

# Dwelling with Interactive In-between Space

P4 Presentation

AR3AD131 Dwelling Graduation Studio: Dutch Housing (2014-2015)

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Housing design

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# Theme Research

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## Problem Statement

Owing to the quickening pace of life, especially in big cities such as Amsterdam, the communicate between people is gradually decrease compared to the past.

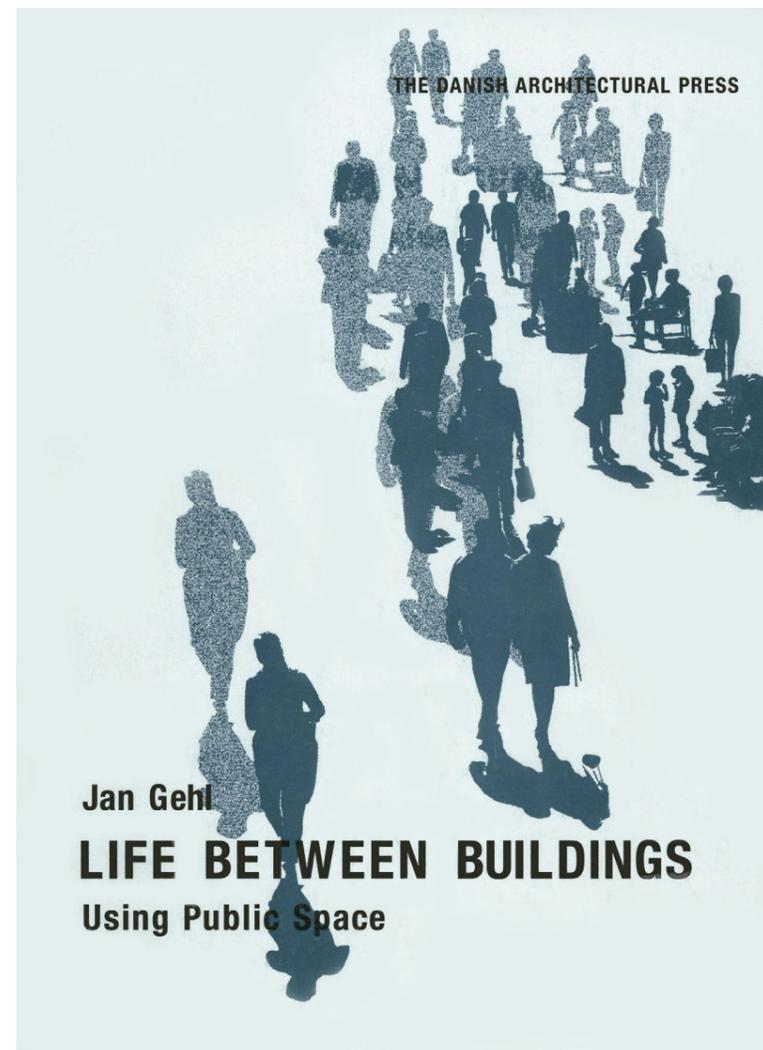
The buildings can be more or less influence people's behavior patterns, and then change this situation.

So the topic of outdoor public, communal or collective spaces are often being brought up by architects, but always being created wrong.

Either it is too small to accommodate any activities or too big that it does not bring people together at all.

As Jan Gehl said in Life between buildings,

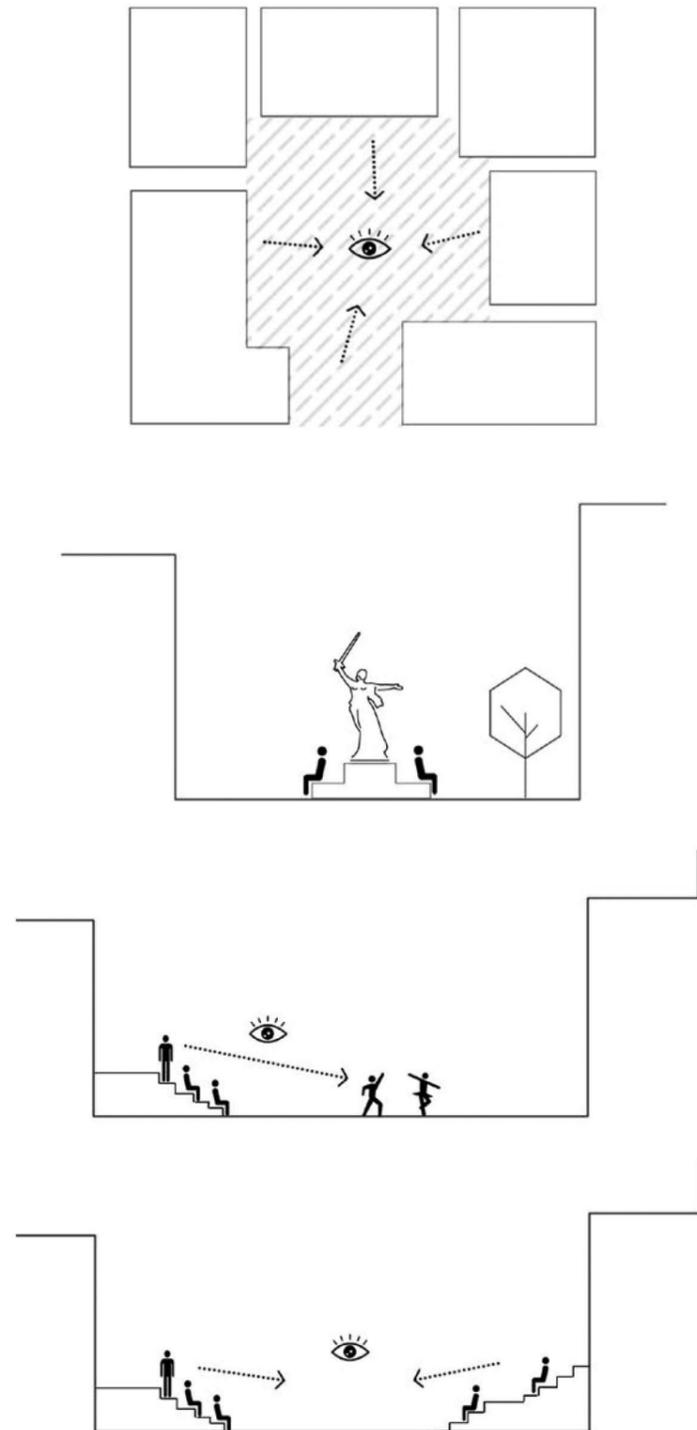
“The courtyards built in modern buildings are very often dead. They are intended to be private open spaces for people to use - but they end up unused full of gravel and abstract sculptures.”



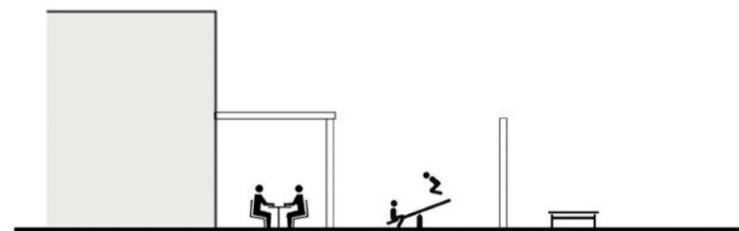
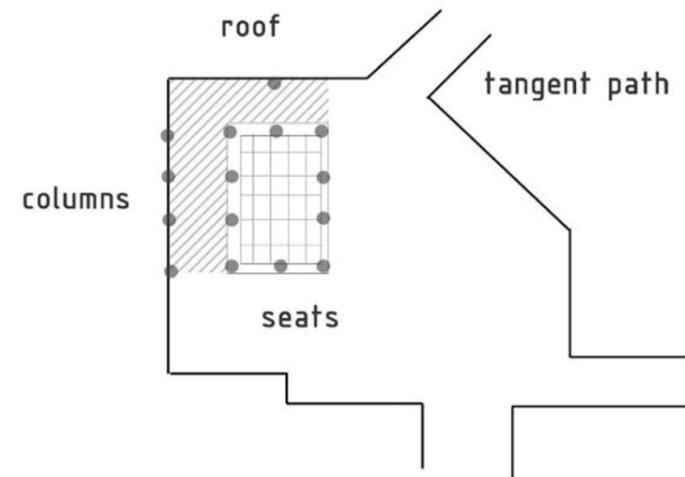
‘What **outdoor space** and **spatial elements** can foster the positive communication between the residents of a dwelling complex?’

# OUTDOOR SPATIAL ELEMENTS

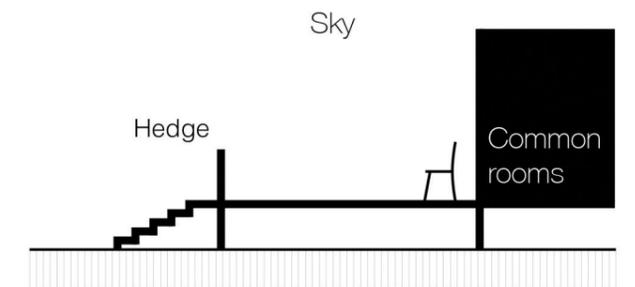
Stair Seats



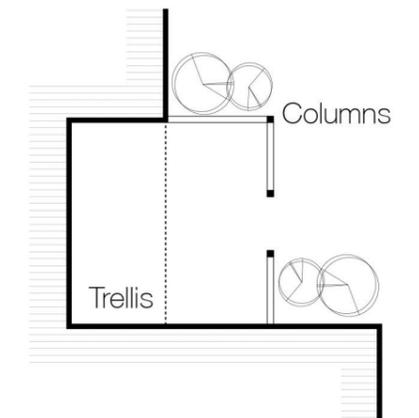
Public Outdoor Room



Outdoor Room



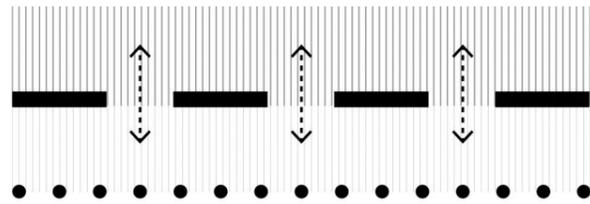
An outdoor space becomes a spatial outdoor room when it is well enclosed with walls of the building, walls of foliage, columns, trellis, and sky



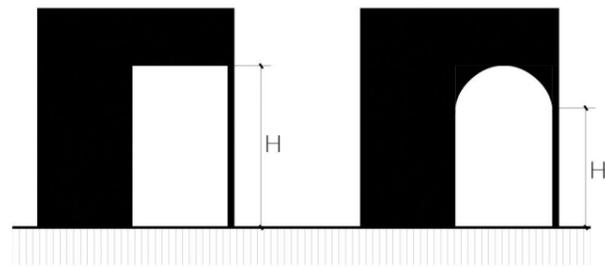
Having so much enclosure round it. It takes on the feeling of a room

# OUTDOOR SPATIAL ELEMENTS

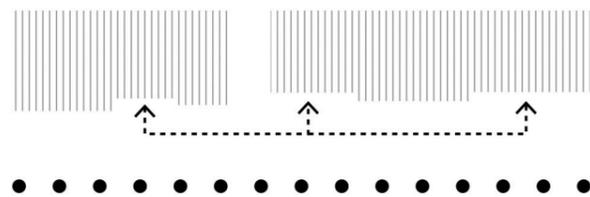
## Arcades



With openings into the building

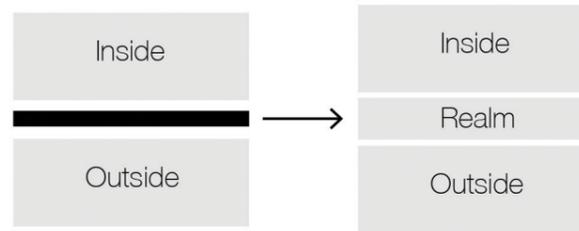


The edge of the ceiling shouldn't be too high

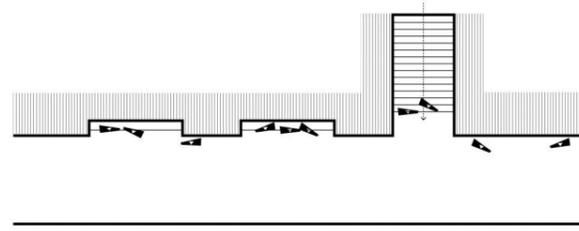


Connecting up building to one another

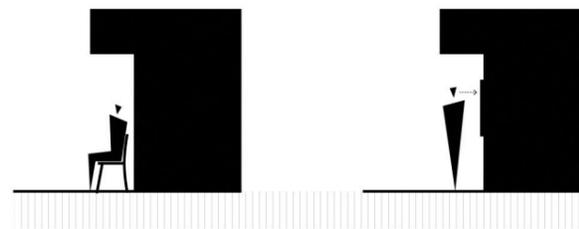
## Building Edge



From edge to realm

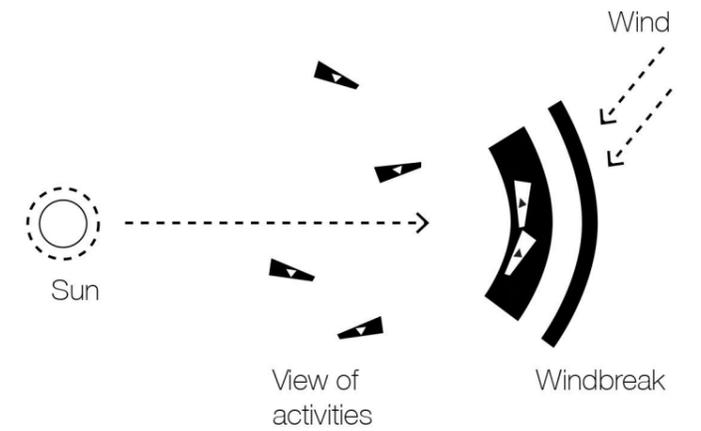


Walls should wave in and out



Roof could extend over to create little places for benches, posters.

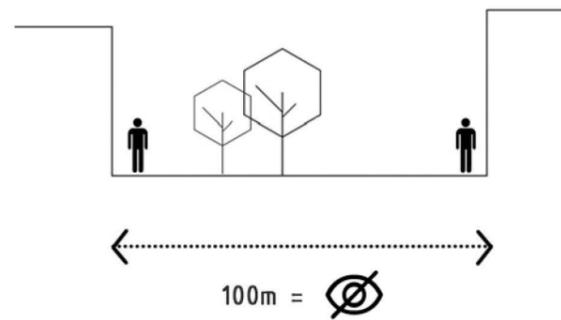
## Seat Spots



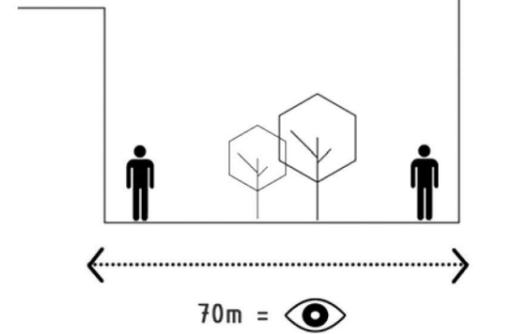
In cool climates, choose them to face the sun, and to be protected from the wind; in hot climates, put them in shade and open to summer breezes. In both cases, place them to face activities.

