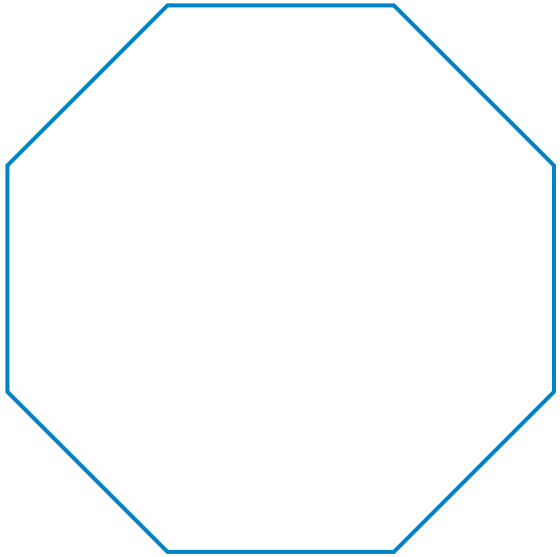
Renovation of “Eskan Towers”

Renovation of a multi functional complex in Tehran, Iran



I would like to take this time to express my heartfelt gratitude first and foremost to my family for the support they have always provided me throughout my studies, no matter the distance, without you, this would have not been possible. Thank you for teaching me to always improve myself, enjoy what I do, and always to find happiness. You are my biggest treasure.

I would like to thank Professor Elena Vigliocco, for your guidance throughout this thesis, and for sharing your knowledge as my tutor and I would like to thank Professor Stefano Invernizzi , for being my co-tutor in this thesis.

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Abstract

The renovation of modern architectural heritage involves both the preservation of historical values and the development of strategies to improve urban integration as well as quality of life inside the project. In Tehran, the Eskan Towers are trio of residential buildings constructed during the city's modernist era represent a significant architectural heritage of mid-20th century Iran. However, over time, these towers have become disconnected from their surrounding urban fabric, and their quality of life has decreased due to infrastructural and environmental challenges.

This thesis aims to develop a comprehensive renovation plan for Eskan Towers that enhances the living conditions of its residents while reestablishing the complex's connection with the surrounding city. The project explores how contemporary architectural solutions can coexist with the preservation of modernist heritage, creating a balanced approach that respects both the historical value of the towers and the evolving needs of Tehran's urban development.

The research is divided into three key sections. First, the history and architectural significance of Eskan Towers are studied to assess their role in Tehran's modernist heritage. Second, an analysis of similar renovation projects is conducted to draw lessons on the preservation and revitalization of modernist buildings. Finally, the proposed renovation project outlines a series of urban and architectural interventions aimed at improving the towers' functionality, enhancing the quality of life for inhabitants, and fostering a stronger connection with the urban landscape of Tehran. Through this approach, the thesis seeks to ensure the sustainable future of Eskan Towers as a living, dynamic part of the city.

Introduction

Modern architectural heritage is a crucial reflection of a society's cultural and historical identity, embodying the values and achievements of a specific era. However, rapid urbanization and uncontrolled city growth have placed modern heritage sites, such as Eskan Towers in Tehran, under threat. As urban expansion continues to reshape the city's landscape, many modernist structures face challenges that impact both their physical integrity and their connection to the surrounding urban fabric.

Tehran, a metropolis undergoing significant transformation, exemplifies how modern heritage sites are being increasingly marginalized by new developments. Eskan Towers, a prominent example of mid-20th century modernist architecture in the city, has experienced a decline in both living conditions and its relationship with the urban context. Originally designed as a residential complex that symbolized innovation and modern living, Eskan Towers now struggles with outdated infrastructure and disconnection from the evolving cityscape.

The aim of this thesis is to address these issues by proposing a renovation plan that not only enhances the quality of life for the inhabitants of Eskan Towers but also restores the complex's relationship with Tehran's urban fabric. As the city continues to grow, it is crucial to develop urban strategies that balance the demands of contemporary urbanization with the need to preserve modern architectural heritage. This research explores how the revitalization of Eskan Towers can serve as a model for integrating modernist heritage into the urban growth of Tehran, providing both a sustainable future for the towers and a more cohesive connection to the surrounding city.

Methodology

This research adopts a multidisciplinary approach, integrating environmental, urban, and architectural analyses to develop a comprehensive renovation plan for Eskan Towers. The methodology is structured into four key phases: environmental and urban analysis, architectonic analysis, design proposal, and design development.

Environmental and Urban Analysis
In the first phase, the research will examine the environmental and urban conditions surrounding Eskan Towers. The following steps will be undertaken:

Data Collection:
Environmental data will be collected, focusing on the local climate, air quality, and natural surroundings.
Urban data will include population demographics, traffic flow, land use, and infrastructural challenges in the area.

Cartographic Mapping:
Using GIS tools and urban mapping software, cartographical maps will be generated to visualize the urban layout, environmental features, and surrounding built environment.

Data Representation:
Climate and population data will be presented in the form of charts and graphs to offer insight into how these factors affect the living conditions in Eskan Towers.

Architectonic Analysis
The second phase will involve a detailed analysis of the Eskan Towers' architectural and structural features.

Building Assessment:
A thorough assessment of the towers will be conducted, including their spatial organization, structural integrity, and functionality.

Diagrams:
The analysis will be supported by architectural diagrams, focusing on circulation patterns, spatial hierarchies, and building systems (e.g., HVAC, plumbing).

Architectural Critique:
This section will critically examine the current state of the building, identifying areas for improvement in terms of energy efficiency, space utilization, and social dynamics.

Methodology

Design Proposal
In the third phase, the renovation design proposal for Eskan Towers will be developed.

Conceptual Design:
Based on the findings from the environmental and architectonic analyses, a design concept will be proposed that integrates modernization with heritage preservation.

Urban Integration:
Strategies will be developed to reconnect Eskan Towers with Tehran's urban fabric, enhancing accessibility and integrating the site with the surrounding neighborhoods.

Design Development
The final phase will refine the design proposal and focus on the technical details of the project.

Detailed Architectural and Structural Drawings:
Comprehensive architectural plans, sections, and elevations will be created, highlighting the key design interventions.

Material and Technology Selection:
Suitable building materials and technologies will be selected, with an emphasis on durability, sustainability, and harmony with the modernist heritage of the towers.

Construction Detailing:
Detailed drawings and descriptions of specific construction elements (e.g., facades, structural systems) will be developed to ensure the feasibility of the proposed interventions.

Chapter 1

Literature Review

Chapter 1, Introduction

Introduction to Iran's Architectural Heritage
Overview of Modern Architectural Heritage in Tehran
Overview of Residential Complexes in Tehran
Case Studies: Renovation of Modernist Buildings

Iran, historically known as Persia, is a country steeped in rich cultural heritage and history, spanning thousands of years. Located in Southwest Asia, Iran serves as a bridge between various civilizations, influenced by its geographic position along ancient trade routes. The country is home to one of the world's oldest continuous major civilizations, with its roots tracing back to the Elamite kingdoms around 3200 BCE.

Iran's cultural heritage is incredibly diverse, reflecting a tapestry of ethnicities, languages, and religions. The country is inhabited by various ethnic groups, including Persians, Kurds, Azeris, and Baloch, each contributing to the rich mosaic of Iranian culture. This diversity is evident in Iran's vibrant arts scene, including literature, music, visual arts, and traditional crafts, which have flourished throughout its history.

Iran is renowned for its architectural heritage, which ranges from ancient ruins to magnificent Islamic structures. Iconic sites such as the ancient ruins of Persepolis, a UNESCO World Heritage site, showcase the grandeur of the Achaemenid Empire, while the intricate tile work and domes of mosques like the Shah Mosque in Isfahan exemplify the brilliance of Persian Islamic architecture. The country also boasts numerous historic bazaars, gardens, and bridges that reflect its architectural ingenuity and aesthetic sensibility.

Furthermore, Iran's cultural heritage extends to its rich literary tradition, with poets like Rumi, Hafez, and Omar Khayyam celebrated for their profound contributions to world literature. Persian carpets, recognized for their intricate designs and craftsmanship, are another hallmark of Iranian culture, representing a blend of artistry and tradition.

In addition to its architectural and artistic achievements, Iran's cultural heritage encompasses traditional practices, festivals, and rituals that reflect the values and beliefs of its people. Celebrations such as Nowruz (Persian New Year) highlight the country's deep-rooted customs and the significance of seasonal changes in Iranian life.

Despite the richness of its cultural heritage, Iran faces challenges in preserving its historical sites and traditions due to modernization, urban development, and socio-political changes. Efforts to safeguard and promote Iran's cultural heritage are essential for maintaining the country's identity and fostering a sense of pride among its citizens.

Iran's architectural heritage

Iran's architectural heritage is a testament to its long and storied history, showcasing a remarkable evolution influenced by various dynasties, cultures, and religions. Spanning from ancient times to the present, Iranian architecture reflects a synthesis of indigenous traditions and external influences, resulting in a diverse and rich architectural landscape.

Ancient Architecture
The roots of Iranian architecture can be traced back to the Elamite and Achaemenid periods. Notable examples include the monumental ruins of Persepolis, which served as the ceremonial capital of the Achaemenid Empire. The grand columns, intricate bas-reliefs, and expansive terraces of this UNESCO World Heritage site exemplify the sophistication and artistry of ancient Persian architecture.

Islamic Architecture
Following the advent of Islam in the 7th century, Iranian architecture underwent a significant transformation. The introduction of Islamic principles influenced the design of mosques, madrasas, and other religious structures. Key features of Islamic architecture in Iran include intricate tile work, large domes, and elaborate minarets. The Shah Mosque in Isfahan and the Imam Mosque exemplify the beauty and grandeur of this architectural style, adorned with stunning mosaics and calligraphy.

Safavid Era
The Safavid period (1501-1736) marked a golden age for Persian architecture. This era is characterized by the construction of magnificent mosques, palaces, and gardens that embodied the principles of symmetry and harmony. The Ali Qapu Palace and the Chehel Sotoun Palace in Isfahan are prime examples, showcasing exquisite frescoes, intricate woodwork, and beautifully designed gardens that integrate nature with architecture.

Qajar and Pahlavi Periods
In the 19th and early 20th centuries, Iranian architecture saw the introduction of Western influences, leading to a fusion of styles. The Golestan Palace in Tehran, with its intricate tile work and European-inspired elements, illustrates this blend of Persian and Western architecture. During the Pahlavi era, modernist influences began to emerge, yet traditional motifs and craftsmanship remained significant.

Contemporary Architecture
Today, Iranian architecture continues to evolve, reflecting the complexities of modern society while honoring its rich heritage. Contemporary Iranian architects are exploring innovative designs that incorporate traditional elements, sustainability, and modern materials. Projects like the Tabiat Bridge in Tehran exemplify this approach, blending functionality with aesthetic appeal and enhancing urban connectivity.

Cultural Significance
Iran's architectural heritage is not merely a collection of buildings; it is a vital component of the nation's cultural identity. These structures serve as historical narratives, reflecting the social, political, and religious evolution of the Iranian people. Efforts to preserve and promote this architectural heritage are crucial in maintaining cultural continuity and fostering national pride.

As urbanization accelerates and modernization poses challenges, safeguarding Iran's architectural heritage becomes imperative. Preserving these structures not only protects the past but also enriches the cultural landscape for future generations.

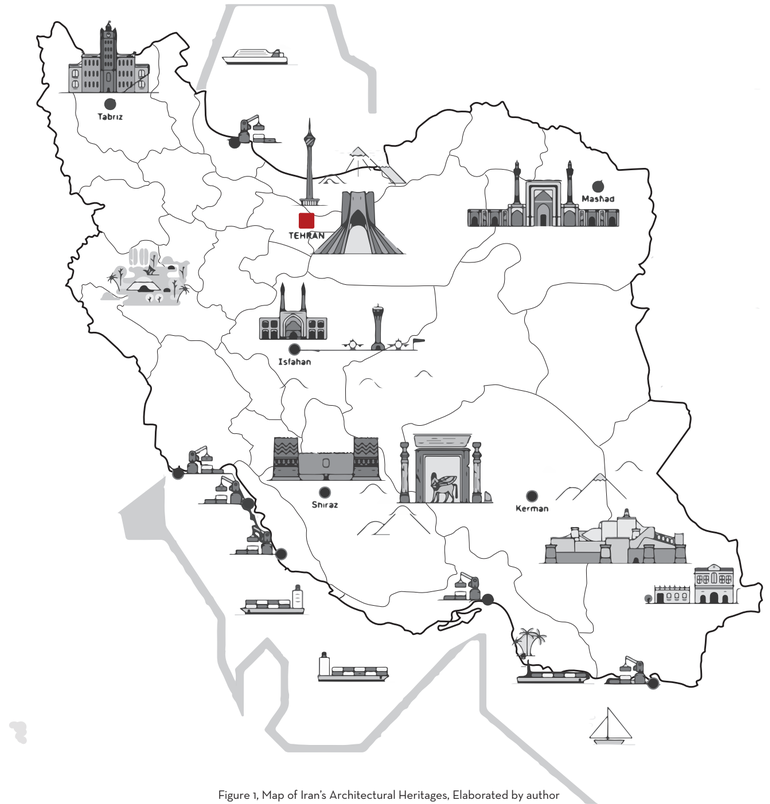


Figure 1, Map of Iran's Architectural Heritages, Elaborated by author

Overview of Modern Architectural Heritage in Tehran

Introduction to Tehran

Tehran, the capital city of Iran, is a sprawling metropolis known for its rich history, diverse culture, and dynamic urban landscape. Situated at the foot of the Alborz Mountains, Tehran serves as the political, economic, and cultural center of the country. With a population exceeding 8 million, it is the largest city in Iran and one of the most populous in the Middle East. The city's growth has been marked by a blend of ancient traditions and contemporary influences, resulting in a unique character that reflects both its historical roots and modern aspirations.

Tehran's history dates back to the 9th century, but it became prominent in the 18th century when it was chosen as the capital of Iran. Over the years, the city has undergone significant transformations, particularly in the 20th century, as it rapidly modernized in response to various social, political, and economic changes. This evolution has led to the development of diverse neighborhoods, each showcasing different aspects of Tehran's rich heritage and cultural diversity.

Modern Heritage in Tehran

Tehran's modern heritage is an integral part of its identity, representing the architectural, cultural, and historical milestones of the 20th century. This heritage is characterized by a blend of international modernism and local architectural traditions, resulting in a unique architectural landscape. Notable examples include iconic structures such as the Golestan Palace, a UNESCO World Heritage site that showcases the opulence of Qajar-era architecture; the Saad Abad Palace, which reflects the lavish lifestyle of Iran's royal family; and the Contemporary Art Museum, known for its striking modern design and important collection of contemporary art.

Additionally, the Money Museum offers insights into Iran's economic history through its diverse collection of currency, while the Niavaran Palace complex serves as a symbol of Iran's modern history, combining traditional Persian architecture with modern influences. The Abgineh Museum highlights the artistry of glass and ceramics, showcasing the country's rich craftsmanship.

Despite the significance of these modern heritage sites, many face challenges today due to neglect, urban expansion, and changing societal needs. Preservation efforts are crucial to ensure that these architectural gems are maintained and integrated into the city's ongoing development. Recognizing and valuing Tehran's modern heritage is essential not only for cultural continuity but also for enhancing the quality of life for its residents and promoting a sense of identity within the urban landscape.

Azadi Tower

"The Azadi Tower ("Freedom Tower"), formerly known as the Shahyad Tower ("Shah's Memorial Tower"), is a monument on Azadi Square in Tehran, Iran. It is one of the landmarks of Tehran, marking the west entrance to the city, and is part of the Azadi Cultural Complex, which also includes an underground museum.

The tower is about 45 metres (148 ft) tall and is completely clad in cut marble.[1][2] It was commissioned by Mohammad Reza Pahlavi, the last Shah of Iran, to mark the 2,500-year celebration of the Persian Empire and completed in 1971. It also serves as the country's kilometre zero.

After winning a competition, architect Hossein Amanat was tasked to design the tower. His ideas were based upon classical and post-classical Iranian architecture,[3] popular influences on art in the 1960s following the White Revolution." (en.wikipedia.org)

Figure 2, Old Image of Azadi Tower

Figure 3, Image of Azadi Tower

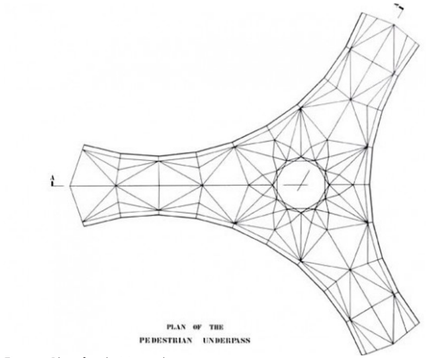


Figure 4, Plan of pedestrian underpass

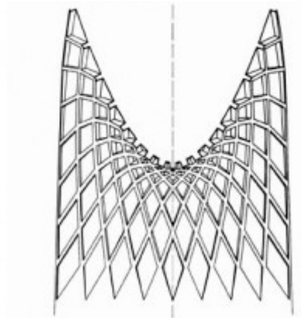


Figure 5, Part of east-west section

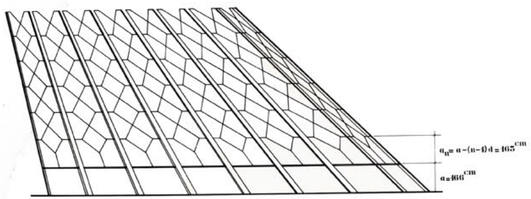


Figure 6, Typical pattern of marble cladding arranged on arithmetical progression

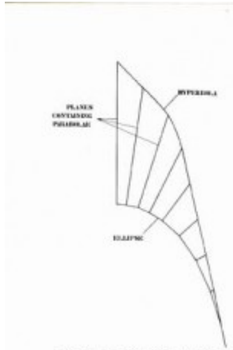


Figure7, Part of East Elevation

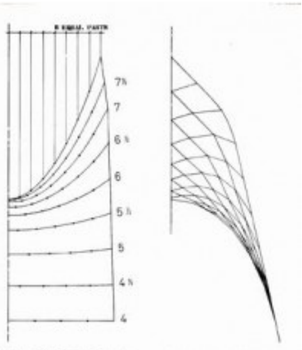


Figure 8, Part of east-west section

Figure 9, Part of East Elevation

"Amanat told the BBC World News in an interview that "overall, the building starts from the base and moves up towards the sky." He states that he was inspired to design the tower in this way because he felt that Iran "should be moving towards a higher level." According to him, the main vault is a Sassanian arch representing the classical era, while the broken arch above it is a popular medieval form of arch representing the post-classical era. The "network of ribs", which connects the arches together, would represent the connection between classical and post-classical Iran."

Built with white marble from Isfahan Province, the monument includes 8,000 blocks of stone. Computers were used to "define its complex woven surfaces," which, at the time, was a new technological technique.[8] The main contractor for the construction of the tower was the MAP Company, supervised by Ghaffar Davarpanah Varnosfaderani, a renowned Iranian stonemason.[9] The project was mainly funded by a group of five hundred Iranian industrialists. According to a report by MEED, the construction cost about six million dollars.

On October 16, 1971, the inauguration of the tower took place. However, it was not until January 14, 1972 that the tower was open to the public." (en.wikipedia.org)

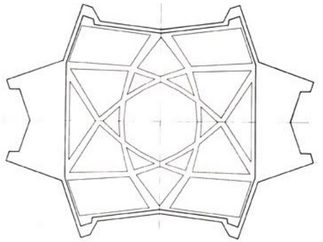


Figure 10, Plan of Azadi tower

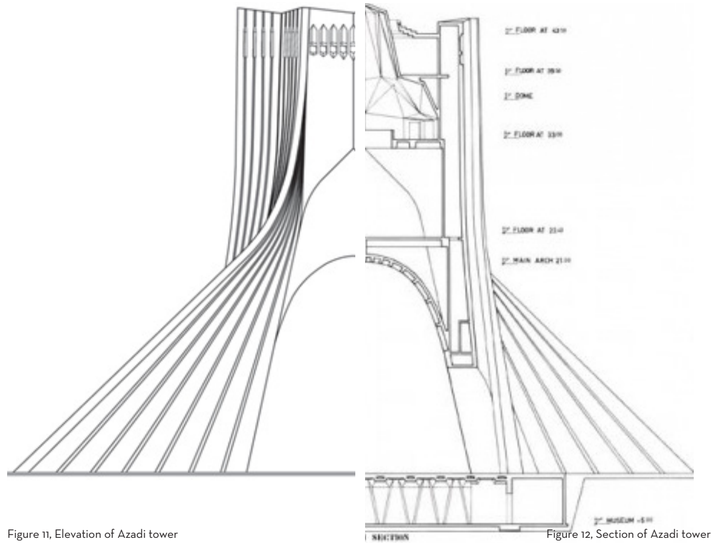


Figure 11, Elevation of Azadi tower

Figure 12, Section of Azadi tower

Name

"The first name associated with this monument was Darvaze-ye Kuroš ("Gate of Cyrus"), and at the time of the Centenary Celebrations, Asadollah Alam, who chaired the Council of Celebrations, referred to the monument as Darvaze-ye Šahanšahi ("Imperial Gate"). The monument's ultimate official name was decided before the announcement of the competition for the monument's design in September 1966. Bahram Farahvashi, a scholar and professor of ancient Iranian languages who worked with the Council of Celebrations, came up with the officially designated name of the structure, Šahyad aryamehr. Built in 1971 in commemoration of the 2,500th year of the foundation of the Persian Empire, this "gateway into Tehran" was named the Šahyad ("Shah's Memorial") in honor of the Shah (Mohammad Reza Pahlavi), but was later renamed azadi ("Freedom") following the 1979 Revolution." (en.wikipedia.org)

Figure 13, Old Image of Azadi Tower

"During the 1960s, Iran became a major oil-exporting country, and using the newly-found wealth, the Shah launched programs to modernize and industrialize the country. This followed a cultural growth that architect Hossein Amanat describes as "a mini renaissance".[5] In 1966, Amanat won a competition to design the building.

Due to governmental concerns, Amanat was required to sign underneath contracts "on condition of the approval of the Council of Celebrations", which would serve as the client. Amanat planned to contract the British company of Arup to assist in the structural design of the tower, as he was impressed by their contributions towards the design and construction of the Sydney Opera House. He initially faced opposition from the head of the council, as well as several conservative and nationalistic Iranian engineers, as he was turning to a foreign engineer for assistance. Despite that, the Shah supported Amanat, sending a letter to the council which would leave the decision to the architect. Shahbanu Farah Pahlavi was also supportive of Amanat's decisions." (en.wikipedia.org)

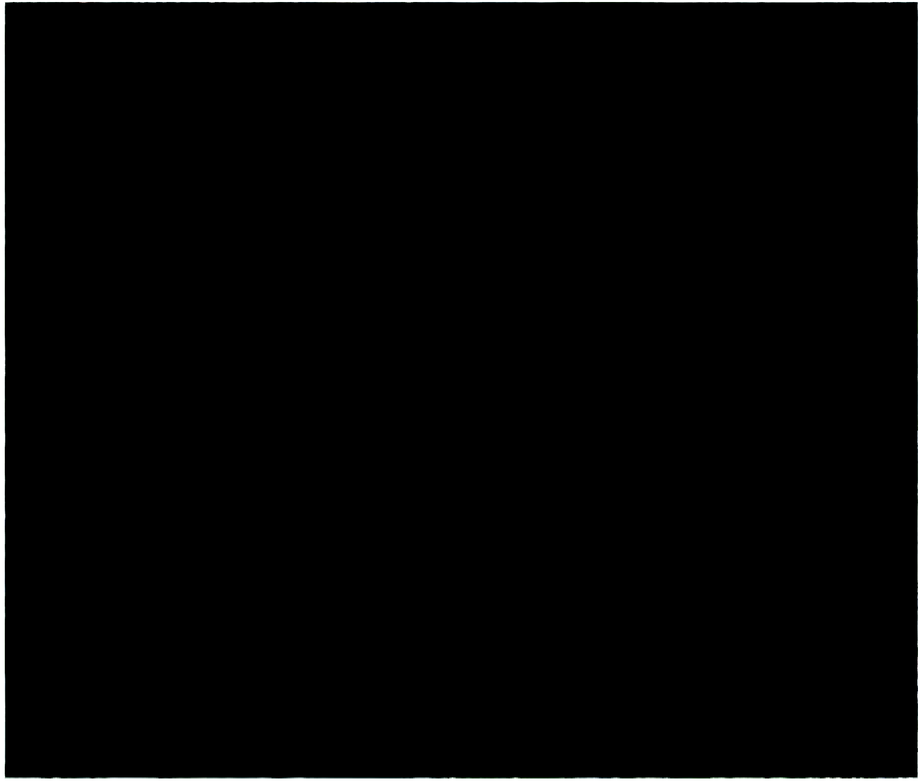


Figure 14, Aerial image of Azadi tower

Tehran Museum of Contemporary Art

Figure 15, Entrance of Tehran museum of contemporary art

"With curved copper cladding, these light catchers form a dynamic skyline moving gradually earthward. When the building was finished, its management was assumed by the newly created Foundation for the Arts and Sciences. The Foundation looked for a director to run the museum without any luck. As time was running short, eventually I was asked, as the initiator and architect of the project, to fulfill the function of interim director, open the museum and find a qualified director of international stature. Therefore, I accepted the responsibility of running the museum for eighteen months. Taking possession and management of the building for which one is the architect offers a unique and rewarding opportunity to make one's building work exactly as one had programmed and designed it." (www.caoi.ir/en)

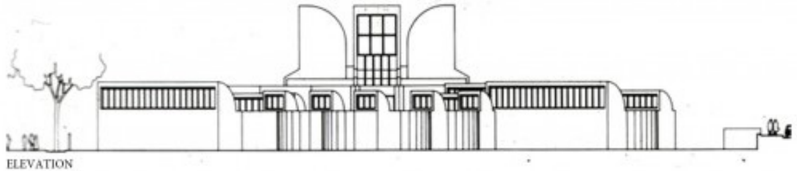


Figure 16, Elevation of Tehran museum of contemporary art

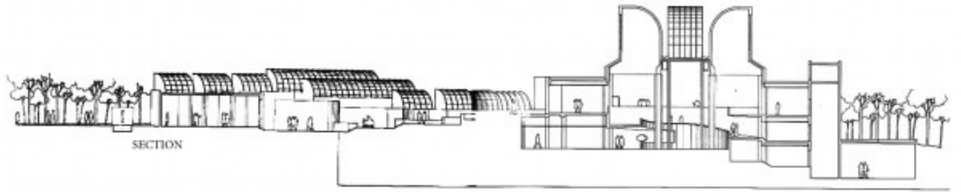


Figure 17, Section of Tehran museum of contemporary art

"As a painter during the sixties, I become interested in contemporary art and my dream was to promote the idea of a Tehran Museum of Contemporary Art. This project, on the east side of Laleh Park, was initiated, promoted and programmed for a museum and cultural center with facilities such as exhibition halls, cinematheque, library, and so forth. Some western and Iranian critics thought it was irrelevant to collect or exhibit modern or contemporary art in Iron. I would often ask them how relevant it seemed to them that Europeans, at great cost and effort, pile up so much of eastern art and cultural products in their museums. As we imported western technology and science, why not the least harmful of all, making an introduction to western art available to Iranians. In fact, in the sixties and seventies, as urbanization grew sad the middle classes expanded, many interesting contemporary artists appeared on the scene and great public enthusiasm was generated.

The museum opening was thus a successful cultural event. The museum was to house an international and national collection consisting of post-impressionist, modern and contemporary paintings and sculptures, as well as a collection of 20th century photography, prints and a collection of contemporary architectural drawings. The museum, as a cultural center, was quite effective and attracted a lot of visitors. The organization of the physical program consists of two major elements. Firstly, there is the entrance hall which accommodates all support facilities such as bookshop, snack bar, library, offices, lecture hall/cinematheque and storage. Secondly, there is an open courtyard surrounded by a chain of interconnected and articulated galleries. These are divided into large and small exhibition spaces, accommodating respectively large paintings, a single painting, and small paintings and drawings.

The galleries are organized along a beltway around the inner outdoor sculpture court. They gradually romp downwards, lending the spectator to the lower level of the entrance hall after a full circle visit. As the galleries along the large circulation ramp move earthward, the roof of the last gallery finally meets the entrance level. The snackbar and outdoor seating area on top of it become part of the courtyard, commanding a view of the greenery of Laleh Park. This feature opens the roof of the galleries for outdoor use. Spectators, after completing a tour of the building, then discover the rare opportunity to experience the galleries from floor to rooftop. One of our fascinations during the design process was the rich, playful quality of the undulating and volumetric vernacular roof scapes of Yazd, Kashan and other desert towns. Not only did we succeed in opening such a roofscape to the entrance level, but we made it accessible to pedestrian use, conveying a sense of conquering the building and making it submit to the users. Natural light plays a significant role in design and all galleries are lit by natural light." (www.caoi.ir/en)

Figure 18, Gallery level plan

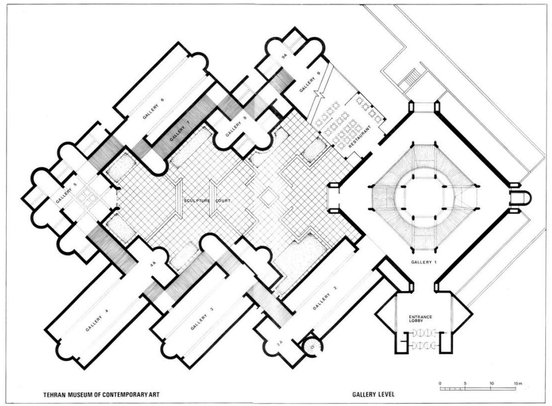


Figure 19, Tehran museum of contemporary art

Niavaran Palace and Cultural Center

"The idea here was to create diversity and a comprehensible scale by treating theater, gallery, library and restaurant as independent units. All the buildings faced a common courtyard which was connected to the axis of cascading pools and tall plane trees.
As one crosses a moat by a narrow bridge to gain access to the sunken courtyard, one is framed and announced by the small entrance gate. We used in situ concrete throughout the structures and added yellow and while to the concrete mix; as a result, the color of the finished concrete has a greenish-yellow tone, which blends well with the green garden. We made the environment seem monolithic, very much reminiscent of one-color, one-material vernacular examples." (www.caoi.ir/en)

Figure 20, Niavaran cultural center

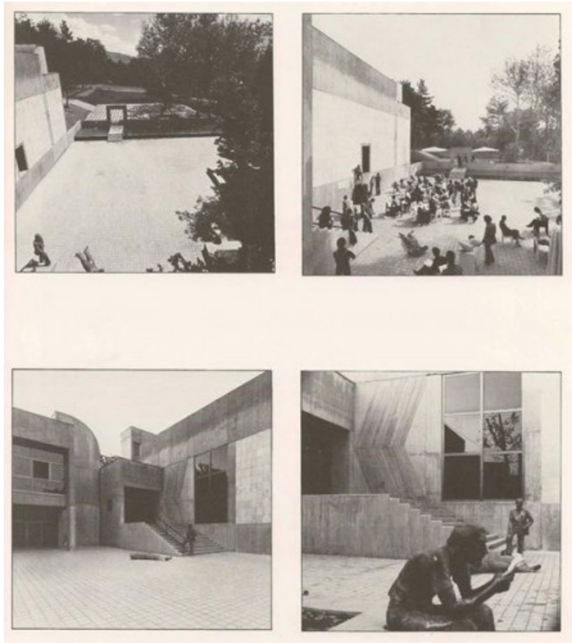


Figure 21, Images of Niavaran cultural center

Figure 22, Images of Niavaran cultural center

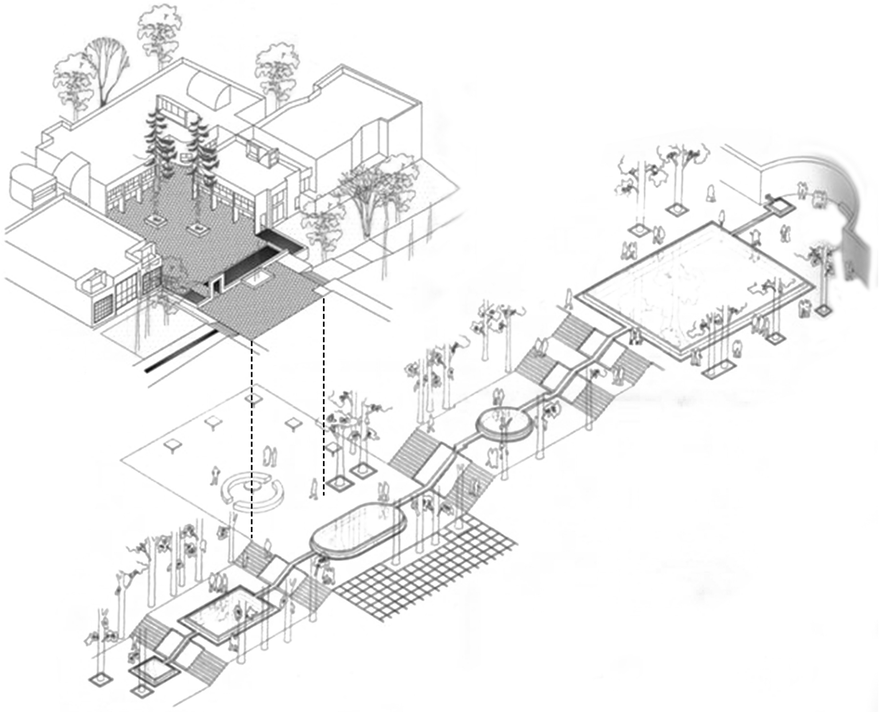


Figure 23, Axonometry of Niavaran Palace and cultural center

"The huge gallery wall facing the courtyard was covered with light yellow-green marble in textural contrast to the some color concrete walls. The translucent and precious quality of the marble softened the whole atmosphere and gave it a luxuriant effect. The fragmentation of the architectural program allowed moderate expansion in the outer peripheries. In the course of construction, such expansion was permitted in the form of a small office complex which did not hinder the overall complex. As in the Garden of Yousefabod, the sculptor, Parviz tanavoli, was again commissioned to produce three life-size bronze figures for the courtyard.

The cultural center consists of library, gallery, auditorium for performing arts, cafeteria-restaurant. The center is designed around a plaza, which is connected to a sizeable Persian garden with extensive waterways. This was programmed as a prototype neighbourhood cultural center." (www.caoi.ir/en)

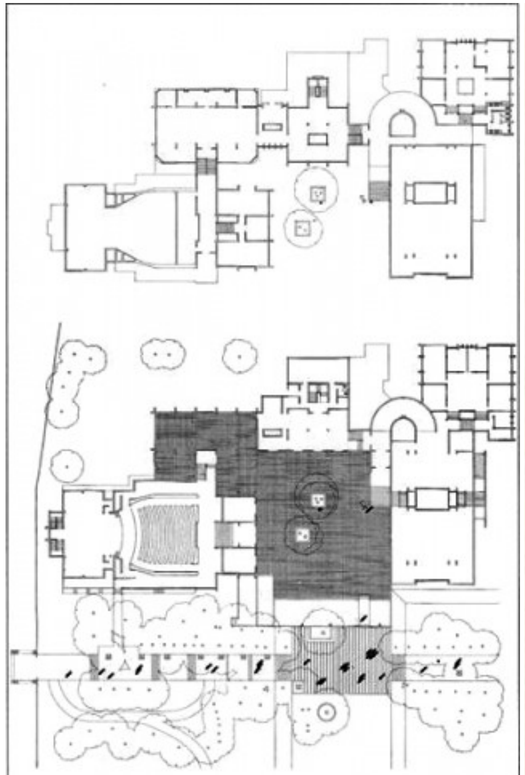


Figure 24, Plan of Niavaran Palace and cultural center

Figure 25, Images of Niavaran cultural center

Carpet museum of Iran

"Carpet museum of Iran is Located in Tehran, beside Laleh Park, and founded in 1976, the Carpet Museum of Iran exhibits a variety of Persian carpets from all over Iran, dating from 18th century to present.The museum's exhibition hall occupies 3,400 square meters (10,200 ft·) and its library contains 7,000 books.The perforated structure around the museum's exterior is designed both to resemble a carpet loom, and to cast shade on the exterior walls, reducing the impact of the hot summer sun on the interior temperature." (https://fa.wikipedia.org)

Figure 27, Carpet museum of Tehran

Figure 26, Carpet museum of Tehran

Shafagh Park

"Shafagh Park and Cultural Center (formerly Yusef Abad) were designed and built in 1966. This park and cultural center are among the first in Iran, designed with concepts of traditional Iranian gardens, but with a completely modern approach. The park's land is located near the western side of the current Seyed Jamal al-Din Asadabadi Street, and it is enclosed by streets on three sides. Two major goals were considered in the design of this complex. First, in the landscaping and design of the park's pathways, in addition to planning areas for visitors to relax and enjoy, a sense of continuity in the paths was also considered. These pathways are meant for pedestrians who don't intend to visit or use the park's green spaces but simply pass through it, and the greatest advantage is the psychological relief it provides while moving through the park.

The second goal was to create a series of elements and buildings that fully harmonized with the park's landscaping. These primarily serve functional and recreational purposes, including a library, meeting hall, children's painting workshop, playgrounds for children, guidance centers, and green spaces for adults to enjoy. The construction of the buildings used brick, blending familiar architectural patterns with stone walls in some areas. The designer creatively integrated both individual and collective spaces, both enclosed and semi-open, and combined plant elements with water features like gardens, streams, fountains, and waterfalls. This approach was becoming a signature in Kamran Diba's architectural work for public spaces, demonstrating the valuable use of Iranian architecture in design.

Since the park's land was located in a limited urban area, the designer used intelligent strategies to increase the length of the walking paths by creating hills and planting dense trees, making the park seem visually larger. Diba writes about his design ideas and later interventions in the site and buildings: "In this project, I tried to establish the first cultural center in Iran, a more complete version of which you can see in the Niavaran Cultural Center. At that time, urban architecture, landscape design, and park furniture design were not topics of discussion in Iran, nor were there specialties in these fields." (aoapedia.ir)

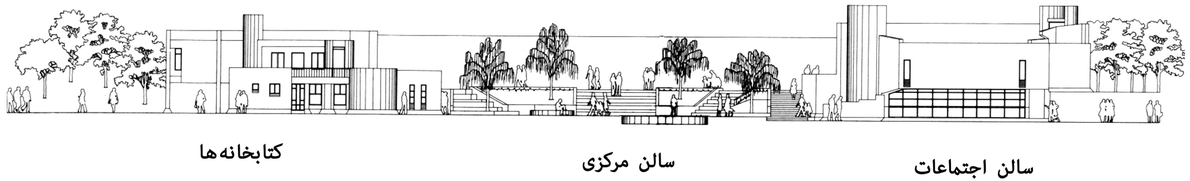


Figure 28, Elevation of Shafagh park

Figure 29, Image of Shafagh park

"This design was, in fact, a cultural gift and a sample of the working method and thought process behind it. One valuable aspect of this project was preserving an old building that was once condemned to demolition. I believe that, even with a flashlight, you wouldn't find a similar building in Tehran from the same era and on this small scale. From the Minister of the Royal Court to the local mayor, I was pressured to demolish the building. Some wanted to open up the view to the Vatican Hospital in the northern alley, and others didn't understand the value of traditional architecture. As an architect at the time, I felt somewhat guilty about blocking the hospital's view from the park. It was said that the Italian architect and his Iranian partner had chosen and designed the hospital's location with the knowledge that the building would be demolished. But today, I am happy I expanded and preserved this old building with minimal interference to its exterior, as it is more elegant and dignified than my own works, without the youthful artistic extravagances.

However, in the new images, the lights we negotiated so much with the blacksmith to install have completely disappeared. The trash bins we designed, which were actually copies of a famous Danish trash bin, are also gone, and the weeping willow tree that was supposed to create a romantic, old-fashioned atmosphere in front of the old building is no longer there, replaced by a 'grape-cluster lamp.' Worst of all, an ugly sign has made it impossible to publish the image of the library façade in architectural journals. We use the best artists for posters that may only decorate streets for a month, but we completely ignore graphic design for the first cultural center built in Iran. [...] In Shafagh Park, there is a small pool inspired by ancient subterranean vessels, with an elongated spout for water flow. Now, they've painted the spout blue, separating it from the rest of the pool and drawing attention to its color rather than the waterfall, which has no place in traditional or dignified architecture. As for the buildings, they have undergone some repairs, and an additional part has been added to the performance hall. This addition was cleverly designed and not only doesn't harm the original design but complements it. This work was executed by engineer Hamid Nourkiani and his colleagues, who skillfully carried out the renovation to preserve the original architectural form and character." (aoapedia.ir)

Figure 30, Image of Shafagh park

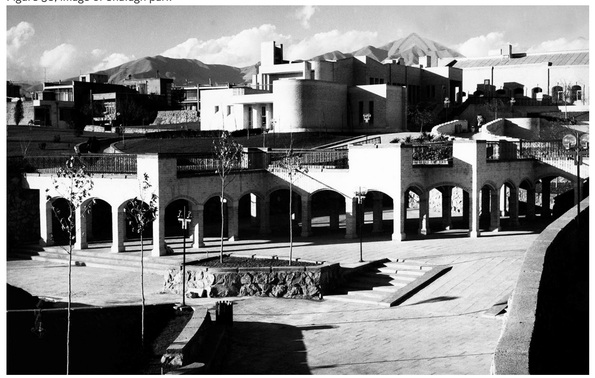


Figure 31, Image of Shafagh park

"Was this a thoughtful and professional action, or did Nourkiani simply act this way because of his fondness for me? I think the latter interpretation is more accurate. But there was a mistake in the restoration: the green strip at the top of the building. One of the design goals of these buildings was the continuity of the wall, with the façade finishing in white stone. The aim was to create no separation between the wall and the color of the sky! However, the continuous green line, while aesthetically pleasing, disrupts the architecture's nature and residence, creating a division between the façade and the sky. I believe that to preserve the bricks, it's better to use galvanized metal in a discreet manner."

In the design of Shafagh Park, and later in Niavaran Cultural Center, Diba collaborated with Parviz Tanavoli. At Diba's request, Tanavoli created six life-sized sculptures of ordinary people for these two projects. Installing these sculptures in such locations was also groundbreaking, as up until then, only statues of important and well-known figures were placed in public spaces. Furthermore, the sculptures depicted completely ordinary and everyday scenes: sitting on the ground, lying down, standing aside watching people, or reading a book in the corner—just like what everyday people do in public spaces.

