Introduction

Multi-Minimal

ALA MASTER'S THESIS
NORTH DAKOTA STATE UNIVERSITY

A DESIGN THESIS BY:
TUCKER DARWIN SCHOENFISH

MINIMALISM FOR EVERYONE:
MINIMAL LIVING SOLUTIONS FOR ALL SITUATIONS

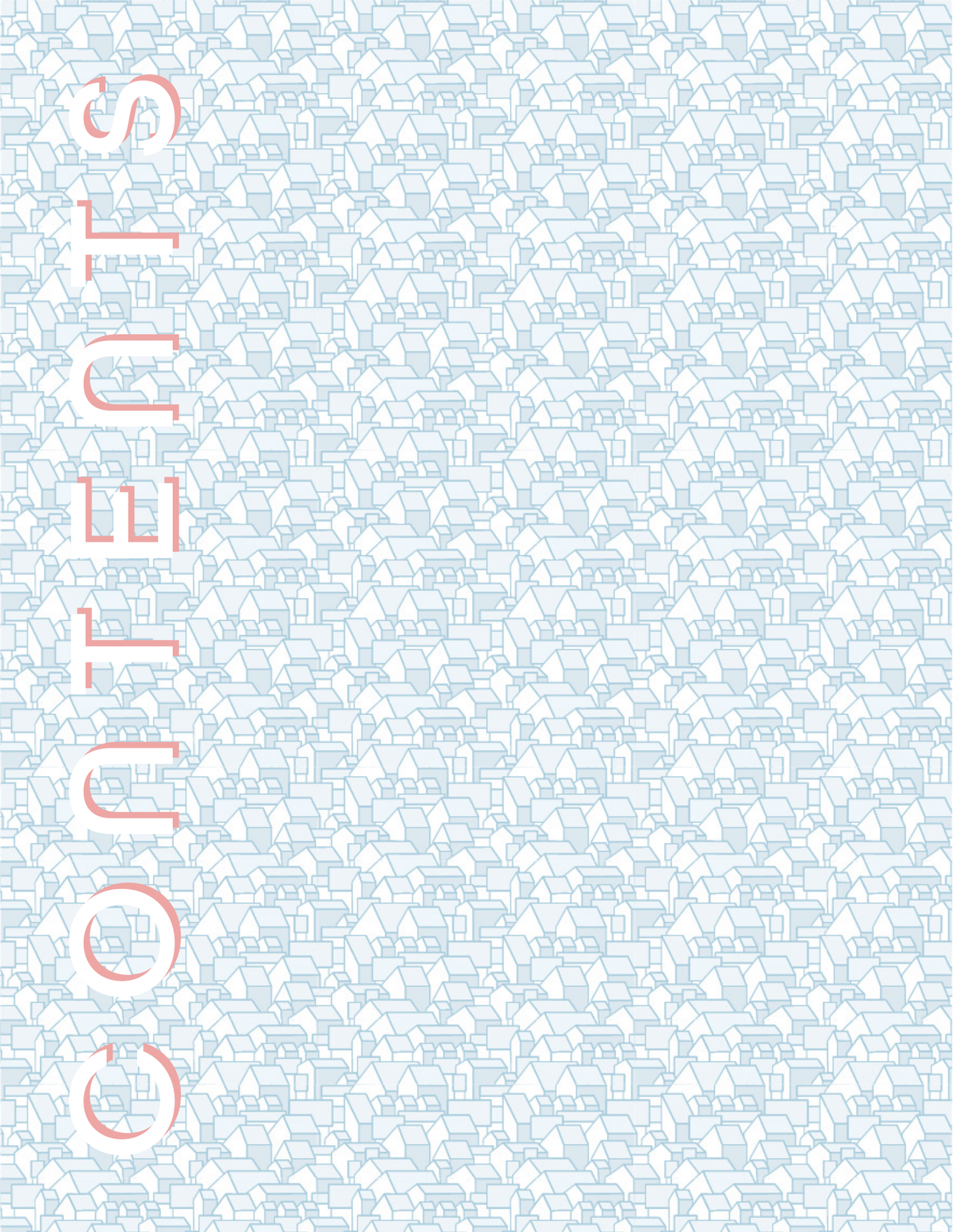
A DESIGN THESIS SUBMITTED TO THE
DEPARTMENT OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE
OF NORTH DAKOTA STATE UNIVERSITY

COMPLETED BY:
TUCKR DARWIN SHOENFISH
MAY 2023

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER'S OF LANDSCAPE ARCHITECTURE

RONALD RAMSAY
PRIMARY THESIS ADVISOR DATE

STEPHEN WISCHER
THESIS COMMITTEE CHAIR DATE



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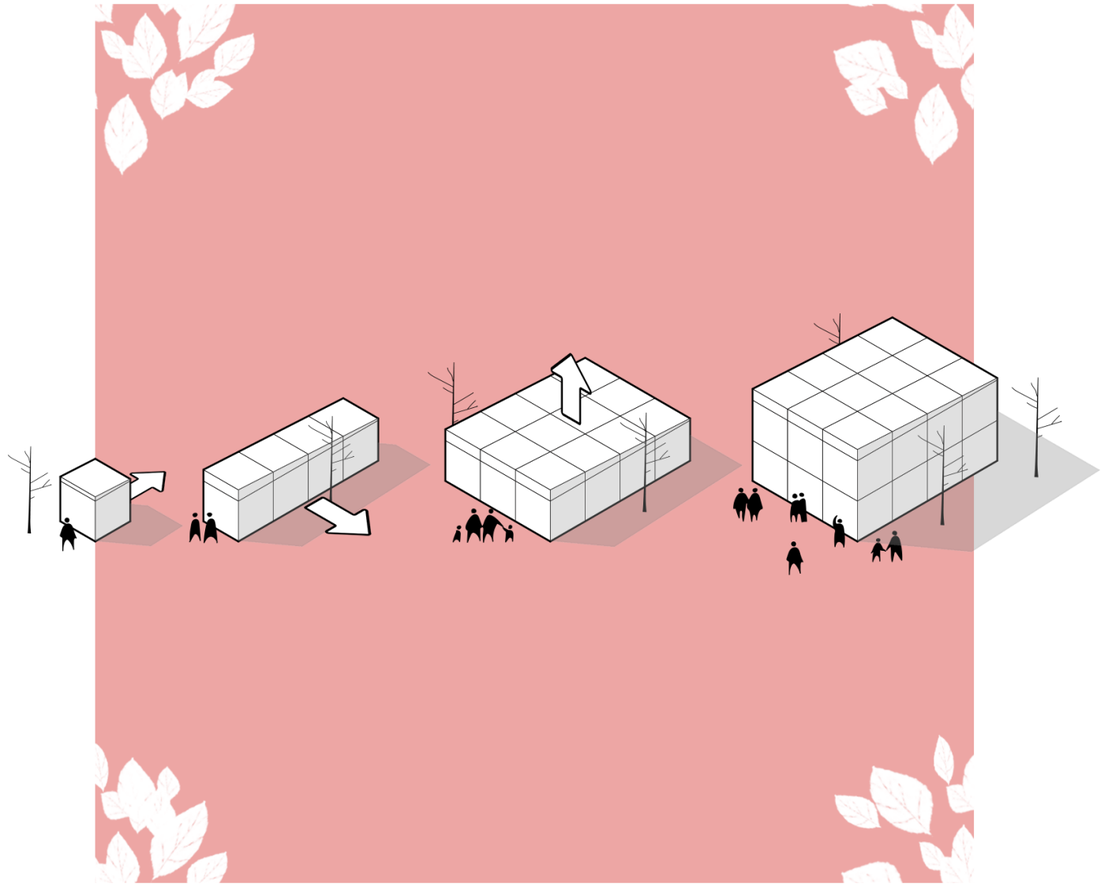
PROPOSAL

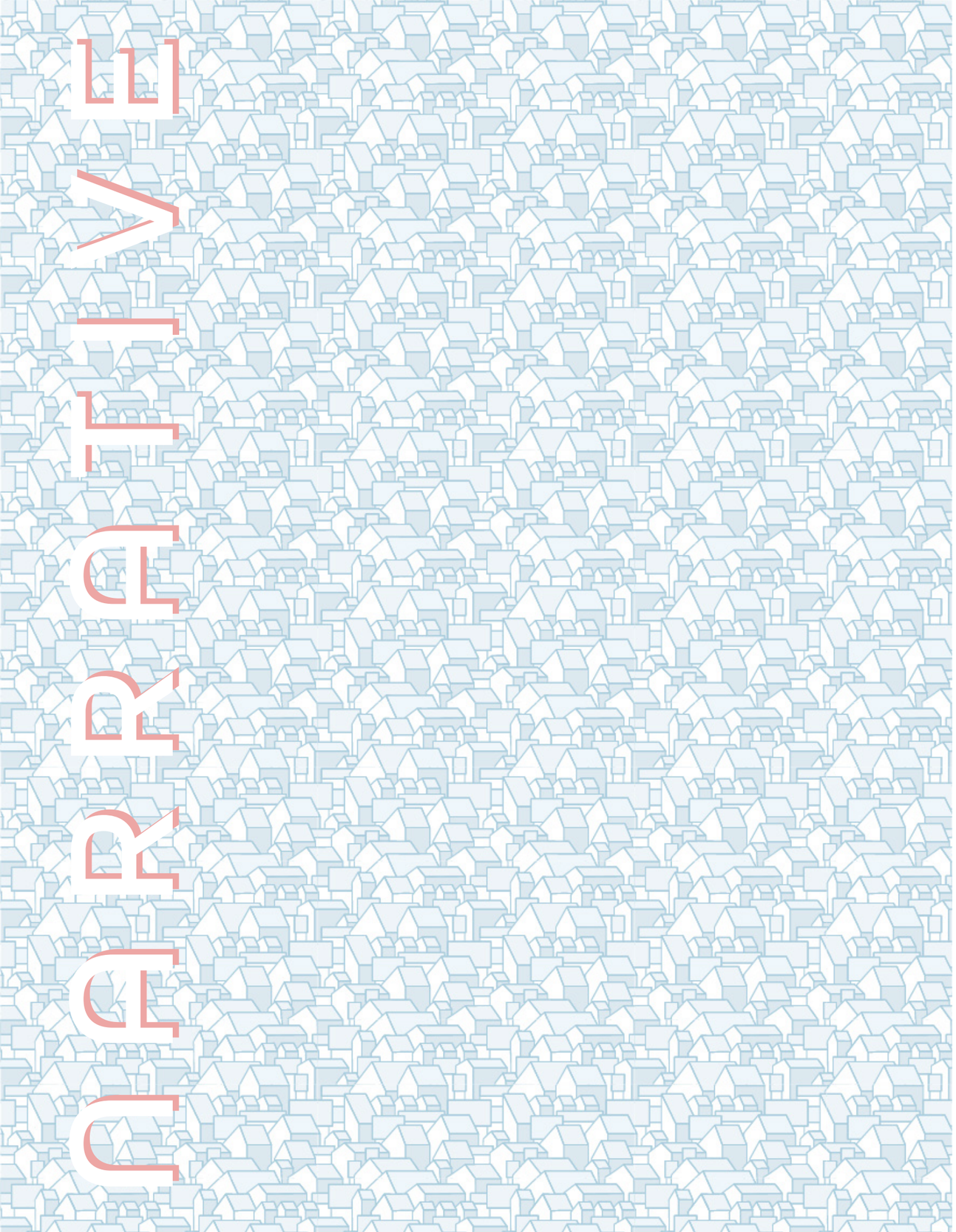


PART 1

THESIS ABSTRACT

The cost of living has started to increase quite drastically over the recent years. From renting an apartment, to buying or building a home. Land and material prices have skyrocketed, especially during and after the pandemic. There are many people these days that have a job, but still have a hard time paying rent or a mortgage on a home. With the cost of living increasing, the amount of habitable space is decreasing. Intelligently reusing and reducing material usage as well as building footprint will be what brings living cost back down and ensure for less urban sprawl with more living spaces in currently developed areas.

This study focuses on creating smaller alternatives to today's maximalist trend for living. Research will be focused on how to build efficiently in regard to space and utility usage. Thinking of creative ways on where and how to build in certain urban areas will be an important aspect for site research. To accomplish this, multiple designs will be made for different family sizes in order to optimize living space wile shrinking the classic home footprint.



THESIS NARRATIVE

Access to decent, affordable housing is very important to the well-being and health of people and contribute to the slick functioning of economies. When you think about advanced and developing countries, cities struggle with the challenges of housing the poorest of their citizens and providing housing at a reasonable cost for all levels of income. Addressing the affordable housing gap should be an important issue that cities should make a priority, it offers benefits of improved economic productivity, environmental sustainability, and equity for cities.

Across the United States, we've underbuilt housing by 7 million units and 3.5 million of those exist in California alone. Cities across the West coast has been struggling with housing cost and availability. Large cities haven't been able to accommodate for affordable living near the cities which has caused many to move further and further away. This has been an issue for those who rely on the cities public transportation systems, as they only go so far away from the city.

THESIS TYPOLOGY

The typology of this thesis will be to create alternative living solutions to the larger, more expensive means of living that most homes and apartments provide. The living solutions will vary in size as well as functionality of being a home or a micro apartment. Modularity will also be factored into the design, this is so the client is not fixed to a certain size of home, and can expand easily later on. This typology was chosen for these reasons:

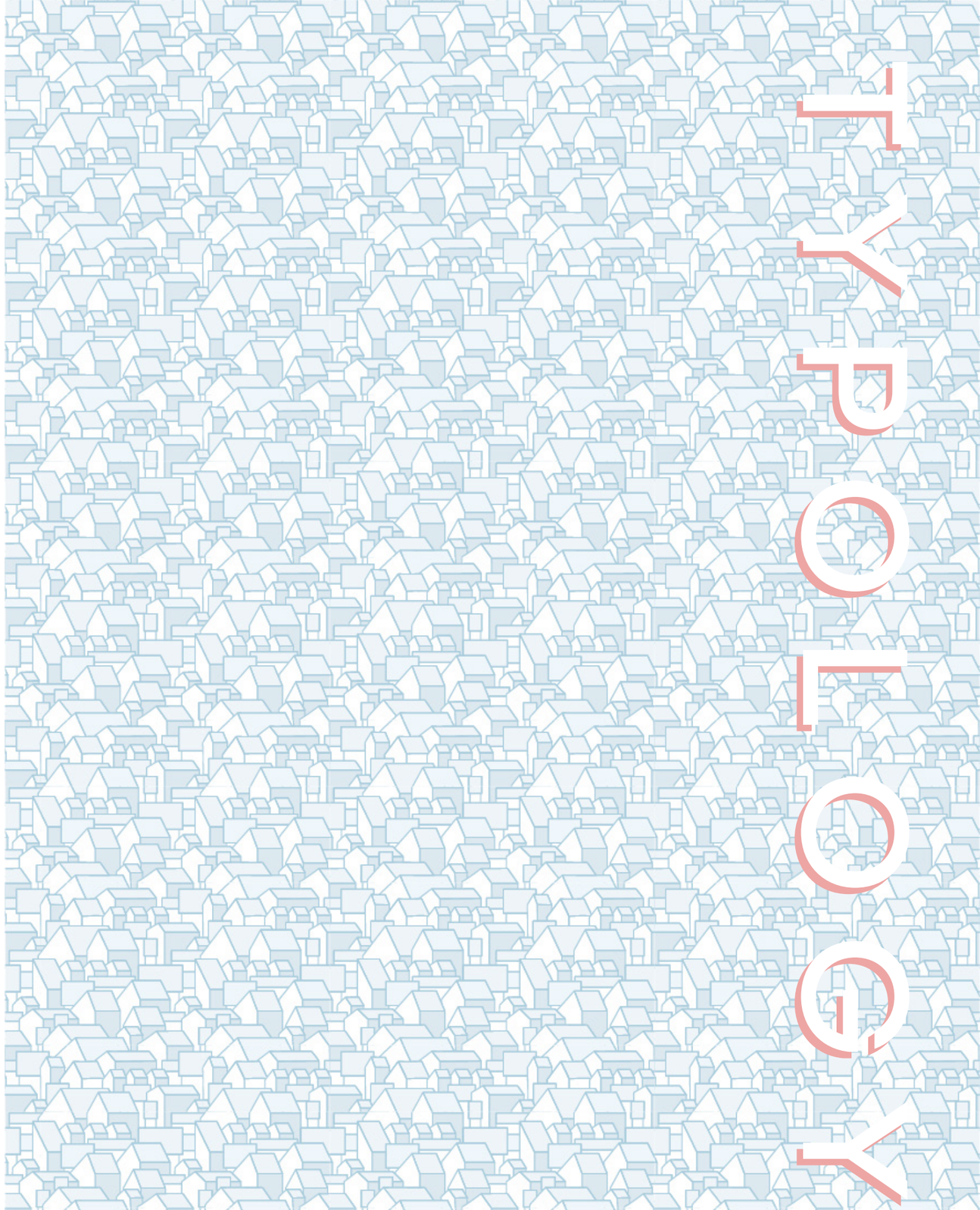
1. The housing market is increasing in price every year.

