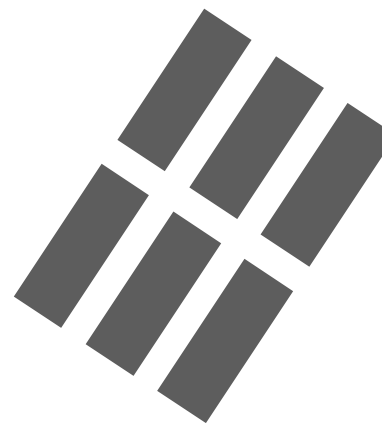


SEOUL'S
PIXELATED
MICROCITY



서울의
픽셀화
마이크로
도시



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TECHNISCHE
UNIVERSITÄT
WIEN

Vienna University of Technology

DIPLOMARBEIT

SEOUL'S PIXELATED MICROCITY

ausgeführt zum Zwecke der Erlangung des
akademischen Grades
eines Diplom-Ingenieurs / Diplom-Ingenieurin
unter der Leitung von

Manfred Berthold

Prof Arch DI Dr

E253

Architektur und Entwerfen

eingereicht an der Technischen Universität Wien

Fakultät für Architektur und Raumplanung

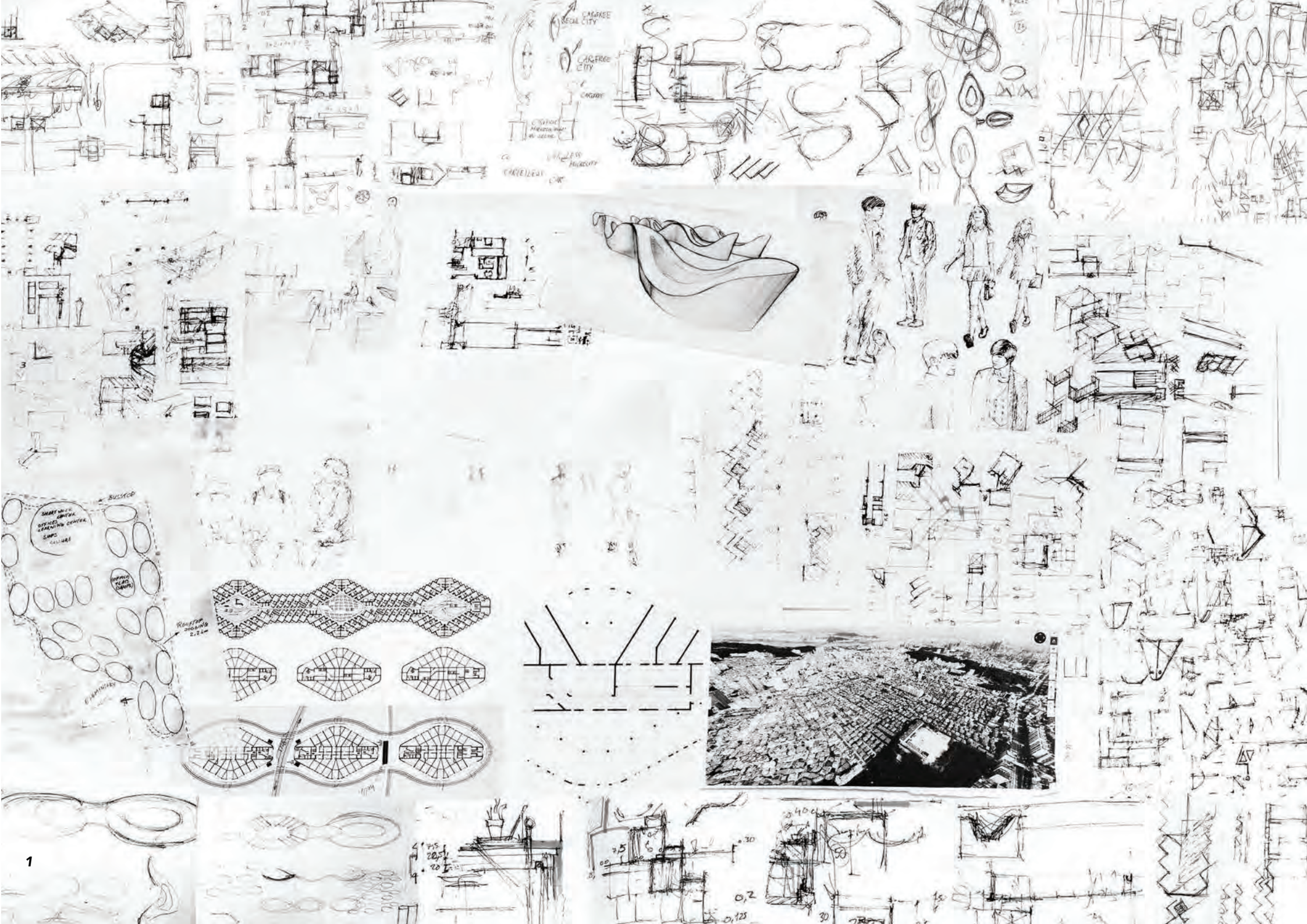
von

Samy Ben Hamida

e1327731

Wien, DATUM

UNTERSCHRIFT



Prologue

Some statements in this master thesis come from my personal interest for the city of Seoul and from intense sessions of watching Korean News, Documentaries and last but certainly not least, Korean Dramas; this has helped me to get a better understanding of the Korean lifestyle. Also, during my trip to Seoul on May 2016 I had the opportunity to get feedbacks from Korean architects and city planners. Moreover, the numerous conversations with other Korean citizens brought me insights about the problems and needs of the citizens of Seoul.

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01 INTRODUCTION

Die vorliegende Masterarbeit beschäftigt sich mit dem Entwurf eines Wohnbaukomplexes in Seoul. Die südkoreanische Hauptstadt gehört mit ihren 10 Mio. Einwohner zu den am dichtest besiedelten Metropolen der Welt. Aus diesem Grund gelten Wohnflächen als besonders selten, bzw. teuer.

Der Bauplatz befindet sich im Bezirk Seocho. Dieser befindet sich westlich vom Bezirk Gangnam und grenzt an der südlichen Seite des Flusses Han.

Anhand eines fiktiven Projektes werden verschiedene Lösungen für den Mangel an Wohn- und Grünflächen erforscht. Trotz günstigen Mietpreisen soll hochwertiges Wohnen durch ein gemischtes Raumprogramm entstehen, ohne dabei die Eigenschaften der koreanischen Wohnweise zu vernachlässigen.

Hierbei wird besonders viel Wert auf die stets wachsende Nachfrage der Einzimmerwohnungen und deren Einrichtung gelegt. Durch die besondere Anordnung dieser Wohneinheiten entstehen dreidimensionale Wellen, die sich an die vorhandene Bergsilhouette von Seoul anlehnen. Gleichzeitig sorgen architektonische Lösungen dafür, dass verschiedene Haushaltsstrukturen aufeinander treffen und sich bestenfalls austauschen.

Des Weiteren werden anhand dieser Arbeit auf bestehende Probleme im Straßenverkehr und in der Arbeitswelt hingewiesen. Eine fast autolose Nachbarschaft wird angeboten, die unter anderem auch die kontroverse Work-Life-Balance in Seoul verbessert. Fußgänger statt Autofahrer und Freizeit statt Stress. So entsteht eine quasi "autofreie" Mikrostadt namens "PIXELATED MICROCITY".



This master thesis deals with the design of a residential complex in Seoul. With its 10 Million inhabitants, the South Korean capital has one of the highest population densities in the world. For this reason, living areas are considered particularly rare and expensive.

The site is located in Seocho district, located to the west of the Gangnam district, bordering the southern side of the Han River.

Based on an imaginary project, multiple solutions for the lack of residential space and green areas are being explored. Despite low rental housing prices, high quality living and mixed functions are being created, while keeping an eye on Korean culture. Furthermore, the thesis focuses on the rise of single households and several experiments are being made on very compact single home units.

The playful combination of these units, also called "Pixels", creates three-dimensional waves, that fade into the hilly panorama of Seoul, also known as the Green Belt. At the same time, spatial configurations ensure that different households can meet and socialize.

Thus, a particular attention is drawn on the high traffic commute in Seoul and its controversial work-life balance. In a new self-contained neighborhood, where pedestrians have more freedom than car drivers, where lost time in traffic jams becomes leisure time, and where stress converts into productivity, an almost car-less neighborhood, named "PIXELATED MICROCITY", is born.







02 LOCATION

2.1 Why Seoul?

I have always been fascinated by futuristic megacities in East Asia. Intrigued by the big gap between strong traditional values and Western influence, my curiosity brought me to do more research about these cities. My personal choice brought me to the capital of South Korea, Seoul. This megacity is known for its fast development, its high technology, and most importantly its high population density.





5

Republic of Korea (South Korea)

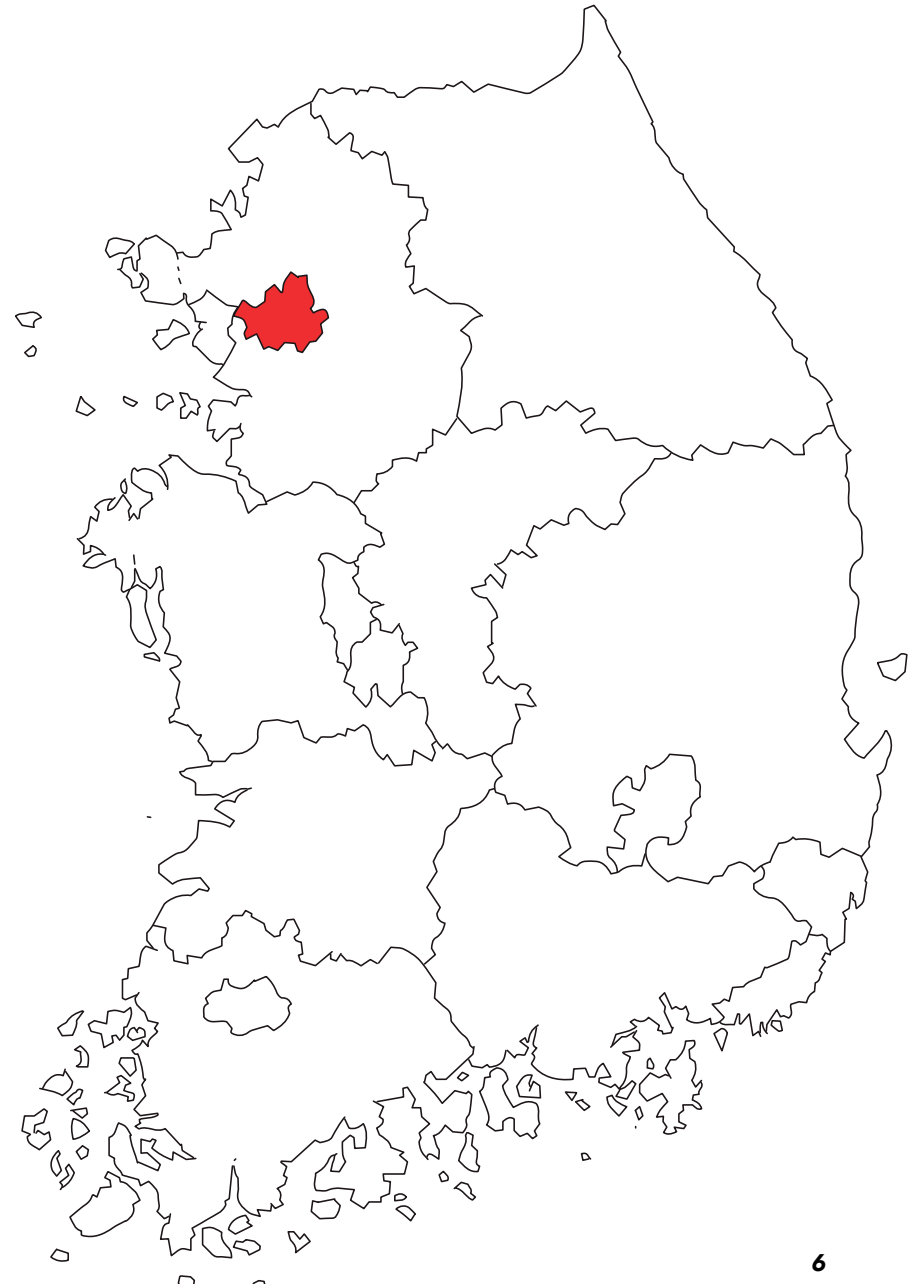
area 100,210 km²
 population 50,801,405
 density 507 p/km²

The capital of Korea was named Seoul after the liberation from the Japanese colonies and World War II on August 15th 1945.

Three years later, the country was split into North- and South Korea. Due to the Korean War that followed, 191 000 buildings, 55 000 and 1 000 factories in Seoul were destroyed.

During 1960-1970, Seoul was ruled by a military-led government under Park Chung-hee. By introducing government programs, export-oriented industries were reconstructed and modernized. This led to a quick economic growth, also known as the "Miracle of the Han River", and better living standards.¹

¹) Hamnett, Stephen; Forbes, Dean (2011): Planning in Asian Cities - Risks and Resilience, New York: Routledge, 2013. p.159



6

2.2 Climate

Extreme climate: South Korea is known for its humid continental/subtropical climate. While the dry winters are very cold, the humid summer season makes it almost impossible to live without air conditioning. In fact, 8 of 10 households have air conditioners.

Especially in dense areas of the city, cooling down seems to be the only thing that people have in mind. However, the intense use of AC has led to health problems in some cases.²

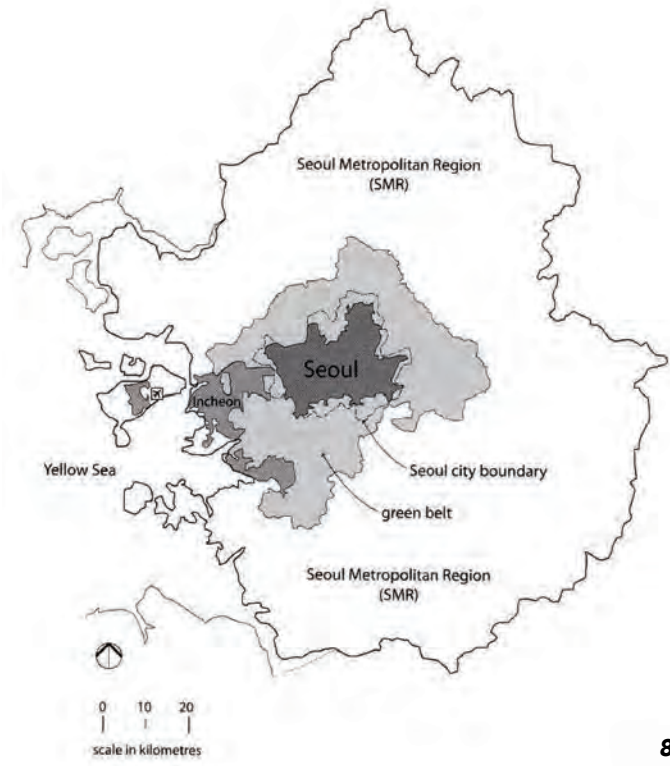
While temperatures are being extreme, the monsoon season (also called jangma) during the month of July brings heavy precipitations of over 400 mm. This leads to flooding, causing death and to serious damage to the city.

One of the main reasons of these catastrophes is that vast areas (47% of the administrative land) in Seoul are covered by asphalt or concrete. This is due to the limitation given by the Green Belt, a protected natural environment, which is made out of hills and forests.

Thankfully, the Korean government has already set high priorities on improving sewage management in some alerted areas. Thus, storm drains are getting a capacity increase in 60 areas of Seoul (including the site for this thesis).³

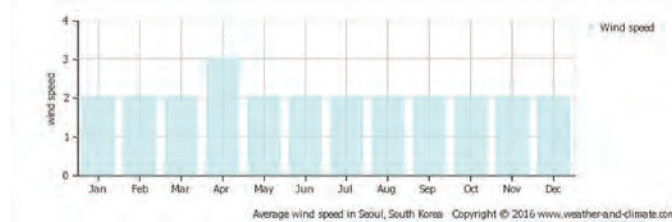
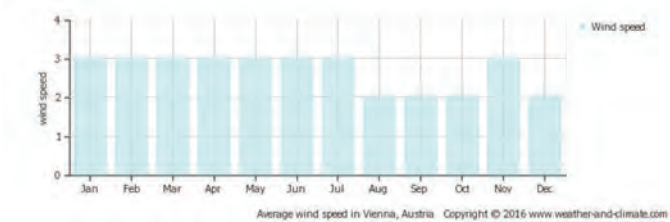
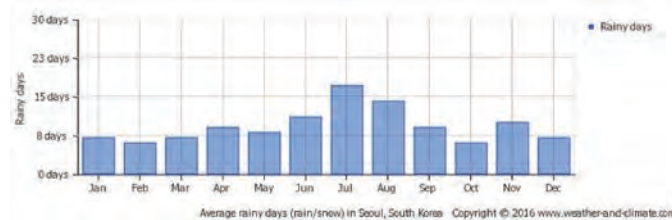
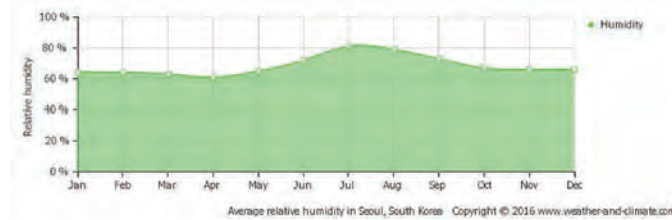
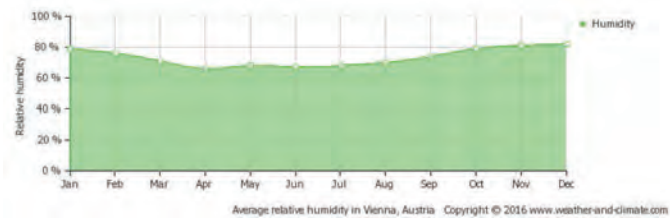
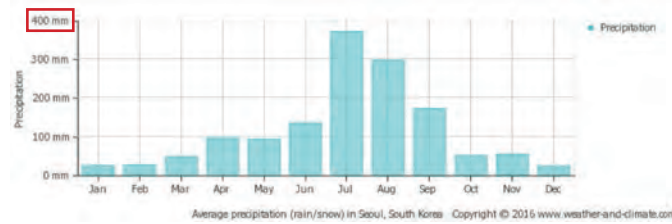
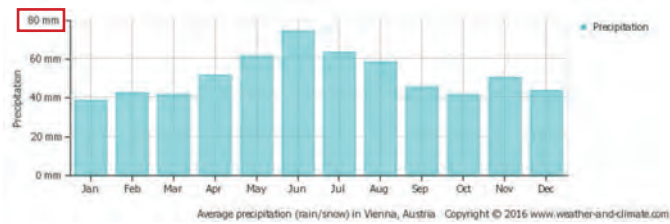
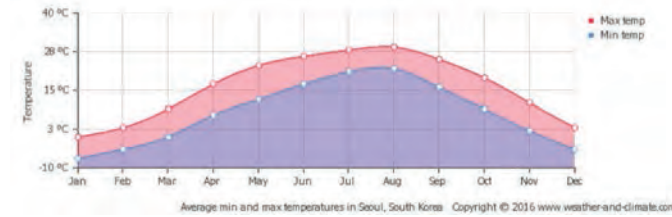
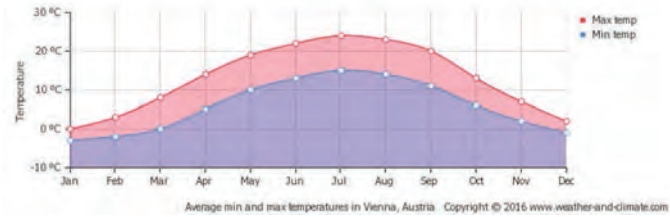
Moreover, since 2002, the capital city is promoting the installation of green rooftops and green recreation facilities.

2) <http://english.yonhapnews.co.kr/news/2016/07/29/0200000000AEN20160729005400315.html>
3) <http://kojects.com/2015/07/15/flooding-in-seoul/>



VIENNA

SEOUL



Average solar inclination at 12:00
(timeanddate.com)

60° summertime

20° wintertime

VIENNA

70° summertime

30° wintertime

SEOUL

10

2.3 Population density

In 1970, 50% of the Korean population lived in Seoul;

The population raised to 80% due to migrants from the rural area in 2000;

In 1980s the urgent need for new housing development at higher densities in Central Seoul led to high-rise apartments;

Late 80s: severe housing shortage lead the central government to develop 5 satellite cities within a commuting distance of 25-40km;

Within 7 years: each cities gained more than 0,5Mio residents;

1990s+2000s: Further large-scale urban renewal projects;

Furthermore, the high population concentration has lead in the SMR (Seoul Metropolitan Region) to many problems:

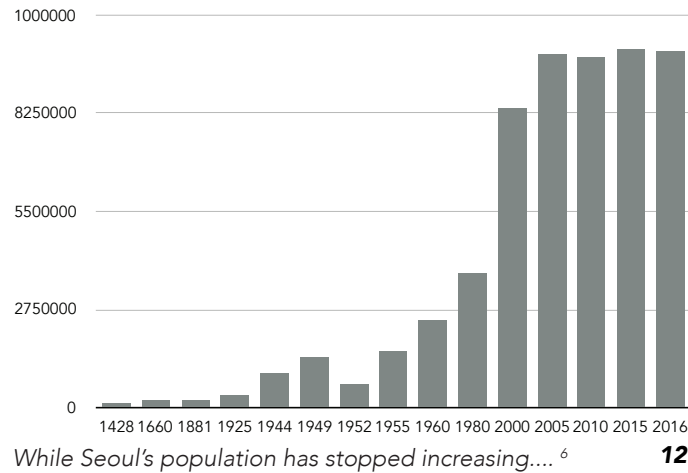
- housing shortage
- increasing real estate prices
- traffic congestion + air pollution ⁴

Nowadays, the population in Seoul has stopped increasing. This is due to a decrease in birth rates and postponing marriages. In the meanwhile, the population keeps becoming older, which increases the amount of single households.⁵

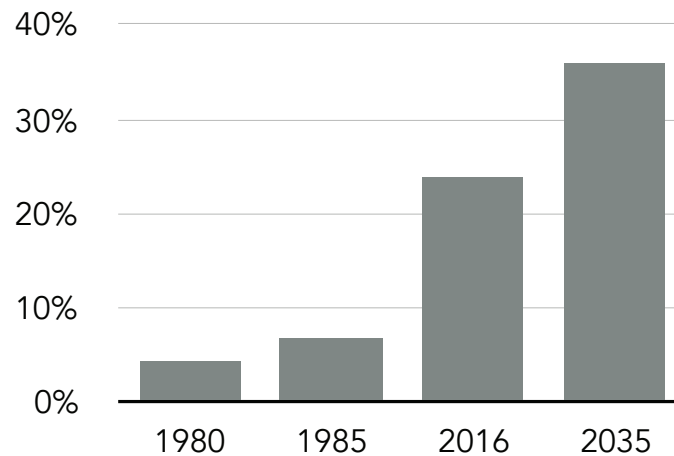


11

4) Hamnett, Stephen; Forbes, Dean (2011): Planning in Asian Cities - Risks and Resilience, New York: Routledge, 2013. p.160-165
 5) <http://thediplomat.com/2014/11/seouls-losing-birth-rate-battle/>
 6) <http://rcps.egov.go.kr/>
 7) <http://www.straitstimes.com/asia/east-asia/single-person-households-surge-in-south-korea>
 8) http://www.koreatimes.co.kr/www/news/biz/2016/03/123_201016.html
 9) Wikipedia

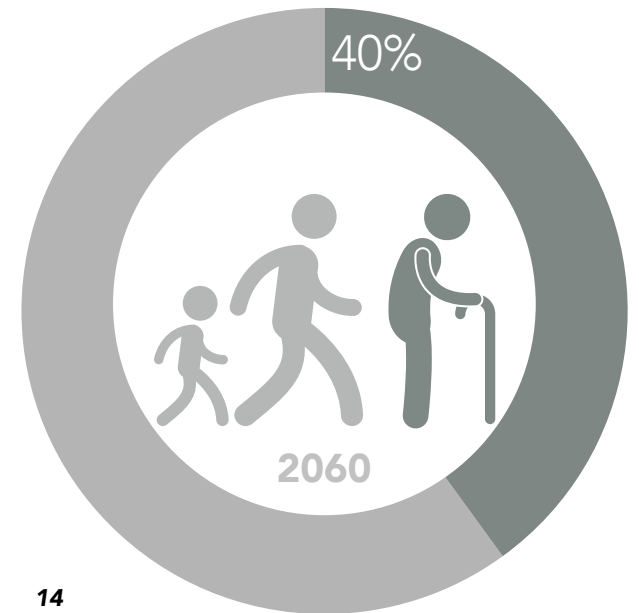
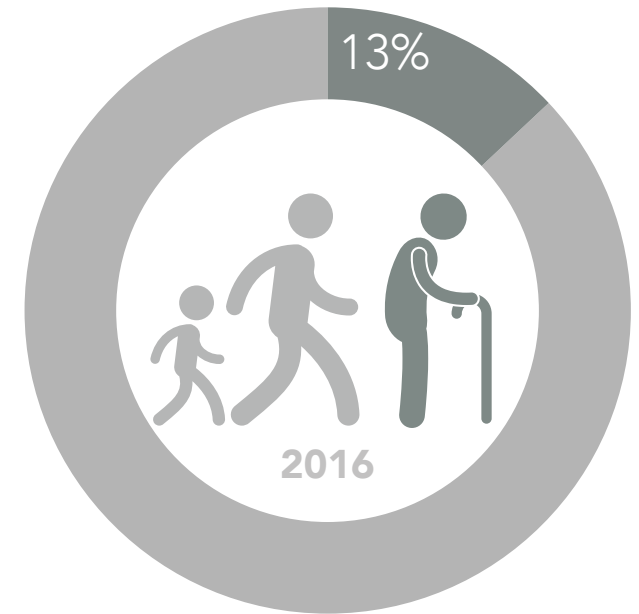


12



13

...single households are on the rise.⁷

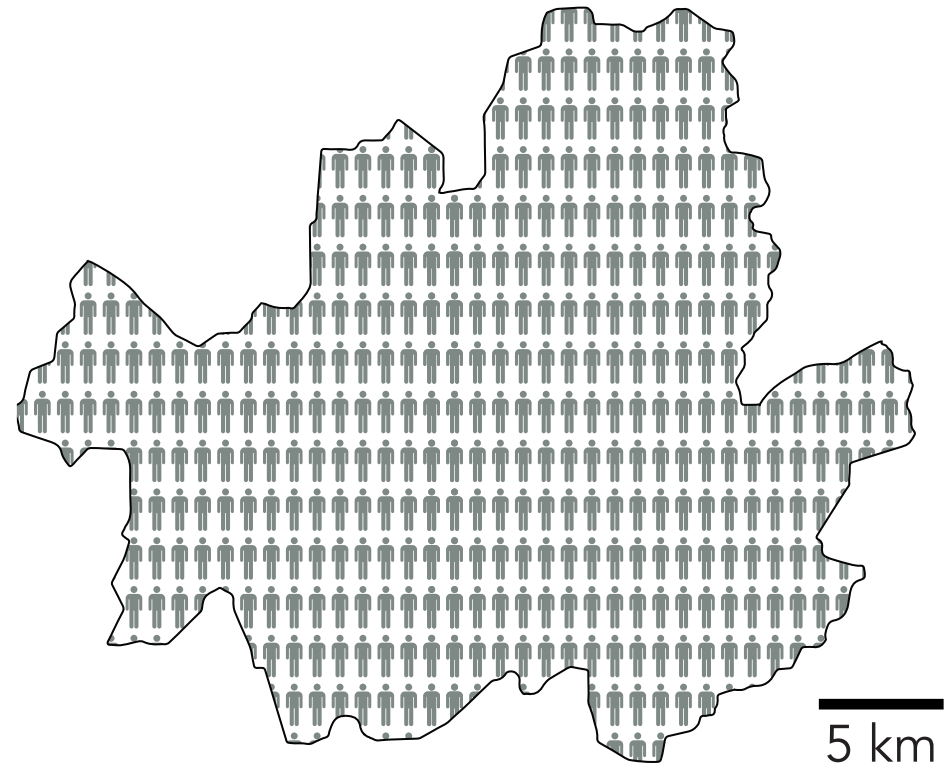


14

By the year of 2060, people aged 65+ will make 40% of the population in Seoul. ⁸



VIENNA



SEOUL

15

area ⁹	414,7 km ²	x 1,5	=	605,2 km ²
population ⁹	1 852 997	x 5,4	=	9 981 673
density	4 468,28 p/km ²	x 4	=	16 493,18 p/km ²

2.4 Transportation in Seoul

Cars:

For larger families with a moderate wage, a larger home is often needed. Since real estate is getting more expensive in the city center, affordable normal-sized homes are usually found in the suburbs or in satellite cities. Moreover, although the subways and buses are well developed, too many people still prefer using the car, as it is (still) seen as a sign of achievement and prestige. This results in almost never ending traffic jams and/or long journeys in the subway, travelling from these satellite cities to the city centre. Also, with the high amount of car drivers comes a high amount of parking lots, which reduces potential area for pedestrian zones and parks.



Never ending traffic jams between Seoul and satellite cities.

Motor bikes:

As more time gets lost through traffic jams, driving a car all alone can become unaffordable, if not ridiculously time consuming. Therefore the use of motor bikes is a very popular way to get around East Asian Cities. Especially for delivery services, people always say "Palli, Palli!", meaning "Hurry up!". Being a nation of delivering everything 24/7, motorbikes seem to be around all the time.



Seoul is known for quick deliveries: some motorbikes even drive on pedestrian zones.



Postmen during Christmas season.

Bikes:

At the same time, bikes are not so popular in Seoul, since the city is quite hilly. Only 1,6% of the population use the bike to commute to work while there's 40% in the Netherlands.¹⁰

In order to motivate more people on using the bike, some companies reward their employees with "Health points", a type of currency system that is earned by driven kilometers on a bike. This points can be used to purchase meals at the cafeteria at work.

Also, more rental bike stations are being spread over the city. Furthermore, the government is improving the safety of cyclists by separating them from busy car drivers with appropriate bike lanes.

As we are referring here to the capital of technology and innovation, it would not be surprising to see in the near future an increased use of E-bikes, becoming more affordable and using clean energy. E-bikes would therefore not just replace bikes and motor cycles, but hopefully, a lot of cars as well.



The rental bikes in Seoul are everywhere, but only a few use them, due to missing bike lanes.

¹⁰⁾ <https://jimsbikeblog.wordpress.com/2011/07/30/bicycling-was-a-wash-in-seoul/>

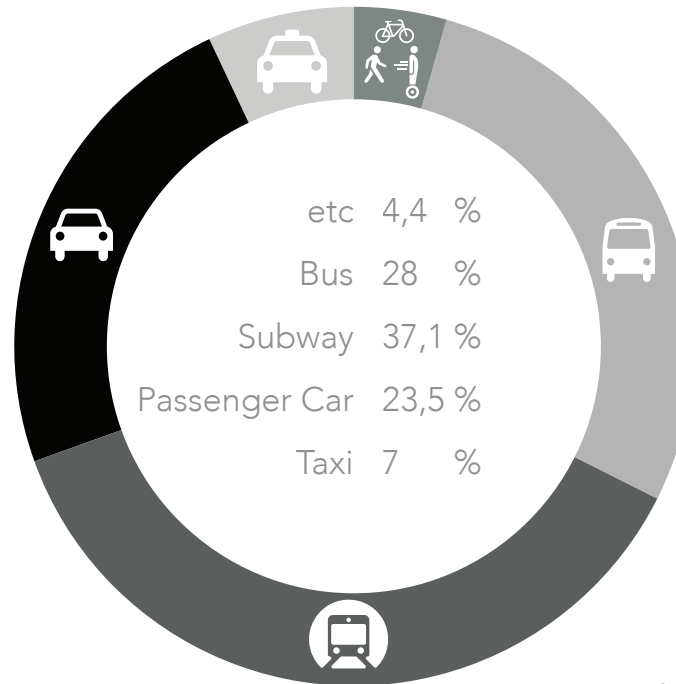
Bus:

The bus system in Seoul has improved considerably since 2004. In fact, next to the subway system, the bus has become one of the most efficient ways to get through the city. Exclusive lanes for buses have been introduced, as well as the implementation of a new integrated transit-fare card system (called T-Money). This resulted in a sharp increase in bus ridership, faster bus services and also better air quality in the city.

For the future, the SMG (Seoul Metropolitan Government) is investing in the modernization of the bus-system. Not only should the fairly old busses in Seoul be replaced by a modern fleet of E-buses, as a matter of fact, new bus-stations are planned, where the e-batteries can be charged wirelessly. In 2010 the city saw the introduction of eco-friendly electric buses. In addition, traffic jam and traffic noise can be reduced.¹¹



The bus network is good, but it is becoming better.



21a



number of cars: 2973000



passenger cars 2317000



subway: 327,1km



Land share for roads: 22%



No. of trips: 31885000



No. of Buses 7485



No. of Taxis 72181



population: 9,971,111



density: 17000/km2

21b

11) <http://de.slideshare.net/simrc/seoul-public-transportation>

2.5 Tiny homes

Lack of space has already existed in Seoul before the era of high rise buildings. In traditional Korean homes, called hanok, some rooms were multipurpose; they were used as a dining room, a living room, a bedroom by hiding things in and out of built-in closets. This idea of flexibility can still be found in current Korean households.



Hanok Village in Buckchon; this Village shows that horizontal density has been in Seoul for around 600 years.

While the population has become bigger, homes have become smaller; in fact, Seoul has one of the tiniest flats in East Asian cities. Due to housing shortage, most neighborhoods of Seoul have become so dense, that parks and recreation facilities have become rare. Thus, some detached houses that were once used by a single household, have been divided into smaller apartment units. Some of them, however, have not even been officially registered. For this reason it is hard to find out the exact amount of people living in a neighborhood.

Splitting existing houses/residences into smaller apartments was first intended to create goshiwons, a Korean version of dormitories for students. Next to a sharing kitchen, goshiwons are units of 8-10 sqm containing a bed, a desk and a compact bathroom. This formula provides "low" rents (starting at 300€/month), while being close to universities and private schools and academies called hagwons. Some units may have a window or a ventilation system, some may not.

Nowadays even working people are living in these kind of apartments in order to stay close to the center.



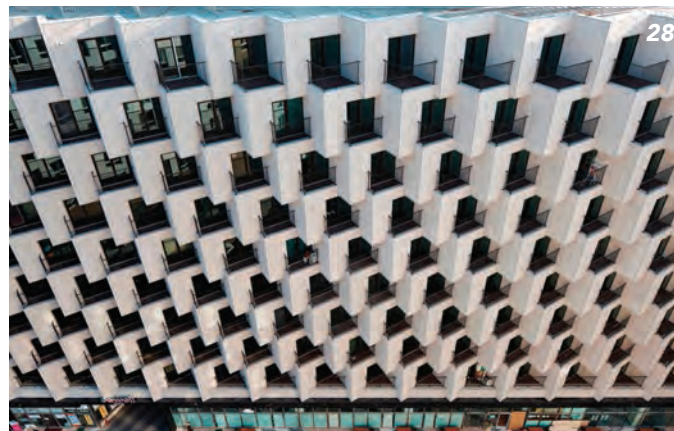
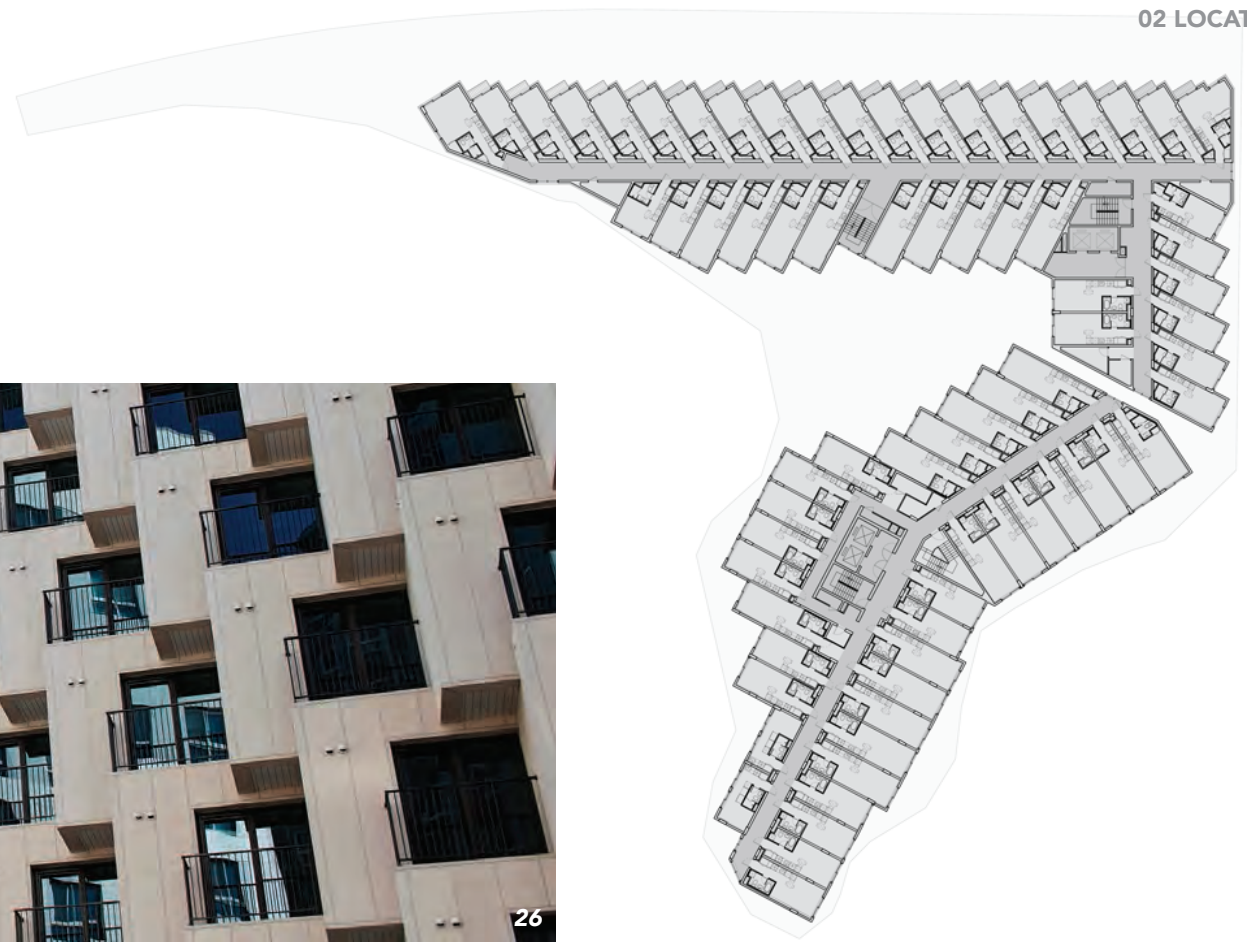
A multi-purpose room in a hanok house.

