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UNI

22

SUMMER

DW2988

SPRING

Serendipity

GSAPP  
GRADUATION  
PORTFOLIO

M.S.ADVANCED  
ARCHITECTURAL  
DESIGN



NEW YORK

NO.5

05/08/2022

**ADV VI**

Spring 22

**Detox USA**

Detox USA is conceived as a thesis studio. Within the rubric of the course, students undertake their own research, formulate their own design project, and work individually. However, partnering is also possible and permitted and depending on the composition of the class this year may be preferable. We will discuss these options in the first week of studio.

**USA**

Like clouds of pollutants or narcotic exhaust, toxicity is not easily contained. It wafts, floats, seeps, and oozes. It is also exported along with military technologies to conflict zones, it travels as pharmaceutical products, and it migrates as petrochemical practices and techniques. Contemporary markets, trade routes, sites of resource extraction, and scenes of geopolitical tensions are its arteries, agents, and accumulators.

The area within the boundaries of the United States is the nominal site and starting point for the studio. Yet the USA will also be understood as the center of an expanded chemical field of toxic effects, products, byproducts, and accumulations. Students may choose sites within the sovereign space of the USA or beyond, within its expanded toxic territories. LA's Four (or Forty) Toxic Ecologies

**LA's Four (or Forty) Toxic Ecologies**

Since the first national American symposium on air pollution held in 1949 in Pasadena, Los Angeles has been ground zero for seeing and testing the relation between cities and different pollutants, contaminants, and processes of purification, from smog controls to addiction therapy. The studio will travel to Los Angeles and the surrounding region to encounter this history, to view the architectures of containment and exposure, and to reflect on the different sites and forms of cultural and chemical concentration. While there, we will meet with a range of experts from atmospheric scientists, to artists, architects, curators, and therapists. To be clear, no student is required to work on Los Angeles. Rather, by expanding on Banham's four ecologies, Los Angeles will serve as a spatial primer for our understanding of the histories and processes of chemical modernity.

Instructor:

Mark Wasiuta

Individual Work

Project Description:

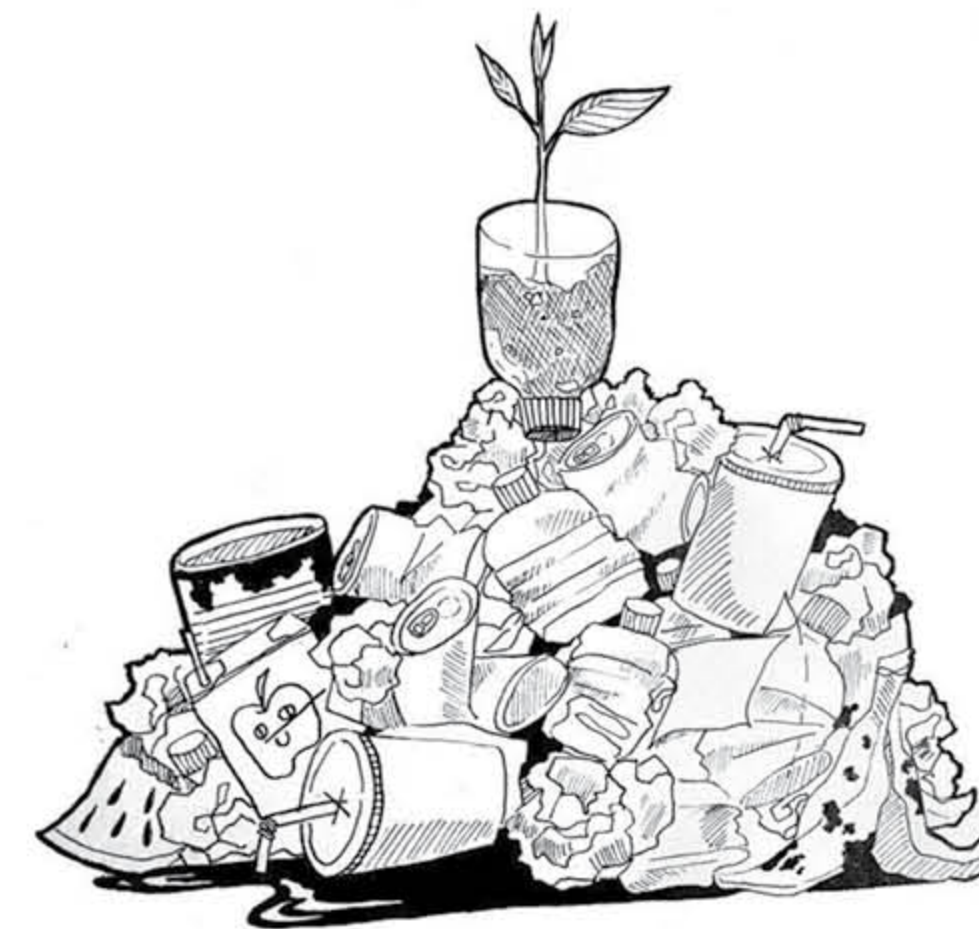
Location: Las Vegas, NV

Area: 6,246,928 ft<sup>2</sup>

Program: Hotel

School:

Columbia University

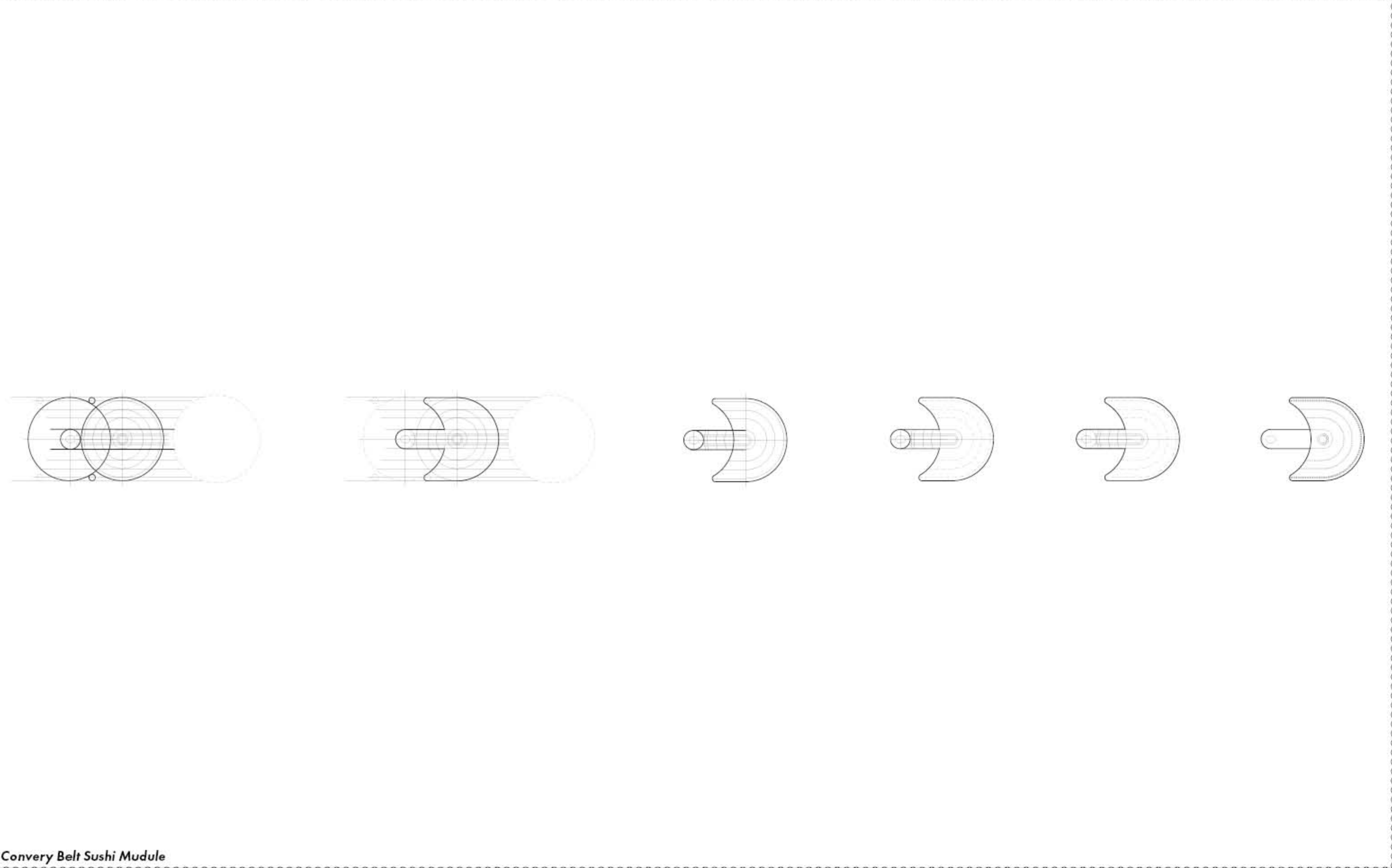
Graduate School of Architecture,  
Planning and Preservation (GSAPP)

Culture has always been the driving force to power sociality and impact our lives. Many ways, such as lifestyle, eating habits, and so on. Especially when it comes to the city of Las Vegas, which has a famous, or rather infamous culture of its own - greed. Toxicity. Waste. Abundance. Which inevitably and ironically leads to an overconsumption and exploitation of all the resources.

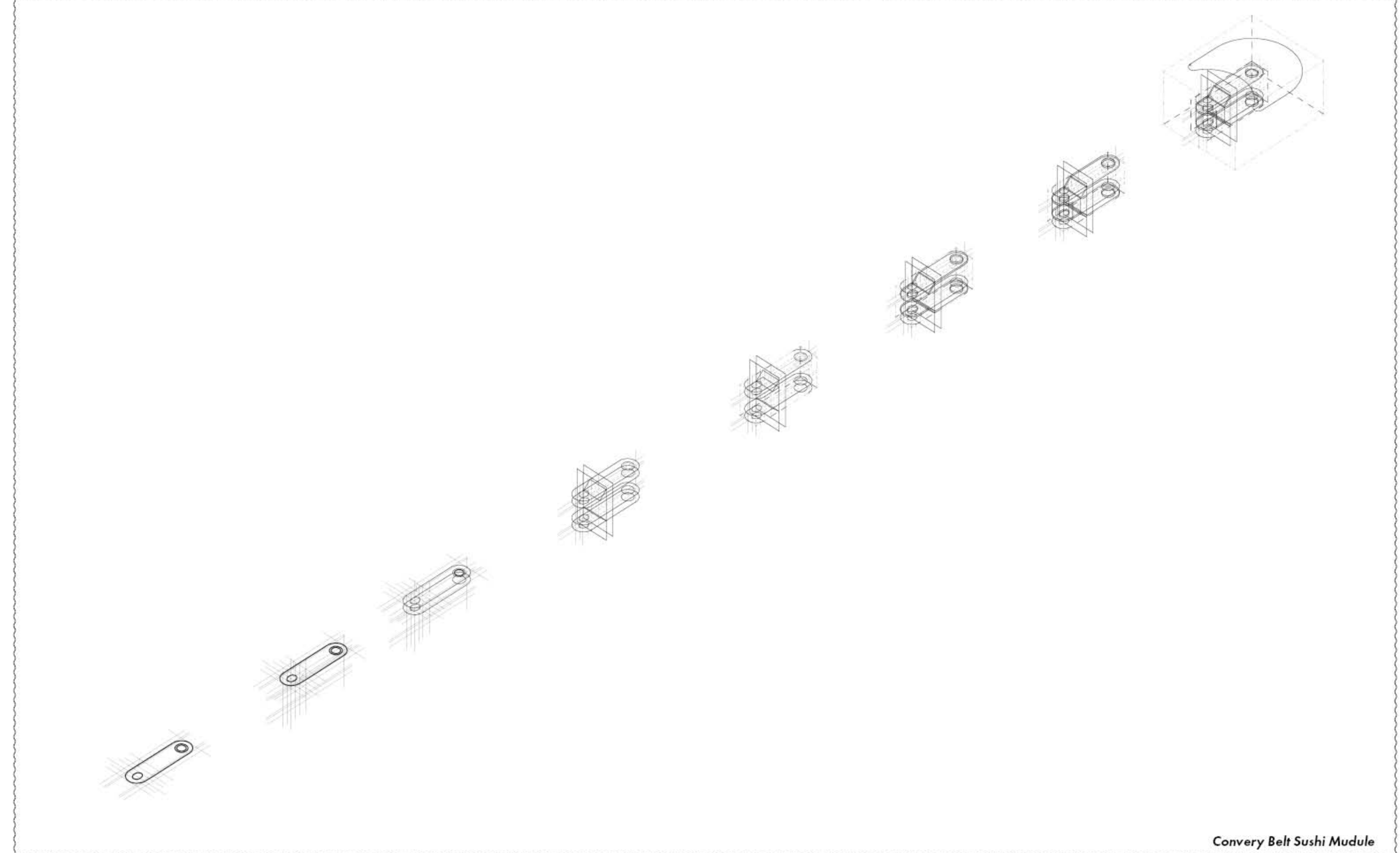
The urge to keep up with the human centric/anthropocentric culture is precisely what results in the city losing its human(e) nature and connection.

The casino culture soon took over the city, by creating an oasis of excess and luxury, which soon trickled down into the daily lifestyles of the people. So much so that it soon became a lifestyle itself.

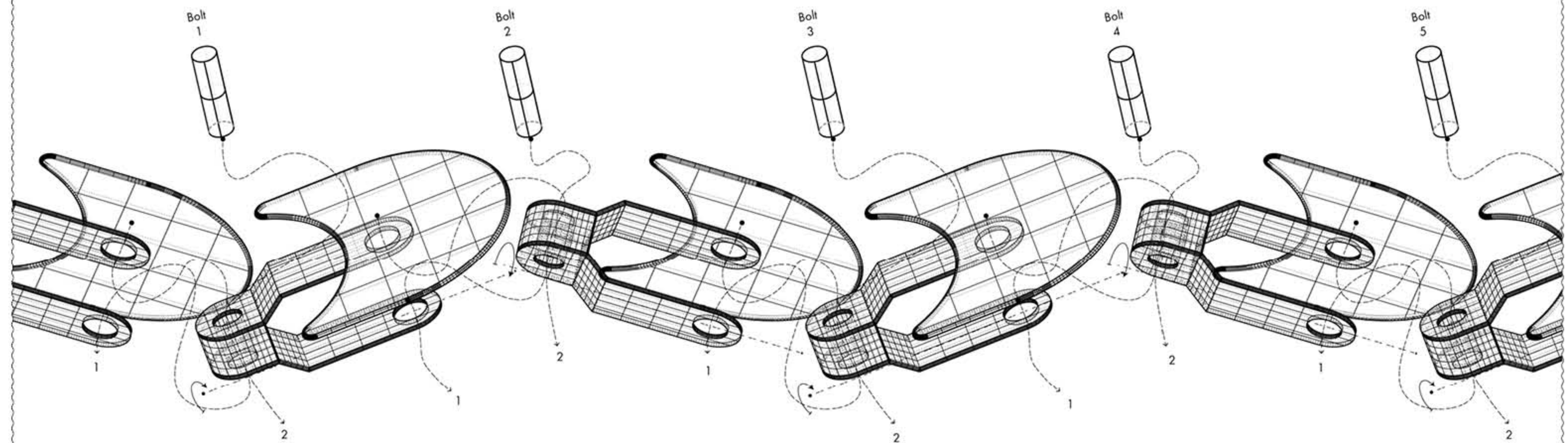
The idea of luxury and abundance started manifesting itself in clothing, architecture and interestingly, food - which led to the popularization of buffets. It gained so much popularity that these models soon began to consume smaller businesses, taking over the prime areas around the Las Vegas strip in order to expand their reign to attract more tourists.



