



PRINKIPO GREEK ORPHANAGE

**Preserving the Past, Shaping the Future:
Adaptive Reuse Project**

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00. Abstract

This thesis examines the restoration and adaptive reuse of the Prinkipo Greek Orphanage, designed by Alexander Vallaury between 1888 and 1900. As the second-largest timber structure in the world and the largest in Europe, the building faces significant challenges due to its extended state of abandonment. The research proposes a hybrid approach to dealing with the building's state-of-the-art condition, which combines restoration, consolidation, selective demolition, and modern construction. The intervention proposes the restoration and consolidation of the northeast wing, the removal of the central axis and the southwest wing, and a new construction for the adaptive reuse project adjacent to the northeast wing.

The consolidation intervention focuses on two main objectives: static load analyses and visual inspections. The first intervention strengthens the foundation with a reinforced concrete strip to increase stability, load-bearing capacity, and resistance to seismic loads. The second adds CLT panels to increase the walls' resistance to vertical and horizontal loads and stability. The reversibility of interventions and preservation of original materials remain central to the strategy.

The adaptive reuse of historic buildings is always associated with unique challenges; one of the most significant is balancing preservation and project cost. A comparative cost accounting method evaluates two alternative approaches: complete restoration versus partial demolition and restoration.

This thesis aims to highlight the importance of balancing historical integrity and contemporary functionality in adaptive reuse projects. It aspires to offer a sustainable model for revitalizing historic structures.

00. Introduction

The Princes' Islands are a container of culture, history, nature, and unique architecture. The most extensive island of the archipelago, Buyukada, also known as Prinkipo, has successively hosted Armenians, Greeks, and Turks throughout history. At one of its highest points, Hristo Hill is the location of the largest timber structure in Europe, Prinkipo Palace. The Palace was built between 1898 and 1900 by a French company as a hotel and casino, but the Ottoman administration did not ensure the needed permits. Subsequently, the Palace was sold and donated to the Greek Patriarchy to be used as an Orphanage. Since 1964, the Palace has been abandoned and severely decayed due to lack of maintenance, earthquakes, fire, and other natural effects.

The Prinkipo Greek Orphanage (also known as Prinkipo Palace or Red Palace) is a significant specimen of Ottoman timber architectural heritage. Its ample dimensions, architectural features, and tremendous structure have gathered attention over the decades and become part of the island's landscape.

However, its preservation introduces challenges, such as protecting a delicate historic timber structure while making it functional in a modern setting, ensuring the new function is suitable, and balancing the costs associated with the restoration and preservation.

We addressed these issues through an extensive study of the territorial and historical analyses, the building, its structural system and functionality with static calculations, a state-of-the-art condition through a restoration perspective, and a comparative cost accounting regarding two scenarios.

The project proposes:

- Selective restoration of part of the building, aiming to preserve its architectural significance while adding minimally intrusive and reversible reinforcement for long-term stability.
- The adaptive reuse of the historic building as an art residency and event space is executed through restoration and the addition of a new volume.

Project Phases:

The design process consists of four main phases:

Territorial and Historical Analyses:

This phase includes research on the territorial scale of Princes Islands, the site-specific scale of Buyukada, and Prinkipo Palace from its origin to the present day.

Demand and SWOT Analyses:

The demand analyses conducted by Istanbul Metropolitan Municipality gave IBBense understanding to our project and helped us develop the SWOT analysis.

Architectural Survey:

The architectural survey phase consisted of detailed documentation of the building's state-of-the-art situation. The construction system and decays on elevations were analyzed in detail.

Design Proposal

The final phase presents the architectural proposal for the adaptive reuse and revitalization of Prinkipo Palace, illustrated with architectural and axonometric drawings. Structural analysis was also executed in this part regarding the intervention solution, analyses consists of distributed load analysis on exterior walls and concentrated load analysis on columns in the theater area. We wanted to ensure the building was stable and safe for use with a new function. Additionally, a cost accounting comparison study was conducted by comparing two scenarios: complete restoration and preservation and partial demolition, restoration, and preservation.

A fundamental challenge that emerged during the project was the **paradox between preservation and transformation**. Current conservation efforts on Prinkipo Palace seek complete material and historical preservation. However, they do not consider the need to redefine its function in the modern era. So the question becomes, should a historic building stay untouched, frozen in time, or should it be restructured to fit contemporary needs while respecting and remembering its past?



VUE DES ISLES DES PRINCES;
La côte d'Asie à droite & la ville de Constantinople dans le lointain.

Figure 1.0 View of the Princes' Islands: The Asian coast on the right & the city of Constantinople in the distance (IBB Atatürk Library, Alb_000002_006 [Photograph], IBB Atatürk Library.)

1. The Princes' Islands General Characteristic

The province of Istanbul is located between 28° 01' and 29° 55' east longitudes and 41° 33' and 40° 28' north latitudes geographically. Administratively, the province surrounded by the districts of Karamürsel, Gebze, Merkez, and Kandıra of Kocaeli to the east and southeast; by the districts of Gemlik and Orhangazi of Bursa to the south, and by the territories of Çorlu, Çerkezköy, and Saray districts of Tekirdağ and the Vize district of Kırklareli to the west and northwest.

The Adalar district, which includes nine of the twenty-five islands of various sizes in the Sea of Marmara, is located within the boundaries of Istanbul province, between 40° 49' 10" north and 29° 06' 45" east.

The Princes Islands are comprised of nine islands located off the shore of Istanbul's eastern Marmara coast. These islands are, from north to south, known as Kinaliada(Proti), Burgazada(Antigoni), Kasikada(Pita), Heybeliada(Halki), Buyukada(Prinkipo), Tavsanada(Neandros), Sedefada(Terebintos) and further from the shore Sivriada(Oxia) and Yassiada(Plati). Two of these islands are uninhabited: Sivriada and Tavsanada. The Kasikada is a private island. As for Yassiada, it was renamed the 'Island of Democracy and Freedom' by a decision authorized by the Istanbul Provincial General Council to commemorate the leaders of the Democratic Party who were executed as a result of the 27 May 1960 coup d'etat. (Alper, 2021)

The islands have been given various names from the Byzantine era to the present time. These names include 'Kadikoy,' 'Cin' (Demonisia), 'Ruh' (Demonesca), 'Princes' (Les Iles Des Princes), 'Evliya' (Iles Des Saints), 'Bahtiyar,' 'Halka' and 'Kizil' (Crimson). Nowadays, the islands are commonly known as the Princes Islands; the name comes from the fact that many members of the nobility, such as princes, princesses, and emperors who were against the emperor in the Byzantine era, were sent into exile here. These islands were places of exile even as late as the 'Young Turks' era. (Alper, 2021)

Only five out of nine islands are being used

for residential purposes, including Büyükada (Prinkipo), Heybeliada (Halki), Burgazada (Antigoni), Kinaliada (Proti), and Sedefadası (Androvitha). The Princes' Islands have five neighborhoods, 2 of which are in Büyükada (Prinkipo), and the rest are located in Heybeliada (Halki), Burgazada (Antigoni), and Kinaliada (Proti) respectively. The island group has a surface area of 1108.5 hectares, of which 475.8 hectares are inhabited. Other parts generally consist of forests, maquis, and rocky areas. (IBB, 2022) The islands' total population is 16,690 people, divided into four islands. The population is as follows in each island: Buyukada has the largest population, 8586, and Buyukada's second most populated island is Heybeliada with 4424 inhabitants, Kinaliada has 2025, and Burgazada has 1655 inhabitants. However, this number does not include the residents who own a summer house and arrive on the islands in summer for recreational purposes.

The climate of the Islands is similar to Istanbul. The islands feature red, soft, fertile soil with high iron-oxide content. (Alper, 2021)

The Islands that are inhabited today have been able to protect themselves with their cultural and natural heritage assets. Throughout history, the islands have been the capitals of civilizations that dominated the Mediterranean and have developed an identity adjacent to Istanbul and away from metropolitan life. This contrast of proximity and distance from the Capital has transformed the Islands into a cultural center that was affected by all the political, economic, and social changes of the 19th century and responded to the changes with economic, political, social, as well as urban and architectural creations. (IBB, 2020)

The Islands have been declared as historical and urban protected sites due to being used as a settlement by various communities since the eighth century and having numerous examples of religious, military, official, and civil architecture from these communities. Additionally, they have been declared as natural sites due to their incredible natural structure, including villages, hills, slopes, pine forests, beaches, and coastline. (IBB, 2022)



Legend

Settlements

- more than 100 000
- 10 000 - 100 000

Land area Water surface

Figure 1.1 Istanbul and Adalar map (Author's elaboration based on data from OpenStreetMap, 2024)

1.1.1 Accessibility and Transportation

The Princes Islands, located off Istanbul’s eastern Marmara coast, consist of nine islands named Kinaliada, Burgazada, Kasikada, Heybeliada, Buyukada, Tavsanada, Sedefada, Sivriada, and Yassiada. Two islands are uninhabited, while one is private (Kasikada).

Transportation to the Adalar district is done by sea due to its location. Istanbul Sea Buses Inc. (IDO) operates ferries between Bostanci, Kadikoy, Kabatas, and the Islands from 06:00 in the morning until 01:15 at night daily. There are two passenger piers in Buyukada, Heybeliada, Burgazada, and Kinaliada, and one ferry pier in Sedefadasi. Sea buses owned by Istanbul Sea Buses Inc. operate during the summer months, carrying passengers between Bostanci, Kadiköy, Kabataş, Çınarcık, and the Islands. Under the supervision of Istanbul Sea Buses Inc., Mavi Marmara Motor Carrier Cooperative organizes regular trips between Maltepe, Kartal, Bostanci, and the Islands. (These hours vary in summer and winter schedules) (IBB, 2021)

Nearly 140 daily trips are organized from different points of Istanbul to the Islands during the peak summer period. During the summer, one-way trips to the island are examined; ap-

	Accessibility to the islands	Number of voyages
Sehir Hatlari	Kabatas - Islands	14
	Bostanci - Islands	11
	Besiktas - Islands	7
Dentur	Besiktas - Kabatas - Islands	12
	Avcilar - Islands	1
Yalova - Islands	Yalova - Islands	1
Prenstur	Kartal - Adalar	28
Turyol	Bakirkoy - Islands	4
	Eminonu Karakoy Kadikoy Islands	10
	Kadikoy - Islands	9
Mavi Marmara	Besiktas - Kabatas - Eminonu - Islands	12
	Bostanci - Islands	25
	Yesilkoy - Islands	2
Total		136

Figure 1.2 Daily ferry voyages table (IBB, 2022)

proximately 23.5% of the trips are carried out by city lines, while private transportation companies carry out 76.5%. The busiest departure points were observed as Kabataş, Eminönü, Bostancı, Kartal and Kadıköy. The most visited pier in the Islands is Bostancı Pier. (IBB, 2021)

When we examine the points and numbers of arrivals to the Islands during the summer and winter, the busiest pier reached on the Islands is Bostancı Pier. Comparing the number of people arriving at the Islands during summer and winter, we see an almost 50% increase at Bostancı Pier, while at other piers, this increase ranges from 20% to 40%. We can attribute the differences between summer and winter to the transitions made by tourist visitors and those using secondary residences. (IBB, 2022) This increase of incoming people to the Islands causes inadequacies in all infrastructure and facilities on the Islands, leading to insufficient transportation infrastructure. (Senel, 2022)

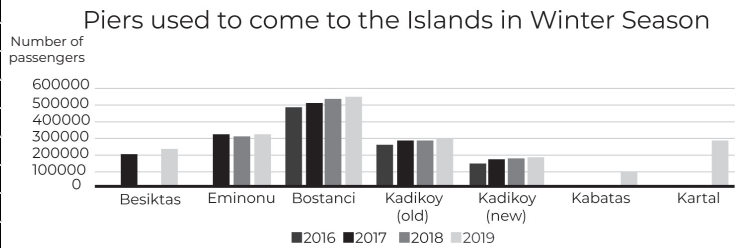


Figure 1.3 Istanbul Piers used to come to the islands in winter (IBB, 2022)

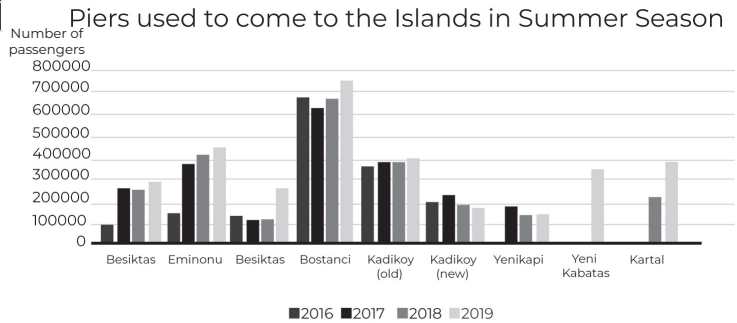
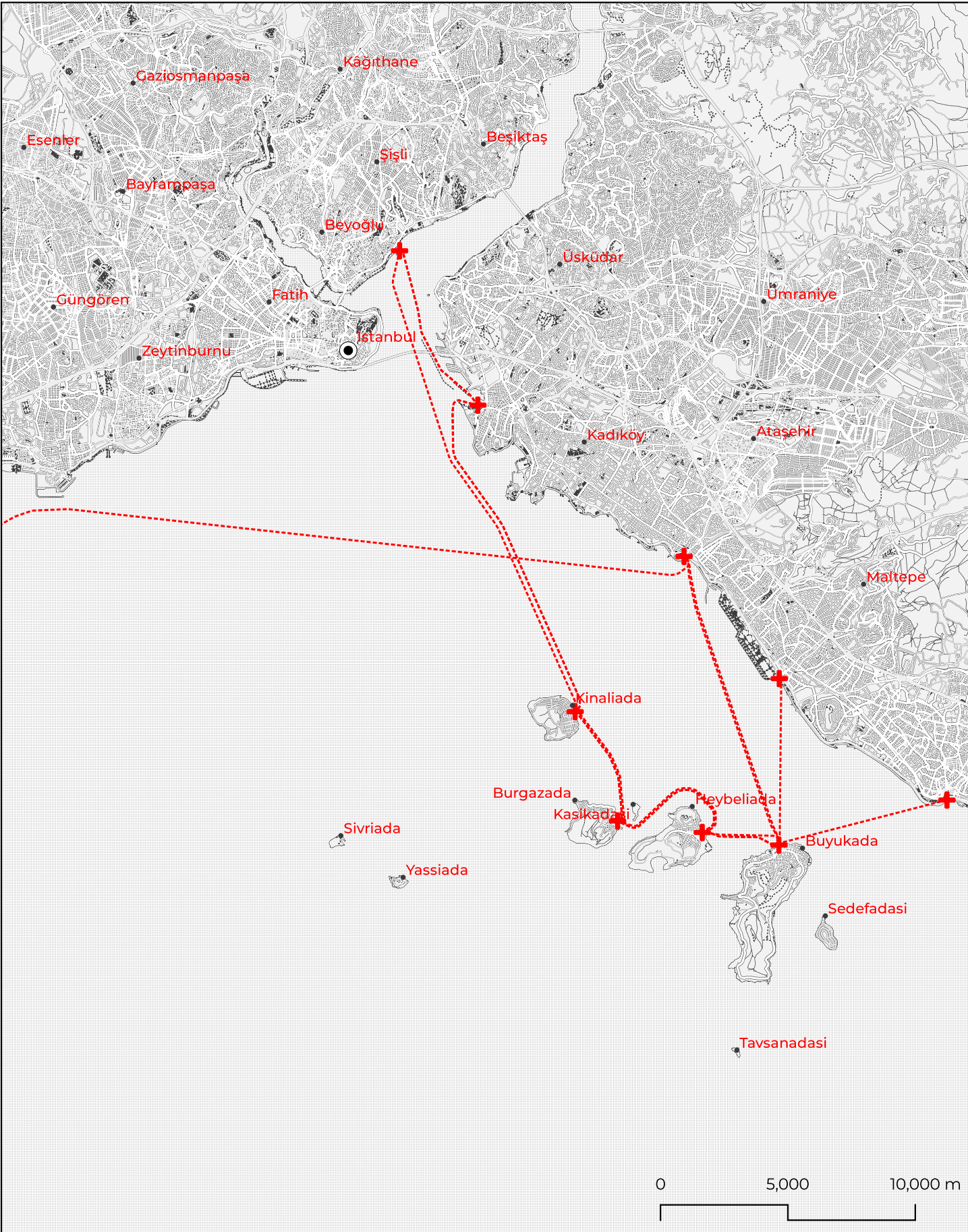


Figure 1.4 Istanbul Piers used to come to the islands in summer (IBB, 2022)



Legend

- Settlements**

 - more than 100 000
 - 10 000 - 100 000
- Transport**

 - + Ports
 - ferry
- Public transport routes**

 - Land area
 - Water surface
- Figure 1.5 Accessibility with ferry (Author's elaboration based on data from OpenStreetMap, 2024)

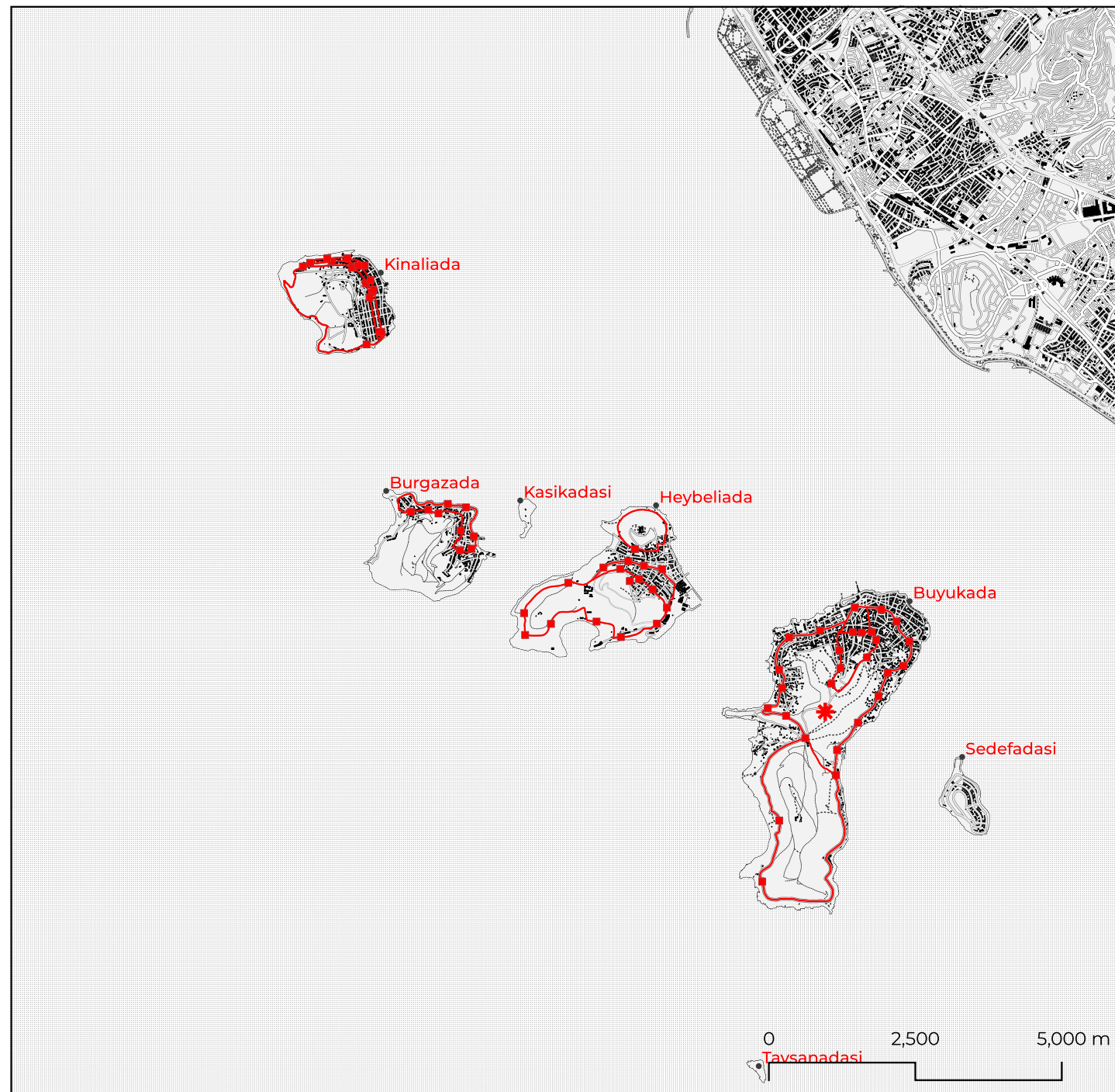


Figure 1.6 Map of bus routes in the Princes Islands (Author's elaboration based on data from OpenStreetMap, 2024)

Legend

* site ■ Bus Stops ■ Buildings ■ Land area ■ Water surface

Traffic

The transportation and infrastructure systems that enable daily life to continue in Adalar District, which differs from other districts of Istanbul in terms of its geographical features and location, also contain unique regulations. Motor vehicles are not permitted on the islands except for public services; the main form of transportation on the islands has historically been pedestrian, bicycle, and horse-drawn carriages.

As a result of the ban on horse-drawn carriages, which tourists mainly used until a few years ago, the use of battery-powered vehicles has increased on the islands. (IBB, 2021)

Public transportation within the island is provided by electric buses with a passenger capacity of 12 people and taxis with a capacity of 4 people. (IBB, 2021)

1.1.2 Vegetation, Climate and Topography Analysis

Topography Analysis

Istanbul Prince Islands generally have a sloping land structure. Highly sloped areas defined as unfavorable for settlement are located in forests and on the seashore. Important peaks on the islands are Yüce-tepe 203 meters on Büyükada, Bayrak-tepe (170 m.) on Burgazada, Değirmentepe (136 m.) on Heybeliada and Çınartepe (115 m.) on Kınalıada. The land orientation is on the southeast-northwest axis. In terms of settlement, Kınalıada and Burgazada have a land orientation towards the east, while Büyükada and Heybeliada have a land orientation towards the north. (IBB, 2022)

Despite the Mediterranean and Black Sea climates that affect the islands, the plant communities on these islands primarily exhibit characteristics of the Mediterranean climate. It is noteworthy that horizonized soil cover is absent throughout most islands due to their sloping topography. Consequently, there is a tendency for soil displacement and material sweeping to occur, leading to soil layer thinning and the emergence of bedrock. (IBB, 2020) Interestingly, the areas with plant communities are marked by red soil, which is why the Istanbul Islands are commonly referred to as the Red Islands.

average temperature in Istanbul. During winter, it tends to rain on the Islands, a characteristic of the Black Sea climate. However, occasional warm southwest winds make the presence of the Mediterranean climate felt during this period. The Marmara climate, a partially distorted version of the Mediterranean climate, generally prevails in the Adalar district. (IBB, 2020)

According to the data from the closest wind measurement station to the Islands, based on Kartal, the dominant wind direction is determined to be west; however, it is also marked that north winds are effective. According to the seasonal data, we can see that the prevailing wind direction is west in winter and east in summer. (IBB, 2022)

When we investigate the precipitation and temperature from the 1980s to 2021, we see an increase, specifically in the last ten years. While there were more abnormalities in decreasing temperatures before 2000, anomalies in the direction of increasing temperatures increased after 2000. At the same time, as a result of temperature increases, the number of days spent above seasonal norms has increased. That is, days spent above seasonal norms and temperatures have increased in the last decade. This situation can also be considered as a result of climate change. (IBB, 2020)

Climate Analysis

The climate of the islands surrounding Istanbul in the Sea of Marmara has a blend of Mediterranean and Black Sea climates. The temperature in the Islands is generally higher than the

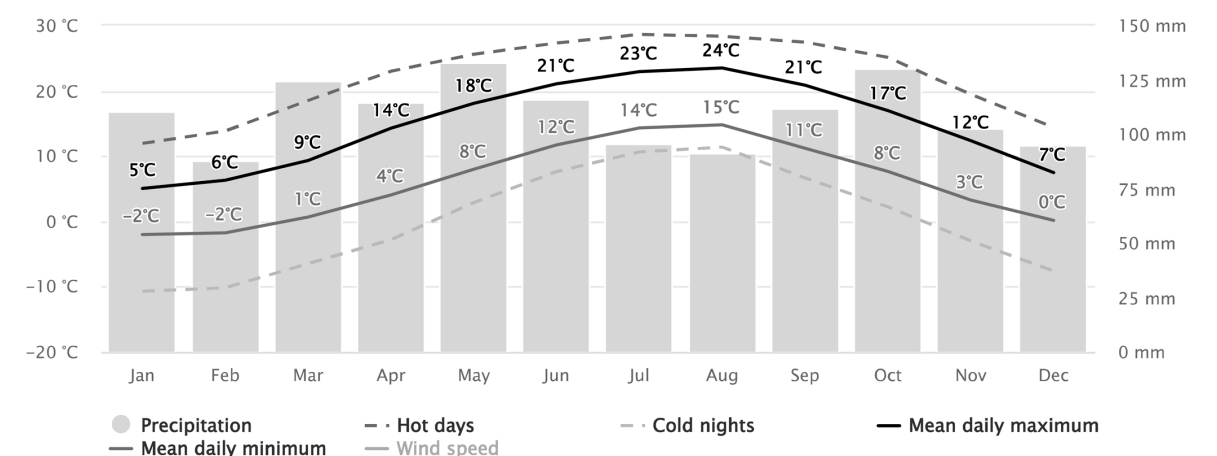


Figure 1.7 Average temperatures and precipitation (Meteoblue, 2024)

Vegetation Analysis

Adalar, with its unique natural landscape and biodiversity, is one of the most essential natural conservation areas in Istanbul. The Islands form a distinctive ecosystem with their unique topography, intertwined forest areas, and the natural and ecological cycles of the sea and coastal areas.

There is a forest area of 655 hectares in the Adalar district. This shows that approximately 70% of the total area is forest area. It is stated in many written works that the pine forests on the Islands were obtained through afforestation in the 1800s. (IBB, 2020)

The distribution of forests on the islands is directly proportional to the size of the islands. Buyukada, the largest island, contains half of the islands' forests with a forest area of 310.3 hectares. There are 170.91 hectares of forest in Heybeliada, 90.68 hectares in Burgazada, and 72.1 hectares in Kinaliada. Forest areas in the Adalar district have increased in the last decade. (IBB, 2020)

When the tree species in the Adalar district are examined, it is seen that it is generally a forest structure dominated by stone pine and red pine. Red pine forests are concentrated in Buyukada and Heybeliada, and stone pine trees in Burgaz and Kinaliada. (IBB, 2020)

	Forest Area Sizes	Percentage
Buyukada	310.3	48.2
Heybeliada	170.91	26.5
Burgazada	90.68	14.1
Kinaliada	72.1	11.2
Total	643.99	100

Figure 1.9 Forest distribution in the islands table (IBB, 2022)

Protected Species

According to the Adalar Municipality Strategy Plan, 2021, as part of the Adalar Defense Biodiversity Inventory Study, it has been observed a vibrant natural life and biodiversity adapted to the conditions in the Islands, which is the only secluded natural area in the Istanbul-Marmara Region with a Mediterranean climate and vegetation. It has been shown that more than 400 plant and tree species and over 90 bird species, some of which are endangered or threatened according to the IUCN Red List, are found to breed or inhabit the area.

The right map showcases different categories of green areas in the Islands. Most green areas are characterized as forests, which house rare and protected species of vegetation and animals. The Islands offer diverse green areas for people to enjoy the parks or have a meal in picnic areas. Each island has designated Picnic and Recreational Areas, such as the Buyukada Aşıklar Hill Recreation Area and the Heybeliada Kabla Recreation Area. Regarding Natural Parks, there are Dilburnu Natural Park and Buyukada National Park in Buyukada and Degirmen Burnu Nation -Park in Heybeliada. Farmlands are only found in Buyukada and are relatively small compared to other areas. This suggests a shortage of farming areas in the Islands.

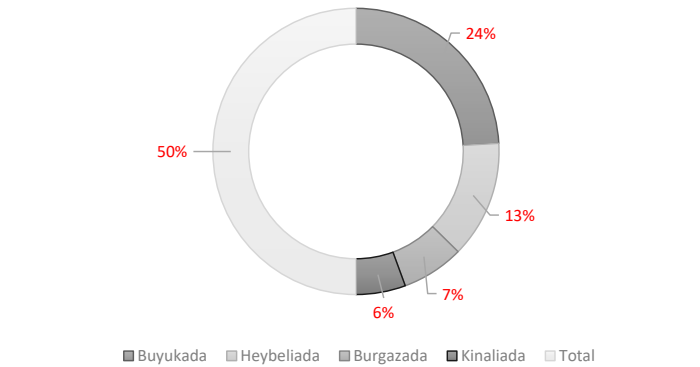
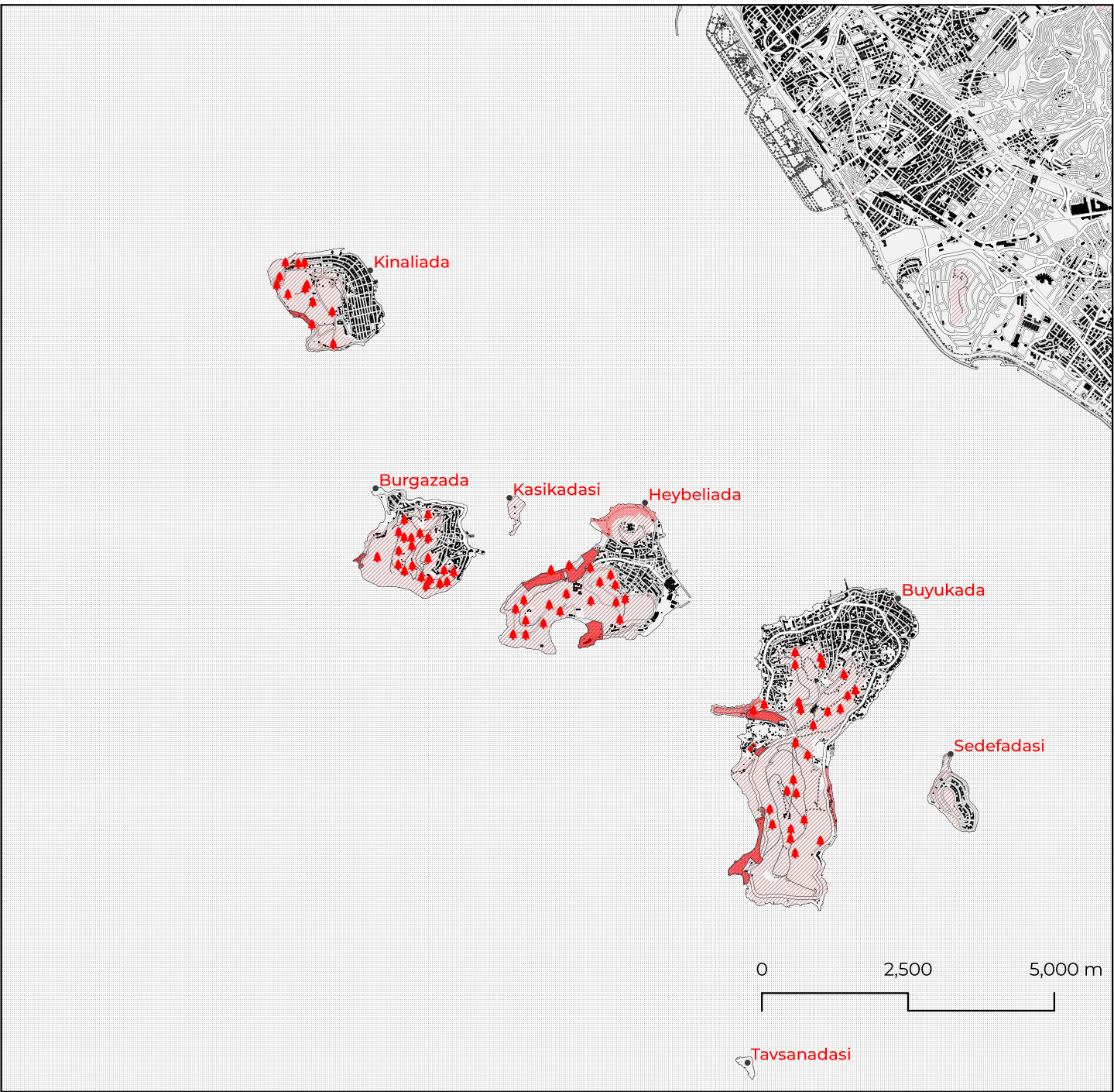


Figure 1.10 Forest distribution in the Islands pie chart (IBB, 2022)



Legend

- Green Areas
 - Protected Species
 - Picnic Area
 - Urban Parks
 - Vegetation
 - Farmland

Figure 1.11 Green Area Analysis (Author's elaboration based on data from OpenStreetMap, 2024)

1.1.3 Population

Adalar municipality is the district with the lowest population in Istanbul. According to 2023 Endeksa data, the population of the Islands is 16,690 people. 51% of the population consists of male individuals while a residual 49% consists of female individuals.

The population of the Islands can be divided into two groups: permanent residents (summer and winter) and those who reside only in the summer months (summer vacationers). The islands witness intense domestic tourism activity in the summer, therefore there are differences between the summer and winter populations. (Karatekin,2014)

When the population development of the Adalar district is evaluated within the period from 1927, which was the first census carried out after the declaration of the republic, to 2007, large population increases and decreases can be seen. The population, which was 11691 in 1927, reached its peak with 19834 in 1960. The Adalar district population, which was determined as 17760 according to the 2000 census, decreased by almost half to 10460 in 2007, according to the population data based on TUIK statistics. In the population data announced by TUIK in 2009, there is a 37% increase. When the annual population values were examined after 2009, it was seen that the population values changed in the range of 14000 - 17000. However, we can see that there has been a steady increase in recent years from 2019 to 2023. (IBB, 2022)

When the population statistics of the Islands are examined individually, we see that the largest population is in Buyukada, and the trajectory of the population has been increasing since 2008 steadily. Heybeliada's population had a drastic decrease between the years 1997 to 2008, but since then the population has grown slowly on the island. Burgazada's population shows similar tendencies to Buyukada's we see an increment in the population starting from the year 2008. Kinaliada seen its most populated time in the year 200, since then we see small changes in the population.

Summer Population:

The current population data in the Adalar district is defined as winter population. Since the islands are used as secondary residences by

many people, the population remaining in the summer months is also considered as summer population when calculating the population. Spatial Address Registration System (SARG) method is used in calculating summer population capacity. This method calculates the summer population as follows; It is the population obtained by multiplying the total number of housing units from the SARG system by the average household size. The summer population obtained by this method is 41680.(IBB, 2020)

In the household survey conducted by TUIK in the autumn of 2020 in the Adalar district, when asked for what purpose their houses were used, 91.9% answered as a permanent residence and 8.1% as a summer residence. When examined on an island basis, it is seen that Kinaliada and Buyukada islands are used more as secondary residences.(IBB, 2020)

For this reason, the summer population was calculated based on 90% occupancy. In this case, it was determined that 37,509 people lived in the Adalar district during the summer months. When we calculated these data on an island basis, it was seen that the islands with a high winter population also had a high summer population. It has been observed that only the summer population of Kinaliada exceeds that of Heybeliada. According to these results, it was seen that the most secondary housing use was in Kinaliada and Buyukada. (IBB, 2020)

Age and Gender

Meanwhile the age and gender statistics display an interesting scenario for a municipality of Istanbul, the majority of the population in the Islands consists of elderly people over 60 years old.

Island	1997	2000	2008	2009	2010	2013	2023
Buyukada	6418	7335	6812	6978	7127	7278	8586
Heybeliada	5623	5529	3763	3890	3921	4807	4424
Burgazada	1541	1578	1203	1392	1405	1474	1655
Kinaliada	2539	3338	2294	2081	1868	2607	2025
Total	16121	17780	14072	14341	14321	16166	16690

Figure 1.12 Population distribution of Islands through years (Karatekin, 2014)

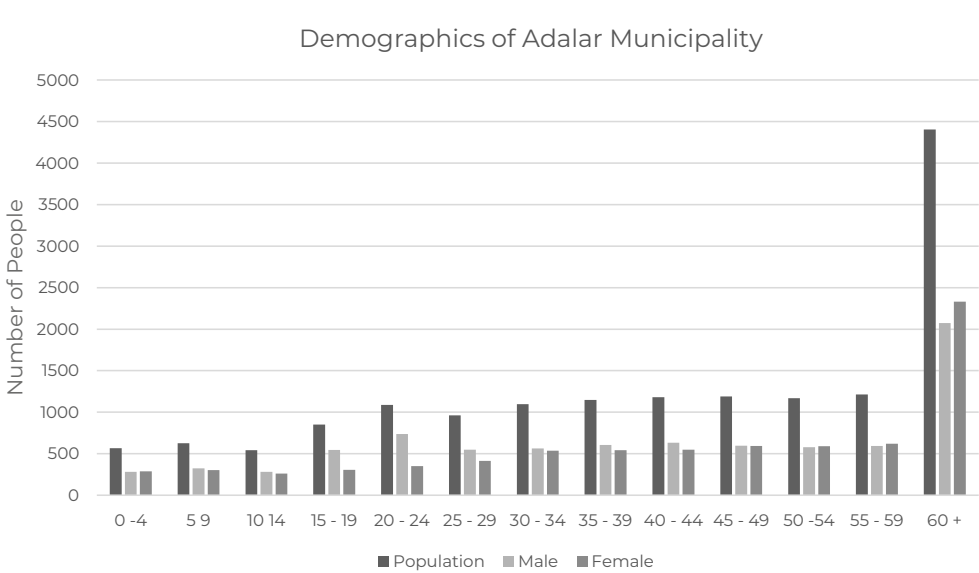


Figure 1.13 Population analysis (IBB, 2022 & Karatekin 2024)

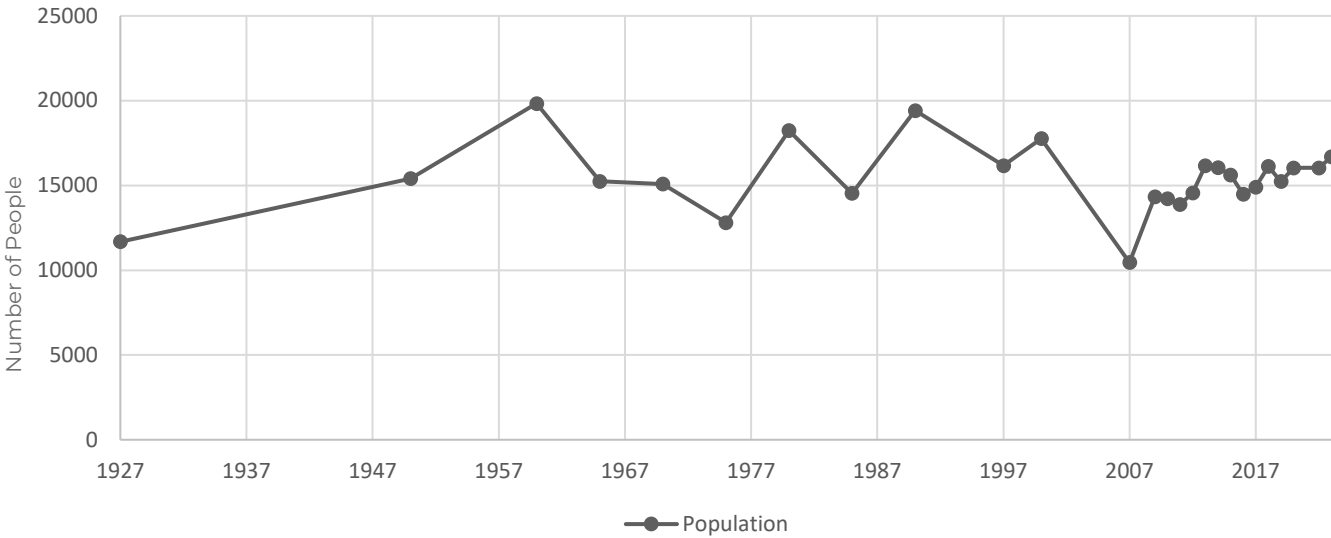


Figure 1.14 Population Trend of Adalar Municipality (IBB, 2022)

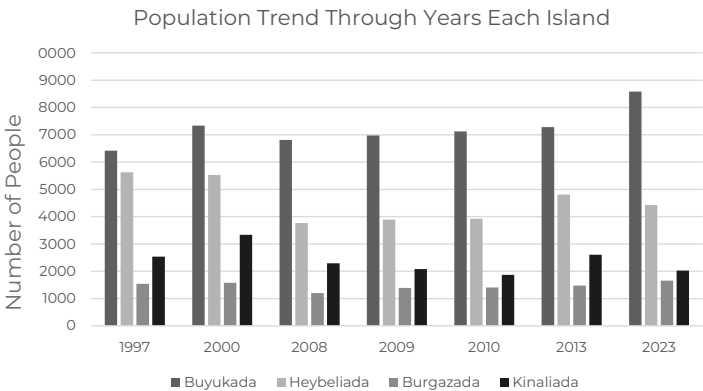


Figure 1.15 Population distribution of Islands (IBB, 2022)

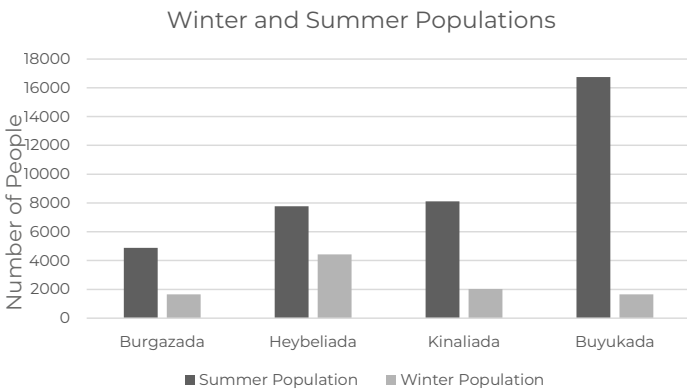


Figure 1.16 Summer and Winter populations (IBB, 2022)

1.1.4 Tourism

Facilities and Accomodation:

The islands have features that attract thousands of local and foreign tourists to the region every year with their unique cultural and natural beauty. It attracts many daily tourists to the Islands during the summer, especially on weekends, due to its easy access compared to many parts of Istanbul, its relatively clean sea, and its beaches and recreation areas.

Some of the incoming population stays in summer residences, some in seasonal rental residences, and some in existing accommo-

dation facilities. Accommodation facilities are concentrated in Buyukada, which receives the most visitors. (IBB, 2022) When the facilities in the municipality are examined in detail, according to the Adalar Municipality Accommodation Inventory for 2020, there are facilities operated with two different documents: a Municipality Certificate and a Tourism Operation Certificate. While there are a total of 86 facilities in Adalar District, the total number of rooms is 1072 and the total number of beds is 1487. (IBB, 2022)

Municipality Certified Accommodation Facilities			
Column1	Number of Tourism Facilities	Number of Rooms	Number of Beds
Buyukada	65	807	1053
Heybeliada	12	90	122
Burgazada	3	25	37
Kinaliada	2	21	21
Total	82	943	1233

Accommodation Facilities with Tourism Operation Certificate			
Column1	Number of Tourism Facilities	Number of Rooms	Number of Beds
Buyukada	3	86	175
Heybeliada	1	43	79
Total	4	129	254
Total	86	1072	1487

Figure 1.17 Accomodation facilities in the Municipality (IBB, 2022)

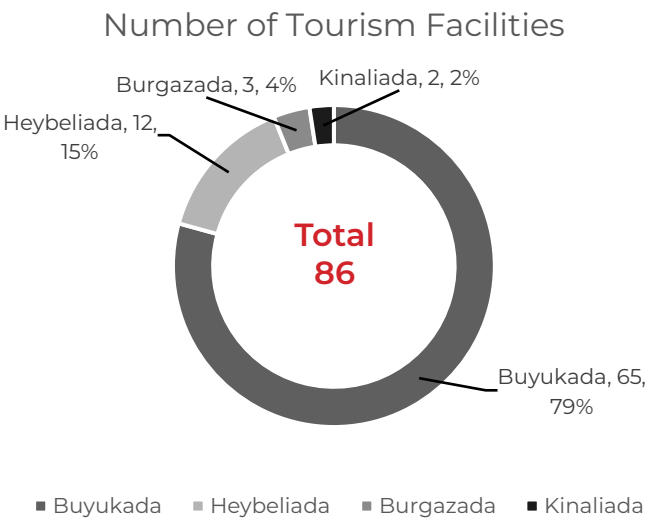


Figure 1.18 Accomodation facilities in the Municipality (IBB, 2022)

Number of Arrivals to the facilities:

When the number of arrivals to the facilities in the past years (2015 and 2019) is analyzed we can see a critical increment in the arrivals of local tourists, we can say that the popularity of the Islands increased through years 2015 to 2019. When it comes to the arrival of foreign tourists there is a big decrease in the arrivals.

Number of Arrivals	2015	2019
Foreign Tourist	18466	2780
Local Tourists	17573	32014
Total	36039	34794

Figure 1.19 Number of Arrivals to Facilities (IBB, 2022)

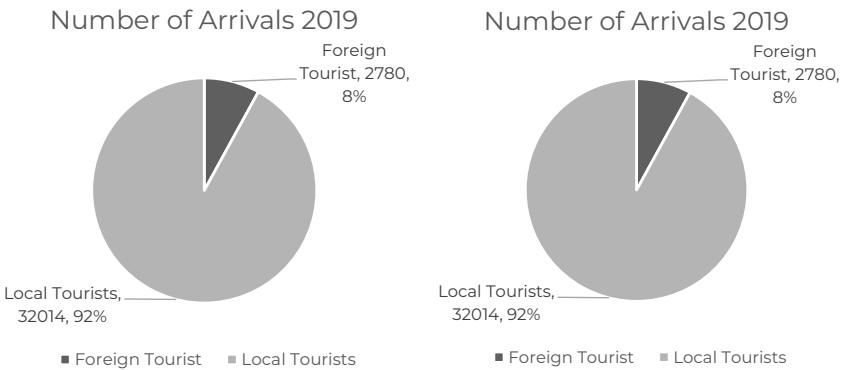


Figure 1.20 & 1.21 Number of Arrivals to Facilities 2015 and 2019 (IBB, 2022)

Occupancy rates of the facilities:

Occupancy rates of the facilities table show us again a big decrease in the number of foreign tourists, while the number of local tourists' occupancy rates increased through the years.

Occupancy Rates	2015	2019
Foreign Tourist	35.39	5.7
Local Tourists	28.77	46.36
Total	64.16	52.06

Figure 1.22 Occupancy rates of facilities (IBB, 2022)

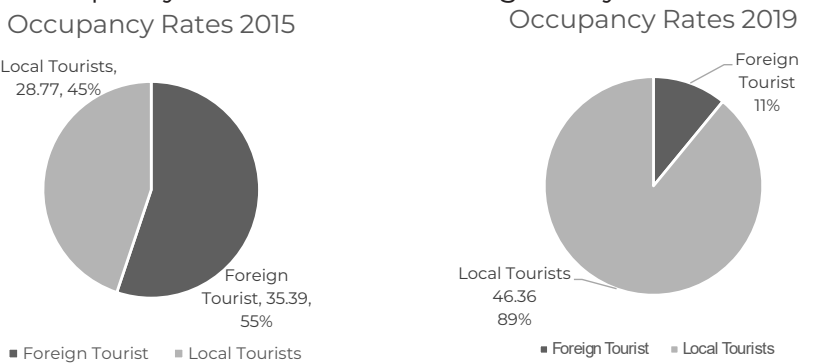


Figure 1.23 & 1.24 Occupancy rates of facilities 2015 and 2019 (IBB, 2022)

Average length of stay:

When we compare the average length of stay over the years, both local and foreign tourists' average length of stay decreased. The average length of stay of foreign tourists is more than double the average length of stay of local tourists.

Average Length of Stay	2015	2019
Foreign Tourist	8	3.24
Local Tourists	4.5	2.66
Total	6.25	2.95

Figure 1.25 Average length of stay (IBB, 2022)

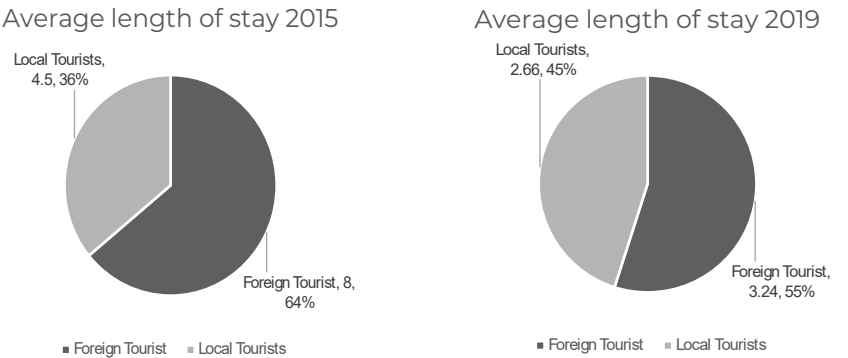


Figure 1.26 & 1.27 Average length of stay 2015 and 2019 (IBB, 2022)

Daily Visitors

Adalar Municipality attracts many daily tourists mainly from Istanbul, especially because of the vicinity to the mainland and natural features of the islands. When we analyze the table (Average Number of Daily Tourists through years) we can see a large difference in incoming daily tourists between winter and summer, the difference in numbers is always more than 10,000 people per year. We can also see a steady increase in the numbers through the years.

When we look at figure 1.25 representing Average Arrival Numbers on Summer Weekends we see a huge amount of incoming daily tourists. There is a steady increase starting from year 2017 to 2019, which at its maximum the average arrival numbers on summer weekends is almost 140000 people per day.

Average Number of Daily Tourists		
Years	Winter Season	Summer Season
2016	12768	24893.1
2017	16292.9	25686
2018	14395.1	26277.9
2019	20683	34476.6

Figure 1.28 Average Number of Daily Tourists (IBB, 2022)

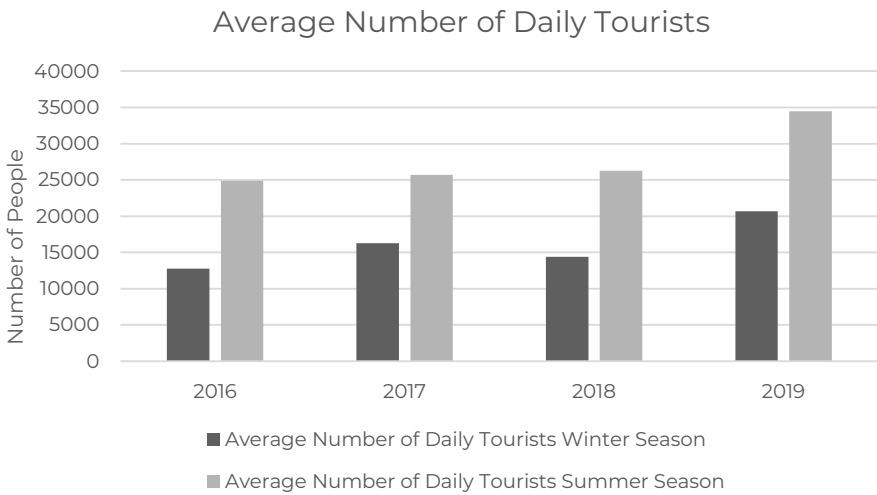


Figure 1.29 Average Number of Daily Tourists (IBB, 2022)

Year	Percentage	Average Arrival Numbers on Summer Weekends
2016	24%	111345.23
2017	20%	91985.54
2018	25%	112883.81
2019	31%	138979.68

Figure 1.30 Average Arrival Numbers on Summer Weekends Table (IBB, 2022)

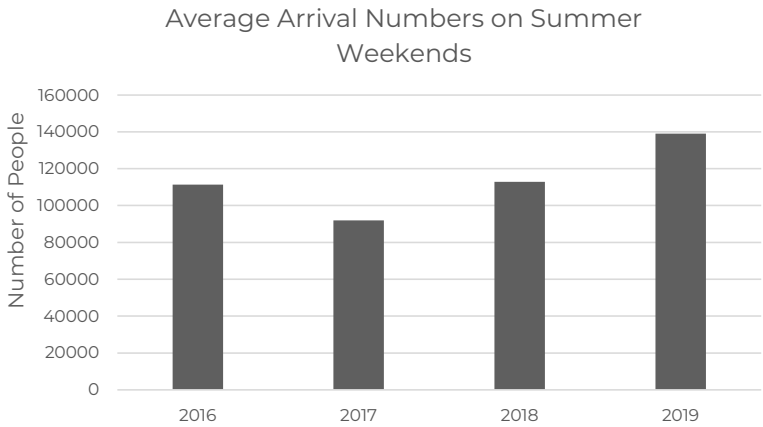
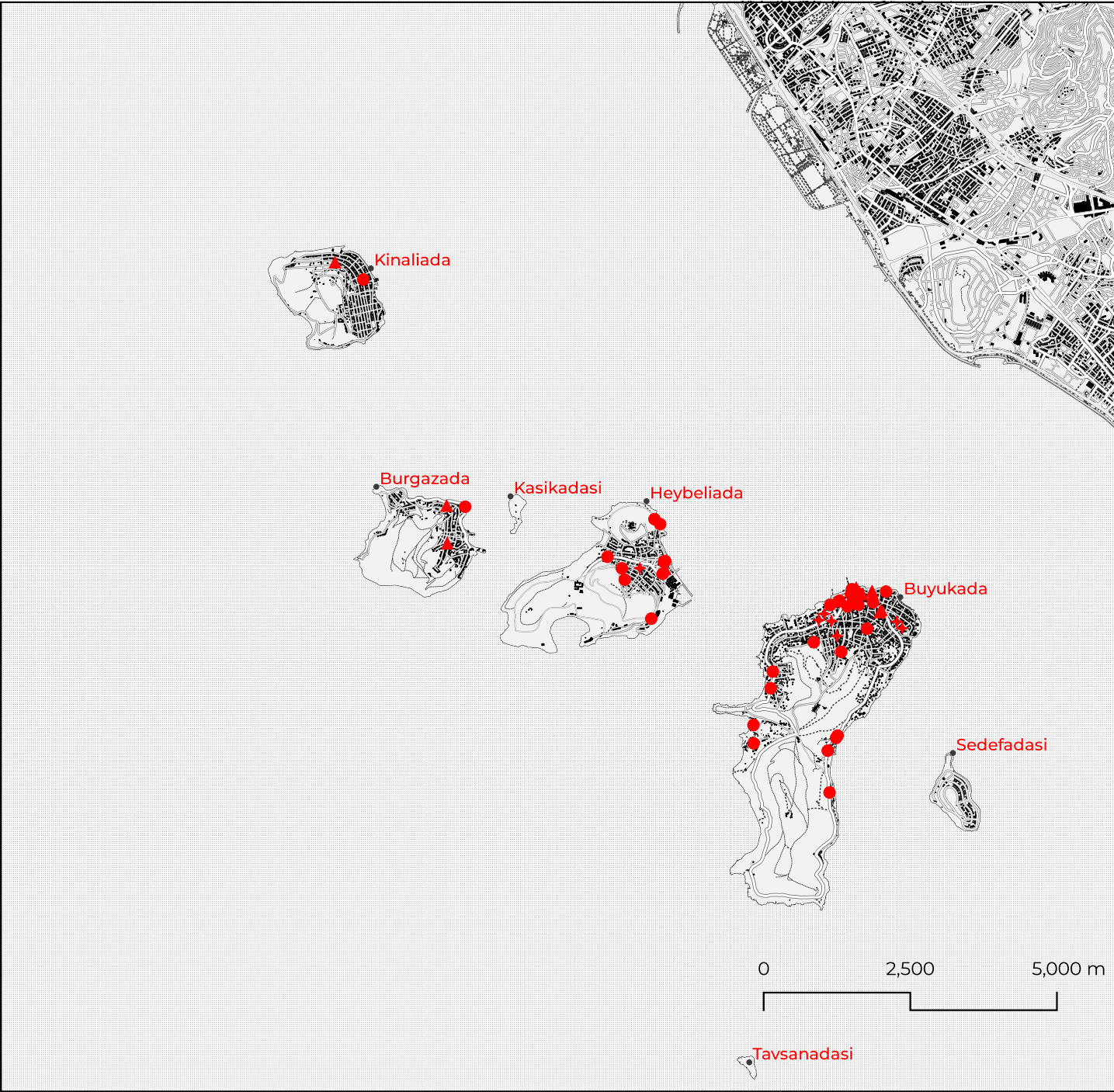


Figure 1.31 Average Arrival Numbers on Summer Weekends Graph (IBB, 2022)



Legend

- + Pansion
- ▲ Boutique Hotel
- Hotel

Figure 1.32 Accommodations in the islands (Author's elaboration based on data from OpenStreetMap, 2024)

1.2. Buyukada General Information

Buyukada is the largest in the Island group also known as Princes’ Islands is also the center of the Istanbul Adalar Provincial District. It is also known as Prinkipo, which means “big” in Greek. (Busch, 2010) Stretching in the north/south direction, Buyukada covers an area of 5.4 km2 and features two hills separated by a collar, Hristo Hill(163 m.) in the North and Aya Yorgi(203 m.) in the South. These two hills descend to the sea, dividing the island in two. The main settlement area of the island is located around Hristo Hill in the north. Union Square is situated at the intersection of many roads between the two hills. Located t.3 km off the shore of Maltepe, Buyukada is 8 km in circumference, 4 km long, and an average of 1.35 km wide. (Alper, 2021)

Büyükada, which serves as the administrative center of the Adalar district, consists of nine islands and five neighborhoods. Buyukada is divided into two neighborhoods, namely Nizam and Maden, with Sedefadasi being part of the Maden neighborhood. Heybeliada, Burgazadası, and Kinaliada form the other three neighborhoods. Kasikadası is included in the Burgazada neighborhood.

Buyukada, which is isolated from the mainland, illustrates a unique nature and landscape formation that comprises a distinguished example of natural, economical, socio-cultural, and architectural qualities. As one of the settlements of Istanbul, the capital of the Eastern Roman Empire, and later the capital of the Ottoman Empire, Büyükada witnessed to historical, religious, and political events for more than 2000 years. This palimpsest structure gives Büyükada its unique character. (Ayanoglu, Kahya, 2019)

In Buyukada, urban settlement is concentrated in the northern parts. Settlements are particularly dense along the coasts facing Istanbul and on the slopes descending to the coasts. The southern part is less populated, there are pine forests and Mediterranean maquis communities. Apart from the maquis that maintain their greenery throughout the year, especially in the gardens of mansions and seaside houses, there are native plants such as mimosa, rose, lavender, and honeysuckle, as well as foreign plant species like palm trees and oleanders (Bozkurt, 2018).

Accessibility and Transportation:

Transportation to the Buyukada is done by sea due to its geographical location, there are public ferry transportation options as well as private motor boats are available. The main pier of Buyukada is the Historical Pier of Buyukada, which was designed by Mihran Azaryan in 1915. The accessibility on the island is provided mainly by electrical busses, and bicycles.

When we investigate the road infrastructure in the island we see mainly two types of roads, one for motor vehicles and pedestrians and the other one for pedestrians only. One of the main problems on the island when it comes to accessibility is, there are no bicycle paths and this causes problems between cyclists and pedestrians oftentimes.

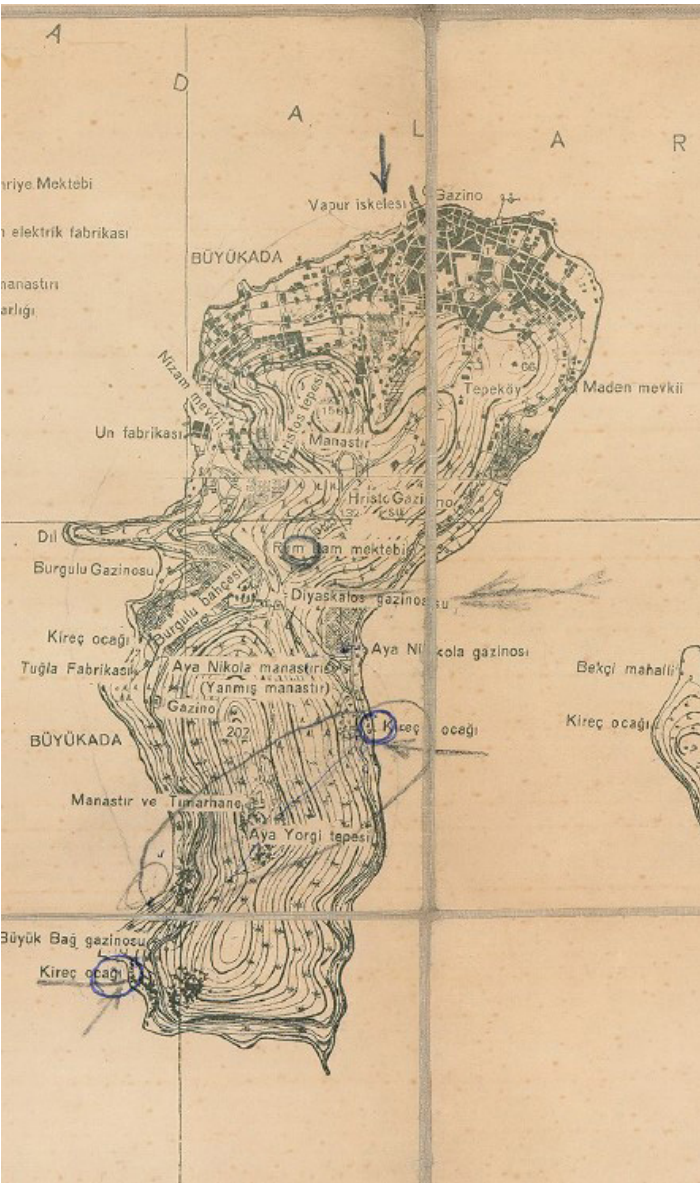
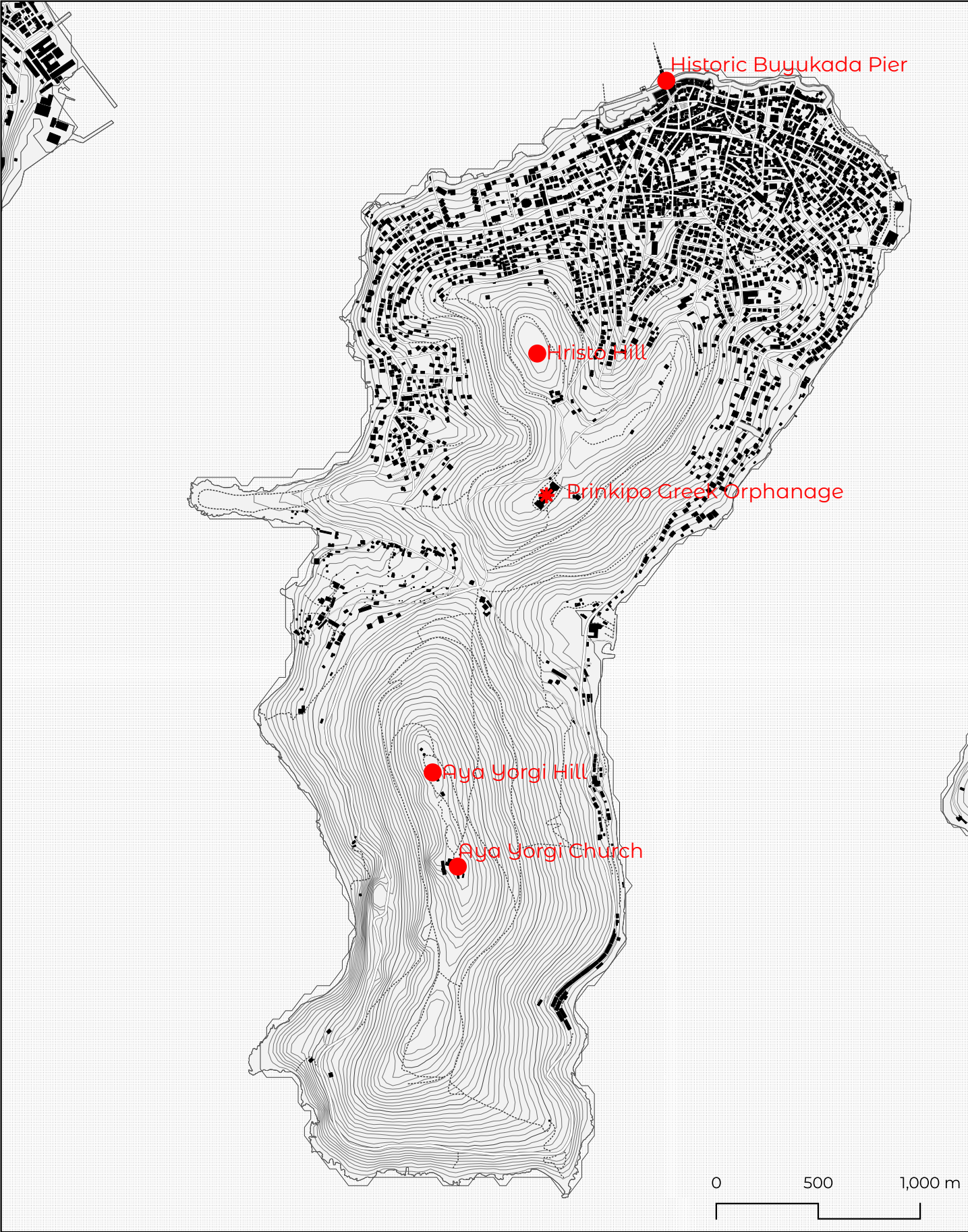


Figure 1.33 Map of Buyukada from 1933 from Atatürk Library (Hrt_011397) [Map]. Atatürk Library, Istanbul.



Legend

■ Buildings ■ Land area ■ Water surface

Figure 1.34 Map of Buyukada (Author's elaboration based on data from OpenStreetMap, 2024)

1.2.1 Education, Health, Museums and Cultural Heritage

Buyukada biggest of the Princes' Islands of- fers a range of essential services in education, culture, and healthcare, tailored to its relatively small population. There is a lack of entertain- ment services such as cinemas, and theaters. When we look at the Figure 1.38 we see that in Buyukada there are two schools, one hospital, one civic center and two libraries.

The educational sector is represented by two schools and two libraries, including a middle school and an elementary school. There is a lack of high schools and higher educational services. There is one highschool in Heybeliada, the teenagers from Buyukada are obliged to go to Heybeliada or to the mainland to attend the highschool. When it comes to higher education institutes, there is no such facility in the municip- ality.

The health sector is represented by only one hospital in the whole municipality. The research hospital is located in Buyukada, meeting the healthcare needs of the residents. It's notewor- thy that the demographic profile is primarily composed of elderly individuals therefore there is a lack of healthcare services adequate for population.

While the island's population may be modest, the presence of educational institutions, cultur- al spaces, and a hospital reflects a commitment to offering essential amenities for the overall well-being and development of the communi- ty. Although these services certainly should be improved according to the needs of residents.



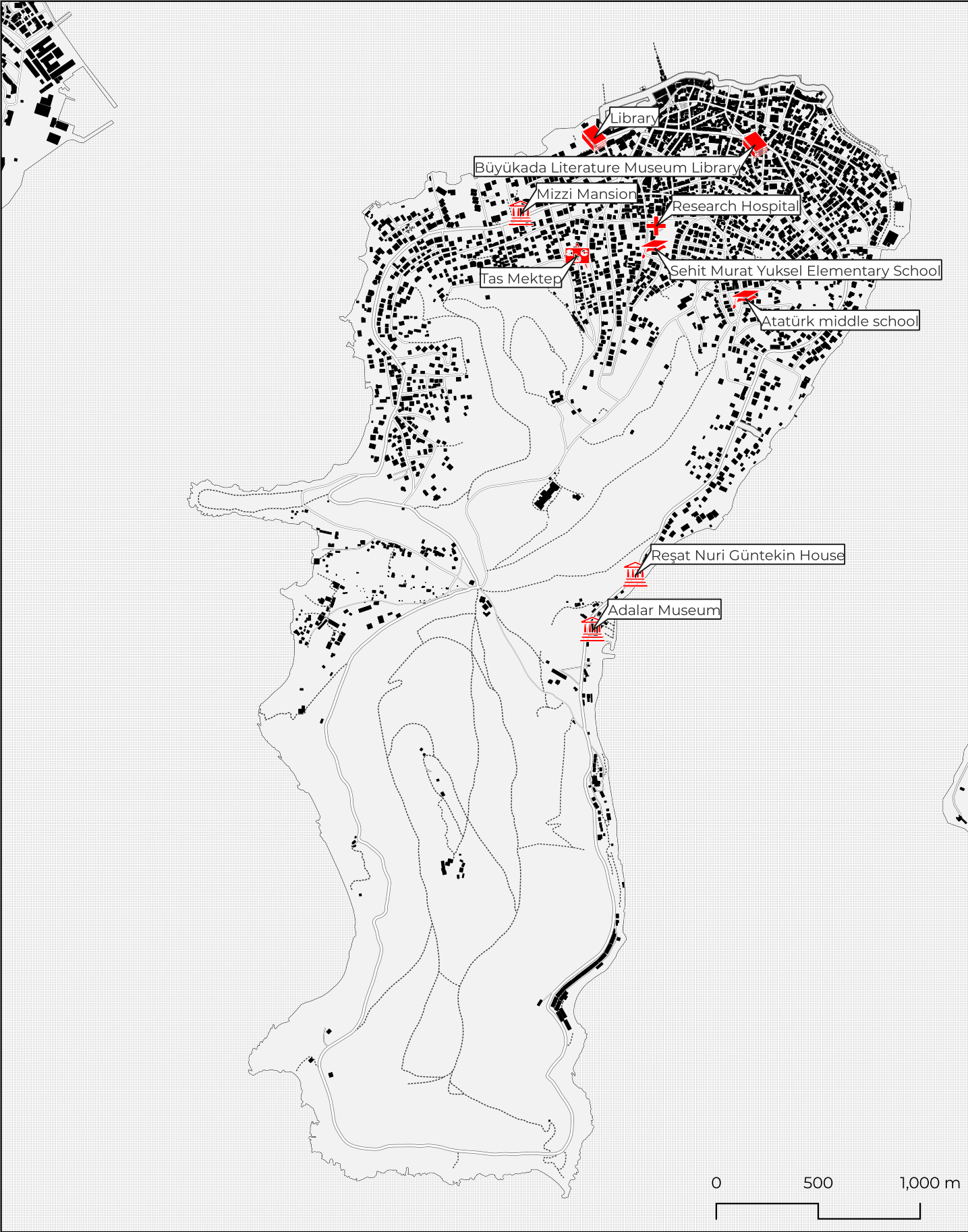
Figure 1.35 Guntekin House (Kurtel, M. (2025). Reşat Nuri Guntekin Evi [Photograph]. Kultur Envanteri. <https://www.kulturenvanteri.com>)



Figure 1.36 Tas Mektep (Kurtel, M. (2023). Taş Mektep, Büyüka- da [Photograph]. Kultur Envanteri. <https://kulturenvanteri.com/yer/?p=149227>)



Figure 1.37 Mizzi Mansion (Olgar, İ. K. (2020). Mizzi Köşkü [Pho- tograph]. Kültür Envanteri. <https://www.kulturenvanteri.com>)



Legend

- Facilities
- + Hospital
 - Library
 - School
 - Museum
 - Civic Center

Figure 1.38 Map of Buyukada Facilities (Author's elaboration based on data from OpenStreetMap, 2024)

1.2.2 Hike Routes and Bike Rental

The Princes’ Islands offers some of Istanbul’s most renowned hiking trails. On Buyukada, two distinct routes offer enthusiasts varying experiences. The first trail is a pedestrian hiking trail, which is a 12 km long track and takes almost four hours to complete. This hike route starts and concludes from the Historic Pier, through the hike the visitors can enjoy several panoramic viewpoints, they can visit Hirstos Monastery, Prinkipo Greek Orphanage, and Aya Yorgi Monastery. The second route is reserved for bikers, it starts and ends at Union Square and visitors can enjoy a scenic view through the route.

Island tourists commonly opt for renting bikes as their preferred mode of transportation, instead of buses or walking. Conveniently, there are five bike rental shops situated around the Buyukada Pier, catering to the preferences of visitors seeking a flexible and enjoyable way to explore the island.

Sources:
1.39 Krugli. (n.d.). Heybeliada Naval High School from Sea [Stock image]. Adobe Stock. <https://stock.adobe.com/it/images/heybeliada-naval-high-school-from-sea/472293564>
1.40 Rachkidi, R. (2018). Buyukada (Princess Islands), Istanbul [Photograph]. Wikiloc. <https://www.wikiloc.com/hiking-trails/buyukada-princess-islands-istanbul-28886753>
1.41 Dmitriy. (n.d.). Old monastery on the island: Isa Rum Manastiri, Buyukada, Princes’ Islands, Istanbul <https://stock.adobe.com/it/images/old-monastery-on-the-island-isa-rum-manastiri-buyukada-princes-islands-istanbul/272563530>
1.42 Gokhan. (n.d.). View of Prinkipo Greek Orthodox Orphanage (Turkish: Buyukada Rum Yetimhanesi) in Buyukada [Photograph]. Adobe Stock. <https://stock.adobe.com/it/images/view-of-prinkipo-greek-orthodox-orphanage-turkish-buyukada-rum-yetimhanesi-in-buyukada-buyukada-is-a-neighbourhood-in-the-adalar-islands-district-of-istanbul-province-turkey/355630788>
1.43 Rachkidi, R. (2018). Buyukada (Princess Islands), Istanbul [Photograph]. Wikiloc. <https://www.wikiloc.com/hiking-trails/buyukada-princess-islands-istanbul-28886753>
1.44 Onedio. (n.d.). Dileklerinin gerçek olmasını isteyenler için Büyüka'da bir nokta: Aya Yorgi Kilisesi [A spot in Büyüka for those who want their wishes to come true: Aya Yorgi Church]. Retrieved January 14, 2025, from <https://onedio.com/haber/dileklerinin-gercek-olmasini-isteyenler-icin-buyukada-da-bir-nokta-aya-yorgi-kilisesi-1090013>
1.45 Rachkidi, R. (2018). Buyukada (Princess Islands), Istanbul [Photograph]. Wikiloc. <https://www.wikiloc.com/hiking-trails/buyukada-princess-islands-istanbul-28886753>

1 The Historical Buyukada Pier - Starting Point



Figure 1.39 Historic Pier of Buyukada (Krugli. (n.d.)

2 Viewpoint



Figure 1.40 Panaromic viewpoint (Rachkidi, R. ,2018)

3 Hristos Monastery



Figure 1.41 Hristos Monastery(Dmitriy. (n.d.)

4 Prinkipo Palas
Prinkipo Greek Orphanage



Figure 1.42 Prinkipo Palas

5 Union Square



Figure 1.43 Union Square

6 Aya Yorgi Monastery



Figure 1.44 Union Square

7 Viewpoint

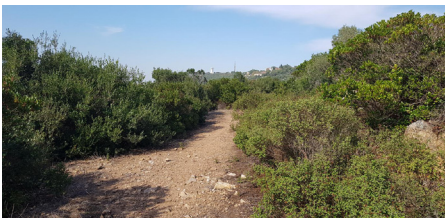
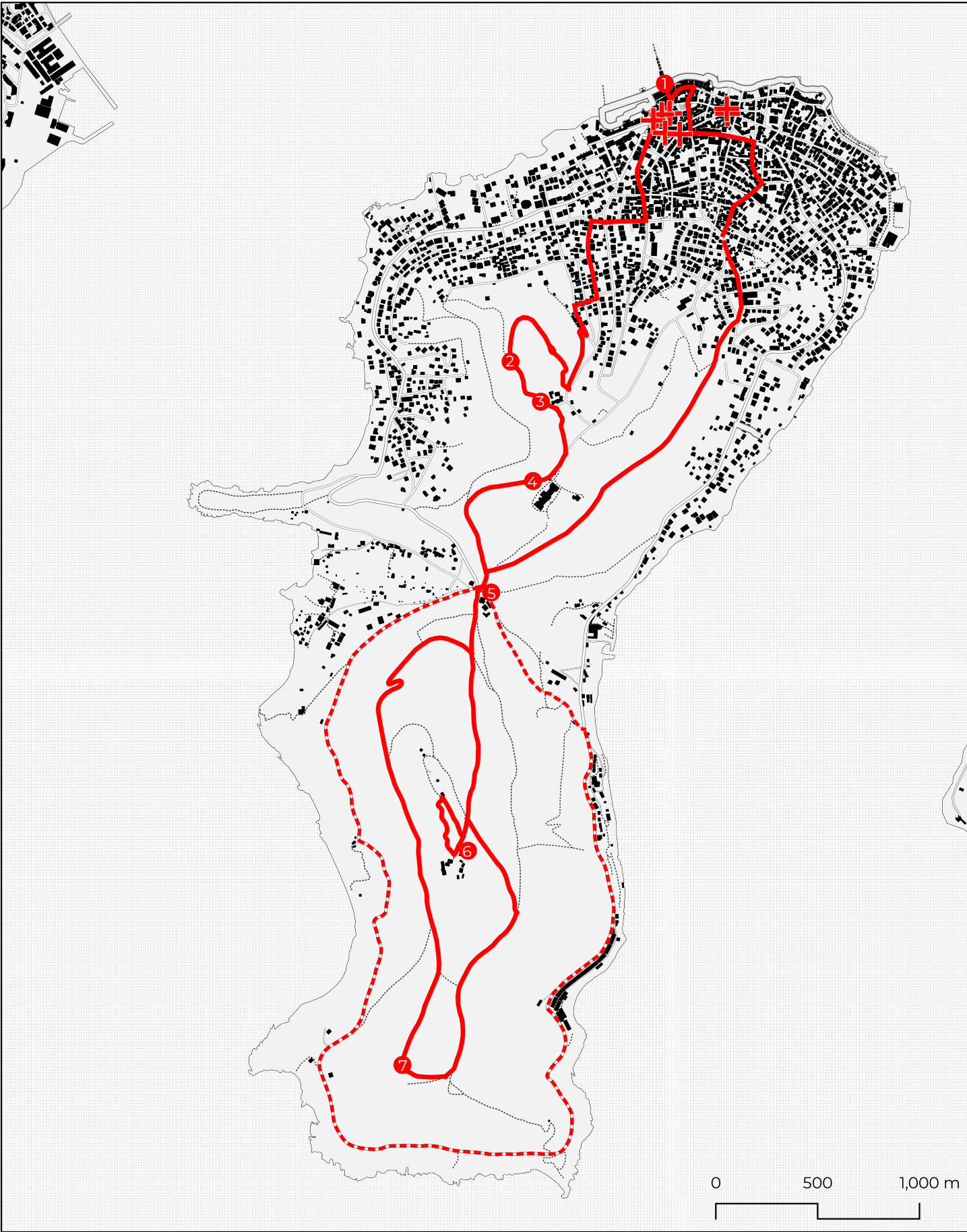


Figure 1.45 Panaromic Viewpoint (Rachkidi, R. ,2018)



Legend

+ Bike Rental --- Bike Route — Long Route Hike

Figure 1.46 Map of Buyukada Hiking Trails and Bike Routes (Author's elaboration based on data from OpenStreetMap, 2024)

1.2.3 Architectonic Heritage

Adalar District, which has preserved its unique settlement identity over the years with its qualified physical environment, historical texture, and original cultural values, is a part of Istanbul with its universal values, multicultural structure, unique civil architecture and monumental works, identity, memory, architectural elements, and natural assets. It is one of the most important treasures of cultural heritage in Turkey.

Buyukada, as the largest island of the Islands, has hosted successively Armenians, Greeks, and the Turks throughout its history. Büyükada was developed around the historic pier in the Byzantine period and has expanded continuously since then. (Ayanoglu, Kahya, 2018)

During Byzantine Empire, the island was occupied with fishers, exiles, refugees and monks who lived in monasteries and engaged in agricultural activities. The fishing village which was initially developed around the coast grew around monasteries and islands. During the Ottoman period, starting from the 16th century islands became a popular destination for non-muslim communities. This popularity brought Armenian and Greek populations to settle there in large groups and as a result, elite, western, and liberal lifestyle became predominant in Buyukada. In this era, wooden and masonry mansions started to be built along the hills and began to form the architectural landscape of the island. Reinterpretations of Classic, Gothic, Baroque and Art-Nouveau architecture flourished in civil architecture. Especially Art-Nouveau elements are particularly in common in wooden architecture which was easily applied to classical Ottoman architecture, therefore Istanbul Art-Nouveau came into existence. (Ayanoglu, Kahya, 2018)

When the registered works are examined, they consist of approximately 1700 religious architectural, civil architectural, and urban elements. Most of these works emerged with the development of summer resort life in the Islands after the 18th century. Religious architectural elements constitute the most important elements of the Islands.

The diversity of the social life also affected the physical environment, forming an architectural style blending the traditional Ottoman style with the eclectic styles of the 19th century.

(Ayanoglu, Kahya, 2018) This special environment was designed by well-known architects of the era, such as Alexander Vallaury, Raimondo D’Aronco, Perikles Fotiadis, Kaludi Laskaris, Turgut Cansever, Abdurrahman Hanci, Mihran Azaryan and Niko Kefala.

