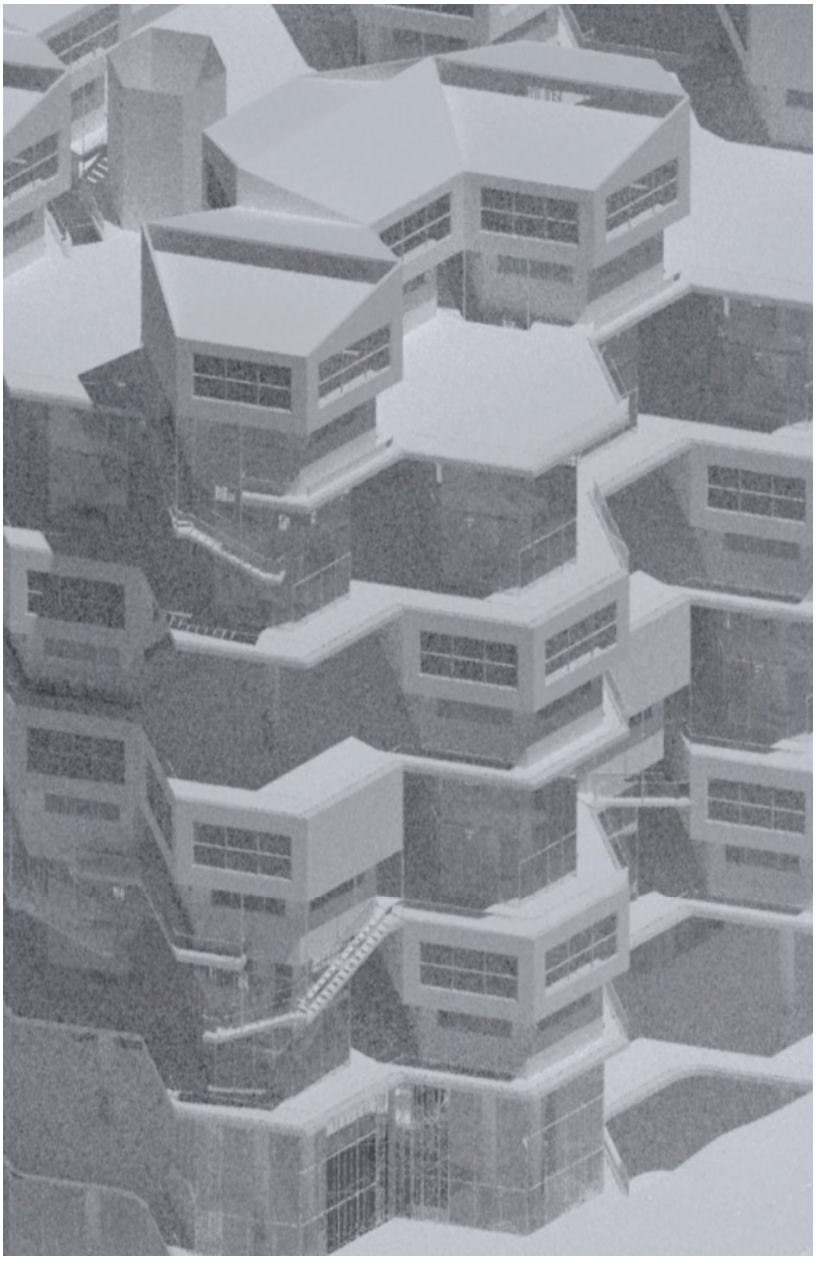
Graduate portfolio

Summer 2019 - Spring 2020

Columbia GSAPP

M.S.Advanced Architectural Design

Haitong Chen



I.

TOWRADS NEWER BRUTALISM:

Mix-use Housing by High Line Park

Manhattan, New York

Summer 2019, Semester 1

Team Members: Haitong Chen, Yechi Zhang

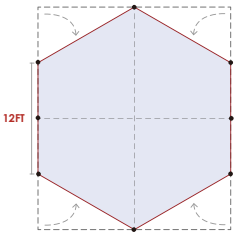
Criticts: Emmett Zeifman

This project revisits the "new brutalism" articulated by Alison and Peter Smithson and Reyner Banham in the early 1950s: a legible synthesis of spatial, structural and material organization; individual buildings conceived as urban theses; directly express new technologies and social relations through architectural form. We critically evaluate the efficacy of these principles today, considering parallels and differences between the postwar years and the present. Where "new brutalism" sought to give form to the emerging welfare state and consumer society of the postwar period, the newer brutalism might express and challenge the transformed economies, social relations, and environments of the new millenium. Working on sites between 10th Ave and the High Line, these experiments are positioned as a direct challenge to the ongoing development of an area laden with financial and cultural capital. The studio asks students to define alternative structures, offering new possibilities of living, working, and building in the 21st century.

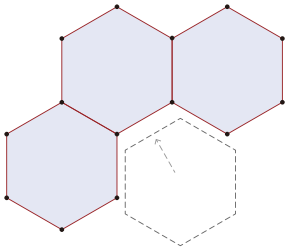
1.Form Strategy

EXAGON BEHIVES AS A PERFECT GRID

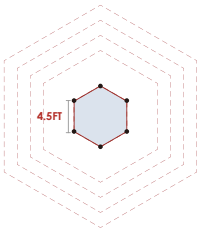
BRUTALISM ARCHITEC-TURE



INDIVIDUAL

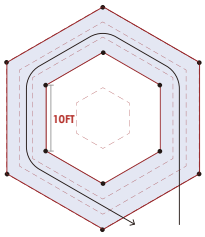


GRID STRATEGY

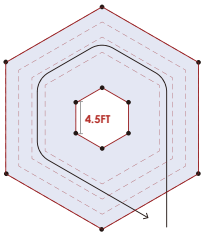


CORE

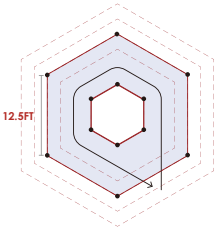
PROGRAM: LIVE AND-



PUBLIC

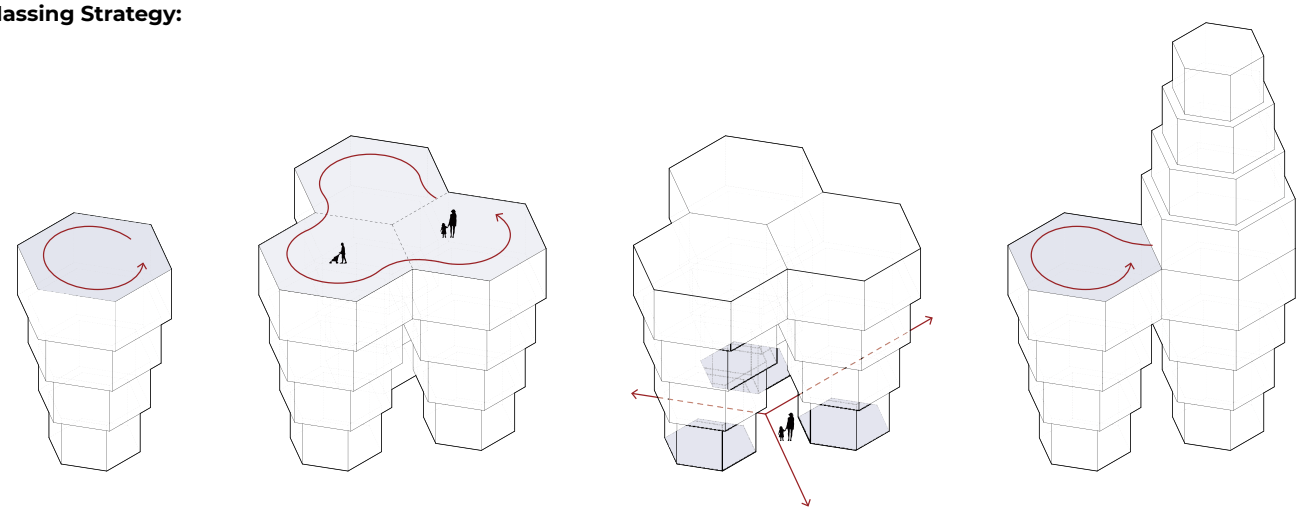


RESIDEN-



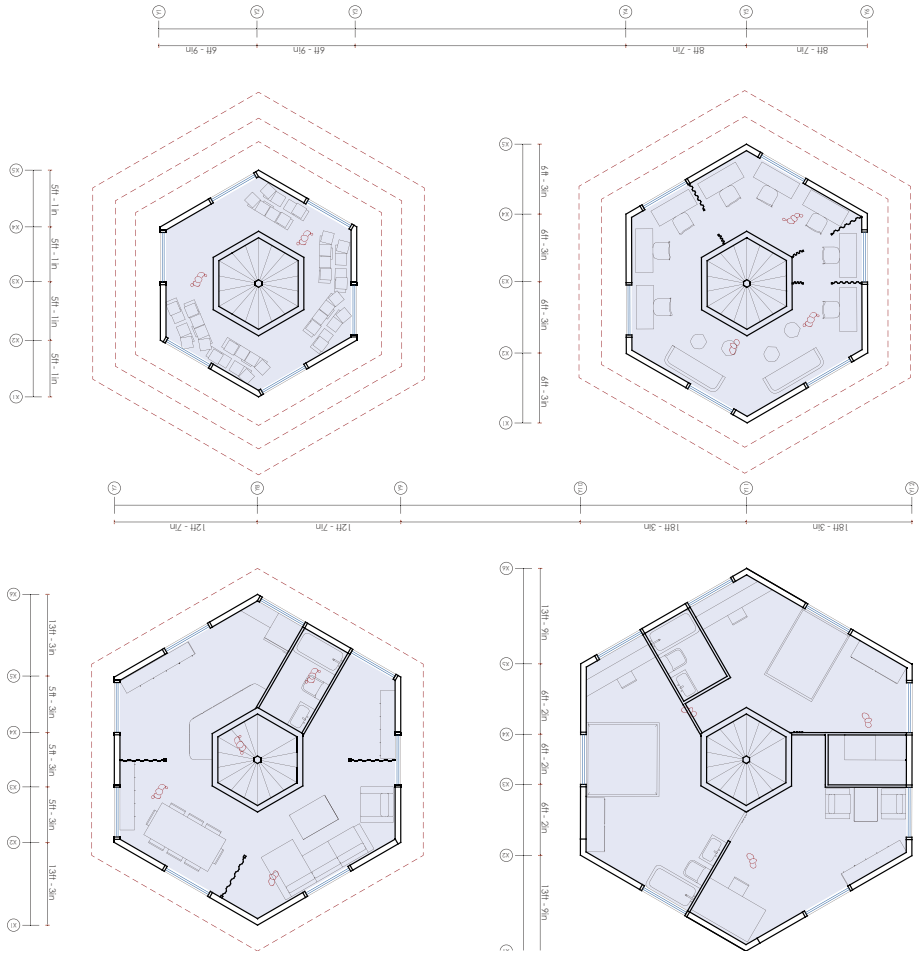
COMMERCIAL

Massing Strategy:

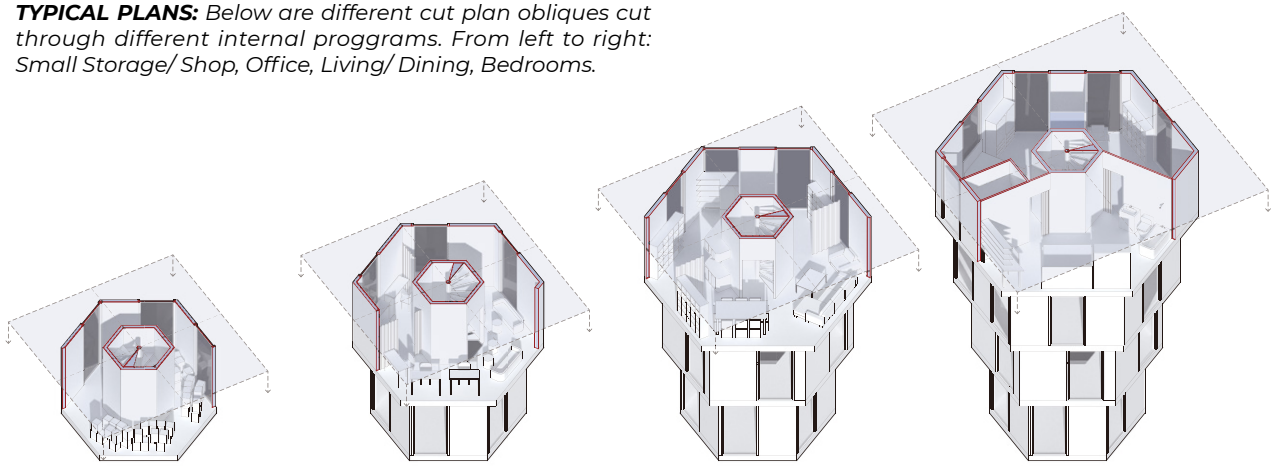


Above: The roof area provides maximum space which allows the maximum sunlight hit the planters. Six differnt planter and three water threatment devices has been designed for this project. Three water threatment are 1. water tank. 2. water recycke system. 3. water threatment. Six planters are: 1. exterior o racks . 2. Square Organizers. 3. Exterior hangers for clibbing plans. 4. Interior L shape racks. 5. Green wall system. 6. I shape racks for multi-urban plans.

2. Typical Plans



TYPICAL PLANS: *Below are different cut plan obliques cut through different internal proggrams. From left to right: Small Storage/ Shop, Office, Living/ Dining, Bedrooms.*



