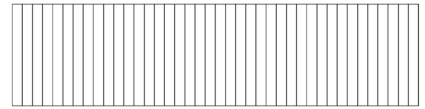


HAVEN

+



NOMAD40



FIGURE 1 | Seattle Space Needle Under Construction, 1962.

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[abakusplace.blogspot.com](http://abakusplace.blogspot.com)



# HAVEN

A Design Thesis Submitted to the  
Department of Architecture and Landscape Archi-  
tecture of North Dakota State University

In Partial Fulfillment of the Requirements for the  
Degree of  
Master of Architecture

  
Primary Thesis Advisor

  
Thesis Committee Chair

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FIGURE 2 | Aerial Views of the KOMO KJR Transmitter on Harbor Island 1964.

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[www.theradiohistorian.org](http://www.theradiohistorian.org)

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# HAVEN

English

[hāven] *-noun.*

a place of safety or refuge.

Dutch

[hāven] *-noun.*

an inlet providing shelter for ships  
or boats; a harbor or small port.

# ABSTRACT

The modern day individual has lost connection with their environment by putting up a metaphorical and literal wall. By re-structuring the way in which we design vertical communities we have the potential to develop a system that produces and promotes accidental interaction between humans and their environment. The promoted interaction is produced by the circulation of "the hive" structure. With a strong focus on social equality, "the hive" encourages individual to create that value through the promoted community.

Sunk into a strong colonic form, "the hive," you'll find people living in modules, called the nomad40, with a paradox of stairs, walkways and public spaces creating separate realms of interaction between the individual units. The nomad40 gives humans the opportunity to travel the world, live anywhere, and carry their structure with them as the modules have the ability to physically plug in and out of a location. This uniform 4,000 cubic foot space links to the sea, rail, and freight giving the modules unlimited potential on reaching its destination. This conceptual thesis project is all possible by repurposing existing materials and structures





# PROPOSAL

# NARRATIVE

## OF THE UNIFYING IDEA OF THESIS

In large populated cities the cost of land makes living unaffordable for a majority of the population. Creating a long commute to work from the suburbs instead of having their house located next to or in the core of the city. Some of the largest and more expensive cities have a few things in common such as: next to the water, have large shipping industries, and shortage on land use. San Francisco, New York City, and Los Angeles are prime examples of this being some of the most expensive places to live in the country. Diving in to different city, Seattle, Washington is also growing at a terrifying rate, the technology industry boom and major tech companies like, Amazon, Microsoft, Google, etc. located in the Downtown District of Seattle are taking over. "Tech Boys" cause the average square foot of living space to increase, with multiple high rise towers filled with primarily males in their 20's. These young adults have a higher income than most adults involved in the workforce of Seattle, pushing them out of the city. The idea of owning a house in the city becomes quite the feat, which is why when you want a family and a house you often find people moving out to the suburbs.

In earlier year the concept of prefabricated homes surfaced, more uniform in price and affordable. Mobile homes are a prime example of this, set dimensioned and outfitted with wheels or on supports to offer the relocation of the structure. They became popular with middle to low income families. They would colonize and form trailer parks (or an array of different names). In Seattle, one might not think to develop a trailer park in the city, but what if a different aesthetic was implemented.

There are thousands of abandoned shipping containers in the port of Seattle that either get forgotten or that make a trip to the port and don't have a purpose to get returned to the port of origin. This graveyard situation is true with all major port cities in the world. Taking these unused containers to create a mobile home by prefabricating the uniform structure. The park can be created on a different platform, not even located on land. In existence there are several piers that are not being used to their full potential, along with decommissioned cargo carriers sitting in the harbor to die. Repurposing the ships and piers to create this trailer park.

Using these modular shipping units will keep the mobilization of the homes alive as well, with the container homes able to be placed on current shipments and transported to piers in the United States and the world.



FIGURE 3 | Aerial Views of the KOMO KJR Transmitter on Harbor Island 1936.

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[www.theradiohistorian.org](http://www.theradiohistorian.org)

# SITE

Haven is a conceptual thesis design project that wants to tackle more than one site and all around the world as well. What these sites will have is water access (access to the main ports of the shipping industry) close distance rail transportation and city transportation in general, and a green space that brings the city to one space. Pier 48 in Seattle, Washington has lots of history on how the city was started on being the main area where immigrants came to the main land, how Pacific North West Indians would fish, and even Nirvana playing several shows on the docks. And more recently the Coleman Dock (pier to the north that serves as the ferry terminal that connects Seattle to Bainbridge Island and Bremerton) was undergoing construction so the city government demolished the warehouses on Pier 48 to serve as a staging platform for the equipment used in the construction of the ferry terminal. That being said my conceptual site on involving the pier is beautifully connected to the city as well as public transportation. Seattle is a thriving shipping and fishing

city with a deep history of being one of the largest ports for imports as well having a constant flow of harvesting seafood. But with the recent technology boom, is causing Seattle to grow at a rate that they were not prepared for.

Building on both water and utilizing some of the baron concrete of the largest cargo harbor in the United States gives great potential to develop a successful community expansion.

Seattle is known for their water, for surrounding the city as well as falling from the sky. International influences also give a great amount of culture to Seattle, having a design and community aesthetic in similar styles of the history of the city. This creates an interesting blend with the heavy Asian immigrant population. This city is light years ahead of other major cities in the Midwest and East Coast for being progressive in social issues, with the arts influencing the design and concepts of the city.



FIGURE 4 | Through The Gates To The Site

# TYOLOGY

Haven is a graduate thesis project that is about thinking toward the future of home living and growing communities. Taking prebuilt homes and finding a new placement strategy for them of the land.

There is new proposals every day for developments on the water but they tend to only reach for the luxurious and wealthy markets. With the price of the units on land in the city costing just as much to live in. I will be looking at re use of existing spaces and structures to bring the cost to a reasonable amount for the client.

Recycling and repurposing is something that will make Haven an effective thesis design process. Using a decommissioned cargo ship to build a lively community of modular homes. Also, taking abandoned containers that are left or forgotten on

ports and making them modern homes. Taking the old Pier 48 in Seattle, creating the green space for the ship to be tied up to and connecting it to the city.

Reaching the world with this thesis design, realizing that this population and cost of living market is on the rise all around the world. There being the previous aesthetics mentioned existing in cities all around the world.

Haven literally connects each of these cities around the world, from houses being transferred from hub to hub to plug in their mobile home. I see this conceptual design model implicated to 6 of the 7 continents with multiple ports on each to test out the methods for living on water.





FIGURE 5 | Seattle Water Home

# MAJOR PROJECT ELEMENTS

## PIER

This large platform will serve as a green space for the community and city to enjoy along the Waterfront. The green space will have designed park features and elements for the residents nearby and the city of Seattle will get attracted to the space. Elements that the pier could house is playing beach, jungle gyms, spaces designed for setting up events, etc. Events like farmers markets, art shows, and concerts.

## SHIP

A large decommissioned cargo ship is the building block to this living experiment. The ship will contain things such as mechanical, plumbing, electrical, etc. to aid to the several cargo container homes placed on the ship. The ship will be able to hold anywhere up to 120 containers and will need adequate circulation to reach the units. Administration and service providers will also be located on the ship with adequate space.

## CONTAINERS

These containers will be recycled and repurposed to be used as single units of living. They will be outfitted with sleeping and living spaces. A condensed kitchen, and bathroom will be located in the container as well. Proper ventilation and plumbing will need to be designed in a uniform matter (making all containers similar) to plug in to their ship hubs. With these stacking containers it will create some great challenges with natural light, but each unit will have adequate natural light.





FIGURE 6 | Mossy Pier Piles



FIGURE 7 | Loading at Pier 46



FIGURE 8 | Loaded Containers

# PROJECT EMPHASIS

## ADAPT FOR POPULATION CHANGE

Create a community that can adjust for the increasing and decreasing demand for housing. As well make it affordable to live along the core of the city.

## DESIGN FOR CHANGE

People get new jobs in new locations sometimes more frequent then they stay in a location. Whatever the circumstance may be, the home has the option to be mobile and transfer to anywhere they would want, by land or sea.

## DEVELOP/RE USE/RECYCLE

Design on spaces that aren't being utilized to their fullest potential as well as build off the main land to avoid overcrowding and land cost. Recycling old shipping containers to create an effective and affordable modular home model.



FIGURE 9 | Seattle Travel Mobile



# GOALS

## CONCEPTUALLY

Develop a community aesthetic to fit a variety of locations around the country and the world. To both utilize the piers and surroundings as best as possible given the cities location.

## COHESIVE DESIGN

Design a modular living unit that can perform mechanically and passively. Using design methods to make each unit uniform in design so they are truly universal in location. Draw and complete sets of drawings to make the organization and build techniques complete.

## THEORETICALLY

Develop a method to globalize the act of mobile housing using the container units as a systematic transfer system. Design in detail how the transition of units can be done safely and effectively to complete the "plug in" process.



# SITE



FIGURE 10 | City map with Site Box

## WORLD

To effectively show the impact of my thesis in a world perspective I will be showing how my conceptual designs can be plugged into multiple ports in several different concepts. Similar in size, and with matching properties such as public transportation access, location to the core city, etc. Showing an example of this idea to six of the 7 continents.

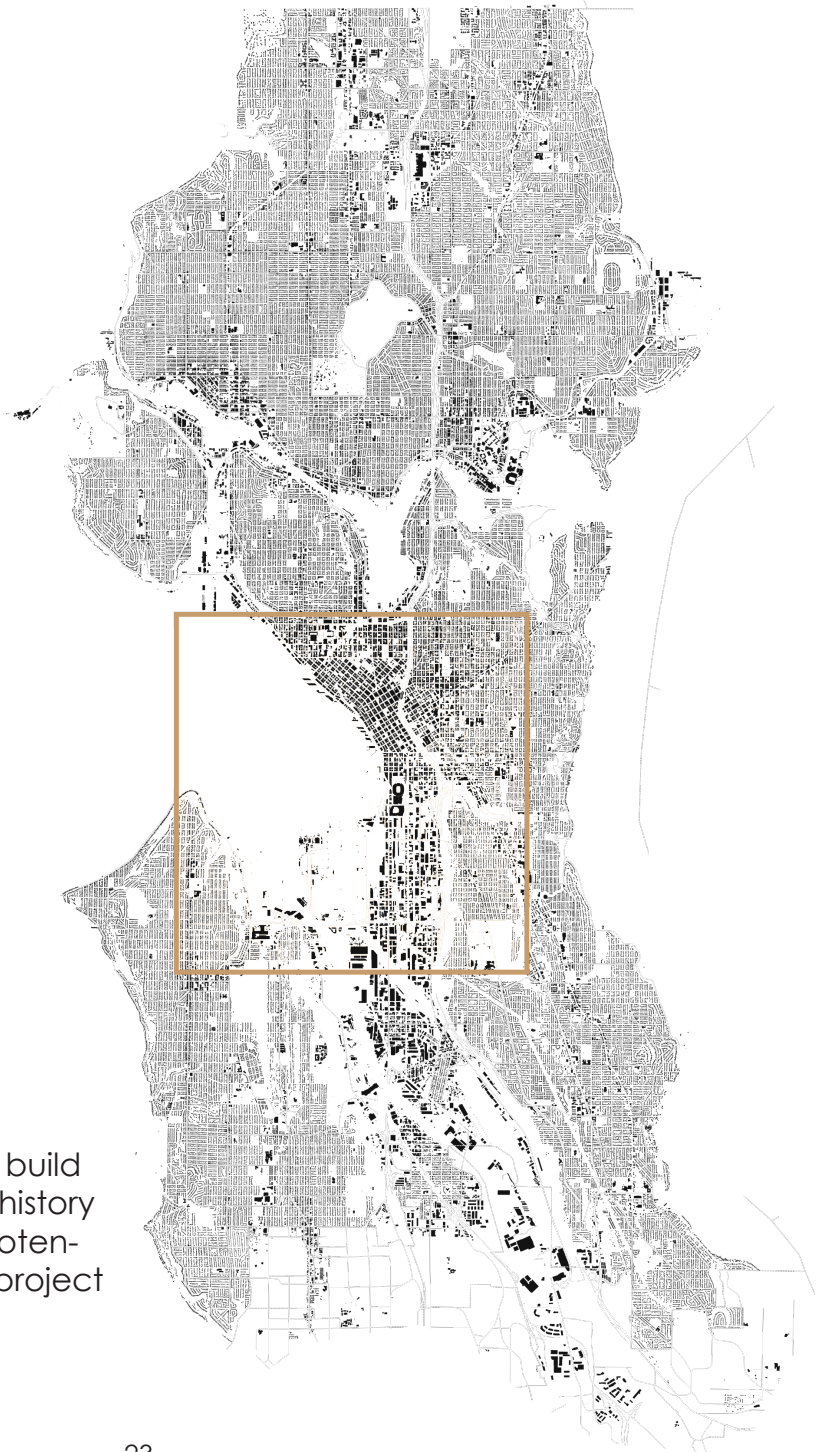


FIGURE 11 | Site Box

## SEATTLE

Seattle was the perfect template to build this thesis design model, with dense history that lies within the site gives lots of potential to develop in depth a beautiful project that is also effective.

# USER/CLIENT DESCRIPTION

## FIRST

The main target audience for this thesis design project is the consumers of the container units. The cost and function of these containers are for middle to low income housing that work in the city to avoid a treacherous commute and outrageous rental rates. This will also appeal to the person that wants to avoid the leasing of units and purchasing the residence instead. Economically the container is financially more effective over a period of time. The average rent in these large port cities are typically 1500 to 2500 dollars a month (in reference to the size of a container). In only a few years' time the container would pay for itself.

This thesis project will also appeal to the person that is constantly relocating for work/pleasure. These hubs are located

on major ports around the world, but this conceptual design isn't limited to the ports. Shipping containers in there module forms are also commonly transported by rail or even freight. In most circumstances there is rail lines that connect to the ports for most other shipments. So with a universal connection system they can find themselves taking their home with them wherever they need to go.

## SECOND

The general public is also a target client for the Haven thesis design project. With a large amount of public amenities such as green space, parks, etc. There is a large amount of tourism foot traffic along big cities waterfront. With the location of this community development, you can find a relief of the compact city aesthetic with views of the water and fresh air.



FIGURE 12 | Seattle Floating Community



FIGURE 13 | Views Of The Carriers From The Site



FIGURE 14 | People Outside The Mission





FIGURE 15 | Boats





FIGURE 16 | Loading



# PROGRAM

# TYOPOLOGICAL RESEARCH

This project is based on the conceptual ideas of building a community located on the water. Similar projects have been produced, thought of, and attempted all around the world. But researching the several aspects that I will be combining will be crucial to this thesis.

I will need to take the thoughts and strategies from designers that have forward thought the approach to the constant growth in population in the major cities, looked into the ideas and functionality of building vertical communities that serve hundreds of people on a vessel, and stud-

ied the foreign practices of creating new districts out of the re use of land that has more potential than laying there baron. The following case studies taught me how to push existing ideas to the next level of my design. They also will help the reader further understand the requirements to produce this idea.

The following studies represent the concepts that this thesis project, and get pushed to a different levels of theoretical and physical design. Each case study is widely different but still connected to one another.



FIGURE 17 | The Pike Place Market, Circa 1907

- [abakusplace.blogspot.com](http://abakusplace.blogspot.com)

# LITERATURE REVIEW



FIGURE 18 | Harbor Island

In summary of the article "Life Cycle Assessment of Shipping Container homes: A Sustainable Construction." Just like the title they respond to many issue to the current use containers and the likely desertion of the modular units after their intended destination. The article mentions how after the container makes it to the port and unloaded, frequently there is not a shipment that instance that would take the container back to its origin. The numbers of containers pile up on these ports causing them to get lost or forgotten. So the sustainability aspect of transforming these containers into homes gets created. It is mentioned on how attractive the containers are to create living spaces, the article lists of what has been done from single unit tiny dwellings to complete hotels made from multiple stacked on each other. The strong structural steel exterior doesn't corrode, and has the potential to be stacked on each other 8 times gives the perfect prefabricated aesthetic of a tiny to large home. If taking these deserted containers and purchasing them from the ports could be extremely beneficial to both the port and consumer.

The current status of the shipping container is stated by the article that there are over 17 million containers around the world waiting to be re assigned for another location. People started noticing this back

in 2006 when the first container home was built after passing a strict number of code guidelines they saw a future with doing multiple projects all around the world at a fast climbing rate. These projects claim to have on site waste as well as an average of half the time to construct the projects. The struggles are also made precedent in the article talking about the hot summer months causing the steel containers to get very warm and vice versa in the winter. But later in the article they talk about sustainable materials used to outfit these containers to give the ability to handle these elements through insulation. The life of a shipping container is dramatically longer than a typical house and the maintenance is noticeably less and the container produces over 50 percent less waste overtime compared to a standard home.

I can agree with several things in this article one being that this is a world healthy option to develop homes faster and more efficiently, also, having them be more financially feasible. The article solidifies the fact there is a waste of shipping containers in ports all around the world. I will take the several data tables located in this article to research the materials used in the construction process.

# NDSM WHARF

TYPOLOGY: Community re-use

LOCATION: The banks of the River IJ in Amsterdam, Netherlands

SIZE: About 71,400m<sup>2</sup>

## HISTORY

In 1937, the company NSM was the largest shipbuilding company in the world, building large vessels, such as passenger, tanker, and cargo ships. Later the company merged the Dutch shipbuilders of NDM, becoming Nederlandsche Dok en Scheepsbouw Maatschappij (NDSM). Located in Amsterdam North, NDSM ship wharf continued to build excellent vessels and war ships for the Dutch navy. In 1978, the Wharf found a shortage of new orders to build new vessels causing them to lose substantial income, they continued to service the ships until 1984 for repairs and maintenance. After 1984, industry of Dutch ship building came to an end, and left the buildings vacant. Soon after the dissolving of the ship building industry, residents in Amsterdam were found squatting in the empty building and using these diverse spaces for creating. The city of Amsterdam loved the idea that had come about and pushed it even further since then the land, buildings, equipment, etc. have been used to there fullest potential.

## PROGRAM ELEMENTS

RESIDENTIAL  
HOSPITALITY  
PUBLIC SPACE  
DINING  
ARTS  
COMMERCIAL

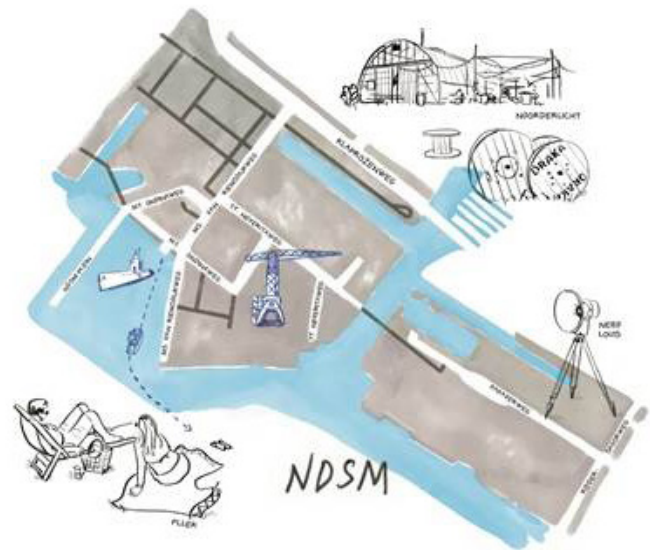


FIGURE 19 | The Neighborhood Map

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[iamsterdam.com](http://iamsterdam.com)

NDSM Wharf is a community in the Netherlands that finds itself catering to the arts community in Amsterdam. This old shipyard is home to several restaurants, shops, festivals, housing, etc. The Wharf, brings locals, tourist, and residents to its water front location and accessing this vibrant community is simple with a free ferry that leaves the Amsterdam Central Station with a commute time of 15 minutes.



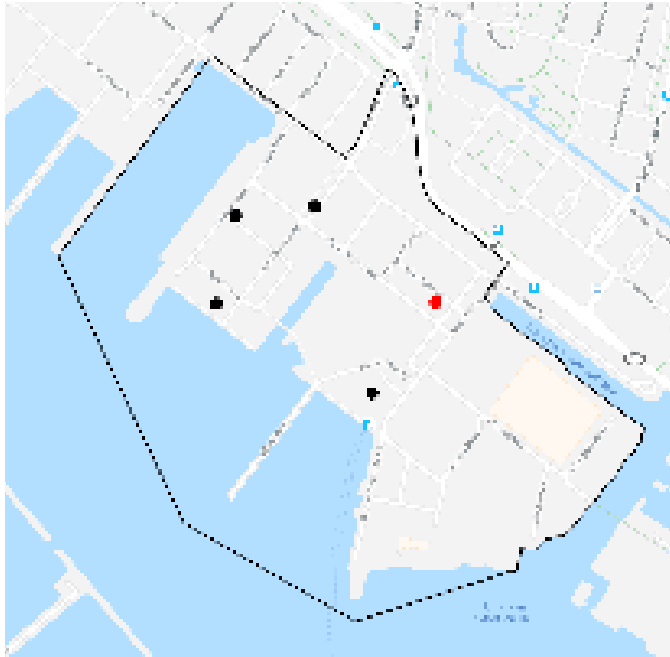


FIGURE 20 | Living Map  
-  
ndsm.nl

Living in the NDSM Wharf has been becoming wildly popular, with over 2000 residents, this re use development really sets the stage for projects in the future. Living units vary in all shapes and sizes with 5 different locations, for several demographics.

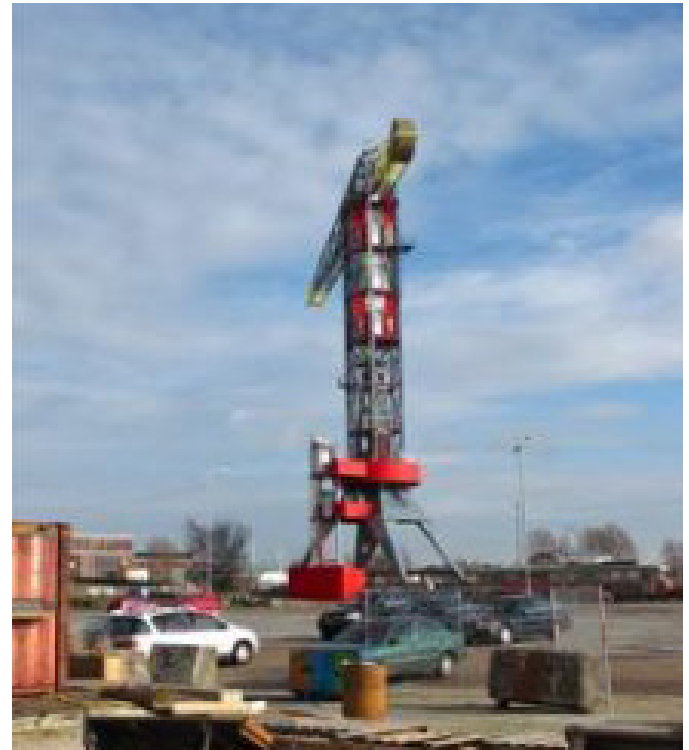


FIGURE 21 | Amsterdam NDSM Crane Hotel  
-  
whatsupwithamsterdam.com

The reuse of 'Crane 13' (the last standing crane in NDSM Wharf) into a luxury hotel is a brilliant redevelopment of an existing structure. Now called Crane Hotel offers 3 rooms physically built into the crane for spectacular views.