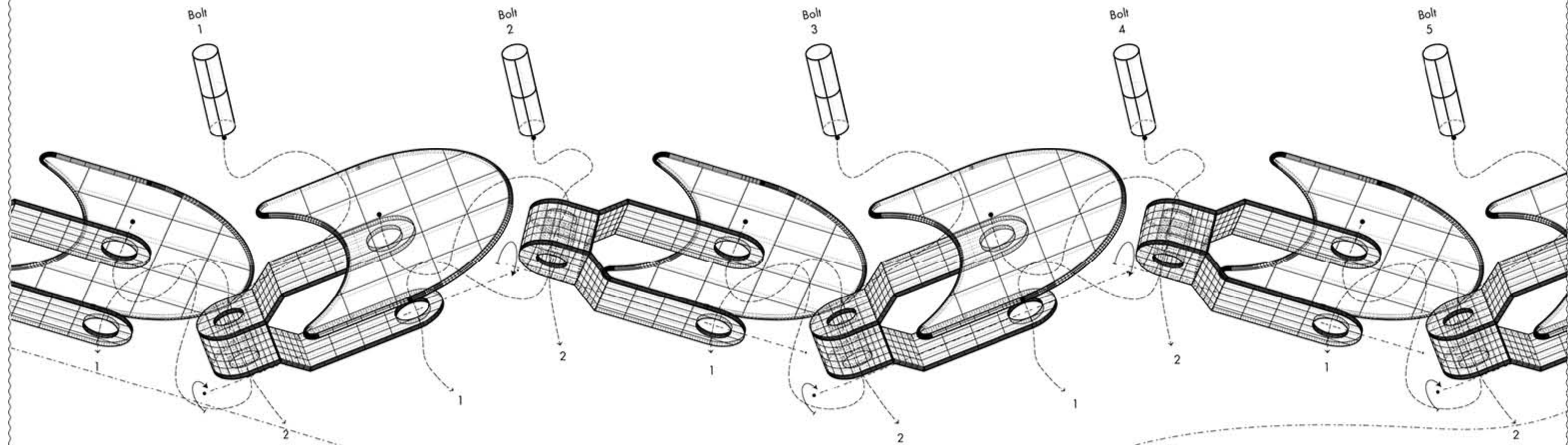
Convery Belt Sushi Mudule



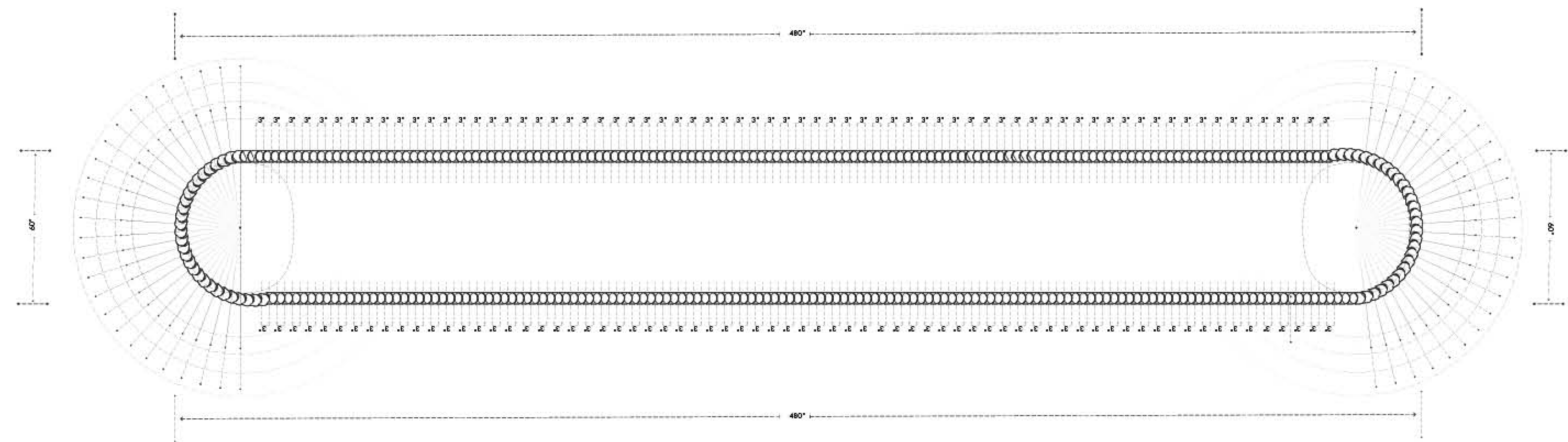
Convery Belt Sushi Mudule



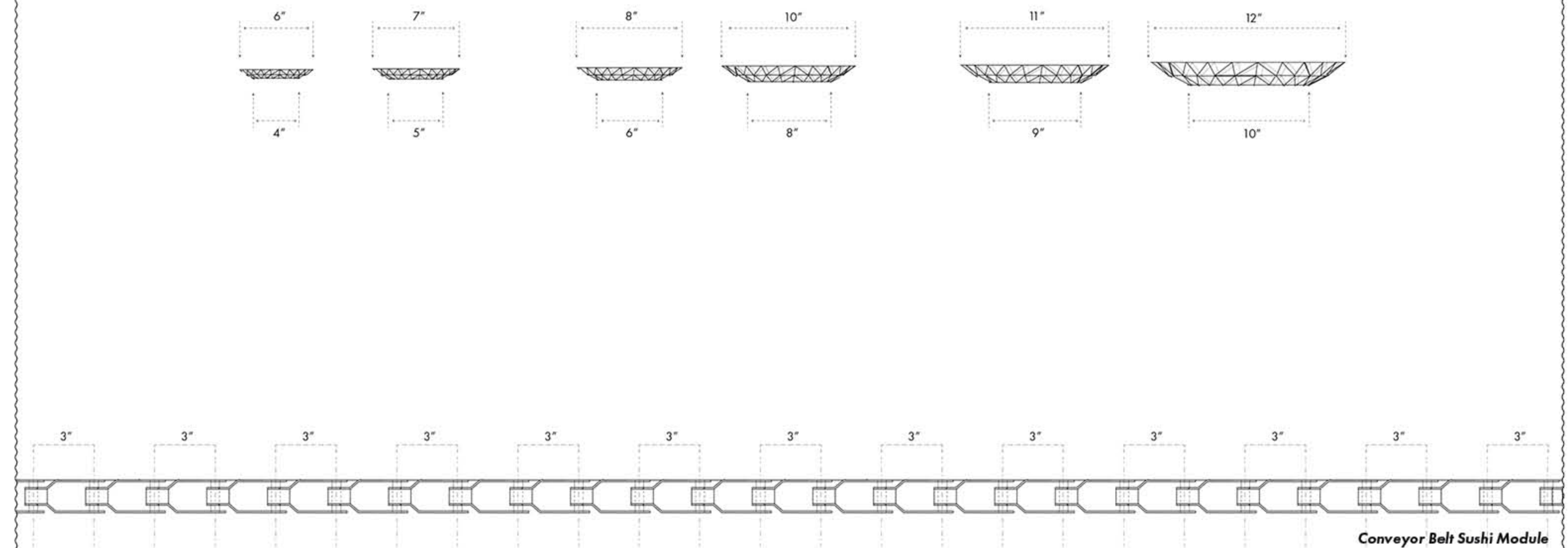
Conveyor Belt Sushi Module



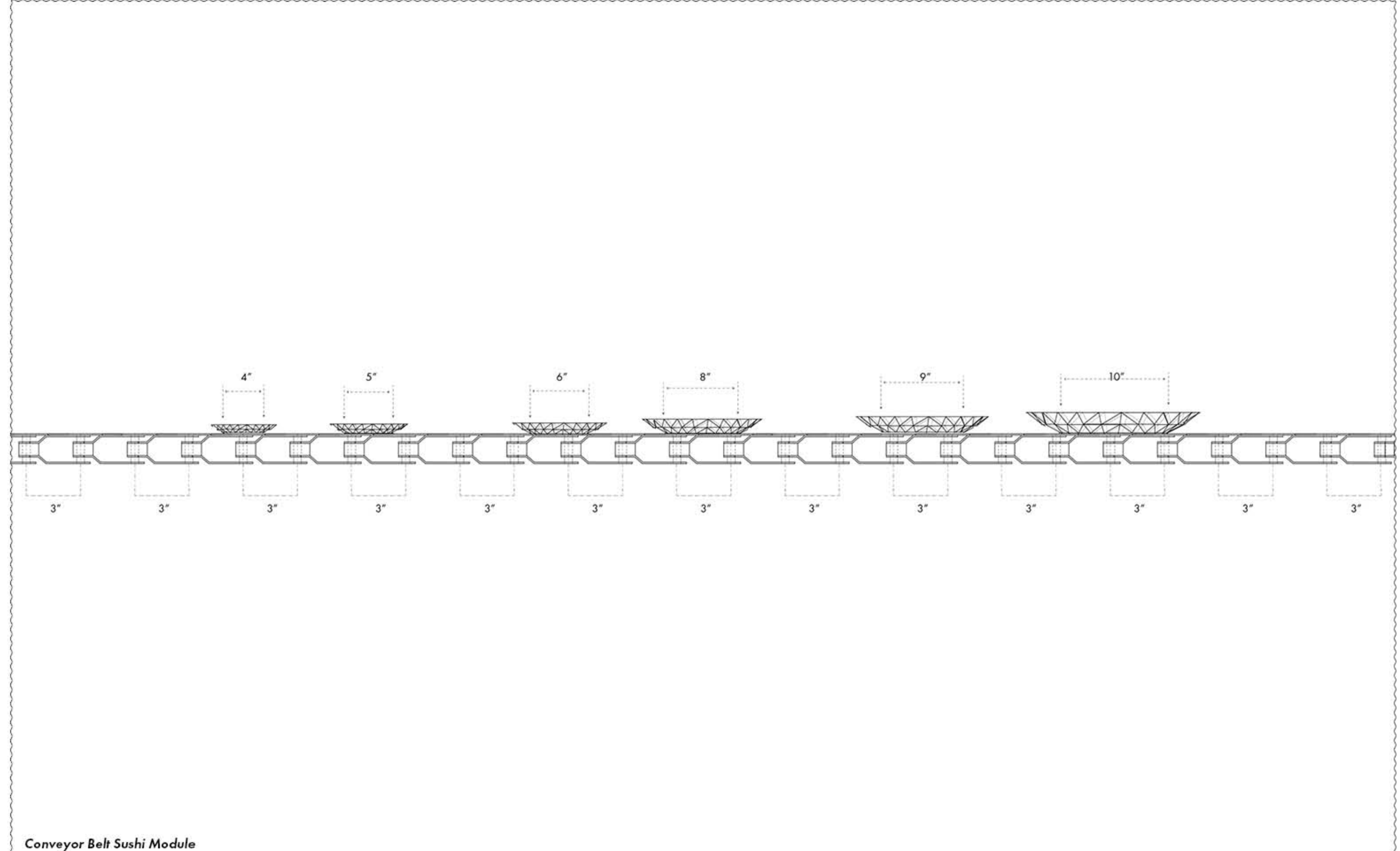
Conveyor Belt Sushi Module



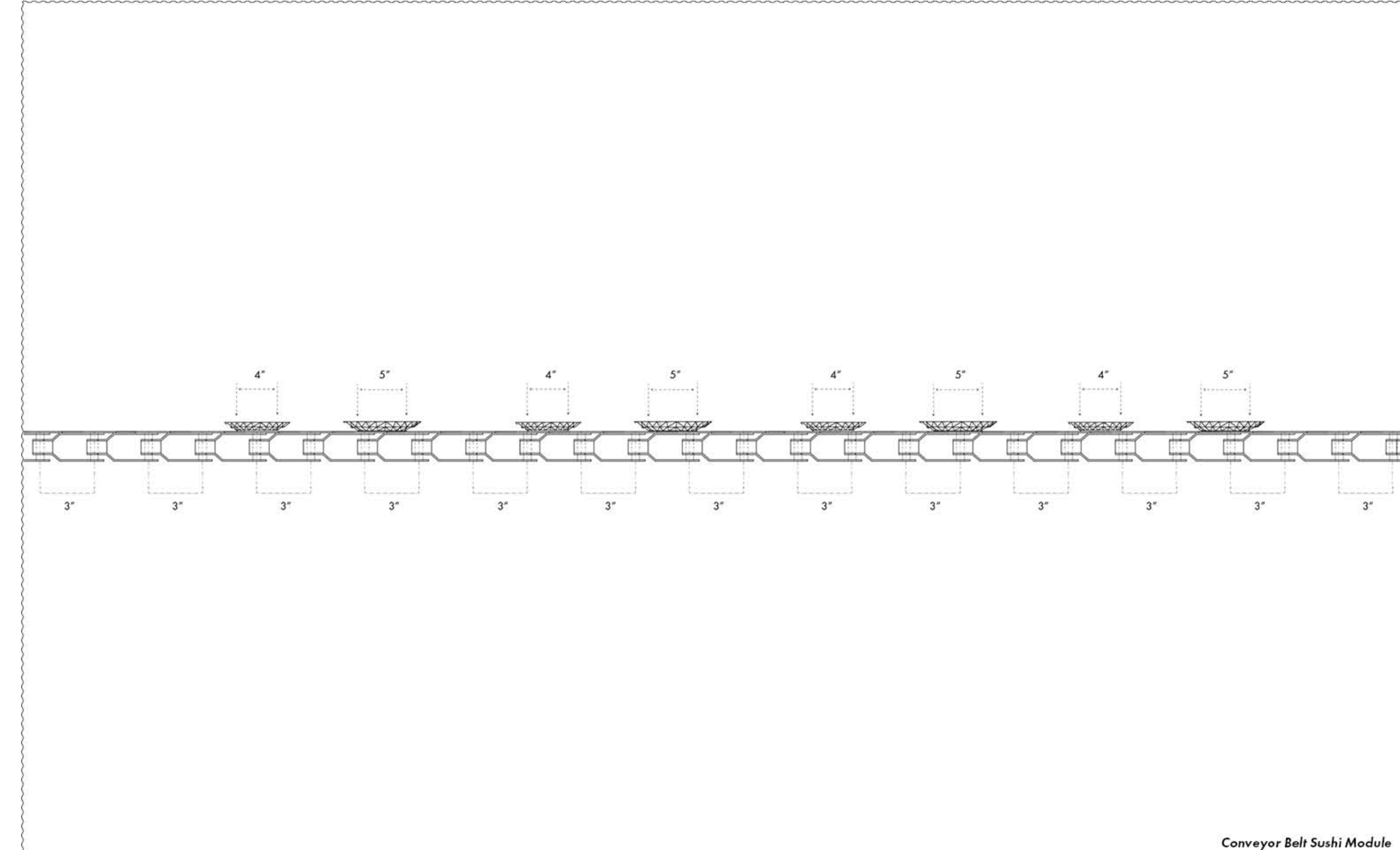
Conveyor Belt Sushi Module



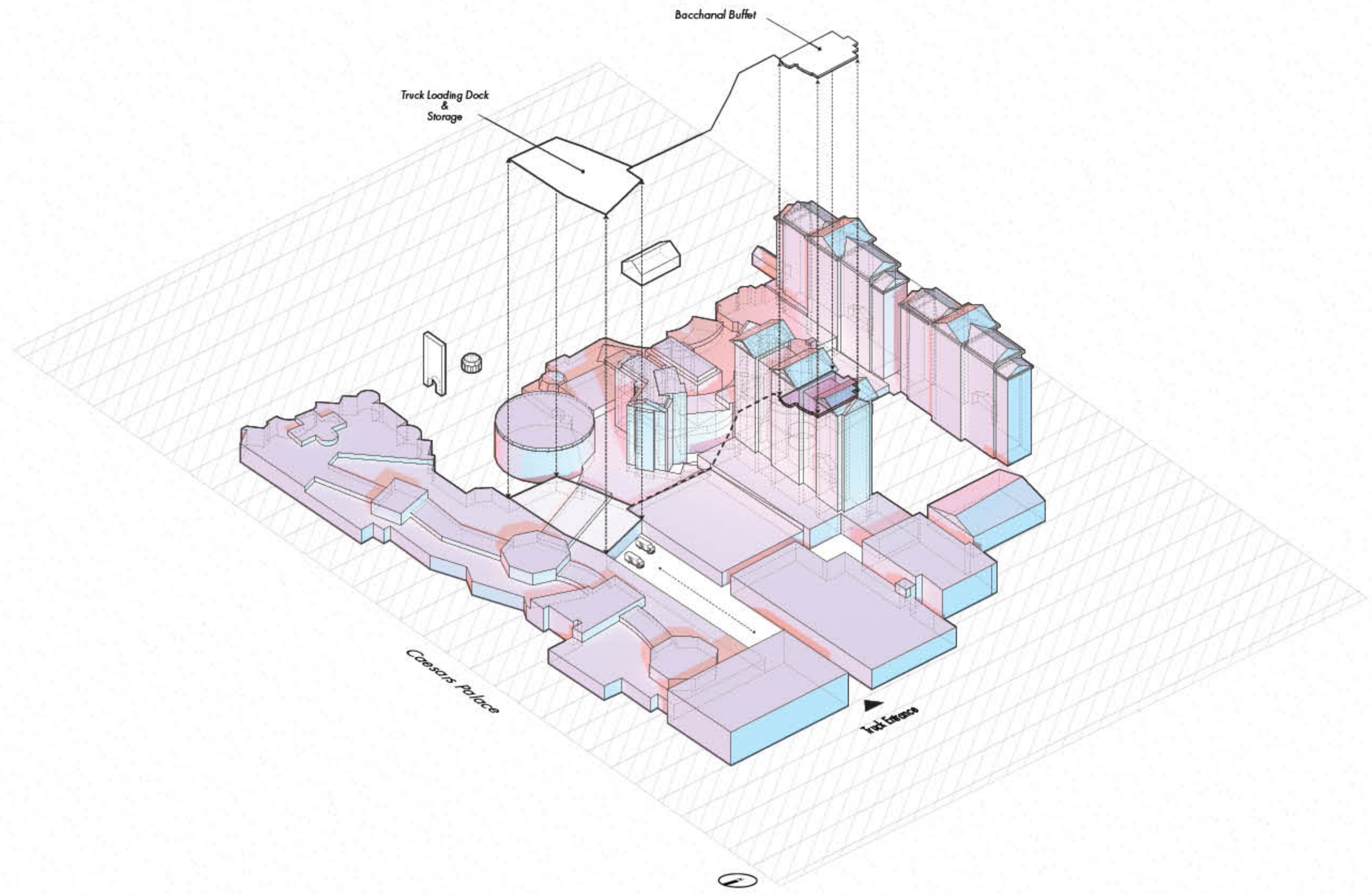
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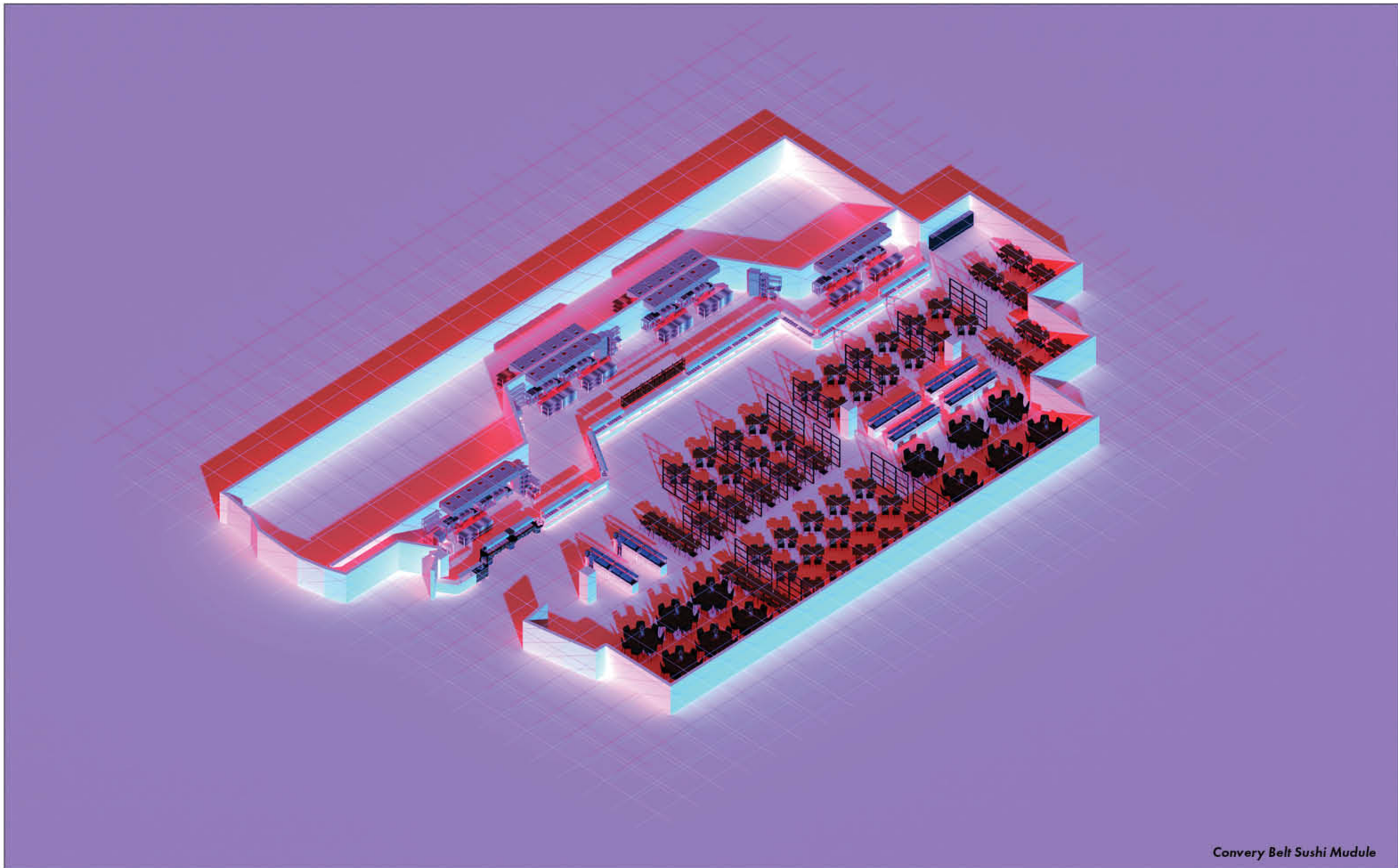
Conveyor Belt Sushi Module



Conveyor Belt Sushi Module



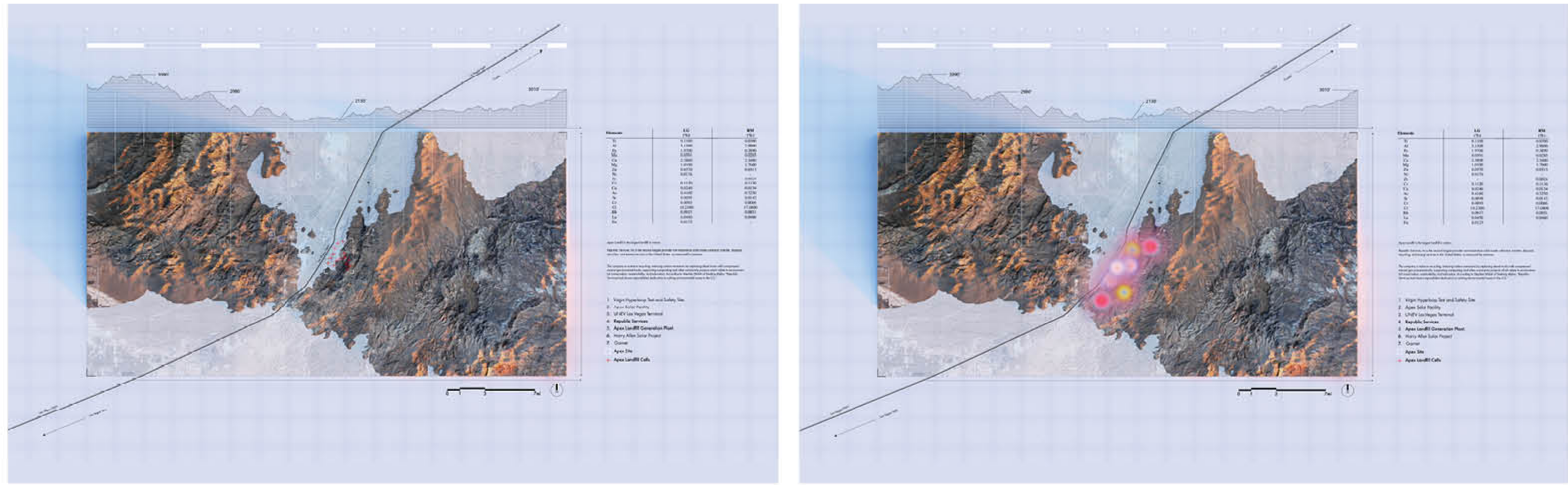
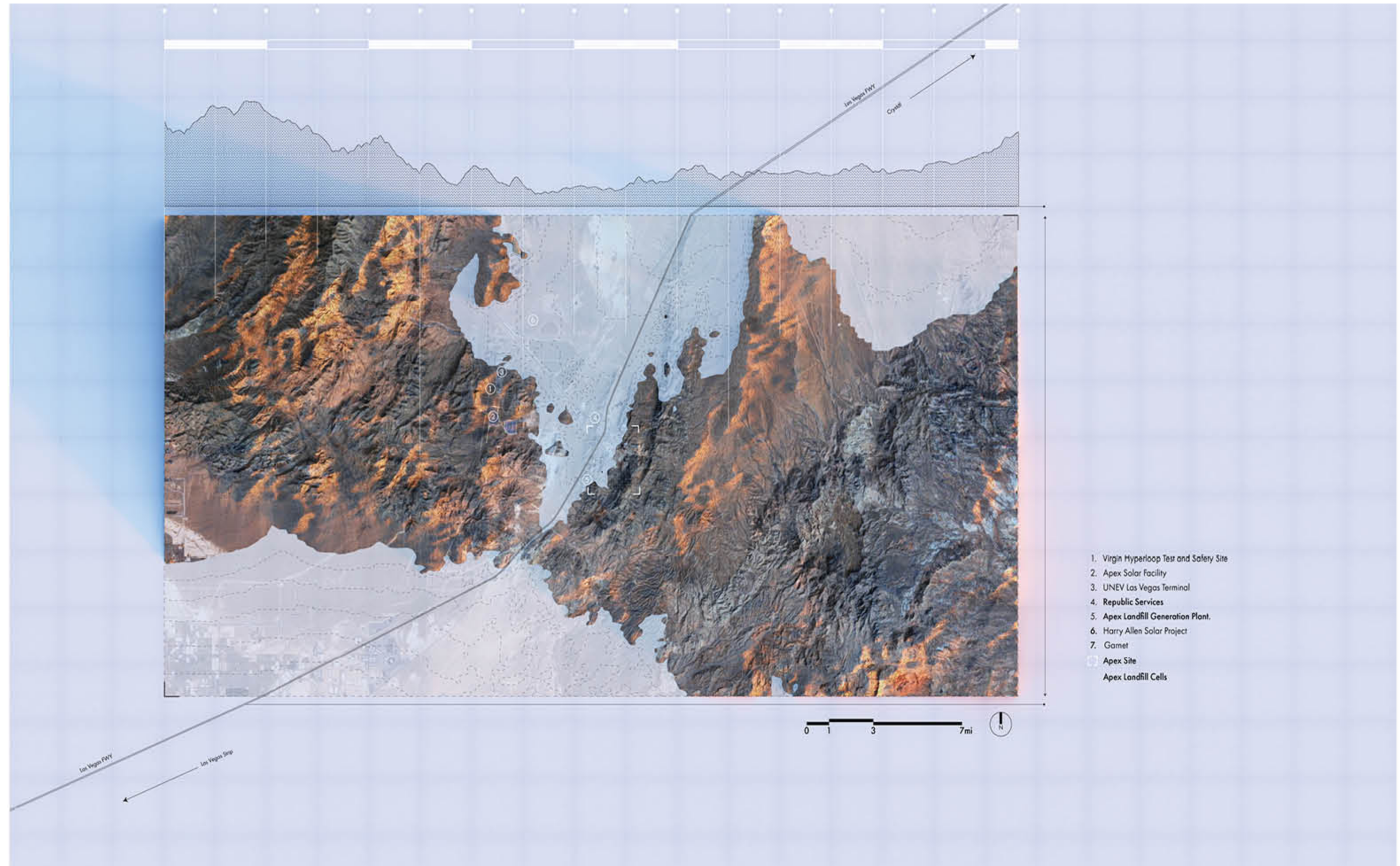
Caesars Palace Hotel

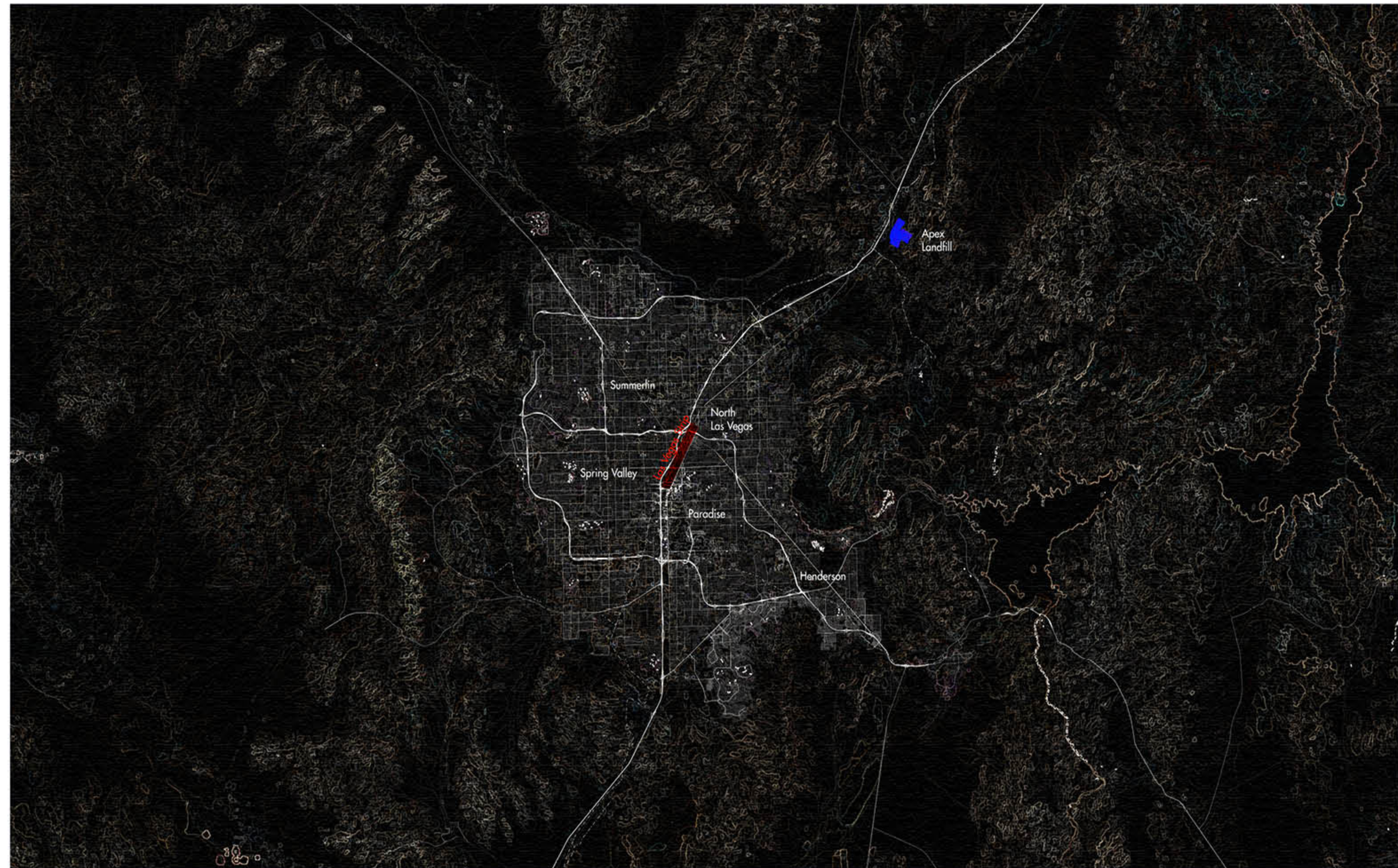


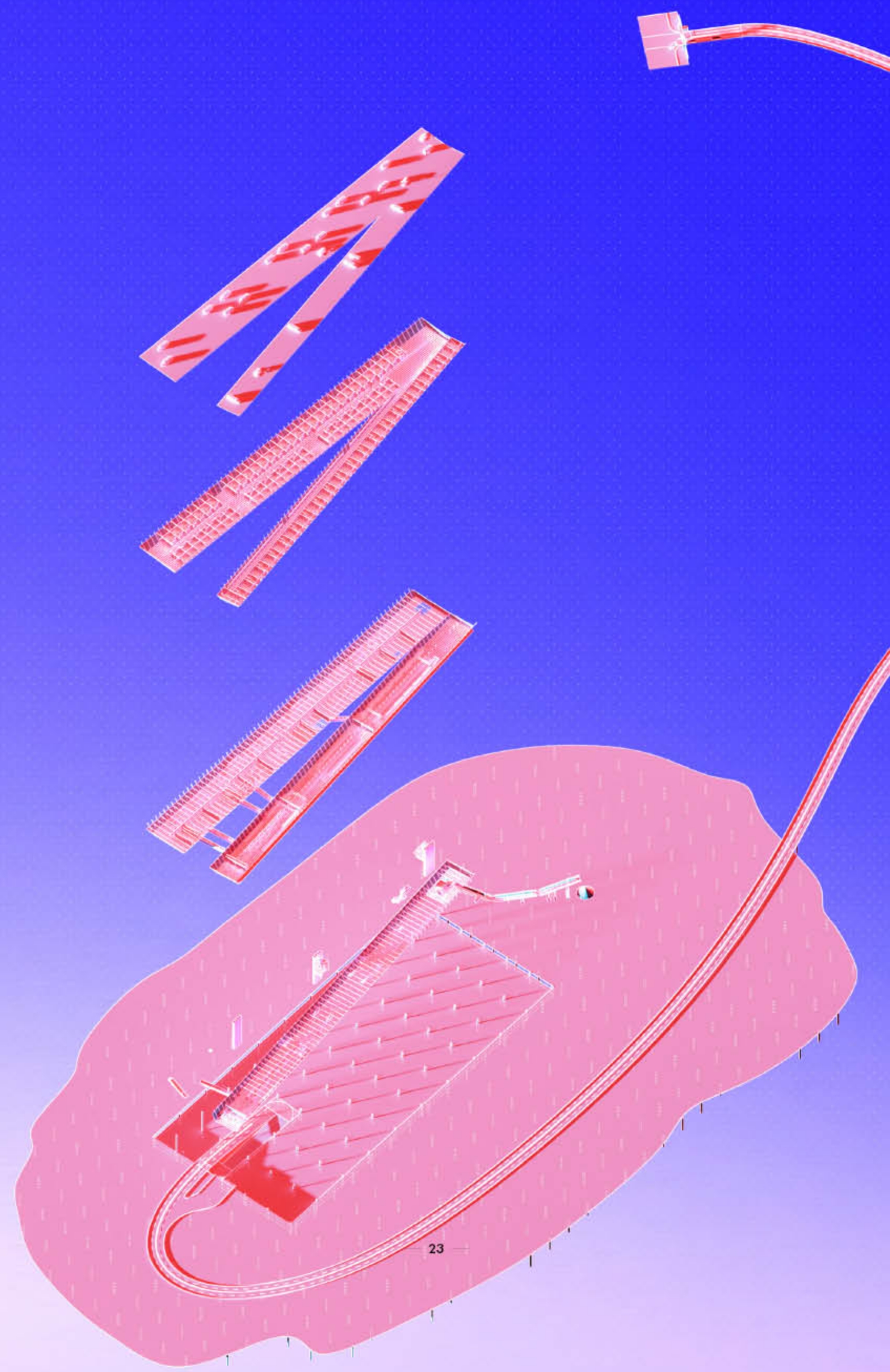
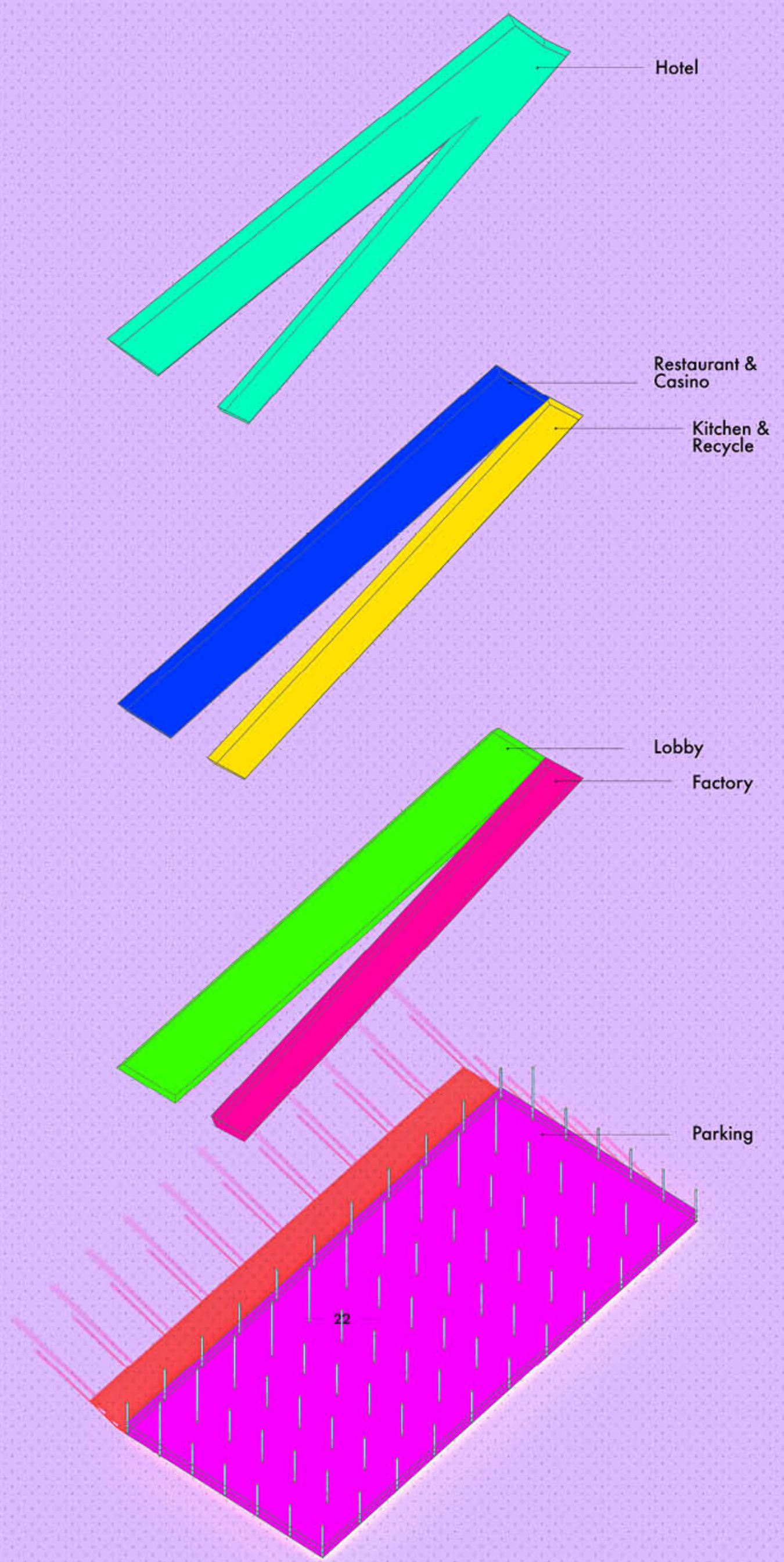
Convery Belt Sushi Module