According to Ataollah Omidvar, the most important characteristic of Diba, which is prominently reflected in his works, is this: before being an architect, painter, or urban planner, he was an artist sensitive to his surroundings and human needs. He did not seek complexity but pursued simplicity and emotional connection. He could carefully analyze the elements of any environment or space, identify positive factors, and most importantly, with great humility, draw on the opinions of other artists and designers, while also decisively leading a team to implement decisions." (aoapedia.ir)

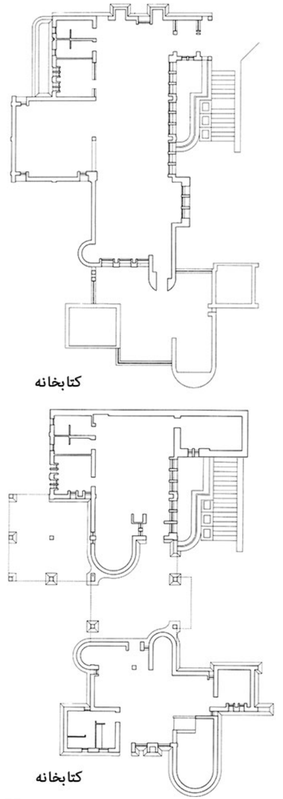


Figure 32, Plans of Shafagh park

Namazi Villa

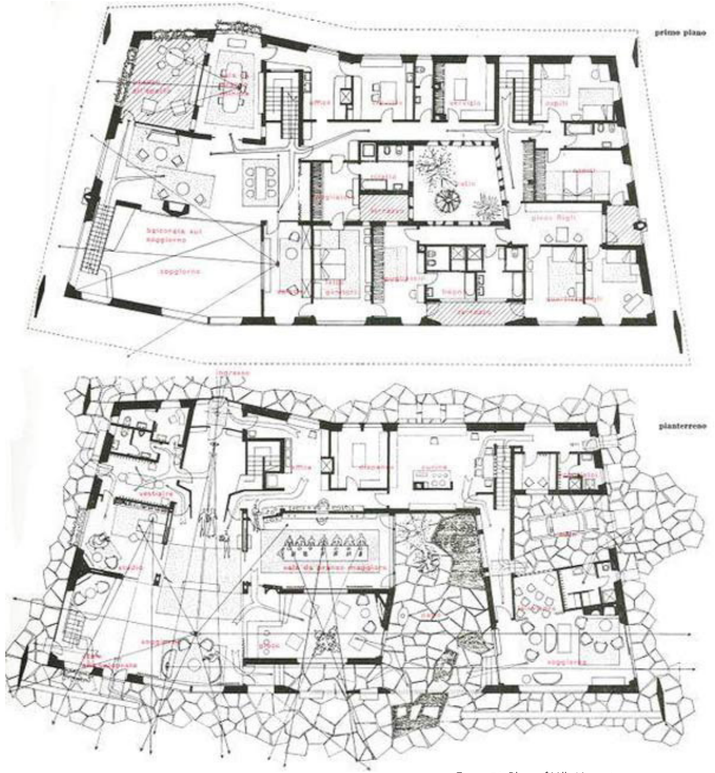


Figure 36, Plans of Villa Namazi

"Giovanni Ponti was one of the renowned contemporary architects, and interestingly, after his death, his fame grew, especially in other areas of design, such as furniture design and designing on fabrics and glass. He was born in 1891 in Milan and studied architecture at the Polytechnic University of his hometown. He was an artist in almost all fields, from designing small-scale items like spoons and forks to furniture, skyscrapers, and urban design on the neighborhood scale. Ponti designed famous buildings across Europe, such as the Pirelli Tower in Milan, and villas in southern France, Italy, Venezuela, as well as in Singapore and Hong Kong. He also designed several churches in Italy, the most important of which is the Taranto Church in 1970. His last work, which is considered his first project in the United States, was the Denver Art Museum in Colorado. Ponti passed away in 1979 in Milan.

In 1961, Shafi Namazi, a wealthy businessman and the son of Mehdi Namazi (a merchant and member of the National Assembly and Senate), contacted Ponti to commission a villa in Tehran. Namazi, consulting with his friend Mohsen Foroughi (an architect, graduate of the Paris School of Fine Arts, professor, and head of the Faculty of Fine Arts at the University of Tehran), had heard that if he wanted a unique villa, he should employ Ponti.

The Namazi Villa has a 70-meter wall along Ammar Street in Niavaran, made from orange-colored ceramic bricks with a porous texture. It also has a stone section as the entrance gate, where the stones are arranged in a way that creates a three-dimensional surface with recessed and raised elements. This wall is about two meters high, allowing part of the second floor and the entire roof of the building to be visible from the street. The roof, which is the most prominent architectural feature of the villa, appears like a floating ceiling. According to Nader Tehrani (a graduate of architecture and urban design from Harvard University, lecturer at various architecture schools in Massachusetts, and head of the architecture department at MIT), who is well acquainted with Ponti's works, Ponti used this type of roof in all three of his famous villas. It seems as though the roof floats above the house, with no visible connection between the house and the roof, appearing as a very light structure with broken lines next to the building. Tehrani adds that in Ponti's Venezuelan villa, even the house does not rest on the ground and appears to float above it. However, in the Namazi Villa, the walls reach the ground, and the zigzag-shaped stone base creates a wavy connection between the building and the ground." (www.archoma.com)

Figure 33,Villa Namazi, Interior space

Figure 34, Villa Namazi, Outside

"Ponti said that he created this house and its yard with the concept of "the joy of life." The site plan clearly demonstrates the harmonious integration of the building and the garden. The house is designed so that from every interior space, a beautiful corner of the garden is framed and visible. He meticulously studied the environmental factors of this plot of land in Niavaran and made full use of all the local features, such as the north-south air flow, light, and the need for shade in proportion. It is certain that the light in Tehran differs from the light in northern Italy. Many of the villa's initial designs show how much he paid attention to all these environmental aspects.

For Ponti, the entrance to a building was its most important element; he wrote, "The entrance must always be mysterious," but in the Namazi Villa, the entrance is a symbol of a sense of welcome and the infinite layers of the house: upon entering, the entire living room and, behind it, the most beautiful part of the yard are visible. Entering feels like stepping into an exceptional space, but the sense of mystery is not as strongly felt. The architectural elements of the villa that I believe deserve special attention are: The car entrance roof, a design that Ponti used in most of his villas, acting like his signature. The living room, with a double-height ceiling and a light staircase where each step is made of a different colored stone. The large patio that brings the garden's greenery inside. The windows of the bathrooms and corridors open to this patio. The windows, reminiscent of Le Corbusier's Ronchamp Chapel or Marcel Breuer's Whitney Museum, are highly Cubist, and the patio walls are decorated with ceramic designs by the famous Italian artist Fausto Melotti, whose works are intensely modern. The walls, ceilings, and balcony floors are adorned with half-egg-shaped ceramics that resemble pebbles in black, white, and navy blue. The four columns that hold up the floating roof are a smaller version of the Pirelli Tower in Milan. All the elements of this house were designed by Ponti himself, including the three fireplaces, furniture, curtain fabrics, door handles, as well as the sculptures in the yard and inside the pool. Undoubtedly, this house was built by the finest Iranian craftsmen of the time. In the 1960s, most architects in Iran were influenced by the international style, and imitating foreign architects like Richard Neutra in Tehran's residential villas was common, but the Namazi Villa is an exception.

The Namazi Villa is significant because, along with a building in Baghdad (the Iraq Planning and Development Council building), it is one of Ponti's only works in the Middle East. Ponti's work in Baghdad was severely damaged during the 2003 war, but it is now being restored by UNESCO, highlighting the global importance of this architect's work from the perspective of the United Nations Educational, Scientific, and Cultural Organization (UNESCO)." (www.archoma.com)

Figure 35, Physical Model of Villa Namazi

Case Studies: Renovation of Modernist Buildings

Argo Factory

Figure 37, Argo Factory

One of the major drink manufacturing factories in Iran during the 1960s and 1970s

Construction dates back to early 1920s as one of the first industrial factories in Iran

Brick Building

In spite of its unique architectural features – high smoke-stacks and strategic geographical position at the heart of the city – the factory was taken for granted for many years and eventually turned into a tumbledown building for almost four decades.

Former drink manufacturing factory

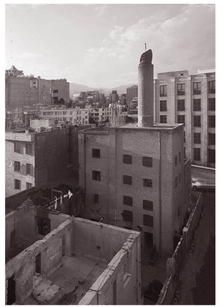


Figure 38, Argo factory, Before renovation

Figure 39, Argo factory, Before renovation

Located in the city's downtown district, the 1,700-square-metre Argo Factory is the first private art museum to be created in Iran's capital since 1979.

The brewery, which was once used to produce a beer named Argo, was chosen for its central location with the aim of attracting more cultural activities to the area.

"It was very interesting for us to convert a modest industrial beer factory, which is part of the industrial heritage of the city, constructed about 100 years ago, into a 21st-century international contemporary art museum," (reflected the studio)

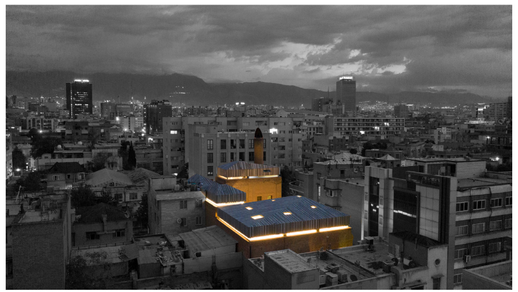


Figure 40, Argo factory, After renovation

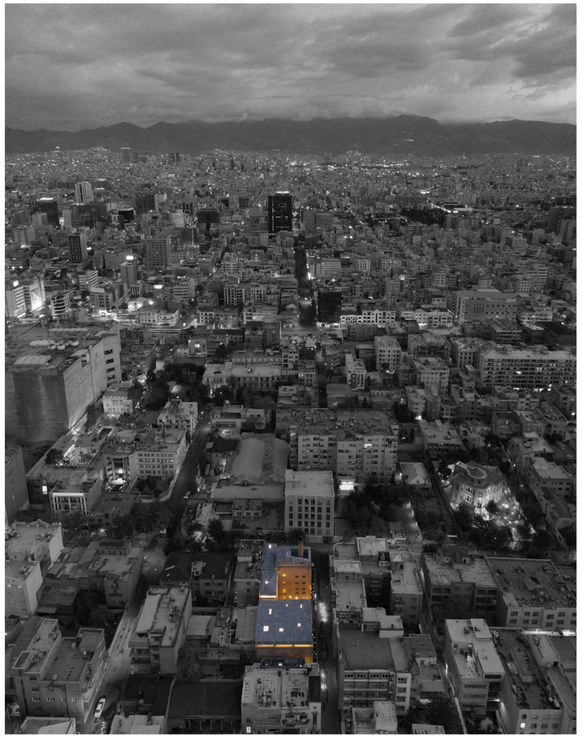


Figure 41, Argo factory, After renovation

Figure 42, Argo factory, Roof plan

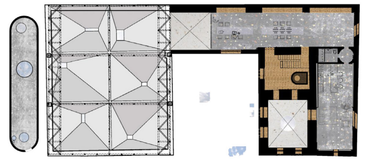


Figure 43, Argo factory, Second floor plan

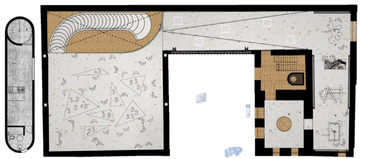


Figure 44, Argo factory, First floor plan

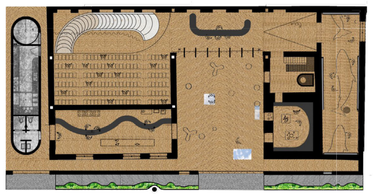


Figure 45, Argo factory, Ground floor plan

There is also an observation deck that surrounds the building's original chimney and a bar that serves non-alcoholic draft beer as a nod to the building's former use. Inside, the Argo Factory comprises six distinct galleries, alongside event spaces, a library, office, shop and a studio for the museum's artist residency programme.

Figure 46, Section 1

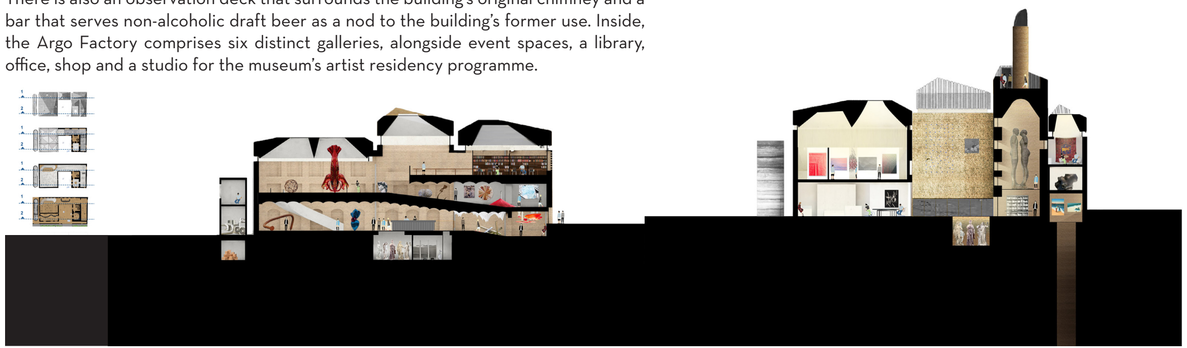


Figure 47, Section 2

FIRST STEP

CONSERVATION

"Argo" is like a sick child who needs a structural engineer before an architect. First, this building must reach a solid state, because it is collapsing...

SECOND STEP

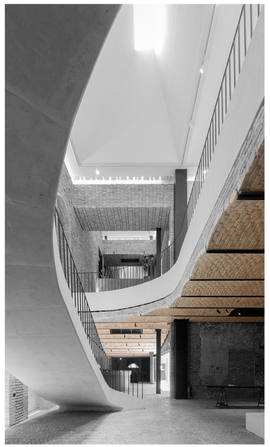
REVIVE

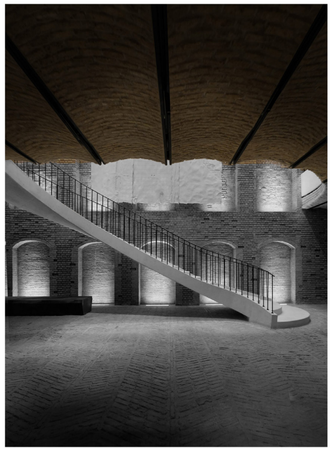
GOAL for the project was TO GIVE NEW LIFE TO THE BUILDING RATHER THAN focus solely on its PRESERVATION.

"Our architectural response to Argo Factory was to offer it a 'SECOND CHANCE' AS OPPOSED TO 'PRESERVATION'."
(explained the studio's founder Ahmadreza Schricker)

The first step of ASA North's intervention was to underpin the existing building without disturbing its original brick walls. Made from a mix of concrete and steel.

Figure 48, Argo factory, Before renovation





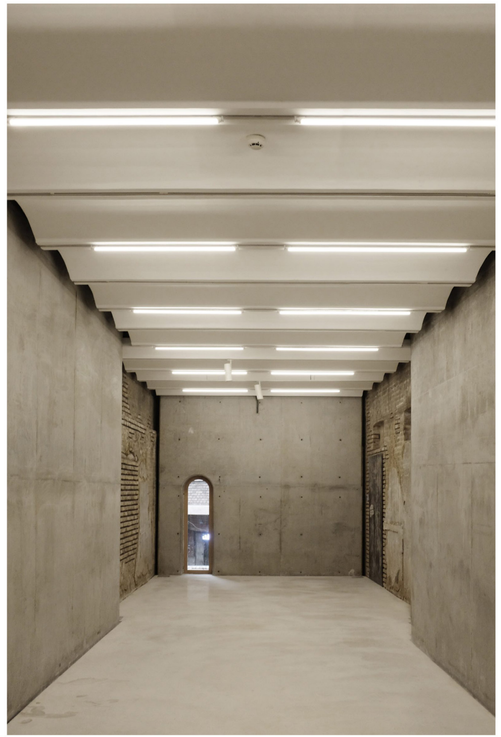


Figure 49, Argo factory, After renovation

A more visible alteration by the studio is the addition of five concrete roofs, which replace the originals that had been taken from the factory while it was left abandoned.

"Argo's structure was left abandoned for the past 57 years and during this time, the roof material was stripped and its beams carried off by neighbors, the factory was roofless and in a state of desolate." (explained Schricker)

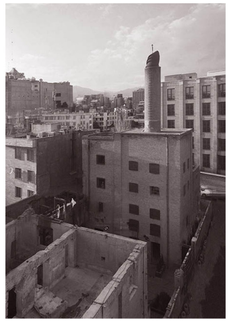


Figure 50, Argo factory, Before renovation

Figure 51, Argo factory, After renovation

Figure 52, Iranian Miniature

Figure 53, Iranian hats

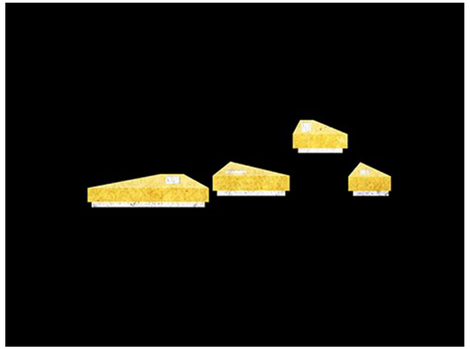


Figure 54, Roofs in Argo factory

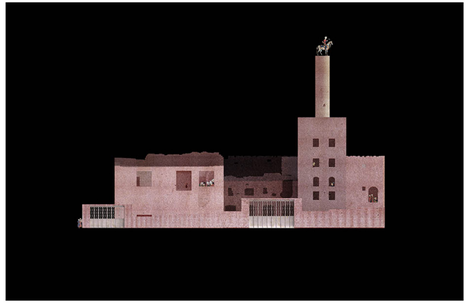


Figure 55, Argo factory, Before renovation

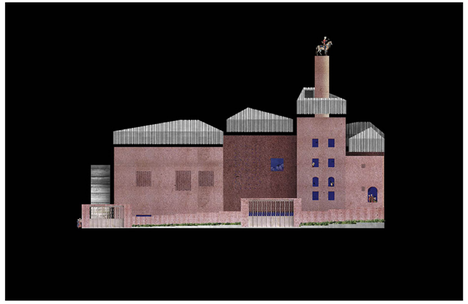


Figure56, Argo factory, Before renovation

Cast by hand, these concrete roofs feature striations designed to echo the metal caps of traditional buildings nearby. They also appear to float above the walls of the factory.

The design and positioning of the roofs are key to maintaining the required climatic conditions in the museum's galleries as they help to keep heat out and filter light into tall-ceilinged galleries below.

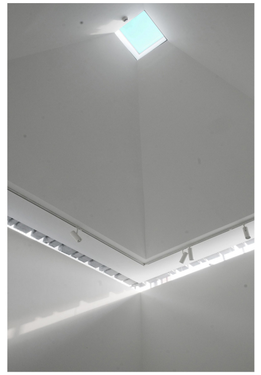


Figure 57, Argo factory, Interior spaces

Figure 58, Argo factory, Outside

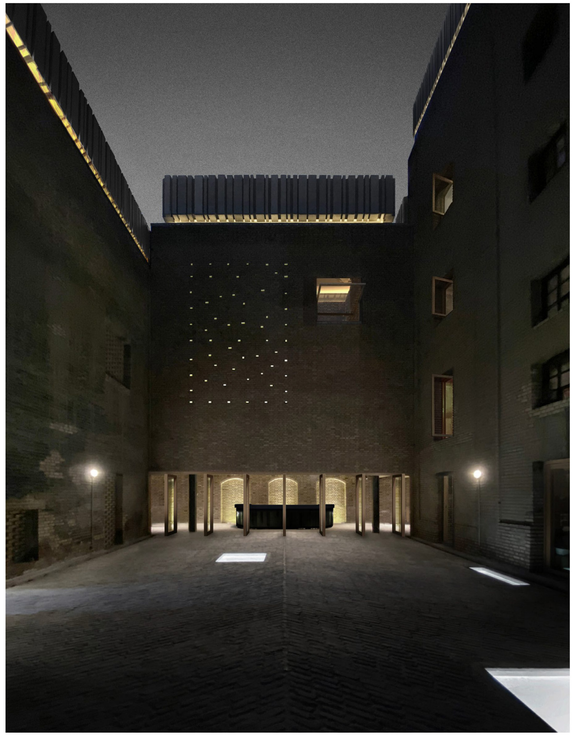


Figure 59, Argo factory, Front Courtyard

Inside the Argo factory, standout features include a curved concrete staircase, designed without any middle supports and positined to linked the musem's lobby and galleries above.

Figure 60, Argo factory, New stiarcase

This Stair Case is among the new elements of the musem that have a curvilinear form to contrast with the more uniform architecture of the original industrial building

Figure 61, Argo factory, New stiarcase

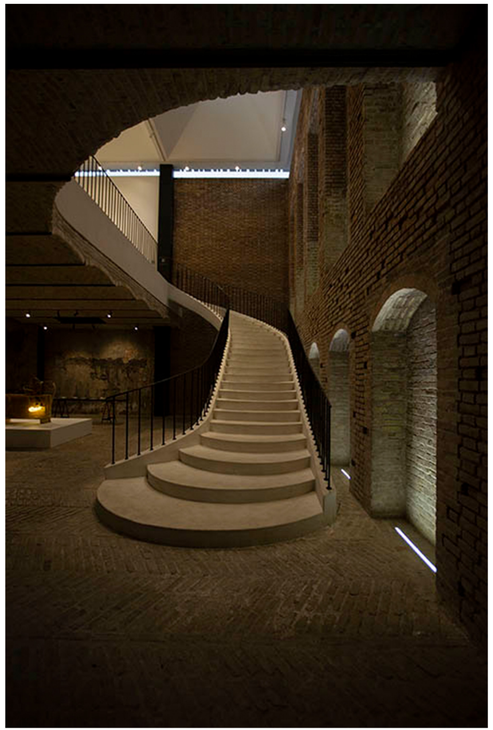


Figure 62, Argo factory, New stiarcase

Vast Gallery and Artistic Residence

Figure 63, Vast Gallery

“Vast Gallery & Artist Residency, located in the historic center of Tehran with an area of 1300 sqm, originally consisted of three residential floors and five retail stores. As it was built in the 1930s in the first Pahlavi period, the architecture language was highly influenced by modernist architecture and cultural trends of that era.” (www.caoi.ir/en)

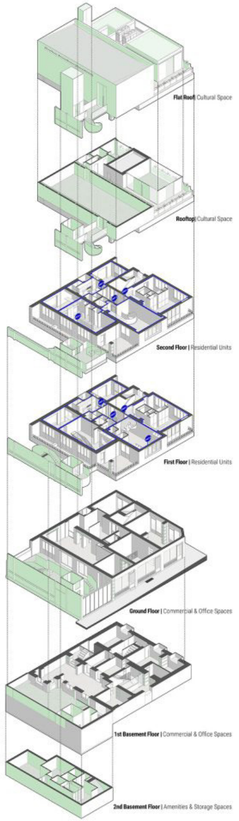


Figure 64, Spatial diagram

“Like many other buildings of this period in central Tehran, this building had been abandoned by the owners after the Islamic revolution. The original owners, Armenian musicians who were lead piano players near City Hall, resided in the residential units. Their daily interaction with the surrounding neighborhood and the formation of a sense of community within this area that was strengthened by providing a public service through retail stores became the source of inspiration for renovation and the core of the new programming for rehabilitation of this building after 40 years of abandonment.

With the intention of endorsing rehabilitation in the central part of Tehran and expanding on a long-term project of reestablishing urban tissues, new programs were implemented, and extensions were added to the building. After reinforcing the building by adding metal bracings and steel jackets on existing columns, vaulted ceilings were supported by metal beams, and openings were created between floors. Two residential units were transformed into six smaller units and an office space was added to the program. Retail stores were converted into a cafe, pastry shop, and a gift shop. Inviting visitors to the complex and highlighting their significant impact on the project’s identity thriving from daily communication with the neighborhood residents.” (www.caoi.ir/en)

Figure 65, Vast gallery, Floor plans

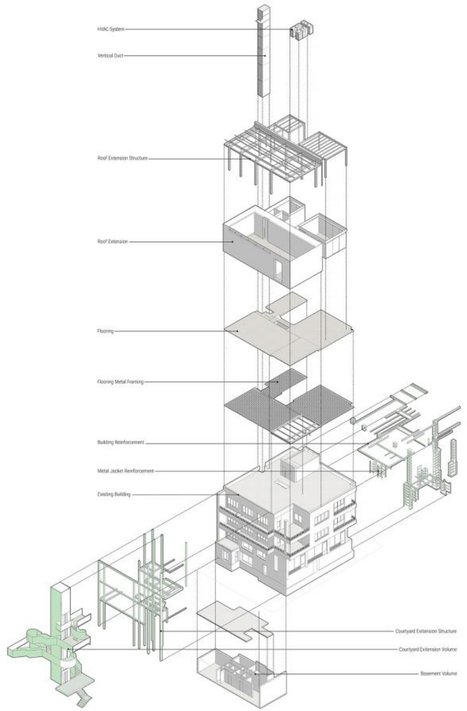


Figure 66, Exploded axonometry

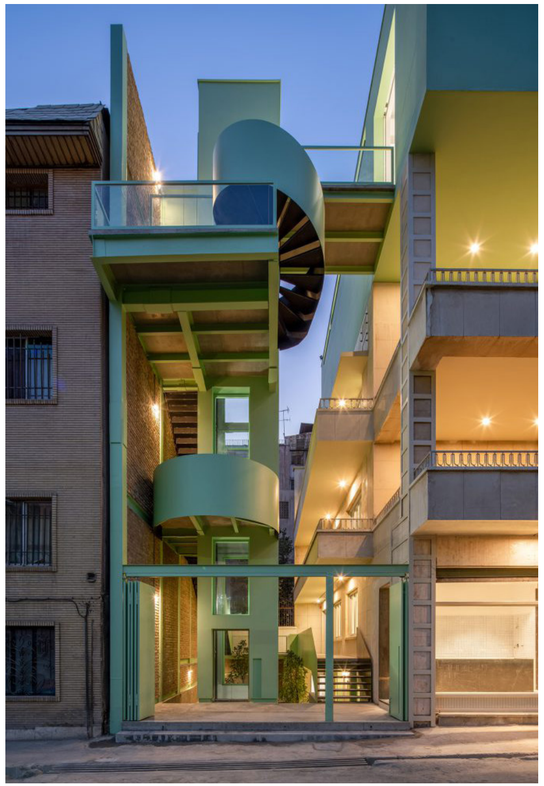


Figure 67, Vast gallery

"Installing the metal extension structure built in the courtyard, the floor was excavated, and the foundation and guard structure was implemented. Concrete walls were built around the metal skeleton pit, and the stairs structure was connected. At the roof level, this structure was connected to the building and integrated with the metal structure on the roof." (www.caoi.ir/en)

Figure 68, Vast gallery

“Consistent with the historic and cultural identity of the neighborhood and surrounding buildings, as well as creating an urban node, an extension gallery space was designed as a volume placed on the rooftop of this building. In order to create a unique experience while reaching the rooftop volume and keeping the existing main staircase only for residential access, a vertical path was added as an extension to the courtyard that leads to the rooftop gallery through bridges and staircases.” (www.caoi.ir/en)

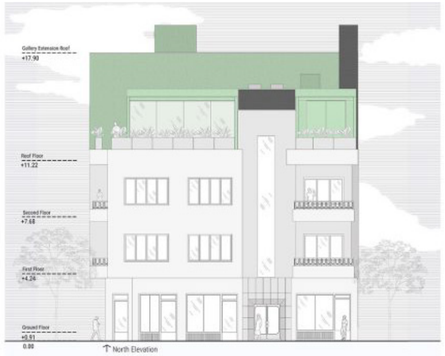


Figure 69, Vast gallery, North elevation

Figure 70, Vast gallery, East elevation

“The purpose of defining, designing, and executing such projects is to attract a new generation to the center of Tehran. In recent years, Neighborhoods have lost their identity as residential areas and have taken on commercial or administrative use. By creating multipurpose projects in which residential use is an essential fragment, part of the population will return to these neighborhoods to live, work, and create. And in addition to reviving the area, they increase the sense of hope, belonging, and interest in the neighborhood among the old residents.” (www.caoi.ir/en)

Figure 71, Perspective Section BB

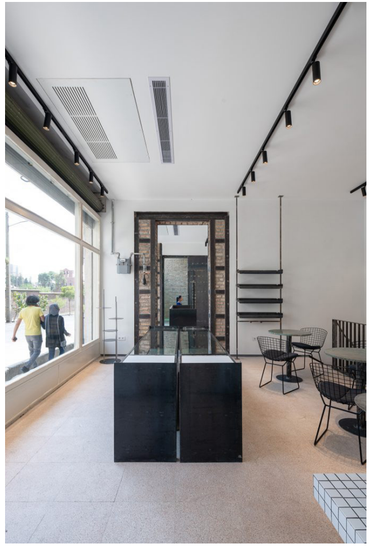


Figure 1, Vast gallery, Interiror space

Figure 72, Vast gallery, Interiror space

Figure 73, Vast gallery, Interiror space

Figure 74, Vast gallery, Interiror space and spiral staircase

Hanna boutique hotel

Figure 75, Entrance of Hanna boutique hotel

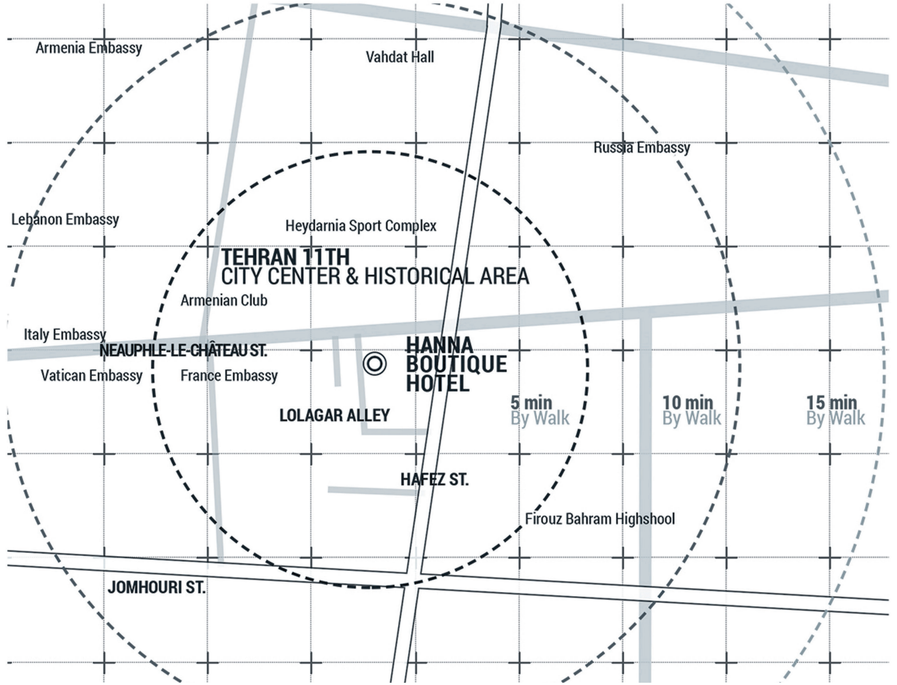


Figure 76, Location of Hanna boutique hotel

"Around 90-years ago, six buildings were constructed in the center of Tehran, creating its one and only symmetrical street. These remaining structures on Lolagar Alley are some of the best examples of architecture from the First Pahlavi era, a time when modern architecture was beginning to appear in Tehran. Initially all six of these buildings were residential, but over time, like many other buildings in downtown Tehran, they were left unoccupied. Hanna Project, which includes a hotel, restaurant, gallery, and multipurpose spaces, was designed in one of these buildings, with the intention of bringing life back to Lolagar Alley and Tehran's city center." (www.caoi.ir/en)

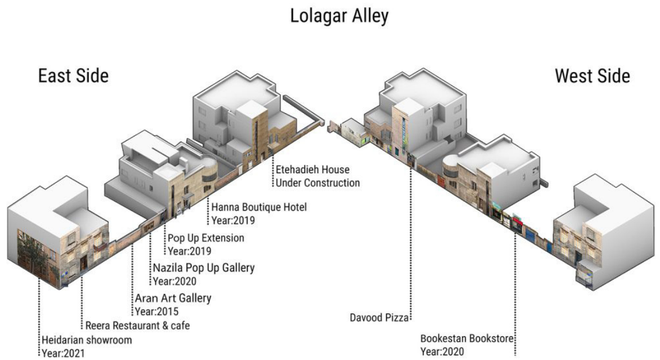


Figure 77, Axonometry

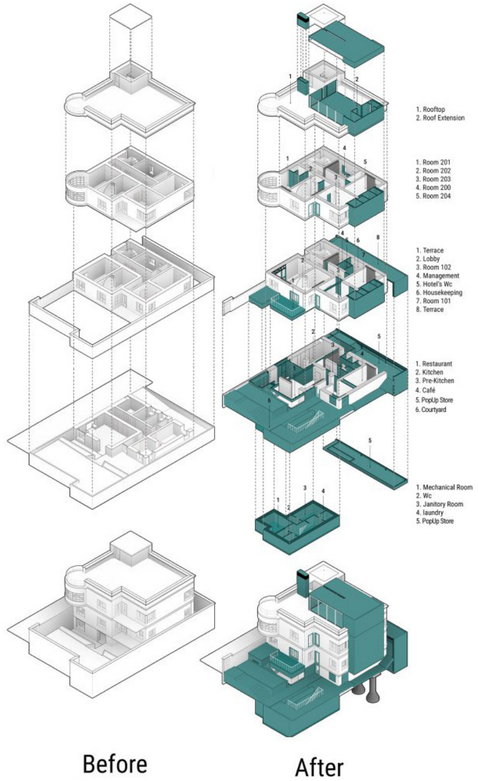


Figure 78, Exploded axonometry

"Part of the design intention was to reconnect the building to Lolagar Alley, but this time with more occupants. As such, new layers were designed around the building and in deference to the original structure, it invite users to move around and inside this historic building.

Hanna project attempted to return people to the center of Tehran, and reacquaint them with abandoned buildings. New added layers that are a product of their time, help the building accommodate users now and in the future, while also displaying the glory of its historic architecture.

The juxtaposition of new and old layers presents its occupants with the building's history as well as efforts for its restoration." (www.caoi.ir/en)

Figure 80, Hanna boutique hotel

Figure 79, Hanna boutique hotel

Figure 81, Hanna boutique hotel

"Because the building was left unoccupied over the years, there was much damage to its structure, which made its structural reinforcement quite complex. Concrete walls and continuous concrete slabs, columns, and metal trusses were added to reinforce the existing structure.

New structural reinforcement elements such as continuous concrete slabs which serve a structural purpose and are also the finished interior flooring material, shear walls, and metal structures were left exposed alongside original loadbearing walls, brick foundations, and barrel-vault ceilings.

Two additional multipurpose spaces were added to the building, accommodating its main functions and providing it with the flexibility to adapt to other uses. One of these is in the basement and highlights the historic architecture of the original structure, and the other is a contemporary space on the rooftop." (www.caoi.ir/en)

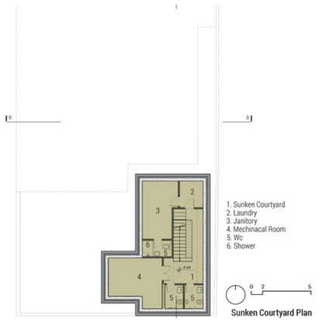


Figure 82, Sunken courtyad plan

Figure 83, Floor plans

"The building's function was changed to a hotel, and with the addition of public spaces such as an outdoor concert hall, cafe, restaurant, gallery and multipurpose areas, the building was revived with a variety of different uses, as well as a greater time of occupancy per day. After repairing and reinforcing the original building's structure, new volumes were added in creative ways, allowing a connection between the original structure and adjacent spaces.

The new volumes create the project's garden, recessed courtyard, part of the restaurant, and gallery. These new layers also seep inside the original building, bringing new functions inside, while maintaining its original layers and structure. An added neutral volume on the east elevation is used to house the hotel bathrooms, and rises to the roof to create the hotel's multi-purpose space.
This space provides a panoramic view of the surrounding areas, while remaining hidden from street level. In the extensions construction metal frames were added to reduce the boundary between inside and outside. These frames define the gallery entrance, and make the border between the gallery and Lolagar Alley transparent. These frames are also used on the building's façade to provide more light and views to the hotel guests." (www.caoi.ir/en)

Figure 84,Hanna boutique hotel, Basement

Figure 85, Hanna boutique hotel, Basement

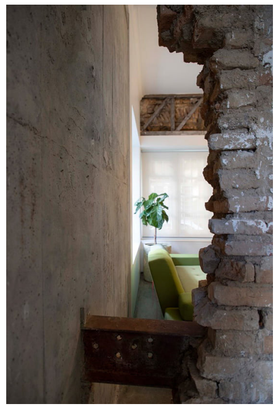


Figure 86, Hanna boutique hotel

“As it was mentioned, project’s purpose was to reconnect it (as a sample of abandoned modern building) with its context which is neighbourhood and in bigger scale, city.

The juxtaposition of varied yet related functions, as well as new and old architectural layers, has turned Hanna Boutique Hotel into a lively structure in the heart of Tehran. A building that shows traces of its history and once again becomes habitable, with the help of new layers and varied functions that make it suitable for today’s complex needs and cultures.

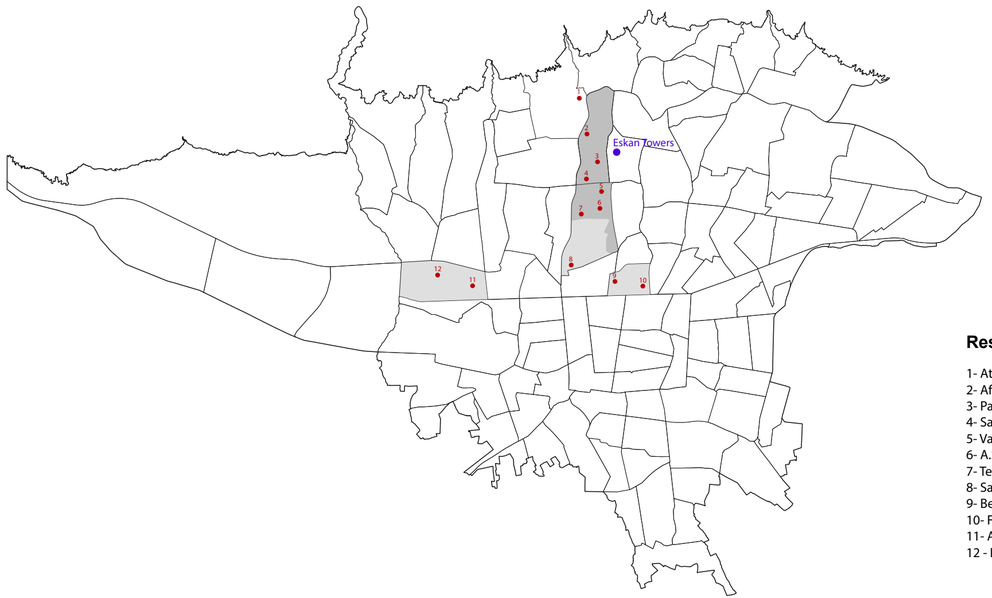
With their simple forms and muted colors, these new volumes accommodate some of the building’s new functions, while also putting the user in contact with the building at different heights and from different perspectives. The new pathway they create gives variety of circulation paths around the building. These new layers are constructed using contemporary material, and while they contrast the building’s original material, they attempt to remain subtle and less seen.

