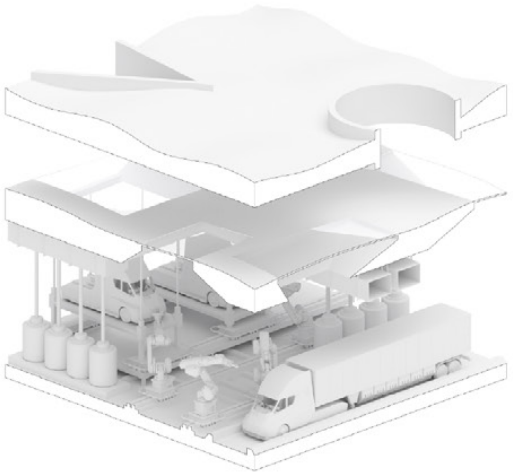
Architecture

Portfolio

Academic Works

GSAPP



Tianyi WANG

Columbia University GSAPP
MSAAD

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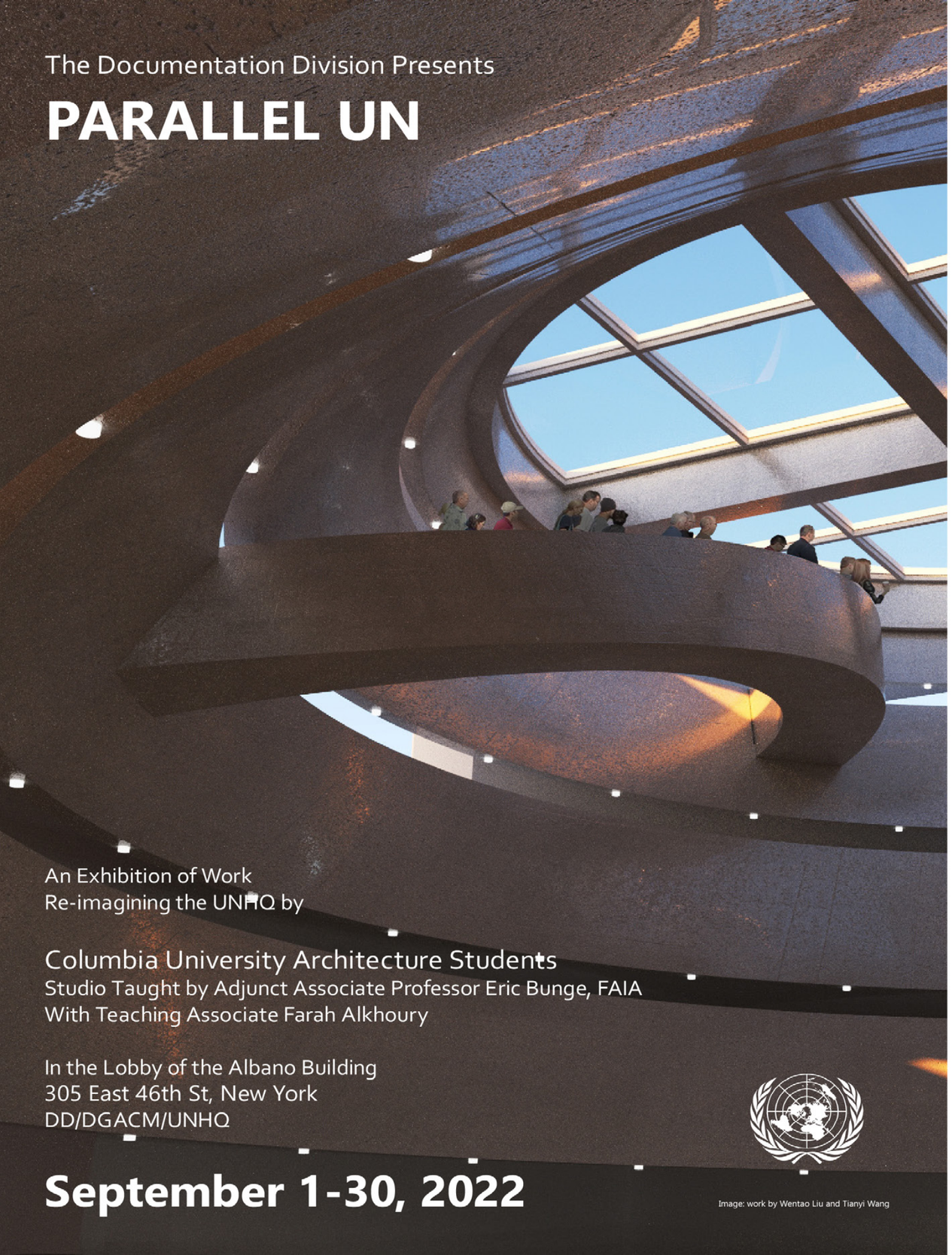


Sovereignty of Voices

Mat Public-Private Design
Site // Manhattan, NY

Instructor // Eric Bunge
Group Work // Tianyi WANG & Wentao LIU
Summer , Year 2022

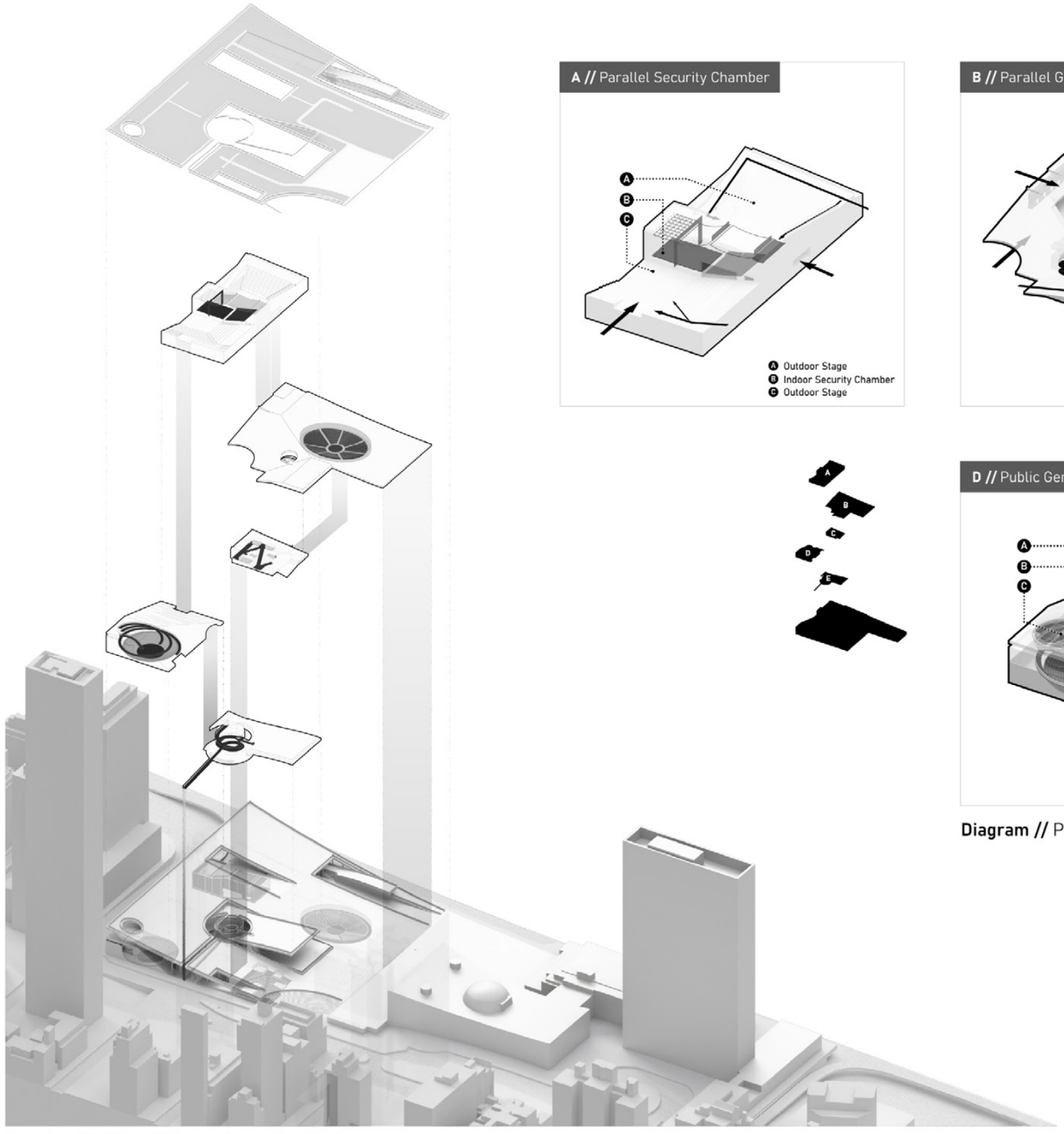
Exhibited in United Nation // Sept.1 - 30, 2022

The North lawn of the UNHQ could invite the public back to the discussion table by offering them a tapestry of stages and seats. Our design of a landscape of indoor and outdoor theaters site serves as a parallel to the delegates' chambers, in which the stages are however for the people. Sovereignty of Voices creates a gateway between the United Nation and the wider public. Due to security concerns, the public has been isolated from the UNHQ. But we have witnessed the power of the public across the world stage. Their voices have led to changes in legislation and historical progress. The United Nation aims to bring peace, equal rights, and prosperity to humankind. The public could be a partner to the UN in this effort.

The site consists of three layers of spatial conditions, and interactions between the underground, the landscape, and a roof. The underground level houses four interior theaters with different scales, functions, and shapes. Its roof forms an open landscape occupiable by a public audience: a new ground-level silhouette. In the center of the site a round podium on the axis with the General Assembly is the center of circulation. It connects with various theaters, allowing the public to walk around and choose their own role as speaker or listener.

The renovated UN north lawn plays more than one role depending on time. The whole tapestry of theaters can broadcast the peoples' voice worldwide, serving as a frontline of mass protest. But for the majority of the time, it can also serve as an urban leisure space for visitors to gather and engage the spirit of the UN. Sovereignty of Voices is an amplification of public voices - a congress that truly belongs to the people; joining forces with United Nations, creating change.

Drawing // Table of Discussion + City Scale

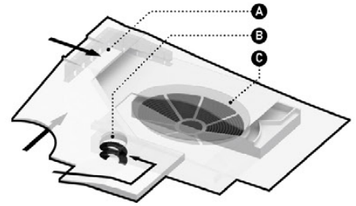


Drawing // Table of Discussion + City Scale

A // Parallel Security Chamber

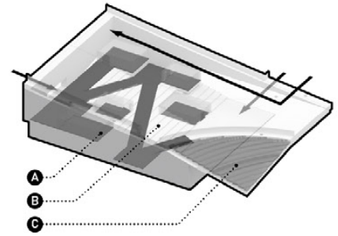
A Outdoor Stage
B Indoor Security Chamber
C Outdoor Stage

B // Parallel General Assembly



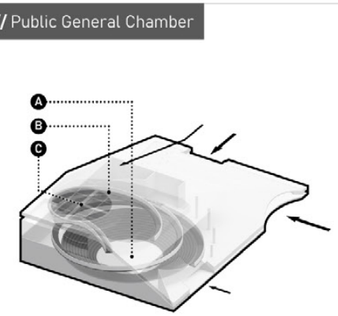
A Bridge to **Program A**
B Vertical Circulation
C Parallel General Assembly

C // Public Conference Plaza



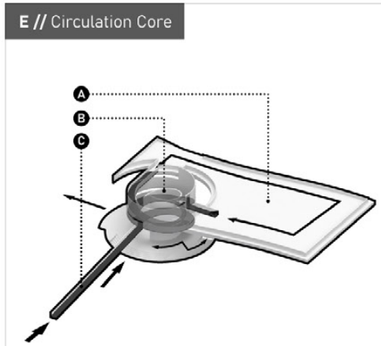
A Small Conf. Rooms
B Plaza Seats
C Outdoor Amphitheatre

D // Public General Chamber



A Public General Chamber
B Spiral Circulation
C Skylight

E // Circulation Core



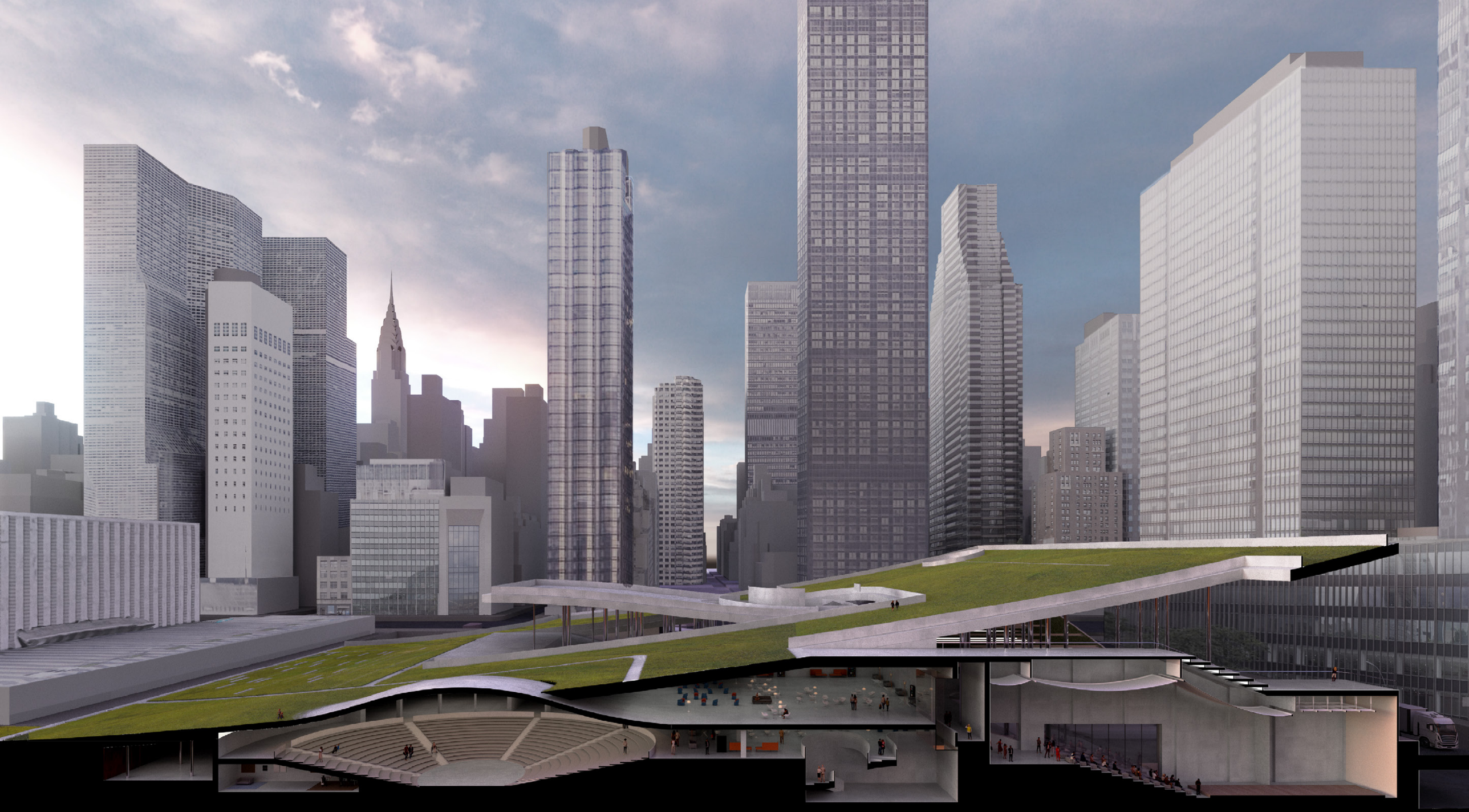
A Protruding Platform
B Stairs Core
C Bridge Entrance

