Temporary Micro Accommodations
To Address Migration

Ebb & Float Neighborhood

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"The Scale of our homes should be derived from the real needs of our daily lives, Not from vanity, insecurity, or a lack of public display. Home should be the setting of our life, not the measure of it." - Anonymous

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This thesis seeks to discover a modular solutions for people frequently moving — a micro-housing system designed through abandoned containers and barges to accommodate different needs of the diverse user groups. , which will also provide all modern life demands and promotes an efficient way of living.

Preface

Micro houses are in vogue for reasons beyond survival. As folks try to dodge the frantic demands of modern-day life, less space helps them to embrace what matters. It is not about possessions; it appreciates what they have. The promise of affordable housing is an enticing proposition in today's world. We see people struggling to find themselves in this modern age, a time defined by "bigger is better," mentality that tells us we must always strive for more, go faster, and achieve perfection. This thesis seeks to discover solutions for people frequently moving — a micro-housing system, which accommodates all modern life demands and promotes an efficient way of living.

LITERATURE REVIEW + RESEARCH

A Brief Introduction to Migration

While migration has been a feature of human existence for ages, this phenomenon is increasing in modern life. Constant development and change have become very prevalent in the contemporary world (Migration, " Vienna Seminar"). Migration has profoundly shaped the nature of the world we live in and continues to do so today. It is estimated that the number of people who have migrated to live and work in other countries has doubled from 99.8 million in 1980 to 200 million in 2005, though this still represented only 3% of the world's population (United Nations 2004).

The following section presents a brief overview of different analytical approaches that have been used to understand why people migrate and how they choose the places they migrate to(Striking Woman" Migration"). Due to numerous political and ecological crises, people are forced to adapt to new environments and conditions.

Today, migration is most vividly observed in the movement of people toward urban centers. The motivations that draw so many to these burgeoning metropolises are many and varied. Primary among these reasons are economic migrants hoping to make a better life somewhere else, though contemporary reasons also include refugees fleeing conflict zones, and environmental migration due to natural disasters. (IOM, "Migration Report") In addition, short and circular migration is repeatedly becoming more significant. As opposed to earlier times, when migration was more likely to end in permanent settlement, people are migrating more than once in their lives, and sometimes returning to their first country. (Striking Woman " Migration"). Michael Kimmelman has also identified a phenomenon known as 'middle-class' migrants--educated individuals in

search of new experiences. (Kimmelman, "Urbanism"). Whatever the reason, together, this influx equates to an estimated three million people moving to cities each week (IMO 2016).

As a result of this movement, cities are becoming increasingly packed; space is at a premium, and even unused spaces such as alleys and rooftops are under pressure to deliver with maximum effect. As the IOM report makes evident, strong population growth in cities puts a great deal of pressure on infrastructure, the environment, and the social fabric of the city(IOM, "Report"). This literature review will discuss the experience of migration, the pressure it puts on urban environments, and some possible solutions in the form of micro-living accommodations(Diedricksen, "Micro Living").

Psychological Effects of Migration

Migration is a process of social/cultural change that happens as part of physical relocation (Surdi, "Relocation" 16). When people relocate from one domain or culture to another, they carry their knowledge and expressions, experiences. Migration can be categorized into two primary types: domestic migration and international migration. Domestic rural-urban migration is more likely to be for economic or educational reasons, whereas migration across nations may be for social, educational, financial, leisure, or political purposes (National Geography, "Migration").

Regardless of the type of movement, migration means leaving familiarity behind and going into unknown social networks. It also includes experiencing at first a sense of loss, dislocation, alienation, and isolation, which usually leads to a process of acculturation (Klumpner & Kalaga, "spatial challenge" 7). Today's immigration is overwhelmingly composed of newcomers from Asia and Latin America, areas with significantly different languages and cultures than those of previous European immigrants in the late 1800s and earlier decades of the 1900s(Statistics on U.S. Immigration).

Whether migration occurs once or more frequently, moving is an intensely emotional experience. The underlying psychological issues involved in changing ones' home are of great interest to therapists and psychologists because housing and moving are filled with symbolism, the hope for new beginnings, crushing disappointments, loss, anxiety, and fear (Kershaw, "moving", 6).

Pressure on Cities from Migration

With 180,000 people globally moving/traveling to cities every day, the search for new solutions for accommodation issues increases (Ingles," urbanization"). As Bjarke Ingels notes, "Essential primary drivers of human migration, such as the availability of centralized, sustainable, and affordable housing, are not only elemental but cardinal in the quest to inspire and attract the best and the brightest to conquer the challenge of our exciting, but fragile future." (ARCKIT Model 18 - Urban Rigger)

As one indicator of the pressures on cities, the cost of housing has grown dramatically over the past sixty-five years. This is particularly noticeable today when income has stagnated. In 1950 the median household income was $4,237, and the average house cost was $7,354 for an income to home cost equivalent of 1.7. Compared to today, the median household income is $51,939, and the average house cost is $343,300 for an income to home cost equivalent of 6.6. This sharp increase means that most people can no longer afford to purchase a home. Even if they are able to earn enough to qualify for a mortgage, more and more homeowners owe more on their mortgage than they can actually earn in standard working life. (Diedricksen, "Micro Living" 21)

The cost of housing suggests that design solutions for living accommodations require a wholly unique approach. In addition to the challenge of space, new housing solutions should address contemporary lifestyles, be attractive, efficient, and sustainable. Finding a sustainable answer to today's urbanization challenge means investigating different forms of housing and undiscovered urban resources. (Ingles, "Urbanization")

Micro Living as a Housing Solution

Micro living accommodations, also know as tiny houses can be understood as a structure that provides everything needed to live the best life most efficiently and cost-effectively possible. A tiny house is a home that conforms to the following three principles:

1. It focuses on the effective use of space.
2. It relies on good design to meet the needs of the residents.
3. It serves as a vehicle for a lifestyle that the resident wishes to pursue.

A tiny home for a family of four might be 1,000 square feet. For one single person, a house of 150 square feet might be right, while another individual might want 300 square feet. All of these are tiny houses (Ryan, "Recycled Material" 8). Small homes, which typically range from 100 to 400 square feet, have drawn much attention as a viable alternative to traditional housing because of cost, design sense, and environmental friendliness (Ryan, "Recycled Material" 27).

The tiny house movement took off after the Great Recession hit. Amid a pervasive sense of insecurity, with millions of Americans losing their jobs, savings, and homes, the fantasy of becoming independent by living small loomed large in many people's minds (Milkman, "Tiny Roots" 2). A yearning for autonomy aligned with a strong desire to continue owning individual property, even

in the face of economic collapse. (Klumpner & Kalaga, "spatial challenge" 7) Tiny houses have captured the imagination of people for more than a decade now. The promise of affordable housing is an enticing proposition in today's world (Ryan, "Reclaimed", 06-07).

Today, tiny houses are in vogue for reasons beyond survival. As folks try to escape the frenetic demands of modern-day life, less space helps them to cherish what matters. It is not about possessions; it appreciates what they have. (Diedricksen, "Micro Living," 23) We see people struggling to find themselves in this modern age, a time defined by "bigger is better," is a mentality that tells us we must always strive for more, go faster, and achieve perfection(Pacific Yurts "Tiny Homes" 2018). In addition to their affordability, tiny houses are an attractive option because of their design and detailing. Often a great deal of attention is devoted to their aesthetics and layout. They are houses that are built and designed from the ground up for the resident because to live in such a small space, attention to details should be considered very personal(Kaufmann, "Tiny Houses)

Maximizing Underused Spaces

The nature of microarchitecture is also well suited to spaces that have been overlooked, such as abandoned buildings, leftover pockets of land, or other urban spaces.

"Why should the physical size of a dwelling determine its liveability?" This research seeks to explore the potential of a more compact housing typology for Sydney and assess its compatibility with our shifting cultural expectations(Rubenach," Compact Living").

A tiny house may release from the trappings of traditionalist homeownership. However, this newfound financial freedom may soon suffocate as a result of prescribed isolation - bogged down by the added labors of achieving true sustainability. It would appear that in its current form, the tiny house movement cannot be genuine without being all-consuming. It requires a complete change of lifestyle(Rubenach," Compact Living").

One example, in Hamburg's Eilbek Canal, a handful of floating homes have thrived as a result of the city's rezoning regulations. With commendable foresight, in 2006, the local government allowed Elibek neighborhood to be transformed from a neglected waterway to a residential zone. Ranging in scale, materials, and function, the eclectic suite of ten homes illustrates how floating accommodation can be contemporary and forward-looking, while also invigorating urban spaces. (Roke, “Mobitecture")

Reasons to go Micro

One reason for the enduring appeal of microstructures is the way they free people from the usual constraints of daily life. Adaptable, lightweight, responsive to local conditions and with the ability to travel almost anywhere with ease: these inherent qualities of 'microarchitecture' imply the opposite of our usual stationery, brick- and - mortar bound existences(Diedricksen, "Micro Living," 14).

"Today, sustainable is almost another word for common sense, or making things practical and smart. Companies like Danfoss have pioneered innovation and made cutting-edge technology available." - Bjarke Ingels, Founder & Creative Partner of BIG.

Away from the frontline of conflict zones and natural disasters, microarchitecture is gaining popularity as a way to downsize, highlighting a philosophical shift in society as well as economic advantages. The tiny life article states that the growing popularity of having a tiny home is, arguably, a result of the rising gap between rich and poor(Rubenach," Compact Living"). The shift towards micro accommodation also addresses the environmental and social costs that come with occupying large buildings. With the amount of living space per person in the USA almost double what it was in 1973, and with the cost of purchasing a home rising steadily in relation to income, the need to find more viable ways to live is pressing concern(Kaufmann, "Tiny Houses).

Conclusion

Viewing the enthusiasm for tiny living through the lens of personal space and ownership calls up much older ideas than Kahn's shelter or Susanka's not-so-big spaces; the tiny house fantasy rests on visions of property and expansion embedded in the American consciousness for more than a century (Milkman, “Fantasy").

According to Mitchell Ryan, who has stated in his book: Tiny Houses Built with Recycled Materials: Inspiration for Constructing Tiny Homes Using Salvaged and Reclaimed Supplies that the Tiny Home Cost A considerable advantage of tiny houses and, in particular, the ones that use reclaimed materials, is their cost. The expense of a tiny house pales in comparison to that of a traditional house. (Ryan, "Recycled Material" 27)

As the Futurist Manifesto declared in 1909, 'We no longer believe in the monumental, the heavy and static, and have enriched our sensibilities with a taste for lightness. As evidenced by the perennial appeal of tiny house structures, we continue to aspire to these inspirational qualities that were set out more than a century ago.

If we are truly invested in solving the local housing crisis, then in parallel to re-examining the spatial requirements of our dwellings, we must also consider new ways of grouping housing, and find a middle ground between the stand-alone suburban house and an apartment building. The challenge for any global city is to balance employment opportunities with proximity to housing. Affordability cannot be solved simply by increasing the housing supply. Efficient land use that caters to current and future lifestyle trends is a critical part of the solution. So where do we go from here? Can we apply the principles of the tiny house movement in an urban setting? How do we do so without building inner-city camping groups and trailer parks?

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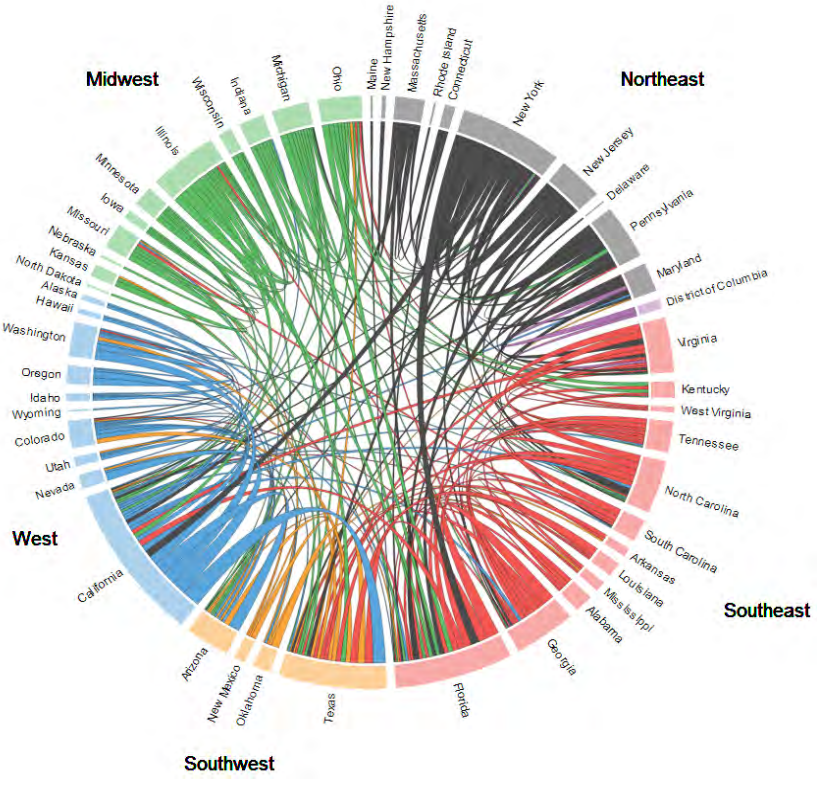
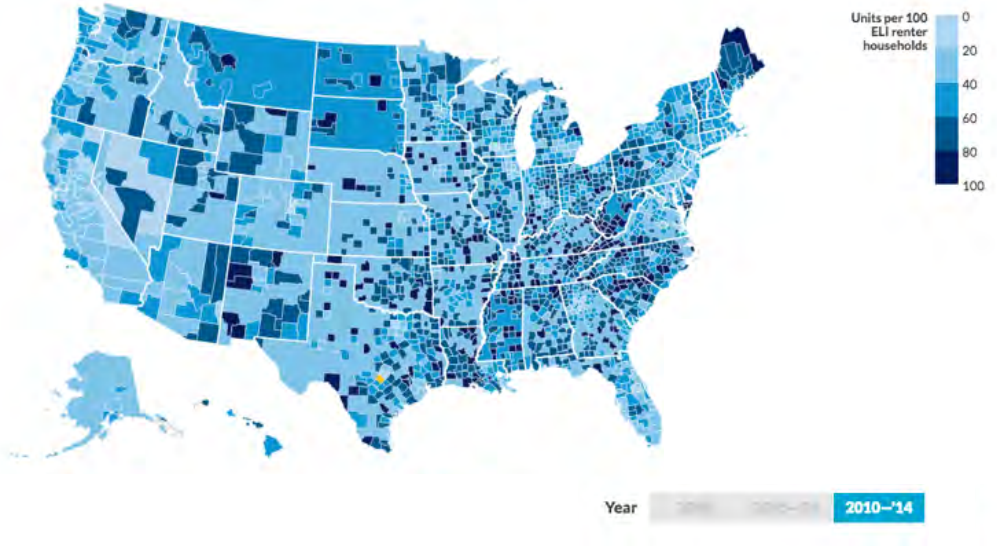
Temporary Migration in America



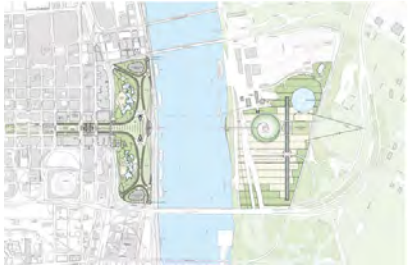
Every U.S. County Has an Affordable Housing Crisis



The map shows how much more severe the problem is in urban counties. Overall, they have 42 units per every 100 low-income renting household, compared to 62 among rural counties.

Solution : Waterbodies

Ocean

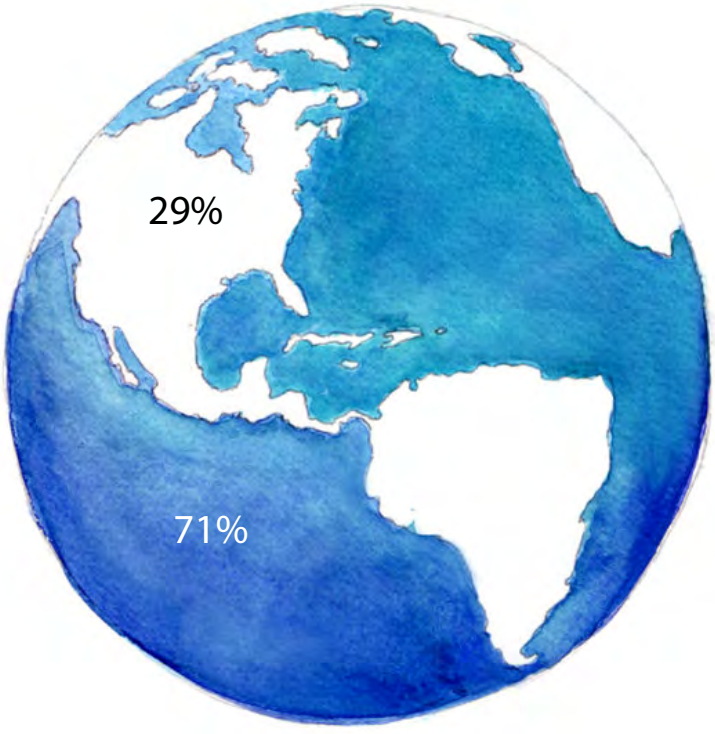


Canal

Bay

River

Lake



We all know that the Earth is two-thirds covered by water, now it is time to put that 71% in use by building a sustainable floating world.

