



# Back to the Future: Residential housing clusters

Master's Graduation Thesis

Tarek Bder

to my tutors for their guidance and support throughout the year,  
to my friends who always make life easier,  
to my family who i miss a lot, and  
to my wife for believing in me



At the edge of the historical city, between old and new urban fabrics and on footprint of multiple histories; that is where this architectural project stands to experiment forms of housing clusters.

This new city block aims to raise awareness of the history of the place, connect people, raise questions.

It aspires to produce a contemporary architectural form, yet has traces of scales and patterns from the past.

A project inspired from human heritage, but offering contemporary and sustainable housing solutions.

A cluster that expresses individuality and community at once.

An urban experience that takes the user back, but to the future.

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Three questions are guiding this project

Can architecture be a medium for dialogue about “the other”?

Can high dense residential clusters be a way to denser inner cities?

How can local heritage be connected to the global human heritage?

## Chapter One

## I. PROJECT THESIS

Brown fields are points of dysfunction in the city harmony. In Prague city, there are multiple brown fields. Some of them are big like Bubny, Nadrazi Zizkov, and Strahov stadium and others are smaller like Rebellion bridge plot next to Strahov monastery and other plots around Holesovice and around Palmovka.

Despite being points of dysfunction, brown fields are opportunities for new interventions to achieve compact city core.

Nevertheless, coordinating between public benefits and private actors interests is tricky.

Household, developers and business are aiming to increase their private benefits, usually at the expense of public interest.

Families prefer less dense built up areas. Developers prefer building far from the city with less regulations. This eventually leads to urban sprawl with gated communities and isolated urban forms.

It affects the growth of the city not only that urban fragments are built despite the context and their relevance to the city, but also making it harder for the city to expand in harmony.

Building in low rise high dense clusters gives the human feeling this project aspires.

Urban space that provides different levels of privacy. Quality dwelling that is designed for the site. A trigger for the urban regeneration of Strahov hill.

The site I chose for my thesis is where Rebellion terminal used to be, below Strahov stadium.

The site's area is three hectares and the reason I chose is that Prague city wall occupies its East edge. Currently, the city walls are integrated as a part of SK Hradcany sports which limits the access of public to one of Prague monuments.

Granting public access to the wall doesn't only allow people to enjoy a part of Prague history, but also increases the feelings of ownership and belonging. (Smith, Uses of Heritage, 2006).



## PROCESS

Part of the modern movement, a new housing typology emerged "tower in park". (Le Corbusier and al.). The city, as a machine perspective under which this typology was developed, did not take into consideration neither the social aspect of such massive buildings nor its relation to the surrounding space. The number of apartments as well as the absence of human scaled spaces were enforcing individuality and were against the possibility of community formation. Later in the Eastern post-war countries, social housing projects had the same problems.

Nevertheless, during the 1960s and the 1970s, low rise high density designs gave a better answer. The concept worked on providing quality dwelling while maintaining human scaled spaces around it; as well as keeping the density high enough to be efficient to provide public transportation and public services. Between 1969-1975, Giancarlo De Carlo designed a very unique project in Terni (Italy). De Carlo put the master-plan for the new development, developed multiple floor plans for different units, and then asked the owners to choose the most suitable unit design. De Carlo was looking for a more vernacular architectural forms and more diverse public spaces formations. De Carlo's decided to include users input as a part of his design process. Despite our increasing interest in more humane designs, users participation in the design process of domestic housing is very limited.

I believe low rise high density is a modern representation of vernacular cities. It is more relevant to how people lived in cities before and the human scale of the built environment. This perspective is a reflection of my own interest in vernacular architecture and my background of growing up in Cairo (Egypt).

The site suggested by my supervisors was the Rebellion terminal used to be. The site was a brown field urban island with total area of 6,700 m<sup>2</sup>. Prague wall was on the edge of the site. The plot to the East is a sports club (SK Hradcany) which uses the wall as tennis courts. Accordingly i decided to add HK sports club to my site 23,500 m<sup>2</sup>. Later another piece to the West was added to complete the block 4,800 m<sup>2</sup>.

When i decided to integrate Prague wall into the Project i saw an opportunity to answer the third research question. How can local heritage be connected to global human heritage?

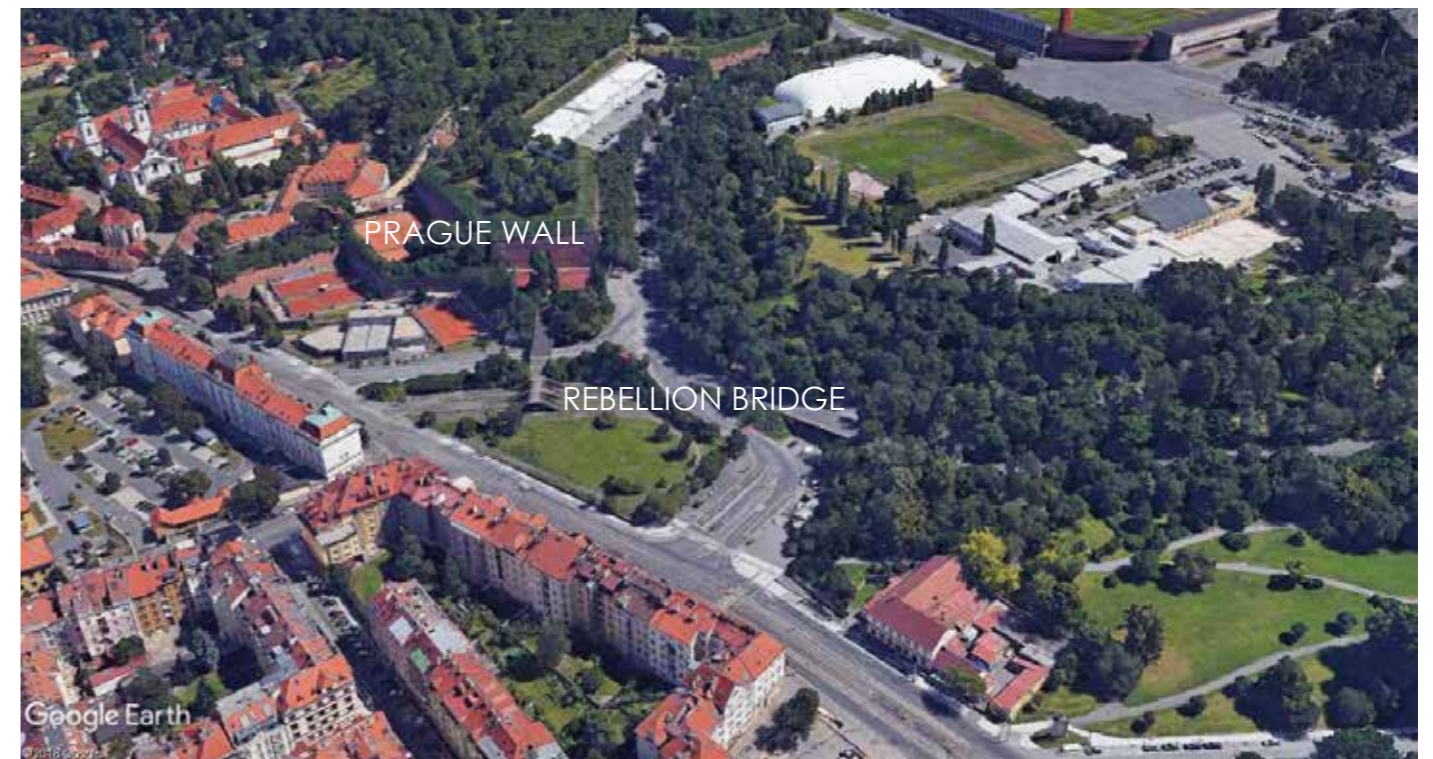
Thus, the inclusion of the Prague wall came to emphasize the importance of inclusion of heritage in the contemporary residential experience. But also, to be inspired from other human architectural and urban heritage examples to create a low rise high dense design.

In this project, along with the Jewish Quarter in Prague, other global examples are interesting to answer my three research questions combined.

Shibam, Yemen one of my favorite cities is a 16th century walled city. It is also known as Manhattan of the desert, for its " high rising buildings " going up to 25 meters. Located in the middle of a valley, its buildings were defensive clusters against floods and enemies. The buildings are made of adobe bricks and plastered with mud. The buildings are grouped in clusters for structural and social reason. Recognized as a world heritage city by UNESCO, the city is currently endangered because of the war in Yemen since 2015. Despite the height of the buildings, the residents of the city were able to create multiple levels of communal spaces.

This is the same in Cairo. Cairo's high dense informal apartment buildings form the majority of the domestic housing with average of 60,000 inhabit/Km<sup>2</sup>. Cairo also suffers a lack of dedicated public spaces (parks, playgrounds, sports facilities). As a result, streets and alleys work as multifunction spaces. For more private spaces, residents of the apartment houses usually use the flat roof tops as communal spaces. A concept which can be used nowadays to provide different levels of privacy and services within the same development. While keeping human scale spaces that are controllable by the community.

Thus, in this booklet, after presenting the locality and analyzing the site; a chapter is dedicated to analyze precedents examples from the past but also contemporary. Then, two chapters are dedicated to a more detailed concept presentation and the drawings of the residential clusters.





## Chapter Two

## II. LOCALITY

Střešovice neighborhood is a part of Prague 6 district, to the West of the old city center.

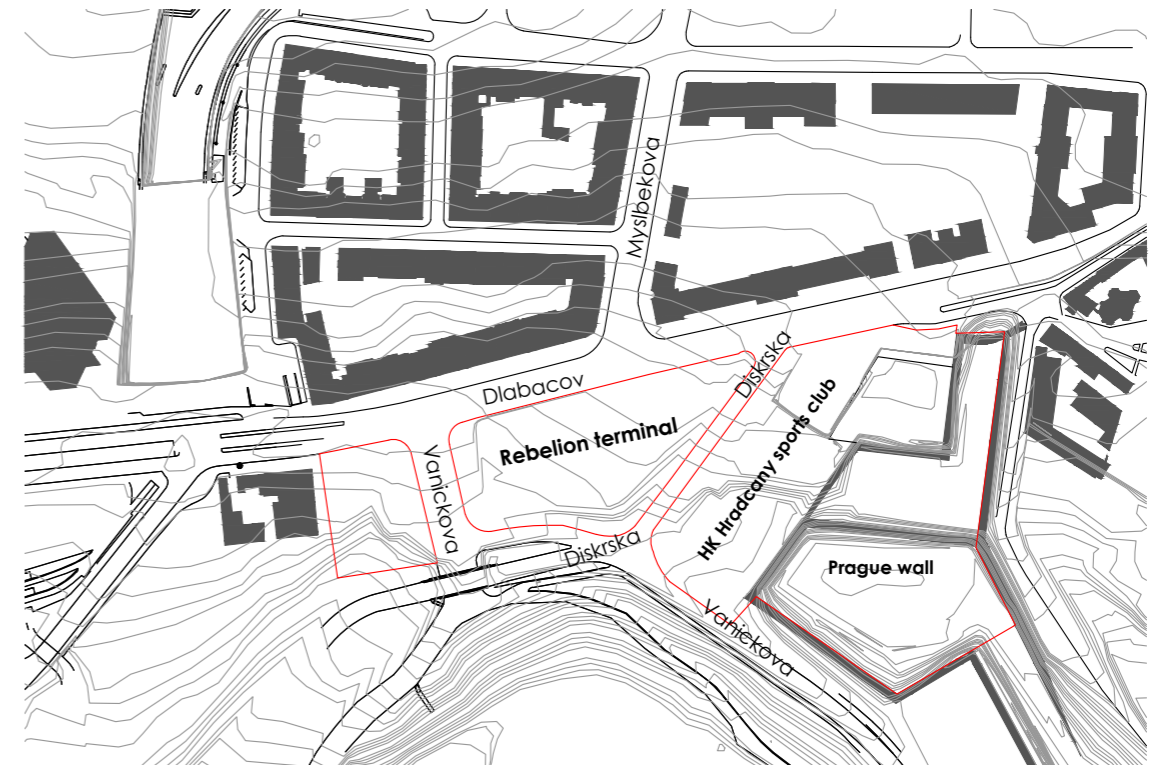
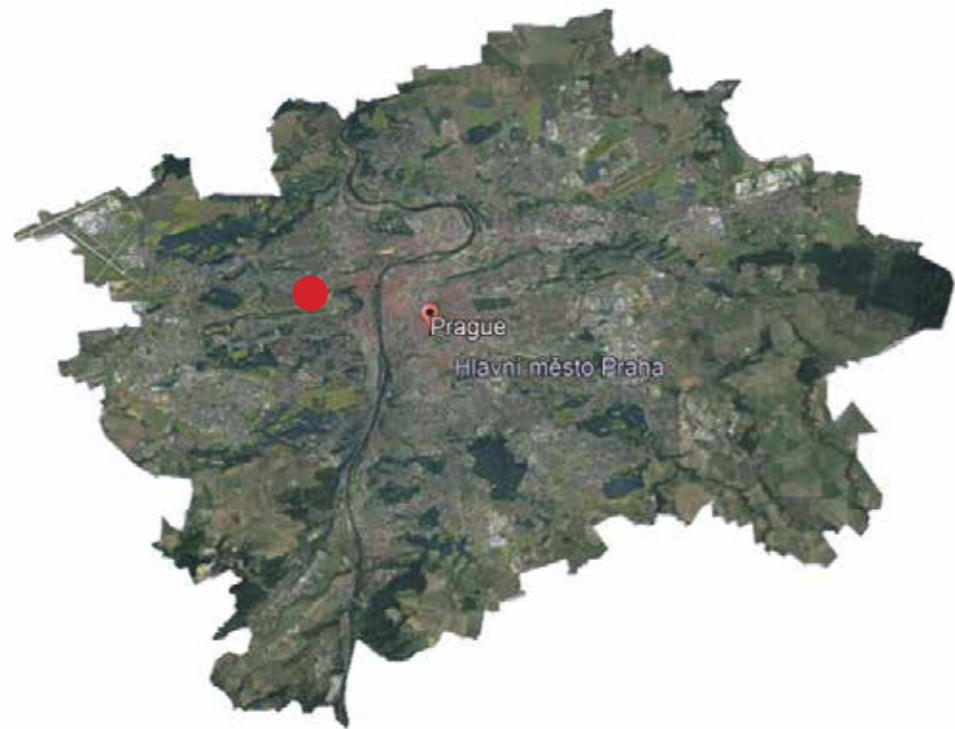
Střešovice is located between Dejvice in the North, Hradcy in the East,

Brevnov in the South and the South-West, Veleslavin in the West and Vokovice in the North-West. Střešovice cad-astal area is 1.54 hectare with population of 6 947 inhabitants.

Střešovice was a village that dates back to the 10th or the 11th century. The village was part of the Czech royal family property to the mid of the 12th century when they donated it to Strahov monastery. By the 20th century, the village got out of the monastery property. Střešovice became part of greater Prague in 1922 as a part of Prague XVIII.

By 1922, Střešovice had 3 880 inhabitants and 254 houses. But it grows rapidly afterwards as a part of the capital of Czechoslovakia. Later in 1949, Střešovice was divided between districts Prague 5 and Prague 6. The 1960 division of Prague merged it back to be part of Prague 6 district.

The Site is located in the South of Střešovice. Only 150 meters West of Strahov monastery and to the North of Strahov sports stadium. The site used to be a terminal station for trams but it is no longer used.



## Chapter Three

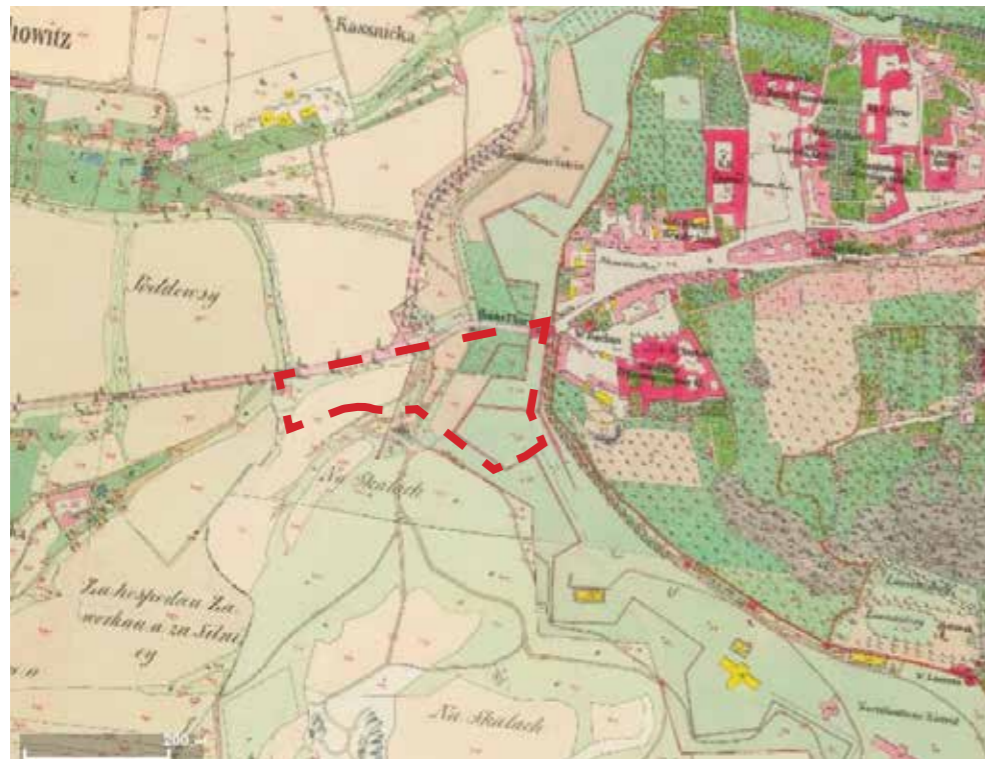
### III. SITE ANALYSIS

#### HISTORICAL MAPS

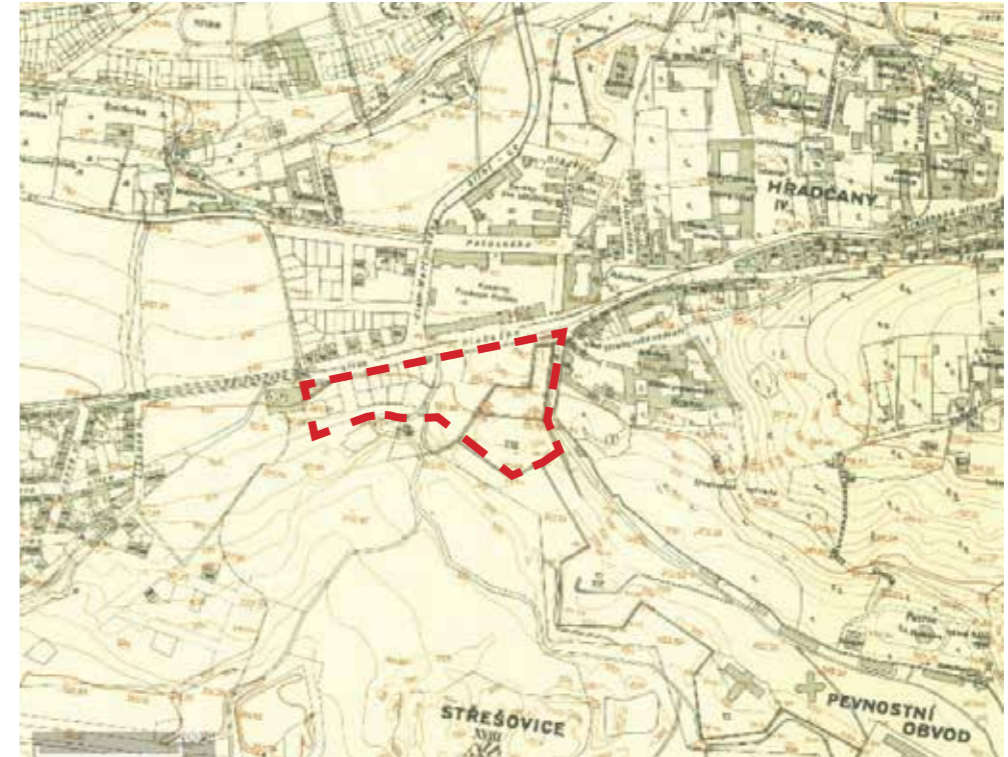
The maps show that Belohorska street used to be a road that travels outside of Prague to the West. Currently, the street is still a vital road within the urban fabric. It has the tram lines as well as the major traffic within the area (aside from Patckova in the North).

As for the site morphology, the first regulated extension started around 1920s. By that time, the neighborhood became part of greater Prague: new streets were made and new blocks were formed.

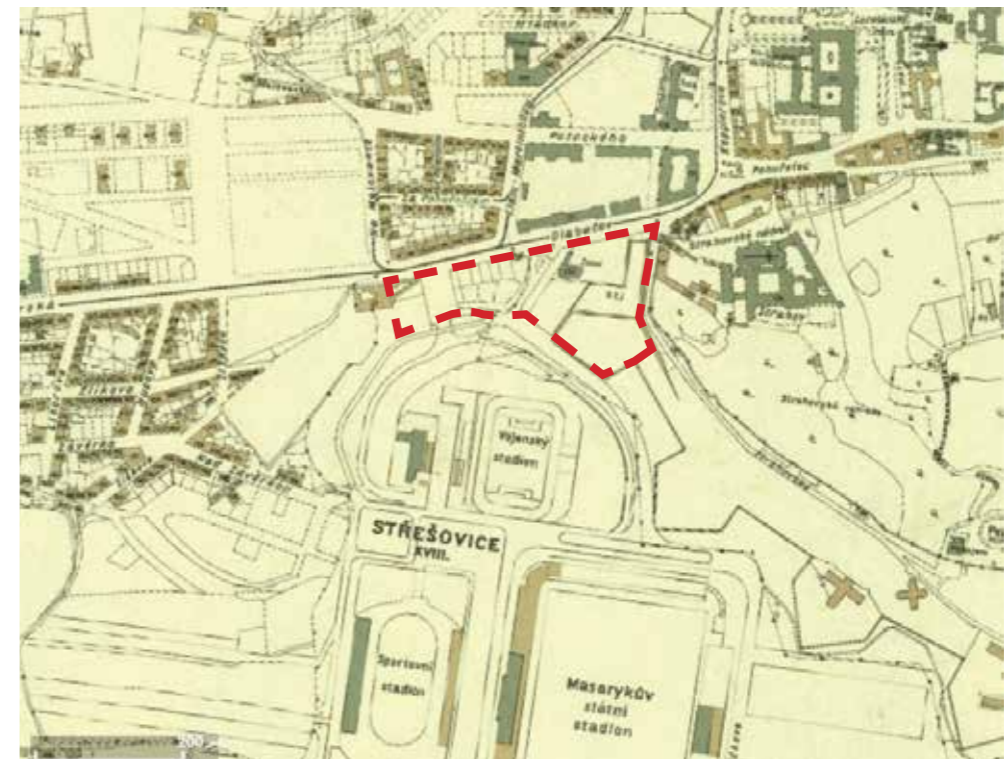
As for the land use plans, the major change was that the plans became more detailed and we can see the growth in administrative/governmental buildings East of the site



In the 1842 map of Střešovice we can see the site as a part of the vineyards of Strahov monastery. Dlabacov street (Road back then) was the main road out of Prague to the west and is the north edge of the site now. Traces of Diskarska street in the form of waterways coming down from the hill.