Structural elements of reinforcement left exposed to familiarize the building’s visitors with its renovation process,
as well as old architectural layers of building which are exposed to show the history of building.” (www.caoi.ir/en)

Figure 87, Hanna boutique hotel

Figure 88, Hanna boutique hotel, Rooms

Overview of Residential Complexes in Tehran



Residential Complexes

1- Atisaz
2- Aftab
3- Par Des Princes
4- Saman Towers
5- Vanak Park
6- A.S.P
7- Tehran International Tower
8- Saman Towers
9- Behjat Abad
10- Firoozan
11- Apadana Town
12 - Ekbatan Town

Figure 89, Map of Tehran's Residential Complexes, Elaborated by author

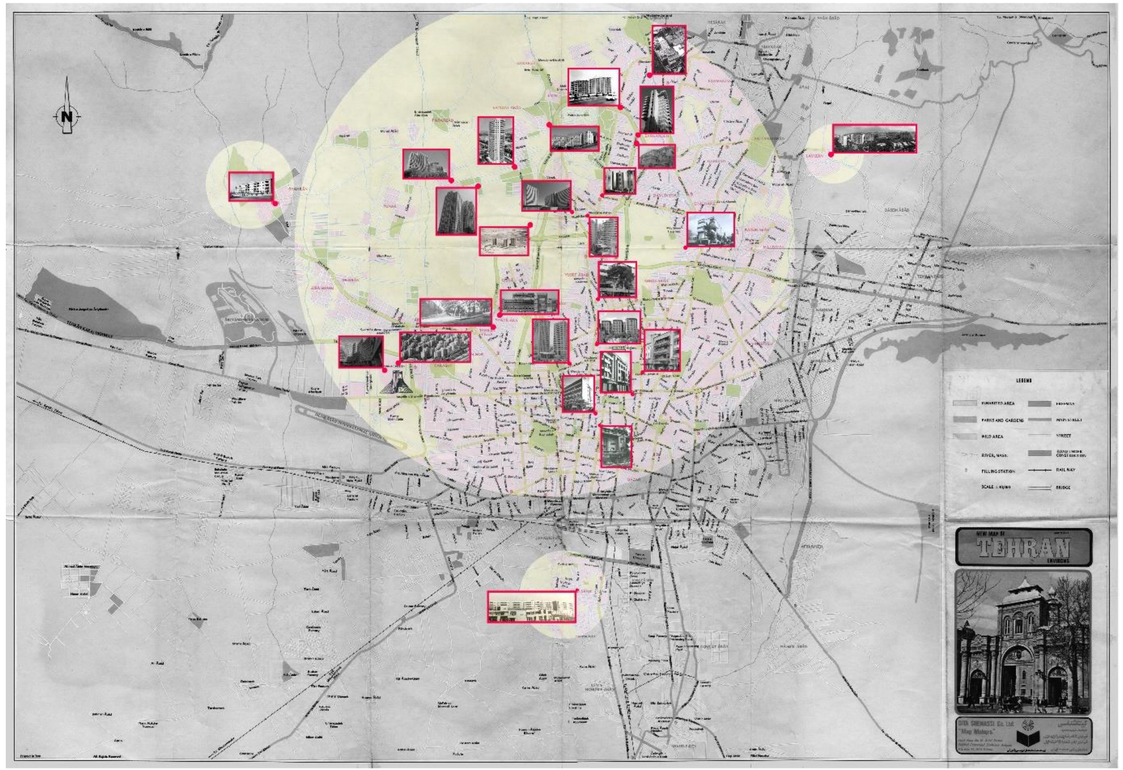


Figure 90, Map of Tehran's Residential Complexes

Contemporary Trends' Timeline

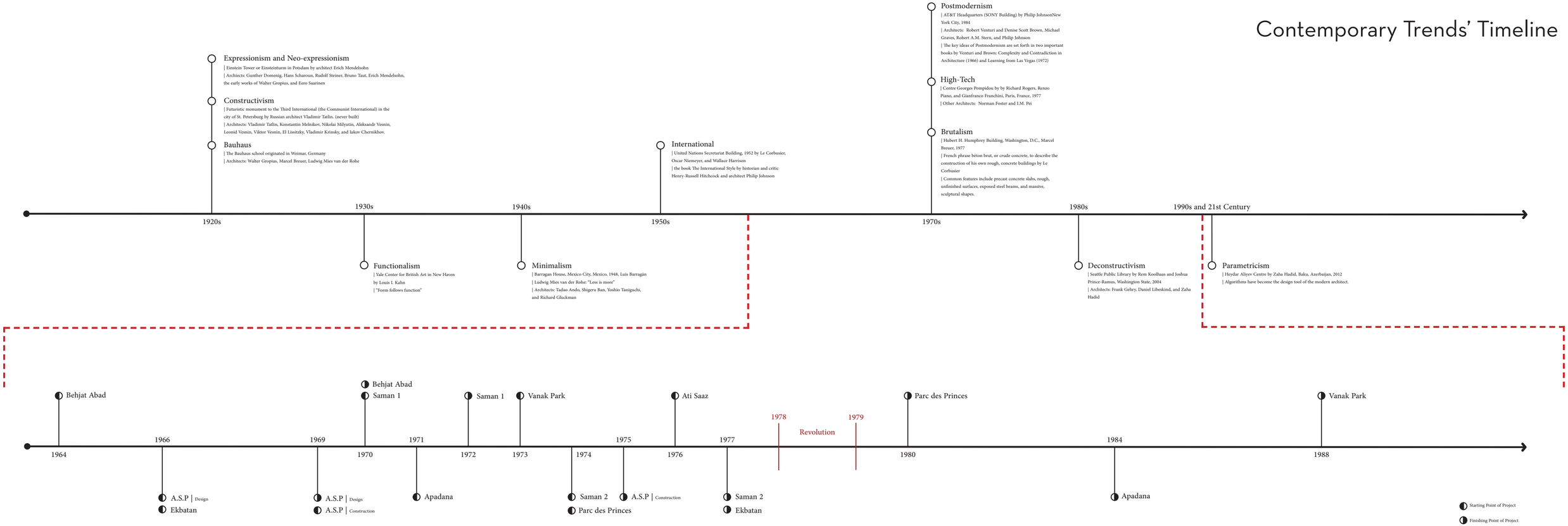


Figure 91, Timline , Construction of Tehran's residential complexes during contemporary trends and styles, Elaborated by author

Shatikian complex

“This building is located on a plot of land in the northwest corner of the intersection of Roosevelt Street and Takht-e Jamshid Street, designed in the year 7999. The continuous balconies extend across the façade and project outward from the main body of the building. The structure includes a basement, a ground flooar, and three floors above the ground floor. On the ground floor, adjacent to Roosevelt Street, there is a commercial space, and on the eastern side, there is a residential unit with independent access to the street. The entrance to the residential section, rotated in relation to the main façade, is located on the northern side and leads to a staircase connecting the floors. A full-length glass panel along the staircase emphasizes the residential section’s entrance.

Each unit consists of two rooms, a kitchen, and a bathroom. The basement includes a water reservoir, a storage unit, and a bathroom. On the floors above the ground level, there are three similar residential units. In these units, the central hall serves as a dividing space. The main areas benefit from natural light from the east and west, while the kitchen and bathrooms are located in the northwest section of the apartment.” (Shafei and colleagues, 1937)

Akhavan building

“The construction of this building started in April 1327.This building, which is located at the intersection of Neghlab and Lalezar streets, has five floors and is dedicated to three different types of commercial, office and residential uses. The access to the administrative units is through three entrances on El-Ghebanal and Lalezar Streets, and the entrance to the residential part is from Fakhte Alley in the south of the building. There is a staircase after each entrance of the building, which enables access to the floors. Another staircase located on the eastern front of the building connects with the backyard of the complex, which is located at the basement level. In the southern part, facing the side alley located in the south of the building, five residential units have been built, and the basement of the building was also used as a storage facility and a water tank.” (Sorushiani and colleagues, 2008)

Figure 92, Shatikian residential-commercial complex

Figure 93, Shatikian residential complex, Floor plans

تصویر ۴-۸: مجتمع تجاری-مسکونی شاتیکیان. مأخذ: شافعی و همکاران، ۱۳۹۴.

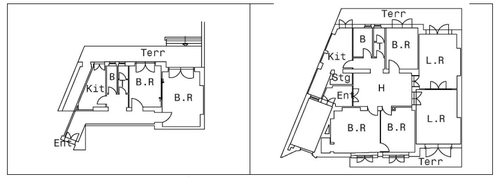
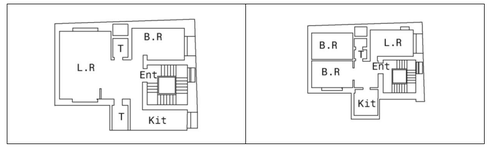


Figure 94, Akhavan residential-commercial Building

Figure 95, Akhavan building, Floor plans

تصویر ۴-۴: ساختمان تجاری-مسکونی اخوان. مأخذ: سروشیانی و همکاران، ۱۳۸۷



“A complete design was created by engineer Vartan in five stories, comprising nineteen apartments and eleven commercial units [...]. All apartments use canal water for drinking and central heating. The kitchens, bathrooms, and other facilities were equipped with Swedish features. The construction of this building began in 1923 (1302 AH) and, before 1933 (1312 AH), it operated as a mixed commercial-residential complex and was dedicated to the High School for Girls. [...] This building was introduced as the “New Buildings at Chaharrah-e Ayakhan.” This complex was one of the early examples of apartment buildings in Tehran, consisting of small, independent residential units equipped with all necessary amenities, such as toilets, bathrooms, and kitchens, combined with commercial and retail activities [...]. On the ground floor, commercial units were set up, while the three upper floors were residential. The top floor of both buildings has less usable space than the other floors, leaving room for two facing terraces overlooking the middle alley.

Figure 96, Jaami residential-commercial Building

Upon entering each building, a staircase connects the basement and the upper floors [...]. Behind the commercial units of each block, there are two small residential units with complete amenities and a caretaker’s room. The first and second floors contain three residential units with two separate entrances: two of the units face Hafez Street, and the other faces Jami Street.

The connection between the interior spaces of each residential unit is provided through a corridor or hallway. Each residential unit contains one or two bedrooms, a living room, a bathroom, a kitchen, and sometimes a dining room and storage. The basement is designated for service spaces, such as storage for the commercial units and apartments, fuel storage, a heating system, ventilation, etc. The main spaces of the building receive light either through main windows facing the street or from rooftop terraces. These terraces, accessible through the building’s main staircase, primarily serve as light sources for the units below them.” (Sorushiani and colleagues, 2008)

Jaami building

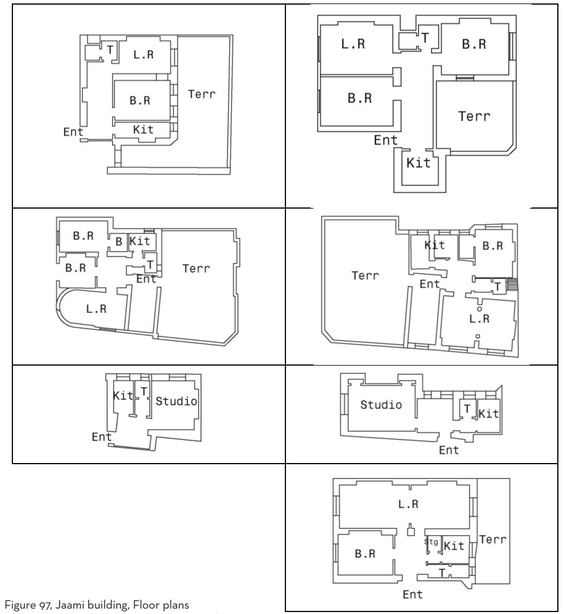


Figure 97, Jaami building, Floor plans

"This project includes 1,711 three-room apartment units. In a section of 211 units, all homes are single-story and have three rooms.

The Kuy-e Kan building blocks are spread across a public open space, consisting of apartment blocks with 9, 12, 21, and 72 residential units. Each block contains eight residential units, which are connected to the outside via a central staircase. This is one of the critical points of concern with these apartments because all eight families use the same staircase and have only one exit. In case of fire, there is no alternative escape route, and the only entrance doors open inward (opposite to the direction one would escape during a fire), which is also a point of criticism. Some families in the southern part of their homes have set up small gardens. However, the open space between the apartments is generally devoid of any trees or greenery, except near the main ring road, where small trees have been planted on both sides. This public open space could have been designed with proper planning to include small parks for children to play and spaces for local people to gather.

As a design for creating social life in one place, the Kuy-e Kan project is weak, and it is difficult to consider it a central hub for social living. The commercial spaces are usually small and scattered within the residential apartments. Many public and private institutions are also scattered throughout the apartments, which reflects the lack of consideration for dedicated buildings and spaces for social living and activities in the local master plan. The size of each residential unit is 80 square meters per apartment. Each unit consists of three bedrooms, a kitchen, and bathroom and toilet services. Each unit has two rooms facing south and one room, along with the kitchen and bathroom/toilet services, facing north. Each apartment has a shallow balcony facing south, but in many apartments, residents have extended the room to the edge of the balcony, bringing the windows forward without any shade.

Kooyeh Kan Apartments

The rooms in these apartments are relatively small, with very limited north-south depth, and the hallway is very narrow and lacks natural or adequate lighting. The house plan is quite closed-off, with many walls separating the spaces within the apartment, and the small bathroom, toilet, and kitchen services on the north side of the apartment make it difficult to take advantage of the north wind in the summer. As a result, creating airflow in the rooms seems quite difficult." (Kiakajoori, 1972)

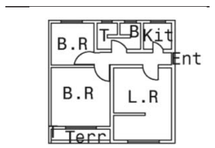


Figure 97, Kooye Kan, Floor plans

Figure 98, Kooye Kan apartments

Avedisian Building

Behjat Abad Complex

"The first high-rise residential complex in Tehran was the Hemmatabad complex, which was constructed between 1961-1964 (1339-1342 AH) between Hafez and Valiasr Streets. The construction of this complex began after the drafting and approval of the Apartment Ownership Law in 1963 (1342 AH), aimed at encouraging the construction of high-rise residential buildings." (Abadi, 1995)

(The plans for this complex were prepared by the management office of the complex.)

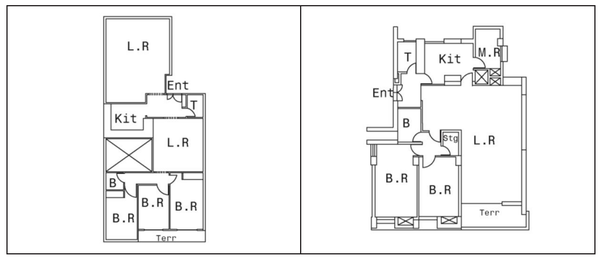


Figure 99, Behjat Abad residential complex, Floor plans

Figure 100, Behjat Abad residential complex

Figure 101, Behjat Abad residential complex

"The Avedisian Building was designed and constructed in the 1930s (1310s AH). The building consists of five floors, constructed with a steel structure. The ground floor, along with a mezzanine, is used for commercial purposes, while the four upper floors are designated for residential use. The commercial section, which has transparent facades on the north and part of the west side, has entrances from both sides. The main entrance to the residential section is located on the western facade of the building, providing direct access to the main staircase that leads to the upper floors.

The residential section, which occupies the four upper floors, consists of three independent apartment units of varying sizes. The layout of each unit is organized such that the rooms are arranged around a central hall. The design approach by Pol Abkar in creating the plan of these apartments resembles more of a villa-like building."(Shafei and colleagues, 1937)

Figure 102, Avdisian residential-commercial complex

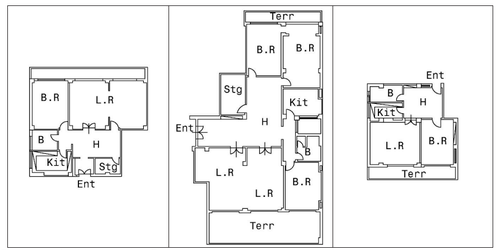


Figure 103, Avdisian complex, Floor plans

Shahr Ara Apartments

"Shahrara is a neighborhood in the northwest of Tehran. Parvaz Street connects it to Ayenhavar Street in the east, and Taj Boulevard connects it to the Karaj Highway in the south. Shahrara was built by the private sector, and by 1968 (1347 AH), most of the residential units in this area were handed over to the residents. Shahrara consists of three-story apartment buildings and private houses. The apartments are located in the northern part of the area and form blocks made up of 16 apartment units. Each apartment block contains 16 residential units. The entrance to each apartment block is from a street to the north. To the south of each block is a shared green space that belongs to the Shahrara municipality, and in fact, the residents of these apartments do not have access to it.

Each apartment unit has an area of 130 square meters and includes spaces for bedrooms, a combined living and dining room, a kitchen, and a bathroom and toilet. The kitchen, bathroom, and one bedroom are located on the north side of the apartment, while the other spaces are located on the south side of the residential unit. The kitchen space is very small, and the bathroom is essentially a very small space for taking a shower. The southern side of the apartment features a balcony overlooking the shared open space between the apartments. Although the residents do not have access to these green spaces, they bring freshness, cool air, and beauty to the environment around the apartments.

The layout inside these apartments is unsatisfactory. A narrow corridor in the center of the apartment serves as a crossing point for movement between different spaces, and it lacks sufficient natural light. The placement of the doors and windows in different areas of the apartment makes it seem unlikely that airflow would be adequate during the summer. In general, the apartment plan lacks flexibility and adaptability to the changing needs and desires of the residents. There is a garbage disposal chute in the apartments, and the garbage is collected from outside the building." (Kiakajoori, 1972)

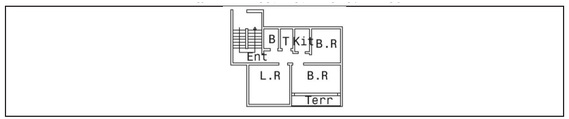


Figure 104, Shahr ara apartments, Floor plans

Figure 105, Shahr ara Inudstrial park's apartments

Zomorrod Towers

"Alongside the villa houses on Herman Street, around the 1950s (1330s AH), the construction of the first towers in Tehran began. Four towers, which even today remain a significant and symbolic feature of Herman Street, dominate the entrance to the street with their imposing presence. A distinctive feature of these towers is their names, which were given after renowned Iranian poets: Hafez, Saadi, Khayyam, and Nezami. Fereydoun Keshani, a resident of the Khayyam Tower, says:

"The construction of these towers was assigned to an American company, and from the beginning, they were named after four prominent Persian poets. These towers were designed based on the model of residential towers in the United States. Their units were pre-sold."

Fereydoun Keshani adds, "The units of the towers were supposed to be delivered with full amenities, such as washing machines, dishwashers, etc." The first tower, Khayyam, had several of its units built during the 1950s (1330s AH) and was handed over to buyers with complete amenities. The other units of the towers were also pre-sold." (Amir Ghasemkhani, 2014)

(The blueprints and information about these units were obtained from the managewment office of the complex.)

Figure 106, Zomorrod towers

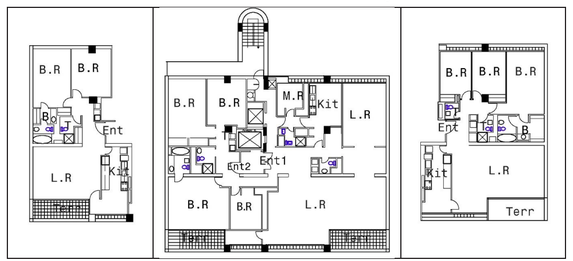


Figure 107, Zomorrod tower, Floor plans

Ekbatan Complex

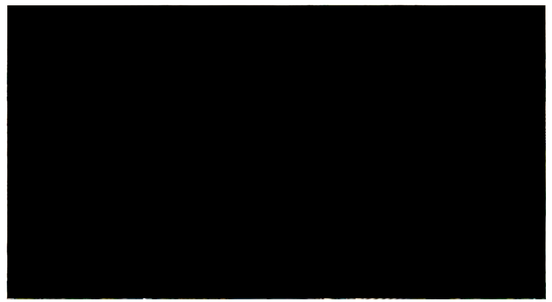


Figure 108, Ekbatan residential complex

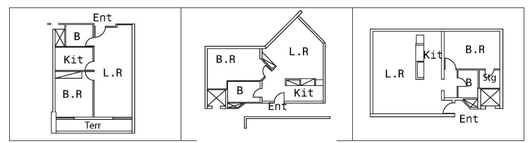


Figure 109, Ekbatan residential complex, Floor

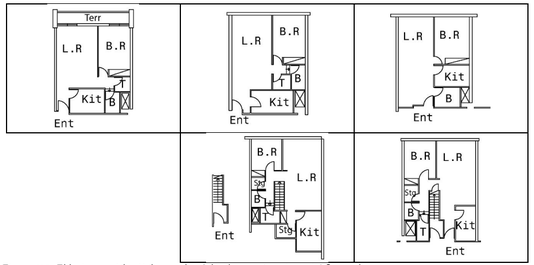


Figure 110, Ekbatan residential complex, 1 bedroom Apartments' floor plan

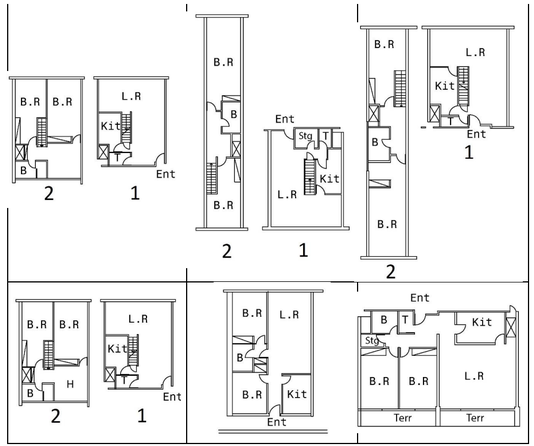


Figure 111, Ekbatan residential complex, 2 bedroom Apartments' floor plan

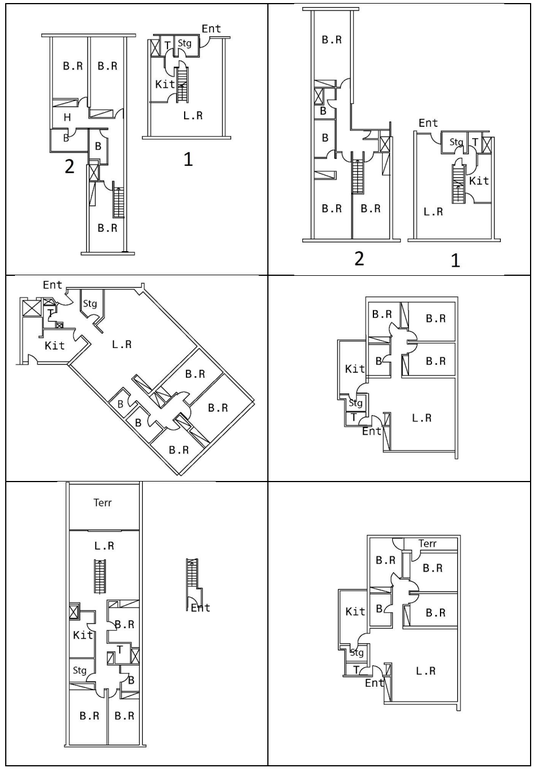


Figure 112, Ekbatan residential complex, 3 bedroom Apartments' floor plan

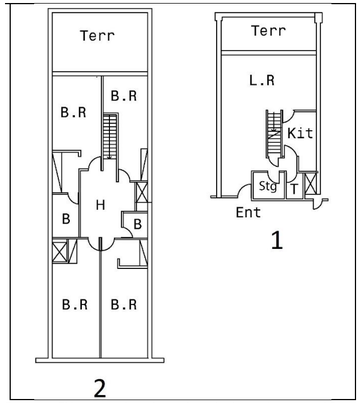
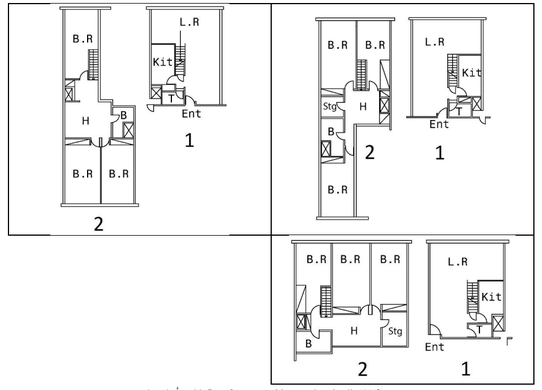


Figure 113, Ekbatan residential complex, 3 bedroom Apartments' floor plan

"At the beginning of its construction, Shahr-e-Akbaratan faced considerable criticism due to its uniform architecture, which conformed to international architectural trends. It was seen as an environment lacking the necessary capacities for promoting quality living and community life within the complex. Shahr-e-Akbaratan consists of five phases, each phase containing several blocks, and each block having several entrances. The complex includes 99 blocks with 1, 3, 7, and 2 stories and a total of 71,139 residential units." (Kimiya Qalam, ?)

"Undoubtedly, this design can be considered as an entry point for advanced technical knowledge in the country. More than 71 industrial production units are associated with it, and industrial machinery, some of which is specifically customized, is still operational for service delivery." (Bavar, 2009)



تصویر ۴-۲۳: پلان واحدهای سه‌خوابهٔ مجتمع مسکونی اکباتان. مأخذ: همان.

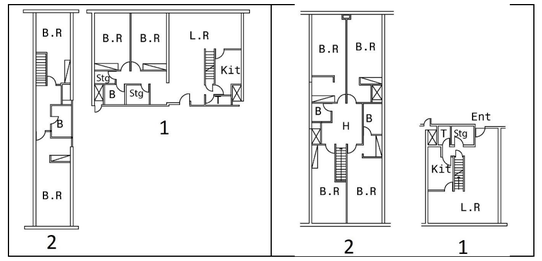


Figure 114, Ekbatan residential complex, 3 bedroom Apartments' floor plan

Nazi Abad

"Naziabad is located in the south of Tehran, south of the railway station and east of the Tehran tobacco factory. In 1348-49, 332 apartments were built in 4-story blocks with an area of 70 square meters for each residential unit in Naziabad. In 1349-50, 280 three-room apartments in five-story buildings with an area of 64 square meters were built.
The apartments that were built in 1349-50 are in blocks containing 4 building units. Each building unit contains 10 apartments on five floors. The space between apartment blocks is wide but undeveloped.
In the northern part of the apartment, there is a kitchen, toilet, bathroom and one room, and in the southern part there are two rooms, one of which has a covered balcony. All the spaces in these apartments have a relatively suitable size, but in general, the flexibility of the apartment plan is low compared to the changing needs of households." (Kiakajoori, 1972)

"The bank's engineers designed a labor apartment complex in ten four-story blocks and two public laundries for the Nazi Abad lands, and with the financial assistance of the four-block program organization, they completed 114 apartments in the same year 1337. The organization that had prevented the construction of slums and claimed that it would come after the construction works, requested that the apartments be given to them, and once when Shah Sarzd visited there, he made the same request, and the Shah did as he wished. They gave the order, but the bank did not give in and sold the apartments in fifteen-year installments to the employees of another organization, and to build the rest of the blocks, it looked for financial assistance from the program organization." (Javadi, ?)

"The main staircase of the building, which connects the ten apartments to the outside, only has an opening from the south side. These holes are created by mesh clay. In the winter season, especially on the upper floors, the cold air blowing from these openings causes inconvenience to the passers-by in the staircases." (Kiakajoori, 1972)

Aban

"Aban, the first block of apartments was built in November 1348, this series of apartments in 8 blocks and 232 residential units in November 1349, 7 blocks were delivered to teachers and one block to railway workers. The second series of apartments in On the same date, Iran Mortgage Bank started again and in 7 blocks each on 5 floors with 270 units and at the same time. The 250-year celebrations were completed and it was opened on 23 Aban 50." (Art and Architecture, 1971)

Figure 115, Nazi Abad apartments

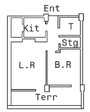


Figure 116, Nazi Abad apartments, Floor plans

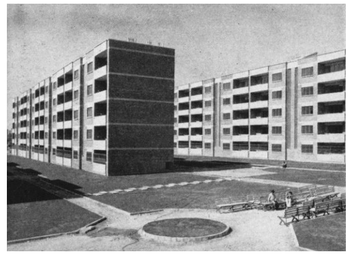


Figure 117, Kooye Aban apartments

Figure 118, Kooye Aban apartments, Floor plans

ASP Towers

"A residential, administrative and commercial complex located in district 6 of Tehran municipality. This complex, which is one of the tallest buildings in Tehran, is located on a land of 50,000 square meters consisting of 3 towers with 23 floors in Vanak lands. The history of the construction of this complex dates back to the 1340s. In 1344, the Nesbi Kasmaei Construction Company and Sharka Zameen purchased the land of this complex, which was agricultural land at that time, to build a complex from Samad Company, Hossein Alizadeh Kagazchi and Akram Almuluk Haji Motamed in 1348. A.S. Co. At that time, for the construction of this complex, Bo was established as a contractor for the construction of this complex along with architects such as J. Duboisson (Chief Engineer from France, Dervaud from France, Relotti from Switzerland and Engineering Studies Bureau of Senk with Tieman and Concrete Studies Bureau of Le Foulquier started. The main shareholders of the company are Asadi, Soltani and Panahi.

Figure 119, ASP towers

Today it is referred to each of these 3 towers.
Tower A with the name of Asman consists of 23 floors and 89 units; S Tower with the name of Simorgh consisting of 23 floors and 168 units; And Tower P with the name of Parand consists of 23 floors and 132 units. Residents' car parking is also located on the 1st to 3rd floors of these three towers. [...] Each of the towers has 4 elevators, emergency staircase, waste disposal system (shooting) in each kitchen. It is equipped with a central heating system and a central TV antenna system." (www.asp-co.ir)

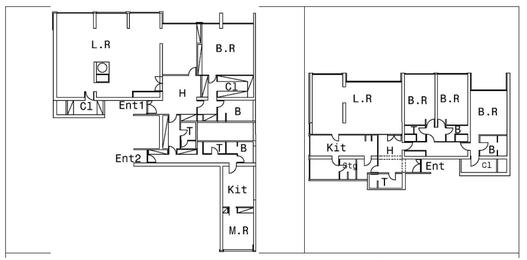
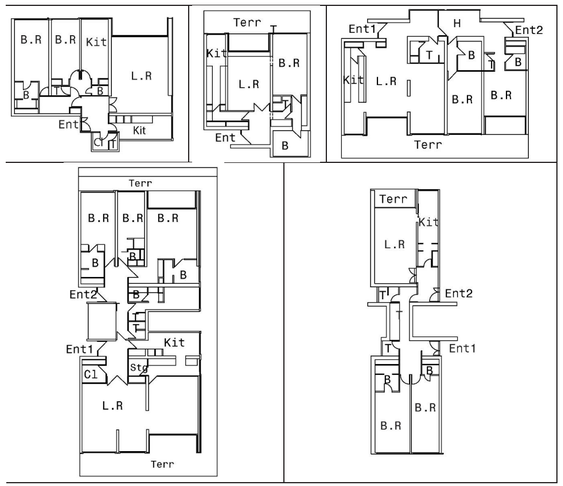


Figure 120, ASP towers, Floor plans



Tehran International Tower

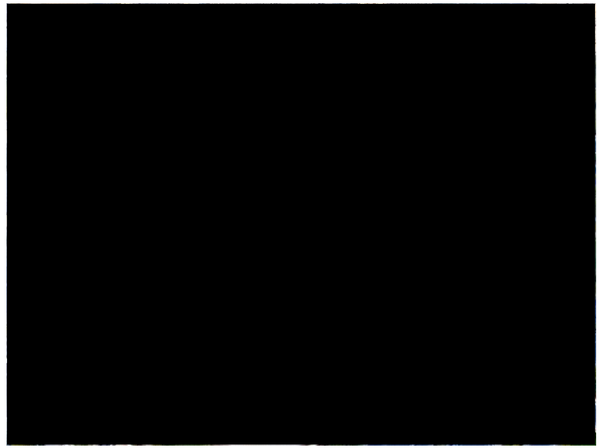


Figure 121, Tehran international tower

"This building has three wings to benefit from maximum light and view in various directions and the least overlook.

56-floor Tehran Tower is the highest residential tower of Iran. Upon constructing this tower, A.S.P Company can claim that it possesses the most comprehensive knowledge of constructing high-rise buildings according to international standards. Constructing Tehran Tower has maximized the brilliant record of the company in constructing high quality special buildings with high technical and engineering standards.

Apart from brilliant architecture, this building has the most modern and technical construction and HVAC systems. Usage of the floors is as follows:

51 residential floors
1 entry floor and its accessions including commercial units
3 parking floors, sports space, and part of mechanical systems, restaurant, and amphitheater
1 installation floor in 21st story as amplification station

The special structure of the building made up of concrete shear walls, is considered one of the highest concrete structures. This building has three wings to use light in various directions to be in the best position and the least domination over apartments.

This tower includes:

43 suite units
172 double-bed units
309 three bedroom units
20 four bedroom units
11 triplex penthouse units." (www.asp-co.ir)

"This building has three wings to use light in various directions to be in the best position and the least domination over apartments. The 56-floor Tehran Tower is the highest residential tower of Iran. Upon constructing this tower, A. S. P Company can claim that it possesses the most comprehensive knowledge of constructing high-rise buildings according to international standards. Landscaping of Tehran Tower demonstratesan astonishing design and construction and is in harmony with the main building. About 26,000 m2 of this space is dedicated to green space, fountain, tennis court, and basketball court. Walking route, in the form of a circular porch around the tower, along with children playground in the eastern field complements the landscape. An appropriate space is defined in the periphery of the tower for offering services the residents need. Tower's restaurant and kitchen salon with a capacity for 400 people and an area of 1075 m2, can be independently accessed from the ambit and parking and contains independent utility room. Separate covered gymnasiums and pools for men and women as well as dry and steam sauna with in a 1257 m2 area, and a three-story parking with a capacity for 1000 automobiles are some of the facilities of the tower. Tehran Tower has been constructed with the best material obtained from the best suppliers all around the world. Windows are opened in three modes. All glasses are double-glazed, and sound and thermal proof. With various and beautiful patterns, ceilings provides a sound and thermal proof layer between stories. High-quality wood with oak coating is used in wooden essentials. A specific lobby for each wing along with a public lobby as well as special routes for elderly and handicapped traffic are other facilities of the tower. For the tranquility of the residents in the highest and most beautiful residential tower of Iran, with a capacity for 15 passenger elevators with 3 m/s speed and 1000 kg weight capacity, as well as 3 freight elevators with a capacity for 1600 kg with 2 m/s speed as well as loading and unloading place has been installed. Among other facilities of the tower is a very classy and beautiful conference hall for the meetings of managers with residents. Restaurant and kitchen salon has a capacity of up to 400 people with an area of 1075 m2 with independent access from the ambit and parking and includes an independent utility room. Separate covered pools for men and women, separate gymnasium salons, as well as dry and steam sauna with an area of 1257 m2. Given the number of floors and units of the international Tehran Tower, we can definitely claim that it is the biggest installed mechanical systems for a residential tower in Iran."
(https://fa.wikipedia.org)

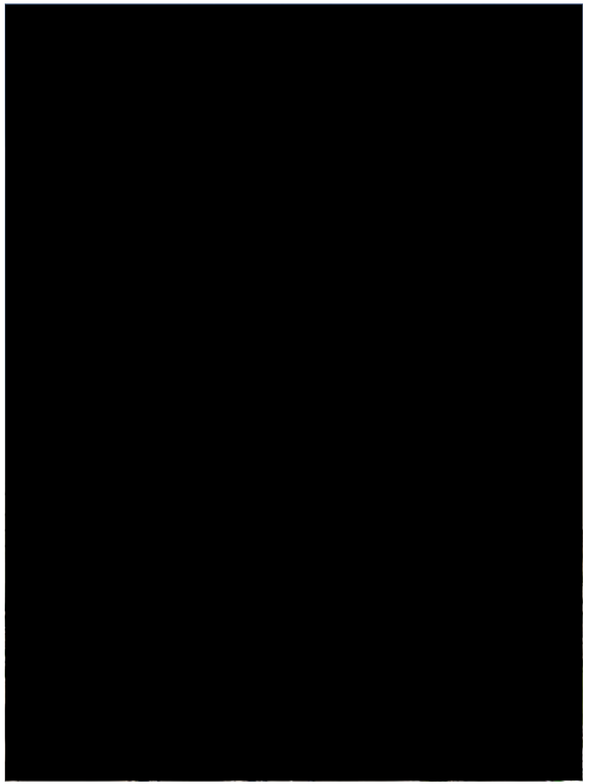


Figure 122, Tehran internatioanl tower

Vanak Park Residential and Commercial Complex

"Vanak Park Residential and Commercial Complex is a complex of 5 towers, 2 of which are 22-story towers on the northern side and 3 of which are 17-story towers on the southern side of the complex.
This complex is located in the north of Tehran's Amirabad district and leads from the north to Sheikh Bahai district, from the west to Valfajr, from the east to Yousef Abad, and from the south to Amirabad.
The designer of this complex was Abdulaziz Farmanfarmaian before the revolution, but the construction of the complex after the revolution began in three phases by the Mostazafan Foundation.
The first phase of the complex was built in 1988, the second phase in 1994, and its final phase in 2001.
This complex includes a shopping center, cafe, restaurant, and offices on the ground floor." (https://fa.wikipedia.org)

Figure 123, Vanak Park residential-commercial complex

Saman Towers

"After the approval of the 100th amendment article of the approved direct taxes law (1345), the construction of Saman residential complex on 20 floors on the north side of Keshavarz Blvd. was started in 2049. This article was set to encourage and encourage owners and capital owners to build buildings taller than ten stories. Saman Iran Construction Company was established by the government under the management of influential people such as Ahmad Ali Ebtahaj and Abdul Majid Aalam, and the purpose of its establishment is to further promote tall buildings. It was residential and a practical test of the law of ownership of apartments rather than profit issues. In this building, for the first time, prefabricated elements were used in Abadi. It is something between two groups of economic and credit buildings, which although it looks new in terms of technique and subject matter, but in terms of performance for The collective life of the locals is not suitable and it is not compatible with the weather conditions." (Bavar, 2009)

"Saman Towers has 22 floors, each floor has a minimum of three and a maximum of five units, and there are five duplex apartments on the top floor. This tower has two elevators. The positive point in the design of this tower is the existence of a second corridor for service works, which is connected to the kitchens of the northern units. The units are available on one floor from a minimum of 50 meters, which is called a studio, to a 220-meter unit. None of the units have a space as a balcony or a joint between the interior of the house and the outside of the urban environment. This complex was built at a time when a person or persons as Servants worked inside the house. Another feature of this tower is the presence of kitchens." (Qarah-vali, 2013)

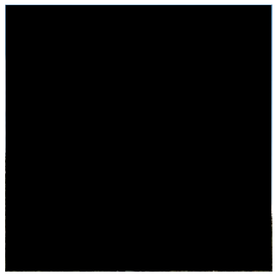


Figure 124, Saman towers

Figure 125, Saman towers, Under construction

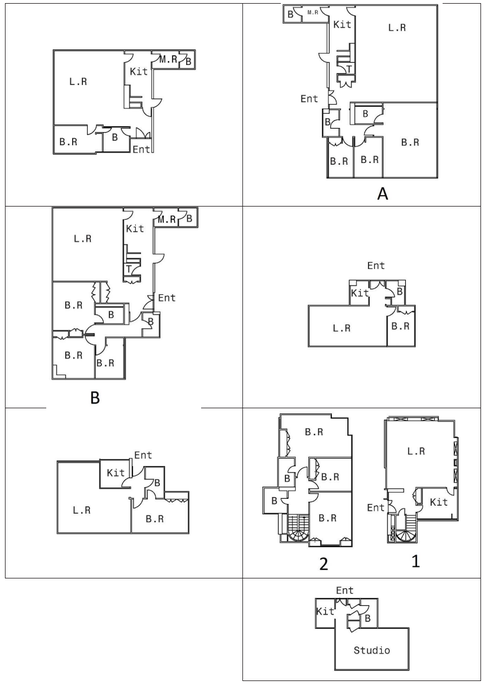


Figure 126, Saman towers, Floor plans

Saman Molla Sadra Complex

"Saman Vanak Residential Complex is one of the famous residential complexes in Tehran.

In the 1950s, the increase in the population of Tehran made development in the direction of Ghaem inevitable. During this period, several complexes were built around the Vanak area, including the Eskaan Building, the Park Prince Residential Complex, ASP, and the Saman Vanak Residential Complex."
(www.saman724.com)

"This complex was designed and built on a 23,000-square-meter plot of land by the office of Abdulaziz Farmanfarmaian. Farmanfarmaian purchased the land for this complex in 1972 for 74,000 Tomans (equivalent to $10,000 in that year) from Ali and Yousef Vanki. According to Farmanfarmaian, the building structure was designed for 30 floors, although ultimately no more than 13 floors were built. The complex has 3 identical blocks and a total of 252 units, and 2 outdoor pools measuring 12 by 25 meters have been built in the complex. The features of this complex include duplex, triplex, and quadruplex (four-story) units.

Saman Vanak Residential Complex is located between Shiraz Street and Sheikh Bahai Street in Saman Alley." (www.fa.wikipedia.org)

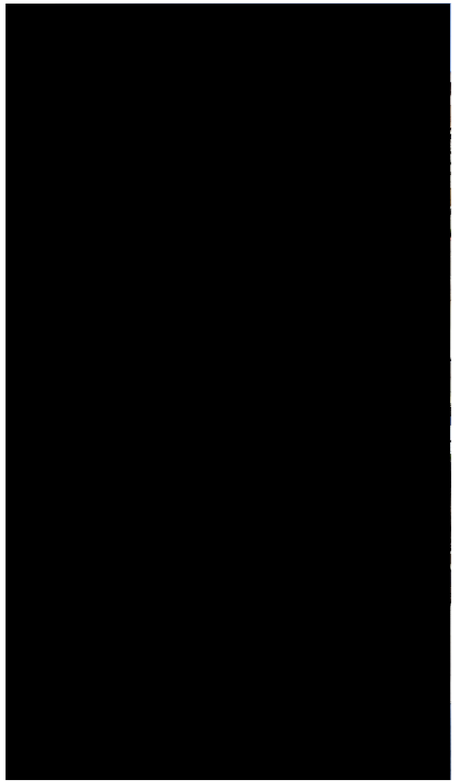


Figure 128, Saman 2 complex, Mollasadra

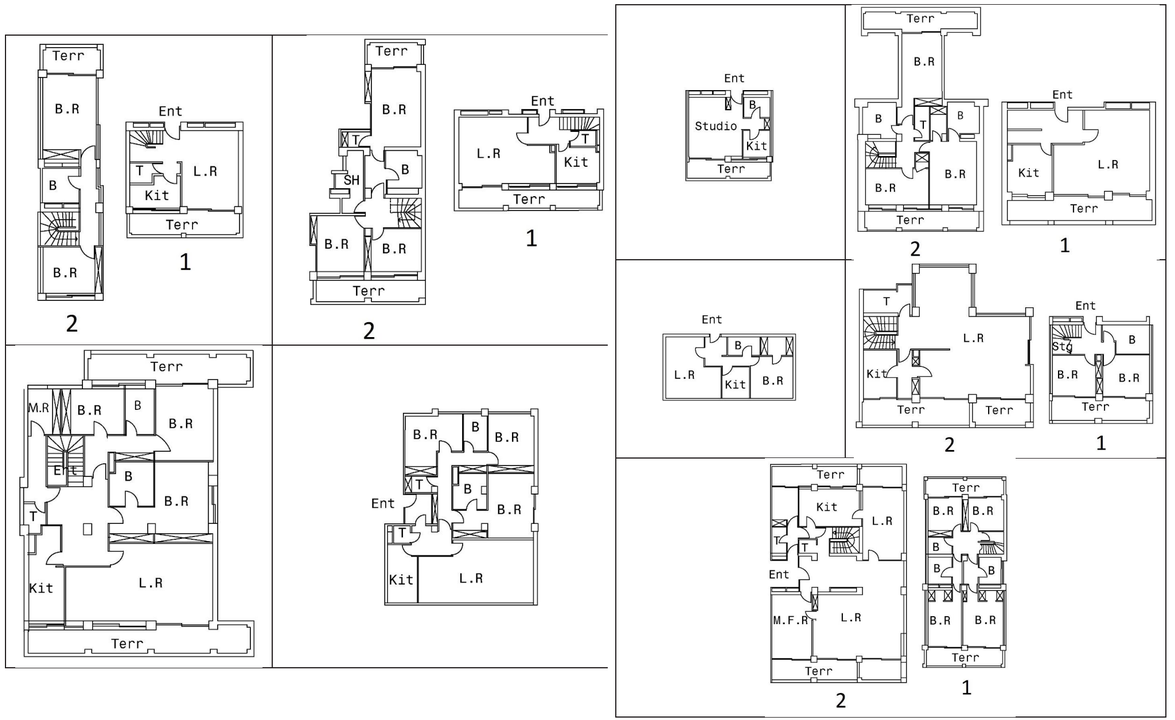


Figure 129, Saman 2 complex, Mollasadra, Floor plans

Aftab Tower

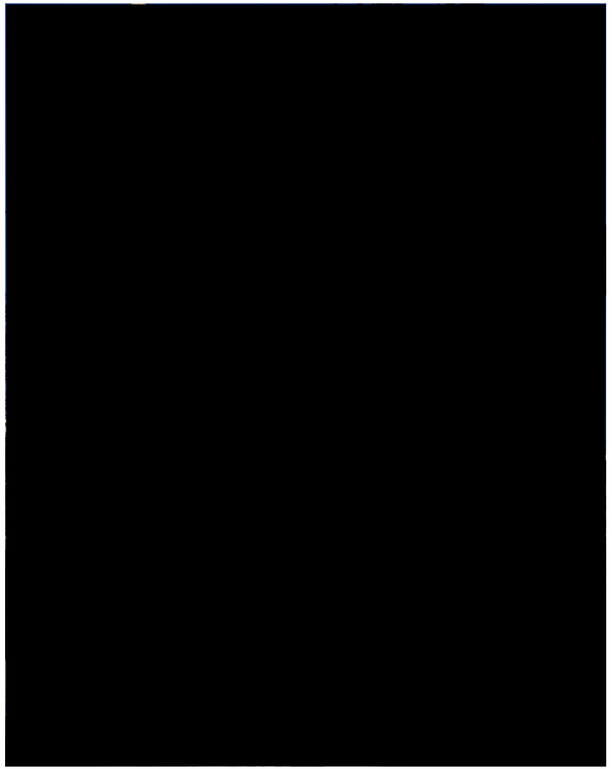


Figure 127, Aftab tower

Atisaz Towers

"This complex is located in the former place of the desert camp of Qalqele or Bagh Chal, overlooking the Chamran highway. The construction of the Ati Saz complex by a company of the same name began in 1355 in 3 phases. The history of the Ati Saz company goes back to 1341, which was founded in the beginning with the participation of Mohammad Reza Shah Parviz Bushehri and a European company. [...] Ati Saz Company was supposed to deliver the project in 1356 according to the contract, but due to the political situation of that year, this project was not completed and was postponed to after evolution." (www.fa.wikipedia.org)

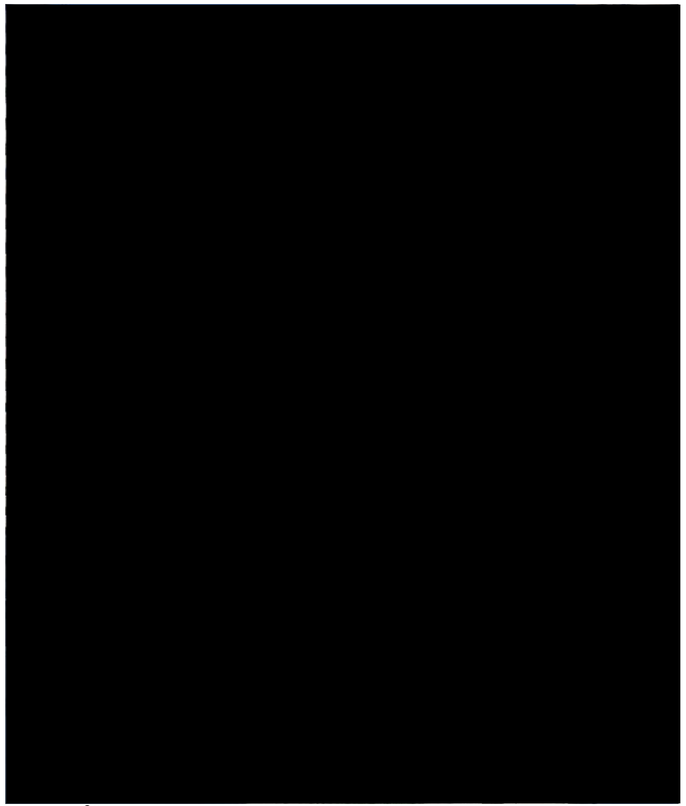


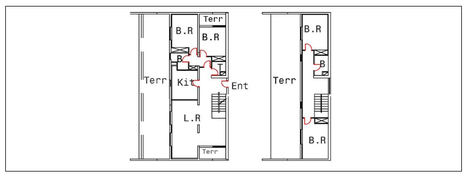
Figure 130, Atisaz towers

It was not completed and was postponed until after the revolution.

