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Rhode Island School of Design
Interior Architecture- Adaptive Reuse

LEED Green Associate

Portfolio 2020-2023

Project 1

High as Hope

A Comprehensive Study on Substance Abuse, Religion and Urban Renewal

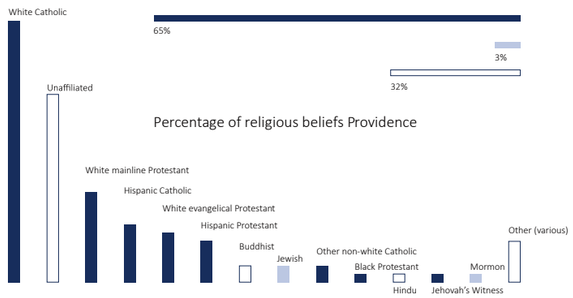
Harm Reduction Center Design
Providence, Rhode Island

Project Synopsis

Last July Rhode Island legislators responded to the staggering number of statewide opioid overdoses by signing a bill that will allow the state to open independently operated harm reduction centers as part of a two-year pilot program. A similar program in New York City provides safe, supervised locations for people to use intravenous drugs and—in many cases—begin the long journey toward treatment and recovery.

Against the social background of the covid-19 pandamic and economic stagnation, data show that the number of overdose deaths caused by substance abuse in Rhode Island is increasing year by year, and the Harm Reduction Center has gradually shifted from theoretical ideas to practical needs. This project aims to provide a design paradigm for the design of Harm Reduction Center from interior to exterior based on the current policy. The result is an interior design-centric approach that integrates architecture and landscape design.

Location:
old city axis

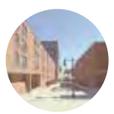


The project address is Cathedral square in Providence. The area was built in the late 1960s. After investigating the historical and social context of the site, the design focuses on the interaction of religion and environmental psychology with such places. At the same time, the site faced urban decline. The project also aims to reconstruct the relationship between place and city, as well as the relationship between people and society.

Changes in the plot

Cathedral square has the highest concentration of places of worship in Providence. There are four churches in one block. These churches belong to different denominations

Due to the decline of the city, Cathedral square is currently only used as a functional place, and lacks the public attributes envisaged at the beginning of its construction



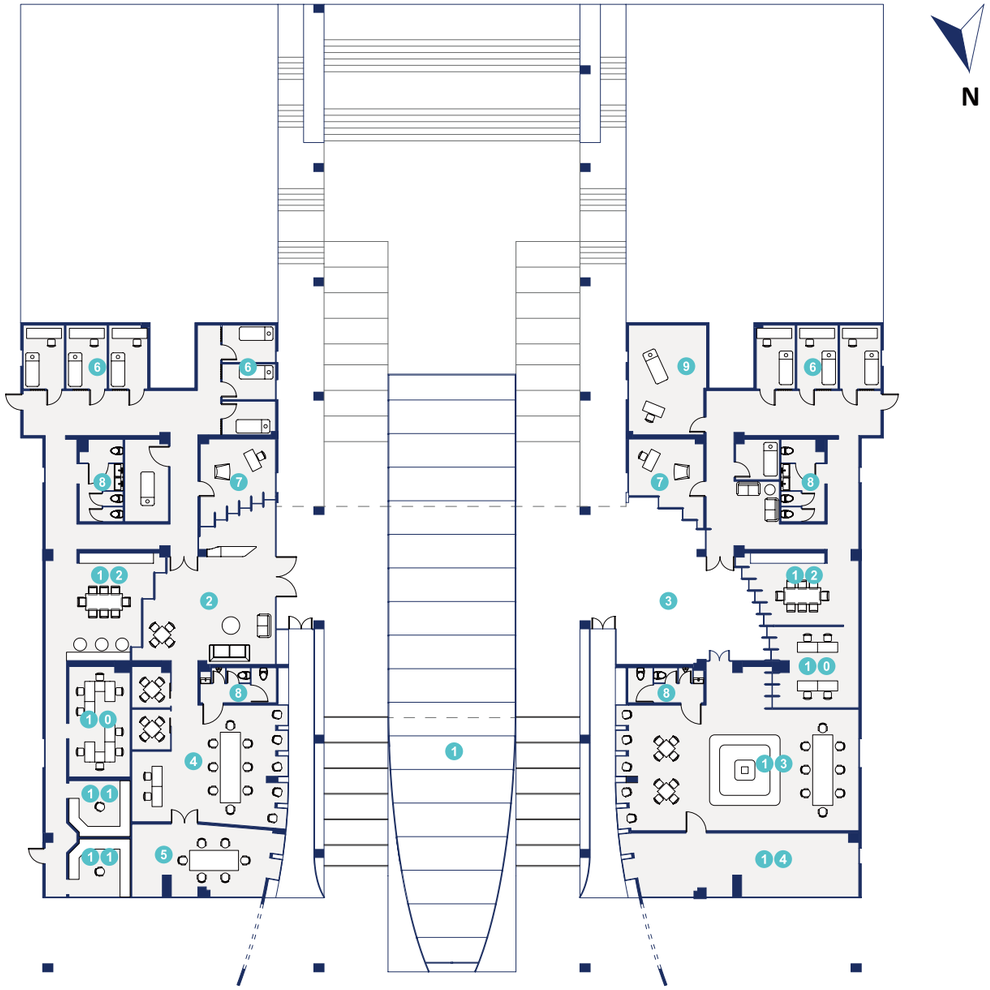
Cathedral Square Apartments

I.M.Pei
Constructed in 1969

Site

1 Chaple
2 Lobby
3 Courtyard
4 Co-work
5 Meeting Room
6 Injection Room
7 Pre-check
8 Toilet
9 Mental Assistance
10 Staff office
11 Medical Check
12 Pantry
13 Cafe
14 Gallery

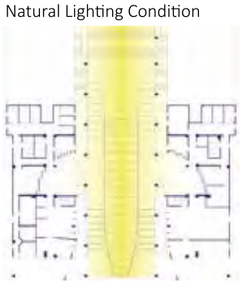
Plan & Functional Division

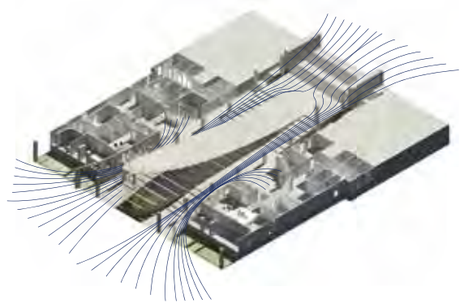


Private & Public

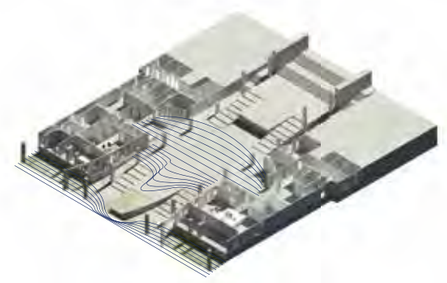
Greening

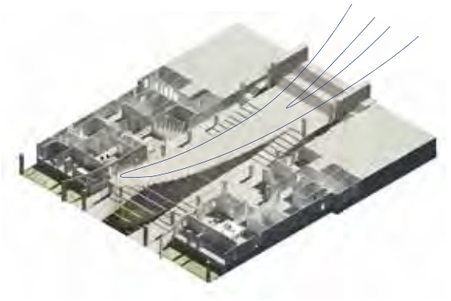
Natural Lighting Condition





An inclusive space for citizens, not specific groups

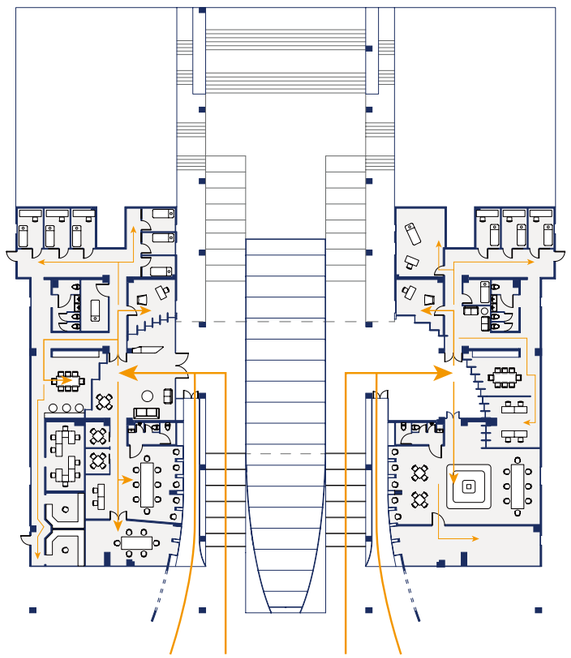




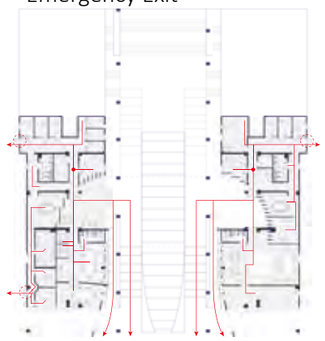
Dynamic Flow

The project selected the street-facing shops on the first floor of Cathedral square apartment and the open space between the two buildings. Due to the problem of urban recession, all the original shops on the first floor have been closed, and the neighborhood lacks vitality. As a very special kind of space, Harm Reduction Center has higher requirements for privacy and security than other public spaces. The design strictly distinguishes between public and private areas, but fully considers the potential of special groups to reintegrate into society. Relevant functional areas are placed in the buildings on both sides, while the open space in the middle serves as a chaple to provide a fully open religious place regardless of denomination.

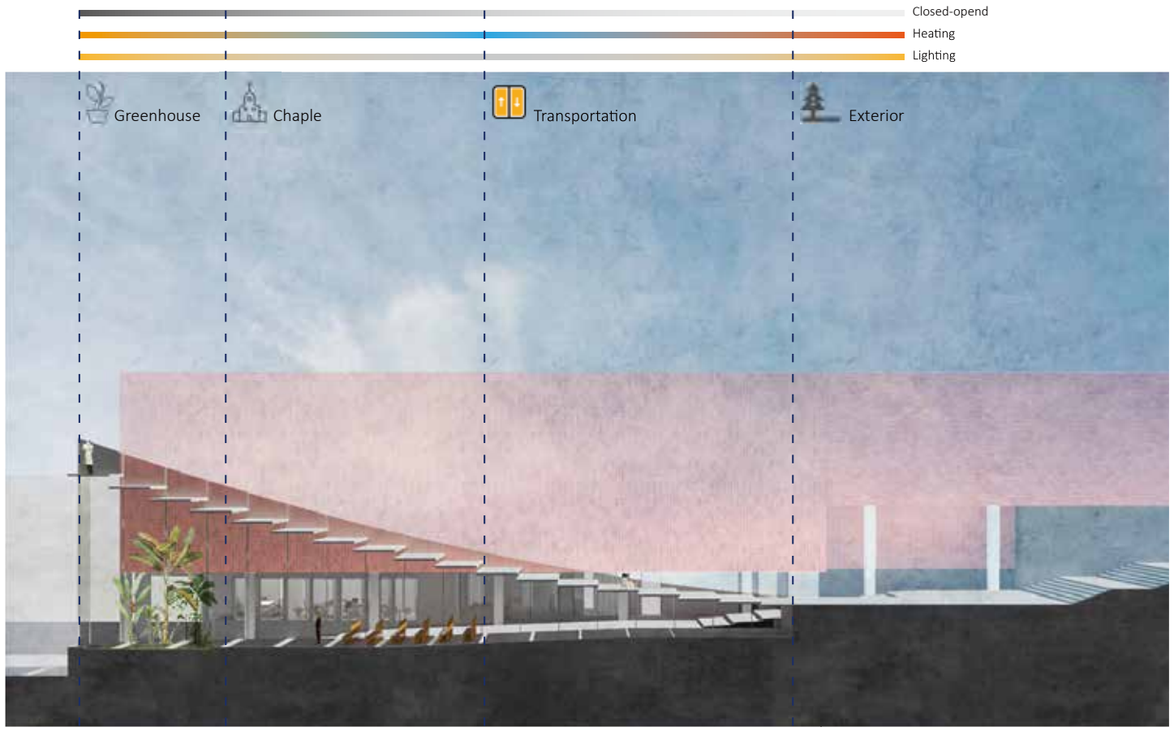
Circulation



Emergency Exit



Interior Circulation



Chaple section

Chaple space formation

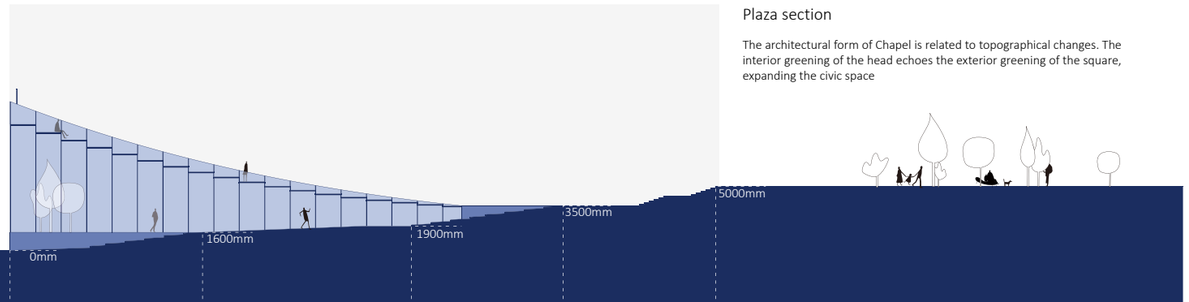
After many interviews and discussions with local scholars, government officials, and citizens of Providence, the site was chosen at cathedral square, a plaza on the edge of downtown. The cathedral square was redesigned in the 1960s by I.M.Pei. The renewal project refers to the church-centered city square in Europe, and intends to re-establish the cathedral square as the public communication center of the city. However, due to misjudgment of urban traffic and climate and changes in urban planning in the future, the square was marginalized. The cathedral square area has the densest concentration of churches in the city. Interestingly, although these churches belong to monotheistic religious sites, their denominations vary. The entire area is currently a purely functional place, and citizens come here only for religious activities. After completing religious activities, citizens do not make more stops in the square.

Based on the Harm Reduction Center, this design hopes to reconstruct a bridge connecting various groups in society. Substance users are a special group. They have long suffered from social isolation and stigma. The stigma of society will not have any positive effect on solving this social crisis. Substance users lack opportunities to integrate into society and lack employment. This exacerbates the poverty and psychological distress of substance users, further reduces their motivation to quit substance dependence, and increases the risk of overdose. As a life support organization, HRC also hopes to provide a certain educational significance.

Located in the middle of the original site is the newly added chapel in this design. Originally it was an empty ramp. The ramp connects Westminster Street (the long city axis) with Cathedral Square. Due to the decline of Cathedral Square, the entire passage is currently deactivated, empty and lacking necessary facilities for the disabled. The addition of Chapel provides a spiritual space for substance users. While coordinating various medical functions of HRC, it also hopes to help substance users from the perspective of religion and psychology. Considering the cathedral square as the religious focal point of the city, the site itself provides the basis for theological education. As a religious place, Chapel is also open to the society, a place of belief that does not differentiate between denominations. Through this chapel, the site connects substance users with the general public, while also providing a place for communication between believers of different denominations in the region.

