

STUDIES ON **HOUSING & CITY**

AHMED ALRAIE • UPM MADRID & ETH ZURICH



this portfolio is personal and a compilation booklet comprises selected works developed during MCH 2021, a master program by **UPM Madrid** and **ETH Zurich**, from March to December, 2021. some of the projects are made by real or by imagination vision to show or express the ideas, and also were developed by a collaboration with classmates during design workshops that lasted 5 days.

housing and city are always the main subject, all together recorded under the title of master in collective housing (edition 13).

the master of advanced studies in collective housing is a postgraduate professional program of advanced architecture design focused on housing, city and energy studies presented by Universidad politécnica of madrid (UPM) and swiss federal institute of technology (ETH).



POLITÉCNICA

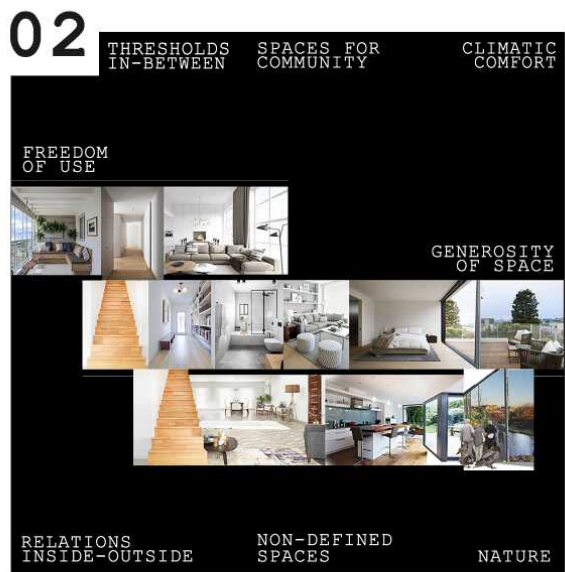
ETH zürich

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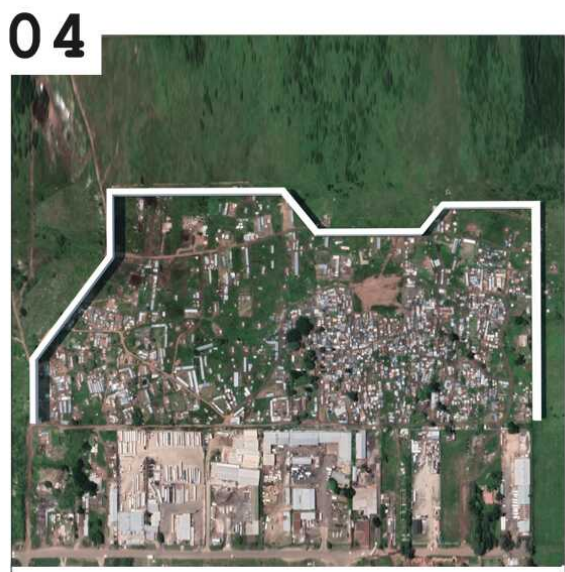
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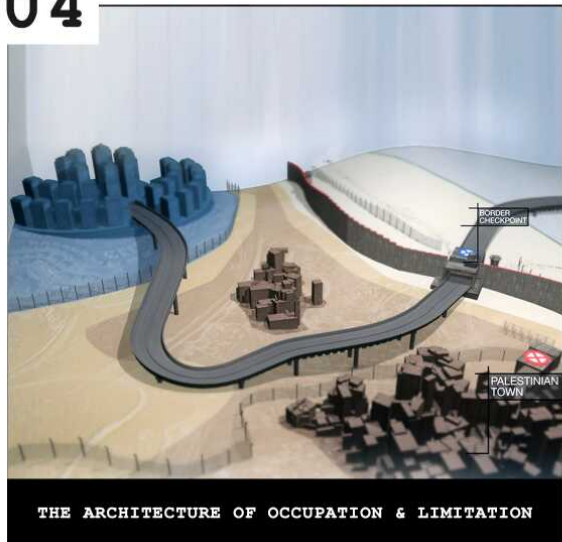
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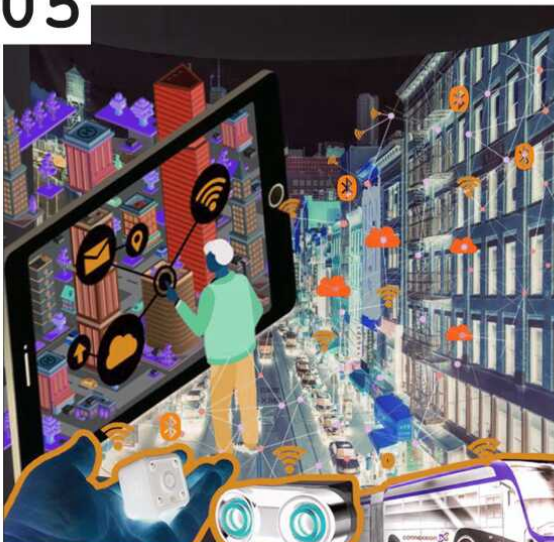
04



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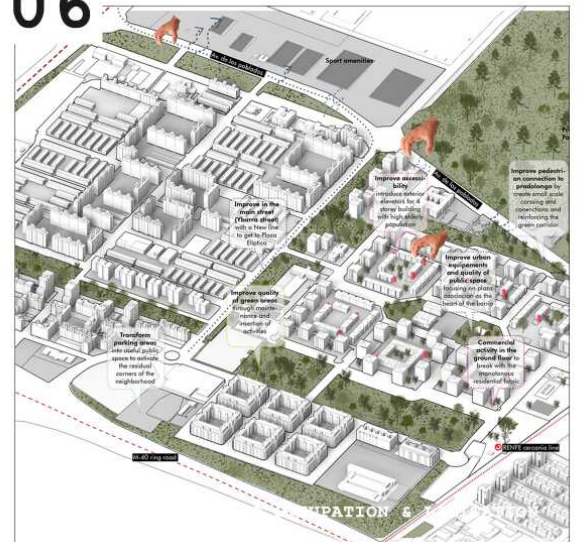
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city science

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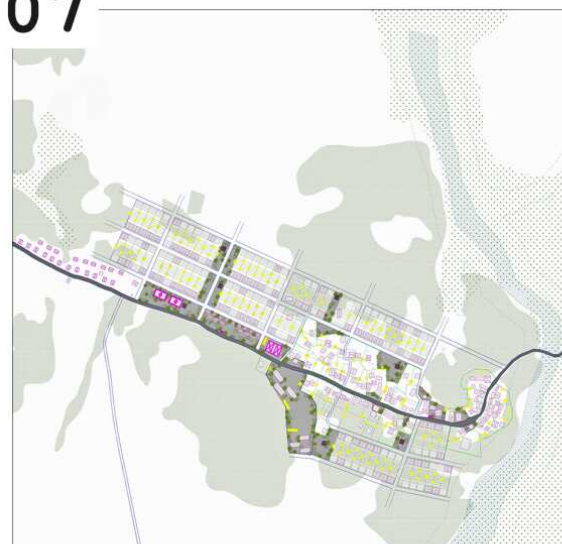
06



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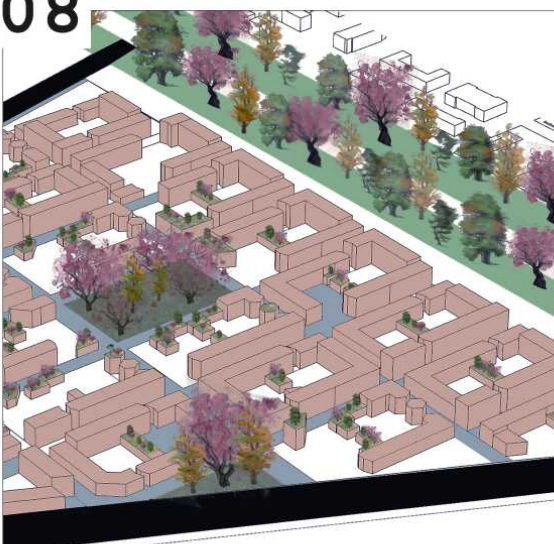
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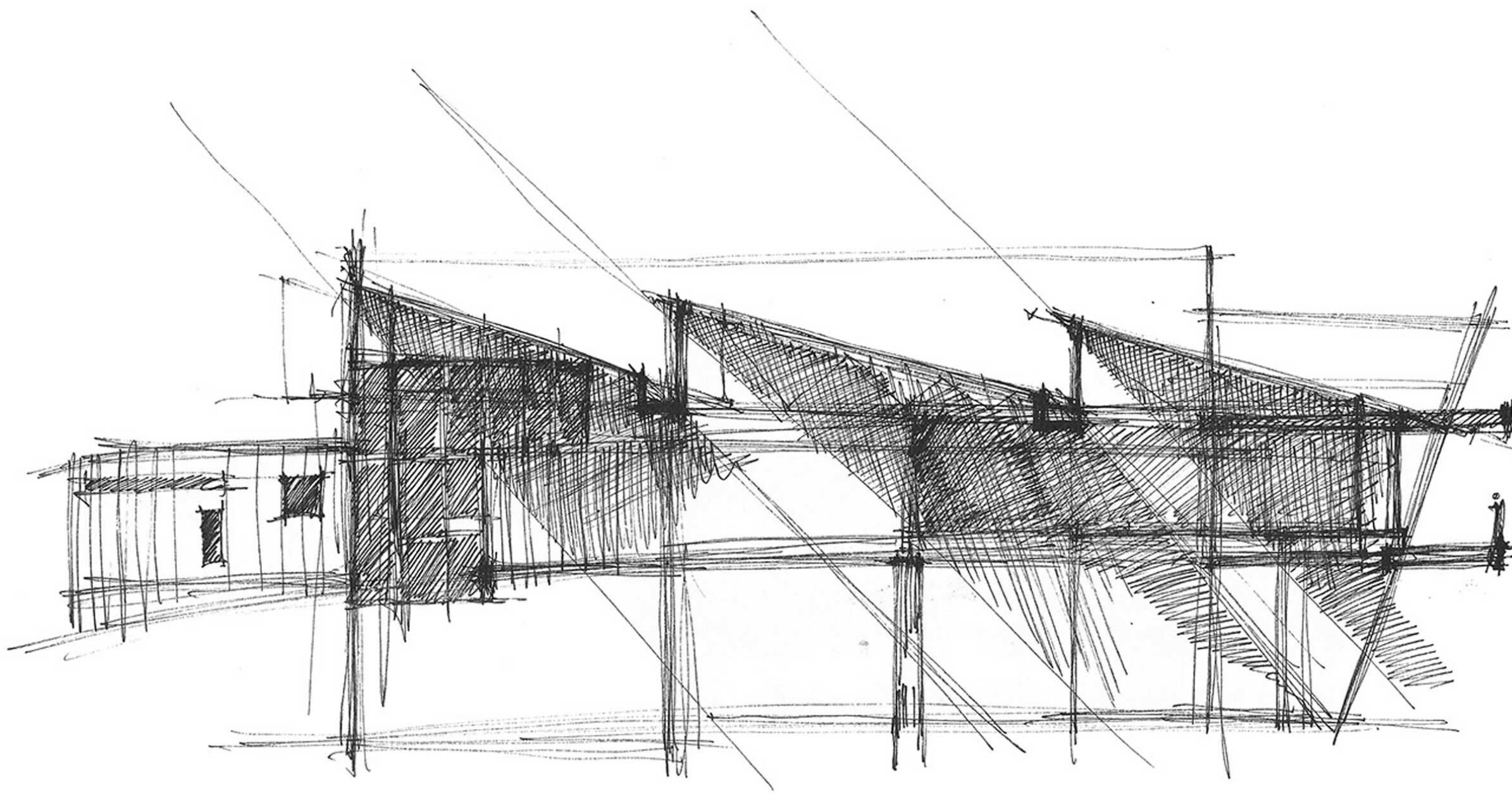


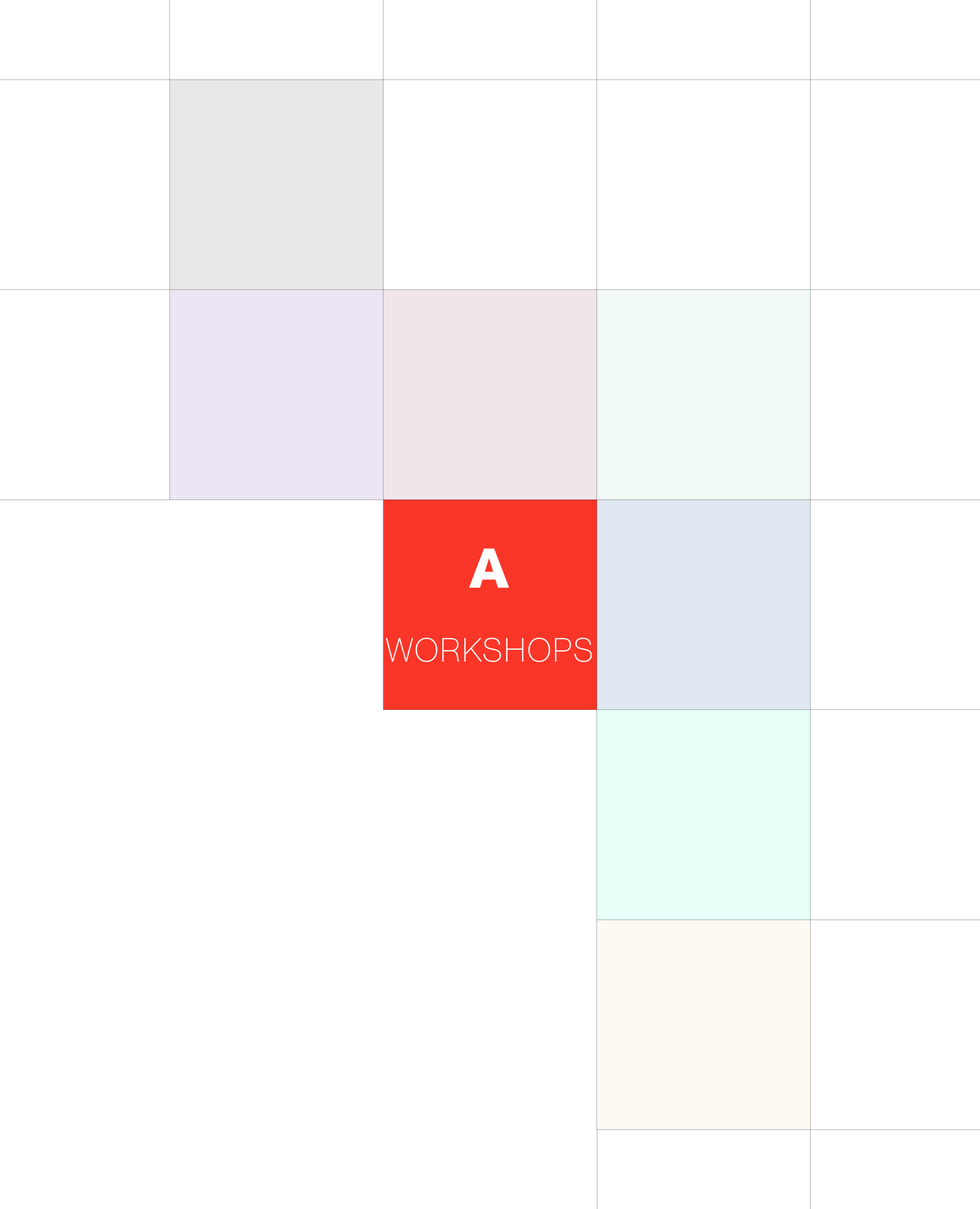
leadership, processes & entrepreneurship

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SPECIALTIES

B





A

WORKSHOPS

W01

domestic, collective grouping

leaders

Andrés Cánovas
Atxu Amann
Nicolás Maruri



assistant

Álvaro Fidalgo



5 days



Madrid, Spain



Faraz Baniasadi
Patricia Safer
Elissavet Pasli



-



structure

1. A Decalogue of Domesticity. (urban cultures of living? How are they expressed in the urban context?)
2. The Public Condition and the city (Urban scale analysis and its relations with the site).
3. The Rooms where we live today. (Design Research on the concept of “Room”, housing conditions, flexibility, mutation and connections with the city and the building as a whole. Plan drawings and “ambiance” artist impressions images will be delivered).
4. Thermodynamics & Technology. (Design Research on materiality, volumetric and constructive conditions)
5. Synthesis and Communication (Compilation and synthesis work).

Domestic collective grouping

The collective housing project is not only an accumulation of equal dwellings, or not even this accumulation is solved today by just the addition of some common areas.

The intellectual debate must be approached from the strategic design conditions which are aligned with the topics of our time, with the great topics of our time.

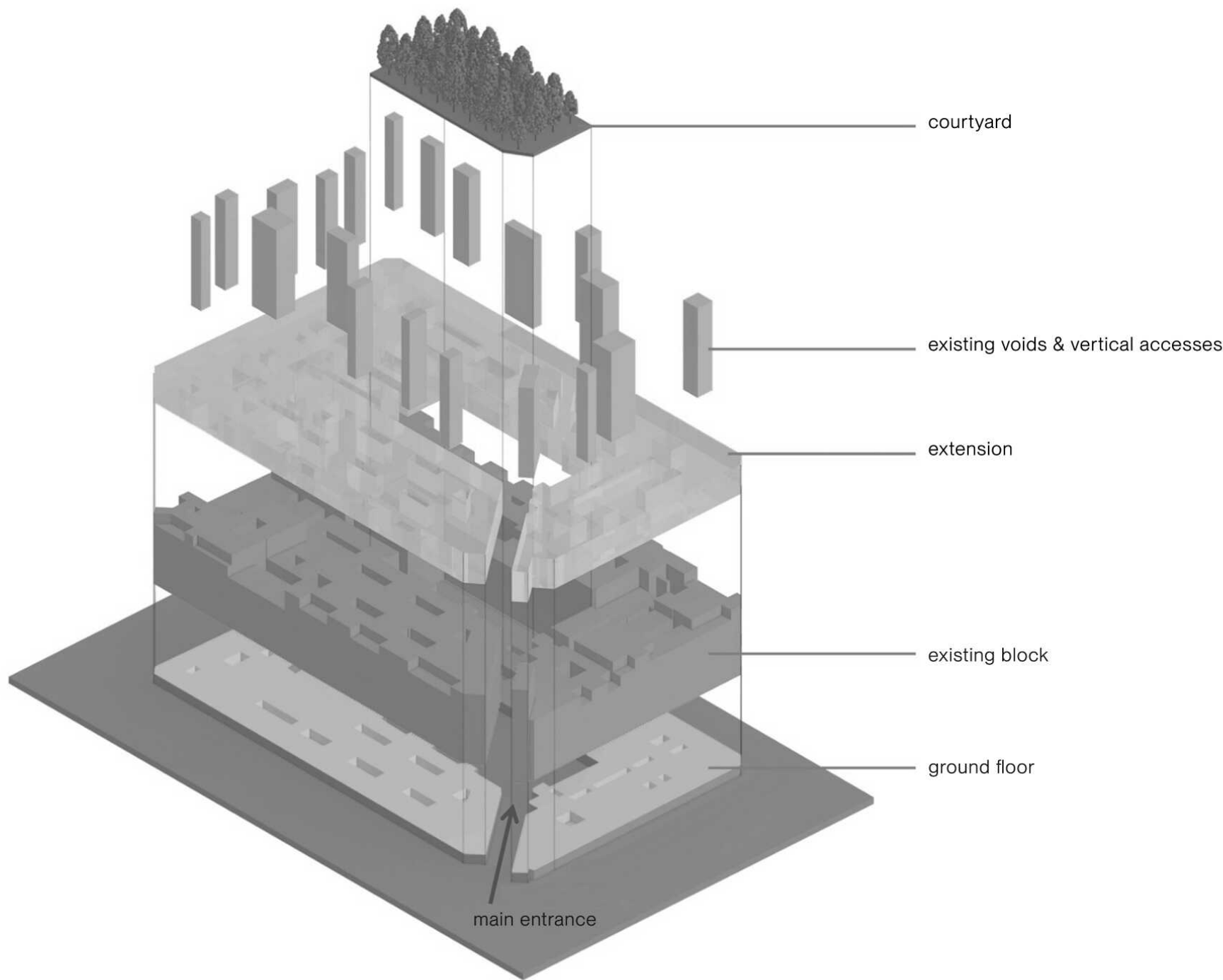
The expansive relation with the city and the understanding of housing as a public agglutination of collective activities are some of the conditions where the public and the private coexist and that should not be forgotten. Mutability and flexibility in an unstable time seem to be a crucial matter. Housing as a place for solidarity in a culture of caring is substantial. The diversity of its inhabitants as individuals who are grouped together and not only in a traditional family association transform the concept of collective living. The irruption of loneliness should not be dramatic; it can be read as a sign of freedom of choice.

The condition of community, of dialogue and collective participation, transforms the spaces collaboratively. Circular lifecycles for the materials is a true fact. Designing from the climate and atmospheric conditions is mandatory. The relationship with an ever-changing Nature is a fundamental issue. Working with all these conditions is presumed as the project basis. It is proposed to work on the project of a domestic collective grouping in the location referred to in the accompanying plan drawings.

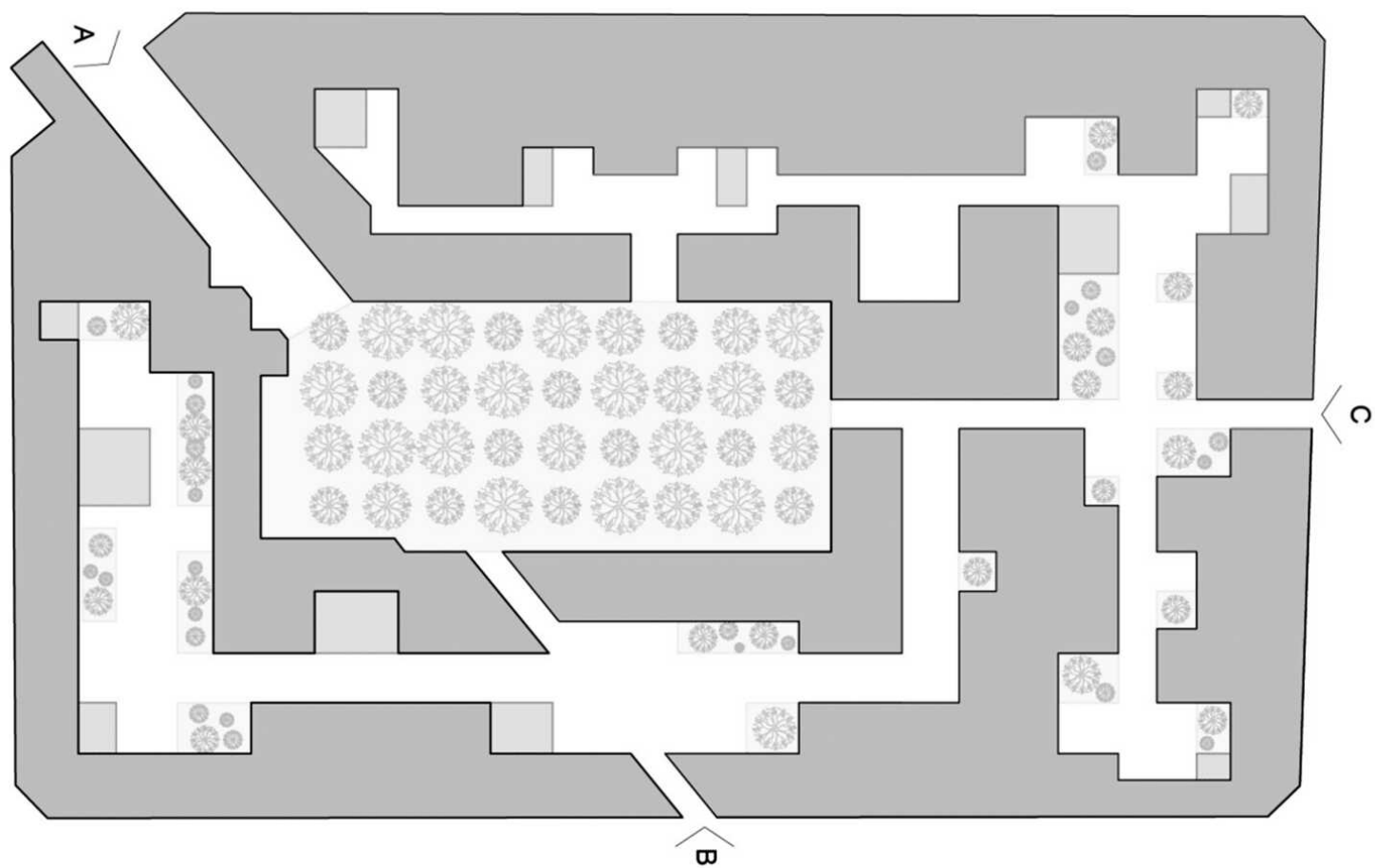
concept



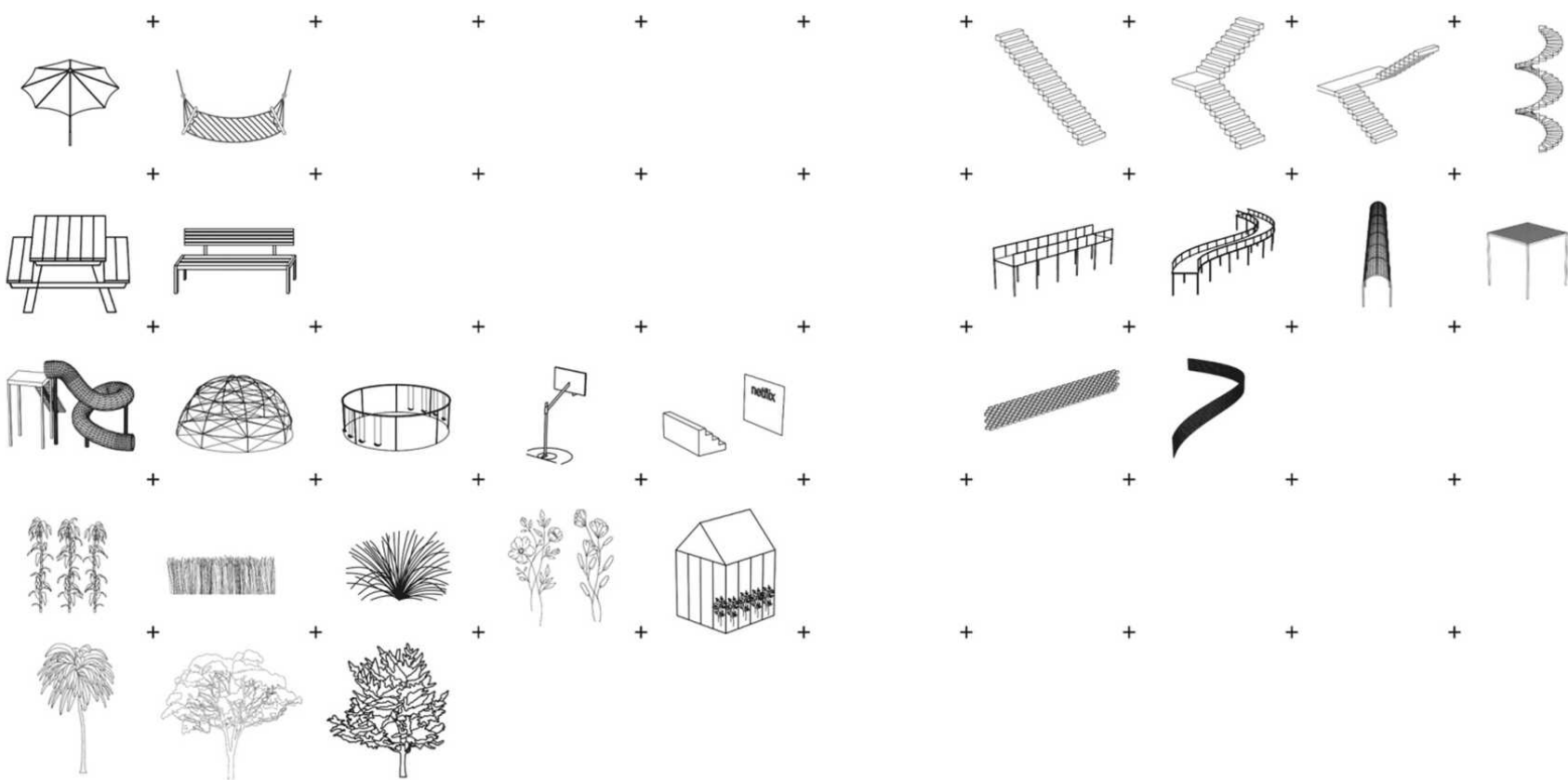
scheme



the ground floor



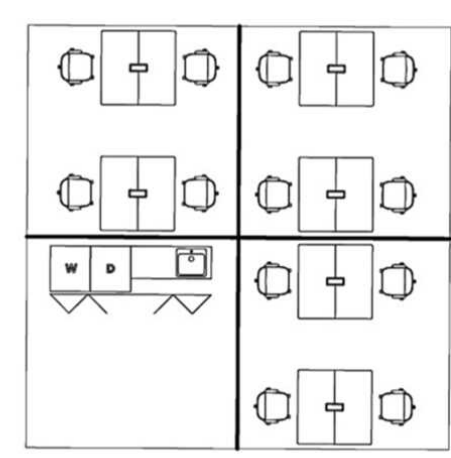
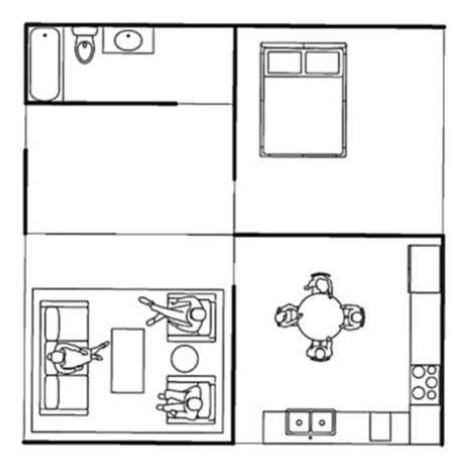
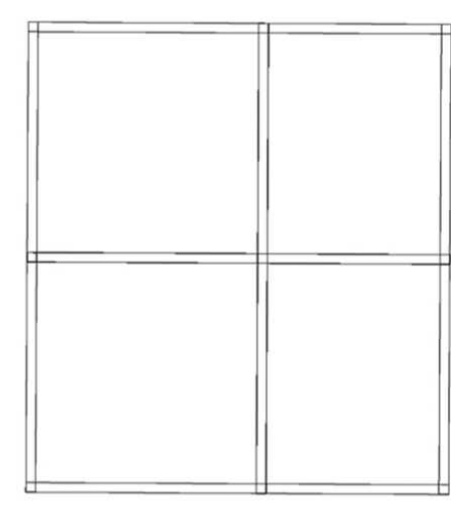
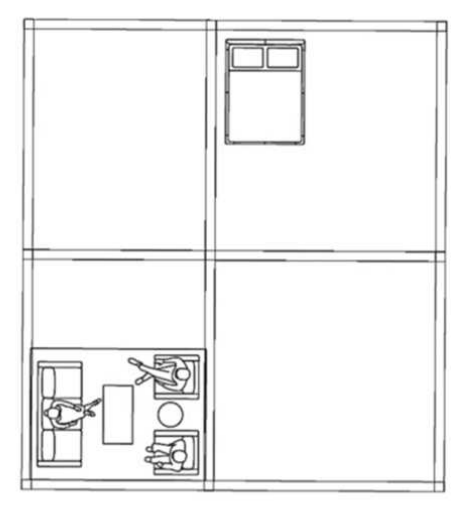
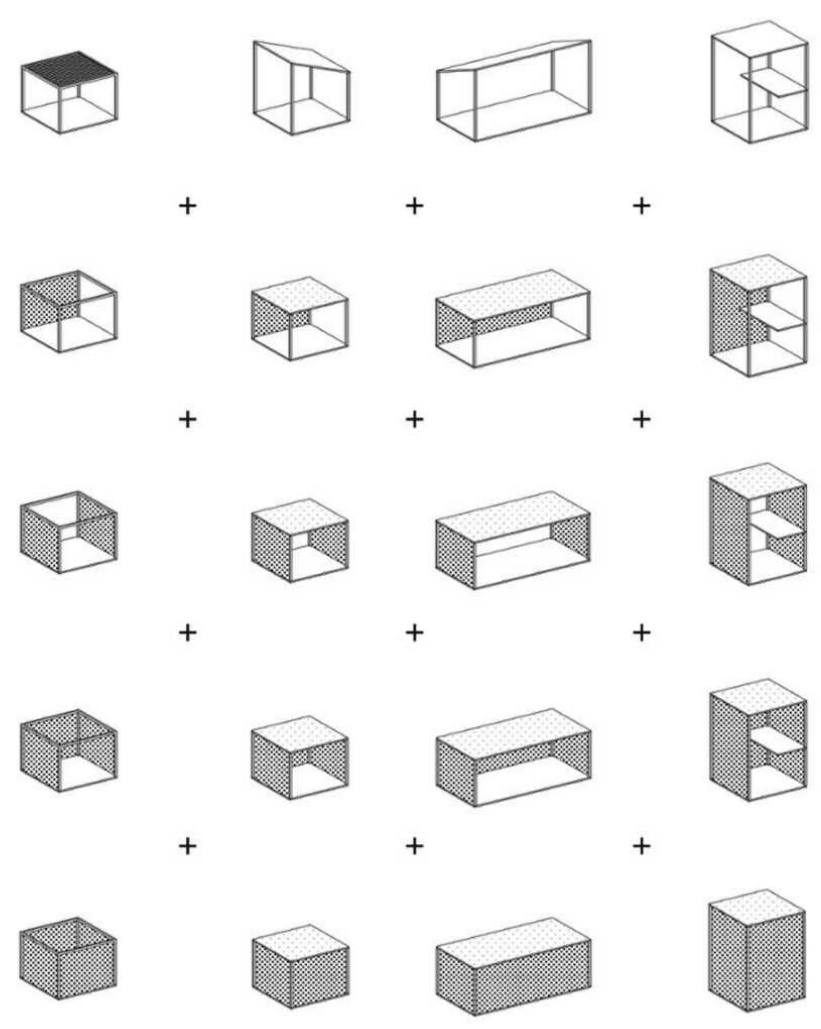
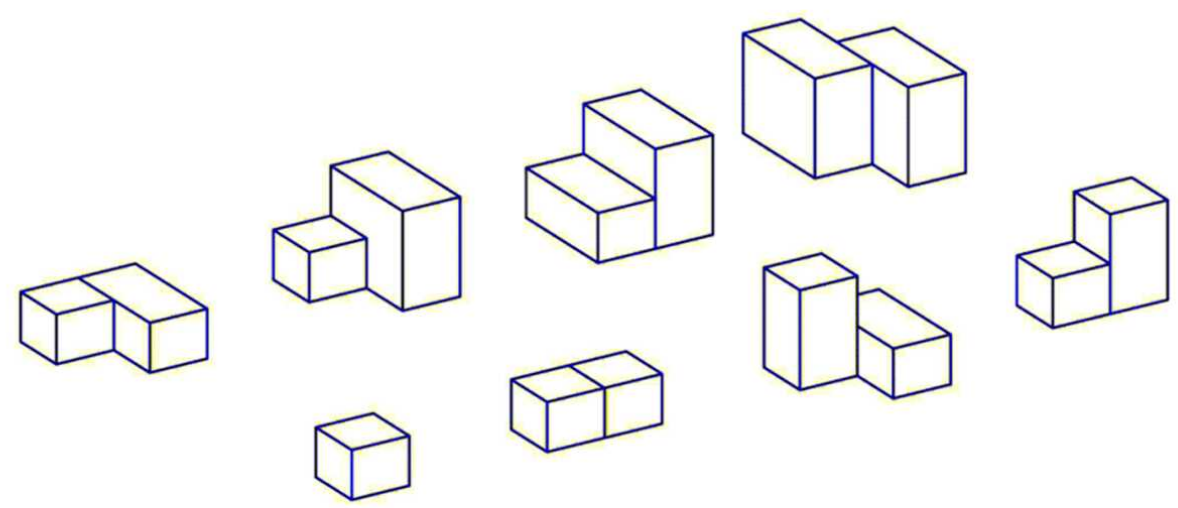
the ground floor



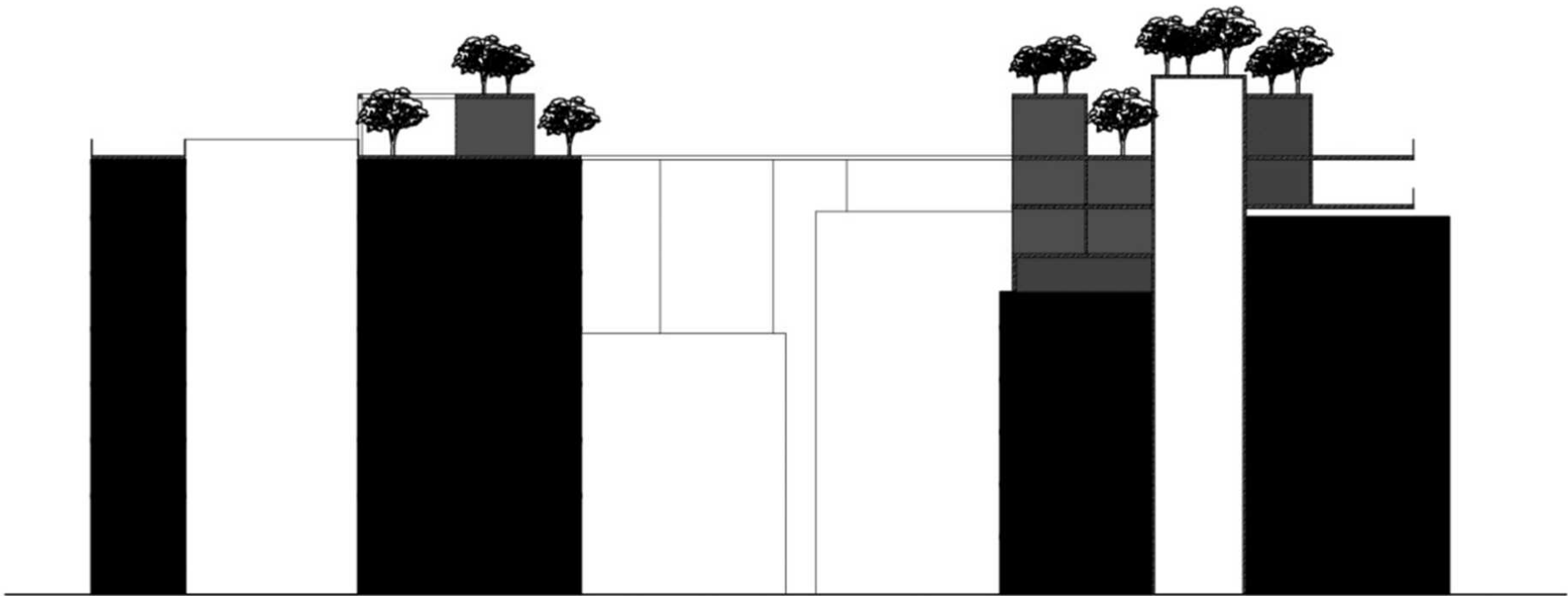
objects

connections/limits

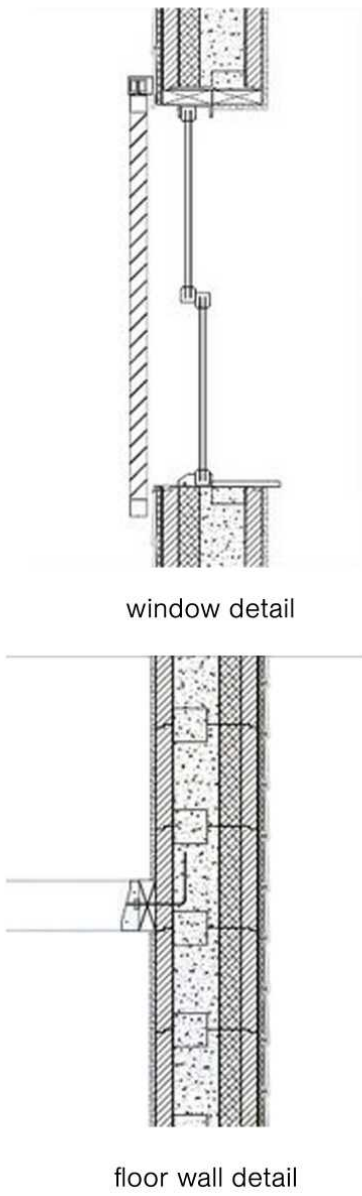
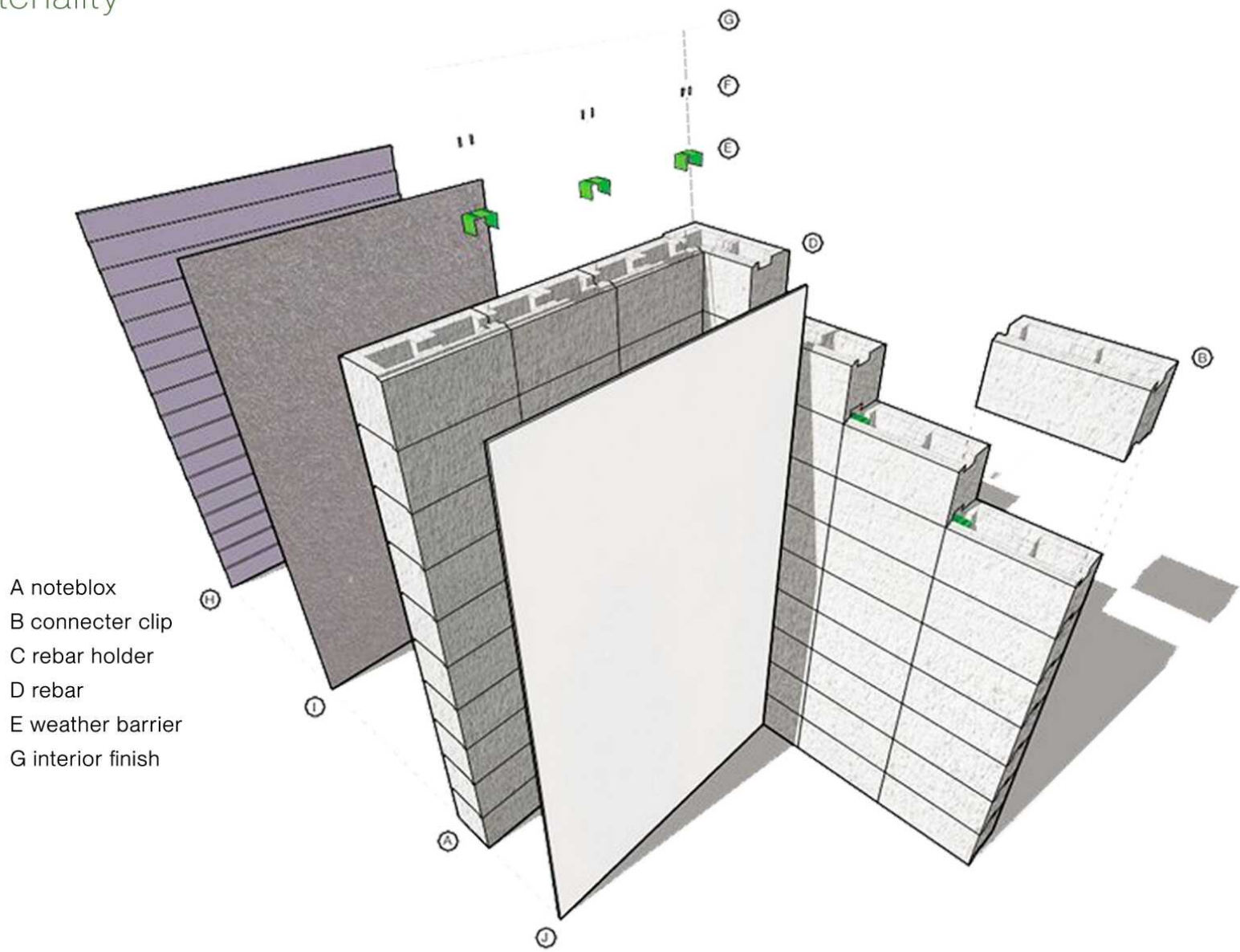
housing units and typologies



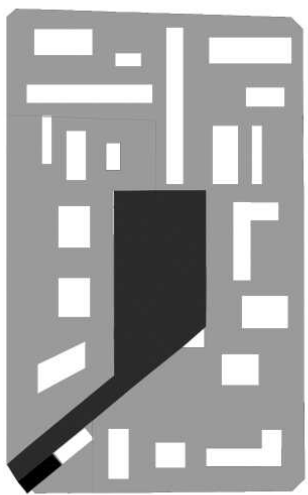
section



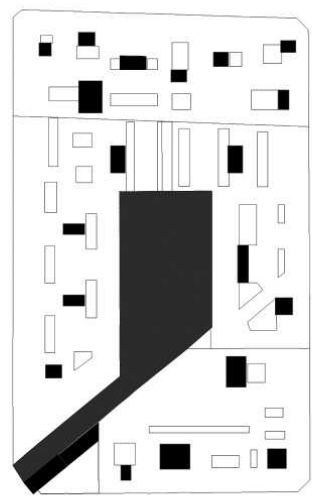
materiality



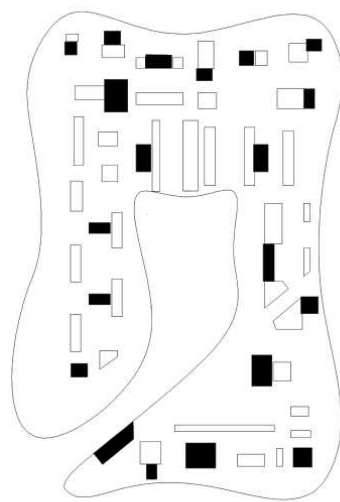
cloud “extension” options



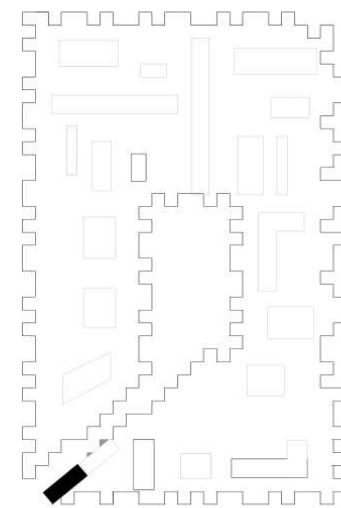
option 1



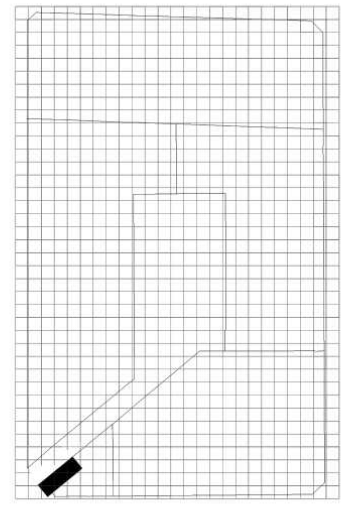
option 2



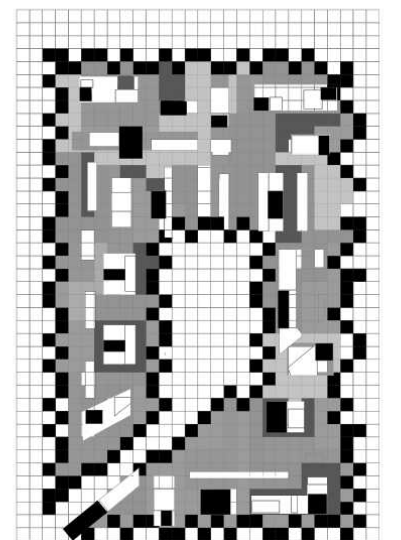
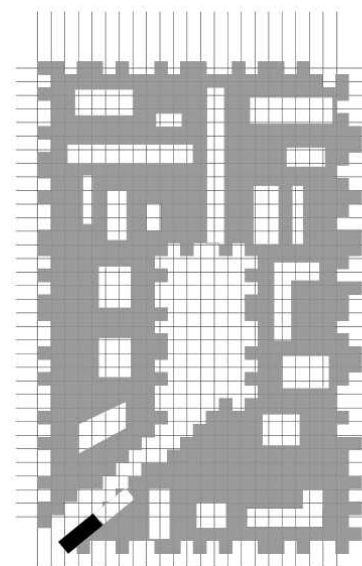
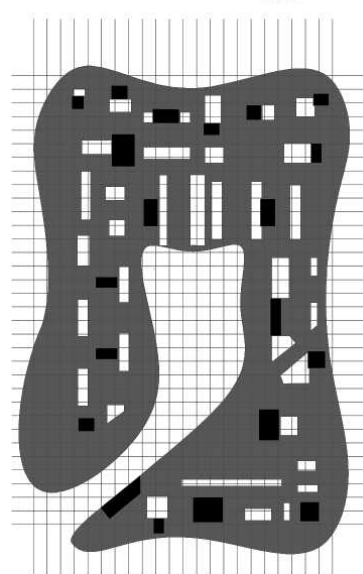
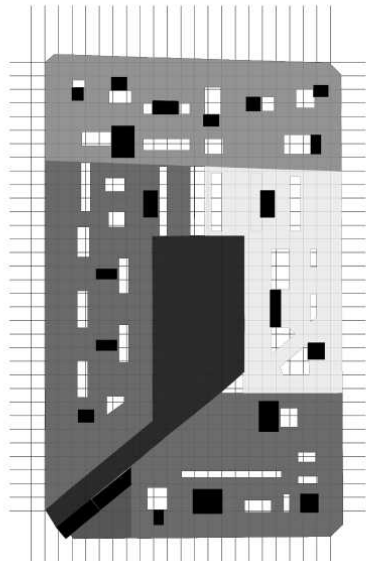
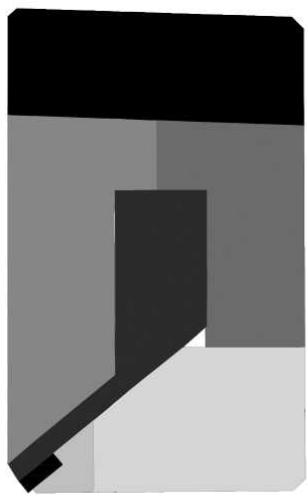
option 3



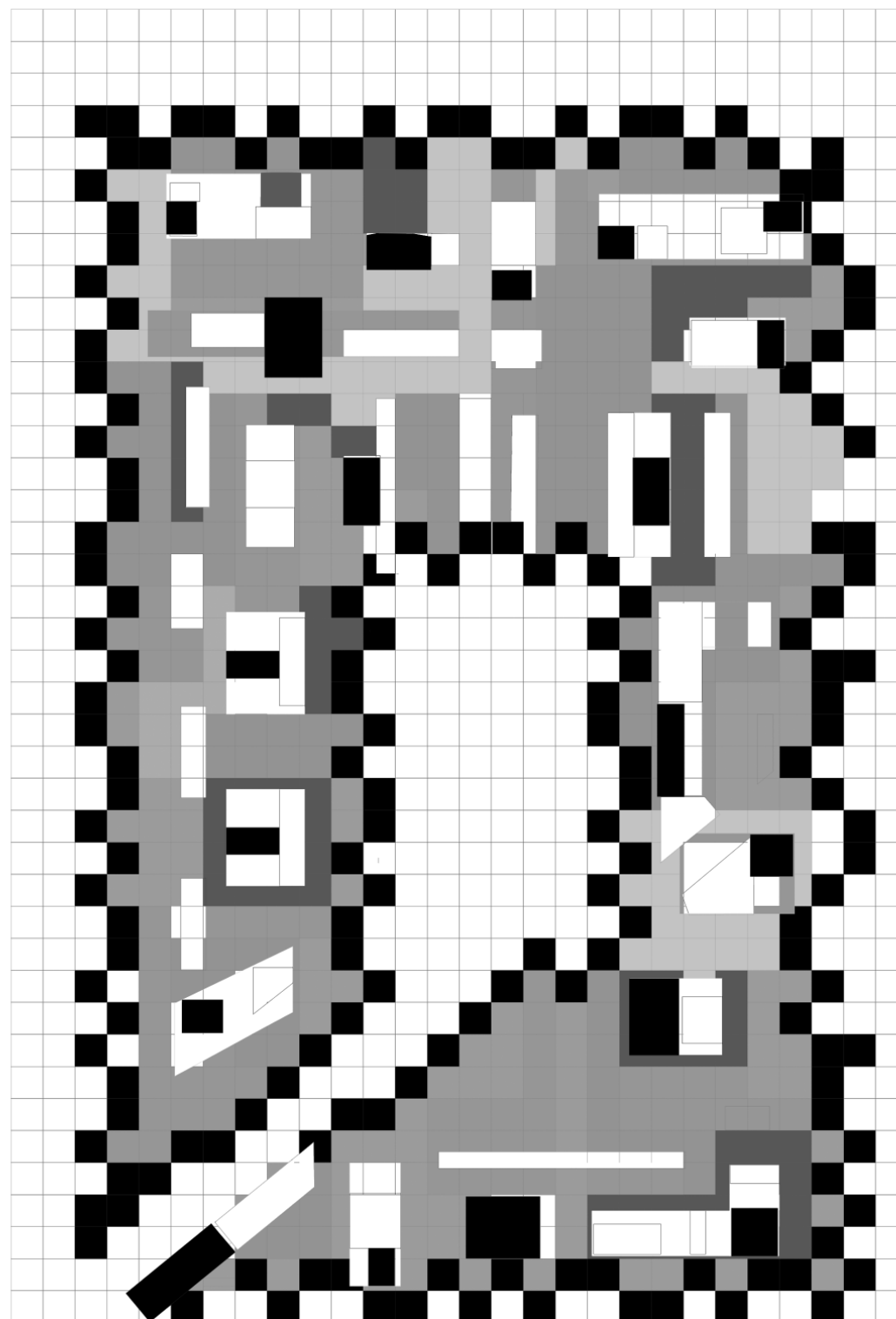
option 4



option 5

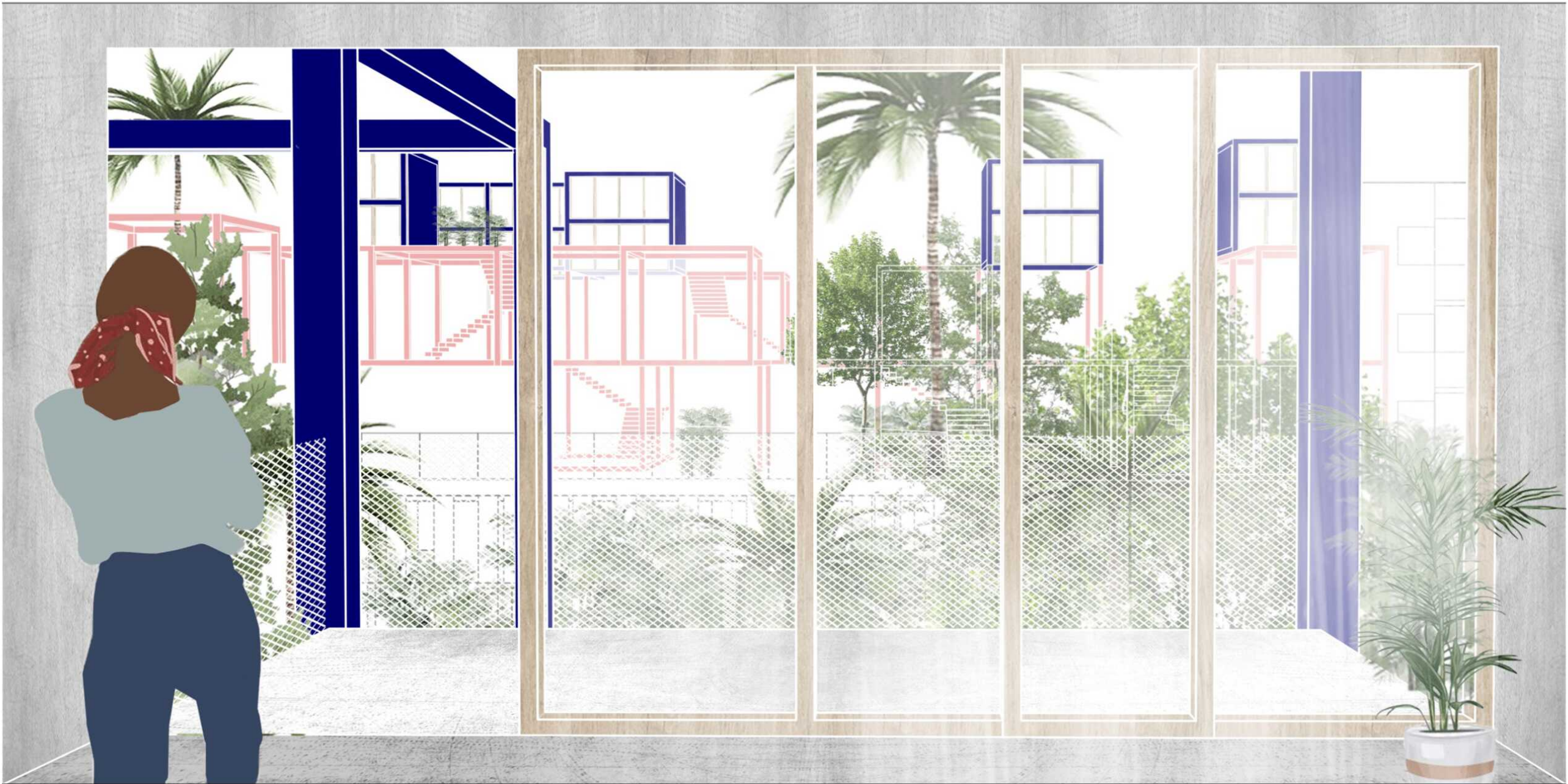


strategy and top view



the courtyard





the extension





W02

what makes good living conditions?

leader

Anne Lacaton



assistant

Diego García-Setién



5 days



Madrid, Spain



individual



Florian Köhl
Anna Ramos
Philip Ursprung

THRESHOLDS
IN-BETWEEN

SPACES FOR
COMMUNITY

CLIMATIC
COMFORT

FREEDOM
OF USE



GENEROSITY
OF SPACE



RELATIONS
INSIDE-OUTSIDE

NATURE



structure

1. WHAT MAKES GOOD CONDITIONS OF LIFE?
2. WHAT MAKES THE QUALITY OF A SPACE?
3. WHAT PRODUCES SENSATIONS IN BEING IN A SPACE?
4. WHAT SHOULD I FIND IN MY CLOSE NEIGHBORHOOD?
5. WHAT MAKES THE QUALITY OF A NEIGHBORHOOD?
6. WHICH IS MY RESPONSIBILITY AS AN ARCHITECT?
7. WHAT ARE WE LOOKING FOR?

What makes good conditions of living?

The global pandemic has suddenly changed our relation and perception of the living space and the public space. This experience has made more obvious to everyone, that the spaces for living are not good enough and do never offer the freedom and flexibility that we could expect. If we are optimistic, this experience should eventually provide a possible perspective for change.

The challenge for this workshop is to push this idea to the maximum. No Site, no Design, just Ideas, Positions and Statements.

The workshop topic will emphasize on the optimal conditions to live in the city, in a public space, in the neighborhood, in collective space, with the close community, in the individual space. The city should provide exceptional quality of life by offering a large range of facilities, proximities, and pleasures, as well as a large variety of typologies to fit with different needs, expectations and ways of life.

The question is opened to a very large concept of housing, which is not specially responding to a “market product”, intended for a traditional middle-class family, but, beyond, rethink the principles of the space for living and how housing is designed: how to create good living conditions -architecturally, spatially, technically, sustainably, etc.- such that, a very large and varied number of people could find a space for living that they could appropriate of.

1. What is good housing in the city?

What is expected from housing, in terms of use, everyday life, feelings from the point of view of the inhabitant?

2. What is your critical point of view?

Does generally housing meet everyone's dream or needs? Why is housing -in general- not good. Where are the problems? Conditions of production? Does it have to do with the resignation of public authorities in their role of setting the level of ambition for what is the most important for people: the housing or the loss of control by public authorities, which only can guarantee high ambitions?

3. What is a Charter of essential quality principles?

Defining a set of principles (8 to 12) which should be mandatory in the design of every dwelling, could drive to a sort of « Articles of a Constitution ».

GENEROSITY OF SPACE

In response to the multiple needs that must be met in the private sphere (socializing, working, relaxing, sharing, etc.), ample space will give users the freedom to appropriate, re-interpret and create a sense of belonging. This can be achieved by using not only the horizontal footprint but also the height of the space, by adding multifunctional areas, super-furniture, and more ethereal partitions.



THRESHOLDS / IN-BETWEEN

The dwelling should always have the potential to promote human connections and intimacy. A space can be habitable to act as a link and maximize spatial connections inside or outside. It can occur in an entrance, a hall, a corridor, or a balcony and must have a significant meaning for a balance transition between private, semi-private and public.



NON-DEFINED SPACES

Dwelling with the maximum level of adaptability, reuse possible, also be able to adjust and change, undetermined activity. It can be inside or outside, whether a building or a park, structures. Space should be flexible, movable, reusable, and reprogrammable; it must be adaptable to peoples' needs, which can change over time. Adaptively designed places are inherently more sustainable and resilient because they can change more readily, when necessary while minimizing the need for demolition and the use of new resources.



SPACES FOR COMMUNITY

A dwelling in the building that can be used by all the inhabitants, these spaces will create a sense of community, and encourage the socialization of the dwellers. Such as rooftop Garden, terrace, or large multi-purpose space.

RELATIONS INSIDE-OUTSID

Where boundaries can be formed between the interior and exterior atmospheres and interaction with its context in both physical and visual, where the users can create relationships among their surroundings and communities. it can be through openings that increase the eye perception and spatial dilatation.



FREEDOM OF USE

To inhabit a multi-functioning space that adapts users' needs around and in front of oneself, space must have multitudes of use situations that can be connected, intersected, and mobility which facilitates the appropriation of space and allows appropriation and user creativity. Far from restricting and diminishing, opens possibilities and provides margins for generosity and the extraordinary.



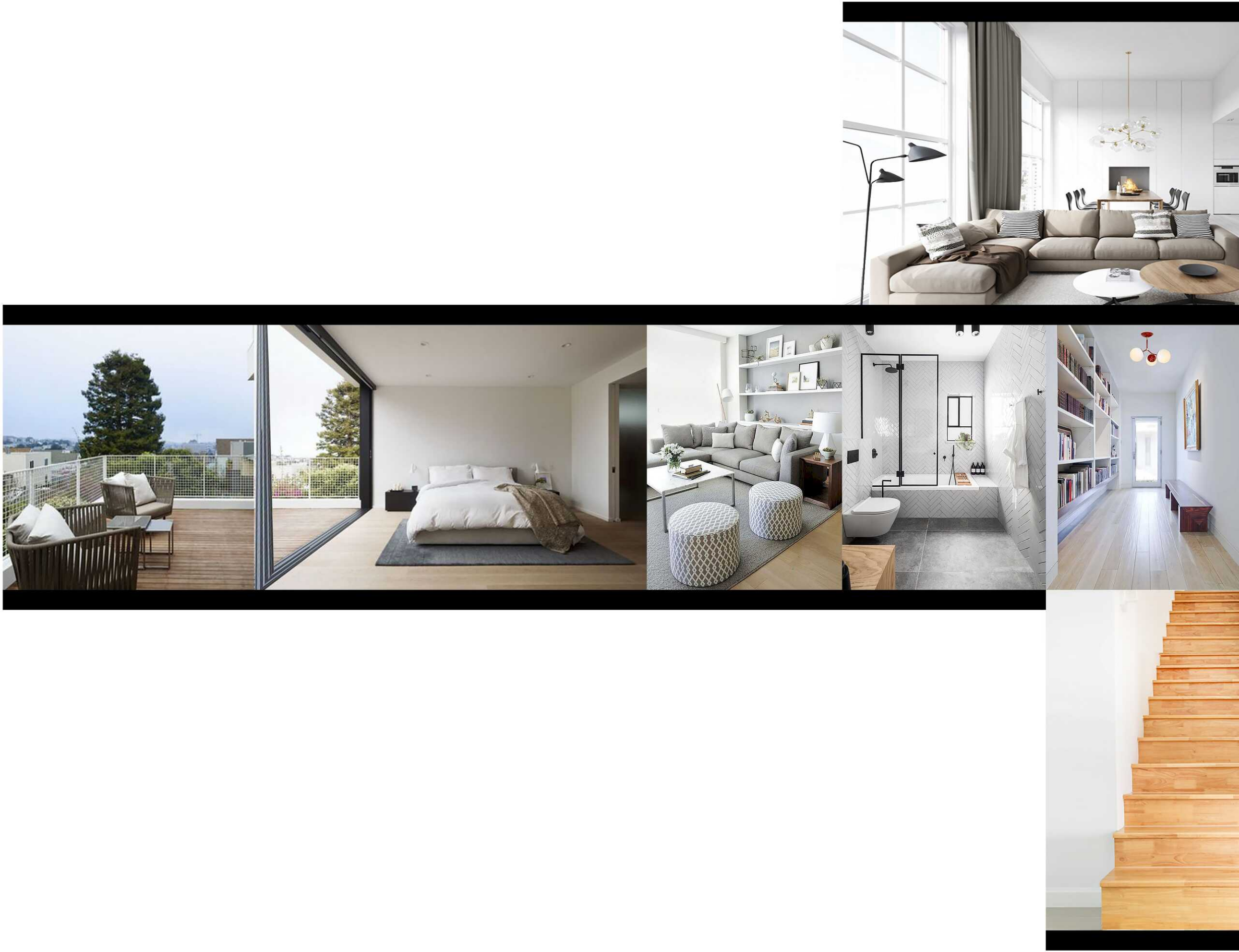
CLIMATIC COMFORT

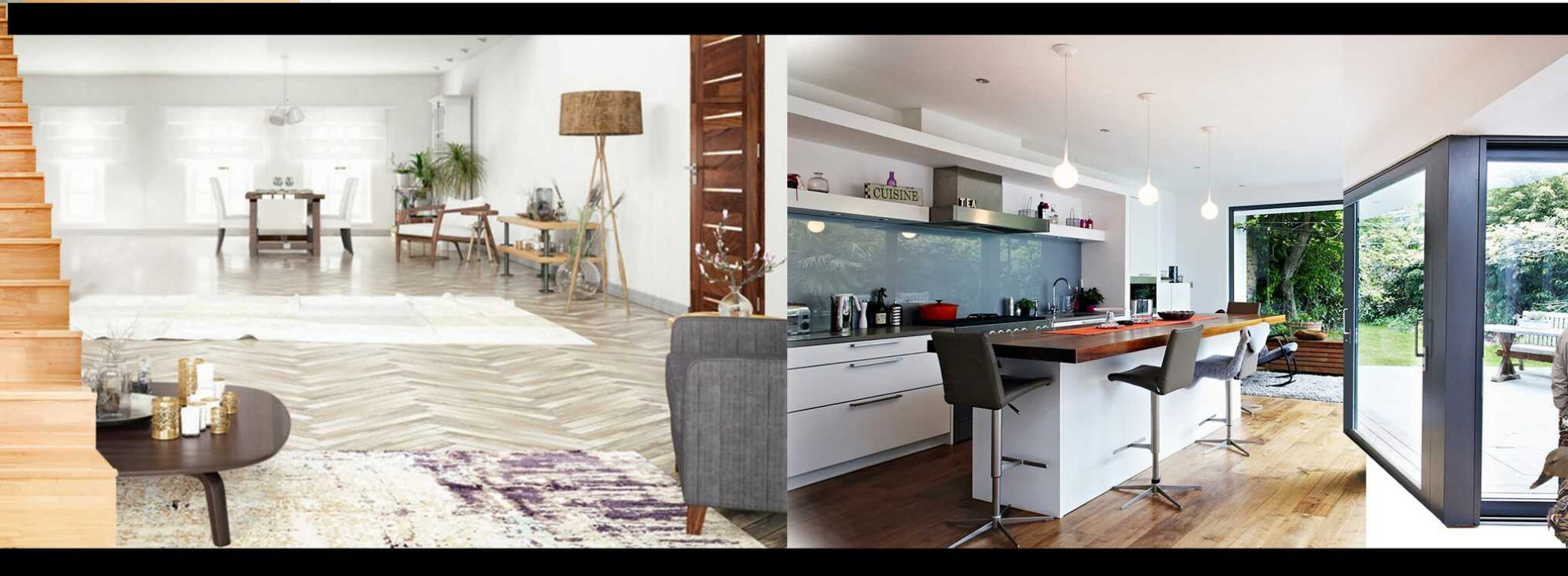
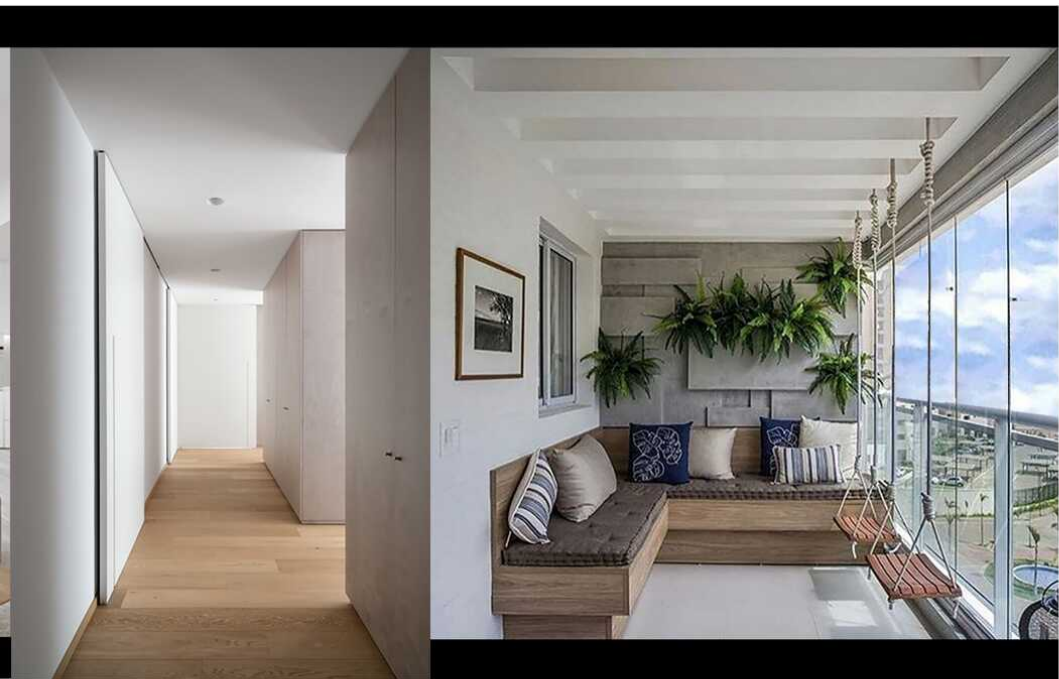
The elements in a dwelling should consider the passive design strategies, the interior space should provide a stable climatic feel throughout the seasons, which make the inhabitants participate and have control over these elements to adapt based on their evolving needs or use of the space, such as Cross ventilation, interior thermal curtains, exterior shutters, and regional materials.



NATURE

Spaces should allow being in contact with nature, both within an intense relationship with natural textures, materials, and vegetation where you can touch and smell. These elements make you feel closer to nature in a delightful atmosphere. The influence of nature can be seen and touched in the form of gardens, plants in the house, water, birds, or natural stones, ... etc.





Quality in housing could be based on the idea of the well-being and pleasure, the variety of spaces and atmospheres, a conception of the comfort other than the one normalized by standards, calculations, models.

Dwellings produced today are neither generous, nor spacious and are no longer adapted to the evolution and to the need or the wishes of the contemporary inhabitants. Standards mostly lead to build dwellings providing minimal surfaces and standardized spaces, plans, and even comfort.

The comfort normative is now much more often determined by rules and calculations, by the performance of technology, estimated through a grid of criteria, by a financial profitability. Housing has become a product, while it should be, first of all, a question for the sensations, quality of life, and freedom of use. The minimum space does not correspond to the contemporary way of life any more, and neither to what the inhabitants expects from the space for everyday and allow extended uses of the housing. Minimum space is not a sustainable concept. The house has to offer spaces with different characteristics and different atmospheres, spaces free of any defined functions and totally appropriable.

The space to be lived must be generous, comfortable, appropriable, flexible and economic. A generous space is a necessary luxury. How to give more space without increasing the cost? How to enlarge significantly the usable space? It is necessary to invent new housing typologies to develop: density, nearness, mixed use, quality, luxury and pleasure.

The densification and the quality of life are not opposites, nor incompatible issues. It is necessary to invent new housing conditions, giving the inhabitants, again, an attractive idea of living collectively in a denser city, by creating an architecture that reconciles the need of individuality and privacy, -often expressed by the desire of a single house in a garden- with the collective need of density. Besides, community and density become inescapable and reasonable for the future of cities, so to limit the infinite development of the urban territory. This is a basis for sustainability. Ecology, saving energy and natural resources cannot be only resolved by adding new technology or materials or new systems, stuck on the existing models.

Its consequence should not be a closer, reduced, or a more protected or reinforced house. It should renew the way of living and introduce new forms and characters into housing spaces. This idea will not work if the inhabitant is not involved being even the main actor of this sustainability agenda. So, the inhabitant must receive a 'plus', finding better conditions for her/his living space.

W03

domestic fragments

leader

Elli Mosayebi



assistant

Álvaro Fidalgo



5 days



Liguria, Italy



Ángela Molina
Georgia Strino-
poulou



Momoyo Kaijima



structure

In the centre of the discussion: how is innovation in housing possible and what might it mean? Can housing be said to innovate at all? What is the relationship between activities, functions and space? Can we imagine dwelling spaces whose qualities are not derived primarily from the satisfaction of function, but rather from an abstract spatial dimension? Furthermore: for whom are we building such spaces? In light of the atomisation of people's concepts of life, can we even conceive of dwelling spaces beyond neutral functional programmes? And finally, what does it mean to build in the city? What are the requirements of the contemporary urban cultures of living? How are they expressed in the urban context?