Some current projects in Seoul prove that the need for single apartments is on the rise. Especially in expensive areas like Gangnam, Songpa or Seocho, compact flats between or on top of office buildings have become very popular, and therefore very expensive. Koreans call them "officetels". They are small single apartments with built-in furniture.

Some officetels have higher ceilings with a so-called "loft". But as the height is usually not higher than 1,50m not everyone seems to enjoy it. Although i have not been personally in one of these flats, i have realized on numerous "apartments-tour"-videos on youtube that these lofts are only used as a messy storage place.



A recent project (since 2014) from JDS architects is a residential building in Gangnam that shows how important the need for single households has become, as already mentioned in this thesis.





서초대로 6길 1-104
Seocho-daero 6-gil

68-4902

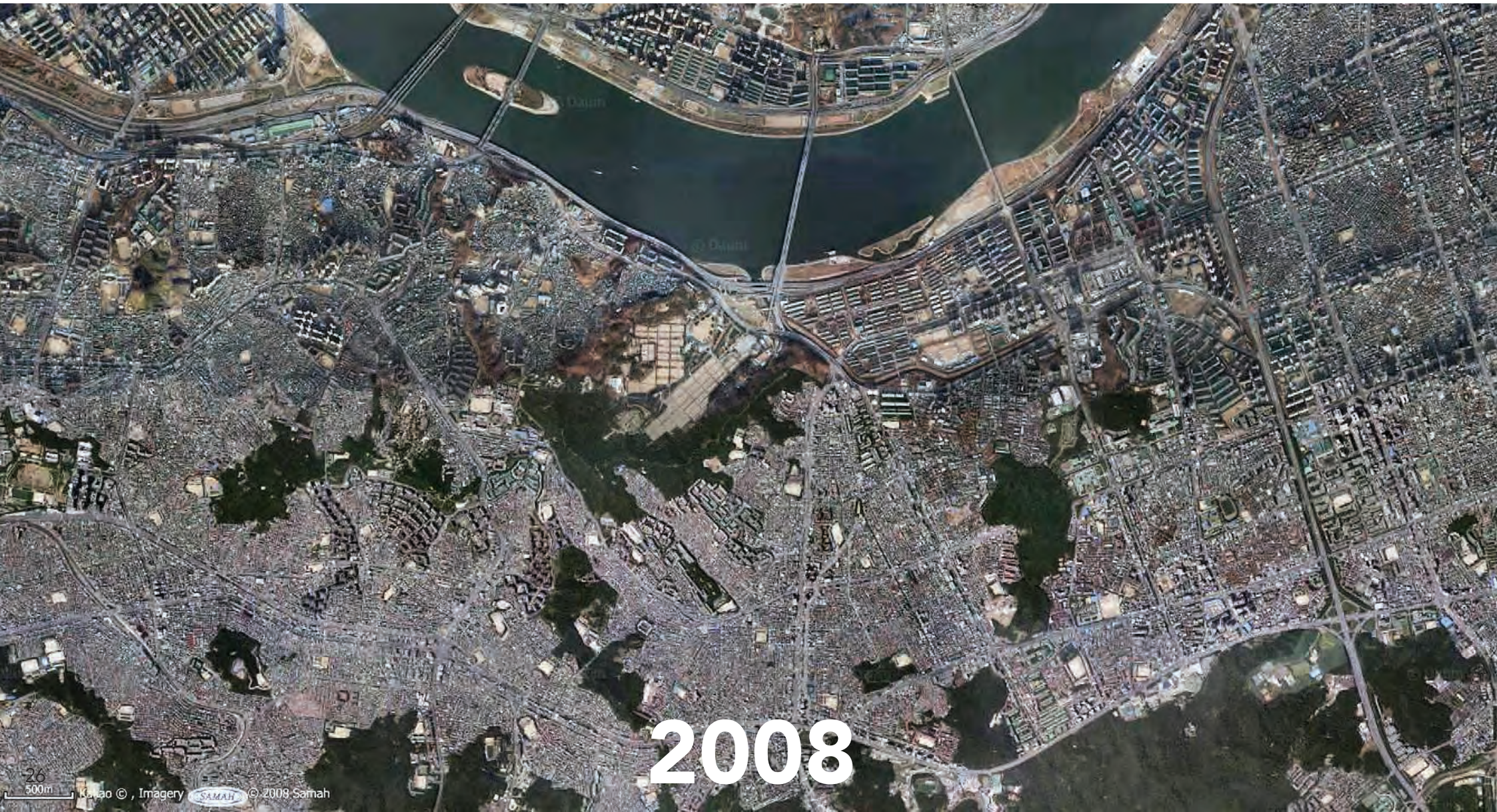


03 ANALYSIS

3.1 Urban transformations in Seoul

The urgent need for housing space can be seen by analyzing Seoul between 2008 and 2013. These maps show the southern part of the city under the Han River. This zone is the more recent part of Seoul, which explains the stronger presence of high rise buildings. As the city had a fast development since 1958, some neighborhoods have been replaced by apartment complexes.

32a

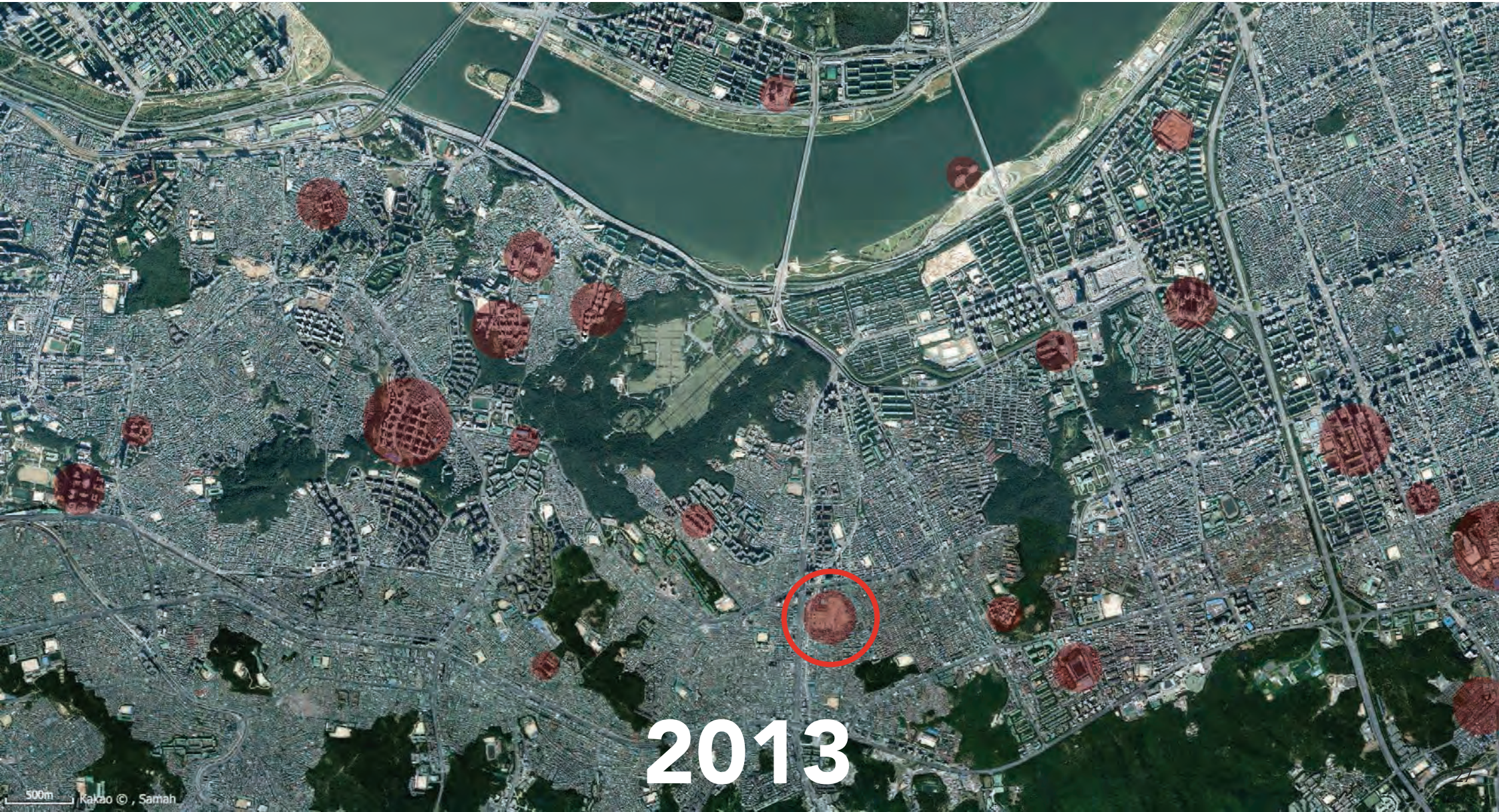


Urban expansion of Seoul



33

32b



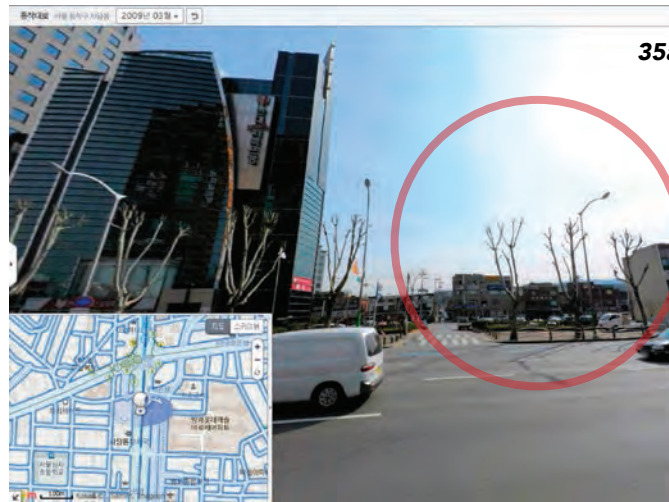
3.2 Urban transformation at the Isu station

One of the mentioned urban transformations happened at the Chongshin University Station (also called Isu Station). This station is the intersection of the subway lines 4 and 7 and of Dongjak-daero and Seocho-daero (-dareo meaning boulevard).

As for green spaces, the only ones that can be found are inside the Lotte Castle (C) condo-complex near the Isu station. As these are private and reserved to the local habitants, there is no sight of a public park nearby.

The Lotte Castle apartment complex offers high quality condos in a 20 story high building with private parking on the ground floor.

Those who do not mind being surrounded by numerous surveillance cameras can walk between the high rise buildings and enjoy the emptiness of a green space with neatly looking plants without having to encounter anyone. From time to time, a car enters the garage, which dominates the ground floor and its car driver disappears quickly into his apartment.



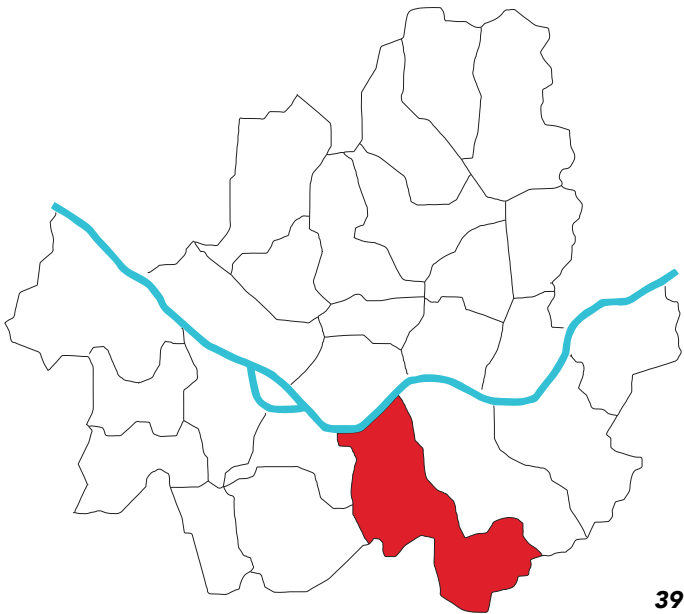


3.3 Walking through Bangbae-4-dong

The chosen site for this project is located in Seocho-Gu (Gu meaning district). Next to Gangnam-Gu, Seocho is the second most expensive district in Seoul.

As we walk through the narrow streets of Bangbae-4-dong, "Dong" meaning neighborhood and "4" meaning that it's the 4th part of the entire neighborhood, space is clearly rare due to the dense urban structure. The ones that dominate the streets are car drivers. Pedestrians are used to press themselves against the walls to let cars pass by. In fact, instead of having pedestrian- and bike lanes, unfortunately parking lots have a higher demand.

Green space is basically inexistent. The only plants visible are one or two trees inside the tiny courtyard of each detached house.

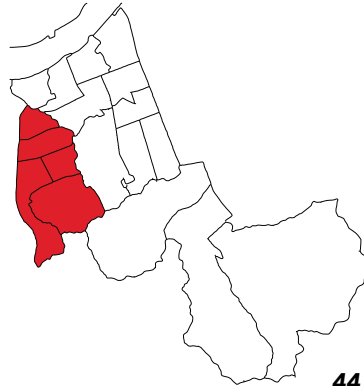


ISU-subway-station ●

Site ○

Bangbae-dong ●

Population 120,020
 Density 18,000/km²
 Area 6.64 km²



44



45

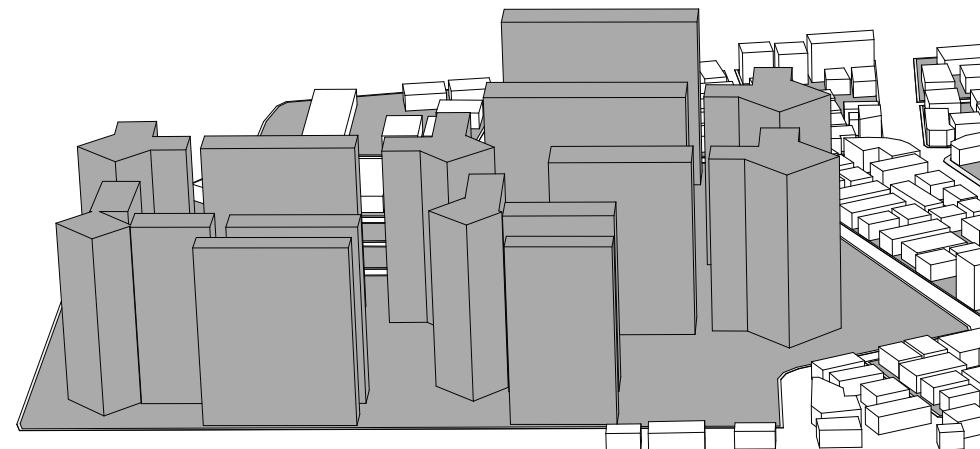


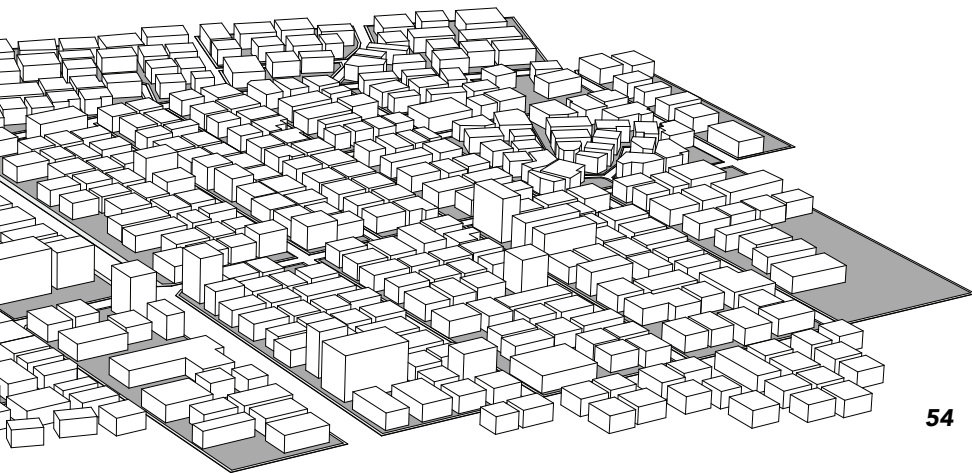
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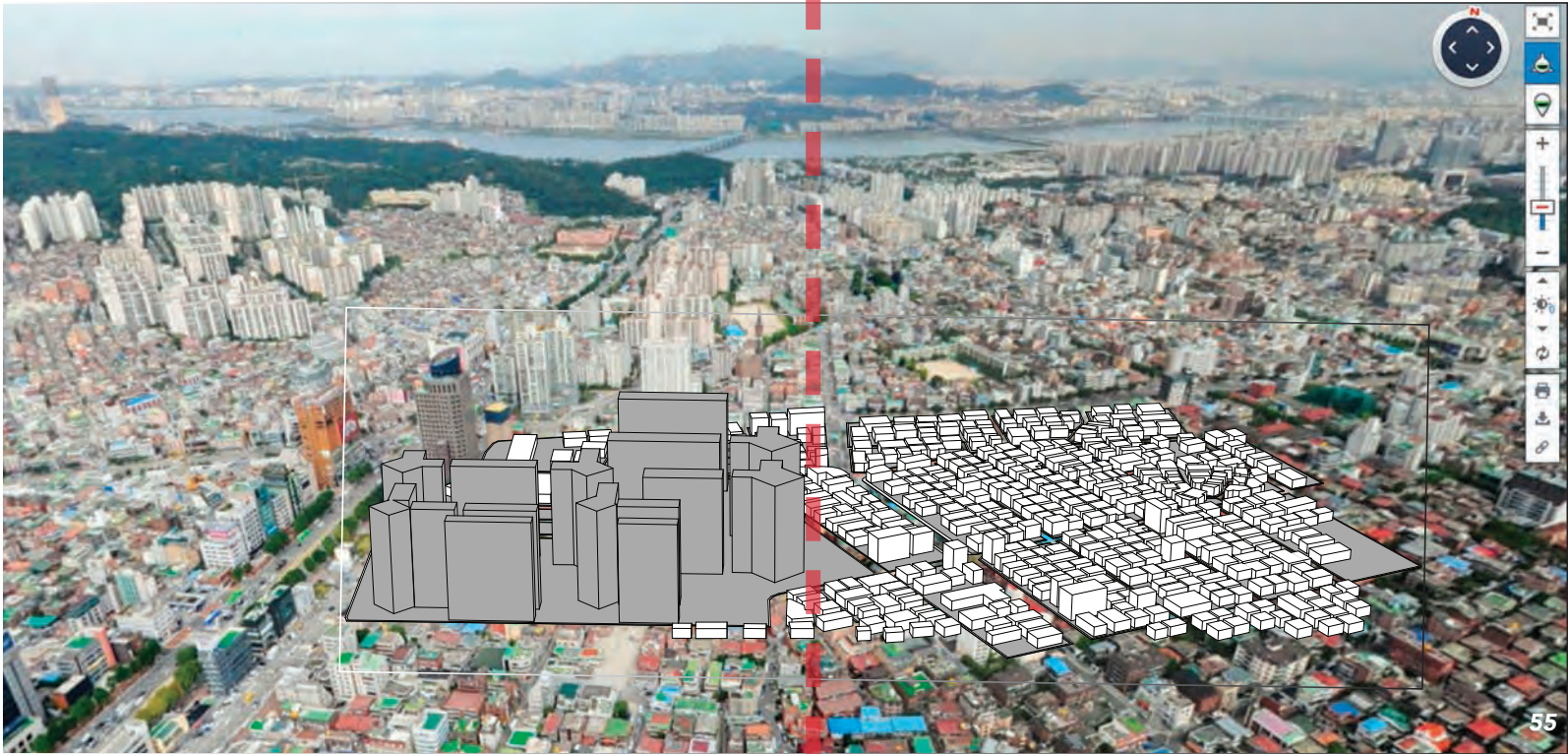
Comparison between the recent Lotte Castle condos and the older, extremely narrow neighborhood. Whilst on the left side hardly any people seem to be on the private places of the gated community, more people and especially more cars can be seen on the high street to the right side of the page.

The picture to the right shows the apartment buildings which are separated from the environment, compared to the high density low-storey private buildings in the old part of the Bangbae-4-dong area.

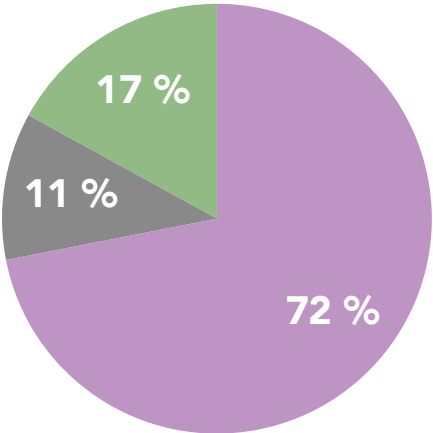




3.2 Urban tissue (big-/small scale)



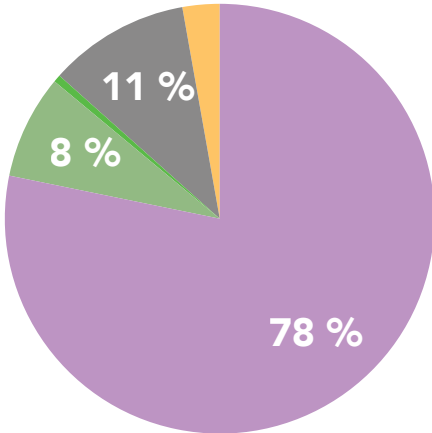
HIGH-RISE



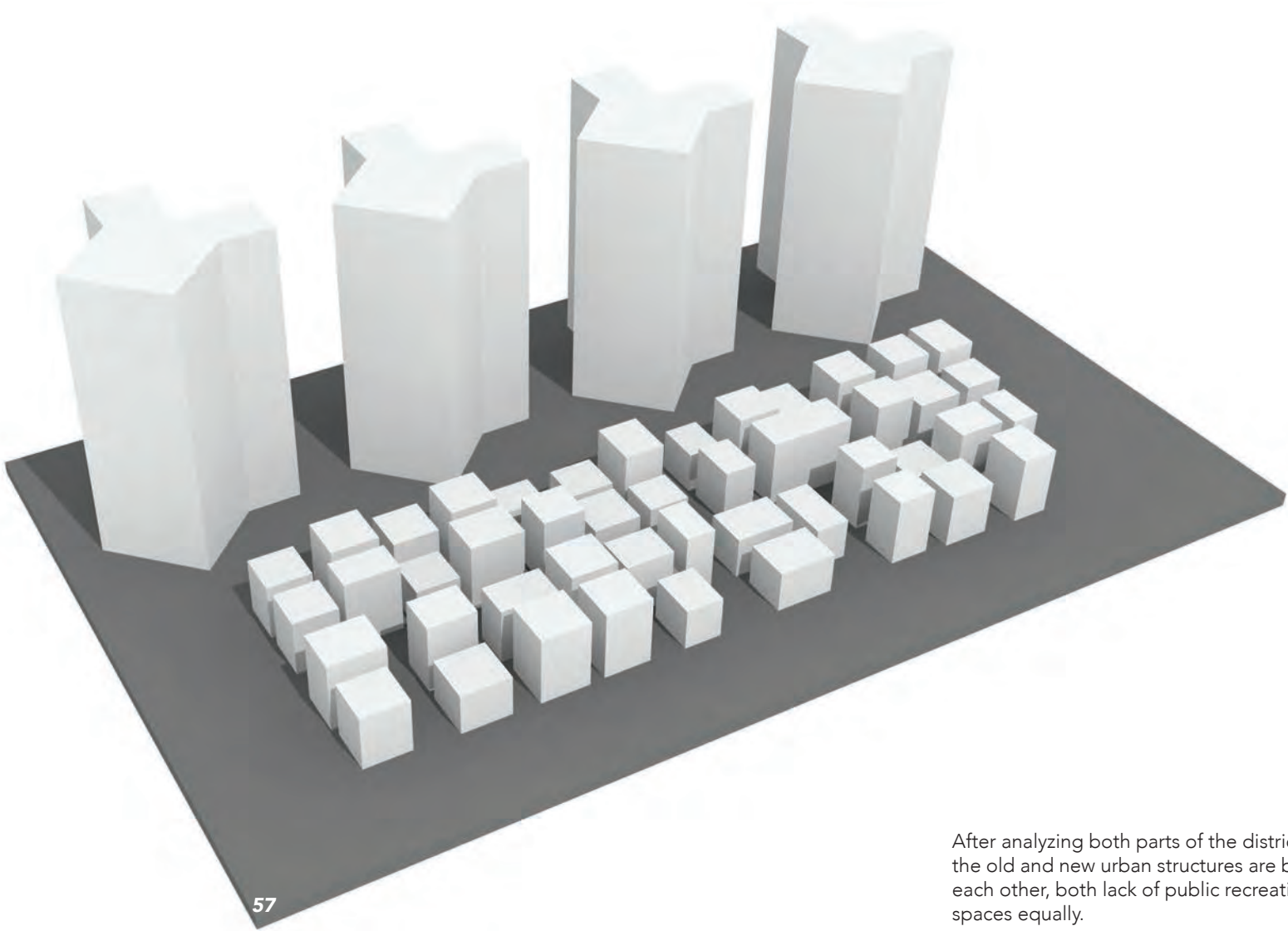
260 000 p/km²
(approximate density)

- living space
- streets + parking lots
- private green space
- patios
- rooftops
- parks and pedestrian zones
- public infrastructure

LOW-RISE



57 000 p/km²
(approximate density)



After analyzing both parts of the district, we realize that despite the old and new urban structures are being different from each other, both lack of public recreational facilities and green spaces equally.





04 URBAN DESIGN

4.1 Urban goals



More buses, less driving; By augmenting the frequency of the upcoming e-buses, traffic commute can be reduced. The goal is to bring the local habitants to the surrounding subway station Isu. Here, most hotspots of Seoul can be reached efficiently.



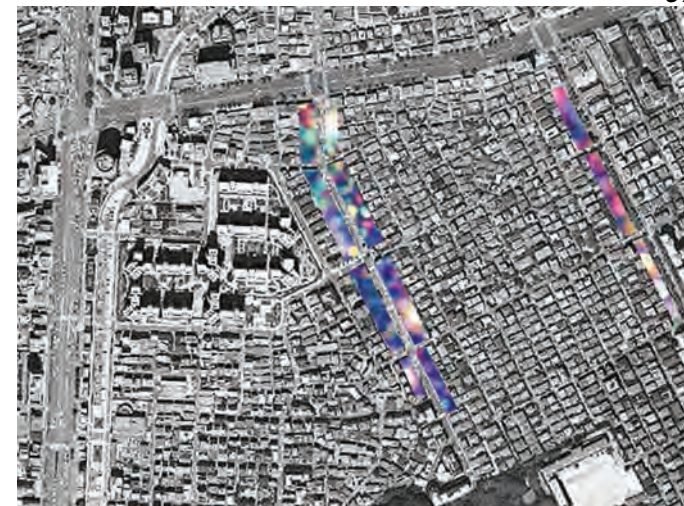
No more parked trucks and cars on pedestrian lanes. Major deliveries for shops and restaurants and other businesses can be transported "backstage" in the underground Parking. Around 29 700 parking lots are planned for locals and visitors.



So far there is only one proper bike lane at the Isu station. This Microcity allows (e-) bikers to move freely through Bangbae-4-dong by offering more bike lanes. If needed these ways can also be used for the common small deliveries made by motor bikes.

For promoting the use of bikes, multiple rental bike stations are planned throughout the project, as well as places especially designed to store the bikes.





In Seoul, narrow streets are often shared by cars and pedestrians. By having a generous pedestrian-friendly area, people can move freely through a safe environment, where they can meet and socialize.



Recreation facilities are very rare in Seoul. In some cases, the few green spaces are private and belong to apartment complexes. The new Microcity has as well private patios as green areas open to the public.

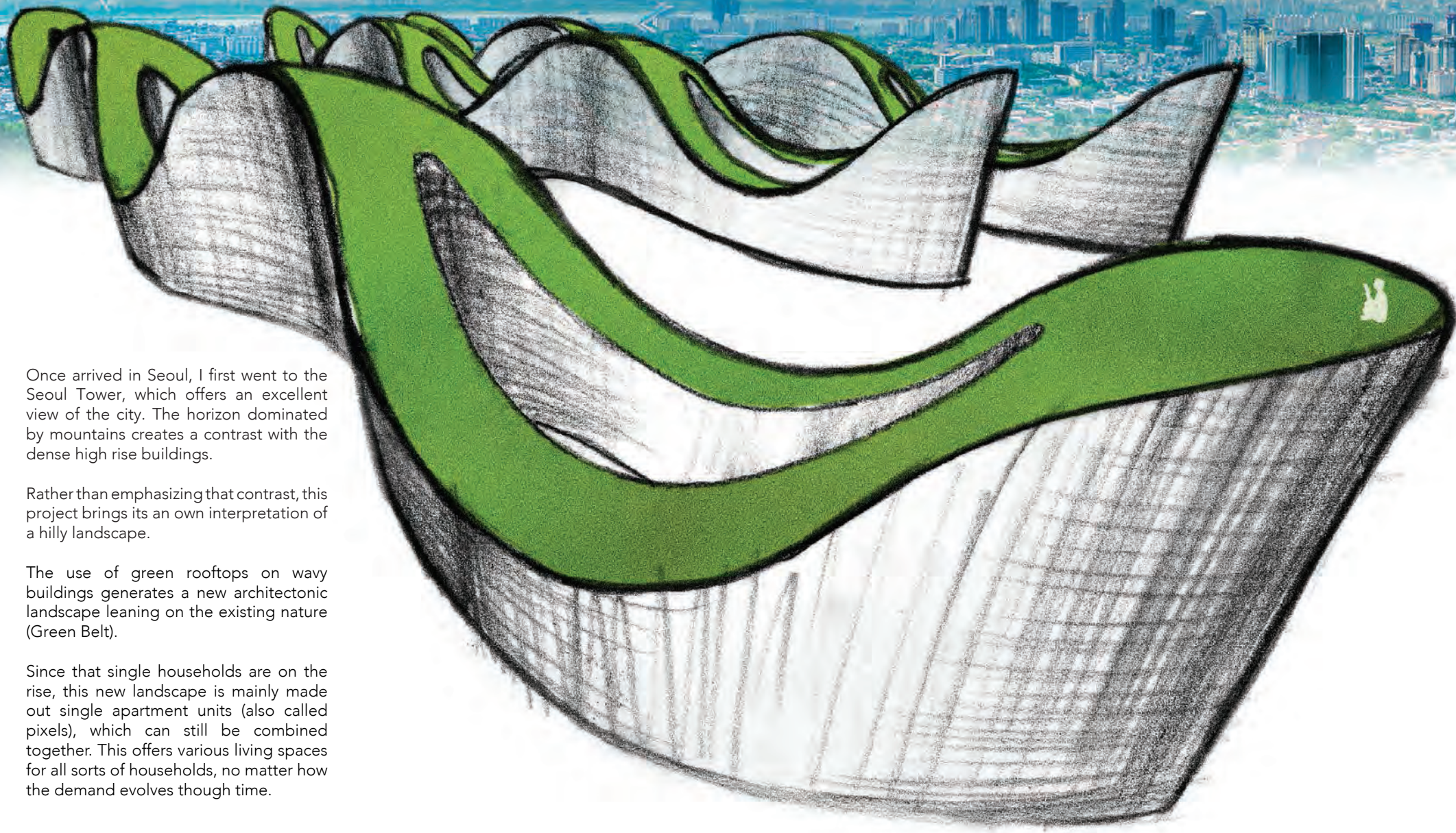


Public functions such as shops and offices are only located in two streets. By adding various public areas like restaurants, offices, markets and bars, the Microcity becomes more dynamic, more autonomous and becomes a place to meet for all the citizens.



4.2 Pixelated landscape

60 The panorama was taken at the Seoul N Tower.
(zoom available on pages 8-11)



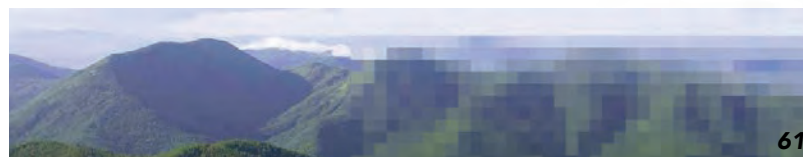
Once arrived in Seoul, I first went to the Seoul Tower, which offers an excellent view of the city. The horizon dominated by mountains creates a contrast with the dense high rise buildings.

Rather than emphasizing that contrast, this project brings its own interpretation of a hilly landscape.

The use of green rooftops on wavy buildings generates a new architectonic landscape leaning on the existing nature (Green Belt).

Since that single households are on the rise, this new landscape is mainly made out single apartment units (also called pixels), which can still be combined together. This offers various living spaces for all sorts of households, no matter how the demand evolves though time.

EXISTING LANDSCAPE
(GREEN BELT)



NEW *PIXELATED*
LANDSCAPE

1 x PIXEL
=
1 x UNIT

62 Through a pixelated appearance, this project brings a three dimensional footprint of the outer mountains to the center of Seoul. By doing so, green spaces are now closer to the citizens.



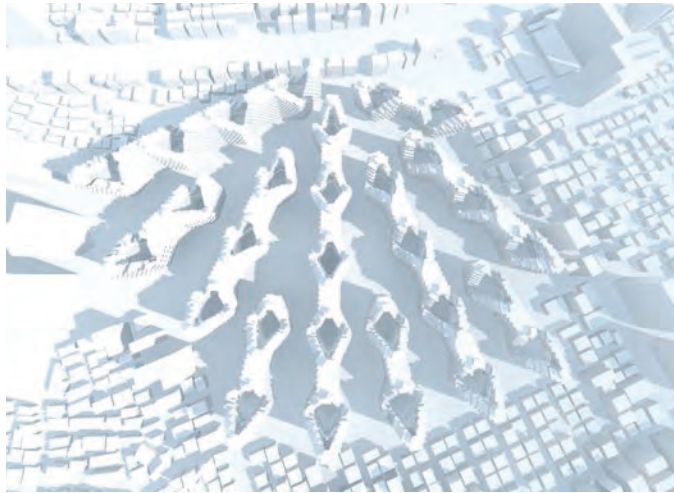




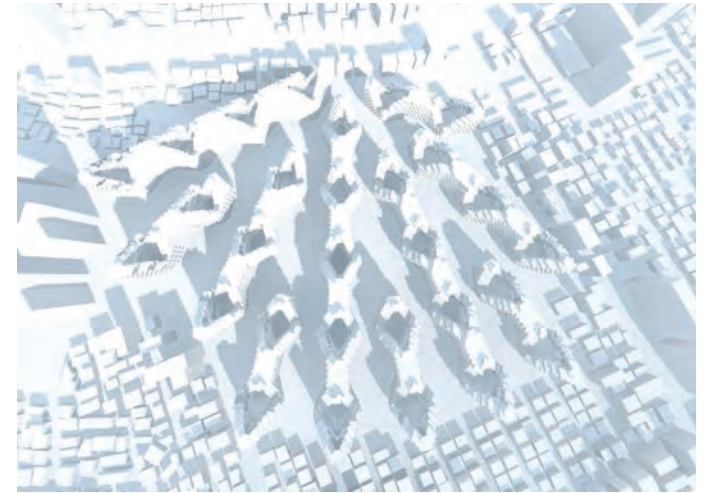
4.3 Sun exposure

One of the main challenges for this project is to maximize sun exposure and density at the same time. For this purpose, the project contains a system of building chains. These chains, made out of 2-5 connected buildings, are attached at higher levels and separated at the ground floor. This offers a flexible way of transportation on the ground level, while assuring a high density on higher floors.

By using a radial array of these building chains, each space in-between gets direct sunlight exposure of at least 2 hours. This arrangement starts at the northern side of the site and becomes larger towards the south.