Diagram // Programs of Chambers + Connections

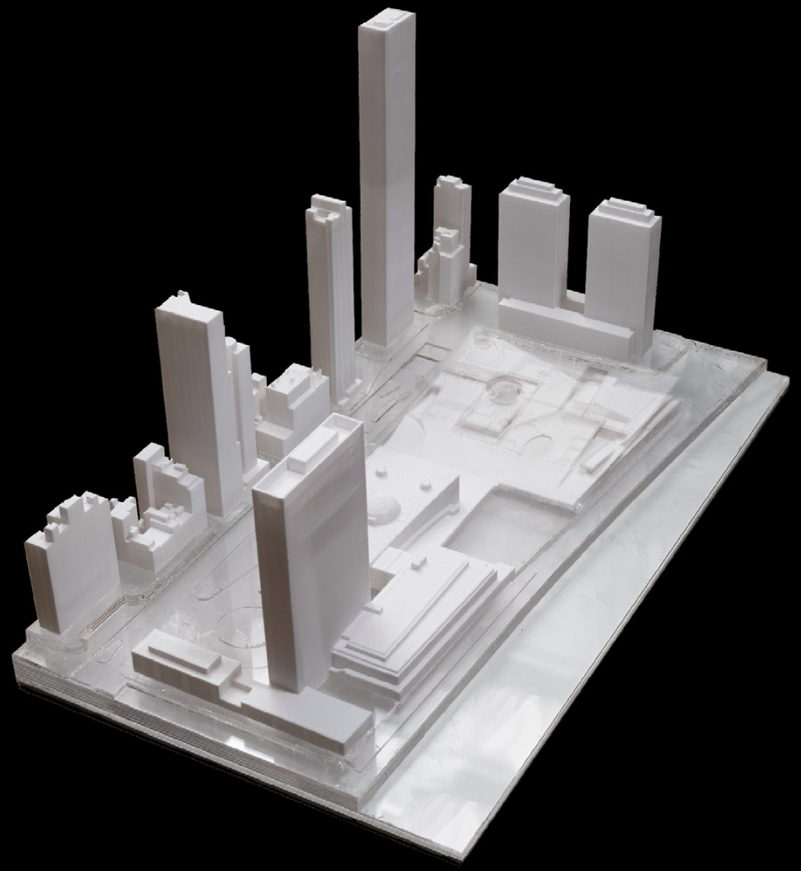
Tapestry programs menifesto

In order to bring a sense of decentralized structure to the whole project, including the difference between various theatres for many users and focuses, we want to create a sense of tapestery of theatres, with various theatres of different scales being allocated within the layout from the site strategy to create the sense of free circulation without losing control.

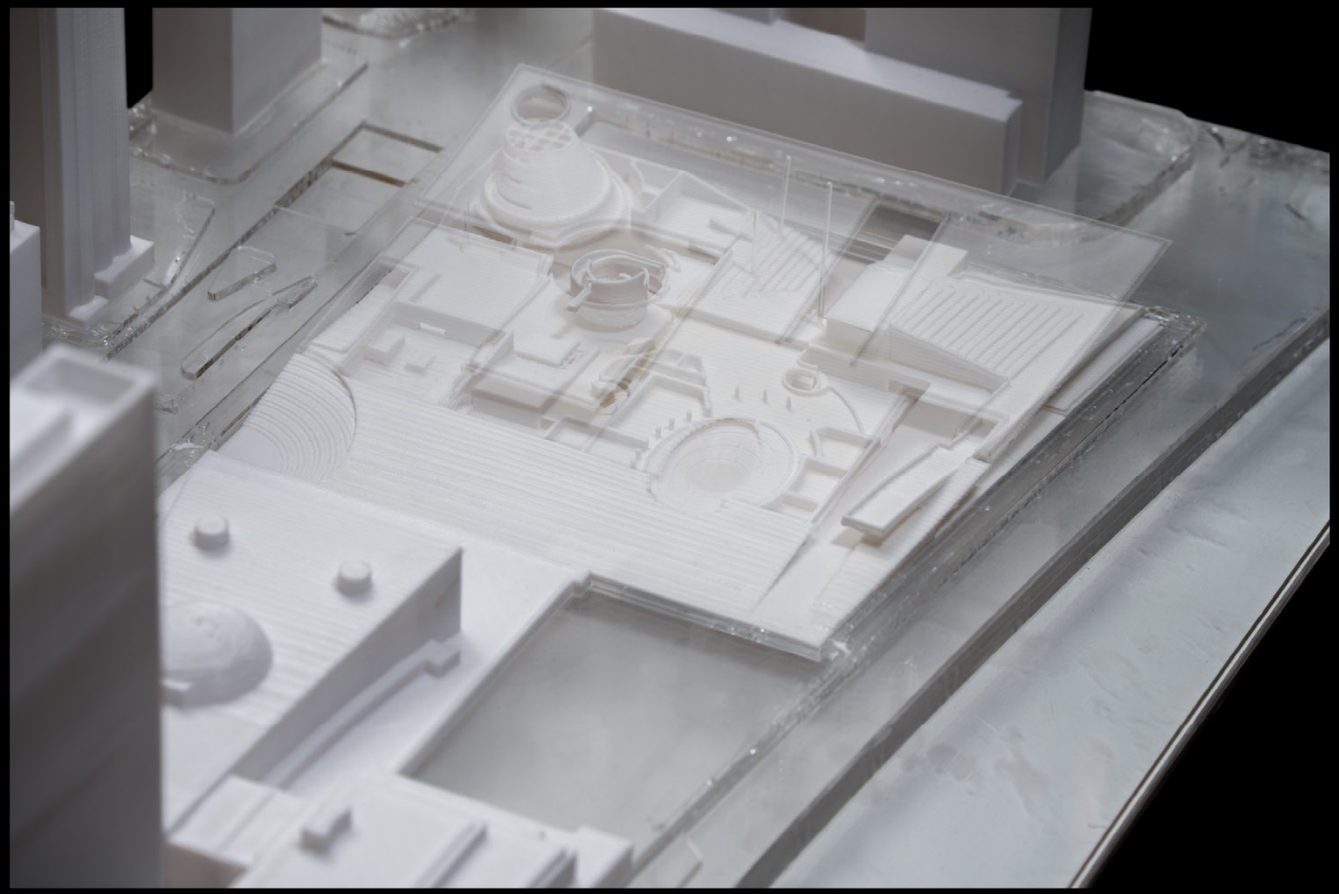
Render // Roof of Discussions and Gathering



Render // Section through Parallel General Assembly + Cityscape



Model // 3D Printed Site Model



Model // Close-up Tapestry of Chambers

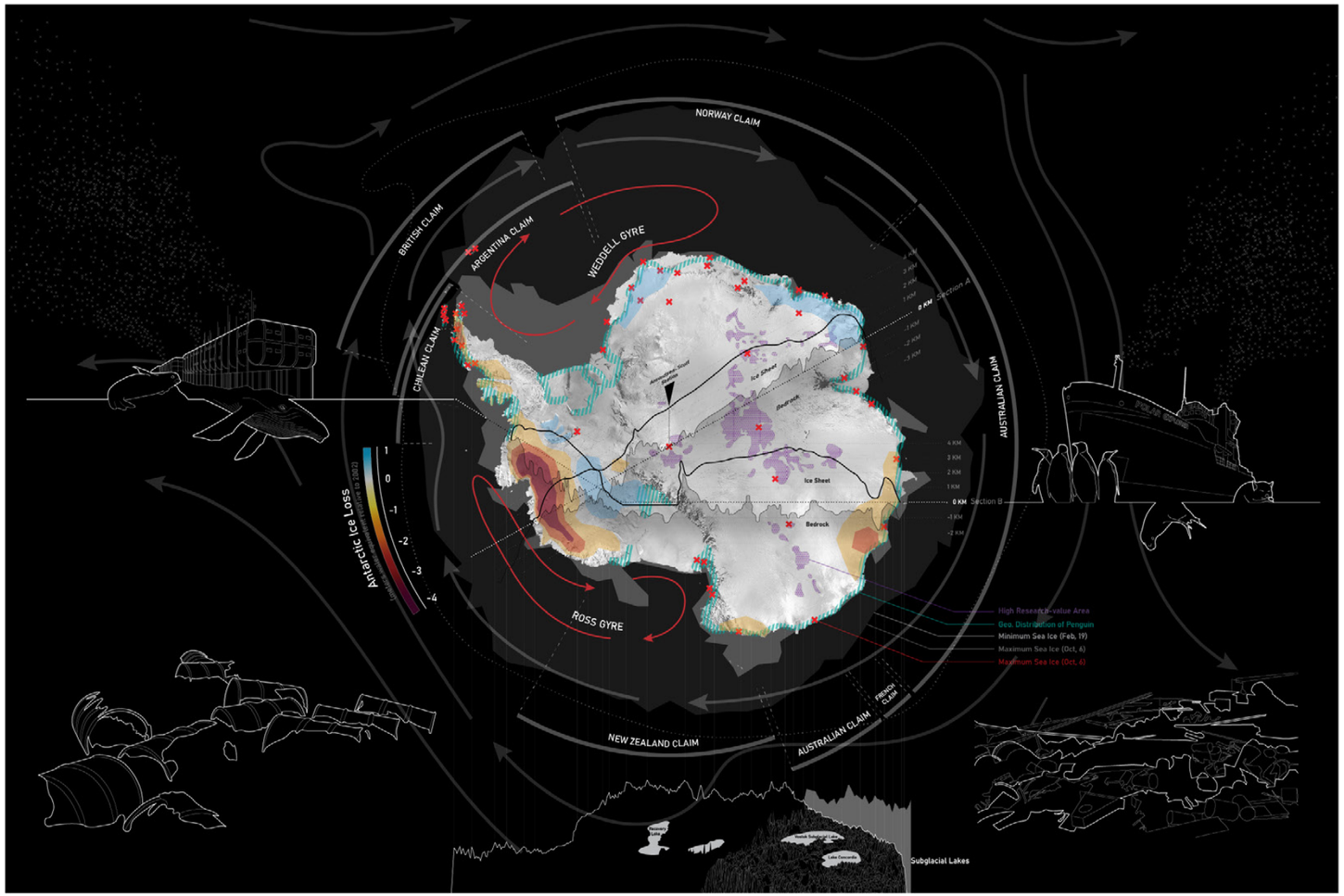
Liberation of Antarctica

Architectural Redevelopment Plan
Site // McMurdo Station, Antarctica

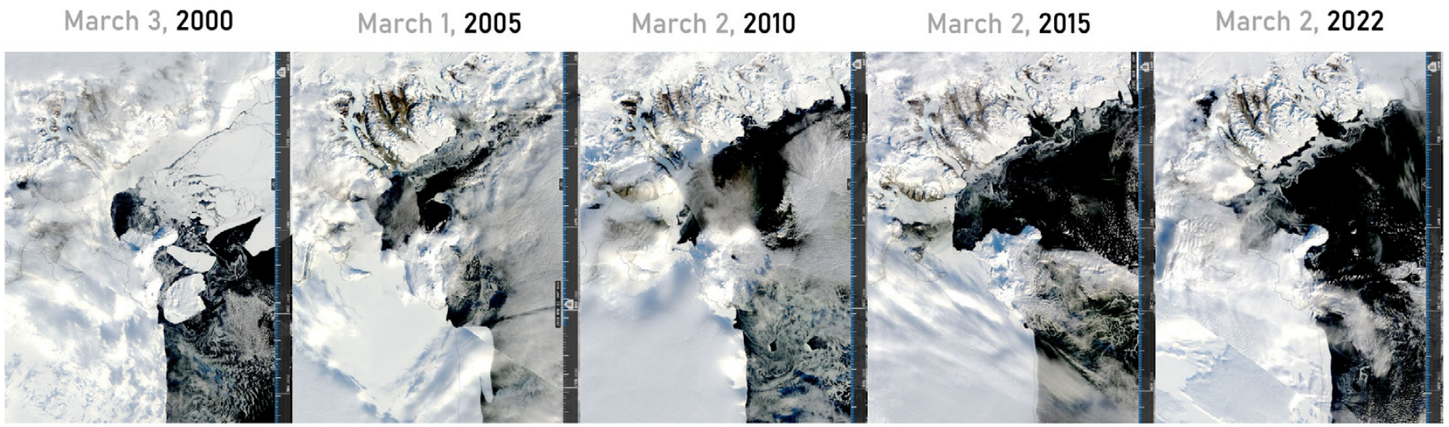
Instructor // Mario Gooden
Individual Work
Fall , Year 2022

Human activities are starting to have a significant impact on the Antarctic environment as human knowledge and research about the continent expand. Human "colonization" of Antarctica has had a significant impact on the environment, ecology, global patterns, and economic distribution, in addition to melting the ice cap and deteriorating the snow cover. Humans must strictly limit their presence or even leave Antarctica entirely in order to preserve the region's essential value.

The International Antarctic Research Center system is based on the Antarctic Treaty agreement, which is strictly planned for the next century of human exploration and research in Antarctica, as well as the eventual withdrawal plan. This series of plans is divided into different phases, and the entire Antarctic region will be gradually recycled from more than 70 research stations to a network of five research stations to ensure a sufficient limit of Antarctic research. It will eventually be condensed into a fully automated Antarctic data collection center for human remote monitoring of Antarctic data after 2100.



Research // Tracking of Antarctica Status



International Scientific Stations

Current Antarctic research focuses on the ocean, marine and polar animals, polar geological conditions and history, polar atmosphere, astronomy, and astrophysics. Only a small portion of geological research in Antarctica needs to be supported by permanent research stations. Inorder to Protect Antarctica, new Antarctic Treaty will prohibit the majority of Antarctic Peninsula and West Antarctica research stations. The proposed four coastal research stations will allow for the examination and study of oceanographic data from various oceans. There is one station used for research on the Antarctic icesheet and astronomy or astrophysical observations inland. In addition, the relative location of Antarctica's scientific research stations allows for a reduction in numbers without compromising the efficiency or quality of Antarctica's scientific investigations.

The original annual meetings from the Antarctic Treaty will be retained, while a minimum number of Antarctic routes will be planned, reducing the number of necessary voyages by combining itineraries. The new Antarctic Treaty system will place greater emphasis on reducing human activities in Antarctica and their impacts.