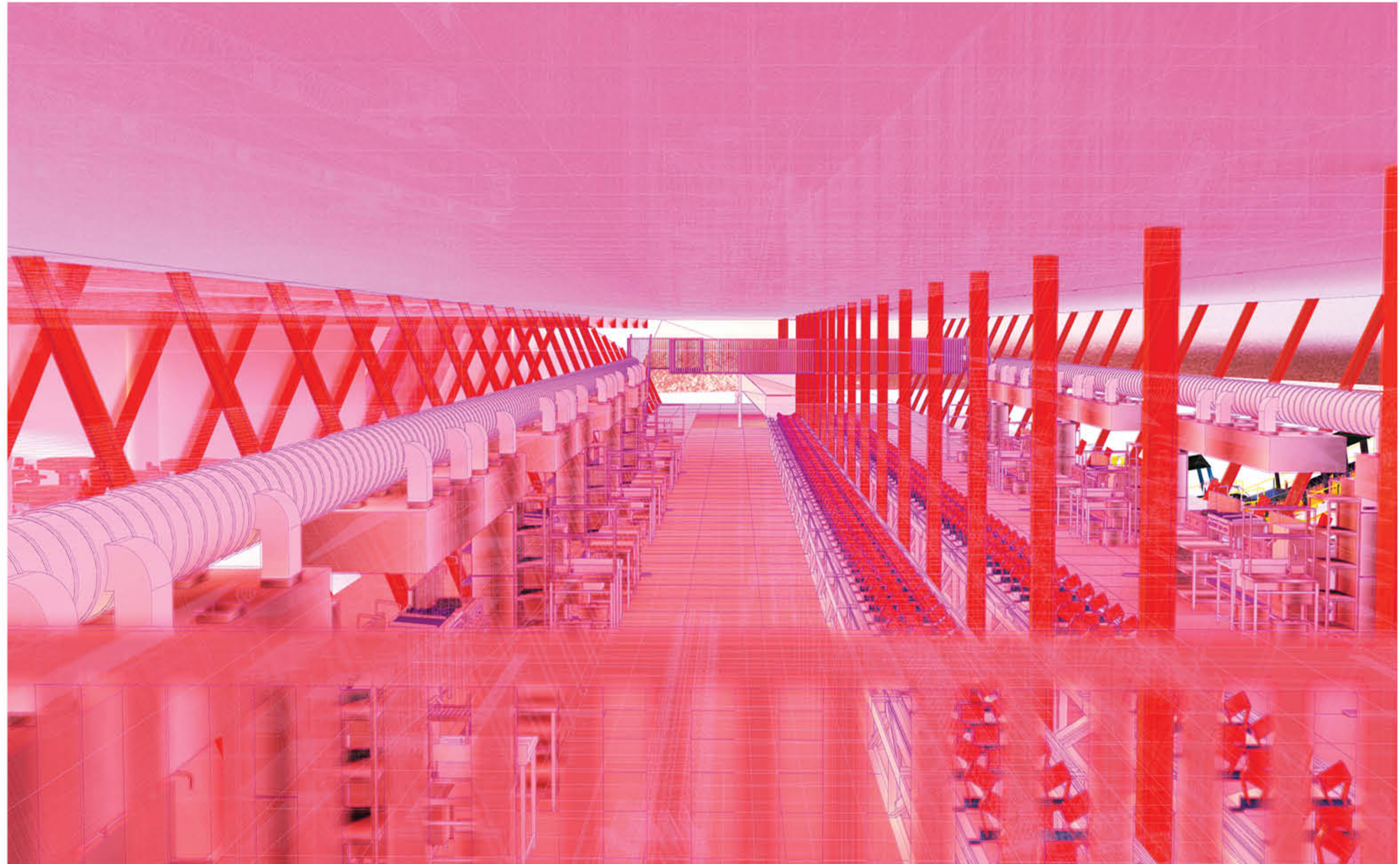


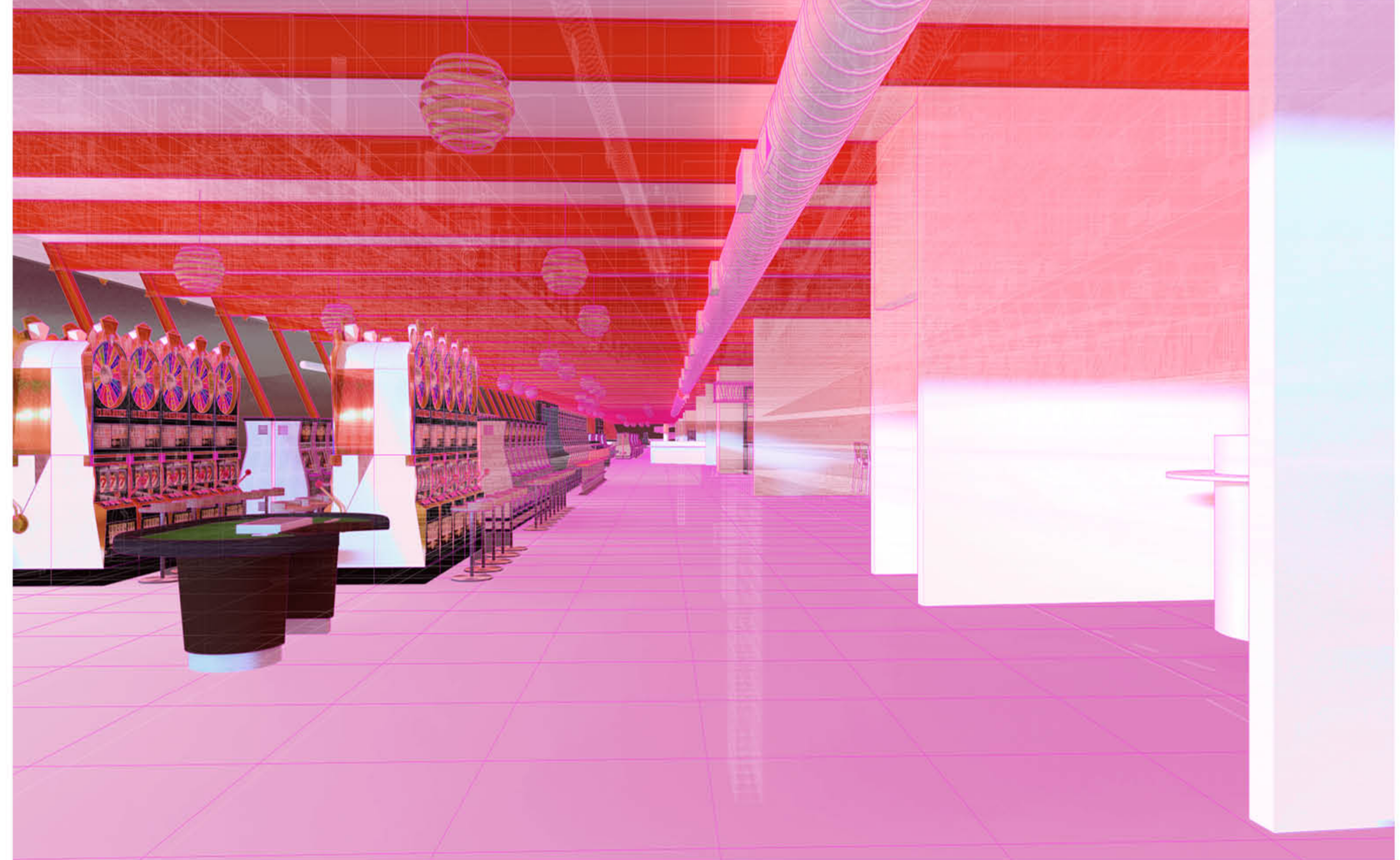
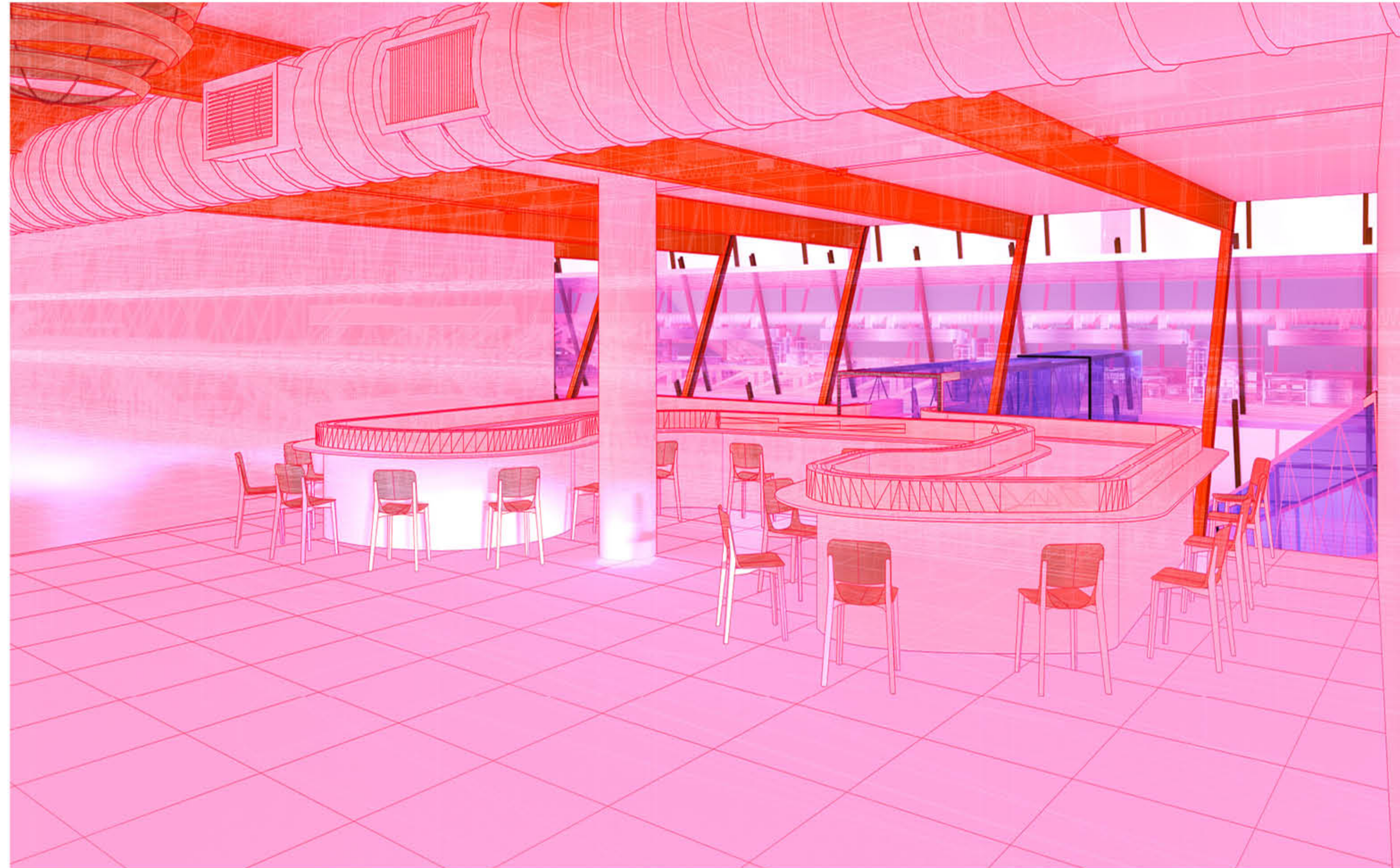


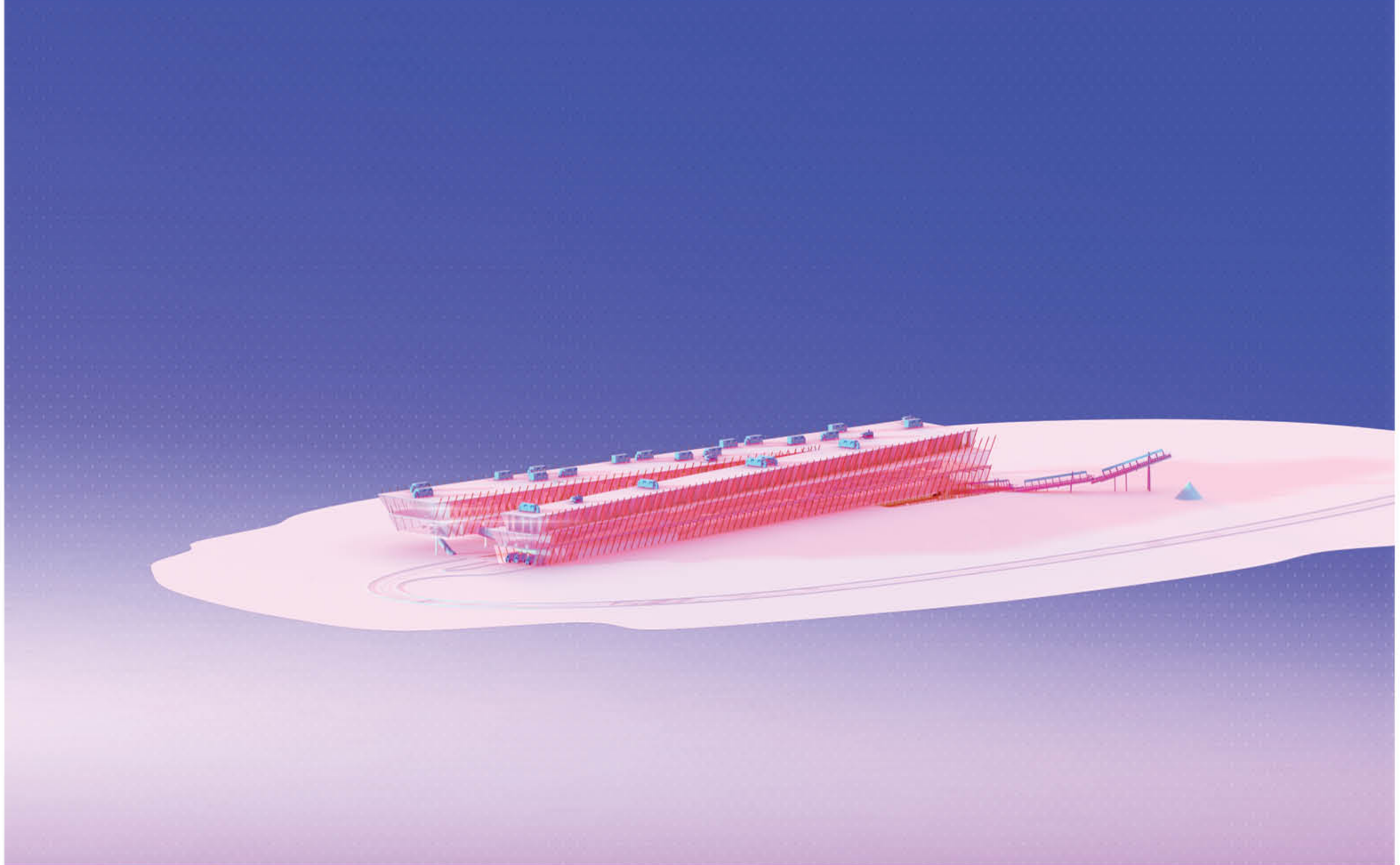














# ADV VI

## AUTUMN 21

### STUDIO RESET

#### Time for a Reset.

In the past year and a half, the entangled crises of a global pandemic, climate change, racial injustice, and income inequality have demonstrated that current systems fail to adequately address the challenges of these times. And a gradual transformation will not be enough.

Architecture  
Environmental justice  
Civilian climate corps

Same with our architecture. Our current systems of design and construction are failing. They cannot adequately address climate change, public health, and inequality - especially at the intersection of population growth, urbanization, and the expected doubling of the built environment in the next 40 years. The challenges are huge, and incremental change is not the answer.

This studio explored these entanglements and intersections through radical imagination and scalable impact. It looked for opportunities like the unprecedented \$3.5 trillion infrastructure plan currently being debated in the United States and the historic United Nations Climate Change Conference (COP26). It developed strategies such as materials that act as a carbon sink, buildings that are open systems, and an empowered workforce through a Civilian Climate Corps. This studio sought to prototype the buildings and cities of the future.

Instructor:

David Benjamin

Individual Work

Project Description:

Location: Austin, TX

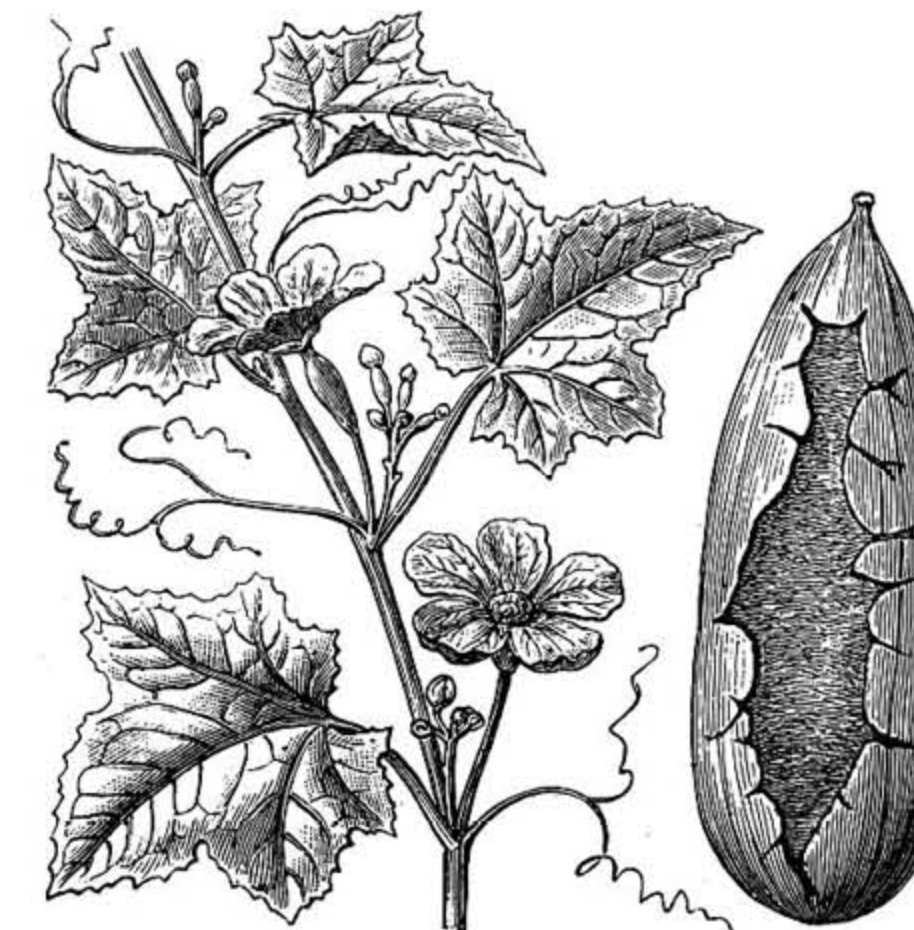
Area: 100,000 ft<sup>2</sup>

Program: Affordable Housing  
Farming Community

School:

Columbia University

Graduate School of Architecture,  
Planning and Preservation (GSAPP)



Our mission is to limit global warming to a 1.5 degrees Celsius increase. And able to achieve "Climate-Neutral" by the middle of the century. To avoid extreme weather and sea-level rise.

In Architecture, buildings generate nearly 40% of global CO<sub>2</sub> emissions annually. Among the 40% of the total emissions, operations cause 28%, and the building materials and construction are responsible for the rest 11%.

Could we address homelessness and decarbonization simultaneously?

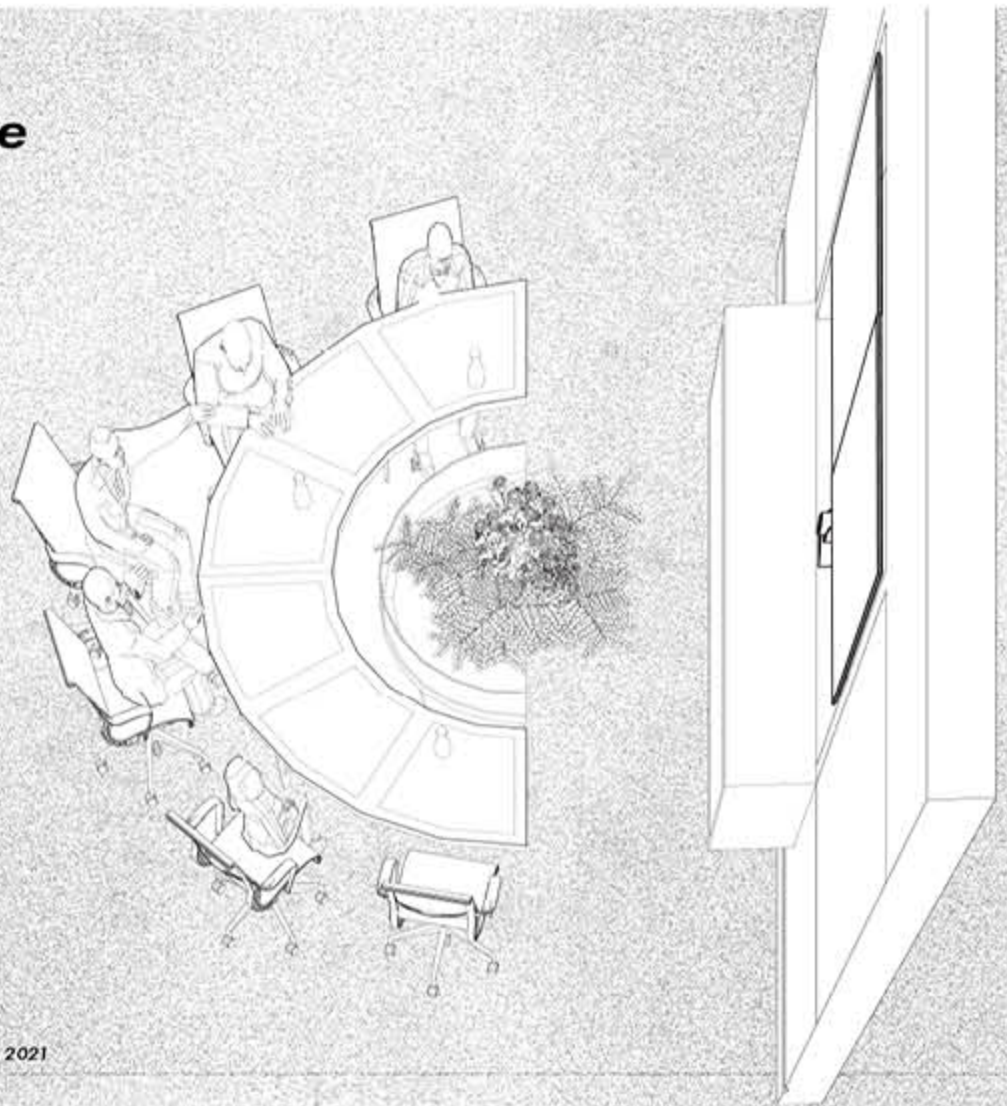
How can we offer a safe environment for those among us who are particularly vulnerable to economic and social plights? How can the government and scientists test a new system and the new possible building construction method and material to lower the carbon emissions?

Could a nature-based carbon-negative material also be produced and assembled by tenants, forming a self-sufficient community, which provides on-site job opportunities?

# Luffa, Tiny House

"There are roughly 255 billion meter square of buildings in the world today- a number that grows by around 3.5 billion meter square every year. We are building the equivalent of a new city the size of Paris every week. The need for action grows ever more urgent."

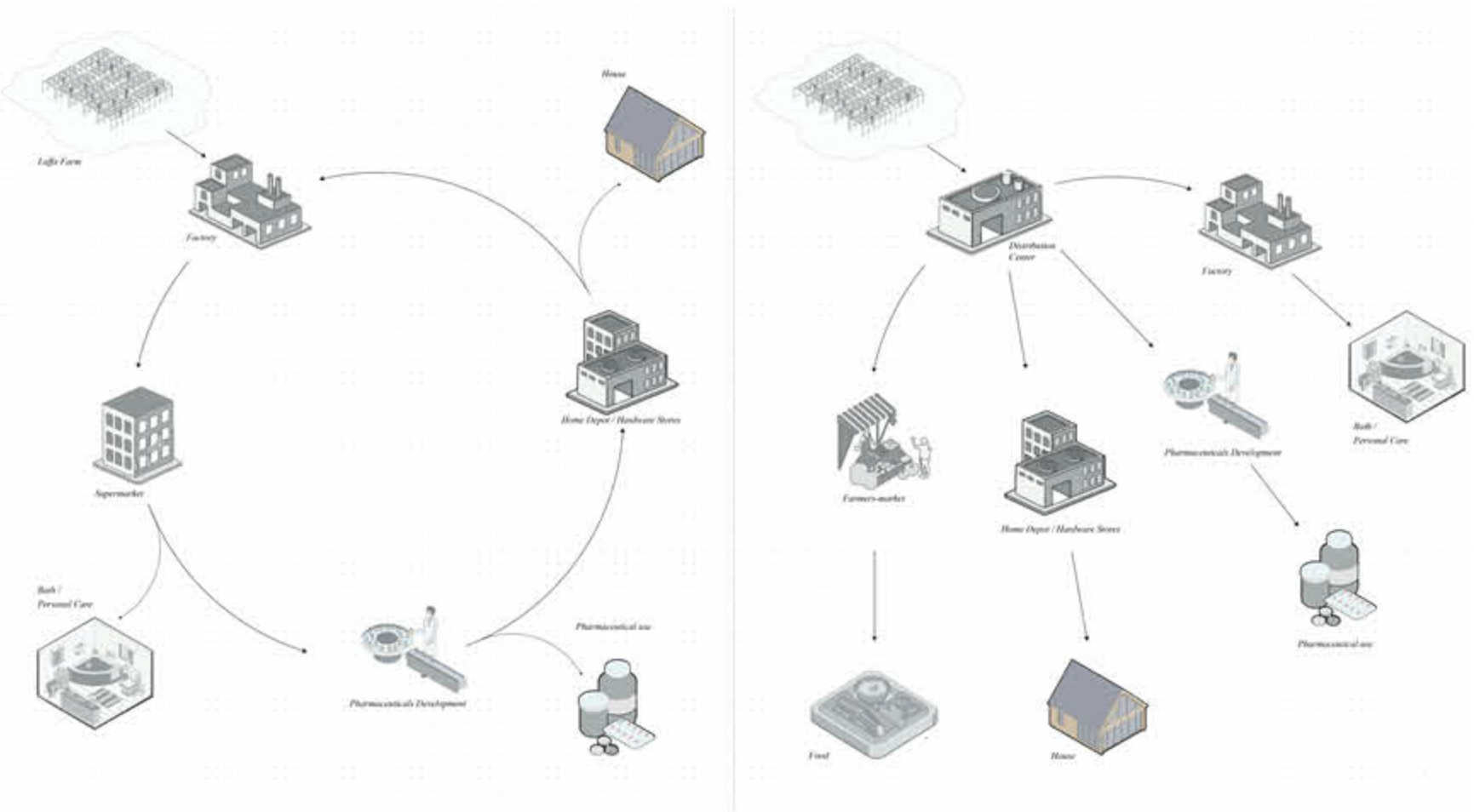
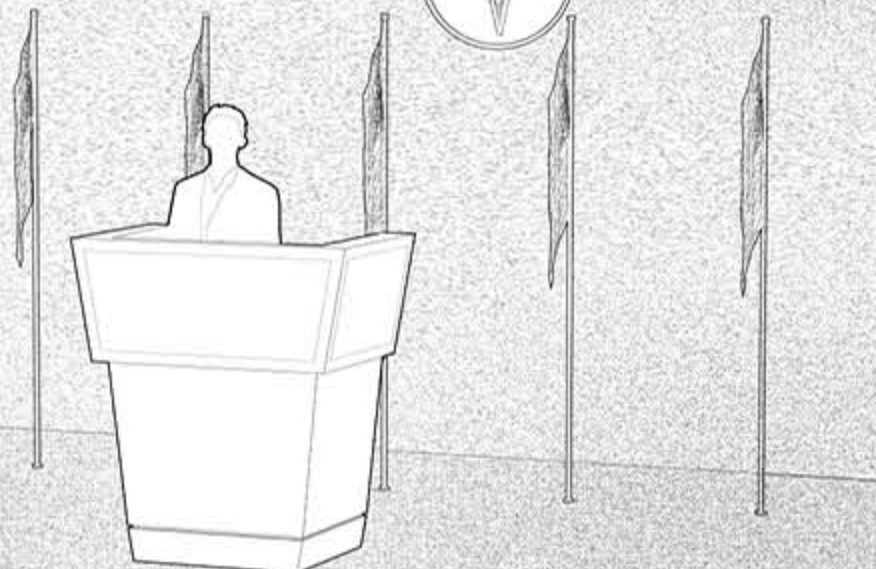
- RIBA  
Built for the environment



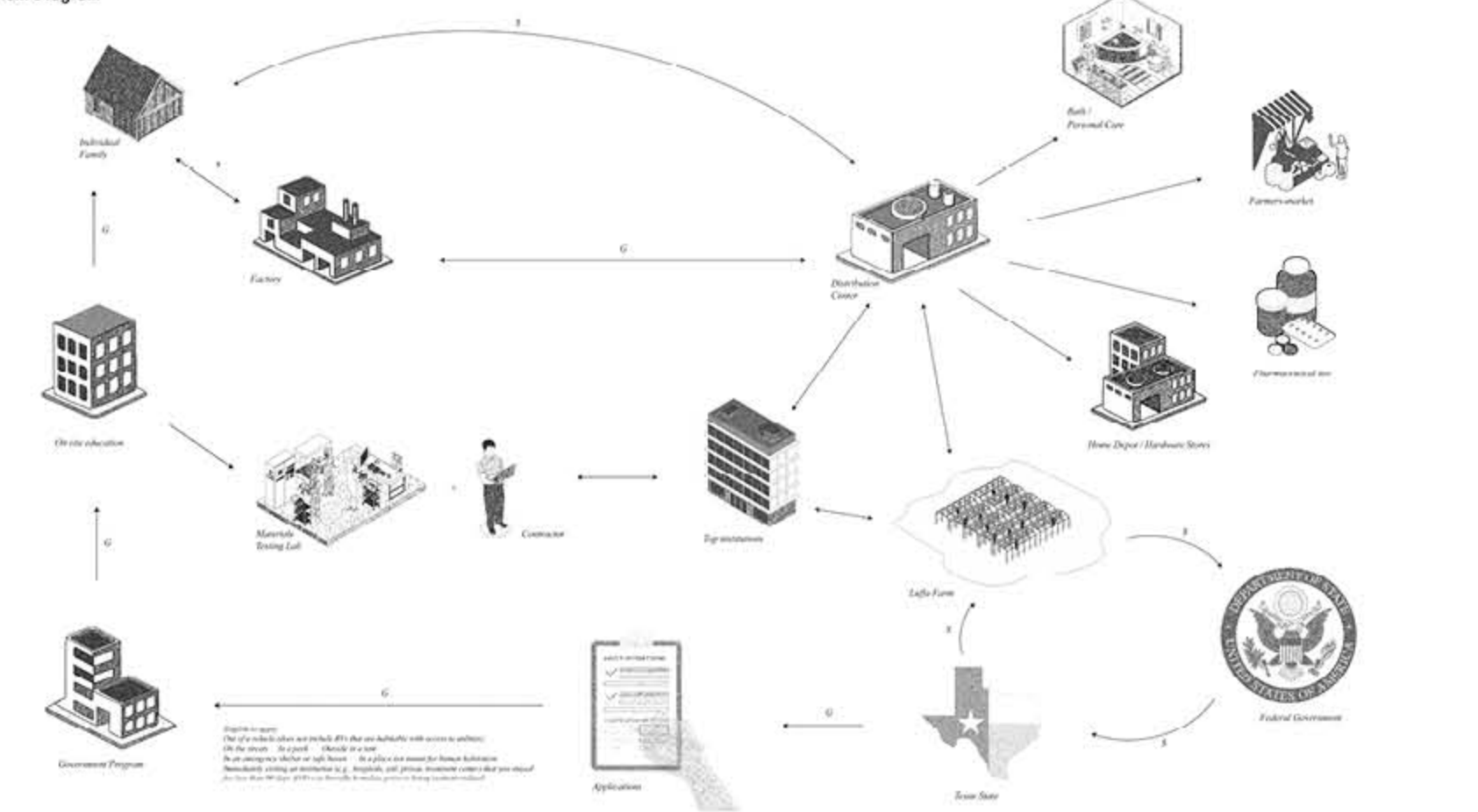
UN Climate Change Conference 2021

Budget	Program	Goal
\$1.1 billion	Clean Energy and Climate Resilience	The White House says that the program "will cut greenhouse gas pollution by and more use programs in 2030, as well as reduce consumer energy costs through investments in energy efficiency."
\$1.0 billion	Housing	Build, rehabilitate and improve more than one million affordable homes. The White House says the program is the "single largest and most comprehensive investment in affordable housing in history."
\$1.0 billion	Affordable Care Act Health Insurance	Aims to reduce premiums for other health beneficiaries and expand the dependent coverage for health and dental health care coverage to four million uninsured people who are locked out of Medicaid.
\$800 million	Immigration	Improve the immigration system by providing relief to millions through expedited, including bordering, expanding legal representation, and ending the asylum system and border processing since "softened and broken."
\$411 million	Higher Education	The program will also be required to be available, high-quality education beyond high school. Legislation would increase the maximum Pell Grant by \$1,000 for over 9 million students.