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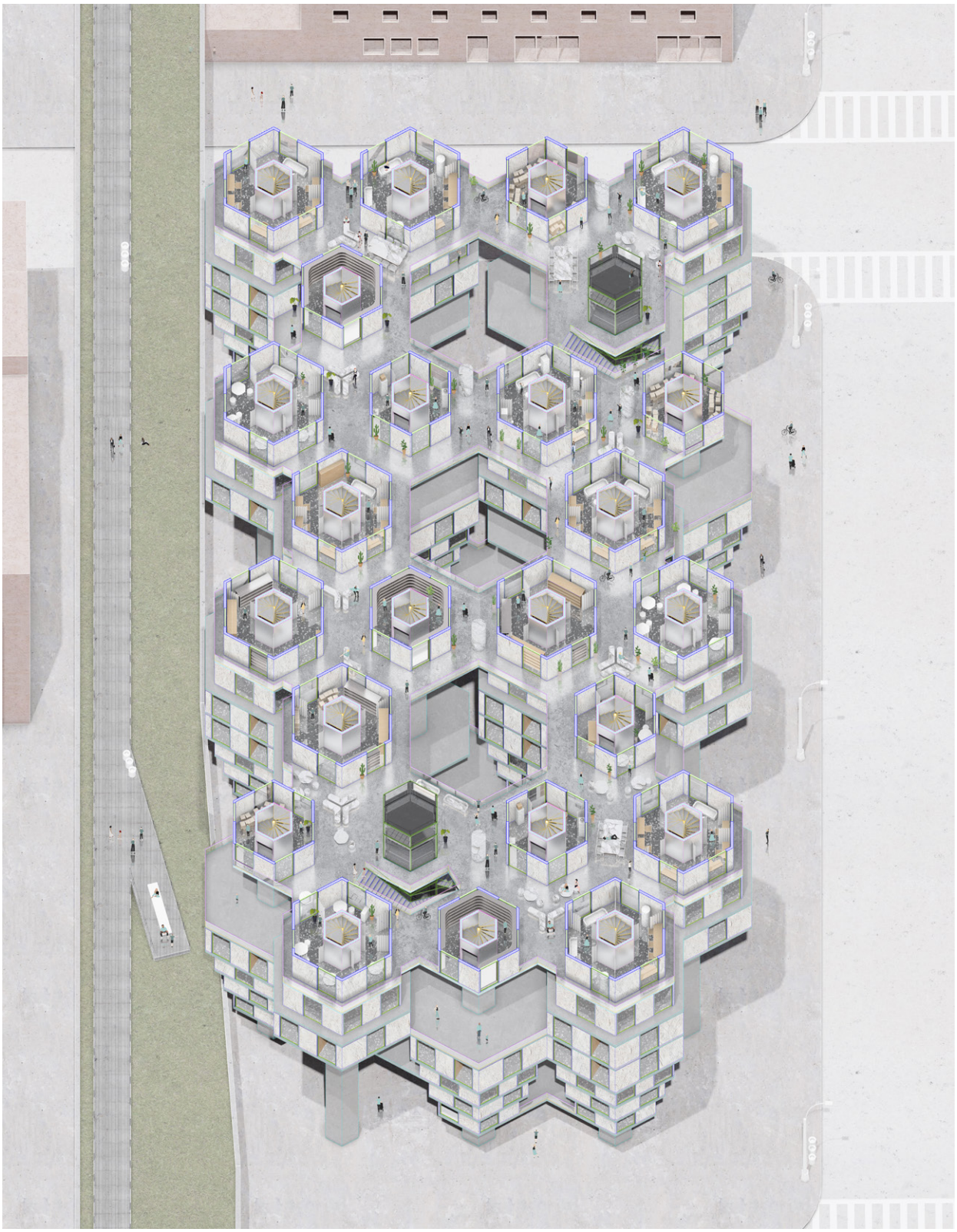
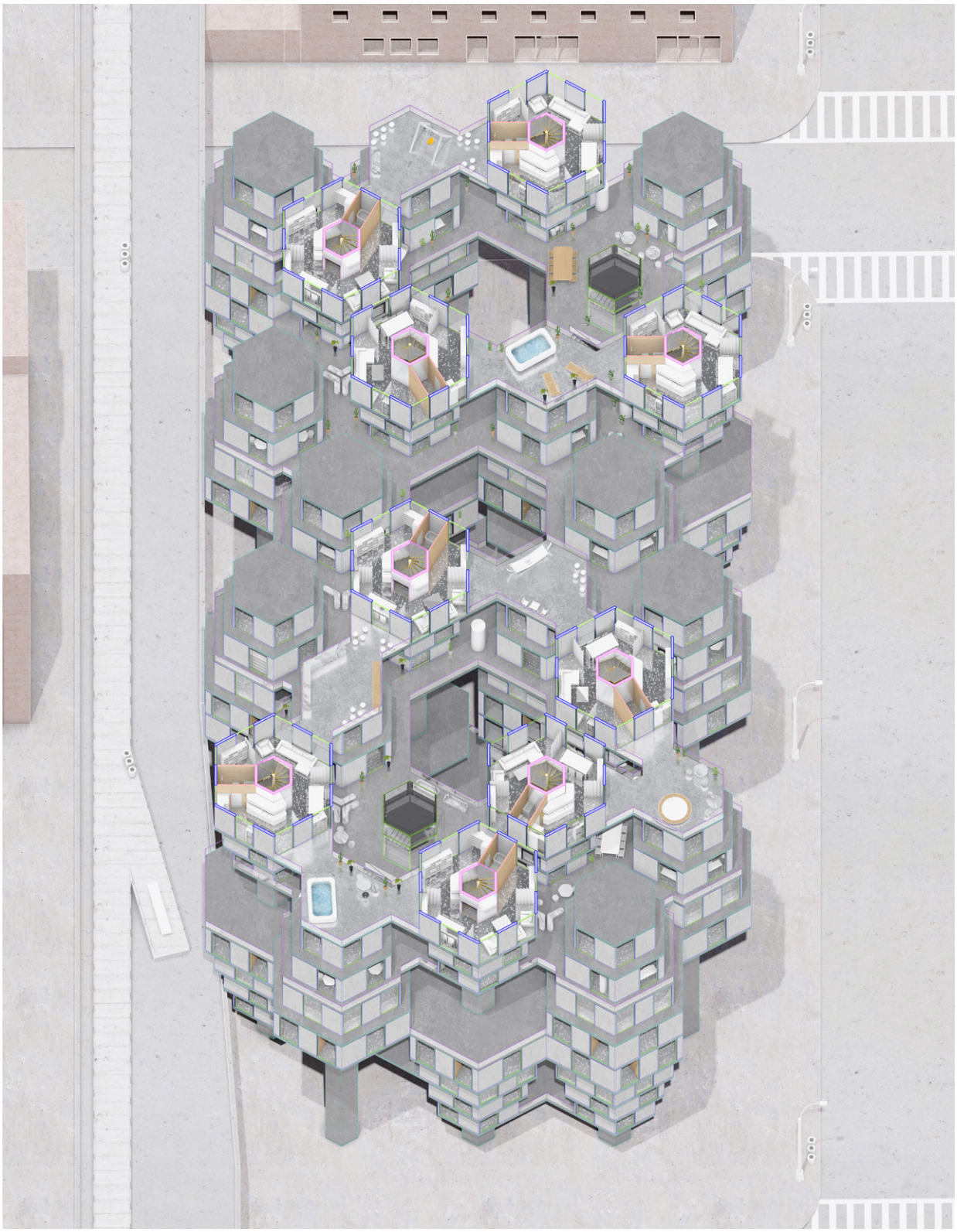
3.Axonometric

4.Plan Oblique I



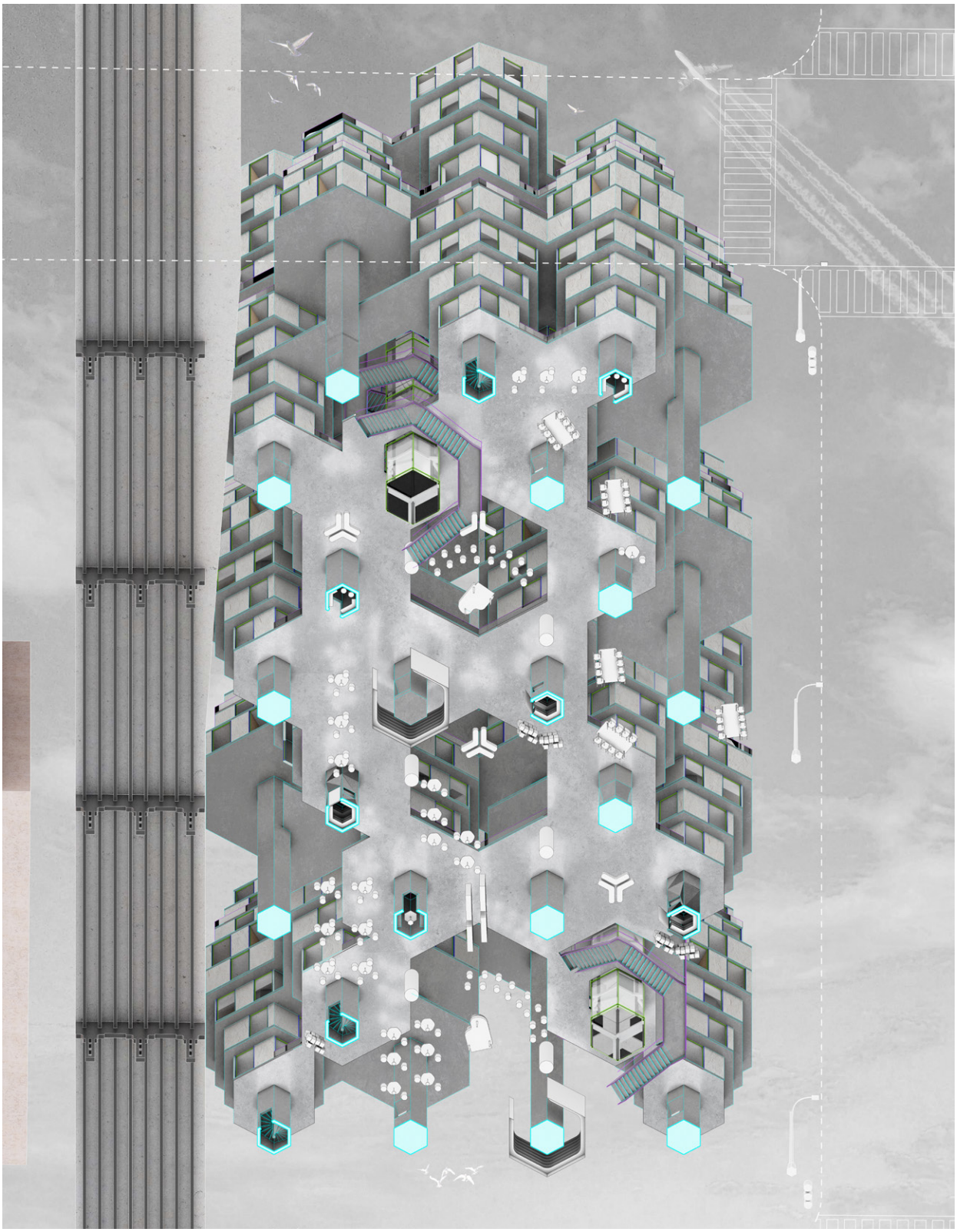
Above: Plan oblique showing the commercial level of different commercial types.

5. Plan Oblique II



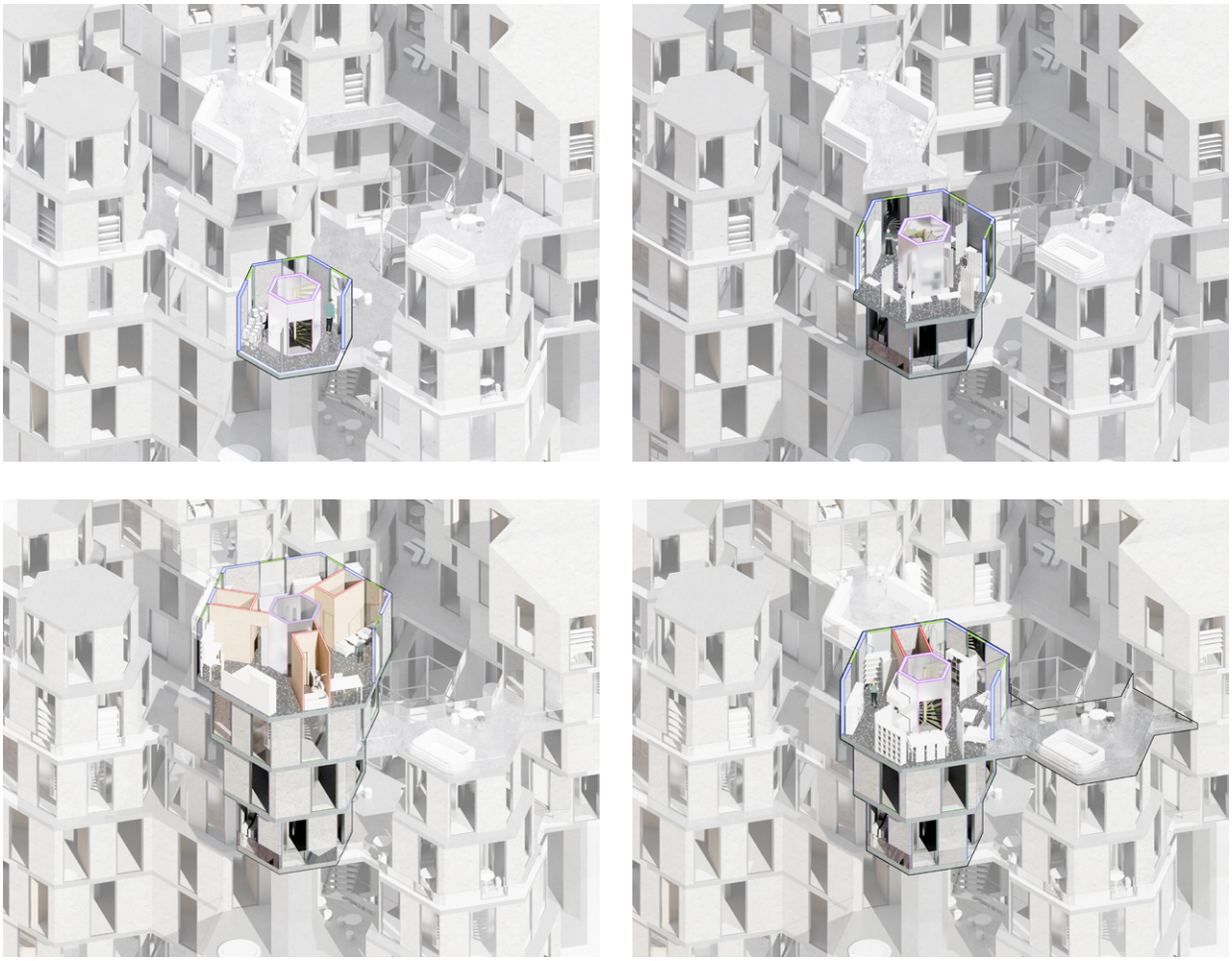
Above: Plan oblique showing the housing level of different housing types.

5.Worms eye oblique



6. Section

7.Room Placement



Above: The project is based on the study of housing recombination. Each level representing a typical way how two different level can be transfer to different living levels

8. Atrium Perspective

Above: The perspective view showing the living level of one typical housing type.

I.

POST OIL:

Coexistence at a Planeatry Scale

Lousiana Coastal line, Lousiana.

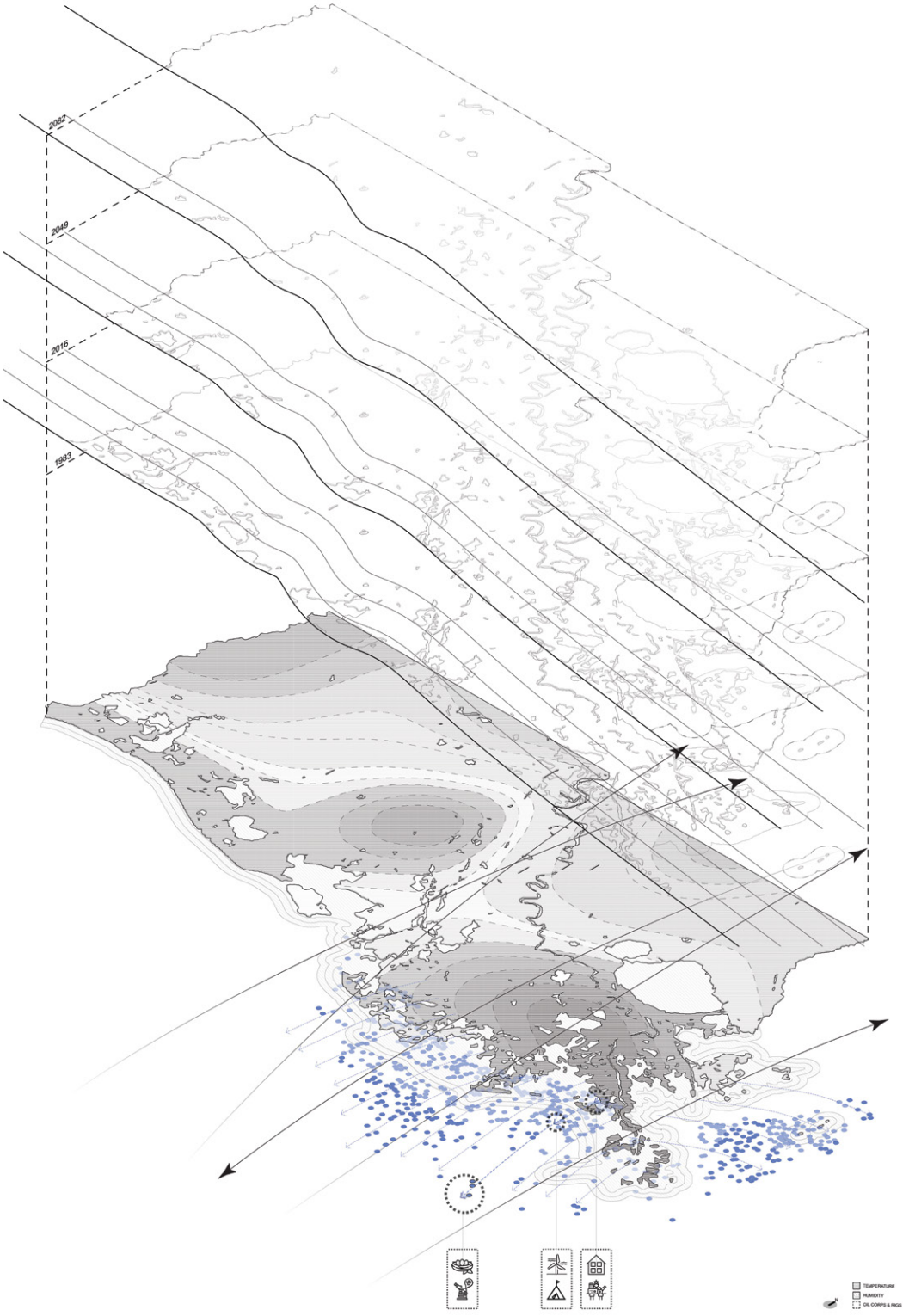
Spring 2020, Semester 2

Team Members: Haitong Chen, Peizhe Fang

Criticts: Phu Hoang

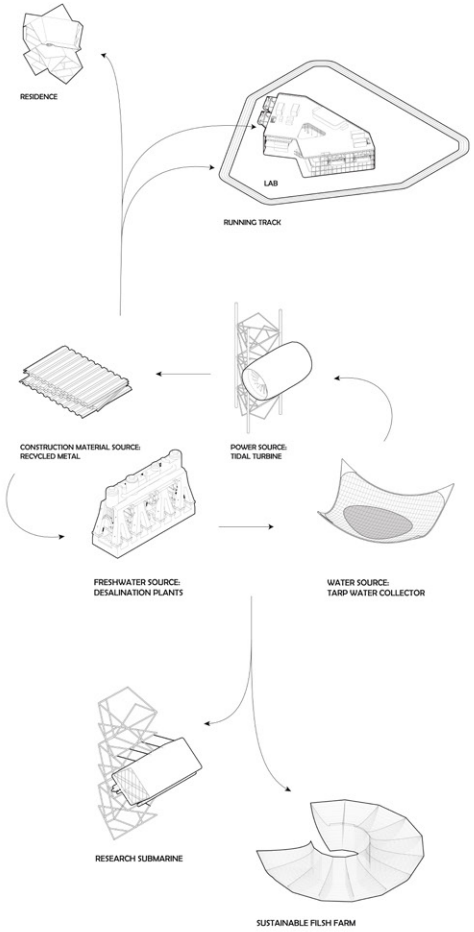
The expected effects of post peak oil: peak oil and sea level rises, reults in a series of incidents such as Oil Rigs Desertion and bio-habitat loss. There are four differnt proggrams designed for offshorem, mid-seas, and high seas oil rigs. Our design foucses on the deserted Oil Rig Networks, we transform the oirginal rigs into vertical bio-habitats, which aims to exert instant response to the oil spill, offer shelter to different types of species, and create public recreational proggram. The proposal can be designed into four different proggrams which is attributed to three different types of oil rigs.