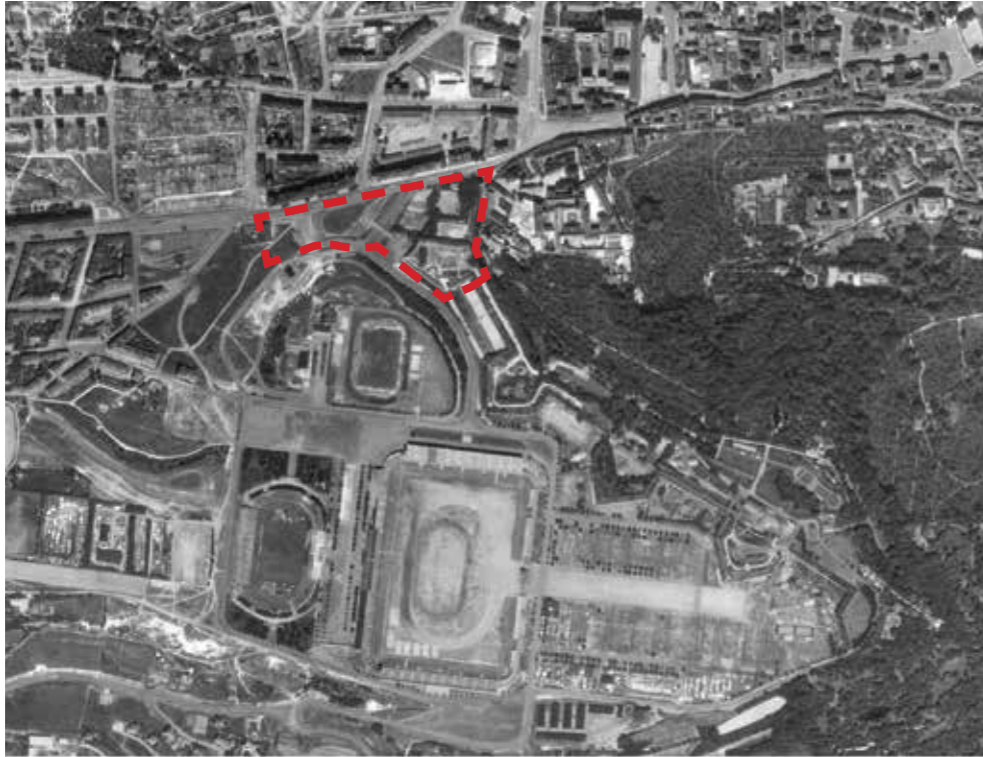


1920 two years before the district joined the greater Prague. We can see some complete blocks to the west and also some pieces in some of the blocks. Despite having a master plan the Rebeion terminal site was not built.



1938 The major changes in here are the construction of Strahov stadium (1926) and the completion of the blocks to the north and the west of the site. We can also see the master plan expanding. New housing blocks plans on the south west and new modernist buildings on the north west with some of it built up.

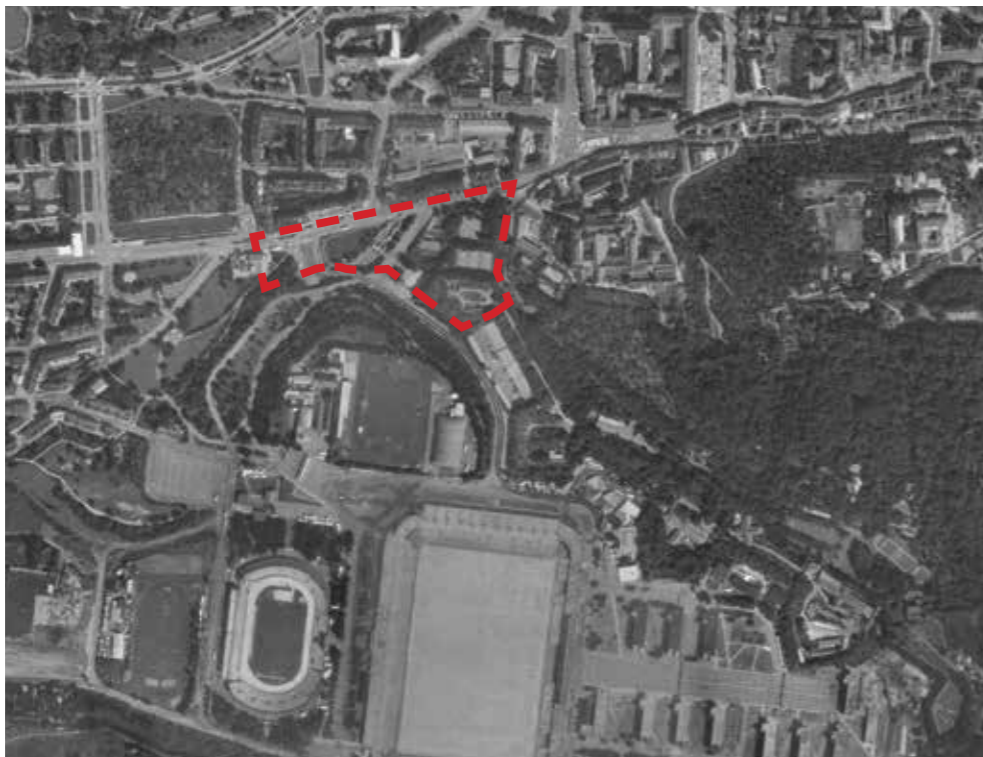
AERIAL IMAGES



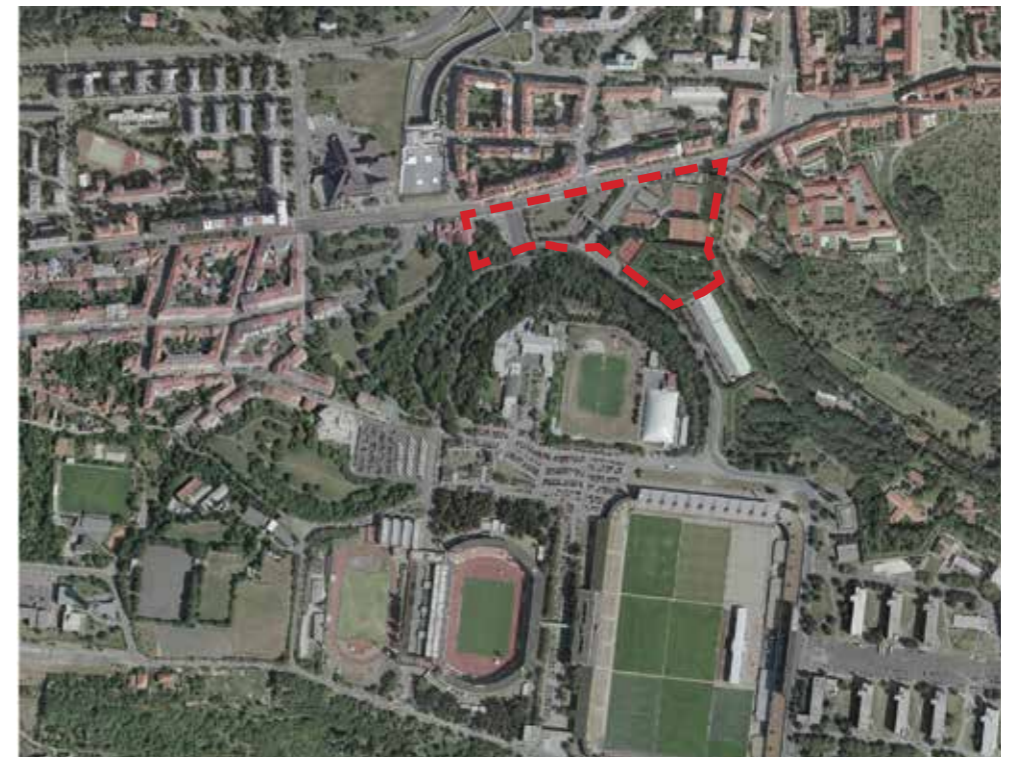
**1953** The site is clearly divided into its current state. HK Hradcany club is built next to the wall on the east, Rebellion terminal is constructed, and Vanickova street as well. Strahov stadium is turned into car racing stadium with the plot to the east as parking (what will be Strahov student housing later).



**1989** Construction of Pyramida hotel, completion of Strahov student housing. Some of the trees on the east of Strahov monastery are removed

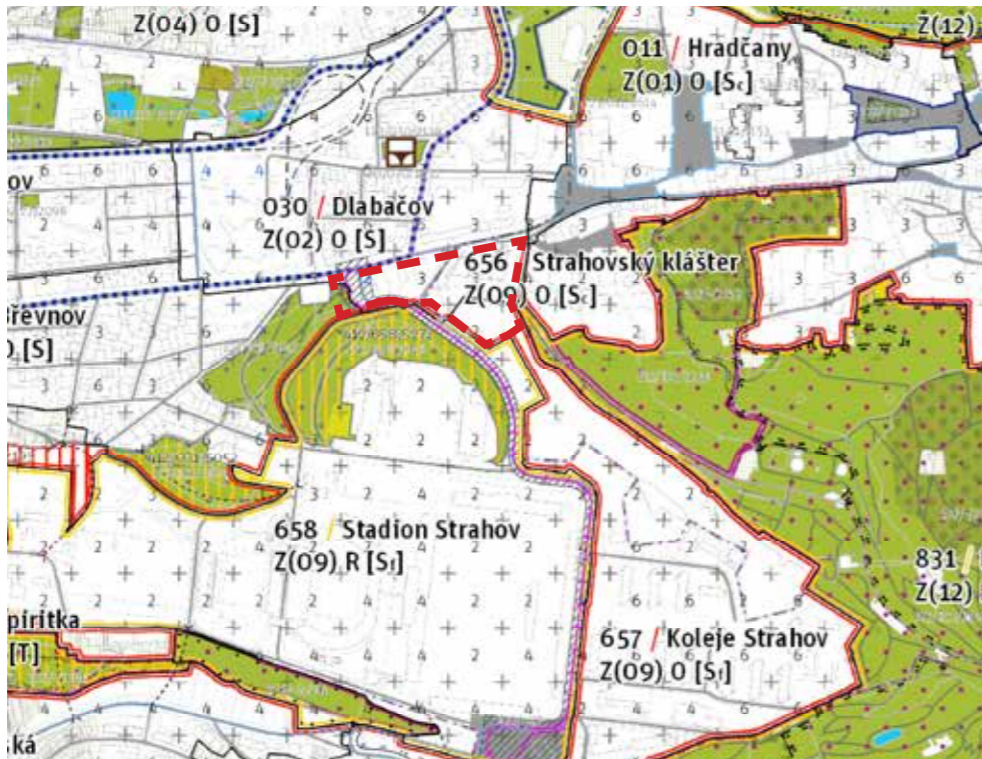
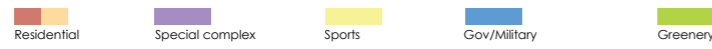
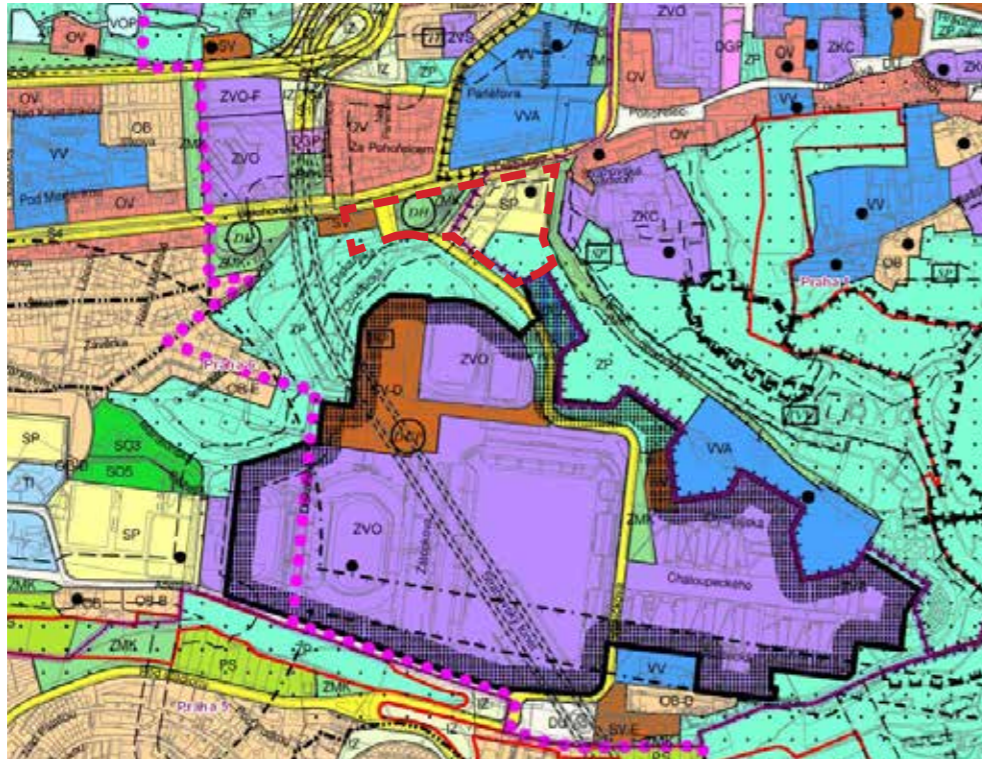


**1975** The construction of Patočkova to the north, beginning of construction of Strahov student housing to the south east, and the massive increase of heavy greenery on the wall and downhill from Strahov monastery.



**CURRENT** The site didn't change since late eighties except of the football courts inside Strahov Stadium.

LAND USE PLANS



Current land use plan (top figure) has been almost the same since 1965. The main changes were related to more detailed zoning but the main functions stayed the same. The future land use plan (bottom figure) is suggesting a tram line going up to Strahov through Vanickova (included in the design). The master-plan also suggests a three floor regulation to the project site.

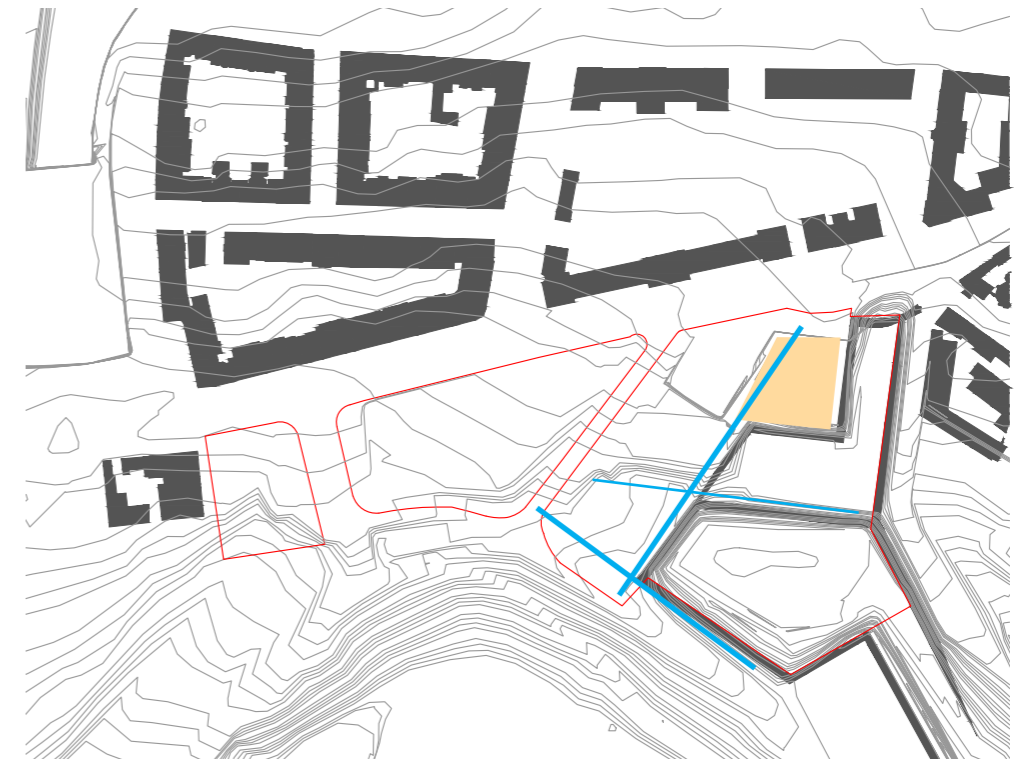
<http://app.iprpraha.cz/js-api/app/>

The study of the historical maps gave a better insight on how the site was developed to its current state. The site's location next to Strahov monastery and the remaining of Prague wall makes it a suitable location for a project that tries to connect between two World heritage sites (Shibam and Prague).

The renovation of Prague wall and using it as an edge for the new development helps bringing in familiarity to the visitors and the residents. The renovation of Prague wall and opening it to public will increase the cultural value of the project. Therefore, assigning cultural spaces along the wall that tells the tales of the two cities would be a grounded solution to create a space for knowledge and social interactivity.

The development will also be working on creating a connection between diverse users. Tourists from the city center to the East, Students from Strahov student housing to the South, and local residents from the North, West and South-West. This diversity of users is one of the reasons that makes this site unique.

Lastly, developing this site is not only a connection between old town and the rest of the city to the West, but also can initiate the development of Strahov hill to be more pleasant and livable.



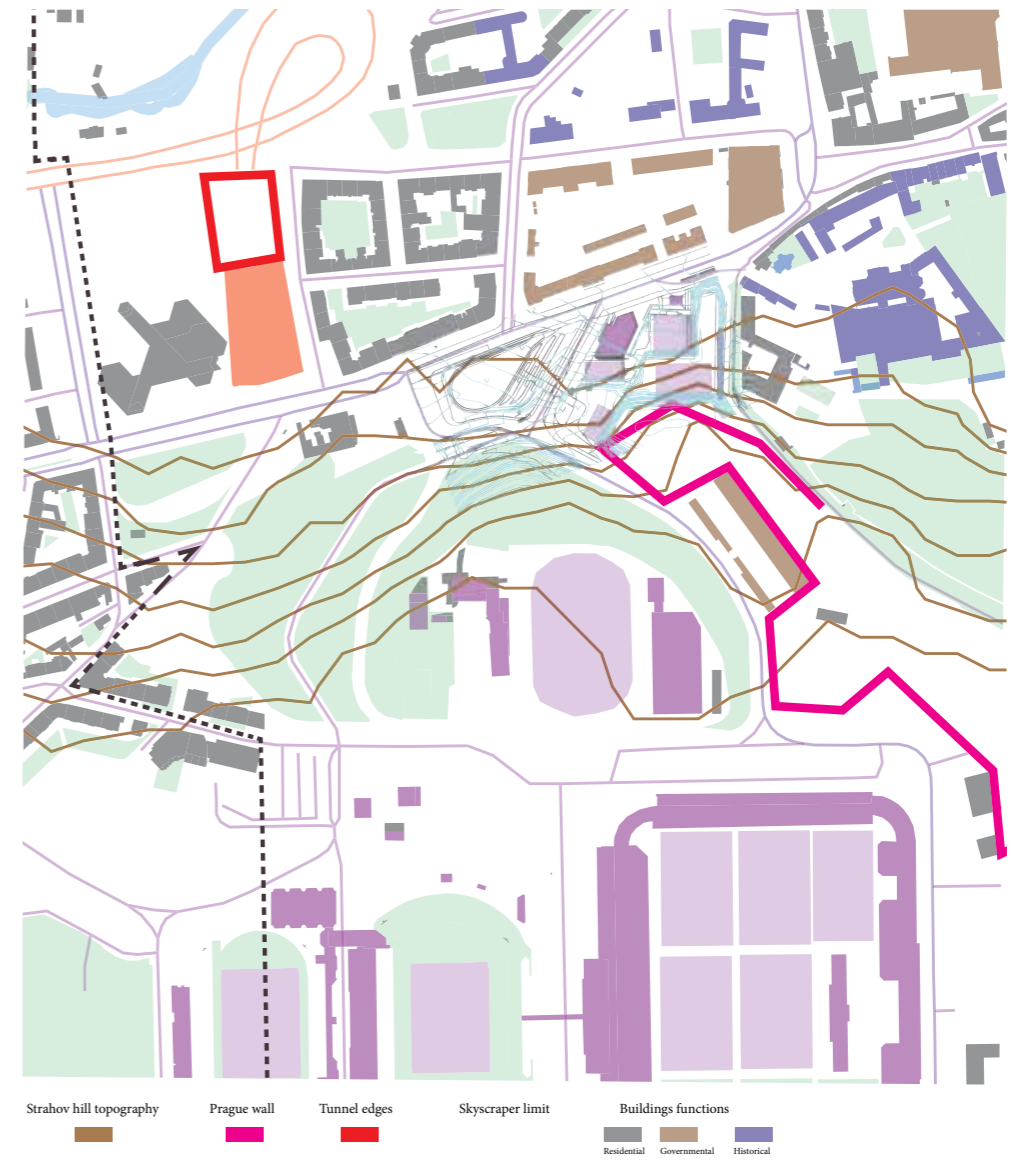
SITE



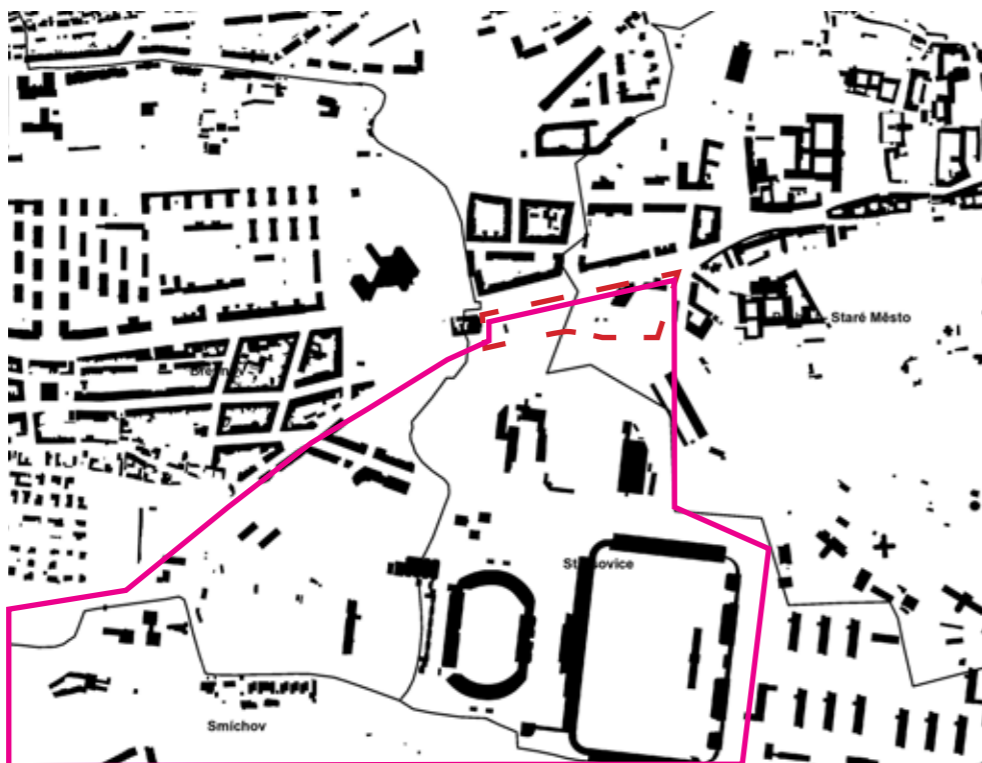
TOTAL AREA 40,000 m2



SITE BOUNDARIES



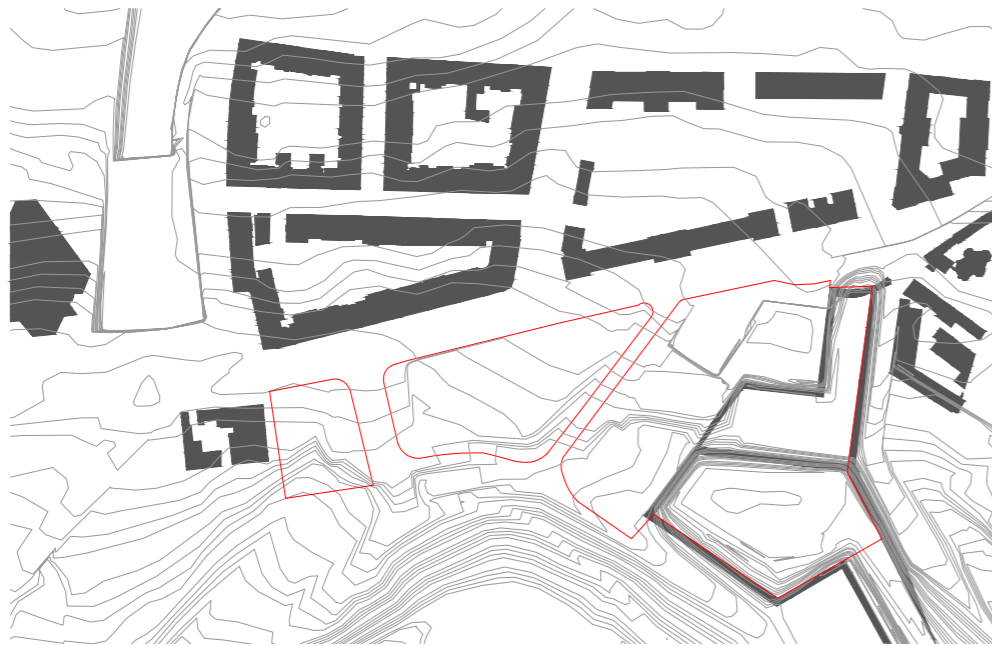
MORPHOLOGY



The figure shows how empty the site and strahov hill compared to the rest of the city. Densifying this part of the city will create a better connection between city parts.