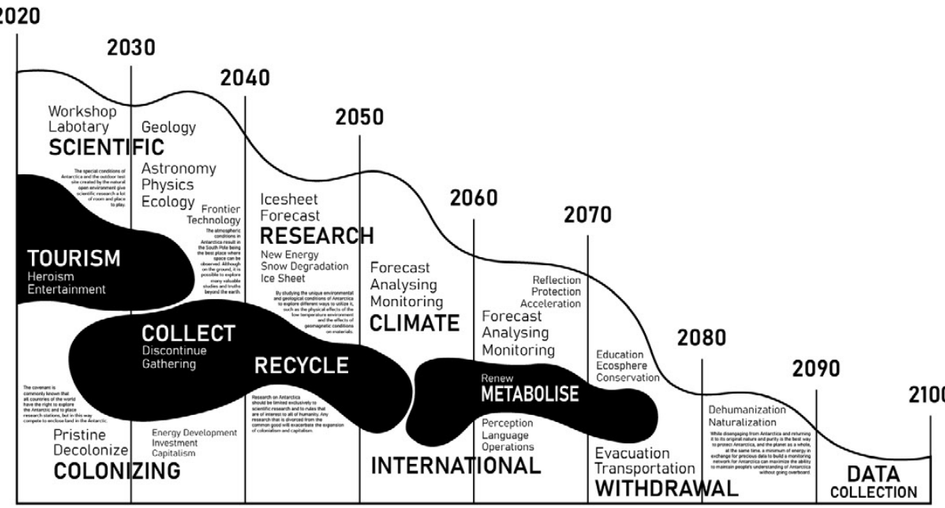
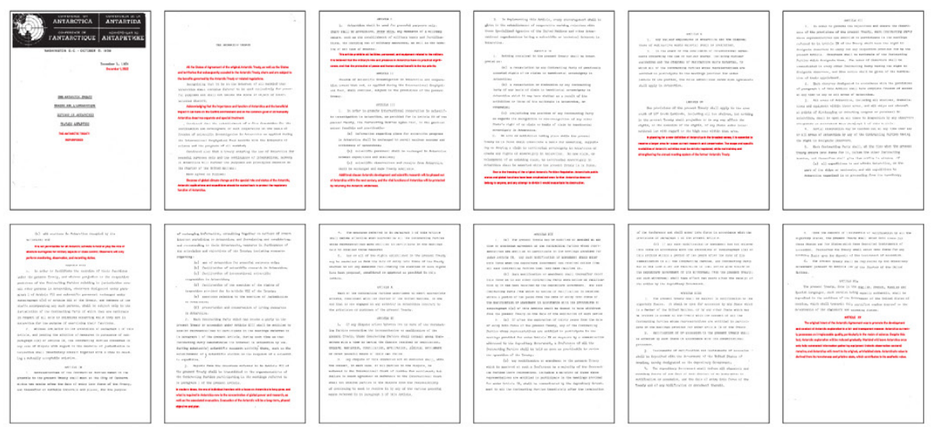


Diagram // Roadmap of Proposed Human Activities



Research // Annotated Antarctic Treaty

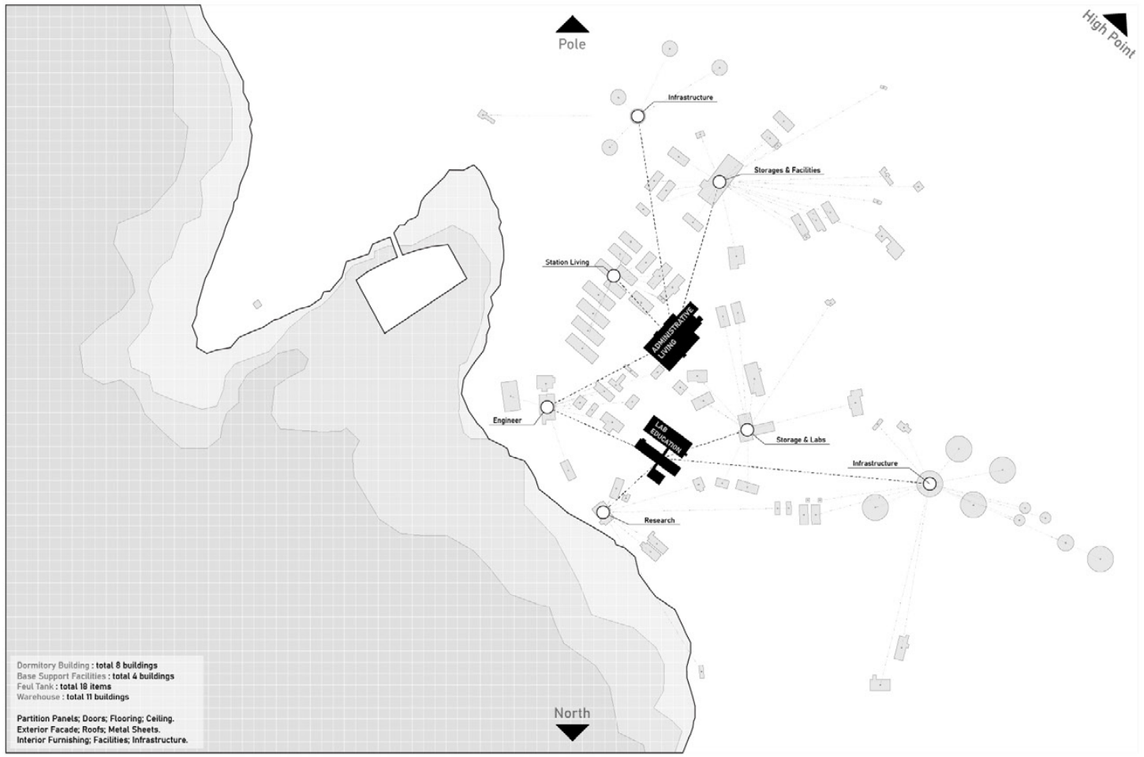


Diagram // Recycling Site Map - McMurdo Station

Adaptive reuse of antarctic bases

Step I - Collecting

All **existing scientific stations** are **operating** as planned. **Collecting** and construct recycled building materials. Collecting dust, ash, micro plastic, and press into eco-blocks. Recycle wood structures into fibers. Dismental steel structure and save the usable parts.

Step II - Constructing

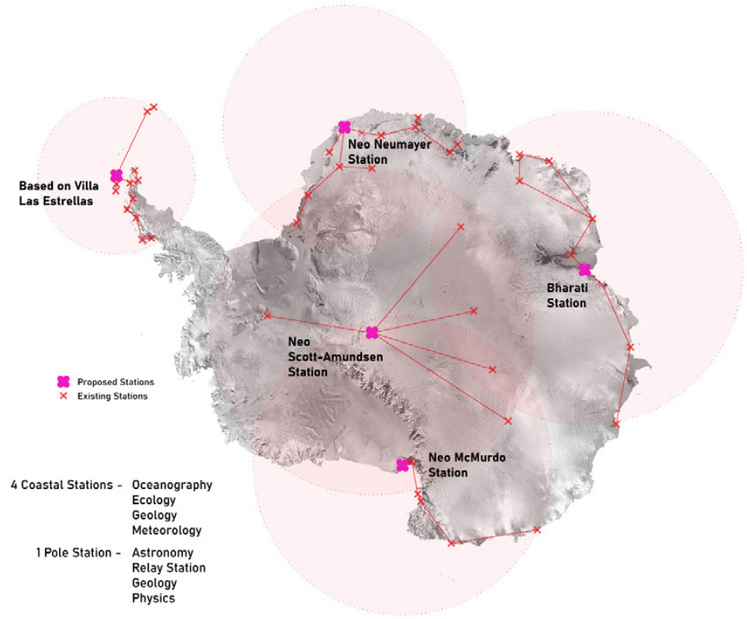
After 10-20 years, most of the stations should reach their designed lifespan before 2030. Starting the adaptive **rebuild** of all **selected 5 stations**. Using ice blocks and recycled inflatable plastic sheets to create semi conditioned space. Using eco-blocks and recycled materials to construct main body. Neighboring stations will take turns be discontinued and relocated into the international stations.

Step III - Metabolising

Untill late 21 century, **the stations will keep operating**. It will need to exchange its facilities, scientific equipments to the latest variants. Its infrastructure system will need **maintainance**. Its building services will need to be **updated** accordingly. The hatch opening at the bottom of the building will provide access to upgrade building. The working space will be kept warm with the help of the inflatable roof.

Step IV - Withdrawal

All five stations will be **gradually dismantled** and **recycled** after a certain level of human understanding of Antarctica. Approximately between 2100-2150, the stations will have only **minimum** structures and **fully automated** detection instruments collecting data. It helps human monitor the status of antarctica. After this step is done, Antarctica will return to **no-man's land**.



Map // 5-Station-System Site Selections

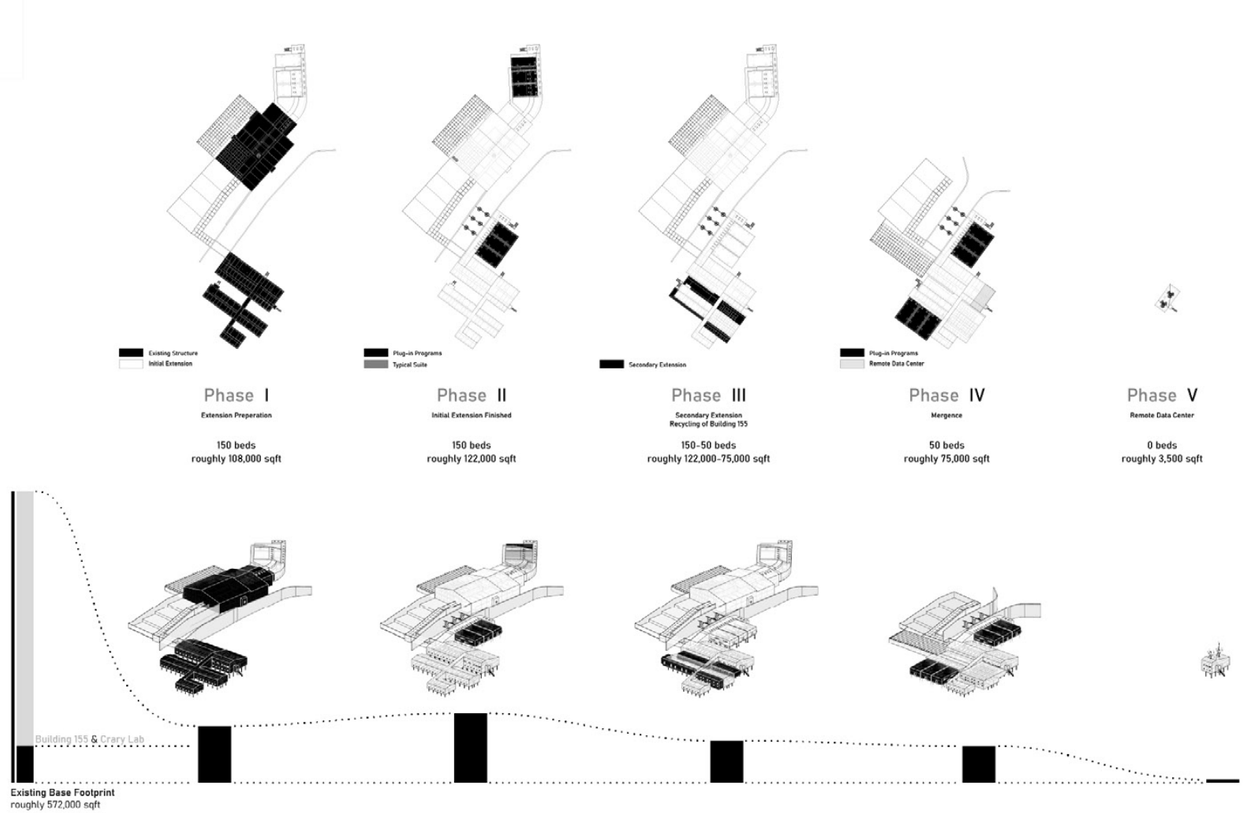
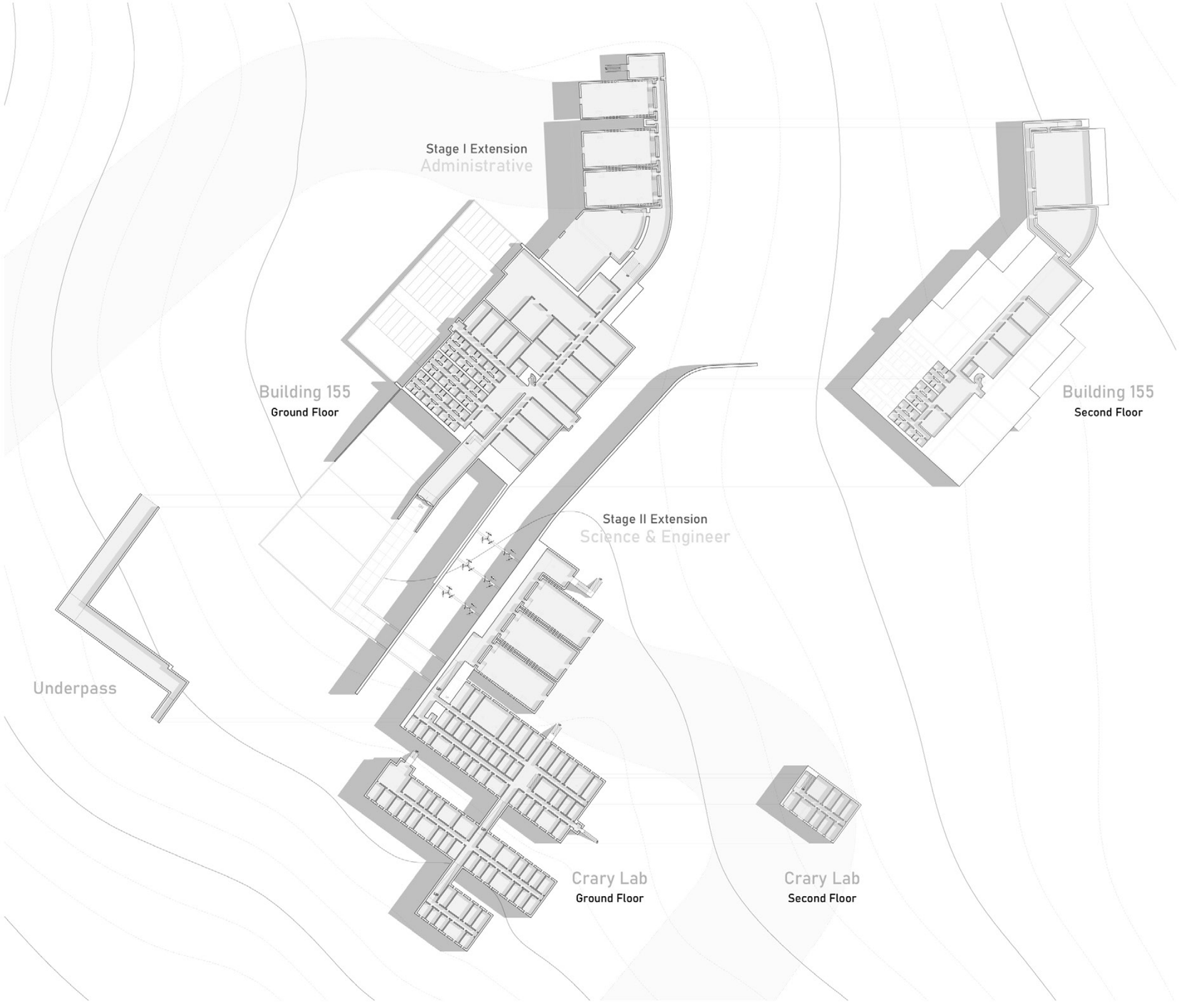


Diagram // Breakdown of Step III - Metabolising

Research Station Recycle, Reuse and Discontinue

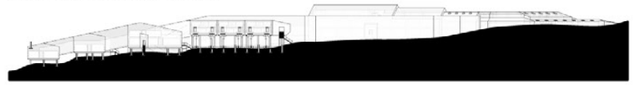
Extreme climatic conditions and relatively uncontrollable geographical conditions characterize Antarctica. Therefore, Antarctic research stations must be evacuated or abandoned sometimes. For example due to the collapse of ice shelves and environmental changes. In such situations, it can be **difficult to reuse or even recover abandoned stations**. This will exacerbate the human impact on Antarctica by leaving behind a variety of foreign materials, fuels, supplies, microorganisms, and so forth. Specifically, the ruins of abandoned research stations near the coast may have an effect on the local biosphere if they are not properly managed.