Domestic Fragments

Questions

A reflection on the problems and challenges of current housing production raises three central questions:

Innovation in housing?

This first question is based on the observation that housing, as an architectural discipline, changes very slowly and is largely conservative. The conformity of urban schemes and floor plan configurations is reinforced by the dominance of private investment.

As states relegate the provision of dwellings to developers, housing becomes subject to market speculation. Risk-aversion leads to the suspension of innovation. How have architects and clients responded to and continue to respond to these conditions?

Housing for whom?

The second question is based on the observation that the predominant bourgeois housing models fail to reflect the wider changes perceptible in society, from family structures and population ageing to immigration and multiculturalism. Rising prosperity in Europe over the last fifty years allows almost everyone to shape their future according to their own desires. The plurality of concepts of life leads to a high differentiation in the patterns of demand and individual expression. How does architectural design respond to these changing conditions?

Housing and climate?

Private households still produce far too much CO₂ for heating and cooling the interior. We want to design exemplary projects that rethink form, space and material from the principles of a specific energy resource and a specific climatic zone and develop a unique form of living from it. For this we distinguish different forms of energy, such as solar radiation, geothermal energy or waste heat. How does a house in a medium climate, a lot of fog and rain showers differ from a house with harsh temperature differences between summer and winter?

activities

inviting guests

&

play a music instrument

architectural element

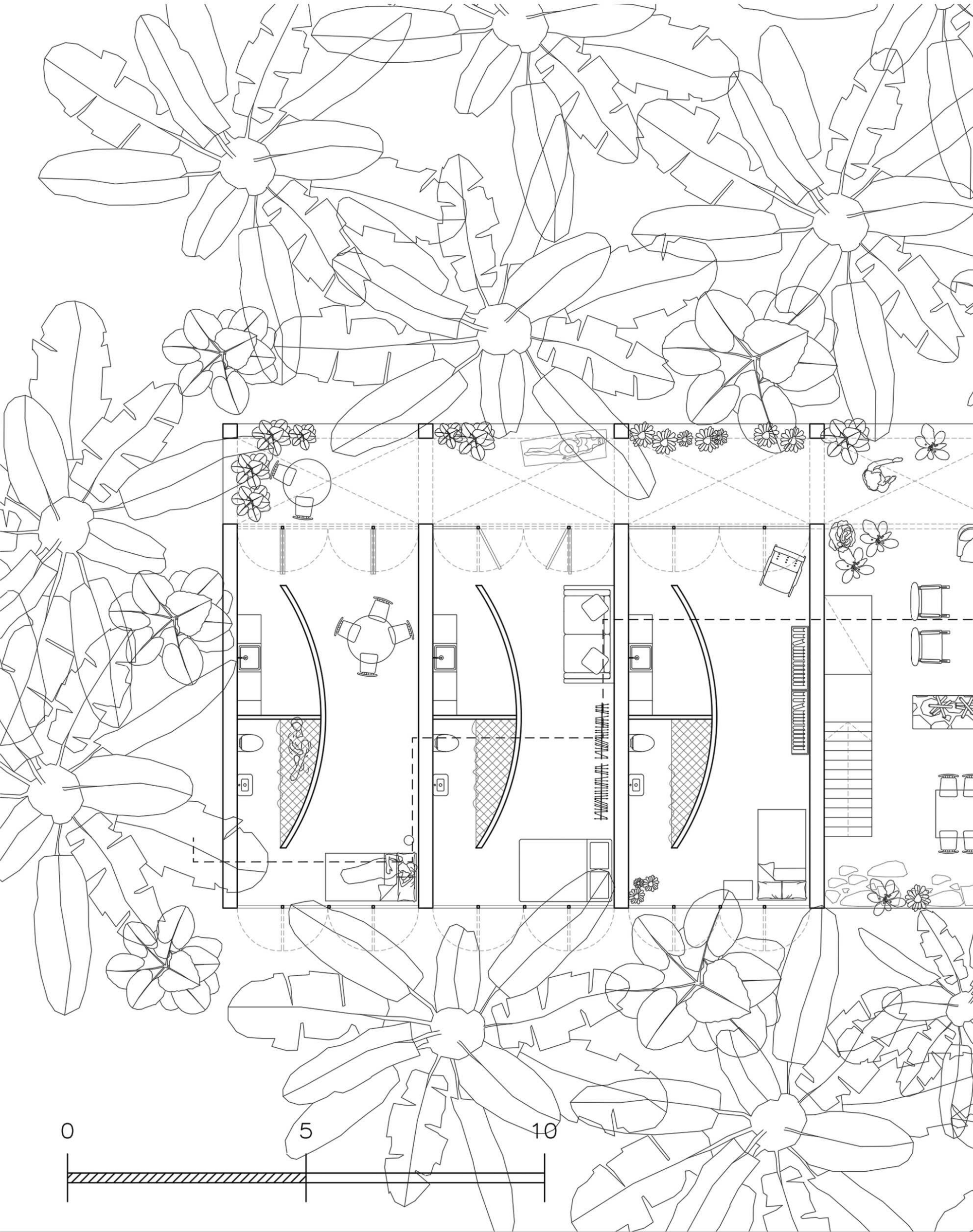
arch

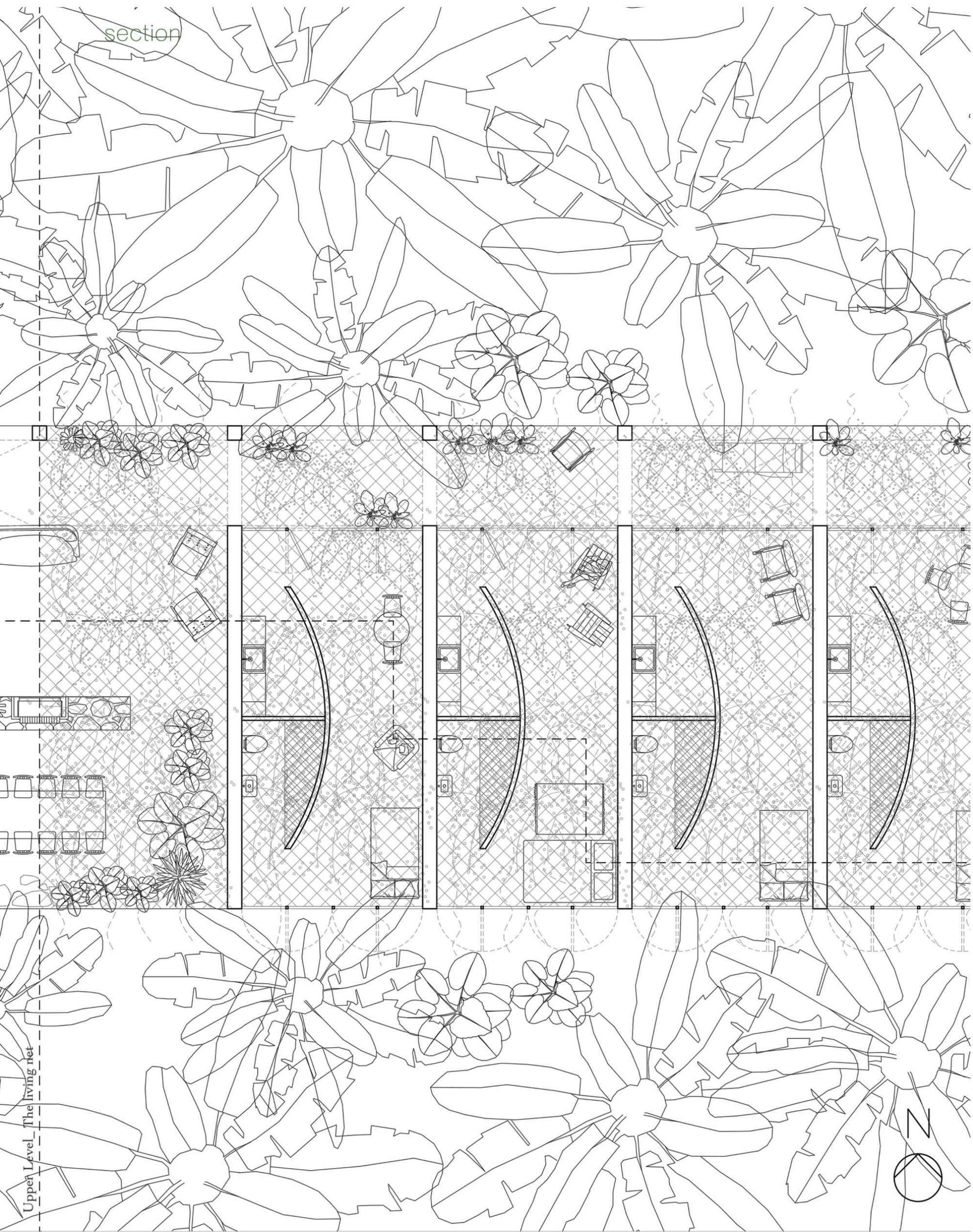
climate

Climate with little thermal oscillation and pleasant temperatures. Cool and dry winds in winter, however in summer wind changes direction and produces hot and humidity with torrential rains.

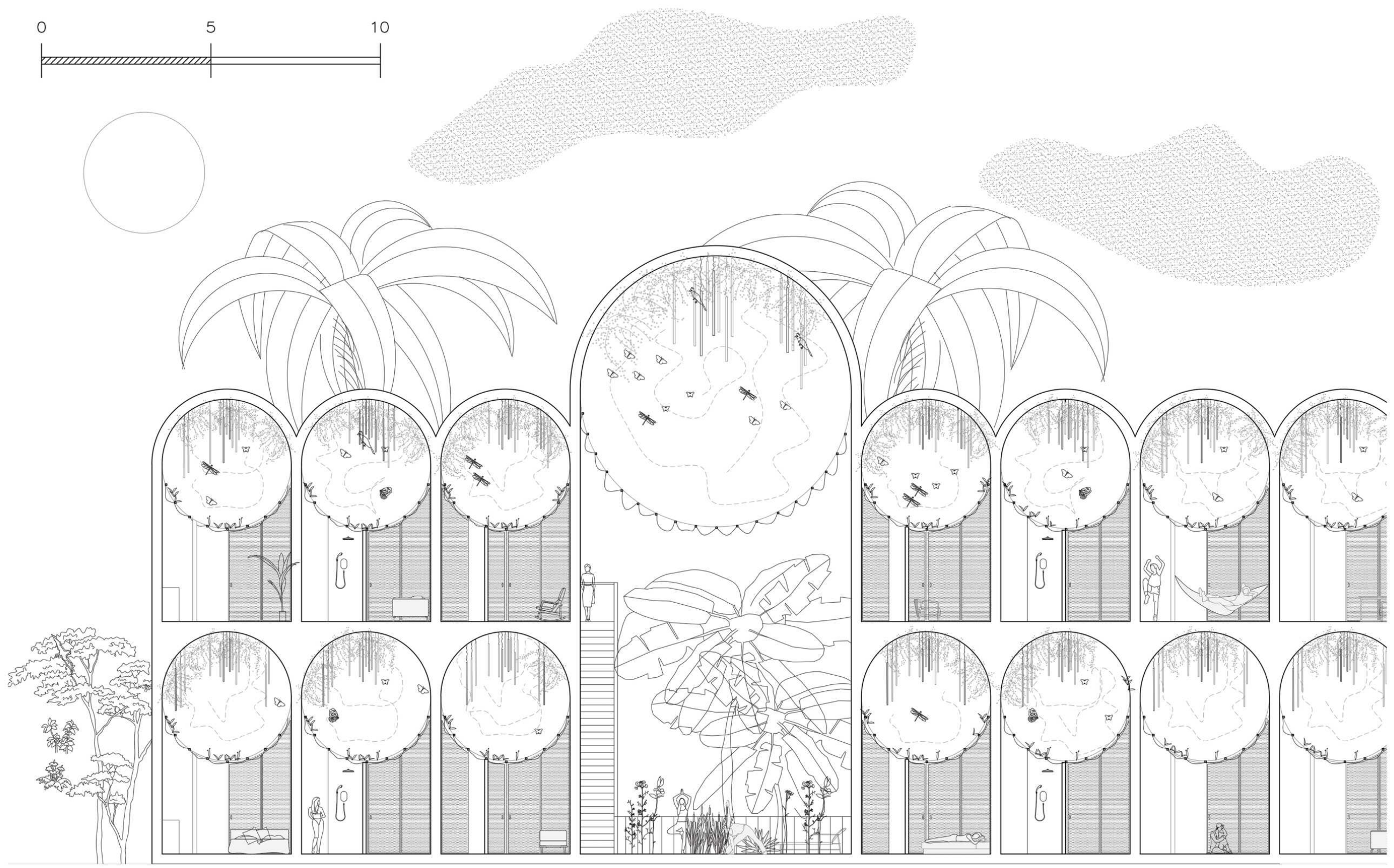


floor plan

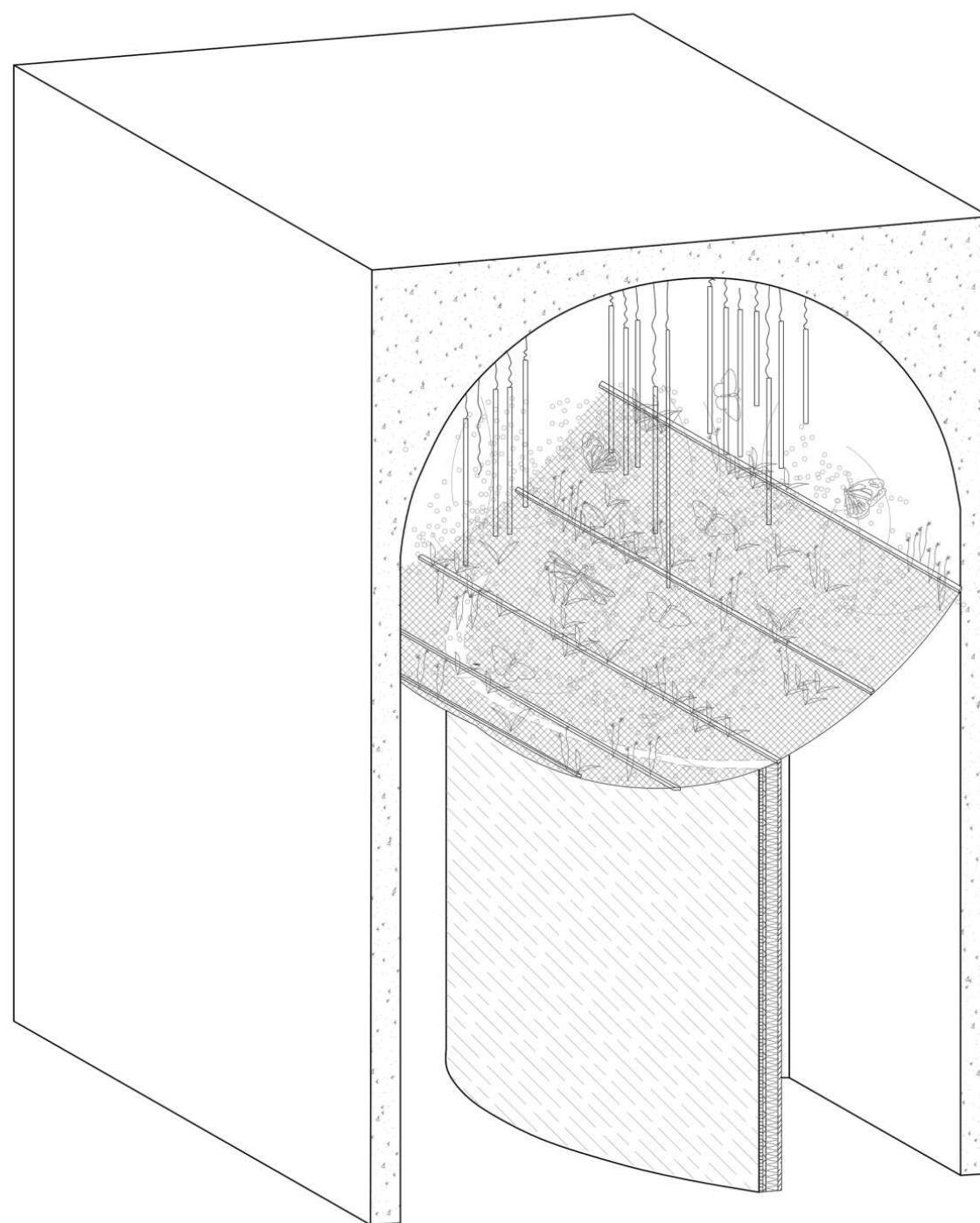




section



detail



miniature



W04

infiniti infill

director

Hrvoje Njirić



assistant

Esperanza Campaña



5 days



Pietermaritzburg,
South Africa



Alberto Huseo



Álvaro Martín Fidalgo



structure

1. Pre-defined and acceptable urban layout
2. Increased density & collectivity
3. Reduction of individual financing
4. Social inclusion and defined neighbourhood mix
5. Standardization of house services
6. Sanitation and maintenance of the city
7. Articulated public space

Infiiti Infill

focusing on low-cost housing, on affordable and innovative solutions to the basic need for a small-sized housing within a structural and infrastructural framework.

also, designed to challenge and seek creativity with ideas and concepts in architectural design of collective living spaces. It aims to promote alternative solutions to housing, coming up with affordable and sustainable units with limited size and budget to meet urgent demands in housing market. The challenge is both multidisciplinary and multiscale - a minimal housing structure, capable of fulfilling the residents' requirements of thrift and sustainability. The assignment gives an opportunity to think about social, cultural and environmental effects in sustainable design within a defined frame. Bearing in mind the constraints of the pre-designed "urban shelf", challenged to:

- design the structure and household services
- conceive a concept for a series of low-cost houses with expandable units or local materials, based on the limitations of the pre-conceived structure, but suitable to be inserted into the frame.

generally speaking, the exercise is about how to insert structures into a pre-conceived spatial grid. It is a predominantly an abstract architectural theme which can be interpreted with inspiration and beauty. methodologically speaking, we link this idea of compositional manifesto with what Sol LeWitt pursued in his oeuvre "serial project, to combine and recombines open and closed white enamelled aluminium shapes all laid out in a grid. this system of organization gives the viewer all the clues that he/she needs to unravel its logic. It seeks to give information, not to instruct.

the clichés

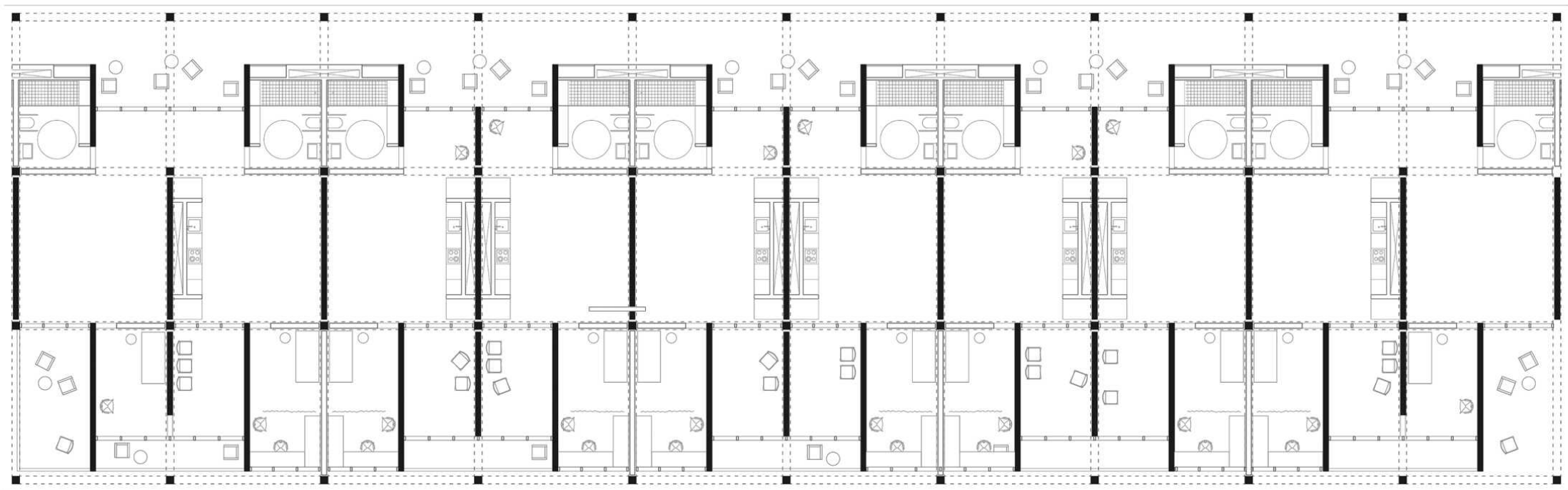
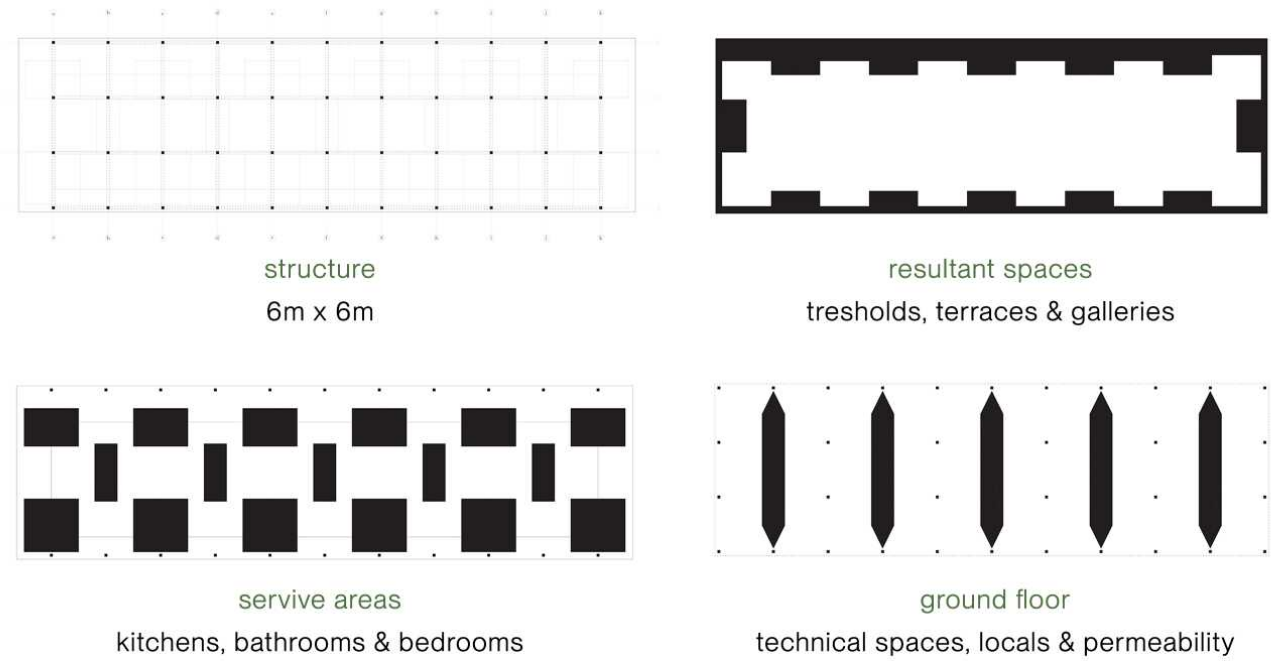
as a critique of usual shortcomings on the housing market, participants will be asked to tackle and rework the existing clichés, turning them into a new quality. There are 6 of them chosen for our elaboration:

shallow/thick plan, Reversible plan, Raumplan - uneven levels, Diversified access modes, Elaborated transitions of public/private, and Irregular contours/limits.

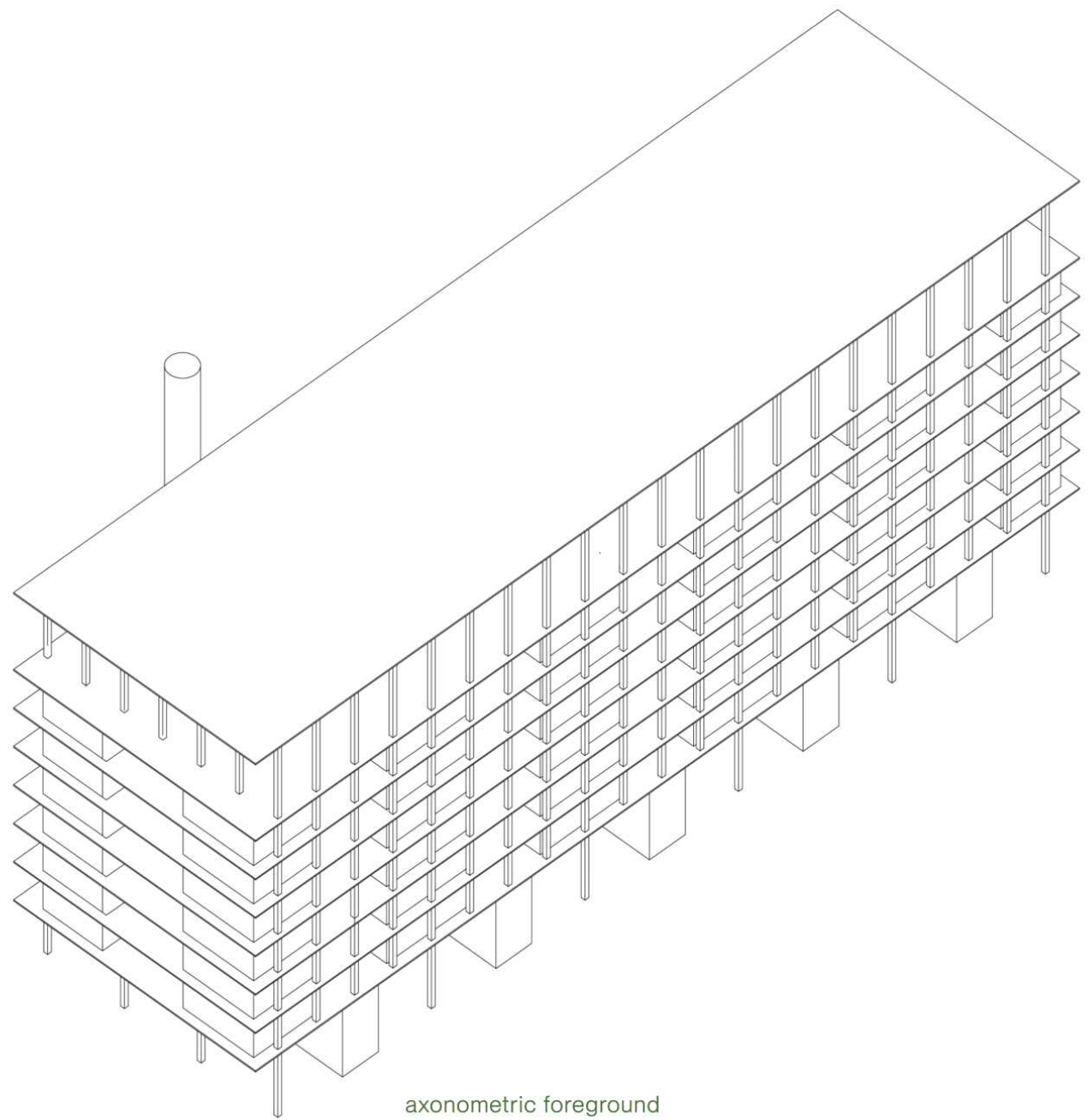
thick plan

Speculations on the housing market often result with extremely deep floor plans which demand a lot of skill to deal with. Depths of 20m are not rare at all, often worsened by an extreme thinness of less than 6m. There is also a number of historical plans with such measures.

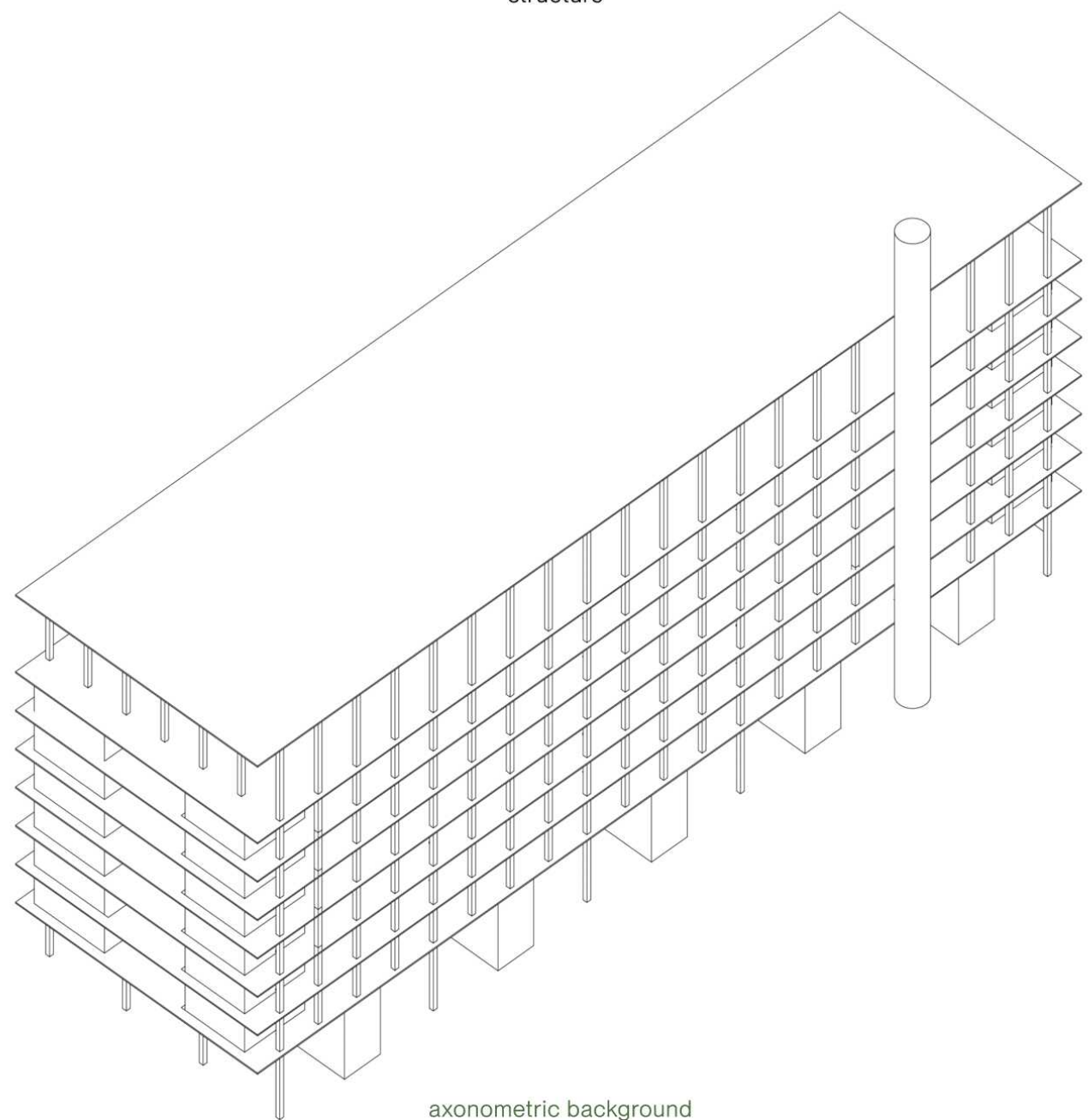
On the contrary, websites are brimming with extremely thin houses which are not wide enough for two functional zones, one behind the other. The advantages of having cross ventilation and unobstructed views are topped with an extreme facade length and thermal losses.



typical plan



axonometric foreground
structure

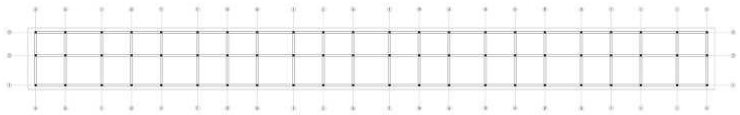


axonometric background
structure

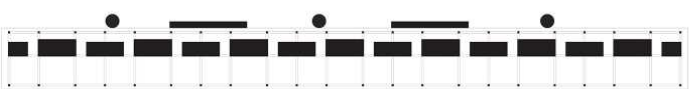
thin plan

Speculations on the housing market often result with extremely deep floor plans which demand a lot of skill to deal with. Depths of 20m are not rare at all, often worsened by an extreme thinness of less than 6m. There is also a number of historical plans with such measures.

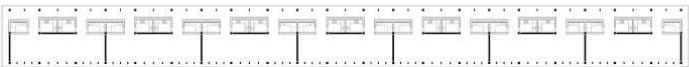
On the contrary, websites are brimming with extremely thin houses which are not wide enough for two functional zones, one behind the other. The advantages of having cross ventilation and unobstructed views are topped with an extreme facade length and thermal losses.



structure
6m x 6m



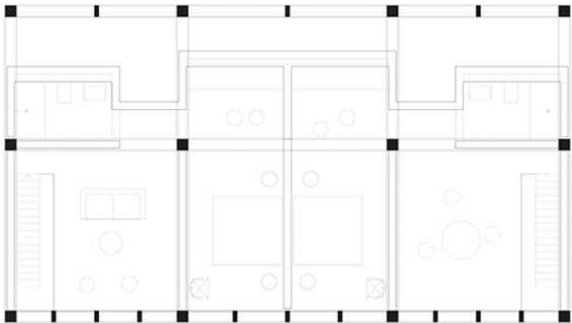
resultant spaces
tresholds, terraces & galleries



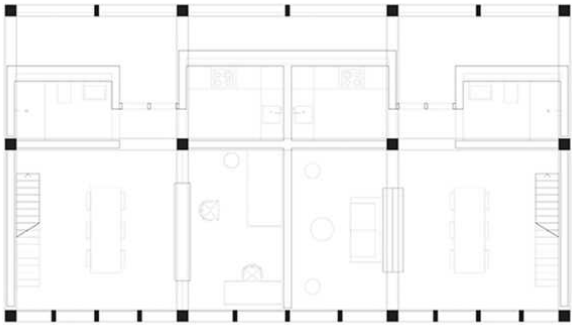
secondary structure
inner partitions



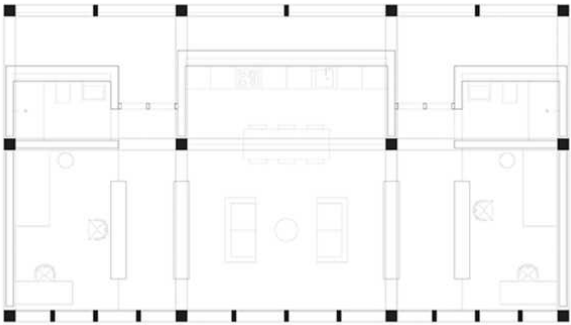
ground floor
technical spaces, locals & permeability



type 01
vertical housing, Level 02

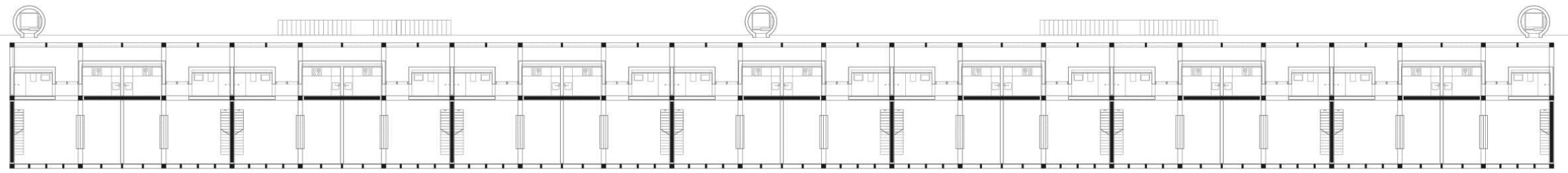


type 01
vertical housing, Level 01

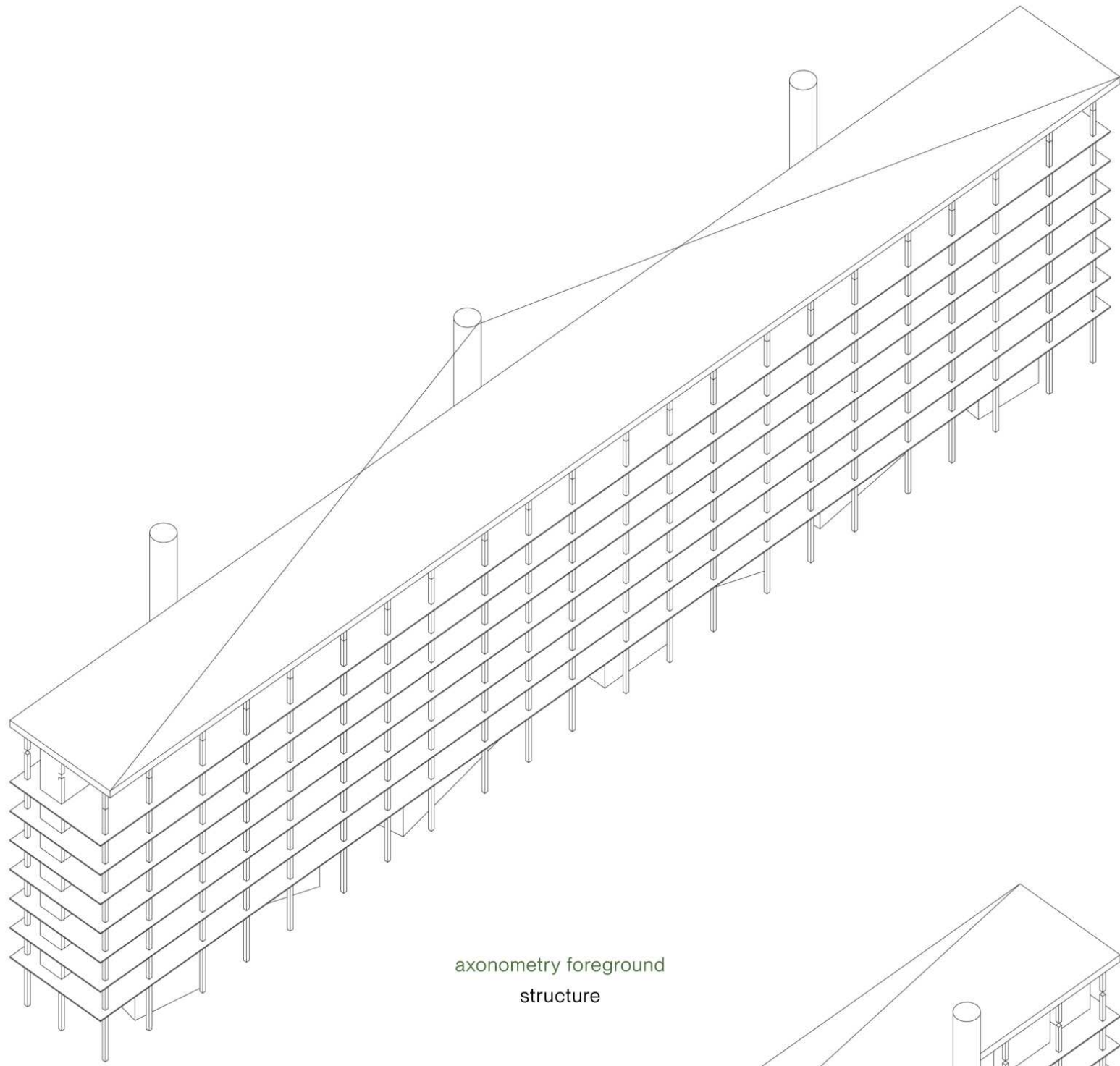


type 02
Horizontal housing, Level 01

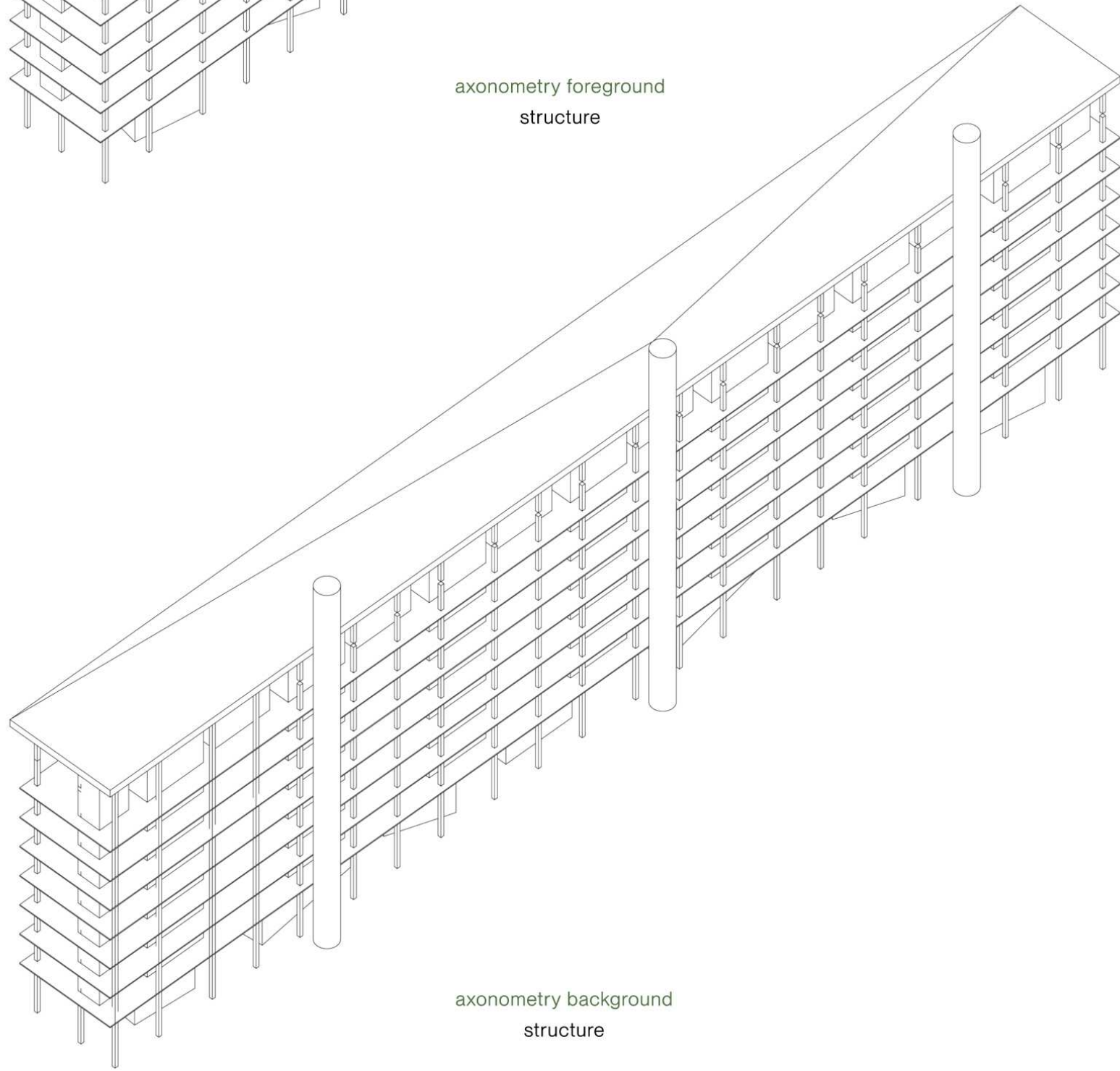
41



typical plan
6m depth



axonometry foreground
structure



axonometry background
structure

envelope

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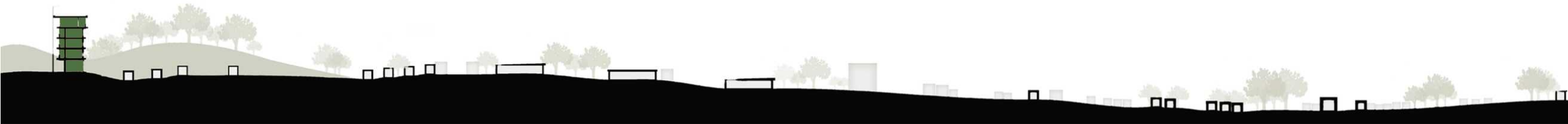
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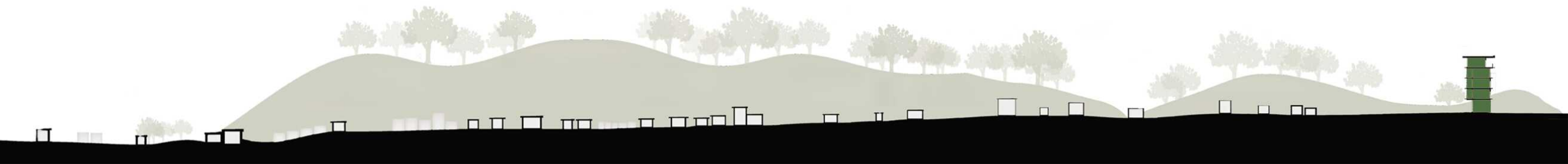
proposals



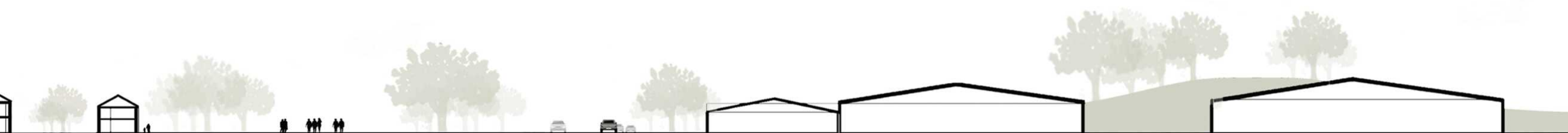
proposal 01 | urban section -
make a border to prevent b



proposal 02 | urban section -
make a border to pr

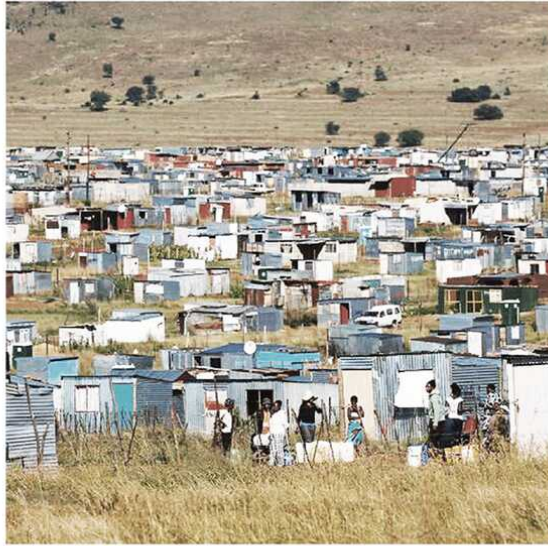


applied in black house area
building more black houses



applied in residential area
protect grean area

site



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urban strategy

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architectural approach



final approach - black houses
alternative collective housing for workers

W05

building depth.
morphometric approach
to urban housing

leader

Andrea Deplazes



assistant

Fernando
Altozano



5 days



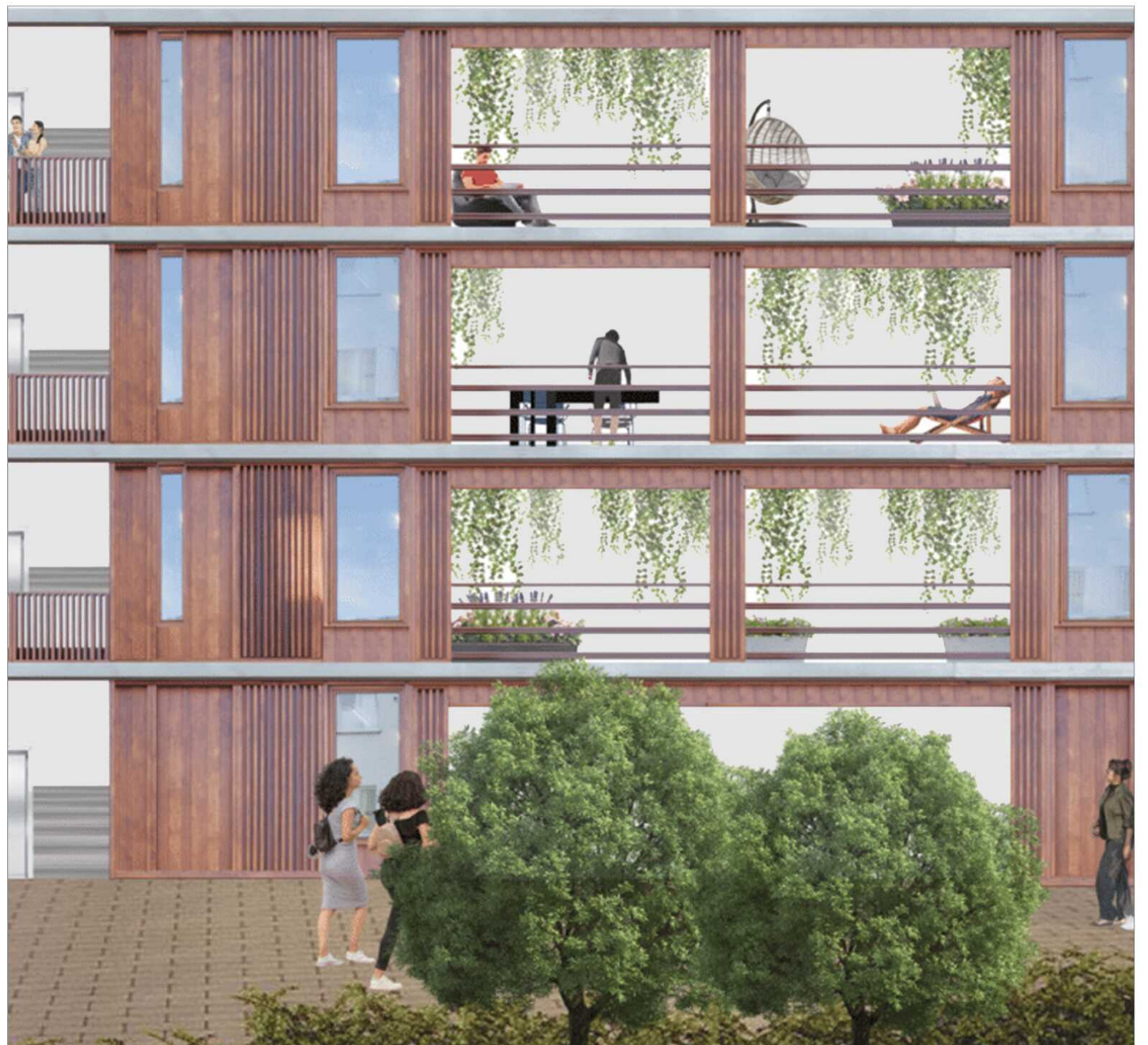
Madrid, Spain



Bruno Dávalos
Francisco Ramos



Óscar Linares



structure

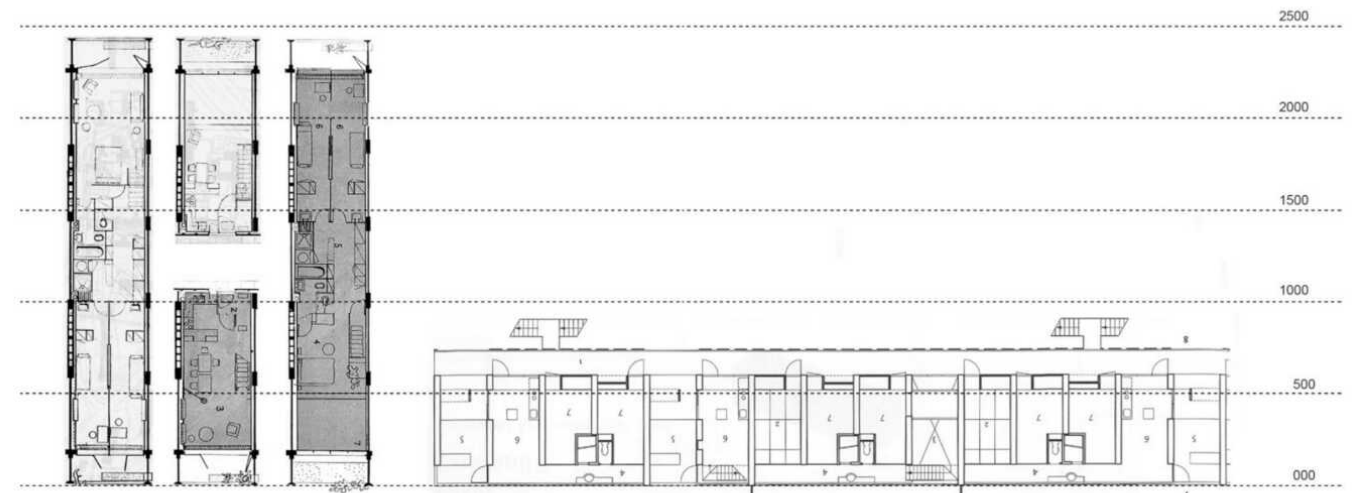
Working scales: From dwelling to city.
Dwelling, repetition system and variations, accesibility, strcture, infrastructure, envelope, building, city.

Working depth: 12m

Project name: Inhabitable Wall

Building Depth.

Morphometric approach to urban housing.



Building Depth

Development of the system with 12m depth: Envelope, accessibility, structure.

Dialectic keywords

Significance of given conditions: First adaptation, open systems, envelope, accessibility, structure.

Narratives

Final adaptation to specific keywords. Plans, sections, models. Building scale.

Proposition of typology

Possibilities of the system.

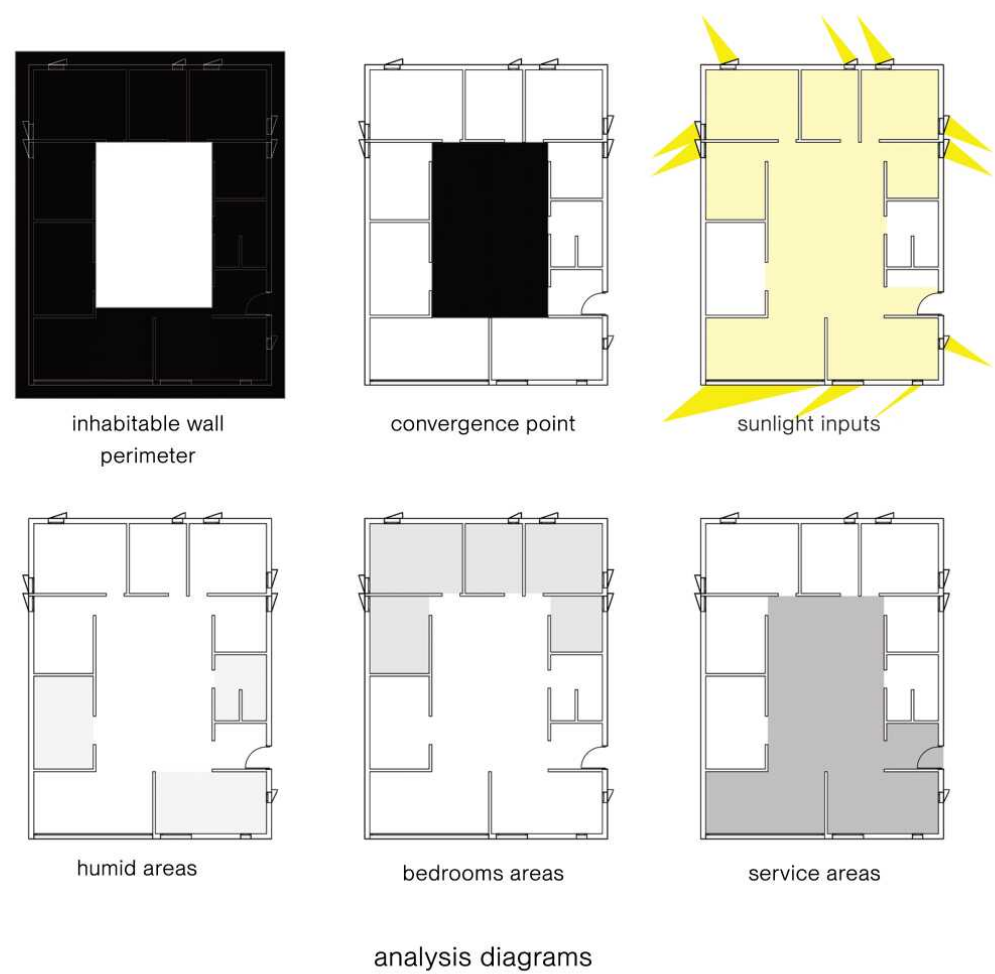
Urban approach

Adaptation to local conditions. Final building.

thick plan

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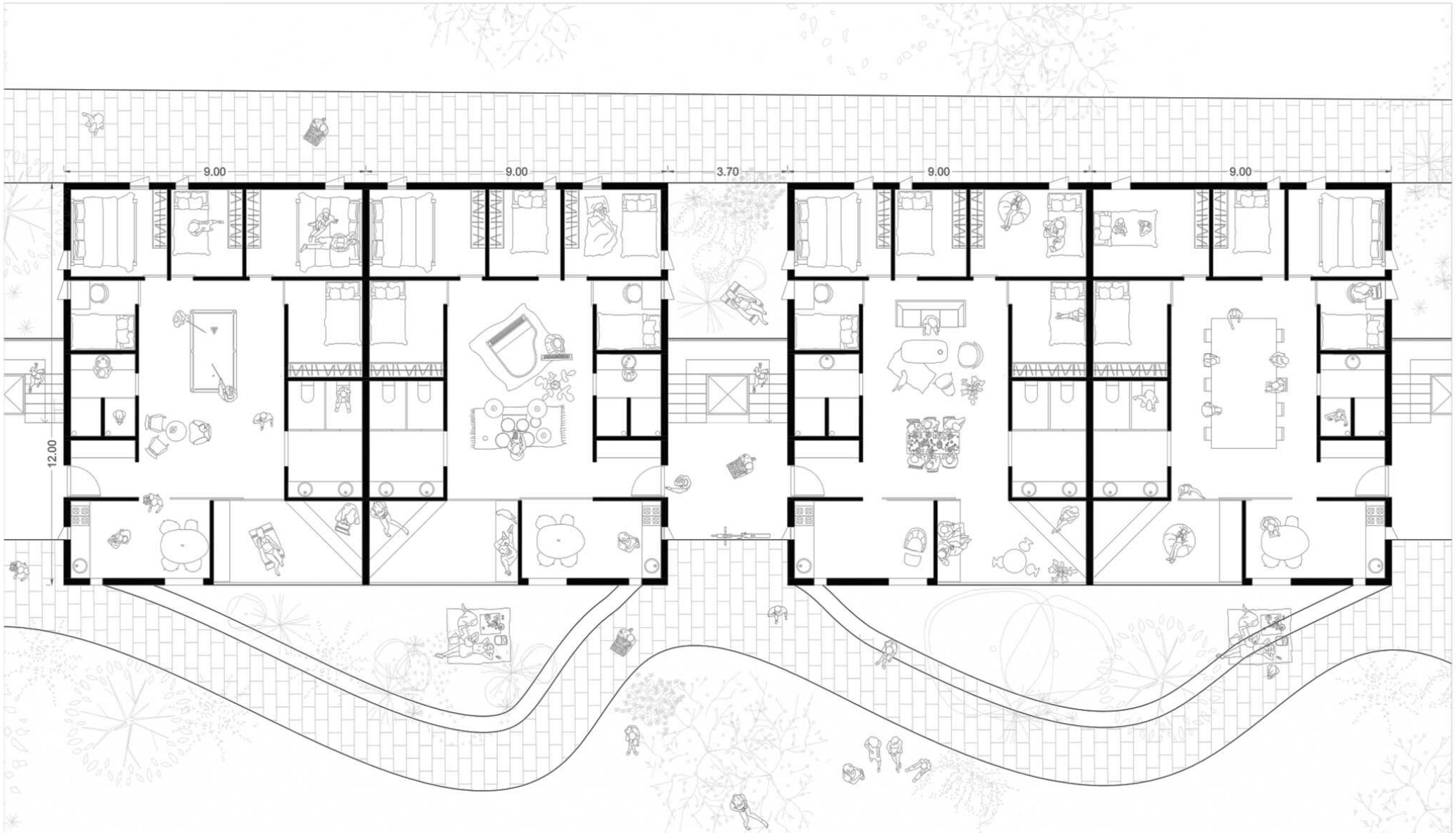


urban plan



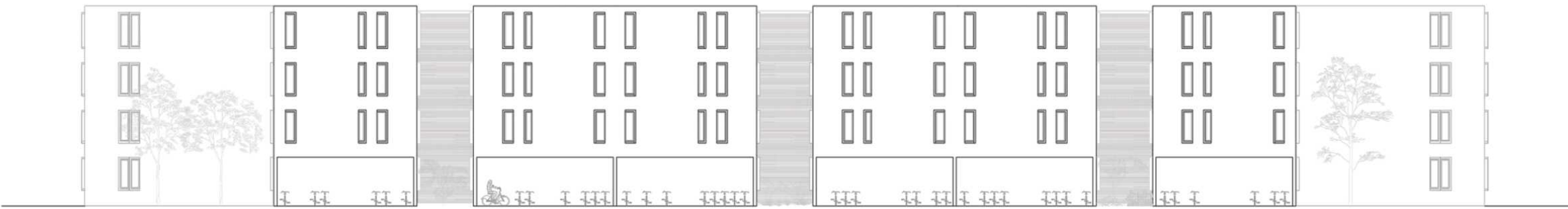


ground floor plan
structure

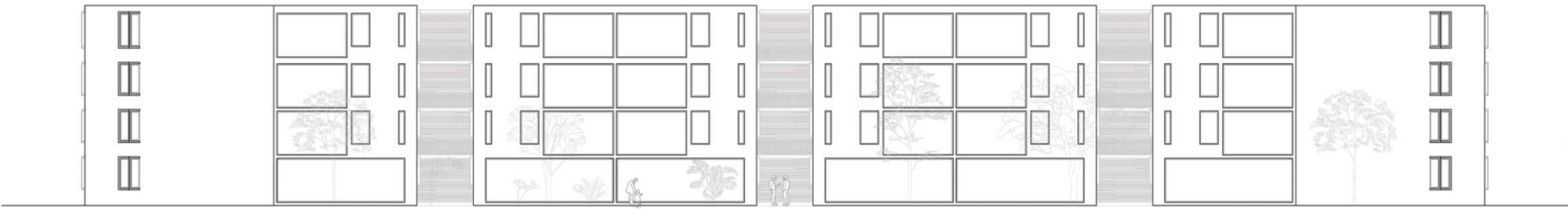


axonometry background
structure

elevations

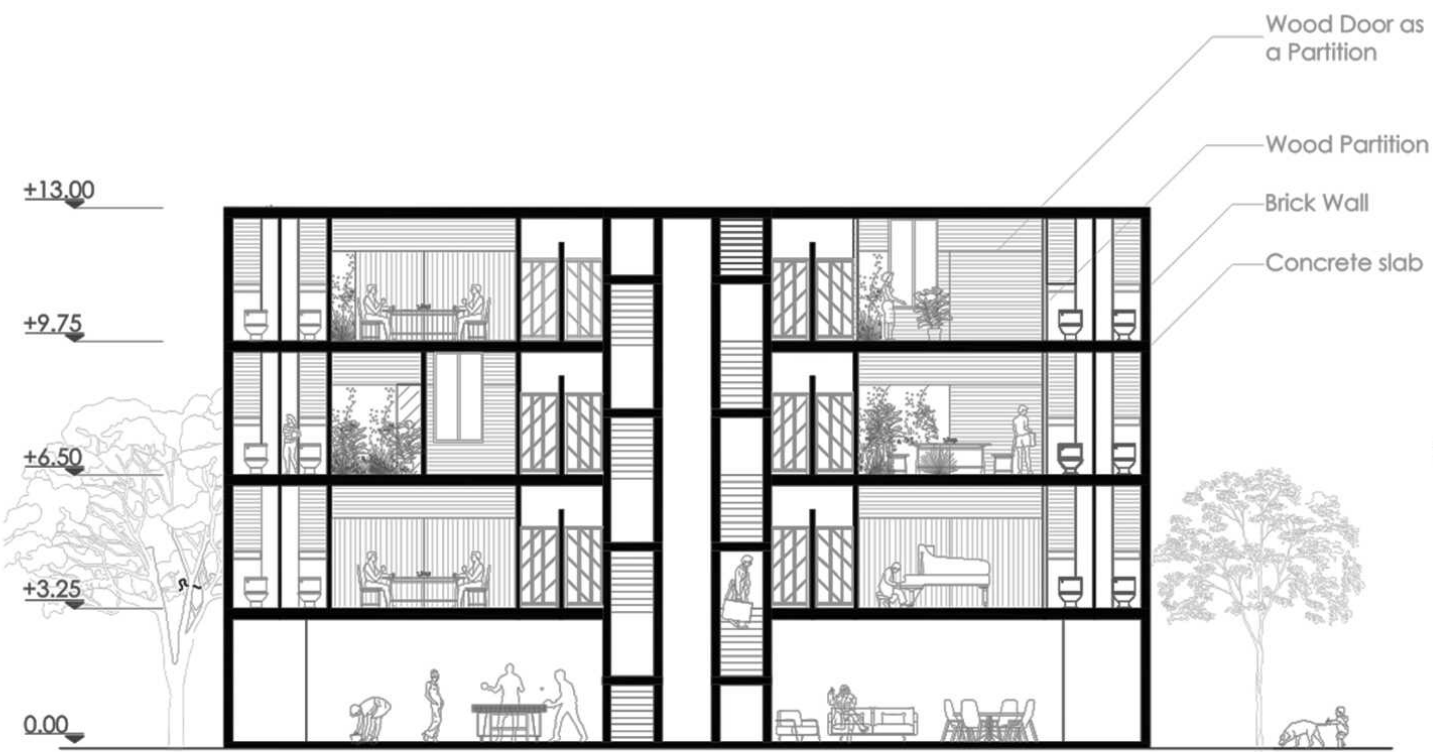


north elevation

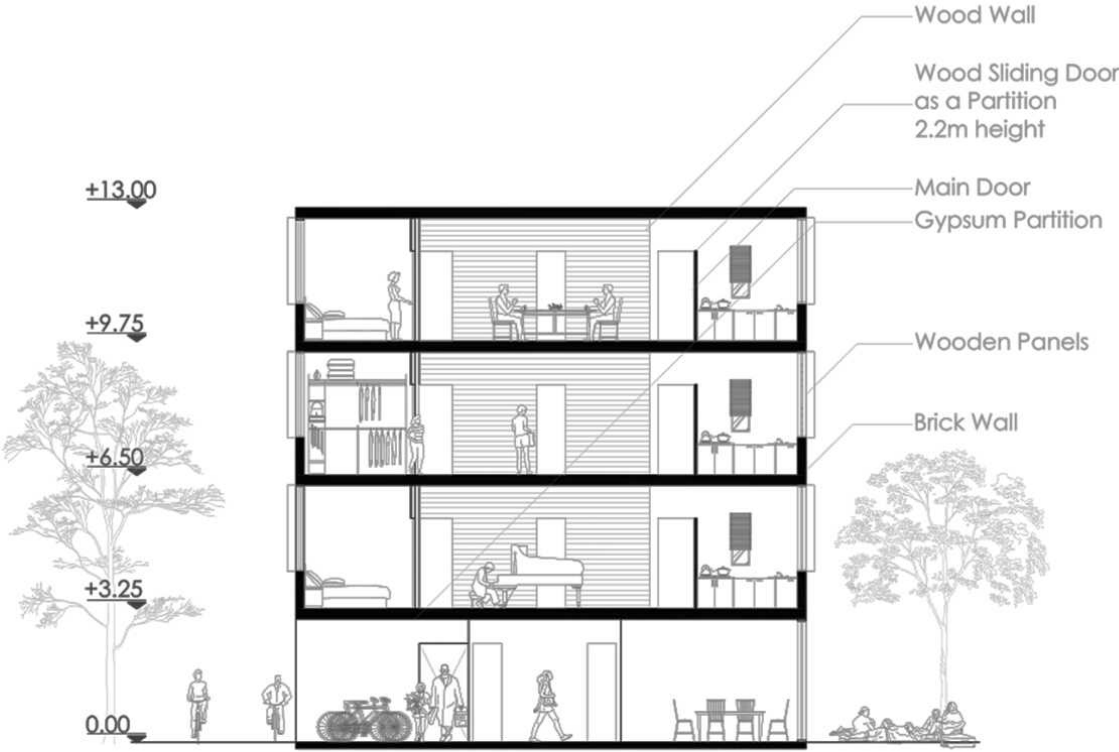


south elevation

sections



longitudinal section

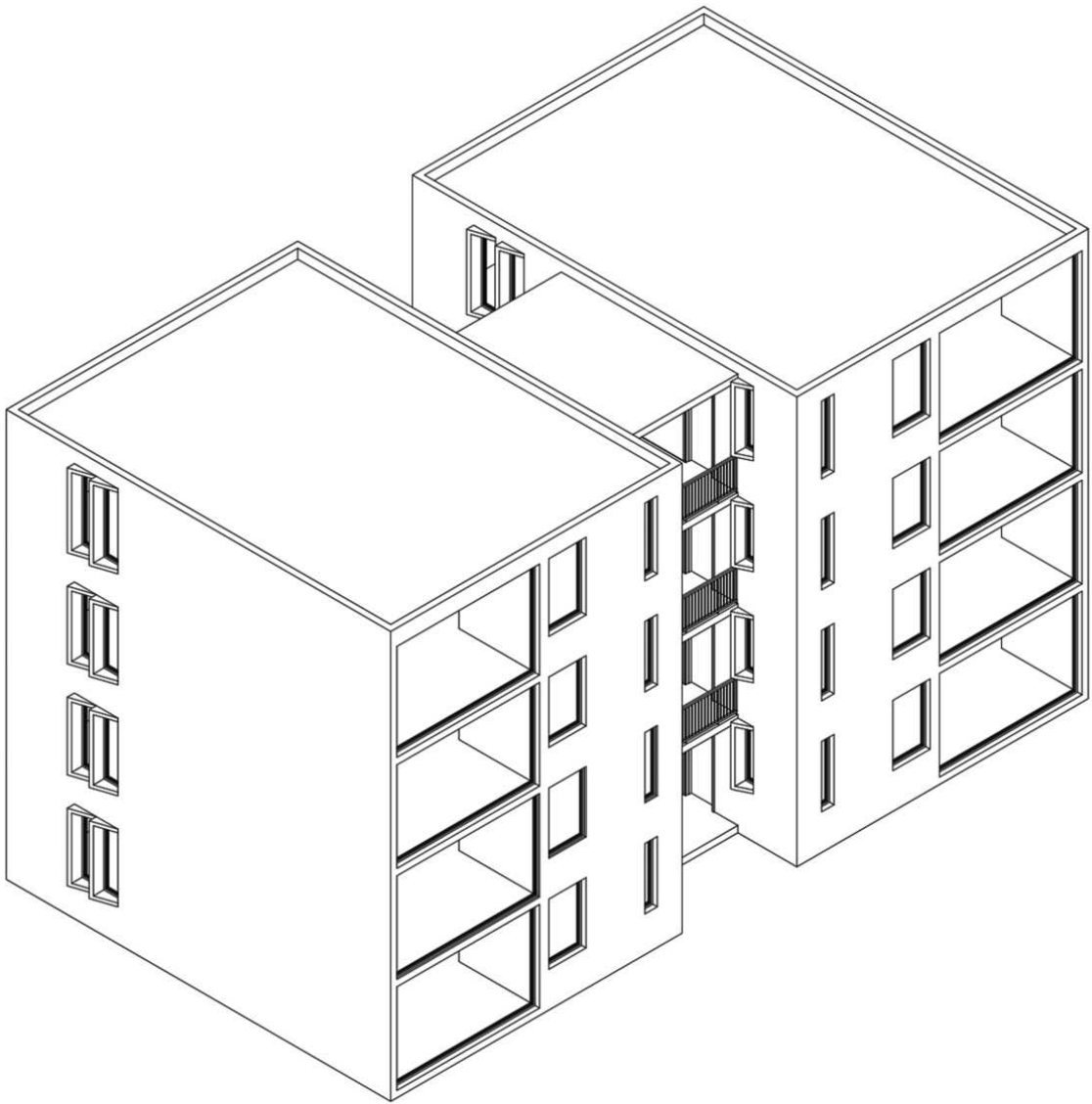


cross section

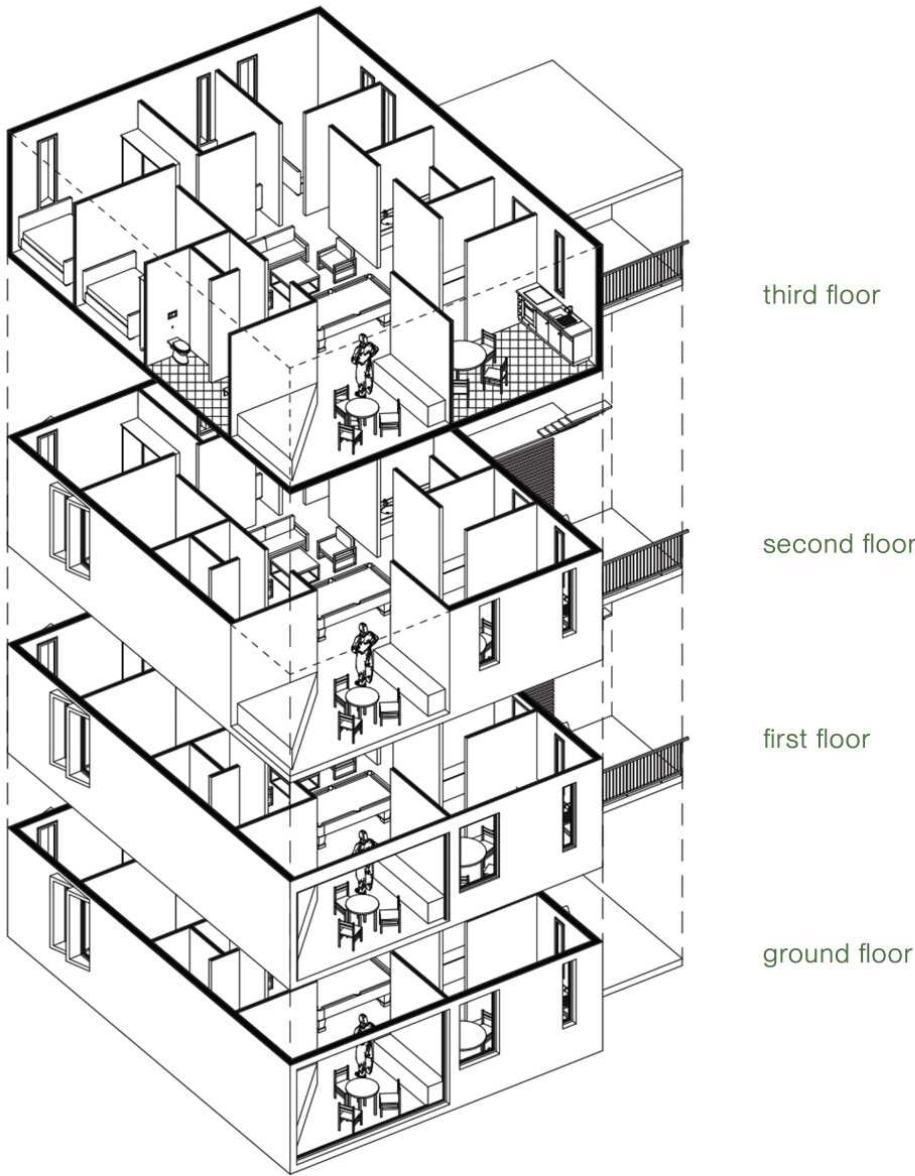


envelope
materials

isometric



exploded axonometric





W06

The courtyard and the tower

leader

Alison Brooks



assistant

Alejandro de Miguel



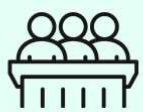
5 days



Madrid, Spain



Andrea Pardo
Nouhaila Zergane
Haidy Lazalde



Miguel Cornejo



structure

1. the maximum number of storeys for the courtyard building should be 6, including the ground floor. Unless the surrounding buildings advise to provide less number of storeys.
2. the maximum number of storeys for the tower should be 15, including the ground floor.
3. each plot should provide a 'civic institution' space, such as a place of work, health, nature/growing for the community, publically accessible and connected to the neighbourhood.
4. become familiar with the site and develop a critical position ahead of the project.
5. develop an ideal dwelling units and distribute within the building, understand how the plan works and how it relates to the objectives.
6. fix the building outline and strategic site plan of the plot, including a 'civic institution space'
7. Detail the building, its image and materiality

The courtyard and the tower

times of crisis can bring out the best in people. Inevitably, they make us see the world through a new lens. This coronavirus pandemic is perhaps the first time all of humanity has seen the world through a common lens. Suddenly we're all on the same side, acutely conscious of our interdependence. we're paying much closer attention to values of open-ness and transparency. nature itself is coming into better focus.