List of Architectonic Heritage examples in Buyukada










- 1-Nikola Monastery
- 2- Aya Yorgi Church
- 3- Hamidiye Mosque
- 4- Akasya Hotel
- 5- Anadolu Club & Hotel
- 6- Prinkipo Palas - Prinkipo Greek Orphanage
- 7- Delakuridis Hotel
- 8- Splendid Palas
- 9- Hacıpulo Mansion
- 10- Seferoglu Mansion
- 11- Mizzi Mansion
- 12- House of Trotsky
- 13- Con Pasha Mansion
- 14- Sabuncakis Mansion
- 15- Agopyan Mansion
- 16- Stefanidis Mansion
- 17- Korpi Mansion
- 18- Agasi Efendi Mansion
- 19- Buyukada Pier
- 20- Tas Mektep



Legend

Architecture Hotel Mansion Pier Religious
 Civic Center

Figure 1.47 Map of Buyukada Hiking Trails and Bike Routes (Author's elaboration based on data from OpenStreetMap, 2024)

		Name	Architect	Year of Construction	Function
1		Nikola Monastery	Unknown	Unknown	Religious
2		Aya Yorgi Church	Unknown	1751	Religious
3		Hamidiye Mosque	Unknown	1893	
4		Akasya Hotel	Niko Kefala	1979	Hotel
5		Anadolu Club Hotel	Turgut Cansever & Abdurrahman Hanci	1953-1957	Hotel
6		Prinkipo Palas also known as Prinkipo Greek Orphanage	Alexander Vallaury	1889	Built as a Hotel Used as an Orphanage Currently Abandoned
7		Delakuridis Hotel	Unknown	End of 18th century	Hotel
8		Splendid Palace	Kaludi Laskaris	1908	Hotel
9		Hacopulo Mansion	Unknown	1860 - 1870	Built as a Mansion Used as a Museum
10		Seferoglu Mansion	Perikles Fotiadis	1885 -1890	Built as a Mansion Current use unknown

		Name	Architect	Year of Construction	Function
11		Mizzi Mansion	Raimondo D'Aronco	1894	Built as a Mansion Current use is Museum
12		House of Trotsky	Unknown	1850s	Built as a Mansion Currently abandoned
13		Con Pasha Mansion	Achileus Policis	1880	Built as a Mansion Currently museum
14		Sabuncakis Mansion	Periklis D. Fotiadis	1904	Built as a mansion Current use unknown
15		Agopyan Mansion	Marten Agopyan	1900s	Built as a Mansio Current use Hotel
16		Stefanidis Mansion	Unknown	1864	Built as a Mansion Current use unknown
17		Korpi Mansion	Periklis Fotiadis	1950s	Mansion
18		Agasi Efendi Mansion	Unknown	Unknown	Mansion
19		Buyukada Pier	Mihran Azaryan	1914	Pier
20		Tas Mektep	Unknown	1950s	Built as a School Current use Community Center

Figure 1.48 Summary table of the architectural examples of the Islands(Author's elaboration from the website kulturenvanteri.com)

1.2.4 Büyükada a Creative Hub

Büyükada is the largest of the Princes' Islands off Istanbul. For centuries, it has been a haven for artists, thinkers, and intellectuals, enticed by its natural beauty, tranquility, and proximity to a vibrating city. From the last days of the Ottoman Empire to the present day, it has historically functioned simultaneously as a retreat and an inspiration to many.

Büyükada became a famous place of escape during the end of the 19th century and Istanbul's rapid modernization during the Tanzimat period. The city became more dense and politically dynamic, but the atmosphere of Büyükada was serene and peaceful; it gave shelter for numerous intellectuals and creators who fled here from the noise and turmoil of the city and needed peace and inspiration. One of the first known persons to settle on this island was Prens Sabahaddin, a liberal thinker and member of the Ottoman aristocracy. He used Büyükada as a base for developing and propagating his ideas on political reform, finding refuge from the political unrest of Istanbul in the isolation of the island. Similarly, Mahmud Ekrem of the Recaizade, the great poet of the Tanzimat Age, also settled on Büyükada because the place was beautiful and intellectually inspiring. (I. Istanbul Adalar Symposium, 2013)



Figure 1.49 Prince Sabahaddin (Wikipedia contributors. (n.d.). File:Sabâhaddin [Photograph]. In Wikipedia, Retrieved January 17, 2025, from https://en.wikipedia.org/wiki/Mehmed_Sabahaddin#/media/File:Sab%C3%A2haddin3.jpg)



Figure 1.50 Mahmud Ekrem (Can Yayınları. (n.d.). Recaizade Mahmut Ekrem [Photograph]. Retrieved January 17, 2025, from <https://www.canyayinlari.com/recaizade-mahmut-ekrem>)

The traditions of finding artistic inspiration continued into the early 20th century in Büyükada. One of Turkey's most important modernist painters, Abidin Dino, found a haven on the island during his exile. For Dino, the island offered him not only physical but also mental refuge to research new ideas of modernist thinking in art. Similarly, Fazıl Hüsni Dağlarca, one of Turkey's most vigorous poets, enjoyed the landscapes of Büyükada, which, for him, was the perfect setting for the introspective themes of his poems. (Adalarin Turk Turizm ve Edebiyatındaki Yeri ve Önemi, 1984)

Perhaps most famously, Fikret Mualla was an eccentric, vibrant, expressive bohemian painter. During his life, he lived in Büyükada, trying to find solace from his stormy personal life. The island served as a calming force for him, and its tranquil influence can be noted in some of his later works. (I. Istanbul Adalar Symposium, 2013)

While its historical role as a sanctuary for artists is well documented, Büyükada remains a vibrant center for contemporary art. One of the artists associated with Büyükada is the contemporary video artist Ali Kazma, whose work is about labor and existence. This island's serenity and introspective feel provide the perfect backdrop for his work, which takes viewers to places of deep meditation. (Artsy, 2024)

Another important contemporary figure is Hera Büyüктаşçıyan; in her work, themes of migration and displacement are often tackled, very often taken directly from the past of Büyükada as a home to different communities. (ArtForum, Bailey)



Figure 1.51 Natürmort by Abidin Dino (Artam Antik A.Ş. (n.d.). Abidin Dino (1913–1993) Natürmort [Photograph]. Retrieved January 17, 2025, from <https://artam.com/muzayede/290-cagdas-sanat-eserleri/abidin-dino-1913-1993-naturmort-4>)



Figure 1.52 Fazıl Hüsni Dağlarca (Idefix. (n.d.). Fazıl Hüsni Dağlarca [Photograph]. Retrieved January 17, 2025, from <https://www.idfix.com/yazar/fazil-husnu-daglarca-218711>)

In recent years, Büyükada has been the site of international art events, with special importance placed on the Istanbul Biennial, which used the island with several site-specific works. International artists such as Adrián Villar Rojas, Mark Dion, and Yto Barrada have created installations on the island that showcase its particular landscape and historical significance. These exhibitions lend Büyükada a theater of contemporary art that draws people from all over the world. (Apollo, Danforth 2019)

For historical and contemporary artists alike, there has been no better balance between tranquility and cultural richness than Büyükada. The ability to live near Istanbul allows the artist to be in some contact with the city's active art world, but at the same time, it enforces an essential distance in terms of focus on the artistic process. The aesthetic inspiration Büyükada offers is equally drawn from its natural beauty—lush forests, quiet beaches, and historic architecture—all inspired by the landed gentry and literary artists living here. Besides, the history of Büyükada as a multicultural center hosting Greek, Armenian, Jewish, and Turkish communities gives layers of cultural and historical meaning that continue to inspire contemporary works. Today's artists on the island are drawing from this complex past to bring aspects of identity, memory, and displacement into modern narratives.



Figure 1.53 Balloon Seller by Fikret Mualla (Artam Antik A.Ş. (n.d.). Fikret Mualla (1903–1967) Kafe [Photograph]. Retrieved January 17, 2025, from <https://artam.com/muzayede/262-cagdas-sanat-eserleri/fikret-mualla-1903-1967-kafe>)



Figure 1.54 Ali Kazma (Photo from Lo sguardo nomade di Ali Kazma (Interlenghi, 2023), Il Giornale dell'Arte. Retrieved from <https://www.ilgiornaledellarte.com/Articolo/Lo-sguardo-nomade-di-Ali-Kazma->)

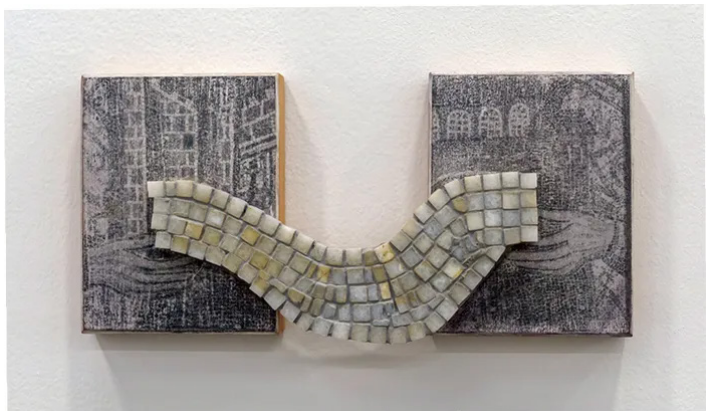


Figure 1.55 An Icon of a Marble King I by Hera Büyükaşçıyan (Hera Büyükaşçıyan. Image from Artforum (n.d.). Retrieved January 17, 2025, from <https://www.artforum.com/events/hera-buyuk-tacyan-2-231284/>)



Figure 1.56 Installation by Adrian Villar Rojas in Istanbul Biennial 2015 (Photo from Foto e video dalle opere della Biennale di Istanbul installate nell'isola di Buyukada di fronte alla città. Seguono vaghi riferimenti all'attualità (Redazione, 2015), Artribune. Retrieved from <https://www.artribune.com/tribnews/2015/09/foto-e-video-dalle-opere-della-biennale-di-istanbul-installate-nellisola-di-buyukada-di-fronte-alla-citta-seguono-vaghi-riferimenti-allattualita/>)



Figure 1.57 Installation by HaleTenger in Istanbul Biennial 2019 (HaleTenger's "Appearance" (2019). Photo by Galeri Nev Istanbul (n.d.). Retrieved January 17, 2025, from <https://www.galerinevistanbul.com/artists/39-hale-tenger/works/9429-hale-tenger-appearance-2019/>)



Figure 1.58 Büyükada Songlines by Studio Ossidiana in Istanbul Biennial 2019 (Thedesignedit)



Figure 3.1 Postcard depicting Istanbul and Buyukada, 1910 (Postcard from IBB Atatürk Library, Krt_000464 [Postcard]. IBB Atatürk Library.)

Demand Analyses

Survey studies were carried out in December 2020 following the initiation of the Adalar District Conservation Master Development Plan by Istanbul Metropolitan Municipality. Within the scope of survey studies, the Adalar District Household Survey with 545 households (BIMTAS, IPA (Istanbul Statistics Office), 808 online Island Residents Opinion Polls, 202 face-to-face Island Residents Public Opinion Polls (IBB Public Relations Directorate), 541 online Visitor Surveys, 94 Adalar District Business Surveys (IBB Public Relations Directorate) were conducted. Due to the pandemic, the Island Resident Opinion Polls and the Visitor Surveys were conducted online. The survey aims to understand better the current situation of the Adalar Municipality, as well as the perception of the participants on the islands.

Visitor Survey and Results:

The visitor survey taken in the Adalar district gives a picture of preferences, behavior, and profile information about tourists visiting the islands. Among the popular destination places in Istanbul, the islands attract both domestic and foreign visitors with their natural beauty, historical value, and recreational areas. The visitor survey helps us to understand, among other things, the motives for travel, the frequency and length of visitors' stays on the islands, awareness of the protected status, and satisfaction with infrastructure and services. Analyzing these factors, the survey highlights opportunities concerning the quality of the visitor experience, the reduction of infrastructural problems, and tourist practices that are sustainable concerning the particular environmental and cultural situation of the islands.

2.1 Visitor Survey and Results

The online Visitor Survey in the Adalar district of Istanbul was conducted with the participation of 561 people. It was observed that 40.54% of the participants were female and 59.46% were male.

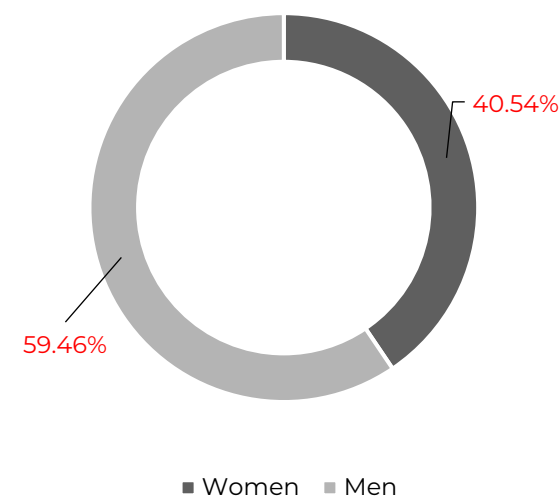


Figure 2.1 Gender of the participants graph (IBB, 2020)

2. Residence place of the participants:

Participation in the survey was 96.61% were residents of Istanbul, while 3.39% were from outside Istanbul.

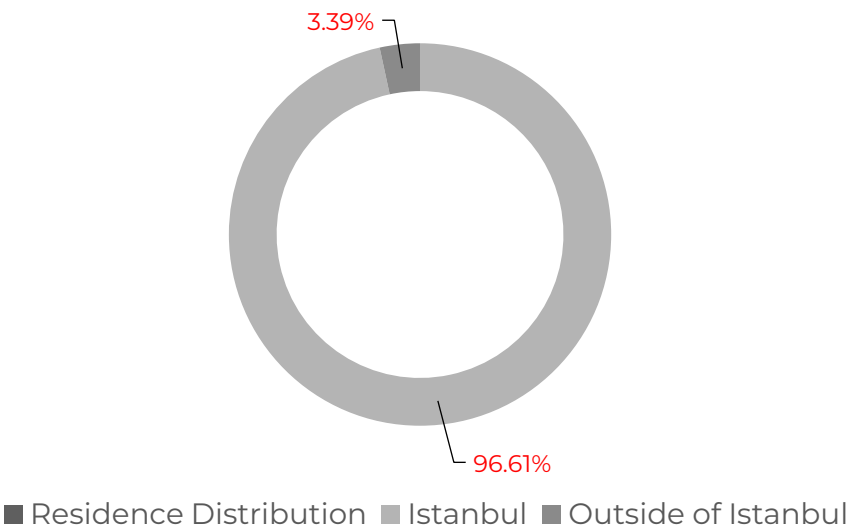


Figure 2.2 Resident of the participants graph (IBB, 2020)

3. Age distribution of the participants:

When we examine the age distribution of survey participants, the majority lays between 25 to 45 age group. The percentage of participants in 65 and older group is drastically less, this can be caused because of the consunction method of the survey which is online.

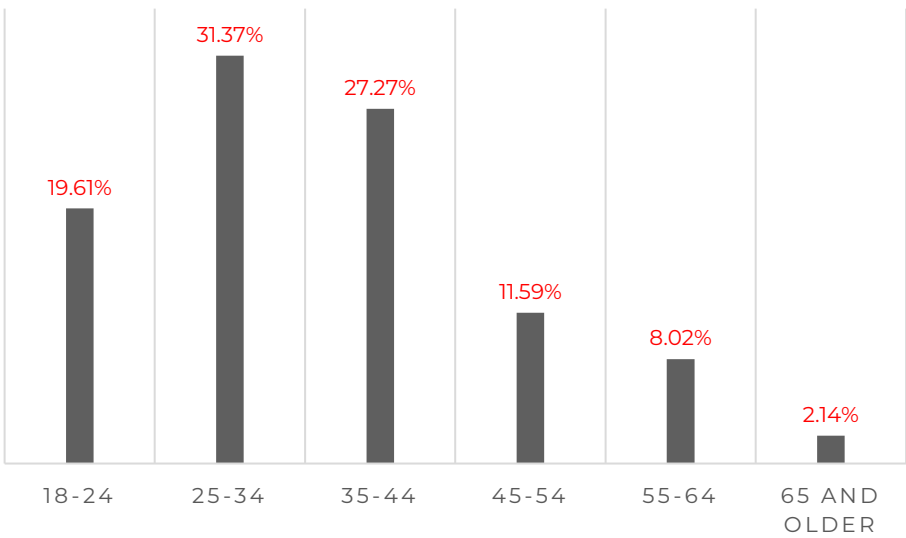


Figure 2.3 Age distribution of the participants (IBB, 2020)

4. Frequency of the visits of participants:

It has been observed that rare and short-term arrivals were the most common answers in the frequency of arrivals to the islands, when we consider most of the visitors residing in Istanbul, short term visits can be explained. (see figure 2.2)

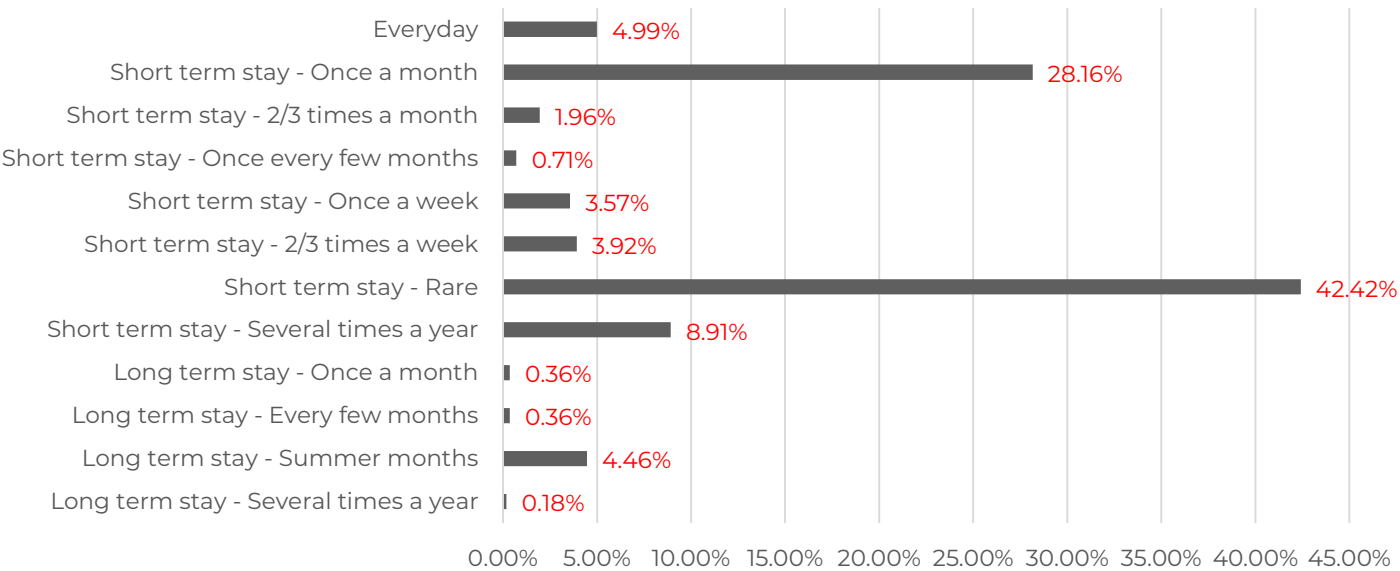


Figure 2.4 Frequency of the visits of participants (IBB, 2020)

5. Island Visitation Frequency:

Of the survey participants, 57.75% preferred Büyükada, 21.57% preferred Heybeliada, 5.53% preferred Kınalıada, 14.97% preferred Burgazada and 0.18% preferred Sedef Adası. It was observed that they visited Sedef Island. Büyükada is the largest one in island group, and offers different museums, cultural and architectonic heritage sites as well as different hike and bike routes. (See chapter 1.2)

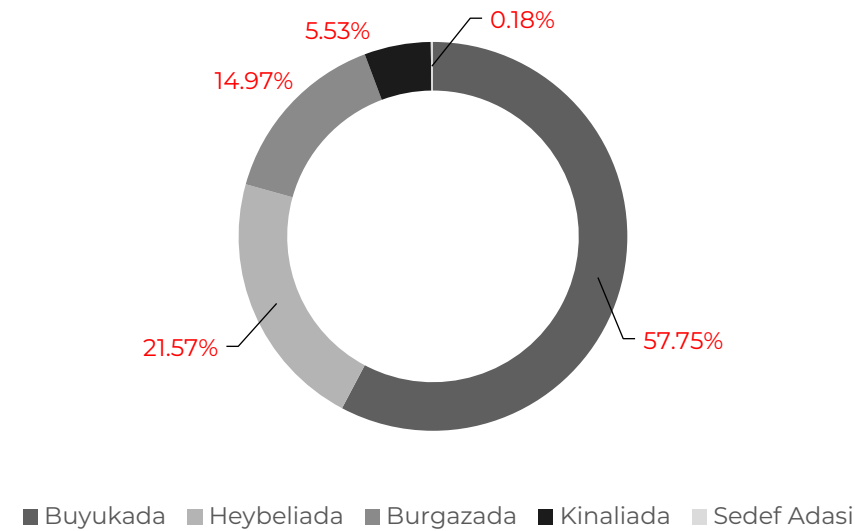


Figure 2.5 Island visitation frequency (IBB, 2020)

6. Which pier do participants use the most frequently to access the islands?

When we analyze the piers used to come to the islands we see that Bostancı and Kadıköy piers used the most.

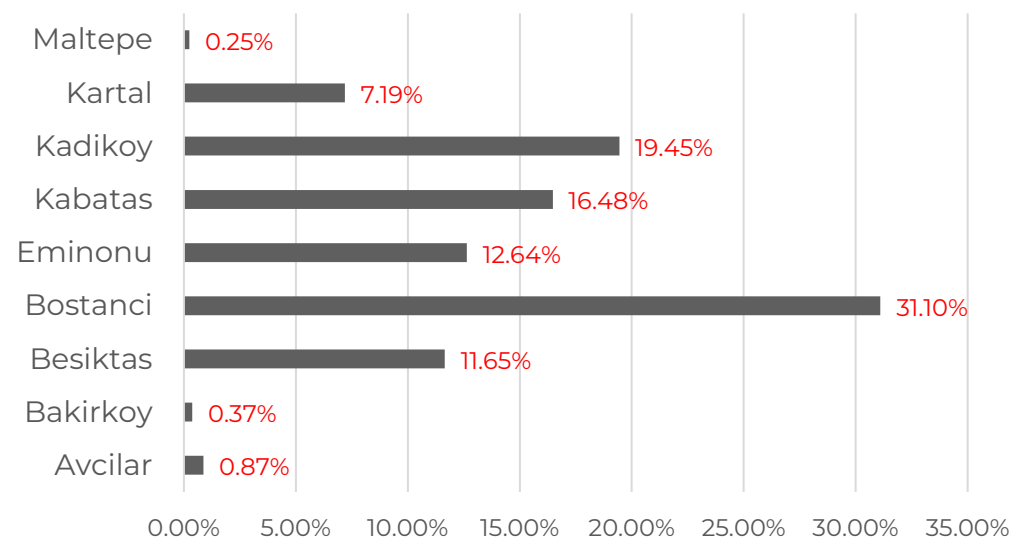


Figure 2.6 Favored pier of the participants (IBB, 2020)

7. Participants purpose on visit:

It was observed that the most common ones were to see historical areas/buildings with a rate of 22.65%, Social and Cultural Activities with a rate of 19.61%, and Food and Beverage activities with a rate of 14.95%. As explained in Chapter 1.1 and 1.2 Princes' Islands offer a range of activities for visitors, but the most prominent features of the islands are historic and cultural sites.

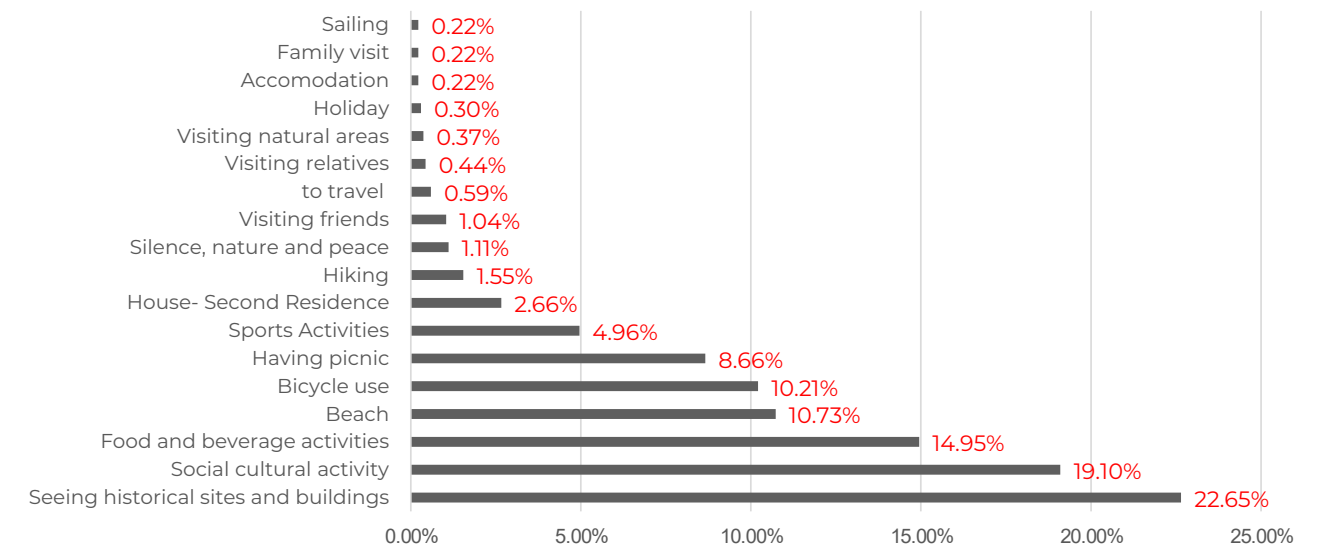


Figure 2.7 Purpose of the visit (IBB, 2020)

8. Participants' awareness of the island being a natural and urban protected area:

While 64.71% are aware that the entire islands are natural and urban protected areas, 35.29% answered No to this question.

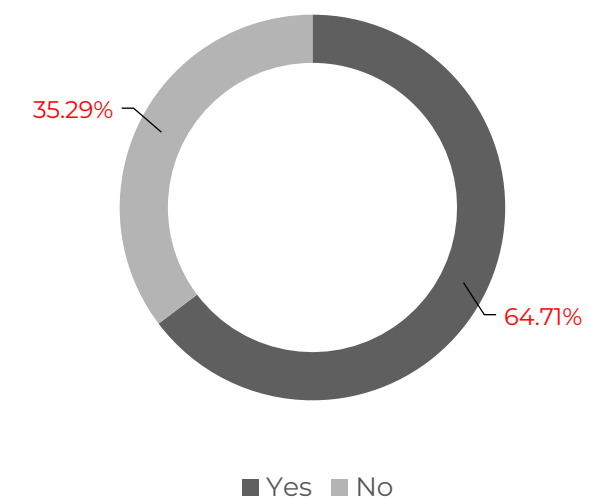


Figure 2.8 Participants awareness of the island being a natural and urban protected area (IBB, 2020)

9. Participants' identification of the areas and features to prioritize for protection and preservation on the islands: were primarily Natural life in forest areas. Islands are a great place for visitors from Istanbul to come and enjoy natural life and coastal areas with its vicinity.

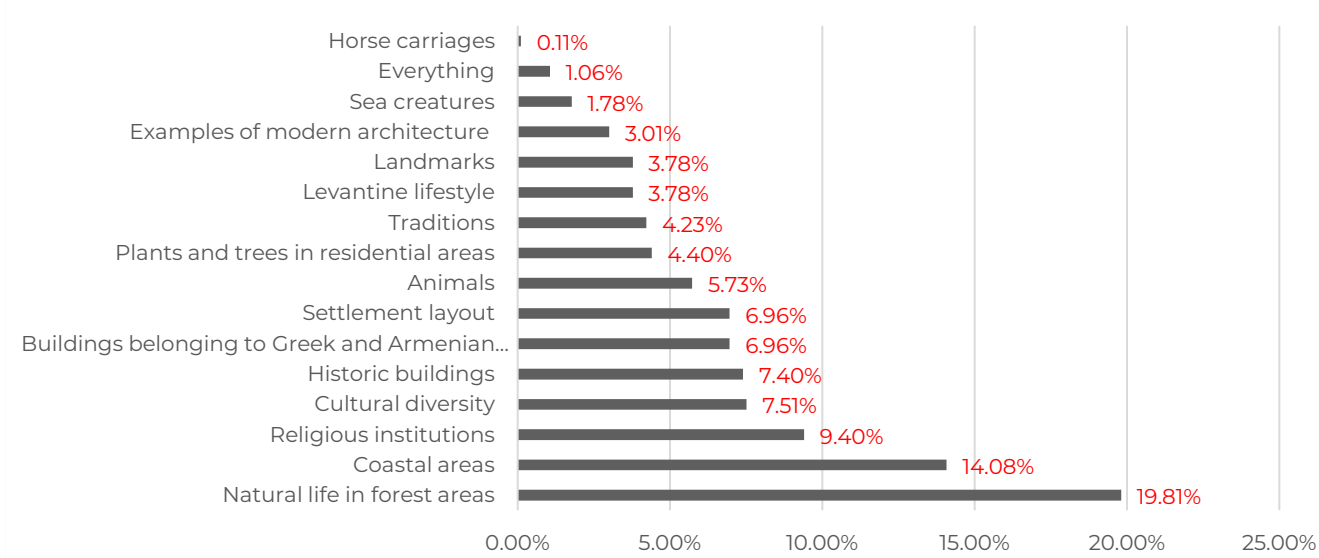


Figure 2.9 Participants identification of the areas to prioritize for protection and preservation (IBB, 2020)

10. Participants' perceptions of which natural and cultural values of the islands are at risk: the majority of answers were distributed between coastal areas and natural life in forest areas. (See Figure 2.9)

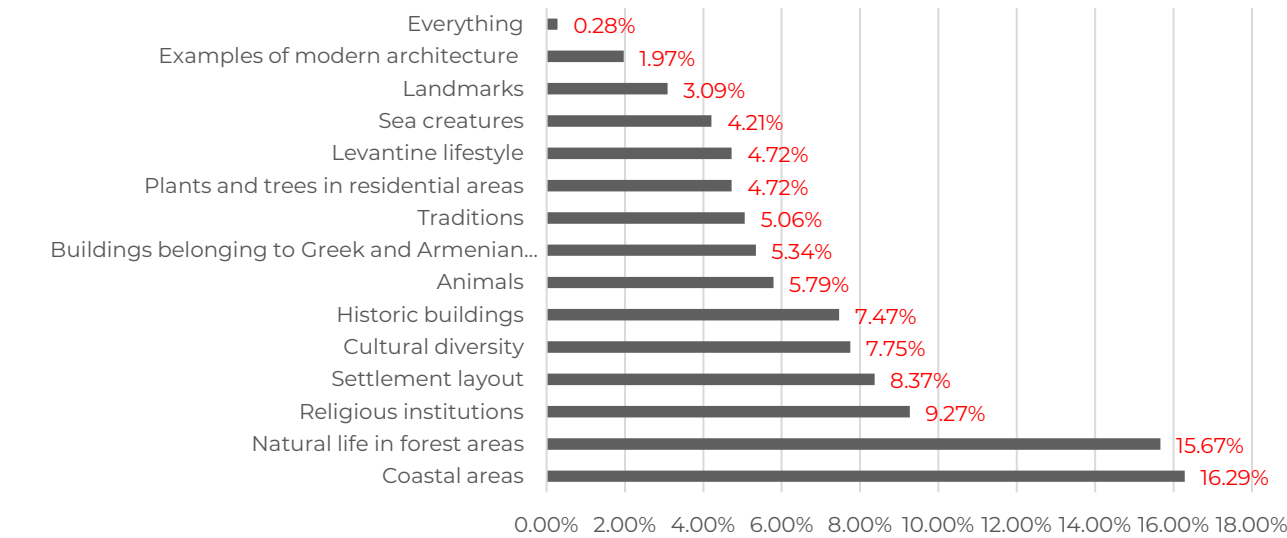


Figure 2.10 Participants perceptions of at risk cultural and natural values (IBB, 2020)

11. Typical duration of stay of the participants:

When the duration of stay of the survey participants on the Islands is investigated, 56.68% Daily, 18.36% are day trips or accommodation 9.63% have 1 night accommodation, when we consider more than 90% of the participants live in Istanbul(See Figure 2.2) it is reasonable for them to have day trips.

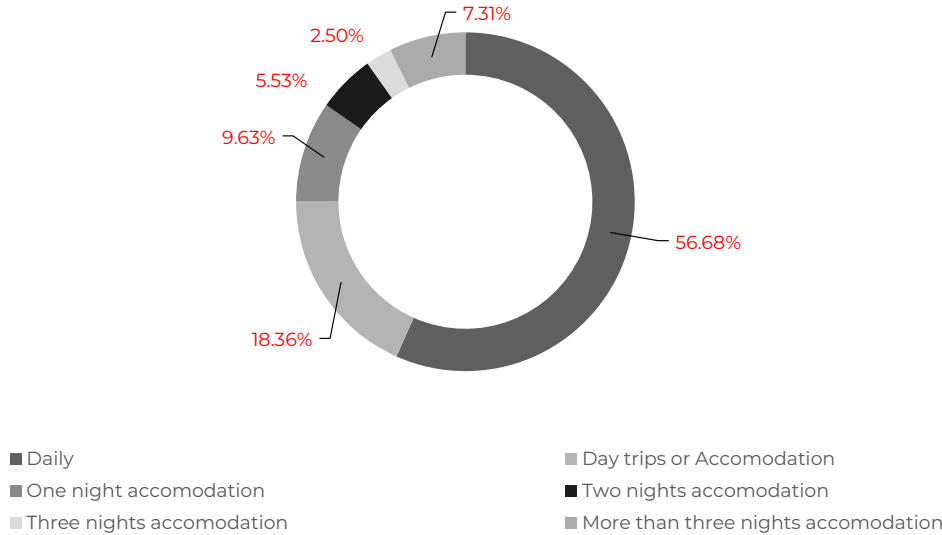


Figure 2.11 Duration of participants (IBB, 2020)

12. Participants' satisfaction with the overall environmental conditions of Adalar Municipality:Survey participants' evaluation of the general environmental conditions of Adalar District, Absolutely Satisfied with 8.20%, Satisfied with 39.04%, Dissatisfied with 12.12%, Absolutely Dissatisfied with 4.63%, and 36.01%. Neutral results were observed with the ratio. When we take into account that most visitors come to the islands for day trips the satisfaction rate of residents could be more important and highlight different results.

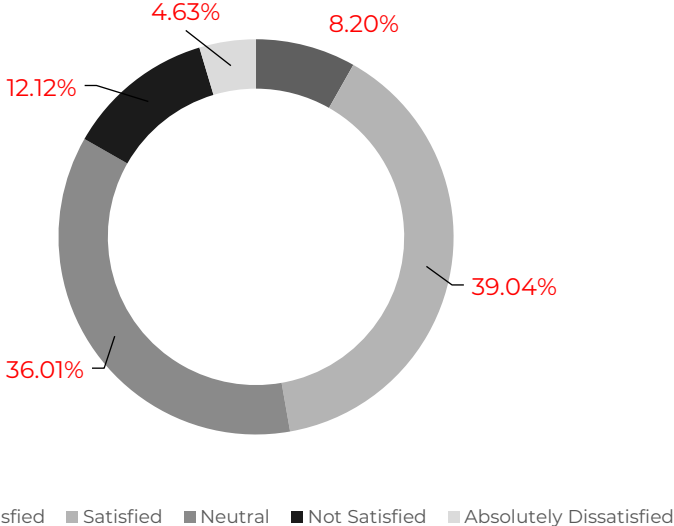


Figure 2.12 Participants satisfaction with the overall environmental conditions (IBB, 2020)

2.2 Residence Survey and Results

The Island Resident Opinion Polls:
The Island Residents Public Opinion Survey, conducted online in Istanbul's Adalar district, was conducted with the participation of 808 people. It was observed that 48.70% of the participants were female and 51.30% were male. Regarding residence distribution of survey participation, Büyüka- da has the highest value with 54.83%. The average age of survey participation was 50.91. 52.05% of the survey participants said they always lived on the Islands. It has been observed that retired citizens primarily reside in the occupational distribution, with a rate of 29.21%. It has been stated that the islands primarily need a health facility, social and cultural facility area, and square design. Compost/Gardening training is the most requested from the municipality, with a rate of 28.37%. Among the natural and cultural values that need to be protected on the islands, Forests, Greek Orphanage, Landmarks, Coasts, Heybeliada Sanatorium, and Public Library, Trocki's House was observed as frequently encountered data between the lines in the answers given. It is thought that forests and coasts are most in danger on the islands. It has been observed that 70.24% of the residents thought that the behaviors of daily tourists have a negative effect on the islands.

2.2 Residence Survey and Results

1. Gender of the participants:

It was observed that 48.70% of the participants were female and 51.30% were male.

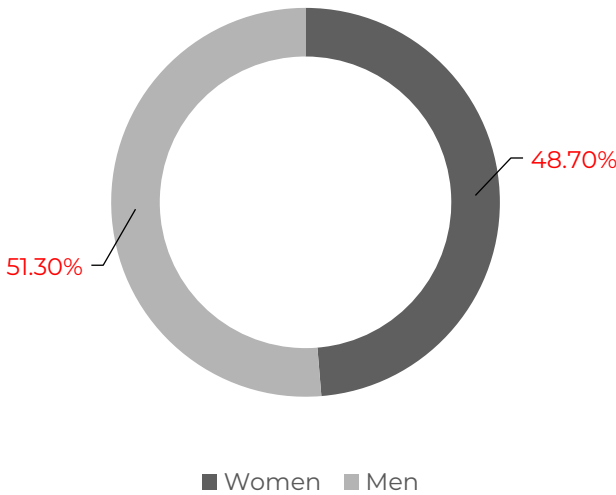


Figure 2.13 Graph representing gender of the participants (IBB, 2020)

2. Age distribution of the participants:

When we compare the age distribution of participants with the demographics of Islands, we see that the age group of 65 and older is in majority, but the smaller number of participation can be explained with the survey conducting method which was online.

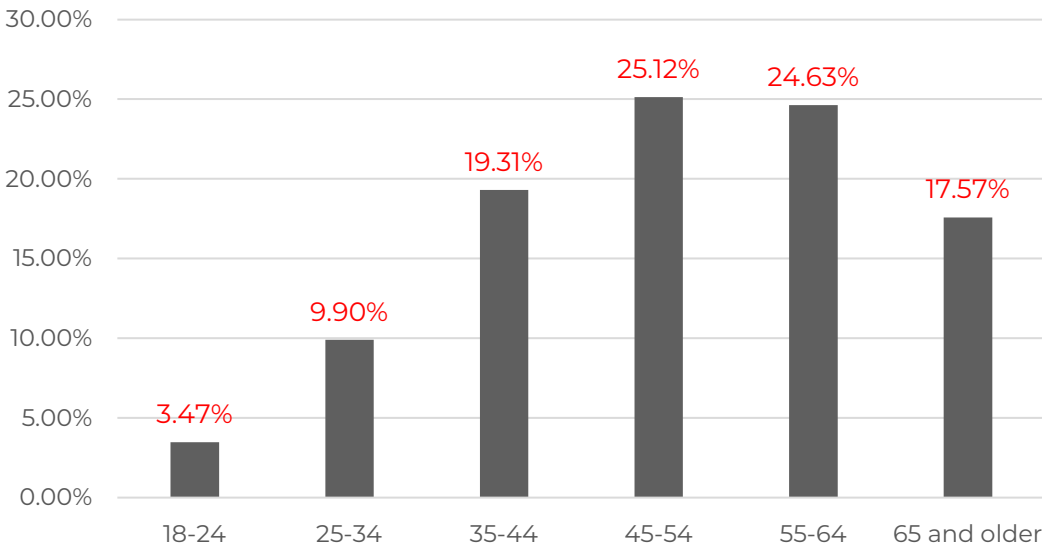


Figure 2.14 Graph illustrates the age distribution of the participants (IBB, 2020)

3. Residence place of the participants:

It was observed as Büyükada 54.83% Heybeliada 17.57% Burgazada 13.99% Kinaliada 8.66% Sedef Island 4.95%. Buyukada is the largest island in the archipelago, and has the major surface area. We should also consider the availability of work, health and general infra-structures.

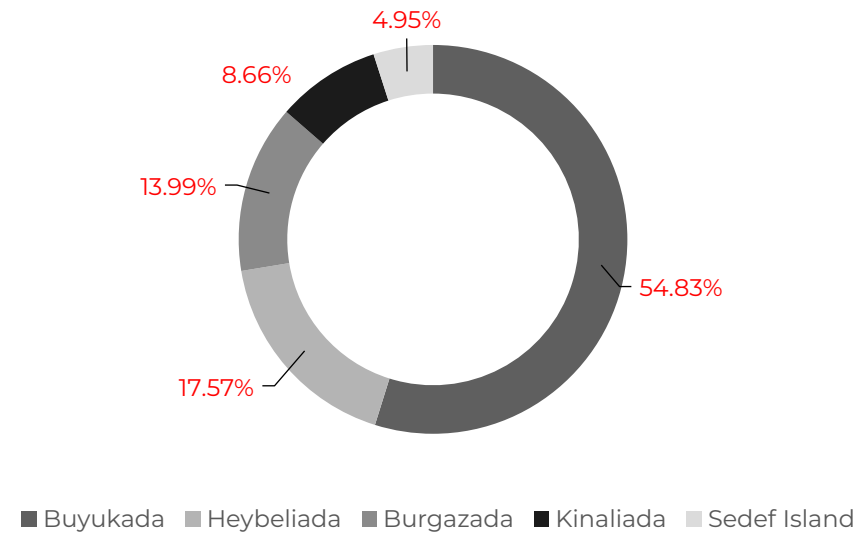


Figure 2.15 Residence place of participants (IBB, 2020)

4. Participants residing purpose on the islands: It was observed that 52.05% of the survey participants declared that they lived on the Islands. Even though the islands are close to mainland Istanbul, the travel time of two way trip takes two hours, so it can be understandable that most of the residents are either retired or work in the island.

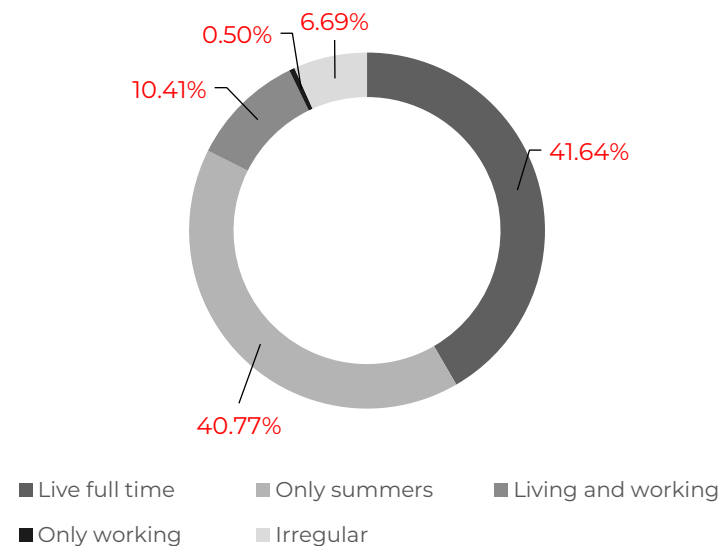


Figure 2.16 Participants residing purposes (IBB, 2020)

5. Duration of the residence of participants:

While 29.95% of the participants have resided on the Islands for more than 40 years, 26.61% have resided for 10 years or less.

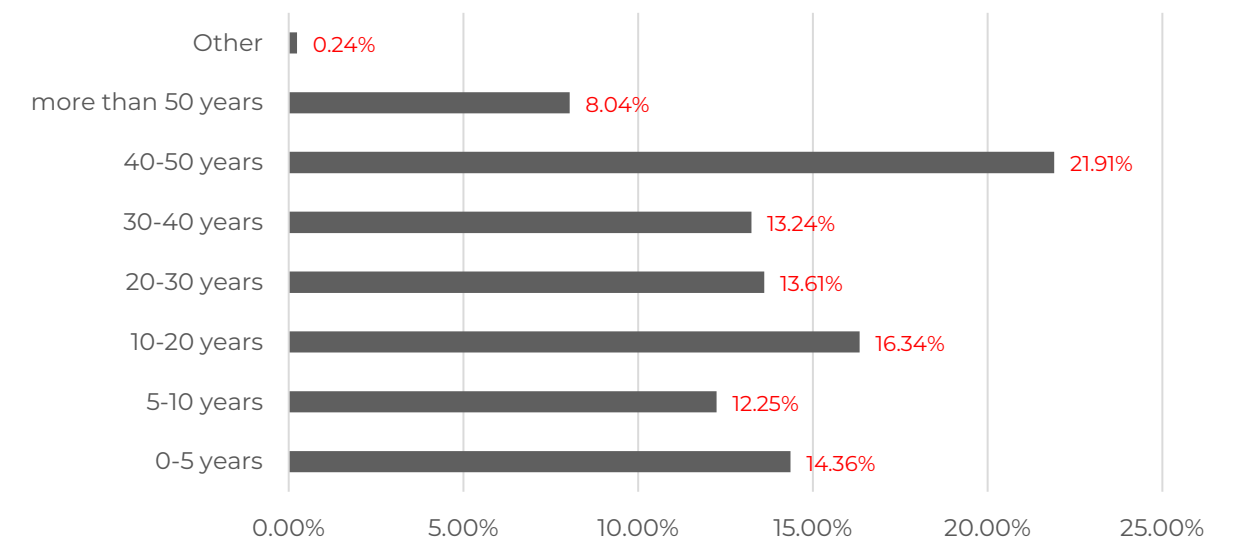


Figure 2.17 Duration of the residence of the participants (IBB, 2020)

10. Permanent residents duration of residence in the islands: 20% lived between 0-5 years, 19.05% lived between 10-20 years, 14.76% lived between 5-10 years, and 11.43% lived between 20-30 years. It was observed that 10.48% were between 30-40 years and 7.86% were more than 50 years. We see a pattern in the last 20 years, more permanent residents moved to islands

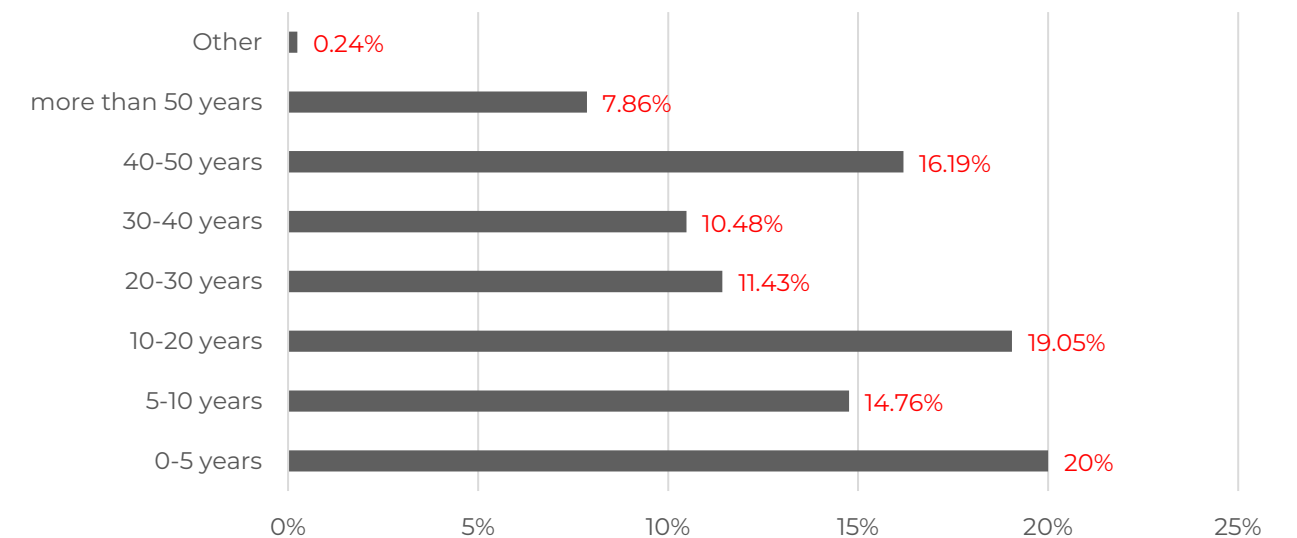


Figure 2.18 Permanent residents duration of the residence (IBB, 2020)

11. Occupation of participants:
When we consider the demographic analysis See Chapter 1.3, it is reasonable that most of the participants are retired.

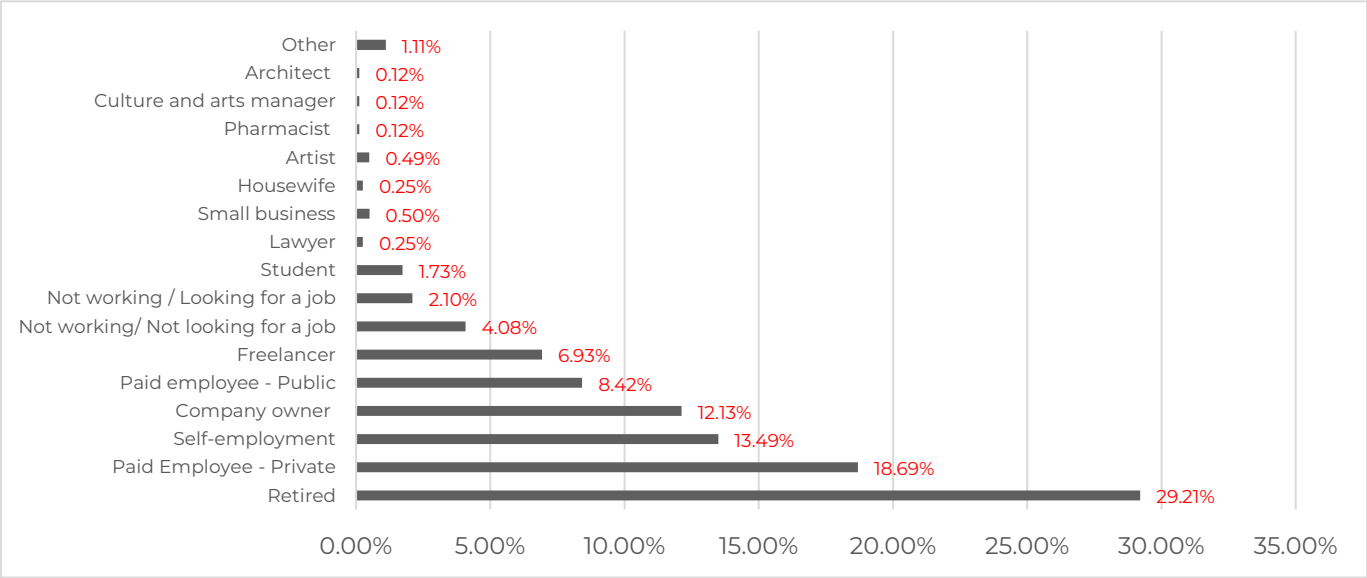


Figure 2.19 Occupation of participants (IBB, 2020)

12. Participants needs of facilities in the islands:
In Princes' Island there is only one hospital currently, and for emergency cases residents would need to travel to Istanbul mainland.

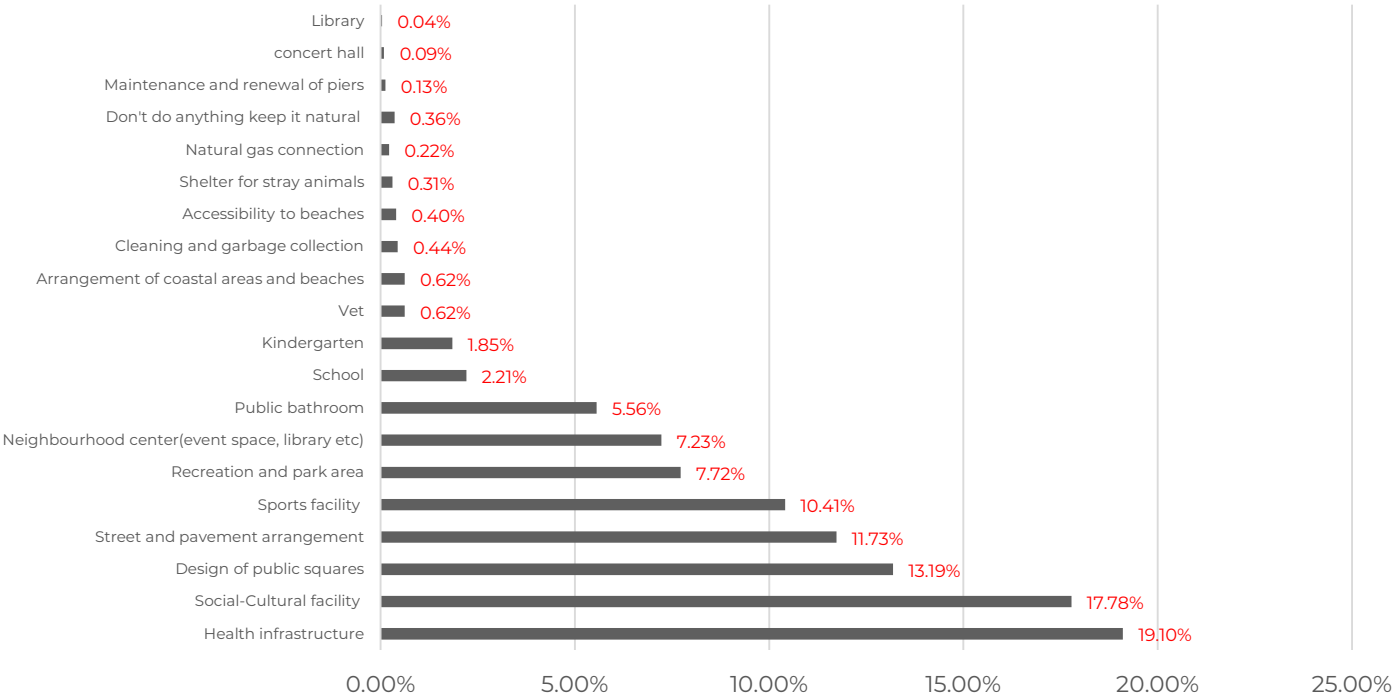


Figure 2.20 Participants choice of the facilities (IBB, 2020)

13. Participants request to the municipality to organize training and workshops: The most requested trainings in survey participation were observed as Compost/Garden-ing with a rate of 28.37%, Handicrafts with a rate of 19.47% and Agriculture with a rate of 15.09%. The Islands were used as agricultural areas for decades, but the decrease of agri-cultural land affected this.

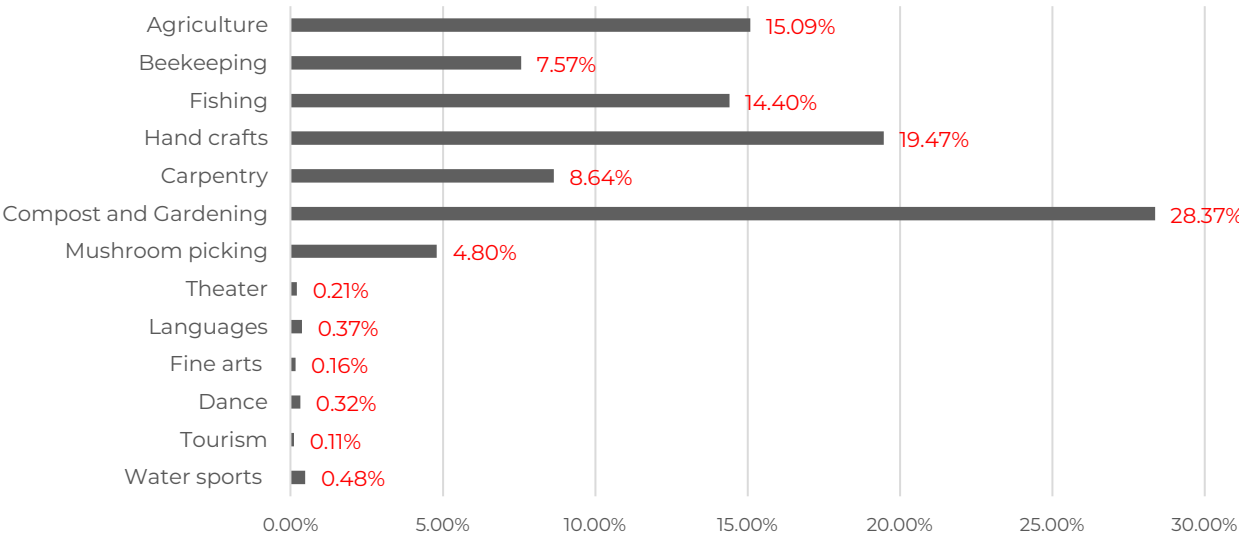


Figure 2.21 Participants choice of training and workshops (IBB, 2020)

14. Participants opinions on the at risk natural and cultural values:
Most of the participants are aware that forests and shores are prominent features of the island group, and even though they are protected areas unfortunately there is a lack of maintenance and safeguard, specifically from daily visitors. (See Figure 2.23)

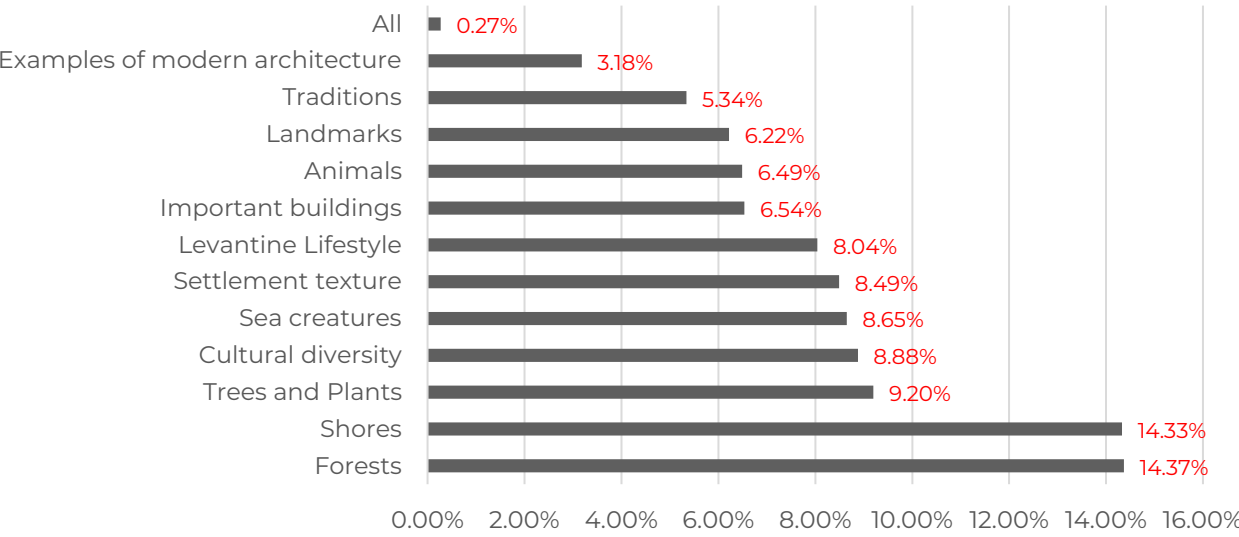


Figure 2.22 Participants opinions on at risk natural and cultural values (IBB, 2020)

15. Participants evaluation of the statement “I think the habits of daily visitors to the islands have a negative affect on the environment and cultural heritage”? Unfortunately unsustainable levels of tourism, and awareness of visitors put islands in danger, specifically about wild fires, littering to the see and protected forest areas.

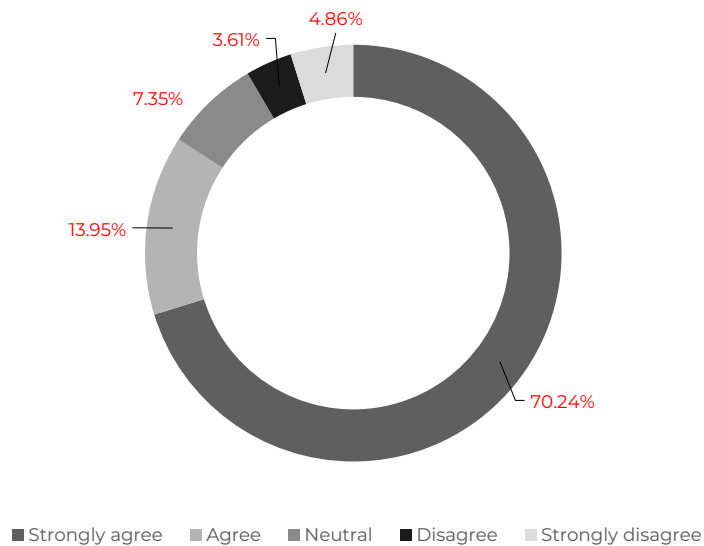


Figure 2.23 Graph represents the participants evaluation (IBB, 2020)

16. Participants evaluation of the statement: “I am satisfied with all sea lines used for transportation to the Islands?”
Most of the residents agree with the statement, There are daily 146 trips(See Figure 1.2) to mainland Istanbul with different ferry firms.

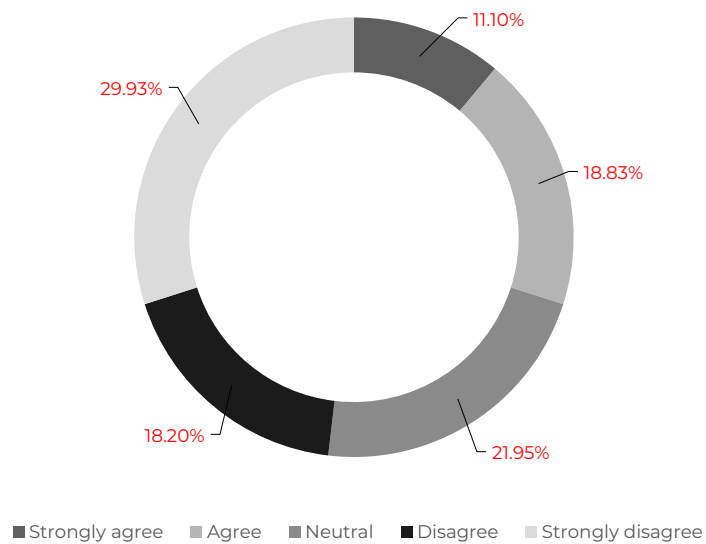


Figure 2.24 Graph represents the participants evaluation (IBB, 2020)

17. Participants evaluation of the statement “I am satisfied with the tariff hours of the city lines? Strongly Disagree with a rate of 35.49%, the tariff hours are between 7 am to 12.00 am, it is a limited time schedule specifically because there is no other way of transport and residents can stay stranded in Istanbul mainland after midnight.

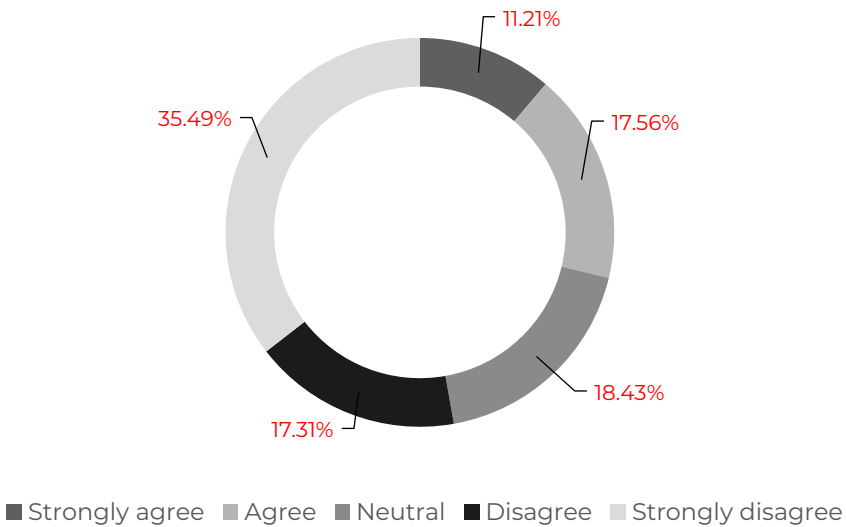


Figure 2.25 Graph represents the participants evaluation (IBB, 2020)

18. Participants evaluation of the statement: “I would like to engage in gardening, or small scale agricultural activities?” Strongly Agree with 54.43%, considering most of the residents occupation is retired, we can imagine adding more social activities to their schedule would create strong sense of community.

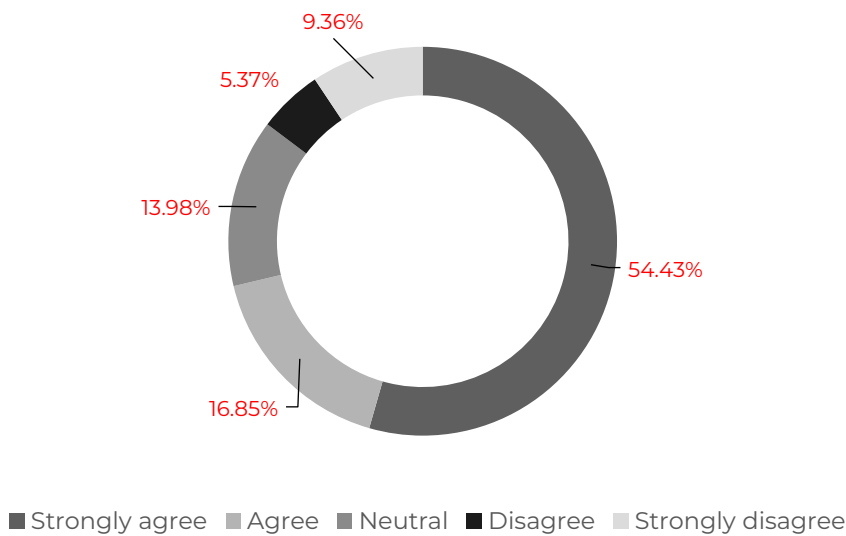


Figure 2.26 Graph represents the participants evaluation (IBB, 2020)

2.3 Importance of Demand Analyses

Visitor Survey:

The visitor survey conducted in the Adalar District offers invaluable insights about tourist patterns, needs, and improvements we can offer them. The survey was designed to better understand tourists' profiles and included specific questions regarding demographics, gender, frequency of visits, satisfaction factors, and purposes of the visits.

One key finding from the survey was the importance of the island group's cultural and architectural heritage. The visitors were not only aware of it but actively pursued opportunities to see these sites. Another key finding was the duration of the visits; more than half of the participants preferred day trips. Considering that more than 90% of the visitors live in Istanbul, it is reasonable for them to make day trips instead of long- or short-term stays. However, this has an impact on the economy of the islands.

Another key point from the survey is the inadequacy of the islands' infrastructure. Many expressed dissatisfaction with cleaning, waste management, and maintaining green areas, coasts, and beaches.

Resident Survey:

The residents' survey conducted by Istanbul Metropolitan Municipality in 2020 in Adalar District gave us a better understanding of the inhabitants' living conditions and needs.

The first important point was the need for facilities on the islands. Most participants agreed that the healthcare facilities were inadequate and that there was a lack of social-cultural facilities in the islands.

When the participants were asked about the habits of daily visitors, 70% agreed that the habits were negatively affecting the environment and cultural heritage of the islands. The islands' infrastructure is insufficient, and the dense influx of tourists coming in specifically high seasons creates disturbances.

Inferences for the Project Proposal:

- The survey highlights that visitors actively seek cultural and architectural heritage sites. Although the Prinkipo Palace has been closed to the public since 1964, it can be a meaningful new destination for tourists and residents.
- Finding a function that does not only serve tourists but can create a new community space for the inhabitants of the islands is an important objective.
- The project should aim to increase the long-term stay of incoming tourists, creating a more sustainable tourism initiative.
- The project should incorporate sustainable design solutions, such as eco-friendly waste management systems, responsible water usage, and green energy strategies, and become an exemplary project for the Municipality.
- According to the analyses, there is a need for cultural and social facilities on the islands. Finding a function that can create a space for the inhabitants would increase the importance of the building.

Themes	Residents	Visitors
Protection & Conservation	Residents are vocal about environmental concerns, particularly the negative impact of tourism. Majority of residents believe that the behavior of daily tourists harms the islands' environment and cultural heritage.	A significant portion of visitors are aware that the islands are protected natural and urban areas. Many expressed concern about environmental issues, such as the preservation of coastal areas, forests, and cultural heritage
Infrastructure & Services	The survey raised concerns about the inadequacy of healthcare and educational facilities. Many residents were vocal about the facilities' insufficiency.	Many visitors expressed dissatisfaction with the islands' infrastructure, particularly the cleanliness of public spaces, waste management, and the state of green areas and beaches.
Economic Opportunities & Challenges	Residents are concerned about the economic sustainability of the islands, particularly outside the summer season. The seasonal nature of tourism means that many businesses struggle during the winter months.	Most visitors spend relatively little during their trips, with the majority reporting expenditures of 0-500 TL per visit. This suggests that the tourism market is not fully capitalizing on its potential to generate higher revenues.
Satisfaction & Future Prospects	Residents' satisfaction is mixed. While they enjoy the islands' natural beauty and historical significance, they are often frustrated by the lack of services and the disruptions caused by tourism.	Visitor satisfaction is mixed, with 39.04% of tourists satisfied with the overall environmental conditions of the islands, but 12.12% dissatisfied.

2.4 SWOT Analysis

2.4.1 Accessibility and Transportation

Themes	Strengths	Weaknesses
Accessibility & Transportation	The islands are located off Istanbul's coast. They are attractive and easy to reach for Istanbul residents; it takes one hour to reach the islands from the mainland.	The average number of daily visitors in Winter in 2019 was 20,683 while same year Summer was 34,476. (IBB, 2022) This different trends between summer and winter months causes economical instability in Islands.
	There is a total of 5 main transportation companies that offer services to the islands, providing flexibility and options for travelers. (IBB, 2022)	The exclusive reliance on sea transport leaves the islands vulnerable to extreme weather conditions and disruptions in ferry operations, impacts life of residents as well as tourists greatly.
	With approximately 140 daily trips, there is a high frequency of transportation options available, making it convenient for visitors and residents. (IBB, 2022)	Despite the high frequency of trips, specifically 136 visits daily, the tariff hours create dissatisfaction among inhabitants; the hours of ferries are limited between 7:00 am to 00:00. (See Figure 2.25)
	The restriction of motor vehicles helps to keep islands safe for pedestrians, and bikers. Enhances the unique atmosphere and historical character of the islands.	The road infrastructure in the islands doesn't have designated bicycle lanes and proper pavements, which increases the risk of accidents and collisions and can cause safety concerns for cyclists and pedestrians.
	The emphasis on pedestrian, bicycle, and battery-powered vehicle transportation promotes healthier and more sustainable modes of travel, promotes sustainable tourism initiatives.	
	Departure points include Kabataş, Eminönü, Bostancı, Kartal, and Kadıköy, catering to various parts of Istanbul and enhancing accessibility. (See Figure 1.2)	

Opportunities	Threats	Importance
Addition of night ferries can improve the quality of life of the residents. (According to the Demand Analyses)	The imbalance between incoming tourists(34,476 in Summer months) and the number of ferries(136 per day) can cause congestion, creating unfavorable transportation experiences for residents and tourists.	<div>++</div>
Expanding the fleet of electric buses and improving route coverage can improve public transportation services on the islands.	The average number of daily visitors in Winter in 2019 was 20,683, while the same year, Summer was 34,476. (IBB, 2022)The significant difference in the number of people arriving at the Islands between summer and winter threatens the stability of transportation services.	
Encouraging the use of bicycles and pedestrian pathways through infrastructure improvements and awareness campaigns can enhance mobility options and promote active lifestyles among residents and visitors. (Istanbul Metropolitan Municipality, 2021)	The Islands' reliance on sea transportation, primarily ferries operated by Istanbul Sea Buses Inc. (IDO) and private transportation companies, threatens continuity. Disturbances in operations, extreme weather conditions, labor strikes, or mechanical failure can restrict the movement of people and goods.	

Figure 2.27 SWOT Analysis table Accessibility and Transportation Created by the author

Importance

The islands are very close to mainland Istanbul, making it easier for inhabitants and visitors to travel. Trips from various ports are frequent daily, but the tariff hours are insufficient for residents, according to the demand analysis. Another aspect that arose from the SWOT analysis was the adequacy of daily ferries when compared to daily incoming tour

ists in high seasons; even though the frequency of ferries is enough for regular seasons, in the high season, there must be an increment in the daily trips.

An important aspect that needs urgent adjustment is the islands' road systems. Since using personal motor vehicles is forbidden in the islands, inhabitants rely on electric bus services and bikes, yet there are no designated paths for cycling or pedestrians.

2.4.2 Vegetation, Climate and Topography

Themes	Strengths	Weaknesses
Vegetation, Climate and Topography	The islands' topography is generally sloping, and they have many elevated peaks, such as Hristos Hill, Makarios Hill, and Asiklar Hill, which provide scenic views and hiking paths.	According to Figure 1.11, the islands have a scarcity of farmland, which makes them dependent on external food sources. This dependence can leave inhabitants vulnerable in case of potential disasters or disruptions in transportation, specifically ferry services.
	70% of the land area in the islands consists of forestry. The distribution of forests on the islands is directly proportional to their size. Buyukada, the largest island, contains half of the islands' forests. (IBB, 2022)	The lack of minimal control over human activities in protected forest areas leads to fires, littering, and the destruction of protected forests.
	Adalar Municipality hosts over 400 plant and tree species and 90 bird species, some of which are protected, presenting a unique ecosystem to experience for visitors and residents. (See Chapter 1.1.2)	


Opportunities	Threats	Importance
Green areas constitute most of the islands; eco-tourism, nature-based activities, and environmental education can attract visitors and create new opportunities for inhabitants.	The effect of climate change can be extreme in the Islands' ecosystem. The observed increase in temperature and precipitation patterns pose threats to infrastructure, ecology, and the tourism industry.	
The development of effective monitoring of forest areas, and innovative participation mechanisms for the protection of the ecological system. Some of the participation tools can be, forest volunteers, tourist tax and carbon tax.	The high tourist influxes during the peak seasons can harm the fragile ecosystem of the Islands'.	

Figure 2.28 SWOT Analysis table Climate, Vegetation and Topography Created by the author

Importance
The islands offer ecological diversity, elevated peaks, and a vast forest area, offering opportunities for tourism and recreation. The weaknesses that need to be addressed pri

marily are the lack of control over protected areas and awareness. Strategic planning and voluntary campaigns will be crucial for resilience in environmental challenges.

2.4.3 Population

Themes	Strengths	Weaknesses
Population	The population of the Adalar district has steadily increased in recent years; from 2019 to 2023, it increased from 15,238 to 16,690 inhabitants, indicating optimistic demographic trends and potential contributions to economic growth and community development.	The predominance of elderly residents, particularly those over 60, may have challenges in terms of healthcare services, social support systems, and infrastructure catering to the needs of an aging population. According to the demand analyses, residents are aware of the shortage of healthcare services and need improvement.
	The inflow of summer residents significantly boosts the municipality's population; while the winter population of the Adalar Municipality is 16,690, the summer population increases to 37,500, indicating a dynamic seasonal tourism industry and economic activity during peak periods.	
	27% of the population consists of people over 60 years old; this significant population of elderly individuals can also be seen as a strength in community cohesion, traditional knowledge preservation, and the potential for senior-focused services and activities.	The fluctuating population dynamics between summer and winter may result in limited year-round economic activity and community engagement.

Opportunities	Threats	Importance
Engaging permanent and seasonal residents in community initiatives, cultural events, and environmental conservation projects can foster a sense of belonging and strengthen social cohesion.	According to the demand analysis conducted by IBB, most residents are unhappy with the current trends of tourism, specifically in high seasons. This can cause some inhabitants to move, causing a decrease in population.	+++
Determining the needs for education, health and cultural facilities, social services, and public spaces on the Islands through participatory methods and eliminating deficiencies with an egalitarian and fair approach, facilitating access to services and increasing social interaction by revitalizing social life.	The seasonal nature of the population may pose challenges in fostering long-term social cohesion and community engagement.	

Figure 2.29 SWOT Analysis table Population Created by the author

Importance

The population has steadily increased in recent years, and the incoming summer residents show a promising and thriving seasonal tourism industry. However, the adequacy of infrastructure and year-round economic activities can be unsustainable for residents

and decrease the population in the long term.

The masterplan initiative must consider population demographics and aim to create facilities, social support systems, and infrastructures that meet citizens' needs.

2.4.4 Tourism

Themes	Strengths	Weaknesses	Opportunities	Threats	Importance
Tourism	According to IBB data from 2019, the islands receive an average of around 35,000 tourists daily.	The significant difference in tourist numbers between winter and summer, with almost 15,000 visitors, suggests a seasonal dependency, which can lead to challenges in maintaining consistent revenue streams and economic activity throughout the year. (IMM, 2022)	There's an opportunity to diversify tourism offerings beyond natural attractions, such as promoting cultural events, culinary experiences, and eco-tourism activities.	The massive influx of tourists, significantly during peak seasons, increases up to 130,000 visitors on average per weekend, and this may lead to overcrowding, which can diminish the visitor experience and negatively impact inhabitants experience.	++
	The islands' unique cultural and natural beauty, clean sea, beaches, and recreation areas are significant attractions for local and foreign tourists. (See Figure 2.7)	According to Figure 1.22, the occupancy rates of foreign tourists in the islands have significantly decreased. The occupancy rate in 2015 was 35.39%, while in 2019, it was 5.7%.			
	There are 86 accommodation facilities in the Princes Islands, and although they are concentrated in Buyukada(65), tourists can choose to stay on all the islands. (See Figures 1.17 and 1.18)	According to the demand analysis conducted by IBB(see Figure 2.11), 56% of the participants said they come to the island only for day trips. This situation may result in less economic support for the islands while also causing overcrowding during the summer months. Therefore, in the Princes' Islands district strategy document, 2021, there is a strategy regarding a tourism tax.	Even though the islands are a popular destination for Istanbul's inhabitants, initiatives of marketing and promotion campaigns can target other groups of tourists.	The surge in daily visitors, especially during summer weekends, may strain the municipality's infrastructure, transportation systems, waste management facilities, and public services.	

Figure 2.30 SWOT Analysis table Tourism Created by the author

Importance
The islands’ proximity to Istanbul and ease of access compared to other parts of the city make them a convenient destination for day trips and weekend getaways. While the influx of daily tourists is a strength for the Adalar Municipality, it is also a threat. Infrastructure needs to be improved to satisfy the needs of visitors and residents. The influx of

tourists can pressure the islands’ delicate ecosystems, leading to environmental degradation if not managed sustainably. There is a need and opportunity for stakeholders and municipalities to diversify islands’ unique attractions beyond natural beauty and cultural heritage.

2.4.5 Education, Health, Museums and Cultural Heritage

Themes	Strengths	Weaknesses
Education, Health, Museums and Cultural Heritage	There are four museums and a new community center on the island.	The educational sector in Buyukada is limited, with only elementary and middle schools available. More high schools and higher education institutions require students to travel to Heybeliada or the mainland for further education.
	Buyukada has education, healthcare, and cultural facilities, including two schools, one elementary and one high school, two libraries, a hospital, and a civic center.	There is a hospital in Buyukada, but it may not fully meet the population's healthcare needs, especially considering the predominantly elderly demographic.


Opportunities	Threats	Importance
Introducing a new high school can improve the resident's lifestyle and access to higher education institutions. Similarly, enhancing healthcare services and facilities to cater to the aging population's needs can improve overall healthcare outcomes.	The lack of higher educational options and limited healthcare services may contribute to dissatisfaction among residents, potentially leading to a "brain drain" phenomenon where younger generations seek opportunities elsewhere. This can impact community cohesion and vitality over time.	
Addressing the lack of entertainment services such as cinemas and theaters presents an opportunity to diversify the island's cultural offerings.		

Figure 2.31 SWOT Analysis table Public Services Created by the author

Importance

This analysis reveals two key points. One is the urgent need to improve education and health infrastructures. Despite a prominent population and consistent tourism, there is

a lack of cultural venues. Improving this can help community engagement and diversify activities for tourists.

2.4.6 Architectonic Heritage

Themes	Strengths	Weaknesses	Opportunities	Threats	Importance
Architectonic Heritage	Buyukada boasts a rich historical texture and original cultural values, reflecting a unique settlement identity preserved over centuries.	There is a lack of research and inventory regarding historic structures and their current situation. Safeguards of these structures are vulnerable since they have not been examined for earthquake resistance. (IBB, 2021)	Enhance cultural tourism by promoting Buyukada's unique heritage and architectural landmarks, which can attract visitors from around the world.	Potential cultural authenticity and heritage loss due to rapid urbanization, commercialization, and uncontrolled development.	+++
	The islands' unique civil architecture and monumental works, including approximately 1700 registered religious and civil architectural elements, highlight the island's significance in Turkey's cultural heritage.			The risk of insufficient maintenance leads to the deterioration of historical monuments and architectural landmarks.	
	Development around the historic pier since the Byzantine period signifies a continuous expansion and evolution of the island's physical environment and architectural landscape.		There are opportunities to implement sustainable development practices to preserve the island's natural assets and cultural heritage for future generations.	Economic challenges and funding constraints hinder efforts to conserve and promote Buyukada's cultural heritage.	
	Buyukada has unique architectural styles, blending traditional Ottoman elements with the eclectic styles of the 19th century. Some of the essential architectural heritage can be listed as Prinkipo Palace by Alexandre Vallaury, Mizzi Mansion by Raimondo D'Aronco, and Buyukada Pier by Mihran Azaryan.	Architectonic heritage is vulnerable to environmental degradation and urbanization pressures, which threaten its preservation over time.	Implementing sustainable development practices to preserve the island's historic and cultural heritage for future generations.	Natural disasters and climate change impacts threaten the island's physical environment and cultural assets, requiring proactive mitigation measures.	

Importance
Buyukada was home to various civilizations with a unique historical and multicultural texture. Even in the last century, we can see instances of Art Nouveau, Modern, Traditional

Ottoman, and Turkish architectural structures, making the island a very attractive place for cultural enthusiasts worldwide. The most significant threat concerning this heritage is the inadequacy of maintenance, research, and level of effort in restoration.

Figure 2.32 SWOT Analysis table Architectonic Heritage Created by the author

2.4.7 Conclusion

The SWOT analysis provided valuable insights across several aspects; we will discuss the ones that helped us understand the island's current setting and guided us in our design proposal.

The Princes Islands' proximity to the Istanbul mainland is an important aspect that arose in the SWOT analyses; it affects tourism, the population through summer residencies, and the economy. However, we realized that there is a gap in the diversity of attractions for both tourists and residents. Establishing new facilities connecting with institutions, museums, and associations from mainland Istanbul can diversify the existing attractions.