This complex includes 23 high-rise towers with an approximate area of 155,000 square meters and an infrastructural area of 381,448 square meters, which is defined in 3 phases. Phase 1 with an infrastructural area of 149,543 square meters has 9 towers with 13 to 24 floors and has 690 residential units, 2 floors. and 3 under Zeeman and ... phase 2 with an area of 166,291 square meters has 9 towers with 12-29 floors and has 832 residential units and ..... phase 3 with an area of 140,497 square meters has 5 towers with 29 to 31 floors and has

781 residential units and... The documents of this collection have been prepared from Ati-Saz office.

Figure 131, Atisaz tower



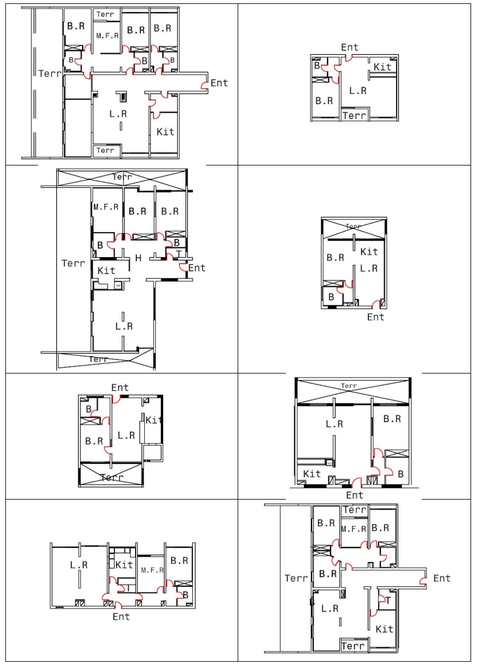


Figure 132, Atisaz tower, Floor plan

Firoozan Complex

"One of the few examples of hotel-apartments in Tehran is the "Firouzan Residential Complex," which has been operating on Shiroodi Street in Amjadieh neighborhood for many years with the compassion of its residents.
The design and construction of the skeleton of this building - which, according to the residents, was intended to be a place for some employees of the US Embassy in Iran to stay - was carried out in the years leading up to the revolution, and its final completion dates back to the early 1960s. Some sources mention Erdam Consulting Engineers as the design consultant and Engineer Qaysari as the builder of the complex, which requires further investigation.
The exterior of the apartment is simple and made of cream-colored cement, and the green details of its stairs and walls have been able to give it a different look. However, the most important feature of this building is its central void (internal space), which in addition to providing excellent light to the units, also houses a symbolic communication space (stairs and elevator). Each unit also has a separate balcony and is well ventilated due to the presence of multiple windows on opposite sides. The units also have two sizes, 90 and 118 square meters, which are one-bedroom and two-bedroom."
(Interview of Calque Studio with Khosro Shahi)

Figure 133, Firoozan residential complex

Apadana Town

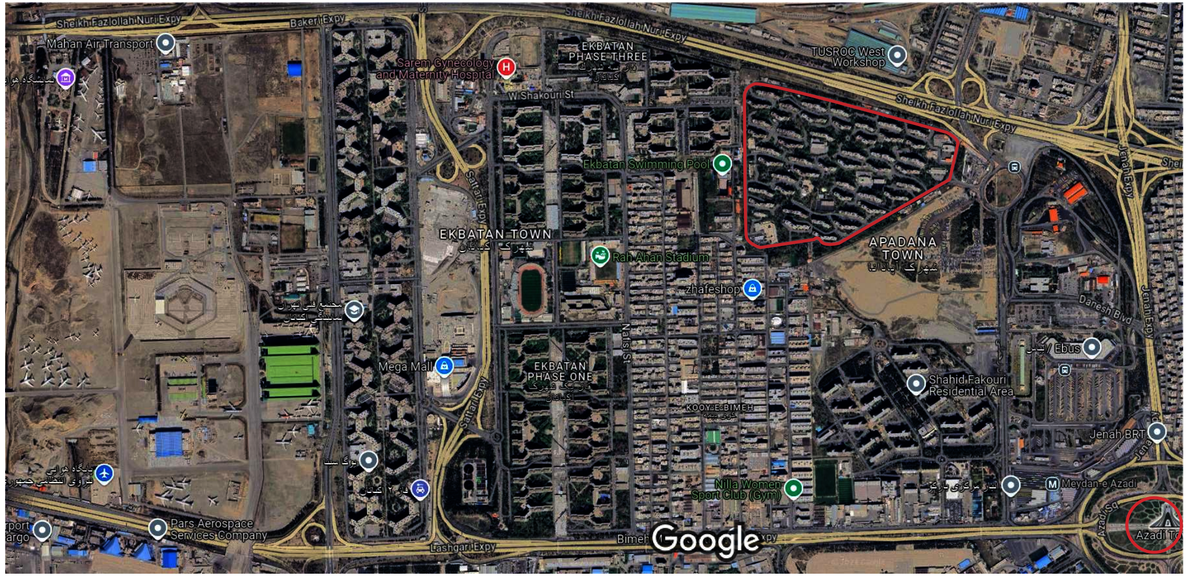


Figure 134, Apadana town, Aerial image

Figure 135, Apadana town

"Apadana Residential Complex is located in western Tehran and District 6 of Tehran Municipality's District 5. The complex is located on the Karaj-Tehran Highway, after Mohammad Ali Jinnah Highway and on the way west, before Ekbatan Town. The complex is adjacent to Tehran-Karaj Highway from the north, Bimih Alley from the south, unused land adjacent to Shahid Fakuri Residential Complex from the east, and Ekbatan Town Phase from the west. The name Apadana Town is not related to Apadana Street (Khoramshahr) in Tehran, but the two names are commonly mistakenly associated. It is also located on the northwest side of the West Terminal of the Tehran Municipality's Terminals and Parking Organization. The complex is located in District 6 of Tehran's District 5.

The mortgage bank, as the project executor, after obtaining permission from the municipality and signing a contract with French contractors in 1977, began constructing the buildings of this town. The name of the company that built the Apadana town was S.A.E.IRAN; however, during the Islamic Revolution, the foreign contractors left the operation unfinished, and due to the formation of the Maskan Bank, the bank continued the operation, and after completing the buildings in 1984, it began selling the residential units by publishing an advertisement in the newspaper and presenting a map of the Apadana town. At that time, due to the lack of completion of the work and ownership documents, the residential units were leased to the buyers, who were mostly government employees, by signing a registered contract and using bank facilities.
Since 1987, according to the announcement of the Housing Bank, all the affairs of the town, including green space, lighting, cleaning, and other facility costs and motor homes, were assigned to the owners. The owners, in cooperation with each other, while forming general assemblies and drafting the statute, in accordance with the provisions of the Apartment Ownership Law and electing boards of directors in six phases, undertook all the management and maintenance required for the town, and while creating a very desirable green space, they took other necessary measures. Until 2003, due to the failure to issue the completion certificate, the municipality had not provided any services; but in 2004, when the completion certificate was obtained from the municipality and the ownership documents of the residential units were issued and the renovation fees were paid to the municipality, the residents' expectations for receiving facilities from the municipality increased.

Due to the existence of 6 engine rooms and independent facilities, the entire buildings of the town, which include 2,901 2- or 3-bedroom residential units, are divided into 6 sections or phases, each phase having an engine room to provide hot water as well as summer cooling and winter heating of the relevant buildings (fan coils).
Each phase includes approximately 500 residential units (phase one 488 units, phase two 510 units, phase three 459 units, phase four 512 units, phase five 512 units, phase six 420 units), which are located in 46 building blocks. Each block usually has 3 or 4 entrances, each entrance consisting of 5 to 11 floors, each floor usually having 2 residential units.
The buildings of the town are of reinforced concrete type (consisting of concrete and rebar). The main structural system of the buildings is in the form of shear walls in two directions and reinforced concrete slabs. Prefabricated reinforced concrete parts are used in the facade of the buildings. The internal secondary partitions are of the gypsum panel type. Given that most of the walls are shear walls, it can be expected that the buildings will have high resistance to earthquakes (usually buildings with shear walls do not collapse in an earthquake). Of course, it is worth noting that the use of shear walls in high-rise buildings is common.
It is common in the general opinion that these buildings are designed to be resistant to earthquakes of about 8 Richter magnitude (it should be noted that the design of the structure is not based on the Richter magnitude of the earthquake and has a different criterion). Also, a number of residents are attempting to destroy the reinforced concrete beams above the openings inside the shear walls, which can lower the status of the buildings." (www.fa.wikipedia.org)

Prince Park Complex

“The implementation of residential projects in the 15th district of Paris in France and almost in the same concept as the Prince Park and Vanak Park residential tower projects in Tehran, when Amir Malekzadeh Yazdi decided to build 22,000 to turn his square meter in Vanak lands into a productive and dynamic platform for Tehrani citizens; This was the basis for the construction of Prince Park. This plan was implemented including the basement and ground floors, including three towers A with 27 floors, tower B with 22 floors and a tower with 19 floors. The facade of these towers included empty spaces and in the last two and three floors with a retreat from the The facade of the large terraces was assigned to the villa apartment. Also, this building includes three floors of parking Underground and necessary equipment for a modern residential complex.

The architecture of the Prince Park building was entrusted to the group of Italian architects named Barzanti, who was based in Milan. The Italian architect proposed some preliminary designs and the client chose the current design after reviewing and consulting with other European specialist institutions. The technical calculations and resistance of the towers' materials were assigned to an Italian company at Barzanti's suggestion. But the employer wanted to be more sure of the correctness and accuracy of the details of the project, which cost him a lot of time and money. The control of technical calculations was handed over to Société Central Technic (Scotec) under a contract, which at that time was known as the largest building technical control company in France. The resistance of structures against earthquakes according to California standards is one of the main requests of the employers of this project.” (Art and Architecture, 2016)

Figure 136, Prince Park complex

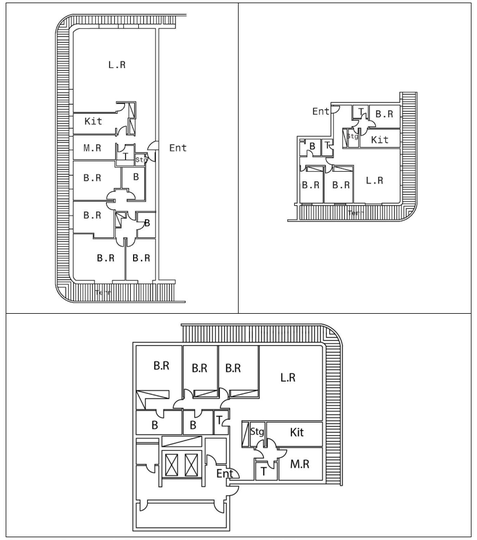


Figure 137, Prince park, Floor plans

Chapter 2

Urban Analysis

Chapter 2, Analysis

Environmental and Urban context (Carto graphical Maps)
Climate and Population Data
Site Analysis

Figure 138, Map of Tehran province and Tehran city, Elaborated by author

Environmental and Urban context

This research adopts a multidisciplinary approach, integrating environmental, urban, and architectural analyses to develop a comprehensive renovation plan for Eskan Towers. The methodology is structured into four key phases: environmental and urban analysis, architectonic analysis, design proposal, and design development.

Environmental and Urban Analysis
In the first phase, the research will examine the environmental and urban conditions surrounding Eskan Towers. The following steps will be undertaken:
Data Collection
Environmental data will be collected, focusing on the local climate, air quality, and natural surroundings.
Urban data will include population demographics, traffic flow, land use, and infrastructural challenges in the area.
Cartographic Mapping
Using GIS tools and urban mapping software, cartographical maps will be generated to visualize the urban layout, environmental features, and surrounding built environment.
Data Representation
Climate and population data will be presented in the form of charts and graphs to offer insight into how these factors affect the living conditions in Eskan Towers.

Figure 139, Map of Tehrans' ditrictss, Elaborated by author

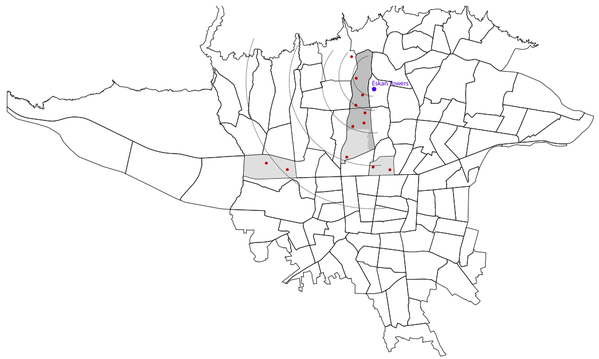


Figure 140, Association between Eskan and other residential complexes in Tehran, Elaborated by author

Figure 141, Map of Tehran's density, E.B.A

Figure 142, Map of Tehran's roads, E.B.A

Figure 143, Map of tehran's closed spaces, E.B.A

Climate Analysis for Tehran

Seasonal Temperature Variations: The climate chart demonstrates a significant variation in average temperatures throughout the year in Tehran. This highlights the city's seasonal changes, ranging from cold winters with temperatures often near freezing to hot summers with averages exceeding 30°C. Renovation strategies for the Eskan Towers must include climate-resilient design elements, such as insulation for winter heating and shading or ventilation for summer cooling.

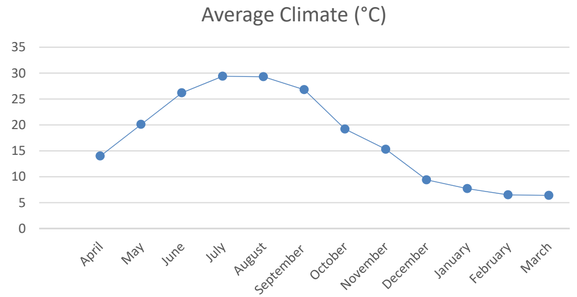


Figure 144, Yearly average climate of Tehran

Spatial Temperature Distribution: The climate map indicates microclimatic variations across Tehran, with certain districts experiencing higher average temperatures (above 20°C) compared to others. This could be due to urban heat island effects or geographical features. Renovation efforts should consider these variations to ensure that materials and designs respond appropriately to local conditions.

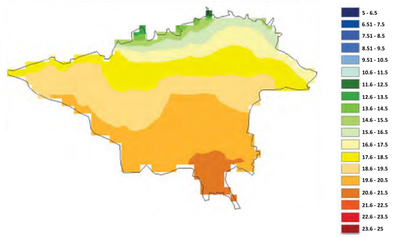


Figure 145, Heat map of Tehran

Urban Demographics and Population Distribution

Population Density Trends: The chart shows significant disparities in population across Tehran's districts. Some districts have experienced rapid population growth, which might lead to increased demand for infrastructure and resources. In the renovation of Eskan Towers, integrating shared spaces or community amenities could address local urban needs and attract residents. Also, it is clear that most of residential units in Tehran are less than 100 sq m and it can show the demand flow of residential

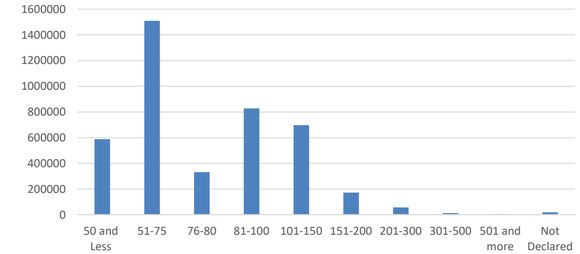


Figure 146, Residential unites' area in Tehran

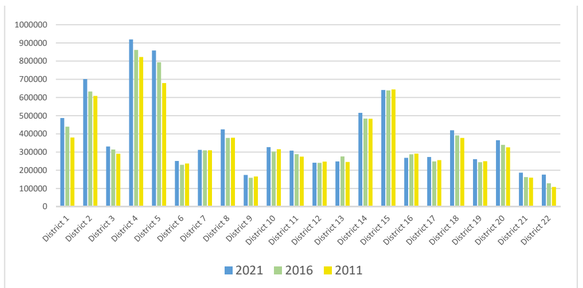


Figure 147, Population chart by districts

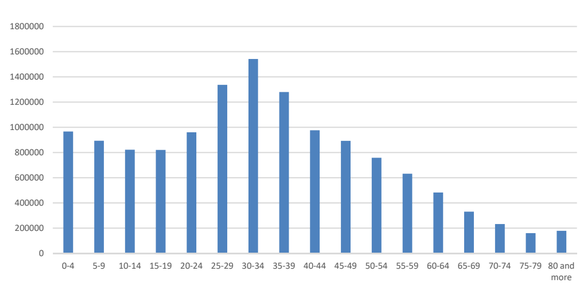


Figure 148, Population chart of Tehran

Analysis of the Area Surrounding Eskan Towers

Site Location

The analysis of the surrounding area provides a comprehensive understanding of the urban context in which Eskan Towers is situated. This exploration includes key elements such as infrastructure, amenities, and the natural environment, all of which play a critical role in shaping the functionality and character of the area.

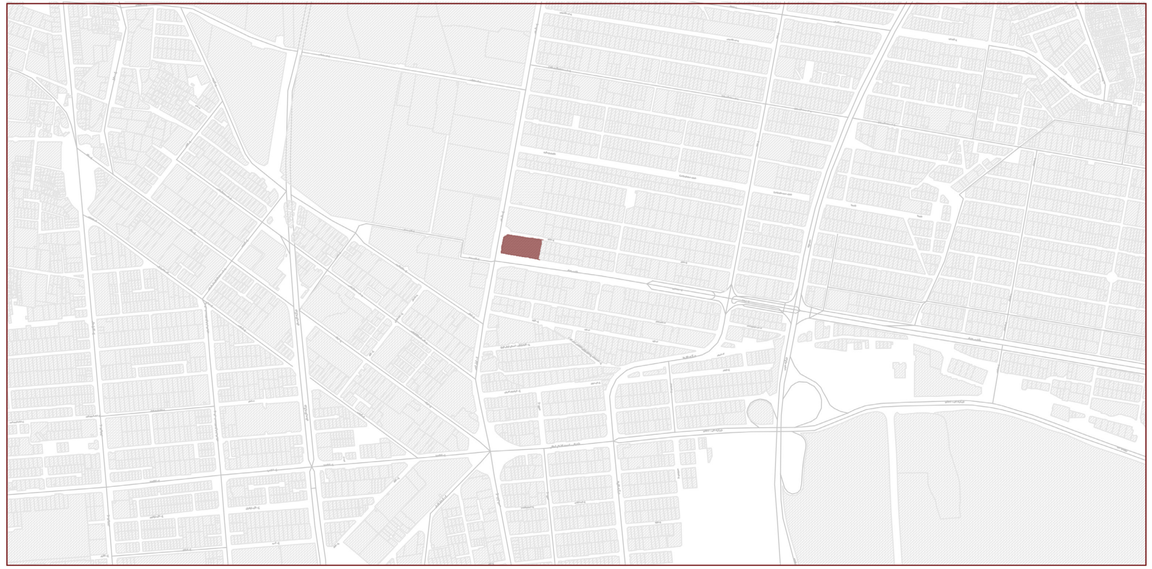


Figure 149, Site analysis, Site location, E.B.A

Grids and Axes:

The layout of the urban grid and the alignment of axes around Eskan Towers influence the spatial organization and visual hierarchy of the area. Key axes provide sightlines to notable landmarks and create a rhythm in the urban landscape, impacting the flow of movement and the perception of space.

Figure 150, Site analysis, Major roads and roads, E.B.A

Major Roads and Nodes:

The area is connected by a network of primary and secondary roads, creating essential access points for vehicles and pedestrians. Prominent nodes, such as major intersections and roundabouts, act as focal points of activity and orientation. These features enhance the connectivity of Eskan Towers and integrate it into the broader urban fabric.

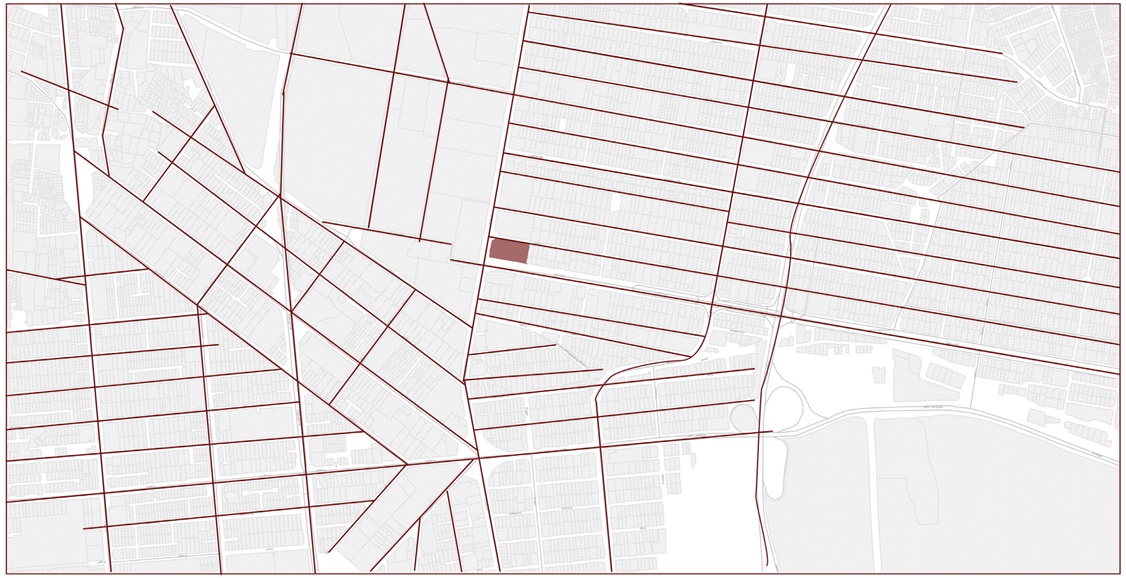
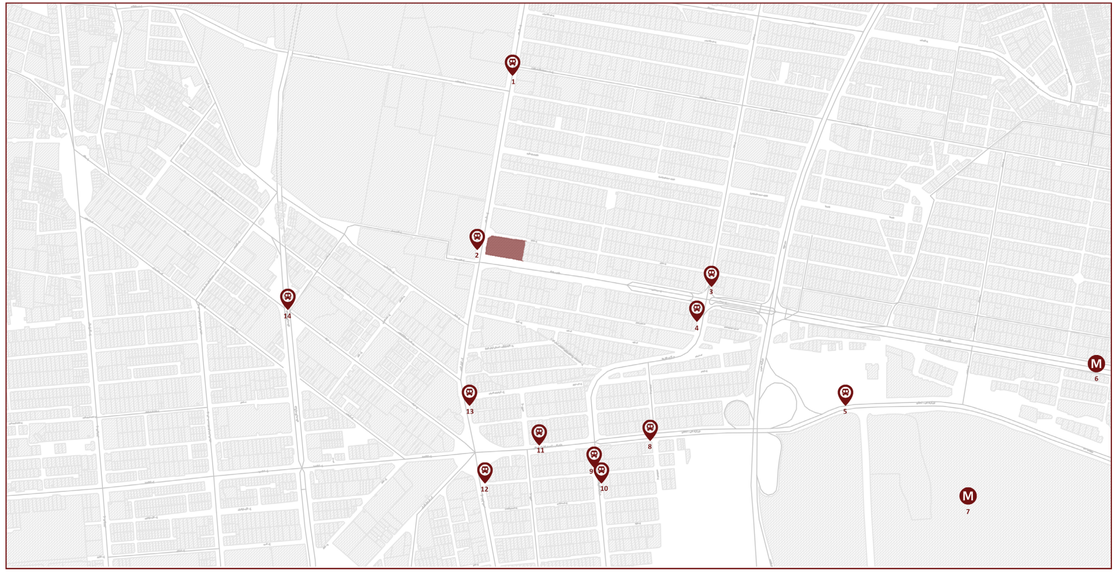


Figure 151, Site analysis, Grids and Axis, E.B.A

Bus Stops and Metro Stations:

Public transportation is a vital feature of the area, with several bus stops and metro stations within walking distance of the building. This facilitates convenient, sustainable, and efficient mobility, which is a critical aspect for residents and users of Eskan Towers.

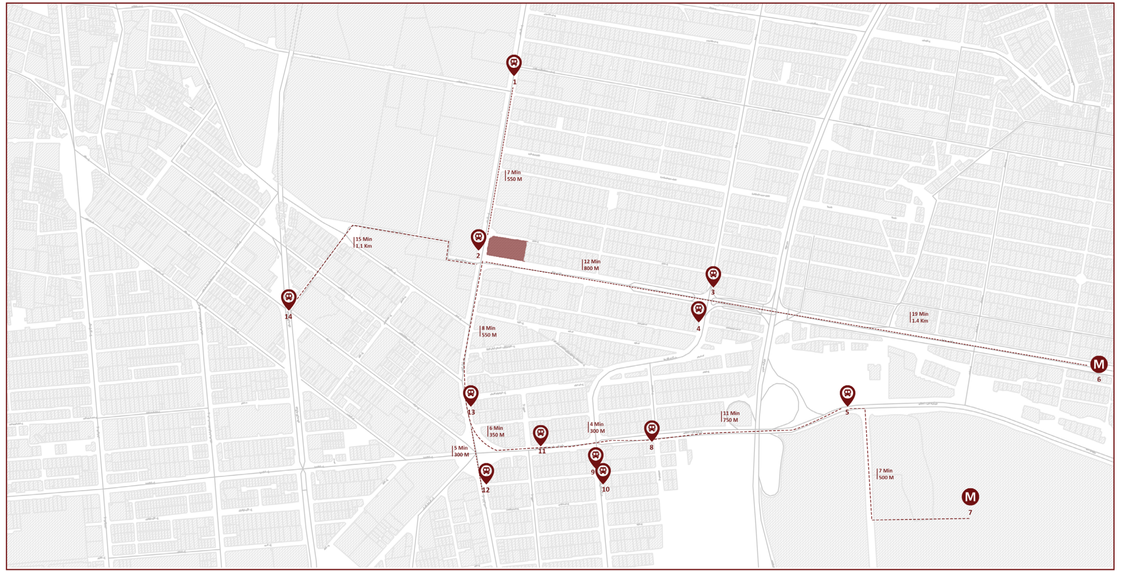


1. Zafar BRT 7
2. Mirdamad BRT 7
3. Mirdamad Bridge
4. Mirdamad Bridge
5. Haqqani
6. Mirdamad Metro Station
7.Shahid Haqqani Metro Station
8. Africa Cross Road
9. Africa Blvd
10. Africa Blvd
11. Vanak
12. Vali Asr
13. Vanak Square
14. Khoddami Bridge

Figure 152, Site analysis, Bus stops and metro stations

Accessibility and Distances:

The proximity of Eskan Towers to significant urban destinations ensures high accessibility. The strategic location minimizes travel distances to essential amenities, making it a well-connected hub for residents, workers, and visitors.

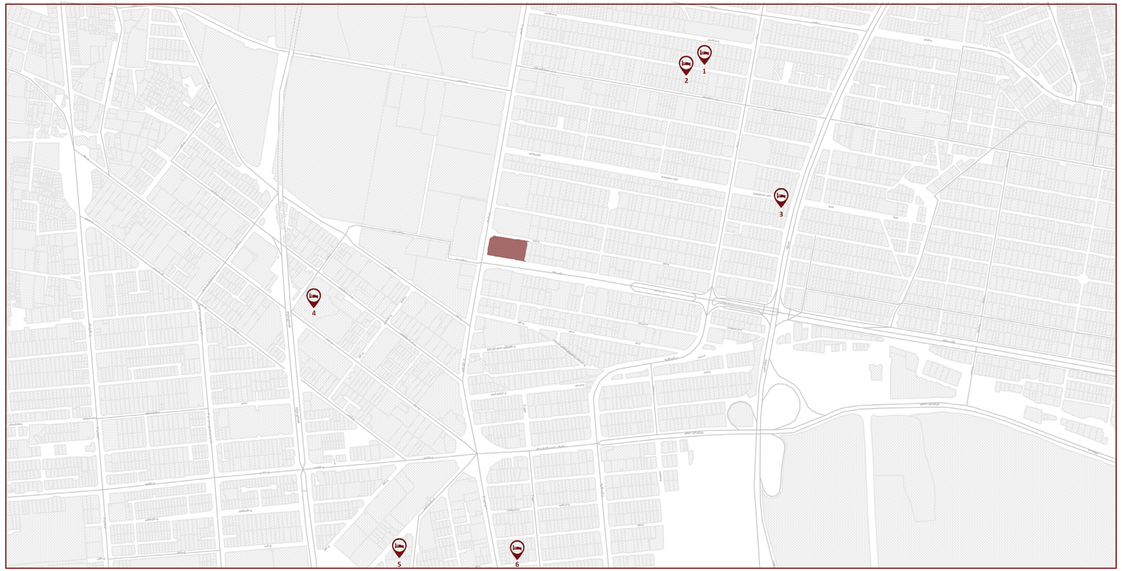


1. Zafar BRT 7
2. Mirdamad BRT 7
3. Mirdamad Bridge
4. Mirdamad Bridge
5. Haqqani
6. Mirdamad Metro Station
7.Shahid Haqqani Metro Station
8. Africa Cross Road
9. Africa Blvd
10. Africa Blvd
11. Vanak
12. Vali Asr
13. Vanak Square
14. Khoddami Bridge

Figure 153, Site analysis, Accessability and distances, E.B.A

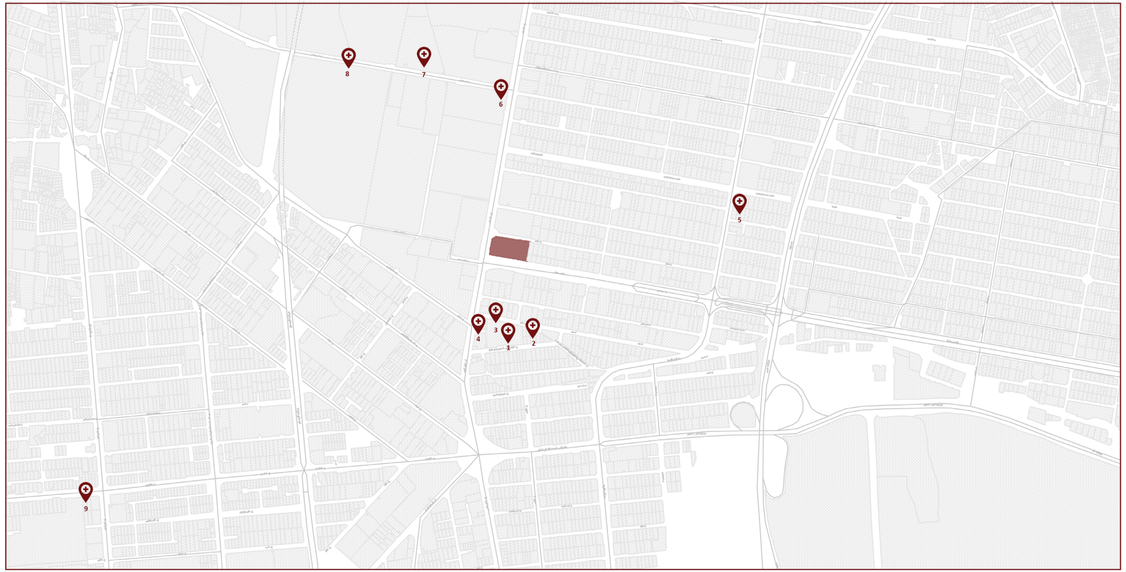
Hotels, Hospitals, and Medical Uses:

The presence of hotels and healthcare facilities nearby adds to the value of the area. Hotels cater to business and leisure travelers, while hospitals and clinics ensure easy access to medical care for residents and visitors, contributing to a sense of security and convenience.



1. Tooba Boutique Hotel (4.3 Stars)
2. Melal Hotel Apartment (4.1 Stars)
3. Pariz Hotel (2.9 Stars)
4. Homa Hotel (3.8 Stars)
5. Vanak Hotel Apartment (3.7 Stars)
6. Pardis Apartment Hotel (4.0 Stars)

Figure 154, Site analysis, Hotels, E.B.A



1. Hashemi Nezhad Hospital (24 h)
2. Atiyeh Hospital
3. Moheb Mehr Hospital (24 h)
4. Ararat Hospital (24 h)
5. Tarzi Clinic
6. ValiAsr Naja Hospital (24 h)
7. Khatam Al-Anbiya Hospital (Government Hospital, 24 h)
8. Motahhari Burn Center (specialized Hospital, 24 h)
9. Baqiyatallah Hospital (University Hospital, 24 h)

Figure 155, Site analysis, Hospitals and Medical uses, E.B.A

Shopping Centers and Commercial Uses:

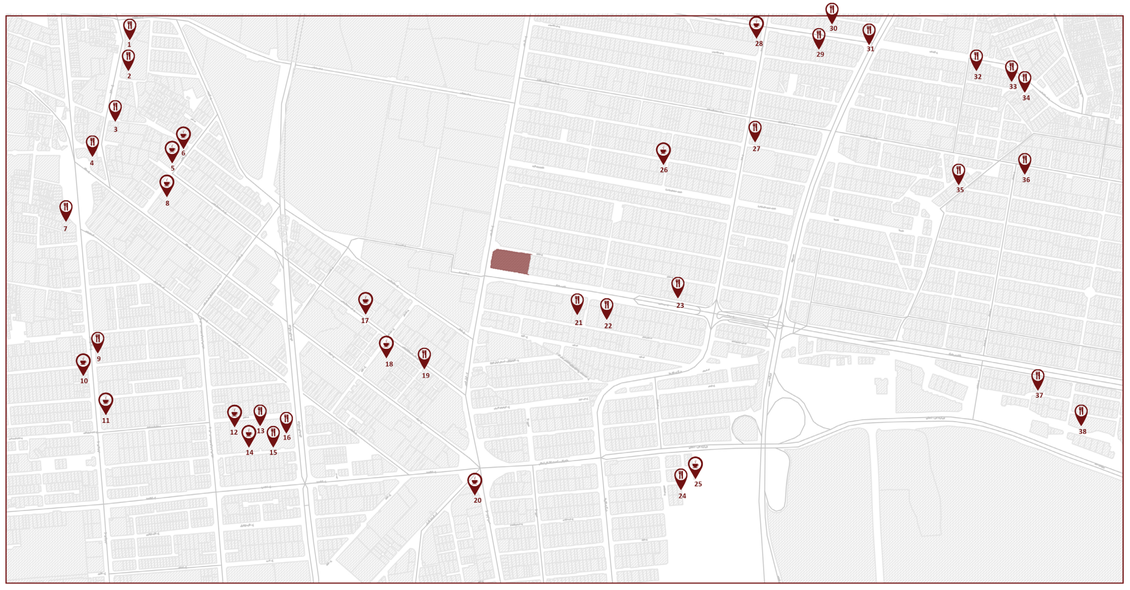
Numerous shopping centers and commercial establishments around Eskan Towers provide access to retail and business services. These hubs generate economic activity and serve as gathering places, enriching the social and commercial dynamics of the area.

1. Paytakht Computer Complex
2. Mirdamad Shopping Center
3. Aseman Shopping Center
4. Vanak Shopping Center
5. Aeene Shopping Center
6. Aftab Shopping Center (Restaurants and Cafes)
7. Seoul Shopping Center (Restaurants and Cafes)

Figure 156, Site analysis, Shopping centers and Commercial uses, E.B.A

Cafes and Restaurants:

A diverse range of cafes and restaurants in the vicinity creates vibrant social spaces. These establishments promote community engagement, leisure activities, and a sense of liveliness in the area.



Restaurants

1. Barbod Traditional Restaurant (3.8)
2. Vanak Pool Restaurant (4.0)
3. Brothers Kitchen (4.4)
4. Vanak Star Sushi Restaurant (4.1)
7. Delkadeh Barbecue Restaurant (4.1)
9. Medel Restaurant (4.2)
13. Kaasse Restaurant (4.1)
15. Parla Italian Restaurant (4.3)
16. Al Harira Restaurant (3.9)
19. Kenzo Japanese Restaurant (4.0)
21. Tehroonchi Iranian Restaurant (4.1)
22. Italy Restaurant (4.0)
23. Maxim Restaurant (4.6)
24. Gap Restaurant (3.8)
27. Mandela Lounge (3.7)
29. Downtown Burger Planet (4.1)
30. Shandiz Persian Restaurant (4.4)
31. Nouvelle Lounge Restaurant (4.6)
32. Mada'in Arabic Restaurant & Café (4.0)
33. Pelak Restaurant (3.7)
34. Wingstop Chicken Wing Restaurant (4.5)
35. Buono Italian Restaurant (3.9)
36. Gata Fast Food (4.8)
37. Milano Restaurant (4.5)
38. Ghasr-e Mowj Restaurant (3.6)

Cafes

5. Chakad Cafe (4.4)
6. Dobar Cafe and Bakery (4.5)
8. Sam Coffee Roasters (4.0)
10. Dong Cafe (4.0)
11. Raees Coffee Shop (4.1)
12. Dobar Cafe and Bakery (4.0)
14. Raees CoffeeShop (4.0)
17. Cai Coffee Shop (4.0)
18.
20. Cluna Cafe (4.3)
25. Viuna Plus Cafe (4.0)
26. Console Cafe (4.5)
28. Tosu Cafe (3.9)

Figure 157, Site analysis, Cafes and Restaurants, E.B.A

Natural Environment:

The surrounding natural environment, including green spaces and parks, provides a refreshing contrast to the urban setting. These areas contribute to environmental sustainability, improve air quality, and offer opportunities for relaxation and outdoor activities.

1. Ararat Sport and Culture Complex (Semi Public)
2. Orchid Sport Complex (Semi Public)
3. Saba Park (Public)
4. Ararat Park (Public)
5. Seoul Park (Public)
6. Vanak hall and garden of the ministry of state (Private)
7. Public Park and Playground
8. Daman Afshar Park (Public)
9. Aqaqiya Park
10. Ab-o Atash Park (City Park)
11. Taleghani Forest PArk (City Park)

Figure 158, Site analysis, Natural Environments, E.B.A

This multifaceted analysis highlights the strategic and advantageous positioning of Eskan Towers within a vibrant and resource-rich urban context. The insights gained from this study can inform renovation strategies, ensuring the building integrates seamlessly into its surroundings while enhancing the quality of life for its users.

Chapter 3

Building Analysis

Chapter 3, Eskan

Architectonic Analysis
Spatial Analysis
Structural and Mechanical Analysis
Functionality and Use

Iran, historically known as Persia, is a country steeped in rich cultural heritage and history, spanning thousands of years. Located in Southwest Asia, Iran serves as a bridge between various civilizations, influenced by its geographic position along ancient trade routes. The country is home to one of the world's oldest continuous major civilizations, with its roots tracing back to the Elamite kingdoms around 3200 BCE.

Iran's cultural heritage is incredibly diverse, reflecting a tapestry of ethnicities, languages, and religions. The country is inhabited by various ethnic groups, including Persians, Kurds, Azeris, and Baloch, each contributing to the rich mosaic of Iranian culture. This diversity is evident in Iran's vibrant arts scene, including literature, music, visual arts, and traditional crafts, which have flourished throughout its history.