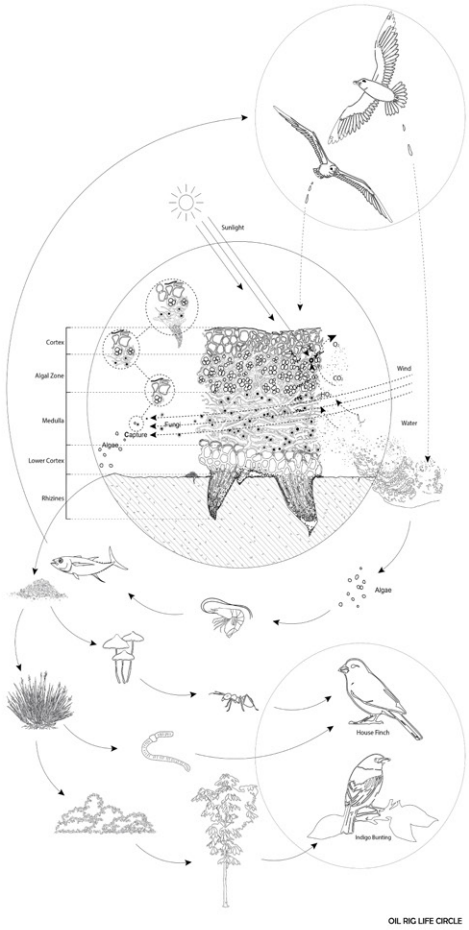
1.Site Plan

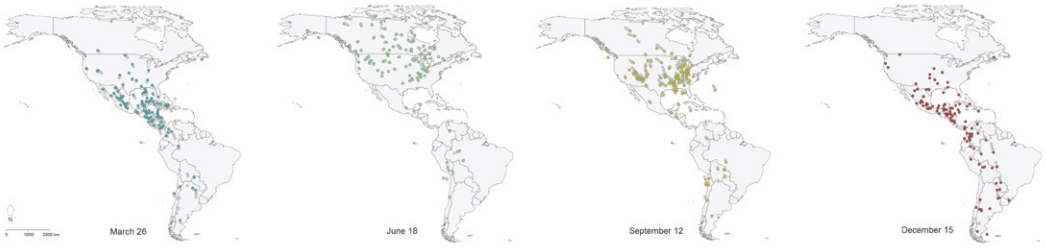


Above: At the time of post oil. We found that there are more and more abandoned oil rigs around the Louisiana coastal line. Currently the research told us just in this area there are 176 large oil platforms and 3000 more small oil rigs.

2. Diagram Oblique








JACK-UP OIL RIG

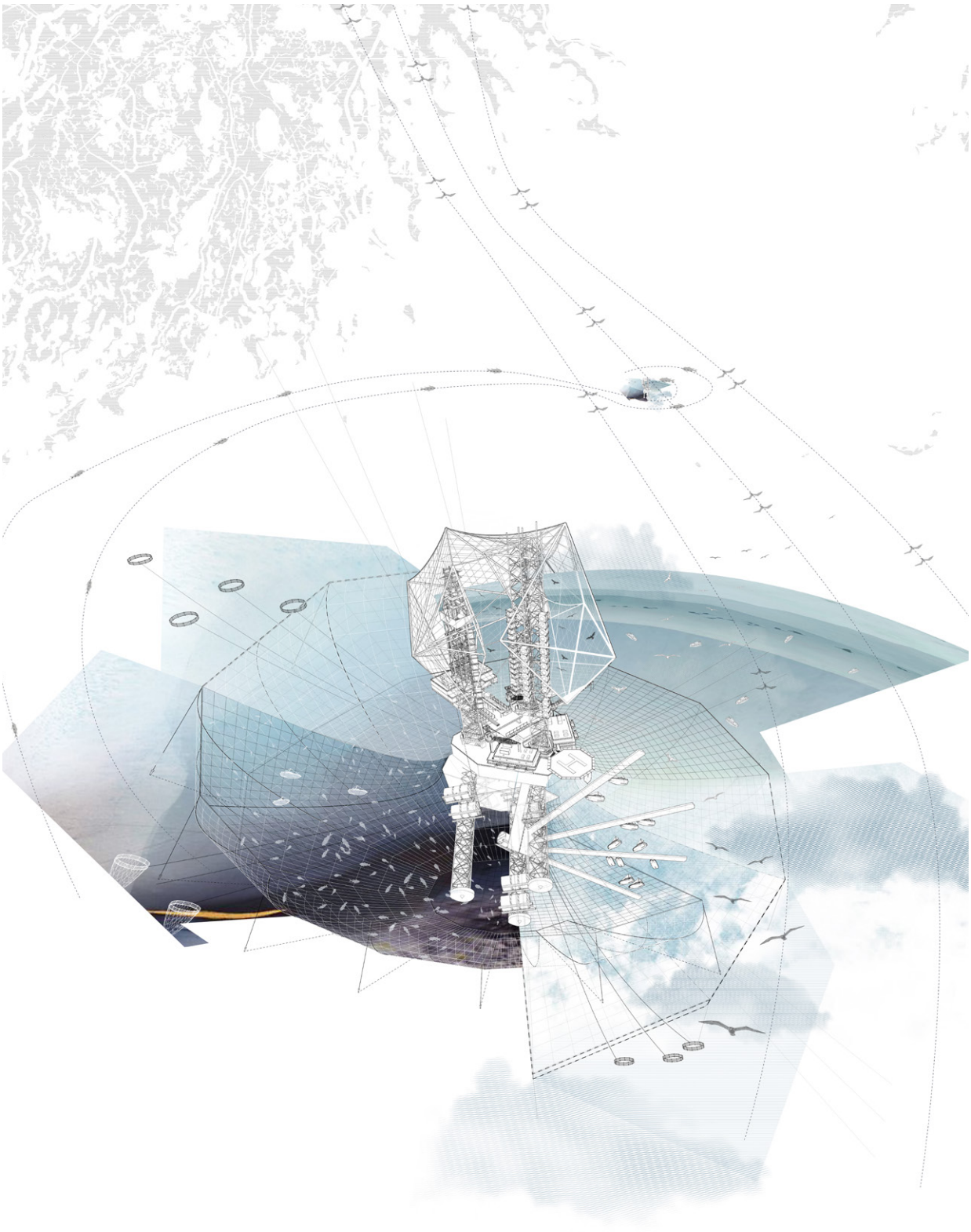

LUMCON EXPERIMENTAL FIELD


LAB

Above: And normally after the oil rigs are abandoned the government would just leave the oil rigs to the government. And takes too much money for just the maintenance. In order to prevent it from different issues such as oil leaks. And we think it's interesting to take it and do something about it.

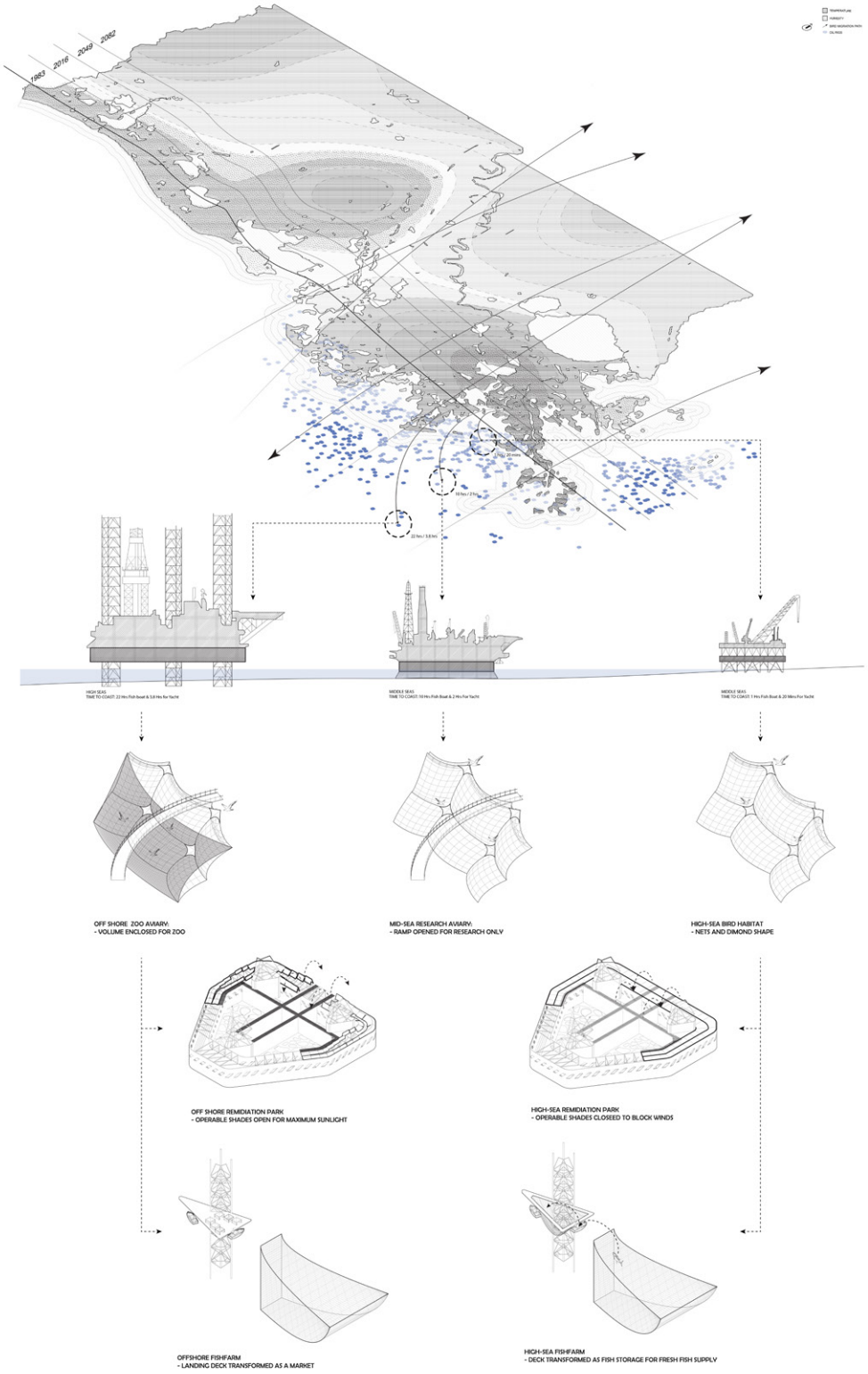
3.Render

4.Birds eye vs Fish eye



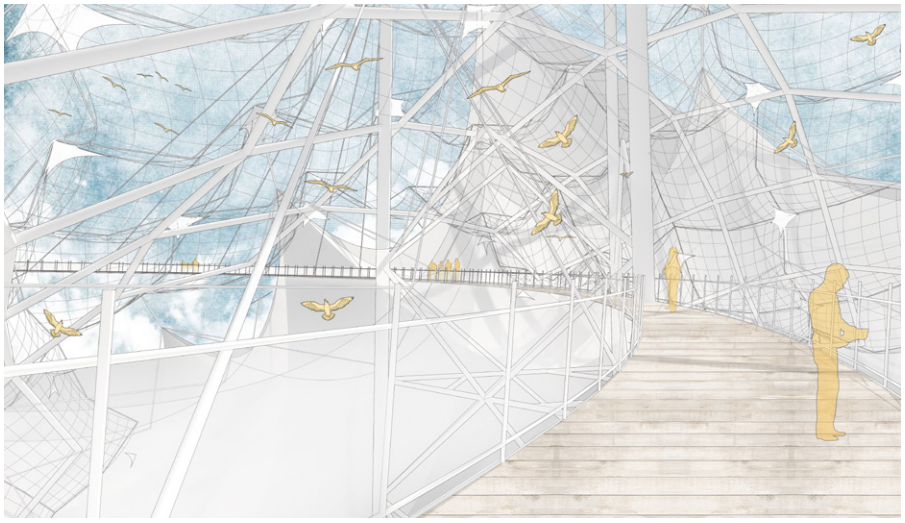
Above:On the left side of the drawing is a fish view. According to research, fish will naturally gather around the structure of oil rigs. On the other hand, fishermen are losing their fishing area because of sediment diversion. Combining these two facts, we design the large new fish farm which can keep the fish live in an almost natural environment and a new system of fish farming, storage and marketing which is hopefully to be sustainable.

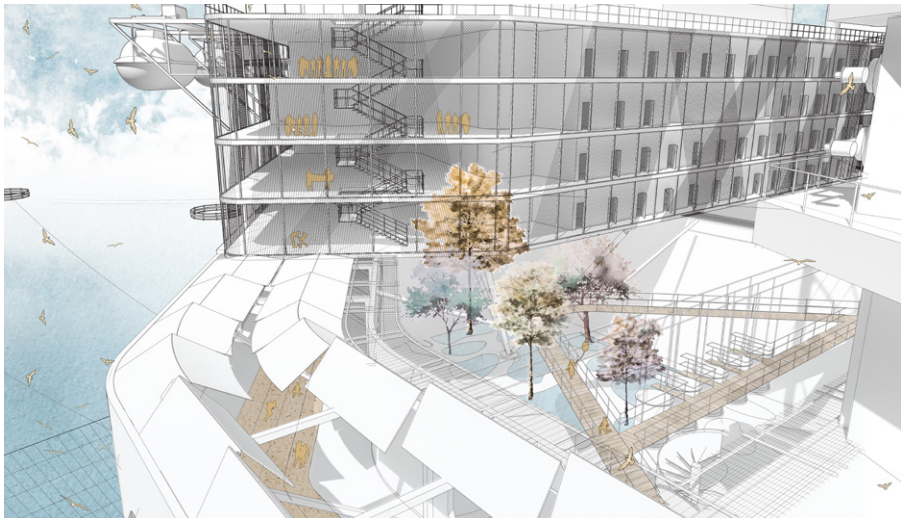
5. Analytical Diagrams

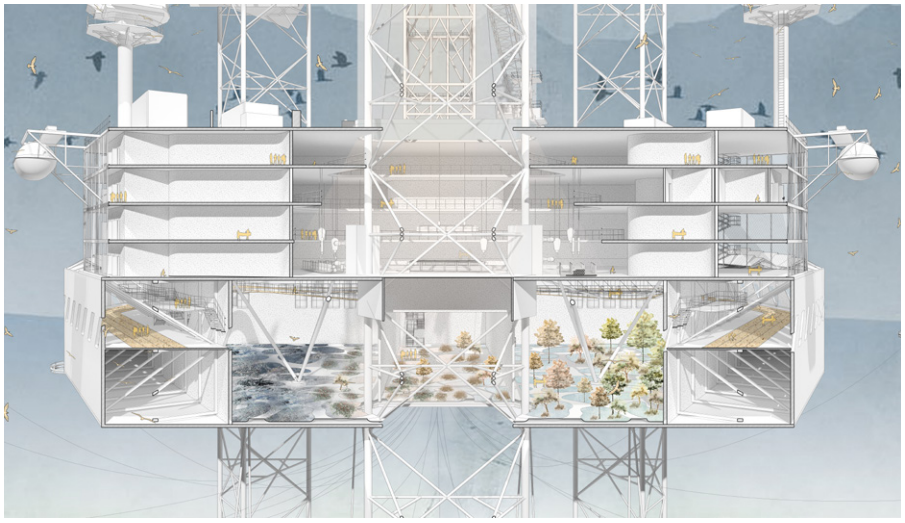


Above: In a word, after peak oil, there will be many abandoned oil rigs. What we found interesting is that oil rigs actually involve a lot of animal activities. Breeding, foraging, nesting happens among different species. And a complex food chain has already formed. Three main species have been discovered on the oil rigs. First, lichen, the coexistence of fungi and algae, can decompose oil waste after the oil rig is abandoned. And second, fish, they gather around the structure of the oil rigs so it is easy to catch and farm. And Third birds, According to the research , each year more than 50 species of birds can be found on only one oil rig.