Tourism is an important part of the island's economy; however, most tourists prefer to visit the islands only for day trips. The incoming tourists prioritize sightseeing on the islands instead of participating in different activities. According to the 2019 statistics, the occupancy rates of the hotels were only 52%(See Figure 1.22). Introducing new tourist activities, such as concerts or theater events and culinary or art workshops, can create a variance in tourist profiles, ensure longer stays, and improve the economy.

Both the resident demand analysis and the SWOT analysis highlight the lack of culture and entertainment venues, such as theaters, cinemas, event areas, and community centers. Finding a use related to these functions can ensure the project's usability by residents and tourists.

Another aspect that emerged was the current attitude toward the historical buildings on the islands. The lack of research and inventory regarding historic structures leaves them vulnerable to natural and man-made disasters. The adaptive reuse and restoration project of Prinkipo Greek Orphanage can be a pioneer, followed by other abandoned structures on the islands and in Istanbul.



Historical Analysis

Figure 6.0 Postcard Prinkipo Greek Orphanage, (Atatürk Library, Krt_024952 [Postcard]. IBB Atatürk Library)

3.1 History of the Princes' Islands

The Princes Islands are comprised of nine islands located off the shore of Istanbul's eastern Marmara coast. These islands are, from north to south, known as Kinaliada(Proti), Burgazada(Antigoni), Kasikada(Pita), Heybeliada(Halki), Buyukada(Prinkipo), Tavsanada(Neandros), Sedefada(Terebintos) and further from the shore Sivriada(Oxia) and Yassiada(Plati). Two of these islands are uninhabited, these are Sivriada and Tavsanada. The Kasikada is a private island. As for Yassiada, it was renamed the 'Island of Democracy and Freedom' by a decision authorized by the Istanbul Provincial General Council to commemorate the leaders of the Democratic Party who were executed as a result of the 27 May 1960 coup d'etat. (Alper, 2021)

The first known event related to the islands occurred when the King of Macedonia, Demetrius I commissioned a fortress on Burgazada. Demetrius named the island 'Antigoni' in honor of his father, Antigonus I in 298 BC. (Alper, 2021)

At the same time, the discovery of a Latin tombstone in the hilly area of Burgazada and the temple ruins of the sixth and seventh-century architecture on Buyukada suggest that the islands were used as religious function areas during the Roman Empire. (Ertin, 2022)

During the Byzantine era, the islands gained notoriety as places of exile for political prisoners. The remote and isolated nature of the islands made them ideal locations for banishing individuals considered a threat to the ruling authorities. Today, there are traces, building ruins, or partial building fragments from the Byzantine period. There are many period examples such as the Hristos Monastery and church (Burgazada), Aya Yorgi Monastery (B y kada), Aya Yani Prodromos Church (Heybeliada), and it is understood that the architecture of this period consists mainly of religious buildings, some of which continue to be in original use today, as well as those whose function has been changed or only ruins. (Alper, 2021)

The Princes Islands came under Turkish rule with the conquest of Istanbul in 1453, then were subsequently linked administratively to the Kocaeli Principality. Most of the inhabitants pri-

or to and after the conquest were Greeks with Ottoman citizenship. After the islands were conquered by the Ottomans, the monasteries were emptied, and most of the inhabitants IBBigrated to the mainland, causing the already small population of the islands to further decrease. (Ertin, 2022) However, some Greek Orthodox groups living on the Black Sea coast were resettled on the islands and in Istanbul by the order of Fatih Sultan Mehmet. As a result of the Ottoman Empire's tolerant administration, which did not discriminate based on religion, the islands became the settlement of priests who retreated to monasteries once again. With small fishing villages on the coast and agricultural fields consisting of wheat, barley, grapes, and olive groves cultivated by the priests, the islands regained their geographical appearance from the Byzantine period. (Alper, 2021)

The events that created movement in the general life of the islands from the 17th century to the end of the 18th century are actually reflections of events that left their mark on Ottoman history. In 1673, the burial of Panayatos Nikosyos, who was the interpreter of the Sultan, in the Paniya Monastery (Heybeliada) drew attention. In 1766, III. Yuanikos Karacas, who was the Metropolitan of Kad k y, repaired the Aya Yorgi Monastery out of dissatisfaction with the patriarchate and later built a mansion there. Another significant event was the opening of the Elen Trade School in 1831, which would later become the Greek Orphanage for Girls. (Ertin, 2022)

The turning point in the historical development of the islands happened with the opening of ferry routes that started operating in 1846 between the European side, Kad k y, and the islands. The new ferry routes diminished the transportation problem of the islands, therefore the urban fabric started to change. In addition to this population started to increase, in 1840 population was 1,816 inhabitants it almost tripled in 25 years and reached to 6000 inhabitants. (Ertin, 2022)



Figure 3.2 Constantinople and Bosphorus by Alexandre Findlay&Son, (IBB Ataturk Library, Alb_000107)

seyin Rahmi Gürpınar, who lived on the island and are buried there. During the Republican era, Sait Faik, who lived on Burgazada between 1934 and 1954, gained fame through stories focusing on the Greek fishermen, the sea, seabirds, fish, and the nature of Burgaz Island and its surroundings. Undoubtedly, the visits made by Turkish intellectuals supported the rich aristocratic life of the islands. (Erting, 2022)

In this period, in addition to the periodically used residences, with the influence of the modernization process, it is seen that new public buildings such as the Heybeliada Naval School, the Heybeliada Seminary School, the Greek Orphanage, and the Trade School began to be built. All these developments have made the Islands an important residential area of the Istanbul metropolis. (Alper, 2021)

Interest in the islands rose steadily with the increased number of transportation modes available during the Republican era. From the late 1930s onwards, many famous architects designed houses on the islands for their families, and built summer houses for wealthy Turkish families. Water and electricity utilities were supplied to the islands regularly starting from the 1950's.

In the mid-19th century, especially Heybeliada and Büyükada were the islands where social life was the most vibrant. Various sources describing this period often mention the elegant and graceful groups strolling along the coast around the pier in the evenings. However, one of the most remarkable aspects of the island's social life was perhaps the visits made by Ottoman intellectuals and writers, in addition to non-Muslim summer residents. Prominent figures such as the poet Mehmet Celal, Yahya Kemal, Halit Fahri, Hüseyin Rahmi Gürpınar, Ahmet Rasim, and Halit Ziya Uşaklıgil visited the islands and wrote poems, stories, and novels set on the islands. In fact, the recognition of Heybeliada is owed to Ahmet Rasim and Hü-



78

3.2 History of Buyukada

Buyukada, as the most extensive island of Istanbul Archipelago, has hosted successively Armenian, Greeks, and the Turks throughout history. As one of the settlements of Istanbul, the capital of Eastern Roman Empire and the Ottoman Empire, Buyukada witnessed historical, religious, and political occurrences for more than 2000 years. This multi-layered culture gives Büyükada its distinctive character, which is further embellished with architectural masterpieces that shape its unique silhouette. (Ayanoglu, Kahya, 2019)

According to Ayanoglu and Kahya, 2019, the first known artifact highlighting the inhabitation of Buyukada during classical antiquity is the gold coins of Philipp II. It is known that Emperor Justinianus II commissioned a palace and monastery near the Buyukada Harbour. The palace's existence was verified when a column capital featured the emblem of the wife of Justinianus II, Empress Sofia, during the infrastructure excavations. Through the palace's construction, Buyukada started to gain significance, and the simple fisherman village changed, with more churches and monasteries.

During Byzantine Empire the island was established around the historic pier, it started to grow around monasteries alongside the agricultural activities.

Buyukada also known as Ada-I Kebir, and Kizilada in Ottoman Empire had two villages in 16th century, one being the Kariye-I Rumiyan and the other one was Karya. The 17th century traveler Evliya Celebi wrote in his Travel Book that Buyukada had about 200 Greek houses, three monasteries, a fortress and a harbor.

From the 18th century onwards, the island was transformed into a residential area for the island inhabitants as well as ambassadors, merchants, aristocrats, politicians, and intellectuals of British, French, Italian, and even Ottoman citizenship. As the Westernization process quickened mansions and villas with wooden columns reflecting an Anglo-Saxon character together with distinctive Eclectic, neo-Gothic, neo-Baroque, neo-Greco, and neo-Classical styles that were dominant around the world

in line with the architectural elements of that century were built on the islands. As was the case in Istanbul, architects and artists of Italian, Greek, and Armenian origin in particular worked on the Princes' Islands. In this period, we can observe the most beautiful Art Nouveau-style artifacts in Buyukada. (Alper, 2021)

A large fire broke out in 1870 in Buyukada, resulting in a devastating impact, and a lot of people were left homeless. When it came to rebuilding the demolished houses, it was requested to use only masonry, but permission was granted for wood to be used in the building interiors for those who couldn't afford masonry. In 1984 an earthquake occurred in Istanbul, it caused damage to buildings as well as opened large crevasses in the ground as a result of this earthquake the minaret of Hamidiye Mosque was destroyed. (Alper, 2021)

In the first half of the twentieth century, the population of Buyukada saw some undesirable changes due to several reasons, primarily limited accessibility and resources due to the island's location and the deportation of non-Muslim communities. However, in the second half, with improvements in facilities and infrastructure, the island group became an appealing place for recreational and rehabilitation centers. Due to these changes, Buyukada gained popularity not only by tourists but also by permanent inhabitants. (Ayanoglu, et al, 2019)

Büyükada, as a reflection of 19th and 20th century historical, urban and natural landscape characteristics, began to lose its cultural and natural assets after its residents abandoned it. Since then, continuing damage has been posing a threat to the natural and cultural heritage on the island.

Büyükada was, by decree (dated 10 December 1976 and numbered 9500), recorded as a natural heritage site within the Princes' Islands by the Committee on Conservation of Cultural and Natural Assets. As a result of further inspections that took place in 1984, the Committee, by decree (dated 31 March 1984 and numbered 234), decided to designate all Princes' Islands as a heritage site, including both cultural and

as a heritage site, including both cultural and natural sites. Under the same decree, the Committee remarked that Büyükada, Heybeliada, Burgazada, and Kınalıada, which have been inhabited since the 8th century, should be listed as cultural sites due to their religious,

military, and civil architecture that is in need of conservation as well as their natural sites due to the picturesque natural character of the hills, ridges, pine woods, lush greeneries, shorelines, bays, and beaches. (Ayanoglu, et al, 2019)

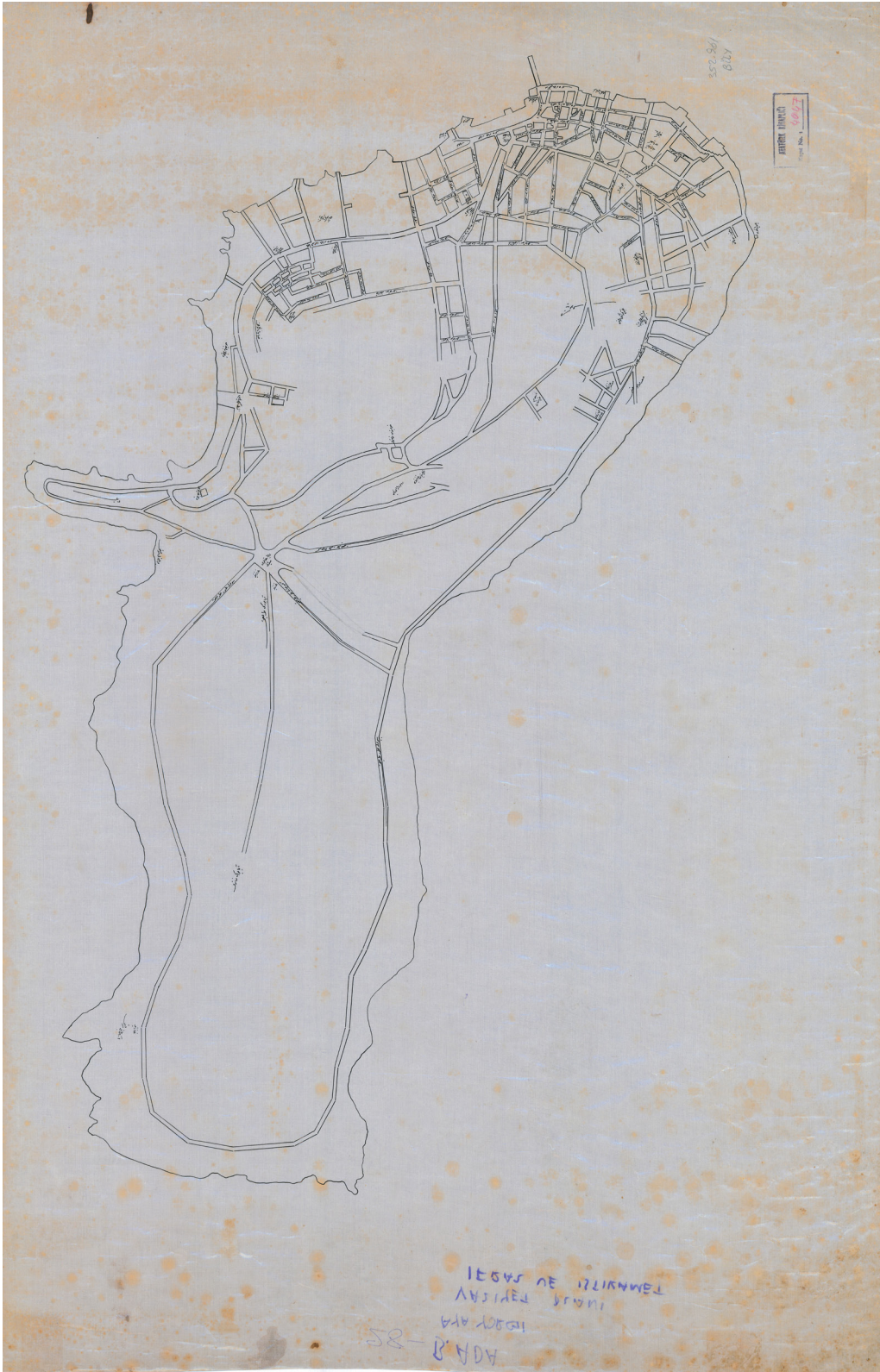


Figure 3.4 Map of Büyükada, by Şehremaneti, (IBB Atatürk Library, Hrt_004047 [Map].)



Prinkipo Greek Orphanage

Figure 4.0 Postcard Iles des Princes-Prinkipo. L'orphelinat, by Max Fruchtermann (IBB Ataturk Library, Krt_004581)

4. Prinkipo Palas - Greek Orphanage

4.1 History

The case study, Prinkipo Palas or Prinkipo Greek Orphanage, is located in Buyukada, one of the Princes Islands northeast of the Marmara Sea. It is the second-largest wooden structure in the world. Alexander Vallaury designed the building between 1898 and 1900 as a resort venue for the Pera Palas, which the same architect also built.

The Pera Palas and Prinkipo Palas were built by the ‘Compagnie Internationale des Wagon-Lits et des Grands Express Europeens,’ affiliated with the famous Orient Express, which provided tourism services from France to other countries by rail network. (Alper, 2021)

Prinkipo Palas was built on a property measuring 6.75 acres, belonging to the Crown Prince Mehmed Foundation, which Anibaldi, the son of Italian Count Maurico de Bozdari, leased. It is assumed that Italian architect Raimondo D’Aronco also worked with Alexander Vallury through the documents found in the Udine City Museum Archives. The documents include two revised plans with the description ‘Grand Hotel a Prinkipo’ and the other projects he worked on with Vallaury. The hotel resembled the other hotels at the time with a total of 206 luxurious rooms, a double dining room, a concert room, dance halls, and a spacious kitchen; the building was 102.5m x 35 m. It is said that the hotel was supposed to operate as a casino, but the Ottoman administration did not permit it. (Alper, 2021)

The late 19th century was an era full of examples of public approaches toward the protection of orphans left behind by soldiers and migrations as a result of war circumstances. The 1894 earthquake aggravated the situation and increased the number of orphans and those needing protection. Following the earthquake, orphans and widows of IBBigrants were settled

in sheds.

The earthquake also demolished the old Greek Orphanage around Yedikule; therefore, searching for a new orphanage was IBBinent. The owner of the Prinkipo Palas at the time, Lady Eleni Zarifis, purchased the structure and promptly donated it to the Greek Orthodox Patriarchate in 1901. After its acquisition, Lady Eleni ensured the building was refurbished according to the new needs of the Orphanage. A marble tower was added to the building to counter fire hazards. In the summer of 1902, the orphans were transferred to the Prinkipo Palas, and necessary permits were obtained for accommodation and as a school to train them for the future. The Orphanage was inaugurated on May 21 May 21, 1903.

The Ottoman Empire fought in World War I with Germany on the side of the Central Powers against the Allied Powers. The presence of the Ottoman Empire opposing Greece in the war caused problems for the Greeks living in Istanbul and on the islands. In 1914, the Naval School building on the shores of Heybeliada was deemed inadequate, and the Minister of the Navy, Cemal Pasha, came to the island and confiscated the Priest’s School, the Greek School of Commerce, and the Greek Girls’ Orphanage. The same year, permission was requested to convert the Buyukada Greek Orphanage into a convalescent hospital with 600 beds. In 1915, the Kuleli Military School settled into the building, and the orphans were transferred to the Greek School of Commerce on Heybeliada. (Alper, 2021)

The occupational forces took over the islands by the Modros Armistice, signed on November 11 November 11, 1918. The Greek Patriarchate requested the Ottoman government to return the Orphanage, which the Defense Ministry had used as a military base. On December 9 December 9, 1918, the German troops based in Istanbul were interned on Buyukada and Heybeliada. Instead of the Germans, the pro-British wealthy Russian nobility fleeing from the overthrown Czarist Russia were housed in the Buyukada Greek Orphanage when Istanbul was under British occupation during the early 1920s. It was stated back then that the building’s wood sidings had been ripped out of their settings and were worn out from lack of maintenance. Once the Russian IBBigrants left Istanbul, the British authorities resettled the orphaned children, numbered around 1290.

While some stayed at the building, others were repatriated with their families and relatives back to Greece during the ensuing population exchange between Turkey and Greece of the mid-1920s. According to a report published in the newspaper Vercin Lur in 1921, 660 orphans were accommodated in the building after the War of Turkish Independence ended. A quiet and peaceful life returned to the Orphanage together with the Republican period.

According to the sources, after World War II broke out, the Inonu Government seized the Greek Orphanage on Heybeliada, and nearly 200 boys and girls were transferred to the previously male Buyukada Greek Orphanage. As a result, the Orphanage turned into a co-ed institution.

From its inauguration in 1903 until 1956, the Orphanage fed, protected, and brought up 5744 orphans. It was a conveniently located institution with access to the beach, on 26 acres of land with a large garden, a massive 5-story

building consisting of 206 rooms, a theater and ceremony hall equipped with a sound film projector, classrooms, cafeterias, an infirmary, a library with Turkish and Greek works and a museum. The building was called the ‘Red Palace of Buyukada’ whenever it was well maintained.

It is said that 173 elementary school students, 15 younger children, and secondary and high school students resided at the Orphanage in 1962. The number of children registered at the Orphanage decreased as the Greek population in Istanbul migrated to Greece.

As the number of orphans in the building began dropping, the third and fourth floors were closed. A firewood problem occurred after these floors were closed, and some flooring materials were ripped apart to be burned. Along with eight teachers, 178 students lived in the Orphanage in 1964.

The Orphanage was closed on April 21, 1964, when the female students were transferred to the Hristos Monastery, and the male students were transferred to the Monastery of Ayios Nikolaos.

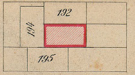
After the building’s evacuation in 1964, it was kept empty until today. According to the sources, a fire broke out in the building in 1980, and a guard was stationed in 1985.

The Buyukada Greek Orphanage and its surroundings were declared a conservation zone by the High Council of Real Estate and Monuments in 1973. This decision was found following the Istanbul No 3. Cultural and Natural Heritage Preservation Board and, as a result, Metropolitan Municipality approved the decision in 1994, and the borders of the Urban and Nature Zones were determined in the 1/5000 scale Master Zoning Plan for Conservation Purposes. (Alper, 2021)

ADALAR PLANI

PAFTA N°193

MIKYASI 1:2000



MÜHENDİS İ. FAHİM ARİ
HARİTA BÜROSU

1:500 mikyasındaki paftaların hududu

Figure 4.1 Map of Istanbul Büyükada Board no:193, (Map of Istanbul Büyükada, Board No: 193, IBB Atatürk Library [Map].)

In 1991, a businessman expressed interest in the building and wanted to convert it to its original function as a hotel and casino. The restoration and refurbishment plans were completed, and the project proposed the demolition and reconstruction of the building. However, through a public campaign against re-conversion, the proposal was dismissed. (Europa Nostra, 2019)

On June 30 June 30, 1997, David T. Yeomans conducted a technical inspection of the structure and prepared a Wooden Status Report. The report aimed to take urgent temporary protection measures to prevent further deterioration. According to the report, certain parts of the roof had collapsed, and there were certain places where rainwater had interpenetrated the outer wall, affecting slabs and support beams. The results of the analysis showed that preventive measures must be taken to ensure the building's thermal, acoustic, and fire performance. The roof should be repaired, and the floors and walls must be supported with rigid plywood.

In March 1999, the General Directorate of Foundations canceled the Orphanage's Greek Patriarchate ownership in a lawsuit filed because it was registered as an outmoded foundation. The Greek Patriarchate applied with the European Court of Human Rights, stating that domestic appeals court applications had run

their course. (Europa Nostra, 2019)

Amongst these functions were the UNICEF sponsored 'World War Orphans Center,' 'Orphanage for Earthquake Orphans' proposed by the Bosphorus University Alumni Association, 'Congress Palace' presented by the Çelik Gülersoy Foundation, as well as the 'European Writers House' within the scope of the Istanbul European 2010 Cultural Capital event.

A final decision was made to return the title deeds to the Fener Greek Patriarchate on November 29, 2010.

The building was included on the World Monuments Watch List In 2012. On 20.09.2017, Istanbul No. V Regional Directorate of Conservation of Cultural Heritage requested the current survey, restitution, and restoration projects of the plot to be forwarded and the safety of life and property on the property to be ensured. It was accepted onto the 'Europe's 7 Endangered Heritage List' on March 15 March 15, 2018." Clive Dawson conducted an on-site inspection of the building's structural report in March 2019. The report said the structure's walls and roof were vulnerable primarily to moisture and rain. Similarly, the windows were also ineffective.

There was widespread rot due to moisture, causing connection losses in structural elements and rendering the structure unsafe. Air that flows inside due to the outer facades vulnerable to the wind cannot escape without increasing the internal pressure. One of the two options proposed was to undertake repairs by erecting scaffolding from the outside with temporary interior supports for balance; the other was to pitch internal supports to balance the structure by repairing the outer facade and roof as a priority to prevent damage caused by water. The first option of the first proposal was to offer a complete structural solution without duplicating permanent or temporary repairs.

Turkey paid an on-site visit to the Orphanage. It held meetings with local stakeholders and officials. Amongst those they met with were the Ecumenical Patriarchate, Ecumenical Patriarch Bartholomew, the Islands District Vice-Mayor and Councilors, Ministry of Culture and Tourism Ministry of Cultural Heritage Protection Councils Department, members of the Istanbul's No. 5 Cultural Heritage Conservation District Board and Turkey's Ambassador to the EU, Christian Berger.

Reference was made to this report in the "technical and financial report containing the action plan" for the Rehabilitation of the Büyükada Greek Orphanage, which was prepared by specialists at Europa Nostra and the

European Investment Bank Institute on July 30, 2019

The Büyükada Greek Orphanage was again recommended to the Monuments Watch List in 2019.

On 29-31 May 2019, a commission comprised of cultural heritage and finance experts from the European Investment Bank Institute, Europa Nostra, and Europa Nostra Turkey paid an on-site visit to the Orphanage. It held meetings with local stakeholders and officials. Amongst those they met with were the Ecumenical Patriarchate, Ecumenical Patriarch Bartholomew, the Islands District Vice-Mayor and Councilors, Ministry of Culture and Tourism Ministry of Cultural Heritage Protection Councils Department, members of the Istanbul's No. 5 Cultural Heritage Conservation District Board and Turkey's Ambassador to the EU, Christian Berger.

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The Büyükada Greek Orphanage was again recommended to the Monuments Watch List in 2019.(Alper, 2021)

4.2 Architect - Alexander Vallaury

Alexandre Vallaury was born in 1850; according to the different records, the birthplace of the architect was mentioned as Istanbul or Turin, Italy.

According to Can, 2020, in different documents, Vallaury's surname was written differently in various years. However, this can be linked to the French influence on Italy in the 19th century, which also Frenchized the Vallaury family.

He changed his name from 'Alexander Vallauri' when he was registered as an Ottoman citizen to 'Alexandre Vallaury' after he became a French citizen in 1897. He is one of five children of his father, M. François Vallaury, and Hélène Moro Papadopulo, whom he met in Izmir while married to Anna Musante of Turin. François Vallauri had settled in Istanbul, and he prepared essential orders. He was awarded prizes for court receptions of the palace through the confectionery/pastry shop he opened on Rue de Pera (today's Istiklal Caddesi). (Alper, 2021)

Alexandre Vallaury received his architectural education at the Ecole des Beaux-Arts in Paris between 1869 and 1878. Vallaury received various awards during his education in Paris and was rewarded five times with the Imperial Medal, given to foreign nationals by the French government, for his work in Istanbul. He was the first architecture teacher of Sanayi-i Nefise-i Mektebi, where he was also the architect of the building. (Can, 2020) He influenced Turkish and foreign architects in his era through his academic career.

The first building Vallaury constructed in Istanbul was the School of Fine Arts, the headmaster of which was Osman Hamdi Bey in 1883. Some of the examples of Vallaury's public buildings include the Cercle d'Orient for the club of the same name at the intersection of today's Istiklal Street and Yesilcam Street (1884), Banque de Change in Karakoy, which was on Bankalar Street until recently; the Archaeology Museum, which was built with the encouragement of Osman Hamdi, next to School of Fine Arts (1887-1907); the Turkish Tobacco Pavilion at the Paris Exposition (1889); the Ottoman Imperial Bank and Tobacco Regime Building (Ottoman Bank

Museum) (1892); the Union Française in Tepebasi (1896); as well as the Public Debts Administration building (Istanbul Boys' High School) in Cagaloglu (1898-1900). His civil architecture works include his own home at Mesrutiyet Avenue No. 231 / Beyoglu; the Decugis House in Sishane Square / Beyoglu, Afif Pasha Mansion / Sariyer, Abdülmecid Effendi Villa / Baglarbasi. (Alper, 2021)

He worked together with the architect Raymond D'Aronco on the Imperial Medical School building / Haydarpasa (1893-1903), the Grand Bazaar Restoration (1894), the Imperial Bacteriology House / Sisli (1900), as well as the Büyükdade Greek Orphanage buildings.

Vallaury, employed as a 'Scientific Architecture' faculty member at the School of Industrial Arts, which opened in 1882, was influential in preparing the curriculum for the Fine Arts Department, which was applied at this school. (Alper, 2021)

He was a recipient of the Chevalier de la Légion d'Honneur Award in 1896. Vallaury founded the association of artists 'Les Premiers Salons de Peinture de Constantinople' with the support of French Ambassador M. Contans. Moreover, with D'Aronco, he was awarded the 1st-degree Mecidi Order at the Ottoman Palace in 1902. (Alper, 2021)



Figure 4.2 Imperial School of Fine Arts in Istanbul, group of professors and students (Photo from Levantine Heritage Foundation, Note 148 [Photograph]. Retrieved from <https://levantineheritage.com/note148.htm>)



Figure 4.3 Pera Palas Hotel (Photo of Pera Palace Hotel in Istanbul, Türkiye (EvrenKalinbacak, n.d.), Adobe Stock. Retrieved from <https://stock.adobe.com/it/images/pera-palace-hotel-in-istanbul-turkiye/527536263>)



Figure 4.4 Zeki Pasha Mansion (Photo of Zeki Pasha Mansion (Sanayi 313, n.d.). Retrieved from <https://sanayi313.com/wp-content/uploads/2022/09/Zeki-Pasha-Mansion-feat-uai-1032x1032.jpg>)



Figure 4.5 Pera Palas Hotel Interior (Photo of Pera Palace Hotel ceiling detail (Sanayi 313, n.d.). Retrieved from https://sanayi313.com/wp-content/uploads/2022/09/Pera_Palas_Hotel_ceiling_detail_Pera_Palas_Oteli_tavan_detayi.jpg)



Figure 4.6 School of Imperial Medicine (Photo of Mekteb-i Tıbbiye (Güryapi, 2023). Retrieved from <https://guryapi.com/wp-content/uploads/2023/02/mektebi-tibbiye-icerik-1.jpg>)



Figure 4.7 Afif Pasha Mansion (Photo of Ahmed Afif Paşa Yalısı (Wikipedia, n.d.). Retrieved from https://tr.wikipedia.org/wiki/Ahmed_Afif_Pa%C5%9Fa_Ya%C4%B1s%C4%B1#/media/Dosya:Wooden_building_on_the_Bosphorus.jpg)



Figure 4.8 Istanbul Archeology Museum (Photo of İstanbul Archaeology Museums (Wikipedia, n.d.). Retrieved from https://tr.wikipedia.org/wiki/İstanbul_Arkeoloji_Müzeleri#/media/Dosya:Istanbularcheology.jpg)

4.3 Accessibility to the Site

Prinkipo Greek Orphanage, also known as Prinkipo Palas, is a historic 20,000-square-meter wooden building on Büyükada, one of the nine Princes' Islands off the coast of Istanbul, Turkey, in the Sea of Marmara. It is considered the largest wooden building in Europe and the second largest worldwide. It served as an orphanage from 1903 to 1964.

Prinkipo Palas is located on Buyukada between Hristos and Aya Yorgi Hills on Maden Street. Protected forests surround the

building, and the lack of neighboring buildings gives it a unique position and scenic view.

Accessibility to the site can be provided by public buses, bicycles, or walking. Two public buses go close to the site; while it takes twenty-two minutes by BA-2, the other one, BA-1, takes nineteen minutes to reach. On the other hand, visitors who choose to walk and enjoy the scenic island can get to the site within thirty minutes, walking a distance of 1.7 km.

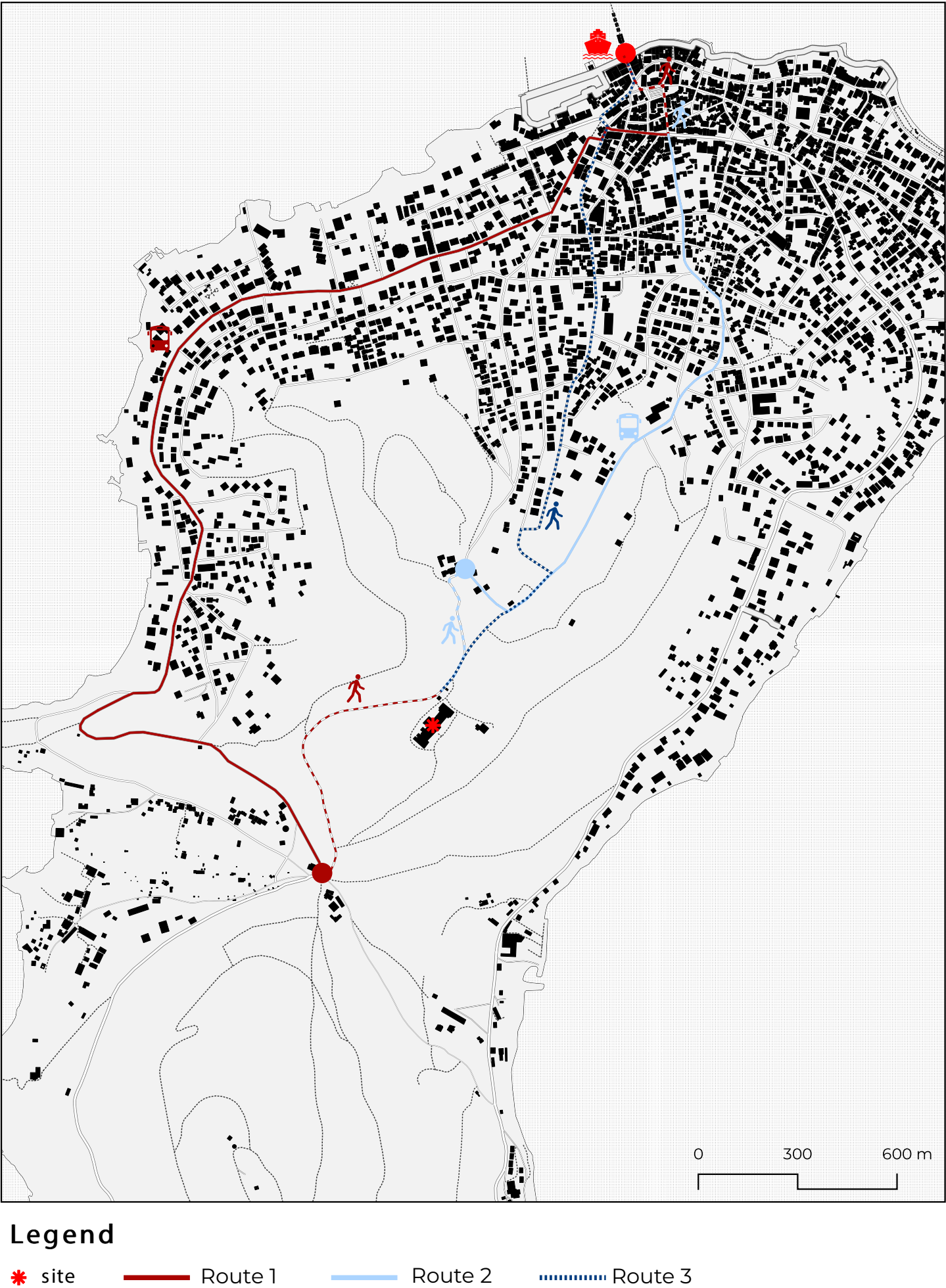
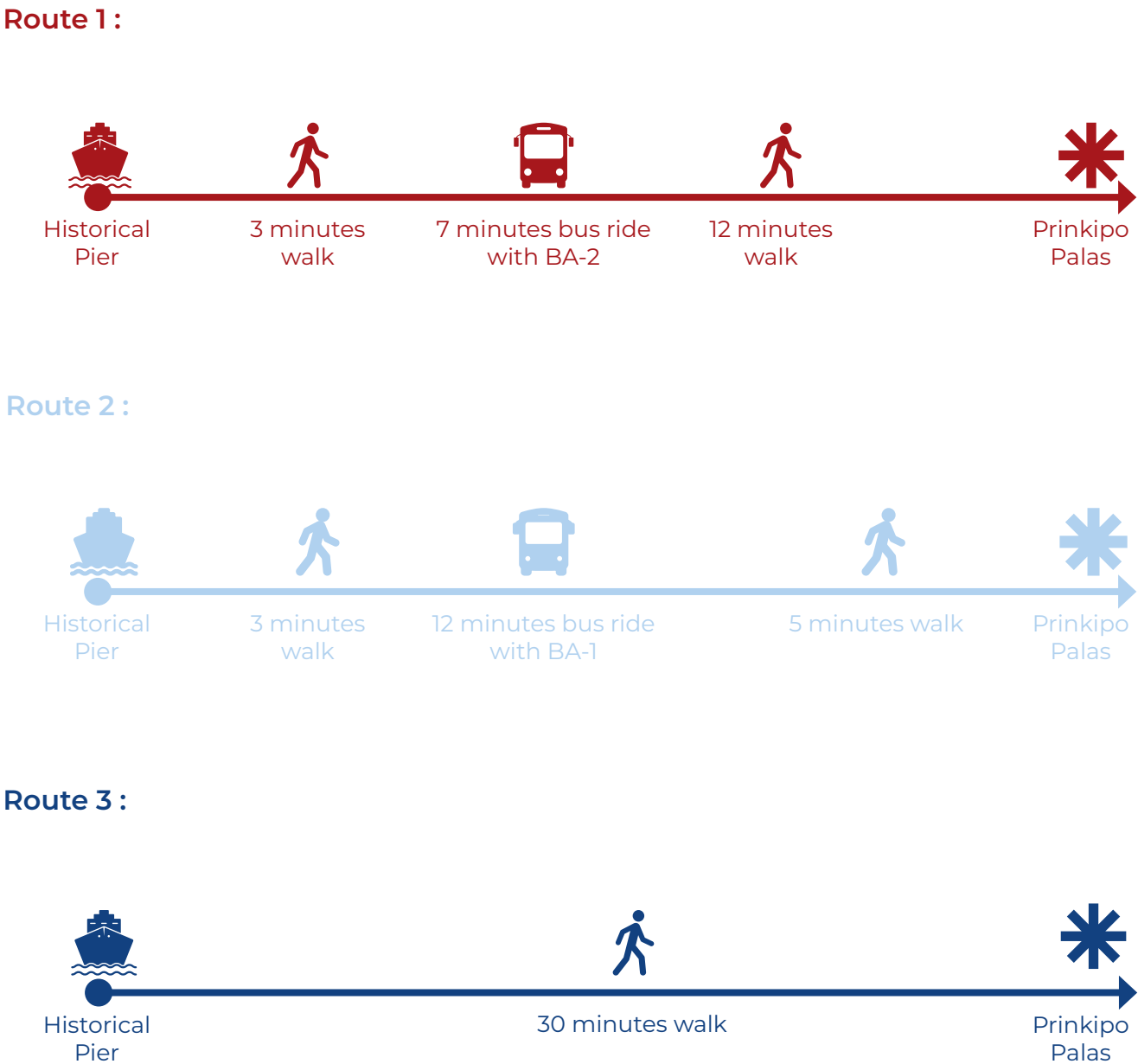


Figure 4.9 Map of Accessibility to Prinkipo Palas, (Author's elaboration based on data from OpenStreetMap, 2024)

4.4 Architectural Features and Style

Buyukada Greek Orphanage is considered the largest wooden structure in Europe and the second largest worldwide. The building, designed by Alexandre Vallauray in neo-classical style in 1888-1900, is located on Isa Hill in Buyukada. The building belonging to the Istanbul Ecumenical Patriarchate is a Group 1 ancient monument that needs to be protected. (Alper, 2021)

The building attracts attention with its dimensions and architecture and has a symmetrical mass arrangement. The long side of the building, located on a northeast-southwest axis in a wide area, is approximately 102 m long with the entrance axis in the middle, the width on the right and left side facades reaches 32 m, and the arms connecting these sections are 18 m wide. (Alper, 2021)

Dimensional differences between sections on the plan plane are also observed in the vertical plane. A basement floor rises with a masonry wall system under the ground floor of the multi-story building with wooden construction. The height reaches five floors at the middle axis and both ends of the building. (Alper, 2021)

Traces of Traditional Turkish Civil Architecture proportions and facade layouts can be seen in the plain façade architecture of the building. The buttresses on the facade, wooden jambs, shutters, window proportions, and wide cornices can be given as examples. The structure represents a traditional style with its plain timber-siding facade, although we can see a Western-style in its architectural plan. The architect achieved a typical hotel plan layout by placing rooms on either side of the corridors positioned along the long axis of the building. (Alper, 2021)

According to Erdenen, 1962, materials used to construct the building were shipped from abroad. The tiles and bricks were brought here from a brick quarry in Marseille, and the lumber was reportedly brought from Romania. In contrast, the kitchen fixtures (oven, stove, etc.) were specially ordered from Paris. The building was built with advanced artistry; The fact that it has been able to survive without repair for nearly a century shows this.

The orphanage is of great importance in terms of both architectural and social values. While its design stands out as Europe's most significant historical wooden structure, it remains central to the local culture, considering its social function and contribution as an orphanage.

The Prinkipo Greek Orphanage is located on grounds that cover an area measuring 23,255 m². Access to the site, which is reached by following the Birlik Square Road, is via the iron garden gate to the northeast of the site. Entering through the garden gate, there is a single-story structure to the right and a guard shack behind it. Located southeast of the site is an elementary school that educated children who stayed at the Prinkipo Greek Orphanage. Measuring 102 m x 32 m wide, the gigantic wooden structure rises amidst the pine trees near the garden entrance. (Alper, 2021)



Figure 4.10 Site Plan, (Source: Created by the author, 2024)

4.5 Plan Features

Basement Floor

Covering the entire floor area below the elevated ground except the southwest end of the building, the basement is at a level of -2.50 m. The basement floor comprises the theater, backstage rooms, and laundry space. Apart from the theater, the floor is covered with supporting masonry columns. The basement floor is linked to the outside by two service entrances and to the ground floor through two staircases.

The section shows that the theater is two stories high: the ground floor and the basement.

The two-story backstage rooms, dressing rooms, and wet areas behind the stage and along the sides were created by benefiting from the theater's height. The balcony section behind the stage is reached via the wooden staircases positioned symmetrically on either side of the stage. Accessed via stairs from the

theater entrances, the upper lodge seats were designed directly opposite the stage.

The stairway on the northwest facade is used near the stage to link the performance hall with other floors.

The southwest part of the building consists of masonry walls and columns, while the north-east part of the building, specifically where the theater is, consists of a wooden frame structure like the rest of the building.

Basement Floor			
Function	Theater	Backstage Rooms	Laundry Area
Area	340 sqm	215 sqm	515 sqm

Figure 4.11 Functions of the rooms and areas (Source: Created by the author, 2024)



Figure 4.12 Photo of lodges (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)



Figure 4.13 Photo of the theater (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=381&urunsyf=1&bolumid=31>)



Figure 4.14 Photo of basement (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)



Figure 4.15 Photo of the theater (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)

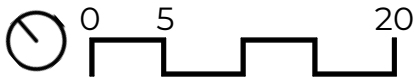
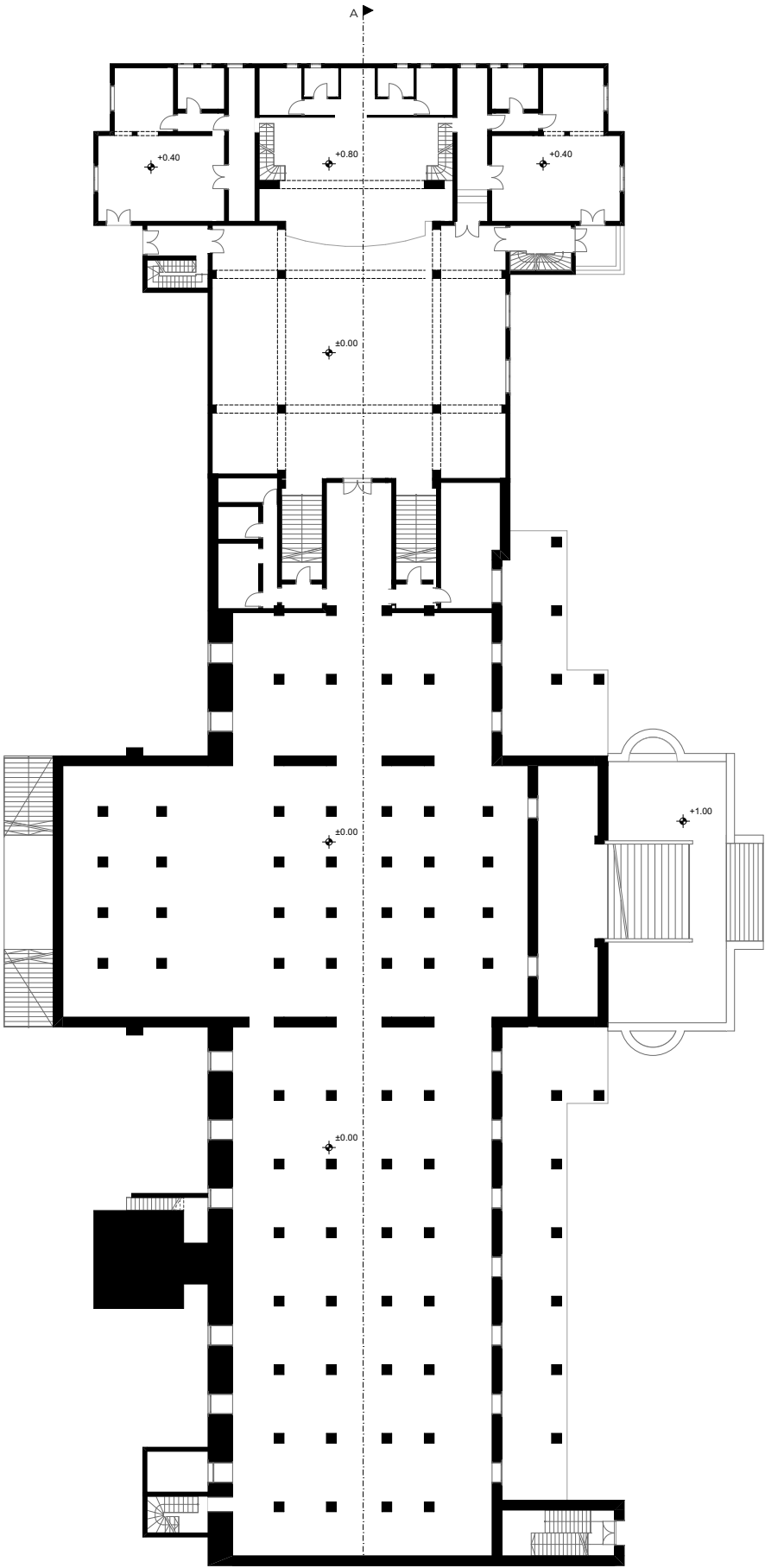


Figure 4.16 Basement Floor Plan, (Source: Created by the author, 2024)

Ground Floor

The entrance landing is elevated to 2.5 meters and is reached by a twin staircase parallel to the facade. The entry is linked to the entrance hall by the second door directly opposite the main entrance.

The opposite side of the main entrance connects to the garden through three doors. On the southeast facade, a porched-shaped balcony supported by wooden columns extends along the facade, integrating the rear garden with the stairwell.

The large wooden staircase can be seen to-

wards the right of the entrance hall and provides a link with the other floors.

The ground floor has a planned layout with a corridor in the middle and different-sized spaces on both sides. The short sides of the corridor are surrounded by the service stairs that reach the other floors on the front and rear facades. The same corridor opens to the outside through a door on the entrance side of the building.

Other ground floor functions include kitchen, dining hall, and theater.

Ground Floor										
Function	Theater	Backstage Rooms	Lodges	Entrance Hall	Dining Hall	Terrace	Service Rooms	Kitchen	Stokehold	Restrooms
Area	366.5 sqm	180 sqm	136.25 sqm	488 sqm	208.8 sqm	225 sqm	20 sqm	111.86 sqm	10.95 sqm	20.64 sqm

Figure 4.17 Functions of the rooms and areas (Source: Created by the author, 2024)



Figure 4.18 Kitchen (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)



Figure 4.19 Light Well (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)



Figure 4.20 Entrance Hall (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)

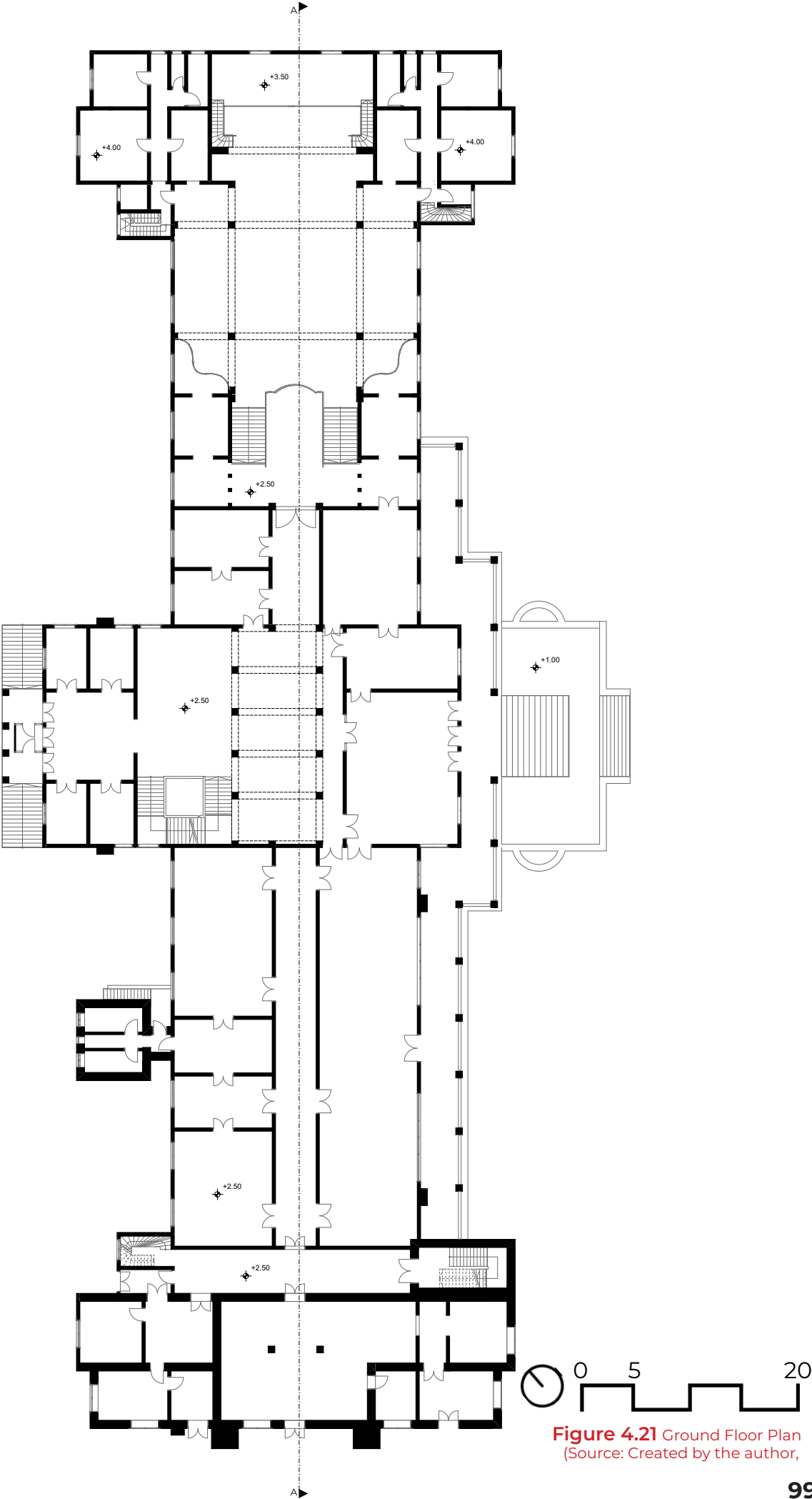


Figure 4.21 Ground Floor Plan (Source: Created by the author, 2024)

First Floor

The first three floors are connected to the ground floor entrance hall with a wide triple-branched staircase. The rooms on these floors were assumed to be dormitories and classrooms when the building was used as an orphanage. The students were enrolled in courses in school such as Turkish, Greek, French, Mathematics, Natural Sciences, Painting, Handicrafts, Music, Physical Education, and Religion; there were also study rooms for lessons and homework, as well as entertainment rooms where they played board games such as chess. Although the exact location has yet to be determined, there were sections in the building where children received instruction in fields such as shoemaking, electrical, carpentry,

blacksmithing, and tailoring. (Alper, 2021)

Even though the overall layout of the first floor resembles the second and third floors, it has rooms in which the separating walls were replaced by wooden columns, creating bigger spaces.

The central corridor of the ground floor side branches continues along the building on the upper floors, forming a longitudinal axis perpendicular to the central axis. This axis transforms into a skylight that rises four floors from the first floor on the entrance hall; the corridor ends at the two ends as it draws into the building. Thus, both axes ensure natural light and air in each room. (Alper, 2021)

First Floor						
Function	Hall	Classrooms	Restrooms	Rooms	Suits	Corridors
Area	160 sqm	391.7 sqm	92.24 sqm	387.2 sqm	668 sqm	186.3 sqm

Figure 4.22 Functions of the rooms and areas (Source: Created by the author, 2024)



Figure 4.23 Classroom(Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)



Figure 4.24 Light Well (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)

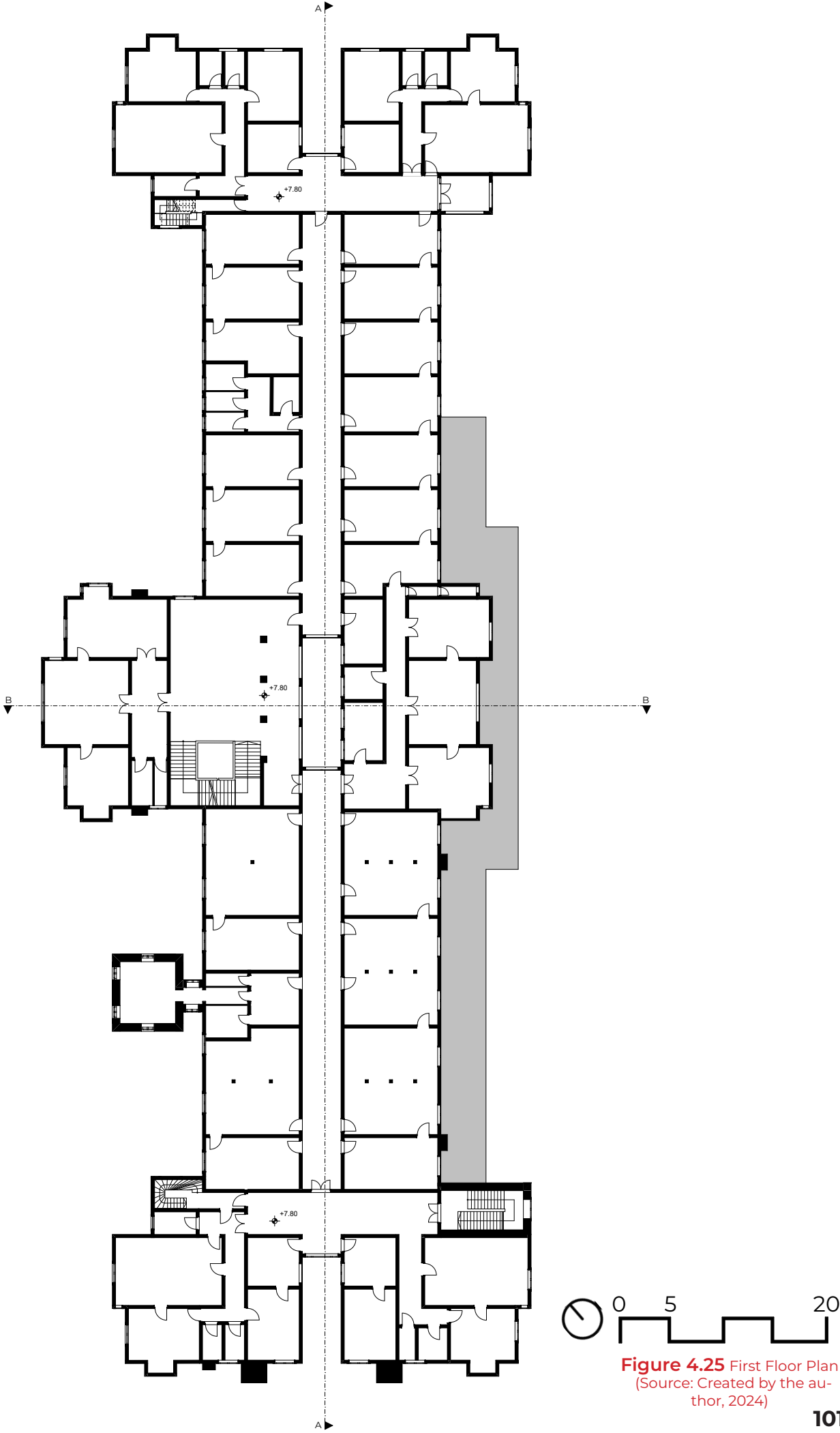


Figure 4.25 First Floor Plan (Source: Created by the author, 2024)

Second Floor

A similar plan layout repeats on the second floor; the long corridors are divided into seven modules on each side, creating rooms, while the southwest and northeast corners of the building are designed as suites. Each module on both branches in the northwest façade was designed as a WC sink, where as this space was expanded on each floor with a masonry mass, which is seen to be added later onto the left of the central axis.

Apart from the single rooms opening into the corridor on each floor plan, unique apartments

were designed on the middle axis and ends in the front and rear façades. These apartments can be considered suites since the building was initially intended as a hotel. Although similar spaces were arranged on each floor, the protrusions of the rooms on the outer façade are of different sizes. Apart from the main staircase in the central axis, there are also staircases at the ends that provide a vertical link.

Although we have yet to determine the exact use of these suites, we can assume they were used as classrooms or teachers' quarters.

Second Floor					
Function	Hall	Restrooms	Rooms	Suits	Corridors
Area	160 sqm	92.24 sqm	813.4 sqm	720 sqm	241 sqm

Figure 4.26 Functions of the rooms and areas (Source: Created by the author, 2024)



Figure 4.27 Second floor Hall (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)

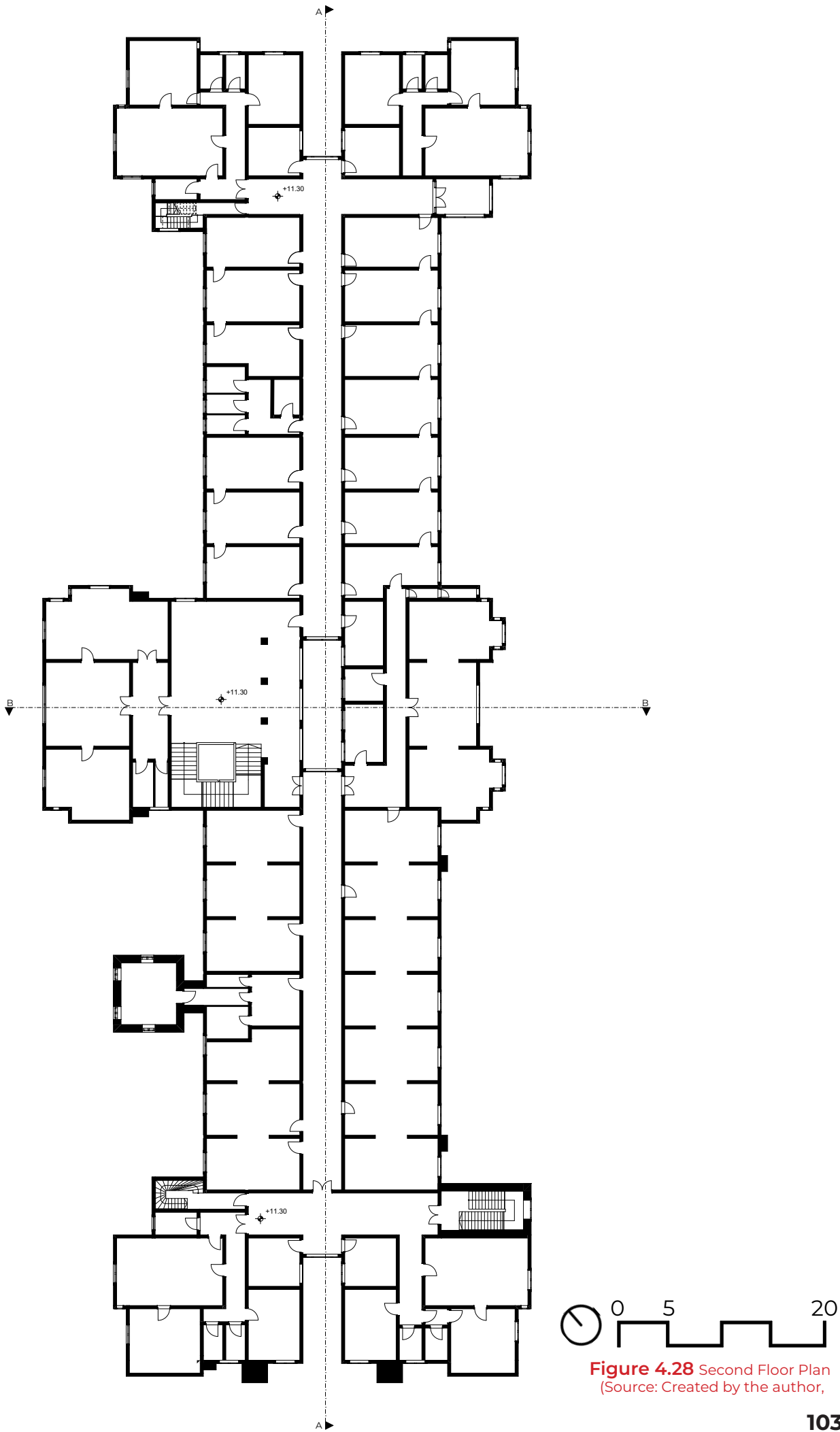


Figure 4.28 Second Floor Plan (Source: Created by the author, 2024)

Third Floor

We can see that the third floor was arranged with the same discipline as the second floor; the story consists of restrooms, suites, rooms, and corridors. Although the rooms on each floor were similar, the protrusions on the outer

façade varied in size. Connections with other floors were provided by the main staircase in the hall and two other staircases, which reside at the end of the central corridor on each side.

Third Floor					
Function	Hall	Restrooms	Rooms	Suits	Corridors
Area	160 sqm	92.24 sqm	813.4 sqm	876.7 sqm	319.5 sqm

Figure 4.29 Functions of the rooms and areas (Source: Created by the author, 2024)



Figure 4.30 Classroom (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)



Figure 4.31 Dormitory (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)

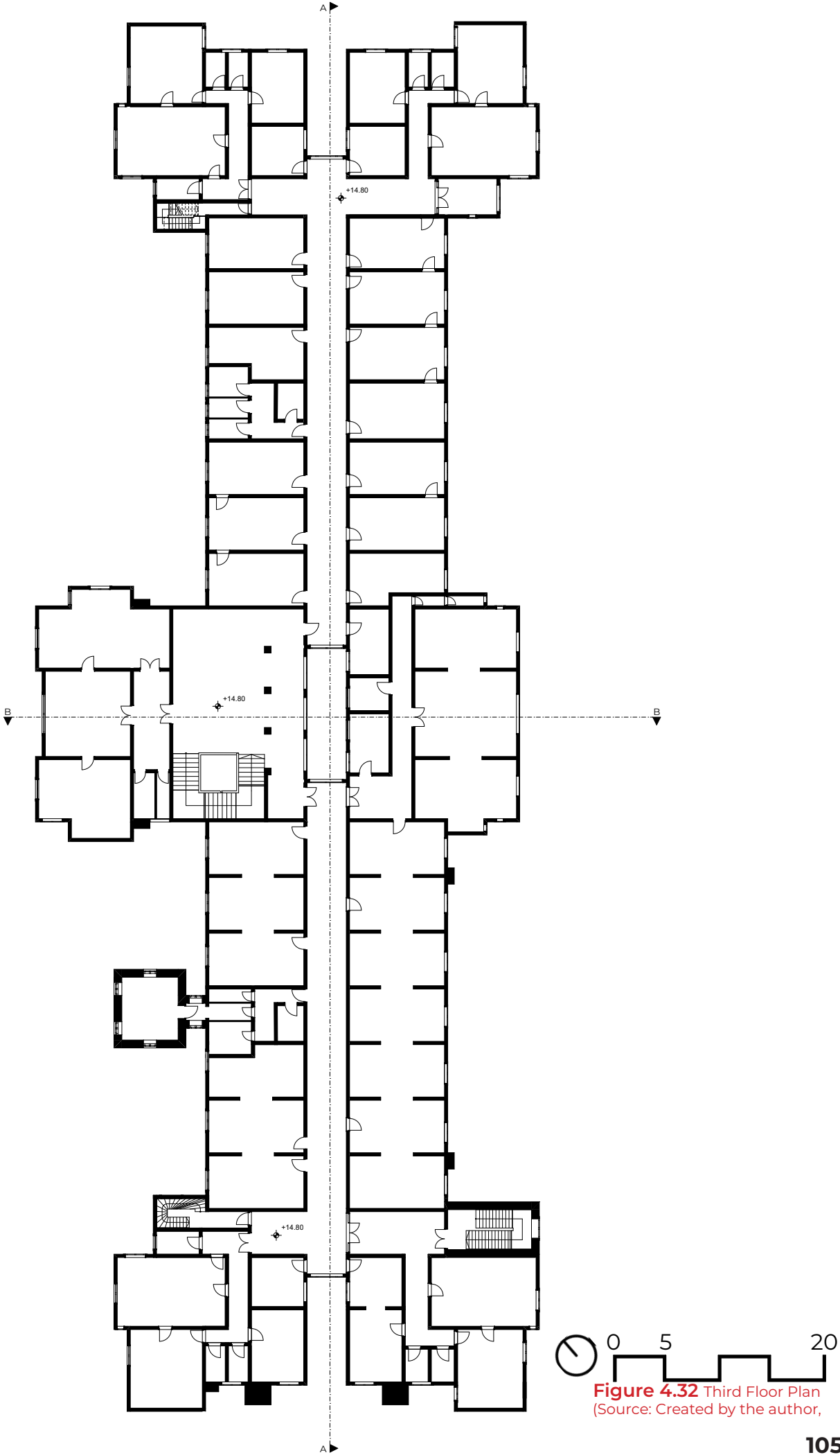


Figure 4.32 Third Floor Plan (Source: Created by the author,

Fourth Floor

The building’s end sections of the central axis side branches were raised to create a fourth floor, which features a lower ceiling height than the others. The lower floor’s layout was replicated on this level, although some rooms had to

be either canceled or reduced in size to prevent any visual dissonance with the building’s exterior. The private rooms here are believed to have been designed as suites with incredible views.

Forth Floor				
Function	Hall	Restrooms	Suits	Corridors
Area	160 sqm	12.1 sqm	720 sqm	159.5 sqm

Figure 4.33 Functions of the rooms and areas (Source: Created by the author, 2024)



Figure 4.34 View from the Suite (Tacir, Z. (n.d.). [Photo of Prinkipo Orphanage]. Retrieved July 8, 2024, from <https://www.ziyatacir.com/ENG/FOTO.asp?uid=386&urunsyf=16&bolumid=31>)

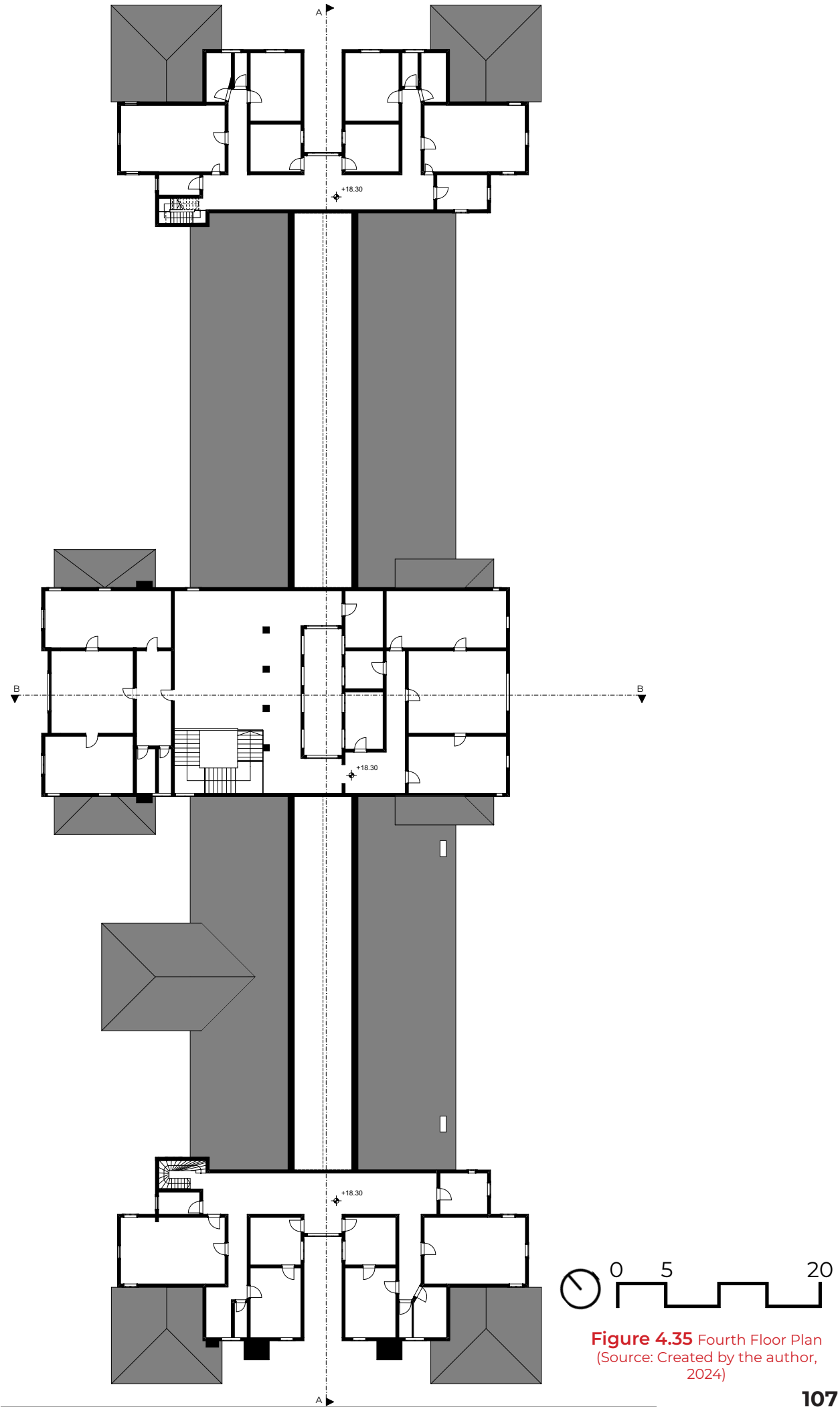


Figure 4.35 Fourth Floor Plan (Source: Created by the author, 2024)

Roof Plan

The building’s hipped roof has suffered significant damage in various areas, but is still adorned with beautiful Marseille-style roof tiles. Running the height of four floors, the skylights

come to an end at the midpoint of the hipped roofs that ascend in the center and the extremities of the side branches.(Alper, 2021)



Figure 4.36 Roof Plan (Adobe Stock. (n.d.). Prinkipo Greek Orthodox Orphanage [Stock photo]. Retrieved July 14, 2024, from <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage/196860173>)

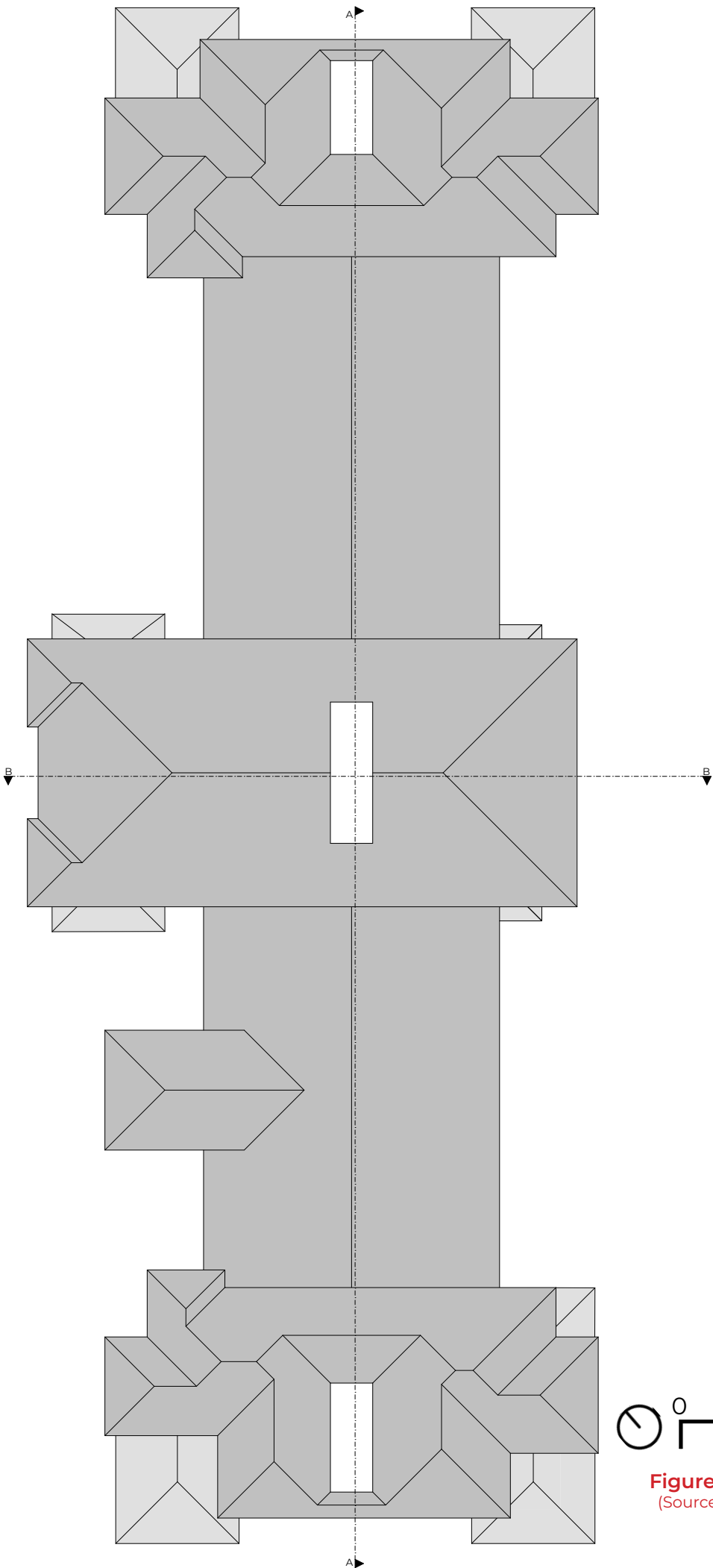


Figure 4.37 Fourth Floor Plan (Source: Created by the author, 2024)

Fourth Floor

Suits Wet Areas Corridors

Third Floor

Suits Rooms Wet Areas Corridors

Second Floor

Suits Rooms Wet Areas Corridors Hall

First Floor

Classrooms

Suits Rooms Wet Areas Corridors Hall

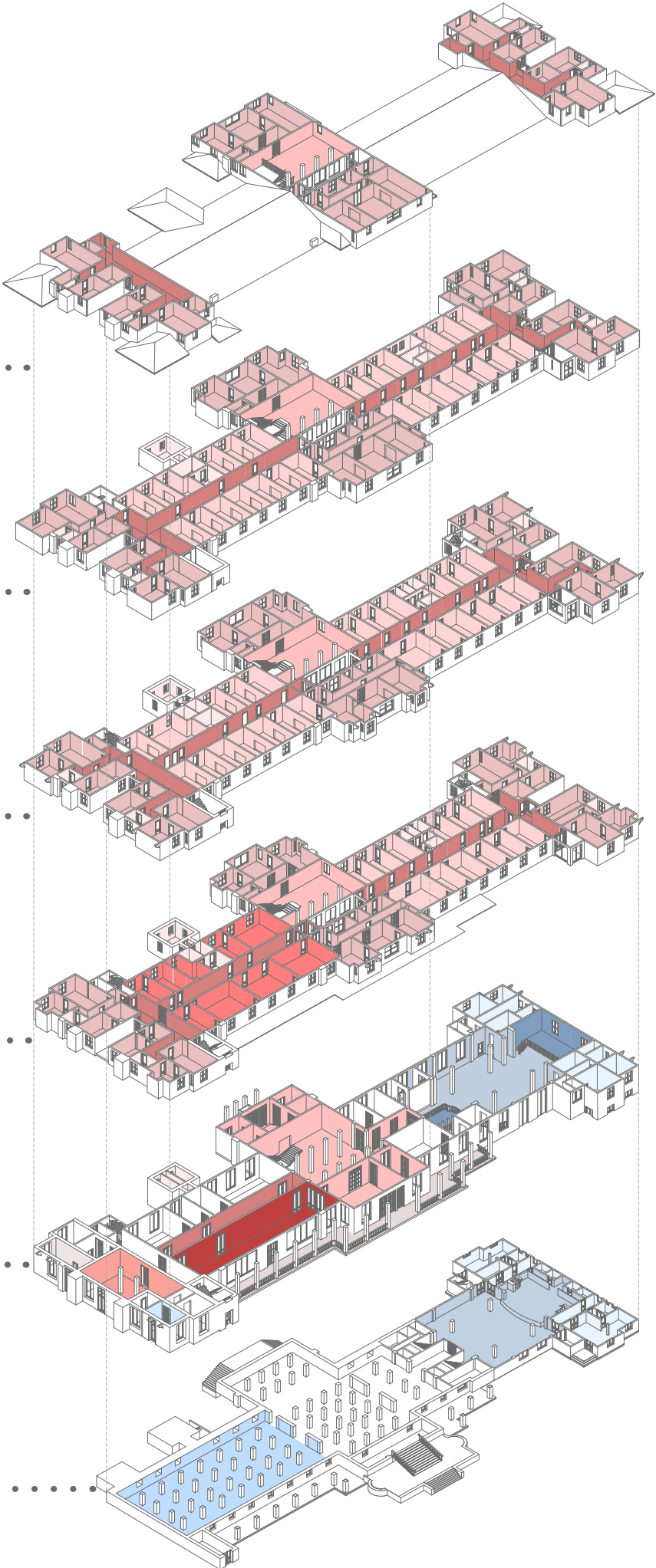
Ground Floor

Theater Backstage Rooms Lodges Dining Hall

Kitchen Wet Areas Terrace Hall Service & Storage

Basement

Laundry Room Theater Backstage Rooms



Legend

Backstage Rooms	7%
Stokehold	1%
Laundry Room	5%
Theater	3%
Lodges	1%
Service and Storage	1%
Terrace	2%
Wet Areas	3%
Rooms	20%
Suits	30%
Hall	11%
Kitchen	1%
Classrooms	4%
Corridor	9%
Dining Hall	2%

Figure 4.38 Exploded Axonometry (Source: Created by the author, 2024)

4.7 Building Sections

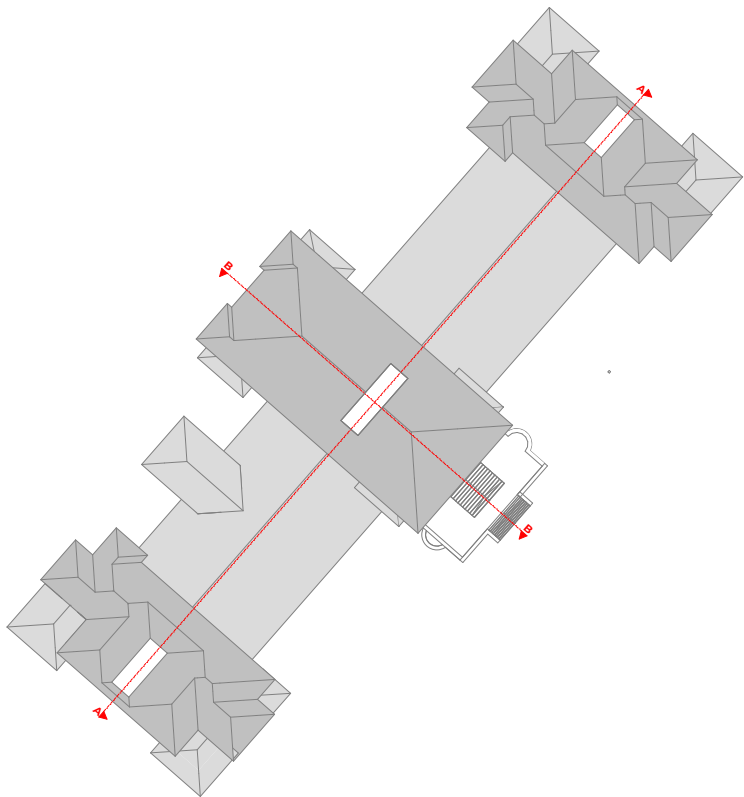


Figure 4.39 Roofplan Scale 1:1000 (Source: Created by the author, 2024)

Europe’s largest and the world’s second-largest wooden structure is the Prinkipo Greek Orphanage. The building, designed by Alexandre Vallauri in the neo-classical style, was constructed between 1888 and 89 and sits atop Hristos Hill on Buyukada, the largest of the Princes Islands. It is connected to Istanbul province and is owned by the Ecumenical Patriarchate of Istanbul. The building is classified as a Group 1 antiquity and must be preserved.

This impressive building features exceptional dimensions and architecture, showcasing a symmetrical mass pattern. Its elongated edge spans approximately 102 meters on a northeast-southwest axis, gracing a sprawling property. The entrance axis sits centrally, while the right and left side facade lines measure 32 meters wide. These sections are linked by branches that are 18 meters wide. (Alper, 2021)

In the vertical plane, a difference in dimensions can be observed between the various sections of the plan. The multi-story wooden frame structure building features a basement floor with a masonry wall system situated below ground level as the foundation. The central axis of the building reaches an impressive height of 24.00 m, while the ends of the structure, measured from ground level at +2.50 m, reach five floors.

The Prinkipo Greek Orphanage comprises six floors: a basement floor, a ground floor, a regular 1st, 2nd, and 3rd floor, and a partial roof floor. Three staircases provided accessibility between the floors; the main staircase was in the entrance hall, while the other two were on the rear ends of the corridors.

The basement floor covers the entire area below the elevated ground except the southwest of the building. The basement floor is at an elevation of +2.50 m.

In Section A-A, we can see that the theater is two stories high, while the ground floor is higher than the other stories. The theater is connected to the ground floor through two symmetrical stairs beside the lodges. The theater stage has an elevation of +0.80 m and is connected to the balcony through stairs (Alper, 2021). The center axis of the A-A section is reserved as a light well to create a luminous space. The upper floors were divided into several modules to create spacious rooms used as classrooms and dormitory rooms when the building was an orphanage.