We're realizing what aspects of our daily lives are essential, or superfluous. We're more aware of the value of our public institutions like the civil service, the NHS, schools, universities, museums and arts organizations, social care charities, our public gathering spaces and transport systems. we're also more conscious of the commercial enterprises critical to a functioning civil society: food supply and distribution networks, pharmacies, utilities providers, financial and communication services, to name a few.

humans sense space, volume, qualities of light, sound, texture and colour. we feel beauty. We also respond intellectually to the stories behind the places we encounter: who, how and why? the city around us offers a never-ending source of this story-telling. It represents an extraordinary layering of cultural history, technological advancement and social change in which we all have a role. so experiencing great architecture and beautiful places in our cities can make us feel better, as individuals and as a society. these moments can stimulate feelings of wonder, belonging, and even joy. great housing has this capacity: to be more than housing, to be the source of our well-being.

the new proposed model, must, at the very least, strive for:

- housing that is contextual, able to respond to the specifics of place and culture, that express a differentiated urban landscape, a resistance to homogeneity, and the welcoming of diversity.
- housing that is generous. designing in generosity means making the most of every spatial, material and environmental opportunity and offering it to everyone, in the long run.
- housing that is civic, in an attempt to remove the disparity between the private and the public realm. civic homes embody the qualities of an institution, communicating that all its users are equal citizens and participants of collective life.
- housing that is beautiful. overcoming the authoritarian rationalism of modernism, also dig into the social and cultural drivers that inform a new housing architecture and support their proposals in the memory and particular conditions of each site, to avoid the overused typologies of the building boom era, inadequate for the specificities of modern reality.

urban scale



Our plot is located at the crossroads of two very busy streets in the Tetuán neighborhood, but without losing its domestic scale, so an important point for the project was not to lose the scale of the environment.

The neighborhood is made up of people of working age but mostly unemployed and very old people, so it is important to create low-cost housing.

To achieve this, it is necessary to increase the density and therefore the height.

In Valdeacederas we can see an environment of narrow streets and patios that are to the east of our plot and the large Villaamil park with the Madrid mountains in the background to the west. We are on the edge of the urban fabric in a privileged position.

Another important point of the project is to improve the public space, since in general, it is of poor quality and very scarce, so our project aims to democratize the urban space with spaces dedicated to different uses, vegetation, shady environment to be protected and not only for the people who live in our project, but for the entire neighborhood.

plan



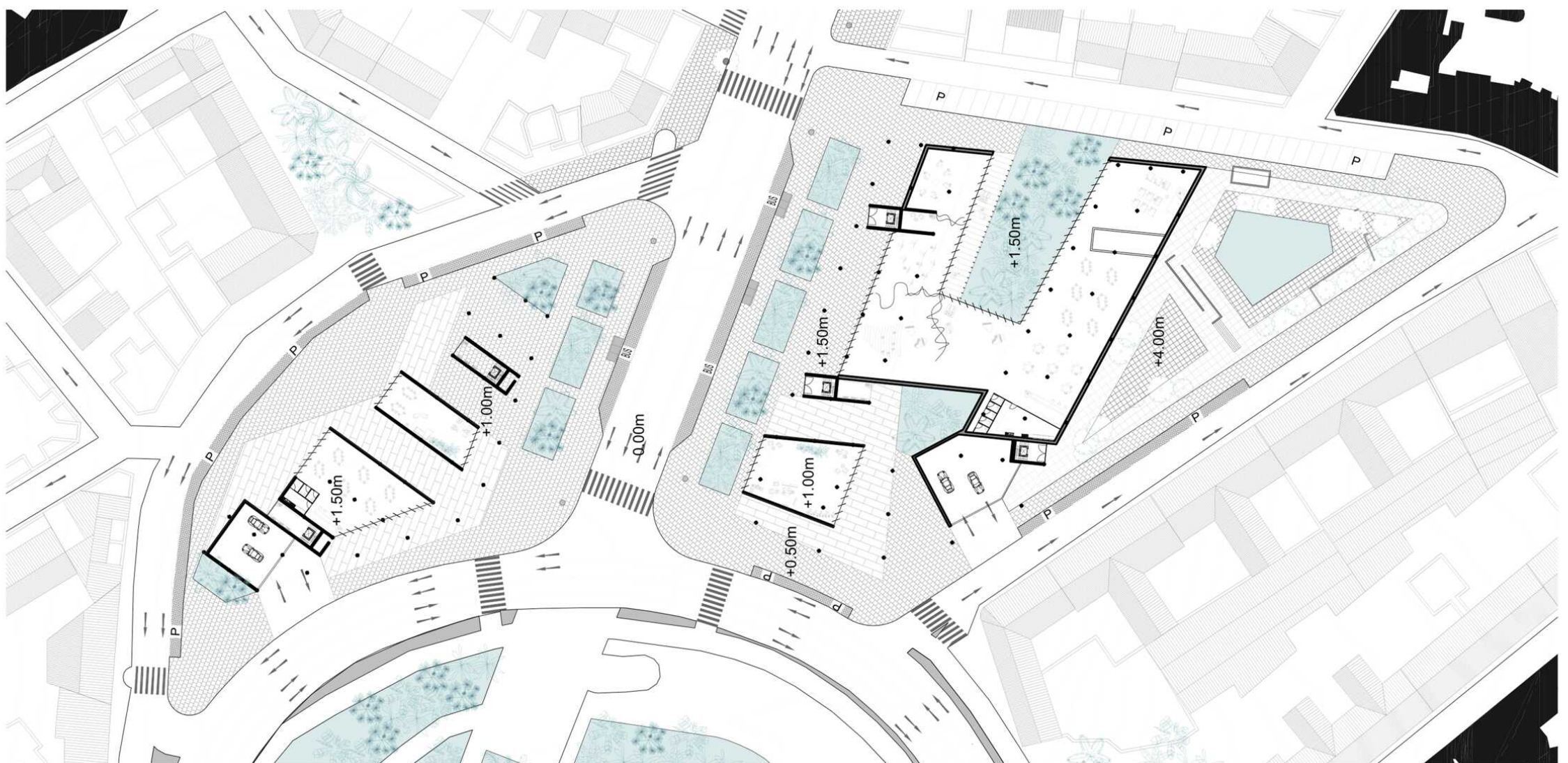
building scale

The shape of the building is delimited by creating a barrier with respect to the park and thus closing the urban fabric. With this form, two private courtyards are generated with a domestic scale, easily related to each other and to the dimensions of the rest of the urban fabric.

In the upper plot, the space is very limited, so that the shape of the building generates a patio with the rest of its surroundings, housing a patio used by two commercial premises, the access to the block and a colonnade to protect passers-by.

In the lower plot, the space is much larger so that the building encloses itself, generating a completely vegetal patio and creating a space for the community, for gathering and also passing through. Regarding the verticality of the building, the main idea was to allow all the inhabitants of the blocks to have privileged views of the park, their own outdoor space with vegetation and a communal space where they could interact with their neighbors.

Hence the stepped shape, which also generates a texture on the façade as if they were blocks linking with each other, like the bricks that can be seen in the environment.

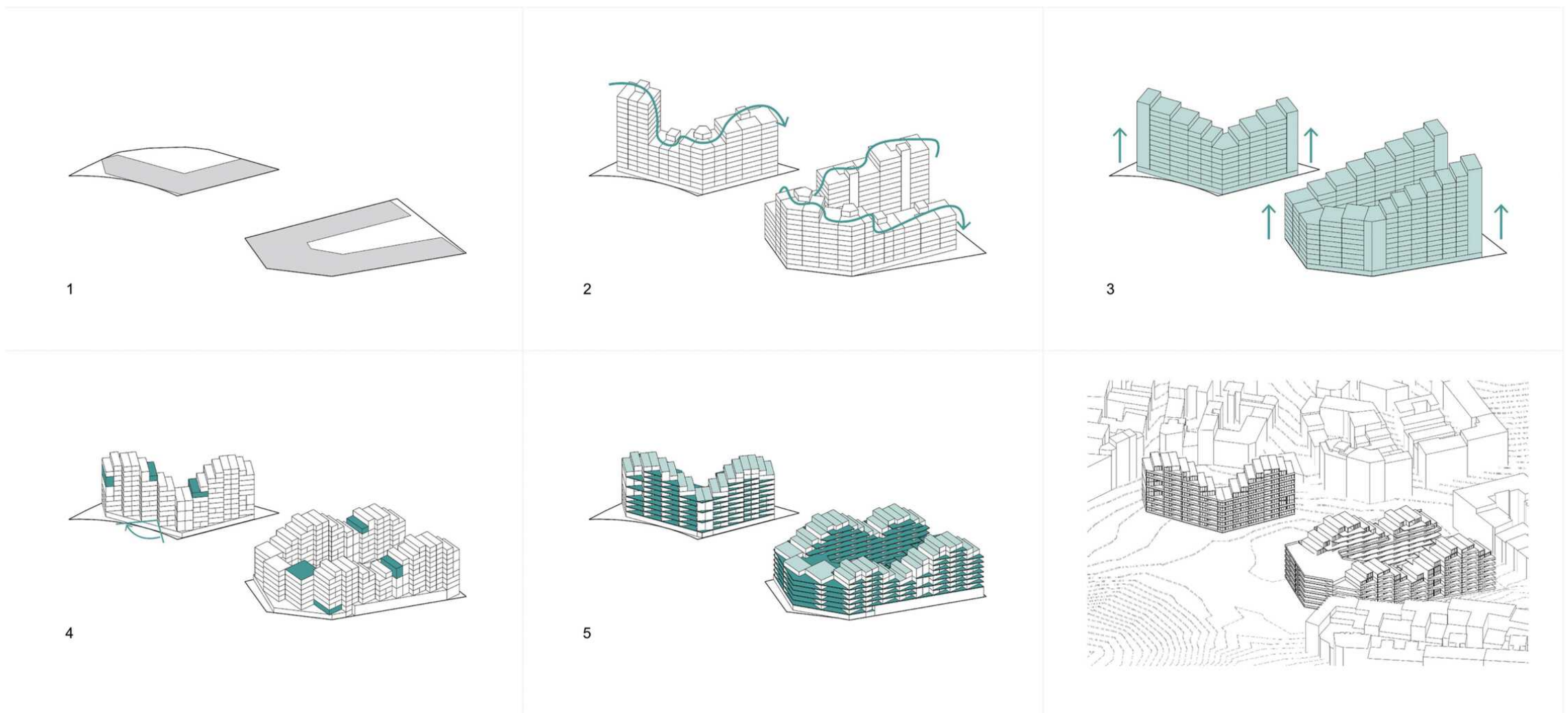


building scale

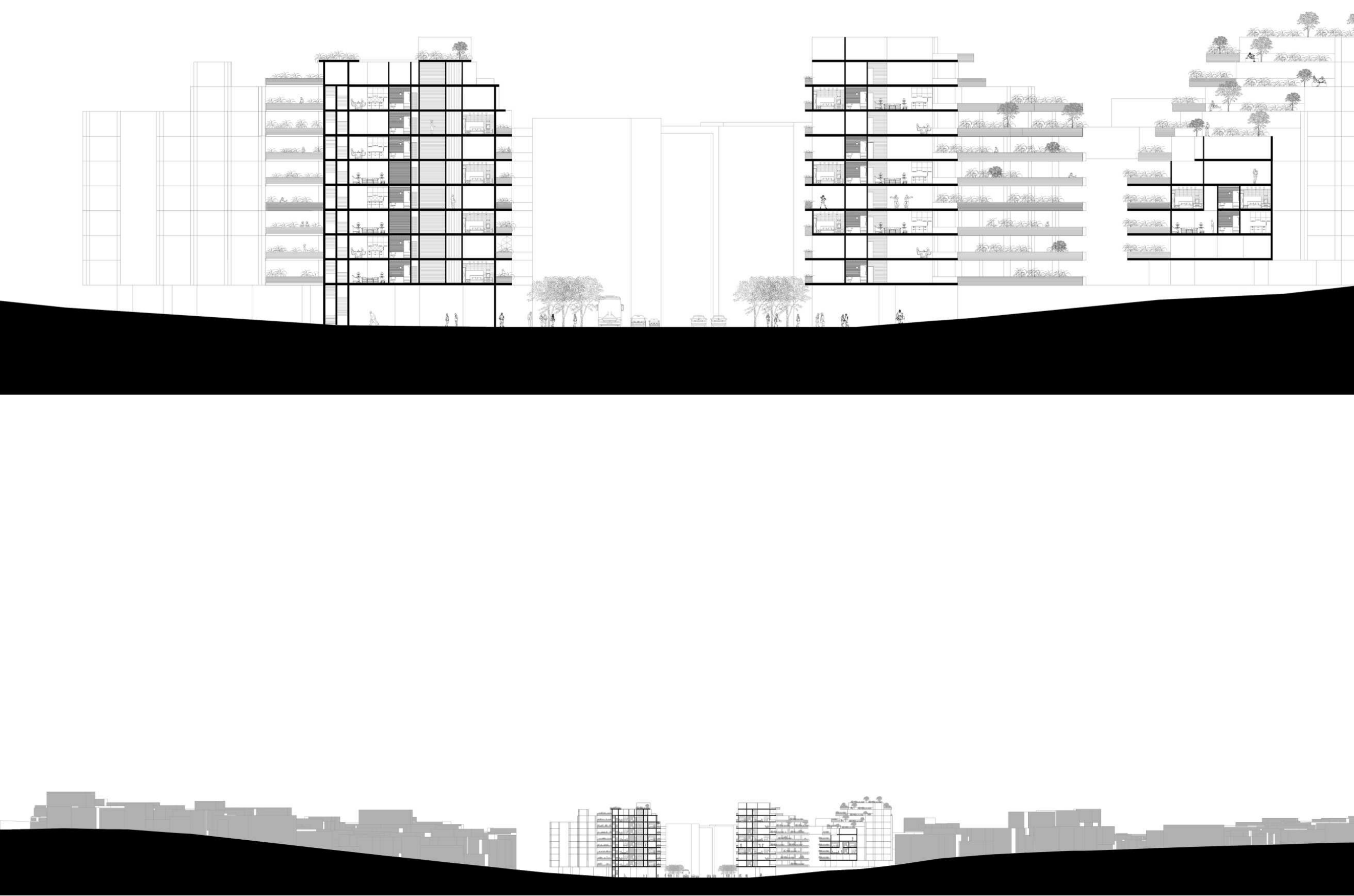
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towers and urban sections



ground floor plan



An important element for us throughout the entire project was the relationship with the neighbors and creating community, not only with the Arts and Crafts Center in the ground floor but also among the neighbors of the blocks.

To achieve the desired density, we decided to place the common spaces in the communication corridors, widening them and turning them into pleasant outdoor spaces where you can meet your neighbors, take out your chair, enjoy the silence of the interior patio or meet up with friends. Although the relationship with the patio is a key element, so are the views, so the west-facing terraces were also a delimiting element to generate the shape of the layouts.



In this way the best views to the park and the mountains; and also the sunshine of the place are taken advantage of. With a simple 4-meter-wide structure, we manage to generate different typologies that can accommodate from one bedroom to four and at the same time, by fitting the duplexes and houses on one floor, we are able to generate wider, double-height corridors, to be able to enjoy more of this communal space.





final shot



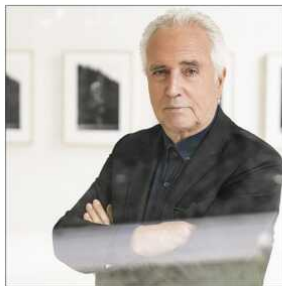


W07

from the city to the house

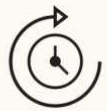
leader

Dietmar Eberle



assistant

Rosario Segado



5 days



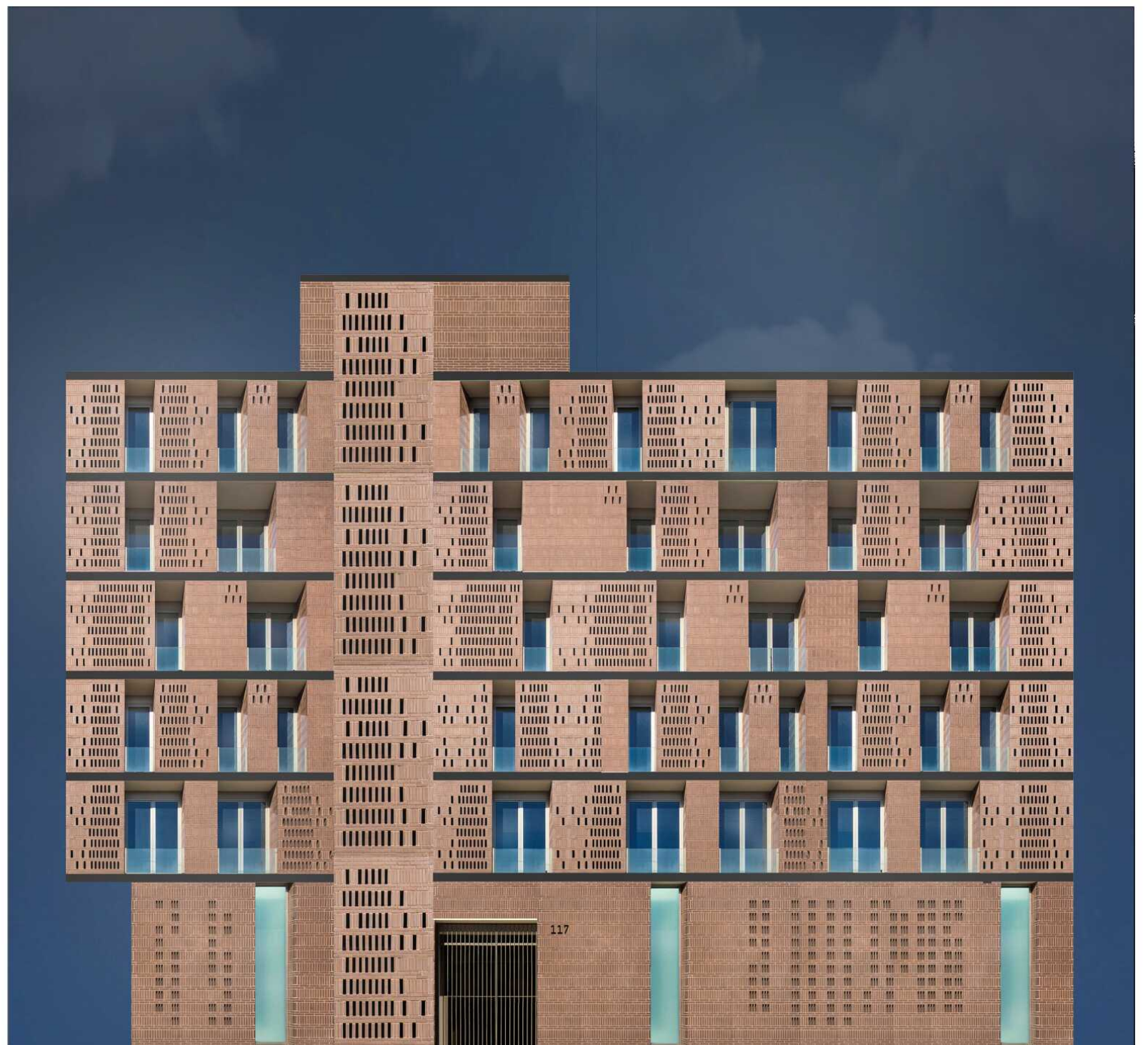
Madrid, Spain



individual



-



structure

1. **middle class society:** goal of urban developments is wellbeing of majority of society.
2. **new time frames:** 100 years and more, not 20 - 30 years from commercial perspective key to long lasting buildings is social acceptance through aesthetics, not technical aspects social acceptance by the public relies on building's external appearance: the value is given by the passer-by continuous development is the key, not re-inventing the world.
3. **quantity and quality:** tremendous quantity of knowledge process of transferring knowledge into quality.
4. **efficiency:** to use the things we already have in a more efficient and focused way 2.000 Watt Society.

from the city to the house

general requirements for buildings of the future

- contribution to public space

100 - 200 years

- structure

> 100 years

- building envelope

~ 50 years

- surfaces

~ 10 years

designing many models characterized by sensitivity to the local environments and to people's needs. buildings should be sustainable in the broadest sense of the term.

design different models to understand the definition of:

1. atmosphere without machines
2. maintenance of buildings naturally
3. penchant for teaching
4. endurance and high quality of buildings
5. multi-dimensional access

the sites

site 01

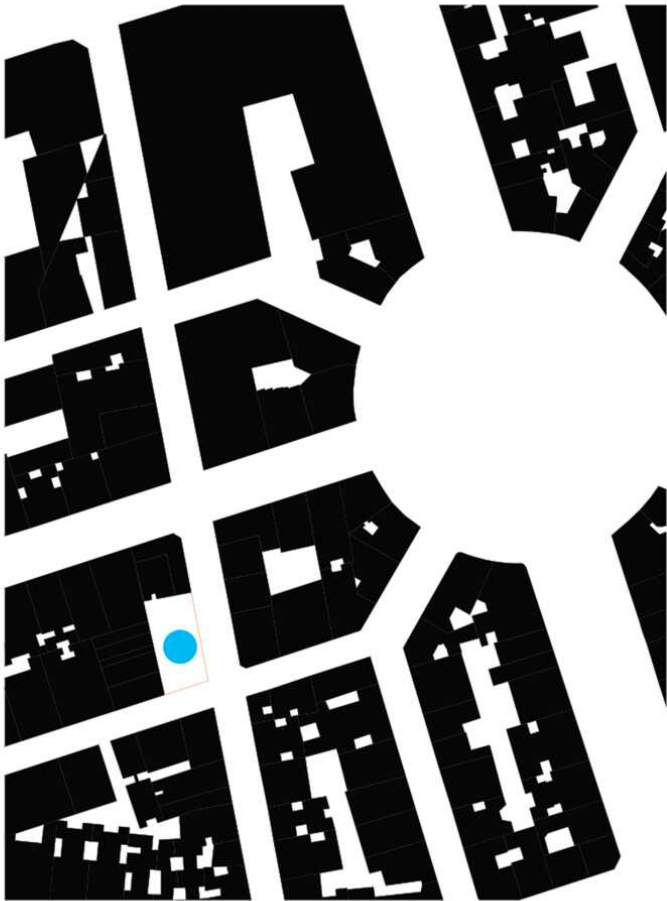


16th Century

location:
CL ALMENDRO 3 Suelo
28005 MADRID [MADRID]

area:
714 m2

site 02

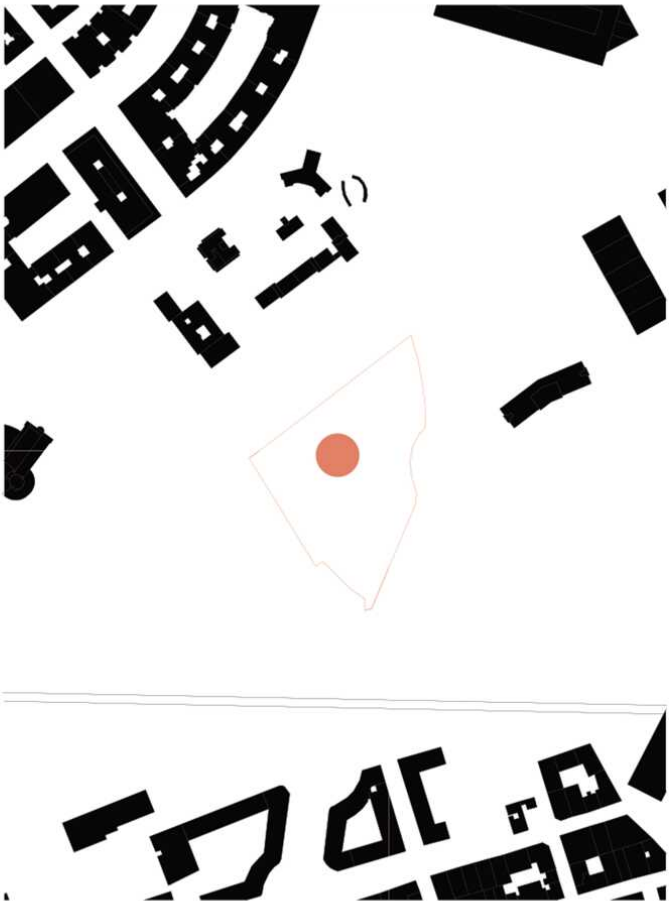


19th Century

location:
CL CARDENAL CISNEROS 43[D] Suelo
28010 MADRID [MADRID]

area:
312 m2

site 03



20th Century

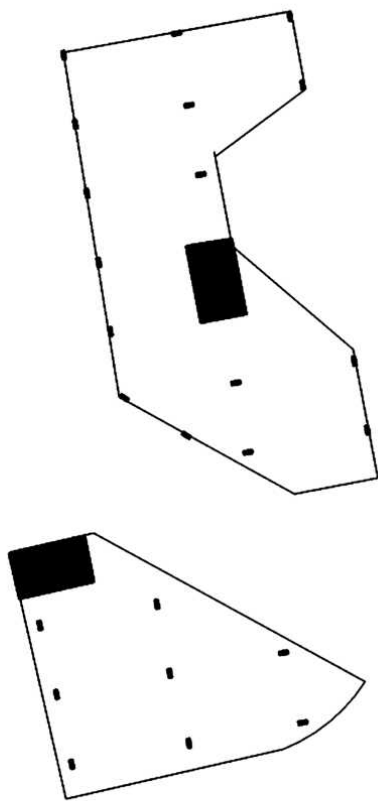
location:
AV CAMILO JOSE CELA 33 Suelo
28028 MADRID [MADRID]

area:
11.431 m2

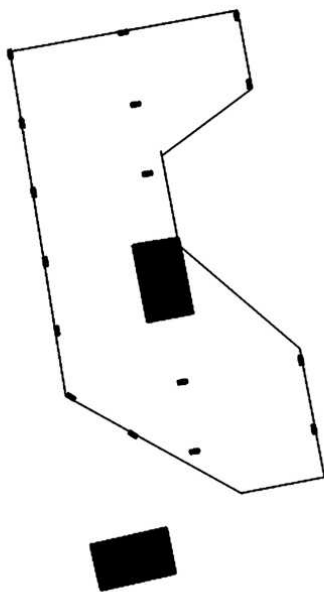
site 1, 3d model



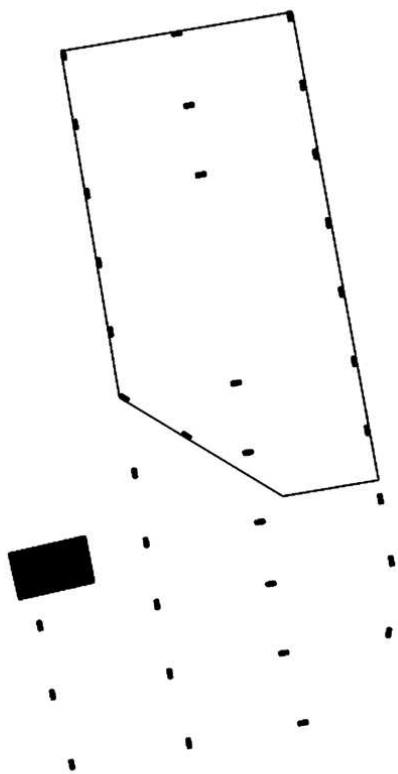
site 2 plan



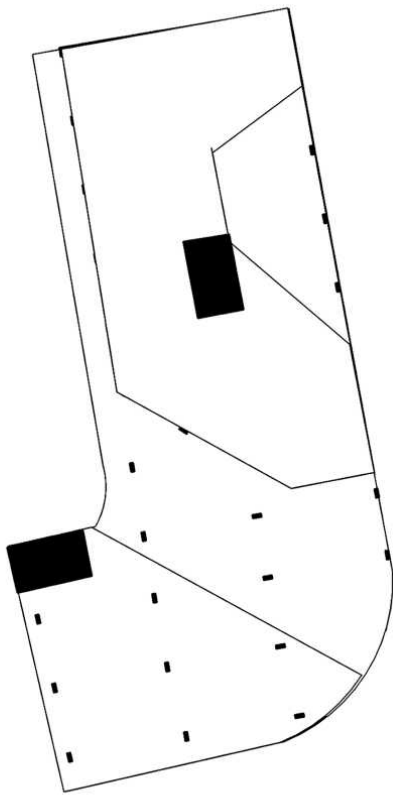
first floor
plan



typical floor
plan

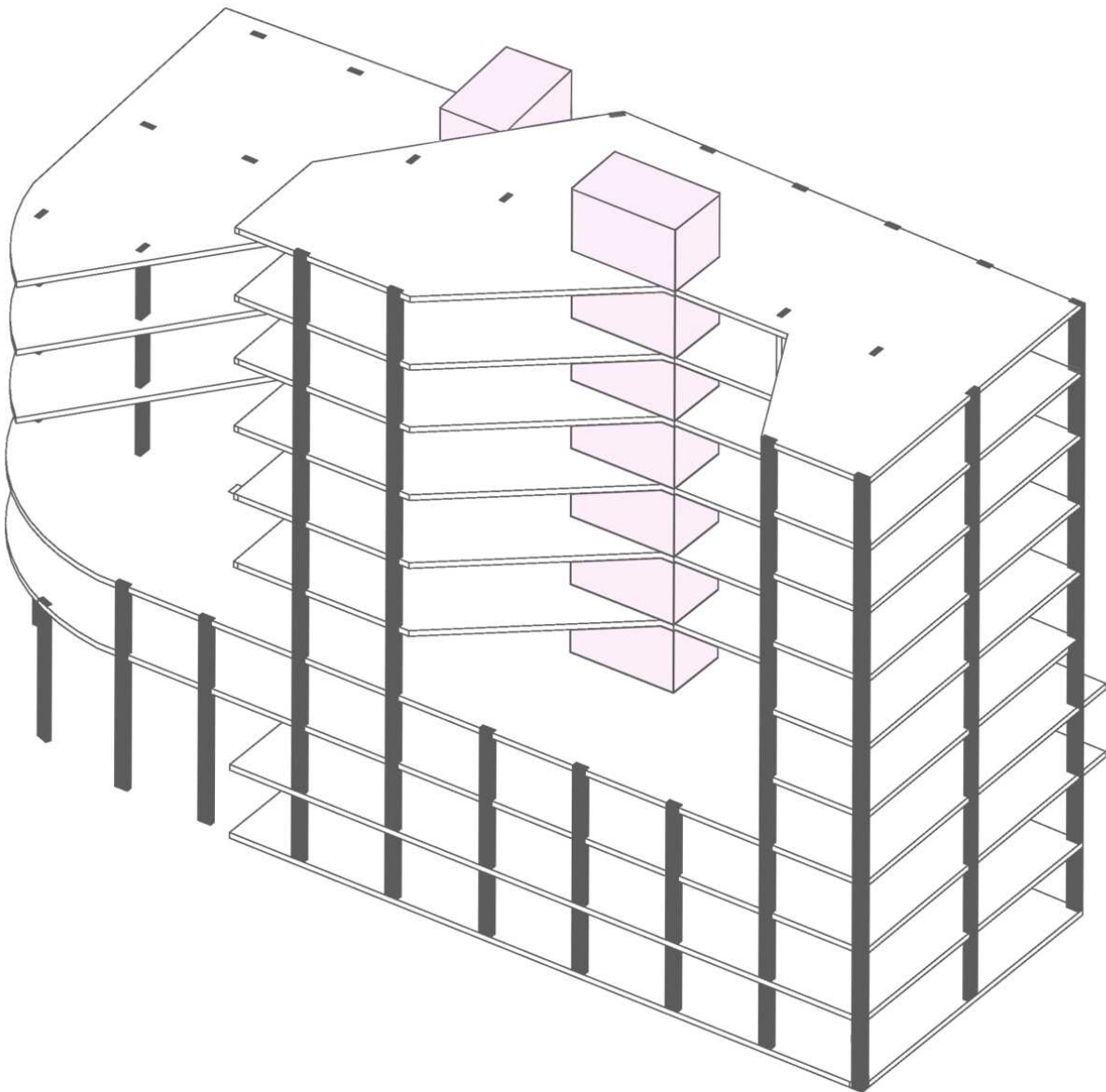
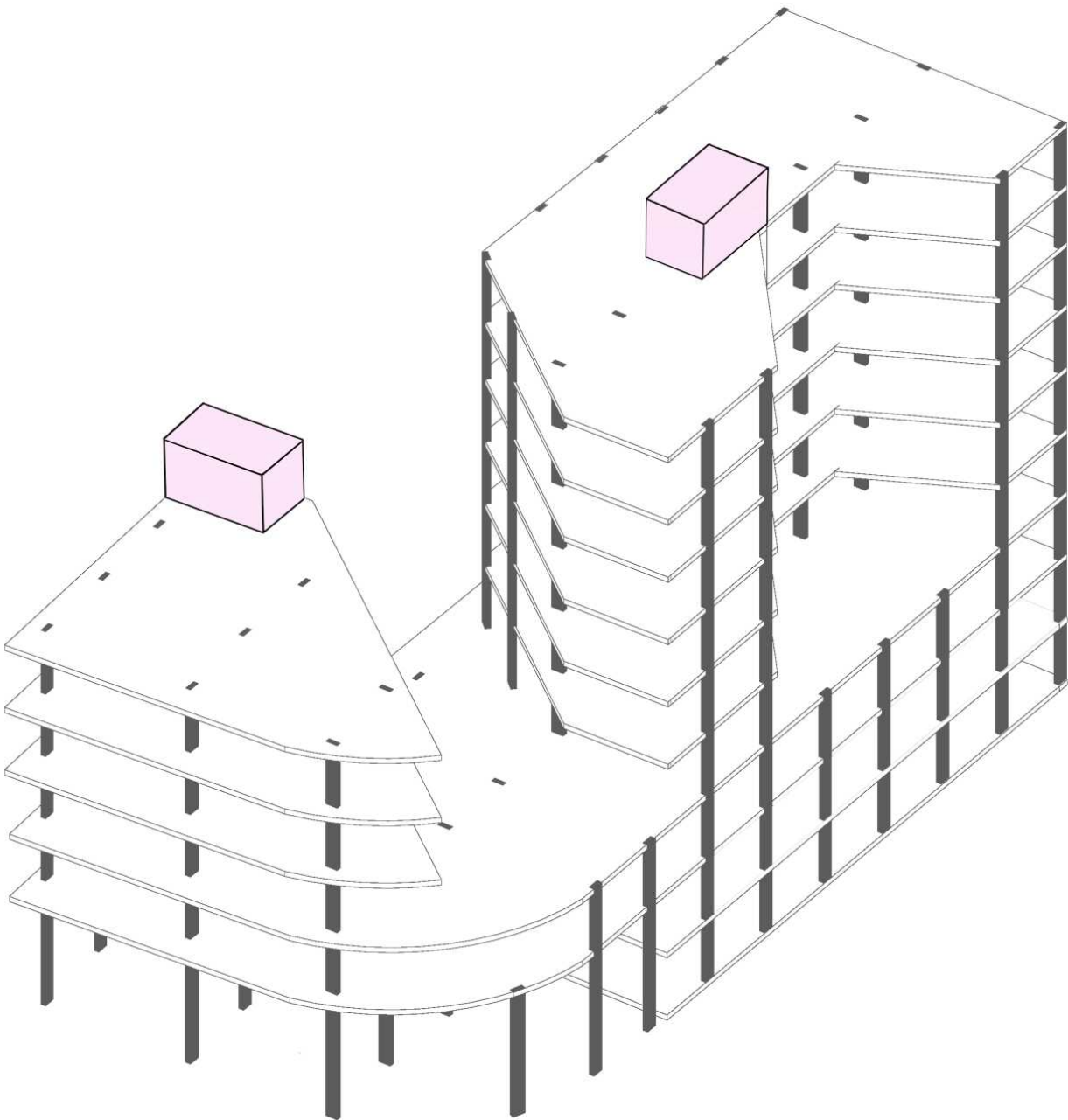


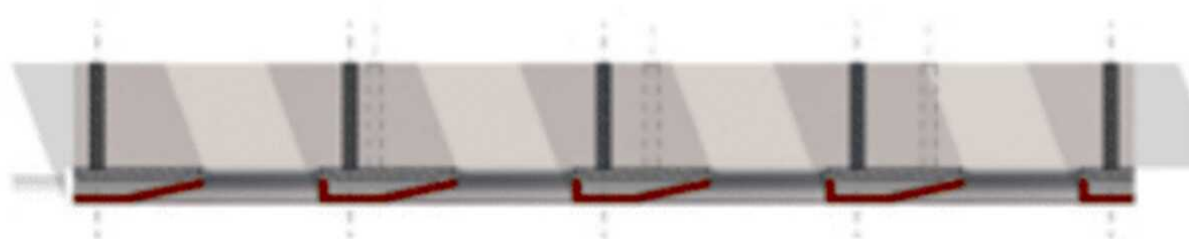
basement floor
plan



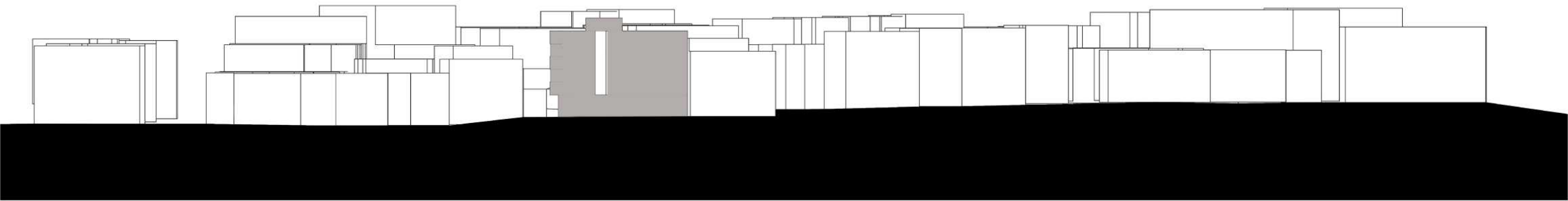
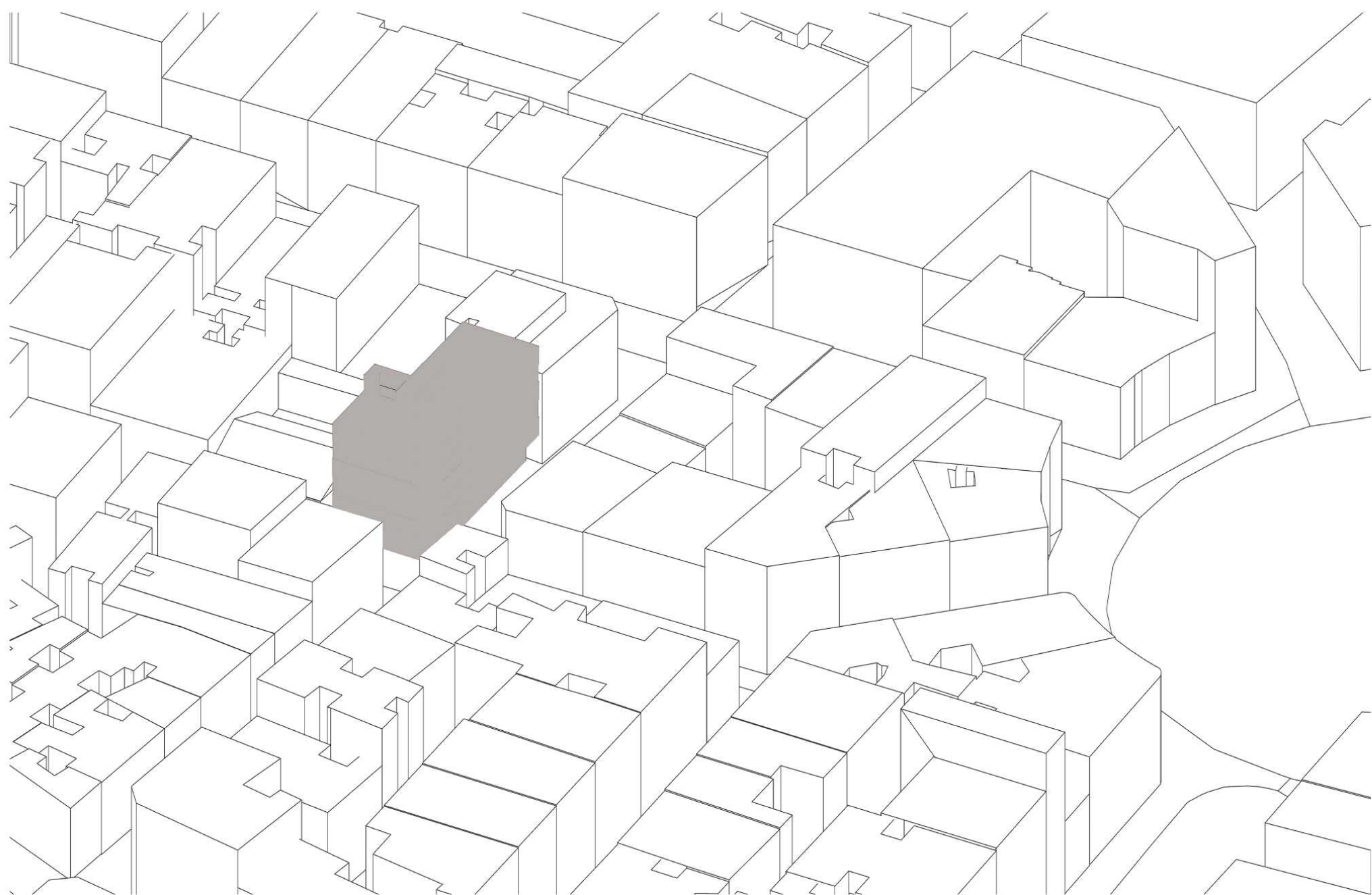
ground floor
plan

site 2 structure isometrics and envelope

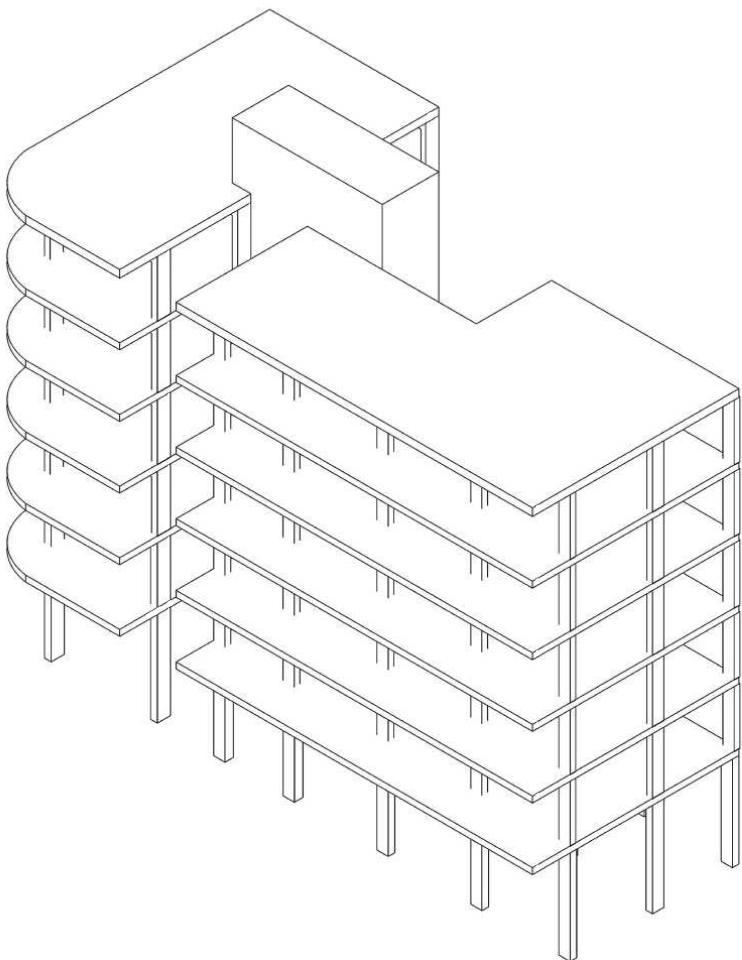
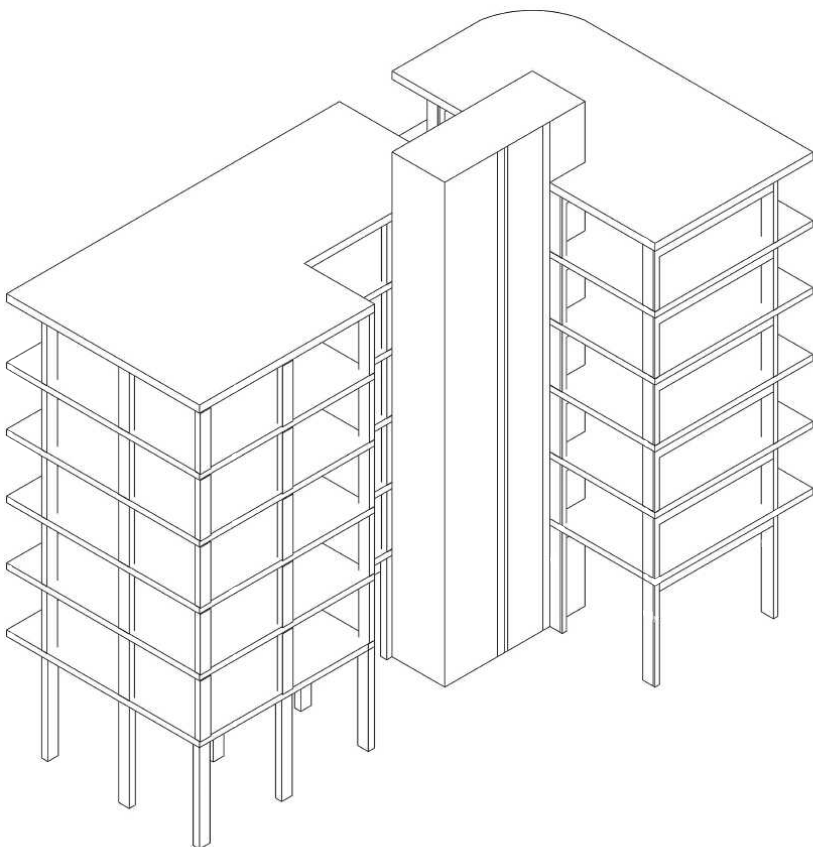
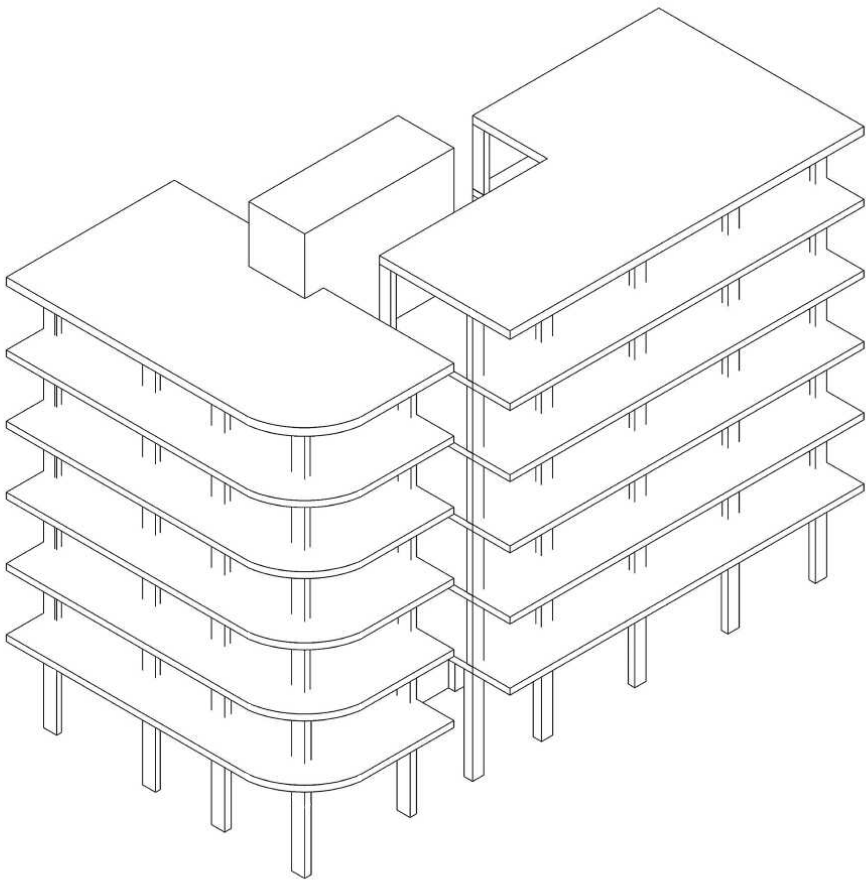




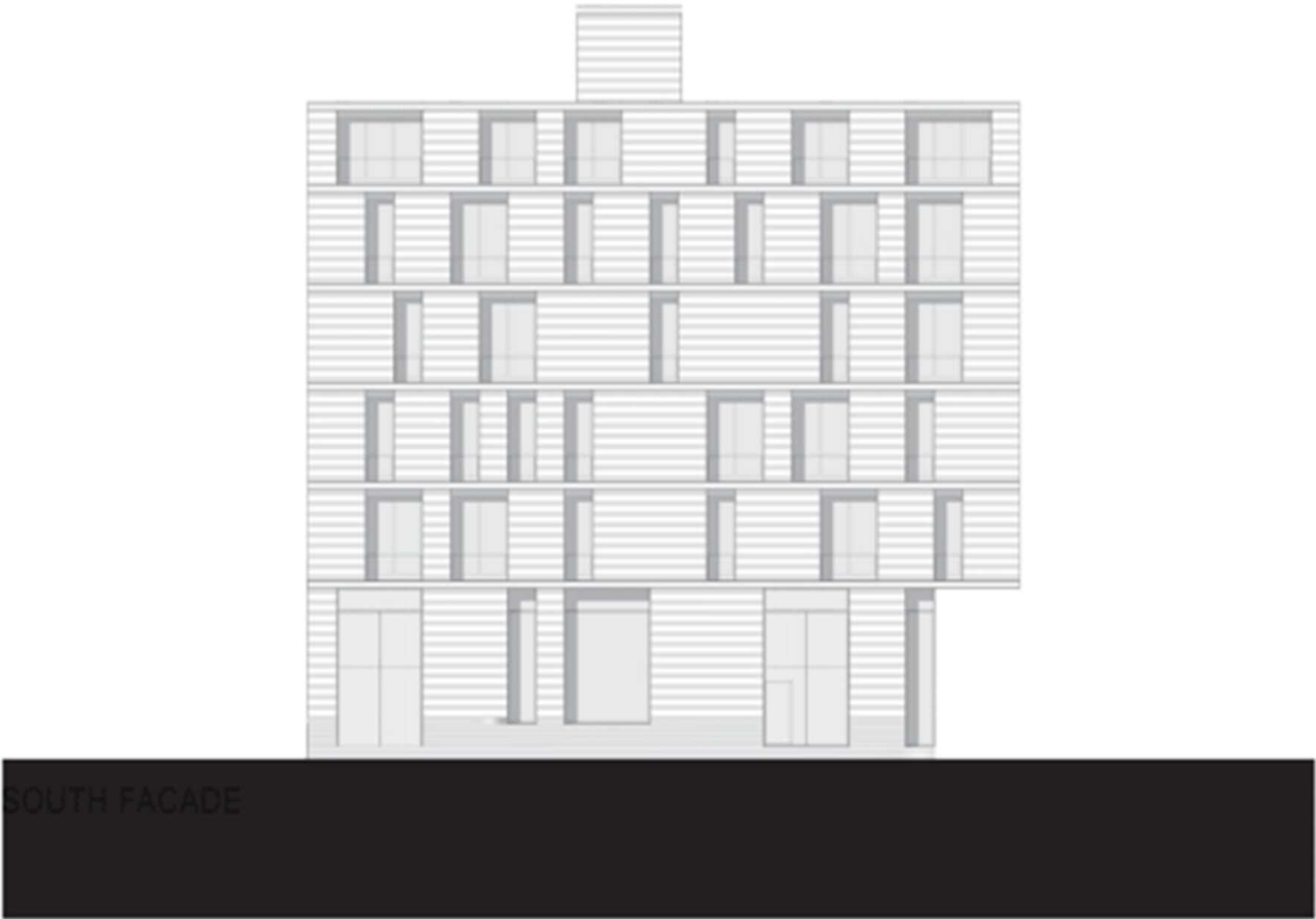
site 2 analysis and urban section



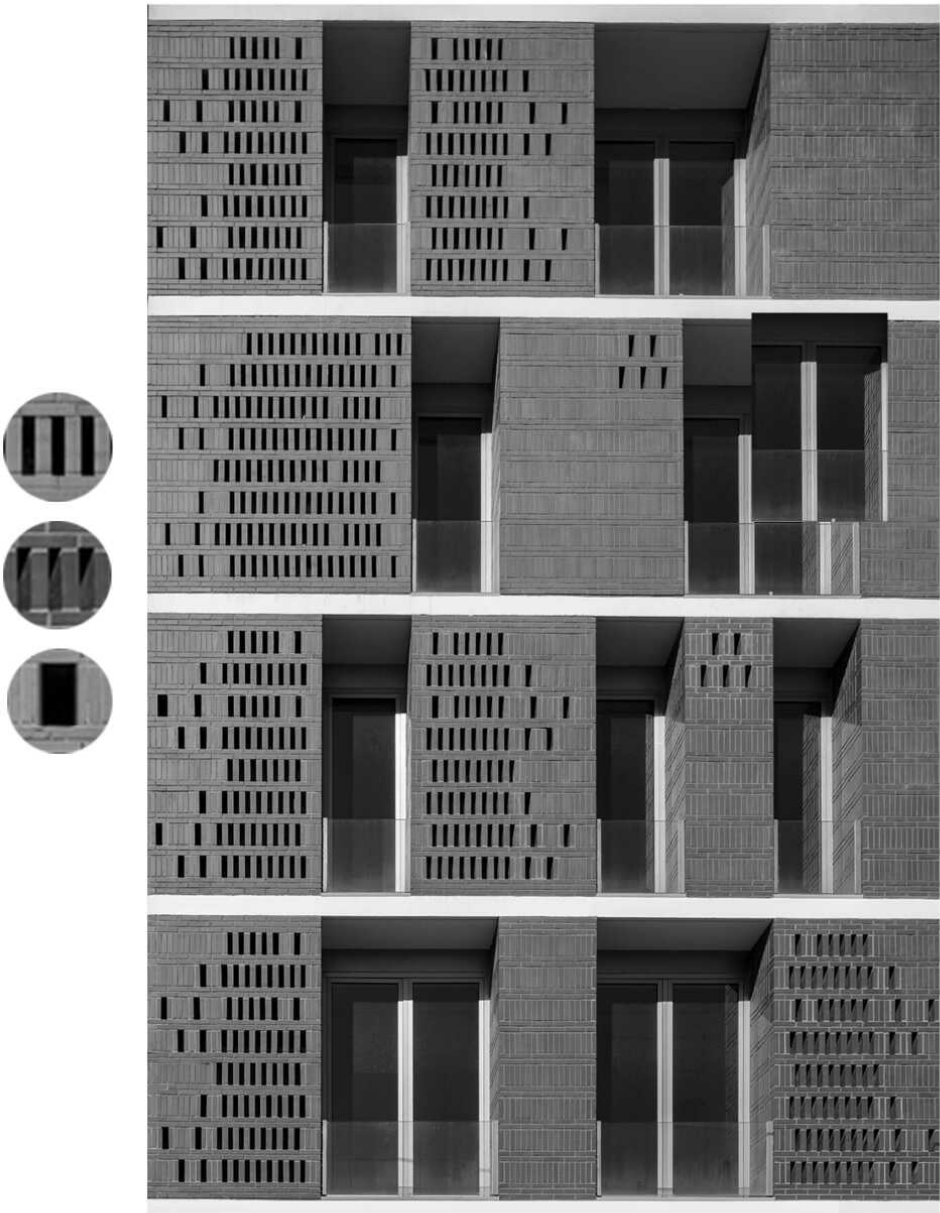
site 2 axonometrics



site 3 northern elevation



materiality



site 3 envelope



B

SPECIALITIES

S01

energy and sustainability

leader

Javier
García-Germán



title

Climatic typologies. Body, climate and architecture



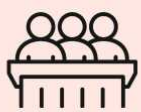
9 days



Huesca, Spain



Irina Papadaki
Bruno Dávalos



Pablo Pérez-Ramos
Emiliano López
Carlos Arroyo
Josep Ferrando
Iñaki Carnicero



structure

1. Climate and terrestrial atmosphere, exploring the climate of a specific location and the human physiological adaptation to this climatic situation. Climate Consultant software and the psychrometric chart will give a first idea of the relationship between climate and architecture.
2. Everyday Life. Sources and Sinks, explore through cultural references (documentary photography, images, etc.) the intersection between a particular climate and its everyday life.
3. Design an elemental space. From interior to outdoor massing, design an interior space which takes on board the findings developed in the previous steps.
4. 20-unit collective housing scheme adapted to the climate of the chosen location. The project will show how collective housing can adapt to climatically-inflected inhabitation patterns.

Climatic typologies. body, climate & architecture

The module Climatic typologies. body, climate & architecture explores the design opportunities which the field of thermodynamics is opening to architecture, and specifically to the field of collective housing. From a practical and project-oriented stand point, the module focuses on connecting thermodynamics and ecology to architecture with the objective of finding potential design strategies which bridge the void between quantitative and qualitative approaches. Contrary to current energy approaches to architecture which are based on quantitative analysis, the module bridges the gulf between energy and architecture, exploring those disciplinary parameters —such as spatial and material structure, program or perception— which are specifically connected to its material and atmospheric performativity.

This workshop departs from the structural connection that exists between the climate of a given location and the culture unfolded by its inhabitants. This question which has been rarely addressed by architects, underpins a wide array of questions which connect climate to social patterns, local lifestyles, how people dress themselves or how architecture is inhabited. From this perspective, a thermodynamic approach to architecture needs to explore the interactions between the local climate, the spatial and material particularities of architecture, and the lifestyle of its users. Contrary to mainstream practice which deploys a top-down approach which proceeds from outdoor massing to indoor space, this studio explores the potential to conceive architecture from the interior. The objective is to design a building starting from the particular atmospheres demanded by its users. As a result, departing from the specific ambient conditions needed by users, will define the set of sources and sinks required to induce specific atmospheric situations. Landscape and building typologies will be a useful tool during the module as it offers the possibility to bridge the gulf between local climate and specific everyday life patterns. Climatic typologies show how architecture can interact between a given climate and the way people live and socialize, offering the potential to connect the spatial and material lineaments with the specific physiological and psychological behaviors, bridging the gulf between the thermodynamic processes induced by architecture and the quotidian behavior of its inhabitants.

thick plan

aragon: Is an autonomous community in Spain. In northeastern Spain, the Aragonese autonomous community comprises three provinces (from north to south).

huesca: Is a city in north-eastern Spain, within the autonomous community of Aragon. It is also the capital of the Spanish province of the same name and of the comarca of Hoya de Huesca.

cultural heritage

In the fertile county of La Hoya lies Huesca, which has a history going back more than two thousand years. El Coso, on the line of the old medieval walls, marks out an interesting network of streets presided over by the Cathedral. Almost 2,500 years ago, on the site of modern Huelva, was Bolskan, an Iberian settlement which, in the middle of the 2nd. C. BC., was known as an important mint. A century later, under Roman rule, Osca - the name with which the city was rechristened - became the destination of the exiled praetor Sertorio, who established a senate there as well as the first centre for studies in Aragon that later became the Sertorian University.



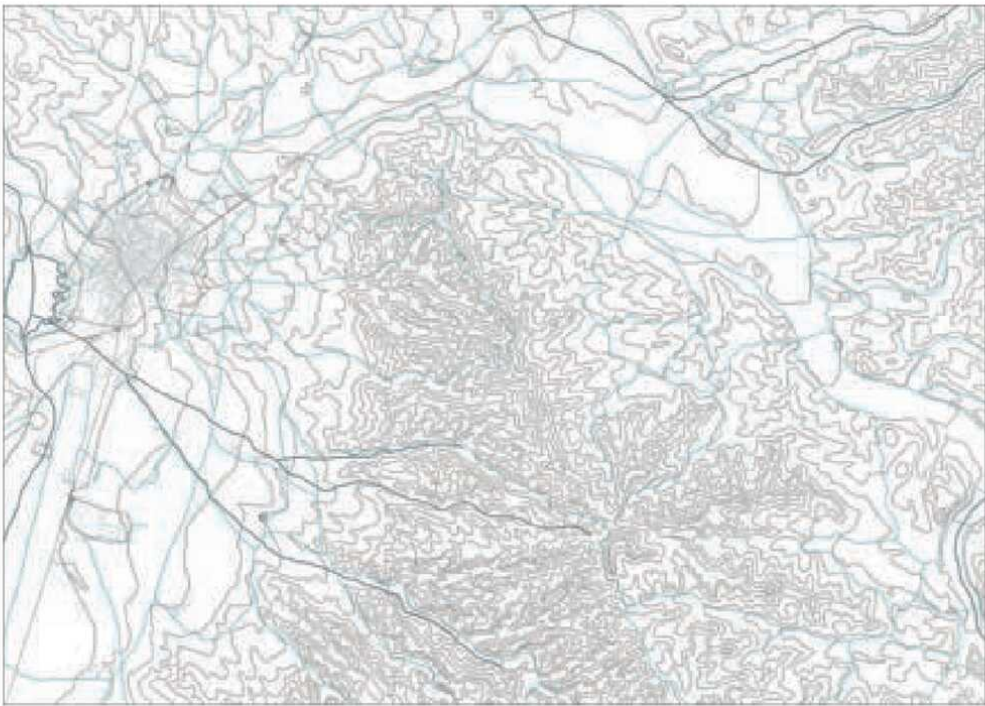
old urban planning
iberian settlement, 2500 years ago