SITE DOCUMENTATION



As seen from the photos below The wall is off limits for public from both lower level (north) and the higher level (south). (1,2)

The site topography is steep and sloped in two different directions. South-north as the major slope. South is 35 meters higher. West is higher by 10 meters. (3,4,5)

The castle towers are visible from Belohrska street. (9)

Due to the site elevation there are two main look outs in the site. One to the north (7) and another one from the top of wall (12).



5



6



7



8



1



2



9



10



3



4

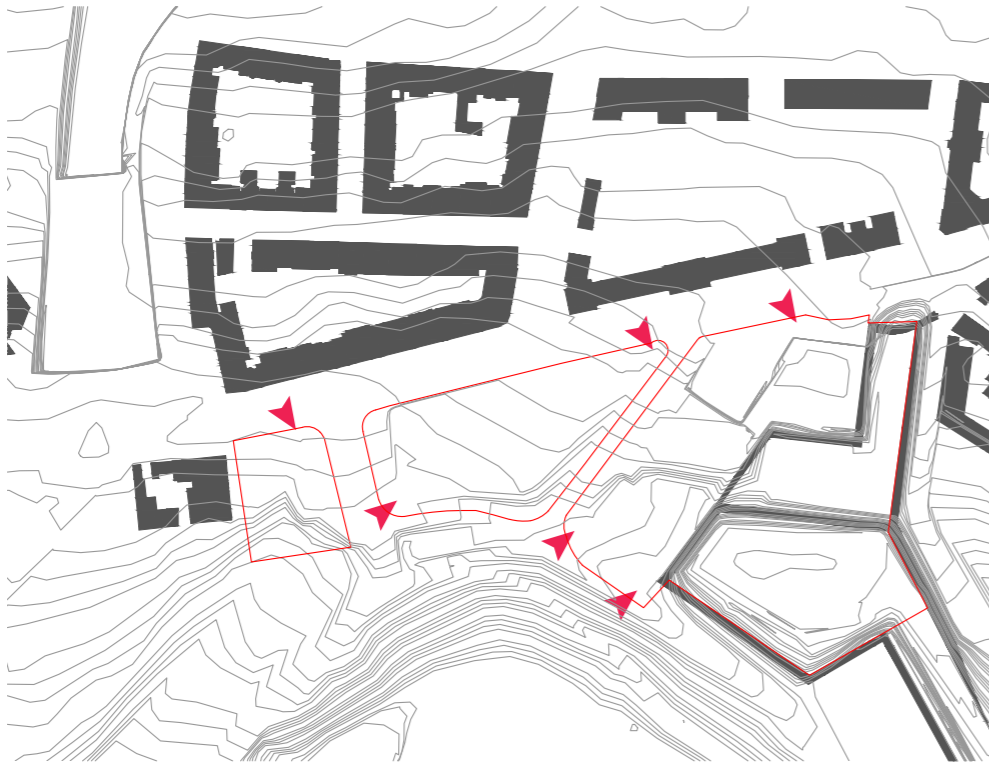


11



12

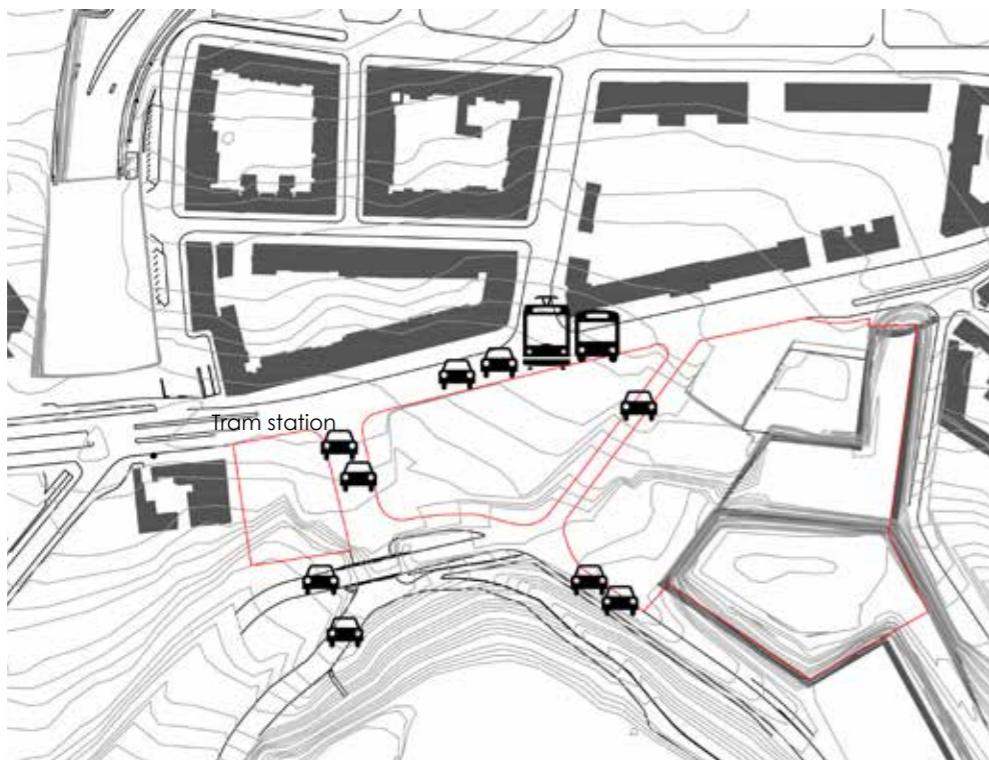
ACCESSIBILITY



TOPOGRAPHY



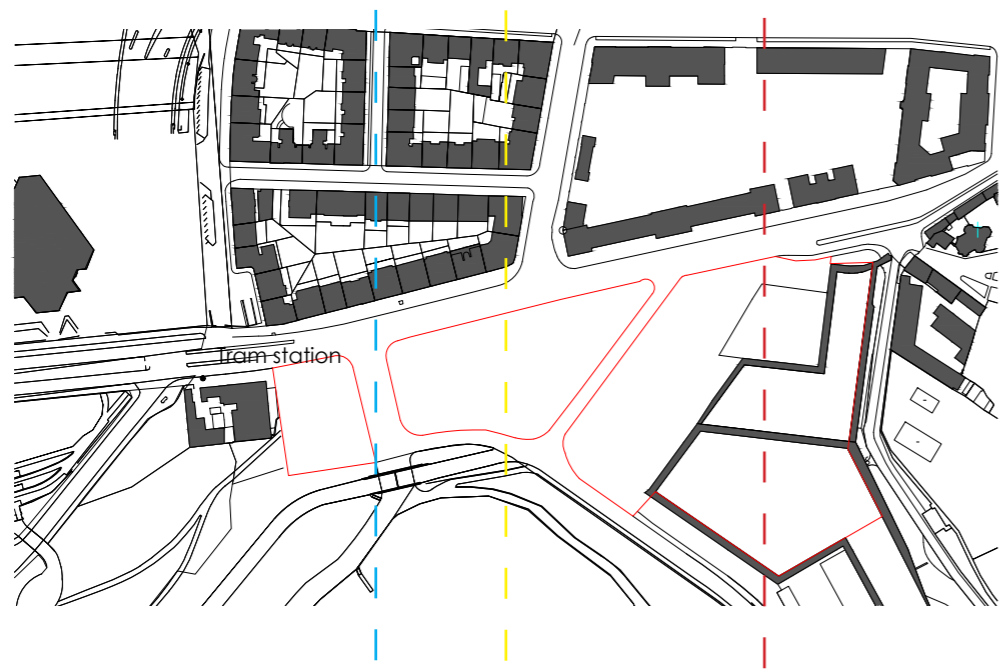
TRAFFIC



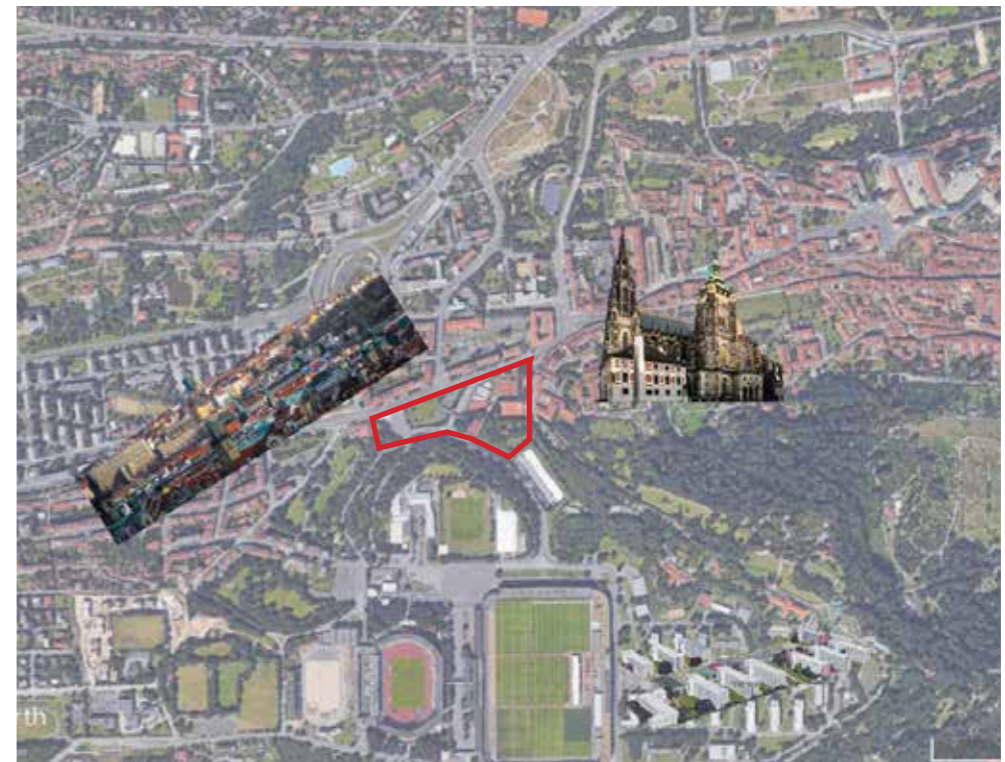
GRIDS



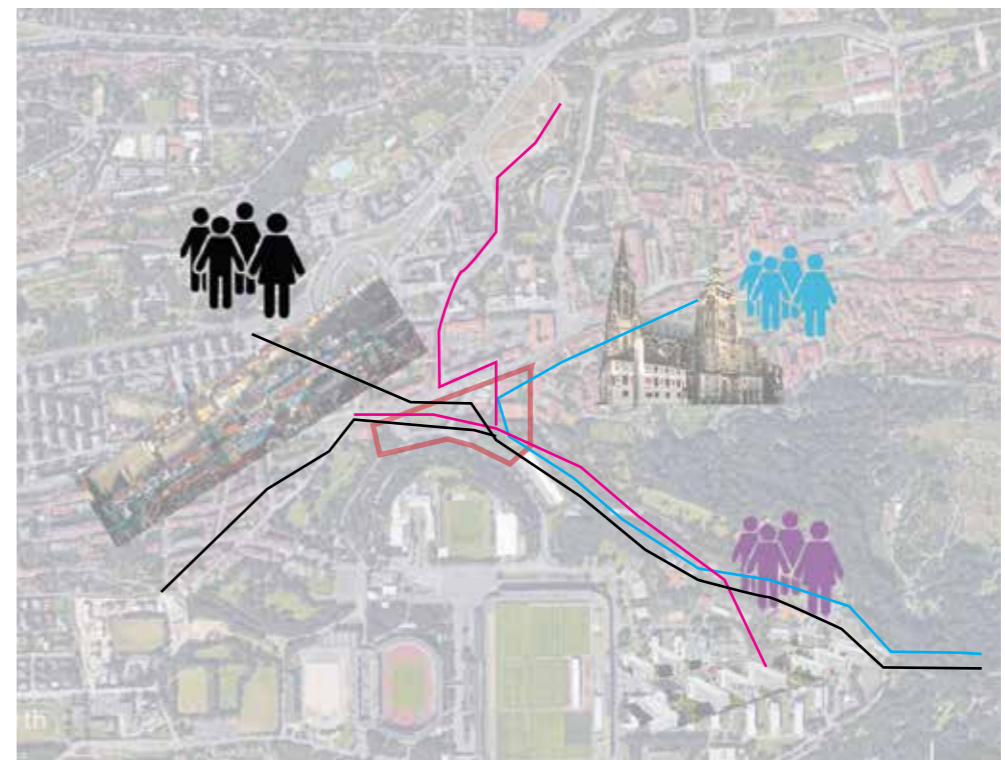
SITE SECTIONS



SITE DIVISION



TARGET GROUPS



## Chapter Four

## IV. Selected Precedents

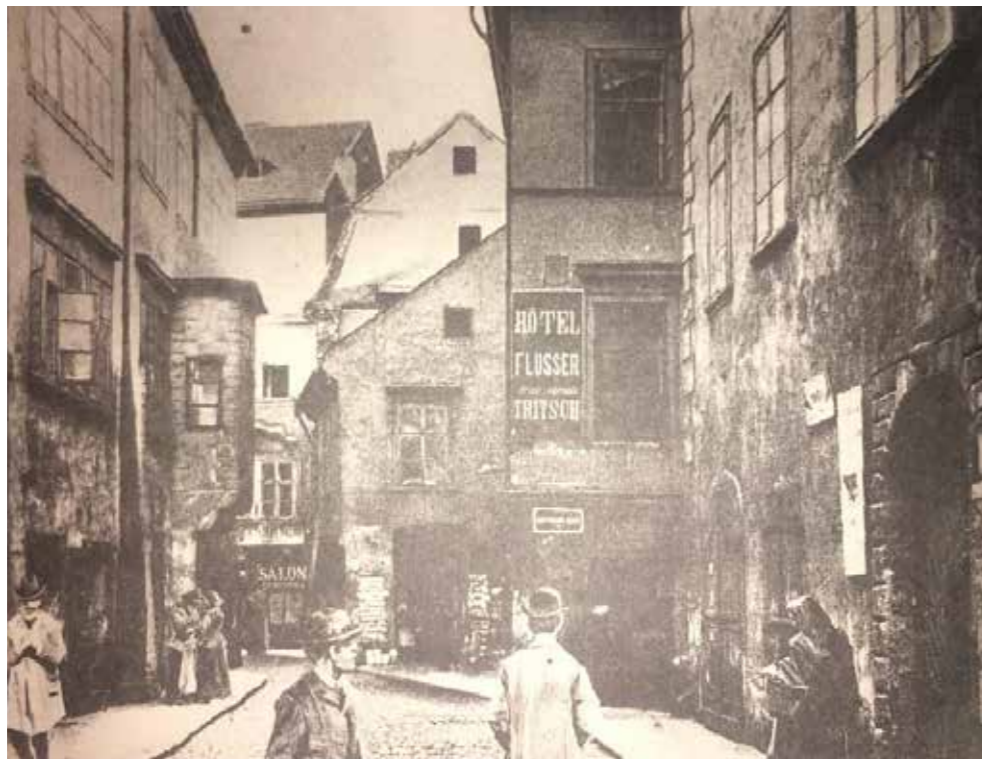
Through my search i found four examples two as historical examples and two as contemporary. These four represent how i saw the site.

The inspiration of the urban and architecture forms in this project will be by analyzing the architecture and urban forms of the old Jewish quarter in Prague, alongside with Shibam. To create a contemporary architecture language. A contemporary context. Chosen examples from BIG and OMA architects are present to help me understand these forms and design solutions.

The goal is to create an architectural design that raises a dialogue and seeks inspiration from human remarkable achievements.



<https://www.savethechildren.org/us/what-we-do/where-we-work/greater-middle-east-urasia/yemen>



# 1. Josefov, Prague

The Jewish quarter in Prague (Jewish ghetto). The district was located North of the old town city center. Josefov was demolished during the late 19th century by the order of the Austrian Hungarian empire similar to what happened to Pest in Hungary around the same time. The wall surrounding the district was removed along with most of the district only few traces of the old district are still standing.

The reason i choose the Jewish quarter to be my first case study is that the Jewish community had been "the other" in Europe for very long time. In the case of Prague, multiple Program happened over the centuries. Despite the efforts of some of the rulers of Czech (Charles IV and Ferdinand III), the Czech Jewish history has been dark and bloody in general.

The second reason was aside from old town, the Jewish quarters was one of the few documented vernacular urban fabrics. Since the Prague new town all the urban expansions were planned with little space for organic growth.

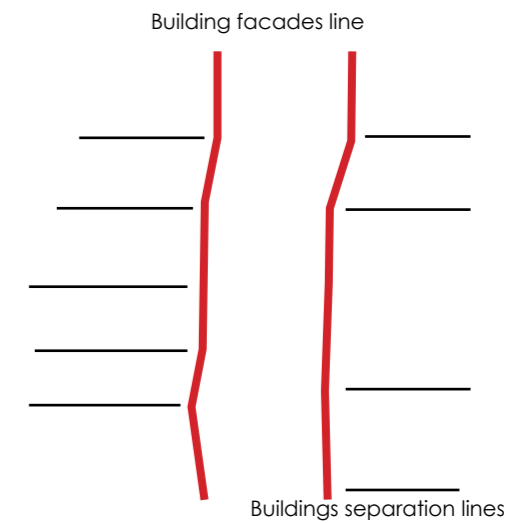
Regardless the scale of my project (two city blocks), I tried to revive some of the interesting moments i found in the Jewish quarter using the architectural and the urban language i developed.

MASTER PLAN



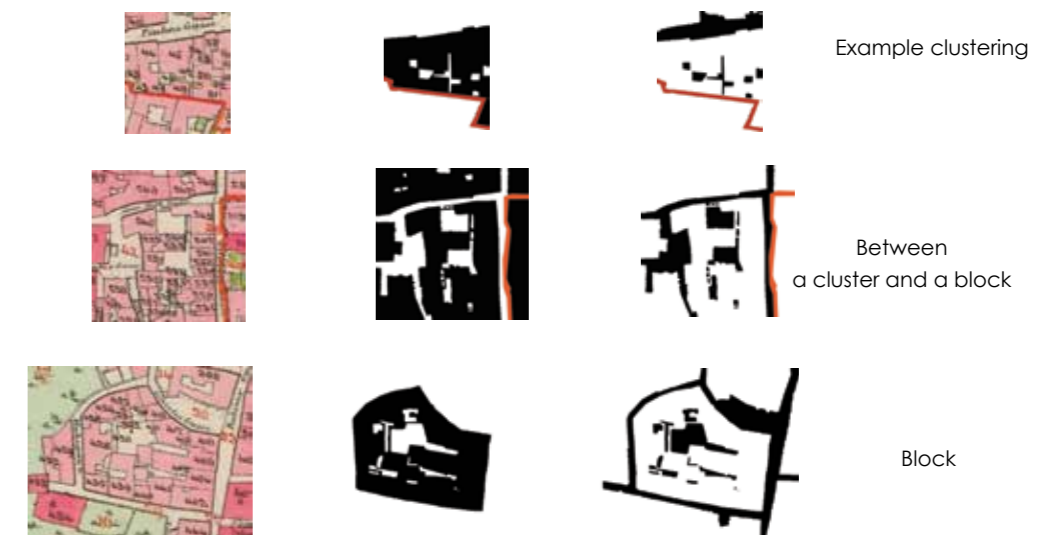
Synagogue  
 Residential  
 Wall

STREET LINE



Organic shape of the street is formed through straight lines

CLUSTERS AND BLOCKS

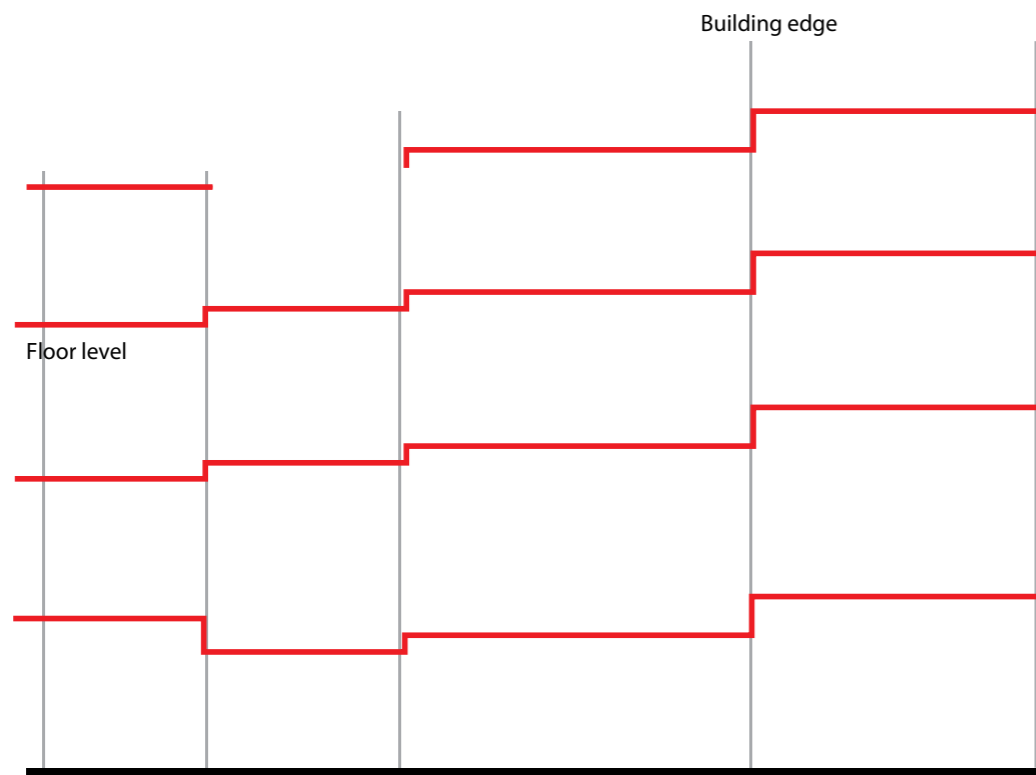
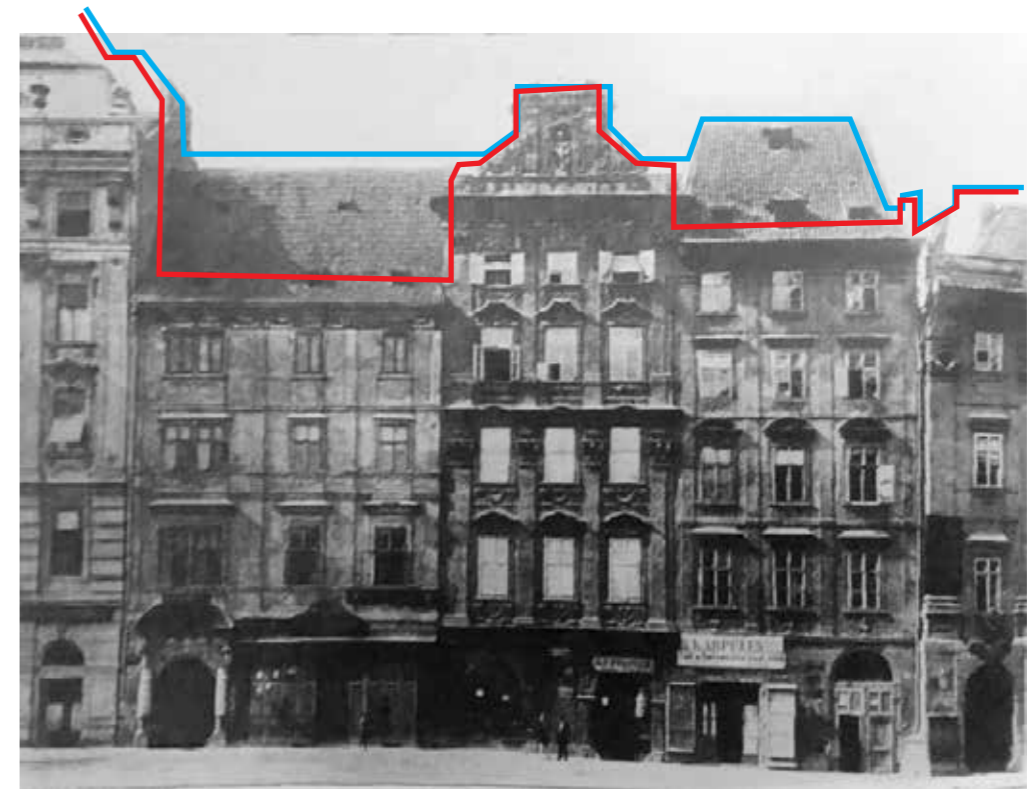


What is very interesting about urbanism of vernacular cities is the hidden rules that were developed through decades or centuries of dialogue within the community. Each new construction was a public participation process.