Plaza section

The architectural form of Chapel is related to topographical changes. The interior greening of the head echoes the exterior greening of the square, expanding the civic space



Flexible interior

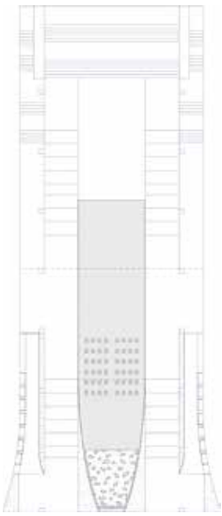
The natural environment inside and outside is an important factor for relaxation. Providence's climate is not suitable for people to stay exterior for long periods of time, which is one of the reasons why the original design failed. The introduction of interior greenery is an important part of the design. The variety of plants interior and exterior creates a lively dialogue.

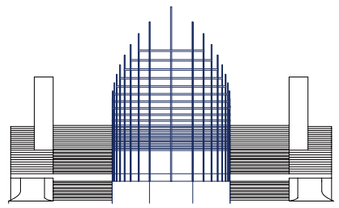
Interior Greenhouse

Tropical and Subtropical Climates

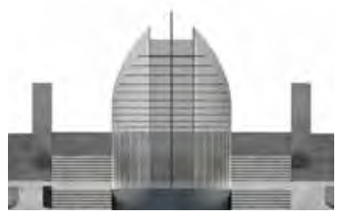
Banana tree
palm
camellia
...

Selection of vegetation





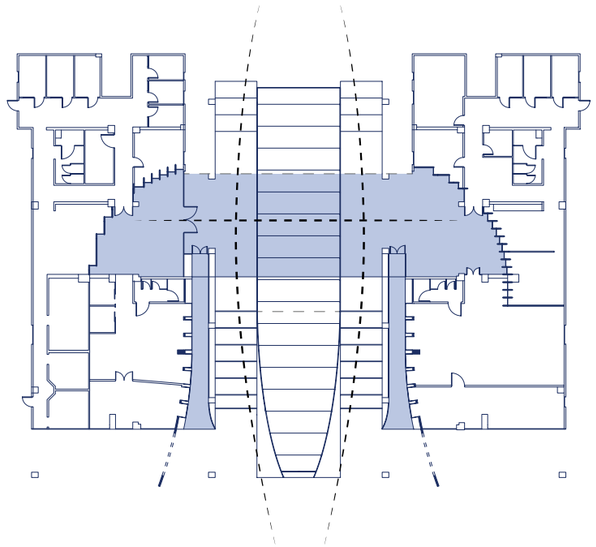
Front view of the chapel

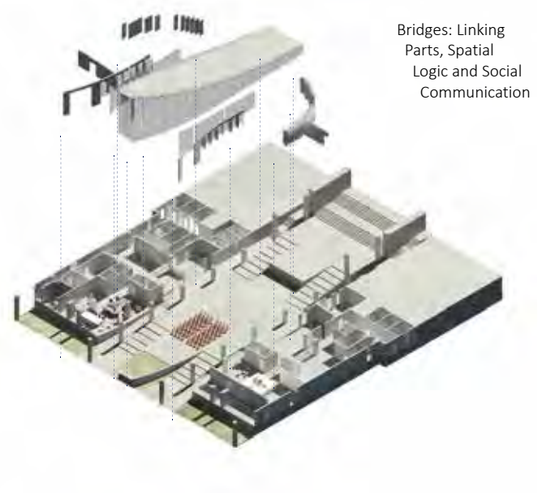


Exterior Greening

Temperate monsoon climate

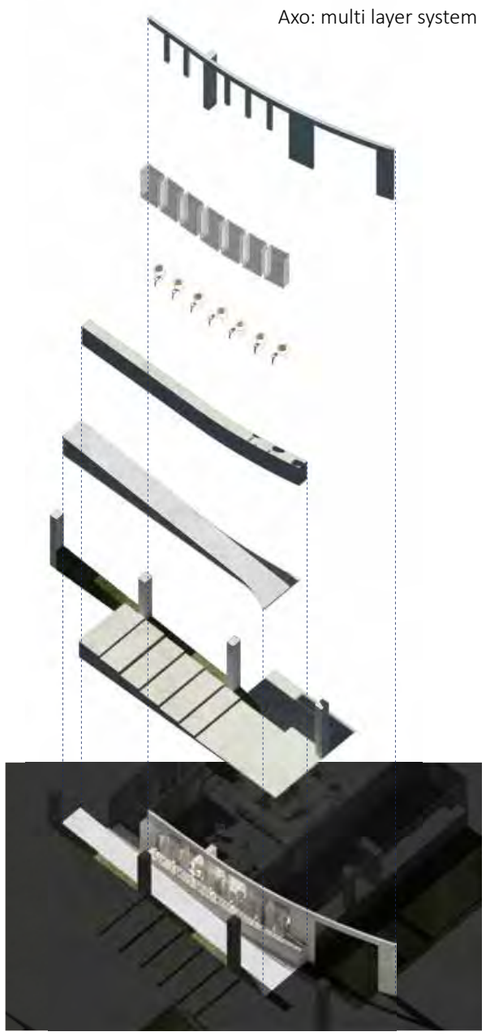
spruce
pine
bulrush
...





Bridges: Linking Parts, Spatial Logic and Social Communication

Axo: multi layer system



Front elevation

Entrance ramp

Coworking space

Indoor and outdoor interaction

Multi-level structure at the interactive entrance of indoor and outdoor. The exterior includes ramps, steps, and flower beds. The interior is staggered with the flower table by a row of protruding glass boxes, and further inside is the indoor shared office area. The staggered design provides the possibility for internal and external interaction

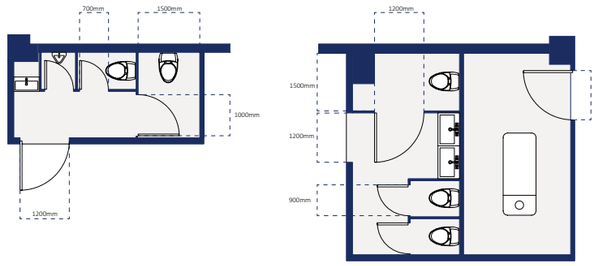
Transportation Hub

The Transportation hub is a semi-circular area, but there are rich indoor and outdoor interactive experiences in it. The semicircle on the left is used as the HRC lobby and is a closed space. This guarantees security and privacy for guests. The chapel in the middle acts as a bridge linking each area. The semicircle on the right is a covered open space for community gatherings. The entire area is placed in the middle of the field. The intention is to inject public attributes into the pedestrian passage area, providing more social possibilities for socially marginalized groups, while reducing social stigma against this group.
A series of functional spaces with public attributes in the entire HRC are developed along the traffic core, and have greater potential at the social and economic level.

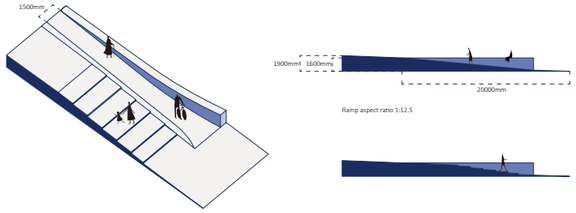
Lobby

The entire design process is deeply concerned with how to create a place where groups from all walks of life can understand and help each other. Based on the function of HRC itself, the whole project consists of three main functions. A safe injection and medical space that focuses on medical security and monitoring, controls overdose, and cares about the basic well-being of substance users. Starting from the surrounding environment of the project, the chapel provides an inclusive space for different religious groups. Aiming at economic sustainability, co-work office and leisure spaces for the public and minority groups.

As a place to serve minority groups and provide social welfare, the design considers the accessibility of the disabled throughout the process. All traffic arteries throughout the site are accessible for wheelchair users. Each restroom has at least one disabled restroom. All areas with height difference have slopes as an alternative, and all slopes are less than 1:13



Accessibility



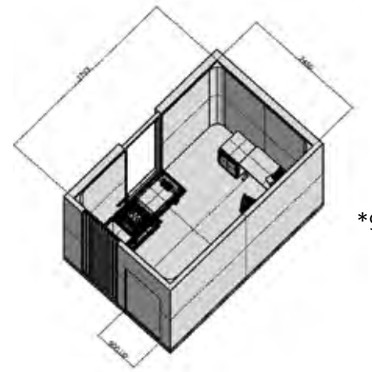
Injection cube

The Injection cube is the core functional area of the entire project. Substance users will choose to self-help or be assisted by staff to inject substance in these cubes. Each cube has an area of about 9 ㎡. There are green plants inside. Injection cube not only pays attention to the comfort of Substance users, but also pays attention to the safety of the actual injection process. Many Substance users have concerns about the use of the camera, fearing it could be used as a basis for police arrests. The Injection cube eliminated the use of cameras and opted to open windows at the door for staff to monitor the security situation. The windows are open with shutters and can be manipulated both inside and out, but the staff side has a higher priority.

All finishes and furniture in the Cube use rounded corners

Simulate skylight

The ceiling adopts simulated sky light to create a natural indoor environment and relieve the tension of users



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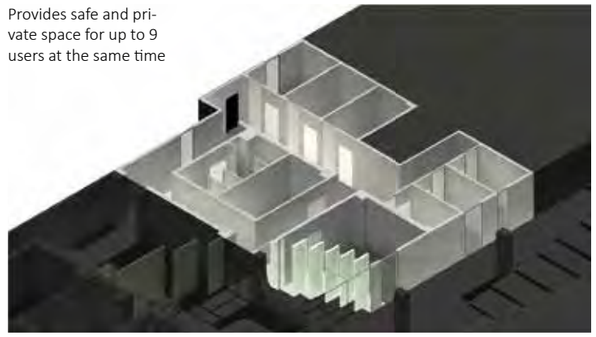
Provides safe and private space for up to 9 users at the same time



Public area

Injection cube

Project 2

A Day Stood Still

The Rebirth of Industrial Heritage on Urban Waterfront

Adaptive Reuse of Brooklyn Navy Yard, New York City

"Guardians of the past, industrial sites testify to the ordeals and exploits of those who worked in them. Industrial sites are important milestones in the history of humanity, marking humanity's dual power of destruction and creation that engenders both nuisances and progress. They embody the hope of a better life, and the ever-greater power over matter. "

UNESCO
Global Strategy Studies, Industrial Heritage Analysis, Page 9

The Brooklyn Navy Yard is an important industrial historic site in New York City. It was established in the 1810s as a private shipyard and became a military property in the late nineteenth century. It provided significant production capacity for the Pacific battlefield during World War II. After the war, the entire campus closed in the 1960s as military orders declined and transportation changed. The Brooklyn Navy Yard was later sold to New York City and repurposed.

After the city government took over the park, unlike other industrial sites that were developed as real estate, manufacturing is still the main goal of the development of the region, to provide more adequate employment and the memory of the national industrial heritage. This presents a trend contrary to the evolution of ordinary urban industries. In the heart of Brooklyn, the survival of the manufacturing industry stands here like a living monument, remembering the history of the industrial age. Continuing the industrial production function of industrial space is a relatively rare type compared to other types of adaptive reuse (such as transformation into workplace, commercial, residential). It faces many challenges in terms of economic sustainability and protection of the surrounding environment. This paper will focus on this often-overlooked subdivision and explore a discussion. In a society dominated by capital, spaces such as factories and shipyards were only used to create economic value at the beginning of their birth. After they lose their ability to create economic value, how should the collective memory of the citizens they carry continue to exist? The article will use Brooklyn Navy Yard as a sample to explore the possibility of coexistence of monumental space and industrial production, and to explore the reasonable future of current urban manufacturing. The research process also pays attention to the impact of sea level rise caused by climate change on waterfront and heritage preservation. In the end, to create a system in which the industry and the environment promote each other.

Efficiency

Open the main space to small production units, Increase the utilization rate and reduce the vacancy rate of the campus through shared studio and production facilities

Memory

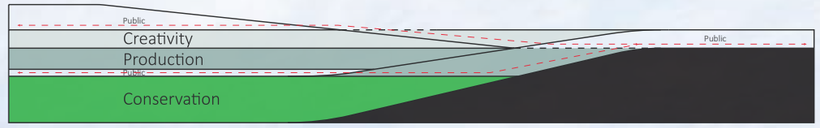
Use the production process as a "museum exhibit" to let citizens understand urban manufacturing and memorize the history of industry and ensures production efficiency and safety

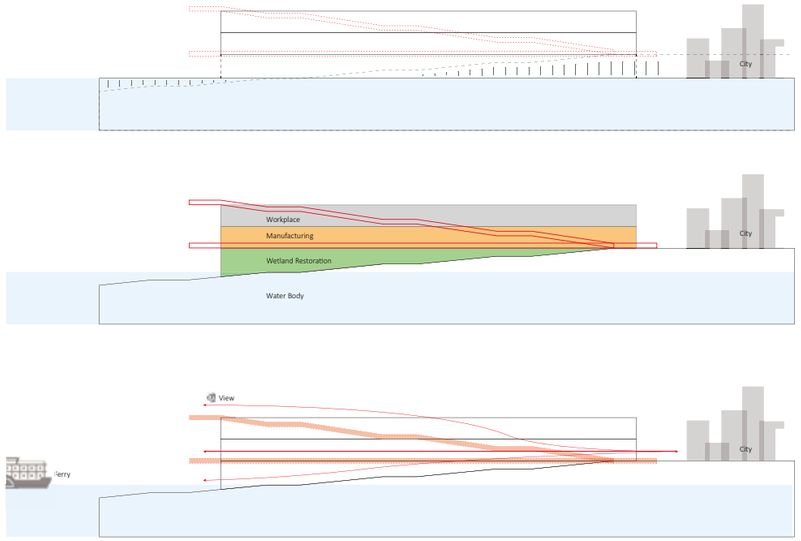
Environment

Use terrain to restore wetland ecology and reduce the impact of waterfront erosion

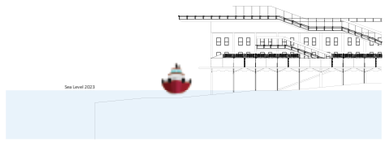
Citizenship

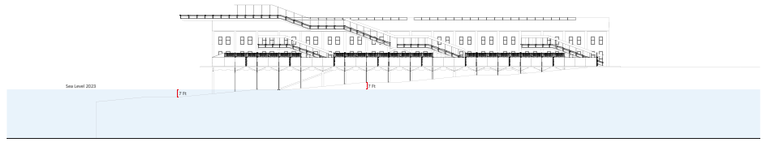
Improve the openness of the park and reduce the negative impact of closed parks on surrounding traffic

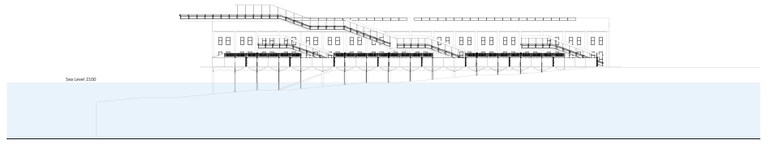


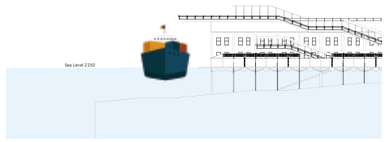


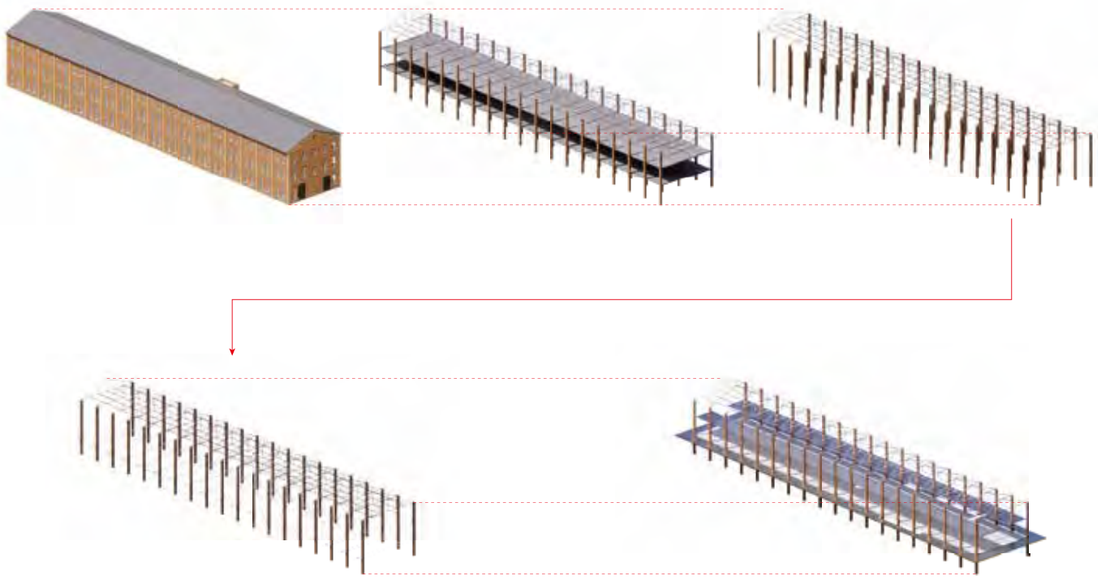
The functional layout has been re-planned. It is intended that spaces with different functions in the vertical and horizontal directions can have stronger interaction. In the ecological protection space on the first floor, the original brick wall is removed, and only the load-bearing structure is retained, which is reinforced for the humid environment. The construction site is located on a pier. At the landscape level, the original terrain of the pier is changed. The front part of the Pier is lowered below sea level, the rear end is raised, and the highest point is at the same level as the second floor of the building.
An additional structure is added to the crooked neck of the building as a new circulation. At the same time, it ensures that the visitor flow line is separated from the production flow line. On this basis, a changing vision is created.