Water Bodies in America

Urban Rigger, designed by Bjarke Ingles from BIG, is a Danish affordable housing start up that looks to respond to Copenhagen's housing storage by proposing to build container apartment complexes that float on the city's underdeveloped harbor. Designed with a modular housing system, the complexes can be quickly and easily manufactured and chained together. In the future, there might be dozens of these units along the harbor, housing students close to the university campus. So far there is one existing prototype built this year, named, Urban Rigger which is made using nine shipping containers to provide housing for 9+ residents.

Precedent Study

The Urban Rigger

The Urban Rigger

Location: copenhagen, denmark
Program: Student housing
Size: 680 sqm / 7,319 sqft
Client: udvikling danmark + Bjarke Ingles

The scheme provides affordable and sustainable homes for young academics studying in Copenhagen, Denmark. measuring a total of 680 square meters, [7319 SF] each structure comprises 15 living spaces articulated around a common green courtyard. Other amenities include a kayak landing, a bathing platform, a barbecue area, and a communal roof terrace. Downstairs, below sea level, the pontoon basement features 12 storage zones, a technical room, and a fully automated laundry.

Setting the containers up this way does create a lovely interior courtyard. The project also is full of green features like solar power and water source heat pumps. Ingells, who never does something in a straightforward manner when he can give it a twist, notes that " the standard dimensions of a shipping container ensure that urban rigger units can be transported by road, water, or air to anywhere in the world at a very low cost. "

Student Housing

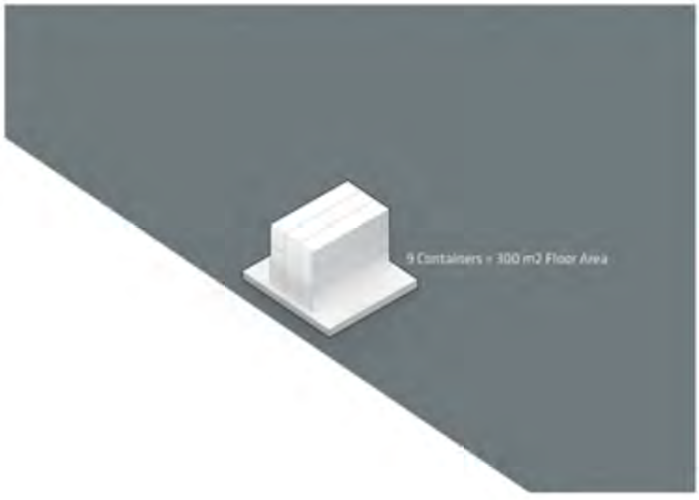
Essential basic drivers of student migration, such as the availability of centralized, sustainable and affordable student housing, is not only elemental, but cardinal in the quest to inspire and attract the best and the brightest to conquer the challenge of our exciting, but fragile future. — Bjarke Ingles

Students are amongst the first to experience the challenges of finding a place to live in an undersupplied market. Often new in town and with a small disposable income, they frequently face difficulties finding affordable and permanent housing. Rising urbanization in Europe's major cities will leave a projected shortfall of more than four million beds by 2025. (ARCKIT Model 18 - Urban Rigger)

One-person occupancy space, the minimal and eco-friendly approach towards design concepts, have found reasonable solutions in this Gen Z world. This generation carries with them a unique set of expectations and expertise, having been inspired by extensive usage of mobile devices and modern technology from a tender age. With notable influences ranging from social media sites and apps to widespread controversy about green design and the environment, these students arrive at college with a unique set of privacy boundaries and lifestyle preferences than any generation before. (Diedricksen, "Micro Living," 23)

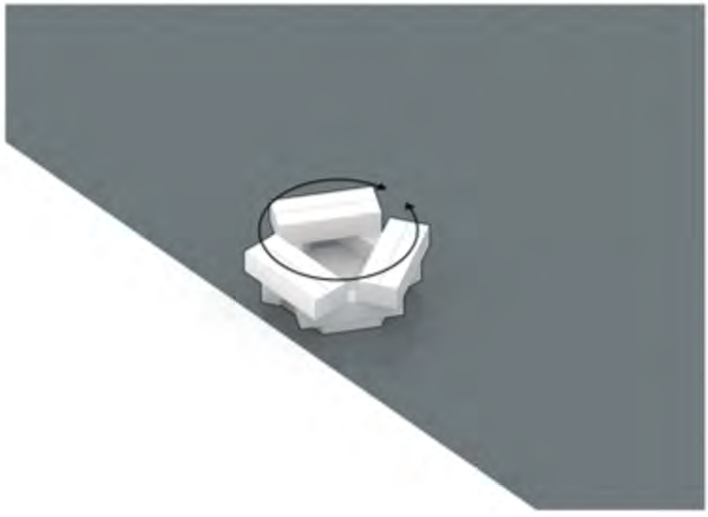
The Urban Rigger project shows how thinking smart can lead to creative ways of solving housing challenges. Like placing buildings on water rather than land. Developed by Kim Loudrup of Udvikling Danmark in close collaboration with Bjarke Ingels and architects from BIG, these floating dorms are an ambitious attempt to meet Copenhagen's student housing challenge. (BIG," Engineering") Made out of upcycled shipping containers, construction of the prototype was finished in the summer of 2016, and the Rigger is located in the city's harbor. Along with its modern style, green benefits can also make people feel proud of living there (ARCKIT Model 18 - Urban Rigger).

Configurations



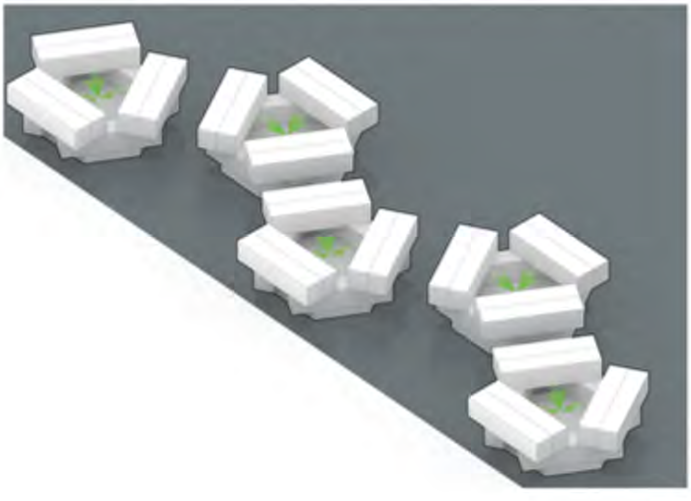
CONTAINERS

In Denmark, the maximum floor area per unit is limited to 300 m2, which allows for a maximum 9 containers. A 7-meter height limit restricts units to two container levels. To address these limitations, we experimented with stacking containers in a variety of ways: in straight lines; in parallel stacks; in links; like bridges; like Jenga. Somehow the regimented, repetitive nature made it feel unfriendly and technocratic.



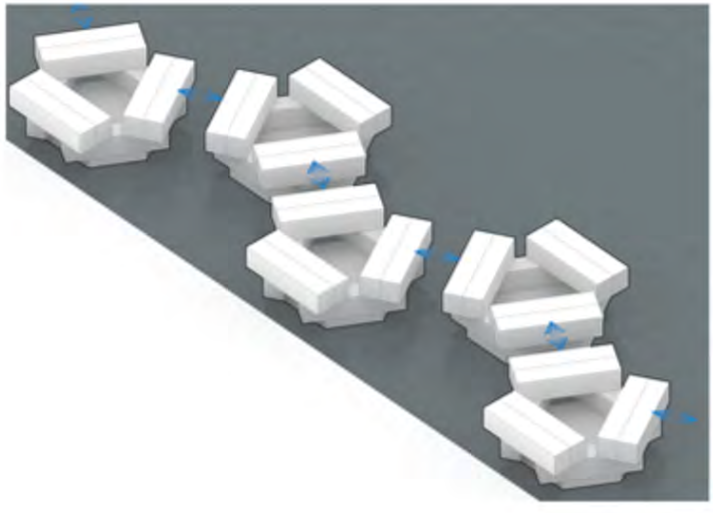
CREATING THE COURTYARD

We then tried arranging the containers into a triangular composition to frame a central courtyard. This allowed us to minimize the footprint of the pontoon, while opening views to the water – optimizing the housing unit.



INTERNAL COMMUNITIES

Courtyards at the heart of the Urban Rigger create opportunities for community activity within each unit. As weather in Denmark changes drastically from season to season, we enclose the gaps with greenhouse glass, minimizing the thermal exposure during the winter months to enclose the largest possible amount of space with the minimal amount of surface.



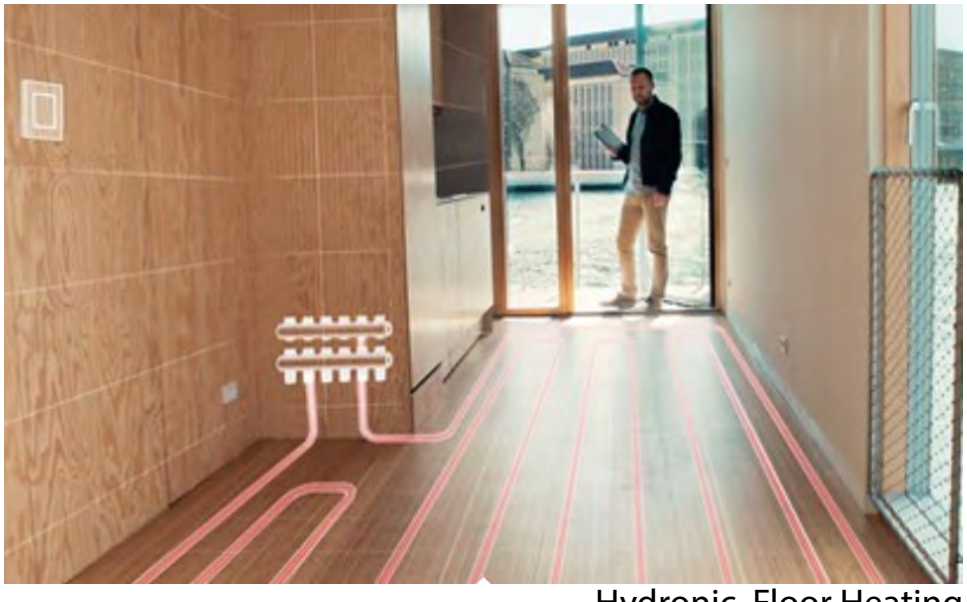
MULTI-LEVEL CONNECTIONS

Another layer of container units completes the circle, forming a hexagon of overlapping entities.

Views

Sustainable Solutions

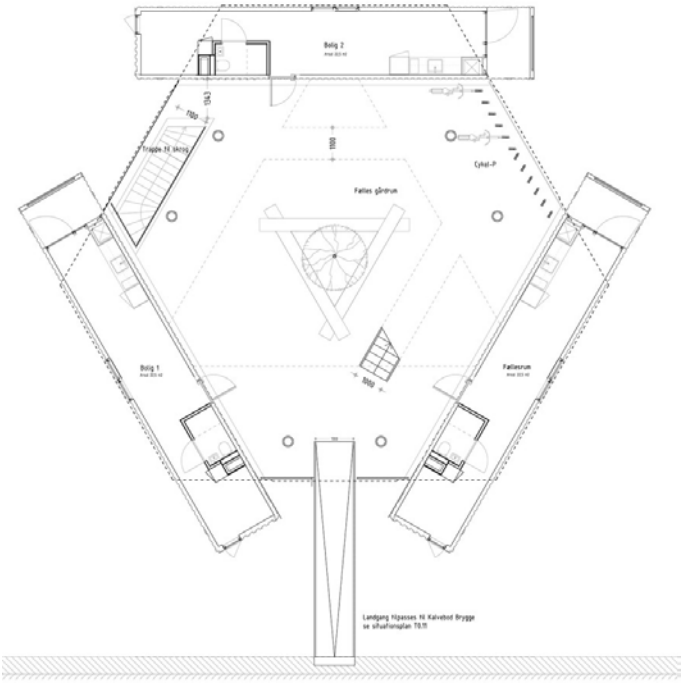
To meet the carbon neutral requirement, the complex is powered in combination by solar energy and a hydro based system that uses heat exchange mechanics from the seawater. The structure uses a NASA created "aerogel" to insulate the interiors of the containers that are made entirely out of "Corten" steel. All throughout the complex there are special hyper efficient pumps that were installed to control and manage the heating, circulating, drinking and waste water.



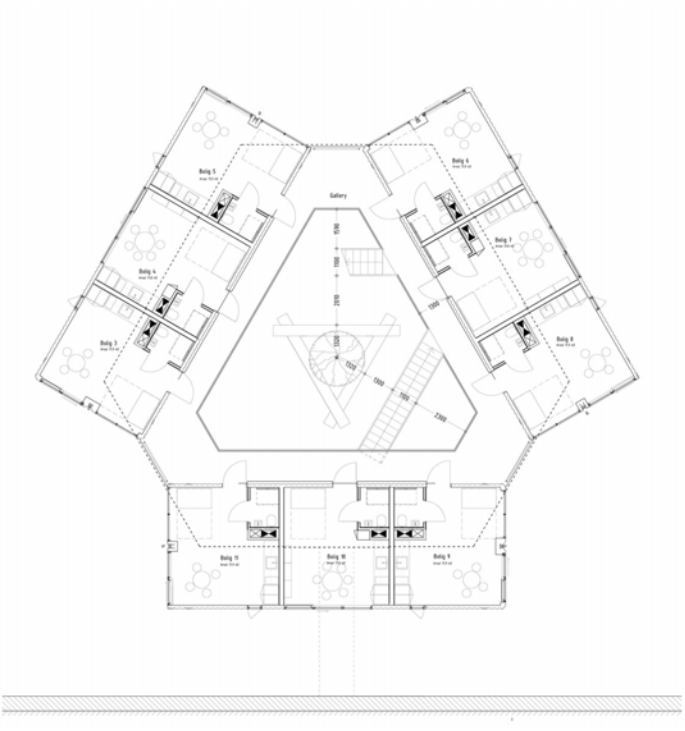
Hydronic Floor Heating

Heat Recovery Ventilation

At 680 square meters per complex, the residents have access to their own "bedroom, bathroom, and kitchen, but also have access to a 160 square meter common green courtyard, kayak landing, bathing platform, barbecue area, and 65 square meter communal roof terrace."



FIRST FLOOR



SECOND FLOOR

Arkup was founded by two long time French friends established in Miami for more than 10 years. Concerned by the environment, climate change and sea-level rise around the world, they thought Miami needed to address floods and hurricanes effects. They decided to bring solutions with a fully solar electric, mobile, self-elevating and rainwater harvesting villa on the water. This visionary product including sustainable technologies could show future generation how to live with the water and get energy and drinking water independent.

CaseStudy

Arkup 75'

Solar - Electric Livable Yacht

ARKUP 75’

SOLAR-ELECTRIC LIVABLE YACHT

Length: 75 ft
Beam: 32 ft
Draft: 5ft
Speed: 2-3 kts cruise / 5kts max
Daily Range 4hrs to 10hrs navigation
Total living Space: 4,350 sqft
Bedrooms: 4
Bathroom: 4.5

Price: 5,500,000 USD
Location: Miami Beach, FL,USA
Architect: Koen Olthuis

ARKUP is a fully solar-powered self-elevating recreational vessel designed by Miami-based ARKUP LLC It was built on spec and the intended use is for recreational purpose only. It is designed for partially protected waters according to USCG and ABYC construction and safety standards, in collaboration with Dutch architectural firm Waterstudio.NL and US naval engineers and architects Donald Blount and Associates.

All the electricity required on board is generated by the solar panels installed on the upper deck ("solar roof"), even to power the electric propulsion. ARKUP anchoring solution is composed by four 40 ft-long steel spuds and hydraulic jack-up system that allow the vessel to be anchored and completely stable in up to 20-25ft of water.