2. Availability for affordable housing near cities is becoming sparce.

3. Models will be modular and easy to move anywhere.

4. The potential for a sustainable and efficient design is easy to implement in this form factor.

5. Opportunity of creating a sense of community.



Typological Research

Things to Consider:

1. Project Typology: Large or small-scale projects. Includes apartments, communities, and individual homes.

2. Location: Urban areas, suburbs, and cities.

3. Sustainable Strategis: Material, technology, and environmental studies.

4. Socioeconomic Context: Inclusivity of all persons and economic savings.

5. Impact: Successful, sustainable, and affordable design will create a possitive effect on the community.

6. Effectiveness: The success of implementing an affordable design.

1 O-POD TUBE HOUSING

2 THE SCAFFOLD

3 MICROHAUS

4 EMERALD VILLAGE

5 MIMMIM VILLA

Figure-1

O-POD TUBE HOUSING

Designer

James Law
Cybertecture

Project Year

2017

Typology

Residential
Apartments

Location

Sha Tin
Hong Kong

Figure-2

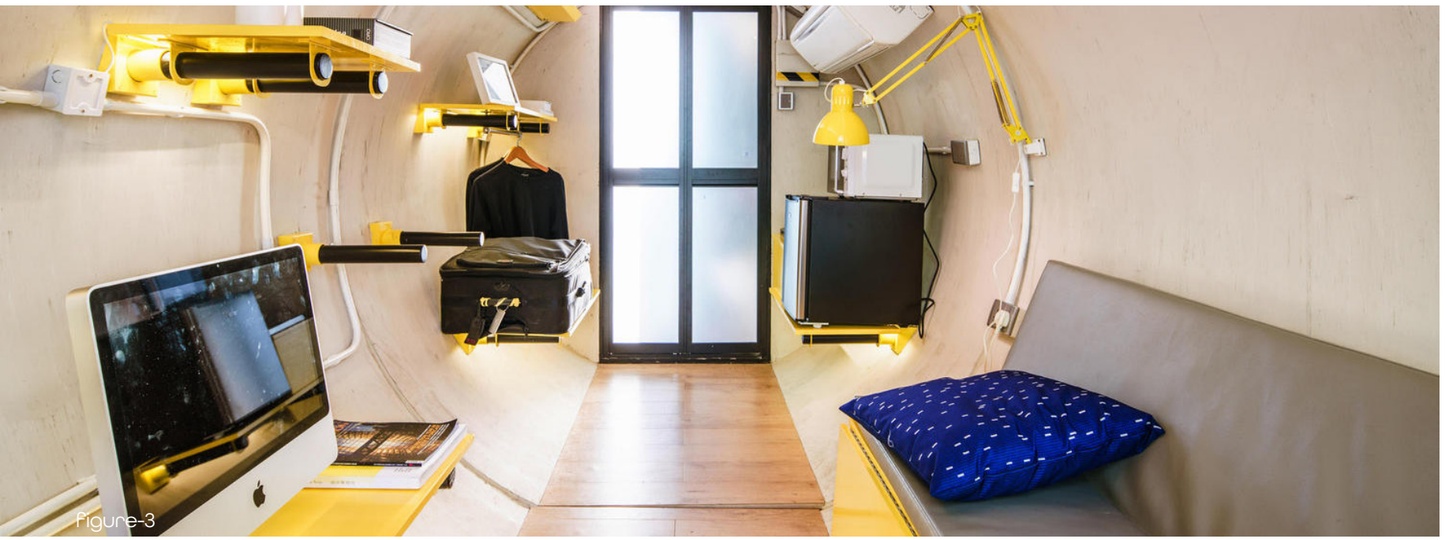


Figure-3

Figure-4

Distinguishing Characteristics:

The O-Pod Tube House is a low-cost experimental housing unit, or micro-dwelling, built from a concrete water pipe 2.5 meters in diameter. The project uses the concrete structure to house an apartment for one or two people with a living room, kitchen, and bathroom enclosed in 9.29 square meters of space. The pieces can stack to become a low-rise housing community in a very short time and can be conveniently located and relocated to different locations.

Adaptability:

These units are very adaptable as far as placement location goes. They can be used as stand alone pods, or stacked together to make a micro apartment structure. They can also be converted for many different types of use cases.

Structure:

This mini apartment is made out of a standard commercial grade concrete sewage pipe. Precast and reinforced with steel rebar. They are then set onto steel legs in order for them not to roll away.

Relevance:

These pods are relevant to this thesis project because of how versatile they are. From being able to be used as more than just housing as well as being flexible to the point that they can be placed in almost any context.

Conclusion:

This thesis will examine the contextual flexibility and use of existing structure and implement some of the design elements into the final design. The way that these pods can be placed in almost any type of urban setting makes them so important to they study and something that will drive one of the main focuses toward the end product.

Figure-5

THE SCAFFOLD

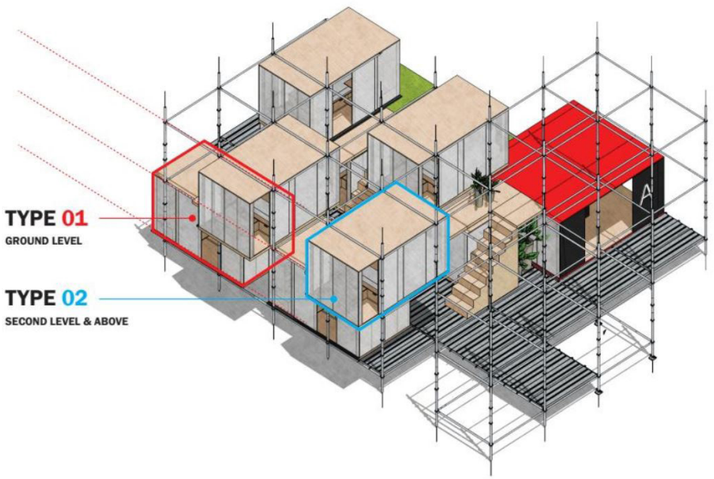
Designer
Alejandra Novelo
Khoa Vu

Project Year
2019

Typology
Homeless
Dwellings

Location
New York, NY

Figure-6



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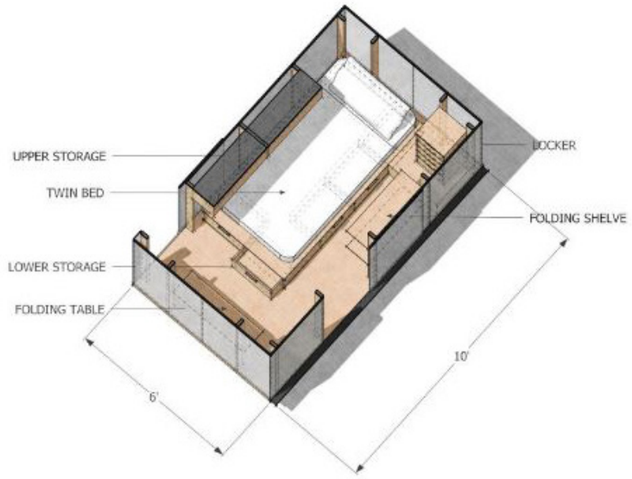


Figure-8

Figure-9

Distinguishing Characteristics:

The main design intent originated by the breakup of the typical transitional housing design layout, to allow for an increase flow of natural ventilation and daylighting. Consequently, the system of the design generates a certain flexibility that allows for the adaptation to different site conditions. Given the new broken layout, we subsequently generated community spaces that not only would maximize the site's square footage's potential, but it will also increase the quality of living for the users.

Adaptability:

These units can be easily and affordably be thrown up with common, easy to access materials that anyone can get their hands on. Because this project uses scaffolding, the units can be oriented in every which way to best optimize the use of the site they are placed on.

Structure:

The design investigates a flexible architectural system using scaffolding structure and the in-filled lightweight prefabricated units. The material of the design lowers the cost by utilizing prefabricated modules and standard scaffolding construction. In the urban perspective, this architectural system, while maximize the living units, generates large shared spaces in between, which promotes a sense of community among the residents.

Relevance:

These pods are relevant to this thesis project because of the smart and minimal use of materials in order to construct the units. This project creates a great sense of community, circulation, and security. The spaces are meant to provide housing for the homeless as well as encourage social interaction.

Conclusion:

This thesis will examine the use of materials and site layout in order to better understand circulation among units. This study will be necessary for the sites that have multiple units placed in one location.

Figure-10

MICROHAUS

Designer

Max Gerbut

Project Year

2017

Typology

Residential Homes

Location

Seattle, WA

Figure-11

Figure-12

Figure-13

Distinguishing Characteristics:

Created using 3D-printed structural components, the prefab dwelling arrives move-in ready with a kitchenette, double bed, bathroom including a full-size shower and toilet, and plenty of storage. The MicroHaus also comes with fully integrated Cloud Self-Diagnosis System, which provides a new generation of Smart Home amenities, full remote control, and machine learning.

Adaptability:

The 120-square-foot structure features a fully equipped, high-tech living space that can run self-sufficiently, and it's designed to be installed within minutes.

Structure:

The exterior is composed of rounded fiberglass and stainless steel, while the interior is layered with warm wooden elements and illuminated by natural light.

Relevance:

The MicroHaus is relevant to this thesis because of it's use of profound efficiency in such a small form factor. The amount of things the designers were able to fit in this form factor is astounding. It is a successful product of meticulous engineering and prefabrication.

Conclusion:

This thesis will examine the use of technology, materials, and space efficiency that this build accommodates. The amount of mechanical and technical components that are able to fit in this unit is difficult, and could highly benefit the outcome of this thesis.

Figure-14

EMERALD VILLAGE EUGENE

Designer

Dan Bryant

Project Year

2017

Typology

Tiny Home Community

Location

Eugene, OR

Figure-15

Figure-16

Figure-17

Distinguishing Characteristics:

Emerald Village Eugene (EVE) is a project developed by SquareOne Villages (SOV), a non-profit organization with a mission of creating selfmanaged communities of lowcost tiny homes for people in need of housing. It builds upon the success of Opportunity Village, a transitional micro-housing community for otherwise homeless individuals and couples.

Adaptability:

Members will make monthly payments of between $200 - 300 to cover operating costs. Each household will also accumulate a $1,500 share, paid in increments over the course of 30 months, and will earn simple interest. This means the initial carrying charge for each household will be $250 - 350 per month.

Structure:

22 tiny houses (160 - 288 sq. ft.) complete with sleeping and living area, kitchenette, and bathroom. Common facilities including community gathering space & kitchen, laundry, storage, and office. Vehicle & bicycle parking consolidated near common facilities.

Relevance:

Unlike most affordable housing projects, residents of EVE will not simply be renters, but instead members of a housing cooperative with a share in ownership of the village—enabling them to create a modest asset that can be cashed out if, and when, they choose to leave. As part of this innovative model, SquareOne Villages will hold the property in trust to assure continued affordability to members of the cooperative.

Conclusion:

This thesis will examine the sense of community that EVE creates. It will look at opportunities to explore a similar model in order to create a livable, affordable, and sustainable community that all tentants will be able to enjoy. Looking at the shared amentities will be a big part of the research.

Figure-18

MIMMIM VILLA

Designer

On Architects

Project Year

2021

Typology

Residential
Home

Location

Ulju-Gin
South Korea


Figure-19


figure-20


figure-21

Distinguishing Characteristics:

The project was to plan a small self-contained pool villa that would be no typical tourist destination but provide a new experience that people cannot experience in other neighboring beach resorts. It was thought that it would act as a small architectural device that could revitalize this aging beach scenery rather than destroy the natural scenery.

Adaptability:

A square with sides of 11m is composed of four intact walls. Within the four walls, a 2m interspace constitutes a four-sided swimming pool, and an indoor space constructed of glass is like another inner island. The indoor space features a 2m square toilet, a shower room, and a utility facility. At the top of the facility utility, on the ceiling, there is an open rectangular structure connected to the sky, through which the light falls.

Structure:

The structure composed of columns and walls supporting the interior space has been removed to recognize the overlapping spaces, and an independent area has been built. The four walls are the vertical structures that receive all the force. A grid form was used as a structural principle to build a space within a space while a skylight has been employed to open the slab. The structural beam formed at the top of the swimming pool creates various shadows on the four walls depending on the time of the day, the swimming pool, and the indoor space.

Relevance:

This project demonstrates using simple materials and construction, as well as simple layout and use of space.

Conclusion:

This thesis will further study the efficiency of use of space from this project. It will also consider the use of simple materials and construction methods. Imitating the sense of seclusion within ones own space will be something that will strive to achieve.

MAJOR PROJECT ELEMENTS

1. Maximized Efficient Layout
2. Modular Construction
3. Community Implimentation
4. Portable Size
5. Common Building Materials

USER CLIENT DESCRIPTION

1. GOVERNMENT

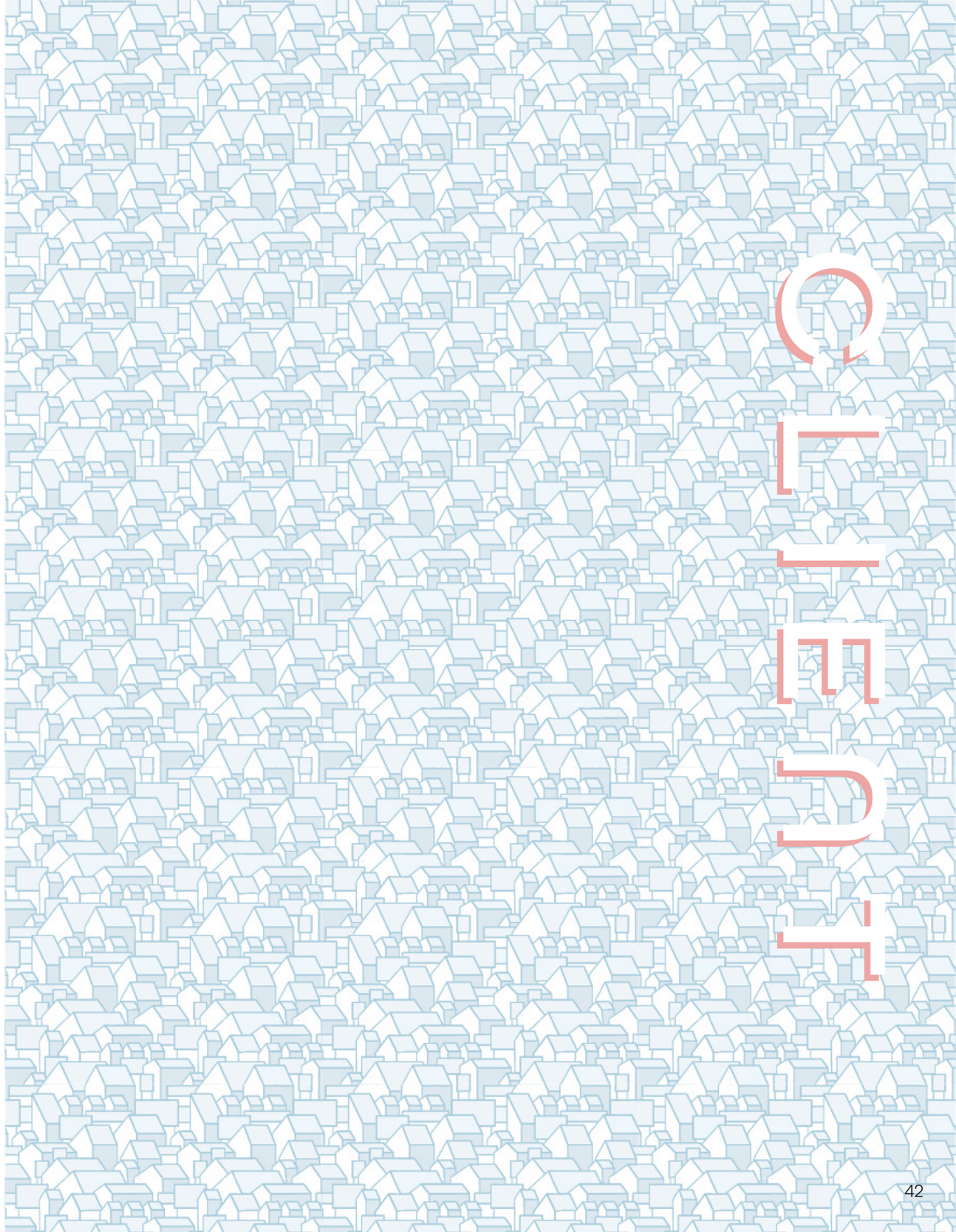
Low Income Housing
Disaster Relief Housing
Temporary Employee Housing
Movable / Temporary Office Space

2. DEVELOPER

Small Housing Developement
Temporary Developement During Construction
Temporary Housing For Out of State Workers
On Site Office Space

3. PRIVATE USER

Single Family Home
Accessory Dwelling Unit (ADU)
Home Office / Studio
Rentable Unit / AirBnB



SITE #1

LOCATION: Redwood City California

ADDRESS: 295 Madrone Street
Redwood City, CA 94061

DESCRIPTION:

This site is located in Redwood City California which is a city just Northwest of Silicon Valley. It is Currently a single family home in a neighborhood close to the center of the city. It is in a nice area that is in close proximity with tow public parks. The lot is on the corner, so has plenty of yard space that is good for family activites.

figure-22

SITE #2

LOCATION: Seattle Washington

ADDRESS: 1612 South Jackson Street
Seattle, WA 98144

DESCRIPTION:

This site is located just East of downtown Seattle Washington. It is currently a vacant lot that hasn't any use at the moment. The area has been recently growing with many housing and apartment developements popping up, as well as many new retail locations. The lot is in between a market and a small apartment building.