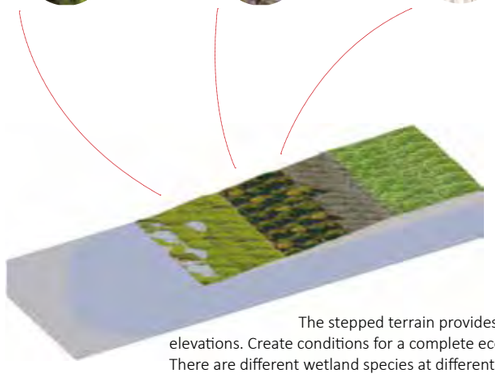




Smooth Cord-grass

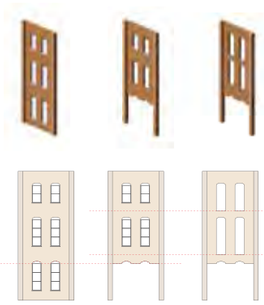
Glasswort

Reeds

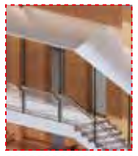


The stepped terrain provides different elevations. Create conditions for a complete ecosystem. There are different wetland species at different heights.

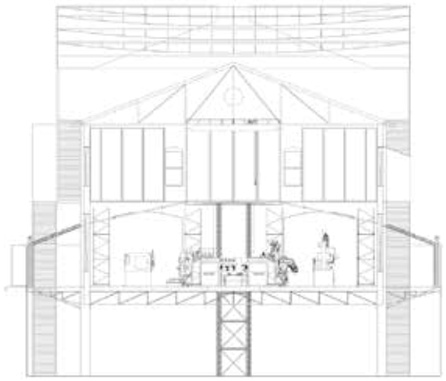
Stepped terrain, each step has a height of 7 feet. This has dual meanings in terms of commemoration and functionality. The stepped topography at a fixed height forms a natural water scale. In different periods, tourists can clearly know the changes in sea level. At the same time, the changing sea level interacts with the industrial production within the building. As the sea level rises, the depth of water in the area where the front of the pier is submerged also increases. The deeper water depth can accommodate larger tonnage cargo ships. The production potential of industrial space will be gradually liberated as the sea level rises.



For the demolished brick wall on the first floor, the arched structure of the top of windows is preserved, echoing the historical memory

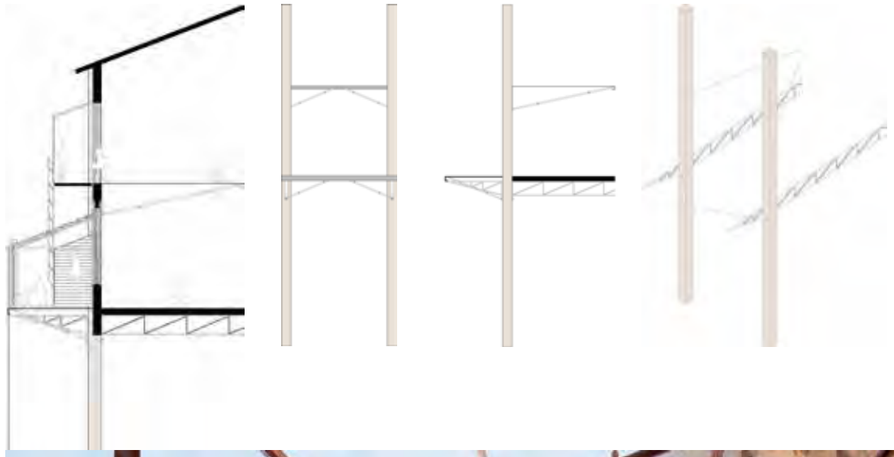


Part of the windows were transformed into doors to improve traffic efficiency



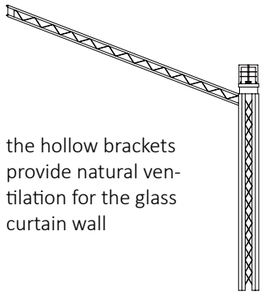
Original

Proposal

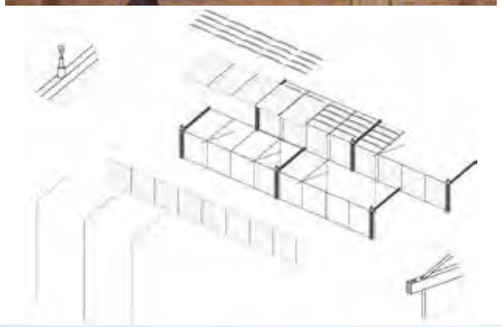


The two groups of columns in the middle of the original building were removed and replaced with a new steel structure to provide a spacious and tidy interior space. Metal trusses support the second floor slab. The outdoor extended platform and the third floor are replaced with lightweight materials, supported by a set of cantilevered structures that bear force on the original load-bearing columns.

All the original interior circulation except the elevator are canceled. Instead, corridors are added to the exterior of the building as a circulation of the building. The external corridors are wrapped in glass curtain walls on the second floor, ensuring transparency while ensuring the comfort of visitors.

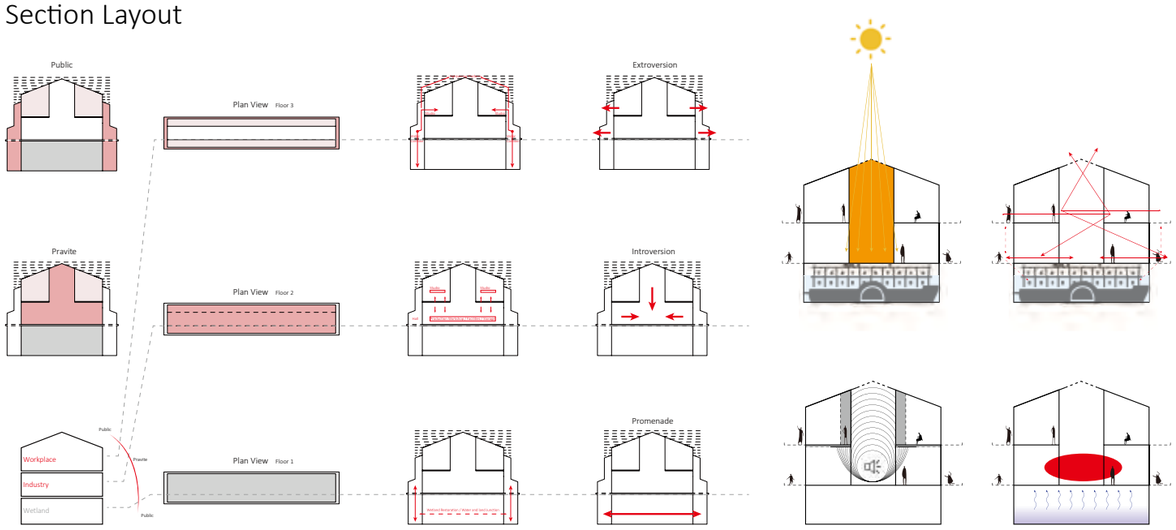


the hollow brackets provide natural ventilation for the glass curtain wall



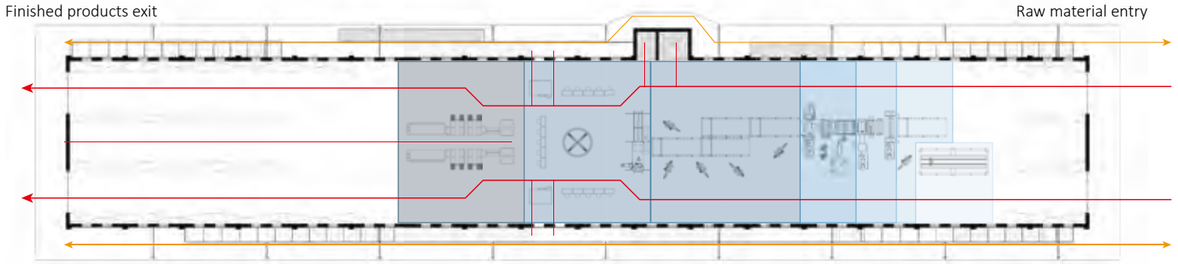
Exterior Corridor

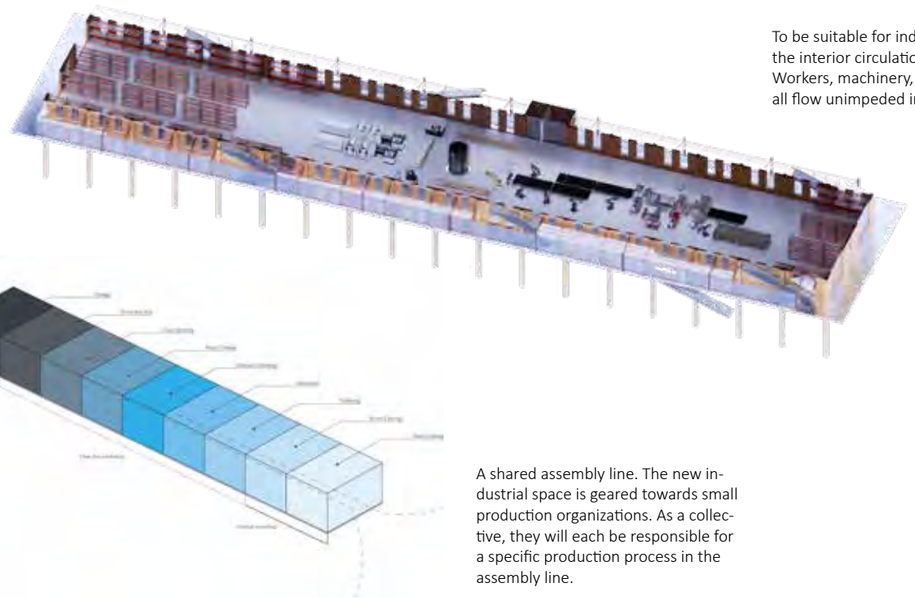
Section Layout



Water Transport:
Finished products exit

Land Side Transport:
Raw material entry

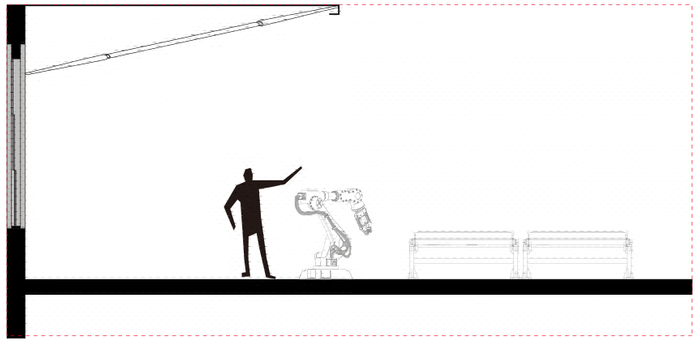




To be suitable for industrial production, the interior circulation is simplified. Workers, machinery, and materials can all flow unimpeded in this space.

A shared assembly line. The new industrial space is geared towards small production organizations. As a collective, they will each be responsible for a specific production process in the assembly line.

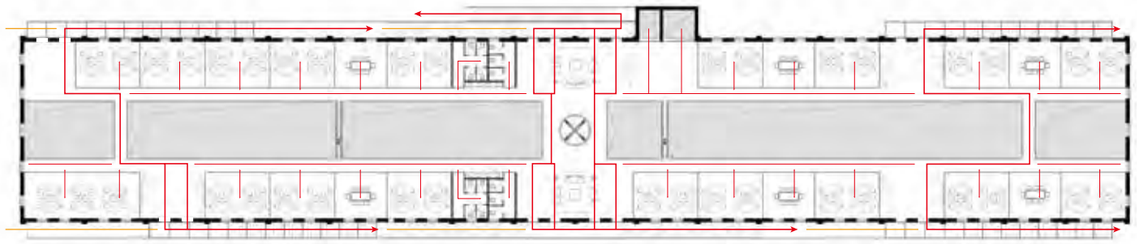
The industrial space retains the space for manual production in the middle.



Here craftsmen can adjust the product by hand.

Industrial Space: 2nd Floor

Co-work Studio: 3rd Floor

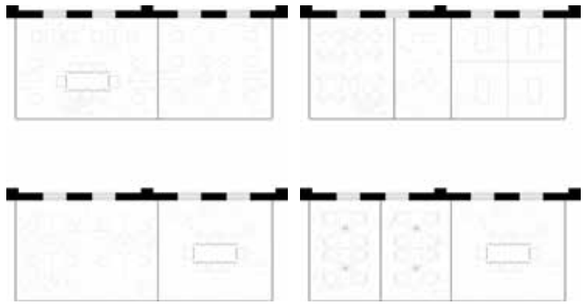


Co-work studio layout

Compared with the industrial production space, the circulation density of the third floor is higher. This is in response to a tenant base that is dominated by small teams and independent producers.

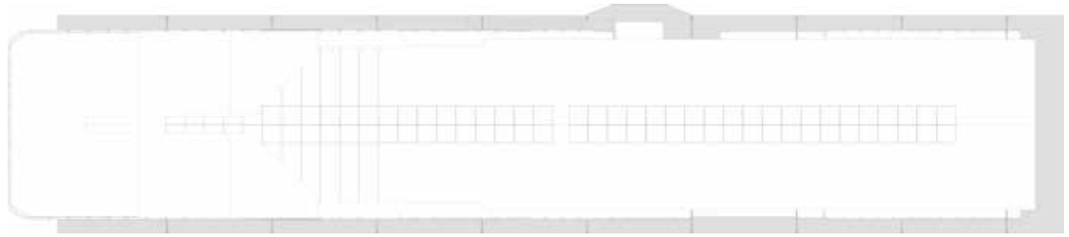
Units

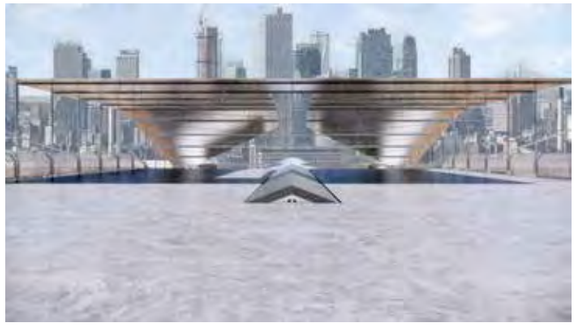
Glass folding doors provide flexible space for tenants.



