A YEAR LATER

KURT MAN HIN CHEANG

MASS CUSTOMIZATION FOR SUSTAINABLE DESIGN

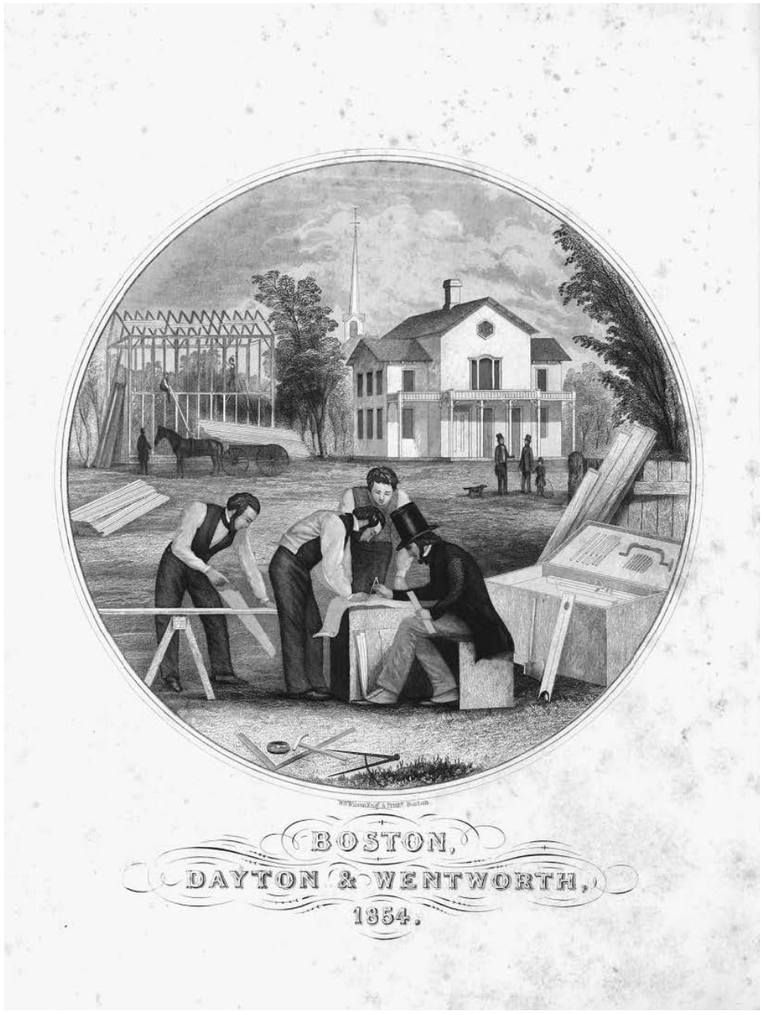
ABOLISHING & REBUILDING

DEFINING A NEW WORLD WITH CONTEMPORARY TECHNOLOGIES

CULMINATION

MASS CUSTOMIZATION FOR SUSTAINABLE DESIGN

“SPECIFYING: THE GENERALITY OF CLERICAL LABOR”



“HOW WILL THE ROLE AND RESPONSIBILITIES OF AN ARCHITECT EVOLVE IN THE CURRENT ERA OF ARCHITECTURE? HOW CAN WE BRIDGE THE DISCONNECTION BETWEEN MANUAL LABOR AND THEORETICAL LABOR?”

Throughout history, our responsibilities as architects have been diminished, as they were subdivided into other disciplines, such as engineers, craftsmen etc. The disconnection between the architect and other disciplines have grown, and architects now bear the role of an overseer. But with technological advances through not only BIM systems and construction technologies, how will the role and responsibilities of an architect evolve in the current era of architecture? How can we bridge the disconnection between manual labor and theoretical labor?

Architects were seen as a jack of all trades, somebody who understood and visualized the world through various disciplines of studies, and hence we were tasked with the responsibility to create spaces that would embody the culture and history of the human race. This profession was once tasked to serve only the population that it was able to reach, but as technology advances and the globalization of capitalist economies, architects are now tasked with designing for all parts of the world. This shift from regionalism to internationalism widened the disconnect between the architect and its creation, and the westward expansion in the United States propagated “managerism” within the field, where architects became mediators and overseers between actors that actually realize the architects’ designs. Hence architects are now deemed as theoretical labor, as they are detached from the reality of manual labor, material acquisition and technical construction of their designs.

In architectural practices, the disconnection between the architect and contractor is apparent, as languages like specifications have been developed to assist the architect in conveying their ideas from architectural drawings to material acquisition and assemblage. However the specification developed deviates from the training of the architect in academia, but relies heavily on data collection in order for estimators to perform value estimations regarding the potential profitability of the building. The profitability of architecture is emphasized in other divisions of architecture, including city planning, where zoning determines the building use and size, which enables the government to assert control over the value of real estate within the city. Architectural designs are also value engineered after meetings between the owner, architect and actors from other disciplines, this furthers the claim that architecture has become a profitability driven field because of the globalized economy.

The disconnection between architects and other disciplines doesn’t limit only to their communication methods, but also the perception and compensation of the fields. In history, manual labor was seen as lower class jobs, as the pursuit of education became the priority for younger generations. The effect of this rendered architects theoretical designers, where they shifted their focus on form making and aesthetics with the advances of technology in drafting software. As more of the population deviated from the path of manual labor, there became a shortage of manual labor within metropolis cities, like Hong Kong and New York. As Osman talks about the torch bearer and follower, the theoretical labor who was once the bearer, is now the follower of the manual labor.

The lecturer proposes the speculation of the cost of creativity, and this could be related to the standardization of specifications, but also the abundance of designers that academia are producing. Osman was self-aware about the fact that as an educator in the field of architecture, it was against his own economic interests to be an opponent against the education and production of architects. However, to speculate the cost of creativity, one must also speculate the cost of labor. With the continuing advancements of construction technologies, manual labor is facing a critical impasse and could be facing a revolution in the field of construction labor. The value of creativity then trumps the value of labor, as creativity could not be replicated machines yet. Moreover, the data collection that architects perform will become immensely valuable, as they will provide guidance and data sets for machine learning algorithms that will operate the machines that construct the architects’ fantasies. Hence the follower once again becomes the torch bearer.

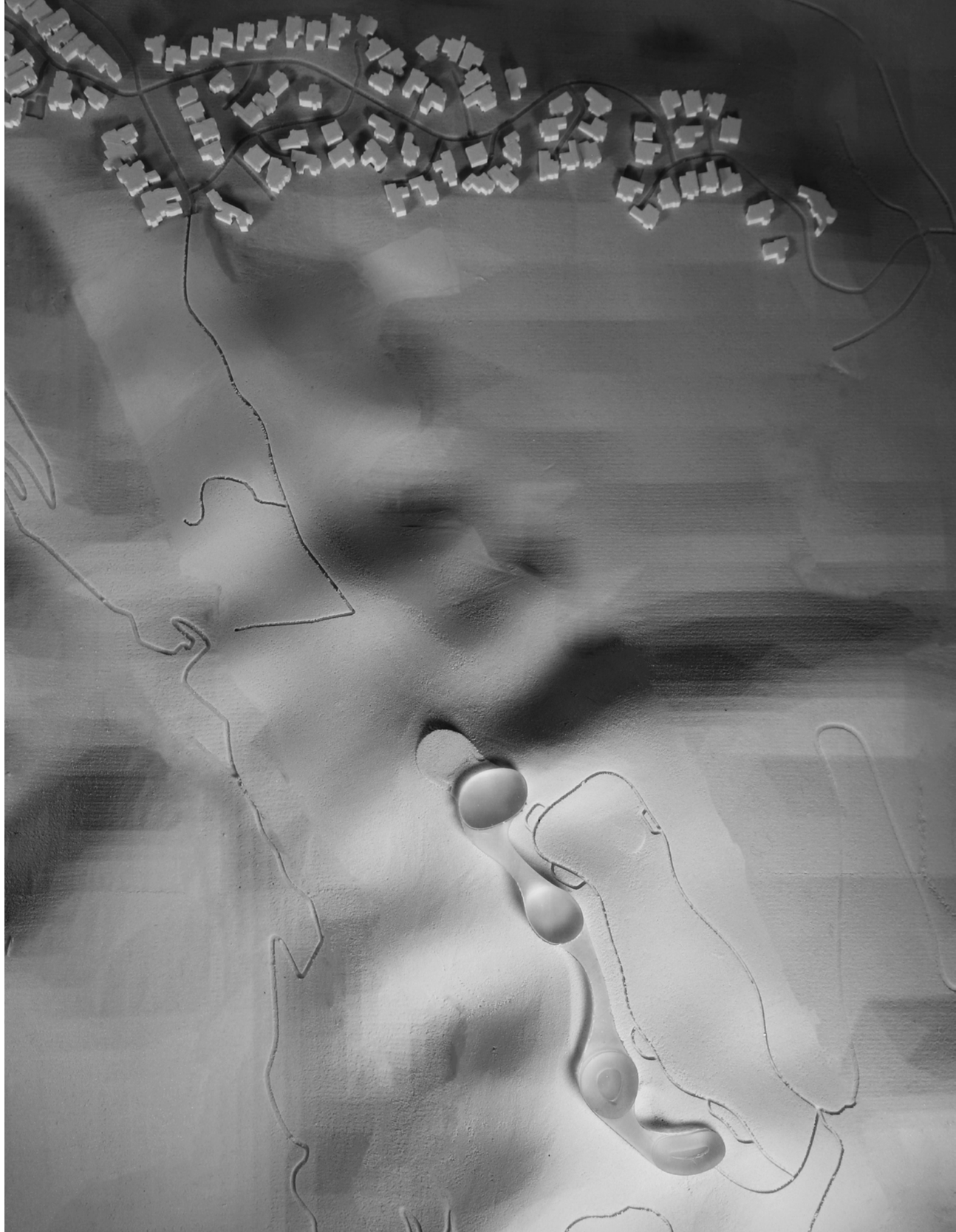
In proposing the advancements in construction technologies, it is crucial to recognize that this is only one of the scenarios enacted in fields of architecture across the world. With metropolises seeing a shortage in manual labor, the ways developing and undeveloped countries treat and compensate their labor are vastly different from those who are wealthy. A glaring example would be the death of labor workers in Qatar over the construction of one of Zaha Hadid’s buildings. Although the criticality proposed by Osman references to standards of the American construction, and he speculates the relationship between the architect and contractor, the dynamics of these actors vary depending on the economic development of the country. The cultural landscape and hierarchy within countries can also be a deciding factor the relationships an architect has with other actors, however assuming the global capitalist economic model eventually lead the developing and undeveloped countries to a similar position the United States is currently in, perhaps they should be seen as grounds of speculation to explore a new dynamics that architects can foster.

In the reading “SPECIFYING: The Generality of Clerical Labor”, Osman argues that technologies and workflows like BIM are now mediating between the theoretical and manual labor, and the variability in the data collected through BIM now allow mass standardization to become mass customization. Though Osman argues in the lecture that the solution isn’t to reject managerism, the mass customization in architecture could perhaps apply to its labor too. With data collection driven communications and workflows, the role of the architect could refocus on the theoretical. Perhaps the mass customization that he had proposed will enable architects to perform less managerial roles, reacclimate and relearn knowledge of other fields and bridge the disconnection between architects and other actors from different disciplines.

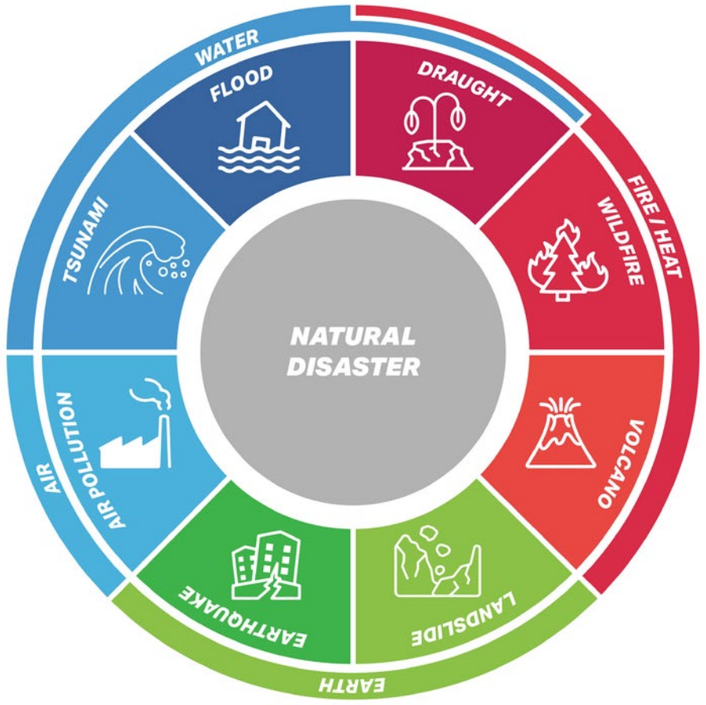
EMERGENCY THINK TANK

GALIA SOLOMONOFF
SUNGHYUN KIM & HANNAH STOLLERY

What is a think tank? A museum? A research institute? An iconic landmark like The Getty Center? This project seeks to redefine the purpose of a think tank through exploring contemporary emergencies within Los Angeles and the state of California. With climate change advancing rapidly everyday, natural disasters have been increasing rapidly. Wildfires in California are recurrent events annually, and the scale of effect often render firemen and rescuers at the mercy of mother nature. This emergency think tank aims to duo as a think tank, but also a shelter for people during times of emergency. The location of the think tank originates from Herzog de Meuron's masterplan for the Berggruen Institute, as the institute sat in the hills of the Santa Monica Mountains, along the 405 highway. Designing on the same site, it was obvious through some brief research that the mountains suffered from severe and constant wildfires every year, and the site had minimal support nearby in terms of sheltering spaces or water reservoirs to help fight wildfires in the area. In order to incorporate emergency shelter as part of the think tank design, it is important to consider the independence of energy source for the site, as energy production and supply could become unstable during times of crisis. Therefore, this masterplan is designed to be self sustained and equipped with passive strategies to be prepared for emergency mode at all times, but to also serve as an exemplary model of sustainable architecture in the city.

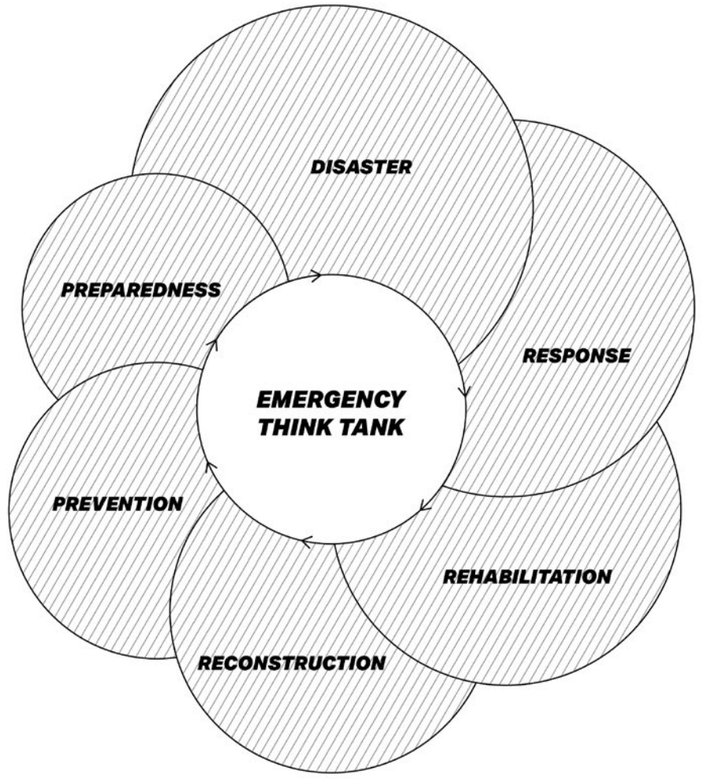


WHAT IS AN EMERGENCY THINK TANK?



ELEMENTS OF DISASTER

The process of designing the think tank began with understanding the types of natural disasters that occur within the state of California, and extracting the primary elements to these disasters.

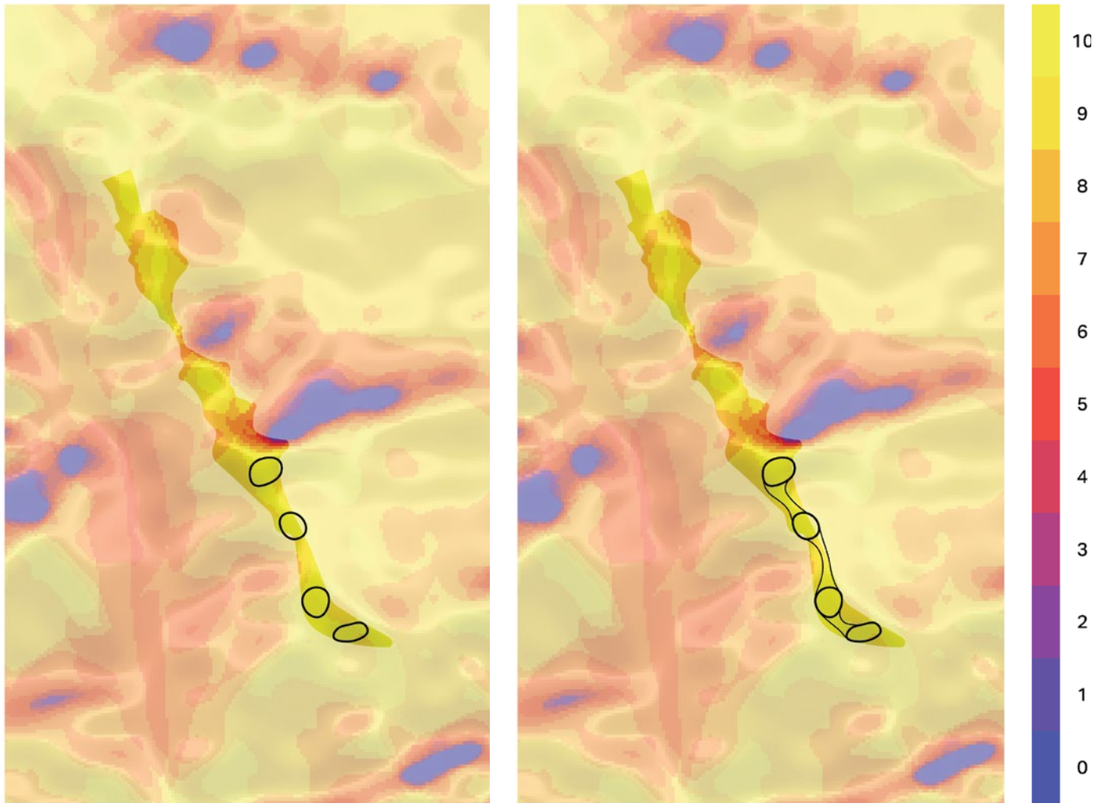


DISASTER MANAGEMENT CYCLE

Preparation for emergency is essential to help understand the cycle and procedures of disaster management, and this study concluded that energy independence and self sustainability would be factors that contribute to a successful emergency think tank.

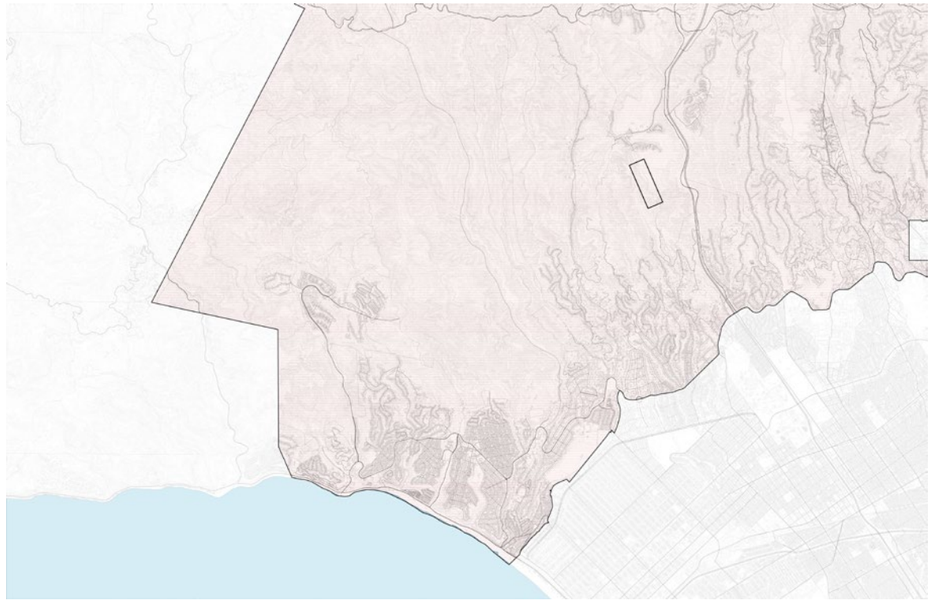
SITE SOLAR &
EMERGENCY ANALYSIS

DECEMBER

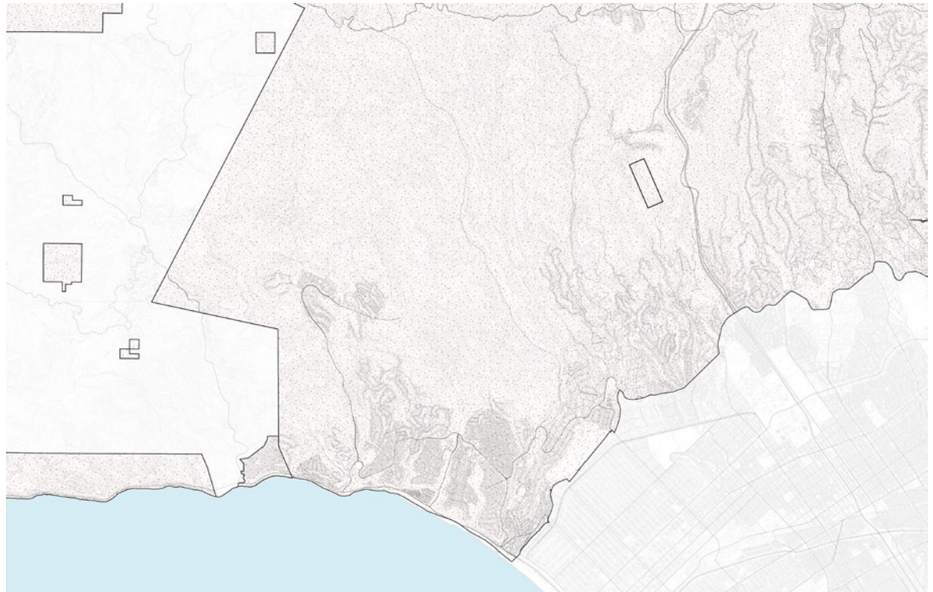


DAYLIGHT HOUR ANALYSIS

By utilizing the existing site boundary of the Herzog de Meuron masterplan, a daylight hour analysis was performed to understand the maximum amount of sunlight the site receives during different times of the year. After isolating the December analysis, four major nodes were created based on the most sunlight hours received, and then connected by bridges that mimic the ridge of the mountain.



FIRE BRUSH CLEARING ZONE



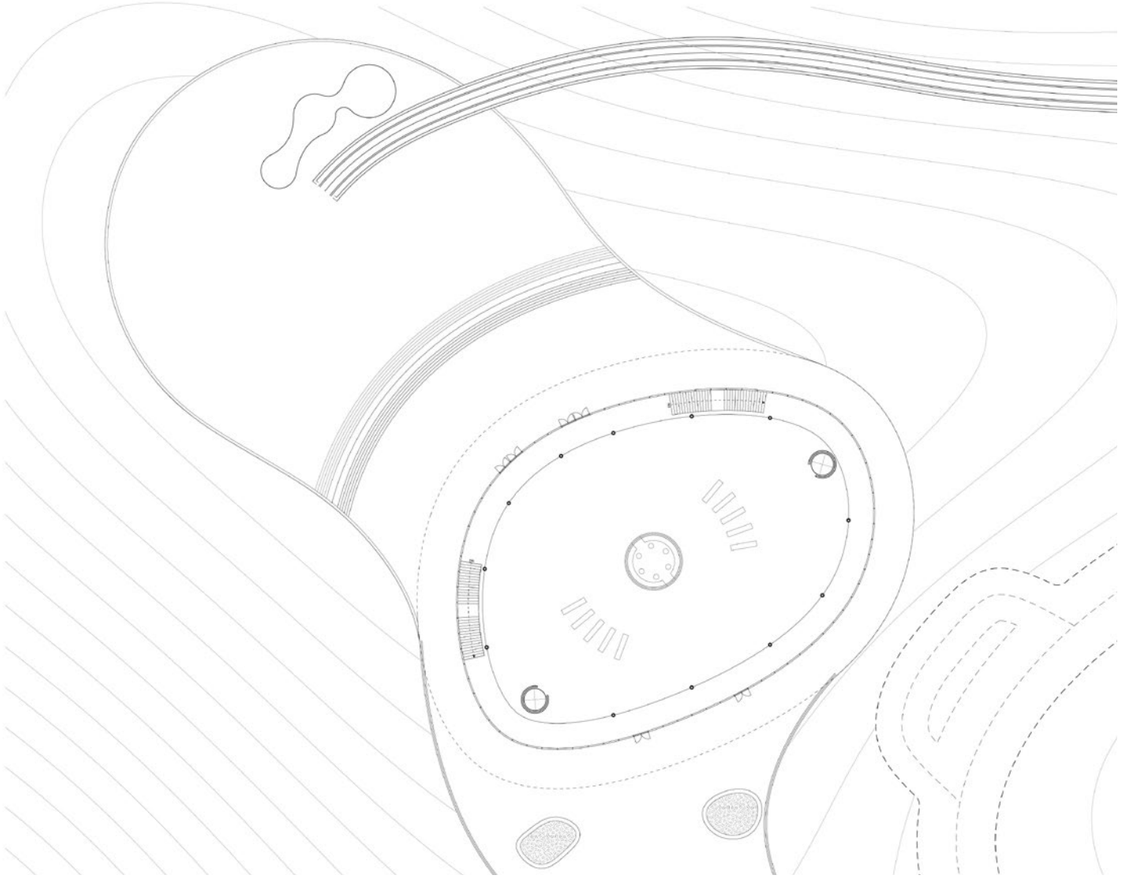
FIRE HAZARD SEVERITY ZONE

MASTERPLAN

H

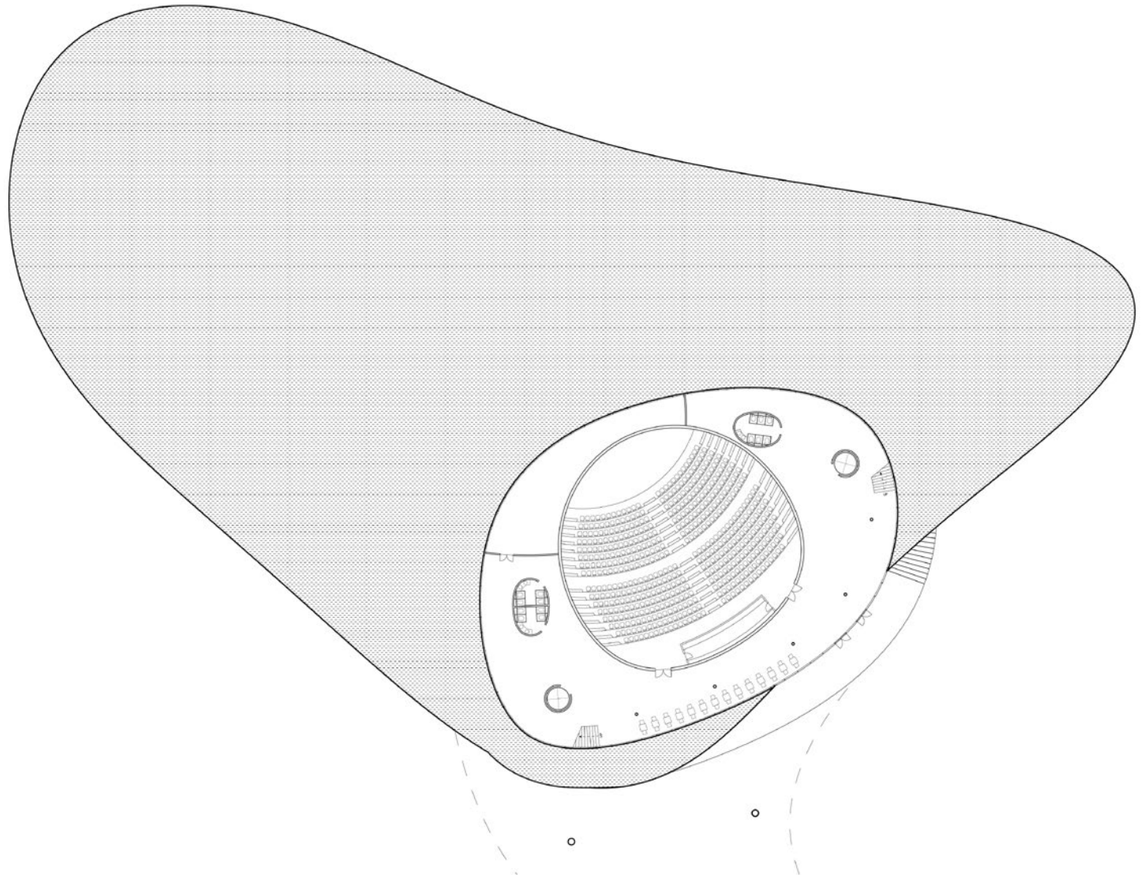
SITE PLAN

EXTERIOR ISOMETRIC



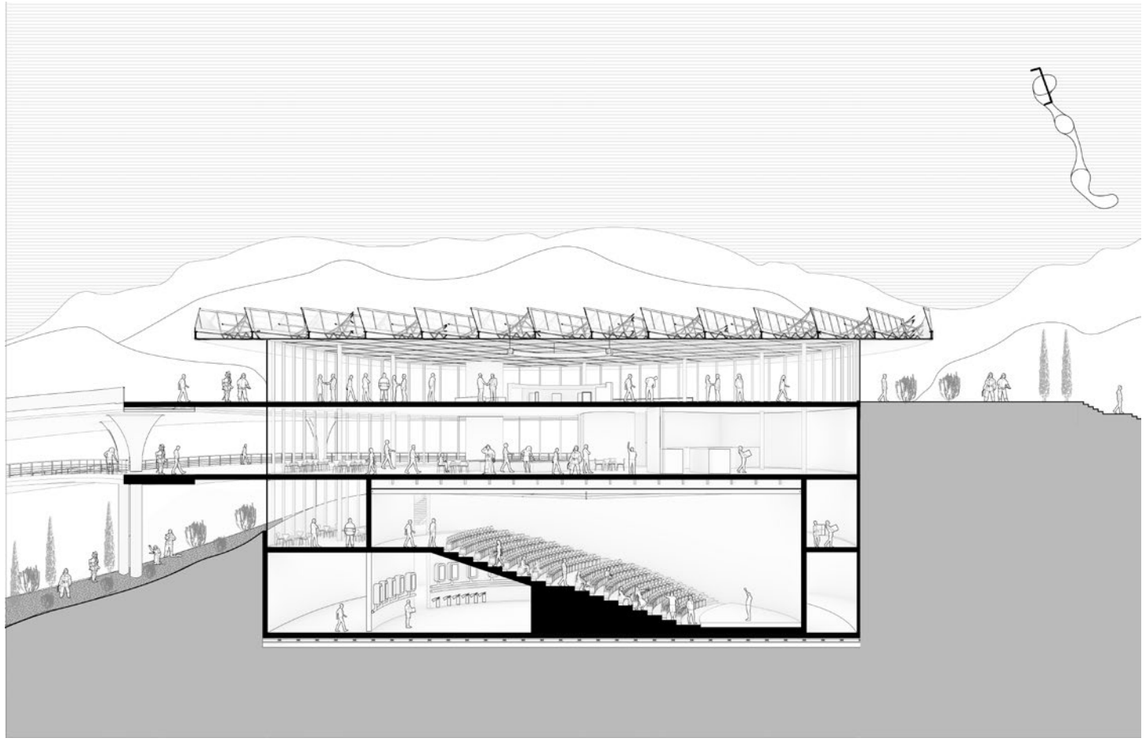
ARRIVAL SPACE

The first node of the emergency think tank consists of public programs, as it is the most public facing node. Upon arriving the building by tram, the visitor enters the think tank through the main exhibition/ lobby space, where conventions or exhibitions could be held.



AUDITORIUM

On the lowest level of this node is the auditorium, where it is sunken into the mountain. This will primarily serve as lecture/convention space, but could also duo as an emergency assembly area during crisis.

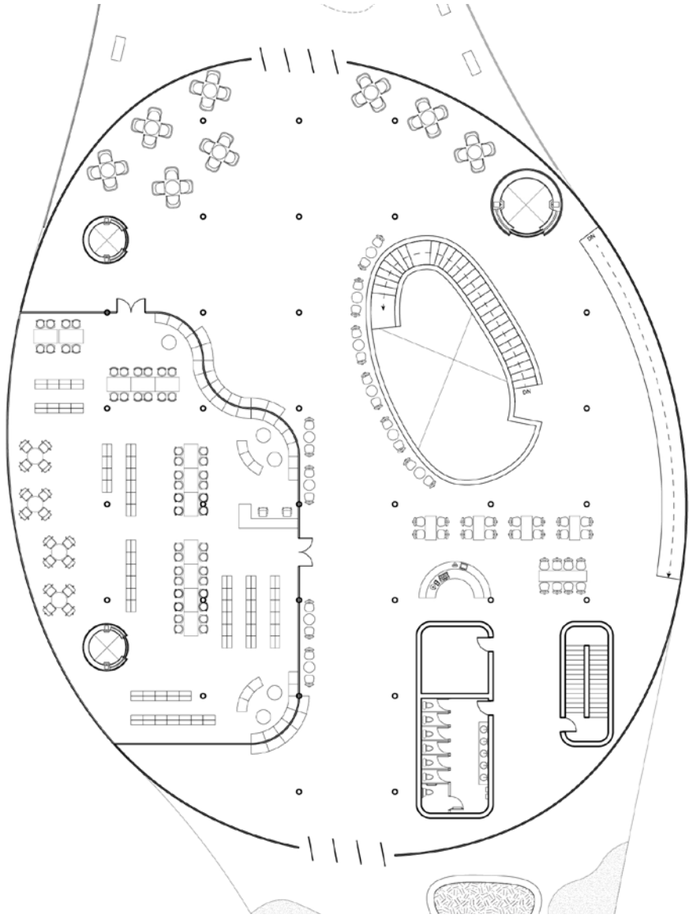


SECTION PERSPECTIVE

This section perspective shows the level below the arrival space, where some enclosed spaces are available for meetings or educational purposes. On that same level and the level above, the bridges connect the visitors to the institute node through either a covered bridge or outdoor rooftop garden.