FLOORS LEVELS

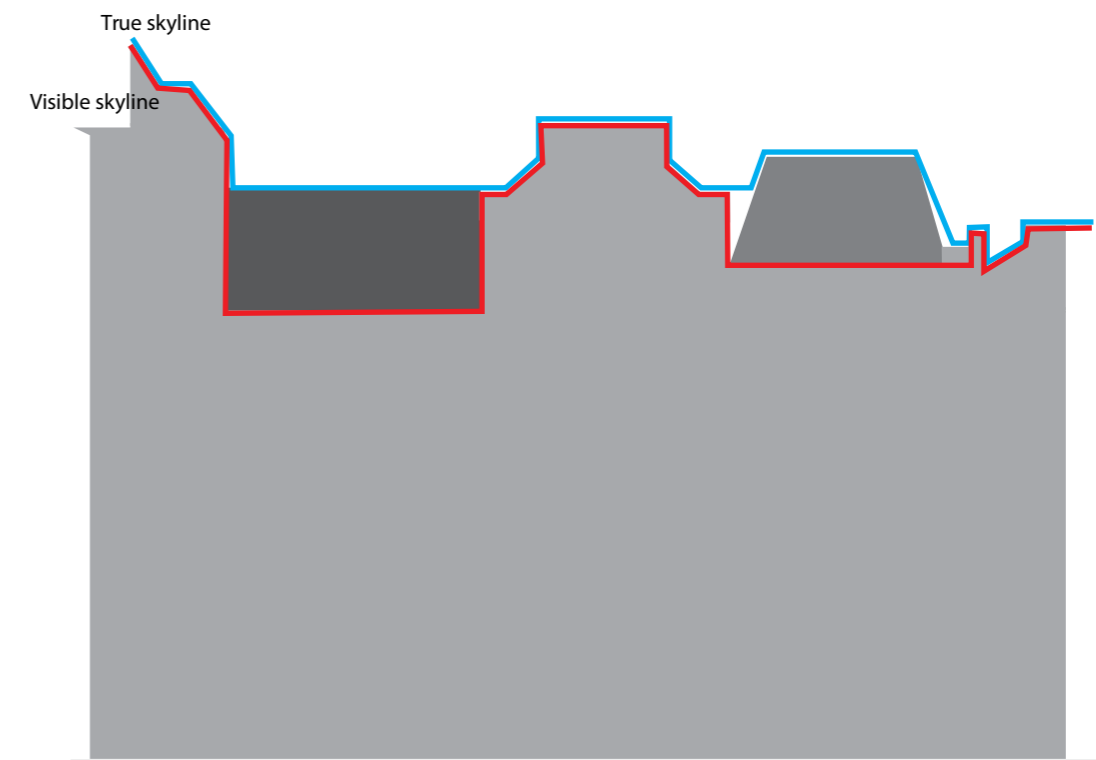


FACADE AND SKYLINE



Street line

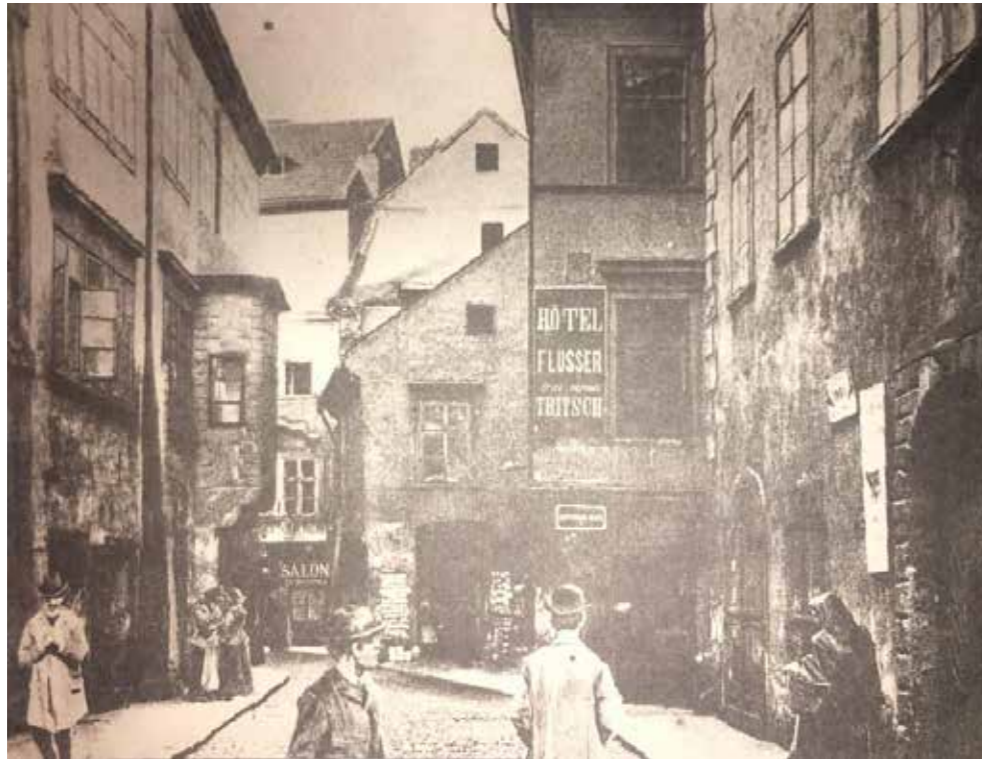
The layering of demolishing and reconstructing as well as the socio-economical status of the community give birth to a diverse urban experience. Buildings with similar facades but different floor levels and different building heights.



Street line

The buildings were working as one body following the same street line but the roof tops were changing.

PROGRAM

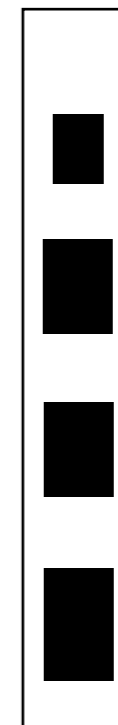


WINDOWS



Housing

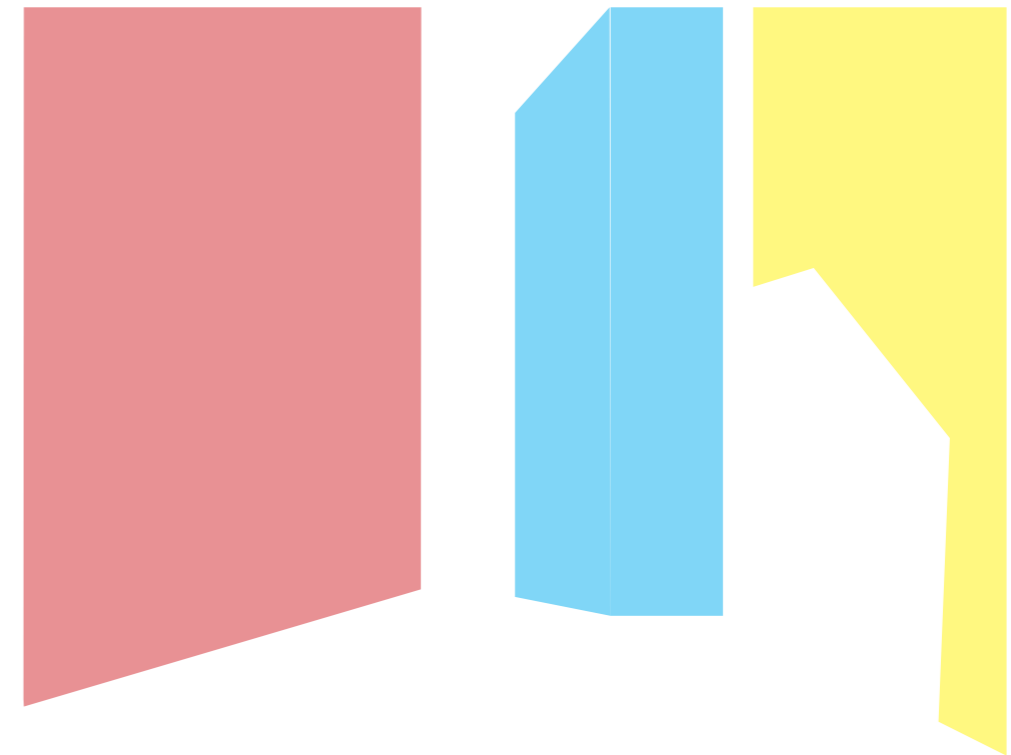
Shops



The windows also reflected the socio-economical status. The apartments on the first and second floors were bigger more luxurious with higher ceilings.



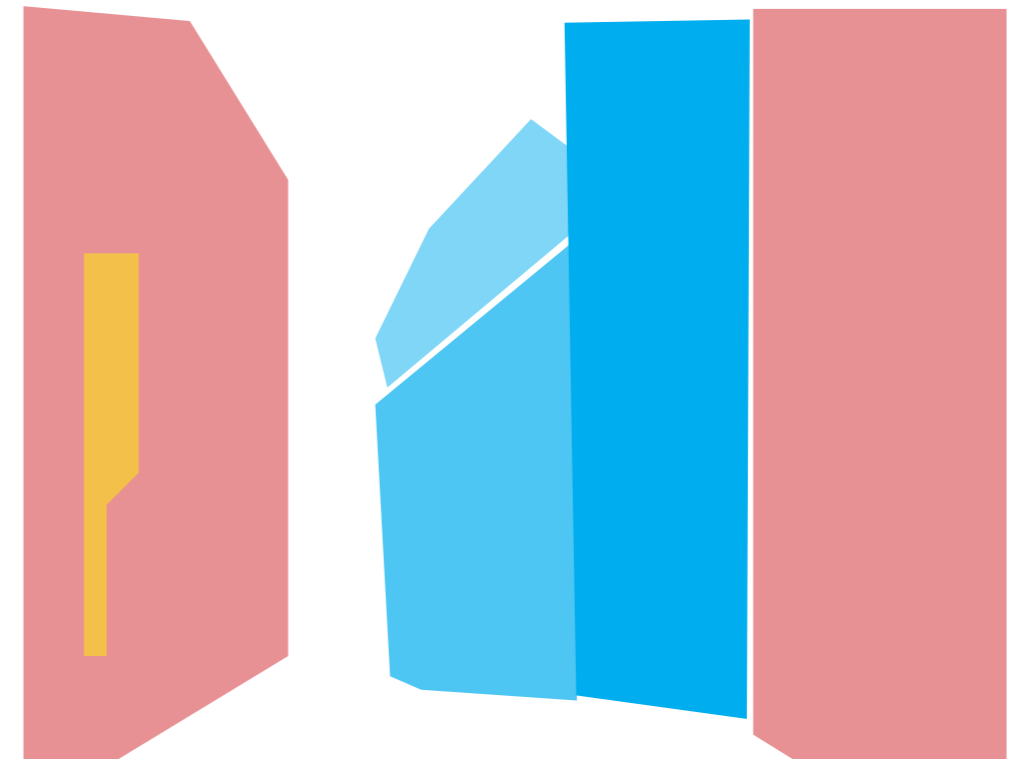
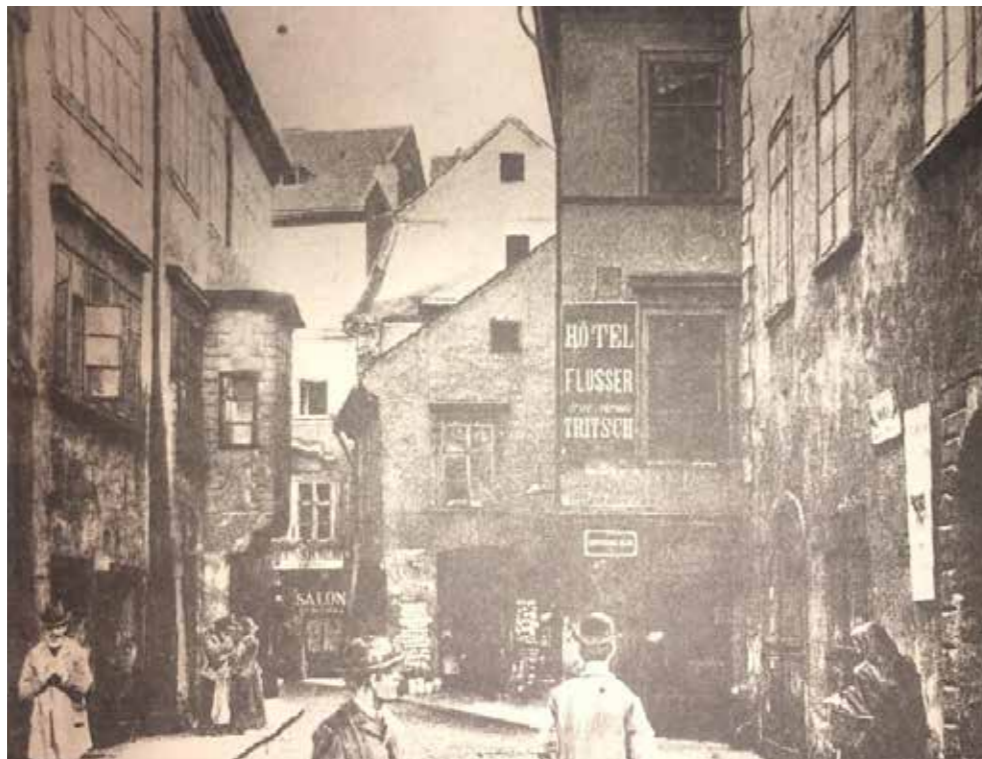
MASSING



Following the street line

Cutting the street line

Flying over



Following the street line

Cutting the street line

## 2. Shibam, Yemen

Shibam in its current statue was built around the 16th century and is considered the first sky scrappers. The buildings are made out of adobe bricks and plasters with mud. The city is located in a valley and was considered a major trade center in Yemen. The buildings are being used as dwellings as well as defensive structures against floods and enemies. The city is spiced in its built form as well as the division of privacy. The street level is totally public and the roof tops are mainly private or semi private. One more reason to choose Shibam as the global human heritage inspiration is that this city was announced as World Heritage after the war in Yemen in 2015. A war that has reached one the worst death toll since World War II with 60 000 deaths. The city now is endangered. Thus, getting inspired from some of its

architectural and urban forms could be one way to raise awarness about the importance of preserving human heritage. The aim of this project is not just to get inspired from the past, but to produce a contemporary livable architectural and urban experience; lookig forward for a more sustaibale future

MASTER PLAN



7 - 10 m

20 - 30 m

AERIAL VIEW



PUBLIC SQUARE



The buildings around the city center and the gate are lower than the average heights in the city which goes up to 30 M.

CITY CENTERS



- City center- Market- Shops  
Al-Jame mosque (Main)
  - Admen Center - City gates
  - Shops - Mosque
- MAIN SQUARE

PATHS AND STREETS



Main streets

- Major Roads (3-7 M)
- Major connections between the centers (2-7 M)
- Path-age through the buildings

STREET VIEW

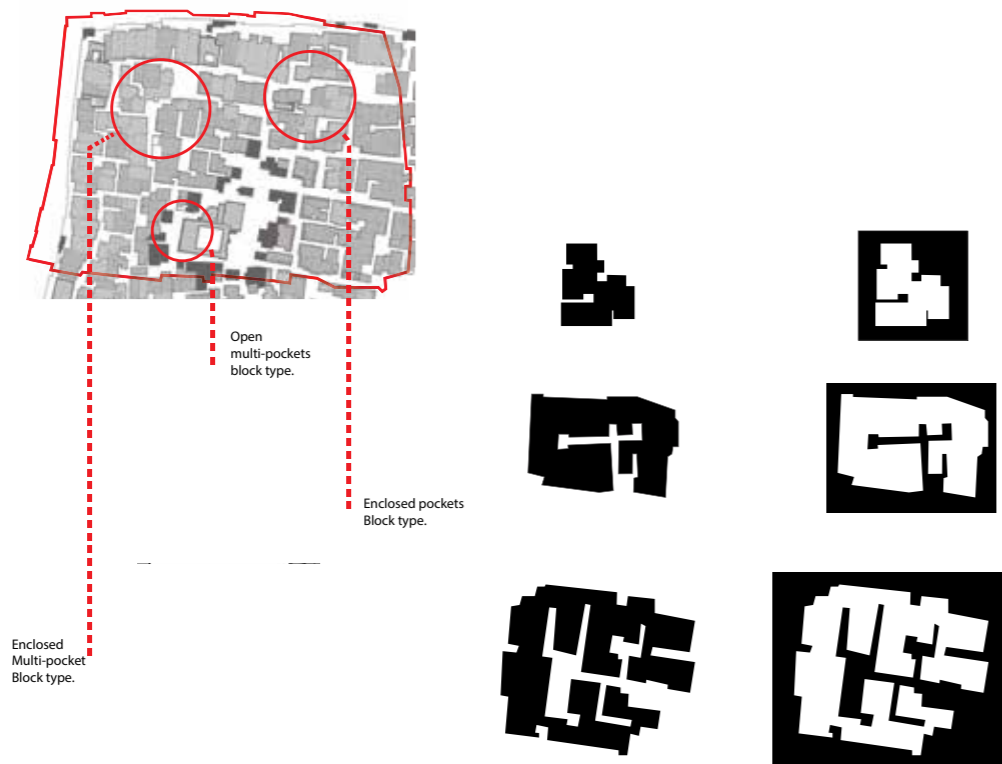


The Streets in the city are not very wide streets the classification above is ranking into major roads, major connections, normal streets, path-ages. The major roads are connecting between the gate/administrative center and the city center.



The street axis are visible to some extent but the articulation in the street line creates more complex form and public spaces around the city. Pathway are clustered in the west part of the city (higher building density).

MORPHOLOGY

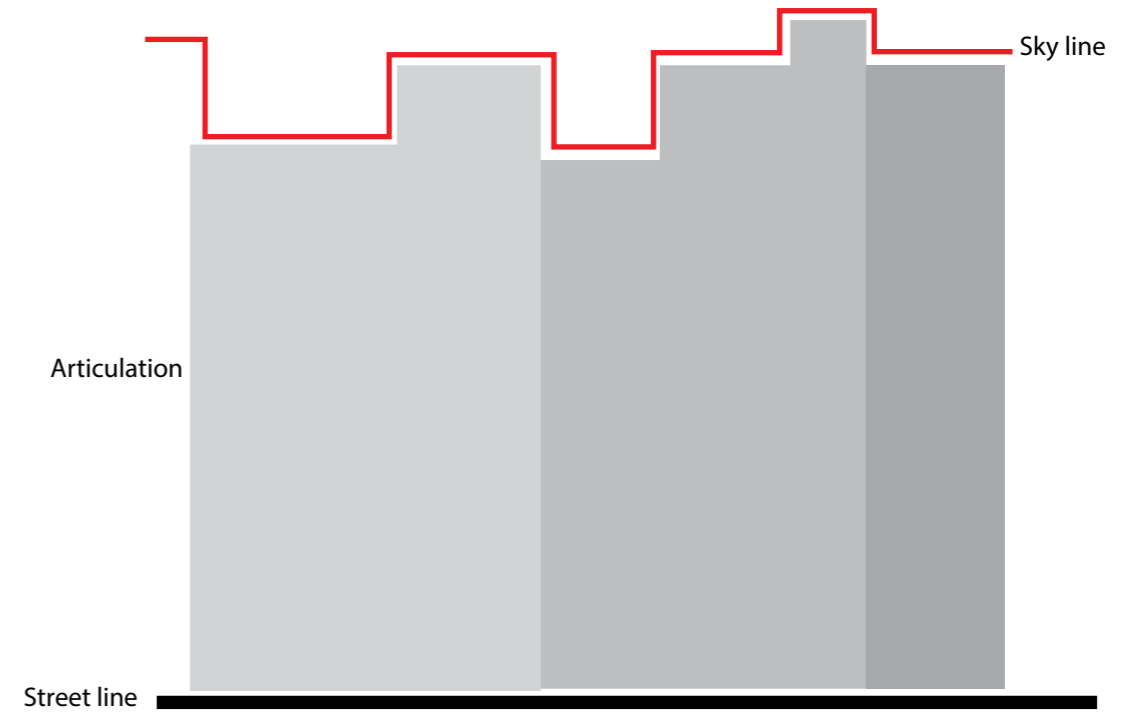


TOP VIEW



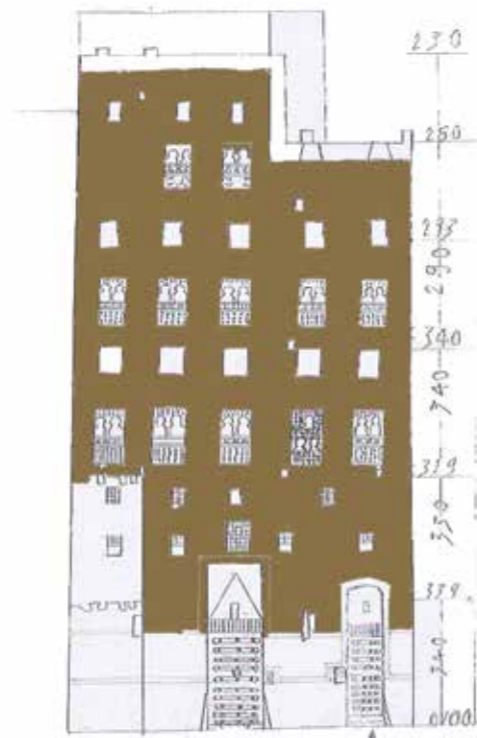
The buildings in Shibam are clustering together shaping the street line. The courtyards are part of the street network.

SKYLINE

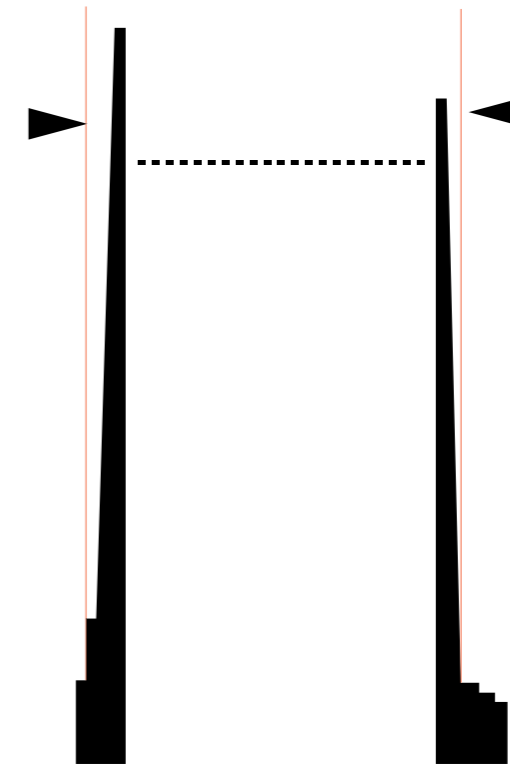


The skyline in Shibam is made of straight lines that form terraces. The buildings are not aligned together pushing the street line in and out.

FLOOR HEIGHTS



FACADE



PROGRAM



NATURAL LIGHT DIAGRAM



The main structure is load-bearing Adobe brick walls and wooden pillars starting from the 2nd or 3rd floor.

The thinner outer layer allowed for wider windows which allowed more light and air to infiltrate the rooms.

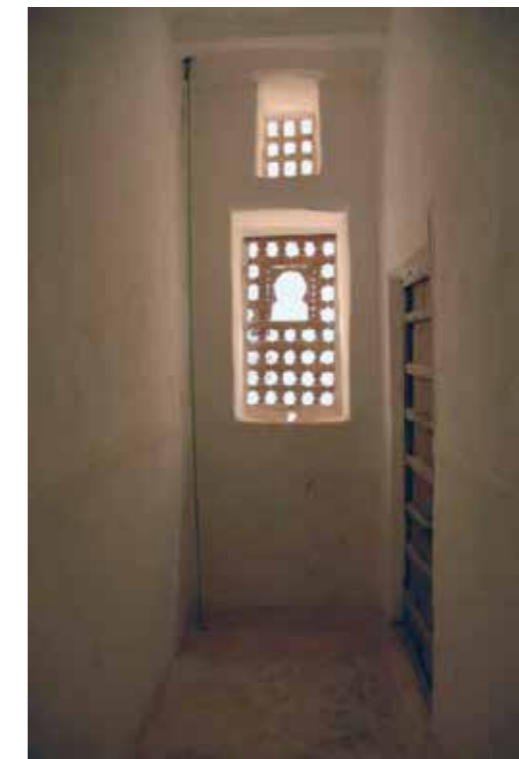
As the main structure are Adobe bricks the load on the walls gets less the higher you go. Reduce the outer layer to give the buildings more stability but also to let the streets breath. (V street section).

FLOOR PLANS



On the 3rd floor plan something very interesting happens a door between two buildings is opened. This principle is mostly related to having a parallel circulation level in case of flood or enemies invading the city.