Iran is renowned for its architectural heritage, which ranges from ancient ruins to magnificent Islamic structures. Iconic sites such as the ancient ruins of Persepolis, a UNESCO World Heritage site, showcase the grandeur of the Achaemenid Empire, while the intricate tile work and domes of mosques like the Shah Mosque in Isfahan exemplify the brilliance of Persian Islamic architecture. The country also boasts numerous historic bazaars, gardens, and bridges that reflect its architectural ingenuity and aesthetic sensibility.

Furthermore, Iran's cultural heritage extends to its rich literary tradition, with poets like Rumi, Hafez, and Omar Khayyam celebrated for their profound contributions to world literature. Persian carpets, recognized for their intricate designs and craftsmanship, are another hallmark of Iranian culture, representing a blend of artistry and tradition.

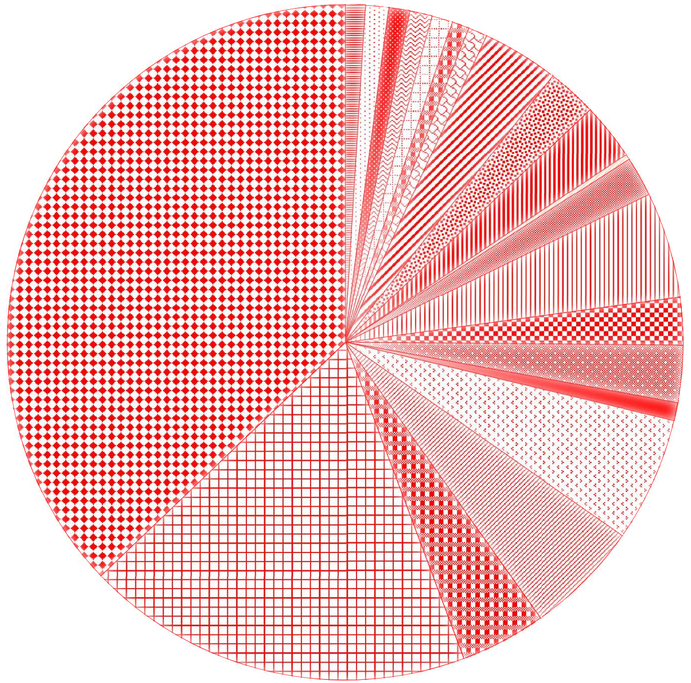
In addition to its architectural and artistic achievements, Iran's cultural heritage encompasses traditional practices, festivals, and rituals that reflect the values and beliefs of its people. Celebrations such as Nowruz (Persian New Year) highlight the country's deep-rooted customs and the significance of seasonal changes in Iranian life.

Despite the richness of its cultural heritage, Iran faces challenges in preserving its historical sites and traditions due to modernization, urban development, and socio-political changes. Efforts to safeguard and promote Iran's cultural heritage are essential for maintaining the country's identity and fostering a sense of pride among its citizens.

Figure 159, Panoramic image of Eskan tower

Location			Net Area (m2)									Number				Sum
		Elevation	Stop and Movement for Vehicle	Store	Public Space/Stairs/Elevator /Aisle/Security	Mechanical	Commercial and Offices	Gathering Hall	Used by Owner	Residential	Balcony	Commecial Units	Office Units	Residential Units	Parkings	
Entrance for Commercial Parking - P0		0.00	796	49	145										21	990
Commercial Parking - P1		.+1.50	839	120	151										27	1,110
Commercial Parking - P2		.+2.68	876	80	60										23	1,016
Commercial Parking - P3		.+4.18	868	68	149										29	1,085
Commercial Parking - P4		.+5.36	869	90	49										23	1,008
Commercial Parking - P5		.+6.86	655	35					155						23	845
Commercial Parking - P6		.+7.94	688	50	182										19	920
Ground Floor in Towers A&B/ Offices Floor		.+7.30			819	321	2,257	314					26			3,711
T Office Floor in Towers B&C		.+10.97			653	Open Space 46	1,752						8			2,405
Mezzanine in Towers A&B&C	.+10.97	.+14.07				2,763										2,763
Ground Floor Tower C		-4.75			258											258
Entrance for Residential Parking - P0		-3.50	1,296	362	276										18	1,934
Residential Parking . P1		-6.35	4,157	610	289	90									129	5,146
Residential Parking P3and Septic		-7.60	1,030	458	149	677									24	2,314
Residential Parking . P2		-8.85	2,032	202	528										70	2,762
Residential Parking P4		-10.10	674	47	150										21	871
Residential Parking P5 and Mechanical Room		-11.35	2,393	445	316	2,906									77	6,060
Lower Commercial Level		-3.50			1,918		3,654					36				5,572
Upper Commercial Level		.+1.75			1,527		2,626					23				4,153
Floors 1 to 23 Tower A	from +14.07	up to 82.27			3,059					15,778	1,656			90		18,837
Floors 1 to 23 Towers B&C	from +17.17	up to +85.37			6,118					31,556	3,312			180		37,674
Sum																101,434

Figure 160, Data Table of project, E.B.A



Entrance for Commercial Parking - P0	0.99%
Commercial Parking - P1	1.00%
Commercial Parking - P2	1.00%
Commercial Parking - P3	1.00%
Commercial Parking - P4	1.00%
Commercial Parking - P5	0.84%
Commercial Parking - P6	0.92%
Ground Floor in Towers A&B/ Offices Floor	3.71%
T Office Floor in Towers B&C	2.40%
Mezzanine in Towers A&B&C	2.76%
Ground Floor Tower C	0.10%
Entrance for Residential Parking - P0	1.93%
Residential Parking -P1	5.14%
Residential Parking P3and Septic	2.31%
Residential Parking -P2	2.76%
Residential Parking P4	0.87%
Residential Parking P5 and Mechanical Room	6.06%
Lower Commercial Level	5.57%
Upper Commercial Level	4.15%
Floors 1 to 23 Tower A	18.83%
Floors 1 to 23 Towers B&C	37.67%

Figure 161, Pie chart, Data of building, E.B.A

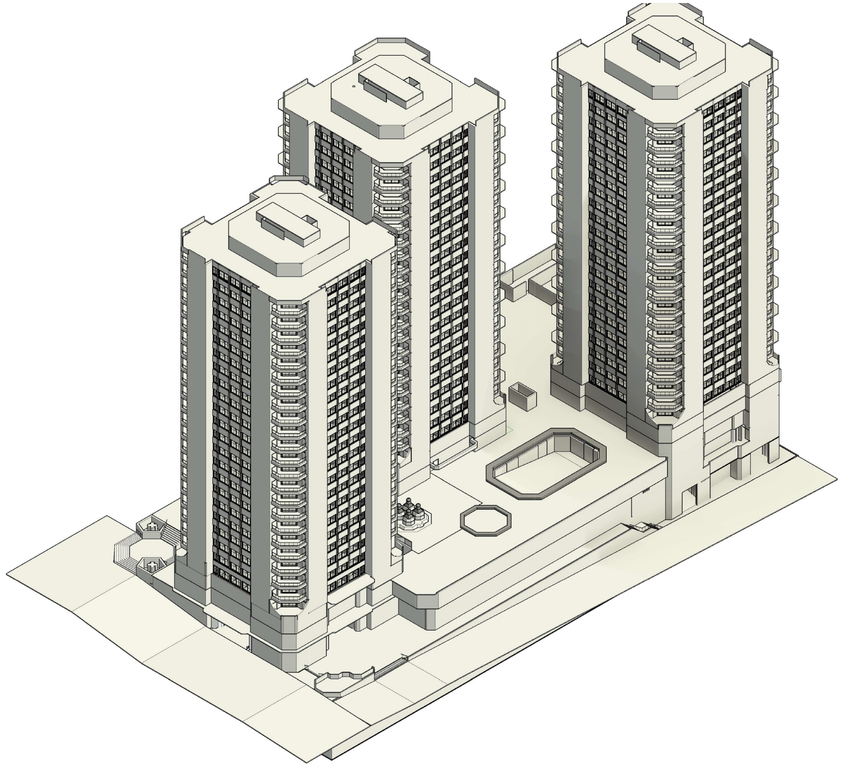


Figure 162, Axonometry, Eskan tower, E.B.A

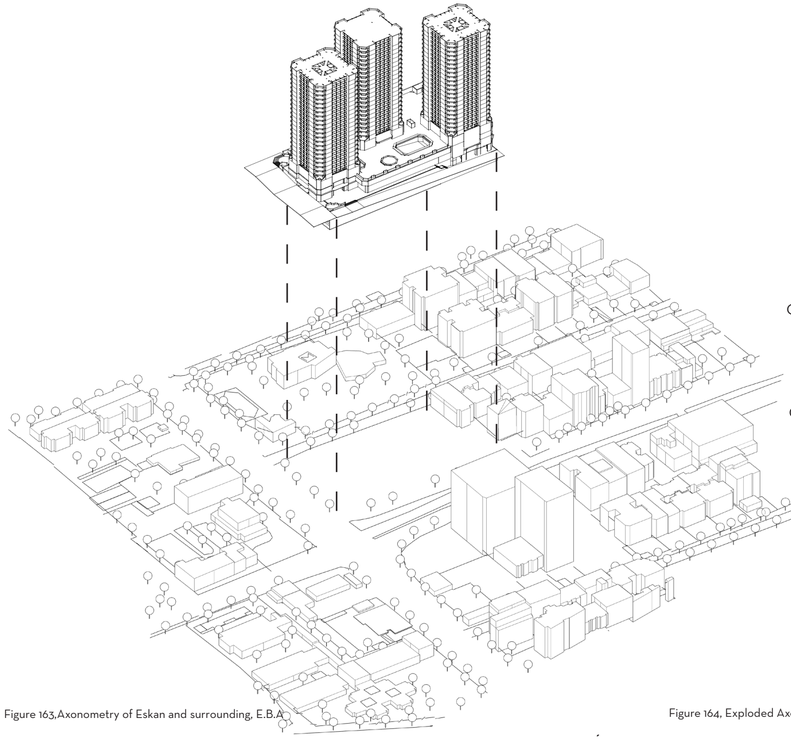


Figure 163,Axonometry of Eskan and surrounding, E.B.A

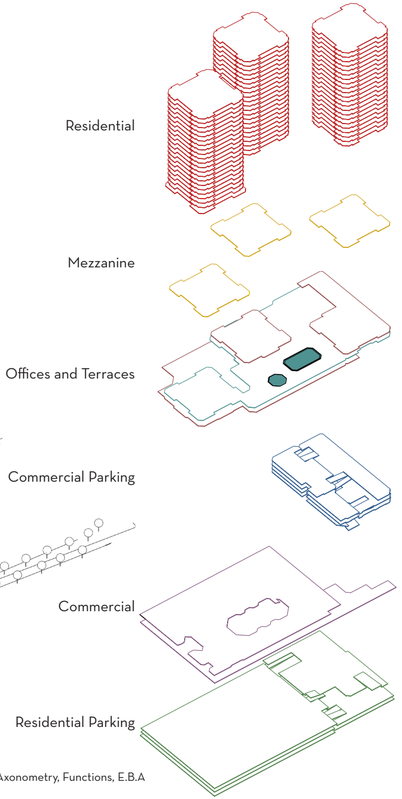


Figure 164, Exploded Axonometry, Functions, E.B.A

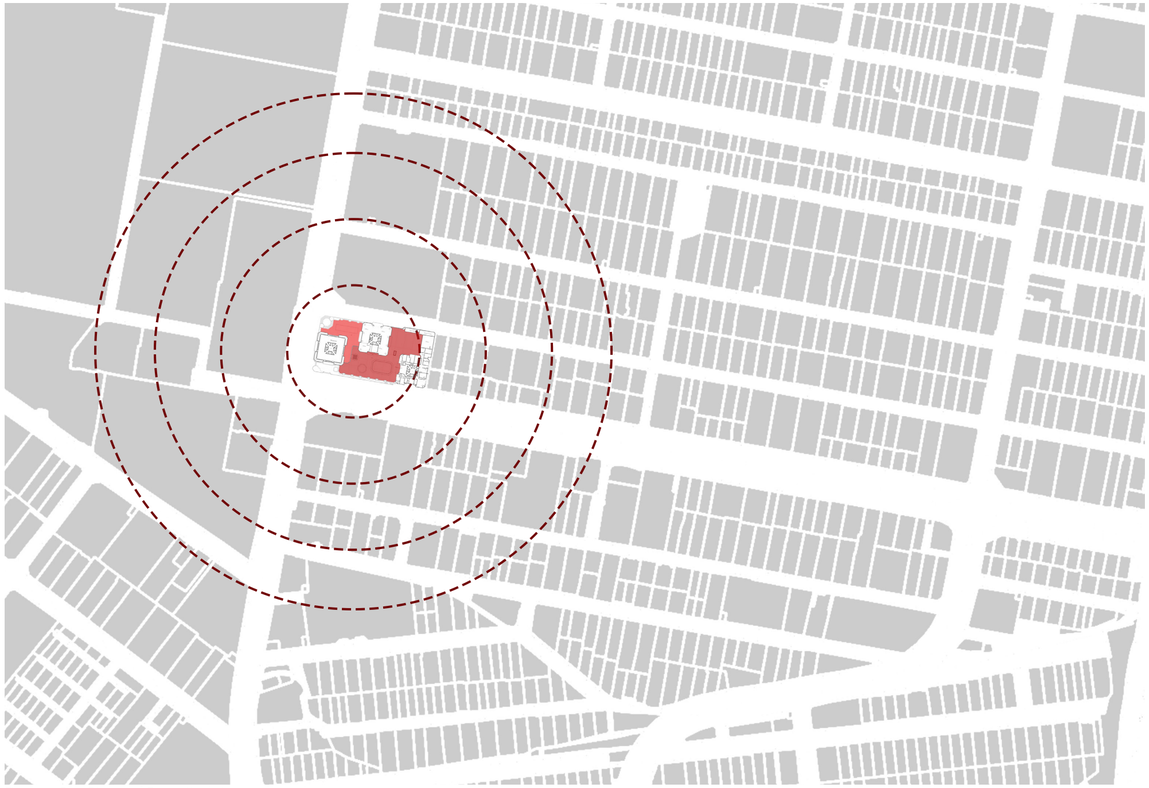


Figure 165, Plan, Diagram of Connection between eskan and area

one of the main aspects of analysis which is crucial for designing the project and making desicions for the interventions is identification of the connection between project and city's fabric.
As it is shown in the diagrams and documents, Eskan has been disconnected from the urban fabric and is not working interactively.
According to its height it is known as a landmark for the area and is visible from different far perspectives.
Also, this big urban block is located at one of the most important and strategic locations at the intersection of two main importan streets in Tehran, but unexpectedly its opportunities are not considered and used effectively by the users and city.

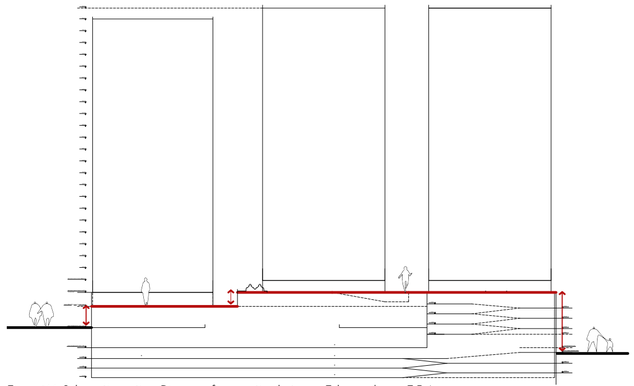


Figure 166, Schematic section, Diagram of connection between Eskan and area, E.B.A

Figure 165, Plan, Diagram of view from outside, E.B.A

Figure 167, Plan, Diagram of view from Inside, E.B.A

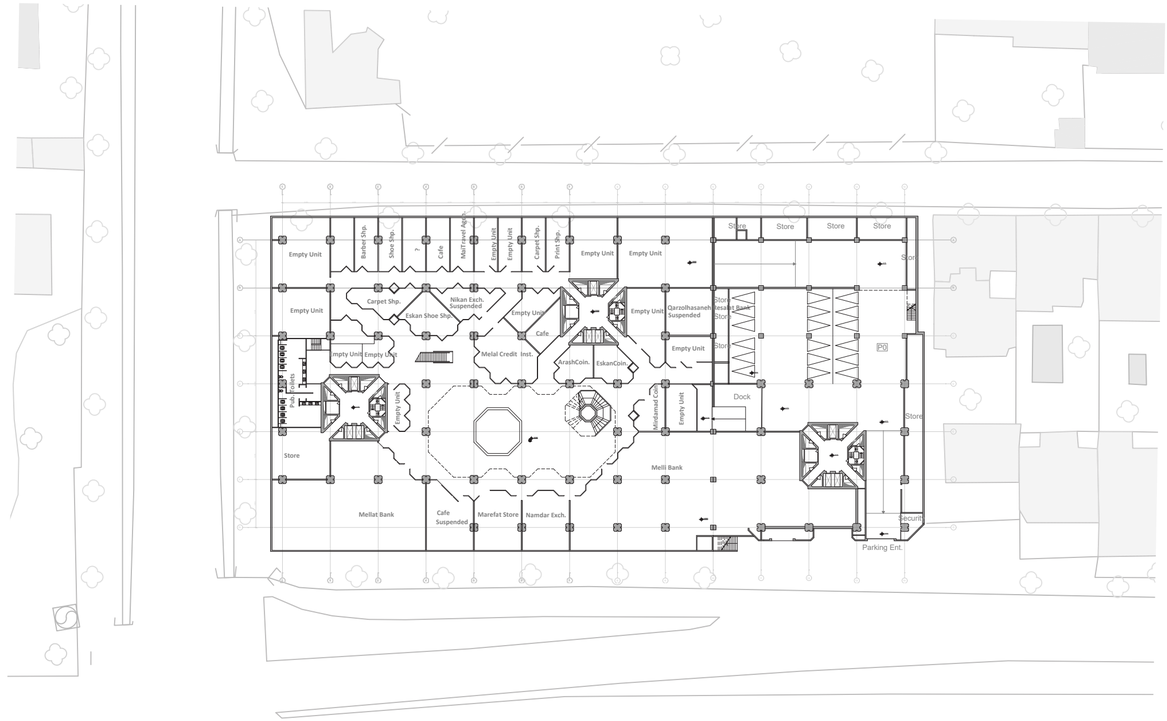


Figure 168, Map of Iran's Architectural Heritages

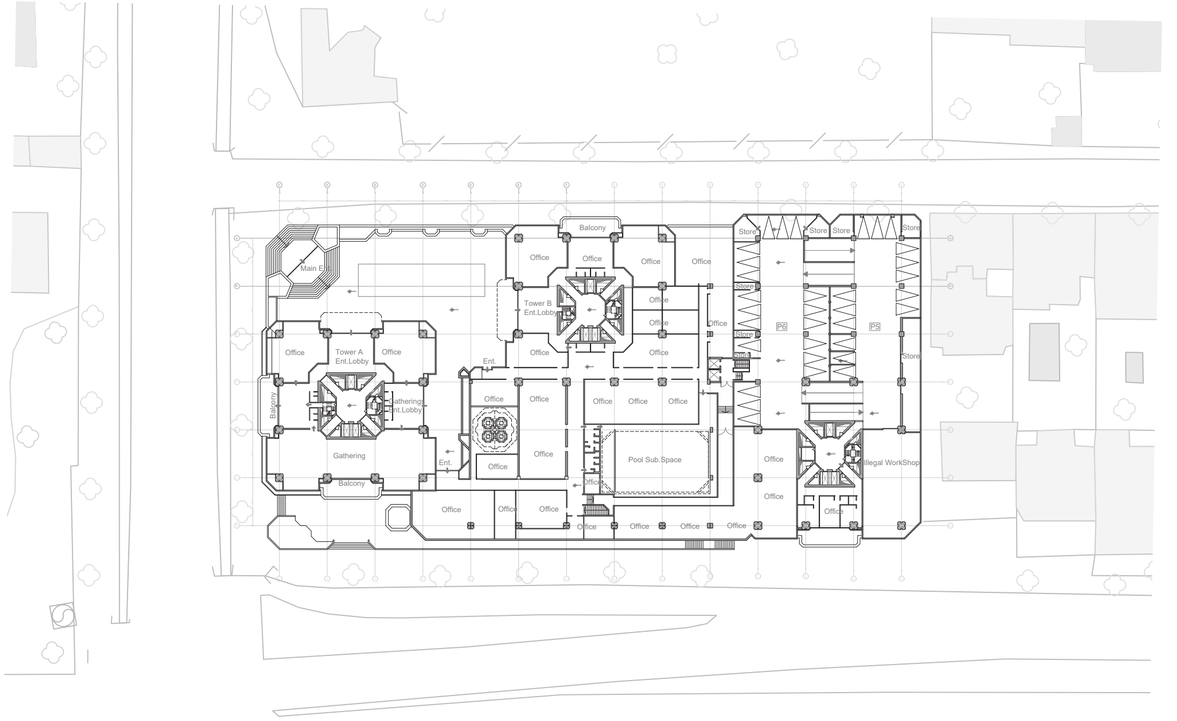


Figure 169, Map of Iran's Architectural Heritages

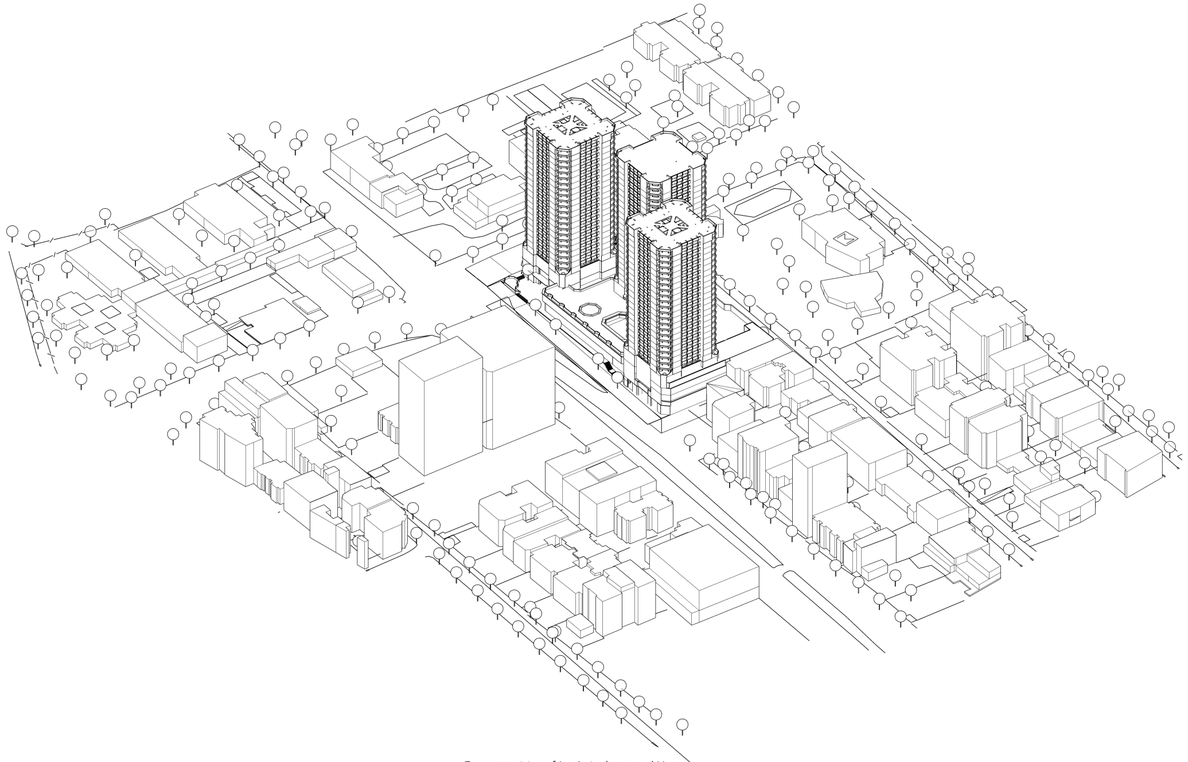


Figure 170, Map of Iran's Architectural Heritages

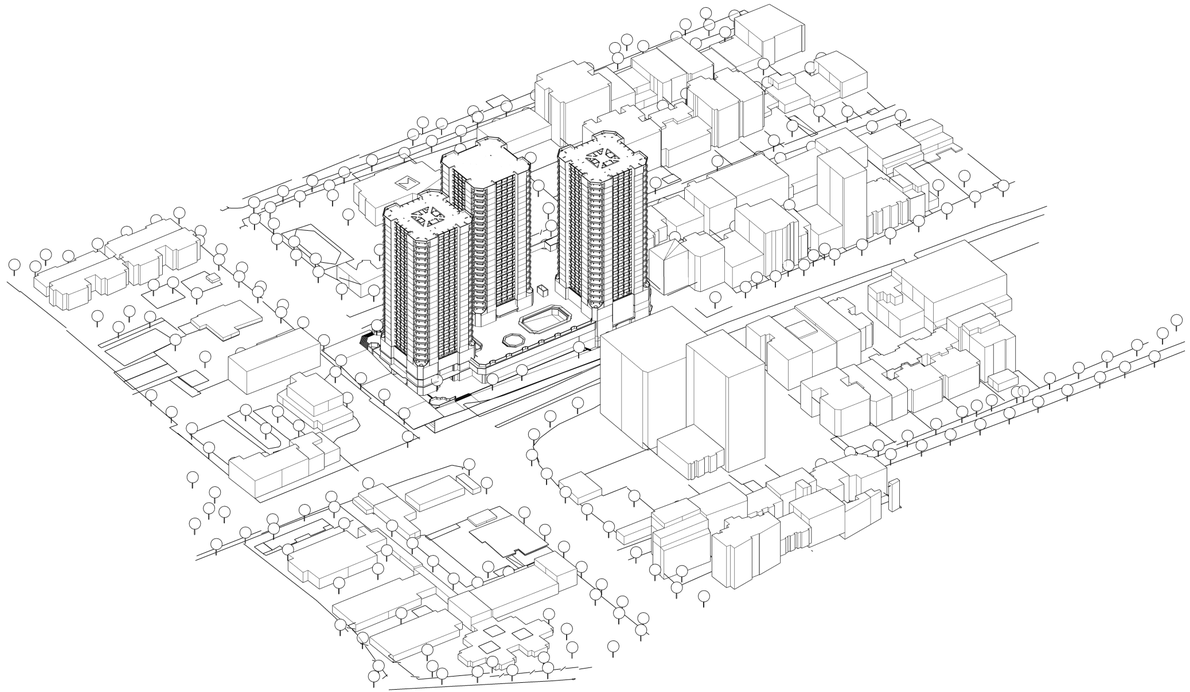


Figure 171, Map of Iran's Architectural Heritages

Entrances and Accessability

Since the Eskan is located at the intersection of 2 major streets and one alley, it has different entrances and accessabilities from these 3 sides.
Some of the entrances are for car and some for pedestrians.
another categorization is public and private entrances.
These accessabilities to enter the project are shown in fig. 171 and 172.

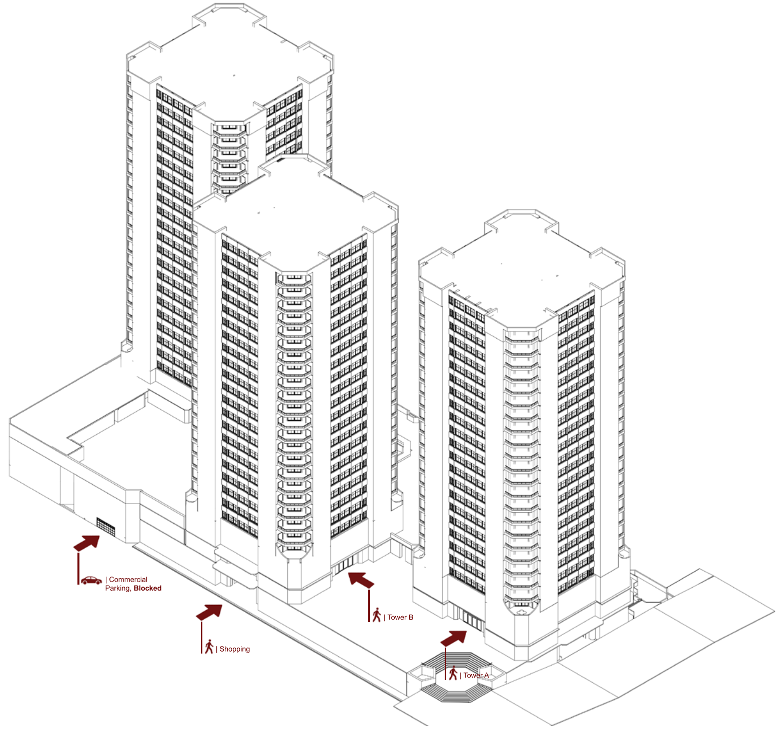


Figure 172, Axonometry, Diagram of entrances, E.B.A

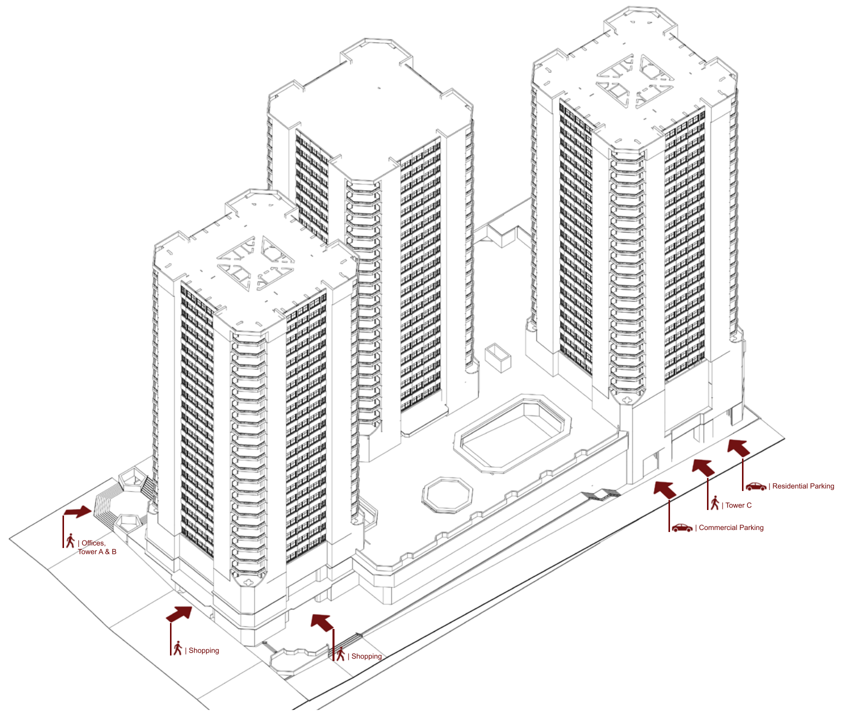


Figure 173, Axonometry, Diagram of entrances, E.B.A

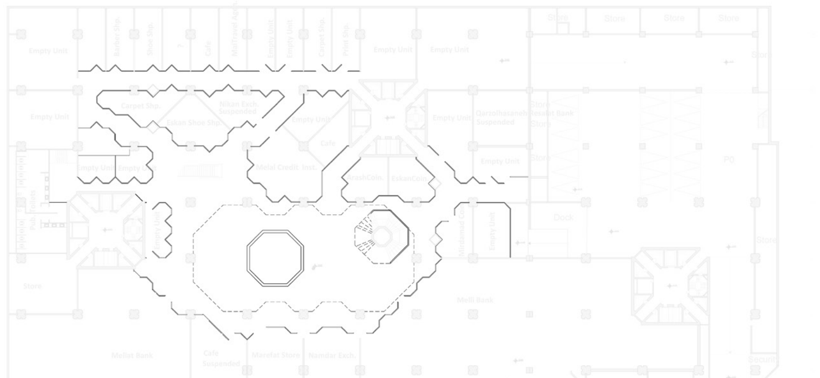


Figure 174, Plan, Diagram of geometry in commercial section, E.B.A

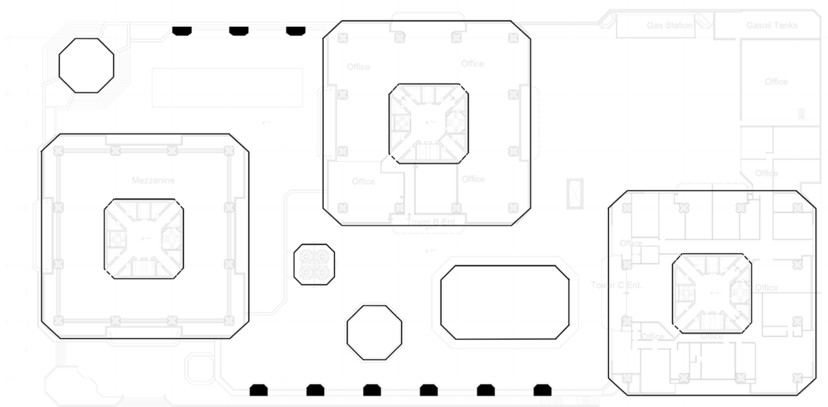


Figure 175, Plan, Diagram of geometry in offical section, E.B.A

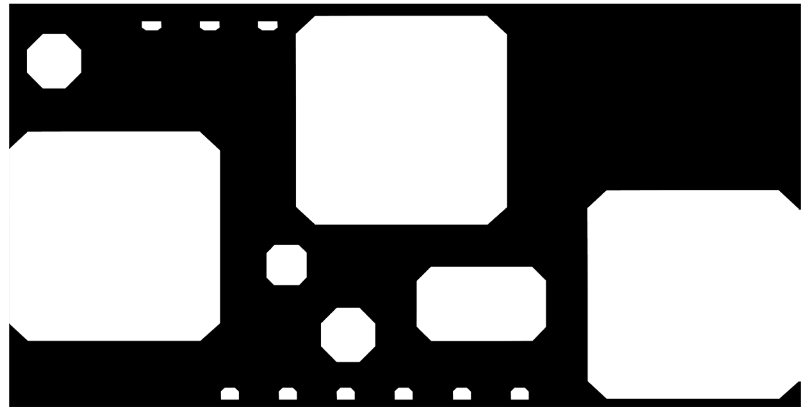


Figure 176, Plan, Diagram of geometry in open spaces, E.B.A

Geometry

One of the fundamental features of this multi functional complex is its form. By studying the forms in this project it is understood that the octagon is the main source of inspiration. this Euclidean Geometrical shape is visible in different elements of the project in various scales.

The form of 3 towers are incompelete octagons. In the sence that they are 3 squares which their corners are beveled and an incomplete octagon shapes have been made.
These diagonal spaces are including terraces in apartments. fig 174.

Inside of every tower there is a core which is the main structure of it.
The form if the core is following the form of the tower. In this sence that the towers outline has been offseted inside and the core has been made. fig 174.

The pillars which are another part of the structure in this procjet that are presented in the lower part (residential and parkings), have followed the octagonal geometry.

In commercial section, it can be seen that the area and outline of the shopps are drawn on basis of an hidden octagonal geometry. fig 173.

The form of two pools on the residential courtyard are inspired by octagon but with this difference that one is the complete and true octagon but the other one is not. fig 174. fig 175.

Actually the form of the chimney in the commercial part is following this shape and this chimney is on of the valuable and outstanding elements in this project that has the value which is should be saved. fig 174. fig 175.

The landing of the stairs in the main entrance of the project is the second compete octagonal element.
It seems that the project after showing itself and its special geometrical form wants to emphasys on this geomtry in the entarnce. fig 174. fig 175.

Even the flowerboxes on the border of the project which are decorational elements in the landscape are semi-octagon masses. fig 174. fig 175.

Mechanical System Analysis

The mechanical system of the project is central.

The mechanical room for whole project is located at the P5 (lowest basement level) and there are 3 mezzanine levels which are located below the first residential floor in each tower.
Two mezzanines in tower B and C are at the same level but the mezzanine in tower A is one level lower.

These mezzanines where used for chillings systems and canals in the past, but by passing time, the previous system has been retired and these spaces have been abondoned.

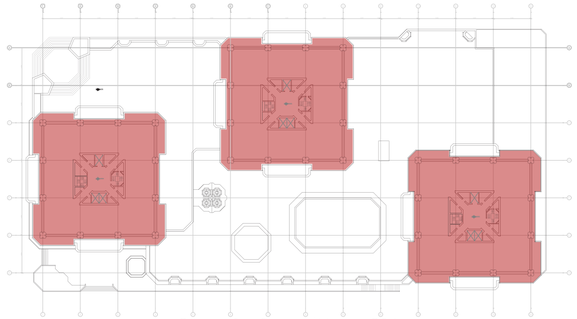


Figure 177, Plan, Diagram of Mezzanin, E.B.A

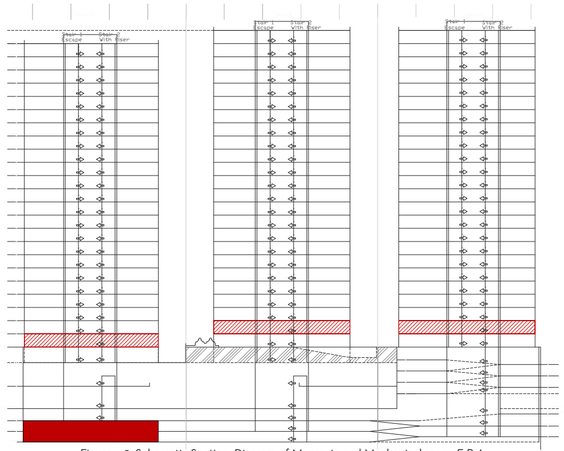


Figure 178, Schematic Section, Diagram of Mezzanin and Mechanical room, E.B.A

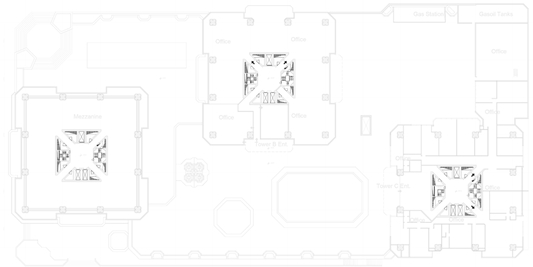


Figure 179, Plan, Diagram of Mechanical Risers, E.B.A

Inside every core in each tower there are some risers at the corners next to the staircases. which host the plumpings and canals of the mechanical systems.
these risers go up from the mechanical room at the lowest level to the roof of building.

As mentioned there are two staircases in every core for the residential units. On basis of the Iran's fire regulation, the number and dimensions of staircases are not suitable for this size of tower with this number of floors and residents at all.
Also another issue about these staircases is that they are disconnected at some levels and are not verticaly continouse throw the whole levels.
It means that some parking levels does not have accessability to escape staircases.

But on the other hand, the number and capacity of elevators are properly sufficient for the project.

Figure 180, Section, Diagram of Mechanical Risers, E.B.A

Structural System Analysis

The Structural system of the project is composed of two main parts.
First part is the pillars and second part is central concrete cores.
The first part existed only in the lower levels of the project from parkings up to offices level but the second part starts from foundation and goes up to the roof of towers which are residential. But it is neccessary to mention that on top of pillars in residential units there are shearing walls which are connected to central cores. fig 180.

The geometry, size and dimension of pillars are different from each other based on their location and section. fig 181.

