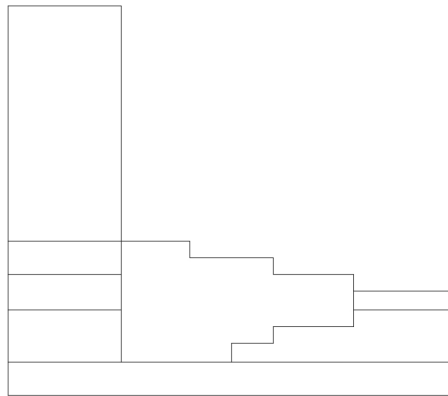


# Creating a city for a new generation of integration

in which young people with migration background  
have a sense of belonging



# Colofon

## Graduation Project

Tu Delft

Faculty of Architecture and the Built

Environment

Master Architecture

Name: **Alice Alkateb**

Student number: 4982886

Date: 29 June 2021

Advanced Housing Design Studio

Academic year: 2020 \ 2021

Mentors:

ir. T. W. Kupers

ir. F. Adema

ir. P.s. van der Putt



# Foreword

I would like to thank the following people for their help. For starters, I would like to express gratitude to my tutors Theo Kupers, Ferry Adema, and Pierijn van der Putt for their patience, enthusiasm, and constructive feedback with which they repeatedly pointed me in the right direction. In addition, I would like to thank everyone who has shown any interest in my research activities and design and motivated me along the way. Constructing this final result was a long haul, but it seems I managed to create something that could make itself useful at some point in the future. I am proud of that.

I would also like to thank all my colleagues and my family, especially my parents. You have always ensured that I was able to study carefree and develop into who I am today. I am very proud of everything I have learned in the past years, but much more of the standards and values you have imparted to me. You have worked very hard and shown a lot of perseverance to be able to give this life to us and I am very grateful for that. I am very much looking forward to what I will learn in practice in the coming years and hope that I can share that with you indefinitely.

This project was done in the Advanced Housing Design Studio, within Master of Architecture at the Delft University of Technology. This project aims to construct residential buildings in the Merwevierhaven M4H in Rotterdam. The main interest in this project is about securing a better future and the shortage of residential buildings in the Netherlands is the main theme of the studio. To find solutions to this important issue, we have to study how to settle

a large number of people in an area with a high population percentage, such as the city of Rotterdam.

This book summarizes the hard work that took place over a whole year and explains all the stages down to the final product. The initiation was very interesting for me personally, through which I learned a lot of new things in different fields and got information that I did not know during my previous years of studying architecture. One of this new information that I gained is how to build a building out of wood and everything related to that. I found this topic very important for future buildings, so I will increase my knowledge in this field. Lots of things were clarified in this project during this year that provides me with a clear vision about the future profession and what path I will follow in the coming years.

The graduation project is one of the special moments that happen in a person's life. It was a very special year for me despite the stress at some times due to the lack of social interactions with my fellow graduate students because of Covid-19. Because of the strict measurements, we didn't have fun together and couldn't keep working on our project at the faculty. Despite all the hard times, this project was very interesting all the time and especially in the deep discussions we all have with the mentors during the tutoring.

Alice Alkateb  
29 June 2021

# Introduction

This book will cover all stages of design and research. Initially, some pages will be shown about the first assignment we had in the first quarter of the year. It was about studying the collectiveness in residential buildings. Then an important decision was made about who the group of people I will design the houses for, which will be briefly explained in Chapter Three. In my case, the young people with migration background was chosen. This group was experiencing many difficulties in finding suitable homes, especially in the last five years, when the number of people coming to the Netherlands increased dramatically. During the research phase, their needs were examined at the building level and some solutions were found. Therefore, I decided to conduct a deep research on this topic and to facilitate some things by building affordable housing for young people.

After reaching many results, the design phase is about to begin, but before that we conducted a case study of many residential buildings and analyzed them in different topics and the result of this analysis is included in the fourth chapter.





The fifth chapter is about the design and the starting points will be explained in detail. The chapter that follows the design is the study of all the aspects related to construction, building technology and the materials that was used for the interior and the exterior elevations.

In addition, there are plans on how to ventilate, cooling, heating the building and provide a comfortable living environment for the residents.

The seventh and final chapter of this book includes a reflection report on the relationship between the design process and research. What types of research were conducted to be of assistance to all stages of design in addition to including the relevance between the design project and the social context.





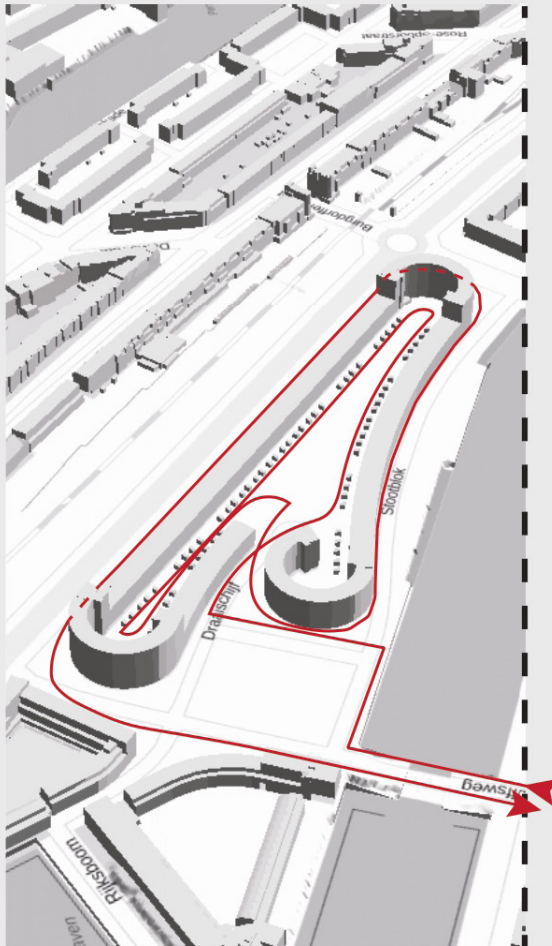
# Content:

- Foreword
- 1- Collectiveness assignment
- 2- Location & Urban design
- 3- Research report
- 4- Case studies
- 5- Design
- 6- Technical aspects:
  - Construction
  - Facade fragments
  - Building technology
- 7- Reflection report
  - Reflection report bibliography
  - Research report bibliography



# Collectiveness assignment

Case study: Peperklip - Rotterdam



## Introduction:

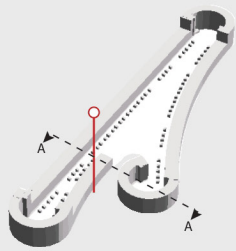
In the following pages, it will be explained how and where the interaction took place, and this was done through pictures of several areas outside and inside the building to determine also the spatial quality of the building and its role in this interaction.

These pictures were taken while visiting the building at different times and days to see different types of people. The last page contains a simplified conclusion of what was presented in the rest of the pages, but with an explanation of the architectural reason behind all these interactions.

A small note about adding some people later to the picture: The reason for this is that we sometimes face many difficulties when trying to capture the real scene while real people are around. Therefore, I decided to see the interaction between people and record the events that were going on, but the photo was taken later without the presence of real people to avoid disturbing them and violating their privacy.

Some of the informal conversations that take place between neighbors is this situation (one inside and one outside) due to that the only external contact of the house with the outside is this relatively small loggia. When one of the neighbors was standing in the street with his wife coming back from the supermarket because the woman was carrying a small bag and the other was on his balcony, they were talking to each other for a few minutes.

Street <-----> Loggia



This scene was repeated two more times on the same street one of them was between two women talking and deciding at what time they will go shopping and the second one was between two adjacent neighbours talking to each other from their loggias. Because of the shape of the balcony was slightly convex to the outside, this helped them see each other somewhat clearly.

At the entrance to the park, at the small roundabout, two girls (Diana and Nora), aged fifteen, were sitting talking to each other. In this confrontation, I chose to be a part of it, as I approached them more to share the conversation with them and ask them some questions. Nora (wears a black t-shirt) seemed a bit shy or maybe hesitant to give an initiative to talk to me, but she just smiled.

Therefore, questions were asked to Diana as follows:

Me: Do you live in this building and for how long?

Diana: No, I have lived in the neighborhood next door since I was born.

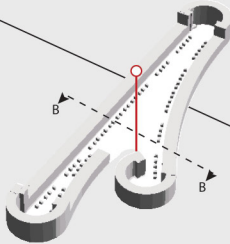
Me: Why are you here then?

Diana: I usually come here to see my friends who live here.

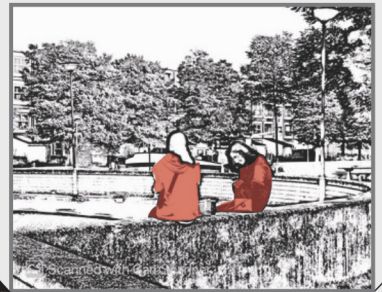
Roundabout



Section BB



2



Me: Do I understand from that that you think this place is suitable for meeting friends?

Diana: Yes, it's a car-free place to play in safely for the children.

Me: I see now there are only kids playing, is this the same everyday?

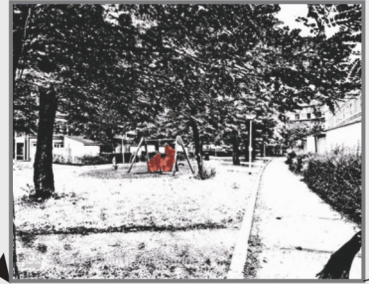
Diana: No, sometimes you also see old people sitting together.

Me: Would you mind if you shared the same place with people older than you?

Diana: No problem with that.

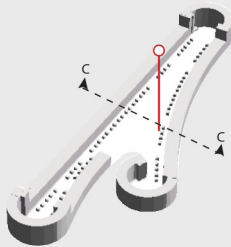
Around the grassland there are two roads connected to each other, forming an approximate circle. There were two boys cycling enthusiastically behind each other, looking like they were racing, and at the beginning of the road there was a man standing as the referee who was waiting for their return to see who won.

Inneryard - roads



Section CC

3

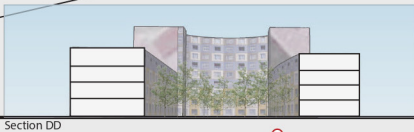


In the middle of the inneryard there are toys for children and some swings. There was a group of children aging between 8 and 12 years old playing and an old man swings them.

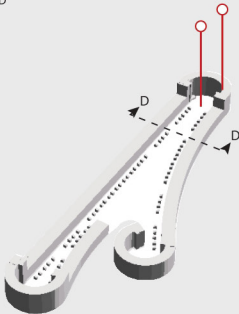
The presence of the playground in the middle part of the park creates a nice and relaxing atmosphere for the children to play in it safely surrounded by greenary spaces.

At the end of the courtyard on each side is the nine-story tall building that has galleries on the inside facade towards the park. When approaching one of these semi-circular areas, we heard an intense noise, evidence of the presence of people gathered in abundance. On one of these floors there were three children of similar ages playing together and running after each other from the beginning of the path to the end.

Galleries <----->  
squares



4



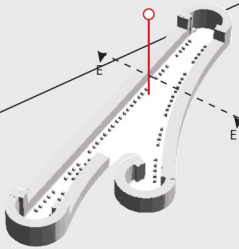
On a higher floor, a neighbor was standing at the entrance to the house, and at the same time her neighbor was coming from the staircase going towards his huis. They stood together for a few minutes talking about something, and then each of them continued their way.

The yard at the bottom of these semi-circular parts is considered a place that has been occupied by children so much. Their parents watch them from the top while they are playing down.

Back-garden



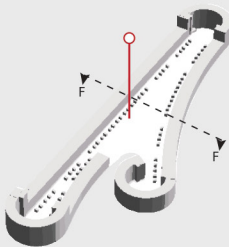
5



(I mentioned in the introduction the reason for adding people later to the pictures). While walking in the park, there was heard the sound of people talking to each other but not being seen. However, when approaching more, the source of the sound was made clear that it was coming from behind the grass fence, and because of the high weeds from the side of the garden, they were not clear to passersby, but rather they could see each other comfortably because there was no high barrier between them. They were talking about the beautiful weather, their children, and other things. In this case, the conversation between them lasted for about half an hour, after that both of them continued to arrange the garden and then I saw them entering their house.

A big place in the middle of the garden for a large number of children to meet, even from outside the neighbourhood. Some of the children were sitting talking and laughing, while others were running after each other playing and hiding. Some children were looking at us, wondering why we are photographing them. On the side of the central park, as I mentioned, there are two roads, but the road that is parallel to the 50-meter-long facade has many neighbours and children running and hiding.

Ship-playground

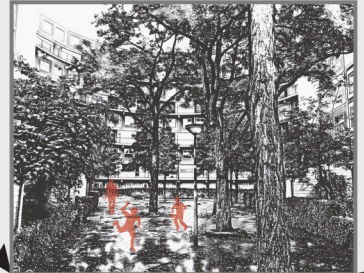


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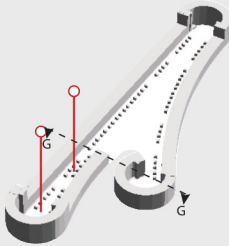




Road - square

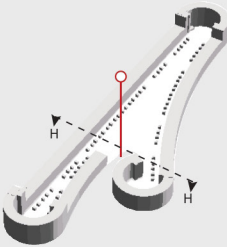
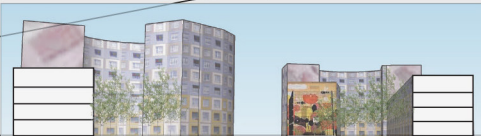


7



To get the other circle opposite the first one there is a very long corridor that one has to walk in. On both sides, there is the back garden of each house. There were two boys talking to each other from one side to the other. This long corridor in the middle divides into small branches which each of them leads to the back entrance of each building. A woman was leaving the block on the right side and crossing the road to the building on the left side. At the same time, a woman standing behind her window was talking to the other one, telling her that she will open the door for her.

Benches



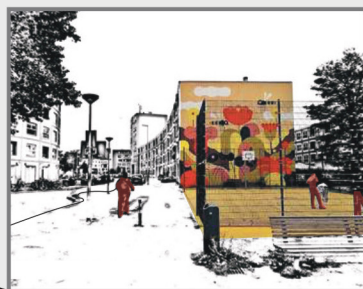
At that point, there were guys sitting on a bench talking loudly and laughing. It looks like they were waiting their turn to play on the basketball eld behind them because one of them would turn around from time to time looking back to see if the players nished their game or not.

8

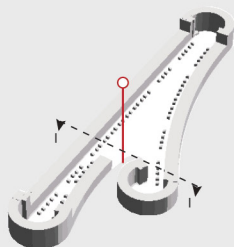


The basketball field at the entrance to the garden is a place for people to meet even though they don't talk to each other much but play. At the entrance to the park came loud noises of children screaming and calling each other while playing. Some were wearing a different color of t-shirt. In front of them a child stood watching and encouraging them enthusiastically and then when the match was finished he left with his bicycle.

Basketball field



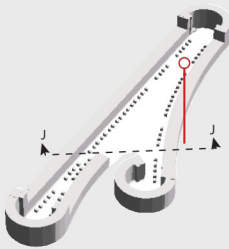
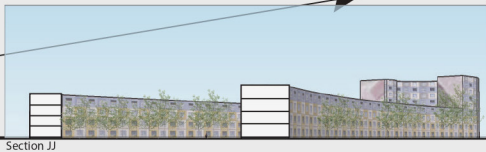
9



Also, there was one of the children watching the match from the balcony of his house, unfortunately, I could not take a picture for that scene. So he went out quickly to watch what was going on in the field when he heard the players screaming. When you stepped away from the basketball field, the players' voices would slowly disappear and fade away due to the presence of other children's voices coming from the other side.

Along the long facade from the river side there are many encounters of people. One of them was between two elderly women, one of them standing on the sidewalk and the other in her house, which is on the ground floor. Through the loggias on the ground floor with iron fences for protection, allows the residents of these houses to communicate with people outside easily. They were standing and talking for about fifteen minutes.

Outside facade <-----> opposite street



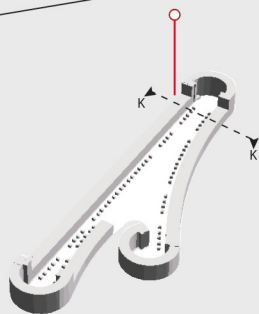
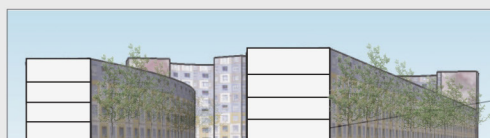
10



Another short conversation was between two friends, one on her loggia and the second was walking on the opposite sidewalk along the river. The first one caught a glimpse of the second one walking below and shouted to her to ask about herself and her studies, but this chat did not take more than a few minutes.

Such double-height entrances that are present in the whole building, about ve in all its corners, are an interesting points in how the interaction between people takes place in dierent ways. When passing by the entrance, rst I noticed two neighbours standing in the entrance hall talking. I made up my mind to stand in the corner of the street while watching if and how a meeting also happened.

The long facade



Exactly a few minutes later, there was a women walking on the sid walk and the entrance to the giant glass entrance was open, taking out some good. This huge glass doors allows a visual connection between outside (whopassing by on the street) and inside (who are either in the hall or even in the inneryard). Suddenly this women stopped talking with another one from the interior room and said to her, come up to the house and drink coee. However, she apologized and they stood together for a few minutes and then this continued on her way.

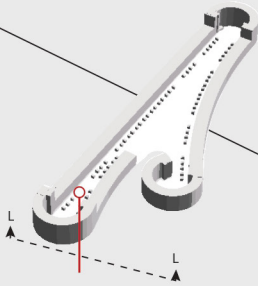
The small square opposite the building was also used as a place for children to play. Although, it is not suitable as a safe place to play compared to the internal garden of the building, but it was occupied as a place for meeting. When I passed by the entrance of the building, I saw two children coming out of it, heading to the square with a small toy that seemed somewhat strange to me that I had not seen before. They were playing for a long time, apparently because I left the place and they were still there.

Outside square



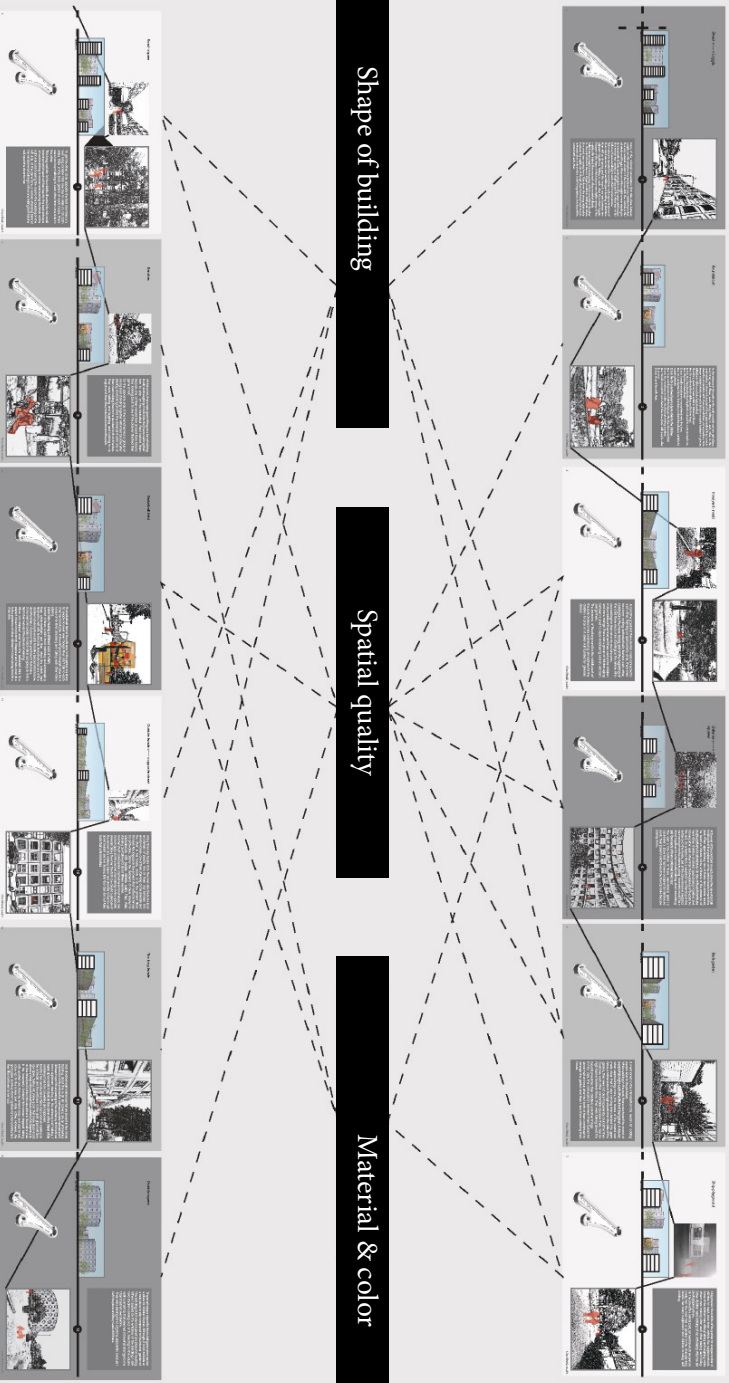
Section LL

12



# Conclusion

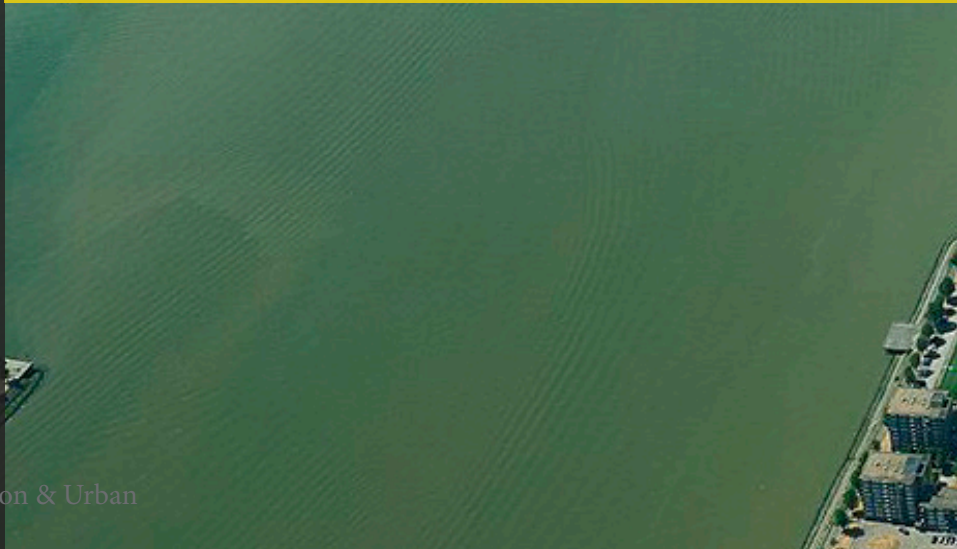
Describing the architectural reasons behind each of the collectiveness through matching each one of the encounters to one or more suitable causes...





# Location & Urban design

Merwe-Vierhavens (M4H) - Rotterdam





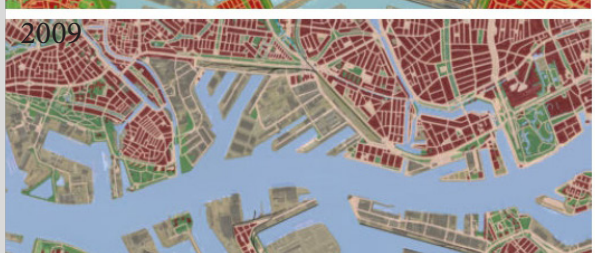
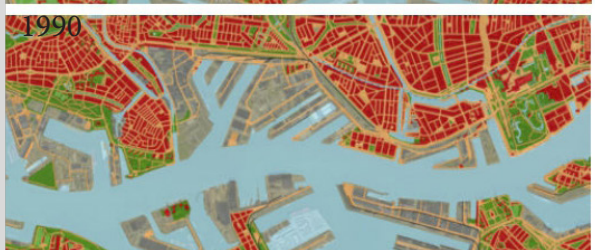
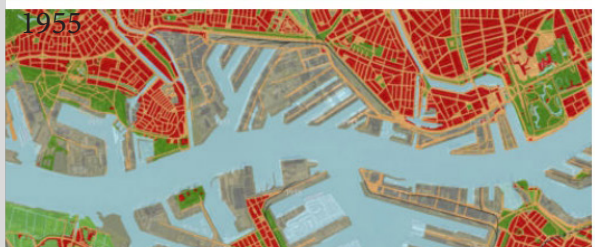


## Site history

Vierhaven was the main harbour of stadshavens to be finished at the north bank. The development started in 1912 and was completed in 1916. The reason for vierhaven to be constricted was to handle industrial and general cargo.

The Merwehaven is a port on the righter side of the river Maas in Rotterdam. The constriction of the two havens began in 1923 and finished in 1930. The two harbour were functioned for storing and distributing industrial cargo and they kept working like that until the 20th century when the harbour of Rotterdam moved towards the west. Both harbours were transformed into Rotterdam fruitprt and the two harbours begun storing vegetables and fruits.

The harbour is surrounded by neighborhoods such as Spangen and Delftshaven and Schiedam municipality. The south side of the area of M4H suffers from the noise pollution and has poor connection with the adjacent harbours while the north side of it is more accessible and connection with public transport. The area in general has been used to storage the fruits and juice and most of the storage buildings are located along the quay. In addition to this, the area has a good connection with the big park in the street side. However, the two piers have not been publicly accessible. The thing that gives the area its own character is the water which surrounds the area almost from all sides and this thing what the inner side of the city is lacking.



# Site pictures



The Merwe-Vierhaven area (M4H) is the location for the design. It is an old port site of approximately 100 hectares on the north side of the Maas. It was once one of the largest fruit ports in the world. Now the port is slowly growing into a new living and working area. A diversity of activities is located in the area.

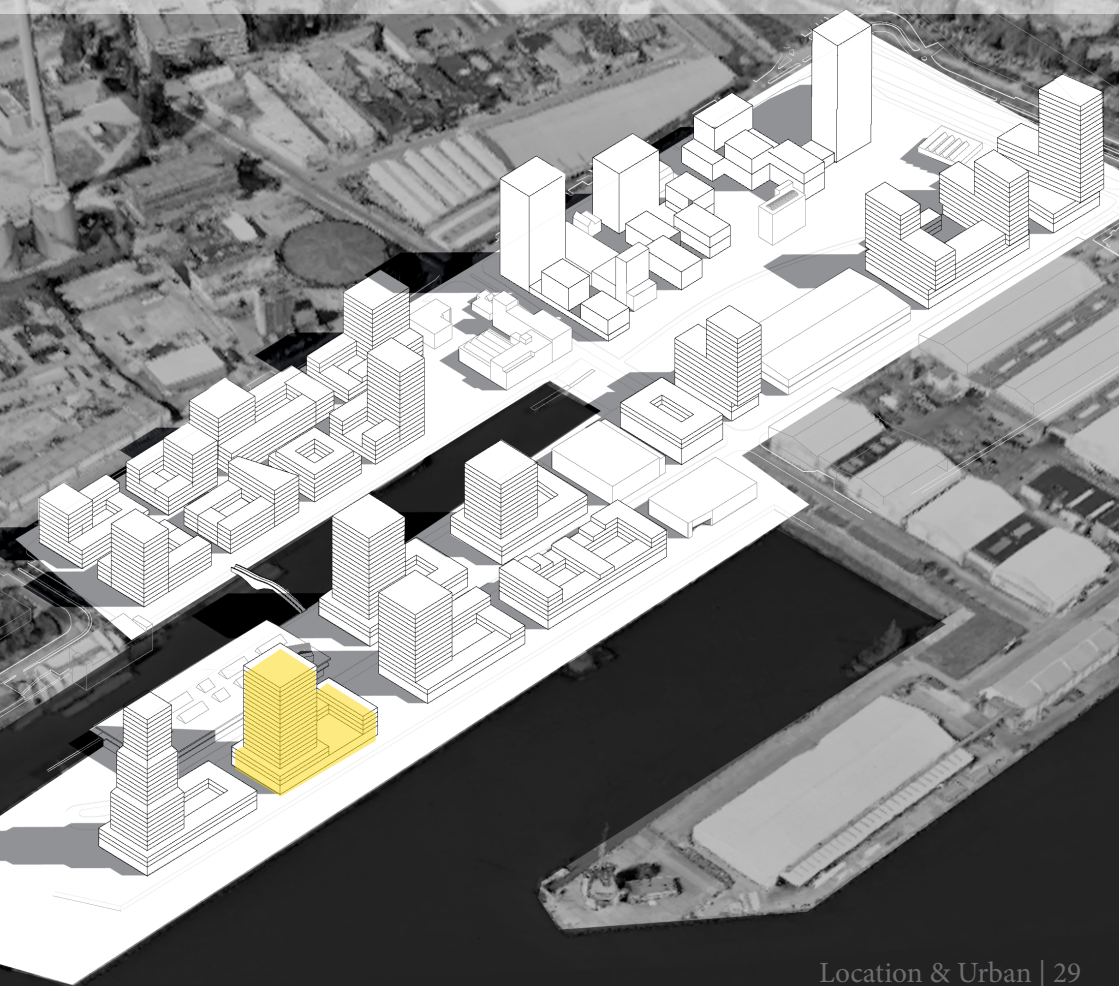
The Merwe Vierhavens will be further developed into the nursery for the innovative manufacturing industry, together with the creation of a part of the city. The ports, which are comparable in size to the center, are transformed into a place where port and city drive the future together. In addition to innovative manufacturing companies, M4H offers space for knowledge and educational institutions, creative makers and supporting services, housing, cultural facilities, catering and shops. An energetic district with appearance and impact on both the city and the port.

During the urban phase, the area was divided into four quadrants and worked on planning it with the group and we got a master plan. All the monumental buildings were preserved and the rest of the buildings were removed. It was agreed to keep the existing buildings in order to preserve the old industrial appearance of the area. The quadrant in which my building is located is the quadrant C. In this quarter, the main street in the middle was preserved and the edges were left for pedestrians and bicycles only.



The area was divided into four parts, and each part was designed on the basis of a reference project from different regions. For example, the quarter that I worked on with my group is Quarter C, which is located on the southern side of the area and was first studied and analyzed on the basis of the Kop van Zuid, which is also located in Rotterdam on the same river. There were buildings on the ground that were removed, except for the monumental and iconic buildings that were preserved as they are.

The buildings were placed in a way that allows different spaces between buildings of different areas and in different sizes, taking into account the direction of the sun. When studying the height of the buildings, it was taken into account that the buildings in the southern part should not be high to avoid dropping a shadow on the buildings in the northern section. The two parts C and D which are separated by water were connected with each other by a bridge for pedestrian and bicyclists. In the following pages, some diagrams will be presented on how the quadrant C is designed in terms of circulation, streets, directions, height of buildings and the public spaces between them.



# Four quadrants

**Quadrant D**  
 x Katendrecht  
 Ordered and well-defined plots, celebrating courtyard and castellated built form typology, much informed by the optimisation of natural daylight

**Quadrant A**  
 x Strijp S  
 Mix scale architecture, with a less defined, sprawling configuration, scattered within a soft boundary gradually dissipating towards the park

Preserved existing building

Park as collective open space

Connecting bridge for bike & pedestrian

**Quadrant C**  
 x Kop Van Zuid  
 Plinth as a unifying element to root high-rises of various form, configured within a staggered grids, feed with generous plot area and open pocket spaces

**Quadrant B**  
 x Binckhorst  
 Gradual transition from a more fragmented composition of Quadrant A to a more defined, ordered plot, consist of architectures configured by intersecting multiple built forms into a single entity

Landmark at the tip of harbour

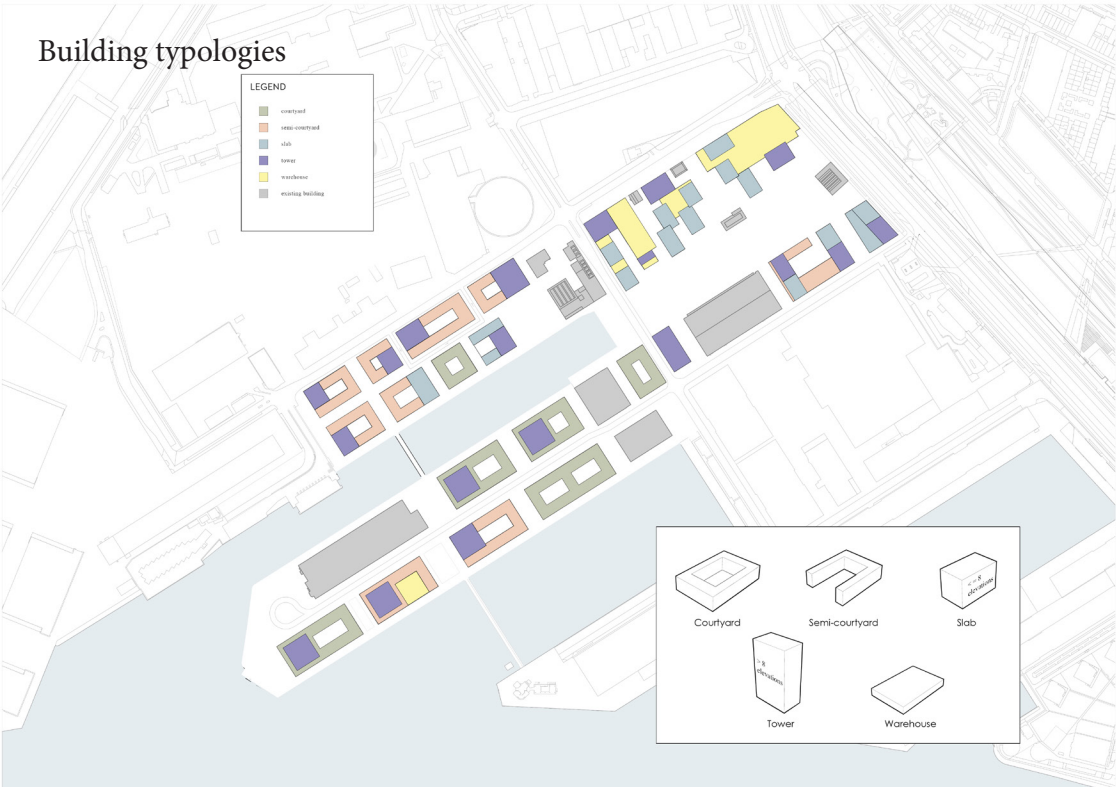
**LEGEND**

- plot border
- collegiate facade
- facade with corner facade line
- possible existing
- commercial ground floor
- plot number
- building's roof height
- room placement
- residential
- workshop
- existing building
- green/open space

# Building typologies

**LEGEND**

- courtyard
- semi-courtyard
- slab
- tower
- warehouse
- existing building



# Circulation

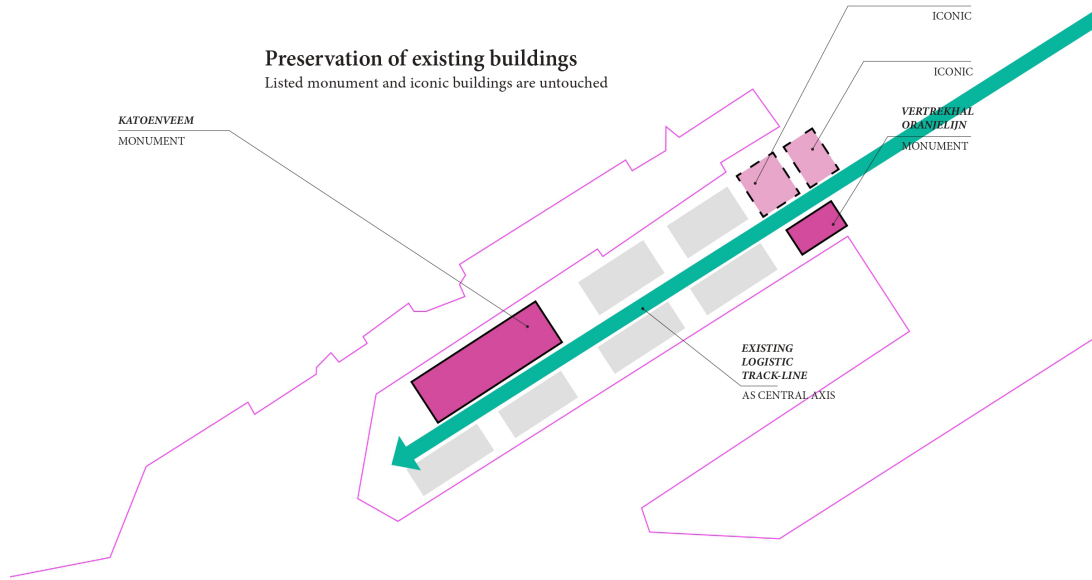
**LEGEND**

- Vehicular routes
- Bicycles routes
- Pedestrians routes



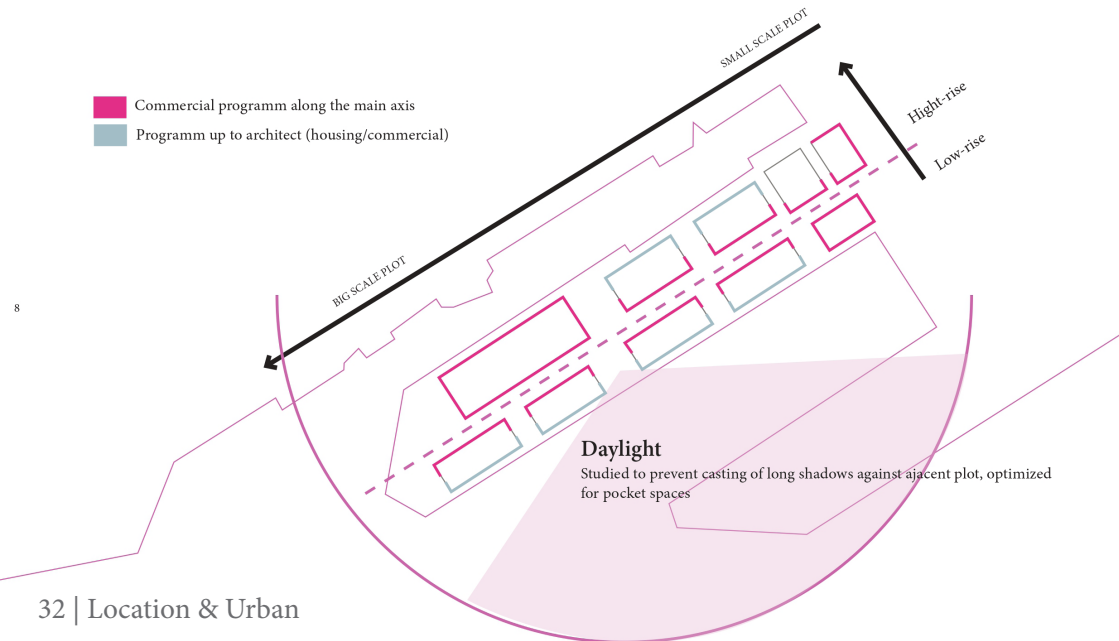
# Heritage in quadrant C

## Preservation of the genius Loci of the site



# Hierarchy in quadrant C

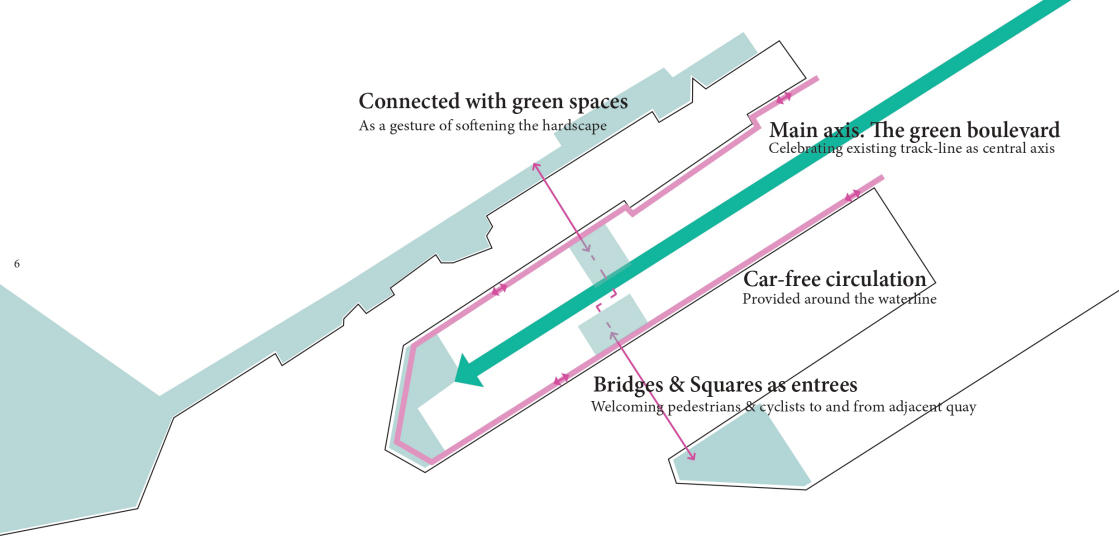
A clear gradual transition of public & private relationship along with scale & proportion, creating a variation in tectonics while optimizing view towards the water





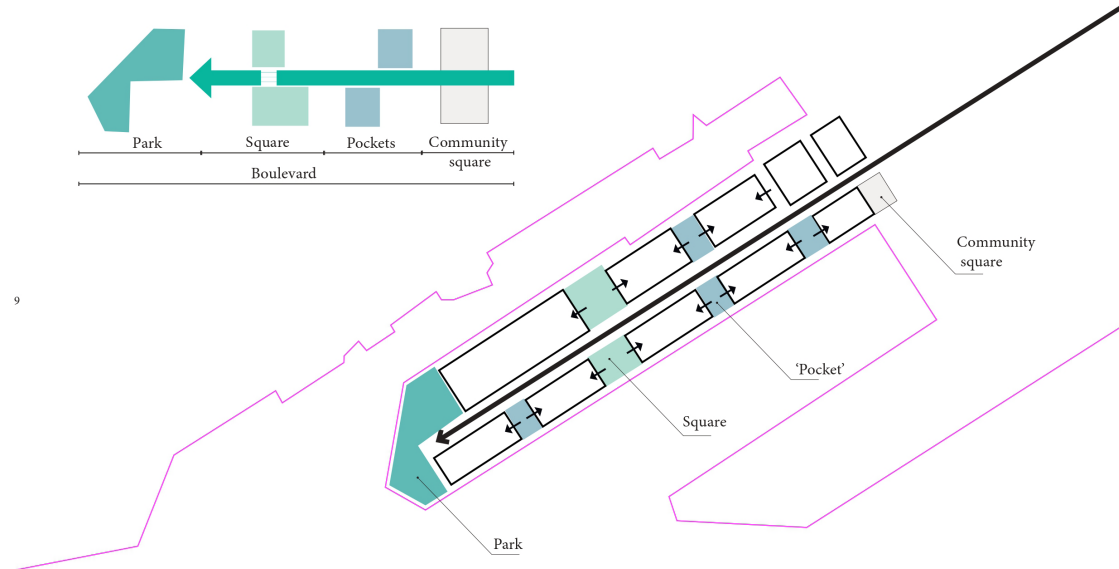
# Circulation in quadrant C

Tracing the heritage by conforming to existing central axis and forming loop ring at perimeter of waterline



# Voids in quadrant C

Allocated among the grids to create sufficient open spaces for users amidst building blocks, ranging from small scale pockets to square and parks



# Urban context Keilekwartier



- Existing building
- New building
- My building

100 cm

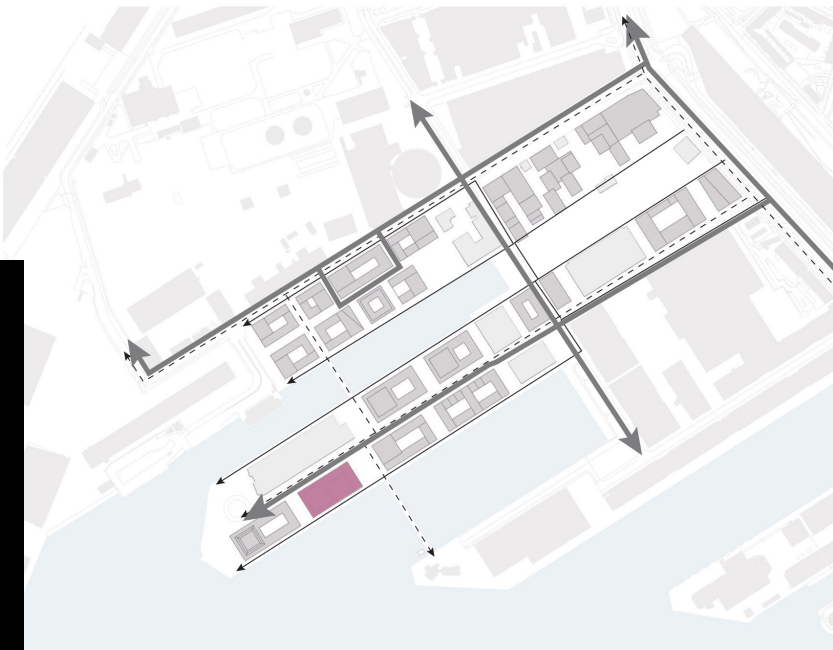


The project is located in de Keilekwartier in Rotterdam which is a harbor area that will be transformed into a district with a mix of housing and also other different businesses.