# COMMUNICATION BETWEEN RESIDENTS

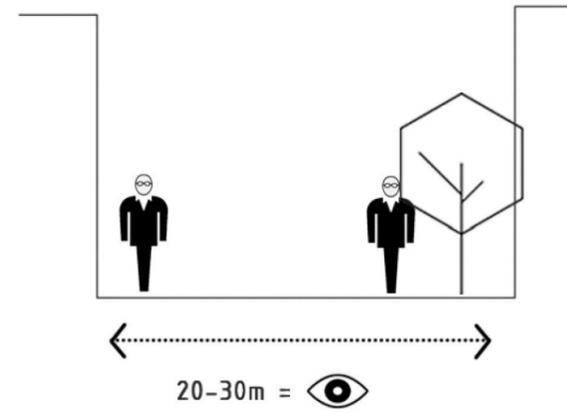
## Seeing



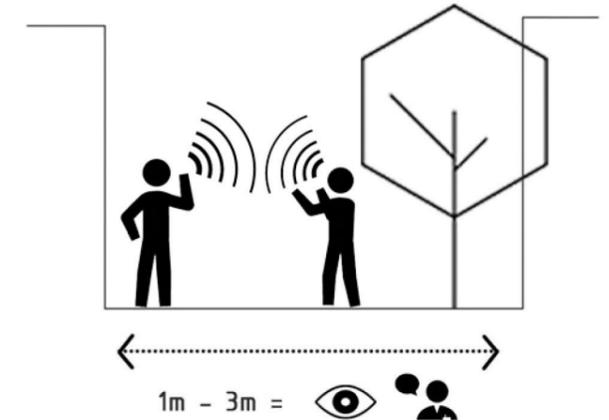
The social field within one can see others and perceive that they are people at distance vision - 0 to 100m. At approximately 100 meters figures that can be seen from far become human individuals but not recognisable.



At a distance of between 70 and 100 meters, it begins to be possible to determine with reasonable certainty a person's sex, approximate age, and what that person is doing. At this distance it is often possible to recognize people one knows well on the basis of their clothing and the way they walk.

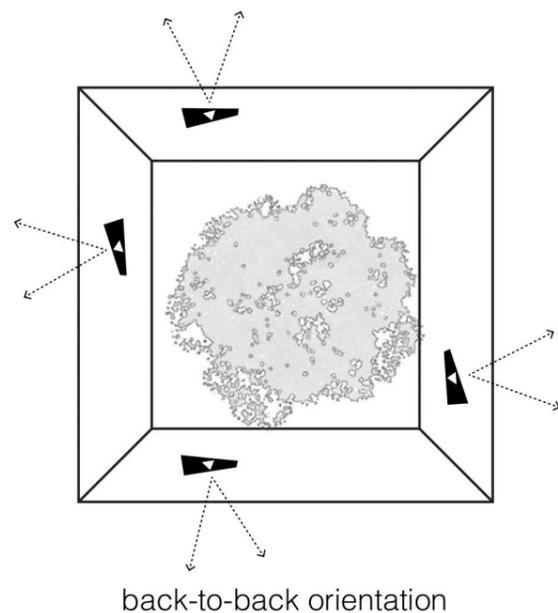


At a distance of approximately 30 meters, facial features, hairstyle, and age can be seen and people met only infrequently can be recognized. When the distance is reduced to 20 to 25 meters, most people can perceive relatively clearly the feelings and moods of others.

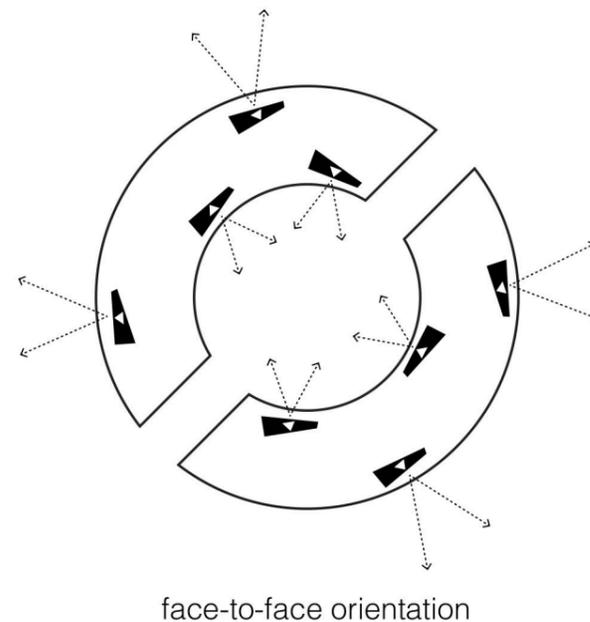


At distances of 1 to 3 meters, at which normal conversations usually take place, the experience involves the degree of detail, necessary for meaningful human contact.

## Sitting



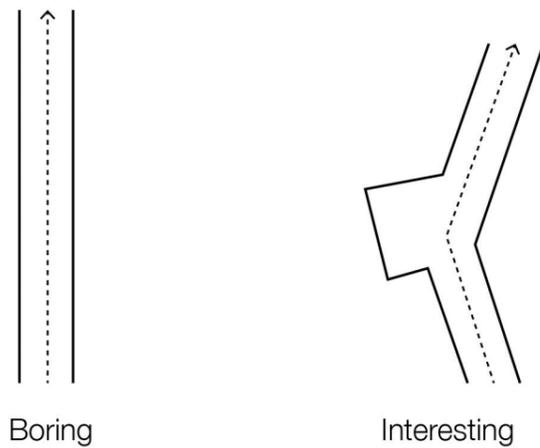
Choosing between sitting in a private backyard or in a semi-private frontyard with a view of the street, people will often choose the front of the house where there is more to see.



A choice of seats in sun or shade can make all the difference in a place's success, depending on its climate and location. Allowing people to sit near a playground or within view of other activities is also crucial.

# COMMUNICATION BETWEEN RESIDENTS

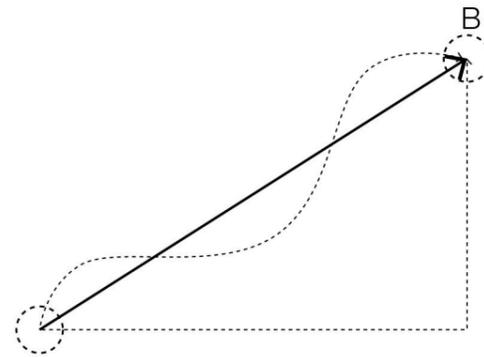
## Walking



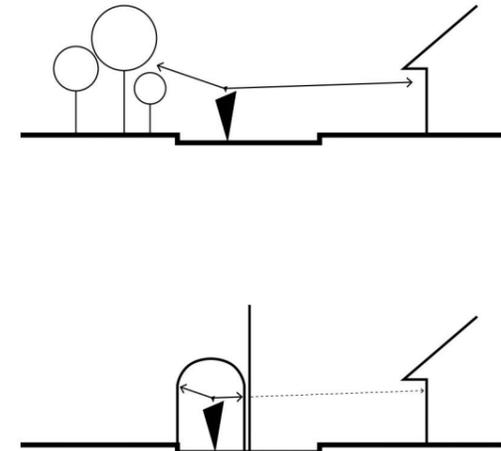
Boring

Interesting

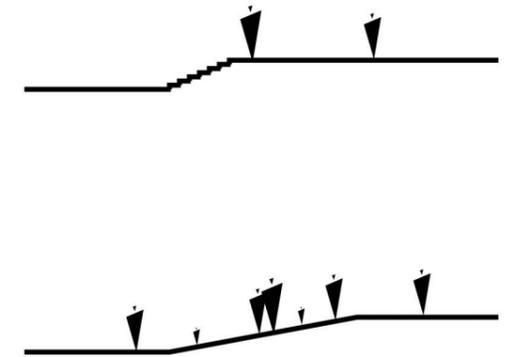
*Physical distance is the same. But the experienced distance is different. A walking network with alternating street spaces and small squares often will have the psychological effect of making the walking distances seem shorter.*



*Whenever people walk, they prefer direct routes and short-cuts. Only very great obstacles, like dangerous traffic, extensive barriers, and so on seem to be able to interrupt this pattern.*

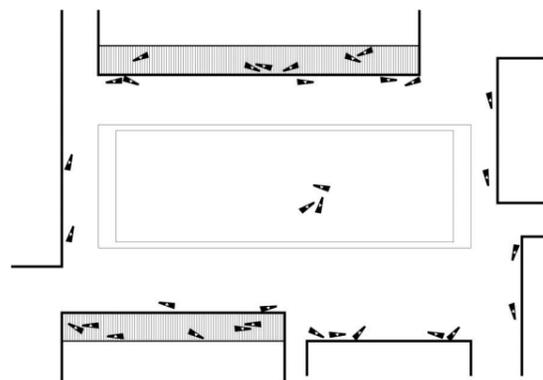


*When walking routes are placed at the edge of an open space, pedestrians may enjoy the best of both worlds: closeness, intensity, and detail on one side; on the other side, a fine view of the entire open space. Walking routes placed in the middle of a space most often provide neither detail nor expanse of view.*



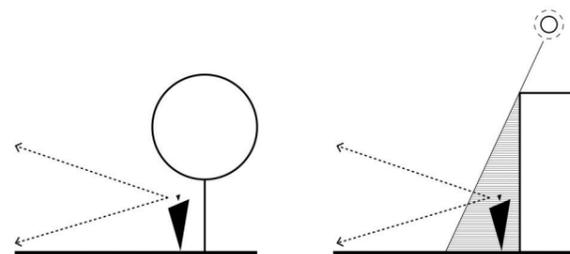
*In situations in which pedestrian traffic must be led up or down, relatively flat ramps are generally preferred to stairs.*

## Standing

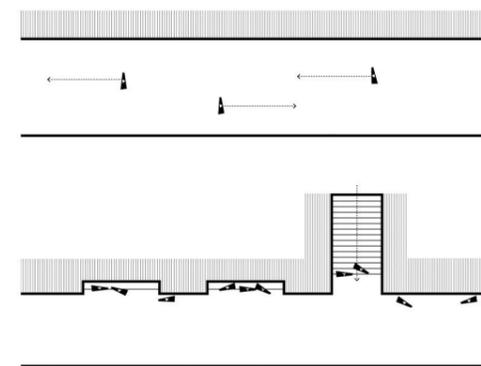


### **the edge effect**

*Popular zones for staying are found along the facades in a space or in the transitional zone between one space and the next, where it is possible to view both spaces at the same time. activities grow from the edge toward the middle*



*To be partly hidden in half shade while at the same time having a fine view of the space-halfshade space will attract people to linger and to observe while remaining unobserved. Protection is provided, but there is still a good view.*



*If spaces are desolate and empty - without benches, columns, plants, trees, and so forth - and if the facades lack interesting details-niches, holes, gateways, stairs, and so on - it can be very difficult to find places to stop.*