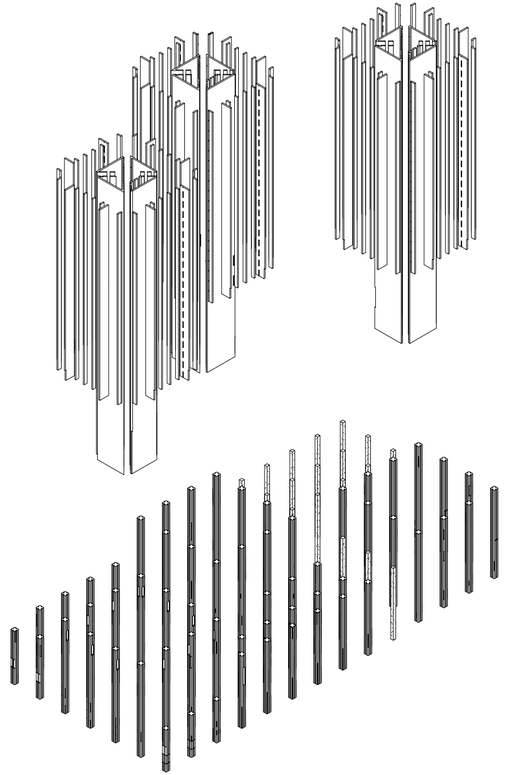


Figure 181, Exploded axonometry, Structure Analysis, E.B.A

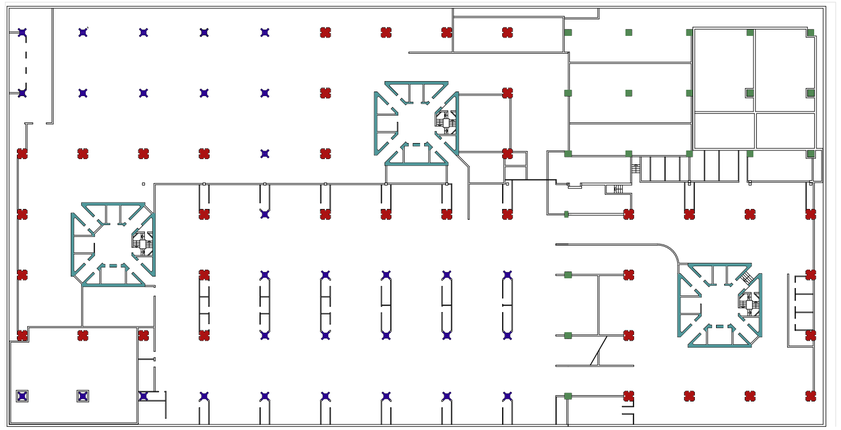


Figure 182, Plan, Structure Analysis, E.B.A

Residential

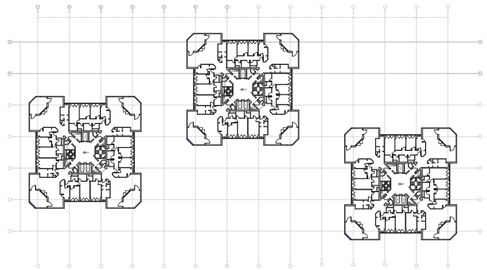


Figure 183, Floor plan, Residential units, E.B.A

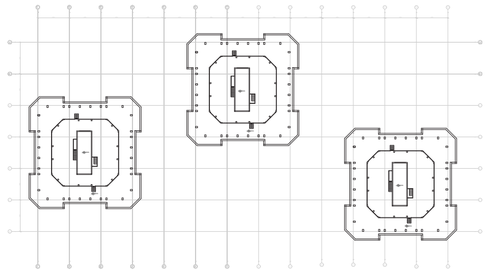


Figure 184, Floor plan, Roof, E.B.A

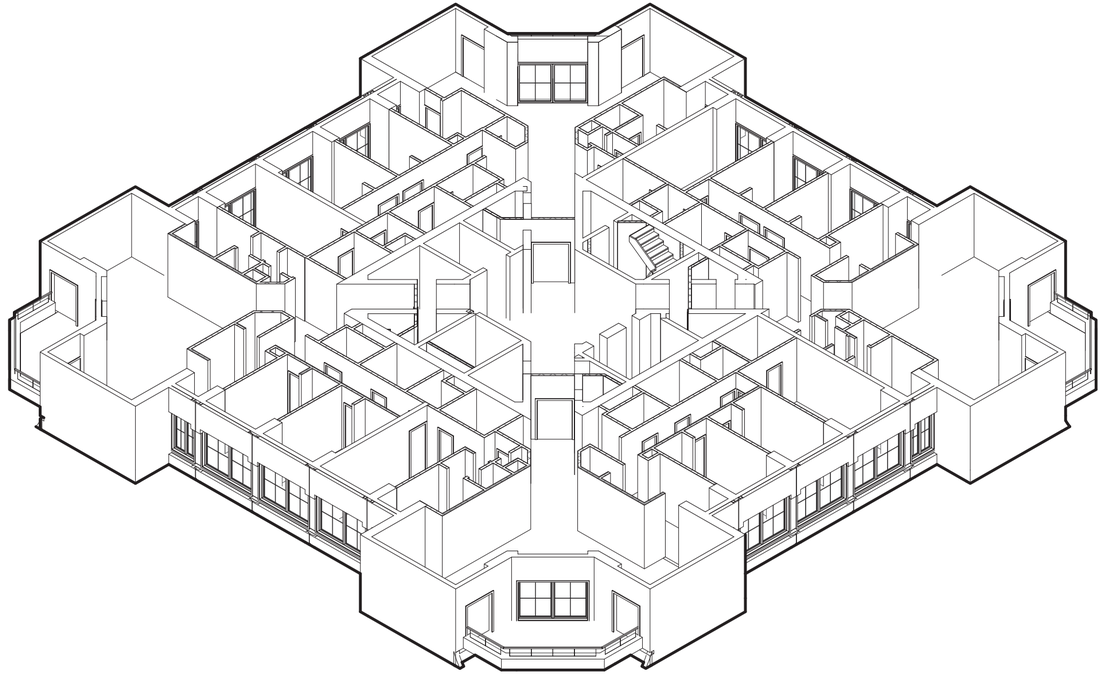


Figure 185, Axonometry, Residential units, E.B.A

Officces and Terraces

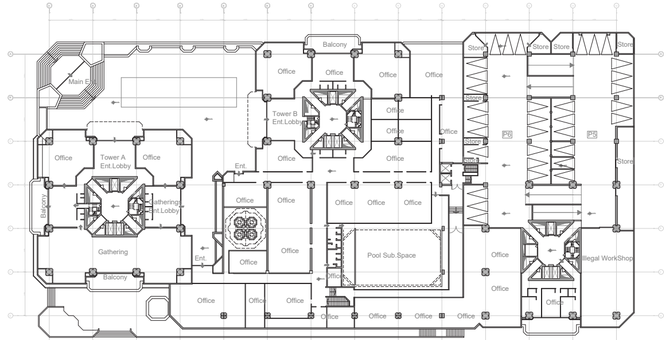


Figure 186, Floor plan, Offices and tower A entrance, E.B.A

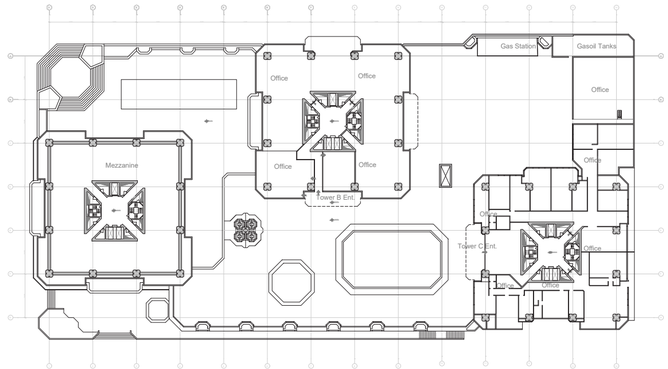


Figure 187, Floor plan, Offices and towers B&C entrance, E.B.A

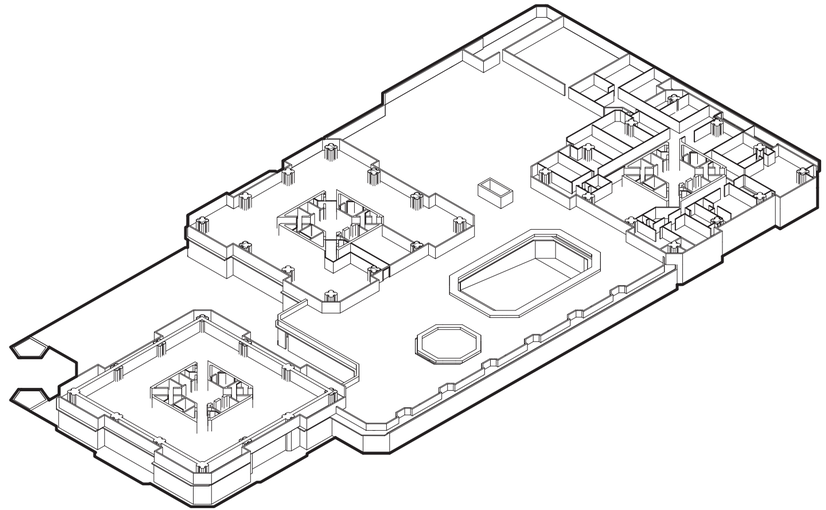


Figure 188, Axonometry, Offices and Terraces, E.B.A

Commercial

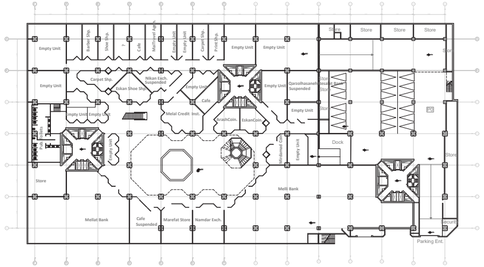


Figure 189, Floor plans, Lower commercial, E.B.A

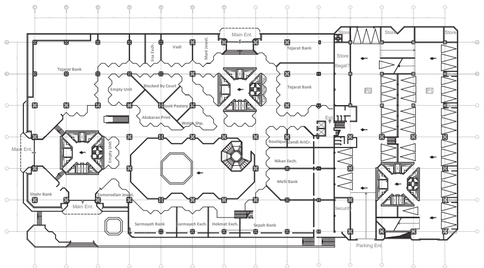


Figure 190, Floor plans, Upper commercial, E.B.A

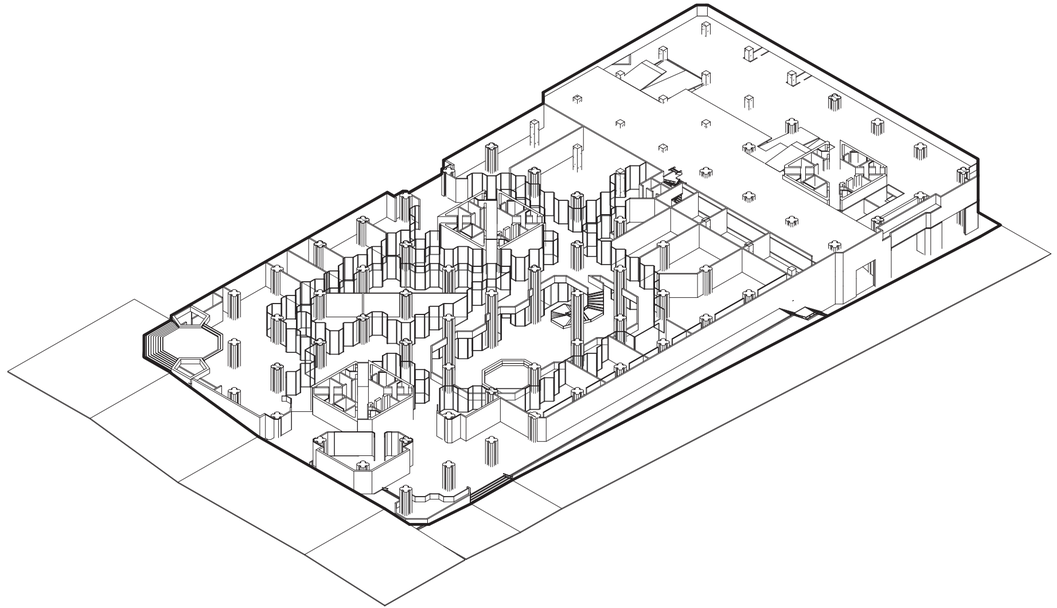


Figure 191, Axonometry, Commercial section, E.B.A

Parkings

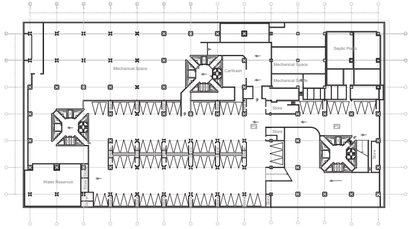


Figure 192, Floor plans, P5 (Residential Parkings), E.B.A

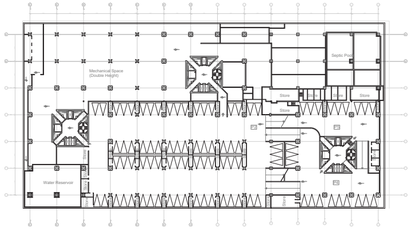


Figure 193, Floor plans, P2&P4 (Residential Parking), E.B.A

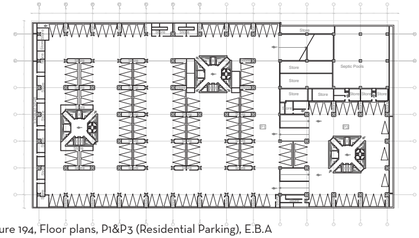


Figure 194, Floor plans, P1&P3 (Residential Parking), E.B.A

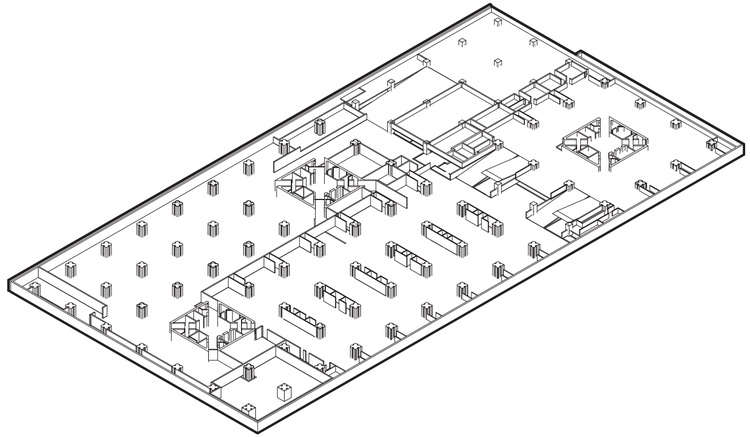


Figure 195, Axonometry, Residential Parking, E.B.A

Figure 196, Section 1

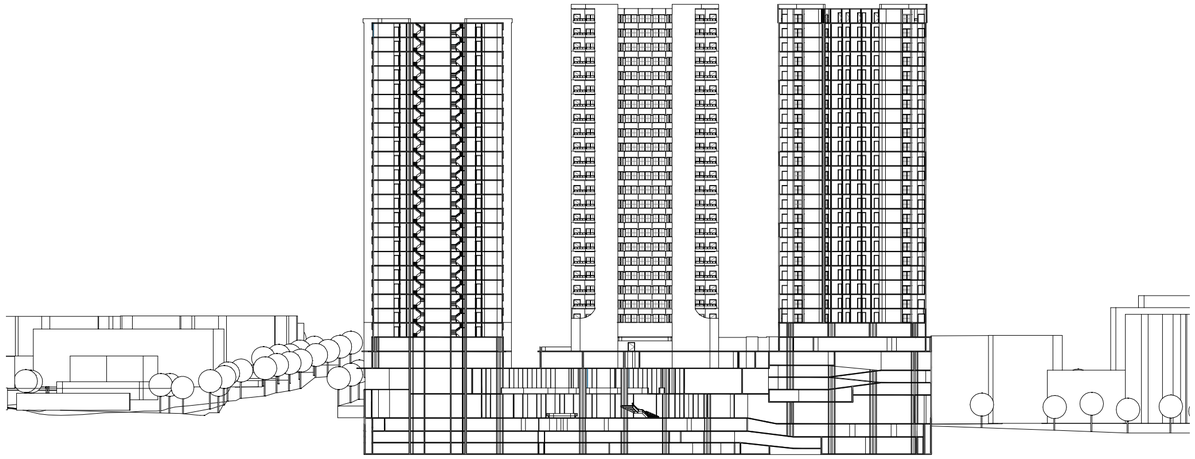


Figure 197, Zoomed out section 1 and surrounding. E.B.A

Images

Figure 198, Image, Southeast View of Eskan Towers

Figure 199, Image, Southernwest View of Eskan Towers

Figure 200, Image, Lower Shopping Floor, View of Chimney

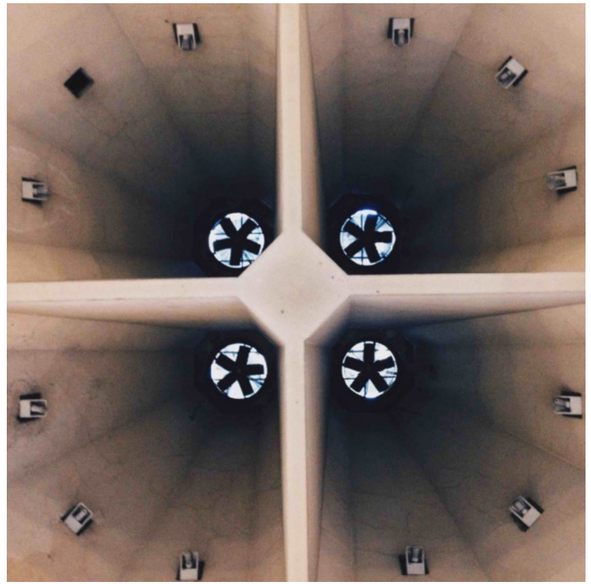


Figure 201, Image, Inside of Chimney

Figure 202, Image, Terrace Floor, Outshide of Chimney

Chapter 4

Design Proposal

Chapter 4, Design

Addressing concerns and objectives
Concept of Design
Design Development
Detailed Architectural and structural drawings

Based on the analysis conducted on the context and building, several issues have been identified, and specific targets have been established in response to these concerns.
Concerning the objectives, the main idea of the design has been developed and proposed.

Problem Statement and Objectives

During the investigation, it was discovered that this multifunctional complex, with three towers and an adjoining component that includes commercial and office spaces, has been detached from the surrounding urban fabric over time. The commercial areas, once occupied by various brand businesses, have been converted into exchange shops and bank branches, resulting in a diminished dynamism and vibrancy of the entire project.
Due to this change, the open spaces of the project have been impacted and, in a sense, neglected. Previously, people visited the project to shop, socialize, spend time with family and friends, or simply enjoy themselves. However, nowadays, users only visit to fulfill specific needs or tasks. In other words, the complex is no longer seen as a destination in itself but merely a place to pass through and take care of necessities.

Another significant issue is the decline in residents' quality of life, stemming from certain infrastructural and cultural changes. Family lifestyles and needs have shifted over time, but the apartment units designed during that era no longer meet these evolving demands. Consequently, some residents have started renovating their homes to better align with their preferences and modern requirements.

During the investigation is was understood that the project has safety problems in order to fire regulations as well as mechanical issues.

Design Proposal

The intervention seeks to integrate and plugs-in the project with its context and transforming it from flat, isolated spaces into interconnected social and cultural spheres, both horizontally and vertically. It focuses on revitalizing open spaces and linking them to the city, introducing semi-open areas that act as transitional zones between open and closed spaces.

By layering the project, the approach smoothly connects the city with the urban fabric, fostering a seamless interaction between the two. The goal is to make Eskan a vibrant urban facility that combines public cultural activities with an internally connected system.

This design incorporates a variety of spaces: paths (both flat and sloped) as lines; stairs as lines; floors and stages as nodes; and squares and courtyards as nodes. All these elements are interconnected, creating a continuous spatial narrative. The intervention also aims to create courtyards with varied spatial qualities, which are distinguished by their dimensions, location, and integration with the surrounding urban fabric. While the intervention complements the existing project, it contrasts with it in terms of materials and color, offering a dynamic visual and functional enhancement.

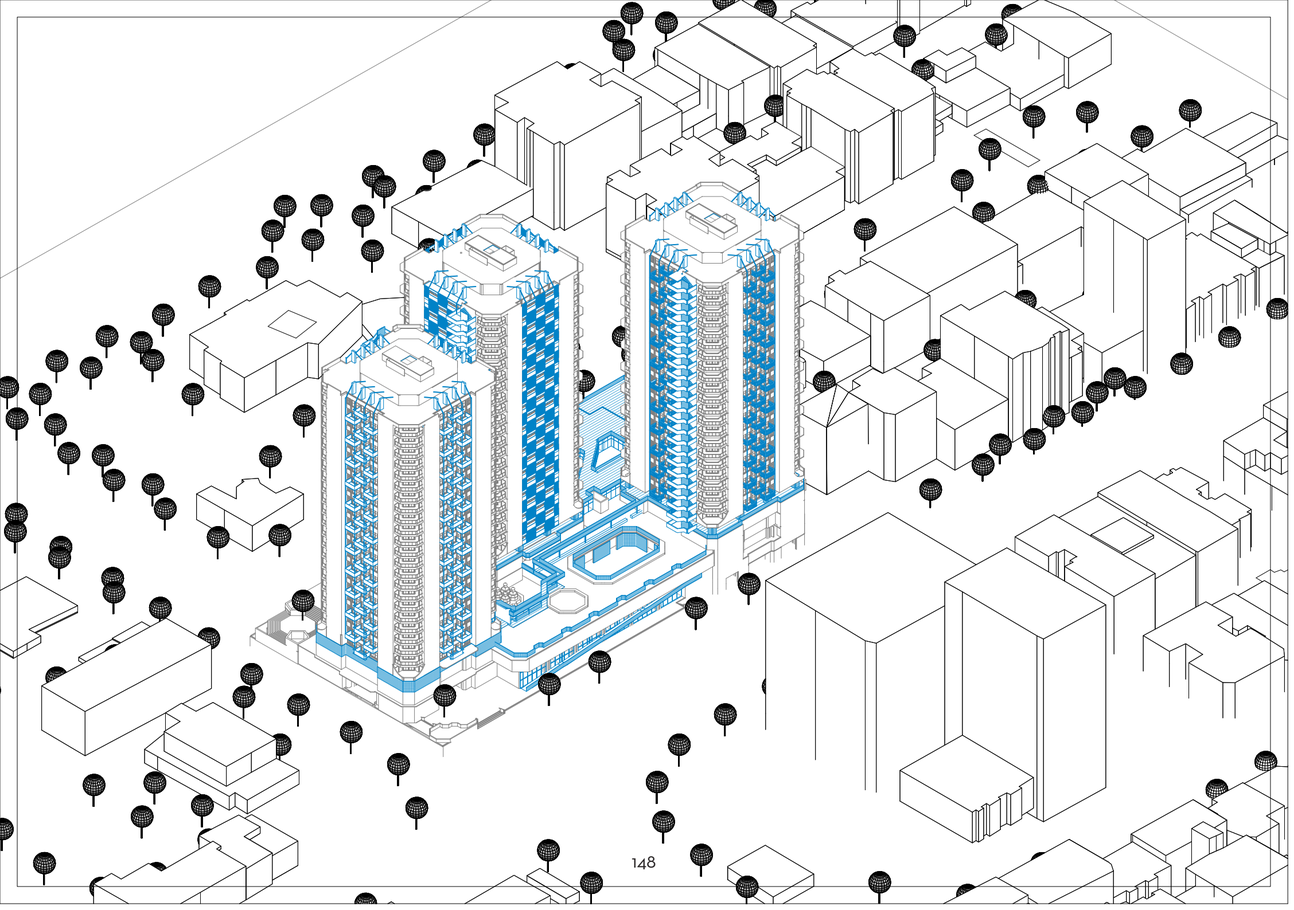
The second part of the intervention was to create a new layout for the residential units by adding new spaces and redesigning the existing spaces.
The addative part for each twoer includes balconies and escape staircase.
This time, balconies playing the role of semi-open spaces as a connection between closed and open areas.

Hence, the idea of connection and integration is repeating in upper parts again.
Regarding fire regulations in Iran, there was a demand for standard and addequate staircases.

Due to the above mentioned point, two staircases have been redesigned and replaced in their existing box on two sides of the central core of each tower and another staircase has been added to the building from outside.
An attempt has been made to merge the staircase and balconies in order to have an integrated addative parts with the same design's language.

All the Documents (except sketches) in this chapter are following the specific color code which is described here :

Existing part
New part
Demolished part



Concept of Design

Lower Section
Courtyards

The intervention in below part is a system which is consist of different memebers; courtyards, bridges platforms, and corridors.
An important feature in the definition of system is the synergy of memebrs. The system has more value in comparison to the sum-up of its members.
In other words the cooperation of the members makes something more.
The above mentioned system is composed of lines and nodes. Courtyards (staying points) play the role of nodes and bridges and pathes work like lines. As it is seen, The Courtyards are the main members of this system and as it is seen have different characters and different qualities consequently.

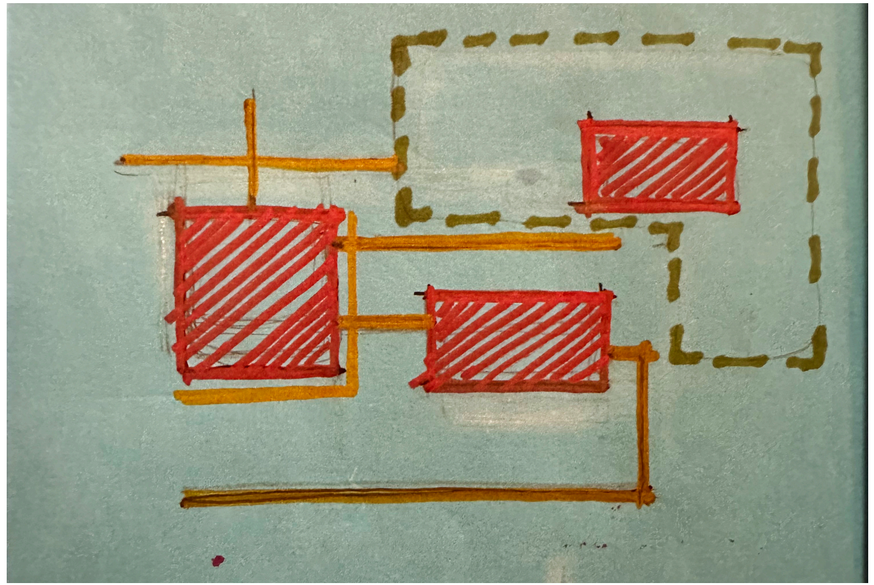


Figure 206, Sketch of concept, Public section, E.B.A

Upper Section
(Balconies)

As mentioned before, another section of intervention was to design a new layout for residential units.
this intervention is recognised by changing the interior plan of the units as well as adding new semi-open volums which are balconies.
these balconies are attached to each side of 3 towers.

The balconies are hanged from the towers. They are attached to the facade and at the same time are hanged from vertical cable which is connected to the shearing walls and continuing the path are is connected to main core of the tower. Shearing walls are connected to main concrete core of the tower as well.

All balconies in 4 sides of one tower are similar together and in another hand balconies of each tower is distnguished from the other ones in rythm or detailed design.
Although, it should be mentioned here that all these interventions on towers (upper section of project) have the same design language.
The design language which these addative parts in upper section have been driven from is composed of two main principals; First rythm and second pattern.

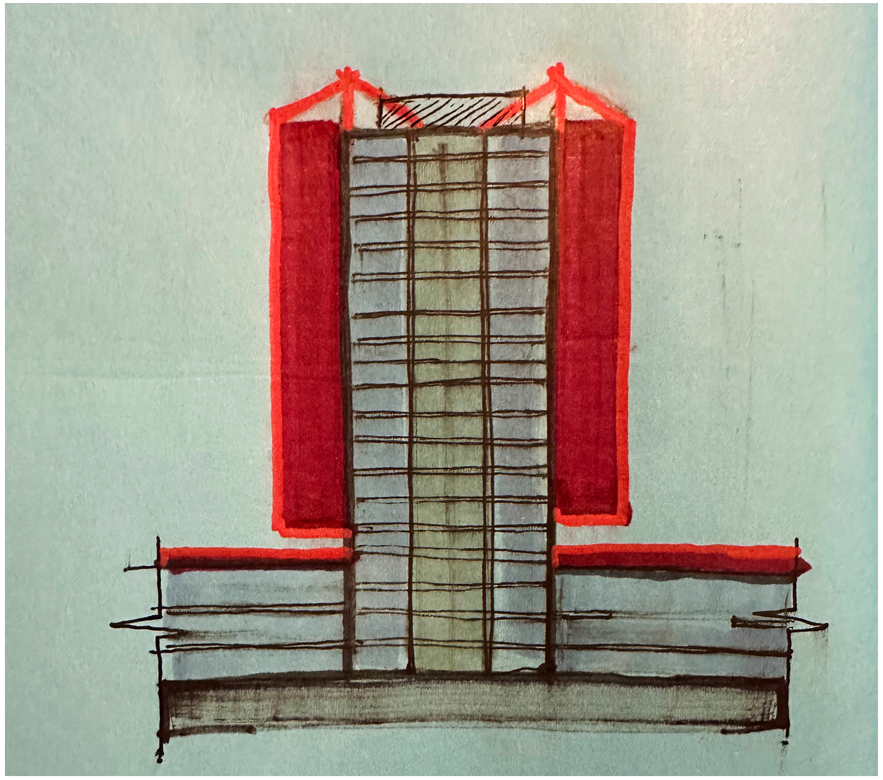


Figure 208, Sketch of concept, Upper section (balconies), E.B.A

Diagram of Concept

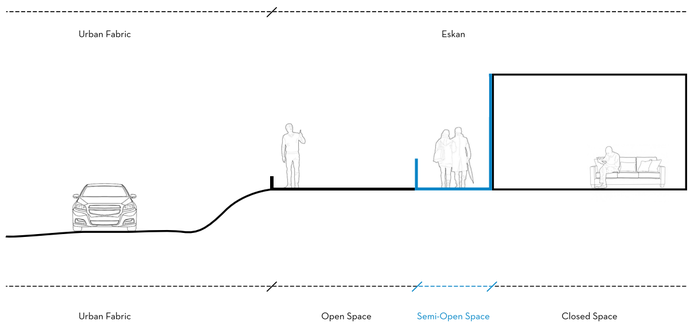


Figure 207, Diagram of concept, Semi-open areas, E.B.A

Diagram of Concept

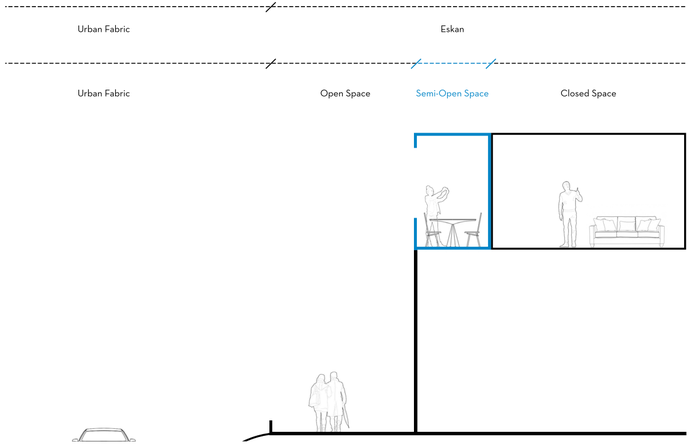


Figure 209, Diagram of concept, Semi-open areas, E.B.A

Diagram of Concept

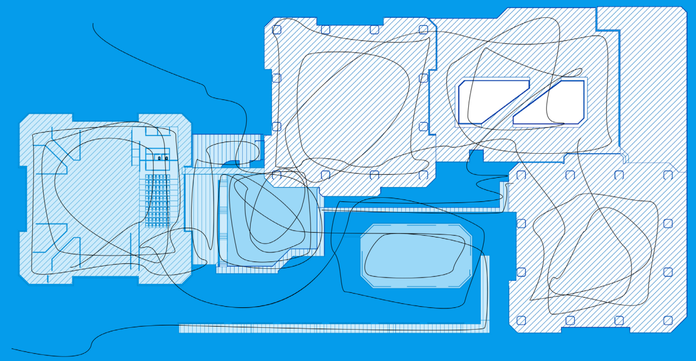


Figure 210, Diagram of concept, Courtyards, E.B.A

Diagram of Concept

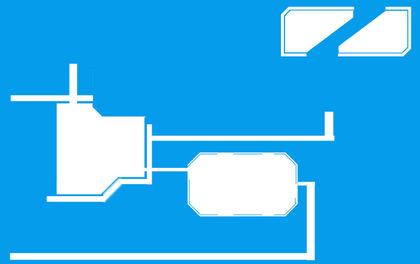


Figure 211, Diagram of concept, Nodes and Lines, E.B.A

Figure 212, Diagram of concept, Courtyard, E.B.A

An important point which should be noticed is that these courtyards are designed on basis of the central courtyards in iranian architectue. they are located in strategic points of the project and closed spaces are gathered around them.

The designed open and semi-open spaces are recognised as social and cultural spheres which has been roomed in different sections of the project vertically and horizontally. This means that the intervention is firmly rooted with the existing building and tries to interact in 3D effectively.

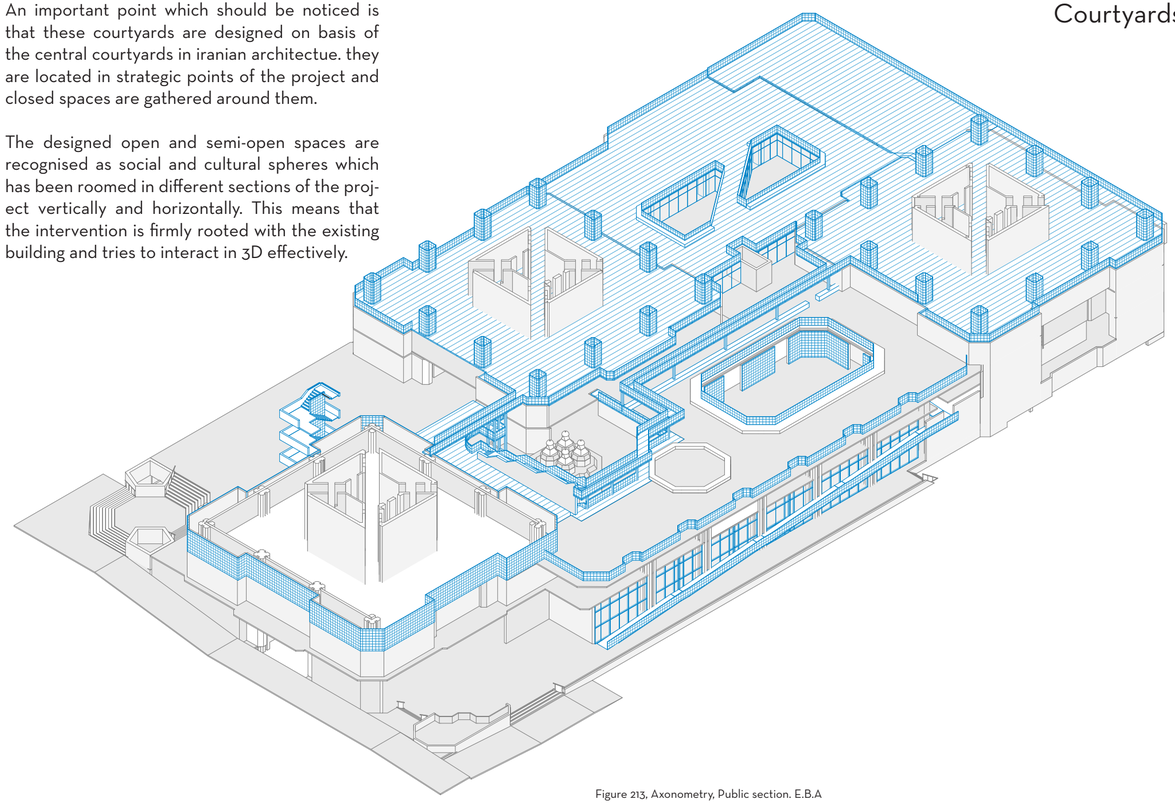


Figure 213, Axonometry, Public section. E.B.A

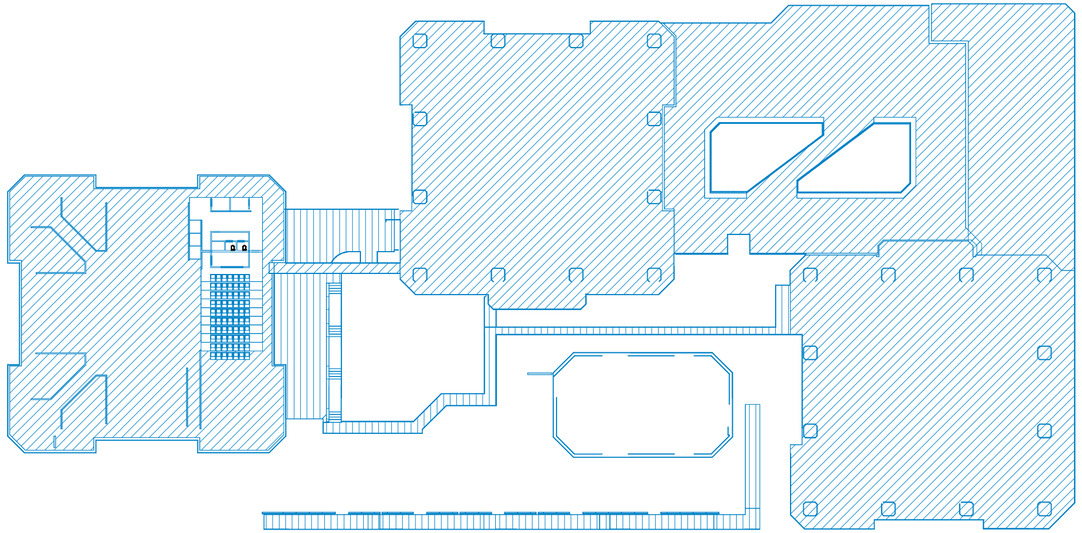
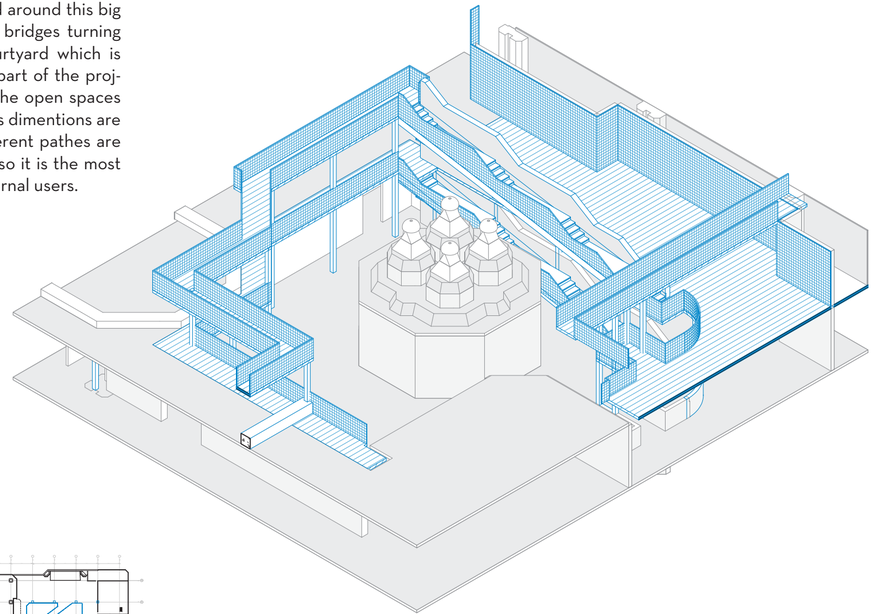


Figure 214, Plan, Public section. E.B.A

Axonometry | Main Courtyard

One of the most important elements which is monumental and has this value to be save in this project is this chimney. This courtyard is formed around this big chimney and stairs and bridges turning around it. The first courtyard which is located at the western part of the project is like the heart of the open spaces and public areas since its dimentions are near to square and different pathes are branched out from it. also it is the most exposed one to the external users.



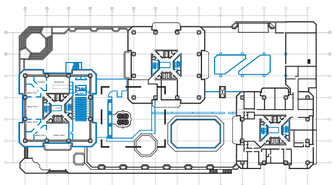
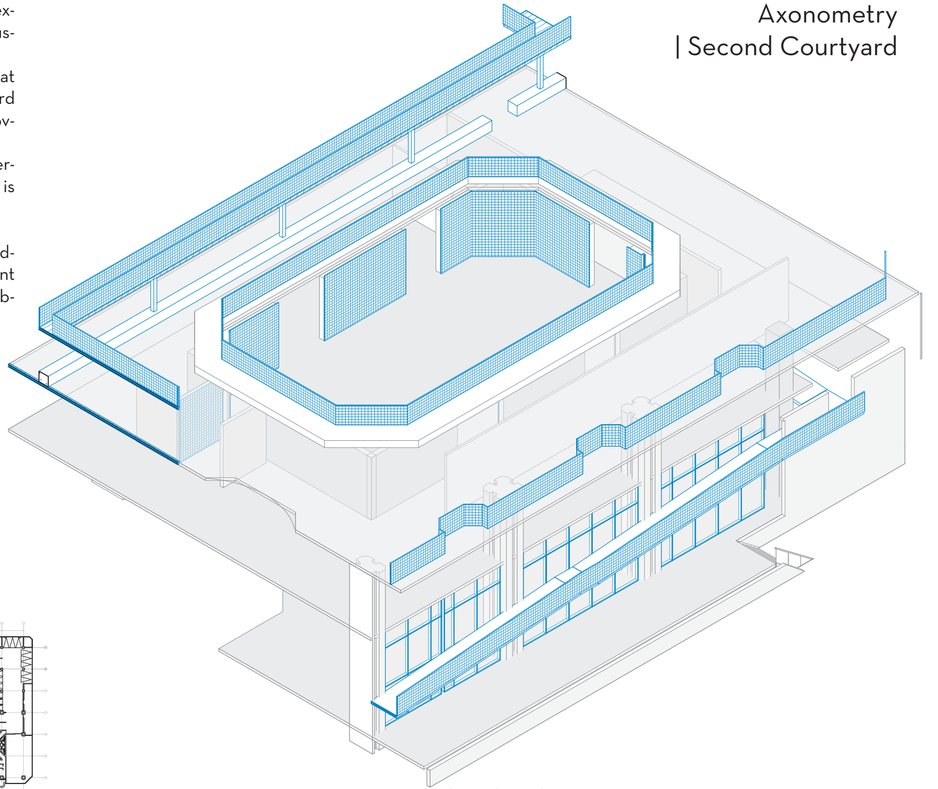


Figure 215, Axonometry, Main Courtyard, E.B.A

Axonometry | Second Courtyard

The second courtyard which is the expool of eskan project is hosted the users of the cafes and restaurants now.
it's a gathering palce which is located at the eastern part of the main courtyard and is connected to it with a short covered corridor.
Since this courtyard is more commercial, one direct accessability (ramp) is considere for it.

There is an uniqe ramp with solid handrail in the southern facade and in front of curtain walls. The ramp is like an object in the showroom.