- Walking route
- Bicycle route
- Vehicular route

100 cm

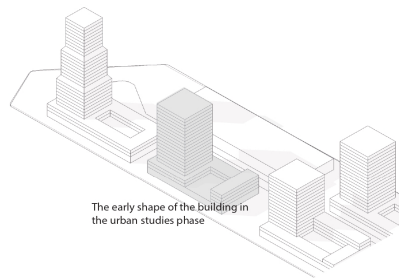
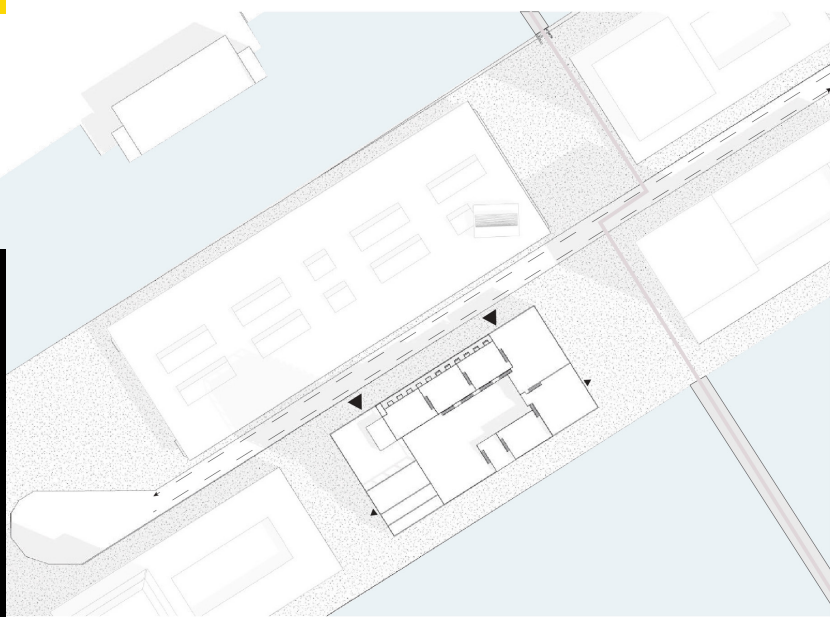


My building is located in the South East next to the public square and in front of the Ka-toenveem which is a monument building.

Building plot &  
Reaction on the context

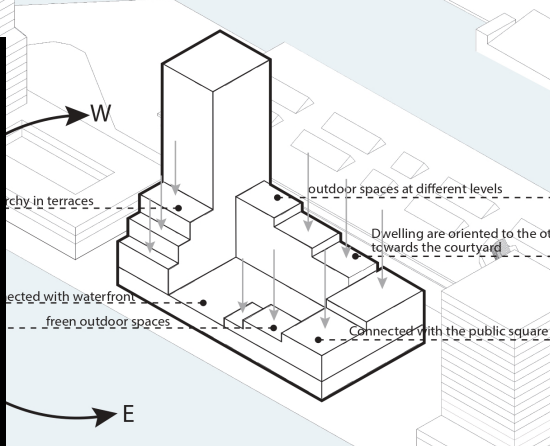


The building is surrounded by other buildings on two sides and connects with a road on the north side and the Lekhaven on the south side.



The early shape of the building in the urban studies phase

Reacts on the context for example with the opening on the east side that creates a connection with the surrounding.



That means that the block isn't completely closed off from the surrounding. It's higher on the West side and lower on the North side to allow more sun light to come to the public square.



Urban qualities



# Research report

Refugees are mothers, fathers, sisters, brothers, children, with the same hopes and ambitions as us, except that a twist of fate has bound their lives to a global refugee crisis on an unprecedented scale.

Khaled Hosseini

## Acknowledgement

This research is part of the 'Advanced Housing Design', a graduation studio of the Faculty of Architecture and the Built Environment of TU Delft.

To complete this research, I had to deal with cramps in my fingers, square eyes and had to consume copious amounts of coffee. It was a big personal challenge, because most of the resources that I used to complete my project were in the Dutch language that I just recently learned, and I had to read and translate many words that were new to me. However, I learned a lot along the way, and I did my best to accomplish everything to my full capacity.

Since I started writing this research, the percentage of refugees in the Netherlands has been changing constantly. In spite of this, nothing has changed with regards to the housing situation of asylum status holders. The pressure to find a solution to this issue remains high and the situation is unlikely to change in the short term.

I would like to thank the following people for their help. For starters, I would like to express gratitude to my tutors Pierijn van der Putt and Theo Kupers for their patience, enthusiasm, and constructive feedback with which they repeatedly pointed me in the right direction in the jungle called 'scientific research'.

In addition, I would like to thank everyone who has shown any interest whatever in my research activities and motivated me along

the way. Constructing this final research report was a long haul, but it seems I managed to create something that could actually make itself useful at some point in the future. I am proud of that. I would also like to thank all my colleagues and my family for their support and encouragements.

I hope you enjoy reading my work!

The Netherlands experienced a large influx of refugees over the past years, which peaked in 2015. Many of these refugees have recently had their temporary residency extended into a permanent residency. In spite of this, there is a disproportionately high percentage of unemployment among refugees and many experience a lack of social and academic integration. As a result, a large percentage of refugees are still dependent on governmental financial aid, and the socioeconomic status of refugees is more likely to be lower than the average socioeconomic status in the Netherlands.

Although refugee integration is a widely studied sociological topic, no effort has been made to apply the findings of such studies to the context of architecture. The goal of the present study was to consider research findings on factors and domains that facilitate sociocultural integration, and apply these to the architectural domain. More specifically, the study focused on the development of functional program and building characteristics intended to facilitate integration and produce a suitable living environment.

The results of the present study showed that asylum status holders need to have certain places in the building, such as common rooms in which they share work and study with the rest of the building's residents, who are of different nationalities and are also local residents. In this case, they integrate into society faster and also the problem of friction that may appear among the

residents of the building disappears because they spend some time together and give them some awareness and educational lectures that make them accept each other and get closer to each other more.

Key words: Dwelling, social housing, refugee, status holder, integration.

# Manifesto

Before I begin my story, let me start by thanking everyone before my story begins.

When we talk about creating a city for a new generation of integration, we should understand that this new generation is a combination of natives and asylum status holders.

A major reason for the generation of integration is the surge in recent years of refugees coming from war-torn nations and who sought asylum in the Netherlands. Many people received these refugees with welcoming, open arms, but the situation was mired in controversy and political discussion, with various influential figures and politicians emphasizing the perceived burden on society these refugees, according to them, represented. With regards to housing, the controversy focused on refugees receiving a preferential treatment over Dutch natives who were looking for a home, which contributed to refugees being treated as outsiders. To some extent, this is true, as each refugee has his or her own story that is nothing like the story of most Dutch natives.

The refugees who arrived in the Netherlands these past few years ended up in cities they knew nothing about except for its name and location on the map. No one except them can imagine how hard it was and is for them to face their future without their past, which was lost along with their friends and relatives. We can only hope their present and future is and will be brighter. Therefore, I do not want this building to be a substitute for their lost homes, but rather to provide them with a living environment that gives them a sense of complete belonging to their new homeland, the Netherlands.

One of the refugee families who ended up in the Netherlands was my own family, who came from Syria about five years ago due to the ongoing war. My father, who used to conduct business visits to the Netherlands for a period of over ten years, and my mother, who obtained her PhD in Economics in Belgium 25 years ago.

Both of them did not expect that there would come a day on which they would be forced to leave their home, lose all that they worked for more than 30 years, and seek refuge in a country of which they did not speak the language or knew what the customs were. The important thing for them was securing a safe and better future for their children. After being separated due to having to leave Syria abruptly, my siblings and I were reunited after two years of waiting, which exhausted my parents psychologically, as for them, family means everything. They had to go through all the asylum request procedures and the reunification while being physically separated, and while being unable to speak Dutch.

Starting from nothing, they had to learn the Dutch language and customs, and worked as volunteers in various fields, which helped them create a sense of belonging and which enabled them to communicate better, although it proved to be very difficult for my parents, who are in their fifties, to form continuous social relations, mainly due to the language barrier. I remember one day when we visited a Dutch family, my parents were both very shy, because they could not understand what I was talking about with the Dutch family. When I realized this, I turned into an interpreter to allow my parents and the Dutch family to communicate.

Regrettably, I arrived in the Netherlands



after my parents did. I wish I could have arrived at the same time as my family did, or even before them, to help guide them better. As me and my siblings arrived when we were over the age of 20, this made it more difficult to adjust to everything. In spite of that, we were all able to overcome all the difficulties and challenges, and are working hard to make our dreams a reality. Dreams that were not meant to be fulfilled in Syria.

Coming to the Netherlands, we experienced a lot of positivity from people who took it upon themselves to help us along the way in ways we would have never expected. The Dutch government agencies in particular provided a lot of care and attention, as did humanitarian associations. In short, we experienced and still experience the Dutch society as an integrated society. However, I also have to acknowledge the suffering of my parents, who spent 50 years of their life in Syria and are now facing many unending personal and social difficulties adjusting to life in the Netherlands.

These are, however, common problems that all newcomers suffer, irrespective of where they are from.

Opening the Dutch borders to refugees is not the only solution to secure a better future for them. Rather, an important solution is to provide refugees with a comfortable living environment that is designed to support them in their new journey to get to know the Netherlands, its customs and culture, and to permit them many opportunities for establishing new social relations. Eventually, this will lead to a fully integrated society. For refugees, this will help them realize that although success perhaps used to be a normal thing in their country of origin, it has now become the exception. Therefore, it is the responsibility of refugees to prove that they can coexist with and adapt to their new society and at the same time strive to be successful, as a word of thanks to this wonderful new country, instead of being a burden on it.



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# Introduction

This research report represents one instance of the overarching graduation project of the 'Advanced Housing Design' studio, of which the main goal is to investigate the future of residential buildings in the Netherlands. During the first quarter of 2020, after developing an urban masterplan, it was determined the location of the design project would be the Miervevier harbor (M4H) in Rotterdam. The present research efforts focused on ensuring housing in M4H is designed in such a way that the costs of living are low, but the living environment is comfortable and conducive to interaction and integration.

In particular, the present research focused on developing effective methods and techniques for housing from the perspective of young refugees, who represent a new wave of the populace. Many of these refugees have arrived in the Netherlands during the past five years, mainly due to the ongoing war in Syria (see Figure 1). In fact, Syrian refugees who are in their twenties and early thirties represent a large percentage of this group of refugees. Many of these refugees have a high level of education and a wide variety of professional skills.

With regards to these young refugees who arrived in the Netherlands from Syria, so far, there has been no reasonable and financially and socially suitable solution to the housing problem this group of new Dutch residents represents, in spite of them having obtained residency permits that allow them to live in the Netherlands.

In line with the career-mindedness of many of these refugees and the fact that many of

them used to live in urban areas and socially-lively cities, it is important to them to live in a busy city that presents many opportunities. This would foster a more rapid integration, which could lead to benefits for the Dutch economy, given the highly-educated background of many Syrian refugees. This makes Rotterdam particularly suitable, as there are many job opportunities. One further aspect that makes the M4H location preferential, is that housing prices in the city centre of Rotterdam are much higher, while job opportunities are abundant in both areas.

In spite of the need as a result of the large influx of relatively highly-educated refugees, there is currently no suitable solution to the housing problems this group faces. More particularly, it is not known what the optimal design of an accommodation would be that combined affordability with a push towards social integration. This cannot be accomplished without investigating the needs of these young adult asylum status holders. The results of this research will open up and broaden the scope of the public discussion on refugee housing.

Figure (1): Number of the asylum requests in each year in the Netherlands. Source: VWNL, 2017.



The problem that is central in the current research is that currently, young adult refugees, who arrived in the Netherlands during the last five to six years, are often forced to stay in refugee shelters or other temporary forms of housing and have to rely on financial aid. In fact, in 2014, more than 60 percent of refugees with a residency permit could not find paid work and still received social benefits (CBS, 2015). This is partly due to the strained housing market situation in the Netherlands. No suitable design solution that is affordable and promotes social integration has so far been developed. This is an undesirable situation, as temporary housing represents a constantly stressful burden of uncertainty, and refugees often have to wait for periods of up to several years before obtaining permanent housing, leading to problems such as study delays (Klaver & van der Welle, 2009). These shelters, furthermore, are often completely full due to the still-increasing number of refugees that arrive from various countries. This prompted the utilization of vacant Dutch penitentiaries as a temporary solution, (Chris Weller, 2017). However, this solution is far from ideal, as it obstructs social integration due to, for example the travel distance to the city itself. So, in short, there is, at present, no solution for the housing problem of young adult refugees, which leads to a professional and educational suspension of the future of this group.

Several problems created by the refugee housing issue that pertain particularly strongly to young adults have to be expan-

ded on in more detail:

1- The temporary housing problem causes psychological, financial, social, and educational problems for refugees: Temporary housing for refugees (e.g., asylum centres) have strict rules and refugees do not have many opportunities to work or study, which could have detrimental effects on their psychological well-being. In addition, there are hardly any options for social interaction that do not involve other refugees. Lastly, refugees from different backgrounds, religions, societies, and cultures who live in temporary shelters frequently share small rooms, sanitary facilities, and kitchens. This promotes absence of privacy and cleanliness, leading to health problems and further psychological pressure.

2- Less social and professional integration after moving into permanent housing due to the long waiting period: the temporary housing conditions have a detrimental effect on the self-awareness of the residents. In addition, due to the long period of being unemployed while at a temporary refugee shelter, it is more difficult for refugees to find work than it is for non-refugees, leading to higher unemployment rates among refugees, even though their average level of education is considered high (Dourleijn & Dagevos, 2011). Furthermore, by treating a refugee who has an actual residence permit as a non-permit holder merely due to a housing issue could cause resentment and thus be detrimental for social integration.

## Research hypothesis

The goal of the current research report was to provide several solutions to create a comfortable and affordable living environment for asylum status holders in Rotterdam with taking into consideration all the problems and obstacles this group faces. It was, therefore, hypothesized that it is possible to design a housing solution for young adult refugees that is both affordable, comfortable and promotes social integration, as part of the M4H area.

## Research questions

How to design social housing in an affordable manner that can provide the status holders a comfortable living environment and help them with the integration?

In order to answer this central research question, four sub-questions were formulated:

- How are the Dutch asylum procedures and housing status holders arranged in the Netherlands and to what extent is the Netherlands tolerant of refugees?
- What should a housing and living environment look like that allows refugees to socially integrate more strongly and without experiencing difficulties?
- How can an architectural environment be created that include both refugees and local residents?
- What are the specific special and social design needs of refugees with regards to house specifications and the scale of the build?

## Relevance and position

This research is relevant for the Dutch government, as it seeks to clarify, specify and shed light on the housing problem among young adult refugees in the Netherlands who mainly arrived due to civil war in different countries, and seeks to illuminate the issues with social integration faced by asylum status holders in the first year before and after their departure from temporary housing (i.e., an asylum centre). In addition, the present study is important for the field of architecture, as it represents insights into how to design accommodation and housing that is suitable for groups of people who come from a different cultural background and who may carry an emotional and psychological burden.

Lastly, the study is also relevant for the young adult refugees themselves, as the outcome will help in the efforts to find a solution to the refugee housing problem in the Netherlands. This research will be done by determining what consequences they face in their lives in order to find appropriate solutions to these problems and identifying elements that facilitate their integration faster.

## Source analysis

With regards to the literature on refugee housing in the Netherlands, many studies have been conducted with a focus on the current housing situation of refugees, such as listing the current asylum centers in the Netherlands, and describing the problems refugees face with regards to waiting times (for permanent housing) and time spent

without receiving any financial aid. Furthermore, many studies focused on ways of developing new temporary housing solutions for refugees. However, importantly, these studies and temporary solutions have not led to a solution to the problem of refugee housing, and in particular with regards to having temporary shelters located outside of a city. As a possible solution, it is proposed that a novel refugee housing design should adhere to two principles: (1) being located inside or close to a city in order to foster social interaction between refugees and locals, and (2) being constructed specifically with the purpose of housing refugees, as a more permanent housing solution.

With regards to this proposed solution, the current literature is lacking. Especially with regards to social interaction, it should be emphasized that refugees, when arriving in the Netherlands, have lost most or all of their social contacts and have problems interacting with others, also in part due to loneliness and psychological issues. Lastly, as stated, most studies focused on temporary solutions, but none of them focused specifically on solutions to accommodate refugees close by or inside a city.

## Methodology

In this study, a combination of quantitative research and qualitative research was used. According to Baarda, Goede, and Kalmijn (2007), quantitative research allows large-scale statistical insights into a topic. By using a structured data collection method, quantitative concepts are clearly defined according to the theoretical framework that is developed (Baarda, Goede, & Kalmijn, 2007). Qualitative research, on the other hand, is more in-depth and includes me-

thods such as interviewing (Baarda, Goede, & Kalmijn, 2007). The purpose is to obtain insights that require interpretation by a researcher.

### Instruments:

Several instruments were used in the current study.

- **Desk research.** For the present study, desk research was conducted by using (1) various internet databases such as Google Scholar, (2) institutes that publish statistical insights, such as the CBS, COA and UNICEF, and (3) various books, dissertations and Master's theses on the topic. Various search terms were used: ... Literature sources were included in the study if they (1) directly concerned the Dutch refugee housing situation, or (2) described more general issues with refugee housing.












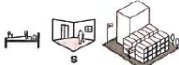




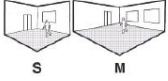
- **Social media.** By focusing on social media posts (on Facebook and Instagram), the goal was to develop insights into the public opinion on refugees and refugee housing, which was helpful when designing a form of housing that fosters social interaction between people of different cultural backgrounds. In addition to such social media posts, an effort was made to include documentaries and movies on the issue.

- **Interviews.** To obtain insights into the perspective of refugees who arrived in the Netherlands and experienced the refugee housing situation first-hand, in-depth interviews were conducted with members of my family who are currently residing in the Netherlands after having fled from the Syrian civil war.

# Clarification of terminology

Reading a book or any literature sources about the migration has been a bit confusing due to the different titles that are used. Therefore, the definition of these different terminologies will be explained here. The Dutch government classifies migrants based on their motivation for migration and, possibly, their search for better living

conditions. According to Dutch law, there are twelve groups of migrants (CBS, 2019; Crimson, 2019) which some of them will be shown in the following table (see figure 2). After that, the research will be addressing the type of migrants who are status holder singles or couples without kids.

	Representation in culture & media	Migrant policies & legislation	Settlement places in the end-destination country
<b>Refugee / Asylum seeker</b>	 Unable and unwilling to go back / Searching for protection	 discourage refugees	 Shared space, small, isolated location
<b>Labour migrants</b>	 Working for a limited period of time	 Restrictive admission / free movement	 Shared space, small, isolated location
<b>Expats</b>	 Are required by a company to work for a limited period of time	 Welcome expats	 Individual space, big, in the suburb
<b>Exchange students</b>	 Studying for couple of years	 Welcome students	 Individual space, small, near the university
<b>Illegals</b>	 Unable to stay and work legally	 Encourage or force illegals to leave	 Shared space, small, in big cities
<b>Creative migrants</b>	 Working for couple of years	----- no official policy	 S M





	Migrants economy & work	Collective space & Private space	Amenities facilities
<b>Refugee Asylum seeker</b>	 <p>Not allowed during the period of AZC / Simple jobs + low-paid work</p>	<ul style="list-style-type: none"> <li>- Preferring private rooms</li> <li>- Shared spaces</li> <li>- Social relationships are crucial</li> </ul>	<ul style="list-style-type: none"> <li>- Sport facilities</li> <li>- music room</li> <li>- Shared kitchen</li> <li>- Hall for celebration</li> </ul>
<b>Labour migrants</b>	 <ul style="list-style-type: none"> <li>- Seasonal work</li> <li>- low-paid work</li> </ul>	<p>Cheap rent is better than the quality of the house</p>	<ul style="list-style-type: none"> <li>- Shared kitchen</li> <li>- Hall for recreation</li> </ul>
<b>Expats</b>	 <ul style="list-style-type: none"> <li>- Technical companies</li> <li>- Embassies</li> <li>- High-paid work</li> </ul>	<ul style="list-style-type: none"> <li>- Near city centre</li> <li>- The quality of the house is more important than cheap rent</li> </ul>	<ul style="list-style-type: none"> <li>- Parking</li> <li>- Restaurant</li> <li>- park</li> <li>- Museum</li> </ul>
<b>Exchange students</b>	-----	<ul style="list-style-type: none"> <li>- Cheap rent</li> <li>- Shared spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Bicycle carage</li> <li>- Supermarket</li> <li>- Cafe</li> </ul>
<b>Illegals</b>	 <p>Informal works</p>	-----	-----
<b>Creative migrants</b>	<p>Working in different sectors Architecture, music, design</p>	<ul style="list-style-type: none"> <li>- Preferring private rooms</li> <li>- Shared spaces</li> <li>- Social relationships are crucial</li> </ul>	<ul style="list-style-type: none"> <li>- Parking</li> <li>- Restaurant</li> <li>- Park</li> <li>- Museum</li> </ul>

Figure (2): Matrix of different categories of migrants are organized in terms of several aspects. Source: my own illustration based on information from CBS and Crimson's book.



## Chapter (A): Refugees\Status holders and their housing situation over time

### A.1 Definitions

It is important to have clear terminology about what different types of immigrants there are. The UNHCR indicates the terminology for referring to the different types of immigrants is often confused in the literature and the terms are often used interchangeably, even though they are inherently different (UNHCR, 2015).

#### **Refugee:**

According to Het Vluchtelingenverdrag (The Refugee Convention, 1951), a refugee is a person who, for a well-founded fear of persecution because of race, religion, nationality, belonging to a particular social group or having a specific political motivation, resides outside of his or her native country, and who cannot or, on account of the aforementioned fear, does not wish to invoke the protection of that country or return to that country (Malmström & Gutierrez, 2016). The UN Refugee Convention grants specific rights to refugees with which recipient states must comply, which are based on the foundation that refugees should not be sent back to a situation where their lives are again at risk (UNHCD, 2015).

#### **Asylum seeker:**

Not every asylum seeker in the Netherlands is a refugee. An asylum seeker is someone who applies for protection from another country with the prospect of a better future, through submitting an asylum application. The country where asylum is sought then checks whether the asylum seeker falls under the United Nations Refugee Convention, which would make it mandatory for the asylum seeker to receive protection. Most refugees in the Netherlands started out as

asylum seekers (Vluchtelingenwerk, 2020). Due to the asylum seekers are not really consistently dealt with as refugees (Winder, 1990).

#### **Asylum status holders and permit holders:**

Asylum status holders and permit holders are the same category of immigrants. 'Permit holder' is a more generic term which refers to someone who has been granted a permit based on an asylum application. 'Asylum status holder', on the other hand, refers to the various permits that a foreign national can obtain. One such permit is a temporary or conditional residence permit, which implies the refugee has been granted the right to a residency in the Netherlands, based on humanitarian grounds (NRC, 1998). After being granted a residence permit, asylum status holders can start their integration into Dutch society. So, it is important that they start looking for work and / or training as soon as possible.

### A.2 Historical point of view

In the following paragraphs, the recent history of immigration in the Netherlands is expanded on. In addition, people's opinions towards refugees and the extent of acceptance and rejection are investigated. Afterwards, the various procedures that refugees experienced are explained (see Figure 3). These procedures are grouped into three stages according to the time period in which they occurred. The purpose of this historical overview is to provide a clear narrative.

## - **A brief overview of the recent history of immigration in the Netherlands**

Refugees who came to the Netherlands in the seventeenth century were from different countries such as Germany, Norway, Sweden, and Denmark. As a result of the expansion of the Old City with a large area, this led to the absorption of this large number of local and foreign refugees. But the living conditions were very poor, in other words, large families lived in one small room or in the basements, which caused many health and psychological problems.

In the First World War, after the German bombardment and subsequent capture of Antwerp in 1914, around one million Belgians fled to the Netherlands, which was a neutral country. The Netherlands greeted these refugee Belgians wholeheartedly and considered it an obligation to offer them a protected and suitable accommodation. Similarly, to the current refugee situation, there was a shortage of suitable housing accommodations. Therefore, in 1914, a 'Central Committee for the Protection of Interests of Refugees in the Netherlands' was set up for refugees. Various 'Belgian villages' were realised all through the Netherlands (Crimson, 2019).

The next mass refugee event in Dutch history that is relevant for the current study is the influx of Surinamese refugees, who came to the Netherlands in 1974. A special area was built in Amsterdam, De Bijlmer, in order to accommodate them and decrease the housing issue that resulted from this relatively sudden event. Importantly, the manner, design and style in which the buildings that made out De Bijlmer were constructed was not successful, as personal accommodations were completely separate from work lo-

cations, and the area lacked social activities and collective meeting spots for socialization. Consequently, the area was known for its bad living conditions and for the problematic situations that often occurred there. Eventually, the area turned into warehouses and stores and the municipality decided in 1992 to demolish a large part of the area altogether (Crimson, 2019).

Most relevant to the current study, over the last few years, the Netherlands faced a large influx of refugees from Syria, Afghanistan, Iraq, Iran, and Somalia. Due to a lack of proper accommodations, the Dutch government was forced to settle these refugees in office buildings after they were converted into houses, and in special temporary housing buildings that are intended to last for ten years. In addition, housing complexes ('Startblok' complexes) were built. These Startblok complexes are interesting, as a new design principle was adhered to: half of the residents were refugees and the other half were native Dutch citizens. The complexes were a great success in terms of the integration of refugees into the Dutch society (Crimson, 2019).

In short, it can be concluded that refugee housing in the Netherlands has been a constant issue throughout recent history, irrespective of the specific circumstances that led to the increase in refugees. Failure to take into account the needs that provide refugees with a suitable and comfortable living environment, making it difficult for them to integrate into society, unlike what happened in the Startblock buildings recently, as these complexes resulted in many positives when all the necessary aspects were taken into consideration.

### - **For or against refugees?**

Dutch people's opinions on whether refugees should receive preferential treatment when it comes to housing are widely divergent. Refugees are sometimes perceived as being prioritized when concerning housing. Some native Dutch people also perceive this as a threat, as it reduces the opportunity for locals to obtain housing. Likewise, when an asylum centre is built close to a city to help refugees integrate into the society (i.e., due to the close proximity to the city), this has, in the past, resulted in demonstrations by city residents who object to the location being used to house refugees (CBS, 2018). However, at the same time, many Dutch natives are happy with the arrival of a group of people from different cultural backgrounds to their neighbourhoods. Such positive reactions have resulted in people providing assistance to refugees, for example through volunteering to help out. One well-known organization that seeks to help refugees is Vluchtelingenwerk (Vluchtelingenwerk, 2017).

## **A.3 Asylum policies in The Netherlands**

In the following paragraph, the steps and procedures refugees who arrived in the Netherlands relatively recently must undertake are described, starting from the day they leave their country of origin as a refugee up to the point of becoming an asylum seeker, becoming an asylum status holder and finally to the holder of the nationality.

### - **From their original country to be a refugee (past situation)**

Many refugees left a war-torn home and hearth in the hope of a better life in Western countries such as the Netherlands (Factsheet Syrische vluchtelingen, 2015; Von der Dunk, 2007). When they arrive in the Netherlands, these refugees have to undergo multiple trials before they obtain the right to stay in the Netherlands (Von der Dunk, 2007; Bloemen & Vloeberghs, 2012;). Upon arrival in the Netherlands, the refugees are received by the Immigration and Naturalization Service (IND) at the Ter Apel application centre. They are questioned by the employees of the application centre to determine whether they are genuine refugees. In principle, the application is then either granted, extended or rejected.

### - **From a refugee to status holder (current situation)**

The responsibility for the reception of refugees after their arrival and transition into asylum seekers lies with the Central Organization for the Reception of Asylum Seekers (COA). The duties of COA are legally defined in the Central Agency for the Reception of Asylum Seekers Act and mainly entail placing asylum seekers in a municipality, providing refugees with financial aid, and making contributions to the relevant municipality where the refugees are placed (Huisvesting vergunninghouders, 2016). At the asylum seekers' centre, refugees wait for an update on their residence permit and residence status from the IND. It can take some time to obtain a residence permit, and during this waiting period, the asylum seeker can and will likely already start a process of social integration into the Dutch society. While the refugees live in the asylum seekers' centre, they are not allowed to work, but they usually start lessons to learn

the Dutch language (Huisvesting vergunninghouders, 2016). During this period, the Dutch Council for Refugees has a task to provide social and legal support to asylum seekers during their asylum procedure. This interaction is, in fact, an asylum seeker's first real (social) experience with the Netherlands (Baltussen, 2012).

In the event of the approval of their request to stay in the Netherlands, the asylum seeker then becomes an asylum status holder. The COA connects the asylum status holder to a municipality, and the municipality then has an obligation to provide housing for the asylum status holder. Until such housing accommodation is available, the asylum status holder remains at the asylum seekers' centre.

The Dutch central government, province and municipalities have made agreements about the number of asylum status holders each Dutch municipality should (be able to) house. This number is influenced by the number of inhabitants of a municipality (Sociaal en Cultureel Planbureau, 2018). After receiving housing, refugees can start their new life in the Netherlands (Huisvesting vergunninghouders, 2016). To help them along the way, they receive guidance by the Refugee Service.

To illustrate the procedure of being granted housing in the Netherlands as a refugee, I asked my father about the period when he was released from the asylum seekers' centre and obtained housing. I also asked about the difficulties he faced when he lived alone in a new country which was

unknown for him. My father's answer was that it was an indescribable experience to not know where he was, nor how, where and when he should do anything. This situation remained so until we were reunited. However, in the period after being reunited, my father and mother spent every day thinking about how they should secure a good life for my siblings and myself, and about how we should evaluate our educational level and complete our studies, or where and when we should do so, without losing time.

#### - **From status holder to a nationality holder (future situation)**

After receiving housing, such housing is often temporary. The first period of residency spans a maximum of five years. If the circumstances in the asylum status holder's nation of origin are improved, it is likely that after these five years, the residency grant will not be extended. If, however, the situation has not improved to the degree that a secure return and permanent stay is ensured, a permit is granted to the asylum status holder that allows permanent residency in the Netherlands. To receive such a permit, an asylum status holder has to have met all the preliminary conditions that are required. For example, permit holders must have passed their integration exams within three years after arrival, and must have stayed in the Netherlands for at least the past five years. Then, the asylum status holder can apply for citizenship and obtain it after the King's approval (Al Temimi, 2016; IND, 2016).

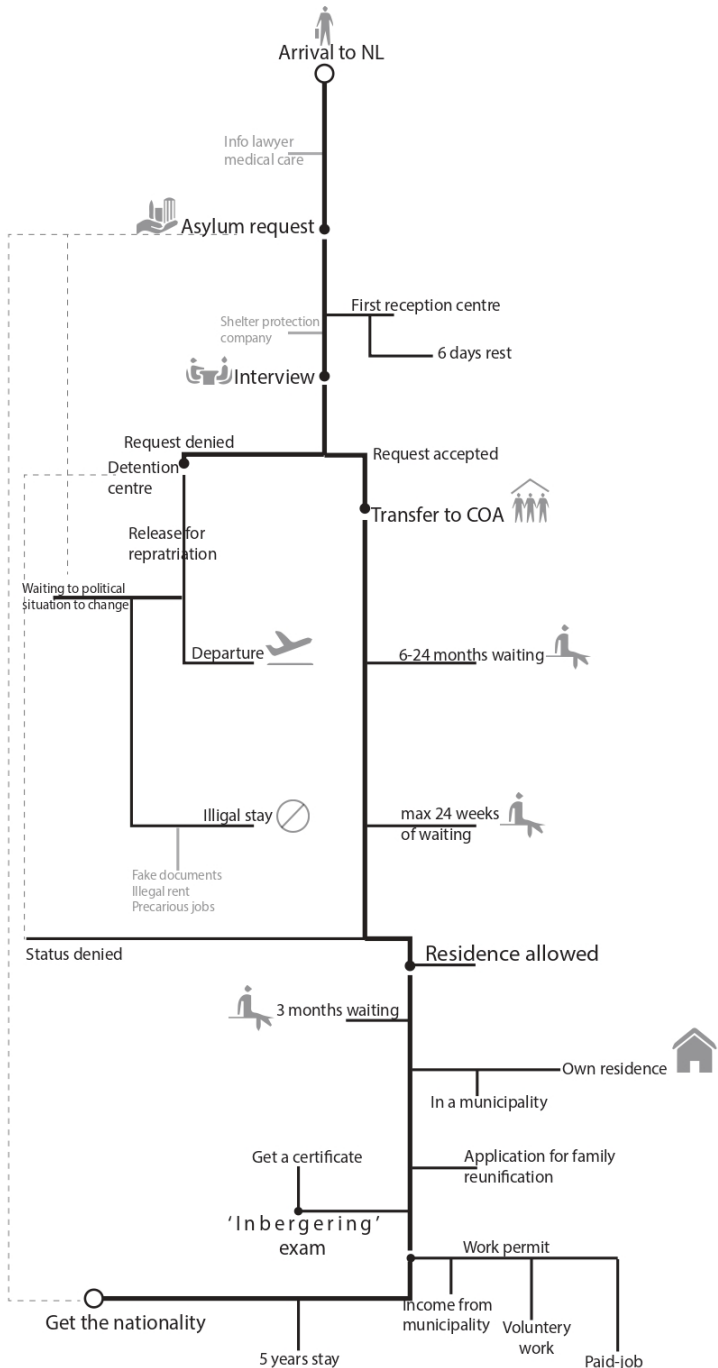


Figure 3: Asylum procedure in The Netherlands. Source: own illustration based on information from <https://www.rijksoverheid.nl/onderwerpen/asielbeleid/>.

## Chapter (B): Integration into the Dutch society

### B.1 Obstacles versus opportunities

For an asylum status holder, social integration begins the moment he or she is released from the asylum seekers' center. This illustrates one important issue: due to the limited housing availability, many asylum status holders have to remain at asylum seekers' centers that are often located on the fringes of a city for extended periods of time, barring any opportunities for fostering social relationships with Dutch citizens. In the present paragraph, these obstacles with regards to social integration are expanded upon, and opportunities and solutions to these issues are addressed and discussed.

As mentioned, asylum status holders usually have to wait for extended periods of time before receiving housing. This is an undesirable situation, as research has shown that long-term stays in asylum seekers' shelters has adverse effects on mental health and - as a result - hinders participation opportunities (Bakker, 2016; Gezondheidsraad, 2016; Schellingerhout, 2011). The Advisory Committee for Immigration Affairs (ACVZ; Adviescommissie voor Vreemdelingenzaken, 2013), therefore, calls this extended waiting period 'lost time'. This lost time is characterized by a lack of privacy, uncertainty about the outcome of the procedure and few opportunities to participate in social activities. Such consequences of uncertainty and isolation also affect asylum status holders' degree of dependence and passivity: waiting and doing nothing becomes the norm.

Previous research has also shown that those who stay in an asylum seekers' centre for more than a year experience more symp-

toms of anxiety, depression and physical complaints than asylum status holders who stay in a shelter for less than six months (Laban et al., 2004).

Aside of fostering interaction rather than isolation, mastering the Dutch language is another condition that is necessary for social participation. In fact, developing language proficiency is absolutely necessary, as this increases job opportunities and facilitates social contact (Bakker & Dagevos, 2017; Dagevos & Odé, 2011; de Vroome & van Tubergen, 2010).

A full integration into the Dutch society is, according to the Dutch government, the intended end result of the acculturation process. According to Graves (1967), three conditions must be met in order to facilitate integration. Firstly, through consistent exposure, there must be knowledge of the norms and values of the dominant culture (i.e., the Dutch culture). The second condition is the ability for an immigrant to identify with the dominant culture, so as to motivate change. Finally, the minority must feel that their goals are actually achievable because of having the same resources available to them as there are available to the majority. Ager and Strang (2004), however, believe that these three conditions are not sufficient to achieve full integration. They distinguish ten domains of integration. Each domain is a condition that must be met for the facilitation of integration (Ager & Strang, 2004). The ten domains are divided into four categories (see figure 4).

- Practical means (work - housing - education - health care)
- Social connections (social ties - social bridges - social links)
- Facilitation (security & stability - language & culture)
- Foundation (rights & citizenship)

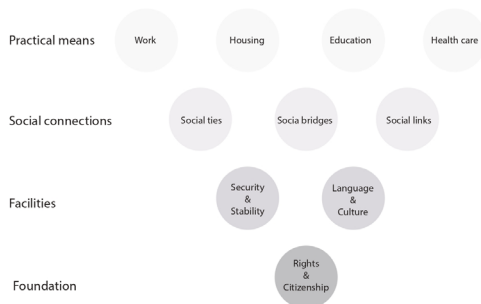


Figure 4: The conditions for integration into a new society. Source: Ager and Strang, 2004.

The first category of integration includes the practical means of integration. Its four domains (work - housing - education - health care) are recognized worldwide as essential aspects of integration. Therefore, asylum status holders in The Netherlands receive social guidance to help them in all of these four domains. As such, these domains should not only be seen as consequences of the integration process, but also as a stimulus for the process of integration.

The second category is that of social connections. For immigration, a particular focus is on the importance of social bridges, which is a concept that describes the relationships of someone with other groups or communities, and social links, which des-

cribe more formal contacts with institutions and companies, including with commercial companies and government agencies.

The third category includes domains that are essential for facilitating the integration process. The first domain concerns the language and culture of the dominant group (local environment). The minority must master the language, but familiarity with the culture is also needed.

The last category describes only one domain. This is the foundation for all other domains: rights and citizenship. Without a vision of a new future, the entire integration process is of no use. Ager and Strang (2014) believe that an individual or group of people is successfully integrated if they:

- Have attained the same level of work, housing, health care and education level as local people
- Socialize with individuals within their own community and individuals from other communities
- Have knowledge of the language and culture of the dominant group and feel safe.

## B.2 Responsibilities:

So far, the argument has been made that promoting integration and helping asylum status holders integrate quickly is the responsibility of everyone. So, when designing accommodations for asylum status holders, it is crucial to provide many opportunities for cultural exchanges and for fostering social interaction. In other words, social interaction should be considered from various facets:

- A person's own responsibility for his or her development.
- The municipality's responsibility for making necessary changes to provide asylum status holders with language training and work experience in advance, during their stay in an asylum seekers' centre.
- The responsibility of the architect who is responsible for designing the housing solution, which lays with securing architectural spaces at different levels that help and stimulate residents to interact and integrate, such as through having sufficient common areas. Schmal (2017) also mentioned that including places for workshops, shops, and work activities is important in order to stimulate social activities and personal initiatives (Heaming, 2017).

### B.3 Binding ladder:

A new aspect to promote (social) integration is the binding ladder of Boonstra and Snel (2005). The binding ladder distinguishes between different degrees of intensity and effectiveness of inter-ethnic contact. According to this theory, the higher the intensity of social interaction, the higher the effectiveness. The binding ladder is a frequently-used sociological method to assess the intensity of an intervention to promote integration. Such interventions can be classified as one of the four steps of the binding ladder (see Figure 5). The lowest step includes initiatives with a low intensity, whereas the highest step includes initiatives with a high intensity (Amir, 1994; Dagevos, 2007). In brief, the four levels can be described as follows:

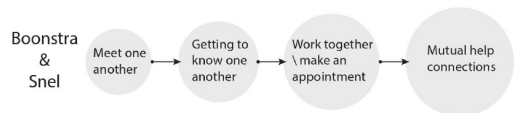
- The first level: “meet one another”. Examples of programmatic interventions with this objective are neighbourhood parties and multicultural festivals (Boonstra & Snel, 2005).

- The second one is: “getting to know one another”. For meaningful relationships to emerge from these previous encounters, people must get to know each other, and the goal is to create mutual understanding and respect for each other. Examples include intercultural dialogues or events in which an ethnic group presents customs and traditions, such as a traditional costume (Dagevos, 2007; Boonstra & Snel, 2005).

- The third one is: “working together”. This concerns for example codes of conduct and other agreements with the neighbourhood. Local residents may enter into a dialogue with each other to jointly improve the social quality of the neighbourhood (Boonstra & Snel, 2005).

- The fourth level is: “mutual help connections”. These are initiatives that focus on establishing one-on-one contacts, with the underlying idea that bridging social networks can have a positive influence on disadvantaged groups. These projects actively work on the creation of meaningful relationships, but they often also improve the language proficiency of the immigrant participants (Dagevos, 2007; Boonstra & Snel, 2005).

Figure 5: The four levels of the binding ladder of Boonstra and snel (2005).





### C.1 Statistics & Households:

The coming paragraphs present statistics that give quantitative insights into the immigration situation of the Netherlands of recent years, in particular with regards to living in asylum seekers' centres. As can be seen in Figure 6, and in line with Figure 1, from 2013 onward, the number of immigrants is increasing rapidly until 2015. Today, around 16 thousand people of the 39.417 already received a residence permit but still live at an asylum seekers' centre, and approximately 23% of these asylum status holders live in emergency centres instead of regular asylum seekers' centres.