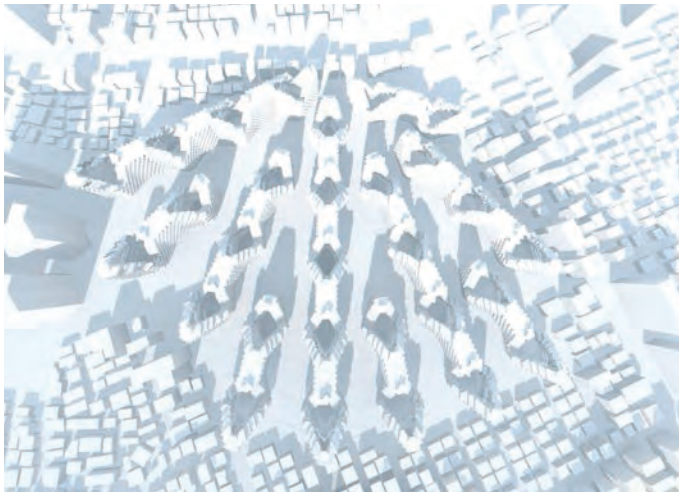


#1: Sunrise

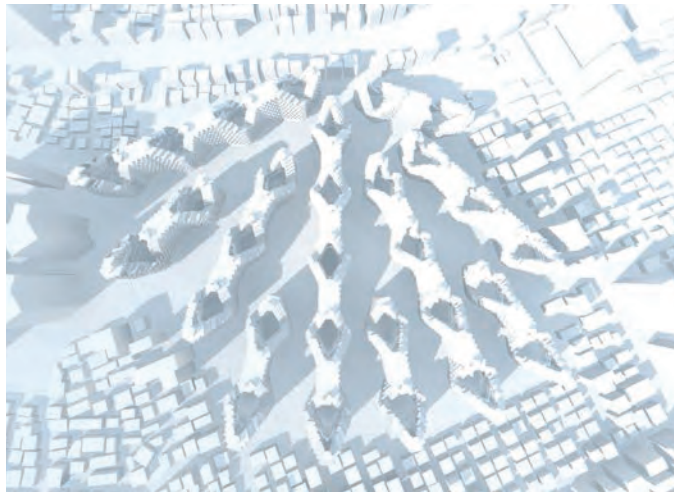


#2: Morning

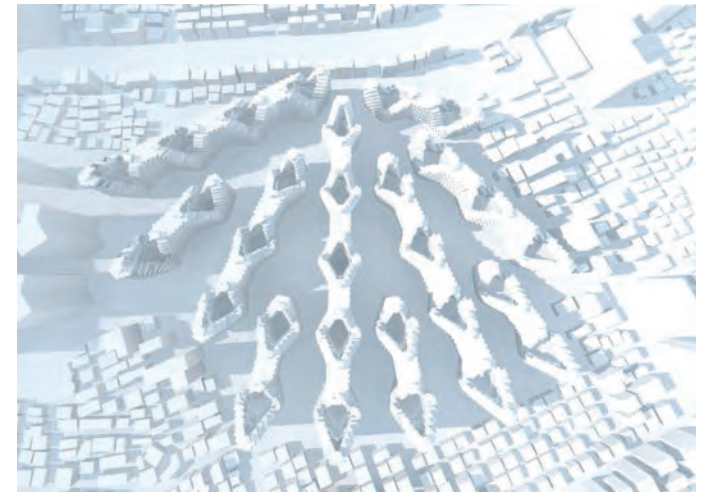
64



#3: Noon

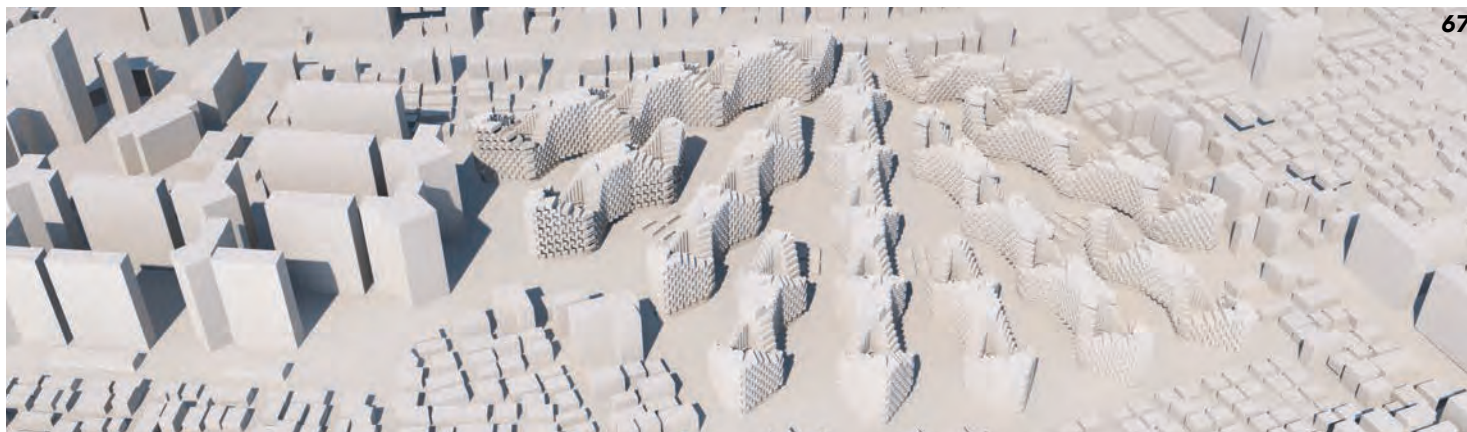
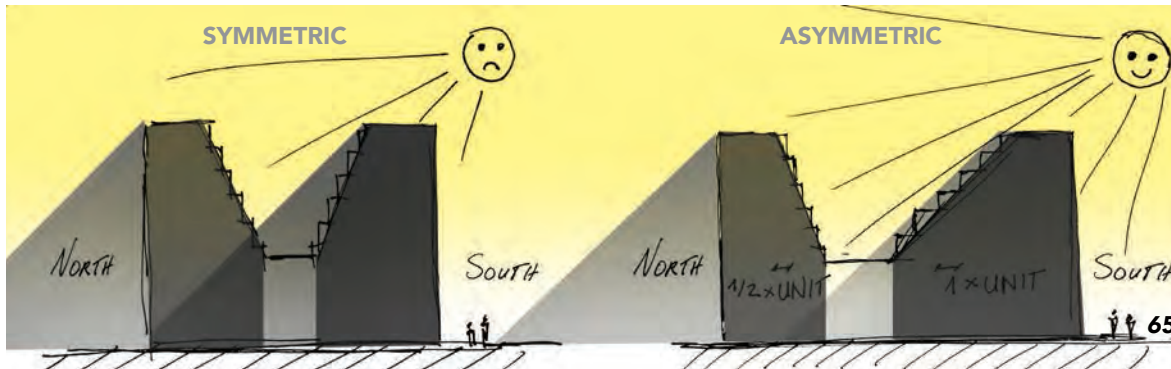


#4: Afternoon



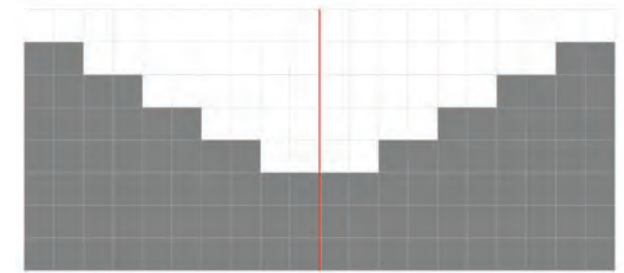
#5: Sunset

In order to further improve sun exposure, the buildings get a slight asymmetric configuration by keeping more apartment units on the southern side. This brings more light to the apartments and most importantly, to the patios.



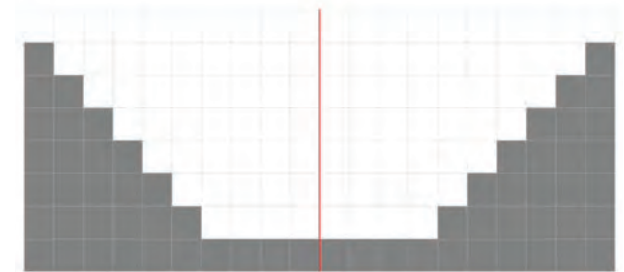
Symmetric arrangement
by removing 1 unit
(=pixel) each floor.

Density: good
Sun exposure: bad



Symmetric arrangement
by removing 1/2 unit
(=pixel) each floor.

Density: bad
Sun exposure: good

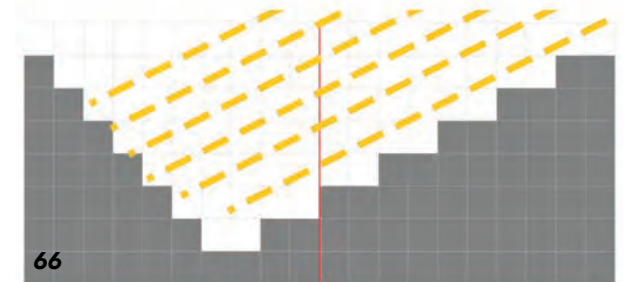


NORTH

SOUTH

Asymmetric arrangement
with more units facing
south.

Density: OK
Sun exposure: OK



■ = 1 UNIT



4.4 Underground transformation

In order to keep the cars out of the landscape, parked cars will be in an underground garage, which can take up to 9000 cars.

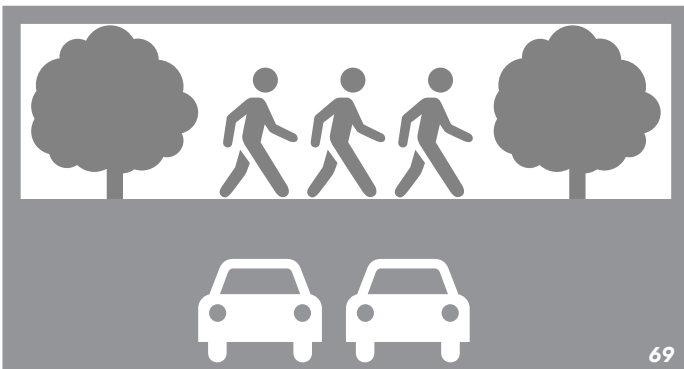
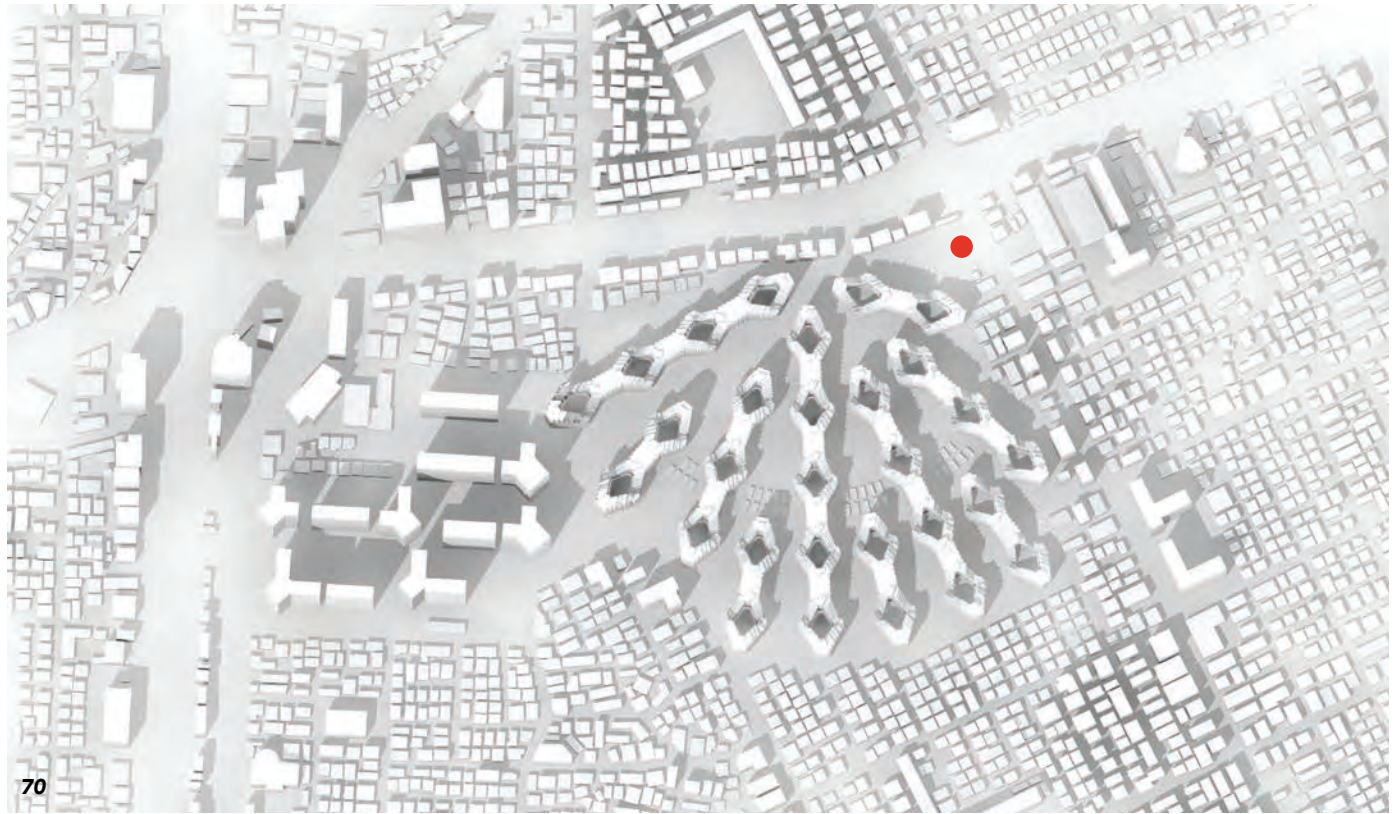
The entrance is located at the north eastern side of the project which is close to an arterial route, called Seocho-daero. This reduces the number of traffic on the western side, close to the Isu station which serves as a "magnet" for pedestrians and bikers.

So far, there are several places in Seoul where shops and restaurants are put underground for offering more space to parking lots. This project does the opposite. As it can be seen on the right side of the page, all parking lots are linked together through a network of underground tunnels, which can also be used for deliveries. The entrance is hence focused to a single street and continues to ramify into a network of streets below the ground. The transportation of goods can be done in a more efficient, and "behind the scenes" way.

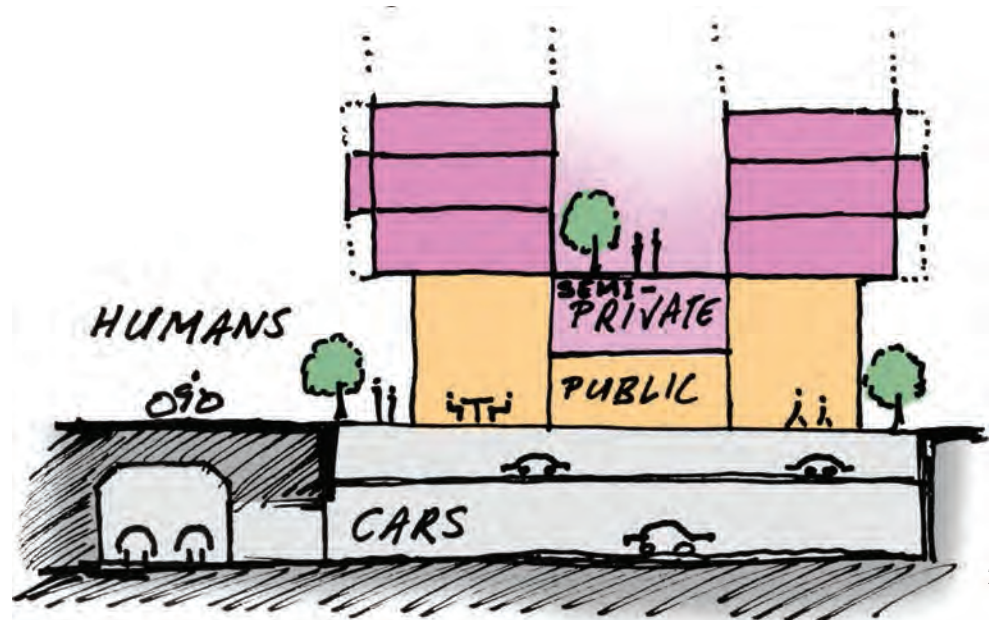
● Entrance for underground parking



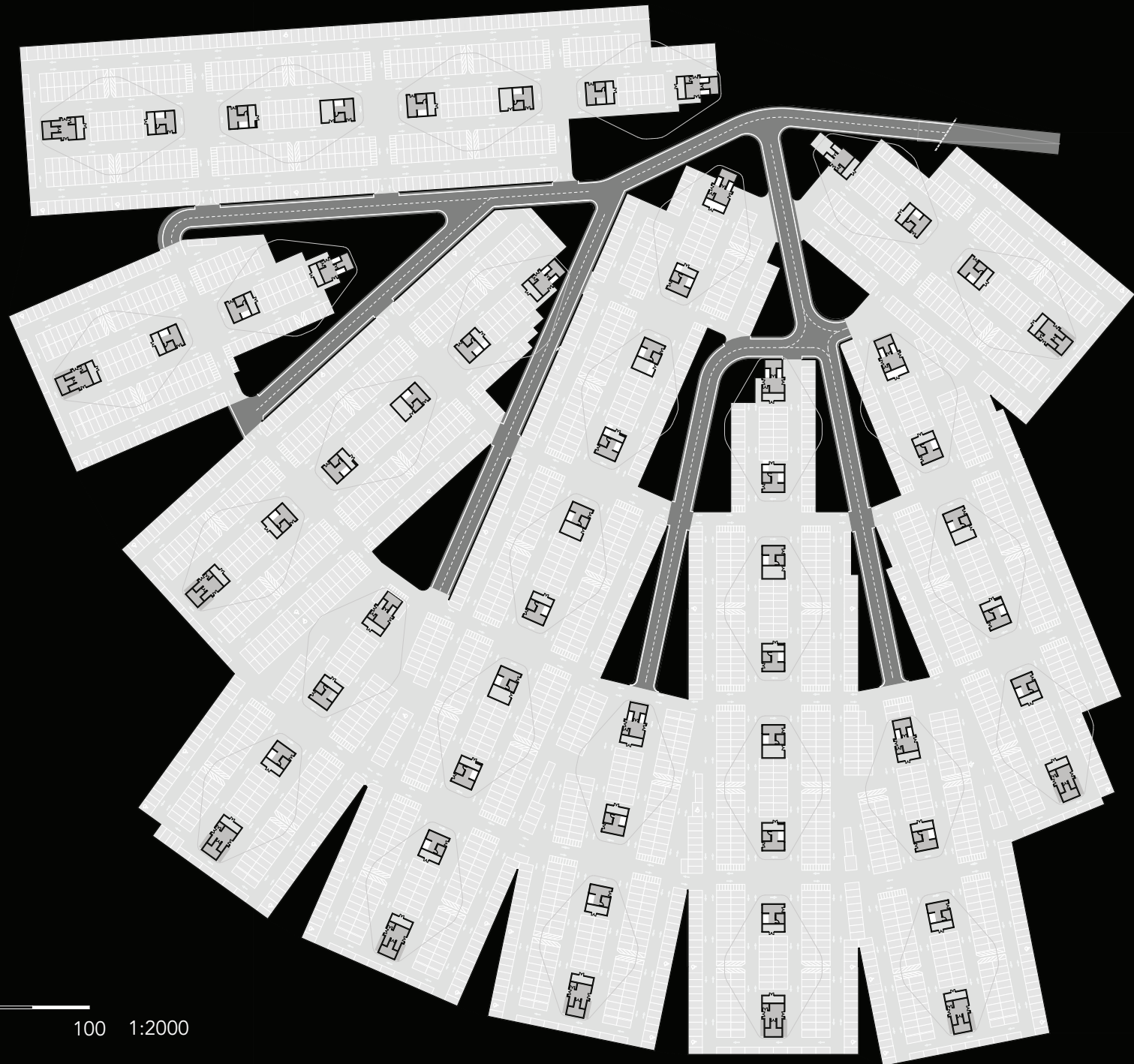
70



69



71



4.5 Ground floor

The ground floor of the buildings will ONLY have public functions, due to privacy issues coming from Korean culture, where it's common to have a clear line between private/communal/public.

This separation is either horizontal with a massive wall or a high fence (as seen in the already mentioned Lotte Castle project), or vertical by starting apartments on top of the public functions.

This allows us to keep the green spaces between the buildings accessible for the public.

Inside the buildings will be communal spaces, which are only accessible for renters of the apartments.

On the ground floor of the project, next to the generous amount of green spaces open to everyone, are multi-purpose areas planned (shown as curved grey zone), which can be used as e.g.:

- seasonal markets (flea-, Christmas markets, etc.)
- general events
- fountains during summertime
- ice rinks during wintertime
- street food festivals
- place for leisure time activities



Outdoor gyms allow all citizens to stay to work out while being outside



Seoul can become very festive during Buddha's Birthday at the popular Cheonggyecheon River.



Staying fit is very important for all Korans.

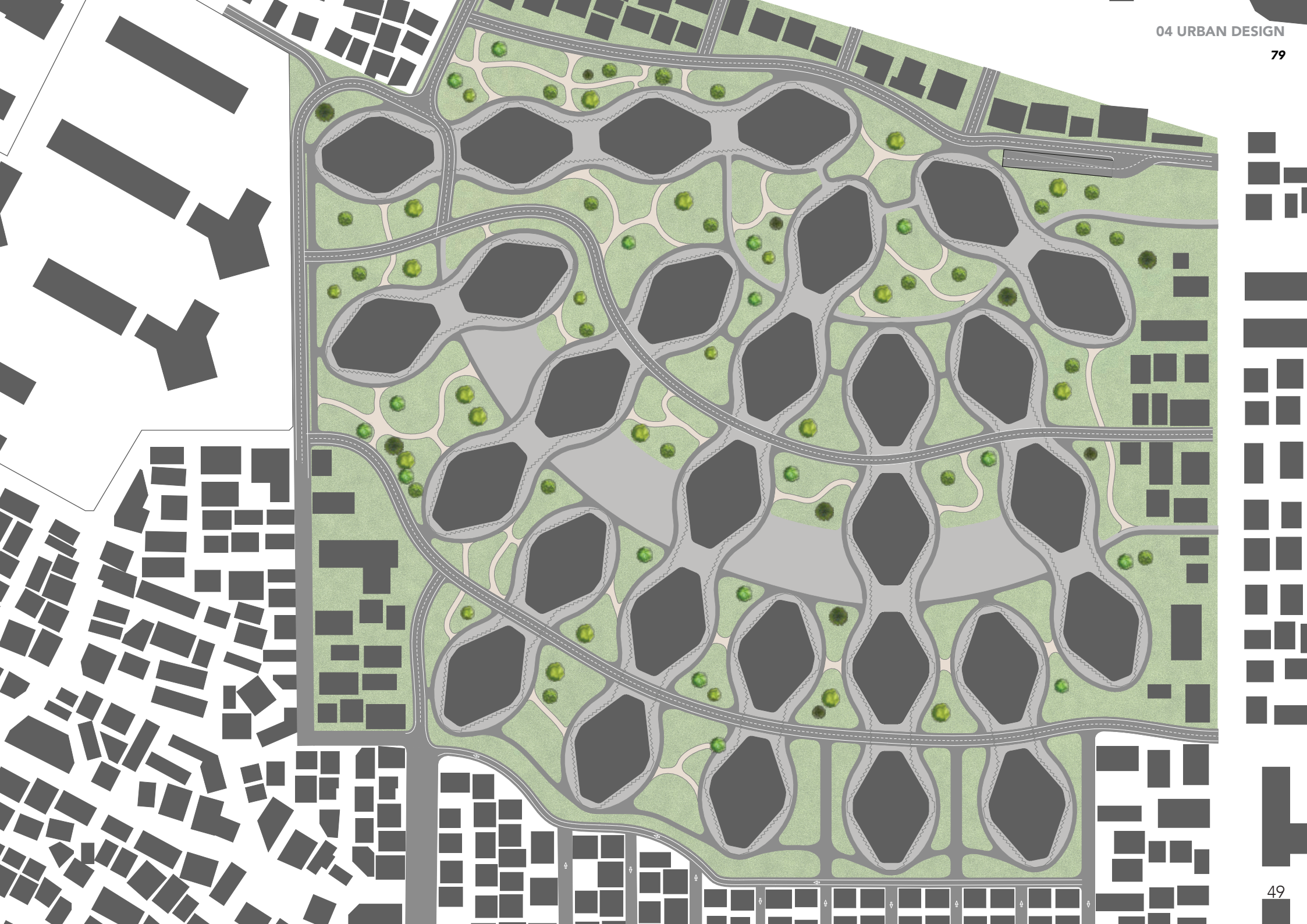


Another festive atmosphere during Winter time at the City Hall.



Best street food deals can be found at the Namdaemun Market.





Example of how one of the public multi-purpose areas in between the buildings could look like if there is a market during springtime.

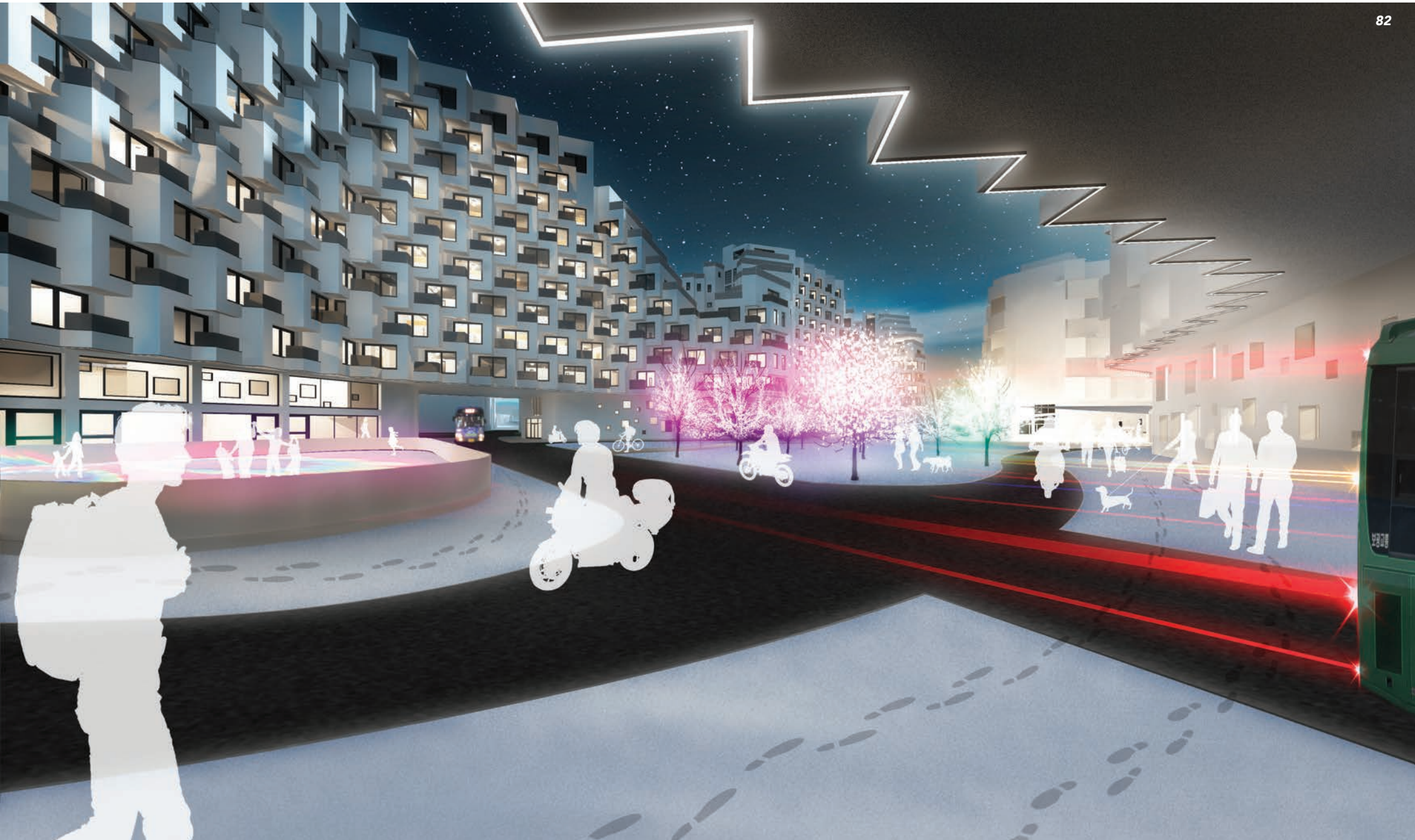
The structure in the middle is flexible and can be removed completely, if needed.

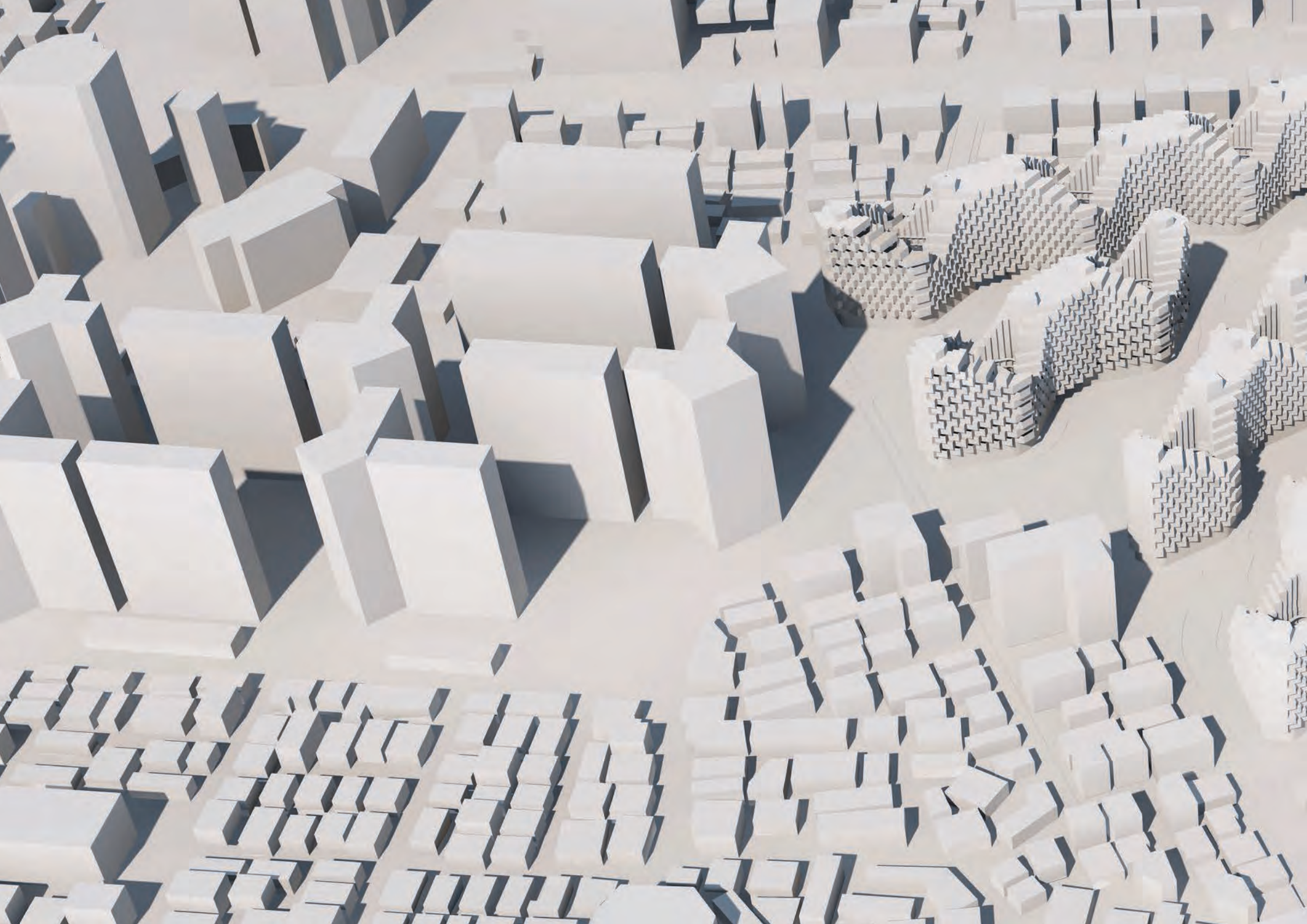


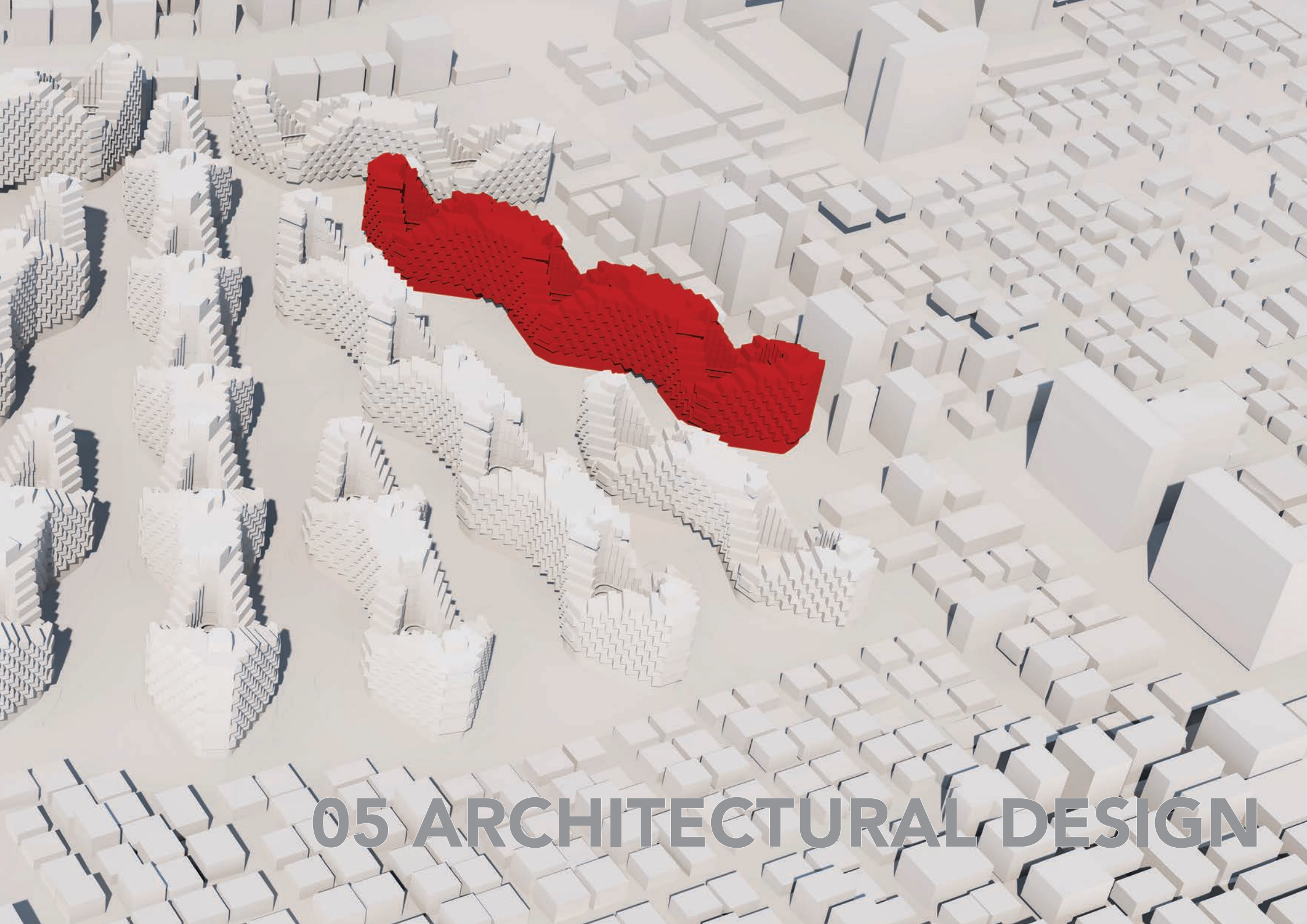
Another suggestion of how the same multi-functional places could be used during summertime to take a stroll through the cooling fountains and for children to play in.