Drawing // Phase II - Plans

FLOATING STRUCTURE

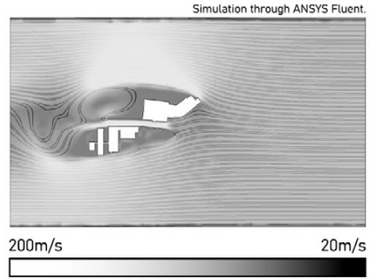
Antarctica, as the world's driest and highest and coldest continent, is often described as a Frozen Ocean. This state stems from the fact that it is constantly windy, while the ice is still in constant motion.



The geological conditions of Antarctica, the structure of the ice sheet, cause the nearly 2-mile-thick ice sheet to be in constant motion throughout the Antarctica. From the high point and moving outward. Of the five sites, 4 coastal bases are less affected by the movement of the ice sheet, but due to the severe climatic conditions, the elevated structure is still a very important option to cope with the snow and high winds.

WIND ENERGY

Antarctic inland windy year-round, how can effectively use this renewable resource will largely change the energy efficiency of the entire base. And the perennial airflow are mainly from the High Point of the Antarctic, blowing to the coast.



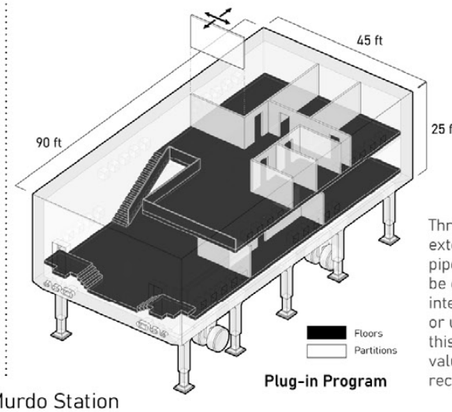
Remote Data Center

INFLATABLE ROOF

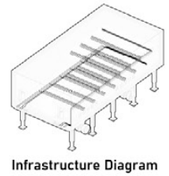
Inflatable roofs made from Recycled Plastic can control the ambient temperature to a degree that is relatively compatible with Temperature-Insensitive programs and plan the temperature circle relationship throughout the base.

PLUG-IN UNIT

By introducing a series of, in this case, six, such attachable space, there are several benefits. In addition to not requiring significant changes to the original building layout, a smooth building metabolism function can be implemented to the maximum. At the same time, in winter, these units can be directly deactivated for power efficiency, as they are inherently detached from the original building's spatial system.



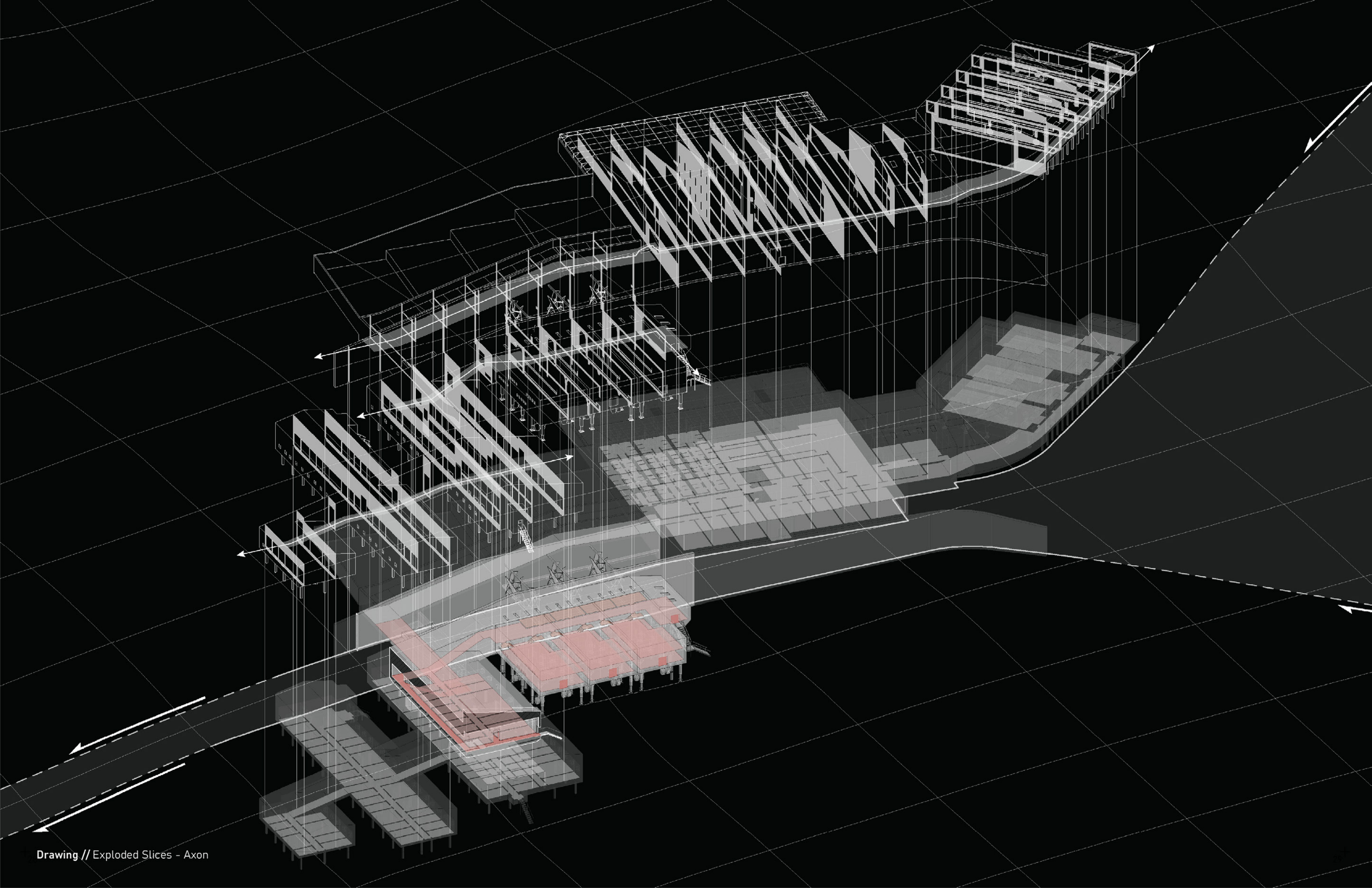
Plug-in Program



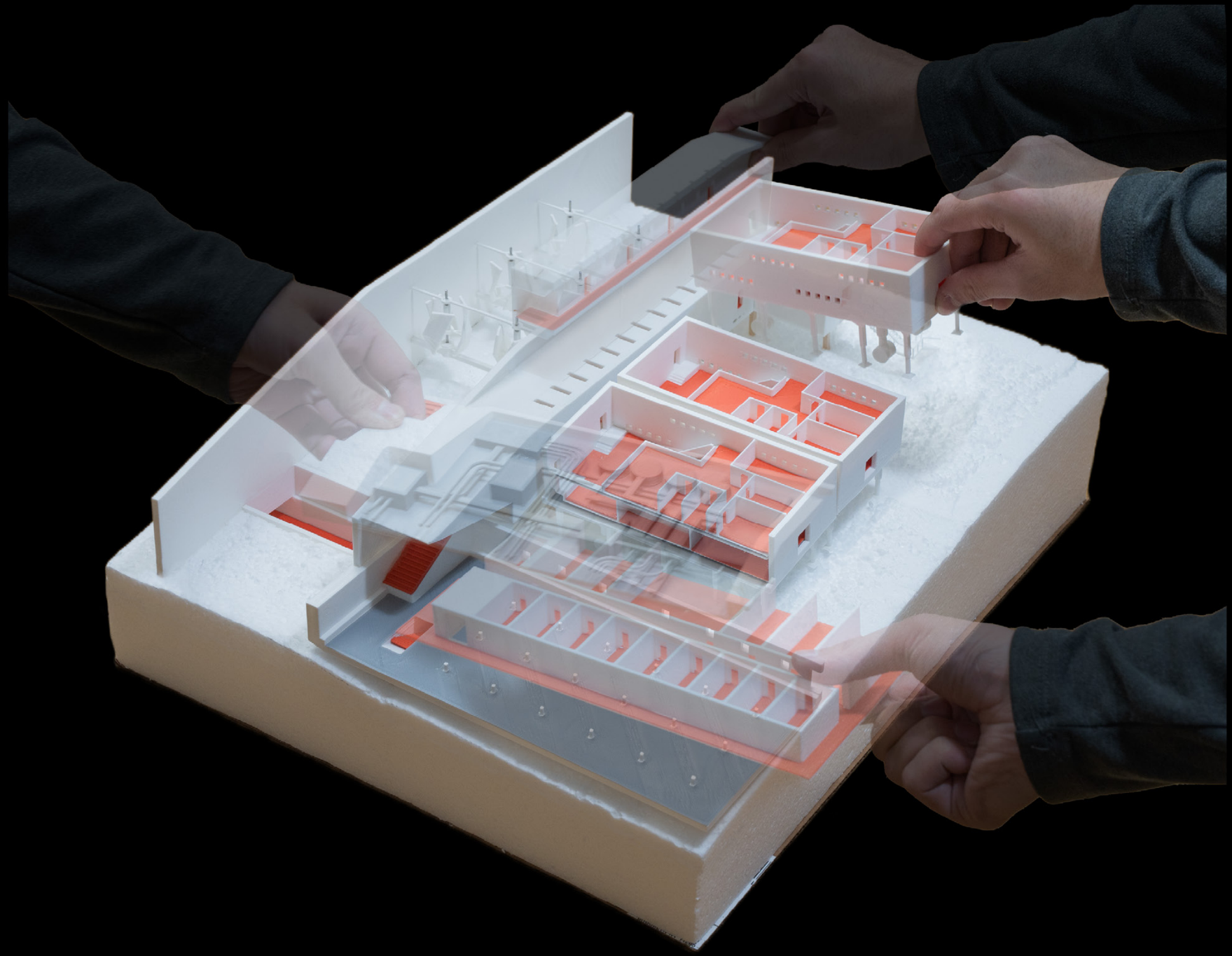
Infrastructure Diagram

Through the connector to the extension corridor, water pipes, heating and cables can be connected. When the interior needs to be recycled or updated. Most importantly, this plug-in provides the valuable ability to "Gradually" recycling or metabolising.

Diagrams // 4 Features of Neo McMurdo Station



Drawing // Exploded Slices - Axon



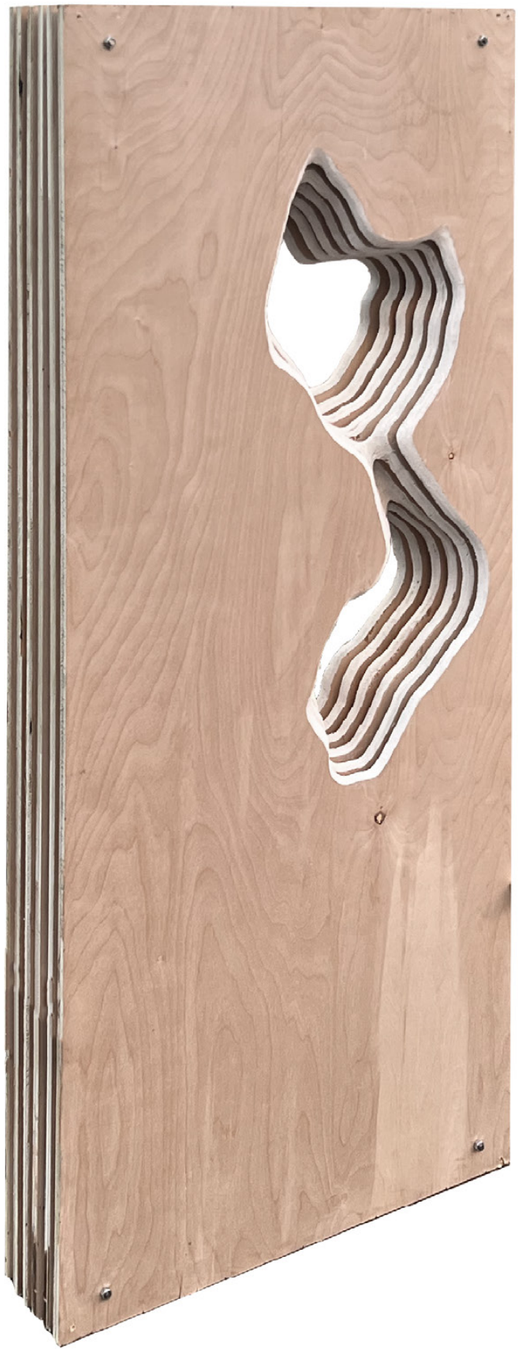
Model // Chunk Model + Disassemble Acts

Layered Aperture

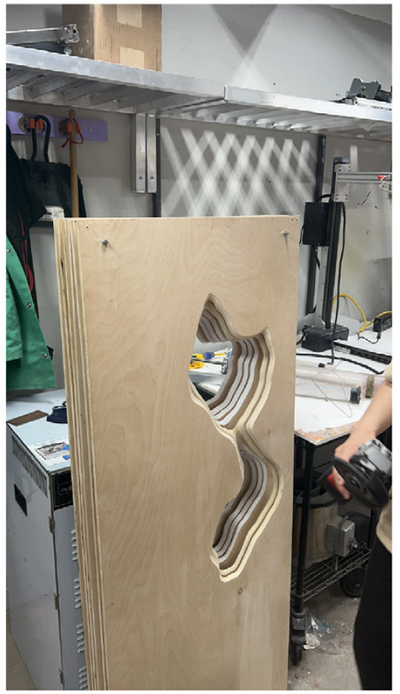
Installation Model

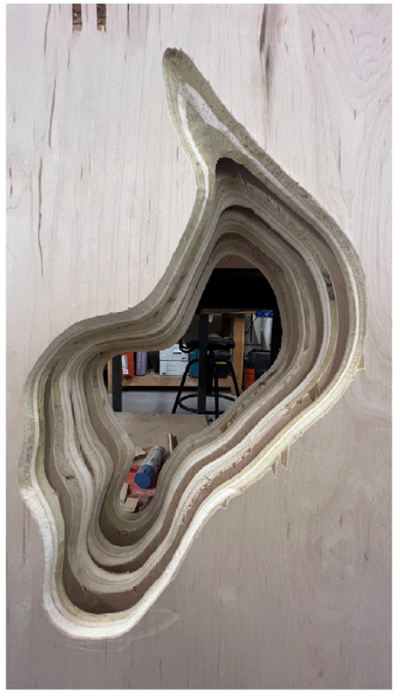
Instructor // Zachary E. Mulitauaopele
Group Work // Tianyi WANG & Jelvis Jiao
Spring . Year 2023