Figure 7 shows that the refugees who have arrived in the Netherlands since 2013 are mainly from Syria 37%, Eritrea 15%, or other countries such as Iraq, Afghanistan and Iran (48%). Around 80% of these refugees were given a permanent or temporary residence permit (Leekers & Scholten, 2016). Lastly, the majority of these immigrants are aged between 18-29; see Figure 8 (COA, 2016).

Asylum status holders usually rely on financial aid provided by the municipality. As such, it is important costs of living are not high (Priemus & Smid, 1993). Consequentially, when obtaining housing, most asylum status holders are housed in social housing and regularly receive placement priority (Klaver & van der Welle, 2009). Recently, due to administrative changes,

the municipality became responsible for finding public housing for asylum status holders.

Concerning the requirements of proper social housing for asylum status holders, it can be said that there are relatively few requirements, as many asylum status holders are young and single, without children. In line with the social standards, the rent of social housing should not exceed 710 euros, (Social housing, 2021). per month in case the status holder does not have a paid job but receives financial aid from the municipality. As such, small starter homes designed for one or two households are the most ideal fit (Paul, 2009).

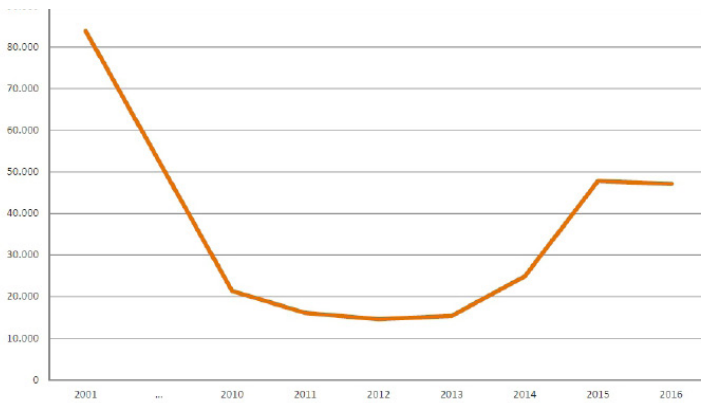


Figure 6: Number of status holders staying in Dutch asylum seekers' centres (Twynstra Gudde, 2016).

	2013	2014	2015	2016	Total	Percentage
<b>Total</b>	9,838	21,811	43,093	8,422	83,164	100%
<b>Syria</b>	2,232	8,748	18,677	1,451	31,108	37%
<b>Eritrea</b>	851	3,833	7,359	437	12,480	15%
<b>Other</b>	6,755	9,230	17,057	6,534	39,576	48%

Figure 7: Recent Dutch immigrants, divided by major nationalities (Vluchtelingenwerk).

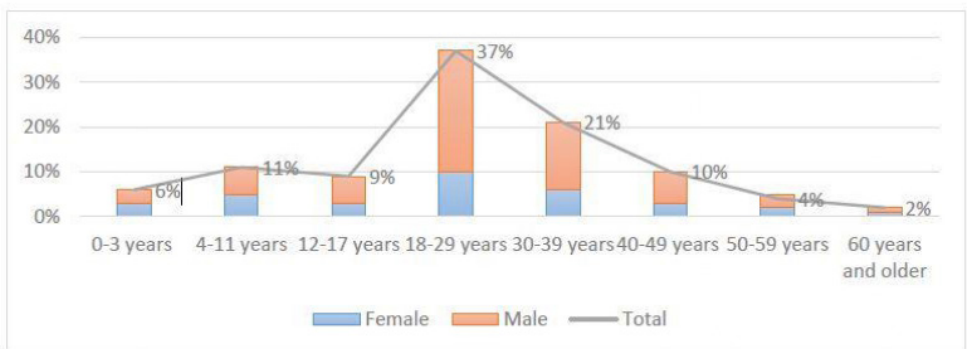


Figure 8: The percentage of people residing in asylum seekers' centres, by age (COA, 2016).

## C.2 House division comparison

To design proper accommodation for the recently-arrived asylum status holders, it is important to take into account the living environment that the asylum status holders are used to. To provide an overview of the cultural differences with regards to housing design, typical Syrian and Eritrean houses were compared with a typical Dutch house. The focus in this comparison was on the Syrian and Eritrean nationalities, as these represent the most common groups of refugees. The comparison can be found in Figure 9.

### In the Dutch house:

- Open kitchen;
- Routing to sleeping room goes through living room;
- Balcony is for both living and sleeping room;
- Same WC for user and guest;

### In the Syrian house:

- Living area in one section and sleeping area in another section;
- Closed kitchen;
- Balcony connected to the living area and balcony connected to the bedroom;
- Different WC for user and guest;

### In the Eritrean house:

- No separation between bedroom and living room;
- One bed room used by more than one person;
- Open kitchen;
- One bathroom;

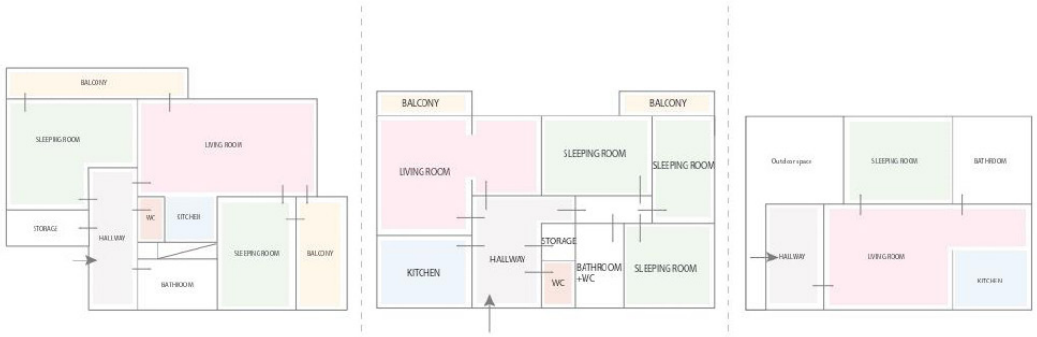


Figure 9: Housing layout for typical Dutch, Syrian, and Eritrean houses.

## Chapter (D): Architectural strategies

### D.1 Affordability & flexibility:

The previous sections have argued that asylum status holders need affordable and integration-promoting houses. 'Affordable' in this sense does not mean 'uncomfortable'. To foster integration, the housing designs should incorporate cultural values the asylum status holders were accustomed to in their country of origin. In the case of affordable houses (small houses), the building block can include lots of houses and as a result, house companies or private owners benefit from that when they get the rent from a large number of residents.

As referenced previously, the homes should be designed in an affordable way. A flexible room setup, where different target group can occupy the house by compacting the floor plan which is a way to guarantee the affordability as a way to build for a group of people where the specific person conditions are not known yet.

According to Bhatta (2009), "affordable housing is a dwelling considered affordable for people with an average income". Milligan (2007) defined 'affordable housing' as "a dwelling which is suitable for the necessities of a range of low income households, so those with low or moderate income can meet the rest of their essential living expenses". Other definitions are more extensive. For example, the Maribyrnong City Council (2009) defines 'affordable housing' as "a well-located energy effective dwelling, suitable to the requirements of a household". Such more extensive definitions also focus on saving energy and on efficient utilization of rooms. Therefore, any housing design

that seeks to accommodate asylum status holders should be flexible and provide the opportunity for changing the layout and making in-home adjustments without having to spend a lot of money on renovations (Friedman, 1987; Pantelopolous, 1993). For instance, this can be achieved by adding the area of the loggia to the house to make it bigger. To summarize, Attenveld and Liesker (2010) have developed methods for increasing affordability while not having to sacrifice comfort:

- When there are common rooms, such rooms could serve to reduce the size of the house;
- Small houses in the building block means more houses and therefore a higher population density, leading to more social interaction;
- Compact spaces could be composed inside the building by providing circulation spaces which can be utilized as meeting areas for residents (Schmal, Scheurman, & Elser, 2017);
- Homes should be flexible;
- There should be a reliance on technologies that reduce the cost of heating and cooling;
- Homes should use prefabricated or local materials.

### D.2 The needs of residents with regards to building requirements

Next to affordability, it is important to meet the needs of the asylum status holder residents, who should be able to live in a comfortable environment with no issues due to cultural differences they might experience,

especially when interacting with locals.

An important topic that relates to having people live together in one building and interact socially is the friction that may arise. Ethnic segregation in neighbourhoods and districts is generally seen as undesirable (Entzinger & Scheffer, 2012).

Regardless of the fact that social blending is a fundamental part of metropolitan living arrangements, it remains indistinct at what spatial scale housing diversification might work best. When individuals from various backgrounds, ways of life, and household compositions live close to each other, the development of close social ties is not automatically ensured. From one perspective, living in socially-blended conditions may create social bridges between occupants of various backgrounds. Another perspective is that this could create a social distance between residents. The following paragraphs will provide insights into how these seemingly opposite arguments (social convergence versus social distancing) relate to the characteristics of the living space, such as the home's design and the common spaces in the building.

Some studies show that housing should be designed in such a way that is mindful to the location in the building that specific houses are located. For example, the housing units should be designed coherently, which could significantly reduce the perceived differences between residents of different backgrounds and thus contribute to creating a strong social bridge between them (Groves et al., 2003; Norris, 2006; Roberts, 2007). When the appropriate design is found, this design will then help overcome prejudice, because it “accentuates the si-

milarities between the residents rather than the differences” (Arthurson, 2013).

Several researchers previously emphasized the importance of including a common area in a residential building that is designed to house people of various backgrounds and origins in order to foster social bonding (Chaskin & Joseph, 2010). It turns out that common places such as parking lots, corridors, and hallways have the ability to encourage the formation of such relationships and can help increase informal interactions between residents (Tunstall & Fenton, 2006). Joseph (2008) emphasized that proximity creates frequent interactions and helps identify common needs and interests.

It has also been shown that, when living in one building, the way of life of residents with various backgrounds and ethnicities may also be affected by the way they meet each other (Matejskova & Leitner, 2011; Nast & Blokland, 2014; Roberts, 2007). Valentine (2008) noted that the presence of common rooms in the building, such as a shared living room or a shared workplace, enhances or creates opportunities for communication and meeting others on a daily basis. Jupp (1999) argued that the presence of these spaces in a building reduces prejudice and decrease the distance between residents.

For the purpose of designing asylum status holder housing, the Startblok buildings are highly suitable reference projects, as half of the residents in the Startblok buildings are refugees from Syria or Eretria and the other half are local Dutch students or starters. Due to the success and positive results of this project and the absence of any pro-

blems among the residents, the same idea has been repeated several times in different areas in the Netherlands.

The method that was applied in the design of these buildings in order to achieve harmony between residents of different backgrounds and to avoid friction is by giving regular educational and awareness lectures to the residents. In addition, potential new residents are not only interviewed by residents, but also by a social administrator who can advise the residents on whether or not to include the applicant. The purpose of the lectures is to ask residents about their experiences in the housing project and to make them aware about their options for participating in social activities, in addition to providing knowledge about what they can expect and what is expected of them. In terms of design, the spaces within the building are well thought-out, and the layout of the residential complex can prevent many potential problems and inconveniences from occurring.

The Startblok project followed various policies to be able to achieve more successful social integration and more harmony among residents. The most important policy that has been implemented in the building is to place the dwellings of both refugees and local residents adjacent to each other and randomly throughout the building in order to avoid separation between them. Another policy was to give the residents complete freedom to organize everything in the building on their own, for example, organizing meetings and celebrations, in addition to distributing various tasks of the building among them, such as cleaning and arranging common places. This is in order to en-

hance the feeling among the residents that they are all equal and that each should be helped regardless of race, gender, religion or background. Some of the tasks that were self-organized by the residents were music events, language exchanges, movie nights, parties, and running groups. Many positive results were achieved from these activities in particular and from the whole project in general. For example, compared to the national average, the Startblok building reported fewer incidents occurring.

To conclude, specific features related to the design of homes and public spaces and facilities can intensify the formation of social bonds between residents. From the Startblok project, it can be concluded that the distribution of residents among the apartments should be randomized except for making sure that residents of various backgrounds live near each other. In addition, the presence of leisure facilities, corridors and outdoor spaces that promote different uses by residents of different background should be emphasized (Chaskin & Joseph, 2010; Roberts, 2007). Moreover, it was found that it is important to give the residents awareness lectures on an ongoing basis in order to break stigmas and prejudice. Lastly, it is important to give residents full responsibility for taking care of the building and organizing meetings.

For the current design, this means that on the building level, first, all the homes of status holders and local residents will be randomized to different places in the building while ensuring their proximity to one another, in order to achieve the maximum possible mixture of backgrounds. Secondly,

on the ground floor of the building, where there is a common place for working and studying, some outreach and development lectures should be given to all residents of the building in order to provide them with information on their duties and rights towards each other and with tips on how to accept each other regardless of ethnicity, nationality, religion, and background. In addition, on the second and the third floor of the building, there should be a centre that the municipality or any other organization can rent to hold workshops, volunteer work activities, and to be able to give Dutch language lessons in order to make it easier for the asylum status holders to communicate with others.

## Design hypothesis:

In this paragraph, all the preceding arguments coming from the literature research are applied to the current design. Consequently, the results of the design hypothesis that fits with this design should express a clear understanding of the requirements of the target group (asylum status holders) and how to translate these requirements into a practical and useful design. The way the design hypothesis was structured was to break it down into four small paragraphs, which are:

- Because (the things that we already know or have seen);
  - We believe (ideas);
  - Will result in (outcomes);
  - We will know this is true when (there is evidence);
- 
- The Netherlands currently copes with a housing market shortage, which complicates housing the increased numbers of refugees. Also based on what I have witnessed personally, having a long stay at an asylum seekers' center affects someone psychologically, socially, financially, and educationally. In addition, the main problem that all new refugees suffer from is a lack of social integration, which leads to difficulties in finding paid work or in the ability to communicate and strengthen social relations due to weak linguistic skills and a lack of knowledge on the Dutch culture.
- 
- I believe that there are basic necessities that a person must possess in order to be able to integrate, such as a job, home, edu-

cation options, and health.

- Achieving integration is the responsibility of the asylum status holder, the municipality, and most importantly, our role as architects. Theoretical findings should not remain theoretical, but should be translated into designs that are actually brought into existence. Consequently, if I assume that the design of a residential building in the city of Rotterdam takes into account all the previously mentioned criteria for fostering social integration, this will provide an architectural environment for status holders to help them secure their first steps towards the future.

- I will make sure the architectural spaces enhance people's social relations. For example, when creating common rooms in the plinth of the building where I will ensure asylum status holder residents will be able to participate together with locals in social activities, or be able to set up or be part of various workshops that are intended to foster knowledge about the Dutch cultural values and other essential information. I also expect that by securing work places for these people in the plinth, they can showcase their skills or even have small halls for celebrations. Lastly, I will ensure the design incorporates a shared living in which residents of one floor share the kitchen, study room, or outdoor places on the roof that are suitable and encourage interaction between residents; see Figure 11.

### - **Program:**

Internal community (Internal contact): creating joint activities and social structures, spatial facilitation, for example, a living

room, study\reading room or kitchen in the upper floors and outdoor spaces with seating areas (Cooper & Sarkissian, 1987), in addition to creating encounter spaces in the circulation areas or in the entrances (Frauenburo, 1997), because designing such collective spaces leads to more social integration (Karsten, 2017) and desired interaction between residents (Becker, 1976).

Adding public functions (External contact): attracting various ethnic groups to mix in with the residents of the building and allow them to communicate with each other without any form of separation by adding functions such as a small library, a hall for different cultural celebrations and parties, a café\language café where people spend time together and teach each other their own language, and a workshop place.

### - **Building characteristics:**

1- Provoking encounters: the design and the conscious distribution of functions distribute the program across the building in such a way as to create dynamism and activity, from which encounters and interactions arise such as:

- Mixing living and public functions;
- Eyes on the street: the relationship of the building with the street through balconies, loggias, and windows;
- Designs for pedestrians: a number of entrances at the street level, presence of seating space and environmental factors such as trees near the sitting area on both sides (street and quay).

2- Transparency: connections between the inside and outside as a concept in the



ground floor to create a sense of connection for residents and outsiders. This enables visibility from the outside, sight lines in the plan, and continuous routes.

3- Transition zones: gradual transition from public to private. For instance: the public functions in the plinth should be large units (restaurant, café), which means that offices (small units) should not be in the plinth because this is not necessary.

- **Examples:**

There are a few reference projects (see figure 10) that are relevant to the current research:

- Refugee Company (social enterprise for refugees), Amsterdam, The Netherlands, 2015: This project helps refugees to rebuild

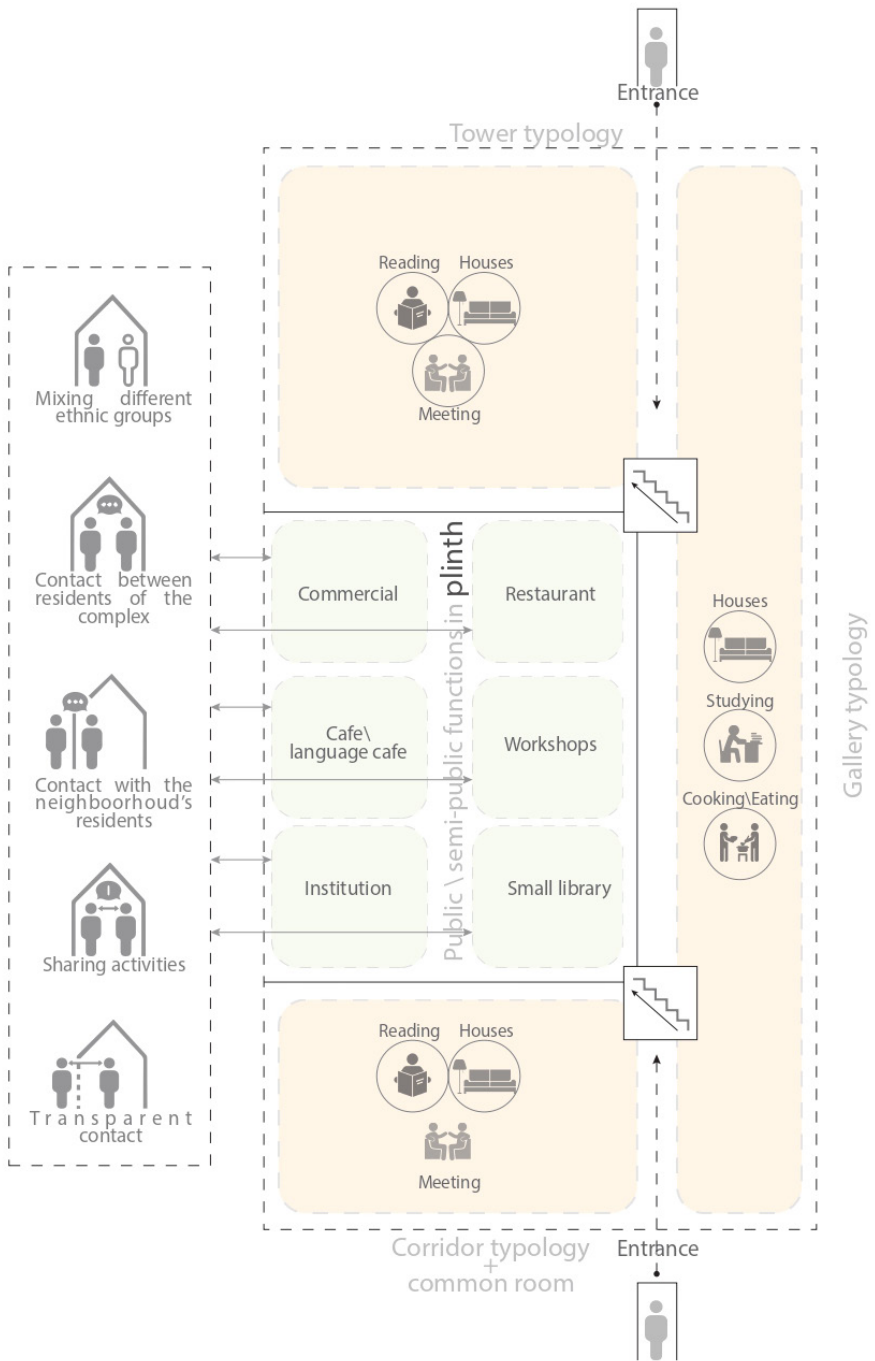
their professional lives by offering a variety of projects and workshops.

- Seedz (support and training program for refugees), Rotterdam, The Netherlands, 2016: Seedz has four categories of business units, such as related to culture and food, engineering, sports, and a business training academy. It is aiming to enhance the skills and entrepreneurial capabilities of the newcomers.

- Migration lab (itinerant workshop for urban interventions), The Hague, The Netherlands, 2014: The migration lab organises multilingual workshops for documenting intercultural communication with refugees and local communities, along with education and cultural activities.



Figure 10: Refugee company, Amsterdam - Seedz, Rotterdam - Migration lab, The Hague.  
Source: Crimson, 2019.



Picture 11: Some functions should be included within the building to provoke interaction between the residents. Source: own illustration.

## Conclusions & Recommendations

This chapter discusses the results of the graduation research and answers the central research question: How to design social housing in an affordable manner that can provide the status holders a comfortable living environment and help them with the integration?

The four sub-questions that were designed to help answer this main research question were:

- How are the Dutch asylum procedures and housing status holders arranged in the Netherlands and to what extent is the Netherlands tolerant of refugees?
- What should a housing and living environment look like that allows refugees to socially integrate more strongly and without experiencing difficulties?
- How can an architectural environment be created that include both refugees and local residents?
- What are the specific special and social design needs of refugees with regards to house specifications and the scale of the build?

To answer the first sub-question, it was clear that there are many procedures someone has to go through when requesting asylum in the Netherlands and in order to obtain the right to stay in the country. During this period, the refugee remains in asylum seekers' centers until a decision is made on whether or not to grant him or

her a more permanent residence. However, during this period, refugees are not allowed to work, and as result, they do not have any option to start the process of social integration. After being granted a residence permit, asylum seekers become asylum status holders. Then, the COA plays a big role in connecting them to a municipality. In terms of housing, asylum status holders are commonly placed in social housing. After being housed the task of the municipality is passed on directly to the local housing association, which prepares the house for use and places a status holder in the house via COA.

Concerning the second sub-question, it was found that there are several conditions that should be met to implement integration. One of these conditions is that there must be knowledge of the norms and values of the dominant culture. The other condition is the ability to identify with the dominant culture to motivate change. It was also found that these conditions are not enough, and other domains were proposed as well to facilitate social integration, such as related to working, housing, education, health care, social connections, security, and language.

Designing a building block which can be occupied by everyone and not specifically by asylum status holders from specific nationalities was a challenge because of the many elements that had to be taken into

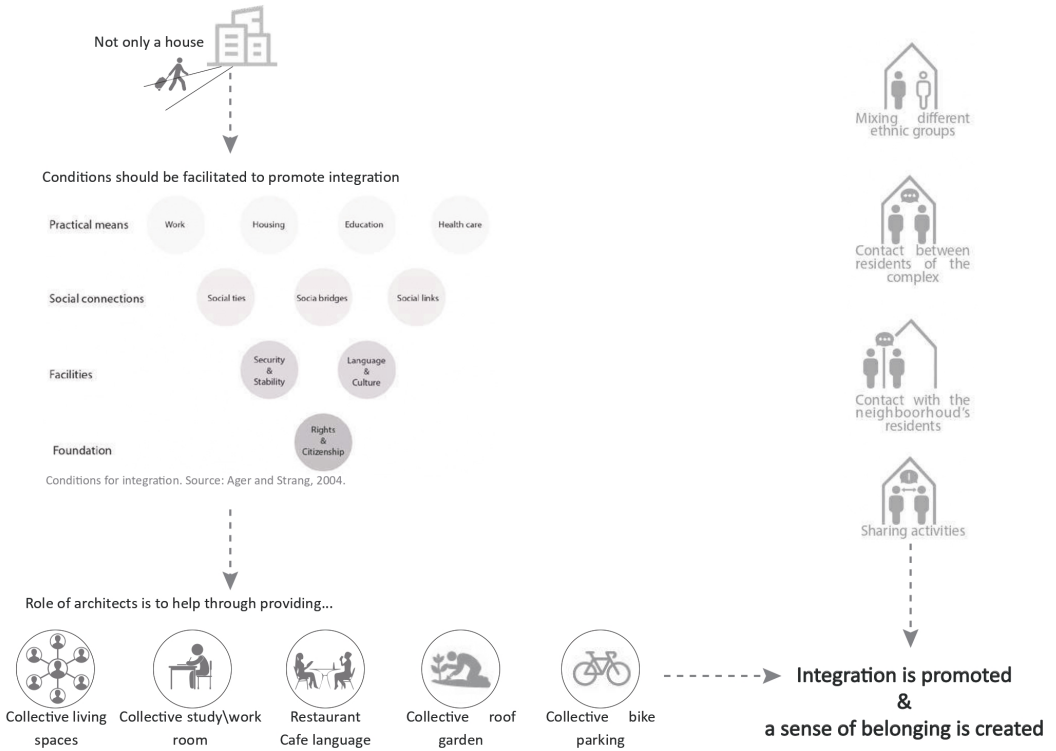
consideration to achieve a comfortable living environment for the residents. To stimulate integration between residents from various ethnic backgrounds, feelings of discomfort and friction should be removed as much as possible. To do this, people with various ethnic backgrounds should be placed in between each other (with regards to housing) as much as possible and should be given a responsibility to perform various chores around the building. In addition, it is recommended to provide residents with awareness lectures that increase their degree of acceptance of one another and closeness to each other.

In order to answer the fourth question, it became clear that it is essential to have commercial functions in the plinth. To accomplish this, small halls can be set up to be able to accommodate people who wish to celebrate with their neighbourhood residents and organize social gatherings. In addition, several public functions should pertain specifically to asylum status holders, such as having a language café where status holders can sit with their local friends to learn each other's language. Common rooms are also needed in the building, such as study and dining rooms, in which the residents can sit together.

## - Recommendations

To be able to properly design homes that suit asylum status holders, it is important that more studies are conducted on this topic. Ideally, the result of such study efforts should be a guideline which allows architects to, for example, provide a specific selection of ethnic backgrounds and immediately list the most ideal circumstances for housing these asylum status holders. If the needs of asylum status holders with regards to housing are not properly identified, social integration will be significantly more difficult. It is important to gather, bundle and propagate this knowledge to the rest of the world so that potential housing providers and local residents also get a fair picture of the target group.

Another idea which needs further research and rethinking relates to solving the problem of status holders being provided with public housing that is intended for a whole family. Given that many of the asylum status holders are relatively young and single, such houses are simply too big and the rent is high. So, research should also focus on ideal ways to design social housing that is intended to accommodate people of various backgrounds together, as roommates.



So, the research findings until now say that the status holders do not only need a house but many elements should be facilitated for them to give them the opportunity to integrate into the society. However, the role of architects in this stage is providing spaces that would allow them to meet one another, share some activities, and live together with the local residents under one deck. To be

honest, It's easy to say that the integration can be implemented and a sense of belonging can be created but that's should be based on research as well.

# Needs on building scale to avoid the friction between residents

## Design coherence of the housing units

- > reduces observable differences between different tenures
- > contributes to bridging social divides
- > may overcome prejudice

## Shared environment among residents of different backgrounds

- > encourages informal positive interactions (ex: in parking - corridor)
- > in which positive experiences can occur between residents
- > develops positive perceptions between residents

## Shared facilities and amenities

such as: communal living room (social gathering)  
study room (enhancing Dutch language)  
Shared kitchen (social gathering)  
workshop space



- > reduce prejudice and decrease distances

For that reason, I did research about the problems that can be an obstacle to implement the integration. For example, the friction that can be arisen between the inhabitants of different backgrounds. So, when we talk about the needs of residents, that doesn't only mean that they need specific spaces and affordability, but it is also important to secure a comfortable living environment to live in with no issues due to cultural differences they might experience. The topic

of friction has been an important thing that needed to be solved in the building. Some studies suggested some aspects that can be helpful in this case. One of these aspects is the design coherence of the housing units in terms of size, orientation, location and thereby positively contribute to bridging social divides. When there is a coherence design, this design may overcome prejudice because it 'accentuates similarities between residents rather than differences'.

## Reference project - Startblock

50% people with Dutch background  
+  
50% people with migration background

Startblock, Amsterdam, housing foundation De key



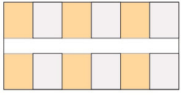
Startblock complexes in different areas in the Netherlands



To see how the possibility of friction was solved in reality, I took the Startblock buildings as a reference project since half of the

residents are refugees and the other half are local Dutch students or starters.

## Policies followed by Startblock to achieve successful integration & harmony between residents



-----> placing dwellings of both refugees and local residents adjacent and randomly throughout the building

-----> giving residents the responsibility in organizing everything on their own



Meetings



Celebrations



Music events



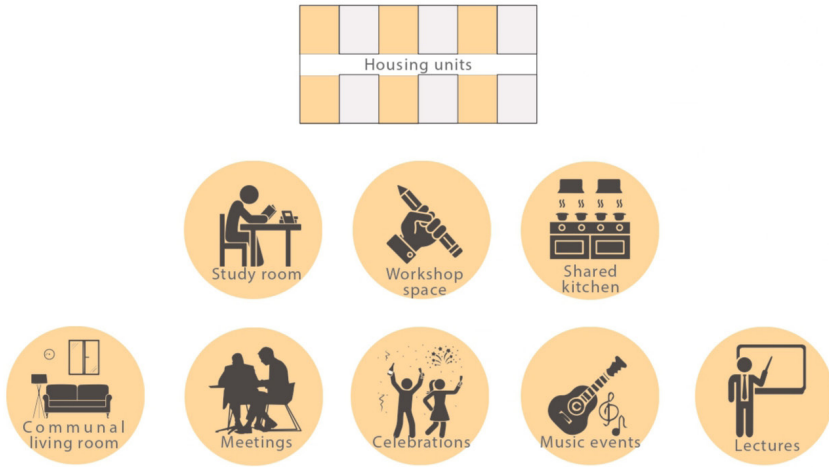
-----> giving the residents educational and awareness lectures about their duties & rights and tips to accept each other

There were some policies that have been followed by this project to achieve social integration and harmony among the residents. One of these policies is placing the dwellings of both status holders and local residents adjacent to each other and randomly throughout the building to avoid separation between them. Another policy is by giving the residents complete responsibility to organize everything on their own

for example meetings and celebrations and that to enhance the feeling among them that they are all equal regardless of race, gender, religion, or background.



# Conclusion



From that research, we conclude that designing the building appropriately is the most factor in reducing friction between

residents of different backgrounds and avoiding many problems and subsequent inconveniences.



# Case studies

# Introduction

The four case studies were chosen on the basis of: Most of the homes are small for one or two persons, and also because there are common spaces in them at different levels in which the residents participate in collective action. In addition to the circulation in the floor plans in terms of the location of the houses and the transition from the private space to the public one.

## - Topic:

The topic of the plan analysis is the design conditions that promote integration and facilitate spaces where people can interact with each other.

## - Research question:

How are the design conditions that promote integration applied within the buildings of the four case studies?

## - Hypothesis:

I suppose that the design of the buildings for the four case studies are designed in order to promote the integration between the residents. It was done through a set of conditions and domains that were found in the building that helped people to interact with each other. So, there are found conditions (a certain living environment) in these buildings to stimulate social interaction.

## - Methodology:

In order to analyze the four case studies,

different drawing techniques were drawn, including 2D floor plans or three dimensional perspectives or axonometry according to the need of the idea to be explained. However, the four cases were analyzed on the basis of four points chosen from a long list of interesting things in all projects which are shown in the next page, but these four points are more important in comparison with others.

The four points that have been chosen are: the public functions, the transition between the private and the public, the circulation, and the dwelling division and its characteristics. The four projects that were selected from several cases are: Tietgen Kollegiet (Denmark - Copenhagen), Antoni (NL - Delft), Babel tower (NL - Rotterdam), West Beat (NL - Amsterdam).

## - Result:

A brief explanation about the case studies is organized in a table in the following pages. The next pages will be for the analysis of the four chosen projects.

# List of case studies



Tietgen dormitory, Copenhagen



SAWA, Rotterdam



Crossover, Amsterdam



Fenix, Rotterdam



Antoni, Delft



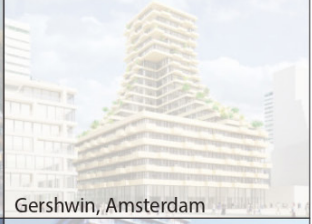
Downtown, Rotterdam



Babel tower, Rotterdam



De Geus, Leiden



Gershwin, Amsterdam



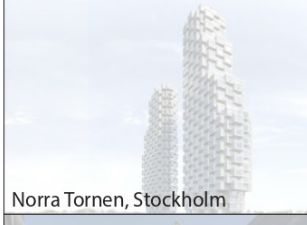
Vertical garden, Amsterdam



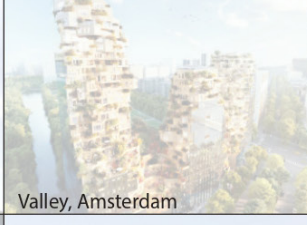
West Beat, Amsterdam



Terraced tower, Rotterdam



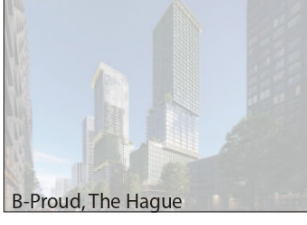
Norra Tornen, Stockholm



Valley, Amsterdam



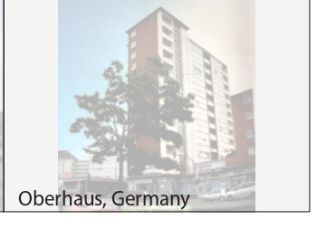
Amvest, Eindhoven



B-Proud, The Hague



Change=ii, Amsterdam



Oberhaus, Germany

# Chosen case studies



1  
Project name Tietgen kollegiet  
Architect Lundgaard & Tranberg  
Location Kopenhagen, Denmark  
Completed 2005



2  
Project name Antoni  
Architect Studioninedots  
Location Delft, The Netherlands  
Completed 2020



3  
Project name Babel tower  
Architect Laurens Boodt \ AM \ Bartels  
Location Rotterdam, The Netherlands  
Completed -----



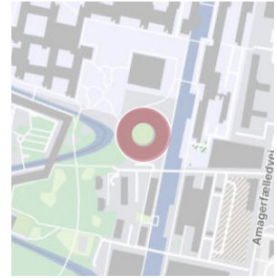
4  
Project name West Beat  
Architect Studioninedots  
Location Amsterdam, The Netherlands  
Completed -----

Interesting aspects in these previous case studies and the chosen four projects will be analysed according to four elements which are:

- Outdoor spaces
- Collective spaces
- Spatial organization
- Orientation
- Private & Public
- Materiality
- Terraces
- Hierarchy
- View
- Circulation
- Combination
- Green spaces
- Dwelling division & characteristics
- Plinth
- Set backs
- Roof terrace usage

# Tietgen Kollegiet

Architect	Lundgaard & Tranberg
Location	Kopenhagen, Denmark
Floor area	26.500 m <sup>2</sup>
Appartments	360
Unit size	29 , 33 , 42 m <sup>2</sup>
Completed	2005
Facilities	bicycle parking, meeting room, music & study room, laundry, living room, computer room.



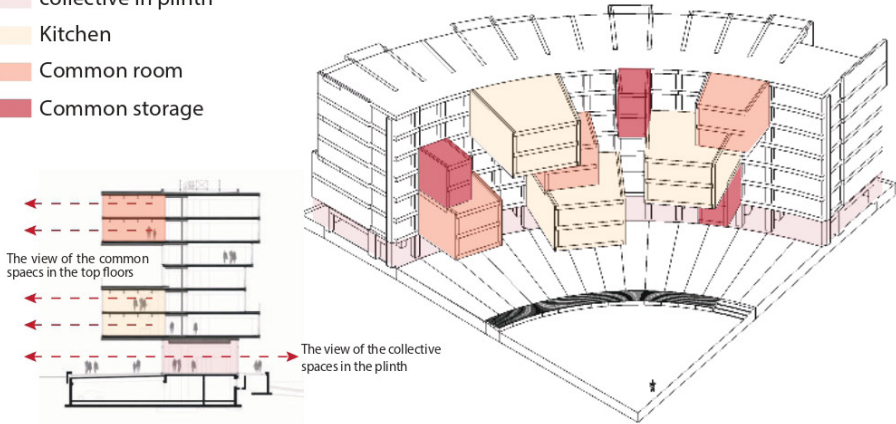
The building has seven floors in total and courtyard in the middle which can be accessed through the five entrances from different sides and this courtyard plays an important role in encouraging the collectiveness between the residents and it is surrounded by the collective functions in the plinth.



## Public functions

the design of the plinth is a bit different than the floors in top of it. The facade of the plinth is transparent that reflects the common functions in the ground floor such as the study room, computer room. The collective functions in the plinth have views to the outside and to the courtyard whereas the collectiverooms in the top floors are oriented to the inside (courtyard).

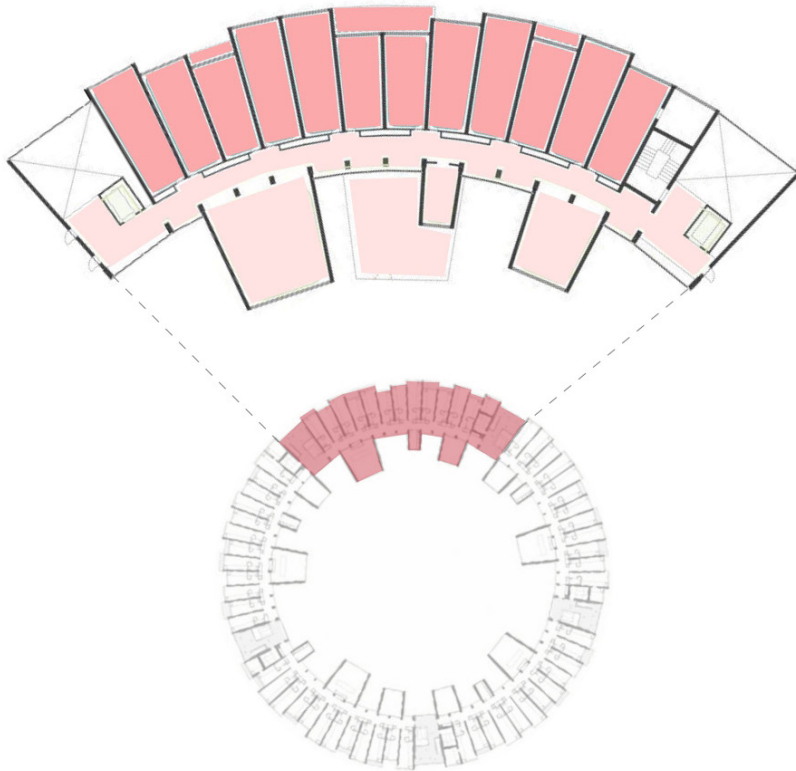
- collective in plinth
- Kitchen
- Common room
- Common storage



## Private & Public

There are 60 dwellings in each floor (60 dwelling in the whole complex) and each 12 dwellings have their shared spaces such as kitchen, living room, and sgared storage. On top of h=these shared spaces there is the terrace for the upper floors. In addition to this, some of the dwellings have their own outdoor space.

- Private dwelling
- Shared spaces

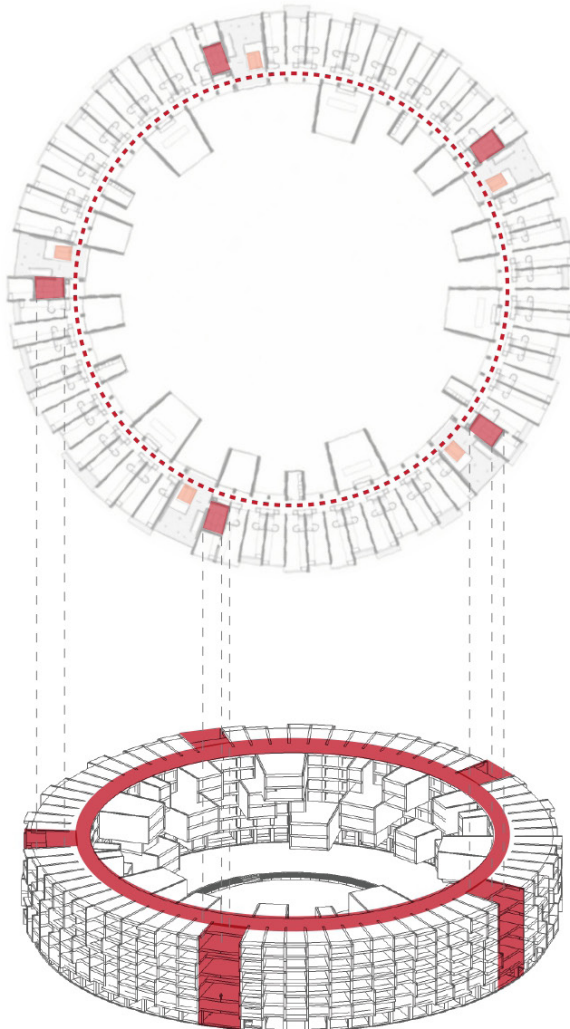




## Circulation

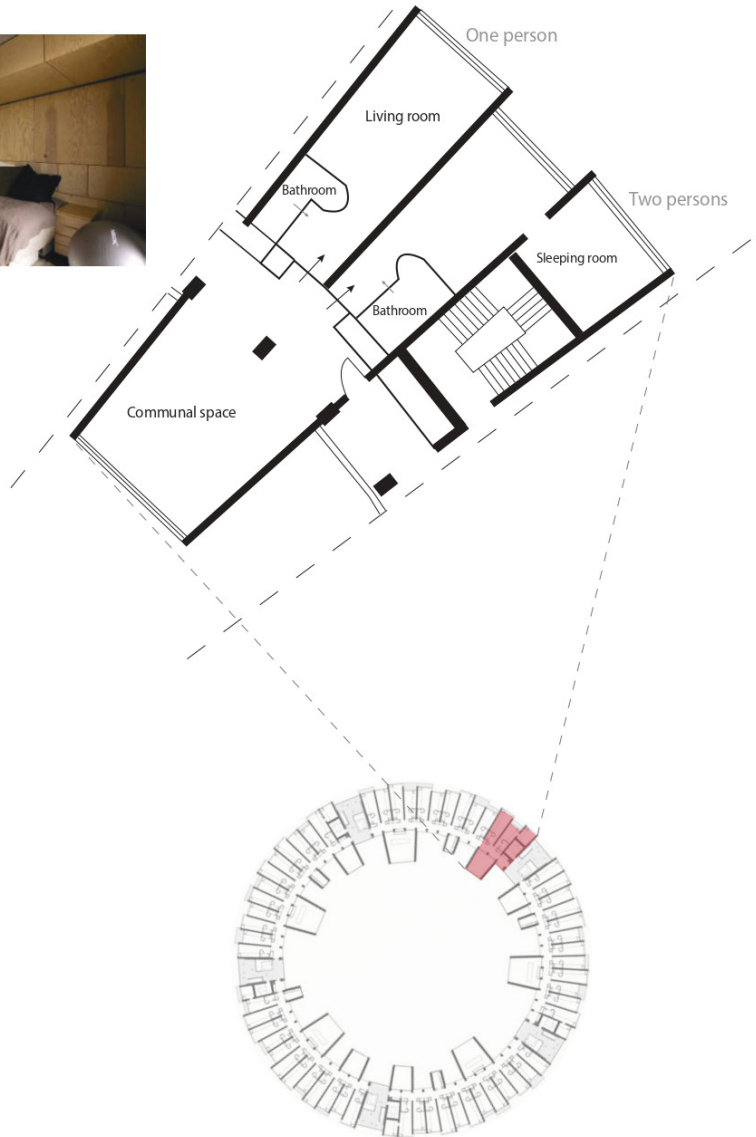
There are five entrances in different directions but all of them lead to the middle courtyard and there is the gallery that connect all stair cases, elevators, houses together. In addition to that, the gallery is located in the middle between the houses and the shared facilities that have the view towards the middle yard.