Theme Research

## **Concept**

Site Research

Design

Structural System

Facade and materials

Housing design

Climate System

Conclusion

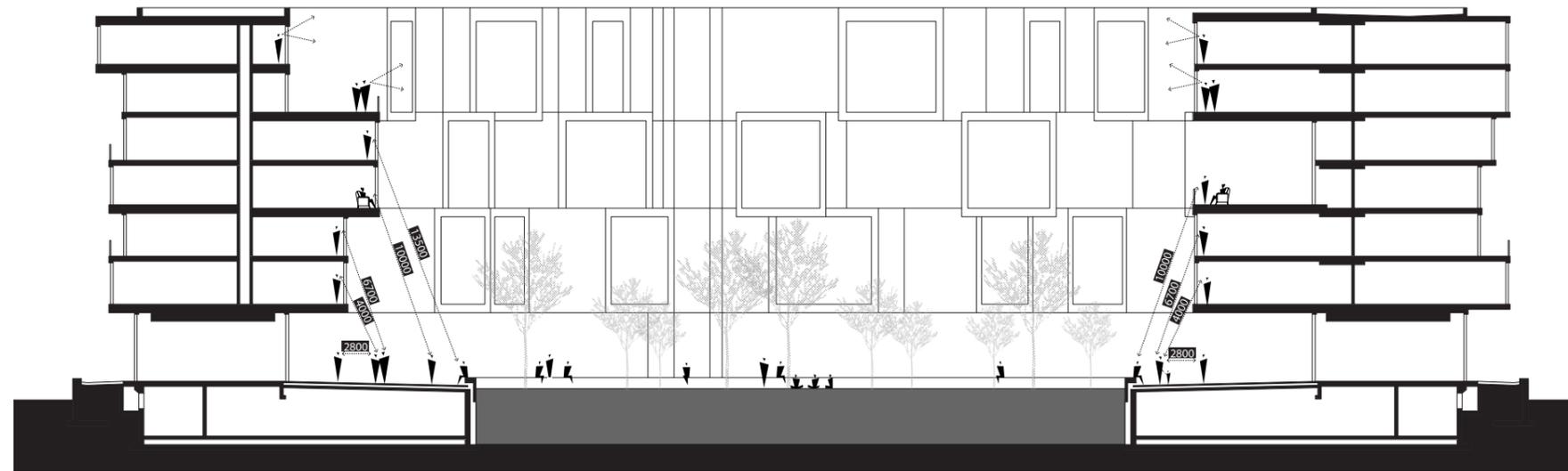


The in-between space defined by architectural elements

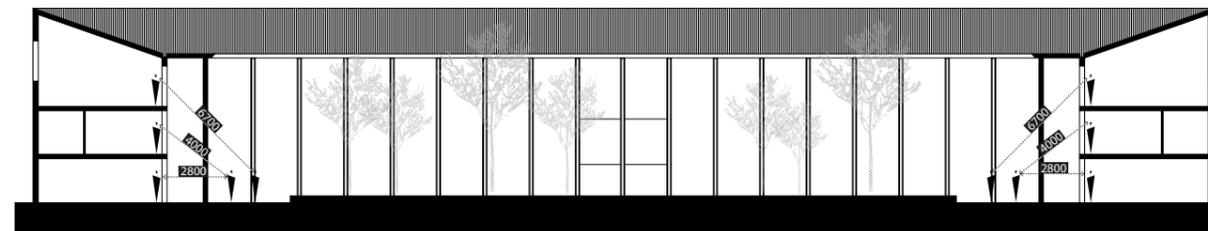


The in-between space defined by non-architectural elements

There is a **strong demand** of users for the in-between space



53 m

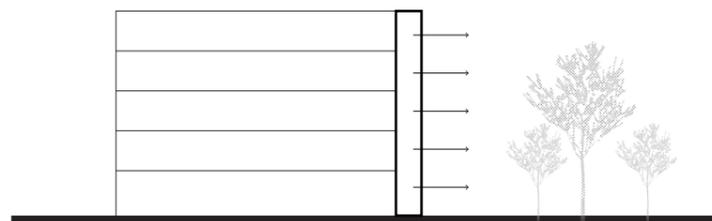


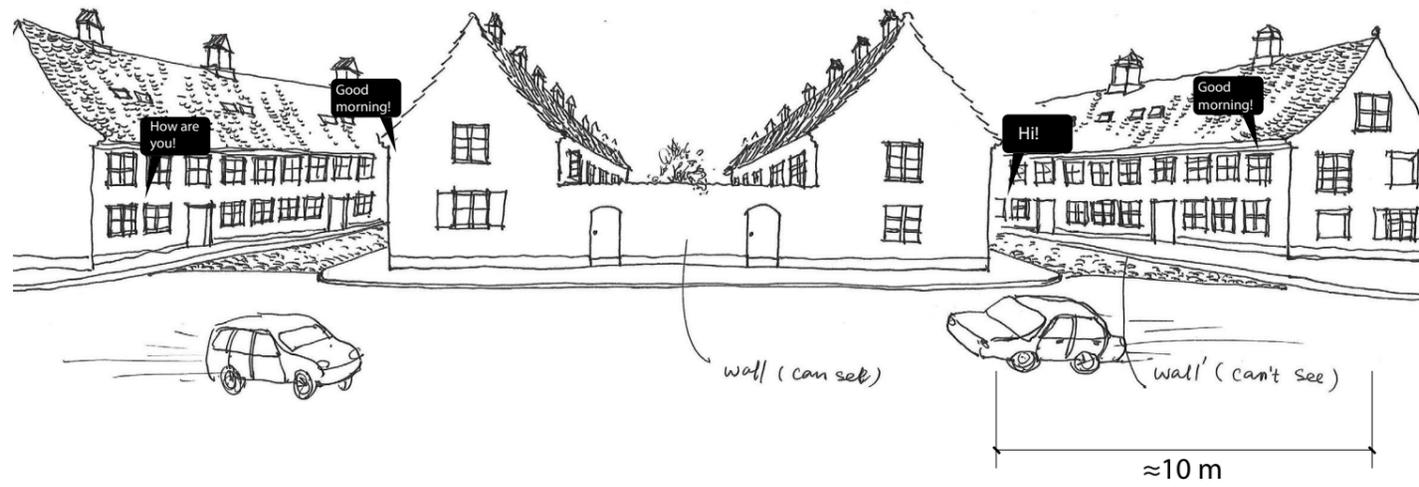
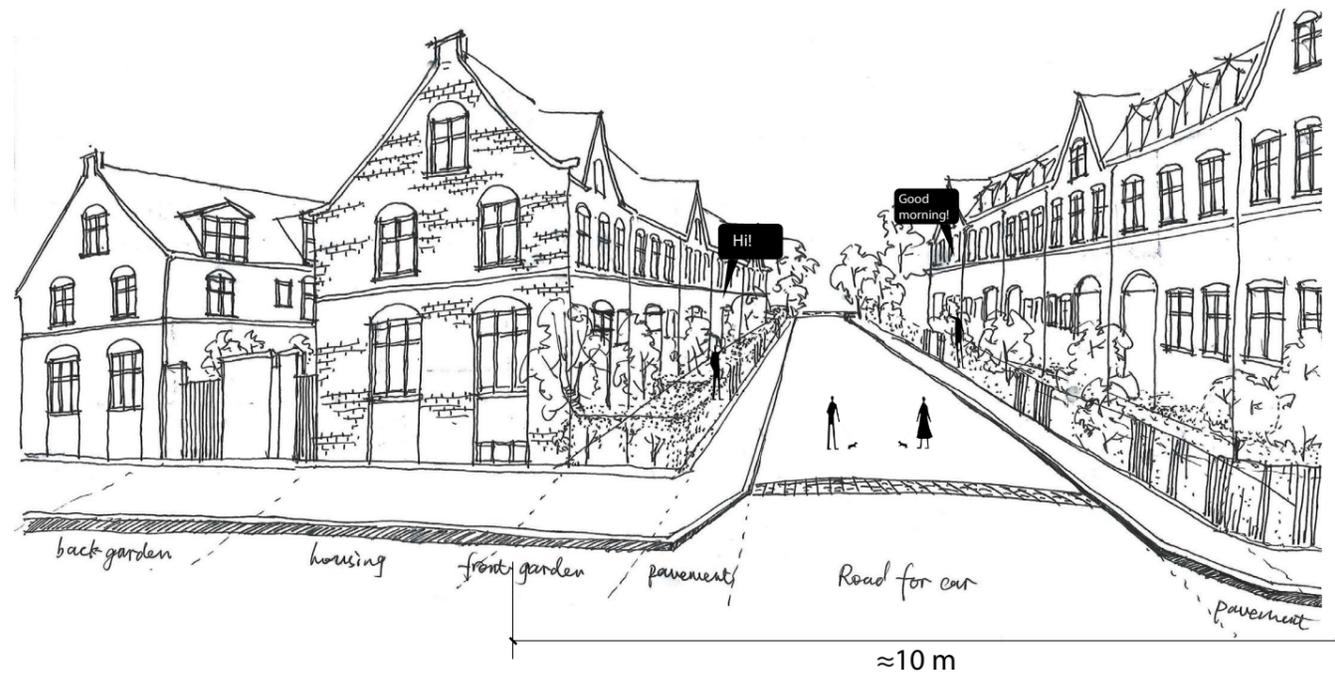
49 m

Pr

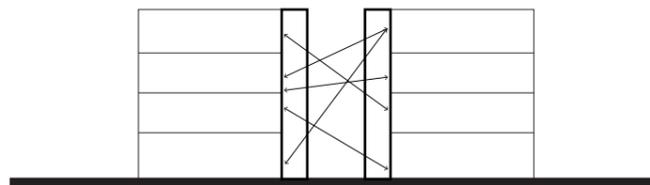
In-between

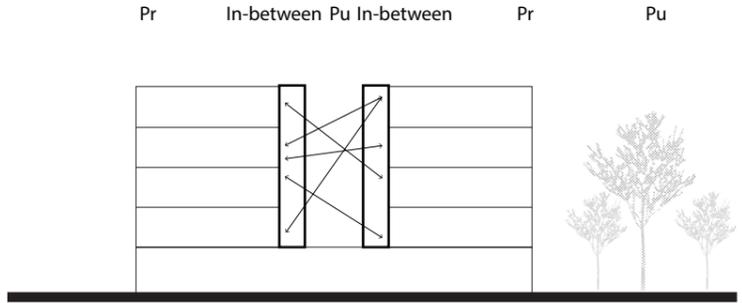
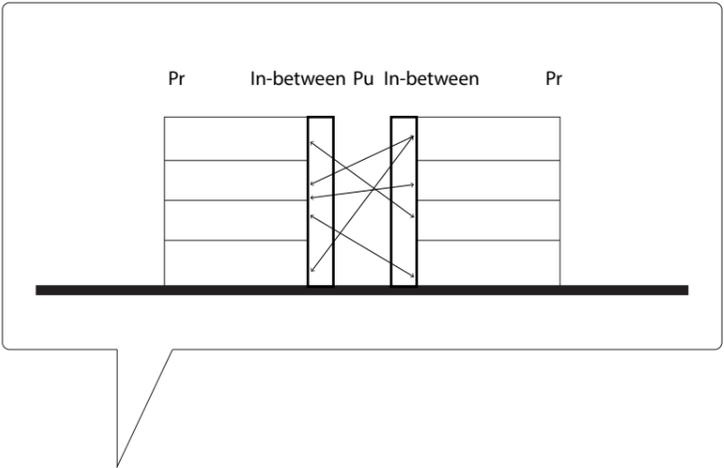
Pu