Model Making Exercise
Wood Working + CNC Experience
Large Scaled Model + Mechanical Mounting



Model // Layered Aperture





Photos // Fabrication in progress

Billboard Park

Urban Culture Amplifier
Site // Tokyo, Japan

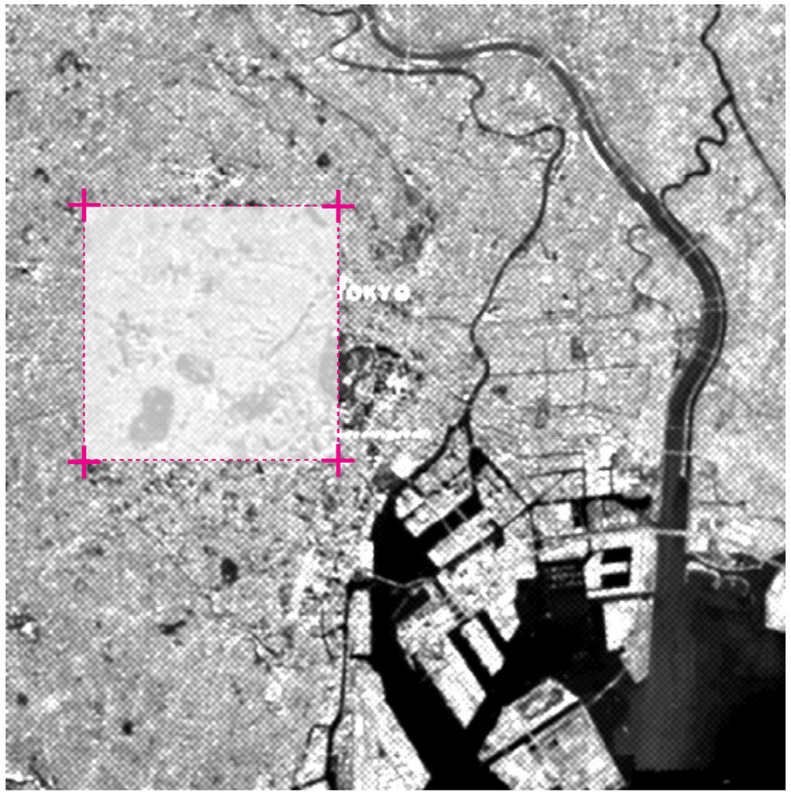
Instructor // David Moon
Individual Work
Spring , Year 2023

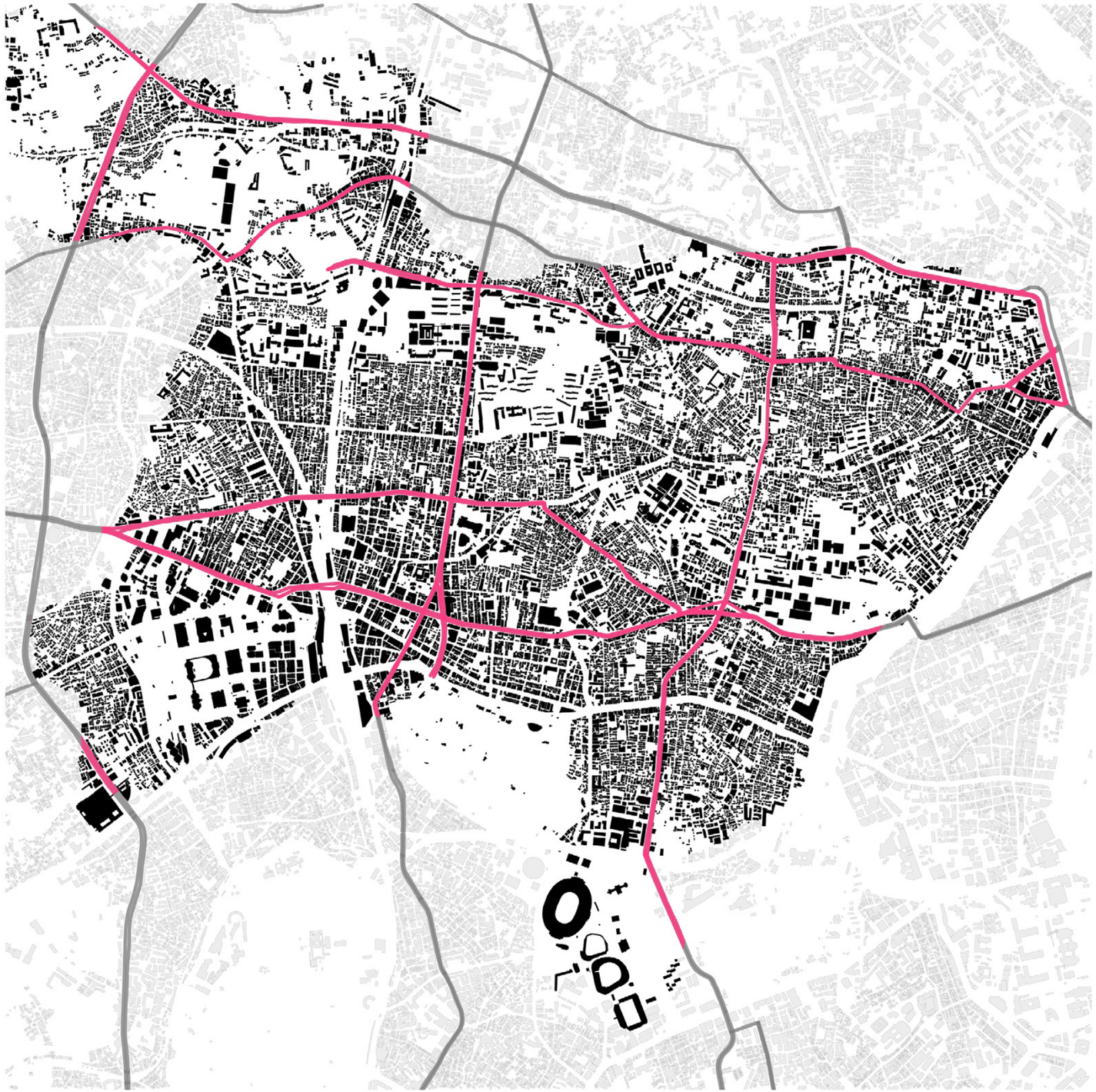
In Tokyo, Japan, particularly in the Shinjuku area, many buildings' rooftop spaces are used for advertising billboards, as well as for machinery and air conditioning units for various building services. These areas are often wasted and belong to the overlooked corners of the city. However, certain very old neighborhoods have unique geographical advantages, as well as a height advantage, which makes the existence of Billboard Park possible. As a special blue public space, it works together with green public space to adjust the community environment and pace.

In the information age, in the heart of the digital deluge of Tokyo, the space that can be used as billboards is very limited, yet plentiful, and almost every building is covered with billboards in its limited locations, including and not limited to its facade, as well as its roof.

Tokyo - Shinjuku

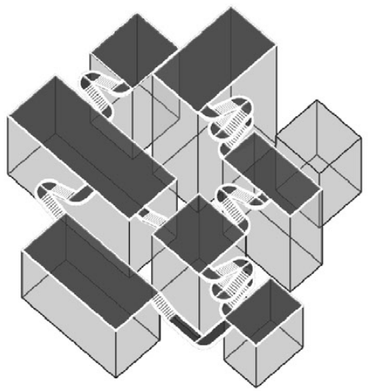
Transforming the City
Expanding horizon
Shaped tiny buildings
All-time residential area

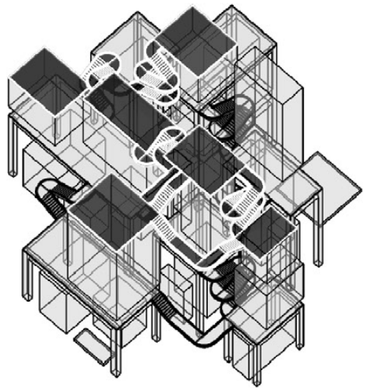




Unutilized Roof

Idle and abandoned
Building services equipment sites
Billboard structure frame
Not open to the public



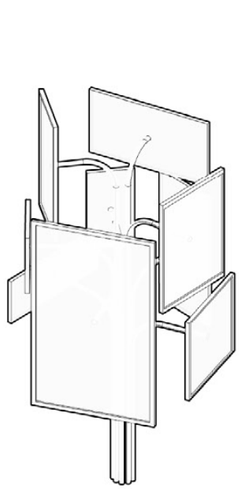


Over-roof Condition

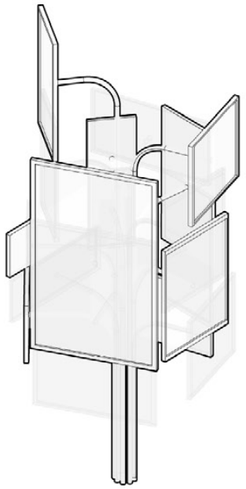
Conditional Testing

Billboard Park

Spare Time
Constantly Changing
Time-sensitive
Sunflower
Growing



Rotating
Lifting
Extending



Lower Status

9:00 A.M.

Lower sky blocking
Better Vision
Subtle

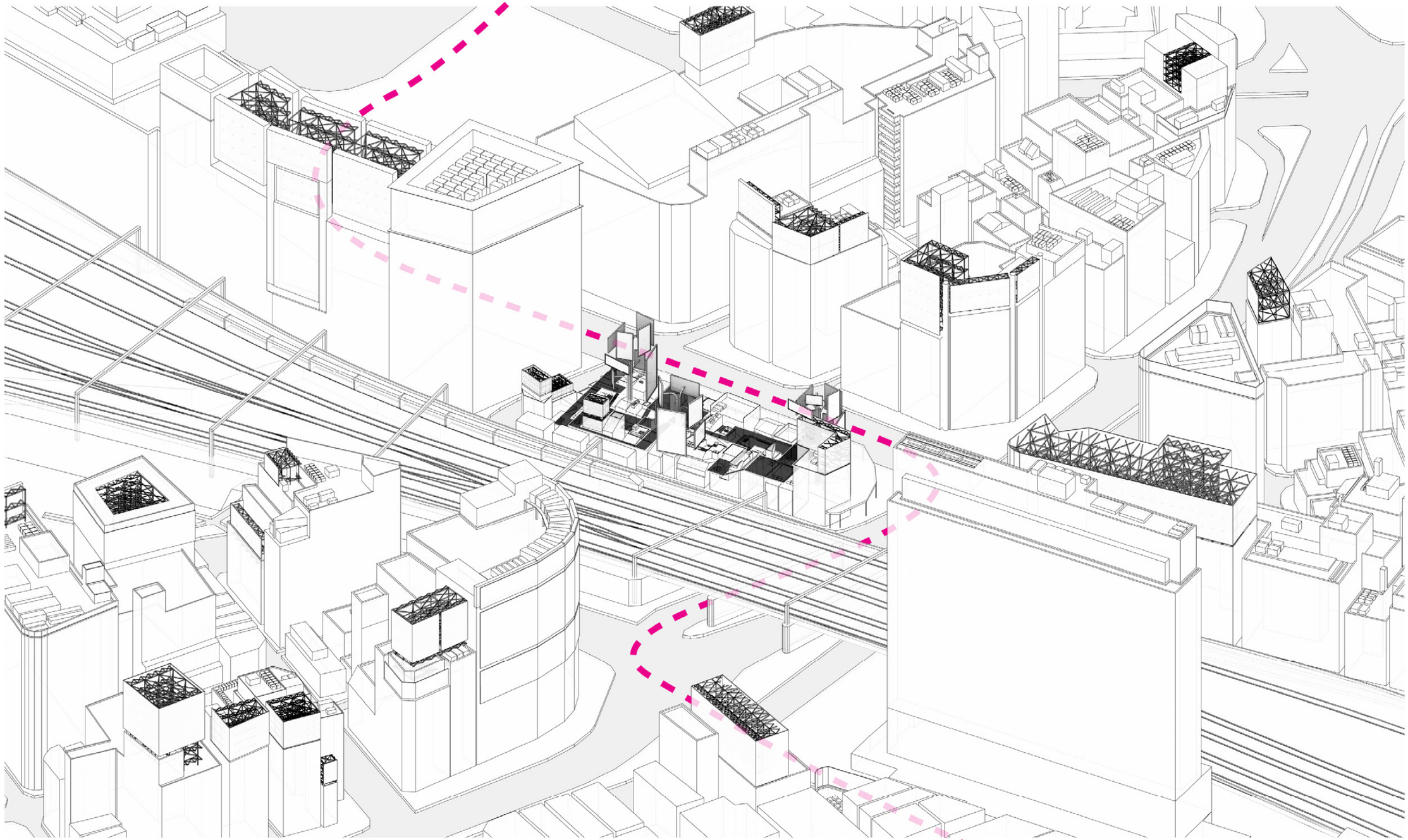
Higher Status

14:00 P.M.

Larger shading
Higher brightness
Attractive

Top View

Connection to site
Occupying roof footprint



Drawing // Prevision of Omoide Yokucho

Beyond the Truck

Future Infrastructure Design
Site // Phoenix City, AZ

Instructor // Michael Bell
Group Work // Tianyi WANG & Huanpeng LI
Spring , Year 2023

The new truck stop, rethinking the duration, role, and relationship of human and machine, use a series of strategies to change the view of driver and truck.