- Stair case
- Elevator
- ⋯ circulation



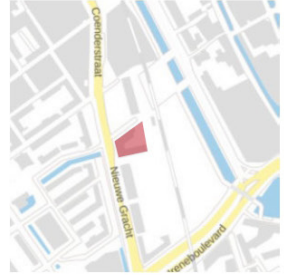
## Dwelling division & characteristics

The dwelling is in a flexible way in order to give an opportunity to the user to adjust it in a way he/she wants. The dwellings are for one person or two persons and there is enough space within the house since the shared facilities are outside the dwelling.



# Antoni

Architect	Studsoninedots
Location	Delft, The Netherlands
Floor area	12.500 m <sup>2</sup>
Appartments	11 lofts, 81 rooms, 28 studios
Target group	Families, singles
Completed	2020
Facilities	Exhibition, meeting spaces, a hotel with restaurant, workspaces, retail and apartments, parking

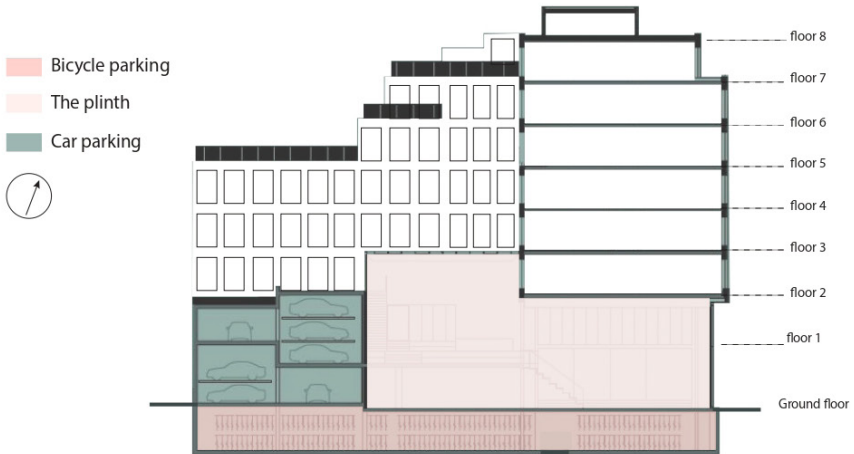


The building houses a distinctive hotel with approximately 80 rooms, a restaurant, flexible workplaces with space for starters and small companies, an exhibition space and an ingenious parking facility. The floors above house 28 compact studios, 10 luxury apartments and 1 penthouse.



## Public functions

Underneath the building there is public parking facility for 2.400 bicycles. The car parking is served by electric system (lift for car).



- Offices
- Podium
- Supermarket
- Hotel lobby
- Restaurant



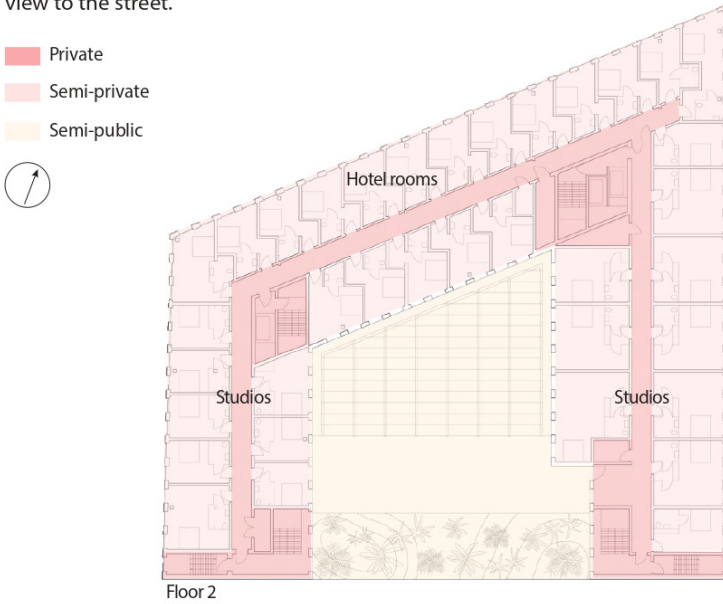
Ground floor



Floor 1

## Private & Public

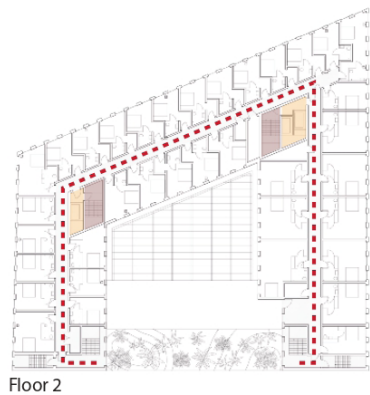
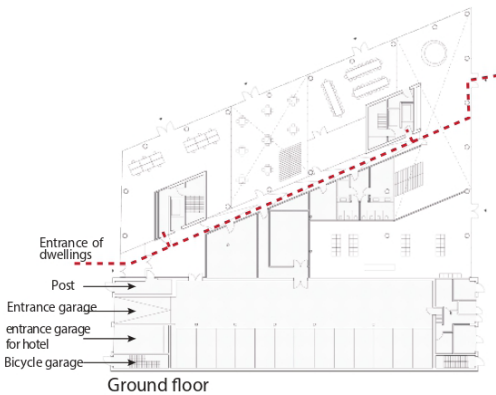
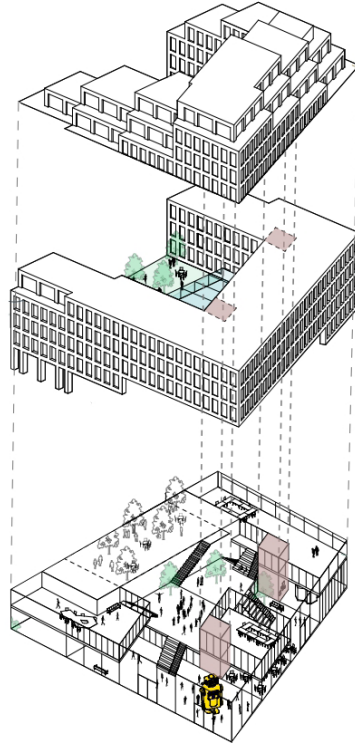
Under the glass atrium there are the Living Lobby, exhibition spaces, workspaces and hospitality venues facilitate connections between people and technology, innovation and entrepreneurship. The private room on the north side in this floor are for the hotel while those on the west and east are studios. Half of the rooms have view towards the roof terrace and the other half have view to the street.



# Circulation

There are two stair cases for the dwellings in the upper floors whereas the hotel has its own stair and the offices has their own stairs. The dwellings have corridor typologr circulation.

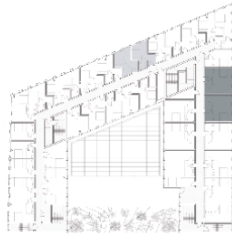
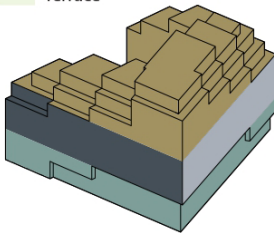
- Stair case
- Elevator
- Circulation



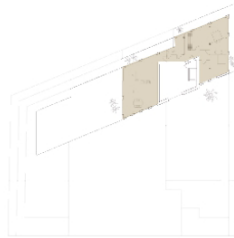
# Dwelling division & characteristics

Temporary and permanent living functions occupy the floors including a hotel, studio apartments and loft apartments. The apartments in the upper floors have their own terraces. The penthouse has terraces from all sides.

- Living lobby
- Studios
- Hotel
- Penthouse
- Room entrance
- Bathroom+WC
- Terrace



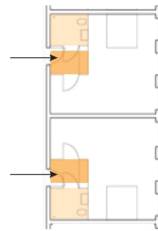
Floor 2



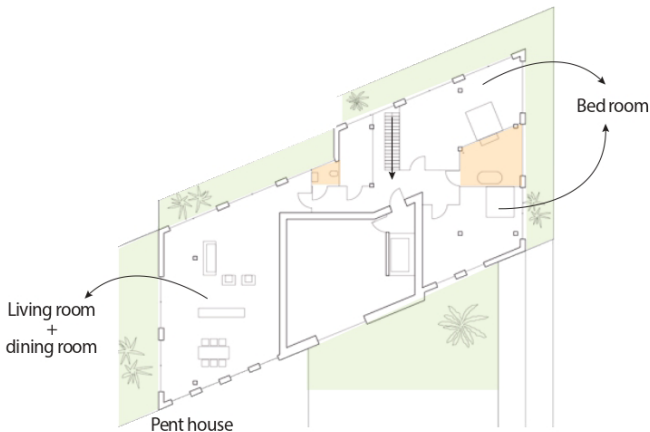
Floor 8



Hotel rooms



Studios



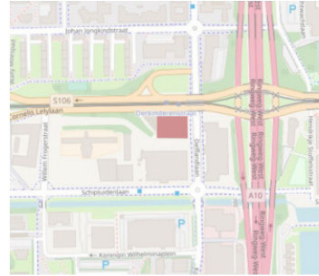
Living room + dining room

Bedroom

Pent house

# West Beat

Architect	Studioninedots
Location	Amsterdam, The Netherlands
Floor area	24.000 m <sup>2</sup>
Appartments	150 units
Target group	Starters
Completed	-----
Facilities	work space, restaurant, parking, common spaces.



The building includes 150 apartments ranging between 41 m<sup>2</sup> and 147 m<sup>2</sup> in the south west side of Amsterdam. There are different types of apartments:

- Junior apartments (46 ones): these are two-room apartments of 41 - 56 m<sup>2</sup>, with or without a loggia.
- Comfort apartments (84 ones): three to four room apartments of 64 - 94 m<sup>2</sup>, all have loggia
- Royal apartments (21 ones): four to five room apartments with one or two loggias, most of them with two bathrooms and beautiful kitchen.

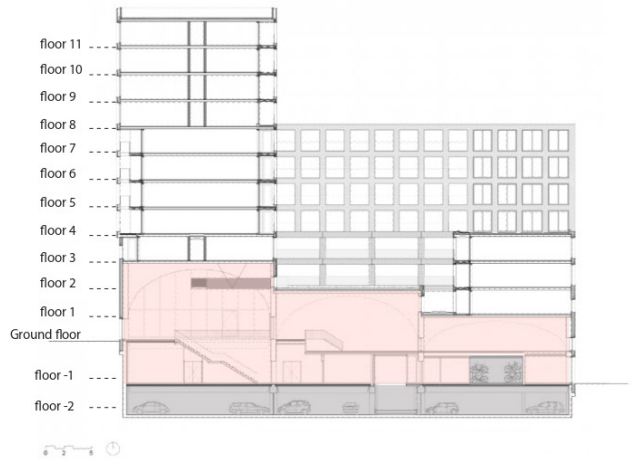




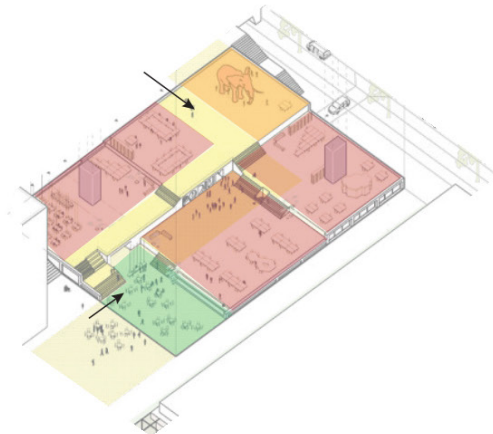
## Public functions

In the plinth there are different public functions like restaurant with an outdoor space on the street level, work space. In addition to this, some events can be hold in as well. The parking garage is underneath the building.

- Public function
- Parking



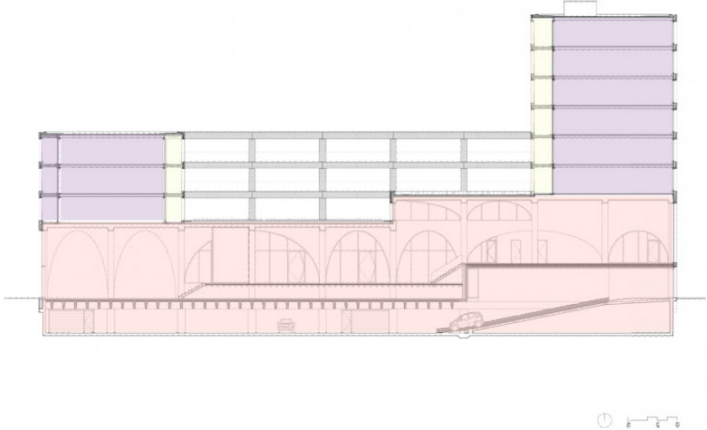
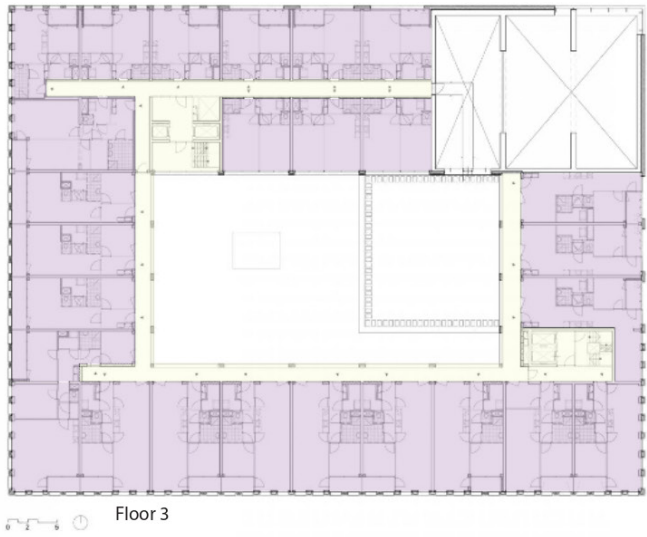
- Podium
- Work space
- Restaurant
- Routing



# Private & Public

All the public spaces are only in the plinth while the upper floors are only for the dwellings. The corridor, the galleries, and the stair cases are semi-private.

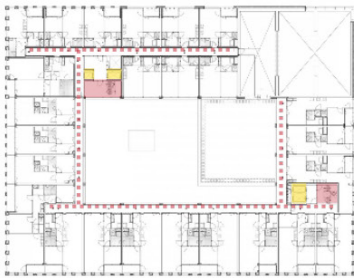
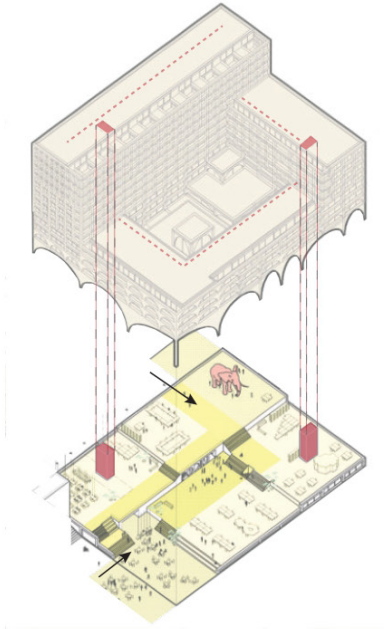
- Public
- Semi-private
- Private



# Circulation

There are two stair cases in the building which continue to the upper floors for the dwellings but there are also in the plinth lots of stairs that connect different levels in the plinth.

- Stair
- Elevator
- circulation



Floor 3



Ground floor

## Dwelling division & characteristics

The dwellings are either gallery typology or corridor typology. All the dwellings have their own private outdoor spaces on the outside of the building. While on the inside of the building there are galleries. Some of the dwellings are rectangle (vertically and horizontally) and the others are square. Some houses have an open space for living room and sleeping room whereas other houses have separated rooms for each function.

- Dwelling type A
- Dwelling type B
- Dwelling type C
- Sleeping room
- WC + bathroom
- Loggia



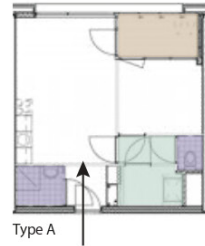
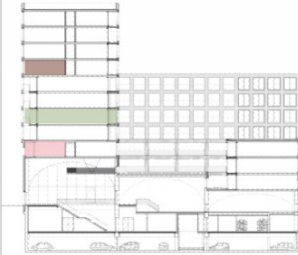
Floor 3, type A



Floor 5, type B



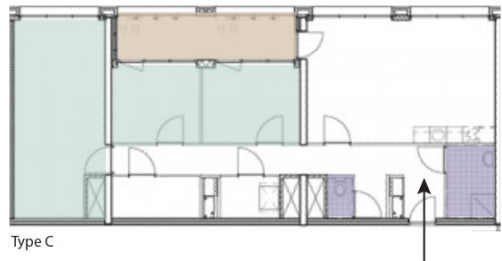
Floor 8, type C



Type A



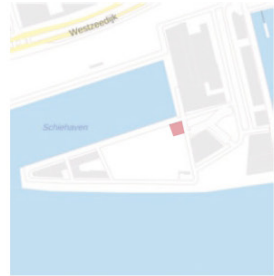
Type B



Type C

# Babel Tower

Architect	Laurens Boodt \ AM \ Bartels
Location	Rotterdam, The Netherlands
Floor area	26.400 m <sup>2</sup>
Appartments	125
Completed	-----
Facilities	bicycle parking, car parking, living room, roof terrace



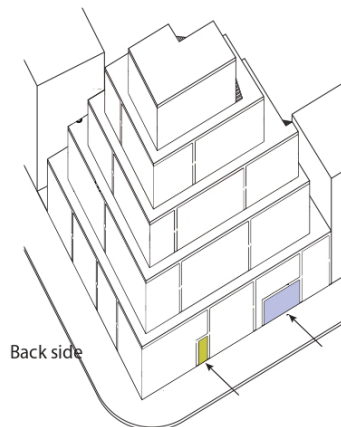
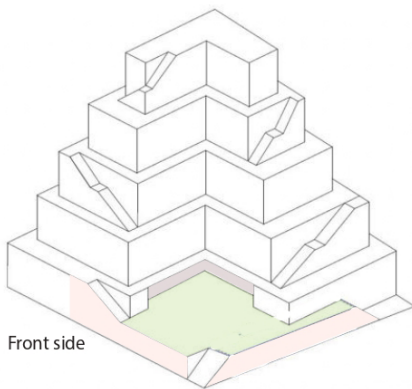
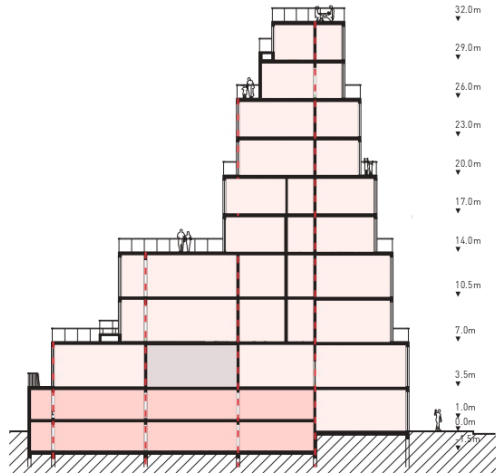
There are 60 dwellings in each floor (60 dwelling in the whole complex) and each 12 dwellings have their shared spaces such as kitchen, living room, and shared storage. On top of these shared spaces there is the terrace for the upper floors. In addition to this, some of the dwellings have their own outdoor space.



## Public functions

There is a communal area on the park (roof of the garage) for children's parties, workplace, and meetings. The parking garage consists of two floors and is accessible via ramps. There is space for 30 parking spaces. In addition, there is room for the storage of bicycles and outdoor storage.

- Private dwelling
- Parking garage
- Common spaces
- Park
- Garage entrance (cars, bicycles, storage)
- General entrance (elevator)

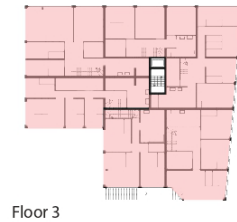


## Private & Public

The houses have loggias that can be opened completely, making them private outdoor spaces. These also function as an entrance on the ground floor.

In addition, houses have a private outdoor space on the street space, which is indicated by a number of thumbtacks. We also propose this extra zone of outdoor space, indicated by thumbtacks, on the sidewalk in front of the houses on the ground floor.

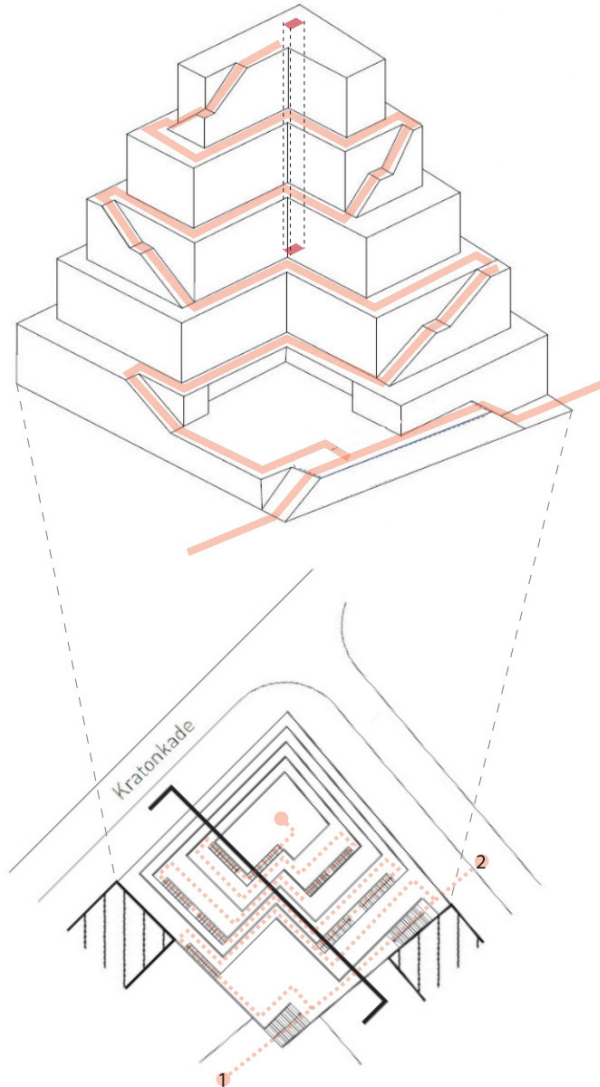
- Private dwelling
- Shared spaces



## Circulation

The building has varied outdoor spaces and stairs that offer various possibilities for play, meeting and views. The outdoor areas and stairs are well in the sun due to the southwest location. The routing is continued from the ground floor until the top of the building.

- Stair case
- Routing

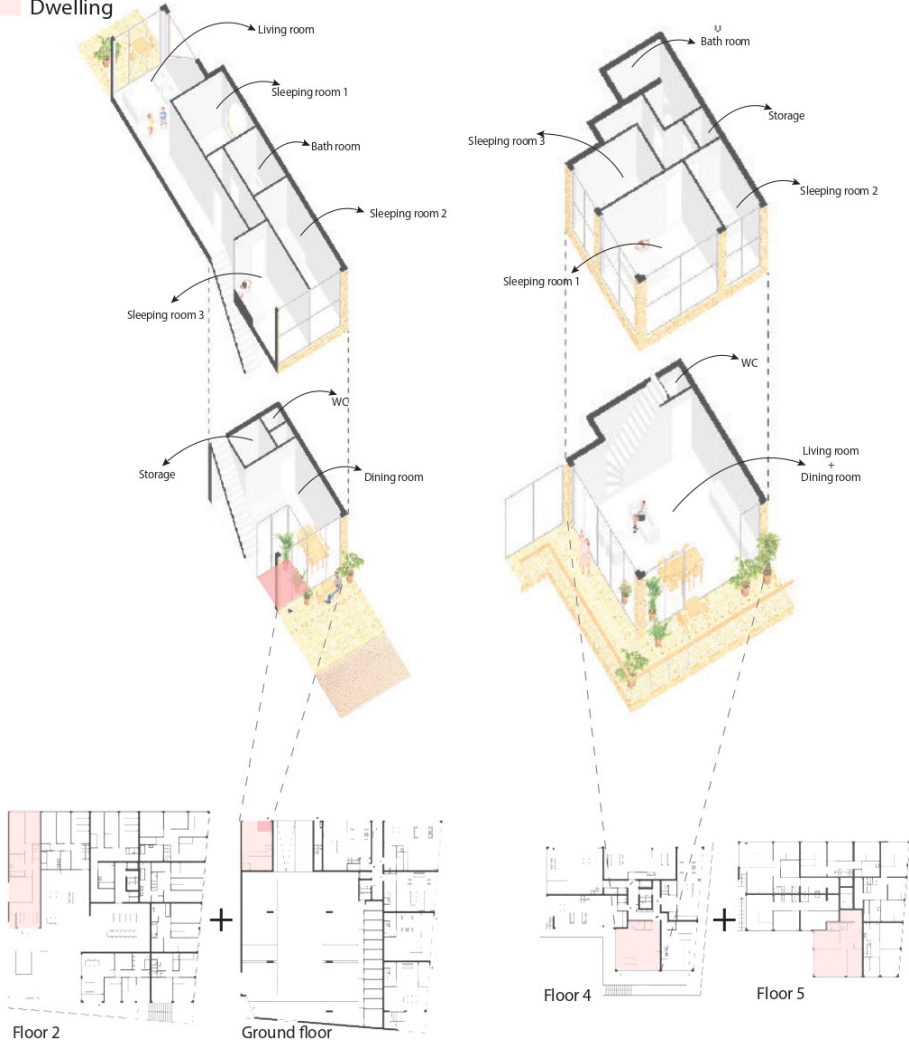




## Dwelling division & characteristics

The dwelling on the left has an entrance and dining area on the street on the ground floor. Living room is on the first floor with its own private outdoor space adjacent to the park. Whereas the dwelling on the right side is located on the corner surrounded by the outdoor spaces.

- Loggia
- Dwelling



# Conclusion

When analyzing these four projects, a search was made for the elements or conditions that helped or motivate people to interact with each other or even spend time with the neighborhood residents. Briefly, what was found in each of the four points on which projects were analyzed will be explained:

In terms of public functions, there were different functions, some of them are located on the ground floor only, such as in Antoni project, and some are located on the upper floors, such as in Tietgen project. However, some of these functions were specific to building residents, and sometimes there were places in which building residents shared with neighborhood residents.

The transition from the private to the public: in all projects, houses were the private part of the building, and in Babel and Tietgen, there was an external space also for the residents of the house. There were also common spaces in the buildings, some of which were located on the ground floors, some on the upper floors, and sometimes on the roof of the building. Sometimes, the private and public spaces were placed close to each other, like in Tietgen project, and sometimes there was a farther distance between them, like in Antoni project.

Circulation: there were different types of vertical and horizontal movement (diffe-

rent types were connecting between private homes and common rooms) for example corridors and galleries. It was important to analyze the movement in order to understand these different ways of communicating between spaces of different levels and from different places.

Division of houses: Most of the houses that were analyzed were small in size in order to see the internal organization in the house or room in case it was for one person or for two persons. These homes have had features, such as having a beautiful view, orientation, design of the interior space, and the method of placing the furniture.

## Discussion:

- If I had the opportunity to analyze all the cases, I would have learned more things while doing a bigger comparison.

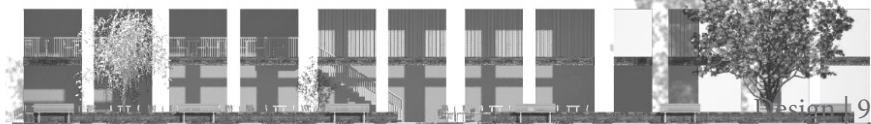
- If it was possible to visit the buildings in reality, it would have been much better for analyzing

the projects, and also the design of the two projects (West Beat and Babel tower) is not yet completed. It would have been better if they were complete to find more information about them.

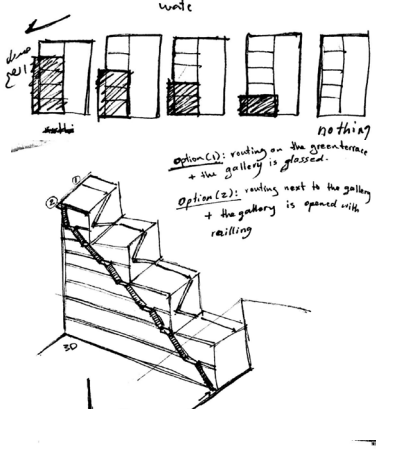
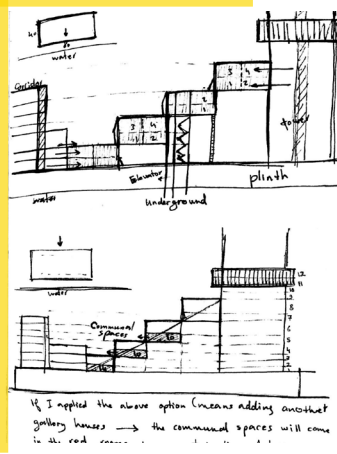
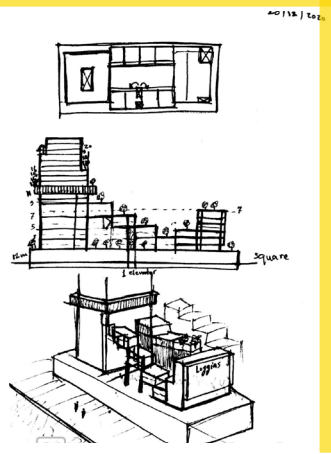
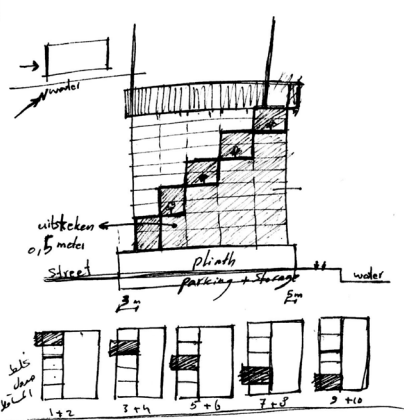
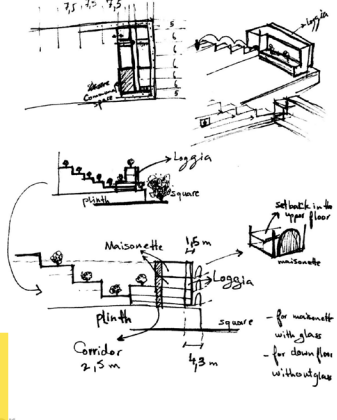
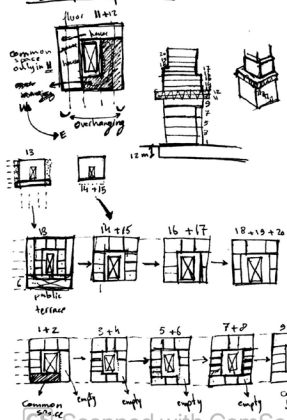
- The use of analytical drawings that are abstract from details in some cases conceal the appearance or reality of a space.



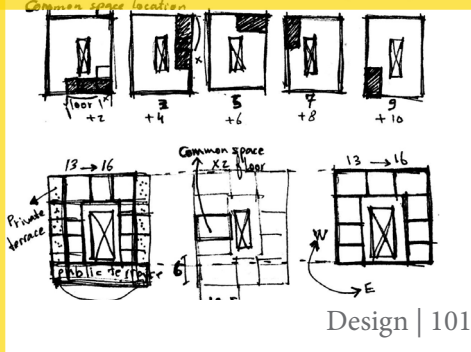
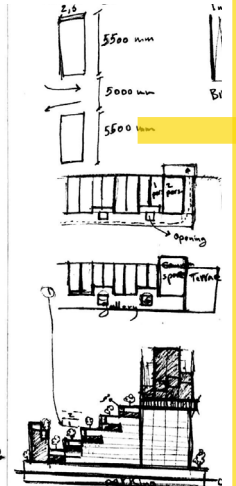
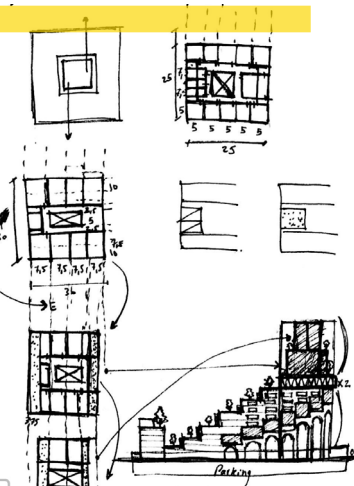
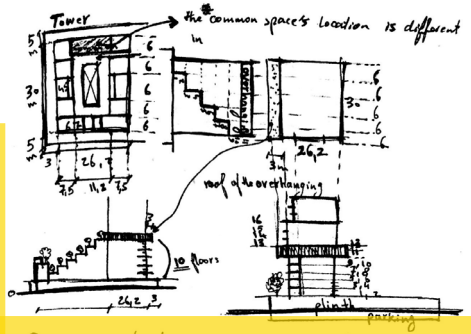
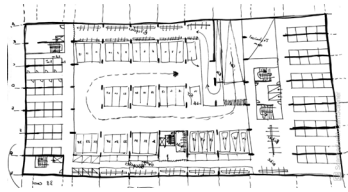
# Design







If I applied the above option (means adding another gallery houses → the common spaces will come in at road corner)







# Design brief

## Starting points for the design phase:

These are some points that will be taken into account during the design and which help to stimulate the integration of the population. For example:

- Designing the spaces in a way that facilitates the interaction of the population with each other.
- Providing the building with spaces in which residents collect to do something.
- Designing a smooth transition between homes and common rooms to encourage residents to go into these spaces.
- Designing somehow small houses to get a higher population density in the building, and thus more interactions.
- The common rooms should be placed in the building in a clear place and have an easy way to reach them.
- The presence of outdoor spaces on almost every floor to give the residents of each floor an opportunity to sit outside with each other.
- Flexible design for homes where the internal organization is in line with the opinion of the people who will inhabit the house in the future.
- Outdoor spaces such as roof terrace or balconies should be directed towards the sun to spend time outside comfortably.

## - The program:

1- Public functions (functions can be found in the plinth):

Restaurant - Language cafe - workshop room - small event hall - other commercial facilities that can work in the day and in the evening.

2- Collective functions:

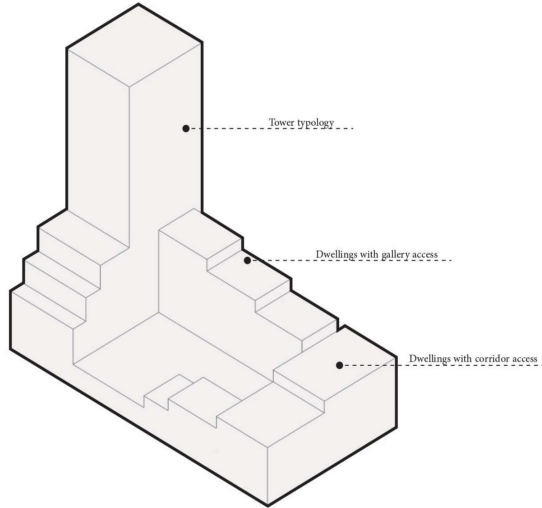
Car & bike parking - storage - outdoor spaces in nature, multifunctional room, shared kitchen, and collective spaces.

3- Private zone:

- Some dwellings have open space and some have separated rooms for each function
- Easy connection with the communal spaces.
- Taking into account the privacy of the residents.

(in total there are 197 dwellings in the building)



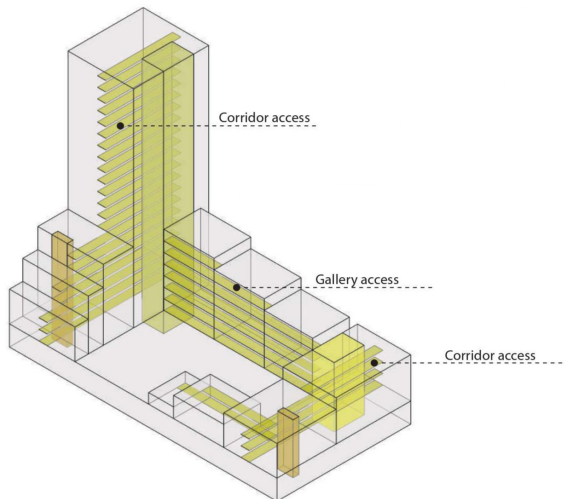


## Diagrams explaining the design strategy

Two entrances provide access to the dwellings on top. These entrances are also accessible from the parking garage itself on the ground floor. The dwellings on the North-East and South-West have a corridor door access but the rest have a gallery access type and we'll see that in a moment in the floor plans.

- Main stair - corridors - galleries
- Fire escape stairs

- Two main entrances that connect the street with the dwellings + two fire escape entrances
- Combination between corridor access and gallery access
- The courtyard can be reached from all dwellings

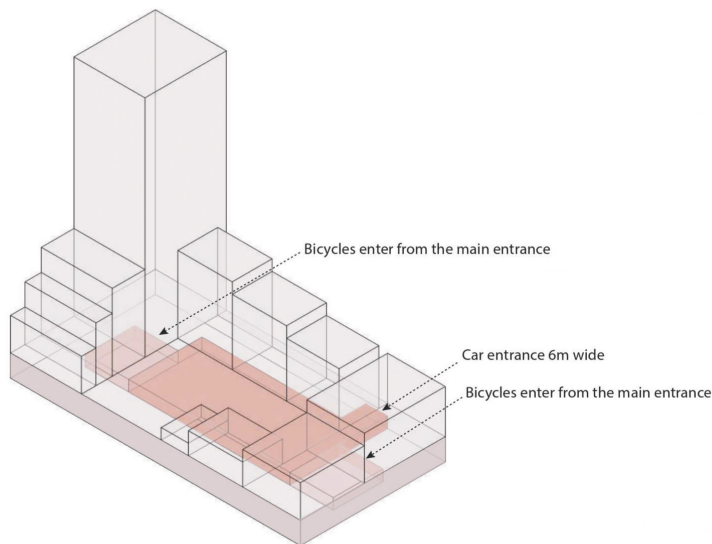


## Car parking & Bicycle garage & Commercial plinth

the car parking is in the core of the plinth and the bike parking spaces are surrounding the car parking and connected with the main entrances of the building. The commercial spaces house cafes, workspaces, and a small psychiatrist center that are oriented towards the outside, towards the street. They have transparent facades which influence the quality of the public space surround the building as well.

- Bicycles parking
- Car parking
- Commercial plinth

- Parking garage with 27 shared cars located in the middle of the plinth
- Two large bicycle garage for all residents located at the same line of the entrance
- Plinth with different public function that facilitate activities to the area. Its transparent elevations make it connected with the adjacent buildings and increase the quality of the area

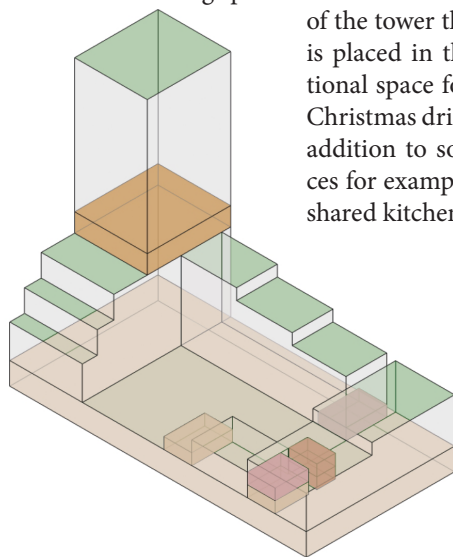


## Car parking & Bicycle garage & Commercial plinth

The building contains multiple collective spaces which are placed at different points and synchronized with the type of household. The inner space and the terraces that you can see here house a large communal garden and this functions as a meeting space for all residents. Moreover, in the middle of the tower the largest collective space is placed in the shape of a multifunctional space for a workshop, events, or Christmas drinks and a fitness room. In addition to some small collective spaces for example, a reading room, and a shared kitchen.

- Public (plinth)
- Private
- Shared kitchen & living room
- Communal room
- Reading room
- Laundry room
- Multifunctional room & fitness room
- Roof terraces (communal spaces)

- Different types of collective rooms
- lots of green roof terraces as places where residents can meet
- Small size of the dwellings in comparison with many collective spaces

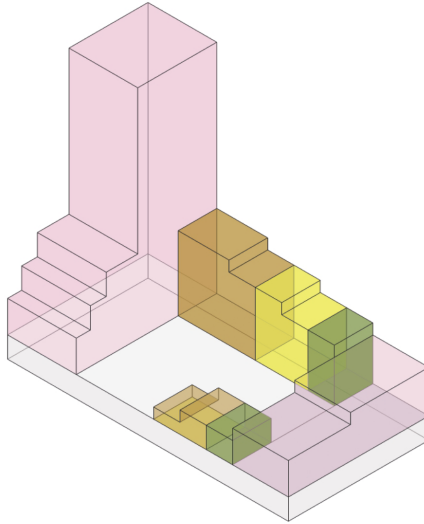


# Configuration of households

The housing block contain a certain type of dwellings for a certain type of household. So, there are dwellings for living alone, living together and shared housing.

Configuration of household

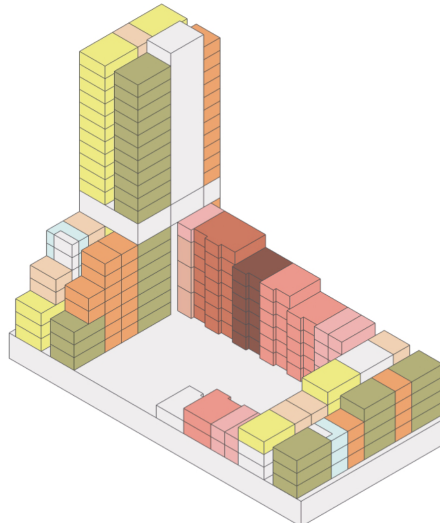
- Living alone
- Living together (couples)
- Living alone \ together (couples)
- Shared housing



# Dwelling typologies

Several dwelling typologies, some of them are one side orientated and the dwellings that are positioned in the middle are orientated towards two sides. There are almost 200 dwellings in the building.