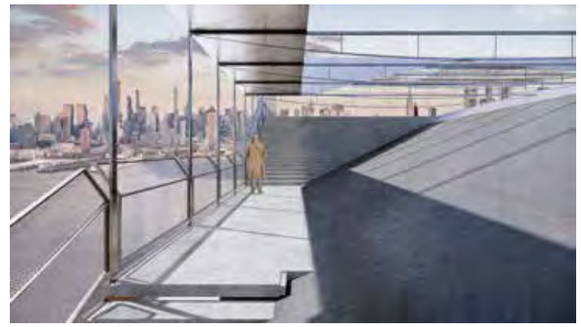
The hanging public corridor provides an outdoor rest area for the office space

Sightseeing Platform: Rooftop

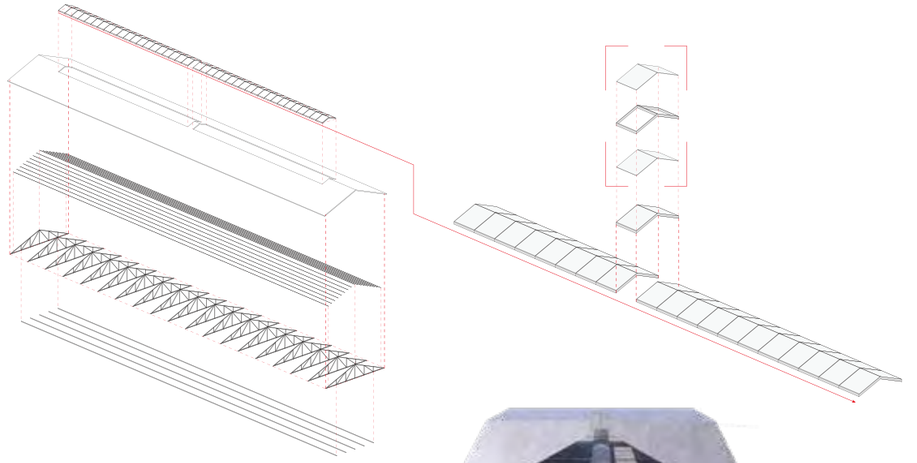


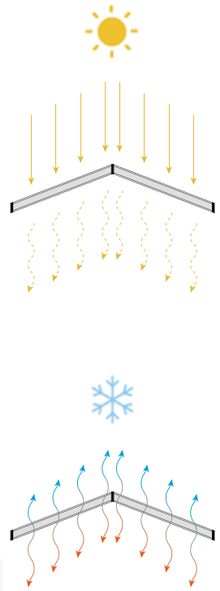


View to the Brooklyn side



View to the Manhattan side





Replace some tiles with double glazing. Improve the indoor lighting environment and ensure the indoor temperature environment.

Project 3

Are man-made landscapes a part of nature? If not, is there any justification for the existence of man-made landscapes?

Unravel

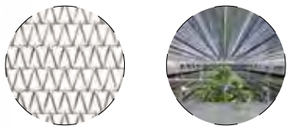
A Proposal on Adaptive Reuse of Industrial Heritage and the Justification of Man-made Landscapes

Adaptive Reuse of Cranston Armory, Providence, Rhode Island

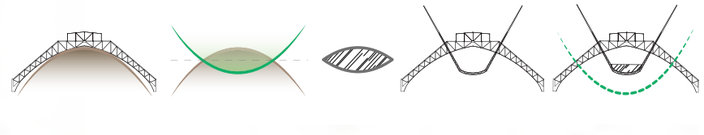
The history of mankind is the history of human use, conquest, and plunder of natural resources. In turn, nature has been shaping human history from the very beginning. On our site, this rule has a subtle expression.

On the one hand, the armory is adjacent to a wide park, which is a typical man-made natural landscape, and all elements, such as trees, lawns, and air, are designed for human. It is a place where people instinctively draw close. On the other hand, what armory itself represents is the history of human industry and war. This is purely artificial. Its dimensions are all purely functional, including the mannerisms on the facade. When these two spaces are adjacent to each other, a dramatic expression is happened, and people try to use the man-made natural landscape to cover up man-made conflicts. Nature, at least in the eyes of people who live in cities, is soft and healing. And industrial heritage, especially space for weapons, are hard and cold. It seems that the two have been full of opposition since their birth. People instinctively stay close to nature and away from industry, even though we benefit a lot from industrial production. I'm very interested in this opposition, especially since our site captures this dramatic relationship. Here, the natural and the artificial are twisted together in a twisted way. Therefore, I'm going to show this relationship in my design. This is not a criticism of which side, but an objective presentation of this opposition.

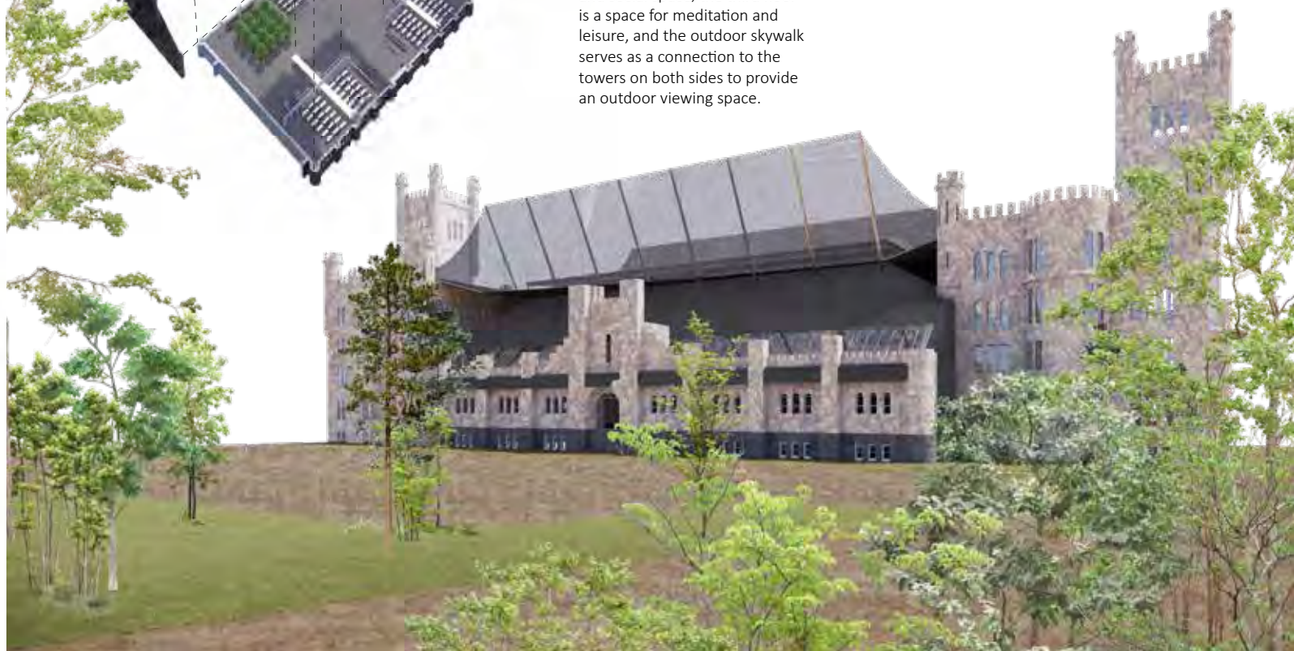
Therefore, I will focus on indoor greening, which is the typical man-made nature, and production activities in our society today (mostly in offices). I try to unravel the disorderly human activities and the mutual encroachment between man and nature and arrange them in an artificial way.

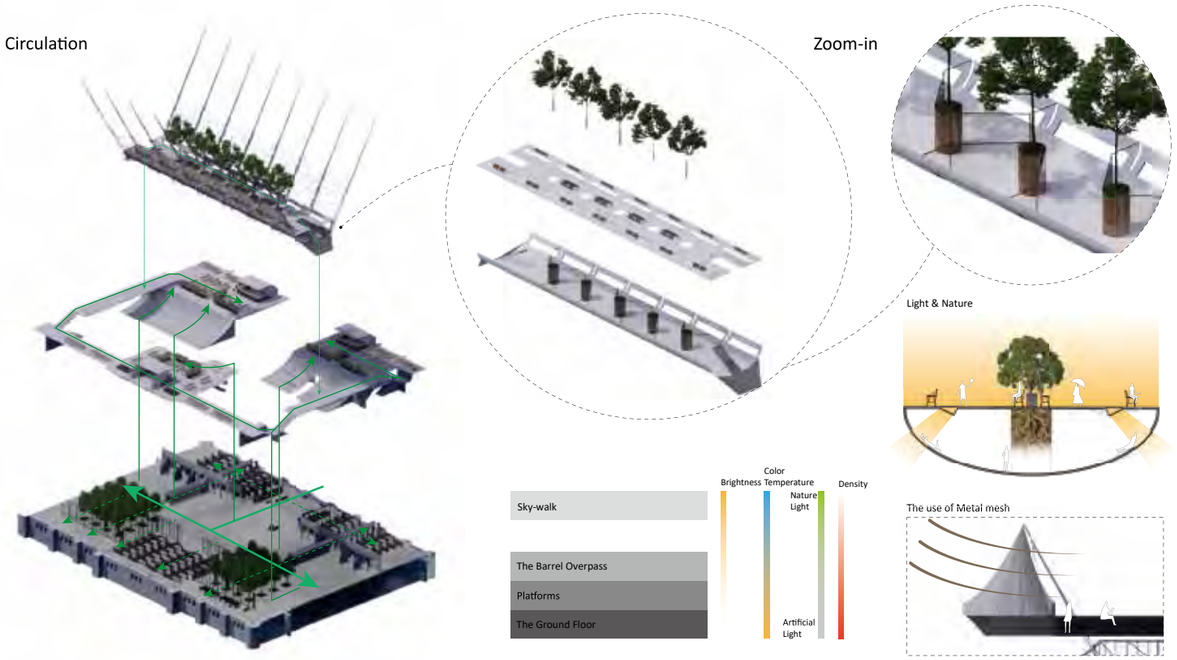


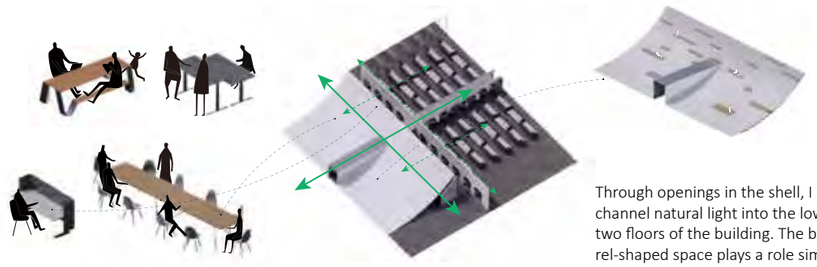
From the way of lighting, from top to bottom is a process in which natural light is gradually weakened.



The function of the building will be a co-work office as the core, and then add functions such as cafes, canteens, meditation spaces, and social spaces. Indoor greening and the use of natural light have different interactions with these different functional spaces throughout the process. The whole space presents a gradient in different dimensions. The first floor is the co-work office, the second floor is a cafe and social space, the third floor is a space for meditation and leisure, and the outdoor skywalk serves as a connection to the towers on both sides to provide an outdoor viewing space.





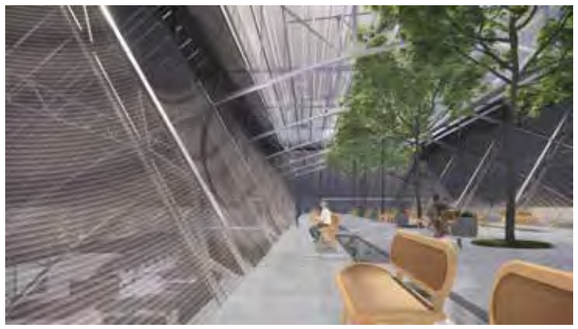


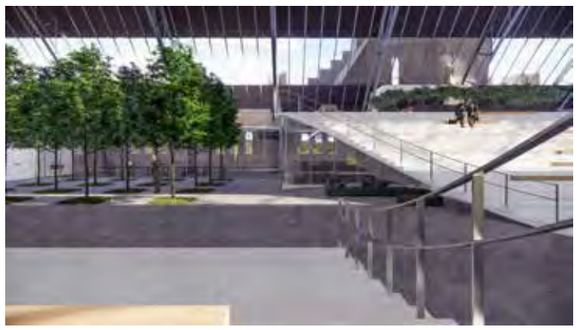
Through openings in the shell, I channel natural light into the lower two floors of the building. The barrel-shaped space plays a role similar to a prism here. On the second floor, this is a place for people to eat and socialize, and it can also undertake part of the teamwork. After being refracted by frosted glass, metal mesh and barrel-shaped space, sunlight and wind are softened. This is the most comfortable area for people, a typical artificial natural environment. This also echoes the human behavior activities in this area. Dining and socializing are social activities driven by human instincts, which reflect both the natural and social nature of people. I try to let people do the human behaviors that have been ruled by society in the artificially carved natural environment.

Armory's beautiful metal keels offer a lot of potential. Metal keels are a product of complete industrialization, but as far as the building itself is constructed, they are a "natural state" that has existed since its birth. The huge space supported by the keel provides a lot of imagination for the use of floor height. At present, such an excellent floor height has not been utilized at all. I envisioned a structure attached to the keel. This is an inversion of the natural form of the keel. I designed a reverse joist to join the original joist to create a hammock-like structure. The hammock is suspended from the ceiling in the opposite position of the original keel, and steel cables are added to strengthen its structural strength. The reverse keel pokes out the part of the ceiling and extends to the outside, and a platform is supported by the suspension cable structure to connect the towers on both sides. This suspension structure is a whole, with the reverse joists suspended above the original joists, leaving a full empty space for the ground floor. The outdoor platform provides tension to offset a certain weight of the reverse keel. All newly added spaces are supported by this system, which minimizes the load-bearing structure and emphasizes the role of the keel in the building. The regular metal structure reflects a very strong artificial feeling. Between each reverse keel, there are metal mesh connections both interior and exterior, which reduces the wind speed outside and makes the air flow more livable. A semicircular area is formed between the two rows of keels. I make this area as the starting point of the whole design and also the visual center of the whole space. This is a barrel-shaped area, and I divided it into two layers, the upper layer is flat and the lower layer is curved. As part of exploring the artifact, I hope that when people look at it, they think of the cargo area of an airplane or a ship.

Third floor, the barrel-shaped structure presents two completely different lighting states. The tubular space itself is divided into two floors, the upper flat area is fully exposed to the sun, which is a place for visitors and tenants to spread out. Walking is the most natural activity people do without any motivation. Here, only a few large trees in the middle provide limited shade. This is the place where the entire interior area is closest to the natural state, both human activities and lighting conditions.

As for the curved space on the lower floor, under the shell of a very industrialized design language, I tried to think about the ancient memories of people living in caves. Natural light is completely blocked by the upper floor, only a little light penetrates through two rows of thin sky windows. The glass cylinders contain the soil used to grow the upper trees. People can see the state of tree roots growing in the soil through the glass. This is the darkest and quietest place, and the pass leading to the upper floor is also deliberately guided out here. The space is divided into several glass boxes, mainly used for meditation and rest between work. Meditation is a natural state with a certain spontaneity. Curved surfaces are not ideal for walking, but are perfect for lying down or meditating. I try to guide people into a more natural and relaxed state through the guidance of the terrain. Under the industrial and suspended shell, the interior creates a state of being underground or in a cave, which embodies the contradiction between man-made and nature.