Section A-A



Figure 4.40 Section A-A (Source: Created by the author, 2024)

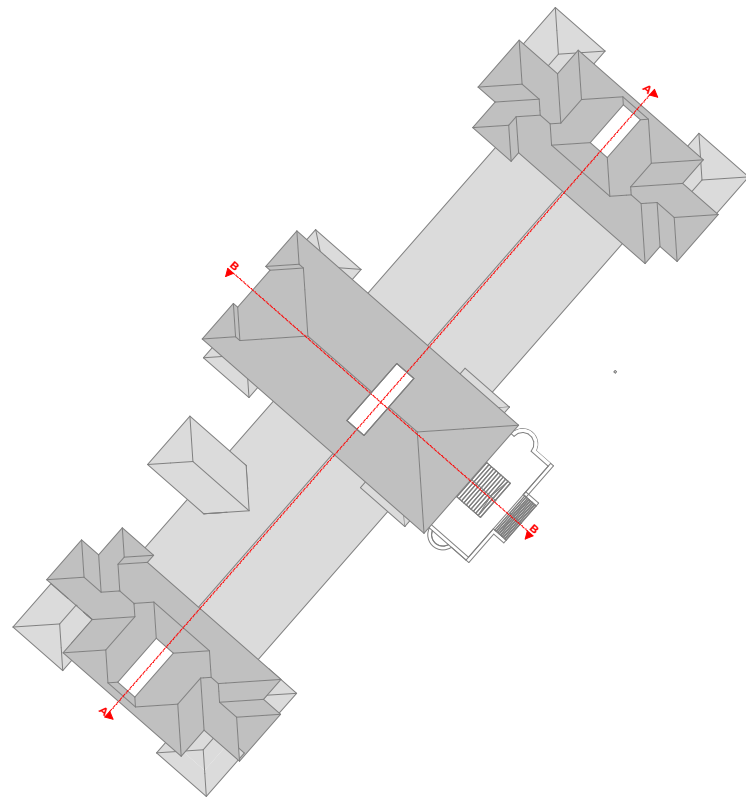


Figure 4.41 Roofplan Scale 1:1000 (Source: Created by the author, 2024)

The Prinkipo Greek Orphanage comprises six floors: a basement floor, a ground floor, a regular 1st, 2nd, and 3rd floor, and a partial roof floor. Three staircases provided accessibility between the floors; the main staircase is in the entrance hall, while the other two are on the rear ends of the corridors.

The basement floor covers the entire area below the elevated ground except the southwest of the building. The basement floor is at an elevation of +2.50 m. As a supporting structure, the basement floor consists of masonry columns covering the entire floor area.

In Section B-B, we can see that the section cuts through the entrance axis of the building, showcasing the main entrance, garden entrance, and entrance hall. The main staircase connects five floors above the basement floor. Next to the hall on the upper floors, we can see suits as they were built with this function when the building was supposed to be used as a hotel, even though we are still determining how these rooms were used when it was an

orphanage. Above the garden entrance, these suits were connected through empty door openings, creating grand rooms with amazing scenic views. The corridor was separated into two parts, with the light well in the central axis; the connection between the two corridors was provided through doors from the hall.

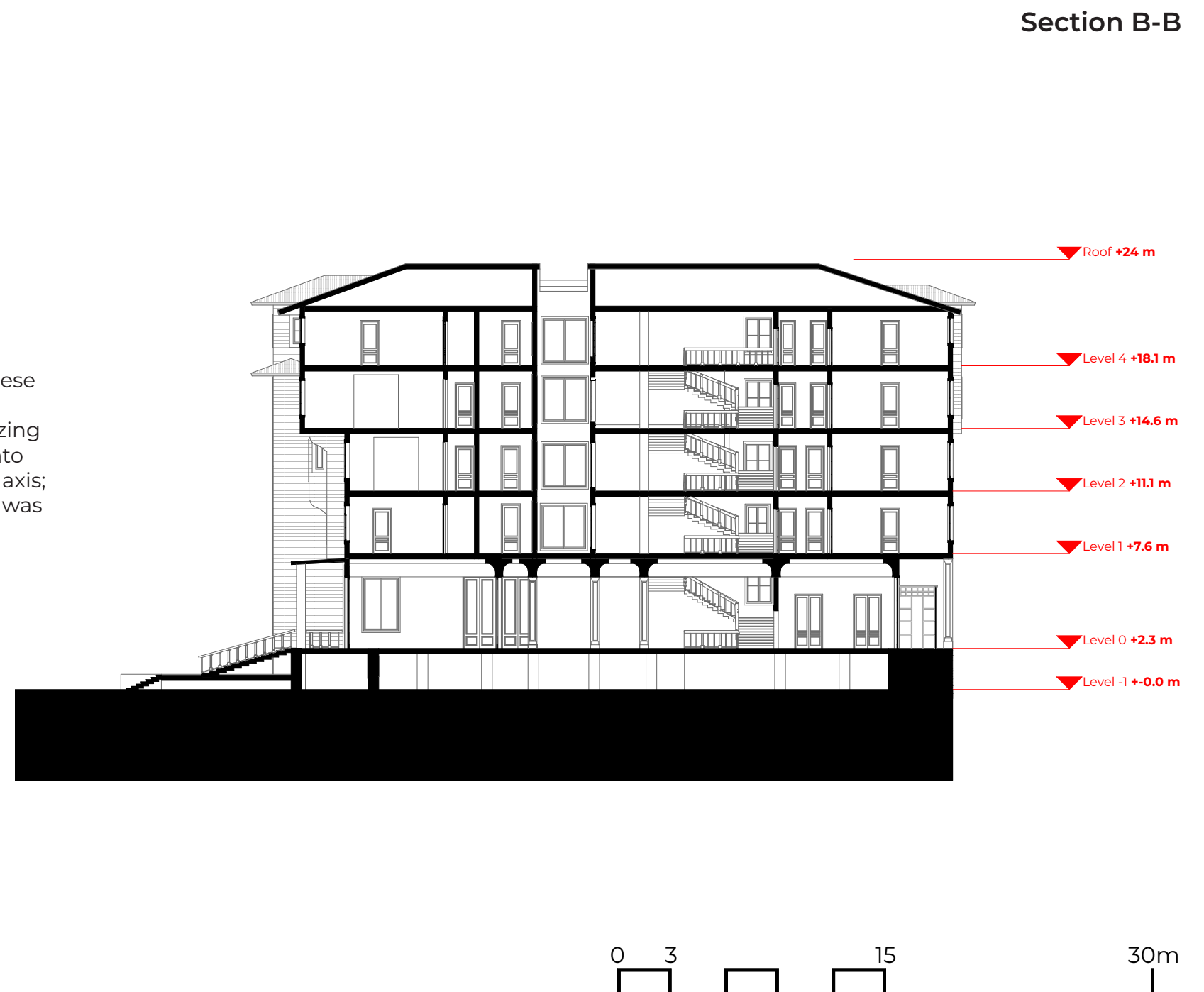


Figure 4.42 Section B-B (Source: Created by the author, 2024)

4.8 Facade Features

Northwest Elevation:

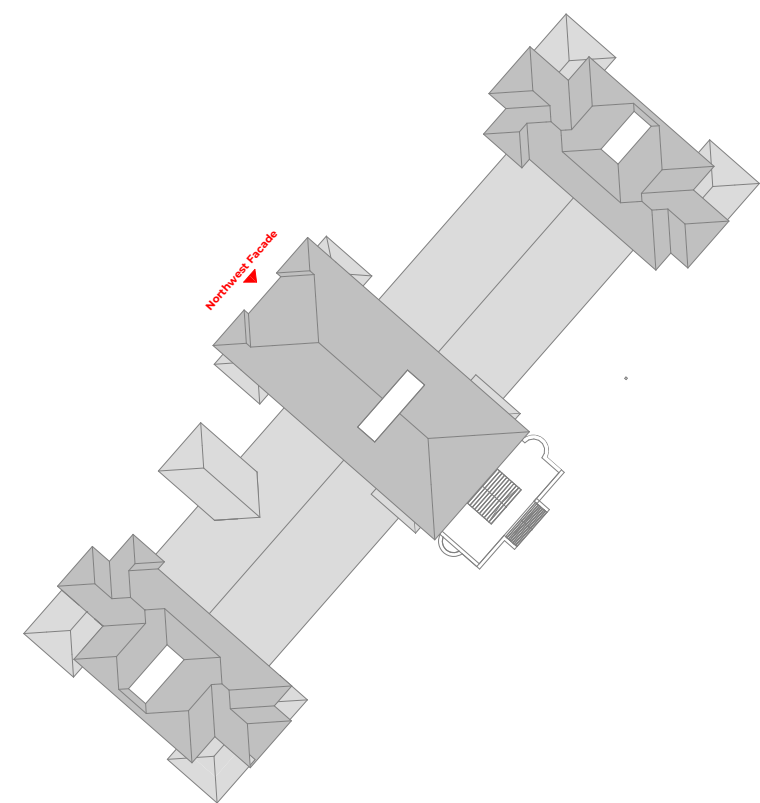


Figure 4.43 Roof Plan (Source: Created by the author, 2024)

The structure, built using the wooden frame system, has a straightforward façade architecture in that the protrusions and roof shape provide the façade movement.

The building’s main entrance is its north-west façade. A two-way staircase with marble steps leads to the ground floor landing rising over the central axis of this façade. No railings are visible on the stairs. The entrance is highlighted by four wooden columns that support the first-floor protrusion. The wooden, glass windscreen behind the columns is considered a period addition.

To the right of the central axis of the northwest façade, which is primarily symmetrical, is a brick masonry structure with flat arches, brick jamb windows, and plastered surfaces. According to Alper, 2021, this masonry structure was added later into the building when Lady Zafiris bought it.

Due to its previous red exterior, the building was known as the ‘Buyukada Red Palace’ for its beauty. Though the paint has flaked over time, traces of red remain visible today.



The building’s symmetry is evident both in its plan and façade. To avoid an overly horizontal appearance, the rectangular mass is reflected in a dynamic façade featuring protrusions of varying sizes on each floor, creating a vertical stagger effect. The fragmented hipped roof adds to the building’s movement, appearing at different elevations. The façade’s design draws inspiration from traditional Turkish residential architecture, adapted to suit the building’s size and multiple purposes.

The upper floors feature an array of windows with similar distances, which are identical in size and appearance. Through old pictures, we can see that these windows originally had shutters, but they are mostly gone due to lack of maintenance and weather events. The windows are cased with twenty-centimeter frames with classical profiles.

Figure 4.44 & 4.45 Northwest Facade (Adobe Stock. (n.d.). Prinkipo Greek Orthodox Orphanage in Büyükada Island, Istanbul, Turkey [Stock photo]. Retrieved July 18, 2024, from <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage-in-buyukada-island-istanbul-turkey/452734867>)

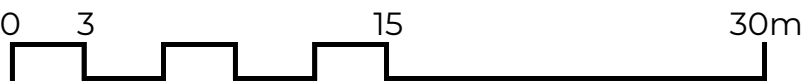


Figure 4.46 Northwest Elevation (Source: Created by the author, 2024)

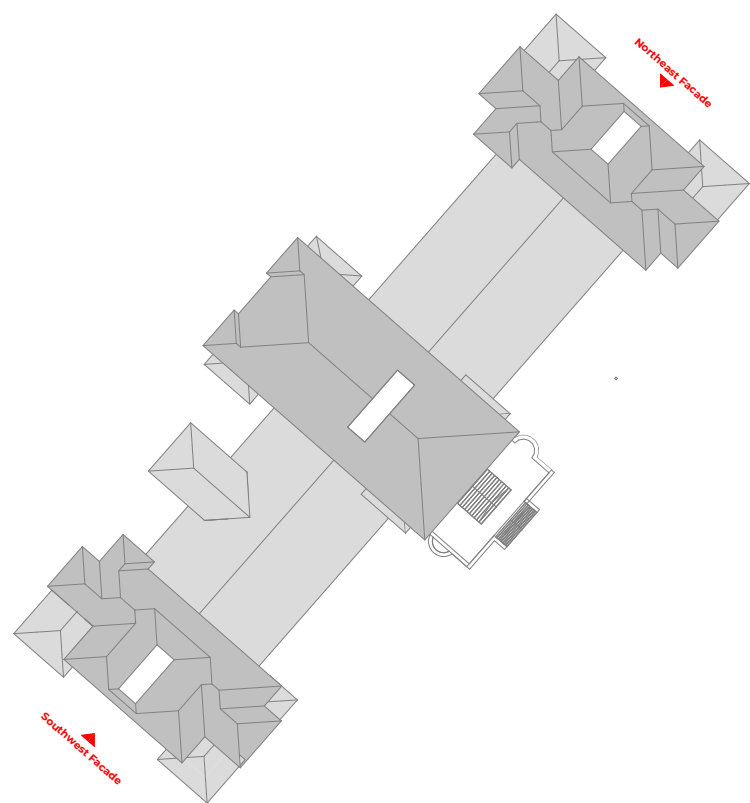


Figure 4.47 Roof Plan (Source: Created by the author, 2024)



Figure 4.48 Northeast facade (Adobe Stock. (n.d.). View of Prinkipo Greek Orthodox Orphanage (Turkish: Büyüka Rum Yetimhanesi) in Büyüka, Istanbul, Turkey <https://stock.adobe.com/it/images/view-of-prinkipo-greek-orthodox-orphanage-turkish-buyukada-rum-yetimhanesi-in-buyukada-buyukada-is-a-neighbourhood-in-the-adalar-islands-district-of-istanbul-province-turkey/355630788>)

The building sits on a sloped topography, with the southwest wing 2.5 meters higher than the northeast wing. Both facades share similarities, such as symmetric features like roofs and windows and a light well in the central axis.

When we compare the construction system of the two facades, we see the southwest facade has a masonry ground floor with two masonry chimneys, where the furnace room and kitchen are located. On the other hand, the northeast wing is the only place where construction starts directly with a timber frame structure.

The protrusions on the left and right sides of the facades and various levels of roofs create a dynamic exterior for the building.



Figure 4.50 Southwest facade (Adobe Stock. (n.d.). Prinkipo Greek Orthodox Orphanage in Büyüka Island, Istanbul, Turkey [Stock photo]. Retrieved July 18, 2024, from <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage-in-buyukada-island-istanbul-turkey/452734846>)

Northeast Elevation:



Figure 4.49 Northeast Elevation (Source: Created by the author, 2024)

Southwest Elevation:

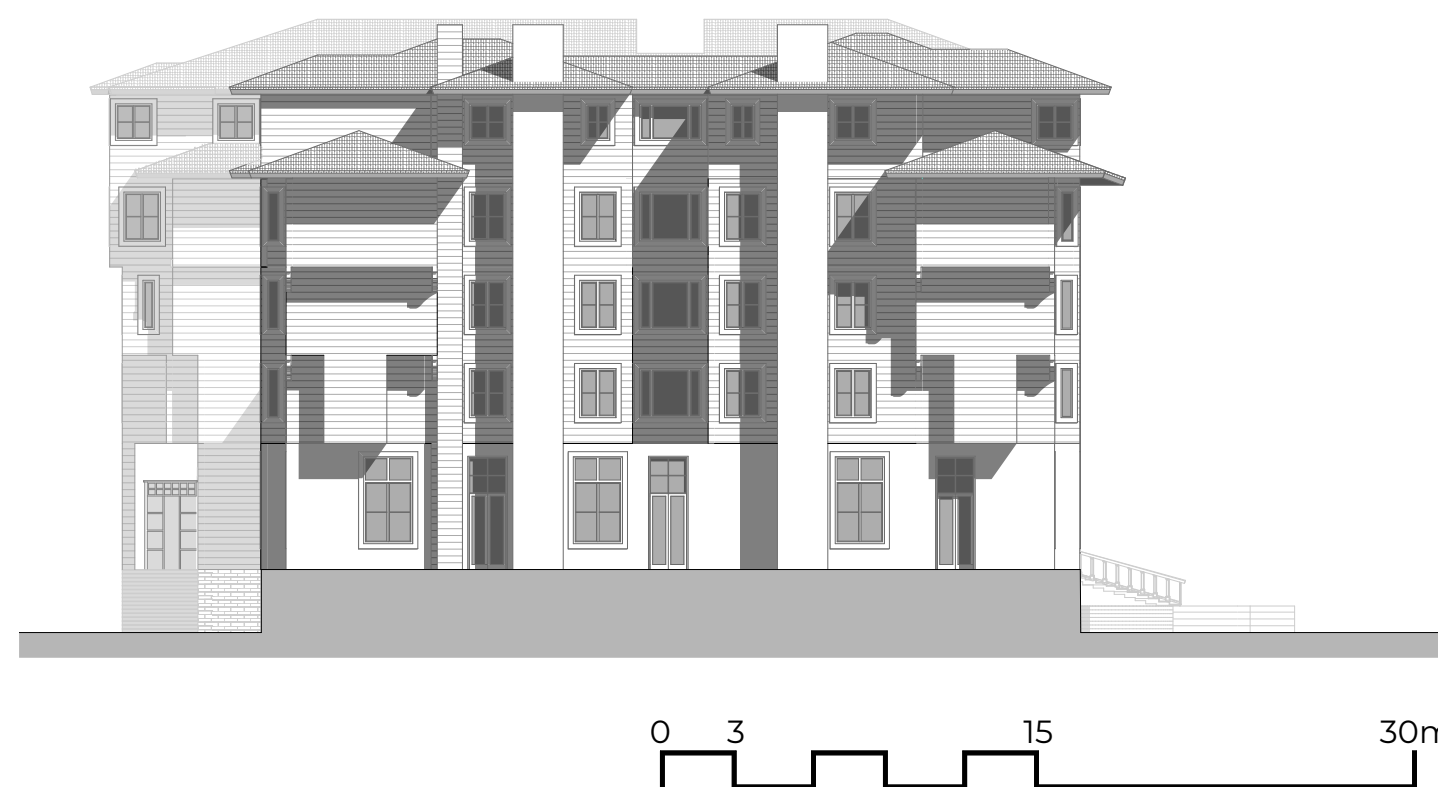


Figure 4.51 Southwest Elevation (Source: Created by the author, 2024)

Southeast Elevation:

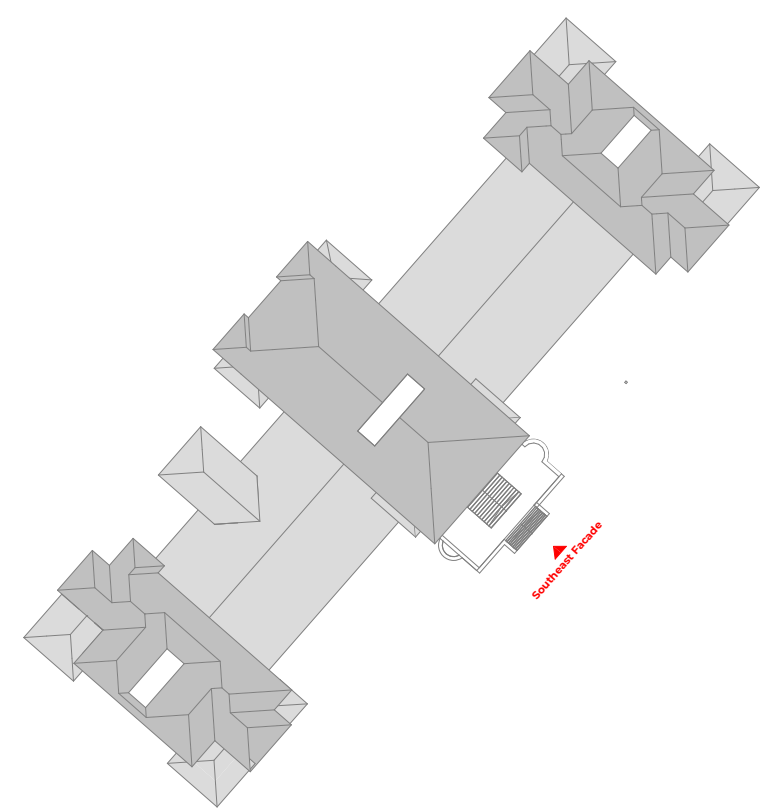


Figure 4.52 Roof Plan (Source: Created by the author, 2024)



Figure 4.53 Southeast Facade (Adobe Stock. (n.d.). Prinkipo Greek Orthodox Orphanage in Büyükkada, İstanbul, Türkiye. <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage-in-buyuk-ada-istanbul-turkiye/573842285>)



Figure 4.55 Southeast Facade (Adobe Stock. (n.d.). Prinkipo Greek Orthodox Orphanage ruins on Büyükkada Island, Adalar, Turkey [Stock photo]. Retrieved January 14, 2025, from <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage-ruins-on-buyukada-island-adalar-turkey/727637218>)

The southeast facade overlooks the building's large back garden, and the Sedef Island. The marble-stepped staircase of this façade's central axis leads to the landing on the ground level, where the gate opens to the garden. There is a terrace on the ground floor, starting from the cafeteria level and continuing along the façade, ending in line with the third window to the right of the middle axis. The terrace is closed off with a veranda supported by wooden columns. Wooden railings were added be-

tween the bases of the supporting columns. It is seen that the façade, generally covered with wood, is plastered at the basement level, the supporting columns are reflected to the façade, and low-opening windows with brick jambs are used between the columns. Moreover, the staircase with brick masonry walls that link the performance hall to the other floors on the left end of the façade is also plastered. Two chimneys surrounded by wood cladding rise on the façade's left wing. (Alper, 2021)



Figure 4.54 Southeast Elevation (Source: Created by the author, 2024)



Figure 4.56 Prinkipo Palas Axonometry (Source: Created by the author, 2024)



Figure 5.1 Prinkipo Greek Orphanage Northwest Facade(Adobe Stock. (n.d.).Prinkipo Greek Orphanage [Stock photo]. Retrieved (July 20), from Adobe Stock (now unavailable).

5.1 Material Analysis

Materials are grouped under six main headings according to their origin: stone, wood-based, clay, plaster, metal, and glass. These are sub-grouped according to the aim and type of use, which depends on location and function.

Stone

The prominent stone parts in the building are masonry basement piers and walls. According to Somer (2020), it can be assumed that the foundation strips and the stone masonry parts of the basement walls were bonded on the outer surfaces and then infilled with rubble of unidentified materials. The thickness of the masonry walls and piers is variable, but the approximate thickness is about 70-80 cm.

Timber

Timber is the most widely used material in the building, including structural systems, exterior cladding, and interior cladding. Structural timber is used inside walls at specific intervals, such as primary posts and beams, floor joists, and secondary elements of the frame structure. The primary elements of the frame have rectangular sections, varying between 18 cm x 18 cm to 16 cm x 16 cm. According to the survey conducted by Elif Somer in 2020, it was discovered that oak was used in structural members.

The more processed timber is generally used as covering elements such as floorboards, exterior cladding, and ceiling finishes. According to Somer (2020), exterior cladding consists of panels with 27 cm x 3 cm dimensions. Pine was also discovered to be used as the material.

Other timber elements can be listed as window and door frames and panels, ornaments attached to columns, ceiling bosses, or surrounding profile boards at the sides of the ceiling, or as framing decoration elements for niches.

Clay:

The materials grouped under this heading are produced from clay as a simple mixture or fabricated material. Baked clay is used as roof tiles and bricks.

According to Alper, 2021, the roof tiles were imported from Marseille. The dimensions of roof tiles are 23 cm to 41 cm.

The masonry portions of the basement walls,

exterior piers, and foundation stripes were in a stone-brick combination. These parts were leveled with layers of brick masonry to create horizontal surfaces. The interior basement pillars and masonry walls were made of brick masonry. The kitchen area on the entrance floor has also been built in brick masonry.

Plaster:

Lime plaster is used in interior and exterior finishes. Flax fibers, often called tow, were used to strengthen the lime-based plaster used in plastering interior timber walls and ensure better surface adhesion.

Metal

Metal can be found in gutters, pipes, anchoring joints, beams, and joists. According to Somer, 2020, anchoring joints, beams, and joists were classified as steel, while gutters and pipes were categorized as cast iron.

Glass

Glass is used in window panes. The dimensions of the glass panes differ according to the frame size.



Figure 5.2 Wood Cladding
(Photographed by the author, 2025)



Figure 5.4 Masonry Columns
(Photographed by the author, 2025)



Figure 5.6 Timber Window Frame Adobe Stock. (n.d.), Prinkipo Greek Orthodox Orphanage in Büyükada Island, <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage-in-buyukada-island-istanbul-turkey/452734624>



Figure 5.3 Roof Tiles (Adobe Stock. (n.d.). Prinkipo Greek Orthodox Orphanage [Stock photo]. Retrieved July 14, 2024, from <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage/196860173>)



Figure 5.5 Plastered Masonry Structures Adobe Stock. (n.d.). Prinkipo Greek Orthodox Orphanage in Büyükada Retrieved July 20, 2024, from <https://stock.adobe.com/it/images/old-abandoned-building-of-prinkipo-greek-orthodox-orphanage-in-buyukada-istanbul/515805198>

5.2 Construction Method

The load-bearing system is composed of foundation walls and piers situated on the basement floor. Approximate stone masonry wall width is 70 to 80 cm. The height of the basement floor(except the Northeast part) is 2.5 meters. These parts were leveled with layers of brick masonry to create horizontal surfaces on specific heights, to create the transition to the timber floors. After the joist was laid on the foundation walls the sub-base, usually made of square-section oak, was placed on it. The cross-section of the sub-base varied depending on the structure but the minimal dimensions were 13x13 cm.

After the construction of the sub-base the corner posts, posts, intermediate posts, and braces were placed leaving gaps for window and door frames. To strengthen the structure the bonding timber beams were placed between the intermediate and main posts, and in between posts rectangular section beams were placed to carry the upper floor structures. The beams are generally placed with a gap of 45-55 cm and again depending on the width between the spaces, using dimensions such as 6x18 or 5x15. The bonding beams were placed above and below windows and doors.

Wooden posts were placed according to the floor height. When they reached the upper floor level, headers were placed on the posts, and then the beams called the base beams that carry the load of the upper floor floor were placed. The construction of the upper floors varied depending on the structures chosen by the architects. The two predominant timber floor constructions are called, Single-Based and Double-Based systems (see Figure 7 and Figure 8).

Single-based structures are built with only one upper-base beam, in which floor beams and upper floor posts are placed. In double-base structures, there are two-floor beams, one of which is under the floor beams and the other is above the floor beams. These floor beams are known as the upper base beam and the sub-base beam.

In case of a protrusion at floor level, it was achieved by extending beams outwards. If the protrusion is more than 30-40 cm, it is reinforced with support elements called buttresses. (Kudeb, 2009)

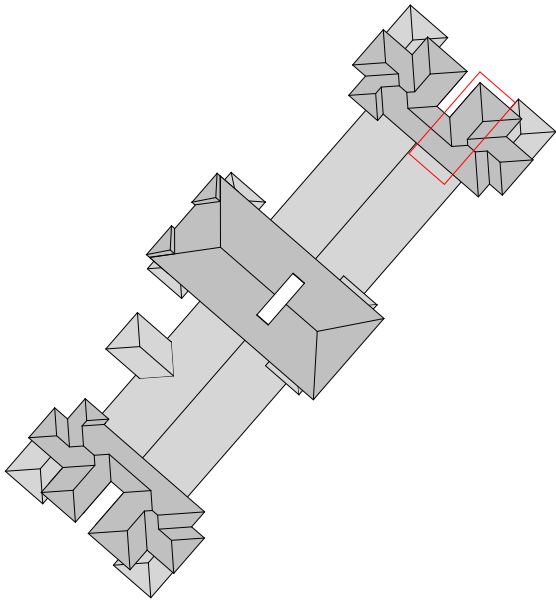


Figure 5.7 Roof plan
(Source: Created by the author, 2024)

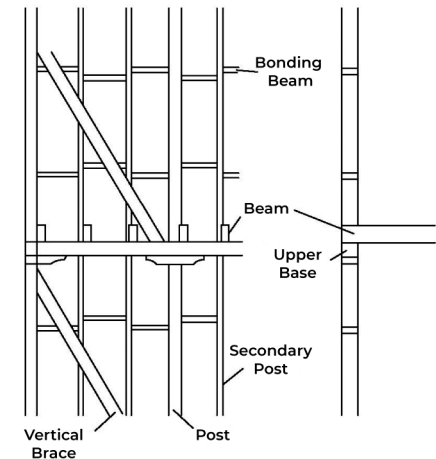


Figure 5.8 Single-based Timber Frame
(Traditional wooden structure applications (Istanbul Metropolitan Municipality, KUDEB Directorate, 2009).)

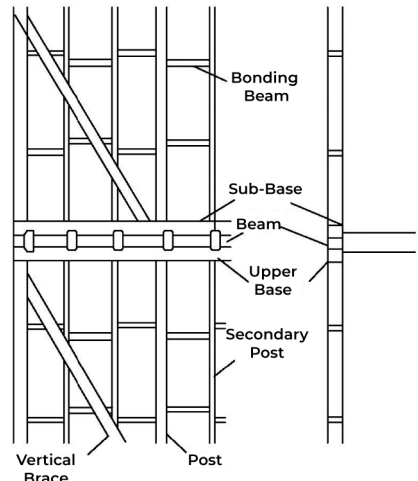


Figure 5.9 Timber Window Frame
(Traditional wooden structure applications (Istanbul Metropolitan Municipality, KUDEB Directorate, 2009).)

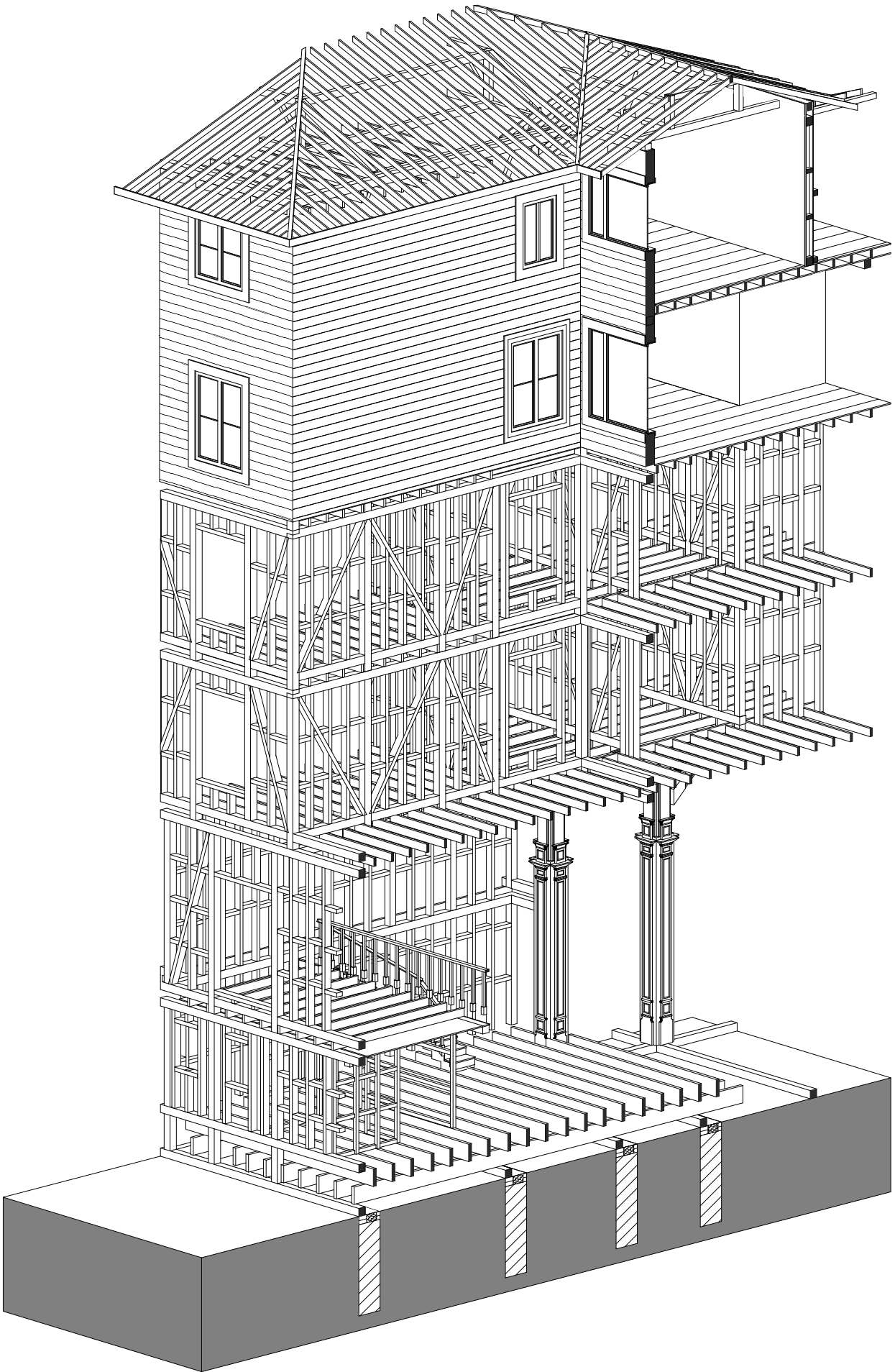


Figure 5.10 Axonometry (Source: Created by the author, 2024)

5.3 Current Situation of the Building

Current Developments in Conservation

The Prinkipo Greek Orphanage has been in a neglected state since it was abandoned in 1964. The building's location, its enormous dimensions that increase the cost of restoration, the ongoing political disputes affecting the state of ownership, the features of the construction system, as well as the difficulties of determining the new function have compounded to make the restoration of the structure difficult, whereas the impasse and damage it sustained during the ensuing years has rendered it a defenseless, fragile structure. Unable to withstand adverse weather conditions due to damage sustained on its roof. In particular, more sections of the structure's damaged woodwork are in danger of collapsing.

Since the building was included on Europa Nostra's list of "Europe's 7 Most Endangered Heritage Sites" on 15 March 2018, two technical reports were written on the subject of the current state of conservation of the orphanage. One of these reports was written by National Timber Association officials in 2019 and the other report was written by Clive Dawson in April 2019 where he prepared a structural report by conducting on-site inspections. (Alper, 2021)

Furthermore, on 2022 August 25th, the Council of Monuments of Turkey approved the restoration project. As a result of this new development, a committee of art historians, civil engineers, and architects was elected and led by the project manager Mr. Laki Vingas. The committee is working with Istanbul Metropolitan Municipality, the National Technical University of Athens, the John S. Latsis Public Benefit Foundation, the Greek Orthodox Archdiocese of Australia, Ecumenical Federation of Constantinopolitans in Greece, and the Ecumenical Patriarchate.



Figure 5.11 Prinkipo Greek Orphanage (Adobe Stock. (n.d.).Prinkipo Greek Orphanage [Stock photo]. Retrieved (July 20), from Adobe Stock (now unavailable).

Approach to Survey and Restitution

Our professors and I have agreed to deal with the scale of the building by taking a modular approach to design for the restoration project. We have chosen the Northeast part of the building to use this method on. Plans, sections, and elevations for this area were taken specifically from the corner of the Northeast façade. This was performed for two important reasons: first, to allow for clear drawings that are easily interpreted; second, to make full use of the symmetrical design of the building and thus easily apply this restoration work in other parts of the structure.

Additionally, another reason for choosing this part of the building comes from the theater located in the basement and ground floor, the two-story performance hall has unique architectural details that must be conserved and maintained.

The following floor plans depict the structural details of walls and floor coverings. The second and third floors weren't included since the layout and dimensions are the same as the first-floor plan. While we don't have enough information regarding the internal state of the building, we were able to find a state of art image of the roof, therefore the roof plan depicts the current state of the building although the floor plans are hypothetical drawings regarding their decays.

5.3 Current Situation of the Building

5.3.1 Floor Plans

5.3.1.1 Ground Floor Plan

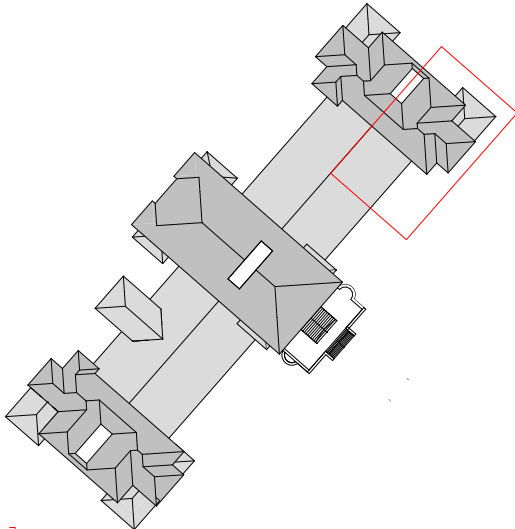
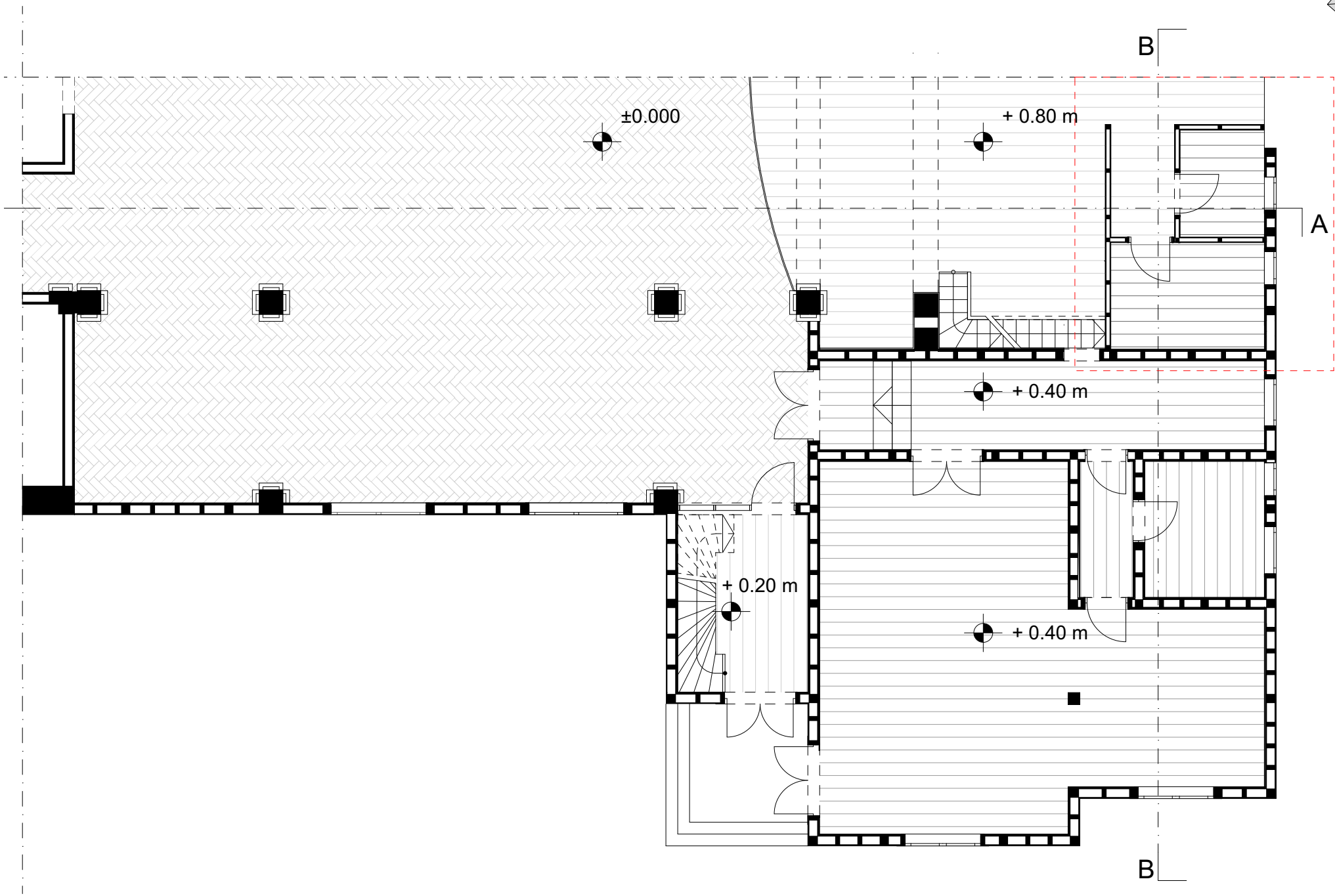


Figure 5.12 Roof Plan
(Source: Created by the author, 2024)



Figure 5.13 Basement Floor Plan (Source: Created by the author, 2024)

5.3.1.2 First Floor Plan

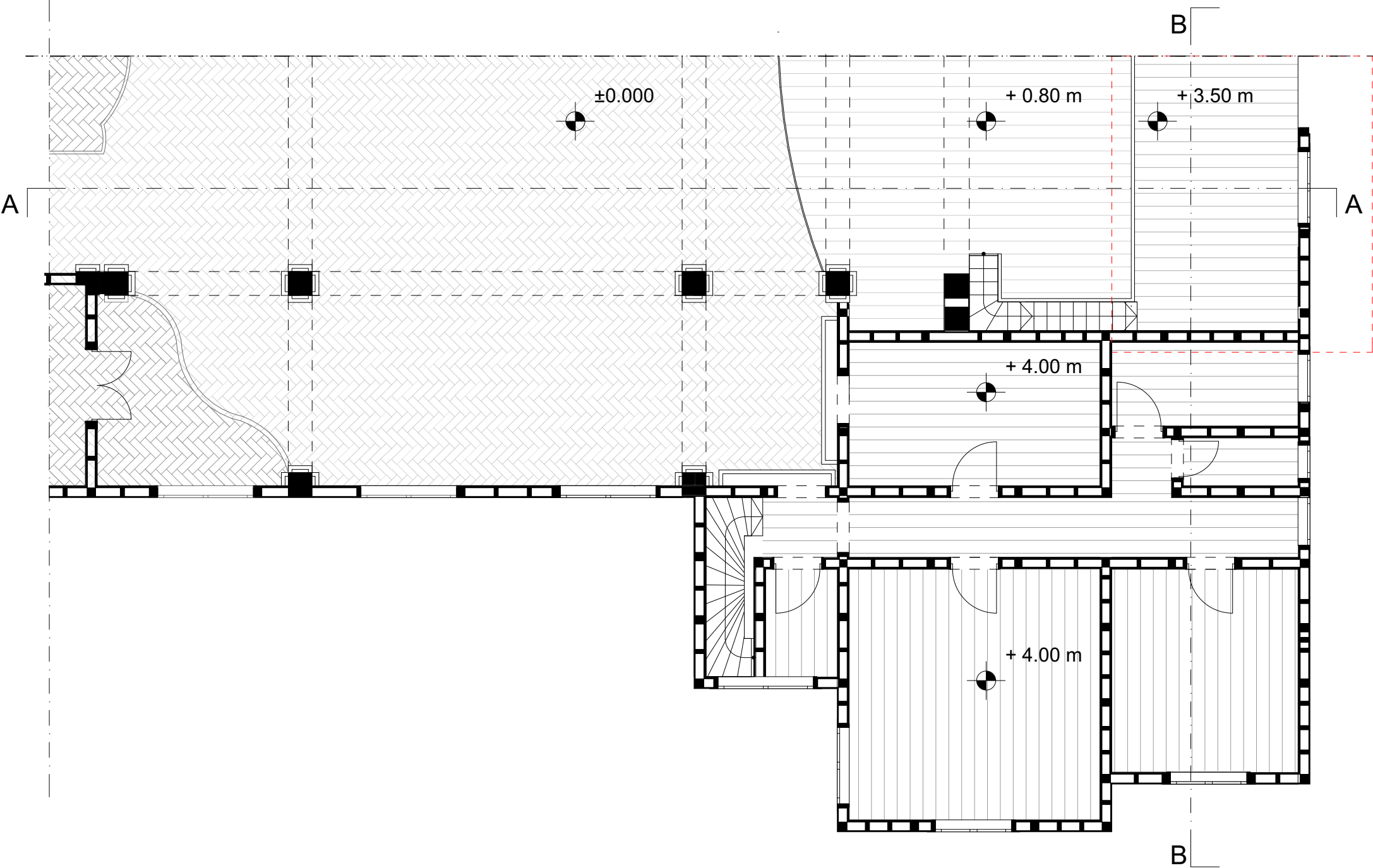


Figure 5.14 Ground Floor Plan (Source: Created by the author, 2024)

5.3.1.3 Second Floor Plan

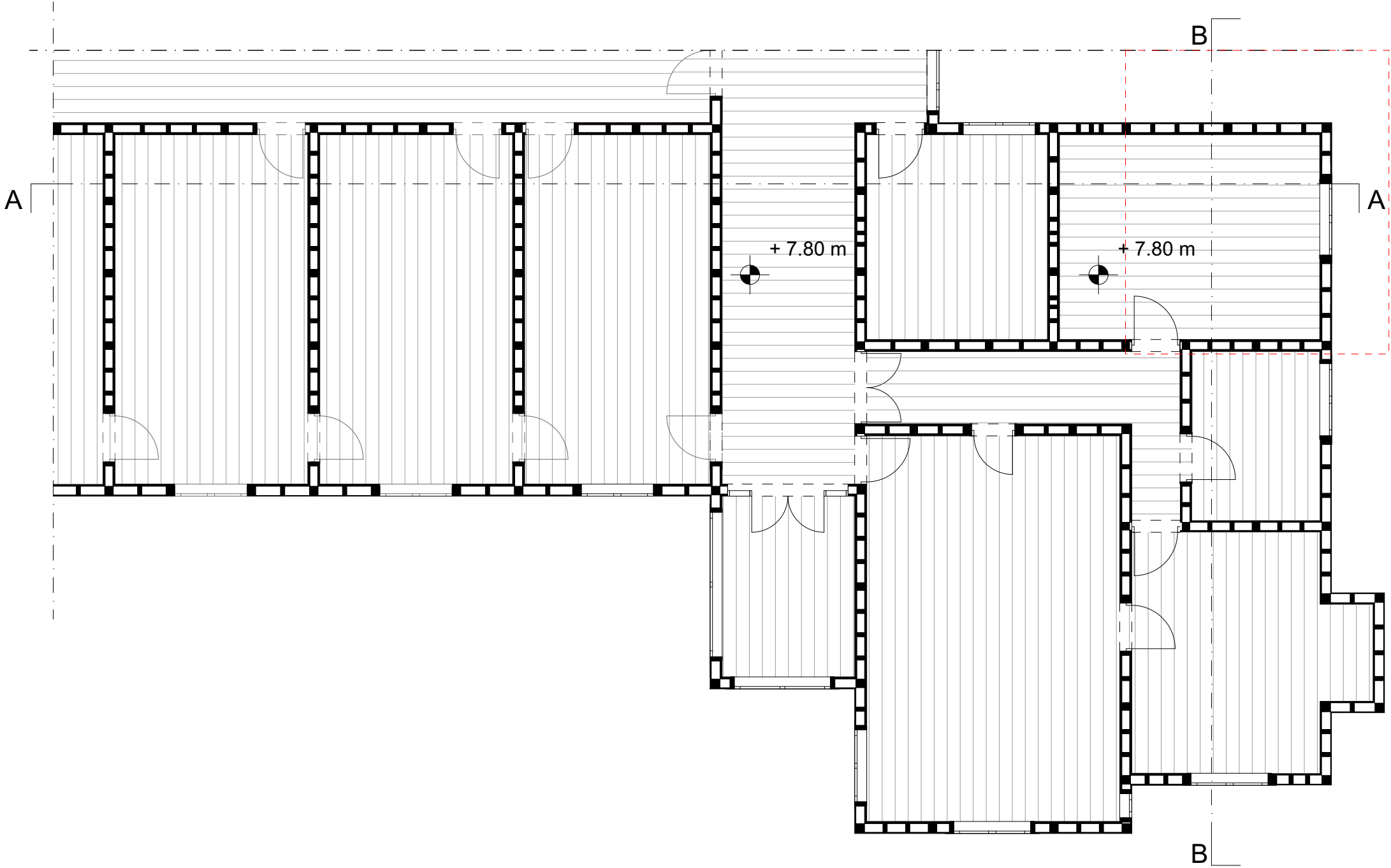


Figure 5.15 First Floor Plan (Source: Created by the author, 2024)

5.3.1.4 Fifth Floor Plan

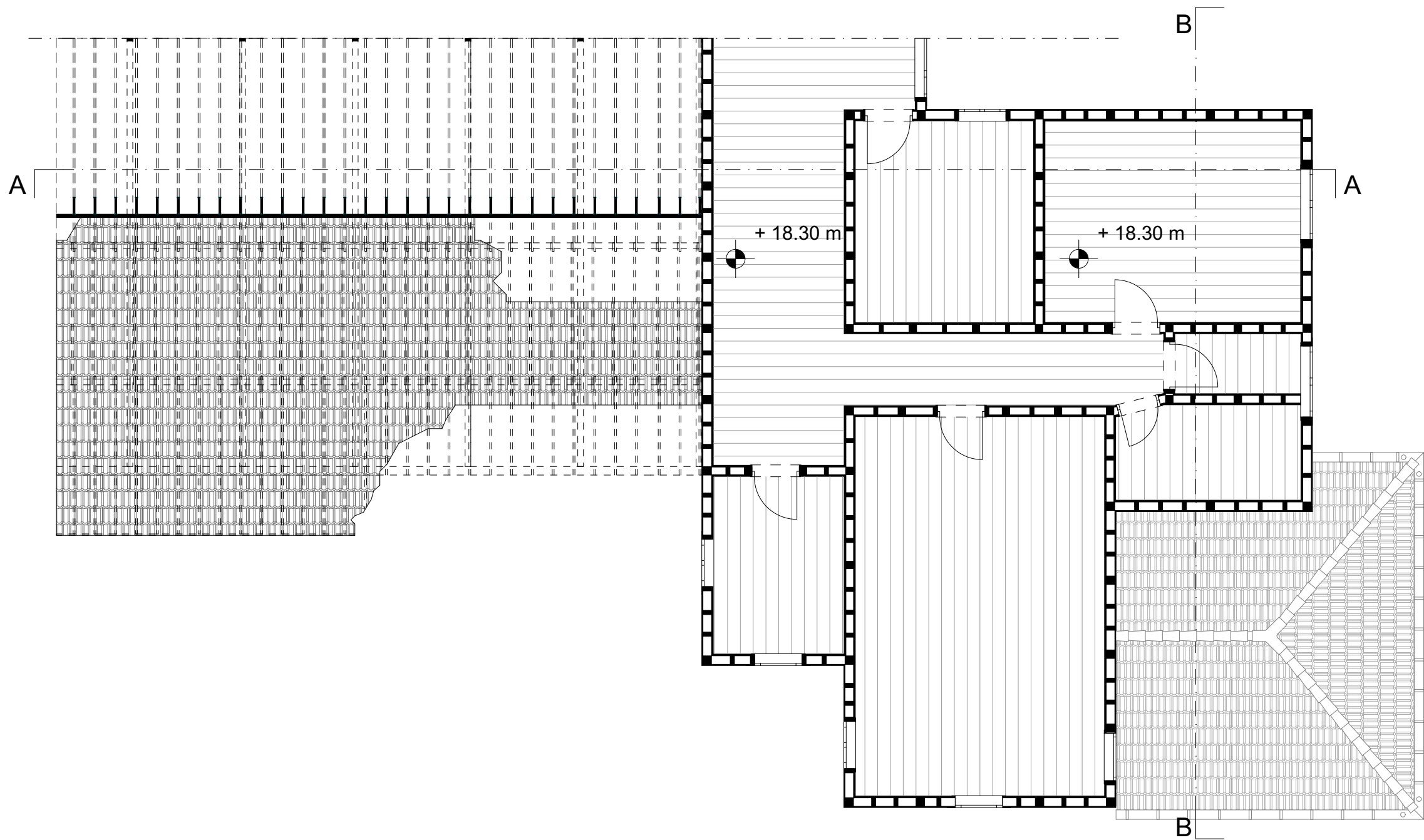


Figure 5.16 Fourth Floor Plan (Source: Created by the author, 2024)

5.3.1.5 Roof Plan

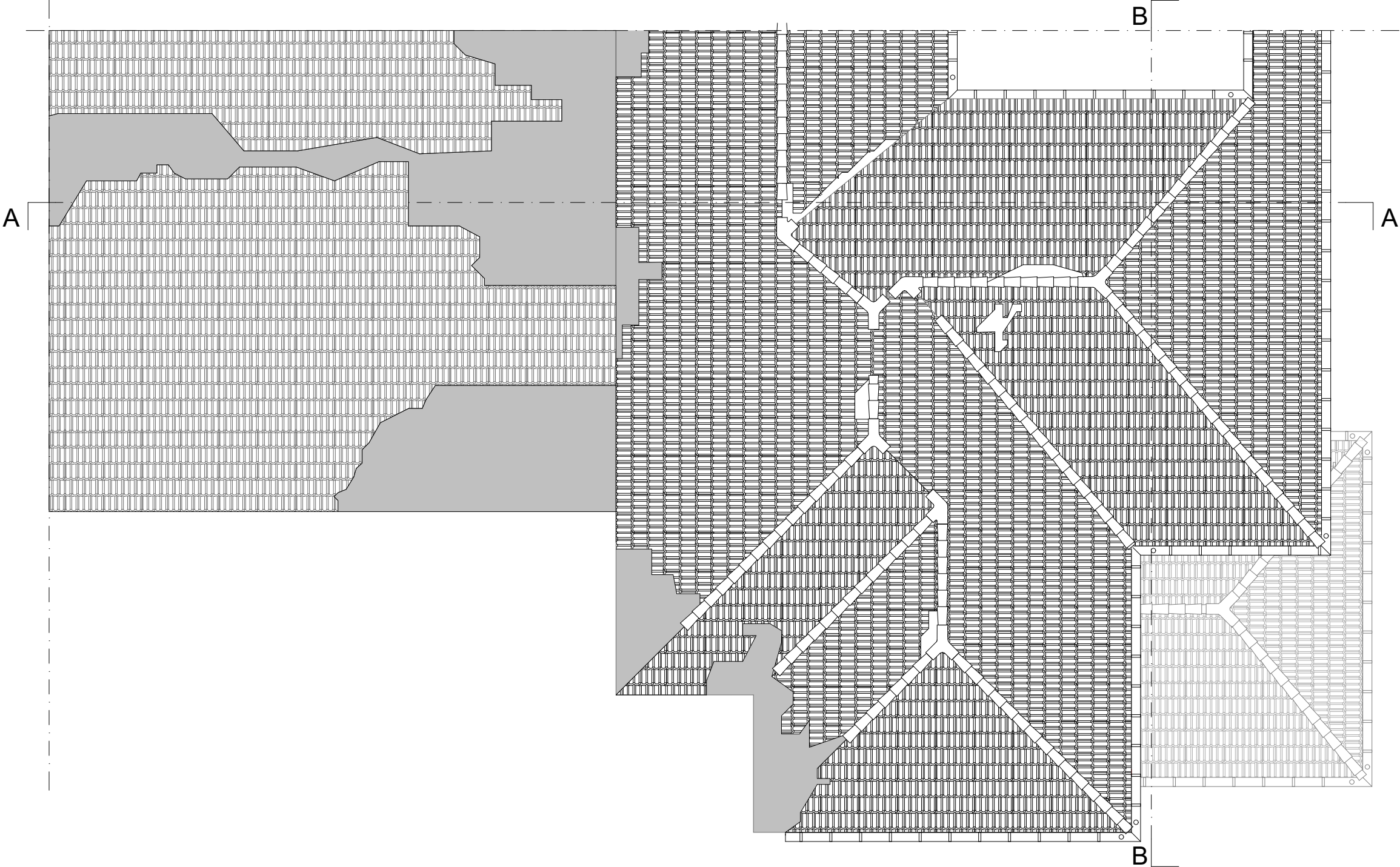


Figure 5.17 Roof Plan (Source: Created by the author, 2024)

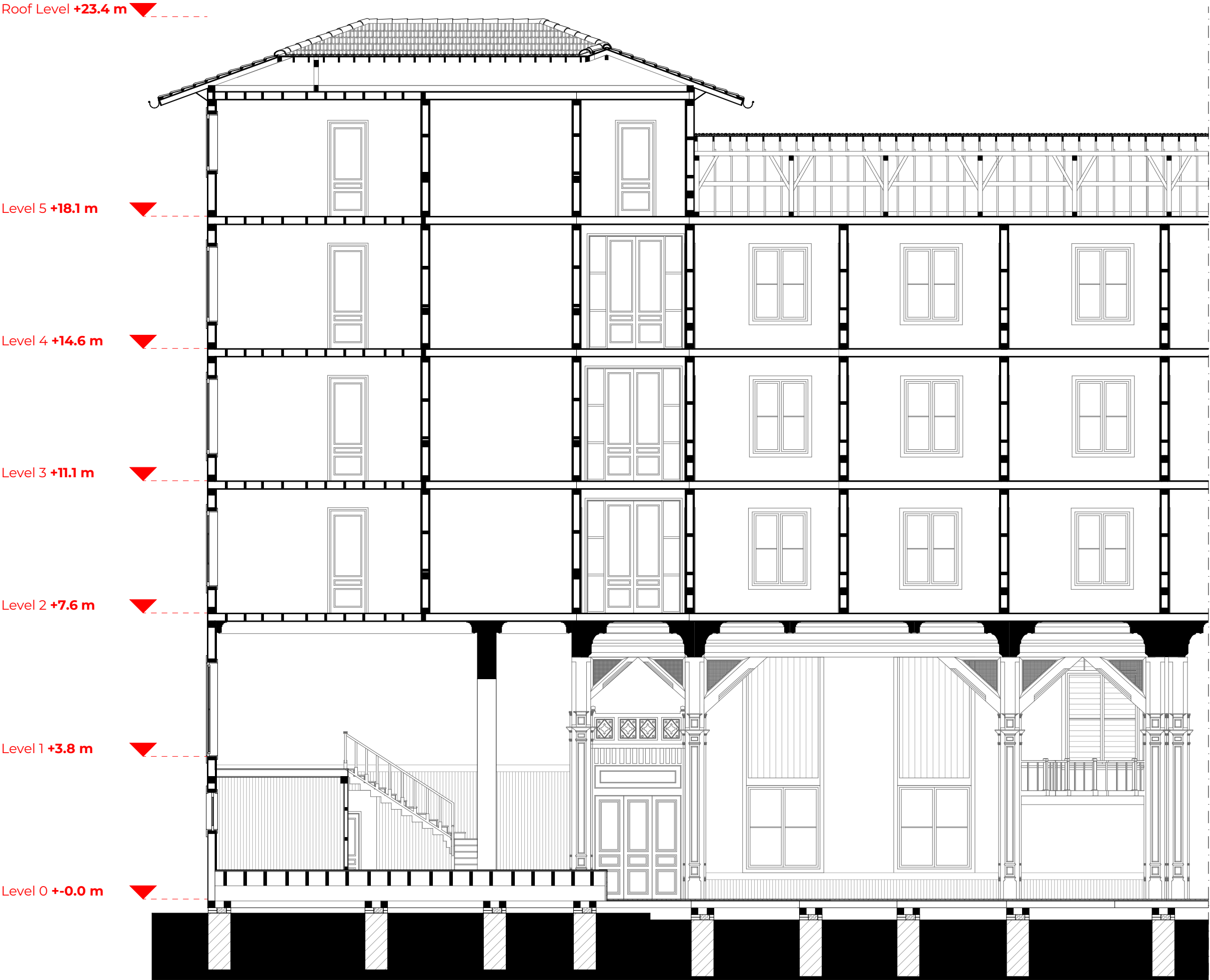


Figure 5.18 Section A-A (Source: Created by the author, 2024)

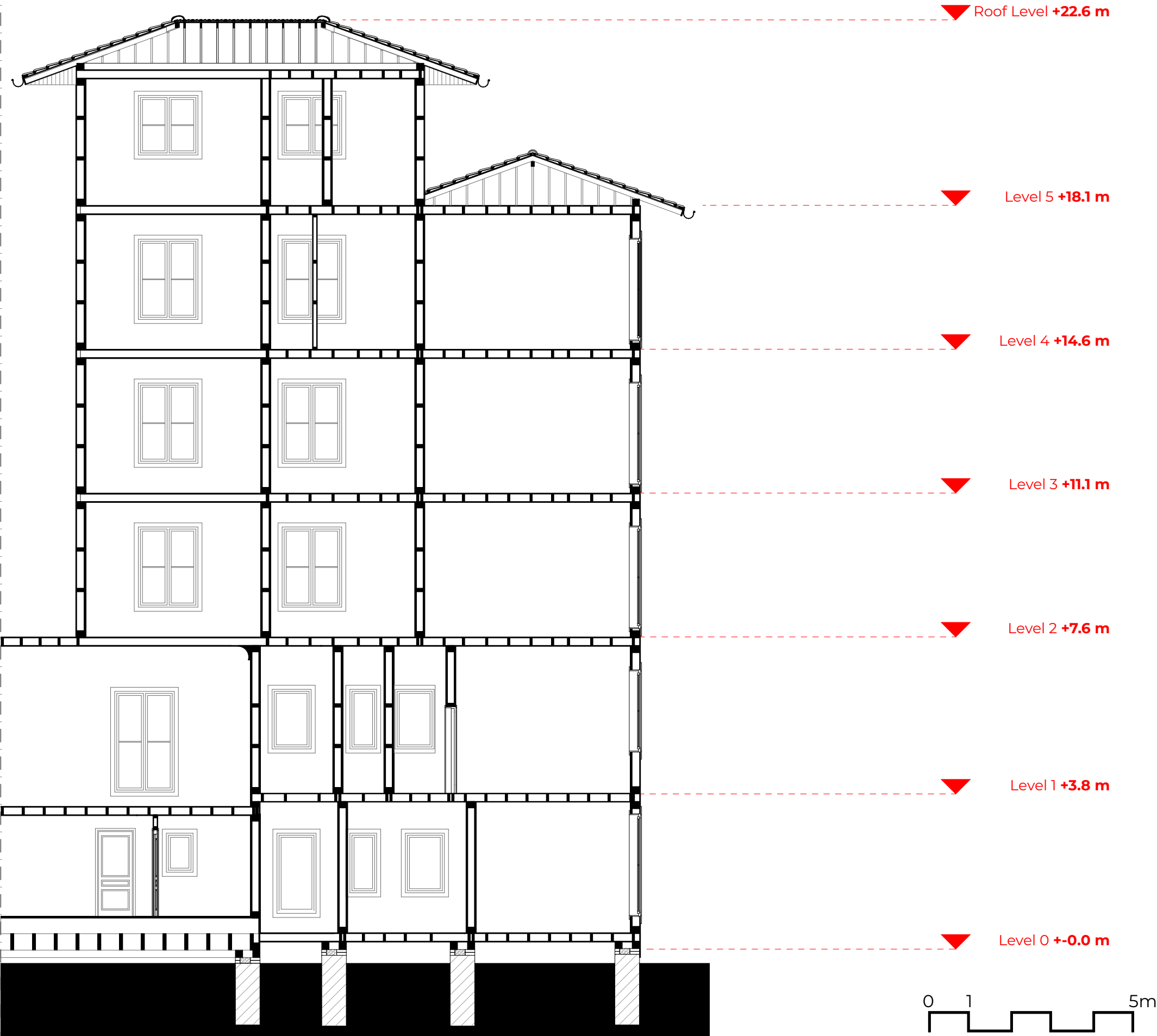


Figure 5.19 Section B-B (Source: Created by the author, 2024)

5.3.3 Detail Drawings
5.3.3.1 Ground Floor Plan

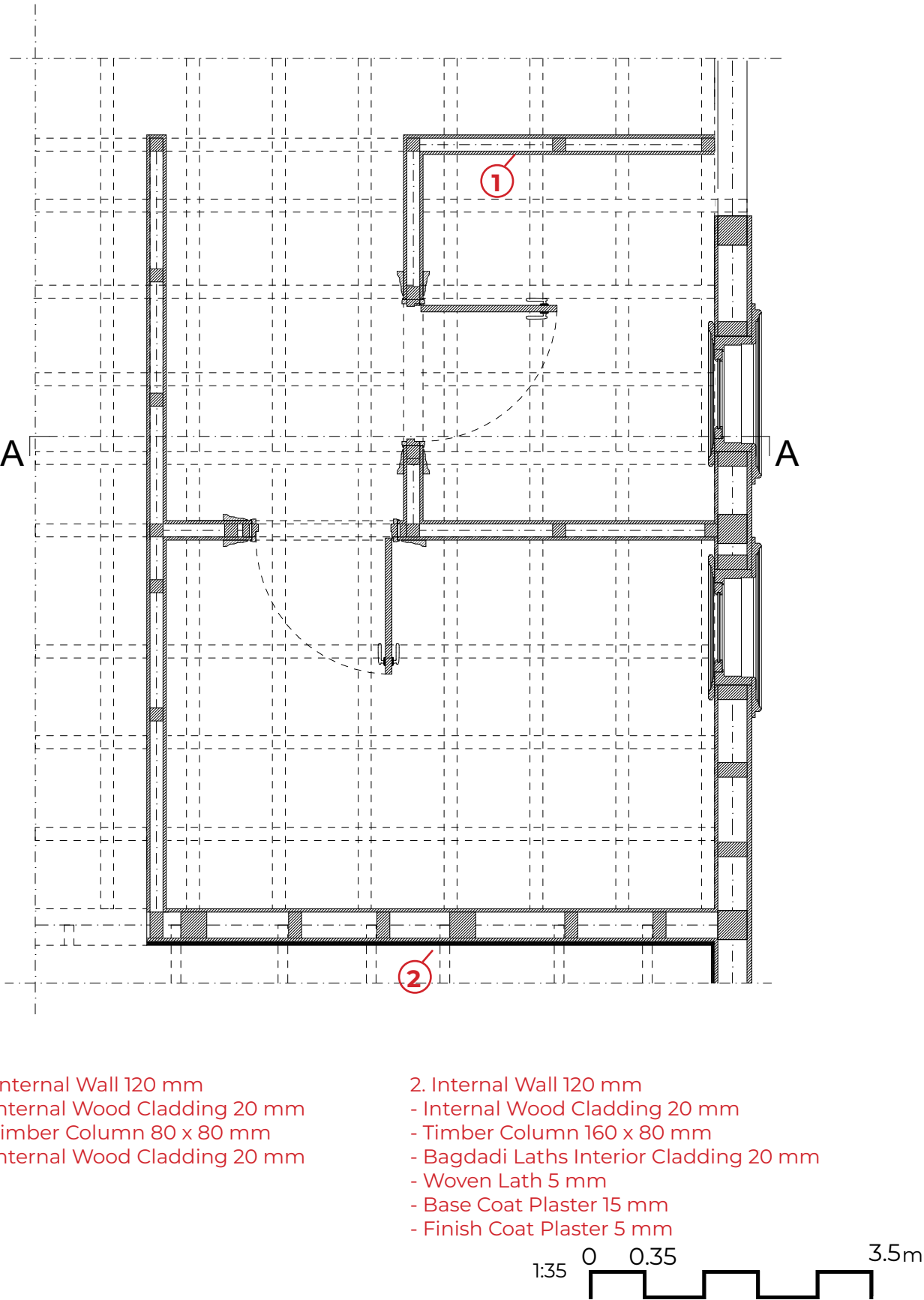


Figure 5.20 Detail plan of basement floor (Source: Created by the author, 2024)

5.3.3.2 First Floor Plan

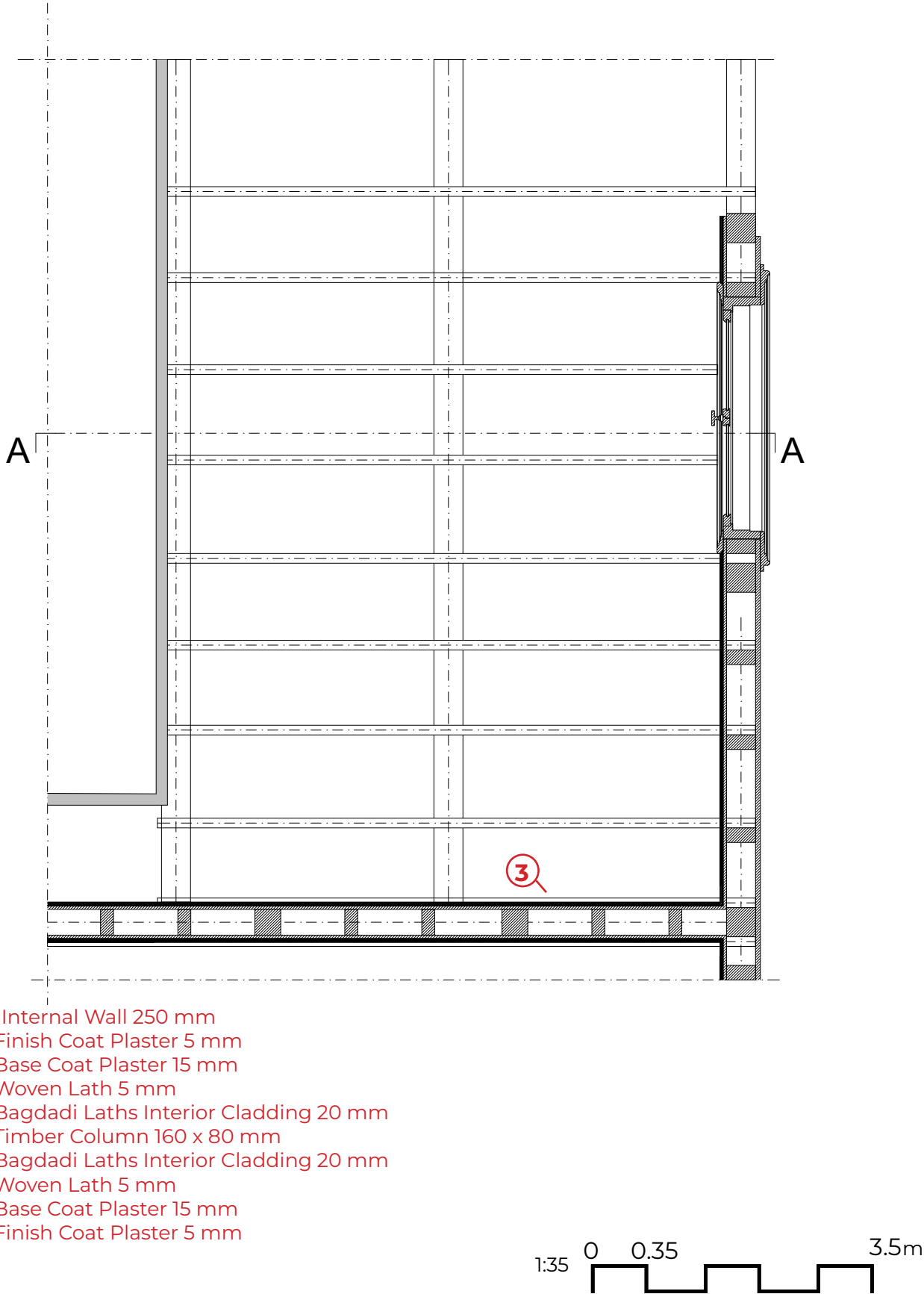


Figure 5.21 Detail plan of ground floor (Source: Created by the author, 2024)

4.3.3.3 Fourth Floor Plan

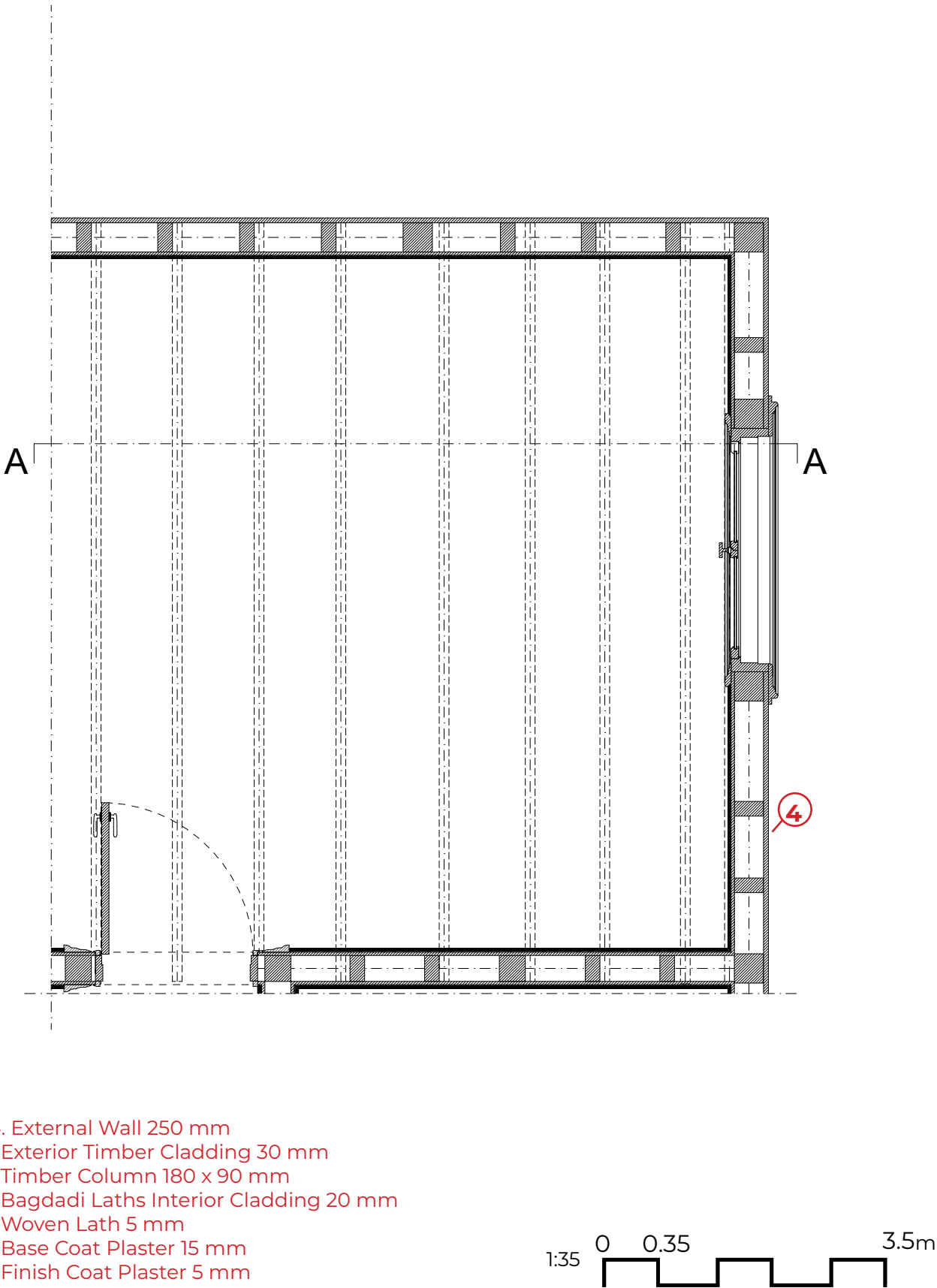


Figure 5.22 Detail plan of first floor (Source: Created by the author, 2024)

5.3.3.4 Section A-A

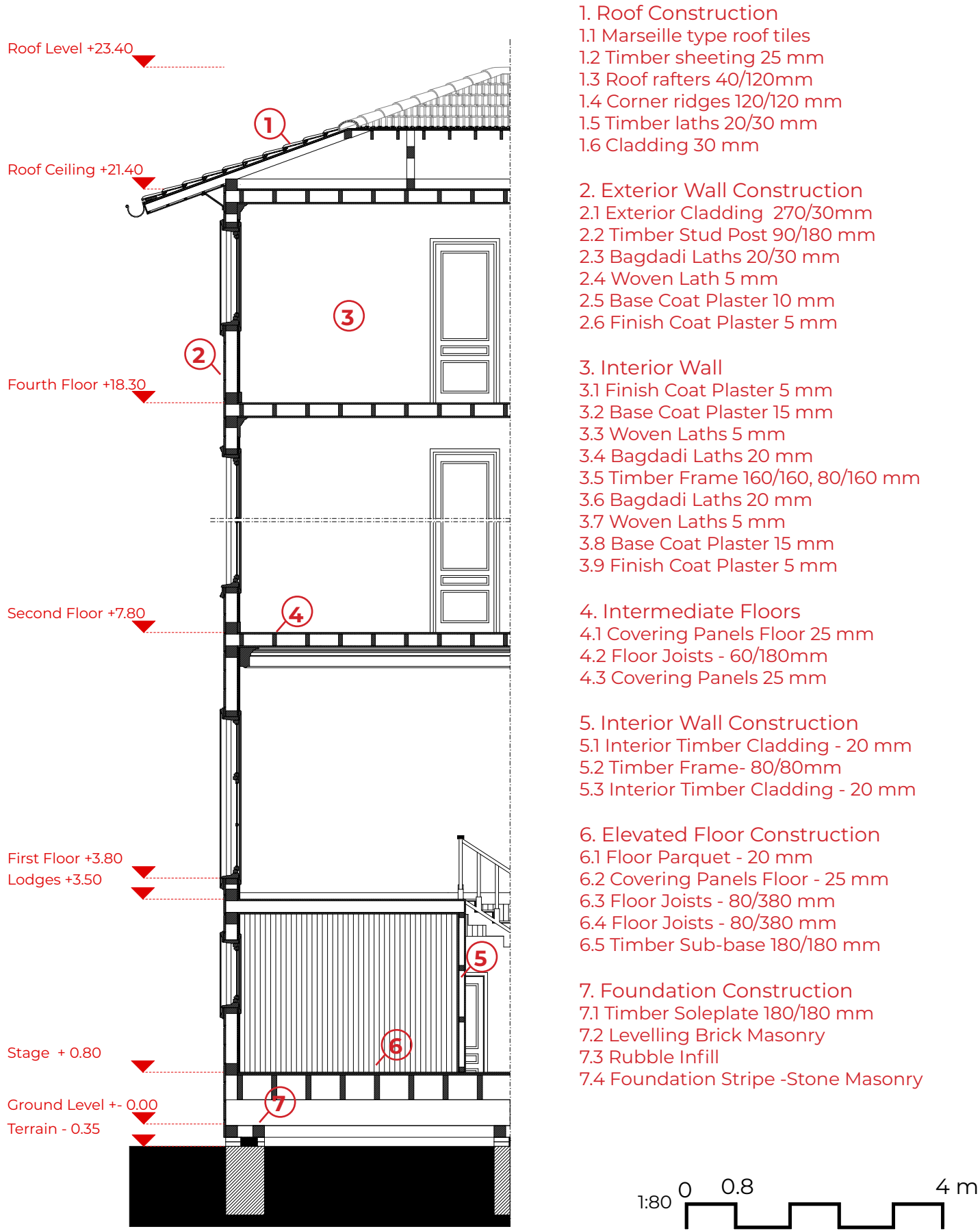


Figure 5.23 Detail plan of first floor (Source: Created by the author, 2024)

5.3.4 Material and Decay Analysis

The building is severely deteriorated and structurally deflected in parts due to lack of maintenance, and problems stemming from natural factors such as atmospheric effects and humidity. The diagnosis of deterioration and structural deformations is based on visual analysis.

Deteriorations and decay forms seen on building materials can be classified as alterations, biotic degradations, and abiotic degradations.








Alterations can be seen in the windows, after the building was erected some of the windows were deactivated by covering them with wooden panels.

Biotic degradations can be classified as deteriorations caused by biological agents such as fungi, insects, bacteria, or marine organisms. (Ente Nazionale Italiano di Unificazione 2017, 1) In this group of decays, we can see oxidation and microbiological growth. According to Somer, 2020, the samples related to pipes and gutters were heavily corroded due to oxidation. Microbiological growth can be seen in the Northeast facade, probably due to the failure of pipes and extreme humidity.









Abiotic degradations are caused by chemical agents like acids or bases, or physical agents like sunlight, wind, humidity, and temperature. (Ente Nazionale Italiano di Unificazione 2017, 1) The types of abiotic degradation are mechanical damage, detachment, missing elements, and white deposits. Degradation of an element or structure or its parts caused by mechanical actions is classified as mechanical damage.

We can see examples of this type of damage in the Northeast facade windows. Cracks and detachments are widespread problems for exterior cladding and window and door frames. They are generally accompanied by missing elements. Cracks on timber elements can be a result of swelling and shrinkage due to weather. Detachments can be followed with these cracks. The white deposits on the facade can be a result of weathering and wood decay over time. This kind of discoloration is caused by moisture exposure, salt deposits, or sun bleaching. Given the visible deterioration of the timber, it seems likely that a combination of these factors is at play.