- Type A1 (x 35)
- Type A2 (x 34)
- Type B1 (x 44)
- Type B2 (x 32)
- Type C (x 10)
- Type D1 (x 13)
- Type D2 (x 13)
- Type D3 (x 6)
- Type D4 (x 7)
- Type D5 (x 3)
- Other functions

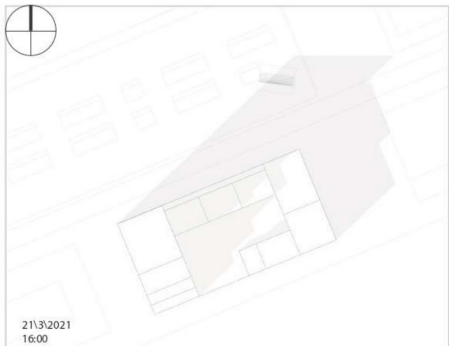
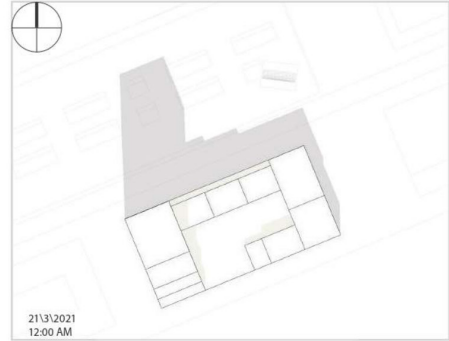
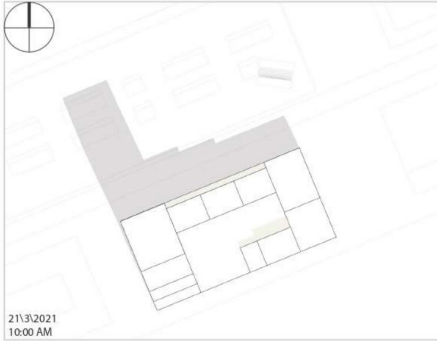


- Many types of dwellings that can be suitable for all residents (status holders, starters, students, other types)

- Total number of dwellings is: 197

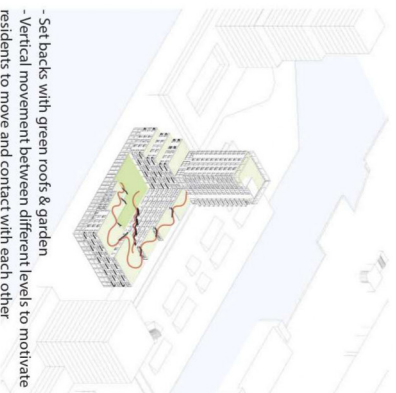
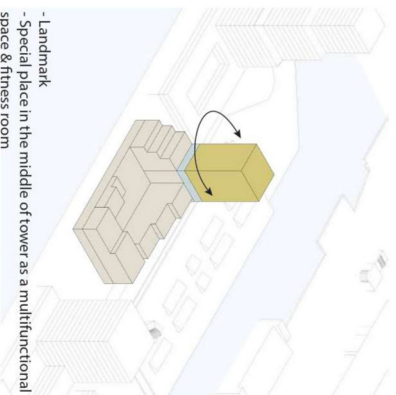
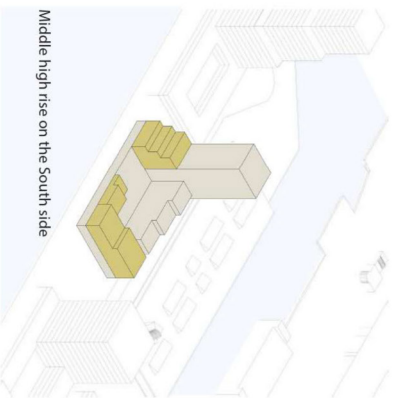
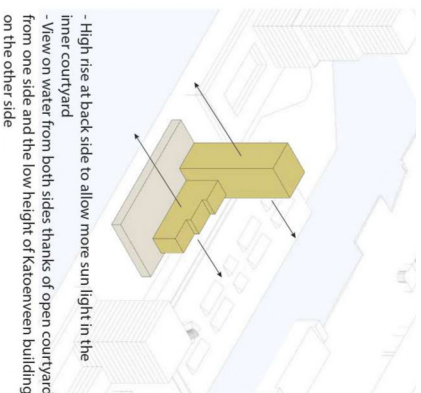
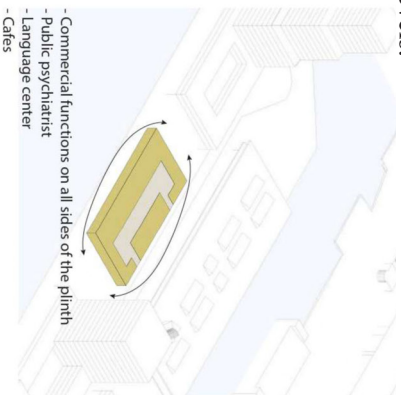
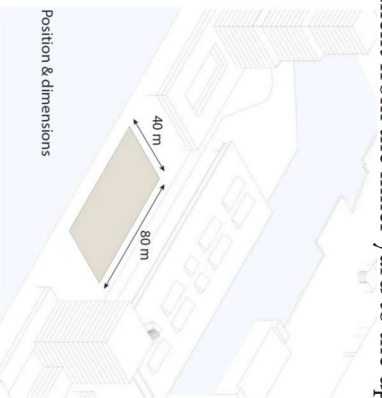
## Sun study

The opening on the South East side doesn't only open up the building to its surrounding but it also ofcourse allows sunlight to enter and together with the lower volumes on the East side and the higher tower on the West this optimizes the life condition in the building and the courtyard.



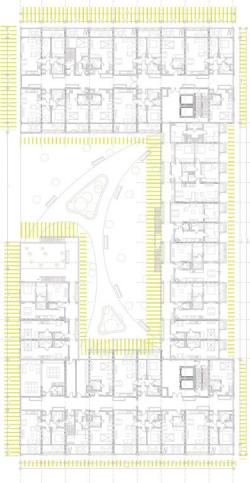
## Diagrams explaining the design concept

The building plot is exactly rectangle 40m by 80m. The commercial functions will come on the edges of the plot. Then the high-rises will be placed on the back side to allow more sun light in the inner yard. The middle high-rises are on the front side. Moreover, placing a special space in the middle of the tower. Lastly, several green roofs were created that led to a continued movement from the inner yard to the upper levels.

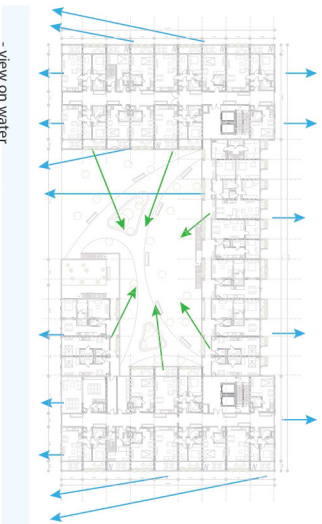


## Diagrams explaining the design strategy

Some design strategies, all dwellings get enough sun light. Some of the dwellings have a view of the water and the rest have it on both the water and the inner yard. The corridors have light inside because of the opened ends on both sides.



Sides that get more sun (SE - SW)  
Sides that get less sun (NE - NW)



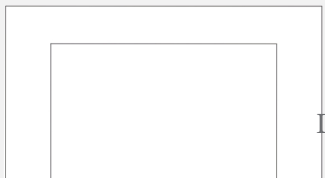
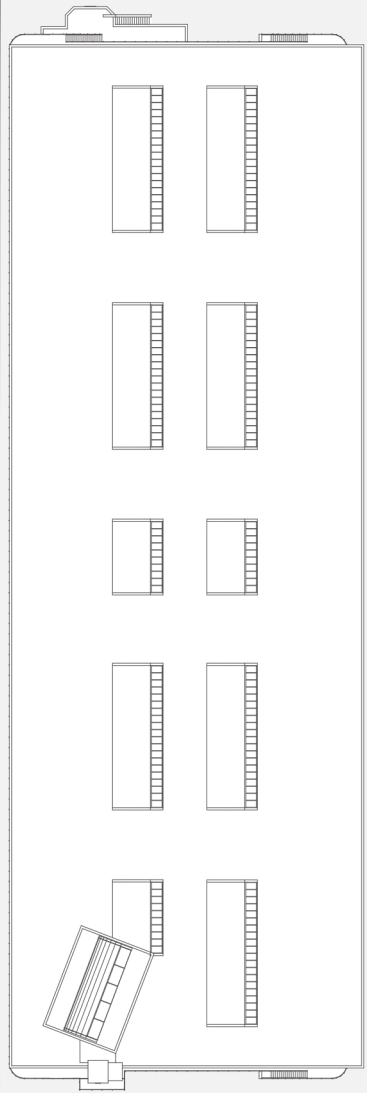
- view on water  
- view on the courtyard  
- lots of dwellings have a view on both sides (gallery dwellings)  
- The building has three different typology (Corridor - gallery - tower)



Landmark B located on the corner oriented to the sun & all dwellings have view on water and half of them have a view on both sides  
- The tower doesn't drop a shadow on the inneryard  
- It is visible from all sides



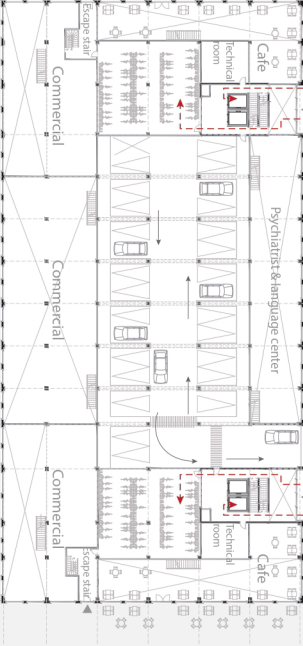
- The corridor has light inside thanks to the openings on both sides  
- Both openings have a beautiful view on water  
- Both endings are not only reserved for one person but for all neighbors



Kellestraat

Routing of a resident

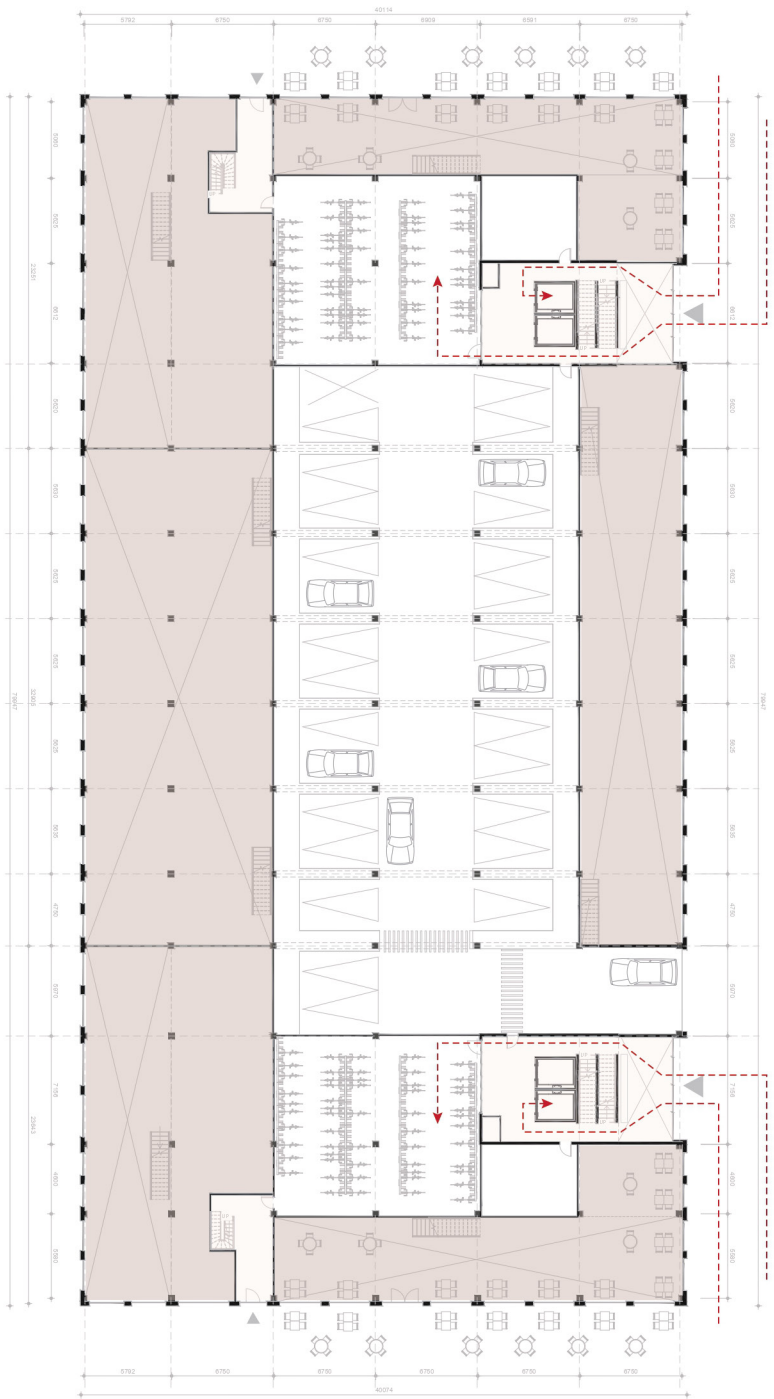
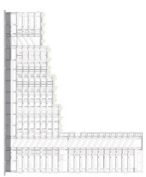
Routing of a resident



# Floor plan: Ground floor 1\1000



- Commercial spaces
- Entrances to the dwellings
- Routing of a resident



On the ground floor, the commercial spaces are located on the edges of the building.



Cafe on the corner  
(such as Verhalenhuis)



One of the two cafes that are located on the corners  
of the building and they are on two levels

## Reference for the cafe (Verhalenhuis)

They ensure that people understand each other better. And that is exactly the idea behind Verhalenhuis. There, Rotterdammers from all neighborhoods and with different cultural backgrounds tell their story.

Verhalenhuis Belvédère uses the stories of Rotterdammers to connect Rotterdammers with each other. Thanks to the life stories of others, visitors to the lunches and evening programs are presented with a different perspective: in this way the visitors get to know and understand each other better.

The concept of the Volkskeuken was created on the spot: eaten together and share (migration) stories. In the

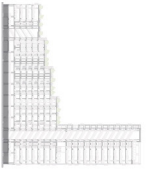


Volkskeuken of the Verhalenhuis we invited Rotterdammers to cook and present their favorite dishes. During the presentation of a three-course meal, we asked the guest chef to tell the attendees about his or her life story, about his or her family history and about the road that led to Rotterdam. This resulted in an evening-filling program. At the long tables, new stories kept popping up naturally and you always met someone you didn't know.

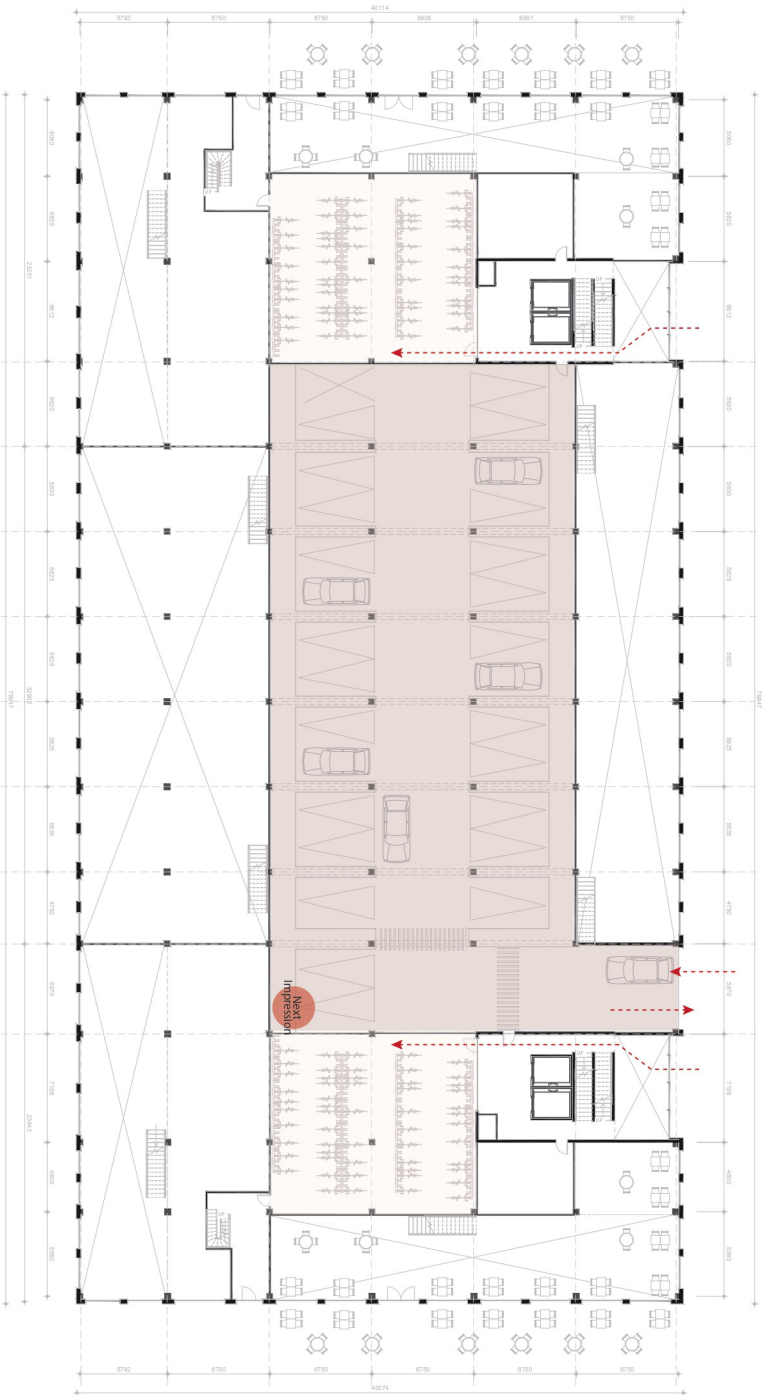




- Car parking
- Bicycle parking
- Routing of cars - bicycles



In the core of the ground floor the parking garage is placed and the bicycle storage can be reached from the entrances which directly connected. So, if you want to go to your home, you can park your bike here and take the elevator. In this way, I make sure that they will be used.



## Car parking - ground floor

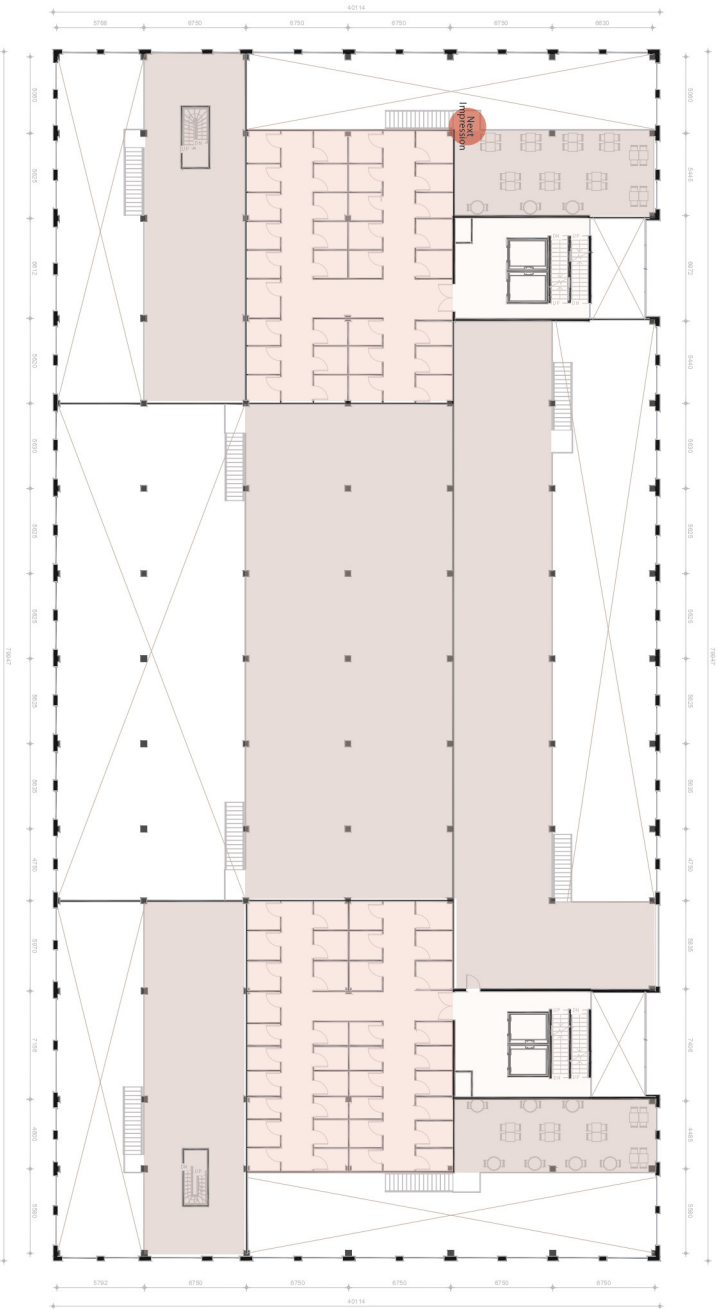
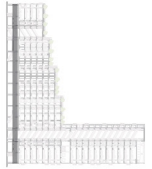
The parking garage is directly connected with the main road.



# Floor plan: Ground floor 1\1000



- Commercial spaces
- Circulation
- Storages



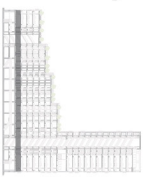
The first floor contains the same commercial function in addition to the storage spaces. If we're standing here at this point

# Floor plan: Second floor 1/1000

(First floor of dwellings)



- Roof terrace
- Communal room
- Reading room
- Shared kitchen + living room
- Laundry room
- Circulation



The second floor which is the lowest floor that contains dwellings. The stair cases are situated on the inside of the block as well as the collective spaces that you can see here in different colors. This has been done to make a connection to the garden and to make a possibility that all residents of the building can use the inner garden.





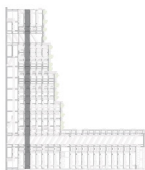




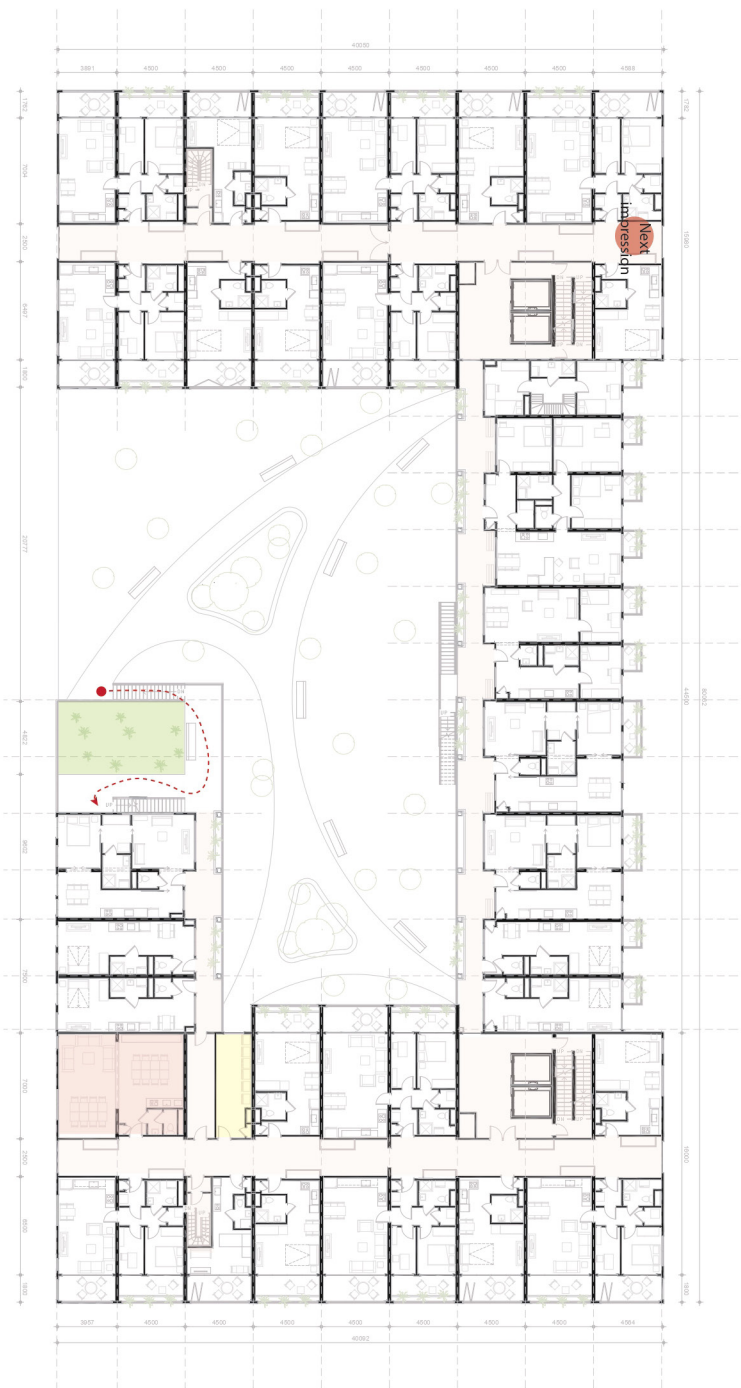
# Floor plan: Third floor 1/1000



- Roof terrace
- Reading room
- Laundry room
- Circulation
- Stairs routing



From this level, the setbacks start to take shape and create a roof terrace. If we stand here we'll see the atmosphere of the corridor.



where small niches are created to break up the long corridor. The  
vides provide a vertical connection and improve the lighting condi-  
tion in the corridor as well as the two opened ends.



08

Natural material for homely feeling

Small niches to break up the long corridor

Not a dead-end corridor

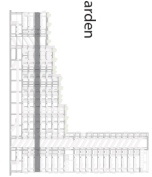
06

Vertical connection between neighbors

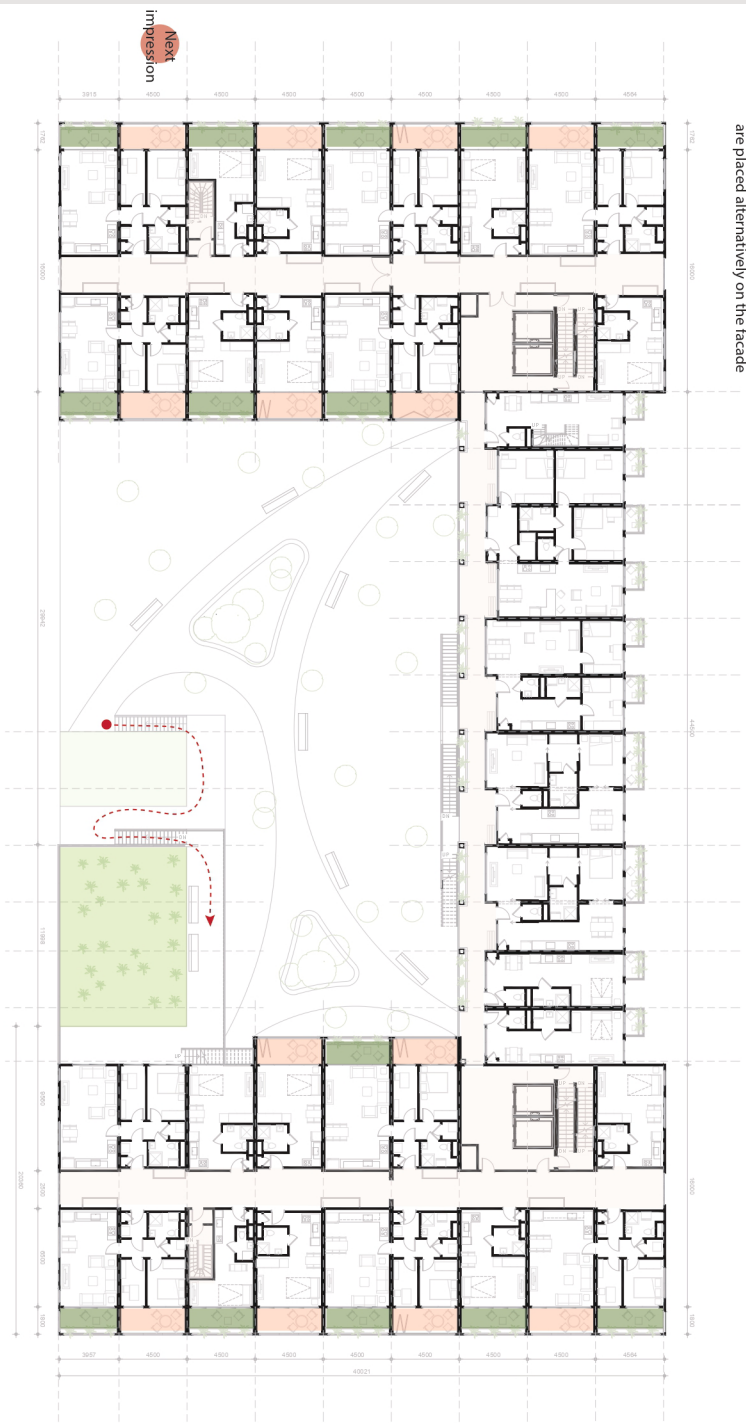


Roof terrace  
 Visible roof terrace  
 Circulation  
 Stairs routing  
 On the outside and inside the dwellings have either loggia or winter garden. They are placed alternatively on the facade

Loggia  
 Winter garden

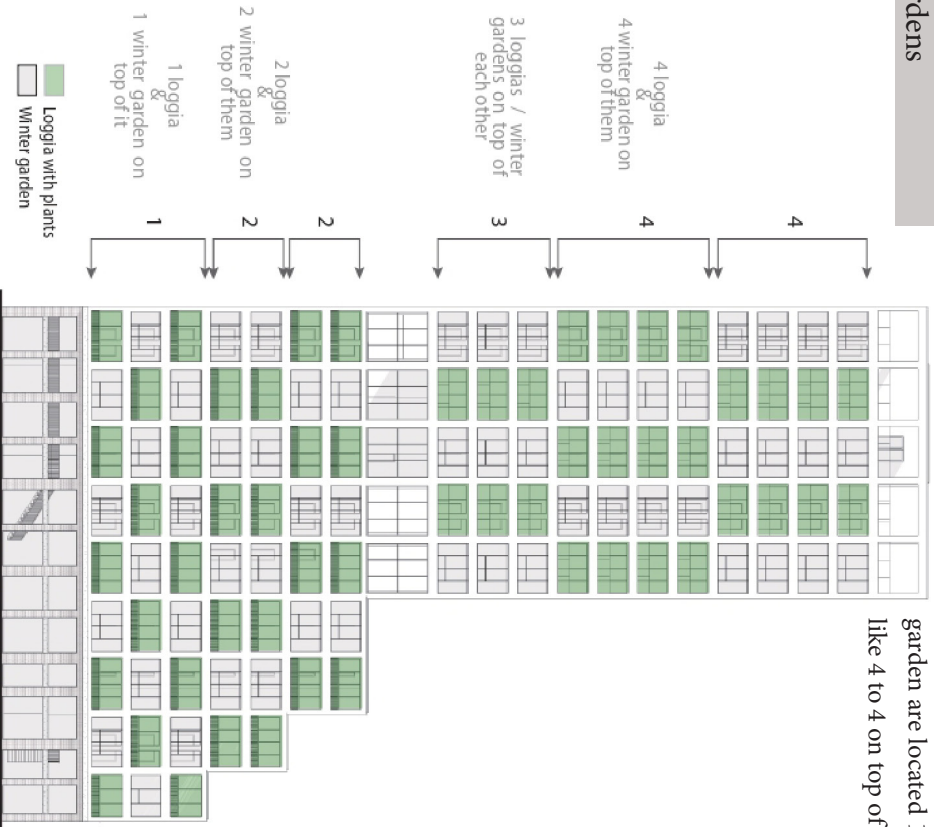


How higher we go, fewer dwellings we get and more roof terraces are created. Each of the dwellings has either loggia or a winter garden which are highlighted here to show that both loggias and the winter garden are placed alternatively on the façade with a specific rhythm.



# Tower facade concept of loggias and winter gardens

The concept of the facade: on the first floors the loggias and winter garden are located 1 to 1 on top of each other but the upper floors like 4 to 4 on top of each other.

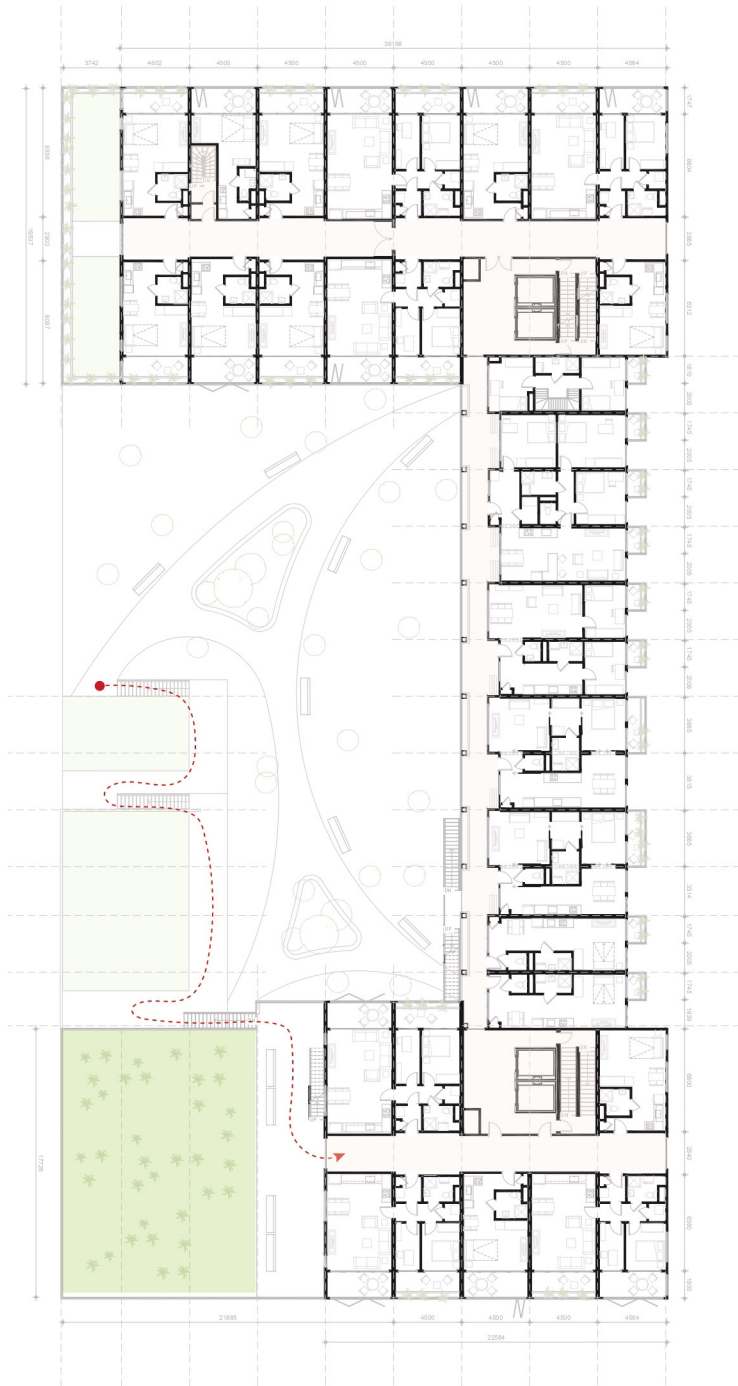




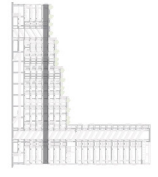




Floor plan: 5th floor 1\1000



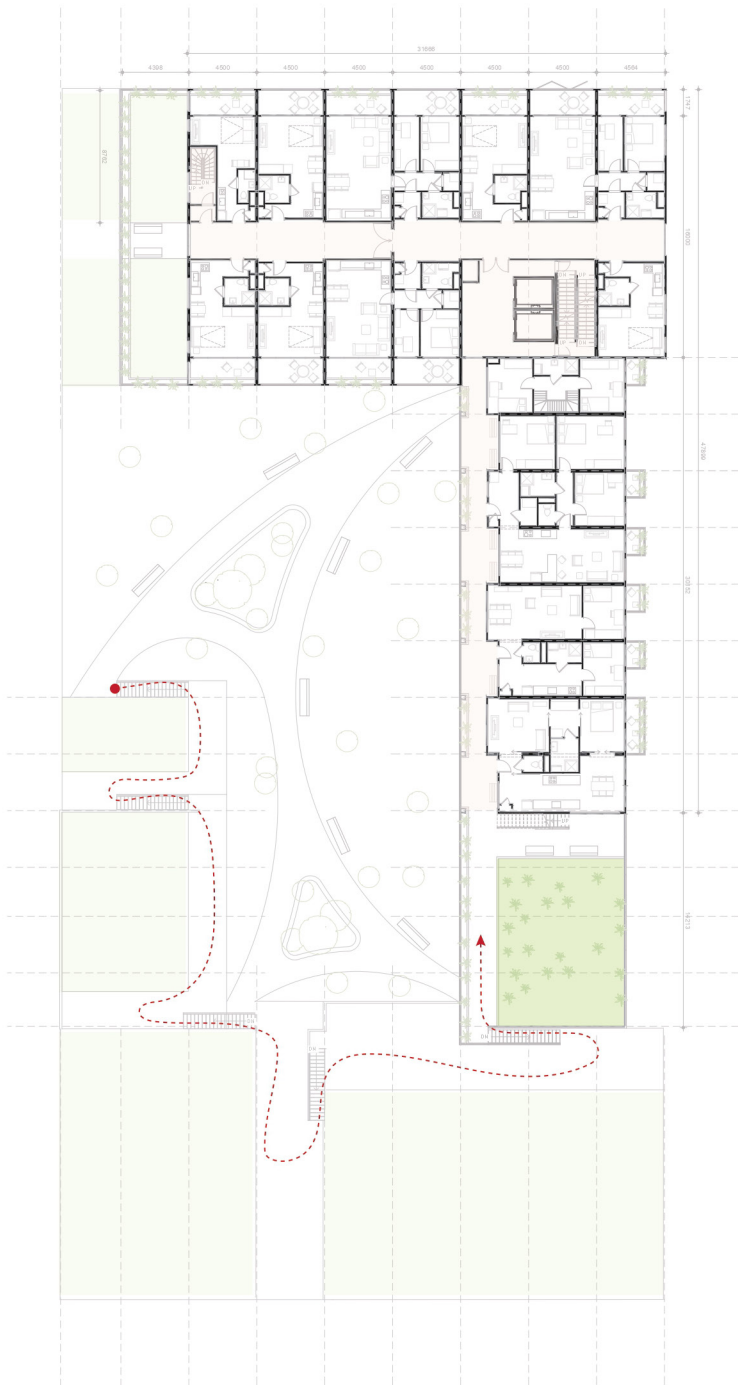
- Roof terrace
- Visible roof terrace
- Circulation
- Stairs routing



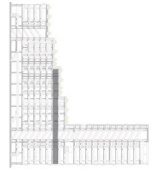




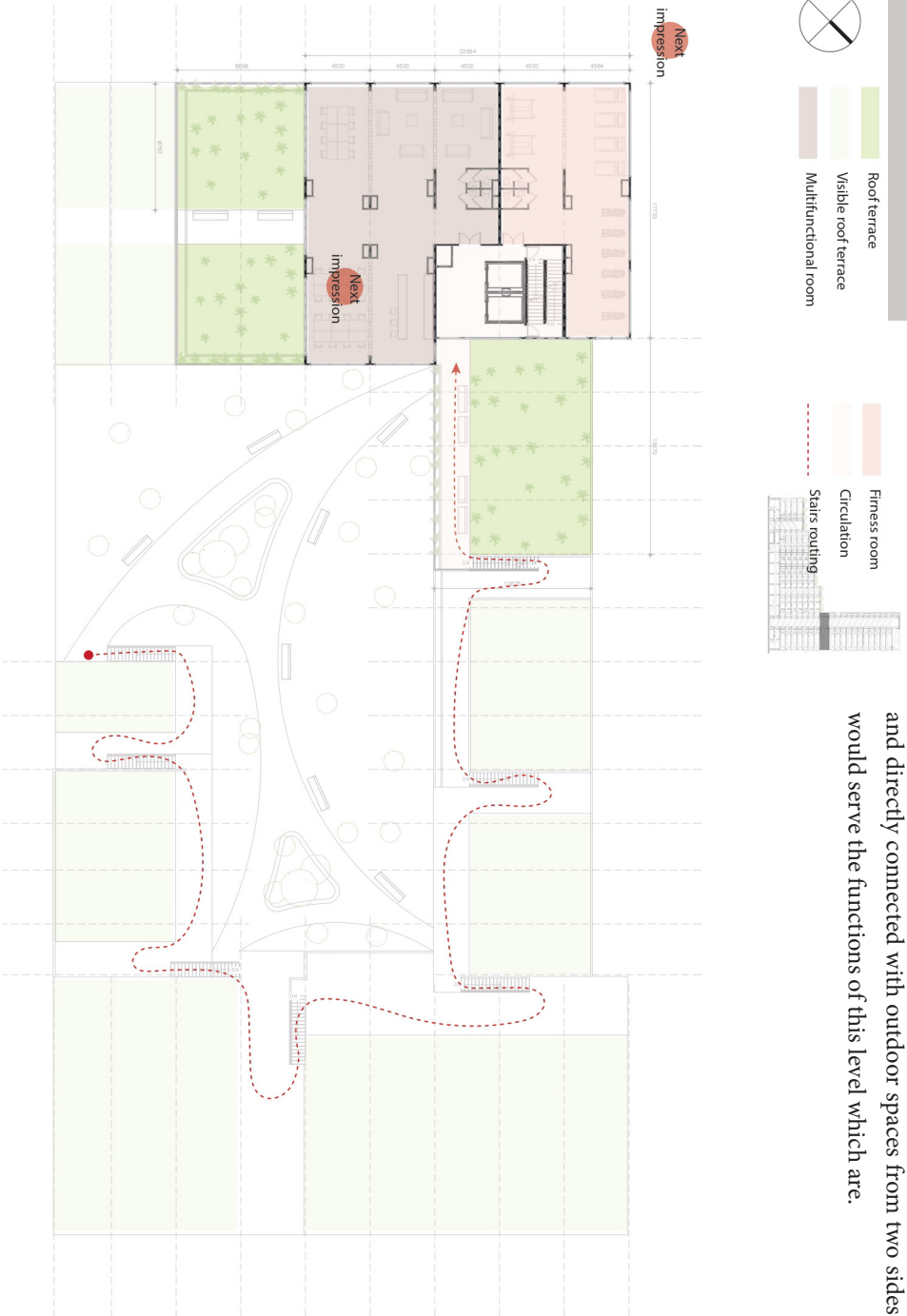
Floor plan: 7th floor 1\1000



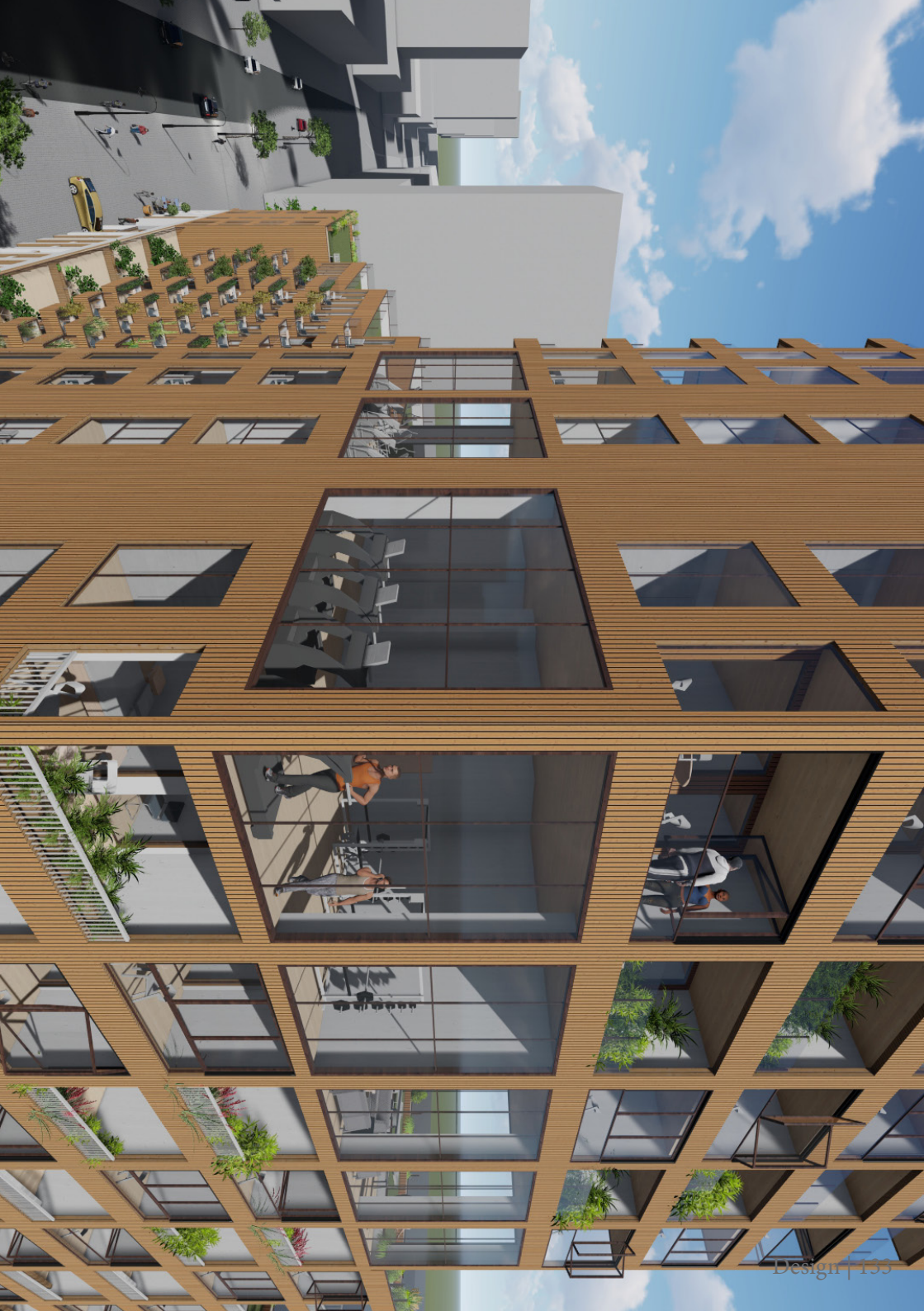
- Roof terrace
- Visible roof terrace
- Circulation
- Stairs routing







Here we get the middle part of the tower which is a 5-meter high and directly connected with outdoor spaces from two sides that would serve the functions of this level which are.