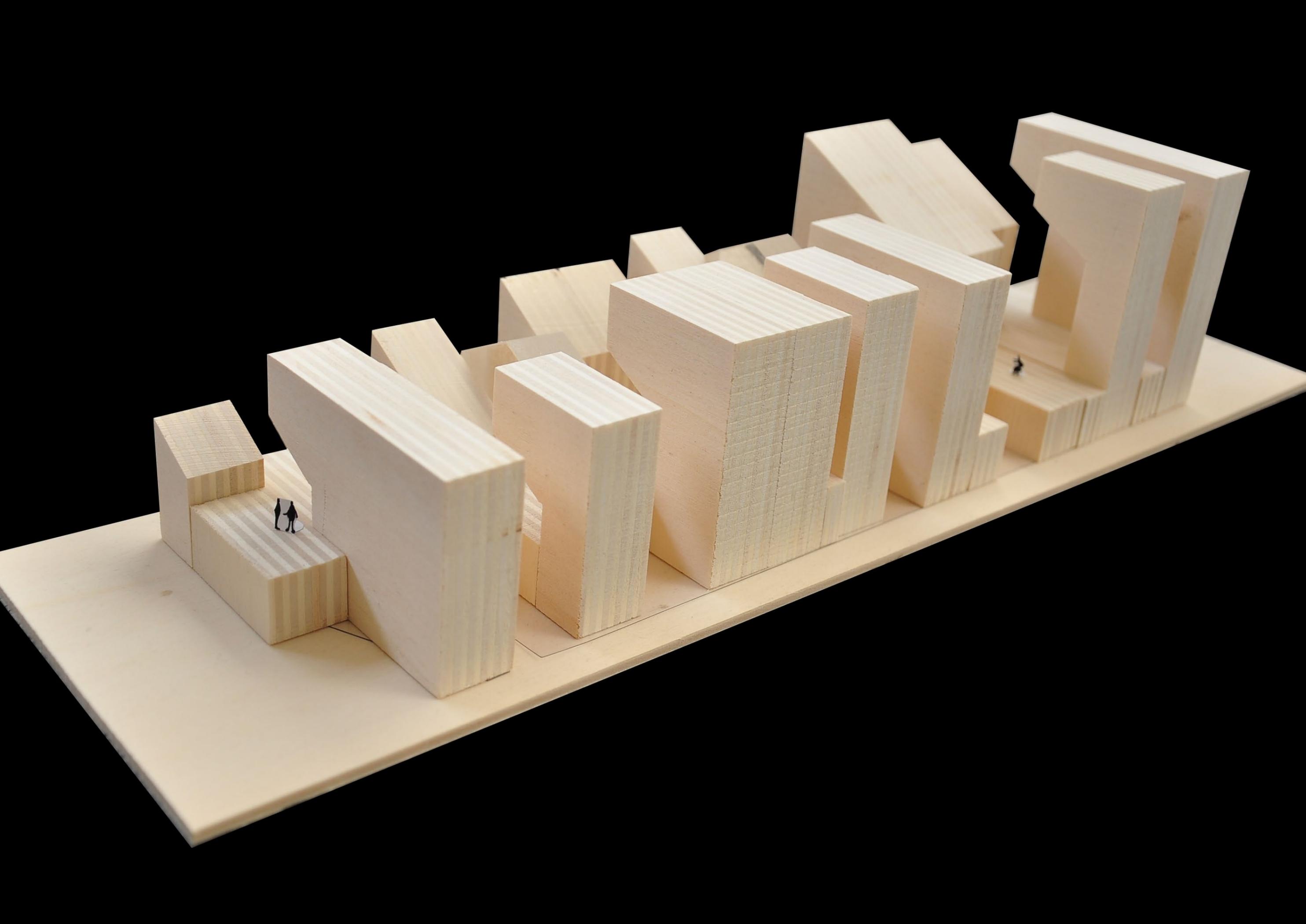




Pr In-between Pu In-between Pr







Theme Research

Concept

## **Site Research**

Design

Structural System

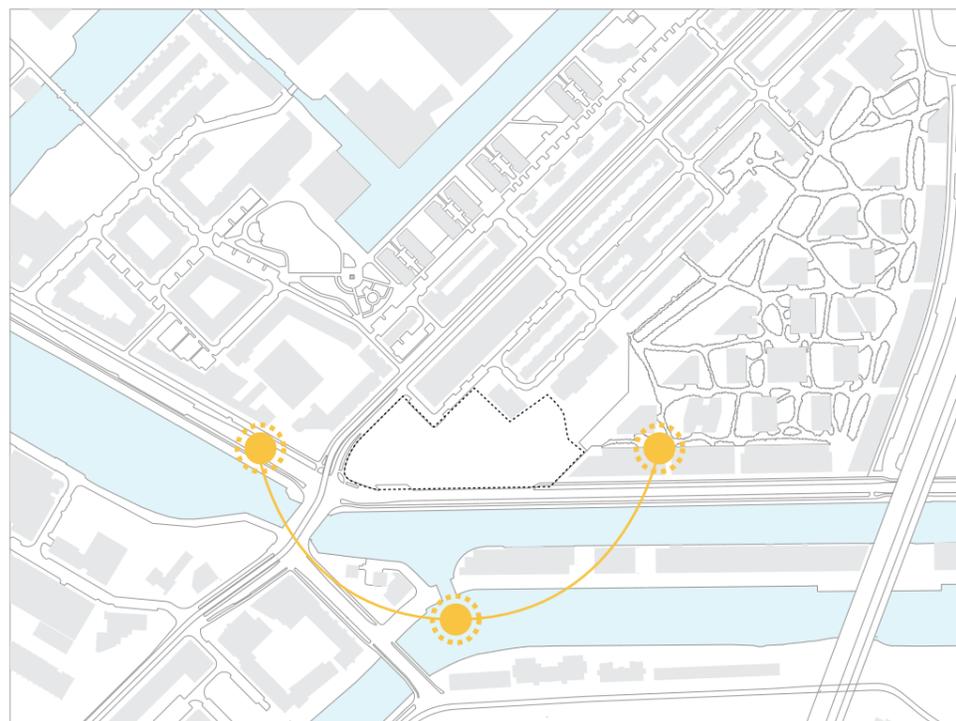
Facade and materials

Housing design

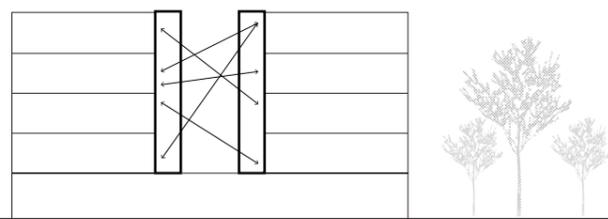
Climate System

Conclusion

about **SUN**

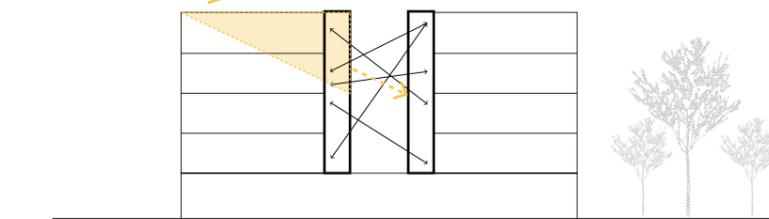


Pr In-between Pu In-between Pr Pu



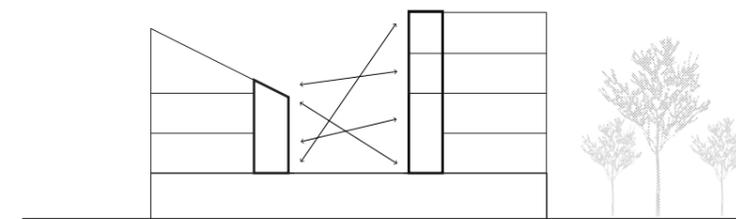
A

Pr In-between Pu In-between Pr Pu



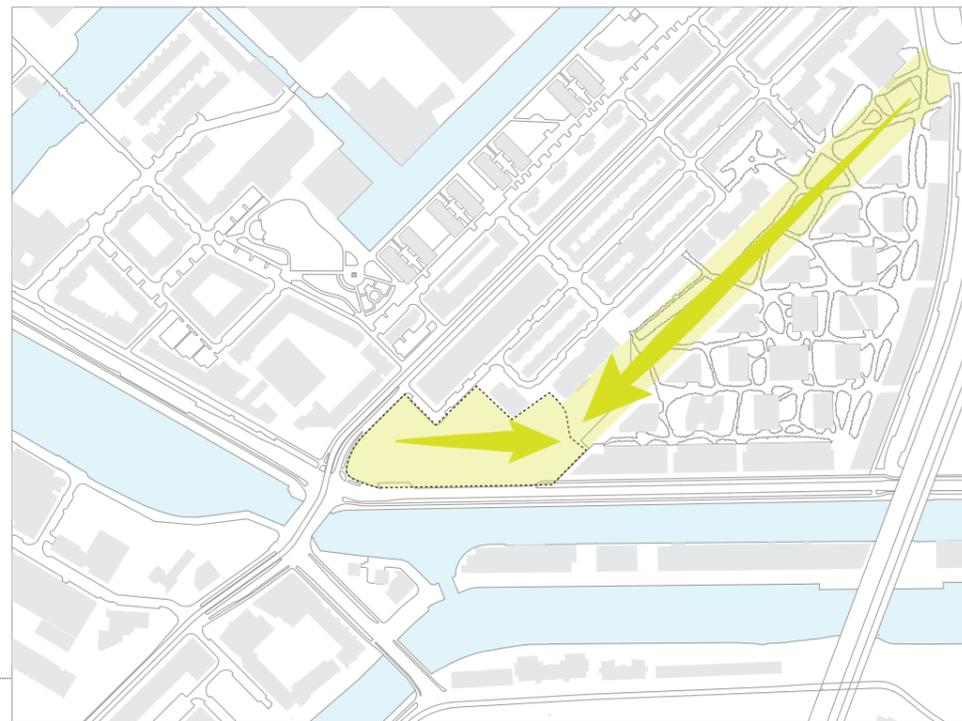
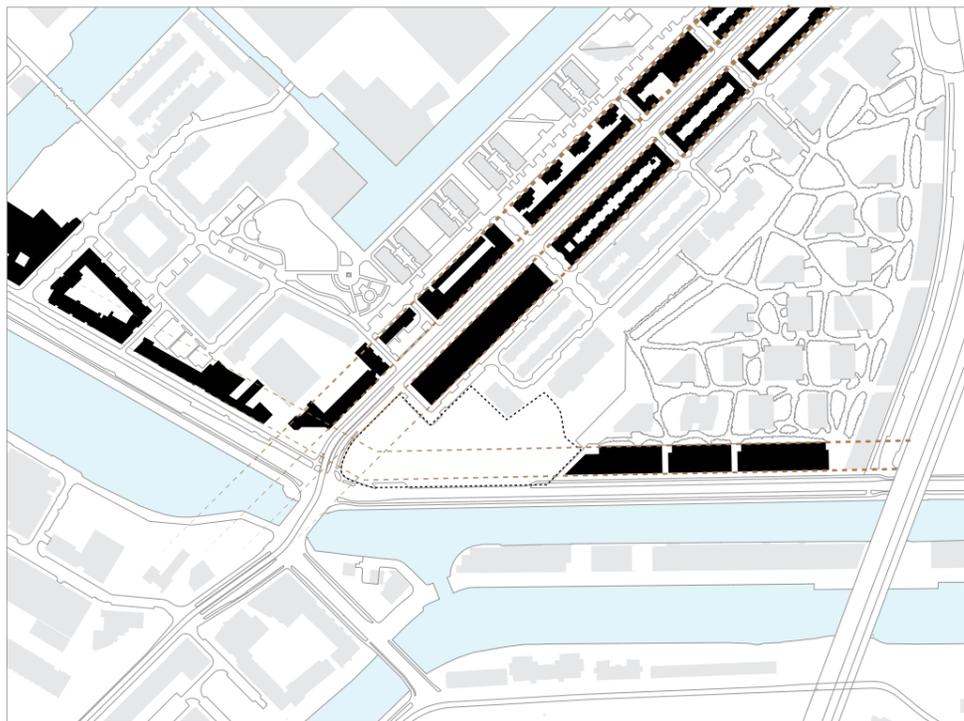
→ B

Pr In-between Pu In-between Pr Pu

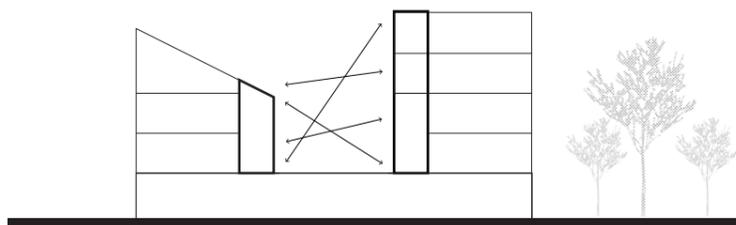


→ C

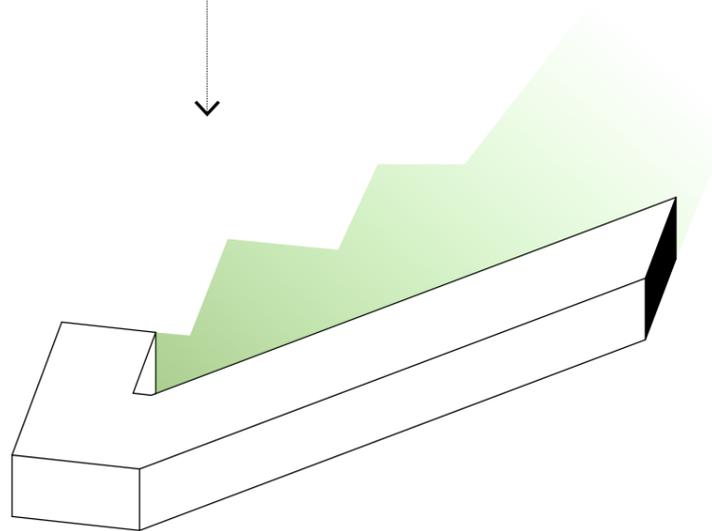
about COMPOSITION



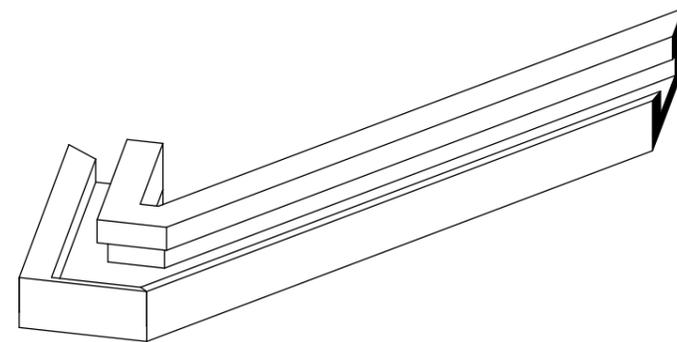
Pr In-between Pu In-between Pr Pu



C



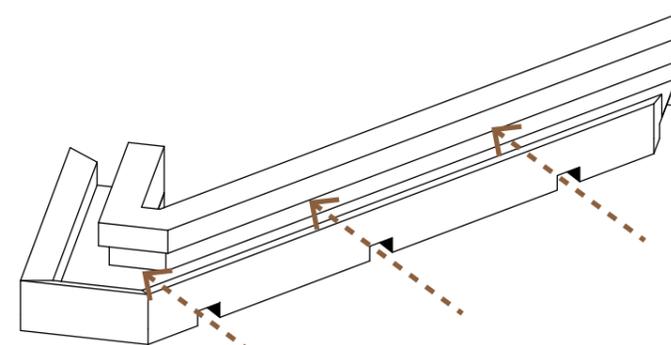
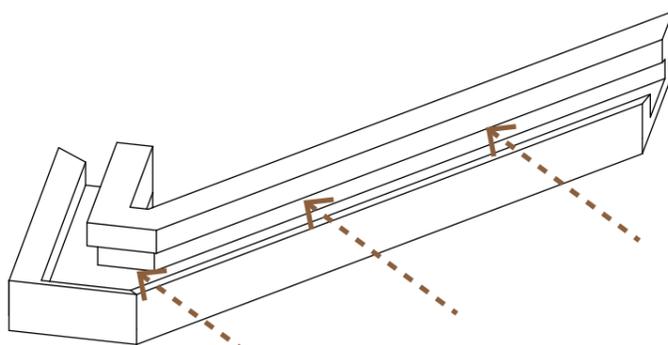
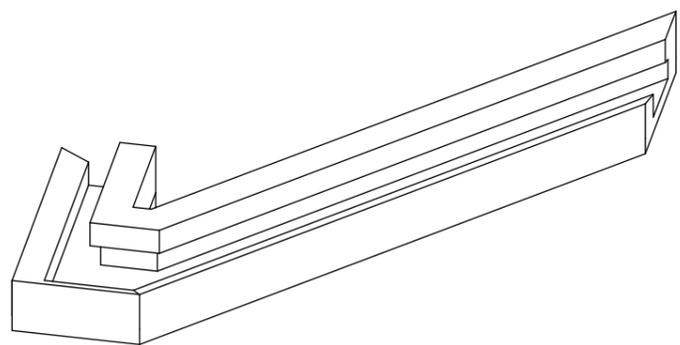
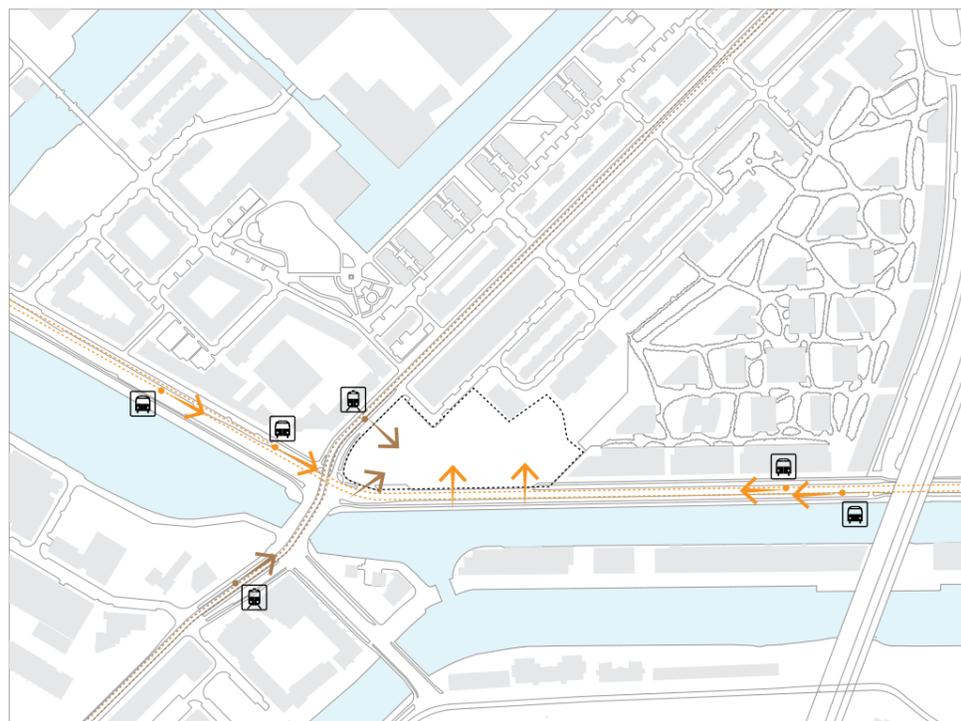
D



E



about ACCESSIBILITY



E

F

G

Theme Research

Concept

Site Research

**Design**

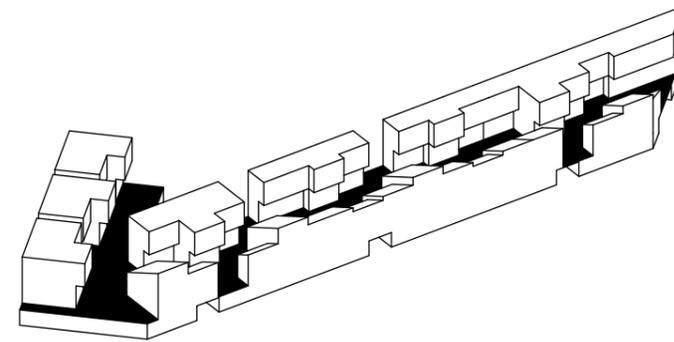
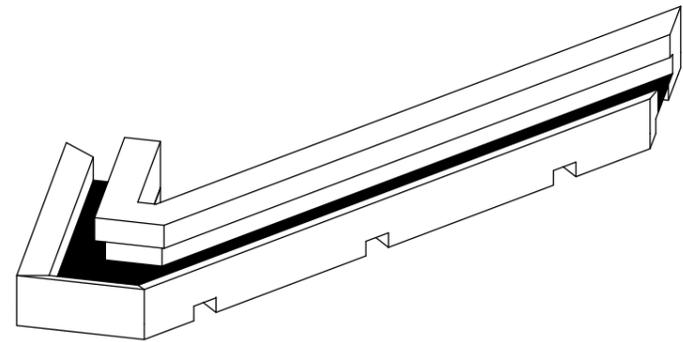
Structural System

Facade and materials

Housing design

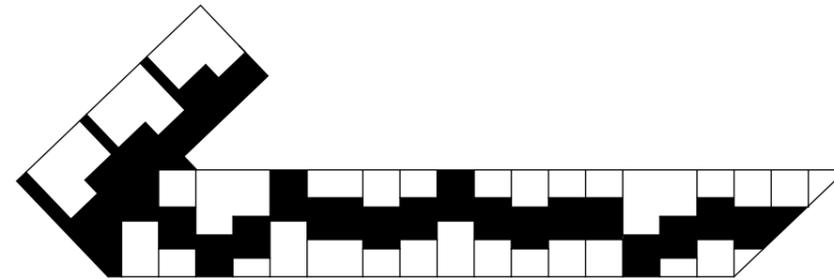
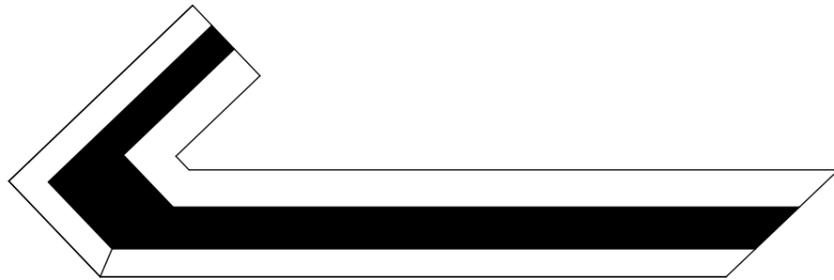
Climate System

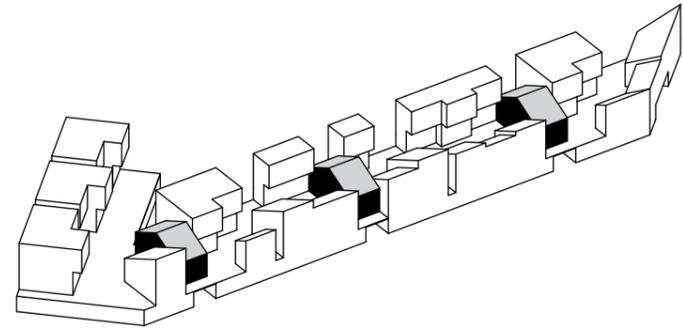
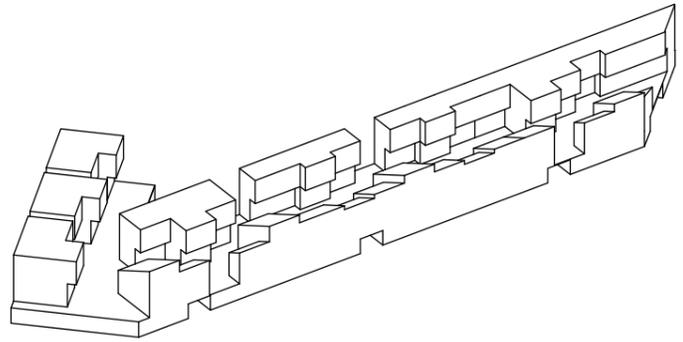
Conclusion