Material Legend

	Timber		Lime Based Plaster
	Stone Cut		Cast Iron
	Roof Tile Baked Clay		Glass
	Brick		

Decays Legend

	Alteration		Crack
Abiotic Degradations			
	Mechanical Damage		Discoloration
	Detachment	Biotic Degradations	
	Missing Element		Oxidation
			Microbiological Growth

Interventions Legend

Cleaning		Reparation	
	Surface cleaning using Sanding		Integration of timber elements
	Surface cleaning using Sanblasting		Reintegration of Plaster
	Plaster Scraping	Protection	
	Herbicide Application		Impregnation using Triazole Type Water-Soluble
			Removal of damaged elements
Discharge			

5.3.4.1 Northeast Elevation



Figure 5.24 Decay analysis Northeast elevation (Source: Created by the author, 2024)

5.3.4.2 Southeast Elevation

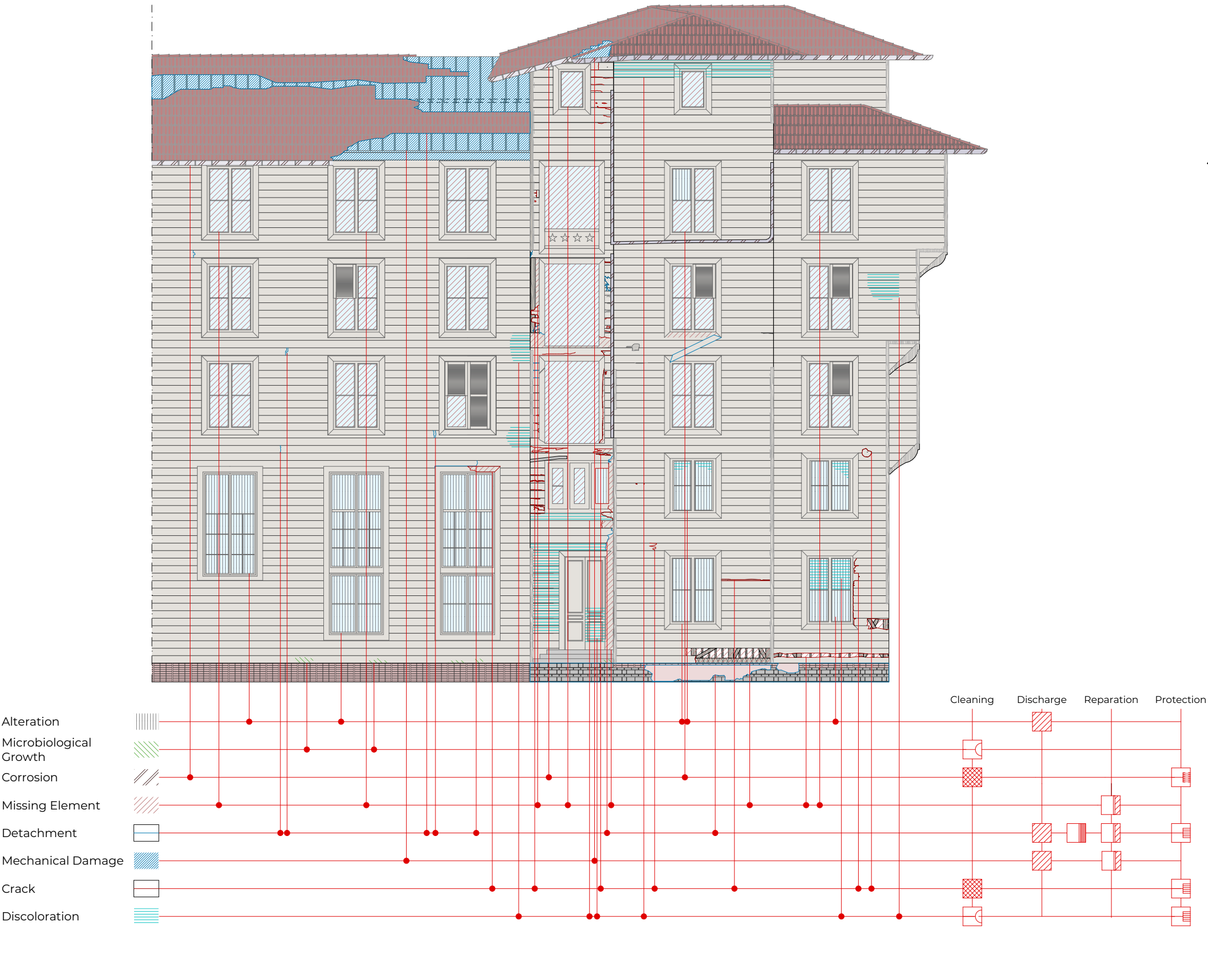


Figure 5.25 Decay analysis Southeast elevation (Source: Created by the author, 2024)

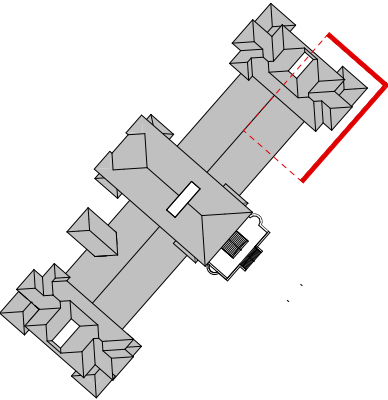


Figure 5.26 Key plan (Source: Created by the author, 2024)



Figure 6.0 Prinkipo Greek Orthodox Orphanage – wide view from hill(Source: abandoned and brownfield, biggest wooden-made building (Adobe Stock, n.d., retrieved from <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage-wide-view-from-hill-abandoned-and-brownfield-biggest-wooden-made-building/515805708>.)

6. Prinkipo Palace - Adaptive Re-Use and Enhancement Project

6.1 Enhancement and Re-Use Strategy

Following the analysis of the current condition, it is evident that the Prinkipo Greek Orphanage is in a state of severe neglect and abandonment. The proposed project strategy includes three phases of intervention: the first focuses on the demolition of the severely damaged part of the building and cleaning of the site; the second focuses on the conservation and restoration of the east wing of the building, preserving the material integrity of the structure; and the third focuses on reconstruction and function, intending to enhance and adaptively reuse the building.

As part of the adaptive reuse project for Prinkipo Palace, a critical decision was made to demolish most of the existing structure while preserving the southeast wing. This approach balances the need for modern functionality with the site's historical significance. The southeast wing, characterized by its unique architectural features and historical value, will be retained as a vital link to the palace's rich past. This decision guarantees that we maintain a tangible connection to Prinkipo Palace's cultural heritage while allowing for a thoughtful and innovative redevelopment of the site.

Given the building's location on an island and Buyukada's status as a hub for creatives, it is proposed that the space be repurposed as an art residency and event space for both island residents and tourists.

Demolition:

The first part of the adaptive reuse project involves demolishing the heavily damaged parts of the building and cleaning the site. The border between the demolished and renovated parts was chosen according to the building's structure, which consists of a limit that separates the timber structure from the masonry structure on the basement floor. This structural difference helped us make decisions, as we are sure that the remaining renovated part can be structurally stabilized in the future consolidation without the demolished part.

Another limitation was the dimensions of the existing building, which spans 106 meters to 36 meters in its most extensive sections. As stated before, a significant part of the building needs structural reinforcement and intensive

restoration attempts. When we consider this, the cost of the project would be very high, and finding a new use for the building would be very limiting.

Preservation and Structural Reinforcement:

The second part of the adaptive reuse project involves preserving and strengthening the east wing. Preserving the building is the most integral part of the project; as stated before, Prinkipo Palas is the most significant timber building in Europe and has been a landmark for Istanbul and the Adalar district for decades. Since the building was constructed, it has seen three significant earthquakes, and even though the structure partially lost its integrity, it still stands. However, to ensure its future structural integrity, we decided to reinforce the existing part of the building through its foundation and walls.

The east wing is home to one of the building's most integral parts, the theater, which is embellished with hand-crafted columns, ceiling bosses, and timber wall details. At the same time, this historically and culturally important part of the building will connect and balance the non-existing part in visitors'/users' minds and save its intangible memories.

Adaptive Re-Use and Repurpose:

The adaptive re-use project consists of reusing the preserved part of the Prinkipo Palas and reconstructing a new part that serves as an accessibility and service hub.

Given the building's location and serene environment and Buyukada's long history as a creative hub, it was proposed that the Prinkipo Palas be reused as an art residency for artists, writers, philosophers, and anyone interested in these fields. Furthermore, according to the questionnaire conducted by IBB, we witness a need for recreational spaces for residents in Buyukada that are suitable for all ages. Therefore, the project includes studios and event spaces that are rentable by not only art residents but also residents of the islands.

6.1.1 Restoration Project Proposal Comparison

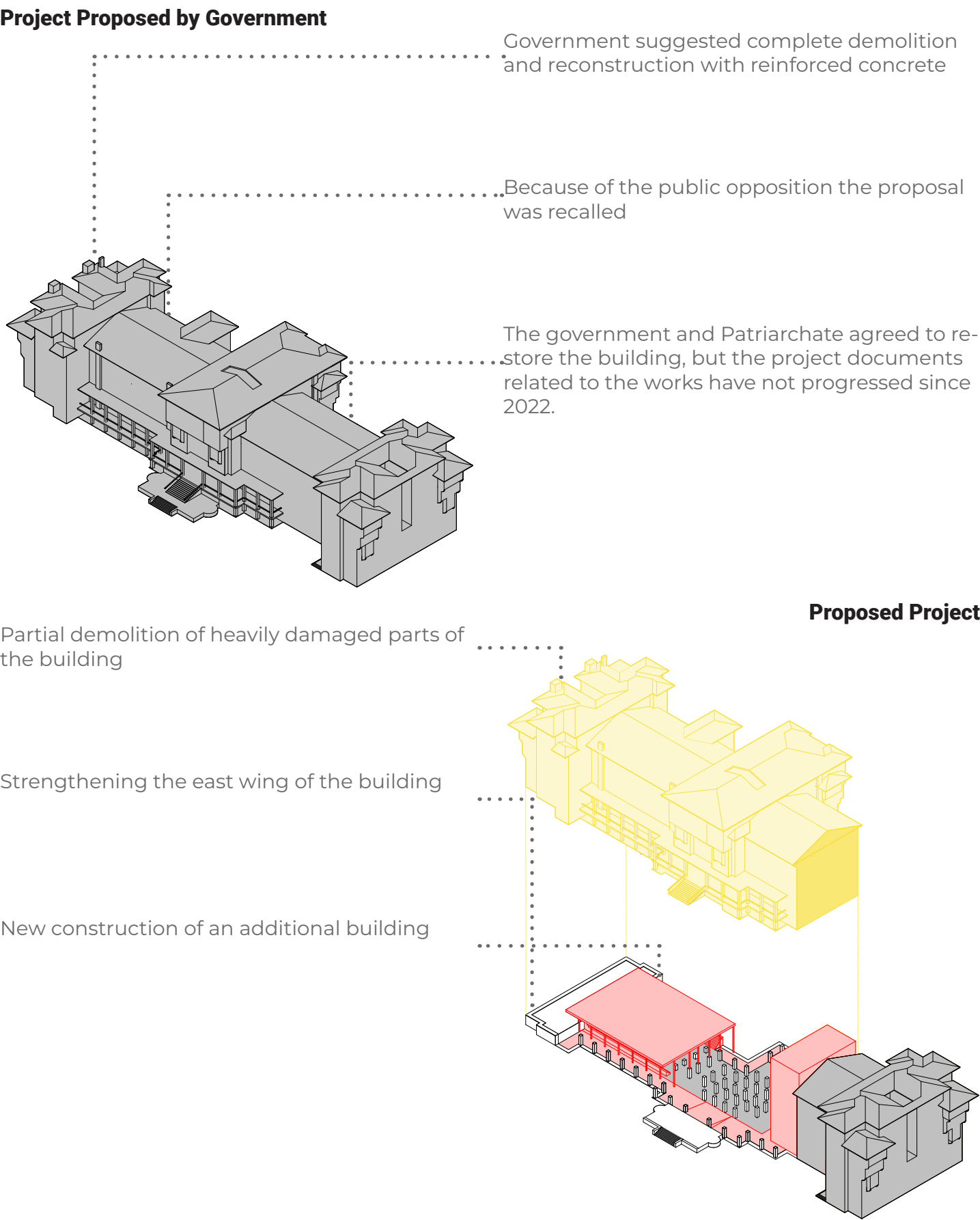
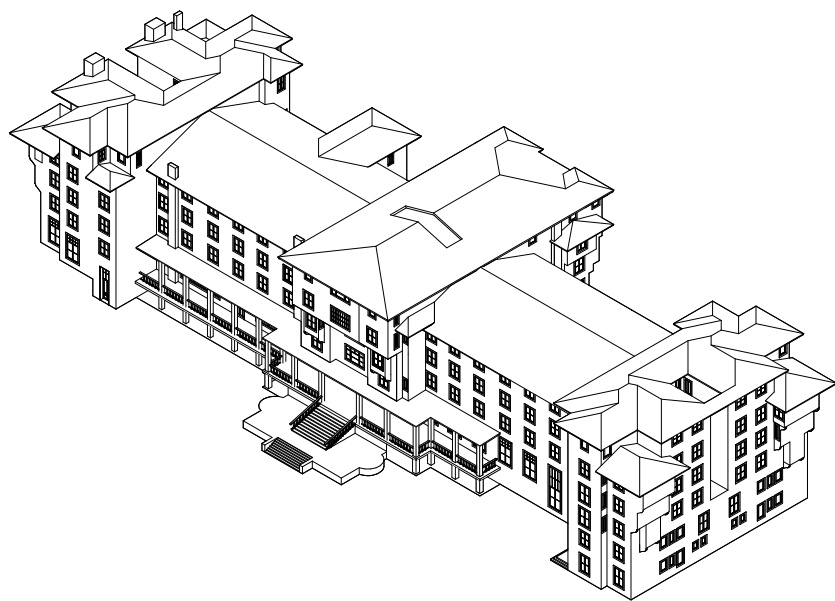


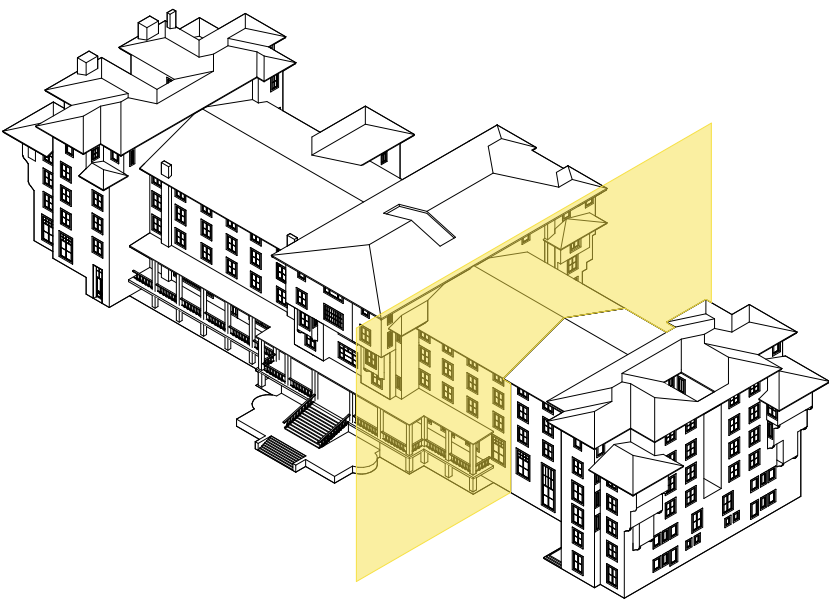
Figure 6.1 Project Proposal (Source: Created by the author, 2024)

6.1.2 Evaluation Parameters

01
Dimensions
Total Area: 13,386 sqm
Footprint: 4,692.16 sqm



02
Structural Condition
The structural difference between masonry and timber basement



03
Historical Context
Memento of Prinkipo Palas

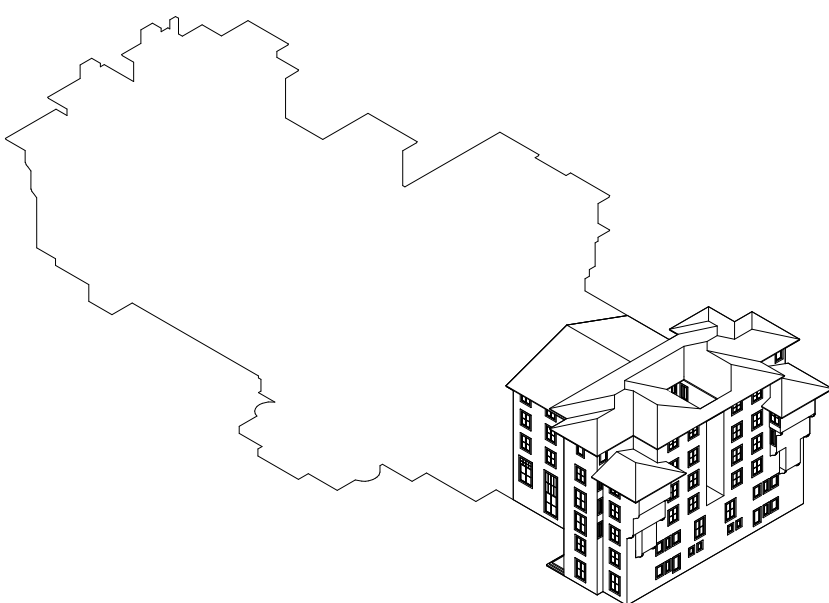
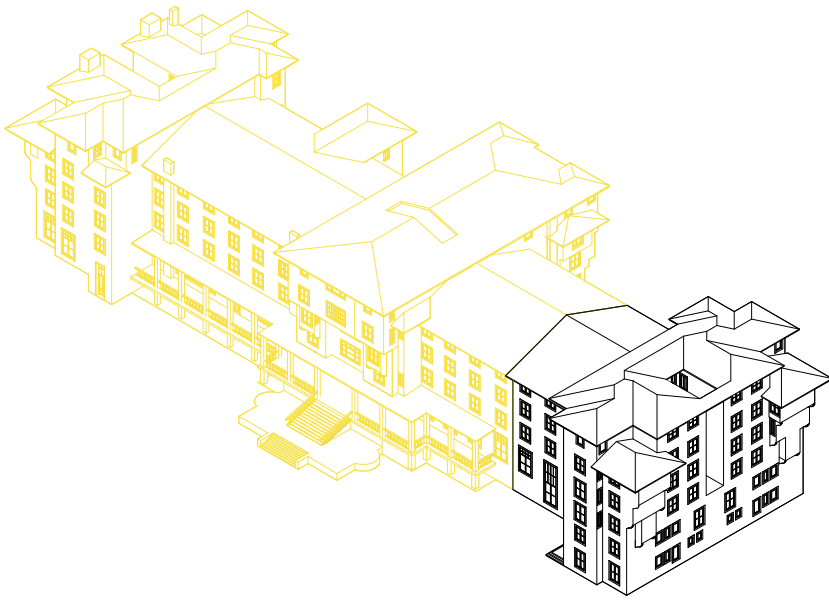


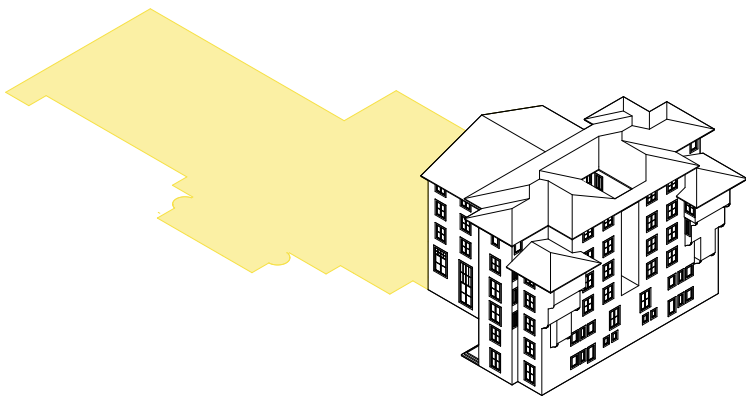
Figure 6.2, 6.3 and 6.4 Evaluation Parameters Diagrams (Source: Created by the author, 2025)

6.1.3 Project Themes

04
Demolition
Demolition of damaged parts



05
Preservation & Structural Reinforcement
Restoration and reinforcement



06
Adaptive Re-Use & Reconstruction
Reconstruction of the new volume

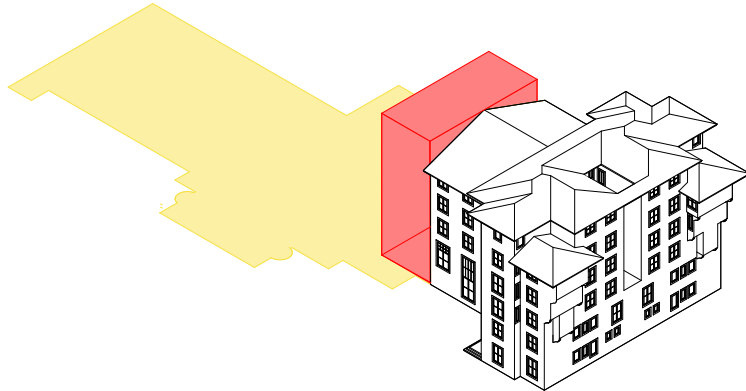


Figure 6.5, 6.6 and 6.7 Project Themes Diagrams (Source: Created by the author, 2025)

6.2.Structural Condition Analysis of the Prinkipo Greek Orphanage
6.2.1 Distributed Load Analysis

1. Introduction

The Prinkipo Greek Orphanage is considered Europe’s most significant wooden construction and the second largest worldwide. Designed and built at the end of the 19th century as a luxury hotel and casino (which never worked), the building was given to the Ecumenical Patriarchate of Constantinople in 1903 with the condition that it would be operated as an orphanage(Europa Nostra, 2018). It was so used until it was closed in 1964 and abandoned subsequently.
After its closure, the building suffered a fire in 1980 and an Istanbul earthquake in 1999. In addition, the lack of maintenance left the building in utter despair. Through the years, some elements of the building, like the roof, windows, and some of the cladding and timber frame, partially collapsed, leaving the building’s structural integrity vulnerable. Therefore, we have decided to do a structural assessment using Pro_Sap and calculation regarding the vertical loads in the building.

2. Existing Structural System

The Prinkipo Greek Orphanage was originally a timber frame structure with external timber cladding sitting on top of masonry foundation walls. Internally, the walls are finished with lime plaster on the Baghdadi laths. According to Somer (2020), they used pine as an external cladding material, oak for the structural elements, and spruce for the Baghdadi laths.
The timber frame structure reaches up to six stories in height. To ensure structural stability, bracing elements were used on either side of the windows and between the primary columns. According to the structural report by Hockley and Dawson in 2019, the visible parts of the internal walls are similar; braces were used again to increase structural stability.
Except for the northeast wing of the building, the basement supports the ground floor through 2.5-meter-high masonry columns. The exterior wall’s beams and posts are 180 x 180 mm, while the interior is 160 to 160 mm. It is assumed that longer-spanned beams and posts have larger cross-sections. The theater, entrance hall, and lobby have a grid of long-span beams supported on bigger cross-sectioned posts, all embellished with panels and coffered.

Distributed Load Analysis:

Distributed load analysis is integral for assessing building elements’ structural performance under uniform stress. By calculating distributed loads in N/m2, we can determine whether the structure can safely support applied loads, including dead and live loads. This analysis highlights the load distribution on the walls.

Preliminary information:

There are six stories, four of them 3.5 m tall while the ground floor is 3.1 m, and first floor is 3,9 meters tall. Therefore because of this height difference in floors, we decided to calculate dead loads per floor.

Calculation of dead loads(self-weight)

The accounting of dead loads per floor is the sum of wall and floor loads. Each element is calculated separately, such as wall interior and exterior claddings, primary and secondary beams, and main and secondary columns. According to these calculations, we found the following results:

- q_Ground Floor = 14783.24 N
- q_First Floor = 14706 N
- q_2,3,4,5 = 13858.85 N
- q_roof = 8492.21 N

The reinforcement consists of CLT wall panels of 10 cm thickness connected with brackets to the existing frame system.

q_CLT = 46475.856 N
q_dead load = 14783.24 + 14706+(13858.85 x 4) + 8492.21 + 46475.856 = 139892.706 N

According to the Turkish Building Earthquake Code(TBEC) 2018, %60 of the live load should be considered in seismic weight calculations for public buildings like schools, dormitories, and theaters. (TBEC, 2018)

q_Live load = 9400 x 6 x 0.6 = 33840 N
q_Vertical Load =33840 + 139892.706 = 173732.706 N =173.73 kN

q_Horizontal Load = 173.73 x 0.4 = 69.49 kN
q_total = 173.73 + 69.49 = 243.22 kN

Shear Force

V = q_total / h
V = 243.22 / 3.1 = 78.46 kN/m

Shear Stress

τ=V/A

Where A is the cross-sectional area of the panel which has dimensions of, 4.7 m in length and 0.1 m in thickness.

A = 4.7 x 0.1 = 0.47 m²
τ=78.46/0.47 = 166.936kN/m²

According to Eurocode 5 the shear strength of CLT panel with C24 timber is:

f_v,k=2500–4000 kN/m²

Design shear strength (f_v,design) (with safety factor γM=1.3):

f_v,design =1.32500=1923 kN/m²
166.94 kN/m2≤1923 kN/m2

The calculated shear stress is much lower than the allowable shear strength, meaning the CLT panel is structurally safe under shear load.

Shear Connection Design Using Angle Brackets

The reinforcing CLT panels are connected to the existing timber frame system through NINO100100 angle brackets. This section assesses the shear resistance of these brackets under the applied conditions. The total shear force per meter acting on the CLT panel has been determined as:

V = 243.22 / 3.1 = 78.46 kN/m

To distribute this force, seven (7) NINO100100 brackets per meter have been used, resulting in a shear force per bracket of:

V_bracket = V_total / n_brackets =778.46=11.21 kN

According to ETA-22/0089, the characteristic shear capacity of the NINO100100 bracket in the F1 direction with LBA Ø4 nails in Pattern 4 is:

R1,k=11.3 kN per bracket

Since the shear force per bracket (11.21 kN) is less than the rated capacity (11.3 kN), the brackets safely transfer the applied shear force.

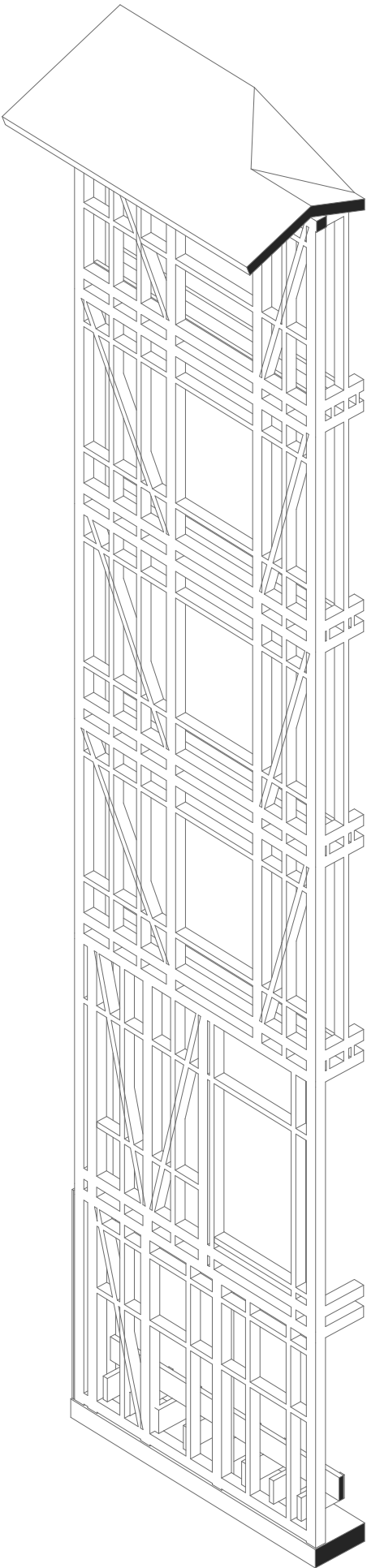


Figure 6.8 Structure of the selected part (Source: Created by the author, 2025)

6.2.2 Concentrated Load Analysis on Column

Introduction

The theater consists of long-spanning beam and column members, and its total height reaches up to 7.5 meters. These members are integral to the structure's integrity, so we chose to analyze their behaviors from a static point of view.

The concentrated load analysis was conducted for the ground floor columns of the Prinkipo Greek Orphanage to assess the vertical forces transferred from the upper floors. The study examines the combined effects of different structural elements. As a result of this analysis, we aim to highlight the column's concentrated load, structural safety, and stability. The concentrated load acting on the ground floor column is the total vertical force transferred from the building's superstructure. It consists of:

1. Self-weight of the column:

Calculated as:

$W_{column} = Volume \times p(\text{timber density}) \times g$

According to this calculation, the column has a self-weight of 12875.625 N.

$W_{column} = 12875.625 \text{ N}$

2. Self-weight of wall structure:

The same equation is used to calculate main beams, columns, secondary beams, secondary columns inside the walls and wall coverings. According to this calculation, we found that the self-weight of a wall per story is 8803.06 N.

$W_{wall \text{ total}} = 8803.06 \text{ N}$

3. Self-weight of floor structure:

According to this calculation, we found that the self-weight of a floor per story is 10289.47 N.

$W_{floor \text{ total}} = 10289.47 \text{ N}$

4. Self Weight of roof structure:

According to this calculation, we found that the self-weight of a roof is 24016.72 N.

$W_{floor \text{ total}} = 24016.72 \text{ N}$

4. Total concentrated load:

Total concentrated load = Self weight of the column + (Self weight of the wall + Self weight of the floor) x 3

$W_{concentrated \text{ load}} = 12875.625 + (8803.06 + 10289.47 + 2000) \times 3 + 24016.72 = 100169.935 \text{ N} = 100.17 \text{ kN}$

Slenderness Ratio:

According to Macdonald (1998), the slenderness ratio of a column can be explained as its effective length divided by its least width, and is calculated as:

$Slenderness \text{ Ratio} = KL / r$

where:

- K=1 (pinned-pinned condition).
- L=7.5 m (column height).
- $r = \sqrt{I/A}$, where:
 - $I = bd^3/12$: Moment of inertia of the column.
 - $A = b \times d$: Cross-sectional area of the column.

Moment of inertia:

$I = 0.5 \times 0.5^3 / 12 = 0.0052 \text{ m}^4$

Cross sectional area:

$0.5 \times 0.5 = 0.25 \text{ m}^2$

Radius of gyration:

$r = \sqrt{I/A} = \sqrt{0.0052/0.25} = 0.144 \text{ m}$

Slenderness ratio:

$KL / r = 1 \times 7.5 / 0.144 = 52.08$

Euler Critical Load:

Macdonald (1998) states that Euler critical load is the maximum load a slender and elastic column can sustain before buckling. Euler identified the slenderness of an element as the most substantial aspect when specifying critical load, and is calculated as:

$\sigma_{critical} = P_{critical} / A$
 $P_{critical} = \pi^2 EI / (KL)^2$ where:

$P_{critical}$ Critical buckling load (N),

- E, Elastic modulus of material ($12 \times 10^9 \text{ Pa}$ for oak timber)
- I, Moment of inertia (m^4)
- K: Effective length factor ($K=0.5$ for fixed-fixed condition).

$P_{critical} = 9.87 \times 12 \times 10^9 \times 0.0052 / 56.25 = 10,948.68 \text{ kN}$
 $\sigma_{critical} = P_{critical} / A$ where:

- $\sigma_{critical}$ is Critical buckling strength (Pa or N/m^2)
- $P_{critical}$ is Critical buckling load (N)
- A is Cross sectional area (m^2)

$\sigma_{critical} = 10,948.68 \text{ kN} / 0.25 \text{ m}^2 = 43,796.48 \text{ kN/m}^2 \text{ Pa} = 43.80 \text{ MPa}$

Conclusion

When we compare the Concentrated load and Critical buckling load of the column we see:

$P_{critical} = 10,948.68 \text{ kN}$

$W_{concentrated \text{ load}} = 100.17 \text{ kN}$

Since $W_{concentrated \text{ load}} < P_{critical}$, no buckling will occur.

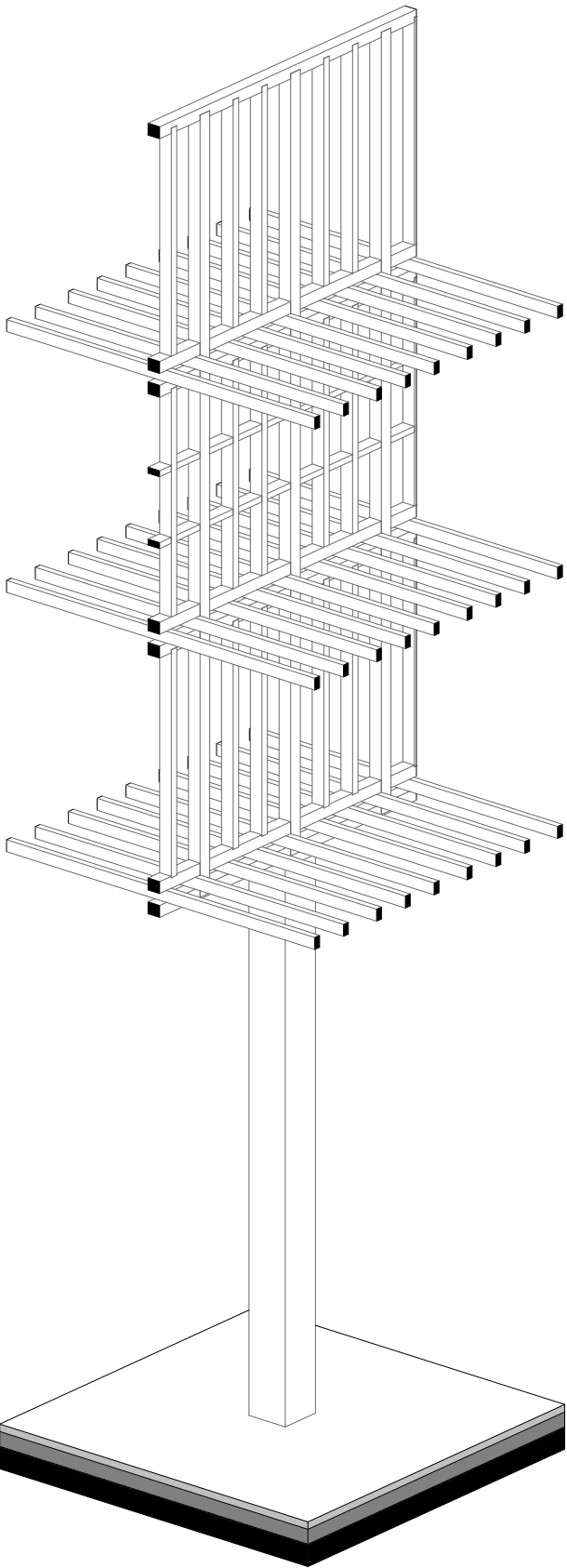


Figure 6.9 Structure of the selected column (Source: Created by the author, 2025)

6.2.3 Proposed Consolidation Intervention

6.2.3.1 Section A-A

Through the analysis of load calculations, we have concluded that the structure needs consolidation and reinforcement interventions to address structural weaknesses and provide long-term stability. The intervention proposes adding a strip foundation to increase the stability of the existing one and adding CLT panels to some exterior and interior walls. We aim to enhance load-bearing capacity, improve resilience against seismic forces, and extend the building's lifespan.

Foundation Reinforcement with Concrete Strip Foundation

The existing facade shows vertical deflections, specifically around the windows. The deflections can signify foundation failure, so we reinforce the existing masonry foundation wall with an additional reinforced concrete strip foundation. (according to the comparison of foundation, I will write more reasoning)

The reinforcing structure aims to increase resistance against vertical loads and lateral forces from seismic events. The strip foundation is anchored to the existing masonry using rebar dowels for structural continuity.

Wall Strengthening with CLT Panels

The existing frame walls consist of oak timber and were strengthened with CLT panels to increase stability. We have decided to choose CLT panels because of these factors:

- Smaller sections and lightweight
- Easy installation
- Higher stability
- Seismic resilience

CLT panels will be anchored to existing structures through brackets and plates. A layer of insulation will be added to the interior side of the panels(between the existing structure), and a layer of vapor-permeable membrane will be added to the exterior side of the panels.

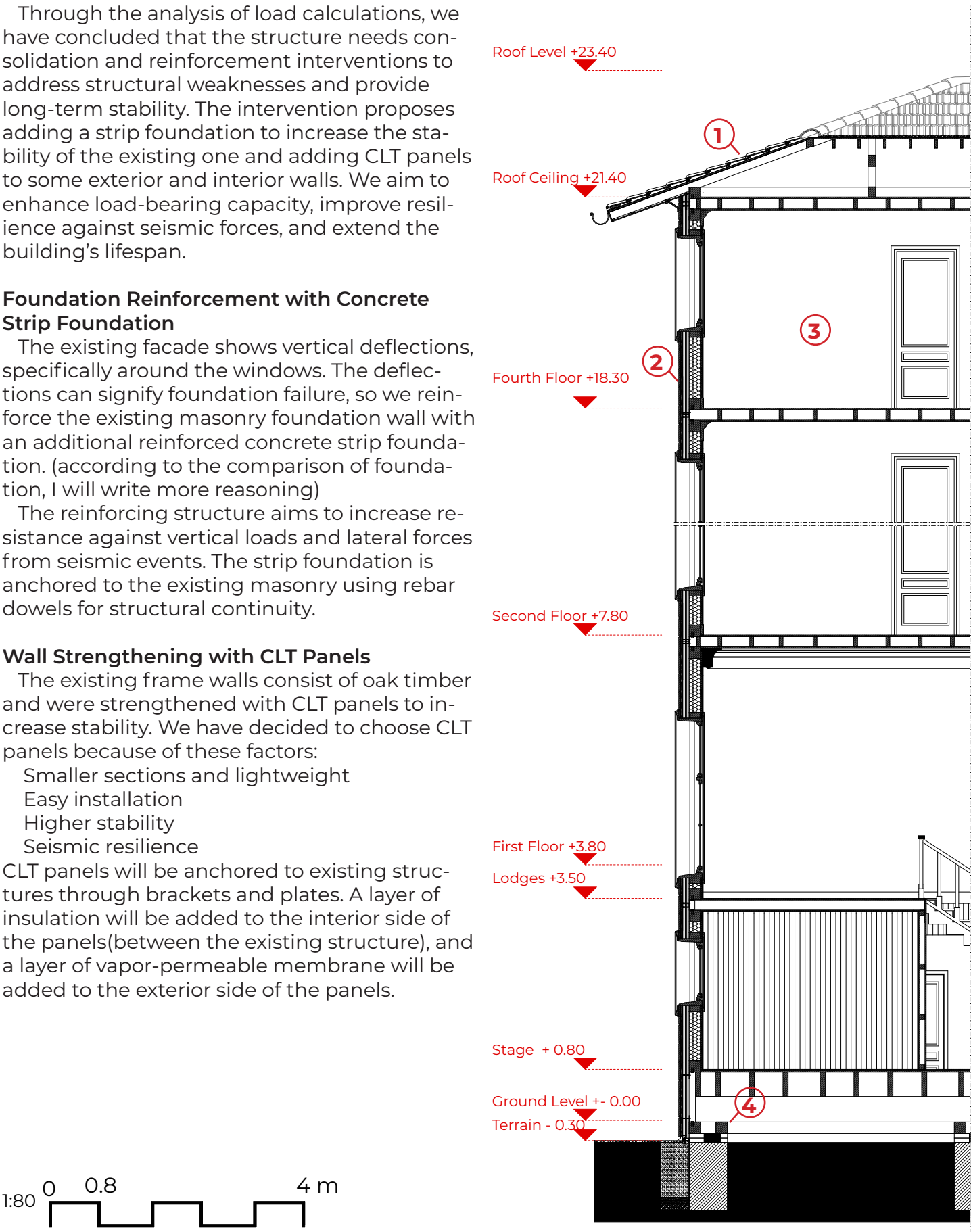


Figure 6.10 Consolidation Intervention Proposal Detail Section (Source: Created by the author, 2025)

6.2.3.2 Ground Floor Plan

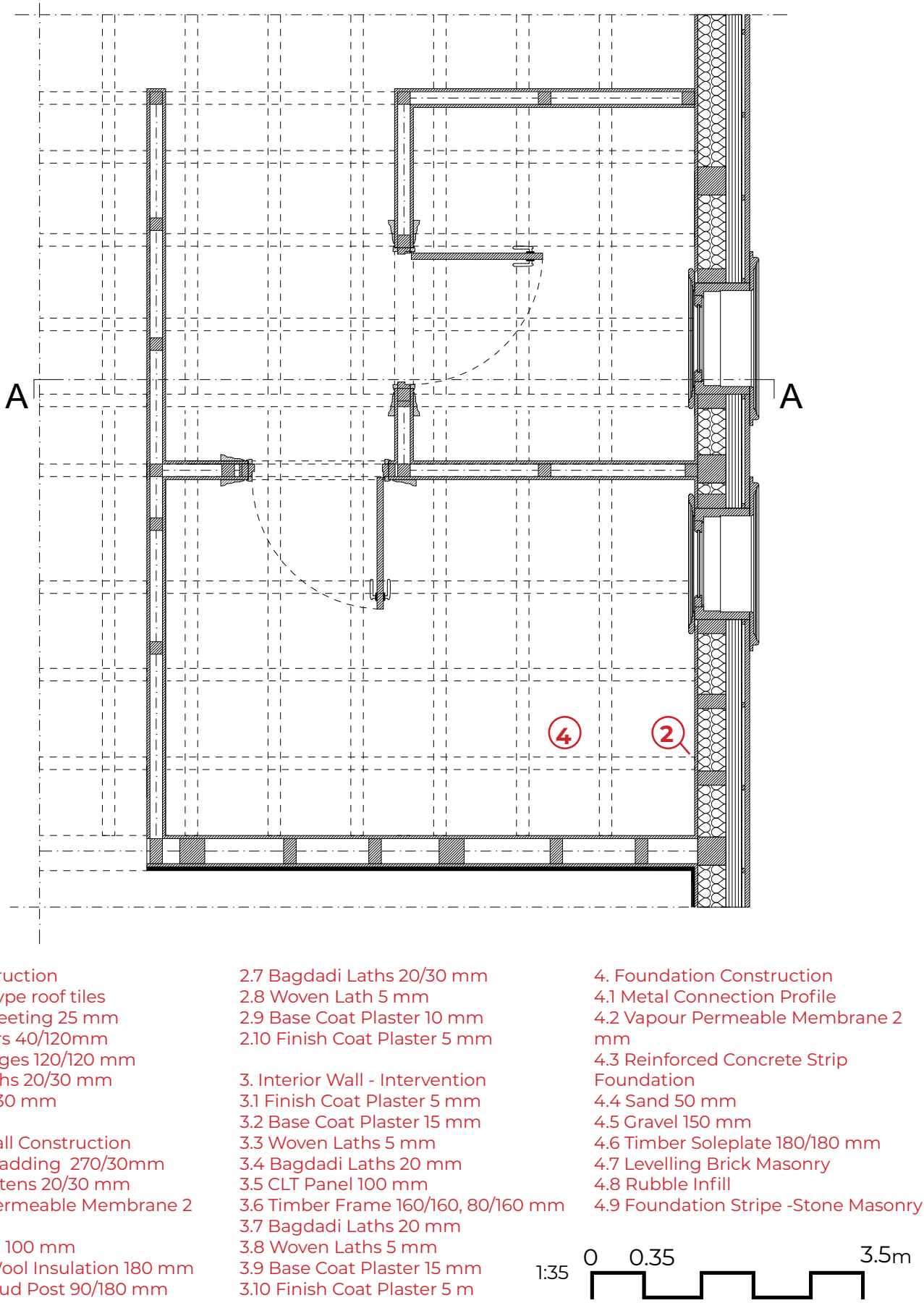


Figure 6.11 Consolidation Intervention Proposal Ground Floor Detail Plan (Source: Created by the author, 2025)

6.2.3.3 First Floor Plan

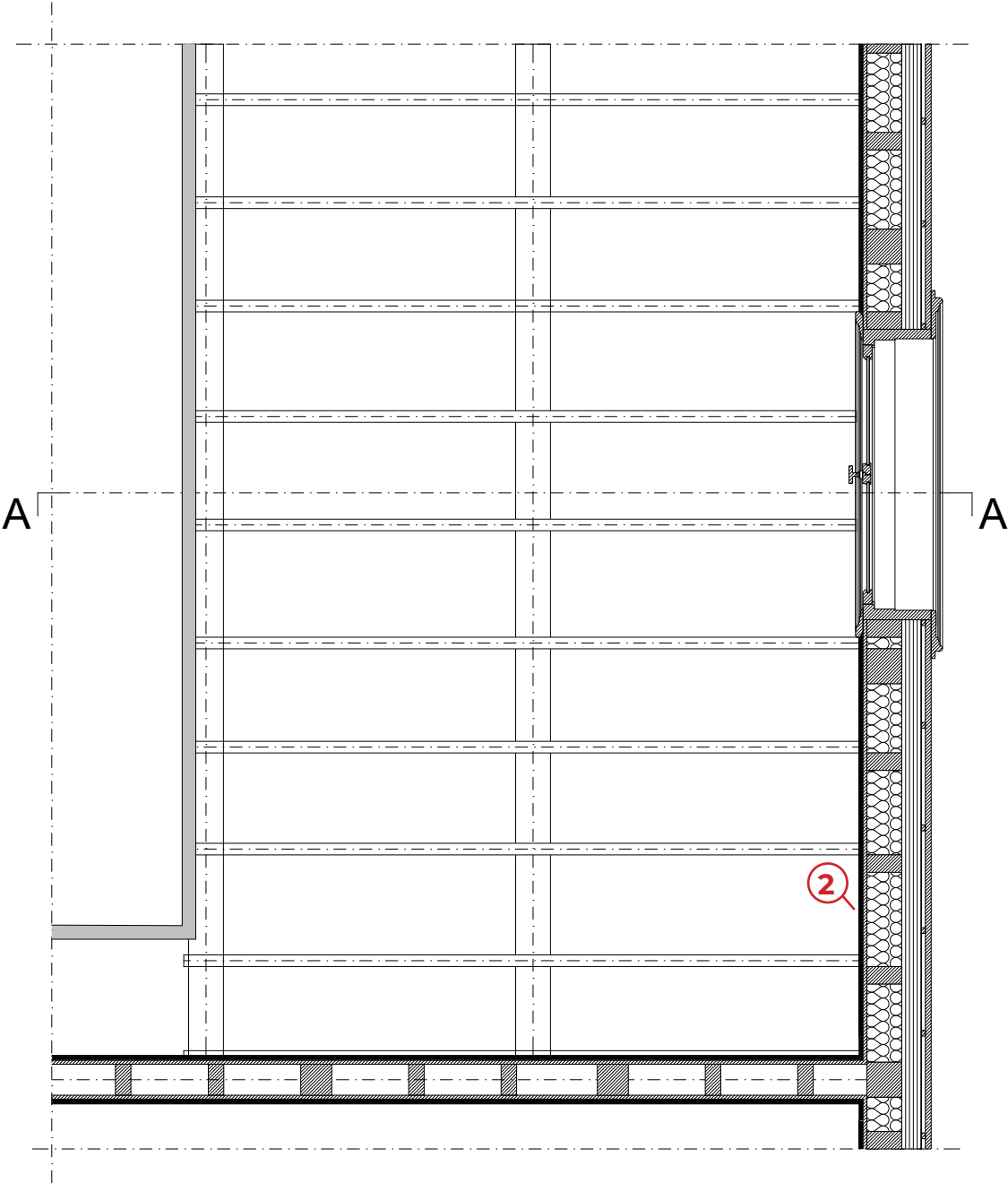


Figure 6.12 Consolidation Intervention Proposal First Floor Detail Plan (Source: Created by the author, 2025)

6.2.3.4 Fourth Floor Plan

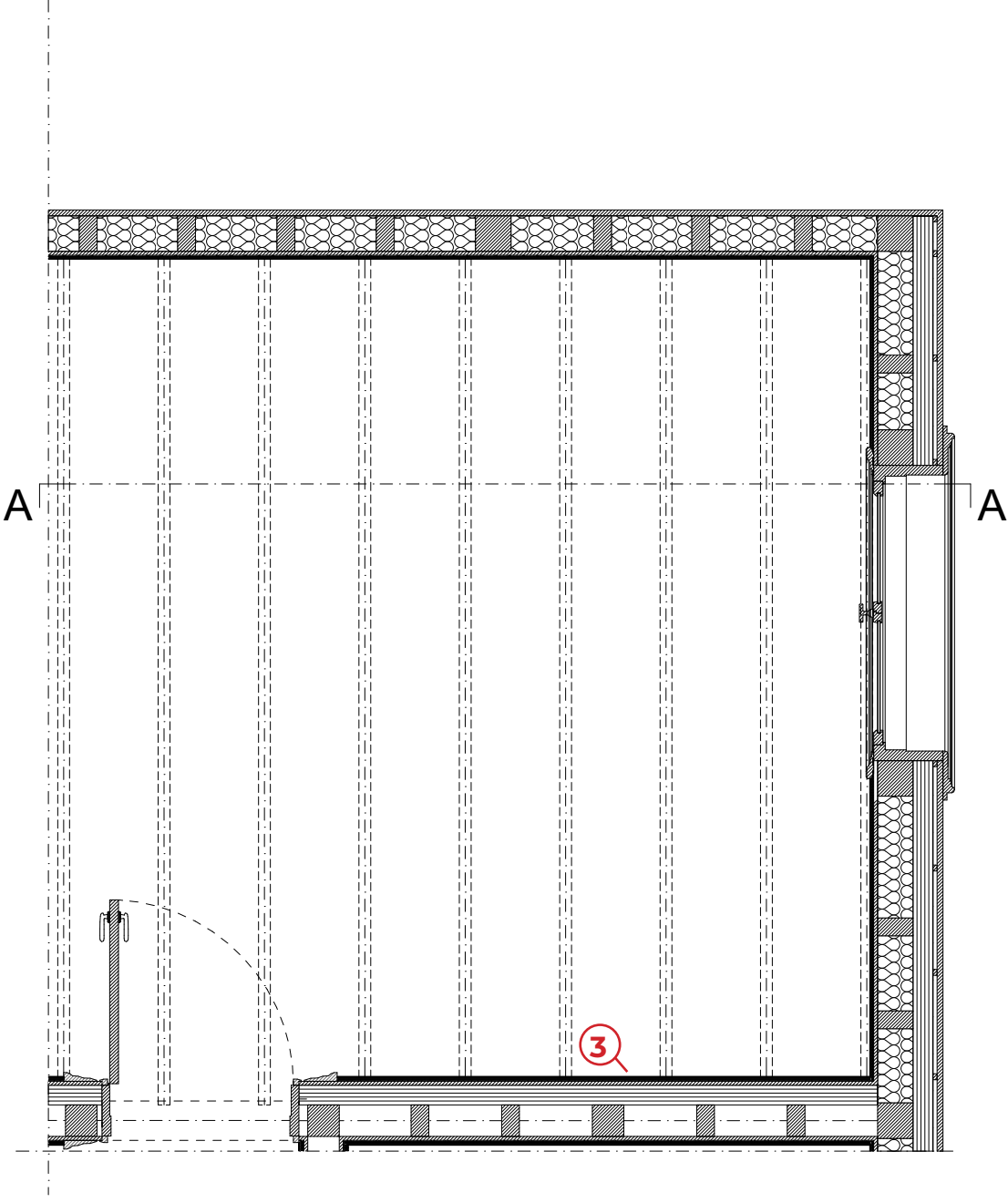


Figure 6.13 Consolidation Intervention Proposal Fourth Floor Detail Plan (Source: Created by the author, 2025)

6.3 Masterplan

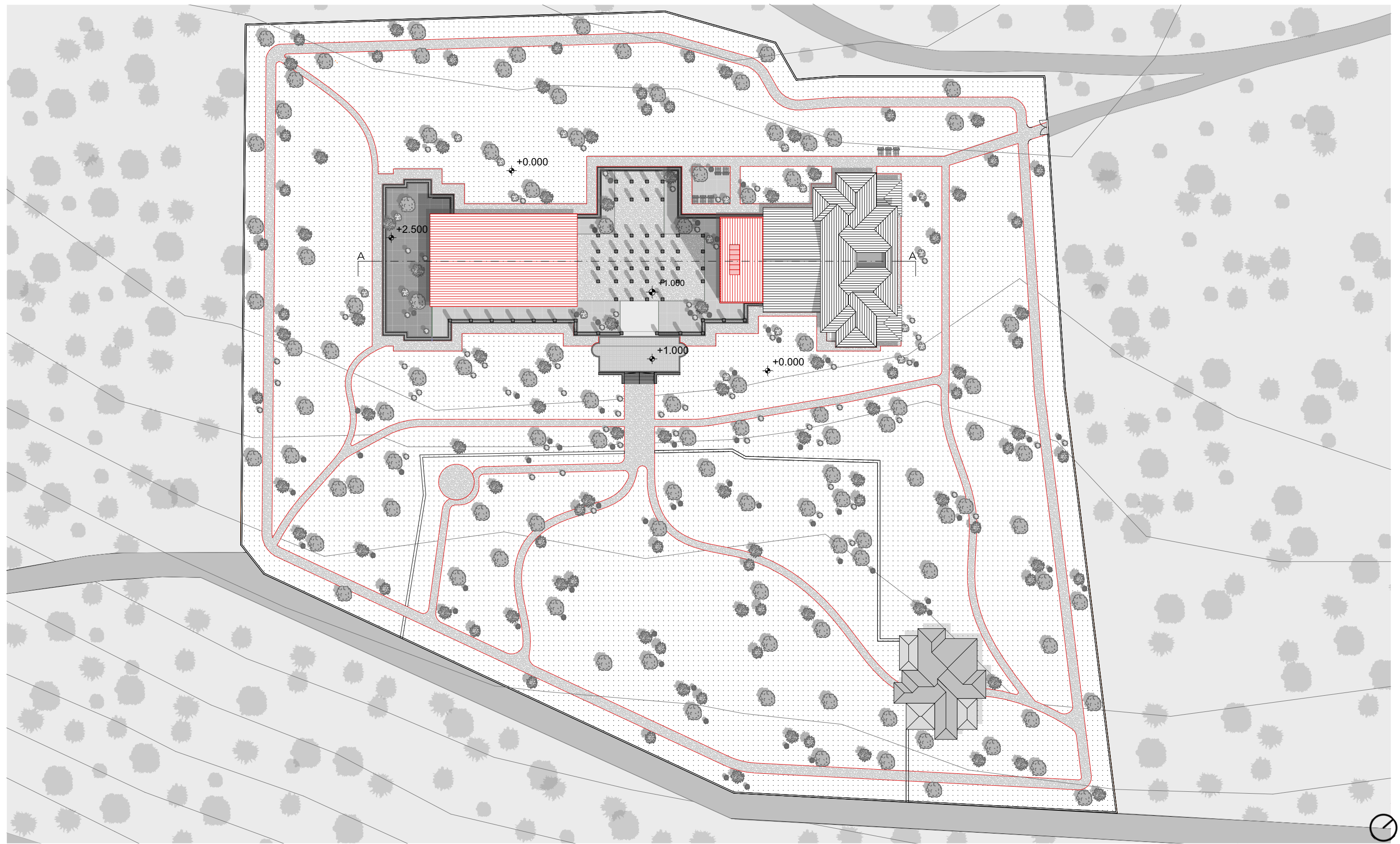
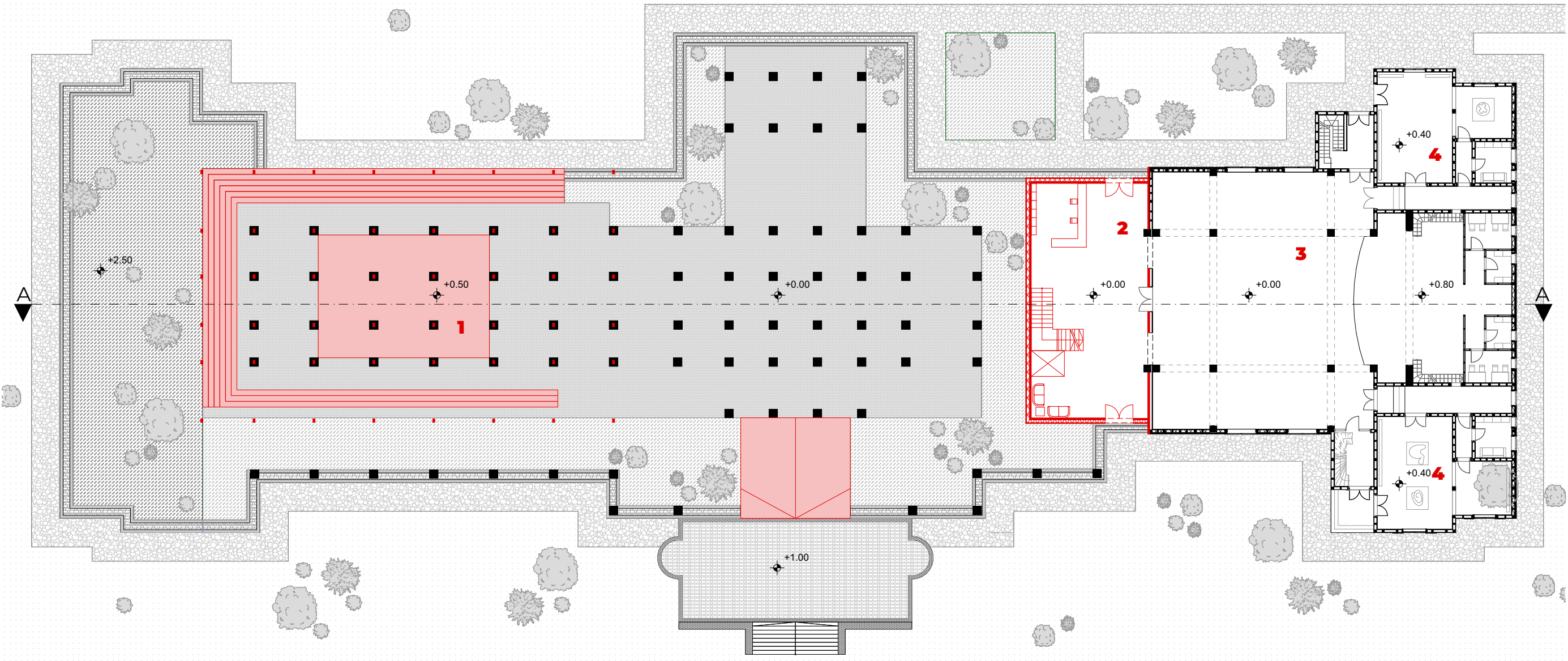


Figure 6.14 Masterplan (Source: Created by the author, 2025)

6.4 Floor Plans
6.4.1 Ground Floor Plan

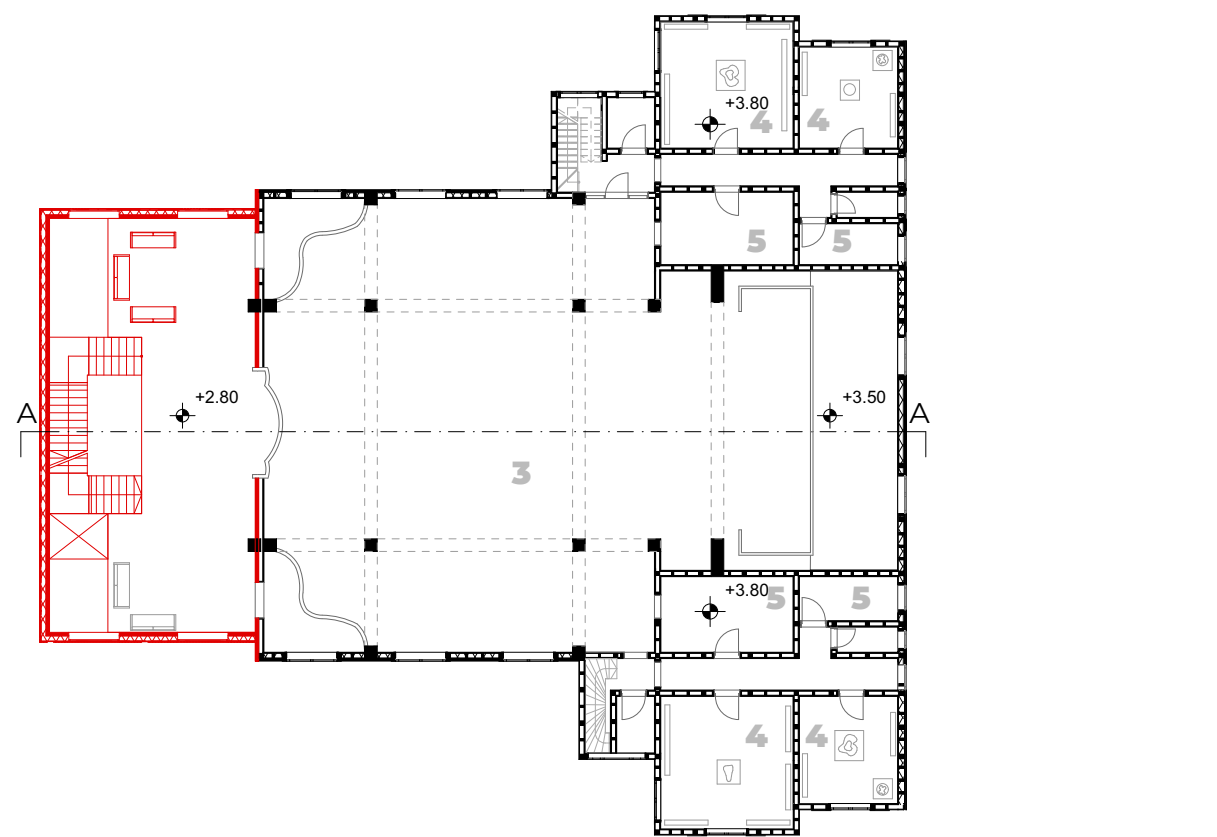


- 1. Outside event area
- 2. Ticket office/Info desk
- 3. Theater
- 4. Exhibition Space



Figure 6.15 Ground Floor Plan (Source: Created by the author, 2025)

6.4.2 First Floor Plan



- 3. Theater 61 sqm
- 4. Exhibition Areas 114 sqm
- 5. Backstage Rooms 18.4 sqm

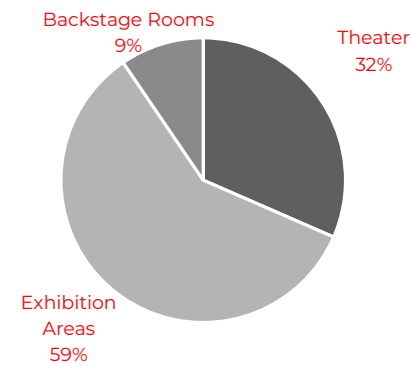
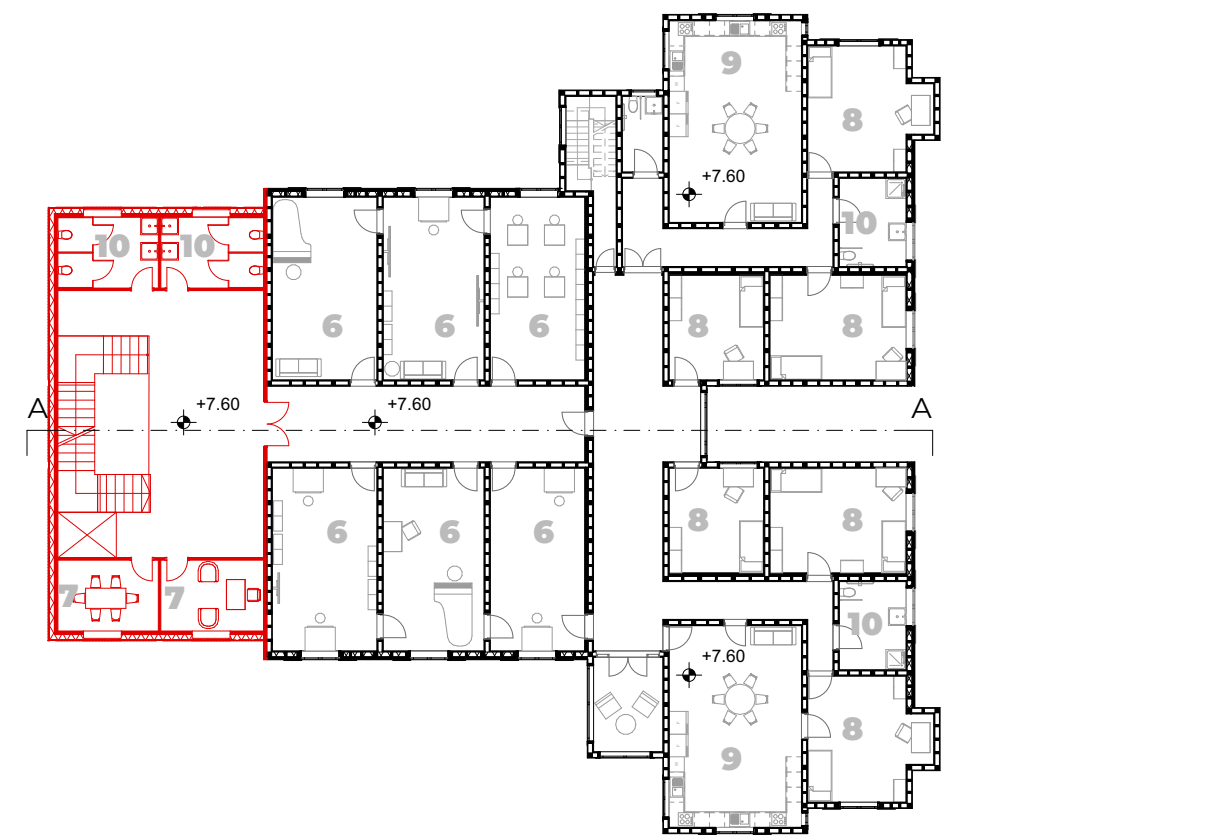


Figure 6.16 First Floor Plan (Source: Created by the author, 2025)

6.4.3 Second Floor Plan



- 6. Studio Rooms for Artists 174 sqm
- 7. Offices 23 sqm
- 8. Dorm rooms 122 sqm
- 9. Common Areas for Artists 84 sqm
- 10. Wet Areas 18.5 sqm

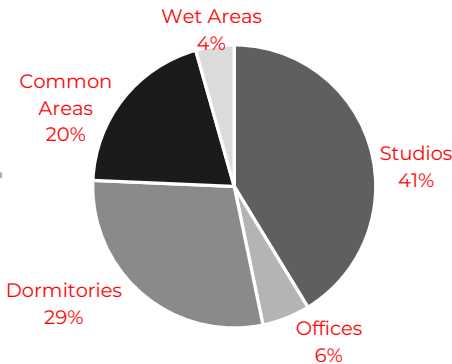
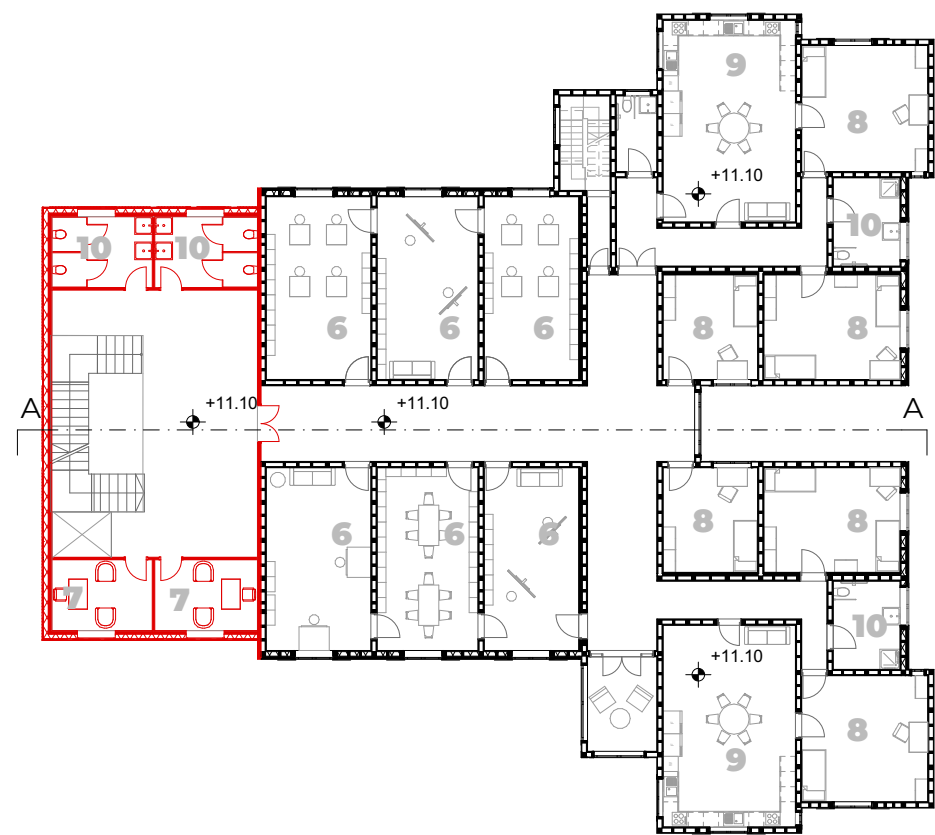


Figure 6.17 Second Floor Plan (Source: Created by the author, 2025)

6.4.4 Third Floor Plan



- 6. Studio Rooms for Artists 174 sqm
- 7. Offices 23 sqm
- 8. Dorm rooms 128 sqm
- 9. Common Areas for Artists 84 sqm
- 10. Wet Areas 18.5 sqm

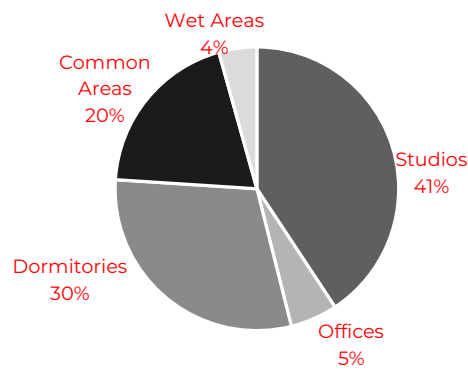
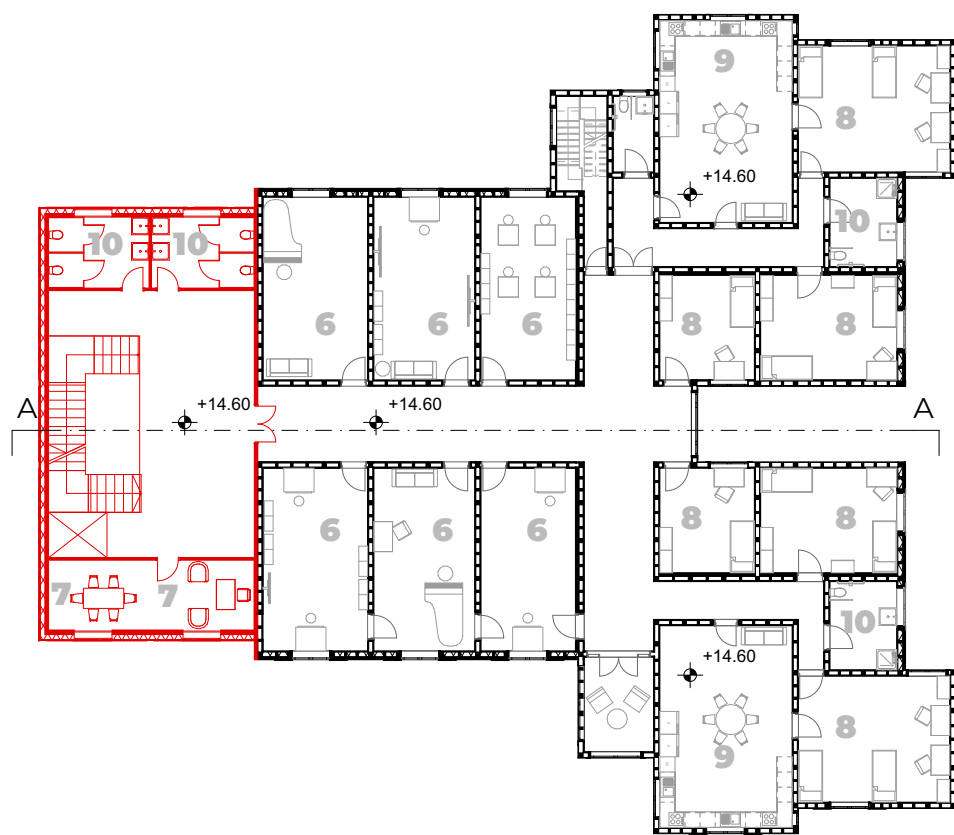


Figure 6.18 Third Floor Plan (Source: Created by the author, 2025)

6.4.5 Fourth Floor Plan



- 6. Studio Rooms for Artists 174 sqm
- 7. Offices 23 sqm
- 8. Dorm rooms 138 sqm
- 9. Common Areas for Artists 84 sqm
- 10. Wet Areas 18.5 sqm

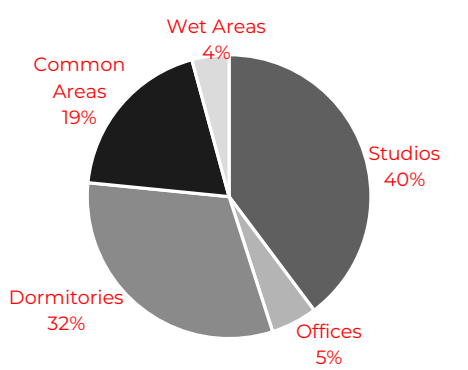


Figure 6.19 Fourth Floor Plan (Source: Created by the author, 2025)

6.4.6 Fifth Floor Plan

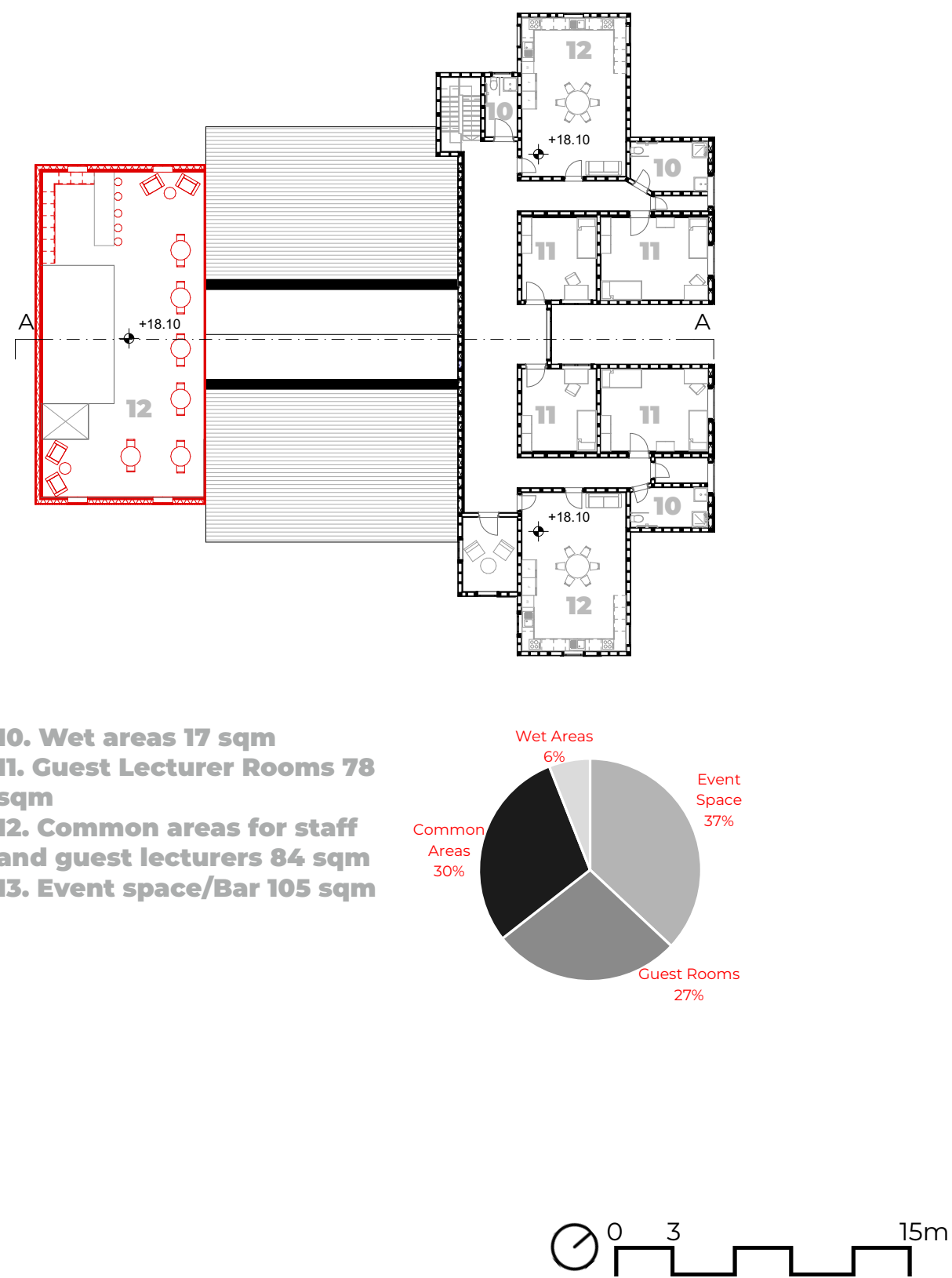


Figure 6.20 Fifth Floor Plan (Source: Created by the author, 2025)

6.5 Functions Distribution

- Event Area
- BackstageRooms
- Exhibition Areas
- Reading Rooms/Library
- Wet Areas
- Rooms/ Art Residency
- Rooms/Teachers
- Recreation Rooms/ Studios
- Communal Space
- Offices
- Ticket Office

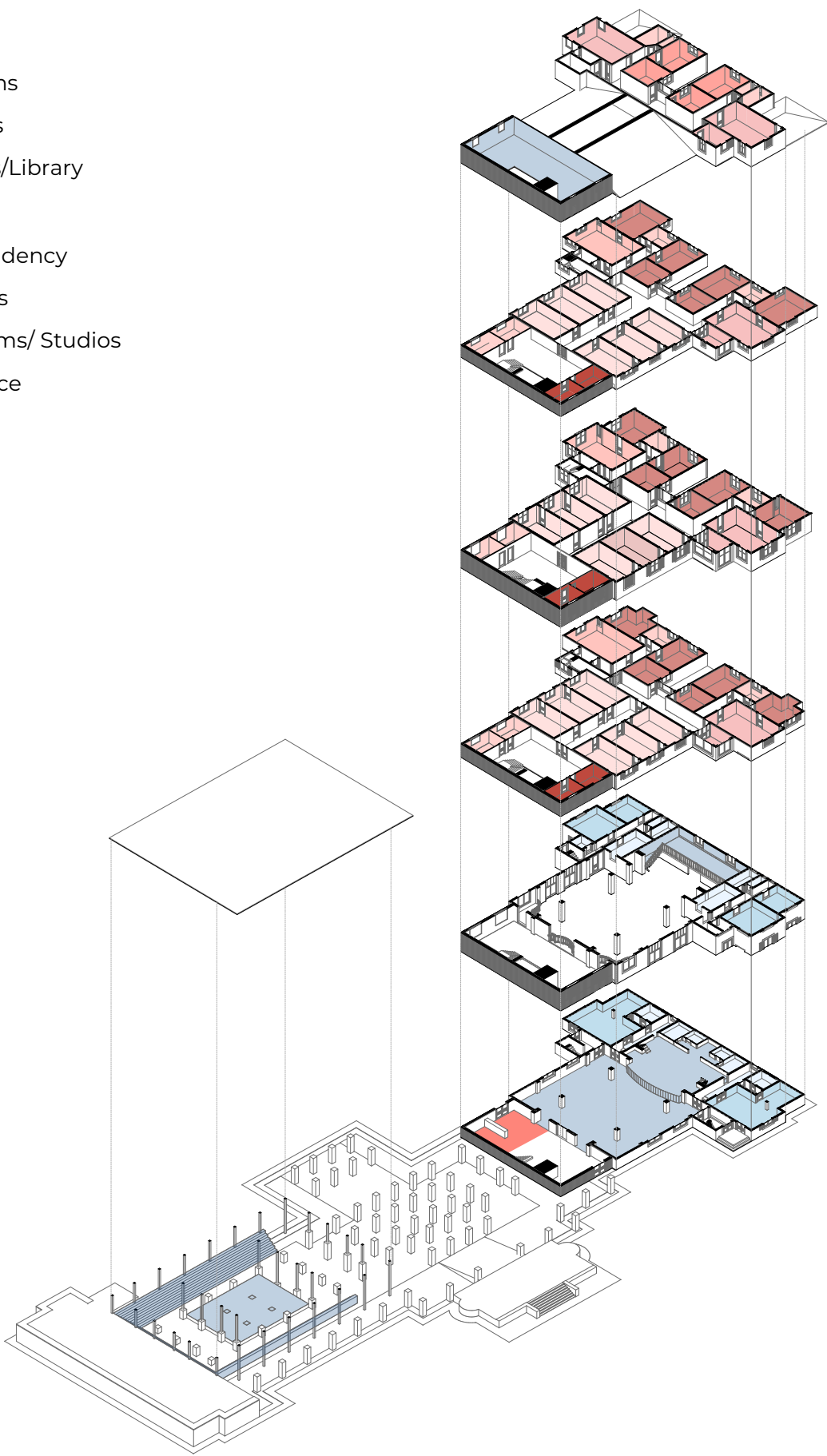


Figure 6.21 Function Distribution (Source: Created by the author, 2025)

6.6 Elevation Southeast

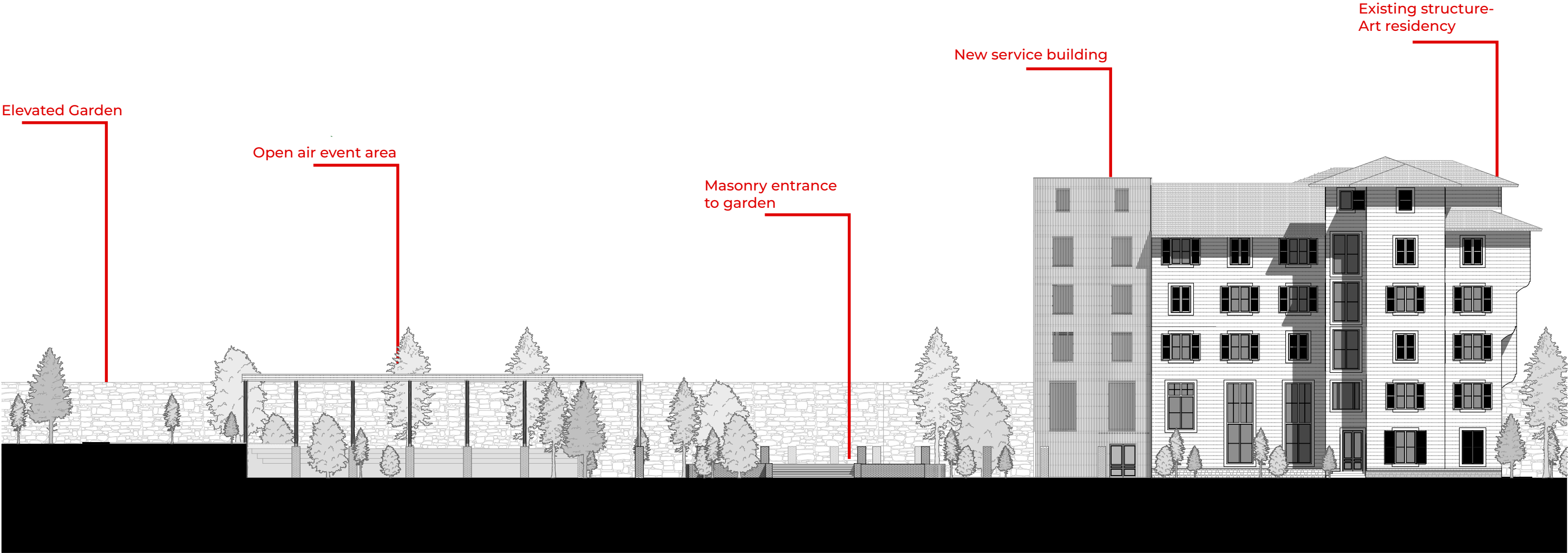


Figure 6.22 Southeast Elevation (Source: Created by the author, 2025)