Figure 28

SITE #3

LOCATION: Portland Oregon

ADDRESS: 530 Southwest 2nd Avenue
Portland OR, 97204

DESCRIPTION:

This site is located in the heart of downtown Portland Oregon. Nested between two off ramp loops, it is a prime location to get anywhere easily. The site is currently a parking lot, close by is a bus stop and the local city train that runs right next to the site. With being so close to the river and right next to a park with walking trails, this is a prime location for people who want a well-rounded life in the city.

Figure-24

PROJECT GOALS

1

Academic: This thesis project will be the most detailed and researched of my academic career. During the span of this project, I hope to further my knowledge in the field of low income housing and the designing of minimal homes. I would also like to gain better understanding of the technical and presentation aspects of a project, and how to best showcase my ideas.

2

Professional: I hope to one day start working on projects in the realm of small home and low income housing, so I can better my knowledge as well as the knowledge of others. Some may not understand how serious and the amount of growth of this topic in recent years. I would like to be a part of the fight to raise awareness and to do something about the issue of the working poor in large and small cities alike.

3

Personal: I hope through the research and design involved in this project, I can help shed some light on the importance of thoughtful architectural design in minimal homes and communities. Going smaller will be an important part of housing the populus of the future. Continually studying this topic will be something that I intend to stick with for years to come.

PRESENTATION INTENTION

The final documentation of the following thesis will implement a wide variety of mediums to present the research and bring the idea to life through design and graphics. The documentation will display a mix of materials that include:

The Thesis Book: In addition to the thesis proposal, the project booklet will include the thesis program, the design process, the final design and solutions.

Project Boards: The project boards will be printed out and will display and present the research and the design. The project boards will be used in alliance with the thesis presentation and the thesis book.

Digital Animation: A video of the completed digital model of the design. The video will showcase design implementations and solutions. The video will also display the interactive features of the design through material usage. This will allow the viewer to see the physical aspects of the design and move around the space.

Final Thesis Presentation: An oral presentation that will combine the research and design aspects of the thesis book, and thesis boards to showcase the findings and solutions of the thesis. The presentation will consist of a digital presentation combining all the research and design implementation.

PLAN FOR PROCEEDING

Research Direction: This thesis will implement a mixed method of qualitative and quantitative research. the research will be conducted based on typology, site analysis, context and programming requirements. Case studies, architecture guidelines, peer-reviewed journals and studies will be used to fulfill the programmatic requirements and establish a fulfilling design and establish meaningful solutions. Site analysis will be conducted in order to determine the best locations for project elements and programming strategies on the site.

Design Methodology: The thesis method that will be utilized is a mixed method that will follow structured design, object oriented design and inclusive design methodology that will employ both qualitative and quantitative research collected during the programming stage to accomplish an inclusive and universal design. The information will be thoroughly analyzed and demonstrated through info-graphics and graphical renderings. Qualitative research will be collected and displayed by completing the inventory and observation of the site, as well as collecting important data on accessibility issues through case studies. Quantitative data will include statistical and scientific data.

Documentation of Design: All research will be collected and documented digitally. It will be combined and implemented into the thesis program and proposal. The design process will be showcased through sketches, conceptual drawings, photos, and graphics. The end result will be a digital graphical representation of the research collected, the design and the final solution. The final project will be presented through a digital and oral presentation, the research, text, and graphics will be documented in the thesis book that will be a digital file as well as a hard-copy.

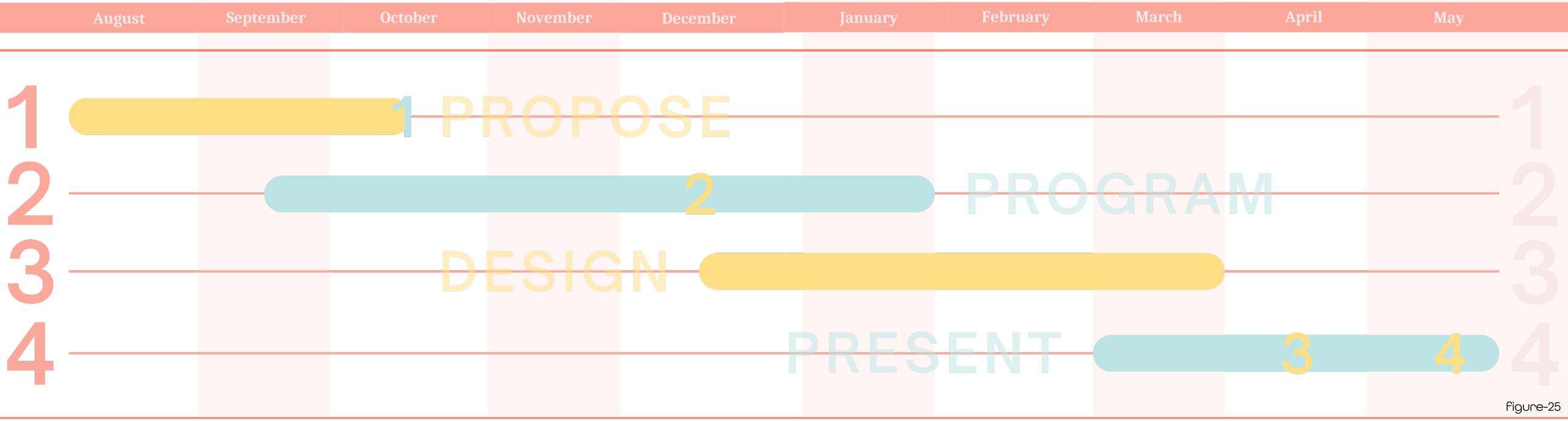


Figure-25

1 | Thesis Proposal Due

This Phase began during the summer when we were encouraged to start thinking about the field we wanted to research and will end with the submission of the thesis proposal.

2 | Thesis Program Due

This phase begins when the final site is determined which was when we had to submit our draft and continues with site analysis and research.

3 | Design Exhibit Due

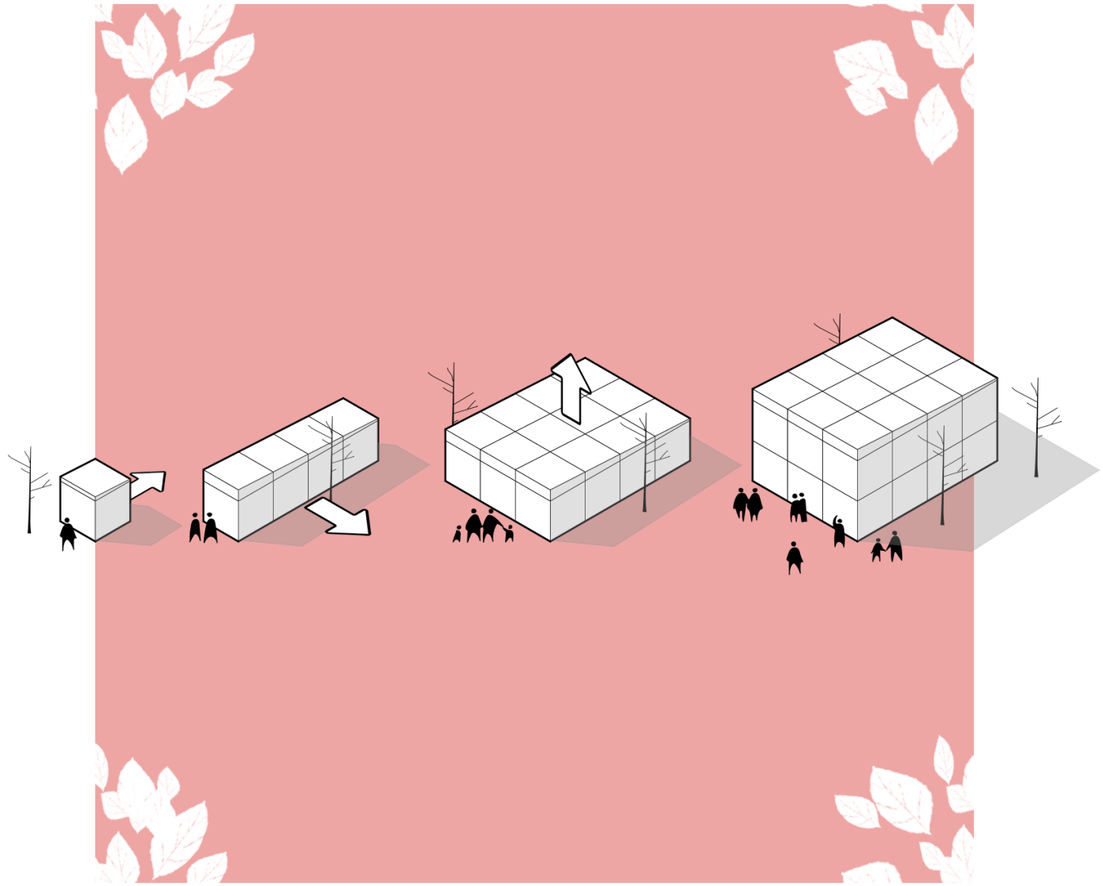
The Design Phase will begin near the end of December when the program will be completed. Design strategies will be implemented when all the research is completed and submitted.

4 | Thesis Book Due

This is the final phase which will complete the thesis by being orally and digitally presented. It will begin at the end of April and end in the beginning of May.

RESEARCH PLAN

PROJECT



PART 2

LITERATURE REVIEWS

The Design of Tiny Homes and Their Significance to Simplistic Living

Author: Monica Garcia-Guzman

This research delves into the significance of tiny homes in the lives of individuals who would otherwise not be able to afford a traditional home. By utilizing design software, the study explores the characteristics of a tiny home and the ways in which engineers and architects create innovative designs that incorporate daily necessities while also appealing to the eye. Tiny homes, which typically range from 400-500 square feet, provide an opportunity for a minimalist lifestyle that is cost-effective. Although tiny homes use the same materials as traditional homes, they require clever designs to optimize the limited space. The popularity of tiny homes is on the rise, but the concept is not legal in many areas due to building code regulations. Through further research on the benefits of tiny homes, such as affordability and independence, there is potential for their legalization across the country.

In today's consumer-driven society, the idea of ownership often leads to a false sense of happiness, without considering the potential consequences of accumulating unnecessary possessions. For individuals seeking a place to call home without incurring significant debt, the Tiny House Movement provides an alternative. This social movement includes individuals from various backgrounds who are choosing to downsize their living space, often to less than 1,000 square feet. This minimalist lifestyle allows people to live comfortably and affordably while breaking free from societal norms. Tiny homes offer a chance to seek personal freedom, reduce environmental impact, and change one's life.

The research process involved using 3D modeling software to understand the design and construction of tiny homes, followed by hands-on building experience. Interviews with tiny home residents provided valuable insights into the benefits of this lifestyle, including financial stability, reduced carbon footprint, and carefree living. Although the cost of a tiny home can range from $25,000-$40,000, it can be a worthwhile investment for those seeking a simpler lifestyle. As basic living costs continue to rise in the United States, more individuals may be inclined to embrace the idea of tiny homes.

Despite the cost of tiny homes ranging from $25,000-$40,000, the investment can be worthwhile for those seeking a simpler lifestyle. The Tiny House Movement is growing, and as basic living costs continue to rise, it is possible that more individuals will embrace the idea of tiny homes as an alternative to traditional home ownership. If more research is conducted on the benefits of tiny homes and how they can be designed to meet building code regulations, the movement may eventually lead to the legalization and legitimization of tiny homes nationwide.

Engineers and architects have responded to the popularity of tiny homes by designing innovative and clever solutions to optimize the limited space while incorporating everyday necessities. These designs use the same materials as traditional homes to ensure durability and value. However, due to building code regulations, tiny homes are not legal in many parts of the country, limiting their widespread adoption.

LITERATURE REVIEWS

A blueprint for addressing the global affordable housing challenge

Authors: Jonathan Woetzel, Sangeeth Ram, Jan Mischke, Nicklas Garemo, and Shirish Sankhe

The study on the blueprint for addressing global affordable housing challenge created by The McKinsey Global Institute (MGI) is a comprehensive report that analyzes the current and future state of housing affordability around the world. The report defines the affordability gap as the difference between the cost of an acceptable standard housing unit and what households can afford to pay using no more than 30 percent of income. The report estimates that the global affordable housing gap now stands at $650 billion a year and that it could affect one in three urban dwellers, or 1.6 billion people, by 2025. The report proposes four approaches that could reduce the cost of affordable housing by 20 to 50 percent and substantially narrow the gap by 2025. These approaches are: unlocking land supply, reducing construction costs, lowering operations and maintenance costs, and improving access to finance. The report also provides case studies and best practices from different countries and cities that have implemented successful affordable housing solutions. The report aims to provide leaders in the public, private, and social sectors with the facts and insights on which to base management and policy decisions for addressing the global affordable housing challenge.

The world is facing a significant affordable housing challenge, with an estimated 1.6 billion people lacking adequate housing, according to McKinsey Global Institute. The problem is most acute in developing countries, where population growth and urbanization are rapidly outpacing the availability of affordable housing.

Governments, businesses, and non-profit organizations are all working to tackle the problem, but more needs to be done to increase the supply of affordable housing and ensure that it is of sufficient quality. McKinsey suggests several strategies to address the issue, including:

Reducing construction costs: Governments and developers can take steps to reduce the cost of building affordable housing, such as simplifying building codes and regulations, using cheaper materials, and embracing new construction technologies.

Unlocking land for development: Land is often scarce and expensive in urban areas, making it difficult to build affordable housing. Governments can help by providing land at a lower cost, creating land trusts to ensure long-term affordability, and promoting the development of unused or underutilized land.

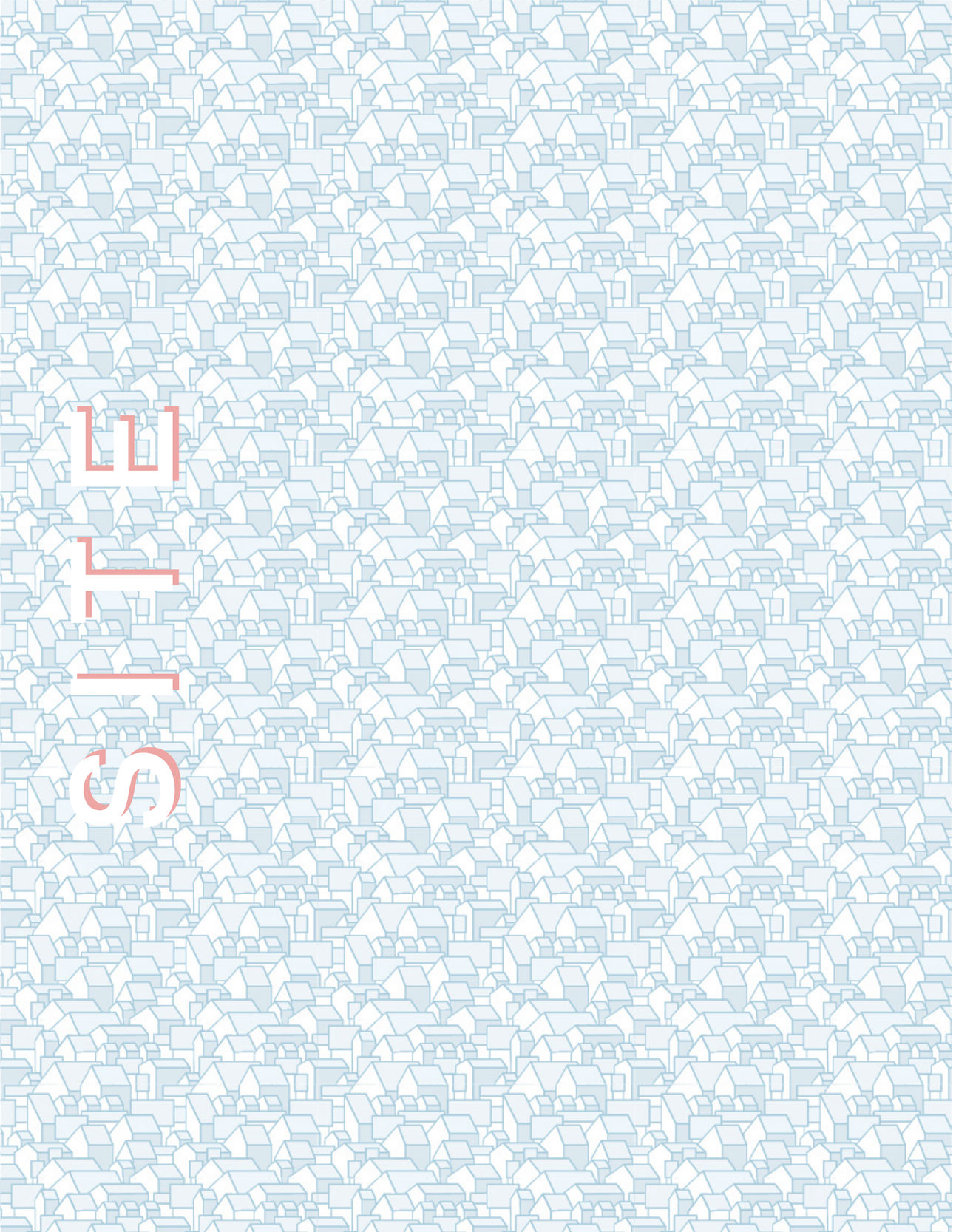
Increasing access to financing: Many people cannot afford to buy or rent a home because they lack access to affordable financing. Governments can support affordable housing finance programs, such as subsidized mortgages and rental subsidies, and encourage private sector investment in affordable housing.