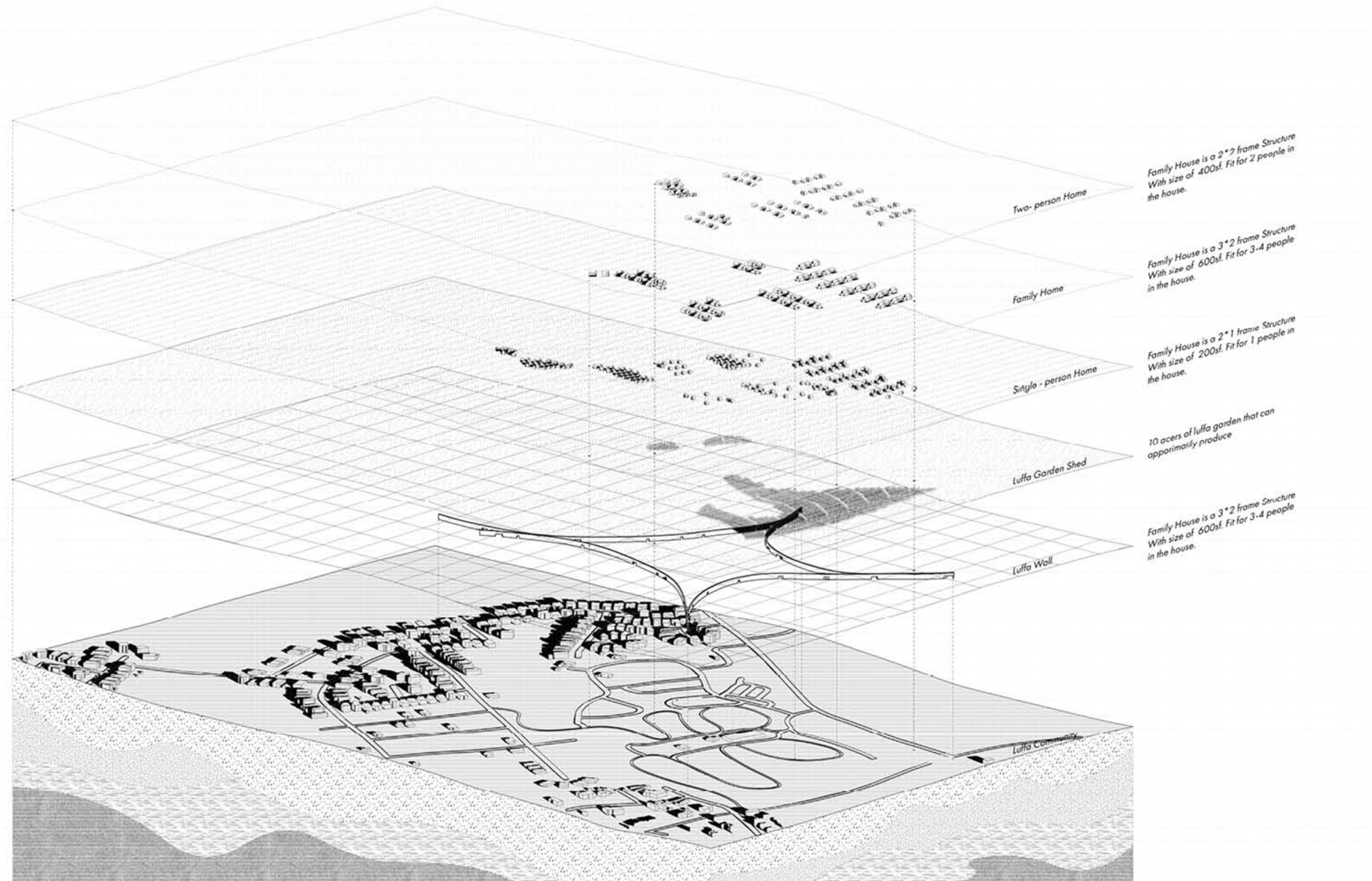
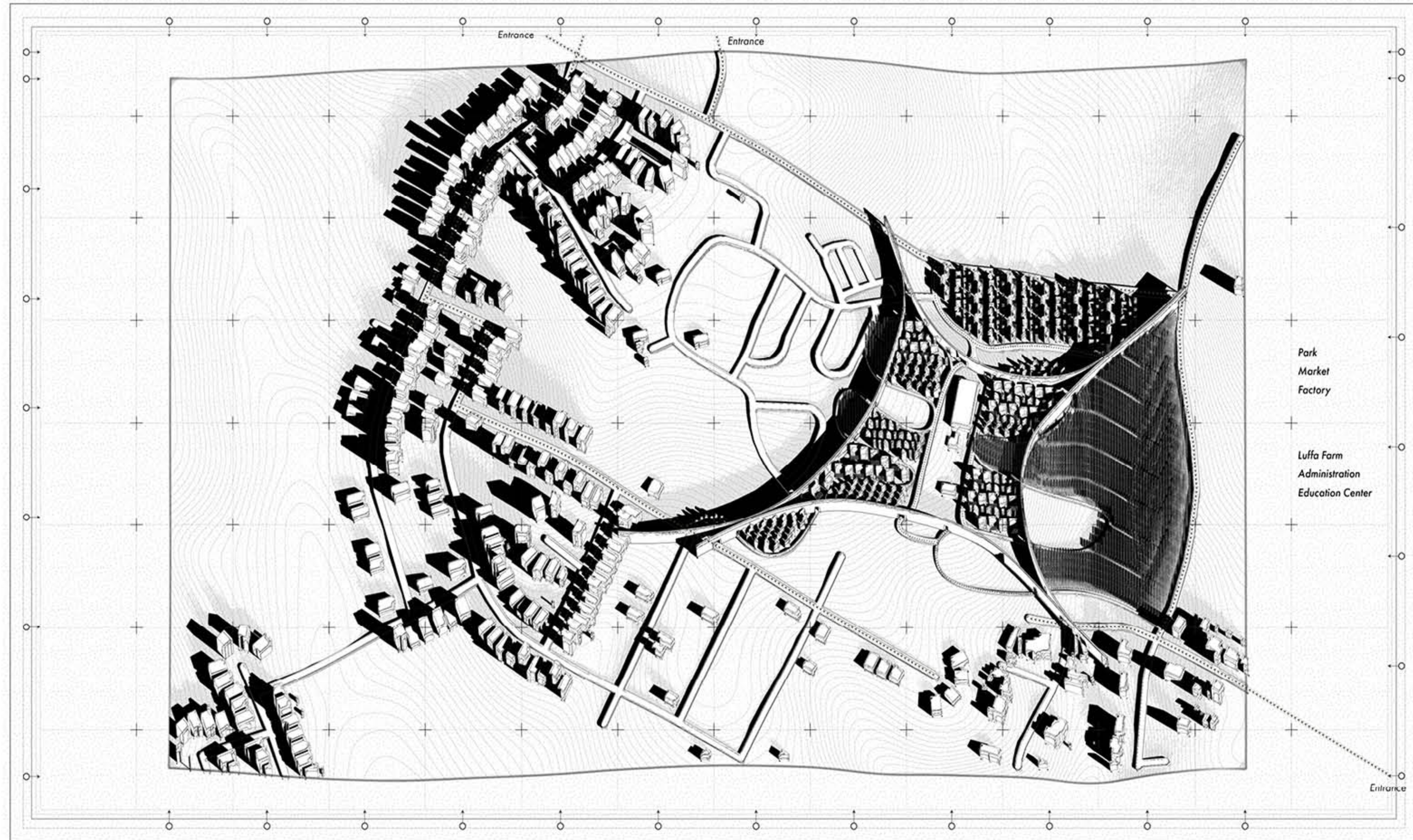
Biden's Infrastructure Plan

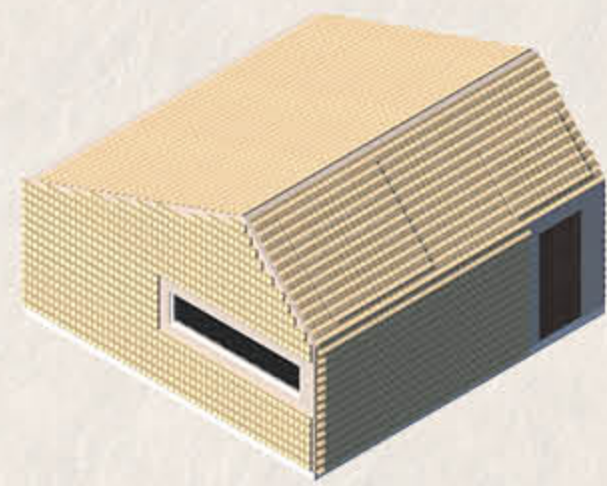


System Diagram

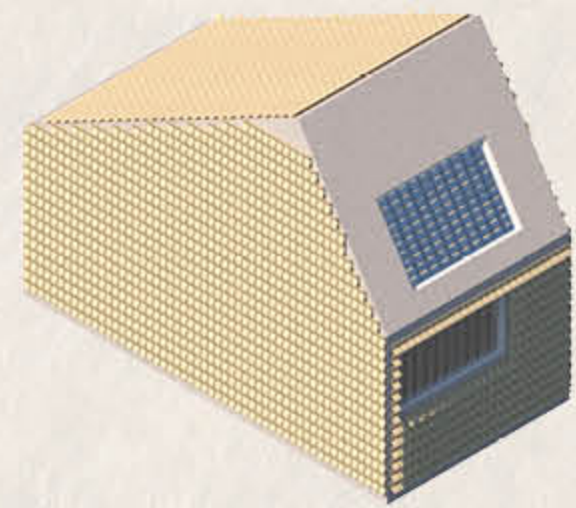


A material we often ignored, luffa. It is soft and comfy, porous and light, strong and stiff, and its excellent flexibility can be shaped to any form. Additionally, low cost, fast-growing, and efficient energy use during production brings the many "cognitive advantages" for luffa to be the new sustainable architectural material for the building facade and wall. Luffa has the potential to be the building construction/structural material. It can reduce significant glass usage on the building facade and filter air and water while perform as a shading device for energy efficiency. As a result, it can reduce cement usage and reduce carbon emissions.

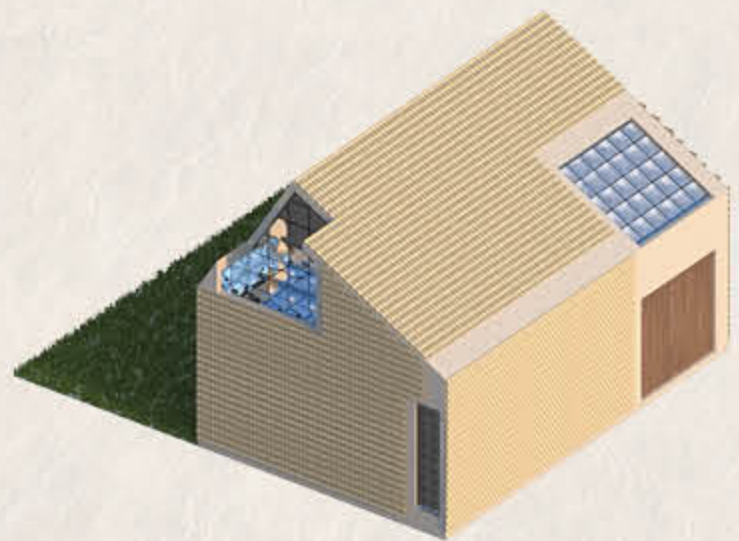




House Type B



House Type A



House Type C



Two Person House



Single Person House



Family House







# ADV IV SUMMER 21

## HAWAI' I NON-LINEAR

Architecture moves very slowly. This last year of social uprisings in response to the murder of George Floyd and other Black americans has revealed the defecits in awareness and ability for architecture to address issues of systemic racism in the discipline. When it comes to issues of social justice architecture has a long road ahead of it.

This studio builds off the ideas, and practices of BIPOC thinkers and activists to work towards a decolonization of the inherited legacies of settler colonialism in the discipline of architecture. Working in contexts and communities, especially indigenou communities, that are not your own, requires that we situate ourselves within the larger historical processes of colonialism that have shaped the world through the oppression of indigneous people and people of color. If we can understand our personal position in and orientation to colonialism within a larger continuum of history, we may be able to understand how the past has shaped our individual world views (politically, culturally, emotionally, and spiritually), how our bodies are at home in certain spaces and not others, and as a result how we conceive of and practice architecture.

This exercise suggests that as much as we may think of ourselves as individuals, we cannot separate ourselves from the complex web of relationships that we inherit from our ancestors and the identity groups that they

may have belonged to.

### Questions:

How do you situate yourself within your web of ancestors?

How are your ancestors situated within a continuum of history?

What was your ancestors' position and relationship to colonialism? E.G. occupations?

How would you represent or diagram the relationships and histories of your ancestors

relative to colonialism?

What role did architecture play in your ancestors' lives?

How does your awareness of your ancestors influence your intent as an architect?

Instructor:  
Dominic Leong  
Sean Connelly

Partner:  
Kurt Cheang  
Oliva Chen

Project Description:  
Location: Hawai'i,  
Area: 20,000 ft<sup>2</sup>  
Program: Public Space

School:  
Columbia Univeristy

Graduate School of Architecture,  
Planning and Preservation (GSAPP)

Project Contribution:  
Conceptual Design  
Drawings Production  
Model fabrication

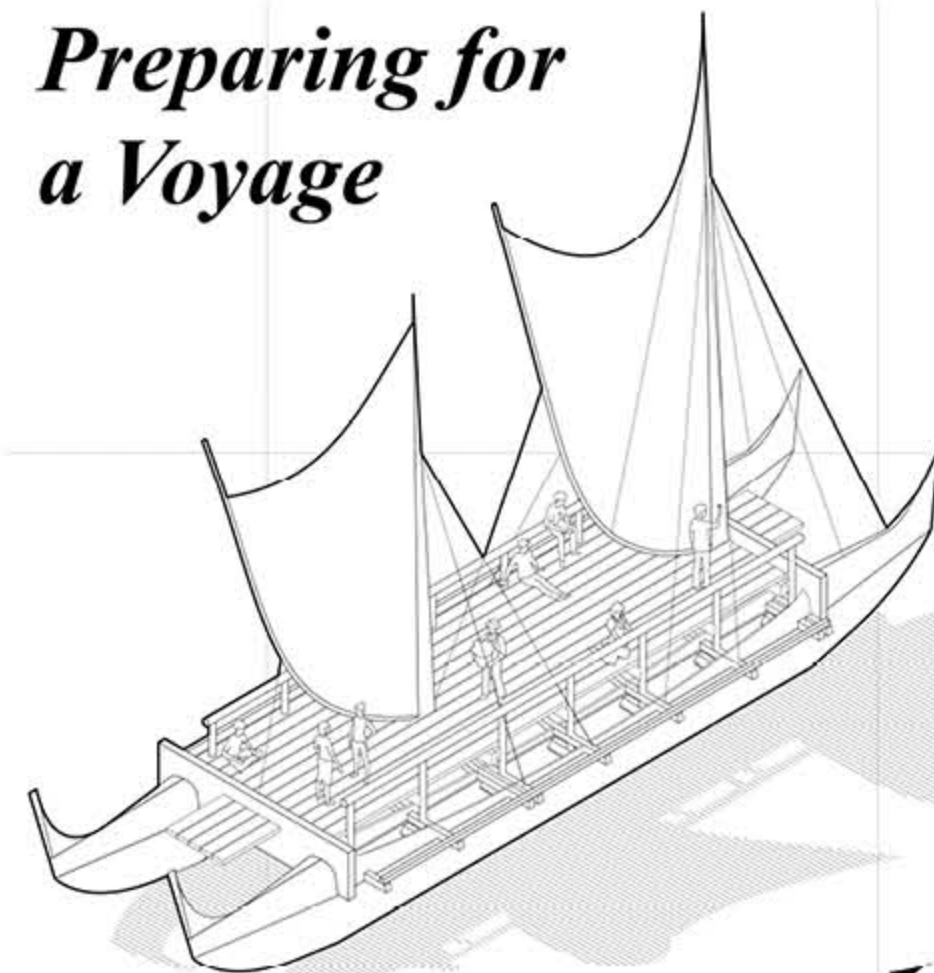


Diamond Head was purchased by the United States government for military usage in 1906, batteries and cannons were built inside and along the crater rim to strengthen the coastal defense of the island. Later on, Diamond Head's boundary expands from the crater rim to include fort ruger, as construction for it began in 1907, extending its military influence into Waikiki. Fort Ruger was slowly demilitarized after WWII, as institutes such as Kapiolani community college began to move in to use the existing military buildings as temporary structures.

Our project design, the three sites around the crater become nodes of a network, one that begins to reconstitute the existing Fort Ruger boundary, and revitalize the boundary for the makahiki. The revitalization of the makahiki season from these sites ignites a process of reclamation of aina from the grips of the United States. And facilitates the continuing education and acknowledgement of hawaiian traditions through the participants of the makahiki season.



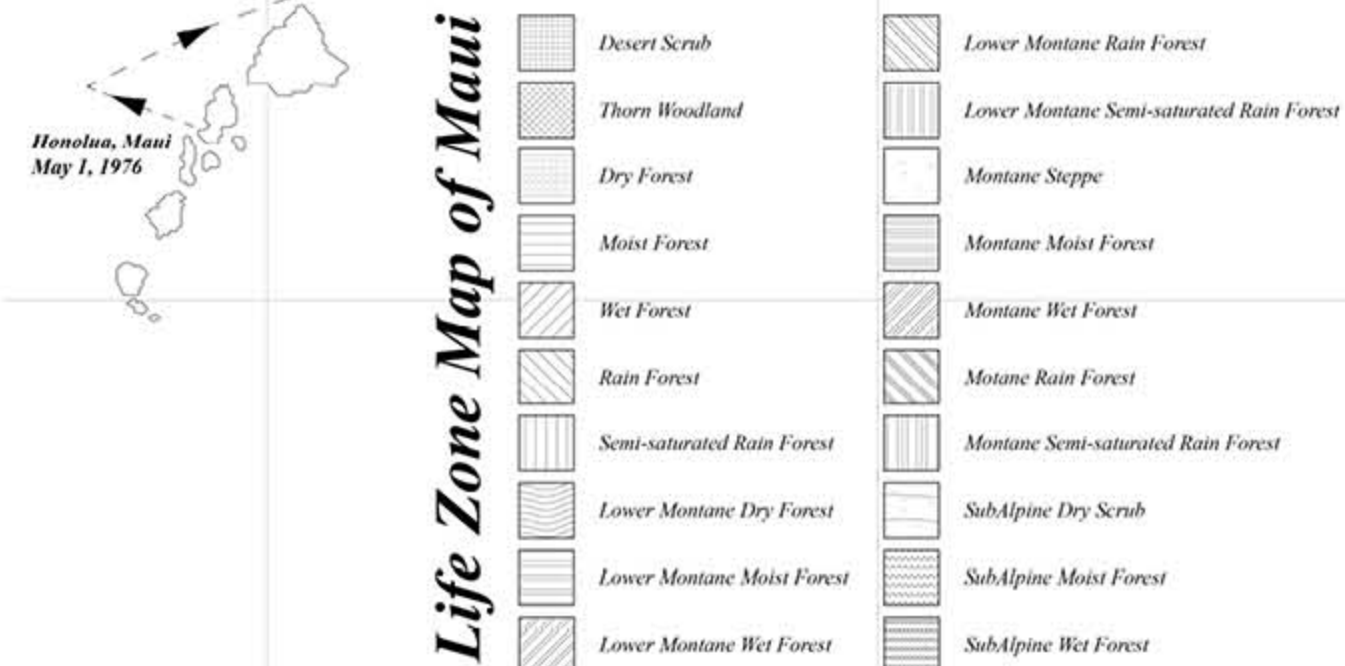
# Preparing for a Voyage



## Crew Responsibilities

- Sailmaster**
  - Responsible for canoe & crew
  - Serves as an advisory capacity
  - Final decision on sailing strategy
  - Works with navigator & captain
- Navigator**
  - Direction of sail
  - Observes 20 hours a day
  - Keeps direction through captain
- Captain**
  - Ensures safe sailing
  - Physical maintenance of canoe
  - Preparation before leaving shore
  - Keeps sailing work schedules
- Watch Captain**
  - Direct crew members
  - Relay instructions from captain
  - Cleaning & maintenance of canoe
  - Monitors safety & morale of crew
- Doctor**
  - Cares for crew's mental and physical health
  - Provides medical supplies when needed
- Cook**
  - Checks inventory of food
  - Cooks meals for crew; helps increase morale
- Fisherman**
  - Fishing to maintain food supply
- Crew Member**
  - Cleaning & maintenance of canoe

Canoe Displacement: 12.5 tons  
 Weight of Canoe: 7.5 tons with rigging  
 Weight of Food: 1 ton  
 Weight of Water: 1.5 tons  
 Weight of Crew & Other Supplies: 2.5 tons



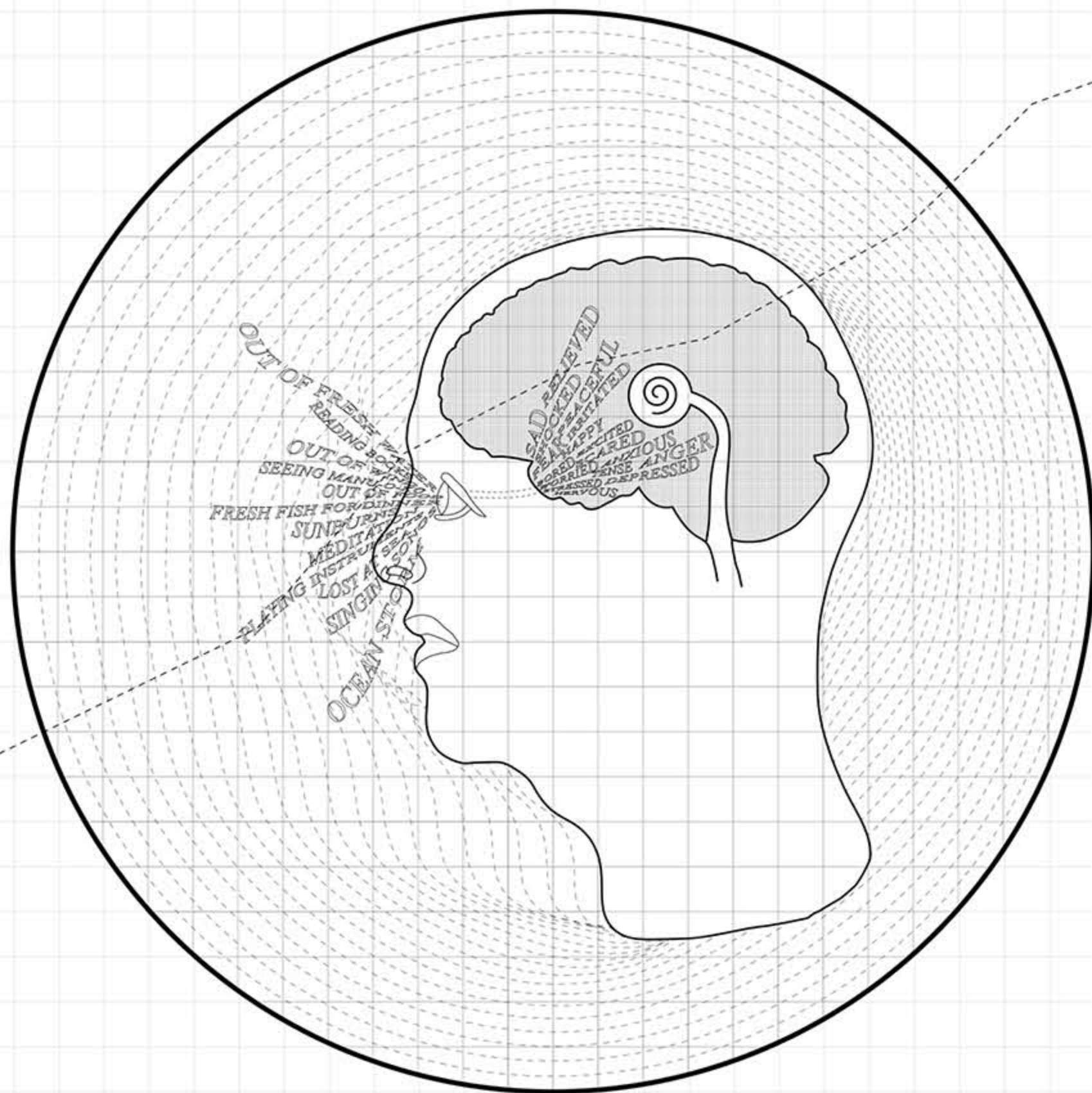
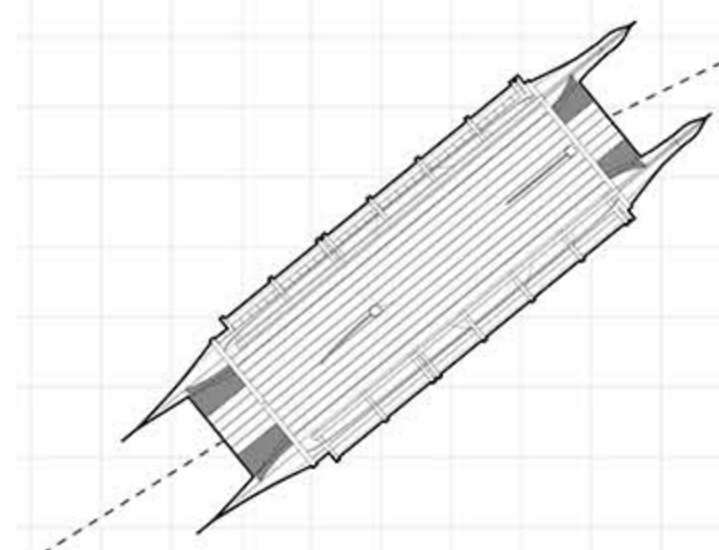
Honolua, Maui  
 May 1, 1976