FIGURE 22 | Temporary Container Units  
-  
ndsm.nl

The living quarters that is most relevant to my thesis project is the temporary container units. These living spaces will be used until no later than 2020 and gradually phased to make space for permanent development. Each unit is 24m<sup>2</sup> and has a kitchen, bathroom, TV, an internet and cost only about 225 Euros a month. These portable containers are movable and not adhered to one another. Student living has become popular in the Wharf with the cheap cost of living and the creative community aesthetic.

Methods from the inside the warehouse can also be used in my thesis project's strategy in design. Located in the warehouse you will find many units that local artists, want to be artists and creatives produce and sell their work. Tourists and visitors have the opportunities to walk up and down these rows to admire their craft.



FIGURE 23 | NDSM Warehouses and IJ-Hallen  
-  
whatsupwithamsterdam.com



FIGURE 24 | Old Shipyard at the North of Amsterdam

- [whatsupwithamsterdam.com](http://whatsupwithamsterdam.com)

This shows the positive response to baron and vacant waterfront locations in repurposing and redevelopment. Thriving cultures and communities come alive in spaces with history, and NDSM Wharf is a great example on how this old vessel manufacturing area that produced the most superior ships in the world became some of the best districts for dining, retail, and housing. Further moving these design methods used in Amsterdam decades ago and applying a modern twist to design in locations in the United States can create a lovely and fully functioning community.

# VERNON C. BAIN CENTER

TYPOLOGY: Prison

LOCATION: 1 Halleck Street, New York, NY

SIZE: 625 feet long, 125 foot wide

## HISTORY

In New York in the eighties the Department of Corrections in New York City was experiencing difficulty with housing the growing population of inmates. With arguments of putting prisons in densely populated areas decisions to put the prison on the water was the next option. The Bain Center helped solve the crisis of available land in New York.

The Vernon C. Bain Center was built from 1989 to 1992 in New Orleans along the Mississippi River in the Avondale Shipyard. The price to build this large floating prison was 161 million dollars, 35 million dollars over budget, because during construction the expected an 18 month delay from a ventilation problem. Once to be thought of the most expensive prison of all time. The prison was then transported the 47,326 ton barge 1800 miles up the Long Island Sound by a tugboat.

## PROGRAM

CELLS

DORMS

2 FOOTBALL FIELDS

LIBRARY

RECREATION ROOMS

3 CHAPELS

KITCHEN

CAFETERIA



FIGURE 25 | Map of Vessel

On this barge there is currently 870 prisoners, and the high to medium risk inmates are held in 16 dormitories and 100 cells, along with a full staff to serve the inmates. This prison on the water contains the program of what all prisons have.



FIGURE 26 | Barge Floating on the East River is Home to 800 Prisoners

-

6sqft.com

In my research I discovered information drives the functional cost up, since this the Vernon C. Bain Center is floating the coast guard states that the vessel needs to have a maritime crew on board at all times. A maritime crew consists of a first mate, oiler, and an engineer, which has an estimated annual cost of about 650 thousand dollars a year.



FIGURE 27 | Most Depressing Barge in the World

-  
gcaptain.com

In the mid 1990's the facility was shut down for a few years with a shortage of inmates and enough space to occupy all prisoners on land. Even though the prison renders very effective with few escape attempts and only 1 successful.





FIGURE 28 | Parking Lot and Main Entrance to the Barge

-

6sqft.com

The knowledge gathered from this case study is that I will have to look into the regulations that the coast guard puts in place to avoid breaking any rules that could get my housing project fined or shut down, but also avoid extreme costs. Designing how mechanical systems, electrical systems, etc. are able to be serviced on the water with also backup systems in place to function. Simplifying security and safety measures to create a safe living environment for residents living on the water. Since it might be necessary to have areas open to the environment on this vessel, so looking into advance code requirements to make have this living ship possible.

# WILLIAM KATAVOLOS

TYPOLOGY: CITY

LOCATION: WORLD WIDE

SIZE: INFINITE



FIGURE 29 | Drawing of a City of Liquid Villas That Would Float on the Sea (1)

-  
[bombmagazine.org](http://bombmagazine.org)

William Katavolos and Peter Cook are famous for what they did 60 years ago when they were producing radical ideas of architecture. In the mid-century Katavolos and Cook were known for being an avant-gardists, which means, people that are considered to work in experimental and unorthodox ways with respect to art, society, and culture. Several avant-gardists were surfacing in the mid-century, they were designing expanding towers, walking cities, etc. Designers and architects were holding nothing back in producing ideas for the future.



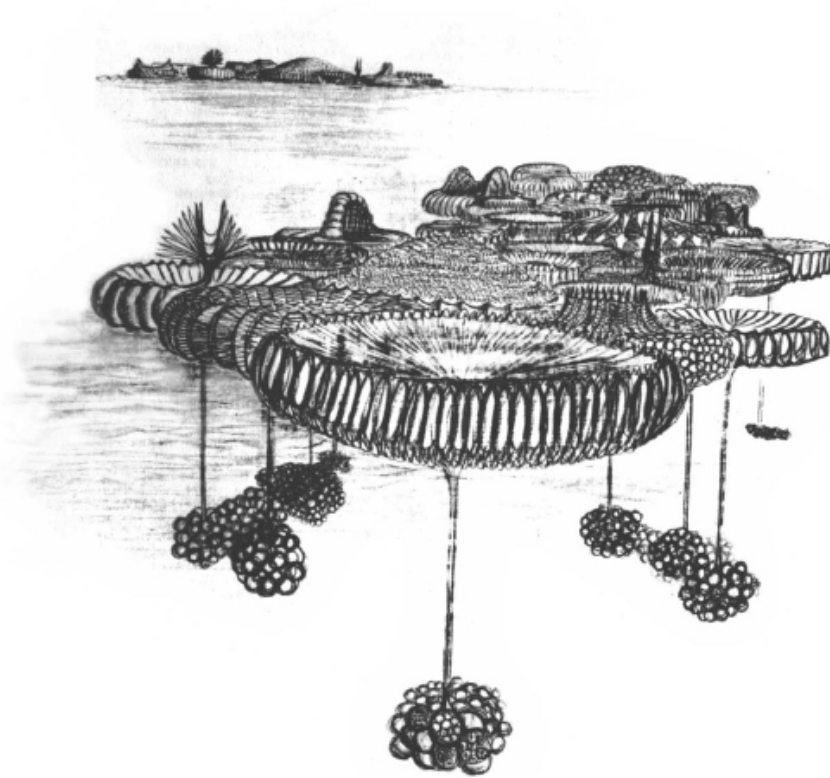


FIGURE 30 | Drawing of a City of Liquid Villas That Would Float on the Sea (2)

-  
bombmagazine.org

In 1954, Katavolos had a concept to effectively design for natural disasters to where if and when hurricanes occur. A city can separate from the main land with water levels fluctuating. Corbusier talks about how architecture must have mass, but Katavolos pushes the idea of gas and liquid that it doesn't need mass. Liquid and gas can create shifting architecture that can travel, move, rotate, float, etc. With an architectural sack or base filled with a gas, it will float on water, with a waited system below it can travel anywhere needed and lift and lower with any water height.

# PETER COOK

TYPOLOGY: CITY

LOCATION: WORLD WIDE

SIZE: INFINITE

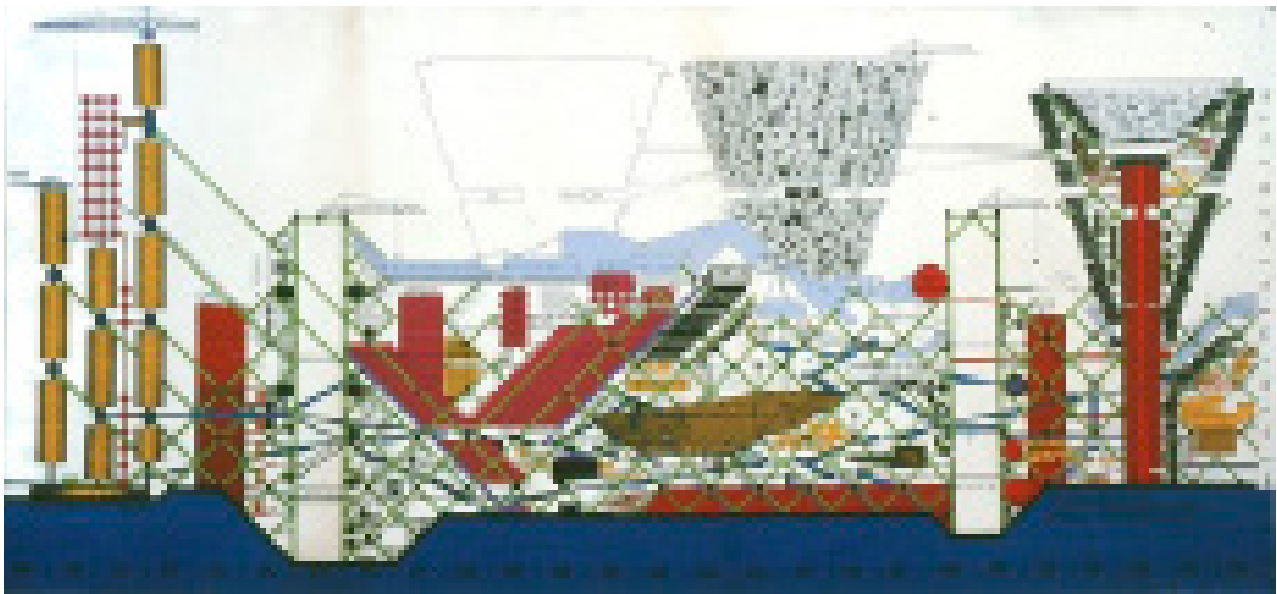


FIGURE 31 | AD Classics: The Plug-In City (Elevation)

-  
archdaily.com

From 1960 to 1974, Cook drew and drew about a concept referred to as “plug in city,” this idea is for vertical cities that at a constant state of change. It’s a system where surrounding giant cranes is a pod based units that when more spaces are need the crane can place the unit on to the vertical and expanding tower.

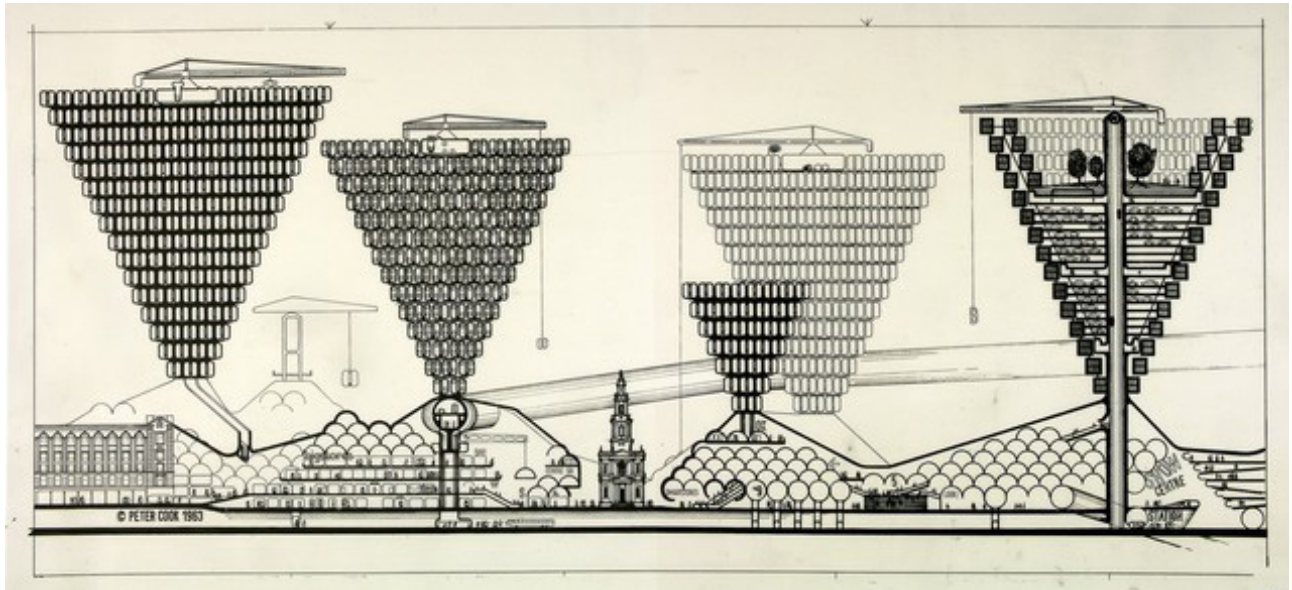


FIGURE 32 | AD Classics: The Plug-In City (Section)

archdaily.com

The method was formed to not only save space on the ground, and allow traffic to circulate below but it can also expand and contract in the amount of units that each tower or community needs and doesn't need.

I plan to take away these conceptual methods that were drawn up over 50 years ago. Creating a city that can separate from the mainland from disaster to water level fluctuating is becoming more of a necessity with climate change. Solid rigid structures that are on organically shifting will create what Katavolos describes as harmony.

Adjusting to rising population change is something that Cook addresses with the plug in city, you can see this implicated in Asian countries currently, but can be pushed further. Since there are cranes already located on my site they will be used to stack necessary amounts of units to the base (ship).

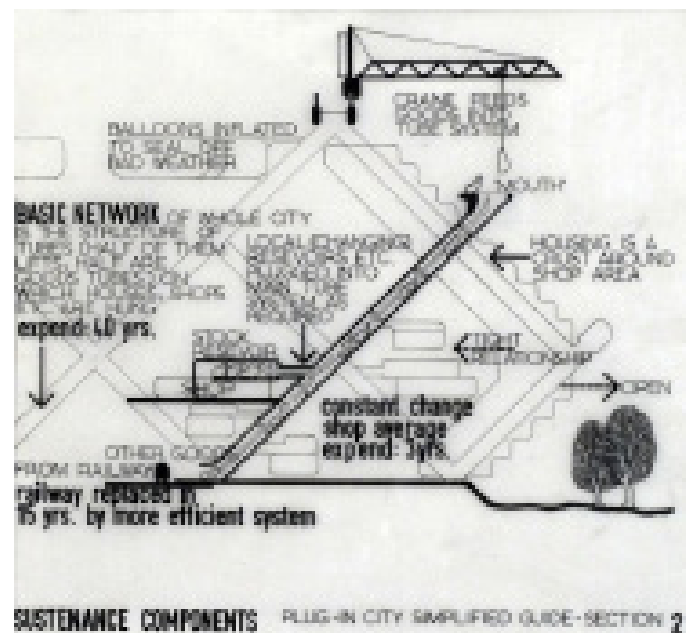


FIGURE 33 | AD Classics: The Plug-In City (Diagram)

archdaily.com

“A new generation of architecture must arise with forms and spaces which seem to reject the precepts of ‘Modern’ yet in fact retains those precepts. We have chosen to bypass the decaying Bauhaus image which is an insult to functionalism.”

-PETER COOK



FIGURE 34 | Big Snow 1950

-

[alltosearch.com](http://alltosearch.com)



FIGURE 35 | Pacific Northwest Beauty

-

[alltosearch.com](http://alltosearch.com)



# SUMMARY

The focus for my case study research was to choose projects at a variety of different scales, whether if the projects were built or not. I wanted to select case studies of not the most common projects that you would typically see in an education setting, because I find it helpful that push ourselves to learn outside of the typical setting.

If I told someone that my case studies included a prison in New York, an arts community in Amsterdam, and radical conceptual designs from the mid-century that weren't even built, they would most likely tilt their head and think why in the hell would someone choose that variety of projects to research and learn about the aspects of those designs.

I learned a great deal about all the all the case studies I chose for this project. I learned so much about the thought the process on how projects are formed on if they are intentional or accidental. In Amsterdam, it was the collapse of an industry that eventually packed up some of the guts to the site and then locals adapted to the no existent company and created their own space to make use of the space. Then, with the city making note of the popularity of the location and developing, but not over developing it to make it a beautiful location that is well like through all of Europe. The study of the Vernon C. Bain Prison in New York I gathered the thoughts

that cities and government go through to adapt to issues at a large scale. Realizing the practicality of building a living/housing development on the water. Even though it was a prison and don't receive the luxuries that normal apartments and communities have, looking at their answers to solve the problems in the overflow of inmates and the limited land availability problem is reassuring. I found it interesting to also flip back the year book many years to look at the Avant Gard designers' work from the mid-century. William Katavolos and Peter Cook thought in ways people didn't think were possible or a concern, but we still see these problems today. Digging deeper into their thought processes it will be an amazing to hopefully finish what they started. Great challenges came with my case study research that leaves lots of information up in the air for not the most definitive answers. Like with the Vernon C. Bain prison you will not be able to find structural, floor, or mechanical plans for safety reasons. No prison that is still in use will issue layout organization of the space. The conceptual designs from Cook and Katavolos never were built, so the functional aspect of their projects will go off there spoke knowledge in interview and diagram drawings. It will be exciting to see how these typological research studies influence my thesis project.



# RESEARCH FINDINGS

## INTRODUCTION

Approaching the research portion of my thesis project I knew it would be tough putting in the factual data that will help assist me in proving that this conceptual design. I conducted interviews with several people of different disciplines that would have major impact in the production of this thesis. Compiled data, costs, functionality, etc. of this design.



FIGURE 36 | New Pier Construction

## INTERVIEWS

So far in research I have conducted interviews with 2 individuals on 2 different aspects of my thesis project.

### STEVE PEARCE

On my site visit in Seattle, Washington I met with one of the cities government officials. Steve Pearce is part of the Seattle waterfront, sitting down and discussing with Mr. Pearce, I came in looking for answers on what would make this project possible. I discovered something so much more, designing for this site needed to be tasteful for the deep history of the Seattle Waterfront. My site specifically is where Seattle came to be. Along with the history portion of the interview, we also discussed the past proposals for reuse of my site and other piers along the waterfront. This will come in great assistance with creating my design for the pier, seeing the failed attempts and getting a larger grasp of the history to design a tasteful community.



FIGURE 37 | Top Of The Smith Tower



## DALLAS SEIBOLD

I also sat down for a beer with a former coworker and foreman of several contracting companies. Dallas Seibold has worked on multiple disciplines of buildings, from housing, commercial, community, etc. We were discussing uniformity in the design of my shipping container homes, and what it would take to build. We came up with potential budgets and costs for fabricating each container and the necessary functions implicated into the design.



FIGURE 38 | New Coleman Dock 1+2

# HISTORY

The history of the site goes farther in depth than I knew about. Pier 48 is the primary location that immigrants would come to the main land of Seattle. Colonizing and developing a community which turns into Pioneer Square to the east of Pier 48. Pioneer Square is the first district of Seattle that has several historic buildings that have eventually got to the construction of Seattle's first tall building, the Smith Tower (built in 1911) which is still standing.

The fishing industry started way back with the Native Americans of the Pacific Northwest using the Seattle waterfront as the main port to shore going in and out on canoes and water rafts, till this day canoe races are still hosted and performed out of Piers.





FIGURE 39 | Smith Tower Fascade

# SITE ANALYSIS

As previously stated, this is a project has multiple sites in the attempt to globalize the characteristics of mobilized housing. Providing housing at a reasonable price to own your own home and avoid living in large multifamily buildings. These Communities will be located on the water on underutilized piers with structures from upcycled shipping containers and barge/cargo ships. Given the location, this renders the option to effectively relocate your home to other ports by sea or inland by rail.

I will be building a conceptual model Seattle, Washington that could be modified and implicated in other major cities in the world that are experiencing the same struggles in land cost and lack of space. The following Site Analysis is in relation to Pier 48 in Seattle, Washington.





FIGURE 40 | Ship Entering Harbor Island

# SITE EXTENTS

The site is located on Pier 48 in Seattle, Washington in the famous waterfront located just north of Harbor Island and the Duwamish Waterway (which is the main. The Pier is roughly 150,000 square feet and contained several warehouses that totaled 120,000 square feet and was used to service the ferry that went to Victoria, British Columbia using the ship Princess Marguerite. When the Princess Marguerite no longer serviced the trip to British Columbia, the Pier then housed to the a museum of a ship from the Soviet Union. Fast Forward to 2008 when the state of Washington purchased the Pier to use as a staging area for the new Alaskan way viaduct, that being said in 2010 the state demolished the warehouses. The vacant pier of concrete is located to the west of historical Pioneer Square.



FIGURE 41 | Site Surroundings

# TOPOGRAPHY

For this design thesis the site is flat to show minimal to no contours, since this piece of land was man made and infill staying at sea level. This flat piece of concrete sits on large wooden piles that stretches to the water floor of Elliot Bay (directly connected to the Puget Sound). The Sound rises and lowers in several feet with the tides. Directly to the East of Pier 48 is Alaskan way and the Alaska Way Viaduct which has heavy traffic that bring transportation north and south of Seattle with views of the sound to the west and downtown to the east. Walking from my site to the east you will actually walk under the double-decker viaduct to historic Pioneer Square. To reach Pioneer square you climb give or take 100 feet in elevation, and Downtown Seattle climbing around 250 feet. The Coleman Dock to the North has a bridge that overpassed Alaska way and cut through the Viaduct to Downtown with little slope.



FIGURE 42 | Alaskan Way Traveling South





FIGURE 43 | Construction Tied Up At The Site





FIGURE 44 | Construction Tied Up At The Site 2

## VIEWS INTO THE SITE

Looking into the site you will not see the anything to extraordinary besides the baron concrete that is the pier as well as the 300 foot ship that will be attached to it. There is also the original 2 foot in diameter wooden pile that holds up the pier.

# VIEWS FROM THE SITE

## NORTH

To the north of my design thesis site you will find 12 piers to the Seattle Waterfront, these piers have lots of tourist attractions. Tourist attractions include shops of souvenirs and local seafood, there is also water tours of Seattle and other locations like the San Juan Islands. In a cluster you will find Seattle Aquarium, Green space, and the landmark "Seattle Great Wheel."

Directly to the north is the Coleman Dock, the dock has a very consistent and trafficked ferry that makes trips to both Bremerton and Bainbridge Island, there is also water taxis for the faster trip to both locations and the clipper that take passengers up to Canada.



FIGURE 45 | Ivars Fish Bar



FIGURE 46 | Crab Pot

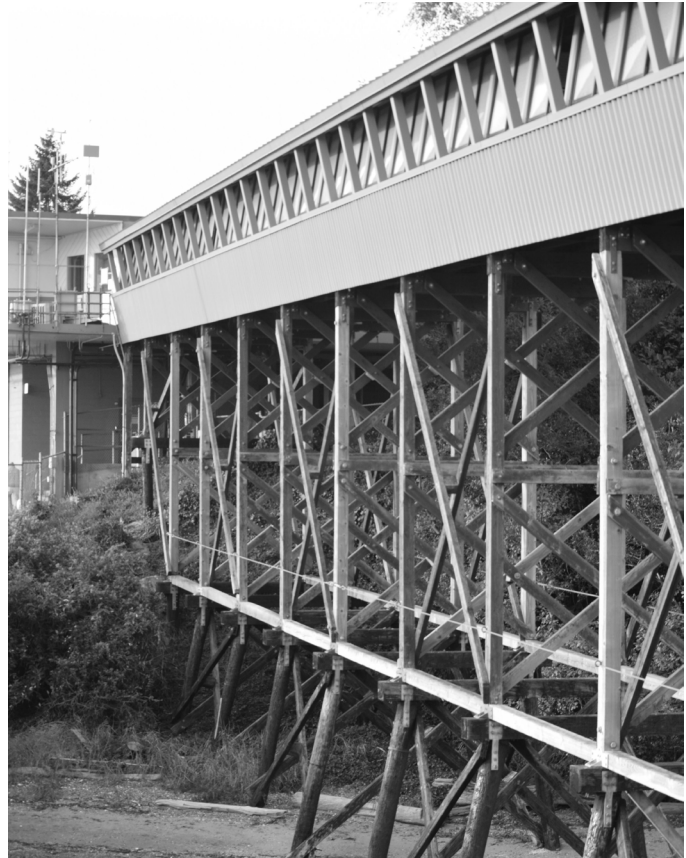


FIGURE 47 | Ferry Terminal Bridge





FIGURE 48 | Layers Of The Viaduct



FIGURE 49 | Pioneer Square Pong  
EAST

If you look to the east of my site one will see both Alaskan Way and the Alaskan Way Viaduct. Beyond those populated streets you see old historic buildings of Pioneer Square that's sits just south of the sky scrapers of downtown. To the east is the populated areas of Seattle; Downtown, International District, Pioneer Square.