2 Decks
4 en-suite bedrooms
5 terraces & balconies
3 sliding/ lifting decks
Outdoor kitchen
Swim platform

Total Living Space: 4,350 sq ft
Indoor living space: 2,700 sq ft
Outdoor living space: 1650 sq ft
Technical & Storage space - underdeck: 1,100 sq ft
1st floor Ceiling: 9.5 ft
2nd floor Ceiling: 8.5 ft

ARKUP 75'

Exterior

Front View

Docked

Deck

Construction of Deck

ARKUP 75'
Interior Views

Kitchen

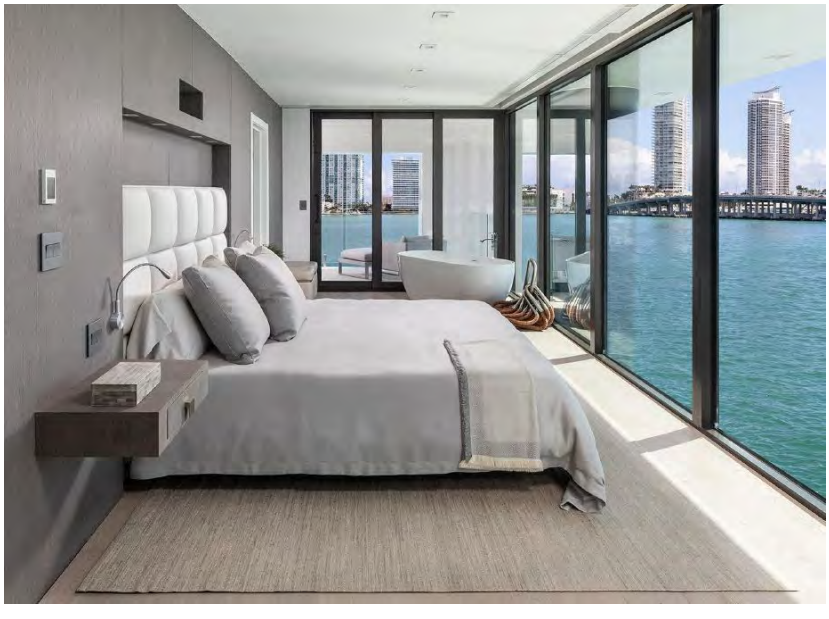
Insulation

Thermal
Roof, exterior walls, main deck
High grade insulation : R35/ R28

Living Room

Soundproofing

Interior Walls : rockwool
Floors : cork



Bed Room

Current Trends

The Tiny House Movement

What is the Tiny House Movement?

The Tiny House Movement is an architectural and social movement that encourages living a simpler life in a smaller space. People from all walks of life have determined that a large home, and more specifically, the large cost of living that comes with it, is both unnecessary and a detriment to their happiness.

Why People are Going Tiny

- Financial Benefits
- Simplification
- Environmental Benefits

Tiny houses have always been around in some form. Mostly people just called them houses back when all houses were tiny. But as homes became increasingly larger our definition and concept of home changed.

In 1999, Jay Shafer built one of the first tiny houses on a trailer and jump started the modern tiny house movement. While interest grew steadily over time it wasn't until 2014 that the movement went mainstream. That was the year the show 'Tiny House Nation' first aired and the term 'Tiny House' entered most people's vocabulary.

Shipping Container Architecture

What is Shipping Container Architecture?

Shipping container architecture is a form of architecture using steel intermodal containers (shipping containers) as structural element. It is also referred to as cargotecture, a portmanteau of cargo with architecture, or "arkitainer".

The use of containers as a building material has grown in popularity over the past several years due to their inherent strength, wide availability, and relatively low expense. Homes have also been built with containers because they are seen as more eco-friendly than traditional building materials such as brick and cement.

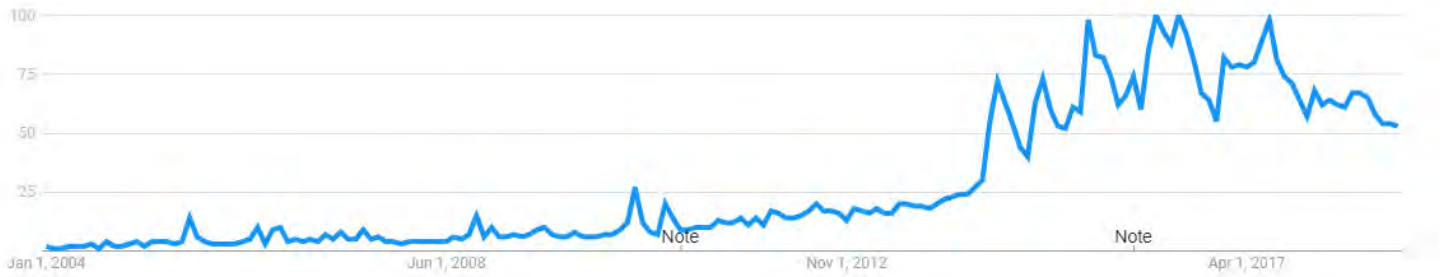
Examples

Maximizing Underused Spaces

The nature of microarchitecture is also well suited to spaces that have been overlooked, such as abandoned buildings, leftover pockets of land, or other urban spaces.

A tiny house may release from the trappings of traditionalist homeownership. However, this newfound financial freedom may soon suffocate as a result of prescribed isolation - bogged down by the added labors of achieving true sustainability. It would appear that in its current form, the tiny house movement cannot be genuine without being all-consuming. It requires a complete change of lifestyle(Rubenach," Compact Living").

Tiny House Movement Growth



Why Shipping Containers?

Shipping containers typically cost only $1800 – $5000 (some as little as $800) depending on their size. They are readily available for purchase as containers that are shipped to their final destinations are usually too expensive to ship back. These containers are also eco-friendly, as they are re-purposed into homes instead of being melted down when they are scrapped or shipped back empty. Containers are also "virtually indestructible". Typical homes in the US seem like they are made of paper, they can't handle extreme climate conditions. Containers, on the other hand, are tough. They are build to handle heavy loads, harsh climate conditions, and being handled by cranes. Containers can also be easily stacked to form multi-story homes. These sturdy houses can be welded together and built in a very short time, and handle just about anything that is thrown at them. Just like with any other irregular structures, container homes do have some disadvantages, so be sure to do some research. Here are some modern container homes that you can drool over.

Pros

Greener building – after companies ship products in shipping containers, it typically costs more to ship back the empty containers than to discard them and buy new ones. Tons of containers are left unused and are often melted down, which pollutes our planet and uses a vast amount of energy. Repurposing the containers can make a big impact.

Affordability – because of the abundance of these containers, container homes are very affordable. The containers themselves provide the main structure for the housing. While there are a lot of other costs involved (discussed below), container homes still represent huge savings as compared to typical housing. Even those with limited architectural experience have a good chance of building a container home because of the lack of structural work. The potential mortgage-free living is also nothing to be scoffed.

Sustainability – if you build small and insulate well, a container home can be a very sustainable way of living. A properly built container home can save energy and lots of money down the line. Because of the tough exterior, these homes may also last much longer.
Transportability – One of the benefits of container homes is their mobility. Depending on how the home is built it can be transported during its lifetime to another location.

Structural Strength – containers are built to last. They are made to withstand enormous weight loads, harsh ocean winds and being handled by cranes. They can be easily stacked to create multi-story homes. Due to their structure, containers can be earthquake and hurricane proof, which could benefit those living in natural disaster-prone areas.

Quick Construction and Building – building the structural part of the house is very time-consuming. Since container homes don't require it, the construction can be completed much more quickly. Also, container homes tend to be smaller in size, which also helps efficient home building.

Cons

Heat and Insulation Control – a plain shipping container is essentially a large steel box. A steel box that absorbs and transmits heat and cold very well. Temperature control becomes imperative when building a shipping container home. This is usually solved by using the appropriate insulation and paint. However, if not done correctly, this could result in the energy-hogging heating systems and reduced home space.

Health Hazards – One of the less discussed cons of the shipping containers is that since they were not built for humans to live it, necessary precautions may not have been taken to build a safe environment. Paints, insulation materials and solvents to control the temperature within the container may have been used that may be hazardous to human health long-term. Some of these include phosphorus, chromate, and lead-based paints on walls. Arsenic and chromium may also be used to deter pest infestation on the wooden floors of a container. Finally, prior shipping contents may also be a concern if toxic or radioactive cargo was previously present. However, all this could be avoided with proper research or talking to the manufacturers of the container.

Deterioration – Scratched, dented, or containers made out of Corten steel may rust quickly. Some of the containers may have a lot of mileage and wear in them making them much closer to their end of their lifespan. Worn containers may be sold to you as ones with a more "industrial look", however, this could lead to rust in the very same areas. Proper inspection is important when buying a used container.

Permit Obtainment – Using shipping containers for homes is not new. However, for those issuing building permits in your area, it may very well be. The process of obtaining the proper permits in your area can take a long time so you should research and factor in that cost and wait time for your building.

“ Ebb & Float Neighborhood program embraces the inherent gifts of water—the water of the Delaware River and water in general—and regards the river water from several perspectives: visual, recreational, and ecological. ”

Site Analysis
Delaware River


Cannonsville Reservoir
Pepacton Reservoir
Binghamton
Hancock
Neversink Reservoir
Poughkeepsie
N
MILES
0
20
NEW YORK
Scranton
Wilkes-Barre
Dingmans Ferry
Delaware Water Gap
Delaware River
DELAWARE
New York
Easton
Allentown
RIVER
PENNSYLVANIA
New Brunswick
Reading
Lambertville
WATERSHED
Trenton
Norristown
Lancaster
Toms River
Philadelphia
Chester
Camden
NEW JERSEY
Wilmington
Salem
MD.
Vineland
Millville
Atlantic City
Ocean City
Dover
Delaware Bay
DEL.
Cape May
Lewes

History of Delaware River Waterfront

The Delaware waterfront once served as Philadelphia's commercial and industrial hub, with the river's industrial activity providing an economic engine for the city. The project area contains historical and archaeological resources of national and in some cases international significance. They range in time, spanning from the period prior to European occupation to colonial America, when the waterfront was one of the most important ports, to the massive scale of industry that dominated the waterfront and served the United States and the world through the 18th, 19th, and part of the 20th centuries.

These resources make the Philadelphia waterfront unique; they create a sense of place that can draw both tourists and residents to the waterfront.

Design intent

The goal of this community housing system is to find a docking spot on the Central Delaware River Front and help transform Philadelphia's waterfront into an authentic extension of the thriving city and vibrant neighborhoods immediately to its west. Breathing life back into an abandoned industrial waterfront that was once at the heart of the Philadelphia economy is a tremendous challenge, but meeting this challenge will yield great benefits to the city and its region. The city of Philadelphia is informal, innovative, proud, relaxed, walkable, resilient, and vibrant. Those qualities should be extended to the Delaware waterfront.

- An attractive network of public space along the length of the waterfront will improve quality of life for all Philadelphians and will contribute to making the city a vibrant place to live and work.
- A rich public realm along the waterfront creates incentive for and catalyzes private development in a challenged development environment.
- A connected system of open space along the waterfront creates brand value for the city, serving as an attraction for regional visitors and tourists.

WHY WATERFRONT?

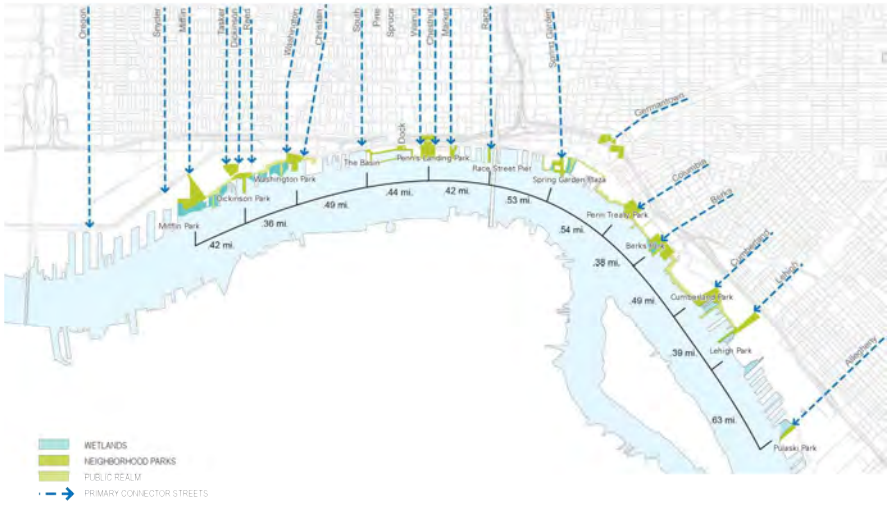
The singular geography: a sweeping and gentle bow of piers and wetlands that offers broad views up, down, and across the river. The many historical and cultural resources that are identifiable and integral to the character of Philadelphia's waterfront.

The vibrancy and low-rise scale of the many adjoining upland neighborhoods;

The powerful integration of the manmade piers and structures with natural ecological systems.

Connectivity

Land Use map



Trail Plan

Water Zones

Delaware Avenue Transit Corridor

Open Space Plan

Design Challenge

Ebb & Float Neighborhood Plan for the Delaware river also identifies important connections between the waterfront and the city and region that extend beyond the defined project area.

This integration of the waterfront with the existing city is a critical part of the urban design and economic strategy employed in the plan because improvements to the streets connecting past the boundary of the master plan and into the neighborhoods are essential.

Key Site Challenges

- Significant infrastructure needs
- Barriers from transportation infrastructure
- Lack of connections to upland neighborhoods
- Lack of accessible amenities

Key Site Opportunities

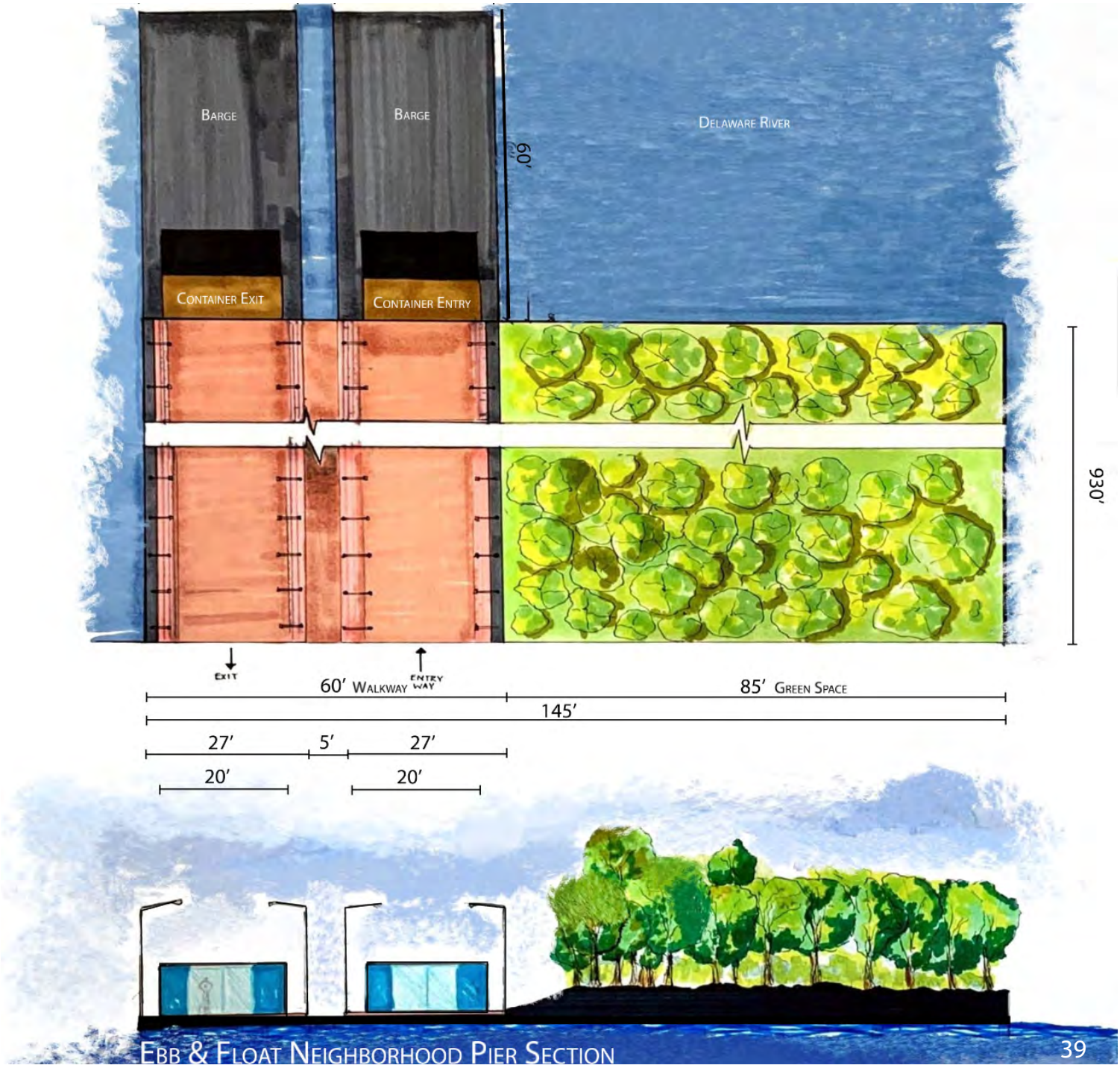
- Waterfront views and access
- Proximity to high-value and emerging neighborhoods
- Direct highway access
- Contiguous parcels, some publicly controlled

Goal

The overall goal of this plan is to reconnect Philadelphia to its Delaware River waterfront. Past generations of Philadelphians had strong connections to the waterfront, which was then a thriving center of transportation, commerce, and industry in addition to offering pockets of recreational activity. The result is a floating community; Ebb & Float housing community which is develoed through sustainable design philosophy.