6.7 Section A-A

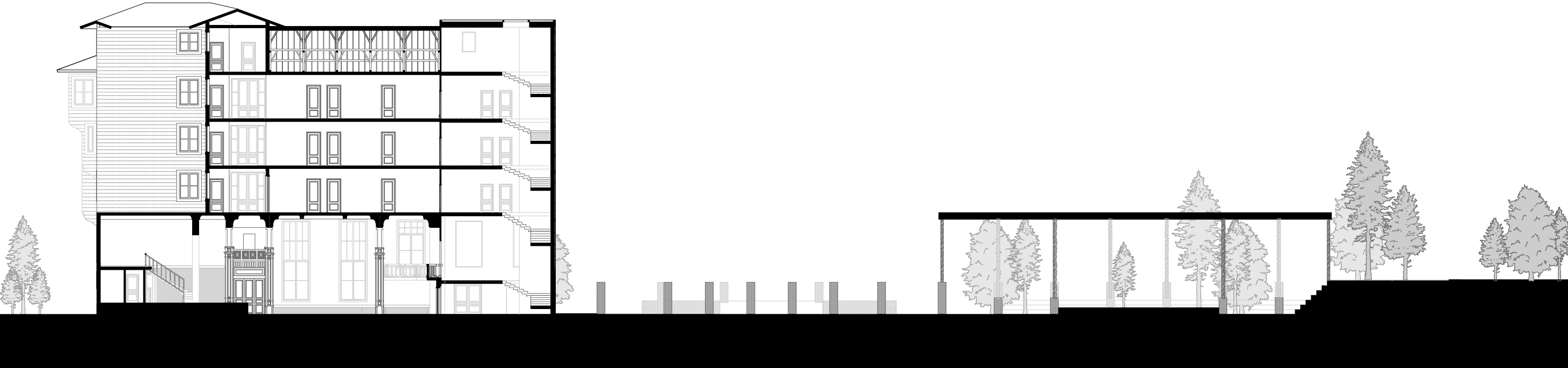


Figure 6.23 Section A-A (Source: Created by the author, 2025)

6.8 Project - New Junction Details

6.8.1 Section B-B

1. Roof Construction
- 1.1 Gravel 50 mm
- 1.2 Nonwoven seperation layer 5 mm
- 1.3 Sealing sheet 5 mm
- 1.4 Rock wool insulation 200 mm
- 1.5 Bitumen sheet
- 1.6 CLT panel 125 mm
- 1.7 Rothoblaas Nino Angle Bracket
2. Floor Construction
- 2.1 Wood parquet 15 mm
- 2.2 Dry screed 25 mm
- 2.3 Mineral wool insulation 30 mm
- 2.4 Polyethylene foam 8 mm
- 2.5 Trickling protection 2 mm
- 2.6 CLT panel 140 mm
- 2.7 Rothoblaas Nino Angle Bracket
- 2.8 VGZ Full Threaded Screw
3. Foundation
- 3.1 Rothoblaas Nino Angle Bracket
- 3.2 BTALU Bracket
- 3.3 Epo-Fix Chemical Anchor
- 3.4 Vapour Barrier 5 mm
- 3.5 Reinforced Concrete Slab Foundation 300 mm
- 3.6 Vapour Barrier 5 mm
- 3.7 Sand 50 mm
- 3.8 Gravel 150 mm

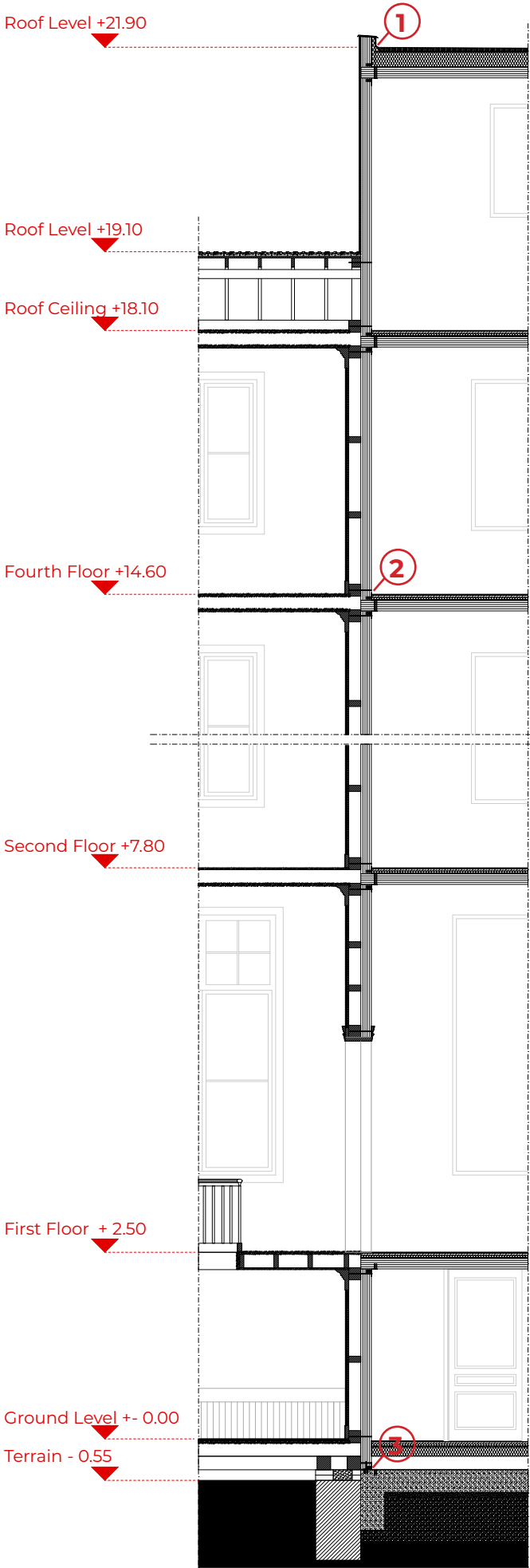
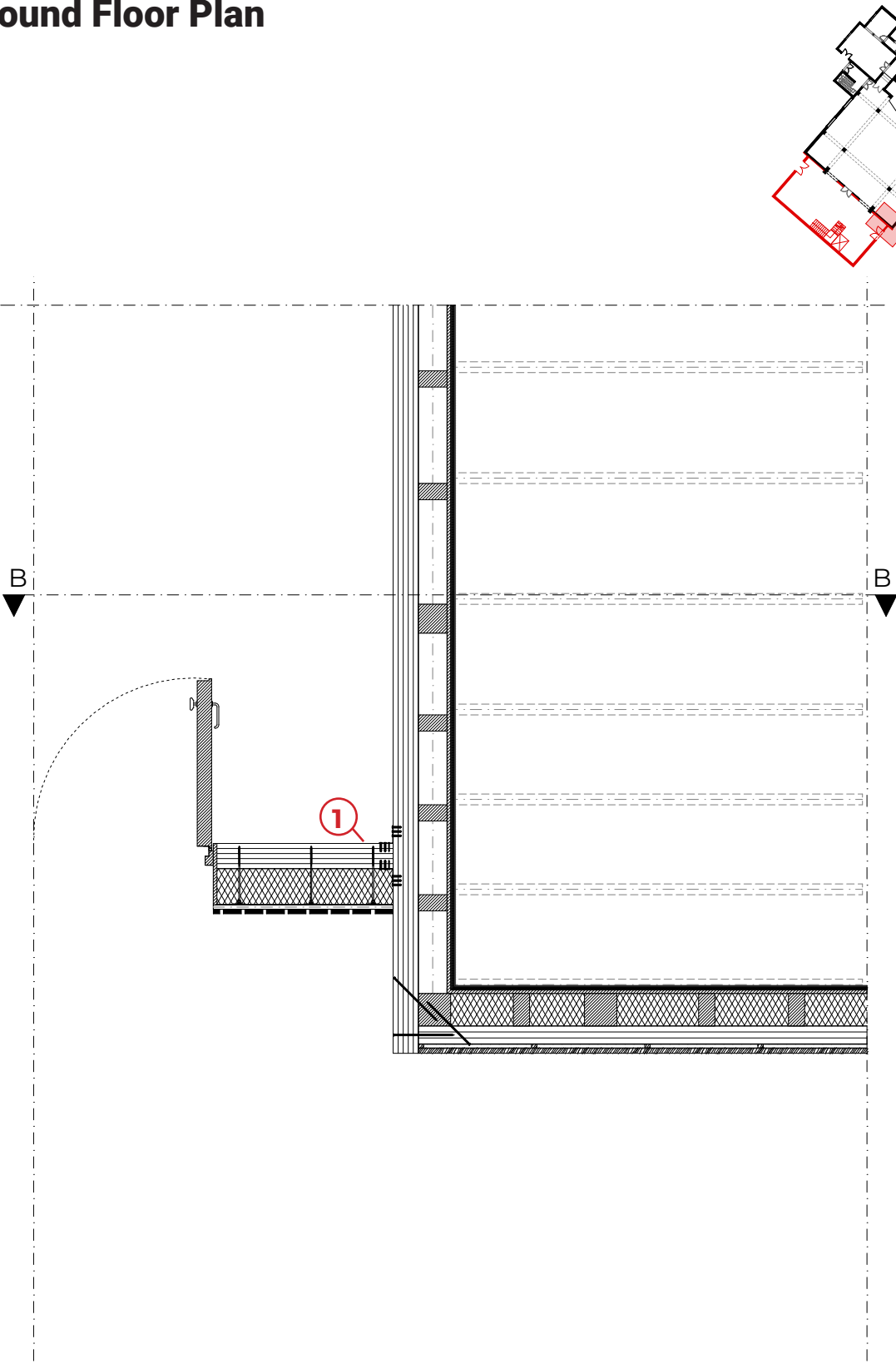


Figure 6.24 Detail Section B-B (Source: Created by the author, 2025)

6.8.2 Ground Floor Plan

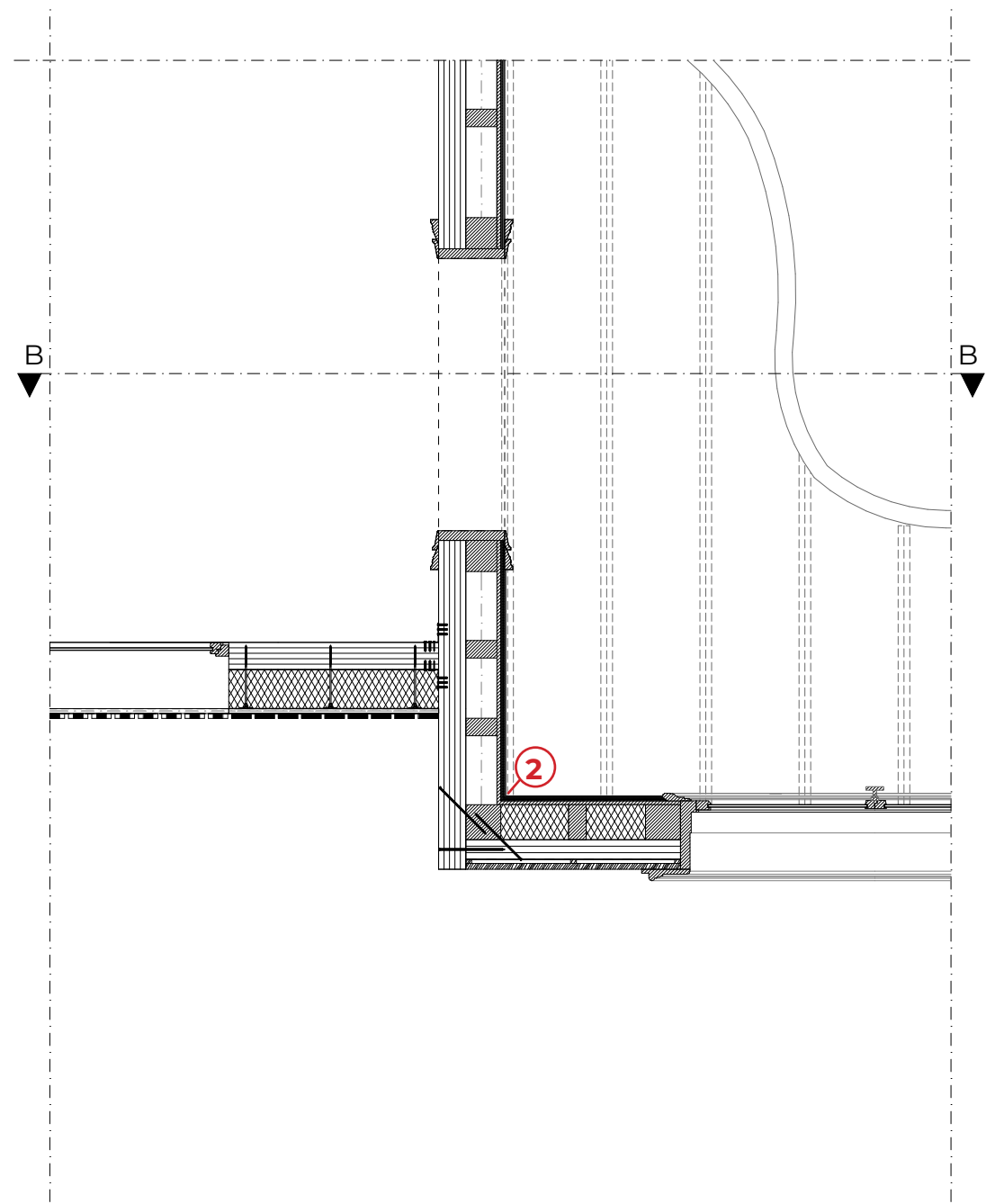


1. Exterior Wall Construction
- 1.1 Rothoblaas Nino Angle Bracket
- 1.2 CLT Panel 140 mm
- 1.3 Rock wool insulation 200 mm
- 1.4 Thermowasher
- 1.5 HBS Screw
- 1.6 Vapor Barrier 2 mm
- 1.7 Wood Battens 25x30 mm
- 1.8 Timber Cladding 100 x 25 mm



Figure 6.25 Detail Plan Ground Floor (Source: Created by the author, 2025)

6.8.3 First Floor Plan



2. Strengthened Exterior Wall Construction

2.1 Finish Coat Plaster 5 mm

2.2 Base Coat Plaster 15 mm

2.3 Woven Lath 5 mm

2.4 Bagdadi Laths 20x30 mm

2.5 Rock Wool Insulation 180 mm between Timber Frame
- 2.6 Rothoblaas VGZ Screw

2.7 CLT Panel 100 mm

2.8 Vapor Barrier 2 mm

2.9 Wood Battens 30 x 20 mm

2.10 Timber Cladding
- 1:35

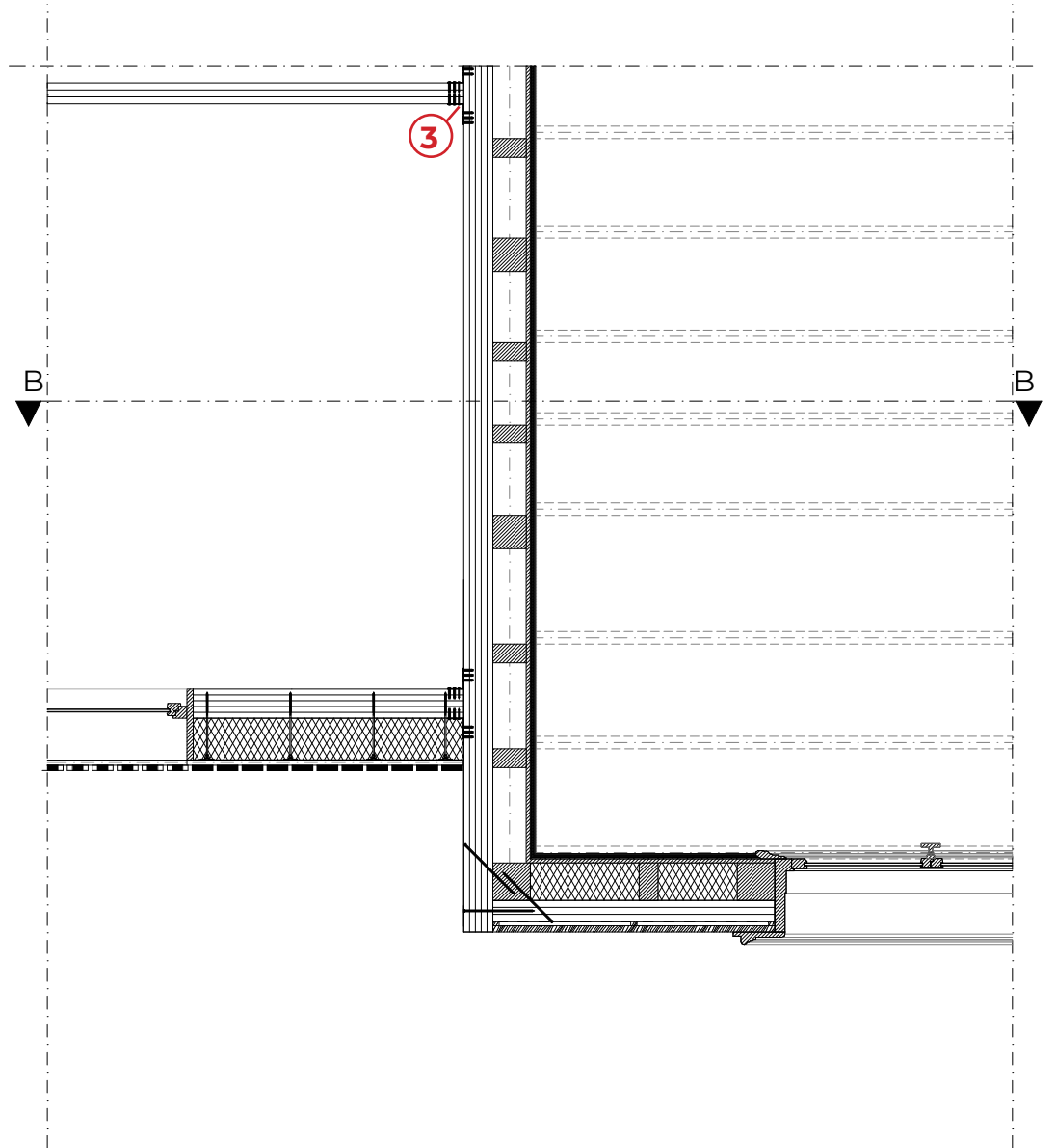
0

0.35

3.5m

Figure 6.26 Detail Plan First Floor (Source: Created by the author, 2025)

6.8.3 Fourth Floor Plan



3. Interior Wall Construction

3.1 Rothoblaas Nino Angle Bracket

3.2 CLT Panel 100 mm

3.3 Rothoblaas Nino Angle Bracket
- 1:35

0

0.35

3.5m

Figure 6.27 Detail Plan Fourth Floor (Source: Created by the author, 2025)

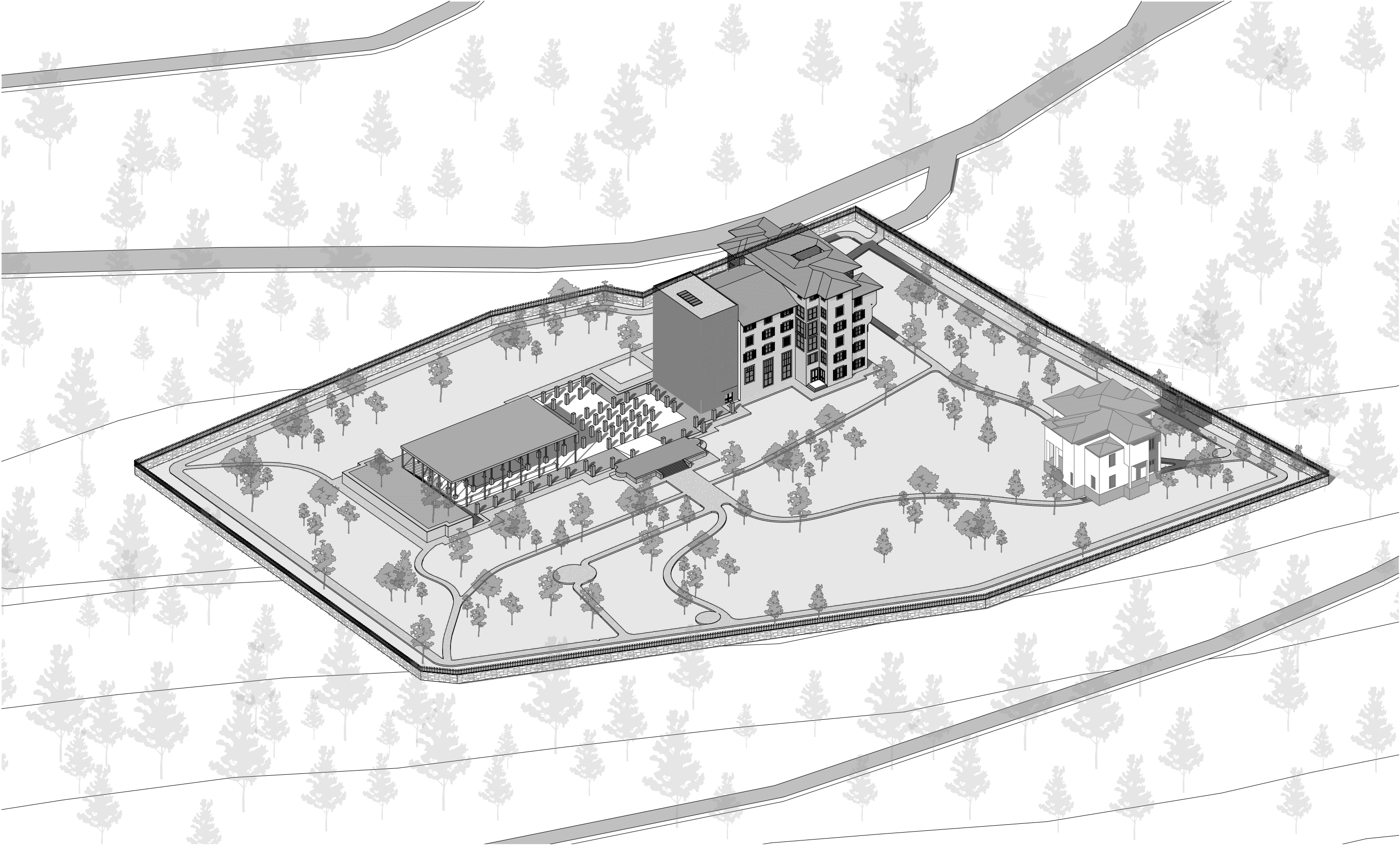


Figure 6.28 Axonometry (Source: Created by the author, 2025)

Cost Accounting - Prinkipo Greek Orphanage



Figure 7.0 Prinkipo Greek Orthodox Orphanage on Büyükada Island (Source: (Adobe Stock, n.d., retrieved from <https://stock.adobe.com/it/images/prinkipo-greek-orthodox-orphanage-on-the-buyukada-island-sightseeings-of-buyukada-adalar-istanbul-turkey-buyukada-is-one-of-the-princes-islands-in-the-sea-of-marmara/512055629>).)

7. Cost Accounting - Prinkipo Greek Orphanage

7.1 Preliminary Information

This chapter introduces a cost accounting method for the Prinkipo Greek Orphanage adaptive reuse and restoration project. We focus on the costs of the intervention project in the main sections: Demolition, Restoration, and New Construction. Since Buyukada Greek Orphanage is the largest timber building in Europe and has been abandoned for 65 years, the objective is to estimate the overall and partial costs to support the decision-making process regarding the two alternative approaches: The applied method consists of partial demolition, consolidation, restoration of the structure, and new construction. Complete restoration and consolidation of the structure.

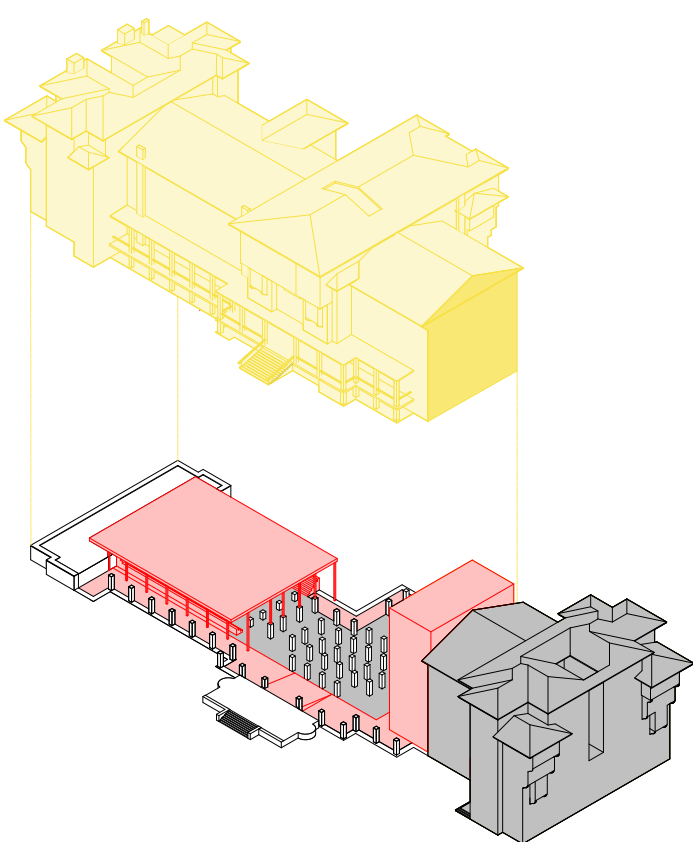
The Prinkipo Greek Orphanage is a historic timber structure located on the island of Büyükada. The building has a footprint of 4,692.15 sqm and a total floor area of 13,393 sqm. Due to its deteriorated condition, the project involves the selective demolition of damaged sections, preservation, reinforcement, and restoration of key architectural elements, and reconstruction of a new structure using a CLT (Cross-Laminated Timber) panel system. The adaptive reuse plan envisions the building as an art residency, providing spaces for artists and cultural events.

The intervention is divided into three main phases:

- Demolition of irreparable sections
- Preservation of structurally safe elements
- Reconstruction with a new structural system

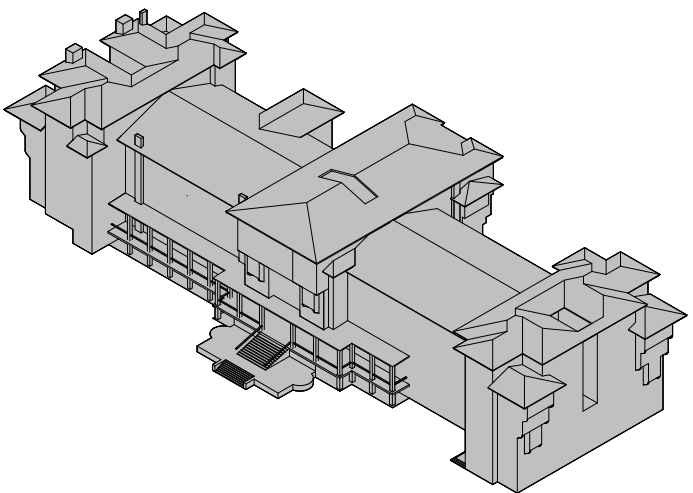
Parametric Data		
	Alternative 1	Alternative 2
Total Building Area	13386	13386
Demolition	8407.7	0
Restoration	4978.3	13386
New Construction	665	0

Figure 7.1 Parametric Data Regarding to two Alternatives floor area in sqm (Source: Created by the author, 2025)



Alternative 1:

- Partial demolition
- Restoration and Consolidation of the north-east wing
- Addition of a new construction for contemporary needs, and landscape



Alternative 2:

- Complete Restoration and Consolidation

Figure 7.2 & 7.3 Diagrams illustrating first Alternative 1 and Alternative 2 (Source: Created by the author, 2025)

Cost Accounting Method

The cost accounting focuses on the expenses related to these eight sections of building construction. During the calculation processes, we used the Unit Price Books published by the Republic of Turkey Ministry of Culture and Tourism in 2024. There are a total of four books, these are:

- Ministry of Culture and Tourism Unit Price Supplementary List: The Ministry of Culture and Tourism provides a supplementary list that presents the Foundation General Directorate's designated unit prices for historical buildings. These specific rates are solely intended to establish the Ministry of Culture's official unit prices and determine unit costs associated with historic structures.

- Ministry of Culture and Tourism Unit Price Analysis and Specifications: The unit prices established by the Foundation General Directorate are exclusively employed to calculate the Ministry of Culture's official unit prices and determine the unit prices of historical buildings.

- 2024 Ministry of Culture and Tourism Unit Price Additions and Modifications Schedule: The unit price changes throughout the year and is guided by modifications.

- Ministry of Culture and Tourism 2024 Unit Price Correction Table

In our cost accounting process, we mainly used the first two books since the unit prices we were working with didn't change throughout the year. To be precise, the masses and areas were calculated using Archicad. The calculations were derived from the Bill of Quantities prepared for the project.

Description of Sections:

- **Demolition:** Disassembly of the structure
- **Restoration:**
 - **Restoration Works:** Restoration of exterior walls, masonry structures, and roofs.
 - **Consolidation:** Reinforce the walls with CLT panels and consolidate the existing foundation with a strip foundation.
 - **Reconstruction:** Manufacturing and installation of heavily degraded elements such as windows, doors, and rain gutters.
- **New Construction:** Construction of a new structure adjacent to the existing one and construction of a canopy.

Separate Sections: Logistics, temporary works for the construction sites, and systems are calculated separately since all are directly related to more than one section.

7.2 Bill of Quantities

Bill of Quantities(BOQ) is a document that shows information regarding the measurement of construction work; it is the basis of the construction tendering system. The document is formatted according to a set of rules provided by a measurement guide, which illustrates a measured quantity with the description of the works. (Towey, 2012)

Methodology:

Categories:

The organization of the Bill of Quantities is as follows: each section or subsection is divided into titles according to their materials, structures, and functions, depending on the section.

Demolitions: Divided into building sections, such as walls, interior walls, roofs, floors, and masonry walls.

Restoration works: Separated depending on the materials, timber - exterior wall cladding, masonry - foundation walls and basement columns, clay - roof tiles.

Consolidations: Categorized as load-bearing structures, foundations, exterior and interior timber frame walls.

Reconstructions: Divided according to finishing works, metal elements such as rain gutters, and internal and external closures.

New Construction: Divided into building sections, including walls, interior walls, roofs, floors, and foundations.

Logistics: Based on vehicle use, we had options such as trucks, trailer trucks, and crane trucks. Since our building is on an island, we also included the ferry transportation prices for these vehicles.

Temporary Works for the Construction Site: Divided according to their use, scaffold systems, site barriers, and containers.

Systems are categorized according to their function and use: hydraulic and sanitary, accessibility (elevator), air conditioning—ventilation, and electrical.

Sources:

Since the building is located in Istanbul, Turkey, and is a historic structure, we used the Ministry of Culture and Tourism Unit Price Supplementary List, which provides designated

unit prices for historical buildings, and the Ministry of Culture and Tourism Unit Price Analysis and Specifications, which includes information about labor and raw materials specific to the work description, making it easier to calculate the detailed cost of work.

In addition to these sources, we have used private company data for **logistics** rental of cranes and trucks and their transportation by ferry to the island, **containers** including a dormitory, canteen, storage rooms, offices, bathrooms, and first aid, **closures** such as skylights for the new building, and **CLT panels** for consolidation and construction of the new building.

Units of Measurement: Units of measurement refer to standardized measurements of quantities of materials and labor required for each work item.

Hours: This unit quantifies the time spent by workers on various tasks

Equal parts: Used for quantifying repetitive or identical components, such as tools like brushes or sandpaper in our project

Volume: Measured in cubic meters (m³), used for volumetric quantities like excavations or removal of masonry walls.

Area: Measured in square meters (m²), this unit is used for surfaces such as floor and wall claddings and roofs.

Length: Our project length is measured in linear meters (m) and applies to rain gutters, hand railings, and window casings.

Weight: Measured in kilograms (kg) or tons, used for steel reinforcement bars in tons, metal profiles in kg, and logistics in tons.

Currency Conversion: Since the project locates in Turkey we have used Turkish unit prices for the project, after the calculations were done in Turkish Lira(TL) we converted the prices using: 1€ = 36.42 TL

Building Area:

Parametric Data		
	Alternative 1	Alternative 2
Total Building Area	13386	13386
Demolition	8407.7	0
Restoration	4978.3	13386
New Construction	1865	0
Total Constructed Area	15251	13386

Figure 7.4 Built area of each alternative (Source: Created by the author, 2025)

7.2.1 Alternative 1 - Applied Intervention

Demolitions:

The demolition phase includes removing irreparable sections of the orphanage while preserving the northeast wing. The costs were calculated based on the volume and area of materials to be removed and the labor required for safe demolition. All the demolitions are made by dismantling each element by hand without damaging the masonry and wooden structures around them. Specific attention was given to ensuring that the demolition process would not compromise the integrity of the preserved sections.

Code	Description	Amounts in TL	Amounts in Euro
		Total	Total
Demolition/Removals			
Roof			
Total		1428810.05	39231.4676
Exterior Walls			
Total		3731483.952	102457.0003
Interior Walls			
Total		5190948.872	142530.1722
Floors And Ceilings			
Total		4568571.124	125441.2719
Columns and Floor - Masonry			
Total		2435710	66878.36354
Total		15926713.95	437306.808

Figure 7.5 Bill of Quantities Demolitions (Source: Created by the author, 2025)

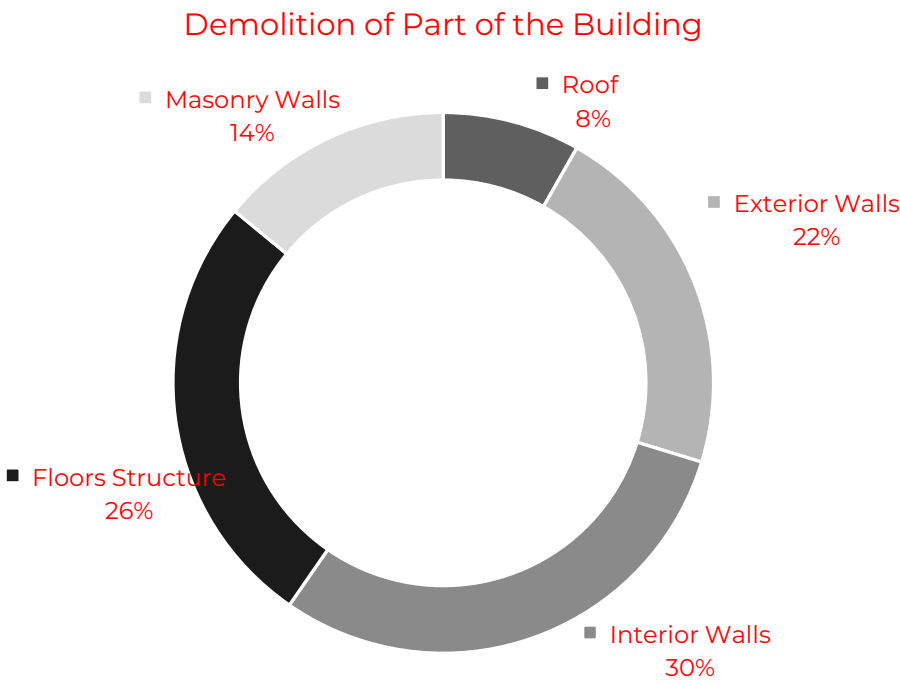


Figure 7.6 Bill of Quantities Demolitions Pie Chart (Source: Created by the author, 2025)

The pie chart illustrates the proportional distribution of demolition costs across different building components. Interior walls present the largest share(30%), indicating that the volume of interior walls is greater than that of the other elements; since the building was designed as a hotel, plenty of interior walls divide the rooms. Floor structures(26%) and exterior walls(22%) also constitute a significant portion of the total demolition cost. Roof accounts for the smallest percentage (8%), indicating that the removal of the roof is less costly when compared with other structural elements. Furthermore, masonry walls(14%) have relatively smaller volume but require careful dismantling since it can affect the structural stability of the overall structure.

Restoration Works:

Restoration works refer to any restoration related to exterior cladding, roof membrane, and visible masonry walls and foundation. Specialized labor and materials are required to ensure the building’s historical entity. Restoration works include cleaning, disposing(if necessary), and relaying roof tiles, removing detached timber cladding, recladding the facade in necessary areas, sanding and impregnating timber cladding for protection, cleaning masonry structures, and integrating new plaster.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
Restoration Works					
Timber - Exterior Walls					
Total			2516699.485		69102.12754
Masonry and Stone Walls - Foundation					
Total			105685.8243		2901.862283
Clay - Roof Tiles					
Total			415131.32		11398.44371
Total			3037516.629		83402.43353

Figure 7.7 Bill of Quantities Restoration Works (Source: Created by the author, 2025)

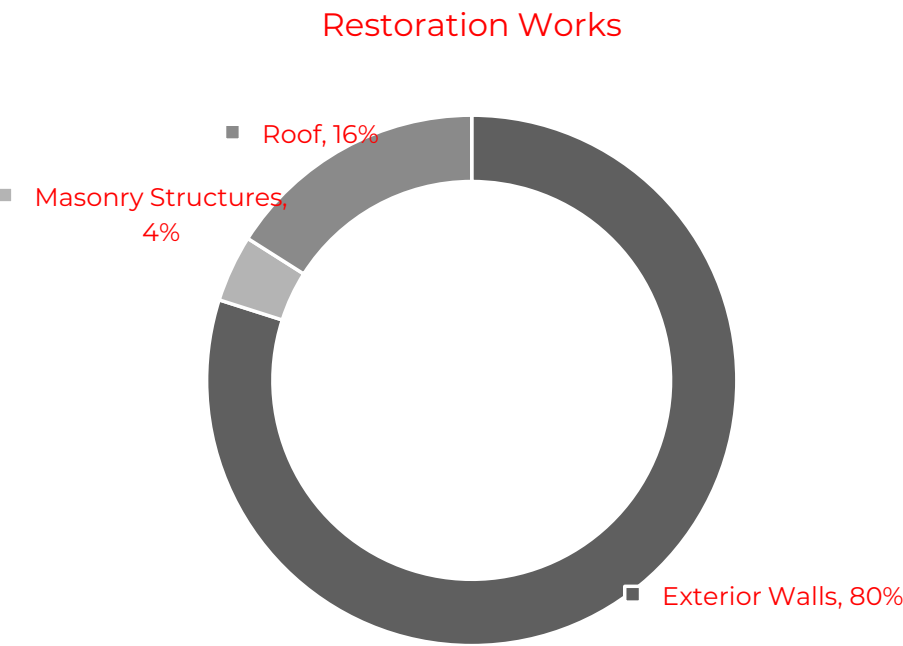


Figure 7.8 Bill of Quantities Restoration Works Pie Chart (Source: Created by the author, 2025)

According to the pie chart, most of the expenses are accounted for by the exterior walls(80%). The high percentage is directly related to the surface area and the state-of-art condition of the current cladding. Masonry structures illustrate the lowest cost share(4%), which can be explained by the exterior surface area of the masonry structures, which covers only a minimal area compared to other elements.

Consolidation:

Consolidation consists of reinforcing and stabilizing existing structures through the addition of new elements. The costs account for structural reinforcements, dismantling, and rebuilding parts of the structure. The exterior and interior walls were consolidated with CLT panels of a 10 cm thickness, and the existing foundation was consolidated with strip-reinforced foundations.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
Consolidations					
Foundation					
Total		538324.5034			14781.01327
Exterior Walls					
Total		20614661.28			566025.8451
Columns					
Total		1183068.45			32484.03213
Interior Walls					
Total		3765487.5			103390.6507
Roof					
Total		2914491.36			80024.47446
Total		29016033.09			796706.0158

Figure 7.9 Bill of Quantities Consolidations (Source: Created by the author, 2025)

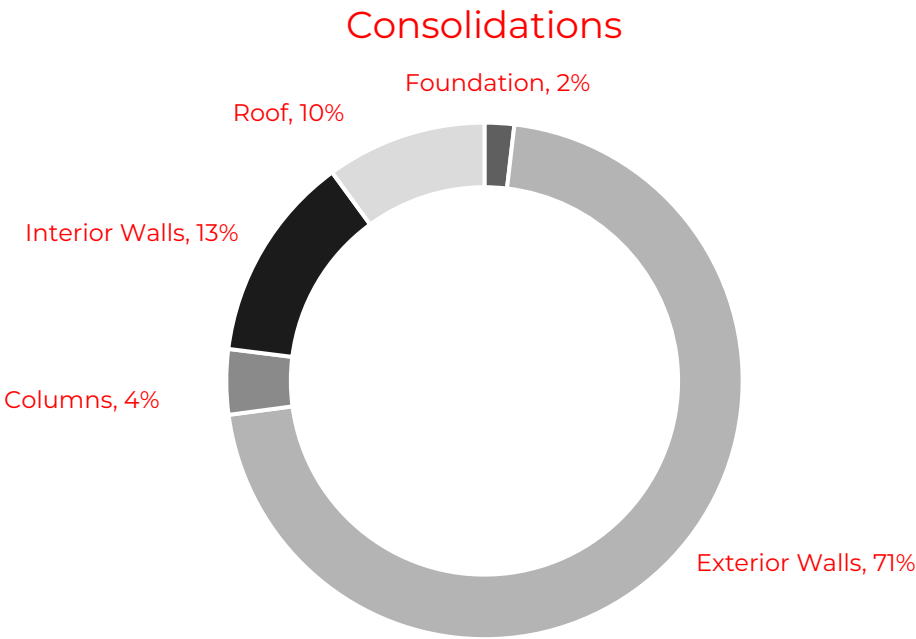


Figure 7.10 Bill of Quantities Consolidations Pie Chart (Source: Created by the author, 2025)

The graph demonstrates the distribution of consolidation costs across key structural elements. The share of exterior walls constitutes most of the total consolidation cost (71%). Due to the building’s current condition, the preserved parts needed to be consolidated on all four sides; therefore, the coverage area can explain the high percentage. The interior walls(13%) and roof(10%) comprise a minor but significant share of the total cost. The least influential cost is associated with the foundations; even though it has a high volume, the construction cost is much cheaper than the CLT panels.

Reconstruction:

Reconstruction refers to removing existing fixtures such as doors, windows, and rain gutters, followed by manufacturing and installation of new ones. The door and window fixtures are an important part of the building’s memory; therefore, they are replaced by exact copies made on the site.

Code	Description	Amounts in TL	Amounts in Euro
		Total	Total
Reconstruction			
Fixtures - Windows and Doors			
Total		3230318.736	88696.286
Metal - Rain Gutters			
Total		132890.94	3648.84514
Total		3363209.676	92345.13114

Figure 7.11 Bill of Quantities Reconstruction (Source: Created by the author, 2025)

Reconstruction in Preserved Part

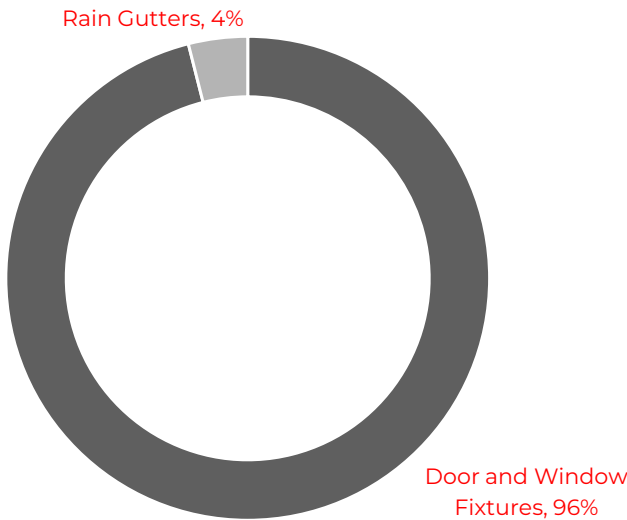


Figure 7.12 Bill of Quantities Reconstruction Pie Chart (Source: Created by the author, 2025)

The pie chart illustrates that the doors and window fixtures constitute the majority of the cost(96%). The high price can be associated with the number of windows, the craftsmanship of manufacturing, and the raw materials. Rain gutters comprise a small share of the total cost(4%)

New Construction:

The new construction phase starts with dismantling the existing masonry slab and foundation and excavating the site for the new foundation. The new foundation is a reinforced slab that is very suitable for exterior and interior CLT wall panels. It includes door and window fixtures, roof structure, floors, and stairs.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
New Construction					
New Building					
Foundation					
Total			759770.4976		20861.35358
Exterior Walls					
Total			6131510.24		168355.5805
Interior Walls					
Total			4785296.64		131392
Stairs					
Total			373083.03		10243.90527
Floors					
Total			5131534.752		140898.8125
Roof					
Total			1590739.665		43677.64045
Fixtures - Doors and Windows					
Total			1246132.46		34215.60846
Total			20018067.28		549644.9007

Figure 7.13 Bill of Quantities New Construction (Source: Created by the author, 2025)

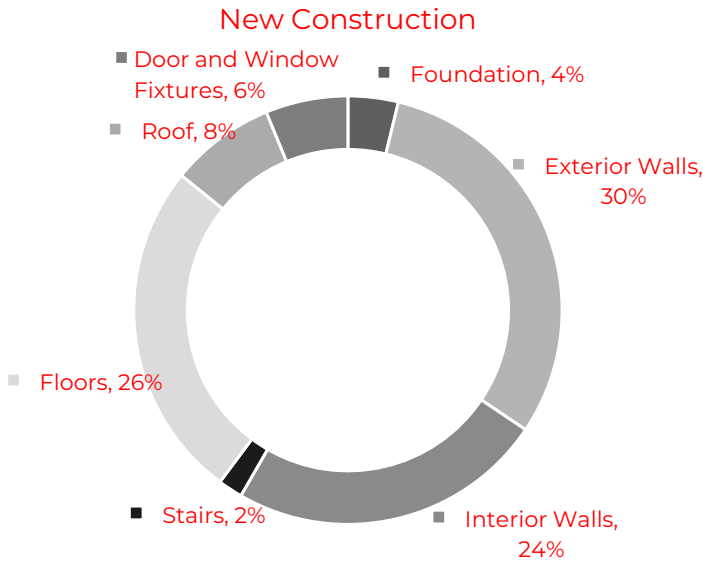


Figure 7.14 Bill of Quantities New Construction Pie Chart (Source: Created by the author, 2025)

The pie chart displays the proportional distribution of new construction costs across different building components. We see that the highest share is the exterior walls(30%), the floors(26%), and the interior walls(24%) constitute a significant portion of the total cost. Roof construction (8%) and Fixtures (6%) are relatively lower, according to their surface areas. Foundation(4%) and Stairs(2%) comprise the lowest share of the total cost. The cost of CLT panels can explain the high prices related to walls, floors, and interior walls; since it is not a widespread construction material in Turkey, we opted to import the materials, making their price higher.

New Construction Canopy:

The new canopy construction consists of wooden columns connected to the existing masonry columns and a timber roof.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
New Construction					
Canopy					
Columns					
Total			1029088.125		28256.12644
Roof					
Total			14819161.5		406896.2521
Total			15848249.63		435152.3785

Figure 7.13 Bill of Quantities New Construction (Source: Created by the author, 2025)

Chart New Construction Canopy

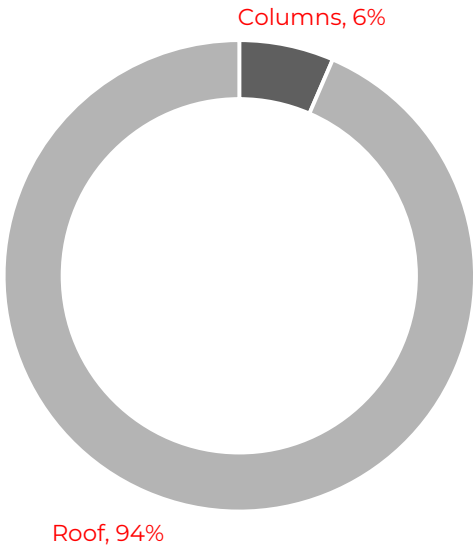


Figure 7.14 Bill of Quantities New Construction Pie Chart (Source: Created by the author, 2025)

The majority of the cost associated with canopy construction is the construction of the roof: 94%; columns constitute only 6% of the total cost.

Construction Site Setup for Temporary Works:

Construction setup for temporary works accounts for safety barriers, scaffolding structures(raw material and set up in the works site with labor costs), containers for offices, dormitories, storage areas, and first aid. In this calculation, we reused the scaffolding used in demolition again in the restoration and preservation.

Code	Description	Amounts in TL	Amounts in Euro
		Total	Total
Construction Site Setup for Temporary Works			
V.0616	Construction of Fully Secured Work Scaffold from Steel Pipes	659432.4191	18106.32672
V.0613/1	Surrounding the Construction Site with Galvanized Sheet	616452.8846	16926.21869
Villa Prefabrik	Containers	2783000	76414.05821
Total		4058885.304	111446.6036
Total		4058885.304	111446.6036

Figure 7.15 Bill of Quantities Construction Site Setup for Temporary Works (Source: Created by the author, 2025)

Construction Site Setup for Temporary Works

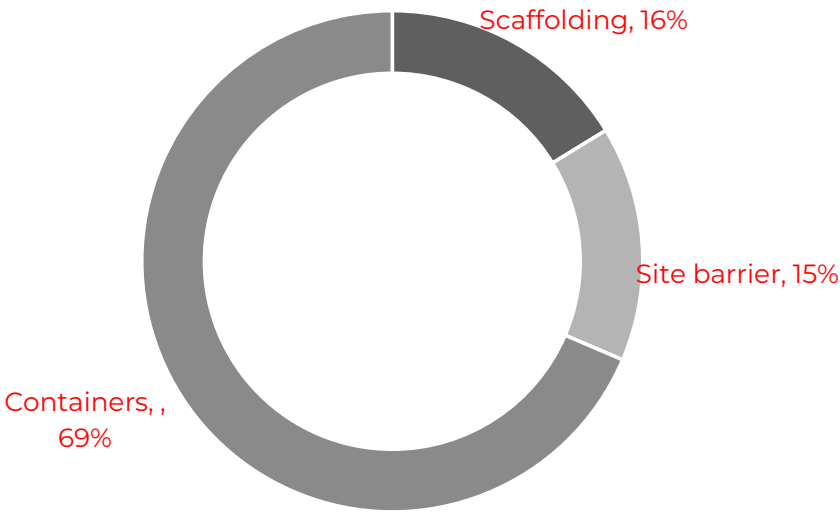


Figure 7.16 Bill of Quantities Construction Site Setup for Temporary Works Pie Chart (Source: Created by the author, 2025)

The containers constitute the highest share of the total cost(69%), while scaffolding(16%) and site barriers (15%) are less significant but still substantial.

Systems:

Systems include electricity and hydraulic infrastructures, sanitary fixtures, elevators, and HVAC units. The cost includes transportation, materials, and labor.

Code	Description	Amounts in TL	Amounts in Euro
		Total	Total
Systems			
Sanitary - Hydraulic			
Total		127604.96	3503.705656
Elevator			
Total		843800	23168.58869
Air Conditioning - Ventilation			
Total		29167.5	800.8649094
Electricity Infrastructure			
Total		542972.9103	14908.64663
Total		1543545.37	42381.80588

Figure 7.17 Bill of Quantities Systems (Source: Created by the author, 2025)

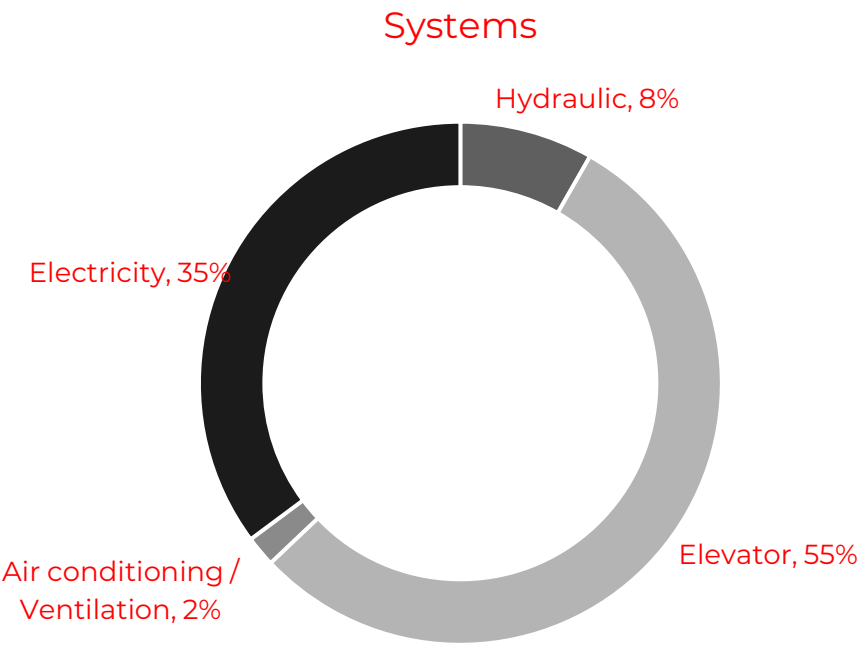


Figure 7.18 Bill of Quantities Systems Pie Chart (Source: Created by the author, 2025)

The overall price related to the elevator constitutes the most significant share(55%) of the total cost of systems. The electricity infrastructure forms (35%), hydraulic systems (8%), and ventilation systems(2%) are the lowest shares of the total cost.

Logistics:

Logistics refers to the transportation of raw materials; since the building is on an island, all the trucks and cranes must be transported by ferries. The calculation method of transportation is as follows: first, we calculated the cubic meter of each raw material, then found the ton per cubic meter of material, and found the weight of each material. A standard truck can carry up to 15 tons; according to this regulation, we have divided the total weight by 15 and found how many trucks would be necessary. In order to find the ferry trips, we multiplied the result by two.

Code	Description	Amounts in TL	Amounts in Euro
		Total	Total
Logistics			
Arabacioglu Logistics	Daily fee of truck 15 tons	1444260.226	39655.68988
Ekinciler Cranes	Crane 30 tons daily fee	1800000	49423.39374
Adalar Municipality	Transportation by truck	2046035.32	56178.894
Adalar Municipality	Transportation with a trailer truck	0	0
Adalar Municipality	Transportation with a crane truck	22200	609.5551895
Total		5312495.545	145867.5328

Figure 7.19 Bill of Quantities Logistics (Source: Created by the author, 2025)

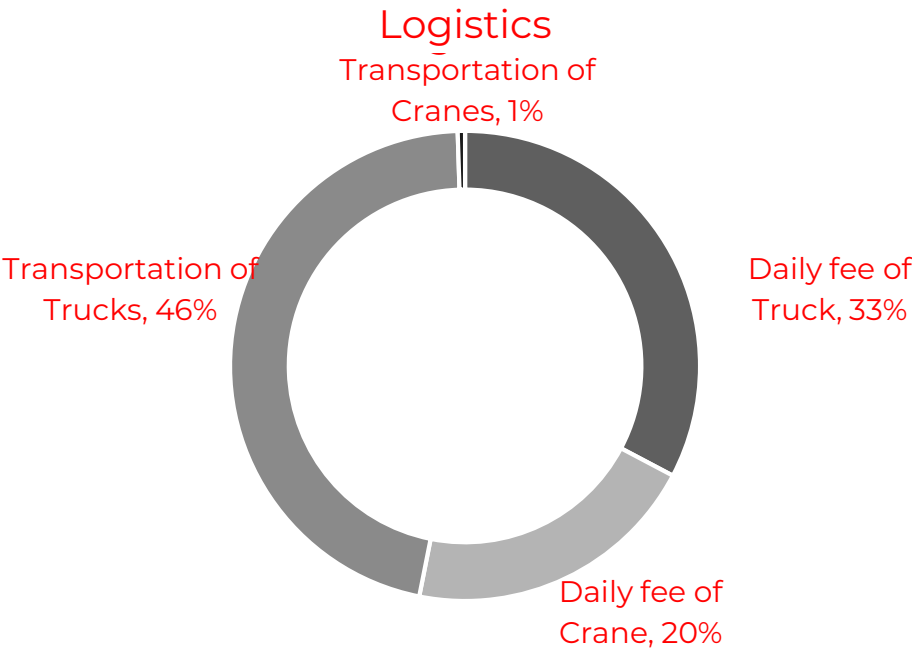


Figure 7.20 Bill of Quantities Logistics Pie Chart (Source: Created by the author, 2025)

The pie chart illustrates that the transportation of trucks accounts for the largest share(46%), and the ferries that carry the trucks are rented only one way, so in our calculations, we multiplied it by two. The daily fee of trucks constitutes (33%) of the cost, and the daily fee of cranes accounts for a smaller percentage(20%), and the smallest percentage is the transportation of cranes(1%)

Bill of Quantities Overview - Alternative 1

According to Table 6.2, the demolition cost per square meter is 52€ and according to the pie chart it is 16% of the total cost. This cost refers to the removal of the roof, exterior and interior walls, and masonry walls by hand, and the labor cost is included in the total price. The price per square meter was found by dividing the total cost of demolitions by the demolished floor area.

Restoration works refer to the restoration of exterior walls, masonry structures, and roofs. The price per square meter for restoration works is 16.75€. Restoration works constitutes 3% of the total cost. One reason the price is reasonably cheaper is that this part of the building was the best-protected area; therefore, in case of restoration of the whole building, this price would be more expensive.

Consolidation of the building refers to removing cladding in desired walls, reinforcing the structure with CLT panels of 10 cm thickness, and recladding the facade. The determination of reinforcement was made according to the calculation in Chapter 5. The unit cost of consolidation is 160.04€; and forms 30% of total cost. The higher price can be related to the CLT panels used in the process; since it is not a common material in Turkey, all panels were imported at higher prices.

The reconstruction price per square meter is 18.55€, and constitutes 3% of total cost, which includes the manufacturing and installation of rain gutters, doors, and window fixtures.

The new construction consists of a new building, mainly for circulation and service areas that were harder to locate in the existing part of the building. The price per square meter is 528.04€, and constitutes 37% of total cost. The high price is associated with the cost of CLT panels.

Construction site setup for temporary works refers to the costs associated with construction scaffolding, safety barriers, and containers for offices, first aid, dining hall, dormitories, and storage areas. The price per square meter is 8.33€ for this section, and according to the pie chart it is 4% of the total cost. One reason this price is relatively low is that it refers to the sum of all the areas. Therefore, the price per square meter was reduced.

Systems refer to sanitary infrastructure, HVAC units, elevators, and electricity infrastructure. The price per square meter is 6.19€, constituting 2% of the total cost. The infrastructure was calculated by multiplying the final total cost by 30%.

Logistics refers to the transportation of raw materials; since the building is situated on an island, all the trucks were transported by ferries. The island roads are relatively small, so we have used trucks instead of trailer trucks. It constitutes 5% of the total cost.

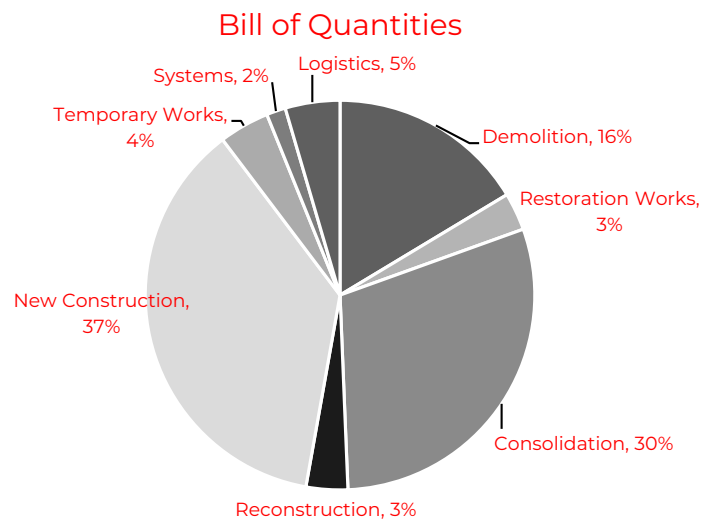


Figure 7.18 Bill of Quantities Alternative 1 Pie Chart (Source: Created by the author, 2025)

Bill of Quantities Alternative 1			
Work Description	Total Amount in TL	Total Amount in Euro	€/sqm
Demolition	15926713.95	437306.81	52.01
Restoration Works	3037516.63	83402.43	16.75
Consolidation	29016033.09	796706.02	160.04
Reconstruction	3363209.68	92345.13	18.55
New Construction	20453219.66	984797.28	528.04
Construction Site Setup for Temporary Works	4058885.30	111446.60	8.33
Systems	1543545.37	42381.81	6.19
Logistics	4412495.55	121155.84	7.94
Total	81811619.23	2669541.91	175.04

Figure 7.21 Bill of Quantities Alternative 1 Table (Source: Created by the author, 2025)

Economic Framework - Alternative 1 Methodology:

Works to be tendered:
Total cost of the project: The total price is calculated with the bill of quantities related to Alternative 1.

Security costs: These expenses cover ensuring safety on the construction site. They include security personnel, the installation of security measures such as cameras, protective gear for workers, and emergency response measures. We considered 10% of the total cost to be security costs.

VAT:
VAT on the Total Cost of the Project: The VAT amount is calculated based on the total project construction cost. In Turkey, the standardized percentage is 20%.

VAT on the Security Cost: VAT is applied specifically to security-related expenses. In Turkey, the standardized percentage is 20%.

Amounts Available to the Administration (VAT Included)
Technical Expenses: Covers costs for surveys, design, and project development services; it includes design and planning fees, structural tests, and environmental assessments. In our development, we used 13% of the total cost as the technical expenses.

Social Security Contributions: These expenses cover workers' insurance, pensions, and health coverage to ensure legal compliance and worker protection. We considered 4% of the total cost to be security costs.

Works Done Not by the Construction Company: This category represents subcontracted works. It can include specific restoration works,

mechanical and electrical installations, and landscaping works that are handled separately. We used 10% of the total cost as the subcontracted works.

Possible Contingencies: A fund for unforeseen costs, such as structural issues, or emergency repairs. We used 8% of the total price as the possible contingencies.

Conclusion:
According to the pie chart, works to be tendered(66%) constitute the majority of the cost, followed by administrative expenses (21%), and value-added tax(VAT) forms 13% of the total cost.

ECONOMIC FRAMEWORK ALTERNATIVE 1	
	Total Cost
WORKS TO BE TENDERED	
Total cost of the project	2669541.91
Security costs	266954.19
Total	2936496.10
VAT	
VAT on the Total Cost of the project	533908.38
VAT on the Security Cost	53390.84
Total	587299.22
AMOUNTS AVAILABLE TO THE ADMINISTRATION(VAT INCLUDED)	
Technical expenses	347040.45
Social Security contributions	106781.68
Works done not by the construction company	266954.19
Possible Contingencies	213563.35
Total	934339.67
TOTAL GENERAL	4458134.99

Figure 7.22 Economic framework (Source: Created by the author, 2025)

Economic Framework Alternative 1

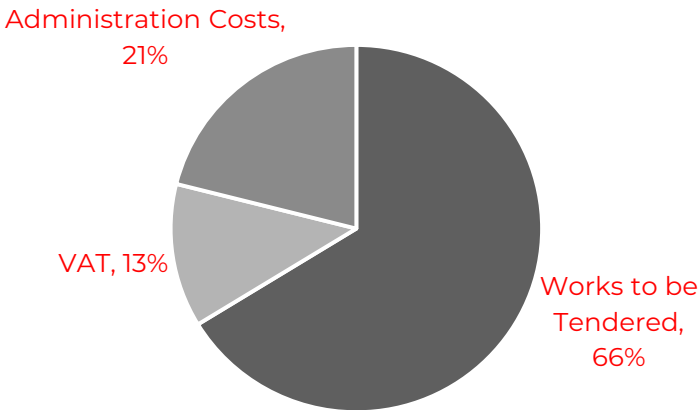


Figure 7.23 Economic framework pie chart (Source: Created by the author, 2025)

7.2.2 Alternative 2 - Complete Restoration

Restoration Works:

Restoration works involve conserving and restoring the building as a whole. Specifically, they include disposing of damaged and relaying Marseille-type roof tiles, removing detached wood cladding, recladding the facade in necessary areas, sanding and impregnating timber cladding, and cleaning masonry structures.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
Restoration Works					
Timber - Exterior Walls					
Total			7544019.01		207139.5
Masonry and Stone Walls - Foundation					
Total			2836067.49		77871.16
Clay - Roof Tiles					
Total			1731512.52		47542.9
Total			12111599		332553.5

Figure 7.24 Bill of Quantities Restoration Works (Source: Created by the author, 2025)

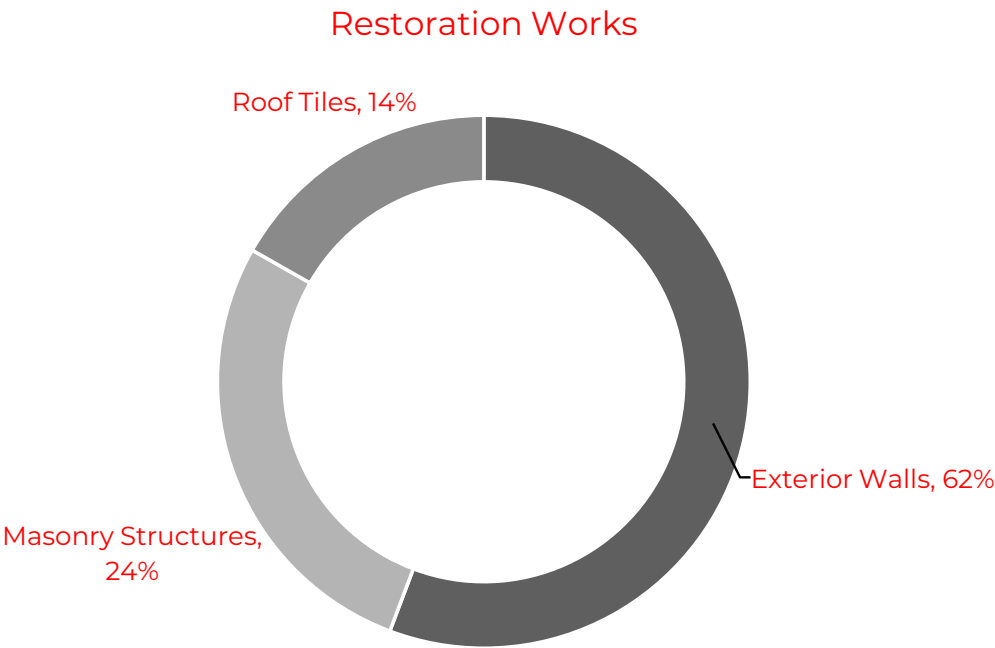


Figure 7.25 Bill of Quantities Restoration Works Pie Chart (Source: Created by the author, 2025)

The pie chart highlights the material specific distribution of cost. The majority of the cost is associated with the exterior walls(62%), followed by masonry structures(24%) and the smallest share of the cost roof tiles(14%).

Consolidation:

Consolidation works consist of reinforcement of foundation using reinforced strip foundation, exterior and interior walls using CLT panels, and roof through addition of a timber frame structure.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
Consolidations					
Foundation					
Total			2241008.98		61532.37
Exterior Walls					
Total			154608244		4245147
Columns					
Total			1183068.45		32484.03
Interior Walls					
Total			37654875		1033907
Roof					
Total			10548999.5		289648.5
Total			206236196		5662718

Figure 7.26 Bill of Quantities Consolidation (Source: Created by the author, 2025)

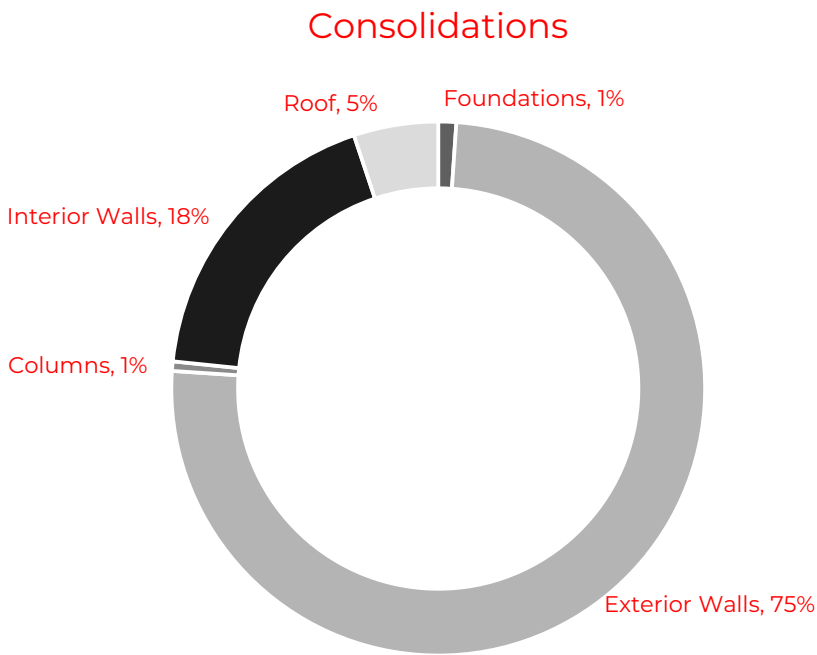


Figure 7.27 Bill of Quantities Consolidation Pie Chart (Source: Created by the author, 2025)

Exterior walls form the highest share of the costs(75%). Since the facade shows signs of deflection and structural failures, we have decided to consolidate most of them. Interior walls constitute 18% of the total cost, following the cost of the roof(5%). We incorporated timber frame reinforcement instead of CLT panels in this section, which can explain the price.

Reconstruction:

Reconstruction consists of replacement of heavily damaged elements such as rain gutters and fixtures.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
Reconstruction					
Fixtures - Windows and Doors					
Total			17678540.6		485407.5
Metal - Rain Gutters					
Total			675402.382		18544.82
Total			18353943		503952.3

Figure 7.28 Bill of Quantities Reconstruction (Source: Created by the author, 2025)

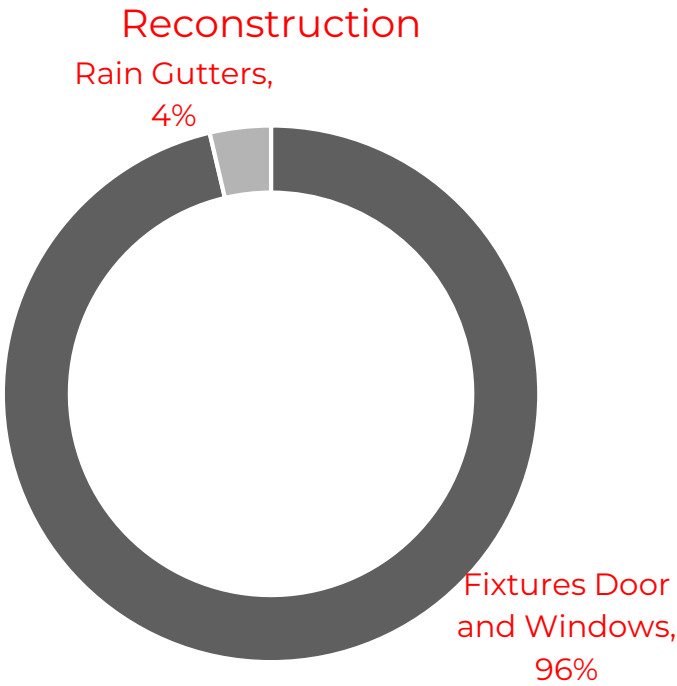


Figure 7.29 Bill of Quantities Reconstruction Pie Chart (Source: Created by the author, 2025)

The pie chart illustrates that the doors and window fixtures constitute the majority of the cost(96%). The high price can be associated with the number of windows, the craftsmanship of manufacturing, and the raw materials. Rain gutters comprise a small share of the total cost(4%)

Construction Site Setup for Temporary Works:

Construction site setup for temporary works includes installation and materials of scaffolding, and site barrier, container for uses such as, dormitories, bathrooms, first aid, storage rooms.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
Construction Site Setup for Temporary Works					
V.0616	Construction of Fully Secured Work Scaffold from Steel Pipes		1040894.68		28580.3
V.0613/1	Surrounding the Construction Site with Galvanized Sheet Metal		616452.885		16926.22
Villa Prefabrik	Containers		5536000		152004.4
Total			7193347.56		197510.9

Figure 7.30 Bill of Quantities Construction Site Setup for Temporary Works (Source: Created by the author, 2025)

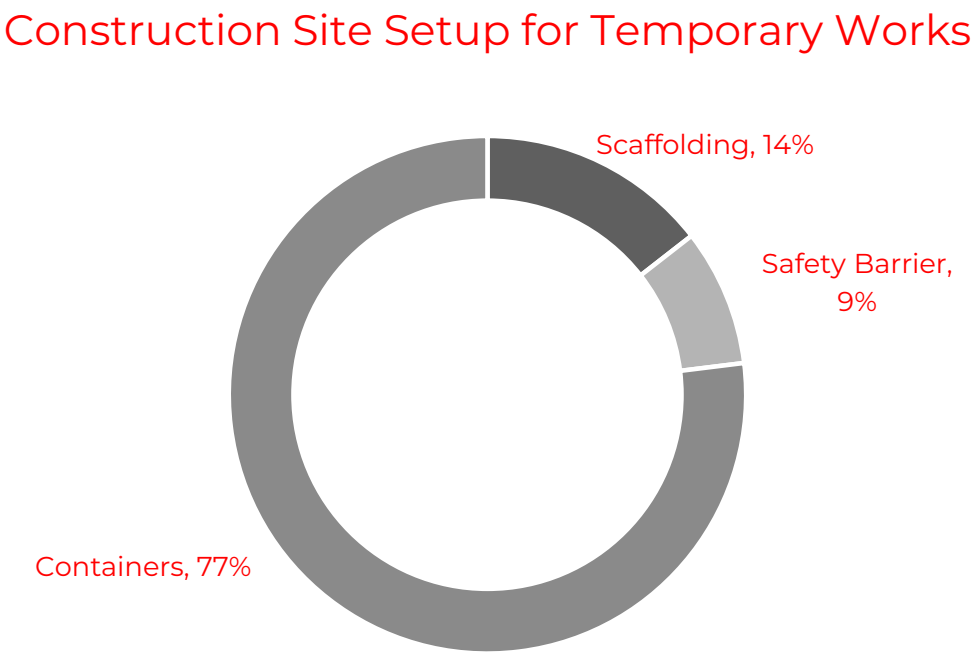


Figure 7.31 Bill of Quantities Construction Site Setup for Temporary Works Pie Chart (Source: Created by the author, 2025)

The containers account for the highest share(77%). The expansion of the project also means the expansion of the construction team. In accordance with their needs, we increased the capacity of the containers to make them suitable. Scaffolding forms 14% of the cost, followed by the safety barrier, which constitutes 9% of the cost.

Systems:
 Systems combines hydraulic and electricity infrastructures, elevator and its installation, and air conditioning/ventilation.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
Systems					
Sanitary - Hydraulic					
Total			287111.16		7883.338
Elevator					
Total			2531400		69505.77
Air Conditioning - Ventilation					
Total			116670		3203.46
Electricity Infrastructure					
Total			1747024.92		47968.83
Total			4682206.08		128561.4

Figure 7.32 Bill of Quantities Systems (Source: Created by the author, 2025)

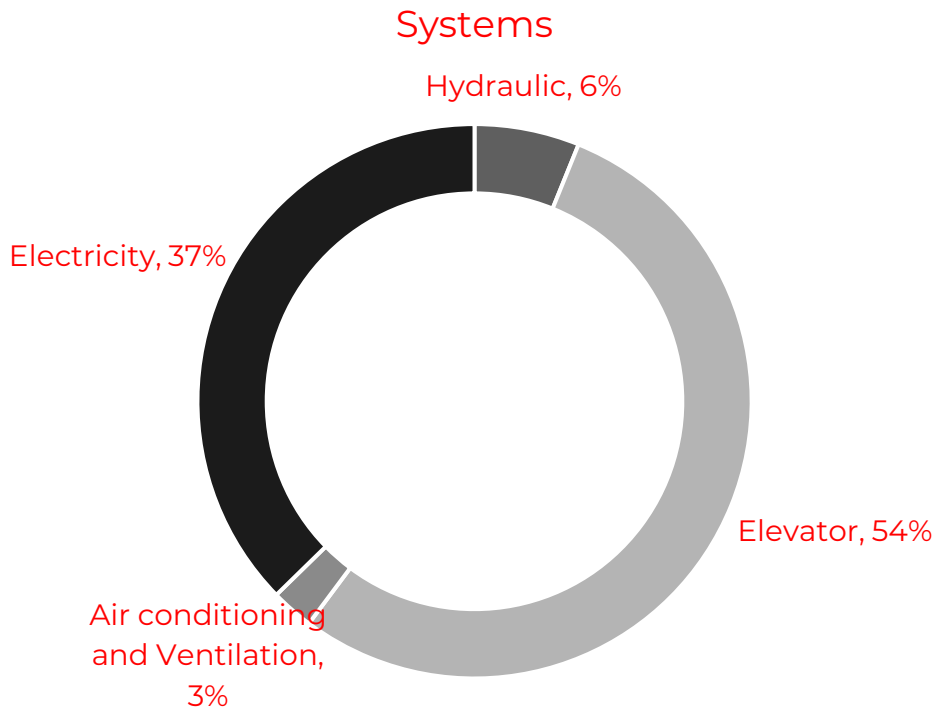


Figure 7.33 Bill of Quantities Systems Pie Chart (Source: Created by the author, 2025)

The overall price related to the elevator constitutes the most significant share(54%) of the total cost of systems. The electricity infrastructure forms (37%), hydraulic systems (6%), and ventilation systems(3%) are the lowest shares of the total cost.

Logistics:
 Logistics refers to the transportation of raw materials; since the building is on an island, all the trucks and cranes must be transported by ferries.

Code	Description	Amounts in TL		Amounts in Euro	
		Unit Price	Total	Unit Price	Total
Logistics					
Arabacioglu Logistics	Daily fee of truck 15 tons	6000	1444260.23		39655.69
Ekinciler Cranes	Crane 30 tons daily fee	30000	1800000		49423.39
Adalar Municipality	Transportation by truck	4250	2046035.32		56178.89
Adalar Municipality	Transportation with a trailer truck	5550			
Adalar Municipality	Transportation with a crane truck	5550	66600		1828.666
Total			5356895.55		147086.6

Figure 7.34 Bill of Quantities Logistics (Source: Created by the author, 2025)

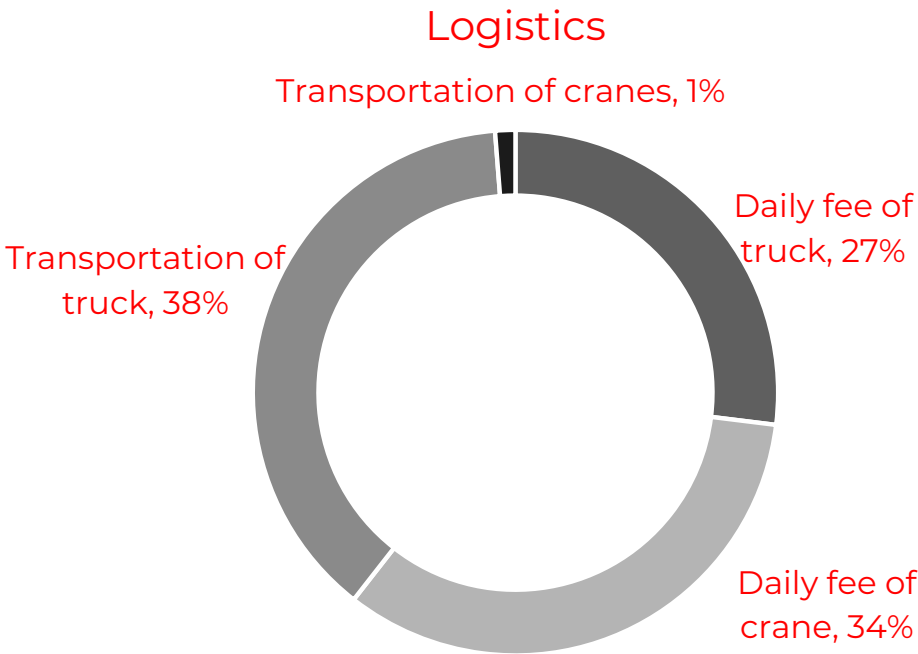


Figure 7.35 Bill of Quantities Logistics Pie Chart (Source: Created by the author, 2025)

The pie chart illustrates that the transportation of trucks accounts for the largest share(38%), and the ferries that carry the trucks are rented only one way, so in our calculations, we multiplied it by two. The daily fee of trucks constitutes (27%) of the cost, and the daily fee of cranes accounts for a smaller percentage(34%), and the smallest percentage is the transportation of cranes(1%)

Bill of Quantities Overview - Alternative 2

Restoration works refer to the restoration of exterior walls, masonry walls, and cladding of roofs. The price per square meter for restoration works is 21.16€. Restoration works constitutes 5% of the total cost.

Consolidation of the building refers to removing cladding in desired walls, reinforcing the structure with CLT panels of 10 cm thickness, and recladding the facade. The unit cost of consolidation is 423.03€; and forms 81% of total cost. The higher price is related to current state of the building, central axis and southwest wings have walls that are completely demolished, and the surface area of intervention.

The reconstruction price per square meter is 37.65€, and constitutes 7% of total cost, which includes the manufacturing and installation of rain gutters, doors, and window fixtures.

Construction site setup for temporary works refers to the costs associated with construction scaffolding, safety barriers, and containers for offices, first aid, dining hall, dormitories, and storage areas. The price per square meter is 14.76€ for this section, and according to the pie chart it is 3% of the total cost.