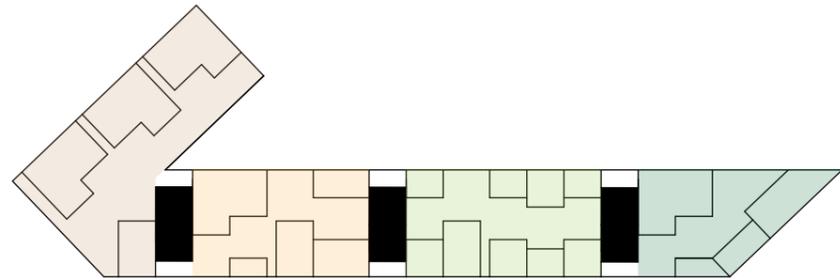
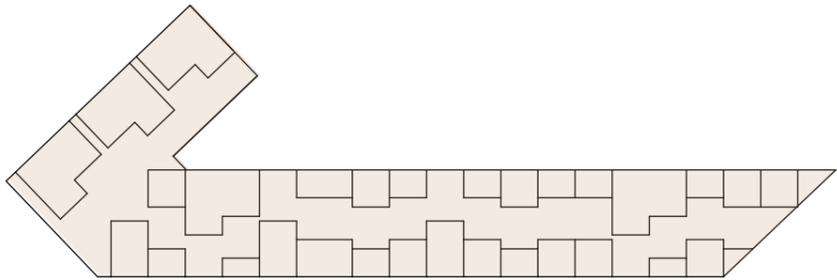
G