Improving urban planning: Poor urban planning can exacerbate the affordable housing crisis by creating sprawl, congestion, and environmental problems. Governments can promote compact, mixed-use development that integrates affordable housing with other uses and provides easy access to public transportation.

Enhancing social housing programs: Social housing programs can help provide affordable homes for low-income households. Governments can improve these programs by increasing funding, expanding eligibility, and improving the quality of housing.

Encouraging innovation: New technologies and approaches, such as modular construction and community land trusts, can help reduce the cost of building and ensure long-term affordability. Governments can encourage innovation by providing research and development funding, supporting pilot projects, and creating regulatory sandboxes to test new ideas.

Overall, addressing the affordable housing challenge will require a concerted effort from governments, businesses, and civil society. By taking a comprehensive approach that addresses the root causes of the problem and leverages new technologies and approaches, it is possible to provide adequate and affordable housing for all.



SITE FLEXIBILITY

One of the main objectives of this project is to design a building system that can adapt to different contexts and environments, without requiring extensive modifications or adjustments. The system is intended to be versatile, modular and sustainable, and to offer a range of possibilities for different functions and users. Therefore, the project does not focus on a specific site or location, but rather on the general principles and criteria that guide the design process.

However, to illustrate the potential applications and benefits of the system, some examples of possible site locations are provided in the following sections. These examples are not meant to be exhaustive or definitive, but rather to demonstrate how the system can respond to different challenges and opportunities in various settings.

Site 01

295 Madrone Street
Redwood City, CA 94061

Site 02

1612 South Jackson Street
Seattle, WA 98144

Site 03

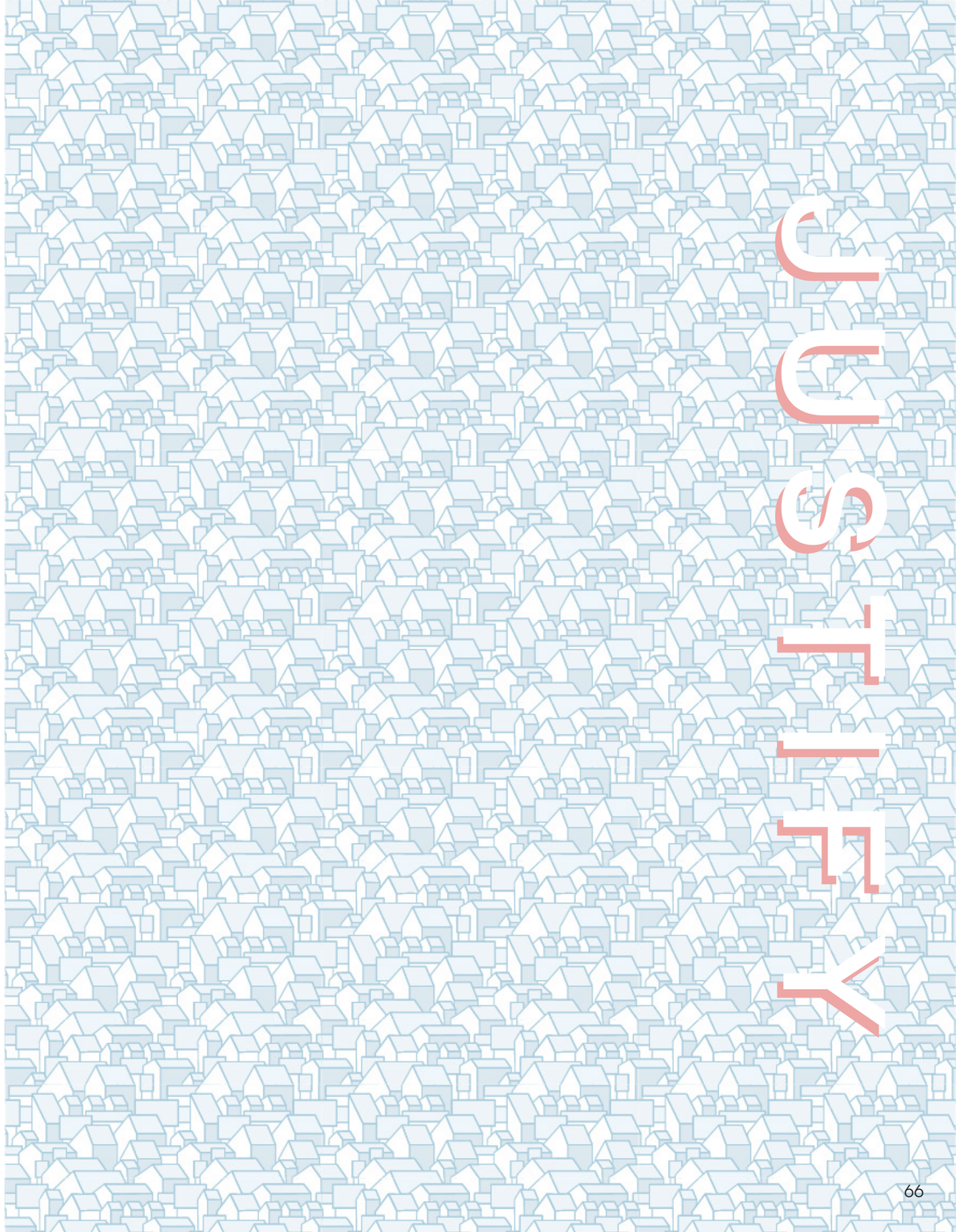
530 Southwest 2nd Avenue
Portland ,OR 97204

PROJECT JUSTIFICATION

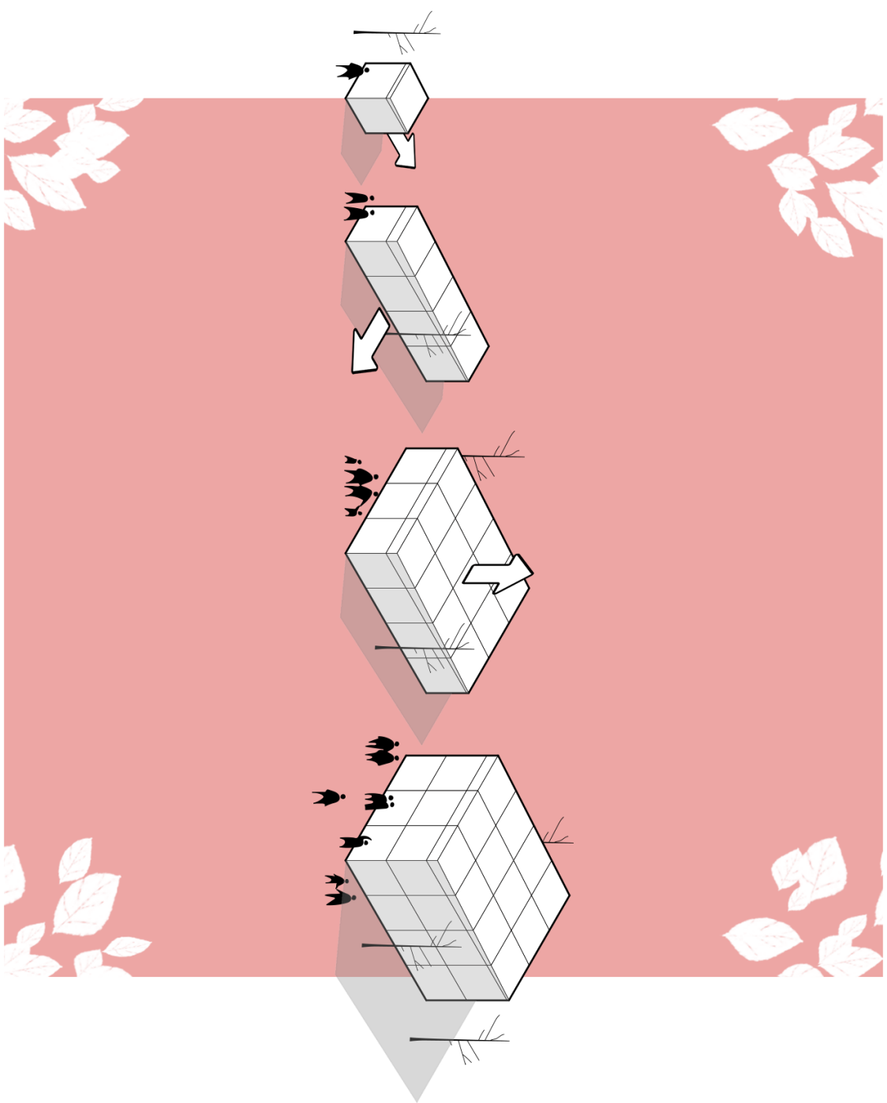
The purpose of this Thesis project is to conduct an extensive research and design project that will challenge me to grow as a person and as a designer. I will explore a thesis topic that I am passionate about and that I believe has the potential to benefit many people. My goal with this research is to demonstrate why investing in low income housing, downsizing home size, or adding an extra unit to your property should be a high priority in this country. I will persuade others why designing and building a suitable modular building system is essential for the improvement and development of the country.

I selected this project typology because I have a strong interest in the future of optimizing the functionality and density of urban areas in a smart and effective way. My curiosity in alternative and minimal living inspired me to further investigate this topic and try to make a positive difference. Cities should not be prohibitively expensive to live in, especially for those who work there. There are many opportunities for utilizing unused or wasted space such as parking lots. If only the city and developers would take the time to efficiently use these areas instead of opting for the cheapest route in order to make money.

I believe this project will be very valuable to explore different ways of thinking about the use of wasted areas in cities and suburbs in order to help lower living cost and increase living spaces for a better and healthier economy.



SOLUTION



PART 3

GOALS TO ACHIEVE

Multiple Use Cases

Home

ADU (Accessory Dwelling Unit)

Apartment

Rentable Space (AirBnB)