34 day trip

Pape'ete, Tahiti  
 June 4, 1976



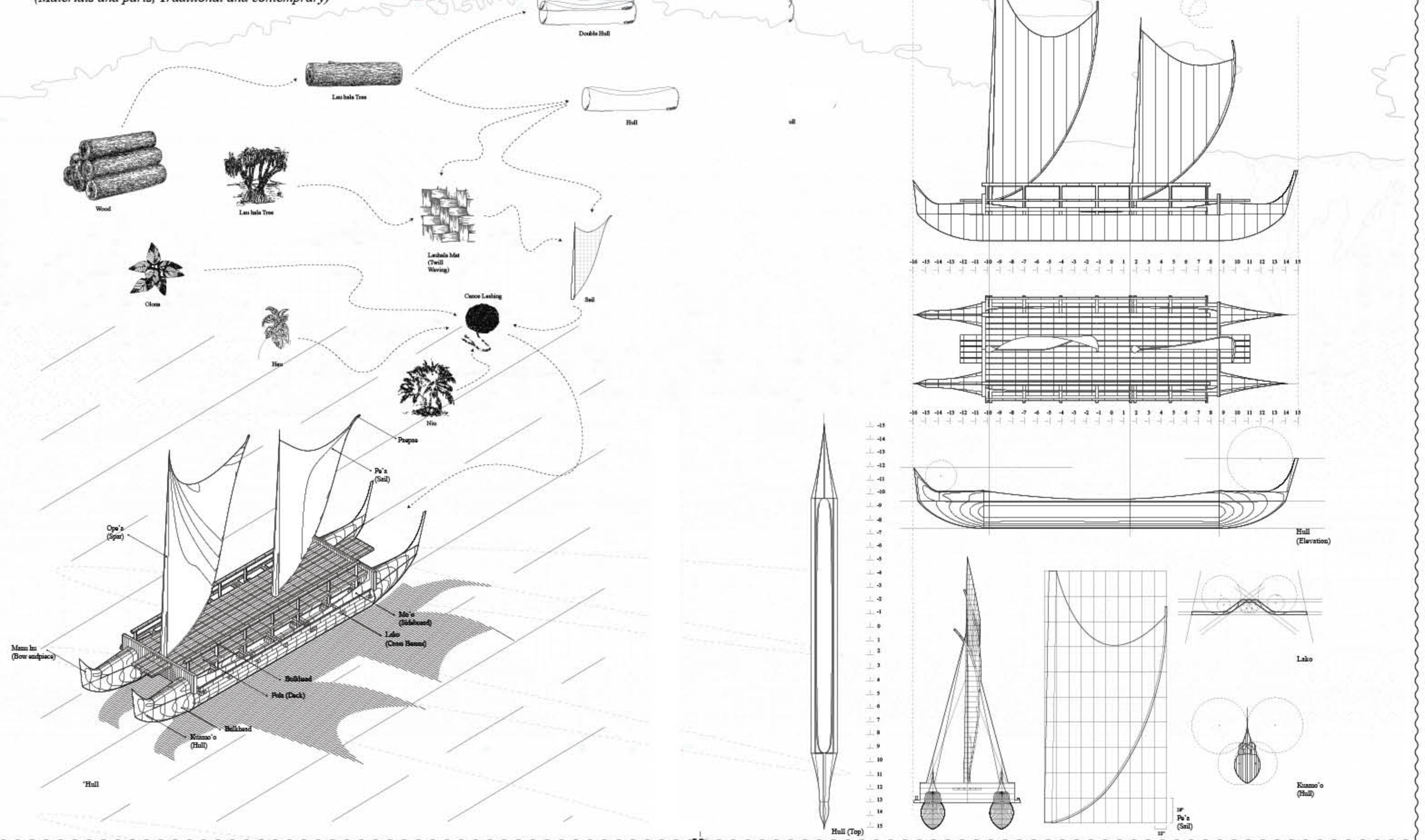
# Psychological Effects of Voyaging



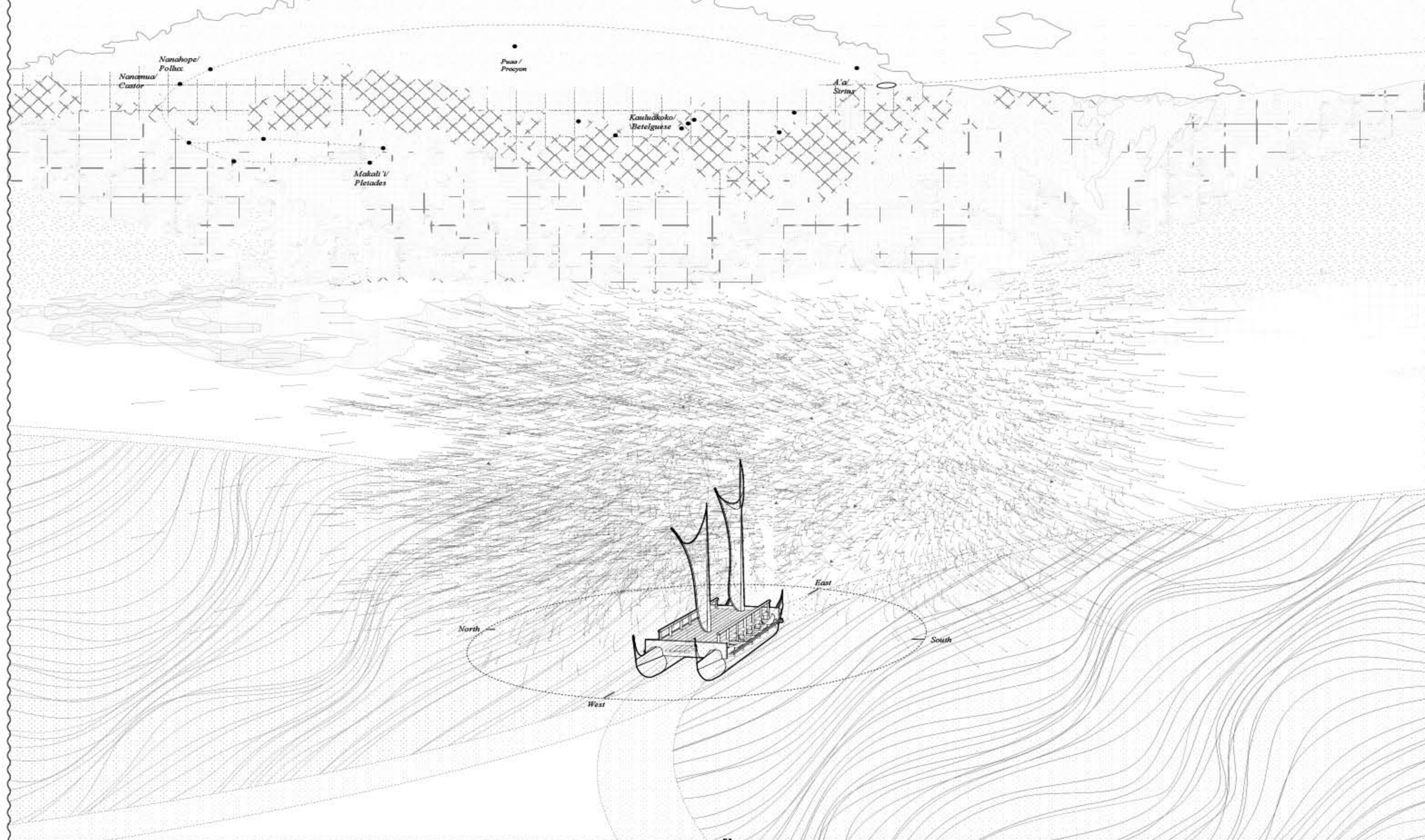


# Canoe Construction

(Materials and parts, Traditional and contemporary)

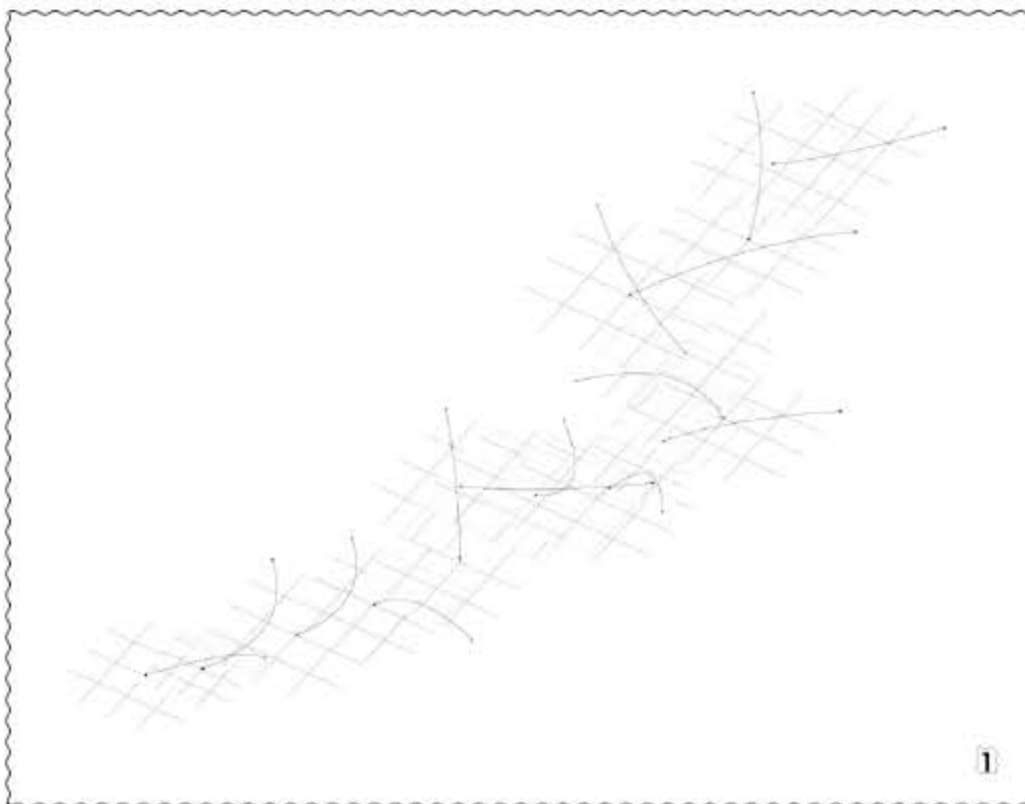


# Waves, Wind, Stars



# Map networks

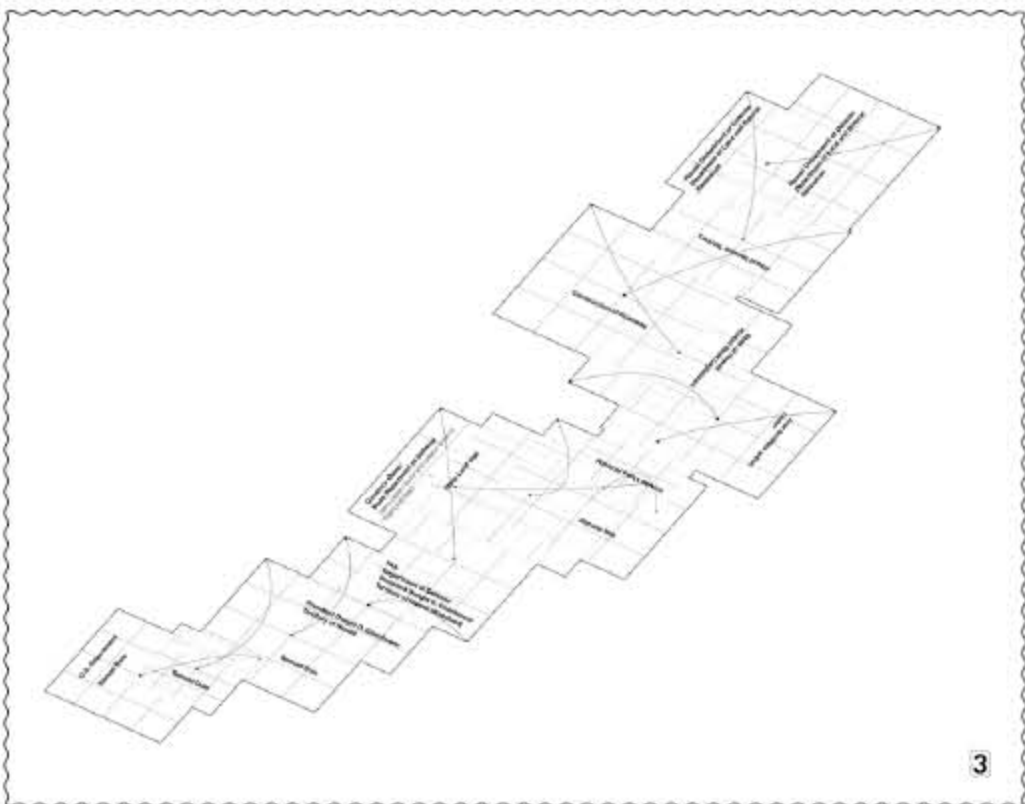
(Influence & Spatial Relationships)



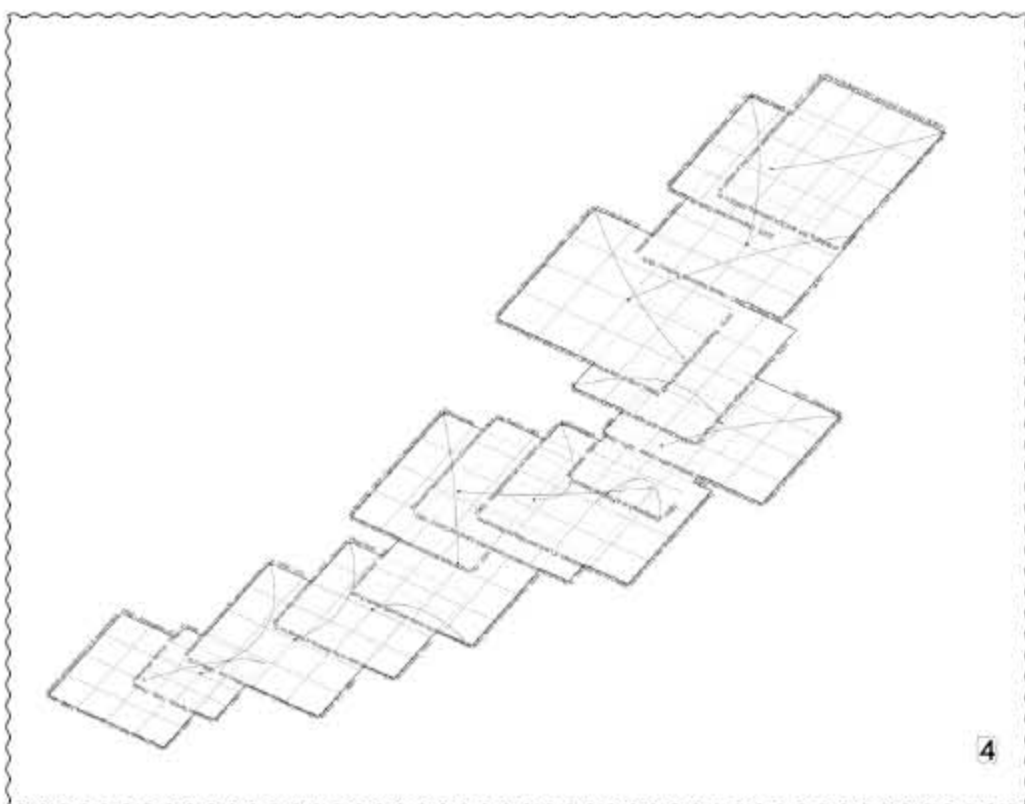
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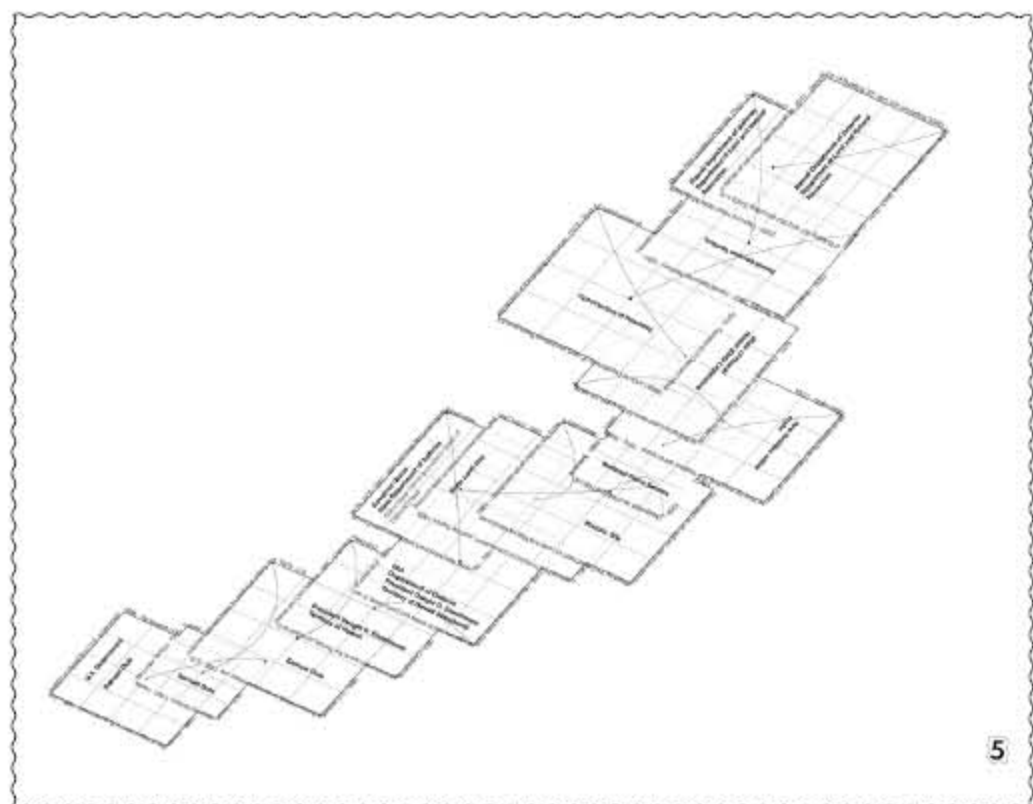
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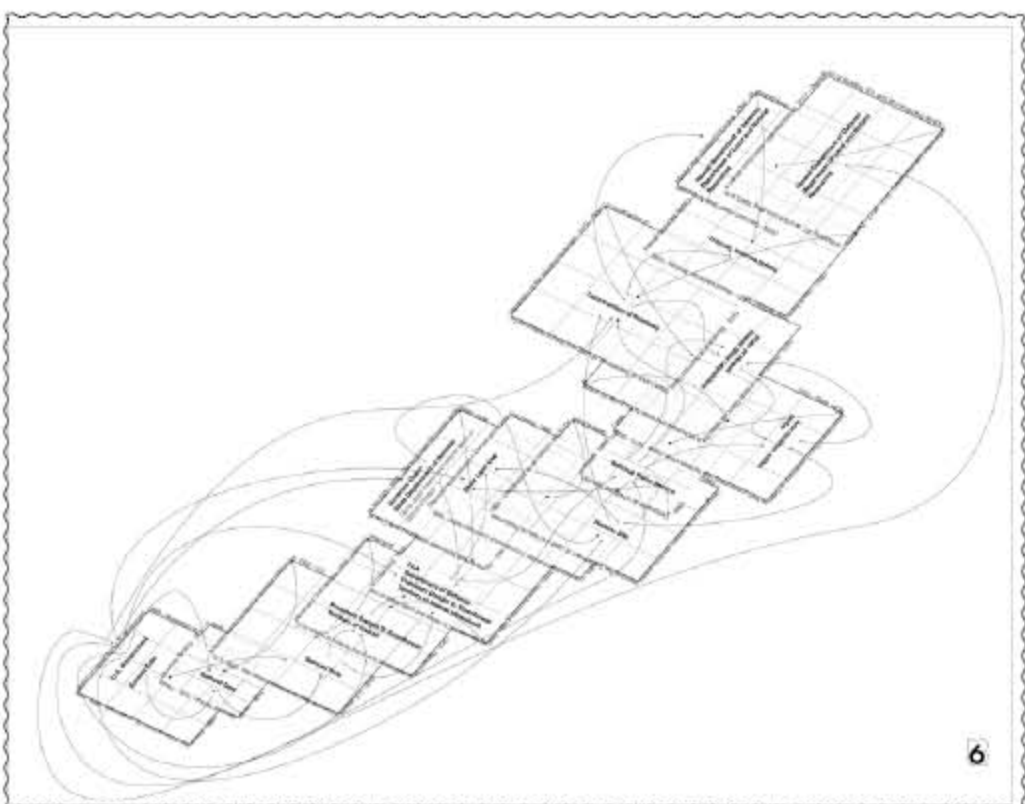
3



4



5



6

## U.S. Government

### Samuel Dole

Leader of Committee of Safety 1893  
Sought annexation in 1894

### President Dwight D. Eisenhower Territory of Hawaii

FAA  
Department of Defense  
President Dwight D. Eisenhower  
Territory of Hawaii (dissolved)  
United States Congress

### Governor Quinn State Department of Defense

Gains crater interior and exterior lands of Diamond Head

### State Land Use

Designated as an historic site to be administered by the Department of Land and Natural Resources

### National Parks Service

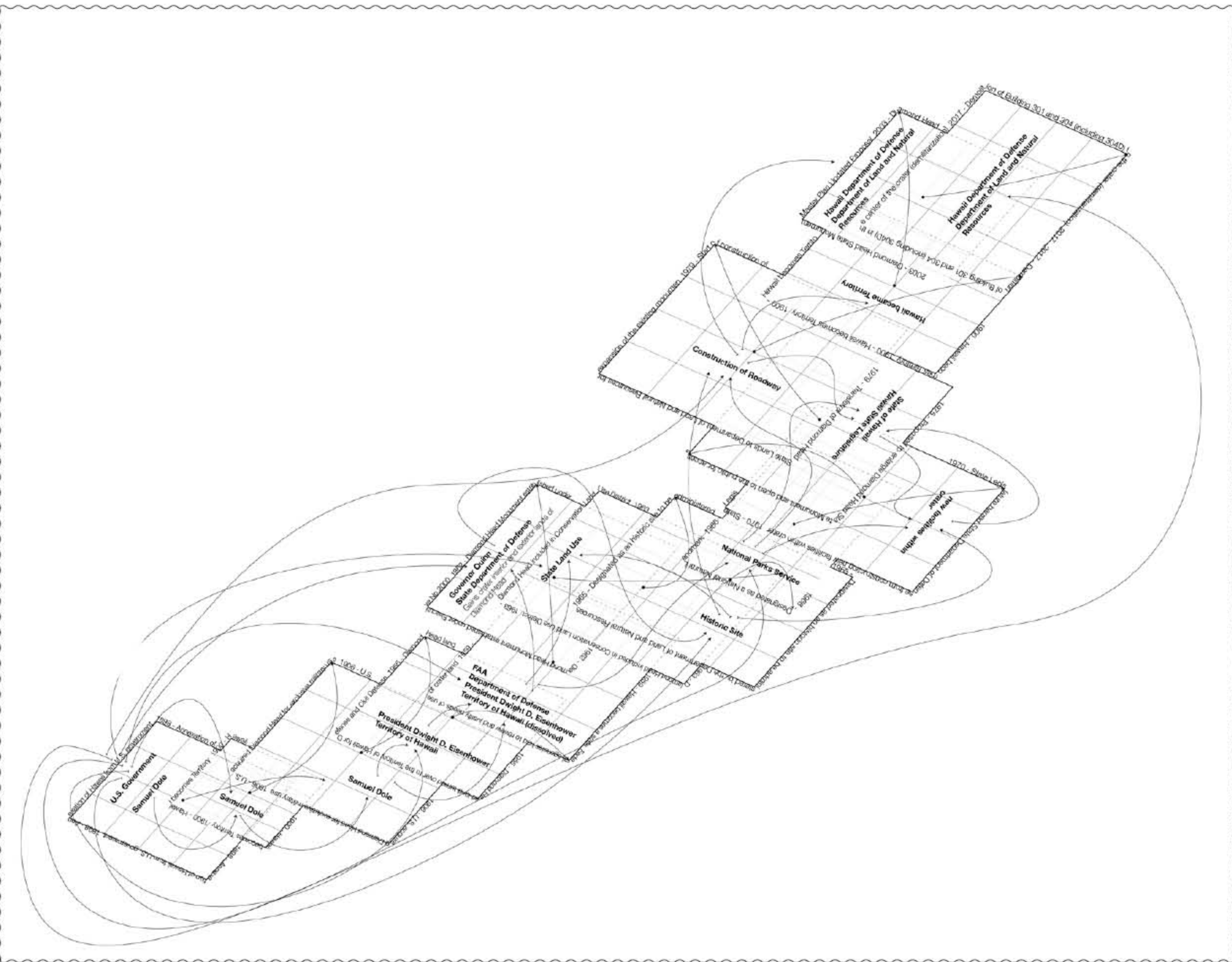
Hawaii State Legislature  
Hawaii State Department of Defense

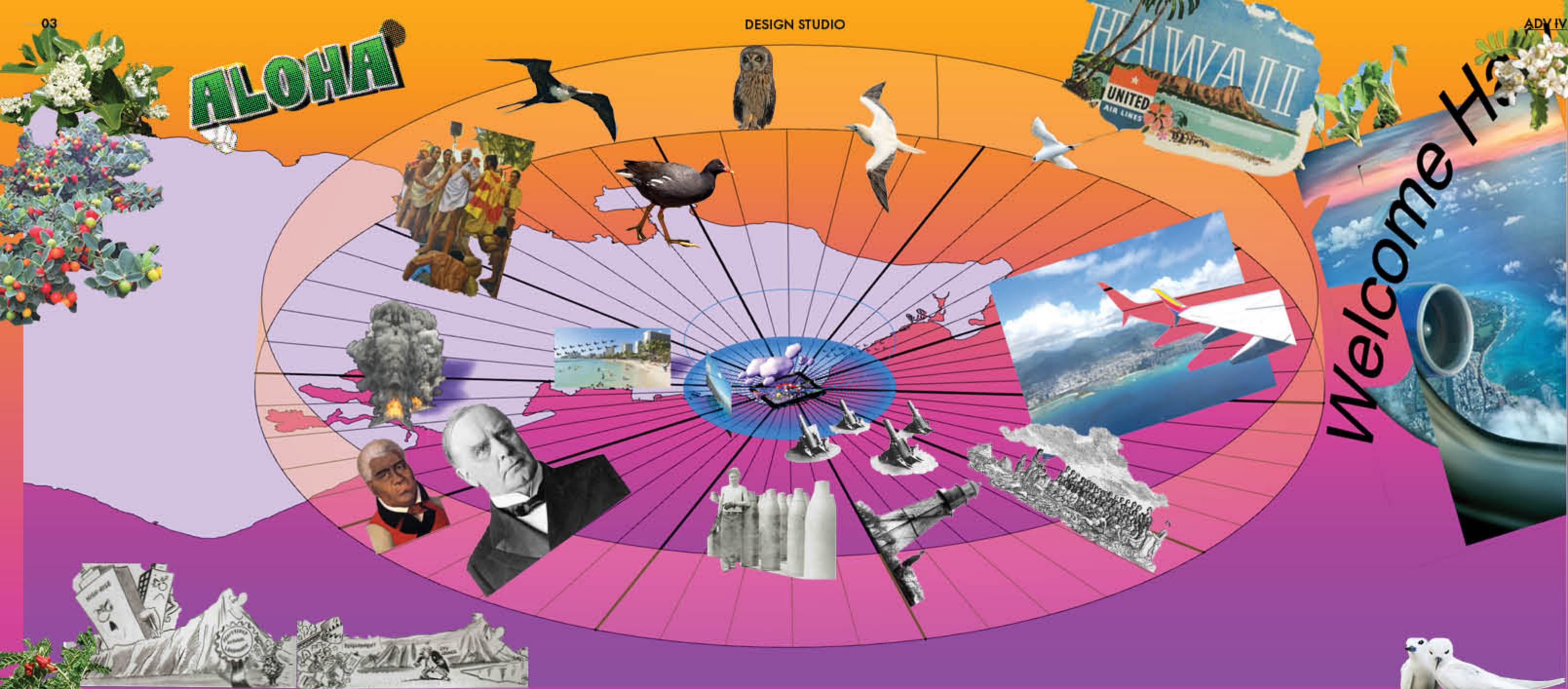
Transferral of Diamond Head State Lands to Department of Land and Natural Resources for expansion of the existing monument