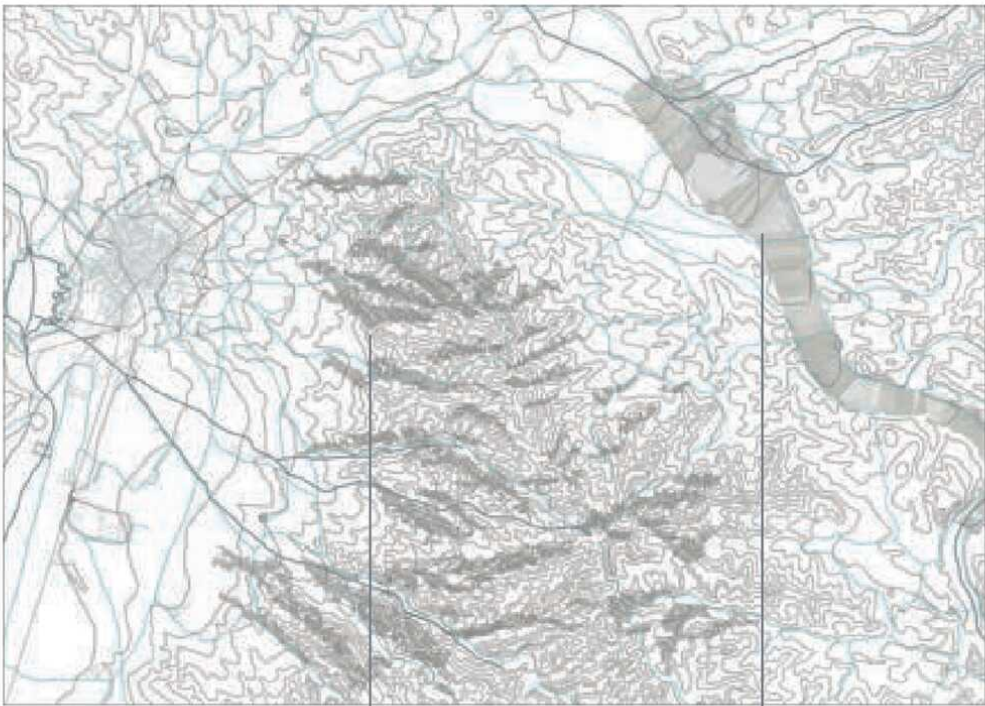
services private housing

city plan '2021
huesca city, Spain

site information



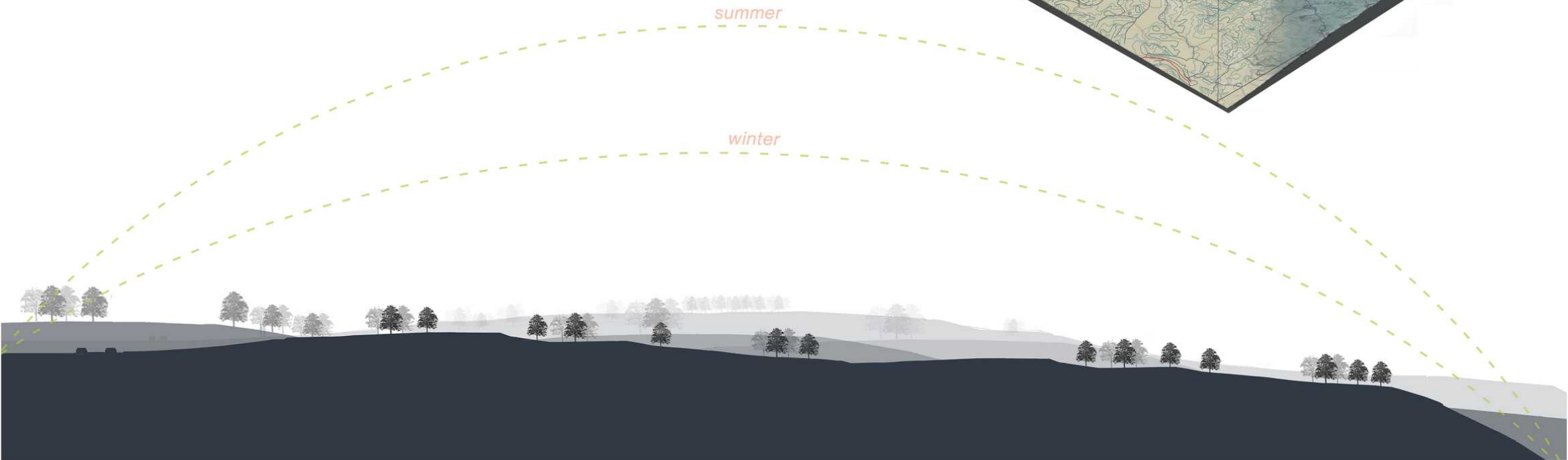
planimetric drawing of the site



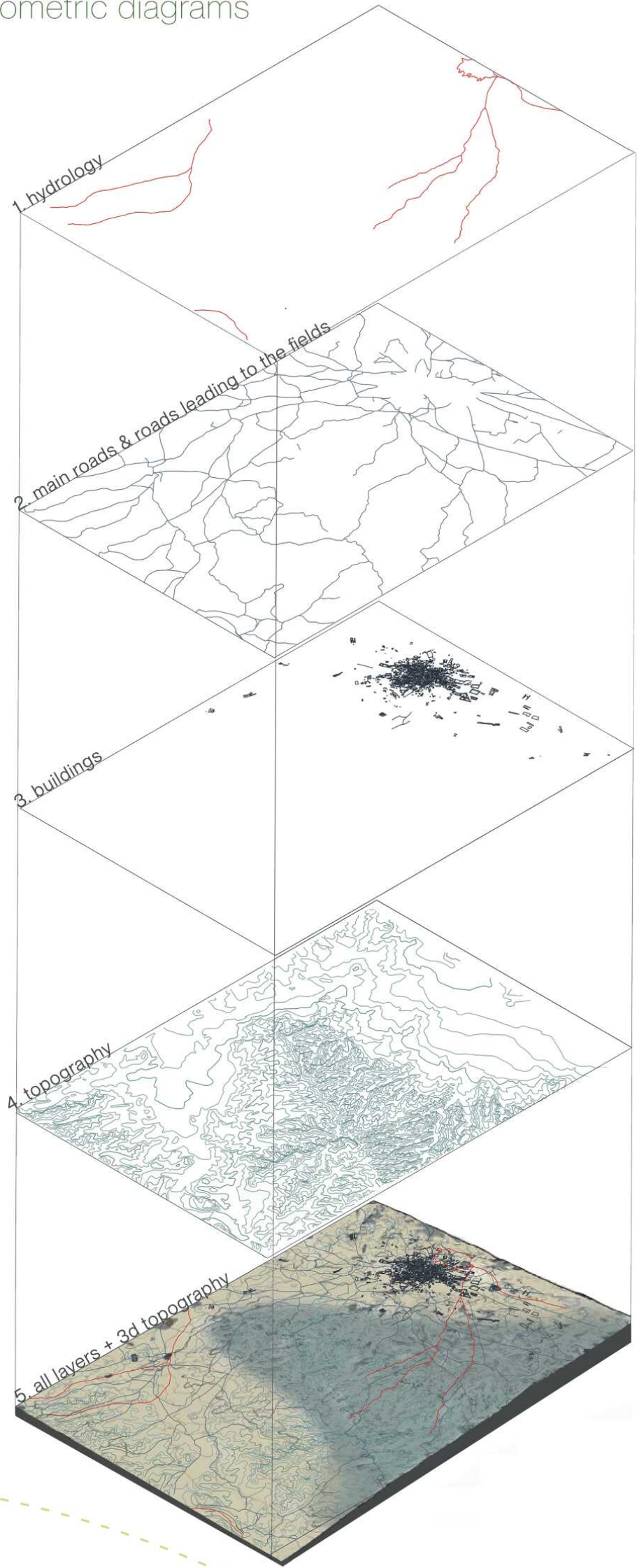
green areas fields

green areas and fields

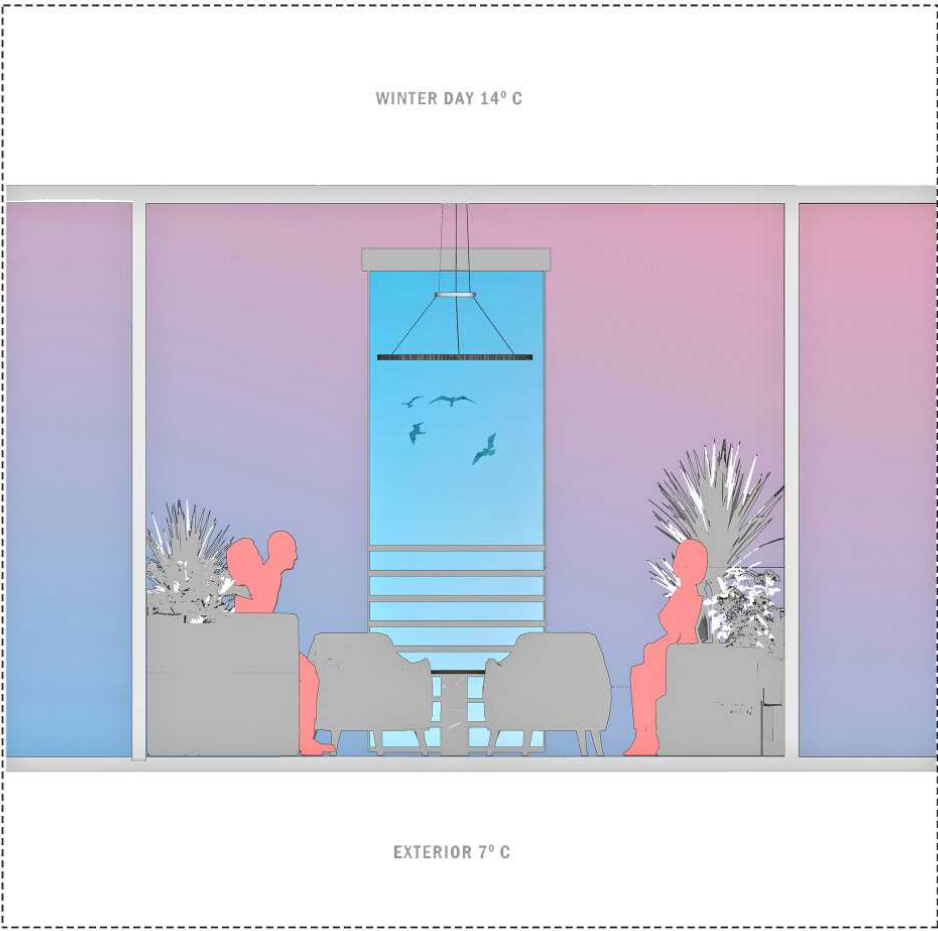
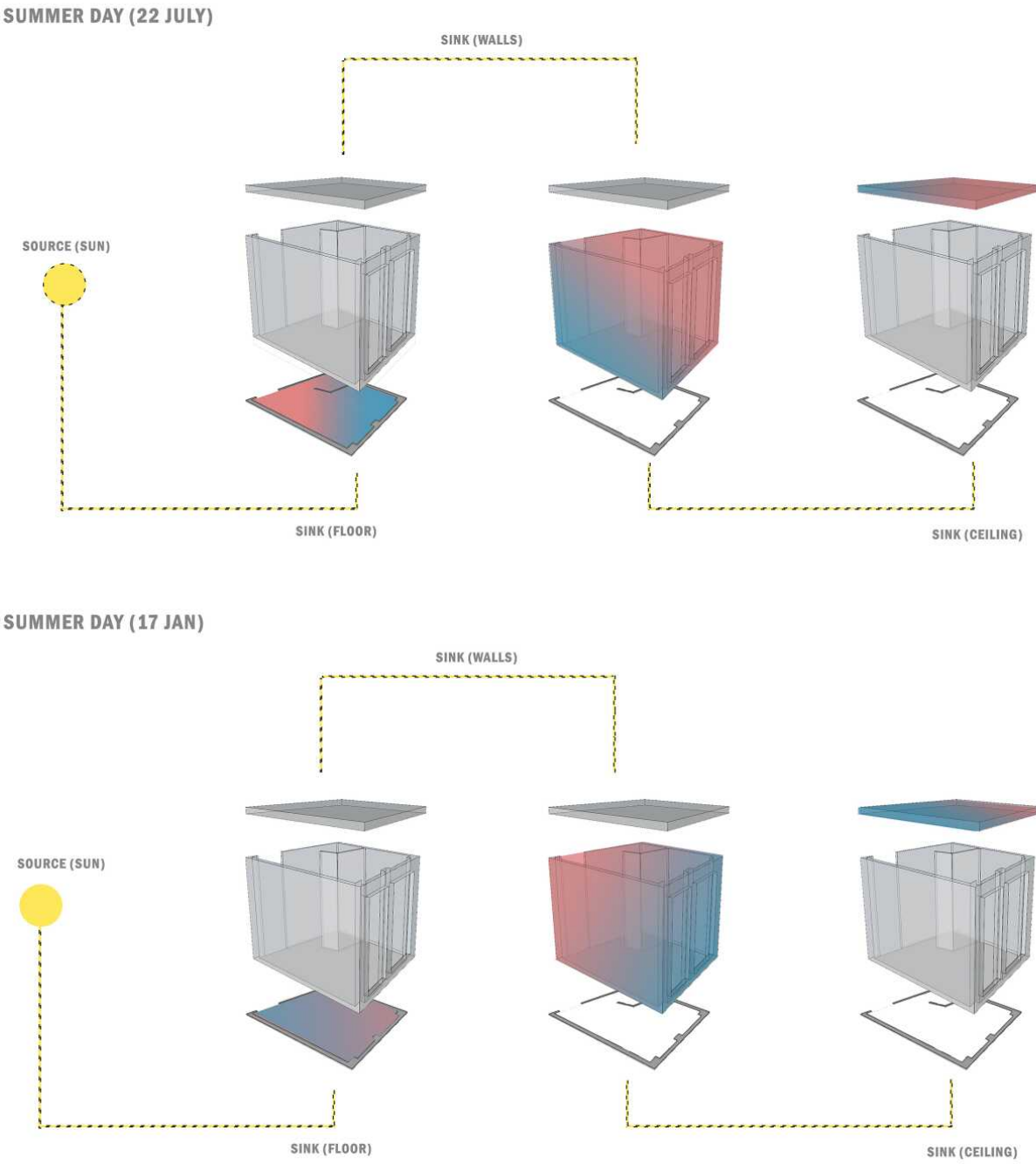
schematic section



exploded axonometric diagrams



thermodynamic performance of the living loggias



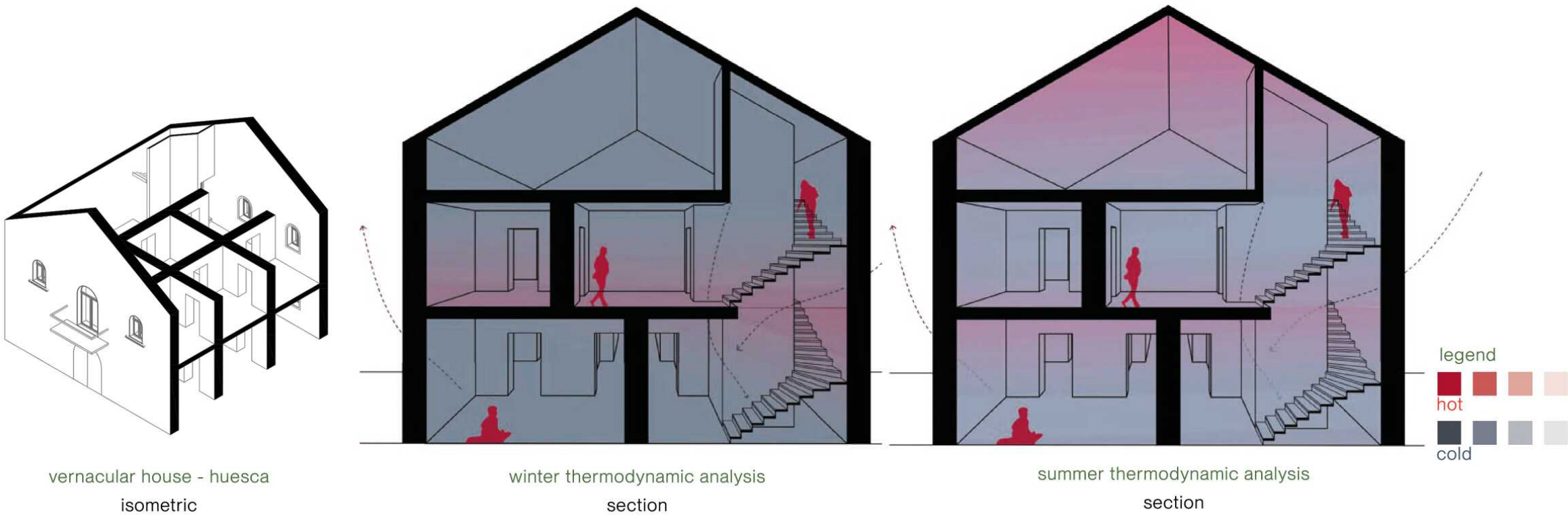
phenomenological atmospheres



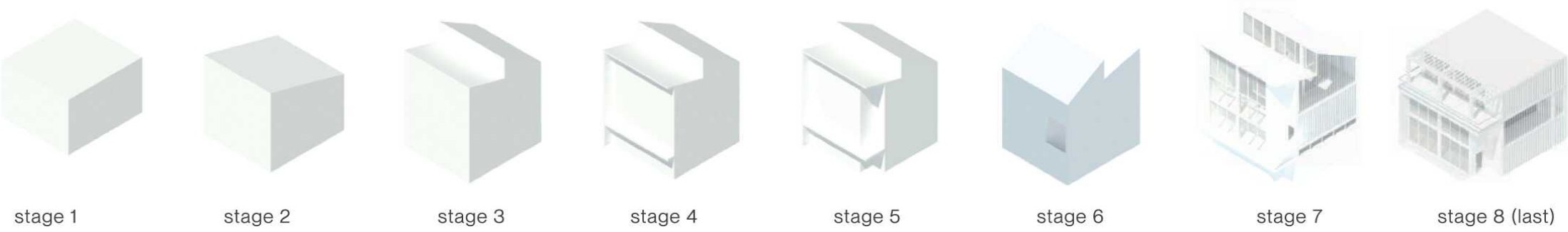
interior activities



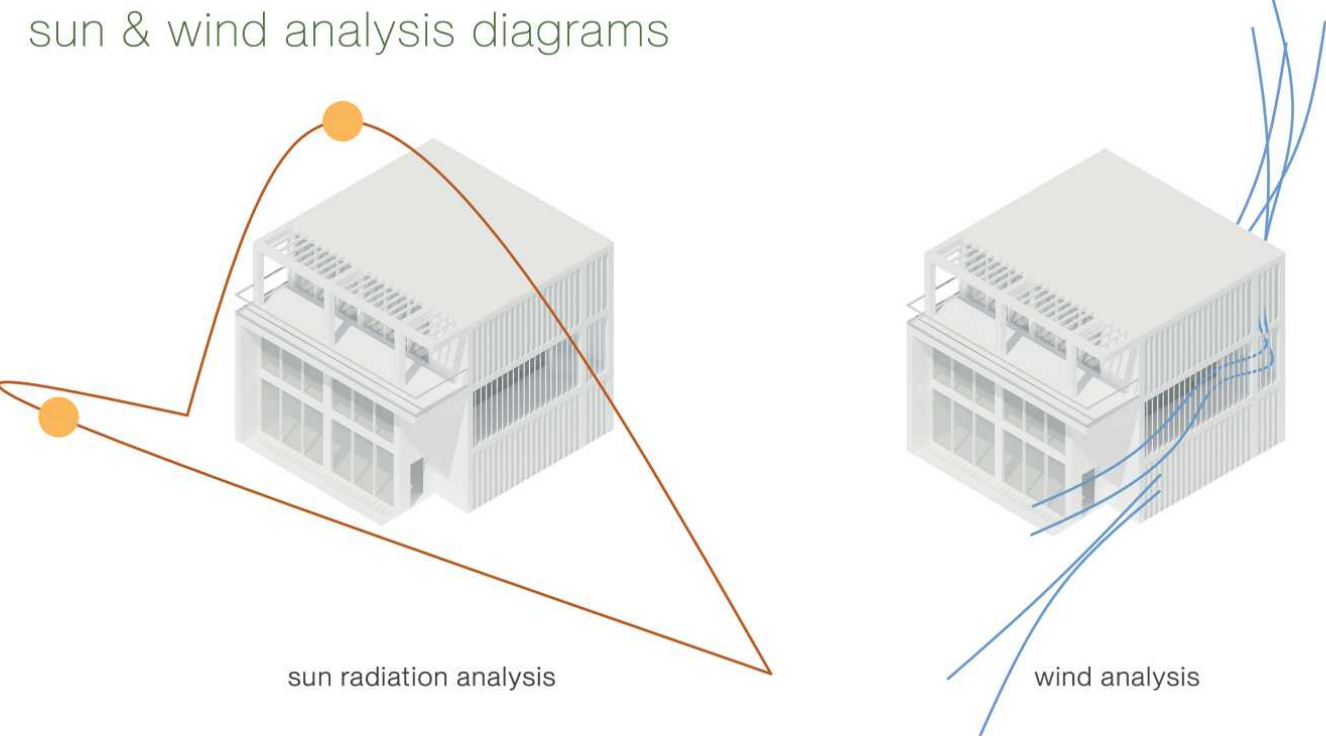
vernacular house - case study, huesca



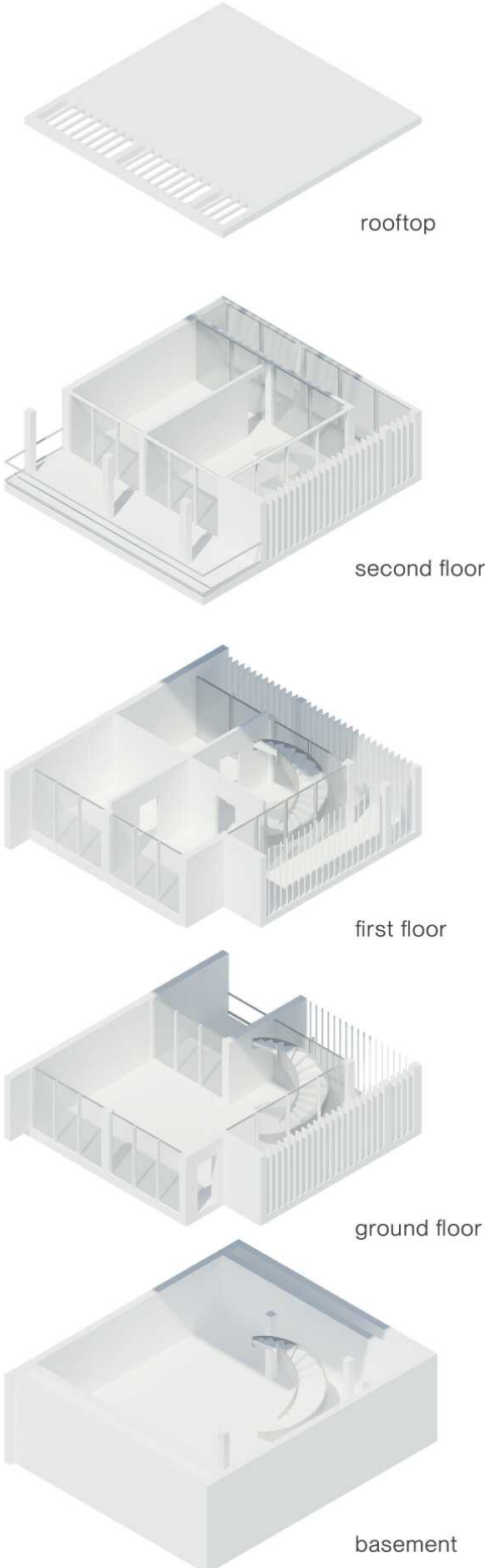
design process



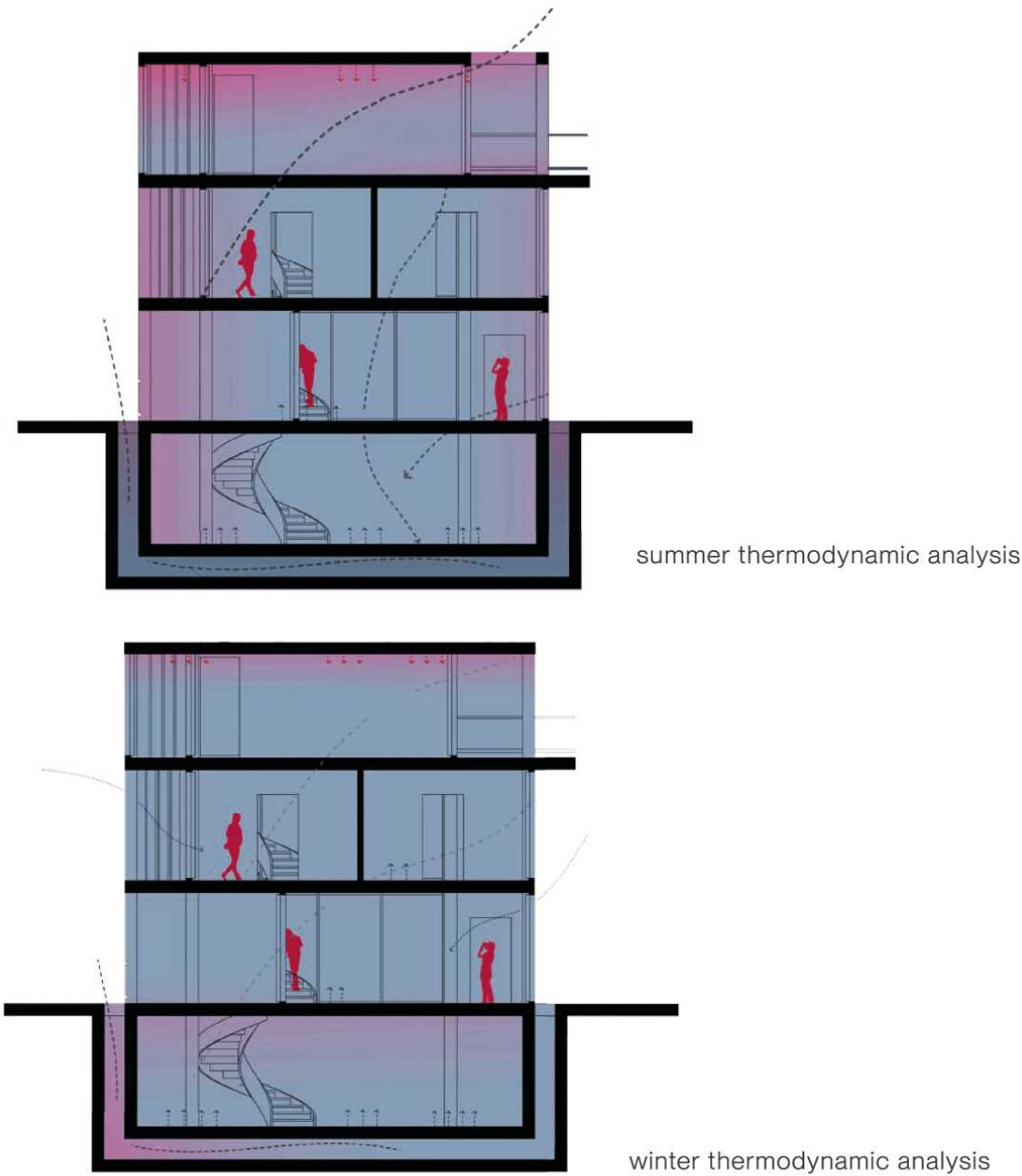
sun & wind analysis diagrams



unit development

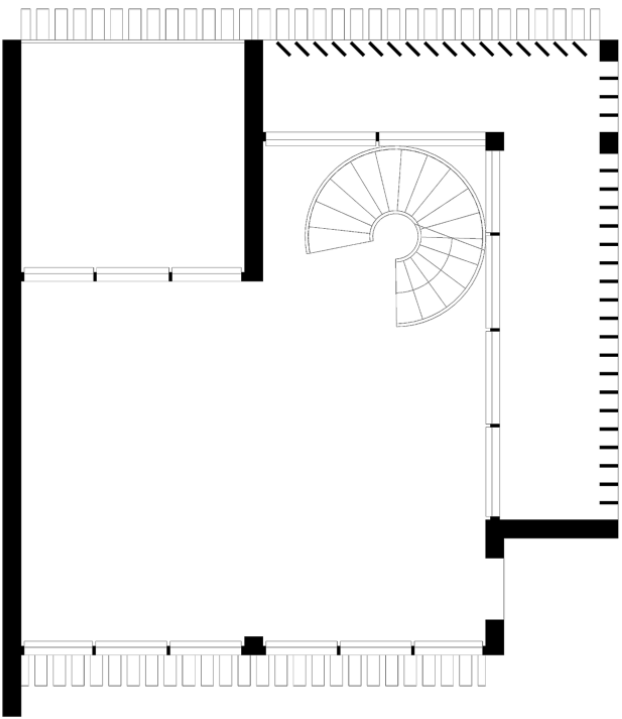


thermodinamical section analysis diagrams

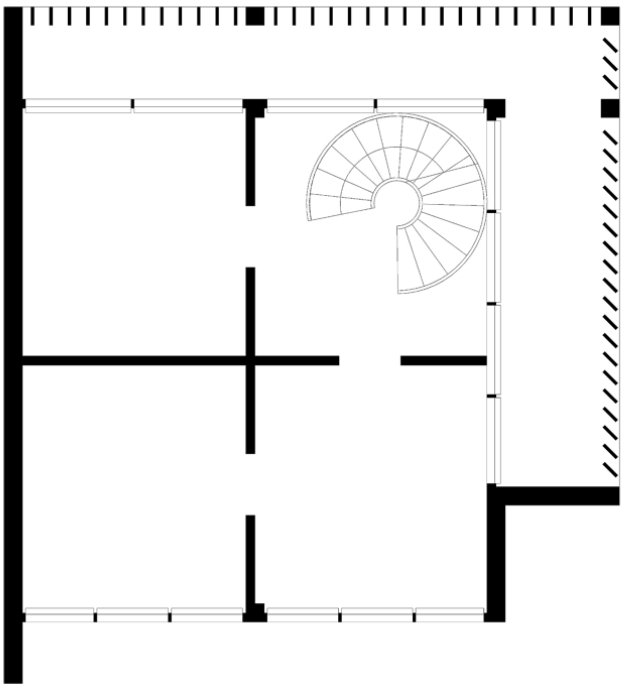


unit design process

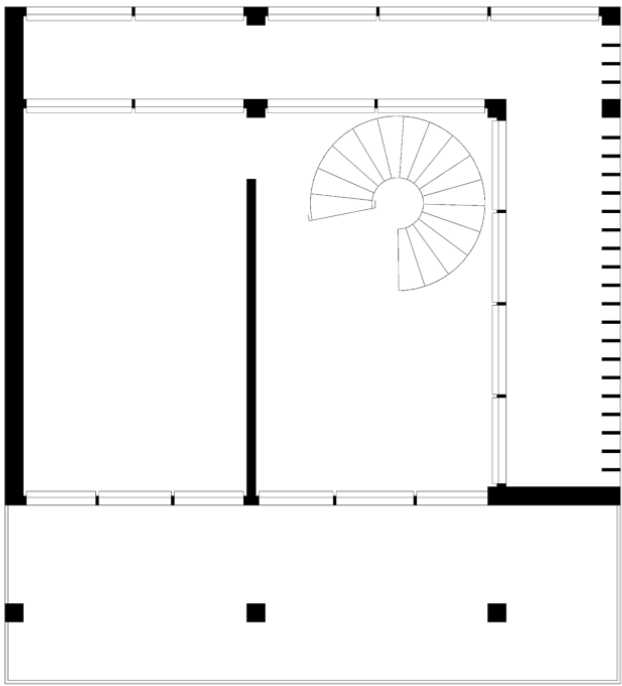
unit 1



ground floor
plan

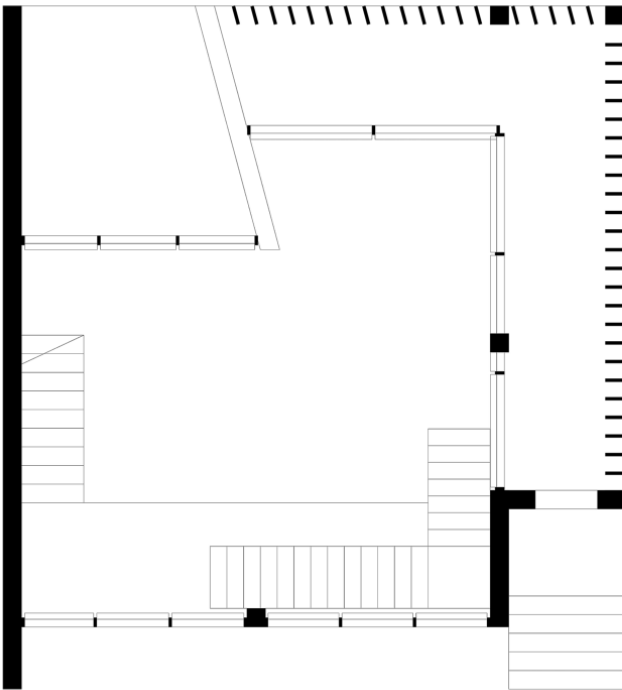


first floor
plan

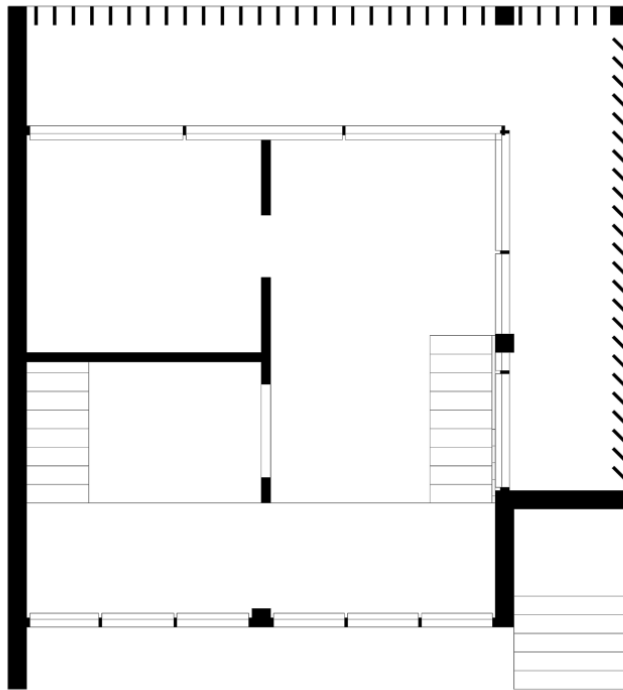


second floor
plan

unit 2

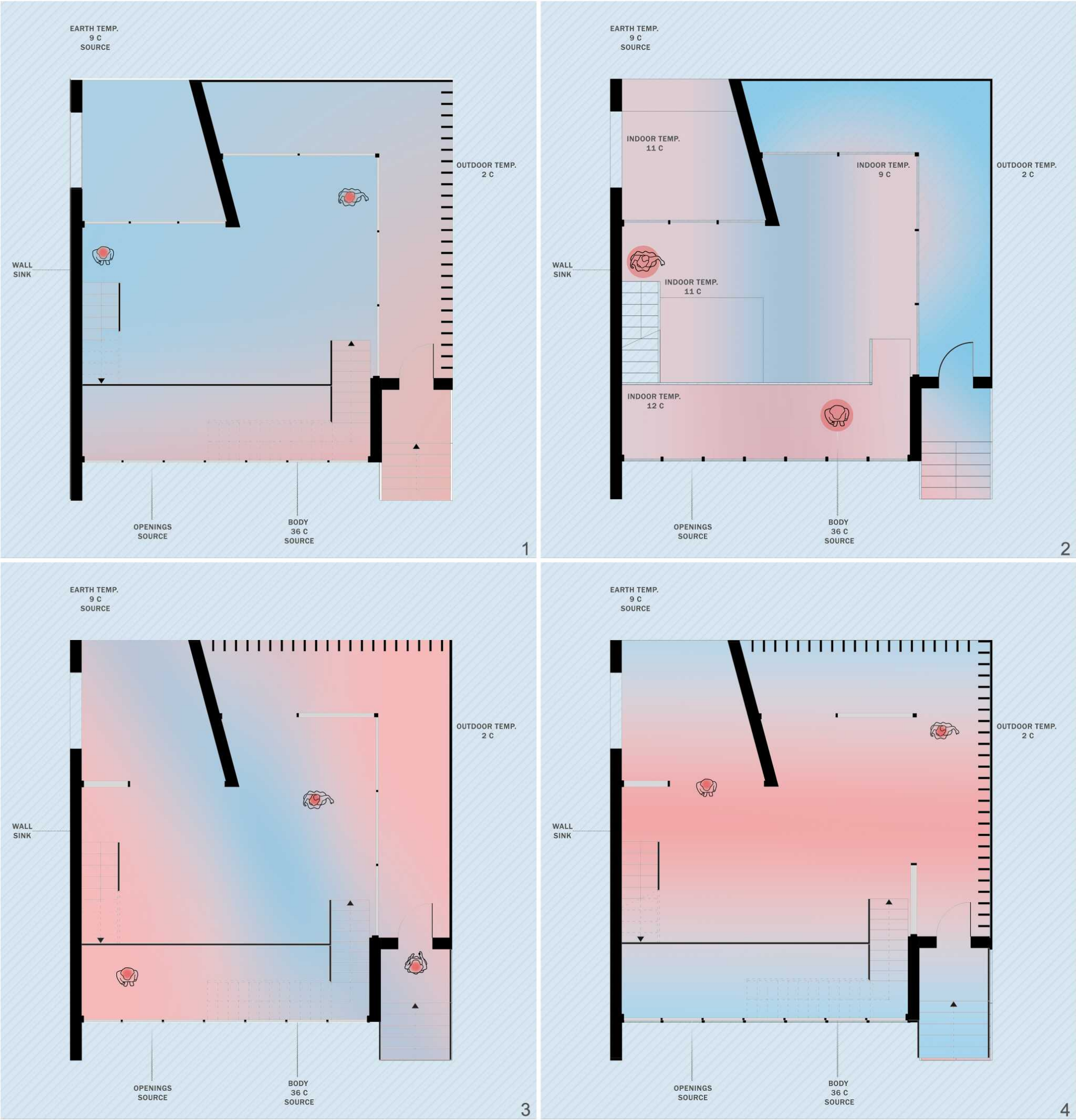


ground floor
plan



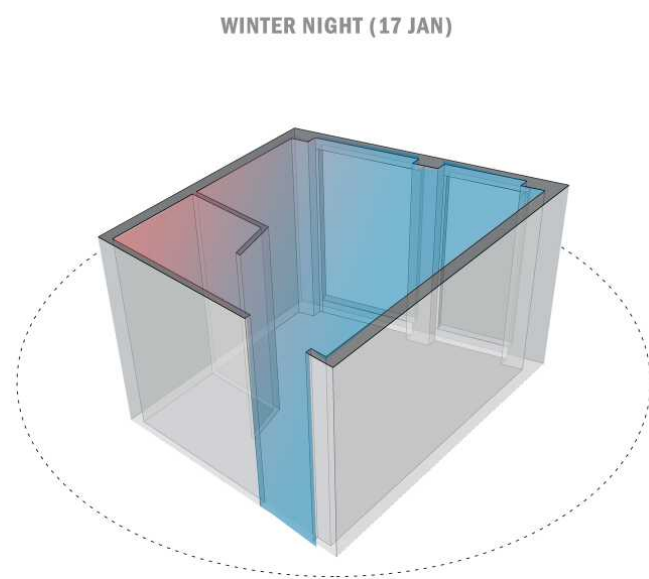
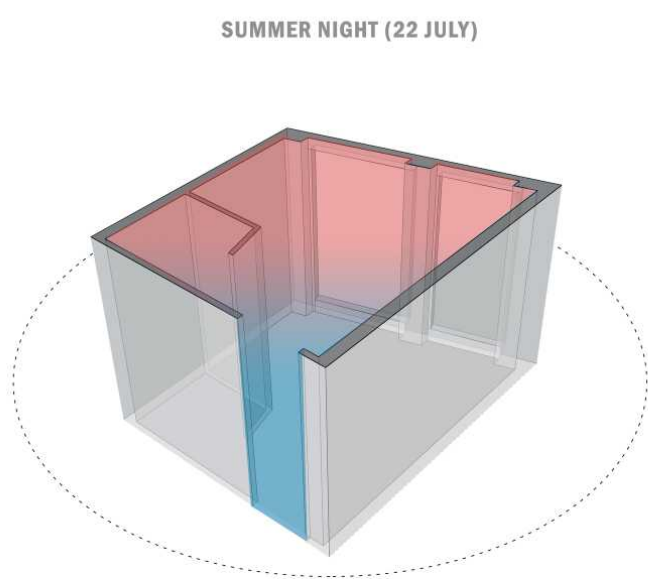
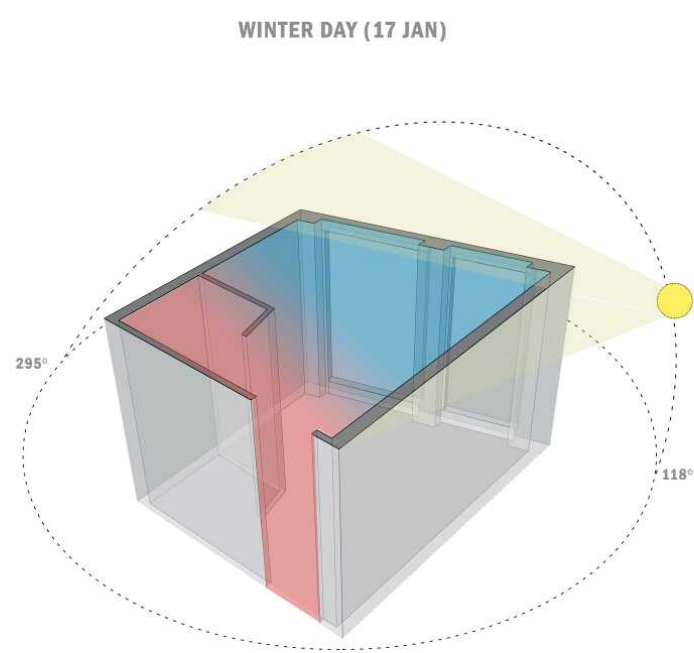
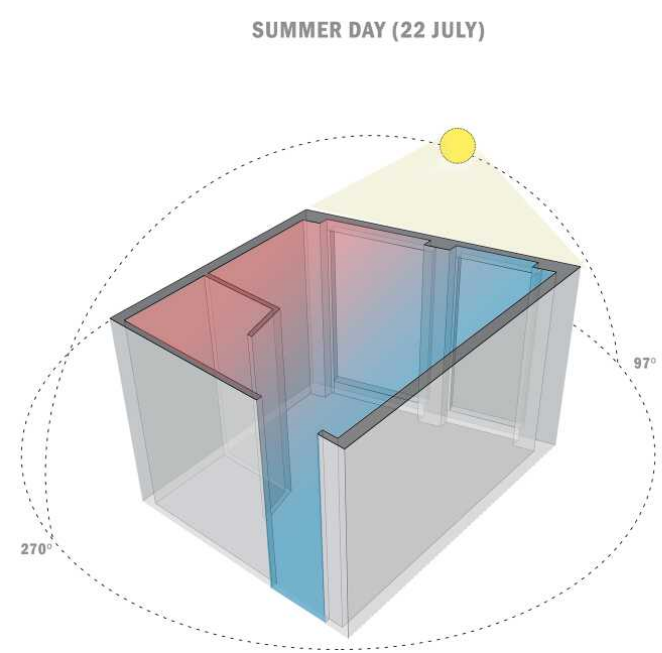
first floor
plan

unit thermodynamic analysis in warm and cold climate



- ① winter day time ③ summer day time
② winter night time ④ summer night time

unit design



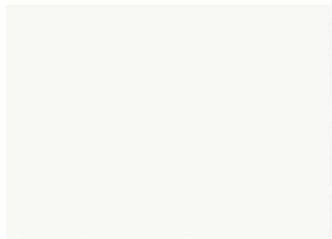
selected materials



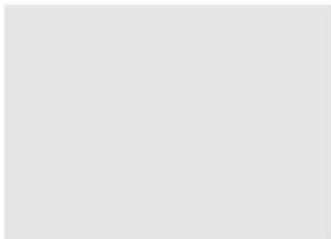
natural wood



concrete



gypsum



white color paint

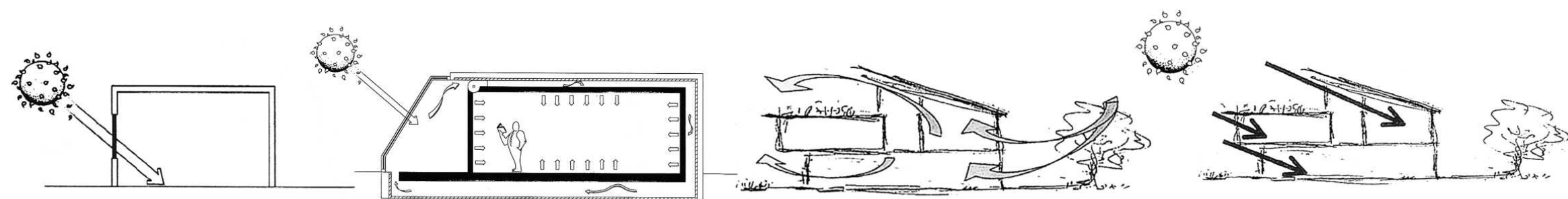


light blue color paint



black color paint

strategies



unit sections

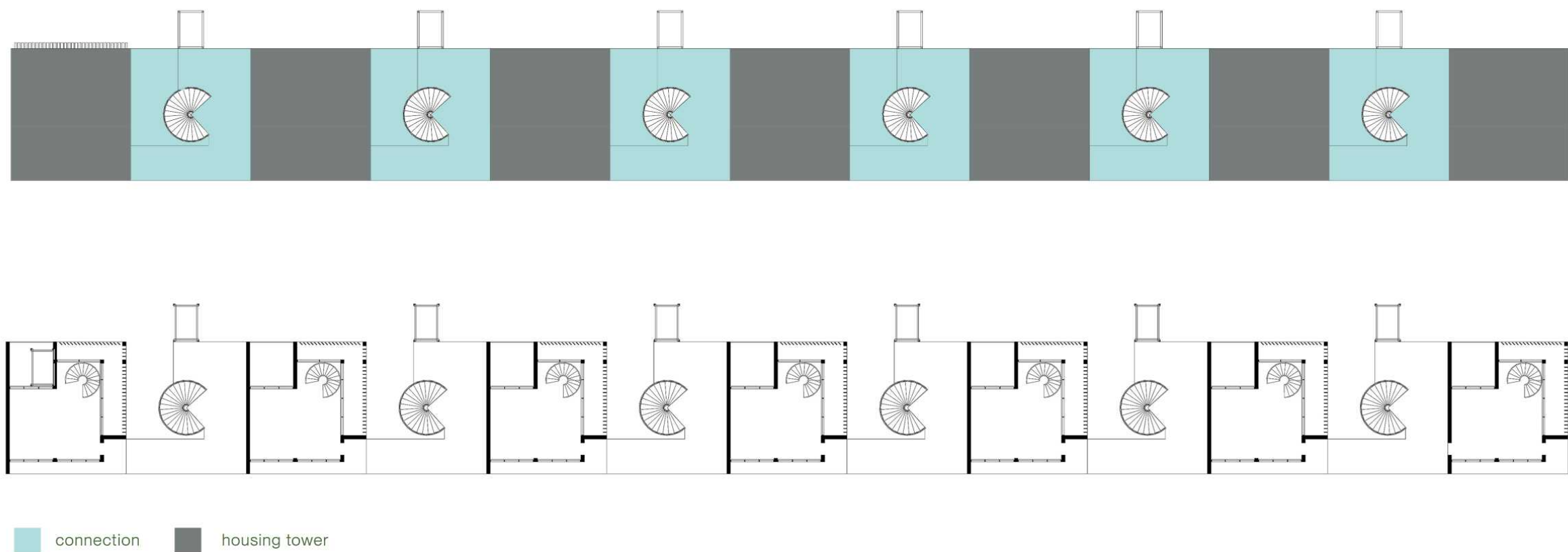


unit 1
section



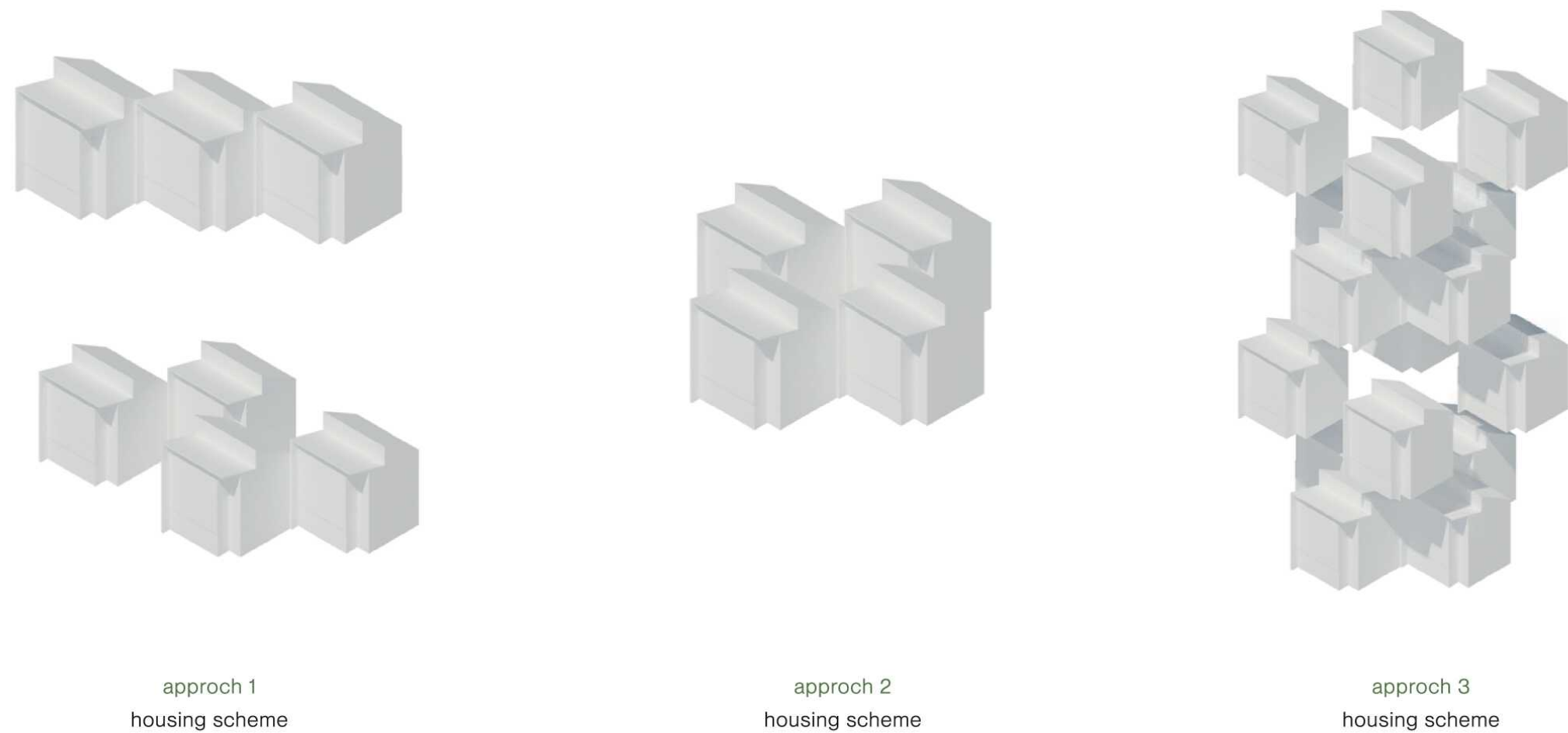
unit 2
section

architectural approach



20 units project
top view and plan

housing scheme proposal



20-units sections



architectural approach



tower units
section

20-units perspective





S02

housing theory

leader

Carmen Espejel



title

Perspective 20th
century + Pro-
spective 21st cen-
tury



6 days



Mulhouse,
France



Camila Urena
Ricardo Marti-
nez



Javier Arpa
Daniela Arias
Orsina Simona
Pierini



structure

1. Develop a critique skills on the most relevant projects in the recent history of multi-family housing, through research and debate.
2. Likewise, critique methods will be studied deeply to avoid superficial analysis and to be able to recognize a reasonable architecture.

Perspective 20th century + Prospective 21st century

Based on the historical context of the 20th century housing, this course will analyse the different solutions of each time, figuring out the elements to recognize an architecture that stands away from trends and becomes a reference because of its universality.

The project defines itself upon the urban characteristics of the city, and it's determined intention of changing it's habitual configuration standards. A housing set of blocks that shows the intention to spread throughout the city, while inviting the city to come inside it.

La Cité Manifeste Lewis - Potin & Block | Mulhouse, (2001 - 2005)

In the context of the "Cité Manifeste", a urban/architectural exercise about a new proposal of generous spatiality in social housing, but doing so by two main strategies. One is a "light" and cheap construction, and the other one, is the introduction of the "sharing" concept, not only between individuals, but with nature itself, and both, individuals and nature, may grow old together within the project.

collective - individual

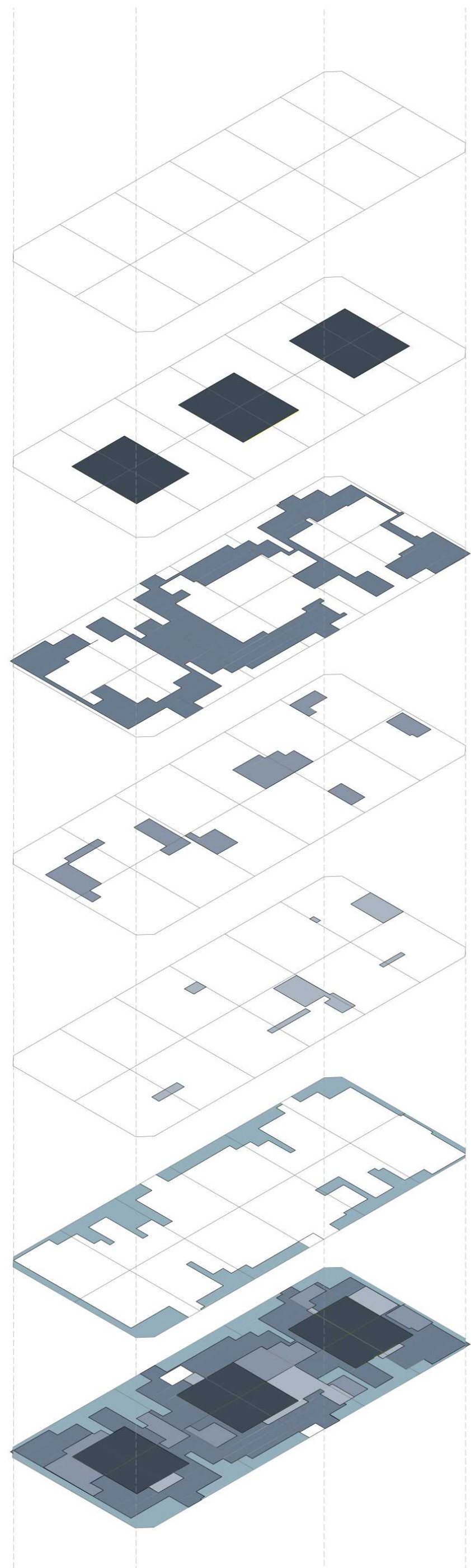
The project is a 27 dwelling complex that raise upon the entire block. The limits within each other, aren't always clear; and is no accident nor weakness, the flow of space enhances the habitability experience. Even the strongest metallic structure elements, land in a subtle manner, and pretend to be there as support, and never a frontier. Nature begins it's intense relationship with this structure. It climbs all the way up, through columns and meshes; to claim the best view to the clouds, without knowing that by doing so, the house itself earns even better views.

Between each module, mid-size open corridors go from one street to the other, creating an ideal permeability through private and public, through neighborhood and housing.

Every unit describes a similar typology. Four main spaces surrounding a cross of a wider wall, the main structure of the elements that seem to hang from this central wall. Kitchens and bathrooms find their backrest in this main cross wall. This four spaces are composed by two bedrooms in the upper level, and two versatile spaces in ground level. Talking about the structure, stairs, interior or exterior, work as part of it.

Giving even in some cases, support to the elements in upper levels that fly above some exterior areas of the project. In the "playful" disposition of these boxes hanging from the cross-wall, we can find different placements of the ground level boxes too, this produces, even with the very same elements, entirely different looking units between each other. There is another concept that helps the bonding between architecture and nature, the void. Double heights mainly in the exterior, help create this union. The views obtained by this relationship through time, are always different and amazing; this is actually, the best description of the projects facade.

By walking through the exterior corridors, you find a rich spatial experience because of the different heights coming along with it and in the middle, the entrance to the units. In the facades of the main units, layers of glass and prefabricated panels distribute themselves along the walls to contain the space. The panels, the only "closing" element, add privacy and thermodynamic inertia; and doing this by also hiding the main cross-wall structure, and only letting the small columns escape slightly and randomly to the outside.

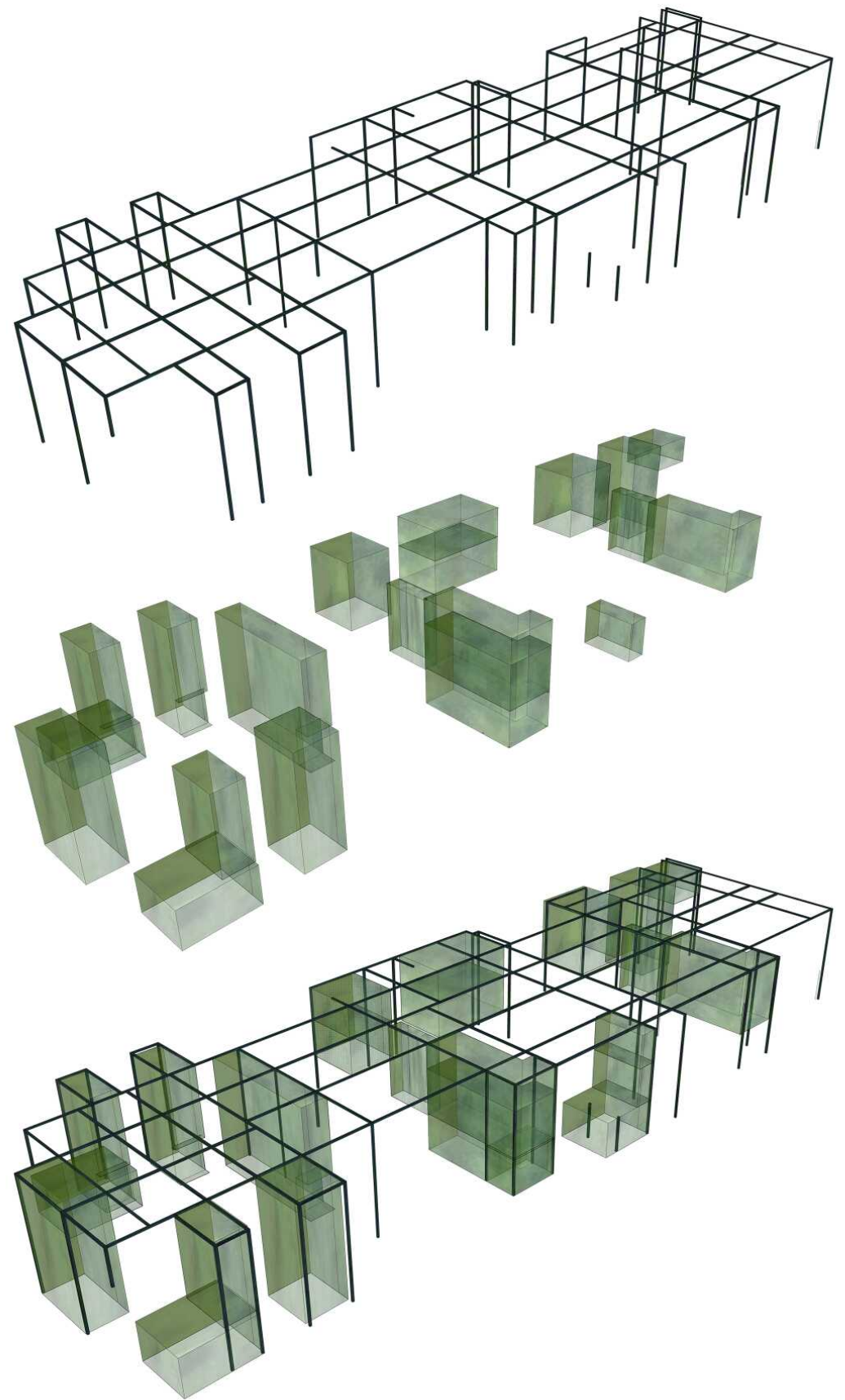


abstraction

It is of course, the facade one of the most relevant elements in this project. A complex facade that changes every season, every year, every generation, but doing so with the laws of nature, and just by doing it that way, the evolution of the project towards thermal comfort, is always guaranteed. A diffuse limit in a lot of subjects, might be the best summarize of every relationship among the project.

The public-neighborhood space, slowly pouring into the housing, just works on disheartening the boundaries between one and other, this is not only a spatial, urban or architectural definition, but even a social one. The project proposes at last, one final question, maybe housing should be a lot more of sharing and not confusing that term with "invading". By creating this dichotomy, but not actually giving away entirely the housing-privacy, this project remains successful and as a reference towards new housing projects.

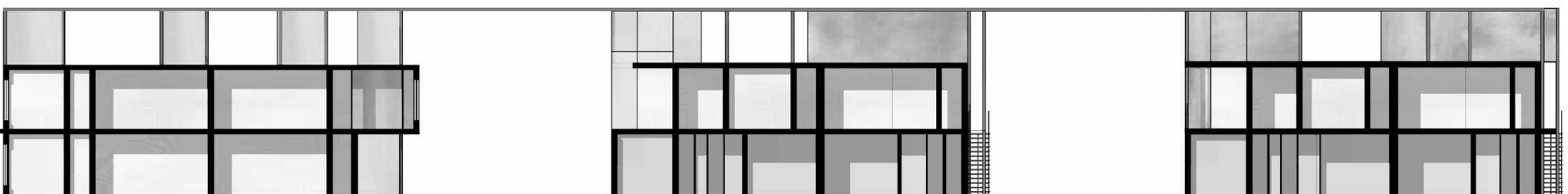
Duncan Lewis is an architect that likes very much to mix vigorously the natural development of vegetation and architecture itself, understanding the "artificial" part of his projects, as pieces that should be as flexible as the natural inhabitants and their evolution through time. Flexibility may very well be, the most accurate ingredient, of contemporary architecture.



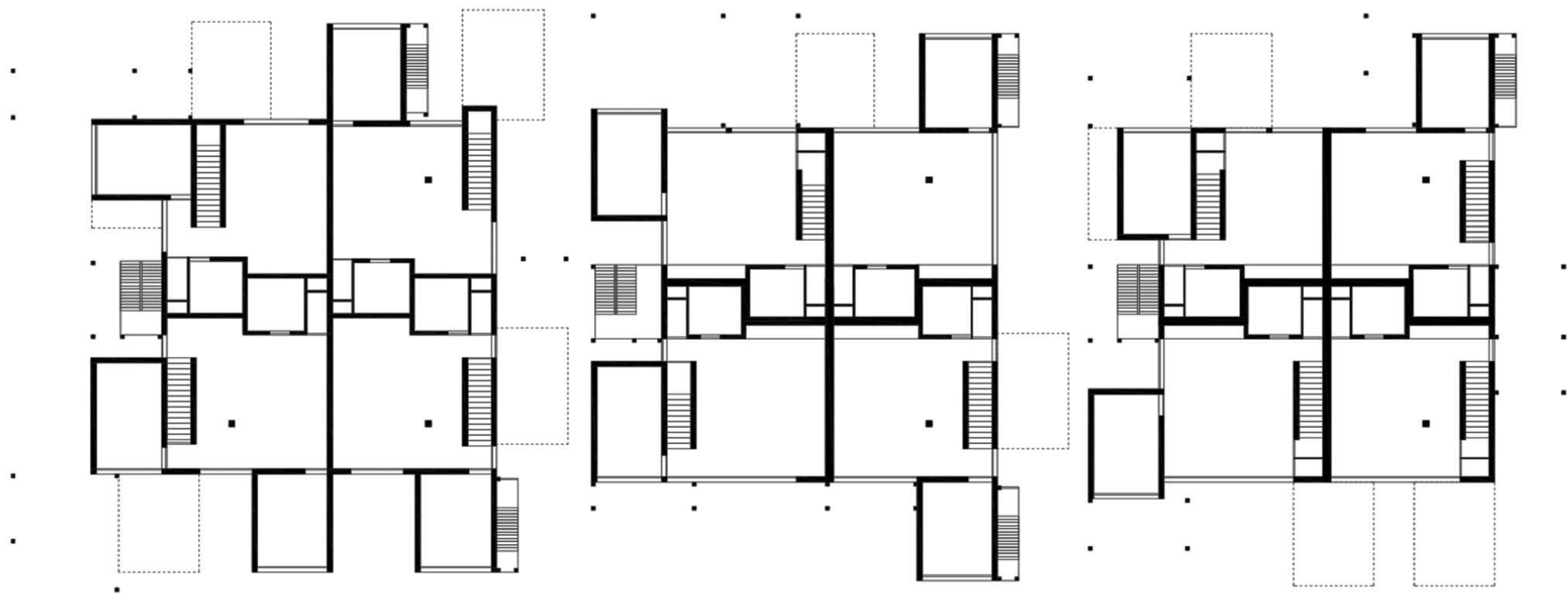
elevations



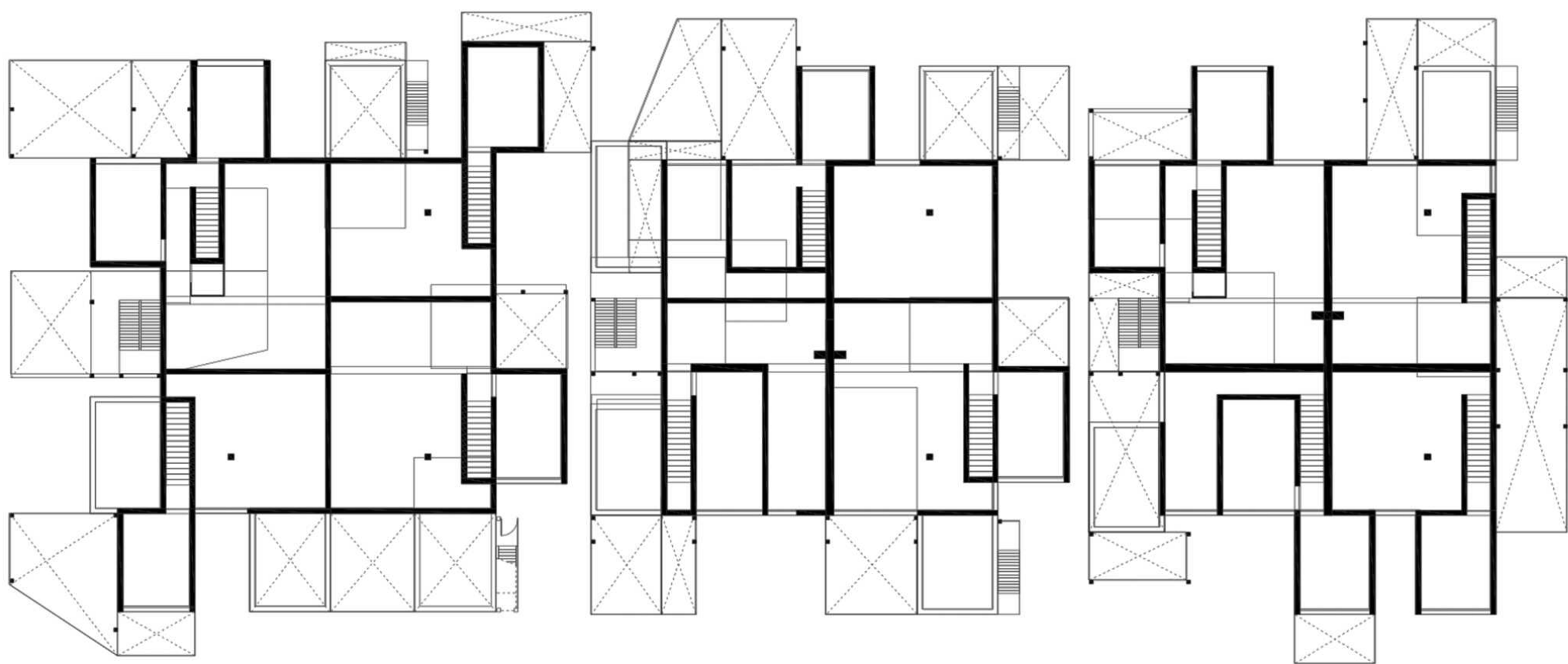
sections



plans

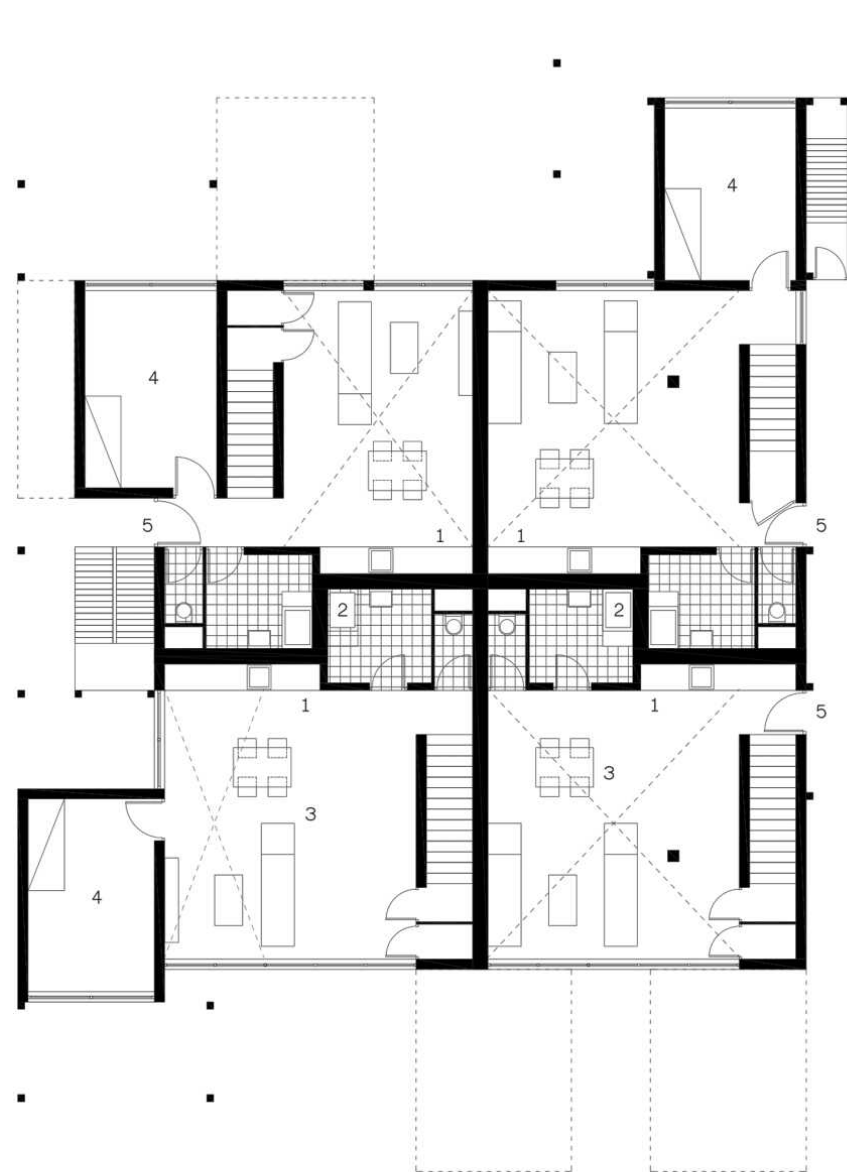


ground floor
plan



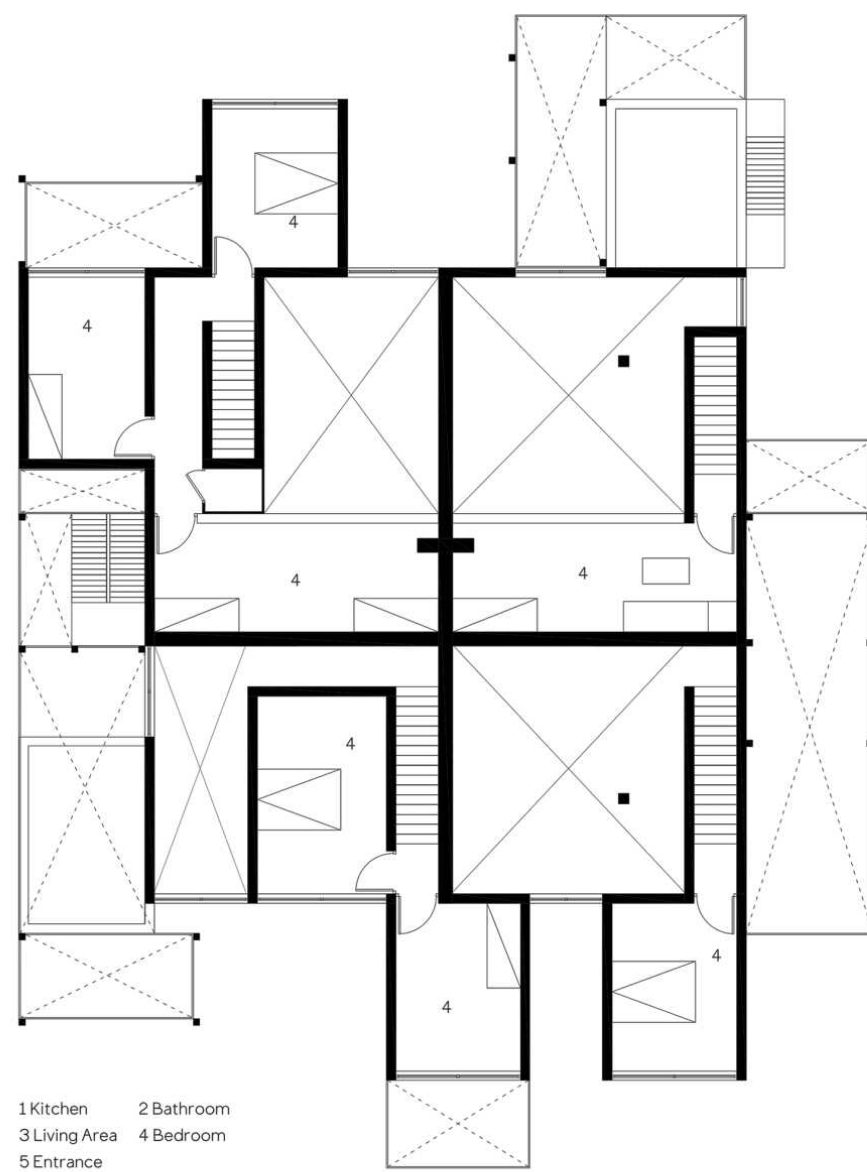
upper floor
plan

unit plans



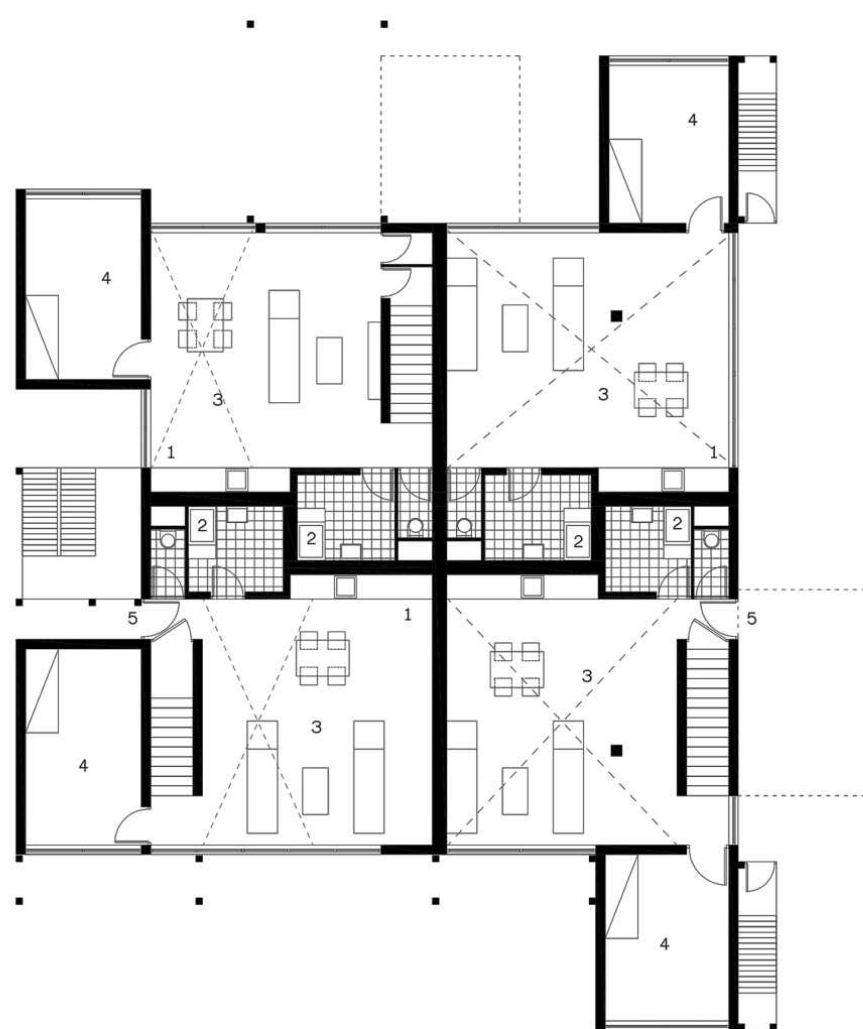
1 Kitchen 2 Bathroom
3 Living Area 4 Bedroom
5 Entrance

ground floor
unit cell A



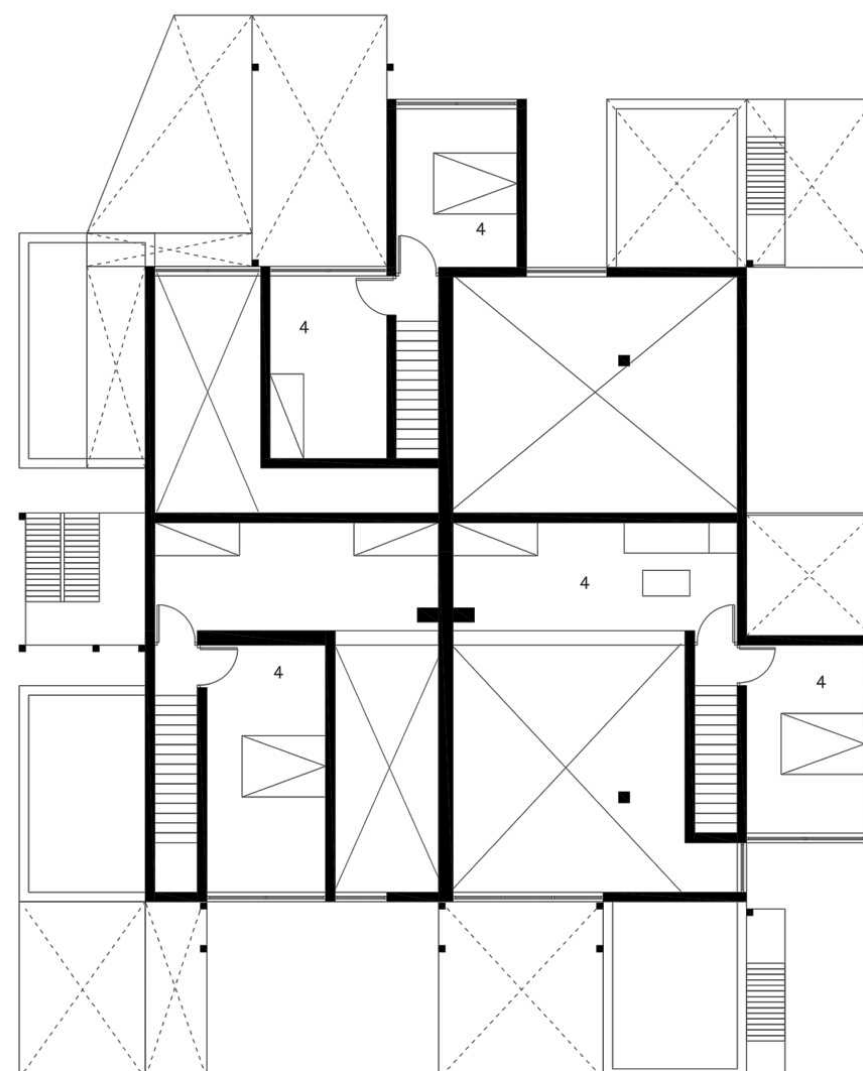
1 Kitchen 2 Bathroom
3 Living Area 4 Bedroom
5 Entrance