6.Perspectivs

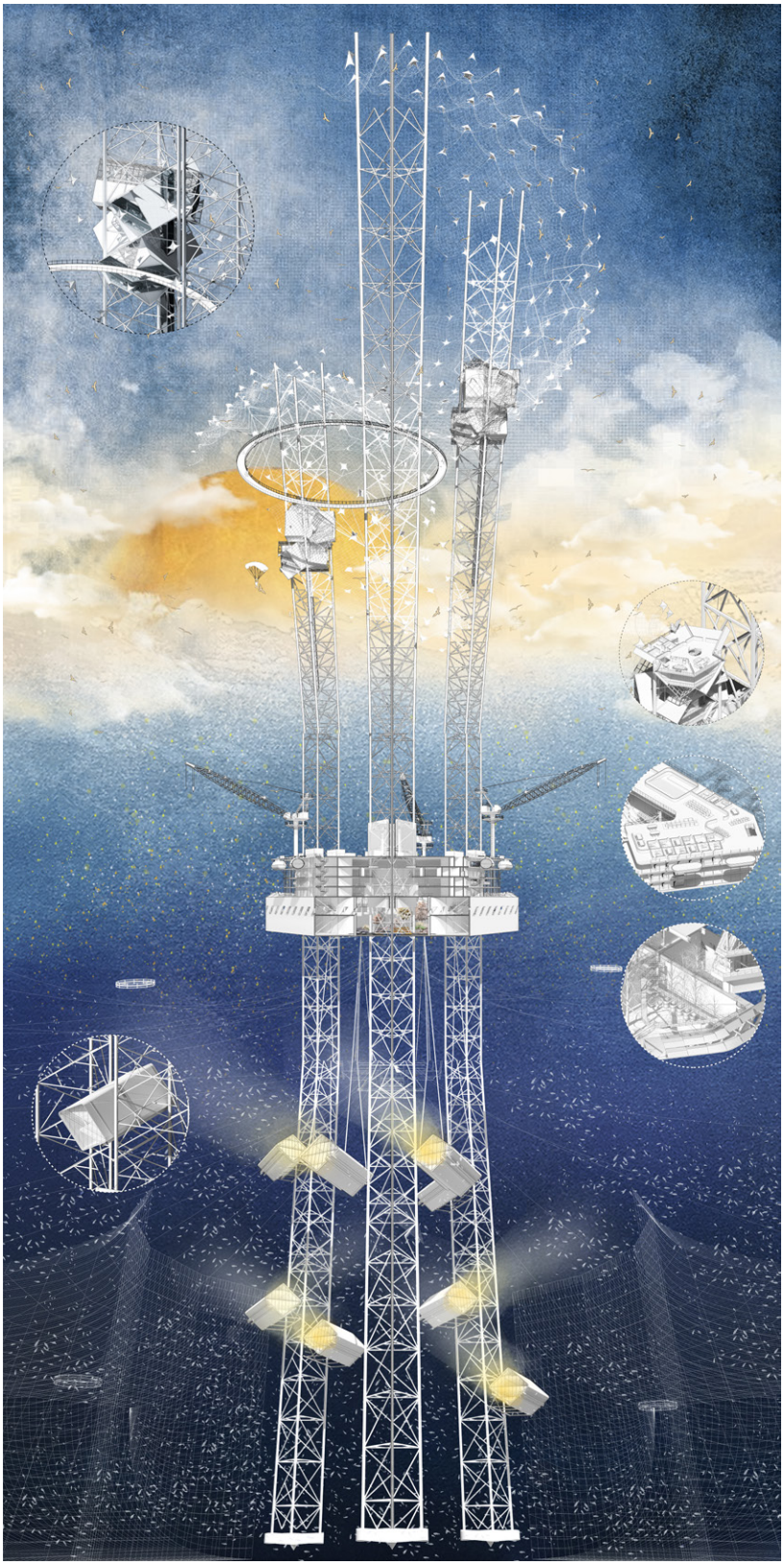




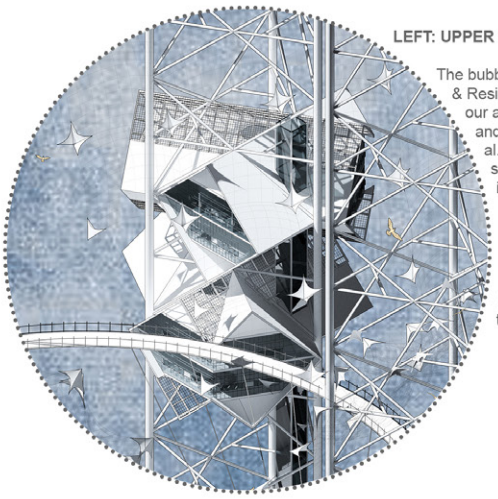


Above: Unlike normal fish farms, we want to reduce the pollution from the use of antibiotics by increasing the size of the fish farm. The large rounded fish farm will then lower the density and provide enough food source for the fish. And the individual mechanical net system will gather the fish and help the fishermen to use the fishnet just like the normal fish farm.

7. Long Drawing



Above: The proposal on the left would be designed into three different types. They work together as a system to correspond to oilrig networks and bird migration. The offshore proposal will serve as a zoo aviary for recreational purposes, and the high-sea ones would serve as the bird habitats. Finally, in between the mid-seas ones would be a mix of other two proposals.



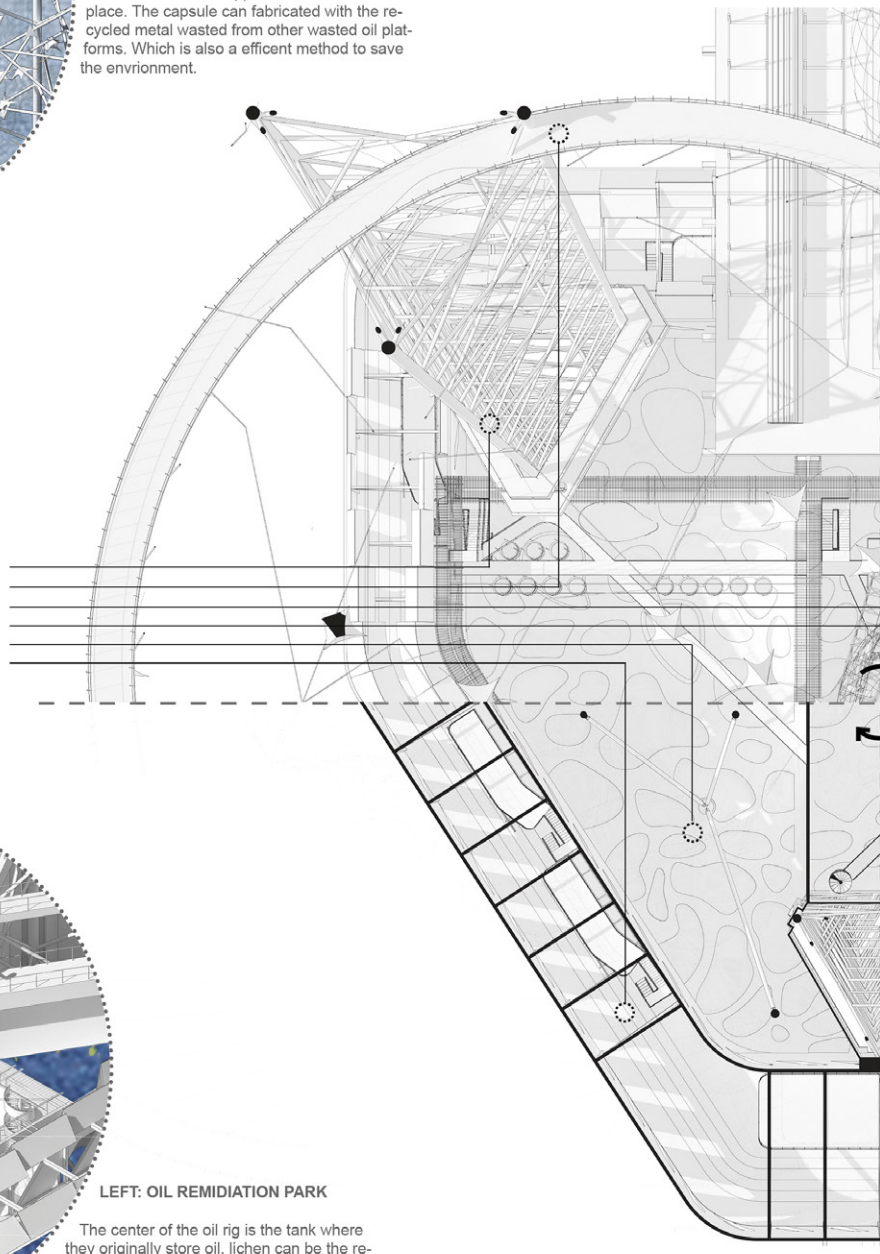
LEFT: UPPER LEVEL AVIARY / RESIDENTIALS

The bubble is a zoom in of the upper part of our aviary & Residential proposal. This is a blue circles presents our anticipatory coexistence of Birds and Humans, and how birds and human whould use our proposal. The Residential is a plausible dimonded shape structure which can be perfectely fit into the original steel structure.

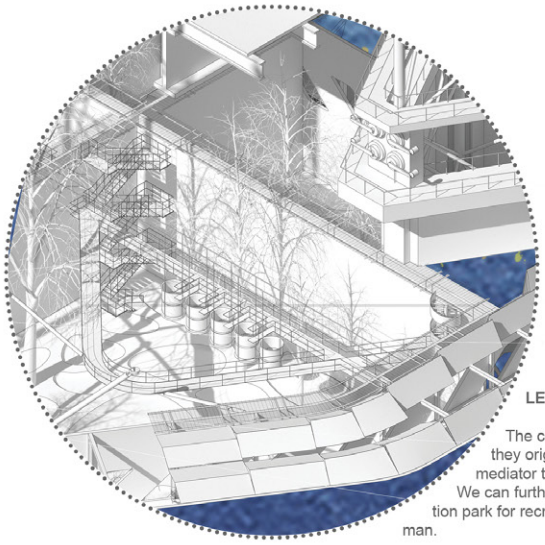
The dimond shape capsules can be prefabricated inland and shipped can assemble in place. The capsule can fabricated with the recycled metal wasted from other wasted oil platforms. Which is also a efficent method to save the envrionment.

PLANS

The four plan
from topdown
clockwise.



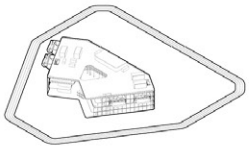
- Primary Structures
- Birds Research Path
- The Residential Plan
- Lab Space
- The Oil Remidiation Park
- Running Track



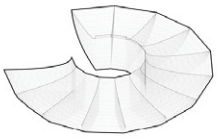
LEFT: OIL REMIDIATION PARK

The center of the oil rig is the tank where they originally store oil. lichen can be the remediator to heal the pollution from leftover oil. We can further transfer the huge tank to a remediation park for recreational use of the workers and fisherman.

RESIDENCE



LAB & RUNNING TRACK

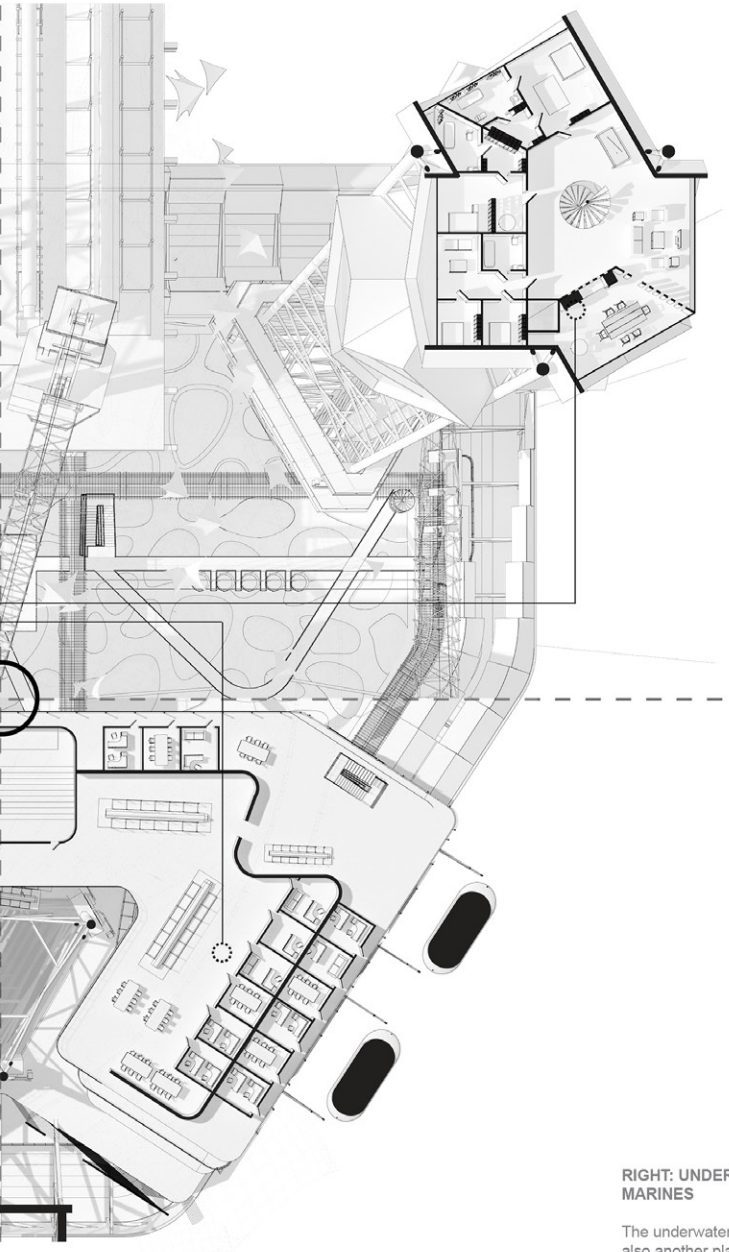


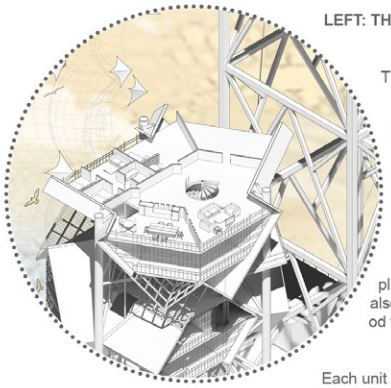
FISHFARM

UNDERWA

OF FOUR LEVELS

s below presents four major programs verticaly
of four different levels, starts from upleft coner

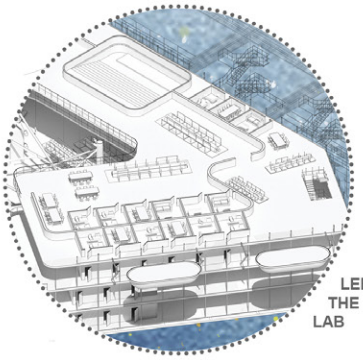




LEFT: THE RESIDENTIAL CUT PLAN

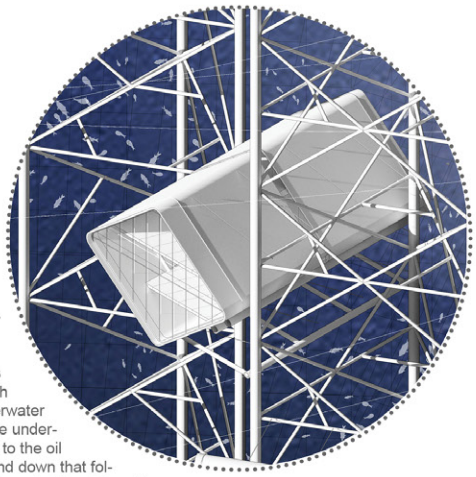
The dimond shape capsules can be prefabricated in-land and shipped can assemble in place. The cap-sule can fabri-cated with the recycled metal wasted from other wasted oil platforms. Which is also a efficent meth-od to save the envri-onment.

Each unit diamond unit can occupies about 15 lab workers. The upper lvel terrace space allows birds research conviniently observe the brids even from thre residence. The bottom part of the dimond is also designed as a bird habitat .



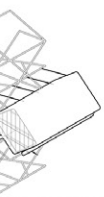
LEFT: THE LAB

The lab provides office spance for more than 500 worers to work in the renovated oil platfor at the same time. The lab offers fac-tory space, office, laboratory of all needs.

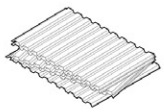


RIGHT: UNDERWATER SUB-MARINES

The underwater submarines is also another plausible research space whcih disigned for underwater resarch and invesitgations. The under-water submarines is attatched to the oil platforms which can shift up and down that fol-lows the movement of the body part of theoil rig plat form.