In order to reestablish a strong waterfront connection, there must be attractions and/or public amenities that people want to visit. In addition, there must be direct, safe, and attractive physical connections between the adjacent neighborhoods and the waterfront.

Ebb & Float Neighborhood Pier

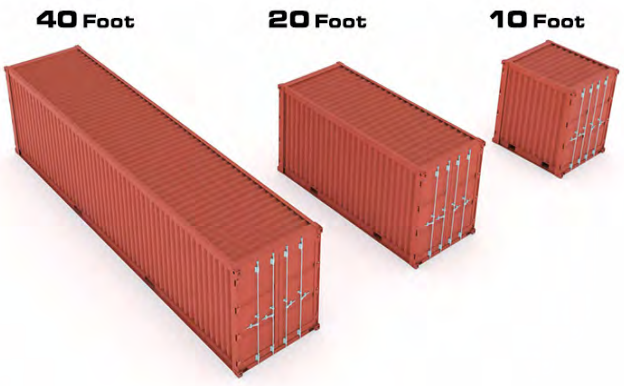


Ebb & Float Neighborhood Pier Section

Vision

Container Sizes + Barges

Container Sizes + Barges



ISO Container Dimensions : 10′, 20′ and 40′

	L		W		H	Area
External :	40′	x	8′	x	9′-6″	320 Sq.Ft.
External :	20′	x	8′	x	9′-6″	160 Sq.Ft.
External :	10′	x	8′	x	9′-6″	80 Sq.Ft.

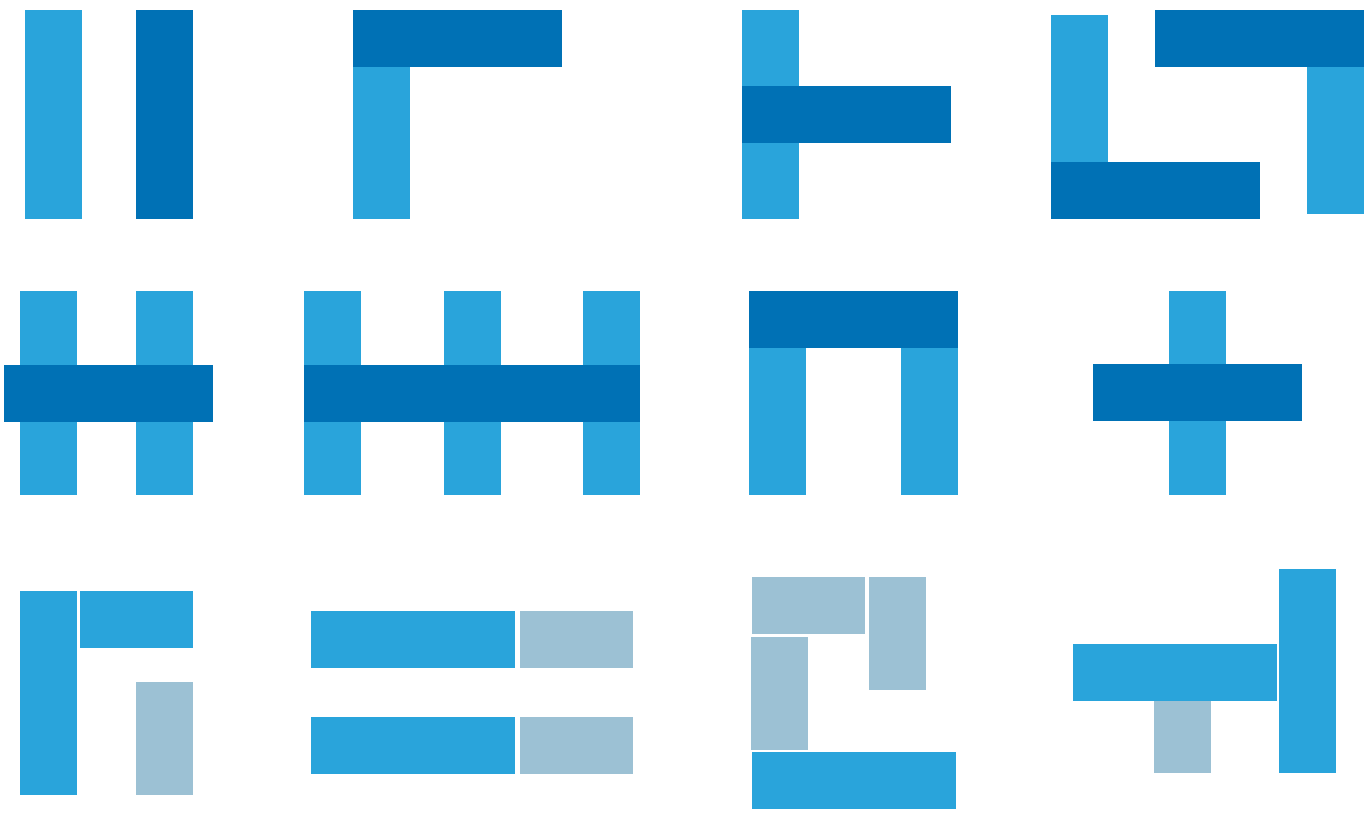
Barge Dimensions

	L	W	D
Housing:	60′	x 26′	x 5′
Area:	1,560 Sq.Ft.		

	L	W	D
Social needs:	140′	x 39′	x 9′
Area:	5,460 Sq.Ft.		

Configurations

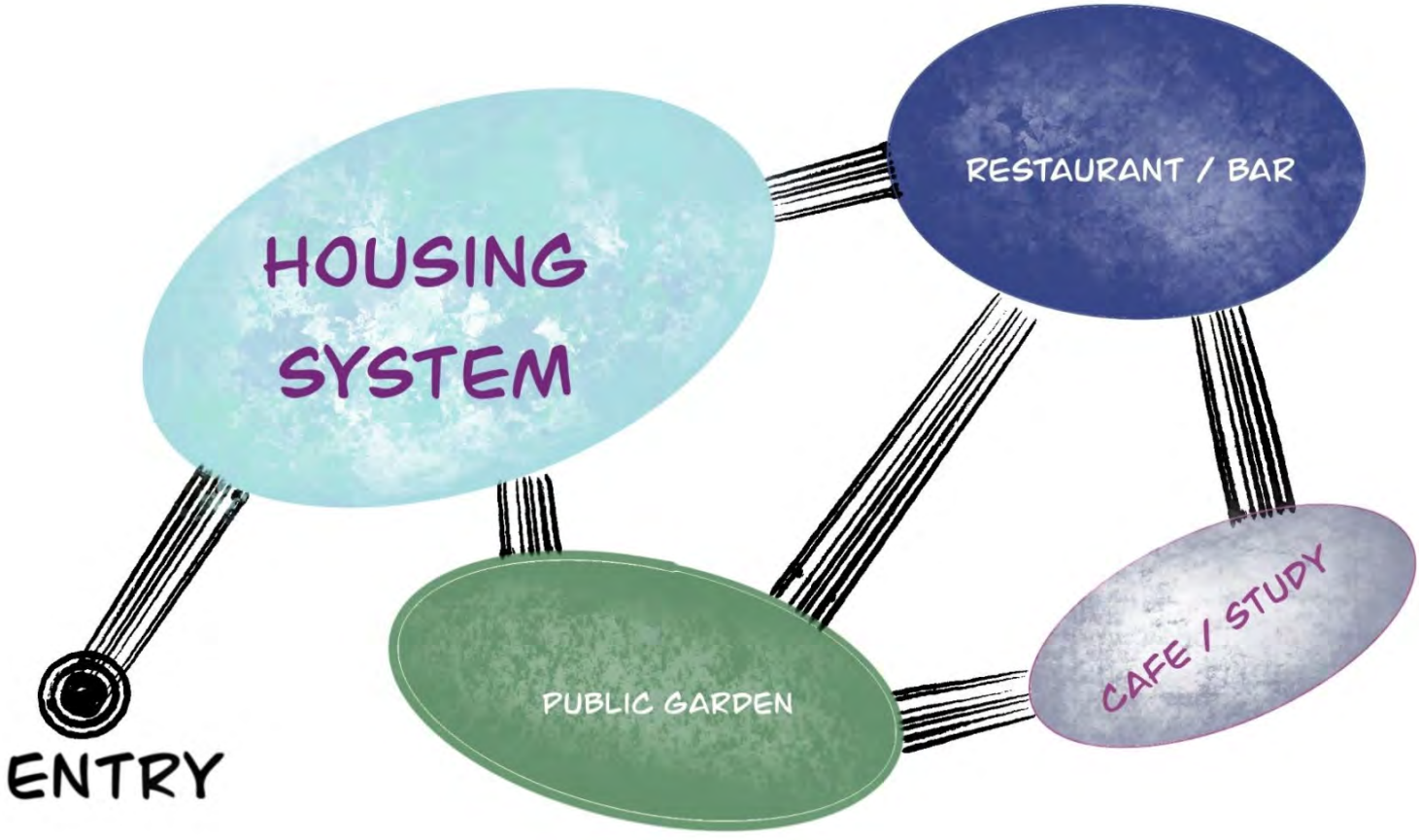
90° Configurations in top view for 40' and 20' Container sizes



N Number of possibilities

Program Bubble Diagram

Design criteria : Housing Systems


HOUSING
SYSTEM
RESTAURANT / BAR
PUBLIC GARDEN
CAFE / STUDY
ENTRY

Program

Private Spaces : 60%
Public Spaces : 40%

The aim is to build an eco friendly community living on water and sustaining mostly on natural energies.

1.Main Entry

Information station: A desk with desktop
Seating Area: Small or private lounge area
Offices: work desks and storage

2. Housing System

The housing system will include different living modules for different user groups.
Every module will be designed according to the user group requirements.
The space will provide living area, open kitchen, Bathing area, Sleeping area, Study and a deck/balcony.

I. Single User group:
- Students
- Solo Travelers/ Bag packers
- Business people
- Government officer

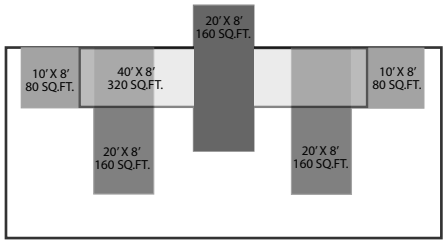
II. Couple User group:
- Couple
- Friends

III. Group occupants:
- Families
- Friends

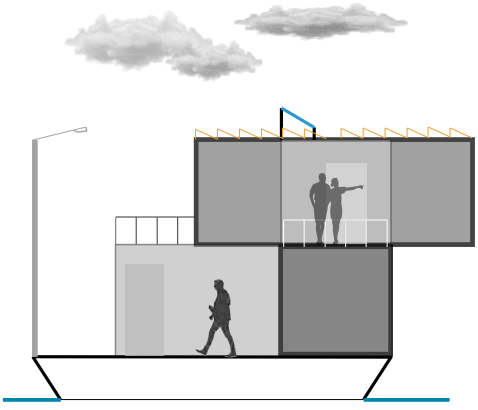
IV. Community living:
- Students
- Travelers