Project 4

The Stranger

An Enivironmental Interior
Design Experiment

Affordable Residential Development for Chinese Urban Village Renewal – Take Baoanfang in Huangpu district, Shanghai as an Example

Key Words

Affordable housing
Modular design
Reducing social segregation
Relationship between public and individual
Urbanism

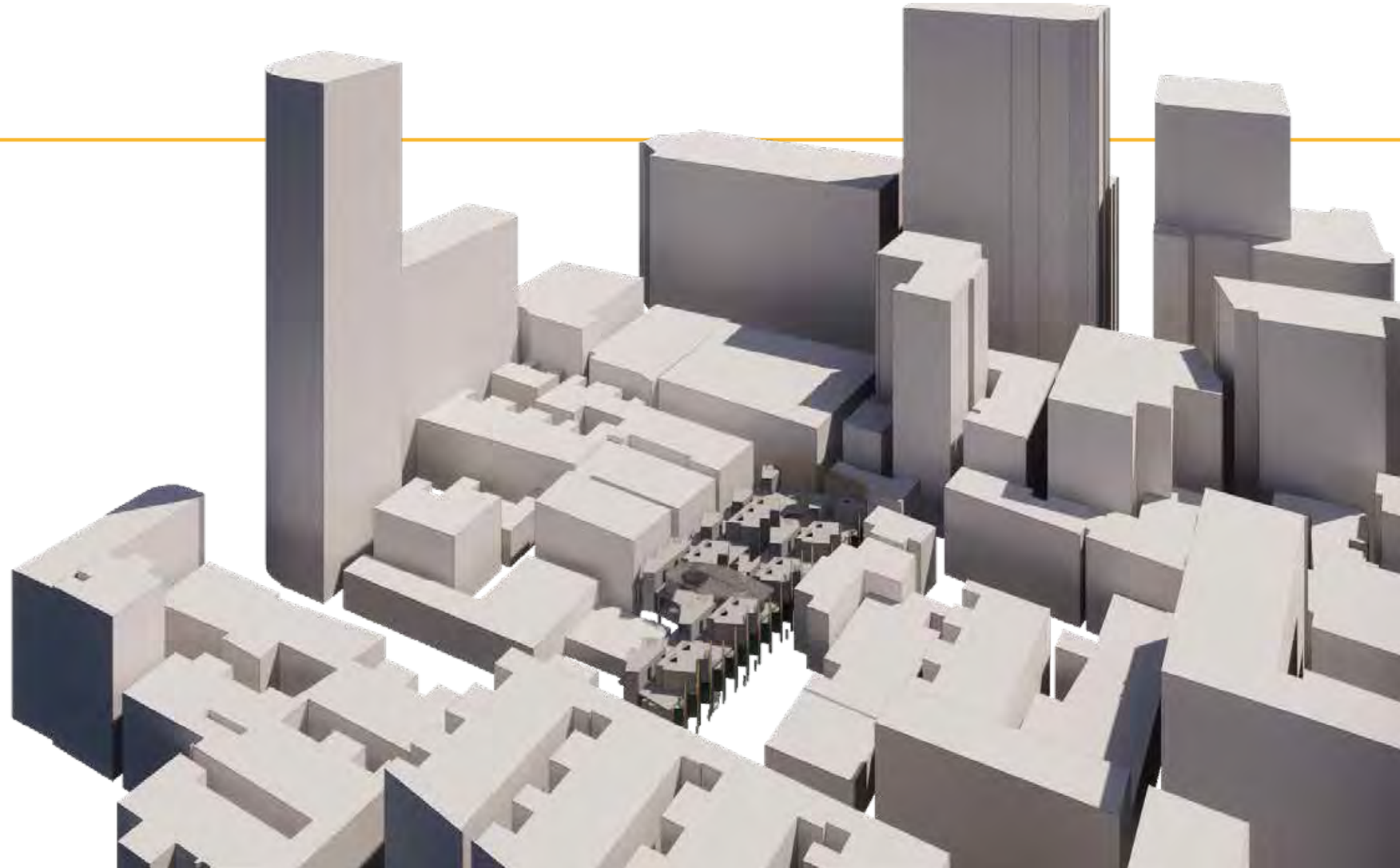
Hardware enviroment
Housing conditions
Supporting facilities

Construction prize
House rental fee
Sustainablility

social relationship
Sense of community
Neighborhood Mutual Help

Software enviroment

City efficiency
Public transpotation
Distance to employment



Project Synopsis

The old urban residential areas have more regional characteristics in the context of China, and they have also spawned extremely complicated social realities such as urban villages. Most of the proposals for the renovation of old residential areas come from the ideas of architects. Therefore, I prospect to put forward corresponding reform proposals from the perspective of interior design, and in this way propose a reform template adapted to Chinese local society.

The site of the experimental project based on an old residential area in Shanghai, adjacent to Nanjing East Road, named Baoanfang. The impact of old residential areas on the residents and the surrounding environment is reflected in multiple dimensions. After analyzing the various factors, this experiment started with a modular design and is committed to solving the overcrowded living space and a series of problems it brings, such as illegal reconstruction, the negative effects caused by the fragmentation of social groups, and health problems caused by conditions.

At the same time, using the original building structure, public spaces and private spaces are re-planned to strengthen the order of the space and reshape the neighborhood atmosphere. For the analysis of household groups, affordable design has also become a key consideration in this design experiment. The construction cost problem has always been accompanied by the progress of design, and the intention is to reduce the living cost of households in terms of materials, shared space, and sustainability.

Project Background

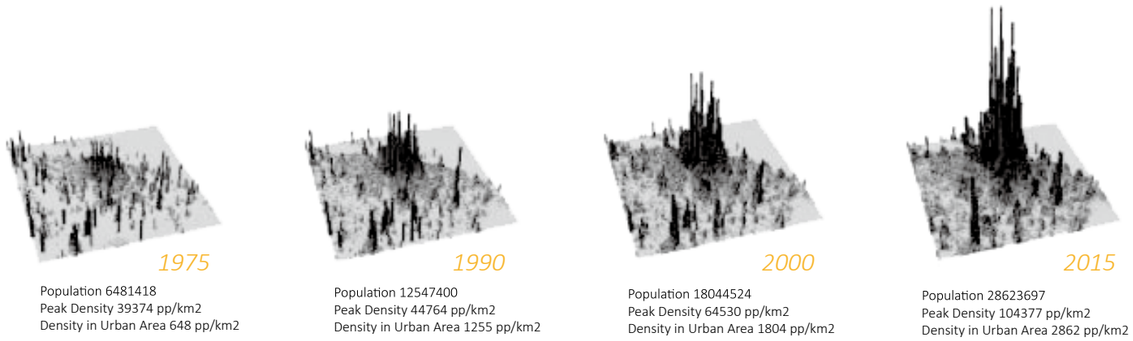
Shanghai Urbanism

Shanghai 1970s

Since the reform and opening up, Shanghai's extremely **rapid urbanization** process has become the epitome of China's urban development. From the 1970s to the present, the population of Shanghai has increased by 4.5 times, and the population density has also increased by 4.5 times. The increase in population, especially the increase in immigrant population, has greatly enhanced urban vitality and urban competitiveness.

Shanghai 2010s

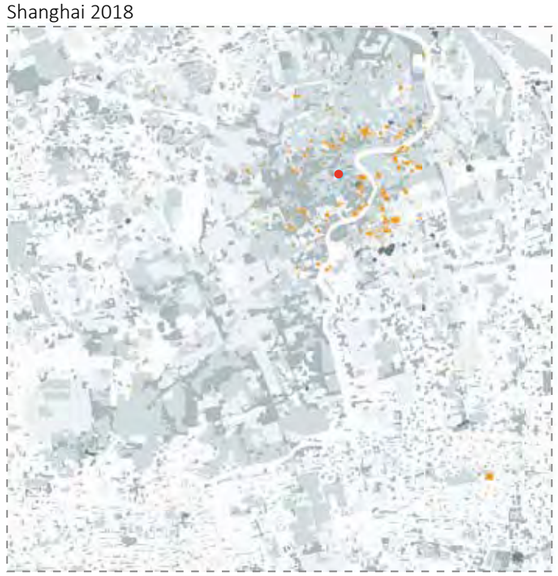
At the same time, the increase in immigrant populations has led to two results, **the rapid expansion of cities and the surge in demand for cheap housing**. Under the combined effect of these two factors, the social phenomenon of urban villages is magnified in front of society.



Urban village in Shanghai

Shanghai 2003

Shanghai 2018



City Center Urban Village Development intensity

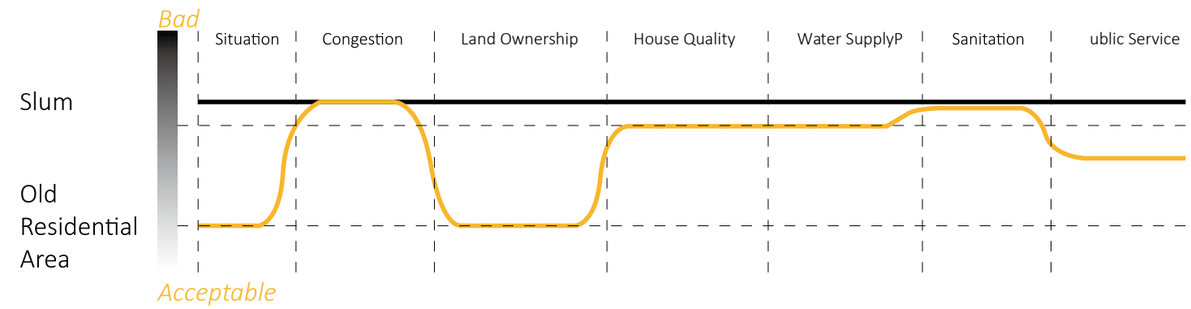
The study area is chosen as Baoanfang, Shanghai. This village is situated in downtown area of Shanghai, which is only one street away from Nanjing West Road. City scenes in here is quite dramatic, one side is newly constructed skyscrapers, the other side is the old, shabby village.

The restructuring plan, guided purely by the maximization of profit values, has led to the extremely homogenization of the building space in the villages in the city. The entire building is composed of rental houses.

The construction density in this area is high. Still, the average floor is small, which results in the land being almost occupied by buildings, the public transportation area is minimal, the whole area is not green, and there is a shortage of housing.

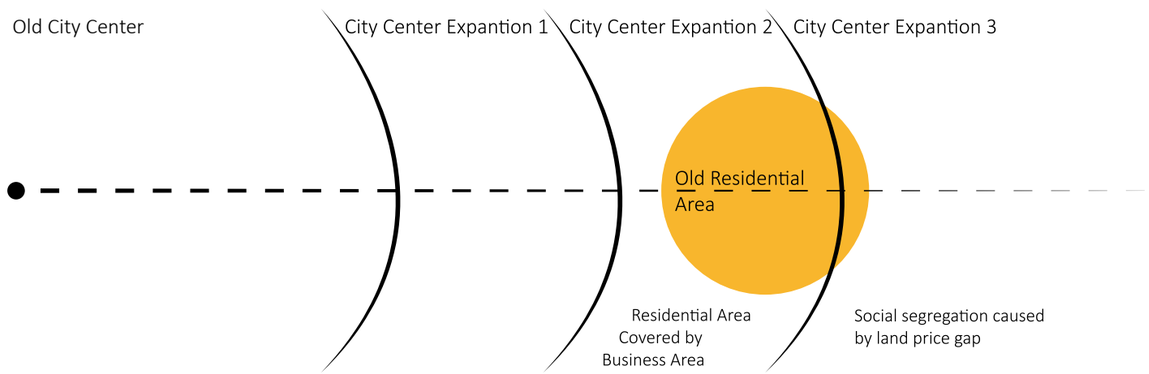
The tiny living space resulted in no more right area to accommodate the toilet, so the entire settlement used the same public toilet. Furthermore, this only public toilet is open to society.

Present situation of the site



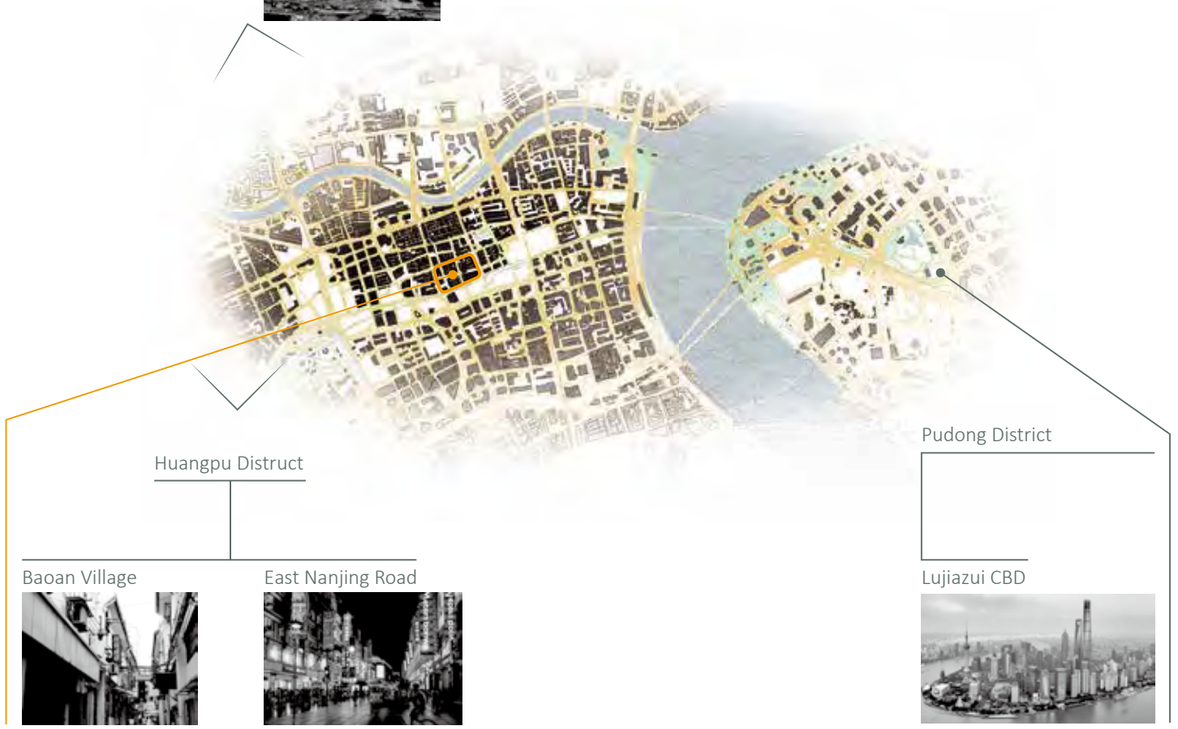
Comparison: slums and urban villages

How urban villages form



Location of Baoanfang

Zhabei District



Huangpu Distruct

Baoan Village

East Nanjing Road

Pudong District

Lujiazui CBD

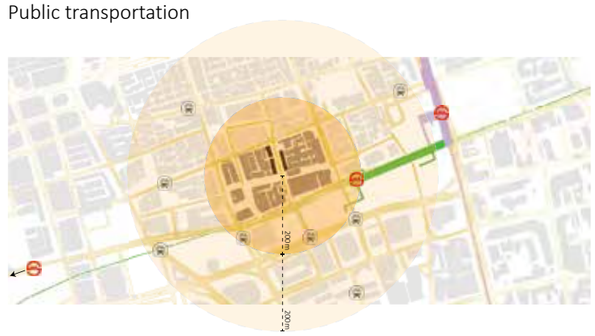
	Land area	Plot area	Floor area	Average storey	Built-up density	Floor area ratio
Baoanfang	31672 ㎡	17346 ㎡	56083 ㎡	3.0	54%	1.77

The study area is chosen as Baoanfang, Shanghai. This village is situated in the downtown area of Shanghai, which is only one street away from Nanjing West Road. The city scenes here are quite dramatic. One side is newly constructed skyscrapers. The other side is the old, shabby village.