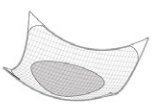


TER SUBMARINE

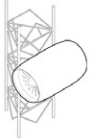


RECYLED METAL

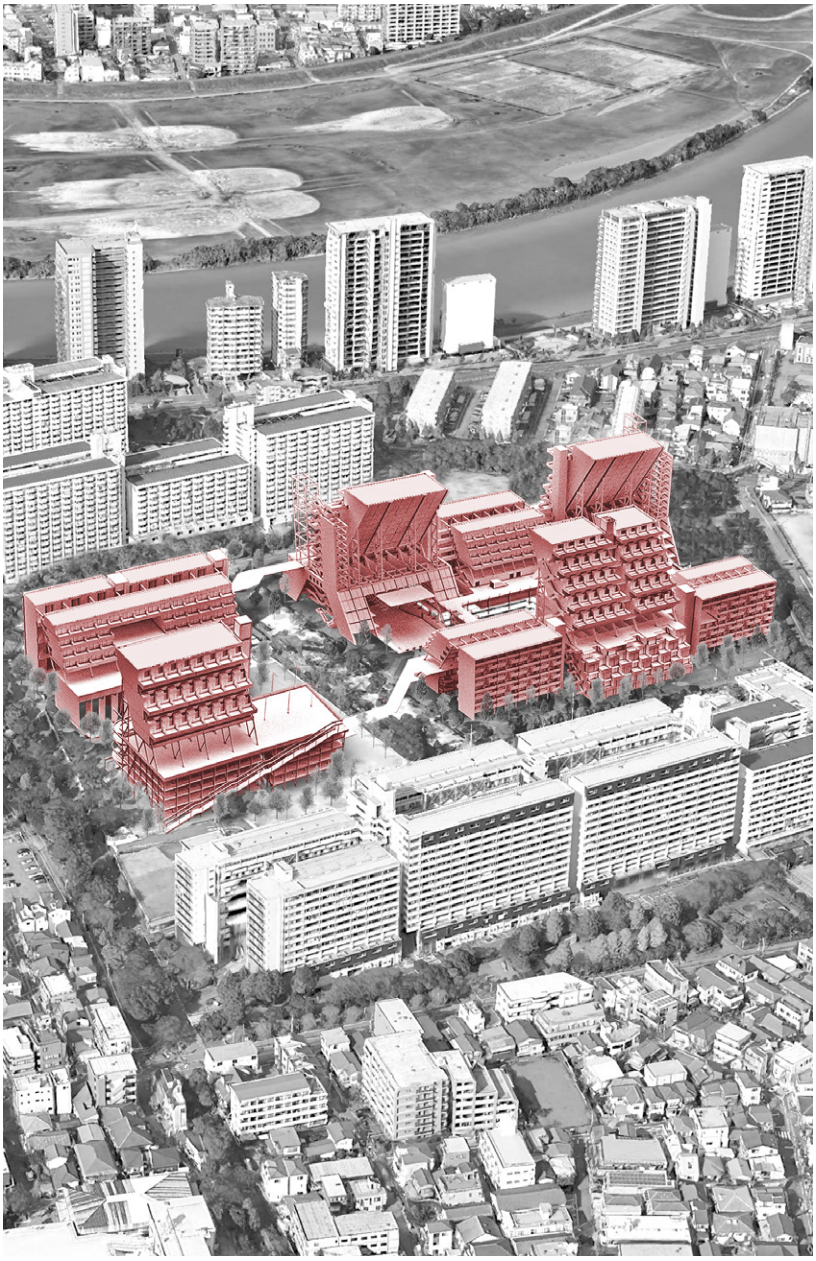
WATER DESALI-NATION MACHIN



WATER COLLECTOR



TIDAL TURBINE



I.

OPEN WORK:

Housing Complex and Campus

Kawasaki City, Kanagawa, Japan

Fall 2020, Semester 3

Team Members: Haitong Chen, Yechi Zhang, Xinning Hua, Qifeng Gao

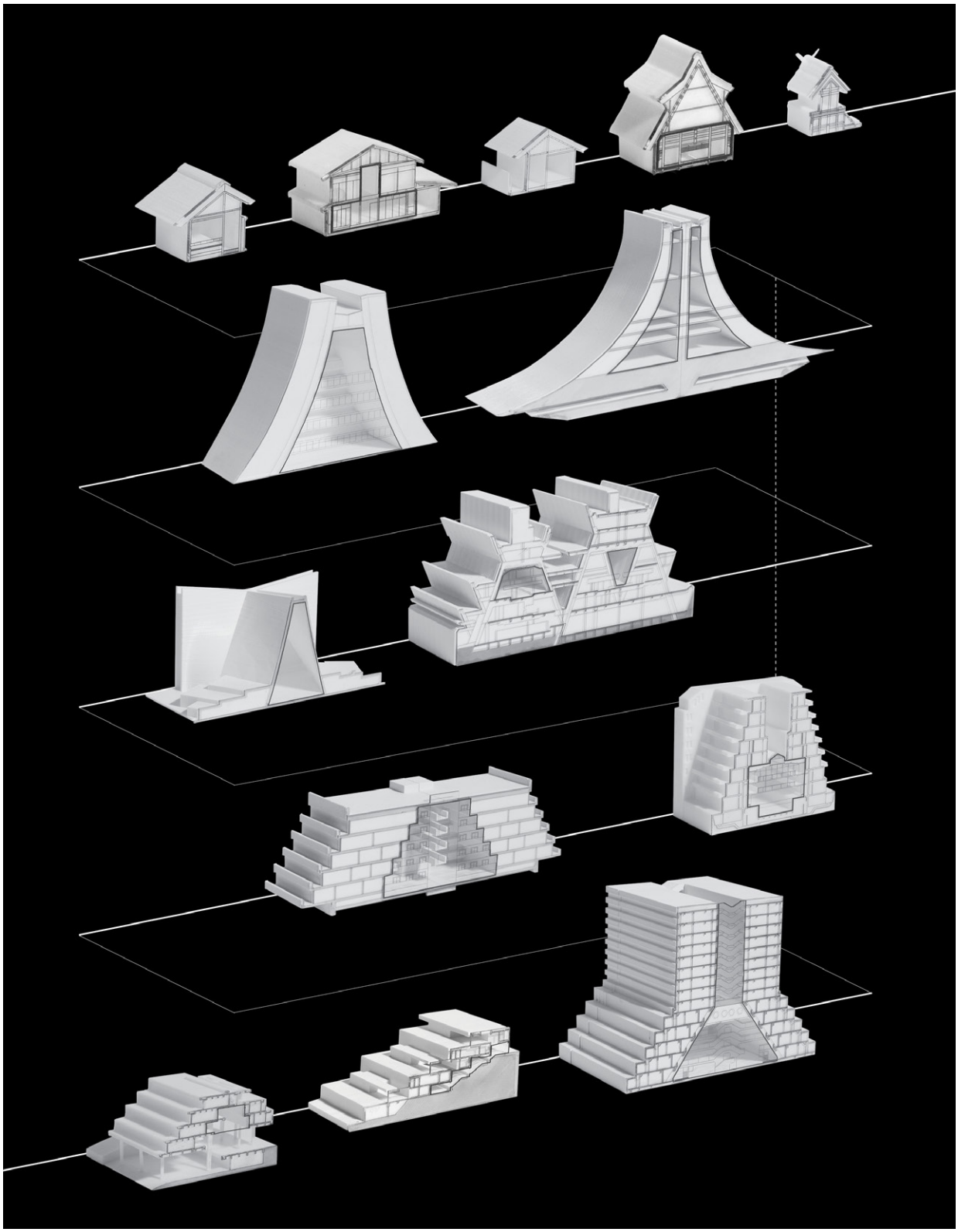
Criticts: Enrique Walker

Half century ago, architecture became open-ended. Buildings would changeand grow, architects argued, not unlike cities. Architects embraced impermanence, promoted flexibility, timed obsolescence, and welcomed uncertainty. Against the backdrop of modern masters and modern monuments, and as a result of cultural, social, political, and technological developments, buildings became systems. Paradoxically, architects would pioneer new building types, in unprecedented ways, by openly disregarding program. Design theories for open-ended buildings differed, but they all implied, almost invariably, free plans and modular units, as well as building components discriminated by their rate of renewal: frame versus clip-on, core versus capsule, structure versus envelope. By the mid-sixties, just a few years after speculation on openness had begun in earnest, several projects materialized.

1.Analysis

Above: In Japan, Danchi is a large cluster of apartment buildings that started to thrive after the second world war but declined in the 1980s. Kawaramachi housing complex, which is also known as Kawaramachi Danchi, was constructed in 1970 by Japanese architect Sachio Otani, in Kanagawa, across the Tama River.

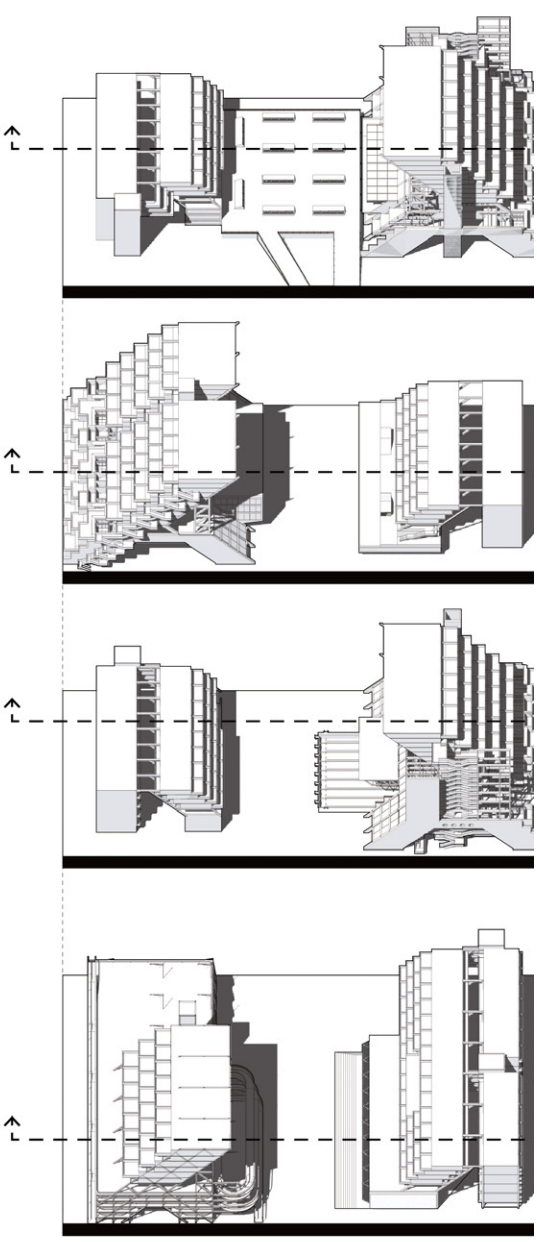
2. Housing Type Genology

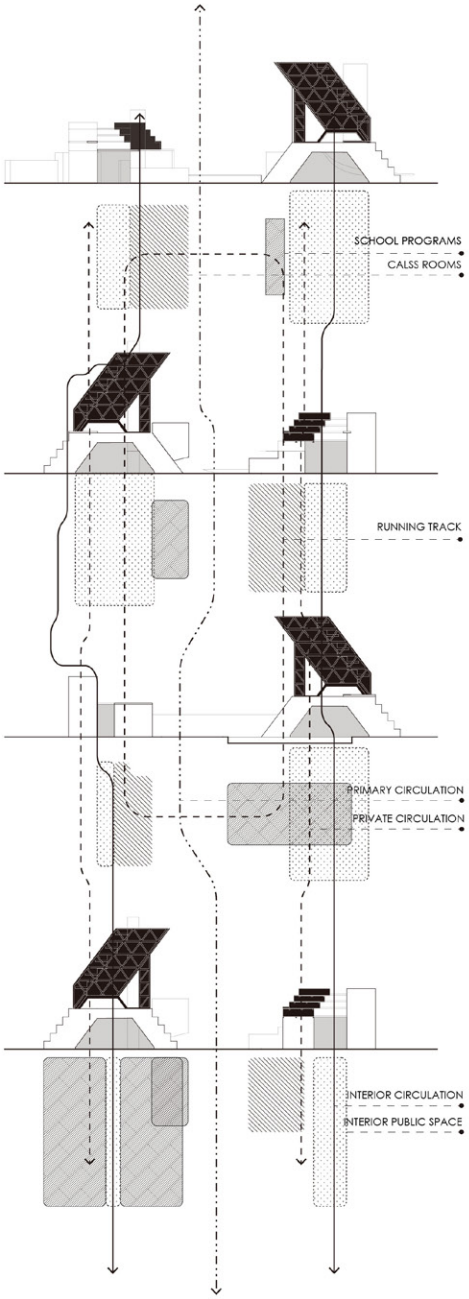


Above: A-framed buildings and normal apartment buildings are combined as a set. In Otani's original drawings, this site should be full of different sets like this. However, due to the budget shortage, only one cluster of original schemes was realized, others are all like standard danchi.