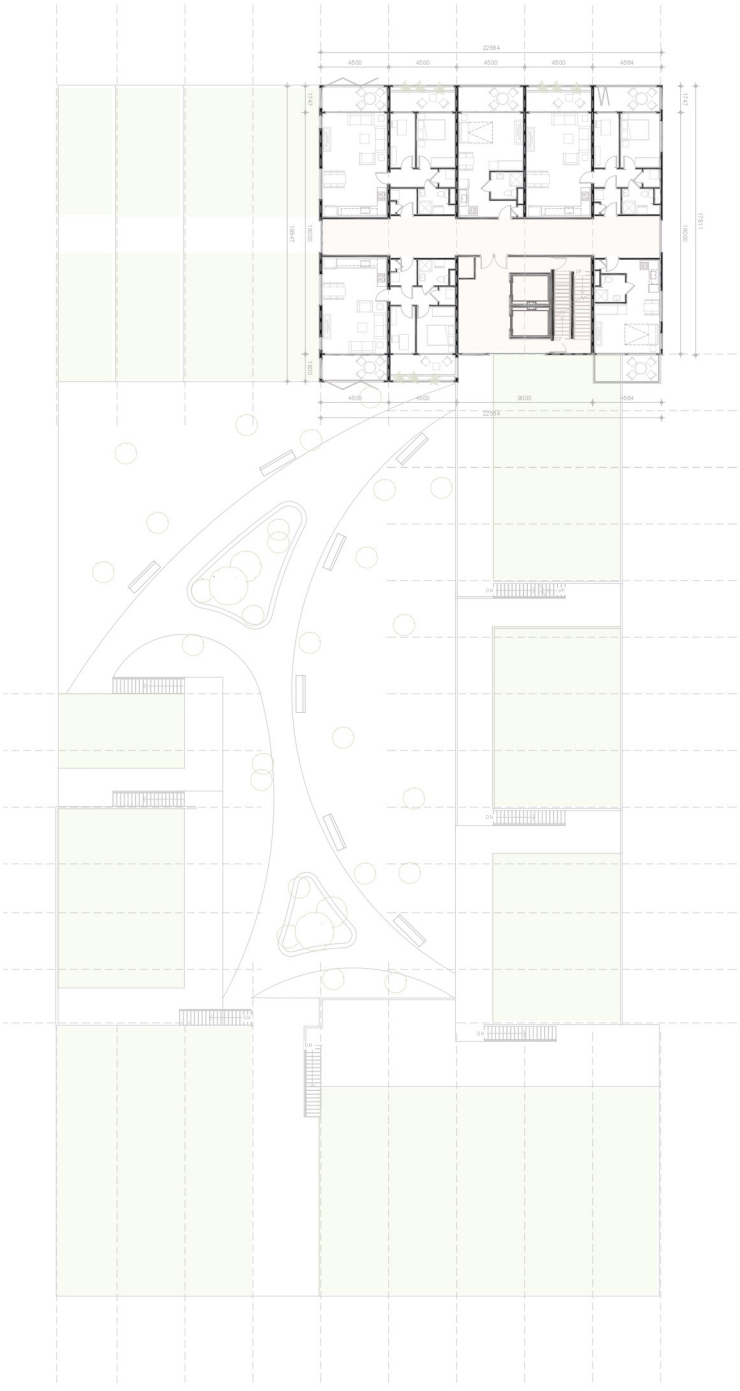
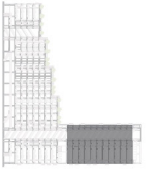








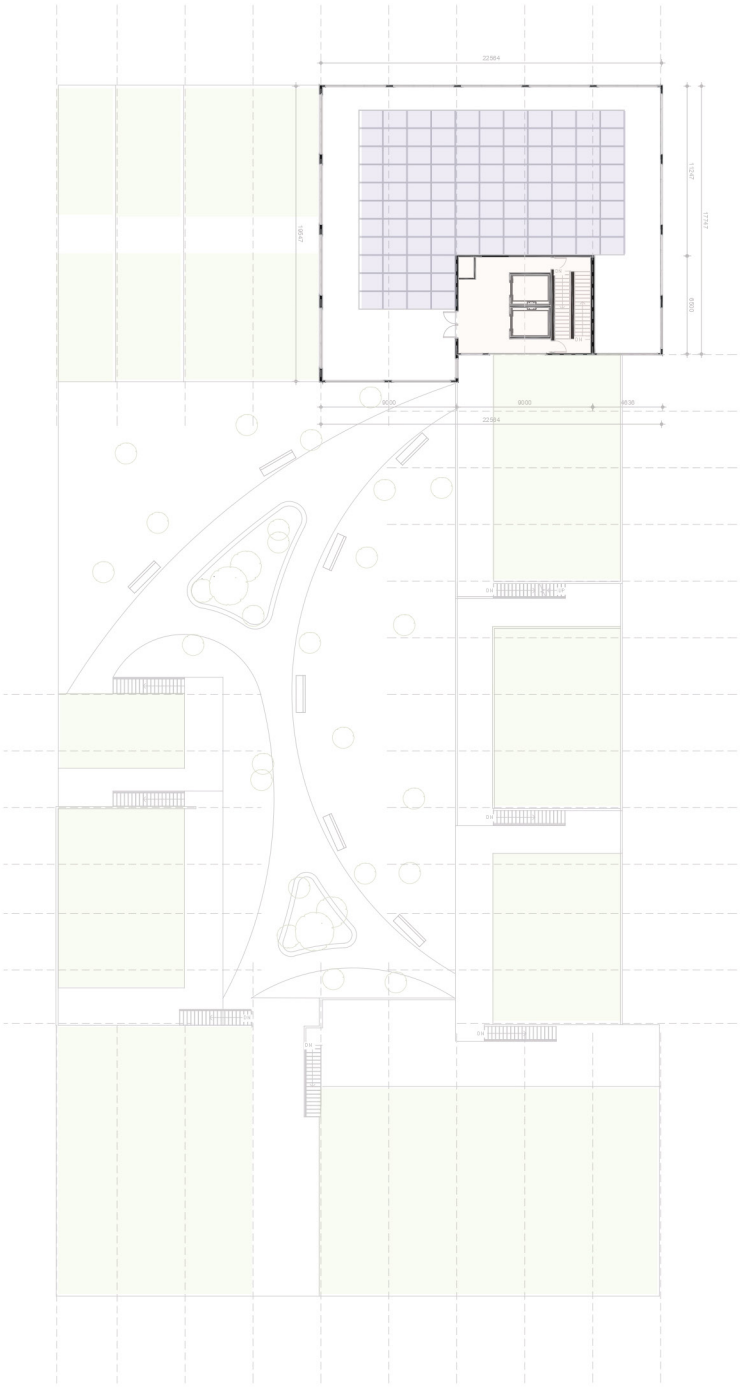
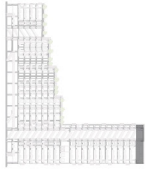
Visible roof terrace  
Circulation







- Sun panels
- Visible roof terrace
- Circulation



South East section - from water side

In the section we can see the double height of the plinth of the commercial spaces over here.

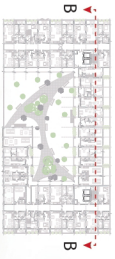


## North East section - from the public square side

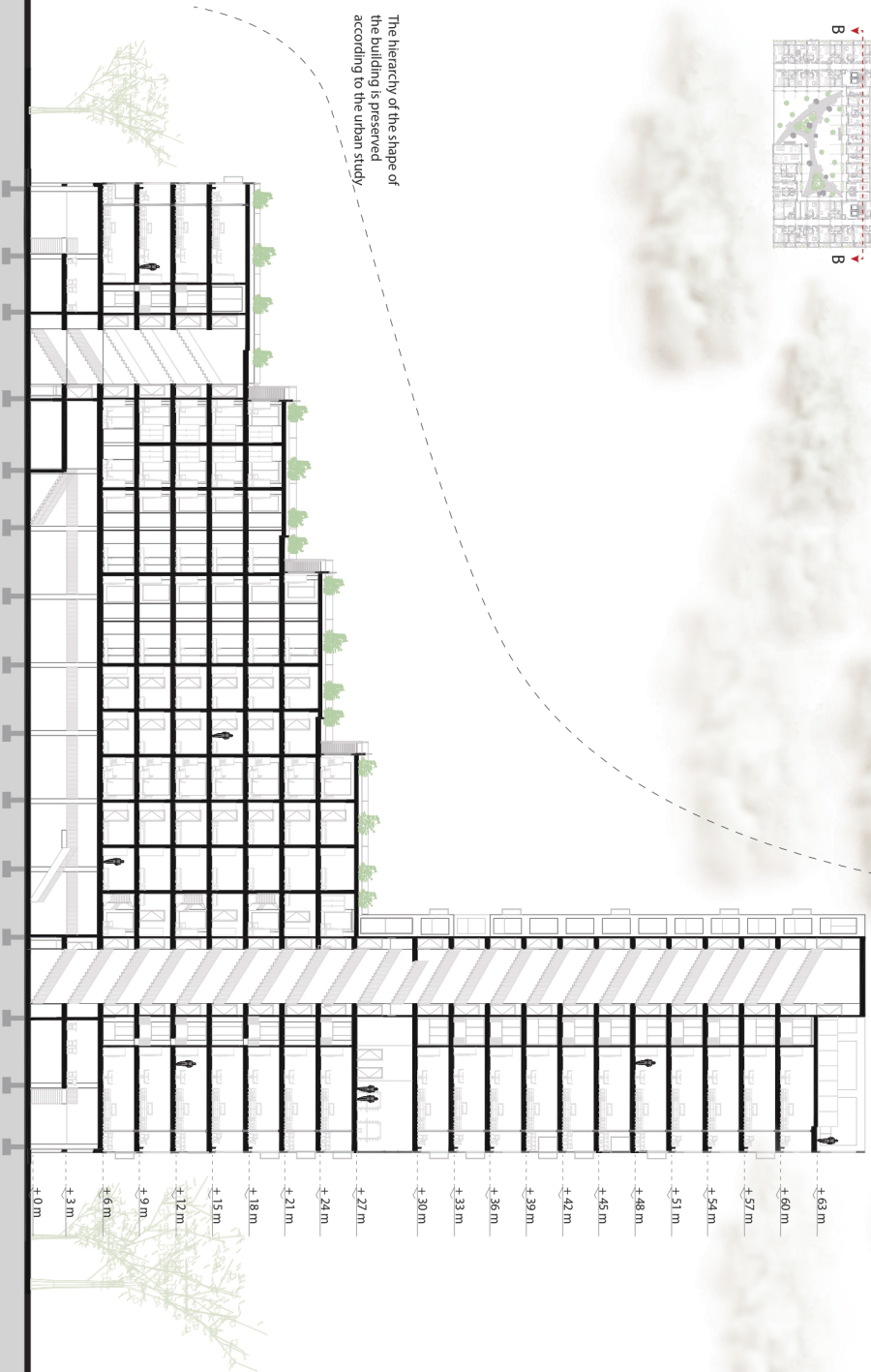
In this section the parking garage is located in the middle. The ceiling height of the storages is slightly lower than the rest of the building and this has to be done to make it possible to create a garden on top that needs sufficient soil and at the same time it needs to be connected at the same level with the dwellings surround it. Ofcourse, the soil brings weight. So, therefore, the ceiling of the storages has been dimensioned a little bit larger.



# North West section BB (from street side)



The hierarchy of the shape of the building is preserved according to the urban study

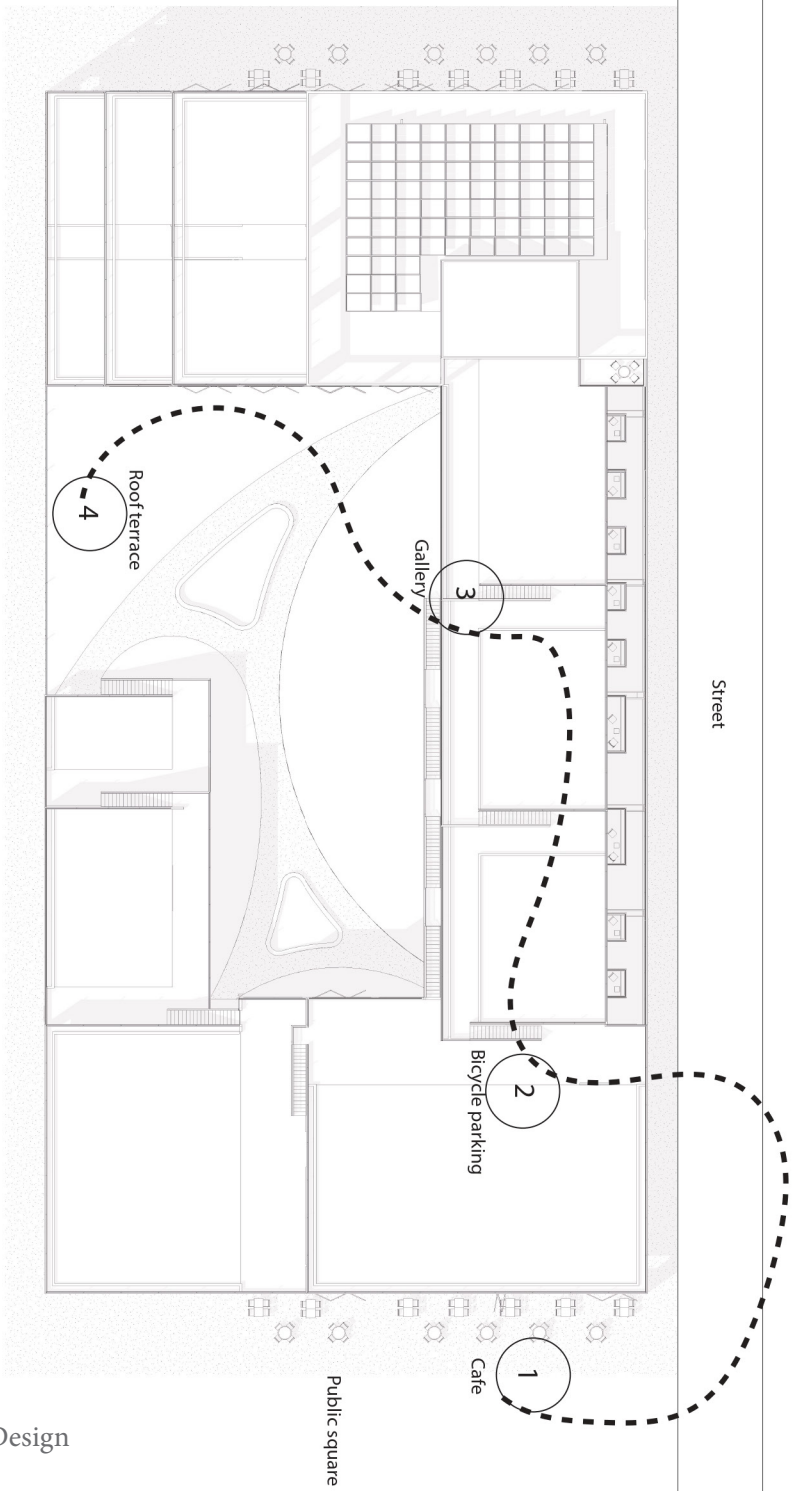


in this page, we see the South-East façade which is on the water side and shows the relationship between the roof garden and the rest of the terraces which are easily connected.

Design 1



the building is designed mainly focused on the residents, I think it's very good to show how they will experience the building and where are some of the collectiveness moments in the building. Therefore, I'll take you along the route of the building.



Moment 1: Cafe <-----> Entrance/public square



Cafes on the corners  
of the building connected  
with a public  
square and located  
next to main entrances

The first moment that the residents get in touch with each other happens before you enter the building over here with those who are sitting in the cafe.



While coming home, you  
see cafe visitors

## Moment 2: Entrance <-----> Bicycle parking

when you enter the building, you directly get to the hall which is located between the elevators and the bike storage. This space is considered as a point where short discussion can occur between those who are coming in, parking their bike or waiting for an elevator.

because of the glass wall there is visual connection between those who's coming in and out. So, they meet and have short discussion

meeting your neighbour in the hall in front of the elevator

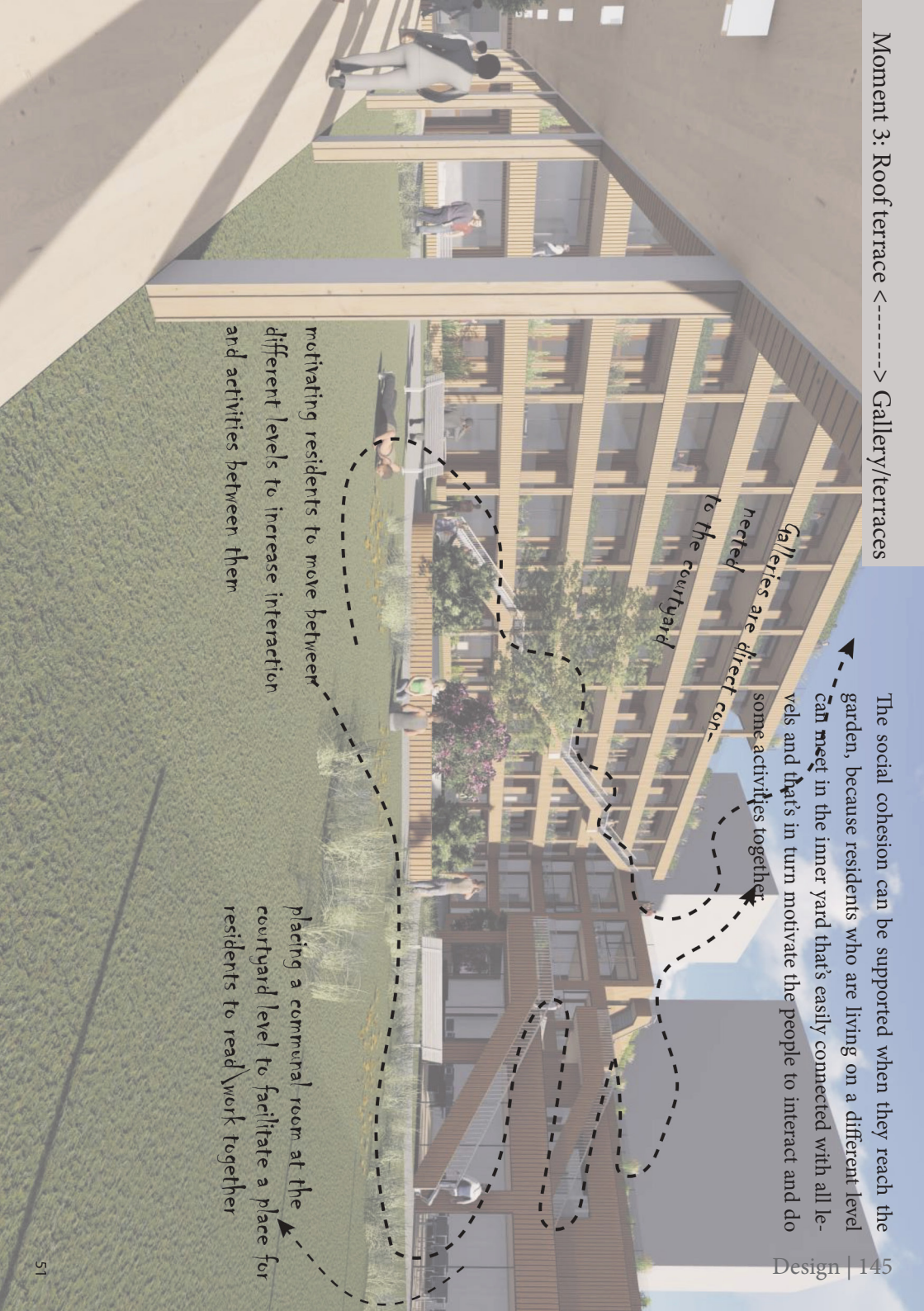
You park your bike in the storage

Waiting for elevator

Coming in







Galleries are direct connected to the courtyard

The social cohesion can be supported when they reach the garden, because residents who are living on a different level can meet in the inner yard that's easily connected with all levels and that's in turn motivate the people to interact and do some activities together

motivating residents to move between different levels to increase interaction and activities between them

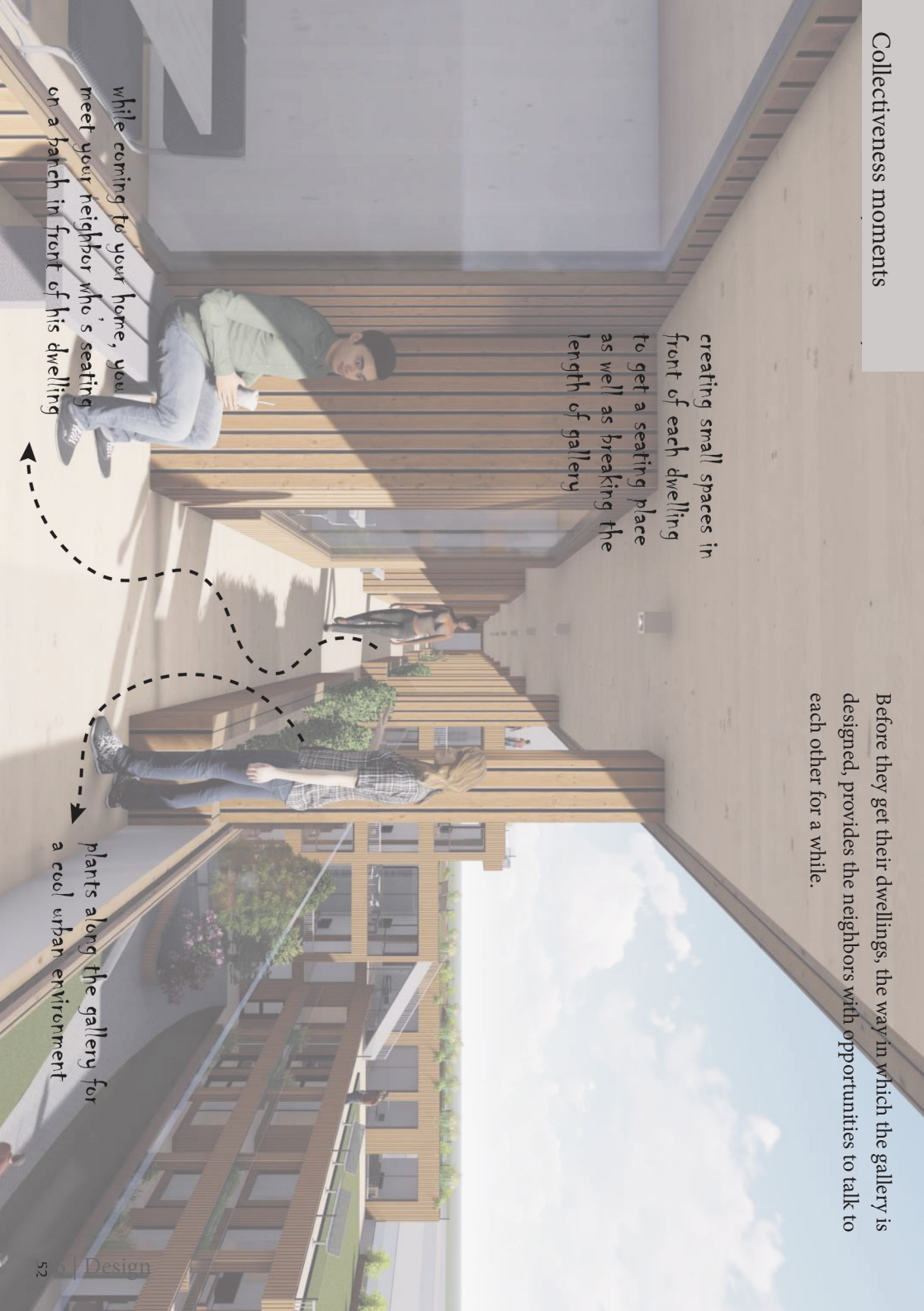
placing a communal room at the courtyard level to facilitate a place for residents to read/work together

Before they get their dwellings, the way in which the gallery is designed, provides the neighbors with opportunities to talk to each other for a while.

creating small spaces in front of each dwelling to get a seating place as well as breaking the length of gallery

while coming to your home, you meet your neighbor who's seating on a banch in front of his dwelling

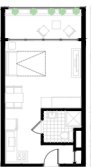
plants along the gallery for a cool urban environment





In total the dwellings contain a variety of dwelling types that provide houses for the people who want to live alone or together with others. There are 10 types of dwellings. Half of them corridor access and the other half with gallery access. They all together make a total of 192 dwellings as I said before. I'll elaborate on a few of them.

Corridor typology



Type A1 (31.5 m<sup>2</sup>)



Type B1 (63 m<sup>2</sup>)



Type C (22 m<sup>2</sup>)

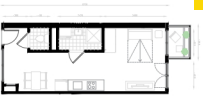


Type A2 (29.25 m<sup>2</sup>)



Type B2 (58.5 m<sup>2</sup>)

Gallery typology



Type D1 (34 m<sup>2</sup>)



Type D2 (65.5 m<sup>2</sup>)



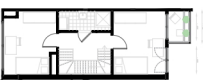
Type D3 (65.5 m<sup>2</sup>)



Type A1 (97 m<sup>2</sup>)

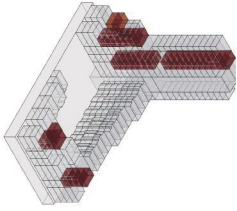


Type A1 (64 m<sup>2</sup>)



## Type A1

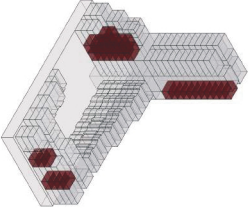
- Studio (single)
- 31,5 m<sup>2</sup>
- Loggia / winter garden
- 35 studios
- Bay width = 4500 mm
- Depth = 7000 mm
- Floor height = 2600 mm
- Corridor access



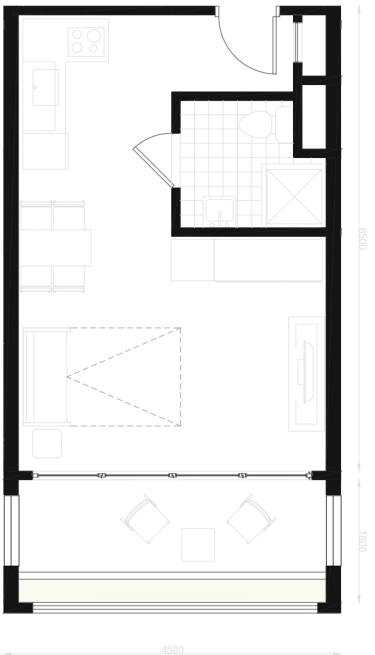
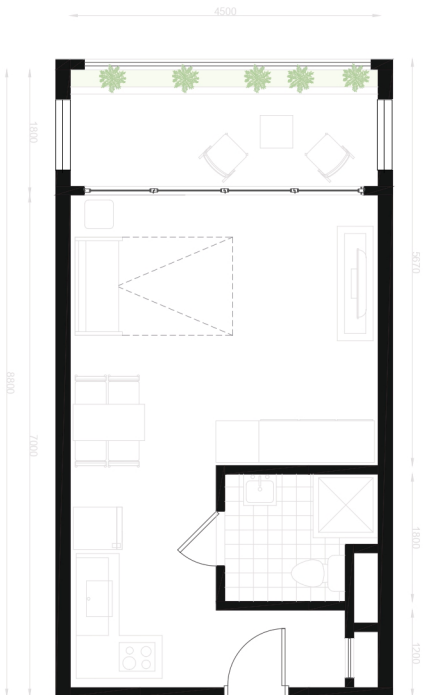
Type A1 and A2 are suited for those who are living alone. Both types have the same organization.

## Type A2

- Studio (single)
- 29,25 m<sup>2</sup>
- Loggia / winter garden
- 34 studios
- bay width = 4500 mm
- Depth = 6500 mm
- Floor height = 2600 mm
- Corridor access



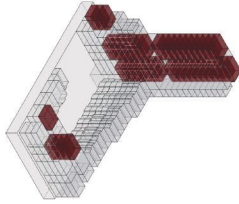
Type A2 is slightly shorter than type A1 because it's orientated to the North side.





## Type B1

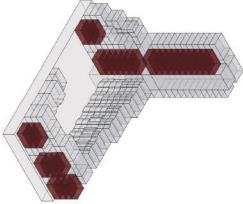
- Apartment (couples)
- 63 m<sup>2</sup>
- Loggia / winter garden
- 44 apartments
- Bay width = 4500 mm x2
- Depth = 7000 mm
- Floor height = 2600 mm
- Corridor access



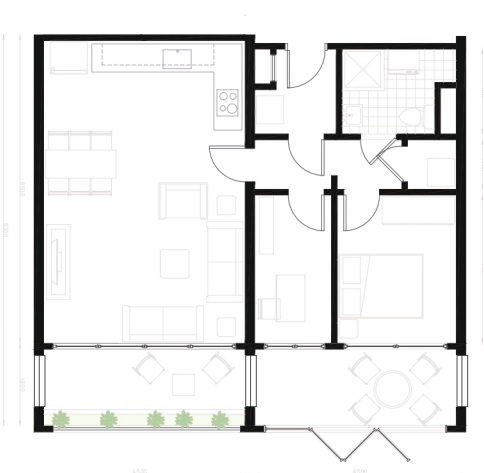
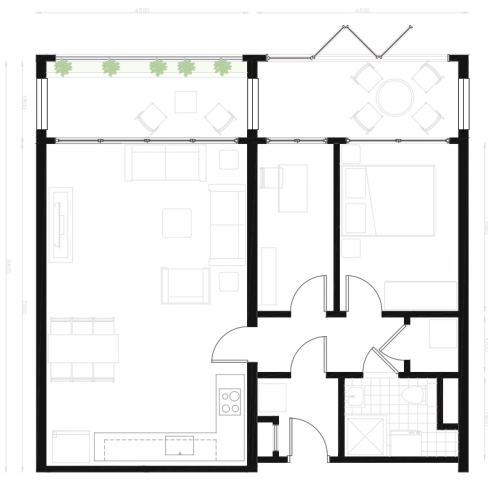
The second type is B1 and B2 for couples and has a large open living room.

## Type B2

- Apartment (couples)
- 58.5 m<sup>2</sup>
- Loggia / winter garden
- 32 apartments
- Bay width = 4500 mm x2
- Depth = 6500 mm
- Floor height = 2600 mm
- Corridor access

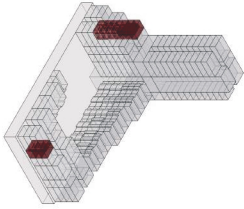


Both types have a separable annex that can be functioned as an office room.



## Type C

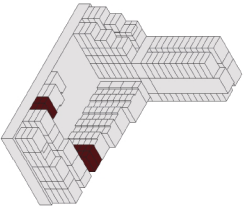
- Compact studio (single)
- 22 m<sup>2</sup>
- Loggia / winter garden
- 10 studios
- bay width = 4500 mm
- Depth = 7000 mm
- Floor height = 2600 mm
- Corridor access



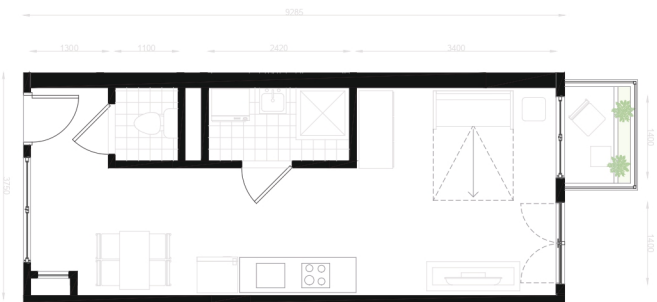
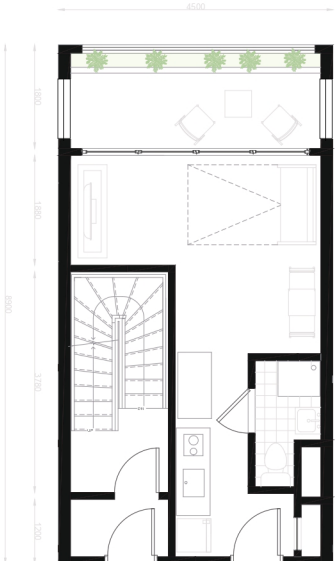
The smallest dwelling in the building is dwelling type C because the fire escape stair takes area from the dwelling

## Type D1

- Studio (single)
- 34 m<sup>2</sup>
- balcony / french balcony
- 13 studios
- bay width = 3750 mm
- Depth = 9150 mm
- Floor height = 2600 mm
- Gallery access

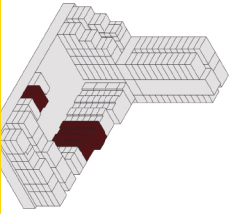


Type D1 is the smallest dwelling from the dwellings with gallery access. It has a small balcony, two separated area for toilet and bathroom.



## Type D2

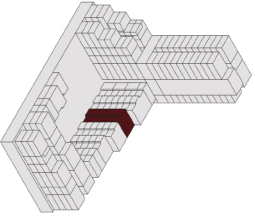
- Apartment (couples)
- 65.5 m<sup>2</sup>
- Balcony / french balcony
- 13 apartments
- Bay width = 7000 mm
- Depth = 9150 / 8400 mm
- Floor height = 2600 mm
- Gallery access
- Has circular movement due to sliding doors



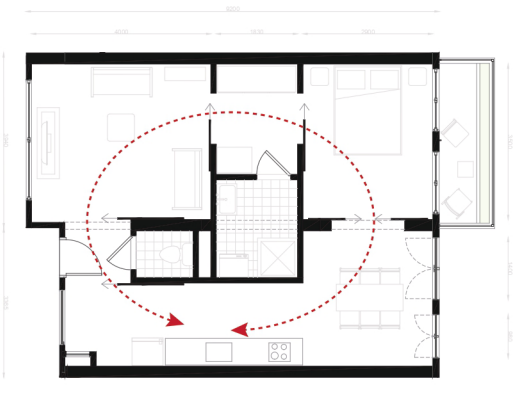
This dwelling with gallery access has the concept of the open space that can be created through the sliding doors between the rooms. So, the movement can be continued in this dwelling.

## Type D3

- Apartments (couples)
- 65.5 m<sup>2</sup>
- Balcony / french balcony
- 6 studios
- Bay width = 3750 mm (x2)
- Depth = 9150 / 8400 mm
- Floor height = 2600 mm
- Gallery access



This type is a shared housing for two persons. The sleeping rooms are oriented towards the outside to have more privacy. While the living area and the kitchen are oriented towards the gallery.

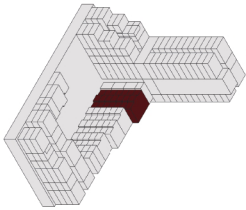






## Type D4

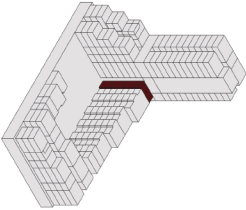
- Shared housing (3 persons)
- 97 m<sup>2</sup>
- Balcony / french balcony
- 7 apartments
- bay width = 3750 mm (x3)
- Depth = 9150 / 8400 mm
- Floor height = 2600 mm
- Gallery access



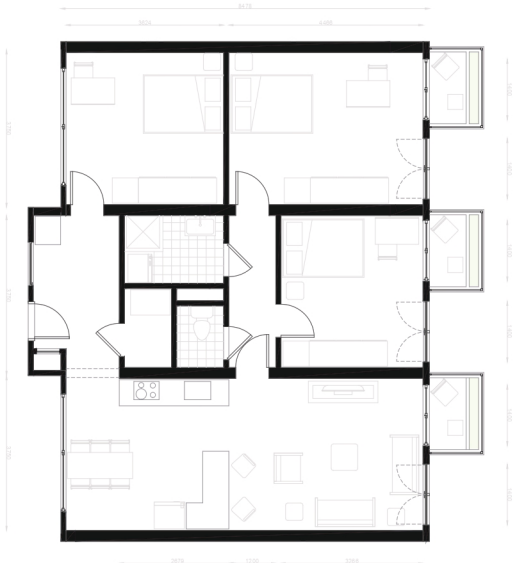
Type D4 is a new type of dwelling called the shared housing where three residents share the same living room, kitchen, and bathroom.

## Type D5

- Shared housing maisonette (2 persons)
- 68 m<sup>2</sup>
- Balcony \ french balcony
- 3 studios
- bay width = 3750 mm
- Depth = 9150 mm
- Floor height = 2600 mm
- Gallery access



The last type is type D5 which is a maisonette for two persons that share the same living area as well.





