upper floor
unit cell A



1 Kitchen 2 Bathroom
3 Living Area 4 Bedroom
5 Entrance

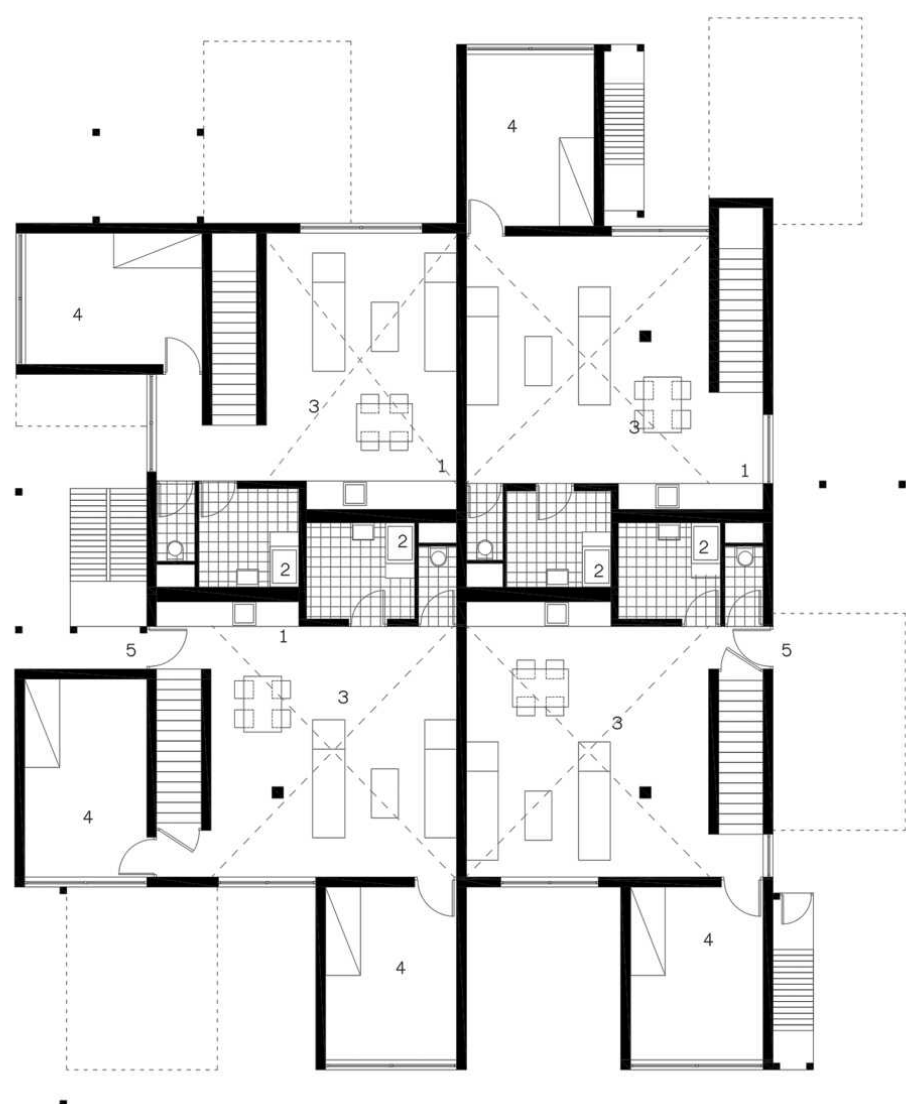
ground floor
unit cell B



1 Kitchen 2 Bathroom
3 Living Area 4 Bedroom
5 Entrance

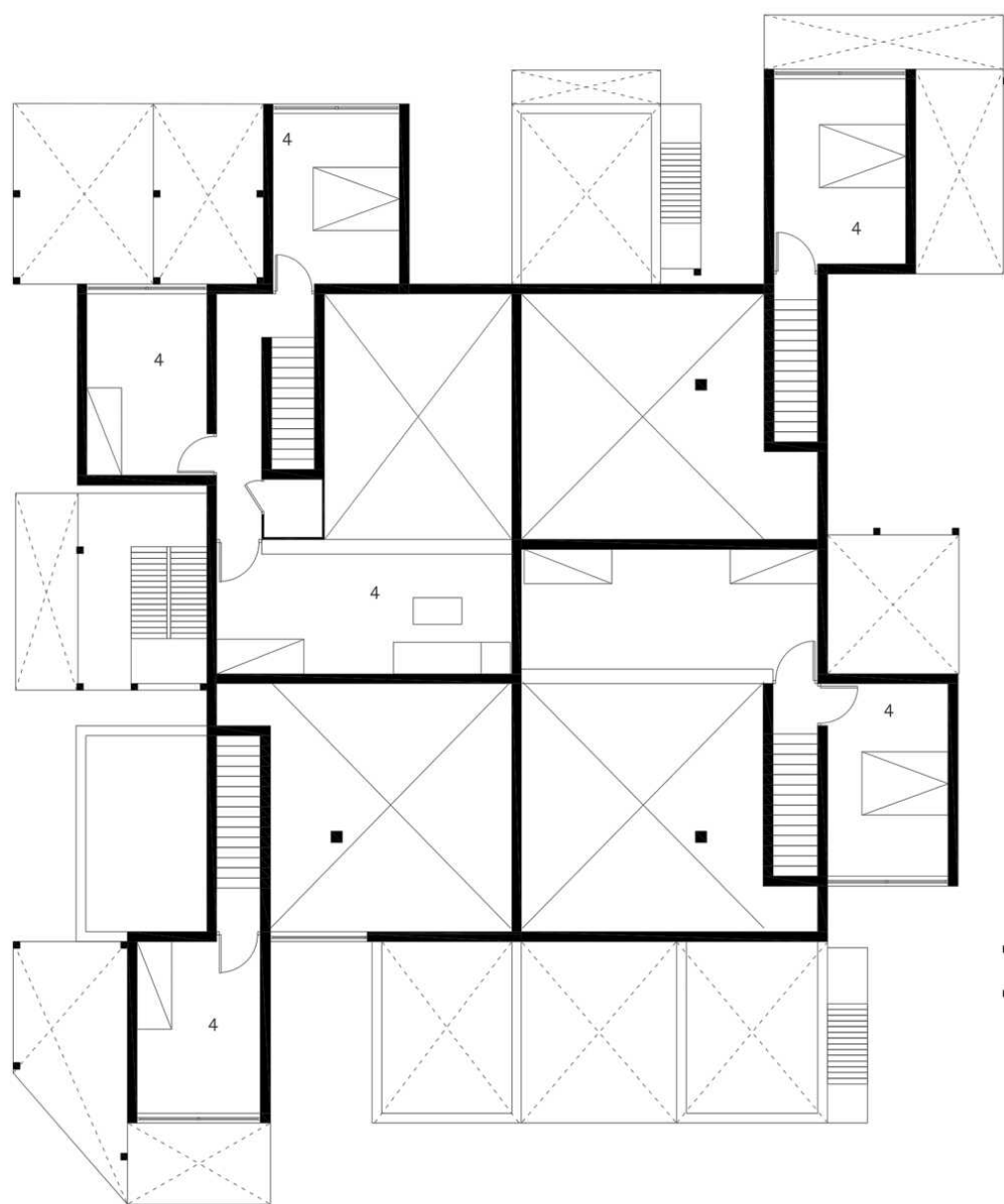
upper floor
unit cell B

plans unit C



1 Kitchen 2 Bathroom
3 Living Area 4 Bedroom
5 Entrance

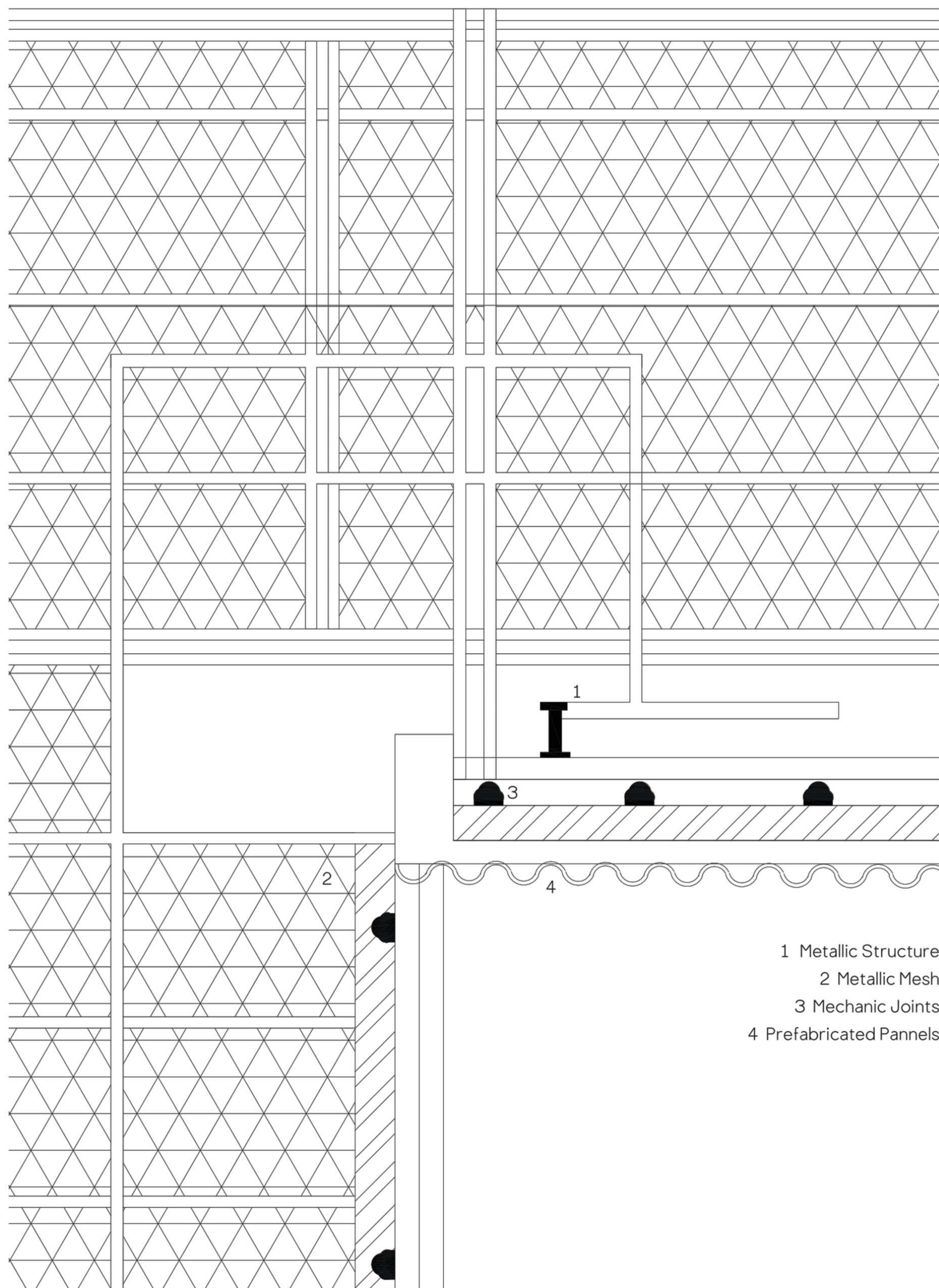
ground floor
unit cell C



1 Kitchen 2 Bathroom
3 Living Area 4 Bedroom
5 Entrance

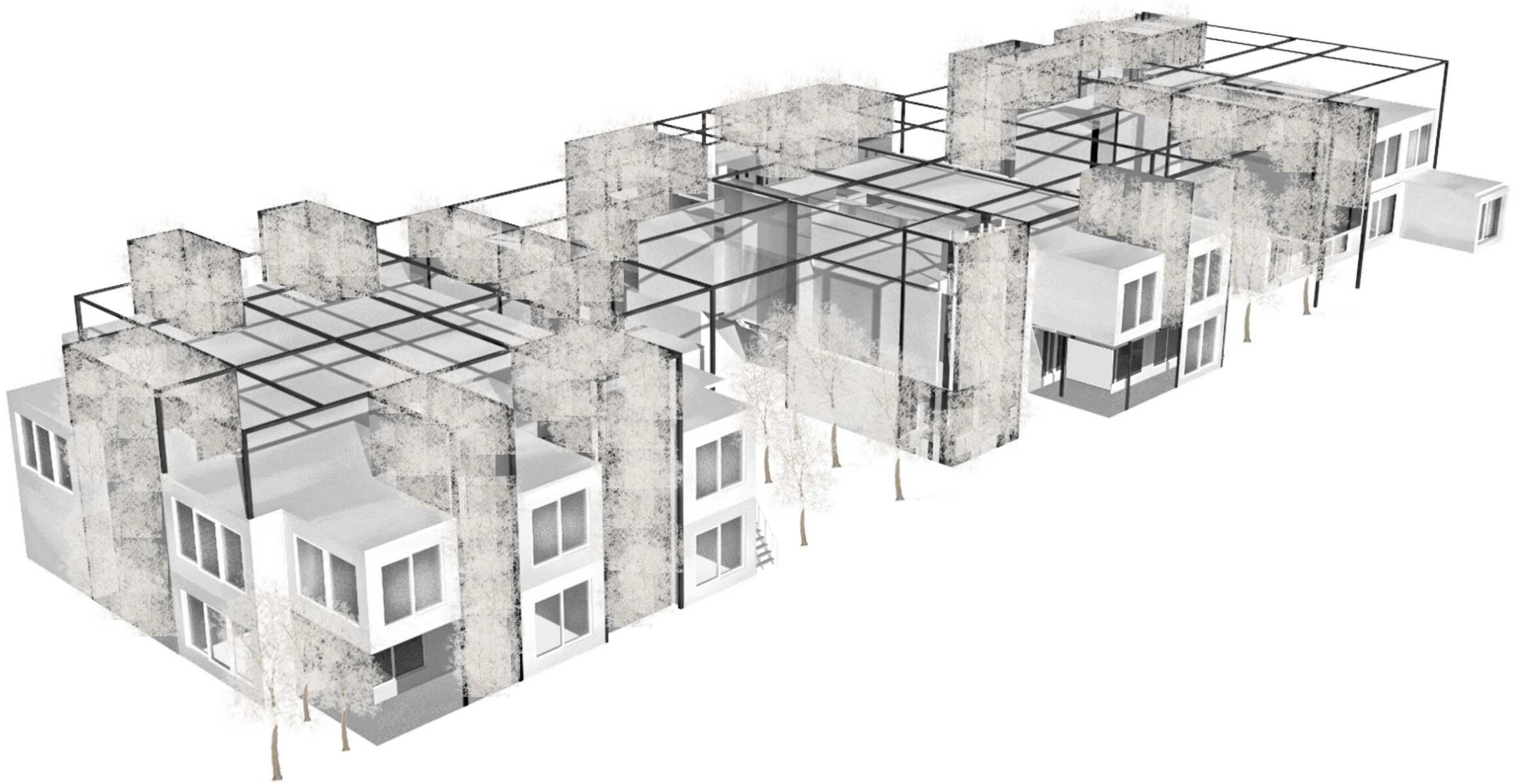
upper floor
unit cell C

constructive section

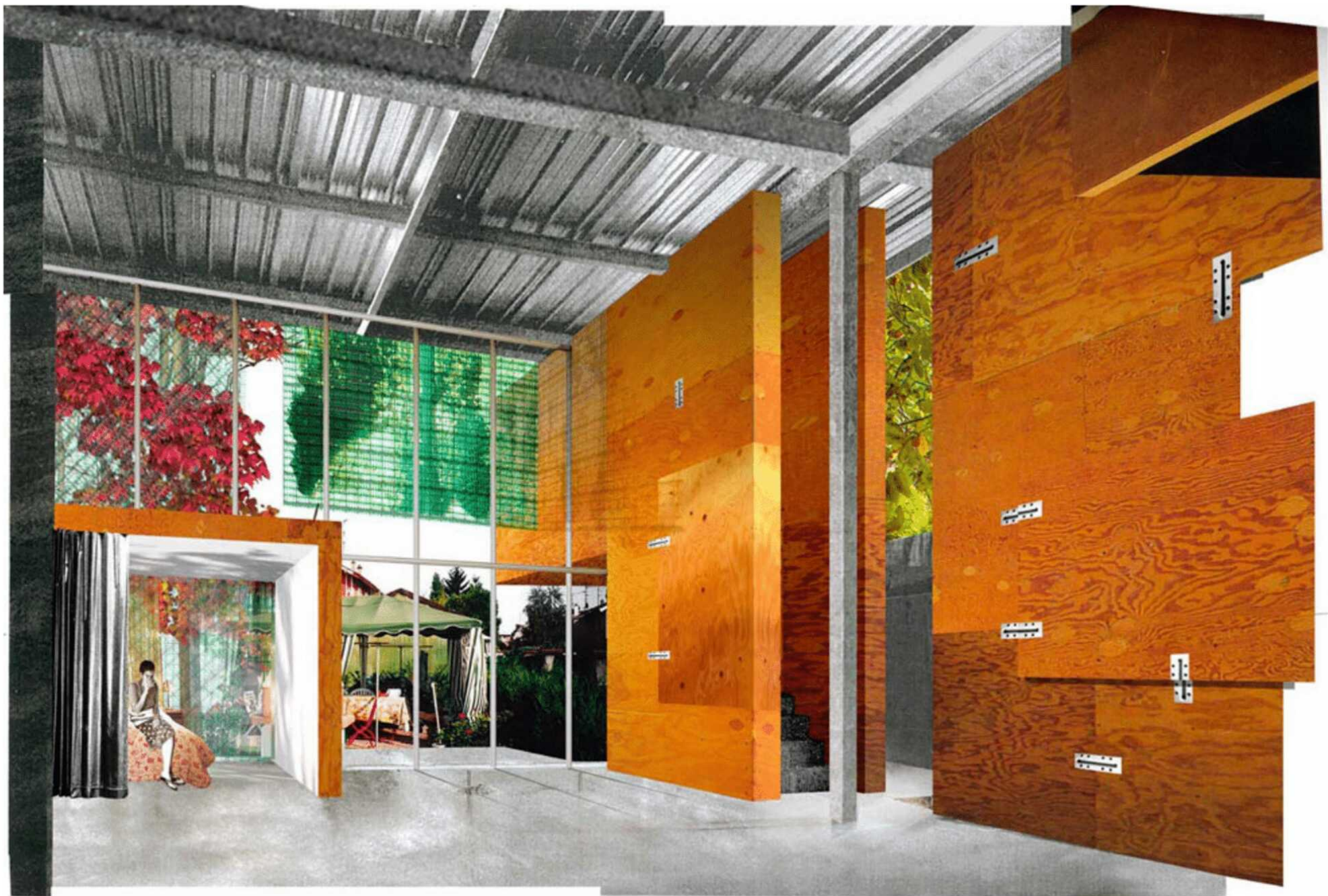


- 1 Metallic Structure
- 2 Metallic Mesh
- 3 Mechanic Joints
- 4 Prefabricated Pannels

shot-render

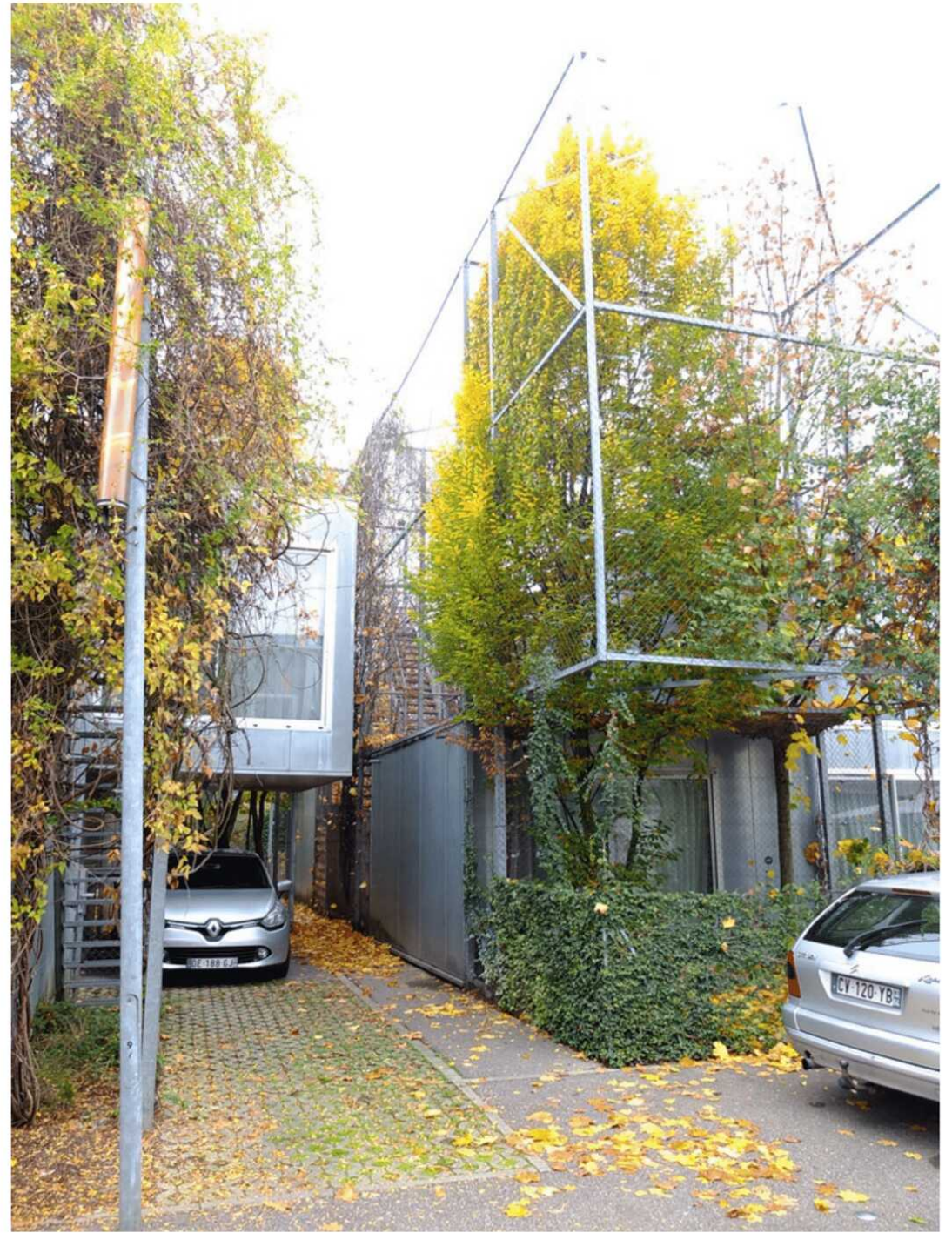


photomontage



interior shot
materiality, structure and architecture elements

shots





S03

construction & technologies

leader

Ignacio Fernández-Solla



title

Construction and technologies:
Zwicky Sud,
Zurich



10 days



Oulu, Finland



Daniel Molina
Elissavet Pasli
Andrés Varela



David Rutter
Archie Campbell
Diego
García-Setién



structure

The aim of this course is to analyse the building as a physical system within the technical and integration systems in the design process. The theory is focused on the description of the main solutions given by architects in their most relevant buildings and the analysis of the different technical systems that make up the building.

Highly experienced professionals in housing construction and design will transmit their experience and knowledge in these fields.

Construction and Technology: new design approach in Oulu, Finland

To understand design and construction as one continuous process.

- **Design is not possible without construction, and vice-versa, if our buildings are supposed to be real architecture.**

- **develop a culture of construction in parallel to their evolving culture of design.**

- **Building envelope**

- Housing and envelope: trends and current practice
- Panel, rain screen, EIFS, windows, and their interfaces

- **Industrialization in housing**

- Worldwide panoramic view of industrialization applied to housing
- Technology transfer applied to architecture

- **Structure: steel, concrete, timber**

- Structural decisions for collective housing
- Steel, Precast and in-situ concrete, Timber structures

- **Energy: MEP, services and sustainability**

- Services in housing: Why? What for? How?
- Energy demand and energy generation. The project of services

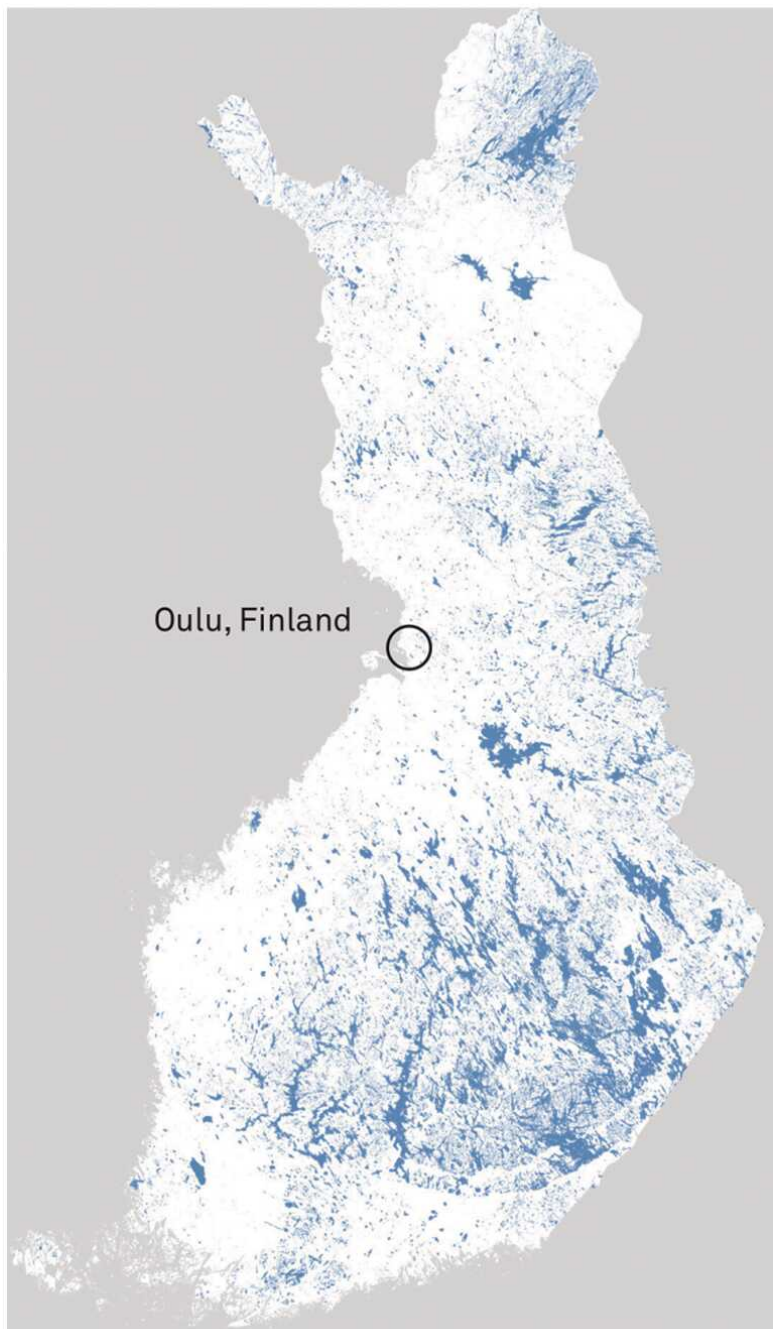
The aim of the module is to understand buildings as entities based on the interplay of three physical realms:

- structure
- envelope
- services

connected by a process:

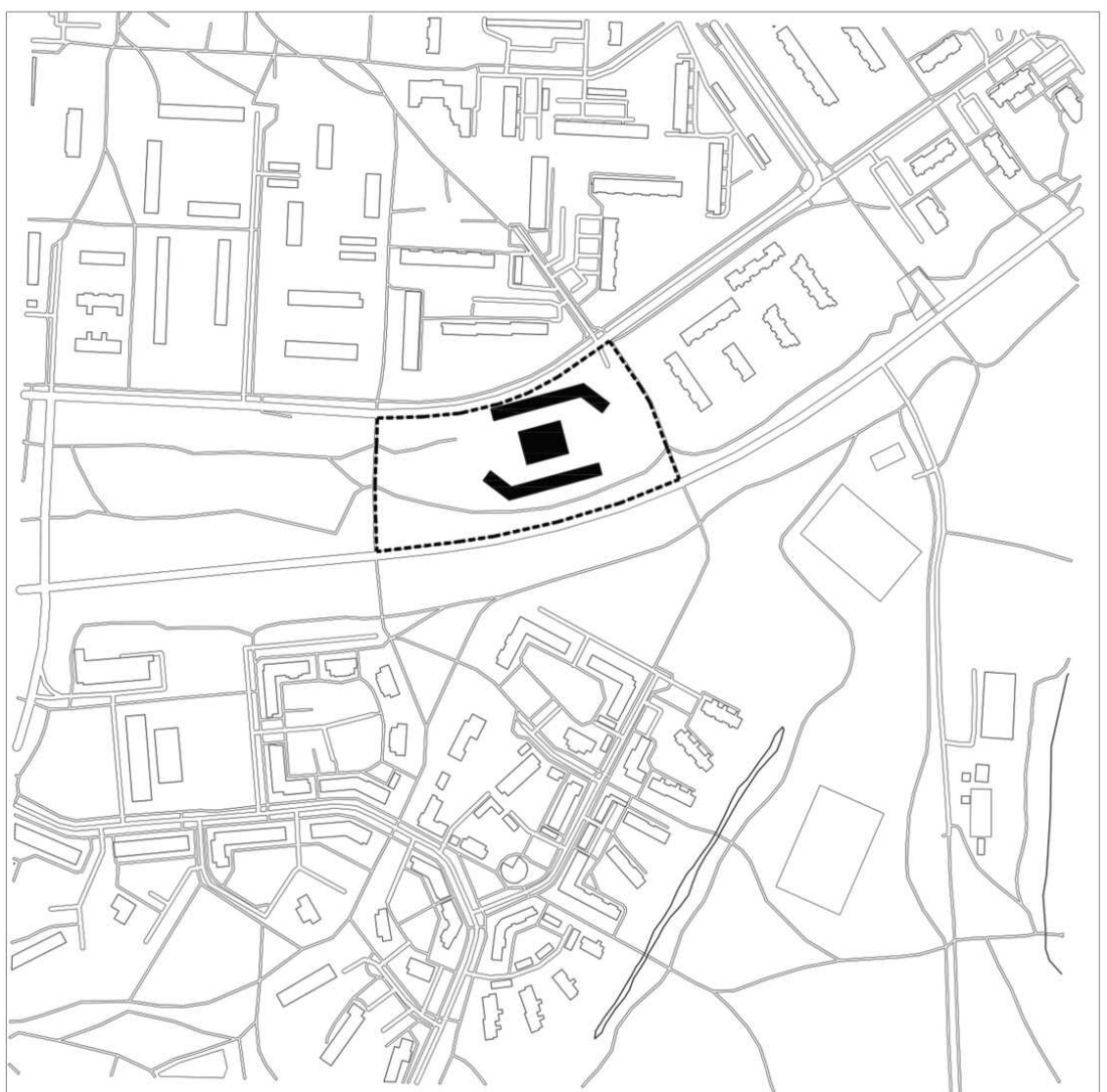
- industrialization

site information

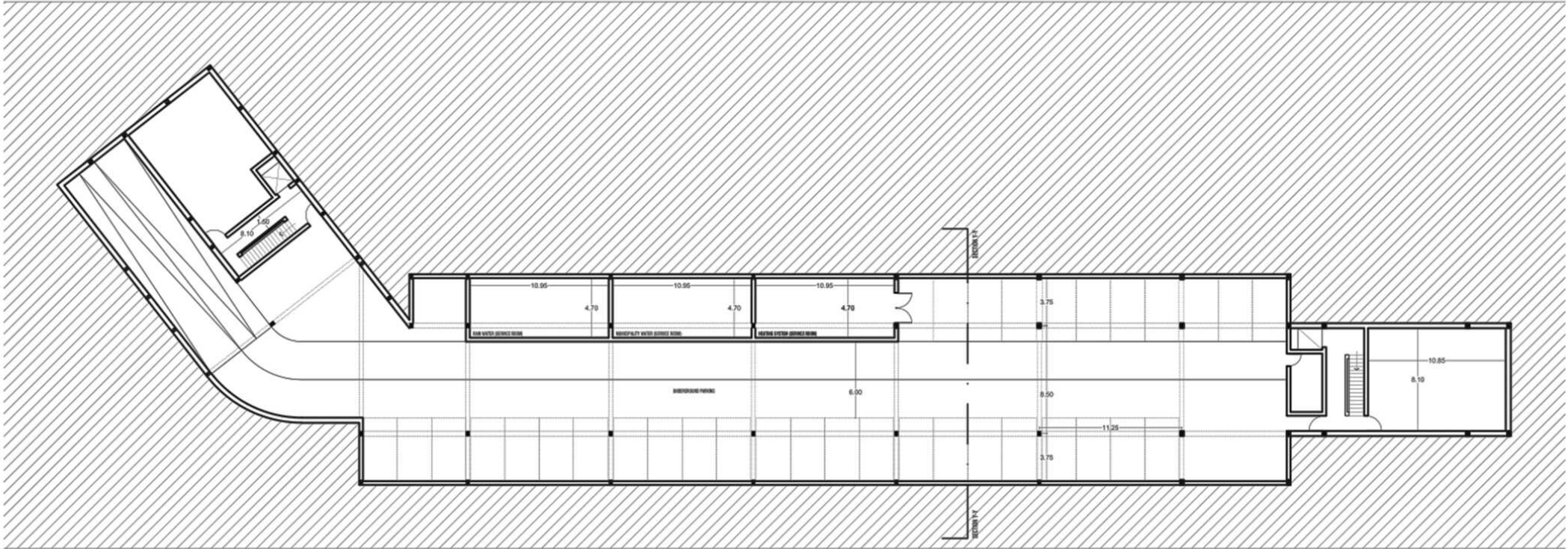


Oulu (Swedish: Uleåborg) is a city and municipality in the former province of Oulu, Finland. Oulu has a population of around 190,000, making it the fifth largest city in Finland and the largest in the northern half of Finland. Oulu is the leading city in Northern Finland, and has, for example, a technology park that houses the University of Oulu. The entire province of Oulu was geographically a transition zone between northern and southern Finland, which is the natural demarcation between Lapland and the southern Lake District. It was also the administrative capital of the Province of Oulu.

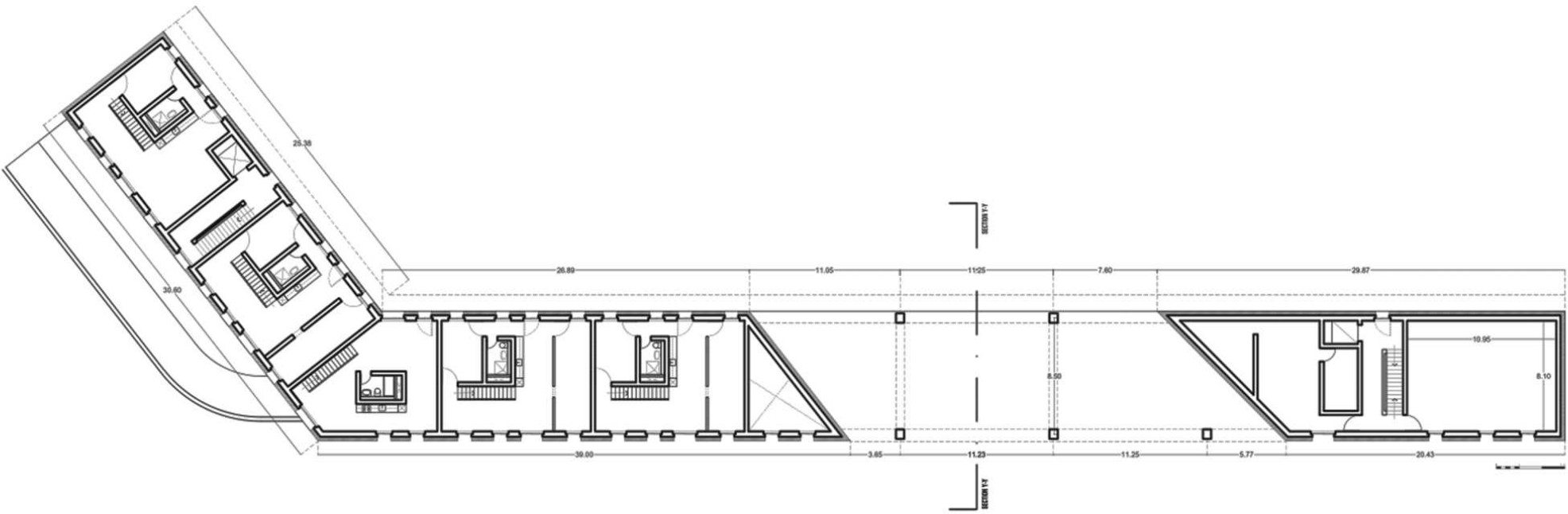
In 2013 the municipalities of Kiiminki, Oulunsalo, Haukipudas and Yli-Ii joined Oulu and formed a new city.



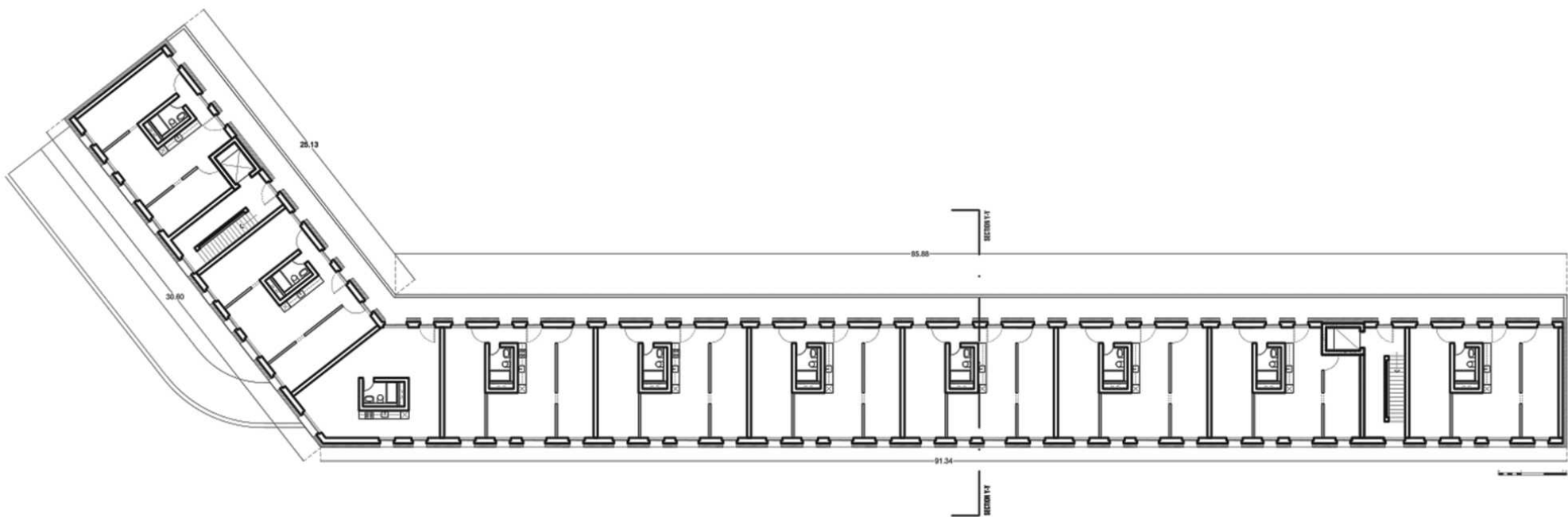
plans



basement floor
plan

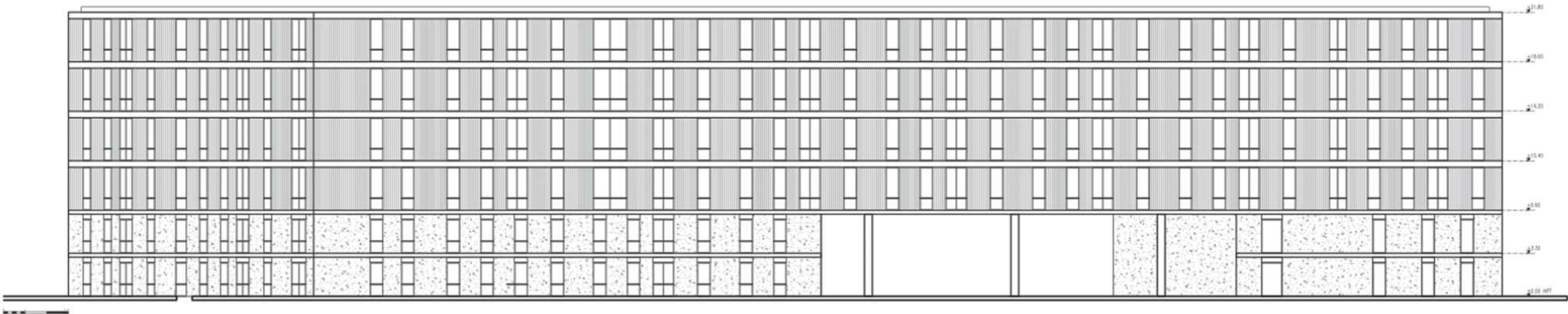


first and second floor
plan

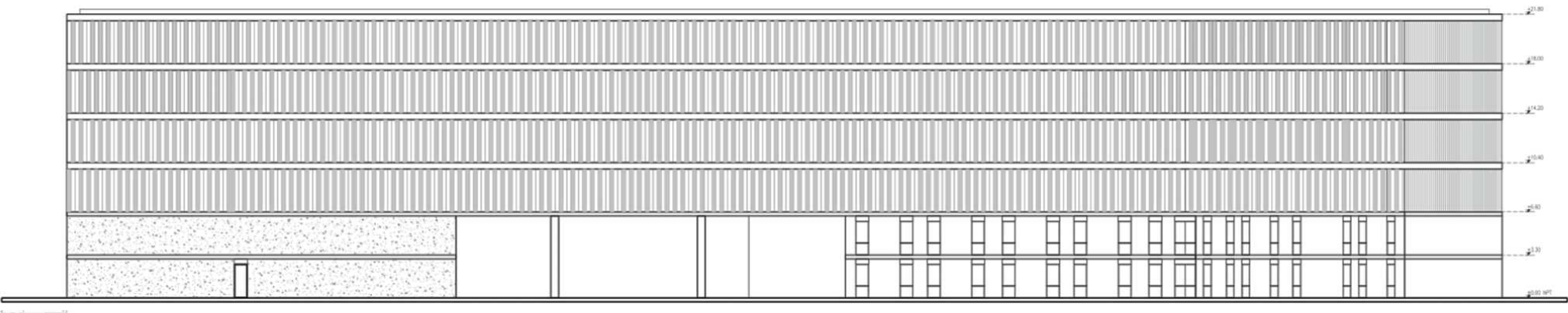


typical floor
plan

elevations

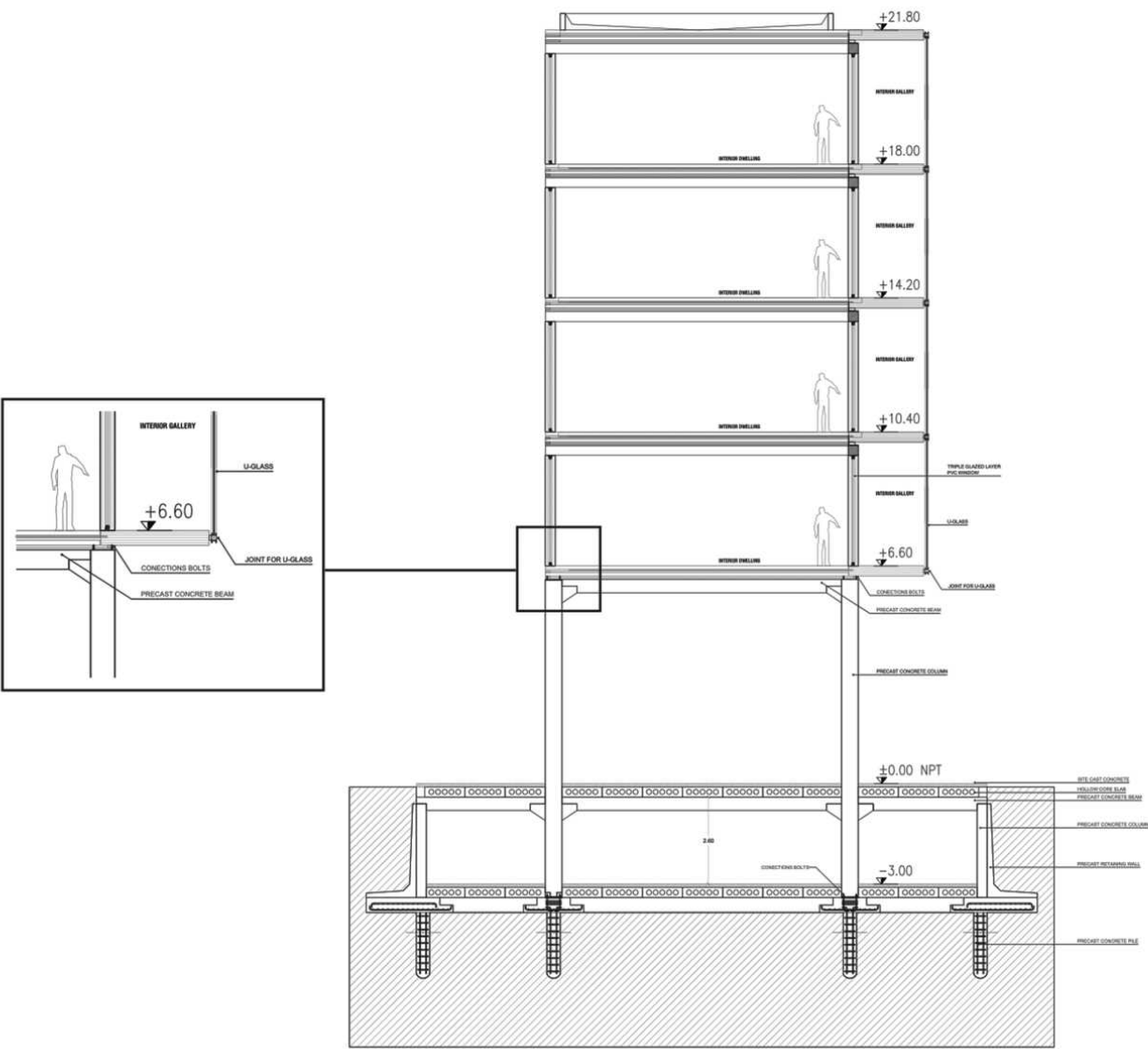


north elevation

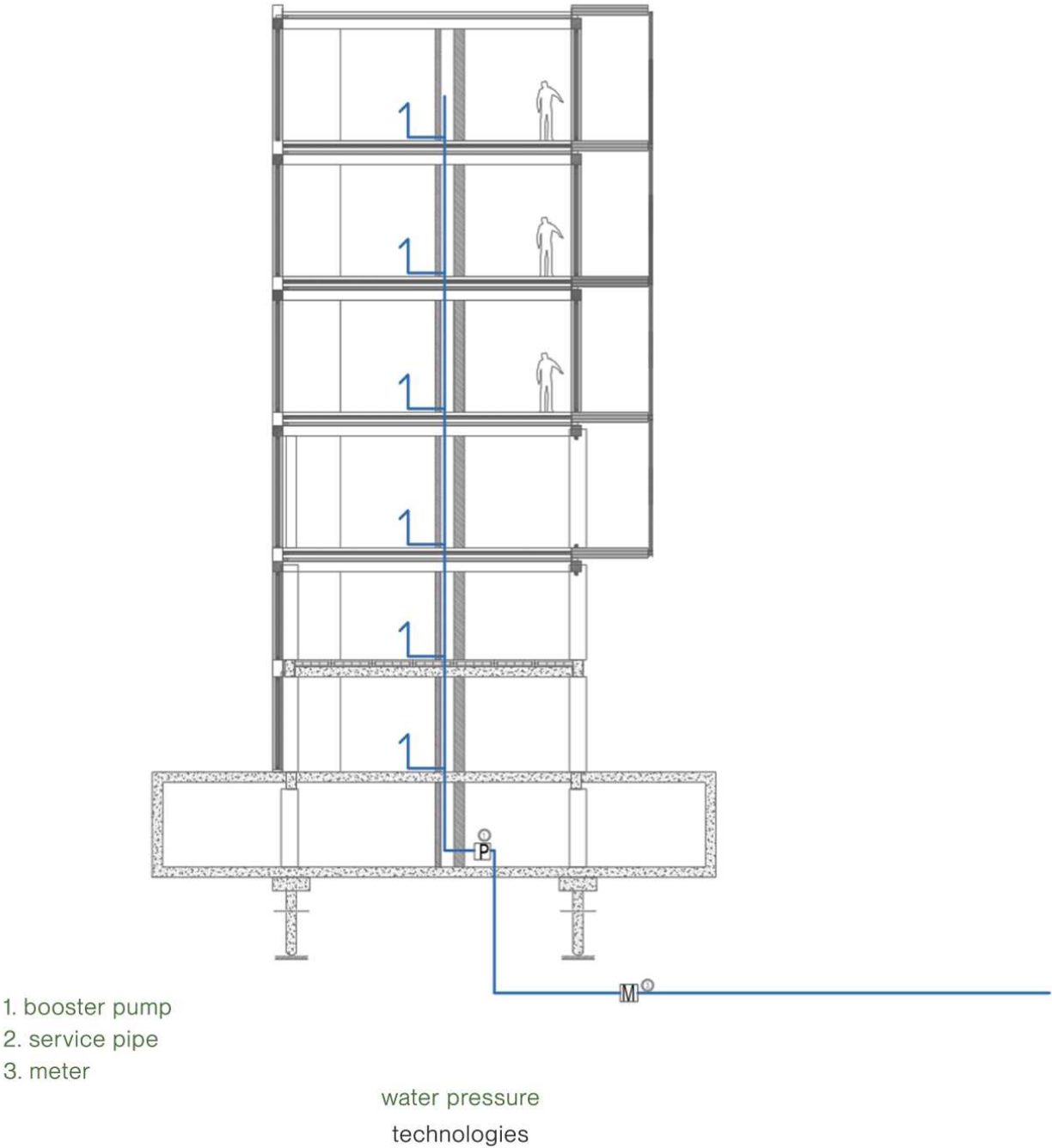
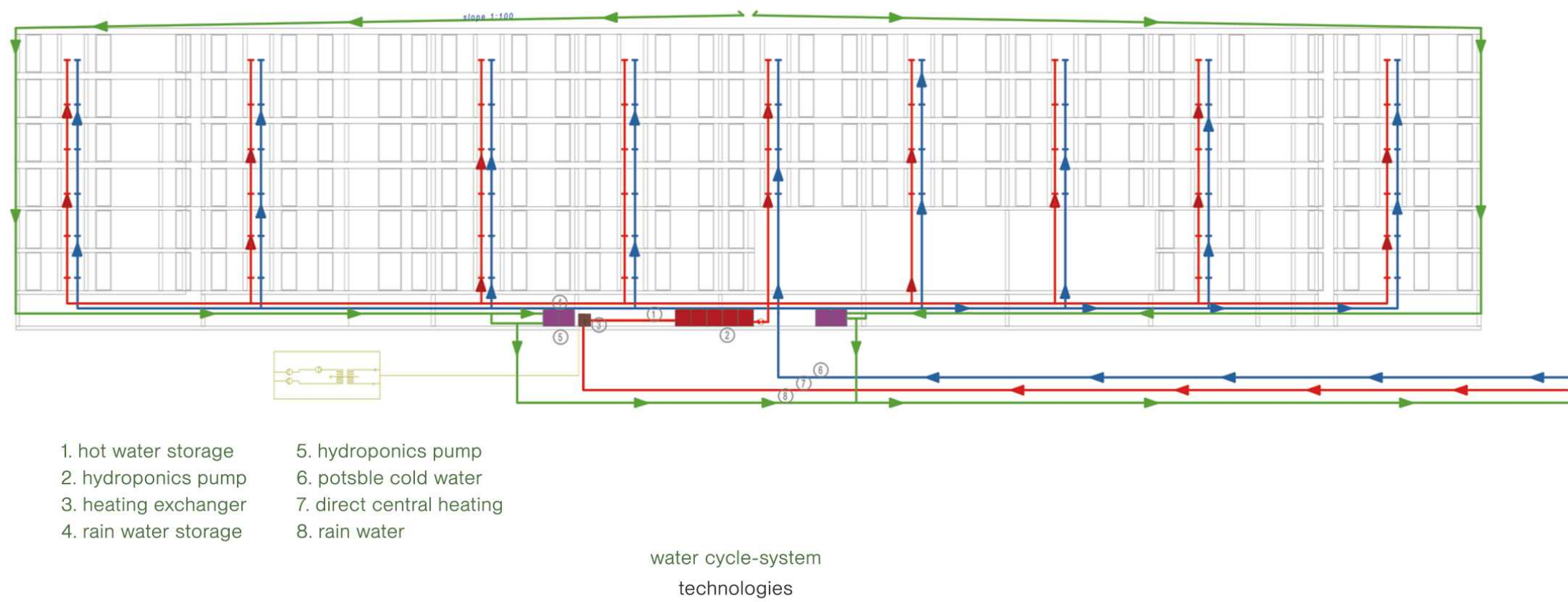


south elevation

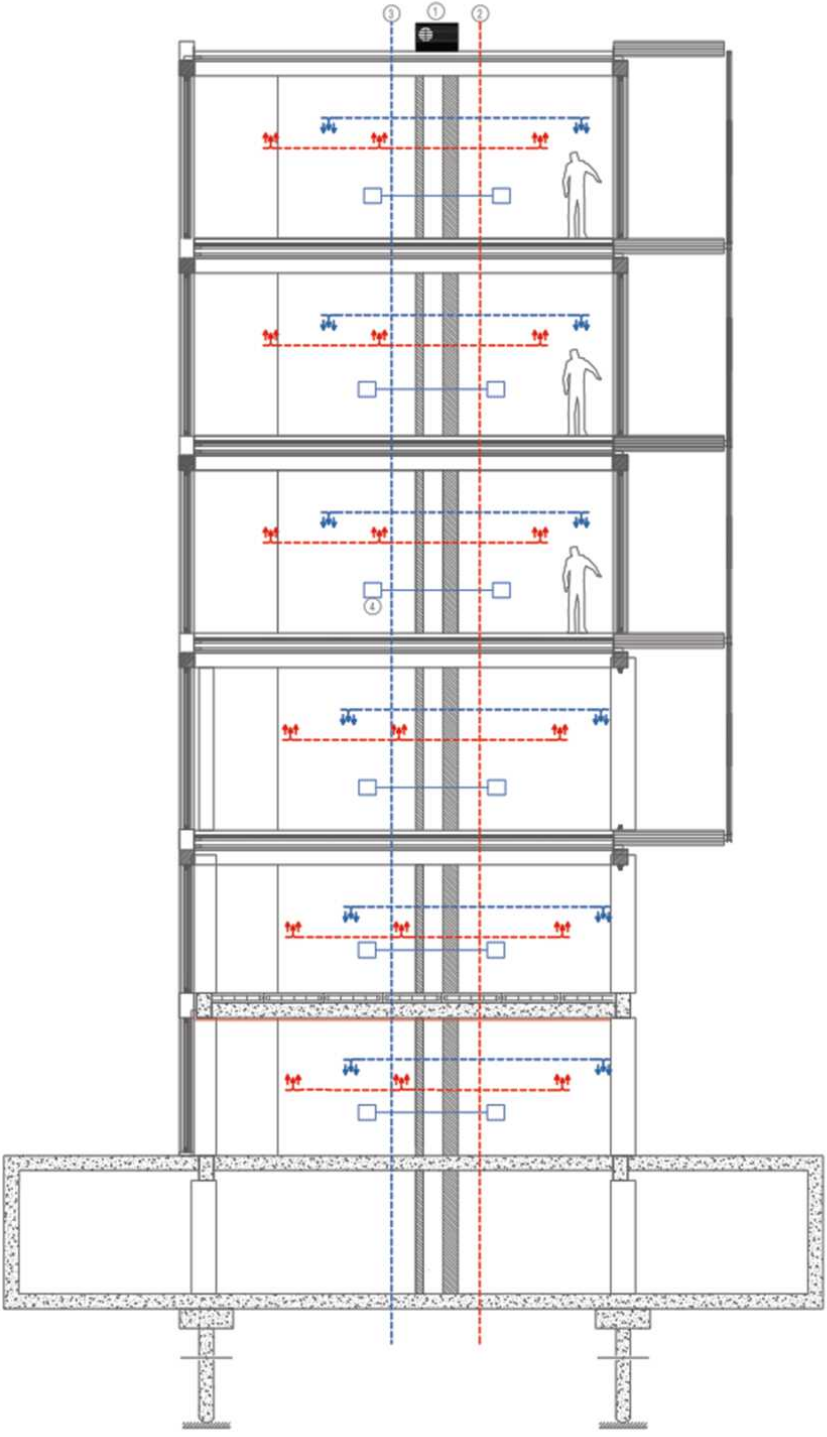
section



technologies

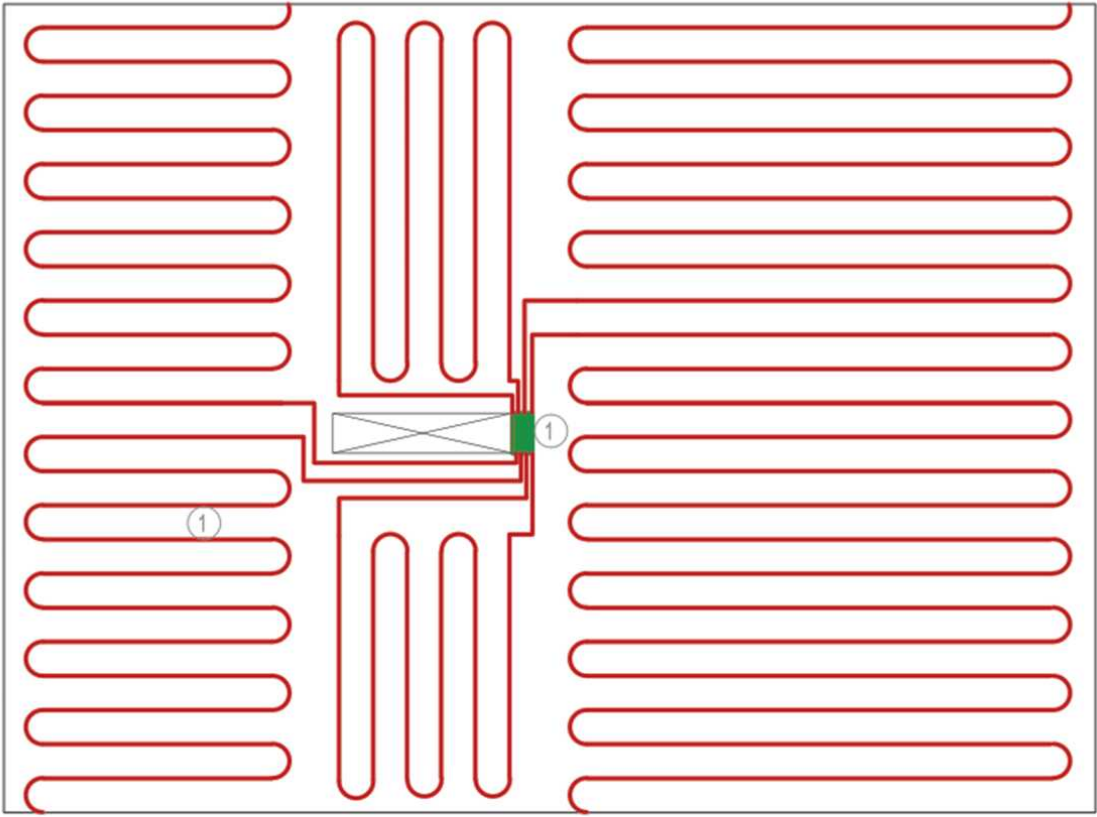


plans unit C



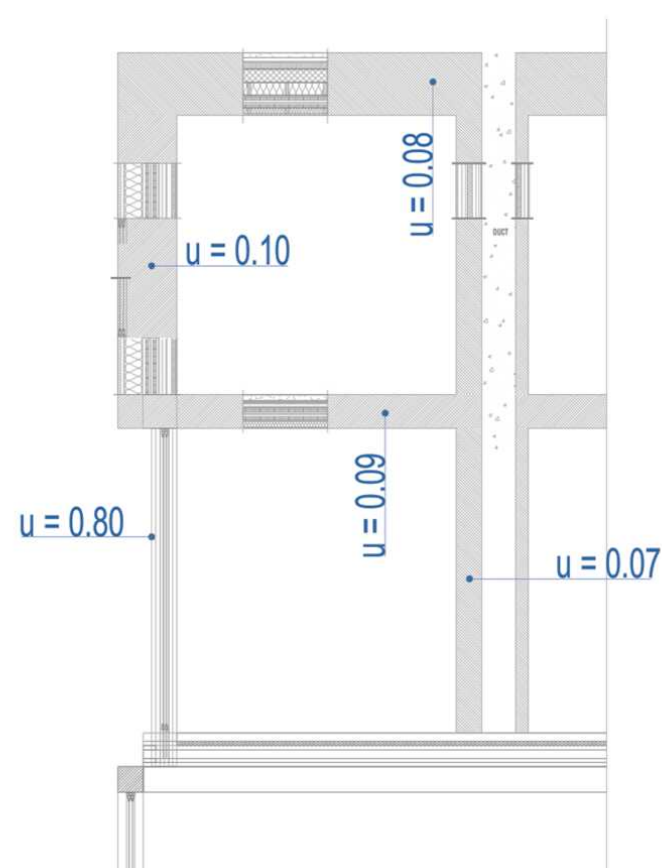
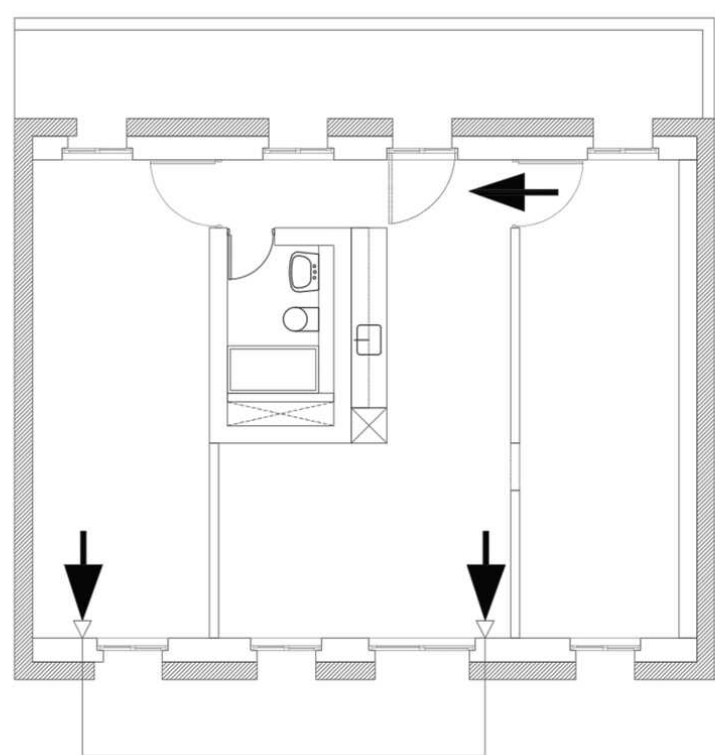
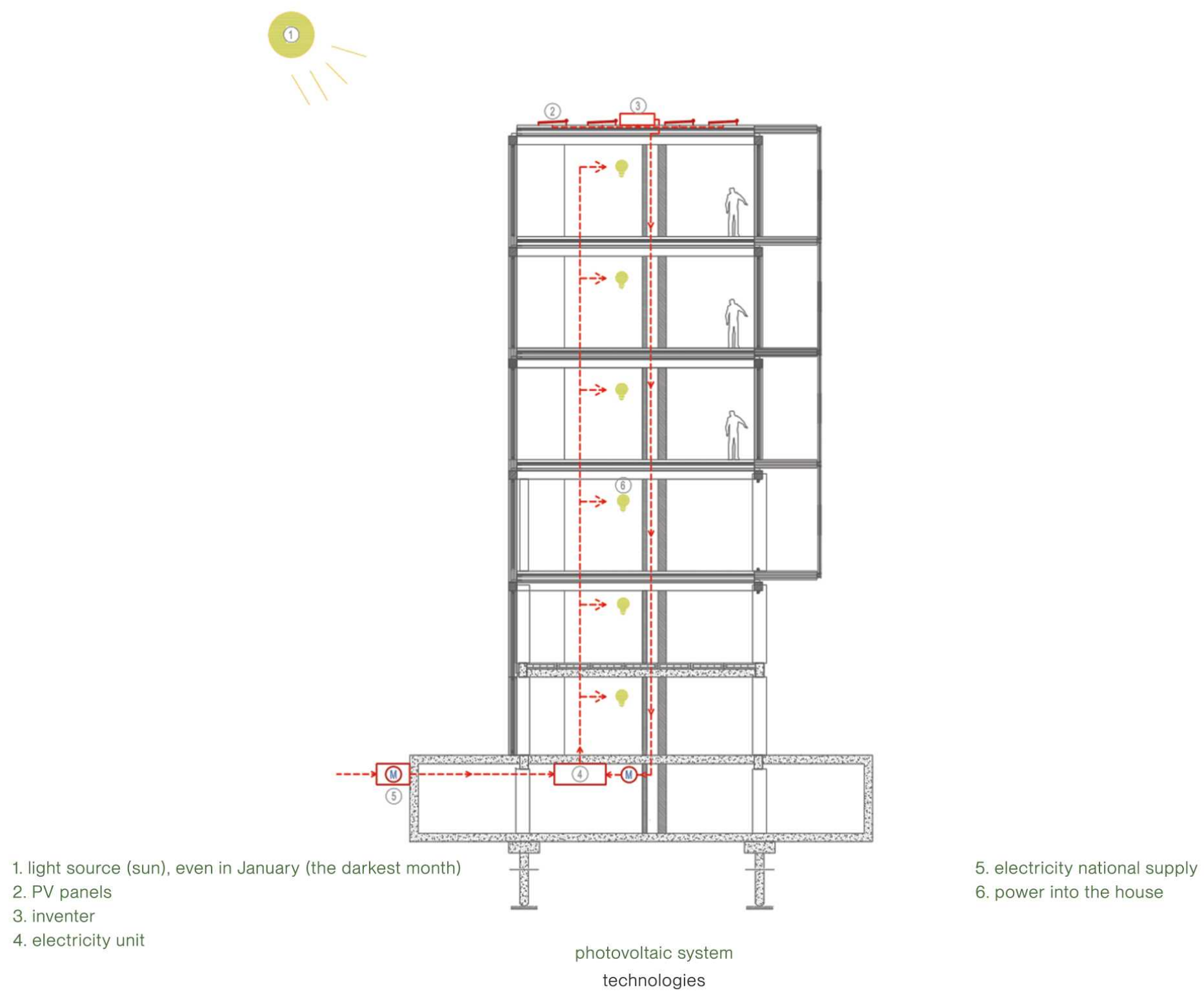
- 1. heat recovery unit
- 2. fresh air inlet
- 3. extracted stale air
- 4. electrical board

heat recovery ventilation system
technologies



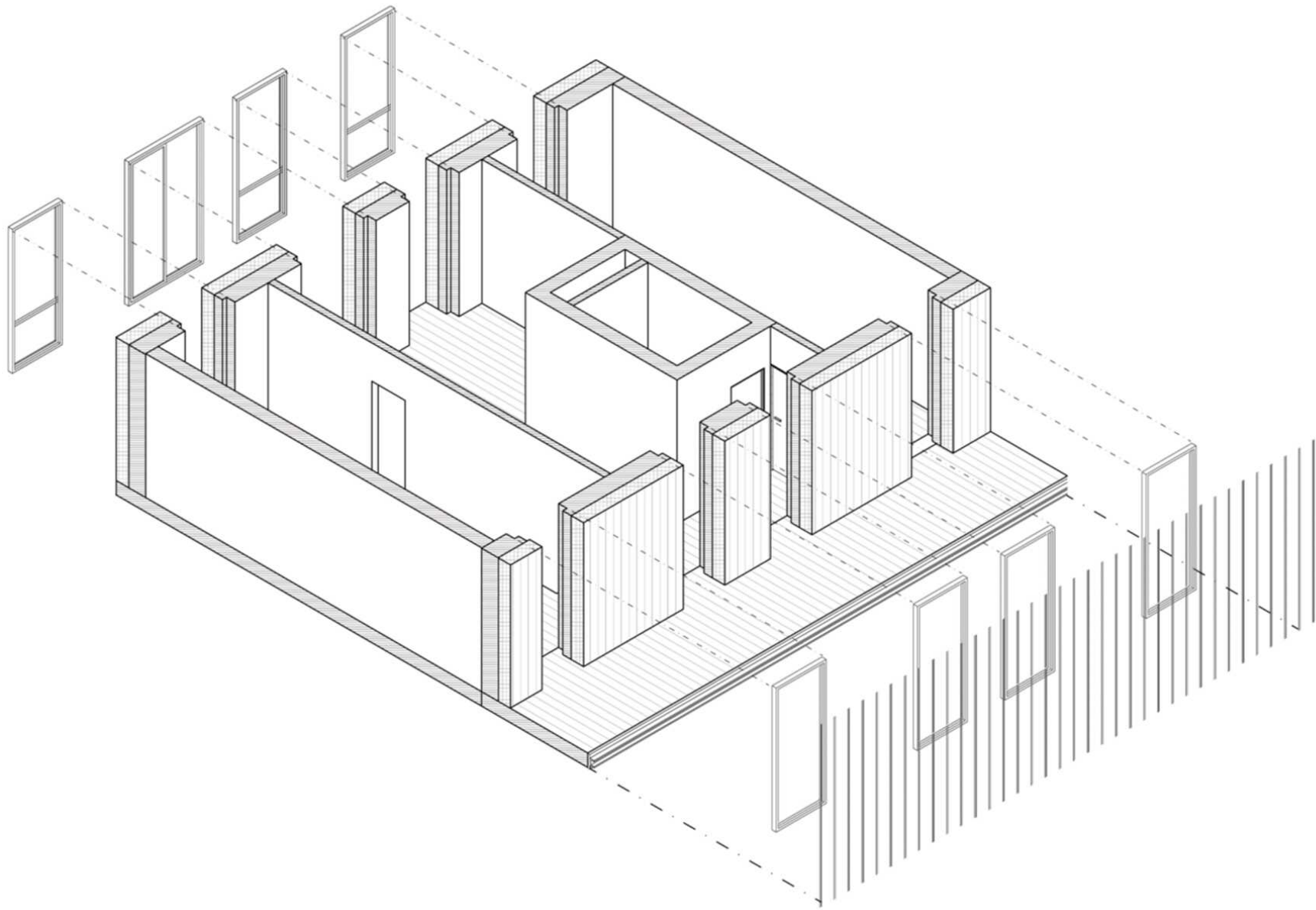
- 1. manifolds
- 2. radiant slabs

hydraulic services heating system
technologies

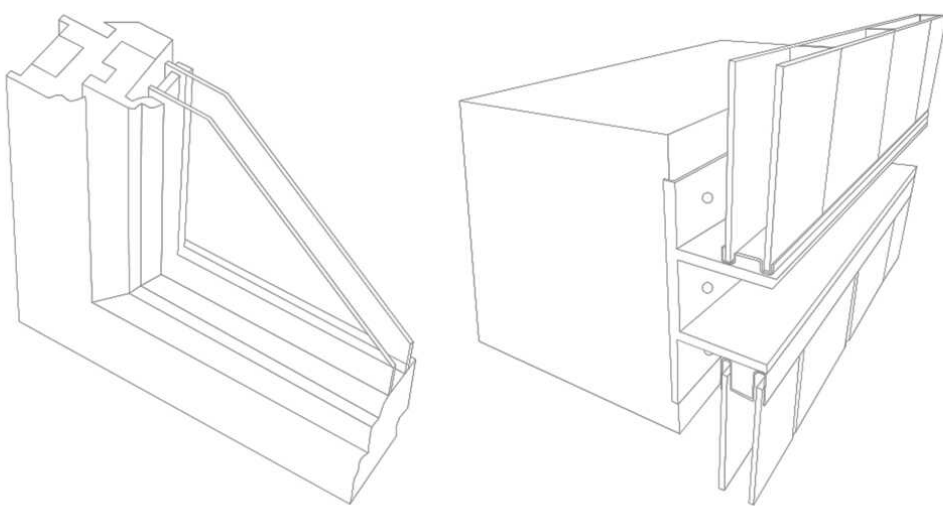


structure U-value, W/(m ² K)	
wall	0.07-0.1
floor	0.08-0.1
roof	0.06-0.09
window	0.7-0.9
fixed window	0.6-0.8
door	0.4-0.7