3.Model

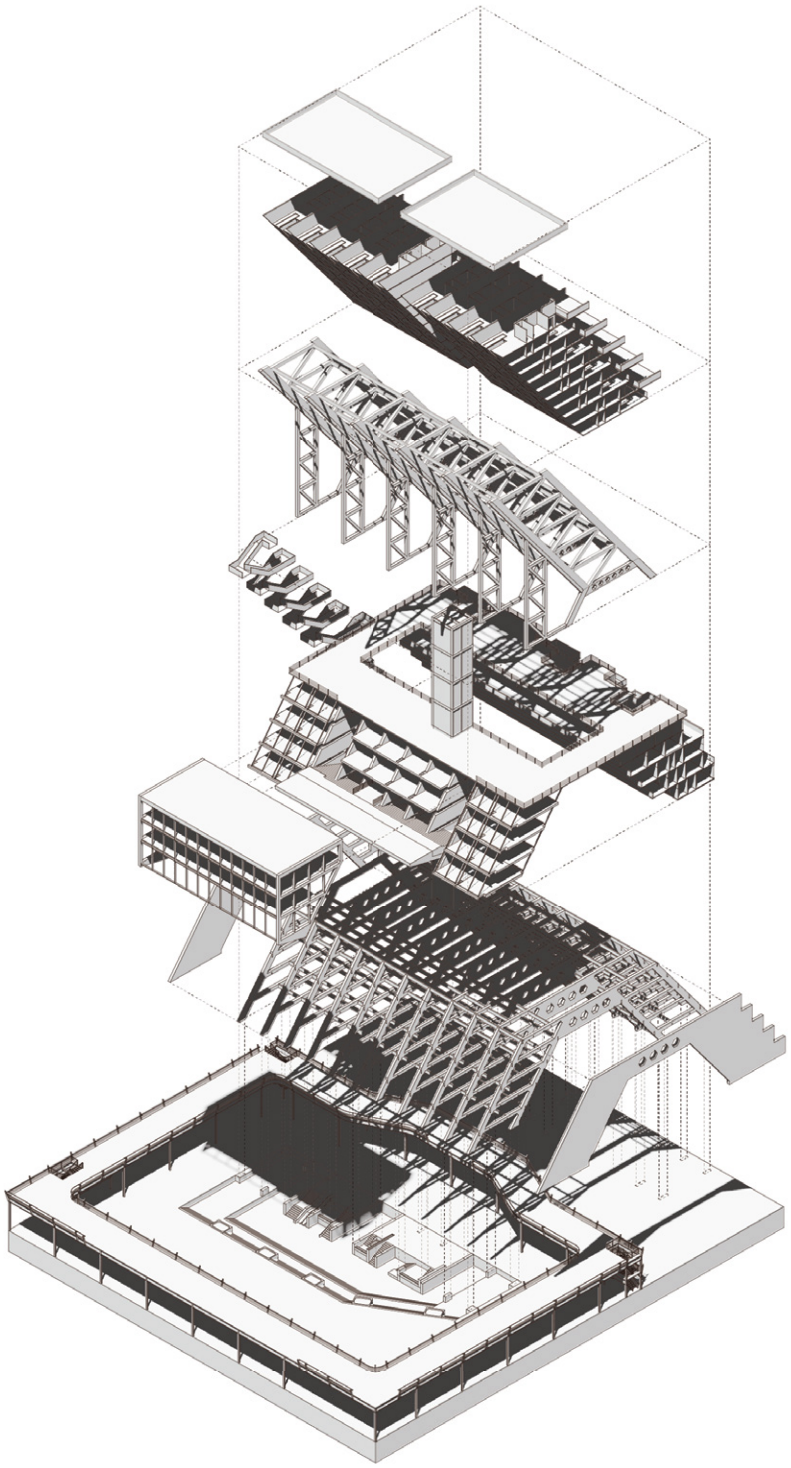
4.Proejct Diagram





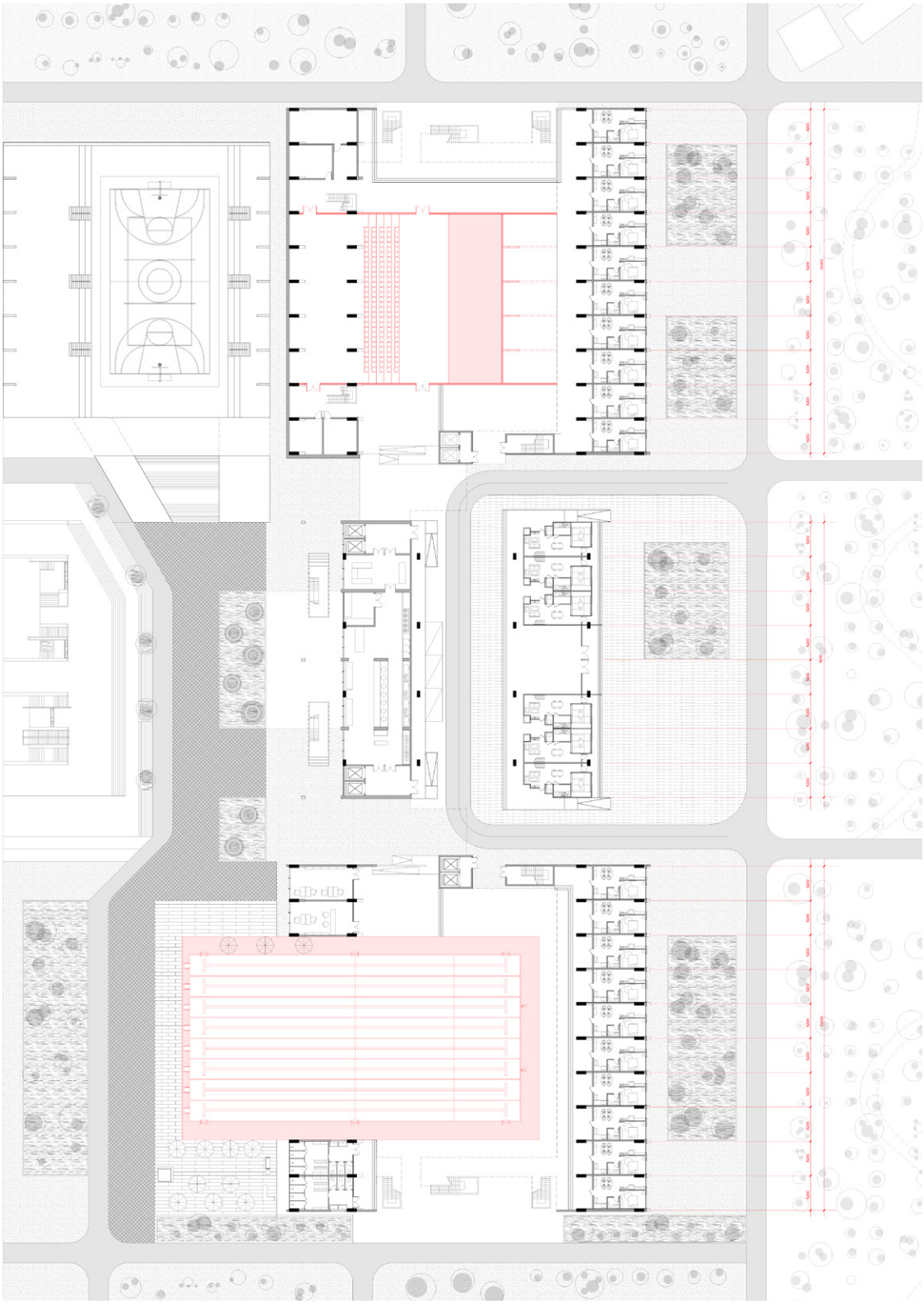
Above: From the diagram we can see that the structure is divided into two parts: the white existing structure and the black new structures. While keeping two original internal public circulation of both sides, we also added two other main circulations to the project.

5. Exploded Axon



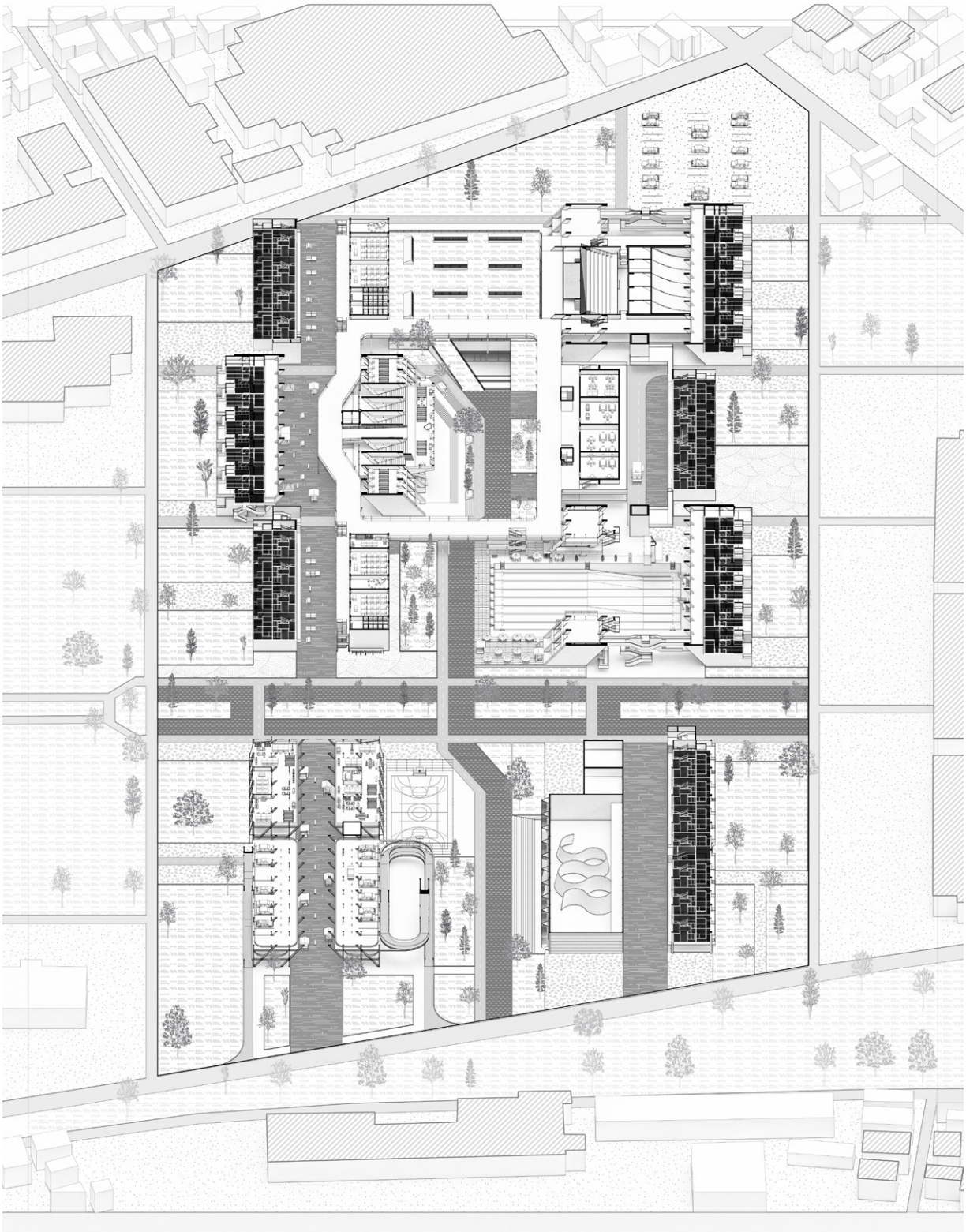
Above: This is an Axonometric chunk we took out of our project, that may help you to get a clear understanding of the structure system. The new running track that connects major school programs. On top of that the original a-frame structures. The new program for the old structure. The new A-framed structure. And the housing volumes for the new A-framed structure.

6.Plan



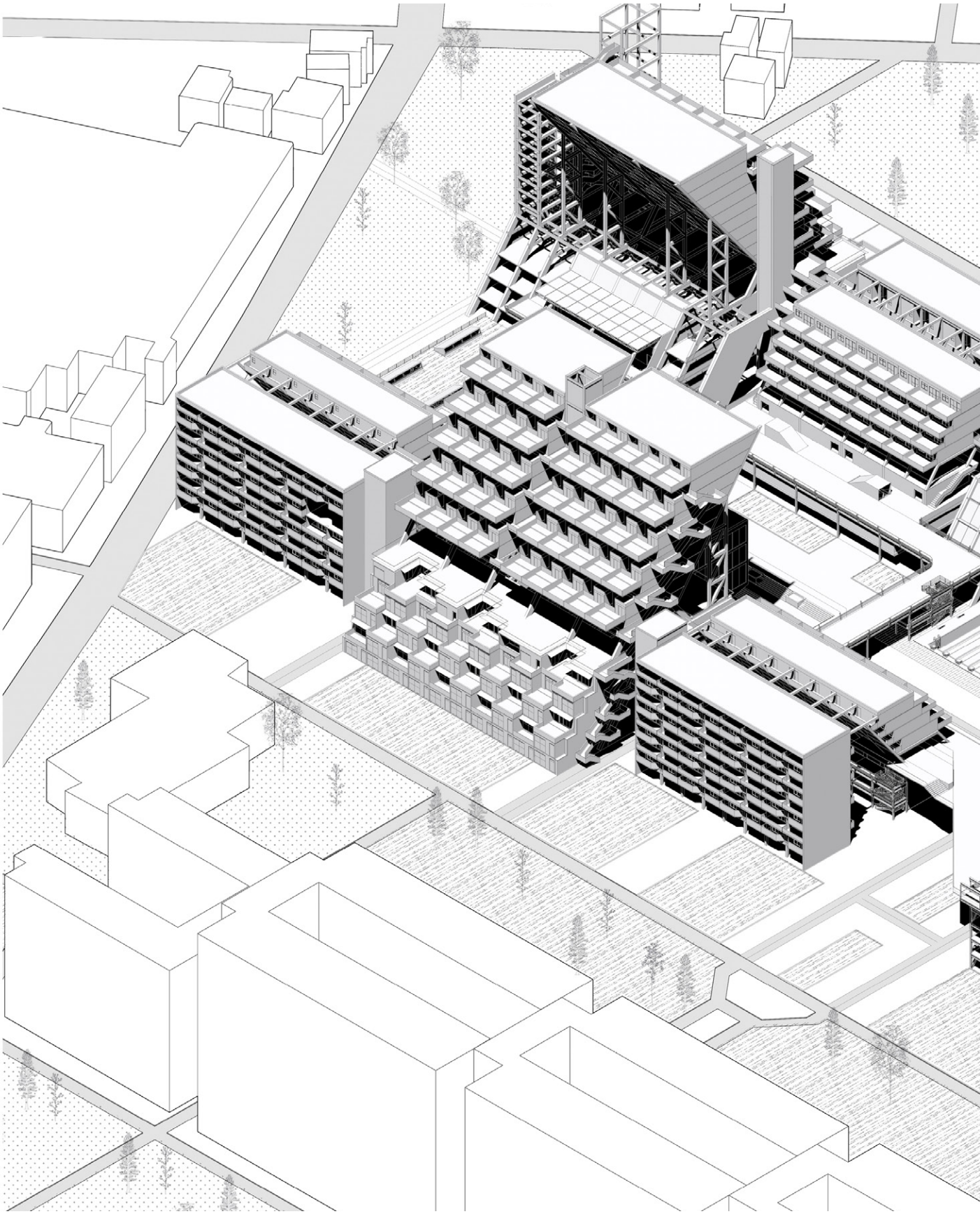
Above: We replan bike lanes and pedestrian streets to make people more willing to enter the central area. In the middle of the site is the main campus street, with four buildings on each side to create our double a-frame space