Office / Work Space

`

Flexible Location

Flat Packable

Modular Layout

Stackable

Adjustable Foundation

Obtainable & Sustainable

Easy Prefabrication

Ease of Assembly

Minimal Tools Needed

Use of Common Materials

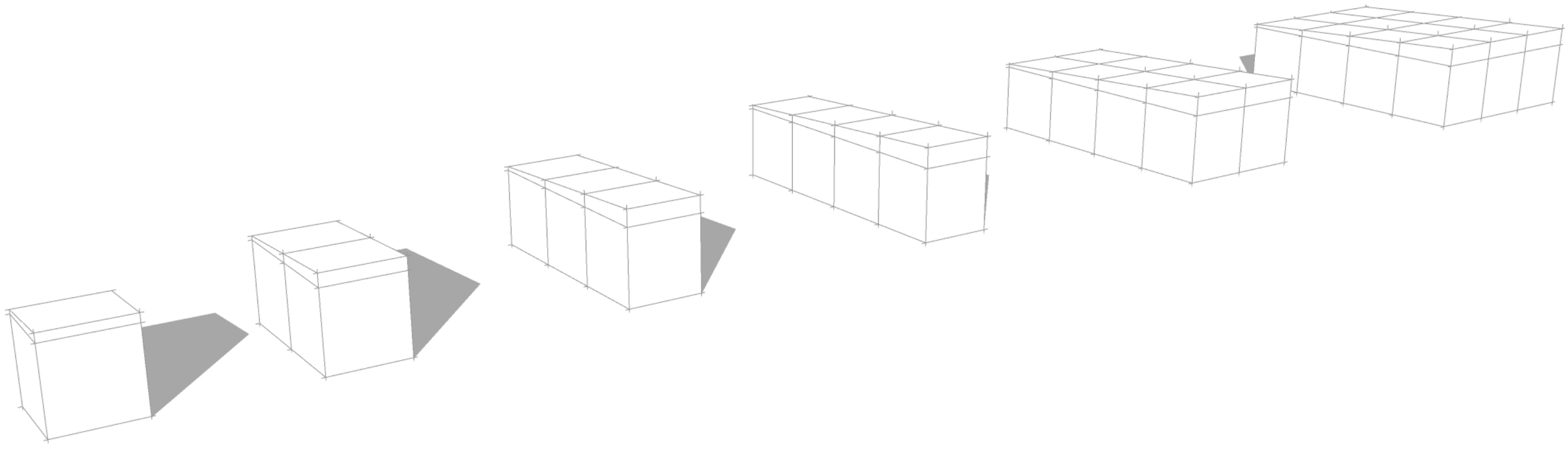
PROCESS

8x8’ Cubes

Flexible Orientation

Designated Add on Locations

Consistent Structural Support

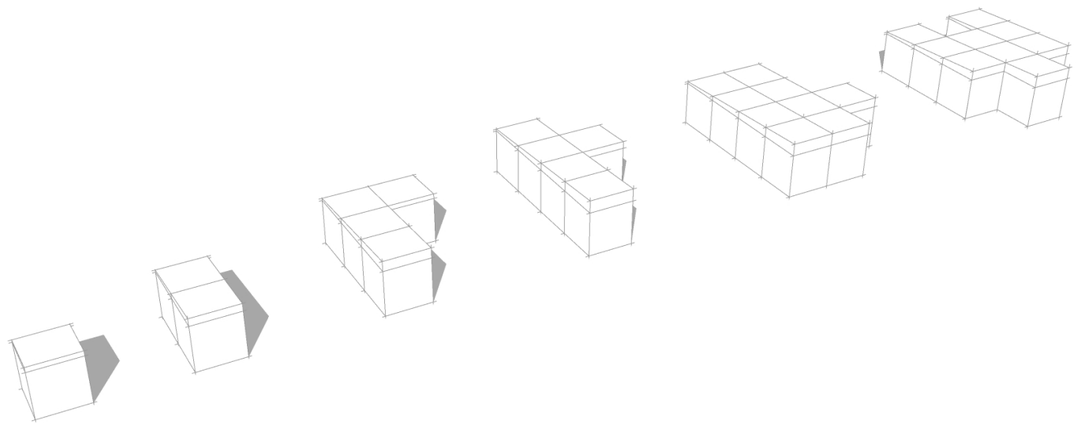


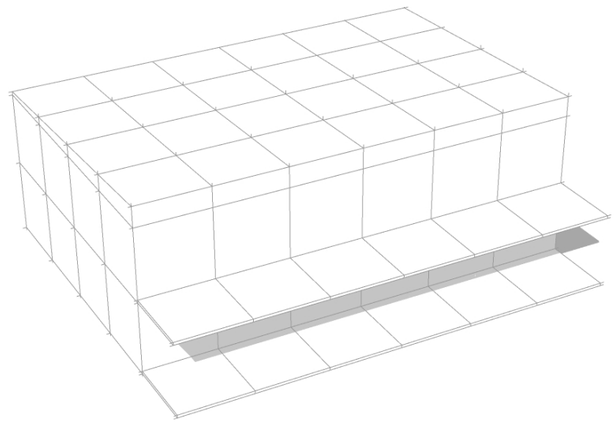
PROCESS

Cubes Create Flexible Layout

Attainable Odd Shapes

Stackable Layout Possible





PROCESS

Panel System

Panel Type System

Prefabricated

Arrangement Flexibility

Reduced Material Cost

Same Size

Structure

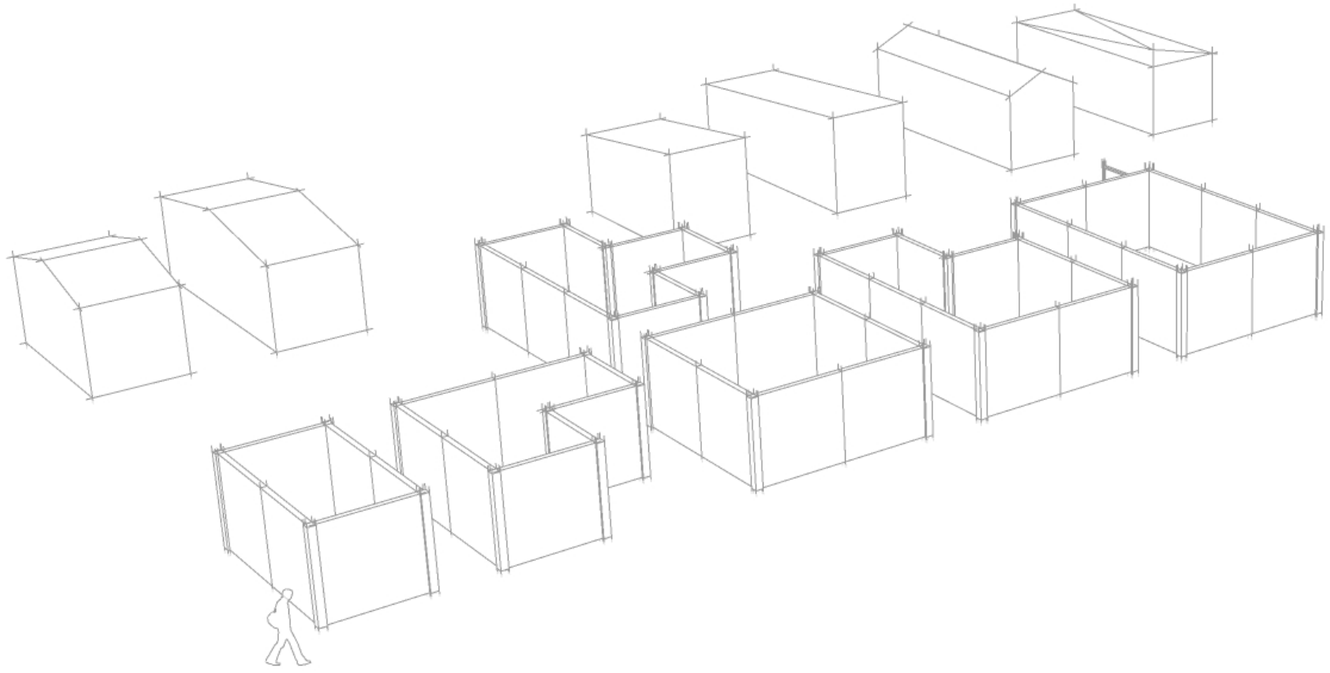
Many Different Iterations

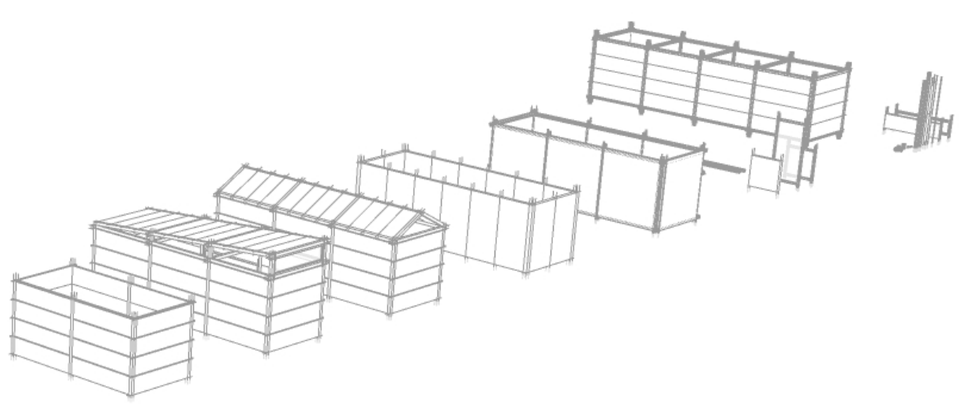
Conventional Ideas

Extruded Aluminum

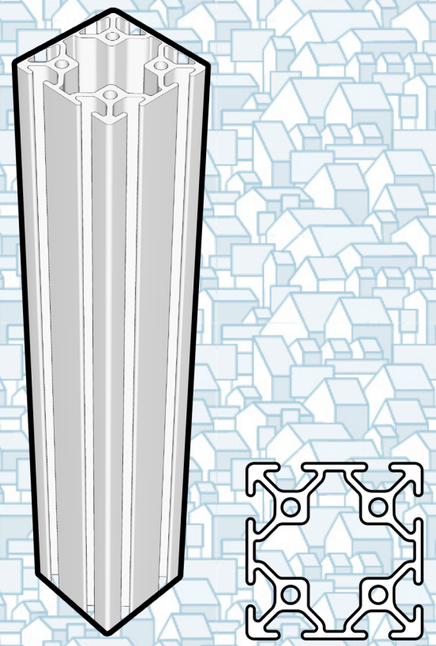
Modular

Slot System



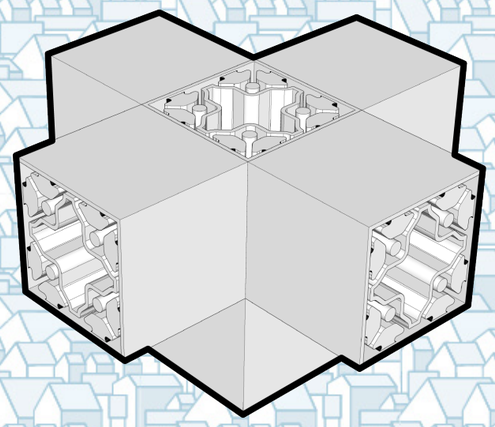


STRUCTURAL SYSTEM



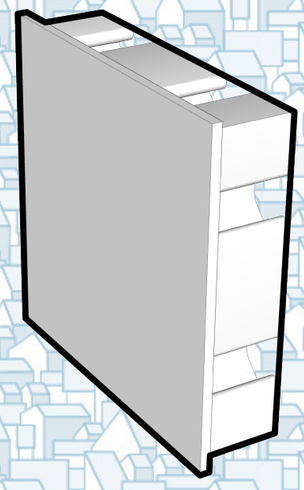
Extruded Aluminum Structure Post

4’ x 4’ extruded aluminum posts.



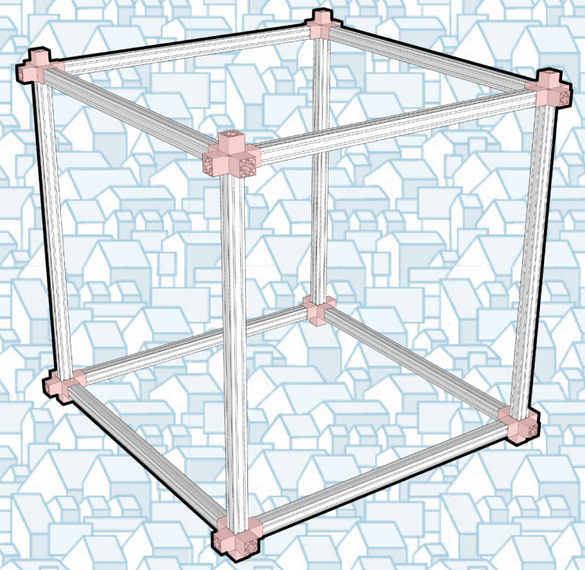
Post Joinging Bracket

Each Post will slot into this six sided bracket.



Joining Bracket Cap

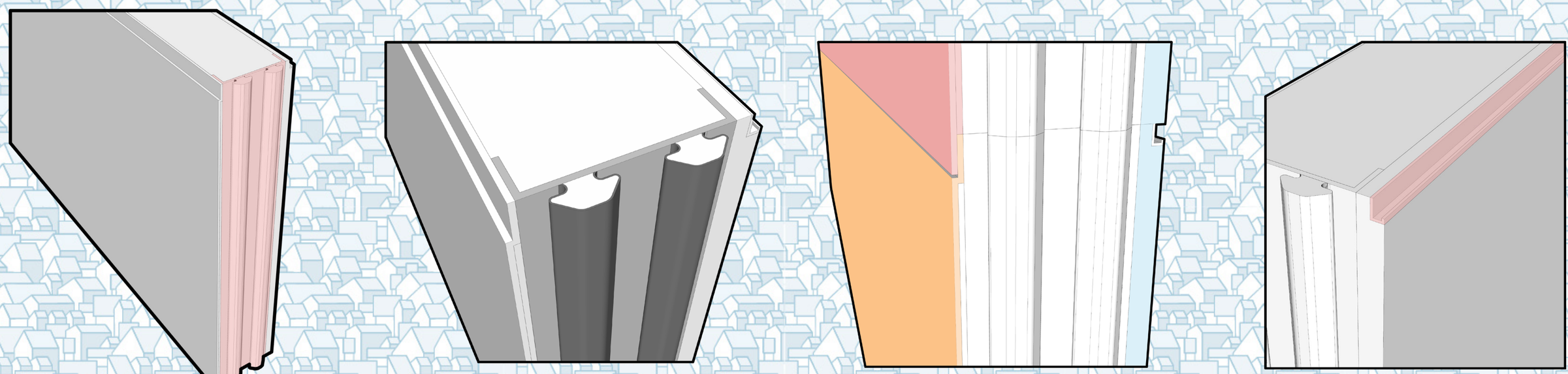
For those pesky sharp edges... Also weather sealing.



Obtainable & Sustainable

These pieces put together create the basic framework for each cube of the system.

WALL PANEL SYSTEM



SIPs Wall w/ Aluminum Channel

2’ x 8’ wall panels that contain an aluminum channel in order to slot into the structural posts.

Aluminum Channel Weather Lining

A rubber lining surrounds the channel bracket to prevent the outside from getting in.

Wall Panel Exterior & Interior

Pink - Overlapping cladding.

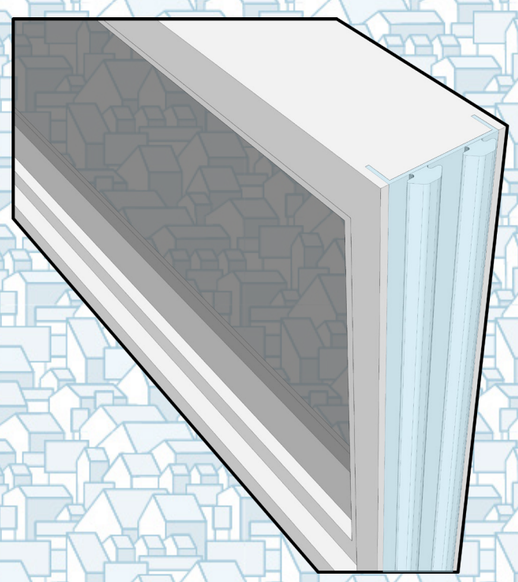
Orange - Aluminum panel cladding.

Blue - 5/8” Plywood

Aluminum Hanging Channel

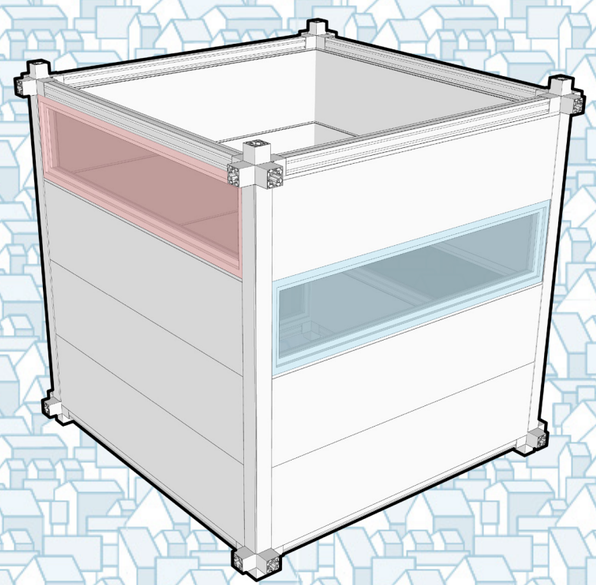
Interior aluminum channel gives the ability for hanging photos or art in a non-destructive manner.

WINDOW PANEL SYSTEM



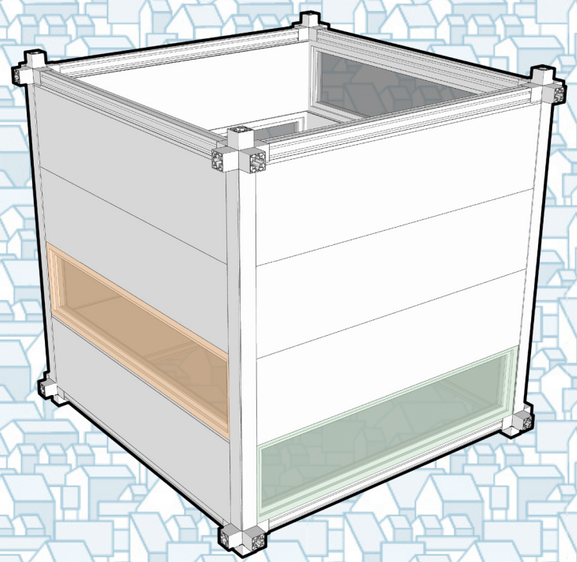
Window Panel w/ Aluminum Channel

2’ x 8’ window panels that contain the same aluminum channel as the wall panels.



Flexible Window Panel System

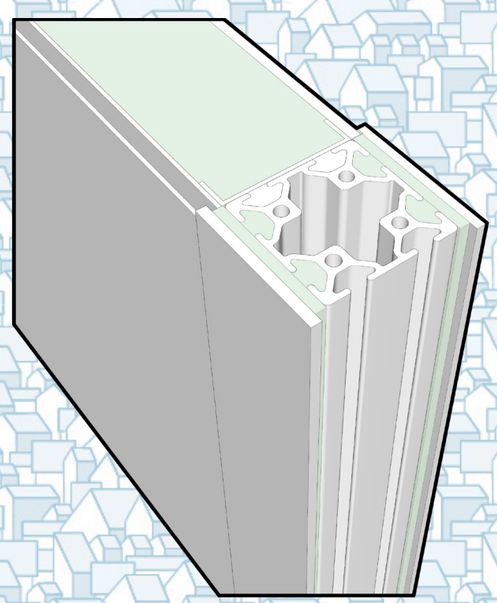
Windows are able to be placed in any of four different locations for optimal customization.



Flexible Window Panel System

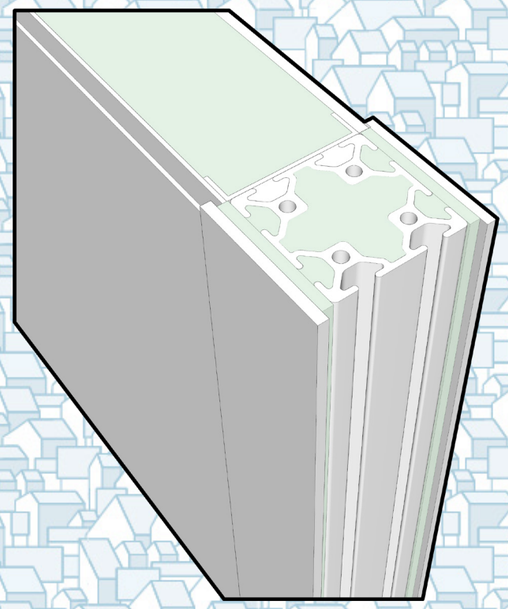
Windows are able to be placed in any of four different locations for optimal customization.

INSULATION INTEGRATION



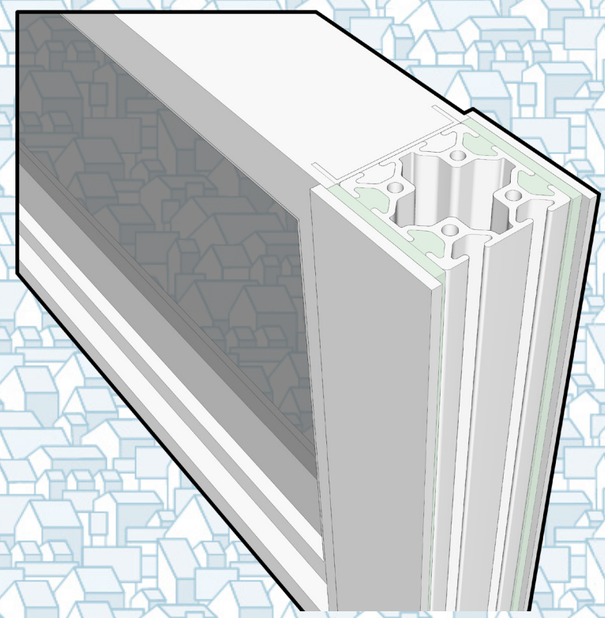
SIPs Wall Panel Insulation

Each wall panel is designed with 4” of rigid insulation between the interior and exterior panels.



Filler Insulaton

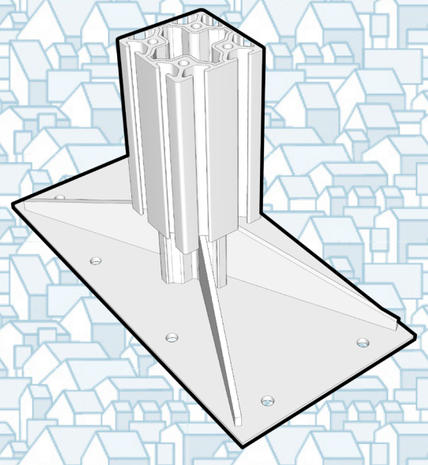
Formed rigid insulation is used in the middle and outsides of the aluminum posts to help with thermal bridging.



Insulated Gap Panels

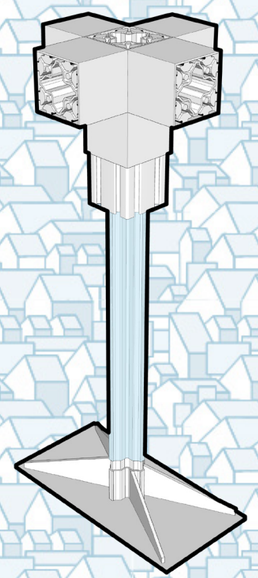
The gap panels are a formed to slot into the aluminum system and have a 5/16” panel on the outside.

FOUNDATION SYSTEM



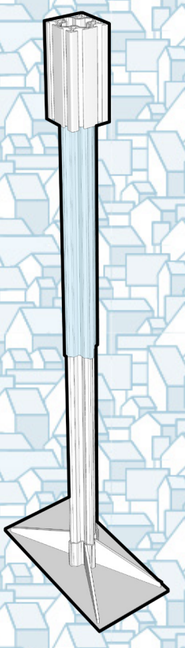
Stationary Foundation Feet

These foundation feet are intended to be used for even surfaces, such as a concrete slab or concrete foundation posts.