Example of an ice-skating rink during wintertime with illuminated trees in the background

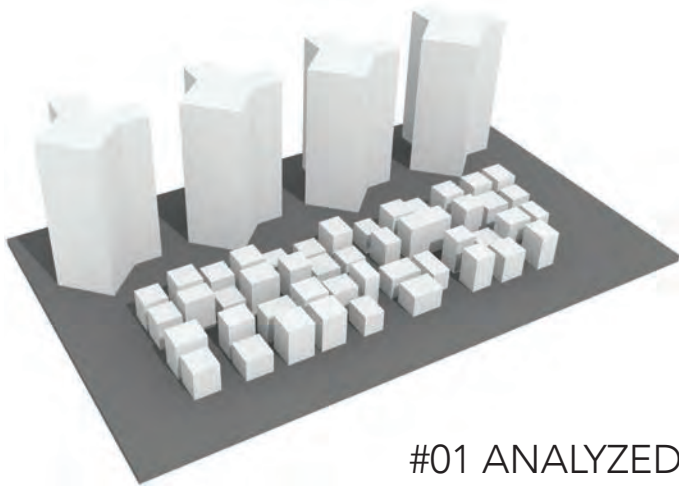




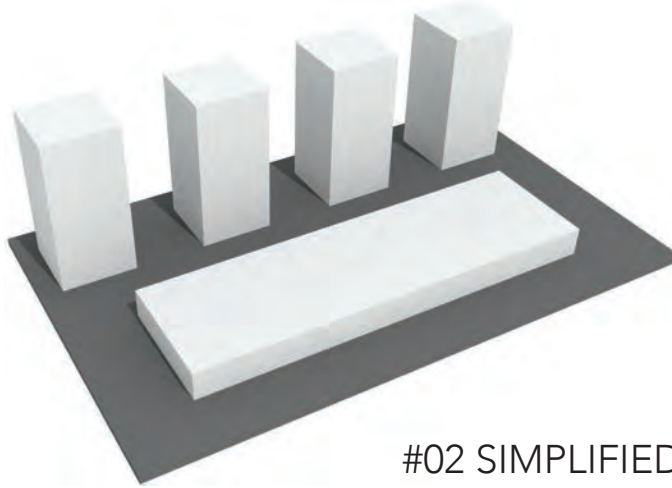


05 ARCHITECTURAL DESIGN

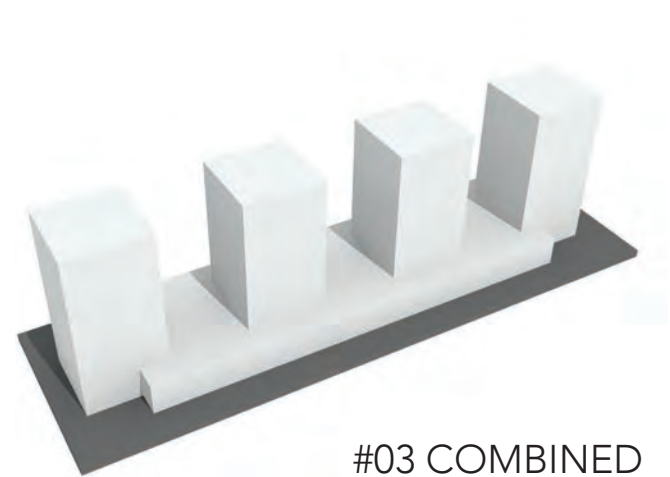
5.1 Formfinding



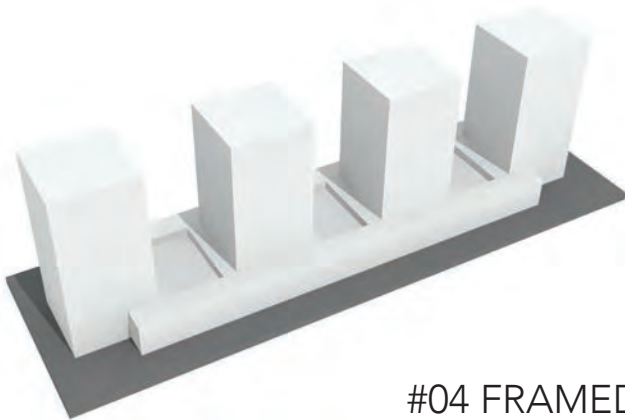
#01 ANALYZED



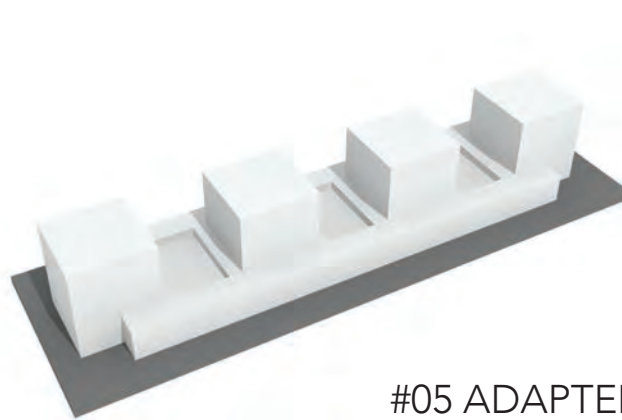
#02 SIMPLIFIED



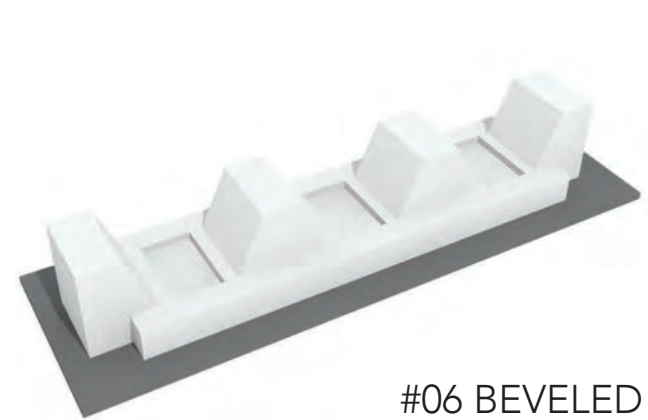
#03 COMBINED



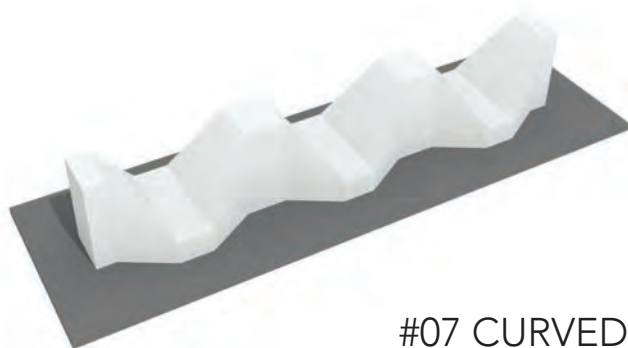
#04 FRAMED



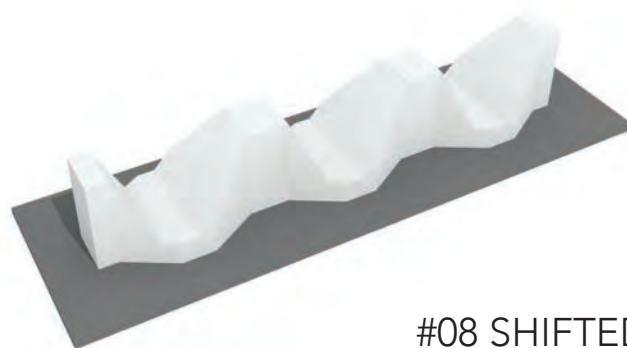
#05 ADAPTED



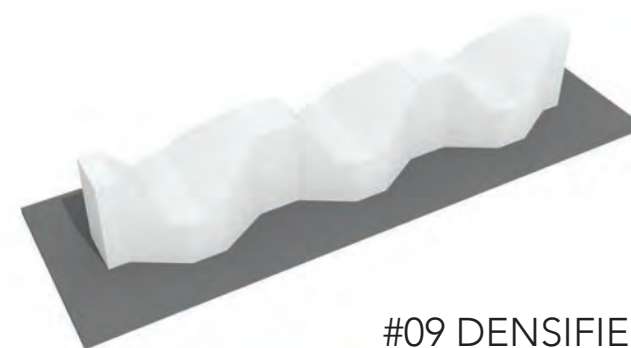
#06 BEVELED



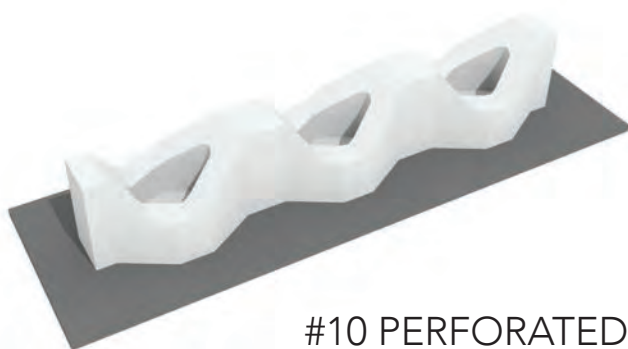
#07 CURVED



#08 SHIFTED



#09 DENSIFIED



#10 PERFORATED



#11 LEVITATED



#12 PIXELATED

OUTSIDE FUNCTIONS

PRIVATE GARDENS

ROOFTOPS FOR HYDROPONIC
GARDENING
(COMMUNAL SPACE)

PATIOS
(COMMUNAL
SPACE)

BICYCLE
PARKING STATION

(MOTOR) BIKE LANE

COVERED BUS STATIONS

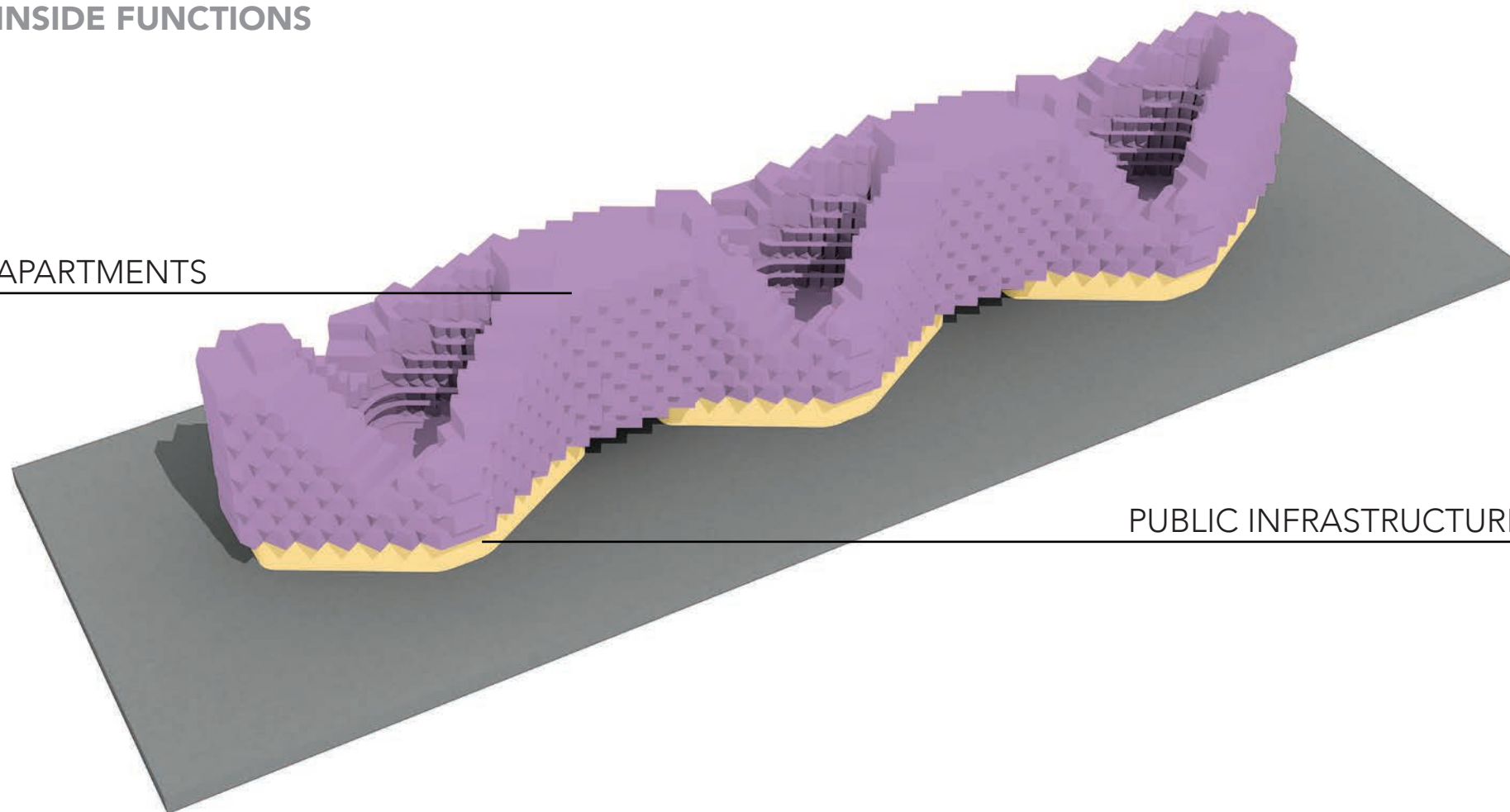
STREETS FOR RUNNING VEHICLES
(NO PARKING)

PUBLIC SPACE
(MOSTLY GREEN)

INSIDE FUNCTIONS

APARTMENTS

PUBLIC INFRASTRUCTURE



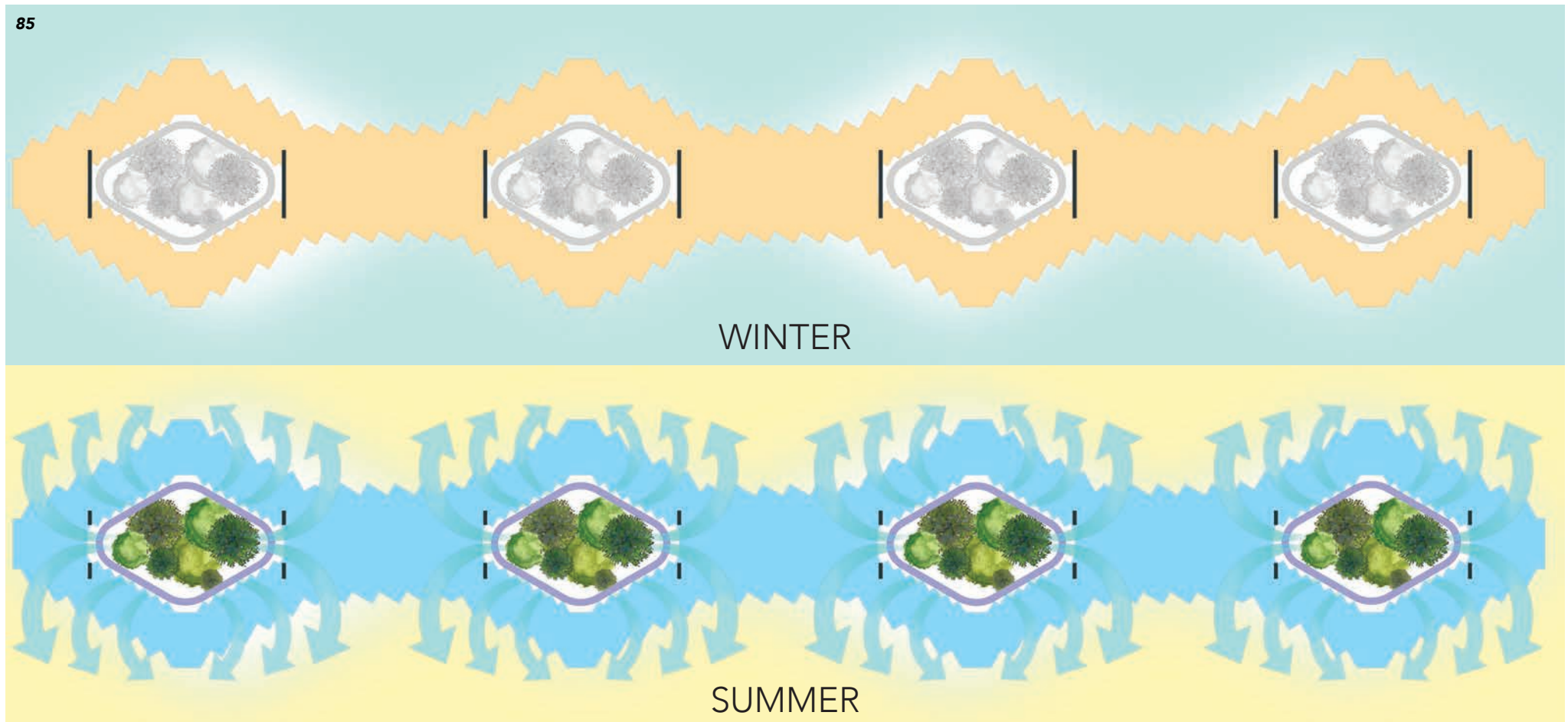
5.2 Natural ventilation

During winter the stair cases remain closed with glass doors. This keeps warm air in the hallway and reduces the heating costs for the units which are not directly connected to the patio.

During summer, the glass doors can be opened during the day and stay open through the night. This creates a constant flow of air throughout the buildings. Also, the air gets renewed and filtered by the trees in the patio, creating a micro climate. Each unit will have a normal window and a transom on the inner side of the building (facing the patio) that will make use of this type of ventilation inside the apartment itself.

Hopefully, this ventilation helps to reduce the current intense use of AC.

85



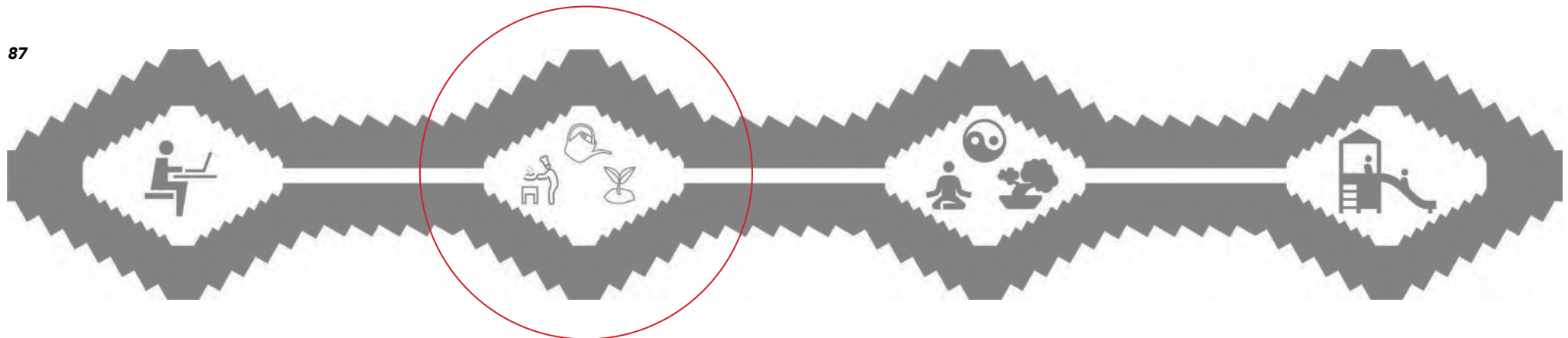


5.3 Different patios - different worlds

As it can be seen on this picture, also the patios inside the building can be different. Despite being of the same size, each patio can be designed individually. Contrary to the picture seen on the page before, where the theme is more of a small park to promenade through, here the use is a completely different one, namely urban gardening.

Generally, this and many other themes (e.g. playground for children, a zen garden, open-air gym, bbq- and picnic areas with shared kitchens on the floor below, etc.) lead to various possible activities for the residents, which make their lives more dynamic and social.

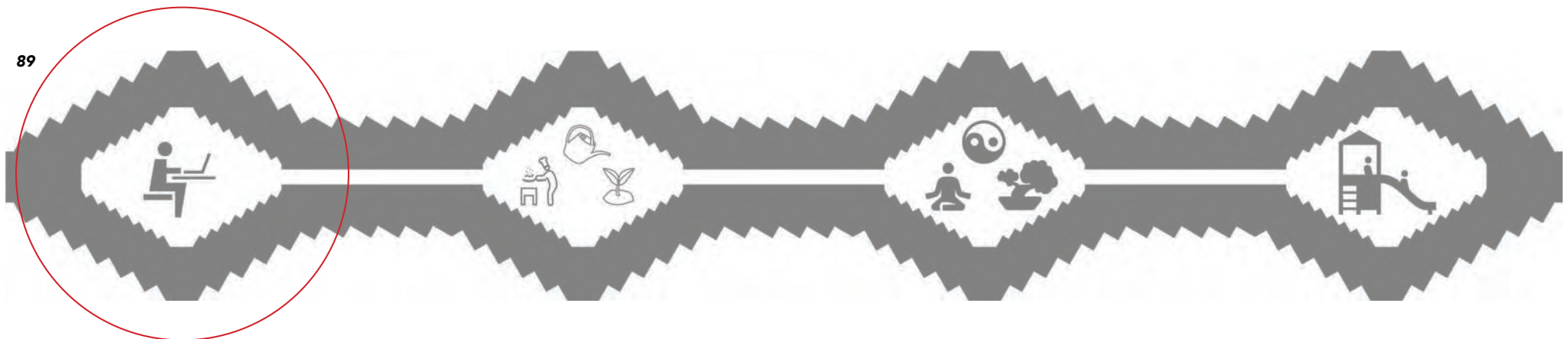
The reason why it's possible to have so many different patios is that all of them in an entire building-chain are linked together so that each inhabitant can use all of them.





5.4 Shared spaces

In the middle and one level below the patios are built-in shared spaces which can be used by residents. Here, as example, a co-working space is shown. As already mentioned before these shared spaces could also be used as a kitchen (with the bbq/picnic themed patio above), day-care center for kids (with a playground above), or gym, among other options regarding these shared facilities.





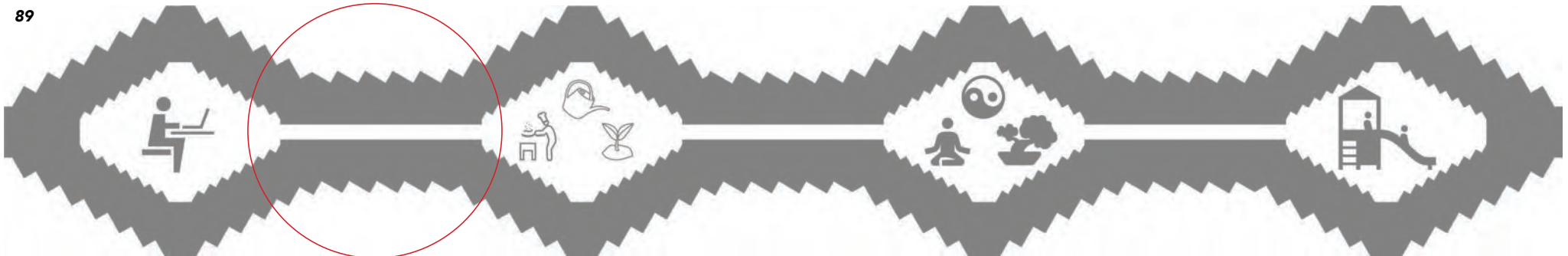
5.5 Connecting Pixels

After arriving on the hallway through the elevator shown on the left side, we can find the shared laundry room in the middle of the picture.

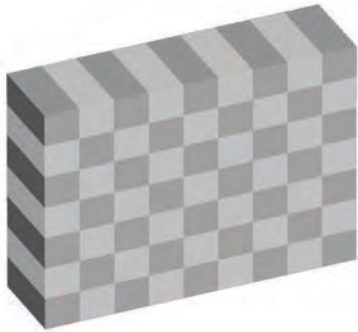
While going through the corridor on both sides lightwells can be seen, which bring us not only natural light from the top floor, but also serve as growing place for plants. These lightwells are built in a constant interval, hence giving the hall a dynamic appearance.

This hallway also serves to connect all the patios with another.

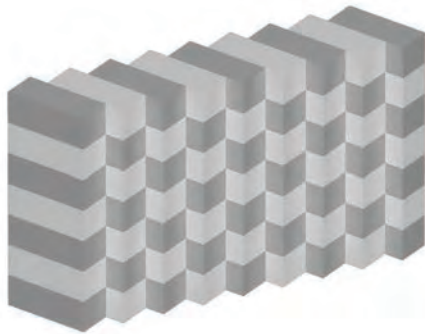
89



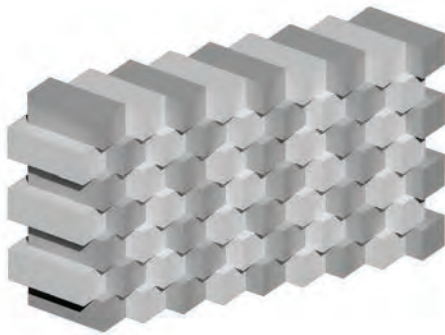




Classic arrangement of Pixels.



Each Pixel is rotated by 30°.



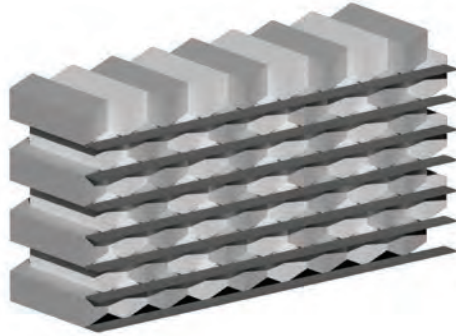
By shifting every second line of Pixels (i.e. the floors) by half a unit, platforms (i.e. the balconies) are being generated.

As it can be seen on the right page, despite the high density and closeness of the apartments, through the very specific arrangement of the balconies, it is not possible to look into a neighboring flat. Therefore the in Korea highly valued privacy is being ensured.

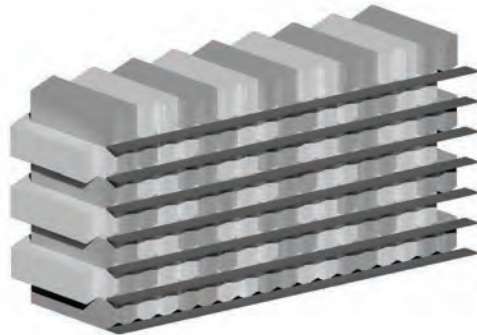


5.7 Green access balconies

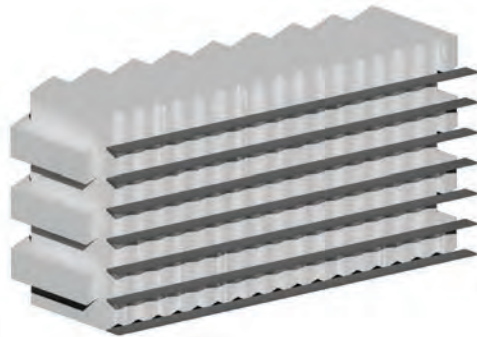
94



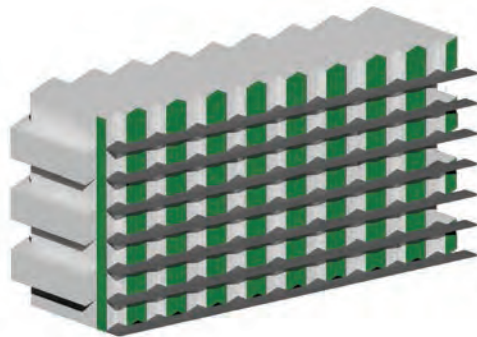
On the backside of the building there are access balconies on every floor. The shifting of each Pixel logically also results in creating platforms on this side of the building as well.



As this structure is not adapted to these access balconies, the created platforms are being divided in half.



Thus, a continuous vertical structure is being created.



Each second niche (shown in white) is then being used for the entrances of the apartments. The remaining niches can be used for the growth of plants (and/or as lightwells for the apartments facing each other)

Privacy layers

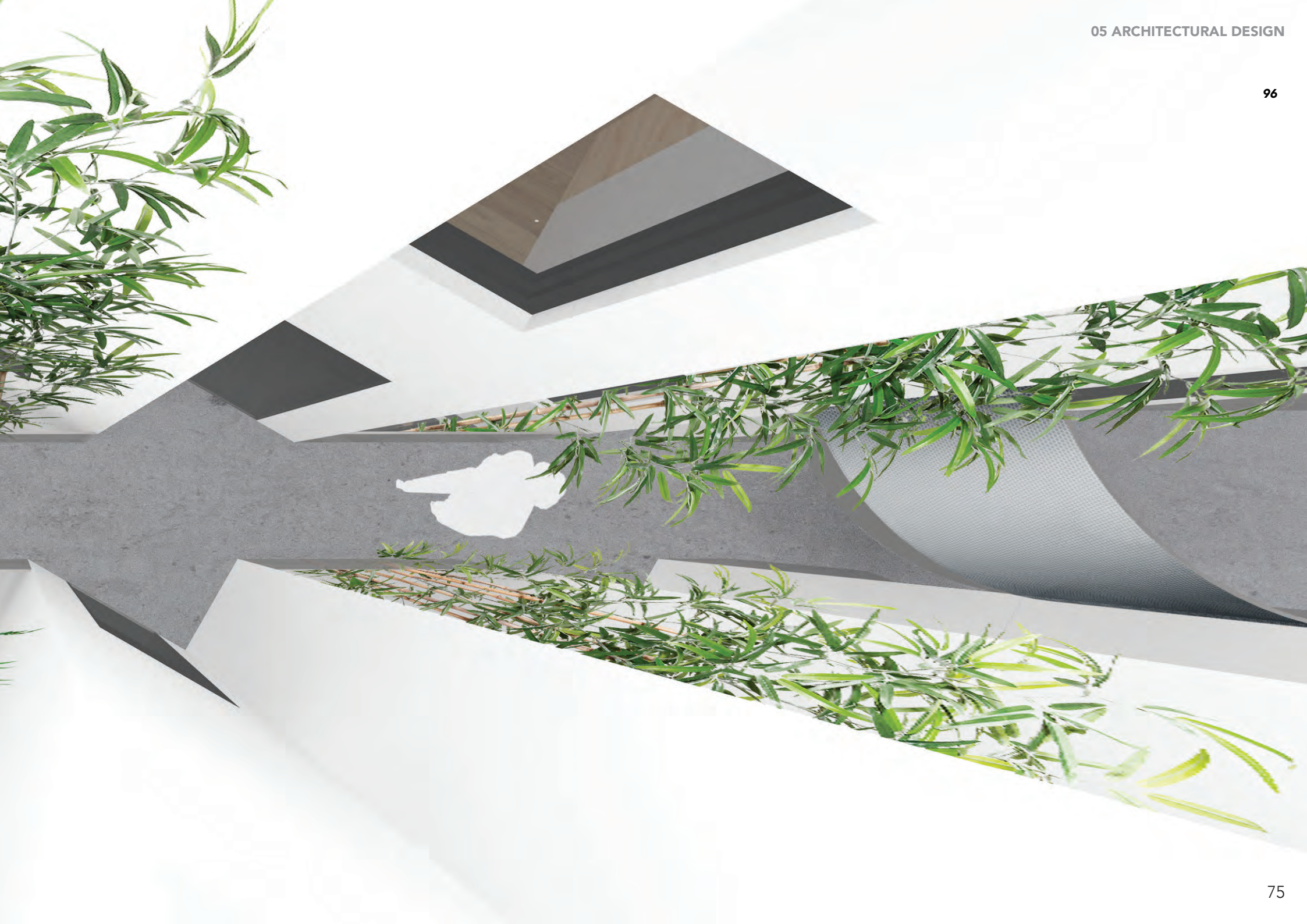
In order to assure the privacy of the inhabitants, several privacy filters are being suggested:

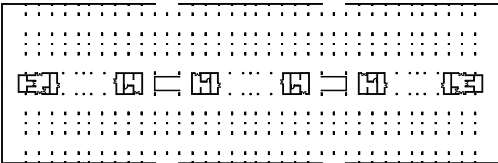
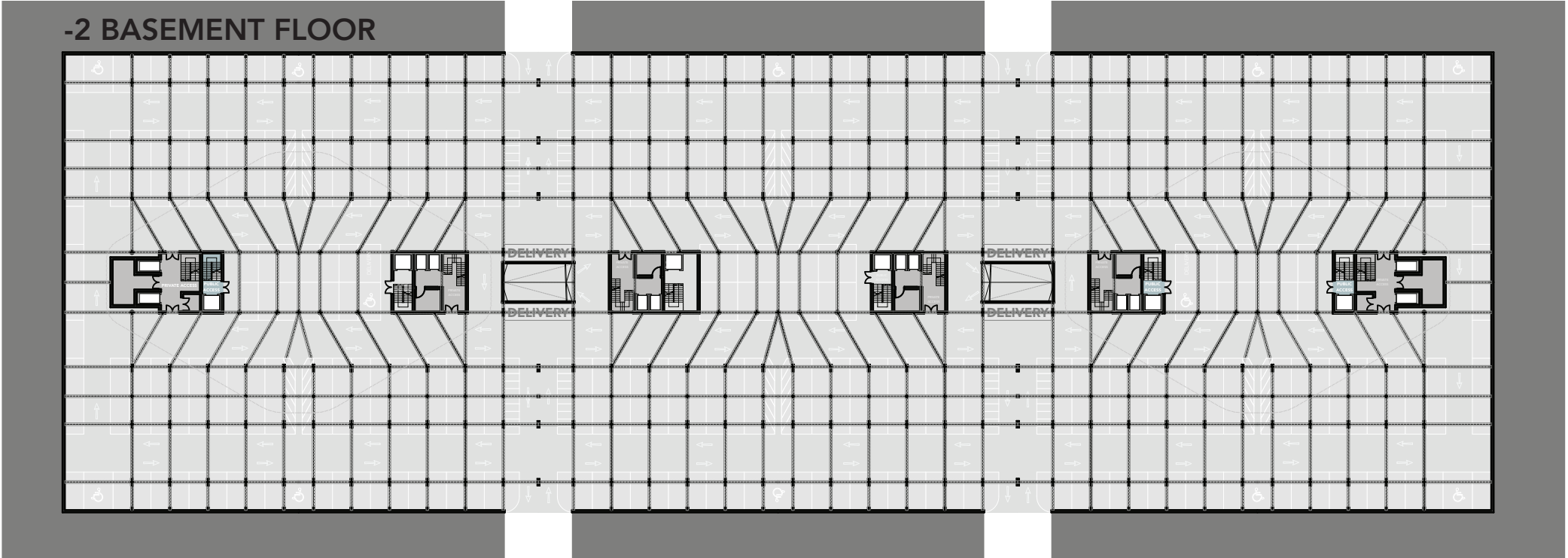
1. For units facing the patio a first layer of handrails made of perforated steel ensures safety. These handrails also provide a continuously u-profile, which also serves as a cup holder. This way the access balconies double as a shared space to meet with neighbors.
2. The second layer is another handrail which creates a distance with the window of each unit and the access balcony, so that people cannot look directly into the window.
3. Thirdly, plants add some natural opacity to the window.
4. All windows come with roller blinds.



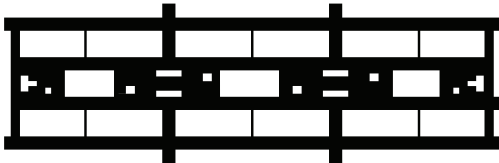
View from the rooftop through the skylight.