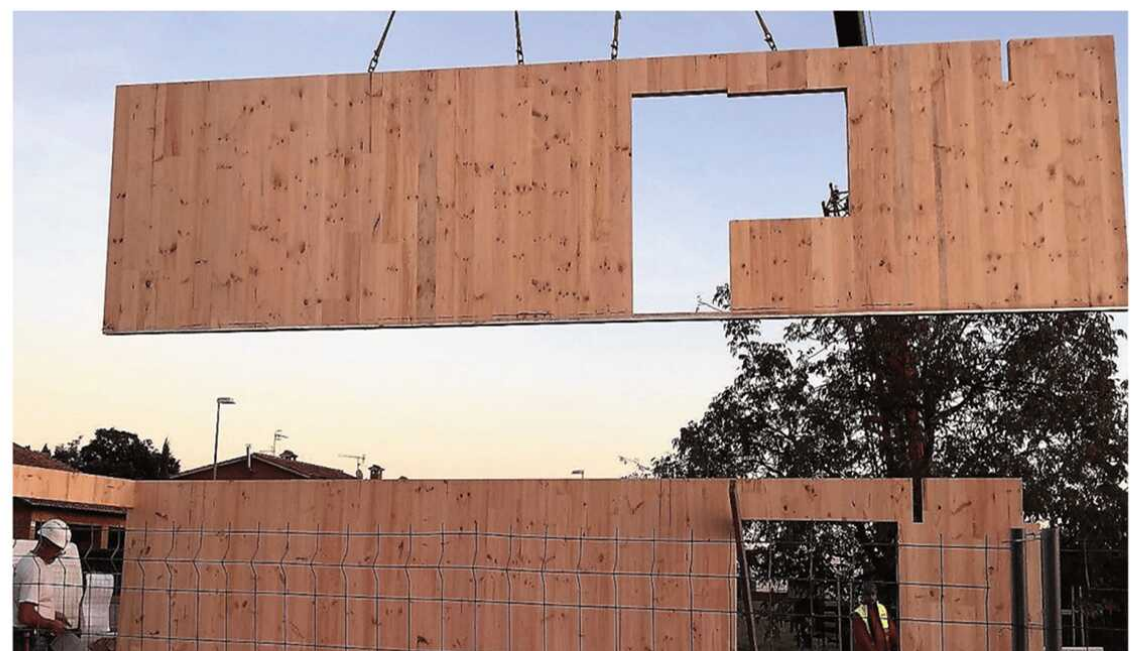
corss-section of the building envelope shows the U-value technologies



structure components
technologies

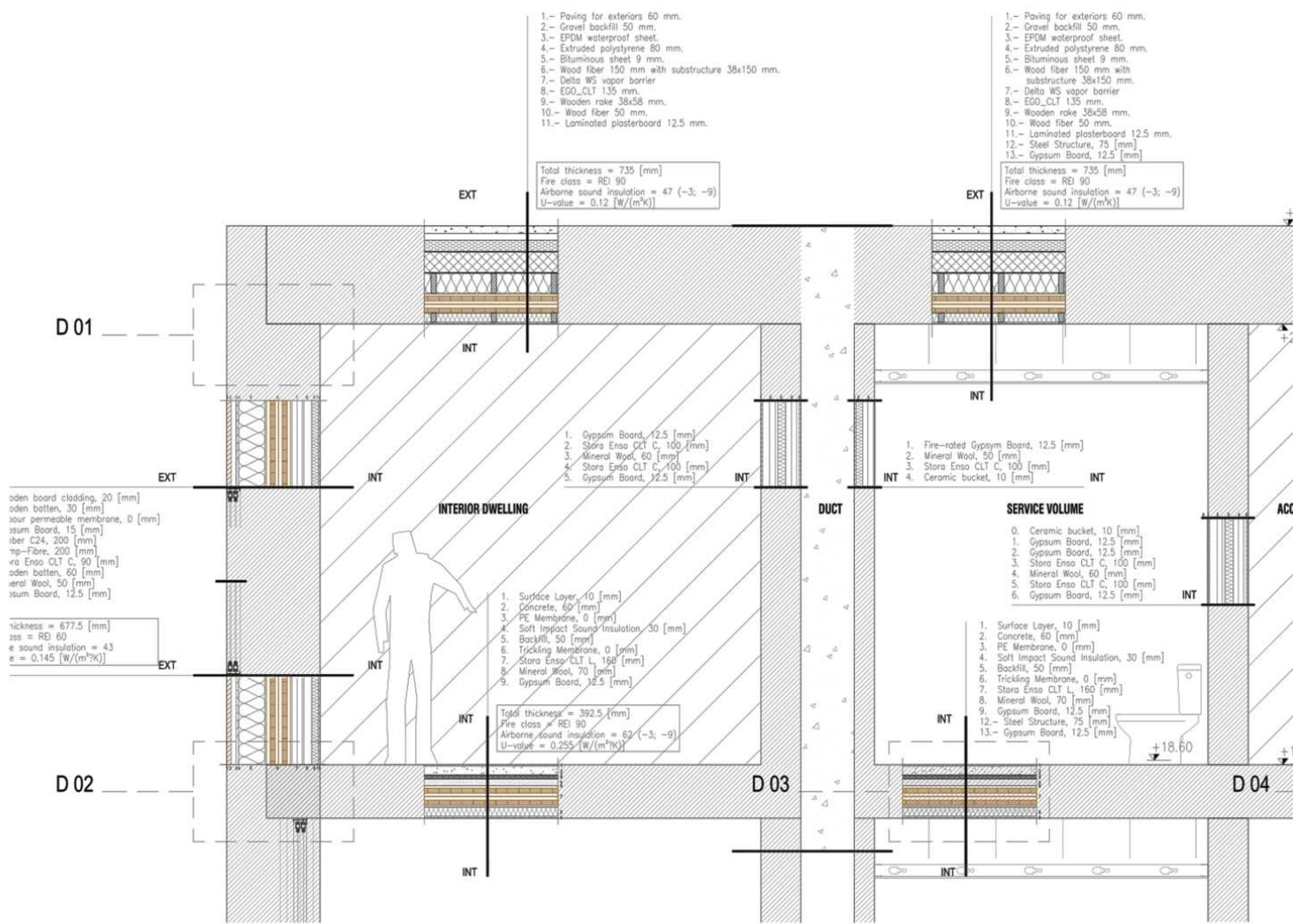


U-glass facade (detail)
technologies

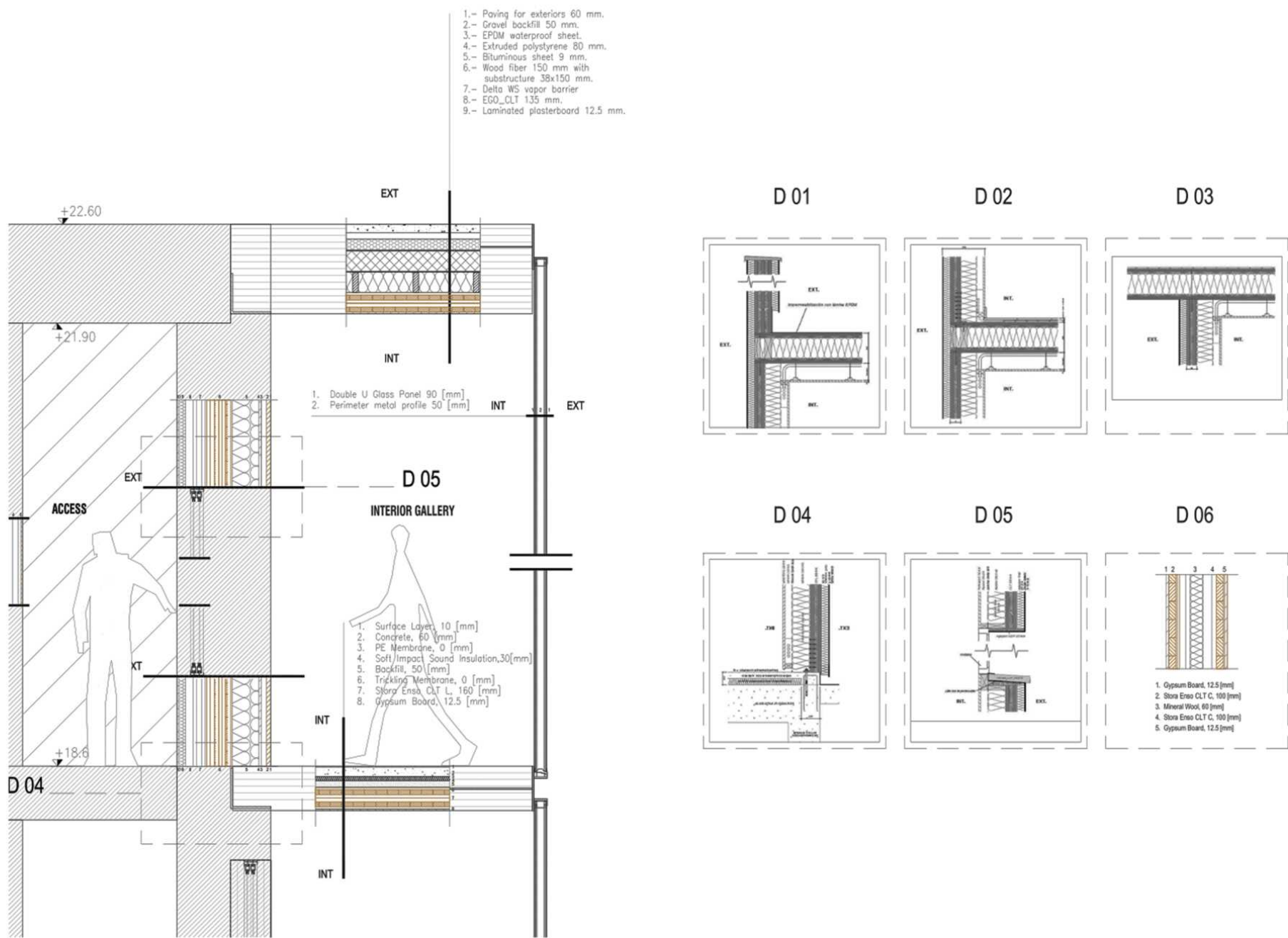


timber, CLT system
technologies

technologies

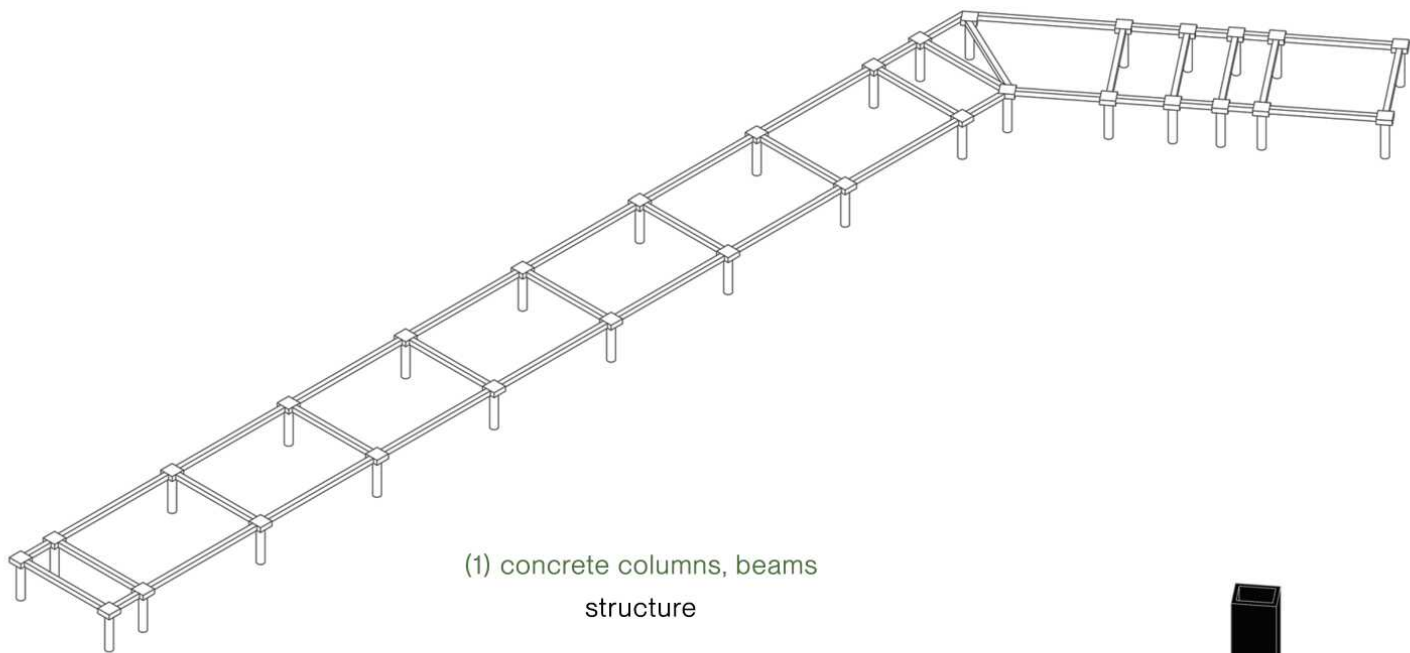


timber, CLT system technologies

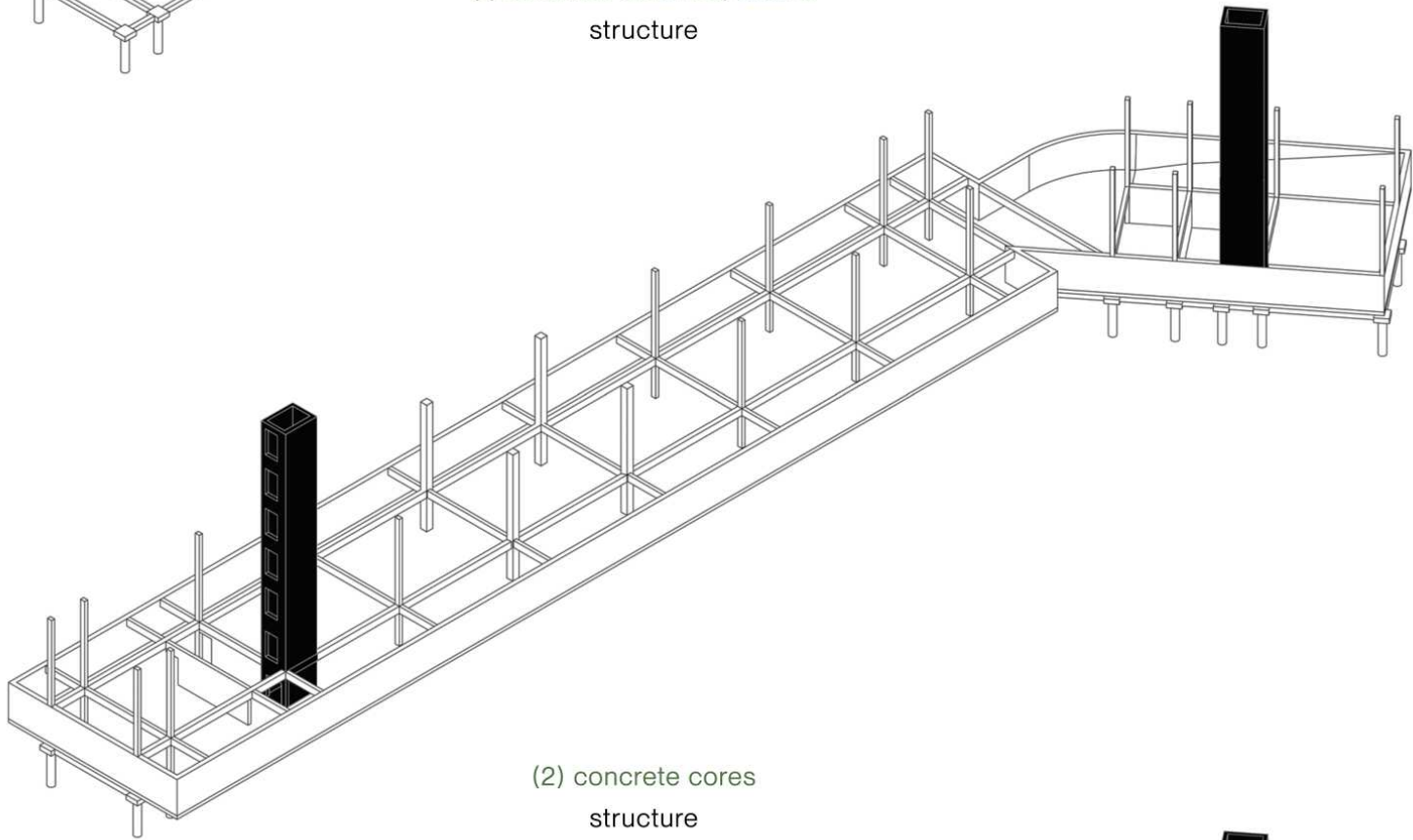


timber, CLT system (details) technologies

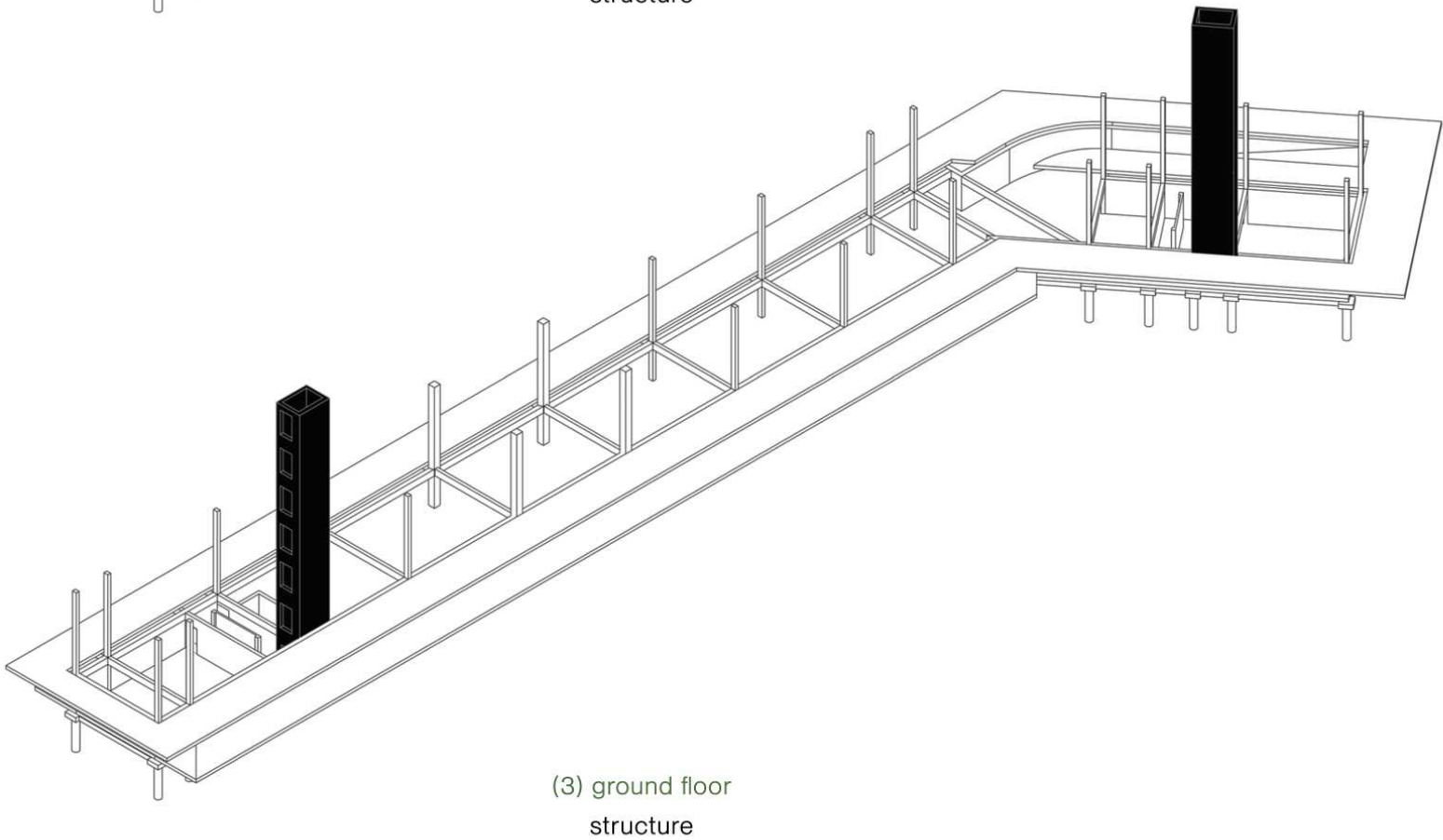
structure



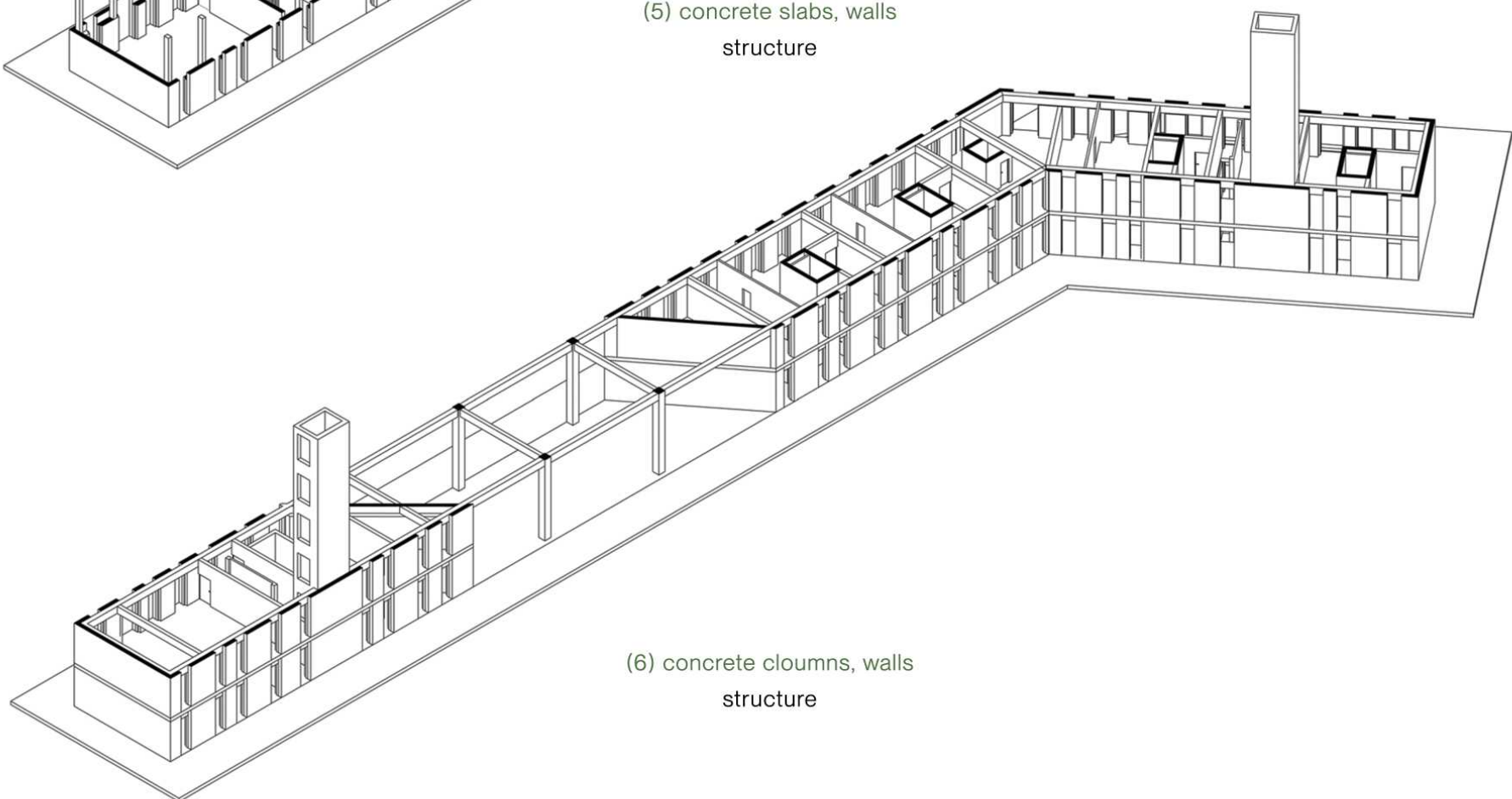
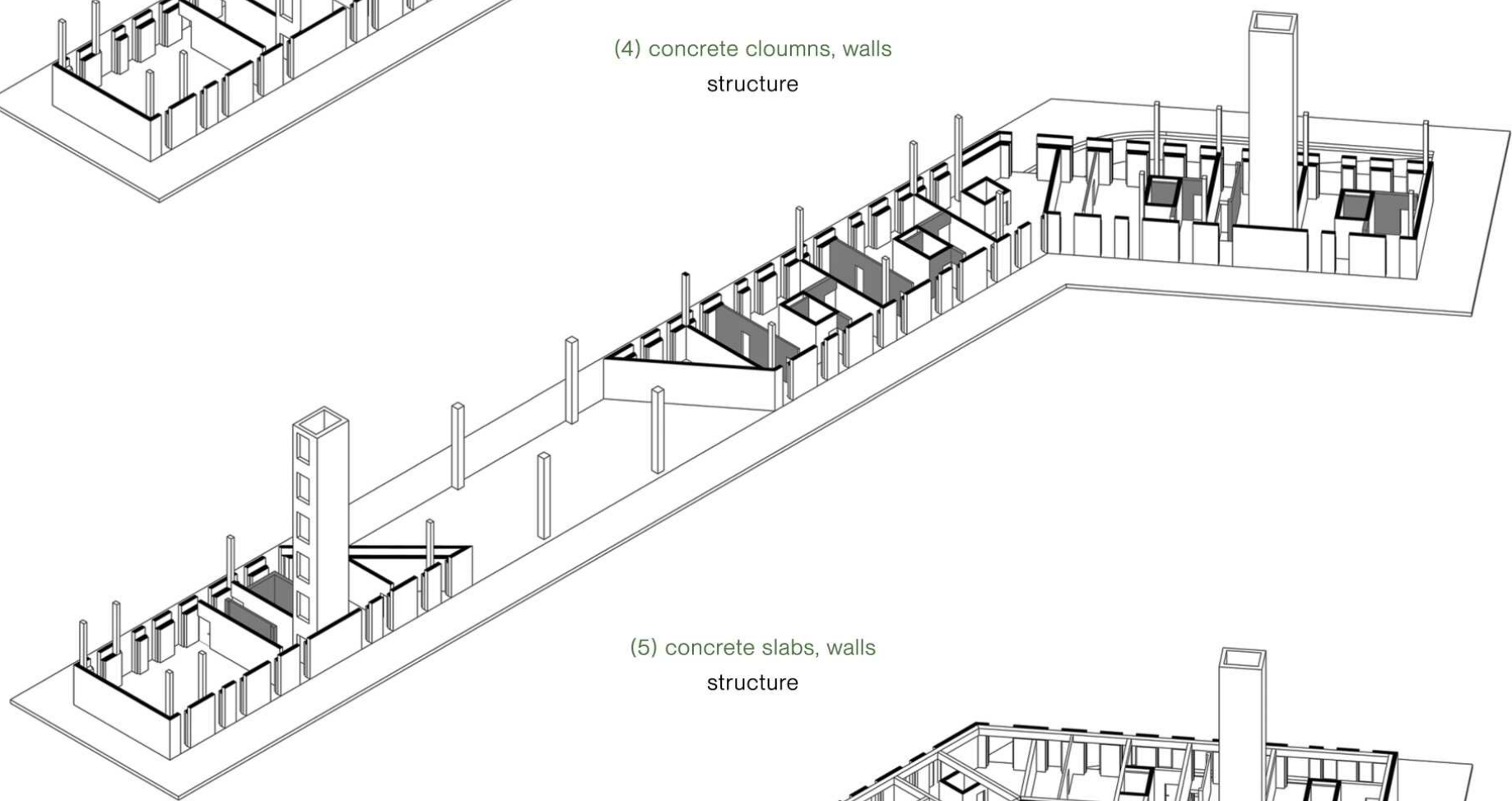
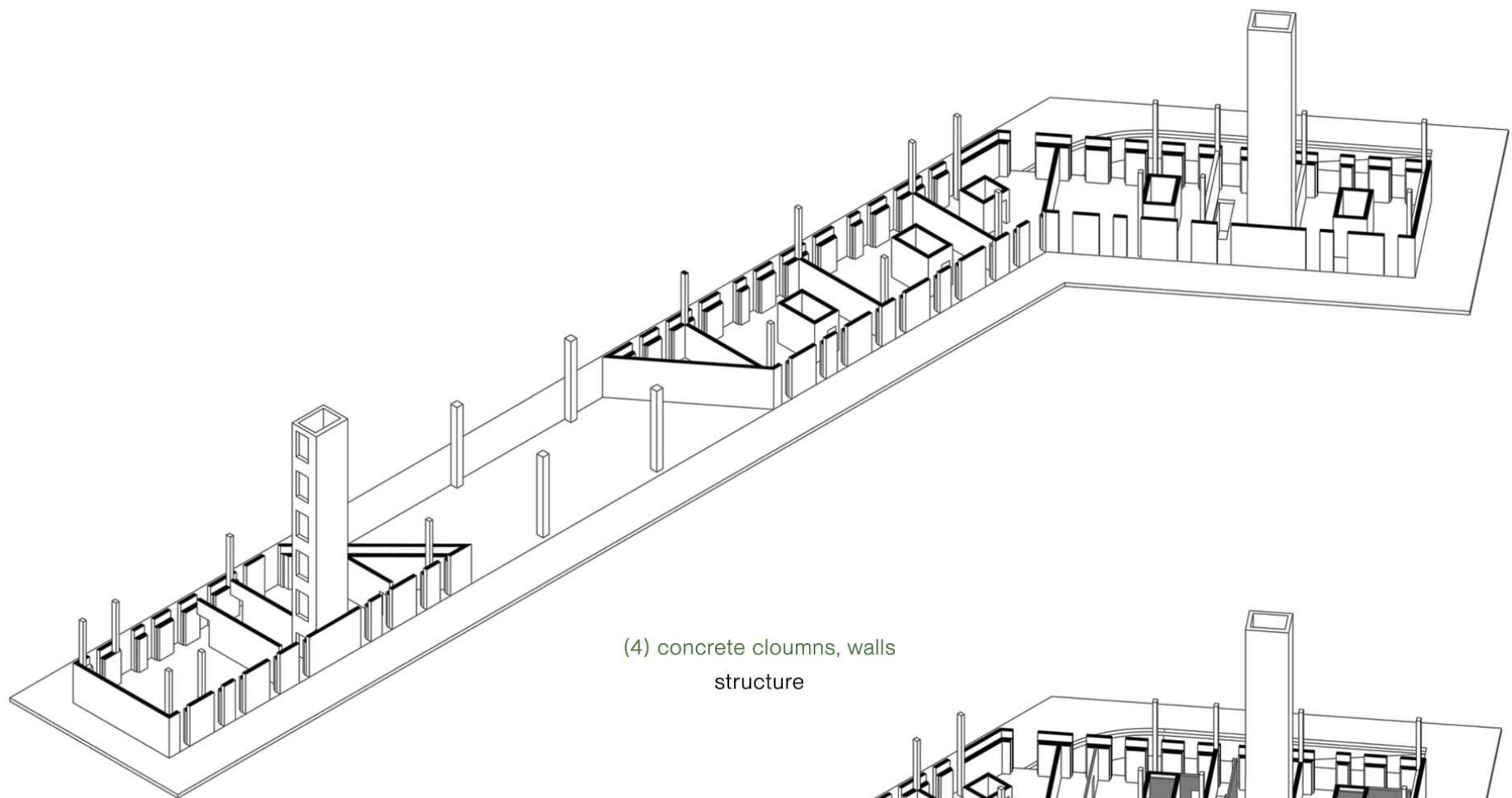
(1) concrete columns, beams
structure

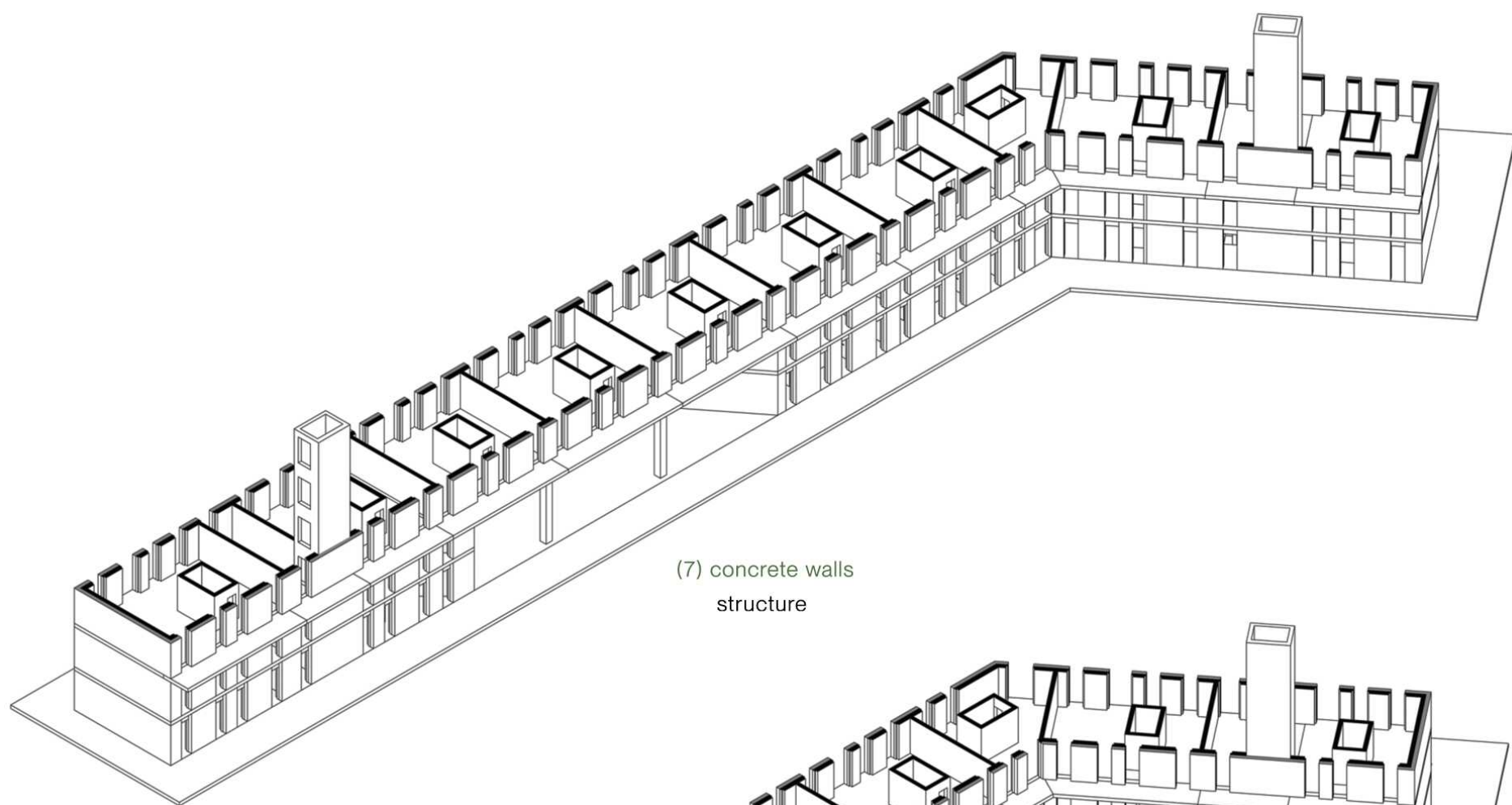


(2) concrete cores
structure

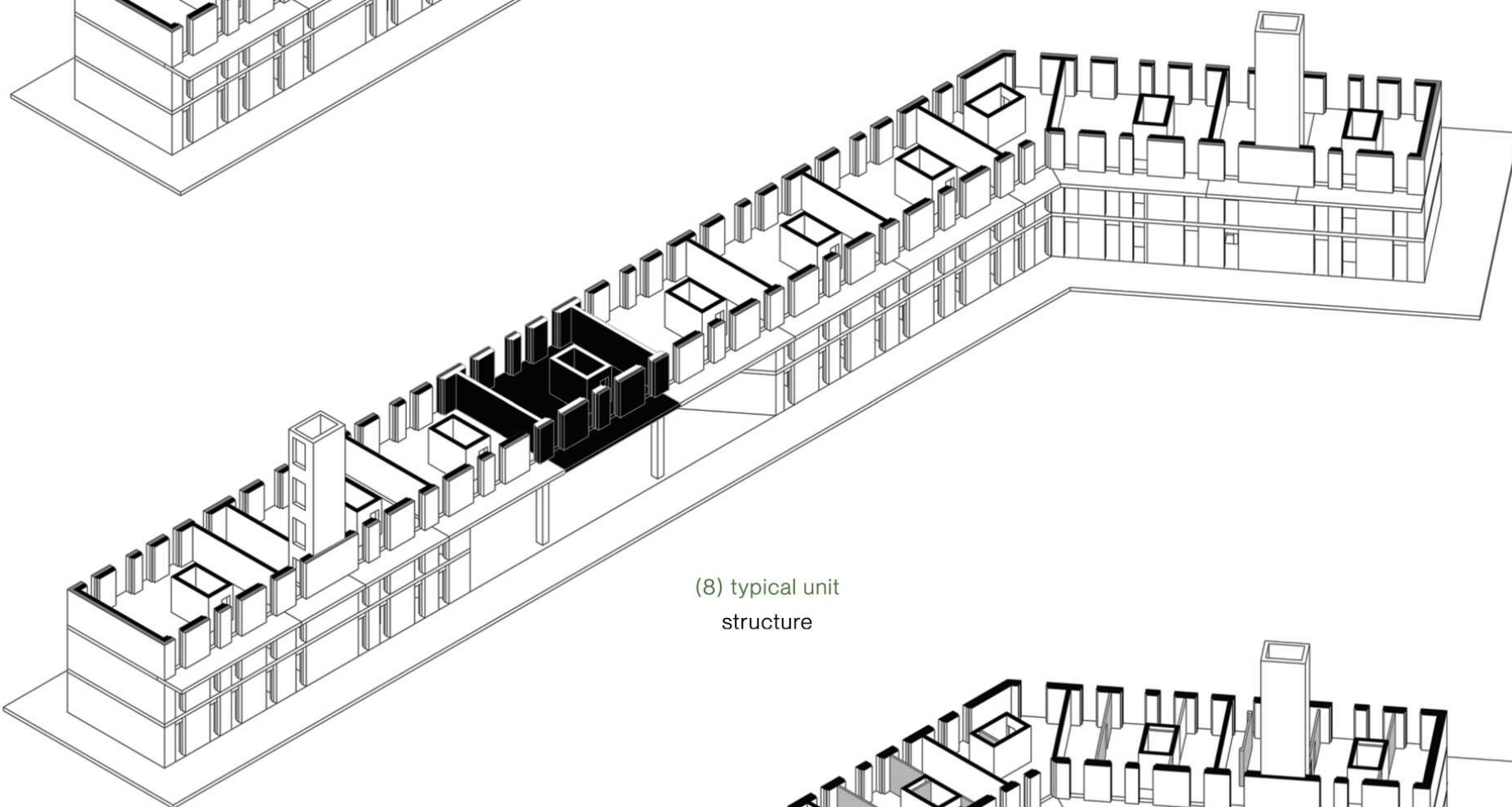


(3) ground floor
structure

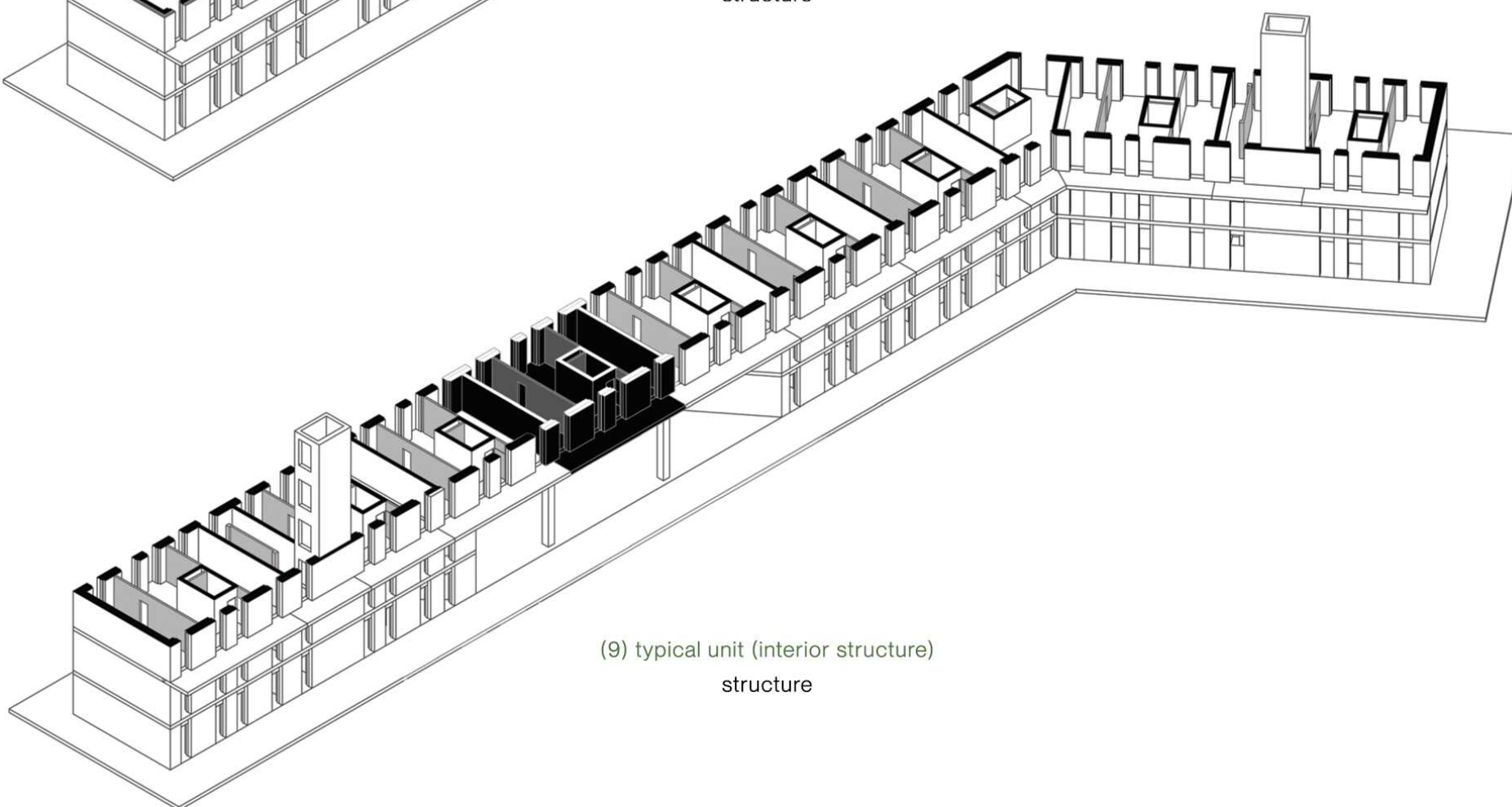




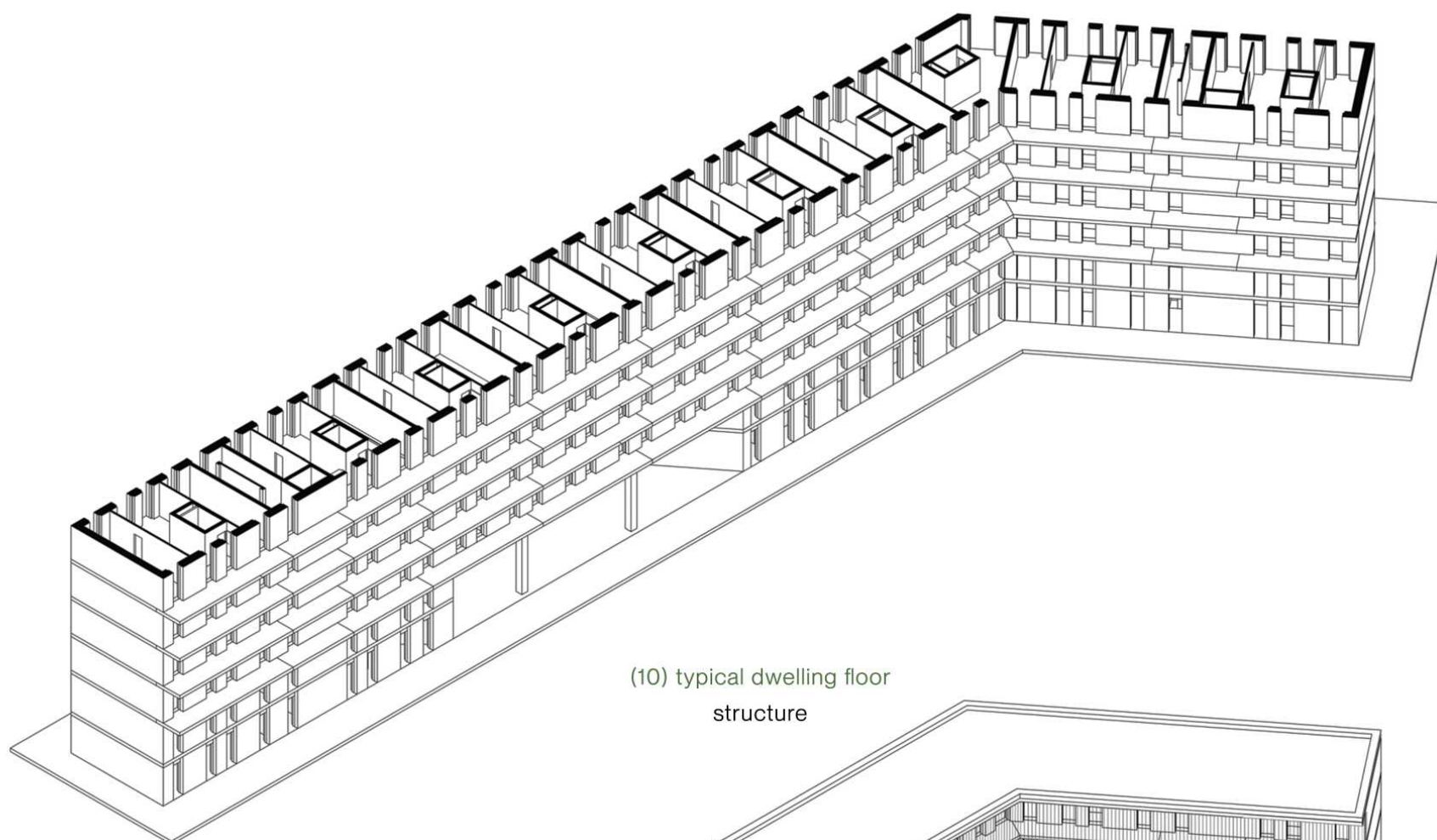
(7) concrete walls
structure



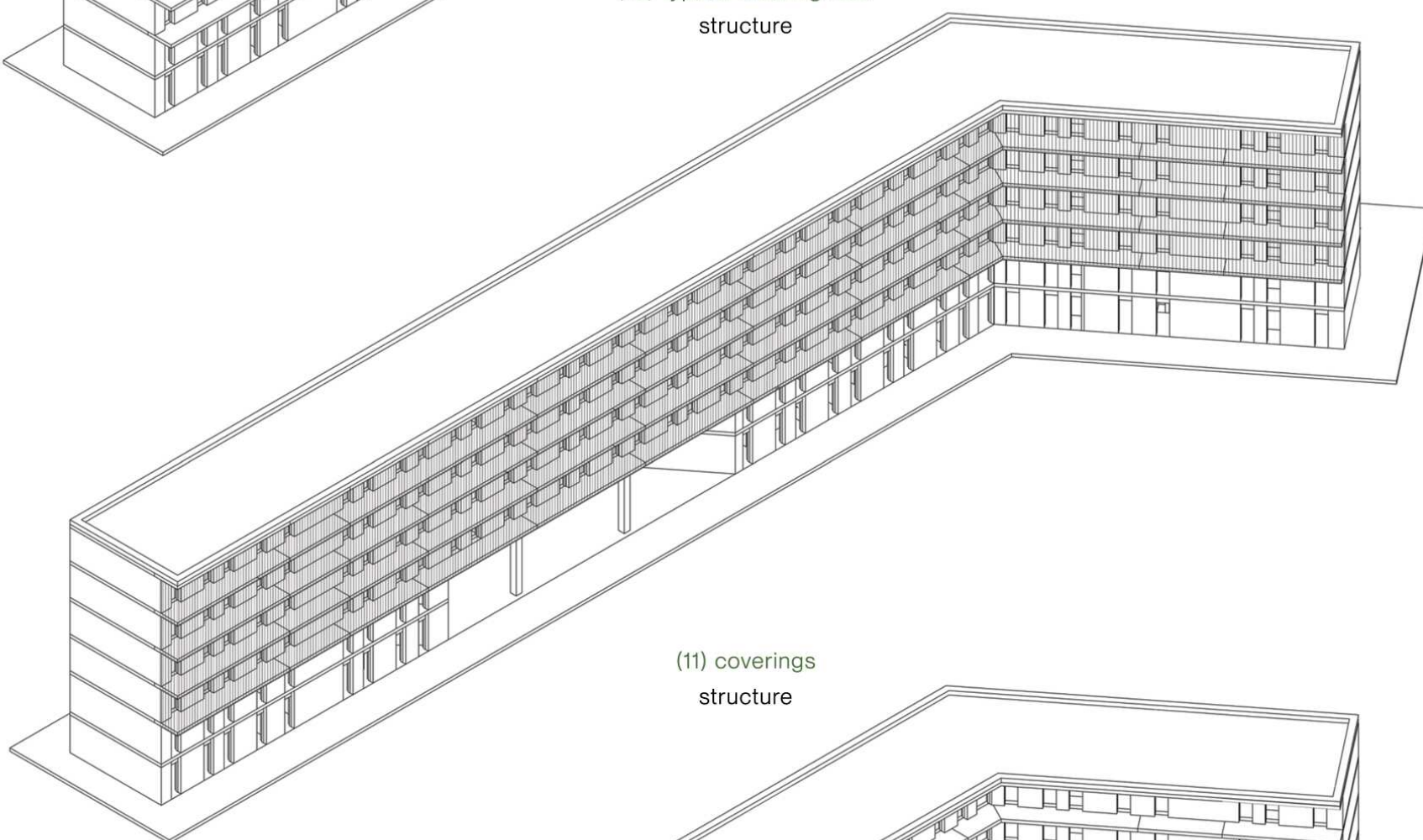
(8) typical unit
structure



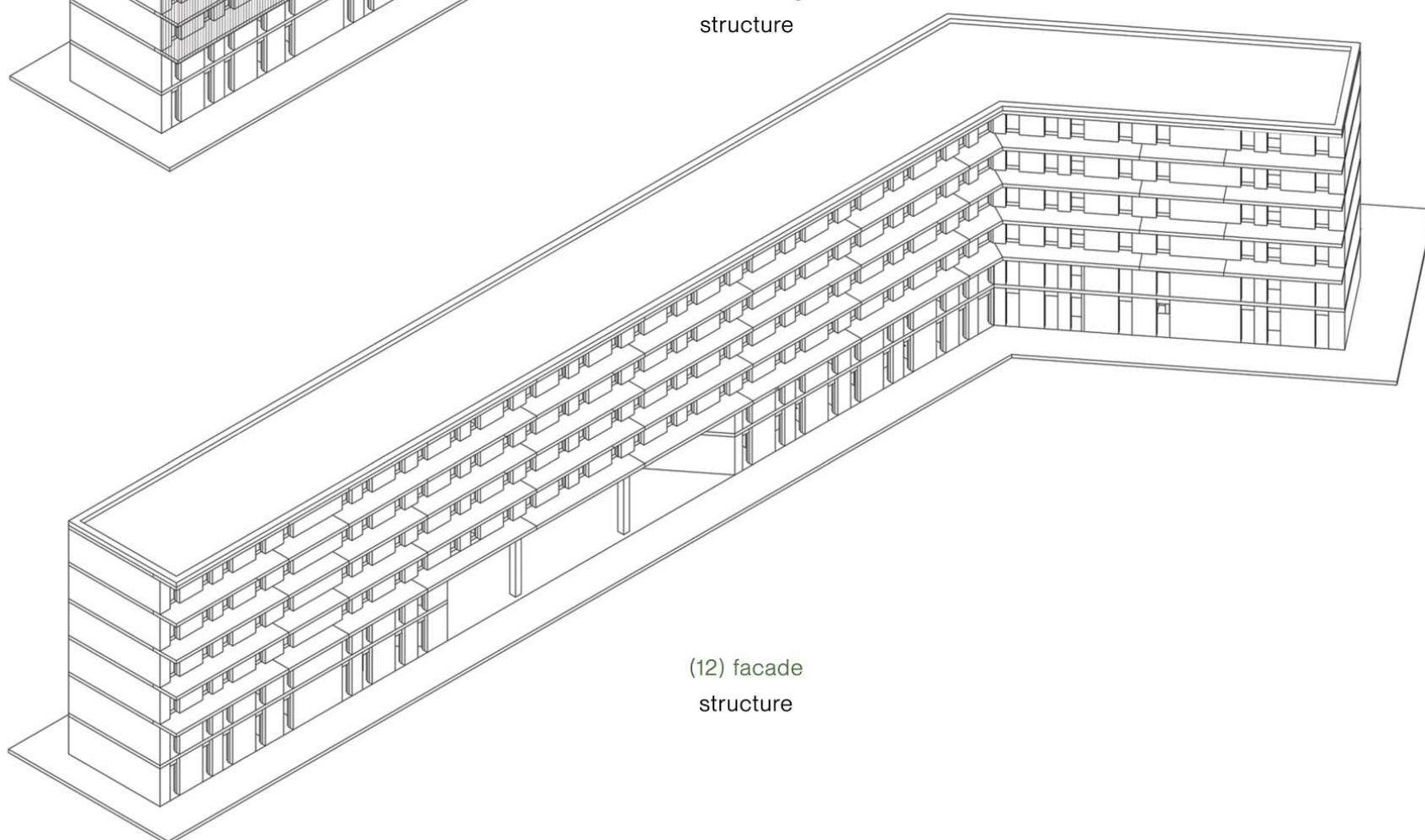
(9) typical unit (interior structure)
structure



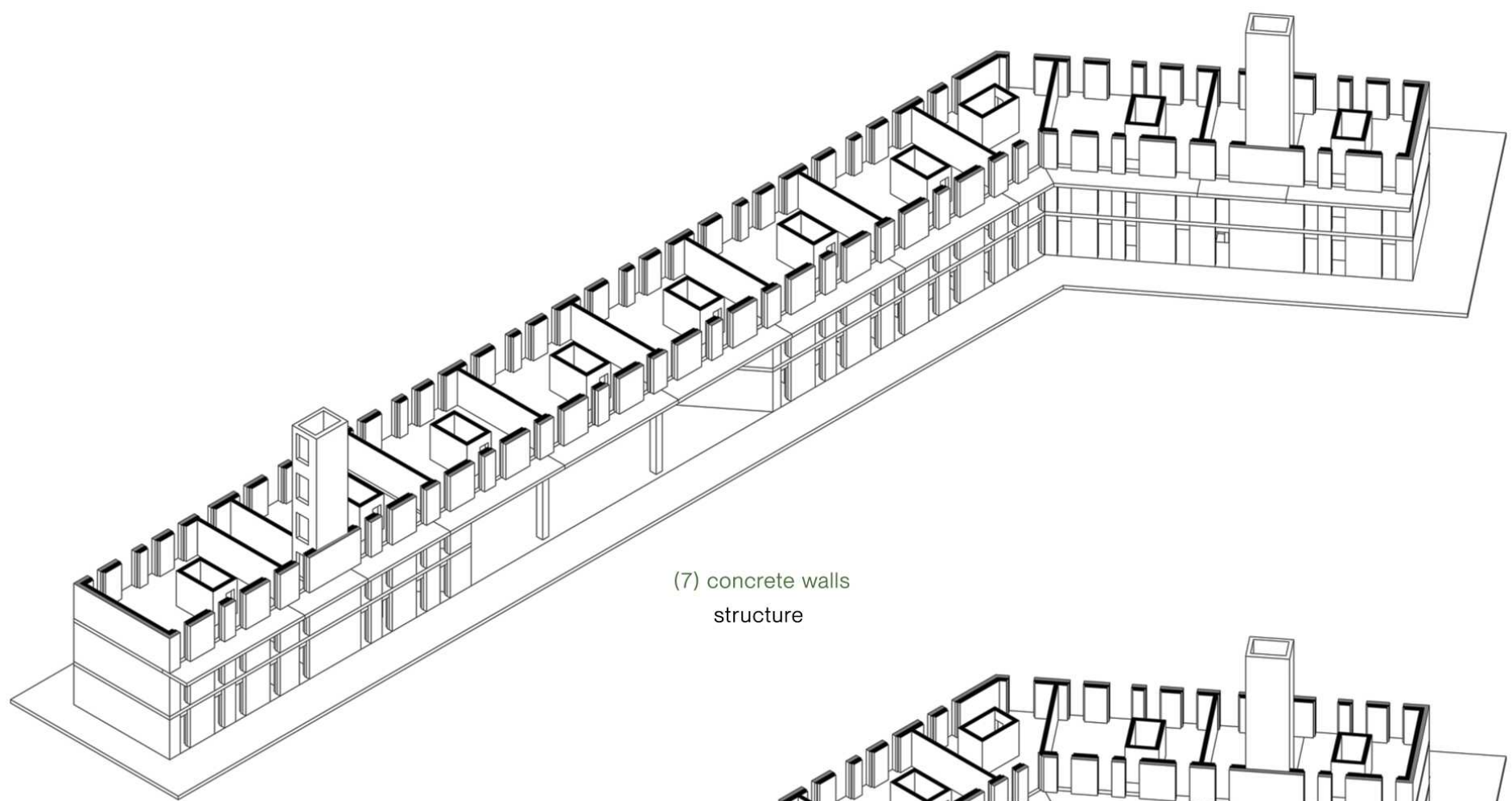
(10) typical dwelling floor
structure



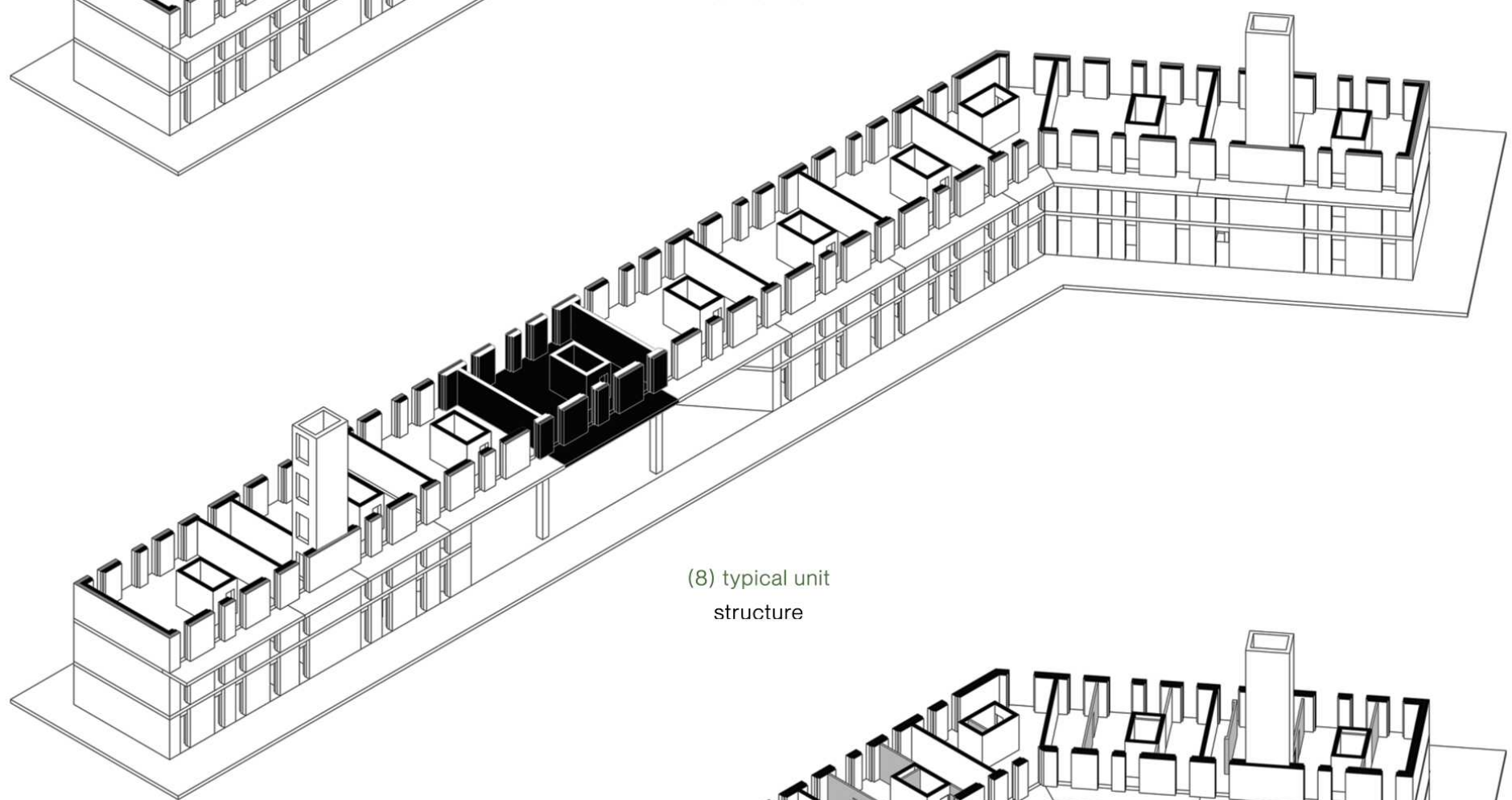
(11) coverings
structure



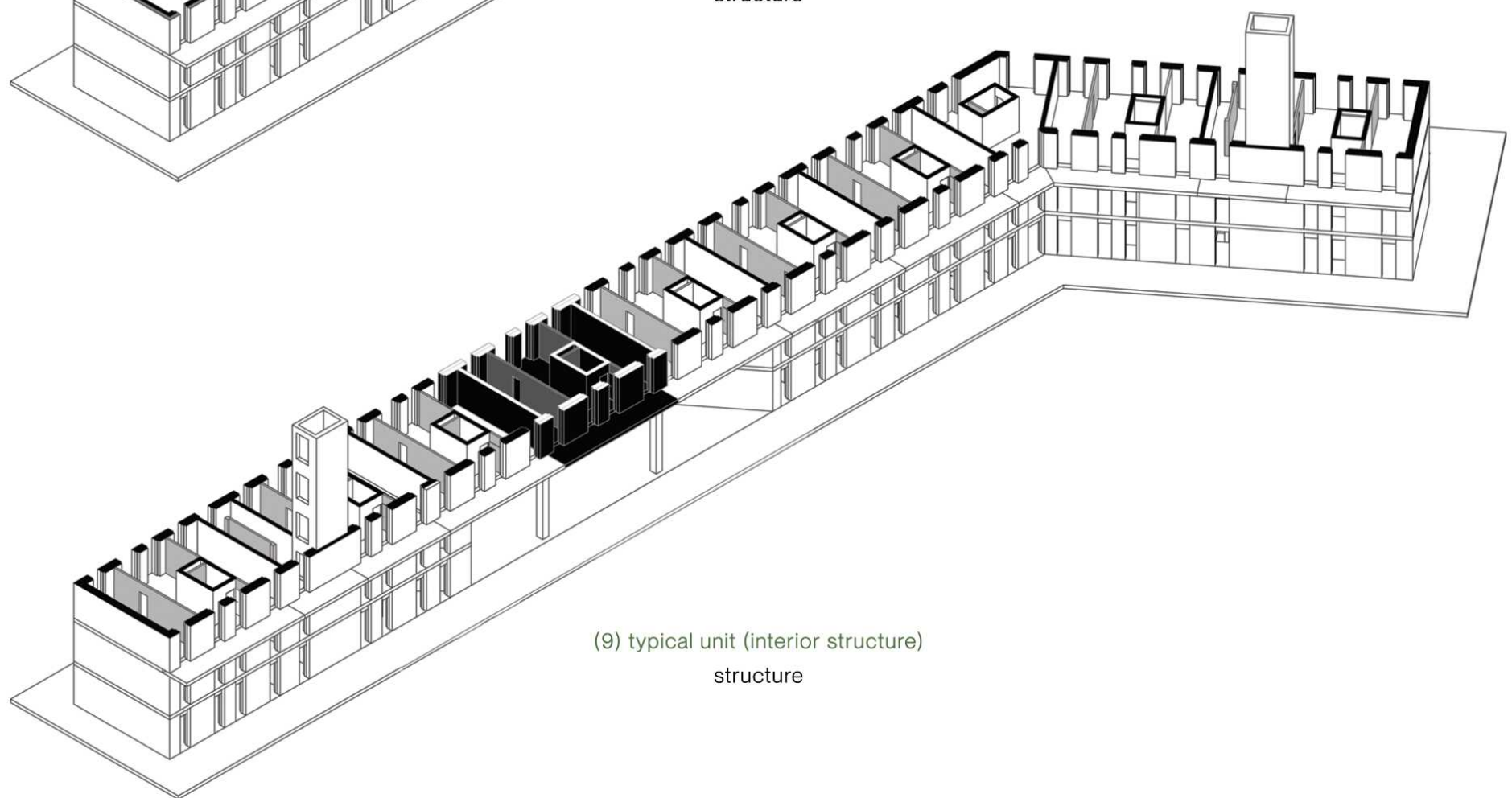
(12) facade
structure



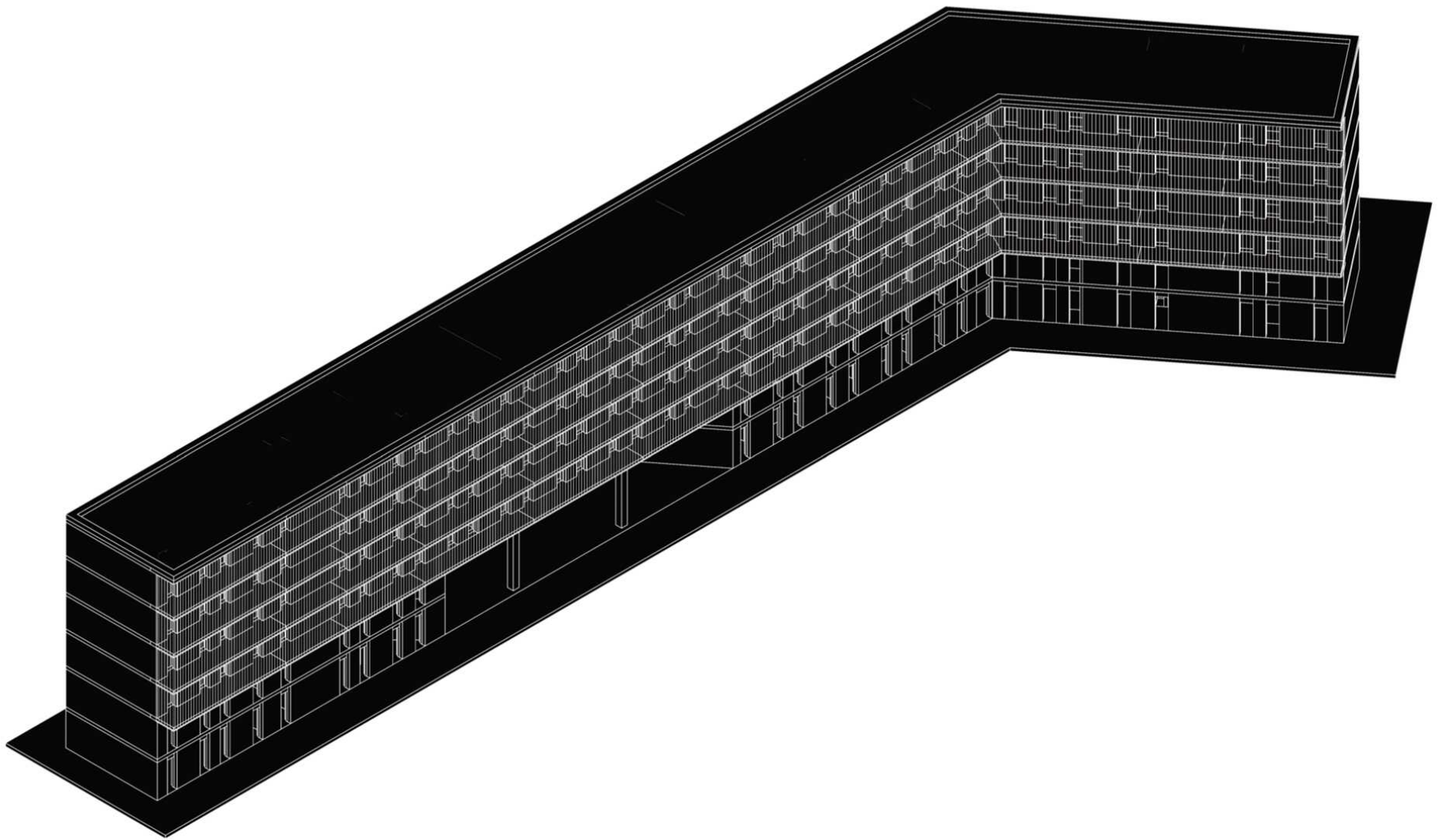
(7) concrete walls
structure



(8) typical unit
structure



(9) typical unit (interior structure)
structure



(13) etapability
technologies



exterior shot
materiality

S04

housing projects

leader

Fernando Altozan



title

Thesis, antithesis,
synthesis



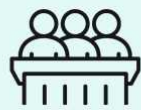
6 days



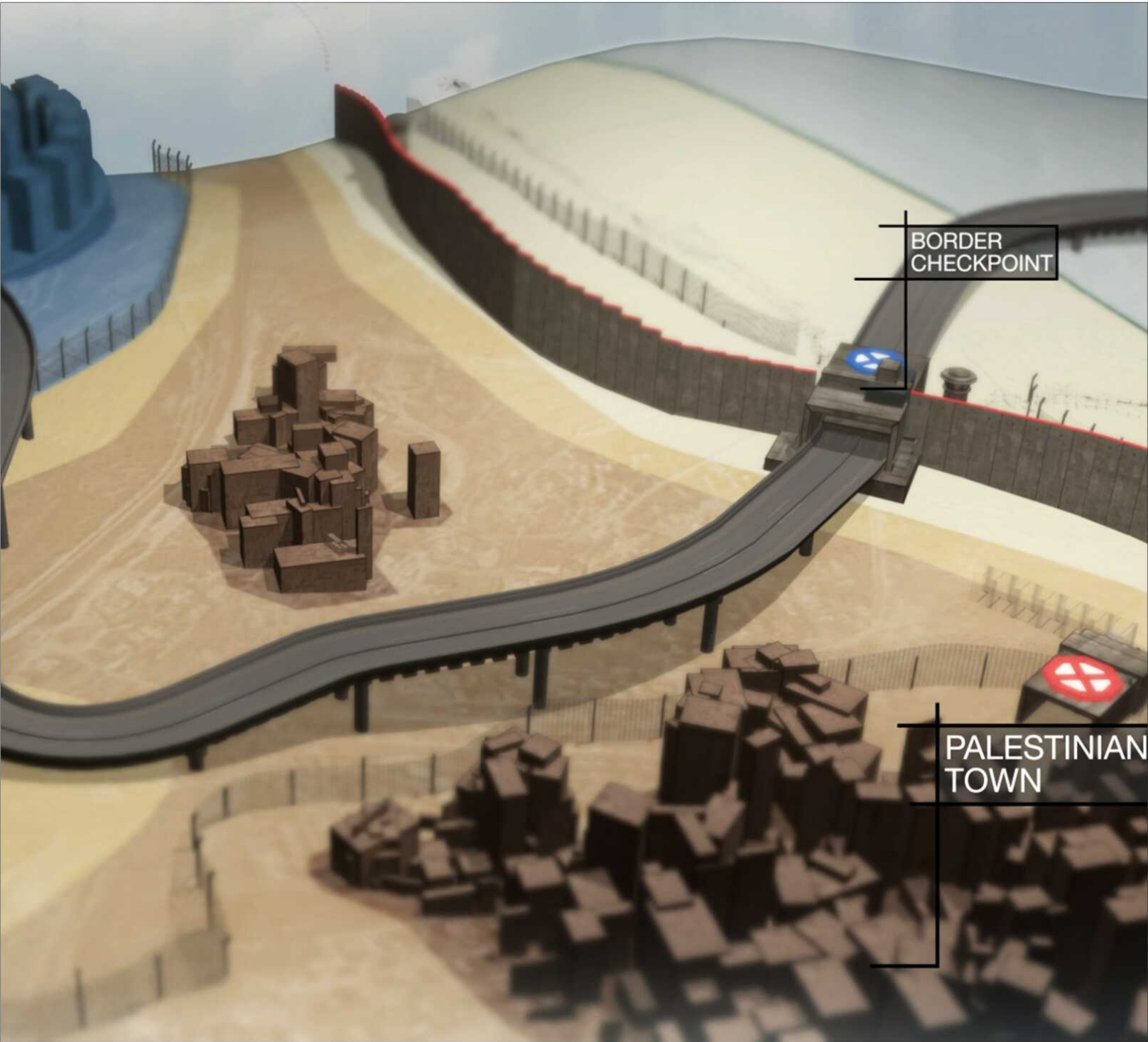
Jerusalem,
Palestine



individual



Javier Arpa
Miriam García
Enrique Arenas
Juan Herreros
Vasa Perovic
Patrick Gmür
Patrick Gmür



structure

study the experience of several classic cases in the history of housing, explained by some of today's greatest architects. There will be special emphasis on the architect's role and the necessary tools to solve common problems in the residential building process. The debate will define the integrated strategies when facing this kind of projects.

housing projects: the architecture of occupation and limitation

essay

“

Architecture and the built environment are a kind of slow violence. The occupation is an environment that slowly was conceived to strangle Palestinian communities, villages, and towns, to create an environment that would be unlivable for the people there.

EYAL WEIZMAN

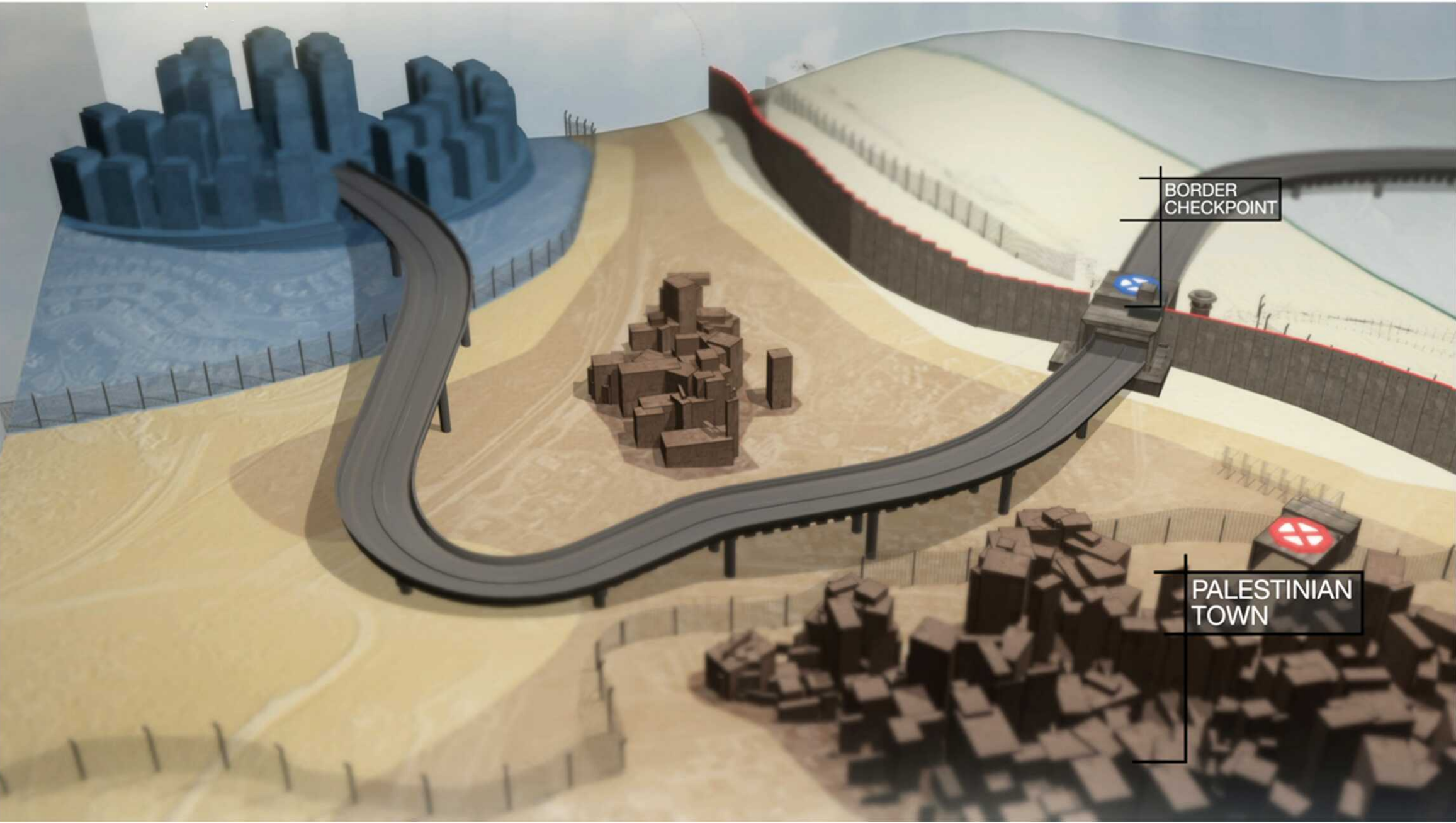
Architecture is not apolitical. To be precise it is not the result of politics, but its medium. And in the case of Israeli occupation of the Palestinian land – a medium used by the Israeli government to enforce its interests. I am going to outline how decisive a role architecture plays in Israel and the Palestinian territories in acts of repression, military decisions, and security policy. through the military strategy of Ariel Sharon, the construction of checkpoints, to the architecture of Jewish settlements?. Through architecture, an ideology becomes a reality. And this reality facilitates land settlement and expropriation. "The destruction of Palestinian refugee camps and cities and the building of settlements are complementary implementations of politics in a spatial context".