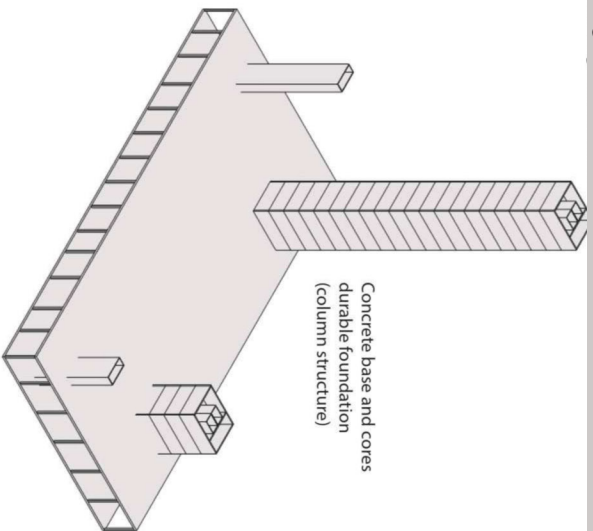




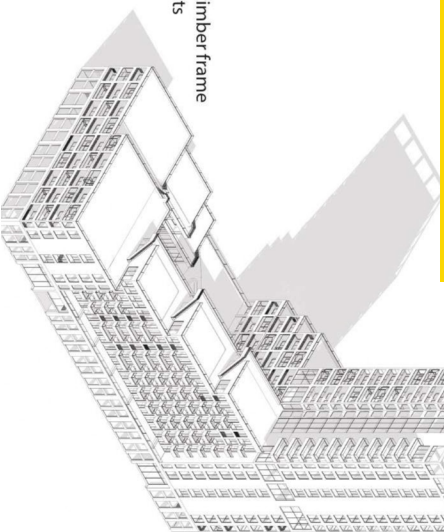
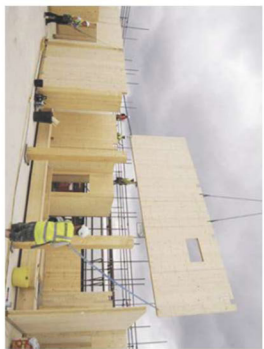
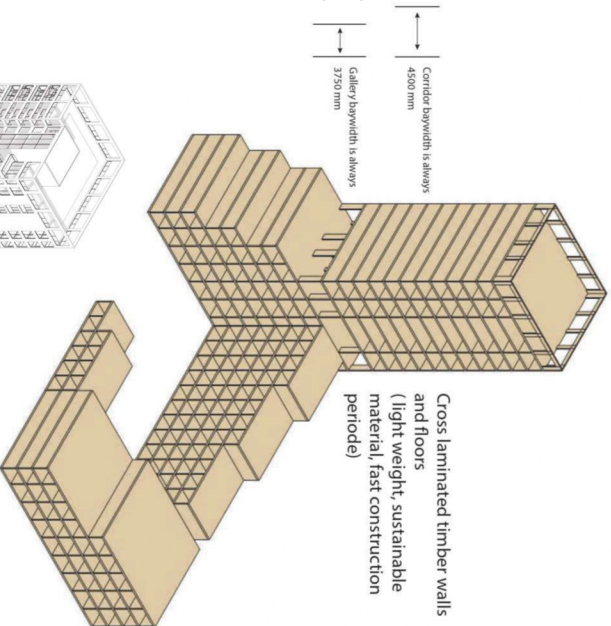


# Technical aspects





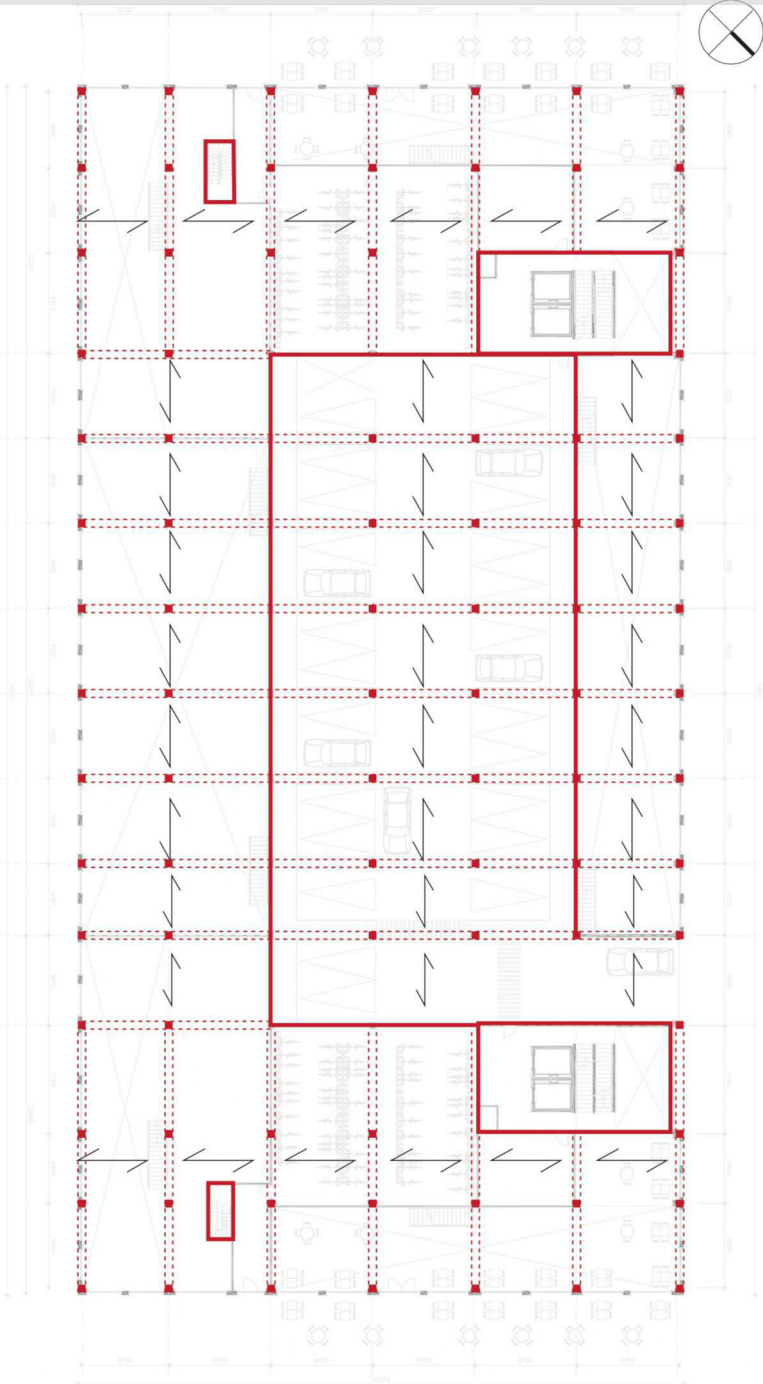
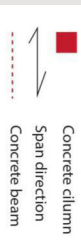
With the technic aspects, I wanted to focus on the environmental impact of the design and that's largely defines the construction method and the material I've chosen. The structure of the plinth is made out of concrete which provides structural stability and is a durable base for the building. It's very handy to have a concrete plinth because of the floating in that area.



The levels on top are made out of the CLT. It's light weight and a fast construction time. The whole building is closed off with prefabricated facade elements.

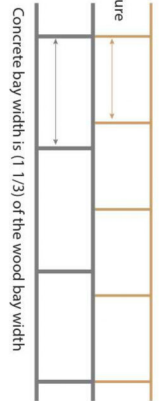
# Ground floor construction 1 \ 1000

Concrete columns 250 x 250 mm  
Concrete beams height = 250 mm

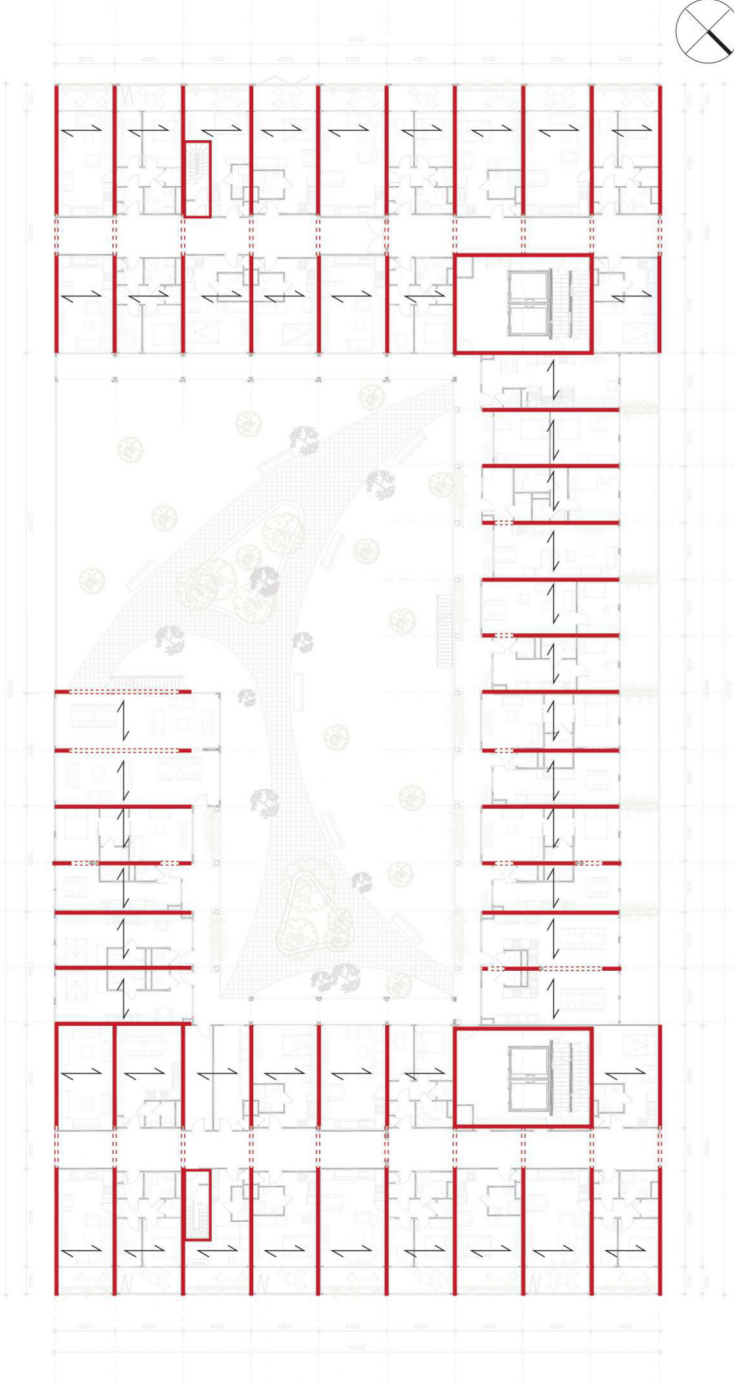


Upper levels: Timber structure

Plinth: Concrete structure



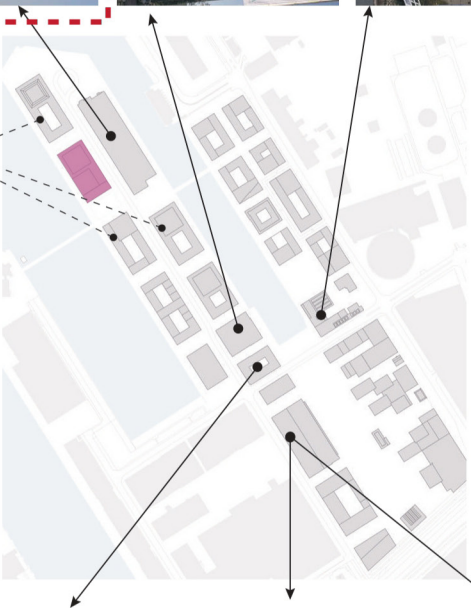
CLT wall = 160 mm wide  
CLT floor = 400 mm height







Brawn\red brick is the typical material of that area



Katoenveem  
concrete finishing



In terms of materialization, I looked at the material of the existing buildings and I found that brown brick is the typical material of that area except for the Katoenveem which is the opposite building.

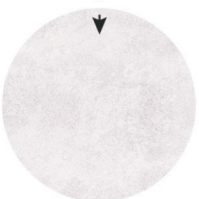
The outside materialization of the elevation is reflecting the construction material behind



Lunawood cladding for the upper floors (Dwellings)

- The expected service life of Thermowood is more than 30 years
- Lunawood Thermowood can be used both indoors and outdoors, regardless of the climate.
- It retains its shape better than untreated wood.
- Decreased heat transmission compared to untreated wood.
- Less maintenance

→ Glass railing of 100 mm height



Concrete cladding for the plinth

Therefore, I have chosen concrete material for the plinth to give the same spirit to the street. Whereas, the façade of the upper levels is clad with lunawood based on aesthetical appearance, sustainability aspects, the cost, and it can be used outside as well as inside.

## Lunawood characteristics

Lunawood is known for Thermowood: a sustainable type of wood material, produced using thermal modification. A production process that only uses natural methods. In this case, heat and steam are used during the processing of the raw material. This significantly improves the properties of the wood. For example, Thermowood retains its shape much better than untreated wood. Lunawood Thermowood has many applications and can be used both indoors and outdoors. The material contains no resin and is free of chemical additives. A durable, attractive and natural product, easy to process and use. A wood product of unsurpassed top quality.

### What makes Lunawood Thermowood unique?

- Durable: The expected life of Thermowood is more than 30 years, when used above ground. Due to the thermal treatment, fungi have little chance.

- Natural and without chemicals: During the production process of Lunawood Thermowood, only heat and steam are used, so no chemicals. Steam acts as a protective gas, which prevents cracks and damage to the wood.

- Resin-free: Even at high temperatures Lunawood Thermowood remains resin-free. Due to the thermal modification process, the wood no longer gives off resin. (Oldenboom.nl)



DIMENSIONAL STABILITY



ALL CLIMATES



RESIN FREE



NON TOXIC



THERMAL INSULATION



WEATHER ENDURANCE



SUSTAINABLE FORESTRY



CERTIFIED QUALITY

# Materialization of my building and Katoenweem



The concrete finishing of the plinth has the same spirit as the opposite building building 'Katoenweem'

- The height of the horizontal line of the plinth is the same as the white part of Katoenweem.

- The horizontality of the ground floor facade is strong in that street

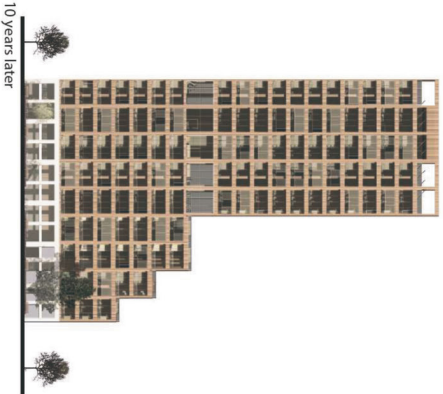
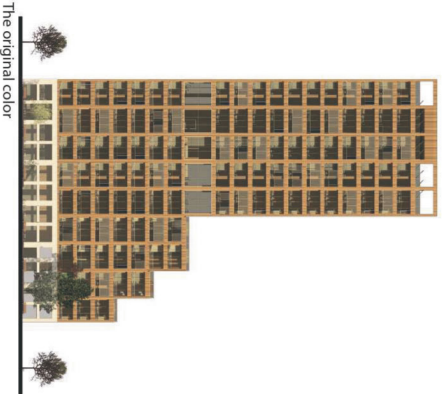


## Colourization of the wood cladding

- A treatment process is applied on the wood cladding (Lunawood) that protect it from turning grayish.

- After 10 ywars would slightly change its colour due to climate factors (rain water, sun light...)

I tested the color of the wood to see how it will look like after ten years and it turned out that the color of the wood will turn gray a little bit even if it's treated with a specific type of oil.



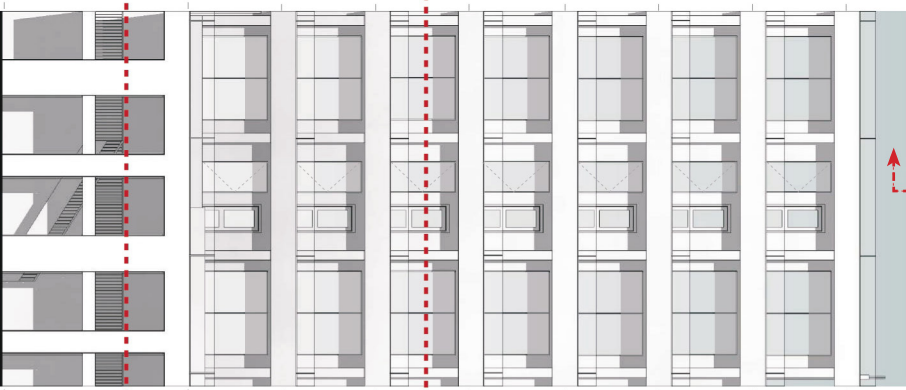
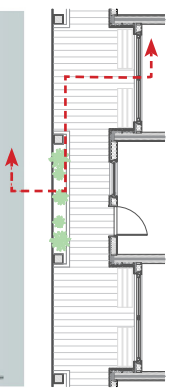
Two facade fragments



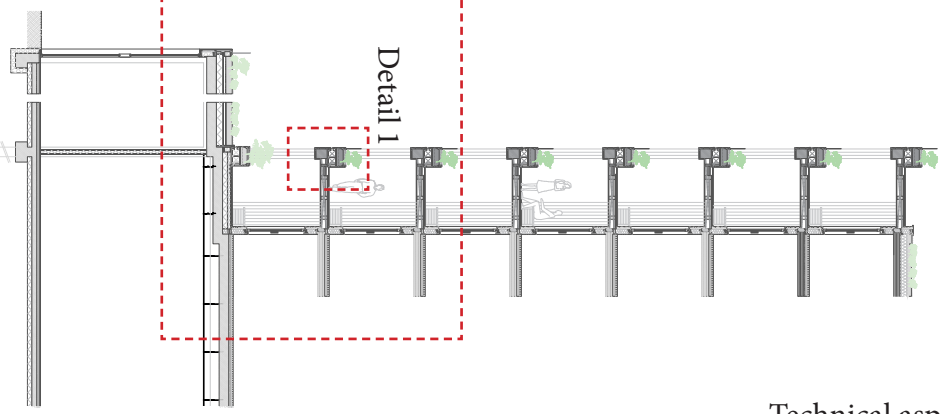
Facade fragment 1  
From the inner side (Courtyard)



+27 m  
+24 m  
+21 m  
+18 m  
+15 m  
+12 m  
+9 m  
+6 m  
+0

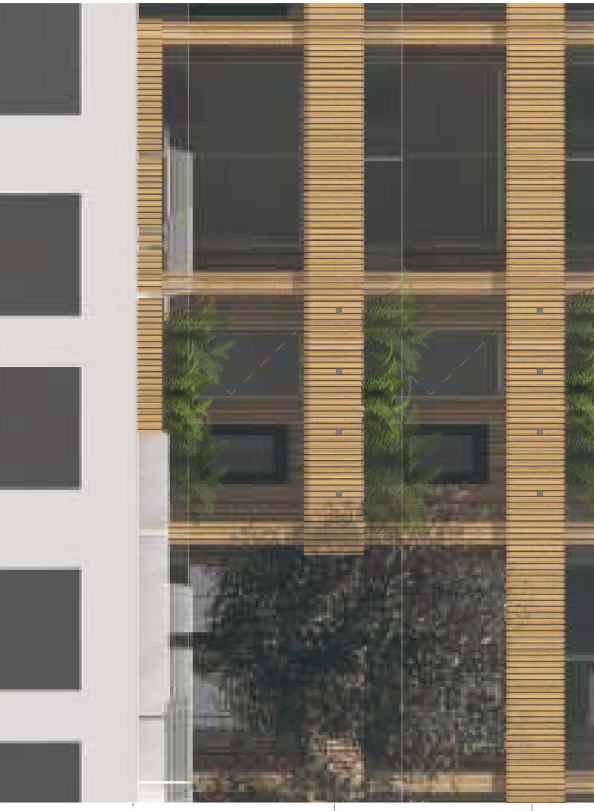
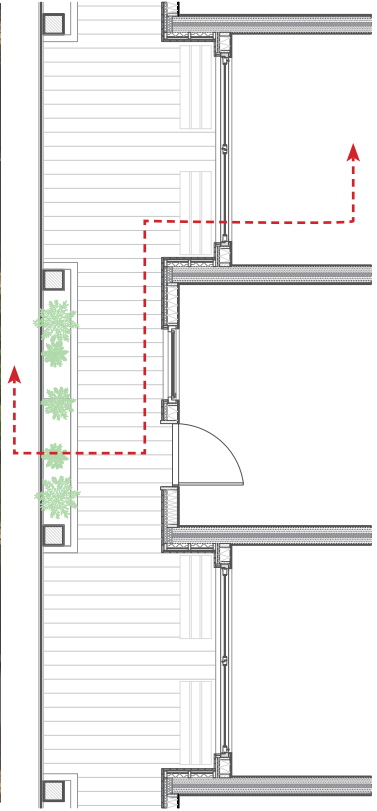


Detail 1

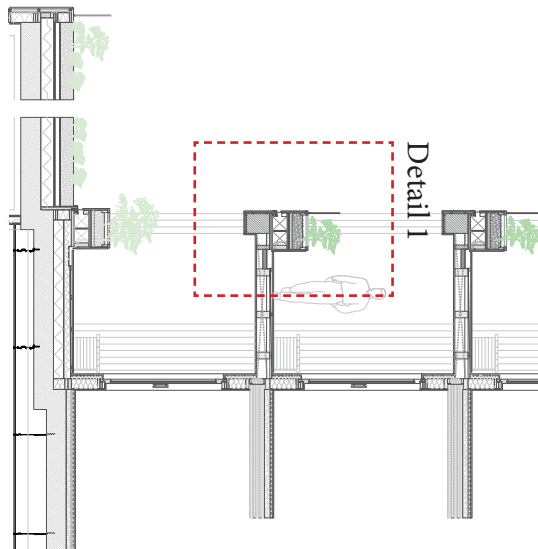


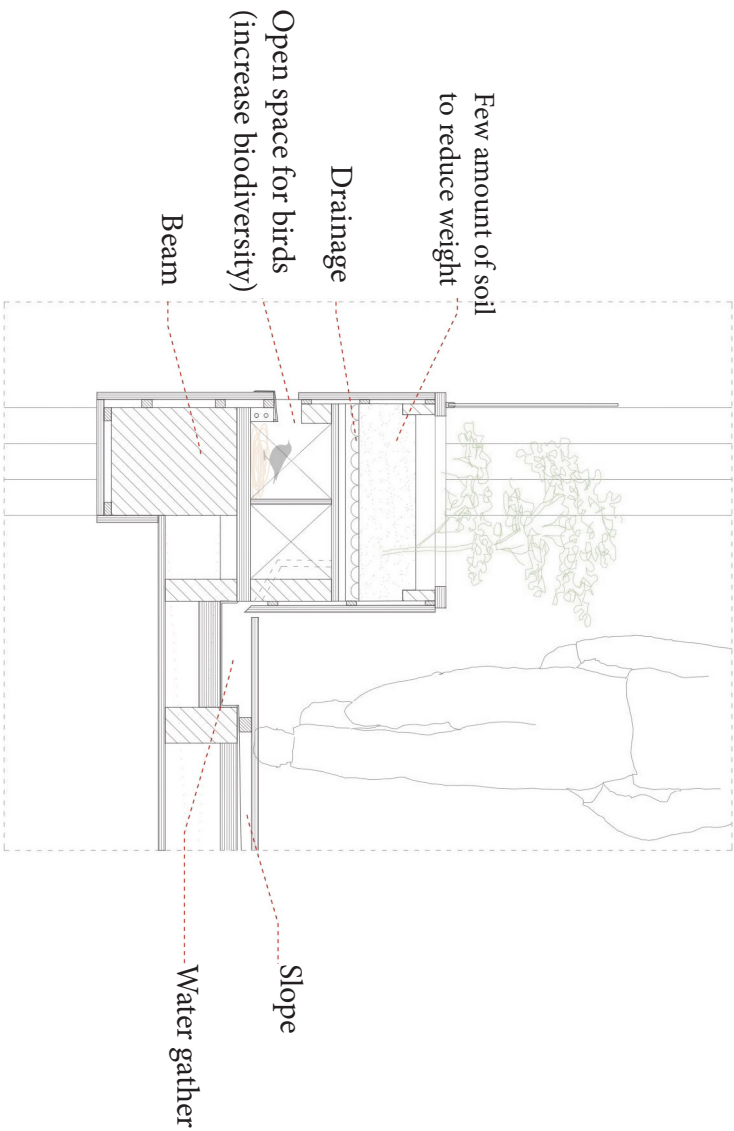


Facade fragment 1  
(from the courtyard)



+12 m  
+9 m  
+6 m



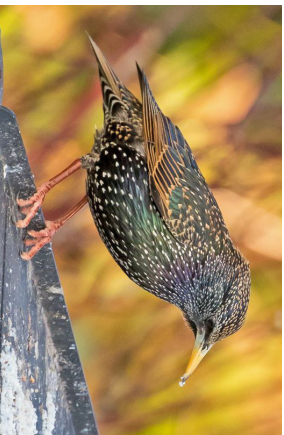




Common starling  
Opening width: 45 mm



Rhododendron 'Nicoletta'



Great tit  
Opening width: 32 mm



Frangula alnus 'Asplenifolia'



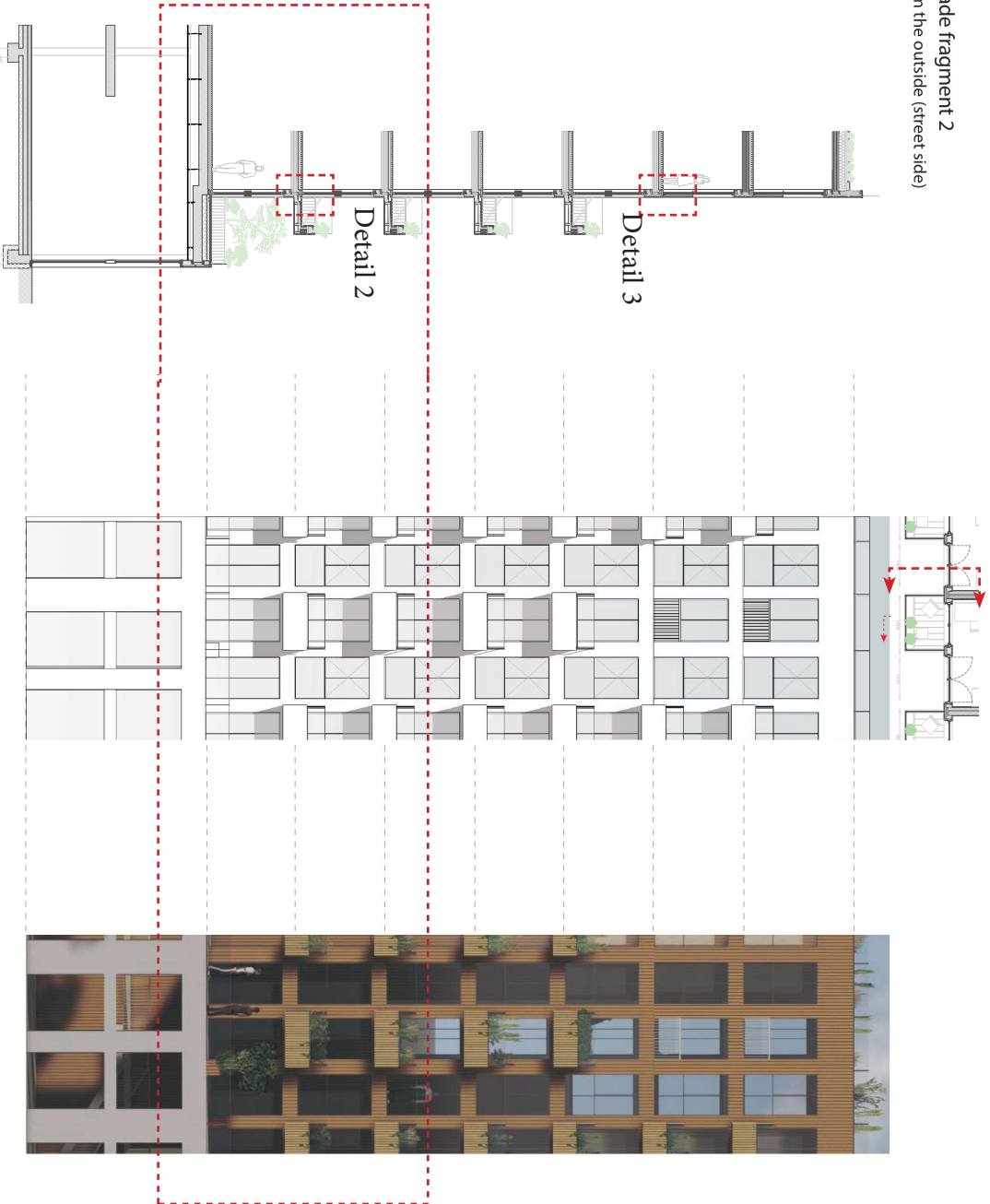
Spotted flycatcher  
Opening width: 100 mm



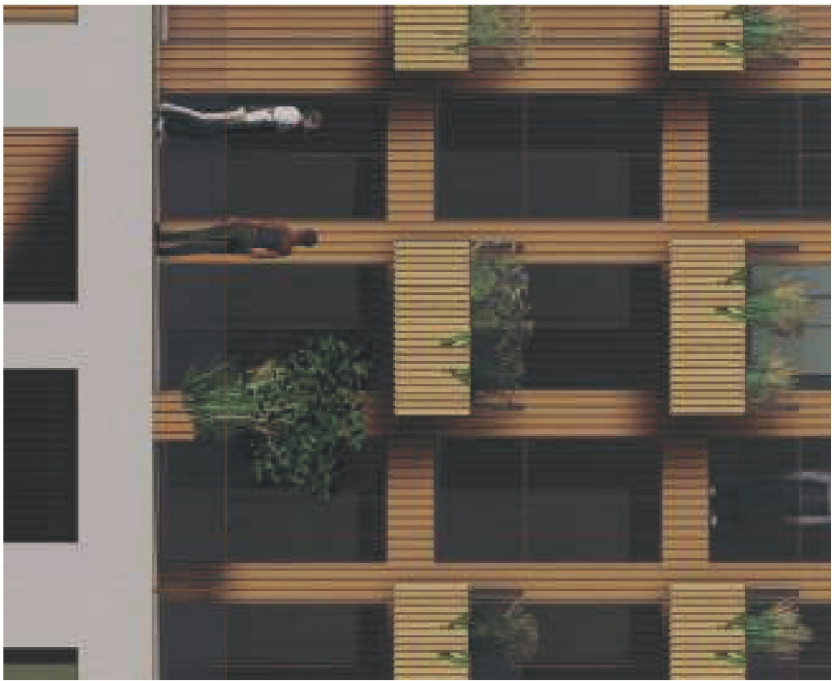
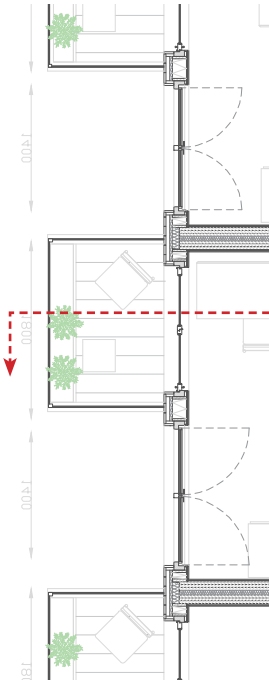
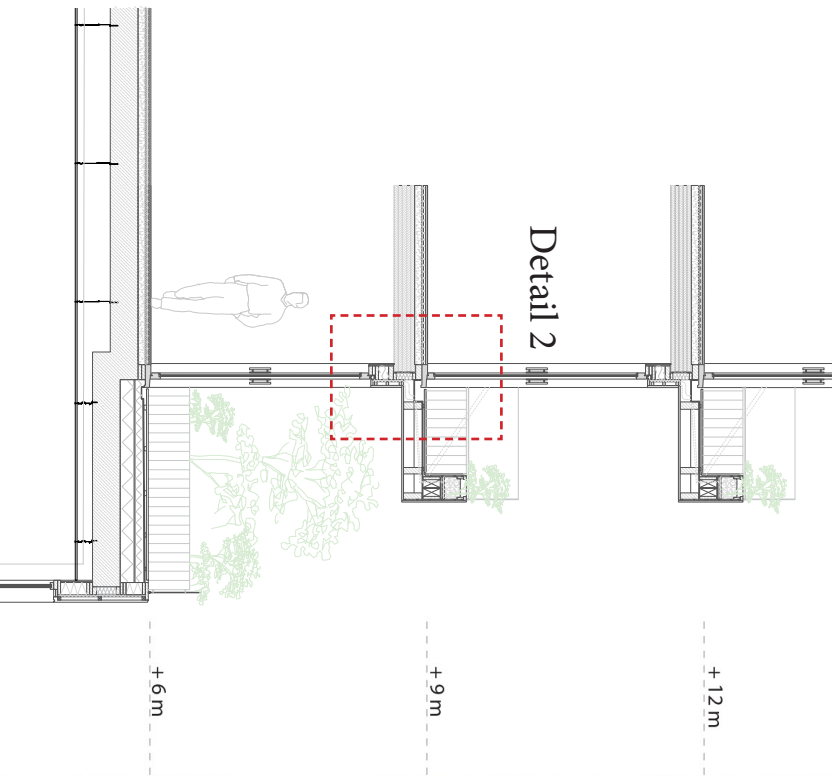
Ilex 'Nellie R. Stevens'

(Van den Berk  
Boomkwekerijen)

Facade fragment 2  
(From the outside (street side))

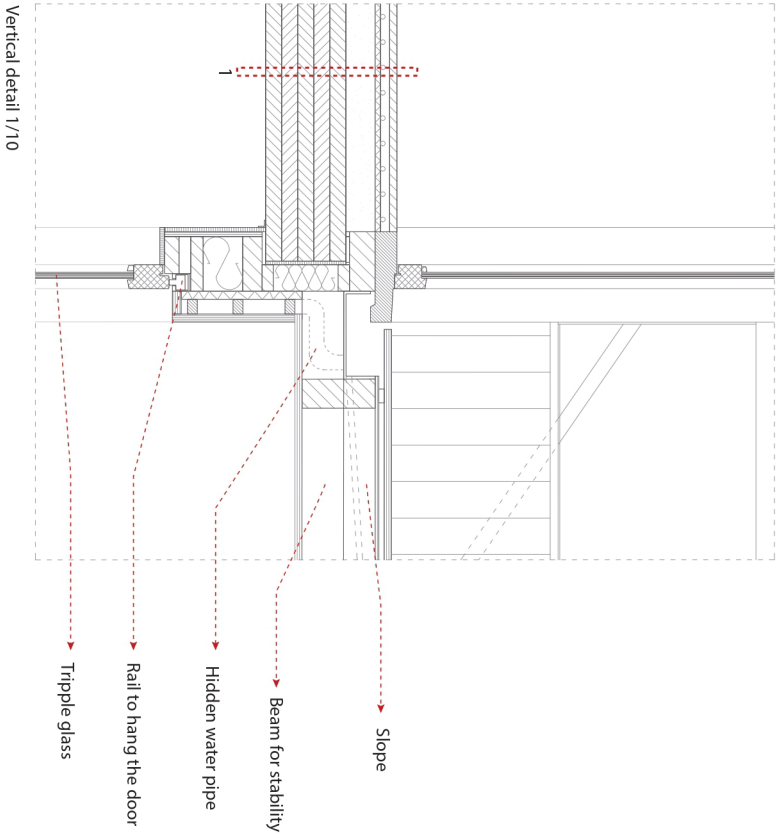


# Facade fragment 2



- 1 - From top to down:
- Floor covering
  - Plate with door heating (18 mm)
  - Insulation layer (15 mm)
  - Sand layer (80 mm)
  - CLT floor (220 mm)

This detail shows the connection between the balcony and the facade and also the layers on top of the CLT floor with the floor heating.

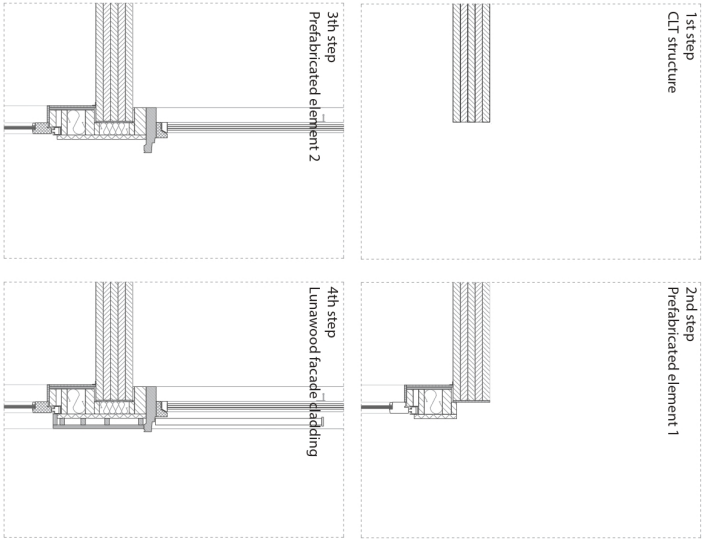


# Detail 3

## Facade detail

This is the standard vertical detail.

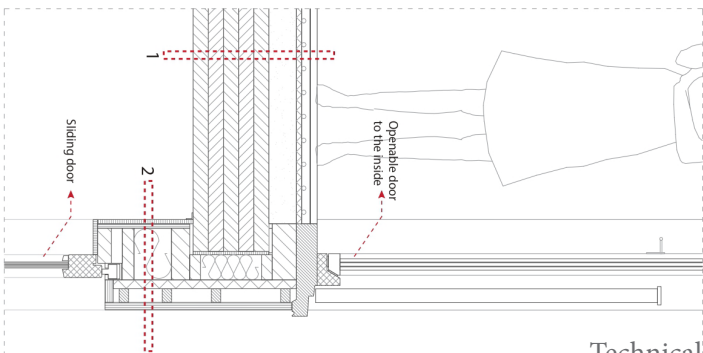
I would like to show you the order of constructing it. The first step is when you have the CLT floor and then you place the CLT frame. After that you add the other element on top. Then the facade cladding is put on top and lastly the floor layers are added with all pipes and heating system.



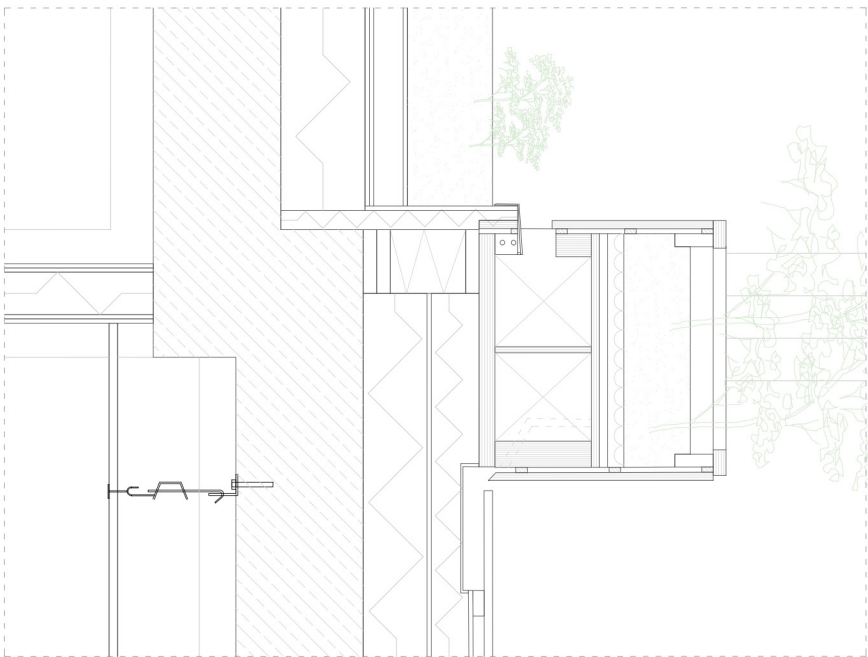
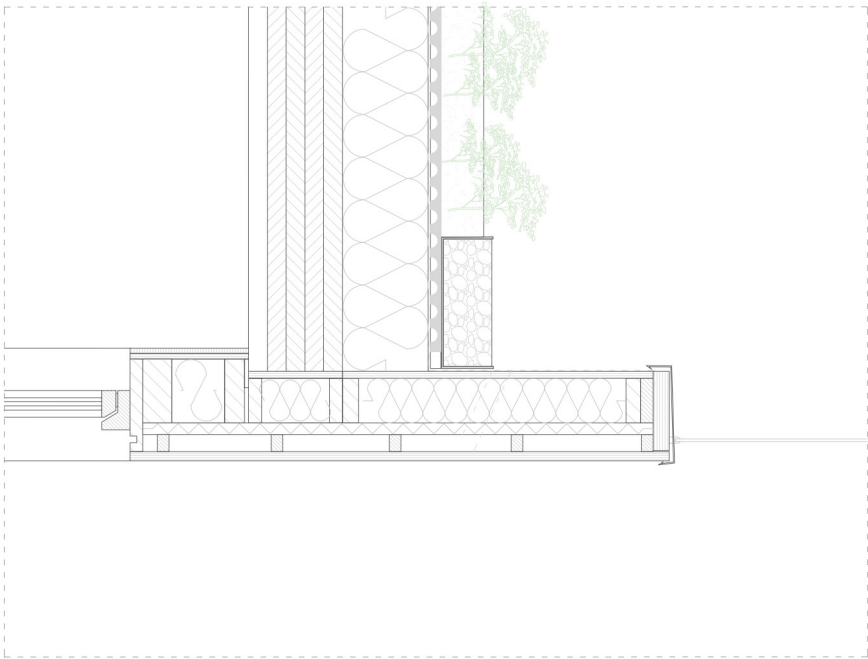
- 1- From top to down:
- Floor covering
  - Plate with floor heating (18 mm)
  - Insulation layer (15 mm)
  - Sand layer (80 mm)
  - CLT floor (220 mm)

2- From left to right:

- Plasterboard (13 mm)
- Structured particle board (13 mm)
- Timber frame with wood fiber insulation (160 mm)
- Wood fiber insulation (30 mm)
- Horizontal patterns (40 mm)
- Lunawood vertical cladding (22 mm)



Vertical detail - Facade detail 1/10  
Facade with floor





## Horizontal detail of dwellign type D4 Shared housing 1\50

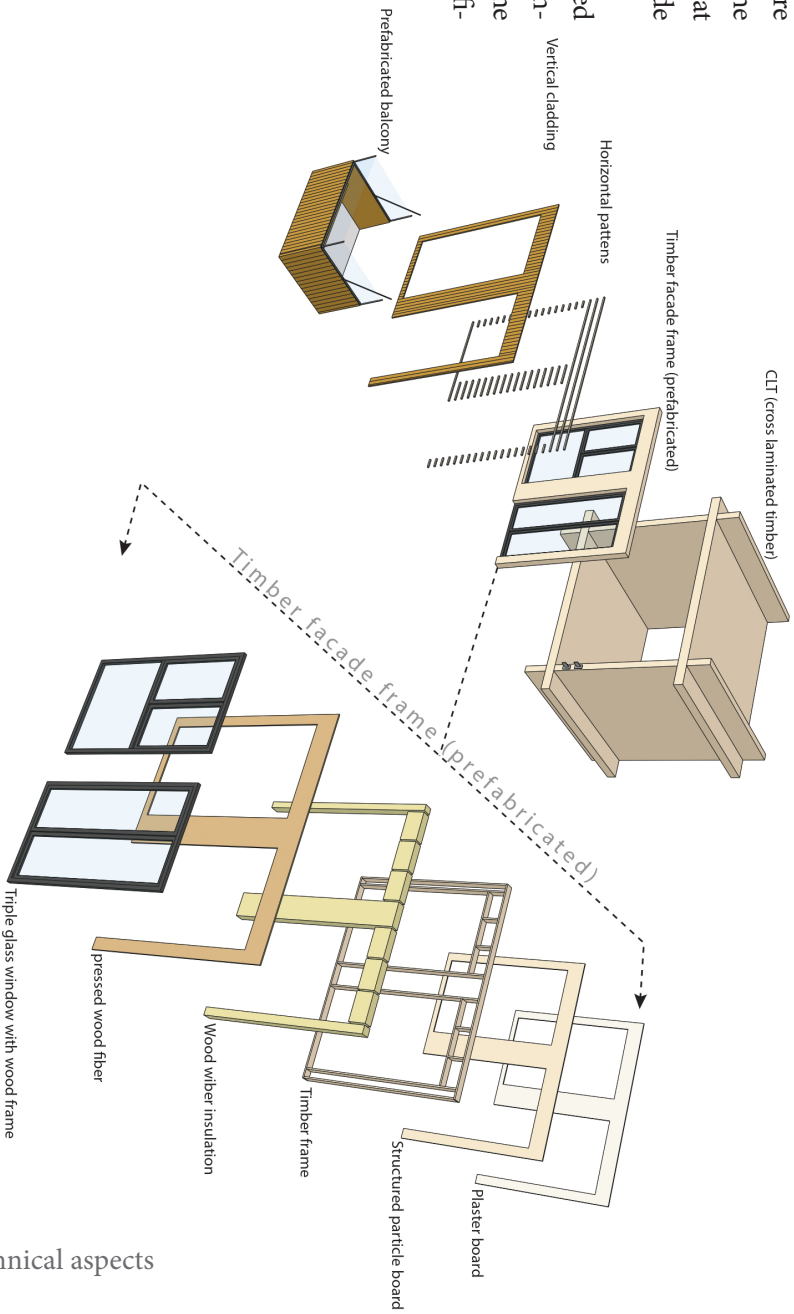
When zooming in on a part of the building. All the dwellings have separation walls that are made out of CLT with a noise insulation layer in the middle. The façade is made out of prefabricated timber façade elements.