WINDOWS

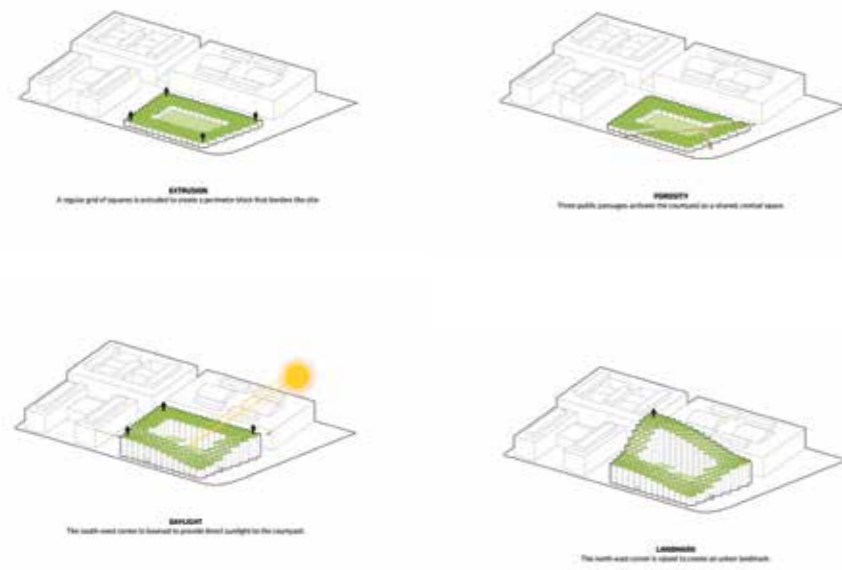


The windows in shibam were mainly reflecting the different privacy levels.

### 3. 79&Park



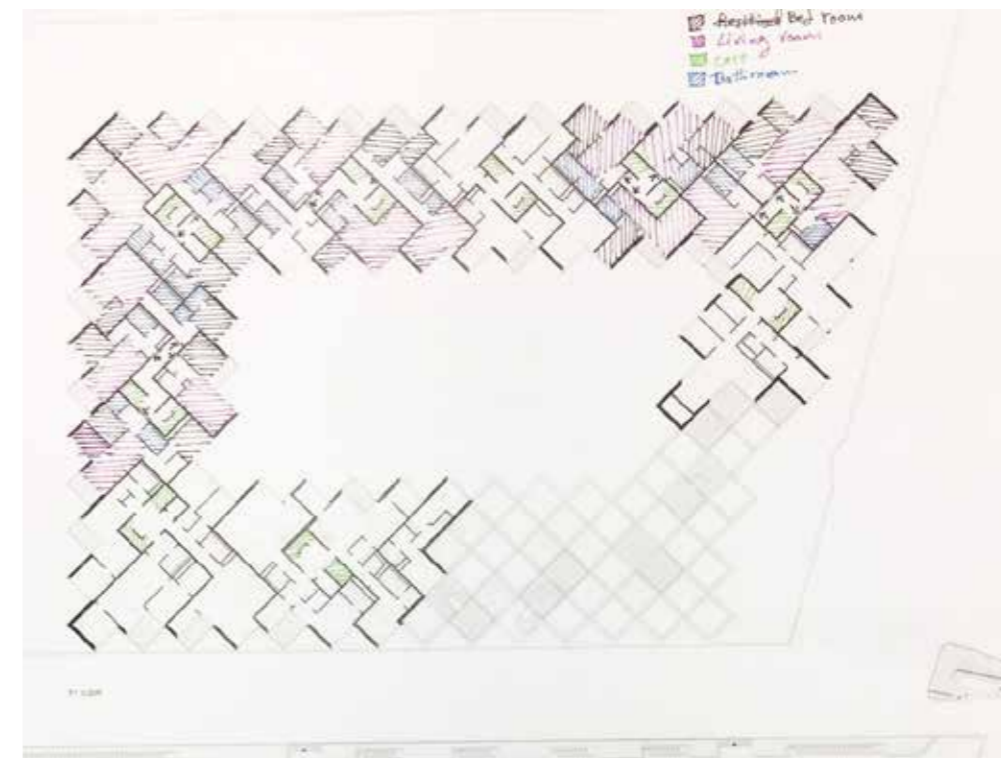
CONCEPT DIAGRAM



GF Plan



3rd floor plan



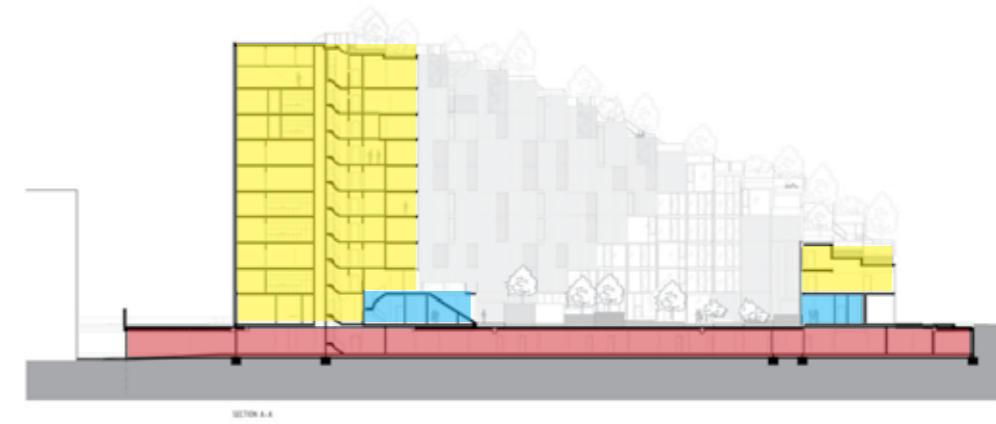
INTERIOR FACADE WINDOWS



SHADING



PROGRAM



ROOF TOPS



Aside from the floor plan solutions, these green roofs are one of my favourite details about this project.



# 4. TIMMURHUIS

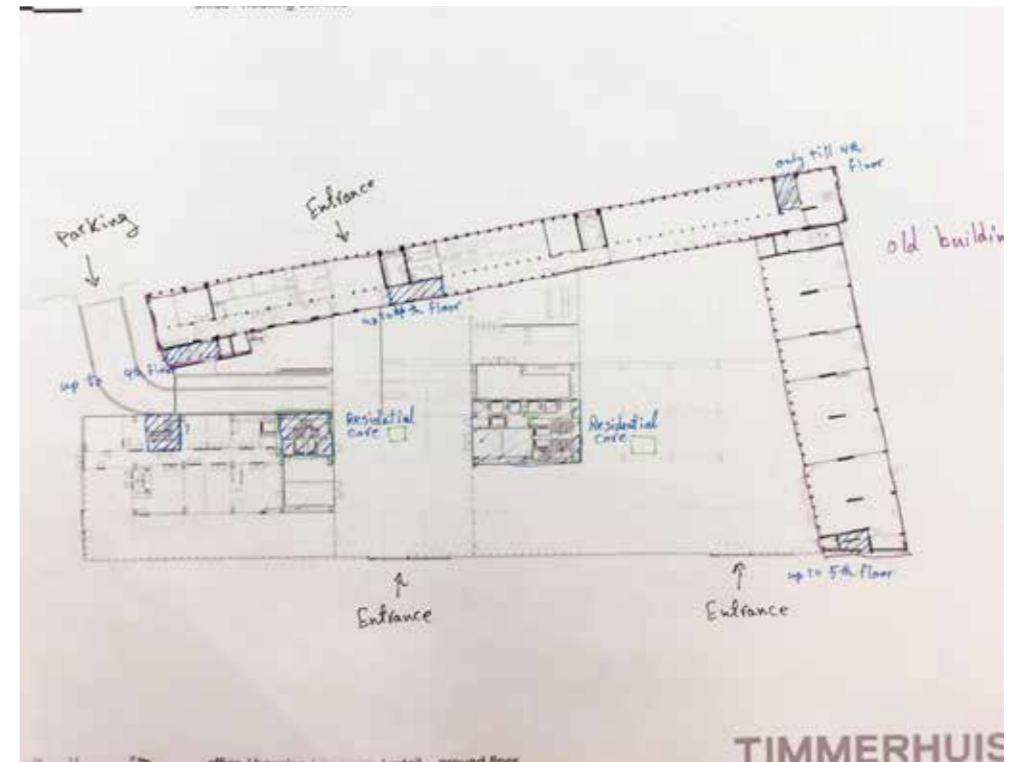


CONCEPT

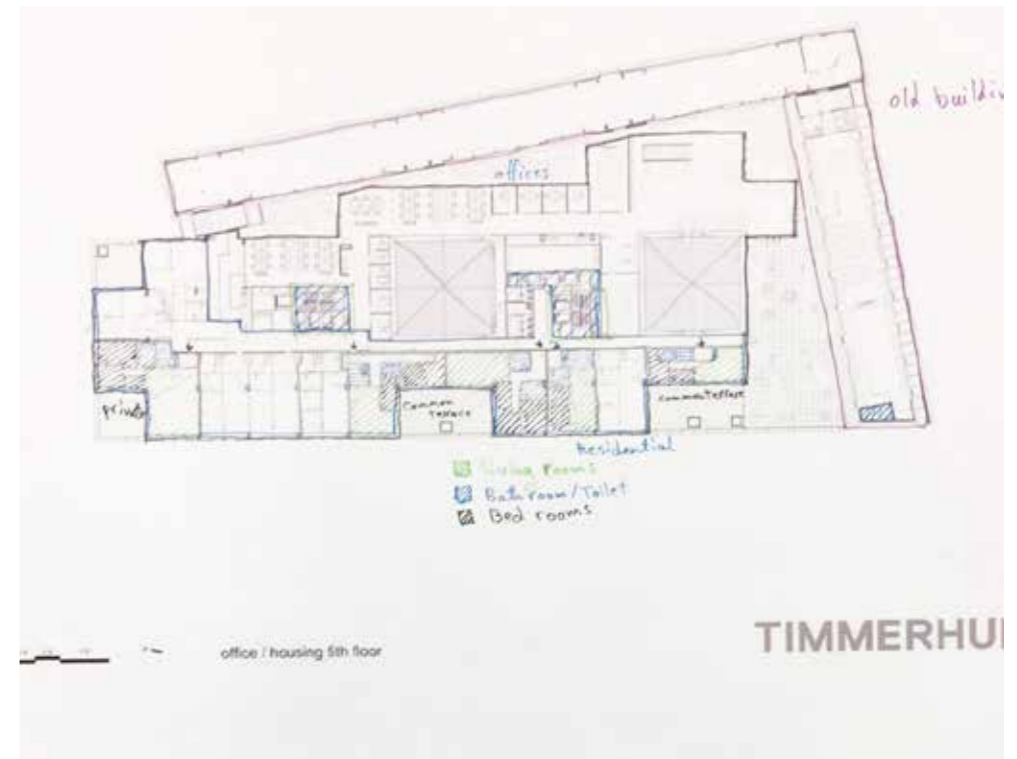


THE MASS KEEPS REDUCING FROM A BLOCK SIZED BASE INTO TWO RESIDENTIAL TOWERS

GF PLANS



3RD FLOOR PLAN



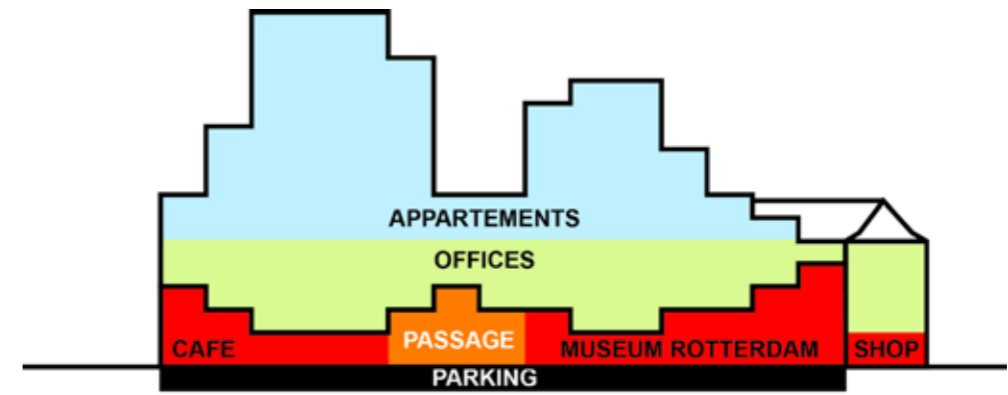
OPENINGS MATERIALS



Openings



PROGRAM



ROOF TOPS



Providing common terraces between the apartments creates a sense of community. But the privacy is questioned in this case.

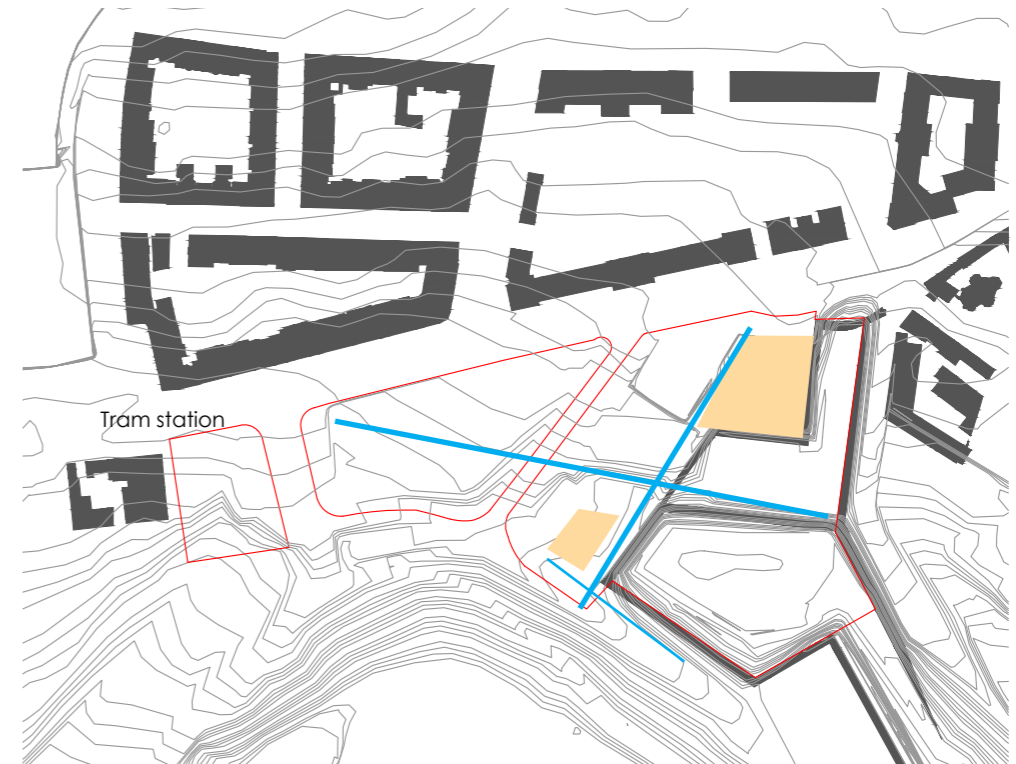
## Chapter Five

V. CONCEPT

CONCEPT DEVELOPMENT DIAGRAMS



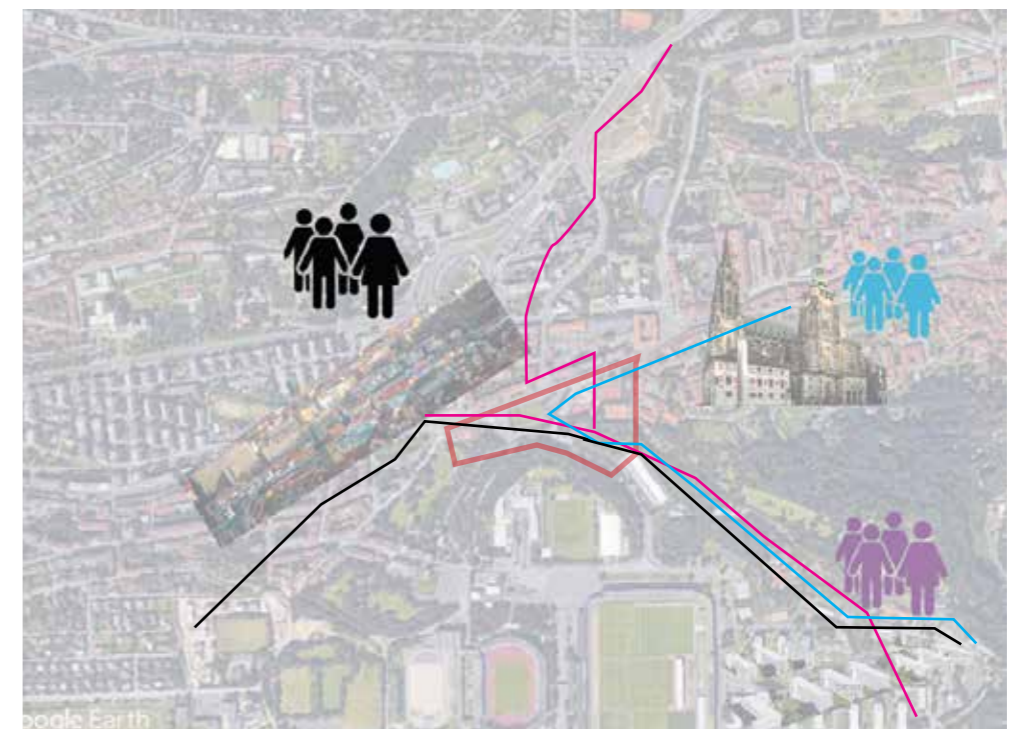
The wall and its axis as the site dominator



Create educational/cultural space along side the wall. A platform for dialogue which will be enriched by the diverse users (Locals, Tourists, and students).

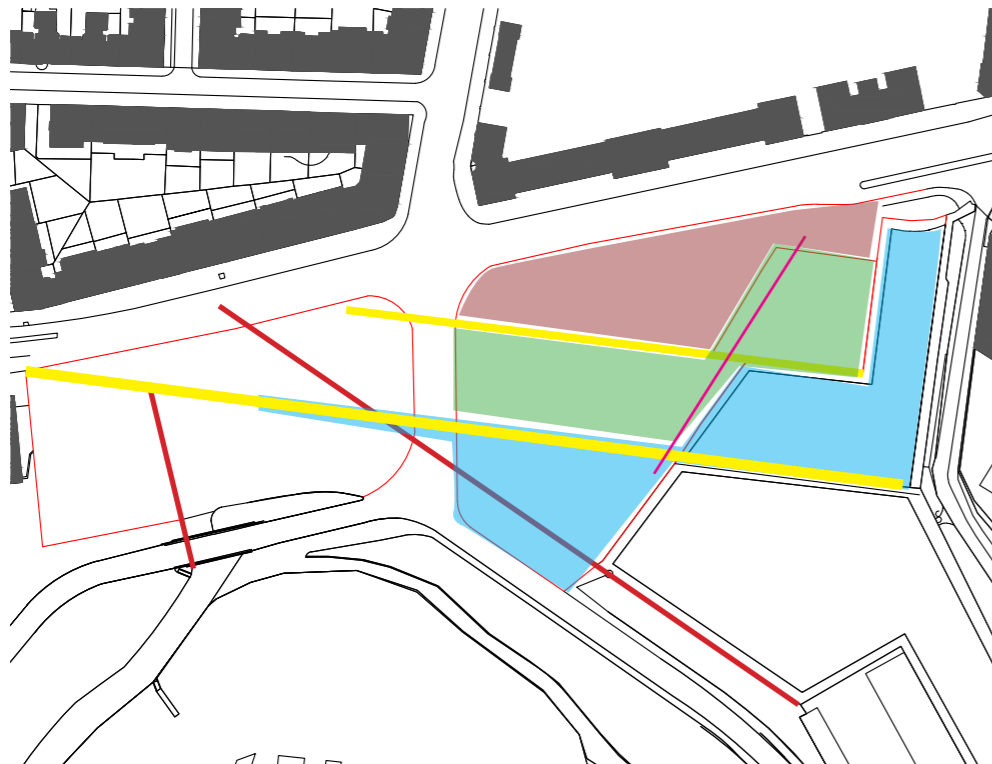


Create visual connection and direct access from the tram stop to the wall (yellow).  
Dividing the site into two pieces instead of three (red).



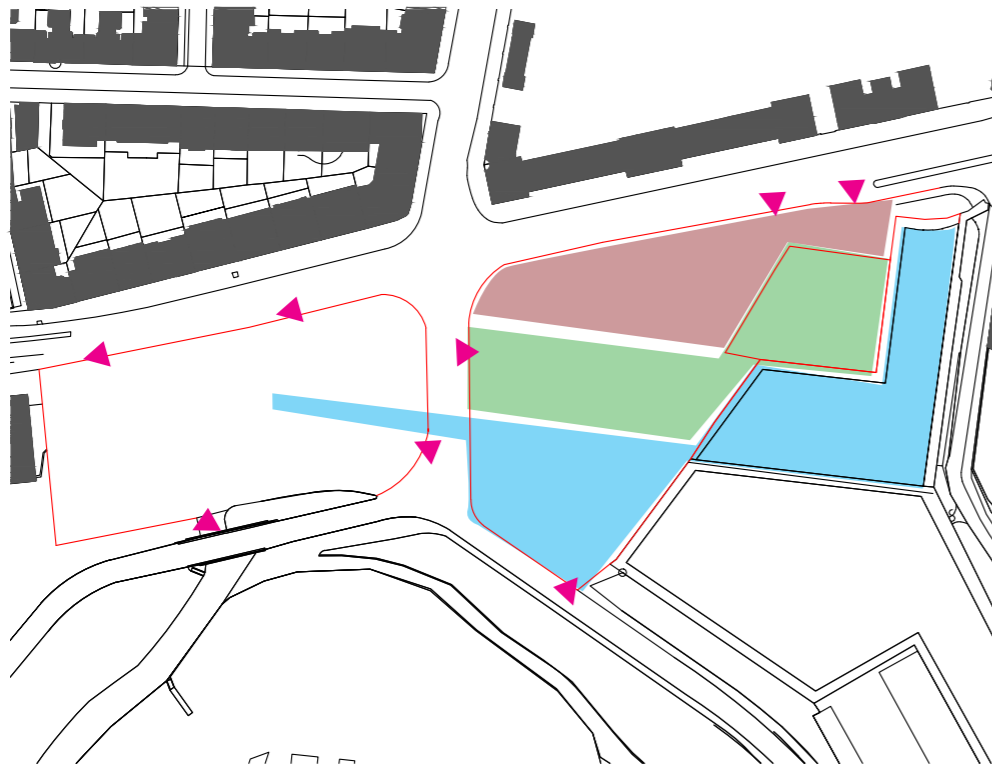
Connecting the site with the top of the wall gives multiple alternatives to navigate and a view point over the whole city.

SITE DIVISION

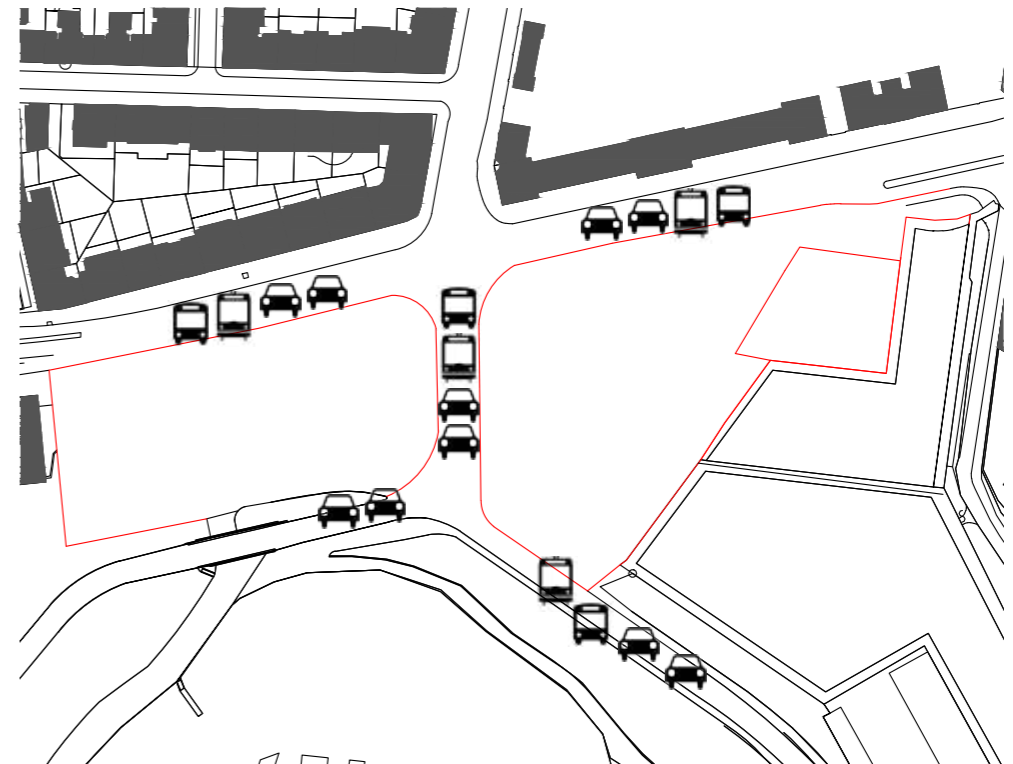


The wall axis will divide the site Vertically creating platforms on the east and Horizontally creating pathways on the west. To east the division is creating three platforms with heights of Zero (site lowest point) in red, + 5 in green, and +15 in blue.