Transportation analysis

The location environment of urban villages is not without merit. On the contrary, the location of the city center makes public transportation very developed. This greatly reduces transportation costs for residents of the area. But the lack of maintenance and planning of internal roads has led to confusion and safety hazards for internal commuting. At the same time, the surrounding environment is relatively noisy, and there are even many tourists who regard entering this place as an "adventure". This degrades the living environment of the area

Public transportation



Main road

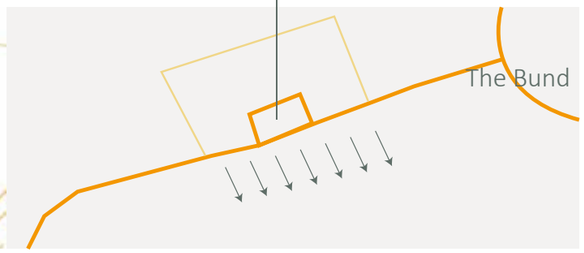
Internal road

Commercial street

Corelation with residents of Baoanfang Strong Weak

Road Network

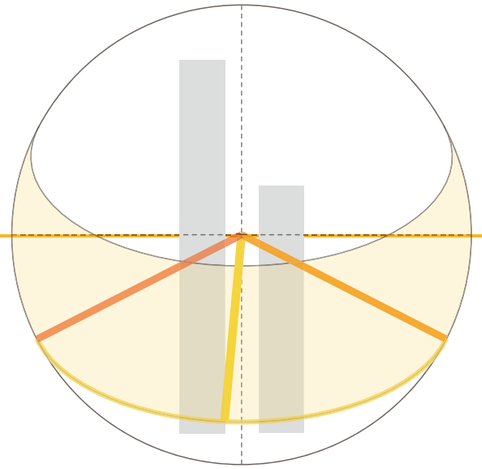
Old residential buildings

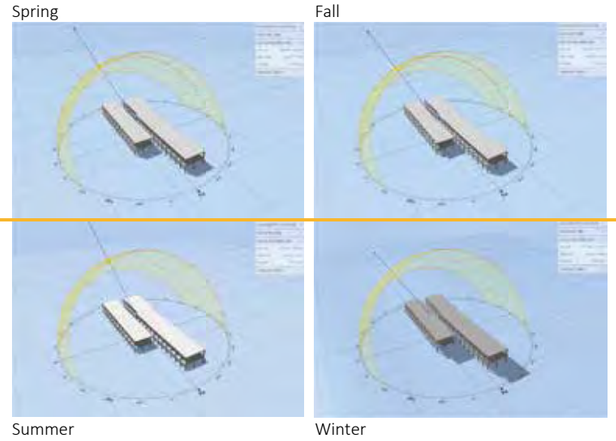


Nanjing Road Pedestrian Street has the largest pedestrian flow in the area, receiving an average of 800,000 visitors per day. There are 12 roads connected to Nanjing Road, of which three are limited to walking. In addition, due to the limitation of the width of the road, Baoanfang can only be used by **walking or non-motor vehicles**.

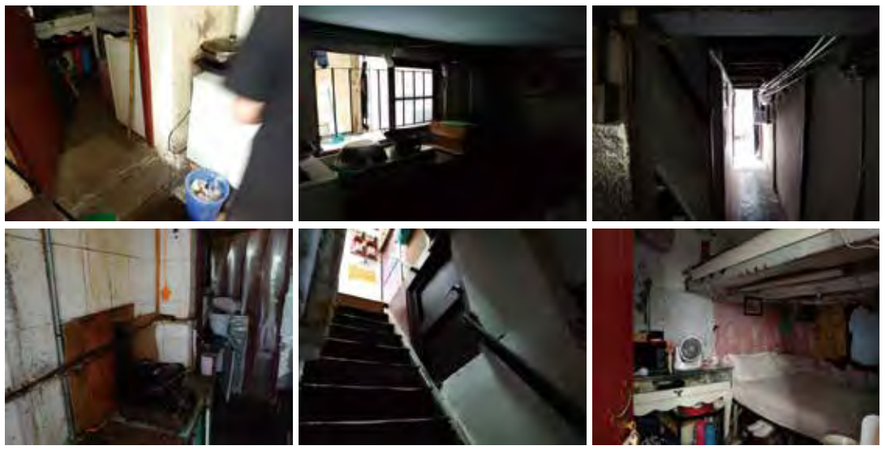
Business area

East Nanjing Road
Walking Street





The sun study based on the 3d model shows some special circumstances of the area. The original building was two long squares, and the building direction was north-south. Under the influence of extremely long and narrow building blocks, the whole building rarely has a unit facing south directly. This is also one of the reasons for insufficient lighting in the area.



Baoanfang 2020

Poor living condition is the most obvious problem for urban village. Many architecture in urban village were constructed illegally. The greenish rate, floor spacing, sanitation all cannot reach the management law.

For the residents, household registration system makes the situation more complex. Under Chinese management law, household registration system in city and countryside is relatively independent. Under city's system, citizen's rights are not opened to those residents in urban village. These immigrants cannot buy homes in the formal housing market or get commercial loans.

Interview 1

Name: Huang Feng
Gender: female
Age: middle-aged

Immigrant from Anhui provience

Question 1: Are you satisfied with your current life?
Huang: Satisfied. It is very convenient to buy food and buy things.

Question 2: Do you think there is a need for the existence of an urban village in the city?
Huang: Nobody will live at here if he has enough money. Urban village is dirty and chaotic, humiliated the big city.

She needs a place with a low rent and convenient transportation, she can't wait to leaf urban village when she earns enough money.

Interview 2

Name: Wang Jian
Gender: male
Age: middle-aged

Immigrant from Anhui provience

Question 1: Are you satisfied with your the condition in urban village?
Wang: No.

Question 2: What is the most important problem in this area?
Wang: Sanitation. The sewers are open-air, you even can find rats. There is no individual washroom, I need to pour excreta to public toilet every morning.

Question 3: Why are you still living here?
Wang: Only for the rent and the traffic. I can only pay 1400-1500 RMB per mouth, which is unimaginable in Shanghai. The traffic is also quite convienet, so that I can save a lot money on transportation fee.

Interview 3

Name: Gong Tan
Gender: female
Age: elderly group

Immigrant from Jiangsu provience

Question 1: Are you satisfied with your the condition in urban village?
Gong: No.

Question 2: What is the most important problem in this area?
Gong: All of aspects are problems. The place is too noisy, I cannot have a good rest everyday. Sanitation is also awful. Public toilet is really unconvienet espacially for me.

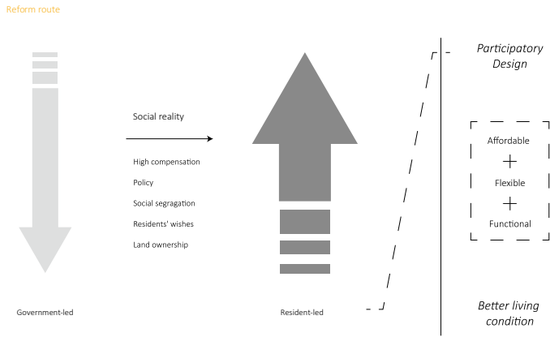
Question 3: Why are you still living here?
Gong: I am just used to living here.

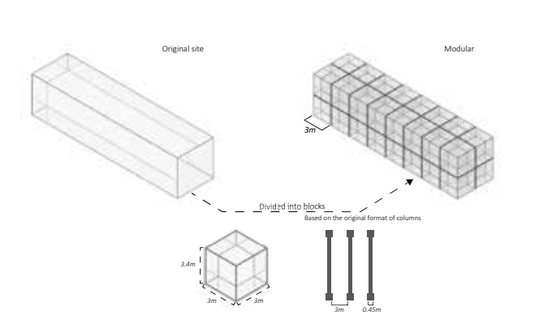
Date collection

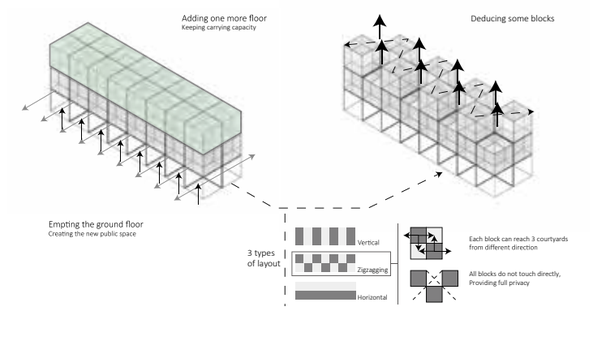
It can be seen from the interview that the residents here are basically not satisfied with their life condition. The main reason for their living here is that the rent is cheap enough. In their eyes, sanitation and noise are the most unbearable defects, and the lack of public services also affects their lives.

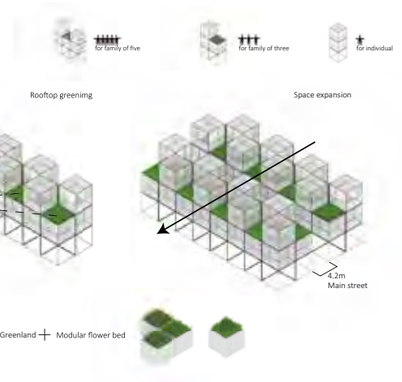
Design Process

The renovation project will focus on the renovation of the living environment. Under the condition of affordable construction funds, how to improve the overall situation based on limited construction, protect the physical and mental health of residents, enhance residents' sense of belonging to the community, and eliminate social segregation will be the focus of this transformation. Sustainability will be given special consideration because it will affect the future cost of living of residents.



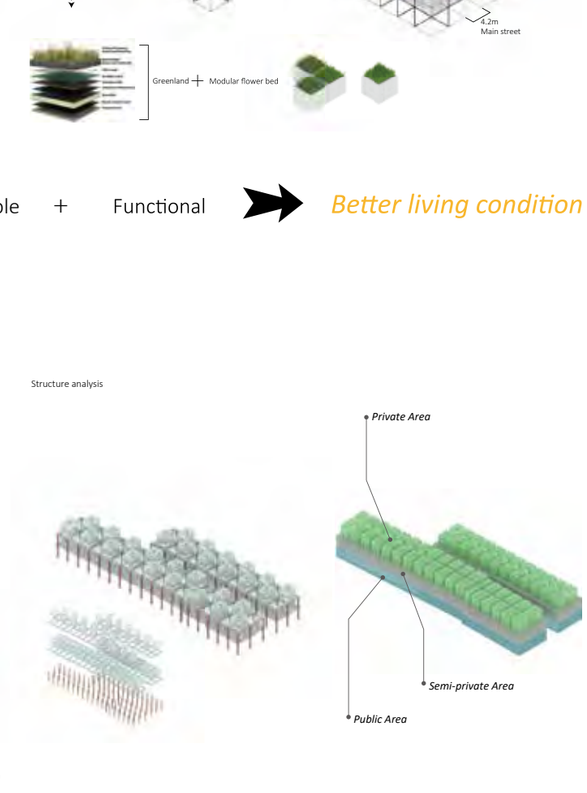






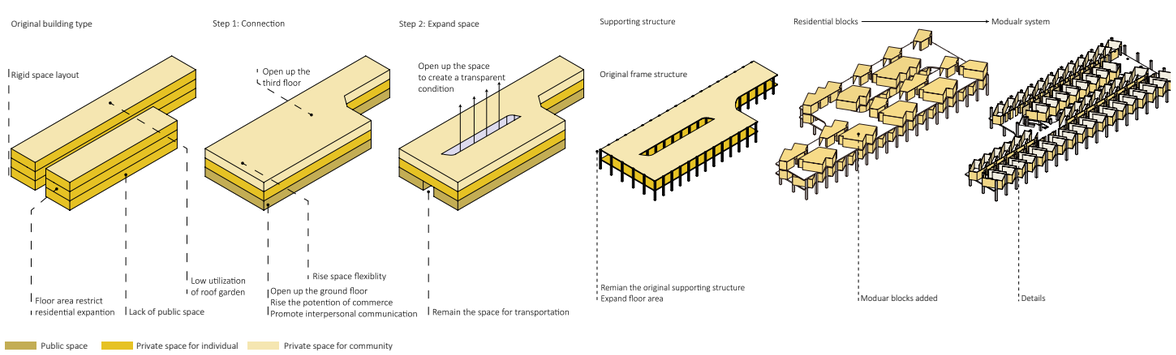
Participatory design → Affordable + Flexible + Functional → *Better living condition*

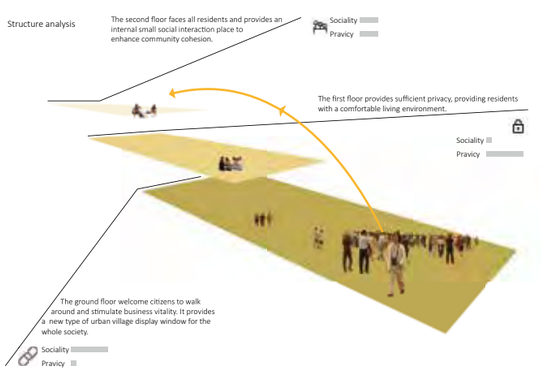
General Layout Mid-turn version

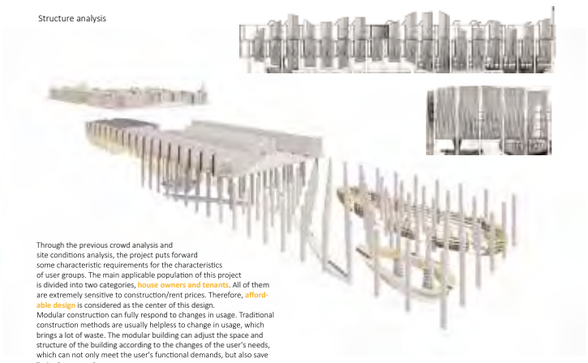


Final Outcome

Urban villages in all big cities now have such a problem, that is, many people have resolutely opposed the transfer of homesteads, resolutely renounced their peasant status and opposed demolition, but their homesteads are very large , So he desperately set up rentals illegally, gathered people, flooded garbage, and disordered public security. This design experiment is devoted to finding a way to maintain the status of peasants who are more valuable than urban status, retain their homestead, and allow them to voluntarily demolish illegal buildings. And improve the environment. This project serves as a solution and demonstration. It is the original appearance of the city. It can also be a commercial block. It is a cultural tourist attraction. It is an urban park. It is also a living space in the city.
At present, there are many reconstruction projects aimed at old residential areas, because they can only live, or occasionally cultural tourism, are cut off from the important functions of the urban life circle, have little commercial value, and the owners have no incentive to invest. So many similar projects across the country are mostly silent.