Keywords: city • occupation • limitation • urban planning city

essay and discussion: the architecture of occupation and limitation



An attempt to simulate the ancient architectural character of the city of Jerusalem, Jerusalem



high way connected to only settlement neighbourhood, where other neighbourhood cannot reach



settlement field of view, instrument to separate from other neighborhoods



tower with hidden cameras and soldiers
separation wall, divided the neighbourhood

photo from my trip 2019

essay: content

essay

housing projects: the architecture of occupation and limitation

read (*text in english*):

issuu.com/mirun/docs/occupation_architecture

S05

city science

leader

Alejandro de Miguel



title

Present & Future Cities



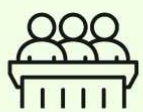
5 days



Madrid, Spain



individual



Daniel Sarasa
Gustavo Romanillos
Andrés Monzón
Iria López
Óscar García
Rafael Borge



structure

write an essay to understand:

1. Present & Future Cities / ICT Module Coordination and Innovation in Cities.
2. Energy in Cities.
3. Transport & Mobility in Cities.
4. Sustainability in Cities.

city science: Importance of IoT in building a smart city?

essay

Cities are regarded as the mainstay of the country's economy and sustainability. To make a city 'smart', we need to build upon the strategies which could alleviate city's current issues and avert future problems which are driven by the urban society and its rapid expansion. Urban cities occupy 2 % of the earth's total area and still with responsibility of 70 % of the global energy consumption and emission of greenhouse gases (UN urbanization report, 2011). Where in the city you have big challenges of fulfilling the essential needs of food, water, shelter, providing necessary public services like utility, security, and mobility and importantly managing scarce resources. The Internet of Things (IoT) provides those critical tools which helps to address these topics and lay down the foundation for next generation smart cities.

Keywords: Smart city • Internet of things (IoT) • Sustainability • Future city

essay: Importance of IoT in building a smart city?

history

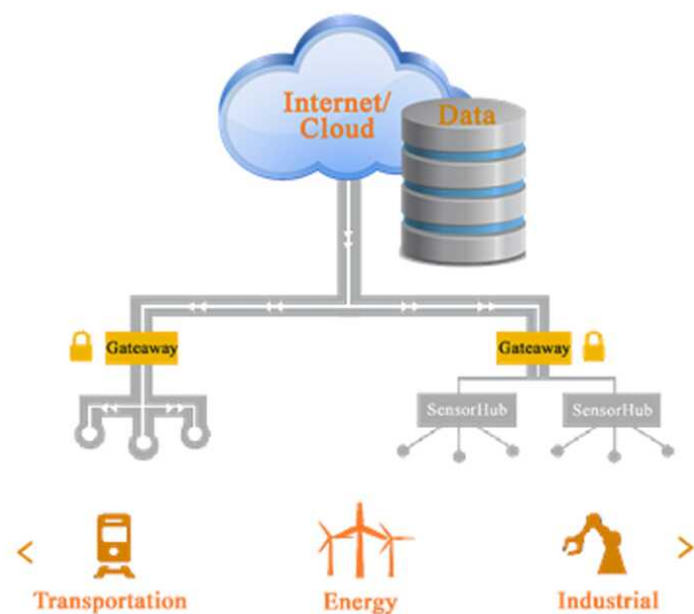
the term “Internet of Things” was first introduced in 1999 by British businessman Kevin Ashton, one of the founders of the Auto-ID Center of MIT University, and he was part of the team that helped develop RFID technology (RFID), which depends on the presence of a device containing a silicon chip and an antenna, so that it can receive and send data from any “thing”, whether it is a human, animal, or machine. There are two main factors that contributed to the development of the Internet of Things:

- First: the changes that sensors experienced during the last decade has reduced their sizes to the extent that they can be placed inside watches and clothes.

- Second: the development of wireless communications so that these devices can send the data they have collected to specialized processing programs for analysis and send the result in real time to the concerned parties, whether they are humans or other devices.

definition

IoT refers to a system of interrelated, internet-connected bodies that can collect and transfer data over a wireless network without human intervention. things can be remotely monitored and controlled, such as computing devices, mechanical and digital machines, objects, animals, or people. The IoT includes only smart sensors and other devices. A smart city is another powerful application of IoT generating curiosity among the world’s population. Smart surveillance, automated transportation, smarter energy management systems, water distribution, urban security, and environmental monitoring all are examples of internet of things applications for smart cities. IoT will solve major problems faced by the people living in cities like pollution, traffic congestion and shortage of energy supplies, etc. Products like cellular communication enabled Smart Belly trash will send alerts to municipal services when a bin needs to be emptied. (Figure below) shows a smart city with the internet of things concept.



the importance of IOF

from my opinion the importance of this technology lies in the fact that it has four main advantages:

1. communication without human intervention

These “things/devices” can communicate and understand with each other without the need for human intervention, by using machine to machine communication technology to transfer data.

for example, some energy companies use smart meters that can collect data on the energy consumed by a customer and prepare bills automatically, without the need to send an employee to read the meters, ensuring the accuracy and speed of the process.

2. take advantage of artificial intelligence techniques

These “things” can use AI and deep learning tools to improve their performance. The British company Farnell, which specializes in design and repair services for electronic systems, published the results of a survey it conducted, indicating that. The artificial intelligence techniques are used in nearly half of IoT applications (49%), where applications using machine learning ranked the first in terms of use (28%), followed by cloud-based artificial intelligence applications (19%). The study indicated that despite the continued integration of smart devices - such as Amazon Echo devices and Google Home devices - into daily life - which indicates an increasing Consumers Dependence on the Internet of Things – 2019 saw a slight shift in focus to industrial automation and smart cities, as more industrial facilities shift to fully or semi-automated automation, and increased investment in predictive maintenance technologies to reduce production downtime.

3. freedom from spatial constraints

As we mentioned in the previous example, and as we will mention in the following examples: A person can control, manage, and monitor many things from a distance, without having to be in the same place which can deliver results on a large scale, quickly, of quality and accuracy, and at costs unimaginable just a decade ago. it means of delivering quality goods and services in health care, education, finance, commerce, administration, and agriculture, among other areas. They can help reduce poverty and hunger, boost health, create new jobs, mitigate climate change, improve energy efficiency, and make cities and communities sustainable.

4. maintaining the security and comfort of citizens

There are also many applications of technology in smart cities that aim to maintain the security and comfort of citizens, and here are some examples of that: In New York City, there are sensors that can detect if a shooting has occurred and locate it within 1 square meter. In Copenhagen, road sensors can detect cyclists approaching a traffic light and turn the signal green. In Hong Kong there are 47 buildings connected to create an artistic display of lights and music every night.

The above examples are just a small part of the applications of technology, IoT, and AI in smart cities. Of course, the future will witness many, many other ideas, and some of the science fiction films that we see now will only become a reality we live in.

components and features of smart city

Through the various data collected by the Internet of Things, it is possible to increase transparency between the citizen and the government and to prosecute the government for any negligence towards the citizens, and improve citizens’ understanding of the city’s situation and the various developments in it, whether at the personal level or for the Community. Through these services, we can say that the Internet of Things for smart cities depends on the centralization of information, that is, the presence of a main center for exchanging information between the different and heterogeneous systems of the city. The interference of some governments of developed countries in the field of communication is considered one of the most important reasons for the development of the Internet of Things and pushing it into the affairs of the country's administration. These countries imagine that it is possible to manage state affairs, benefit from its resources, and increase the quality of service provided to citizens while reducing the cost of administrative operations through the smart city system based on the Internet of Things.

the quality of service provided to citizens while reducing the cost of administrative operations through the smart city system based on the Internet of Things.

The consequences: freshwater scarcity, pile of garbage, collapse of traffic and air pollution, Increasing the number of cars, increasing demand for government and municipal services, such as: renewing the identity card, a license to build a residential house, and Increasing demand for health services: The biggest witness here during the Covid-19 pandemic we find that the largest number of registered cases has been witnessed in cities due to the large population overcrowding. How can we cope with these challenges? One key is the Smart City - the networked and intelligent city. It stands for better quality of life and lower consumption of resources. In my opinion there is six components of the smart city and their impact in the IoT era:

1. Smart Infrastructure

Urban infrastructures and buildings must be planned more efficiently and sustainably. Smart Infrastructures consist of several operators from different domains of activity, such as energy, public transport, public safety, and health services. Smart cities use intelligent technologies to achieve an energy-efficient and environmentally friendly infrastructure. CO2 emissions should be kept as low as possible for example spending in electric cars, buses, or self-propelled vehicles. Smart lighting should only give light when someone walks past them like setting brightness levels and chasing daily use to reduce the need of electrical power.

2. Smart Homes

switch on air conditioning before reaching home, turn your watching machine on/off by remote control, switch off lights even after you have left home or unlock the doors to friends for temporary access even when you are not at home.

3. Smart Parking

Smart parking services that provide a comprehensive journey for parking users starting from searching and finding vacant parking spaces and mobile payment. High-quality and scalable information services for indoor and outdoor car parks form the core of the full service with Intelligent parking solutions identify when a vehicle has left the parking area. Others use vehicle feedback to tell exactly where the openings are and nudge waiting cars towards the route of least defiance. Smart Parking is reality today and does not require difficult infrastructure and high investment making them ideal for a mid-size Smart City.

4. Smart Waste Management

Smart cities offer technological solutions to achieve a cleaner environment and reduce waste. Waste management solutions help to optimize the efficiency of waste collection and to reduce operational costs and better address the environmental issues associated with an inefficient waste collection. The waste container receives a level sensor; when a certain limit is reached, the management program of a truck driver receives a notification on the smartphone. The message appears to empty a full container, which avoids half empty gutters. For example, Songdo District in South Korea is working to reduce noise pollution by banning garbage trucks altogether. Instead, it has set up smart garbage collection stations in each building, where residents dispose of garbage bags divided into organic and combustible materials. These stations have sensors to detect when they are full. The garbage is then automatically sent through high pressure pipes directly to the recycling center.

5. Smart energy

Both residential and commercial buildings in smart cities are more efficient with less energy, and the energy used is analyzed and data collected. Smart grids are part of the development of a smart city, and smart streetlights are an easy entry point for many cities since LED lights save money and pay for themselves within a few years. In Copenhagen they are trying to become the first carbon-neutral smart city. uses heating and smart-grid integration to show how electricity and heat, energy-efficient buildings, and electric transport can be integrated into one energy integrated system.

6. Traffic Management

The whole city and will communicate with itself, where the streets can talk to you, and tell you the time it will take to reach work, and you may have a faster way in case you are late or in case Traffic accident happened, and thus smart traffic lights that will immediately give priority to ambulances and firefighters. Or perhaps in a world in which self-driving cars will spread, it will be an easier fate and perhaps we can consider this car also as part of the world of the Internet of Things.

Challenge for large smart cities is to optimize and control traffic. Traffic lights receive data from sensors installed in public transport and private cars. This allows the signal lights to be changed and timed to respond to traffic automatically, thus reducing road congestion.

conclusion

The Internet of Things is a technology that promises a lot in the future and our next-generation smart cities will be smarter than ever before, and the increasing demand for its services will improve the lives of individuals and raise the productivity of societies or institutions, as well as services in the field of transportation, logistics, security, utilities, health care manufacturing, fashion, restaurant, healthcare, education, and many other fields, also the future of IoT is more enthralling than this where billions of things will be talking to each other, and human intervention will become the least, because IoT will bring a large-scale shift in the way we live, move, interact, and work. Cities if they are small or large scale are networked and controlled via the central cloud platform. Finally, the size of a city is not an obstacle on the way to becoming "smart", because in each group can benefit from intelligent technologies.



photomontages





S06

sociology, economy & politics

leader

Daniel Sorando



title

Social change and housing



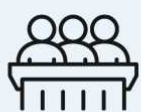
7 days



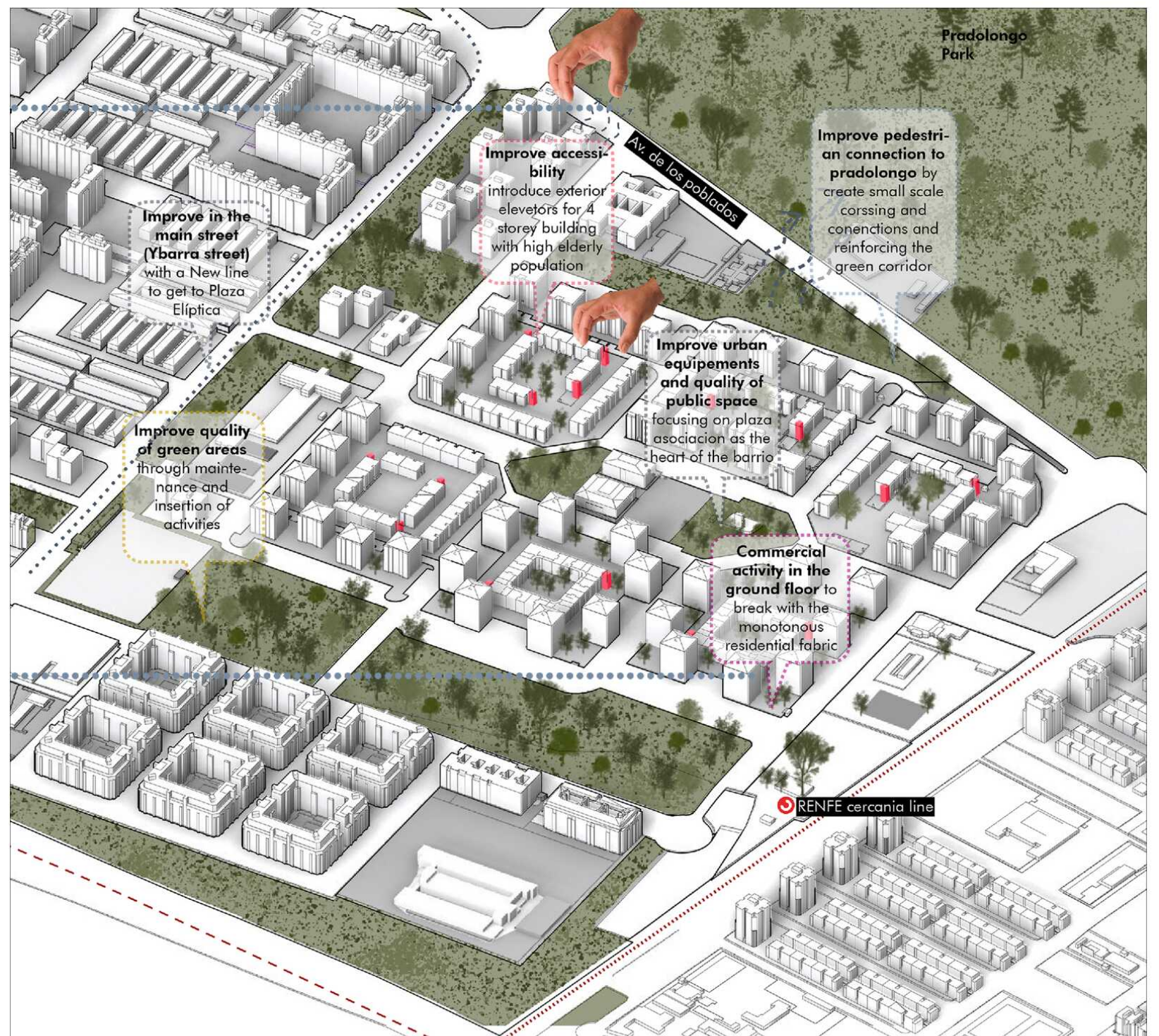
Orcasitas, Spain



Nouhaila Zergane
Andrea Pardo



Jesús Leal
Susanne Bauer
Gaia Redaelli
Javier Gil
Irene Lebrusán
Max Gigling



structure

1) Essay on social change and housing:

- A theoretical individual essay under this title: "THE POLITICS OF NEIGHBORHOOD PLANNING" on the impact which the different topics we will comment along the course have on housing.

2) Research Project:

- An analysis of the housing problems within a Orcasitas neighbourhood in Madrid and a vision about its possible interventions.

- Using: A statistical description of the neighbourhood. And Interviews with residents, neighbourhood associations and other stakeholders.

Sociology, economy and politics: Social change and Housing

to understand:

1. Sociology of Housing

- A sociological approach to Housing
- Determinant demographic contexts

2. Housing Economics

- Housing as an asset (financialization)
- Basic principles of Housing Economics

3. Socio-spatial Dynamics

- The (unequal) challenge of leaving home
- Segregation / Gentrification / Touristification

4. Housing Policies and Practices

- Housing Policy from a comparative perspective
- Alternatives to classical models of collective housing

Development neighborhood: Orcasitas, Usera district, Madrid

The origin of the neighborhood is found in settlements of immigration flows mainly the rural part of Spain. As the capital was not able to absorb that number of people, the lack of housing was a serious problem for the institutions of the time. This lack generated the rise of self-construction in the form of shanty towns, with crude typologies of a rural nature.

In the mid-sixties, a social movement germinated in the neighborhood that in the seventies took shape around the Orcasitas Neighbors Association. It is a key moment since the end of the Franco dictatorship is looming and the residents of Orcasitas constituted as an Association - given the multiple deficiencies of the neighborhood - demand improvements in living conditions and advances in the democratic process. From that moment on, Orcasitas, initially lacking the most basic services and urban infrastructures, little by little it was provided with them. The landowners, supported by the Ministry of Housing, tried, through a technocratic Partial Urban Planning Plan, to expel the resident population of Orcasitas. This was the origin of a broad citizen movement, led by the Orcasitas Neighbors Association, which will claim, and finally achieve, the right of the inhabitants of Orcasitas, to continue residing in their new houses built by the State and suitably equipped.

site information

Planning the neighbourhood for the neighborhood Four phases in the formation and consolidation of Orcasitas in their three original core. In the 1945 photograph it is observed how the first settlements already occupied the agricultural land of the Absorption Town and the Minimum Town, the future Orcasur polygon. In the second image, villages of social housing that were created provisionally in 1954 by the National Housing Institute. In 1955 Orcasur and Meseta de Orcasitas began to define themselves. The Directed Village, which appears in the 1975 photograph. The Orcasitas "Meseta" is developed from a Partial Plan drawn up in 1976, after the Remodeling Neighborhoods operation. The new space is formed through a project of 6 superblocs formed by towers and open blocks that delimit a neighborhood civic center, configured as a plaza. This arrangement has large courtyards for public use, tree-lined and pedestrian-friendly, becoming the reference space for the new neighborhood.

The 1991 image shows us the area as it has been defined today. Orcasitas "Meseta" In the construction of the area, three types have been used: the linear open block, the towers and the closed blocks. Orcasitas "Meseta" In the construction of the area, three types have been used. The neighborhood's relations with the rest of the city are carried out by the urban bus network, which constitute the main public transport system of the same. The main road connections with the city is the M-40, outside the area of the neighborhood. The "Plaza de la Asociación", in the interior of the neighbourhood, and the Pradolongo park (outside Orcasitas, constitute the urban landmarks of the Orcasitas "Meseta".



proposal

OBJECTIVE:

Promote from the City Council and also from the Community Administration and from the Neighborhood Associations and Cooperatives, the improvement of housing and commercial premises as the main tool of social, cultural, educational, employment and excellence development of the neighborhood.

Based on the sociological analysis of the neighborhood, we can see how one of the most important problems of Orcasitas is the low economic capacity and the few studies that the people who live in it have. These problems are represented in their daily lives, with a relatively high unemployment rate, especially affecting women.

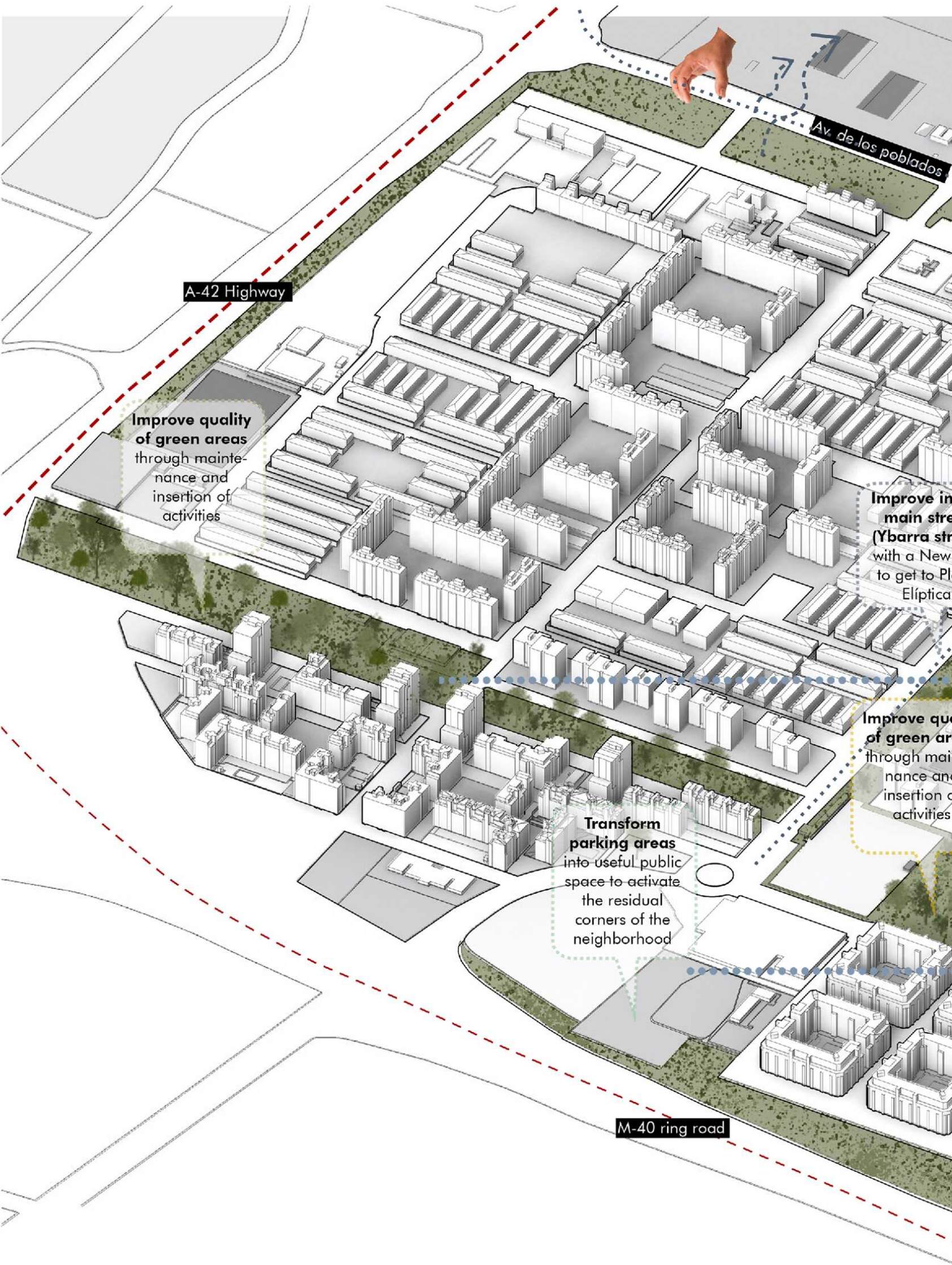
In addition, these problems are aggravated in a neighborhood with shops that keep closing, empty premises, isolation from the rest of the city, the poor condition of many green areas and public spaces in general and, due to the economic capacity of the inhabitants, many homes are outdated and in need of repair.

Our goal is to operate in the urban fabric with small actions in the public space of the Orcasitas "Meseta" to rehabilitate it and give it a fresh air, actions from neighborhood associations to re-fill the neighborhood's commercial spaces and improve the economy, and thanks to this, and thinking in the medium and long term, to improve the quality of life of the people who live in the Orcasitas neighborhood and what we need for these ideas to be sustainable and successful.

proposal

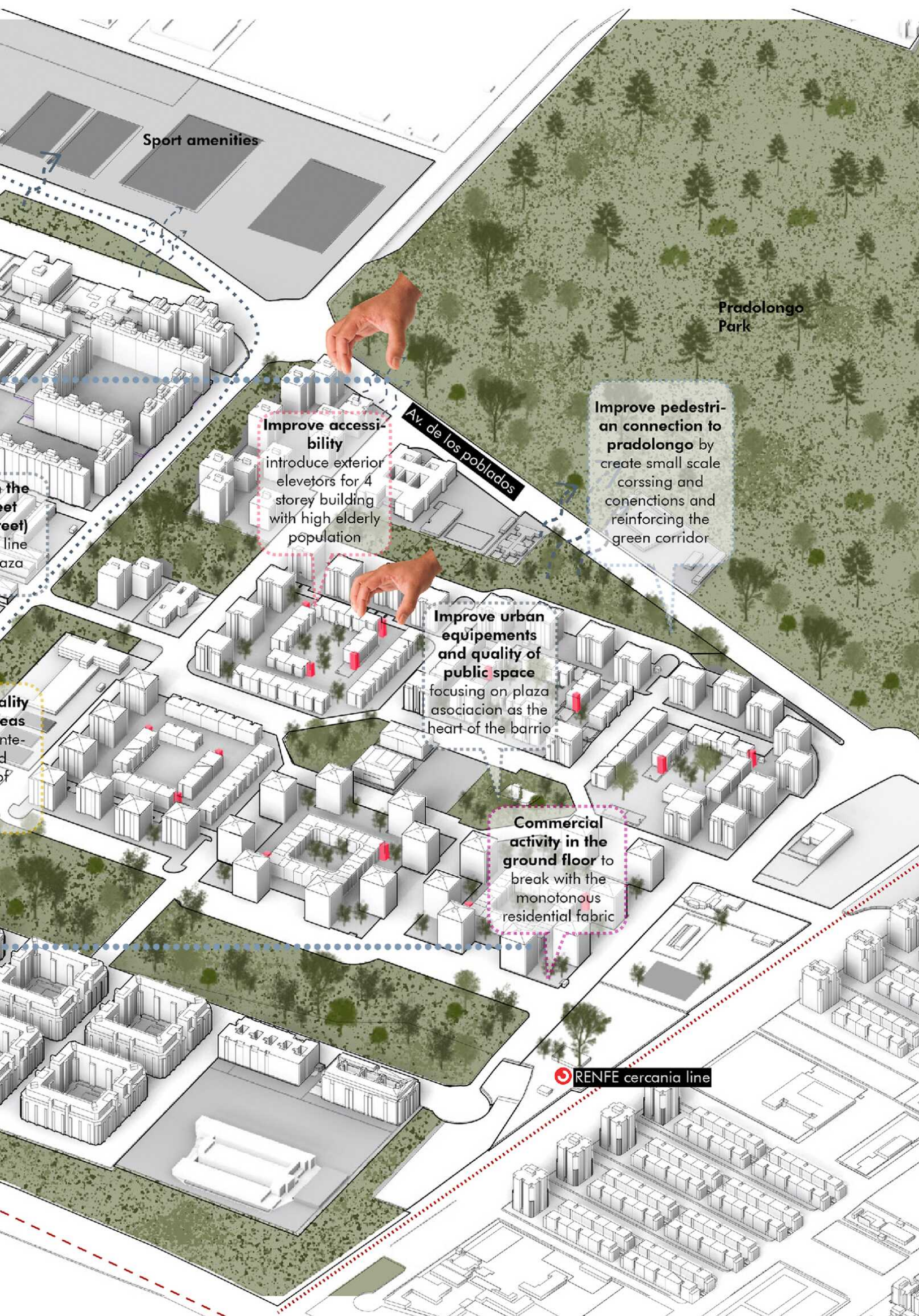


new street humanized
proposal









essay

on social change and housing:

Title: the politics of neighborhood planning,

read *

issuu.com/mirun/docs/divided_city

full text report and development plan for Orcasitas neighbourhood, Madrid:

read *

issuu.com/mirun/docs/orcasitas

** text in english*

S07

low cost & emergency housing

leader

Sonia Molina
Adela Salas Ruiz



title

providing urban
and housing solu-
tions for Robuya
neighbourhood



8 days



Makeni,
Sierra Leone



Haidy Lazalde
Pedro Ordóñez



Enrique Sevillano
Gonzalo Sán-
chez-Terán
Andreas Schiffer
Javier Cidón
Javier Mazorra
Cecilia Schmölzer



structure

working in Robuya, a precarious rural area near to Makeni (Sierra Leone) to develop strategies to upgrade the conditions of inhabitants, providing urban and housing solutions.

1. give an introduction about the problem of slums, informal city and new urban development and research on the climatic areas where projects will be settled. And get familiarized of the exercises location and possible settlement options, also Understand people's housing needs and capacities, available materials and construction techniques (vernacular architecture), possible barriers and opportunities in the specific context to access adequate shelter.

2. Propose an urban / settlement design for the target population, and Propose infrastructure solutions at urban and unit scale, also design housing units based on the specific needs of target population, defining material and construction detail

Low cost and emergency housing: providing urban and housing solutions for Robuya neighbourhood

The urban poor have to solve an equation with diverse variables: the need of access to soil, optimize housing costs, the dwellings quality, access to infrastructures and services, or the displacement to the work. The result is a mixture of high costs, absence of municipal services and insecurity in the property of the soil, and it makes up the slums of the cities in the developing countries, where nowadays a third of its population lives overcrowded, without drinking water nor improved sanitation or in insecure and unhealthy housings.

Shelter is essential for the physical protection and privacy of people affected by displacement, allowing them to lead lives in a safe, supportive and culturally appropriate setting. Rights should be protected and lives saved by providing timely shelter interventions to meet both immediate and temporary needs, promoting durable solutions and enabling families to access social services and livelihood options.

Shelter programmes should aim to facilitate both the physical and social needs of targeted beneficiaries in all phases of a crisis and across a range of settlement options beyond the household, including Settlement or Camp Planning, Community Infrastructure and access to Basic Services, Housing or Emergency Shelter, Non Food Items (Household and Shelter Items), Capacity Building and link with Livelihoods. It should not focus solely on the delivery of house or shelter as a physical product but should also include a range of wider social and settlement related considerations that enhance and complement the impact of individual solutions.

Appropriate strategies and activities should be defined based on a contextual analysis such as scale, climate, culture, available materials and skills, logistics, funding, legislation and policies, and needs.

site information

Robuya is in a very good position very close to Makeni (4,3 km-53 minutes walking (the most common way in Robuya) to acces the Makeni city center). Considering the urban expansion of Makeni, Robuya will be soon part of the city. Robuya has 74 dwellings (20 people per dwelling) and according to the data given during the fieldwork, aproximate 1.500 total people.

Almost all the people in Robuya (over 90%) works in agricultural land around the village (subsistence agriculture in a very small scale). Rice, cassava, fruits, leaves, sweet potato are the main products. Working groups are organized for getting crops, and they sell the products in the market in Makeni. In addition, people is fishing in a river half mile and there is some livestock activity.



exisiting conditions

1500 inhabitants
20 people per dwelling
74 dwellings
5 people per room
10% have access to improved sanitation

3 community boreholes, only one has safe drinking water
70% of the population has access to safe water
The school has **no** well
10% of people have stormwater drainage
No waste management



pictures from Adela Salas Ruiz on Roubya neihbiurhood report 2017



land allotment

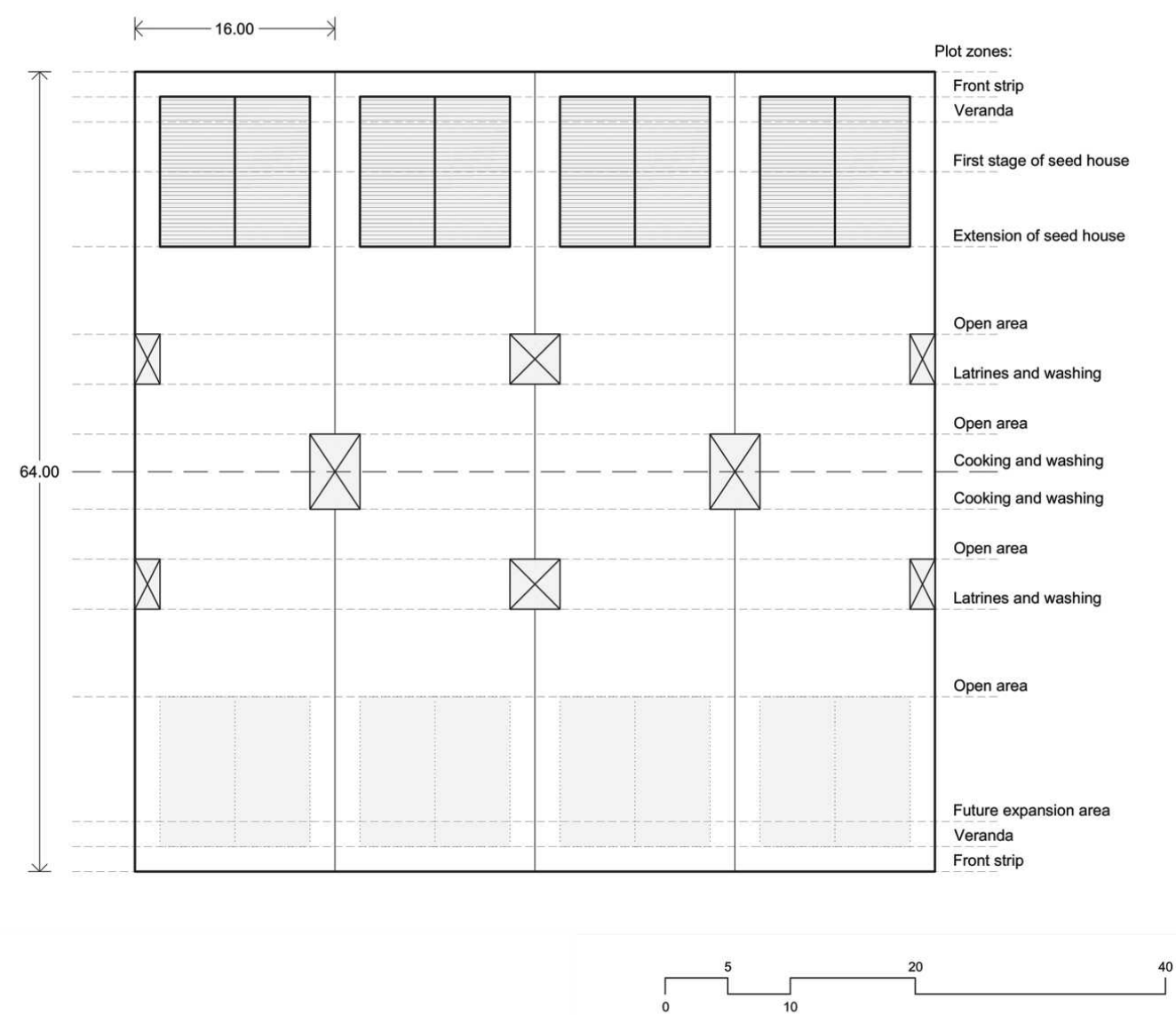


housing and infrastructure
plan

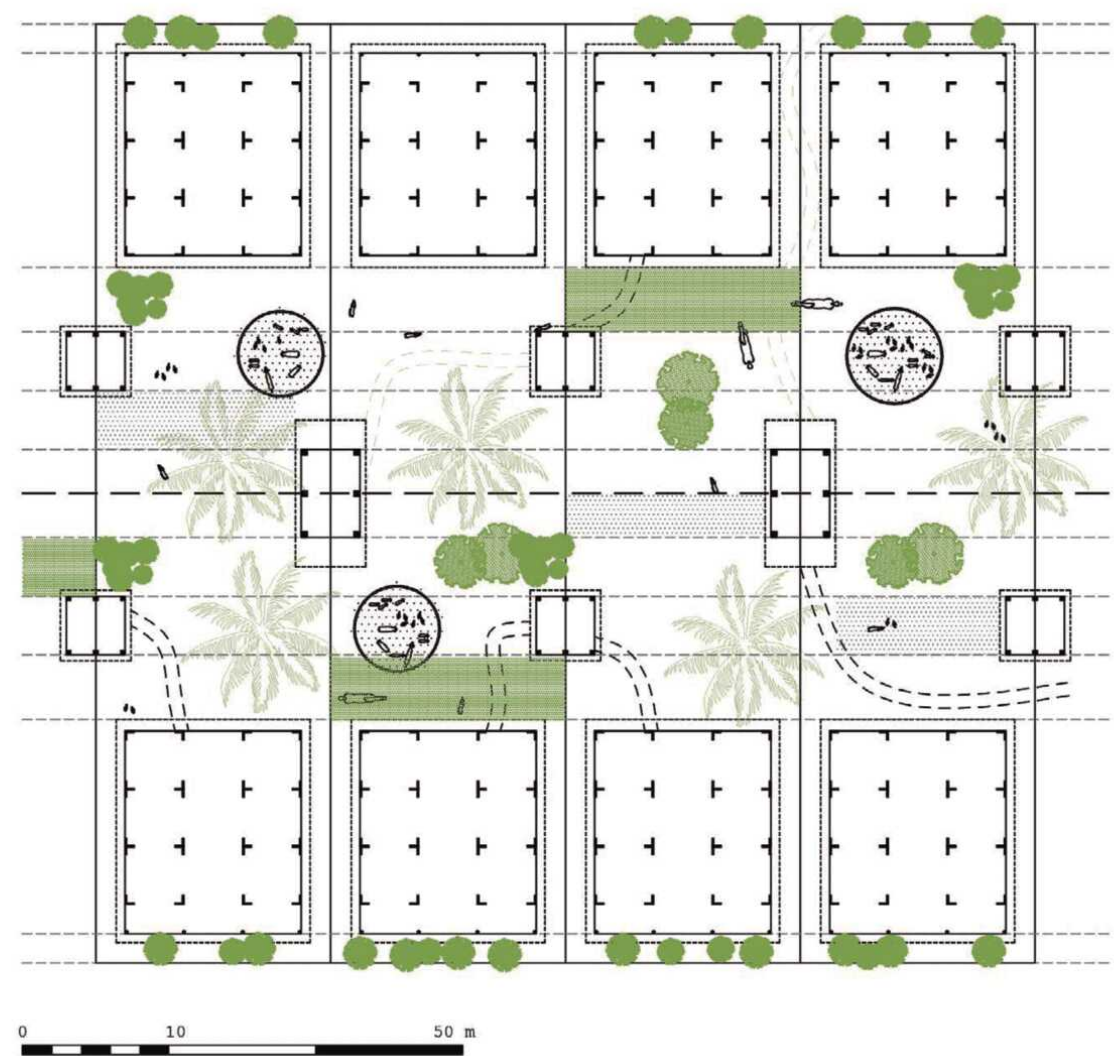


borderless
plan

collective plan

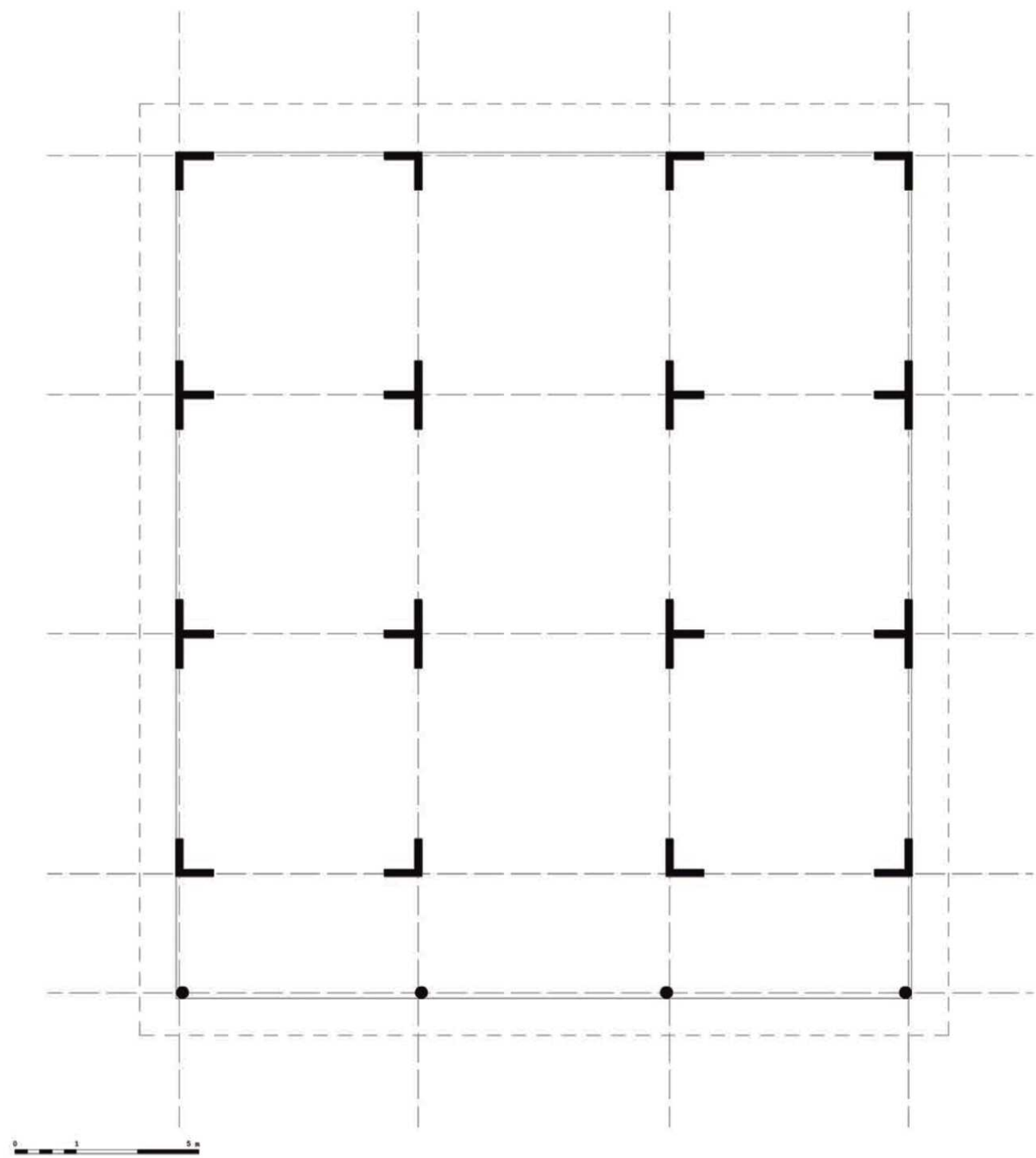


plot portion
1:4 prtion



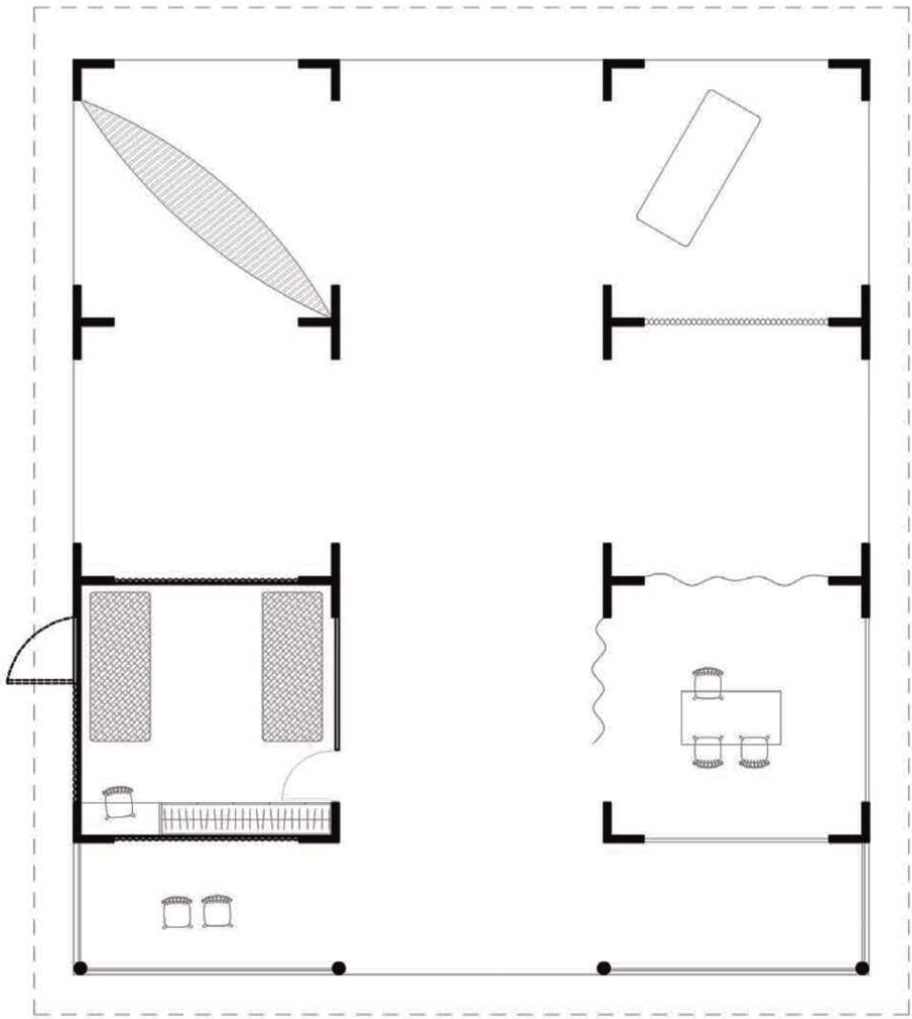
collective plan
relation inside-outside

structure

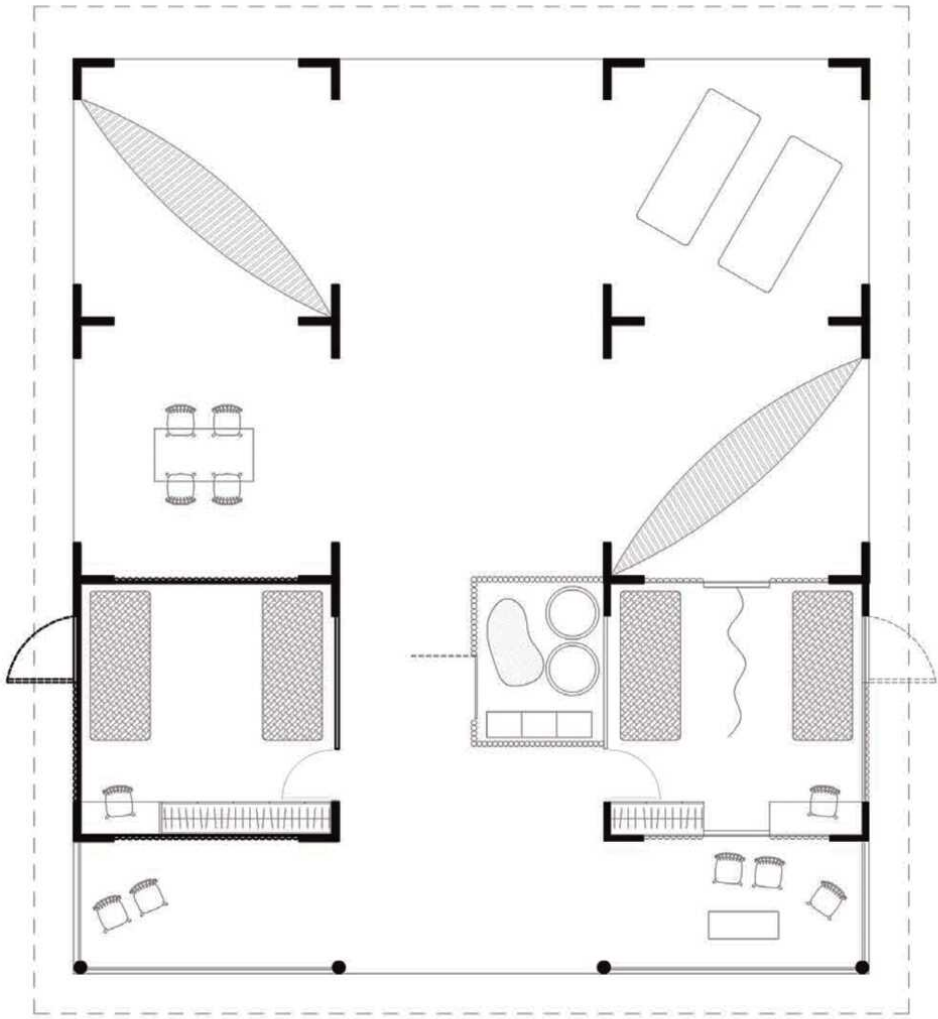


unit structure plan
structure

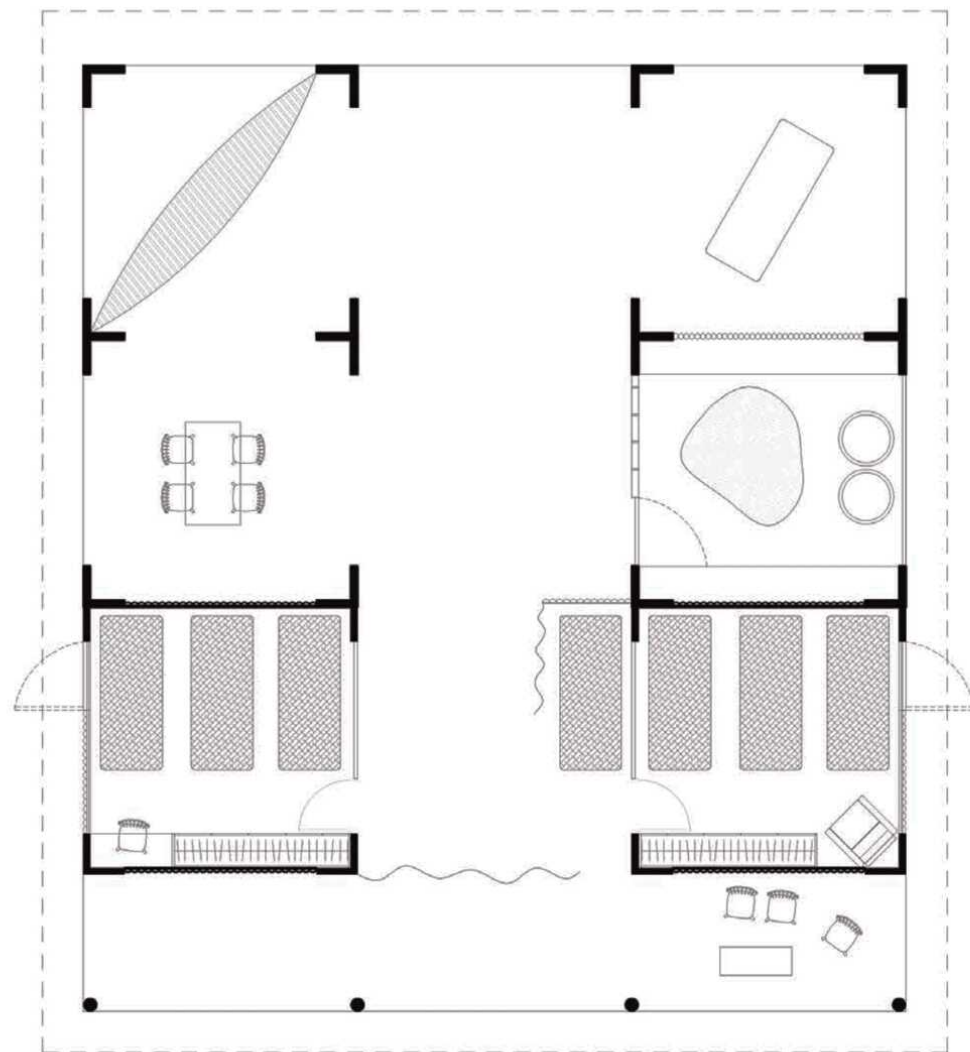
progressive dwelling



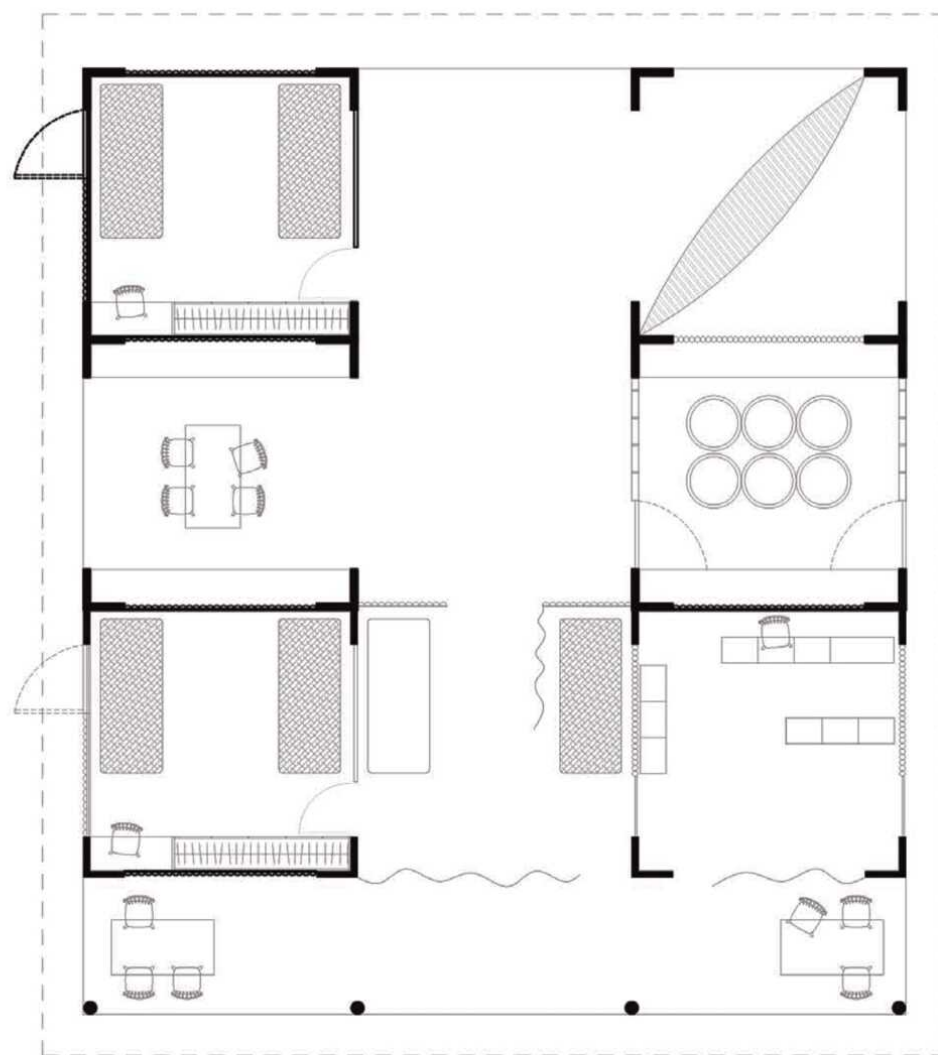
seed house (one room)
progressive dwelling



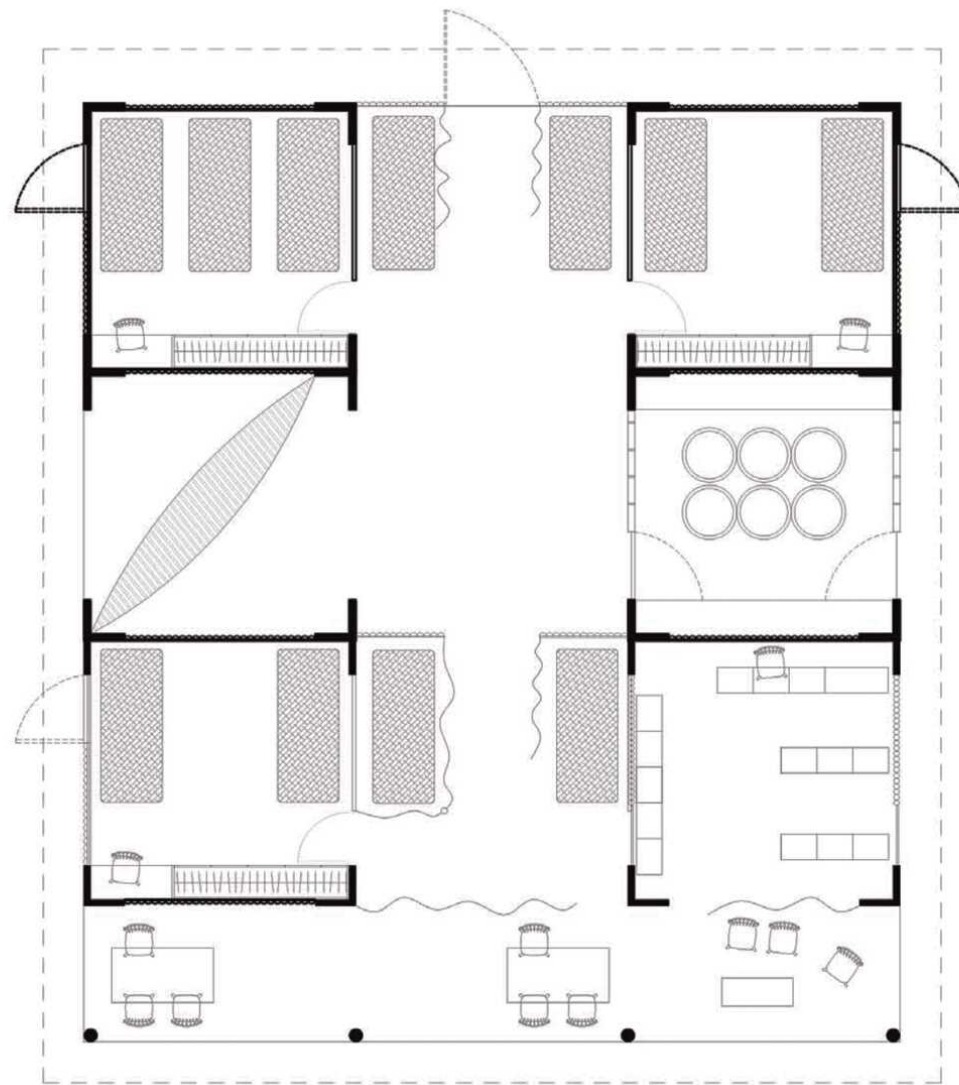
seed house (two rooms)
progressive dwelling



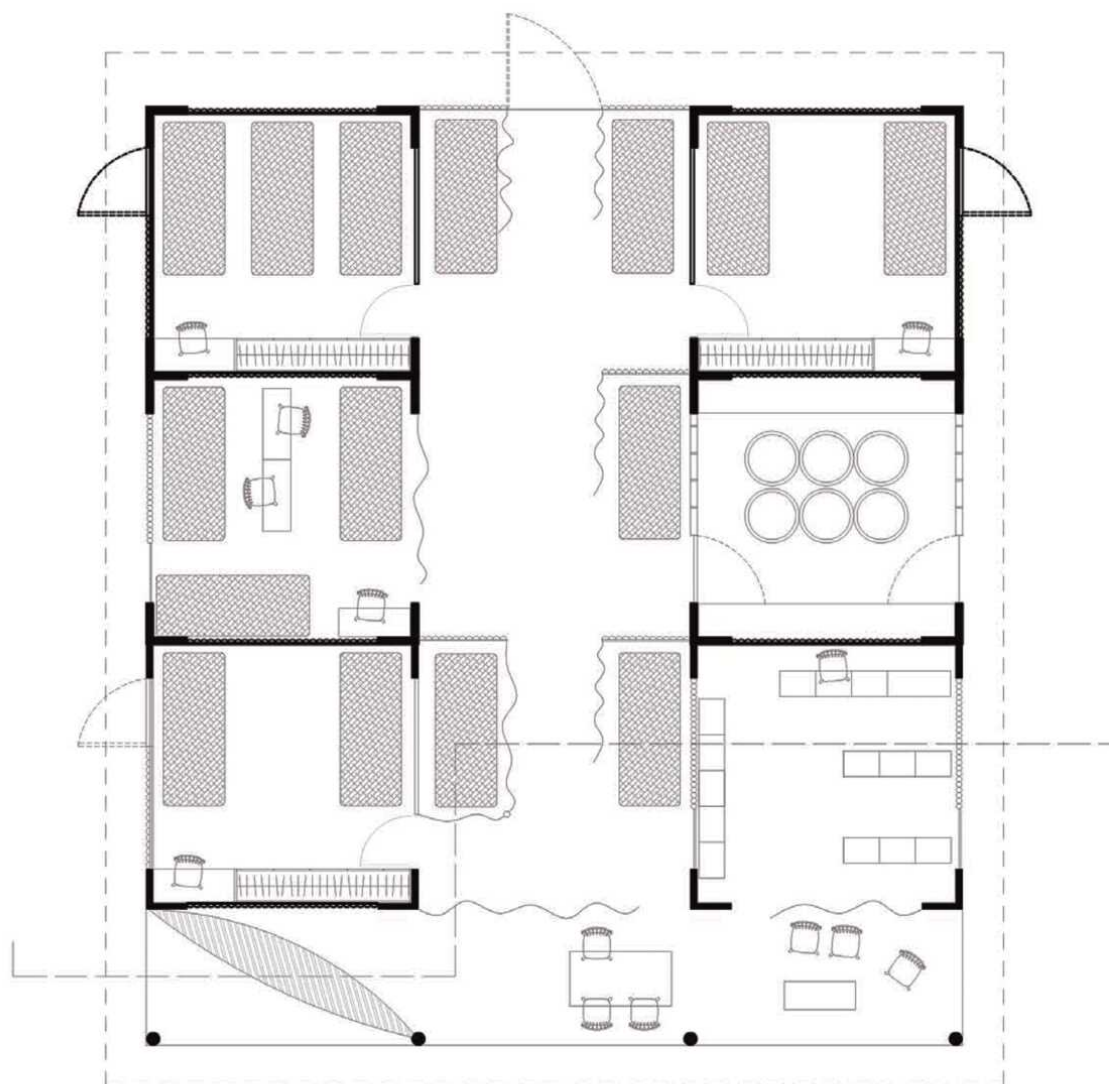
seed house (storage)
progressive dwelling



seed house (productive house)
progressive dwelling

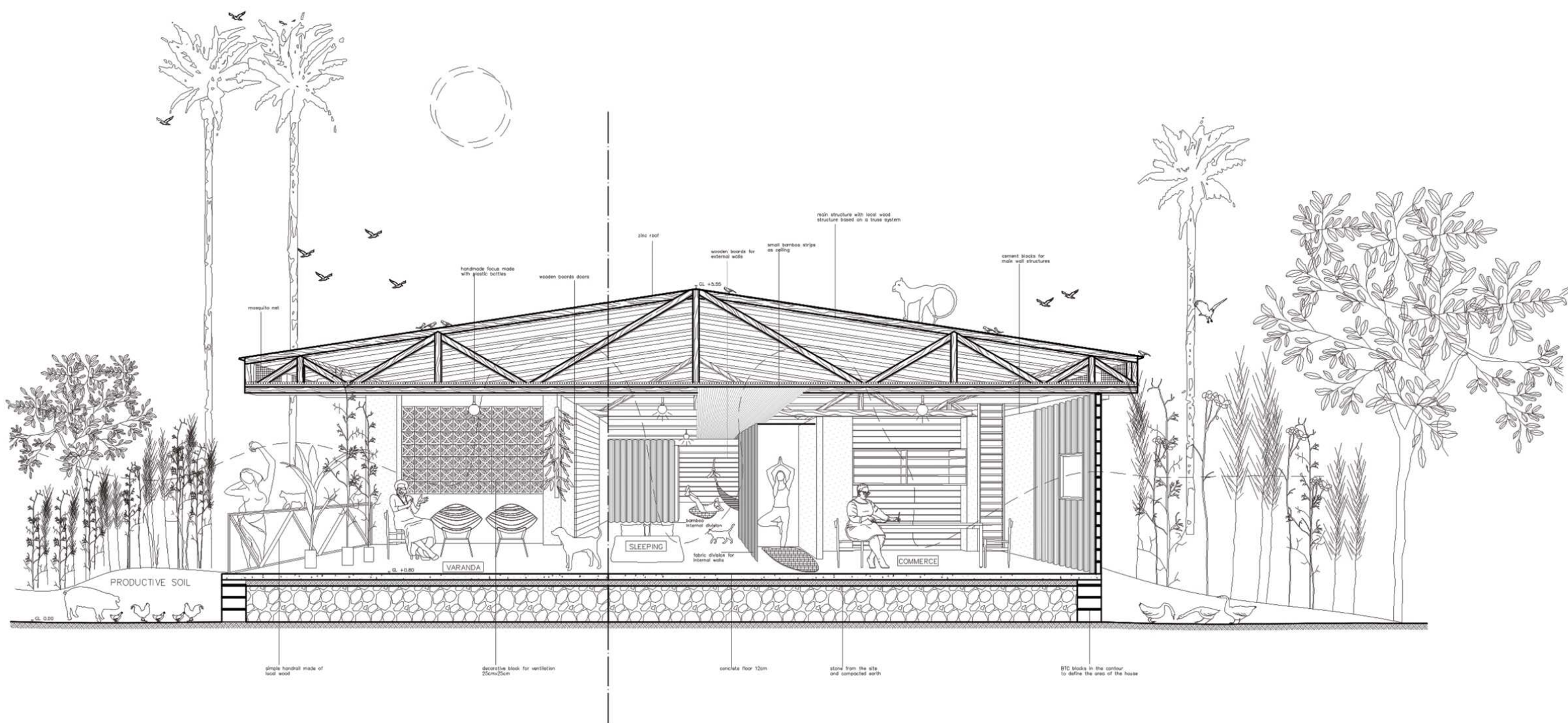


seed house (one room)
progressive dwelling



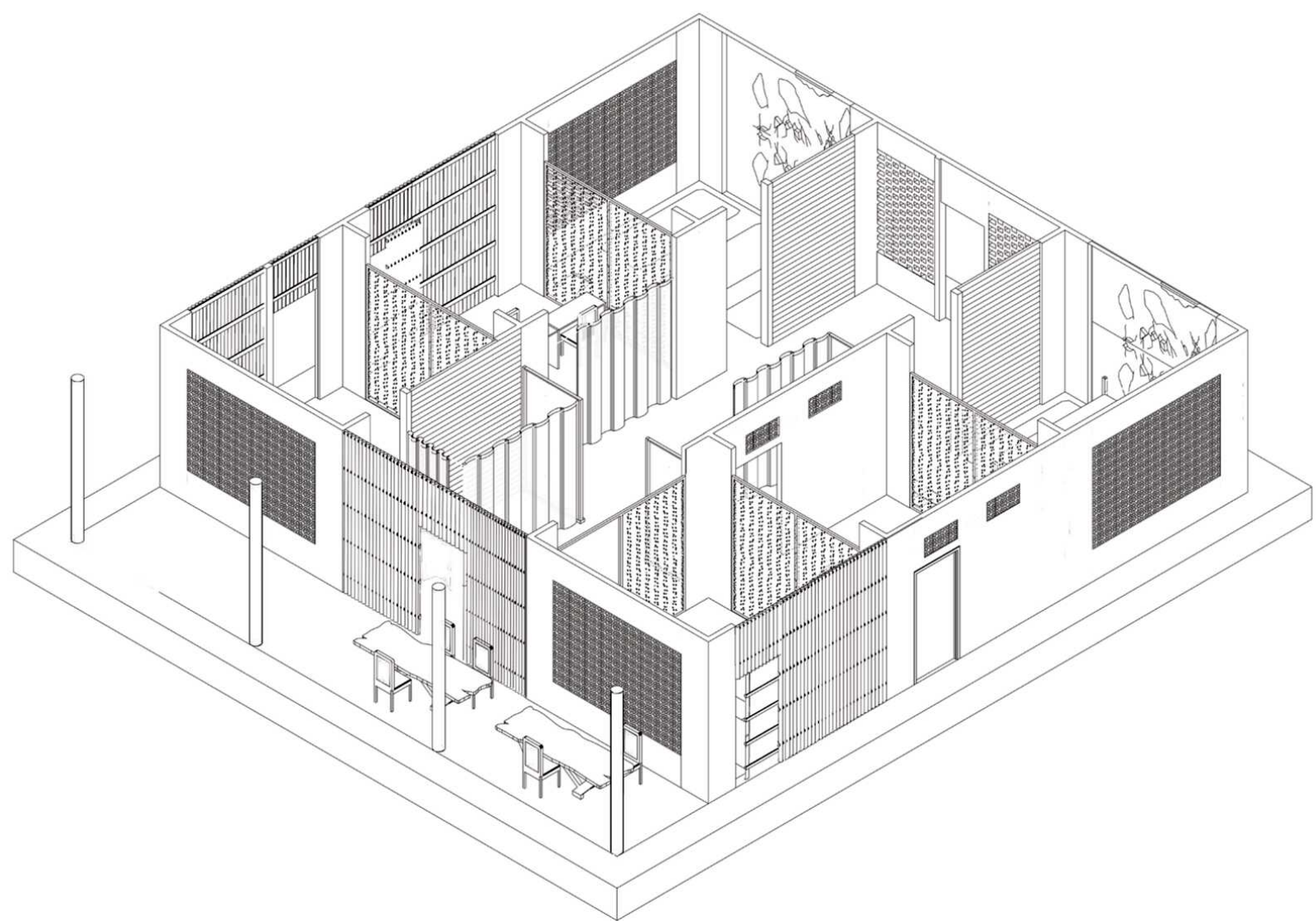
seed house (two rooms)
progressive dwelling