FIGURE 50 | Views to the South

## SOUTH

Looking to the south of my site lies the 4th largest shipping ports in the country, Pier 46 and Harbor Island control the banks of the Duwamish Waterway. This waterway accepts and transfers thousands of cargo containers a day. Also, to the south sits both Century Link Field (home of the Seattle Seahawks Football) and Safeco Field (home of the Seattle Mariners Baseball). Looking passed the city of Seattle on a sunny day you will see Mount Rainier and Mount Rainier.

## WEST

Across the water to the west you can find views to West Seattle, where there is lots of residential housing as well as beautiful beaches. Looking past West Seattle You will see Bainbridge Island and the Olympic mountain range.



FIGURE 51 | Views To The West



# CIRCULATION

## FOOT

The foot traffic around my site is quite dense, with both locals and tourists. With large sidewalks that run along the waterfront. Tourists are often found here for the advertisements for best local and fresh seafood, it probably doesn't help that these places are located near Pike's Place Market (Home to the famous fish throwing and the disgusting Gum Wall).

Unique characteristics about the sidewalk along the water front is that there are clear glass rectangles submerged into the concrete. These help the salmon navigate and swim upstream. Since the piers and sidewalk are infill that hang over the water that creates shade and darkness to the water's edge. Salmon follow the edges of the banks to receive the strongest, so with the daylight shimmering through the glass rectangles it helps the salmon instinctively navigate.

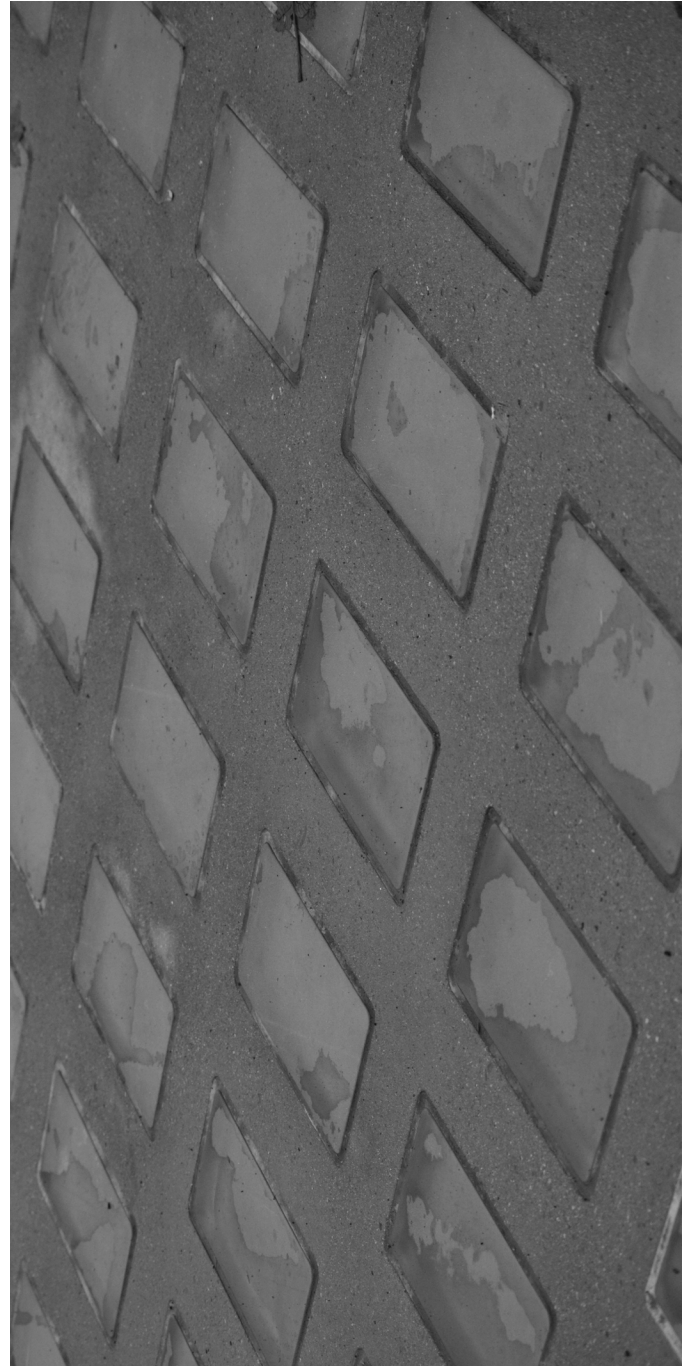


FIGURE 52 | Salmon Sidewalk





FIGURE 53 | Coleman Dock Ticketing



FIGURE 54 | Driving On The Ferry

## WATER

As previously stated, the Seattle Ferry is located on the Pier to the North. There is a ferry that leaves the dock about every 45 minutes. These ferry vessels can carry hundreds of vehicles and people. Several people commute from Bainbridge Island to Seattle for work every day. Traffic can also be considered as the large barges, cargo carriers, fire boats, and coast guard vessels.

## VEHICLE

Alaskan Way and the Alaskan Way Viaduct are some of the most backed up trafficked streets in Seattle, especially at rush hour times. With the Ferry located nearby, generates lots of public transportation stops and hubs in the area.

Individual public transportation (app based transportation) has become very popular in the Seattle area as well as most major cities. Uber and Lyft are always minutes away, with Options like “Pool” and “Express Pool” it can pair with you with people going in the same direction as you to cut down the cost of your ride. There are over 20,000 Uber and Lyft drivers in the Seattle area, and the number of drivers is constantly growing. There are also apps such as Limebike and OFO that let you scan bicycles that are just scattered around the city and you pay a rate per minute, then by stopping the payment process wherever you are in the city by locking the bicycle.

# SUN CLIMATE WIND PRECIPITATION

Seattle isn't known to be the sunniest of cities in the country, "rain city" experiences a typical 9 months of cloud cover. With my experiences of living in Seattle, locals will say, "summers start after the fourth of July and end in September." I will say that is extremely accurate, it typically rained every other day until the month of July. Sun, In reference to the site is a beautiful thing, with the only obstructions to the sun is on the sun rise seeing the glow come off the high rise towers of the east in the morning as well as watching the sun rise over Mount Rainier. As far as for sunlight in the late morning to midafternoon no obstructions from keeping the sun to the site besides cloud coverage. The sun sets every day with a gorgeous view tucking in behind the Olympic Mountains across the Puget Sound.

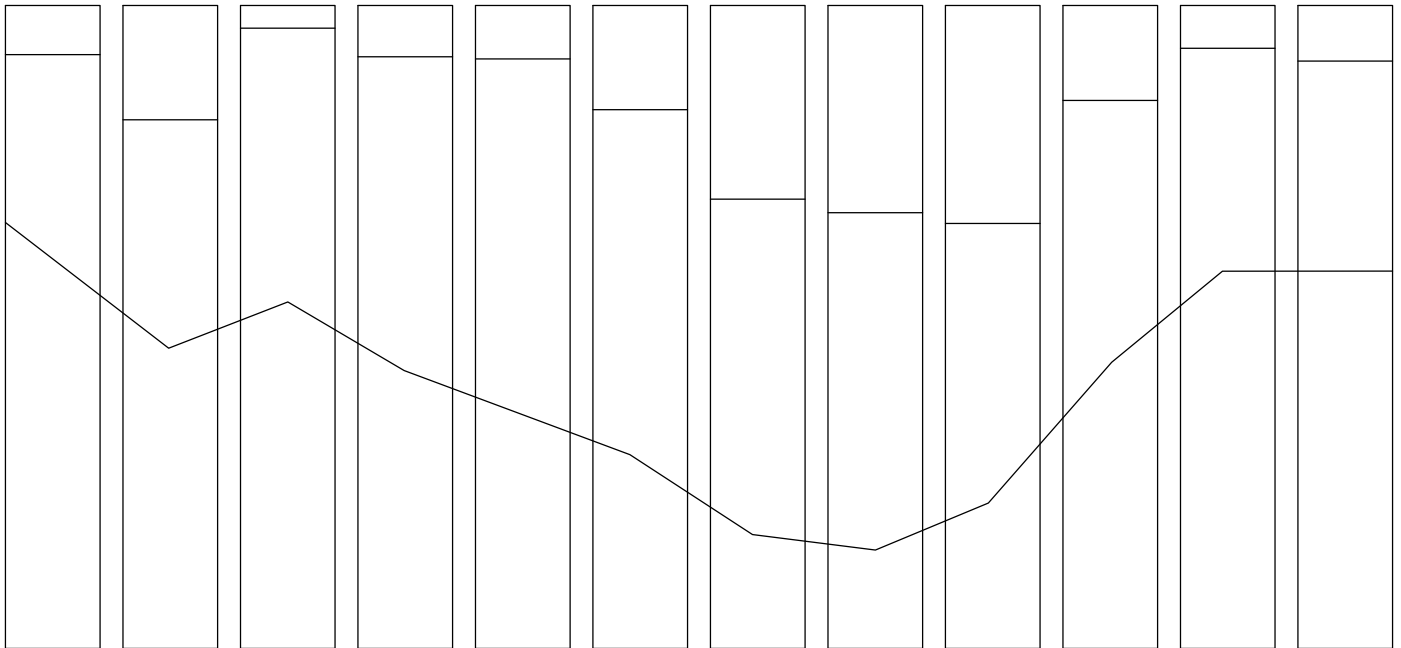


FIGURE 55 | Cloud Cover And Precipitation

Seattle has the reputation for being one of the gloomiest places in the country. Averaging about 5 days of sunshine a month, with fall, winter, and spring receiving 2-5 days of sun shine a month and the summer months receiving about 10 days of sun shine.

When the sun isn't shining it is overcast and/or partly cloudy, following these patterns of cloud coverage, with precipitation days per month average being more than overcast days. Precipitation in the Pacific North West is different, with not experiencing much snow except for the mountains, it doesn't generally get cold like the Midwest, and with the large amounts of salt water in the area doesn't create much for snow but rain in the winter months.

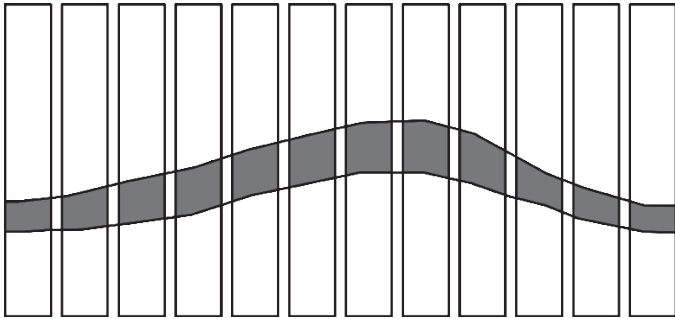


FIGURE 56 | Average Temperatures

Weather in Seattle is temperate, and not on a radical level. With the Average for highs and lows in the summer of 77 degrees and 56 degrees Fahrenheit; winter being 44 degrees and 35 degrees Fahrenheit (with the exceptional hot day and cold night).

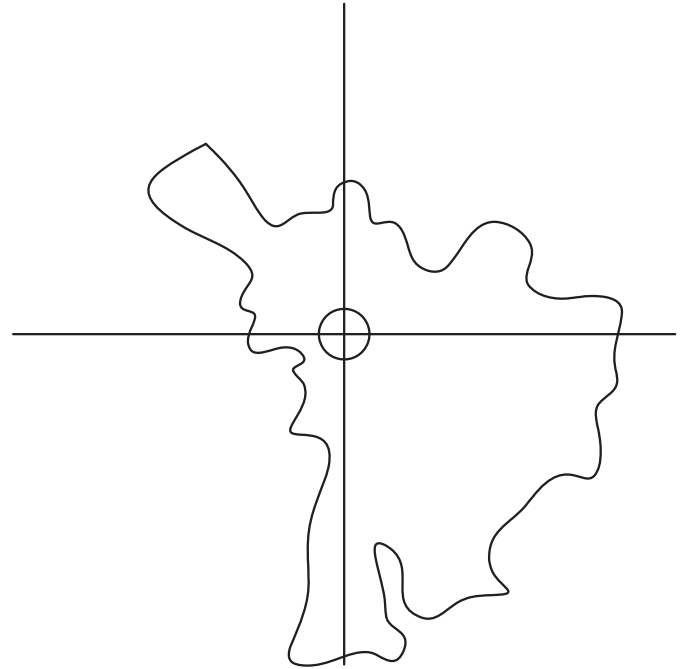


FIGURE 57 | Wind Rose

Winds on my site fluctuate frequently, with several mountain ranges and being next to the water with no building coverage. Winds on average come out the northwest more frequently and more often. With the average speeds ranging from 3 to 10 miles per hour.



FIGURE 58 | Docks

# SITE CHARACTER

The site for my thesis design feels like a bad day at the beach. Being located on the water and with the average temperatures being typically lower than 80 degrees and gloomy. There is a tough and rigid aesthetic to my site, located on the edge of the water with a large shipping industry a pier over. It is empty but cluttered, you witness vast open platforms of concrete but also scattered with abandoned shipping containers. Cars driving by on the viaduct above you giving you the ability to feel invisible. Located just blocks away you can find the heart and history of the city; full of old buildings and history, Tall glass façades that are a part of a technology empire, and the biggest tourist destinations in the city.





FIGURE 59 | Coleman Dock Cranes



FIGURE 60 | Docked Ship



FIGURE 61 | Baron Site

# VEGETATION

The current amount of vegetation on the site is scarce, with only a few spots of greenery on the site. Northeast of the site you will find a small belt of 6 trees around 20 feet tall in height. Just over the edge to the south of the site you will find a small green space that is in a restricted area that is home to bushes and shrubs with one 20 foot tree. Across Alaskan way you will find vines growing up the pillars that hold up the Alaskan Way Viaduct. Other than those few areas the site consists of man-made materials and fabrication.

# PERFORMANCE CRITERIA

Out of the performance categories all of them are effective and used but the main ones that are a driving force in my thesis that can make it solid are; cost, code compliance, space allocation, behavioral performance.

## COST

Cost is a large category that is major factor in my project, from cost to produce and cost for the client. The client will be living in an outfitted standard shipping container that is roughly 9'X9'X40' (a nice sized studio apartment in big city, which this project is designed for cities). To purchase a used shipping container is in the range of 1000-1500 dollars and then with estimated costs of 40,000 dollars to create it into a living space. These modular devises will become the client's home. Which is a fair price from the annual cost of paying for rent in a unit that size, with the average rent price for that size unit in the city costing anywhere from 1600-2400 dollars a month. Other costs will be development of the public and green space on the actual pier. On the 150,000 square foot slab of state owned concrete was estimated by the city of Seattle to hold a 200 million tear demolition and re build project. If I don't tear down the existing structure and repair and build on top of I estimate nearly cutting the cost of that aspect in half. And the

final aspect of the project being the ship itself. In research I found that the cost of a 500 TEU ship in 2008 cost 5-10 million doors. But the fact that I will be using older and decommissioned ships will be a major price step down.



FIGURE 62 | Floating Homes

## SPACE ALLOCATION

Space allocation is what this project is built on with the intent on creating a living environment on the water because the lack of space on land. So the fact that I and creating new space makes my thesis automatically out of the red.

## CODE COMPLIANCE

Code Compliance will be a factor, since I will be designing on water there will be extra hoops that will be considered, such as natural disaster expectations, ADA, and fire and build codes. The clients need to be safe in this project to take it out of this conceptual phase.

## BEHAVIORAL PERFORMANCE

Another category I would really like to explore in my thesis is the behavioral performance. There is a history of people living on water either in boats or floating homes and you see more and more projects getting developed over water, but seeing how someone would react to this is interesting. Or hearing their responses to how they could become mobile and interests them.



FIGURE 63 | Seattle Street Car

## PERFORMANCE MEASURE SOURCE

To measure this I will be/have been in contact with everyone from builders, shipping companies, code officials, residents of the city, people that live in mobile homes, people that live on water. To get a personal experience expected from these interviews to know how to effectively design to the best ability.

For example, after talking to talking with the project director or the Seattle Waterfront he enlightened me on major other considerations to design based on the history of the site (and there is so much more depth than one would think.) So that proves that these interviews render effective.





FIGURE 64 | Pioneer Square Alley

## PERFORMANCE ANALYSIS

With all design it starts with an idea and later tested and manipulated to see if it renders effective.

Circulation and effective use of systems will cause this thesis to rise or fail. Going through drawing starting with partis and partis and narrowing down these drawings ad making them more detailed will be the core of the design.

Interviews, at a large quantity and diverse will give my project a personality.

## PERFORMANCE JUDGEMENT

To judge my project I would like to take the design that is rendered nearly complete and demonstrate to all of the interviewees and see their responses to the project. Another is to see if the cost is effective rather than building on the land.

# SPACE INTERACTION

The spaces involved in my thesis design project will need to be connected on the site in Seattle as well as the conceptual sites around the world. All of the spaces will need to be included for the thesis design project to function correctly as a community.

In the Haven thesis design project the primary space will be the Pier and the public green space. This element of the design is centralized on the site and branches off to other key programmatic elements. Not all spaces will be able to be accessed through another space or be accessed by the general public.

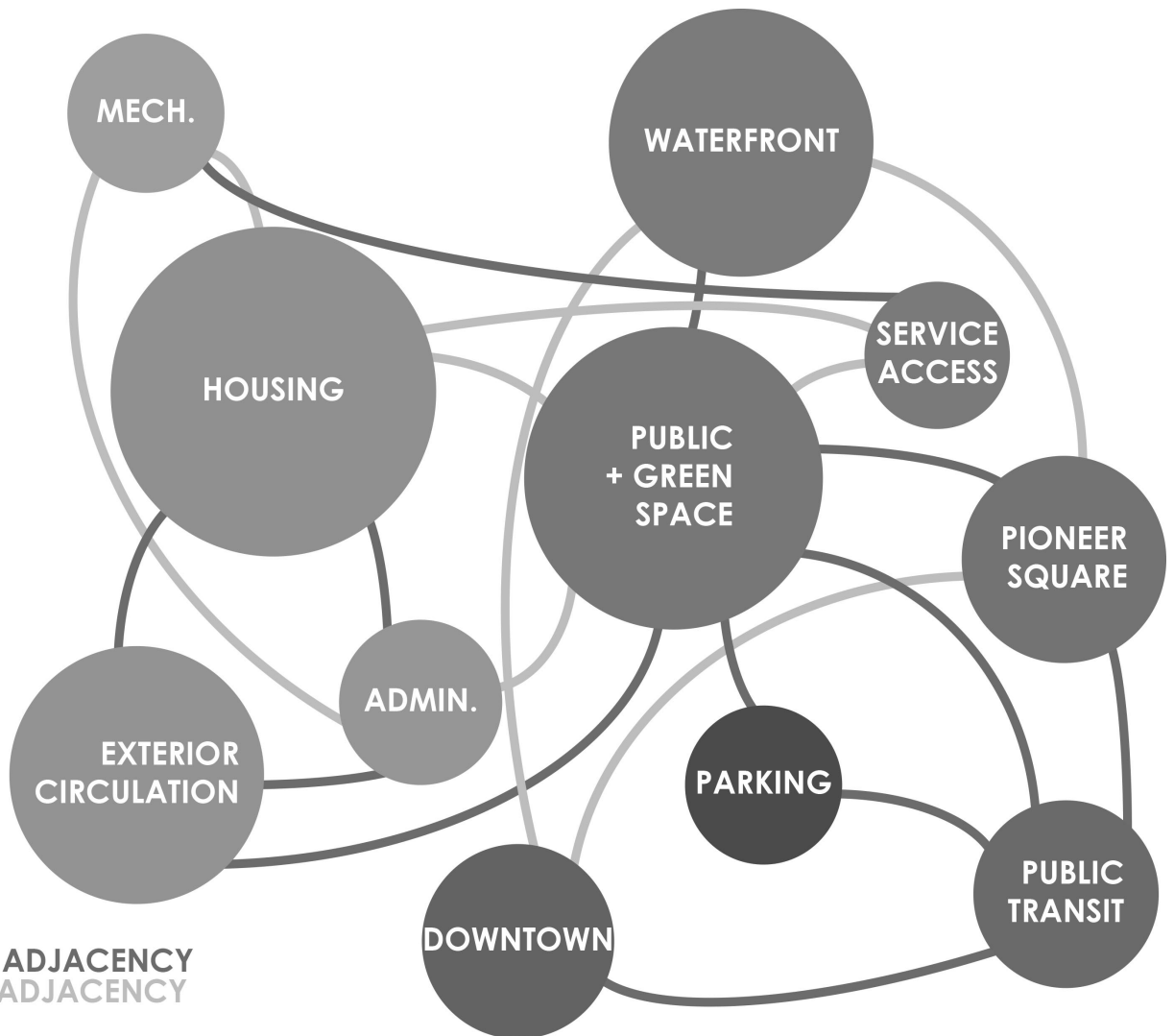
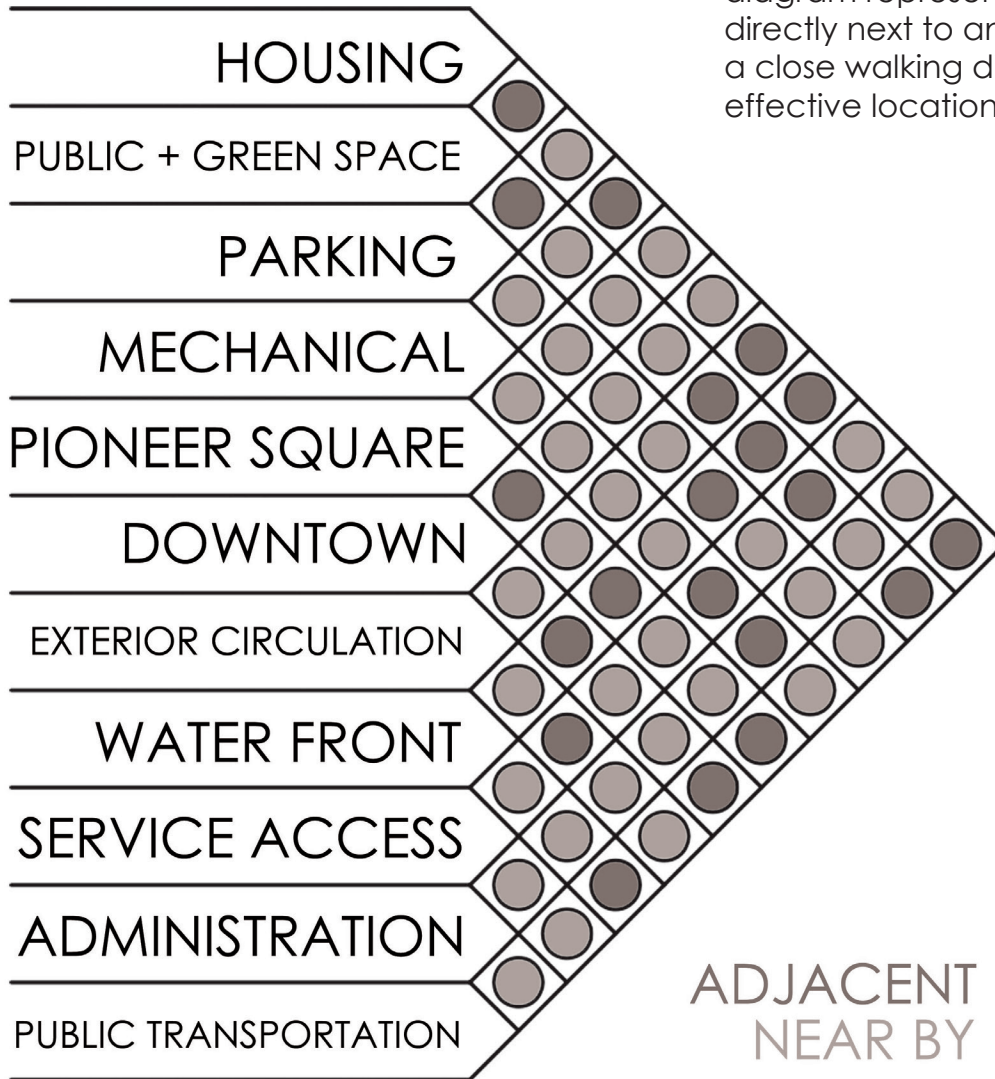


FIGURE 65 | Interaction Net

# ALLOCATION

There are several program spaces listed in the diagram to the left, some are located within my site and others nearby. This diagram represents what will be located directly next to and the others to what is in a close walking distance away to show the effective location of my site to the city.