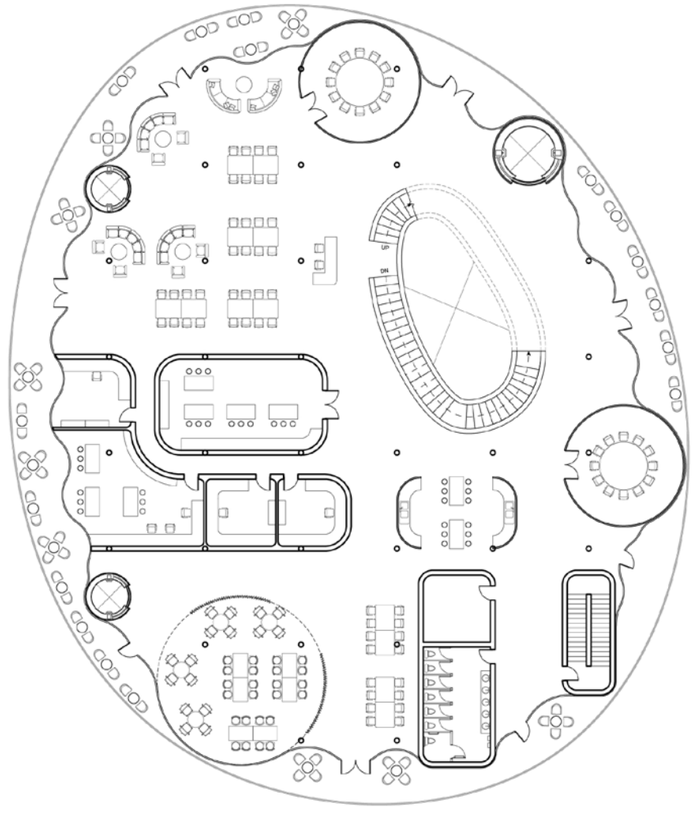
ANTHROPOCENE EXHIBITION

Beyond being an iconic public space and emergency shelter, institutes should educate the public. In regards to the emergency think tank, global warming should be addressed and relayed to the public, as the need for a shelter originates from the more frequent wildfires caused by global warming.



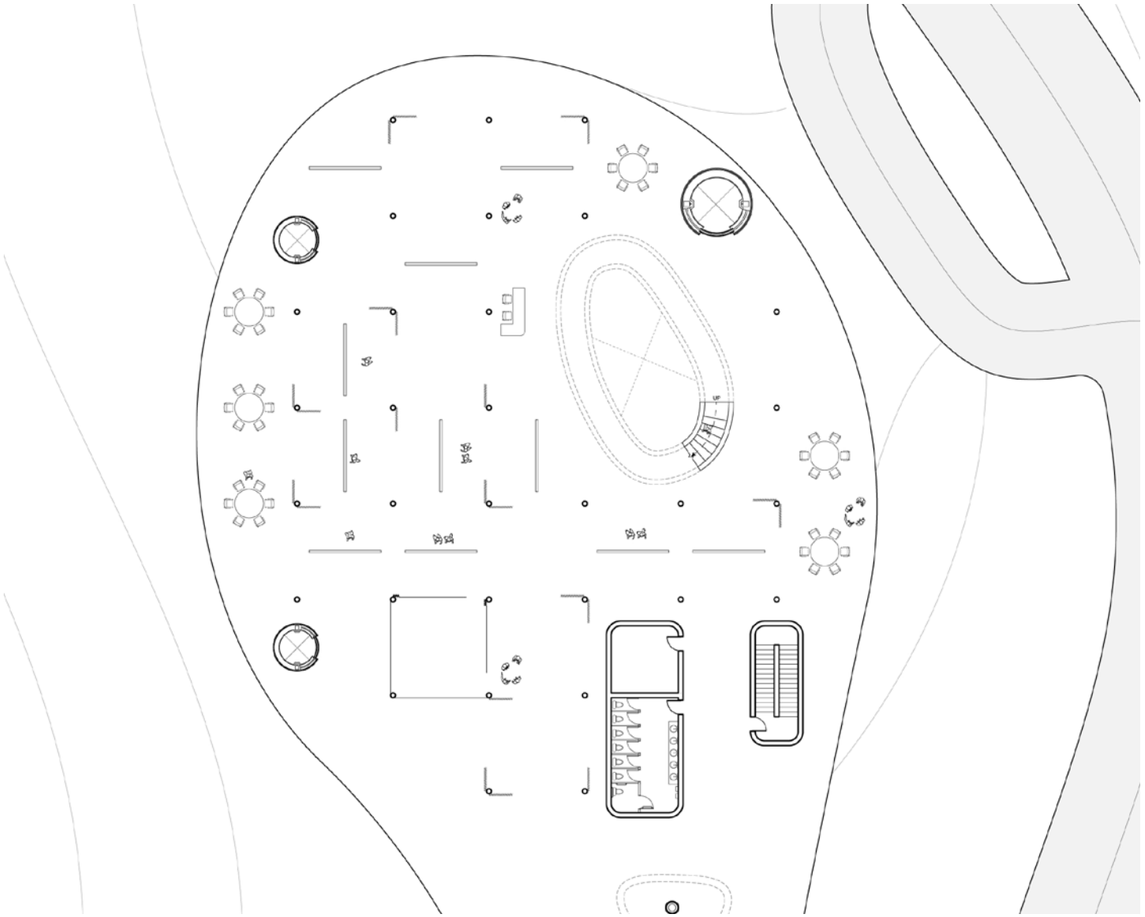
LIBRARY & CAFE

Upon walking across the covered bridge, the visitors arrive at a semi-enclosed space with a mesh facade, where the cafe is housed. The library is fully enclosed by glass and is available for the public to visit. After visiting this floor, visitors have the choice to continue walking across the roof garden or venturing below.



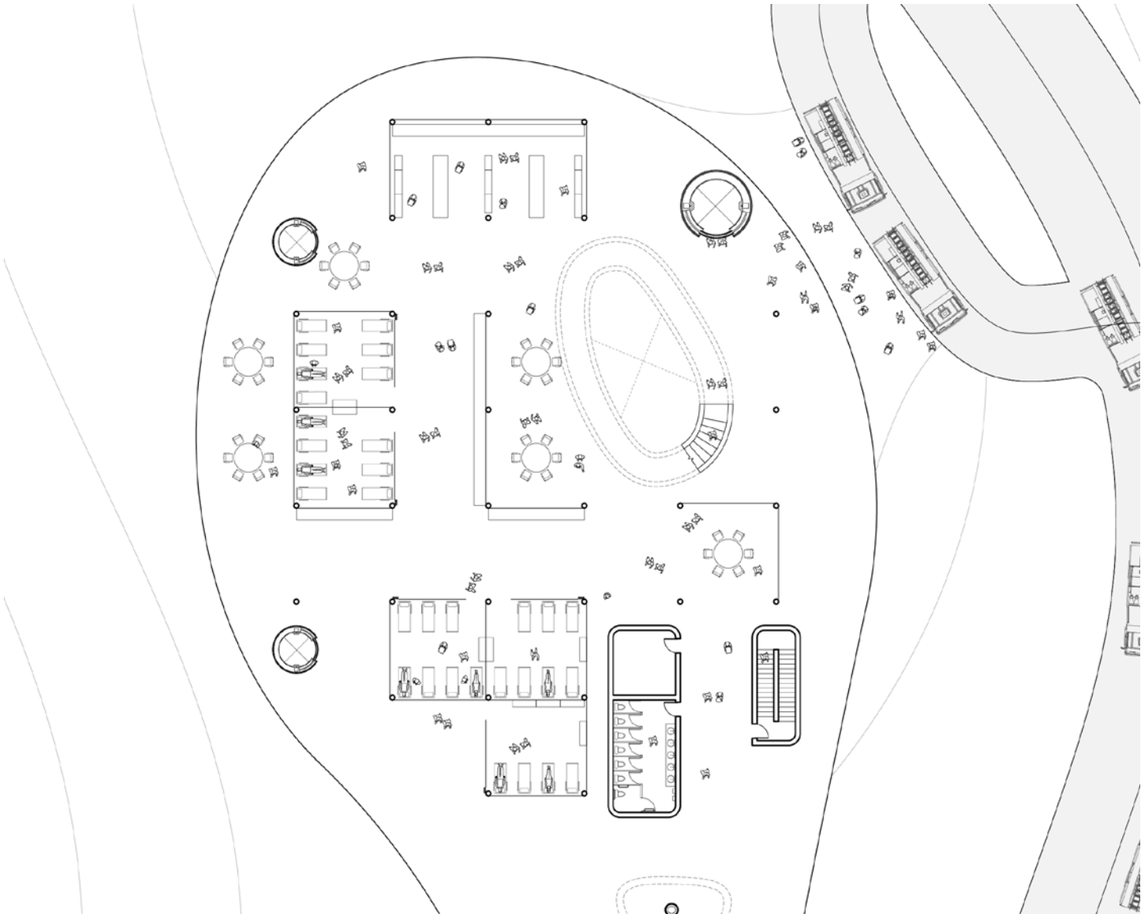
INSTITUTE OFFICE

Below the library & cafe floor is the institute office floor, where open workspace, closed work rooms and meeting rooms are available for on site researchers to work in. The facade ripples around the floor, creating pinches by interior spaces, and helps to divide up balcony spaces.



GROUND FLOOR: EXHIBITION SPACE

On the ground floor of the institute node is the exhibition space. This space could act in tangent or separate from the primary exhibition space from the auditorium node. Around the columns are accordion walls that could unfold and create temporary spaces or enclosed gallery rooms when necessary.



GROUND FLOOR: EMERGENCY CARE FACILITY

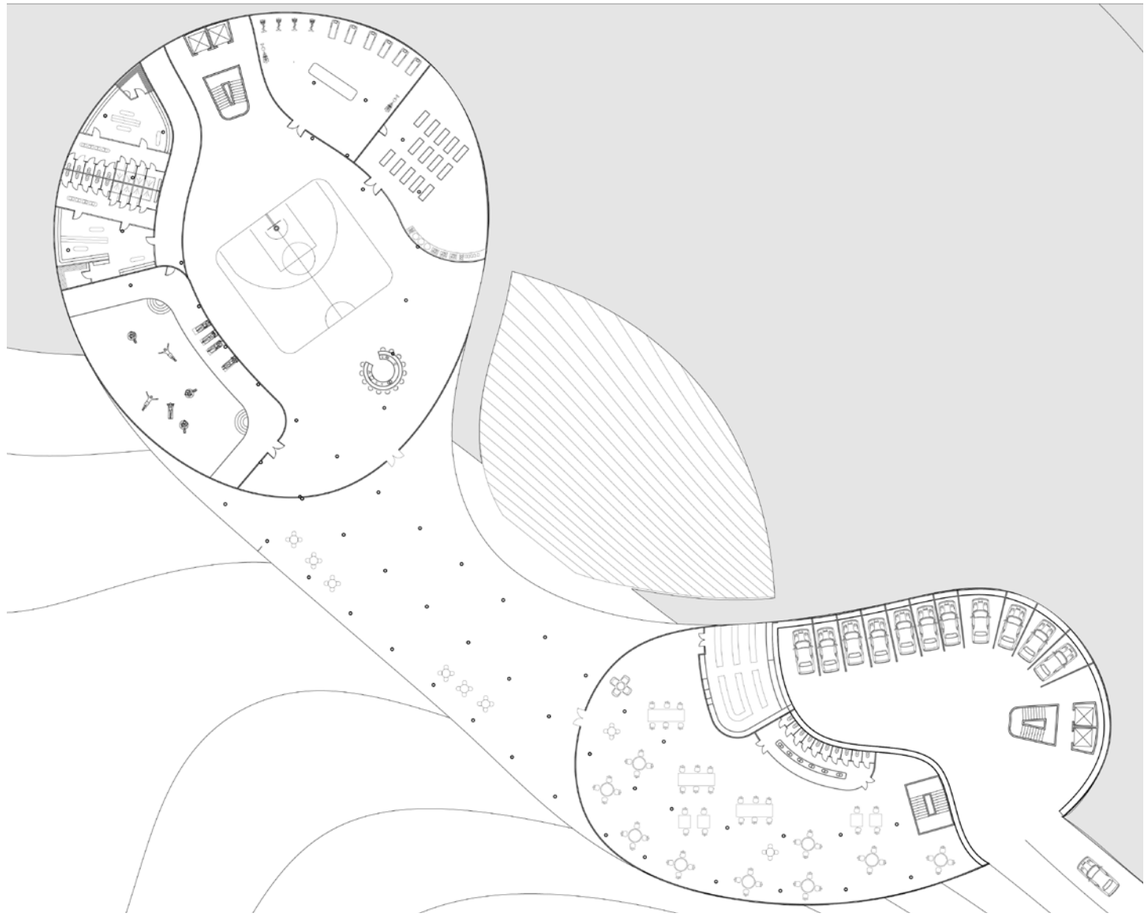
During an emergency state, this exhibition floor can be transformed into an emergency care facility. With a close access to the road, it allows for the injured or civilians to be unloaded easily. The aforementioned accordion walls could also duo as partitions that create temporary rooms for the injured.

GROUND FLOOR: EXHIBITION SPACE

GROUND FLOOR: EMERGENCY CARE FACILITY

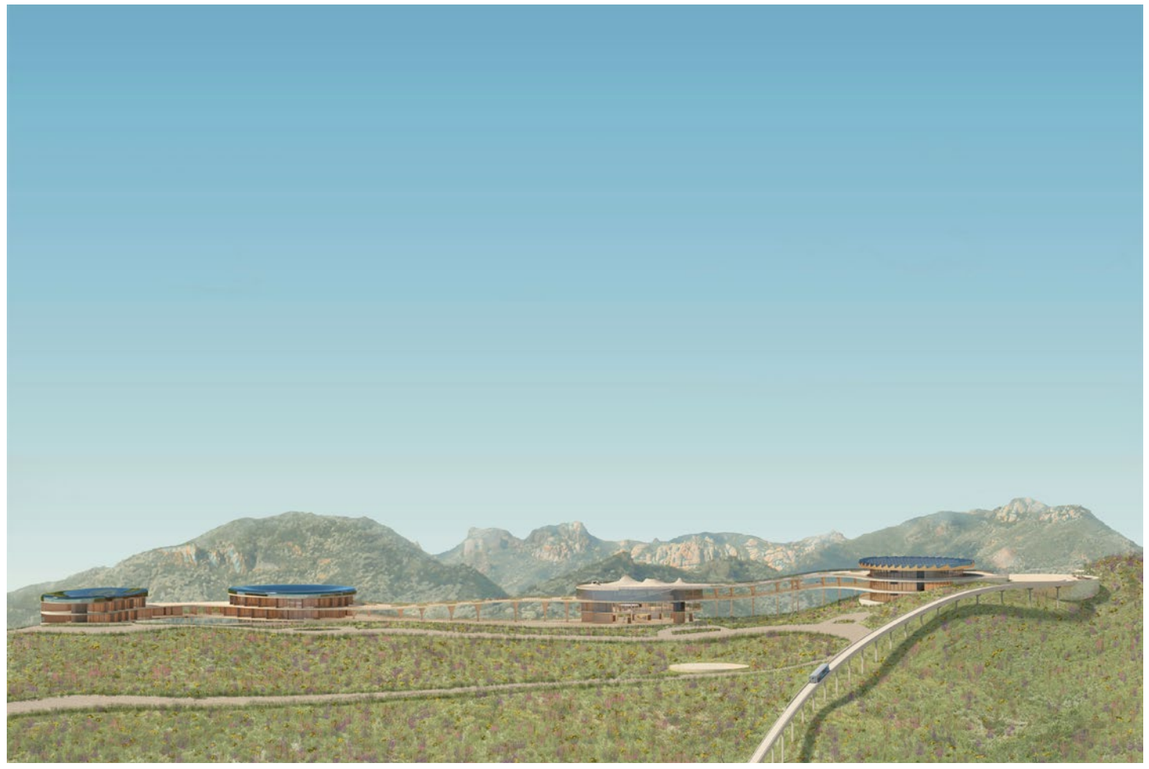
HOUSING UNITS

The housing units provided at the institute are for both permanent and temporary researchers. The units are paired with working spaces in tangent, and during emergency, these working spaces can transform to accommodate people that need it.



AMENITIES & RESTAURANT

Under the housing units are the amenities, restaurant and parking for the residents. The site is car-less site usually, and only allow for certain residents to own a vehicle. All other visitors must travel to the site by tram. The restaurant would duo function as a cafeteria for residents during a time of emergency.



STATUS: NORMAL

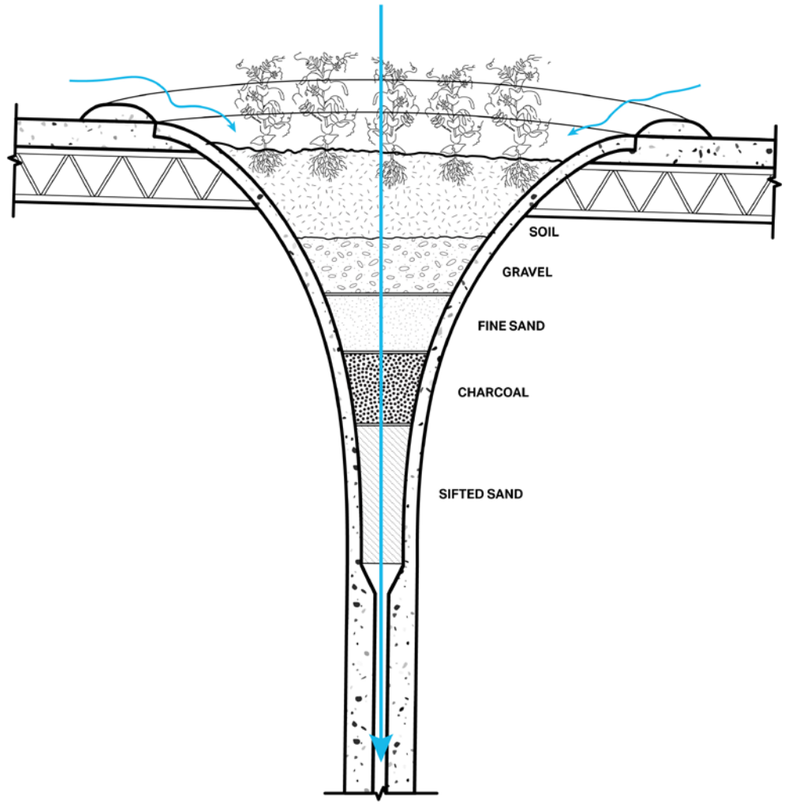
STATUS: EMERGENCY

PHYSICAL SECTION MODEL

STATUS: NORMAL

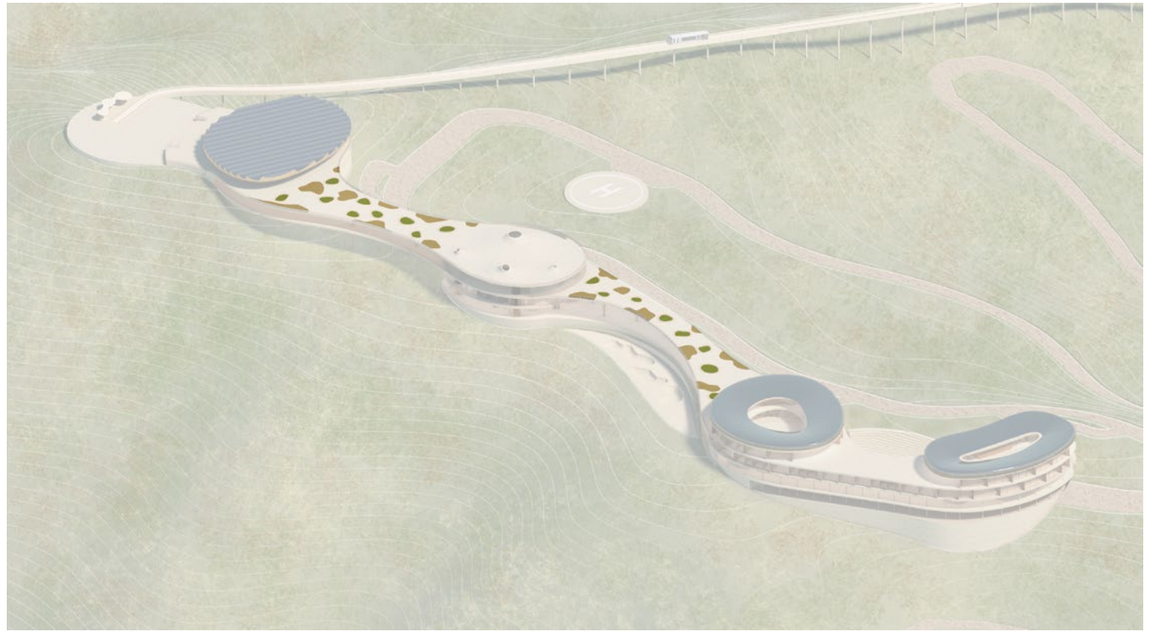
STATUS: EMERGENCY

CONSTRUCTION OF SUSTAINABLE STRATEGIES

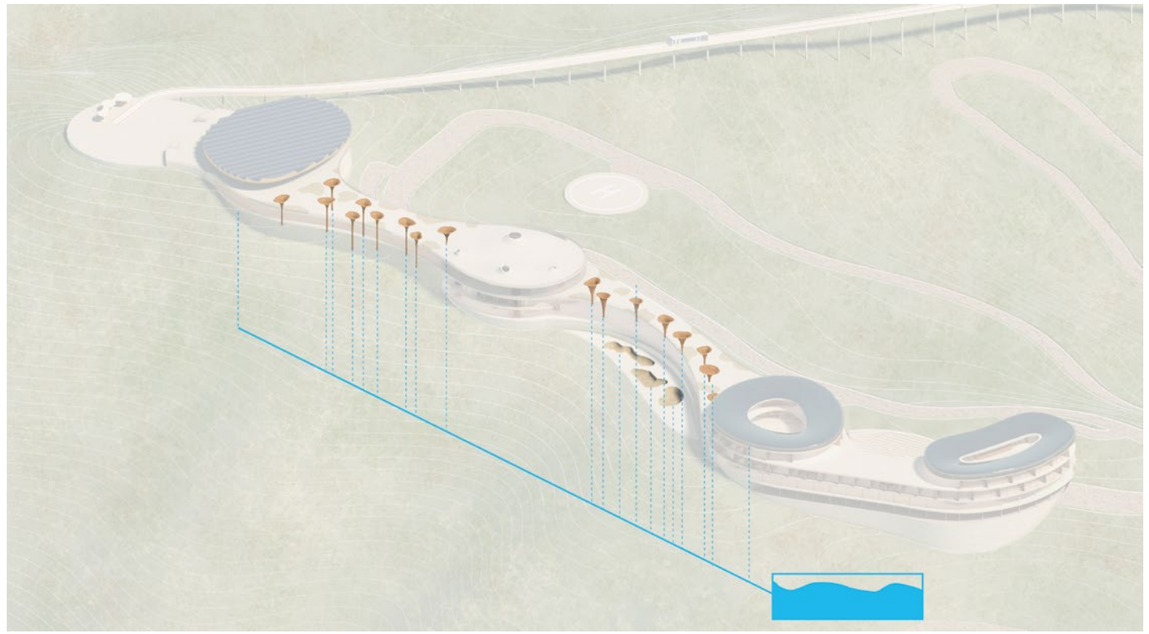


PLANTER COLUMN DETAIL

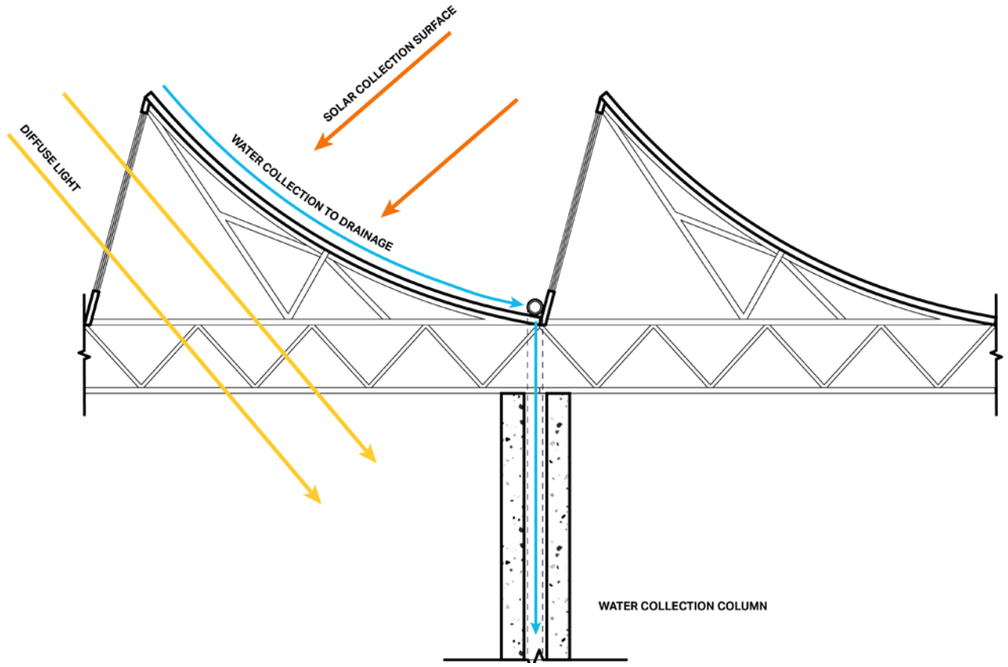
These planter columns are populated along the bridge that connects the nodes. Their primary use is for harvesting efficient food sources, such as spinach or green peas, but it also collects excess water during rain, as water is a scarce resource in California. All the water collected goes to a central water tank that is situated below the housing node. As for the roof garden, besides the planter columns, there are cactus gardens as well. Cactus gardens will be populated with edible cactus, and they are more efficient as they don't require as much water as regular farming, and therefore doesn't require partial thickening in structure, like the planter column.



STRATEGY: ROOF FARM & CACTUS GARDEN

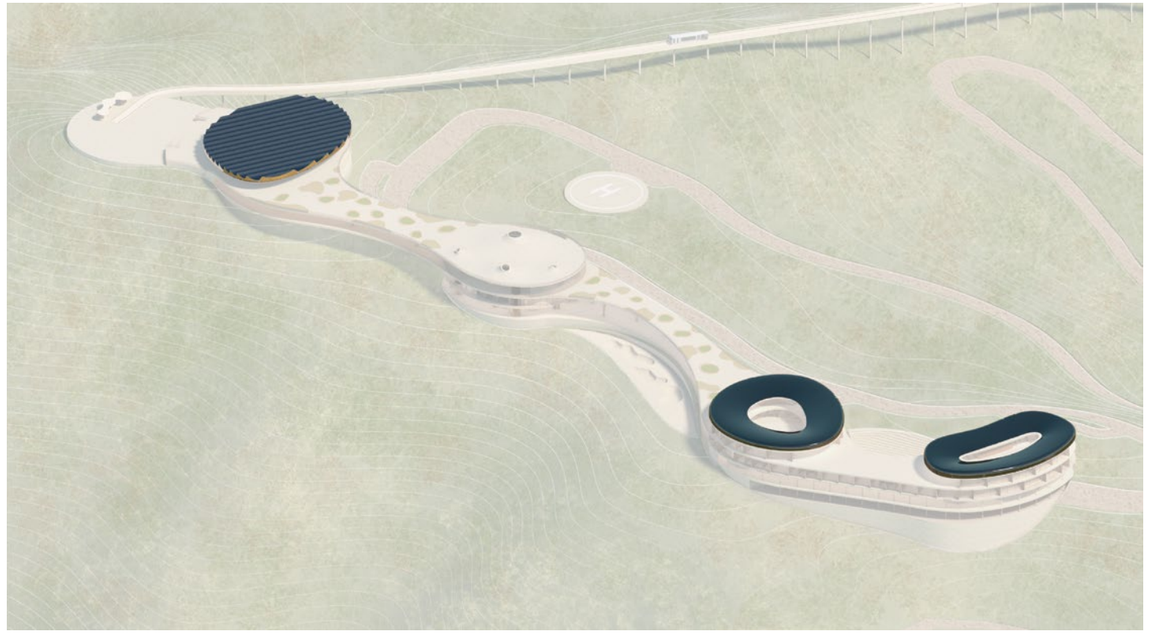


STRATEGY: WATER COLLECTION

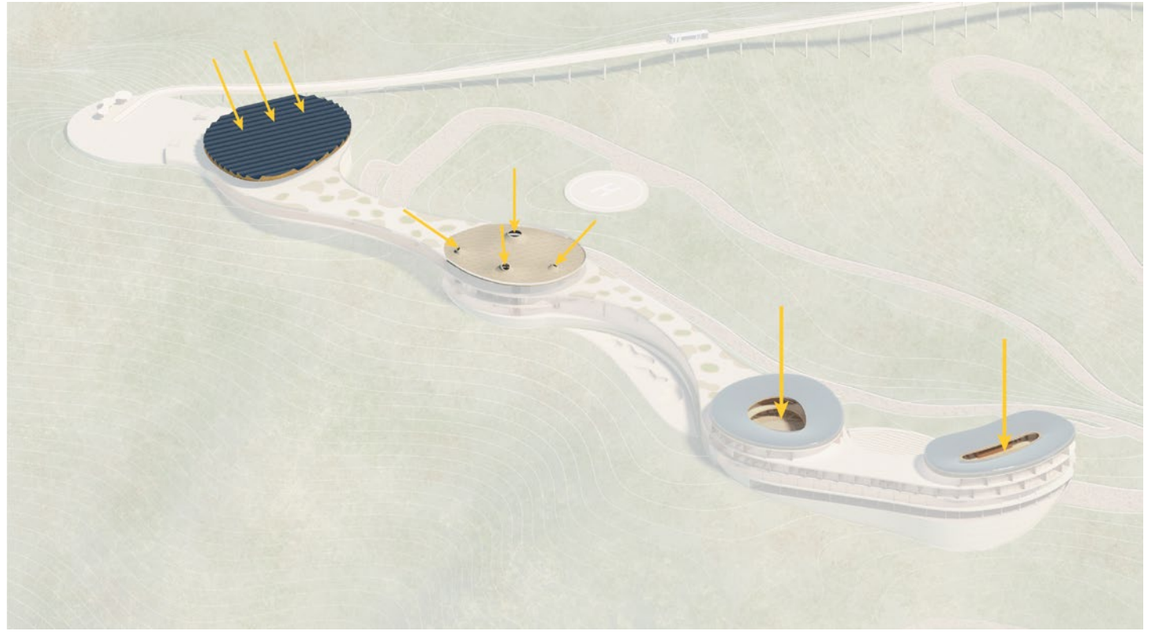


SOLAR SAWTOOTH ROOF DETAIL

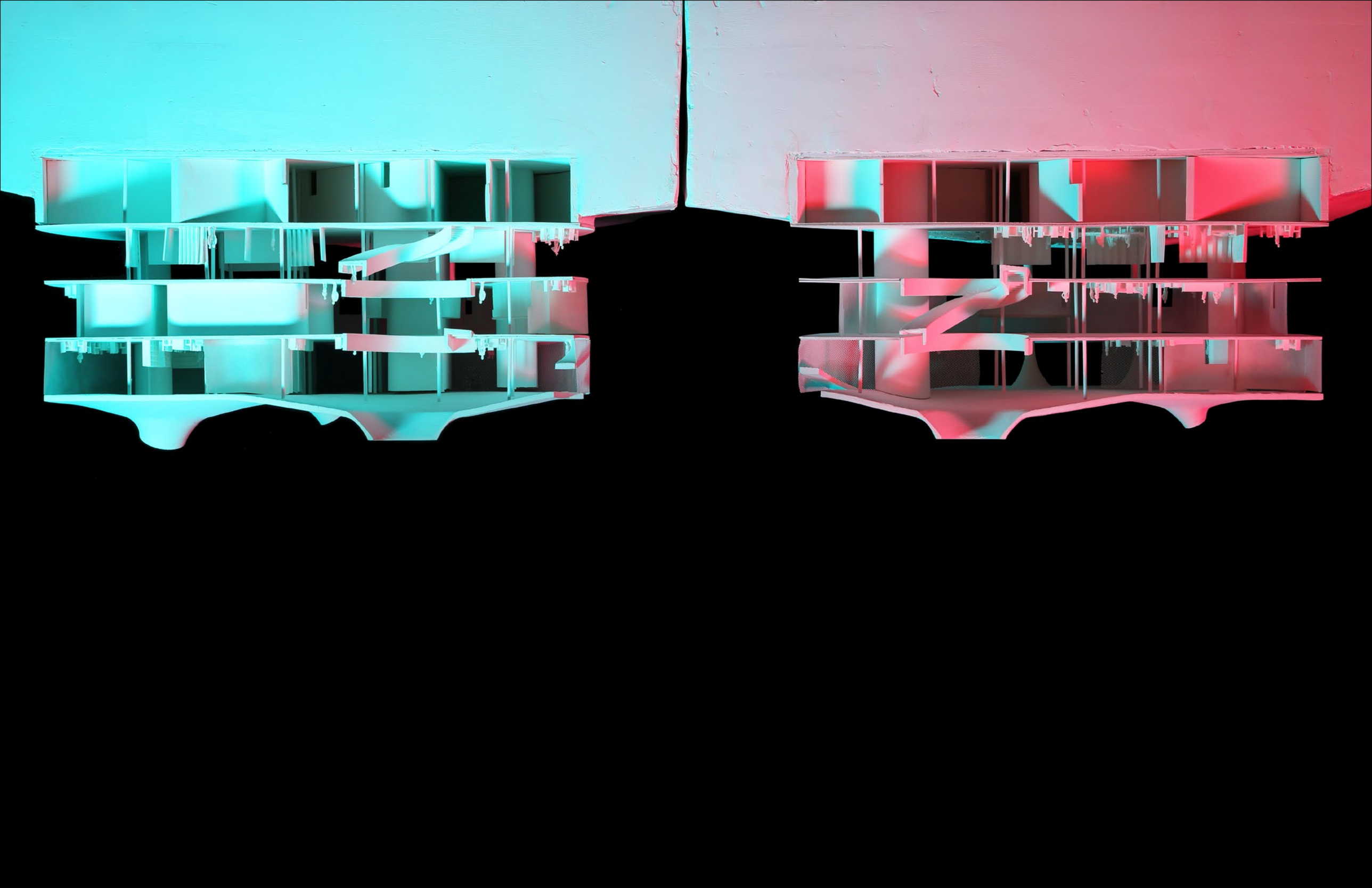
In order to achieve self sustainability, the building must be able to harvest energy from nature. Los Angeles has an abundance of sunlight, and solar harvesting would be most efficient. Once the panels are organized to be south facing, the northern side is enclosed to be a skylight panel, creating a sawtooth pattern on the roof. And much like the planter column, the columns on the sawtooth roof would be water collecting columns as well, with a pipe embedded within the column construction.