perspective section

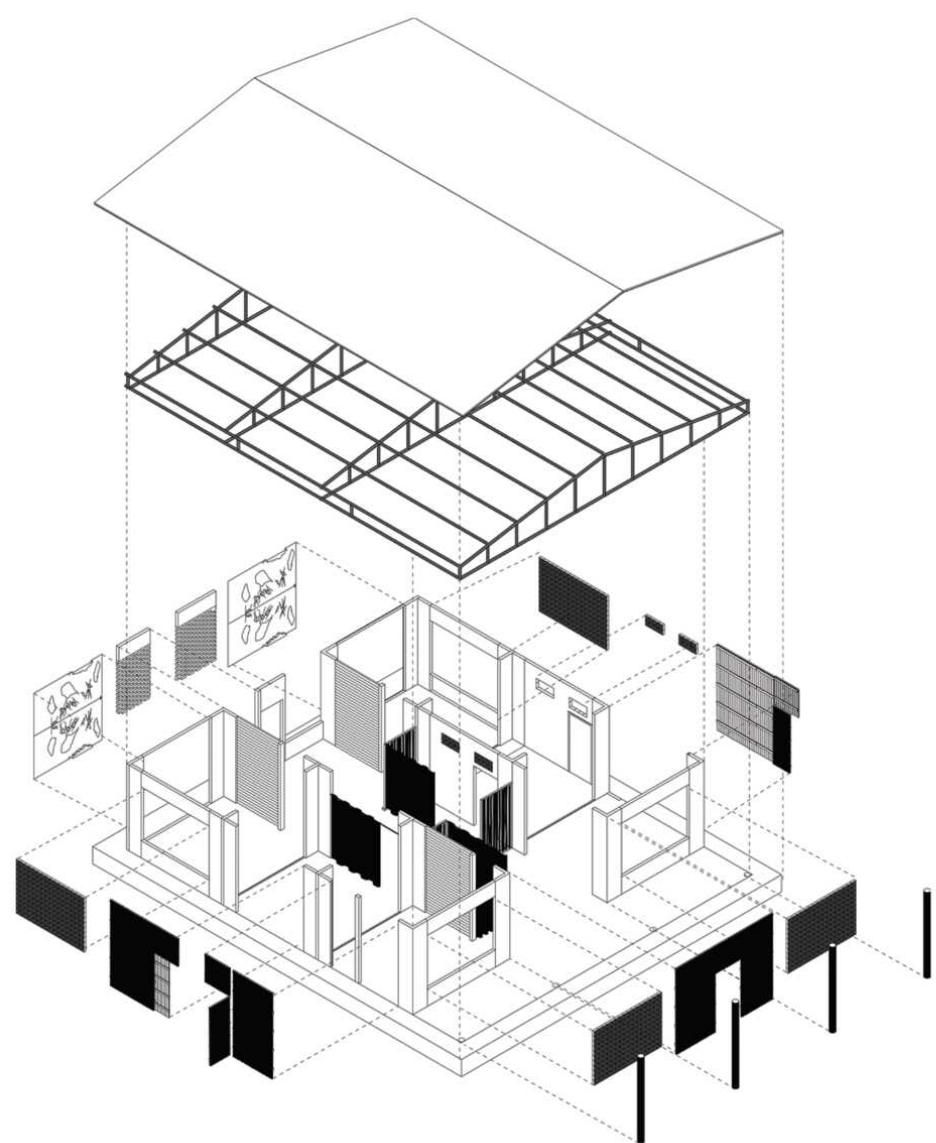


living atmosphere
section

unit axonometric

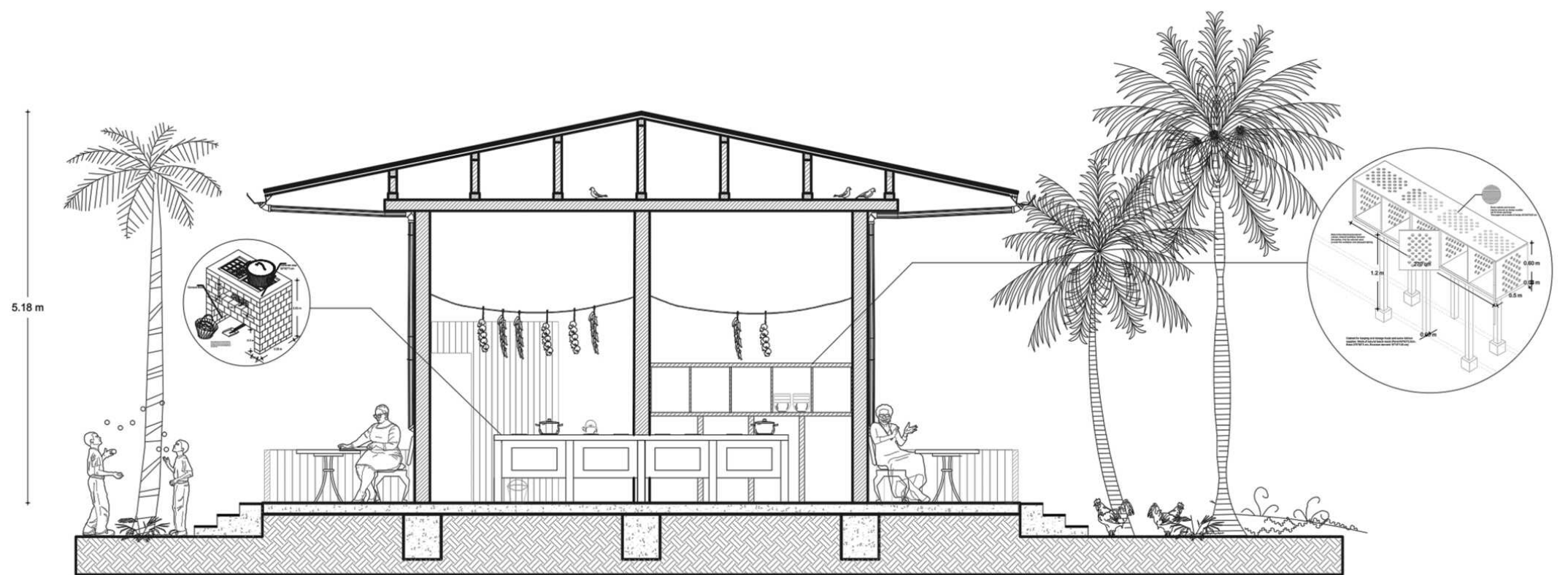
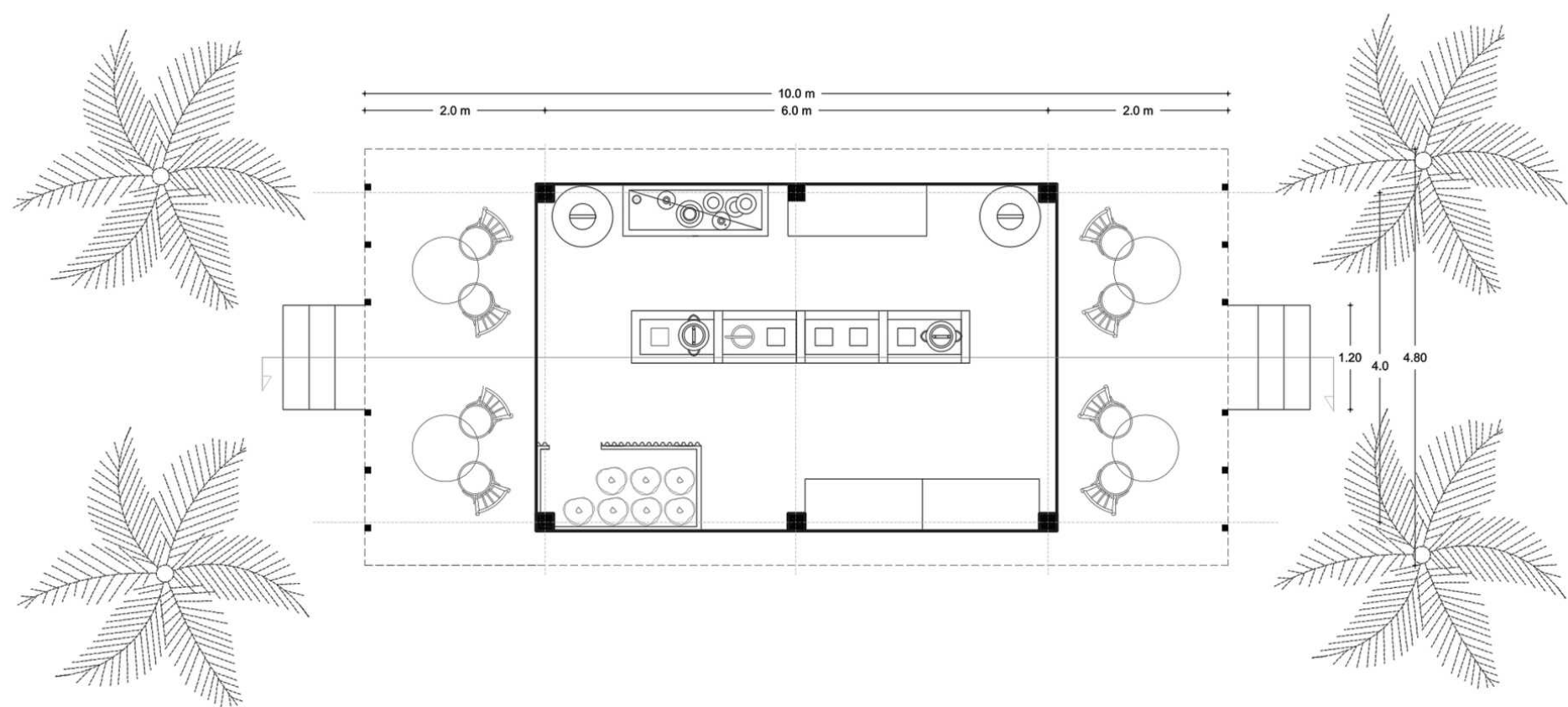


interior view + materials
axonometric



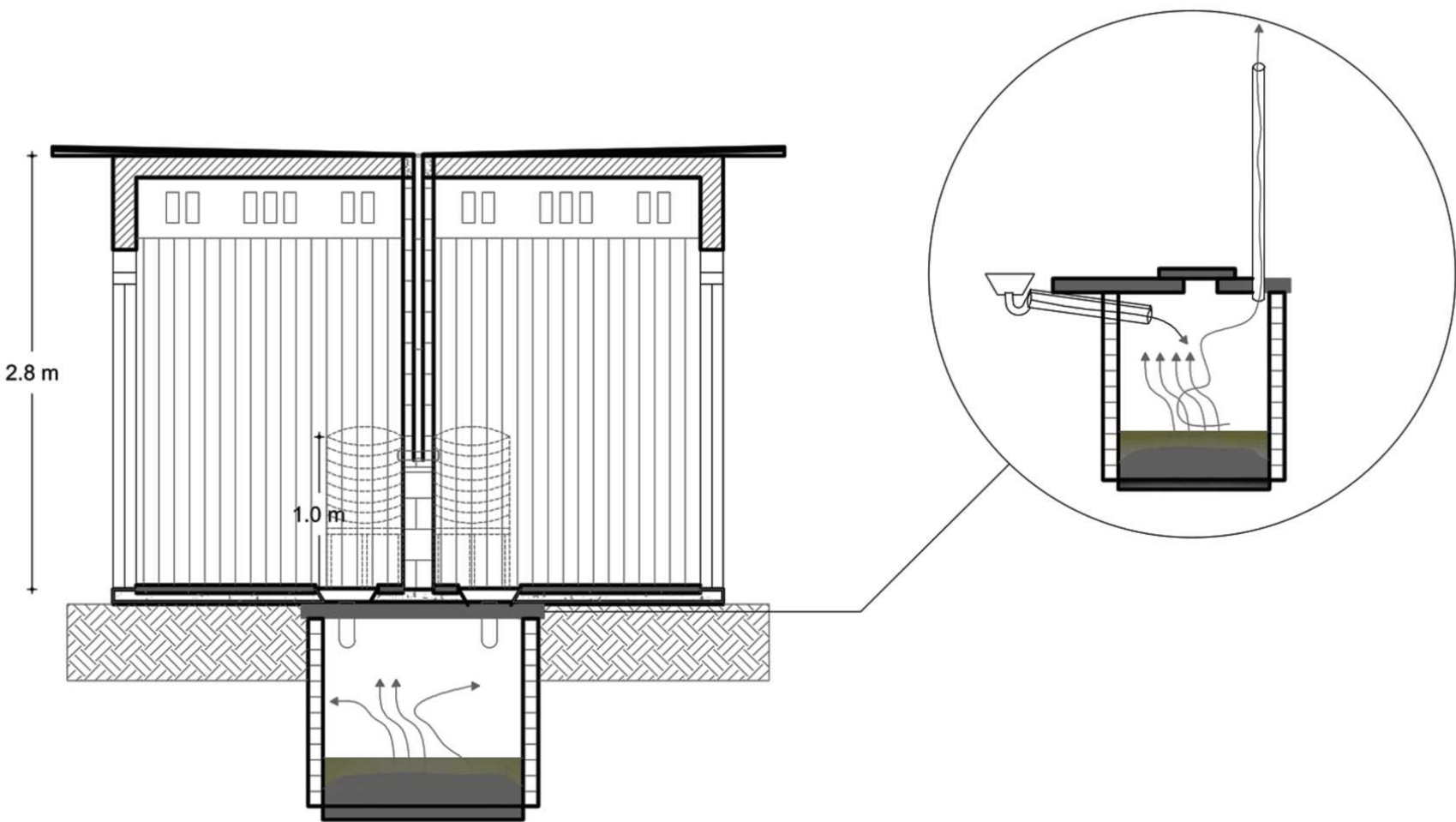
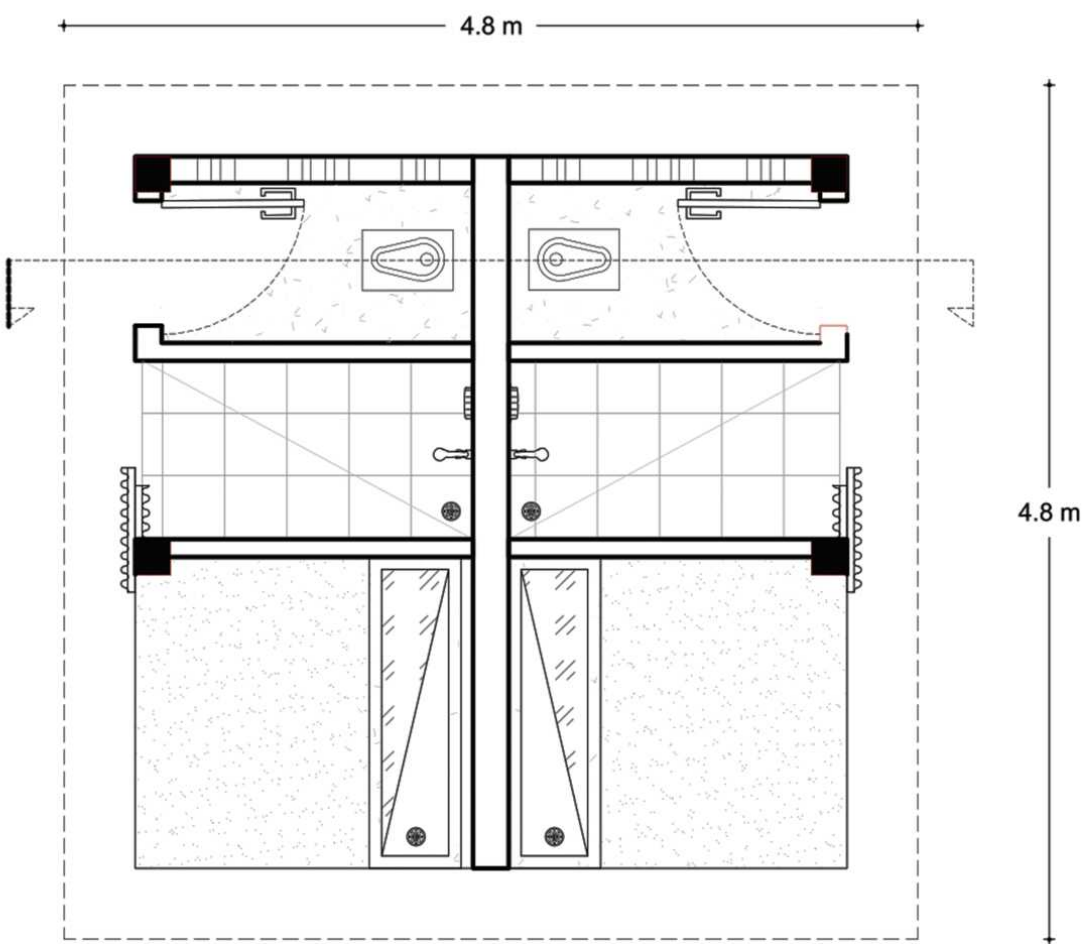
interior view + materials and covering structure
axonometric

kitchen is a communal area



living atmosphere (kitchen)
section

latrines and washing area are shared



S08

urban design and landscape

leaders

José María
Ezquiaga

Gemma Peribáñez



title

New urban per-
spectives for
South-west Madrid
Metropolitan Area



11 days



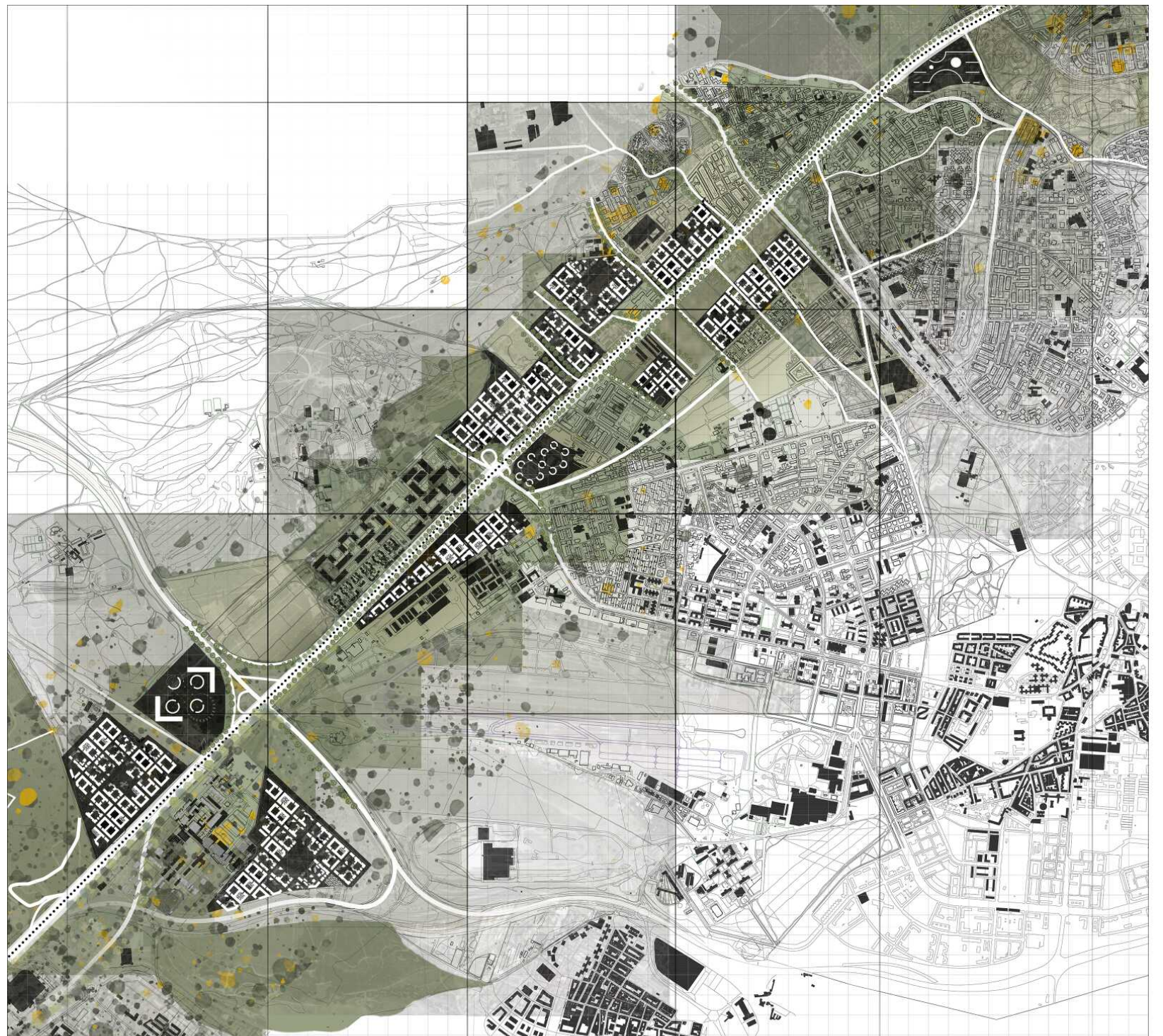
Madrid, Spain



Irina Papadaki
Andrés Varela
Pedro Ordóñez



Miriam García
Doris Tarchópolus
Daniel Ibañez
Flavio Tejada
Mar Santamaría
Juan Tur + more



structure

1. Competitive dialogue between urban development, public space and integration with the consolidated city/ neighborhoods in its environment and metropolitan open spaces.
 2. Activity and commerce: the A5 axis and interior axes associated with large urban boulevards, qualified public spaces.
 3. Innovations for the district of the future as part of a large inner-city transformation space
 4. The vision of the area made from the perspective of understanding the use of public space by the population and the integration in a consolidated area of the city: residential, offices, commercial, green.
3. Proposal approach: Main factors involved in sustainable urban planning, as much as Location context, Connectivity, Integration, Accessibility, Mobility, Scale, Safety, Quality, Resilience, and Diversity.

new urban perspectives for south-west madrid metropolitan area: urban interventions and public space in the near future to create a smart liveable city.

1. Competitive dialogue between urban development, public space and integration with the consolidated city/ neighborhoods in its environment and metropolitan open spaces For the urban planning and open space planning qualification of the new district, a highquality urban planning and open space-related functional planning should be created.

The proposal will continue the process of urban transformation started with the burial of the M-30 and the execution of the Madrid River Project on public land, proposing in the recovered river axis, a strategy comprehensive for intervention in the building and space free private and in the fabric of social activities and economic, through an innovative proposal in Sustainable rehabilitation, revitalization and renewal of the building and the urban scene, which will transform the relations between the A5 border, existing city, Casa de Campo Park and the neighboring districts.

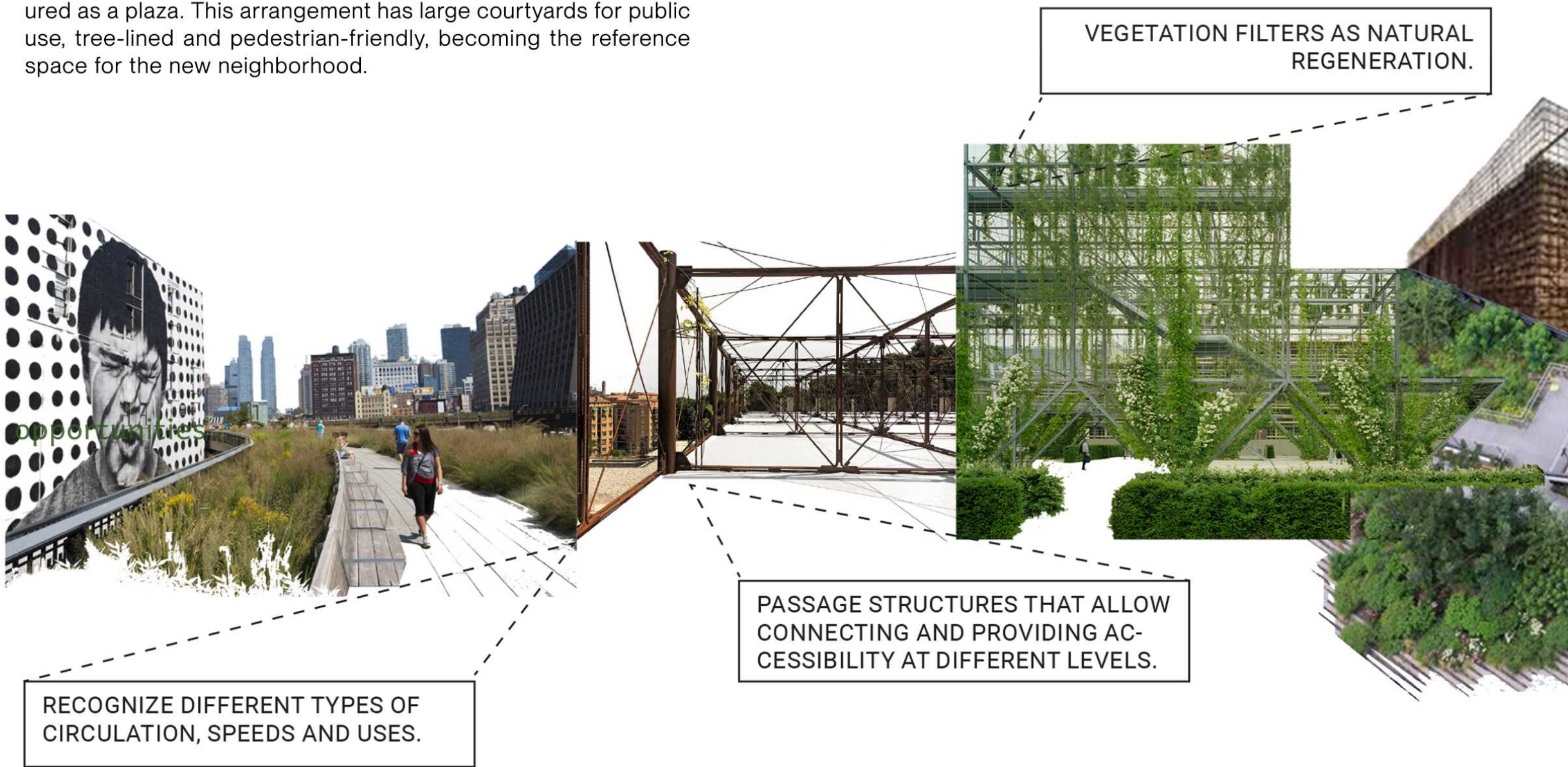
2. The New District of WEST MADRID, between existing city and Casa de Campo Park – and open spaces at municipality of Alcorcon: The opportunities of urban development are closely related to the development of a sensitivity with urban edges, with integration criteria adapting to the size and scale of the neighboring districts:

- Equipment that can contribute to satisfying the deficits in its immediate environment and to completing existing equipment.
- Activity and commerce: the A5 axis and interior axes associated with large urban boulevards, qualified public spaces.
- Green Infrastructure (GI) based on the principle that 'protecting and enhancing nature and natural processes consciously integrated into spatial planning and territorial development'. Create a Green Infrastructure Strategy as 'a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services' in both rural and urban settings as a part of the Metropolitan south west area.

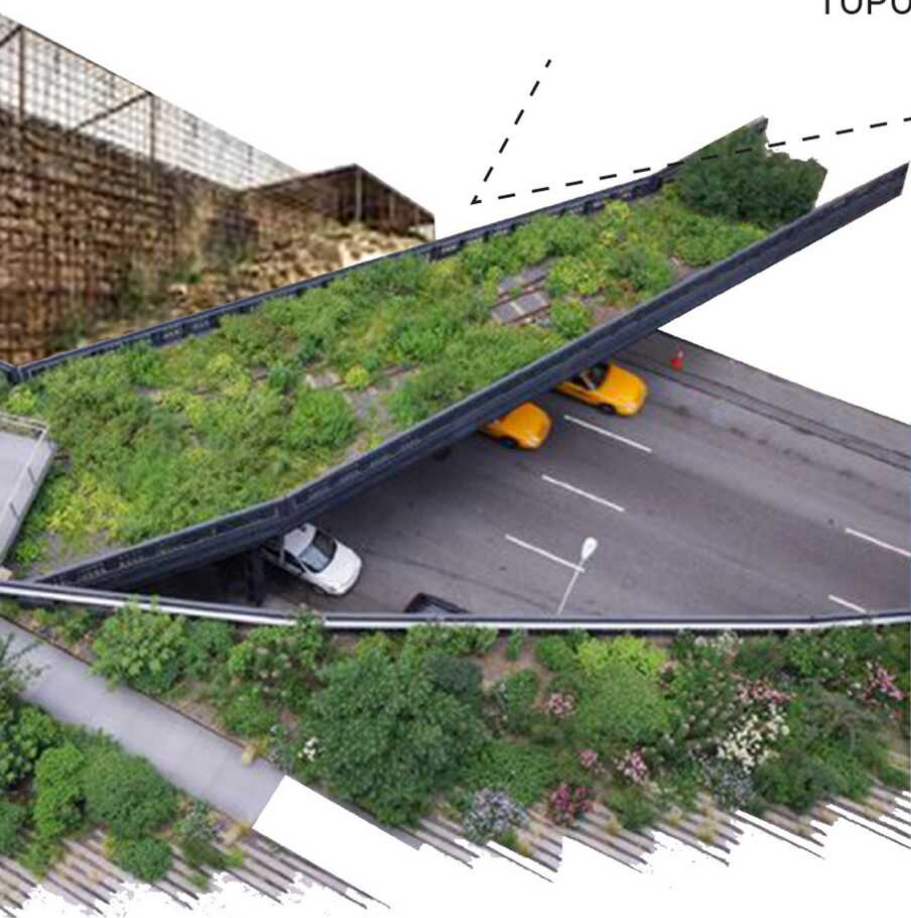
3. Innovations for the district of the future as part of a large inner-city transformation space Developing a district like this offers great opportunities to find future-proof solutions for innovative urban development, sustainable urbanism, embracing social housing, good public and collective spaces, greenery, creating communities that will be resilient in the face of future challenges.

Planing the neighbourhood for the neighborhood Four phases in the formation and consolidation of Orcasitas in their three original core. In the 1945 photograph it is observed how the first settlements already occupied the agricultural land of the Absorption Town and the Minimum Town, the future Orcasur polygon. In the second image, villages of social housing that were created provisionally in 1954 by the National Housing Institute. In 1955 Orcasur and Meseta de Orcasitas began to define themselves. Tthe Directed Village, which appears in the 1975 photograph. The Orcasitas "Meseta" is developed from a Partial Plan drawn up in 1976, after the Remodeling Neighborhoods operation. The new space is formed through a project of 6 superblocks formed by towers and open blocks that delimit a neighborhood civic center, configured as a plaza. This arrangement has large courtyards for public use, tree-lined and pedestrian-friendly, becoming the reference space for the new neighborhood.

The 1991 image shows us the area as it has been defined today. Orcasitas "Meseta" In the construction of the area, three types have been used: the linear open block, the towers and the closed blocks. Orcasitas "Meseta" In the construction of the area, three types have been used: the linear open block, the towers and the closed blocks. The neighborhood's relations with the the rest of the city are carried out by the urban bus network, which constitute the main public transport system of the same. The main road connections with the city is the M-40, outside the area of the neighborhood. The "Plaza de la Asociación", in the interior of the neighbourhood, and the Prado-longo park (outside Orcasitas, constitute the urban landmarks of the Orcasitas "Meseta".



TAKE ADVANTAGE OF THE EXISTING
TOPOGRAPHY, SLOPES.



NEIGHBORHOOD REFERENCES,
PROGRAMMATIC SUPPORTS.

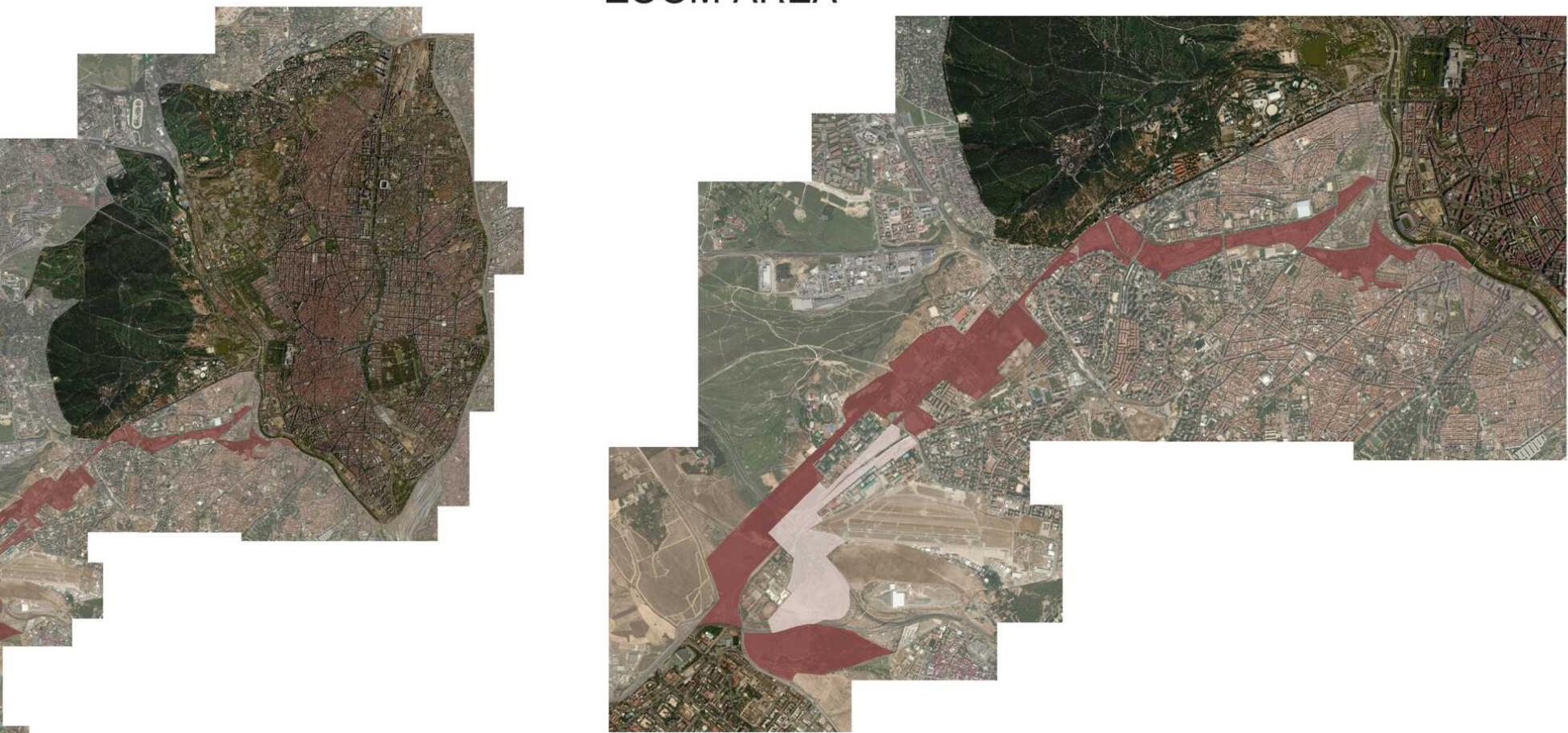
development plan

INTERVENTION AREA



BACK FROM THE CITY TO THE COUNTRYSIDE

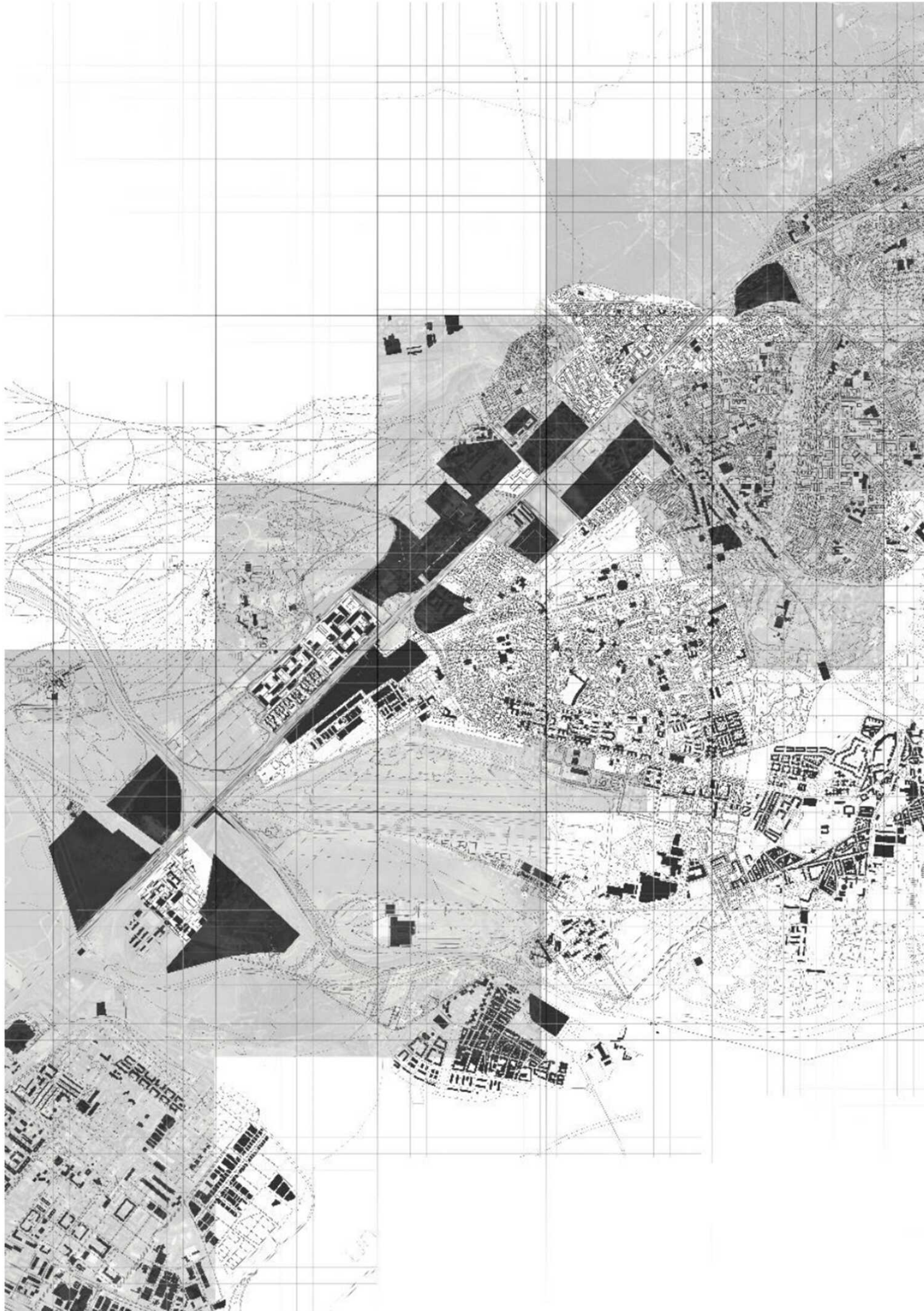
ZOOM AREA



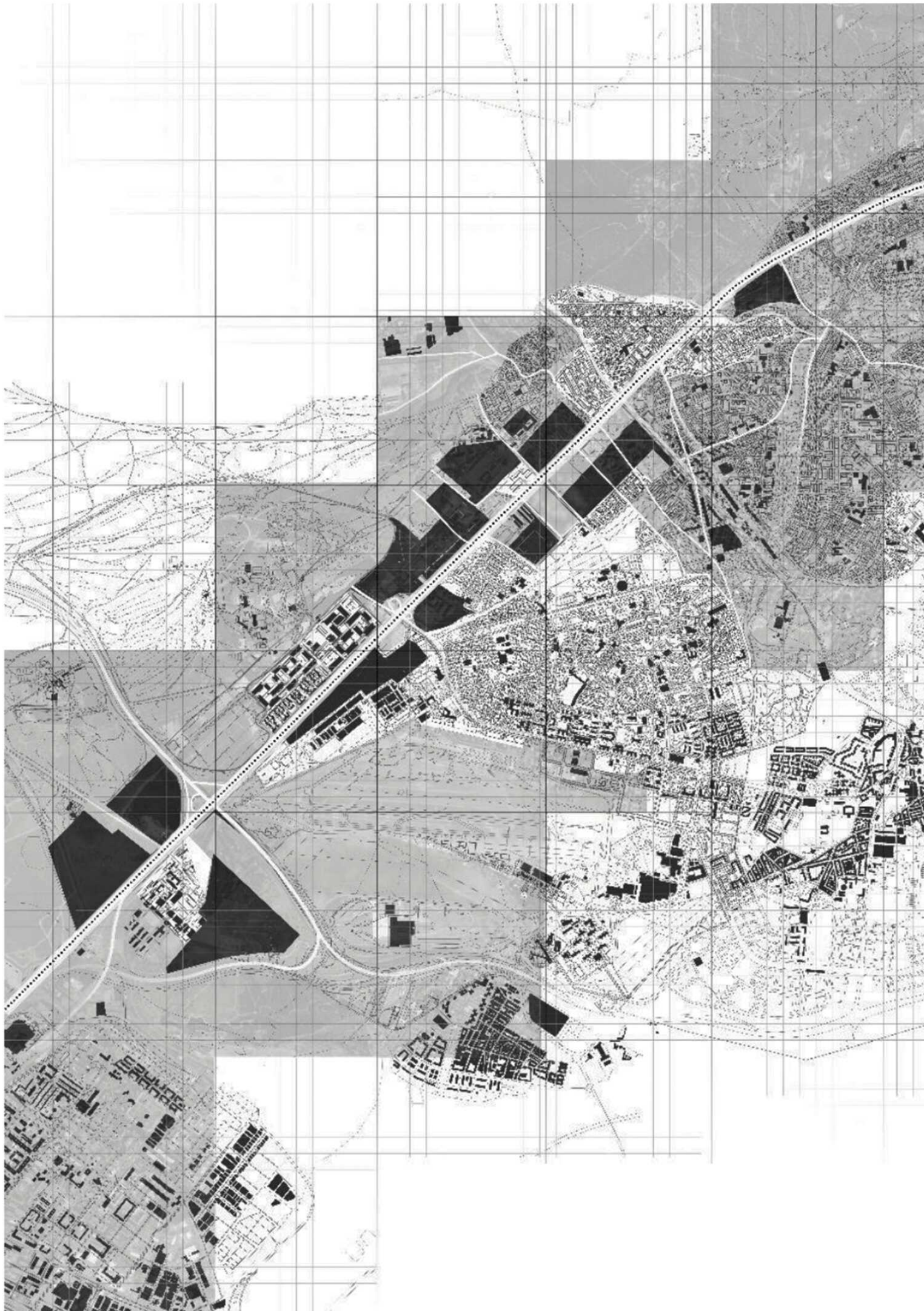
NATURAL INFRASTRUCTURES
COEXISTENCE BETWEEN RURAL AND
URBAN



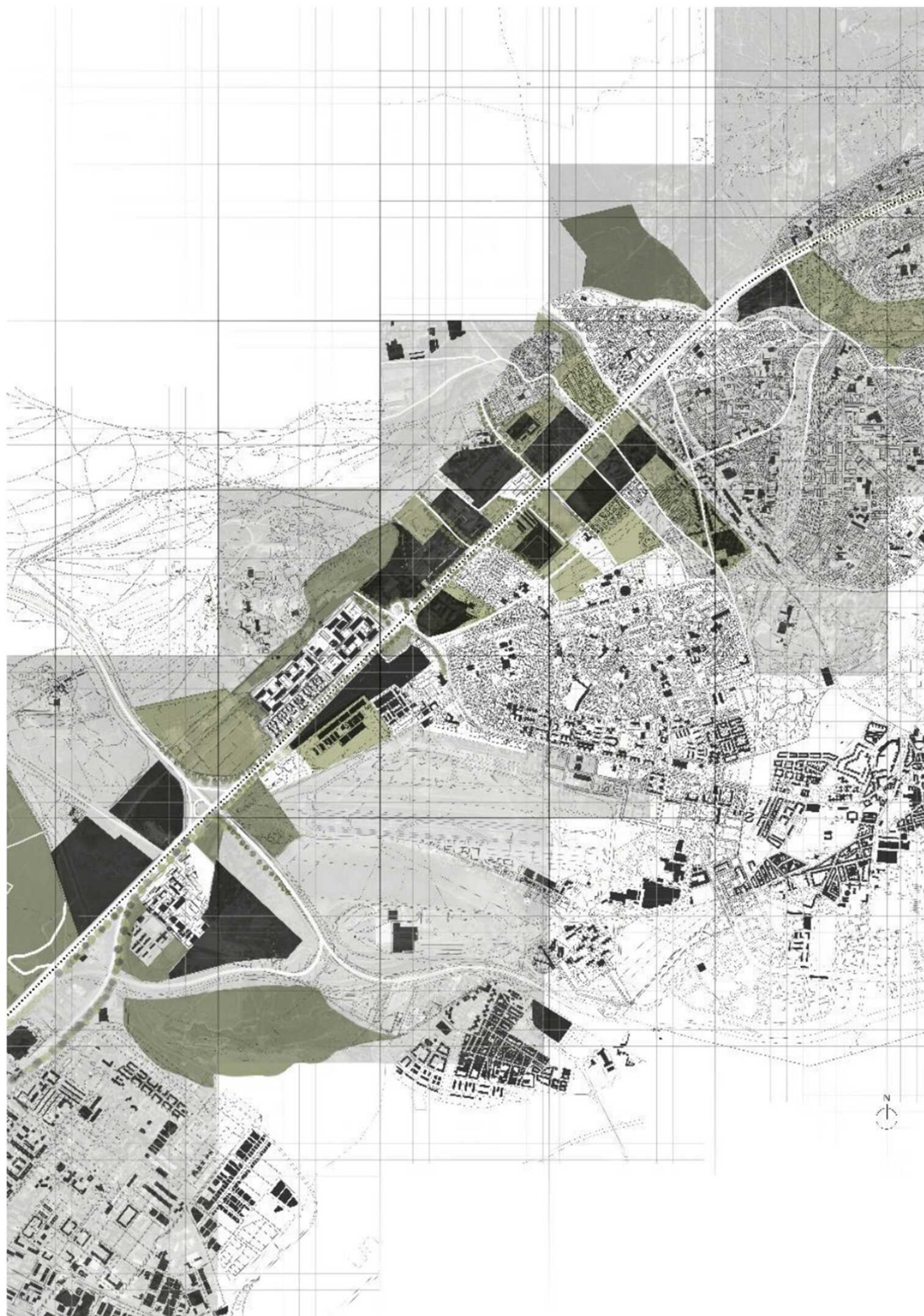
potential sites



connections: A5 axis - M40

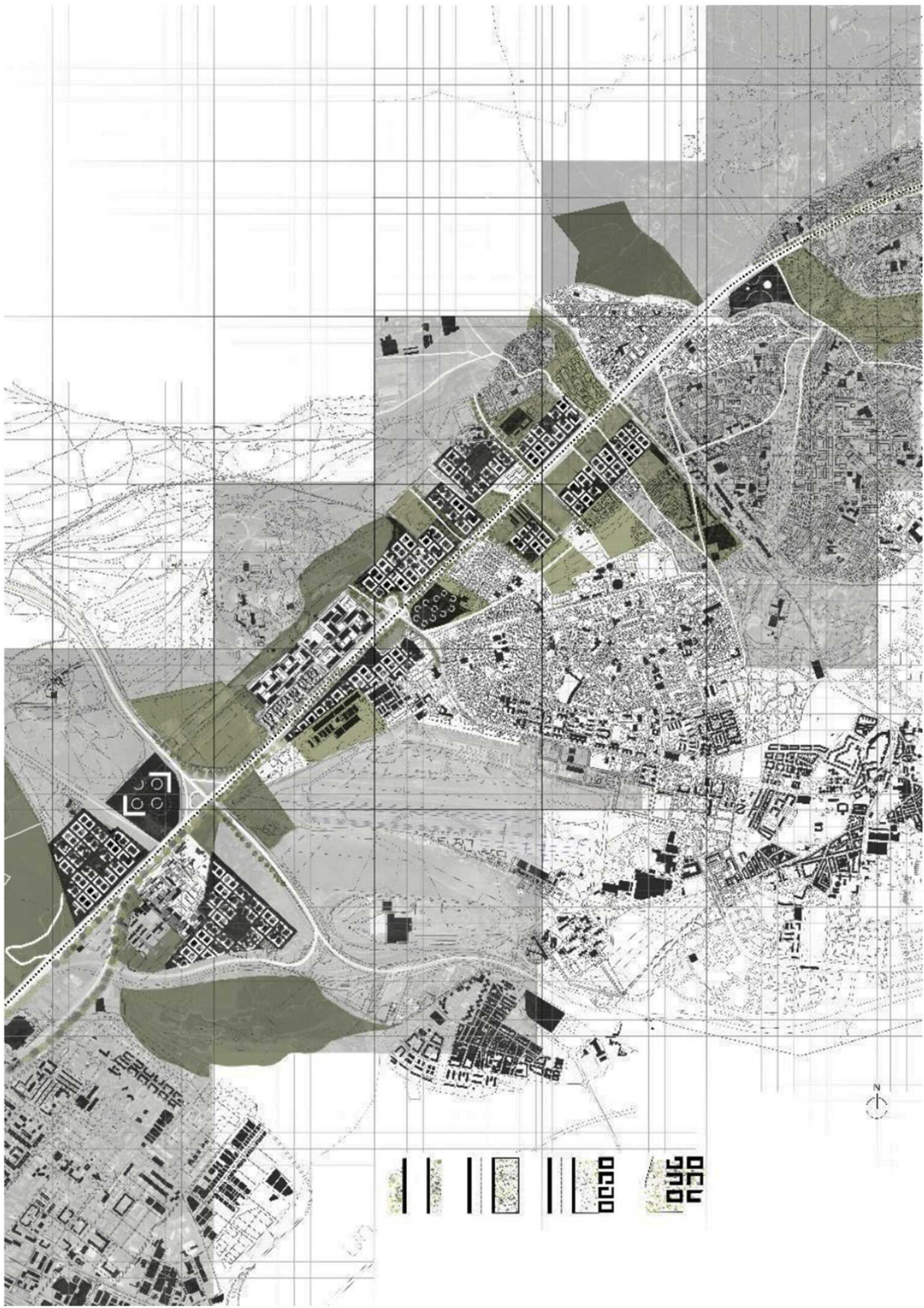


potential green areas



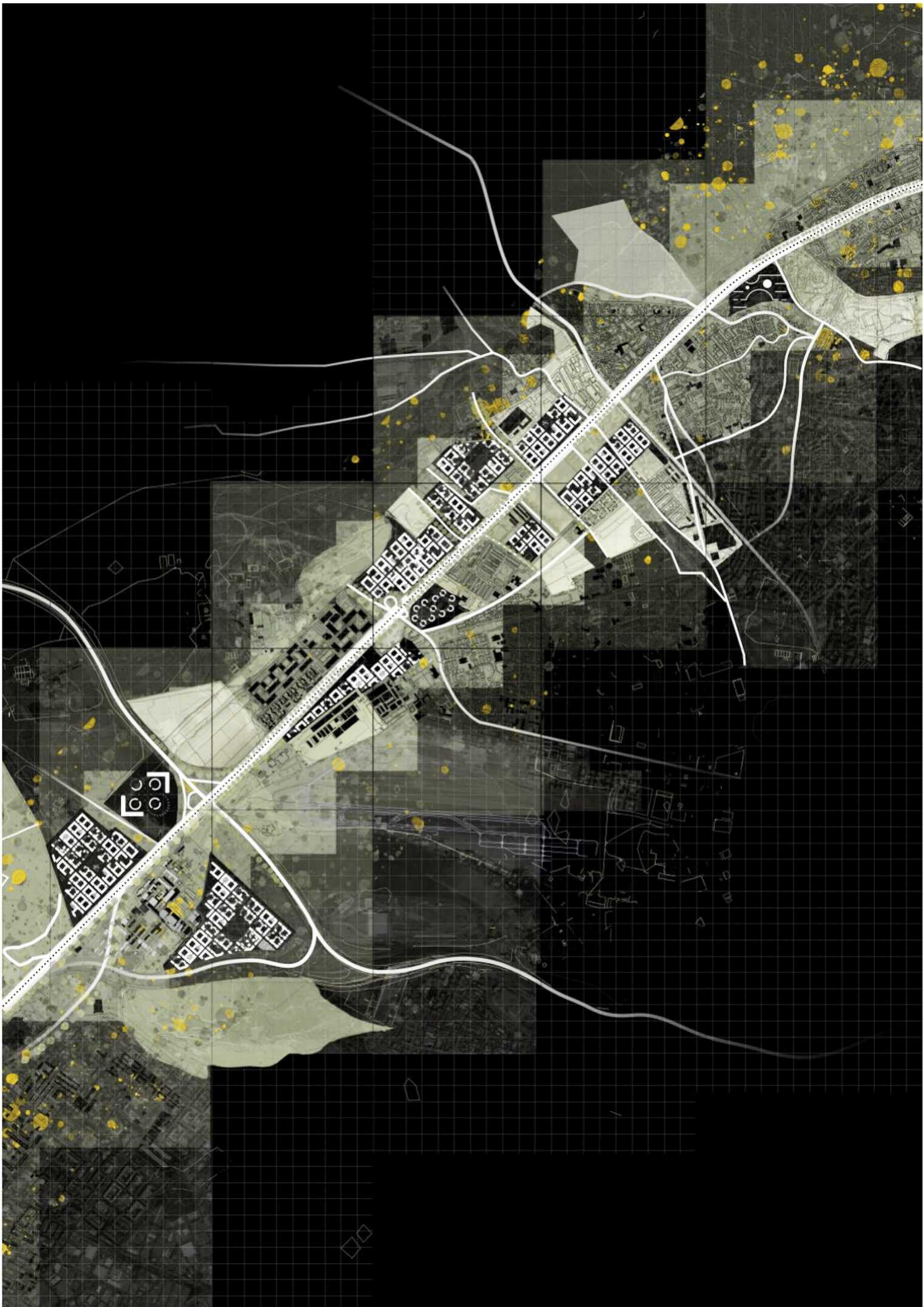
housing and communal services areas







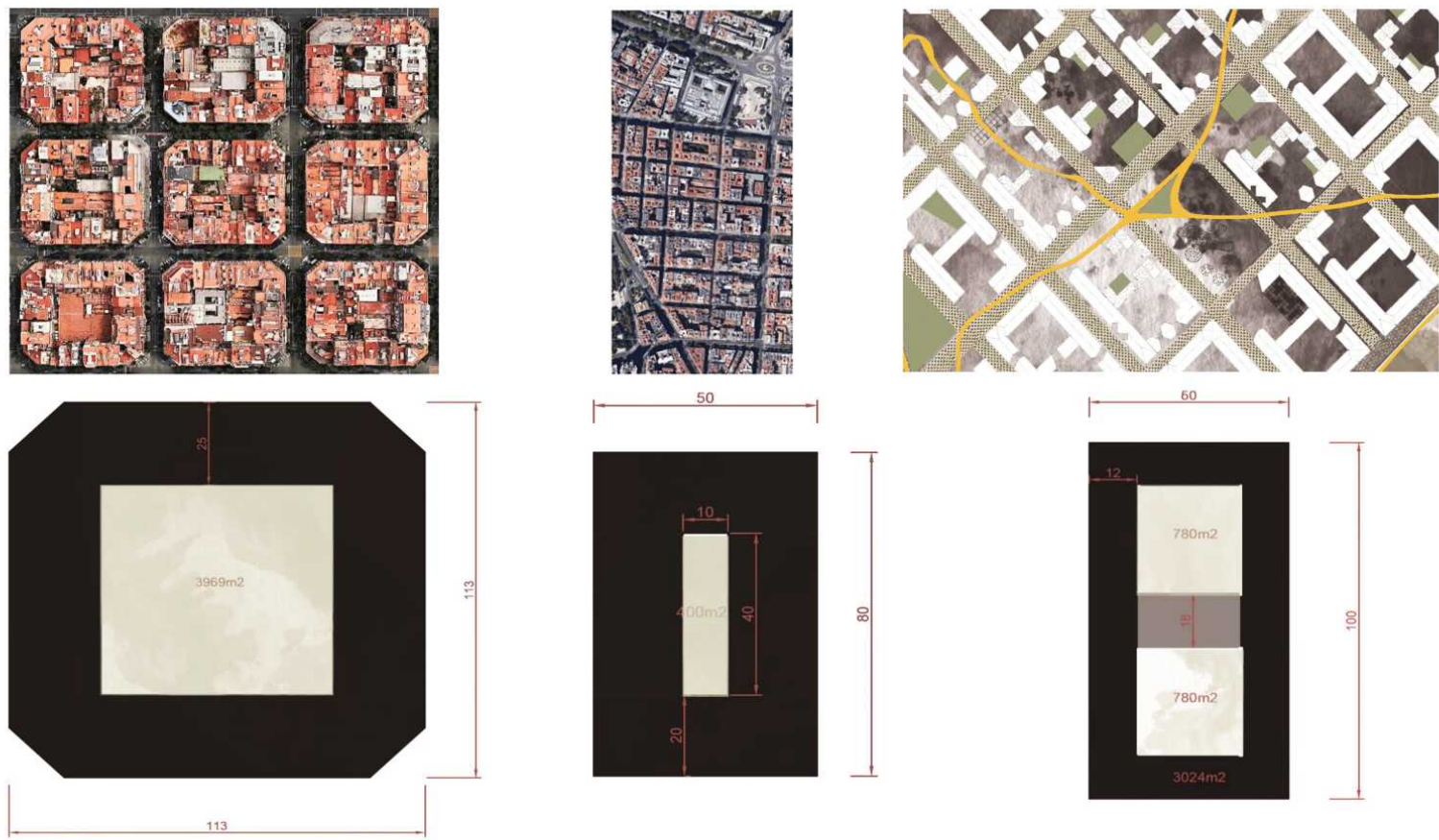
new green connector



area of intervention with connection



block design



block diagram
the new block dimensions



connection grid
plan



layers of nature
plan

buildings heights



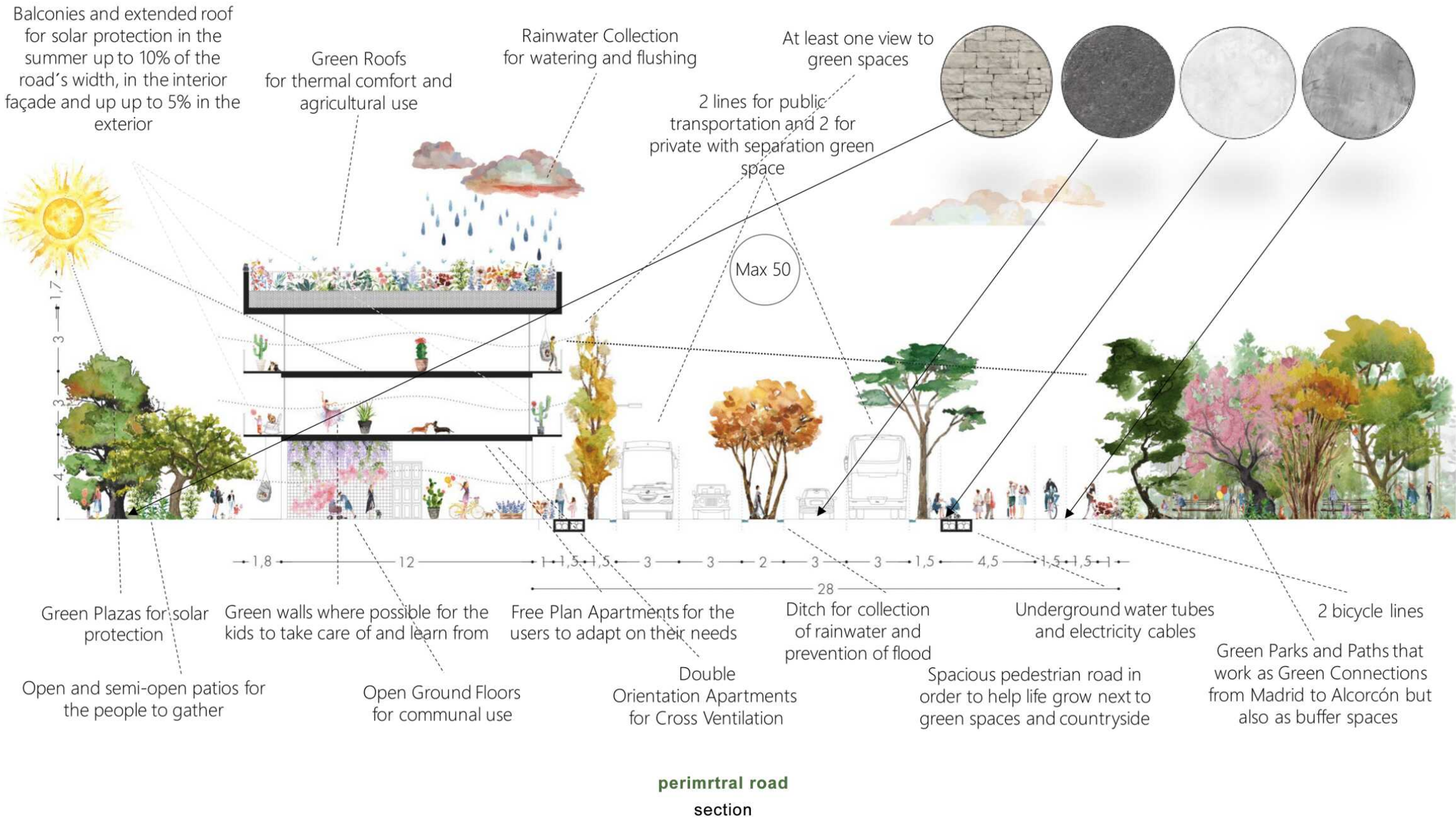
buildings height
plan

public and private plazas

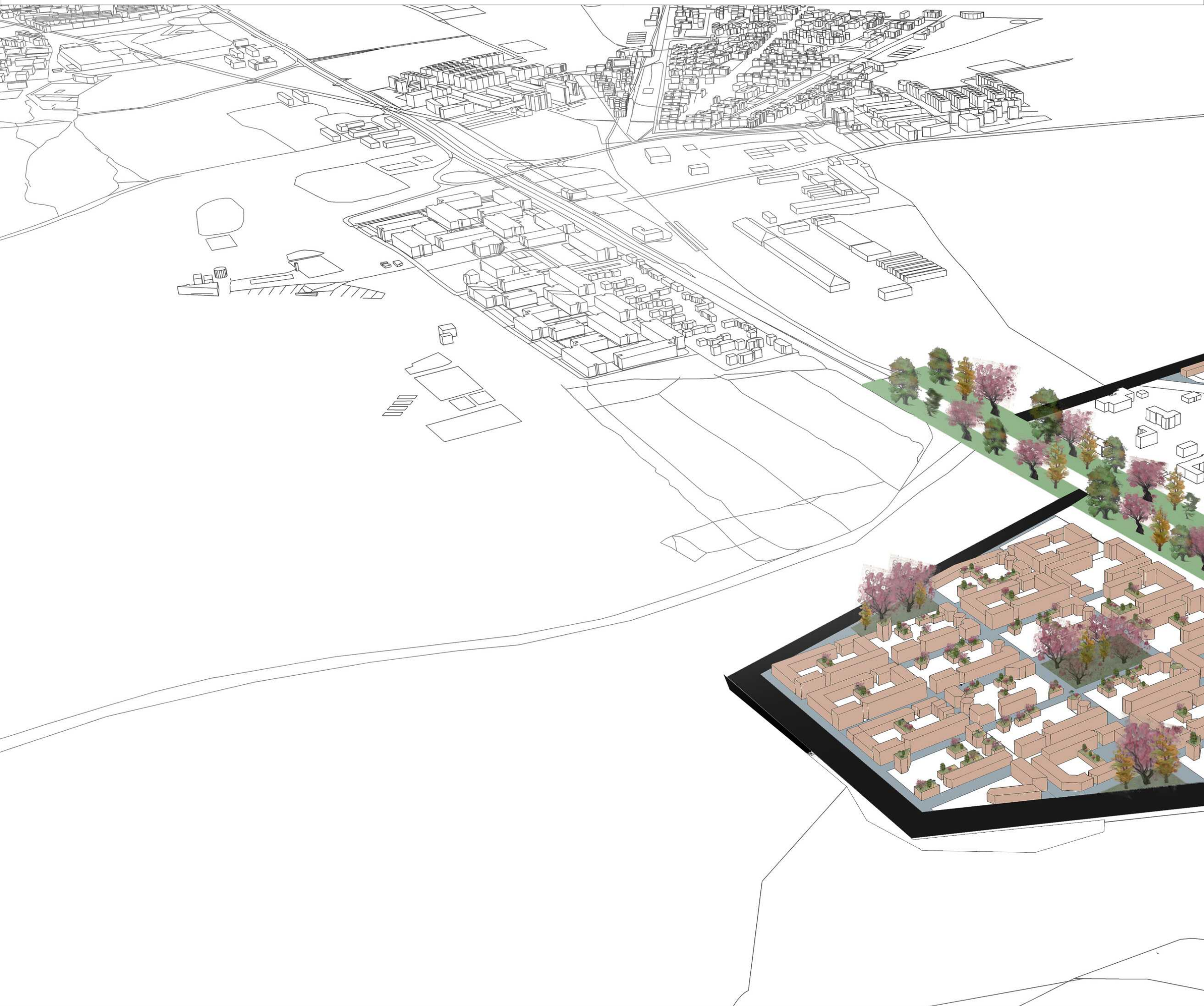


public and private plazas
plan

details



3d of the intervention area







potential exterior road
section



potential interior road
section

S09

leadership processes
& entrepreneurship

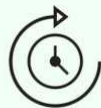
leader

Sacha Menz



title

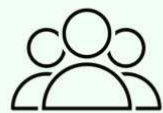
live and work for
an IT based com-
munity project
management and
schedule



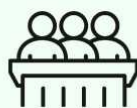
7 days



Leon, Spain



Kaustubh Zavar
Georgia Strino-
poulou
Irina Papadaki



Axel Paulus
Fernando León
Brendan Anglin



structure

to understand the concepts of management such as value, cost, price and time, which will help adding realism to their architecture proposals and enabling them to be part of the economic debate during the building process.

1. How to Work Together Organisation Charts
2. How to Work Together Service Provision
3. Acquisition
4. Contracts/Agreements Fee

leadership processes & entrepreneurship

goals:

- avoid the old adage "fail to plan, plan to fail"
- clarify your business goals and strategy
- make clear business administration
- know how to maximize marketing
- always have the Balance Sheet in mind
- get exposed, practice & feel comfortable using common business tools in trade of services... (architectural services)

to understand:

1. what makes "the" practice go international.
2. target market, market approach reflections, and market intelligence.
3. how are we about the new competitive factors?
4. Planification Steps.
5. the execution of the project, the fees, insurance, and competitions.

the study charts:

project urban design and landscape and project sustainability and energy.

finance

this plan applied on urban design and landscape project



financial director

Management, and tendering (internal and/or external)



other financial team (3 positions)

- checking accounts
- payroll direct deposit
- follow up payments' and cheques

benefits

- social justice
- new pedestrian connection and roads to madrid center.
- give back the identity of the place and recover its memory.
- environmental: more green areas, better air quality, reinforcement, and regeneration of the green areas, heat island elimination, and to become part of the ring around madrid that is the metropolitan park.

project costs

- economical cost
- land appropriation process
- socialization of the process

company budget

1. the company adopts an operating budget by individual investors. over €50M, Our investors from over the world (middle east, america, africa and europe).
2. subpartnership with others over €50M, work in Ratio investments or services, big-scale projects over €50M).
3. co-operative investment funds (marketing before and during the construction and establishing a cooperative investment society).

other options

4. the external investment plan (banks fund) (small-scale and medium projects, €1M-€20M)
5. The internal investment plan (projects, trading, investment projects, €100K and less)
6. deferred payment investment (trading, supplying materials and equipments, €500K and less)

investment plan policy

- focus on
- safety
- liquidity
- yield

balanced long-term financial planning

- five-year capital improvement plan budget updated biannually
- debt policy and procedures
- investment policy

the financial planning process

- investments
- marketing and service development
- capital structure
- sources of financing

financial department also will follow up and cover

- cash flow
- tax planning
- risk management
- investment planning
- estate planning

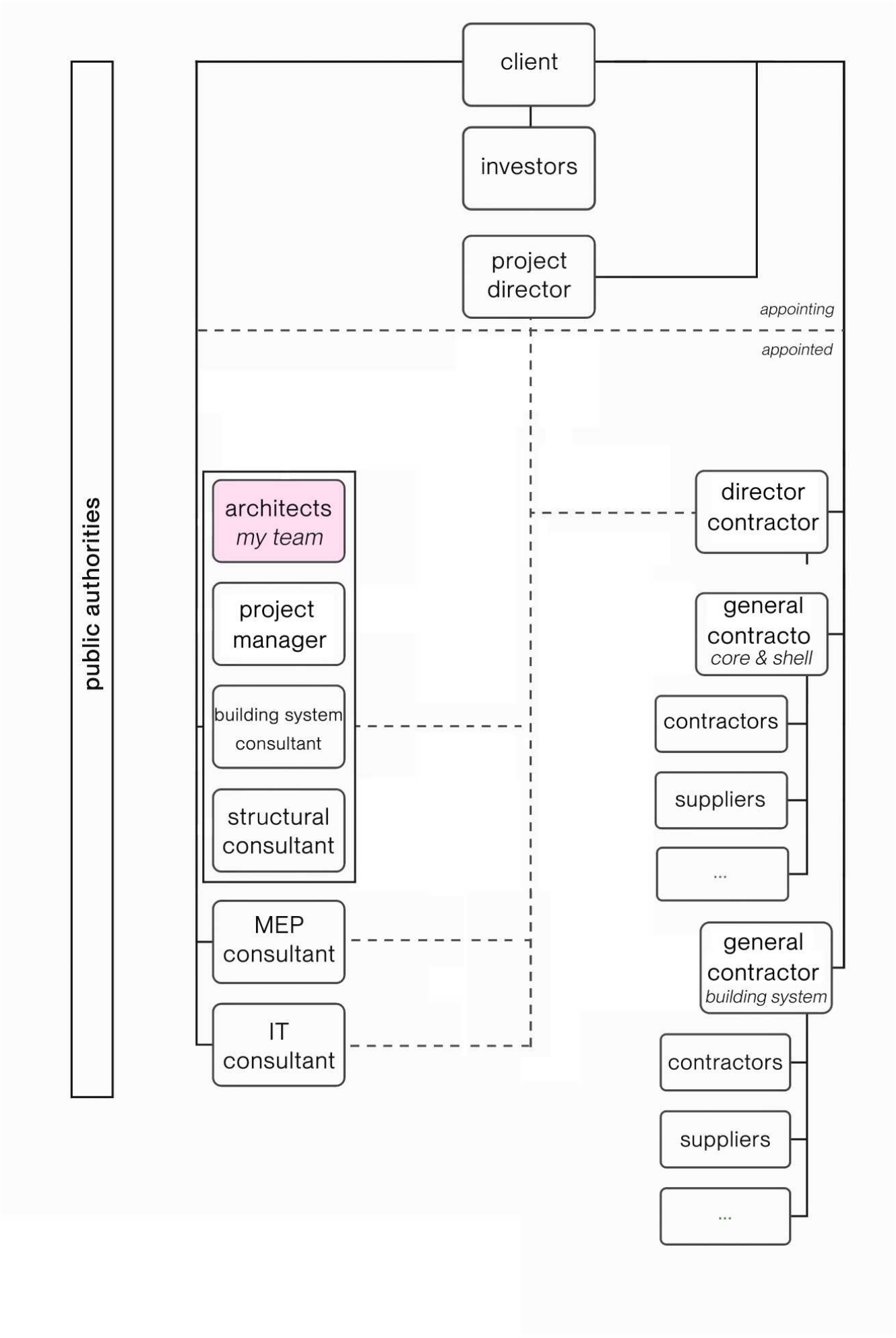
statistics

- focus on our goals to provide the best financial results by customizing plans according to our need and mission.
- the financial department to take care of our financial planning progress and meet regularly as needed to keep on track

relationships
this pain applied on sustainability and energy project

<i>delivery phase</i>	<i>goal of the client</i>	<i>decision of the client</i>	<i>services of offer</i>
<i>entry of the architect</i>	advertising and marketing for investors	brief thinking choose of the architecture firm	quality design originality of ideas low maintenance options
<i>building permit and construction documents</i>	form contractor with suppliers and construction company	design approval set a budget	detailed drawings prepare bureaucracy help to choose contractor
<i>tendering</i>	quality vs. cost	choose construction company agree on the budget	choose materials consultancy about cost, risks, and quality
<i>entry of the contractor</i>	timeline of the project	choose suppliers agree on the costs	consultancy to choose the contractor (if one or more) prepare timeline schedules and BOQ construction supervision

organization chart



threats

- not enough control of the architects on the execution
- project director can communicate directly with the contractors without keeping the architects in loop.

opportunities

- everybody has clear role and responsibilities in the project.
- everyone has liability because they are directly contracted with the client.
- project director is the center of communication cause we do not have the adequate experience

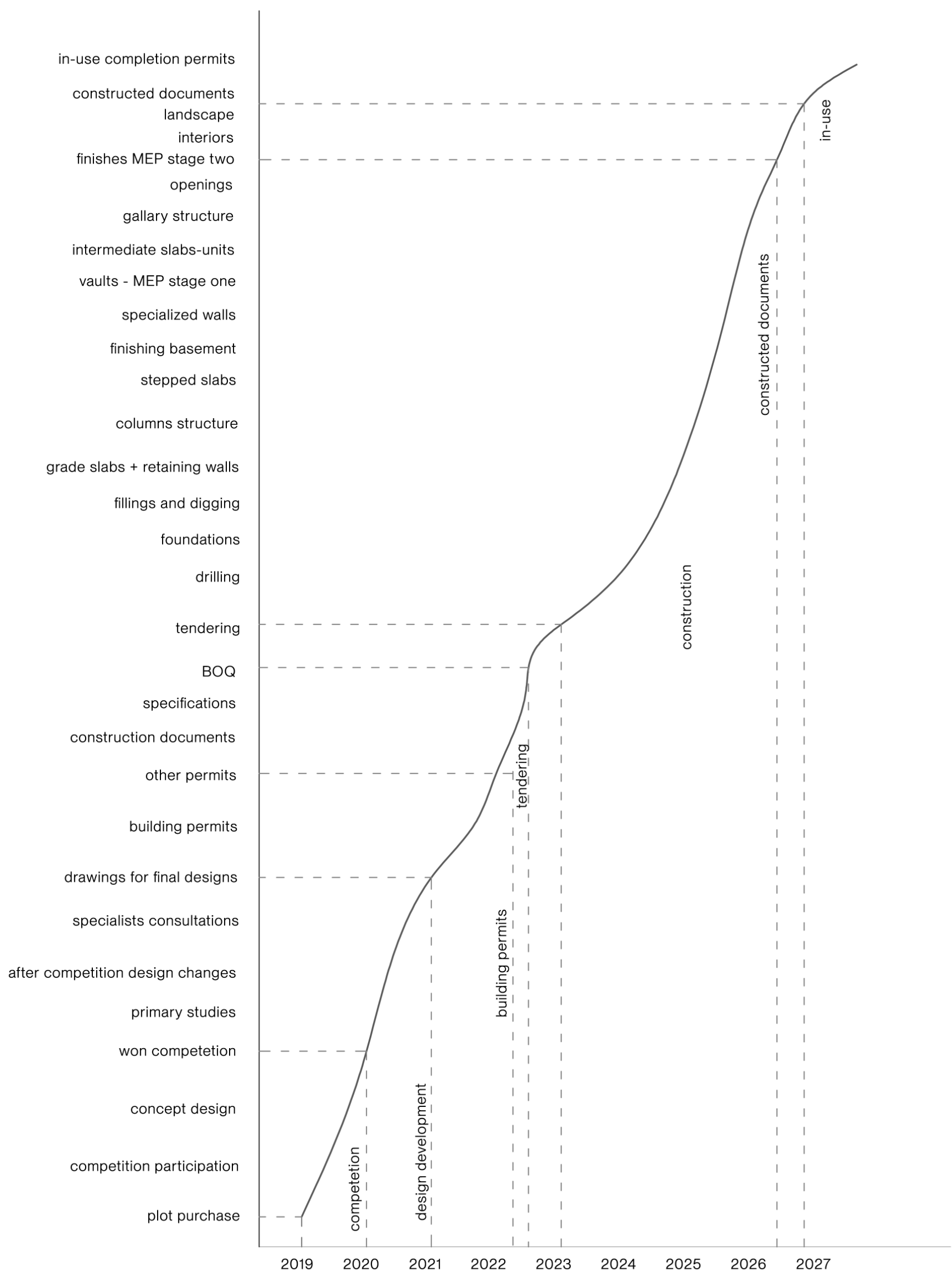
driving forces

- project manager.
- architects (my team).

key partners

- structural consultant.
- building systems engineering consultant
- MEP consultant.
- IT consultant.

timeline highlight
 sustainability and energy project



family

MC

MCH*

leadership



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MCH director

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MCH director & Workshop leader

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POLITÉCNICA

*&
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