### Construction of Roadway

Governor of Hawaii  
Department of Land and Natural resources  
Division of State Parks  
Diamond Head Citizens Advisory Committee

Hawaii Department of Defense  
Department of Land and Natural Resources





Welcome to Hawaii



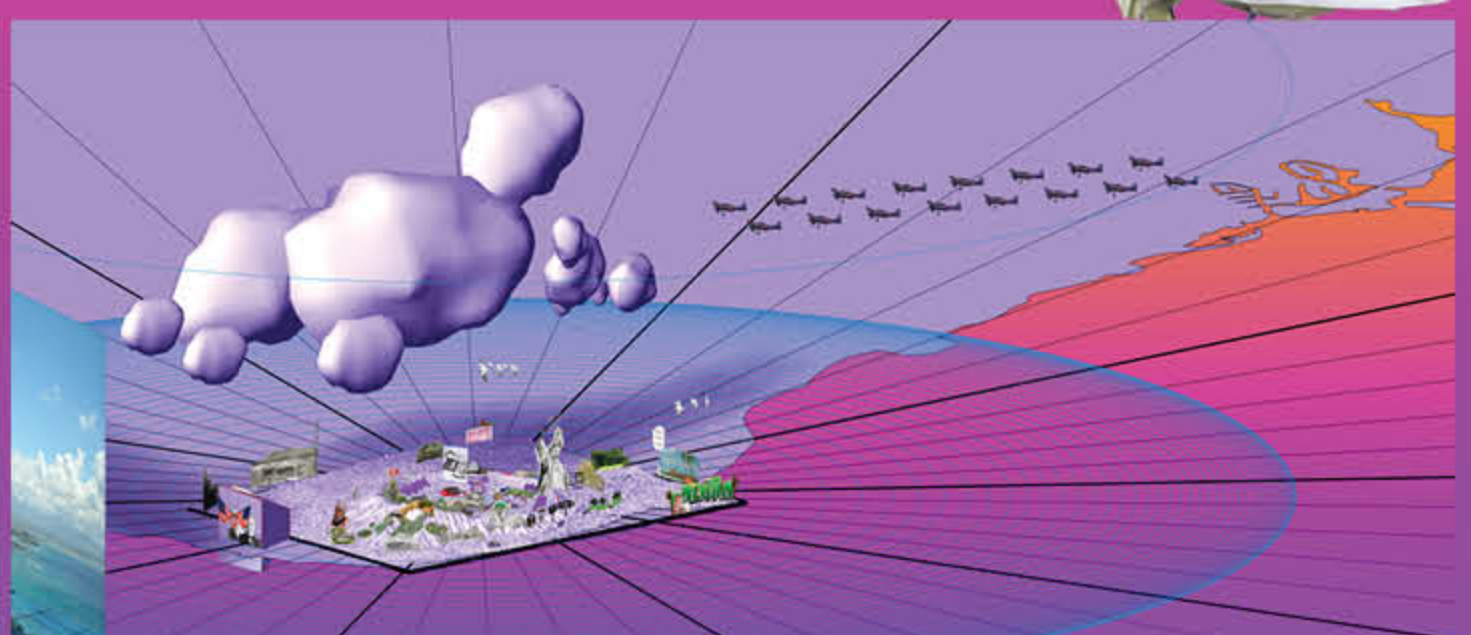
Spatial Conflicts of Diamond Head's Ecologies

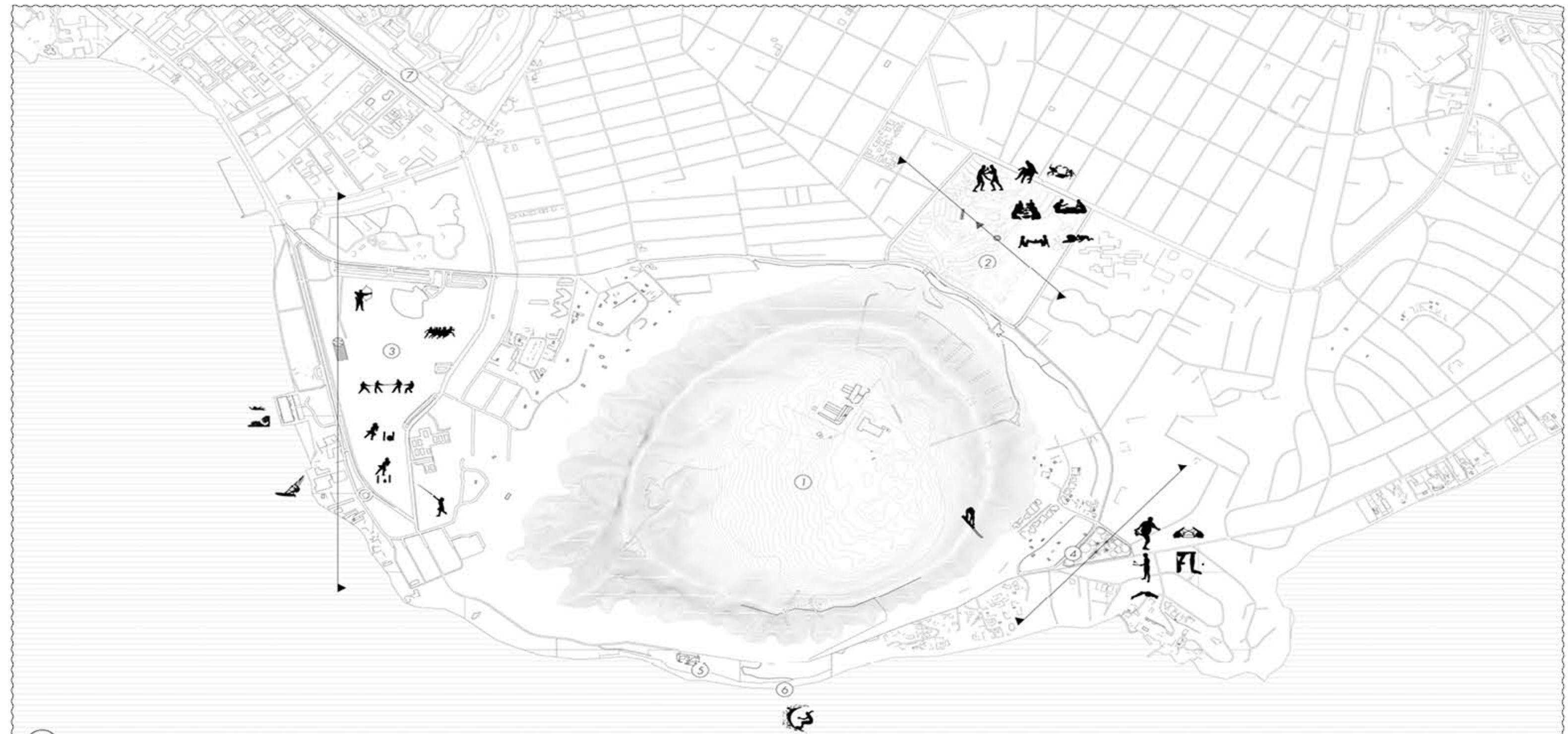
Le'ahi, born from fire and water, once a refuge for a goddess, once a source of sacred power, and once a home for indigenous birds, but now it is a host to parasitic ecologies. Ecology of militarism, Ecology of environmental destruction, Ecology of greed and desire. They took, and took, and took, and never gave back to Āina. Non-Hawaiians relentlessly reshaped and redefined the landscapes of Diamond Head, and intravenously applied a westernized form of urbanism to Oahu and the rest of the Hawaiian islands. Yet if you follow the coastlines of Waikiki, you will find yourself on

Ecology of Greed and Destr:

Present day Diamond Head was once the future of Diamond Head, where many fought to introduce and establish their own ideologies. With the British Empire's arrival, missionaries began to spread their Christian ideals to Native Hawaiians in the late nineteenth century. Though Hawaiian culture encompassed its own religious beliefs and spiritualities, the introduction of Christianity eventually led to the demise of heiaus across the islands. The dismantlement of the Papa'ena'ena heiau represented a pivotal shift in cultural and political influence within Hawaii.

Walter Dillingham, a businessman from Honolulu, who was the creator of the Ala Wai Canal, hired Chicago architect David Adler to build his stately home, "La Pietra", atop the grounds of Papa'ena'ena; a building that drew inspirations from Florentine villas; signifying the arrival of western architectural ideologies at Diamond Head. His home eventually became "La Pietra - Hawai'i School for Girls", but Papa'ena'ena; once the most politically influential heiau on the island of Oahu; was never restored.

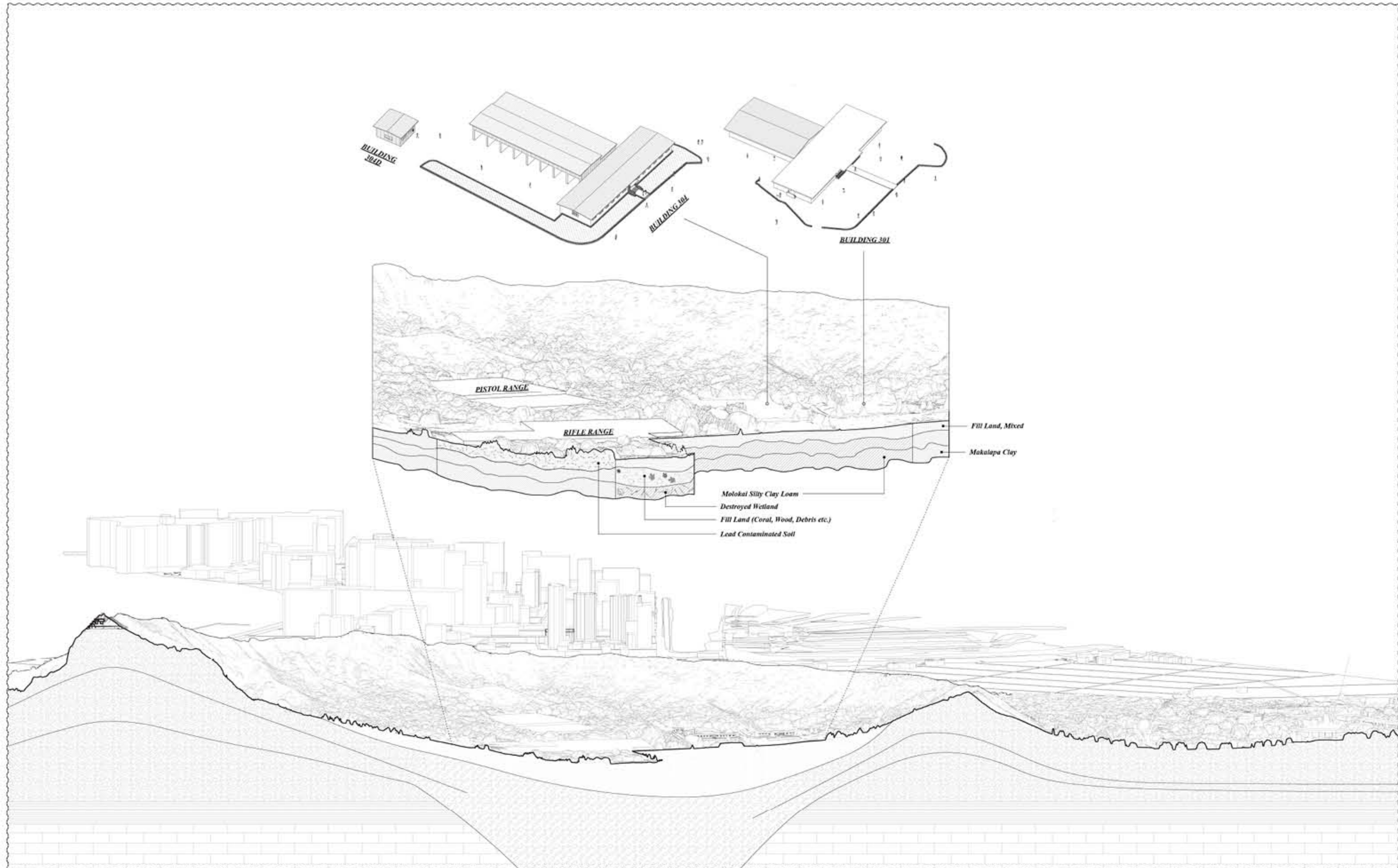
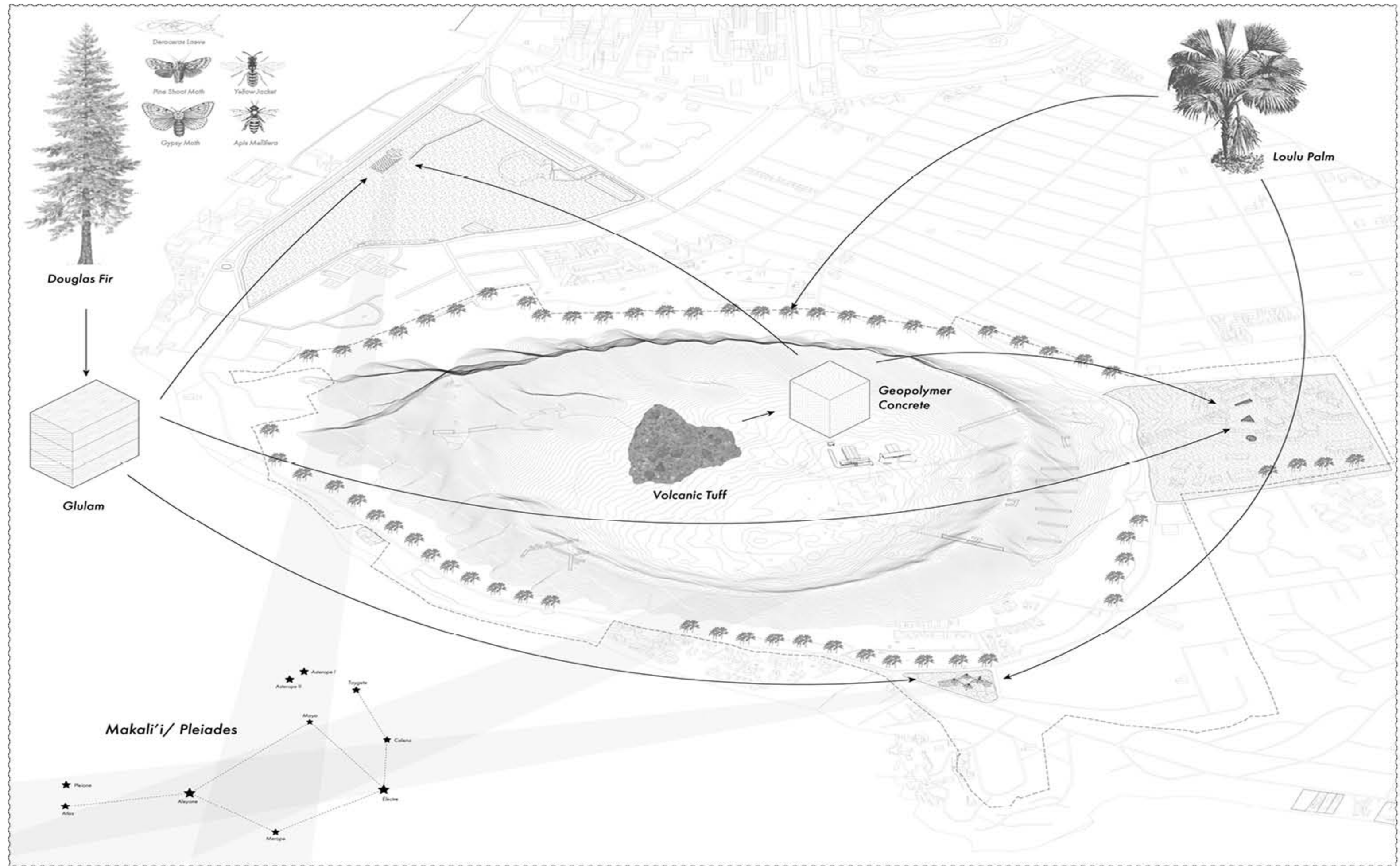




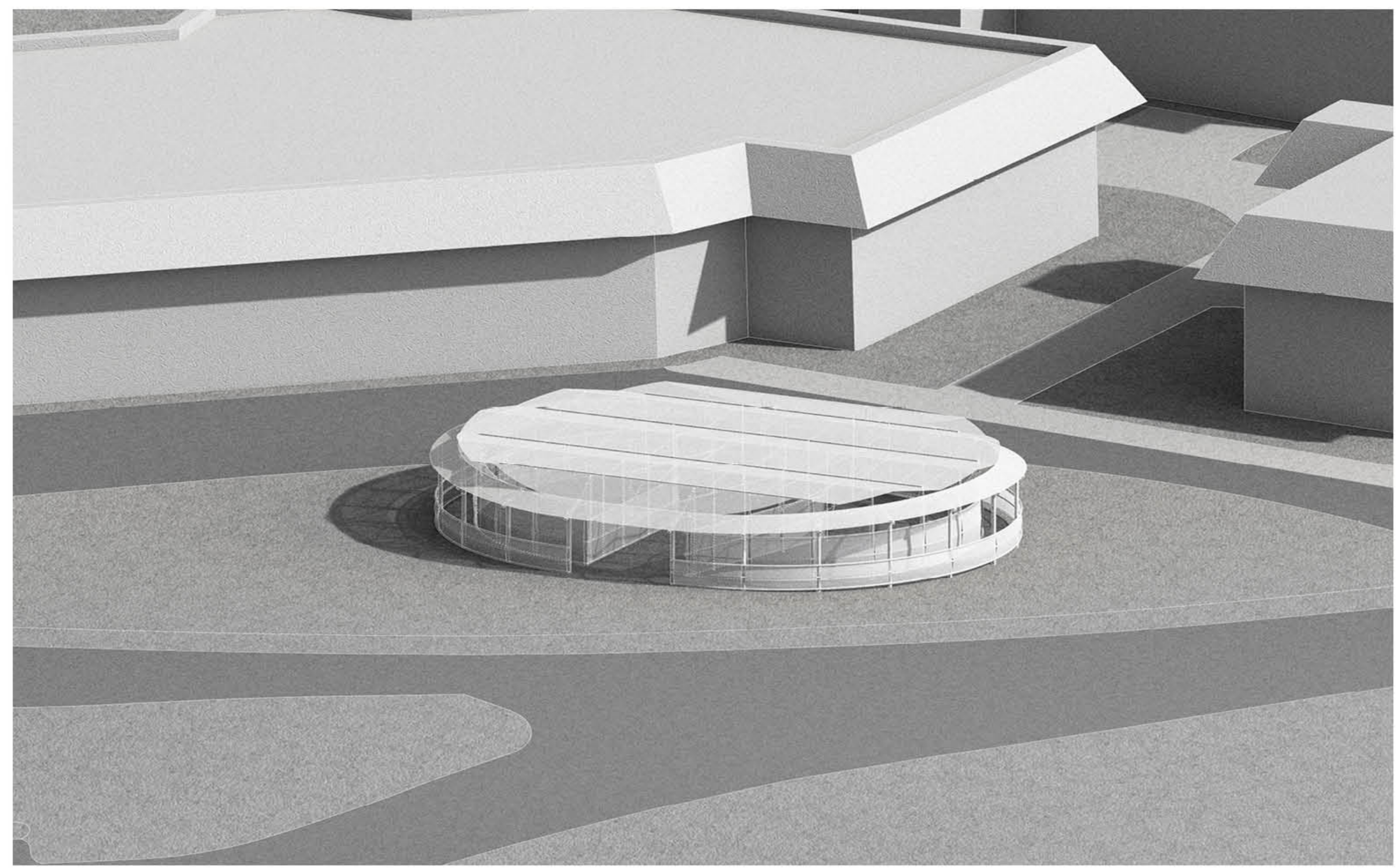
- ① Diamond Head Crater
- ② Kapi'olani Community College
- ③ Kapi'olani Park
- ④ Fort Ruger Park
- ⑤ Diamond Head Lighthouse
- ⑥ Diamond Head Beach Park
- ⑦ Ala Wai Canal

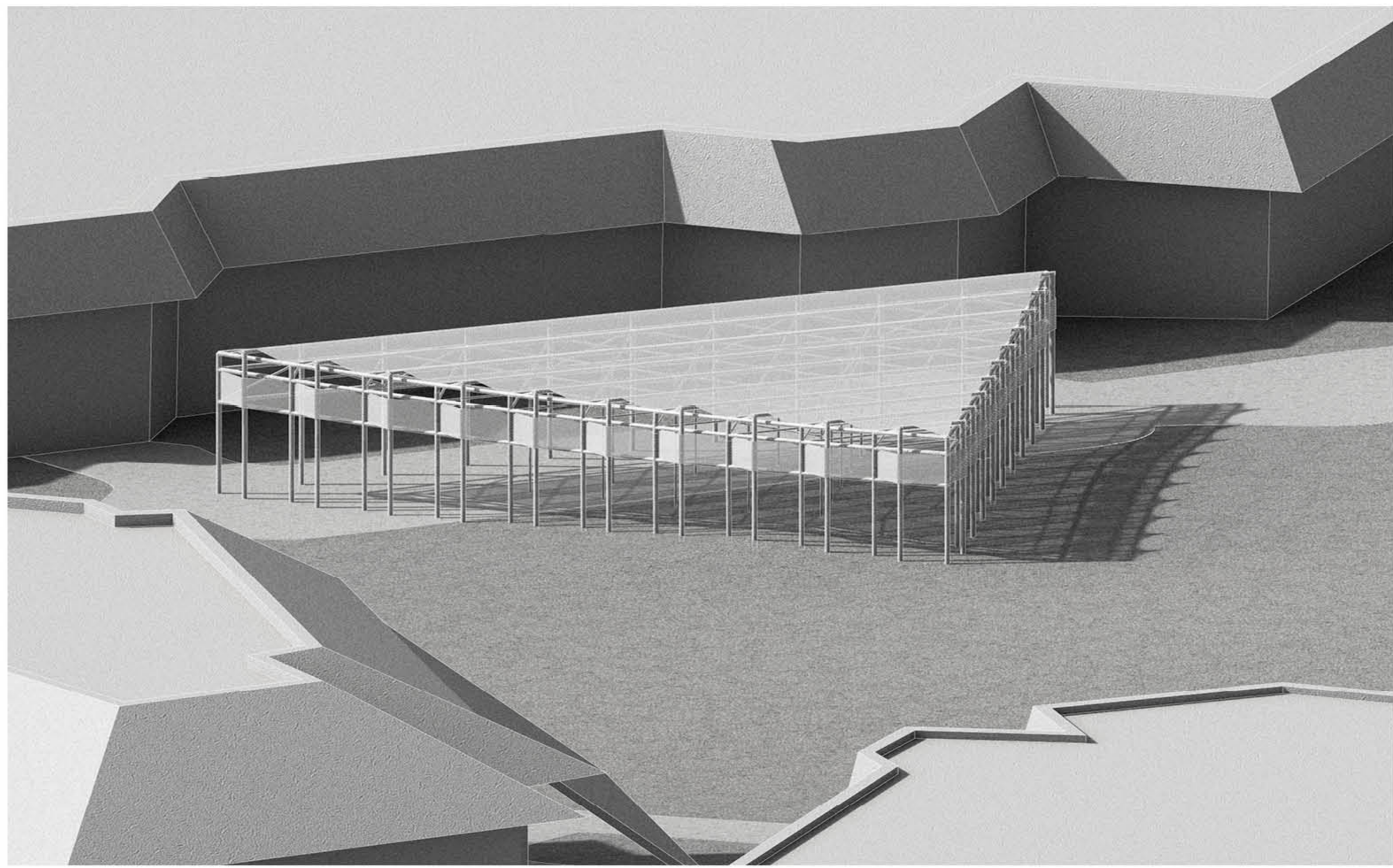
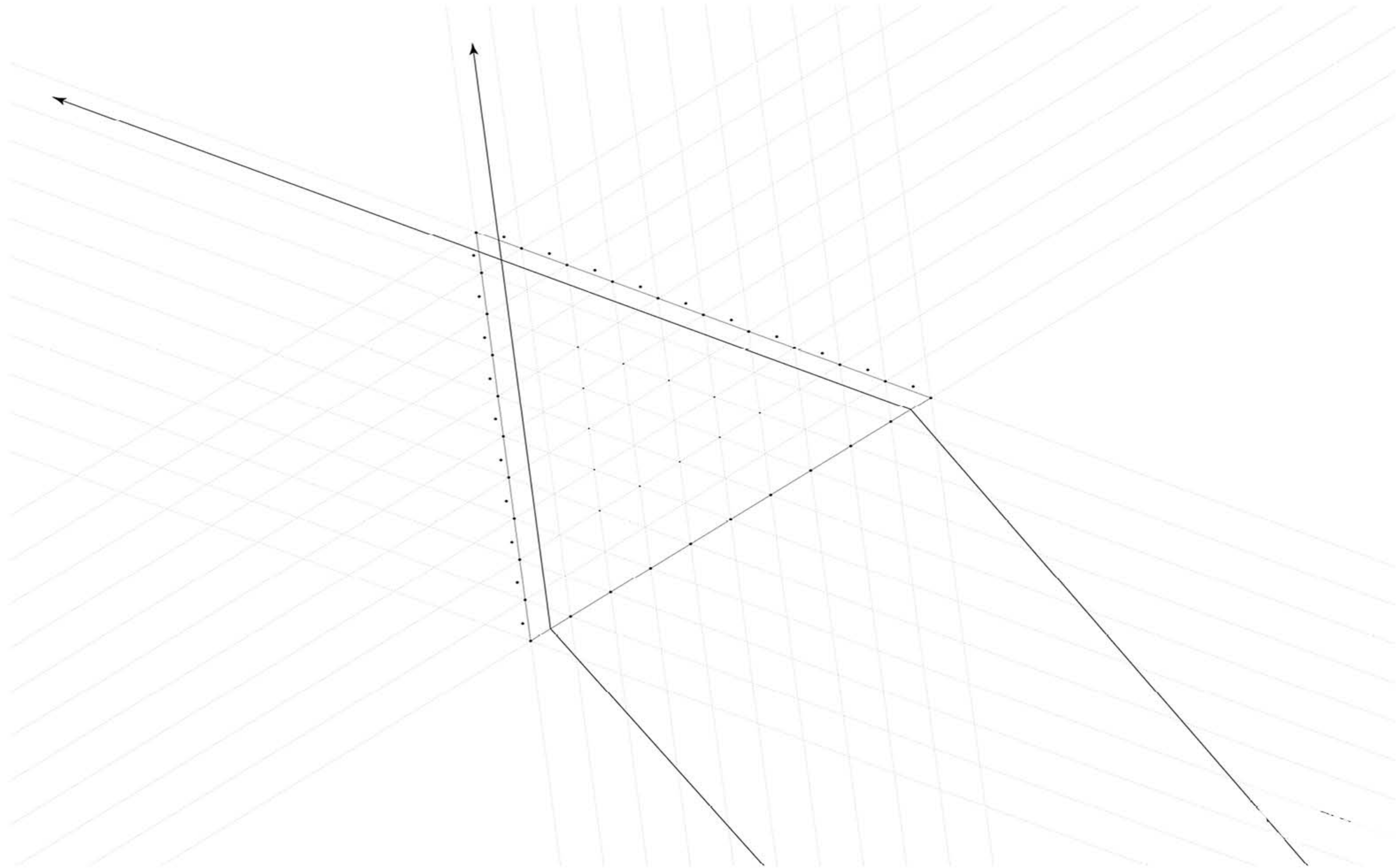


- ① Lighthouse  
Initiation of the Makahiki Season  
(The Constellation Maui)
- ② Beach (Kapi'olani)  
Purification & Water Sports  
People purified and cleansed themselves at midnight, during the start of the Makahiki season. Also used for Water Sports.
- ③ Park (Kapi'olani)  
Kahua & Other Courses  
Grounds for Games of Strength & Endurance, Games of Skills and Games for Quiet Moods.
- ④ Park (Fort Ruger)  
Hula Dance & Other Courses  
Grounds for Games of Strength & Endurance, Games of Skills and Games for Quiet Moods.