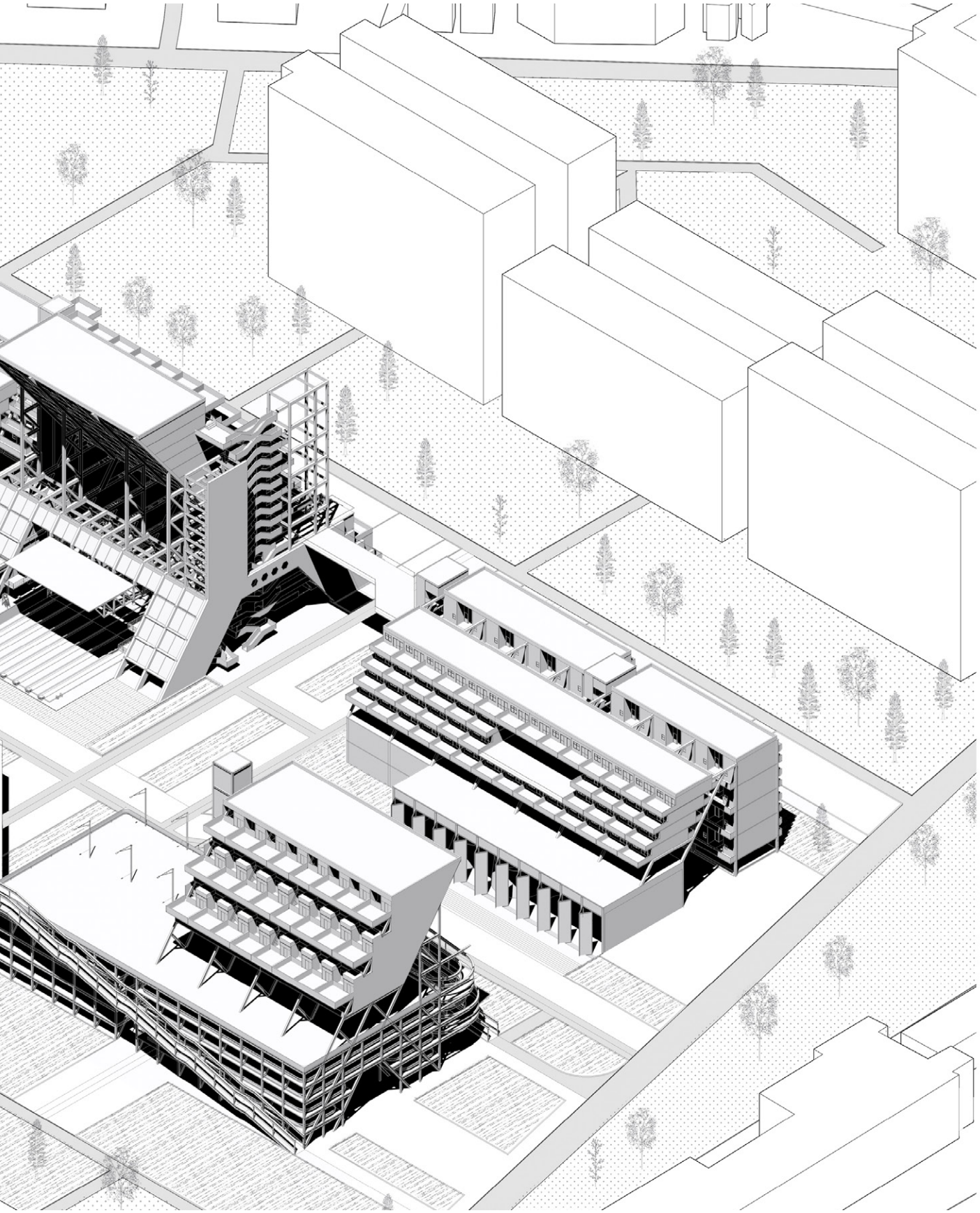
7. Plan Oblique



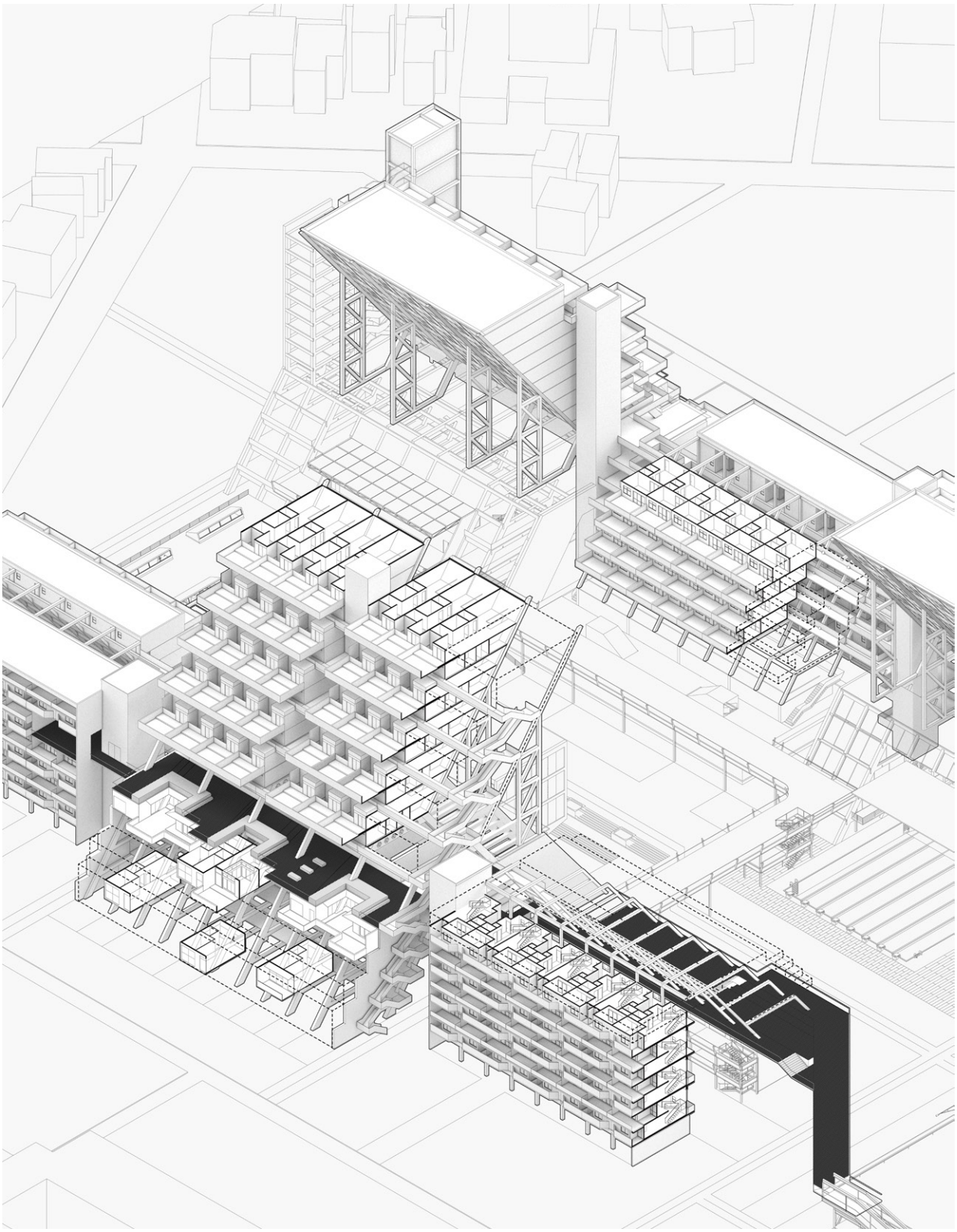
Above: We replan bike lanes and pedestrian streets to make people more willing to enter the central area. In the middle of the site is the main campus street, with four buildings on each side to create our double a-frame space

8.Axonometric



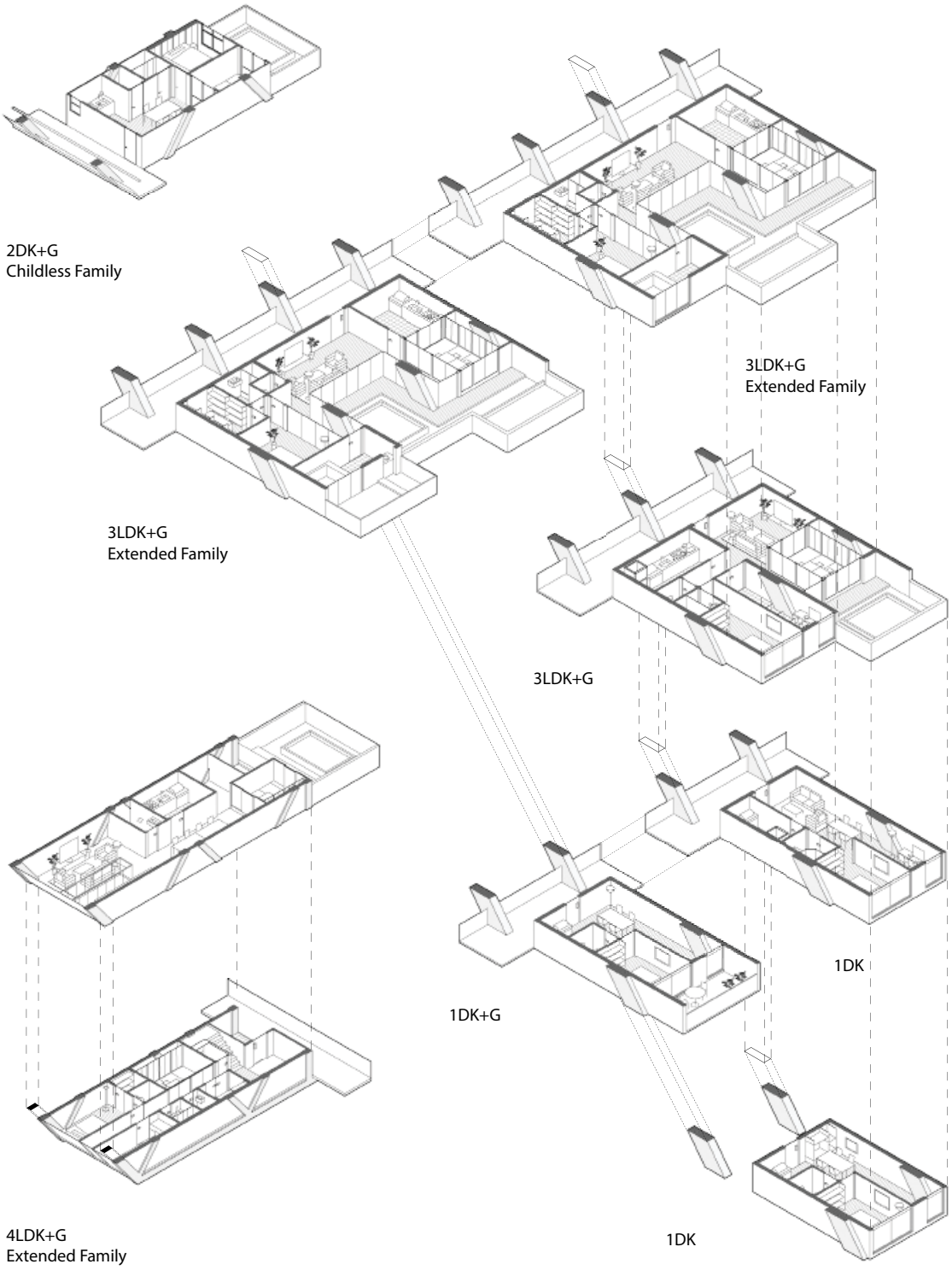


5.Housing



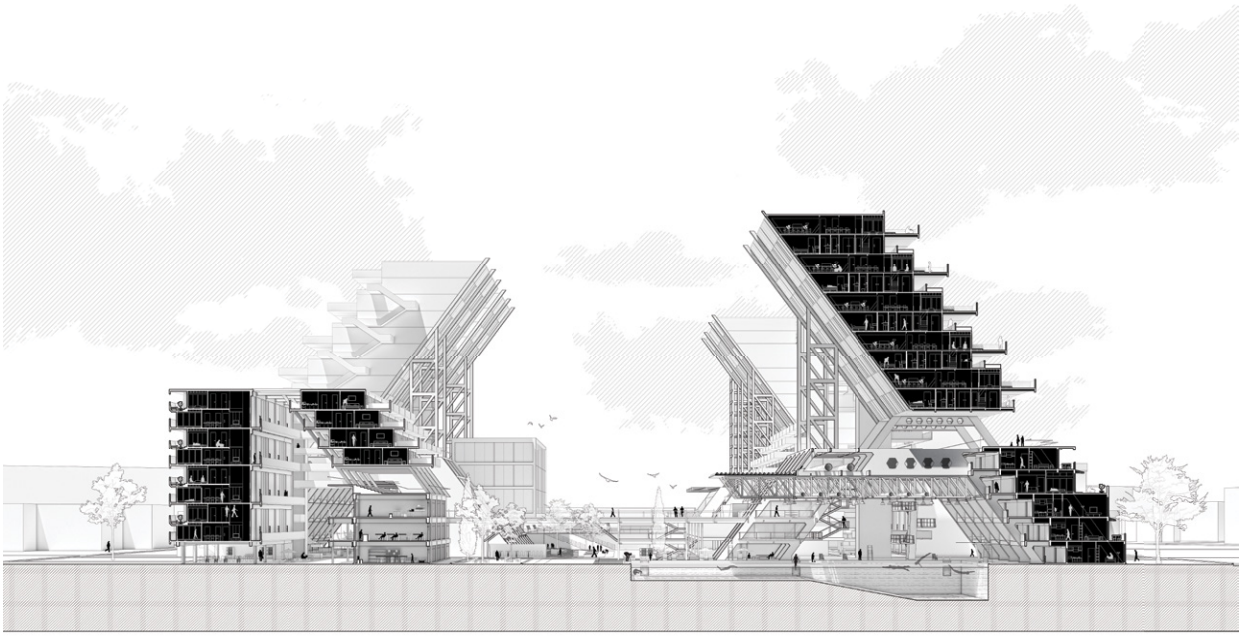
Above: By renovating the structure, we changed the narrow danchi units into types of housing suitable to various family types. The new housing structures maximize the number of teared housing. Taking advantage of the teared units, each apartment has a family garden which traces back to the spatial experience in traditional Japanese housing types, like nagaya and machiya.

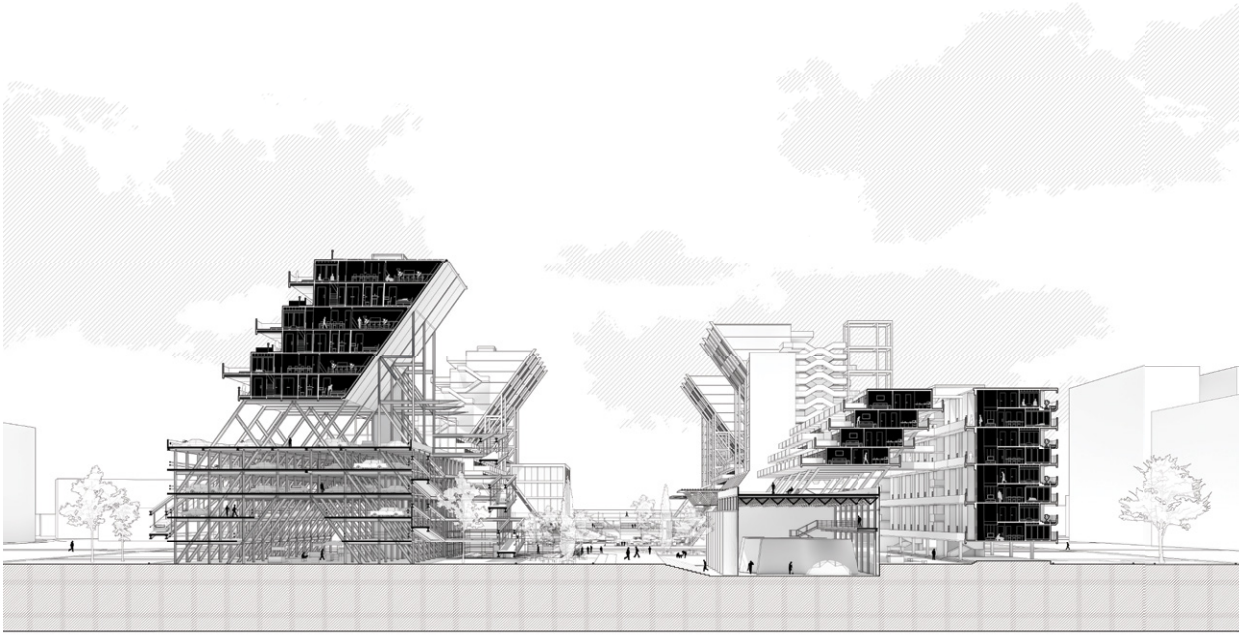
6. Housing Units



Above: Also, the teared units provide eye contact opportunities between neighbors and make the corridors more open. In this way, the elderly people can be seen and greeted more often, and also can get in touch with people from different age groups. So the solitude situation of them can be improved.We set the units layout based on the original ones and rearranged them accordingly.

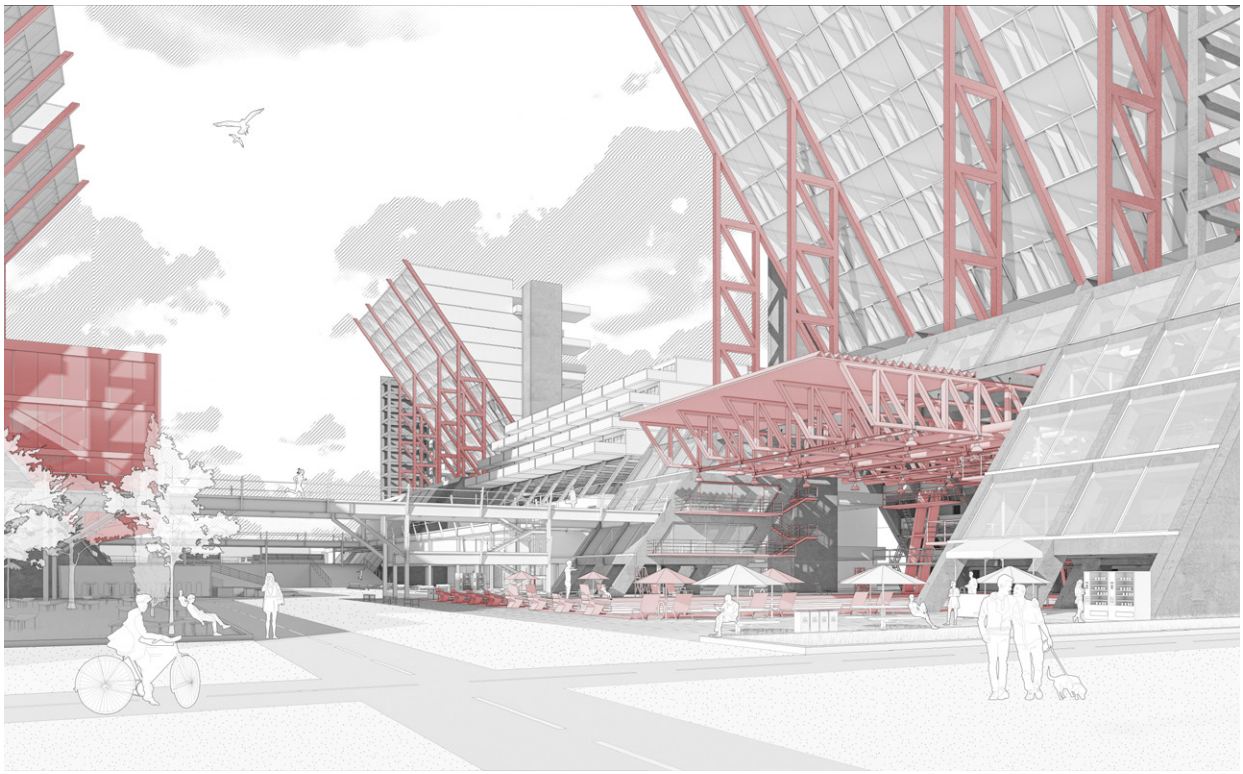
7. Sections

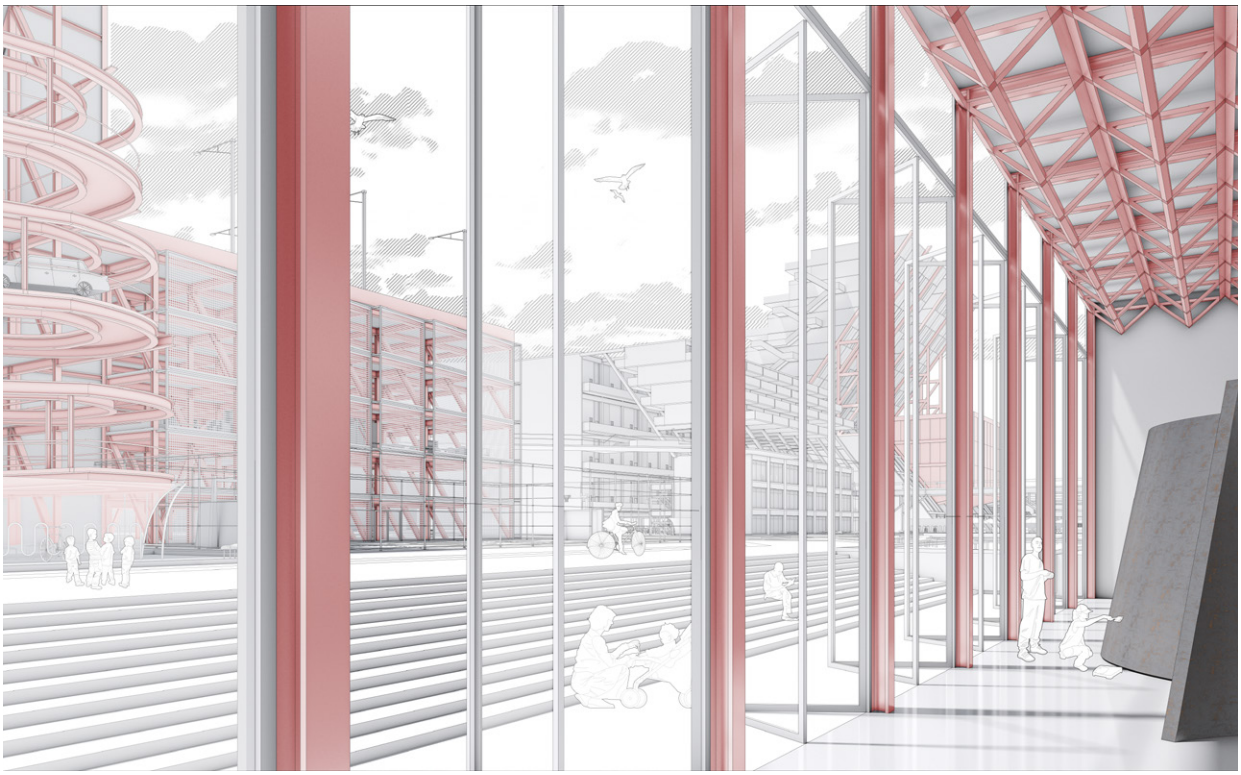




Above: The project is a connection from the site to the whole community, where new structures become a linkage to the public. This is a connection from the old interior, a frame space to the even larger A framed campus, where the school activities become a tie between two different identities.