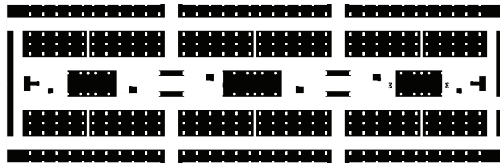




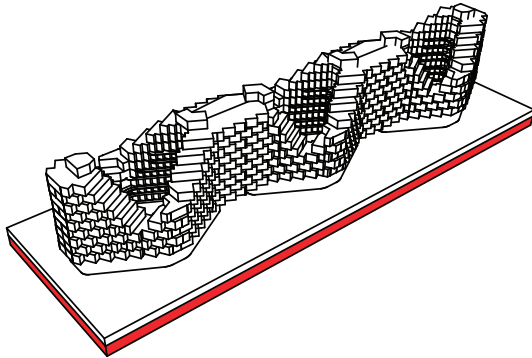
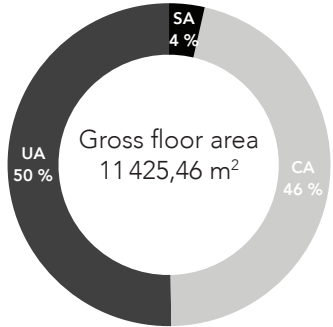
Structural area (SA)
406 m²



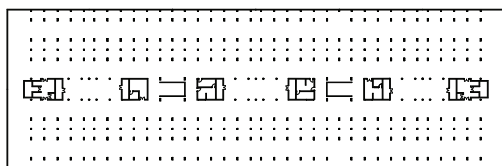
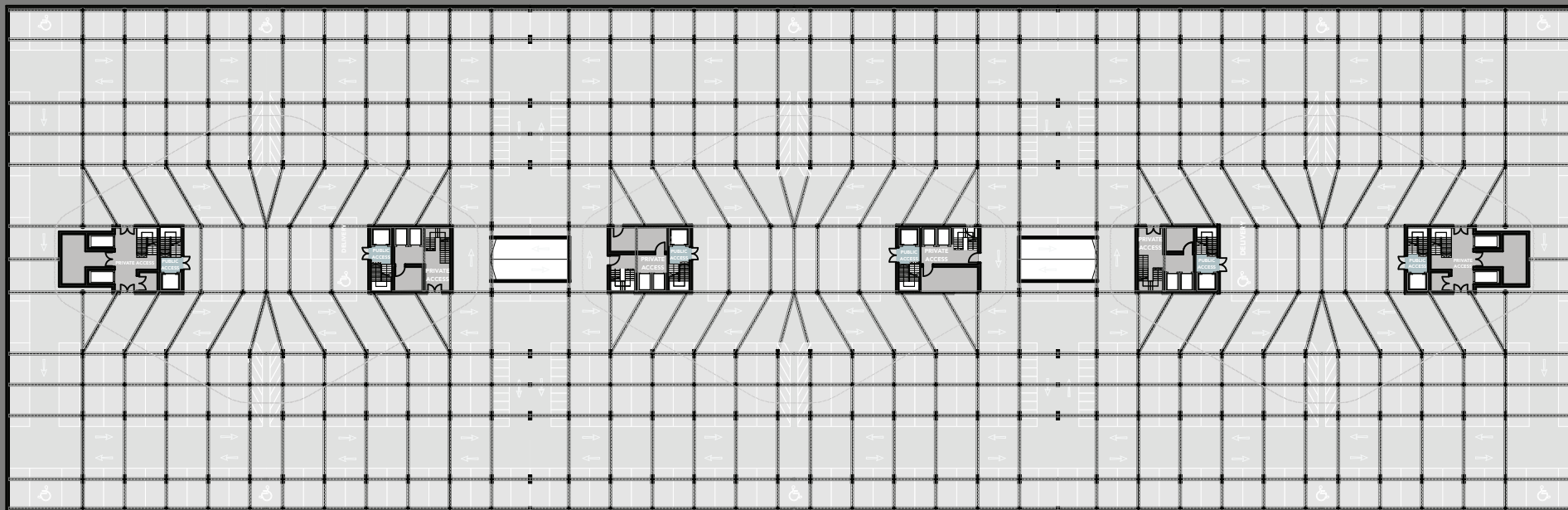
Circulation floor area (CA)
2281,34 m²



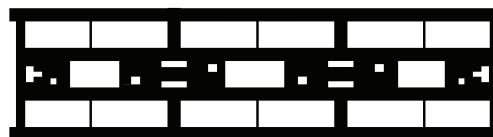
Usable floor area (UA)
5738,27 m²



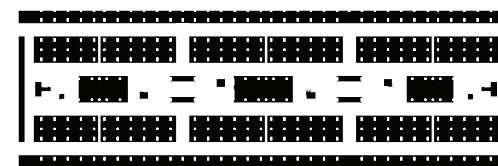
-1 BASEMENT FLOOR



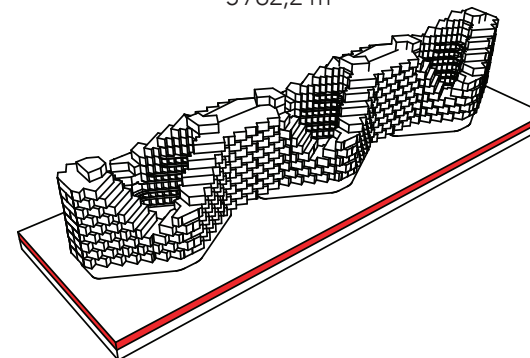
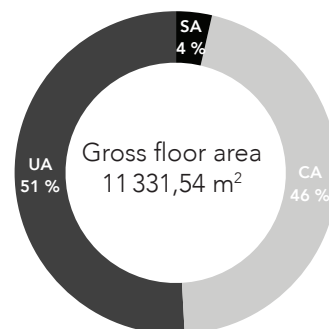
Structural area (SA)
406 m²



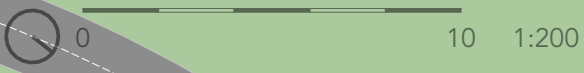
Circulation floor area (CA)
5163,34 m²



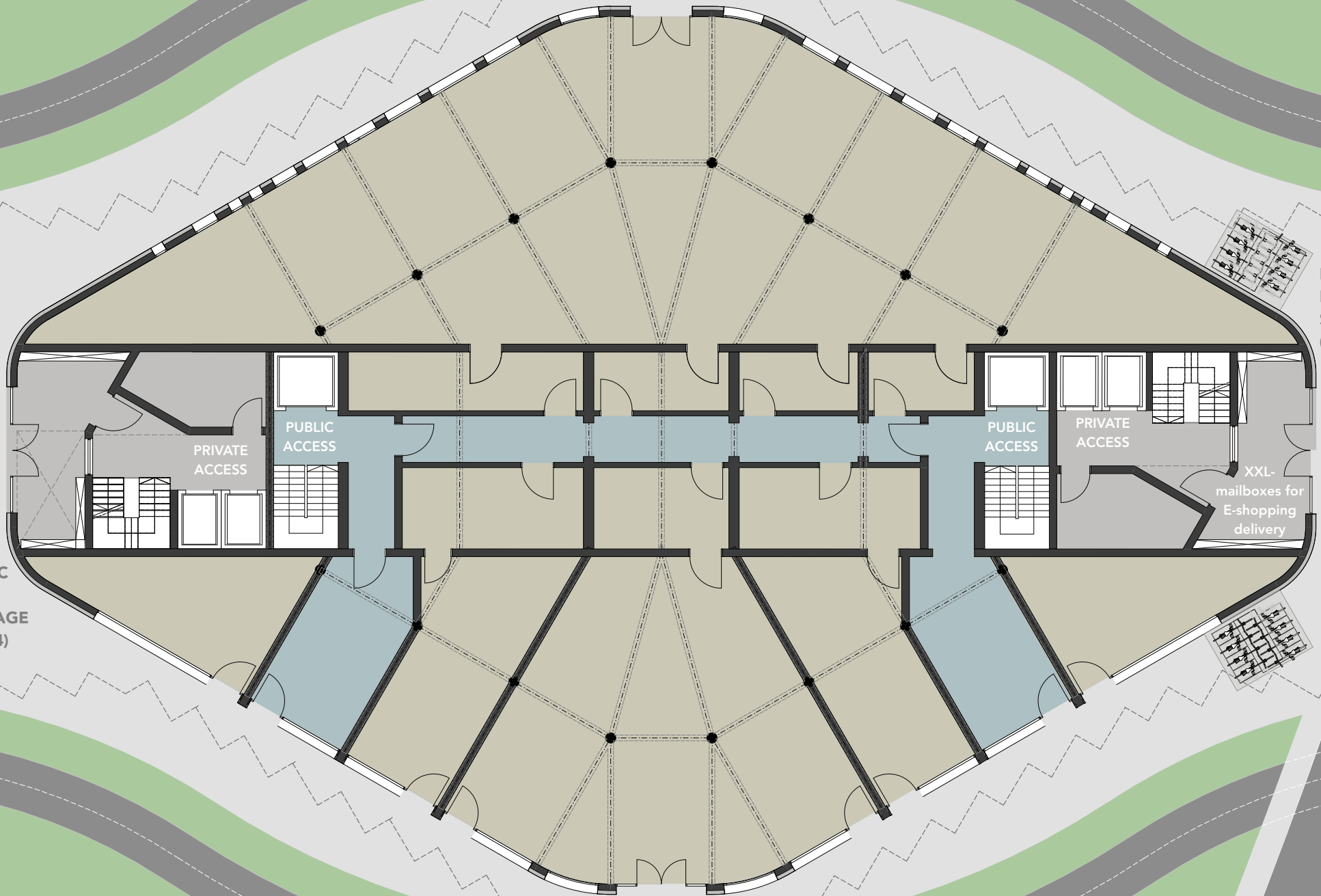
Usable floor area UA)
5762,2 m²



GROUND FLOOR

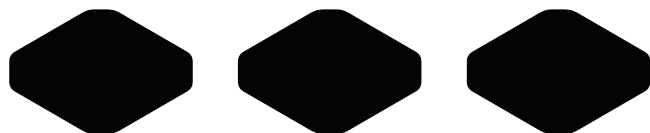


PUBLIC BIKE STORAGE (2x104)



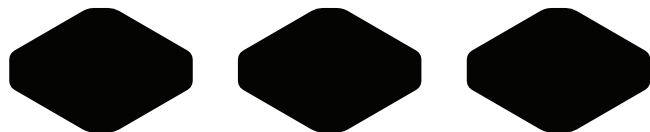
PUBLIC BIKE STORAGE (4x16)

XXL-mailboxes for E-shopping delivery

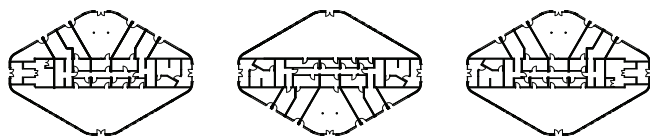


Total floor area (TFA)
3573,72 m²

Free area (FA)
0 m²



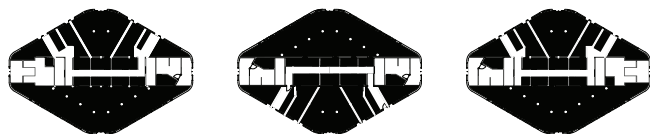
Gross floor area (GFA)
3573,72 m²



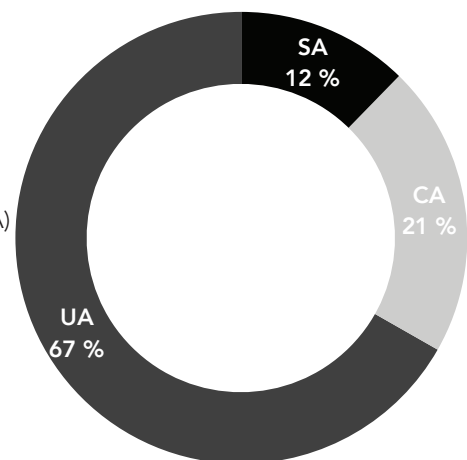
Structural area (SA)
439,3 m²



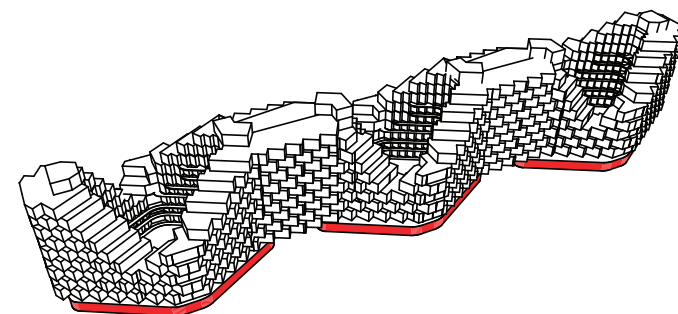
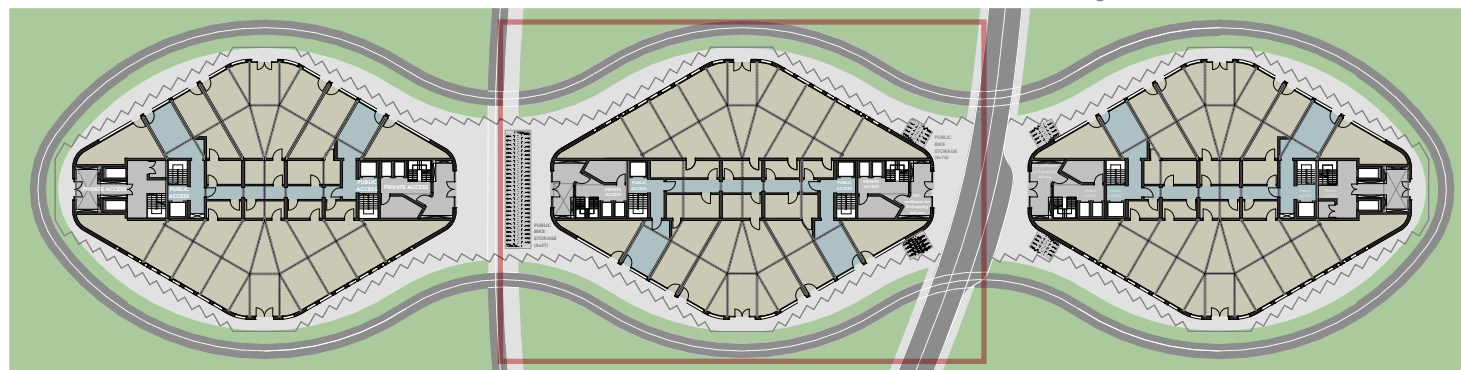
Circulation floor area (CA)
748,71 m²

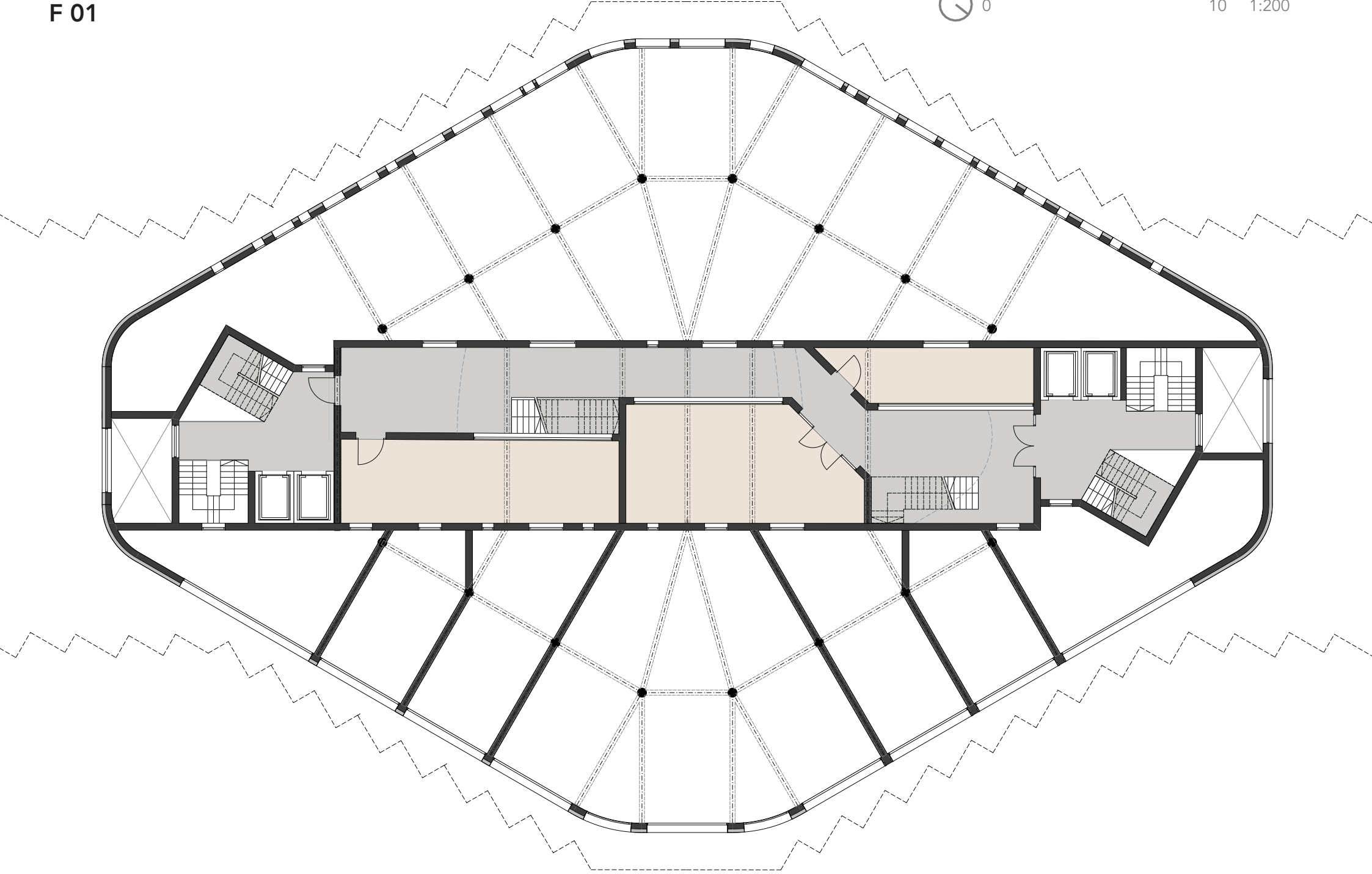


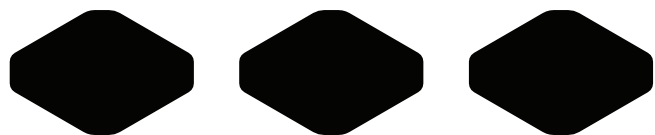
Usable floor area (UA)
2383,71 m²



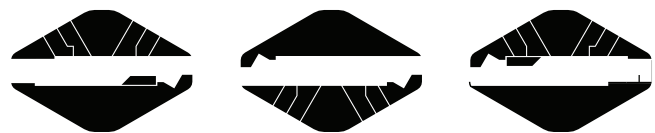
0 50







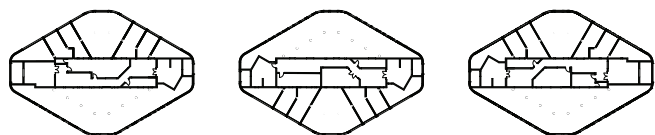
Total floor area (TFA)
3573,72 m²



Free area
0 - 2295 m²
(depending on the use of
split levels in the public
areas)



Gross floor area (GFA)
1278 - 3573,72 m²
(depending on the use of
split levels in the public
areas)



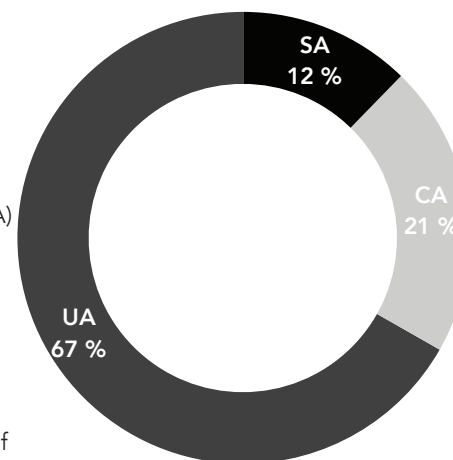
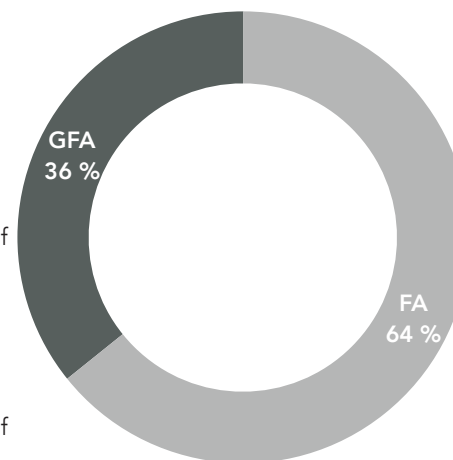
Structural area (SA)
384 m²



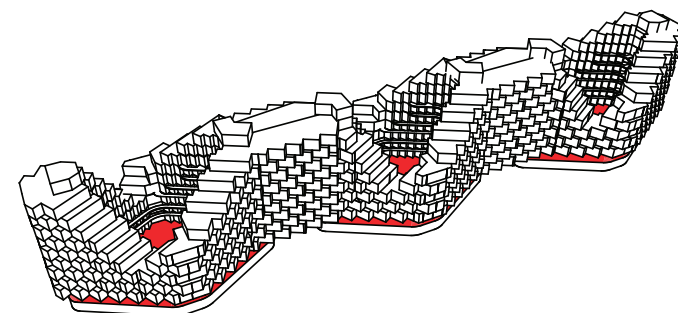
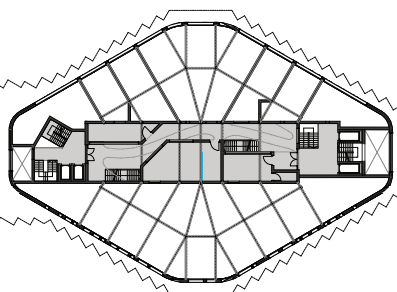
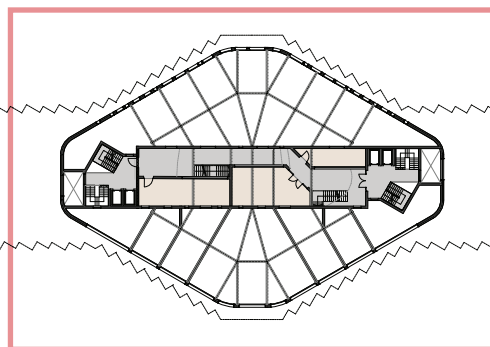
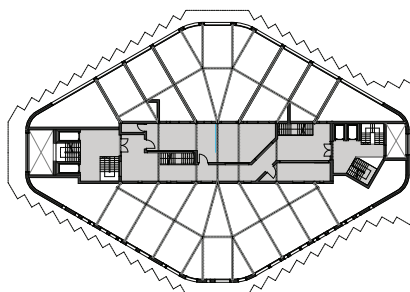
Circulation floor area (CA)
403,54 m²

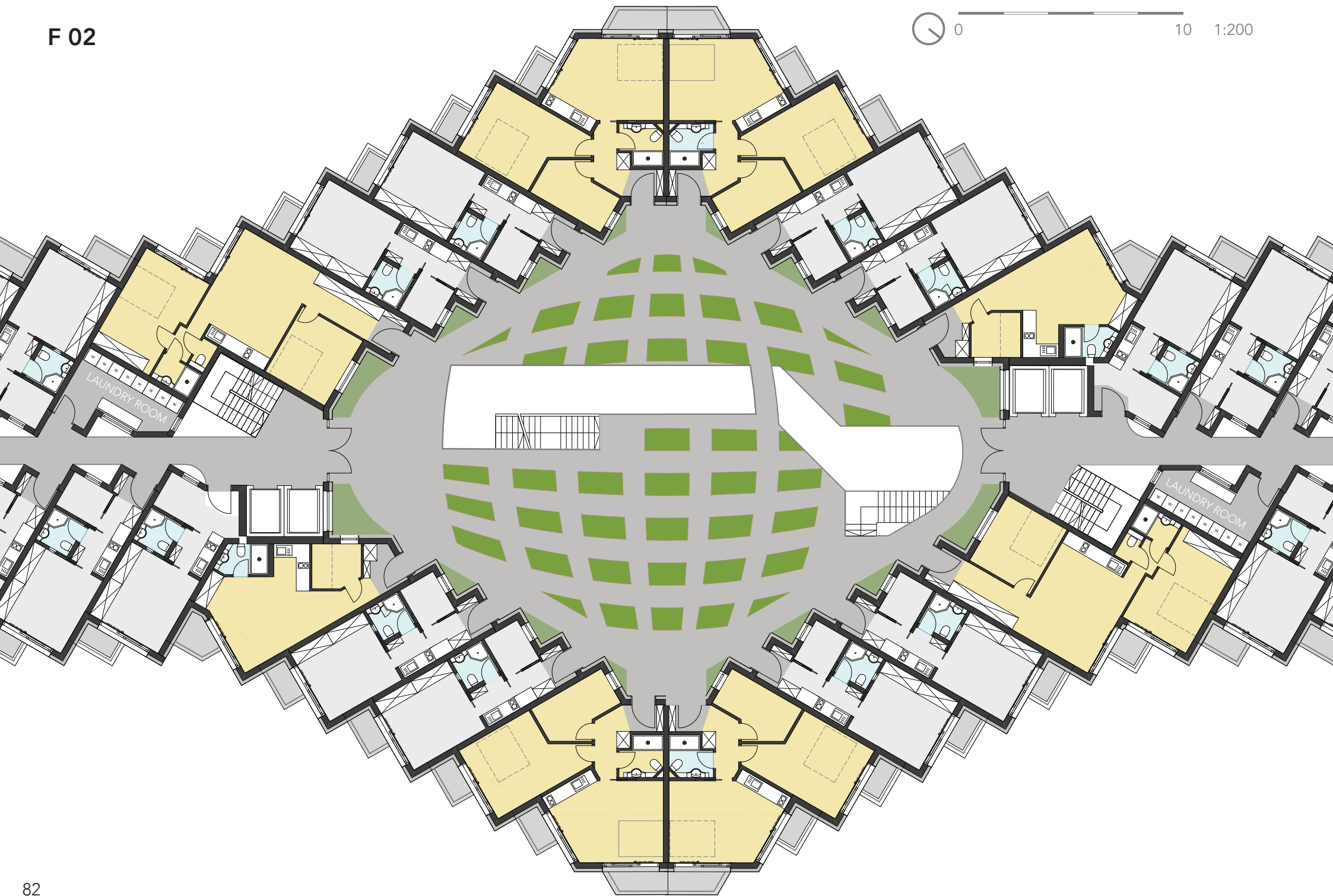


Usable floor area (UA)
409,46 - 2679,72 m²
(depending on the use of
the public areas)



0 50







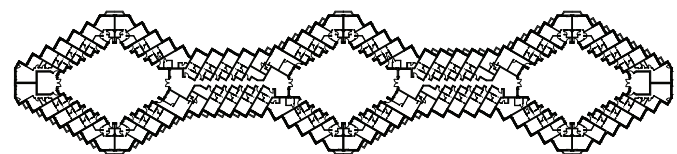
Total floor area (TFA)
4672,76 m²



Free area (FA)
228,18 m²
(*value can vary with the
design of each patio)



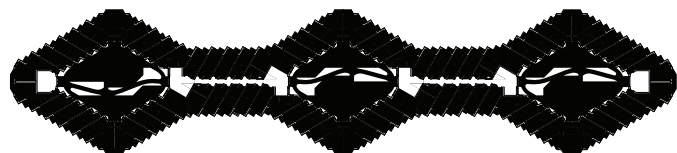
Gross floor area (GFA)
4444,48 m²



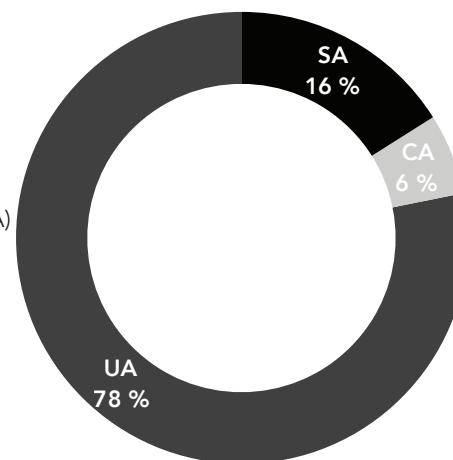
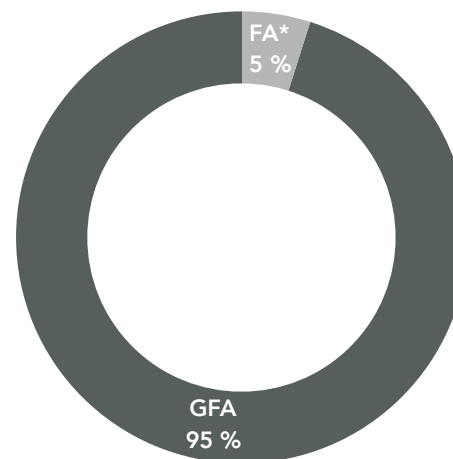
Structural area (SA)
712,65 m²



Circulation floor area (CA)
257,58 m²



Usable floor area
3474,35 m²

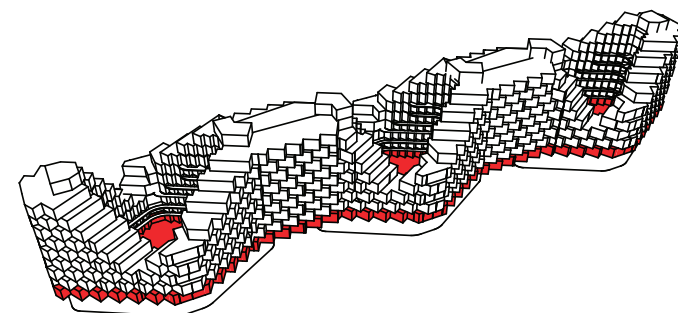
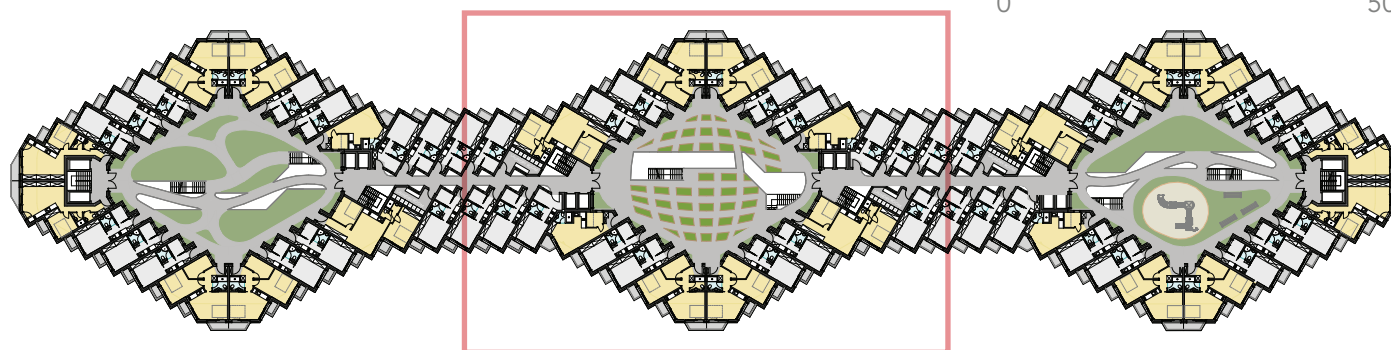


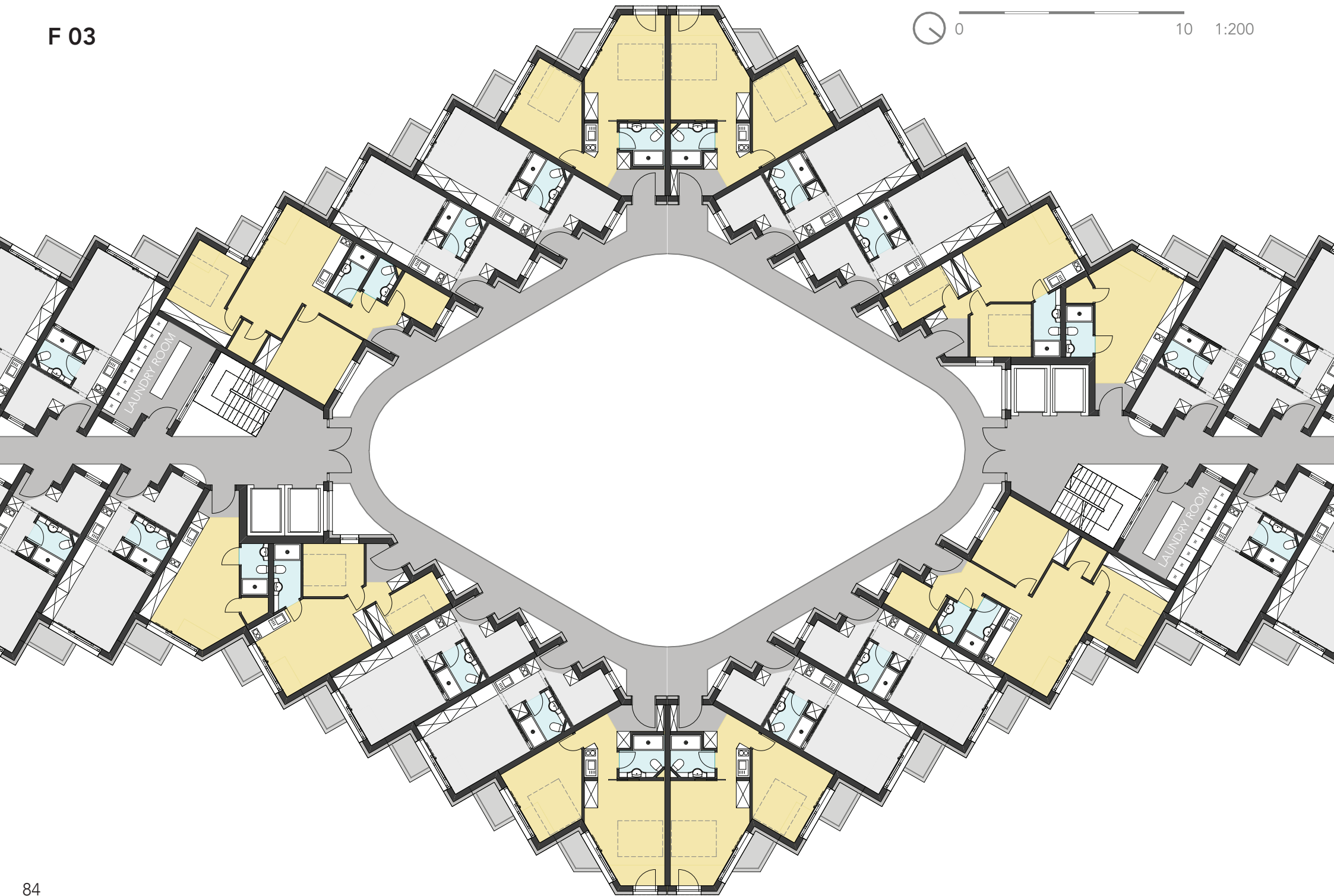
44x 1,5 - room apartments
27 m²

24x 1 - 3 - room apartments
32-50m²

3x Patios
360 m²

0 50



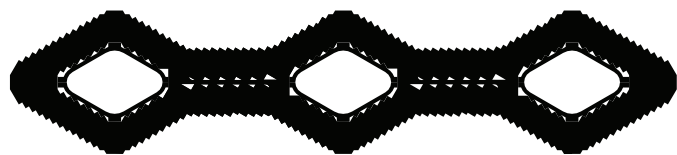




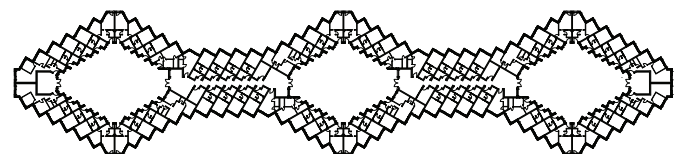
Total floor area (TFA)
4672,76 m²



Free area (FA)
933,3 m²



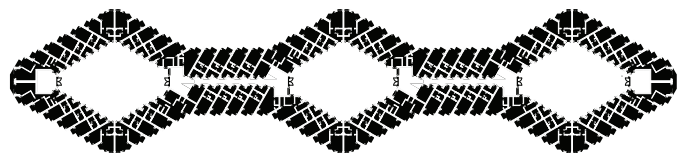
Gross floor area (GFA)
3679,46 m²



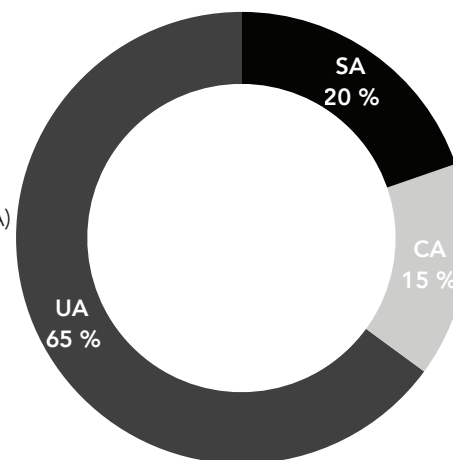
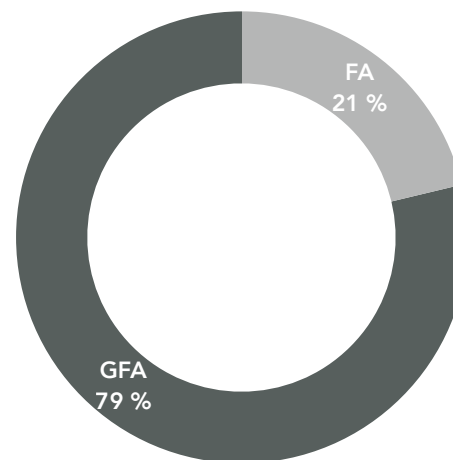
Structural area (SA)
724,73 m²



Circulation floor area (CA)
565,82 m²

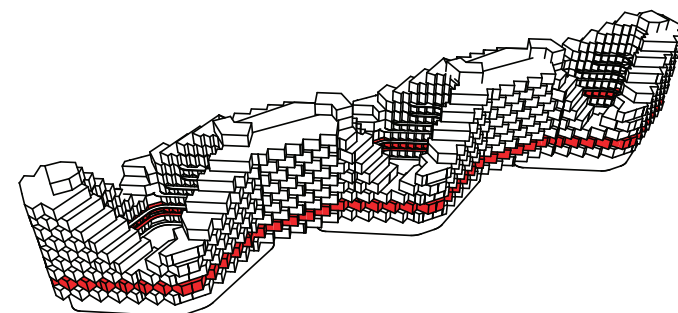
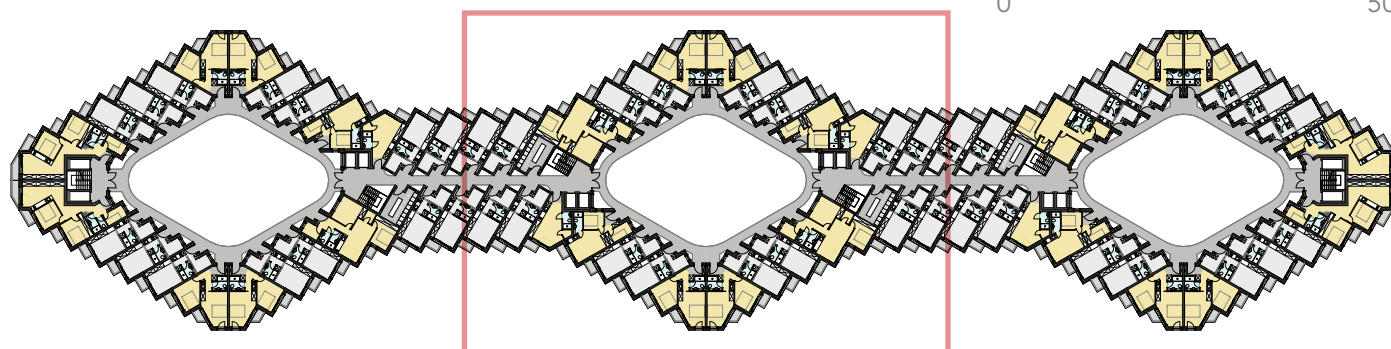