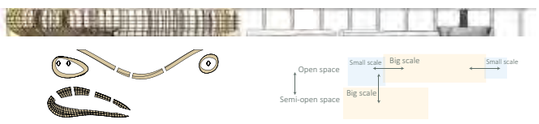


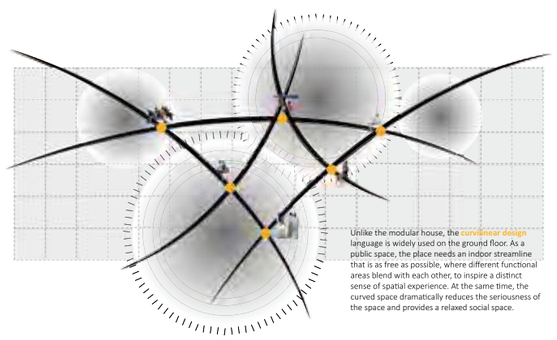
The ground floor

Space analysis

The ground floor

The public space on the ground floor includes a large-scale centralized commercial space, providing residents with various necessities of life- an open flat ground for multiple activities, such as gatherings, square dances. Two circular bar counters serve as a seating area while providing some leisure places such as a cafe or bar.





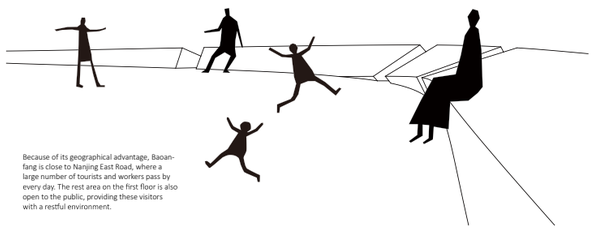
Unlike the modular house, the curvilinear design language is widely used on the ground floor. As a public space, the place needs an indoor streamline that is as free as possible, where different functional areas blend with each other, to inspire a distinct sense of spatial experience. At the same time, the curved space dramatically reduces the seriousness of the space and provides a relaxed social space.

Bar coumter*2

Two circular bar counters serve as a seating area, while providing some leisure places such as a cafe or bar.

Playground

An open flat ground for various activities, such as gatherings, square dances.



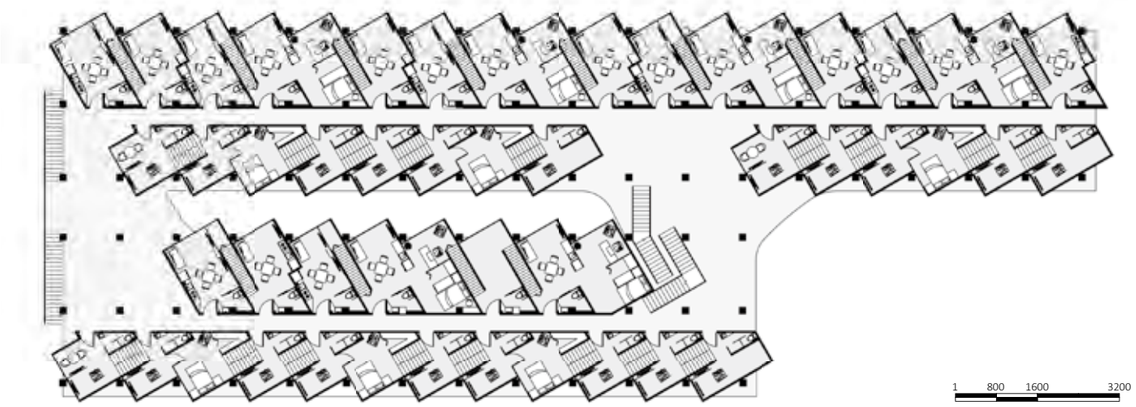
Because of its geographical advantage, Baoanfang is close to Nanjing East Road, where a large number of tourists and workers pass by every day. The rest area on the first floor is also open to the public, providing these visitors with a restful environment.

The first floor

N

The residential area

The two-story floorslab increases the area on the basis of the original structure and connects the two original buildings to each other. On the one hand, it improves the accessibility of the living area, makes the single-story area more open, and at the same time enhances the overall sense of the building. On the other hand, after the two sides are connected, households have more import and export options, improving transportation efficiency and increasing safety.



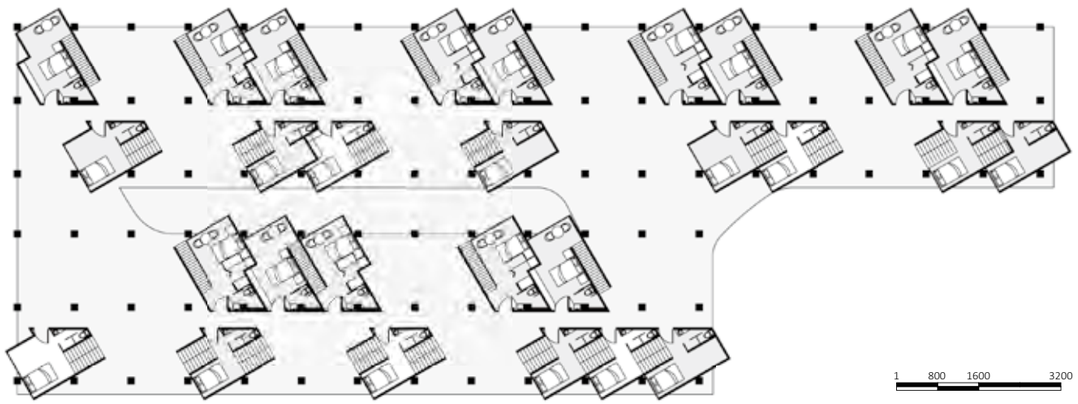
The second floor

The second floor

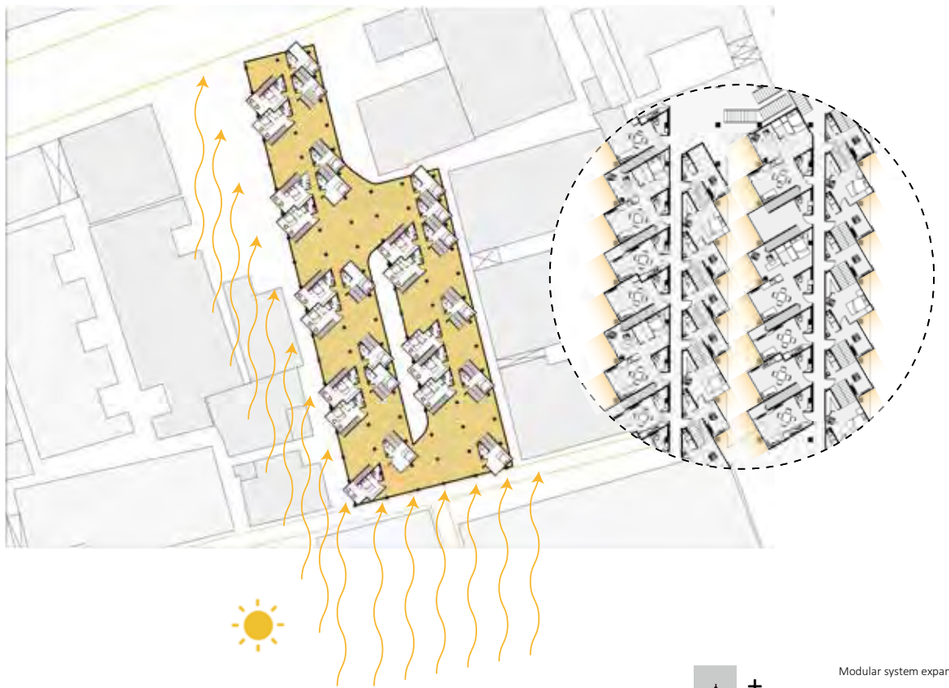
N

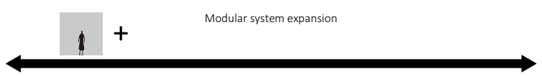
The residential area + roof garden

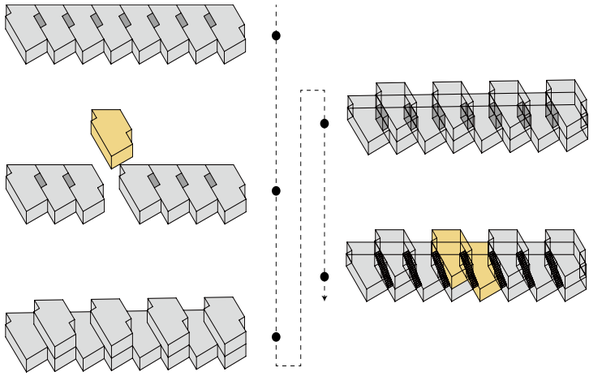
In accordance with the principles of modular design, the third floor space is added to the original building, which is also used as a living space, but the module density is reduced compared to the second floor, and the outdoor space is interspersed between each module to provide residents with a fresh air exposure place.

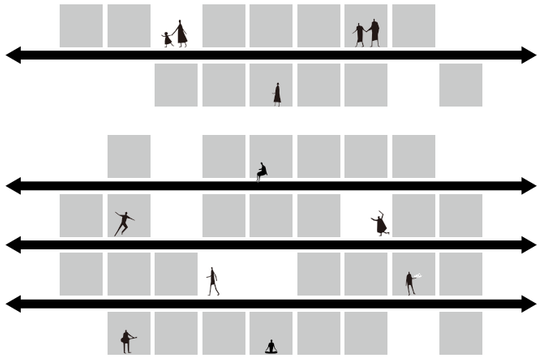


Window opening direction determined by orientation

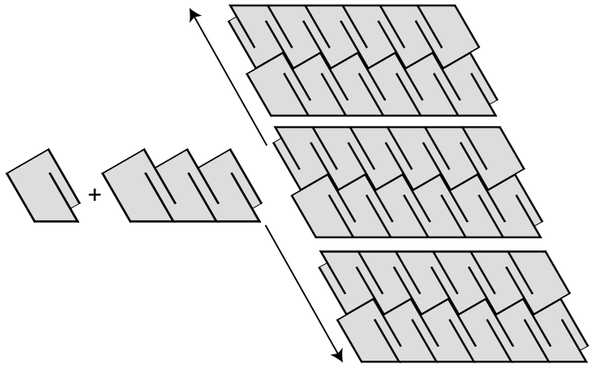








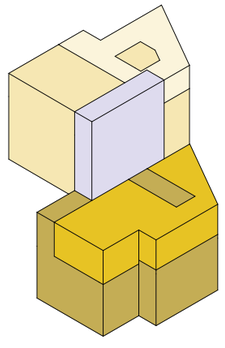
The modular system achieves maximum prefabrication, which can reduce a series of problems during construction. Operations such as dependence on site season and climate, transportation impact on the environment, dust pollution on the air, uncontrollable construction accuracy. High labor costs can be greatly reduced if modular construction is implemented. And it can greatly speed up construction progress, reduce pollution and control costs.

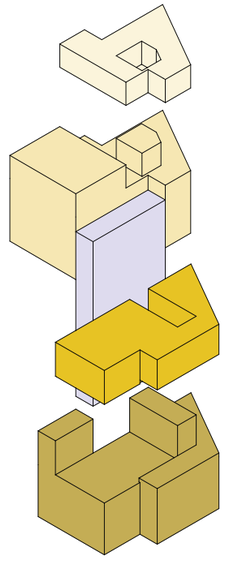


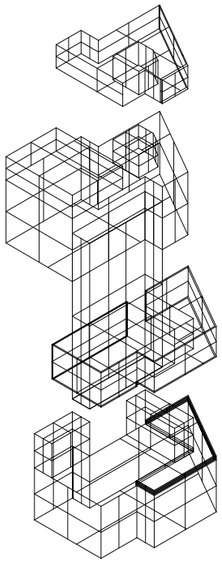
Rendering of living room

Space composition

Units





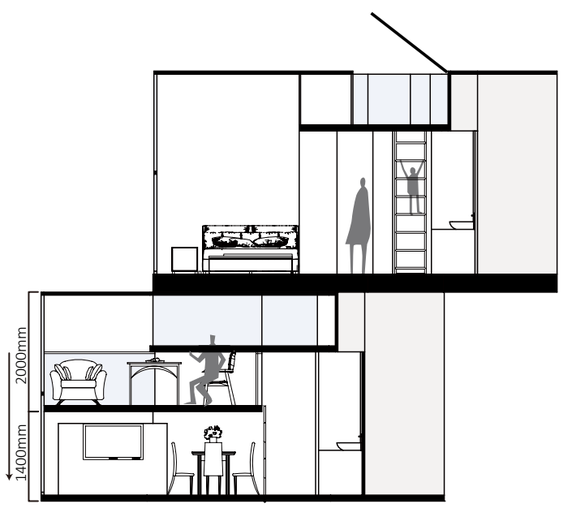


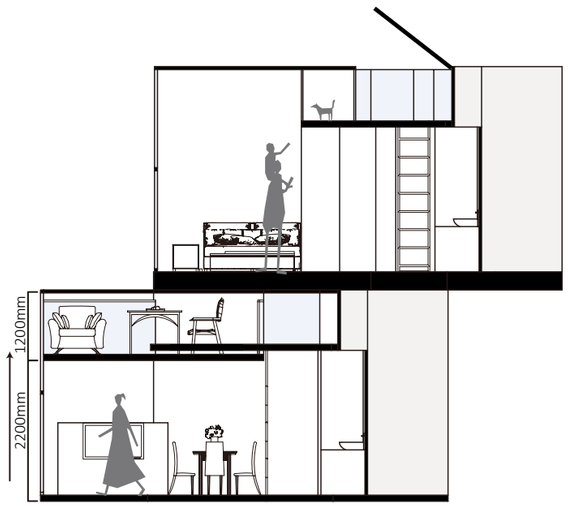
Social Flexible space Anti-social Stairs

Rendering of bedroom

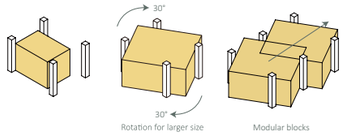
The design of the residential block is the same as the overall layout. Each small space is divided into a public space (living room), a semi-private space (study/studio), and a private space (bedroom). Due to the narrow area of the single-story and the ample space of the story height (the area of the single-story reaches 3400mm), space is explored to the height while expanding the plane space. The total height of the residential block is 6800mm, and it is divided into four interleaved spaces.

A mobile floor is added above the reception room. When the reception room is not in use, the story can be lowered to a height of 1400mm, and the remaining 2000mm space in the high area is used for the reading room. The living room can also be used when the mobile floor is raised. Through this flexible space change, the function configuration of an ordinary 100 square meter apartment was installed in the space of about 36 square meters.



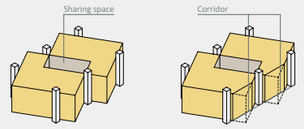


Space formation for units

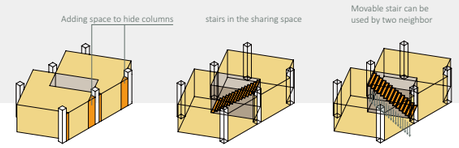


This improvement is mainly aimed at the problem that the single layer area is too small. Because the original block layout caused the area to be too small, the various functional spaces could not be fully utilized. In order to solve this problem, first rotate all the square units by 30 °, and then expand the single layer area as much as possible in the plane space. Keep the four walls as close as possible to the load-bearing column when inclined. Under the influence of this method, the area of a single floor can be increased by about 50%, reaching 18 square meters per floor.

At the same time, through modular replication and arrangement, a partial overlap is formed where the two modules intersect. By hollowing out this overlapping part, a long shared space is formed. Therefore, considering the problem that the staircase space occupies a large amount of each smaller space, this space is used as a shared space for stairs, and every two households share a staircase, which effectively reduces the total number of stairs.