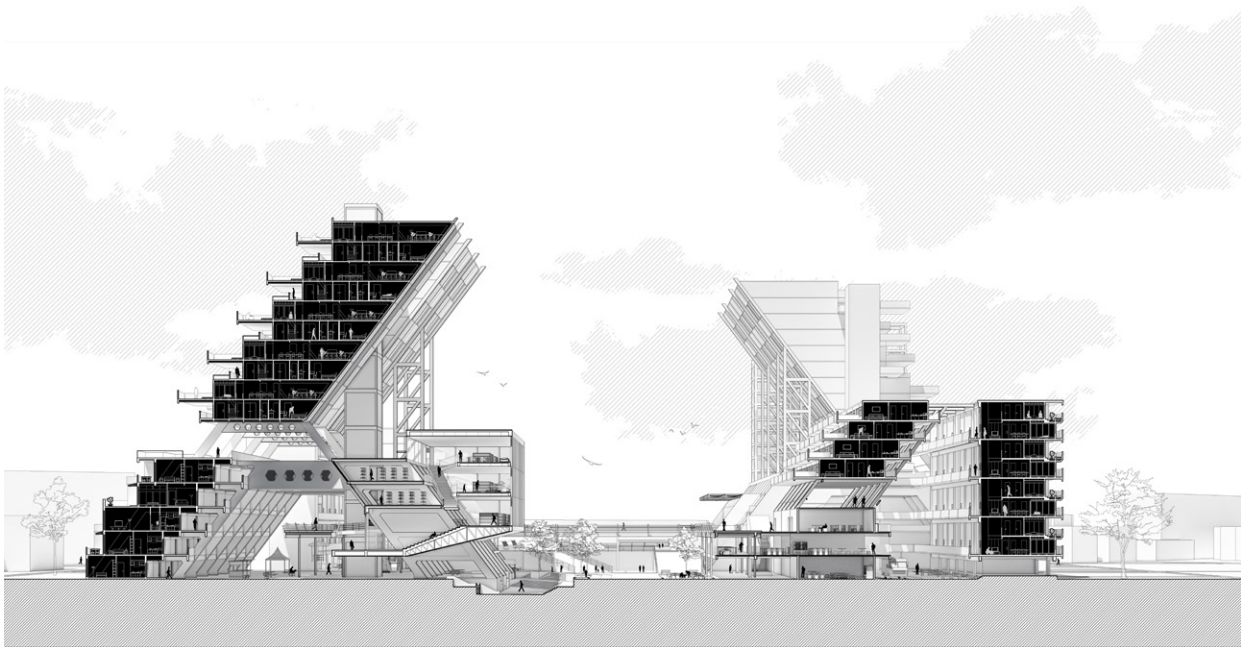
8. Perspective

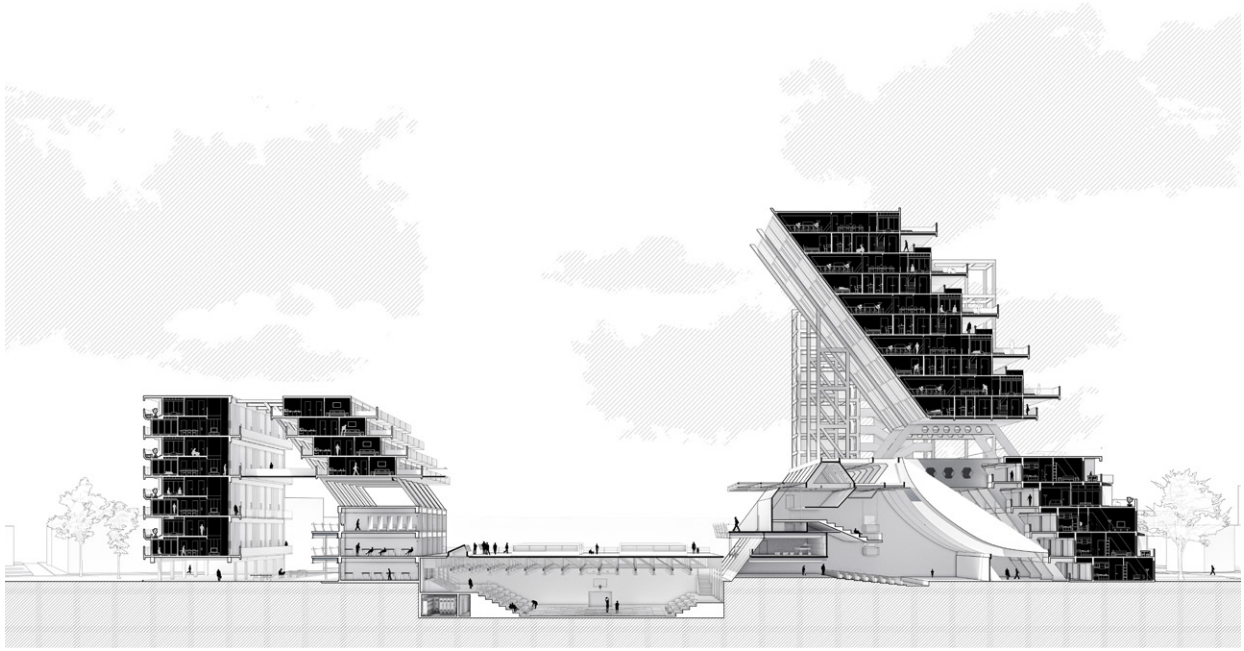




Above: We have four perspective vignettes that we envisioned for the new project.The new gallery space is now a linkage that ties the campus to the community.The new internal atrium space is now occupied with different programs such as /auditorium and /leisure area for students. The central framed space is now open to the public and reactivated by the neighbors.

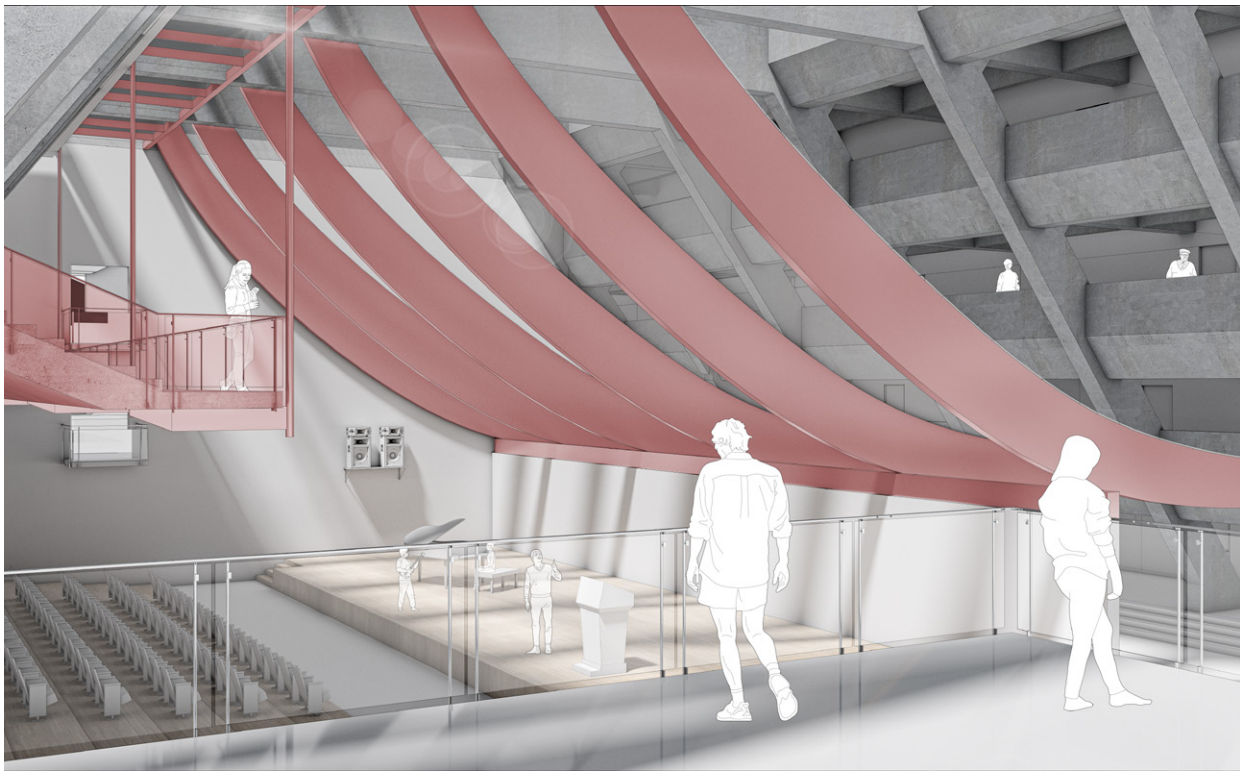
9.Sections

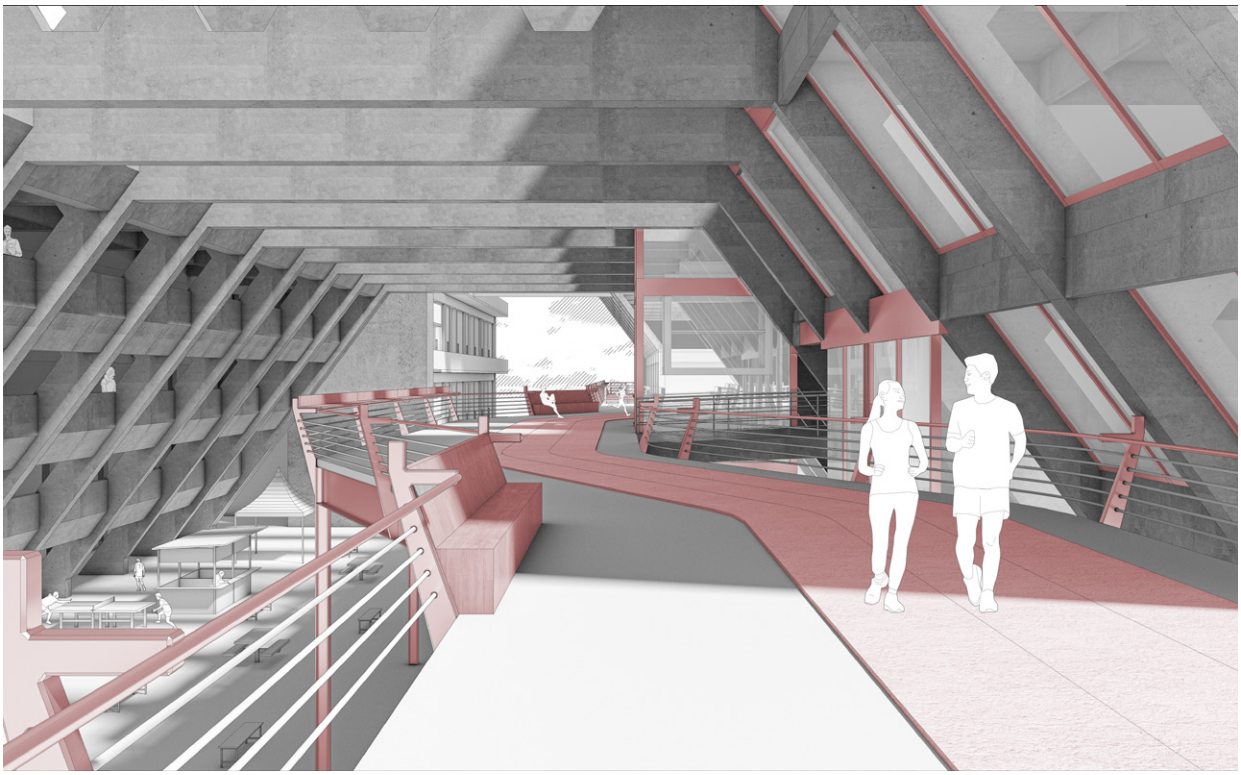




Above: This is a connection from housing to school, where the lives of different generations overlap in the A-framed atrium. This is a connection from metabolism to contemporary architecture, where the doubled surface redefined the old megastructure and revitalized urbanism.

10. Perspectives





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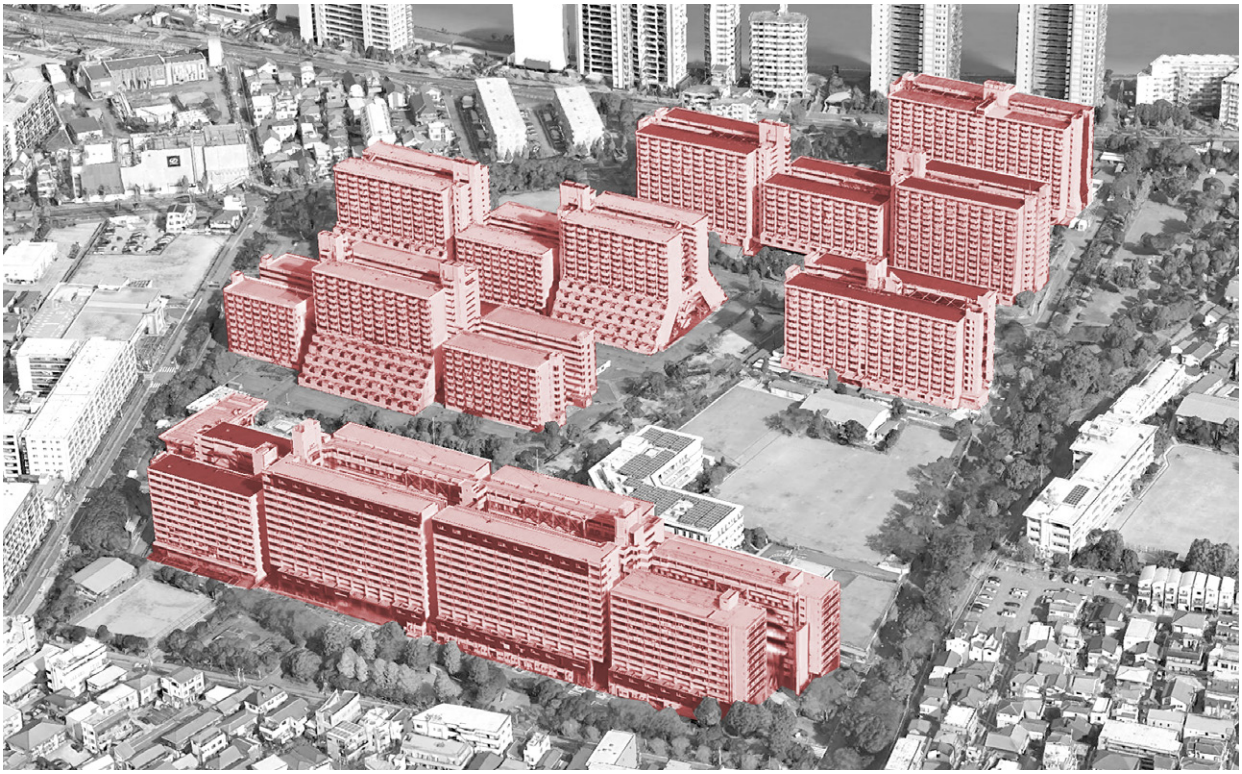
11.Before



12. After