Adjustable Foundation Feet

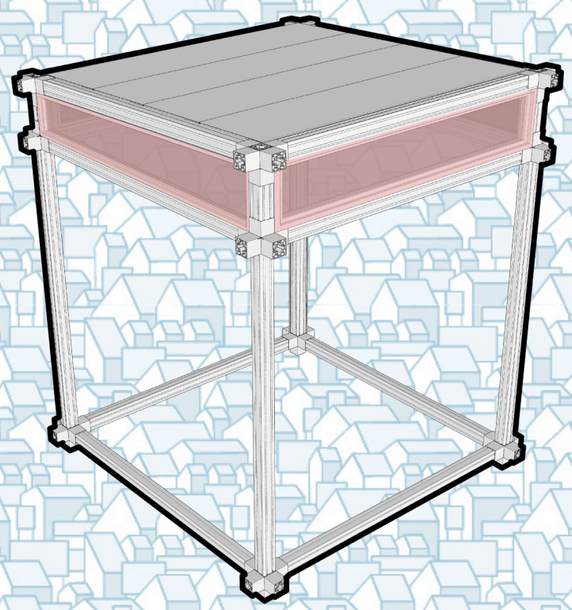
These adjustable foundation feet are meant to be used on uneven surfaces, such as non-level terrain in a backyard.



Extended Foundation Foot

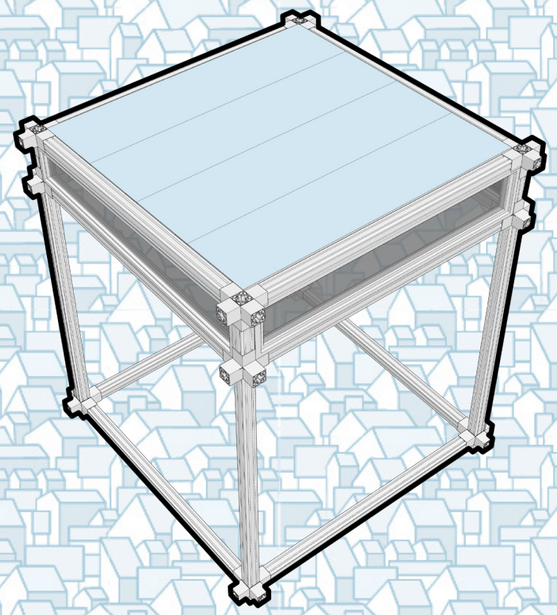
This is an image of an extended leg post. The legs are about 2’ un-extended and 4’ extended.

ROOF / FLOOR SYSTEM



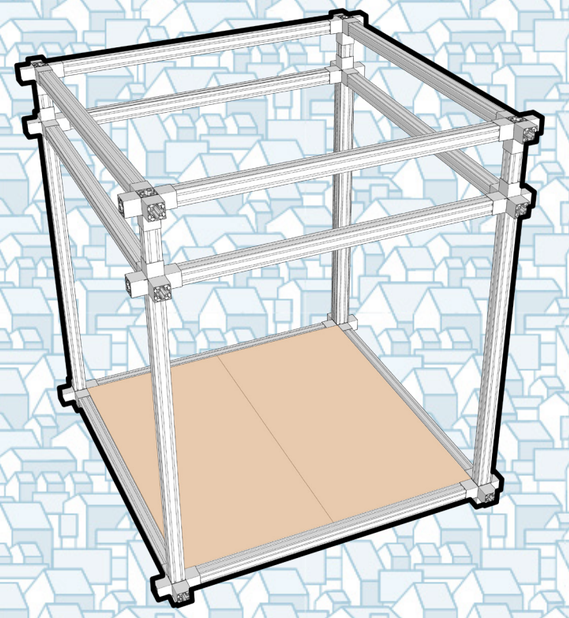
Roof Window Panel System

The window panels on the roof system add additional light to the space as well as still maintaining privacy.



Roof Panel System

The roof panels are the same 2’ x 8’ panels that the wall system uses. This allows for there to be less pieces individual pieces during construction.

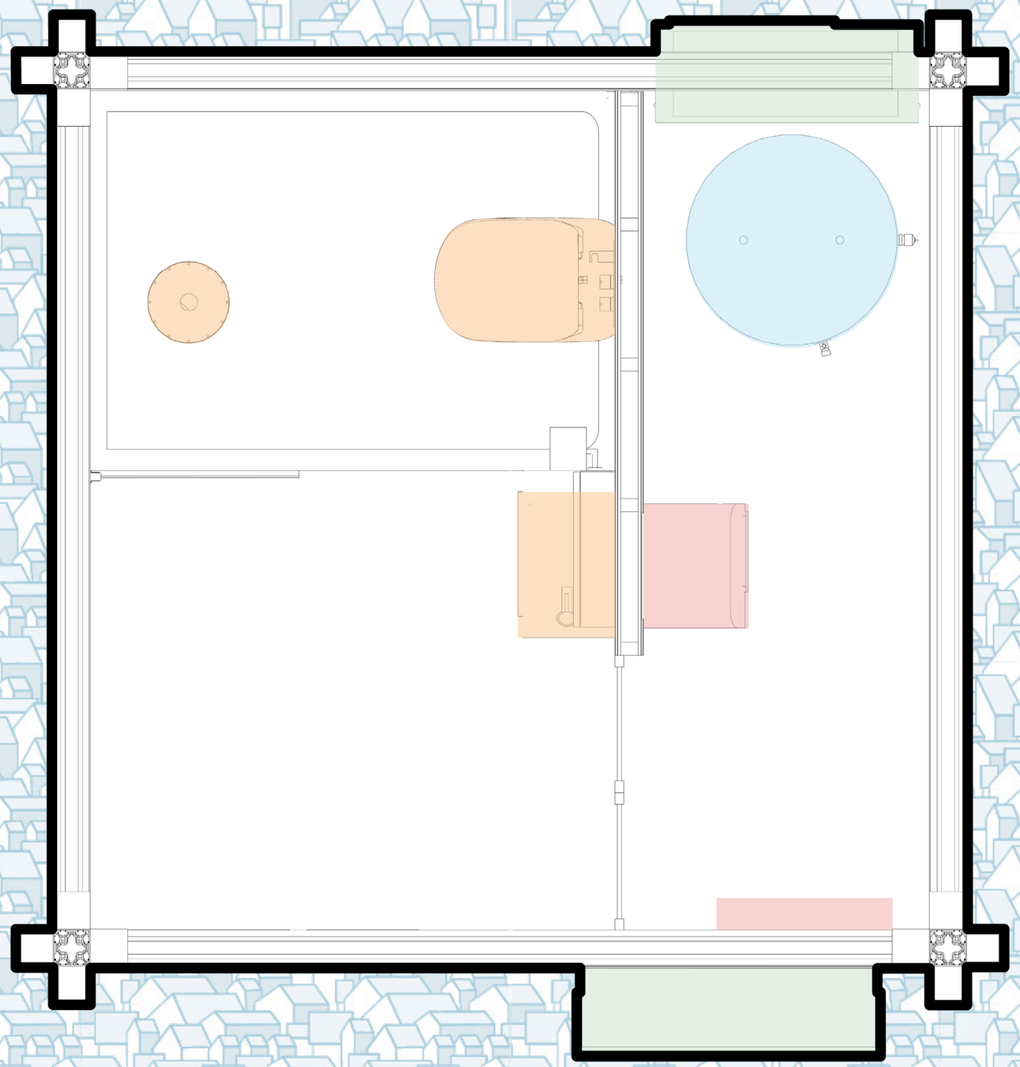


Floor Panel System

The floor panels are a similar construction to the walls, however they are 4’ x 8’. This and a metal brace under the panels ensures for a sturdier floor system.

UTILITIES

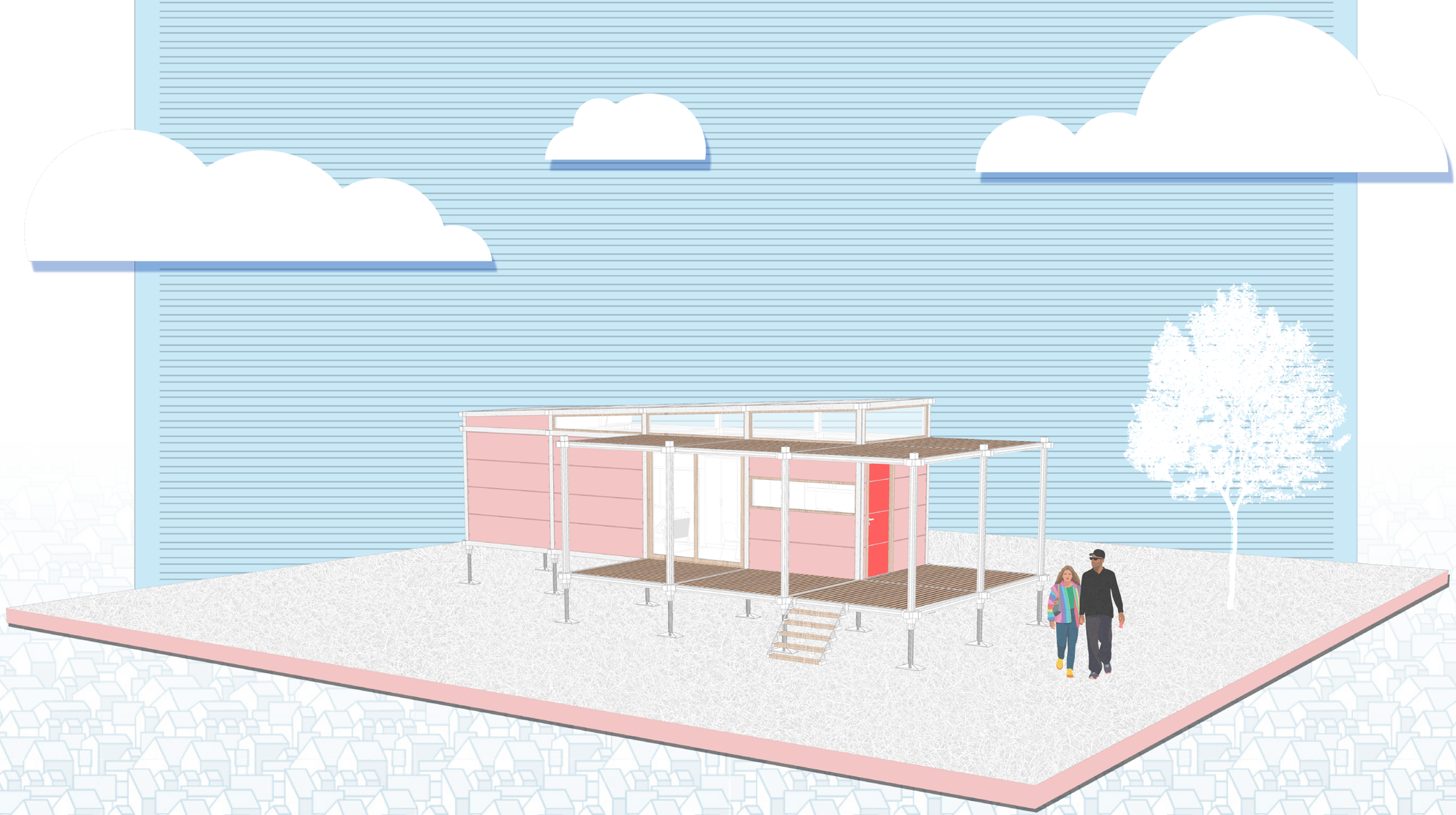
Plumbing Fixtures
Off-Grid Capable



Tankless Hot Water
Heater and
Electrical Breaker

Mini-Split A/C &
Heating System

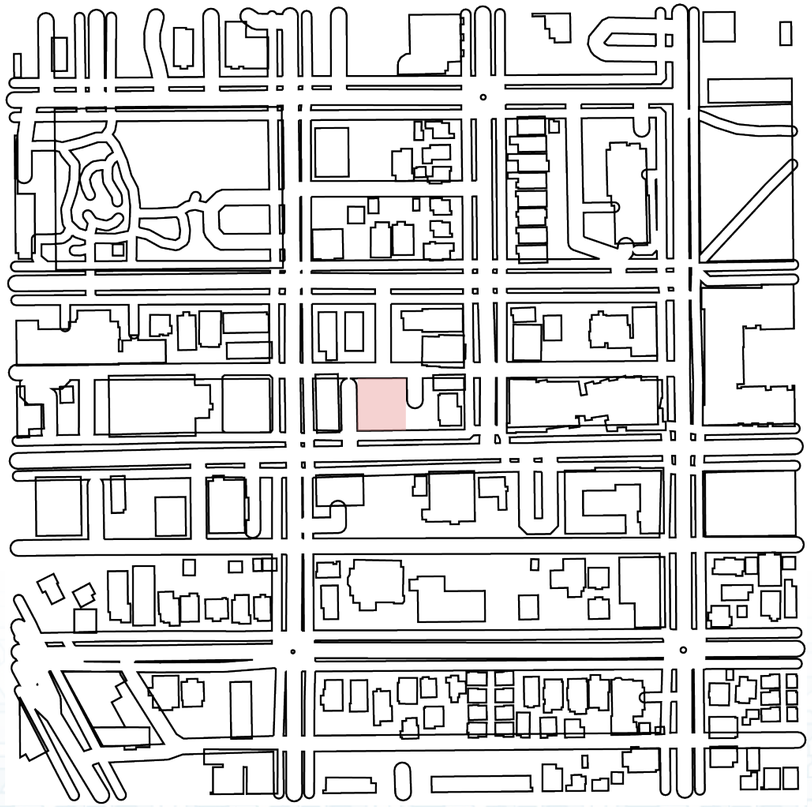
Water Tank for
Off-Grid or
Hot Water Heater



MULTI-MINIMAL

Site 01

295 Madrone Street
Redwood City, CA 94061
Type: Accessory Dwelling Unit (ADU)



Site 02

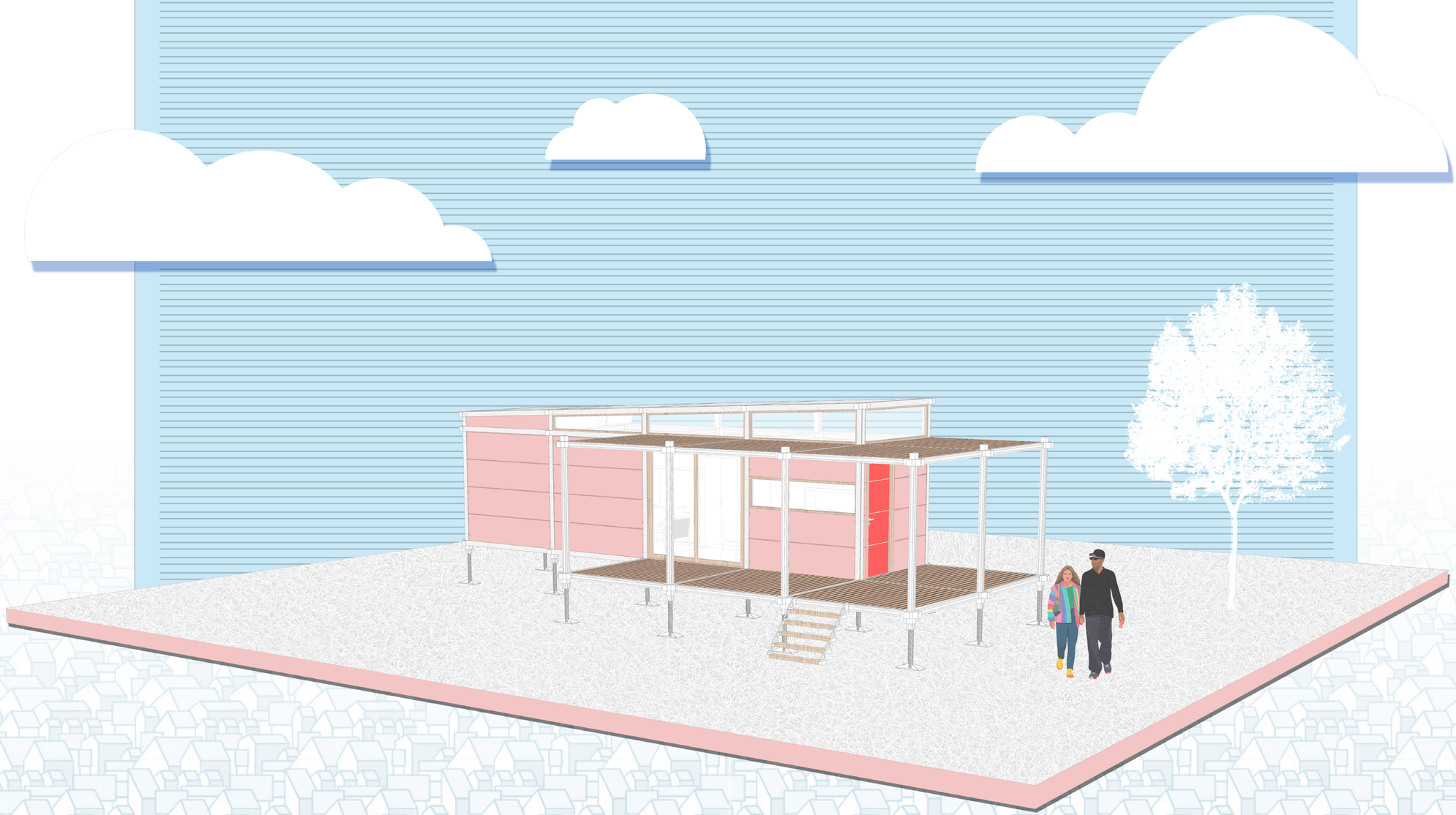
1612 South Jackson Street
Seattle, WA 98144
Type: Single Family Home

Site 03

530 Southwest 2nd Avenue
Portland OR, 97204
Type: Multi-Family Residential

SITE LIST

I chose to focus on three different sites for this project. These sites will be used as different typologies, yet are all located in areas that have very high living cost. These show that something affordable can be put in any type of area to help compress housing in areas that are increasing in price and decreasing in availability.