Systems refer to sanitary infrastructure, HVAC units, elevators, and electricity infrastructure. The price per square meter is 9.6€, constituting 2% of the total cost. The infrastructure was calculated by multiplying the final total cost by 30%.

Logistics refers to the transportation of raw materials; since the building is situated on an island, all the trucks and cranes were transported by ferries. The island roads are relatively small, so we have used trucks instead of trailer trucks. It constitutes 3% of the total cost.

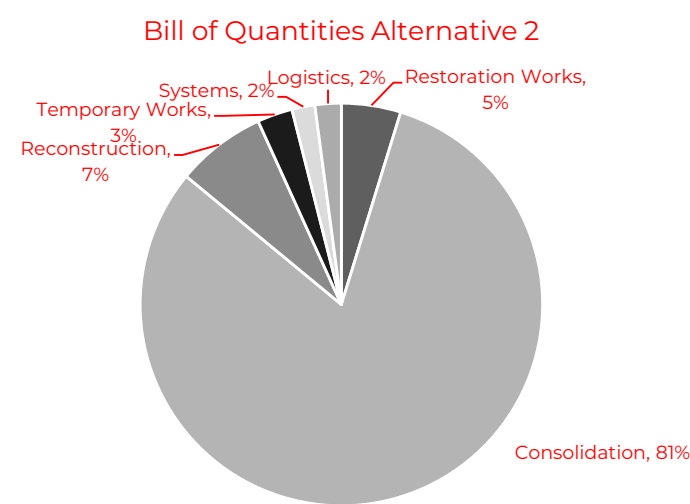


Figure 7.37 Bill of Quantities Alternative 2 Pie Chart (Source: Created by the author, 2025)

Bill of Quantities Preserving the Building Alternative 2			
Work Description	Total Amount in TL	Total Amount in Euro	€/sqm
Restoration Works	1211599.02	332553.52	24.84
Consolidation	206236195.56	5662718.16	423.03
Reconstruction	18353942.95	503952.31	37.65
Construction Site Setup for Temporary Works	7193347.56	197510.92	14.76
Systems	4682206.08	128561.40	9.60
Logistics	5356895.55	147086.64	10.99
Total	253934186.72	6972382.94	520.87

Figure 7.36 Bill of Quantities Alternative 2 Table (Source: Created by the author, 2025)

Economic Framework - Alternative 2 Methodology:

Works to be tendered:
Total cost of the project: The total price is calculated with the bill of quantities related to Alternative 2.
Security costs: These expenses cover ensuring safety on the construction site. They can include costs related to security personnel, protective gear for workers, and emergency response measures. In our project, we considered security costs to be 10% of the total cost.
VAT:
VAT on the Total Cost of the Project: The VAT amount is calculated based on the total project construction cost. In Turkey, the standardized percentage is 20%.
VAT on Security Costs: In our project, we considered the standardized percentage of 20%.
Amounts Available to the Administration (VAT Included)
Technical Expenses: Includes costs for surveys, design, and project development services; it can contain design and planning fees, structural tests, and environmental assessments. In our development, we used 13% of the total cost as the technical expenses since our project relies on technical surveys and tests.
Social Security Contributions: These expenses cover workers' insurance, pensions, and health coverage to ensure legal compliance and worker protection. We considered 4% of the total cost to be security costs.

Works Done Not by the Construction Company: This category represents subcontracted works. Our project includes specific restoration and landscaping works, for which we used 15% of the total cost as the subcontracted work.
Possible Contingencies: This fund is for unanticipated expenses, such as structural issues or emergency repairs. We used 10% of the total price for possible contingencies.

Conclusion:
According to the pie chart, works to be tendered(64%) constitute the majority of the cost, followed by administrative expenses (24%), and value-added tax(VAT) forms 12% of the total cost.

ECONOMIC FRAMEWORKALTERNATIVE 2	
	Total Cost
WORKS TO BE TENDERED	
Total cost of the project	6972382.94
Security costs	697238.29
Total	7669621.24
VAT	
VAT on the Total Cost of the project	1394476.59
VAT on the Security Cost	69723.83
Total	1464200.42
AMOUNTS AVAILABLE TO THE ADMINISTRATION(VAT INCLUDED)	
Technical expenses	906409.78
Social Security contributions	278895.32
Works done not by the construction company	1045857.44
Possible Contingencies	697238.29
Total	2928400.84
TOTAL GENERAL	12062222.49

Figure 7.38 Economic framework alternative 2 (Source: Created by the author, 2025)

Economic Framework Alternative 2

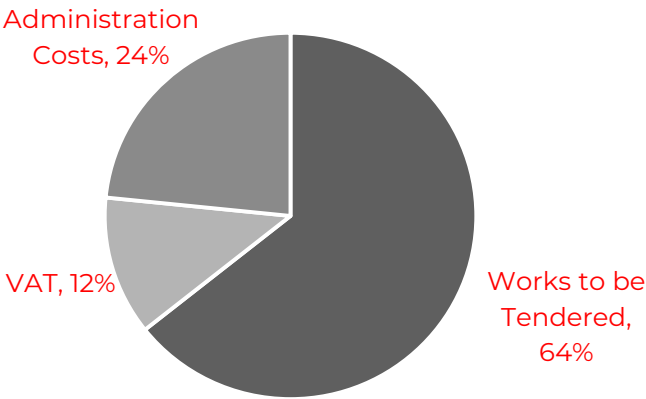


Figure 7.39 Economic framework alternative 2 pie chart (Source: Created by the author, 2025)

7.2.3 Cost Comparison Study

Bill of Quantities:

The restoration and adaptive reuse of historic buildings are always associated with unique challenges; one of the most significant is the balance between preservation and cost associated with the project. From a heritage perspective, a complete restoration of the entire structure may seem ideal, yet it may not be the most viable solution due to economic limitations. This chapter introduces a cost comparison between two adaptive reuse and restoration approaches: the first is the applied method, which includes partial demolition of the building with restoration and new construction versus an entire restoration and preservation of the structure. The comparison study aims to highlight each practice's economic importance to clarify the proposed intervention strategy.

The cost comparison was conducted according to the Unit Price Lists published by the Republic of Turkey's Ministry of Culture and Tourism in 2024. To be precise, the masses were calculated with Archicad. The calculations were derived from the Bill of Quantities prepared for the project.

When we compare the two approaches, the restoration cost is 16.75€/sqm in alternative one and 24.84€/sqm in alternative two. The difference between the prices is directly related to the building's state of conservation; as mentioned before, the central axis and southwest wing are severely decayed, and some parts have been completely demolished, thus needing new cladding and roof cover.

The consolidation cost in scenario one

Parametric Data		
	Alternative 1	Alternative 2
Total Building Area	13386	13386
Demolition	8407.7	0
Restoration	4978.3	13386
New Construction	665	0
Total Constructed Area	14051	13386

Figure 7.40 Buliding area Comparison Table Created by the author

Bill of Quantities Work Description	Partial Restoration & New Construction			Complete Restoration		
	Total Amount in Euro	Area (sqm)	€/sqm	Total Amount in Euro	Area (sqm)	€/sqm
Demolition	437306.81	8407.70	52.01			
Restoration Works	83402.43	4978.30	16.75	332553.52	13386.00	24.84
Consolidation	796706.02	4978.30	160.04	5662718.16	13386.00	423.03
Reconstruction	92345.13	4978.30	18.55	503952.31	13386.00	37.65
New Construction	984797.28	1865.00	528.04			
Construction Site Setup for Temporary Works	111446.60			197510.92	13386.00	
		13386.00	8.33			14.76
Systems	42381.81	6843.30	6.19	128561.40	13386.00	9.60
Logistics	121155.84	15251.00	7.94	147086.64	13386.00	10.99
Total	2669541.91		175.04	6972382.94		520.87

Figure 7.41 Bill of Quantities Comparison Table Created by the author

is 160.04€/sqm, while in scenario two, it is 423.03€/sqm. The cost difference is again related to the building's decay; the demolished parts must be reinforced and reconstructed. Another reason is the number of CLT panels, which would increase substantially since the building's structural safeguarding is in danger.

The reconstruction cost in scenario one is 18.55€/sqm, while in alternative two, it is 37.65€/sqm. The area of alternative two is substantially more extensive, more than 2.5 times, so the number of fixtures needing replacement is much higher.

The cost of setting up a construction site for temporary works in alternative one is 8.33€/sqm, while in alternative two, it is 14.76€/sqm. The increment in the cost is related to the site size, scaffolding, and container needs according to the workers and worked area.

The systems are compared in two alternatives: alternative one is 6.19€/sqm, and alternative two is 9.60€/sqm. There is minimal change considering the difference between the two alternative' areas.

When we compare the logistic needs of two projects, the alternative one's cost is 7.94€/sqm, while alternative two's is 10.99€/sqm. The necessity of transportation of raw materials can explain the change in cost per square meter.

The comparison shows that the complete restoration is 2.9 times higher than the partial demolition and new construction approach, making the partial demolition and new construction approach is economically more attainable.

Economic Framework Comparison:

As a continuation of the bill of quantities comparison, we continue our process by comparing the economic frameworks of Alternative 1 and Alternative 2. We will analyze each title and its effect on the general total cost separately by examining the Economic Framework Comparison table. Each section, such as VAT on security costs, technical expenses, possible contingencies, etc., is a percentage of the project's total cost, which we calculated using a bill of quantities.

Works to be tendered:

The total cost of tendered works in alternative one is 2,936,496.10€, and the unit cost is 192.54€/sqm, while in alternative two, it is 7,669,621.24€, and the unit cost is 572.96€/sqm. The total cost of tendered works in Alternative 2 is almost three times higher than in Alternative 1, and the unit price per square meter of Alternative 2 is three times the amount of Alternative 1.

VAT

The cost associated with the value-added tax of Alternative 1 is 587,299.22€, while Alternative 2's is 1,464,200.42€. Since the VAT is calculated as 20% of the project cost, this is directly related to tendered works.

Administrative Costs:

The administrative costs of the Alternative 1 is 934,339.67€, and Alternative 2 is 2,928,400.84€.

When we compare the General Total costs:

Alternative 1 = 4,458,135.0€, Alternative 2 = 12,062,222.5€. Alternative 1's unit cost is 292.3€/sqm, while Alternative 2's is 901.11€/sqm. When we compare the unit costs, Alternative 2 is three times higher than Alternative 1. The price difference is directly associated with the bill of quantities and the project cost of each alternative. Since the project cost of Alternative 2 was significantly higher than Alternative 1's, we can associate the general total with it.

Conclusion:

Through this project, we acknowledge the importance of the building's historical integrity and intangible, non-monetary values. However, when we compare the costs of the two alternatives, we see that the used project, Alternative 1, has a more economical price. Our intervention consists of partial demolition, restoration, and new construction; through this strategy, we found a balance between heritage preservation and financial sustainability.

Economic Framework	Alternative 1		Alternative 2	
Work Description	Total Cost in €	€/sqm	Total Cost in €	€/sqm
Works to be Tendered				
Total cost of the project	2669541.91	175.04	6972382.94	520.87
Security costs	266954.19	17.50	697238.29	52.09
Total	2936496.10	192.54	7669621.24	572.96
VAT				
VAT on the Total Cost of the project	533908.38	35.01	1394476.59	104.17
VAT on the Security Cost	53390.84	3.50	69723.83	5.21
Total	587299.22	38.51	1464200.42	109.38
Amounts Available to the Administration (VAT Included)				
Technical expenses	347040.45	22.76	906409.78	67.71
Social security contributions	106781.68	7.00	278895.32	20.83
Works done not by the construction company	266954.19	17.50	1045857.44	78.13
Possible contingencies	213563.35	14.00	697238.29	52.09
Total	934339.67	61.26	2928400.84	218.77
Total General	4458135.0	292.3	12062222.5	901.11

Figure 7.42 Economic framework comparison table (Source: Created by the author, 2025)

08. Conclusion

The analyses of Prinkipo Palace, such as territorial and historical, demand, state-of-the-art conservation, and structural, substantially guided us in the project development. One of the challenges that arose during the project development was the need to rethink the structure's future while protecting its intangible and historic values.

Through the restoration and adaptive reuse project for the Prinkipo Palace, the goal has been dual: to preserve and highlight the historical significance and architectural character and to provide a function that addresses emerging needs.

The building's new function enhances the islands' unique characteristics. The project aims to bridge the gap between the islands' and the buildings' histories through a reuse project that revitalizes the site through cultural and social activities, creating a new place for community engagement. Demand analyses were an integral part of the decision-making process regarding the new function, helping us understand the actual needs of residents and visitors to the islands.

The proposal includes partial demolition, restoration, consolidation, and new construction. The intervention methods were chosen according to the building's needs, reversibility, and harmony with the existing structure.

Moreover, a cost accounting method was used to determine the costs associated with the project. We expanded this research by creating a comparison cost accounting study, where we compare two alternatives:

Alternative 1: Applied Intervention, which consists of partial demolition, restoration, consolidation, and new construction

Alternative 2: Complete restoration and preservation, consisting of complete restoration and consolidation

The developed restoration and reuse project represents a vision of how the Prinkipo Palace can be recovered through a new use firmly rooted in its context while respecting the building's unique characteristics. These studies serve as a starting point for potential future developments, which can involve other abandoned timber buildings in Istanbul and Turkey to revive the identity of traditional timber constructions.

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Historical Analysis

Location of the Site



Europe's largest and the world's second-largest wooden structure is the **Prinkipo Greek Orphanage**. The building, designed by Alexandre Vallauri in the **neo-classical style**, was constructed between 1888 and 1900 and sits atop Hristos Hill on Buyukada, the largest of the Princes Islands. It is connected to Istanbul province and is owned by the Ecumenical Patriarchate of Istanbul. The building is classified as a Group 1 antiquity and must be preserved.

It is a historic 13,000-square-meter wooden building on Buyukada, one of the nine Princes' Islands off the coast of Istanbul, Turkey, in the Sea of Marmara. It served as an orphanage from 1903 to 1964. Protected forests surround the building, and the lack of neighboring buildings gives it a **unique position and scenic view**.

This impressive building features exceptional dimensions and architecture, showcasing a symmetrical mass pattern. Its elongated edge spans approximately 102 meters on a northeast-southwest axis, gracing a sprawling property. The entrance axis sits centrally, while the right and left side facade lines measure 32 meters wide. These sections are linked by branches that are 18 meters wide.

The Prinkipo Greek Orphanage comprises six floors: a basement floor, a ground floor, a regular 1st, 2nd, and 3rd floor, and a partial roof floor. Three staircases provided accessibility between the floors; the main staircase was in the entrance hall, while the other two were on the rear ends of the corridors. The basement floor covers the entire area below the elevated ground except the northeast of the building. The basement floor is at an elevation of +2.50 m.

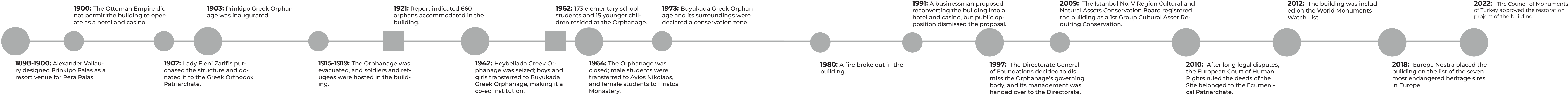
Siteplan



Axonometry

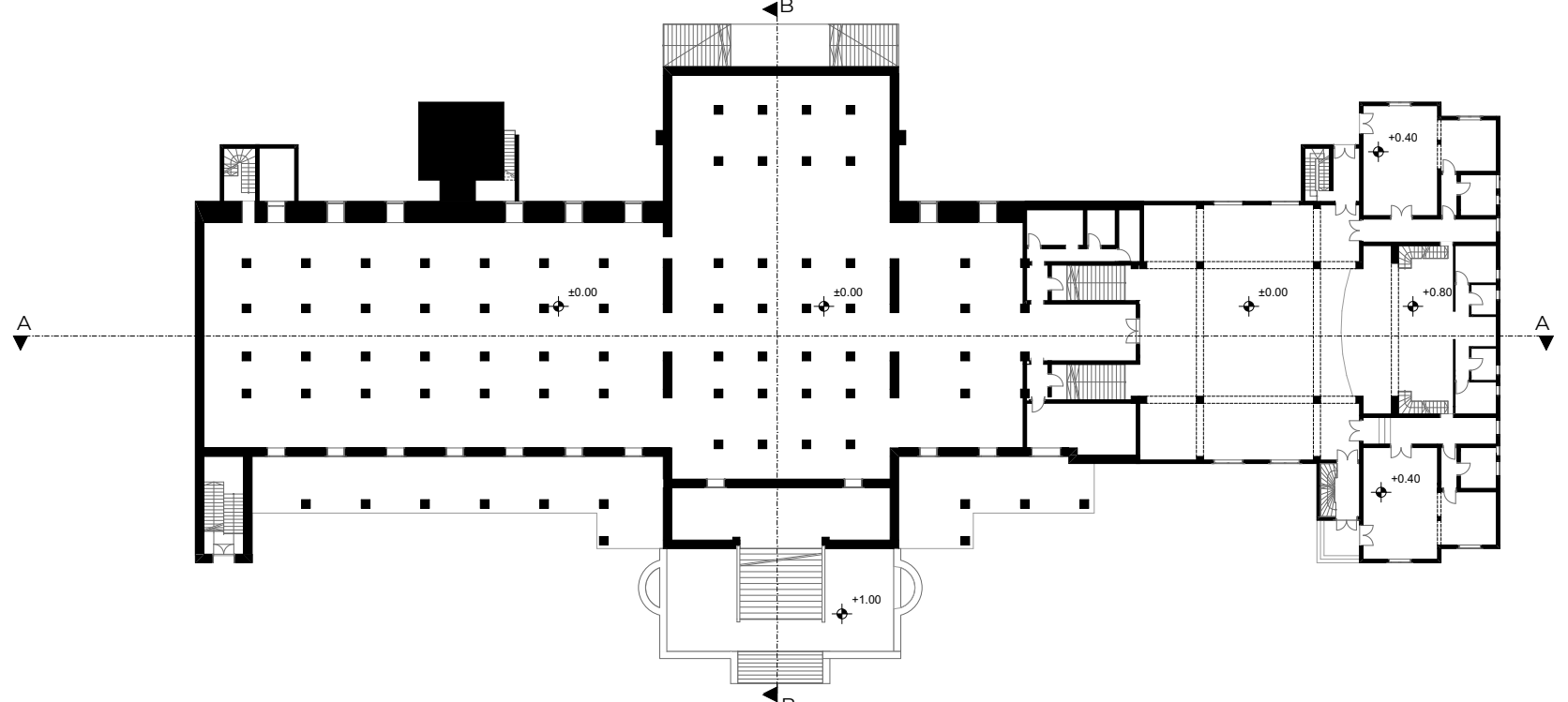


History of Prinkipo Greek Orphanage

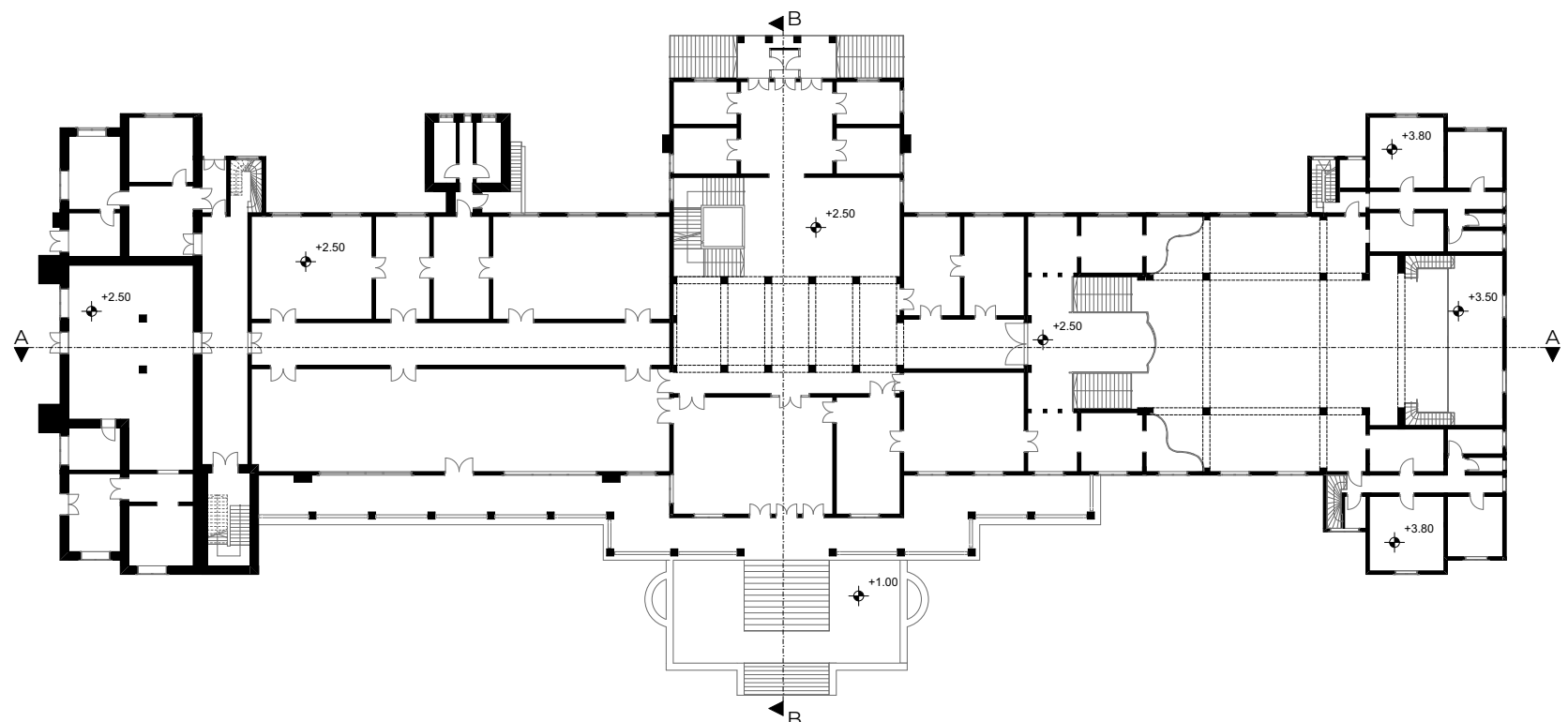


Plan Features

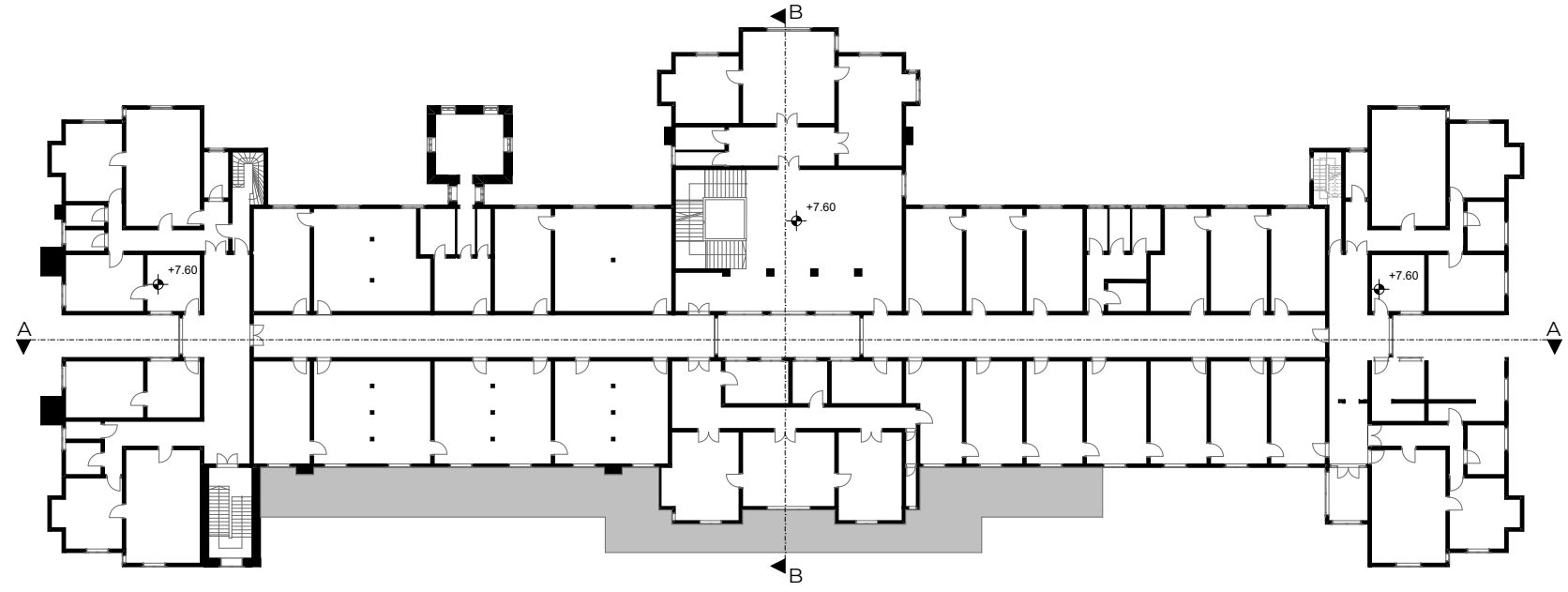
Basement Floor



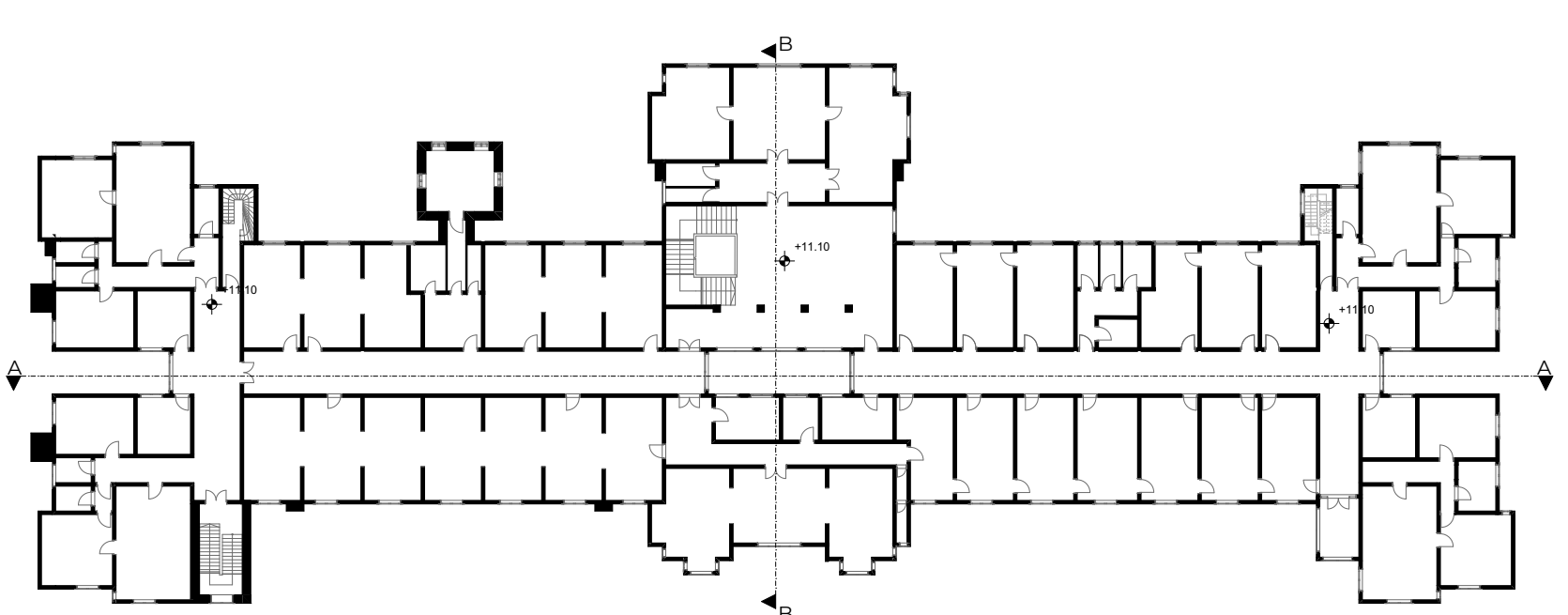
Ground Floor Plan



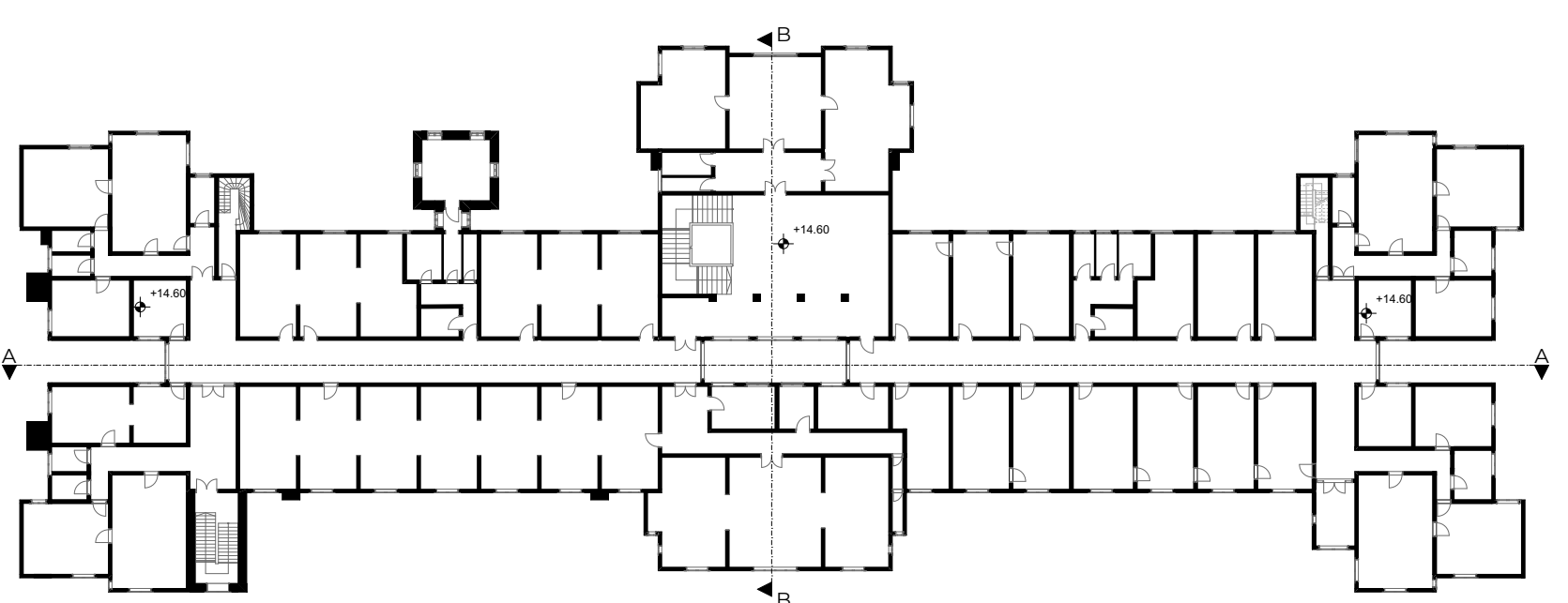
First Floor Plan



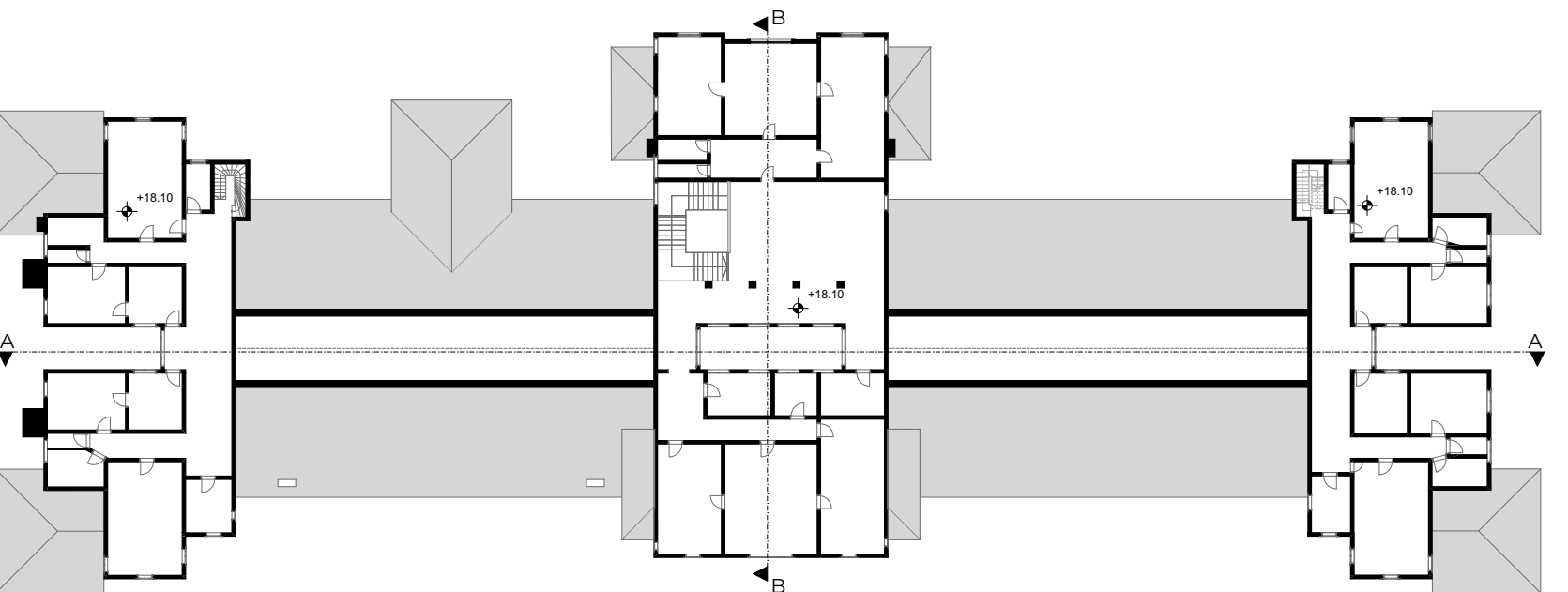
Second Floor Plan



Third Floor Plan

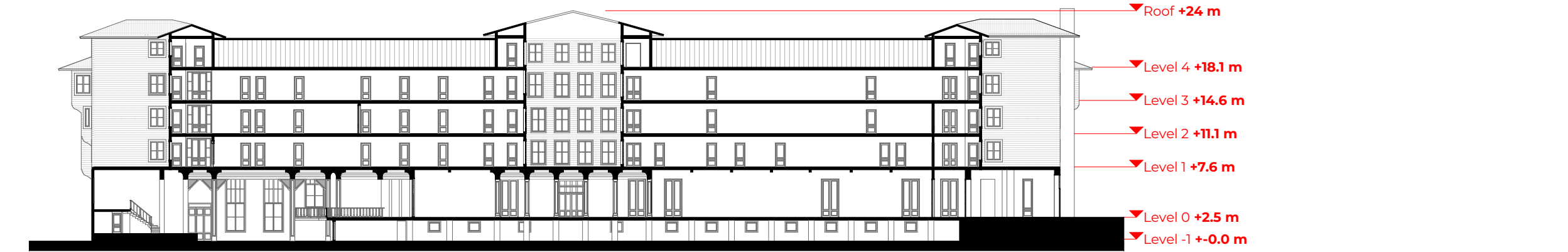


Fourth Floor Plan



Sections

Section A-A



In Section A-A, we can see that the theater is two stories high, while the ground floor is higher than the other stories. The theater is connected to the ground floor through two symmetrical stairs beside the lodges. The theater stage has an elevation of +0.80 m and is connected to the balcony through stairs (Alper, 2021). The center axis of the A-A section is reserved as a light well to create a luminous space. The upper floors were divided into several modules to create spacious rooms used as classrooms and dormitory rooms when the building was an orphanage.

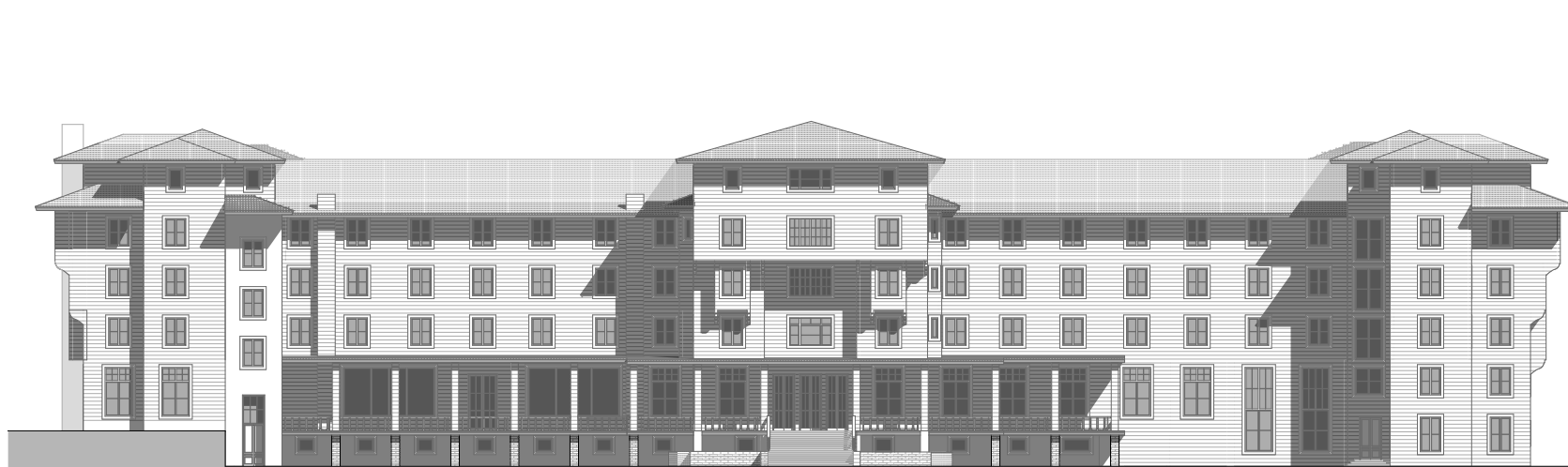
In Section B-B, we can see that the section cuts through the entrance axis of the building, showcasing the main entrance, garden entrance, and entrance hall. The main staircase connects five floors above the basement floor.

Section B-B



Elevations

Southeast Elevation



Northwest Elevation



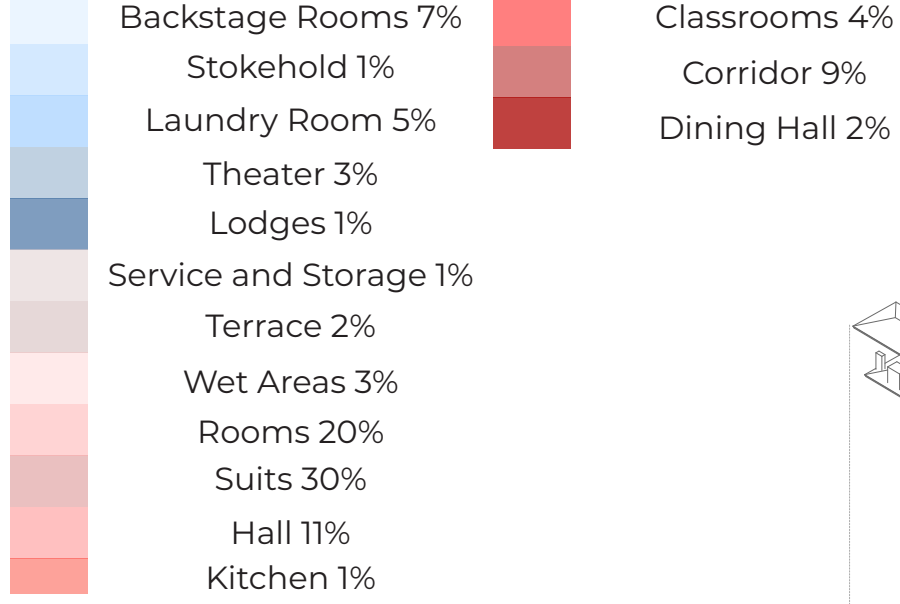
Southwest Elevation



Northeast Elevation



Functions Distribution



Fourth Floor

Suits Wet Areas Corridors

Third Floor

Suits Rooms Wet Areas Corridors

Second Floor

Suits Rooms Wet Areas Corridors Hall

First Floor

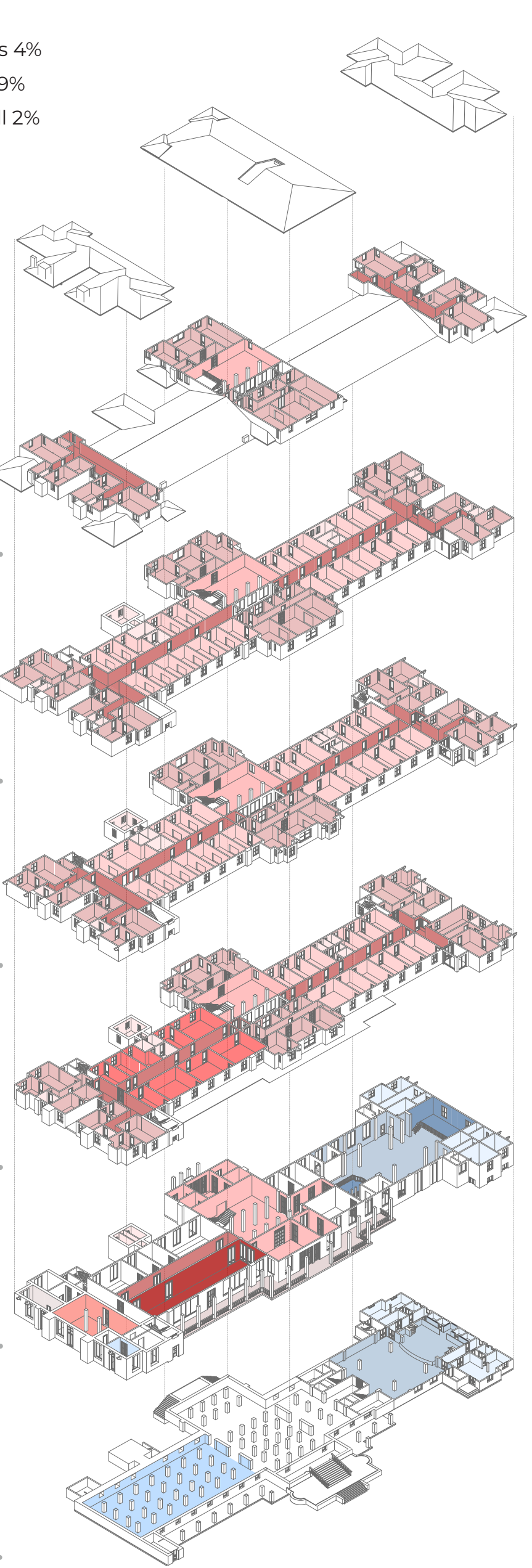
Suits Rooms Wet Areas Corridors Hall Classrooms

Ground Floor

Theater Backstage Rooms Lodges Dining Hall Kitchen Wet Areas Terrace Hall Service & Storage

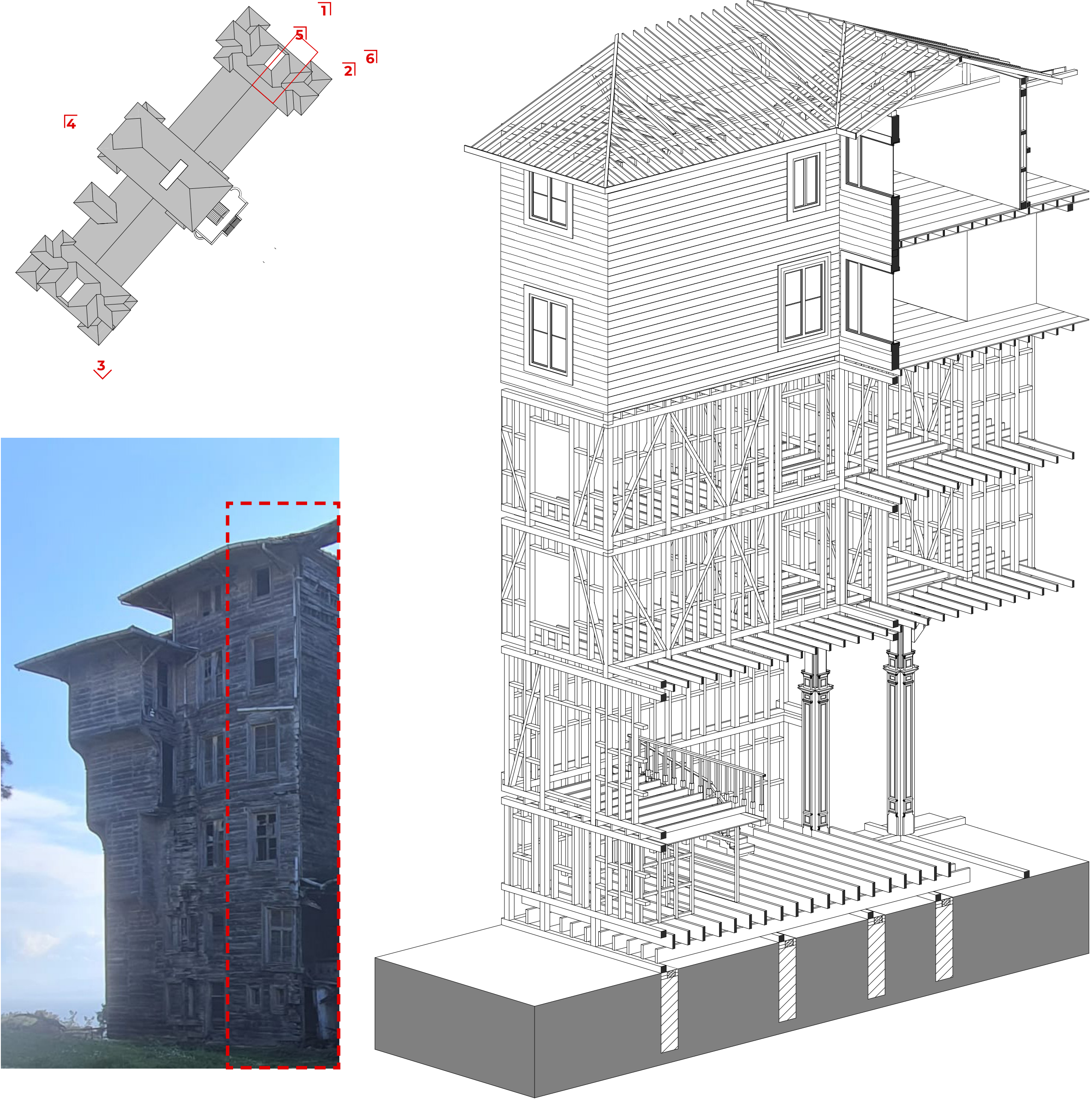
Basement

Laundry Room Theater Backstage Rooms

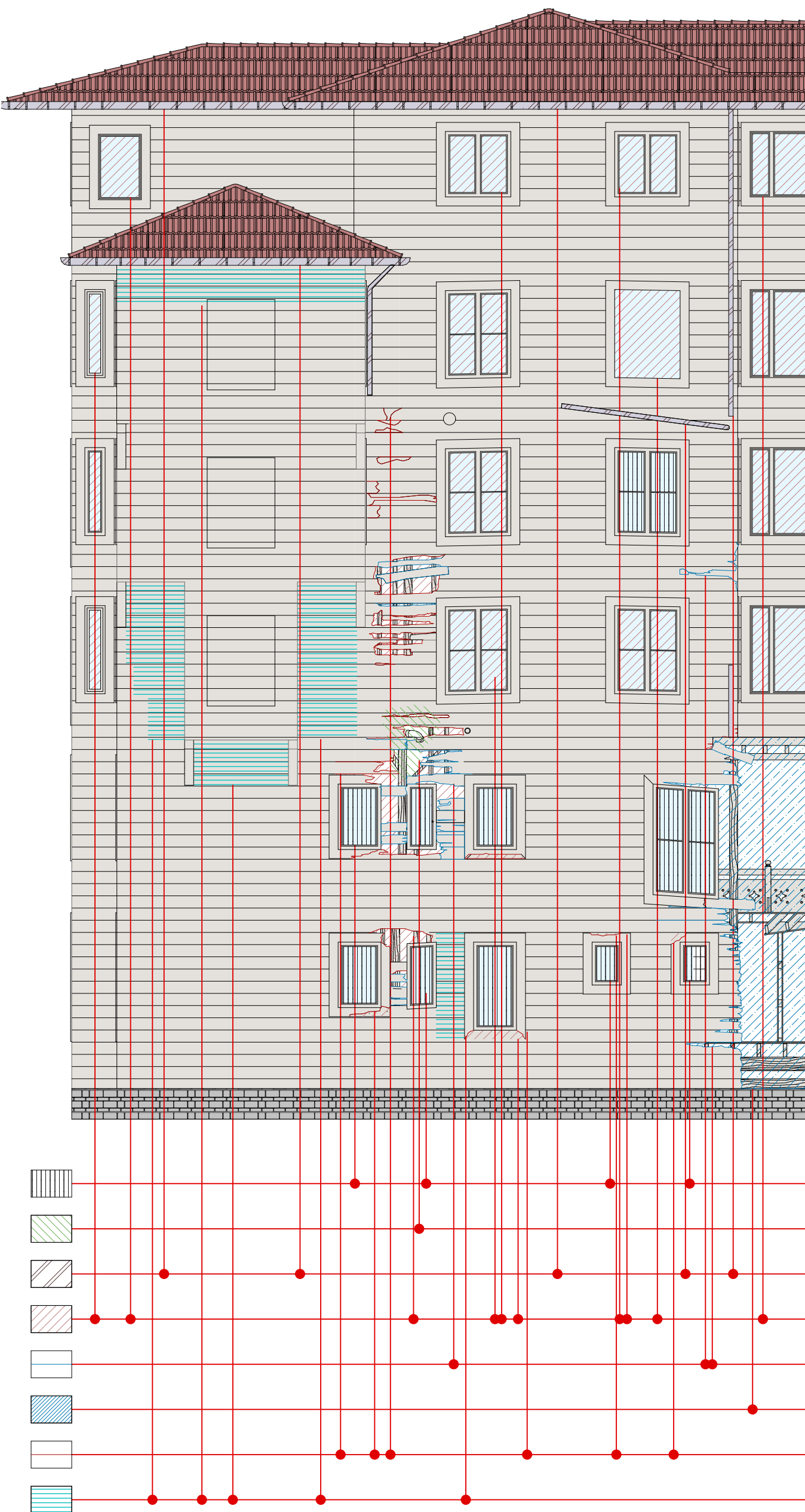


Current State

Construction Method



Decay Analysis
Northeast Elevation



Southeast Elevation



Material Legend

- Lime Based Plaster
- Cast Iron
- Glass
- Roof Tile Baked Clay
- Brick
- Stone Cut
- Timber

Decays Legend

- Alteration
- Mechanical
- Detachment
- Missing Ele-
- Crack
- Discoloration
- Oxidation
- Microbiological Growth

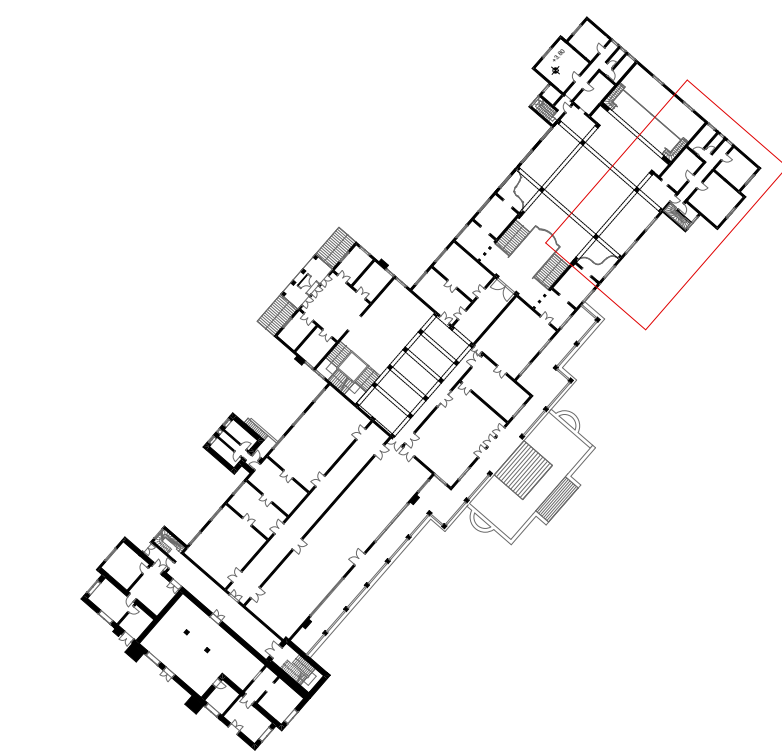
Interventions Legend

- Cleaning**
 - Surface cleaning using Sanding
 - Surface cleaning using Sanblasting
 - Plaster Scraping
 - Herbicide Application
- Reparation**
 - Integration of timber elements
 - Reintegration of Plaster
- Protection**
 - Impregnation using Triazole Type Water-Soluble
- Discharge**
 - Removal of damaged elements

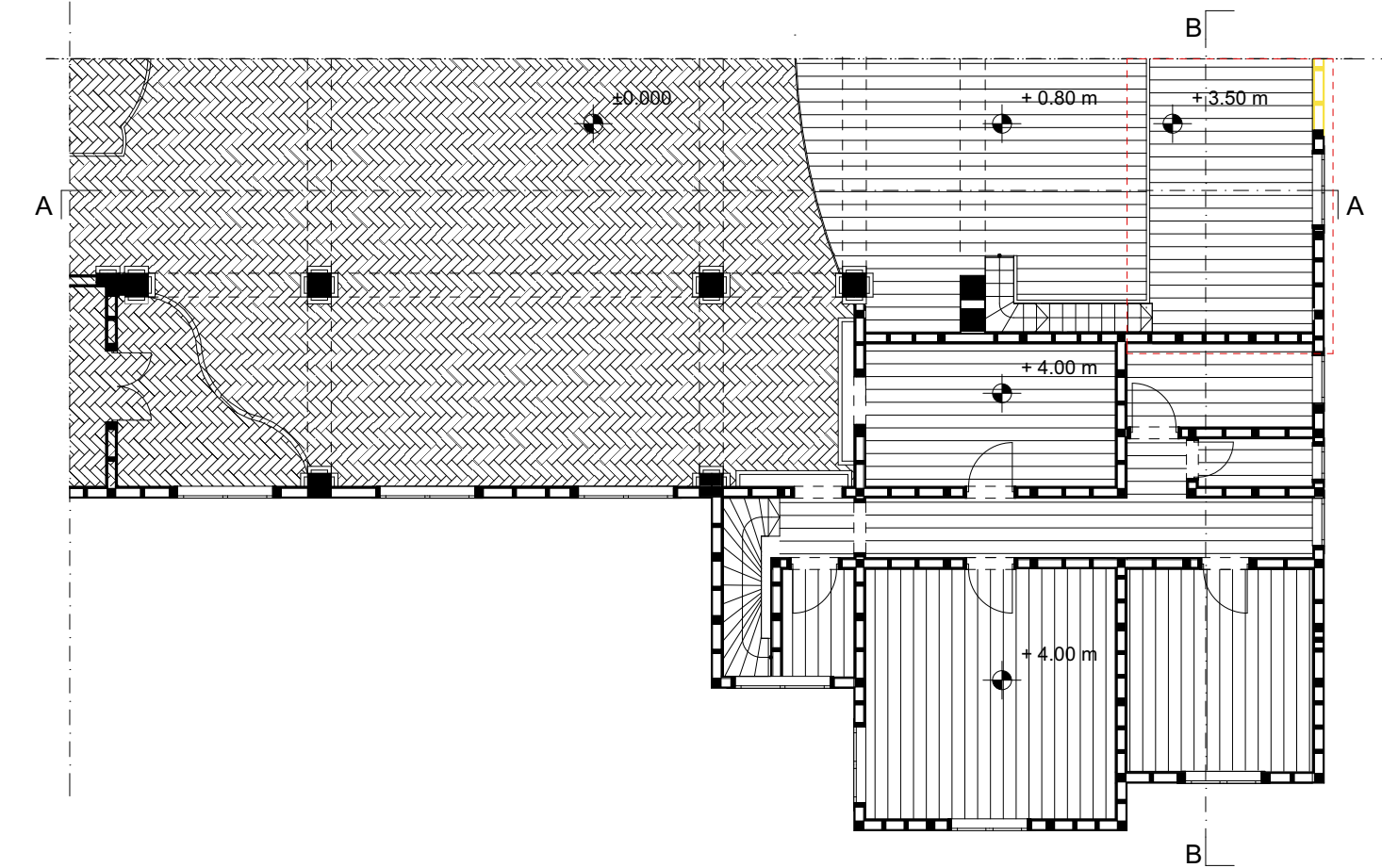
Cleaning Discharge Reparation Protection

Current State - Evaluation of Consistency

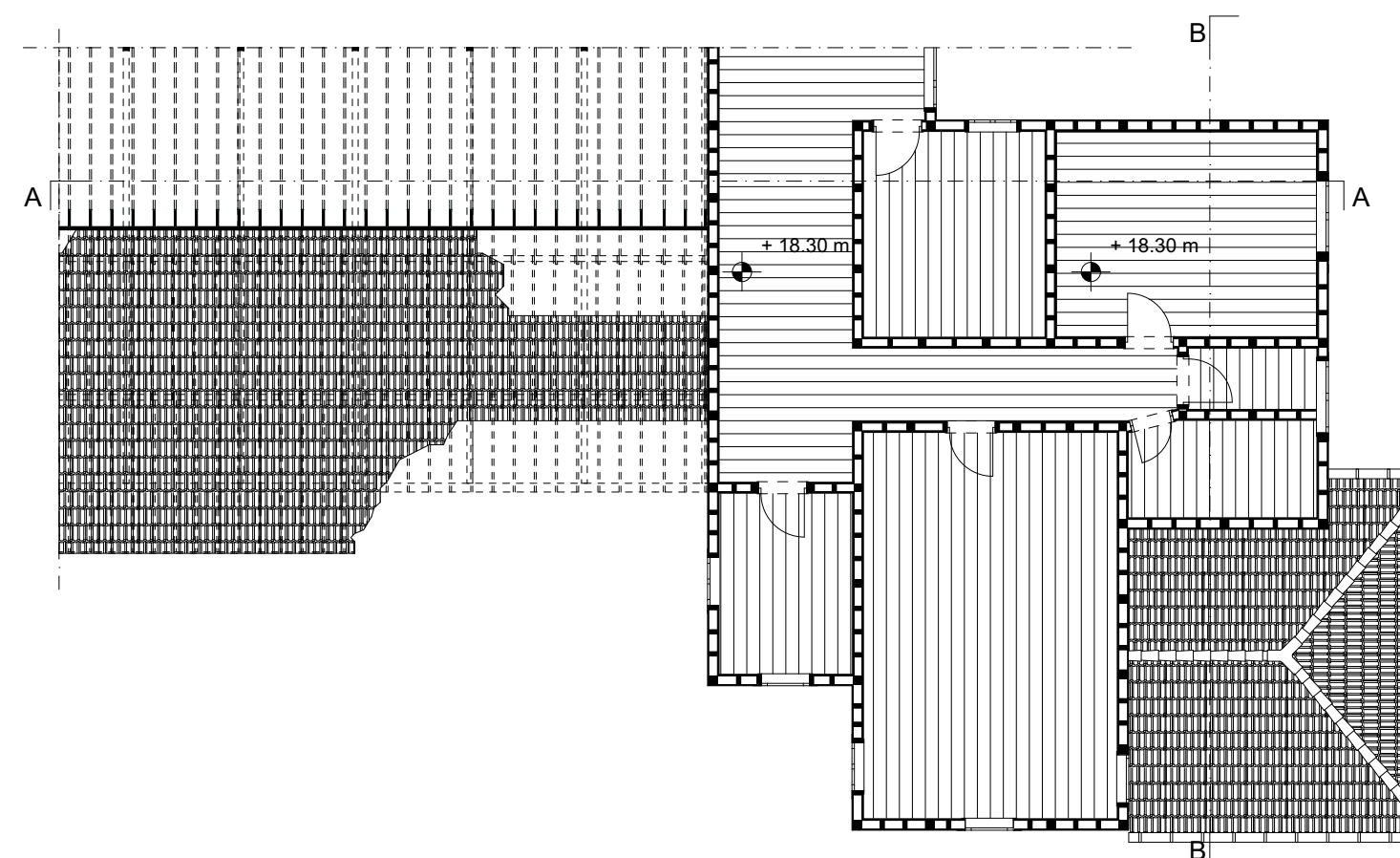
Study Area



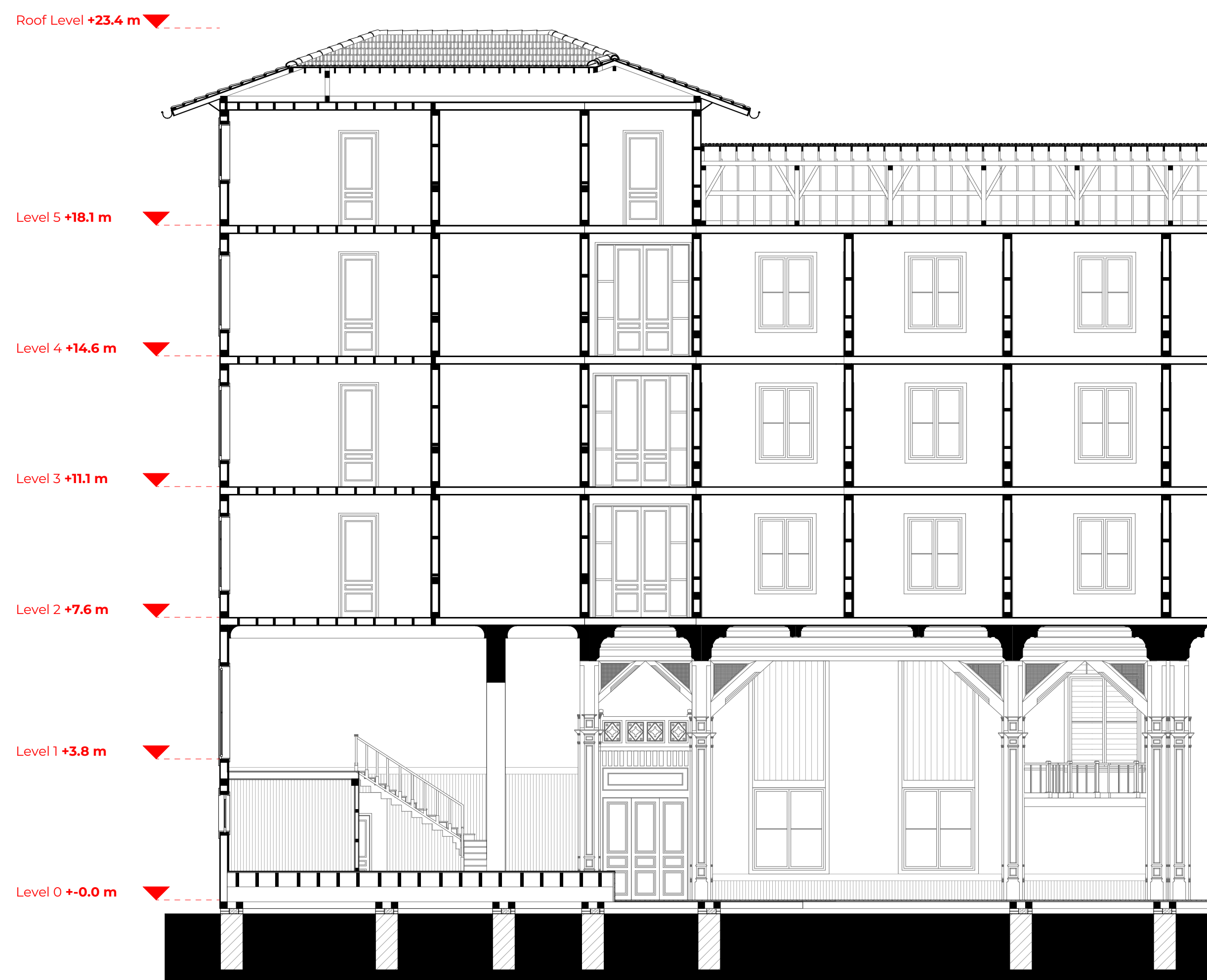
First Floor Plan



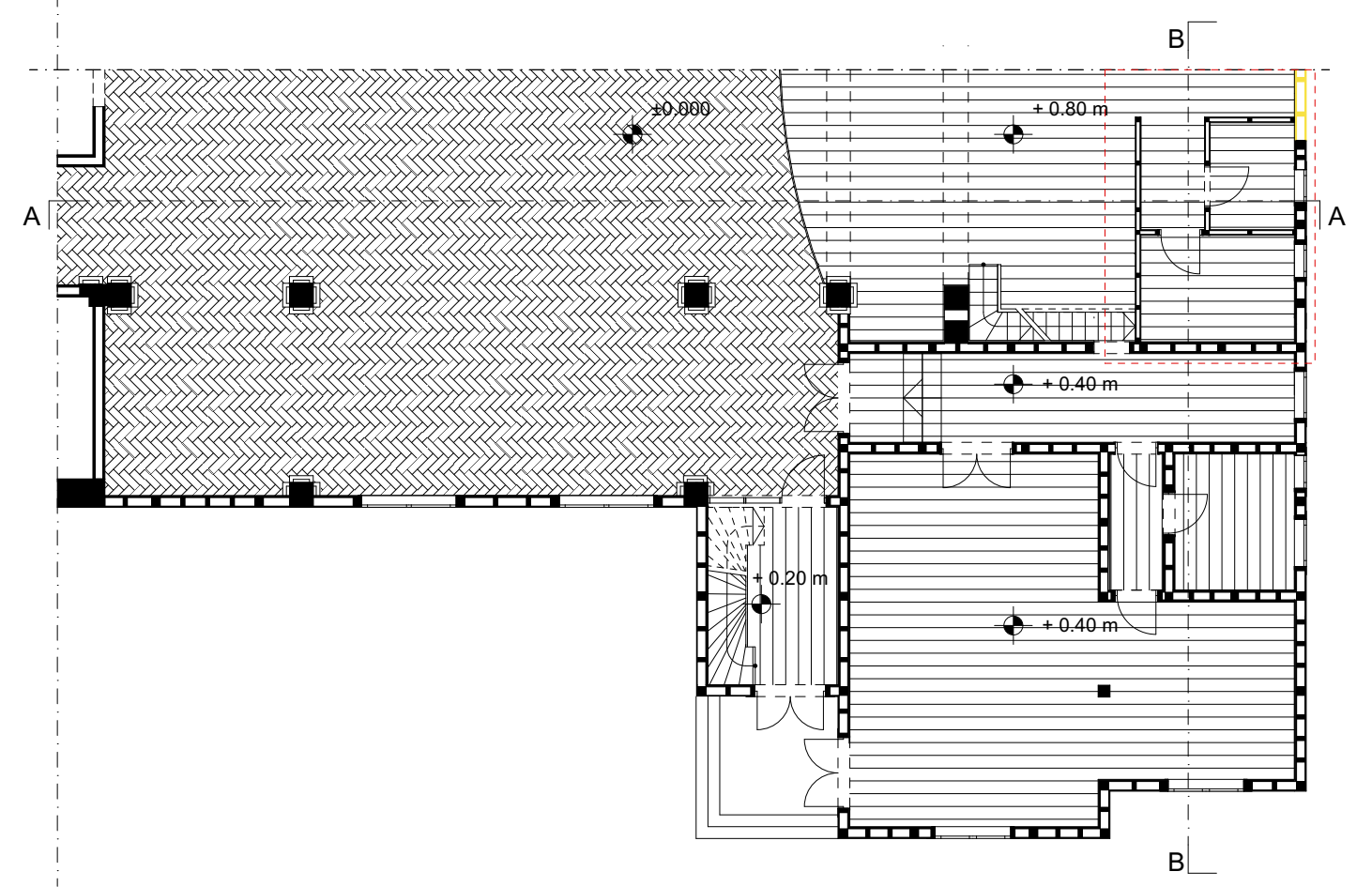
Fifth Floor Plan



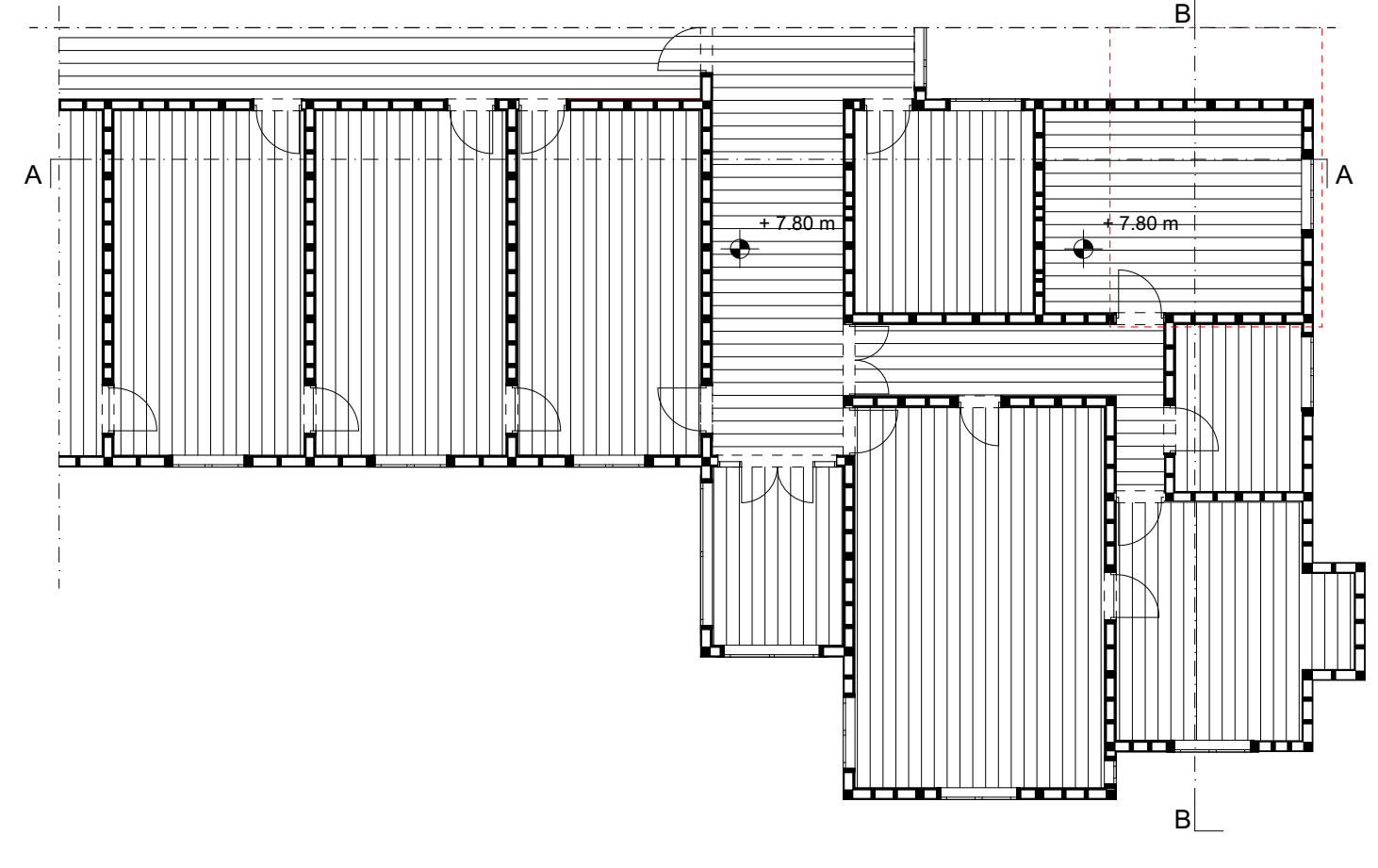
Section A-A



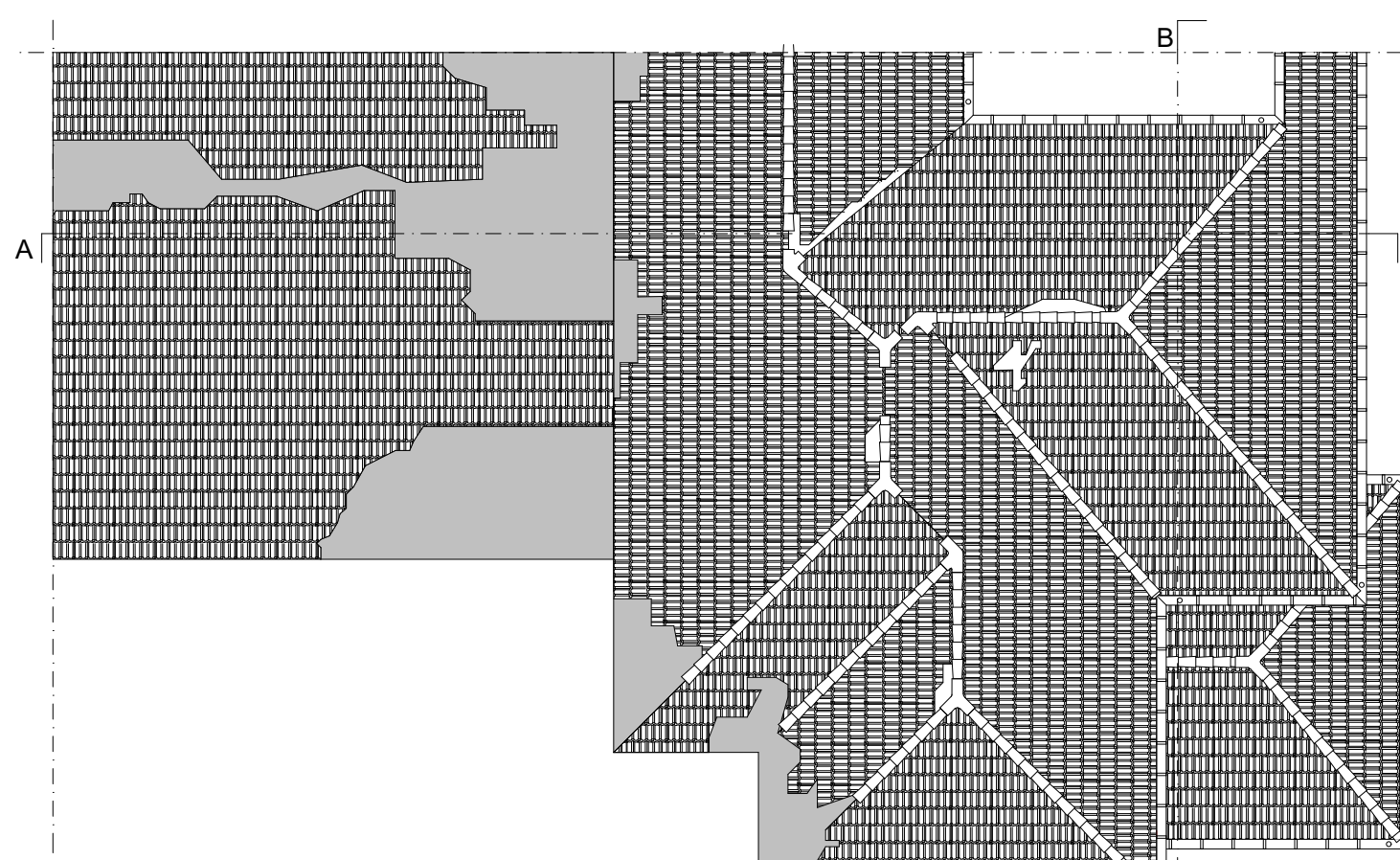
Ground Floor Plan



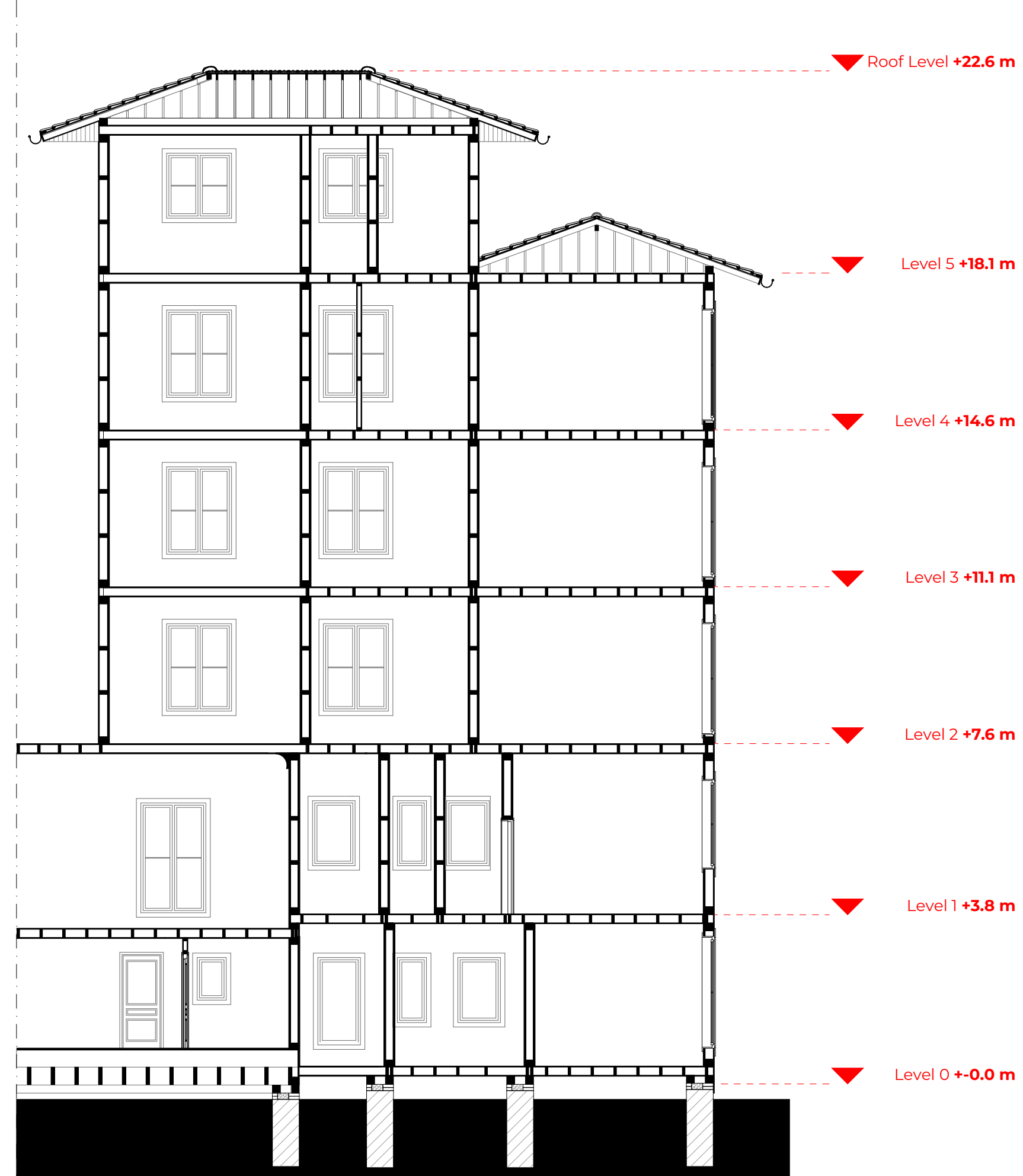
Second Floor Plan



Roof Plan



Section B-B



Current State - Evaluation of Consistency

Key plan

- 1. Roof Construction
- 1.1 Marseille type roof tiles
- 1.2 Timber sheeting 25 mm
- 1.3 Roof rafters 40/120mm
- 1.4 Corner ridges 120/120 mm
- 1.5 Timber laths 20/30 mm
- 1.6 Cladding 30 mm

- 2. Exterior Wall Construction
- 2.1 Exterior Cladding - 270/50mm
- 2.2 Timber Stud Post 90/180 mm
- 2.3 Bagdadi Laths 20/30 mm
- 2.4 Woven Lath 5 mm
- 2.5 Base Coat Plaster 10 mm
- 2.6 Finish Coat Plaster 5 mm

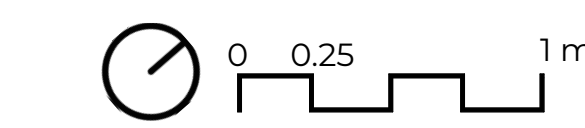
- 3. Interior Wall
- 3.1 Finish Coat Plaster 5 mm
- 3.2 Base Coat Plaster 15 mm
- 3.3 Woven Laths 5 mm
- 3.4 Bagdadi Laths 20 mm
- 3.5 Timber Frame 160/160, 80/160 mm
- 3.6 Bagdadi Laths 20 mm
- 3.7 Woven Laths 5 mm
- 3.8 Base Coat Plaster 15 mm
- 3.9 Finish Coat Plaster 5 mm

- 4. Intermediate Floors
- 4.1 Covering Panels Floor 25 mm
- 4.2 Floor Joists - 60/180mm
- 4.3 Covering Panels 25 mm