STRATEGY: SOLAR ROOF



STRATEGY: SKYLIGHT

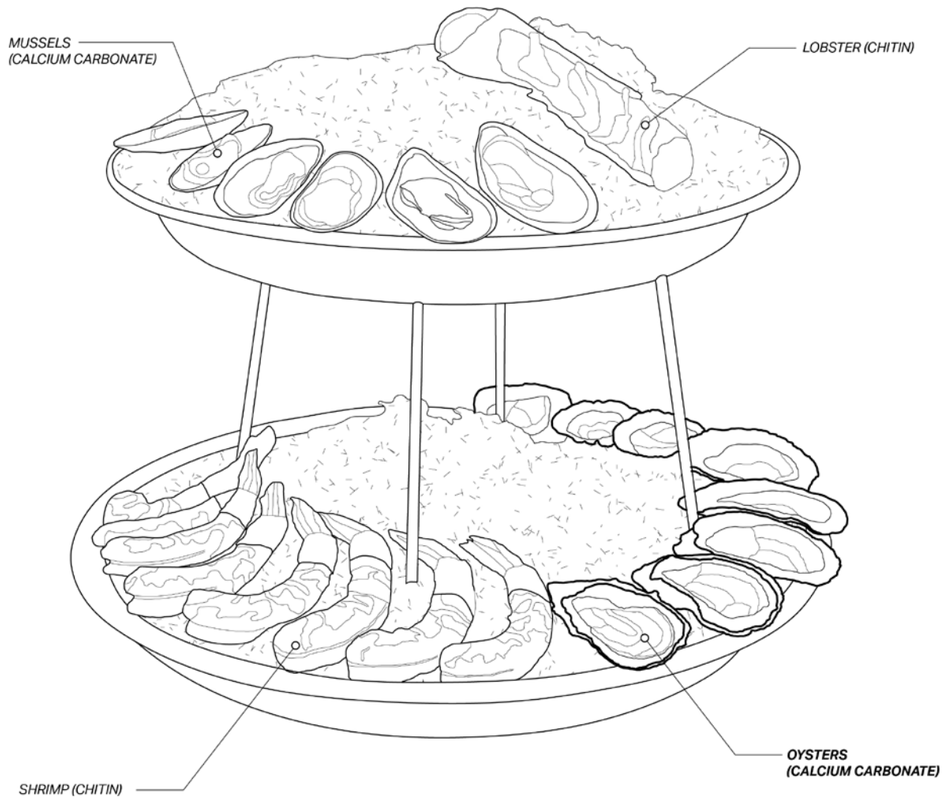


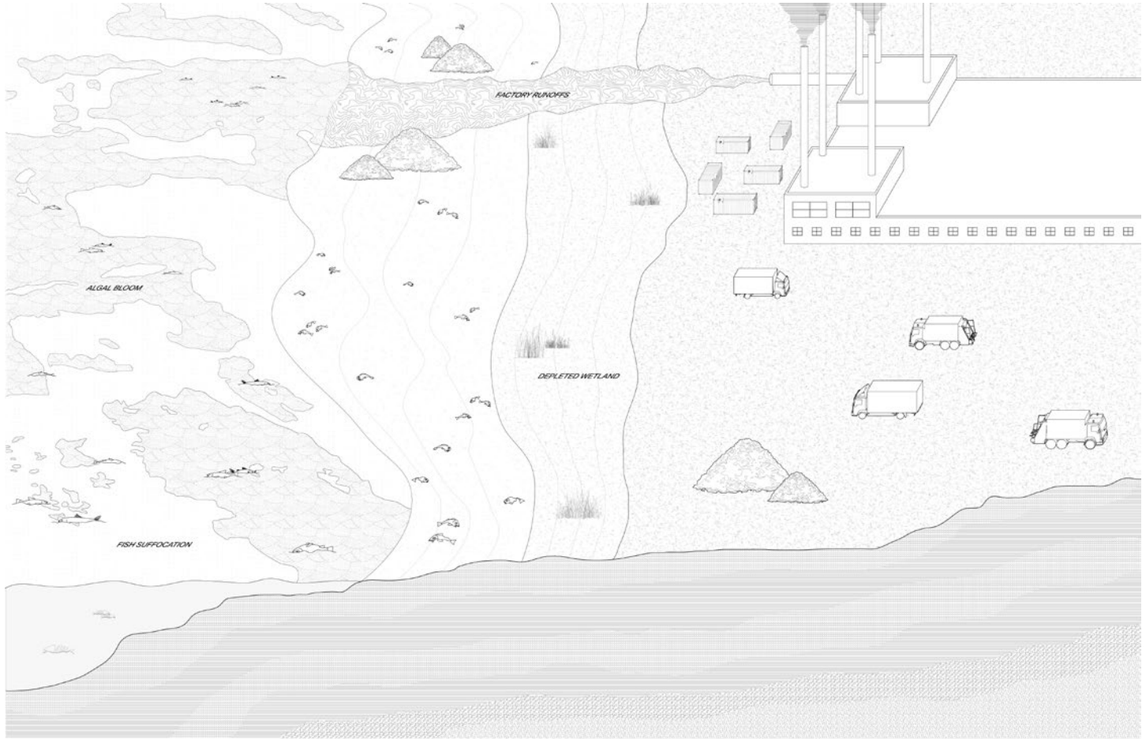
RESET: OYSTERIA

DAVID BENJAMIN

As climate change worsens, we must seek solutions not only to reduce emissions, but also to sequester carbon and mitigate effects of global warming. Oysteria proposes a phased implementation of oyster cultivation and reef restoration in Jamaica Bay, New York. As the city was once known as the oyster capital of the world, this project aims to reinstate the oyster's status as a sustainable food source for the city, exploit its water filtration and breakwater capabilities, and reuse shell waste as an element to create new biocomposite construction materials. The project comprises of two proposals: a phasing plan of integrating oyster farming and oyster reef restoration in Jamaica Bay to foster coastal communities and to create local economies, and a building that facilitates the integration of the phasing plan. The phasing plan organizes oyster farming/ restoration in two ways through tidal zones within the wetland. The intertidal zones (dedicated to oyster reef restoration) and subtidal zones (dedicated to offshore oyster farming). The proposed building entails the Harbor School; a public high school that centers its curriculum around water; where an educational outpost would inhabit the primary building. The secondary building was designed for public engagement and leisure, where an oyster bar named "Oysteria" is oriented towards the scenic views of the Jamaica Bay wetlands. Oysteria aims to be the first of many oyster farming/ restoration phasing plans that could be implemented around the world. Other countries can emulate the restoration and production approach as a way of carbon sequestration to combat climate change and foster coastal communities.

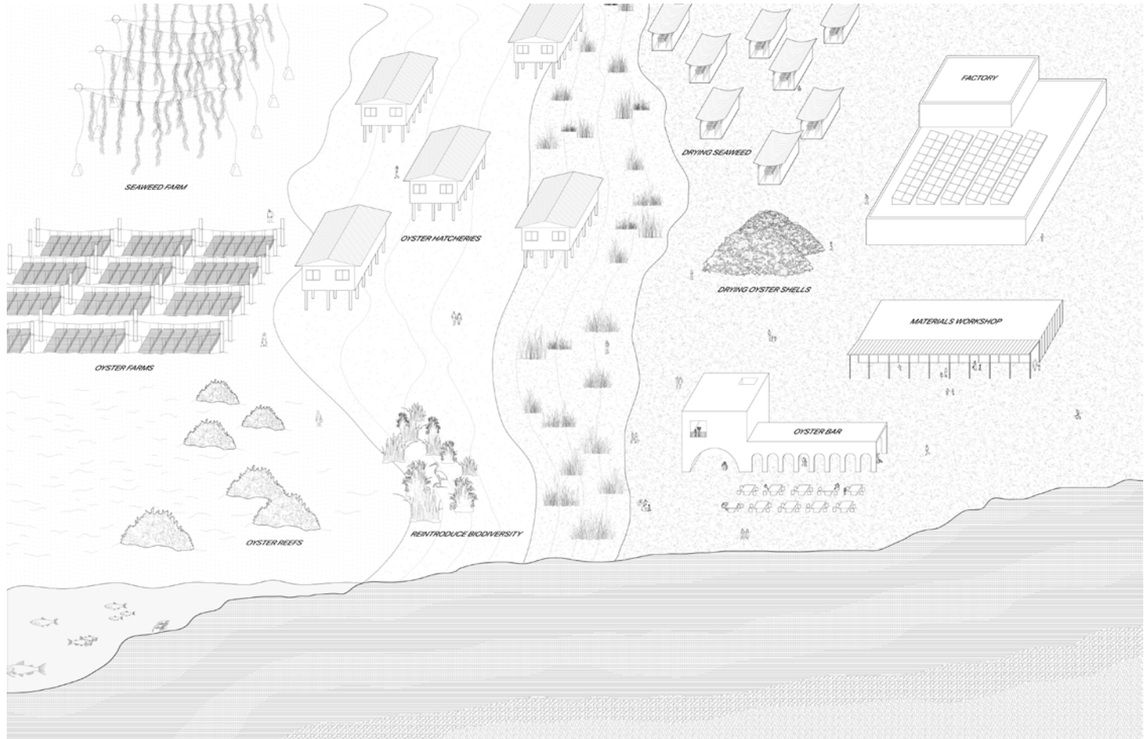
SEAFOOD TOWER





PRESENT STATE OF ESTUARIES

Currently, estuaries suffer from algal bloom and other pollutions due to toxic factory runoffs and combined sewage overflows, which causes fish suffocation and depleted wetlands. In order to repair the estuaries and wetlands around the coast, we must lessen the role of polluting factories and CSO outlets.



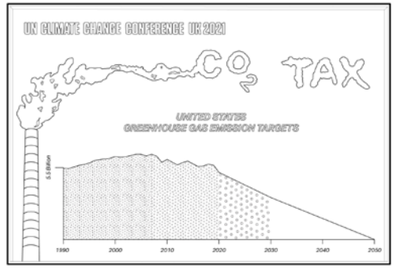
FUTURE ESTUARIES WITH OYSTERS

With the reintroduction of oyster reefs in the area, water will begin to purify, and biodiversity would return. Oyster farms, hatcheries and seaweed farms could then be introduced into the system. With the seaweed harvested, alginate and seaweed fiber would be extracted from it for the creation of the oyster biocomposite in combination with oyster shells. These materials could be used to build oyster bars and educational workshops along the coastline, to provide leisure and to educate the public about biocomposite materials.

COP 26 CONFERENCE IN GLASGOW...

CARBON TAX & CREDIT

The implementation of carbon tax and credit systems in construction and other industries across the world will incentivize industries to find alternatives to current practices, in order to maximize monetary gain. To reach the United States target of reducing 50% of emissions by 2030, and net-zero by 2050, the country must seek alternatives to contemporary construction materials, as the construction industry contributes to more than 38% of global emissions annually.



UNITED NATIONS

COP 26

UNITED STATES REPRESENTATIVE

OTHER WORLD LEADERS

AFTER THE CONFERENCE...

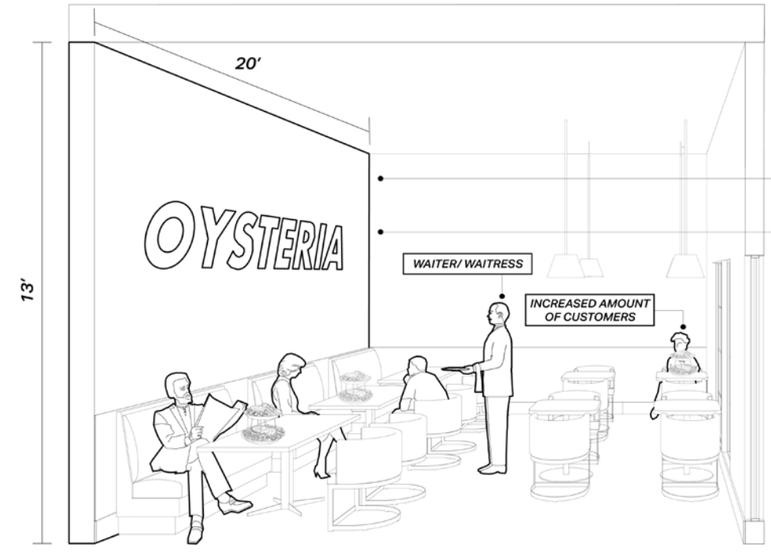
RESTAURANT MENU

CLIMATE SPECIALIST/ POLICY MAKER

BIOCOMPOSITES

Observing what we consume daily, there are a plethra of hidden opportunities surrounding us. This seafood tower plate contains mussels, oysters, shrimps and crab legs. The wastes that remain are the shells of the sea animals, which are rich in calcium carbonate and chitin, making them viable materials for biocomposite materials.

NEW OYSTER BAR OPENING...



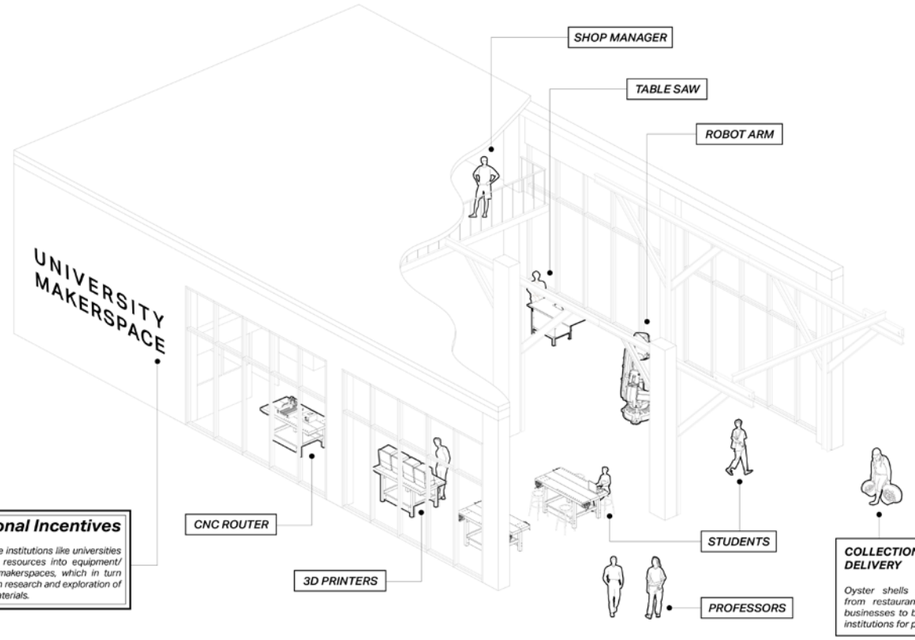
NEW OYSTER BAR?

With the demand of oyster shells ever increasing, the expansion of coastal oyster communities continue to thrive, as they provide a healthy combination between positive externalities and economic benefits.

VOLUME PER BRICK: 25.92 IN³
BRICKS NEEDED: 1891
OYSTER SHELLS (KG) (70%): 562.24 KG
OYSTERS NEEDED ≈ 8050

RECYCLE BIN DEDICATED TO OYSTER SHELLS

1 YEAR AFTER COP 26...



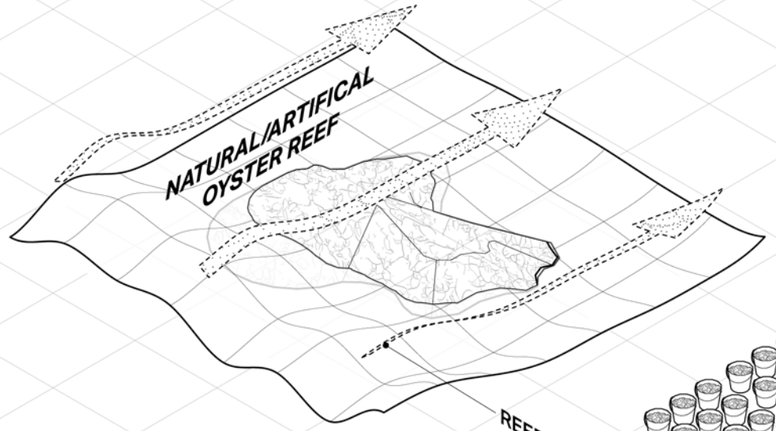
Institutional Incentives

Incentives enable institutions like universities to devote more resources into equipment/ technology for makerspaces, which in turn assist students in research and exploration of biocomposite materials.

COLLECTION & DELIVERY

Oyster shells are collected from restaurants and other businesses to be delivered to institutions for prototyping.

FACTS & INCENTIVE POLICIES



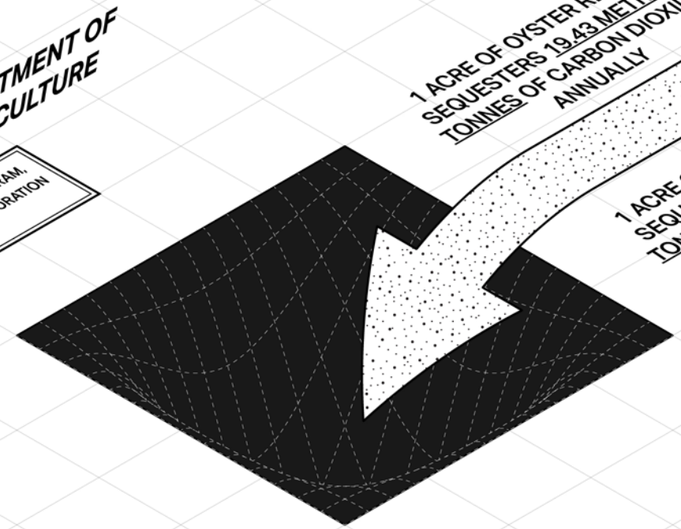
REEFS ACT AS BREAKWATERS AND PREVENTS COASTAL EROSION

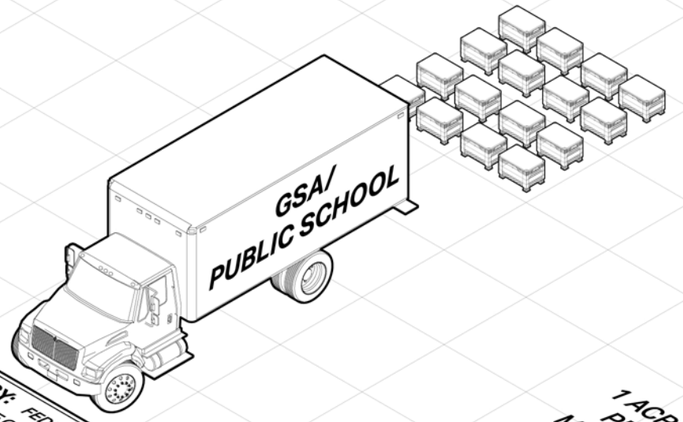
AN ADULT OYSTER IS CAPABLE OF FILTERING UP TO 50 GALLONS OF WATER PER DAY

OYSTER

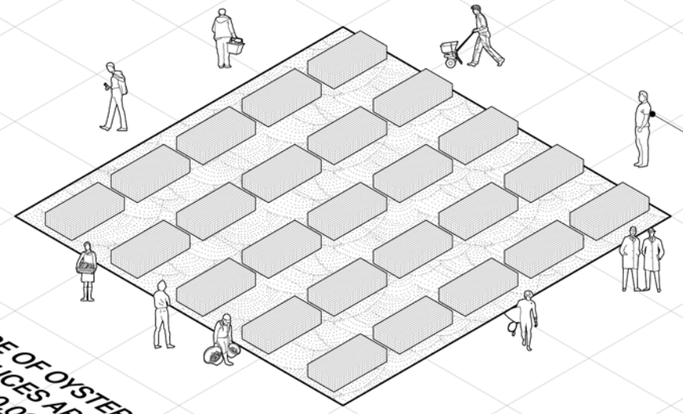
DEPARTMENT OF AGRICULTURE

POLICY: GOVERNMENT BUY BACK PROGRAM. UNSOLD OYSTERS CAN BE USED FOR RESTORATION OR PRODUCTION OF BIOCOMPOSITES



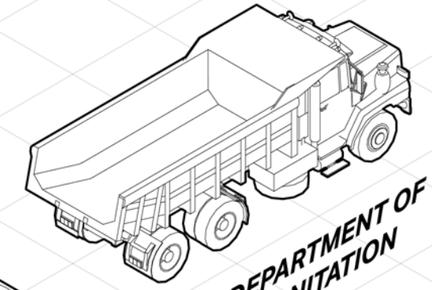


POLICY: FEDERAL FACILITIES TO REQUIRE CAFETERIA VENDORS TO PROVIDE OYSTERS AS PART OF FOOD OPTIONS. ALSO INCLUDE THE OYSTER REQUIREMENT AS PART OF THE SCHOOL LUNCH PROGRAMS

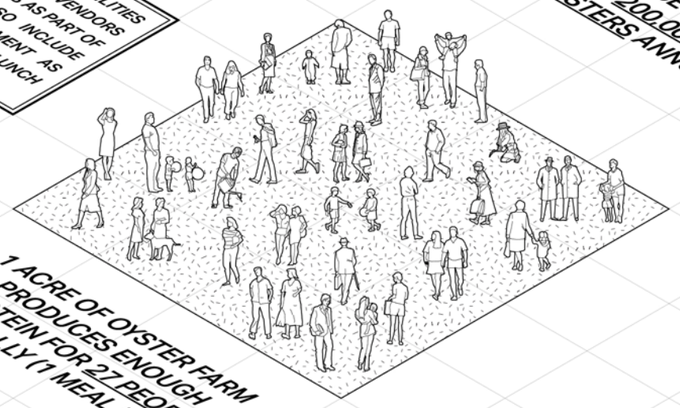


1 ACRE OF OYSTER FARM PRODUCES APPROXIMATELY 200,000 - 300,000 OYSTERS ANNUALLY

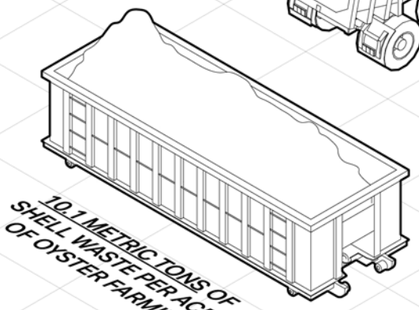
10 JOBS ARE PRODUCED PER ACRE OF OYSTER FARM



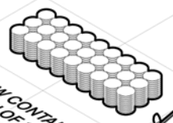
DEPARTMENT OF SANITATION



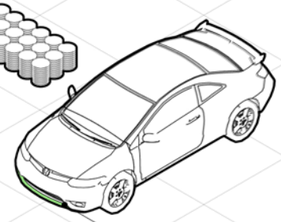
1 ACRE OF OYSTER FARM PRODUCES ENOUGH PROTEIN FOR 27 PEOPLE ANNUALLY (1 MEAL DAILY)



10.1 METRIC TONS OF SHELL WASTE PER ACRE OF OYSTER FARMING

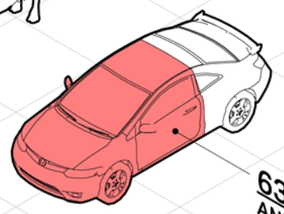


1 COW CONTAINS PROTEIN OF 11,000 OYSTERS (918 DOZENS)



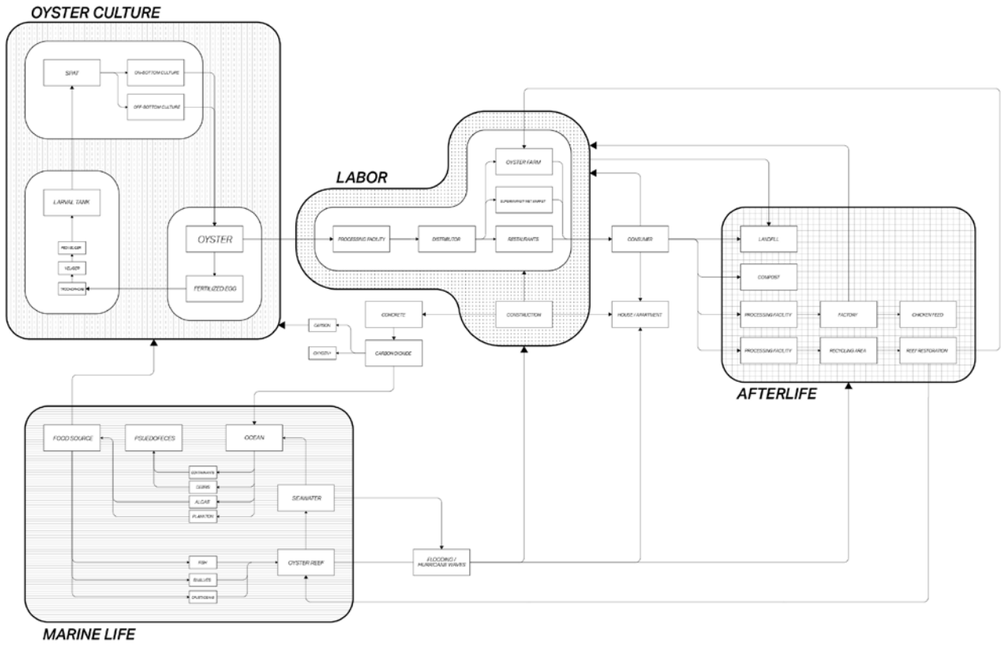
-1% OF A CAR'S ANNUAL GHG EMISSIONS

THERE IS 998.050G OF PROTEIN PER COW



63% OF A CAR'S ANNUAL GHG EMISSIONS

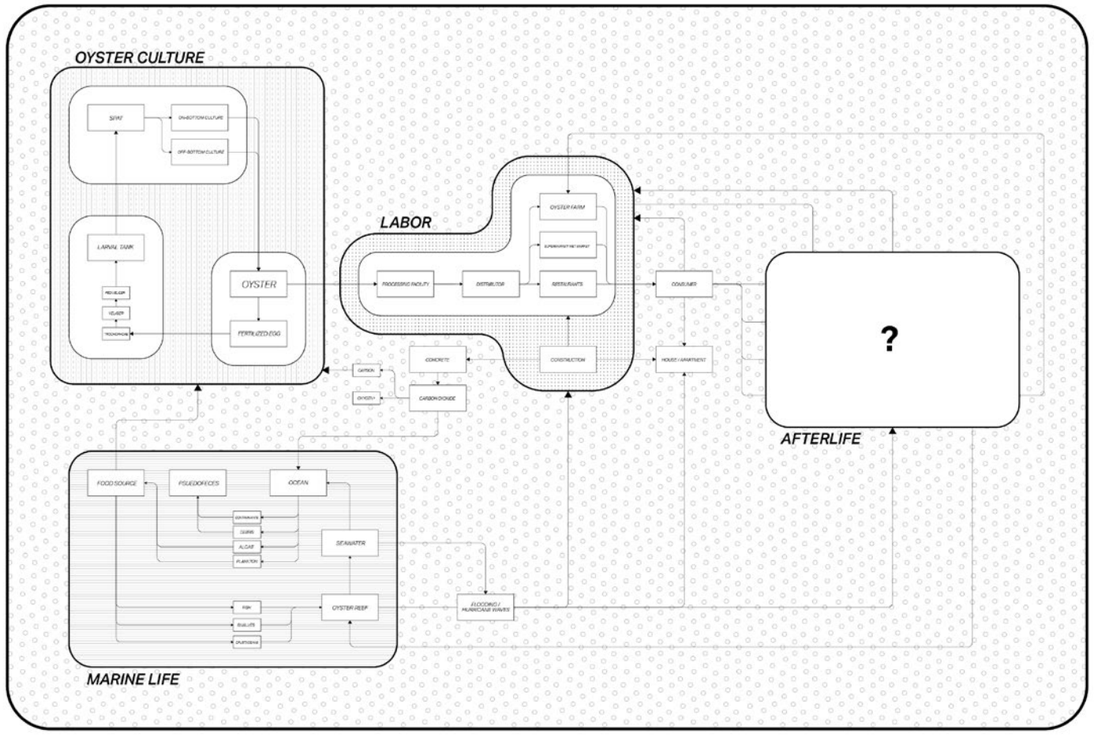
POLICY: SET UP CITY WIDE OYSTER SHELL COLLECTION SYSTEM. DISTRIBUTE RECYCLING BINS TO RESTAURANTS AND OTHER VENDORS



CURRENT INFRASTRUCTURE OF OYSTER FARMING

Studying the different areas/sectors involved in the current life cycle of an oyster and its shell, including the relationship between the oyster and labor market, marine life and afterlife use etc.

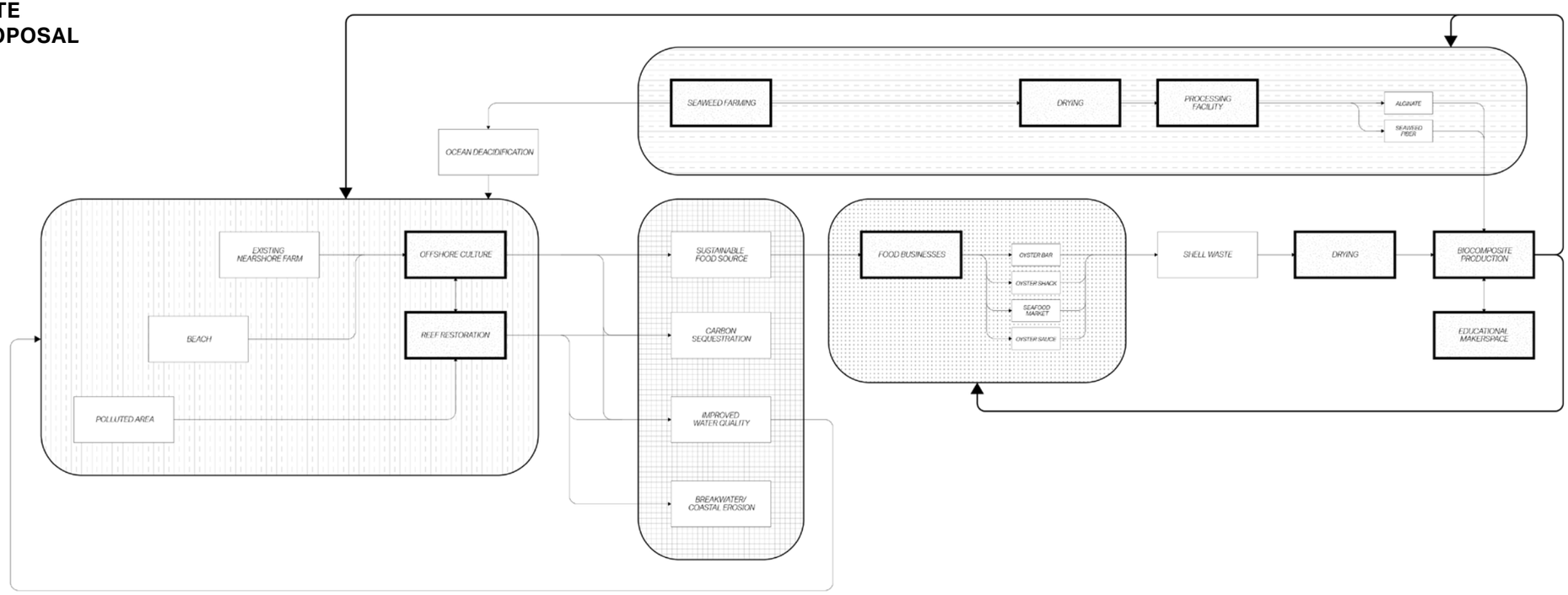
CONSOLIDATION

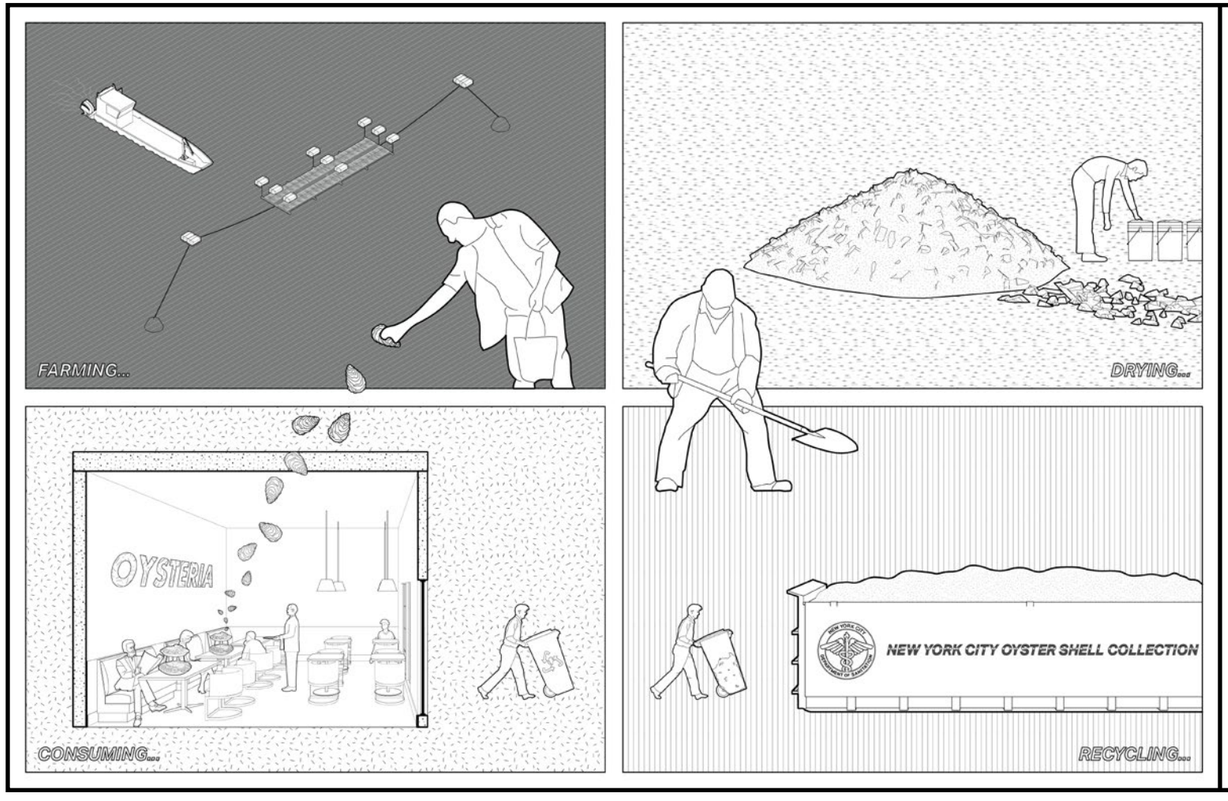


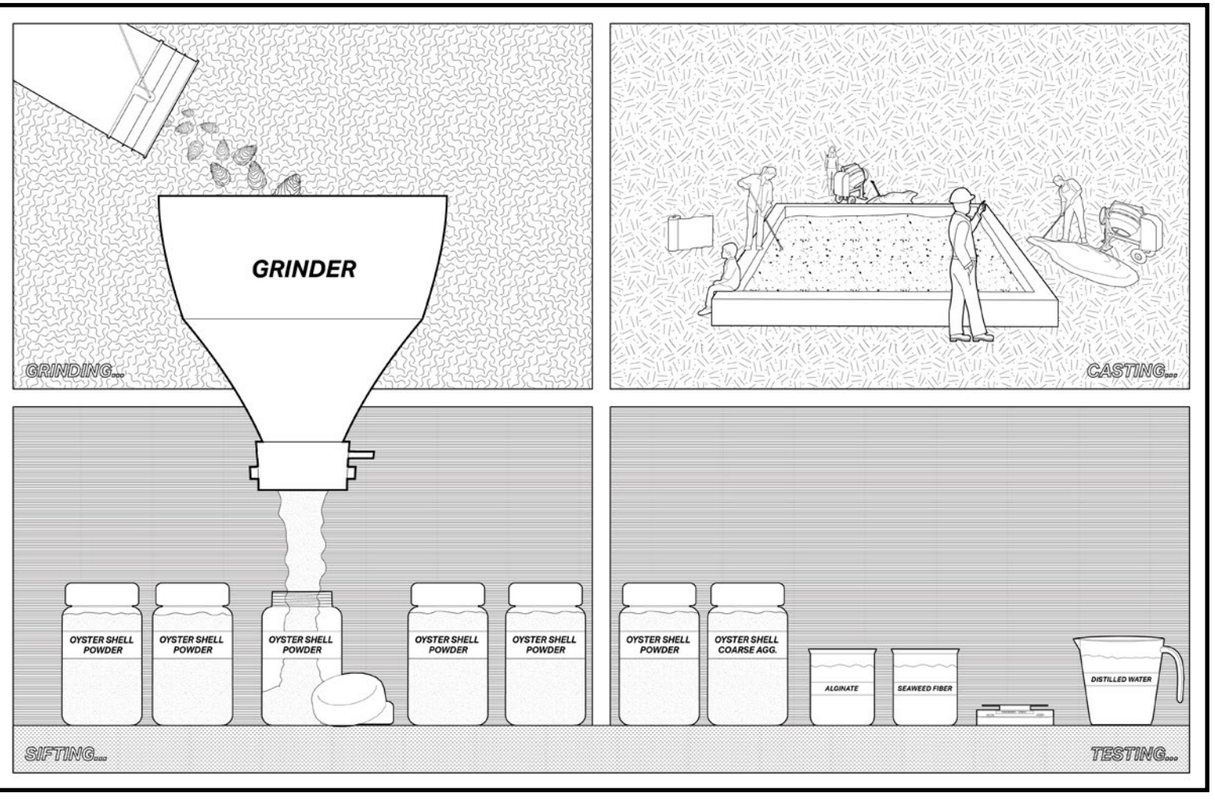
CONSOLIDATION OF INFRASTRUCTURE

The consolidation of the oyster farming/ restoration infrastructure allows for more carbon sequestration and biocomposite production, and it also widens the effect of government incentives and policies as the sectors are all intertwined.