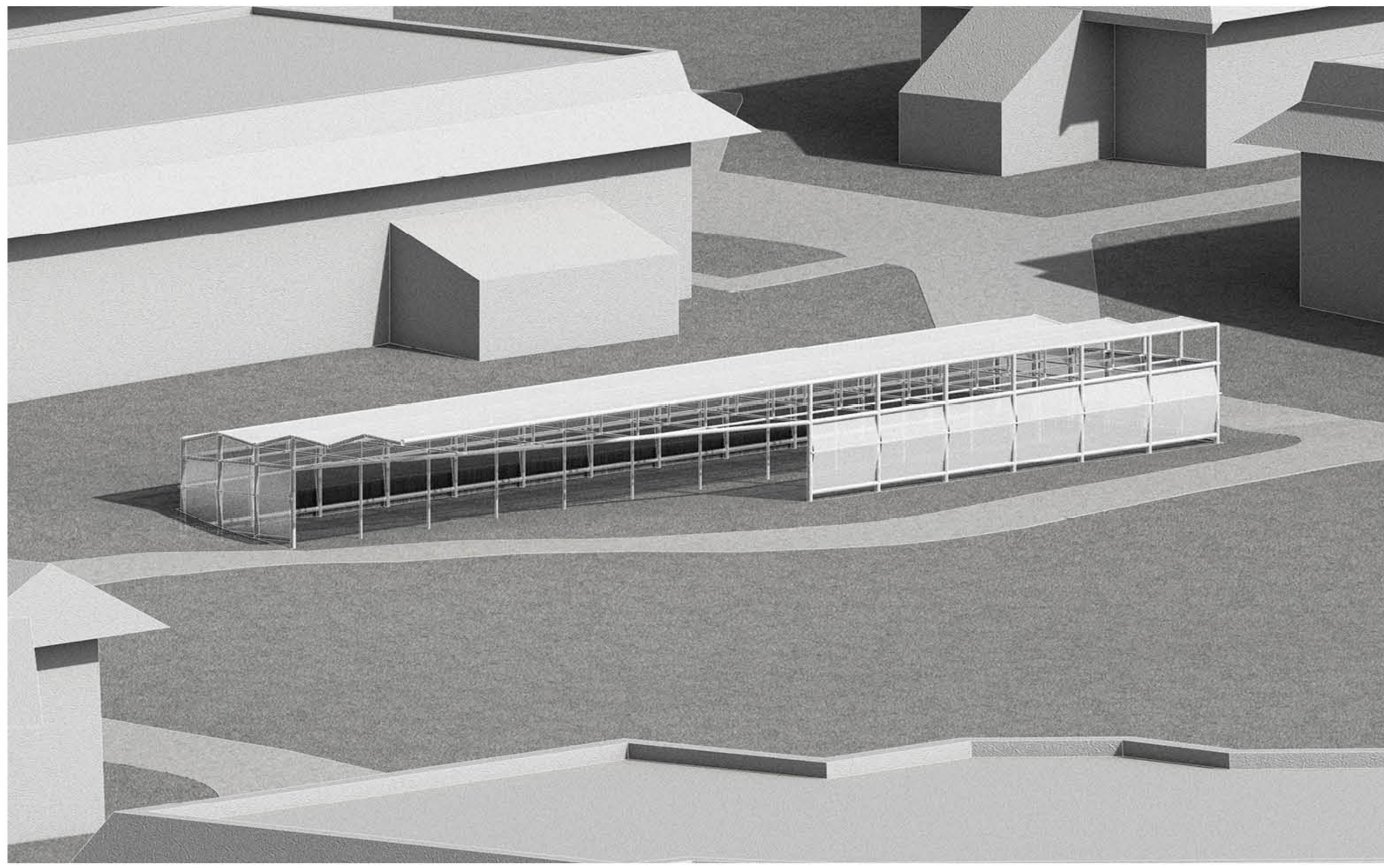
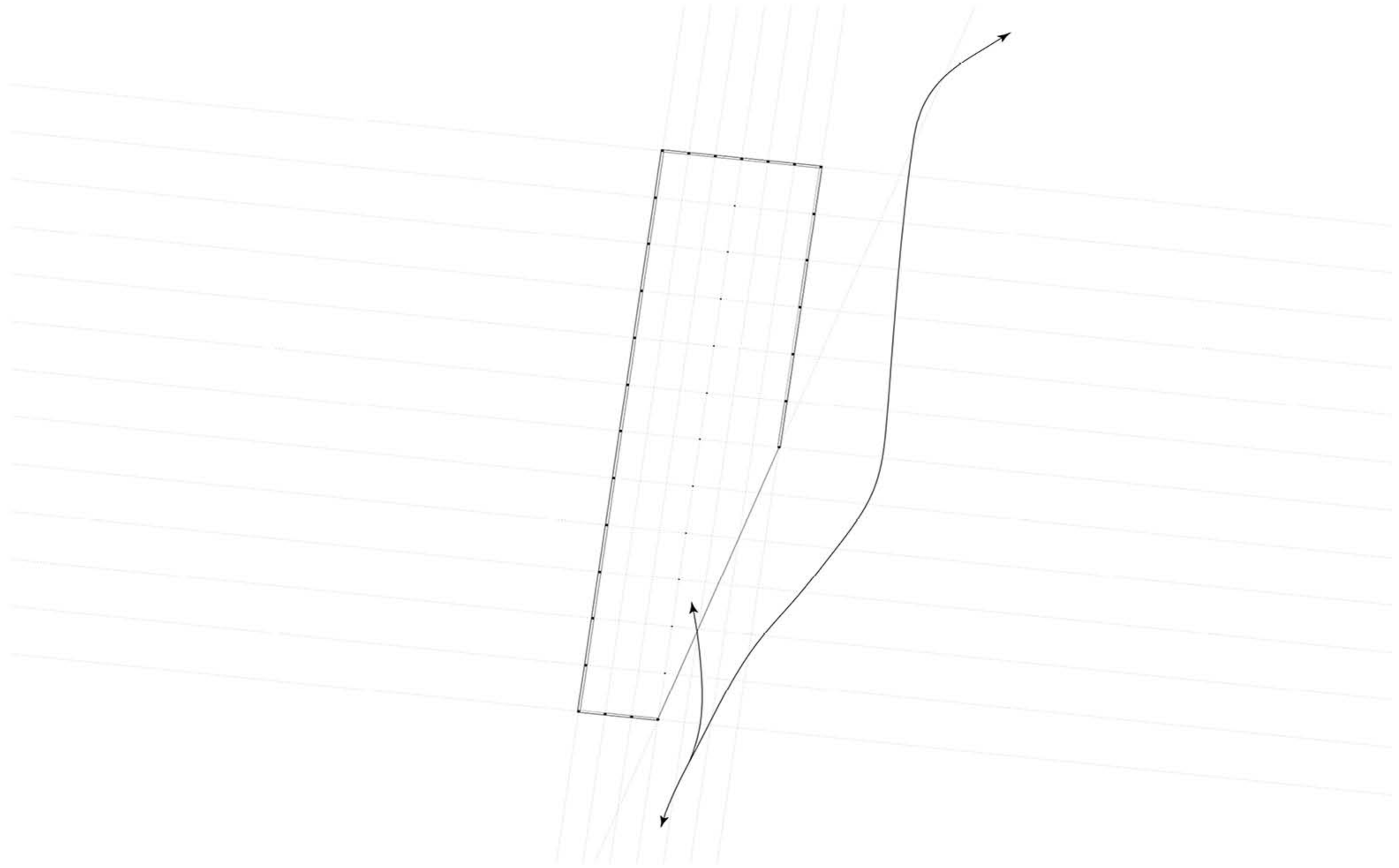


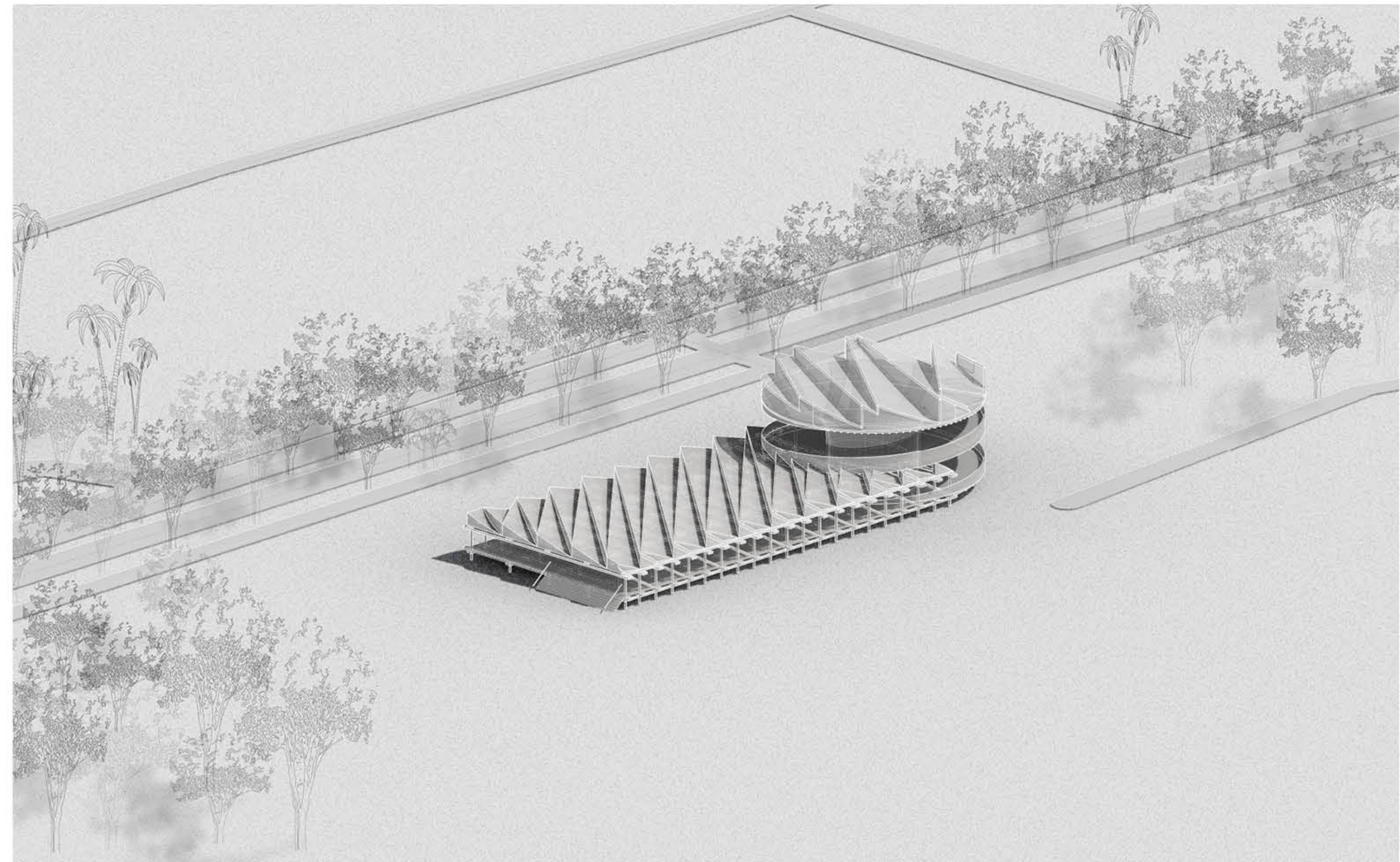
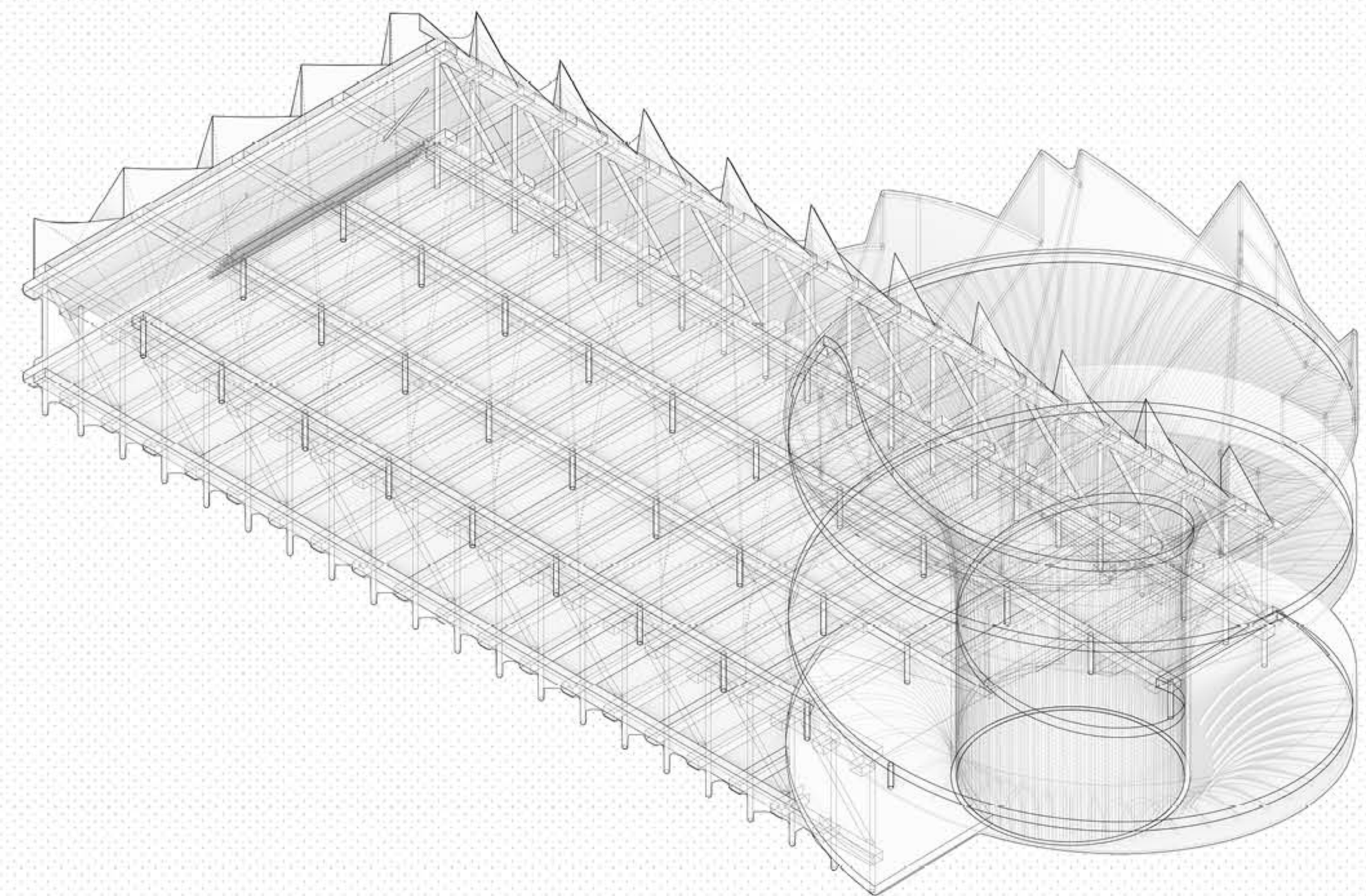


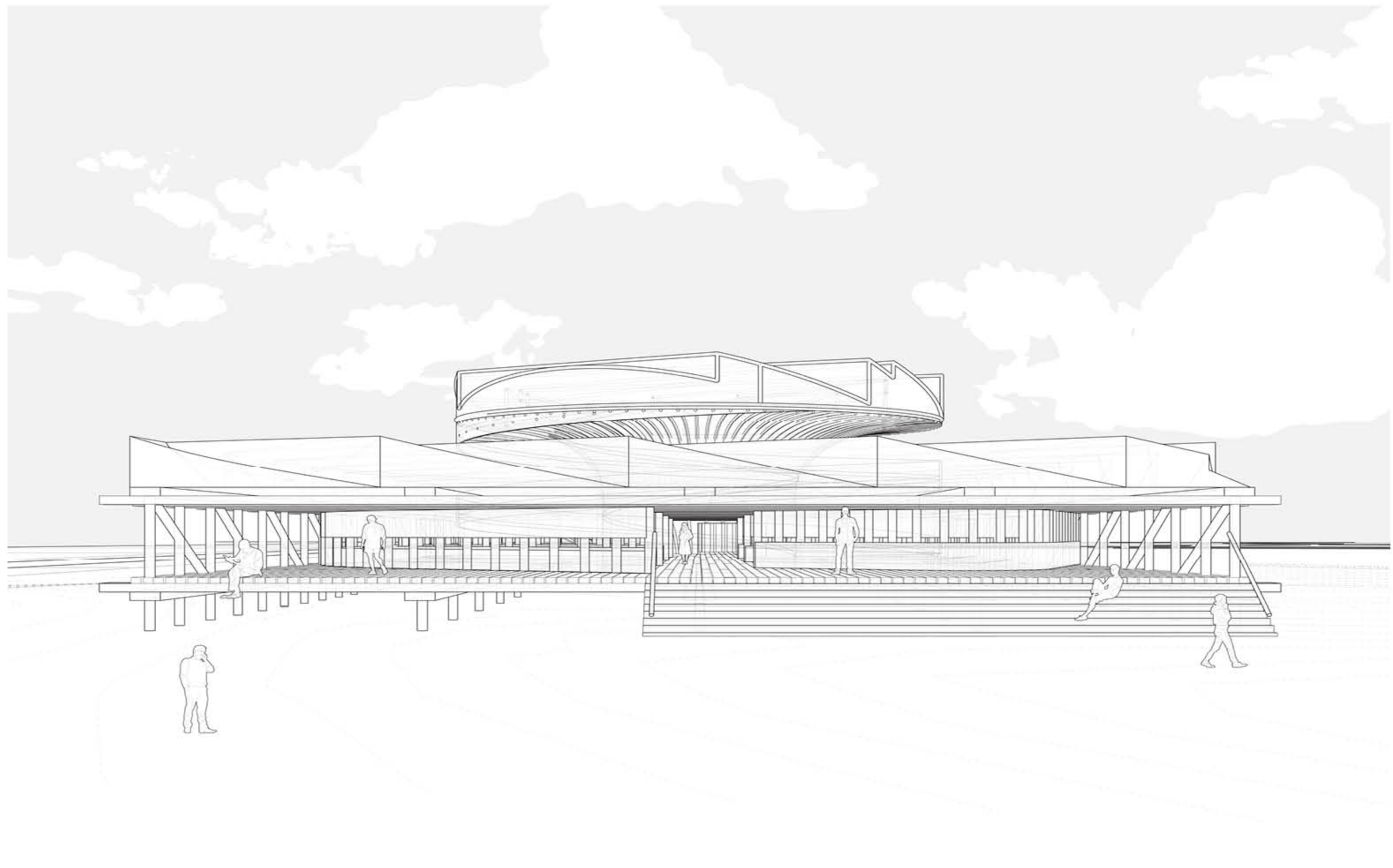
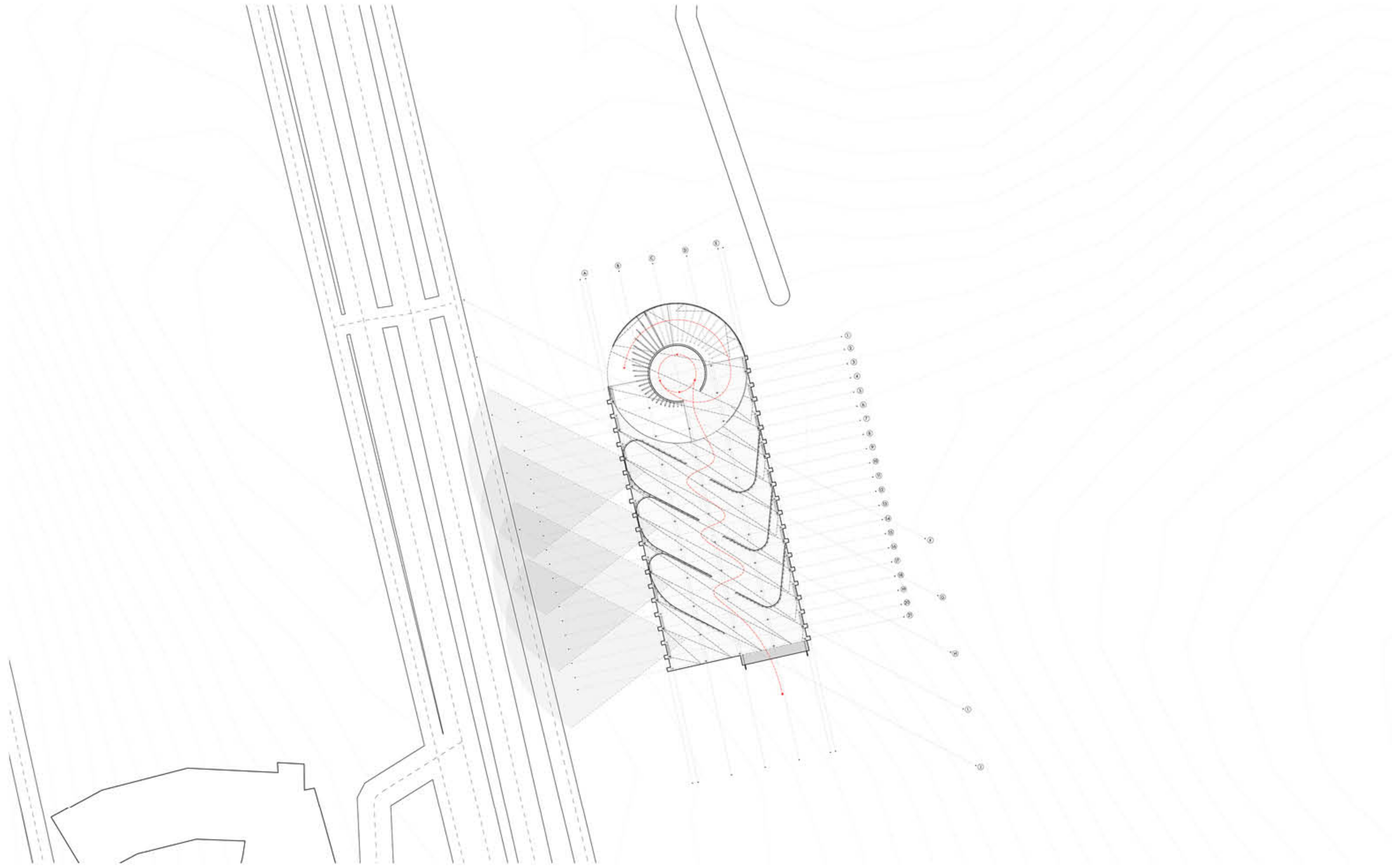


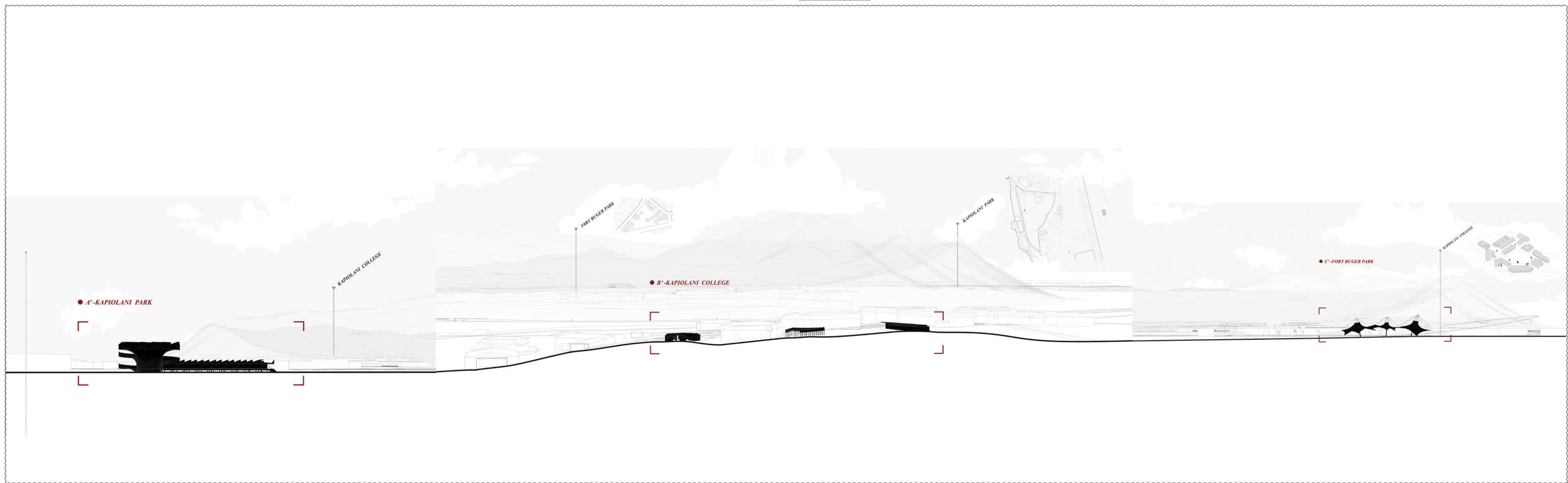


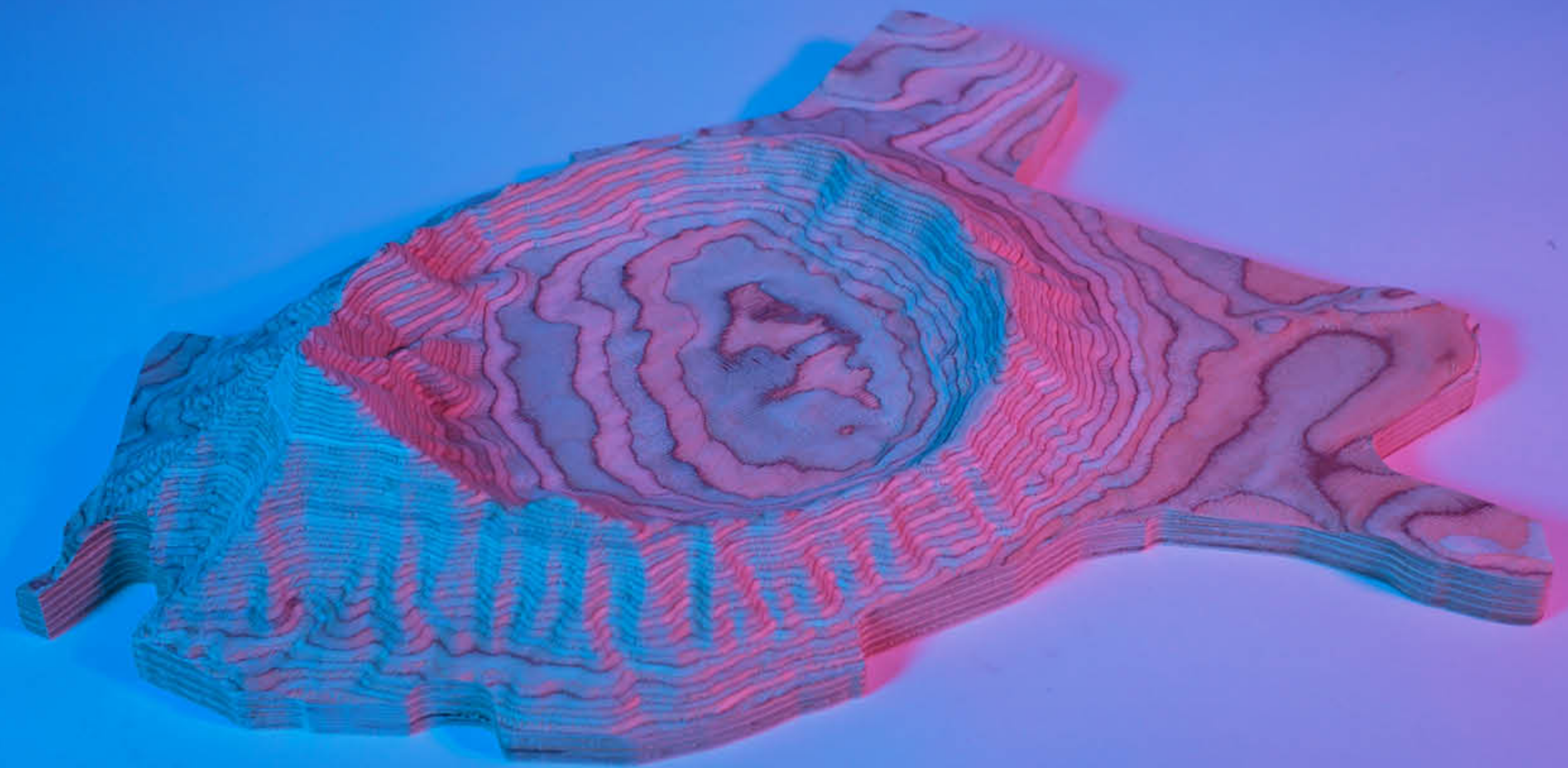












**VS**  
**SPRING 22**

**VIRTUAL ARCHITECTURE**

**Time for a Reset.**

In the past year and a half, the entangled crises of a global pandemic, climate change, racial injustice, and income inequality have demonstrated that current systems fail to adequately address the challenges of these times. And a gradual transformation will not be enough.