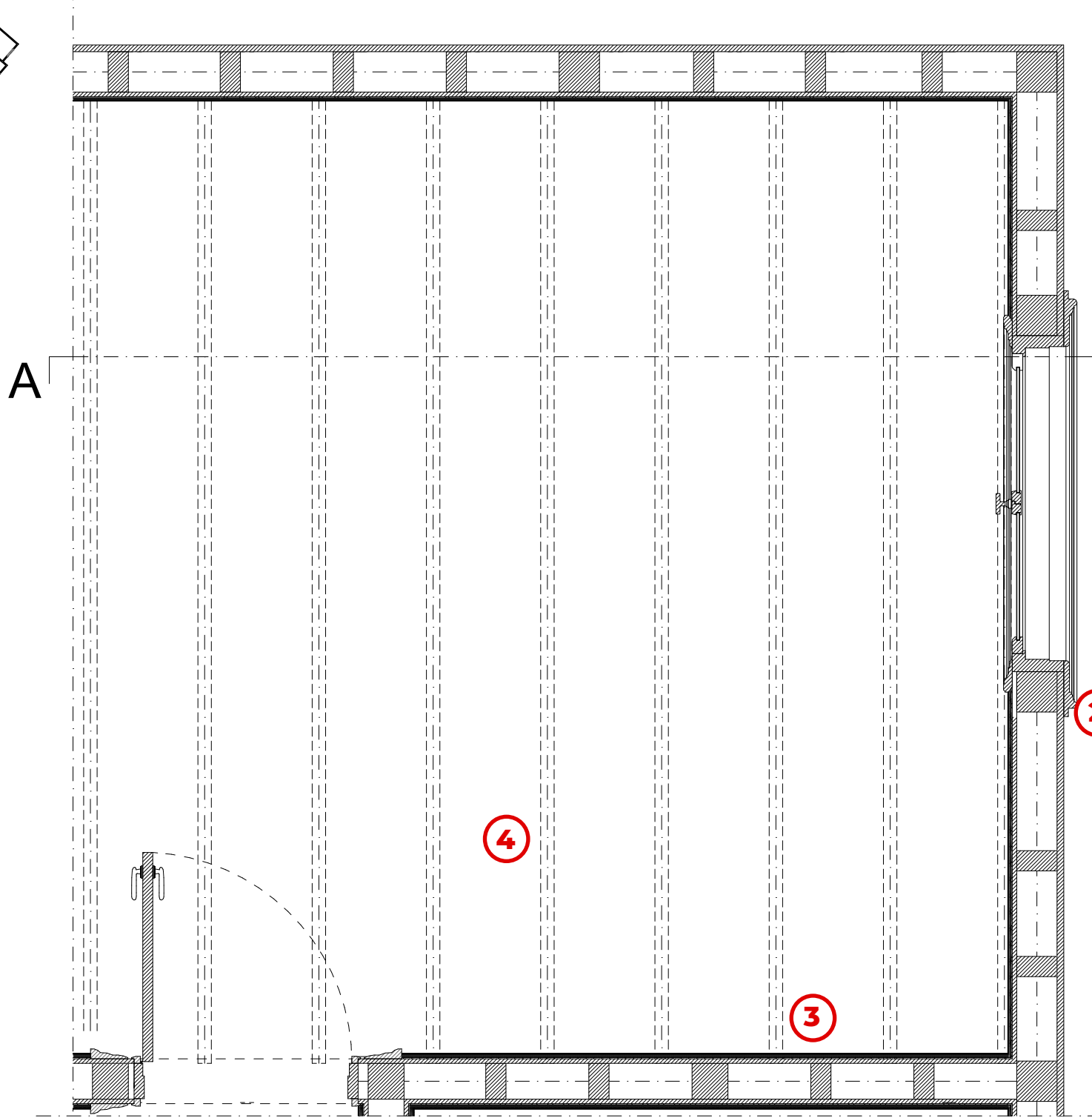
- 5. Interior Wall Construction
- 5.1 Interior Timber Cladding - 20 mm
- 5.2 Timber Frame- 80/80mm
- 5.3 Interior Timber Cladding - 20 mm

- 6. Elevated Floor Construction
- 6.1 Floor Parquet - 20 mm
- 6.2 Covering Panels Floor - 25 mm
- 6.3 Floor Joists - 80/380 mm
- 6.4 Floor Joists - 80/380 mm
- 6.5 Timber Sub-base 180/180 mm

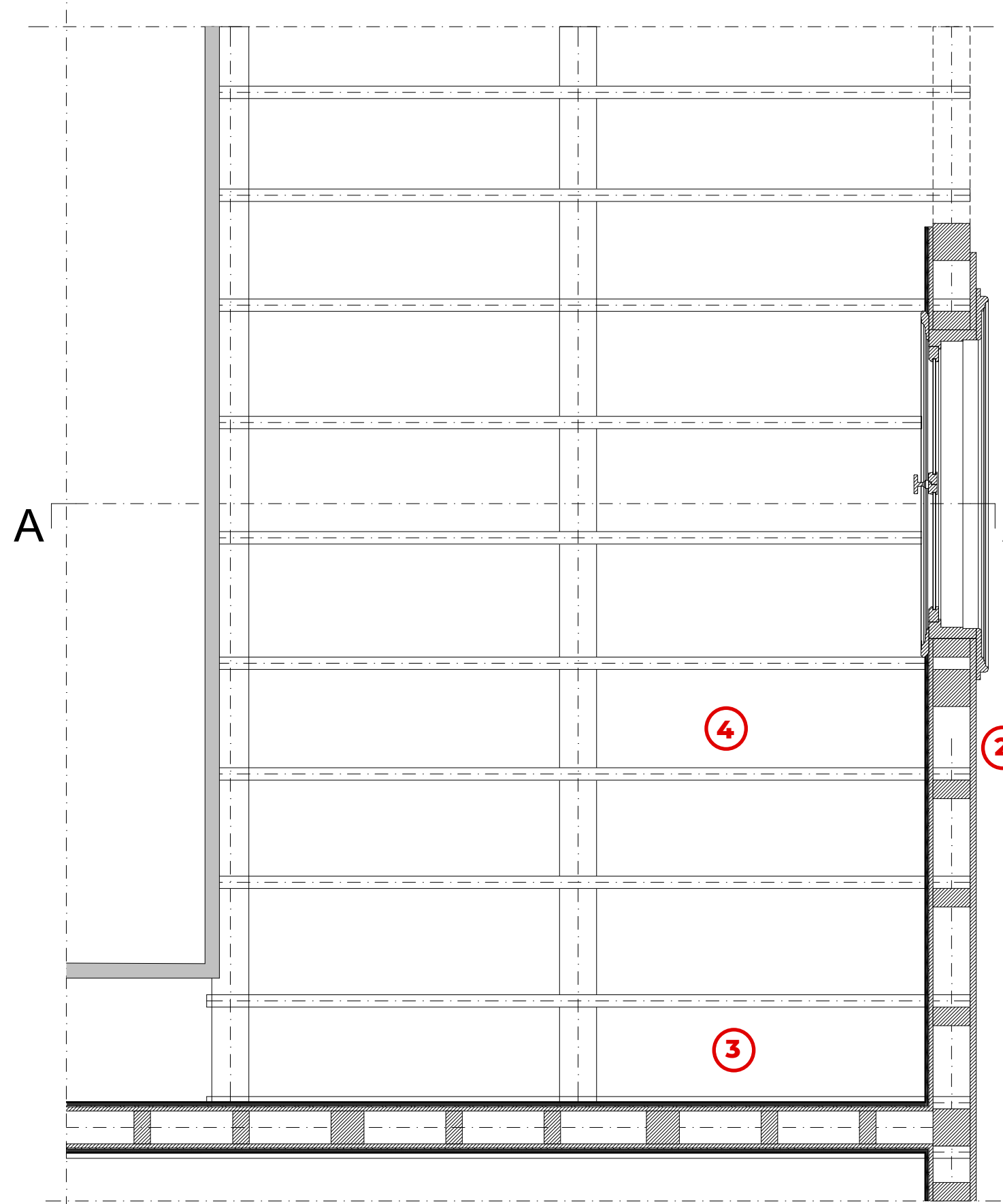
- 7. Foundation Construction
- 7.1 Timber Soleplate 180/180 mm
- 7.2 Levelling Brick Masonry
- 7.3 Rubble Infill
- 7.4 Foundation Stripe -Stone Masonry



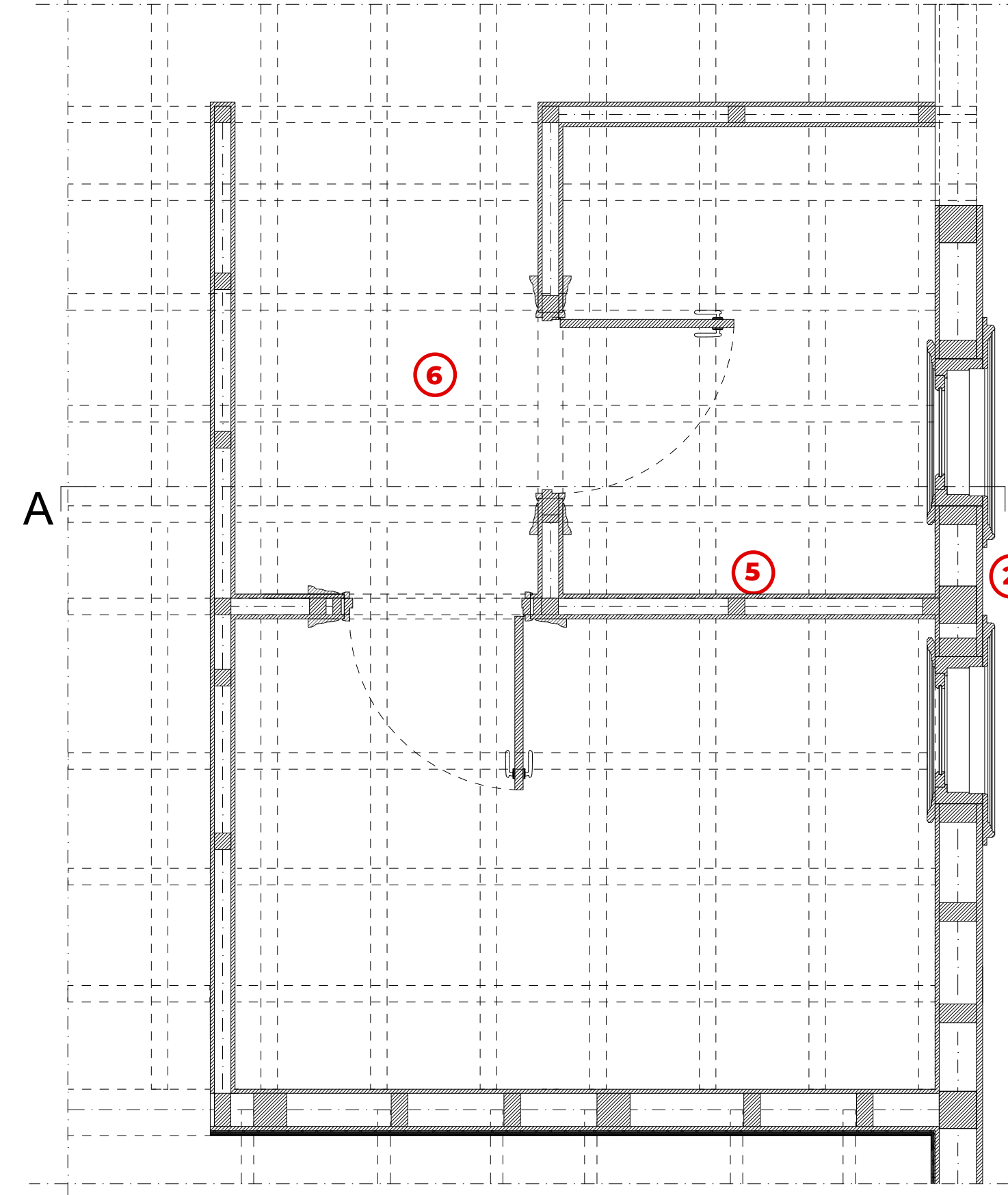
Fifth Floor Plan - Section a-a



First Floor Plan - Section b-b



Ground Floor Plan - Section c-c



Roof level 23.4 m

Ceiling level 21.6 m

Fifth Floor 18.1 m

Second Floor 7.6 m

First Floor 3.8 m

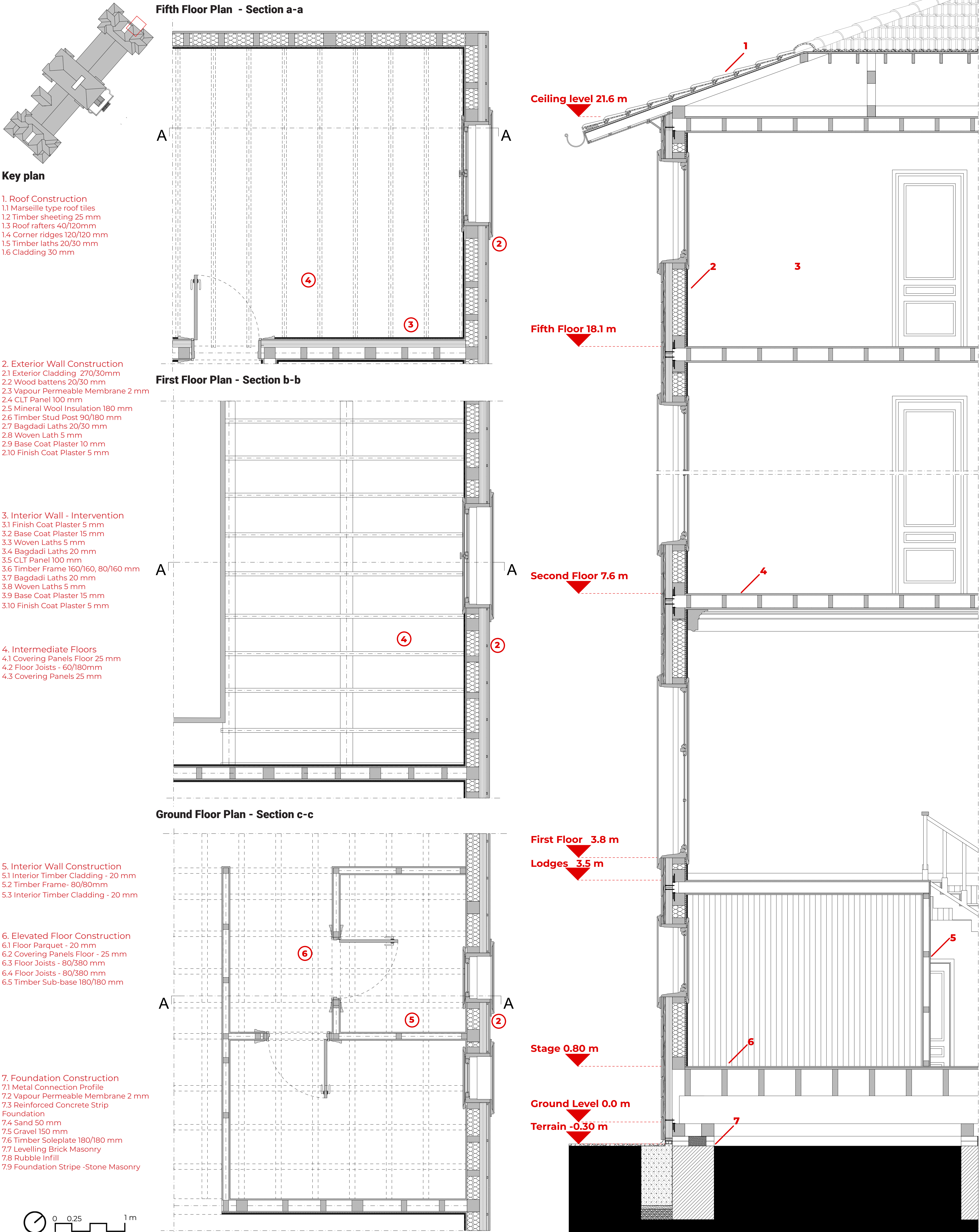
Lodges 3.5 m

Stage 0.80 m

Ground Level 0.0 m

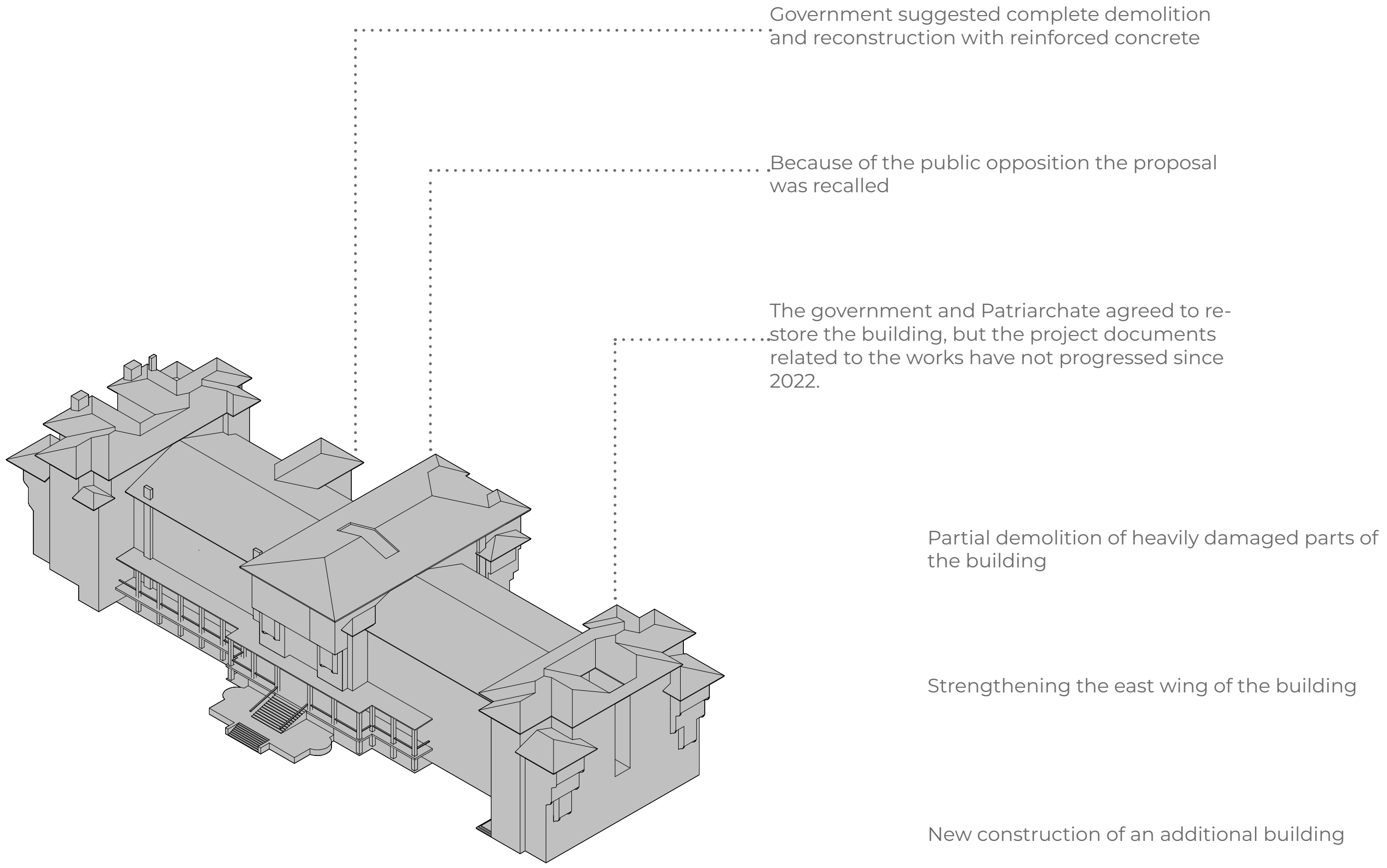
Terrain -0.35 m

Adaptive Reuse and Enhancement Project - Consolidation Intervention

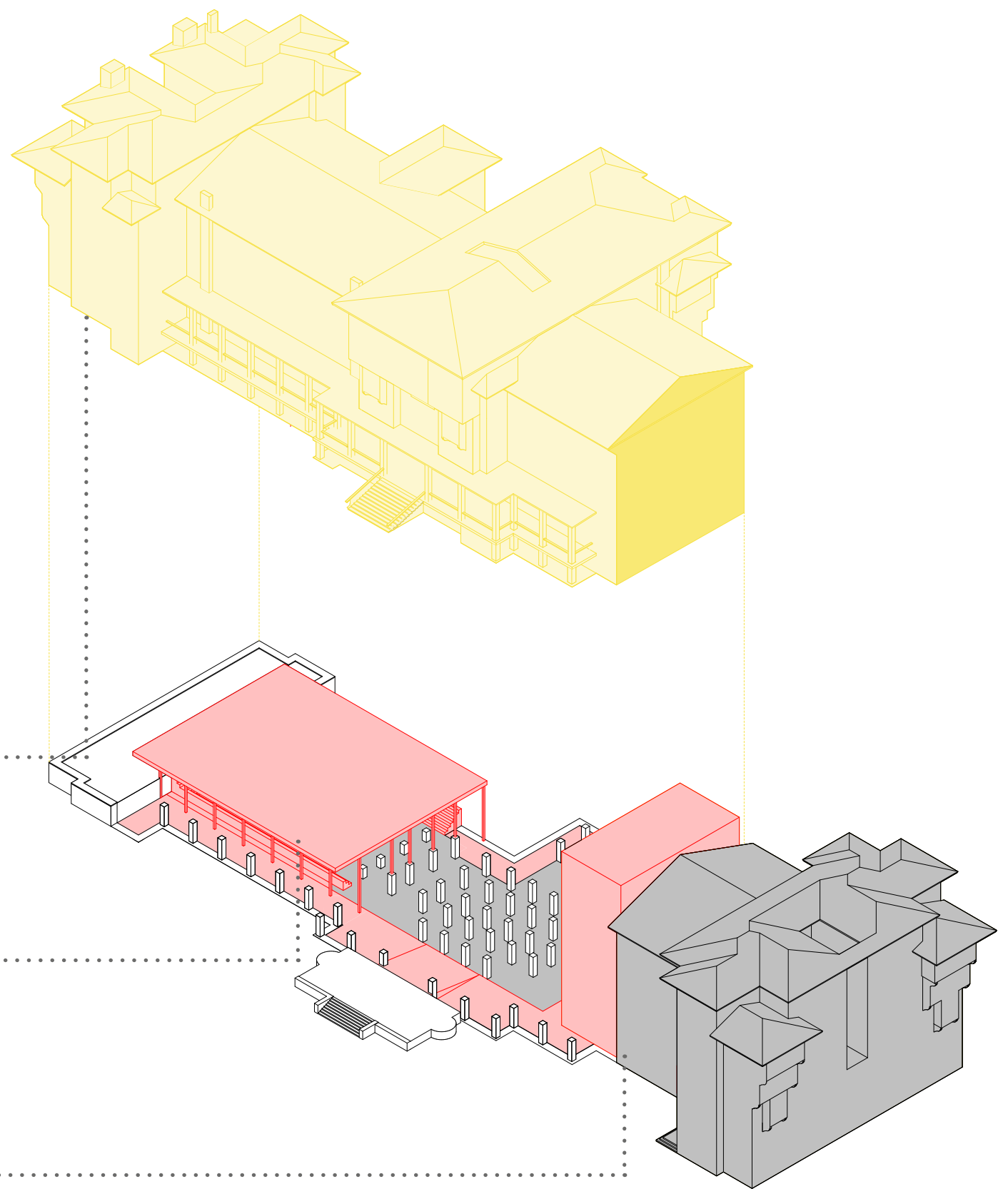


Adaptive Reuse and Enhancement Project

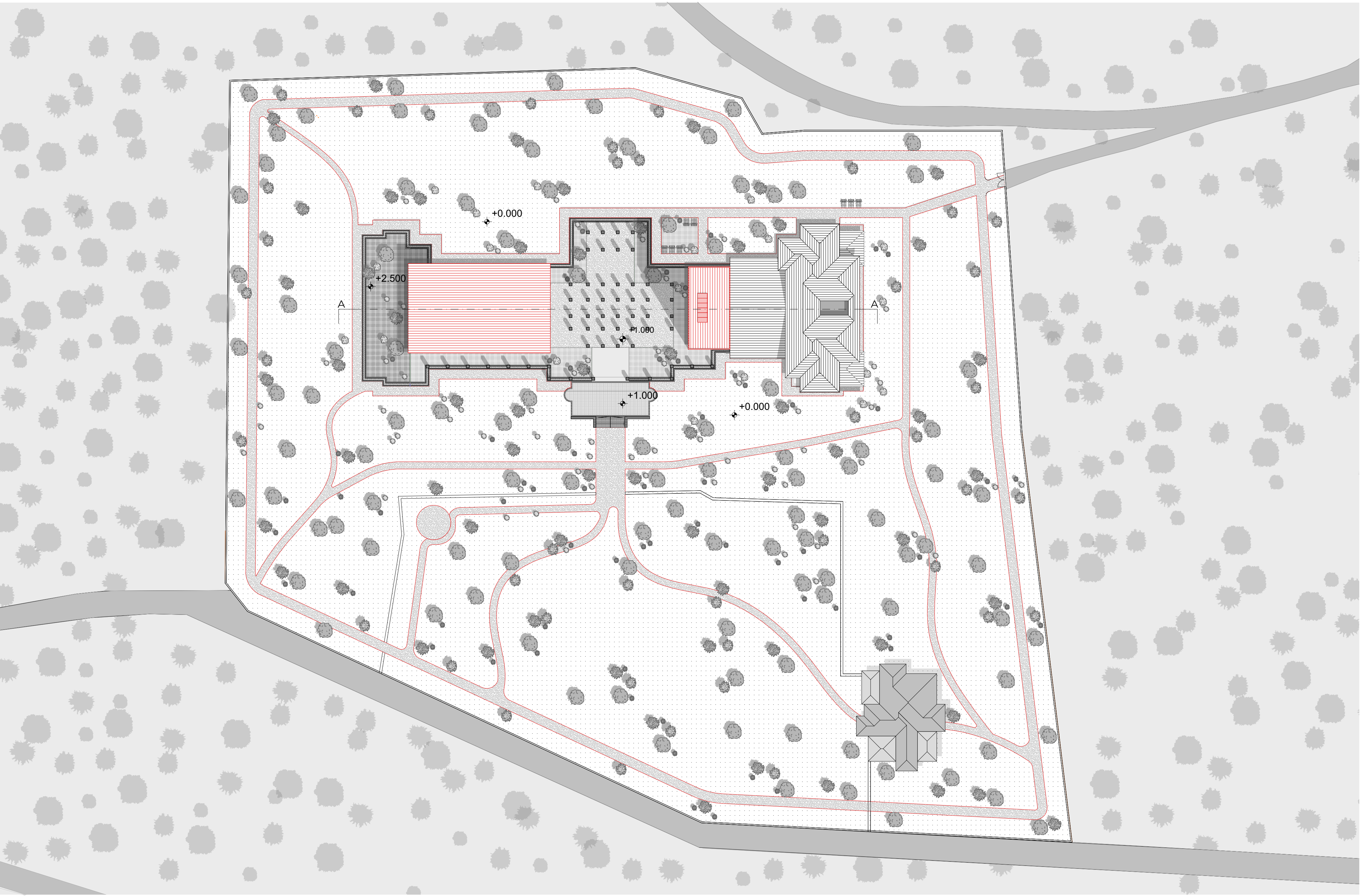
Comparative Study
Project Proposed by Government



Proposed Project

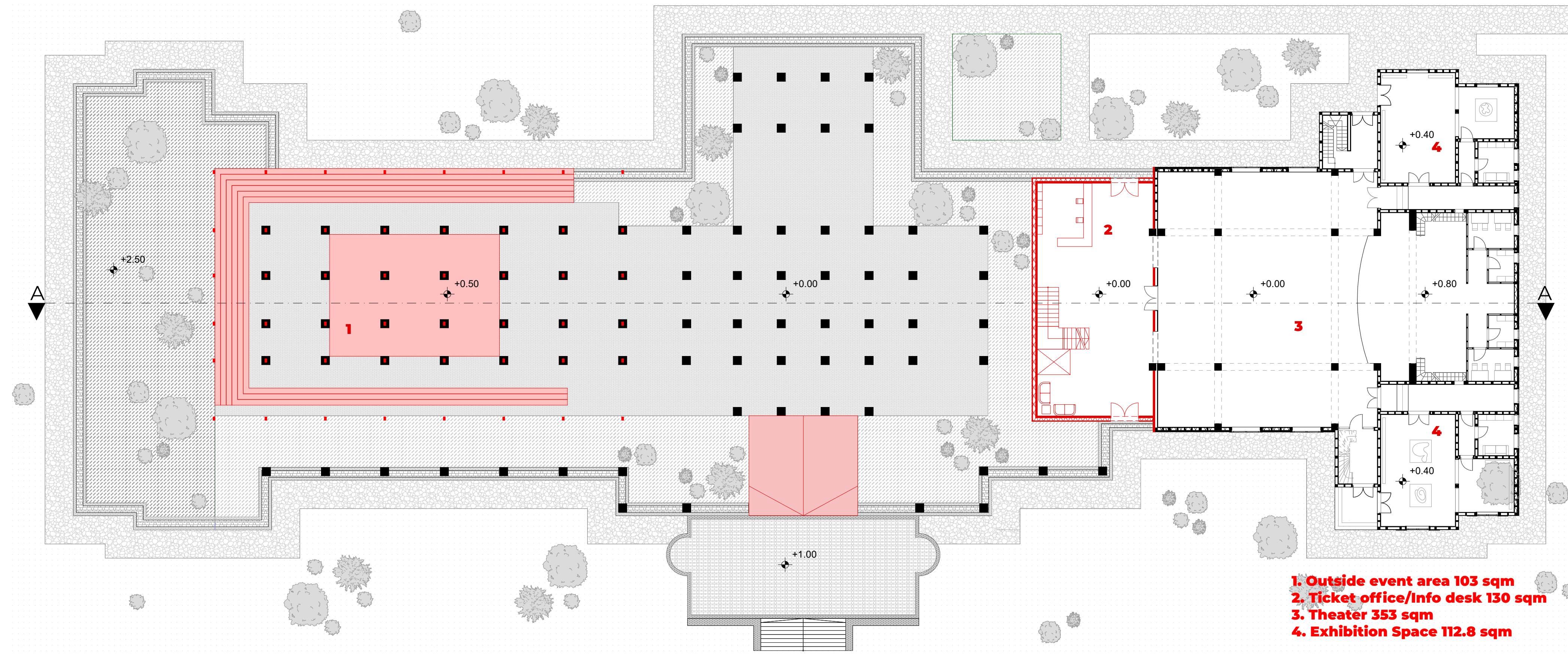


Masterplan

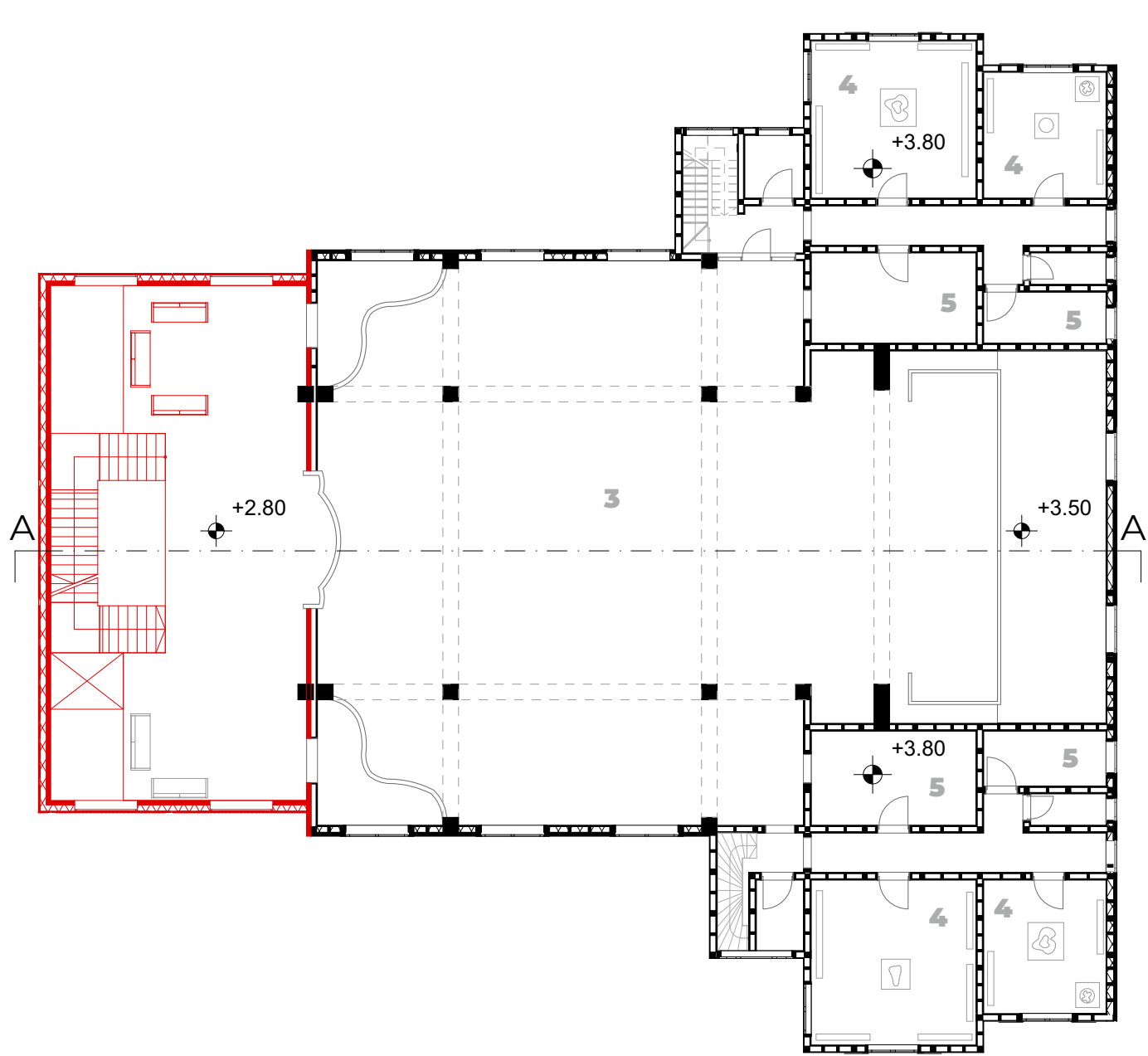


Adaptive Reuse and Enhancement Project

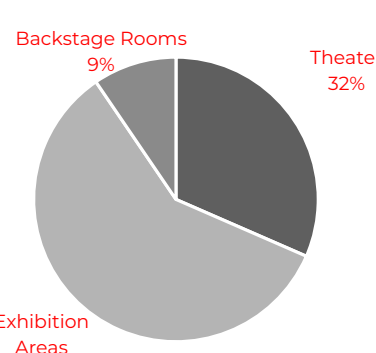
Ground Floor Plans



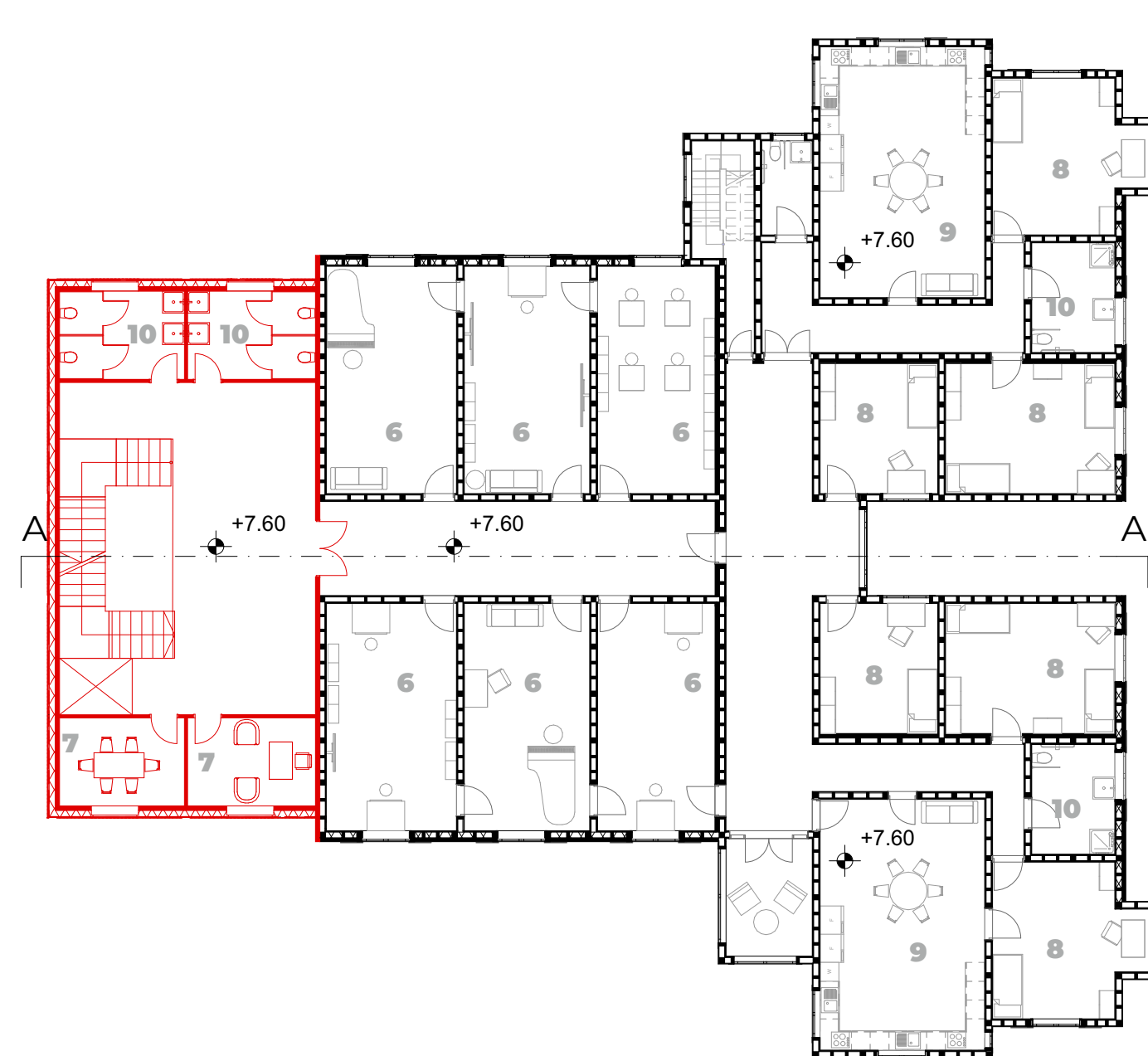
First Floor Plan



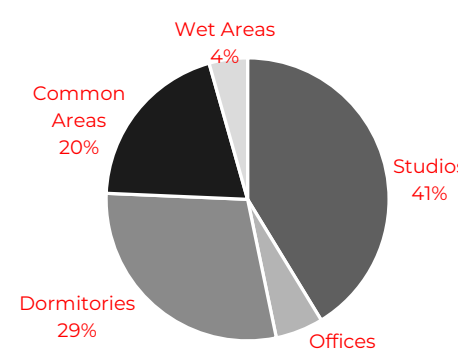
3. Theater 61 sqm
4. Exhibition Areas 114 sqm
5. Backstage Rooms 18.4 sqm



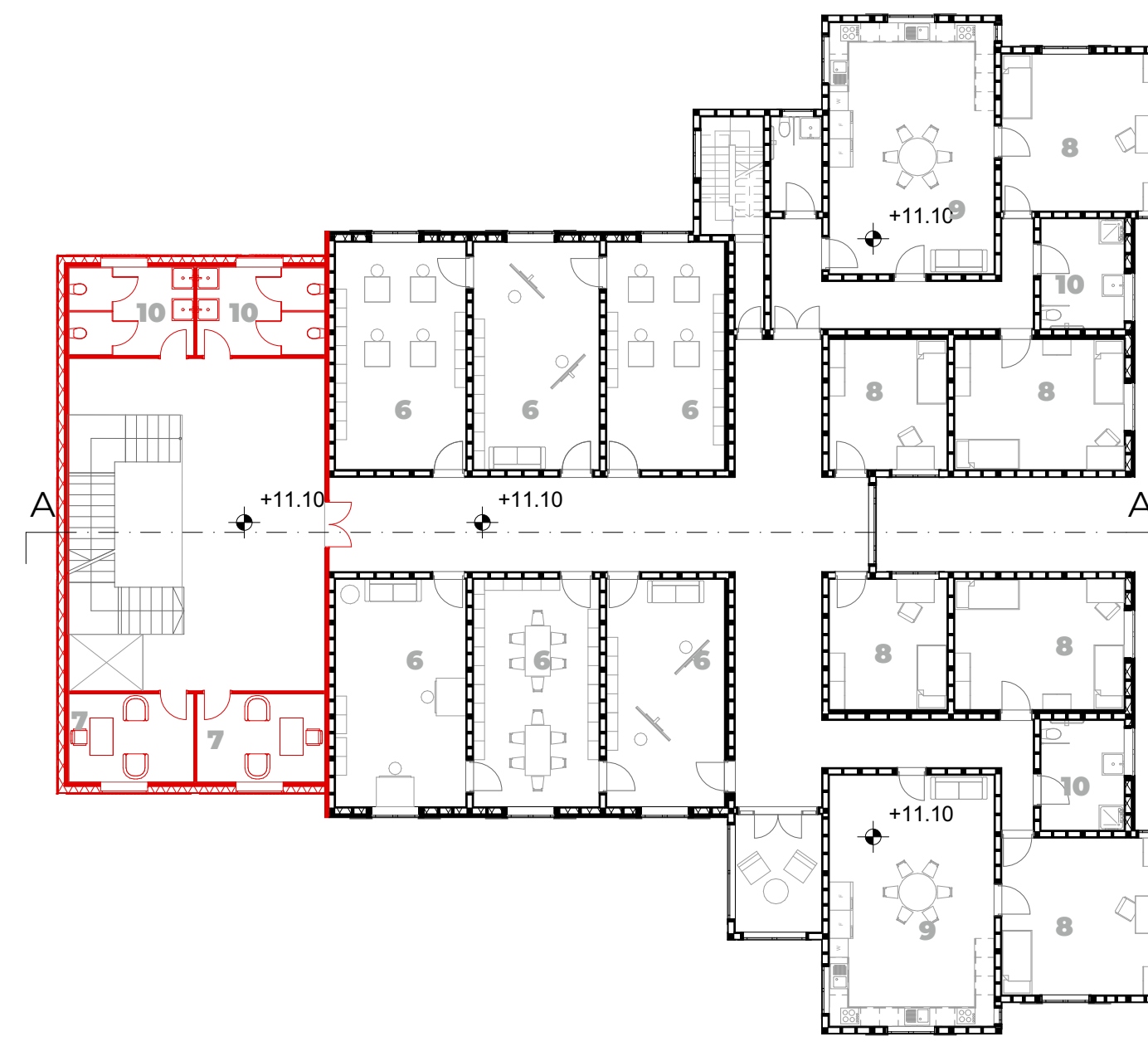
Second Floor Plan



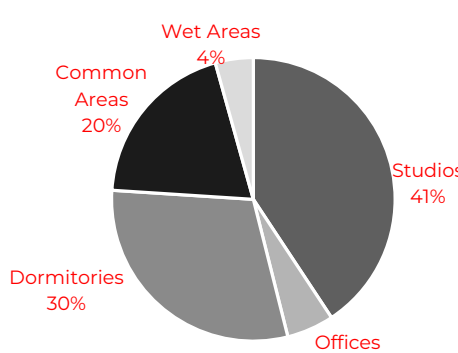
6. Studio Rooms for Artists 174 sqm
7. Offices 23 sqm
8. Dorm rooms 122 sqm
9. Common Areas for Artists 84 sqm
10. Wet Areas 18.5 sqm



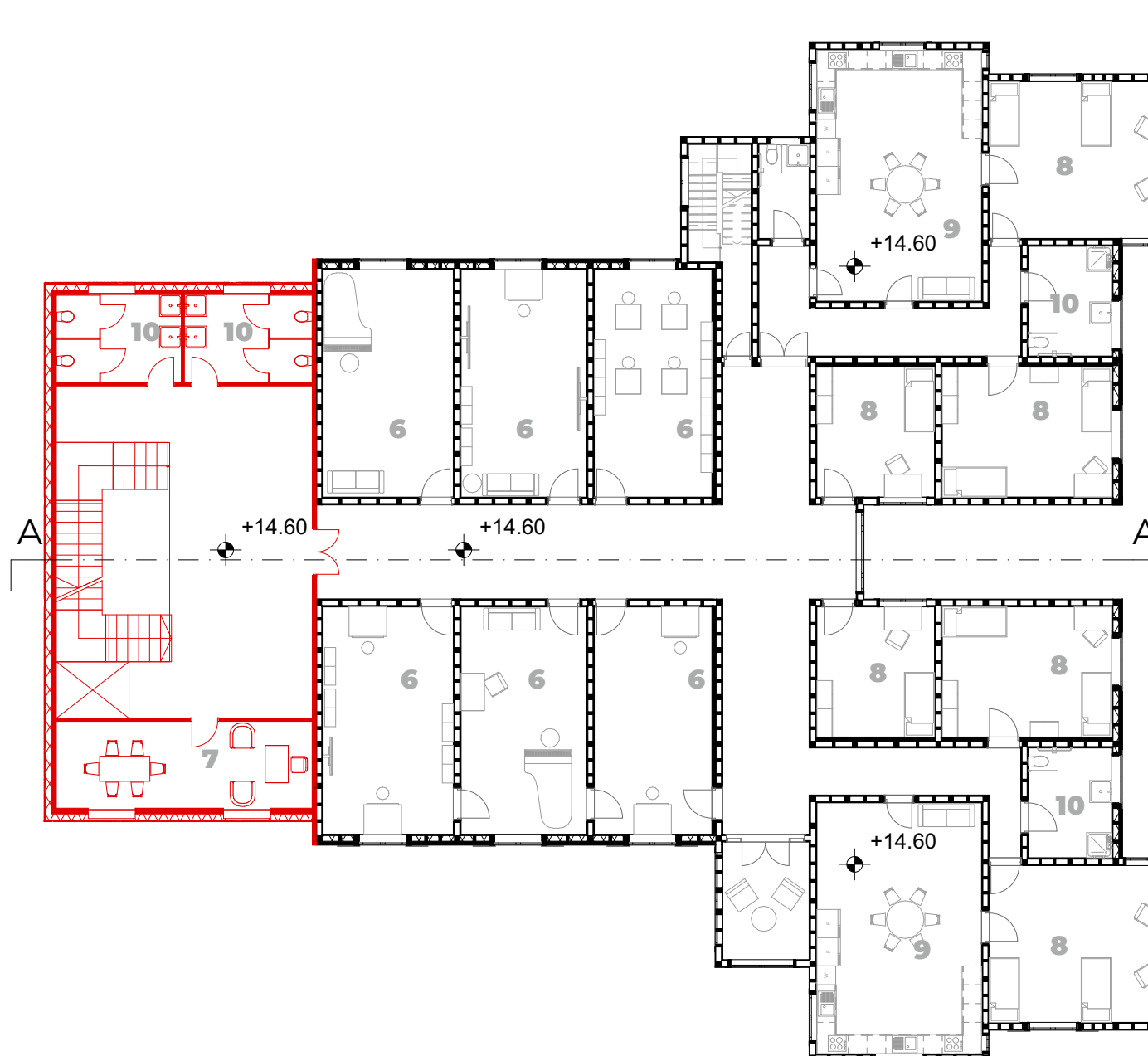
Third Floor Plan



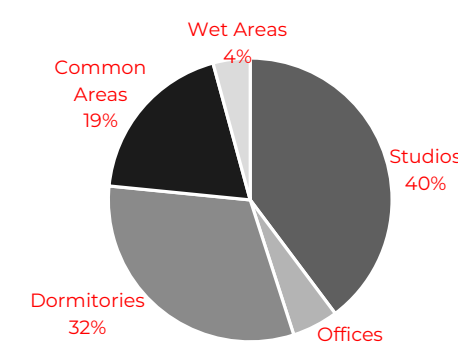
6. Studio Rooms for Artists 174 sqm
7. Offices 23 sqm
8. Dorm rooms 128 sqm
9. Common Areas for Artists 84 sqm
10. Wet Areas 18.5 sqm



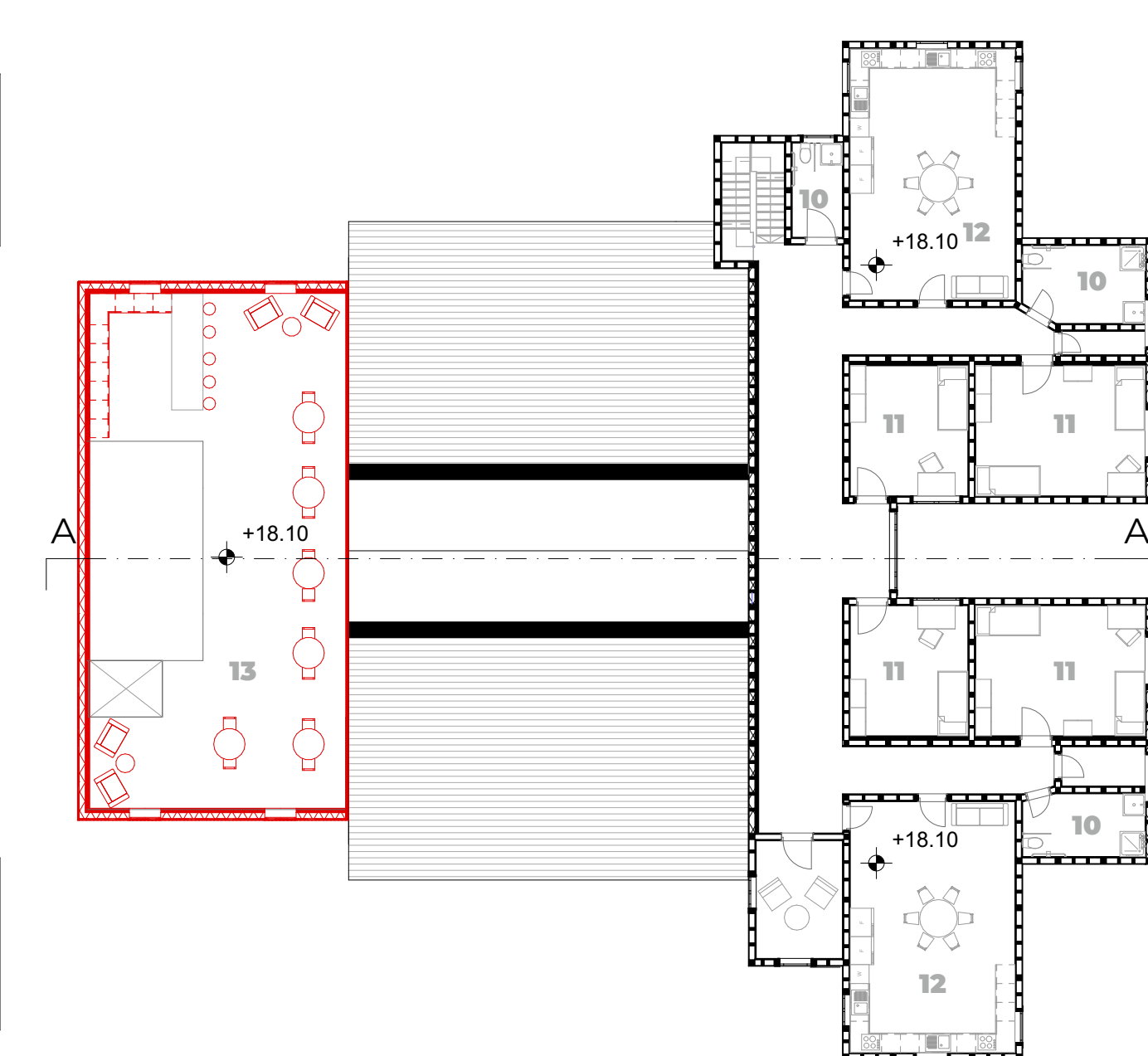
Fourth Floor Plan



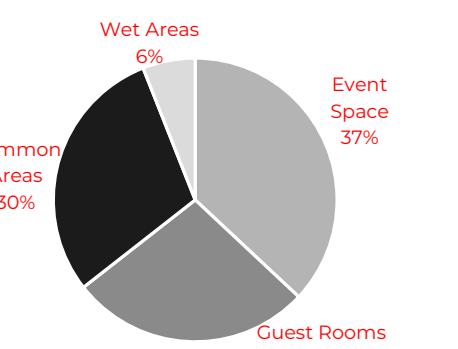
6. Studio Rooms for Artists 174 sqm
7. Offices 23 sqm
8. Dorm rooms 138 sqm
9. Common Areas for Artists 84 sqm
10. Wet Areas 18.5 sqm



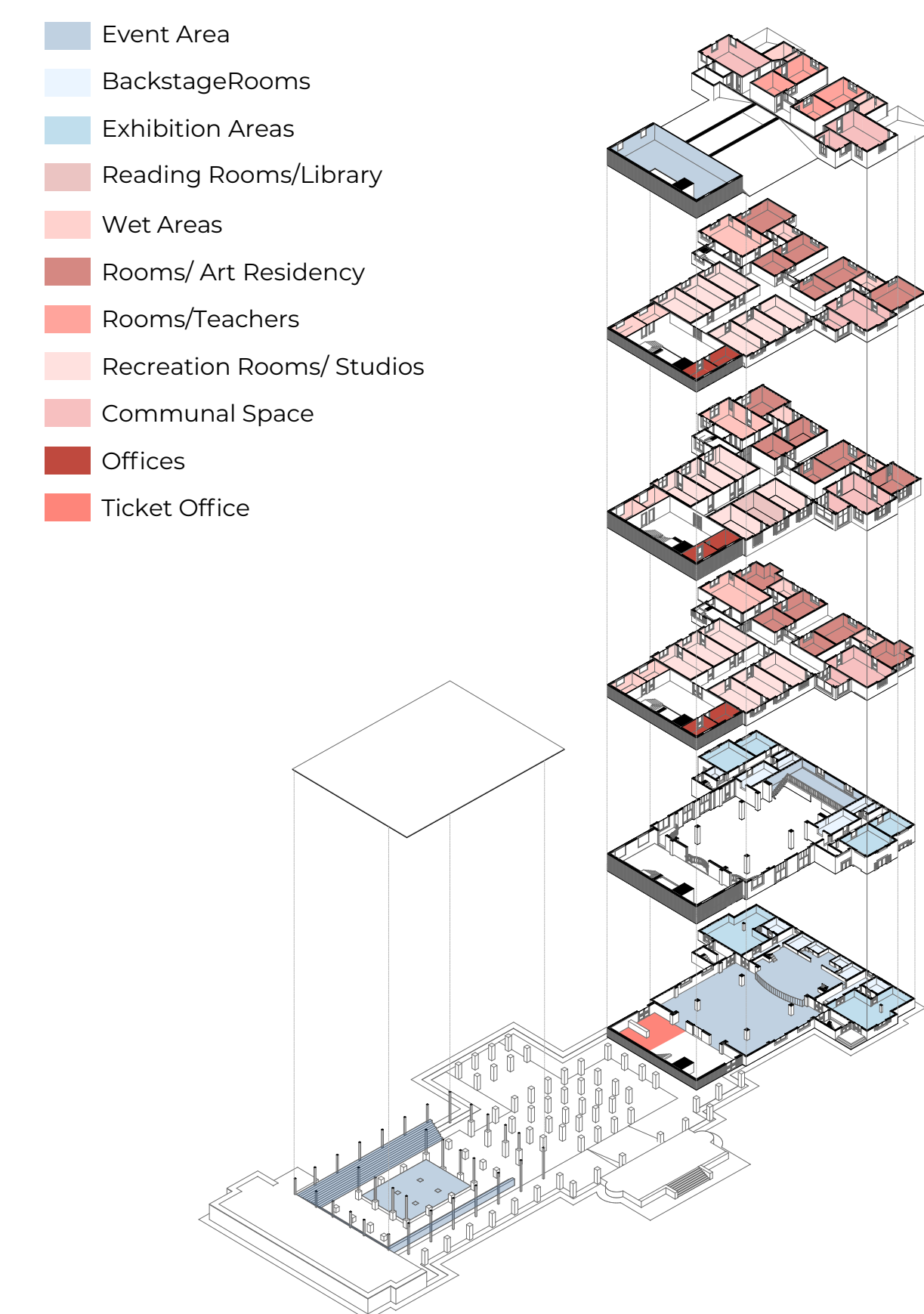
Fifth Floor Plan



10. Wet areas 17 sqm
11. Guest Lecturer Rooms 78 sqm
12. Common areas for staff and guest lecturers 84 sqm
13. Event space/Bar 105 sqm

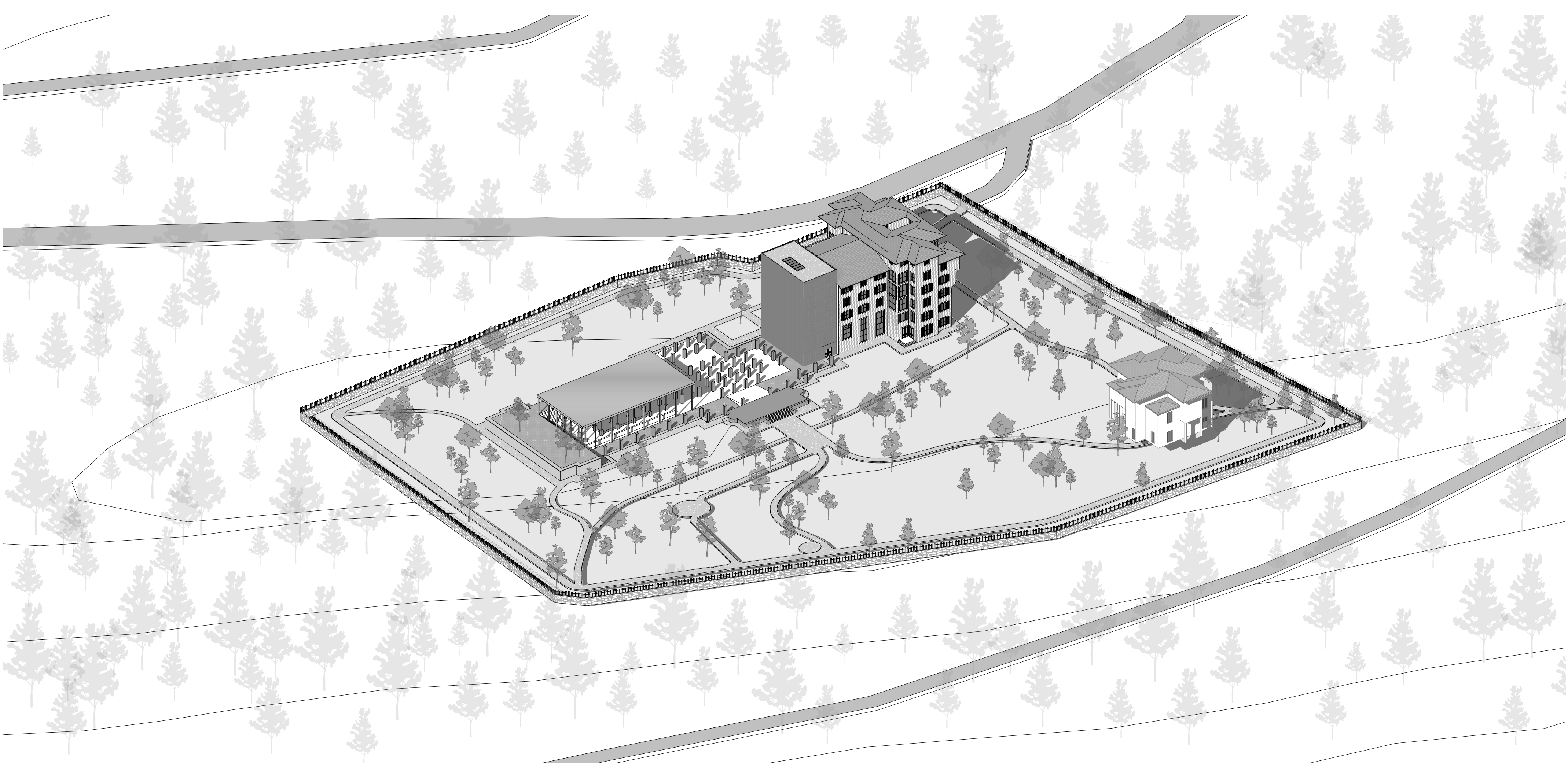


Functions Distribution

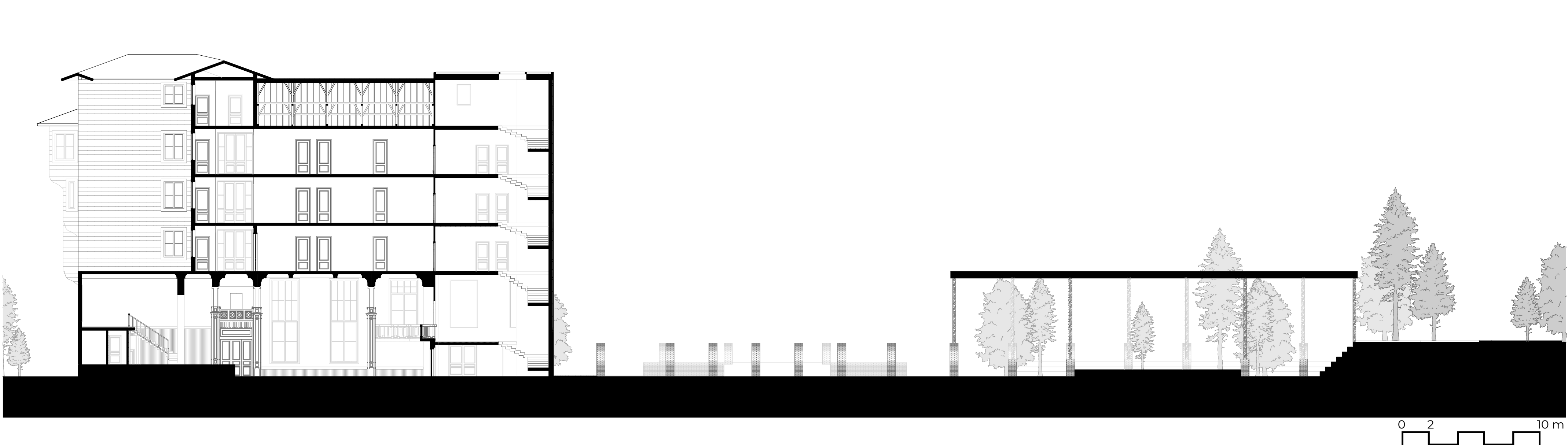


Adaptive Reuse and Enhancement Project

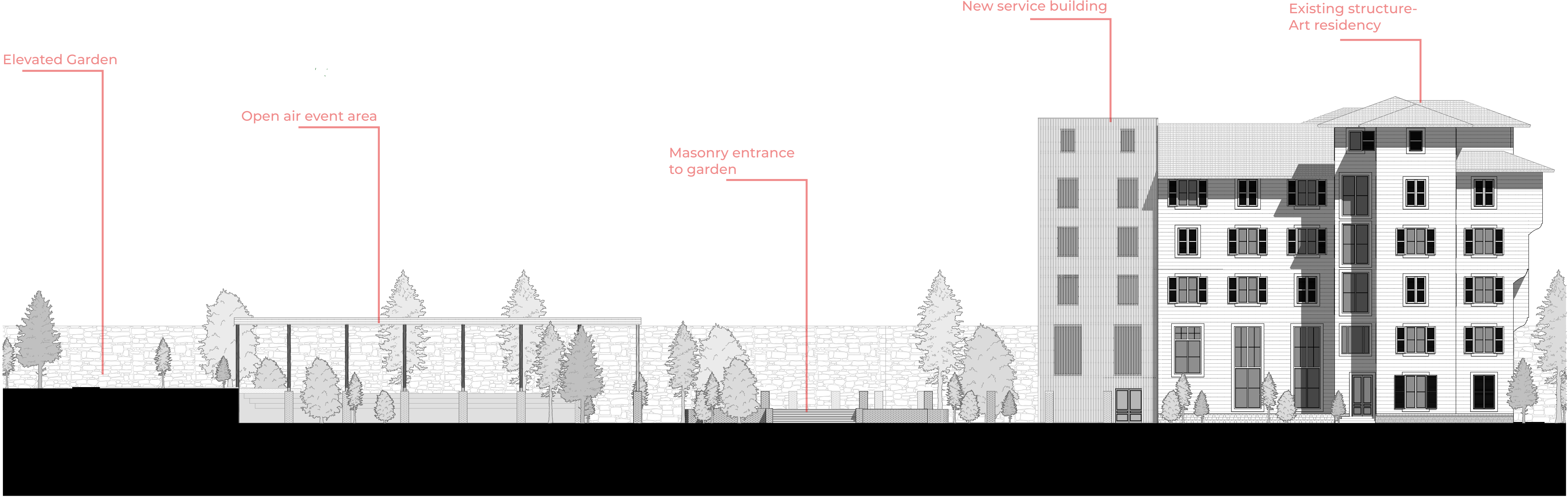
Axonometry



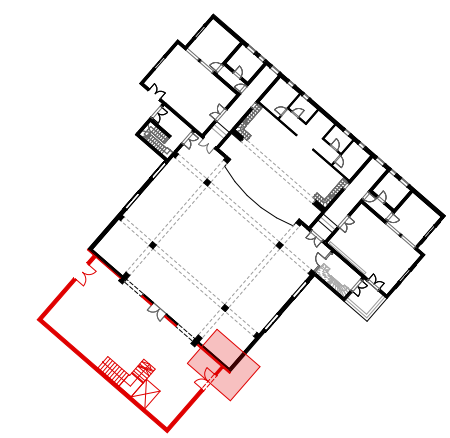
Section A-A



Elevation



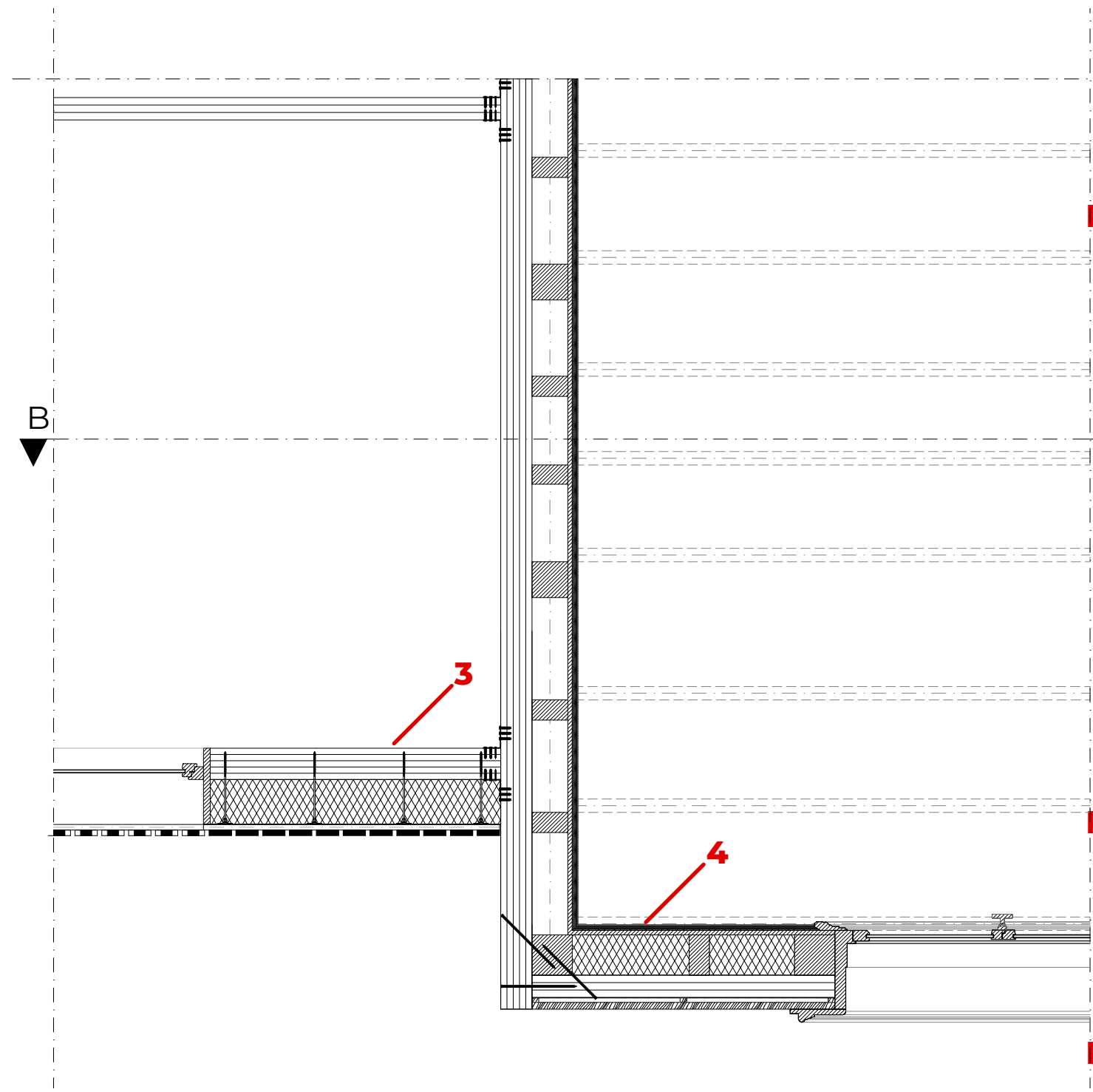
Adaptive Reuse and Enhancement Project - Consolidation Intervention



Key plan

1. Roof Construction
- 1.1 Gravel 50 mm
- 1.2 Nonwoven seperation layer 5 mm
- 1.3 Sealing sheet 5 mm
- 1.4 Rock wool insulation 200 mm
- 1.5 Bitumen sheet
- 1.6 CLT panel 125 mm
- 1.7 Rothoblaas Nino Angle Bracket
2. Floor Construction
- 2.1 Wood parquet 15 mm
- 2.2 Dry screed 25 mm
- 2.3 Mineral wool insulation 30 mm
- 2.4 Polyethylene foam 8 mm
- 2.5 Tricking protection 2 mm
- 2.6 CLT panel 140 mm
- 2.7 Rothoblaas Nino Angle Bracket
- 2.8 VGZ Full Threaded Screw

Fourth Floor Plan

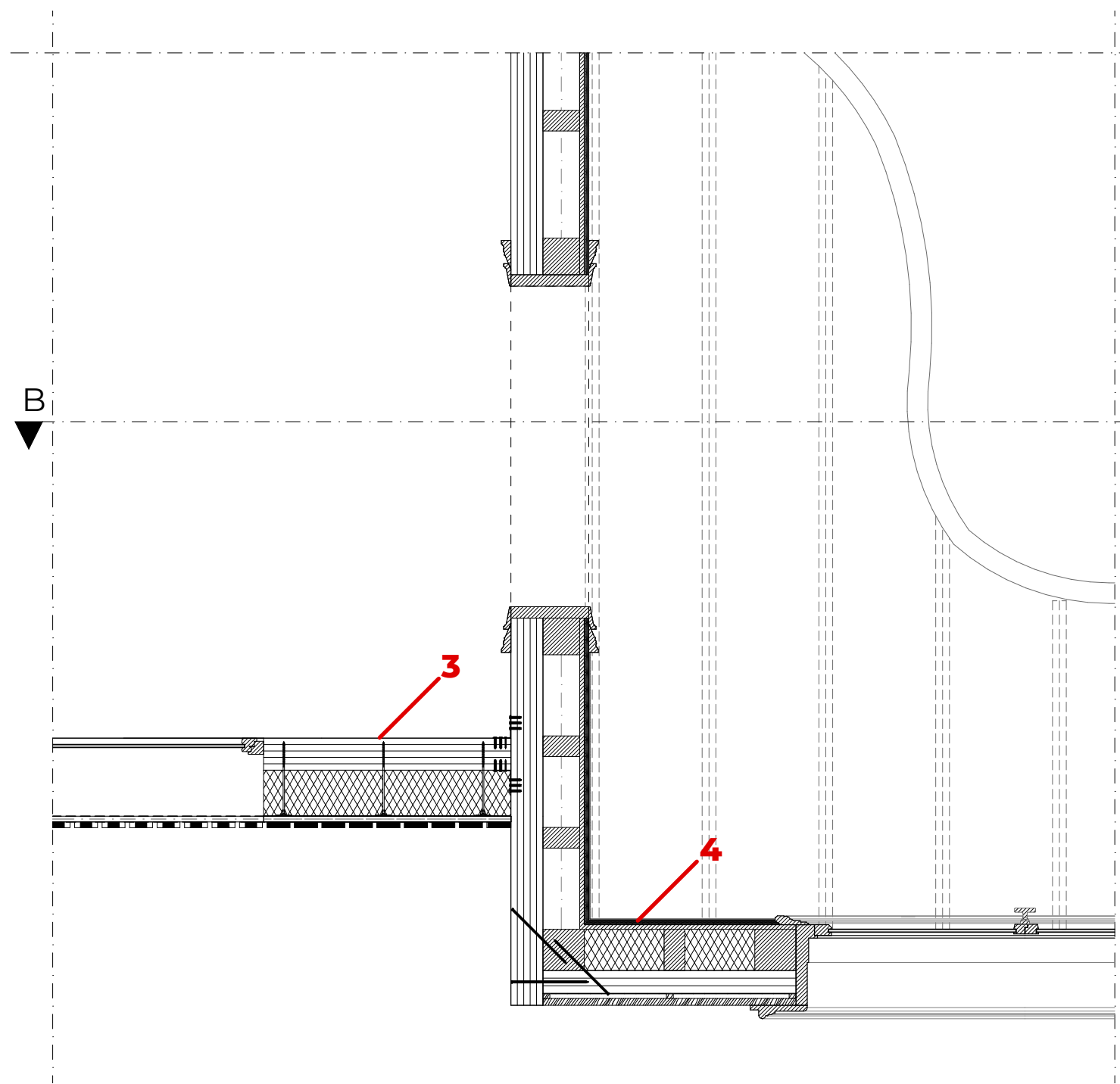


Roof Level +21.9 m

Roof Level +19.1 m

Roof Ceiling +18.1 m

First Floor Plan

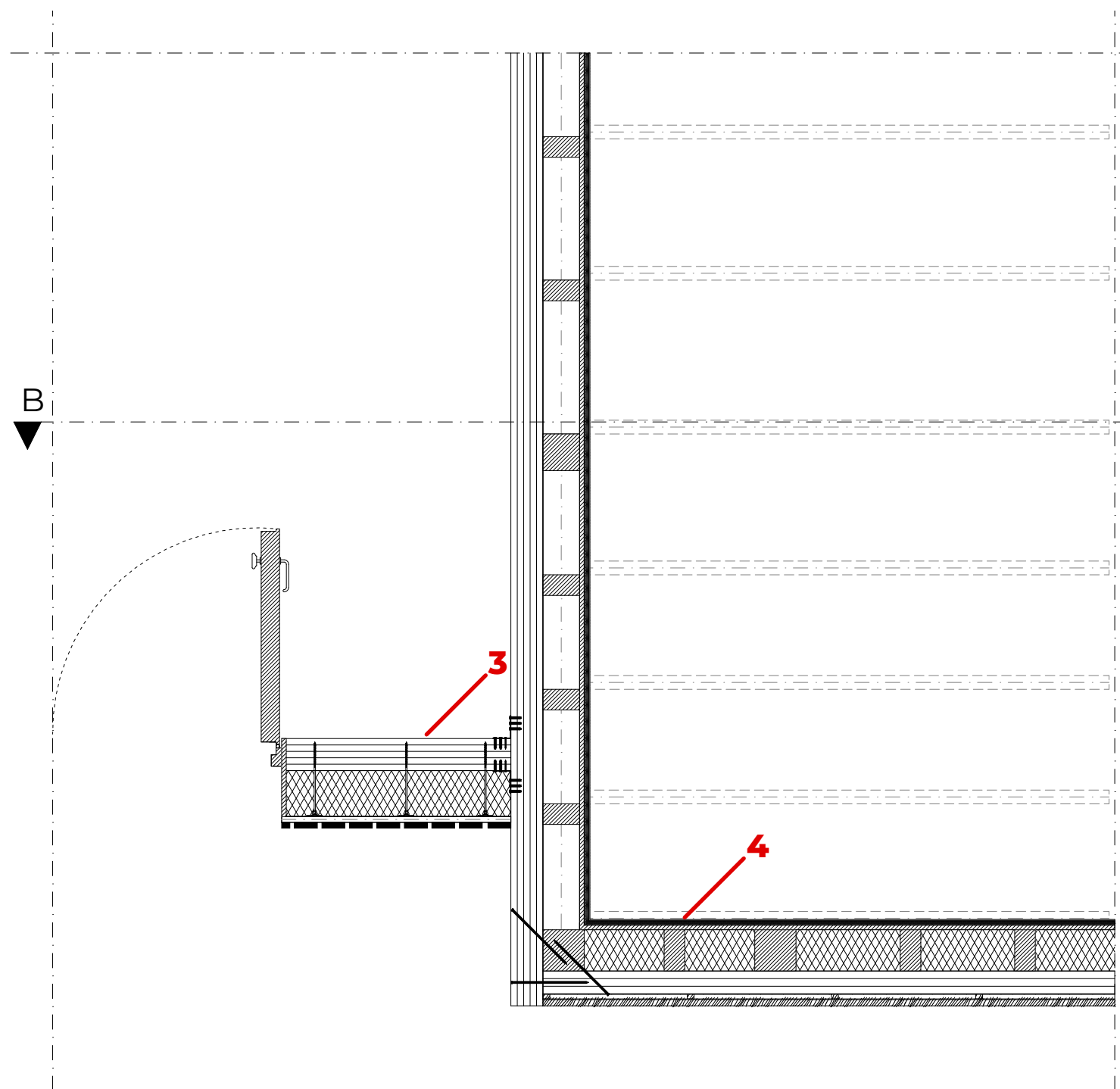


Second Floor 7.6 m

3. Exterior Wall Construction
- 3.1 Rothoblaas Nino Angle Bracket
- 3.2 CLT Panel 140 mm
- 3.3 Rock wool insulation 200 mm
- 3.4 Thermowasher
- 3.5 HBS Screw
- 3.6 Vapor Barrier 2 mm
- 3.7 Wood Battens 25x30 mm
- 3.8 Timber Cladding 100 x 25 mm

4. Strengthened Exterior Wall Construction
- 4.1 Finish Coat Plaster 5 mm
- 4.2 Base Coat Plaster 15 mm
- 4.3 Woven Lath 5 mm
- 4.4 Bagdadi Laths 20x30 mm
- 4.5 Rock Wool Insulation 180 mm between Timber Frame
- 4.6 Rothoblaas VGZ Screw
- 4.7 CLT Panel 100 mm
- 4.8 Vapor Barrier 2 mm
- 4.9 Wood Battens 30 x 20 mm
- 4.10 Timber Cladding

Ground Floor Plan

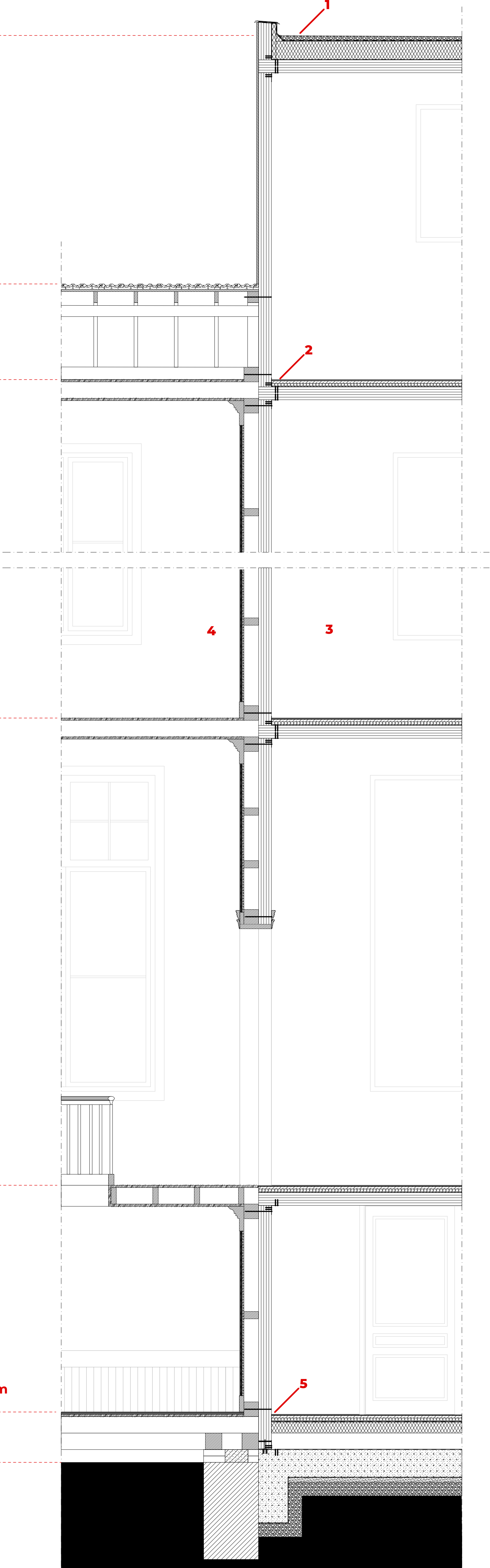


First Floor +2.5 m

Ground Level -+0.0 m

Terrain -0.55 m

5. Foundation
- 5.1 Rothoblaas Nino Angle Bracket
- 5.2 BTALU Bracket
- 5.3 Epo-Fix Chemical Anchor
- 5.4 Vapour Barrier 5 mm
- 5.5 Reinforced Concrete Slab Foundation 300 mm
- 5.6 Vapour Barrier 5 mm
- 5.7 Sand 50 mm
- 5.8 Gravel 150 mm



Master of science program in
ARCHITECTURE FOR HERITAGE
Collegio di Architettura e Design
LM-4 (DM270)
Academic Year:
2024-2025

Supervisors:
VIGLIOCCO ELENA
ROLANDO DIANA
INVERNIZZI STEFANO
MATTONE MANUELA

Candidate:
Zeynep Melis
Ekincikli

Thesis Project:
Preserving the Past, Shaping
the Future: The Adaptive Reuse
of Prinkipo Greek
Orphanage



Politecnico
di Torino