OYSTER BIOCOMPOSITE INFRASTRUCTURE PROPOSAL



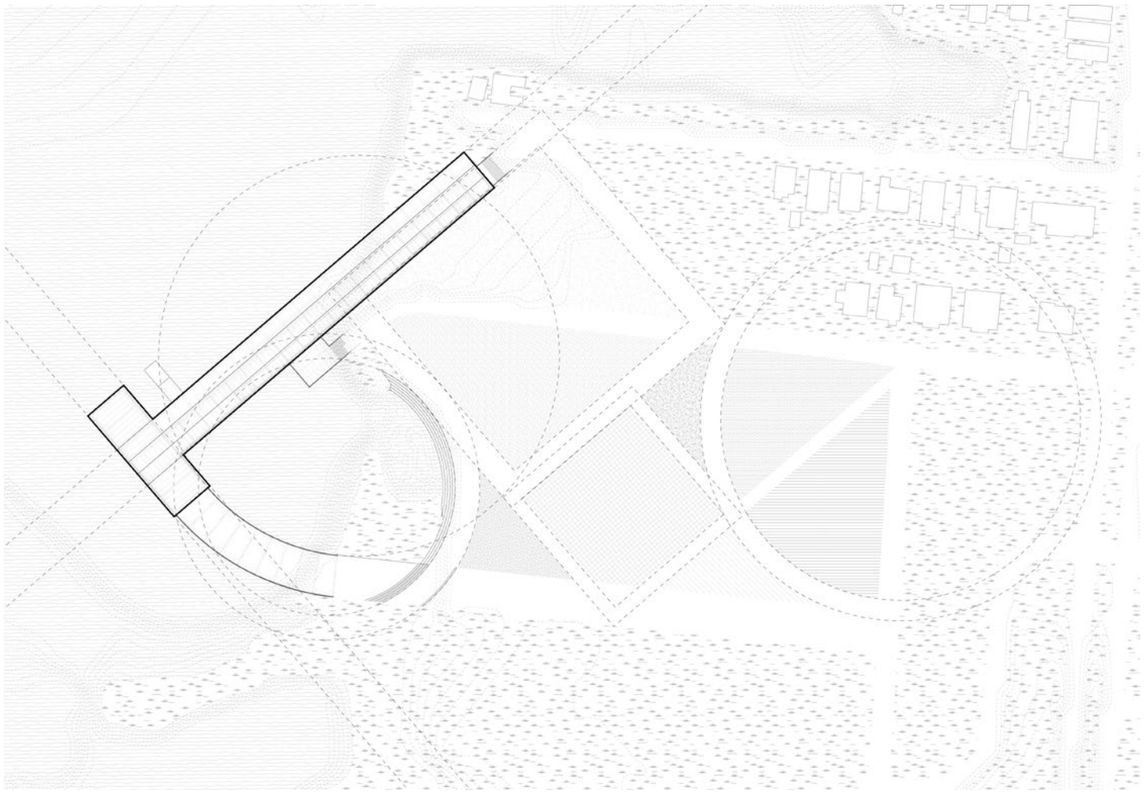


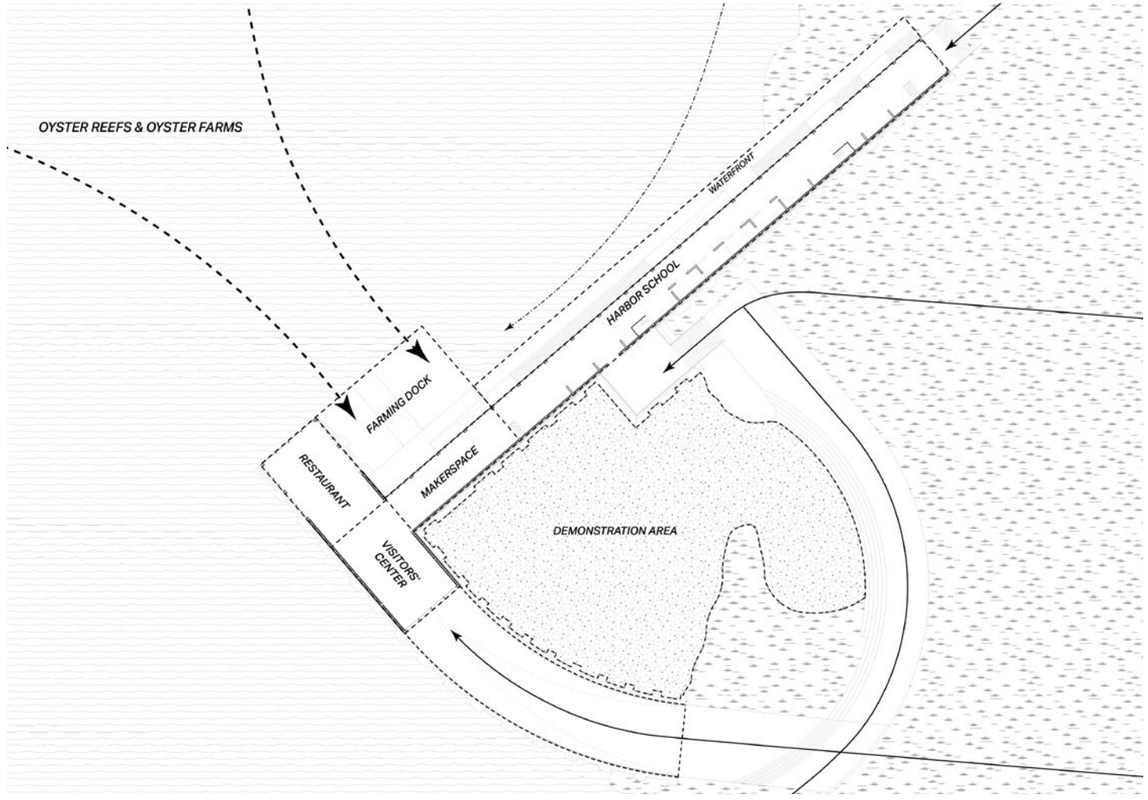


PROPOSED MASTERPLAN
FOR JAMAICA BAY, NY

- *PROPOSAL*
- *BIOCOMPOSITE FACTORY*
- *UPLAND*
- *PALUSTRINE*
- *INTERTIDAL*
- *SUBTIDAL*
- *TRUCK ROUTES*
- *DOCKS*
- *HARBOR NAVIGATION CHANNELS*
- *BEACHES*
- *PARKS*
- *SCHOOLS*
- *INDUSTRIAL ZONES*

FUTURE RESTORATION AND FARMING OF OYSTERS IN JAMAICA BAY





SITE PLAN

The proposed masterplan of oyster farming/ restoration situates in Jamaica Bay, NY, where oyster reefs are heavily polluted currently by CSO outlets. The proposed building will be placed on the existing Sunset Cove Park along the southern end of Broad Channel, along the shoreline.

PROGRAM PLAN

The building is designed as two bars, with the long bar planned for the Harbor School; a public high school that dedicates its curriculum to water; to be used as an educational center outside of their main campus. The other bar is designed for public engagement and leisure, the visitors' center is placed so that visitors must be first informed before enjoying their meal at the oyster bar or using the makerspace, which will be cohabited with the harbor school for community collaborations.

SECTION PERSPECTIVE
FARM DOCK & RESTAURANT

LABOR OF THE FUTURE

THE CIVILIAN CLIMATE CORP WILL PROVIDE LABOR IN EFFORTS OF REEF RESTORATION AND WILL WORK WITH VOLUNTEERS FROM NEARBY COMMUNITIES.

FEDERAL FOOD VENDORS

BY REQUIRING FOOD VENDORS TO PROVIDE OYSTERS AS PART THEIR MENU, THE GOVERNMENT JUMP STARTS THE DEMAND FOR OYSTERS.

WATER CAREER

HARBOR SCHOOL'S SPECIFIC WATER CIRRICULUM INVOKE INTERESTS IN FIELDS RELATED TO WATER, POTENTIALLY LABOR FOR THE CIVILIAN CLIMATE CORP.

GREEN INCENTIVES

SUSTAINABLE MANUFACTURING INITIATIVES ARE PROPOSED IN THE PAST AND ARE EFFECTIVE IN ENCOURAGING THE GROWTH OF NEW GREEN SECTORS.

SHELL COLLECTION

THE CITY WIDE PROGRAM WILL NORMALIZE THE PRACTICE OF COLLECTNG AND RECYCLING OYSTER SHELLS, MUCH LIKE OTHER RECYCLABLES.

AQUACULTURAL JOBS

WITH OYSTER FARMS AT FULL CAPACITY IN JAMAICA BAY, THE FARMS CAN PROVIDE UP TO 2,350 JOBS ANNUALLY.

EARLY EDUCATION

ALLOW FOR EARLY LEARNING OPPORTUNITIES THROUGH FIELD TRIPS AND WORKSHOPS IN COLLABORATION WITH THE HARBOR SCHOOL

$1.2 TRILLION INFRASTRUCTURE BILL

COST OF JAMAICA BAY'S COMPLETE OYSTER RESTORATION

CARBON SEQUESTRATION

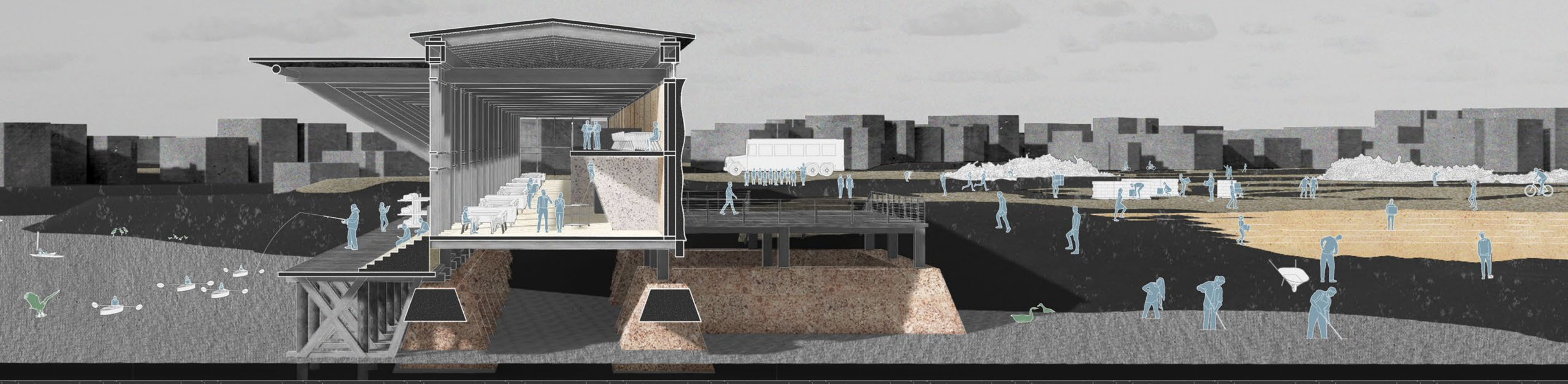
JAMAICA BAY CAN SEQUESTER UP TO 180,000 METRIC TONNES OF CARBON, WHICH EQUATES TO REMOVING 39,000 CARS ANNUALLY.

NITROGEN REMOVAL

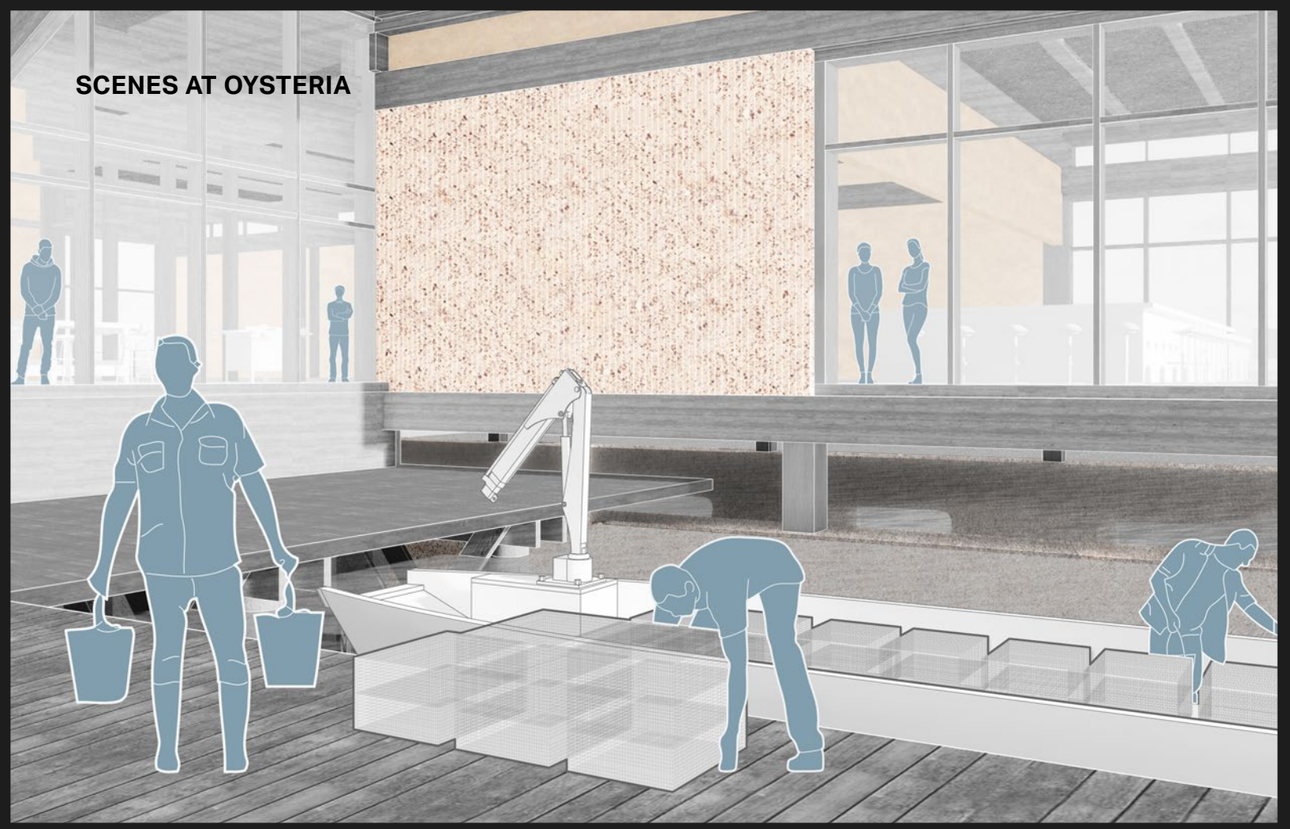
THROUGH BIOEXTRACTION, JAMAICA BAY OYSTERS CAN REMOVE 200,000 METRIC TONNES OF ALGAE ANNUALLY, TO HELP FIGHT ALGAL BLOOMS.

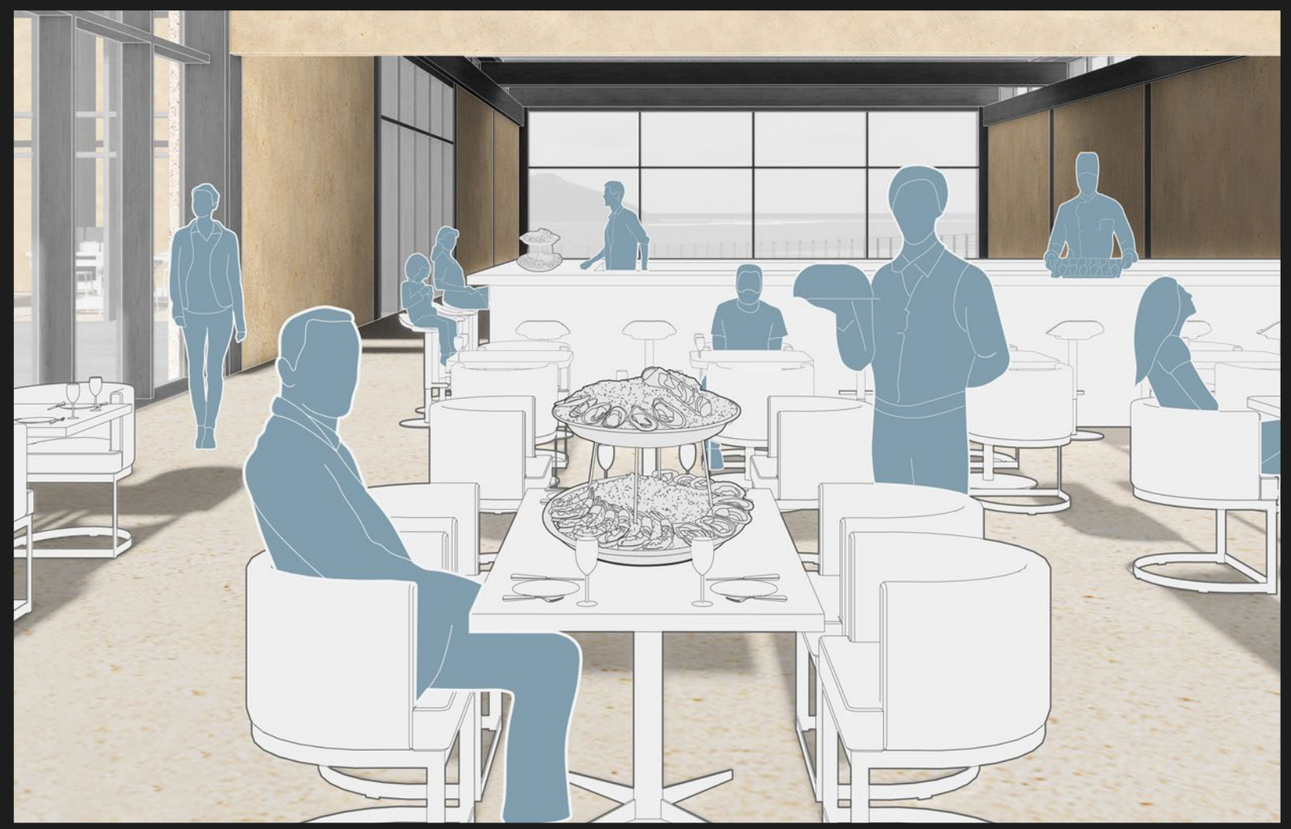
WATER FILTRATION

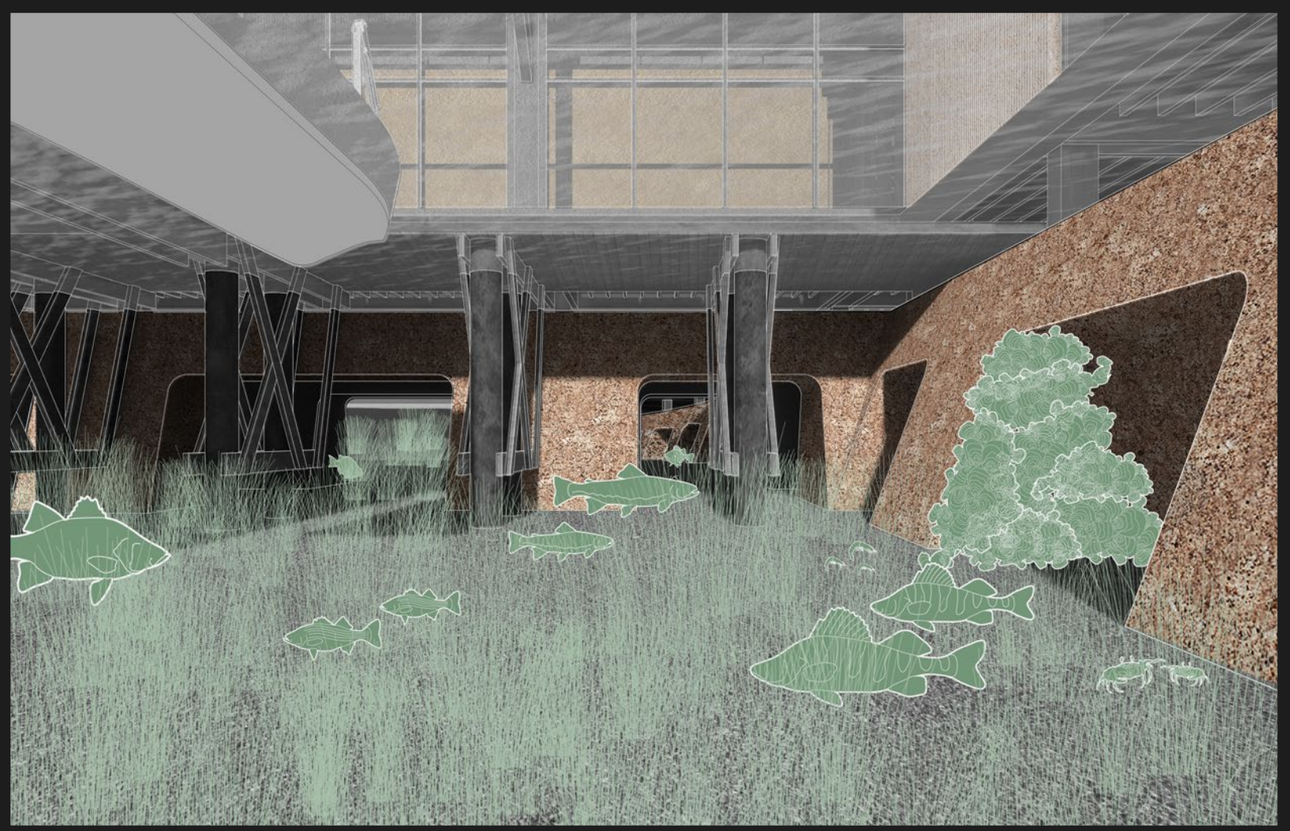
THE 36 BILLION OYSTERS THAT LIVE IN JAMAICA BAY CAN FILTER 716 TRILLION GALLONS OF WATER ANNUALLY, WHICH IS 3000 TIMES ITS OWN VOLUME.

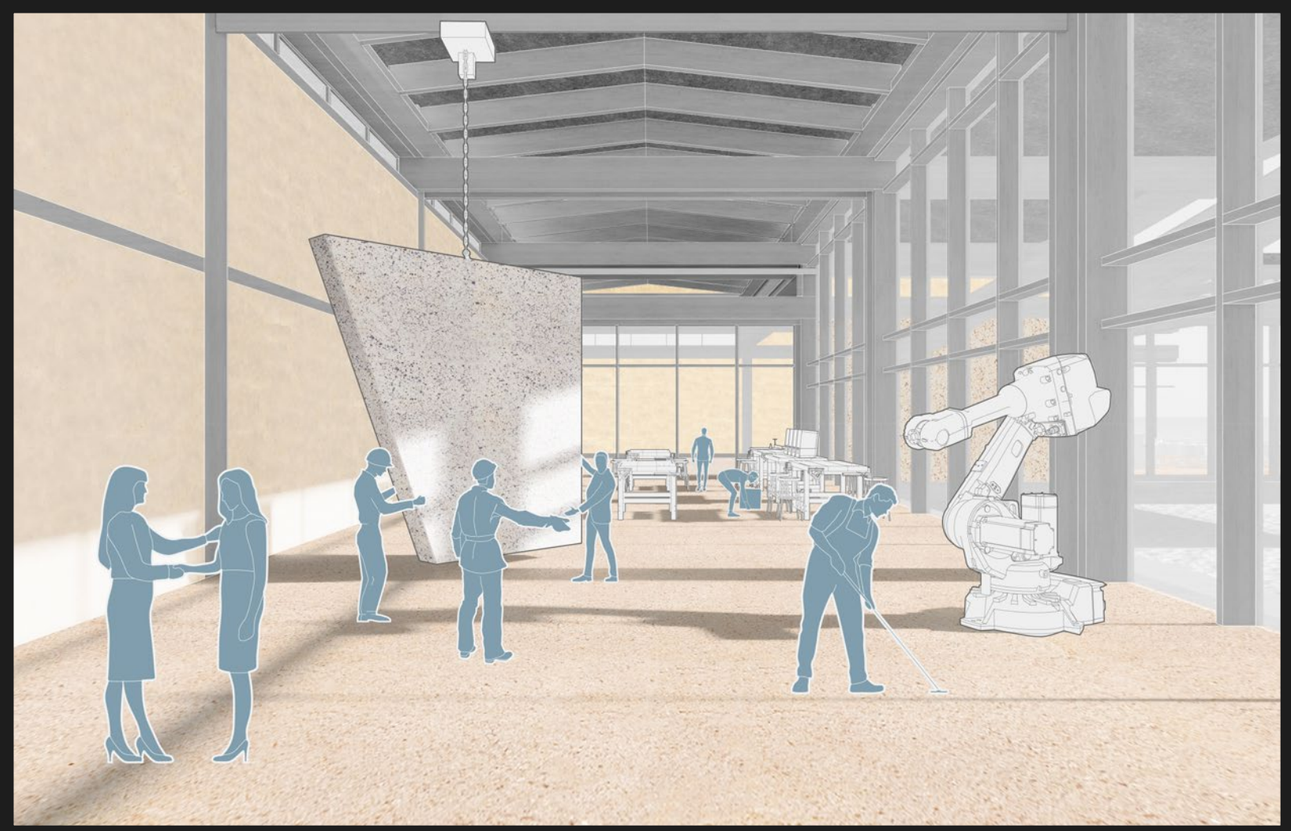


SCENES AT OYSTERIA

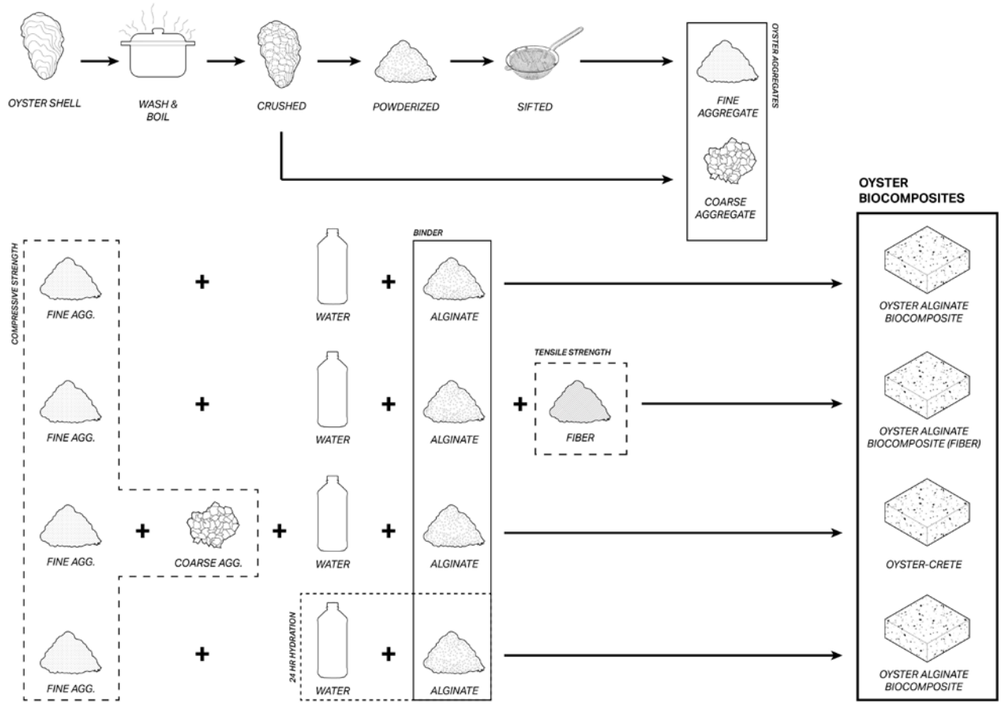








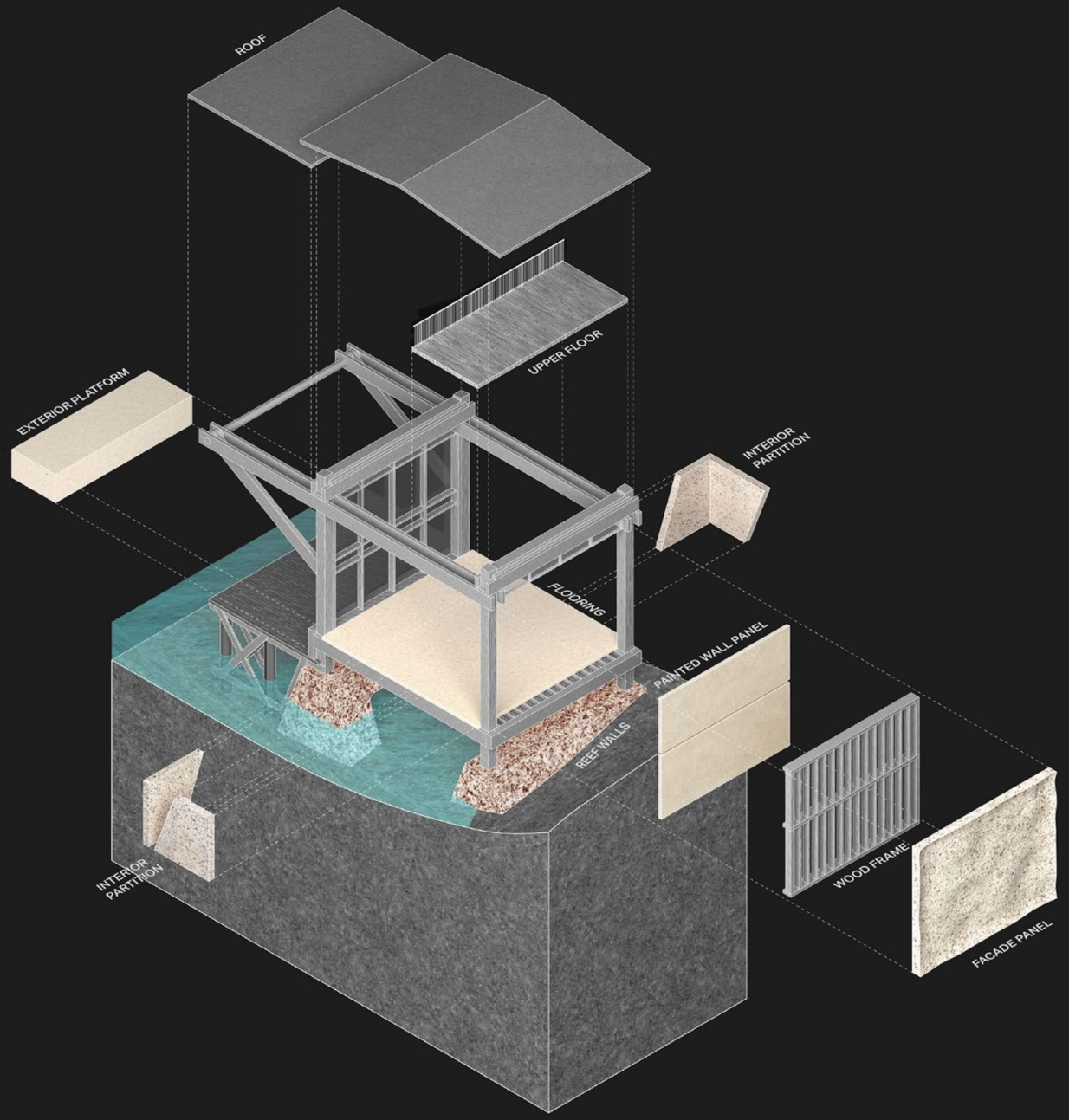
OYSTER BIOCOMPOSITE
PHYSICAL STUDIES



PROCESS OF BIOCOMPOSITE MAKING

After consuming the oyster, the shells are boiled and crushed to form fine and coarse aggregates. And by using the basic formula of binder + water + fine aggregate, and at times coarse aggregate and fiber as well, biocomposite prototypes were produced for studies.