Architecture  
Environmental justice  
Civilian climate corps

Same with our architecture. Our current systems of design and construction are failing. They cannot adequately address climate change, public health, and inequality - especially at the intersection of population growth, urbanization, and the expected doubling of the built environment in the next 40 years. The challenges are huge, and incremental change is not the answer.

This studio explored these entanglements and intersections through radical imagination and scalable impact. It looked for opportunities like the unprecedented \$3.5 trillion infrastructure plan currently being debated in the United States and the historic United Nations Climate Change Conference (COP26). It developed strategies such as materials that act as a carbon sink, buildings that are open systems, and an empowered workforce through a Civilian Climate Corps. This studio sought to prototype the buildings and cities of the future.

Instructor:  
**Nitzan Bartov**

Partner:  
**Ben Diller-**

Project Description:  
**Location:** Hawai'i,  
**Area:** 6,246,928 ft<sup>2</sup>  
**Program:** Public Space

School:  
**Columbia University**  
**Graduate School of Architecture,  
Planning and Preservation (GSAPP)**

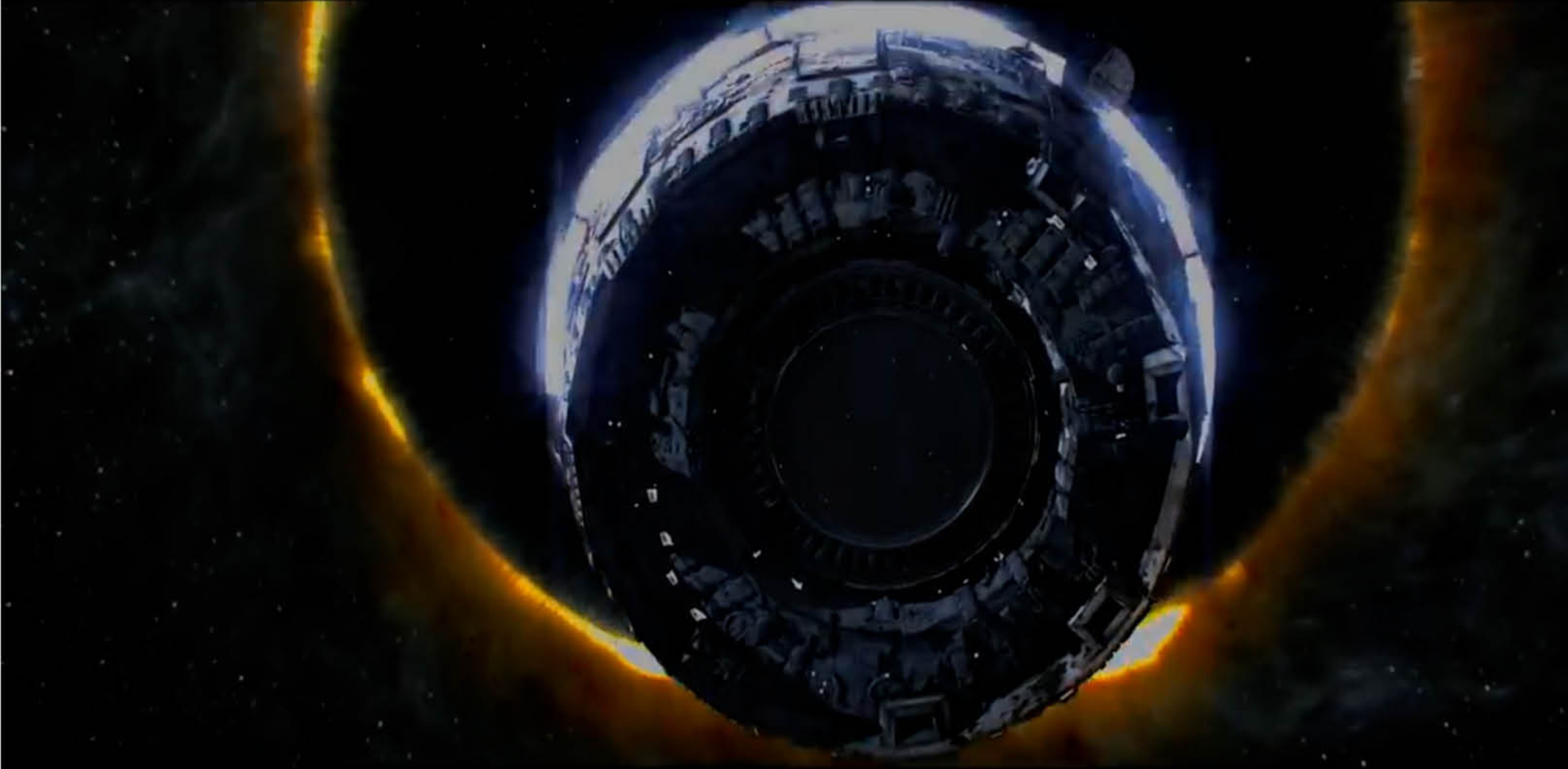
Project Contribution:  
**Conceptual Design**  
**Drawings Production**  
**Model fabrication**



How we always questioning about the video game space and reality. In virtual Architecture class, we challenging this idea to the production level.

We been thinking about the space, which without human being however with so many familiar item and plantes.

It's somewhere outside of earth.









# TECH

## SPRING 22

### RETHINKING BIM

Our capabilities as architects today, to create and leverage organized building information, is continuously expanding the possibilities for designing and understanding what we build and how we can build it. Developing a literacy of the digital tools and how to leverage them through informed design practices that exist both within the architectural field and more broadly, is an increasingly essential competency for designers. This class challenges students to develop robust methodologies and frameworks to better drive possibilities for creative iteration and validation of design solutions through analysis, automation, simulation, optimization, and representation.

This course is intended to provide foundational knowledge of building information modeling (BIM) practices, as well as relevant options for alternative design-platform interoperability and integration. Sessions will include case-study review and discussion, critical analysis of design and design-technology strategies, and overall exposure to diverse approaches to industry design practices. Guest lecturers will introduce industry-proven examples of platform integrations, and demonstrate methodologies for students to consider for their own design problem. The guest lectures will each take a different lens of informed design interventions and interoperability, including computational and iterative design, advanced interoperability for design optimization, performance-based strategies to address energy and environmental design considerations, and cloud-BIM strategies to iterate at the detail level of building articulation. Throughout the guest-lecture portion of the semester, students will be introduced to a sampling of more specialized tools that

will enable them to take a deeper investigation into topics of interest. For the final project, students will select one or more approach to interoperability and design intervention, leverage the affiliated platform(s) to develop their advanced parametric and design-informed methodologies, and apply them to the models developed earlier in the semester with a revised set of design goals.

Instructor:

**Joseph Brennan**

Partner:

**Dan Kim**  
**Alexa Long**  
**Audrey Marie**

Project Description:

**Location:** Austin, TX

**Area:** 100,000 ft<sup>2</sup>

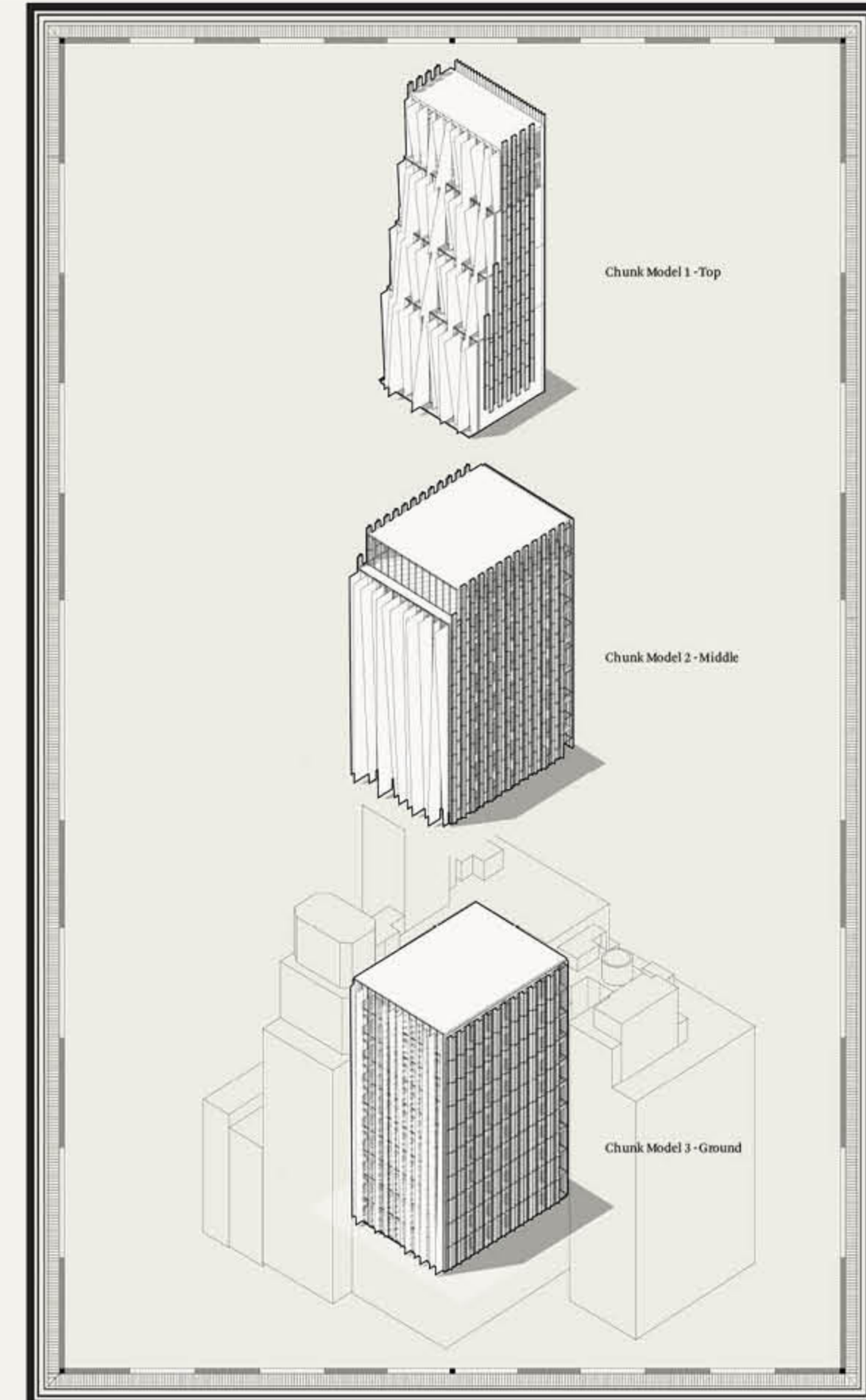
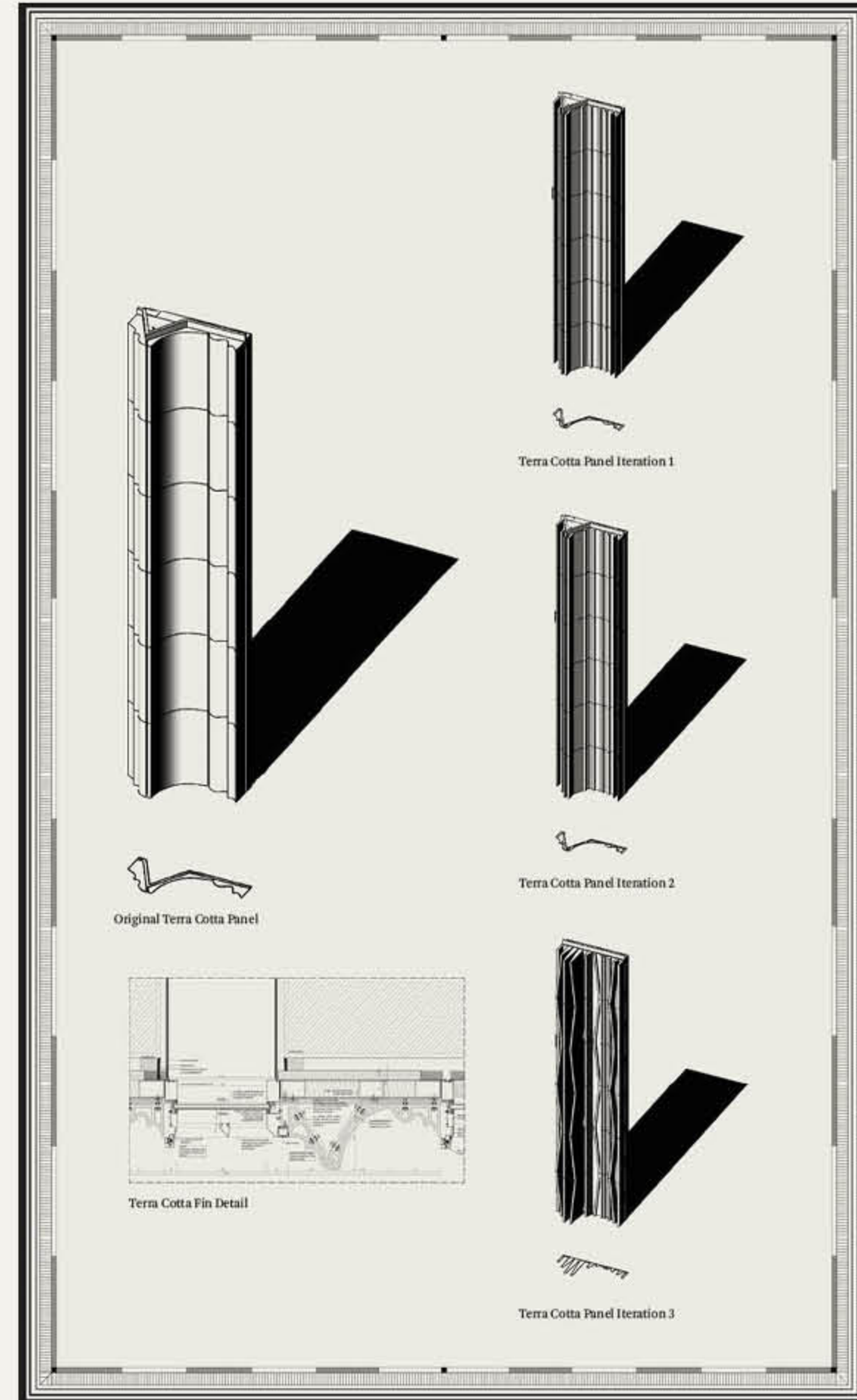
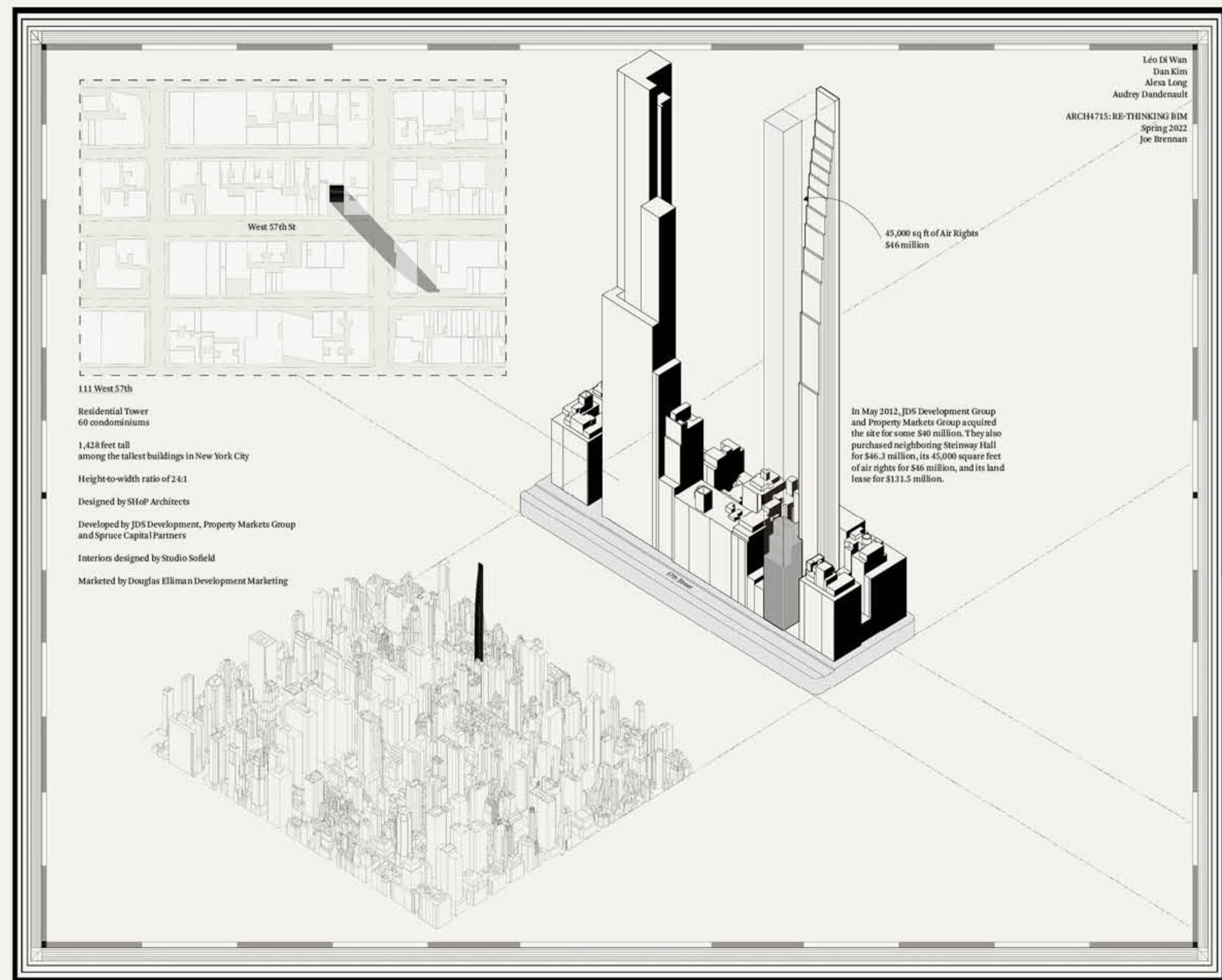
**Program:** Affordable Housing  
Farming Community

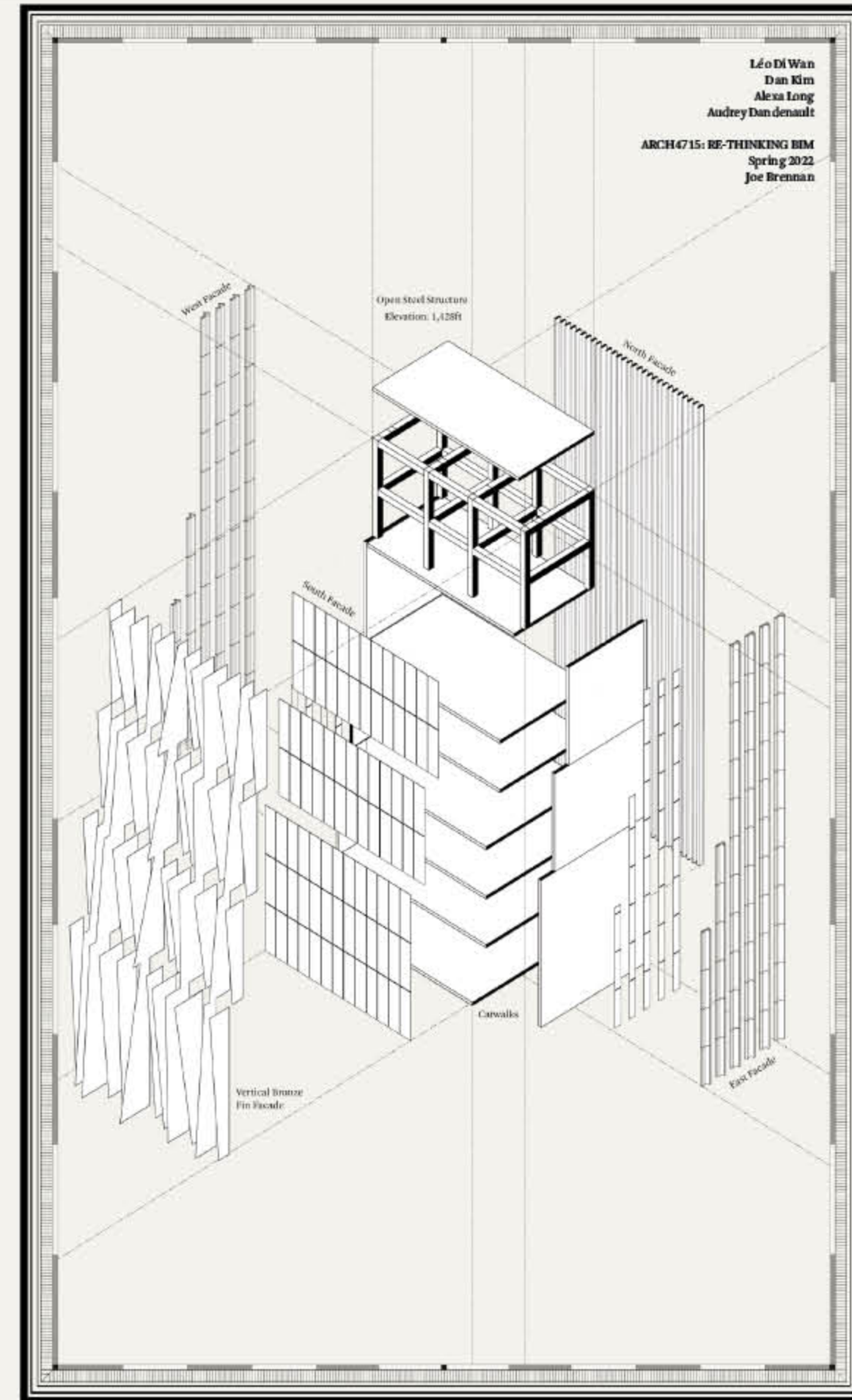
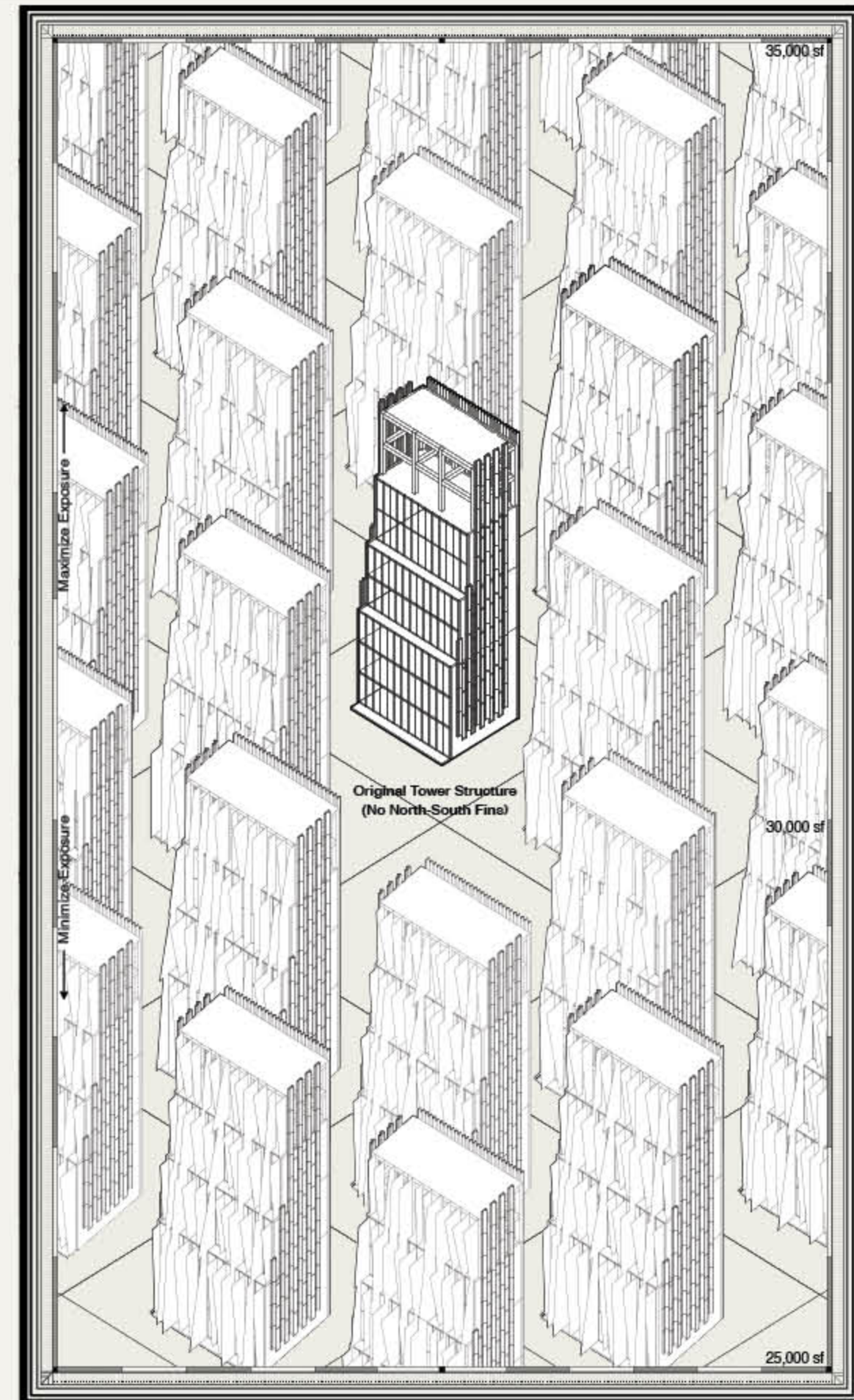
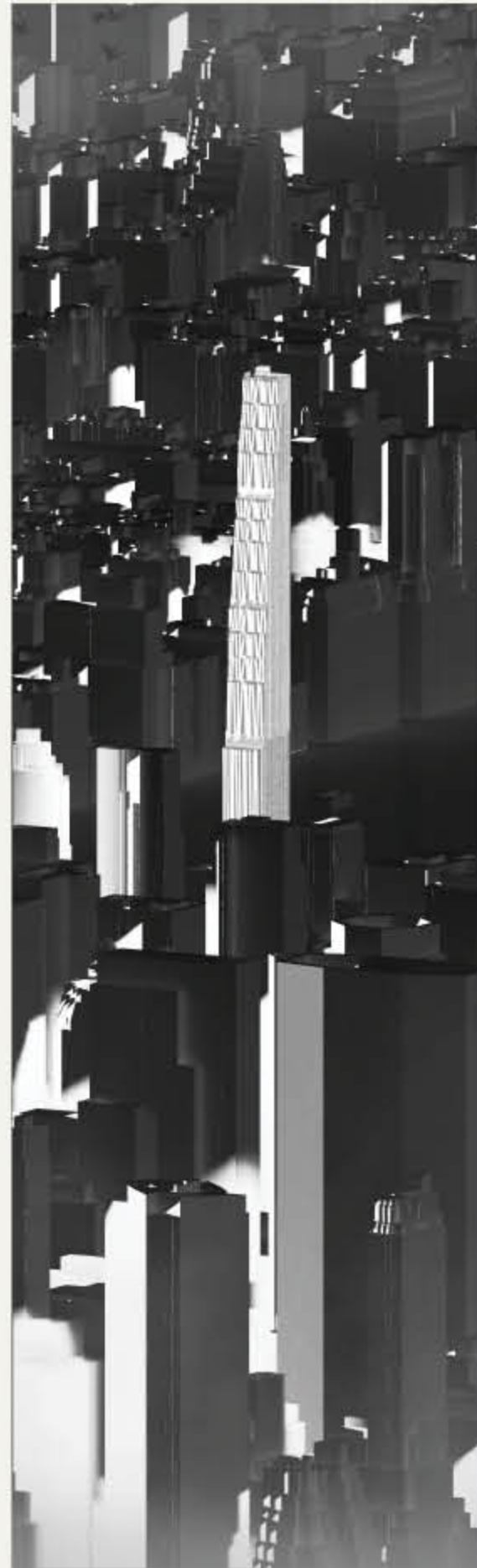
School:

**Columbia University**

**Graduate School of Architecture,  
Planning and Preservation (GSAPP)**







Léo Di Wan  
 Dan Kim  
 Alexa Long  
 Audrey Dan denault  
 ARCH4715: RE-THINKING BIM  
 Spring 2022  
 Joe Brennan