ADJACENT  
NEAR BY

FIGURE 66 | Allocation Grid

SPACE	SQUARE FOOTAGEP	PERCENTAGE
HOUSING	50000	23
PUBLIC + GREEN SPACE	147000	59
PARKING	25000	11
MECHANICAL	6000	3
EXTERIOR CIRCUCATION	10000	4
TOTAL	238000	100

The figures above are the breakdown of spaces for my site. The numbers indicate what the proposed square footage I will be trying to meet as well as the percentage it make up of my program.





FIGURE 67 | Downtown At Night



FIGURE 68 | Frank Gehry And The Needle



# DESIGN SOLUTIONS

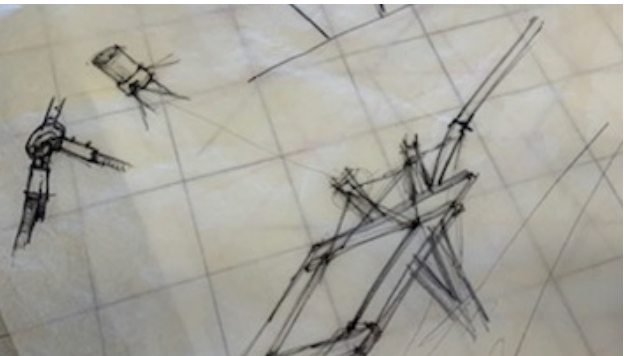
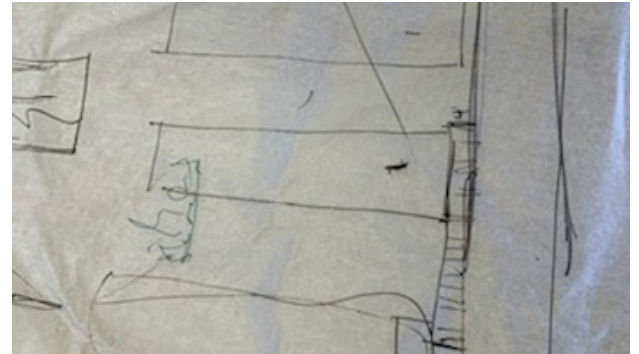
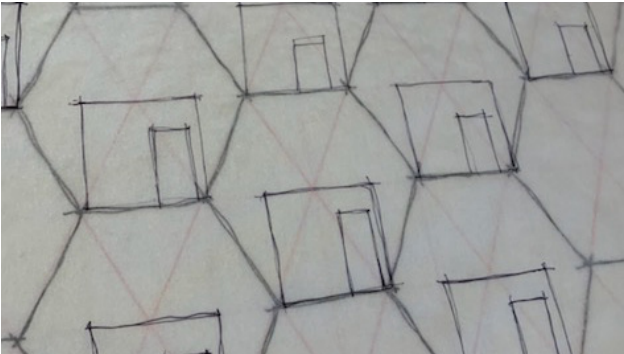
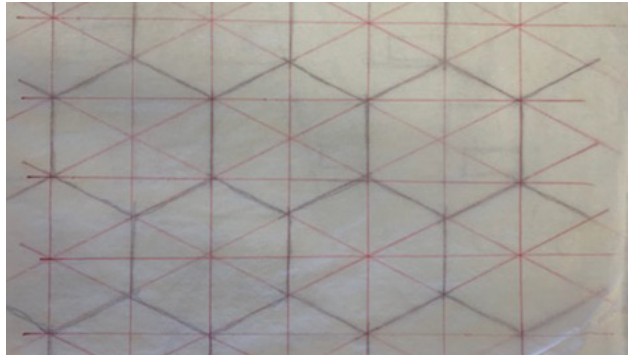
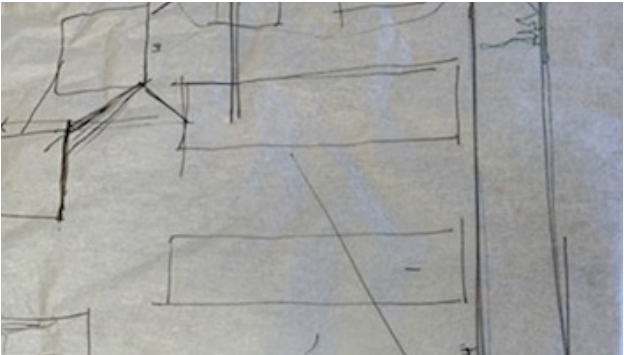
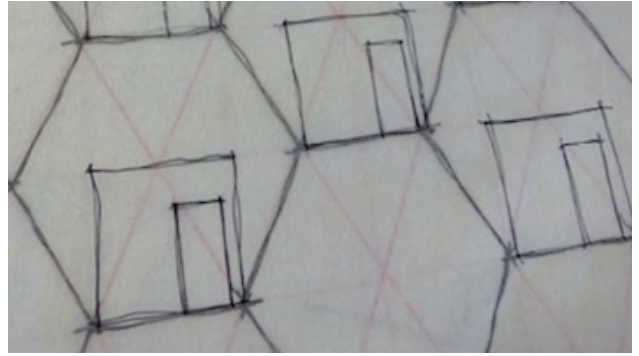
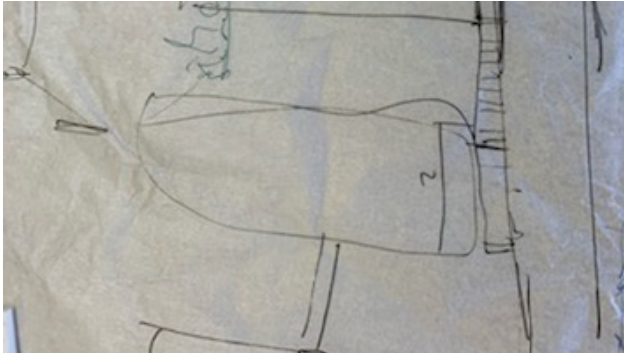


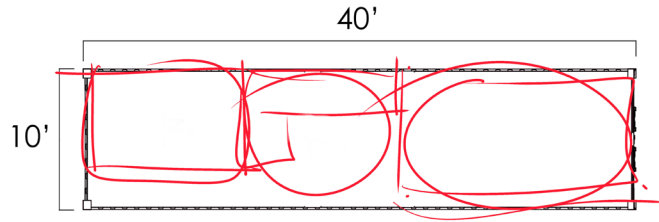
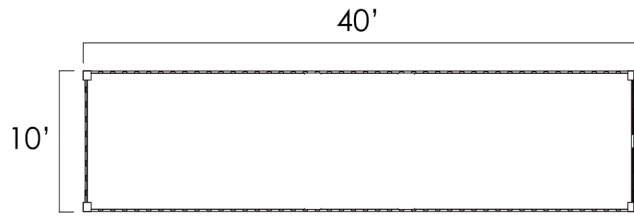
FIGURE 69-76 | Introduction process



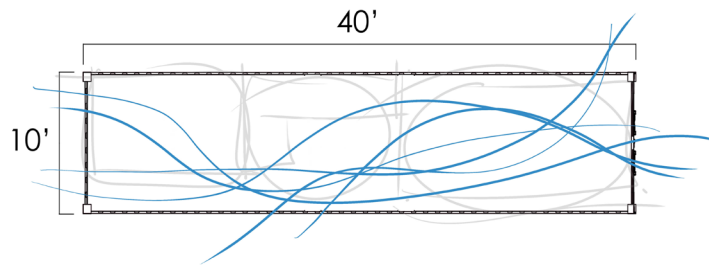
# INTRODUCTION

# NOMAD40

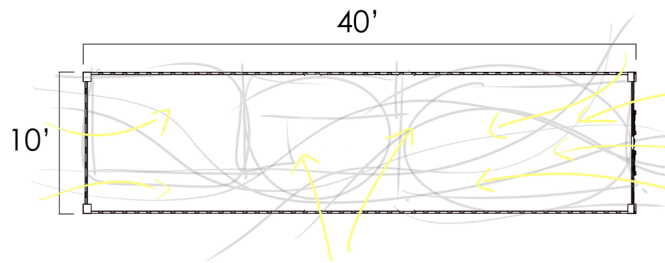
Natural light, Circulation of space, air flow, and space layout were all major challenges in designing the Nomad40. It is a small space and no square foot can go wasted.



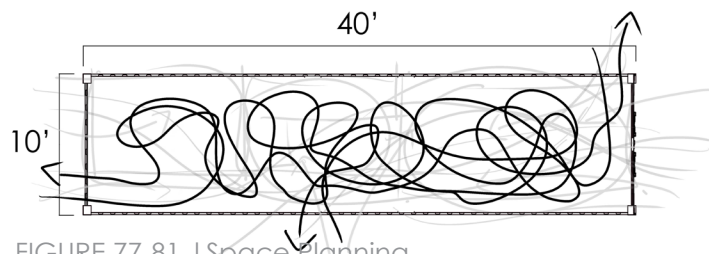
SPACE PLANNING



AIR FLOW



NATURAL LIGHT



CIRCULATION

FIGURE 77-81 | Space Planning

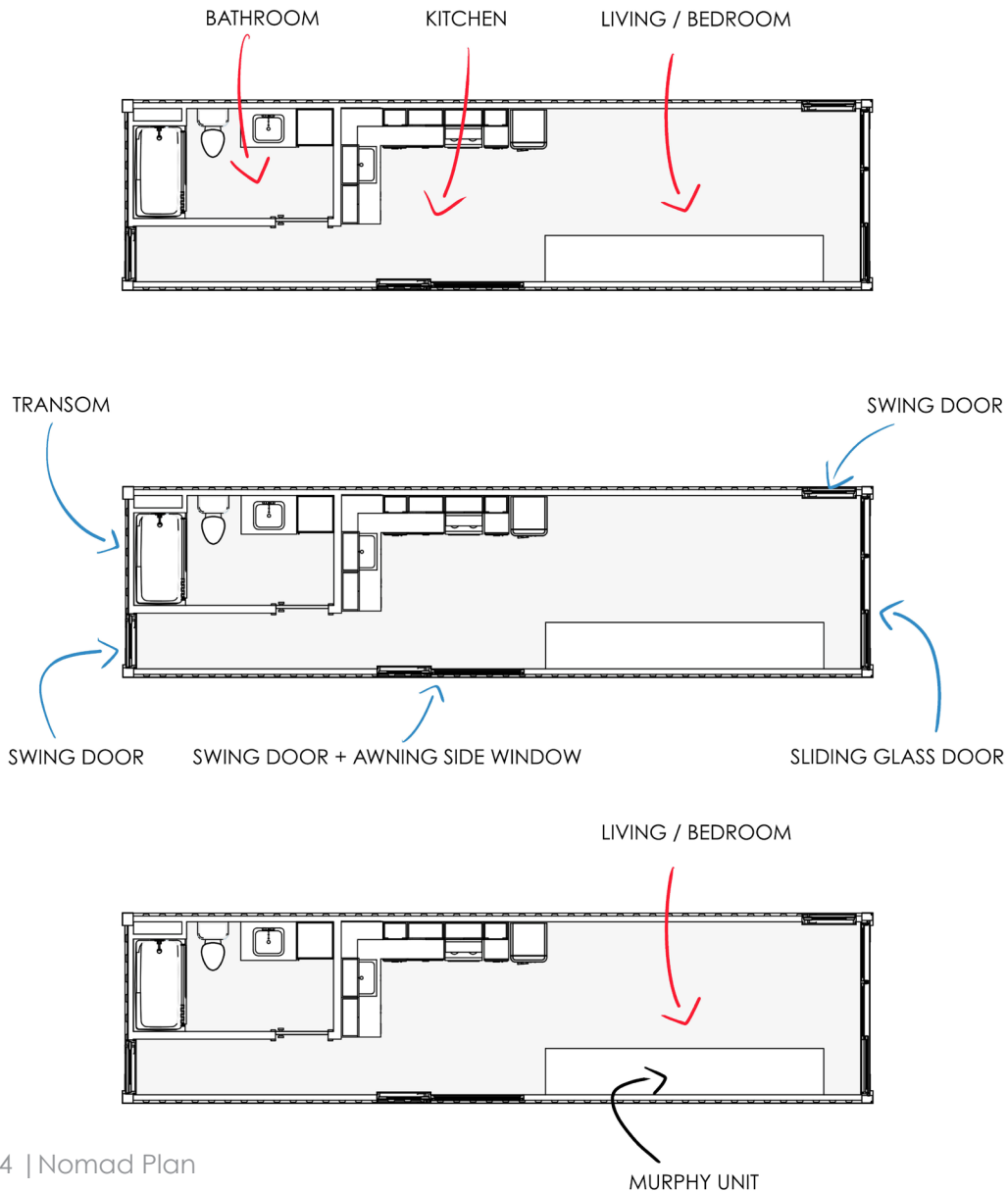


FIGURE 82-84 | Nomad Plan

The Nomad40 is a shipping container that is outfitted to be a mobile home that can universally travel the globe by freight, rail, or sea. How the hive structure is designed with the stair paradox and the connection points gives the users of this community to own more than one unit and able to be connected. The Nomad40 is a 4000 cubic foot space that features a full kitchen and bath with also a living / bedroom transitional space.

# MURPHY SYSTEM

The murphy system is a versatile object that lets the consumer have both a living room space as well as a bedroom space. This structure also has several different sizes and shapes of cabinets and drawers for storage. The taller more open cabinets purpose is for a clothes and coat closets. To make the space a living room, the individuals can simply pull out a love seat sofa. And to make it a sleeping space, the individual can pull down a queen size mattress that sits in the space above to sofa drawer.

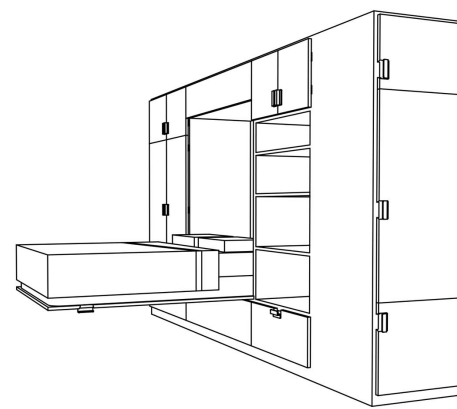
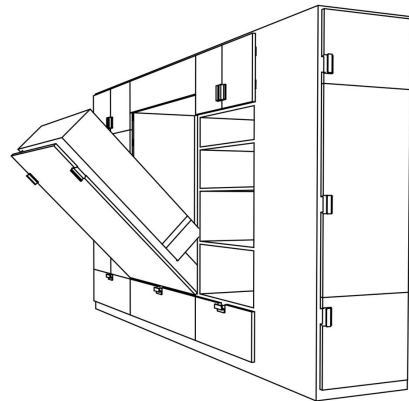
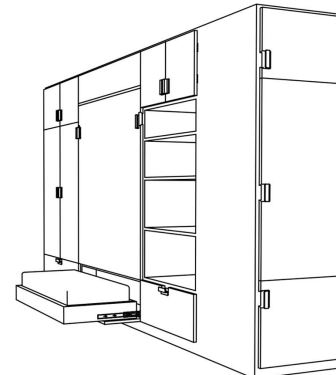
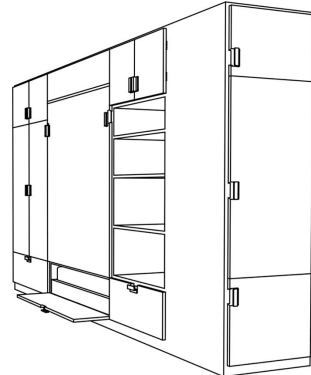
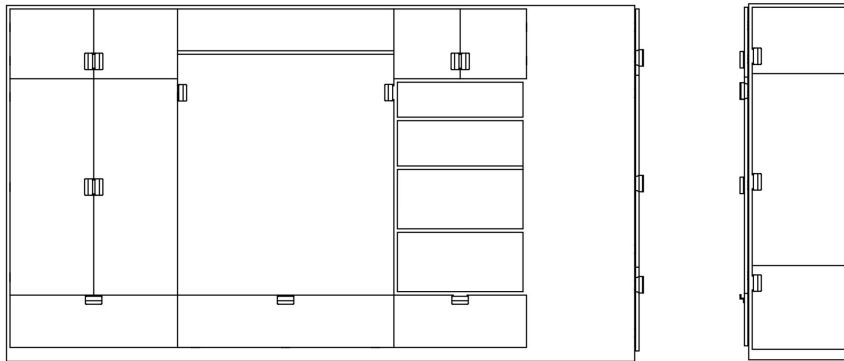


FIGURE 85 | Murphy Diagram

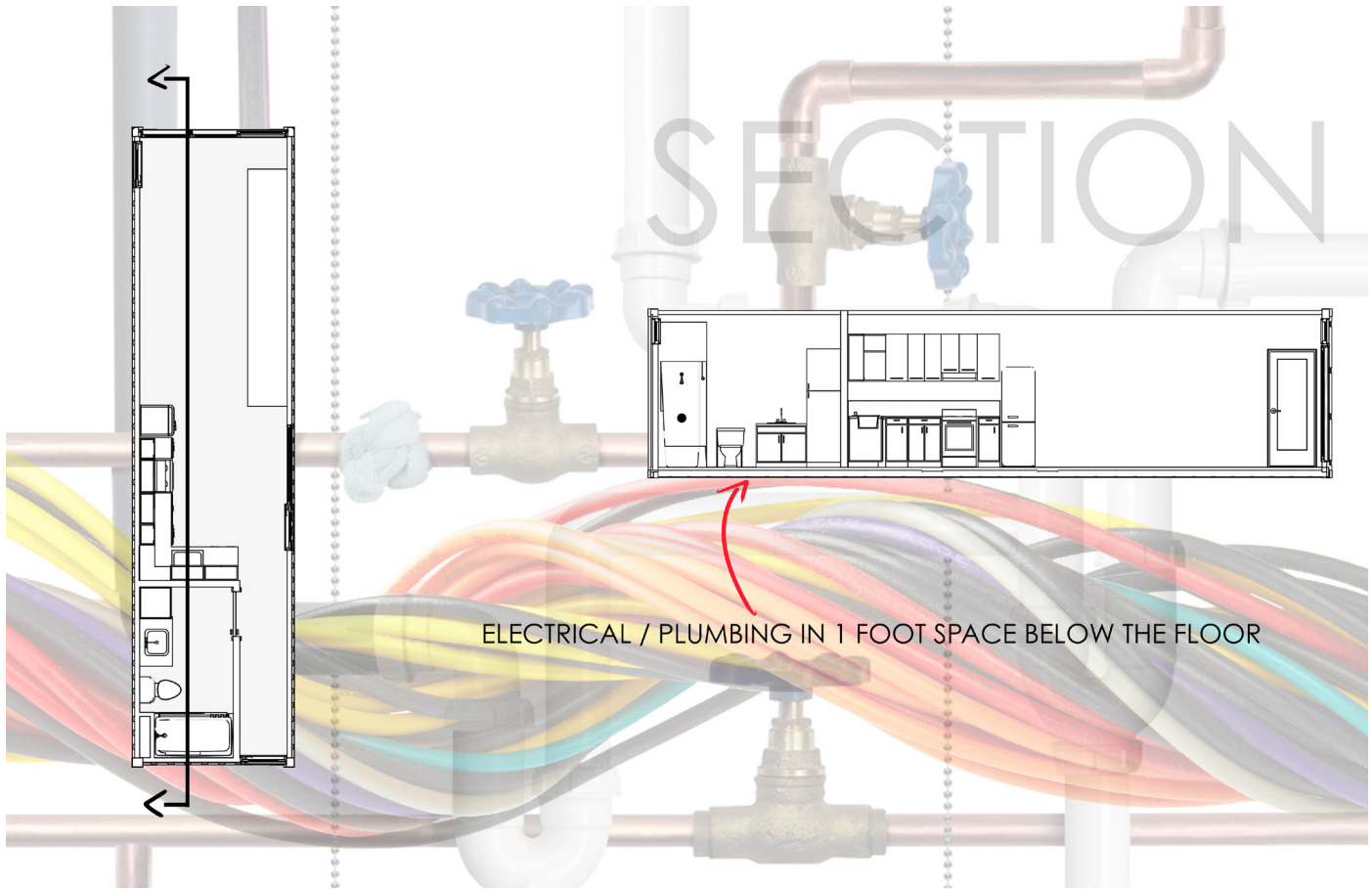
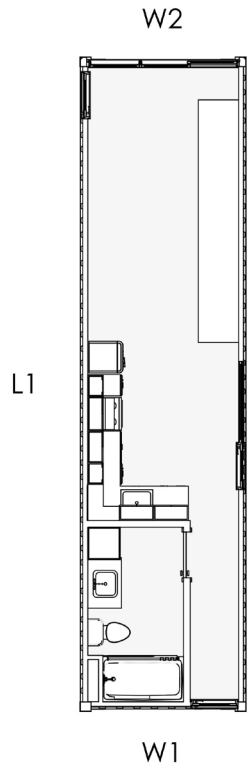
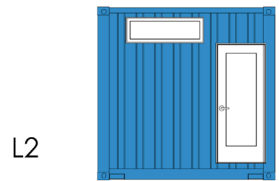