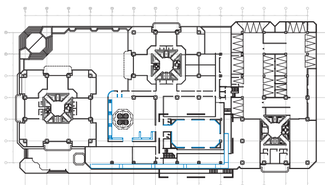
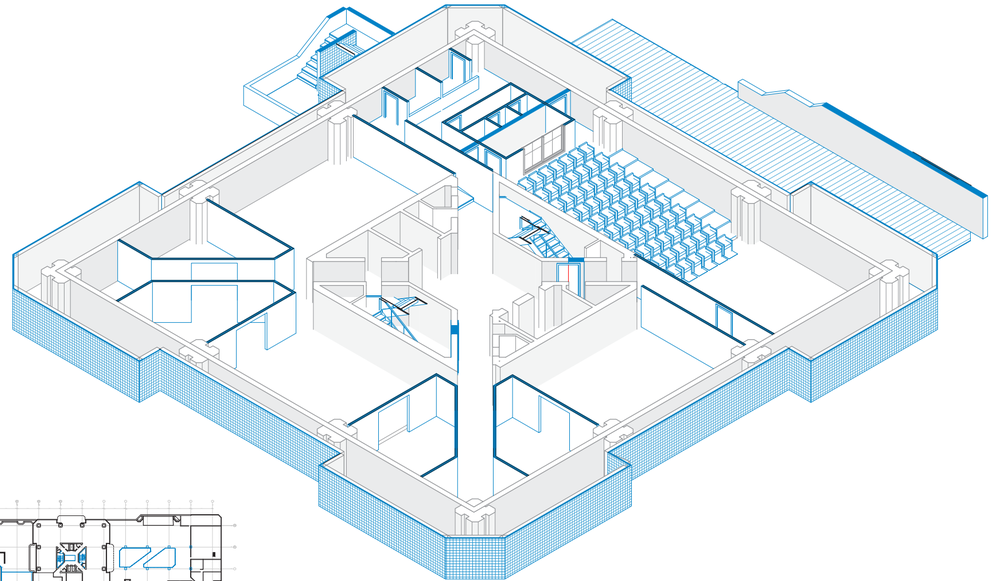


Figure 216, Axonometry, Second cortyard (Ex pool), E.B.A

Axonometry | Cultural Section



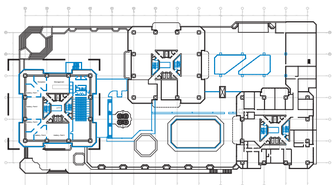
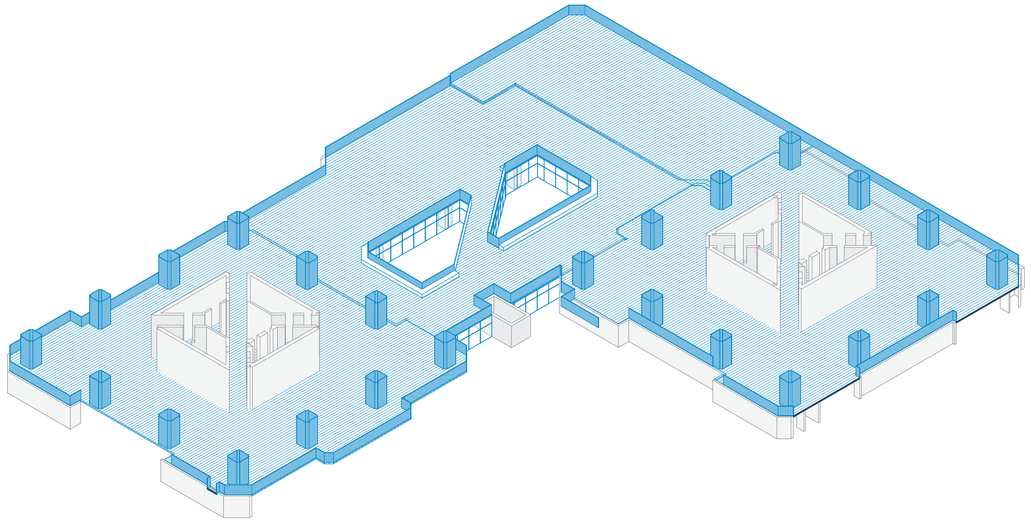


Figure 217, Axonometry, Cultural section (Ex mezzanine in tower A), E.B.A

Axonometry | Residential Courtyard



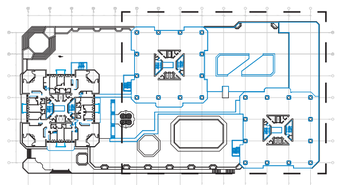


Figure 218, Axonometry, Residential Courtyard (Ex mezzanine in tower B&C), E.B.A

Axonometry | Whole Project

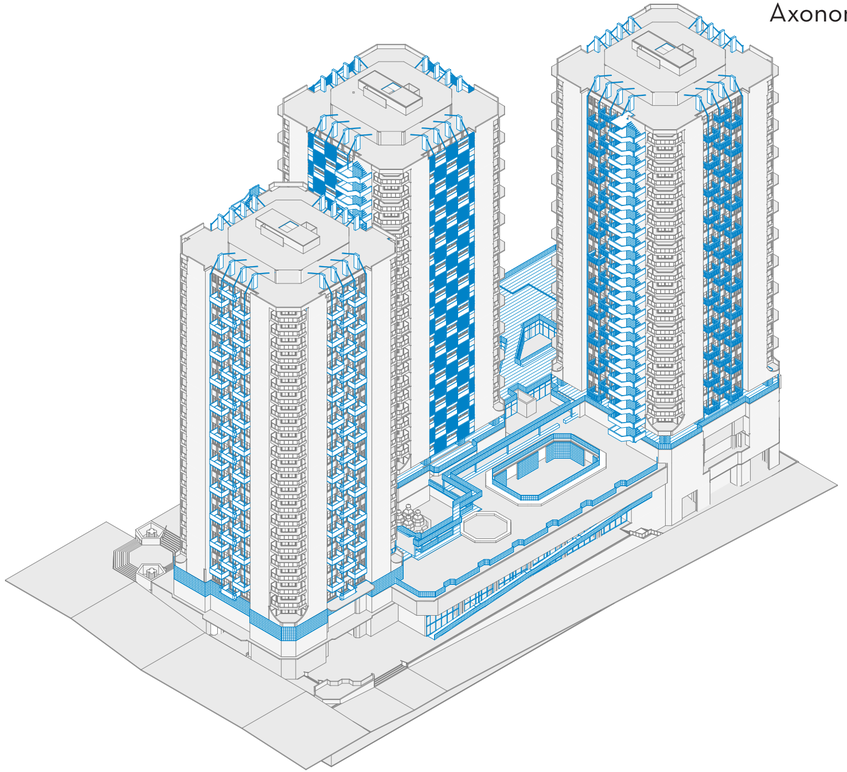


Figure 203, Axonometry of intervention and existing parts, E.B.A

Axonometry | Intervention

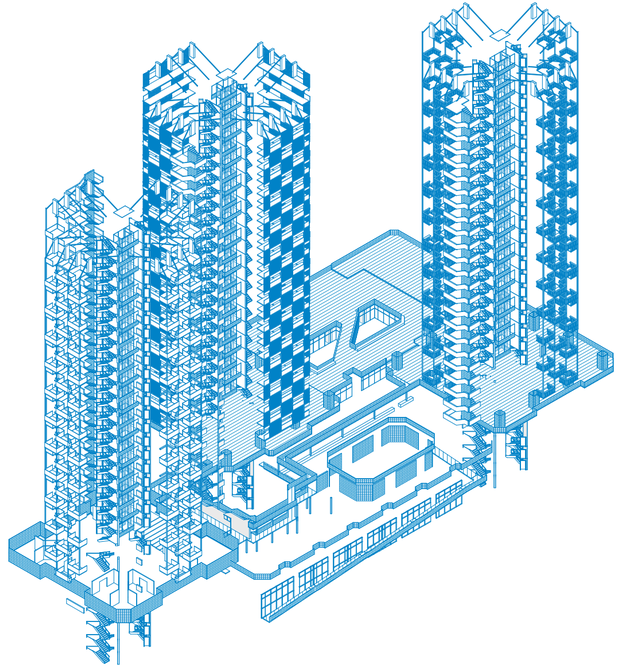


Figure 204, Axonometry of Intervention, E.B.A

Towers (Upper Part)

Public Area
(Below Part)

Existing Situation

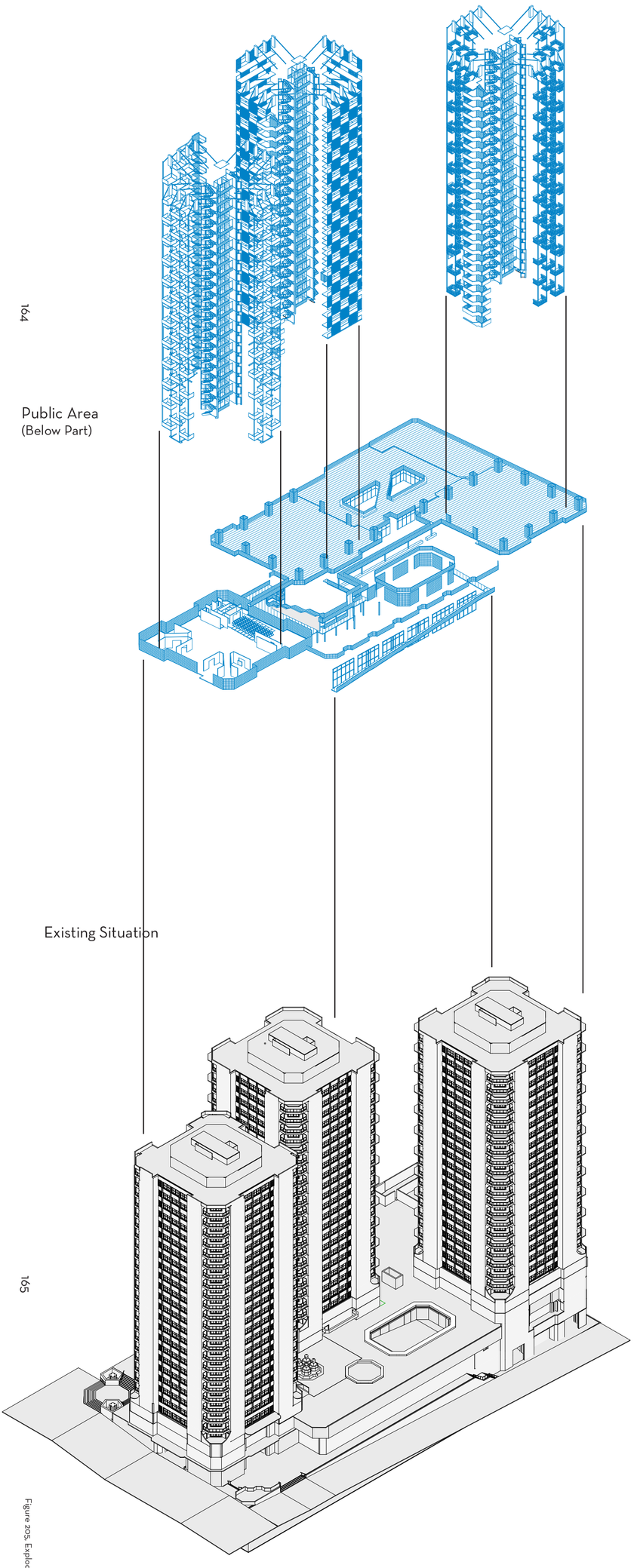


Figure 205. Exploded axonometry of Intervention, E.B.A

Demolished Plans

Residential Units

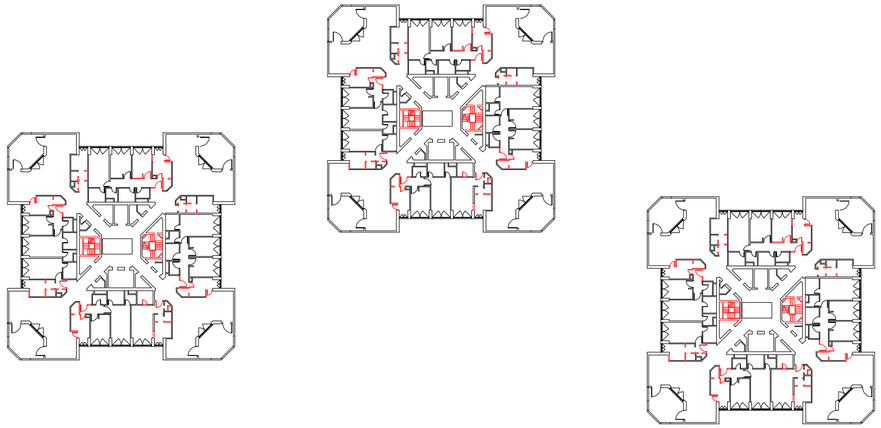


Figure 219, Demolished Plan, Residential Units, E.B.A

Mezzanine Level

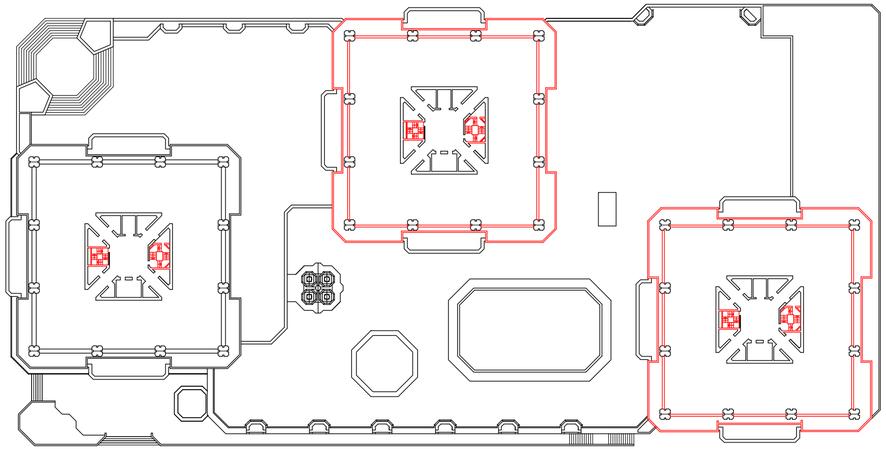


Figure 220, Demolished Plan, Mezzanine Level, E.B.A

Terrace Floor

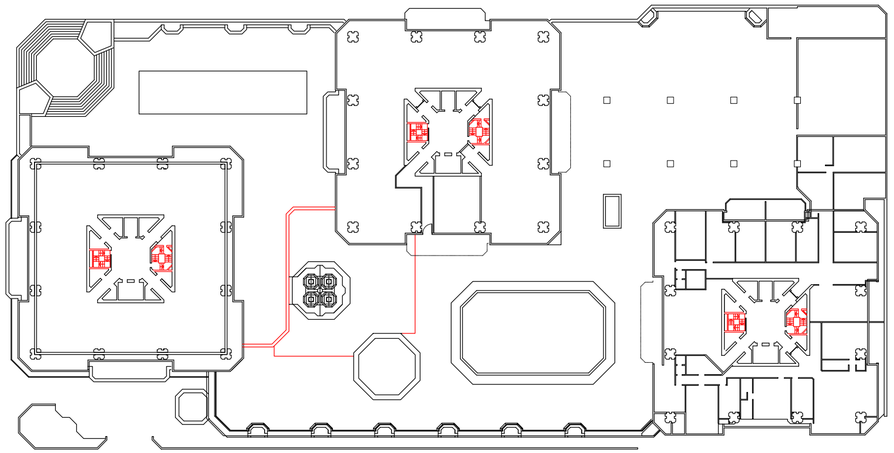


Figure 221, Demolished Plan, Terrace Floor, E.B.A

Offices Floor

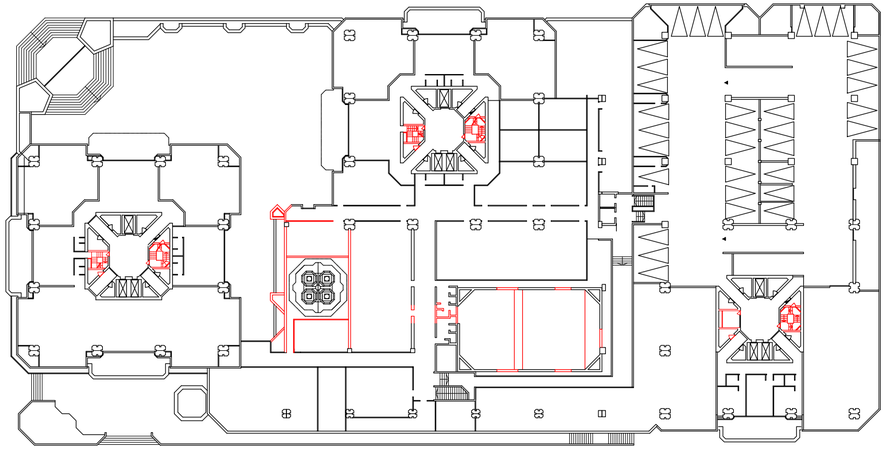


Figure 222, Demolished Plan, Offices Floor, E.B.A

Designed Plans

Main Courtyard Level

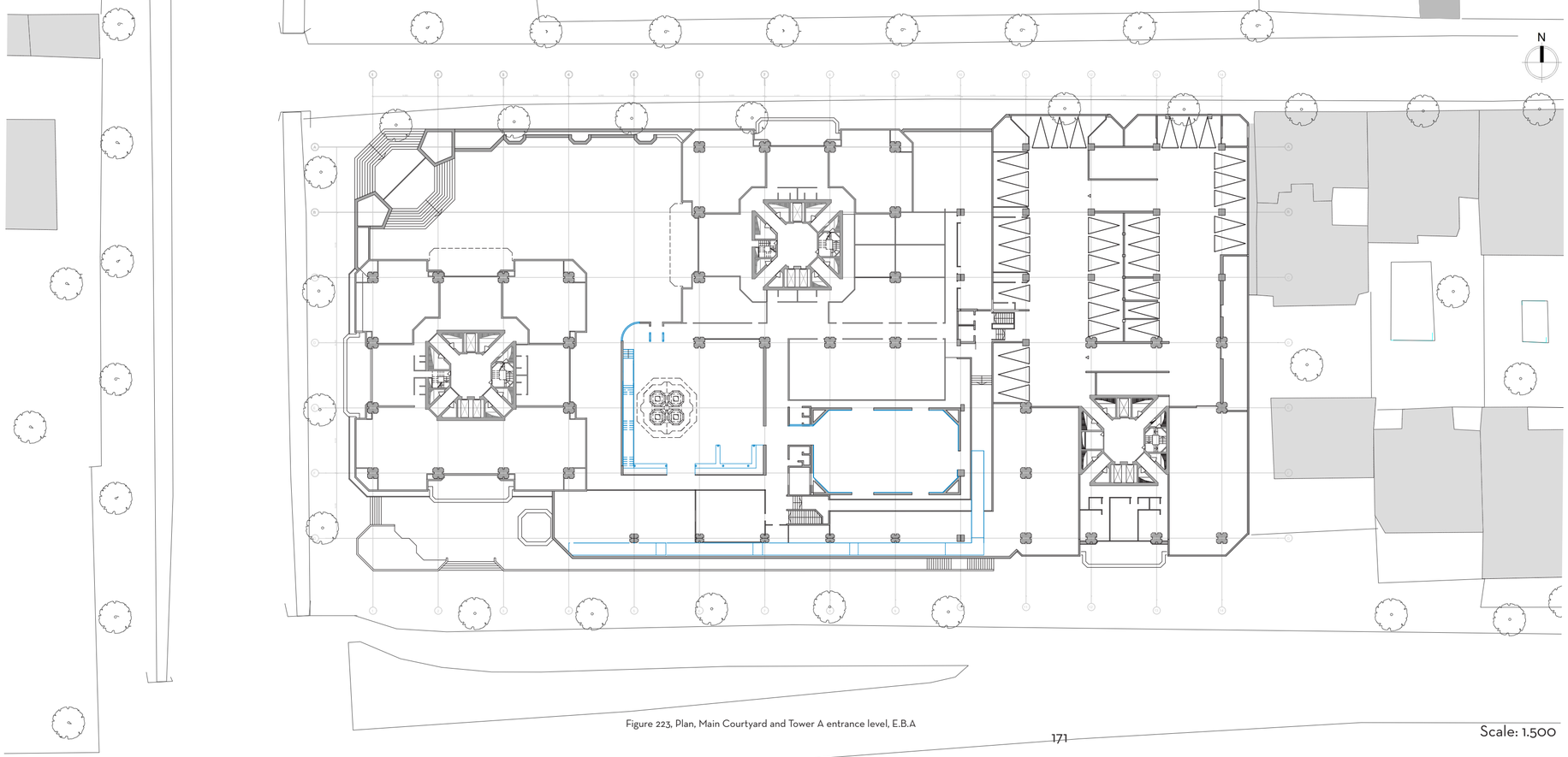


Figure 223, Plan, Main Courtyard and Tower A entrance level, E.B.A

Scale: 1.500

Cultural center and Terraces Level

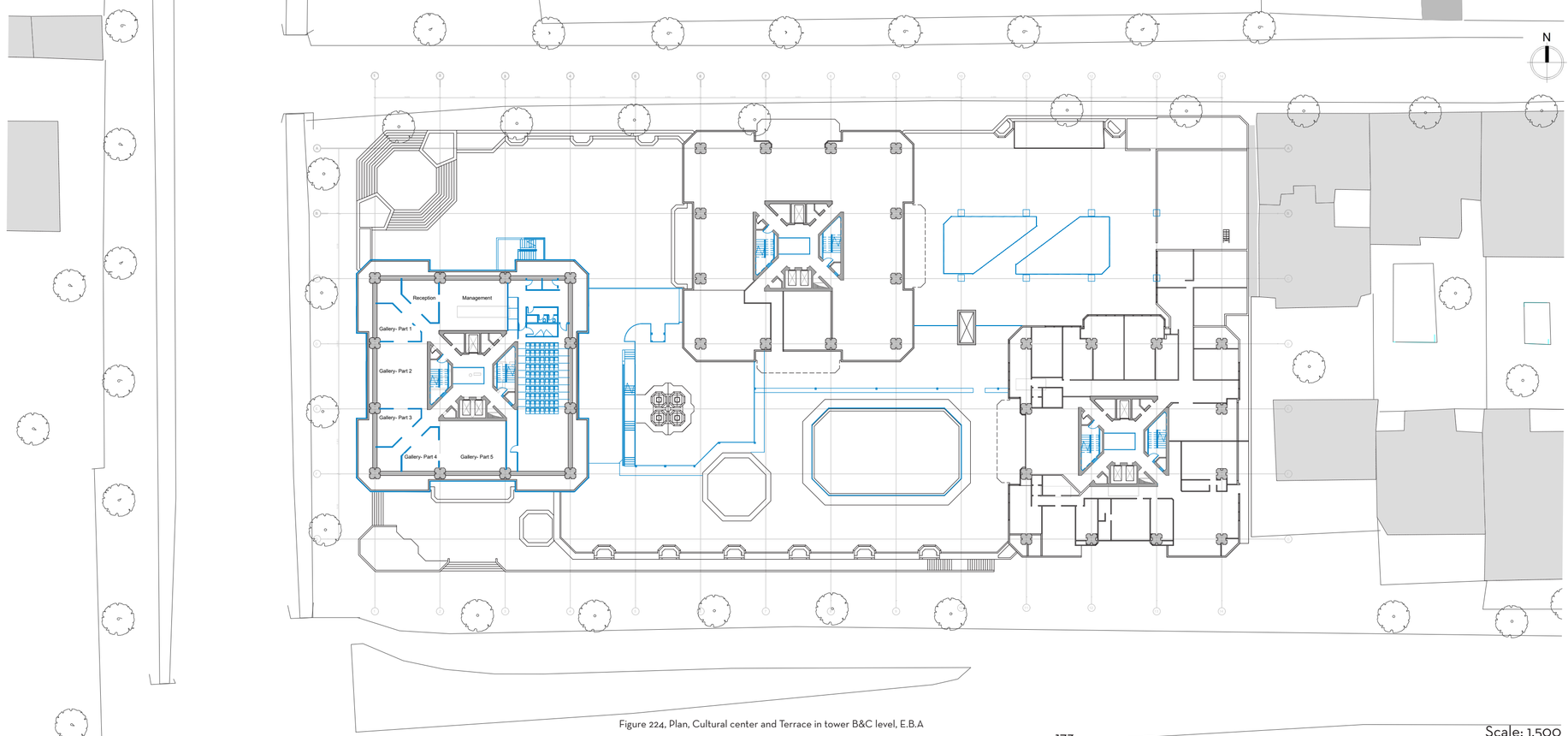


Figure 224, Plan, Cultural center and Terrace in tower B&C level, E.B.A

Scale: 1.500

Residential Courtyard Level

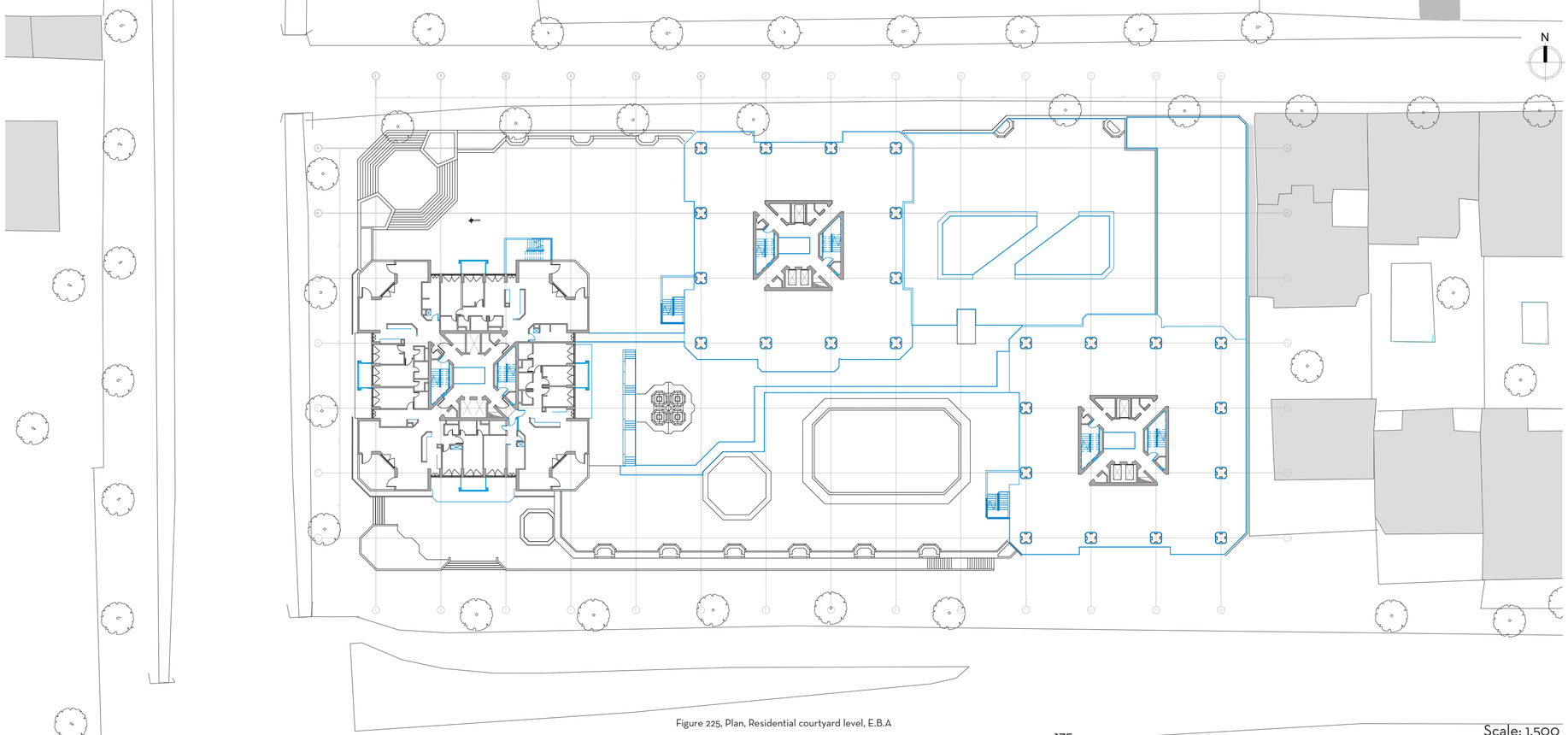


Figure 225, Plan, Residential courtyard level, E.B.A

Scale: 1.500

The new layout of residential units has not changed foundamentaly.
Since this building was built for the wealthy class of society, in the original version in every apartment there were a room for maid of the house but according to the lifestyle changes during the time, these rooms are not usefull anymore and most of the residents remove them during the renovation of thier homes.
Also thesize of kitchens were a little bit small in comparison to the size of apartments.

In the new layout it was decided to alter that maiden room into a new room with new interior plan or a small, cozy TV room.
Also in some apartments dute to their type, area and number of their rooms, one bedroom has been changed into a private living room.
The entrance door for the corridor of the rooms and kitchen has been removed but the seperational wall of the kitchen has remained. So meanwhile the useable area of the kitchen has increased, its character has been saved.

By reviewing the types of apartment this point is understood that there are 2, 3, or 4-roomed apartments in these towers but the lack of studio units can be felt. Therefor, to enrich the variaty of apartments' types, in every floor one master room and maid room of one of the apartments combined and a small studio has been formed. Hence, there will be 22 studio in each tower.

Balconies are the next parts of intervention in residential units.
In tower A and C, according to the floor which the apartment is located in, there will be 1 or 2 balconies for the bedrooms.
In tower B the balconies are continues and all bedrooms and kitchen have accessability to it.

In the Center of the core and lobby of the floors there is a void which is 22-floored high.
The void is shifted every floor in a row in order to make a doule hight corridor next to void.

Finaly, the exterior escape staircase is attached to one side of each tower, therefore one of the apartments in every floor has an accessability to it by passing a short path but in the open area.

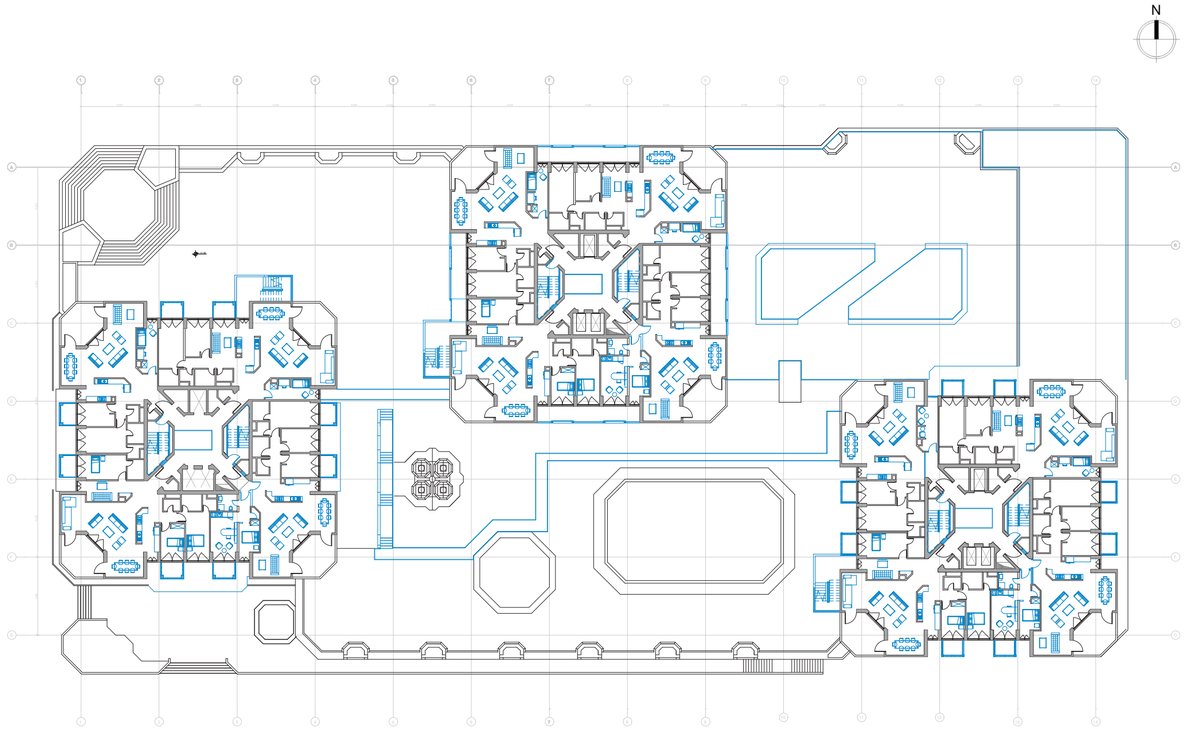


Figure 226, Plan, Residential Units, E.B.A

Scale: 1.500

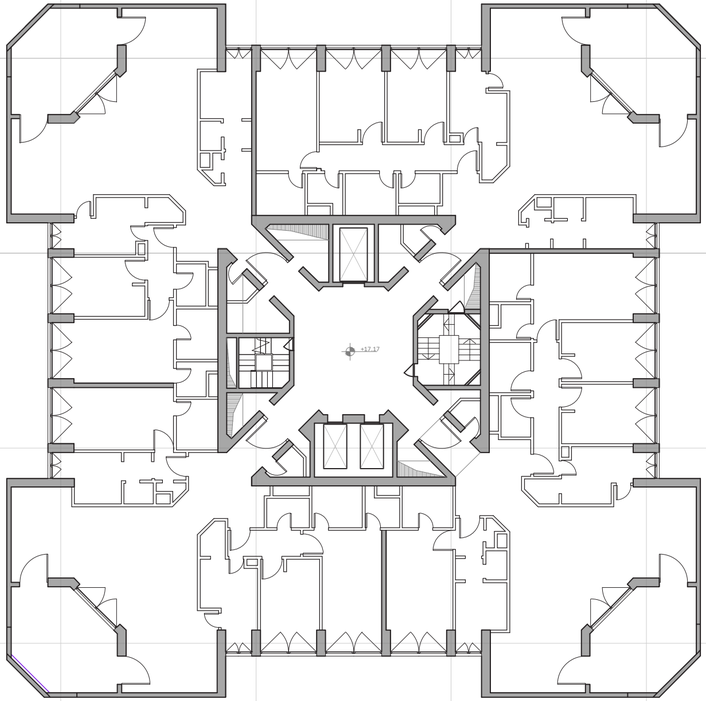


Figure 227, Existing Plan, Residential Units, Zoomed-in, E.B.A

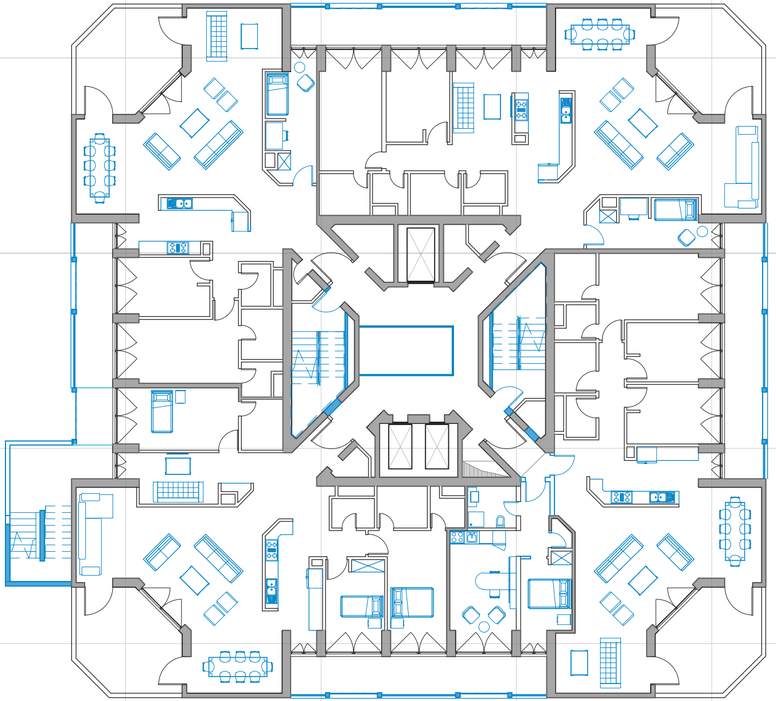


Figure 228, New Plan, Residential Units, Zoomed-in, E.B.A

Site Plan

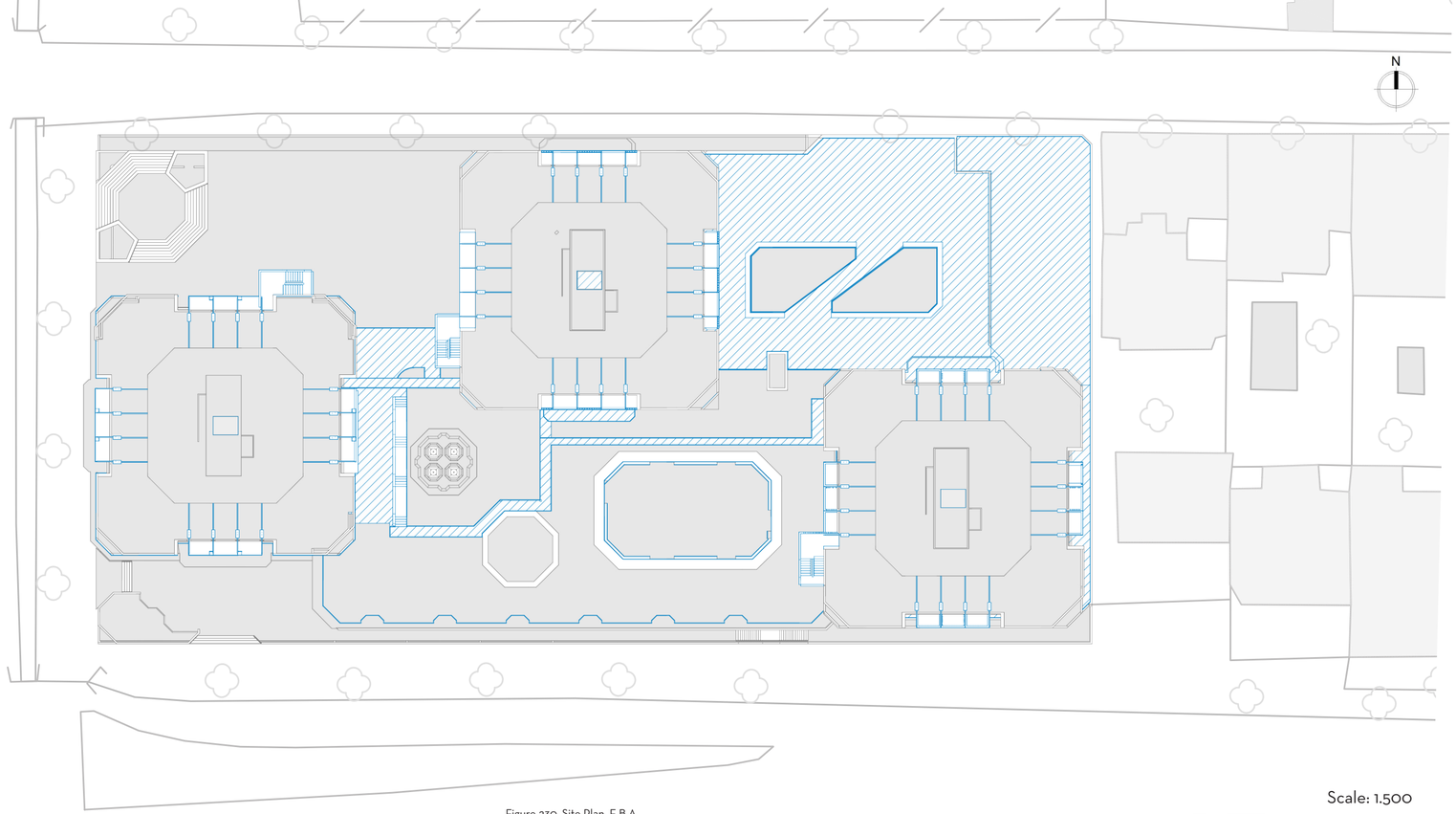


Figure 230, Site Plan, E.B.A

Section 1

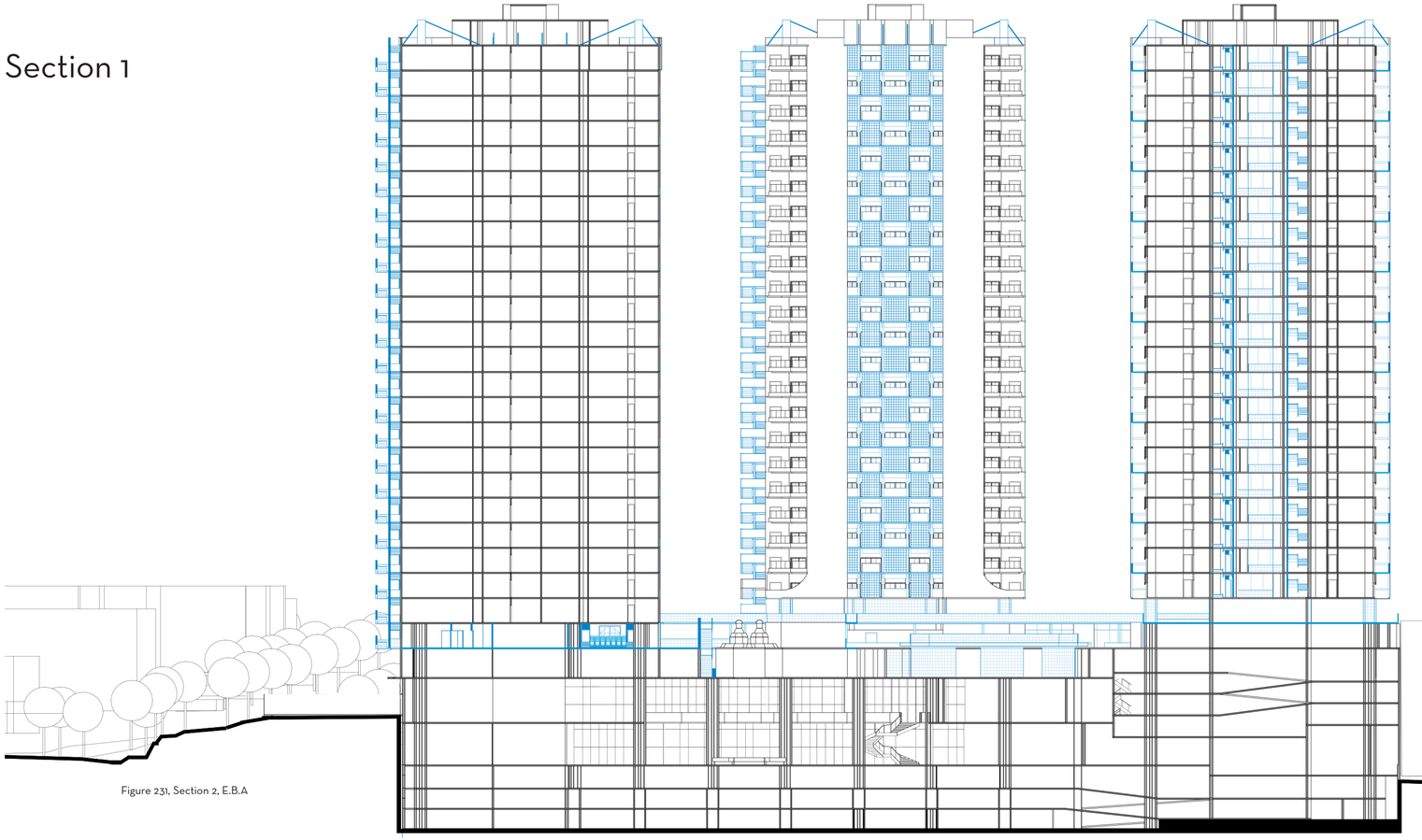
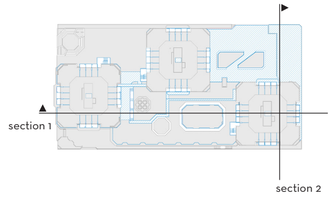


Figure 231, Section 2, E.B.A

Section 2

Due to Iranian fire regulations, two existing staircases were not sufficient. Therefore 2 main desicions have been maden. First, to replace 2 new staircases in the same location of existing ones. It means that the answer for this problem was to redesign and rearrange new staircases.
Second, to attach a new exterior staircase to each tower.