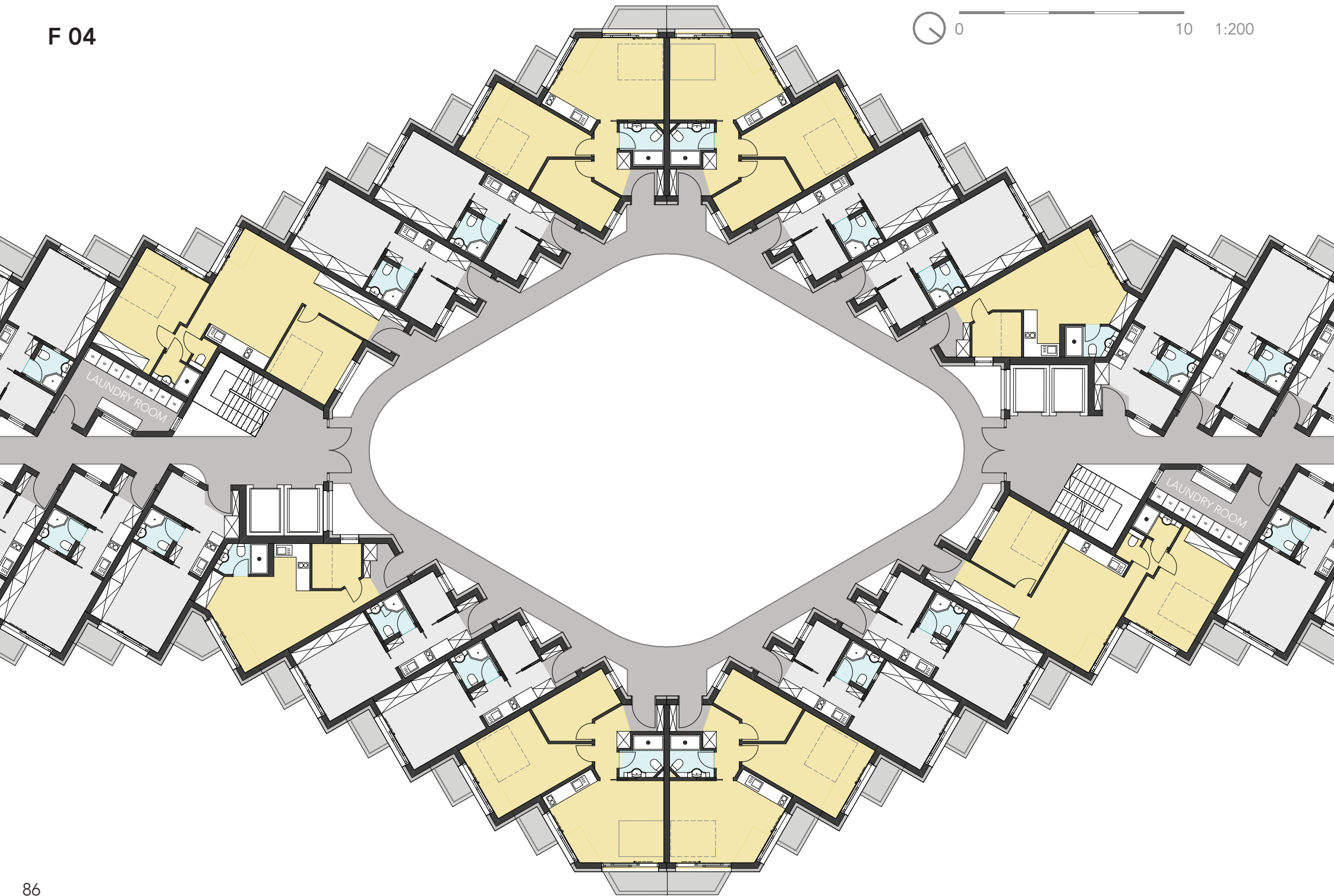
Usable floor area (UA)
2388,91 m²



- 44x 1,5 - room apartments
27 m²
- 24x 1 - 3 - room apartments
32-50m²

0 50



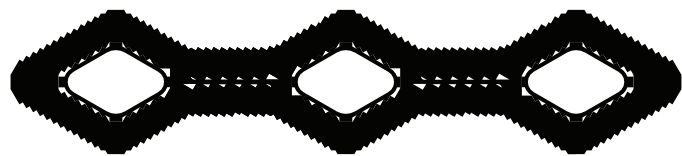




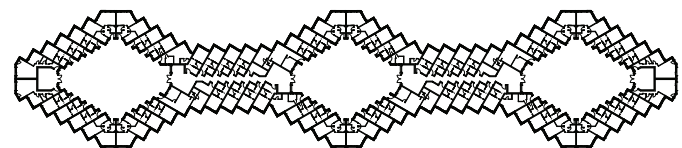
Total floor area (TFA)
4672,76 m²



Free area (FA)
933,3 m²



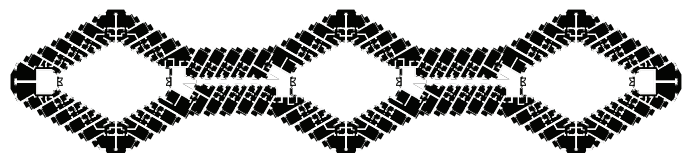
Gross floor area (GFA)
3679,46 m²



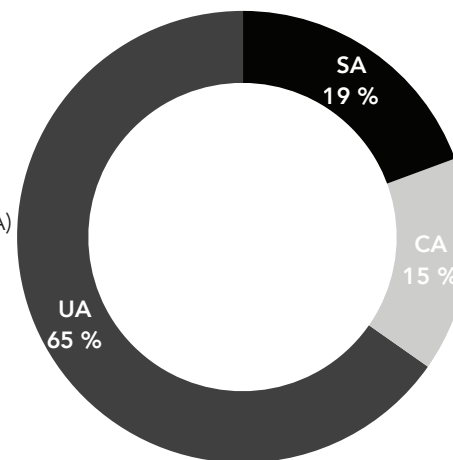
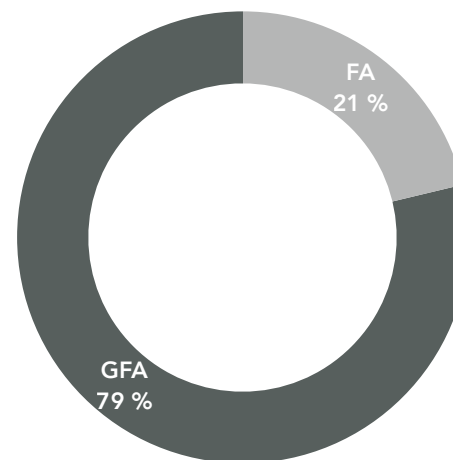
Structural area (SA)
712,65 m²



Circulation floor area (CA)
565,82 m²



Usable floor area (UA)
2400,91 m²

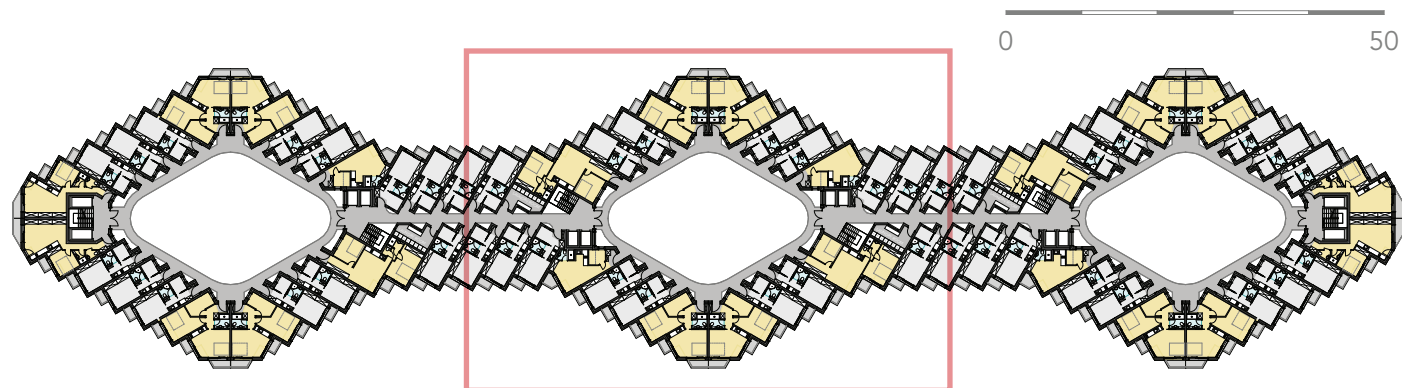


44x

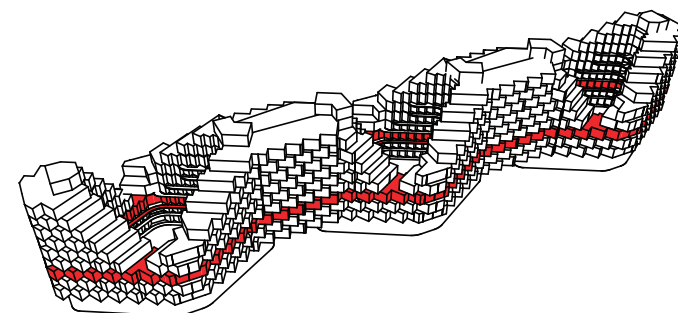
1,5 - room apartments
27 m²

24x

1 - 3 - room apartments
32-50m²



0 50







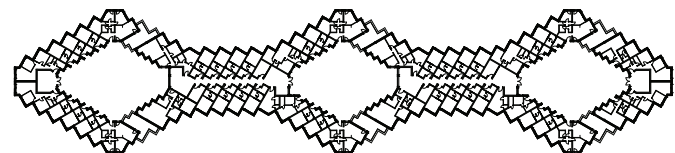
Total floor area (TFA)
4672,76 m²



Free area (FA)
1174,64 m²



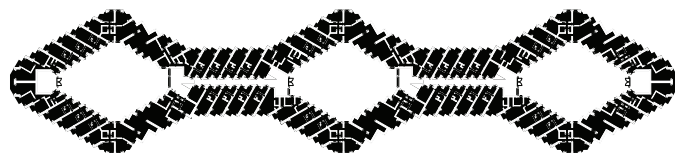
Gross floor area (GFA)
3498,09 m²



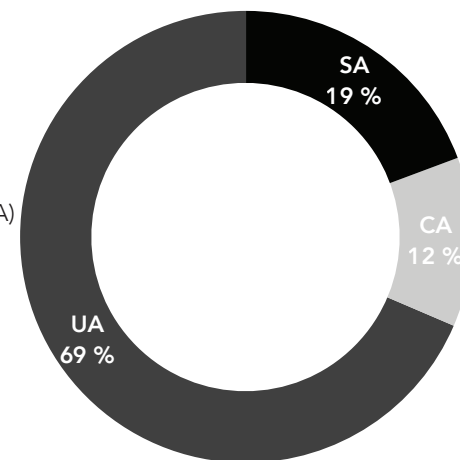
Structural area (SA)
675,63 m²



Circulation floor area (CA)
424,09 m²



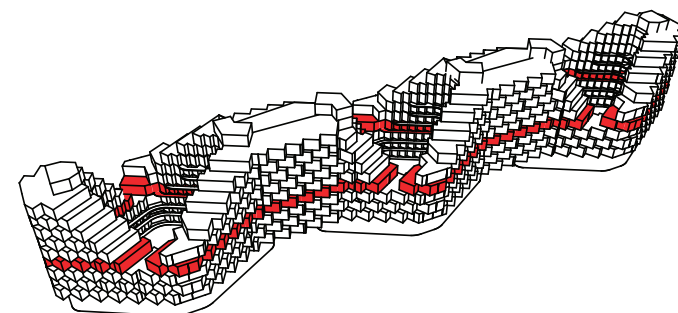
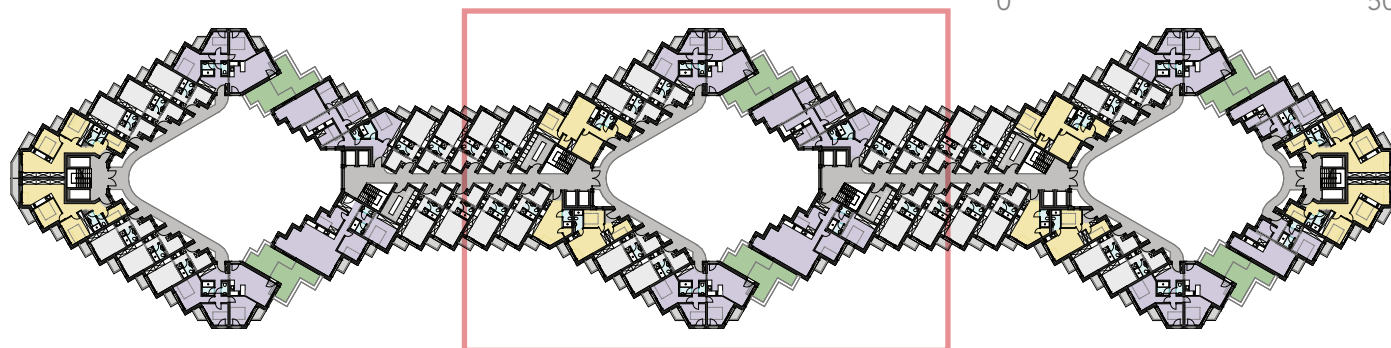
Usable floor area (UA)
2389,37 m²



- 30x** 1,5 - room apartments
27 m²
- 8x** 1 - 3 - room apartments
32 - 50m²
- 12x** 2 - 3 - room apartments (+garden)
70 - 90 m²

- 12x** gardens
16 -20 m²

0 50



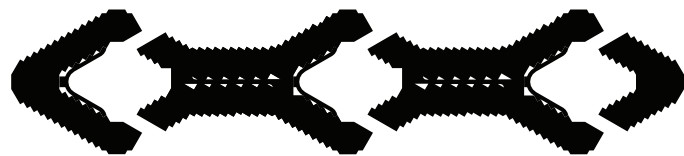




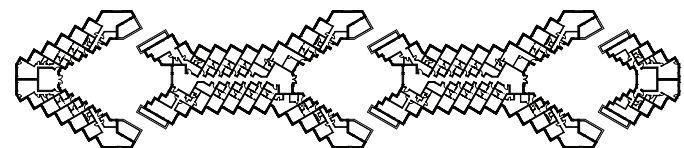
Total floor area (TFA)
4672,76 m²



Free area (FA)
1429,42 m²



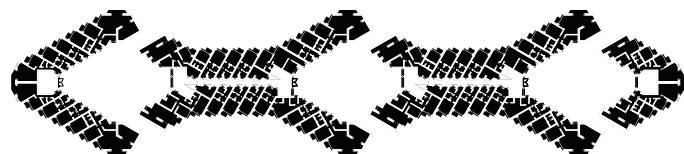
Gross floor area (GFA)
3243,34 m²



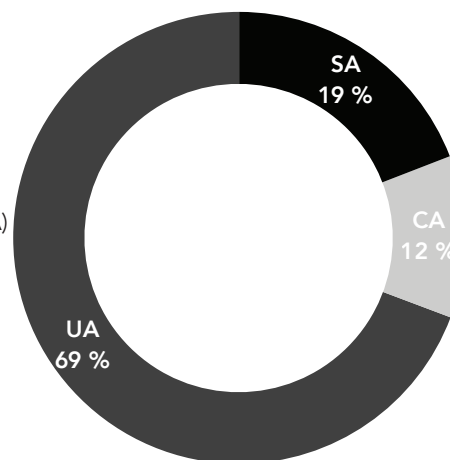
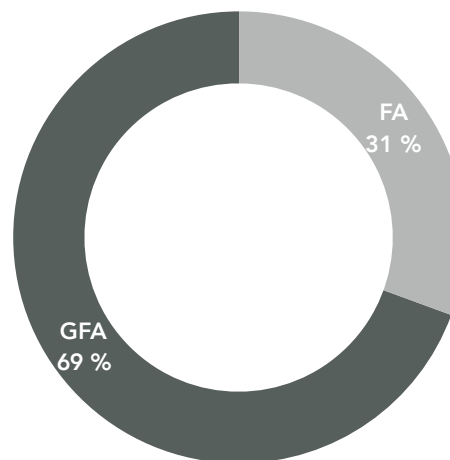
Structural area (SA)
620,1 m²



Circulation floor area (CA)
376,56 m²

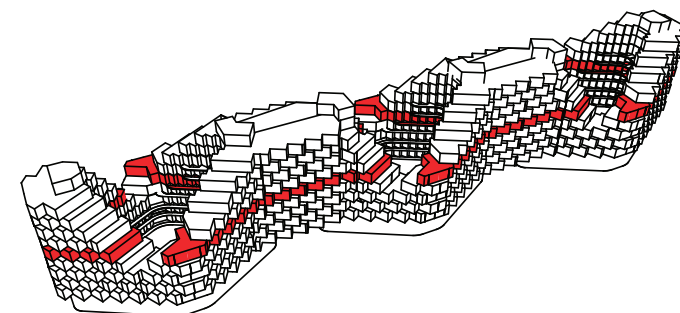


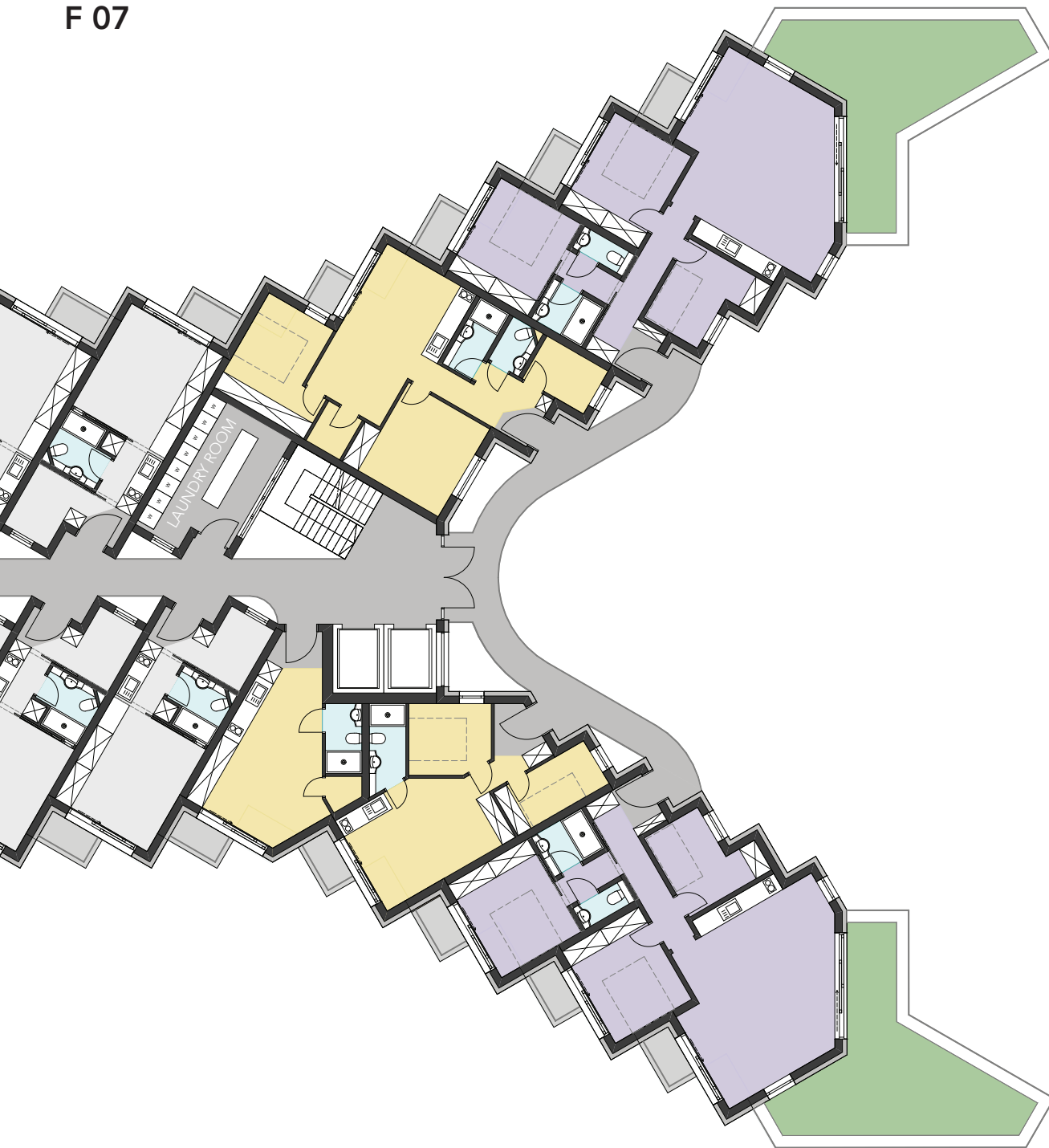
Usable floor area (UA)
2246,68 m²



- 20x** 1,5 - room apartments
27 m²
- 8x** 1 - 3 - room apartments
32 - 50m²
- 6x** 2 - 3 - room apartments (+garden)
70 - 90 m²
- 12x** gardens
15 - 20 m²

0 50



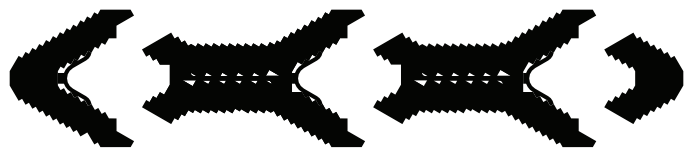




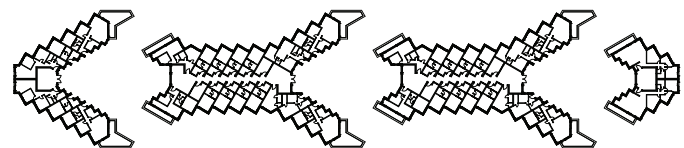
Total floor area (TFA)
4672,76 m²



Free area (FA)
1743,91 m²



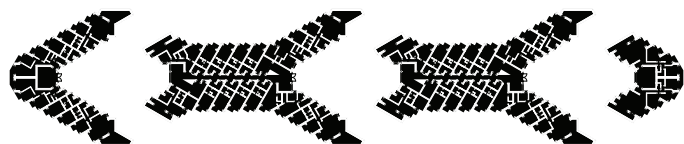
Gross floor area (GFA)
2928,85 m²



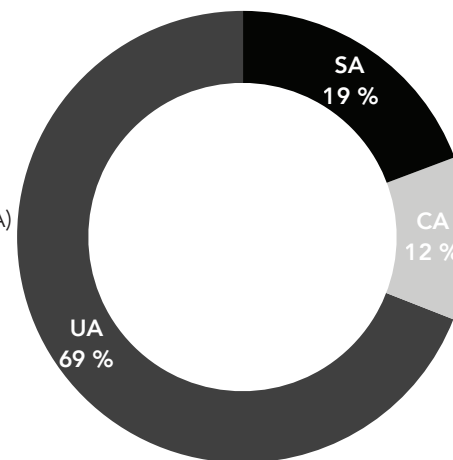
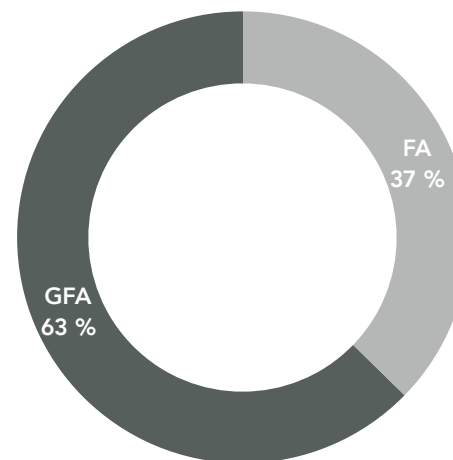
Structural area (SA)
564,57 m²



Circulation floor area (CA)
341,92 m²



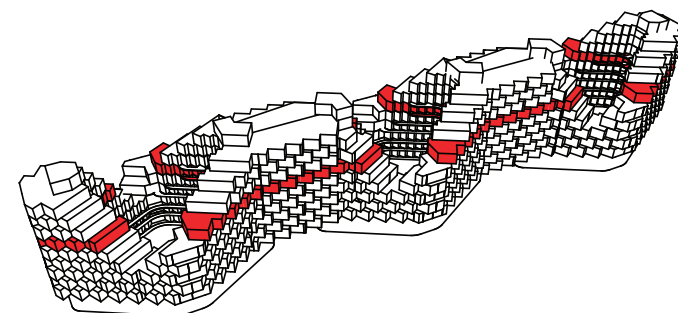
Usable floor area (UA)
2022,36 m²

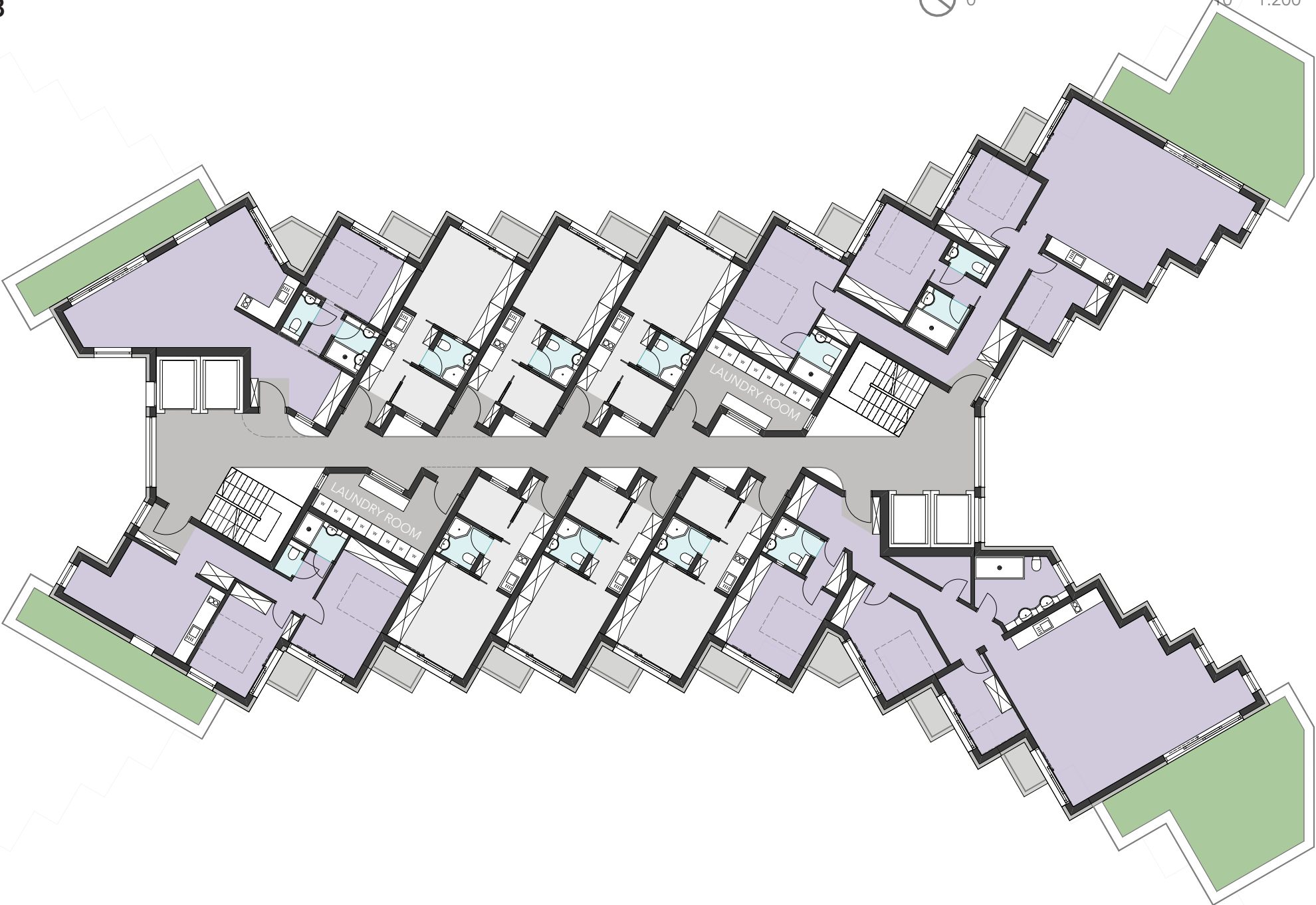


- 18x** 1,5 - room apartments
27 m²
- 6x** 1 - 3 - room apartments
32 - 50m²
- 12x** 2 - 3 - room apartments (+garden)
70 - 90 m²

- 12x** gardens
15 - 20 m²

0 50



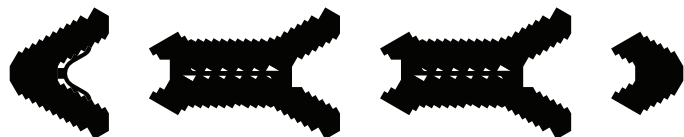




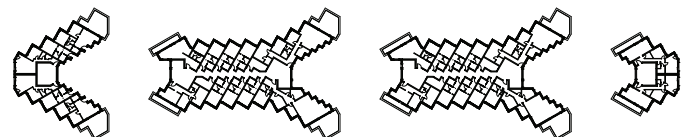
Total floor area (TFA)
4672,76 m²



Free area (FA)
2131,99 m²



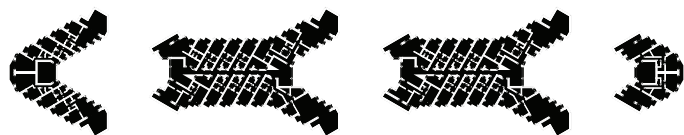
Gross floor area (GFA)
2540,77 m²



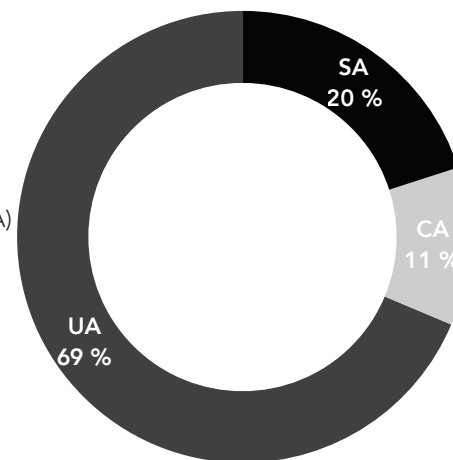
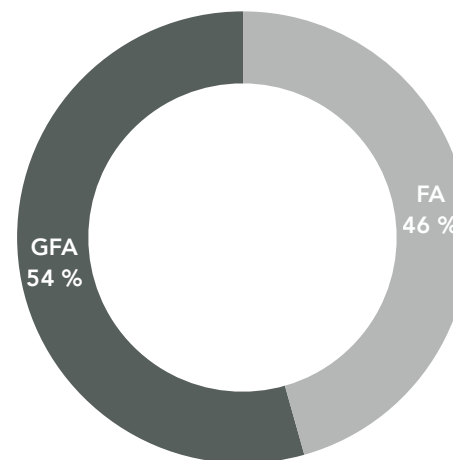
Structural area (SA)
509,04 m²



Circulation floor area (CA)
287,38 m²

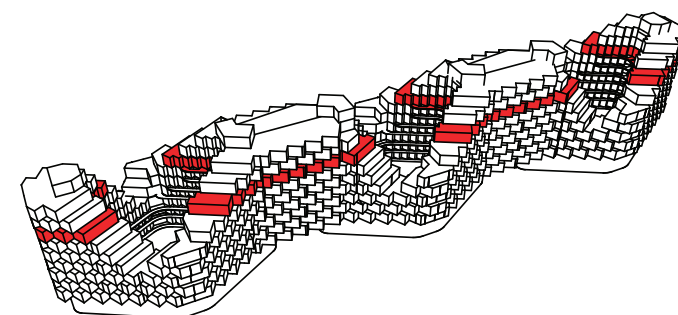
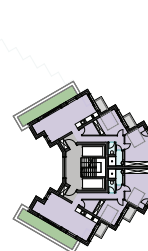
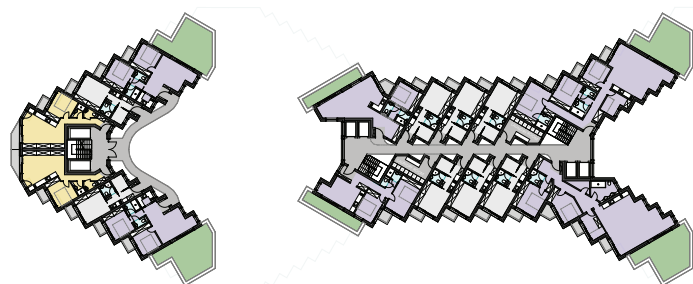


Usable floor area (UA)
1744,35 m²



- 14x** 1,5 - room apartments
27 m²
- 12x** 2 - 3 - room apartments (+garden)
70 - 90 m²
- 12x** gardens
15 - 34 m²

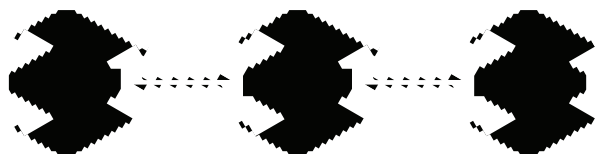
0 50



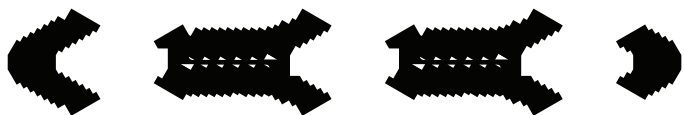




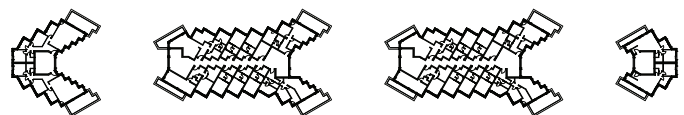
Total floor area (TFA)
4672,76 m²



Free area (FA)
2535,39 m²



Gross floor area (GFA)
2137,37 m²



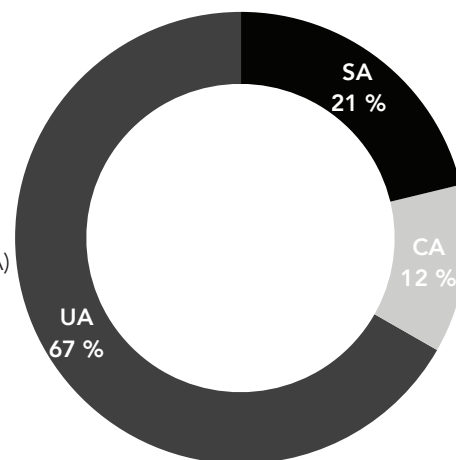
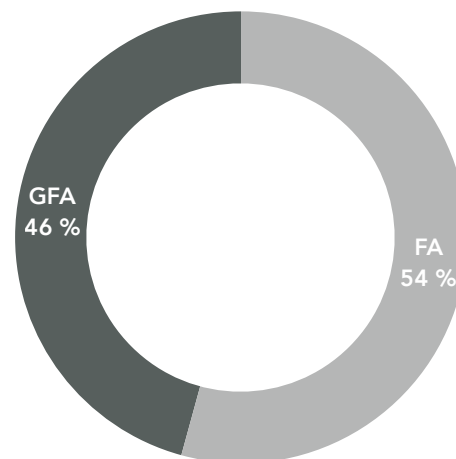
Structural area (SA)
453,51 m²



Circulation floor area (CA)
257,58 m²



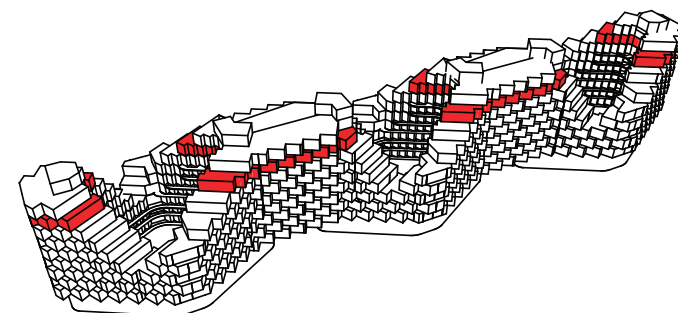
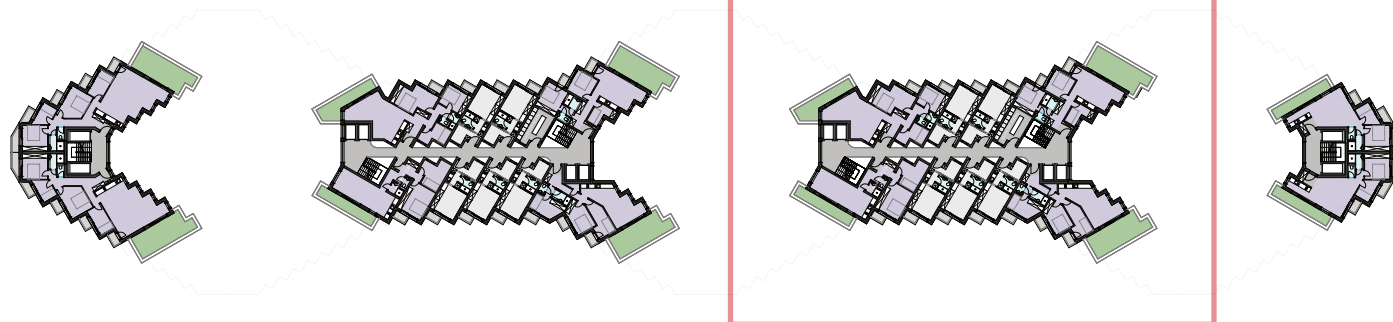
Usable floor area
1225,91 m²

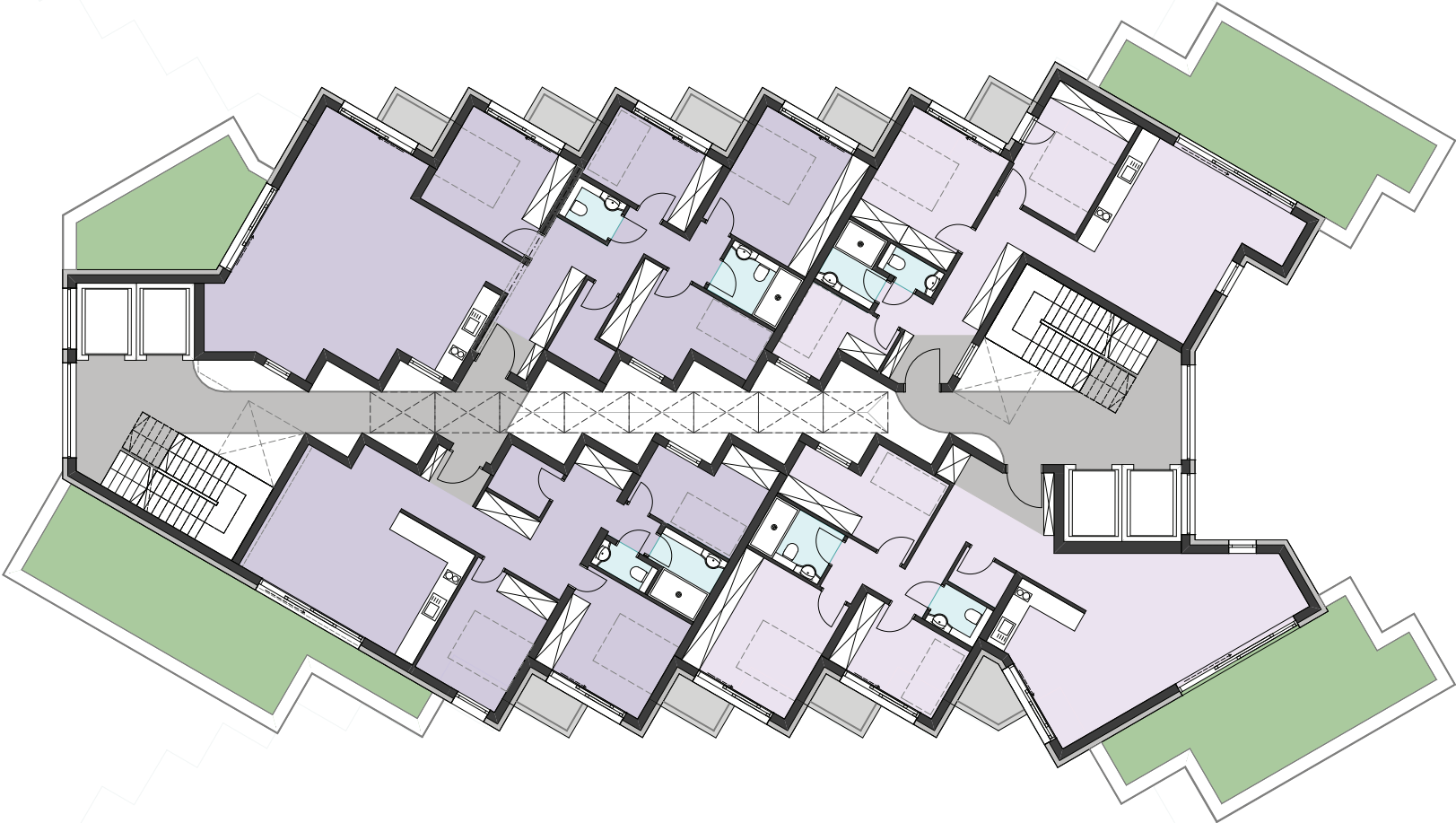


- 10x 1,5 - room apartments
27 m²
- 12x 2 - 3 - room apartments (+garden)
70 - 90 m²