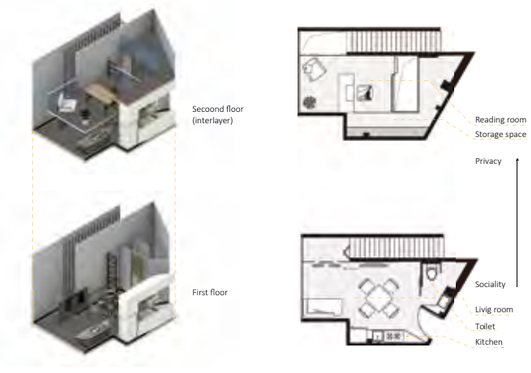


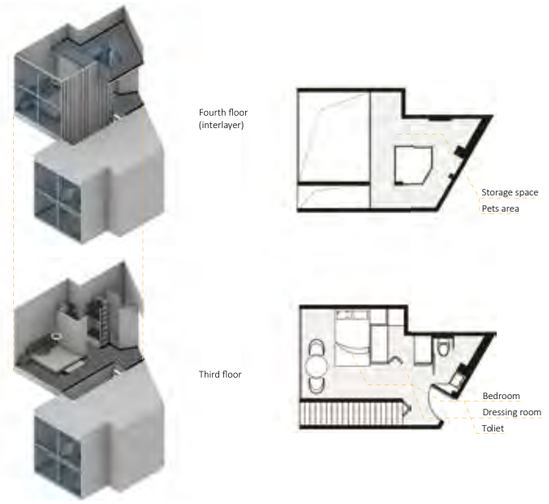
Space formation for units



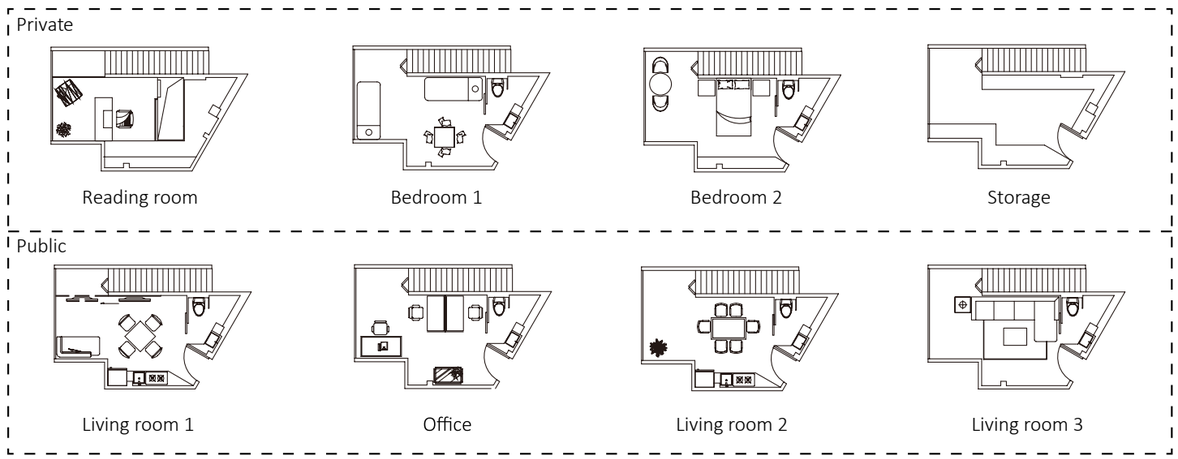
Because the rotation causes the four corners of the module to face outwards, the side facing the corridor will squeeze the public space, so the sharp corners toward the side of the corridor will be cut off to leave enough space for the corridor. At the same time, on the side of the corridor, the wall is inclined to form many small wasted spaces with the load-bearing columns. As compensation, these spaces are filled. That expands the interior space and also has the visual effect of hiding the load-bearing columns.

In the consideration of shared stairs, consider adding a movable device to the stairs so that the same row of stairs can respond to residents in different directions to change different directions. Each stair can be moved up and down independently, and the linkage of all stairs Next, the shared staircase has two different forms to serve the two neighboring households. Under this operation, the space is more flexible, and the shared staircase serves as a rigid partition. Even if it is used by two households, the living space of each other will not intersect, which protects privacy.

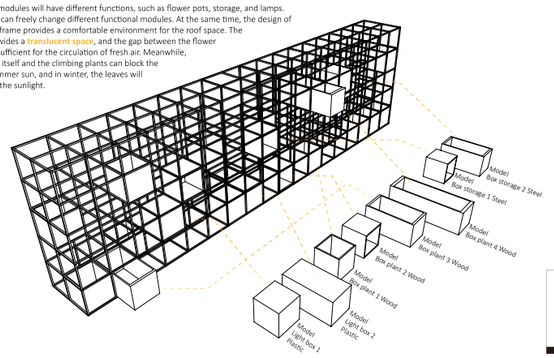


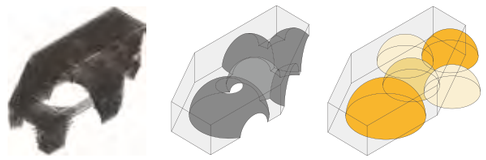


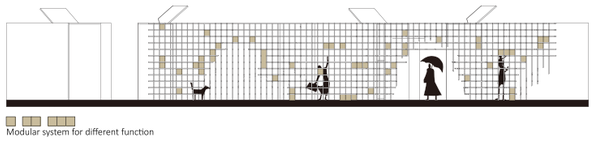
Modular design can improve the living quality of the space. Many of our pollution sources today are not outdoors, but indoors. The main carcinogen formaldehyde is mainly contained in the decoration glue and paint. Usually the decoration formaldehyde in the home takes two to three years to dissipate, and the poor quality building materials are even longer. Due to the construction level and time efficiency of the workers, people cannot wait until formaldehyde is exhausted before using the space. Moreover, for the quality of decoration, the country does not have a sound quality inspection to control the quality of the decoration as a whole, so many families have no choice but to endure. However, if the modular system can adopt industrial product standards, strictly control the process of materials, and carry out quality inspection on the modules that go out. Basically, it is possible to check in and use in time.



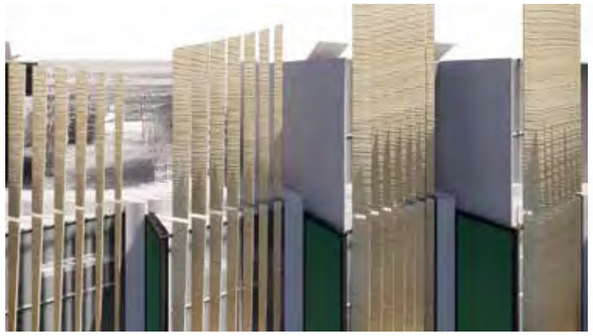
Different modules will have different functions, such as flower pots, storage, and lamps. Residents can freely change different functional modules. At the same time, the design of the cubic frame provides a comfortable environment for the roof space. The frame provides a translucent space, and the gap between the flower stands is sufficient for the circulation of fresh air. Meanwhile, the frame itself and the climbing plants can block the strong summer sun, and in winter, the leaves will not block the sunlight.

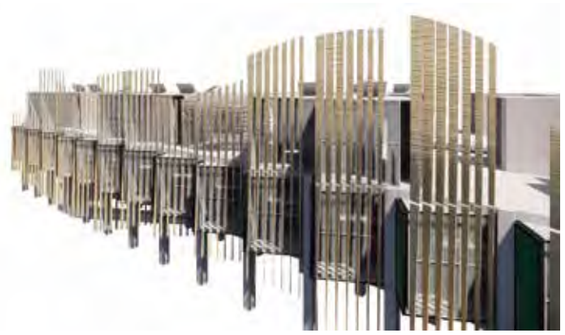




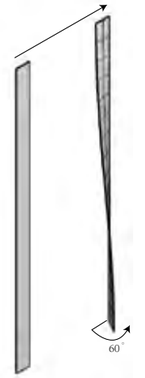


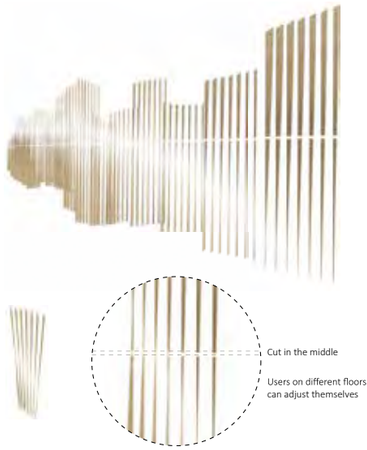
Transformation of the space over time



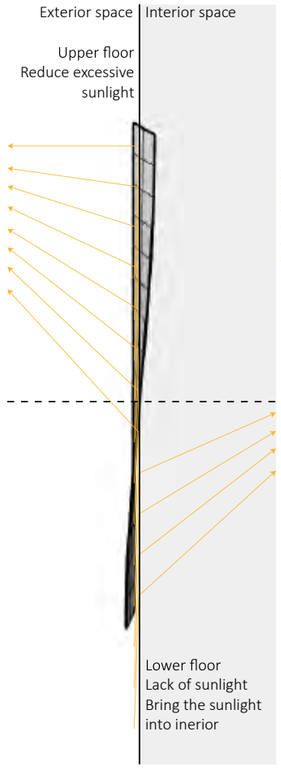


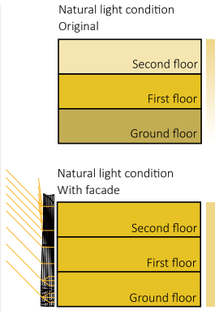
The vertical louver facade system also uses modular design idea. The louvers are designed as a detachable system, made of lightweight polymer wood panels. Unlike ordinary louvers, each louver is rotated 60 degrees from top to bottom. This is a design that considers both practicality and aesthetic considerations. The design of the entire system is based on consideration of the daily exposure conditions on the ground. In Baoanfang, the building density is extremely high and the buildings are relatively low, which leads to insufficient lighting of the ground floor. At the same time, the top floor is directly exposed to the outside, which also leads to excessive sunlight in the top floor in summer. The lighting conditions of the entire building are uneven.



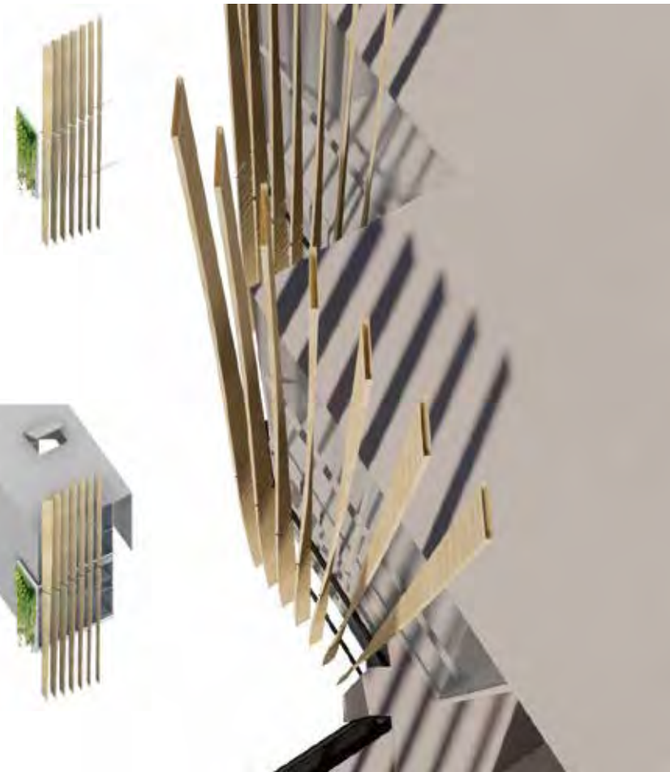


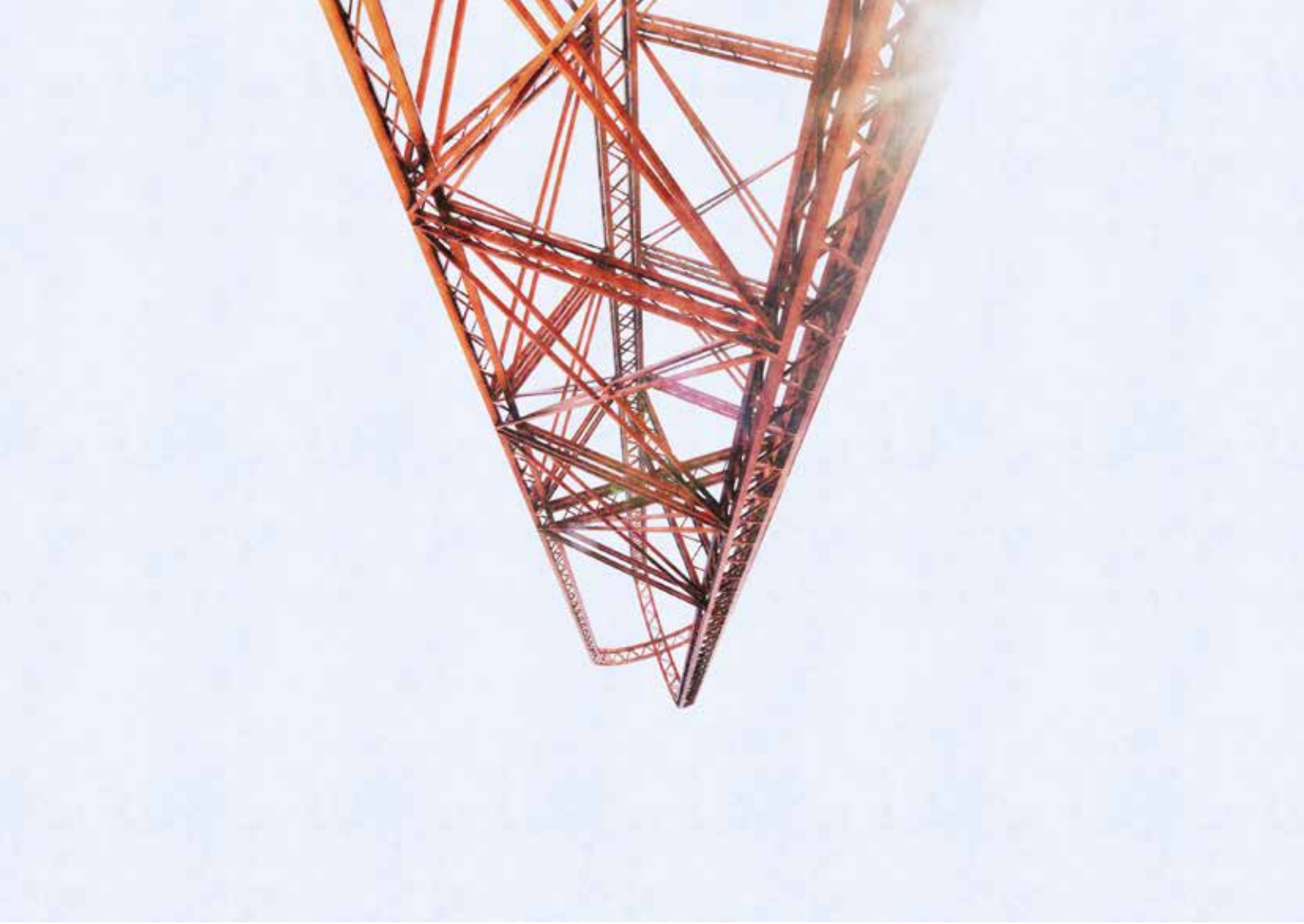
After the spiral louvers have been specially designed, the lower space can lead more sunlight into the room, while the upper space can block excess sunlight. Through the reasonable use of natural light, it can reduce the indoor dependence on artificial light sources and refrigeration systems, reduce energy consumption, and improve sustainability. At the same time, the louvers are divided into two in the middle, with two sets of system controls, allowing residents to adjust their own sunlight intensity.





As an additional structure, the entire system does not depend on the building structure, so it can be disassembled or replaced with greater flexibility. At the same time, the flexible assembly method allows it to be copied on other old buildings on a large scale, providing a cheap and easy sustainable development plan for the renovation of old residential areas.





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