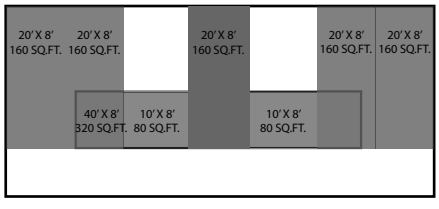
Modules

Studio | Couple Living | Communal Living

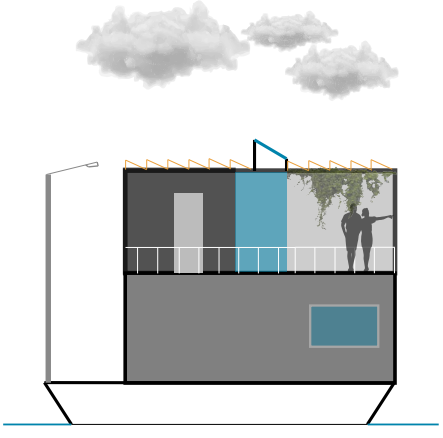


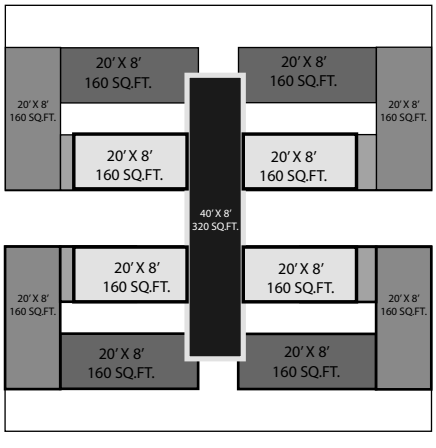
Studio Module



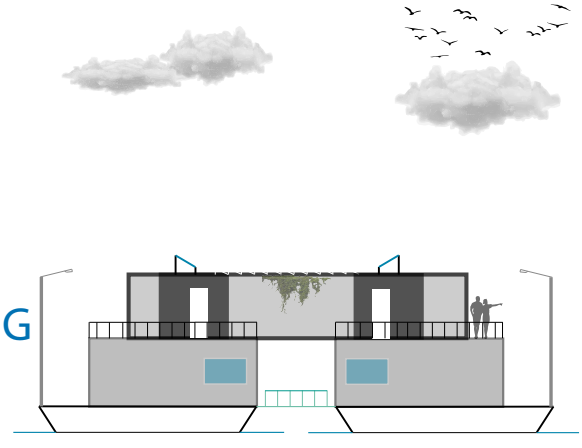


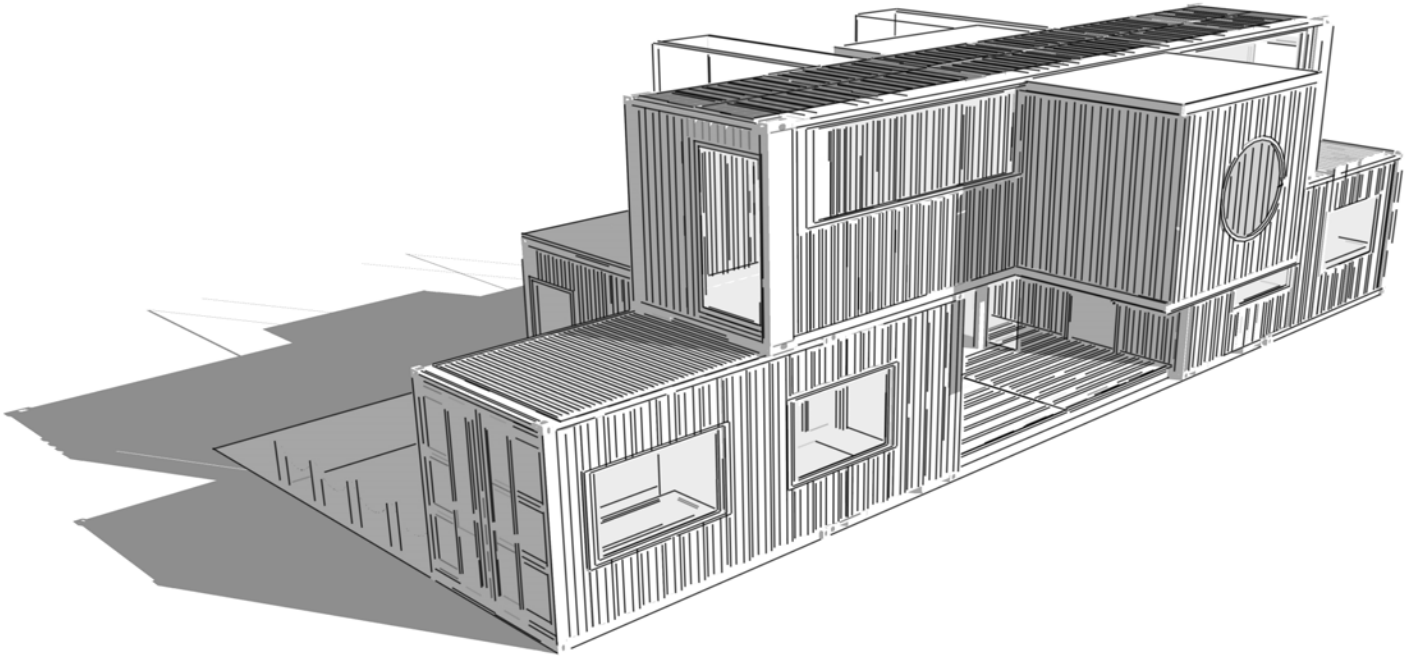
Couple Living Module

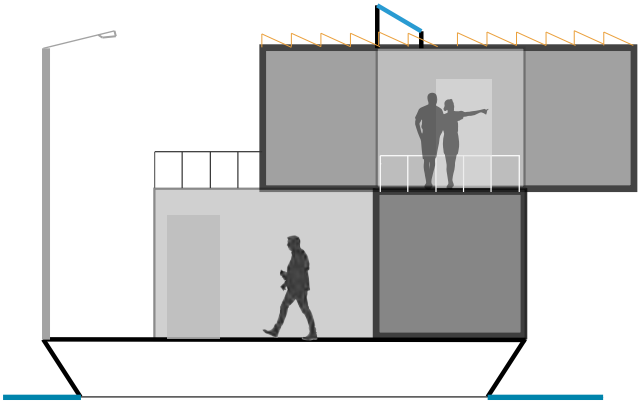




Communal Living Molule

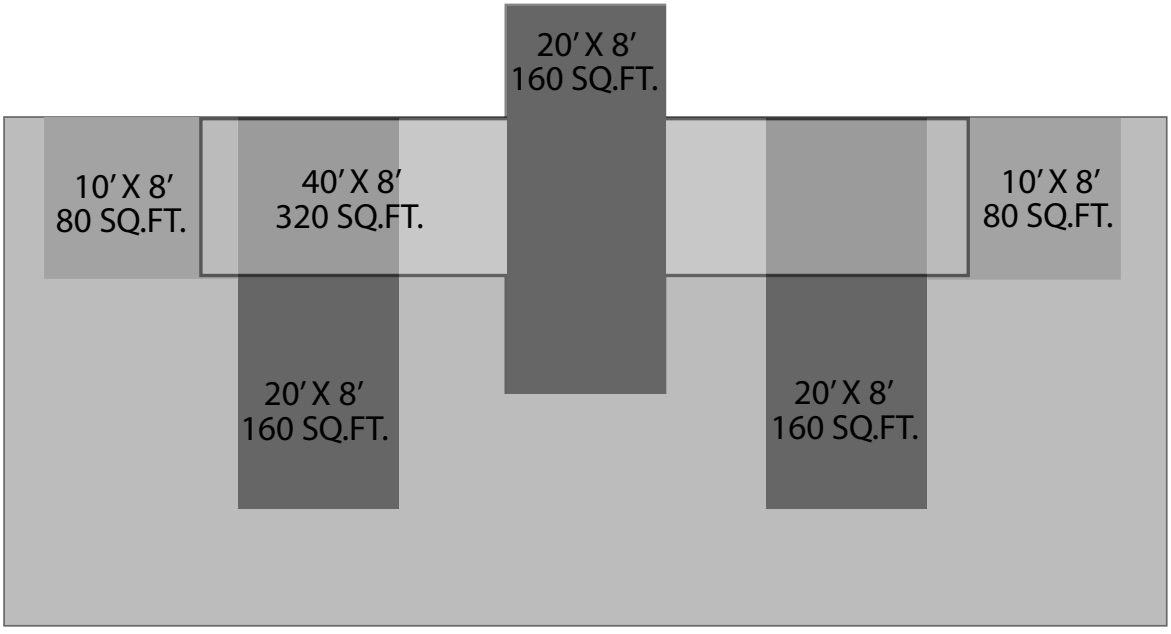


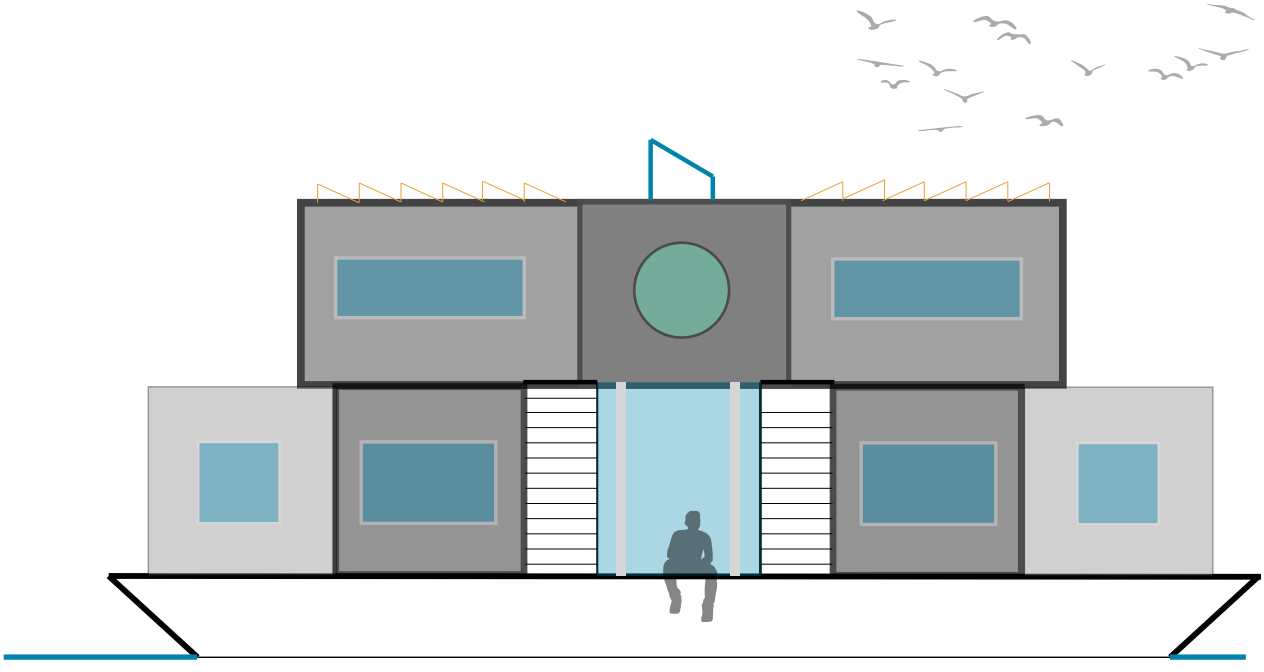




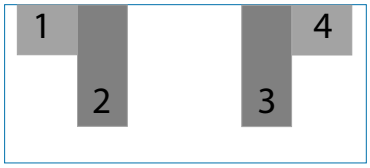
TOTAL CONTAINERS: 6
SIZES: 2 X 10′ 3 X 20′ 1 X 40′
AREA : 960 (INDOORS)
OCCUPANCY : 2
BARGE : 1
SIZE : 60′ X 26′ X 5′

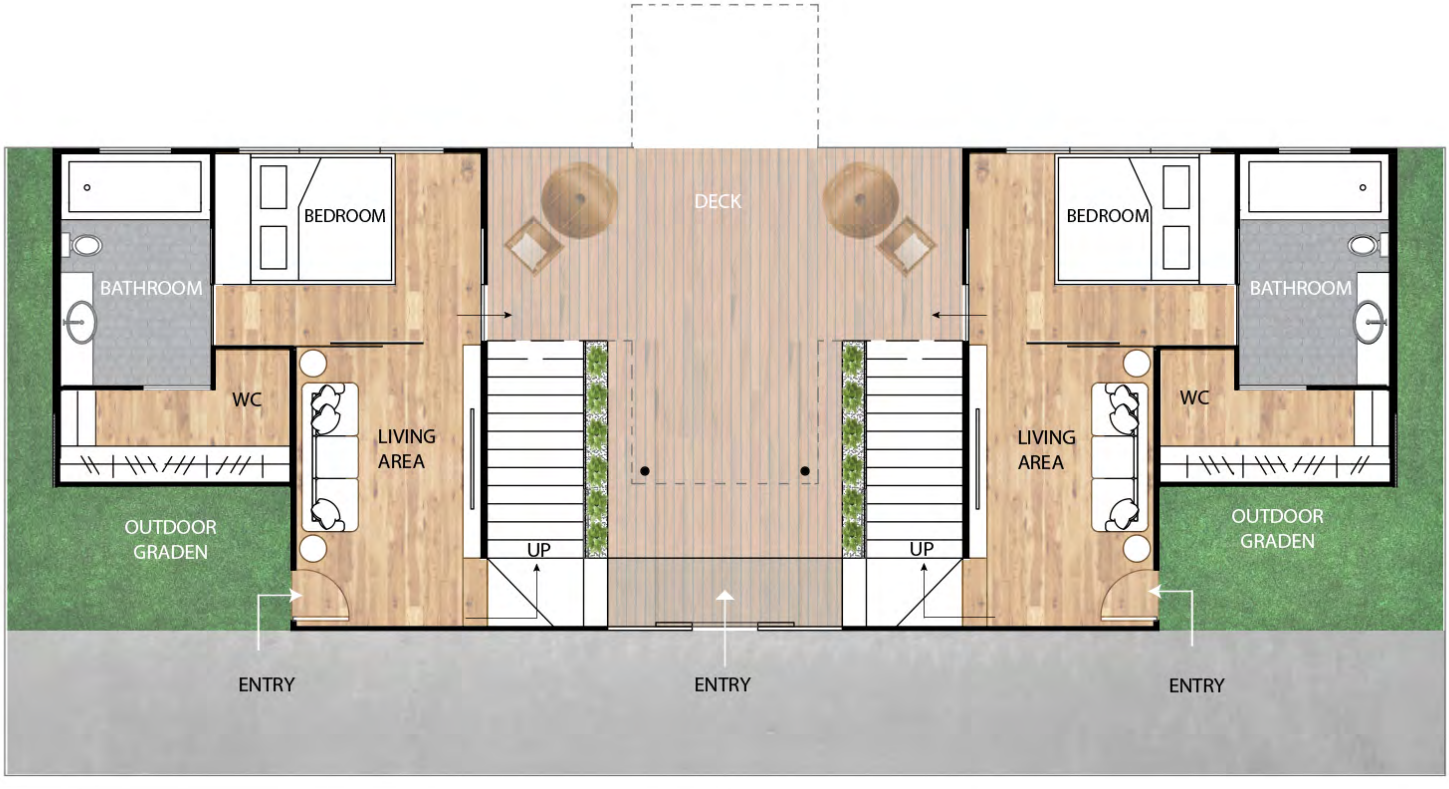
Studio Module


20′ X 8′
160 SQ.FT.
10′ X 8′
80 SQ.FT.
40′ X 8′
320 SQ.FT.
10′ X 8′
80 SQ.FT.
20′ X 8′
160 SQ.FT.
20′ X 8′
160 SQ.FT.



Studio Module
Floor Plans

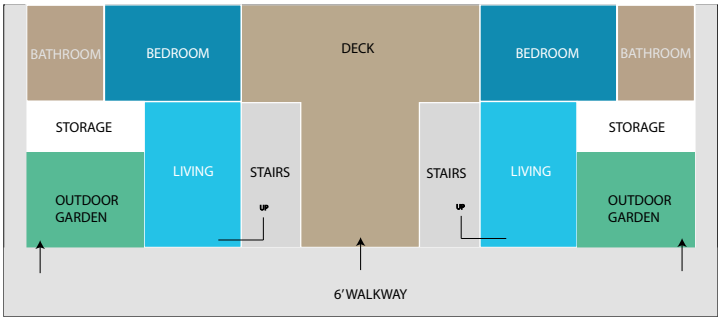




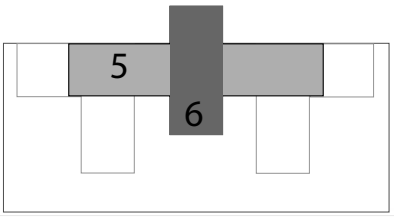
First Floor Plan

Scale: 3/16″ = 1′-0″

Modular Diagram



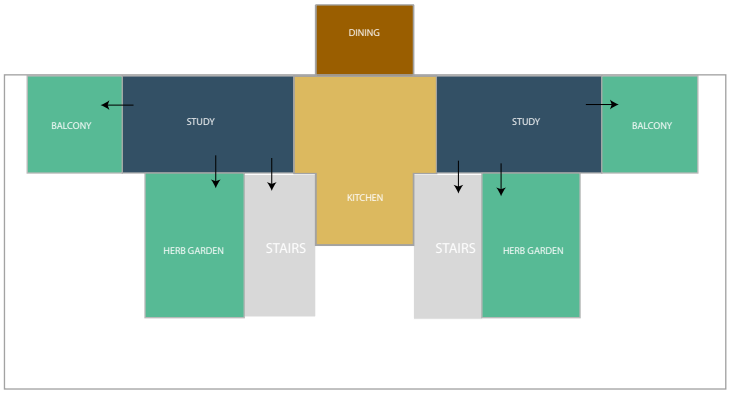
Studio Module
Floor Plans



Second Floor Plan

Scale: 3/16″ = 1′-0″

Modular Diagram



Studio Module Sections

Scale: 3/16" = 1'-0"

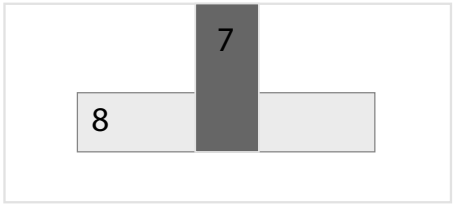
Section AA

Section BB

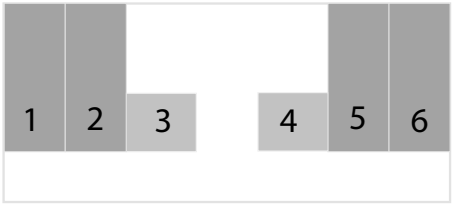
Studio Module Iso View

Studio Module Front View

Studio Module Side View



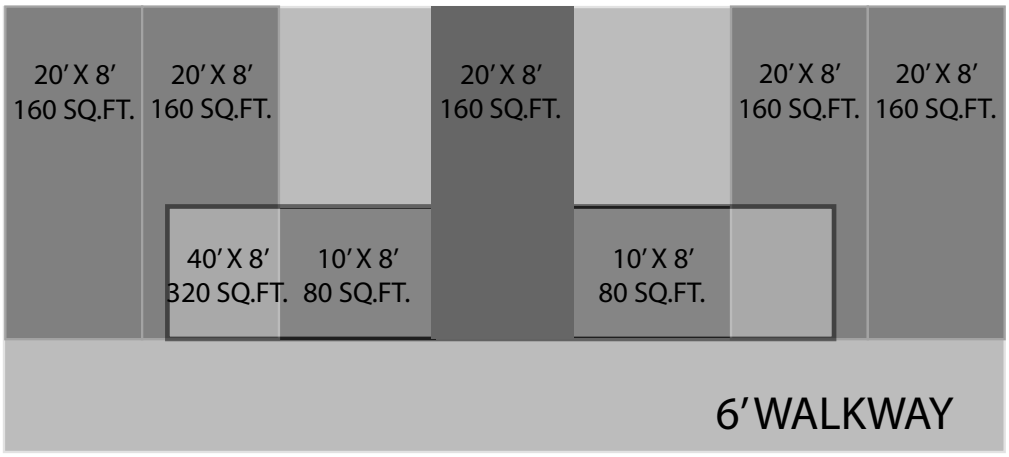
SECOND FLOOR

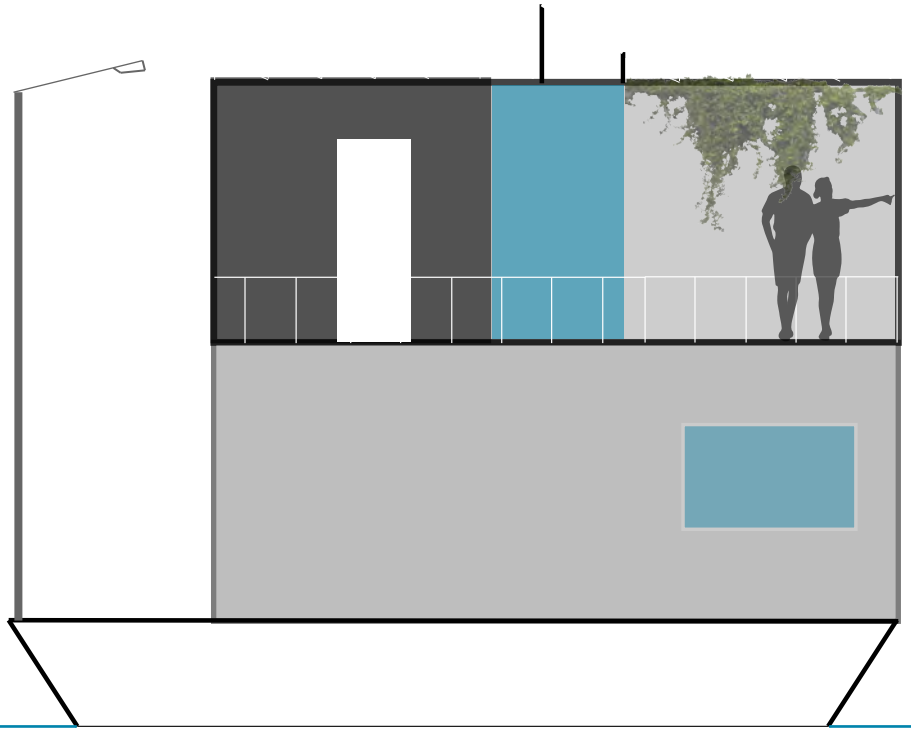


FIRST FLOOR

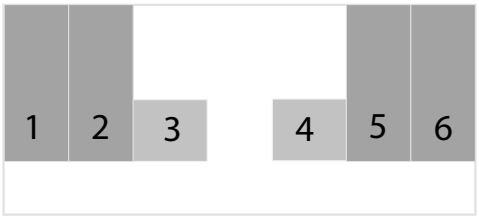
TOTAL CONTAINERS : 8
SIZE: 2 X 10′ 5 X 20′ 1 X 40′
AREA: 1280 SQ.FT (INTERIOR)
OCCUPANCY: 4
BARGE: 1
BARGE SIZE; 60′ X 26′ X 5′