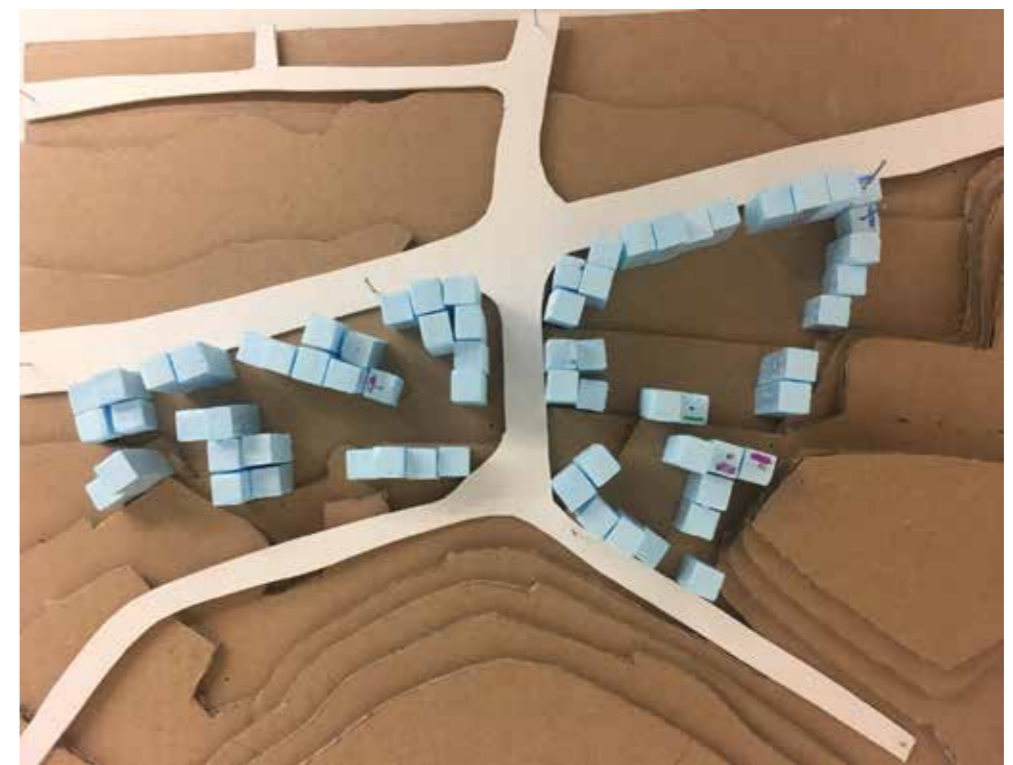
ACCESS



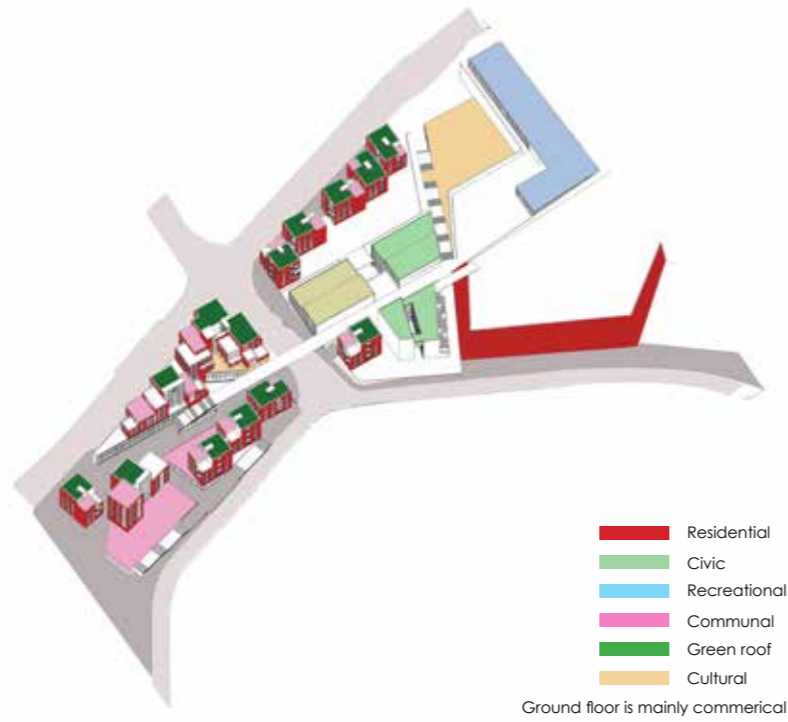
TRAFFIC



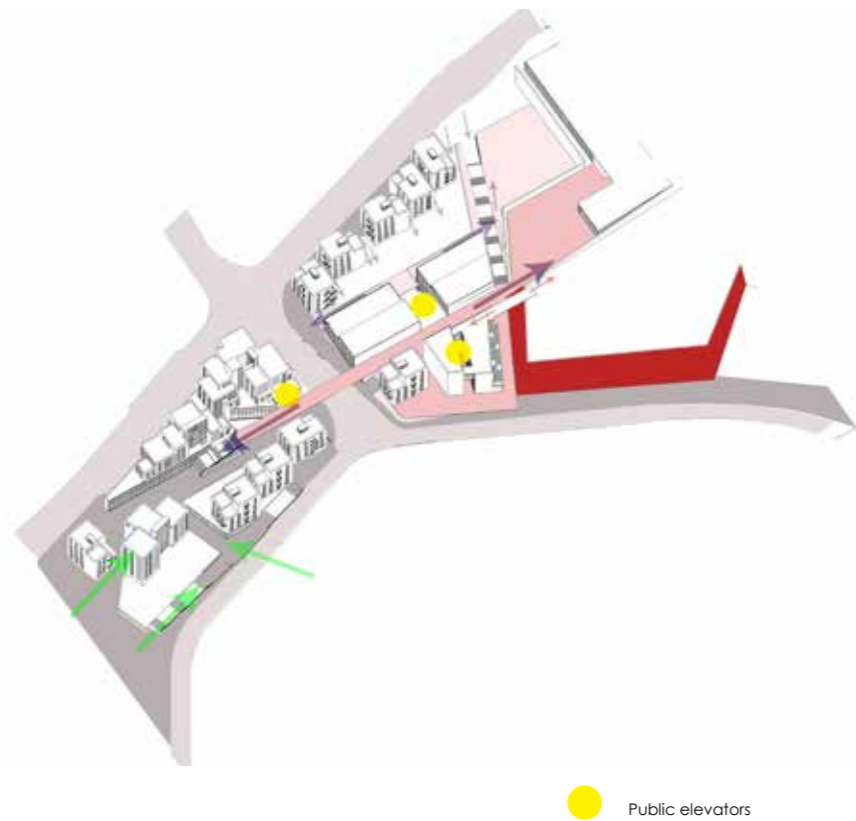
CONCEPT MODEL



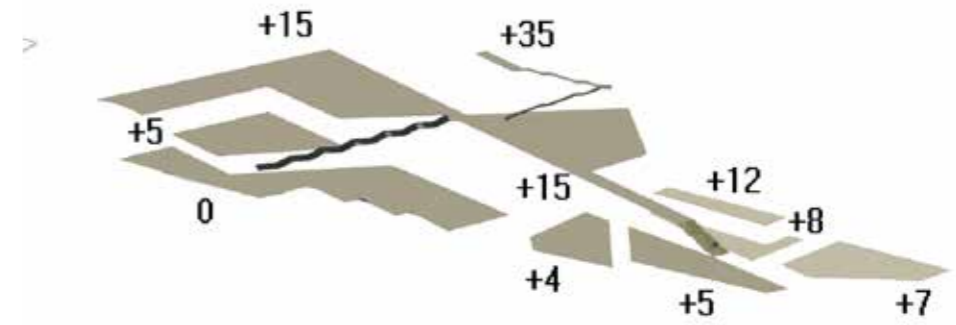
PROGRAM



CIRCULATION



LEVELS



MATERIALITY



The buildings are mainly finished with bricks, the same as the wall. But not the same grade of color to keep the wall highlighted.