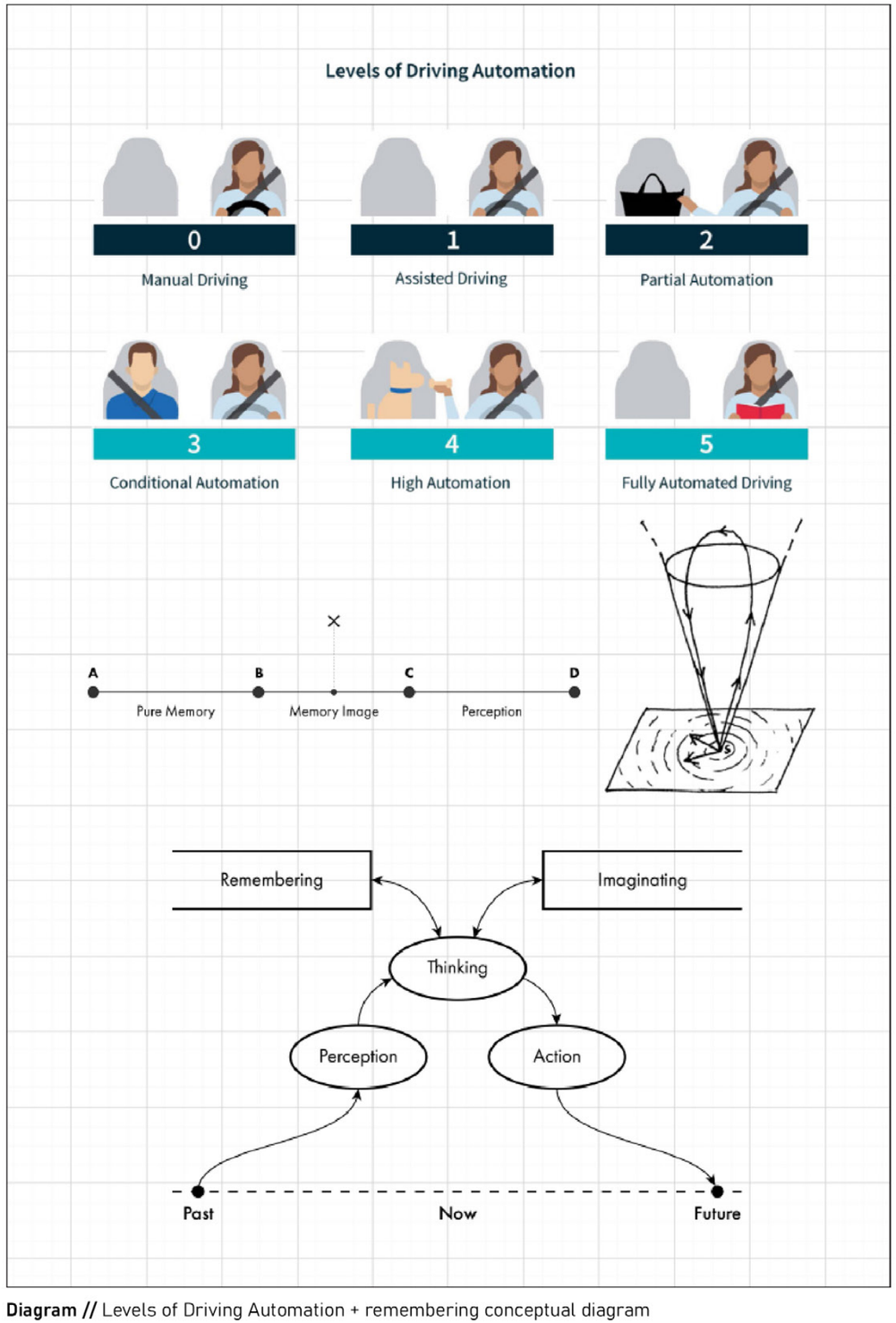
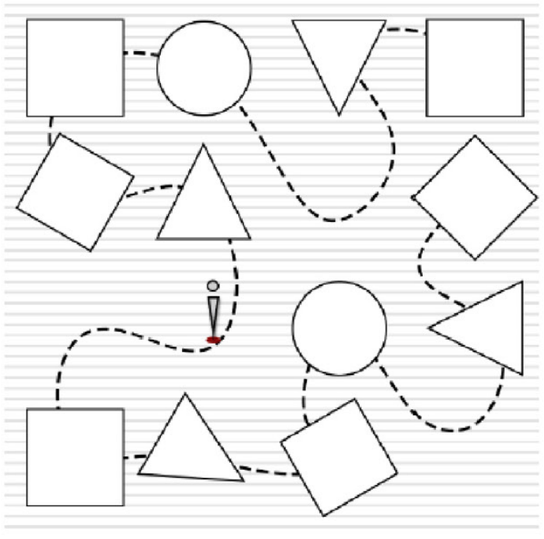
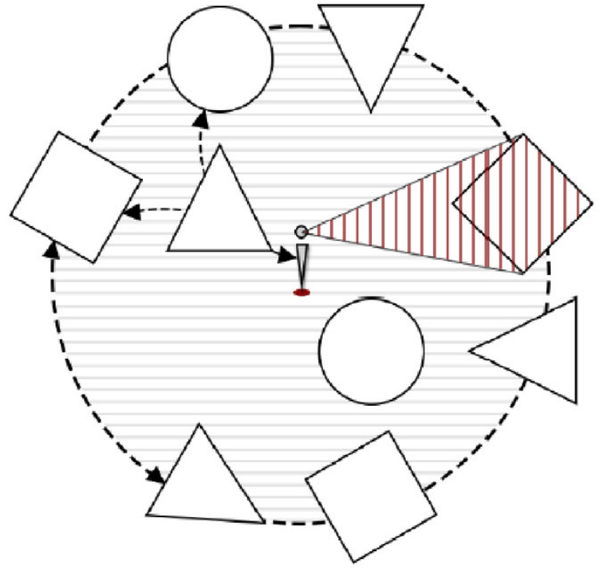


Diagram // Levels of Driving Automation + remembering conceptual diagram





We set the project after 2027 or 2030. The truck will be fully autonomous. By then, tntering the fifth stage. Besided, in this context, we still believe that humans exist within the system as distinct different role.

1 // The data within the truck and AI is a kind of habit memory, like a child, with a pure, fast, and uncomplicated perception of different situations. This is a klnd act of autonomous behaviors, sucj as drinking water and walk-ing.

2 // The driver or human has the image memory and emotion that the AI does not. This part enables people to make multiple judgements and choices in the face of unknown situations. This is the ability to project people's own experiences and memories onto surroundings.

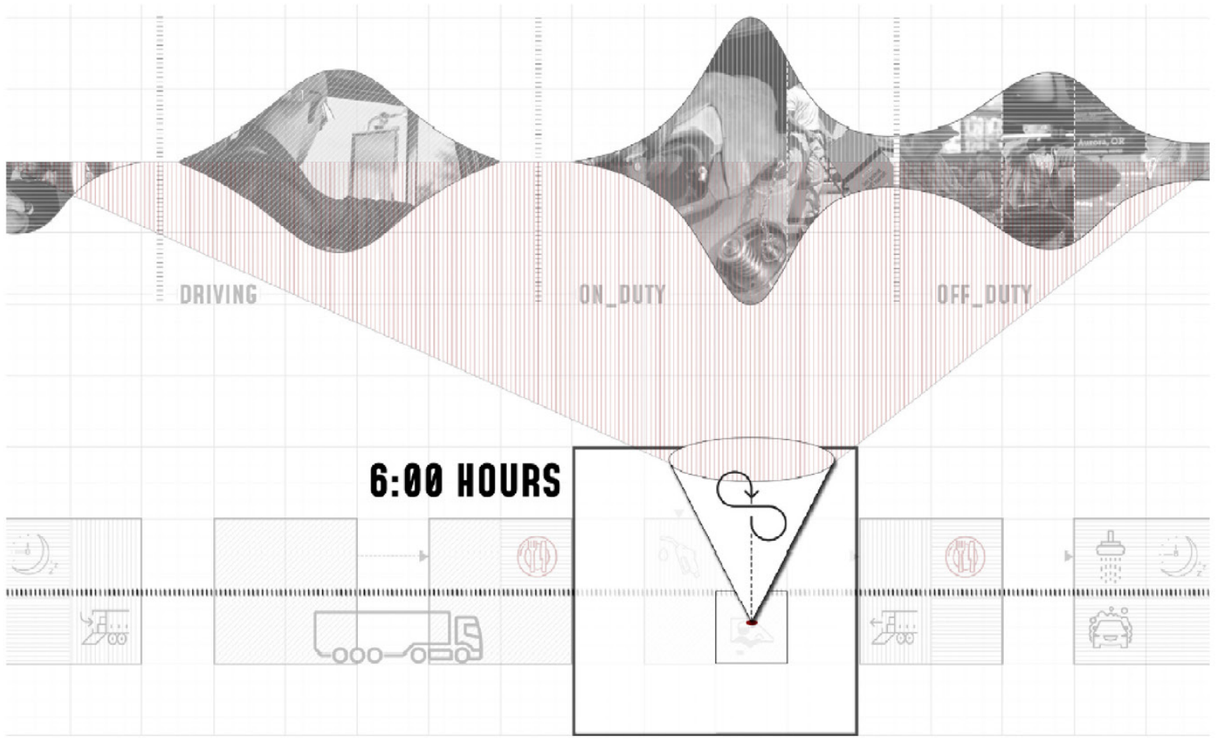


Diagram // Future blank time within a driver's daily

A time that does not exist now, with no purpose,
no role, and truly belongs to the drivers.

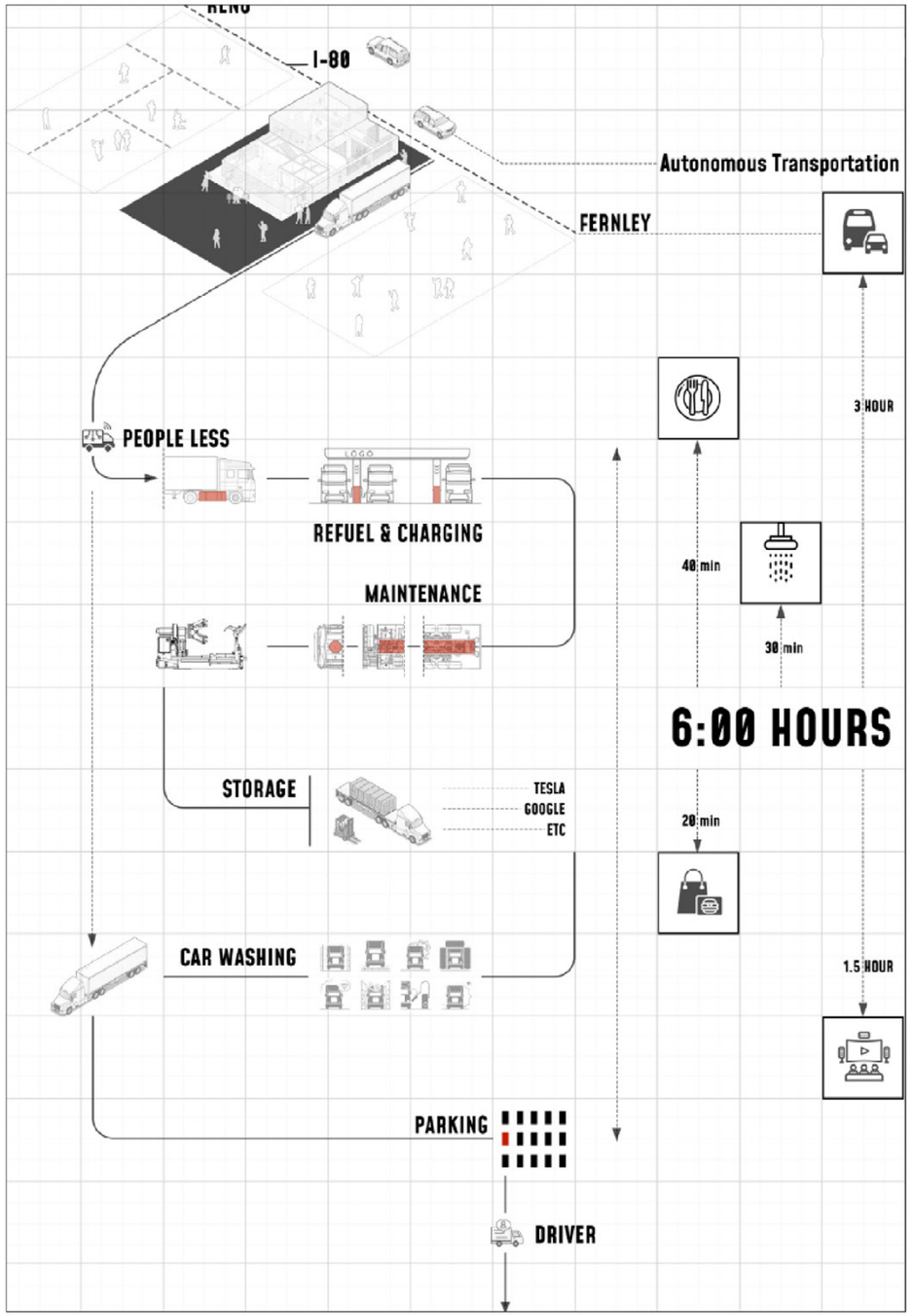
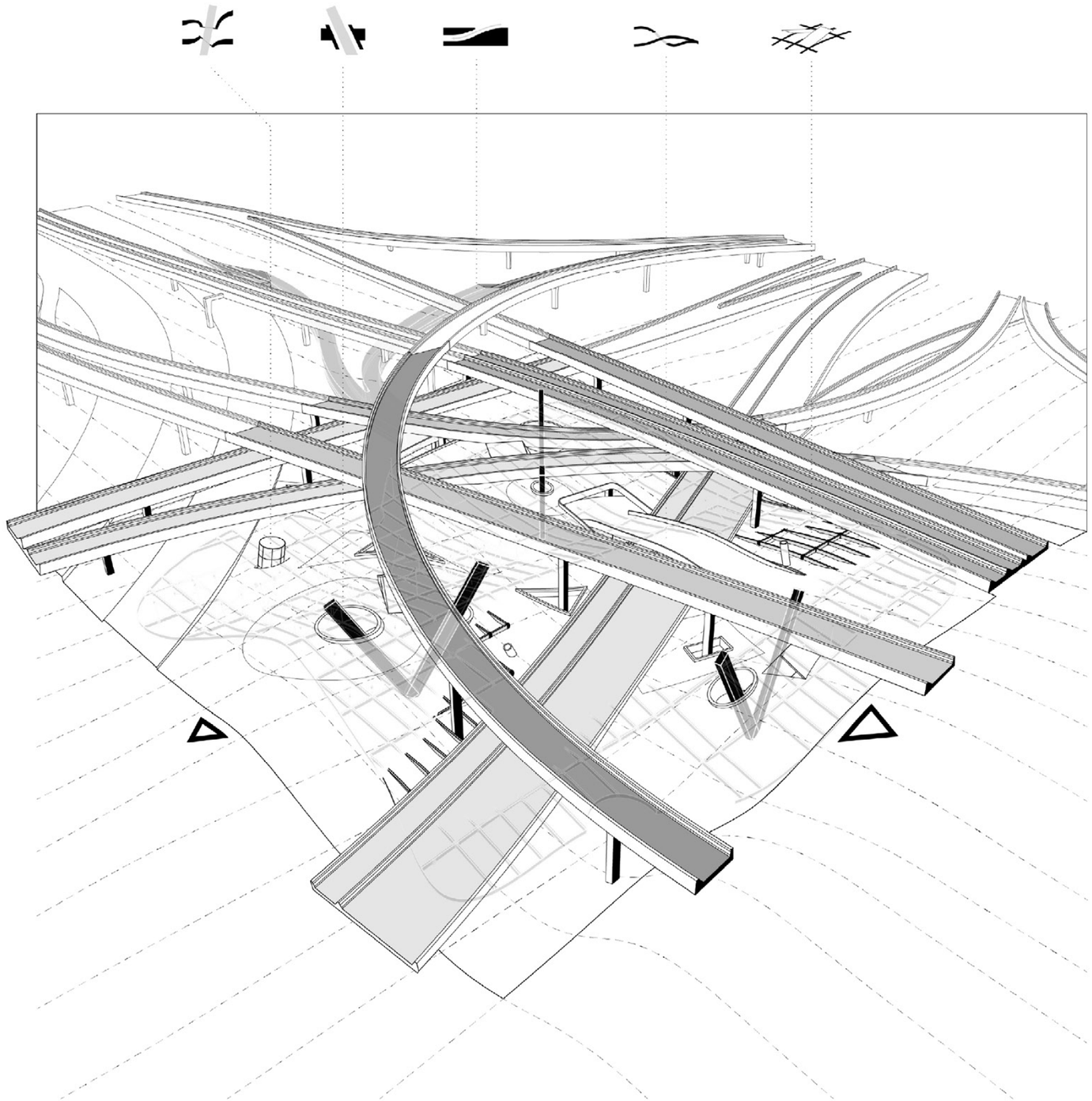
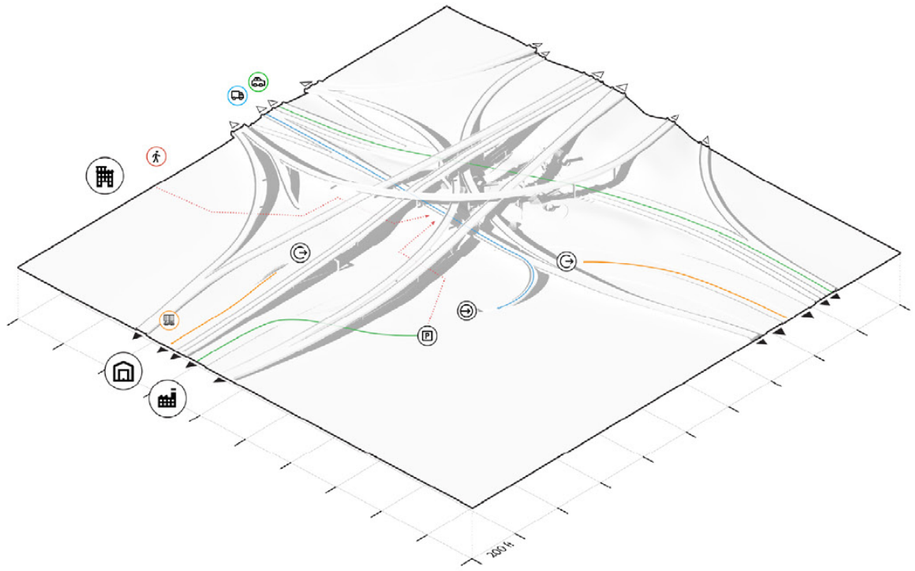