Couple Living Module


20' X 8'
160 SQ.FT.
20' X 8'
160 SQ.FT.
20' X 8'
160 SQ.FT.
20' X 8'
160 SQ.FT.
20' X 8'
160 SQ.FT.
40' X 8'
320 SQ.FT.
10' X 8'
80 SQ.FT.
10' X 8'
80 SQ.FT.
6' WALKWAY



Couple Living
Module Floor Plans

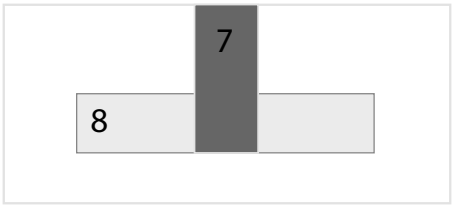


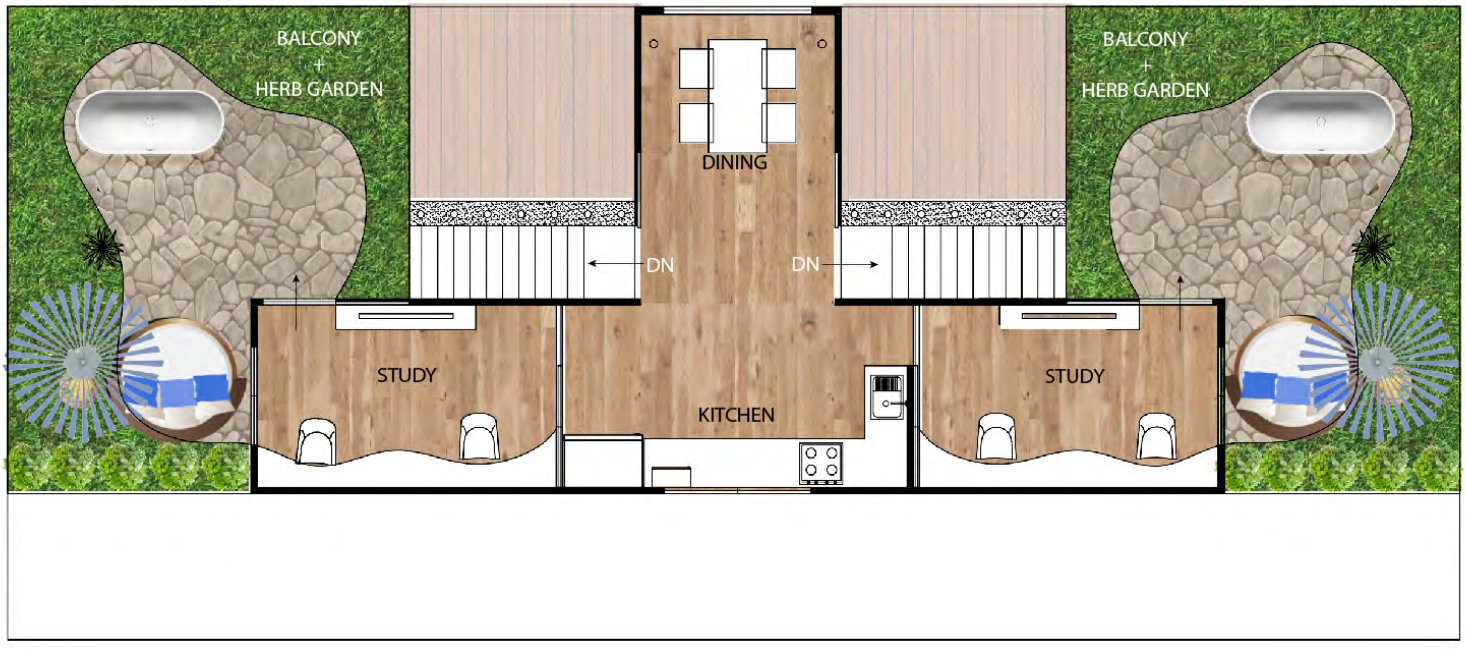
First Floor Plan

Scale: 3/16" = 1'-0"

Modular Diagram

Couple Living
Module Floor Plans

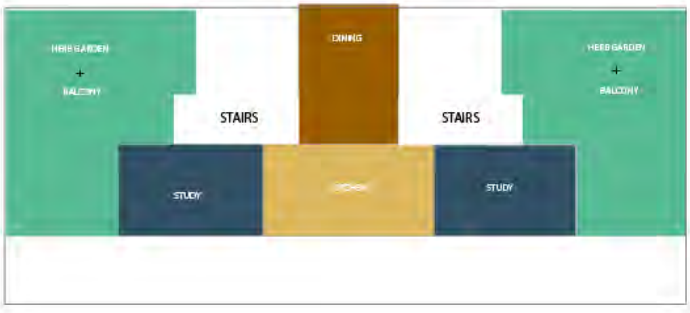




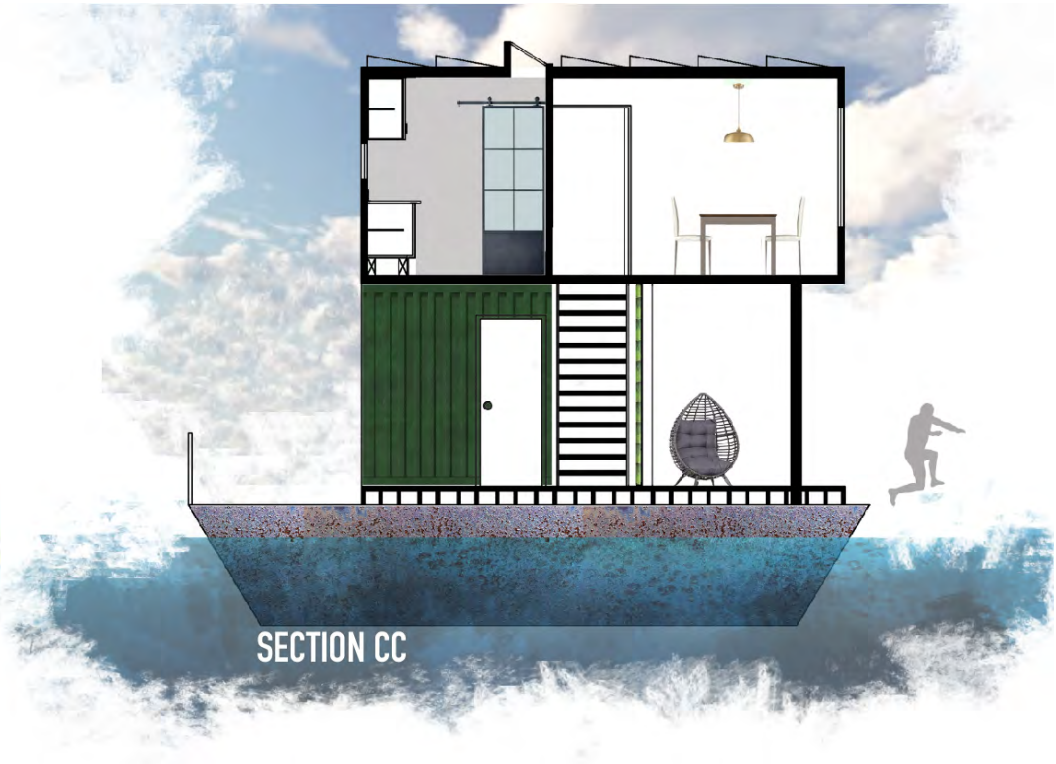
Second Floor Plan

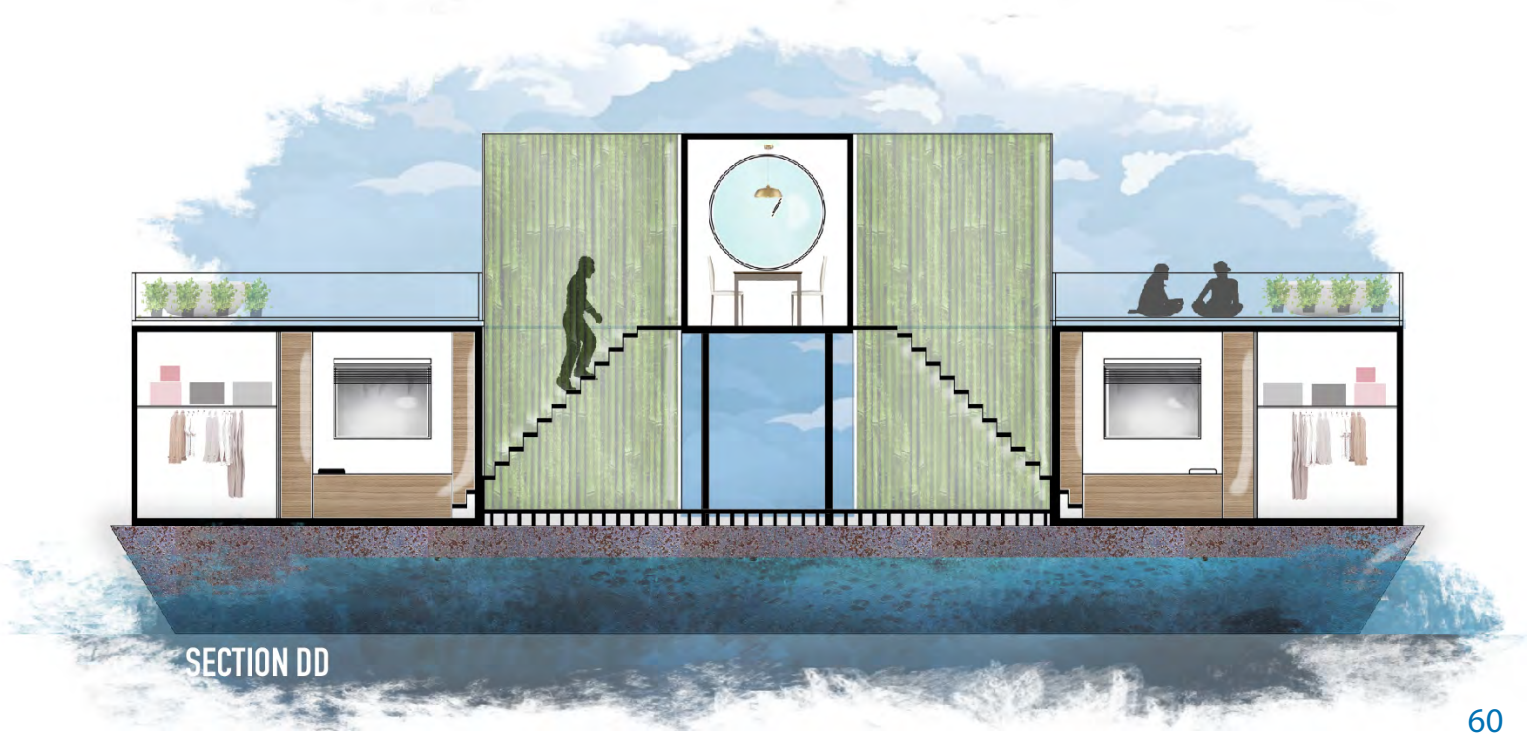
Scale: 3/16" = 1'-0"