OYSTER BIOCOMPOSITE
PHYSICAL STUDIES



ABOLISHING & REBUILDING

PRUITT IGOE: EMBODIMENT OF SYSTEMIC RACISM

“THE ARCHITECTURAL ELEMENTS THAT WERE ONCE USED TO CONSTRUCT THIS HAVEN WERE NOW USED TO DETER THE AUTHORITY THAT CONSTRUCTED IT. ”

Pruitt Igoe was a tool that facilitated systemic racism by embodying racial urban planning policies, stigmatizing media portrayal and . Designed by the Twin Tower architect Minoru Yamasaki, Pruitt Igoe was a public housing project that consisted of 33 modular apartment buildings in the north side of St. Louis, and it was originally portrayed as the modernist dream and solution to the slums in the city centre and growing population of St. Louis during the 1950’s. Though the project saw initial success after construction, the projects quickly decayed and were fully demolished by 1976.

System racism enacted through urban planning was a commonality in the 20th century of the United States, as policies like redlining existed long before Pruitt Igoe. The St. Louis housing authority was no different, it used public housing as a tool of segregation, as the initial plans for Pruitt Igoe were originally planned to be segregated. Although the project was desegregated after the Brown vs Board decision, the towers lost its white American residents rapidly, which accounted for most of the income source for the apartments.

Another racist urban movement that Pruitt Igoe helped facilitate was the creation of white suburbia. With industrial jobs leaving the city and the desire for homeownership post WWII, suburbia began to sprawl, and financial institutions assisted white Americans in this movement. Although financing a suburban home was cheaper than living in the city, the banks did not offer same treatment for African Americans when it came to home loans. The discouragement in homeownership for African Americans forced them to resort to renting the public housing and failing economy of the city, and Pruitt Igoe became the tool to embody and facilitate those racial policies in urban planning.

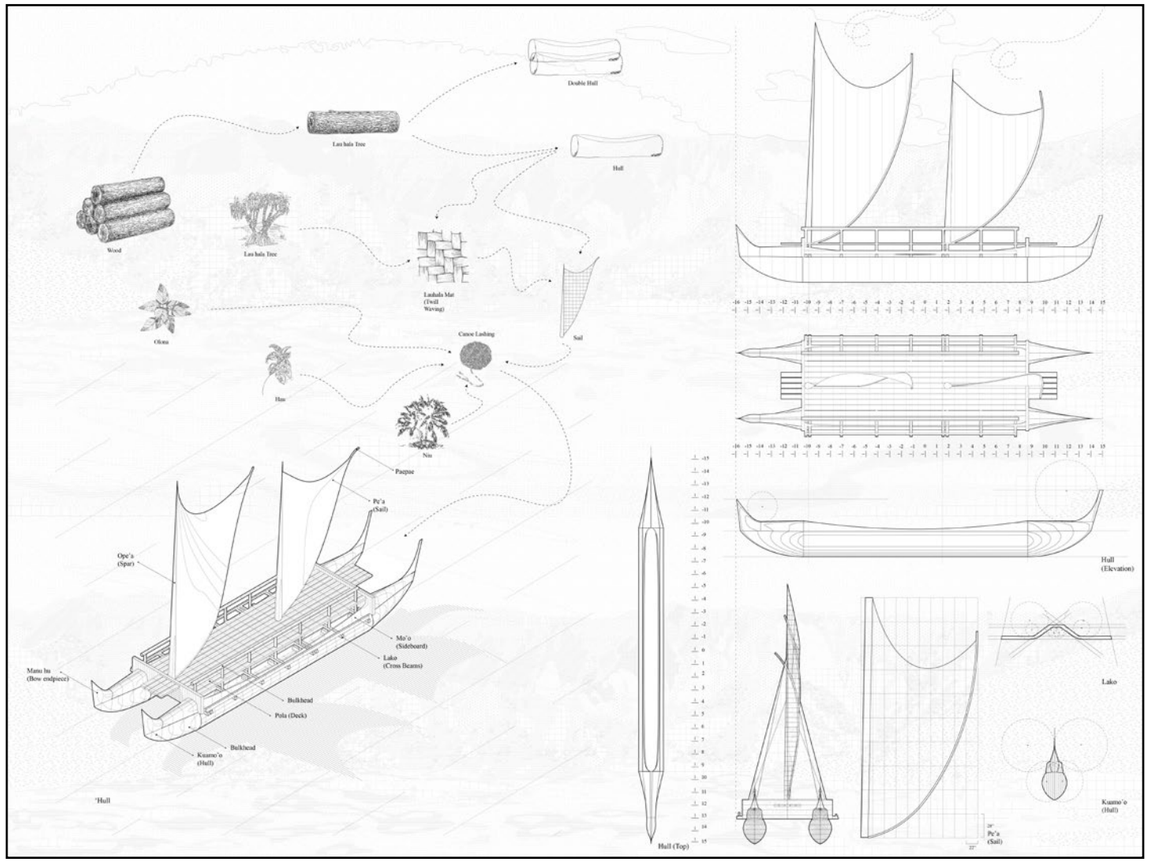
Although Pruitt Igoe fell into disrepair due to the lack of capital for maintenance, the portrayal of the apartments through media deepened generations of stigmatization of African Americans residing in public housing. Before the economic collapse of St. Louis, Pruitt Igoe was advertised as a modernist paradise with brand new playgrounds and unbeatable city views, and residents recall fond memories of smells of cooking and dancing down the corridors. But prior to the 2011 documentary “The Pruitt Igoe Myth”,positive accounts of Pruitt Igoe were virtually non-existent. The project was portrayed to be ran-down and criminal filled over the years, with the media describing the broken pipe, windows elevators etc. of the towers. This portrayal by the media painted Pruitt Igoe eerily similar to the slums that it was built to replace, and further “validated” policies like redlining, as African Americans were seen to devalue the properties that they resided in.

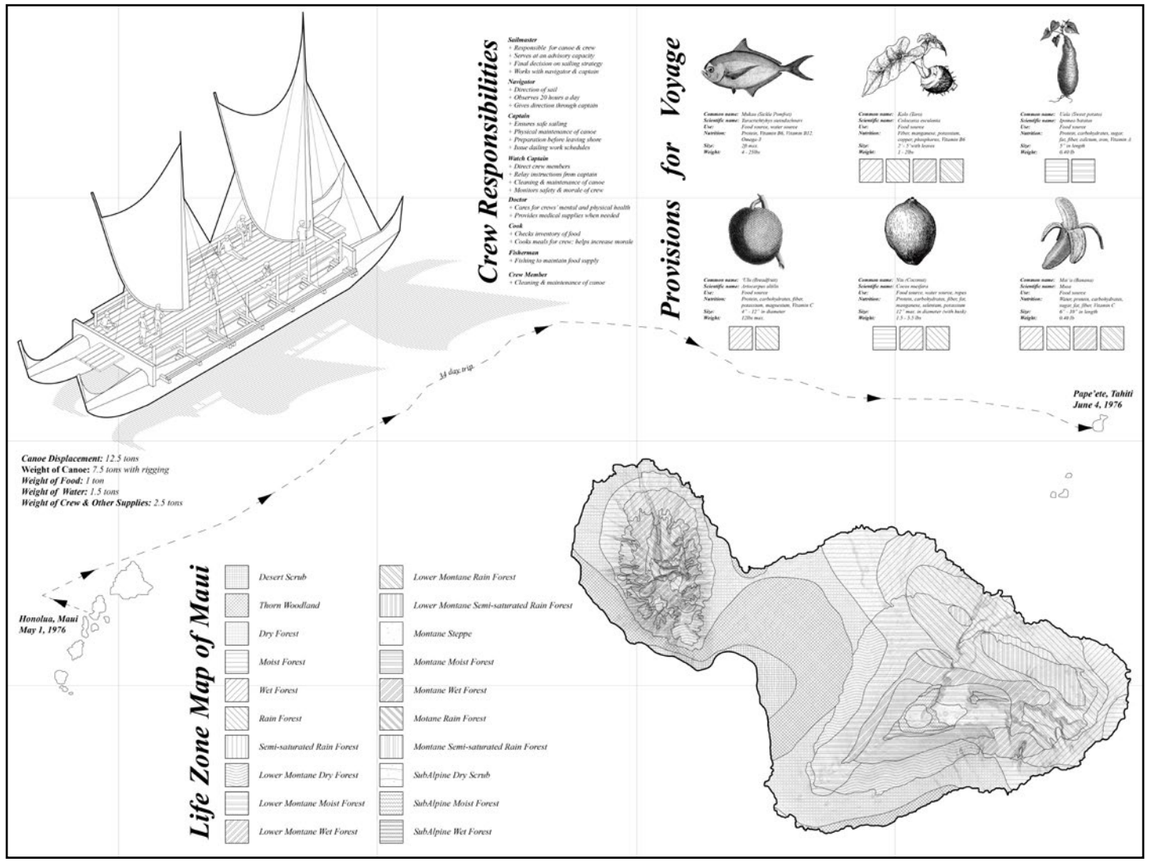
The decay of Pruitt Igoe enabled criminals to infiltrate and vandalize the complex, turning buildings into hotbeds of criminal activity. The housing authority’s response to the vandalized interiors was to install “indestructible” versions of the counterparts/fixtures, instead of improving the living standards of the residents. With the authorities unwilling to assist, residents began to reject the authority whenever they are insight, hurling loose bricks or pieces of the building at policemen and firemen during emergencies. The architectural elements that were once used to construct this haven were now used to deter the authority that constructed it. This state of decay emboldened the media’s “ghettoization” of Pruitt Igoe, negatively portraying the downfall of these once vibrant apartments. With the aforementioned policy failures and media stigmatization, they suggest that Pruitt Igoe was the architectural embodiment of systemic racism and was used as a tool of segregation.

MAKAHIKI PAVILIONS

DOMINIC LEONG & SEAN CONNELLY
LEO WAN & OLIVIA CHEN

Hawaii has been a contentious United States territory ever since it gained control, and although its people have yearned for its independence, their voices are unheard. The geographical location of Hawaii is prime for military positioning, and hence the deep rooted presence of US military, dated back to the beginning of the 20th century. The restoration of the Makahiki games around one of the most controversial military sites in Hawaii: Diamond Head Crater/ Le'ahi became a strategy to demilitarize the crater, and reclaim the land (ʻĀina) for the Hawaiian people. The Makahiki games were the Olympic games for the Hawaiian before the colonizers had arrived, with a variety of games ranging from strength and agility to board games. To facilitate the games, three pavilions are built at the Kapi'olani Community College, a site outside of the crater, but closely connected the military history of Le'ahi. These pavilions are strategically placed in specific areas of the school in order to enable different types of games. The pavilions are part of a larger masterplan that includes two other pavilions at Kapi'olani Park and Fort Ruger Park, which combine to form a ring around Le'ahi. The goal of the ring is to create a new Makahiki boundary that designates the zone as the place to celebrate the Makahiki season in Honolulu, which contributes to demilitarizing the area within the zone. The construction of the pavilions will be made of glulam structure with Douglas Fir. The reasoning of using Douglas Fir originates from the sourcing of Christmas trees to the island, which brought an abundance of invasive species to O'ahu, and so Hawaii began planting their own Douglas Fir in order to limit imports of foreign plants. The act of using the Douglas Fir symbolizes the celebration to ʻĀina by using a newly introduced "local" material that merges the ʻĀina of the past with the contemporary.



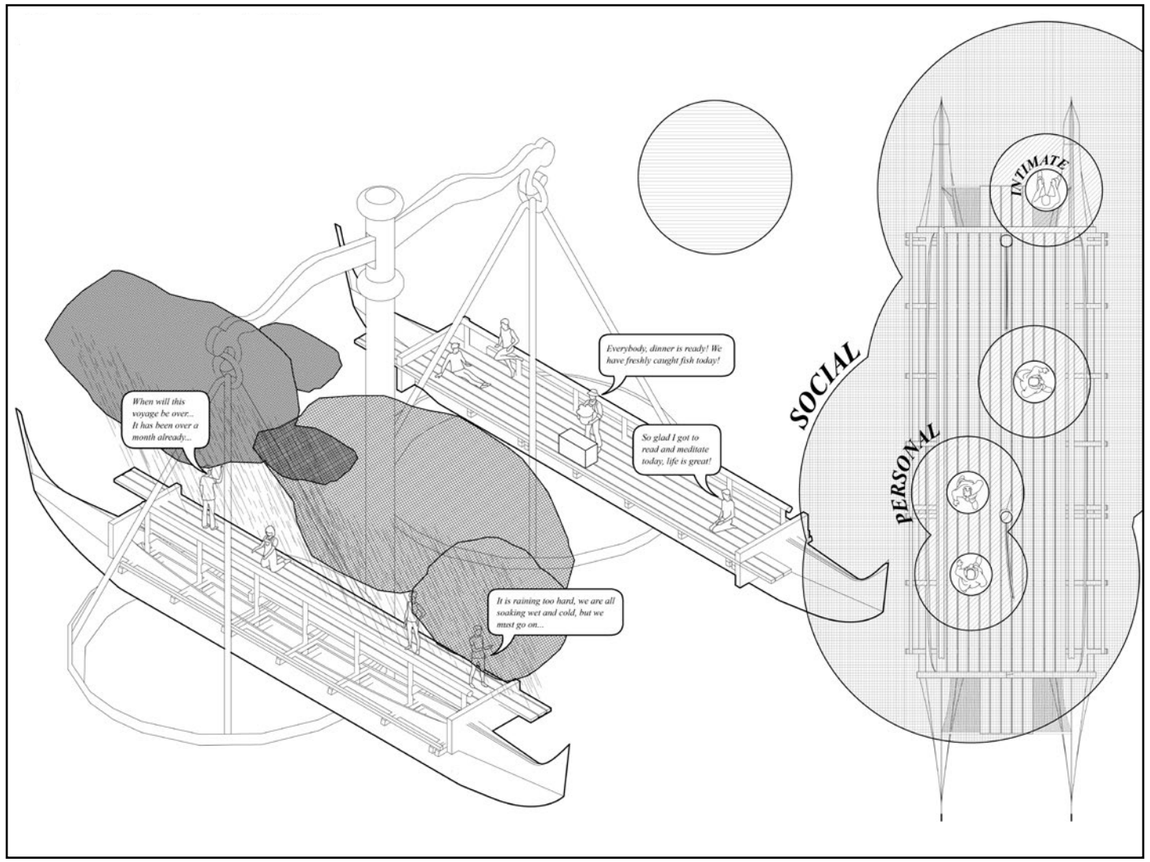


HŌKŪLE ʻ A CONSTRUCTION

Through dissecting the structure, proportions and materials of the hōkūle ʻ a, it displayed the sophisticated knowledge that native Hawaiian voyagers had already developed in order to travel across the ocean.

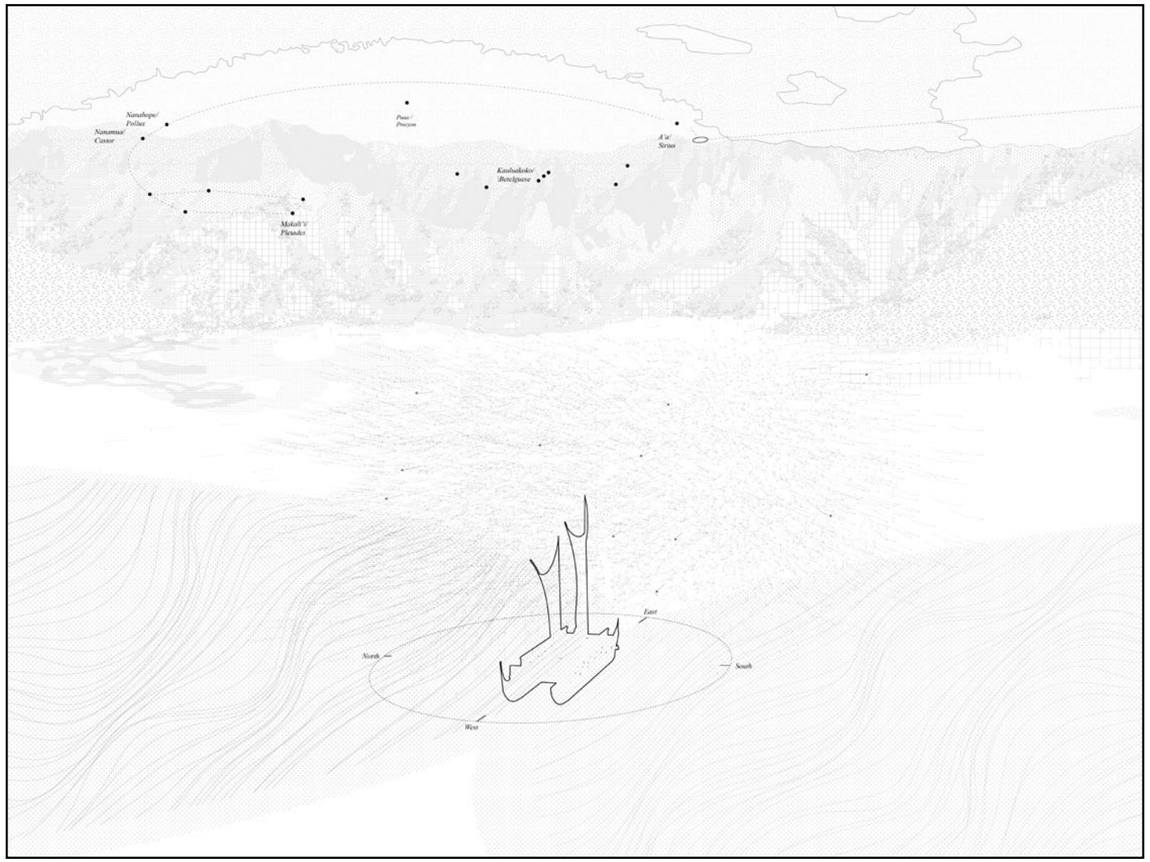
PREPARING FOR A VOYAGE

Analyzing the preparation that was required for a voyage across the oceans, it showed the determination and persistence of the native Hawaiian people, and the immense amount of work required for a voyage.



PSYCHOLOGICAL EFFECTS OF VOYAGING

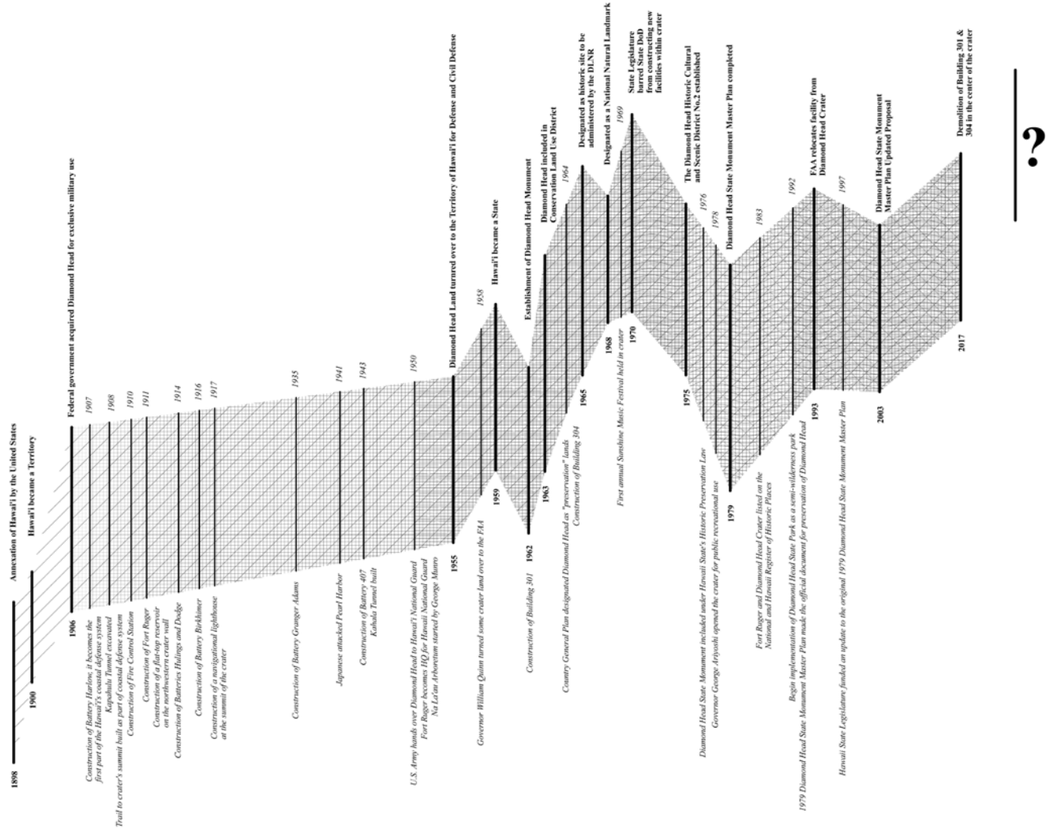
Balancing mental health during a voyage could be daunting, as weathers are often extreme. Resources and space are also limited on the hōkūle ʻ a, which means personal space is virtually non-existent.



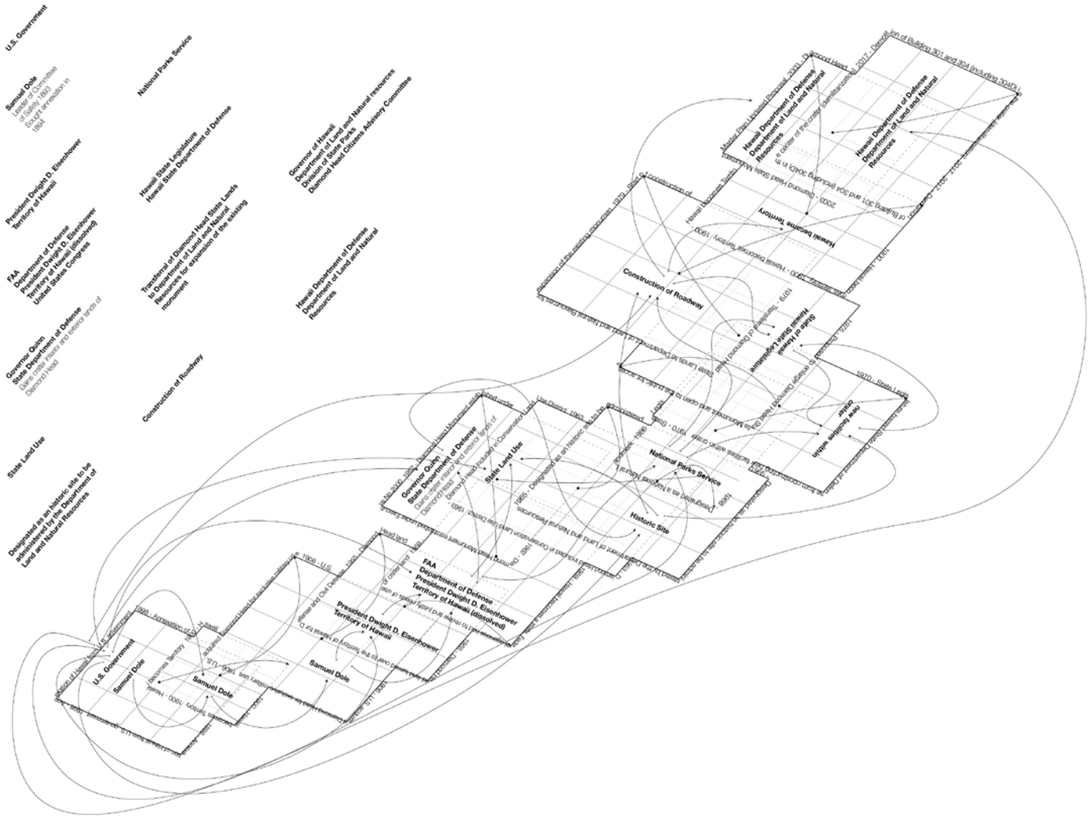
WAVES, WIND, STARS

Hawaiian navigators have long led their voyages with the waves, wind and stars. This ancient knowledge exemplifies the complexities in voyaging, even for sailors in present day with contemporary equipment.

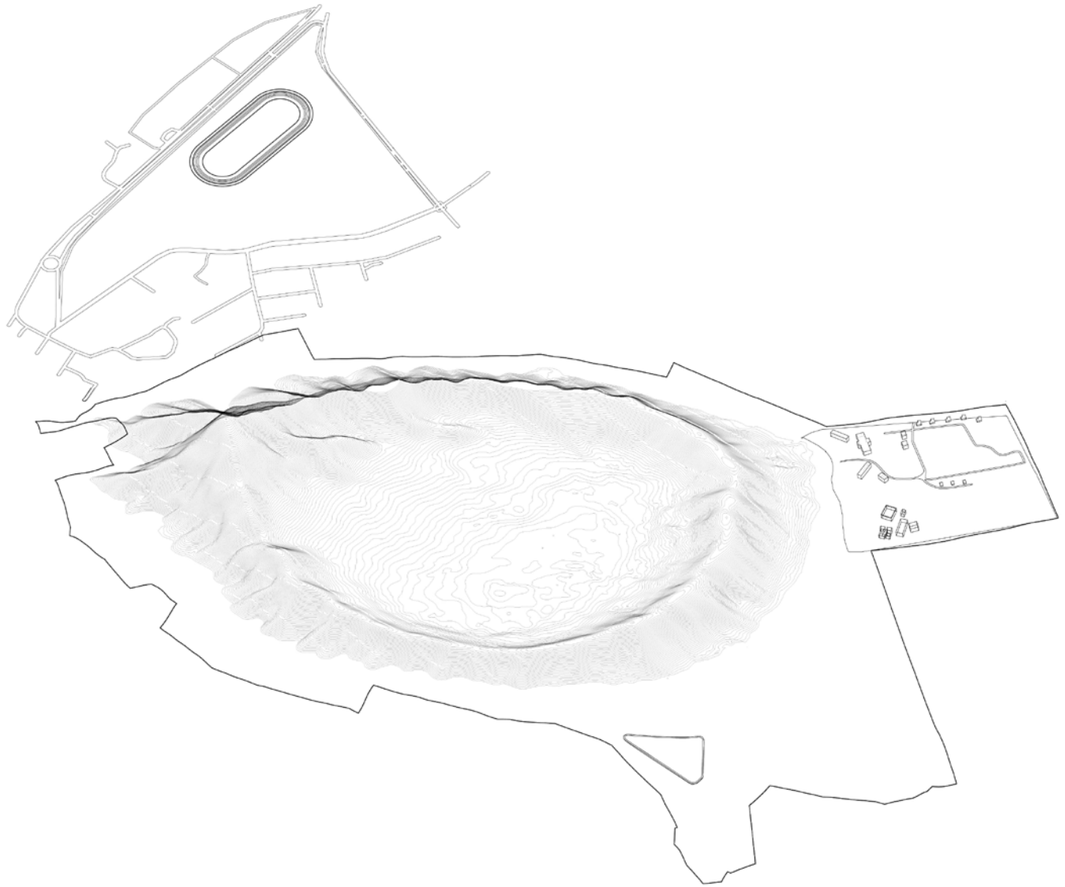
DIAMOND HEAD HISTORICAL TIMELINE & influences



HISTORICAL TIMELINE OF DIAMOND HEAD (LE'AHI)



NETWORKS OF INFLUENCES & SPATIAL RELATIONSHIPS

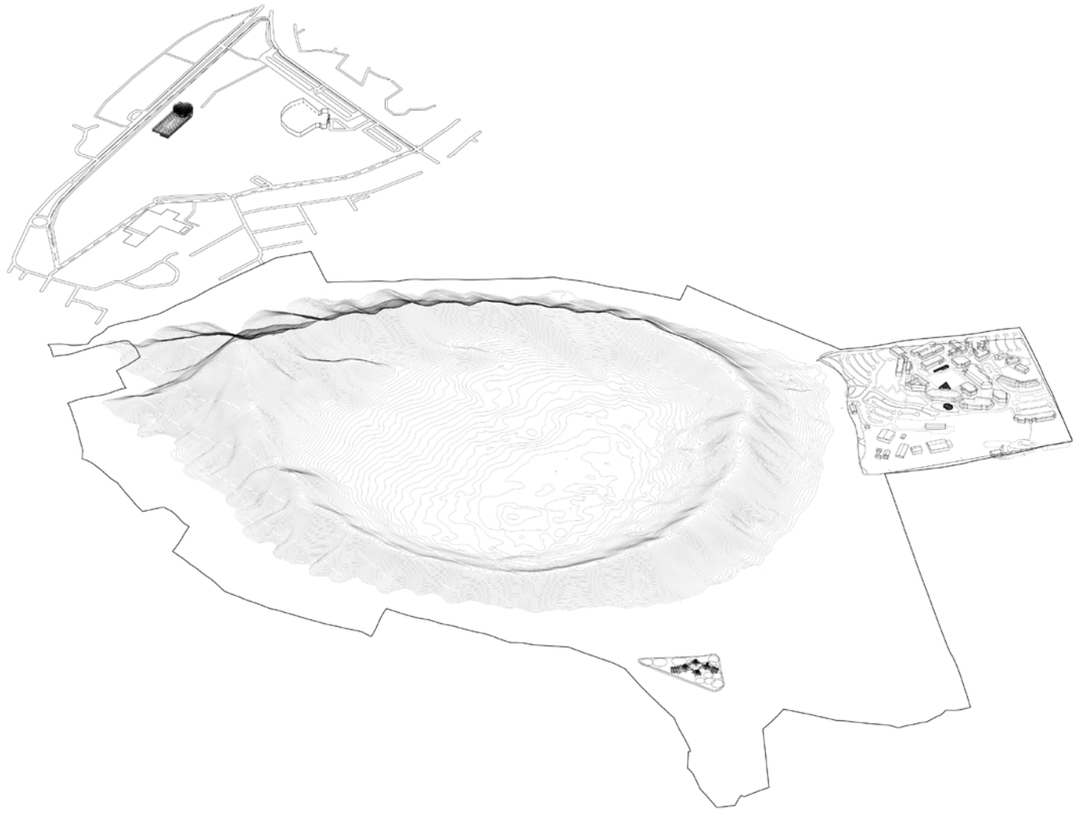


DIAMOND HEAD (LE'AHI): PAST - 1922

In the past, the three sites: Kapi'olani Park, Kapi'olani Community College and Fort Ruger Park were all used different. Kapi'olani park was first used as a horse racing course, which later then became a marsh that was beautified to become Kapi'olani Park. As for the community college, it is situated on the former site of Fort Ruger, which was the first military installment in the Territory of Hawaii.

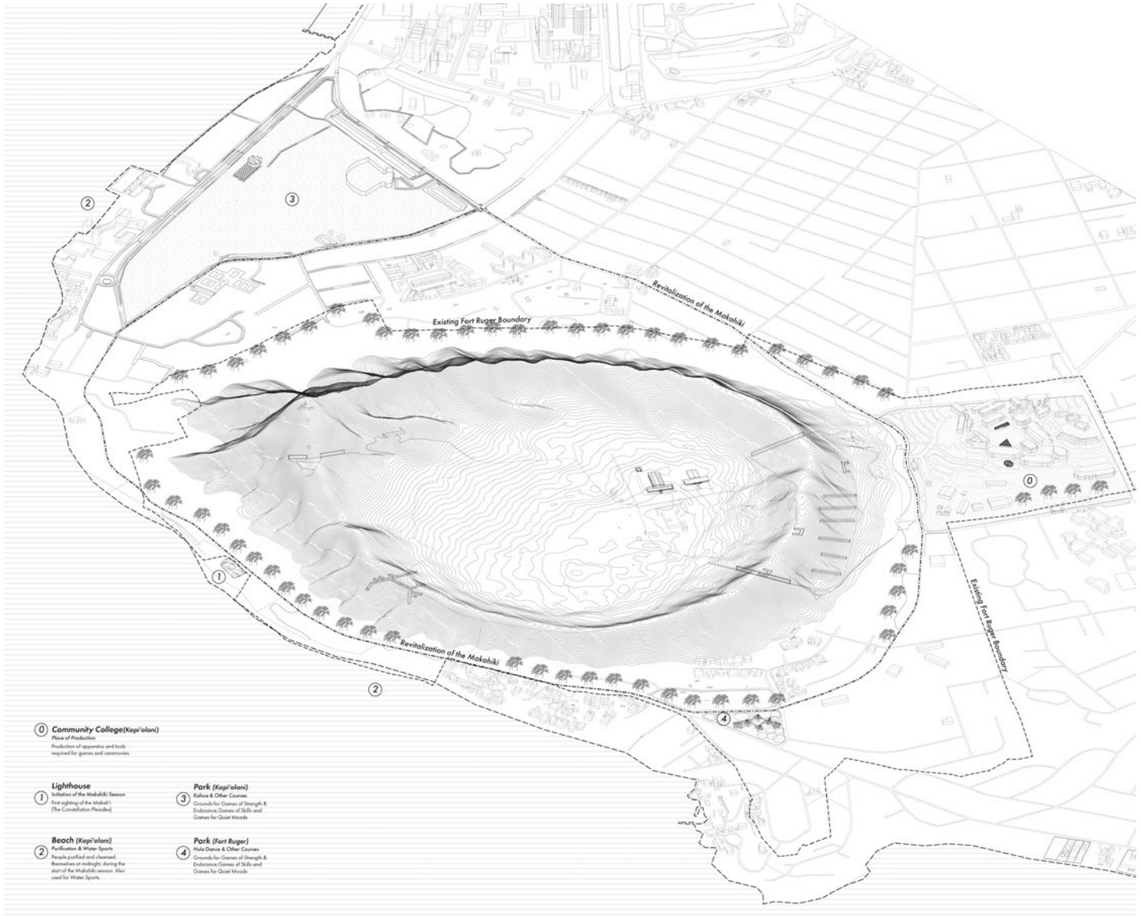
DIAMOND HEAD (LE'AHI): PRESENT - 2021

In present day, Kapi'olani Park hosts world class events, it is the largest public park in Hawaii, and also home to the Waikiki Shell and Honolulu Zoo. As for Fort Ruger's previous site, parts of Fort Ruger are still active elsewhere, but the site is not Kapi'olani Community College.



DIAMOND HEAD (LE'AHI): FUTURE

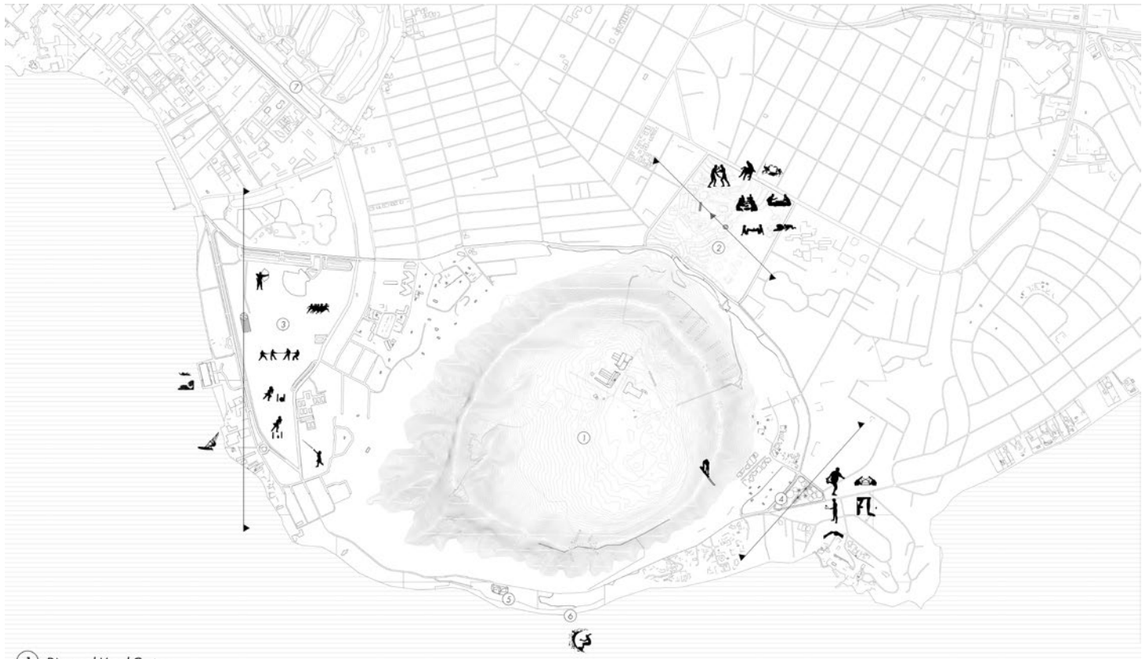
By reimagining the existing three sites with the Makahiki Games, pavilions are placed along the circuit to help facilitate the games that will be happening on each of the sites.