FIGURE 86 | Section

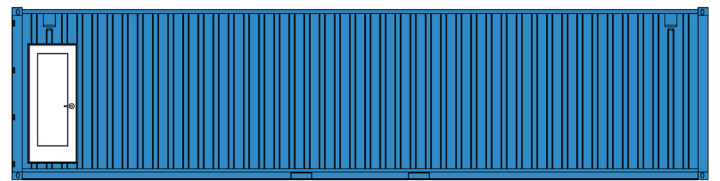




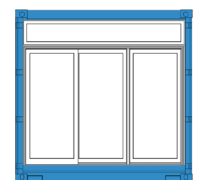
# ELEVATIONS



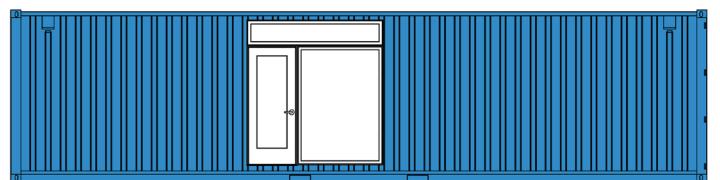
W1



L1



W2



L2

FIGURE 87 | Elevation

COMPLETE  
MAKE UP  
OF THE  
NOMAD40

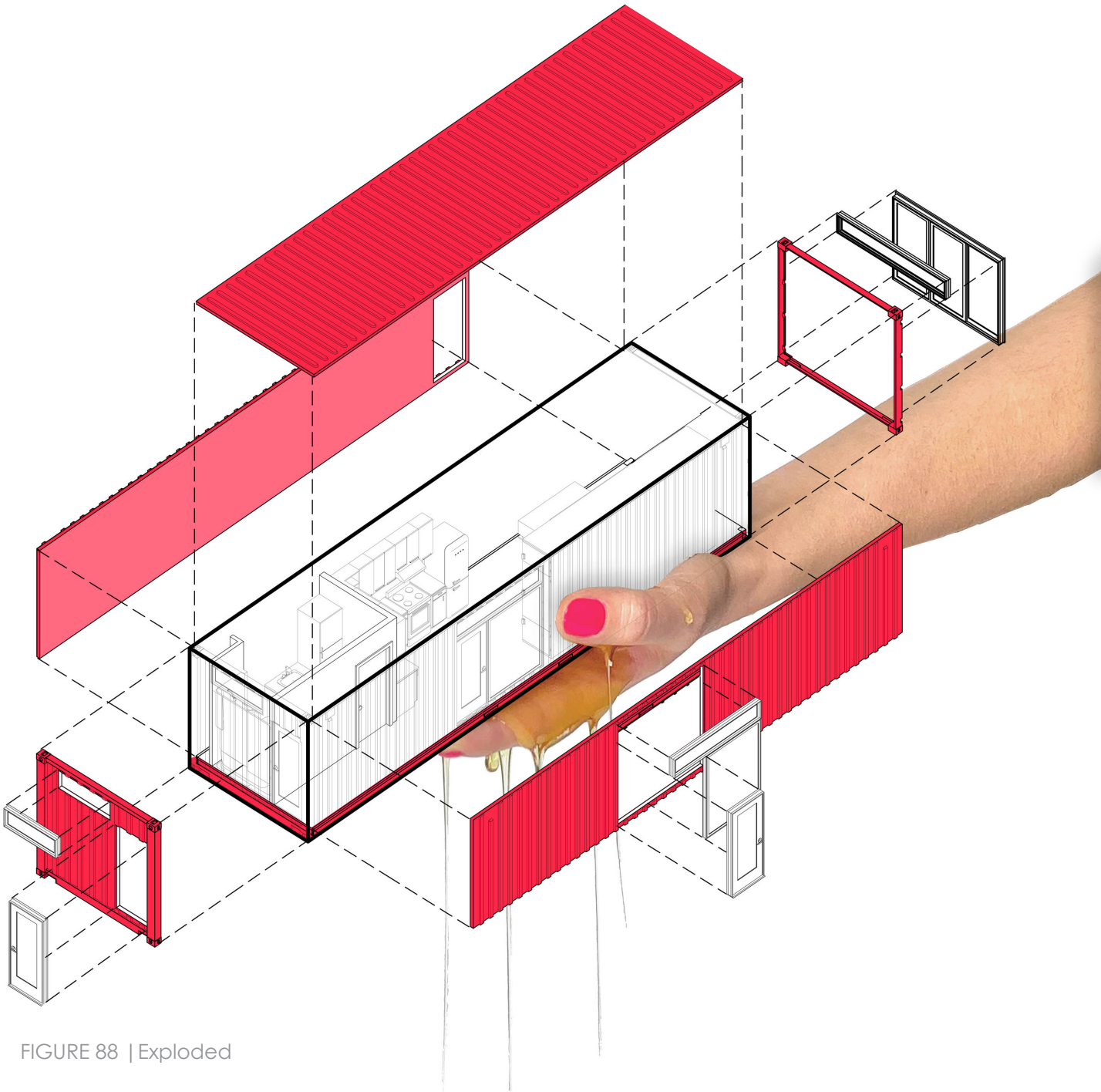


FIGURE 88 | Exploded

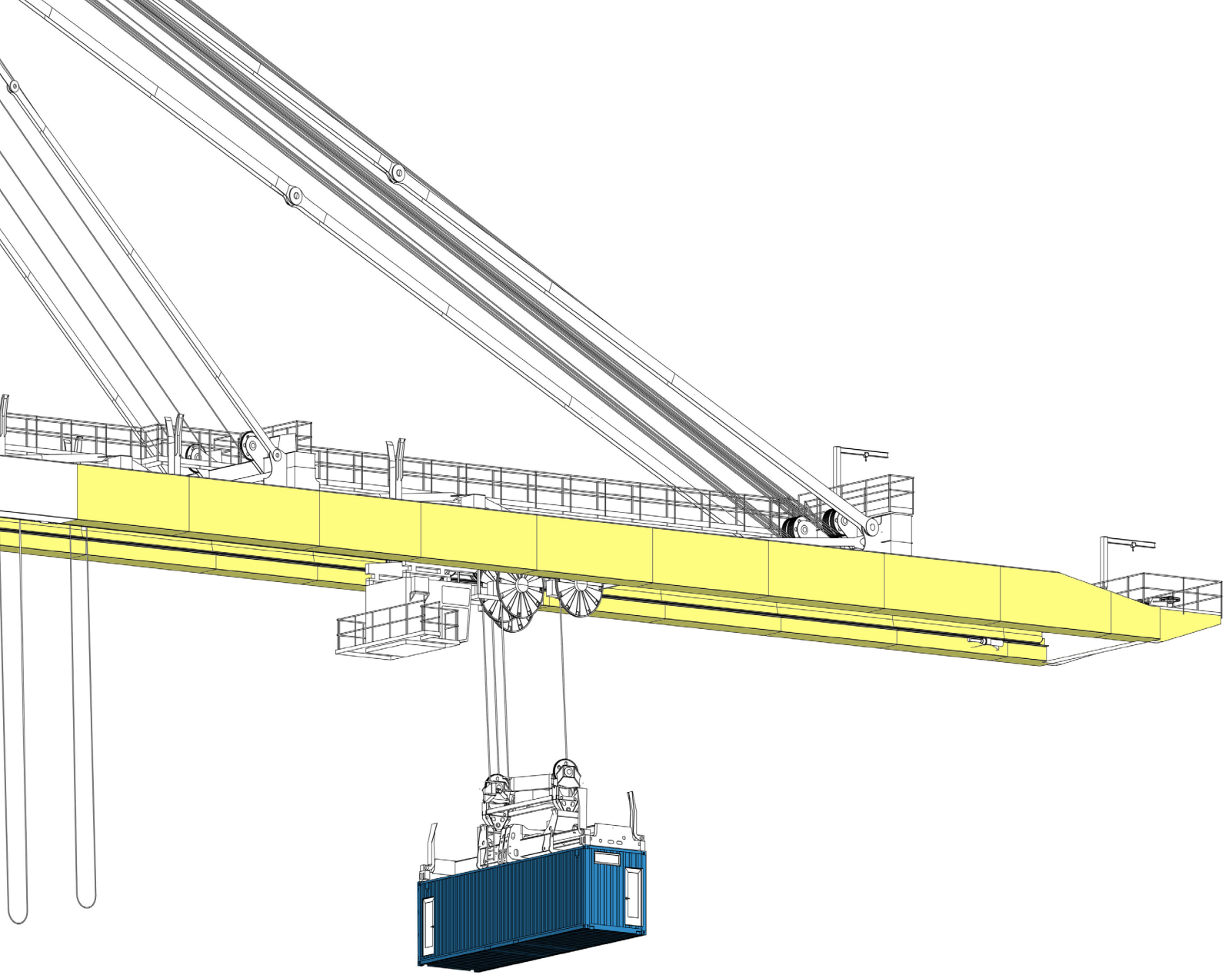
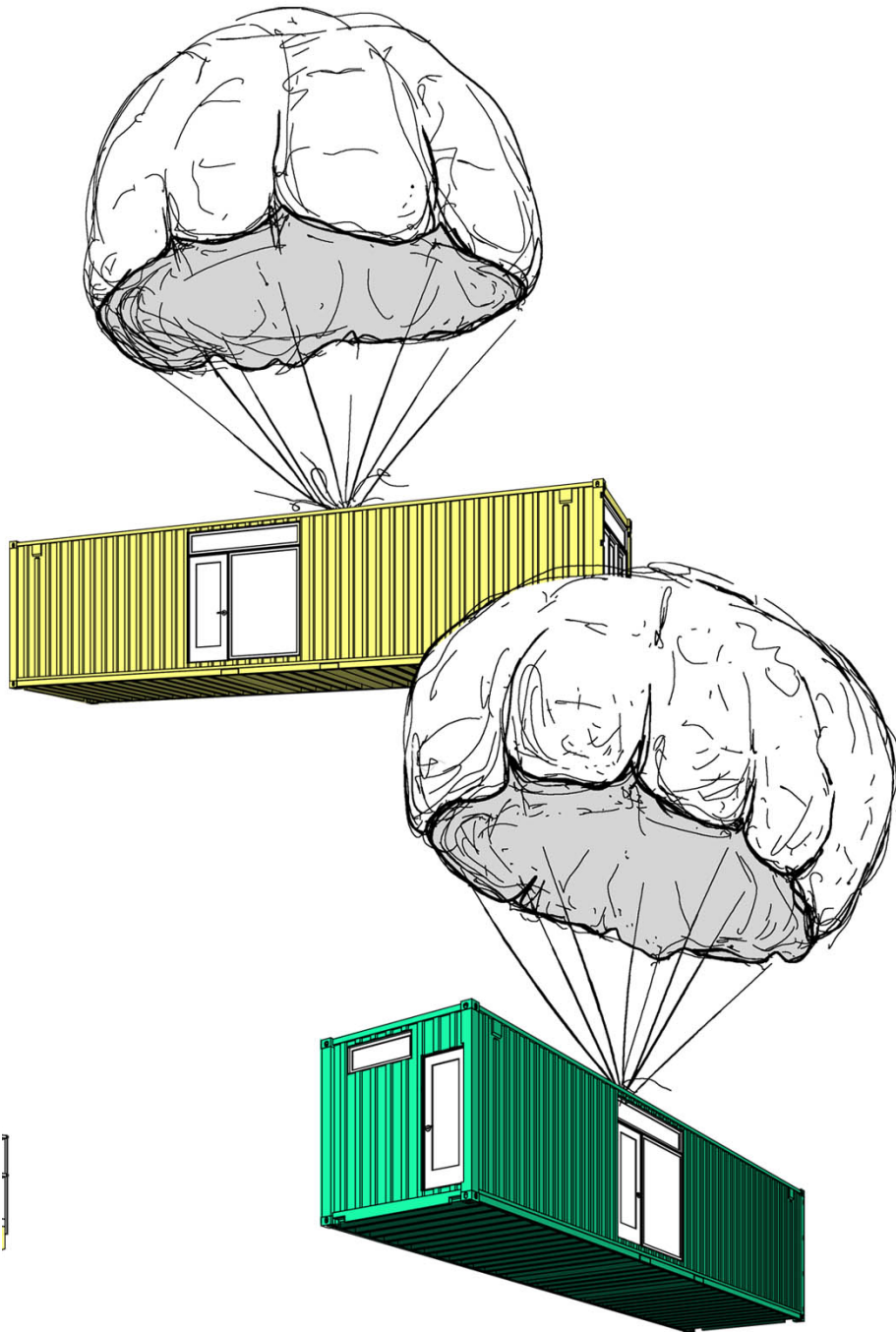


FIGURE 89 | Archigram



The purpose of these diagrams is to represent the idea that the Nomad40 can be relocated to anywhere in the world. In several forms of transportation the Nomad40 can connect into the hive.

# THE HIVE

The Hive is a super structure that is located on a huge decommissioned barge know as Haven. In the hive offers the Nomad40 to plug in and out of the community. Also, with the Hive it brings individuals to the forced action of social interaction between parties. There are areas of space that also let people connect physically. When a Nomad40 module isn't in a hub spot, it can offer a place of green space, for lounging and gardening. There is also a paradox of circulation, with an assortment of stairs and walkways it is the ultimate way of connection.



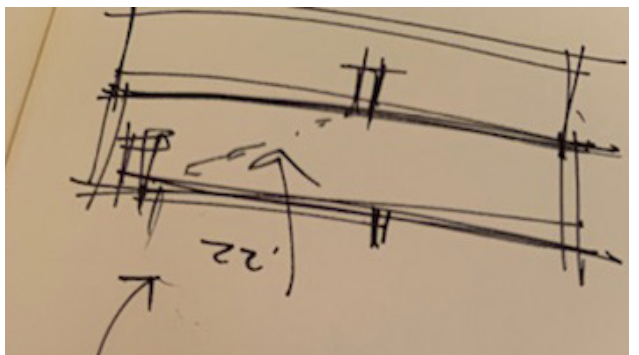
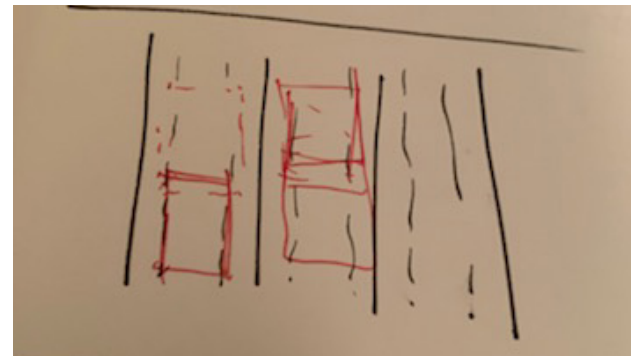
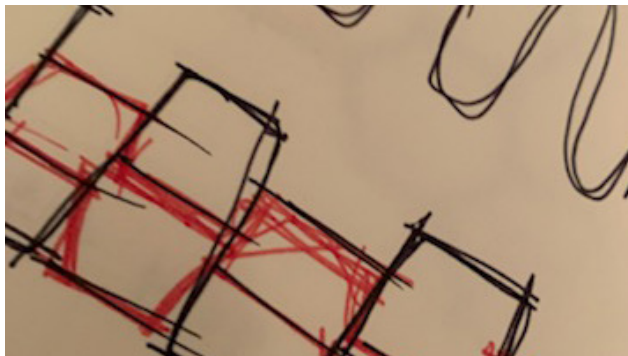
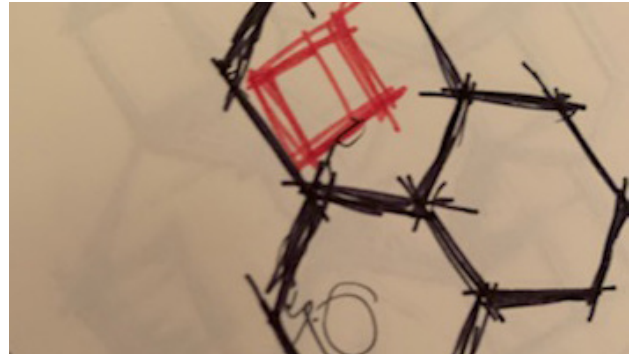
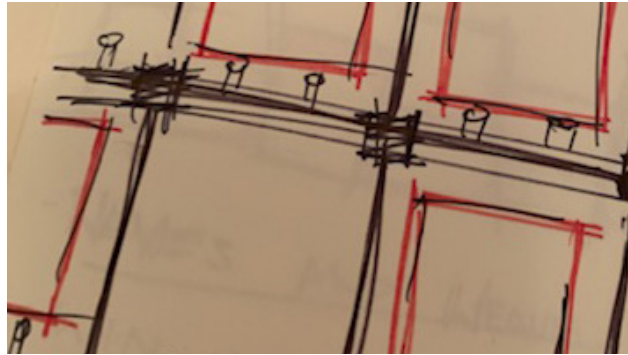


FIGURE 90 | Hive Process

# CONNECT

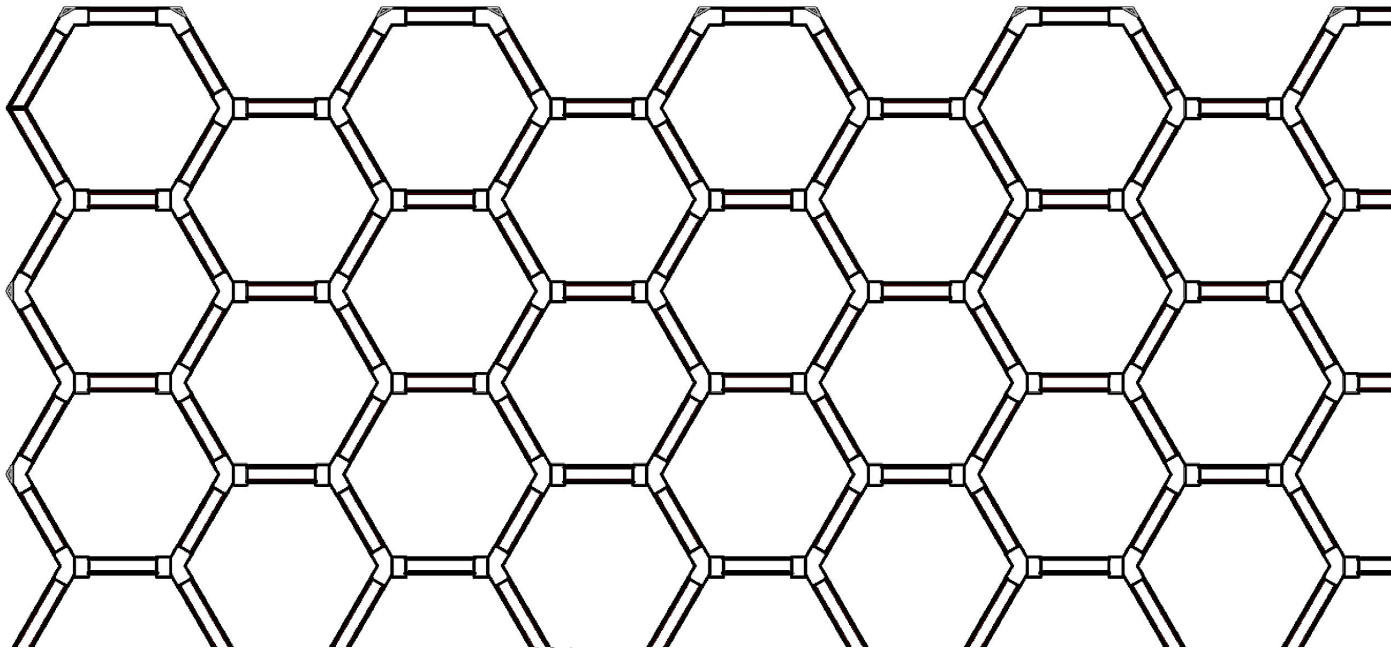
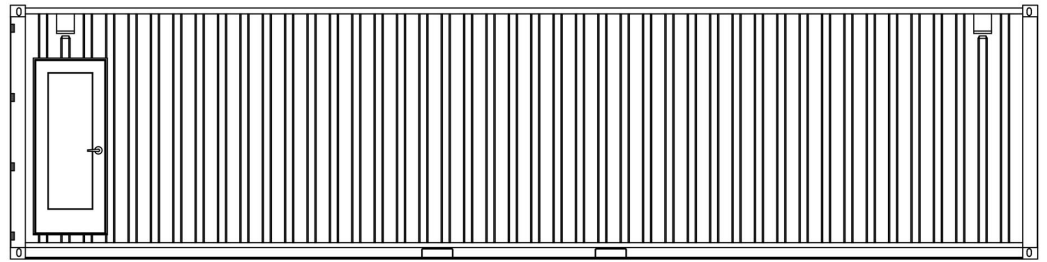
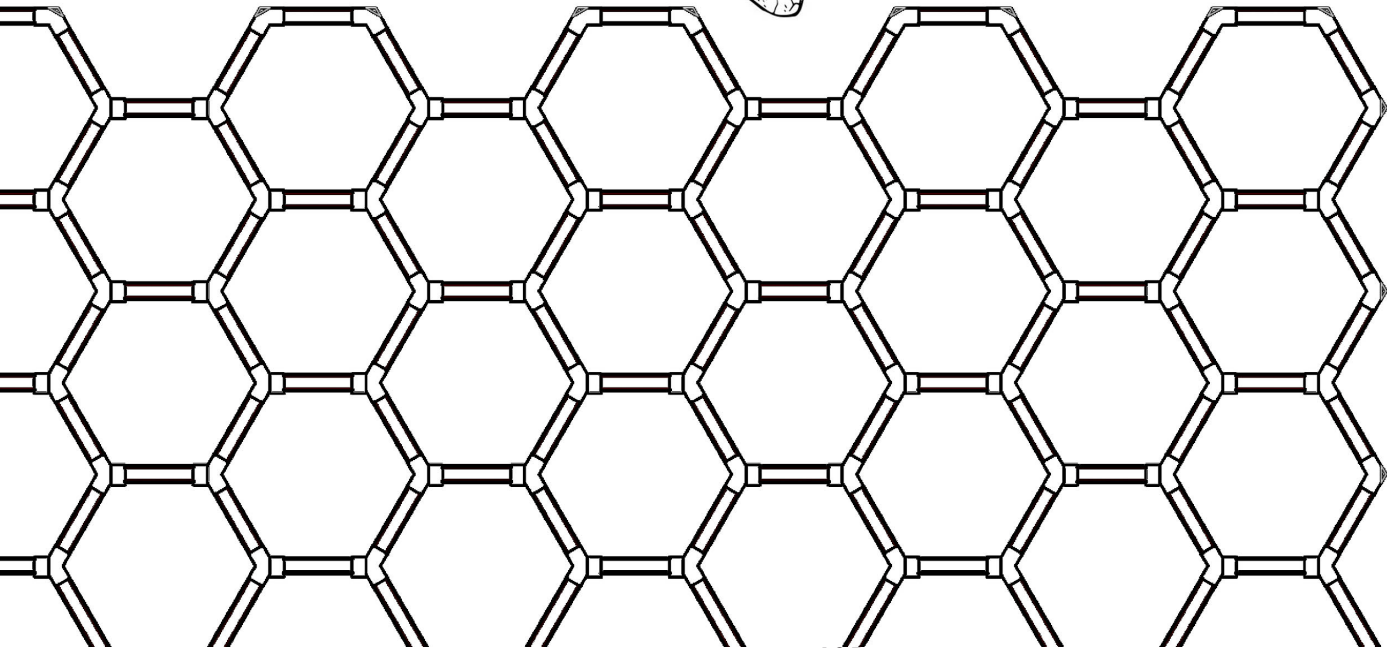
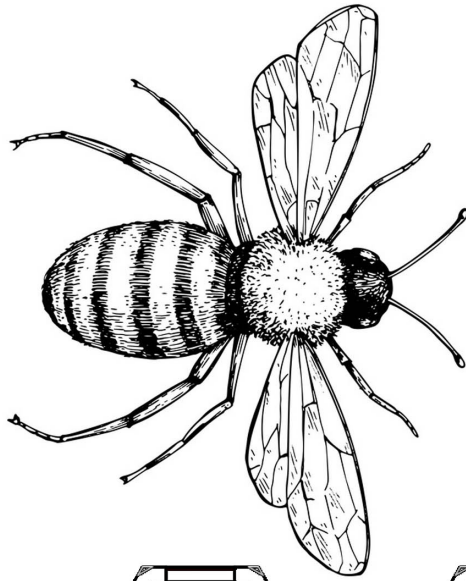


FIGURE 91 | Colonize

# COLONIZE

+



# STRUCTURE

Made of 18" x 12" rectangular beams.  
These rectangular beams come to a  
connection socket joint.