Modular Diagram

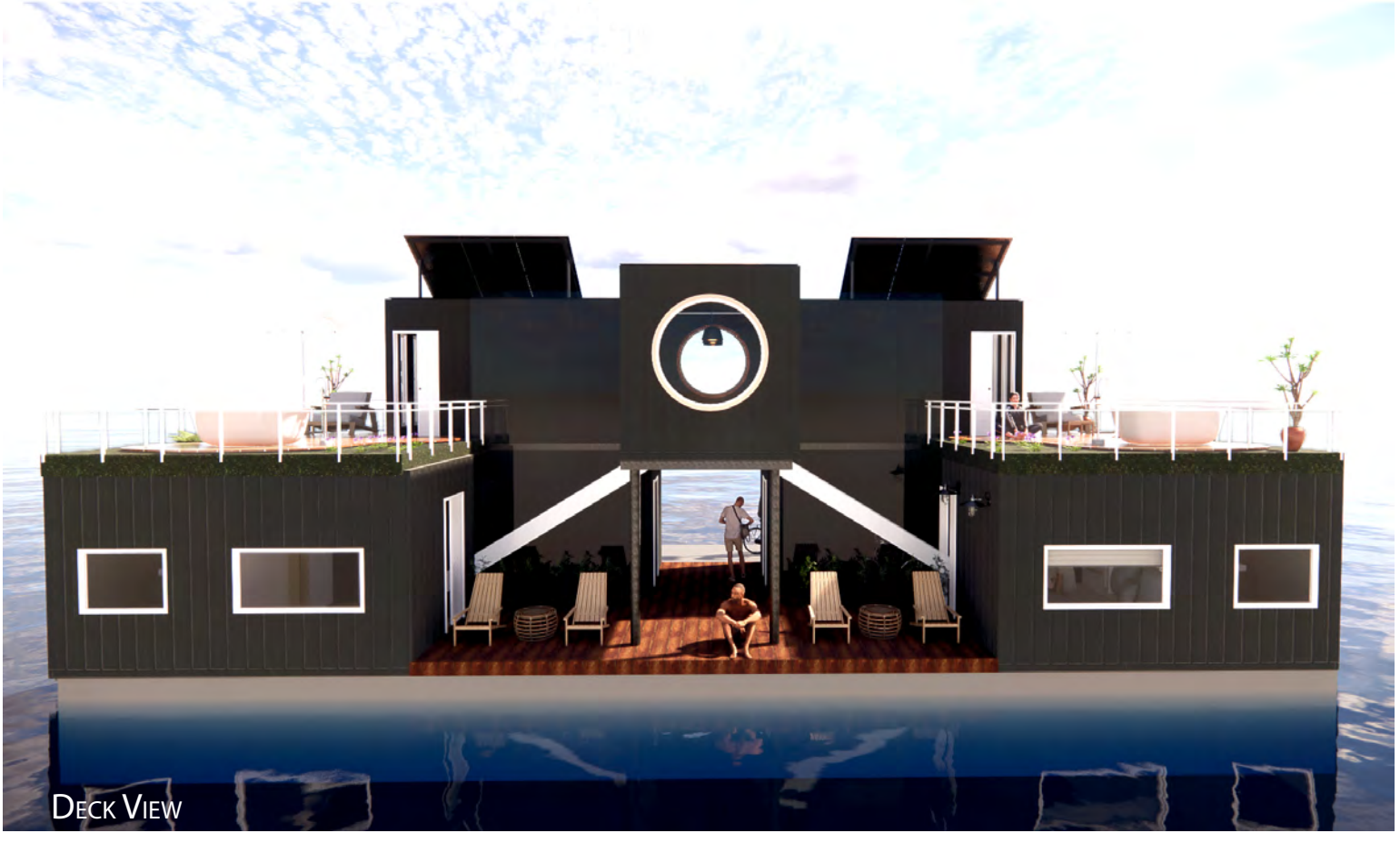


Couple Living
Sections





Couple Module Iso View



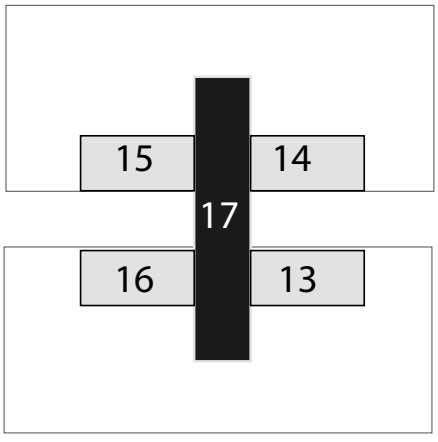
Deck View

Deck View

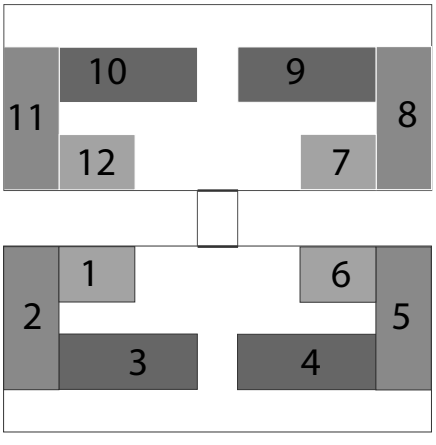
Gallery View

Study

Bedroom



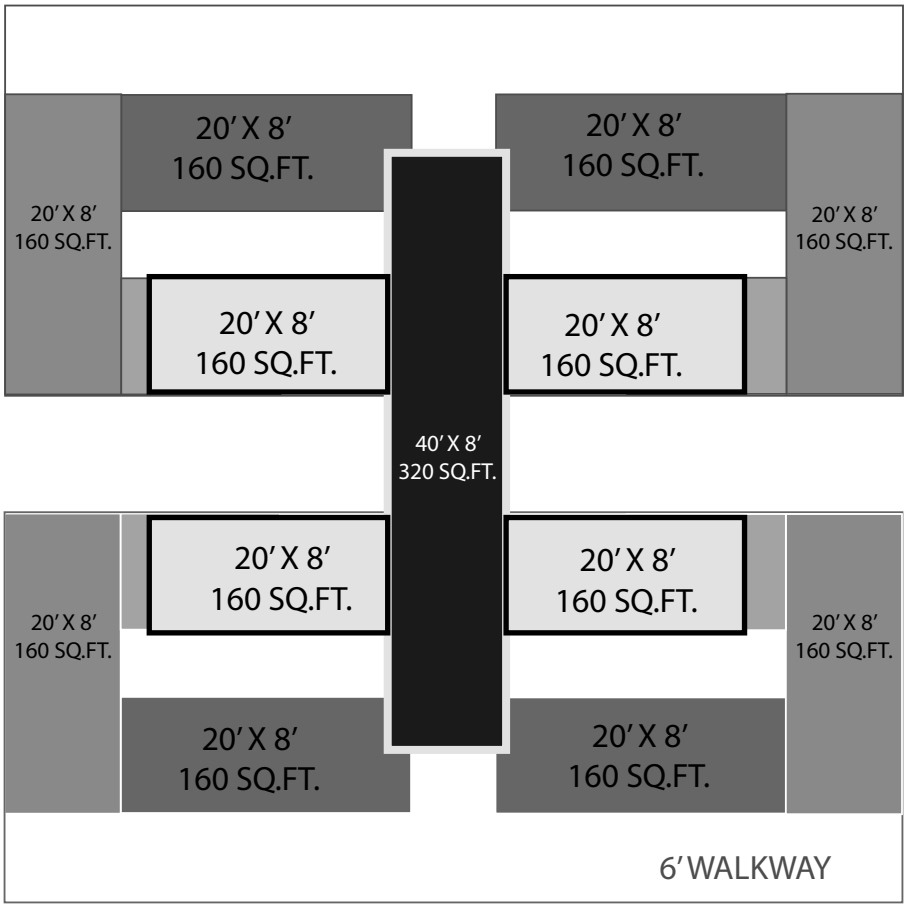
SECOND FLOOR



FIRST FLOOR

TOTAL CONTAINERS : 17
SIZE: 4 X 10′ 12 X 20′ 1 X 40′
AREA: 1280 SQ.FT (INTERIOR)
OCCUPANCY: 4 - 8
BARGE: 2
BARGE SIZE; 60′ X 26′ X 5′

Communal Living Module


20' X 8'
160 SQ.FT.
20' X 8'
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20' X 8'
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20' X 8'
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20' X 8'
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20' X 8'
160 SQ.FT.
40' X 8'
320 SQ.FT.
20' X 8'
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20' X 8'
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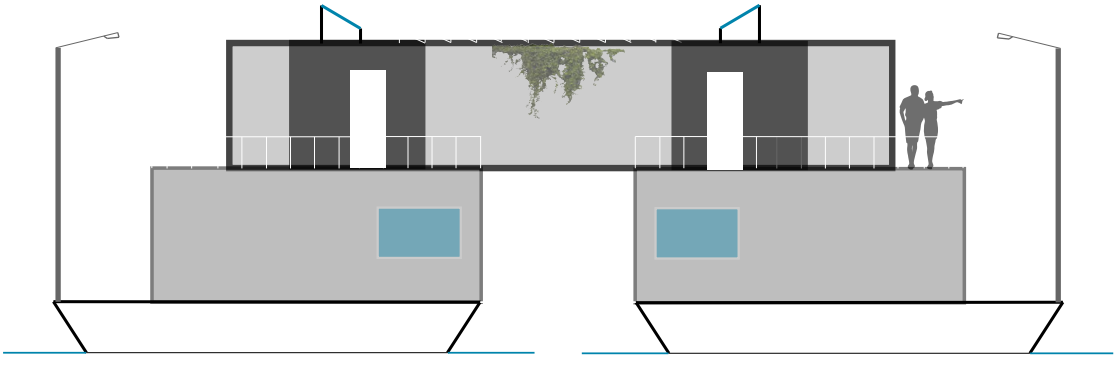
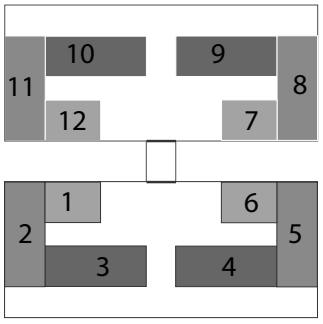
6' WALKWAY

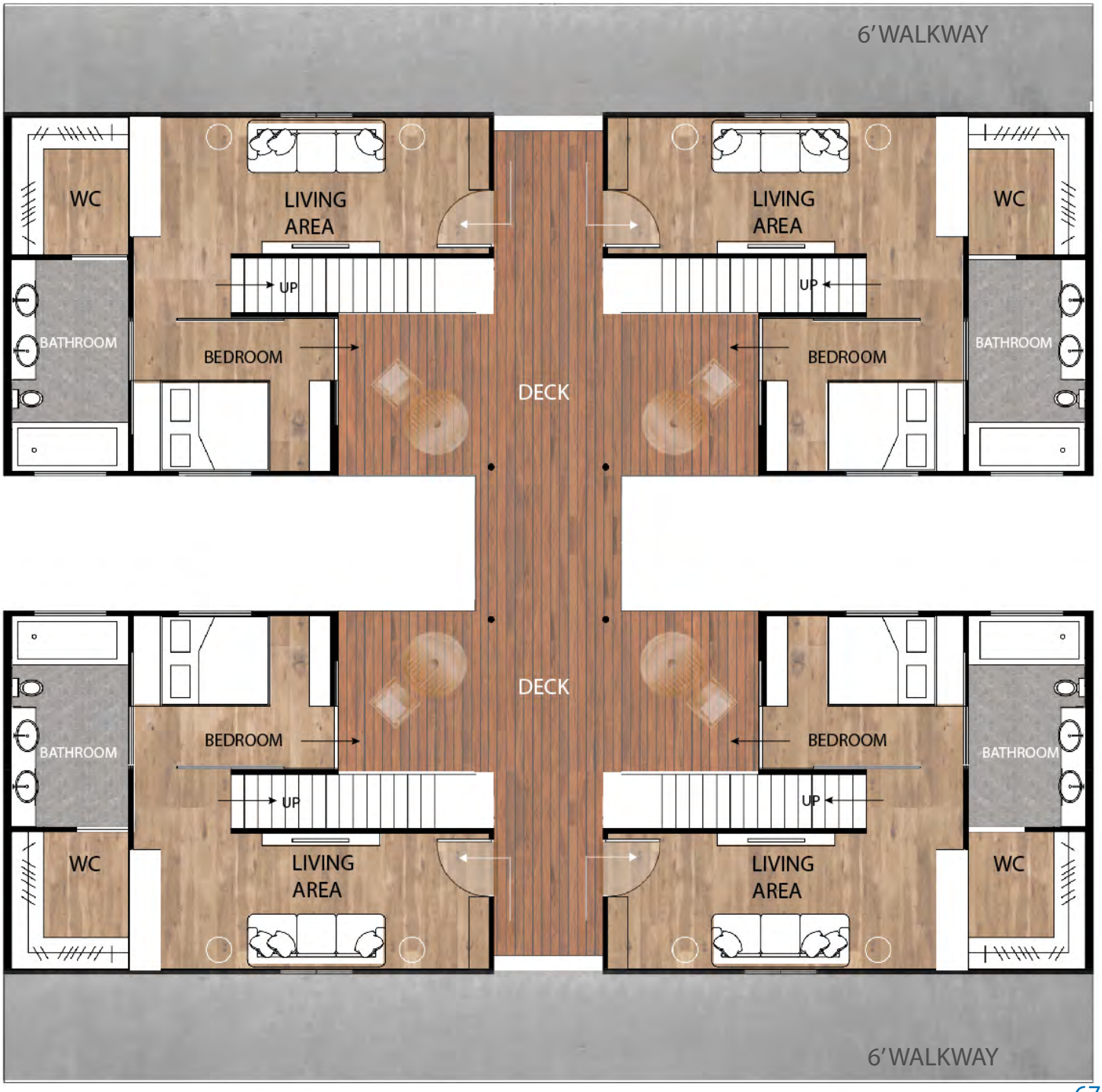


Communal Living
Module Floor Plans

First Floor Plan

Scale: 3/16" = 1'-0"

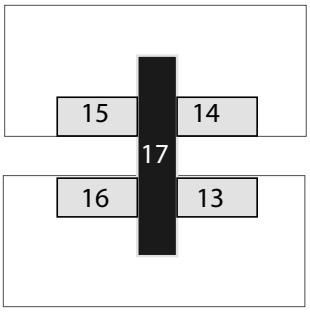


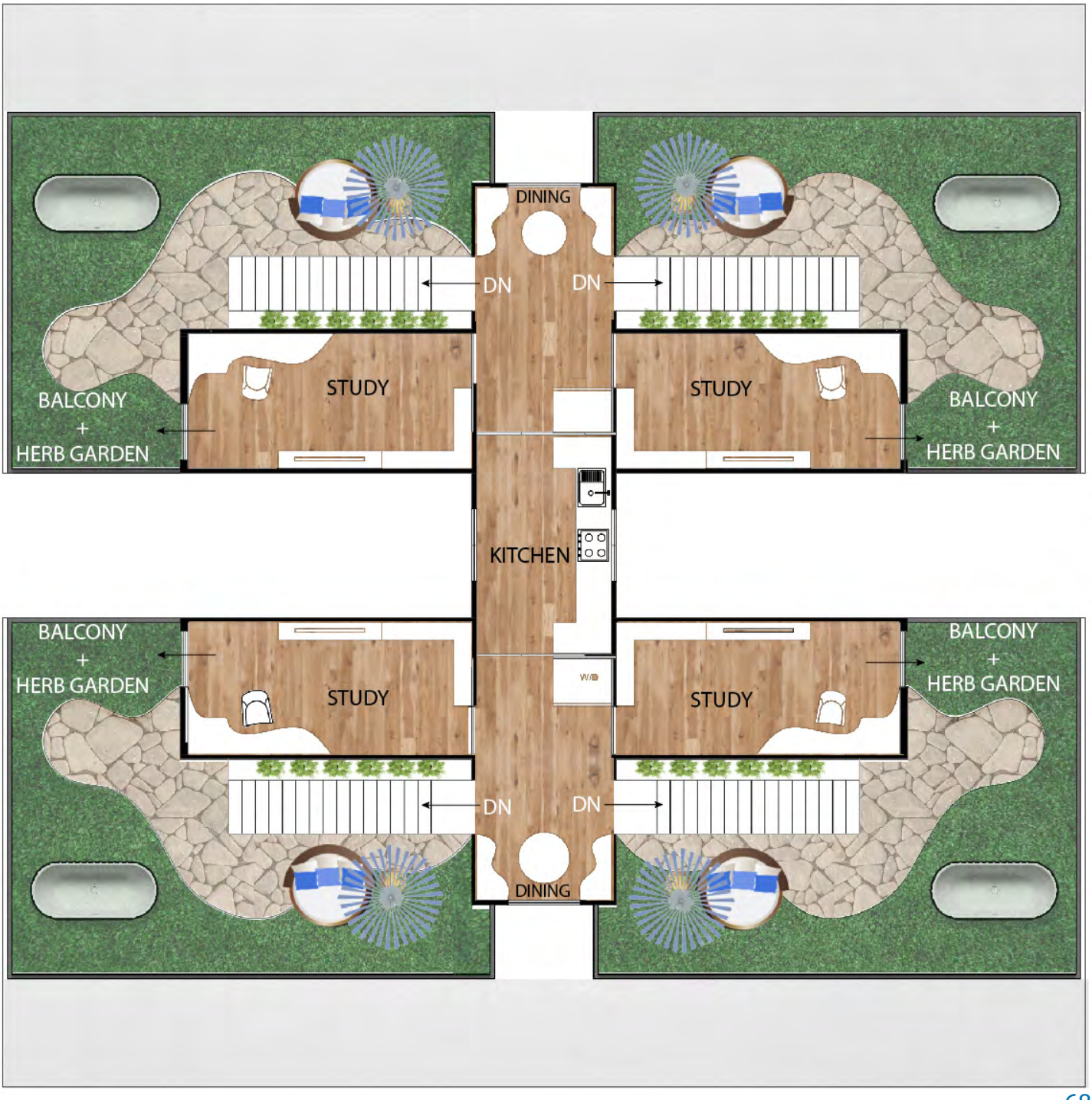


Communal Living
Module Floor Plans

Second Floor Plan

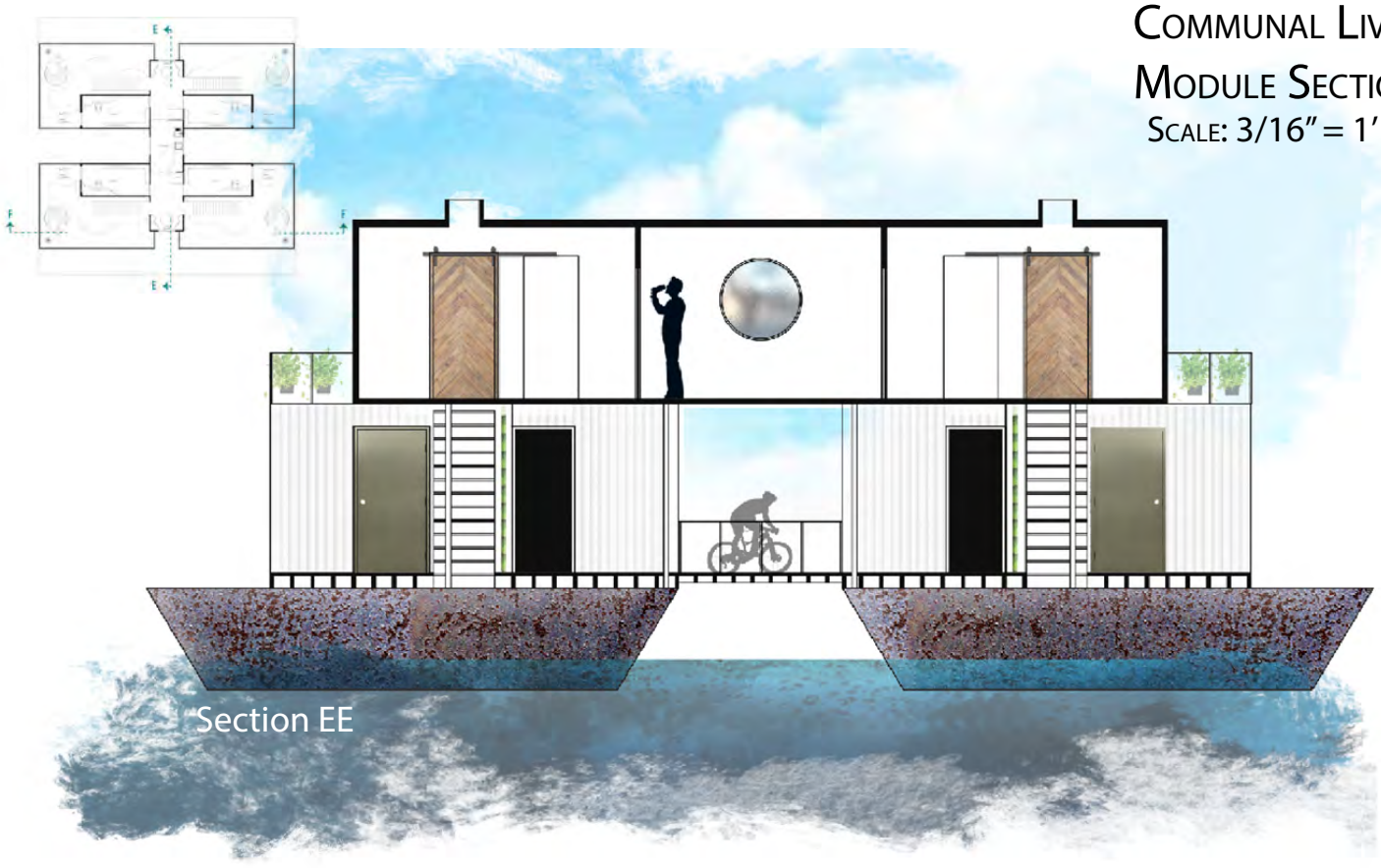
Scale: 3/16" = 1'-0"