ACCESSORY DWELLING

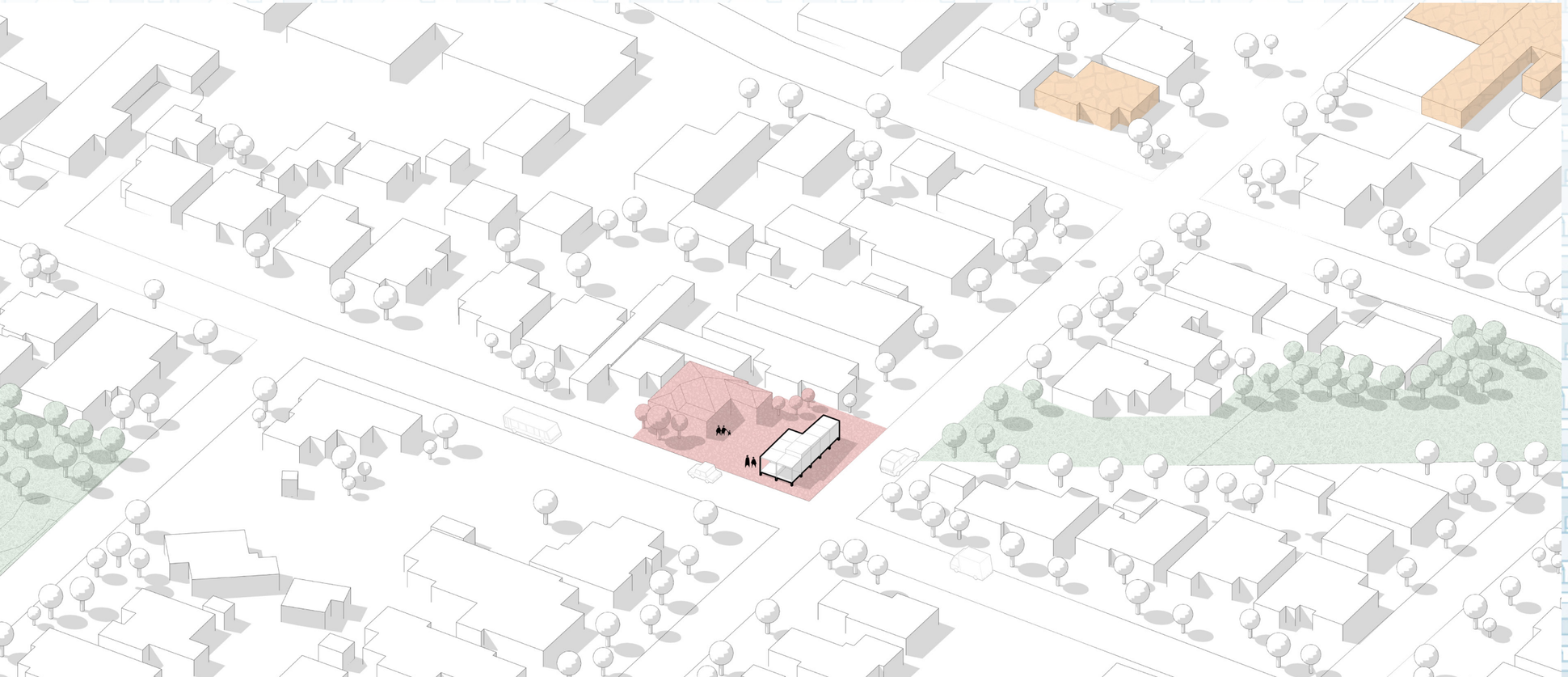
REDWOOD CITY

This unit is located in Redwood City which is a city just Northwest of Silicon Valley. It is currently a single family home in neighborhood close to the center of the city. It is in a nice area that is in close proximity with two public parks. The lot is on the corner, so has plenty of yeard space that is good for family activities.

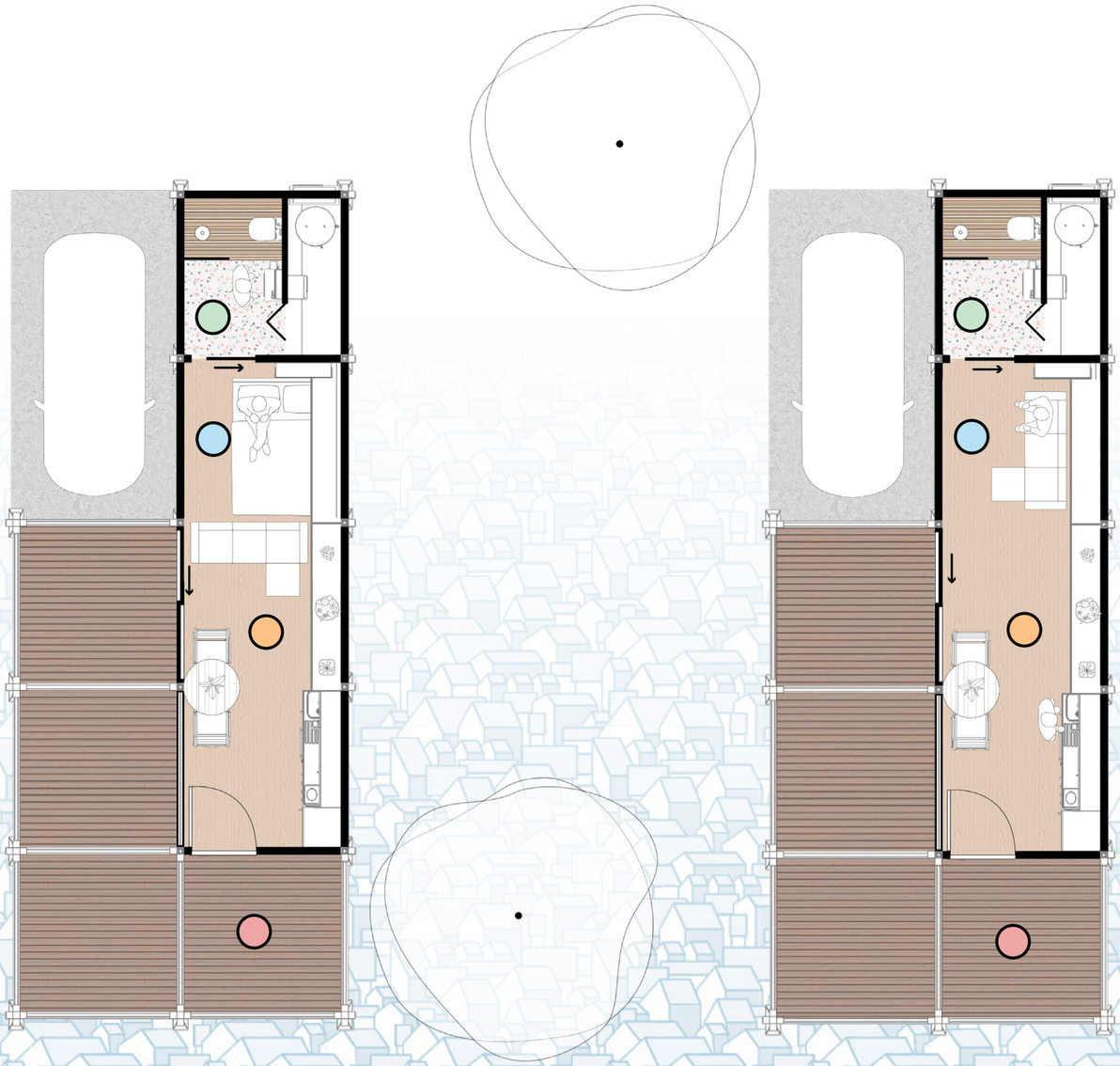
Site Location

Local Retail

Local Parks



FLOOR PLAN



Murphy Bed Open

Murphy Bed Closed

Wood Deck

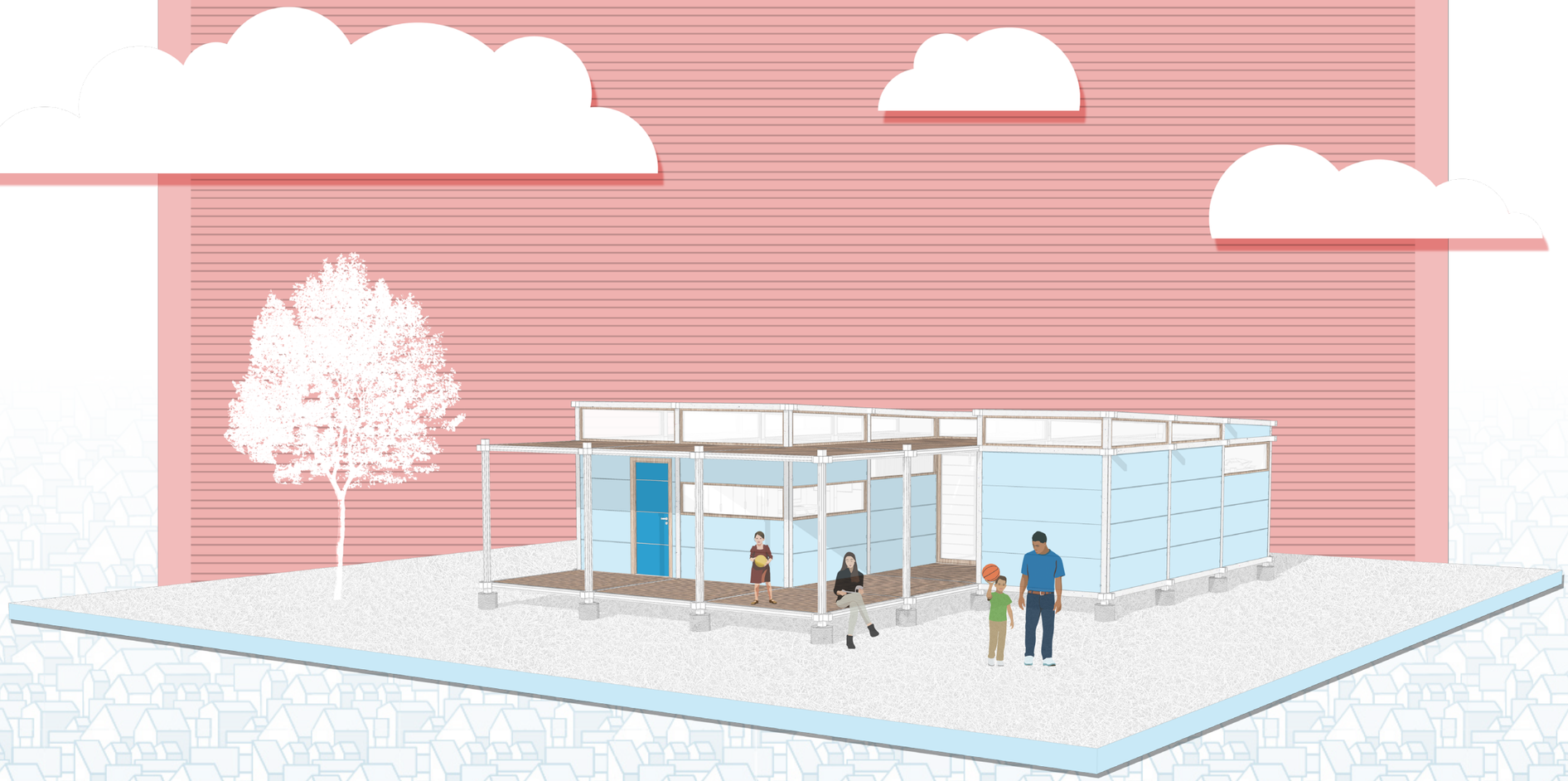
Kitchen / Dining

Living / Bedroom

Bathroom / Mech.

The structure is place in the yard and is used as an accessory dwelling unit (ADU). This design is one of the smallest livable options that Multi-Minimal can provide. It is set up as a studio where the bedroom and living room are shared. installed is a murphy bed for easy transformation from day living and night sleeping. In the back is a full bathroom with a walk-in shower, and a mechanical closet for utilities. There is built in storage for clothing and other needs. There is a small kitchen and dining space in the entry of the unit, as well as a large sliding door that opens to an expansive wrap around deck. There is a possibility of having a concrete or dirt pad that would perfectly fit on vehicle at the back two cubes. It is a perfect size for this use case, and if later on an ADU is not needed, it can be easily deconstructed moved off site.

Studio Unit:
256 Square Feet



SINGLE FAMILY HOME

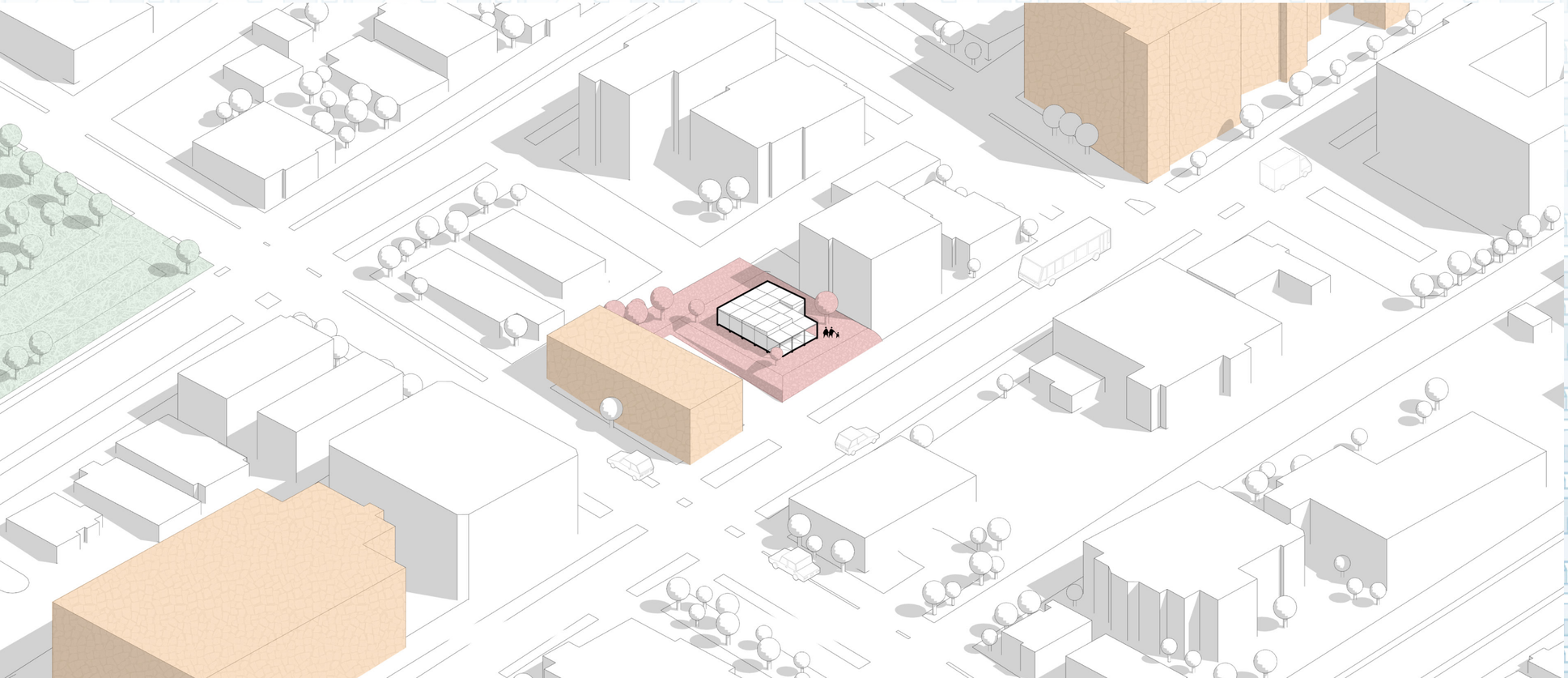
SEATTLE

This unit is located just East of downtown Seattle Washington. It is currently a vacant lot that hasn't any use at the moment. The area has been recently growing with many housing and apartment developements popping up, as well as many new retail locations. the lot is in between a market and a small apartment building.