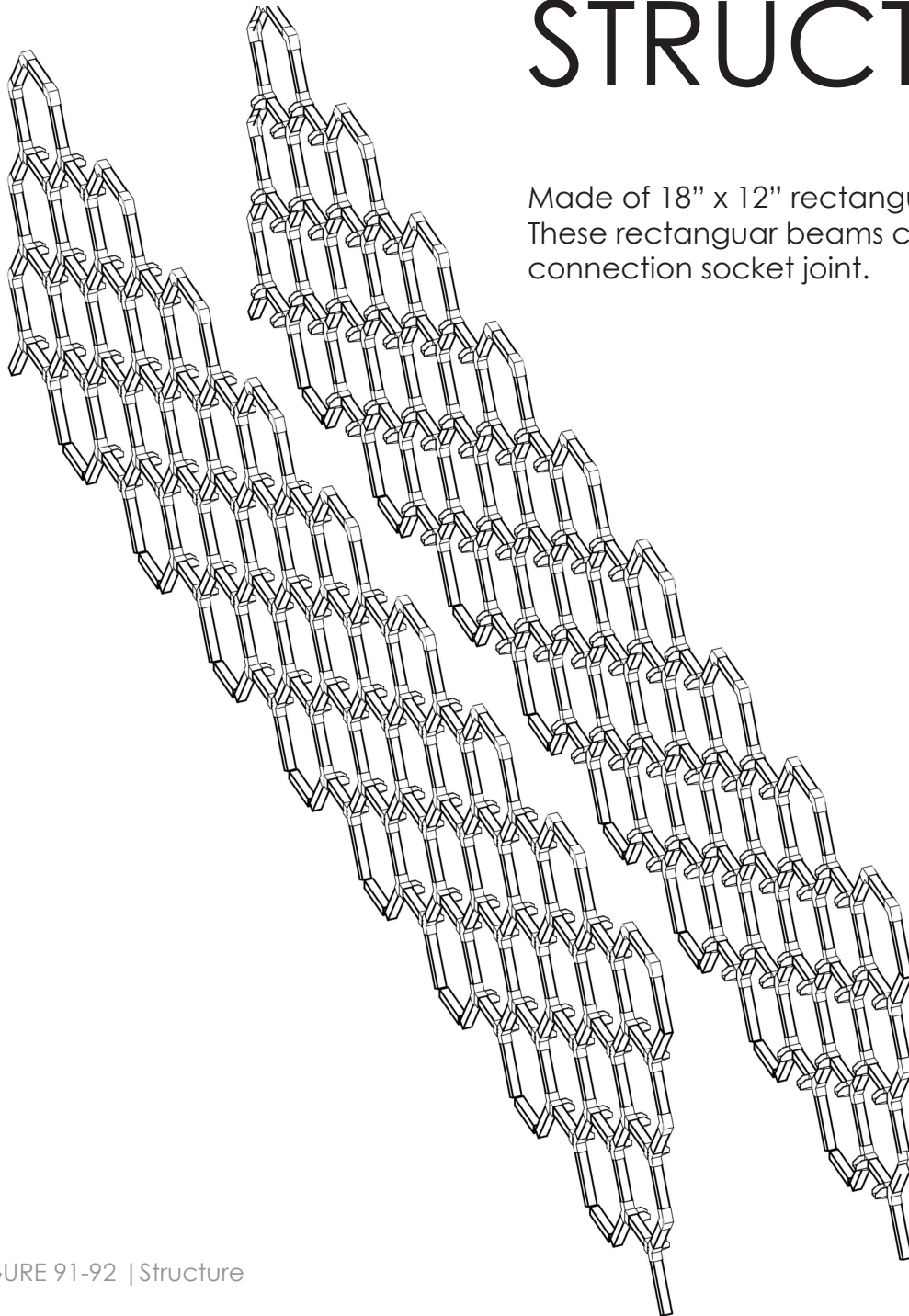
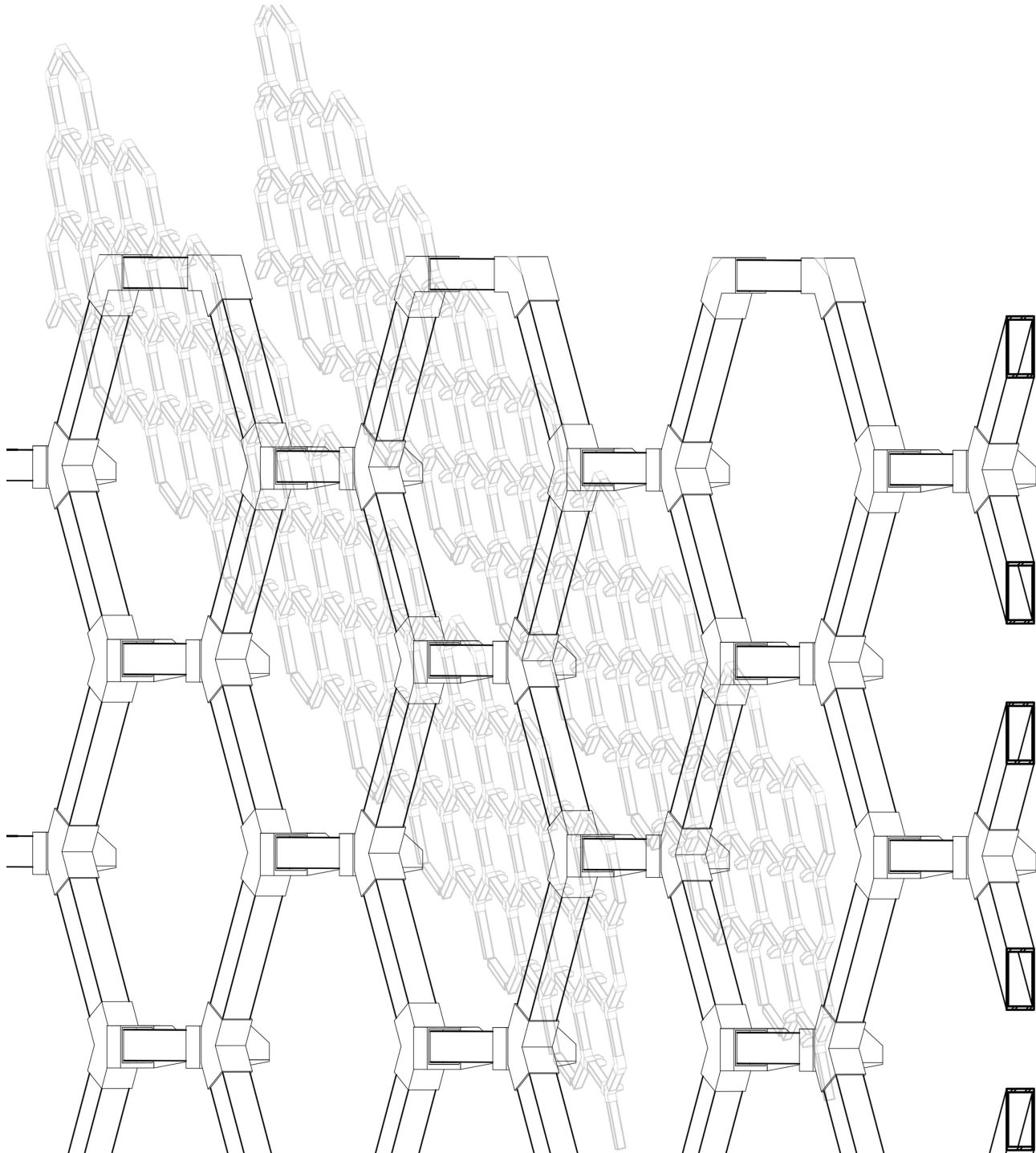
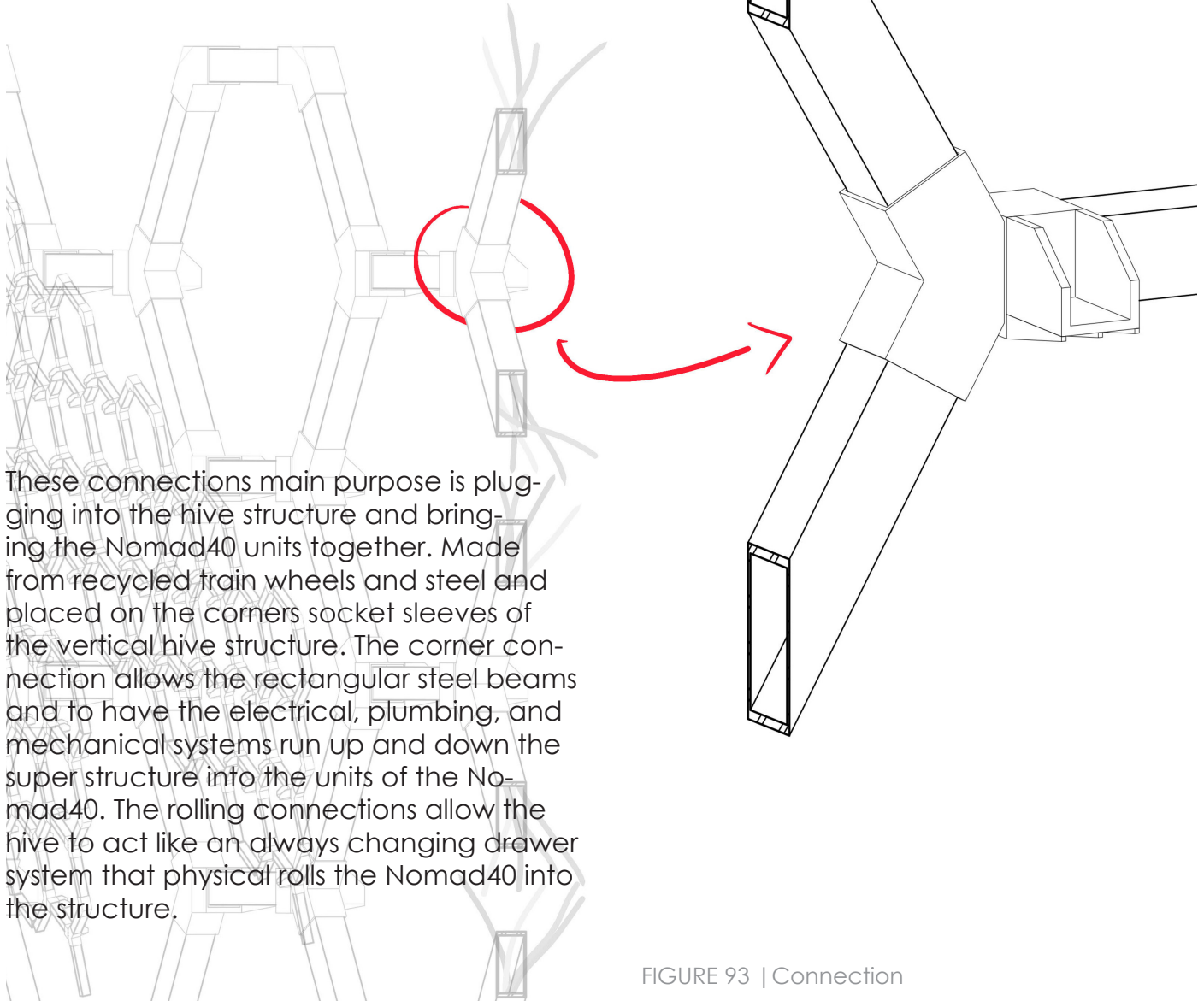


FIGURE 91-92 | Structure





# CONNECTION



These connections main purpose is plugging into the hive structure and bringing the Nomad40 units together. Made from recycled train wheels and steel and placed on the corners socket sleeves of the vertical hive structure. The corner connection allows the rectangular steel beams and to have the electrical, plumbing, and mechanical systems run up and down the super structure into the units of the Nomad40. The rolling connections allow the hive to act like an always changing drawer system that physical rolls the Nomad40 into the structure.

FIGURE 93 | Connection



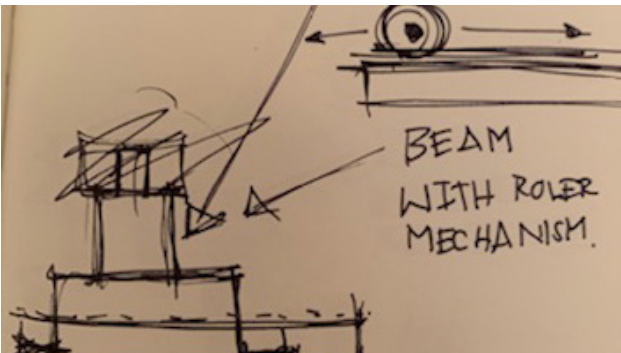
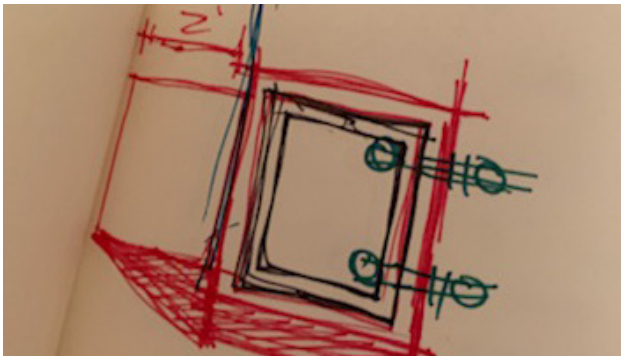
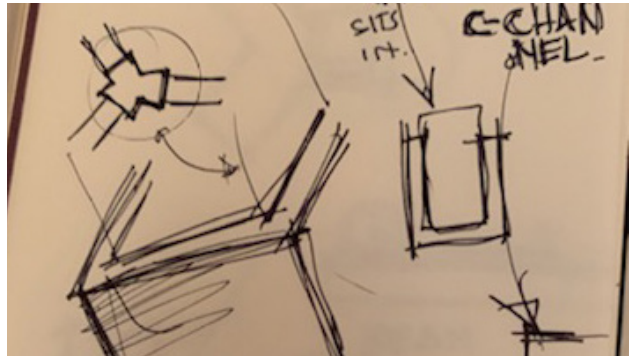
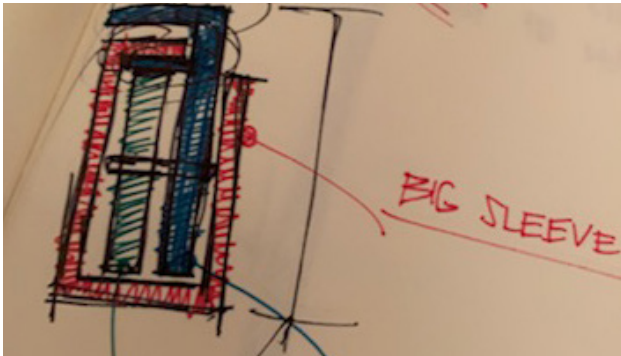
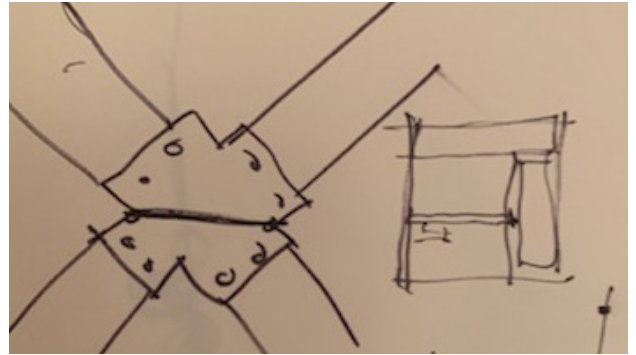
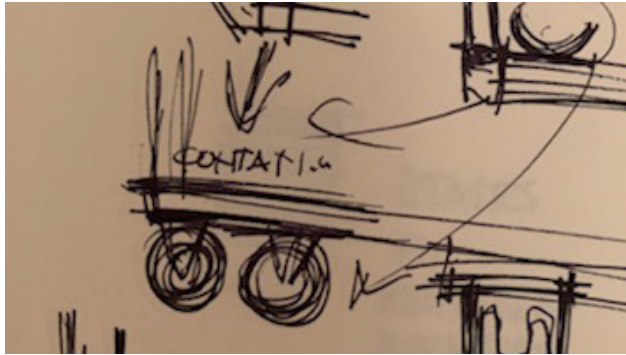


FIGURE 94 | Connection Process

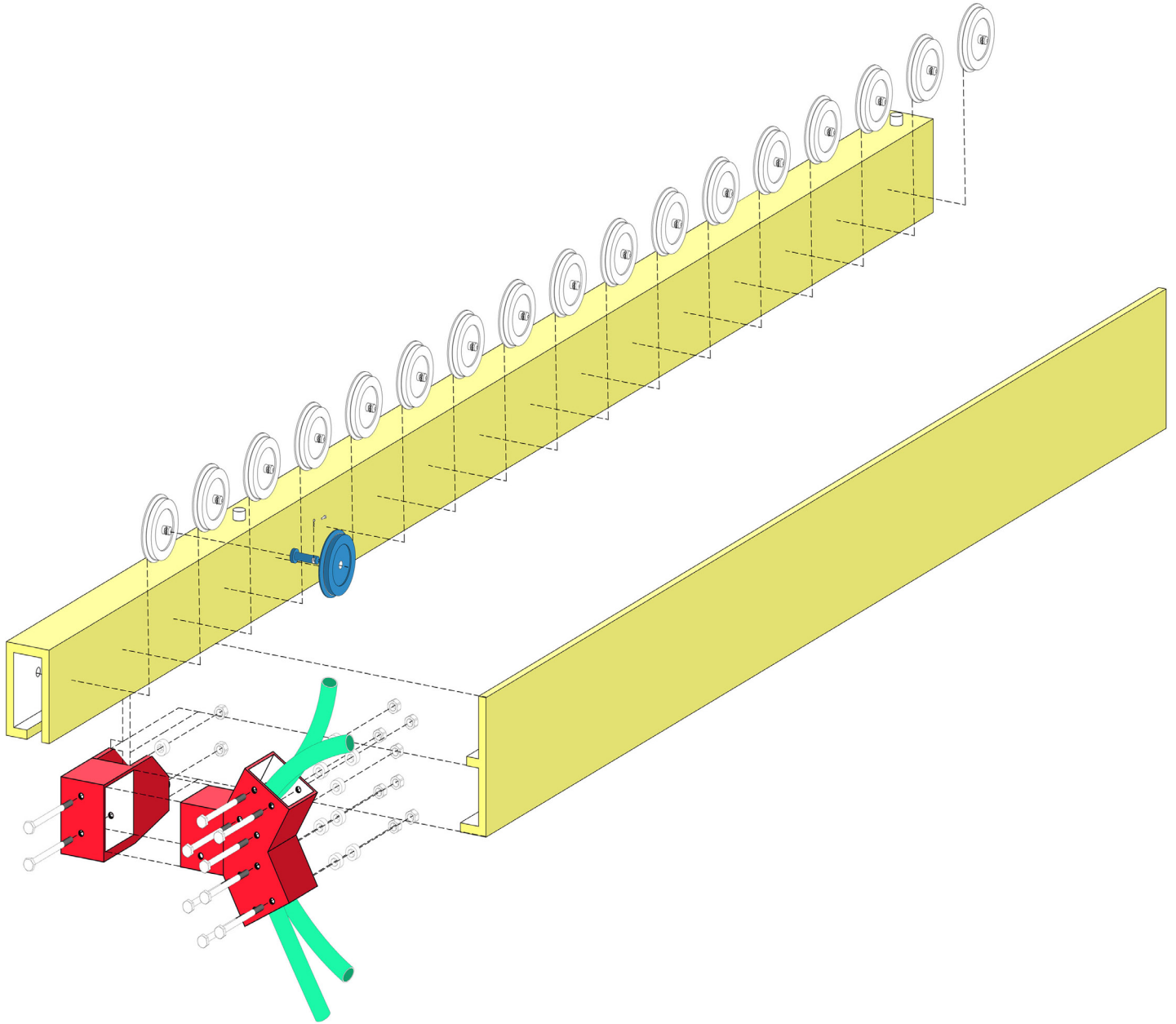


FIGURE 95 | Roller

# ROLLER SYSTEM

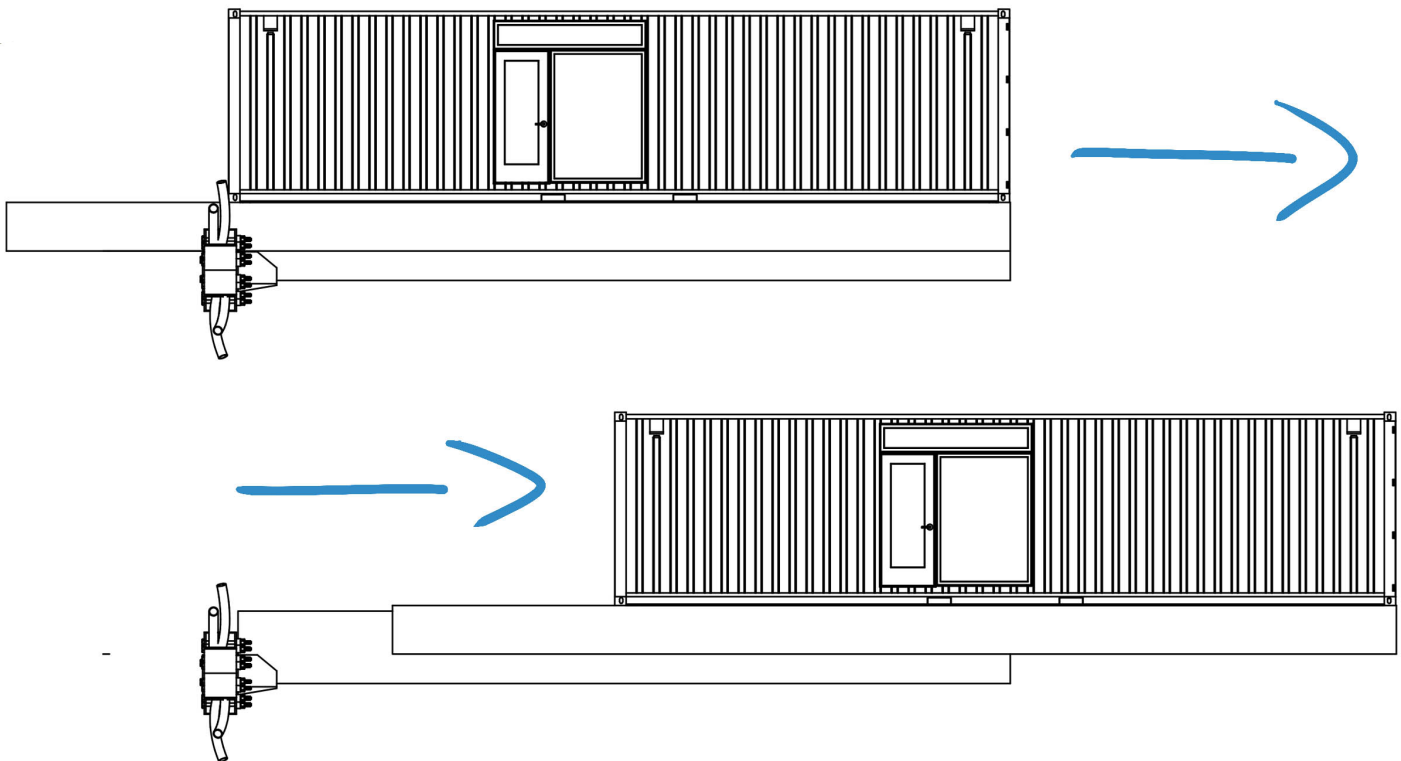
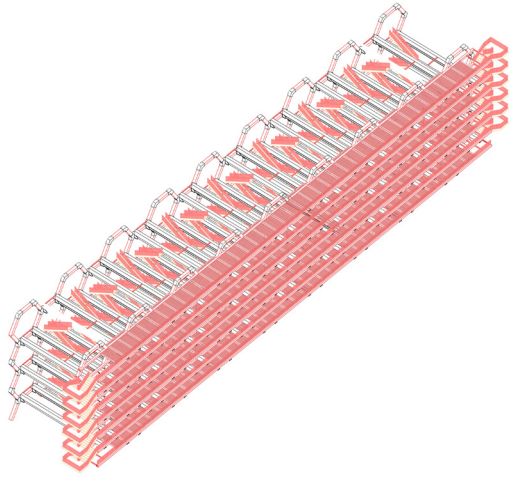
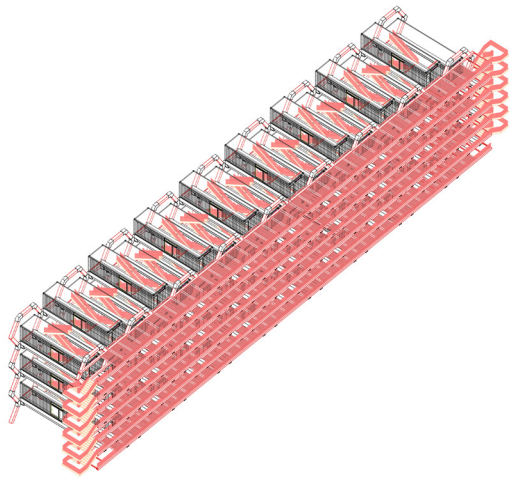


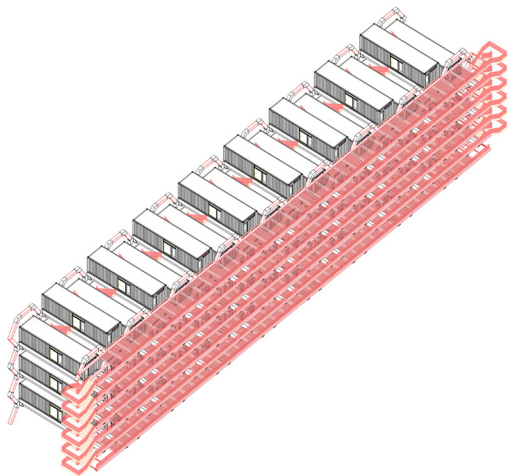
FIGURE 96 | Roller Diagram



Stairs and pathway circulation.