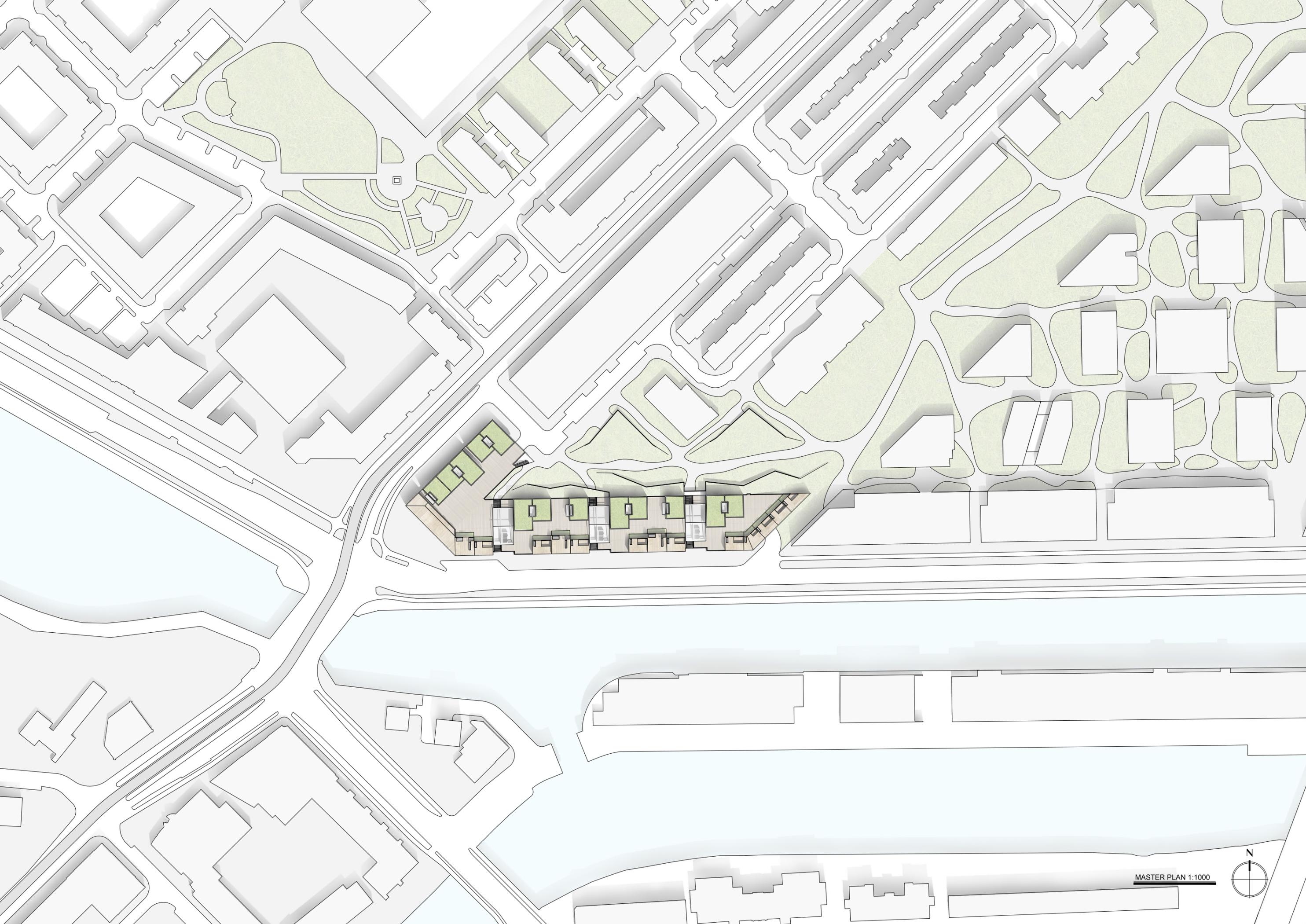
H





H → I



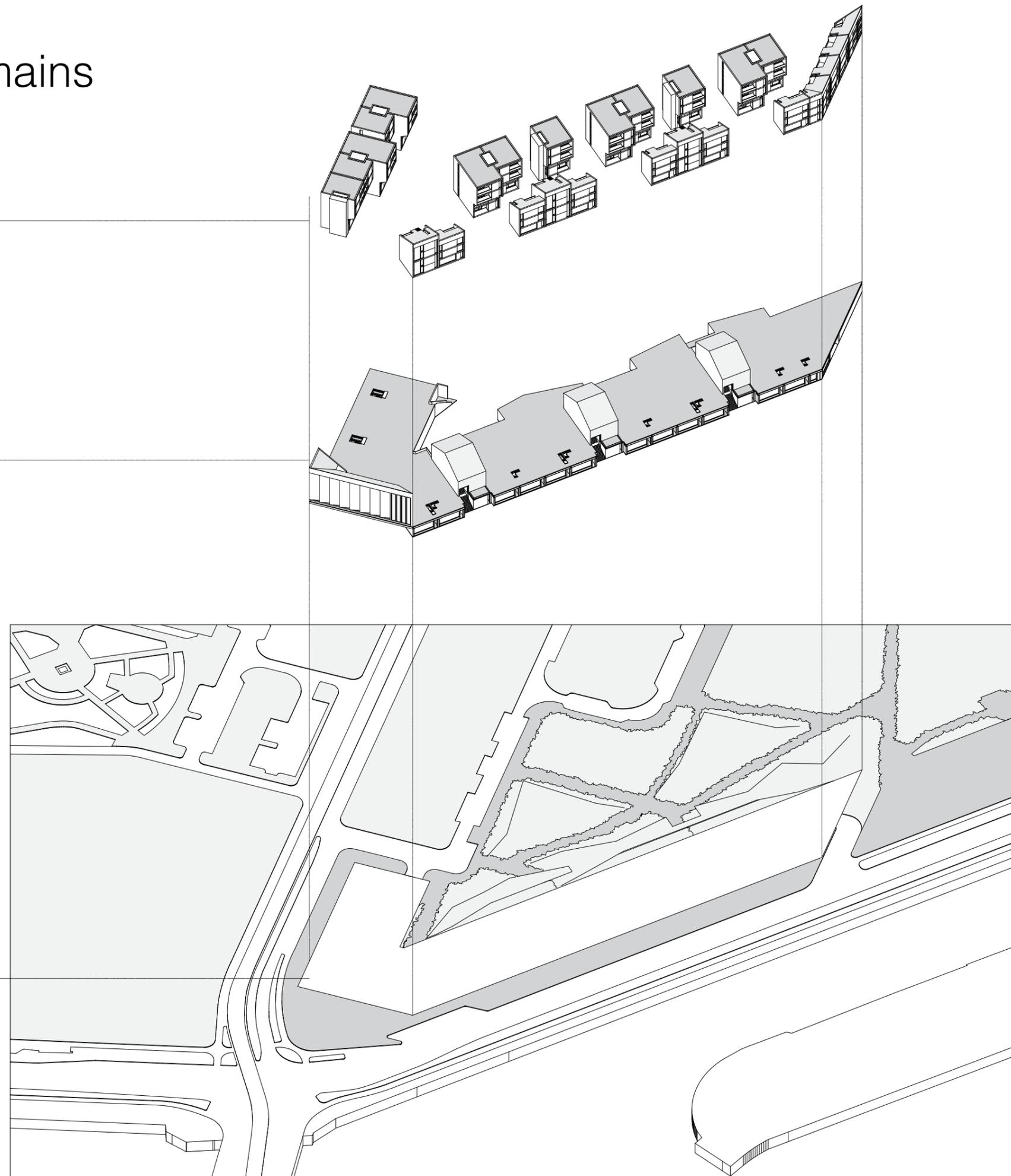


# Spatial Domains

Private space

Common space

Public space



# Programs

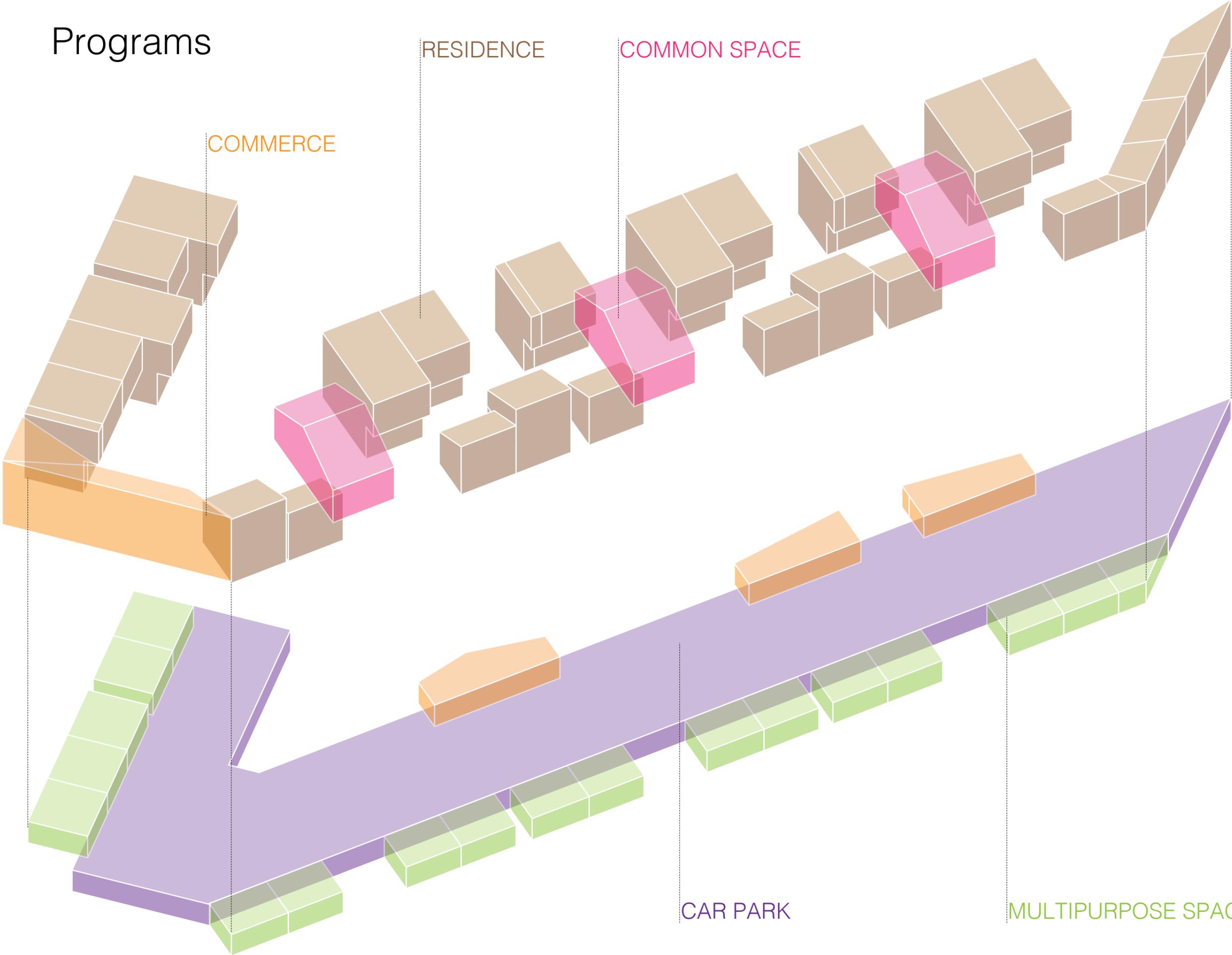
COMMERCE

RESIDENCE

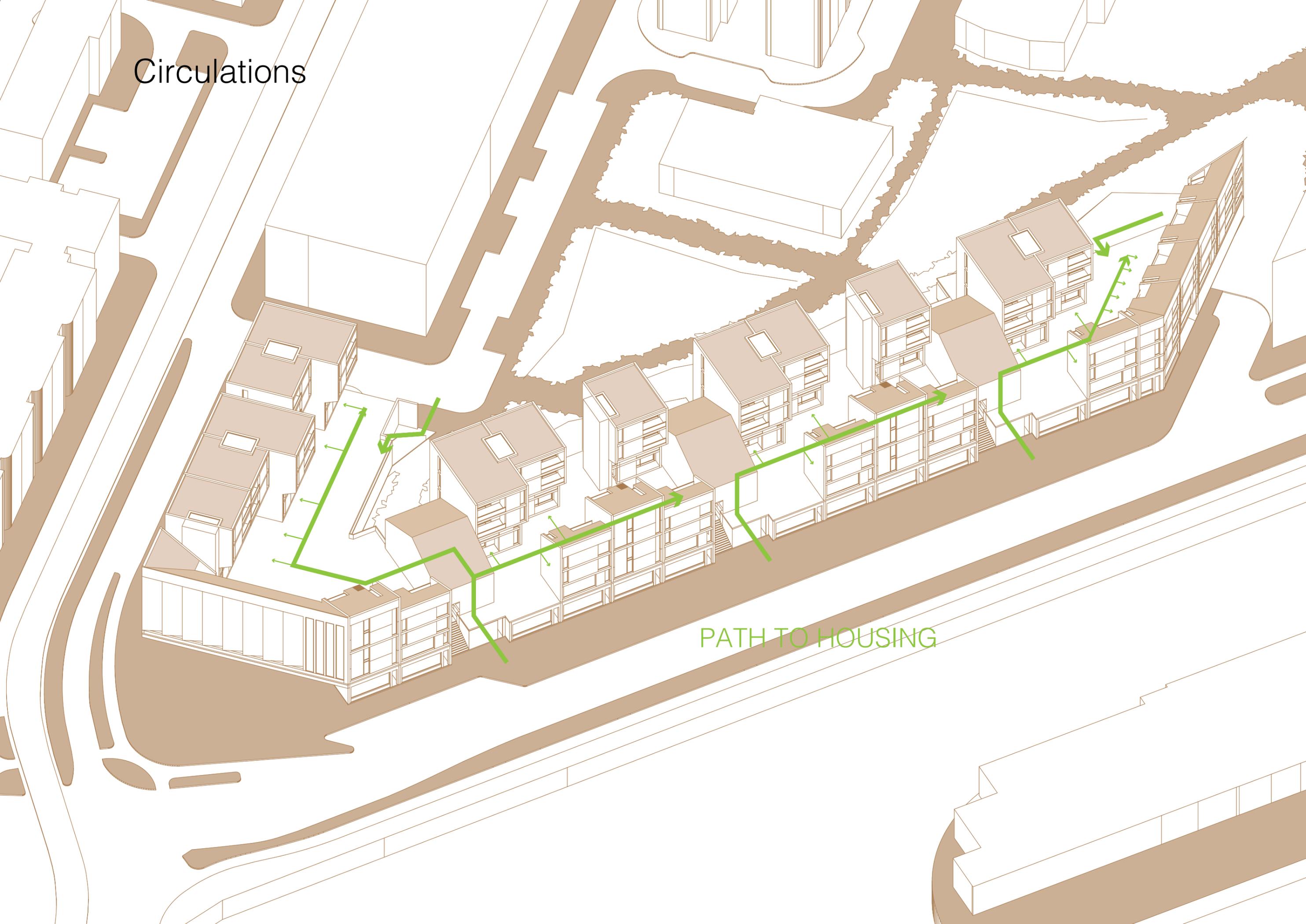
COMMON SPACE

CAR PARK

MULTIPURPOSE SPACE

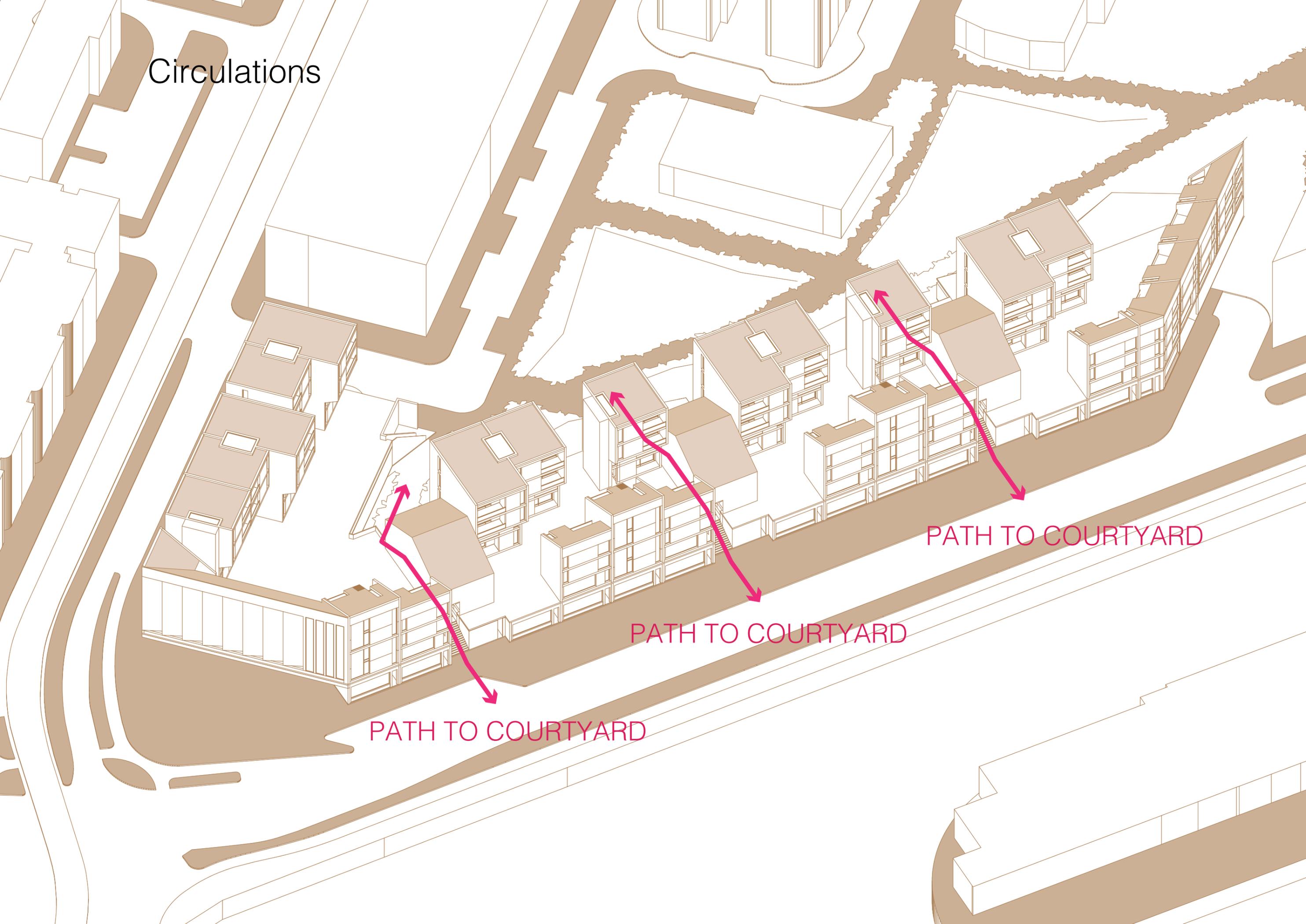


# Circulations



PATH TO HOUSING

Circulations

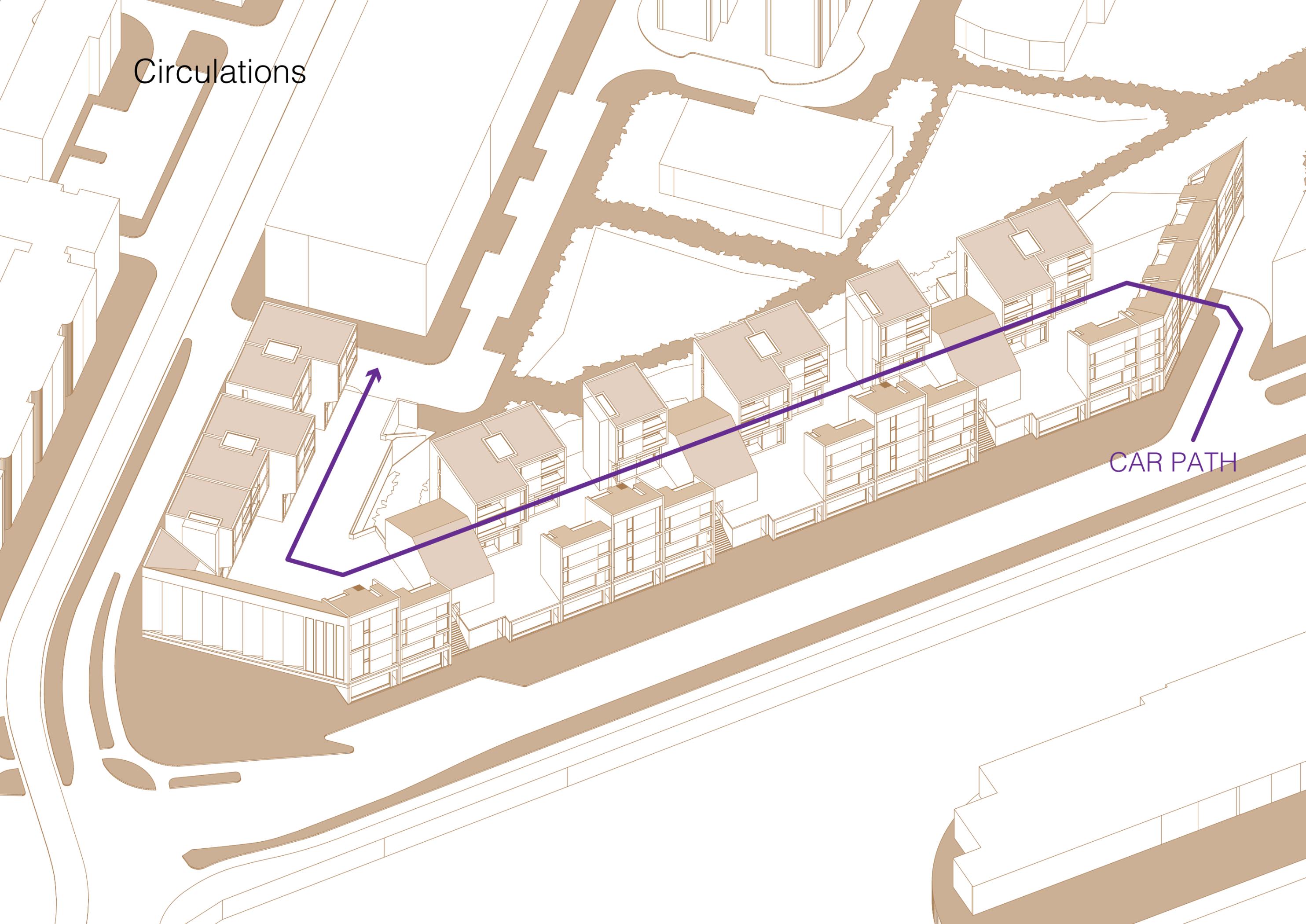


PATH TO COURTYARD

PATH TO COURTYARD

PATH TO COURTYARD

Circulations

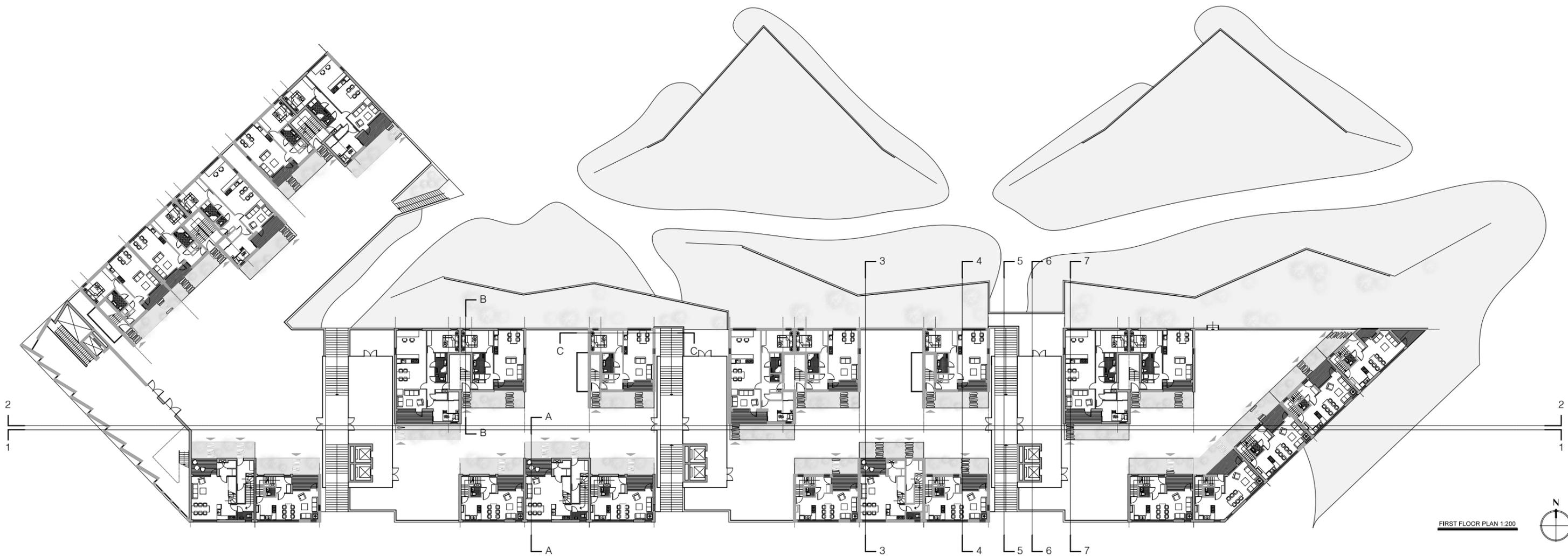