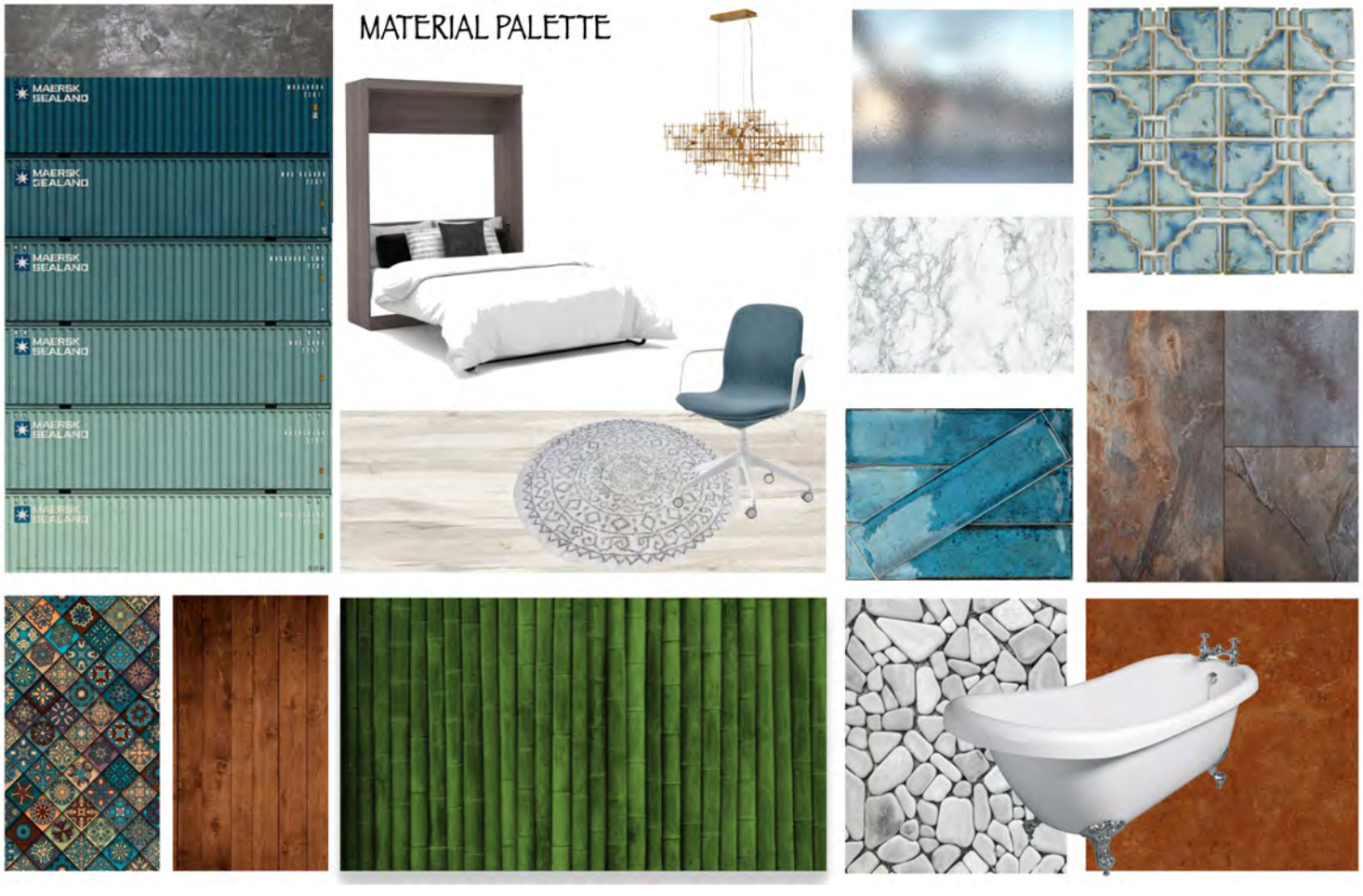
Communal Living Module Sections

Scale: 3/16" = 1'-0"



Section EE

Section FF


MATERIAL PALETTE
MAERSK SEALAND
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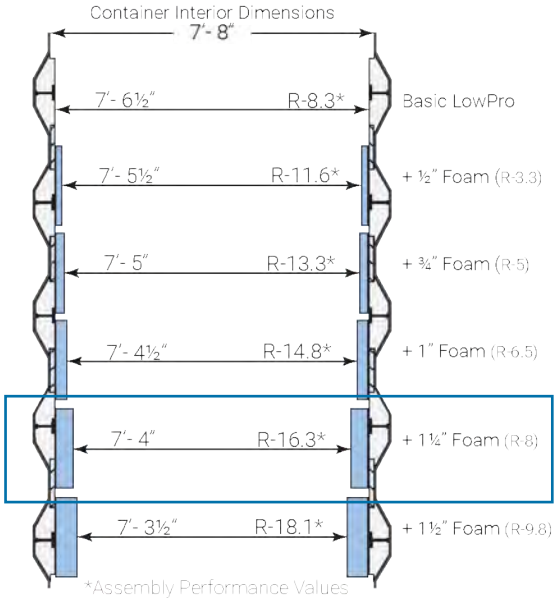
Ebb & Float Comunity Neighborhood View

Ebb & Float Neighborhood

Ebb & Float Neighborhood Entry

Insulation Solutions

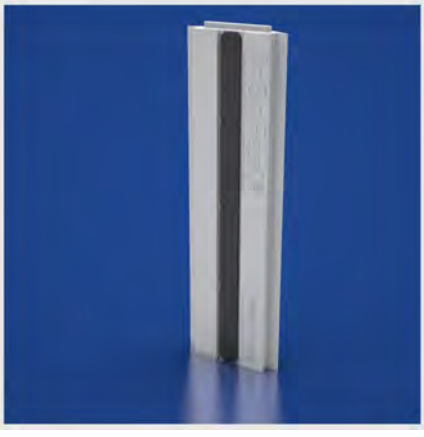
LowPro® Basic Plus Additional Sheet Foam



LowPro Basic Wall Assembly R-Value	
Component	R-Value
Interior Air Film	.68
½" Drywall	.45
LowPro Basic	7.0
Container Sidewall	0
Exterior Air Film	.17
Assembly R-Value*	**R-8.3**
Add R-Value of Additional Foam	

Sheet foam R-Values vary by manufacturer. Examples shown use polyiso foam. Verify manufacturer's specifications.

CX-LP LowPro Insulated Studs



LowPro Side Wall Material List

20' IEU Standard Sidewall - (CX LowPro/Insert - every other corruguation)

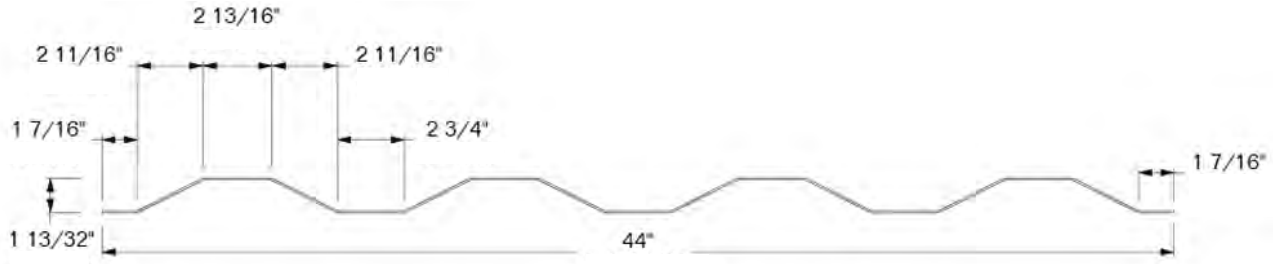
- 1(CX-LP 46 Insulated stud Boxes = 46 pcs.)
- 1 (Side Wall Inserts Boxes = 28 pcs.)

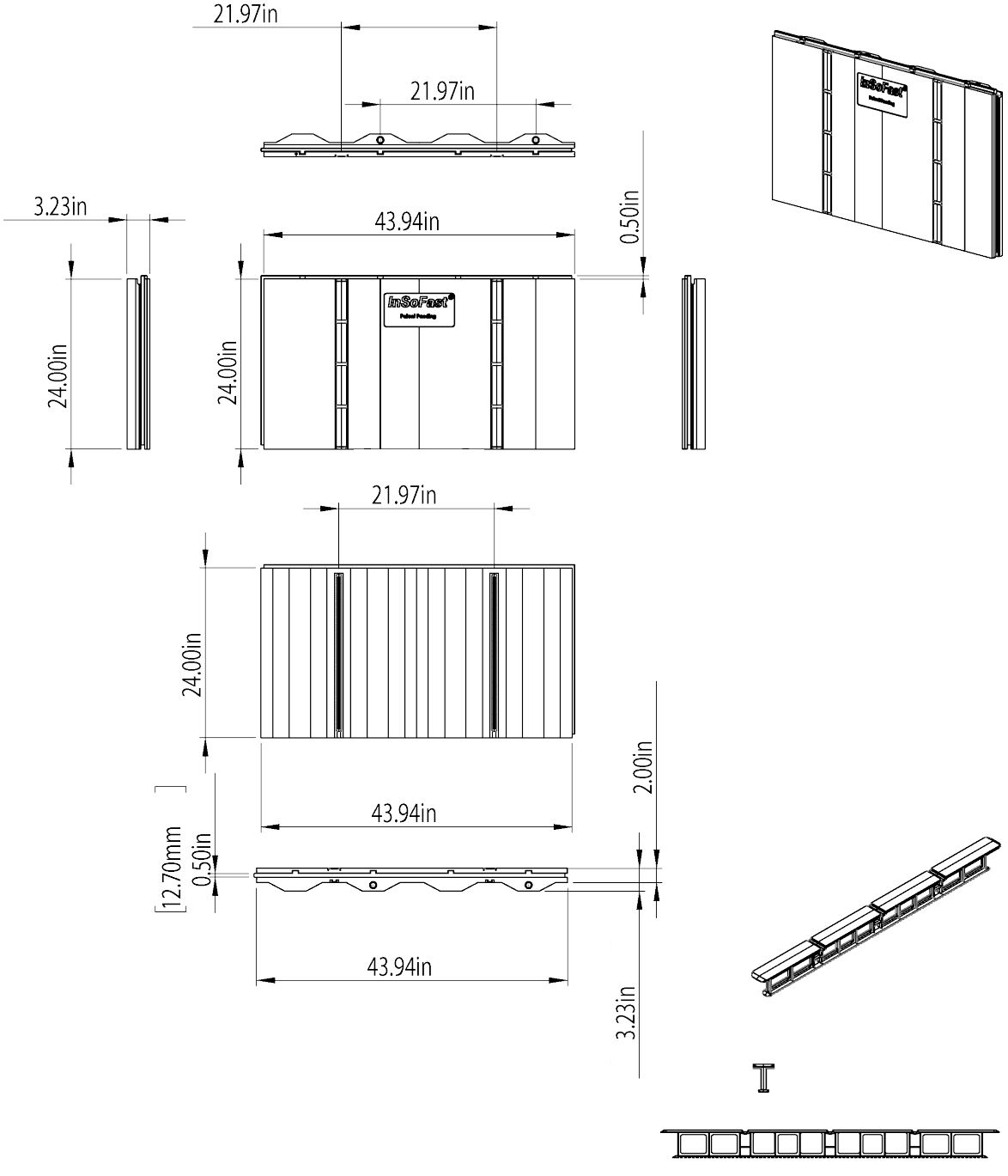
40' Standard Sidewall - (CX LowPro/Insert - every other corruguation)

- 2(CX-LP 46 Insulated stud Boxes = 46 pcs.)
- 2(Side Wall Inserts Boxes = 28 pcs.)

Source:

https://www.youtube.com/watch?v=VjWX47L5wTw&feature=youtu.be


2 13/16"
2 11/16"
2 11/16"
1 7/16"
2 3/4"
1 7/16"
1 13/32"
44"


21.97in
21.97in
3.23in
43.94in
0.50in
24.00in
24.00in
InSoFast
21.97in
24.00in
2.00in
43.94in
[12.70mm
0.50in
43.94in
3.23in

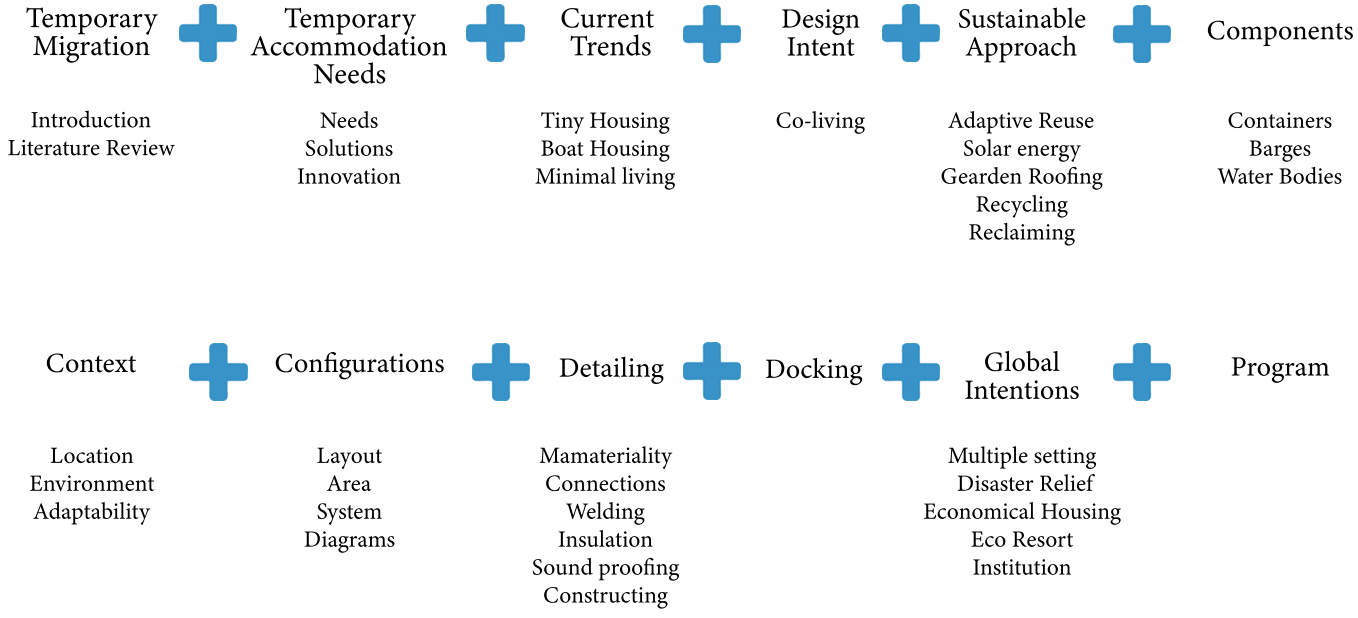
One reason for the enduring appeal of microstructures is the way they free people from the usual constraints of daily life. Adaptable, lightweight, responsive to local conditions and with the ability to travel almost anywhere with ease: these inherent qualities of 'microarchitecture' imply the opposite of our usual stationery, brick- and -mortar bound existences(Diedricksen, "Micro Living," 14).

"Today, sustainable is almost another word for common sense, or making things practical and smart. Companies like Danfoss have pioneered innovation and made cutting-edge technology available." - Bjarke Ingels, Founder & Creative Partner of BIG.

Away from the frontline of conflict zones and natural disasters, microarchitecture is gaining popularity as a way to downsize, highlighting a philosophical shift in society as well as economic advantages. The tiny life article states that the growing popularity of having a tiny home is, arguably, a result of the rising gap between rich and poor(Rubenach," Compact Living"). The shift towards micro accommodation also addresses the environmental and social costs that come with occupying large buildings. With the amount of living space per person in the USA almost double what it was in 1973, and with the cost of purchasing a home rising steadily in relation to income, the need to find more viable ways to live is pressing concern(Kaufmann, "Tiny Houses).

Project Components

This thesis is going to focus on finding a solution on how to make these water bodies around the Globe be helpful to build an affordable housign system over it. Which can address some global issues and which can also be a conscious design contribution to the world.



JUST A THOUGHT

When environmental disasters force cities, islands and countries to declare that there is a " basic shelter and low income housing crisis" up-cycling or recycling shipping containers is a sensible solution. Reusing intermodal containers are a responsible way to respect the planet and people.