Addition of Nomad40.



Final build.

# CIRCULATION

Physical connection was the goal in this aspect of the project. Showing the detail on how the physical module plugs into the structure. Also, the connection between the humans of the hive structure. These images show the circulation of the structure and how the people move throughout the space.

**SOCIALISM;**  
VALUE MADE  
BY THOSE  
CREATING IT.



FIGURE 98 | Isometric



# ISOMETRIC CUT

This is an image of a cubic section cut that goes through the whole hive structure.

As you can see, the modular forms sitting between the pathways and the stairs that connect to the Nomad40. I use the term "socialism" because, yes, it is a uniform series of box structures, but it is to encourage the socialization between individuals in the structures.

With the uniform structures also lets them travel around the world and connect to other locations with even more people.



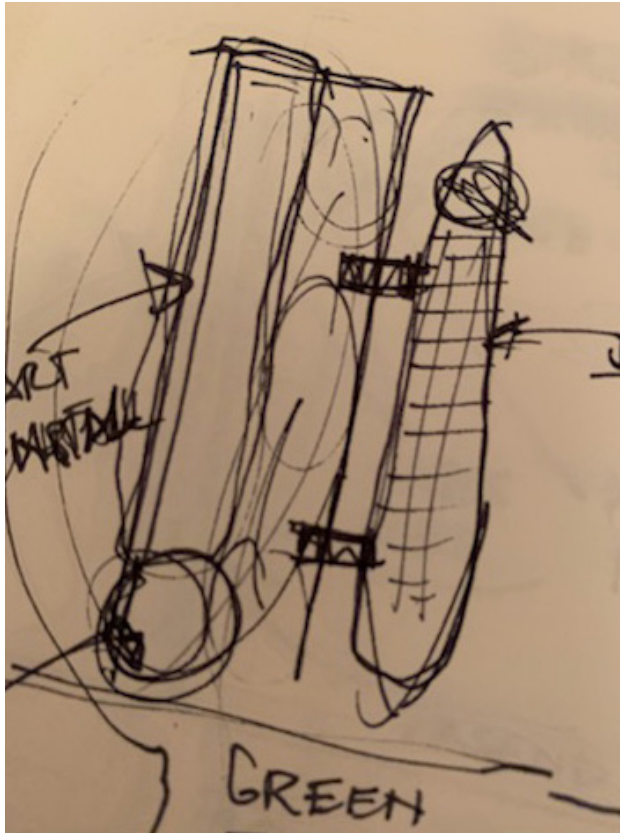


FIGURE 99 | Haven Process

# HAVEN

The hive sits on a boat called HAVEN and attached to abandoned piers in major cities. Haven is made from decommissioned cargo ships that float with no purpose. Inside the boat they have the ability to hold waste from the hive as well as clean water for the nomad40. In the existing tower will be repurposed to be services that you will typically see in a residential building. There would be aspects like laundry, gym, emergency services, administration and so on. Making this floating structure the ability to serve for itself.

LAUNDRY  
ADMINISTRATION  
GYM  
MECHANICAL  
STAFF  
EMERGENCY SERVICES

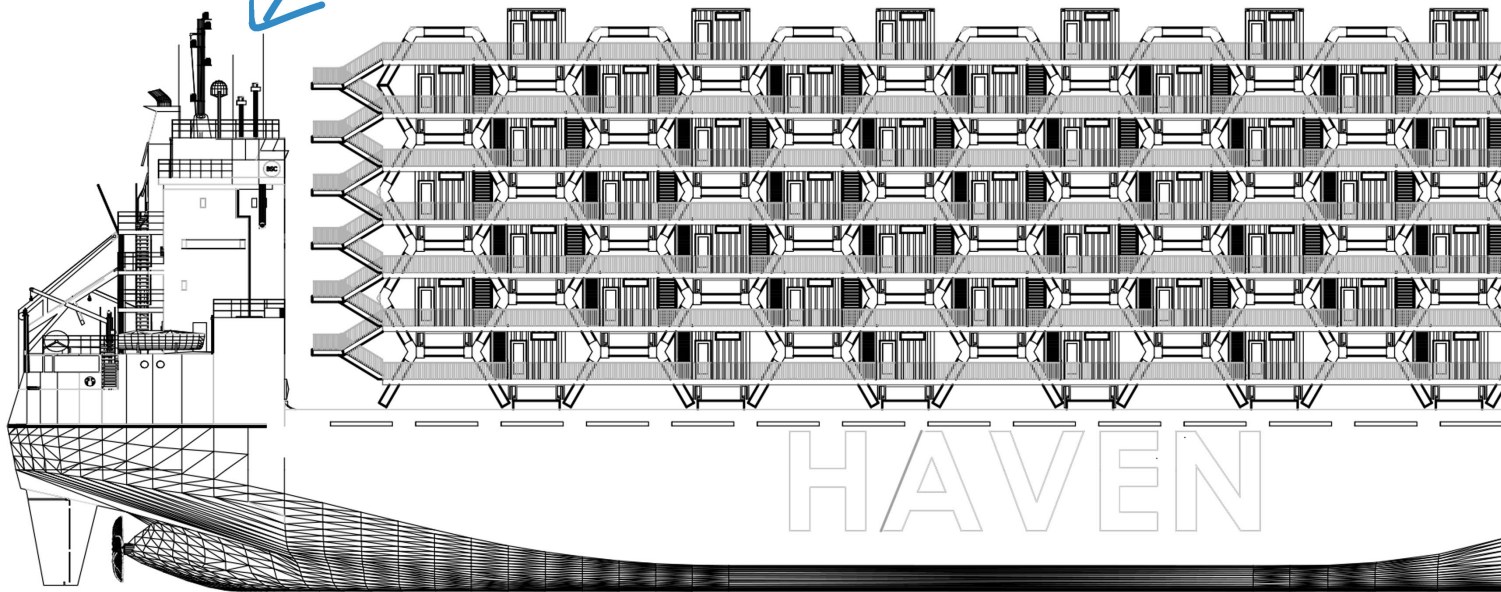
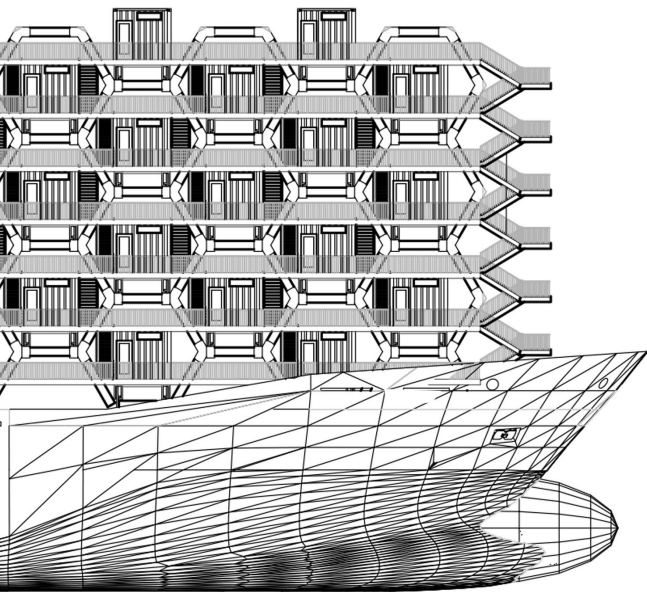


FIGURE 100 | Haven

STORAGE  
WASTE  
WATER  
MECHANICAL



# THE BOAT ELEVATION



FIGURE 101 | World Map





**TOKYO**

**SHANGHAI**

**SYDNEY**

**HIVE +  
HAVEN  
LOCATIONS**

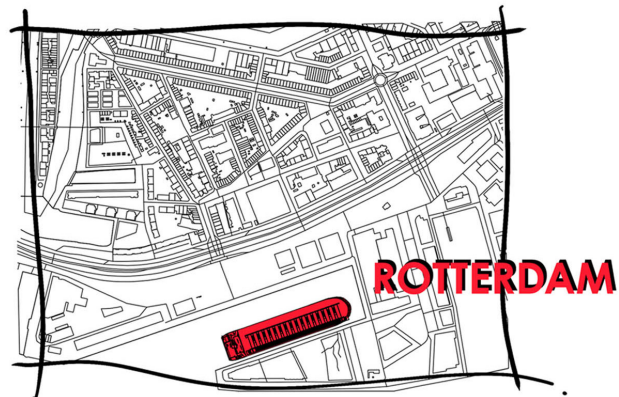
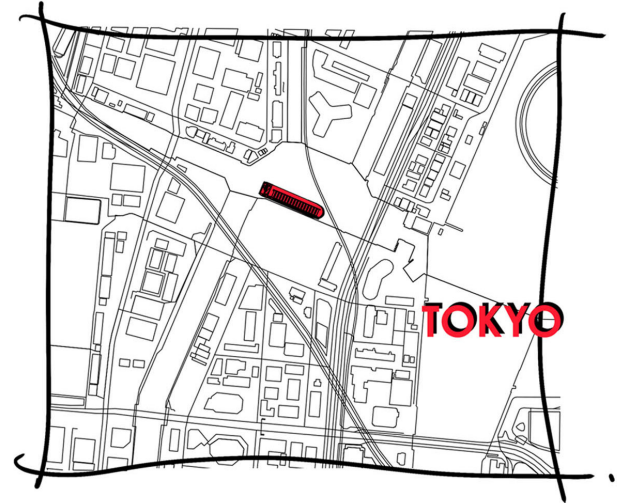
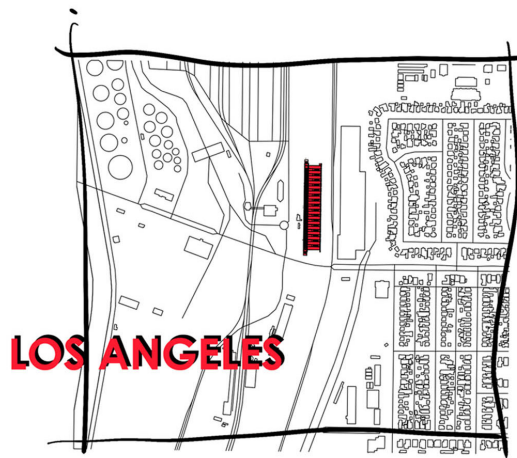
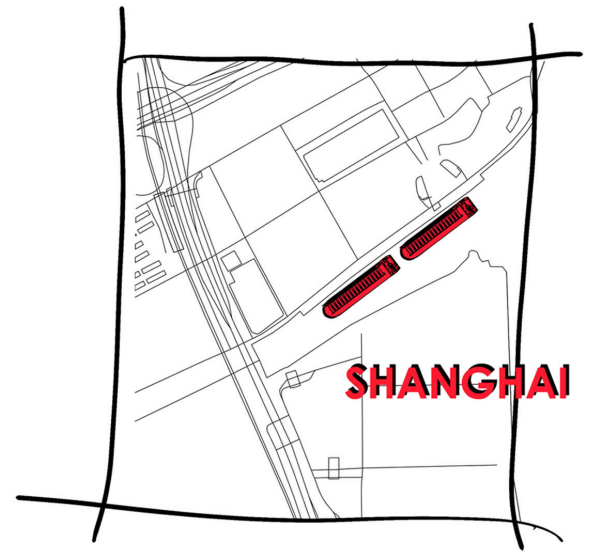
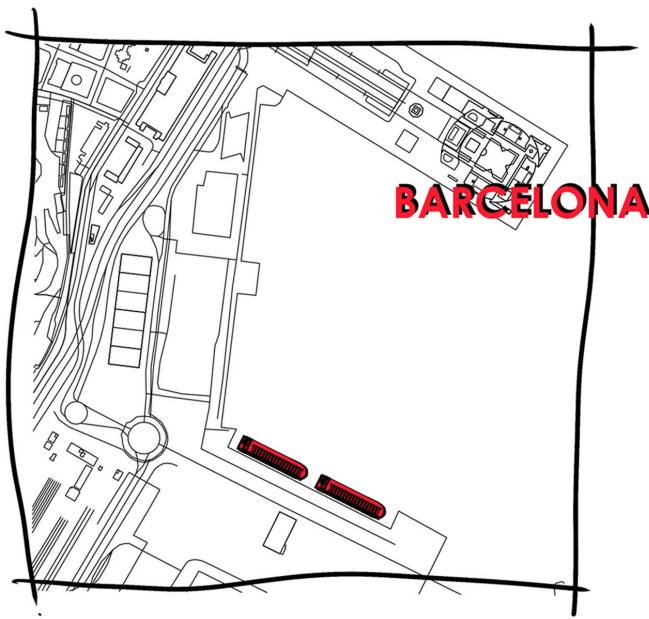
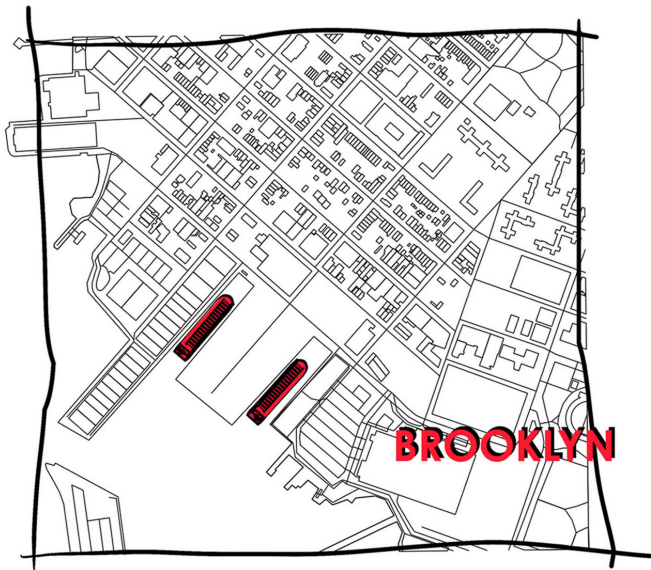
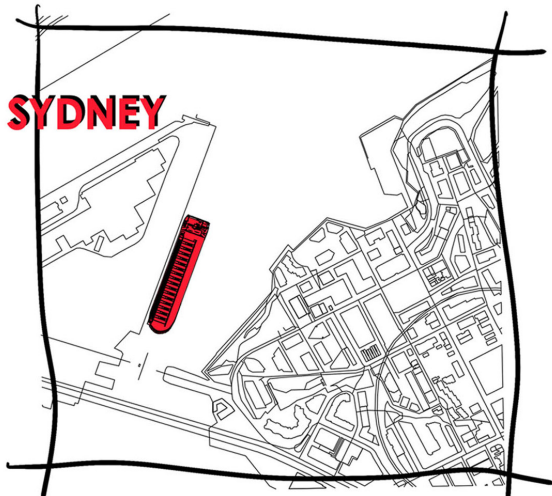


FIGURE 102 | World locations

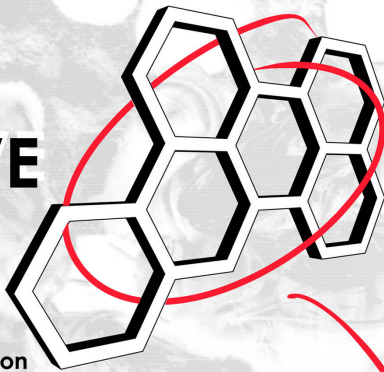


## WORLD SITES

HAVEN is about repurposing abandoned piers and docks around the world in overpopulated cities. The conceptual cities above are some of the most trafficked ports in the world.

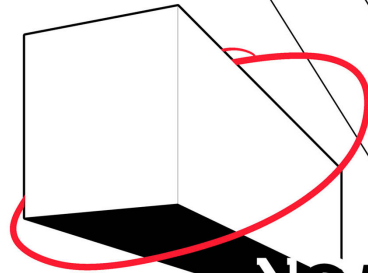


# HIVE



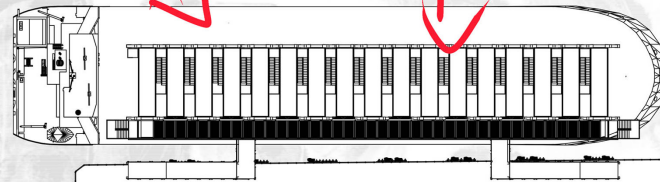
A honey comb shaped super structure that sits on a decommissioned cargo ship.

COLEMAN DOCK



# NOMAD40

A modular home made from recycled shipping containers. The NOMAD40 can be shipped all around the world using freight, rail, or sea.



PUBLIC PIER

PIER 48

WATER ACCESS

SHIPPING TERMINAL

FIGURE 103 | Site

# DETAILED SITE: SEATTLE

On this Seattle site specific, I have created details and aspects to the pier. For example I created a public space of overhead panels that are in tension at different angles, to provide different optimum shading. There is also an organic snake shaped bench that provides seating in shade or open to the sun. Another aspect of the Seattle pier I designed is water access. I created a step system that reaches the water, a ramp for launching small boats or canoes, and also a floating dock for fishing and views. The dock is a floating structure that can adjust with the tides. All of the factors help create the public attraction of the new Pier 48.