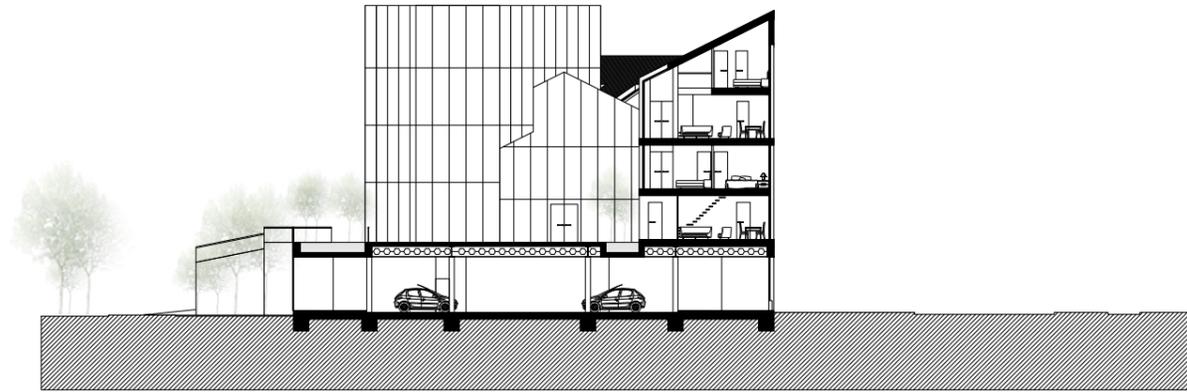
CAR PATH

# Ground Floor Plan



# First Floor Plan - "Inner Street"

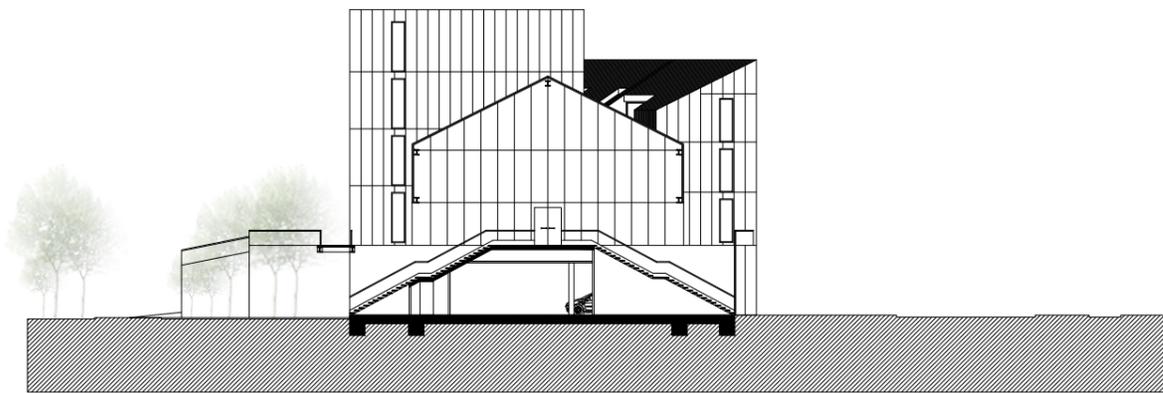




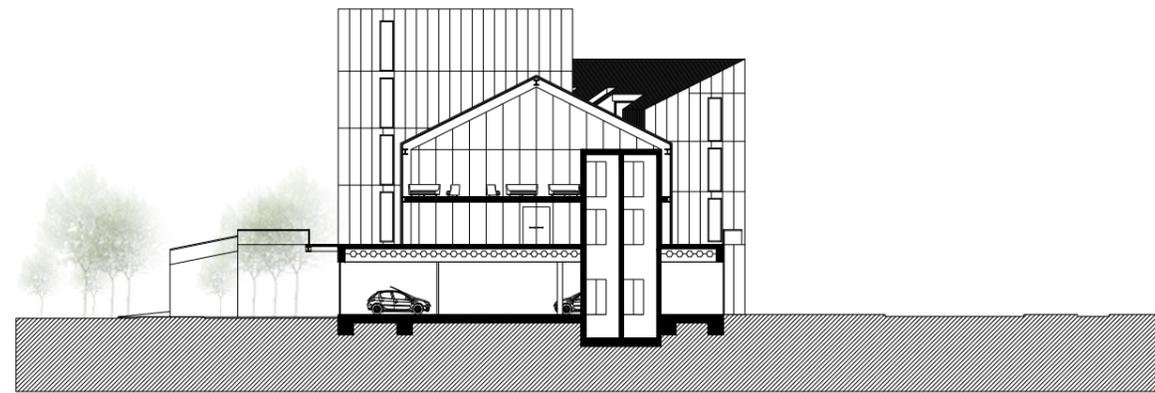
SECTION 3-3 1:200



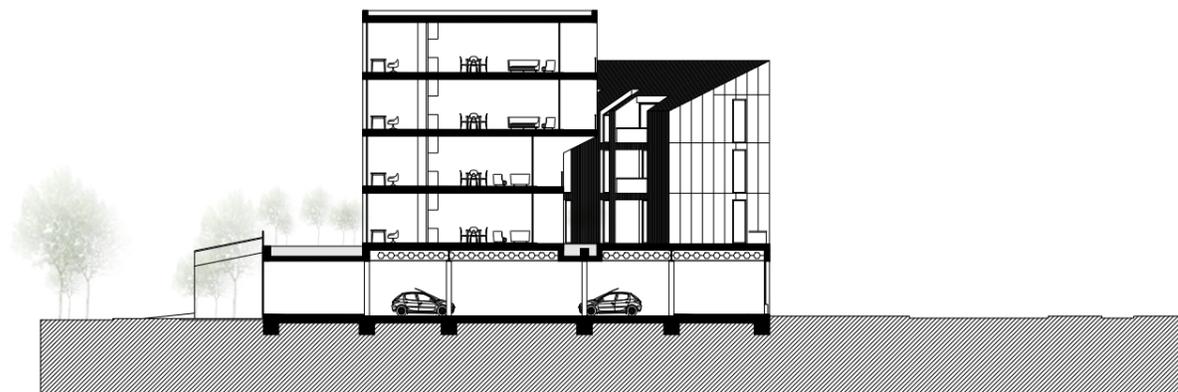
SECTION 4-4 1:200



SECTION 5-5 1:200



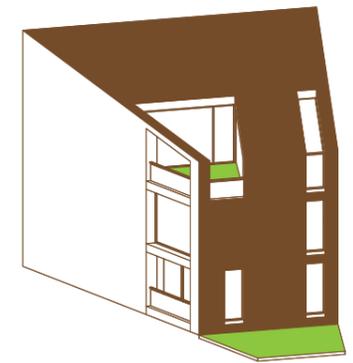
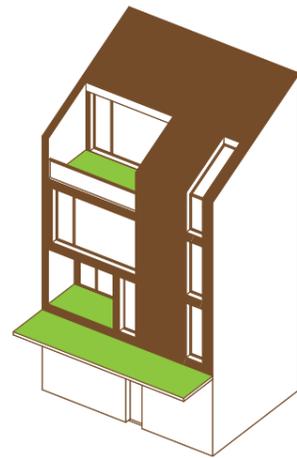
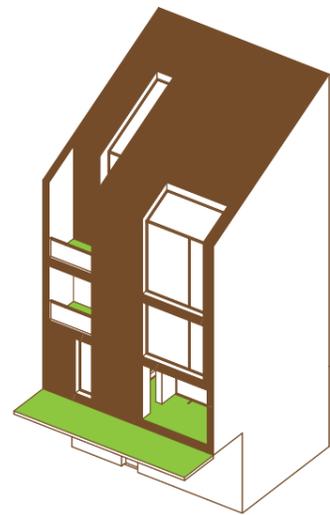
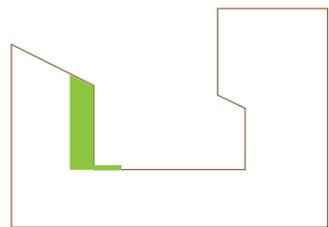
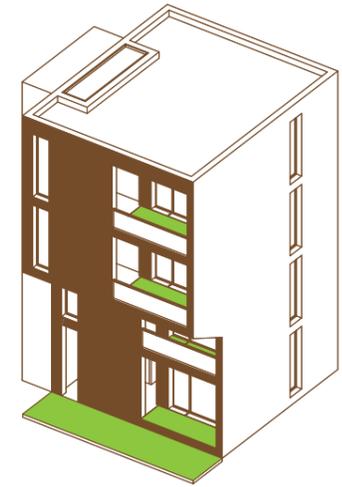
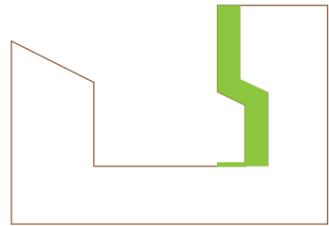
SECTION 6-6 1:200