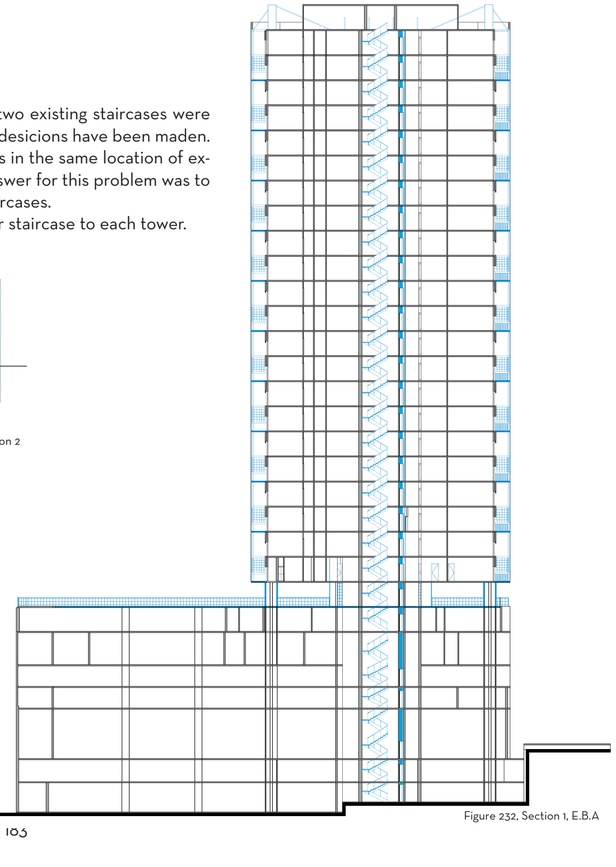


Figure 232, Section 1, E.B.A

Detailed Architectural and structural drawings

Balconies

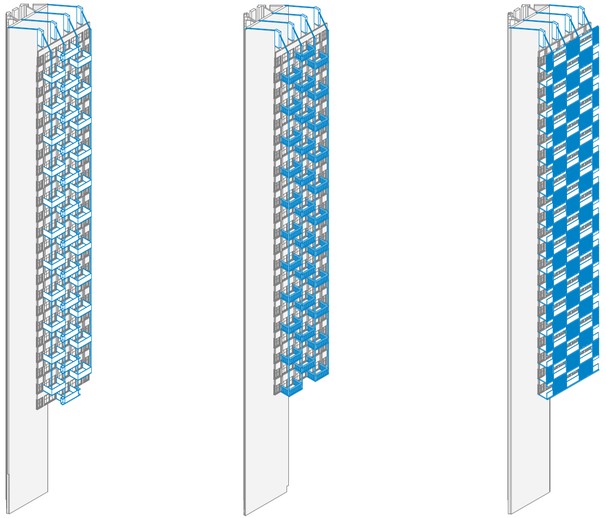


Figure 233, Axonometry, Structural analysis of balconies. E.B.A

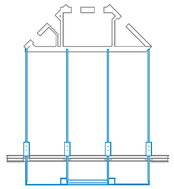


Figure 234, Plan, Structural analysis of balconies. E.B.A

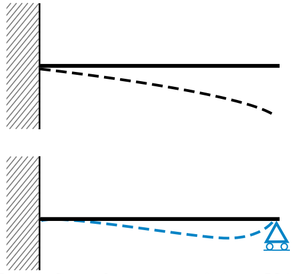


Figure 235, Diagram, Structural analysis of balconies. E.B.A

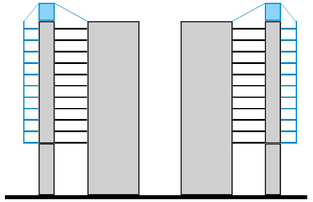


Figure 236, Diagram, Schematic Section of balconies' Structure. E.B.A

Staircase

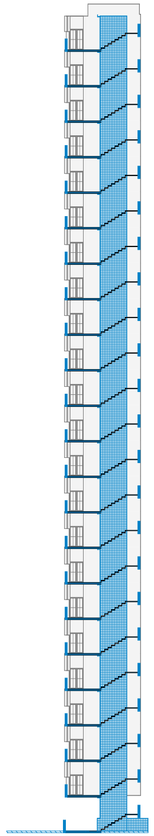


Figure 237, Section, Addative staircase, E.B.A

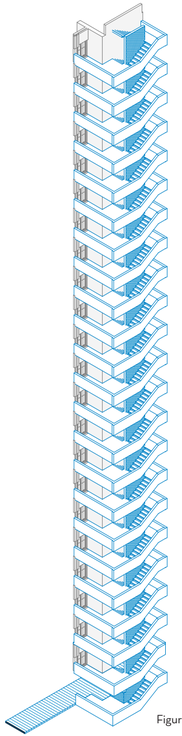


Figure 238, Axonometry, Addative staircase. E.B.A

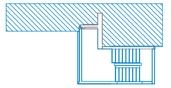


Figure 239, Plan, Addative staircase. E.B.A

Void

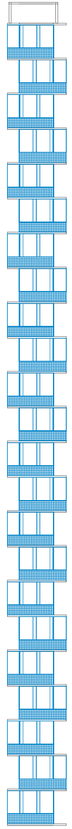


Figure 240, Elevation, Central Void, E.B.A

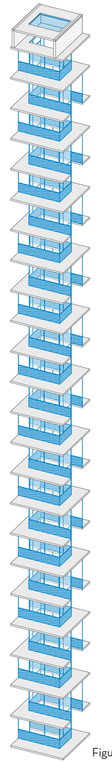


Figure 241, Axonometry, Central Void, E.B.A

Figure 242, Plan, Central Void, E.B.A

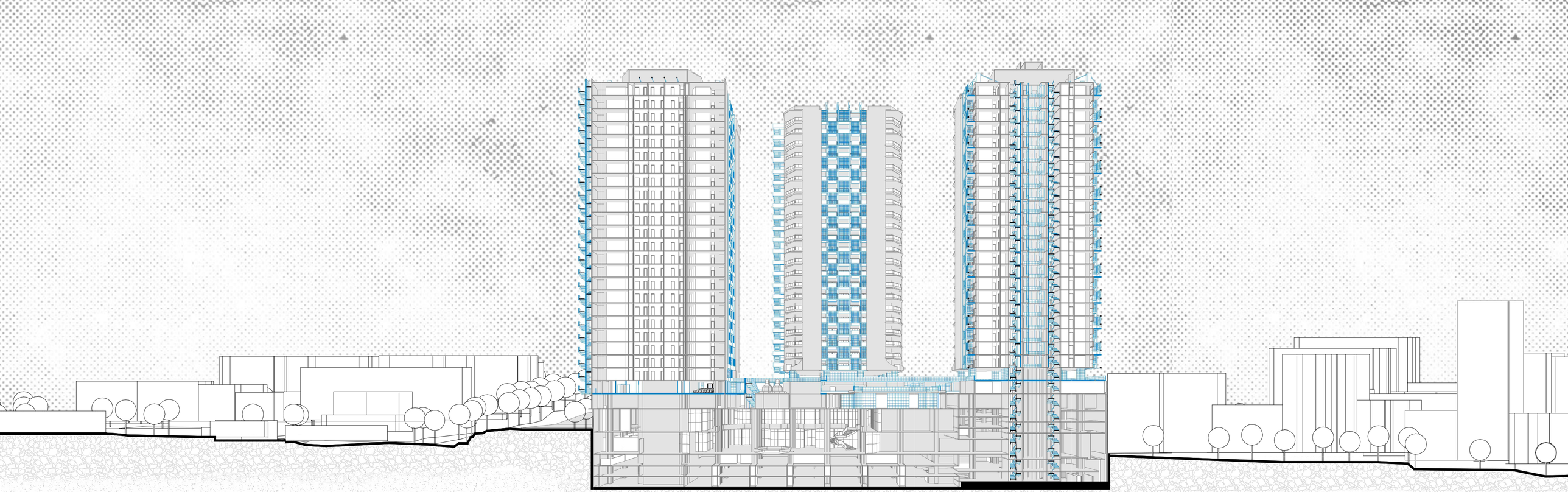


Figure 243, Perspective Section, E.B.A

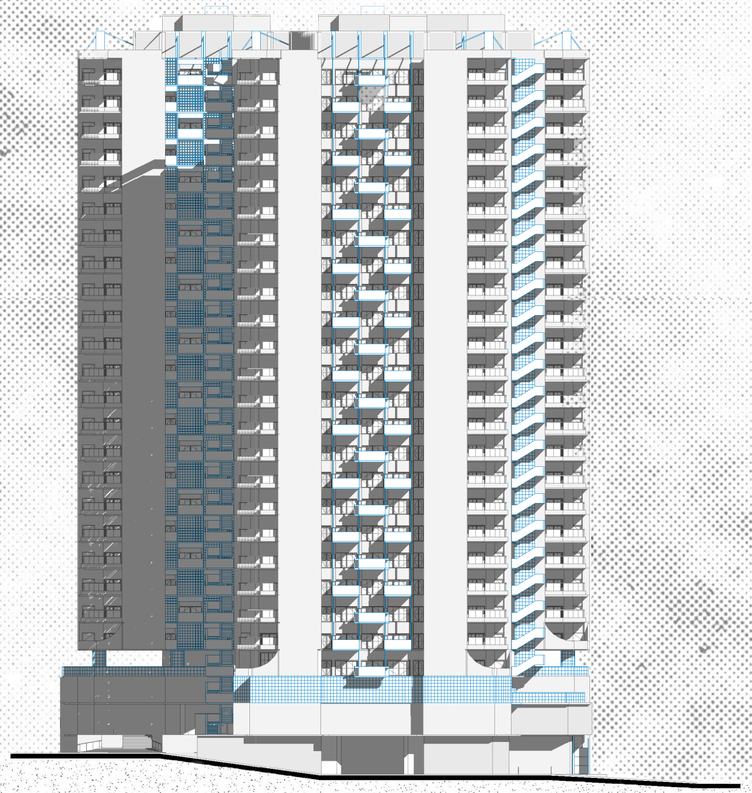


Figure 244. West elevation, E.B.A

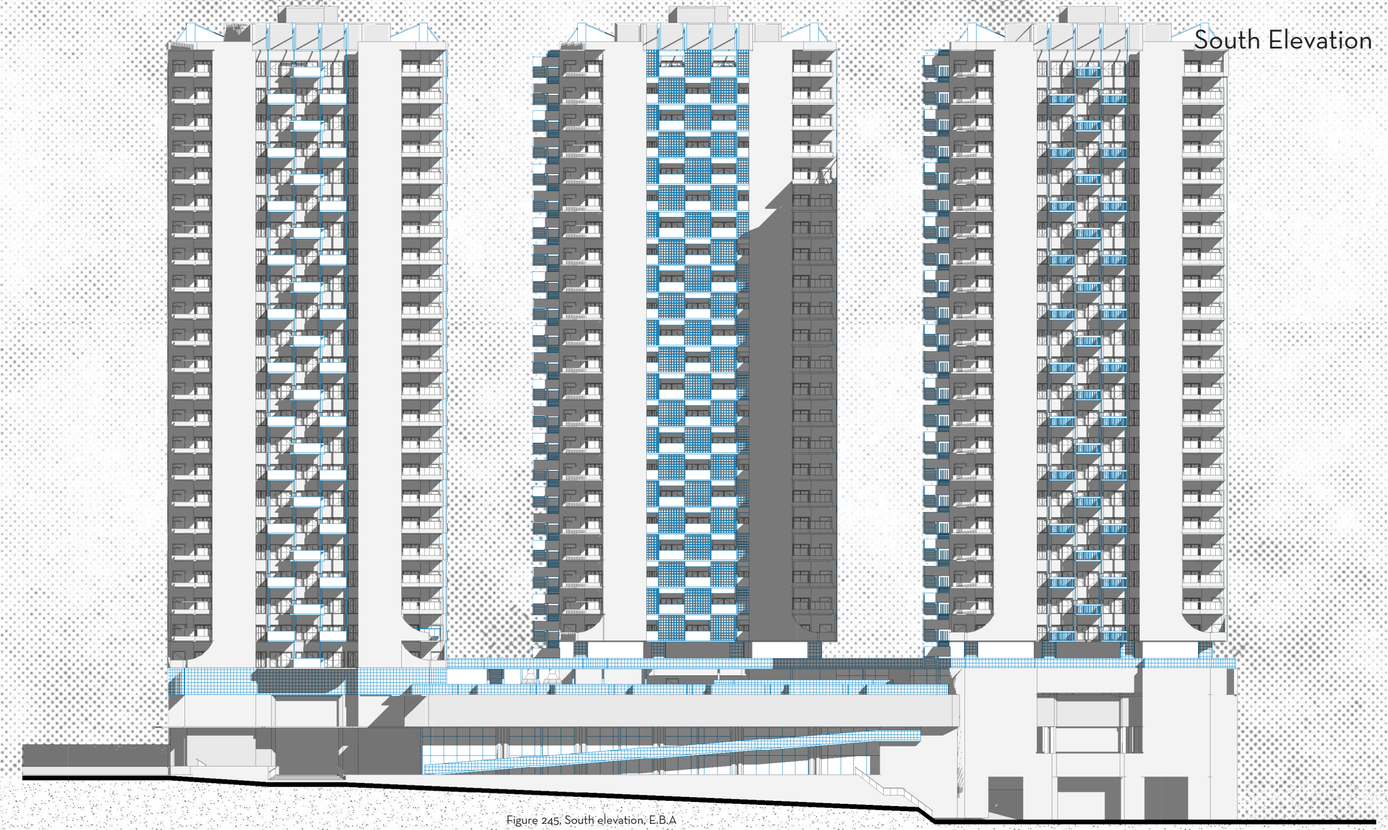


Figure 245. South elevation, E.B.A

East Elevation

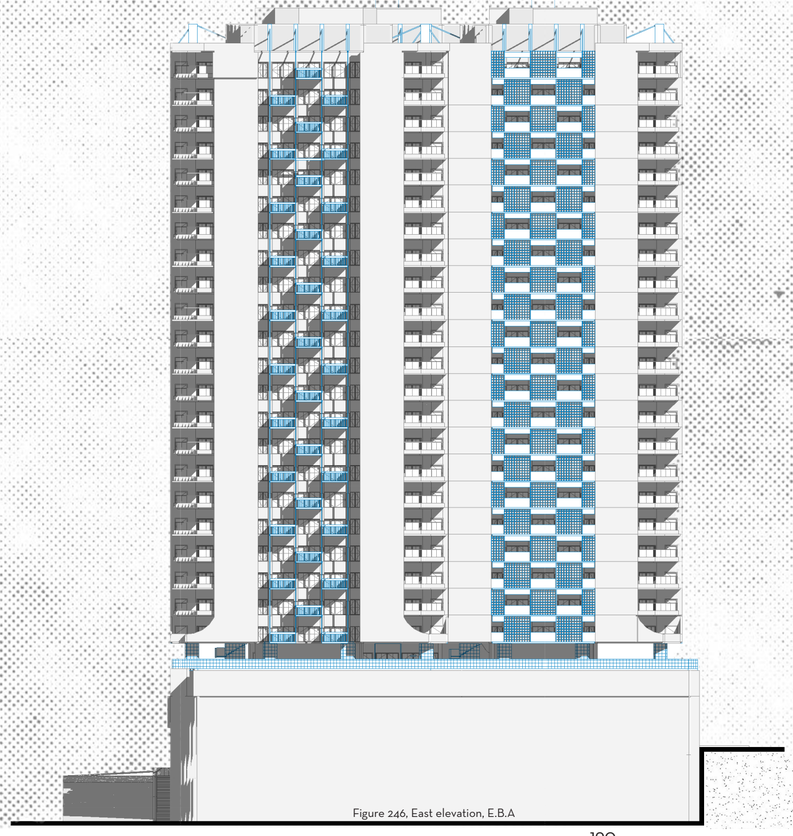


Figure 246, East elevation, E.B.A

North Elevation

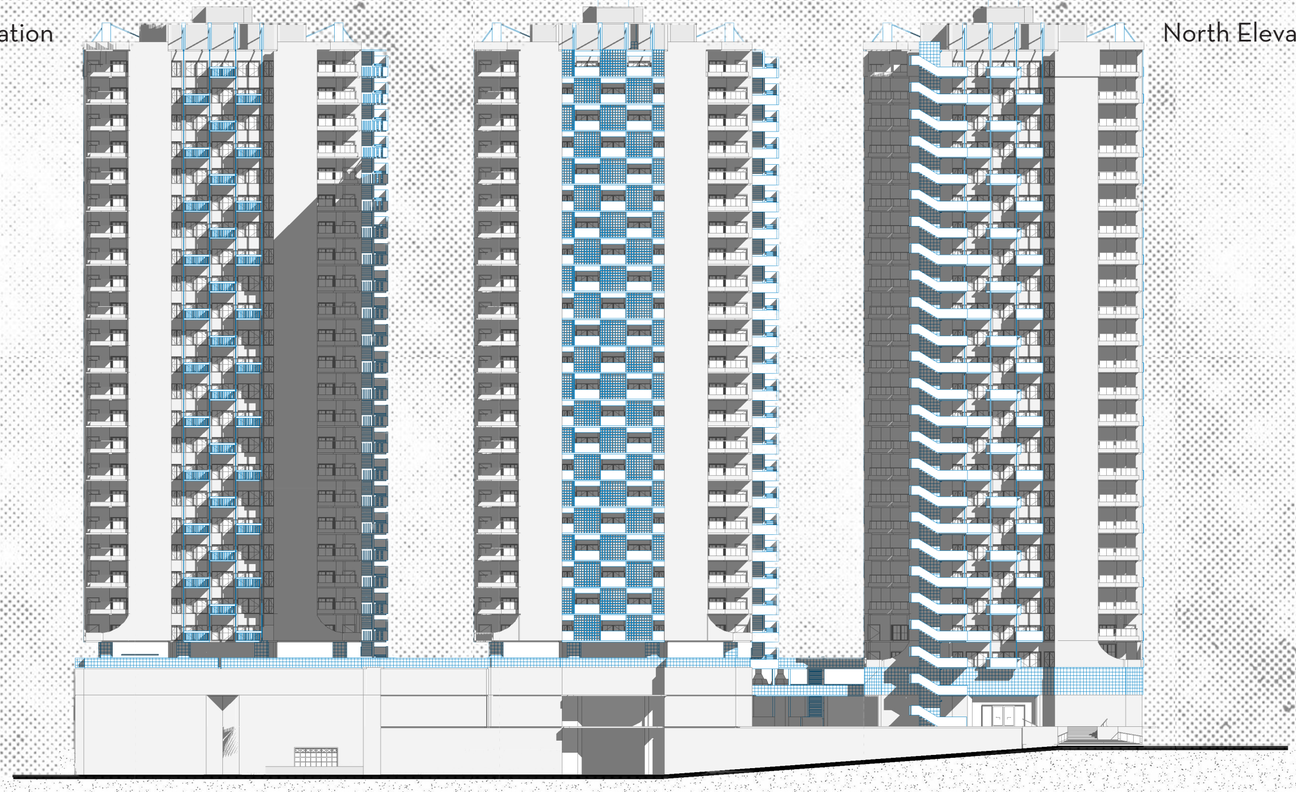


Figure 247, North elevation, E.B.A

Terrace View

Figure 248, Rendered Image, Terrace View, E.B.A

Balcony View

Figure 249, Rendered Image, Balcony View, E.B.A

Rendered Axonometry | with Surroundings

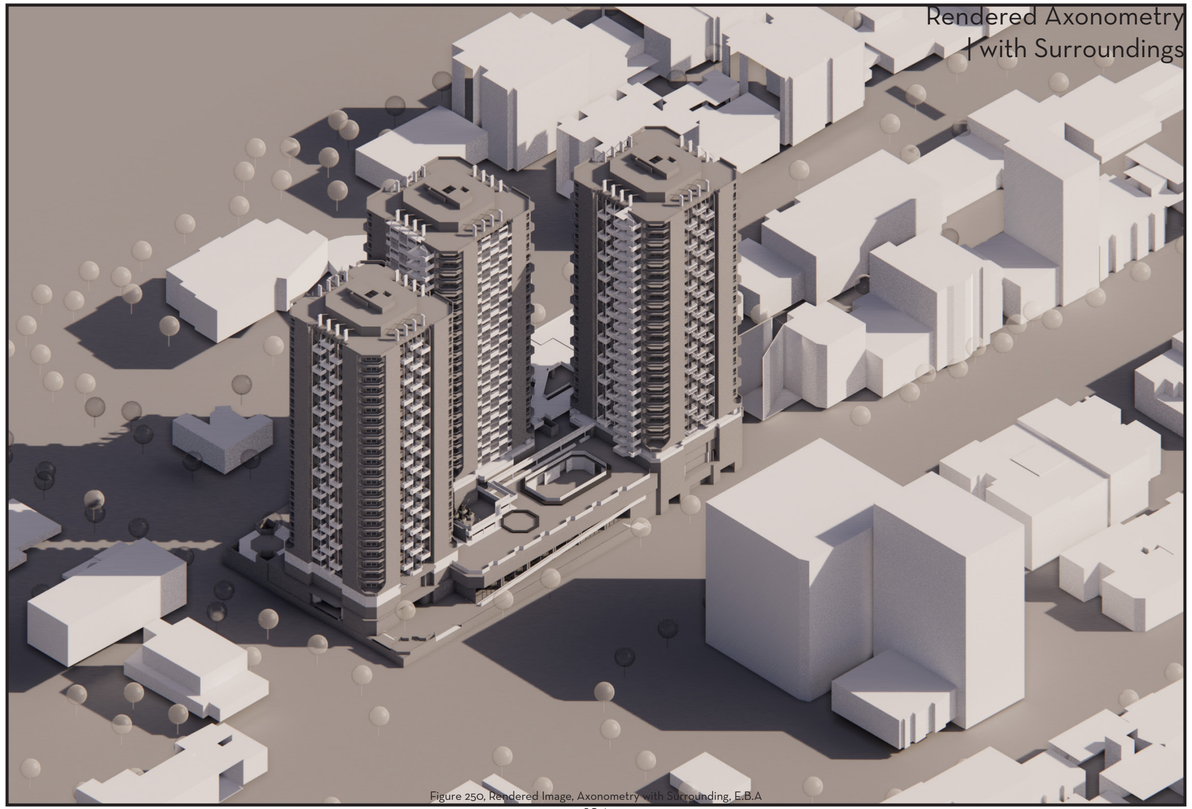


Figure 250, Rendered Image, Axonometry with Surrounding, E.B.A

Rendered Axonometry | Isolated Version

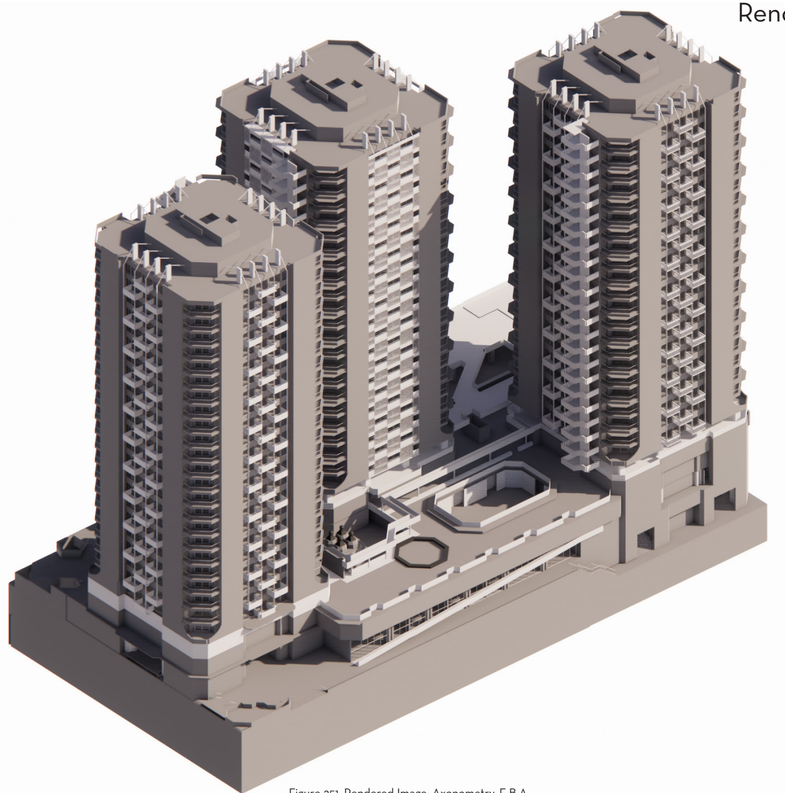


Figure 251, Rendered Image, Axonometry, E.B.A

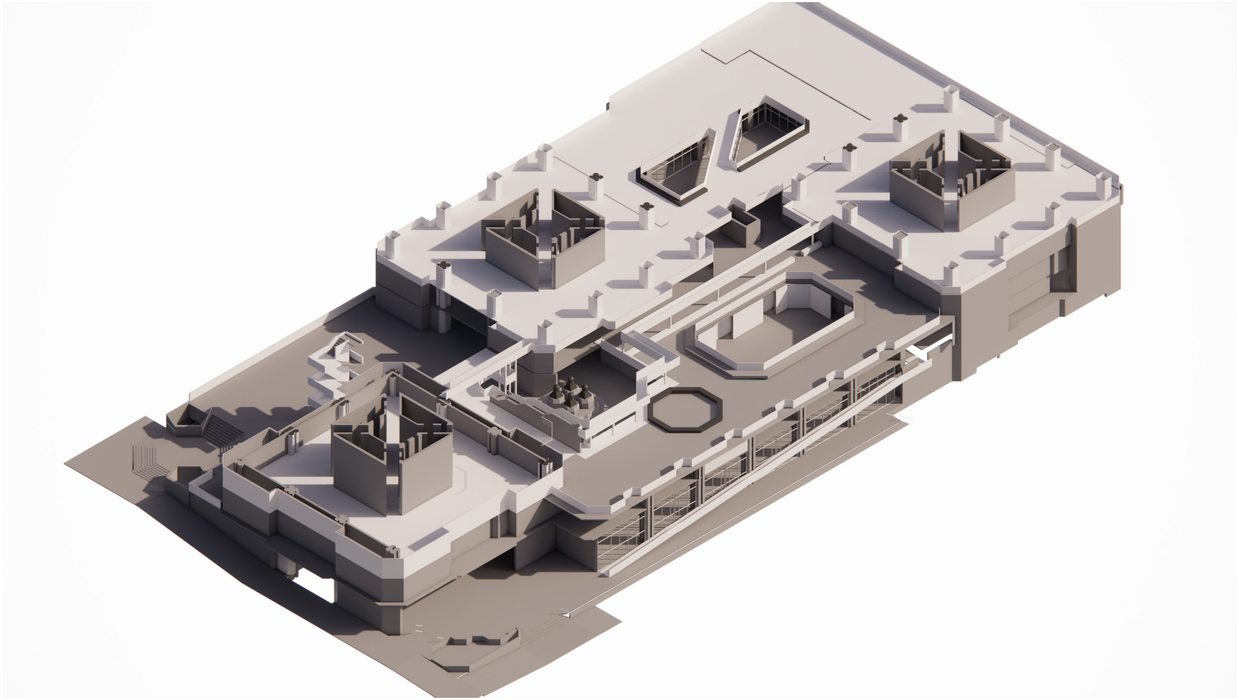


Figure 252, Rendered Image, Axonometry of Lower part's Intervention, E.B.A

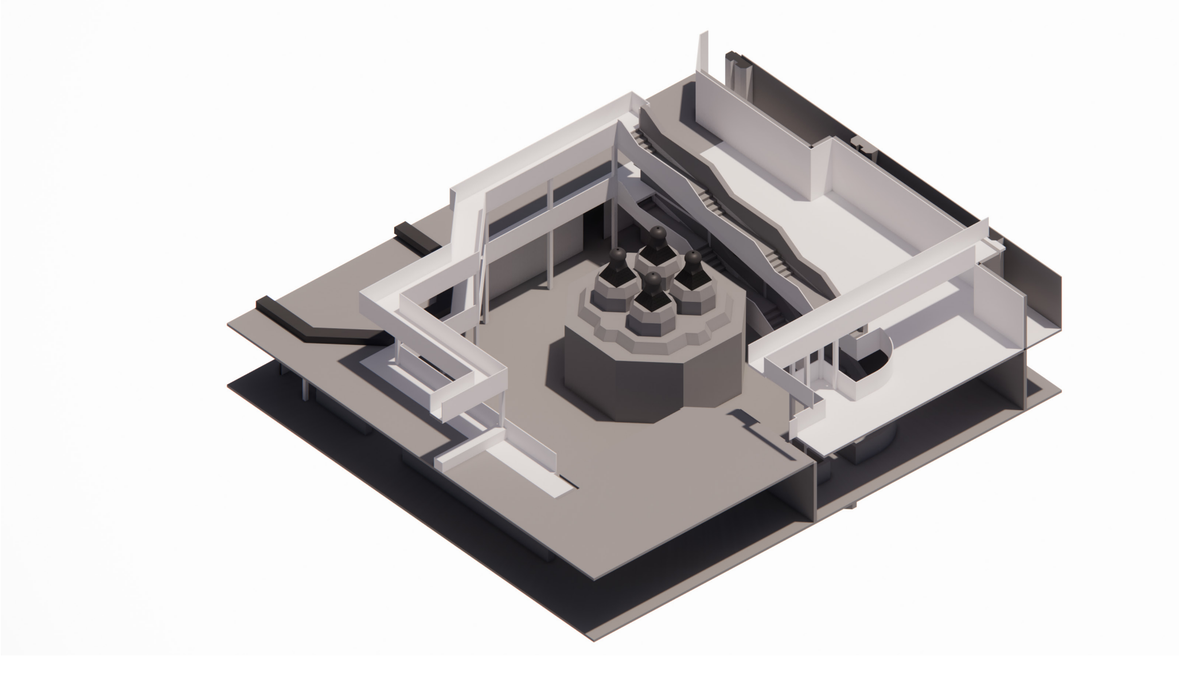


Figure 253, Rendered Image, Axonometry of main courtyard, E.B.A

Rendered Axonometry | Second Courtyard

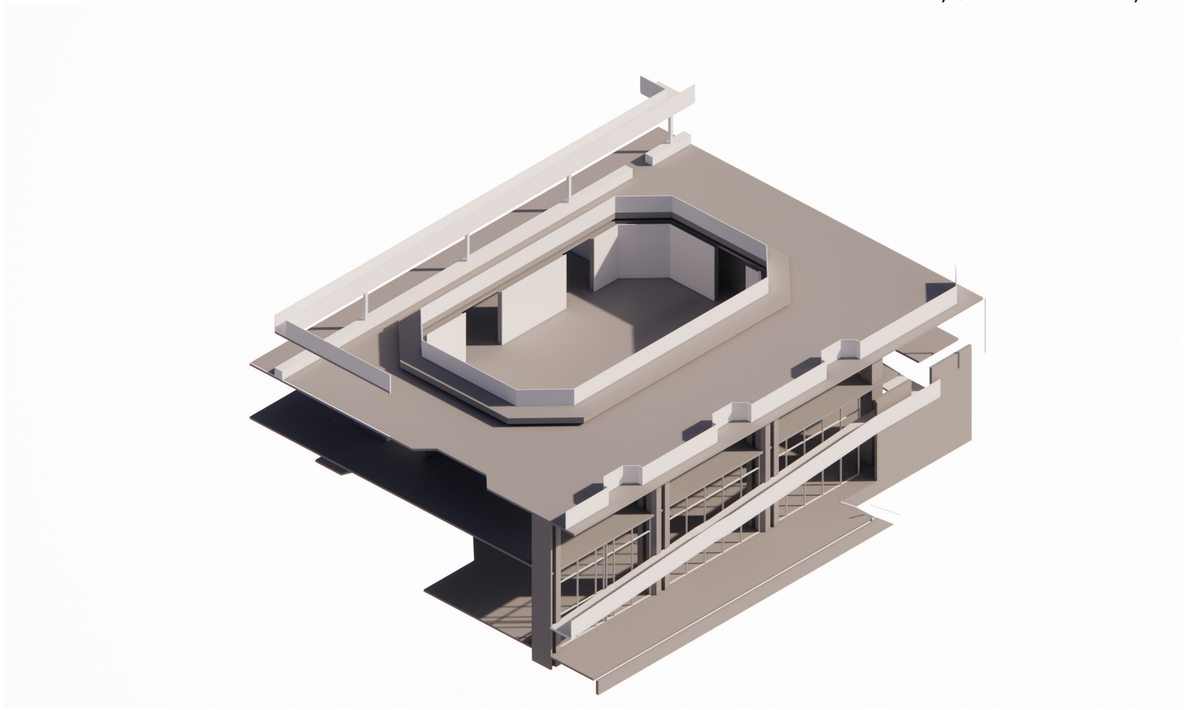


Figure 254, Rendered Image, Axonometry of second courtyard (Ex pool), E.B.A

Rendered Axonometry | Residential Courtyard

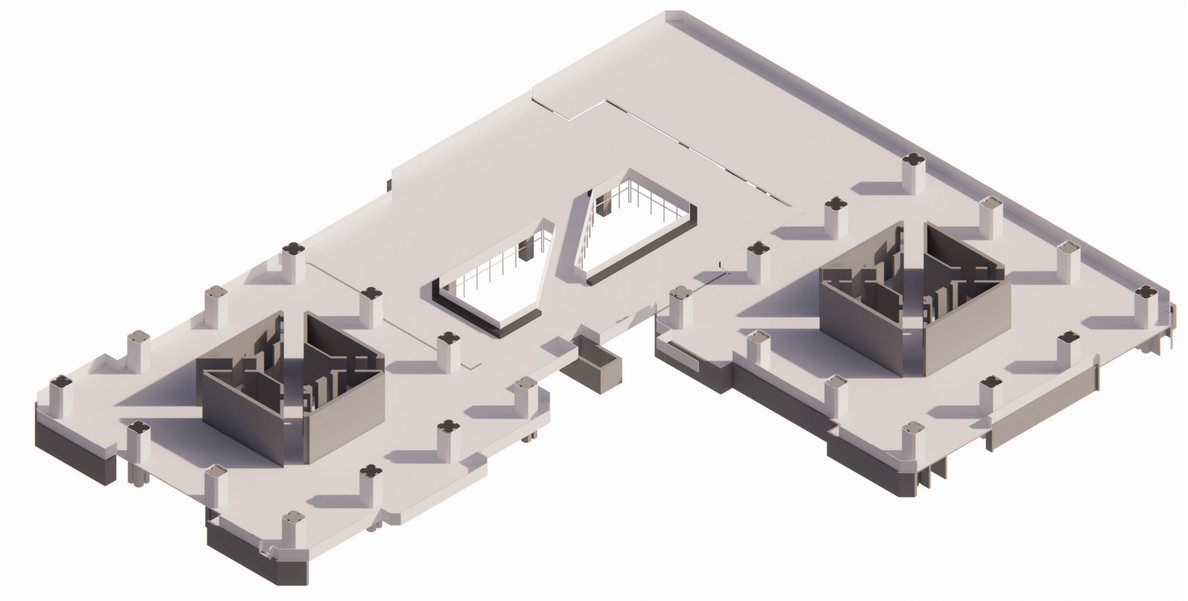


Figure 255, Rendered Image, Axonometry of residential courtyard (Ex mezzanine in tower B&C) , E.B.A

Rendered Axonometry | Cultural Section

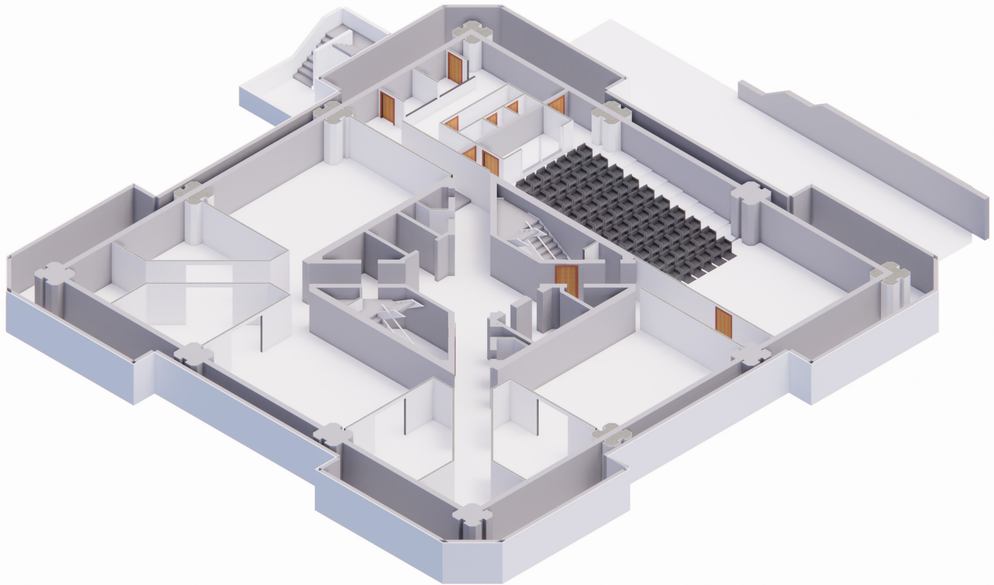


Figure 256, Rendered Image, Axonometry of cultural section (Ex mezzanine in tower A) , E.B.A

Rendered Axonometry | Balcony in Tower A

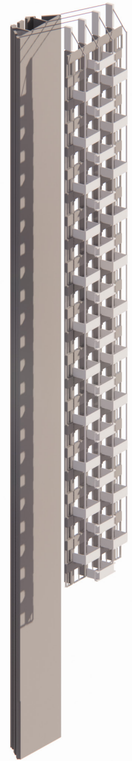


Figure 257, Rendered Image, Axonometry of Balconies in Tower A , E.B.A

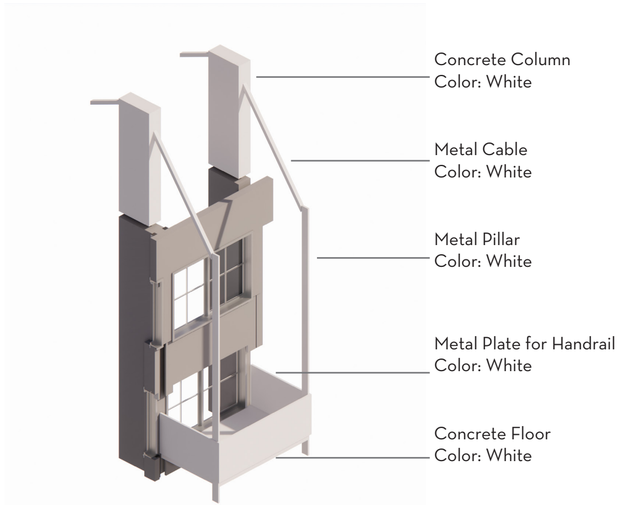


Figure 258, Rendered Image, Material of Balconies in Tower A , E.B.A

Rendered Axonometry | Balcony in Tower C

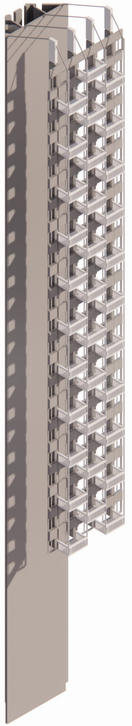


Figure 259, Rendered Image, Axonometry of Balconies in Tower C , E.B.A

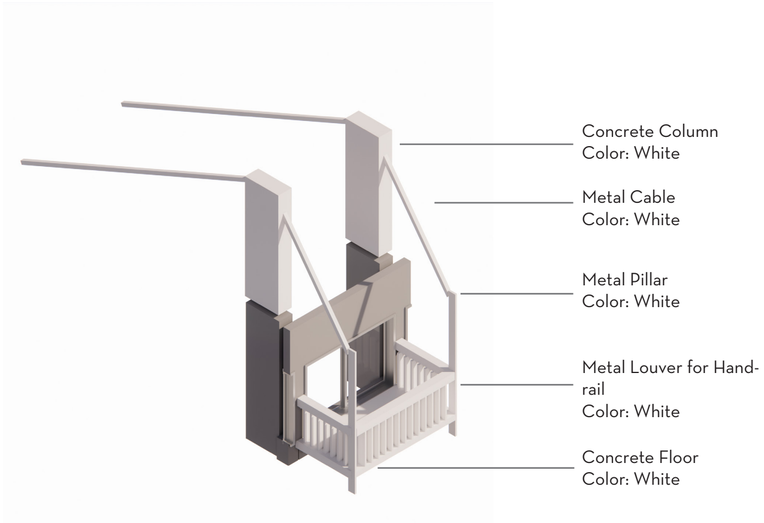


Figure 260, Rendered Image, Material of Balconies in Tower C , E.B.A

Rendered Axonometry | Balcony in Tower B

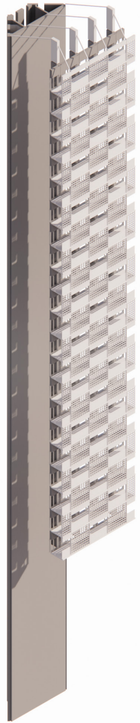


Figure 261, Rendered Image, Axonometry of Balconies in Tower B , E.B.A

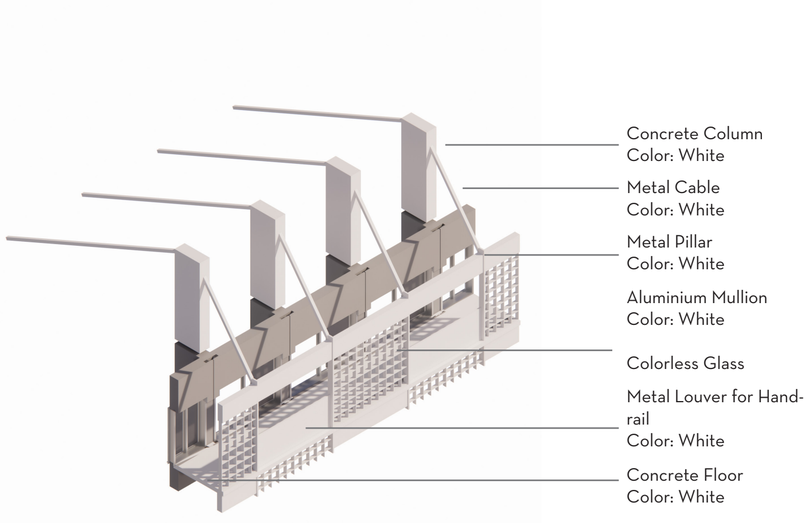


Figure 262, Rendered Image, Material of Balconies in Tower B , E.B.A

Conclusion

Basis on the studies have been made about architectural heritage in Tehran, there are an architectural style of the design which is called “Modern Architect” and the building of this era are considered as architectural modern heritage.
These projects can be categorized into different sections. One of these categories is multi functional complexes.
Which are mixed of commercial and residential functions.
Mostly the commercial functions are at the ground level or the levels which has more connection with urban fabric and the upper parts are devoted to residential units. Eskan was an examples of this category.

In confrontation with this project, some steps have been passed which can be taken into consideration:

1-Identification
To check if the project can be identified as a “modern heritage” or not?

2- Assessment
after finding and identification of these types of project, the second step is to assess their situation and do analysis of the building and its environment.

In step 1 and 2 the most important point is to find the “Value” of the project which should be saved and respected

3- Problem Statement and Objectives
On basis of the assessments and analysis, concerns and problem of the project should be identified and grouped. At the next step there should be a general idea and strategy for solving these problems. this main strategy can be divided into minor goals which are considered for each problem.

4-Design proposal and concept
according to the objectives there will be a concept to design the intervention for the project in order to use its potentials and change the threats into opportunities.

This confrontation can be applied to the similar projects that are from the same era of time and same architectural style.
In this way, an stream of activity can be start and continue in order to save the modern architectural heritage in Tehran.

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