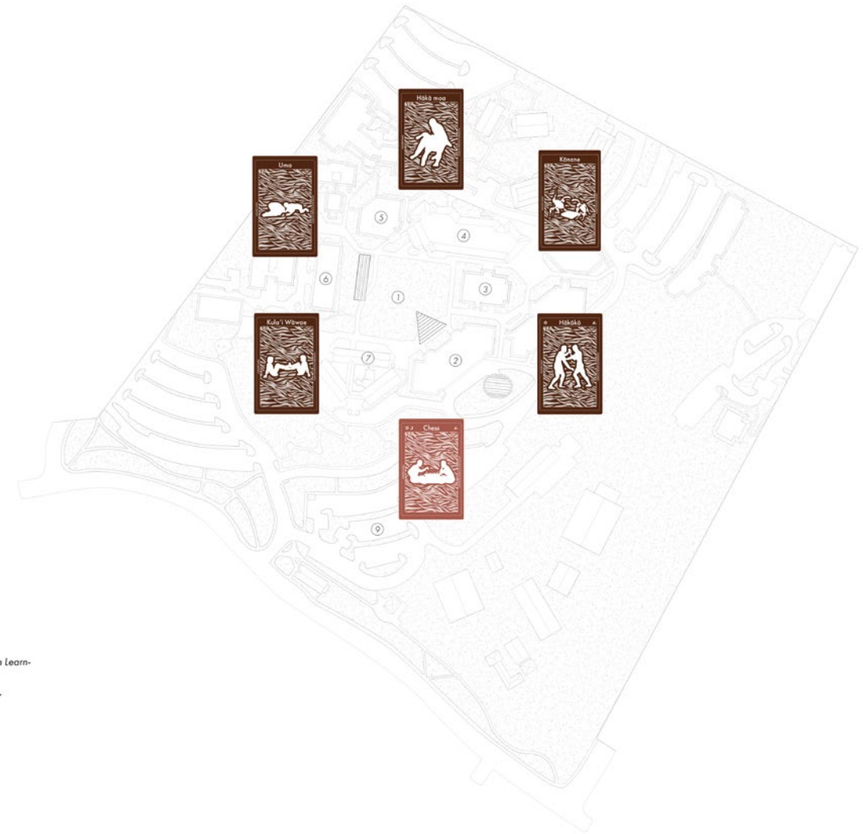
DIAMOND HEAD (LE'AHI): MAKAHIKI SEASON MASTERPLAN

The Makahiki Circuit created establishes a designated boundary for the celebration of the Makahiki Season, which happens annually. This begins to demilitarize the zone and remediate the precense of the United States military.

DIAMOND HEAD MASTERPLAN & MAKAHIKI GAMES



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



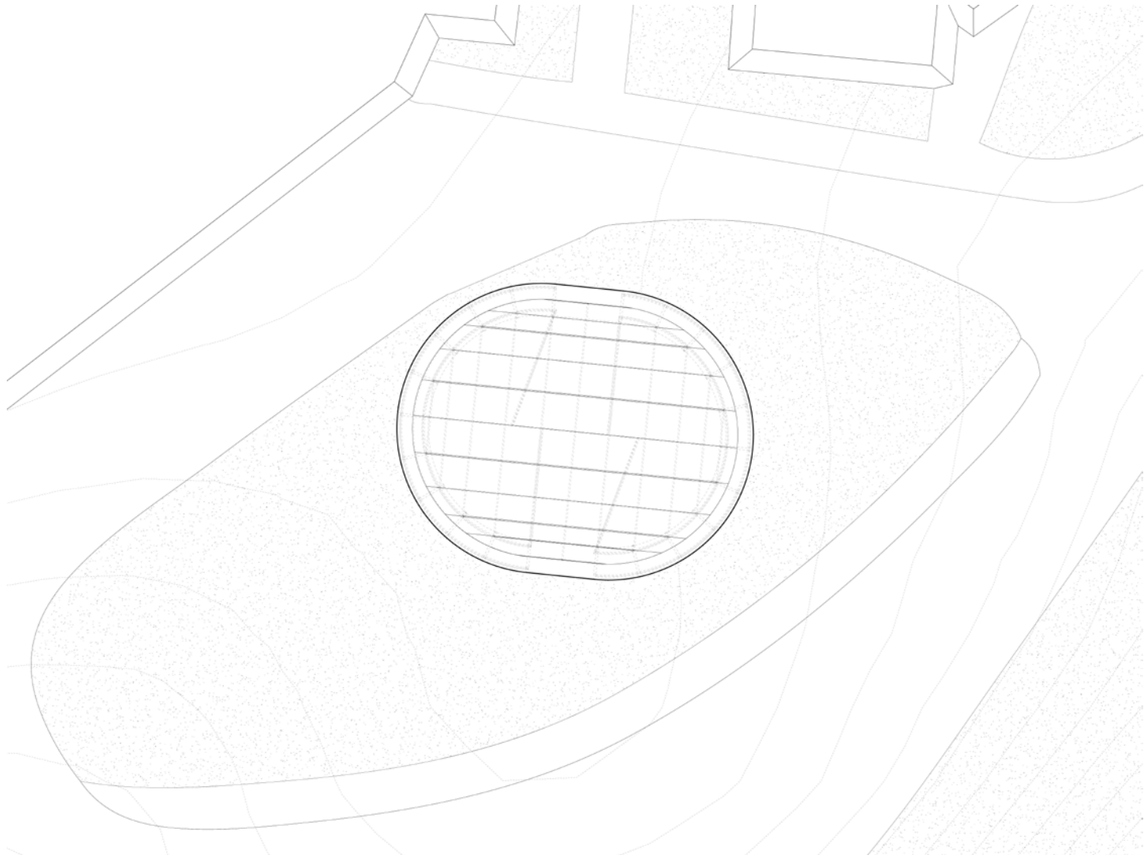
1. Great Lawn
2. 'Ōhi'a - Auditorium
3. Naio - Center for Excellence in Learning, Teaching & Technology
4. Lama - Library/ Testing Center
5. Kalia - Arts & Sciences
6. Koki'o - Science, Technology, Engineering & Math Cetner
7. 'Ilima - Adminstration
8. 'Ōhelo - Culinary Arts
9. Parking Lot C

THE MAKAHIKI GAMES MASTERPLAN

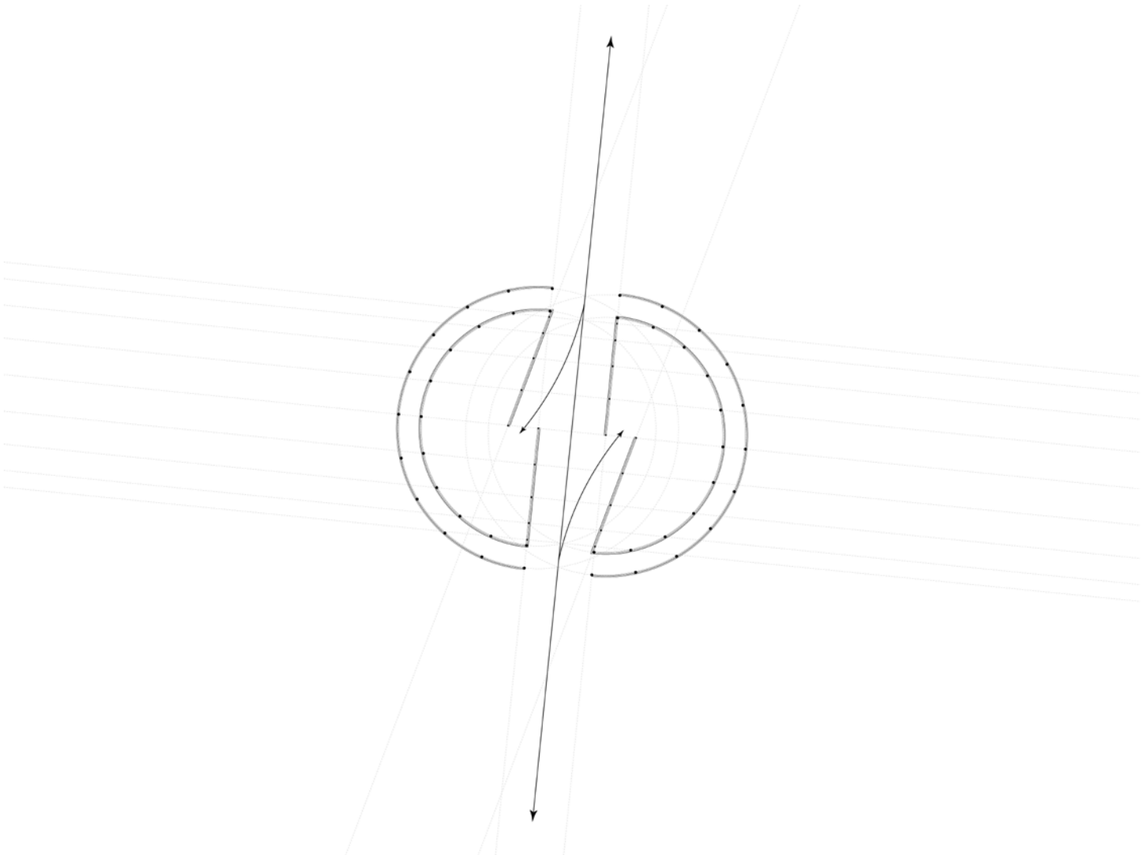
As Kapi'olani Park is the largest event site, most of the spectator sports will be held there, with smaller outdoor sports and quiet mood games held at the community college. As for Fort Ruger Park, it has the closest proximity to a surfing location, which it will then serve as a resting place for surfers.

MAKAHIKI GAMES AT KAPI'OLANI COMMUNITY COLLEGE

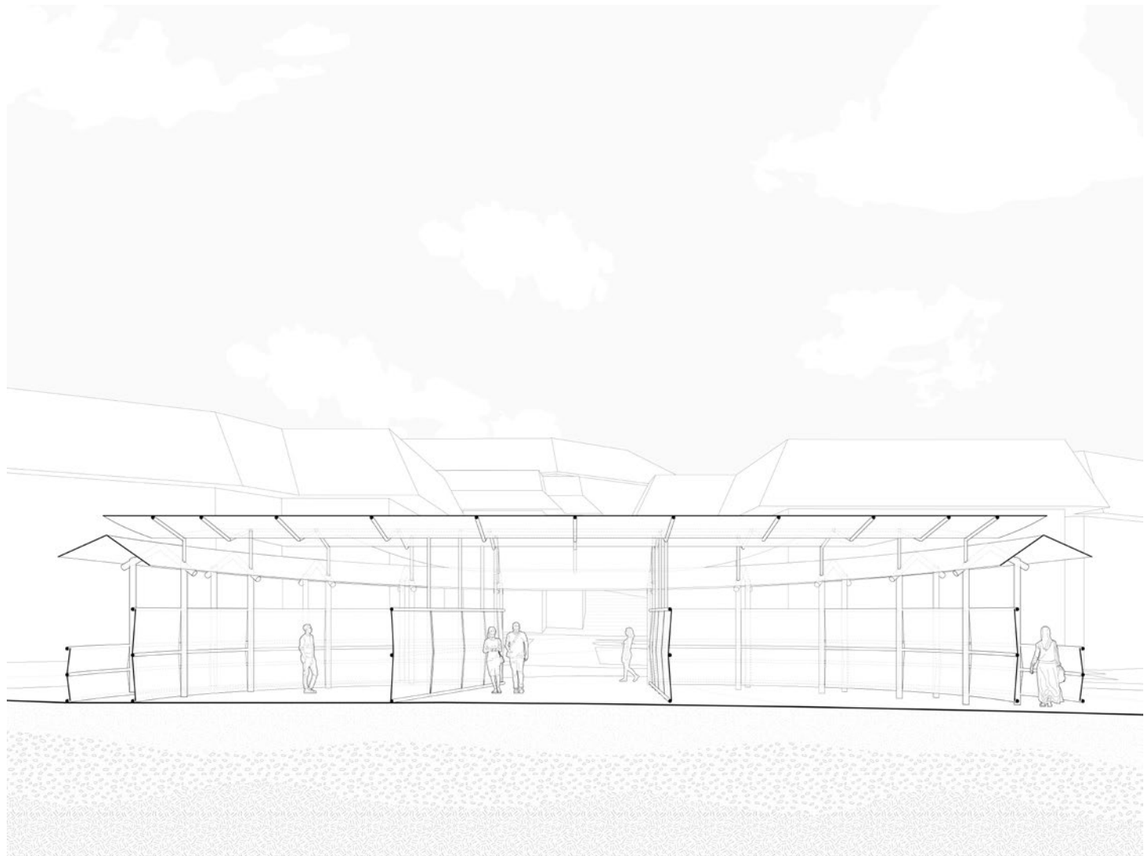
Most of the strength games will be happening at the Great Lawn of the community college, allowing for spectators. As for the quiet mood games, they can played in the pavilion away from the Great Lawn. The pavilions also encourage student and community participation, where the game equipments could be produced at the school's fabrication shop.