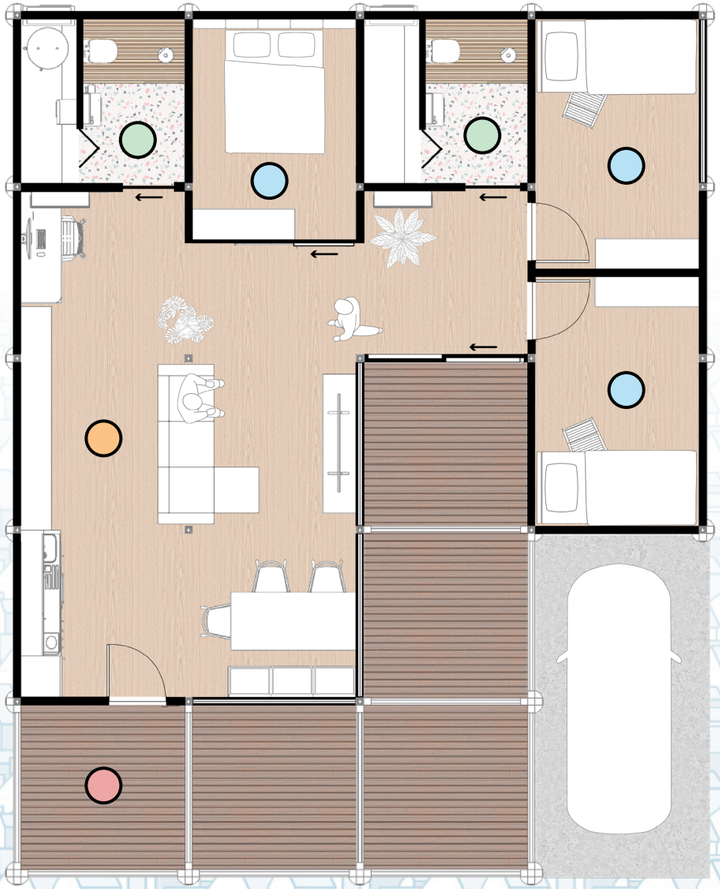
Site Location

Local Retail

Local Parks



FLOOR PLAN



Wood Deck

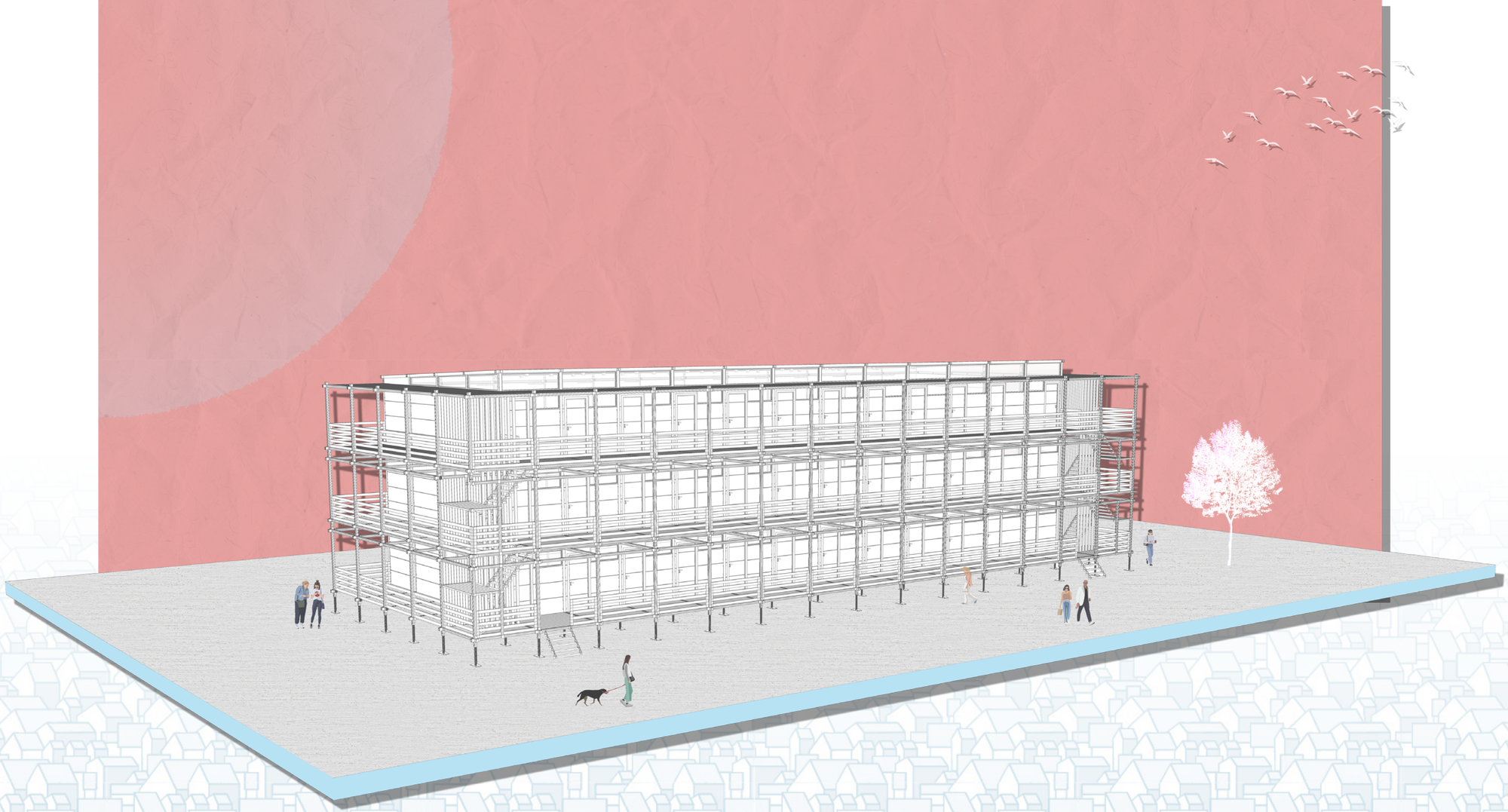
Kitchen / Dining / Living

Bedroom

Bathroom / Mech.

This design is quite a bit larger than the last and is able to comfortably house four people. There are three bedrooms and two bathrooms in this layout.
Walking in you will be greeted to the kitchen and dinging area as well as the living room that has storage along most of the wall. There is a small desk space in the corner for the option of working at home. The first bathroom is located off of the living area and houses the mechanical closet. The second bathroom has an open closet for plenty of storage space, or a washer and dryer. the master bed and the other two bedrooms all have wardrobes for clothing space and the two smaller rooms have lofted single beds to accomodate a desk area beneath. This design also has a large sliding door that goes out onto a deck for spending time outside. Like the smaller unit, this design has a space for a possible car parking area. This is a layout that would be perfect for a small or new family.

Three Bedroom:
832 Square Feet



MULTI-FAMILY

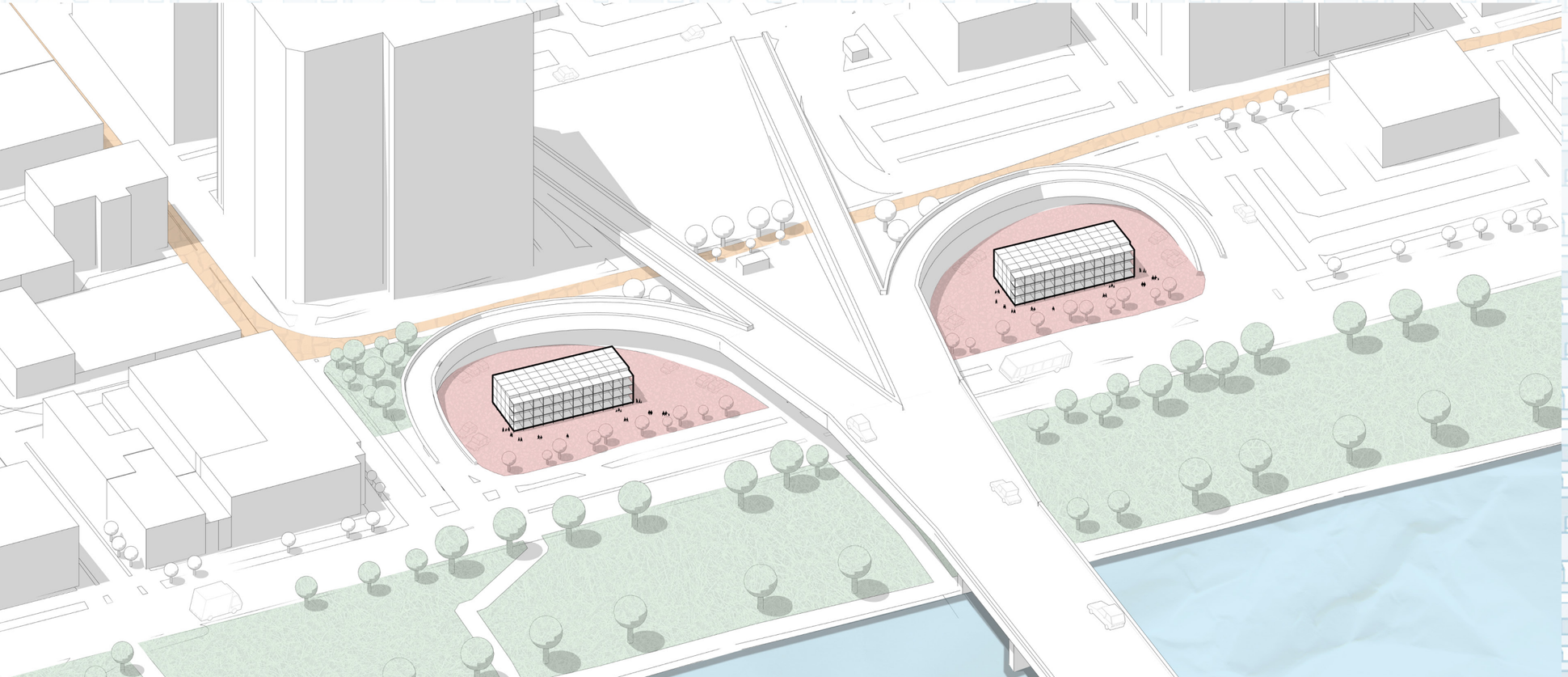
PORTLAND

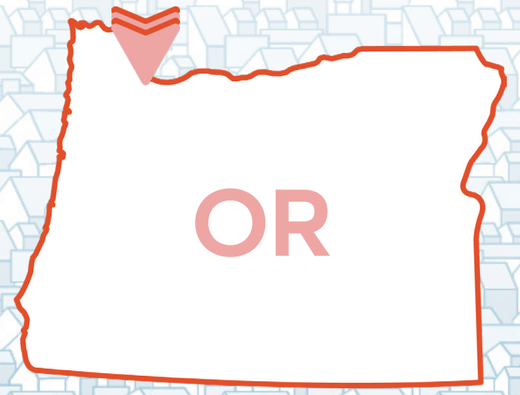
These units are located in the heart of downtown Portland Oregon.
Nested between two off ramp loops, it is a prime location to get anywhere easily. The site is currently a parking lot, which is perfect for this structure to be set on. Close by is a bus stop and the local city train that runs right next to the site. With being so close to the river and right next to a park with walking trails, this is a prime location for people who want a well-rounded life in the city.

Site Location

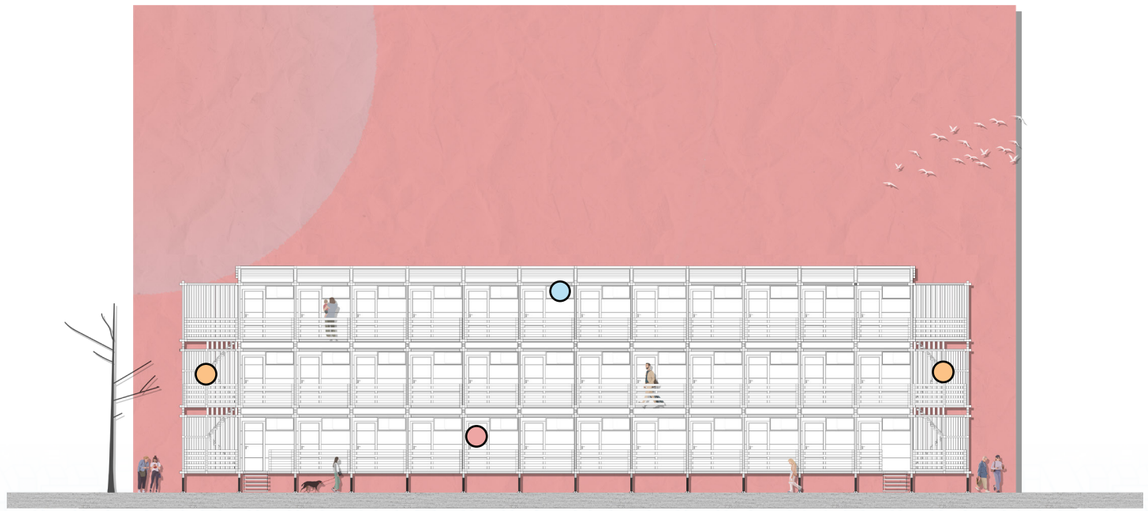
Public Transportation

Local Parks

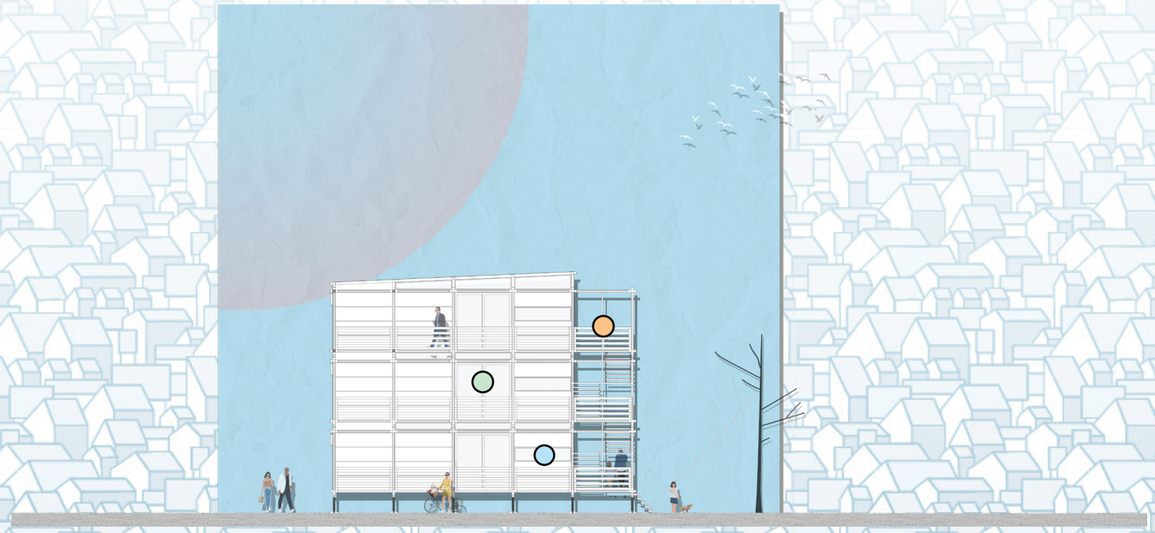




ELEVATION



Front Elevation



Side Elevation

Door to exterior on all units

Staircase to units

Windows on all units

Deck & sliding door for side units

This design is a stackable system that has 36 units in total. Each level consists of 12 units with outdoor entrances for a “front porch” feel. The structure has two stair cases on either side for ease of access. The units on the ends each have a glass sliding door and a private porch area for possibility of outdoor living and entertaining. Every unit has windows on the front portion to let light into the living space. this style of design would be super flexible and could be used for many different situations such as temporary housing in vacant lots or disaster relief housing.

36 Individual Units:
256 Square Feet Each

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TUCKER SCHOENFISH

STUDIO EXPERIENCE

2nd

Fall 2019
Charlott Greub

Olafur Eliasson Studio
Residential Studio
Moorhead, MN

The Oar House
Rowing Club Boathouse
Minneapolis, MN

Spring 2020
Ronald Ramsay

Gordon Residence
Residential
Marfa, TX

Clean Slates Family Shelter
Multi-Use Building
Fargo, ND

3rd

Fall 2020
Regin Schwaen

Puzzle City
Multi-Use Competition
Yangliuqing, China

Nekoma MOMA
Museum
Nekoma, ND

Spring 2021
Cindy Urness

Infinity Surgery Center
Healthcare Center
Fargo, ND

River Walk Pavilions
Pavilion Project
Fargo, ND

4th

Fall 2021
David Crutchfield

Sunset Plaza
High Rise Capstone
Miami, FL

Spring 2022
Amar Hussein

Marvin Windows Home
Residential
Lake Park, MN

Bal Laguna
Urban Design
Miami, FL

5th

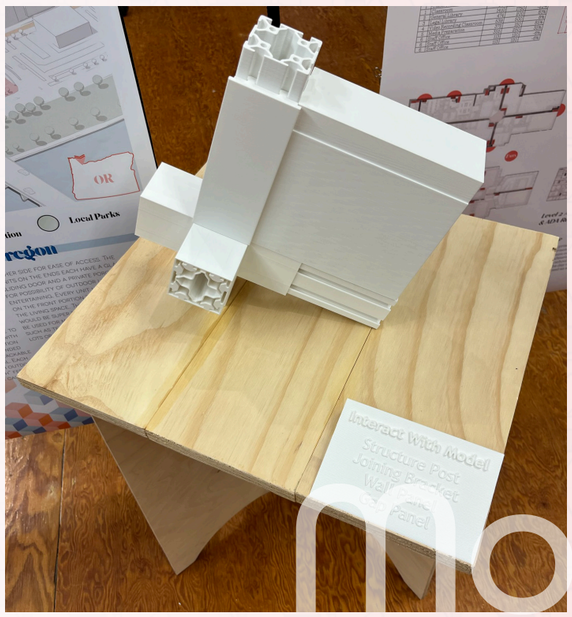
Fall 2022
Ronald Ramsay

Akron Board Game
Architecture Game
Fargo, ND

Multi - Minimal
Thesis Project
United States

BOARD EXHIBIT

Board



Model

THANK YOU!