Diagram // Truck stop system + seperating human and nonhuman



Drawing // Chunk perspective of selected phoenix overpass



Drawing // Ground level access and connection to neighbors

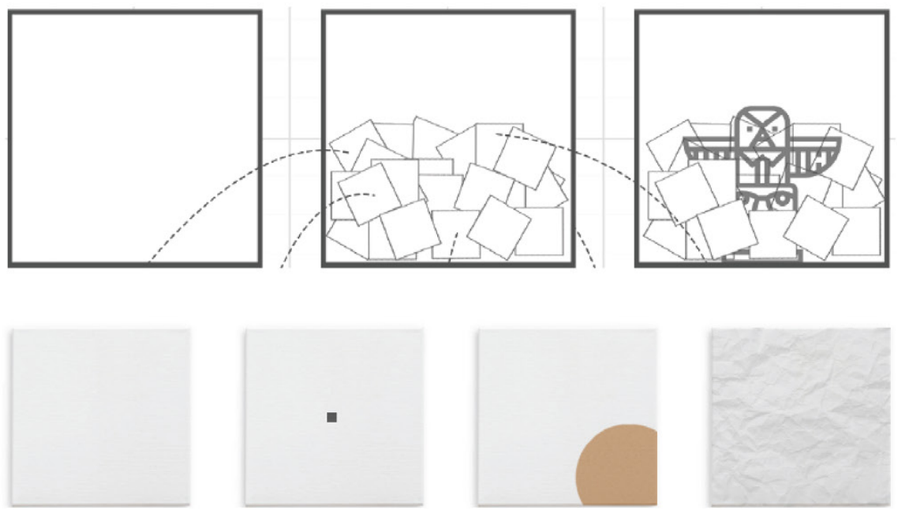
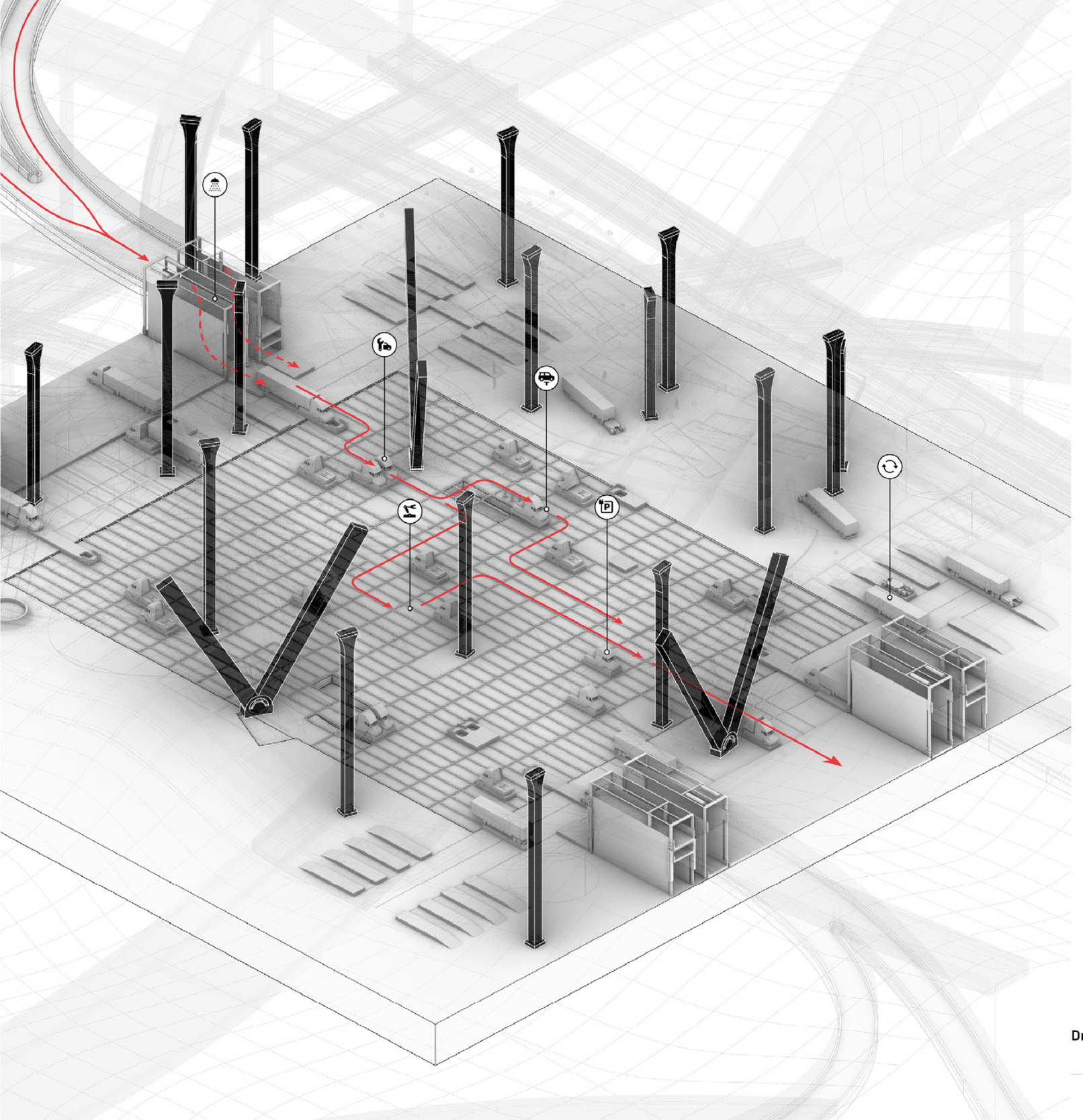
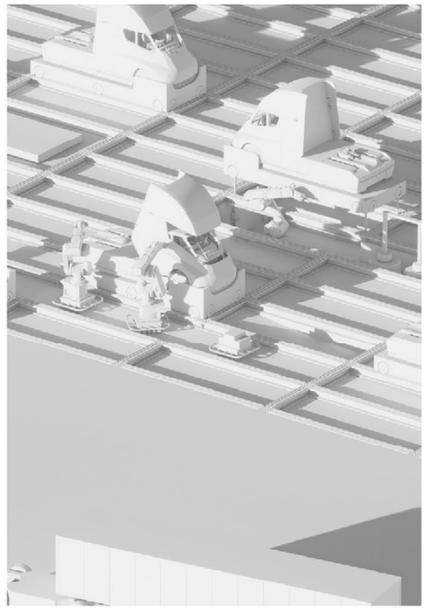
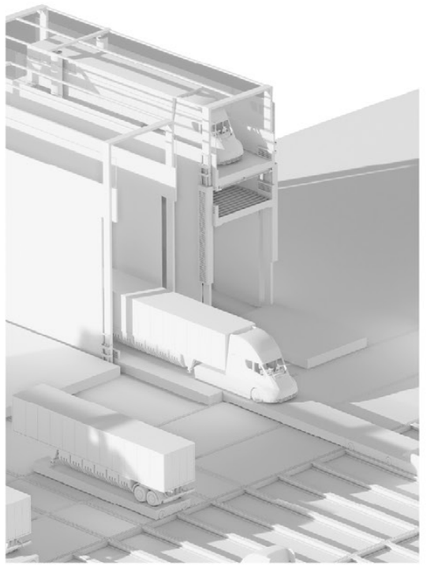


Diagram // Nature level intends to be blank initially, and gradually grows into cultural totem

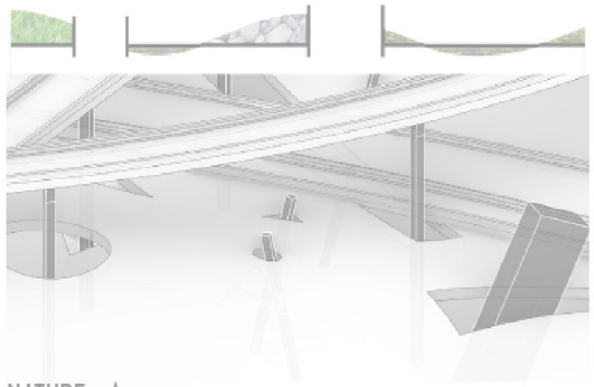






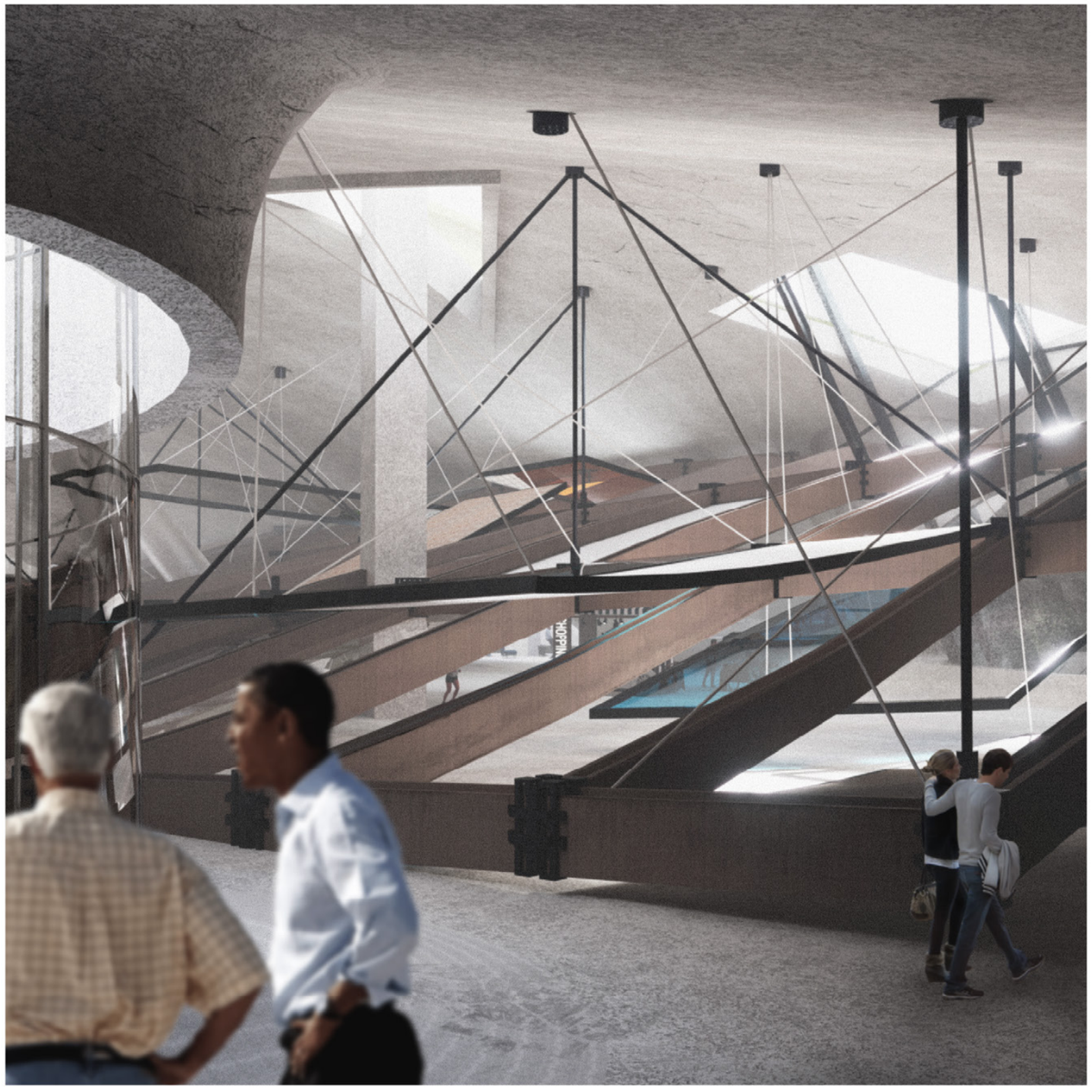
Render // Details of proposed programs on the machine level

Drawing // Machine level + system order of truck

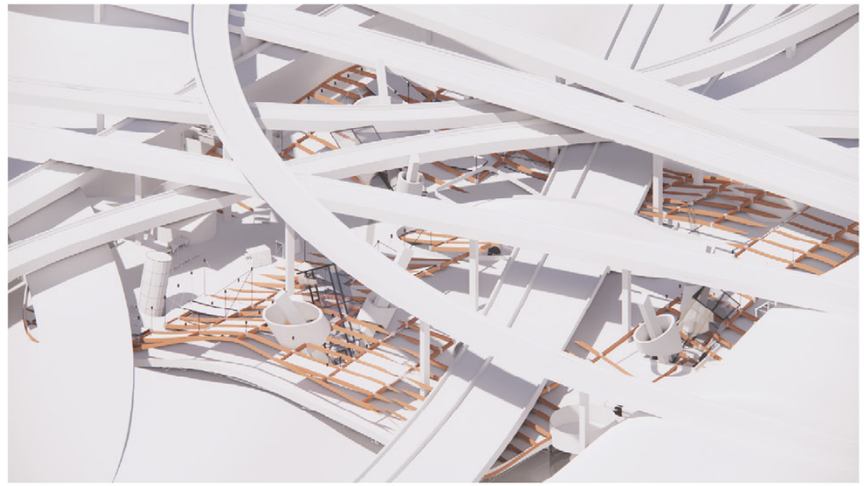


Human level

What could be this space be like?