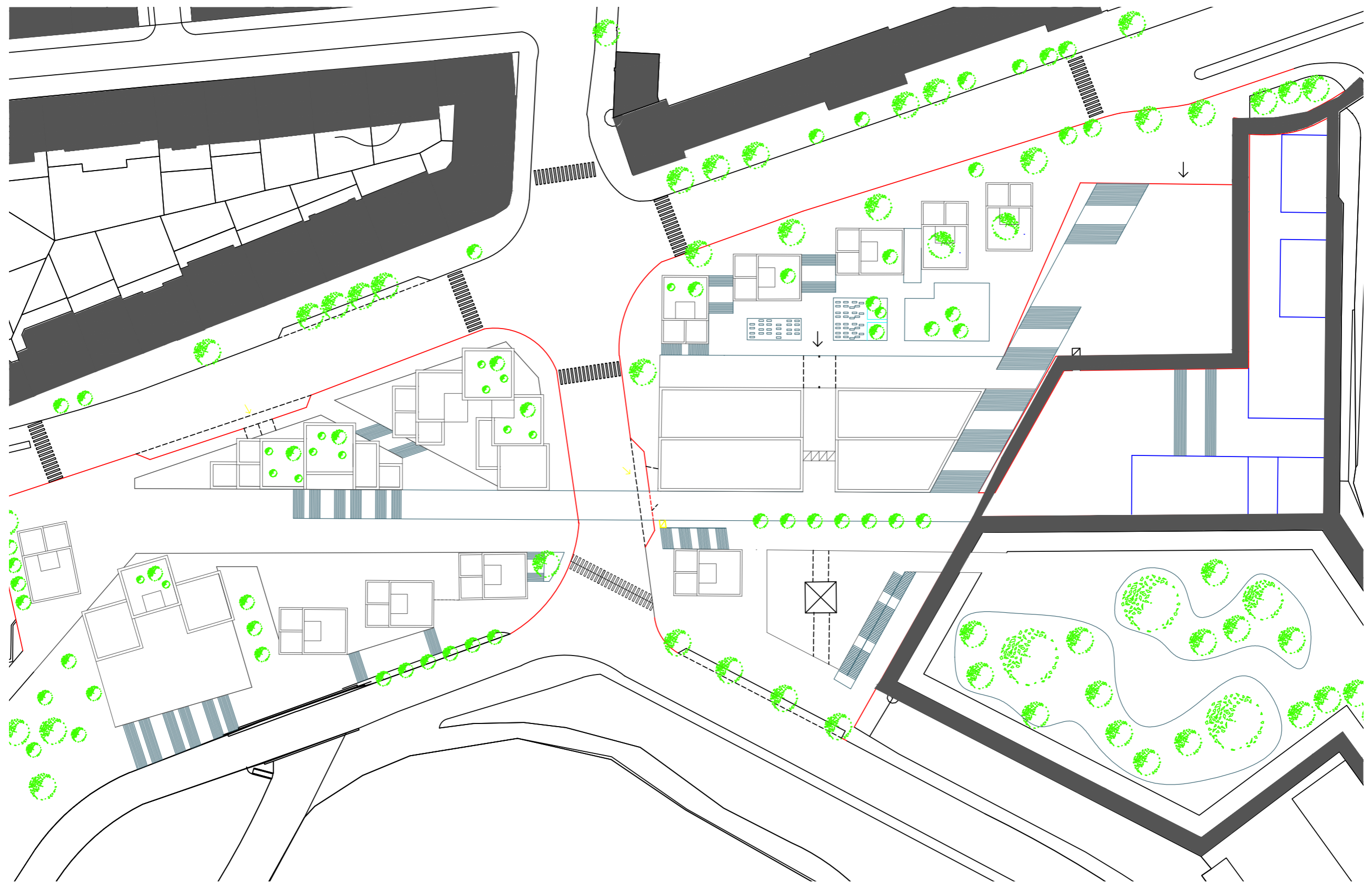
## Chapter Six

VI. PROJECT DRAWINGS

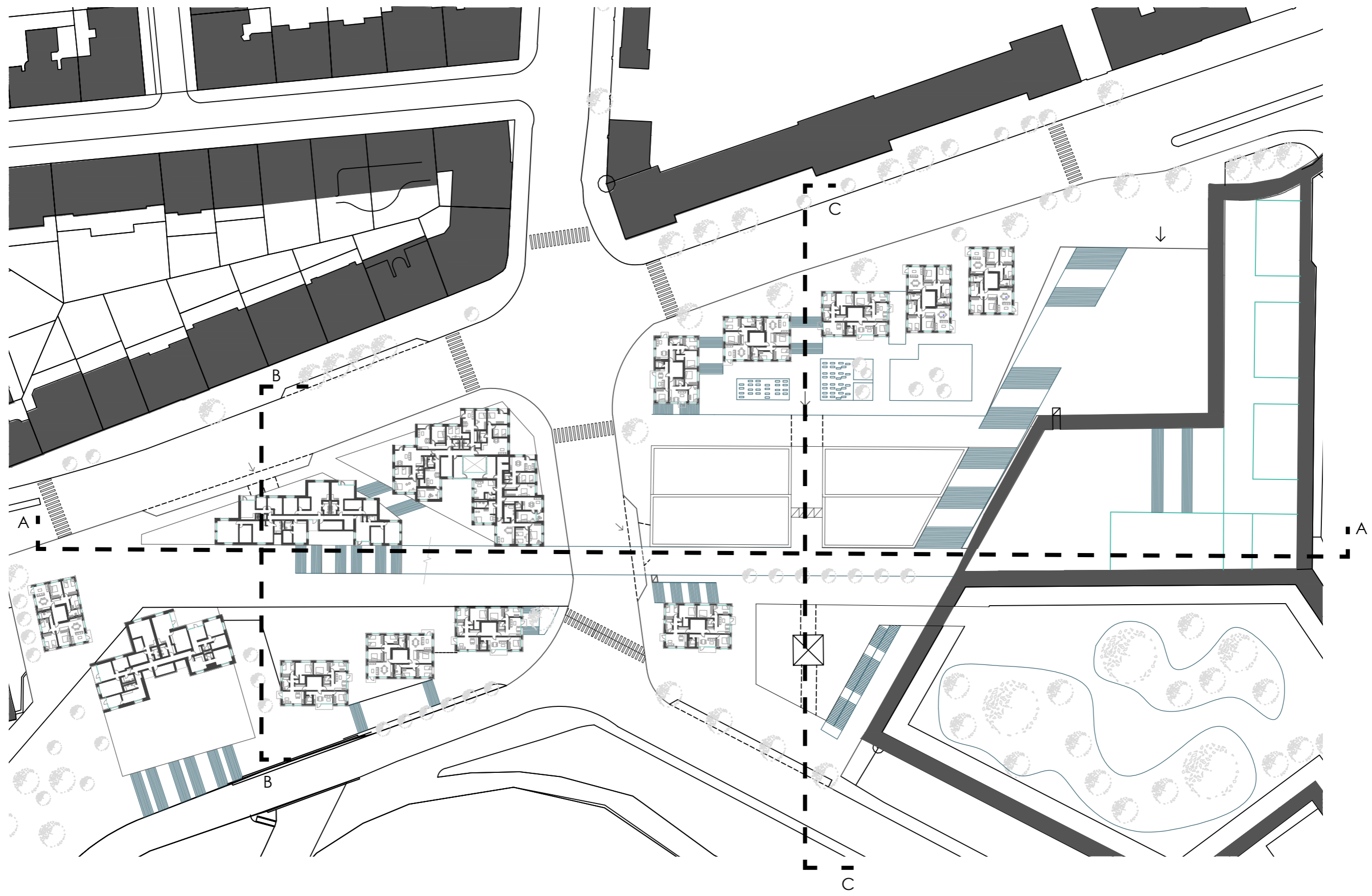


MAIN PERSPECTIVE





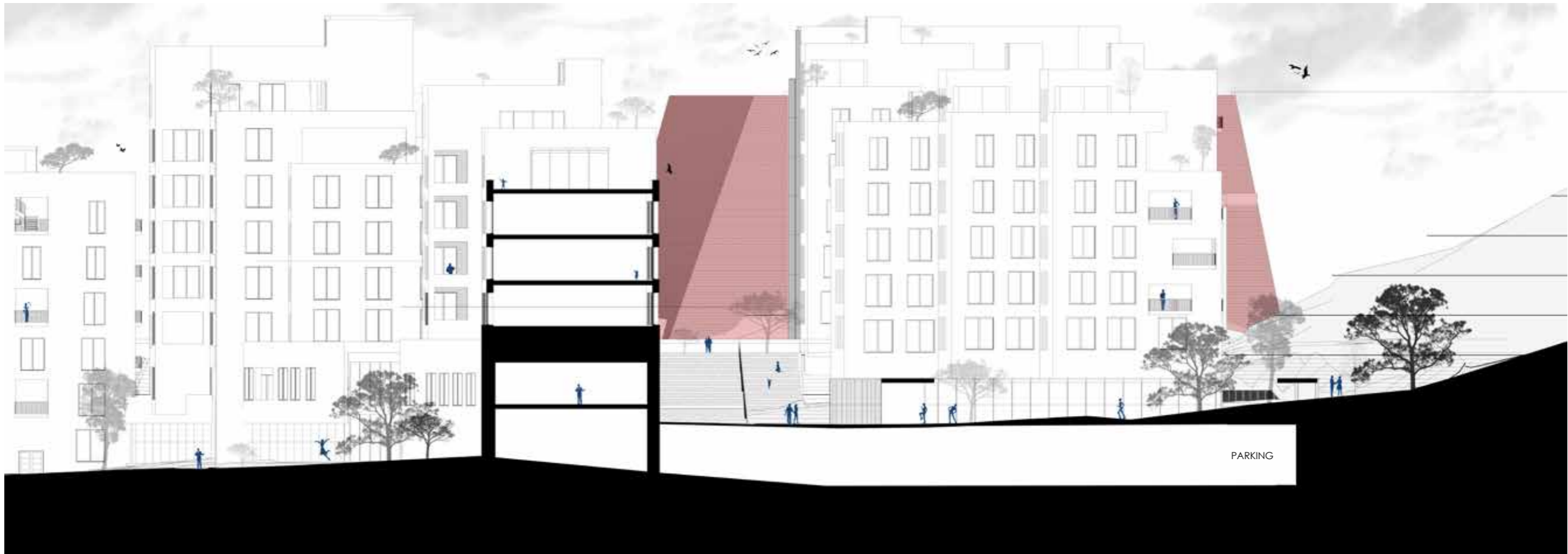
MASTER PLAN SCALE 1:1000



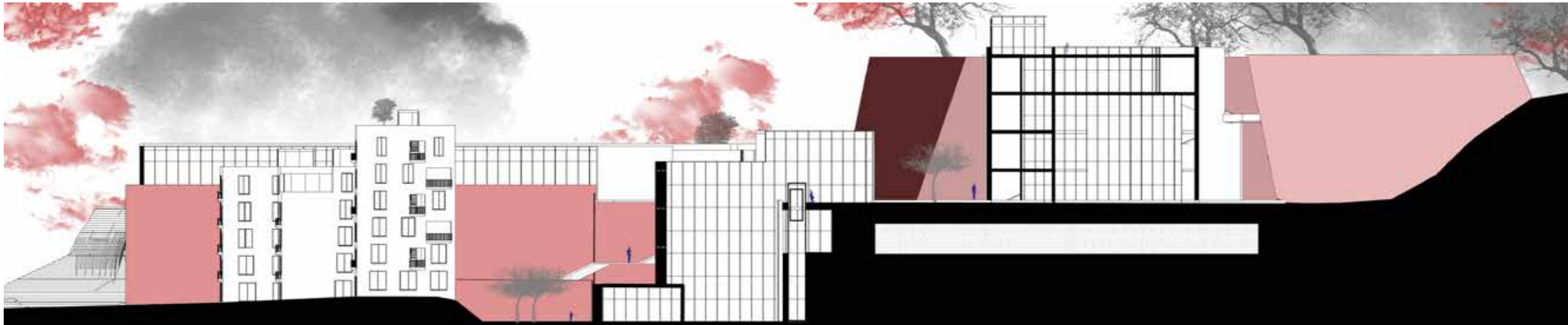
TYPICAL FLOOR MASTER PLAN SCALE 1:1000



SITE SECTION A-A SCALE 1:800



SITE SECTION B-B SCALE 1:250



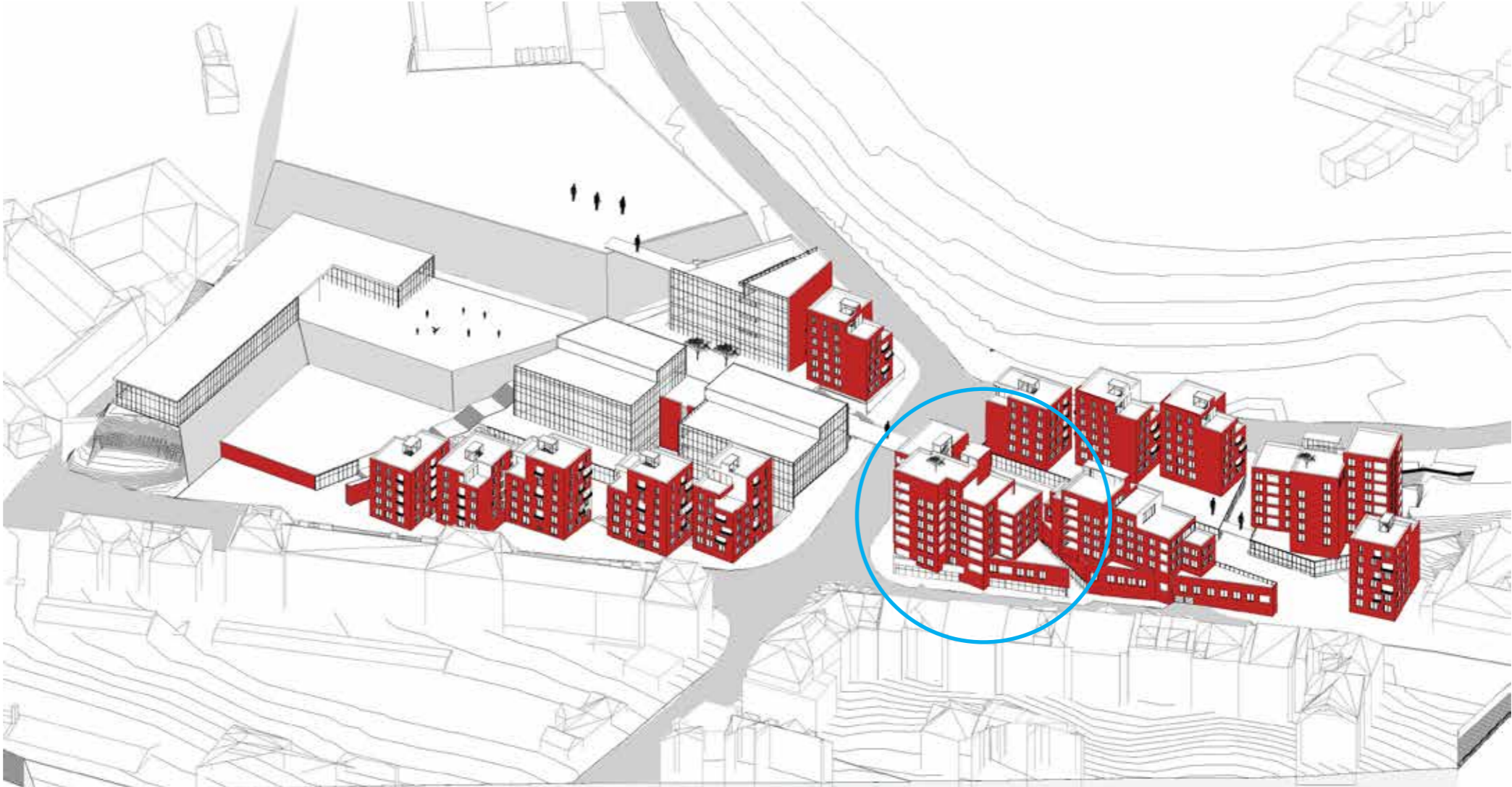
SITE SECTION C - C Scale 1:400



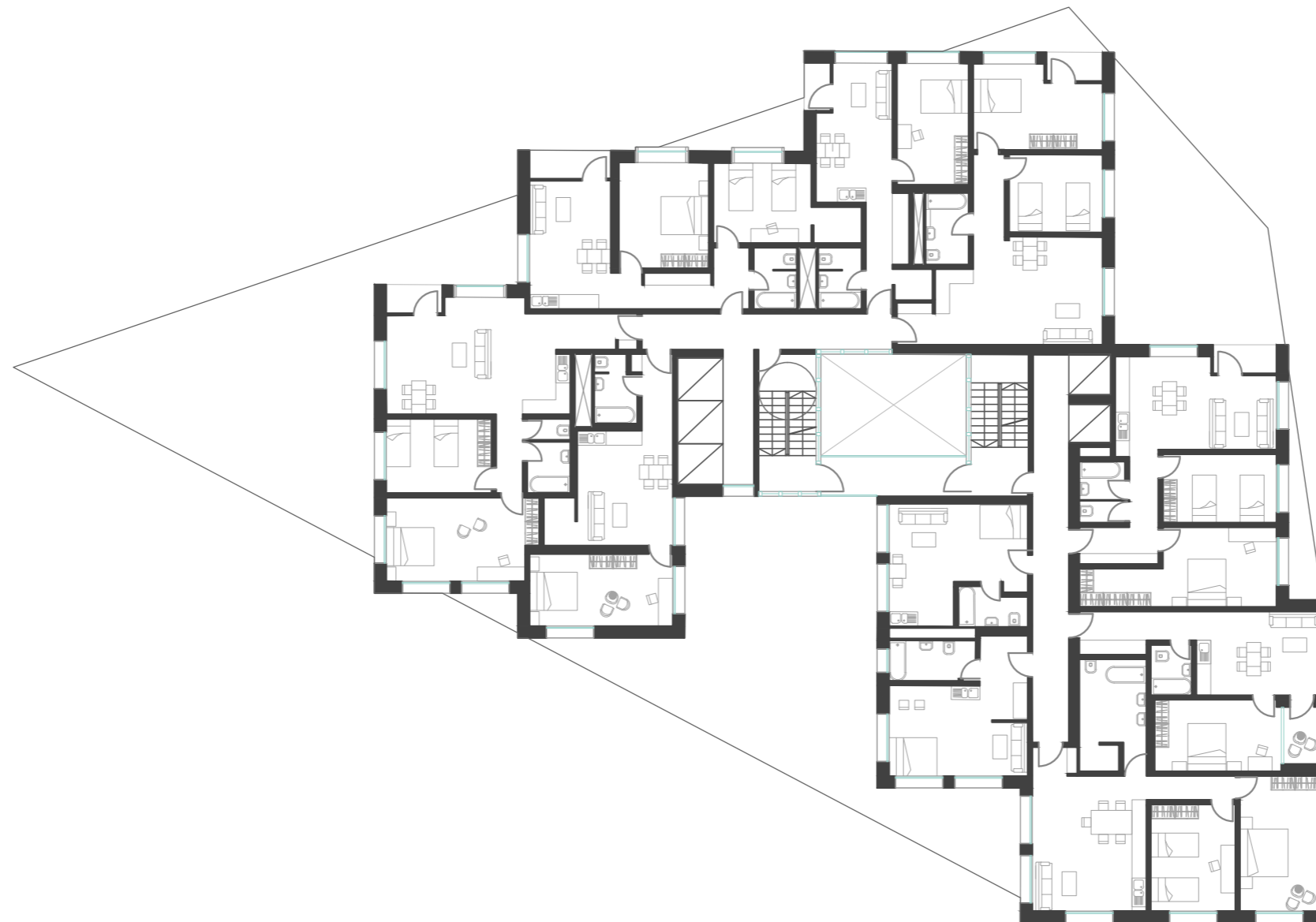
NORTHERN ELEVATION SCALE 1:1000

CLUSTER A the highest building in the project with seven floors of residential housing. Each floor is divided into two levels to keep privacy from the narrow side (south side). The difference between the two levels is 1.5 meters. This method is inspired from Josefov Prague.

This change in level is also used to avoid privacy problems between the Cluster A and Cluster B

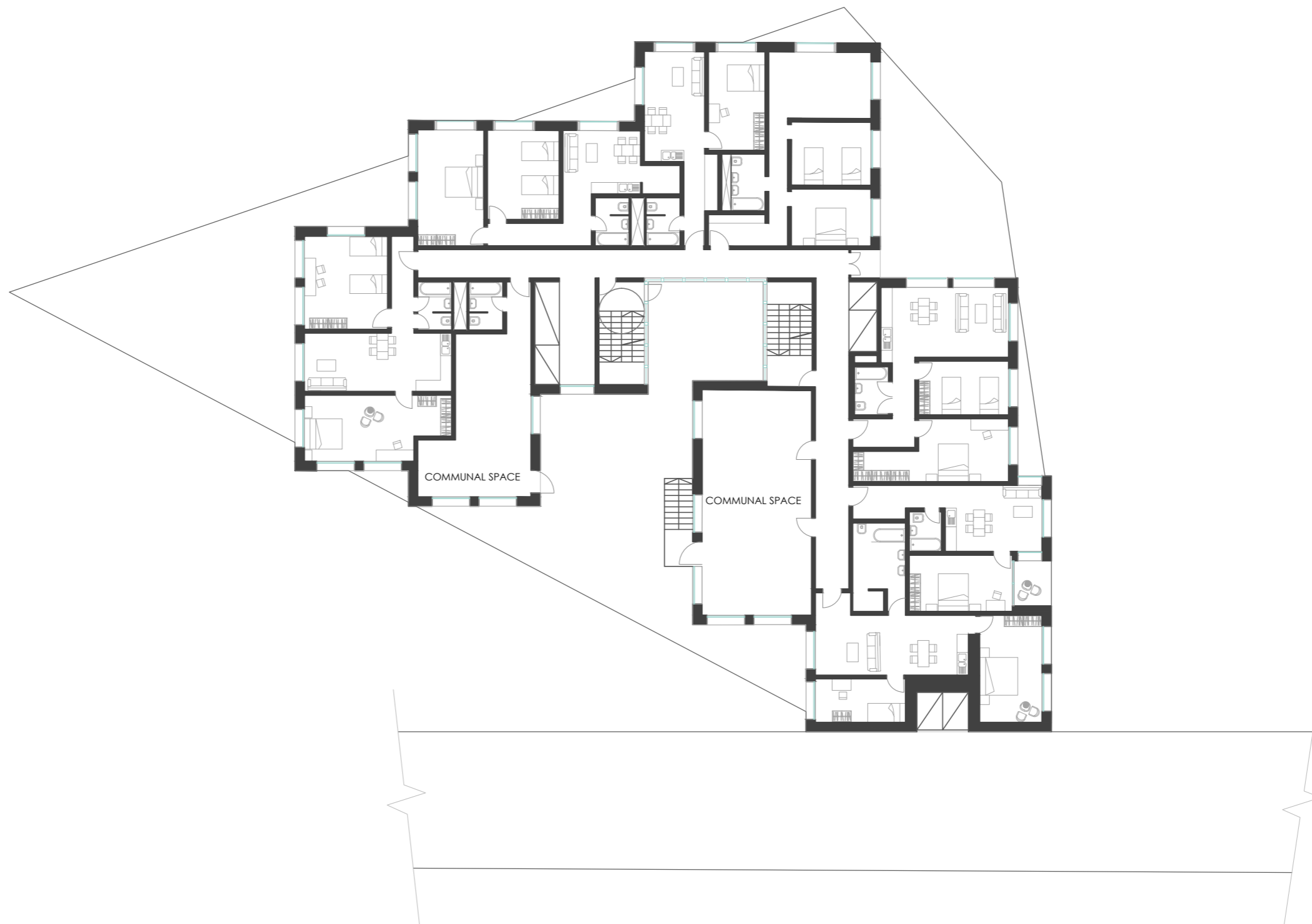


CLUSTER A

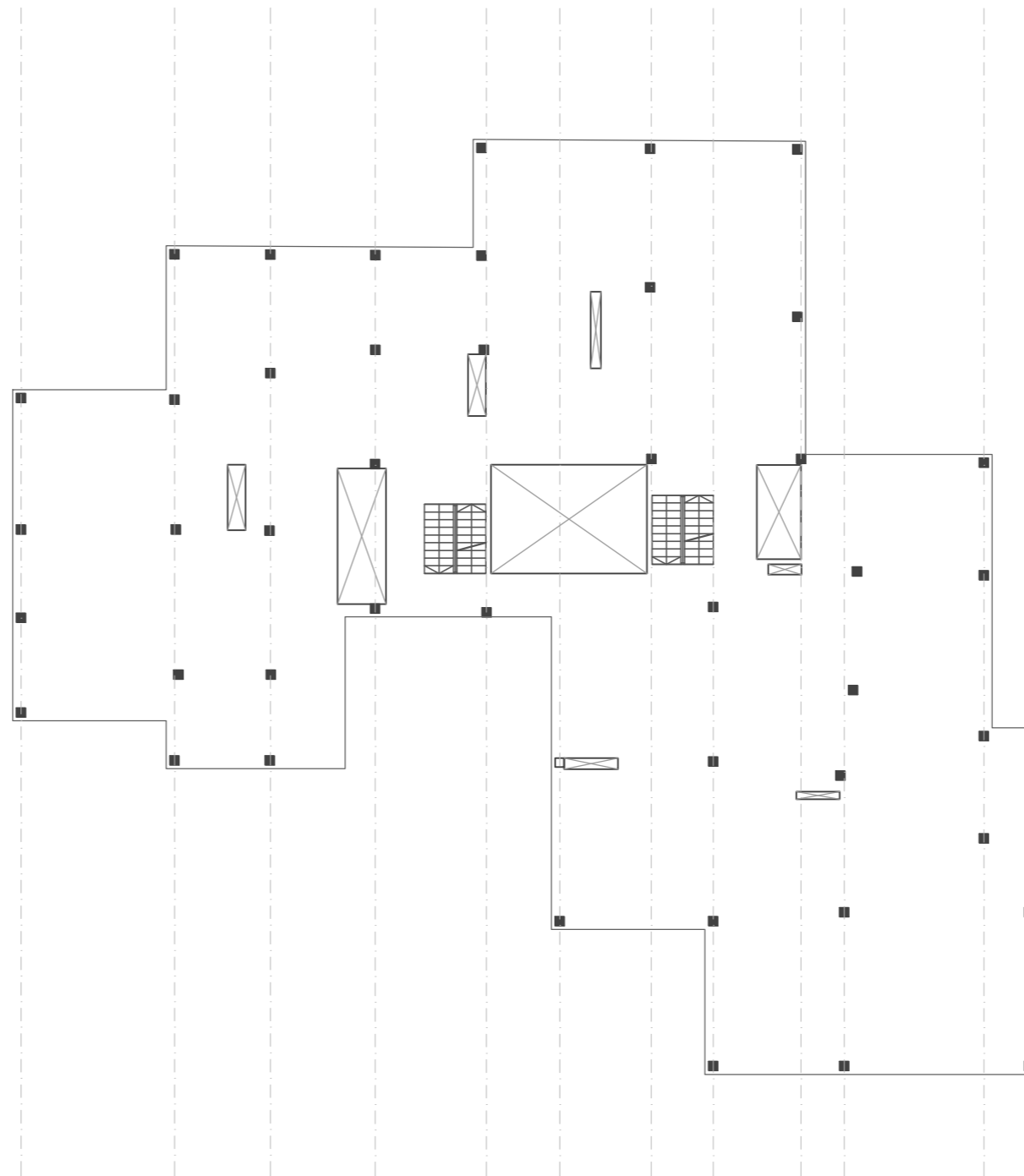


FULL FLOOR AREA PLAN Scale 1:250

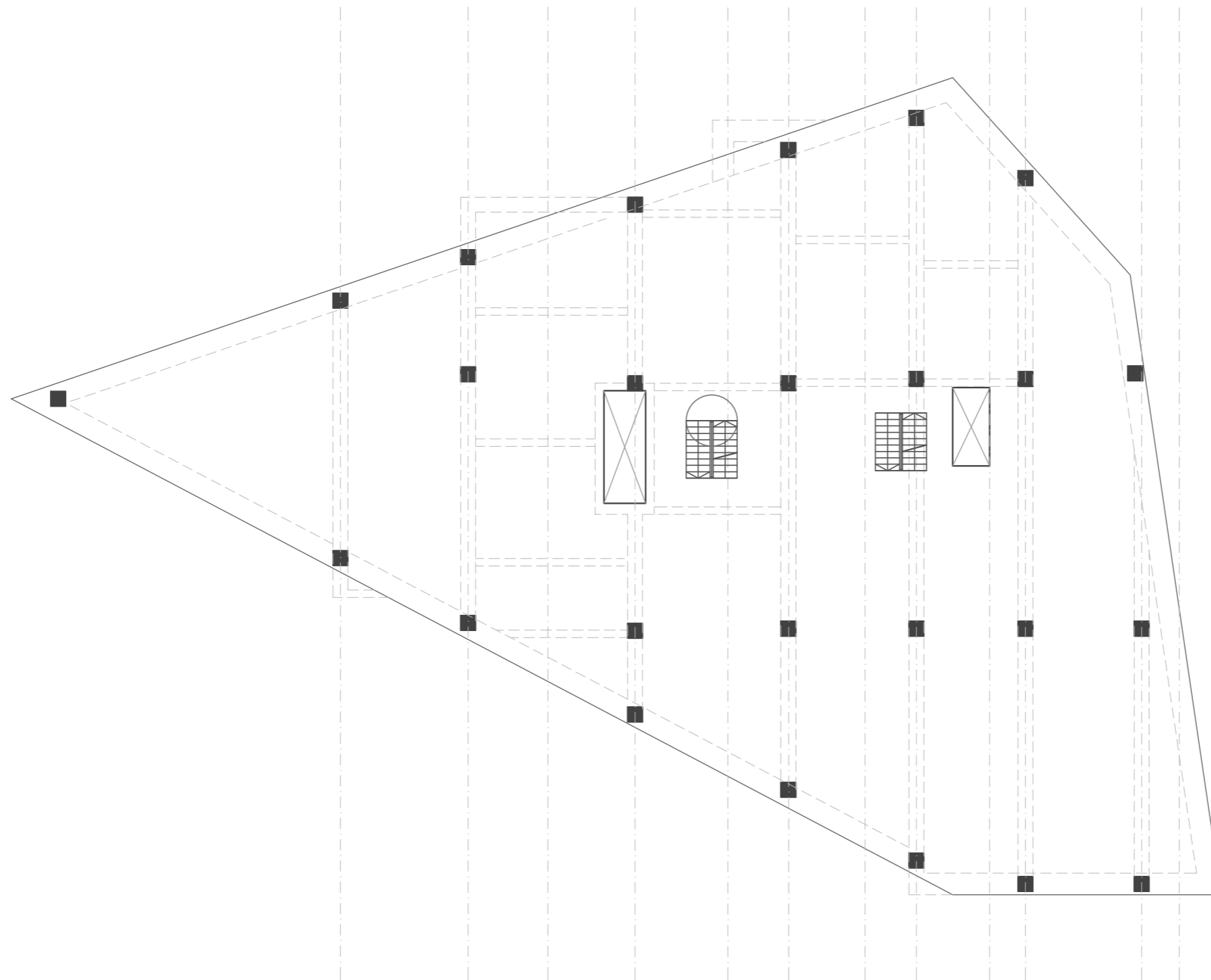




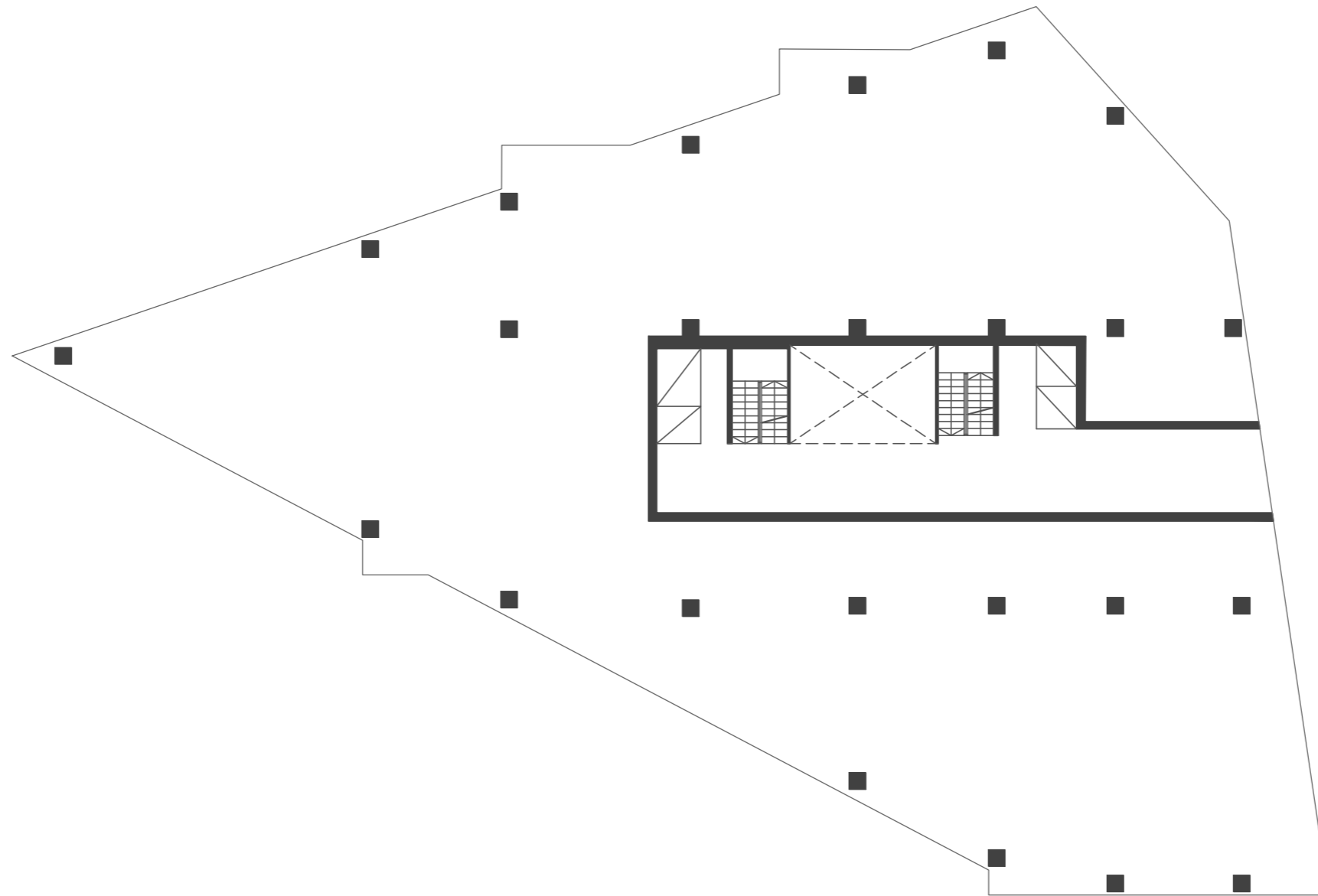
3RD FLOOR PLAN Scale 1:250



STRUCTURAL DETAIL PLAN SCALE 1:250



TRANSITIONAL SLAB PLAN SCALE 1:250



GROUND FLOOR PLAN SCALE 1:250

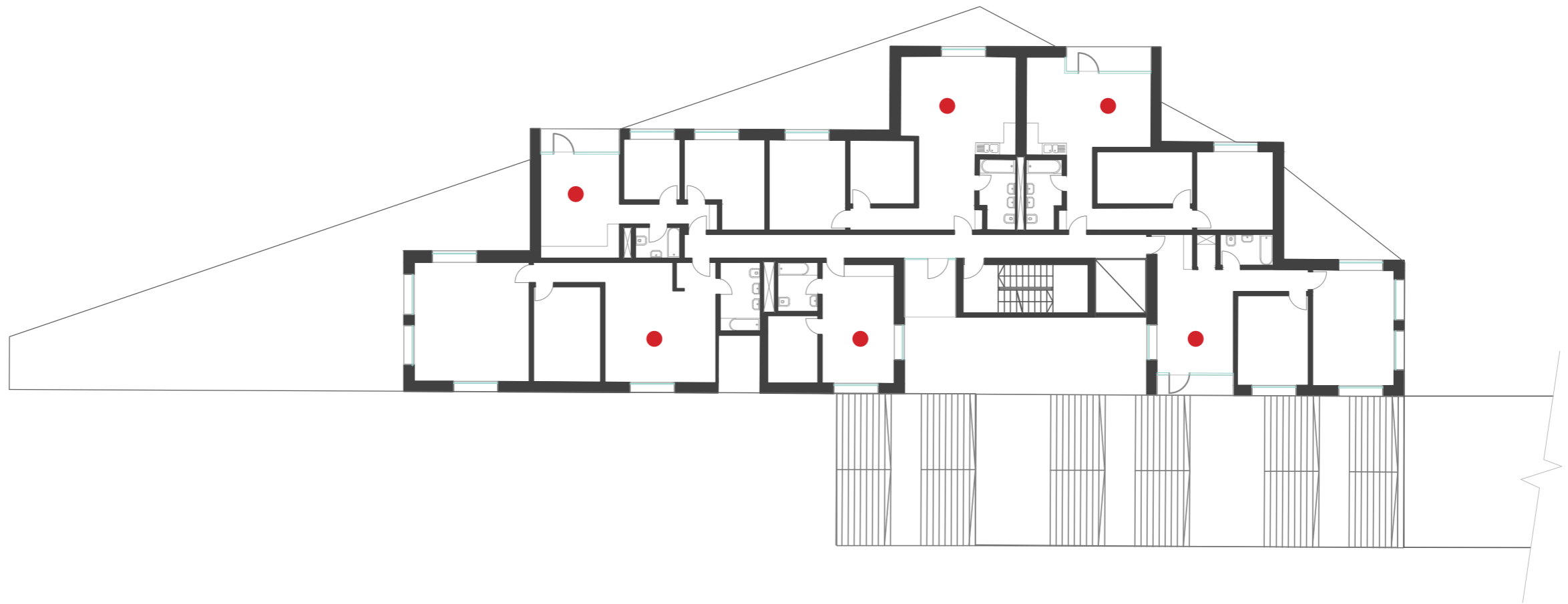
CLUSTER B has the residential parking from the northern side of the street and on the southern it has commercial spaces.

It is the first building you meet to your left-coming from the Tram station it also has residential apartments from the first floor up.