- 12x gardens
15 - 30 m²

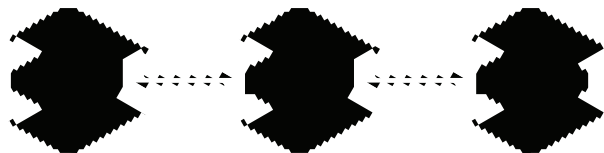
0 50



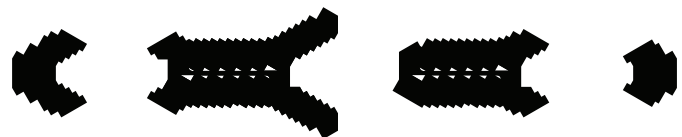




Total floor area (TFA)
4672,76 m²



Free area (FA)
2912,19 m²



Gross floor area (GFA)
1760,57 m²



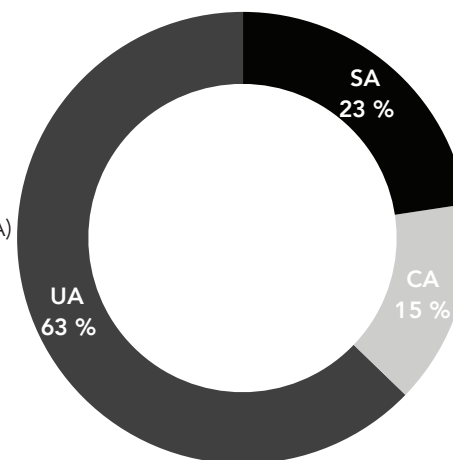
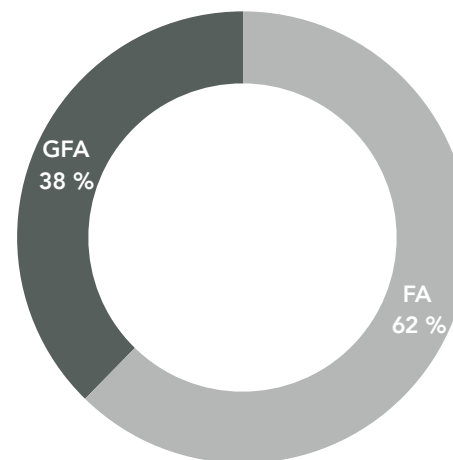
Structural area (SA)
397,58 m²



Circulation floor area (CA)
257,58 m²



Usable floor area (UA)
1105,01 m²



4x

3 - 4 - room apartments (+garden)
84 - 120 m²

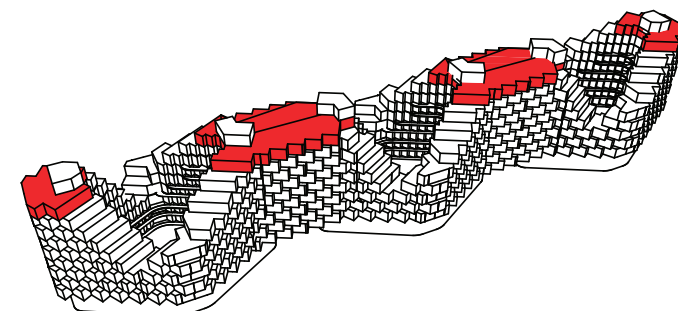
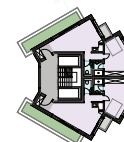
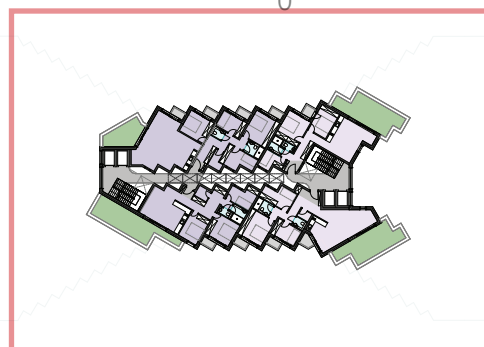
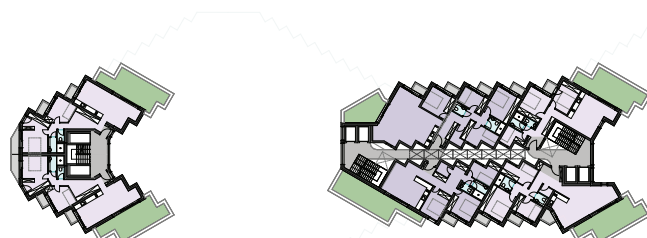
8x

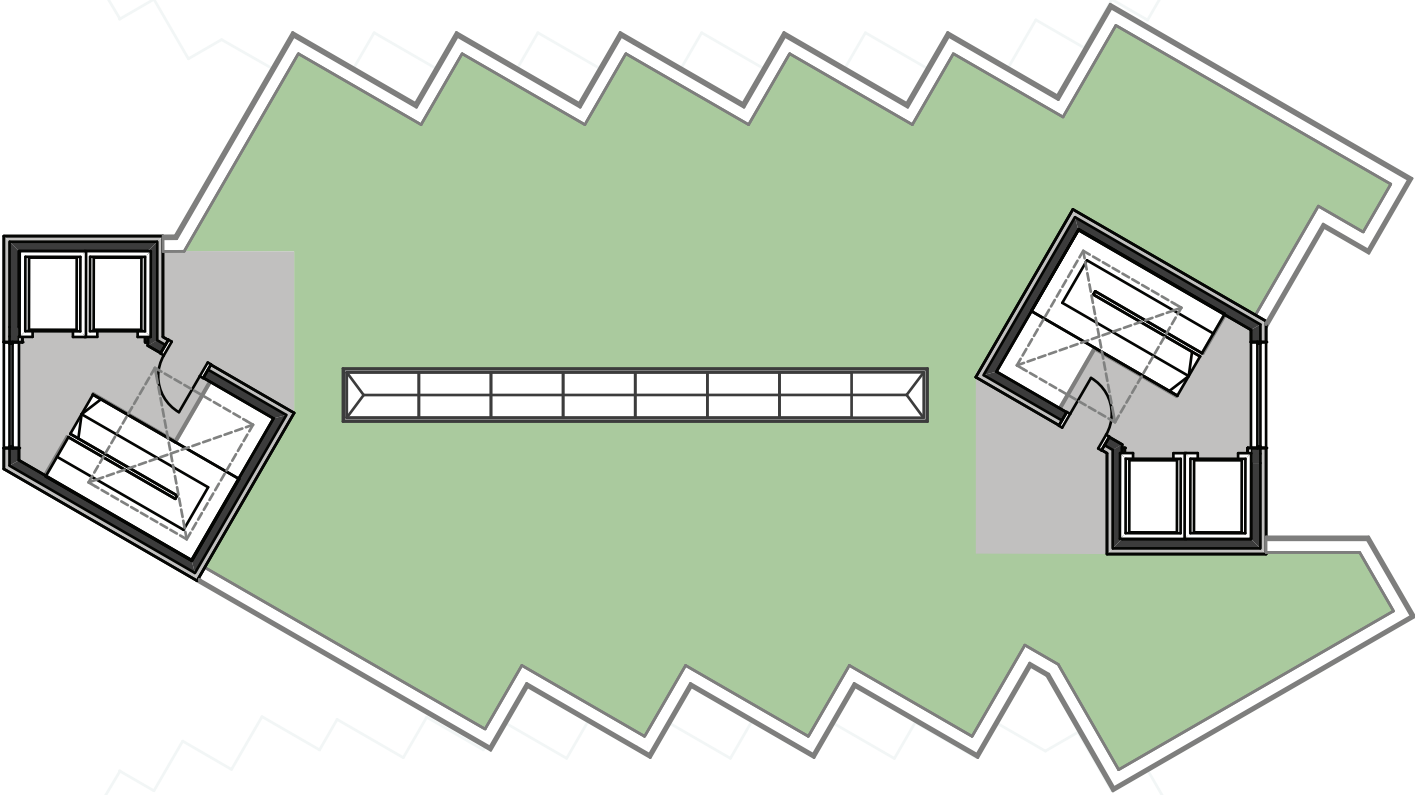
3 - room apartments (+garden)
70 - 90 m²

12x

gardens
18 - 34 m²

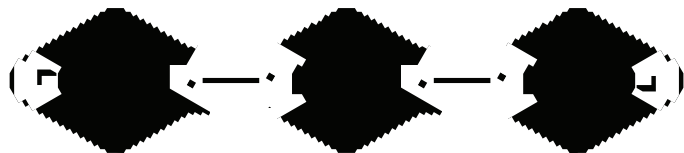
0 50



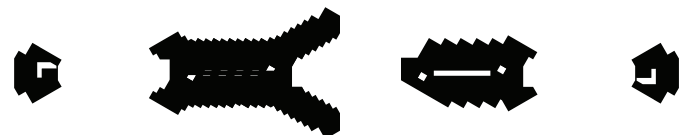




Total floor area (TFA)
4672,76 m²



Free area (FA)
3378,06 m²



Gross floor area (GFA)
1294,7 m²



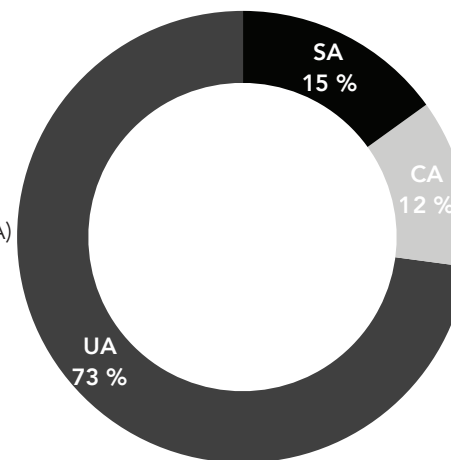
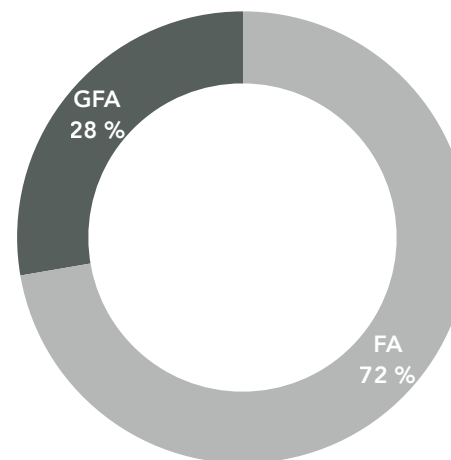
Structural area (SA)
194,92 m²



Circulation floor area (CA)
156,24 m²



Usable floor area (UA)
943,54 m²



On the rooftops inhabitants can enjoy a view over the entire pixelated landscape. As most Koreans do not like to sunbathe, these rooftops are rather made for cultivating hydroponic plants. They are lightweight as they do not require any soil, only fertilized water, that runs through a pumping system, which is powered by solar panels. The installation requires less space than traditional plant growth because of its vertical structure. This system not only allows hydroponic plants to grow twice as fast, they can also be taken care of by the inhabitants themselves. As a part of the elder population used to work on the fields at their younger age, their knowledge can be of good use here. The harvested plants can either be used for private consumption within the building chain or sold outside at the local market in one of the shared public spaces.

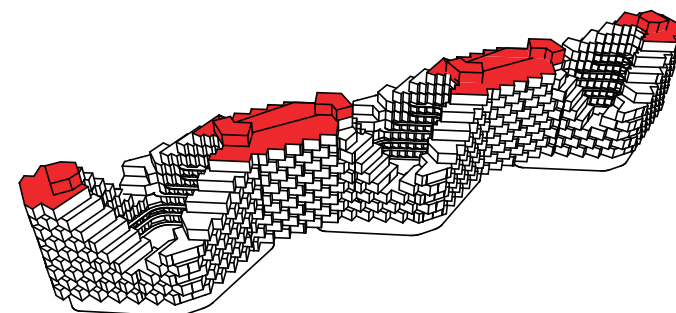
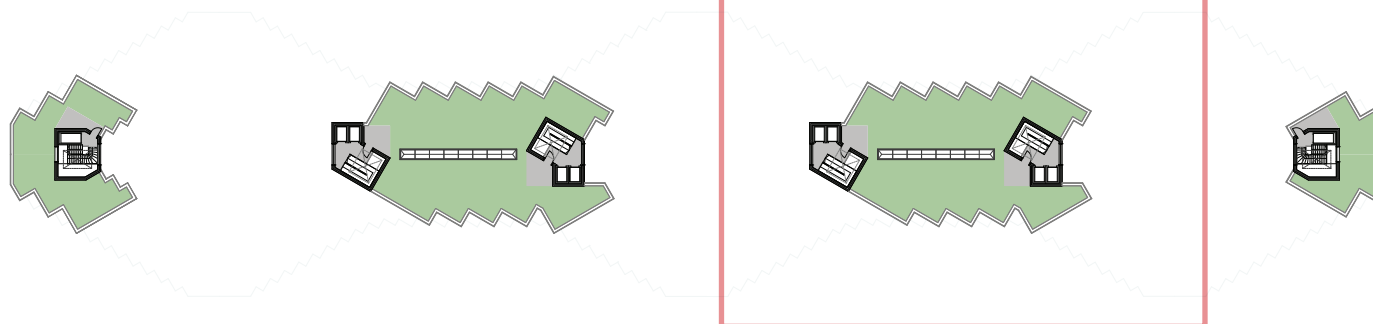
Being able to cultivate your own food close to your home adds up to the idea of being an autonomous Microcity.

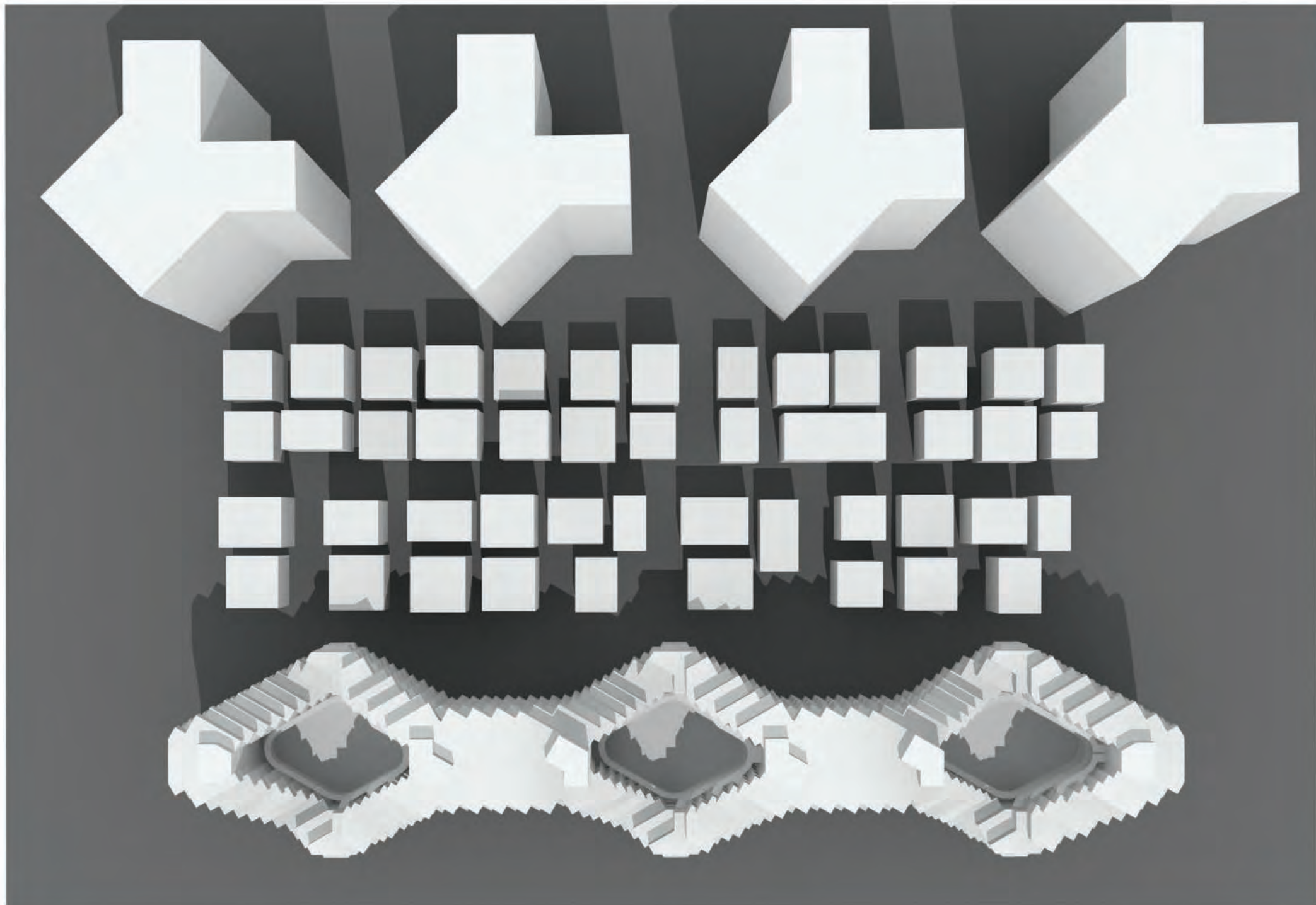
This may not replace further transportations of foods entirely, but it can potentially raise awareness about consuming local and seasonal vegetables and fruit to

4x

Accessible rooftops for hydroponic gardening 194 // 490 / 490 / 110m²

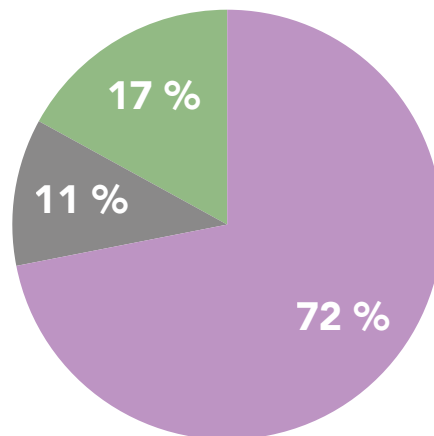
0 50





Distribution area

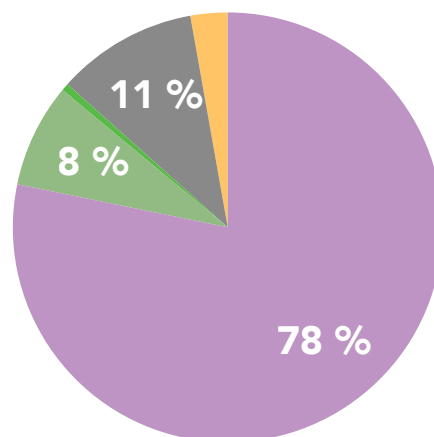
- living space
- streets + parking lots
- private green space
- patios
- rooftops
- parks and pedestrian zones
- public infrastructure



HIGH-RISE

260 000 p/km²

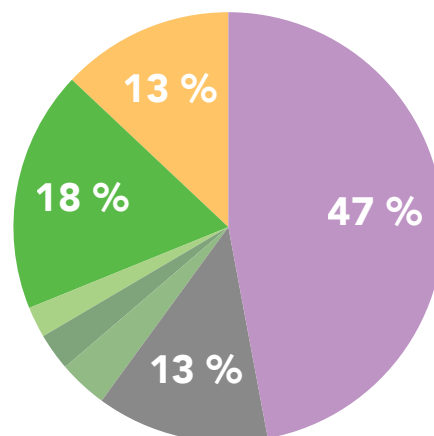
(approximate density)



LOW-RISE

57 000 p/km²

(approximate density)

PIXELATED
MICROCITY**350 000 p/km²**

(average density for the entire site)

5.9 Sections and elevations

0 10 1:200





0

25 1:500

+37.00
12 ROOF
+34.70
11 GREEN ROOF

+30.00

10 F

+27.00

9 F

+24.00

8 F

+21.00

7 F

+18.00

6 F

+15.00

5 F

+12.00

4 F

+9.00

3 F

+6.00

2 F

+3.00

1 F

+0.00

0 GROUND FLOOR

-3.00

-1 BF

-7.00

-2 BF

+37.00
12 ROOF
+34.70
11 GREEN ROOF

+30.00

10 F

+27.00

9 F

+24.00

8 F

+21.00

7 F

+18.00

6 F

+15.00

5 F

+12.00

4 F

+9.00

3 F

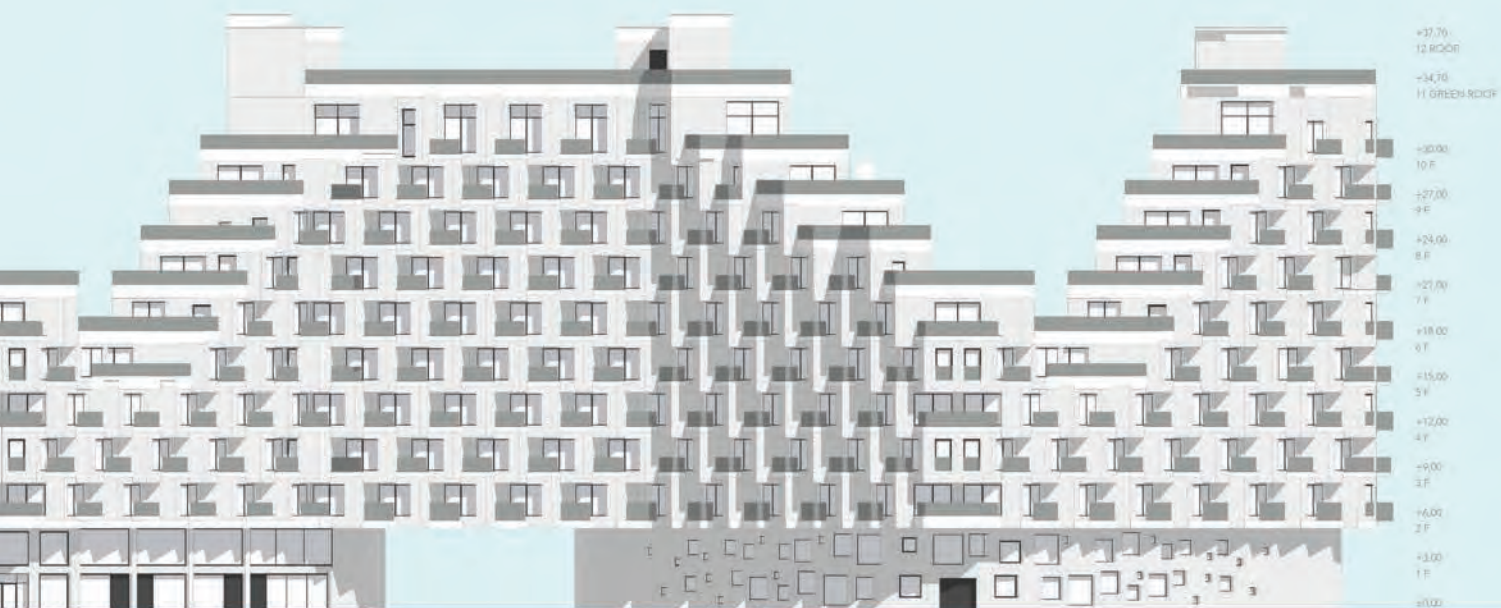
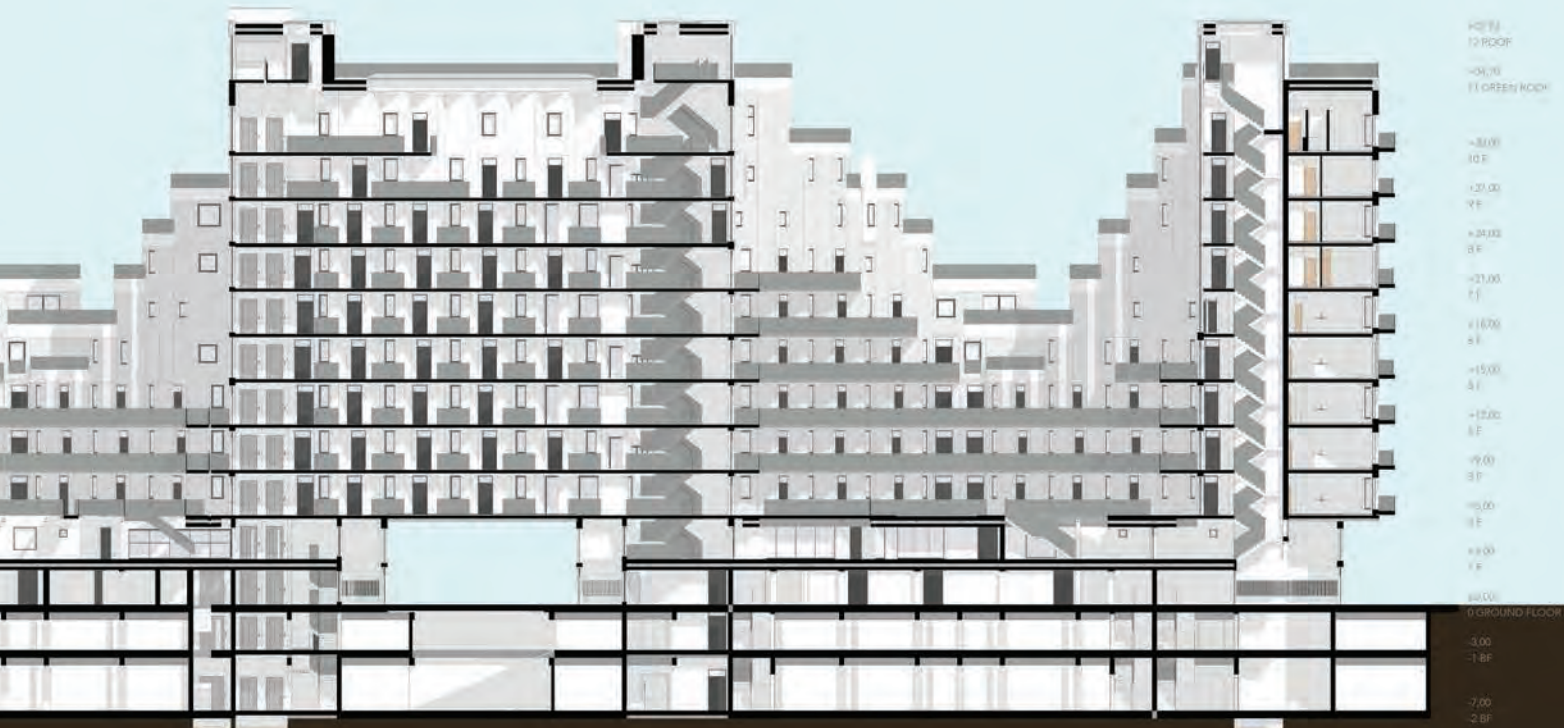
+6.00

2 F

+3.00

1 F

+0.00





06 INTERIOR DESIGN

6.1 One and a half room apartment

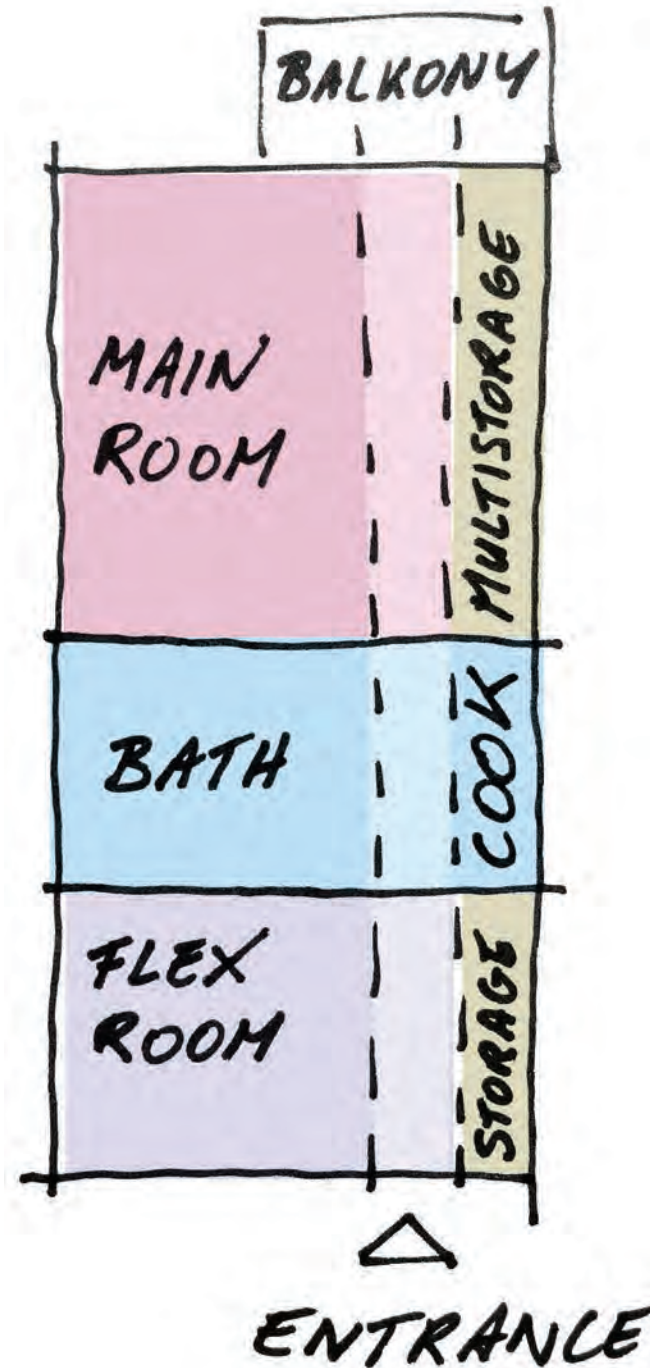
If we zoom into a single Pixel we see that it is actually subdivided into three sections.

Next to the entrance is a so-called flex-room, which is 3,4sqm. This room can be used as a separate office, a guest room or a children's room.

In the middle of the apartment is the sanitary section, marked in blue, which contains the bathing unit and a kitchen unit.

The biggest part of each flat is the flexible main room, which can be transformed into either a living-, dining-, or bedroom. This can be realized by convertible furniture. The sliding door towards the balcony is very generously planned regarding the overall size of the apartment.

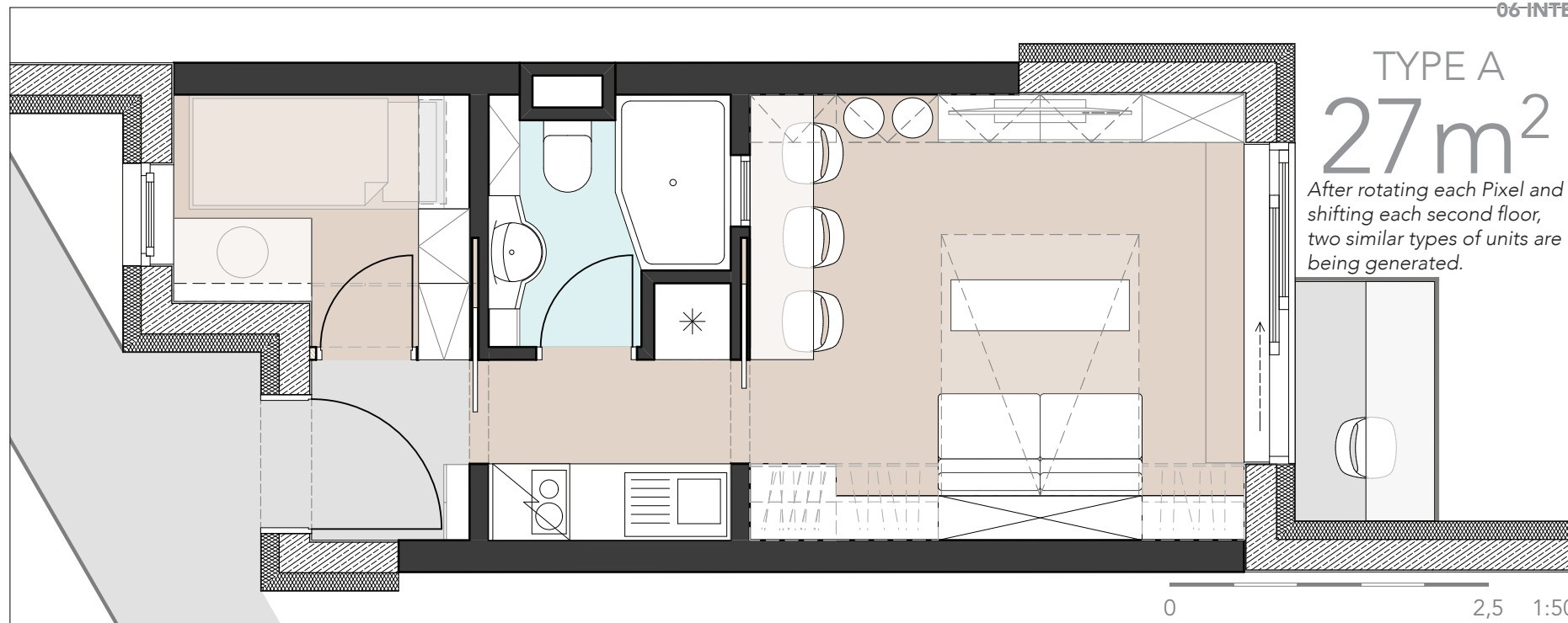
Despite being differently designed, these three sections have one thing in common: they all have plenty of built-in storage.



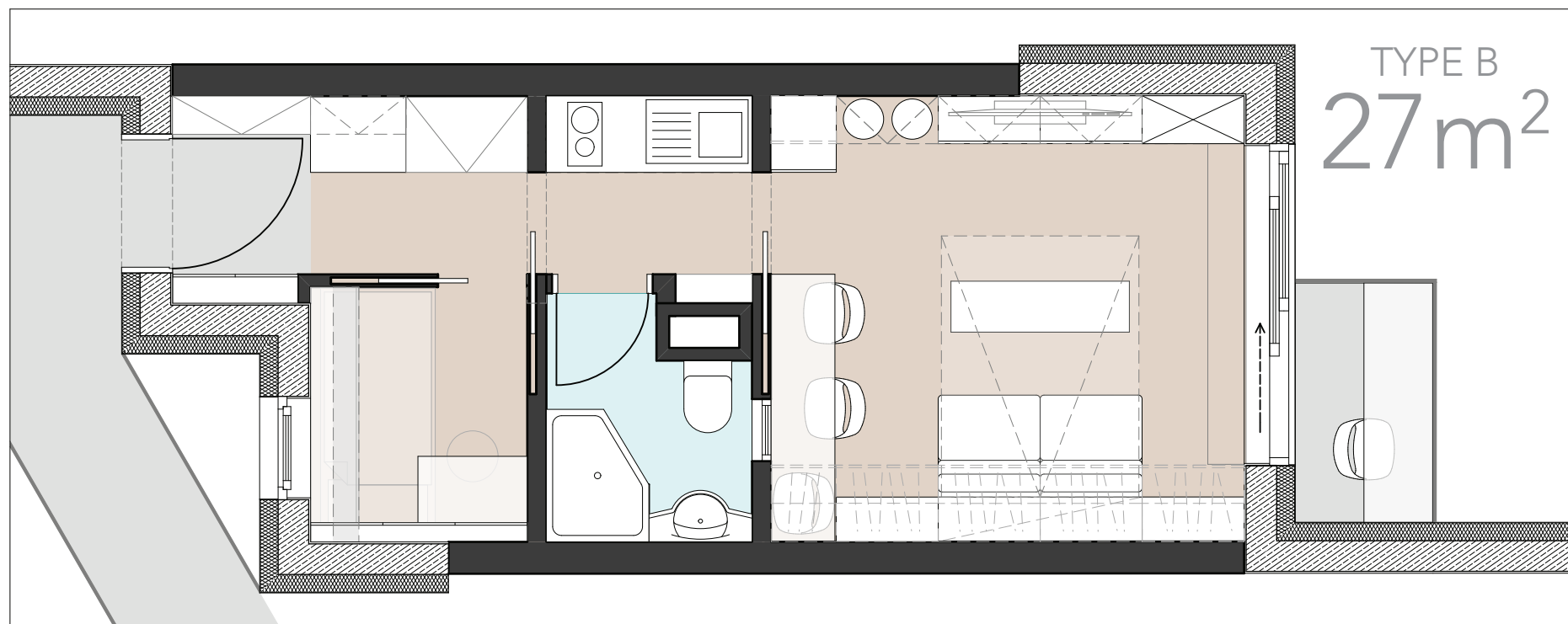
TYPE A

27m²

After rotating each Pixel and shifting each second floor, two similar types of units are being generated.