Renders // Human level



Drawing // Frame system on the Human level

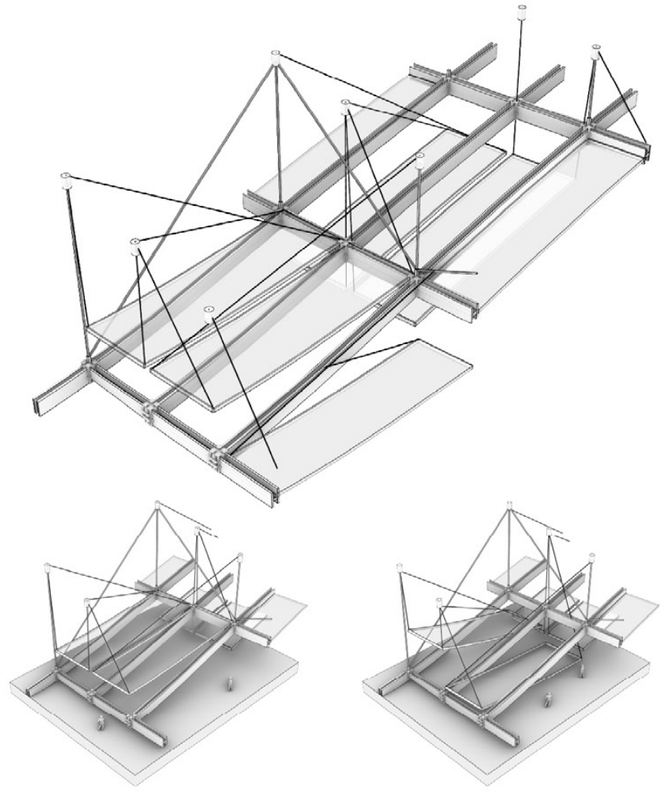


Diagram // Ever moving frame structure creates different spatial conditions for different programs

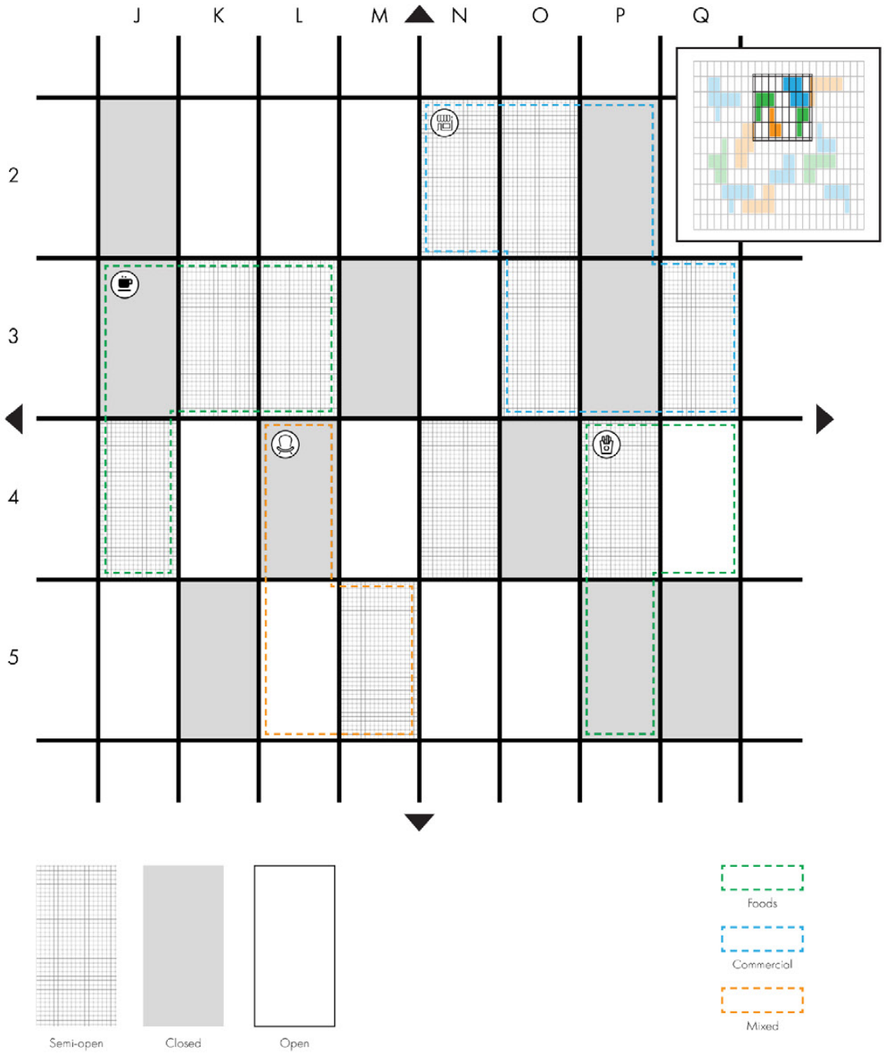
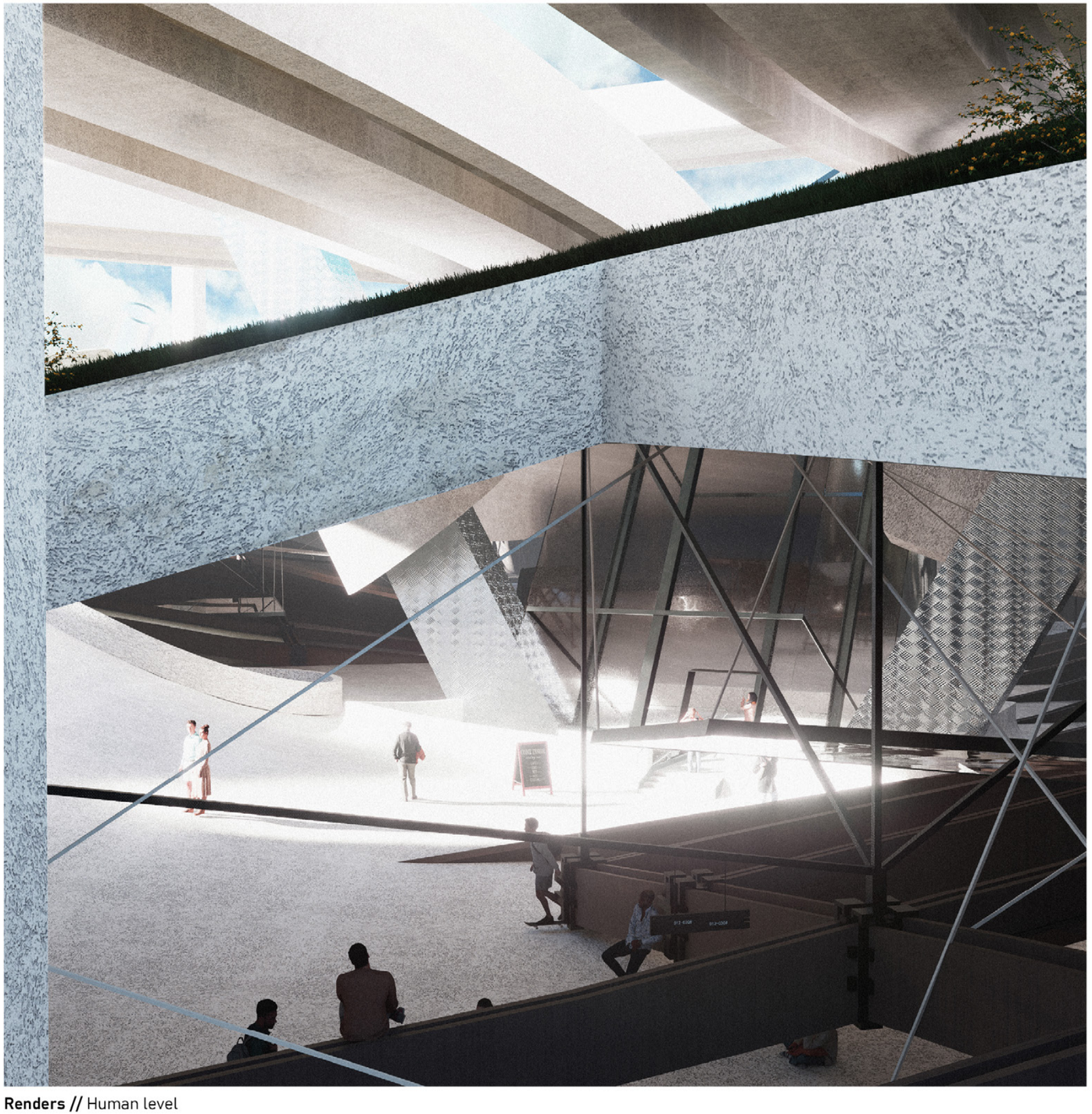
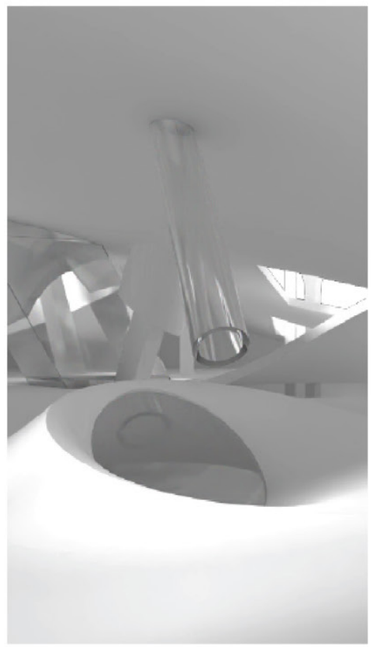


Diagram // Truck stop activities schedule + changing of space



Renders // Human level

Renders // V pass-through structure



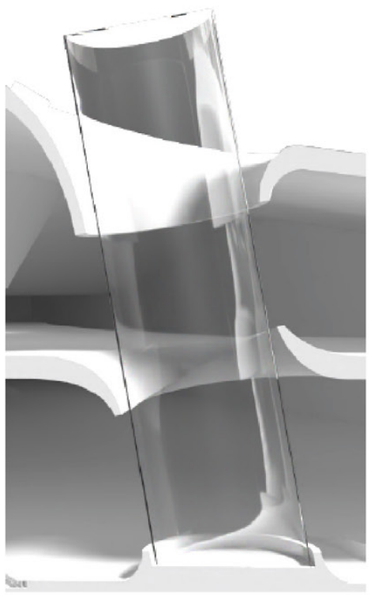
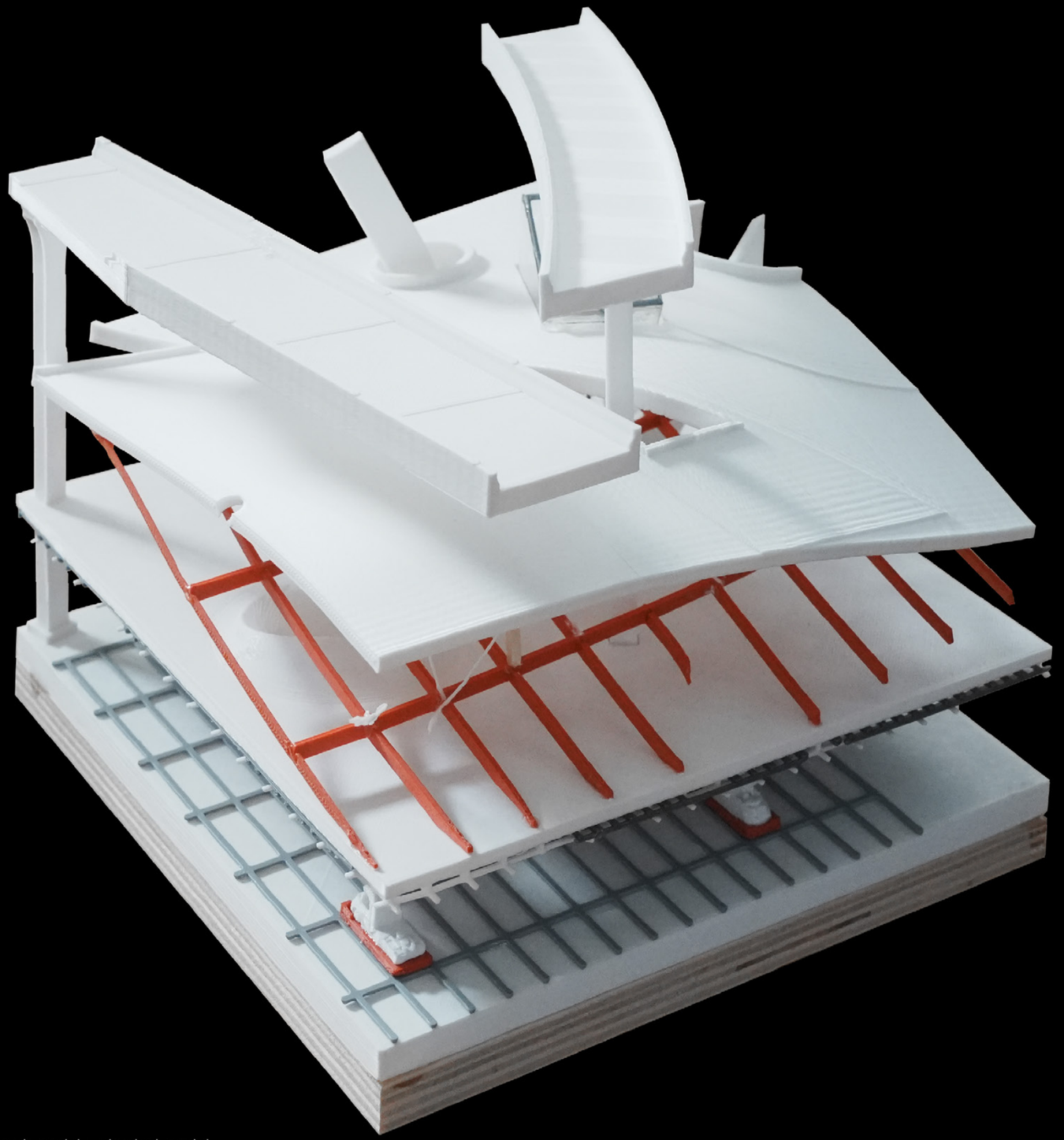
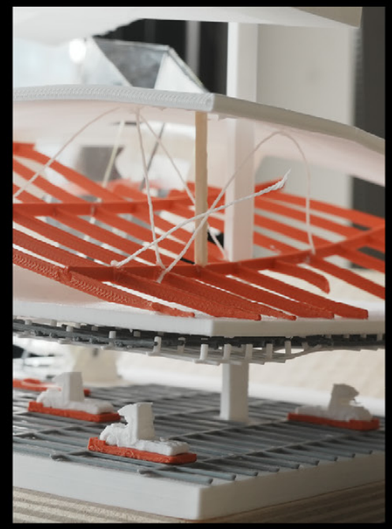


Diagram // Passing through elements + Glass members



Model // Chunk model + physical model



Model // Details of physical model

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