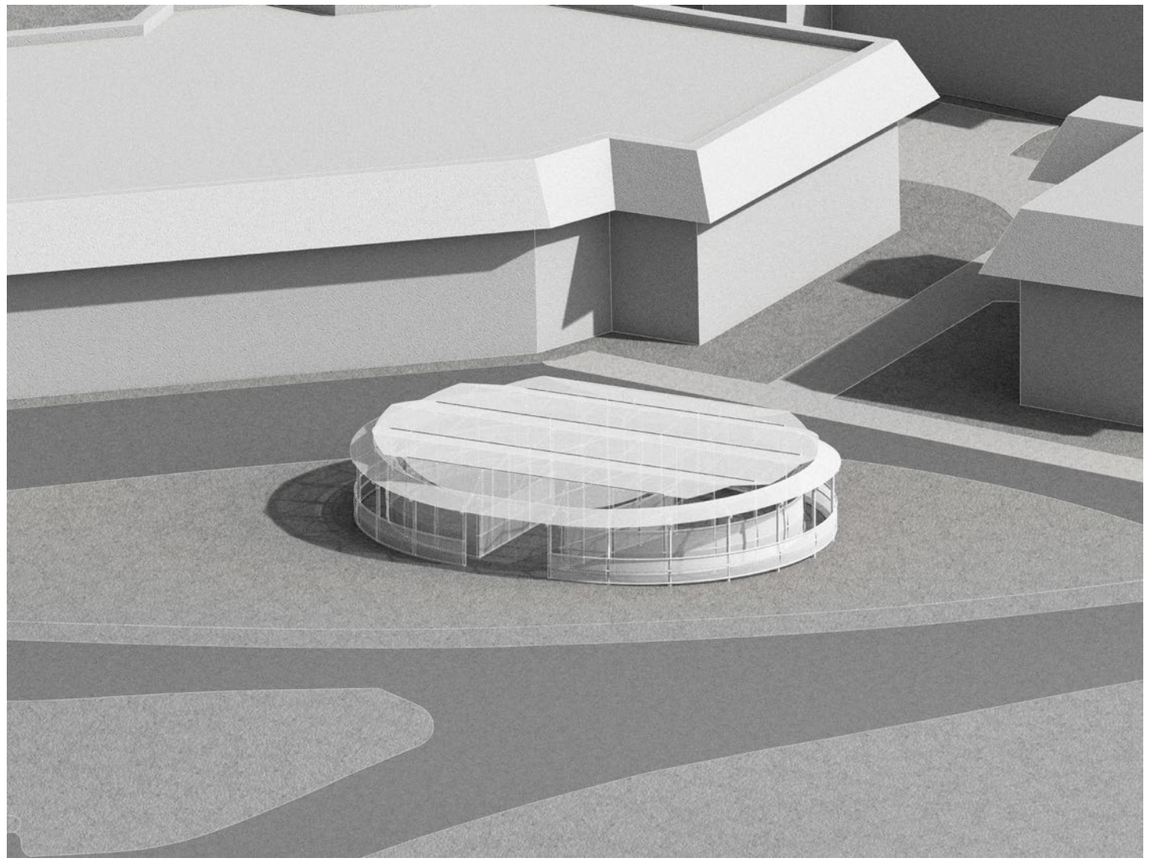
THE CIRCLE: ROOF PLAN



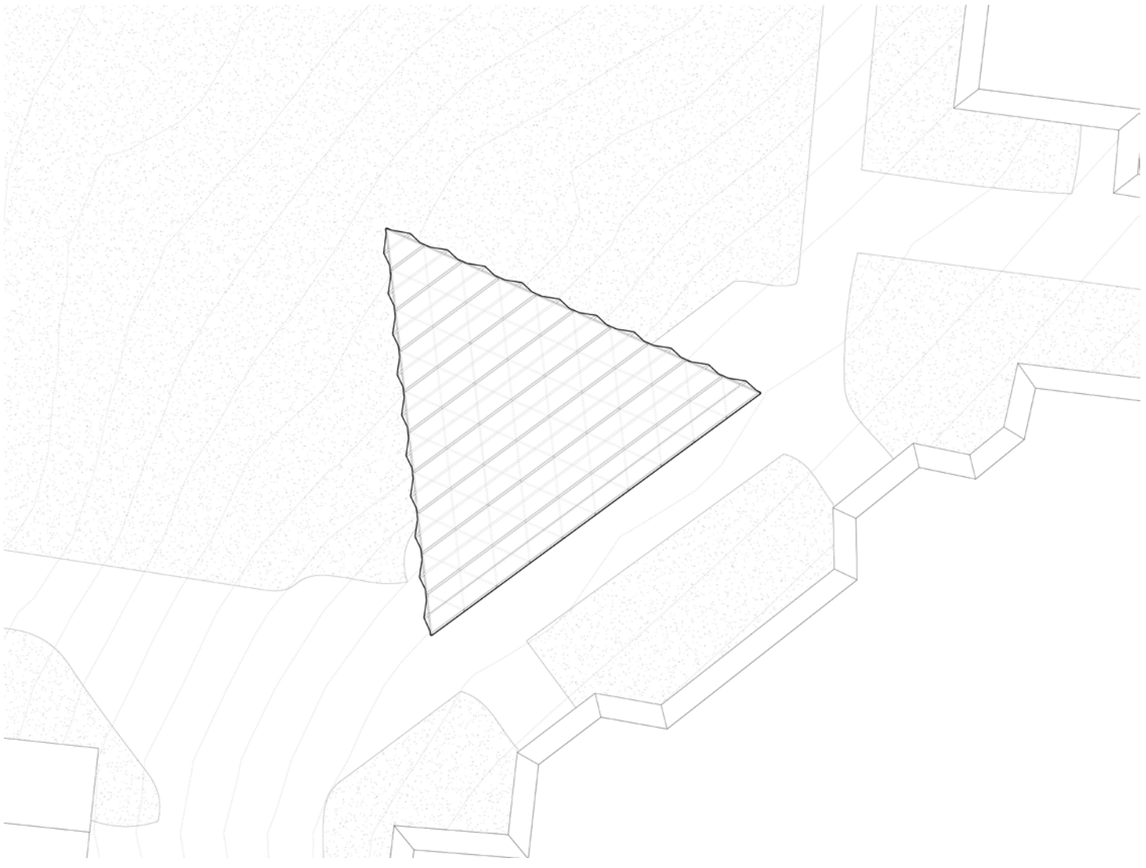
THE CIRCLE: FLOOR PLAN



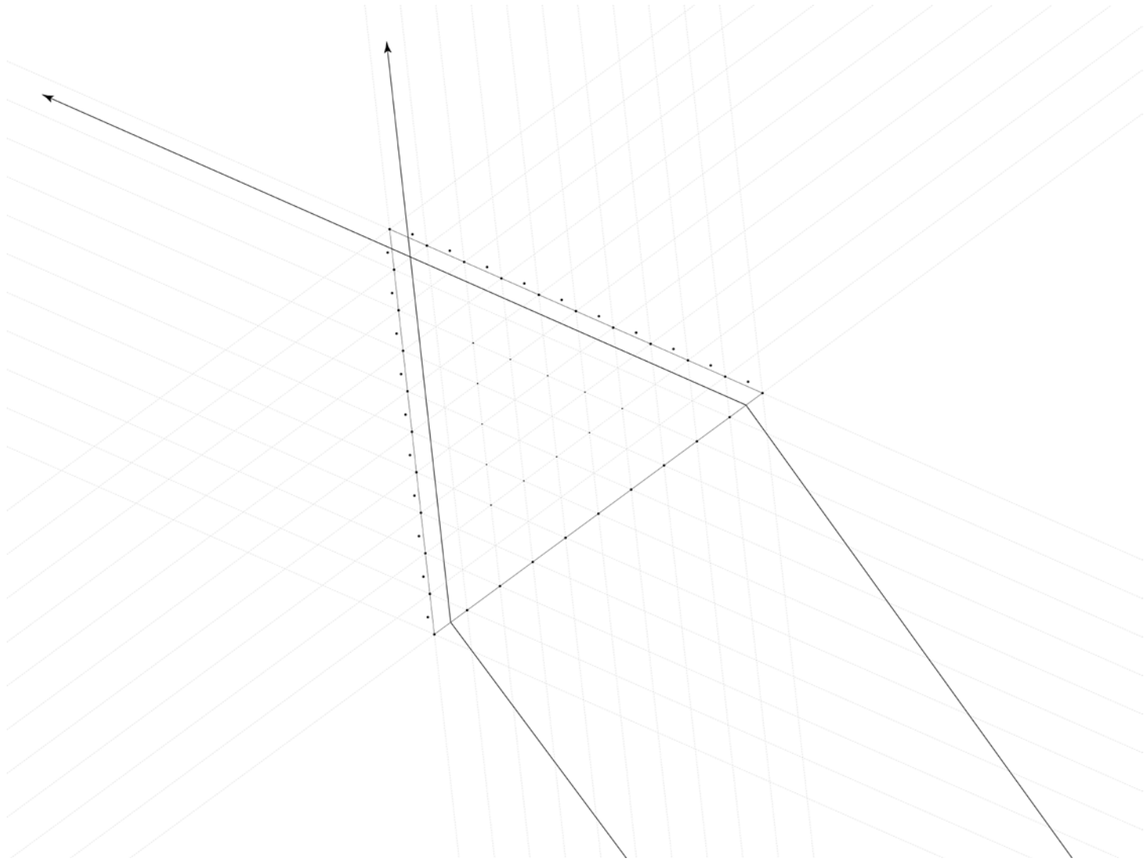
THE CIRCLE: SECTION PERSPECTIVE



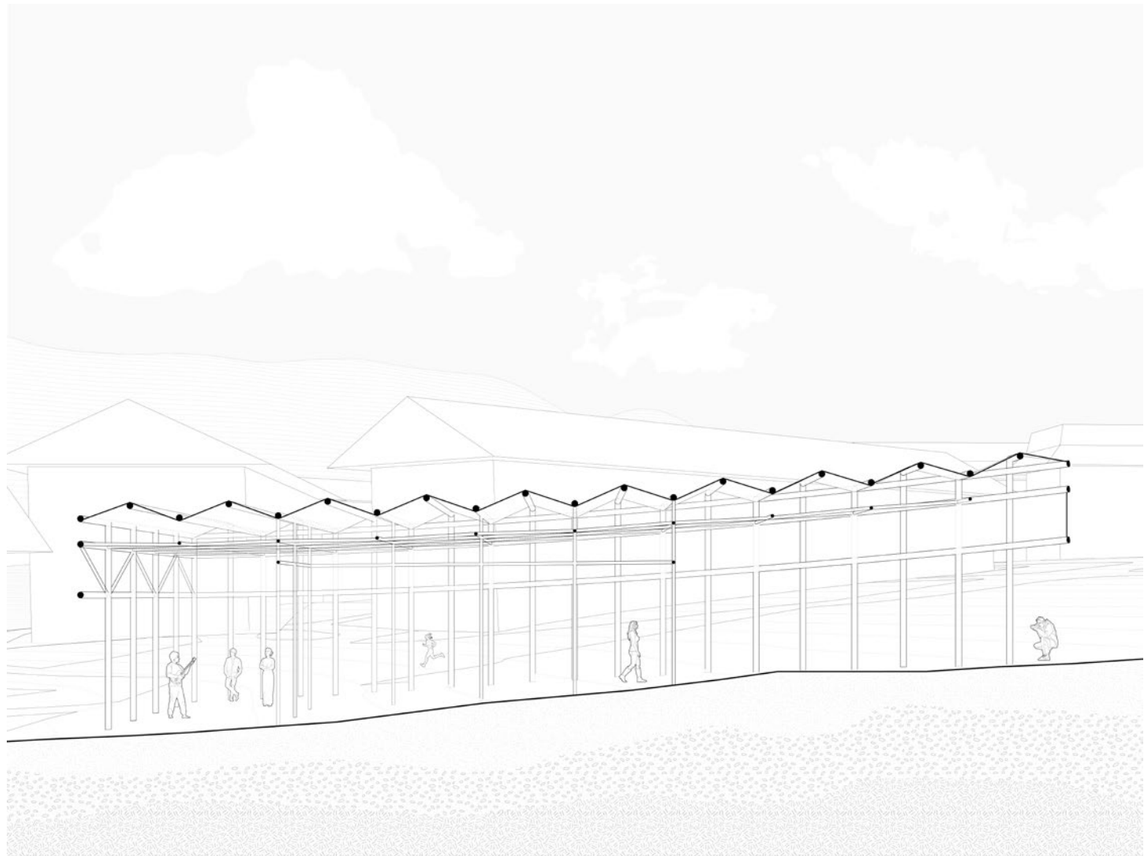
THE CIRCLE: ISOMETRIC



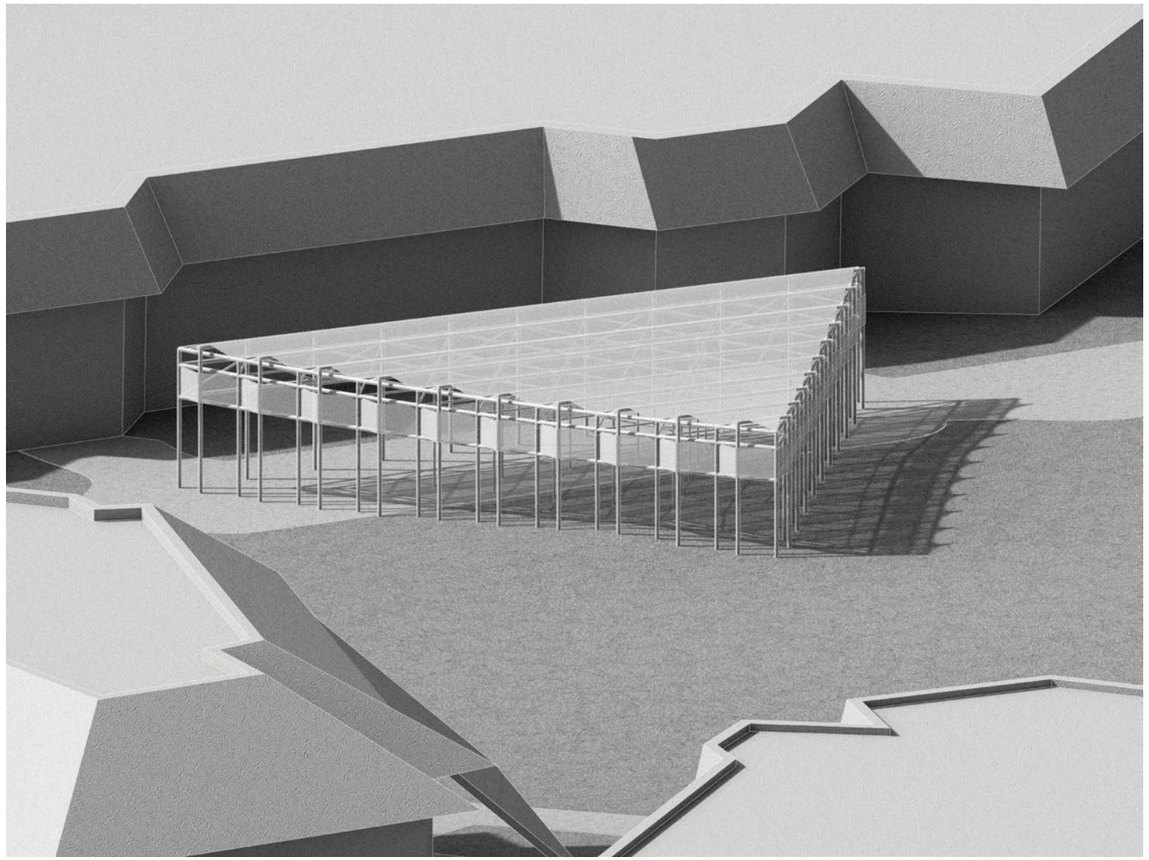
THE TRIANGLE: ROOF PLAN



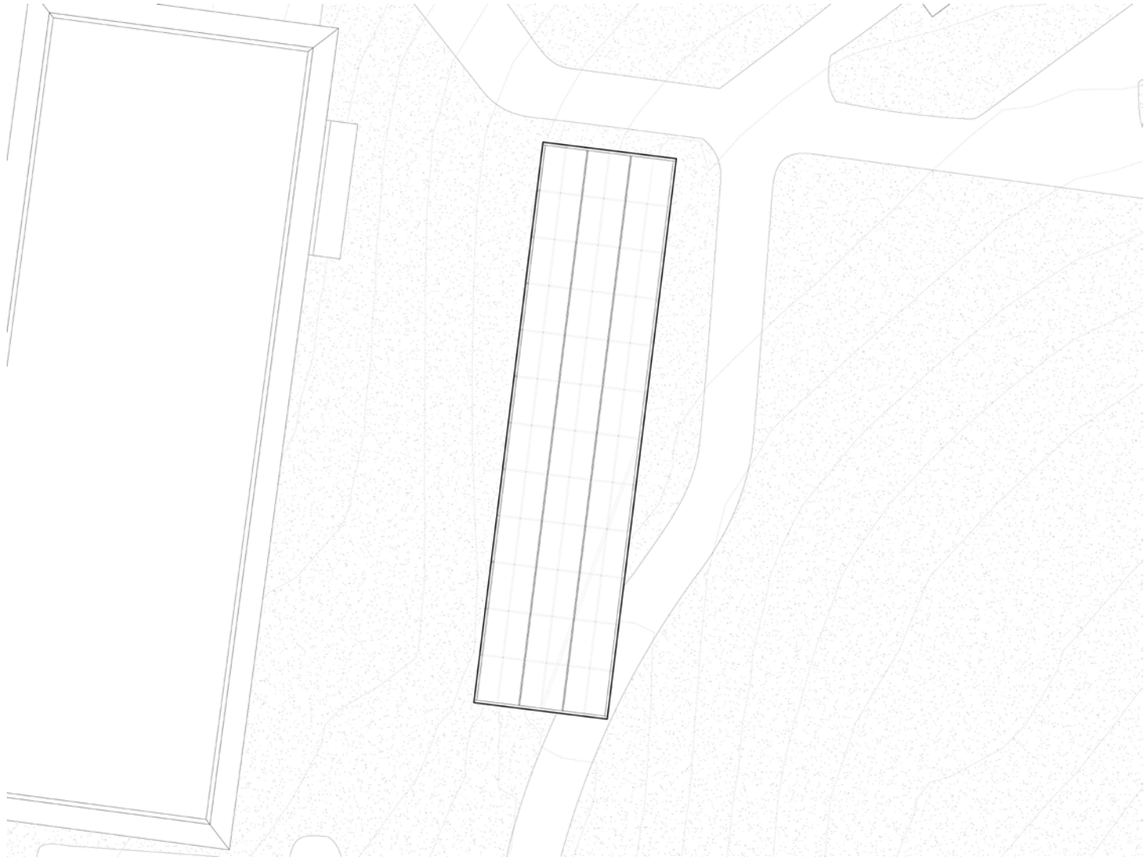
THE TRIANGLE: FLOOR PLAN



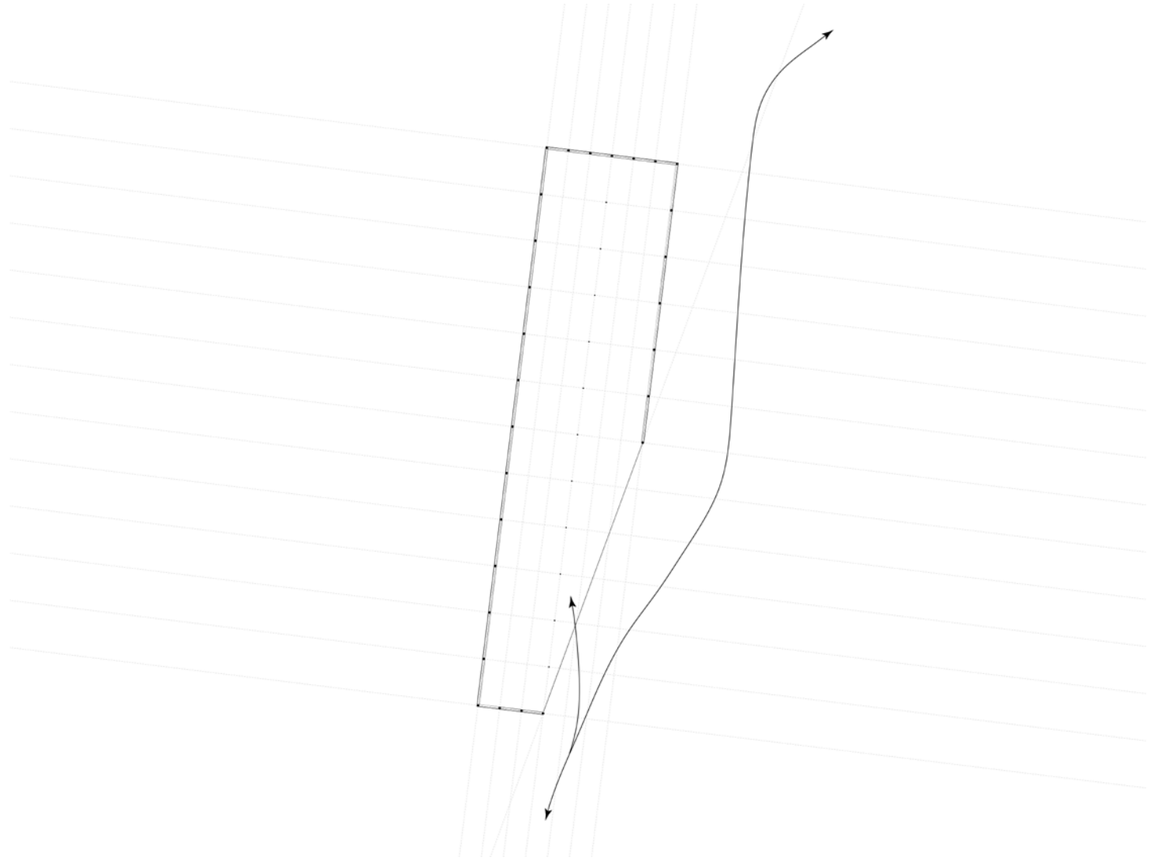
THE TRIANGLE: SECTION PERSPECTIVE



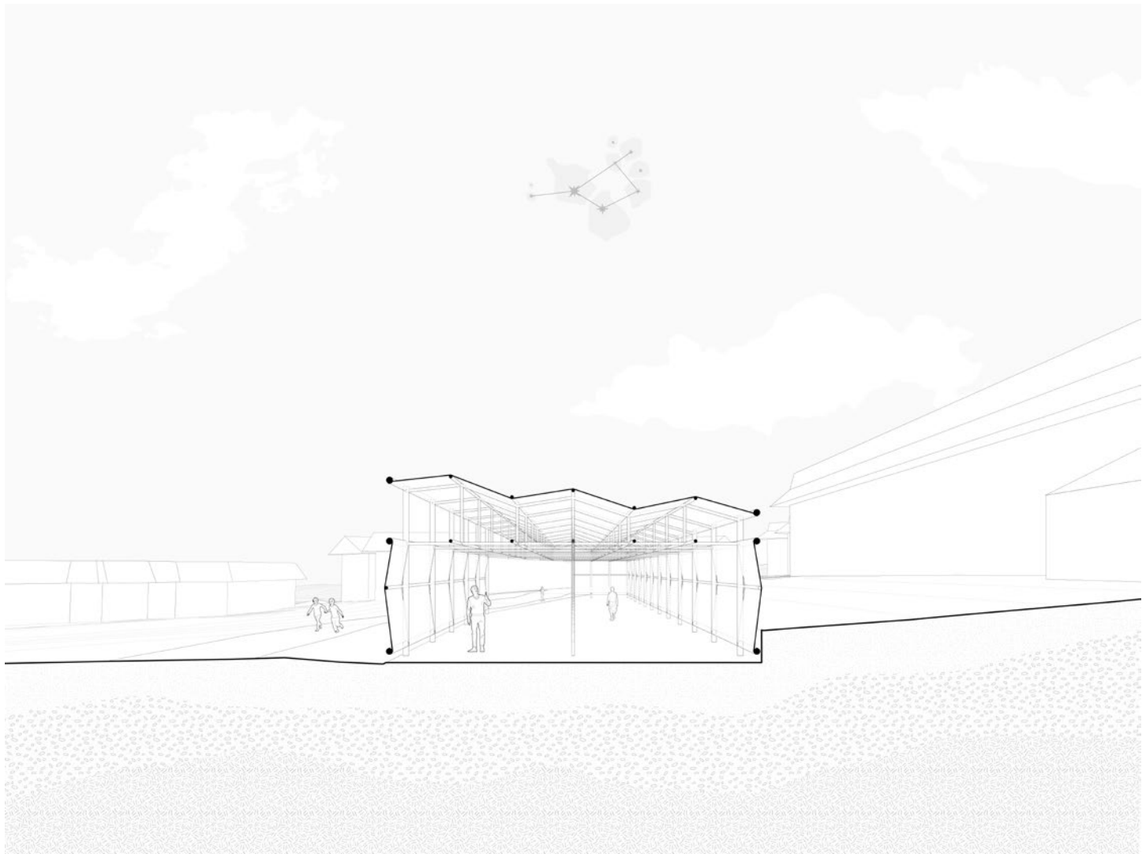
THE TRIANGLE: ISOMETRIC



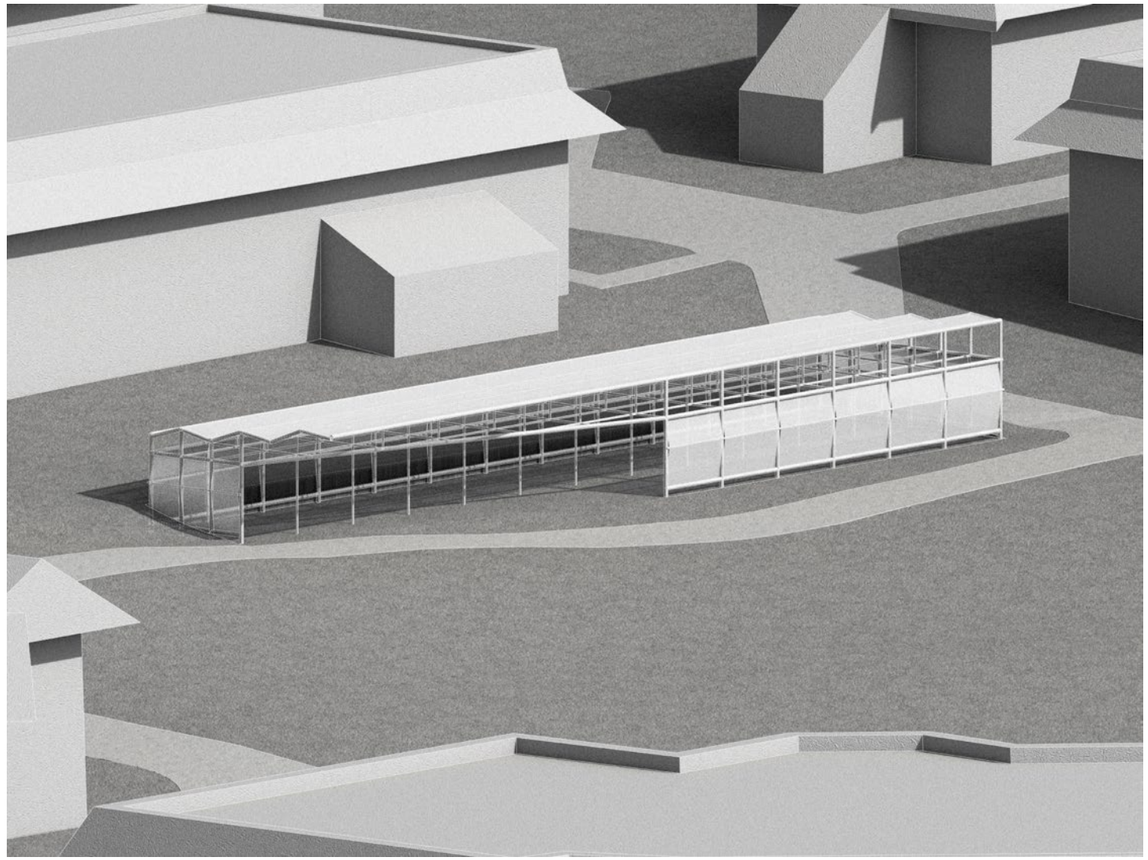
THE RECTANGLE: ROOF PLAN



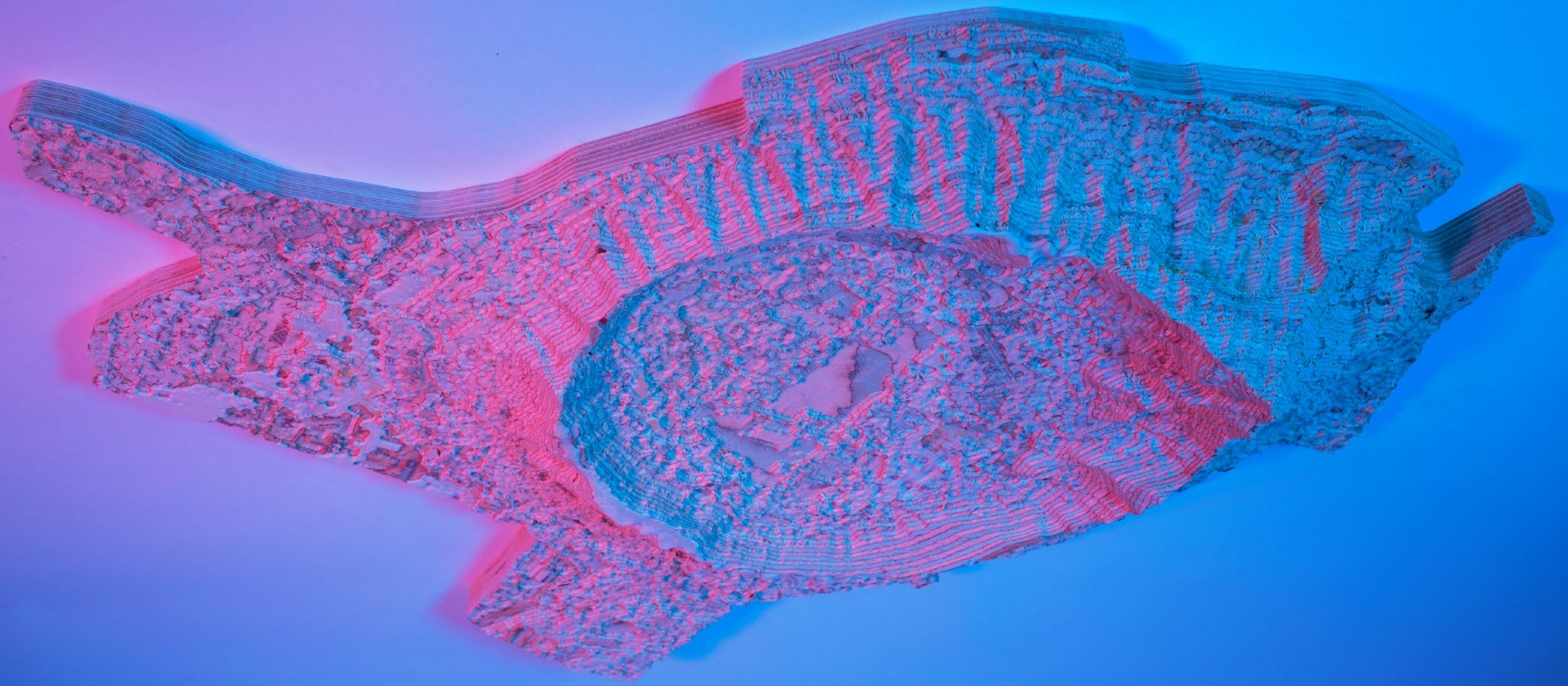
THE RECTANGLE: FLOOR PLAN



THE RECTANGLE: SECTION PERSPECTIVE

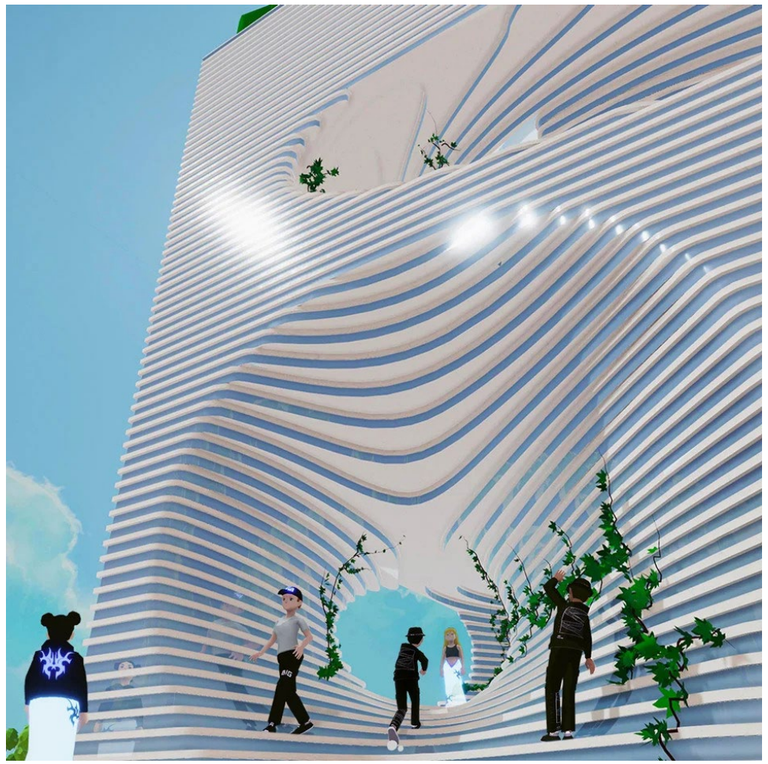


THE RECTANGLE: ISOMETRIC



DEFINING A NEW WORLD WITH CONTEMPORARY TECHNOLOGIES

BODILY METAVERSE: VIRTUAL REALITY & AR-CHITECTURE



“THE VR ENVIRONMENT CAN IGNORE PHYSICAL LAWS... BECAUSE MATERIALITY SHOULD NOT MATTER WITHIN THE VIRTUAL SPACE IF IT DOESN’T POSSESS ANY OF ITS PHYSICAL PROPERTIES. ”

Despite the continuing acceleration in the use of the use of virtual reality and the fact that the field of architecture is shifting towards designing spaces within VR, the authors made multiple assumptions that require more evidence and further investigation. From the beginning of the paper, the authors immediately offer their “prediction” with certainty that the future is moving towards online, such as “networking, working, educating, socializing and shopping.” But within the current context with COVID, are people willingly venturing the digital space, or are they forced to inhabit this space because of social distancing circumstances? The situation with COVID will pass at some point in the future, and the certainty in people continuing to cohabit digitally is still unknown. With possibility of over usage of the virtual space, a healthy balance of both physical and virtual should be considered. There are advantages and disadvantages to both worlds, and efficiency would become one of the major deciding factors. While virtual meetings are more convenient when participants of that meeting are in various locations, activities such as playing a sport in the virtual world might not be replicated in a way in which it stimulates users the same way it does in the physical world. There is no doubt that younger generations have been migrating their social lives online at an increasingly earlier age, though the willingness of participation is debatable, it is still crucial to manage a healthy balance between the physical and virtual worlds as more people from all age groups begin participating.

Another idea that was introduced earlier within the paper was the question regarding “what would happen to existing cities when people no longer paid attention to them” . The word “when” implies the certainty of an event, only the time is undetermined. The reference was also used as a rhetorical question, implying the aftermath of existing cities in disrepair would be to inhabit the virtual space. But how could this assumption be attested? The authors utilize the word “reasonable” for their argument, attempting to legitimize their prediction for virtual space to replace 2D screens and physical contact, but that assumption discounts the eagerness of people for life to return to normal and their fatigue with inhabiting the digital space, so they could participate in activities physically instead of virtually.

Virtual reality space would require maintenance as well, and it is unknown the amount of energy and resources that will be required if virtual spaces were to scale up exponentially. The physical spaces of where these virtual spaces are hosted would also require maintenance, which brings upon another question, who will be the ones maintaining the virtual space? The creator of the virtual space in a way becomes “god” within that environment, since they would have been the one that creates and operates the space, should they have that amount of control over users as well? And to what extend would regulations from the physical world apply within the virtual world? To answer the question of maintenance, the question of ownership within the virtual world must first be defined. If a virtual world was hosted and designed by a mega company, then it is only logical that the company maintains the space because it wants more users to engage with their product. But if a decentralized system could be adopted for everyone’s virtual space, people will start taking ownership for their space, and therefore maintaining and caring for their own property.

The VR environment boasts its ability to be unbounded by physical laws, which allows for limitless possibilities within the space. Throughout the paper, the authors argue the importance of architects in designing spaces in VR, but if physical laws do not apply, why would it be necessary for architects to design these spaces? Architecture is also a culmination between the digital and the physical, do architects have the skillset to solely design within a virtual space without their design taking physical forms? For a space that is known for its boundlessness, the “Bodily Metaverse” seemed like an awfully linear experience. The project limits the users to specific modes of transport through predetermined interactions that are designed by the creators, such as flying is only available when the avatar is in the miradouros, and teleportation when they are close to the Elevador. The predetermination of the users’ experience reveals the set of laws that are applied to a space that is supposed to be boundless, and the linear experience of leading users towards a single landmark within the space contradicts with the immense possibilities that VR offers. Though, the “Bodily Metaverse” was designed to be an artistic interpretive experience, and therefore should be treated as such. But for the future of virtual reality in architecture, open-source and customizability are important features for users to tailor it their own experience and allow the space to be flexible and interchangeable.

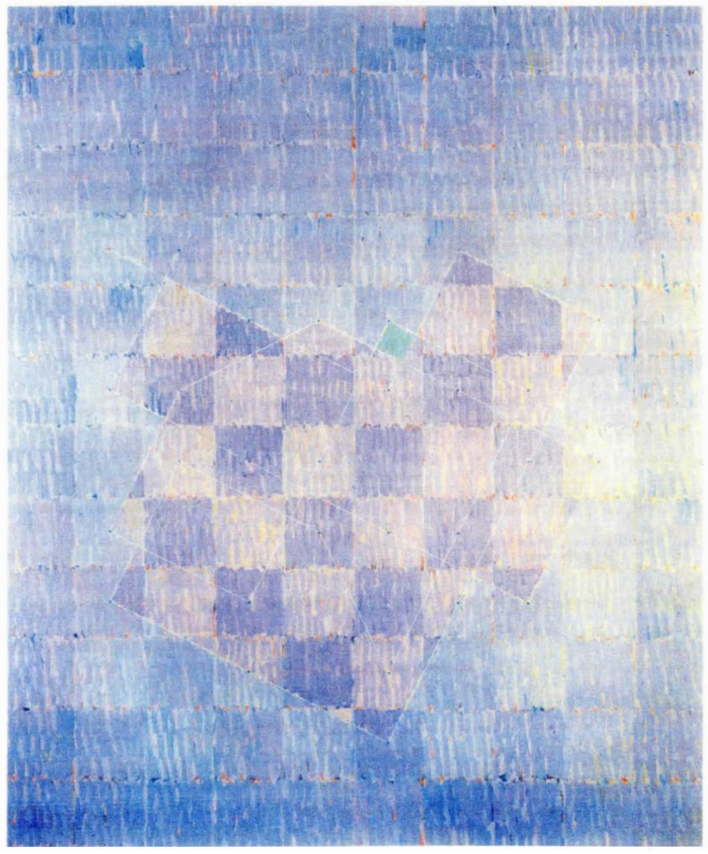
Since the VR environment can ignore physical laws, it was peculiar that the author’s first research project was on “concrete construction elements such as walls, floors, ceilings, and roofs” because materiality should not matter within the virtual space if it doesn’t possess any of its physical properties. Elements could be textured with real world materials, but it would only present itself aesthetically. Is there a purpose to assigning materiality within the virtual space for the purpose of a case study? Furthermore, perhaps virtual reality should possess its own materials since real world materials textured within the virtual space would still communicate their physical properties to the users.

Towards the final remarks of the paper, the authors finally mention the necessity of using “VR headsets” to access the virtual space. This could be an assumption on the knowledge of the readers, where the targeted audience is at an age where VR technologies are known to most people. But it could also have been intentional that the authors have avoided to mention the headsets, since it is still one of the typical barriers for everyday users to begin the usage of the virtual space. This intentional avoidance could be used to encourage readers to experiment with virtual reality first without prefacing the inconveniences that comes with it.

THE ICE CUBE

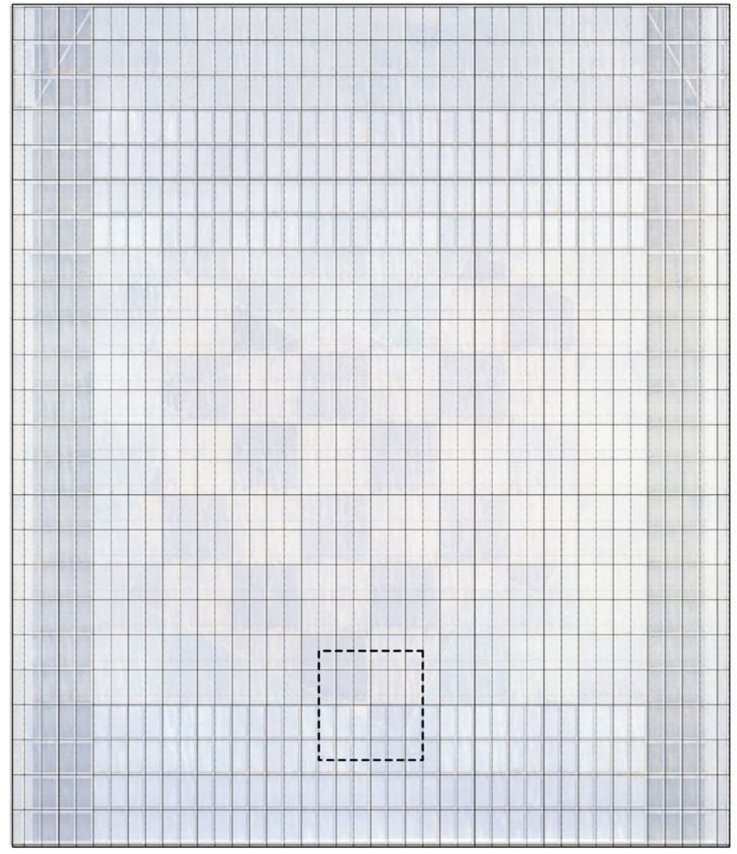
DANIEL ARVIN VOS

Originally inspired by Jack Tworkov's 1975 Knight Series painting, the building design focused on exposing the void space within a solid volume, through the projected geometries from the artwork. The facade of the building was designed to be double layered, in order to accentuate the hollowed void within the building. For the levels that intersect with the void, cable hung glass walkways are populated around the volume, so users can experience the void and light can also penetrate through to the void. There consists of two mullion profiles, a major mullion which lays seamless across the facade, and a minor mullion which is fin that creates texture across the facade surface. The glass will be finished with fritting and low-e coating to create the artwork's coloration and pattern.



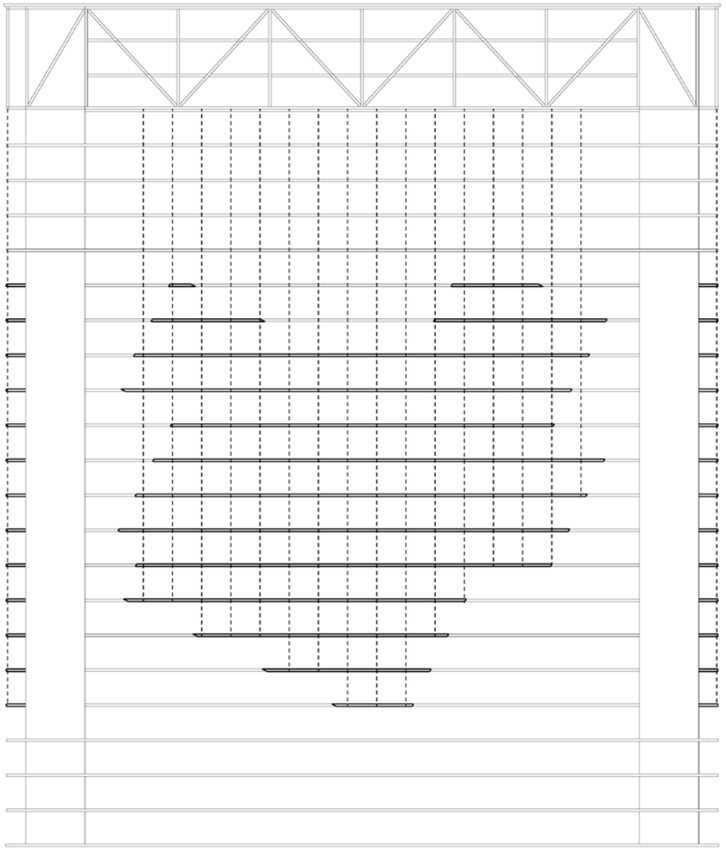
ORIGINAL PAINTING: JACK TWORKOV KNIGHT SERIES 1975

Inspired by the order and chaos of the original painting, the artwork appears to be organized in a grid, yet the distortion of the grid in center creates a void, which influenced the design of the Ice Cube.



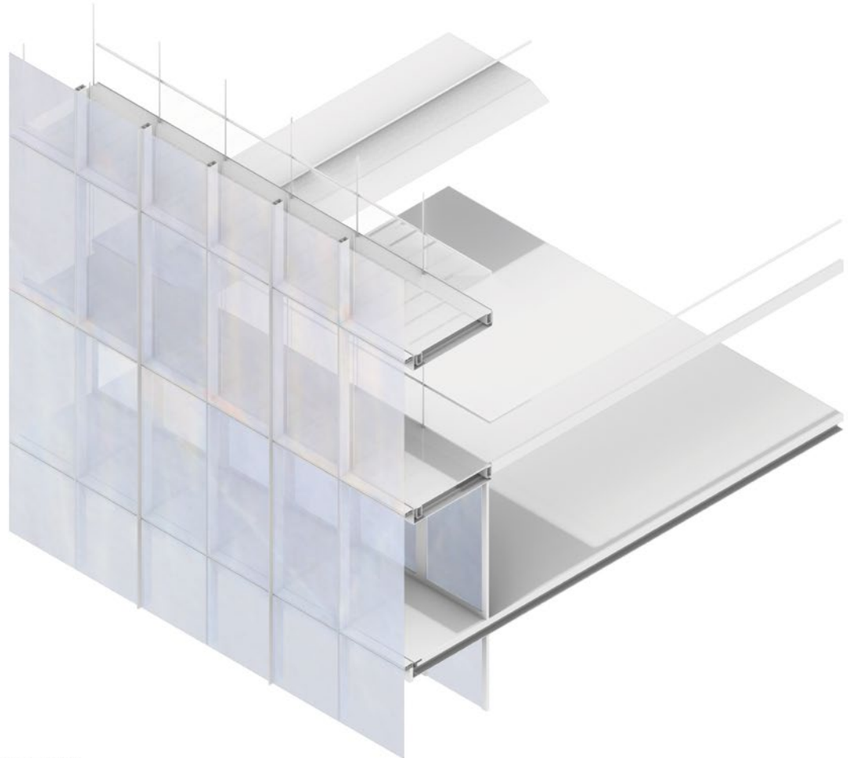
FACADE ELEVATION CALLOUT

The portion of the facade being studied will include not only the curtain wall, but also the glass walkways and the connection to concrete slab in order to demonstrate the hollowed void within the volume.



GLASS WALKWAY CABLE SYSTEM

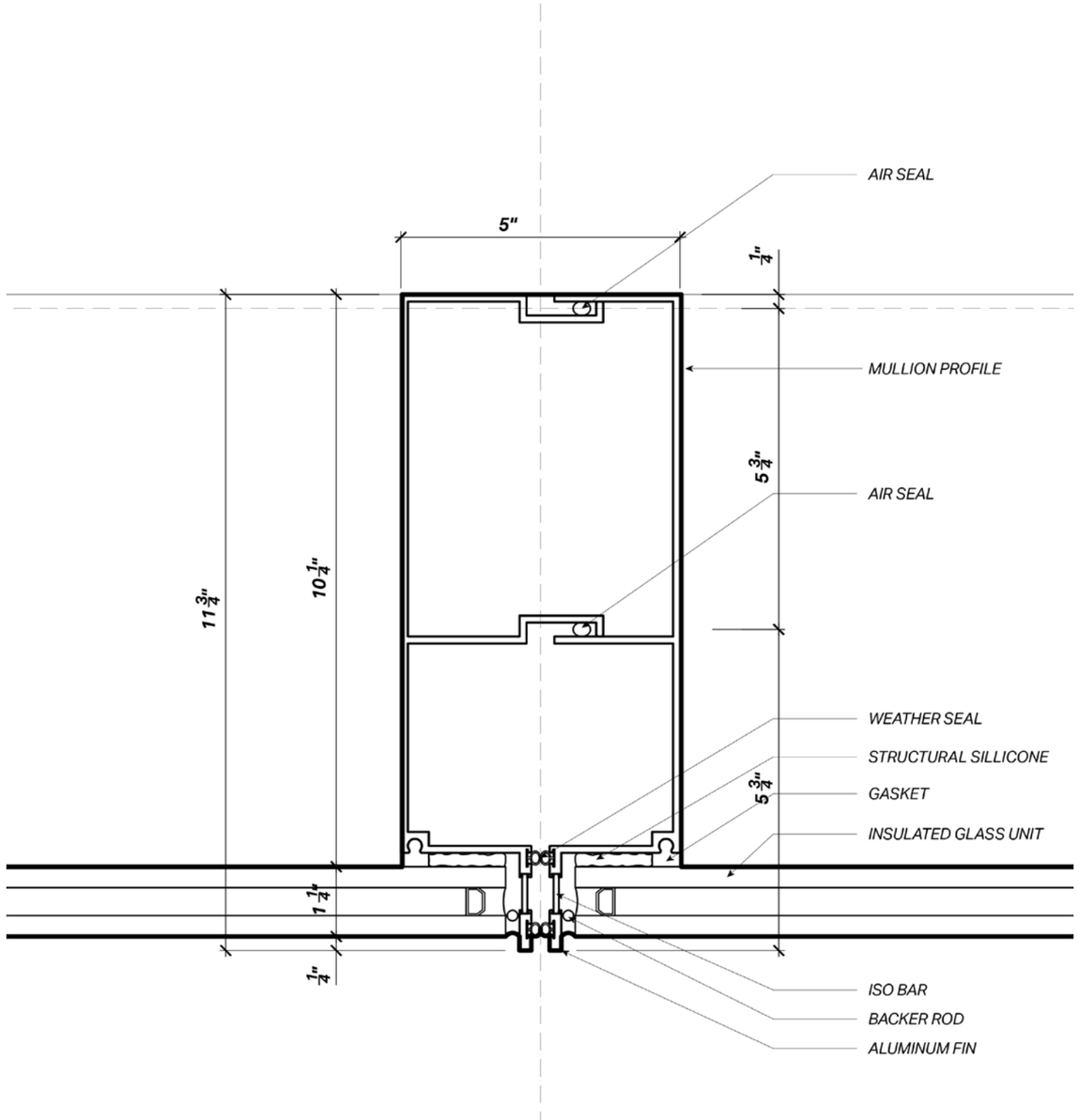
With glass walkways populated around the building facade, in order to structurally support these walkways, they became hanging glass walkways that would be connected to mega truss at the top.

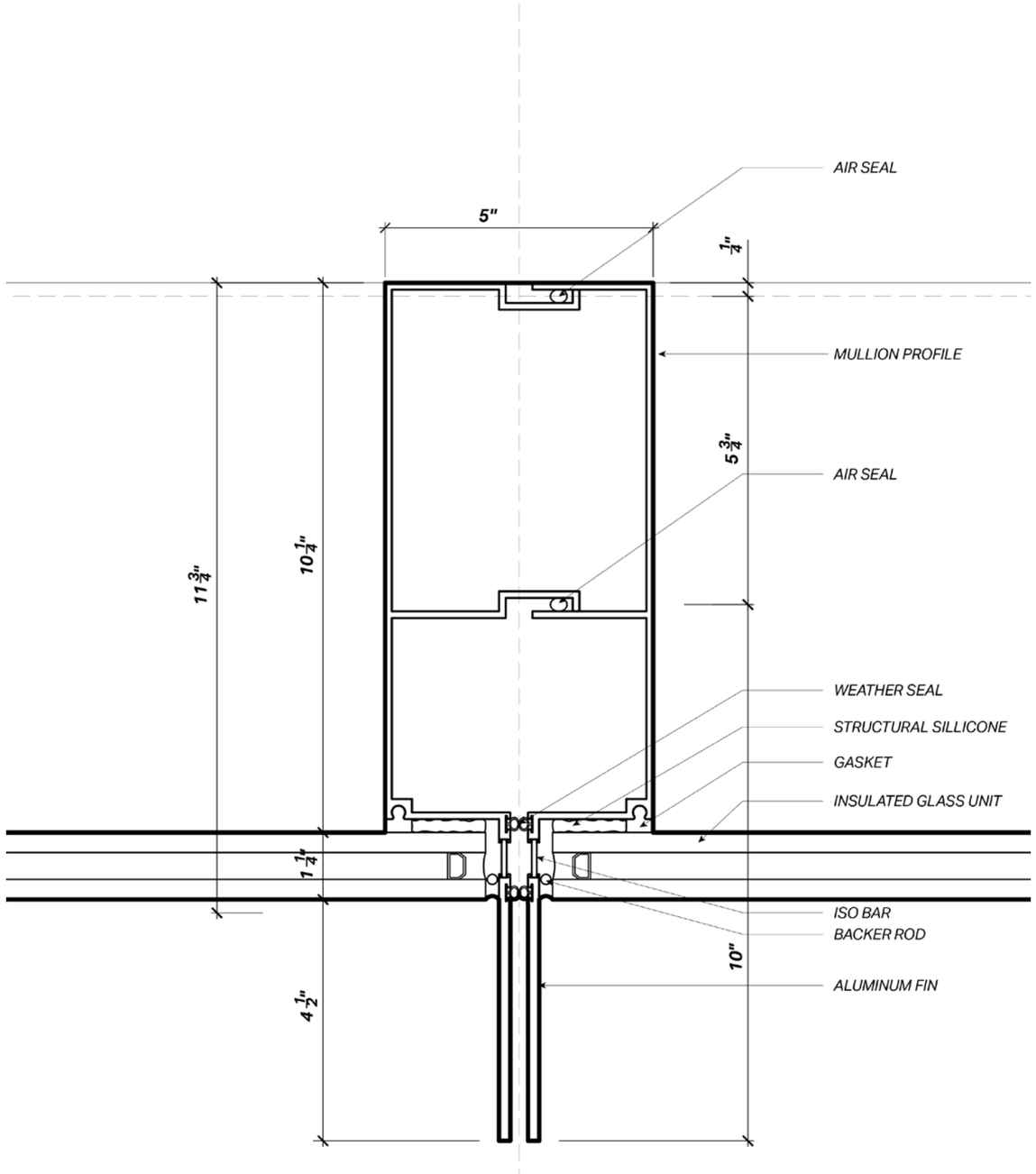


FACADE CHUNK

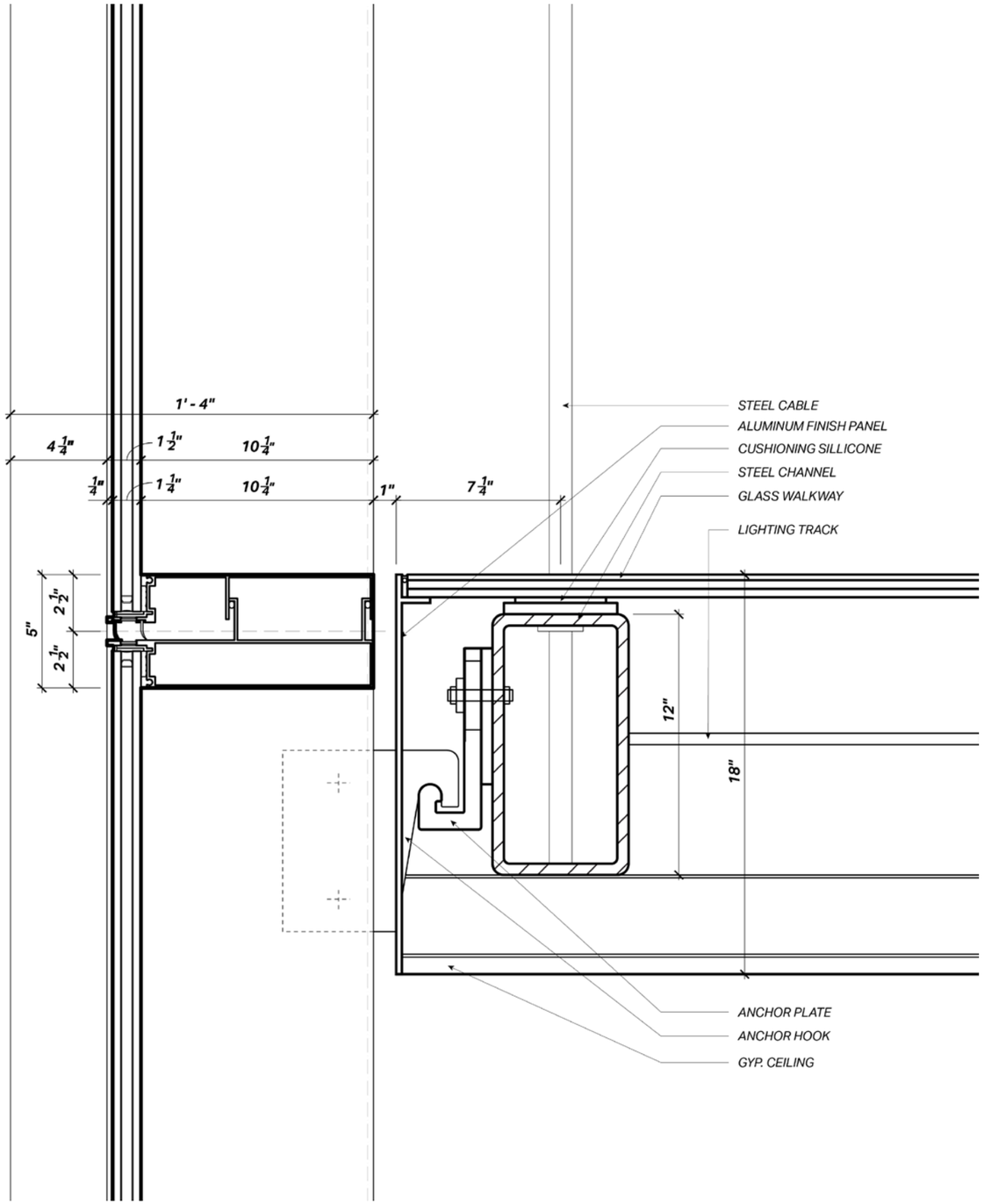
The chunk rendering shows the hanging condition of the glass walkway verses the condition at where it meets with the slab. Glass railing is placed along the walkways, where as folding doors with the same frit pattern will be behind the curtain wall, creating a double layer effect.