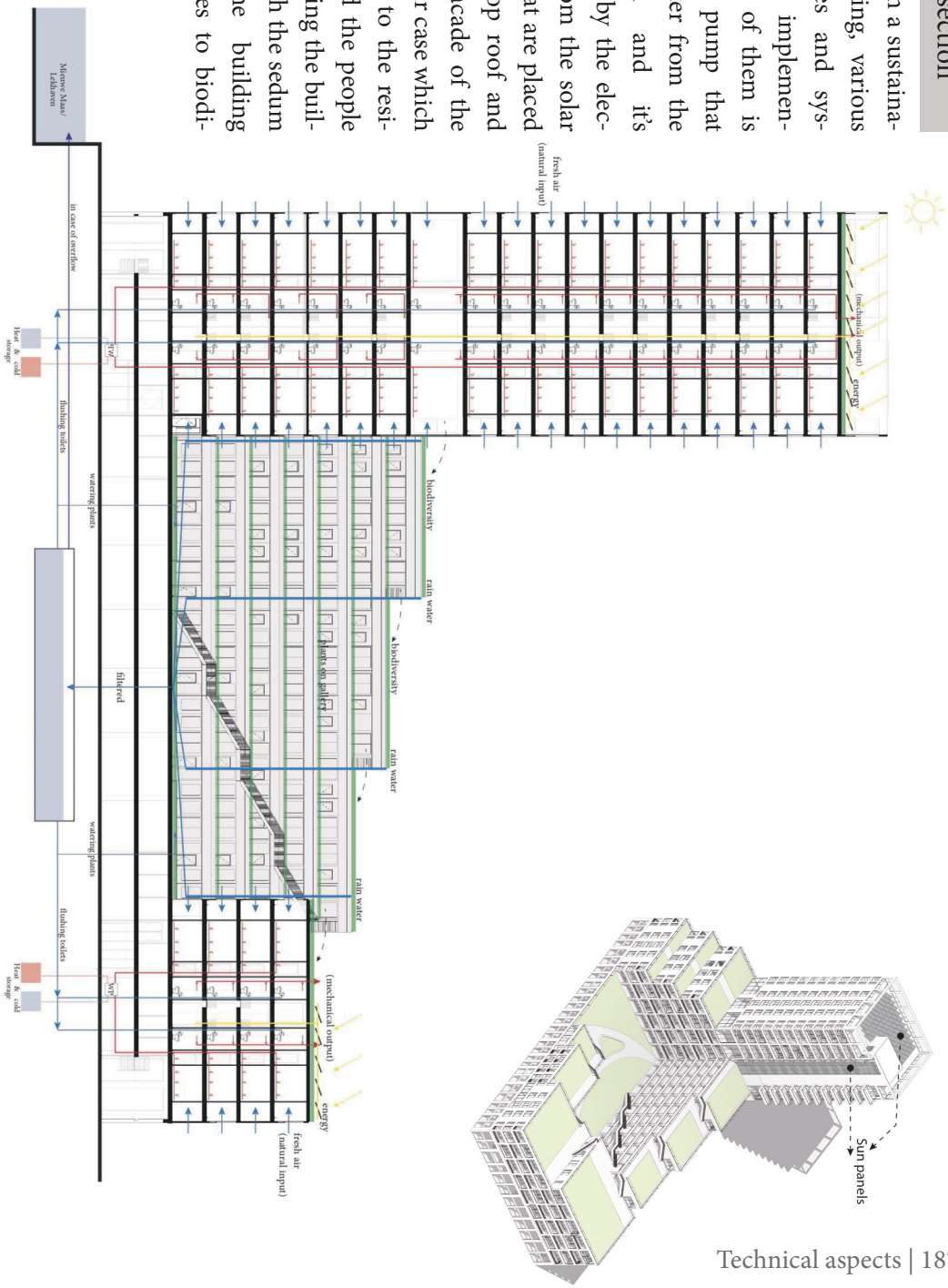
## Facade assembly

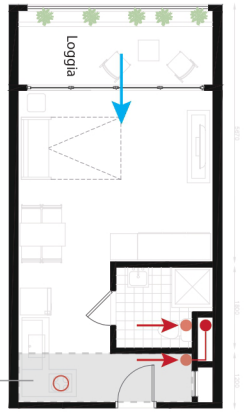
The prefabricated elements are placed first to the CLT structure before connecting the balcony and after that the Lunawood façade cladding.

The prefabricated façade elements consist of a timber frame which is filled with fiber insulation.



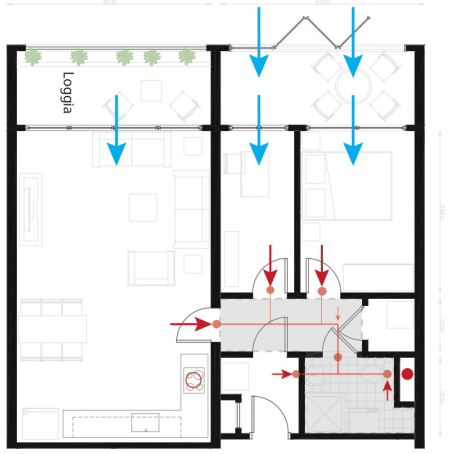
To design a sustainable building, various techniques and systems are implemented. One of them is the heat pump that takes water from the Lakhaven and it's powered by the electricity from the solar panels that are placed on the top roof and on the facade of the tower stair case which is visible to the residents and the people surrounding the building. With the sedum roofs, the building contributes to biodiversity.



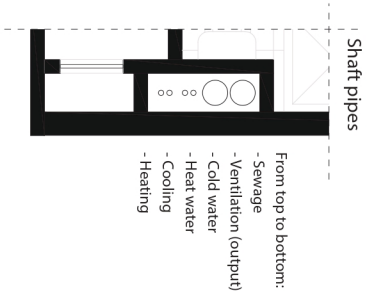


Dwelling type A1  
Suspended ceiling

The building has one type of ventilation with a natural inlet and a mechanical outlet. The mechanical outlet is a centralized system as you can see in the section. The dwellings that have winter gardens can get a preheated fresh air in the winter.

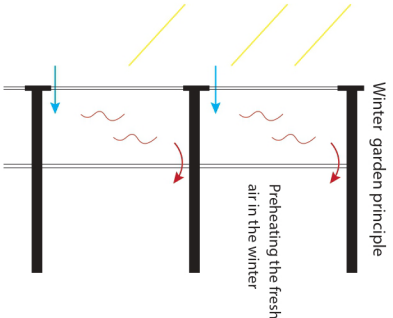


Dwelling type B1



- From top to bottom:
- Sewage
  - Ventilation (output)
  - Cold water
  - Heat water
  - Cooling
  - Heating

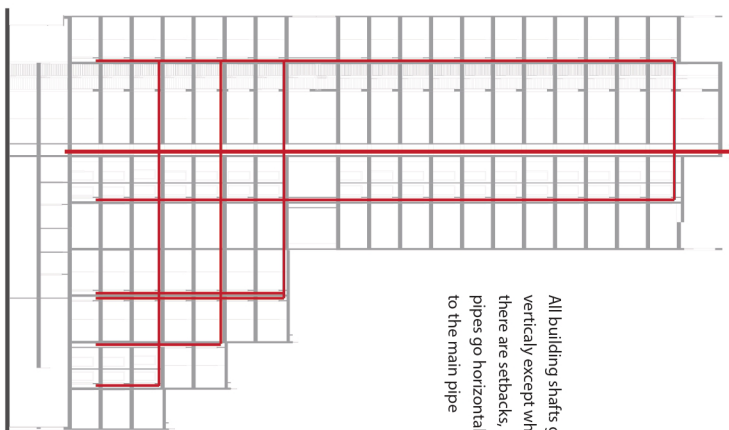
Shaft pipes



Winter garden principle

Preheating the fresh air in the winter

Main outlet pipe in the main shaft in the core



All building shafts go vertically except where there are setbacks, the pipes go horizontally to the main pipe

# Reflection report

Creating a city for a generation of integration  
in which young people with migration background have a sense of belonging

## Preface

This Reflection Report is the final and most important chapter of my graduation project, which is a project of The Dutch Dwelling Studio in Rotterdam. Title for my design project is 'Creating a city for a new generation of integration in which status holders have a sense of belonging'. The main research question was "How can social housing be designed in an affordable manner to be able to provide status holders a comfortable living environment and help them with the integration into the Dutch society?". In addition, several sub-questions were created. To be able to answer these research questions, many different study- and design-related decisions were taken. In this report, I will focus on the different types of research that I have done throughout the year, as well as on how these decisions influence my design.

# Reflection report content

- Introduction
- Relation between research and design
- Research methodology
- Studio reflection
  - Literature studies
  - Target group research
  - Site analysis (typology transfer)
  - Case studies
  - Dwellings typology
  - Building block (1- mass & 2- material)
  - Facade study
- Conclusion
- Four other reflections
- Reflection bibliography

## Introduction

The College of Architecture at TU Delft is one of the Dutch scientifically-oriented colleges that incorporates both design and theoretical research. In addition, the college adheres to the idea that the architect must take many decisions that serve a design, whether these decisions emerge from imagination, ambition, experience, or are based on research. During my academic career as a student of architecture, I had to make many decisions on my own. However, this year, in particular, I felt a lot of responsibility for all the decisions I made. This responsibility was a burden, as any wrong decision would make, would have cost me time and would influence the quality of my output as a student and architect.

One of the reasons I initially decided to study at the College of Architecture is the method of study used by the College.

This method of study is a mixture of architectural design and research, which are intertwined in an uneven balance to be able to reach the final product. I cannot deny this method proved a little difficult to get used to at the onset of my studies at Delft University, especially because I was not used to this rigorous method of research during my five-year studies of architecture in my native country, Syria. In this chapter, I will look back at the seven and a half years in which I studied architecture in my native country and in Delft to further elaborate on the relationship between research and design.

In a scientific institution such as the College of Architecture, architecture students are taught how to design in effective and renewable ways that are commensurate with contemporary times and contemporary architecture, and to know how to deal with all kinds of spatial and technical challenges in the architecture-built environment. The College of Architecture in Delft in particular focuses on, for example, the technical, scientific, and research aspects. In this report, the extent of the importance of conducting scientific research during the design process and the extent to which a design is affected by scientific research will be discussed. Thus, the relationship between design and research is a fundamental aspect that played a central role in this report.

To guide this reflection report, a simple definition of research was used, based on Theo van der Voordt's definition in his report "Methods and technique research". This definition is: "Scientific research is the collection, analyzing, and processing of data in a methodical, objective, and valid manner to understand and explain better and therefore make the data manageable".

IN the following paragraphs, the types of research that was used in the graduation project will be explained, starting from describing the type of research, and then moving to how to use the actual research and make use of it for the purpose of architectural design.



Each of the research methods used in the graduation project will be explained in detail separately and without any deliberate order. The reason is that these methods were used many times and intermittently during the design process, so they do not have a specific order. The philosophy behind this principle is the idea that research and design processes can differ from one person to another. They do not go together in a specific order, but rather run in parallel (Van der Voordt, 1998). With respects to the graduation project, at times, the research process preceded the design process, depending on the topic that required preemptive research. When this occurred, the resulting design was stronger, because it was based on logical arguments that were derived from the research. At the end of this report, four additional aspects will be explained, which are also included in the graduation plan.

## Relation between research and design

The relationship between research and design at the College of Architecture in Delft, and in particular in the Dutch Dwelling Studio, is very strict and neither can be separated from one another. During the first semester of the year-long graduation project, the focus was fully on the research conducted to study the project site, which was based on teamwork. Without this research phase, I expect it would have been very difficult to obtain a suitable and valuable design. Most of my design was ba-

sed on various types of research that will be explained in the following paragraphs. This included intensive and extensive literature research. During the research and design process, there was a dominant relation between research and design. In fact, the process was 'research by design', where the design was used to explore, identify and visualize possibilities and where the design began to take its final form after several weeks of research.

As mentioned, the Dutch Dwelling Studio has a clear and specific structure of requirements throughout the year that all students follow simultaneously. For each of these requirements, we had a specific method of research. I will briefly explain all the requirements that we had fulfill, which included simultaneously conducting research and design. These requirements were in effect from the first quarter until the end of the academic year. They were:

- Choosing a research topic about a target group;
- Site analyzing (Mierwevierhaven) with the group members (case study was Kop van Zuid);
- Plan analysis, conducted individually (four case studies);
- Quick Start course as the first step towards the design phase;
- Real design process (started before P2 and continued until the end) which included the construction and the building technology studies.

## Multiple research methodologies

Many types of research can be used during the design process for any project. A well-known distinction is made between literature research and field research. For literature research, only pre-existing data from literature sources are used, whereas for field research empirical material is (also) collected. In the book, “Ruimtelijk Onderzoek” by Korteweg and Van Weesep (1983) this dichotomy is further elaborated and six basic forms of research are distinguished. I prefer to mention these six forms specifically because some of them were used in my graduation project. They will be briefly elaborated on:

- **Literature research:** The first method relies on a specific approach, which consists of exploring, analyzing, comparing, and evaluating the results of the research and all the methodological explanations that other authors provide.

- **Analysis of statistical material:** This method relies on collecting information, basic features, and various details regarding the neighborhood, region, and city, in addition to demographic characteristics, such as the age and occupations of those who live there.

- **The survey:** A survey upholds investigating a large number of characteristics and specific data. Some types of this surveys can be quantitative or qualitative. A quantitative questionnaire can be used when we need to find out some facts and figures from a large sample of people. It con-

cerns objective data. Qualitative surveys, such as from an interview with open-ended questions, are preferred when we need to know why someone thinks or does something: the data are more content-rich and subjective. Such research usually focuses on a small group of persons (Lucas, 2016).

- **Content analysis:** Conducting a content analysis implies analyzing written documents such as (articles, architectural critiques), spoken text such as (lectures, radio broadcasts) or images such as (photo, film, video). This method of research is usually used to gather different sources of information that benefit the researchers and enable them to link different information to reach the desired goal.

- **Secondary analysis:** Secondary analysis aims to re-analyze existing research material with different methods. This can be a benefit to researchers in order to get novel results and insights by using the same resources but from a different angle. Through using different methods, triangulation of information is achieved, which improves the validity of claims that are made from the results of the research.

- **The experiment:** An experiment is a method of research in which first measurements are taken as a baseline, then various changes are done, and then measurements are taken again. Alternatively, several groups of people, who receive a different manipulation of some variable, could be compared to check if there are differen-

## Studio reflection

ces between the groups on some outcome measure.

In the coming paragraphs, the research that I conducted for my graduation project will be reflected on, and I will discuss how it affected the final results of the project. The reflection will center specifically on the research that I did when I needed to obtain information regarding the target group, site analysis, case studies, affordable dwellings, influences of the design, mass and material, and the study of the façade. Some of the six research types of Van der Voordt that were explained previously will be linked to the types of research that I used in order to specify how my own research efforts fit into these six research types, as I did not strictly adhere to each of these six research types.

### - Literature study

During the literature research, many sources were used, including books, articles, and publications that were documented by the municipality and private organizations that support refugees in several matters, such as Central Orgaan Opvang Asielzoekers ('Central Agency for the Reception of Asylum Seekers'; COA) and Dienst Uitvoering Onderwijs ('Education Executive Agency'; DUO). I used Crimson's book called 'A city of comings and goings' to find specific information about the needs and requirements of asylum status holders in terms of the living environment and the difficulties they faced in the past. For example, I used information concerning refugees who came

to the Netherlands from Belgium, focusing on where and how they were accommodated.

I read many documents of the federal authorities and several student's theses from previous years to uncover information about the current policies regarding refugees in The Netherlands, the steps that they have to go through to get their residence, and the obstacles that limit their integration into the Dutch society, in addition to other, related questions. This was mostly conducted in the first semester of the graduation year. One of the seminal books that was proposed by the curriculum of the 'Research Plan' course in the first semester is the book 'Building and Dwelling' by Richard Sennet who played a major role in inspiring us with several ideas, including how to play a role in improving an inclusive city through architectural design.

At the beginning of the research, I was very surprised when I realized how serious the housing problem in the Netherlands is and that there is not enough living place in Rotterdam to house asylum status holders and residence seekers. I searched the Rotterdam city files regarding the number of people who are granted a house each year, and it turned out to be a very limited number. The rest of the residency holders must wait at the asylum centers until there are suitable accommodations available. I also investigated the asylum policy in the Netherlands and the timeline for refugees from arriving in the Netherlands to becoming asylum status

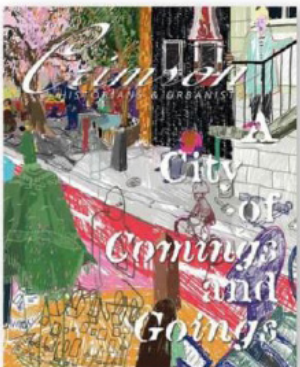
holders and eventually attaining the Dutch nationality. I concluded that it is possible to solve the housing problem or at least reduce the waiting time in the asylum centers if the government constructing other types of houses. Through this literature research, it was possible to look at the problem objectively and on a large scale, without being personally affected just because I belong to the target group as well. Sometimes, however, being part of the target group was a positive aspect in itself, because the knowledge I acquired during my five years in the Netherlands about refugee life always led me to reasonable solutions even before I searched for the answers. But, of course, I always had to look for scientific sources.

The results of the research report could have been slightly different if I was not part of the target group as I know their wishes and what they feel. Therefore, sometimes it was rather easy to find useful information for the report, even if it was not scientific but supportive. I remember some of the interviews with refugees in the Netherlands

that I watched on YouTube, which were in Arabic (my mother tongue), and I was able to benefit from them because they made me think of other topics that would not have been present in my mind without watching those interviews.

In short, in the early phases of the design, the work was difficult because I had to define what the problems and solutions were to reach conclusions. However, over time, most of the ideas became clear and I was able to dive deeper into the research.

One thing that kept reminding myself of is when I was in the research process, is that I always had to think in a way that would lead me to objective results. The goal was not only to design homes for these people, but to find ways that would contribute to the increase of the integration process. This prompted me to search for appropriate answers to these inquiries, to be able to find out how it would be possible to turn these ideas into reality.

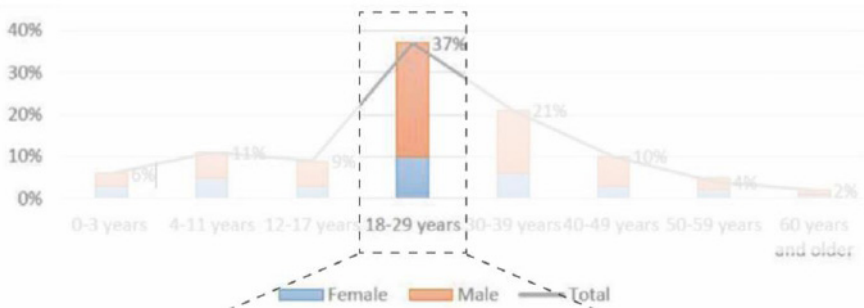


Crimson 'A city of comings and goings' – Richard Sennett 'Building and dwelling' – article about Startblock projects.

## - The target group:

The first thing I did for the project was to conduct an extensive search for information and statistics about asylum status holders and the problems they face when it comes to finding dwellings. Much of the research consisted of numbers and data written by the municipality and/or published in various journals. Some statistics indicated that most of the refugees who came to the Netherlands were in their twenties. That is what caused me to focus specifically on this age group (see diagram below), regardless of whether they were singles or couples. Several diagrams revealed that most of the

asylum status holders are unable to obtain a paid job, largely due to the language barrier, which promoted me to think about designing affordable homes and providing rental houses as part of the project. Following my investigation and the statistics I came across, my design project became largely based on these ideas, formulated as research questions: (1) What is the percentage of people who have not yet acquired permanent homes? (2) What are their financial capabilities? and (3) What are their needs in terms of the living environment?



The percentage of the refugees by age. Source: COA, 2016

## - Site analysis (typology transfer)

When the Dutch Dwelling studio started, we visited the site with team members to get know its intricacies and its surroundings. It can be said that the process of research and design commenced right there and then when we started taking pictures of various dimensions along the road that we walked (Keilestraat). It was discussed and agreed upon with the team members that we made sure the images we took should be accurate in the sense that they should express the distinctive aspects of this area that distinguish it from other areas. During the first week, all the pictures we took of the area were collected and compiled into one poster, which centered on the middle section of the and map of the area, where the location of each picture was indicated on the map. In the following weeks, a discussion was held with the rest of the studio's students about the fate of the pre-existing older buildings. An agreement was made to preserve and demolish the rest of them.

The master plan of the project was divided into four sections, and each team was responsible for one quarter. The quarter I was responsible for designing with my team was called Quarter C. Before being able to properly think about how to design this quarter, it was necessary to first analyze an area somewhat similar to ours, for example in terms of being located near the water. This area was (Kop van Zuid) in Rotterdam. The area was analyzed from various angles, looking for its characteristics and trying to understand the way its (sub-)buildings were designed. Lastly, through the analysis,

we tried to transfer the typology of the buildings to our quadrant, to be able to determine what is appropriate and inappropriate for our quadrant. This analysis was guided by several research questions:

- What is the design strategy that was followed in that area?
- What is the typology of the buildings there and how can these typologies be transferred to our quadrant?
- What specific characteristics do these buildings have due to their location along the quay?
- Where the towers and the low-rises are placed?

After visiting the site, we wanted to build a model that would encompass the whole site plan with all the buildings in it. The goal of creating modules was to create different design ideas and making them serve as "vehicles for refinement" (Mills, 2011). Two types of modules were created: primary and secondary modules. The first of these illustrates the idea of the project, whereas the second highlights more details of several elements, whether related to buildings or to the site (Mills, 2011). In our case, we created a 1/1000 scale massing model (see first image below). Massing models are simple models that depict volumes and are typically devoid of openings (Mills, 2011). This type of model was very useful to be able to see the three-dimensional relationship between buildings and the surrounding, the size and position of each block. All decisions regarding car streets, parking spaces, tree locations, pedestrian paths, bicycle rou-

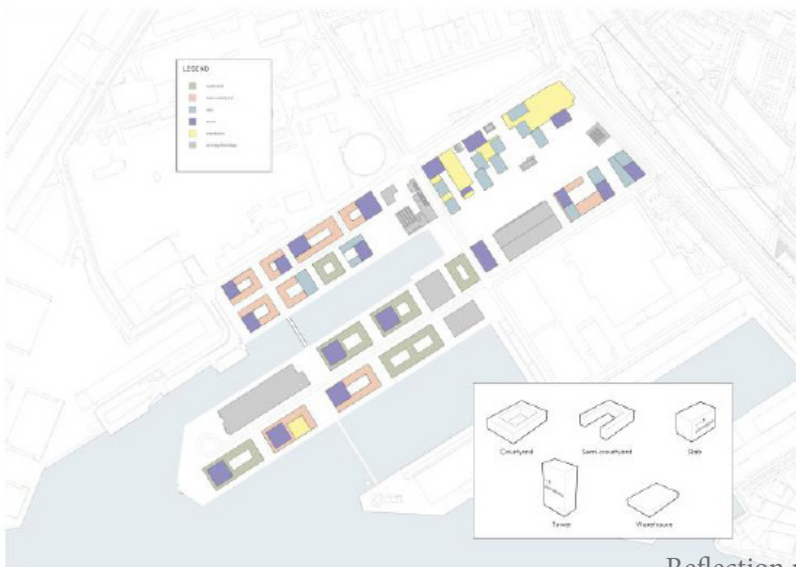
tes, and public squares, were made through these analyses, and the distance between the blocks was precisely accounted for in a way that would ensure the sun's rays can reach all buildings. Several solutions were studied and tried until the final shape of the site plan was reached. From that moment

onward, we moved to make digital models for the site and buildings (see second image below), and the individual design phase commenced. Also, we were unable to make any other models due to the closure of the university building because of Covid-19.



Foam massing model

### Digital model



## - Case studies

The case studies phase was very important, especially when it came to the architectural design. I learned a lot by analyzing previous projects, taking the things I needed and reflecting on them in my project. In the beginning, specific projects were selected that suited the target group (asylum status holders, student, starters) as explained in the previous paragraphs. These projects were analyzed based on several themes, such as on size, dwelling typologies, horizontal and vertical circulation, private, public and communal spaces, and the orientation of the houses. The projects that proved useful to me were: Tietgen Kollegiet (Kopenhagen) by Lundgaard and Tranberg, Babel tower (Rotterdam) by Laurens Boodt architect, Antoni (Delft) by Studioninedots, and West Beat (Amsterdam) by Studioninedots.

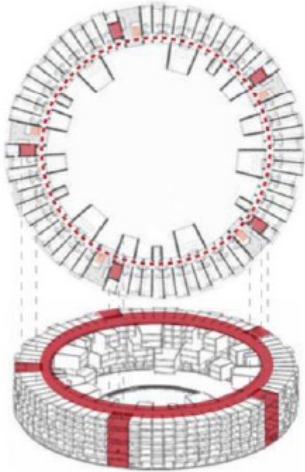
Analyzing the floor plans, elevations, and sections of these projects helped me find logical solutions to several elements in my project. For example, from the Babel and Anthony project, I learned how to hierarchically organize outdoor terraces and make them connected by external stairs. With regards to the Tietgen Kollegiet and West Beat projects, I looked at how to design a studio with a small area for one person. In addition, it proved useful to be able to conclude from the Tietgen Kollegiet project that every twelve individual studios should have a common room or a common kitchen. This is exactly what I did in my

project in the studios through gallery access.

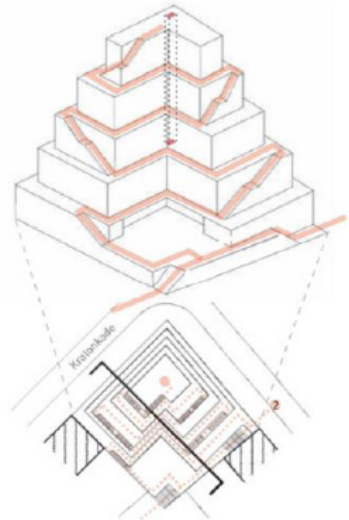
All the projects that were analyzed were not designed specifically for status holders, but rather for young professionals or students. The reason for this is that there are a few projects with permanent homes specifically built for asylum status holders.

After the study cases phase ended, I found Startblock projects that were specially designed to have status holders and Dutch students live together in one building. These projects were a treasure to me, because they were designed on the principle of integrating newcomers with local residents. I looked at the floor plans of these projects, but did not analyze these floor plans in detail. I also benefited from all the ideas implemented by the Key firm to help refugees integrate. I sent emails with questions to an engineer of one of the Startblock projects to obtain more information about the goals that they set in these projects, the methods they followed, and what policies and standards should be taken into account. From the Startblock projects, I also learned how to minimize the possibility of friction that can arise between residents as since they are from vastly different backgrounds.

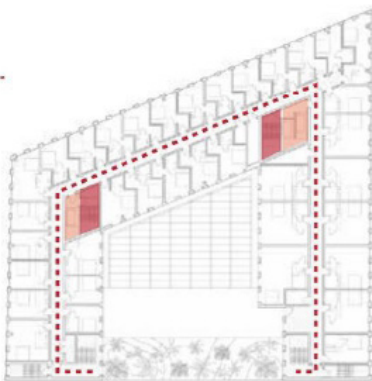




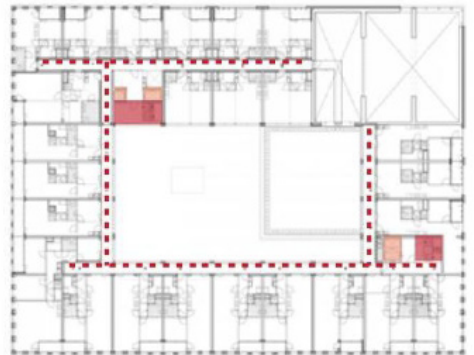
Tietgen Kollegiet, Kopenhagen



Babel tower, Rotterdam



Antoni, Delft



West Beat, Amsterdam

## - Dwelling typology

To determine the appropriate typology for the dwellings in the building, I conducted a lot of research on several topics. First, I read many articles and documents, such as “De Eerste Jaren van Syriëers’ Leven in Nederland” to determine the number of households. As mentioned, in several publications, I found that most refugees were in their twenties. This information was used to determine the financial situation of the target group and to estimate how many people will be living together under one roof. Based on this information, the type of house was chosen. The majority of this research was based on content analysis. As

a result of this research, I found that most status holders are not able to spend or save much money monthly. Therefore, constructing affordable homes is the most appropriate and wise choice for them and for the local students\starters who will live with the asylum status holders in the same building.

Several types of houses were focused on (see image below): small studios with one shared kitchen for every ten of studios, a small apartment, a large apartment, and shared-housing for three or four people living together, with bedrooms and a shared a living room, kitchen, and bathroom.



All dwellings typology of my building

## - Building block (1- mass & 2- material)

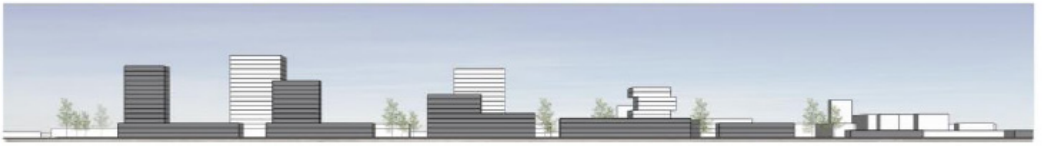
### 1- The mass.

The final form of the building was influenced by many theoretical studies conducted throughout the year, including an urban study, case studies, and construction material studies, in addition to the Quick Start course had a great impact on determining the eventual shape of the building. The target group I focused on (status holders) also influenced the shape of the block somewhat. Since this target group is considered to be among the most vulnerable groups of society and faces difficulty in integrating, their spatial requirements of having communal indoor and outdoor spaces were deemed of high importance in the consideration. To put this differently, my goal was to try and create as many roofed terraces as possible for the residents at different levels, which affected the form of the mass. Each of the research phases that played a role in the formation of the building will be explained briefly.

### Urban study.

In addition to the analyses previously mentioned regarding the site plan, which were carried out by the students of the group to understand the site and the types of the existing buildings, an in-depth study was also conducted in Quarter C to be able to shape the new buildings more effectively. We decided that all the buildings in Quarter C should include a plinth with a height

of 12 meters, due to the height of the monumental building Katoenweem. Through this decision, my building design took its first shape (plinth of 12 meters high). The second factor that affected the buildings in that quarter was the direction of the sun, where the buildings were placed at different heights and in a thoughtful way so that no shadow would be dropped in inappropriate places. The height of my building design was determined based on this analysis and the theoretical study of the way shadows would affect the space. The final factor that affected the shape of my design started when we as a group decided that every building in Quarter C should have a height different relative to the building next to it. In other words, the hierarchy of blocks starts from the first block in the quadrant - the lowest one - and continues to rise until the last block in the quadrant. This way, we have given the area a special characteristic, so that passers-by can perceive the height of the buildings. This means that the further you enter the area, the higher the buildings you see will be.



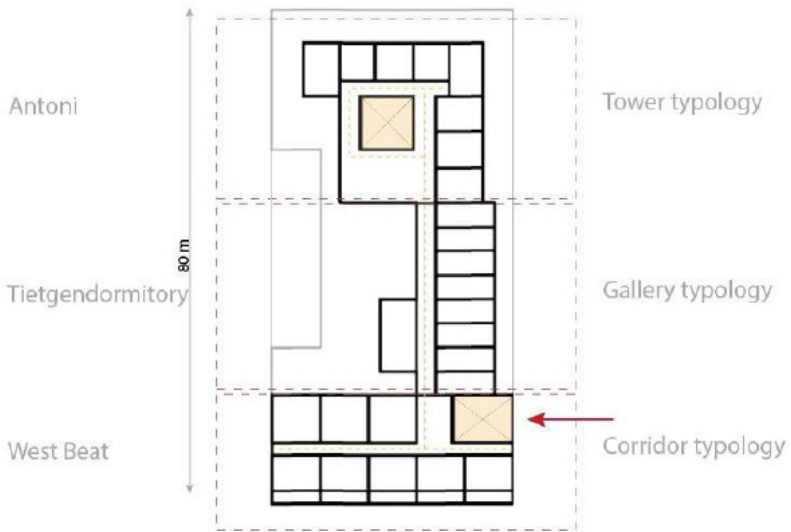
The hierarchy of the buildings in quadrant C



**Case studies.**

Previously the importance of the case studies and their impact on the circulation and the organization of homes and areas was discussed. Nowhere, I will mention how the case studies affected the shape of the building prior to the P2. After analyzing the

types of houses in the four cases, I arrived at the idea of combining three types of houses into one building. In other words, my block contained a tower typology on the left side of the spot, galley typology in the middle, and corridor typology on the right side.

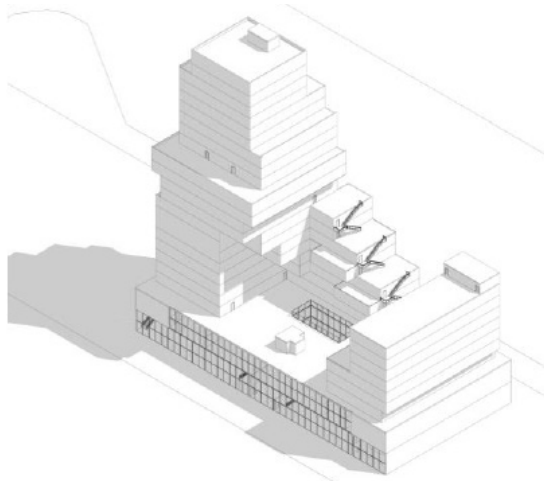


An early layout of the floor plan before the P2 influenced by the case studies

## Construction material.

In the first semester, we did not have building technology tutoring. Therefore, when I initially designed my project with a lot of cantilevers, I did not take the construction material and conditions into account. Therefore, in the second semester, the shape of the building changed when I started looking at the construction material more seriously and began to search in-depth about it. A great deal of my research on this

topic focused on its conditions, properties, measurements, qualities, colors, climate related effects on the material, and the method of installation. All these conditions and rules related to the construction material that I chose (Cross laminated Timber) that made me change the shape of the block so that all the cantilevers were eliminated and replaced by setbacks and terraces were created at each level.



The mass before the P2 with lots of cantilevers



The mass after P2 with setbacks

## 2- The material.

Much of my research also focused on the exterior finish material that gives character to the building. In the beginning, I was considering two options: either to create the whole building out of one type of material, or to use one type of material for the plinth, and another type of material for the upper levels. To find a suitable solution based on theoretical research, I looked for the material of the surrounding buildings and concluded that the typical material in that area appeared to be brown brick. So, I tried to apply the same material to my plinth

(brown brick) and Lunawood to the upper levels. After several attempts, I decided to give the plinth a concrete finishing. Of course, concrete is not a sustainable material. However, it is durable and can be used sustainably when the building should be occupied for a long period. This material is similar to the material used in the building opposite of mine – the Katoenveem. Therefore, the spirit of unity is preserved when walking the streets between both buildings. With this result, the outer cladding material fully reflects the construction material behind it.



Option 1: Brick finishing for the plinth with Lunawood for the upper levels



Option2: Concrete finishing for the plinth with Lunawood for the upper levels

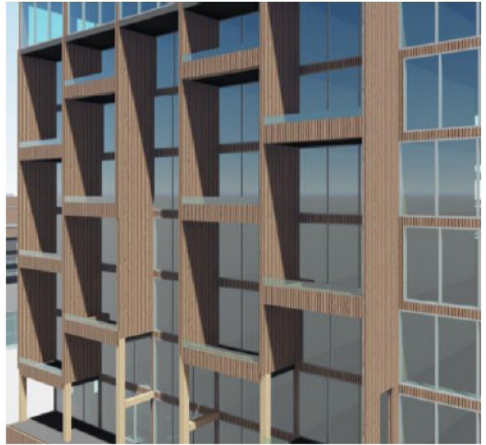
#### - Facade study:

The study of the facade required a lot of research and experimenting with several options before reaching the final shape of the elevations. The main factor that required me to reconsider the façade design was the sun shading. I looked at different solutions in different reference projects to know the pros and cons of each of them, their cost, and aesthetics. In the end, I solved this problem by adding an extra layer to some of the facades. In other words, this additional

facade constitutes a loggia for some houses and a winter garden for others. The pictures illustrate the options I tried to apply and study.



Option (1)



Option (2)



Option (3)



Option (4): the final shape of the facade



## Conclusion

At the time of writing this reflection report, the project and research have almost reached the end, and I can reflect on all of the previous processes. To conclude, I can briefly state that thanks to the extensive research I conducted, I have become more aware of in the different stages of the design process, and what types of research and investigation are suitable to help determine design characteristics without wasting time on unnecessary activities. There are always specific times over the course of project to ask specific research questions (Van der Voordt, 1998). For example, during my research into my target group and the subsequent study cases, many questions and inquiries were raised that preceded the design process. I could also say that all the decisions I made for the design were based on scientific research, statistical information, and content analysis. This means that I was aware of how every step of the design came to be. As architects, we always need to understand things on a large scale, or in other words, we need to have a comprehensive awareness about a specific topic, whether on the social, architectural, historical, current or future levels, updates, or new developments. It was very important to investigate the various facets of building design in order to be able to come up with a solid design, as we must always be aware of what makes something a good or even perfect design. I am very happy and satisfied with the results that I was able to achieve,

and this was all due to the continuous research process.

During the research process, I found some data that I found very important not only for my project or my target group but also for all current and future projects. One striking finding was that the percentage of people (regardless of their age) who live alone is constantly increasing for various reasons. This increase is estimated to continue, especially in the ongoing Covid-19 pandemic, as most people are, as a result thereof, working from home. Due to the lack of social interaction on a whole, not just asylum status holders are suffering from a lack of social activities – even locals are. To solve this issue, creating a lot of common places for residents at the level of the building and the neighborhood is very useful and encourages the residents to even without there being specific activities.

Another important thing is that the building should be sustainable and contain comfortable places that motivate the residents to meet each other. I believe that this type of residential environment should be a priority for all architects when designing buildings.

## Four other reflections

### 1- **The relationship between my graduation (project) topic, the studio topic, my master track, and my master program.**

The topic of the studio is an inclusive city in which there is a place to live for all people regardless of their religion, customs, profession, traditions, or origin. The main questions that we had to find solutions to were: (1) What do we want our lives to look like in future dwellings in the Netherlands? And (2) What buildings typology will include these houses?

So, the task is to create a type of housing that guarantees the future of homes in the Netherlands, not only based on ideals, but also on realism. More than ever, the competition for the housing market is becoming increasingly more complex. In my opinion, the best way for the city of Rotterdam to keep pace with future population development for is to continue attracting local and international youth groups who want to live and work in this city. Of course, to achieve this, these target groups should be provided with suitable living environments. This project added a different type of building to Rotterdam, as it was designated to provide homes for both status holders and local residents, so that these groups could live together in one building in which they share their customs, traditions, and various activities.

Refugees or status holders are one of the most vulnerable groups in society who are only able to obtain housing after long waiting times, and most of the time, they do not have the right to even choose their place of residence. It is important that status holders live in a place surrounded by all kinds of social cohesion to support the integration process and help them form a social network. One of the topics of my project was also to supply affordable homes. Both these topics related to the central topic of the studio and the master program as a whole. By adding this new idea of housing to Rotterdam, my project can contribute to the challenge to design many houses of high quality and sustainable values. Thus, the result aligns with the master program's goal of renewal, creativity, generation, and innovation for future life.

### 2- **Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.**

The graduation studio for Dutch housing has a rigid structure that differs from other studios and that requires students to continue working and finishing their work at specific times. Especially in the first semester of this academic year, work require-

ments regarding the research were specific and clear, as we had to investigate a topic related to current issues (housing a specific target group, with a focus on 'why', 'how', and 'where'). While we had complete freedom to conduct scientific research on our topic, there was some mandatory research for all studio students, such as through case studies. This is what made the research conducted by students and their work output comparable in certain periods.

In the second semester, we had the freedom to choose a preferred method of research, as we were able to think deeply about our design. So, we went to search for specific details that would serve our project in order to reach more specific and informed results. During this stage, the work was more comfortable and clearer due in part to the scientific approach.

### **3- Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.**

During my work on this project, I used all the experiences I had acquired during my previous years of studying architecture in my country, Syria, and through my studies in the Netherlands. However, especially this year, I learned about the different types of research that exist, and through that,

I gained additional knowledge that relates to the scientific framework. I learned where to look, how, and when to look at each stage of the research and design process. The process of designing a building for both asylum status holders and students\starters is very different than the process of designing a building for families with children, for instance. My project was different, as residents needed specific spaces to enhance integration and foster social interaction.

All of these requirements led to overthinking several details that might not have been important to another target group. In the Netherlands, some buildings have been designed broadly according to the principles I adhered to in my design, such as the Startblock projects. It was found that these projects led to remarkable and supportive results for both target groups (asylum status holders and Dutch people) in terms of providing a suitable environment that helped residents from different backgrounds to live together under one roof and develop friendships. However, there are always improvements that can be applied to any project.

During the design process, I always tried to learn from various other projects and apply what could be applied to my own project. Some of the ideas of my project that may prove useful for other projects with the same concept concern, for example, the design of common spaces that play a large role in strengthening social relations between the residents, as well as the number of individuals in each of these spaces, as that

contributes to social interaction. In addition, some of the results I found are directly capable of being transferred to practice. In particular, some spaces can be reused in other projects, such as the design of the galleries and corridors, which play an important role in increasing the possibility of social interaction.

#### **4- Discuss the ethical issues and dilemmas I may have encountered in doing the research, elaborating the design, and potential applications of the results in practice.**

Over the year, I encountered some ethical dilemmas in my project. One of these dilemmas occurred near the end of the research process that focused on my target group (asylum status holders). I realized that I had to design small-sized homes that are affordable for these people. I did not expect that such a dwelling would be comfortable for one person to live in. However, it turned out this could be achieved by a logical design of the internal environment.

Another point I encountered was that I wanted to send a questionnaire or conduct an interview with the refugees who are currently staying at a camp while awaiting a new home. I wanted to conduct interviews with this specific group because I thought their insights would be different from the

insights of people with a residency permit who were already housed. More specifically, in some cases, asylum status holders who live in a permanent home may have come to the Netherlands through the process of family unification. This means that their stay in the shelter generally did not exceed one week. Therefore these people did not face the same difficulties as other asylum status holders in terms of integration and the lack of a suitable living environment. I felt that I needed to approach people who had been staying in a camp for more than one year, for example, to get to know their specific needs. However, it was difficult to do this due to a lack of internet or a computer in order to be able to complete a questionnaire. Also, I was not allowed to visit the camp because of the Covid-19 regulations. In the end, I settled with asking many of questions to one of the architects of the Startblock projects, as I mentioned previously, and I also benefited from my personal experience, of having refuged to the Netherlands in 2016.

The final dilemma that I faced is that I used CLT as a construction material, as it was the first time I used this material. Although it took me extra time to find the appropriate information for this material and use it in my project, I am very glad that I learned something new. I am certain this material will prove to be ideal for the future construction of buildings, as it is a sustainable and renewable material.

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I do not think that architecture is only about shelter, is only about a very simple enclosure. It should be able to excite you, to calm you, to make you think.

Zaha Hadid