TYPE B

27m²

6.2 Entrance

As it can be seen on this picture, all flats offer a very clean and neat vestibule after entering. It contains built-in furnitures mainly for coats and shoes. The floors of both types are slightly lower than the rest of the apartment due to cultural habits of Korean households regarding hygienic reasons.



Entrance Type A



6.3 Connecting

All units of the building are designed to connect the outer space of the patio or hallway with the public space outside. Therefore these apartments contain a continuous corridor inside.

This does not only make the interior feel spacious, it also allows a guaranteed air circulation flow. This cross ventilation reduces the dependence on the AC, which is heavily used due to the humid summers in Seoul.

This continuity can be broken down simply by closing the double sliding glass doors, so that the two rooms get a certain independence and each inhabitant of the main- or flex room privacy.



Entrance Type B



6.4 Kitchen

As it can be clearly seen, every appliance of the kitchen is built-in, so that even the apartments are generally small in size, the inhabitants can benefit from a fully equipped kitchen.

Above the kitchen unit is a 60cm deep storage space. The same storage is being found on the opposite side inside the bathroom unit above the door.



Kitchen Type A



6.5 Main room

Again, continuity is shown on the picture on the right. Whilst the entrance door can be seen, a glimpse of the bathroom is visible through an opal glass window. This not only adds some sort of transparency to the room, it also lets natural light shine into the bathroom without having its own window.

All tables can be moved freely inside the room, which allows the residents to invite people for dinner.

As the dining table is of the same height as the kitchen counter, it also doubles as additional cooking space in the living room.



Main room Type A



6.6 Small...

The flex room in these apartments can be either used as additional working space, as guest room, nursery or children's room, etc.

Storage space dominates in these type of room, but as it is flush with the frame of the sliding door, it seemingly disappears and becomes part of the wall.

On the left side of the picture to the right is a magnetic wall which hides a murphy bed.



Flex room Type A



6.7 ...but functional

A deep storage space of 80cm can be found in both types of the flex room, located here on the upper-left part of the picture to the right. As this compartment is located above the bathroom unit, it is spacious enough to put e.g. seasonal clothes, bed linen or a foldable futon in.



Flex room Type B



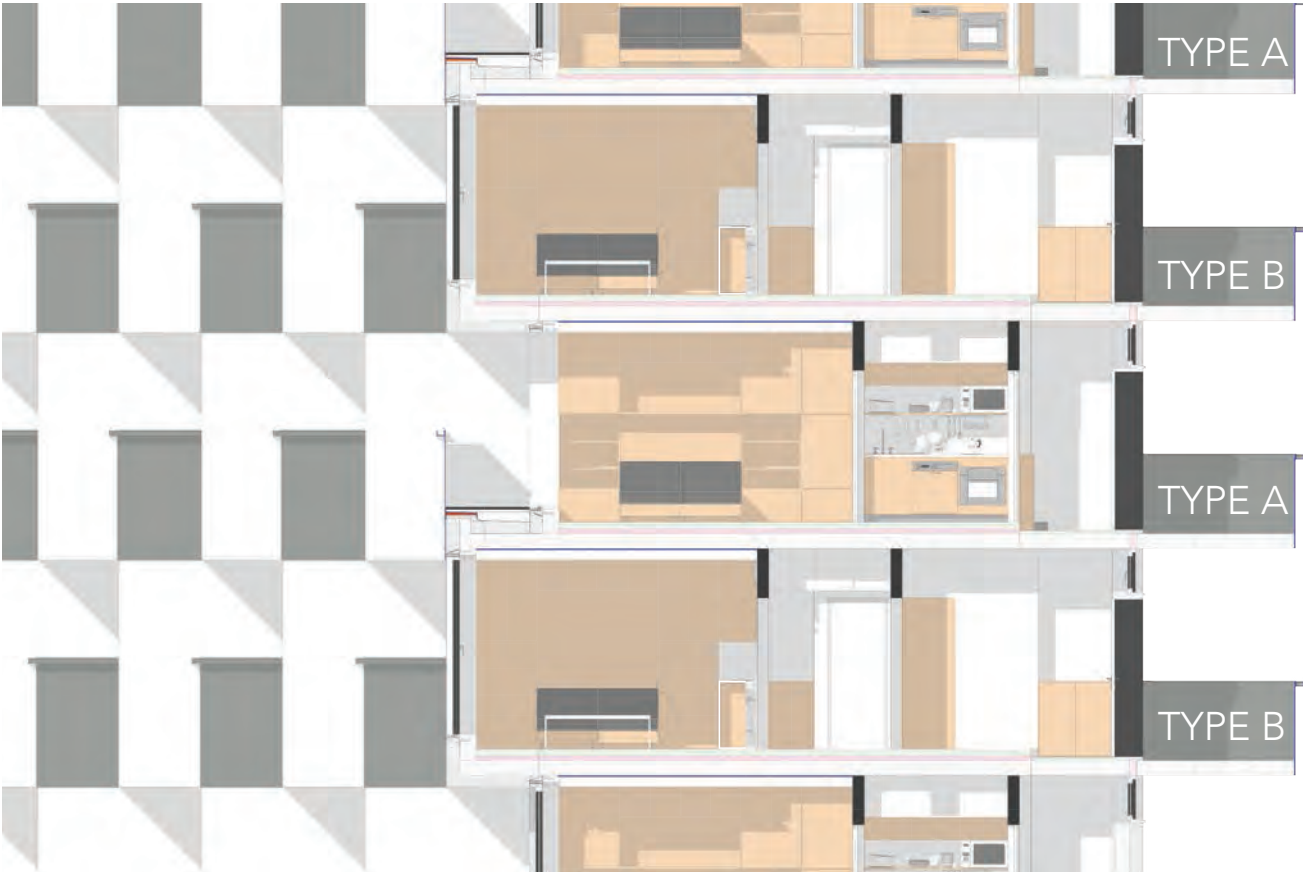




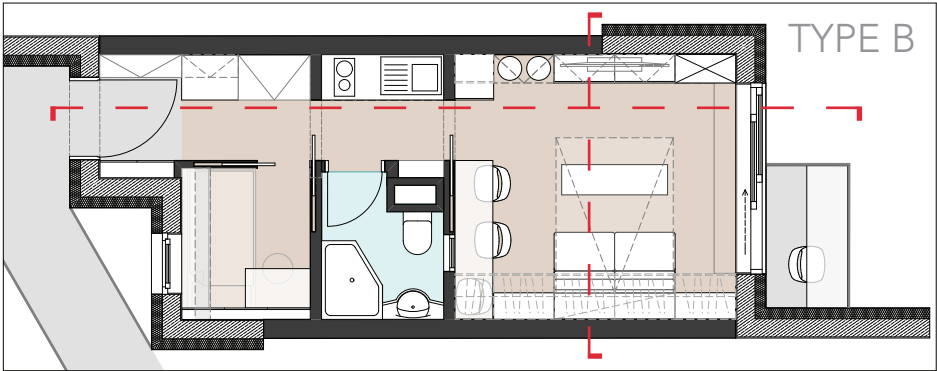
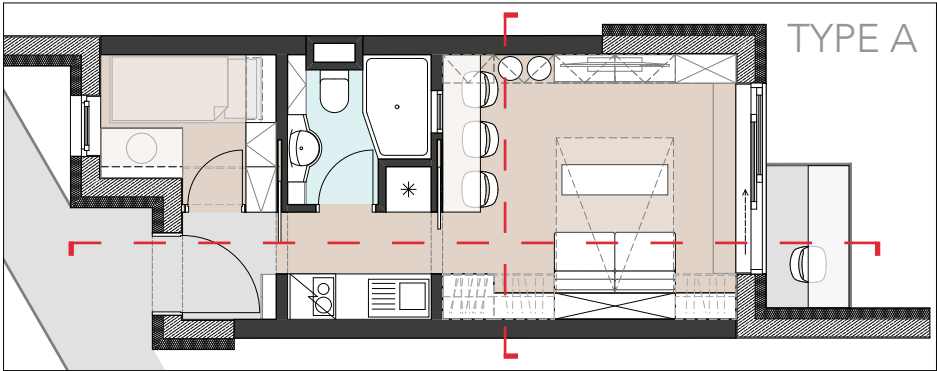
07 DETAILS

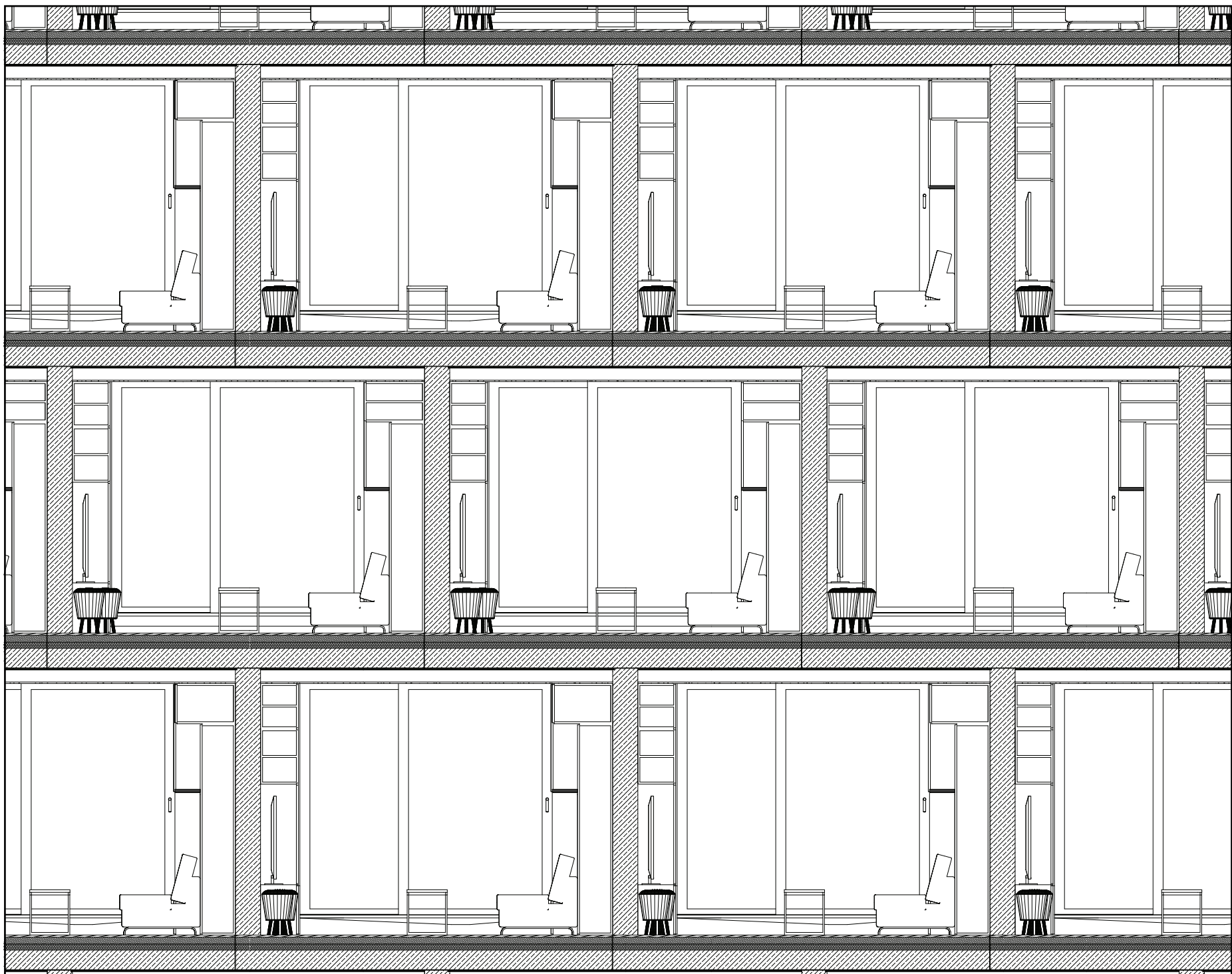
7.1 Displaced...

Both sections illustrate how the units are staggered on top of each other. This is due to the shifting that has occurred on every second floor for generating the balconies.



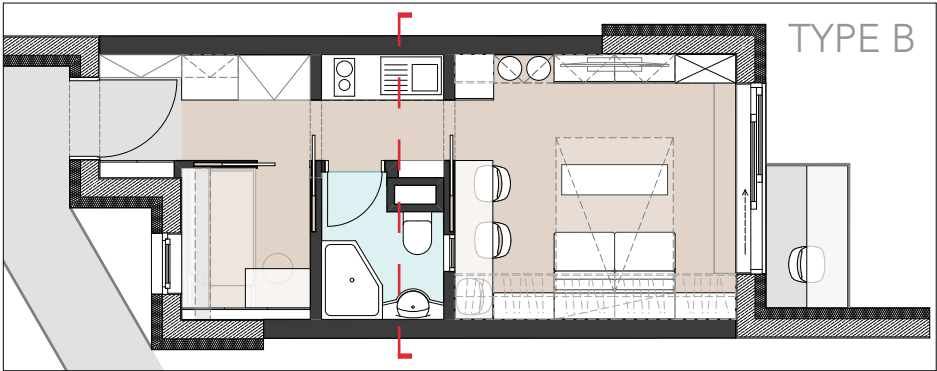
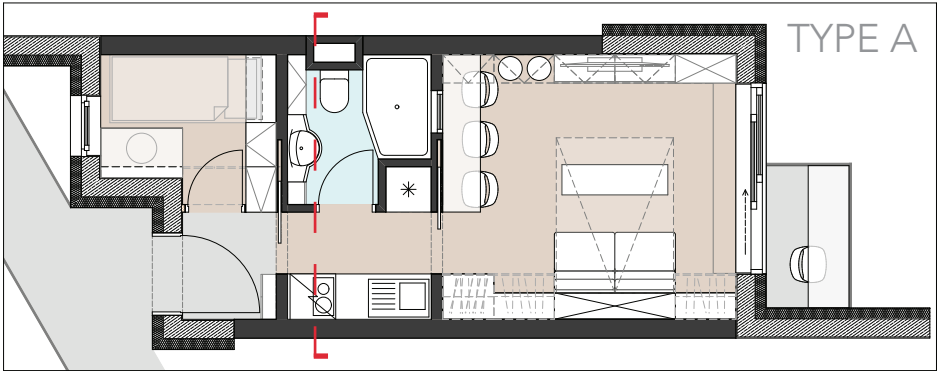
a three dimensional version of the section above can be found on p.127





7.2 ...and yet aligned.

At the same time, the service shafts remain aligned. With the adapted arrangement of the units, these ducts are directly connected to the toilets and air conditioners. This installment offers economical and ecological benefits to the architecture of the building.





TYPE A

TYPE B

TYPE A

7.3 Three dimensional section

Another kind of alignment can also be found on this section on the right. If the sliding door of the balcony gets opened, the opening to the outside does not seem to have any frame. This is possible due to an integrated window profile into the wall that is flush with the built-in furniture and the suspended ceiling. Hence, a strong continuity is maintained inside out.





AC
integrated to the wall,
connected to
the service shaft

cup-/plant holder

perforated stainless steel

wooden floor decking

metal cap

XPS isolation 15 cm

armed concrete

insulated aluminum profile,
welded with windows
profiles + screwed into the
concrete structure

gravel
(with a slight slope)

crossed struts

Floor heating

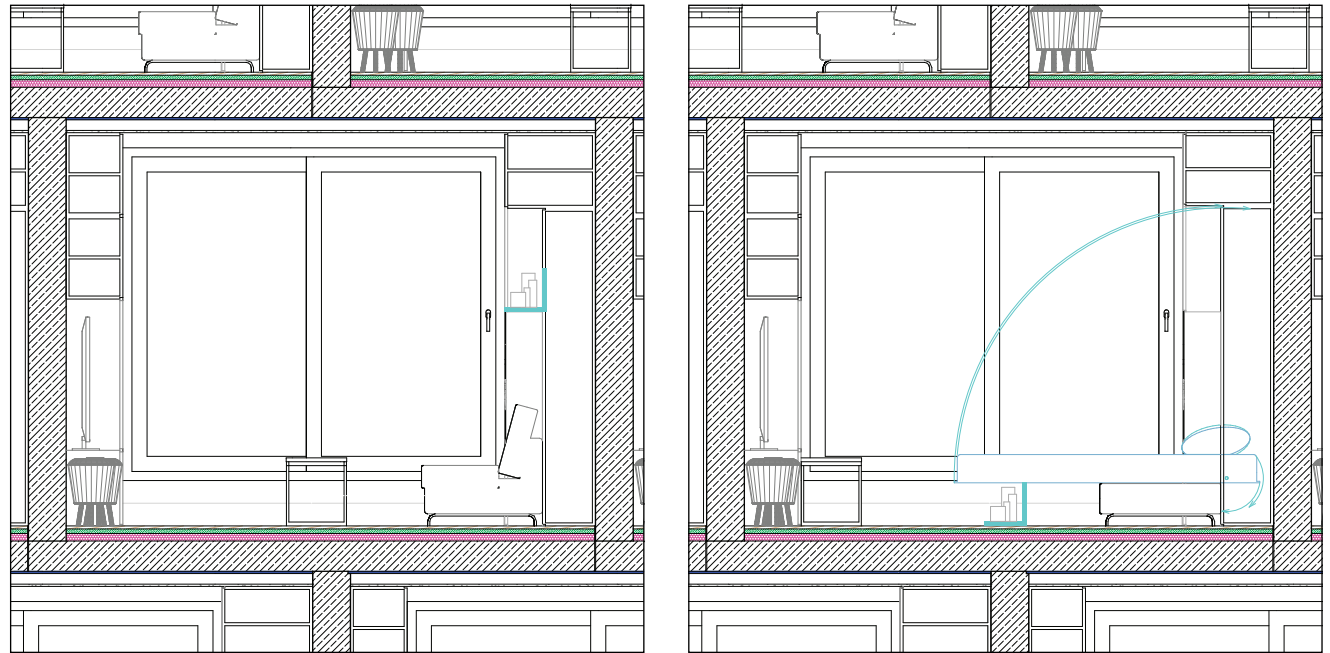
2 rollers:
1 x semi transparent
1 x opaque

Suspended ceiling containing:
-wires for integrated spots
-pipes for evacuating excess
water form the balcony to the
service shaft

7.4 Options and gadgets

As there is only one main room available within these tiny Pixels, most furniture must be movable or at least tucked into the wall. Murphy beds are an excellent solution for this case, as they require almost no effort to fold in and out. For people with disabilities, a motor with remote control can be an option as well. Although murphy beds have been out there for a while, they have not really reached the masses yet. This is mostly due to the fact that they are rather costly if they are bought by individuals. However, if they are ordered in high numbers as for a Microcity of this size, prices can definitely become more interesting.

When flats of this size are shown to westerner, people often feel rather discouraged to live in such a place. One of the main reasons may be the habit of simply looking at the size of the flat. For example, an apartment of 26 sqm is rarely used by more than one person in European cities. Though, if a potential buyer or a tenant looked more at the number of options, or the number of possibilities that a tiny space has to offer, he or she may actually forget the number of square meters.



Murphy beds are an optimal solution for saving space. The sections on the top show how a murphy bed is transforming the living room into a Master bedroom.



Despite the height of most storage systems, some can still be used by people with disabilities.





This illustration shows how architecture and furniture design work hand in hand together: Especially with a white finishing, these “storage walls” easily absorb any kinds of mess, leaving a space that is nice and clean, yet easy to individualize. Even the detailing in the sliding door (as seen on page 131), consolidates with the furniture. They both become flush and create lines that elongate the room. Once the oversized sliding door is opened, the outside and the inside become one like Yin and Yang, which offers a sense of infinite freedom throughout the entire Pixel.





08 ANNEX

- 0 front page: Inspired by the South Korean flag, edited on Illustrator for representing the silhouette of the entire project
- 1 Piles of drawings for creating the pixelated Microcity; different use of techniques (black ink, copics, regular pens), **Samy Ben Hamida (SBH)**, 2016
- (pages 8-11) 2 Panorama of Seoul from the Seoul N Tower, Canon 60D, Photomerge with Lightroom+PSD, **SBH**, May 2016
- 3 https://img.clipartfest.com/0a06d8a5399742e42d269b44c285f247_world-map-blank-black-lines-45-world-map-clipart-black-and-white_4500-2234.gif edited with illustrator, **SBH**
- 4 Wall of Gyeongbokgung Palace, Canon 60D, **SBH**, May 2016
- 5 https://upload.wikimedia.org/wikipedia/commons/thumb/0/09/Flag_of_South_Korea.svg/2000px-Flag_of_South_Korea.svg.png
- 6 https://upload.wikimedia.org/wikipedia/commons/thumb/9/99/Jeju-teukbyeoljachi-do_in_South_Korea.svg/1085px-Jeju-teukbyeoljachi-do_in_South_Korea.svg.png edited with illustrator, **SBH**
- 7 <http://nimg.sulekha.com/others/original700/south-korea-floods-2010-9-21-7-50-8.jpg> desaturated
- 8 Hamnett Stephen and Forbes Dean, 2011. Planning in Asian Cities - Risks and Resilience New York: Routledge, 2013, p.160
- 8' https://www.google.at/search?sa=G&hl=de-AT&q=cyberpunk+building&tbm=isch&tbs=simg:CAQSlwEJzbk0ED2VMAwaiwELEKjU2AQaBAgACAMMCxCwjKclGmIKYAgDEiirDloVnwyRC64MixVwDbwNjBWMDPI48TjwOO84mT_1oKuAqhCjmKtErGjBSruuphAjzBehY1L1aupsf6GM4t9u6xICZKvRFdNlfOhTUp2gRgQZIAMZzyEFpA-wgBAwLEl6u_1ggaCgoICAESBE99VylIM&ved=0ahUKEwiL--2SjqvRAhW-DeVAKHfnBCCQQwg4IHCgA&biw=1440&bih=755&dpr=1#imgsrc=zbk0ED2VMAz1MM%3A desaturated
- 9 [https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,Seoul,South-Korea\(+Vienna\)](https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,Seoul,South-Korea(+Vienna))
- 10 Sun inclination, photoshop, **SBH**. (values from timeanddate.com)
- 11 https://felloutofthenest.files.wordpress.com/2012/10/img_2470.jpg
- 12 diagramm done by Apple pages, **SBH**. values: <https://en.wikipedia.org/wiki/Seoul>
- 13+14 diagramms done by Apple pages, **SBH**. values: <http://www.straitstimes.com/asia/east-asia/single-person-households-surge-in-south-korea>
- 15 Maps of Vienna and Seoul: edited on Illustrator, **SBH**, values: Wikipedia
https://upload.wikimedia.org/wikipedia/commons/thumb/4/49/Austria_Vienna_location_map.svg/1280px-Austria_Vienna_location_map.svg.png
https://upload.wikimedia.org/wikipedia/commons/9/93/Seoul_South_Korea_location_map.svg
- 16 <https://www.quora.com/How-bad-is-the-traffic-in-Seoul>
- 17 http://www.koreatimes.co.kr/www/news/special/2008/10/177_31645.html
- 18 <http://media.mlive.com/grandrapidspress/photo/2014/11/26/16438326-standard.jpg>
- 19 <http://blog.naver.com/PostView.nhn?blogId=peakhill&logNo=220656908889>
- 20 <http://de.slideshare.net/simrc/seoul-public-transportation>
- 21a-21b diagramms done by Apple pages, **SBH**. values: <http://de.slideshare.net/simrc/seoul-public-transportation>
- 22 <http://static.thousandwonders.net/Bukchon.Hanok.Village.original.17281.jpg>
- 23 <http://www.tuttlepublishing.com/books-by-country/hanok-the-korean-house-hardcover-with-jacket>
- 24 http://www.gosiwonstory.com/board_data/editor_data/img/1392775019.jpg
- 25 https://twomiguks.files.wordpress.com/2012/01/dsc_0160.jpg
- 26-30 <http://jdsa.eu/gwell/>
- 31 Through the streets of Bangbae-4-Dong, Canon 60D, **SBH**, May 2016
- 32a Screen shot of the South f Seoul, Naver Maps, 2008
- 32b Screen shot of the South f Seoul, Naver Maps, 2013
- 33 The Seoul Metropolitan Government, 1997, *The Seoul Urban Master planning toward 2011*, p.109
- 34+36a+36b Lotte Castle, Bangbae-4-Dong, Canon 60D, **SBH**, May 2016
- 35 Street view from DAUM maps during 2009/2015
- 37a+b+c Screen shots of Isu Subway station during 2009/2012/2014, Naver maps
- 38 Zoom on Bangbae-Dong, DAUM maps
- 39 https://upload.wikimedia.org/wikipedia/commons/9/93/Seoul_South_Korea_location_map.svg, vectorized and edited on illustrator, **SBH**
- 40-43 Phanoramas in Bangbae-4-Dong, iphone 6s, **SBH**, May 2016
- 44 https://en.wikipedia.org/wiki/Seocho_District#/media/File:01-22-seocho-en.svg, vectorized and edited on illustrator, **SBH**
- 45 Bangbae-4-Dong, DAUM maps

- 46** Bangbae-4-Dong, DAUM maps , edited on photoshop , **SBH**
- 47-53** Bangbae-4-Dong, Canon 60D, **SBH**, May 2016
- 54** Bangbae-4-Dong, reconstructed model, Archicad, **SBH**
- 55** Bangbae-4-Dong, reconstructed model, Archicad, layered over a helicopter view from Naver Maps, **SBH**
- 56** Graphics with estimated values with calculated areas from maps and with average floor numbers, Apple pages, **SBH**
- 57** Reconstructed model of Lotte Castes with a strip of Bangbae-4-dong, Archicad **SBH**
- 58** Desaturated screen shot of Seocho district from DAUM maps with inserted Archicad model of Seoul's Pixelated Microcity, **SBH**
- 59 (all figures)** Desaturated screen shots of Bang-4-dong from DAUM maps with photoshop editing, icons are vectorized with Illustrator **SBH**
- 60** Sketch + panorama of Seoul (=Fig 2), combined with photoshop, **SBH**
- 61** <http://roadfortwo.com/wp-content/uploads/2015/03/business-insider.jpg> , pixelated with photoshop, **SBH**
- 62** Adapted helicopter view from Naver maps, combined with a rendering from Archicad, edited with photoshop, **SBH**
- 63** Archcad rendering, edited in photoshop, **SBH**, combined with helicopter view (from NAVER maps)
- 64** Studies about sun exposure, used with average local light conditions during, Archicad, **SBH**
- 65** Sketch, edited with photoshop, **SBH**
- 66** Simplified elevation of the pixels, illustrator, **SBH**
- 67** Rendering of the microcity, Archicad, **SBH**
- 68** Elevation of the building, Archicad, **SBH**
- 69** Pictogramms, Illustrator, **SBH**
- 70** Top view of the Micropixels, **SBH**
- 71** Sketch, simplified section, edited on photoshop, **SBH**
- 72** Underground parking, Archicad, **SBH**
- 73** Screen shot: <https://www.youtube.com/watch?v=xtCDqhvxTGA>
- 74** <https://therewillbeasia.files.wordpress.com/2011/09/outdoor-gym.jpg>
- 75** Cheonggyecheon river during Buddha's Birthday, iphone 6S, edited with Instagram, May 14th, **SBH**
- 76** <http://static.thousandwonders.net/Seoul.City.Hall.original.18523.jpg>
- 77** Namdaemun Market, iphone 6S, May 14th, **SBH**
- 78** <https://s-media-cache-ak0.pinimg.com/736x/87/3c/24/873c24c7fb3a87da9b99622a39818fd1.jpg>
- 79** Ground floor, Archicad, **SBH**
- 80-82** Archicad renderings, edited with photoshop, **SBH**

*All the figures on the pages 56-133 have been done either with Archicad, Photoshop, Illustrator, Apple Pages, or with all these programs combined, **SBH**, between June 2016 and January 2017*

- 83** <https://s-media-cache-ak0.pinimg.com/736x/28/c0/9e/28c09e06881a657ceef5a9b1ae0f7596.jpg>
- 84** <https://s-media-cache-ak0.pinimg.com/736x/40/68/78/406878b6ac27459ae26c6163b06f9dee.jpg>
- 85** Namsan Park (behind the Seoul N Tower), Canon 60D, **SBH**, May 2016
- 86** Gyeongbokgung Palace, Canon 60D, **SBH**, May 2016
- 87** Experimenting with my furnitures, Canon 60D, **SBH**
- 88** Testing my home made lowcost murphy bed, iphone 6S, **SBH**
more info:
<http://freshome.com/2014/02/14/10-tips-live-large-in-a-small-space-24m%C2%B2/>
- 89** Patio inside the Bukchon Traditional Culture Center, iphone 6S, may 2016, **SBH**
- 90** Selfie at the Gyeongbokgung Palace, iphone 6S, may 2016, **SBH**
- 91** Autoportrait, Canon 60D, 50 mm + lightroom + photoshop, february 2014, **SBH**

Library: Internet

<http://citiscope.org/story/2014/office-future-government-work>
<http://www.koreaherald.com/view.php?ud=20120314001068>
<http://theseoultimes.com/ST/?url=/ST/db/read.php?idx=10004>
<http://kojects.com/2015/09/18/bike-sharing-system-in-seoul/>
<http://kojects.com/2016/06/13/seoul-becomes-koreas-first-green-transport-promotion-zone/>
<https://seoulsolution.kr/content/seoul-public-transportation-reform-0?language=en>
<https://www.youtube.com/watch?v=qRBXdbEhT3E>
<https://en.wikipedia.org/wiki/Seoul>
http://www.koreatimes.co.kr/www/news/biz/2016/03/123_201016.html
<http://www.straitstimes.com/asia/east-asia/single-person-households-surge-in-south-korea>
<http://top10for.com/top-10-countries-highest-divorce-rate-2014/>
<http://thediplomat.com/2014/11/seouls-losing-birth-rate-battle/>
<http://www.economist.com/news/asia/21659768-more-women-ditch-or-delay-marriage-men-tie-themselves-knots-i-dont>
<https://www.quora.com/Why-do-South-Koreans-seem-so-hard-working>
<http://english.yonhapnews.co.kr/news/2016/09/26/0200000000AEN20160926002500315.html?did=2106m>
<http://www.architectureforfuture.com/julien-de-smedt-proposes-new-typologies-for-residential-living-in-istanbul/>
<http://www.designboom.com/architecture/jds-architects-zeytinburnu-city-istanbul-06-19-2014/>
<http://www.trendhunter.com/trends/peak-architecture>
<http://www.arch2o.com/hangzhou-waves-jds/>
<http://english.yonhapnews.co.kr/news/2016/07/29/0200000000AEN20160729005400315.html>
<https://www.timeanddate.com/>
<http://www.weather-and-climate.com>
<http://de.slideshare.net/simrc/seoul-public-transportation>
<http://kojects.com/2015/07/15/flooding-in-seoul/>
<http://nimg.sulekha.com/others/original700/south-korea-floods-2010-9-21-7-50-8.jpg>
https://en.wikipedia.org/wiki/2011_Seoul_floods#Impact
<http://darkroom.baltimoresun.com/2012/12/60-outta-his-sleigh-santa-snapshots/postmen-dressed-as-santa-claus-ride-on-their-delivery-motorbikes-during-an-event-to-begin-their-christmas-season-service-at-the-central-post-office-in-seoul/>
http://www.koreatimes.co.kr/www/news/special/2008/10/177_31645.html
<http://relocationjunkie.com/blog/finding-and-staying-at-a-seoul-goshiwon/>
<https://myhubsdotorg.files.wordpress.com/2015/12/21.png?w=610>
<http://www.koreaherald.com/view.php?ud=20130520000905>
<https://jimsbikeblog.wordpress.com/2011/07/30/bicycling-was-a-wash-in-seoul/>

Library: Books

Hamnett, Stephen; Forbes, Dean (2011): Planning in Asian Cities - Risks and Resilience, New York: Routledge, 2013.

Jung, Inha (2013): Architecture and Urbanism in Modern Korea, Hong Kong: Hong Kong University Press, 2013.

Leibinger, Barkow (2007): Building in the Digital Media City, Seoul, Berlin: Cantje Cantz, 2007.





09 CONCLUSION & CREDITS

Conclusion

Before allowing anyone to move into a tiny space that you design, you must first live in one yourself.

I have been living in a 24 sqm apartment, which I like to refer as my "furniture lab". During 3 years I have constantly experimented with moving furniture and tested them on a daily basis. This gave me a better feeling for designing tiny flats in a city like Seoul.

On the right: moving shelf on wheels for testing the perception of space.

On the bottom: Creating a low-cost murphy bed that can be used as a desk.



Space and time have become rare and expensive in megacities like Seoul.

In a culture where people use to work a lot, traffic circulation needs to be quick and efficient. While the aspiration of having prestige and freedom led to the heavy usage of cars, this nowadays has become a mouse trap into never ending traffic jams, where precious time gets lost.

By focusing on high quality public transportation, citizens can get a more reliable way of commuting. Furthermore, the environment is less polluted. This is why cars must be reduced, or be shared by more people. While a car is parked outside, it becomes a still object and removes potential public space.

This Microcity raises awareness on creating a generous amount of green space for the public by keeping cars out of sight.

Also, sharing outdoor spaces may become soon more important for socializing, as people are spending an increasing amount of time on the internet. E-commerce in East Asian megacities is already so well developed, that people spend less time outside for shopping or for eating. Therefore social encounters must be encouraged between people of all kinds by creating attractive recreation facilities. Especially now, that Seoul has already become a melting pot for different cultures, exchange seems inevitable.

Despite the strong Korean family values, the current households seem to change more rapidly as often planned. For this very reason, flexible designs of new flats are crucial to ensure sustainability and quick adaption of modern household structures.

Thus, in respond to this social phenomenon, a strong symbiosis between furniture design and urbanism has dominated the entire designing process for this pixelated Microcity.

In reality, the designing process for thesis started off with the creation of tiny homes. After numerous prototypes, and after being seduced by Korean culture, I decided to work my way from the inside to the outside, which is exactly how Seoul's pixelated Microcity was born.

This journey brings me to the conclusion, that interior designers will be more involved in urban projects, for having a more efficient use of space and for corresponding exactly to people's needs.



Credits

This thesis would have never been possible without the great help of the following:

I am truly thanking:

- the K-POP industry for keeping me awake 24/7;
- my mother for the numerous facetime sessions, during which she reminded me to eat and sleep;
- my father for always being available for help and for reminding me to put bike stations everywhere i can;
- my brother, for being silly, keeping me laugh and believing in me;
- all my friends for being understanding that i have been in a time consuming relationship with this thesis;

- my friend Ida Jusic for the inspiring conversations about urban development;
- my dear friend Michael Auer for asking numerous questions about my project and his 24/7 support;
- Sir Andreas Hiehs and the entire T.E.A.M. from Derenko Company for learning a lot about interior architecture;
- the talented furniture designer Claudia Mayerhofer and creative interior designer Raphael Amon for keeping me updated about the latest trends on furniture design;
- the international office of my university for supporting my trip to Seoul;

- Prof. Kim Kwang - Joong, for inviting me to the Seoul National University and for teaching me about the Korean housing culture;
- Urban planning Phd student Soe Won Hwang for giving me tips on how to improve and adapt my project to the needs of Korean citizens;
- Architect Jungnim Nam from OA Lab for explaining the relationship between Korean life and Korean homes;
- Adam Hun, a father of 2 children, who told me a lot about Korean History and that living as a family in Seoul on 21 sqm is completely normal;
- Michael Jun Lee for talking about Korean Politics and it's history;
- Amanda Mirim Park for showing me that everything in Seoul moves at a high pace – even the food. ^^ ;
- Prof. Manfred Berthold for supervising my work and for pushing me out of my comfort zone as an interior designer for doing urban planning (as well).



*In front of the Gyeongbokgung Palace.
My trip to Seoul was an inspiring journey.*

10 CURRICULUM VITAE

EDUCATION

May 2016	Scientific research in Seoul for my master thesis
2013-2017	Master in Architecture at the University of Technology in Vienna
2009-2013	Bachelor in Architecture at the ULB (Brussels)
2001-2009	Lycée Hubert Clément Esch, scienti c orientation (Luxembourg)
1994-2001	Elementary School in Mondernange (Luxembourg)

TRAINING

February 2010	Internship at DHA Architects
July 2009	Internship at Architecture & Environment Ltd
April 2008	Classes in AutoCAD to the Chamber of Crafts
2008-2009	Classes in Computer Graphics at the Technical College of Arts and Crafts in Luxembourg
2007-2008	Courses of Photography at high school
July 2007	Driving License in Luxembourg
2006-2007	Courses in Portrait at the Technical College of Arts and Crafts in Luxembourg

PROFESSIONAL EXPERIENCE

09/2015-03/2016	Interior architect at Derenko, Vienna (specialized in gastronomy
09/2014-01/2015	and hotel business)
Summer 2014	Part-time job at Schneider&Schumacher architects
2013	Part-time job as an architectural photographer for Jacques Constantin, a furniture designer from Luxembourg
Summer 2011	Summer job at WW+ architects
Summer 2009	Summer job at Veronica Ziegler's (industrial Engineering in Civil Engineering); computer drawing in AutoCAD + measurement of buildings
Summer 2008	Summer job at BENG architects (Summer Holiday work in BENG (visiting construction sites, administrative support, computer drawing, AutoCAD + promoting their projects through Photography and Graphic Design)
Summer 2008+2007	Summer job at DHA architects (site visits, administrative support, computer drawing; ArchiCAD + promoting their projects through Photography) Summer job at the au National Center for physical therapy and rehabilitation Rehacenter in Luxembourg. (medical transportation)
2007 - current	Tutoring for pupils in Biology+Math+Chemistry+Physics+French Freelance Photographer, specialized in portrait and architectural photography.

SKILLS

Country	AI	Id	Ps	Lr	AR	ARTLANTIS
United Kingdom	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●
Germany	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●
France	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●
Hungary	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●
South Korea	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●



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