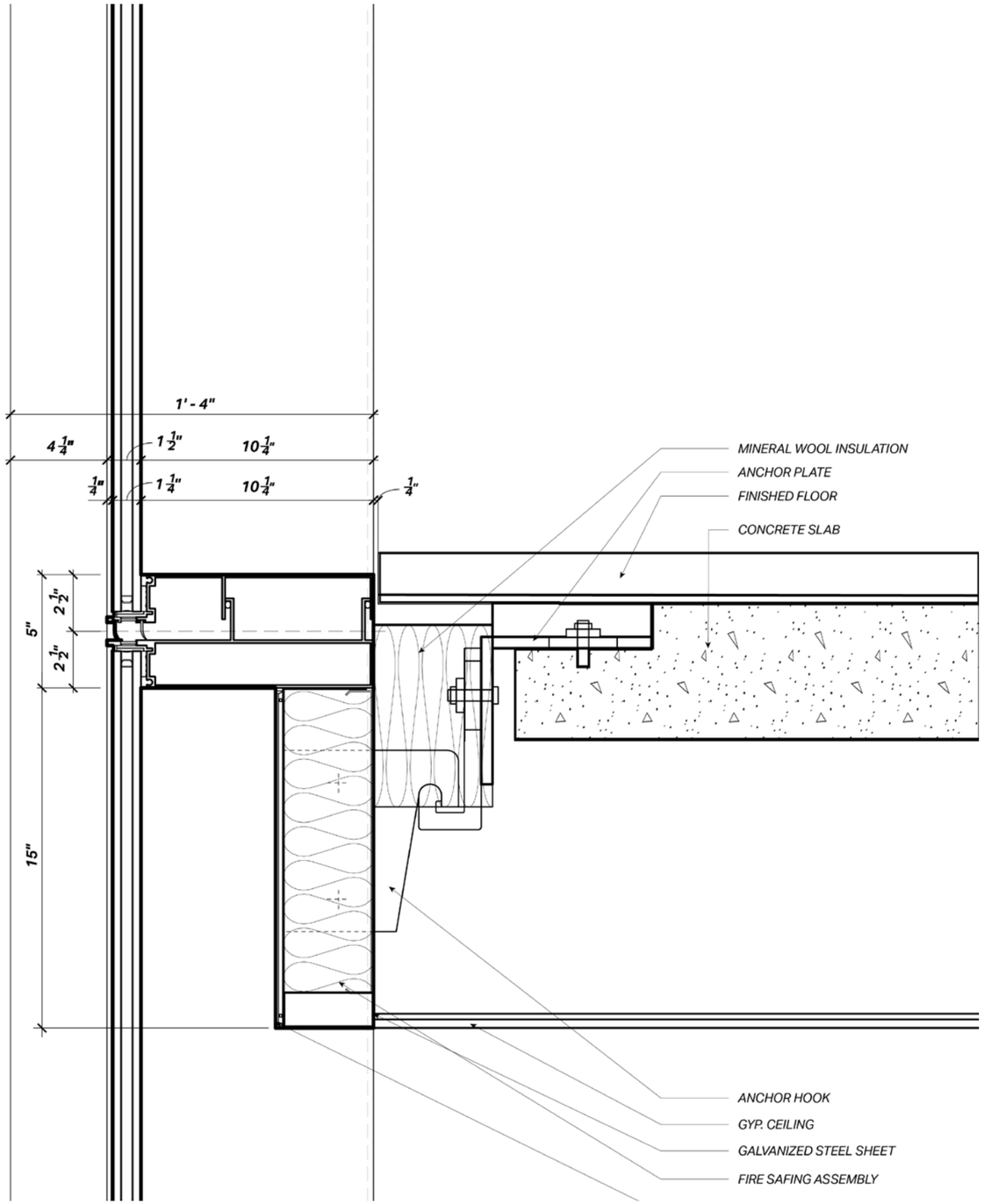
VERTICAL MULLION DETAILS





MULLION SECTION DETAIL





THE DESERTED DUNES

PHILLIP CRUPI & JOSEPH BRENNAN
ROURKE BRAKEVILLE & VASCO LI

The Deserted Dunes takes its inspiration from a ruinous library in the middle of the desert. After years of the architecture being forgotten, the sand has overtaken and created a new sense of circulation through the building. Approaching the architecture, all but the rectangular walls are buried, and there is a mysterious reflective light that creates a beacon of interest. In the back, the reading room is flooded by the overrun sand as light floods the space. Moving down and into the building, the main hall is where the stacks line the surrounding floors. Here, stairs flank either side and the bookshelves have been left all but barren with books. At the end of the corridor, there is the courtyard with a large foreign spiral staircase that rises up and through. Without entering up the stairs, the visitor is left with a sense of mystery and hope.

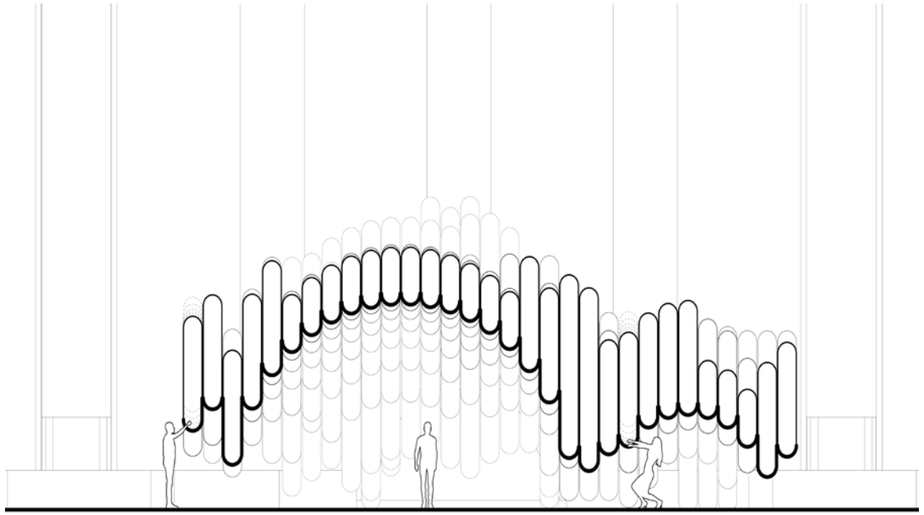
CULMINATION

SPECTRA 121

SPECTRA

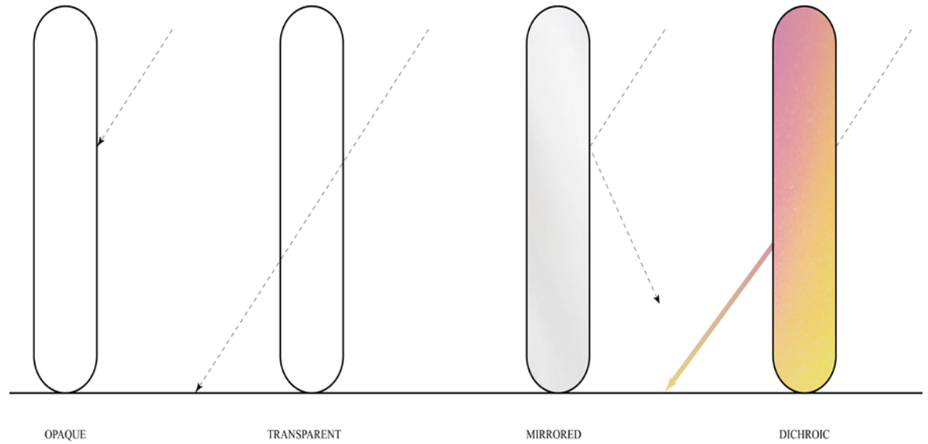
GALIA SOLOMONOFF & LAURIE HAWKINSON
ANOUSHAE EIRABIE, ROURKE BRAKEVILLE, HYOSIL YANG, AAHANA BANKER, ABRI AIKEN, OMAR BADRIEK, BISHENG HONG, YINING LAI, VASCO LI

Spectra began with the curiosity to study materiality and texture to create interactivity between the architecture and the user. The use of aggregation became a way to pixelate the pavilion to gain more control of the interactivity that the modules are allowing. Floating between Avery Hall and Fayerweather Hall, Spectra is an inflatable pavilion that provides a unique experience of serenity through the use of lighting and reflection of the module's surfaces. The pavilion is also designed to accommodate solar panels on the roof, which allows it to be energy independent and sustainable.



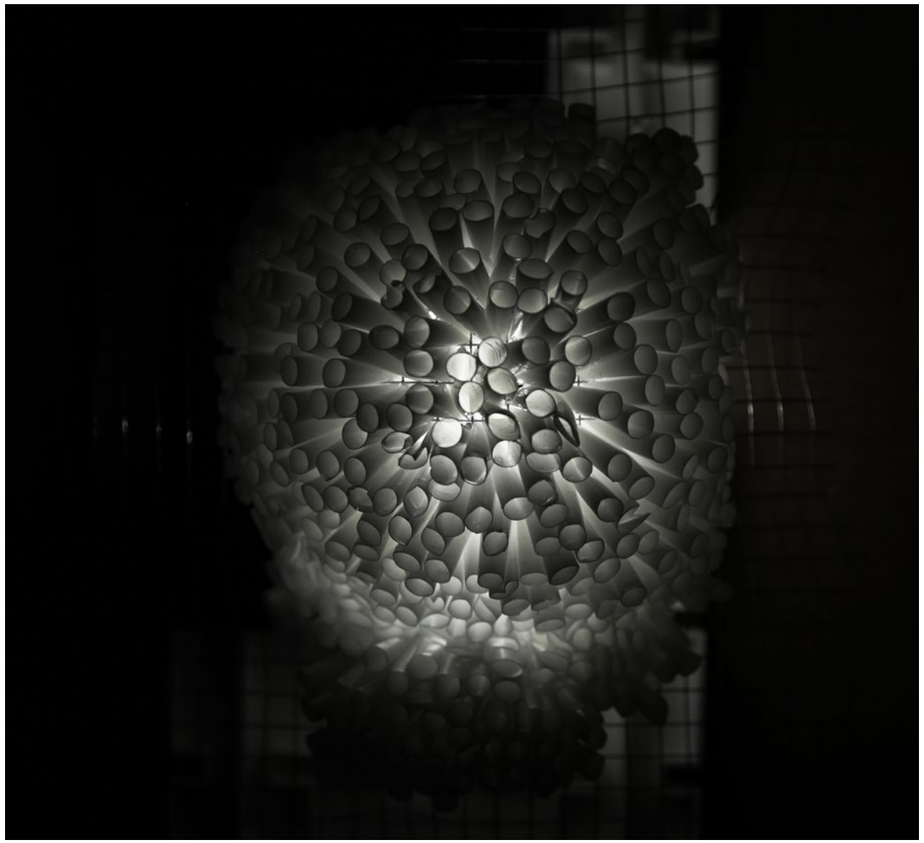
EXPLORE: INTERACTIVITY

Initial explorations of inflatable modules that allowed users to maneuver through space as they saw fit. These modules would be tightly packed together and allow for just enough friction for users to slide the modules up and down.



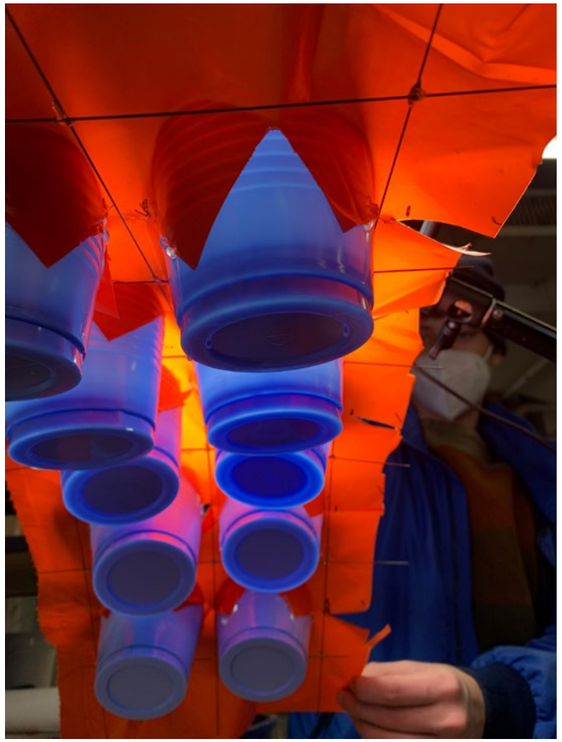
EXPLORE: MATERIALITY

Materiality was a crucial part to the project, as aggregation might spell repetitiveness, materiality can help diversify the experience in combination with lighting and reflection.



STUDY: STRAW AGGREGATION

The initial physical modeling of the pavilion began with a mesh net, that allowed for a certain sized module to fit through. Stumbling upon the folding of straws, it became the module that was aggregated across the net and forming a dome. The folded straws had two surface textures, with the underside being tooth like, and the top side having two holes at each end of a straw.



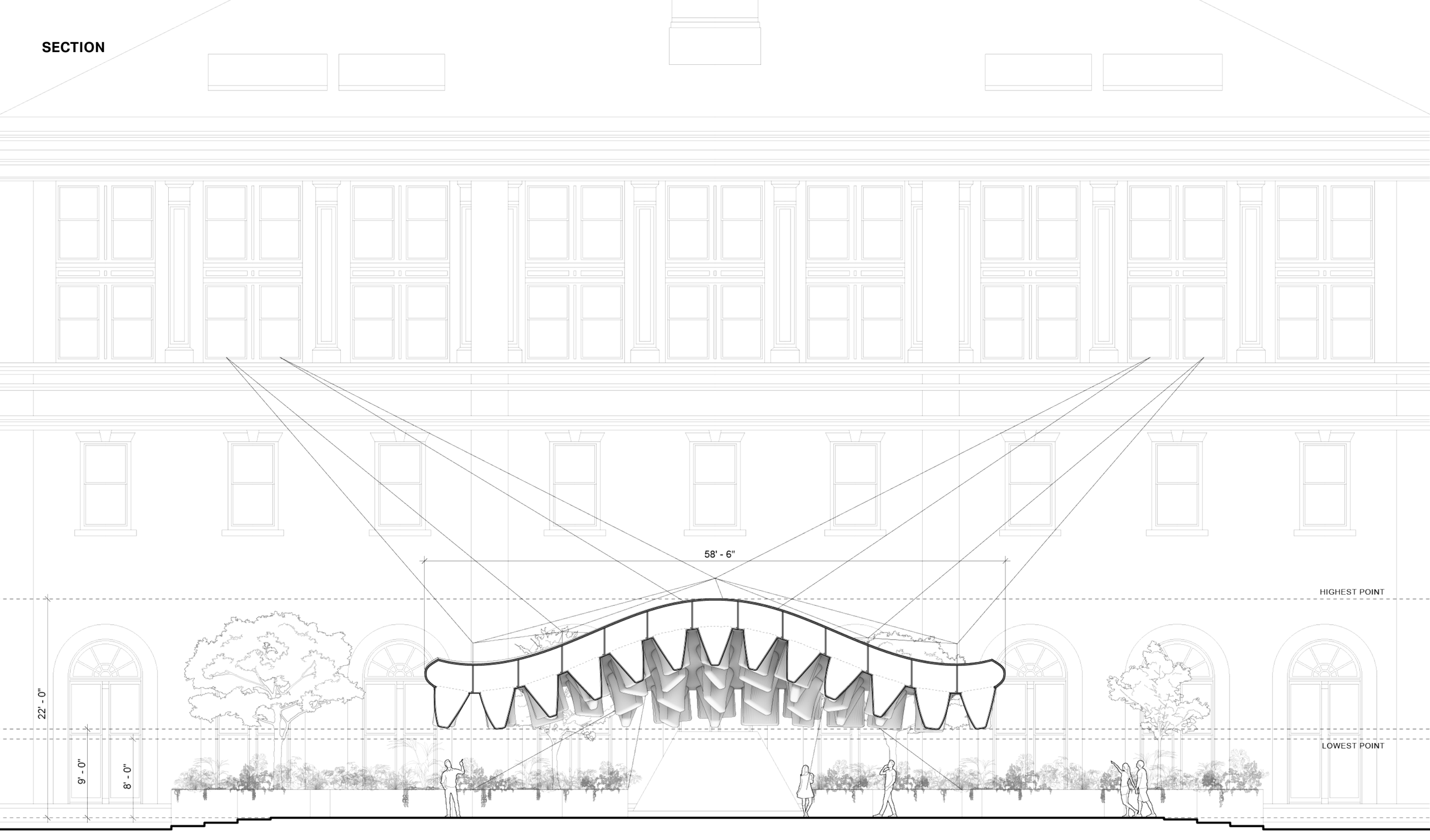
STUDY: MODULE TO MEMBRANE

After the study of a small scale module, larger scale prototypes were investigated through the use of cups to mimic the lighting conditions that the straw modules had created. This study was also to understand how the underside could be waterproofed with a membrane when modules are poking through it.

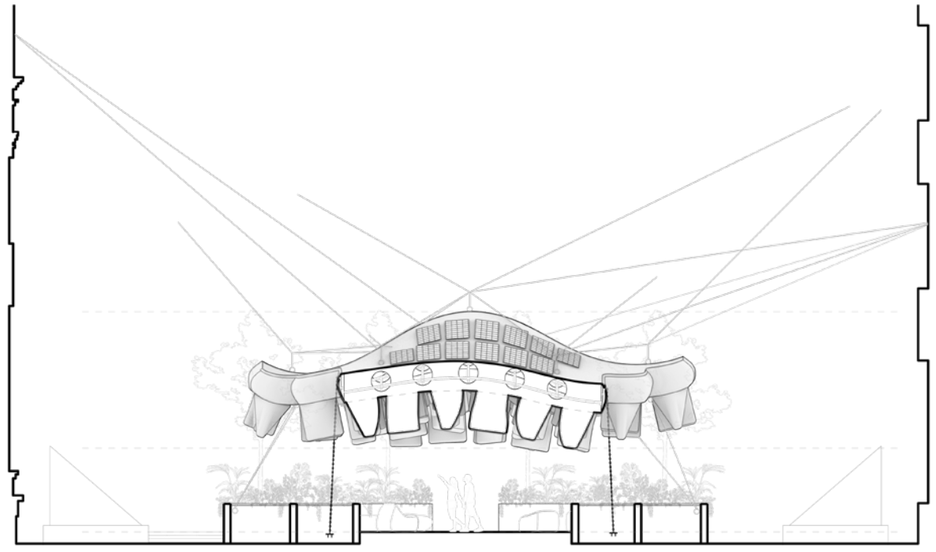
INITIAL AGGREGATION
TRANSLUCENT VS MIRROR

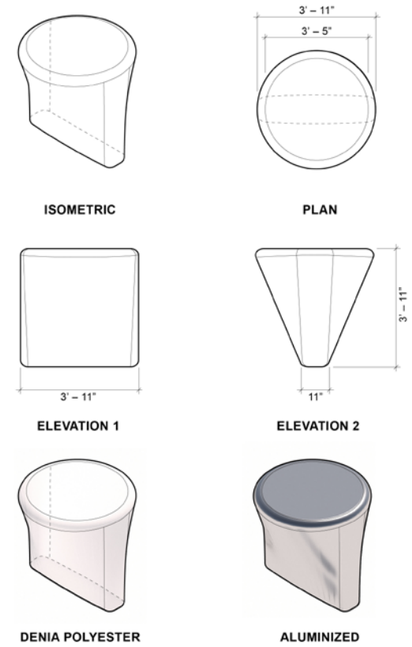
FINAL AGGREGATION

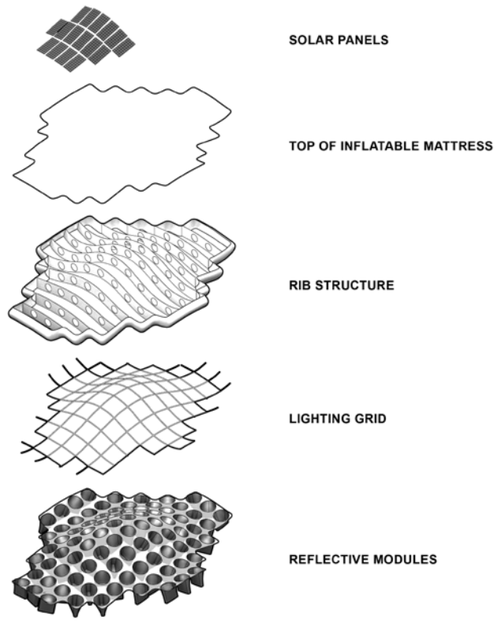
SECTION



CONSTRUCTION SYSTEM





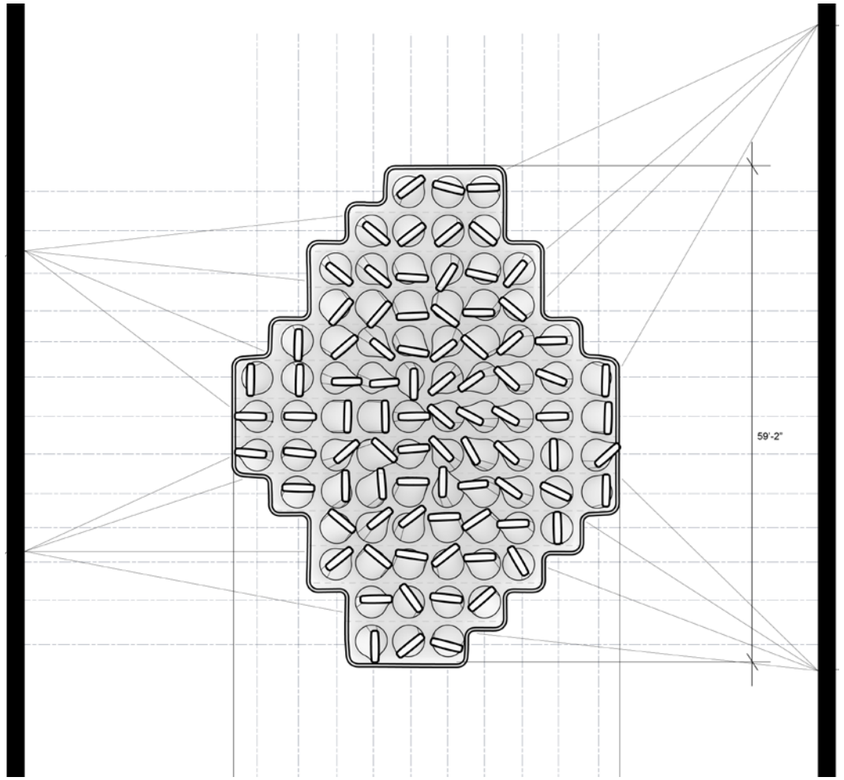


STRUCTURE: CABLES AND RIBS

In order to support the weight of the individual inflatable modules, fabric ribs are ran along the short side of the pavilion in order to provide rigidity and support. As for the pavilion itself, due to wind updrafts, cables would have to attach not only to the sides of the building, but also anchored to the ground.

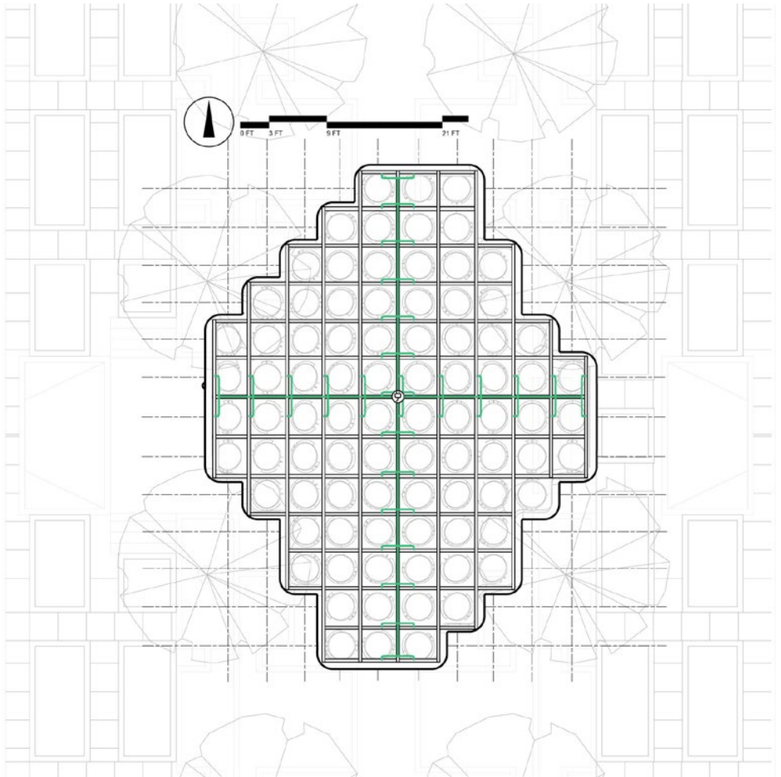
MATERIALS AND SYSTEMS

The lighting grid will be embedded within the inflatable mattress, running through the rib structure of the mattress and along side the modules. Solar panels will be mounted on the south end of the pavilion to optimize solar harvesting.



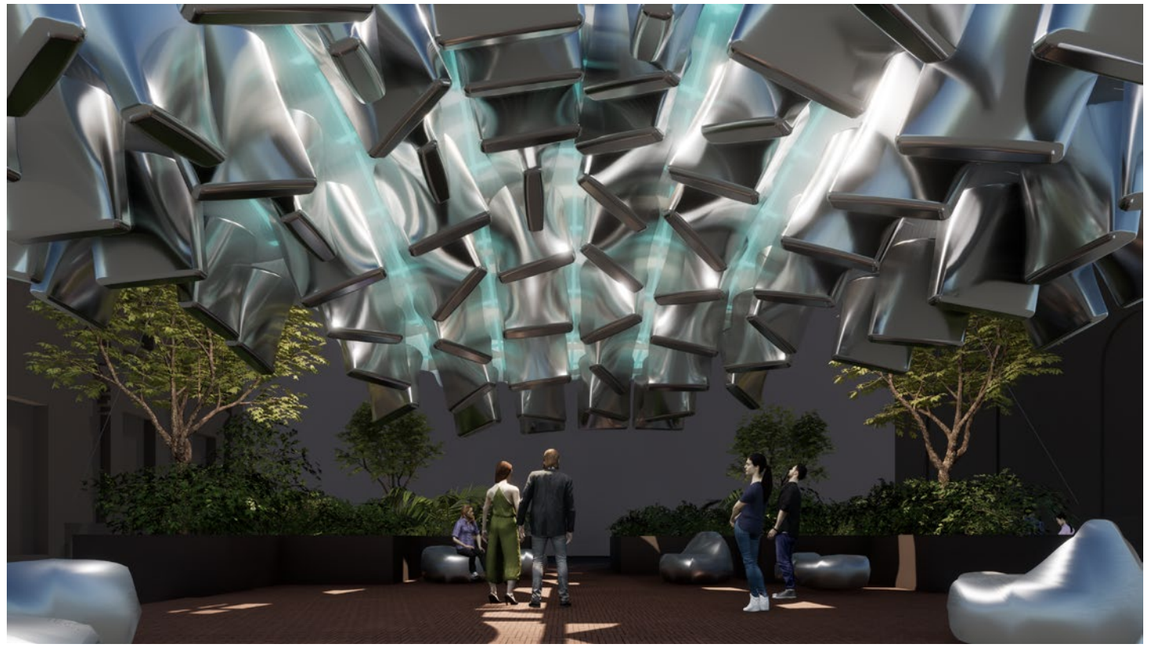
REFLECTED CEILING PLAN

Each module has a slight rotation to it in order to remove linear directionality visually. The rotations create more unique moments of reflection between modules and lighting, but also emulates more of a dome like effect with the flowing surface.



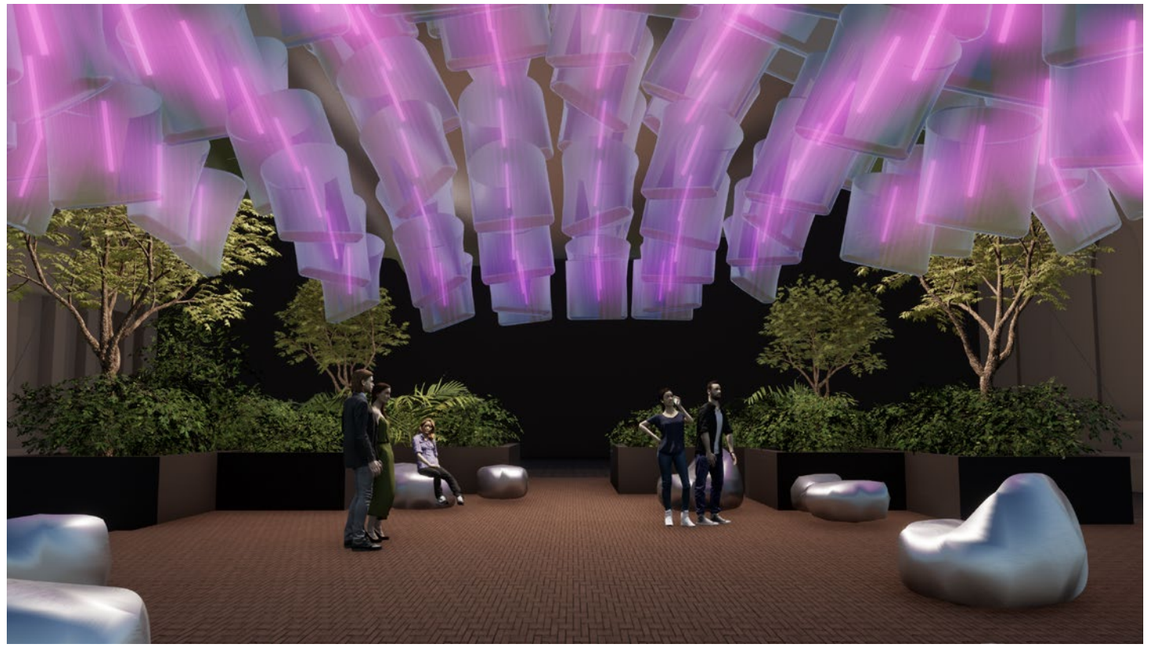
LIGHTING SYSTEM

The lighting system is designed to respond to users below the pavilion, with sensors installed at each entrance. Sensing motion, a light show could be designed based on the location of the users and music played at the time, creating a new layer of interactivity between the user and the pavilion.



LIGHTING IN MATTRESS

With the lighting mattress option, lighting strips embedded between the modules will glow through the gaps and refract off of the reflective modules, creating an ambiance like no other.



LIGHTING IN MODULE

With the lighting module option, the material of the modules would be transparent, which allows of light to come through, but users would also see the lighting that are installed within each module. This option creates a double layer of aggregation and allow for simple pixelating light shows utilizing the modules.

VORONOI CLUSTERS

The furniture were designed to be in clusters, allowing it to form as larger tables or seating, but also break apart as smaller individual furniture. The voronoi pattern allows for organic divisions of a blob-like shape .

STOOLS TO SHELVES, TABLES TO ROCKING CHAIRS

After breaking apart the clusters, the stools could also be stacked to be used as shelves or high stands for projectors. As for the tables, not only do they serve their purpose, but by rotating sideways, the table could also become a rocking chair/ lounge chair, and each of these “table chairs” have two orientation of seating that the user can pick from.