# PUBLIC

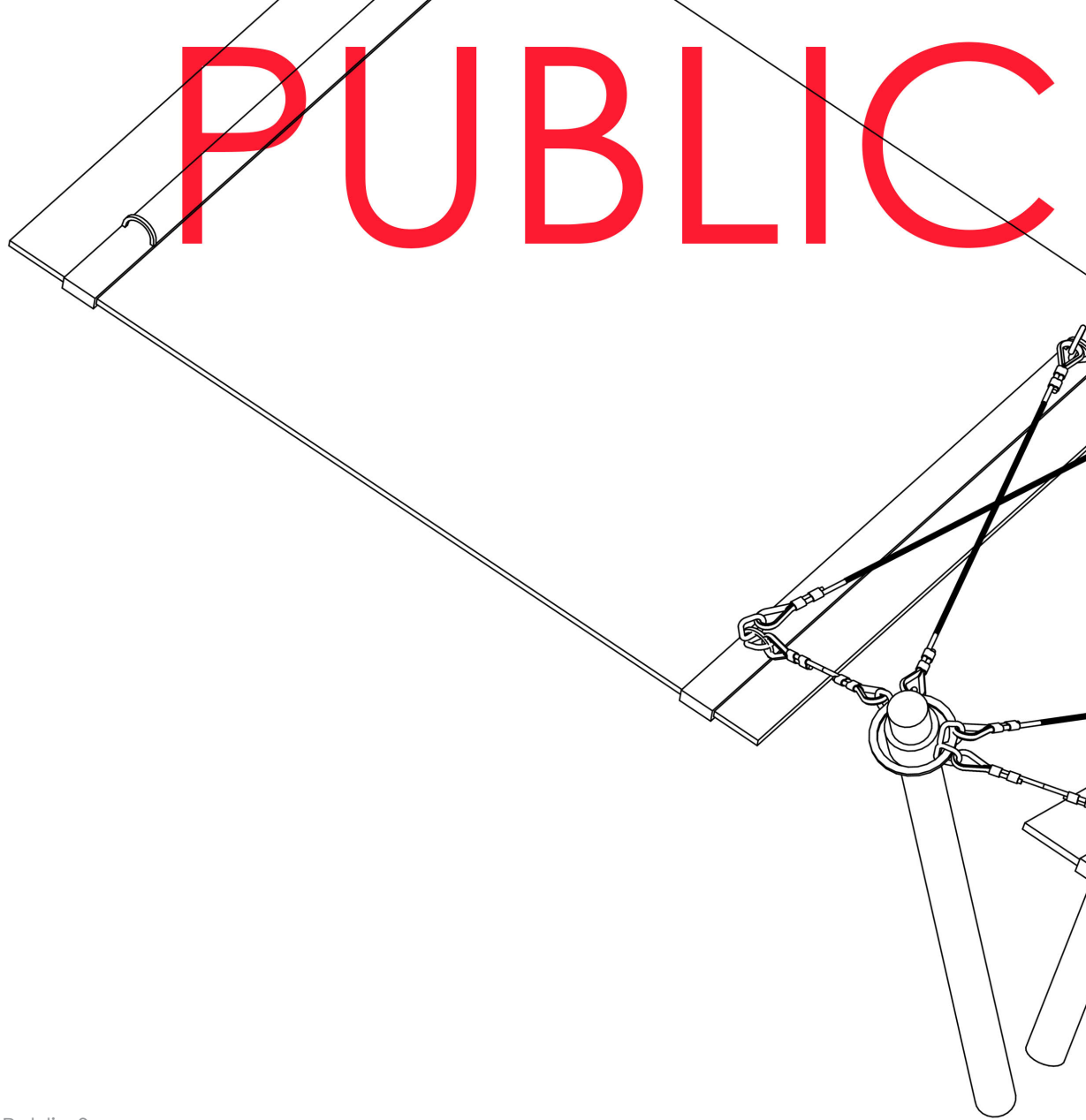
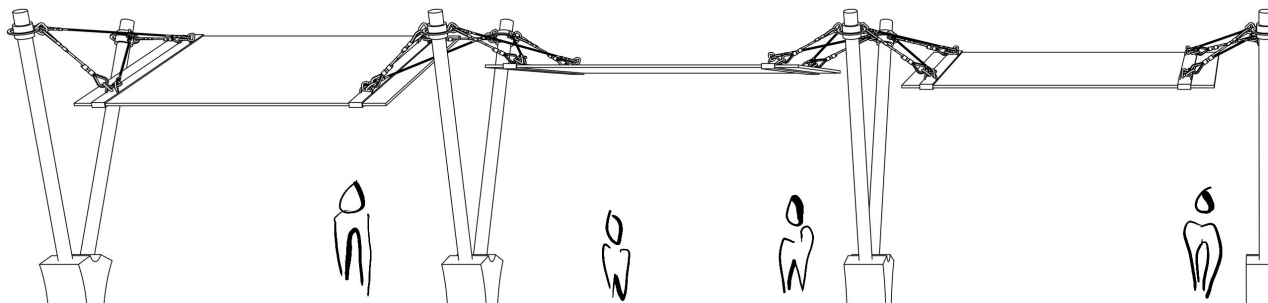
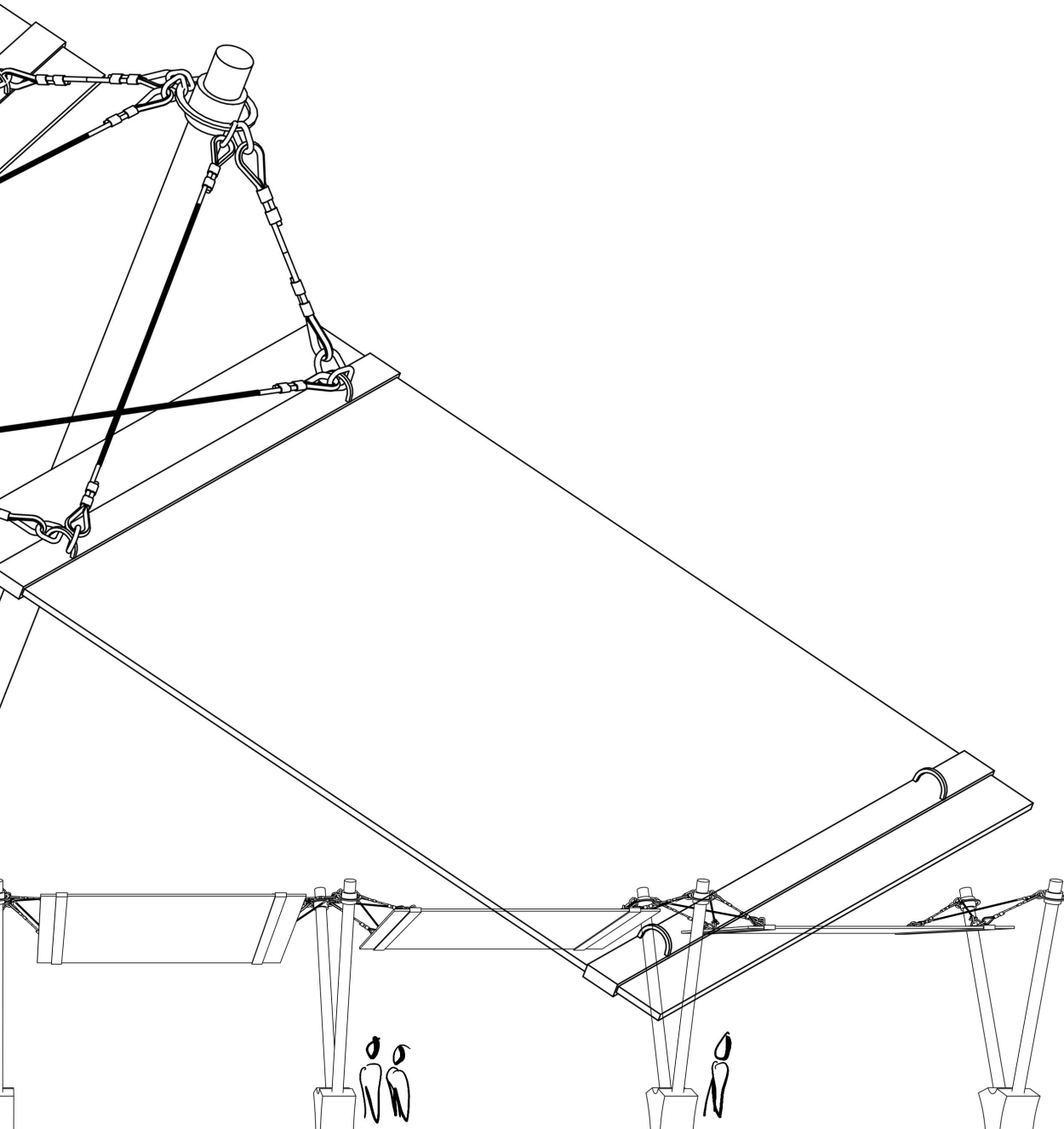


FIGURE 104 | Public Space





# SPACE



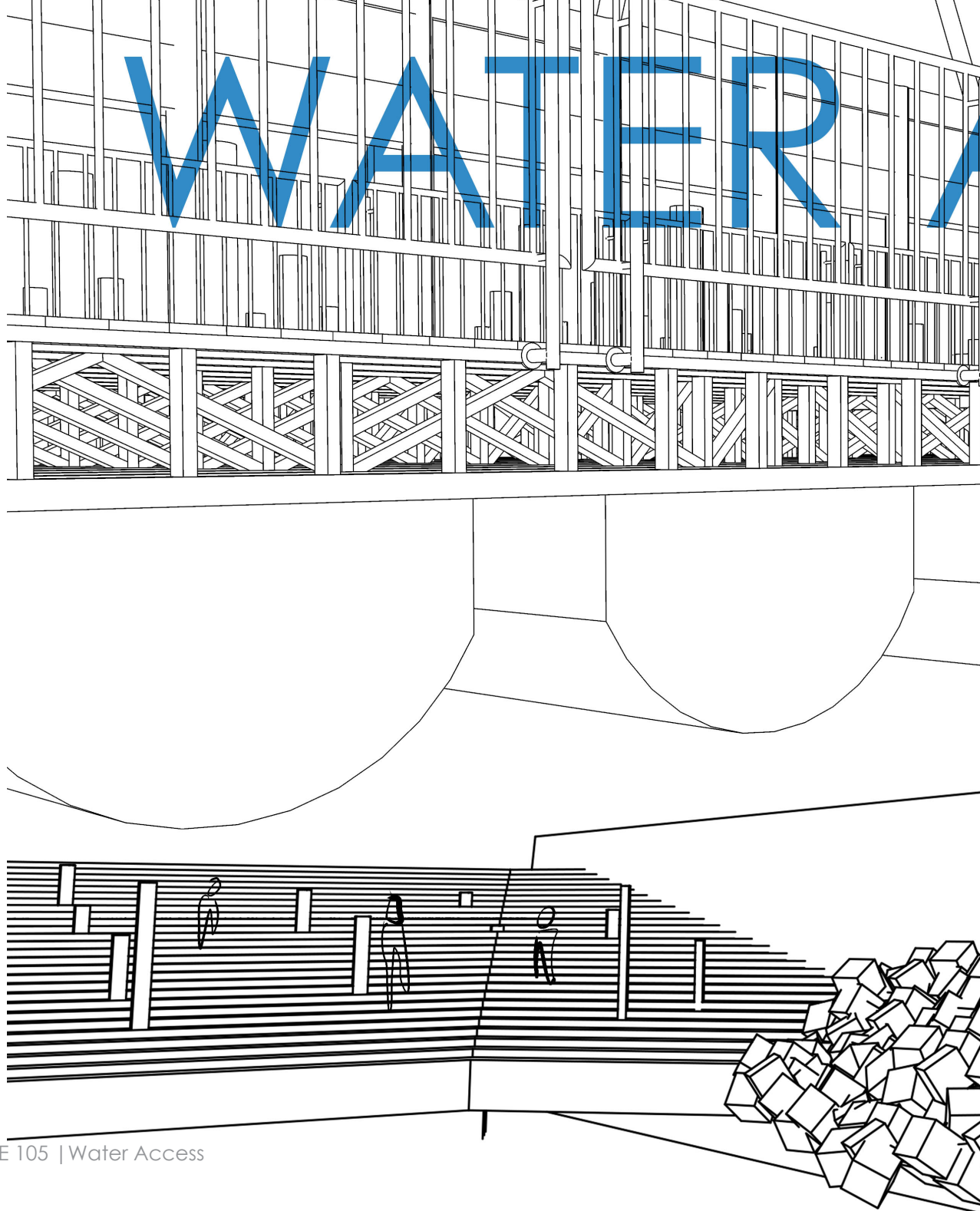
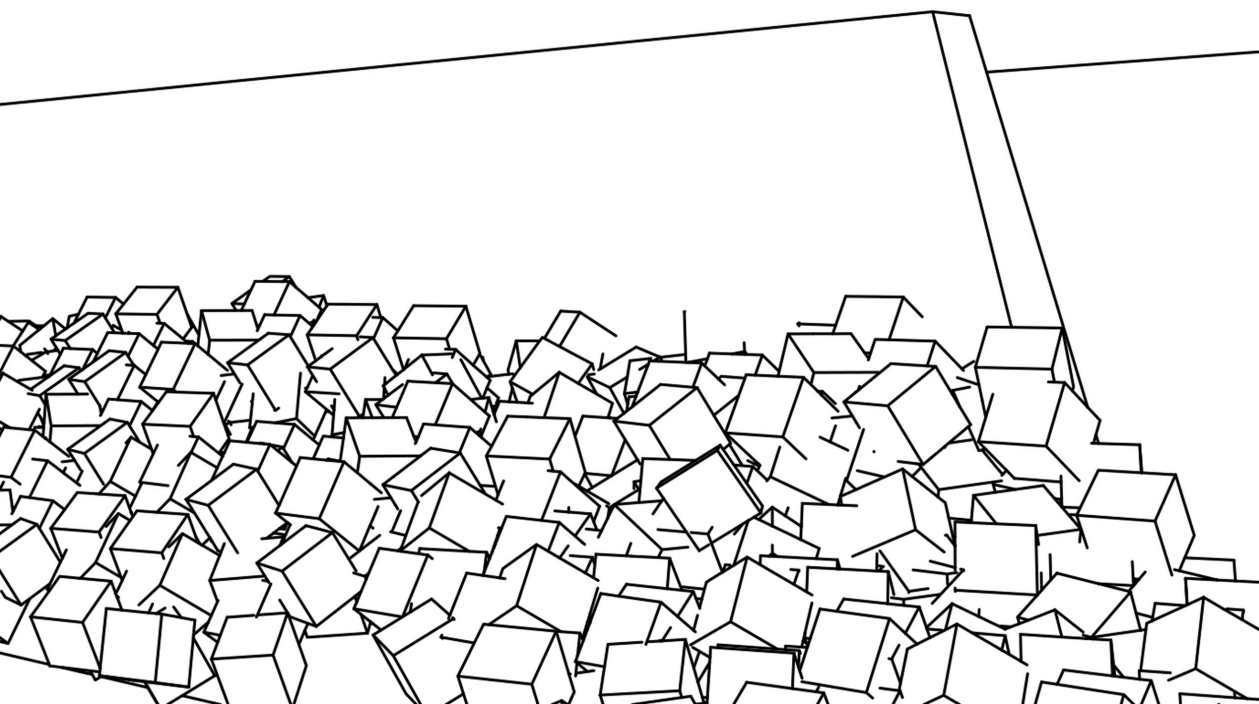
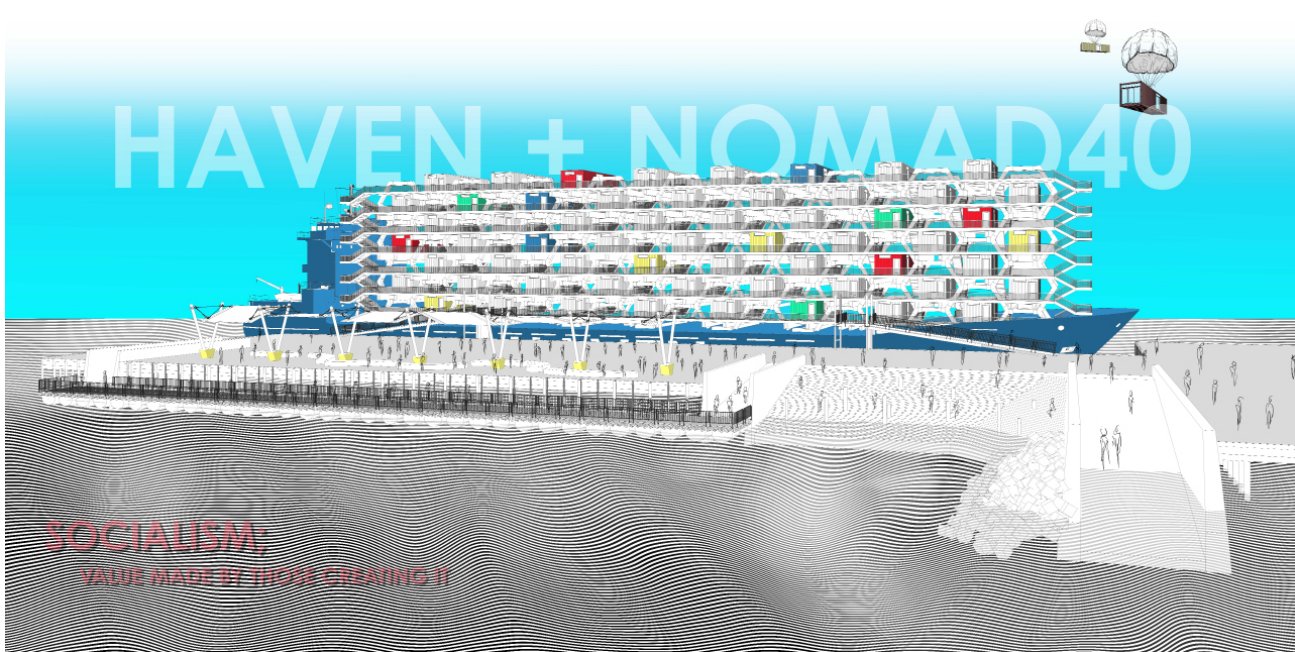
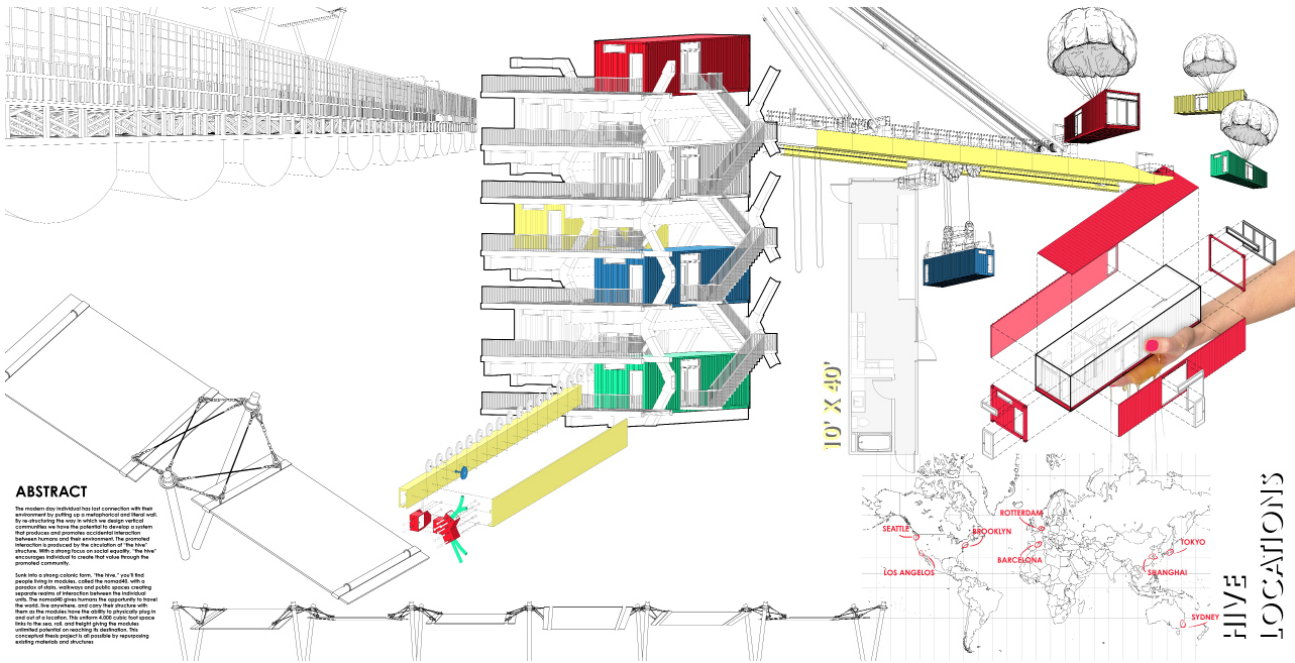


FIGURE 105 | Water Access

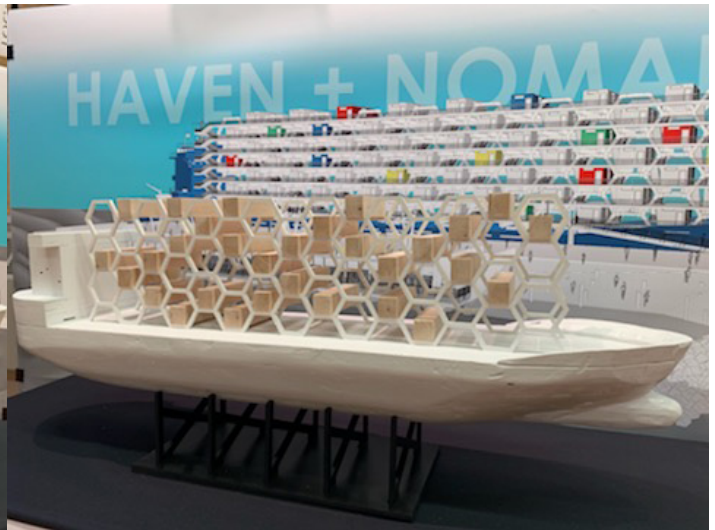
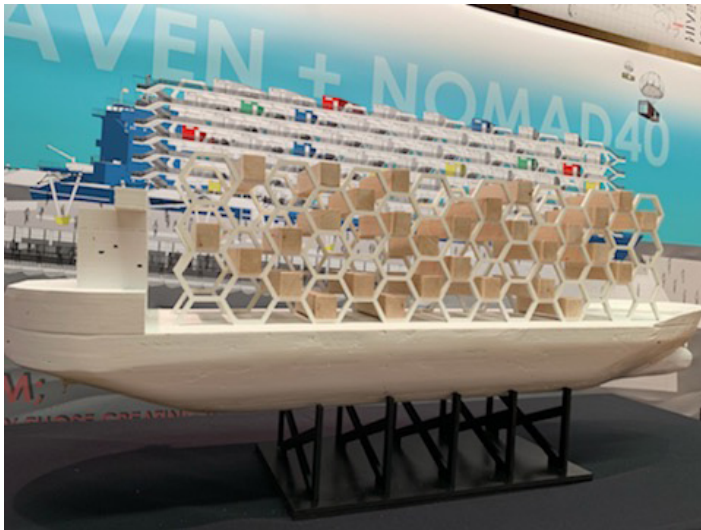
# ACCESS



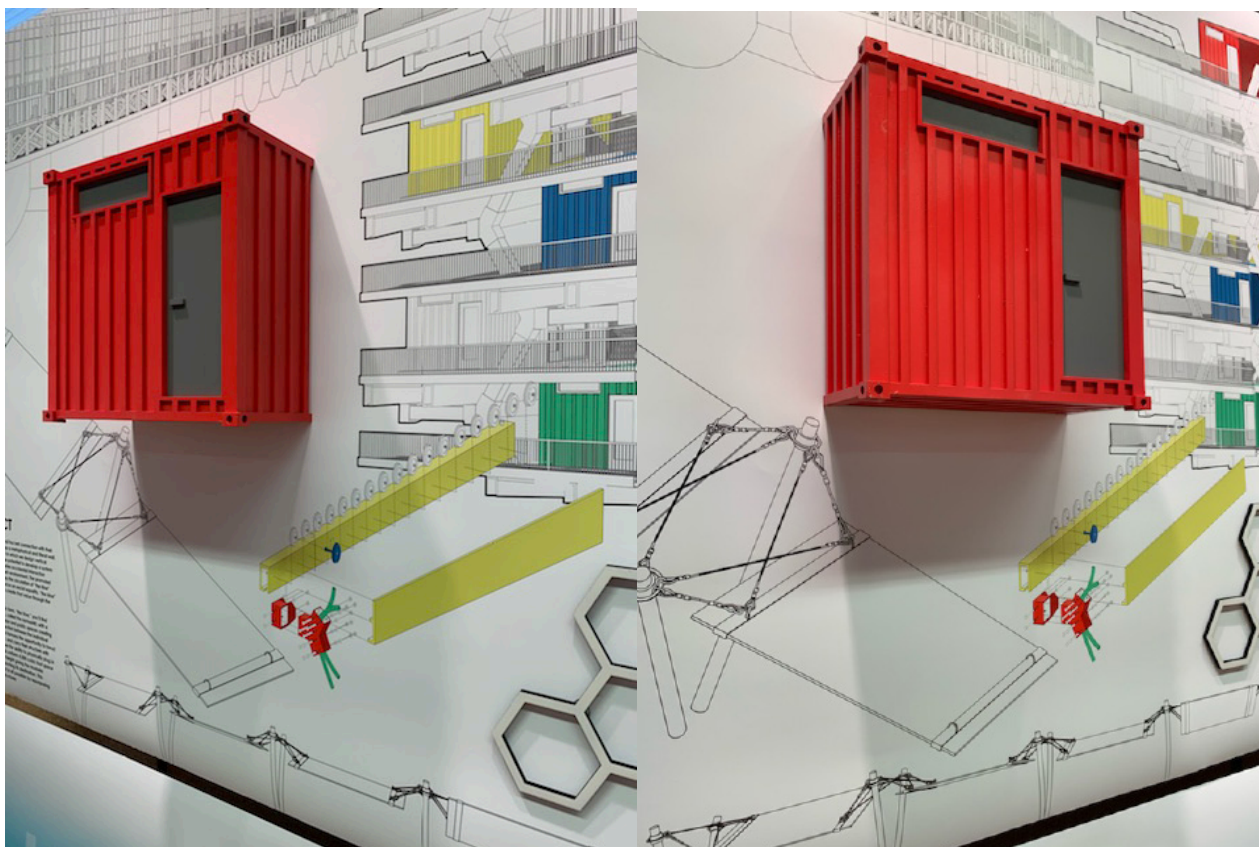












# APPENDIX

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# NICHOLAS HOLZER

Email:

nicholas.d.holzer@ndus.edu

Website/Portfolio:

nicholasdholzer.wixsite.com  
/artandarchitecture

Phone:

701.220.5227

Hometown:

Bismarck, North Dakota



## 2 Past Studios:

2

Fall:

Instructor: Darryl Booker

Tea House – Moorhead, Minnesota

Pritzker Bird House – Midwest

Spring:

Instructor: Joan Vorderbruggen

Small Dwelling – Marfa, Texas

Montessori School – Fargo, North Dakota

3

Fall:

Instructor: Paul Gleye

New American Center – Fargo, North Dakota

ND Culinary School – Fargo, North Dakota

Spring:

Instructor: Bakr Aly Ahmed

Information Center – Bryce Canyon, Utah

Tech High School – Fargo, North Dakota

4

Fall:

Instructor: Don Faulkner

Capstone High Rise – San Francisco, California

Spring:

Instructor: Mark Barnhouse

Mississippi Watershed – Minneapolis, Minnesota

5

Fall:

Instructor: Doug Hanson

Guggenheim Addition – Bilbao, Spain