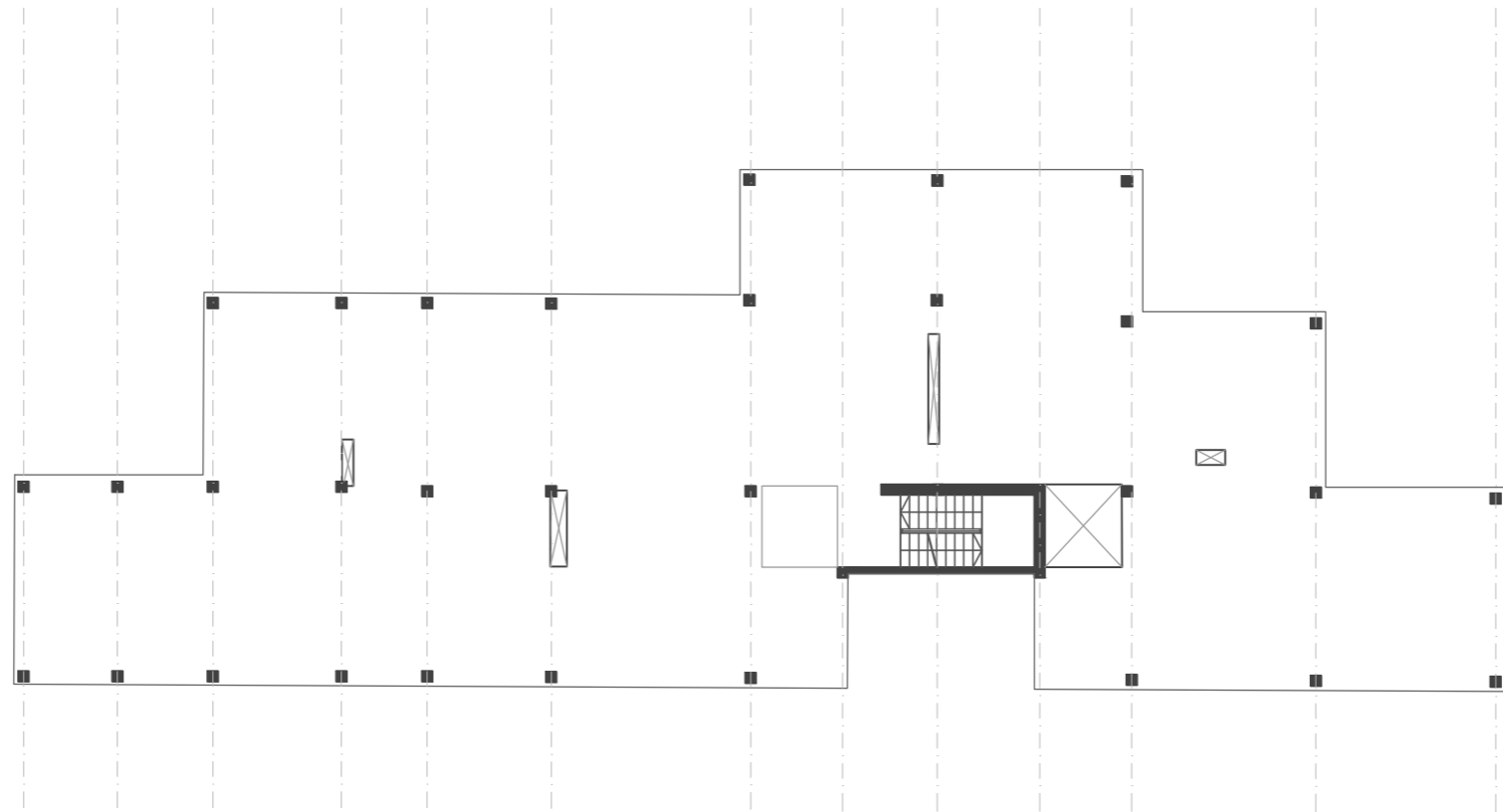


CLUSTER B

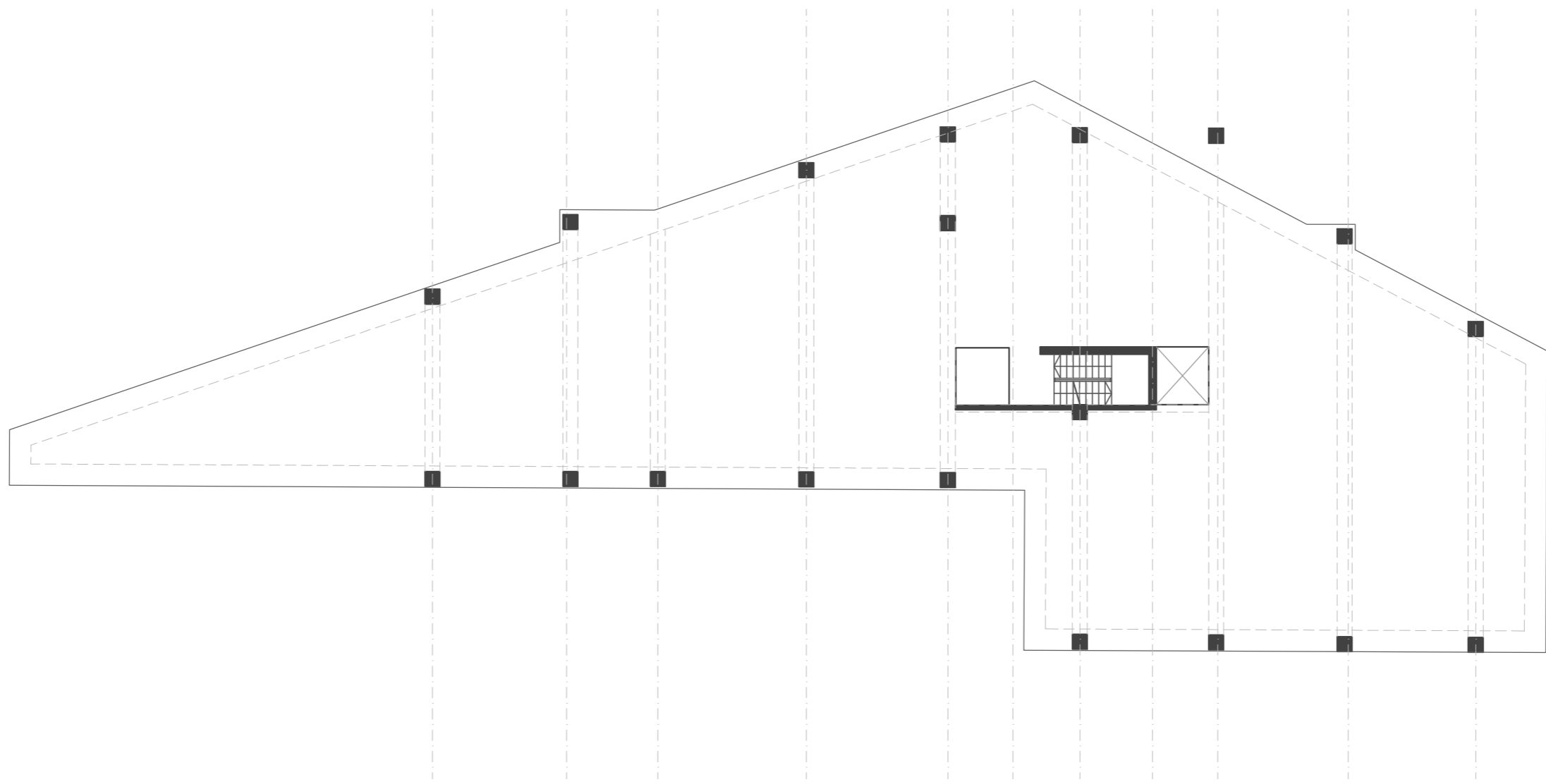
LIVING ROOM



3RD FLOOR PLAN Scale 1:250

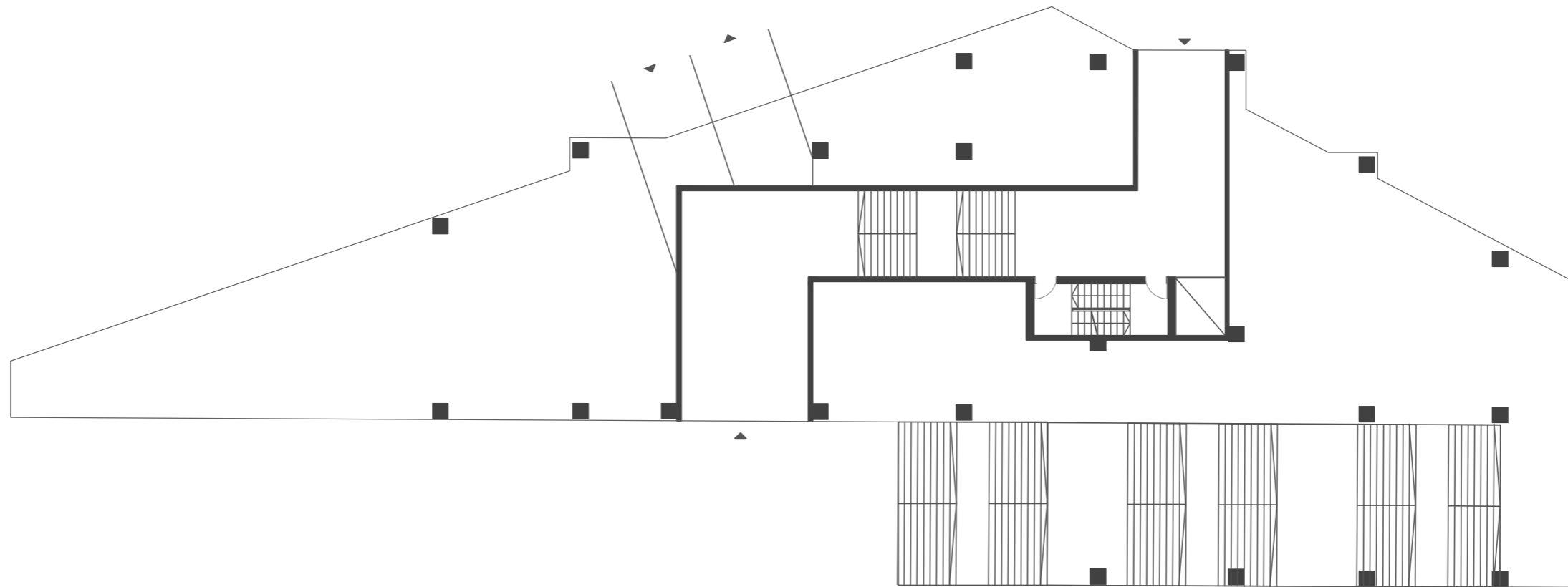


STRUCTURAL DETAIL PLAN SCALE 1:250



TRANSITIONAL SLAB PLAN SCALE 1:250





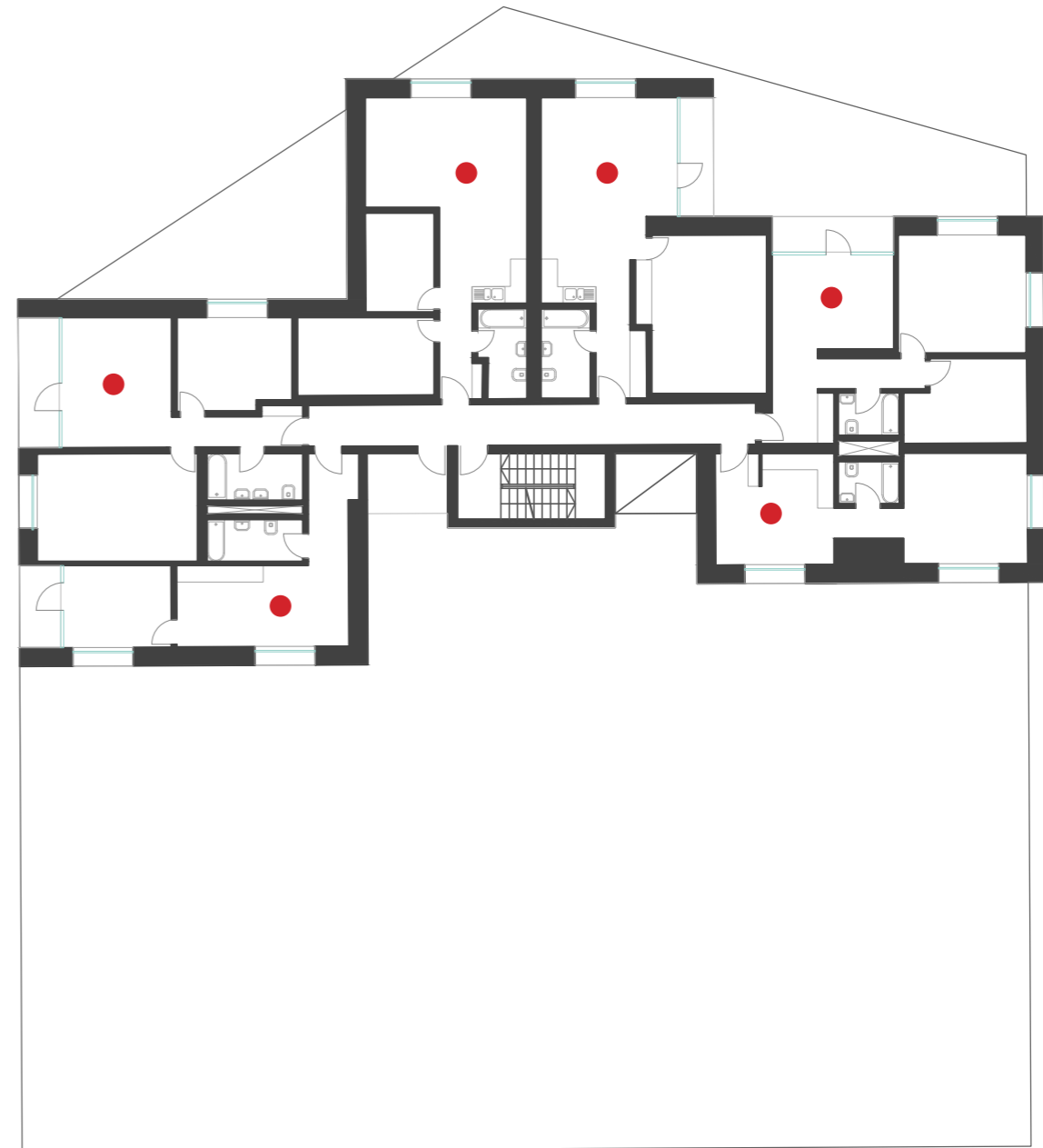
GROUND FLOOR PLAN SCALE 1:250

Cluster C rests on a base that is connect-  
ed to the park directly and also connects  
to the volume next to it with a bridge.  
This elevated level works as a communal  
space that's partially a play ground in the  
wall direction and it is connect to the park  
with a green roof that provides a street  
level greenery limited to the residents.



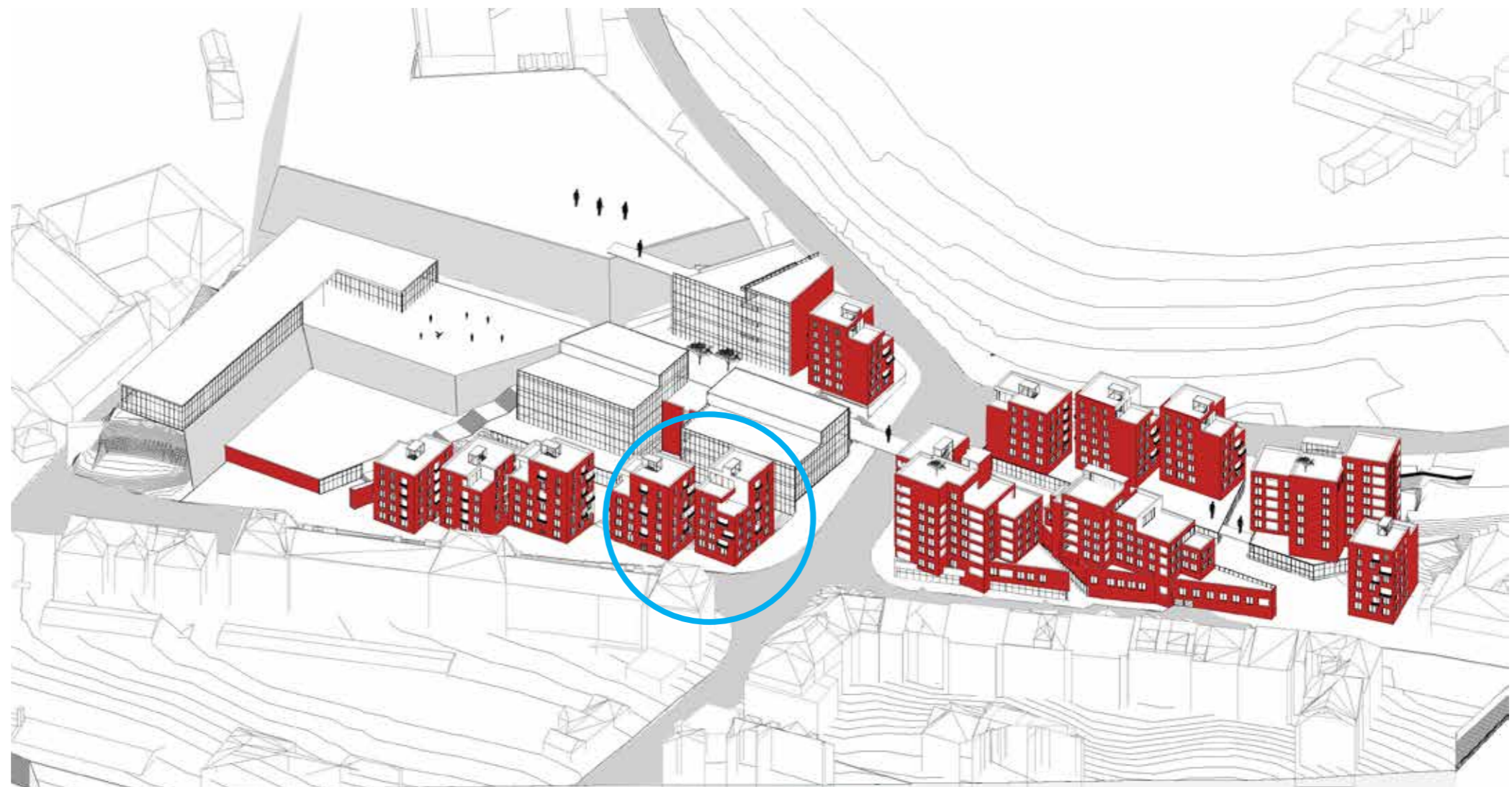
CLUSTER C

LIVING ROOM ●

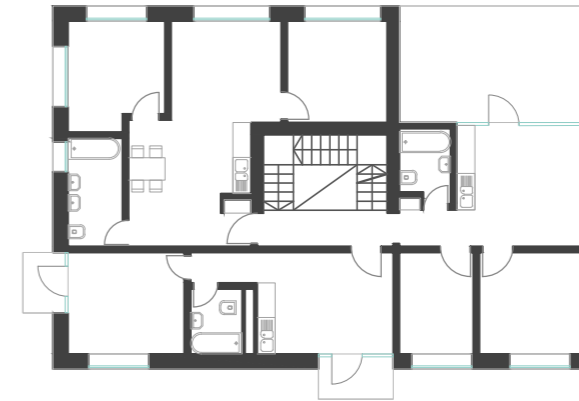


3RD FLOOR PLAN Scale 1:250

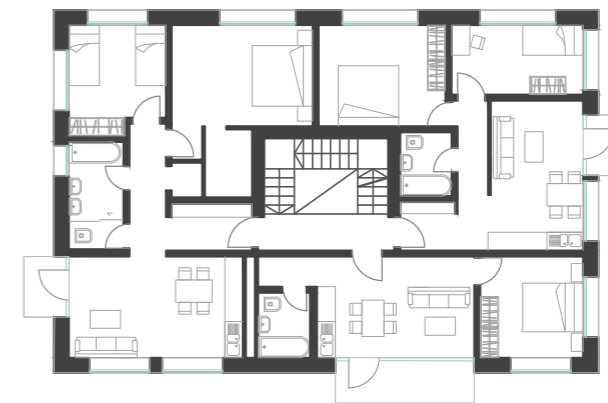
There are two different floor plans provided one with two apartments and the other with three apartments per floor. The units are either one type or a mix of the two in order to provide dynamic volumes as well as social mixture. The last floor is usually a communal space for the residents of the building as a kind of semi private high quality space (better view, bigger terrace).



Repetitive unit



5th floor plan Scale 1:250

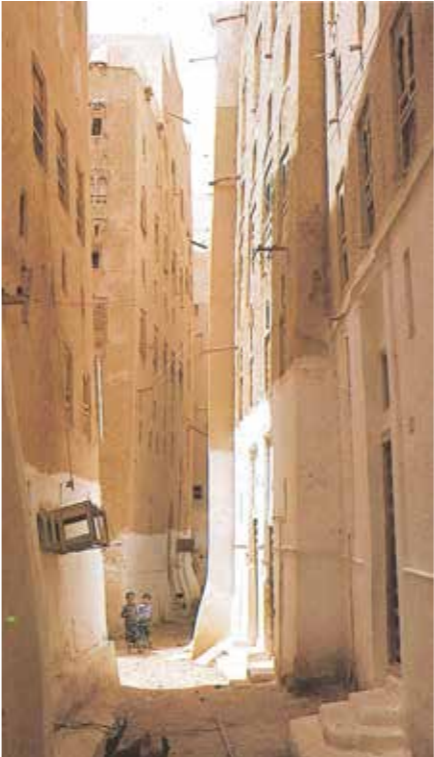
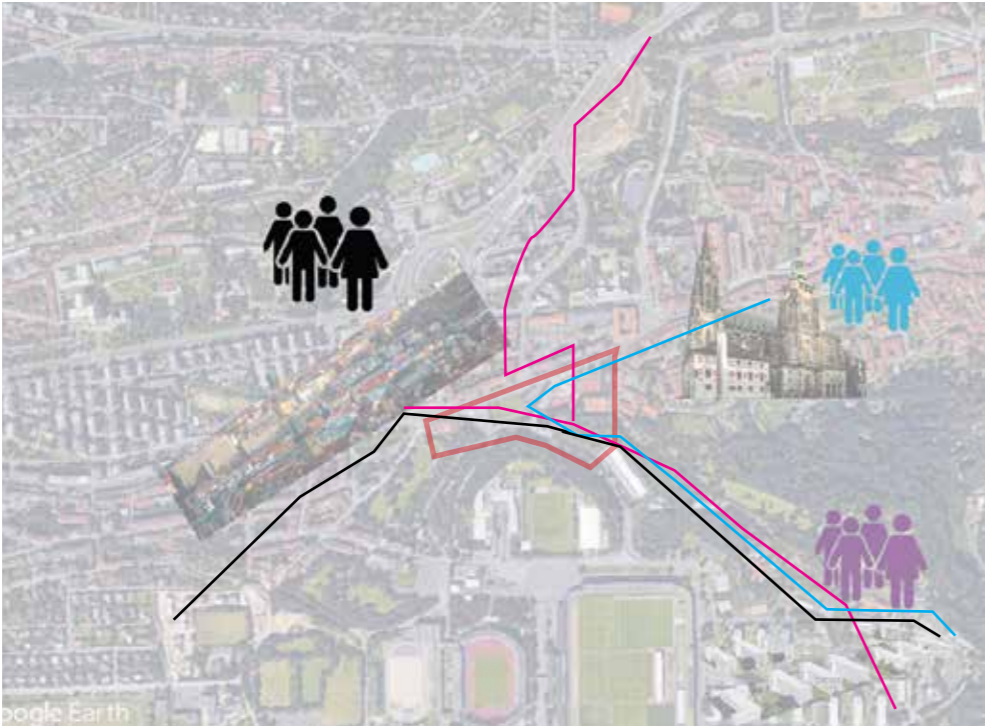


Three apartments floor plan Scale 1:250



Two apartments floor plan Scale 1:250

CONCLUSION



I believe that through my design i was able to create an interesting connections between the edges. These connections will create a flow of users where they can interact with each other and communicate. The cultural spaces on the east edge and along the bridge will help to enrich this dialogue and ensure better communication.

The complexty of the built up forms and the urban experiance from narrow to open spaces wouldn not have been possible without my study of the verneclear examples. This human scale experiance is what makes us feel safe and comfart to the space. This leads later to a feeling of ownership and belonging.

# Tarek Bder

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Berlin, Germany



## EDUCATION

2016-present: Master's Student at Architectural institute in Prague (ARCHIP).

2014 - 2016: Bachelor of Architecture, ARCHIP.

2009 - 2014: Student of Architecture, School of Engineering, Cairo University.

June 2009: Graduate Secondary school, Orman secondary for boys, Giza, Egypt

## COMPLEMENTARY EDUCATION

July 2018: CIME City workshop in Paris, France

September 2014: "Good Governance and advocacy training" by Action Aid Denmark in Amman, Jordan.

June 2014: Kinder garden Project by NKA Foundation in Kumasi, Ghana.

December 2013: Earthen Construction workshop by Arch. Ahmed Hamed in Cairo, Egypt

July 2011: Namaa Summer school for sustainable development organized by Konrad Adenauer Stiftung, Nahdet Mahroussa, and FEPS in Cairo, Egypt

September 2009: Contribution in "Seraj toolkit", Educational tool for Youth, Egypt

## Language

Arabic	English	German
Native	Excellent	A1

## WORK EXPERIENCE

August 2017 - September 2017: Intern at RMW studio in Frankfurt, Germany.

June 2017: Workshop in Partnership between Boldan and Urban Research Institute (URI), Albania. Building urban furniture with recycled materials.

April 2016 - May 2016: Intern at A69 studio in Prague, Czech Republic.

1 June - 30 September 2015: Intern at the Center for Democracy and Human Rights in People in Need, Prague, Czech Republic.

2014 - Present Co-Founder at Boldan Initiative. Boldan is an Arabic word that means countries or nations. It is an initiative aiming to organize visits to different regions in Egypt in order to discover their architectural heritage and their traditional ways of building.

2013 - 2015: Leader of Assessment team and coordinator of Activities team in "El Mosharka el maarifiya" (Red Sea Villages project), working on documenting the culture, traditions and, architecture of the Red Sea inhabitants.

June - July 2013: An Intern at Noun architecture firm on Khalda western dessert compound and oil field.