SECTION 7-7 1:200

Sections

# Interactive In-between Space



Theme Research

Concept

Site Research

Design

## **Structural System**

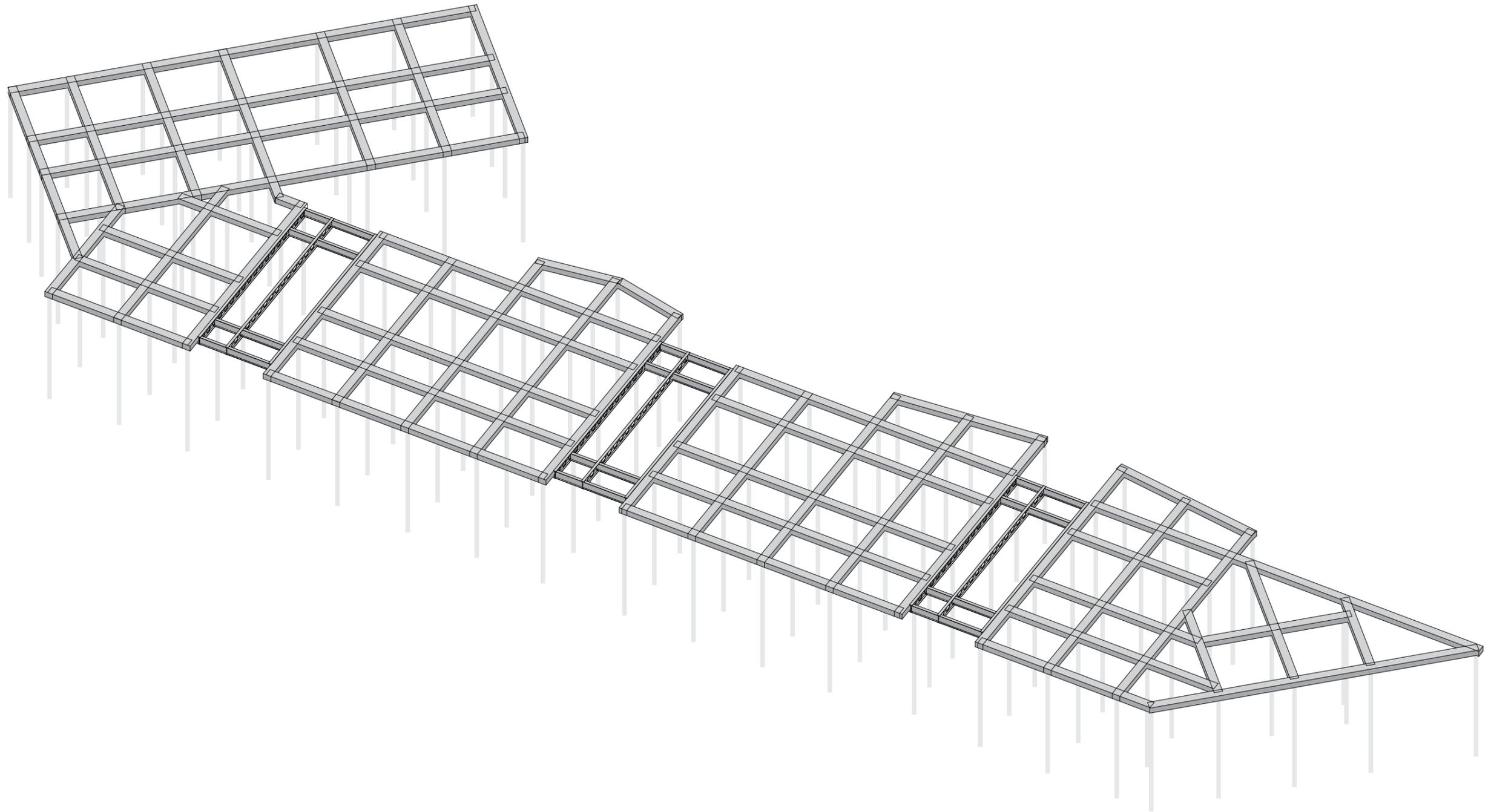
Facade and materials

Housing design

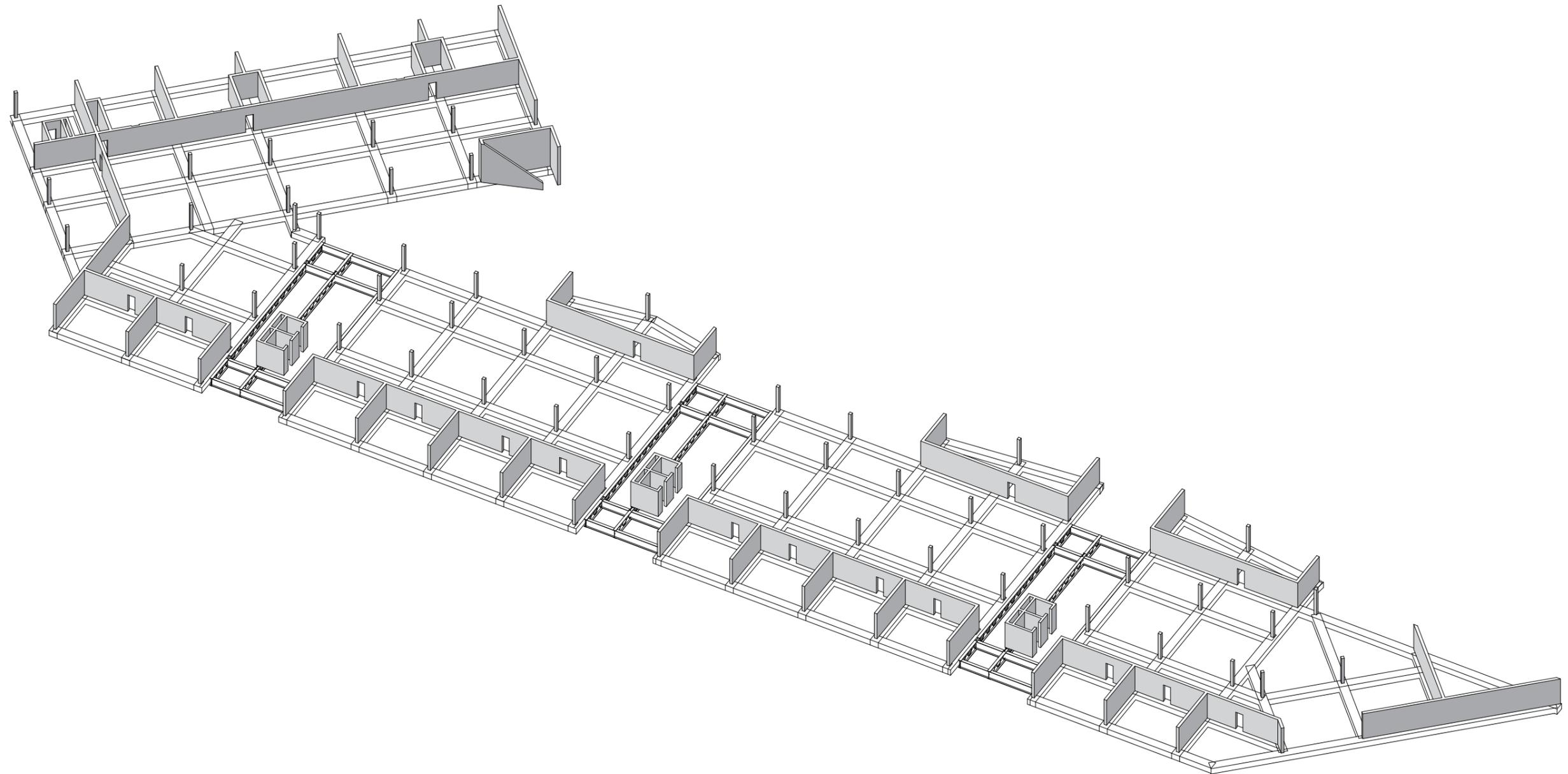
Climate System

Conclusion

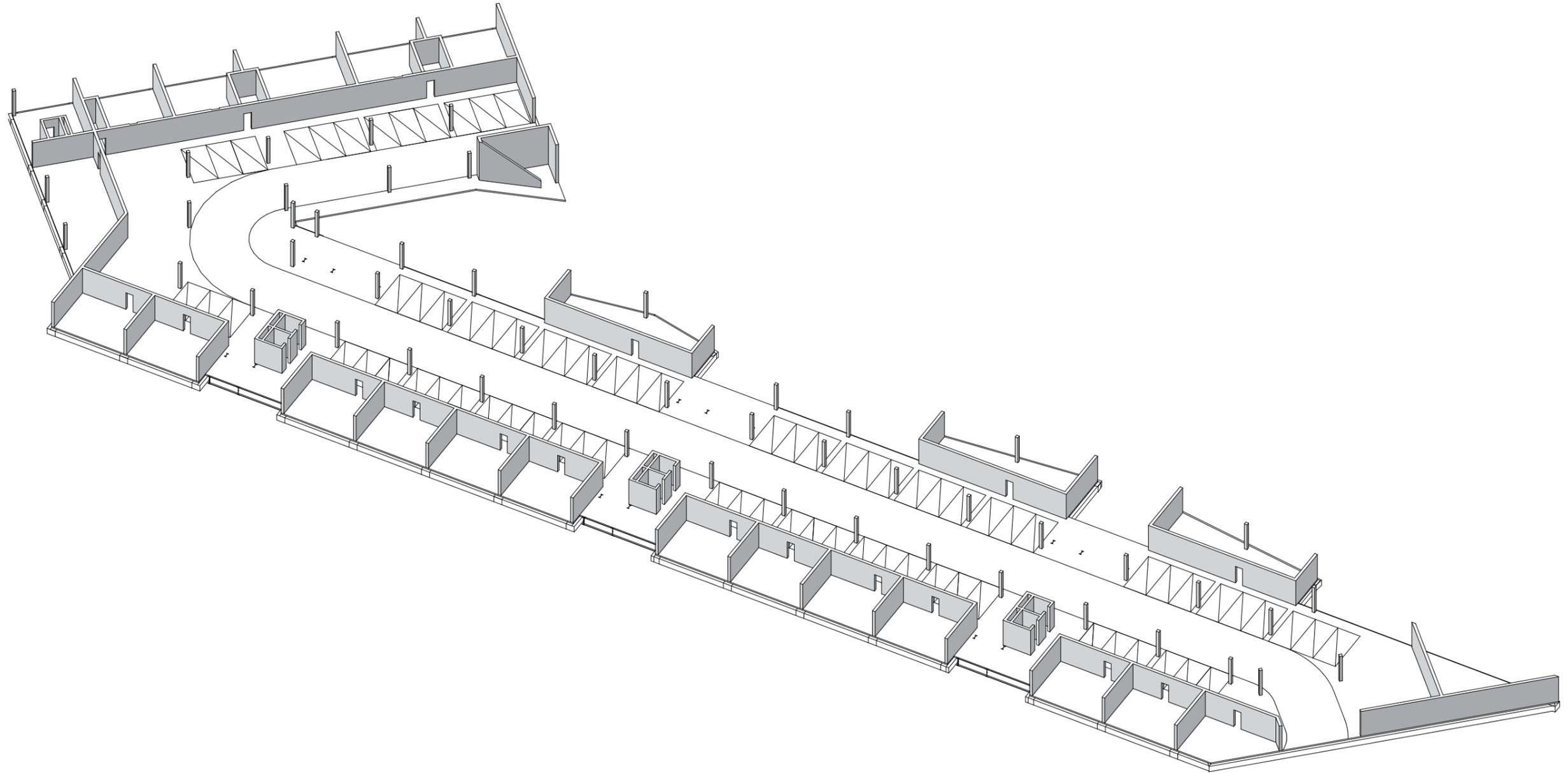
# Concrete foundation



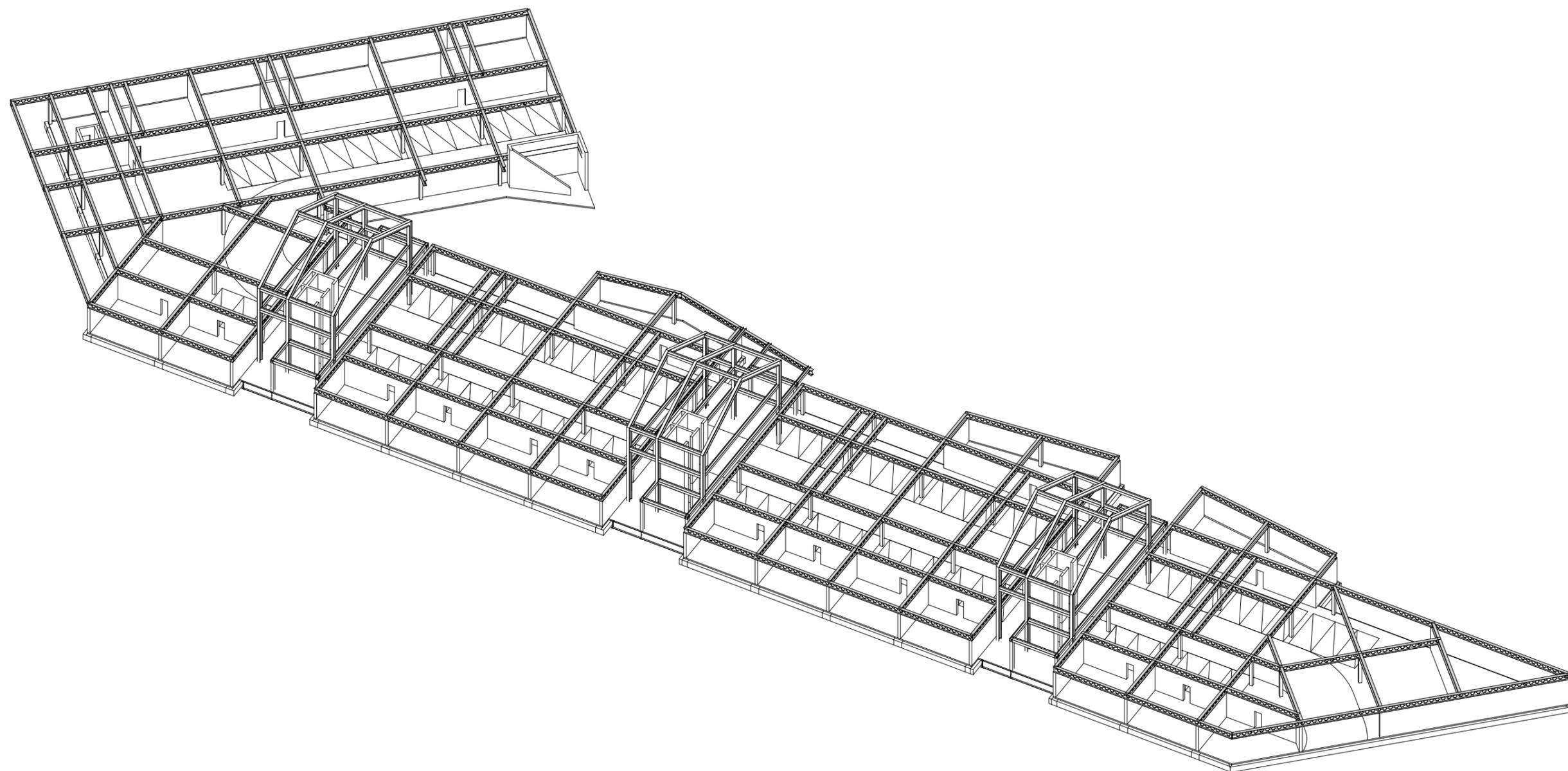
# Steel columns and concrete shear wall



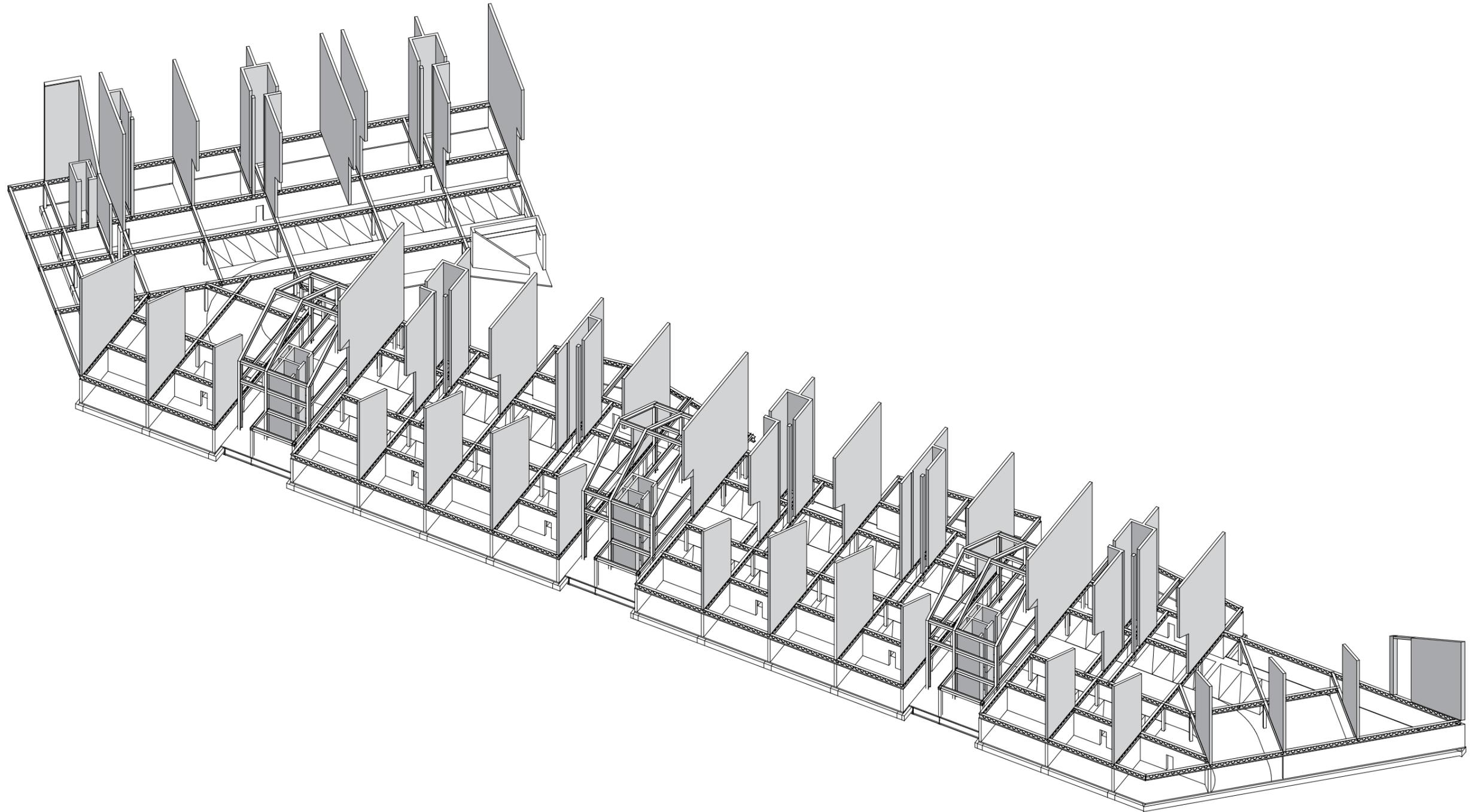
# Concrete floor



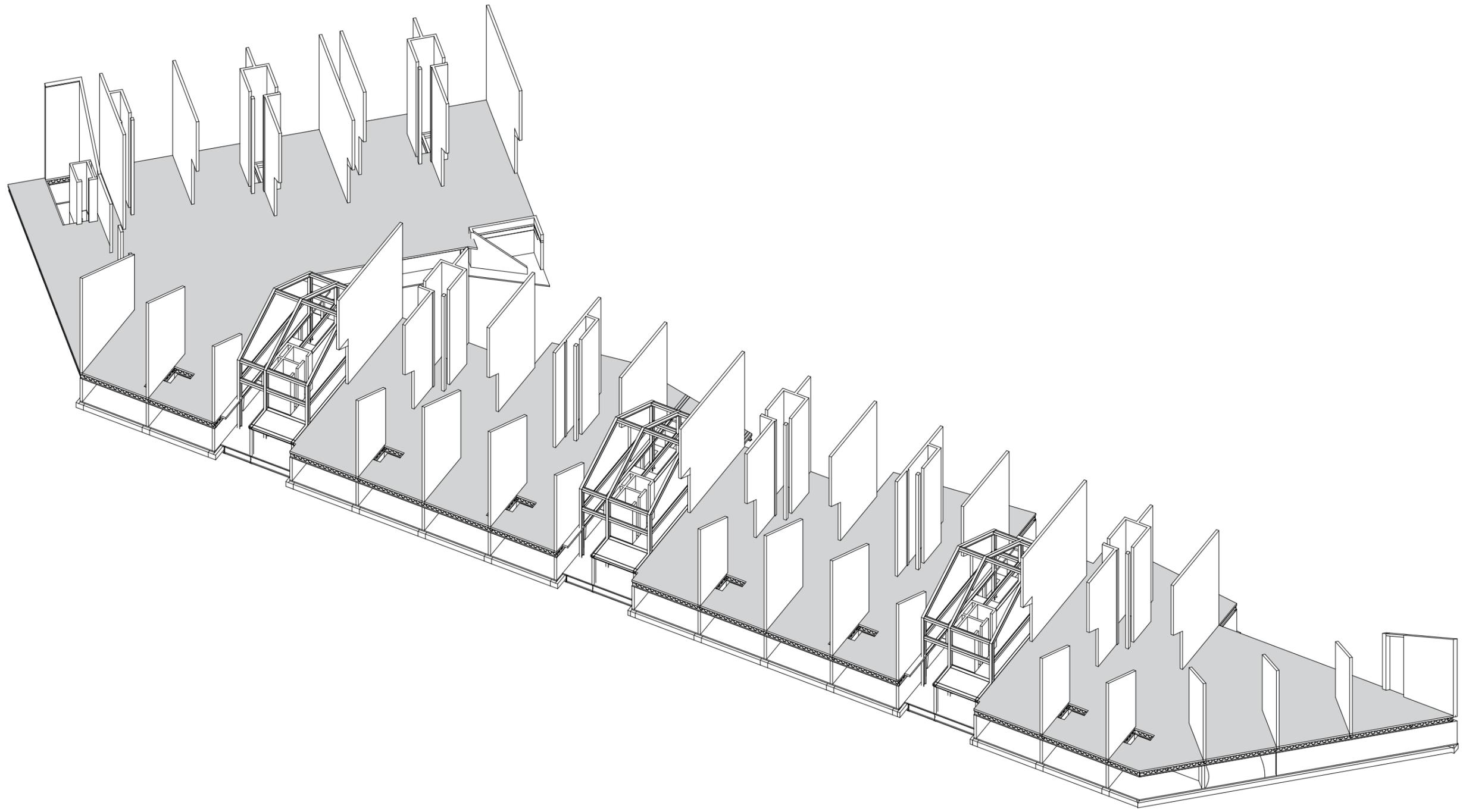
Steel beams (Castellated beam, HEA 450 processed)



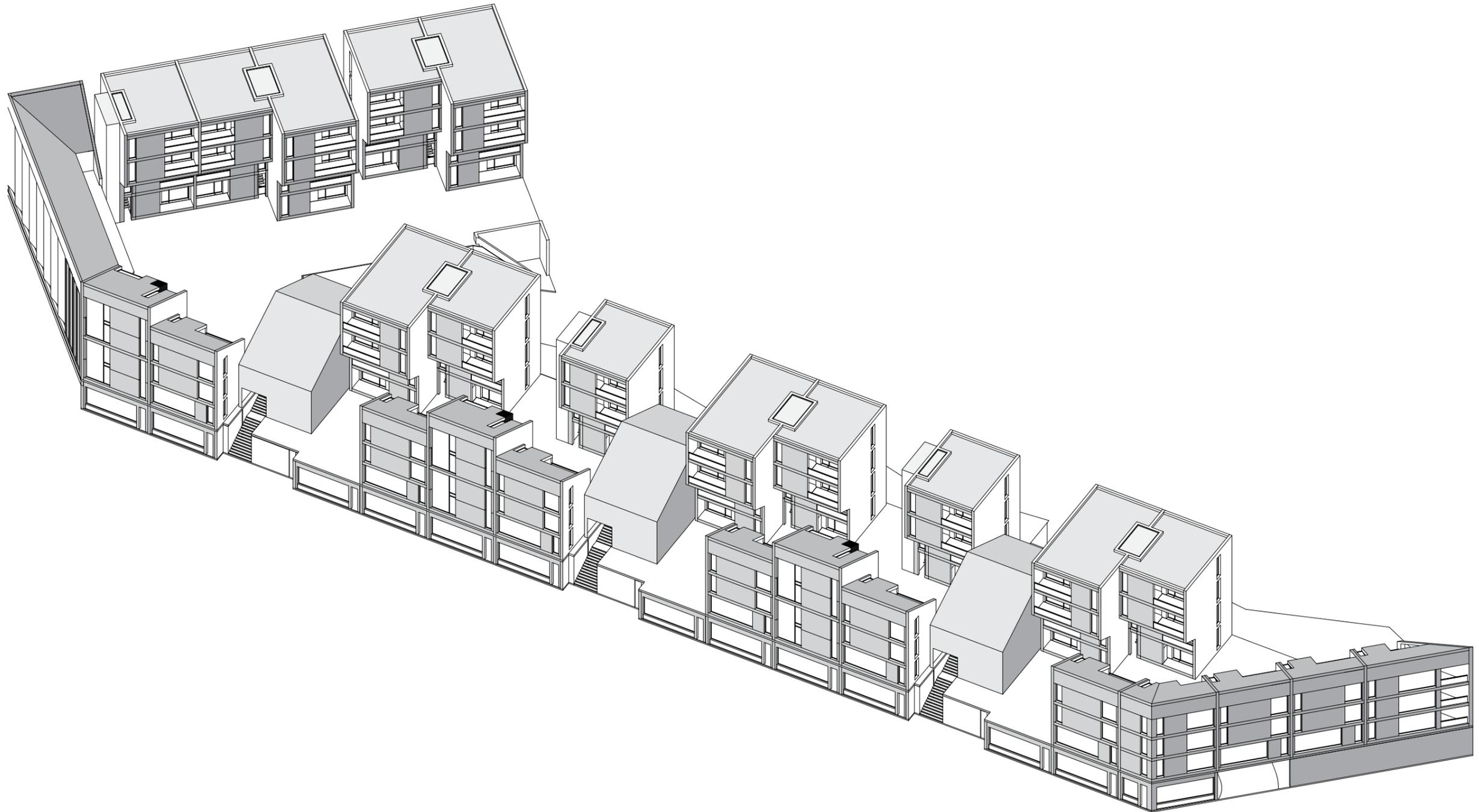
# Solid-wood-panel party walls



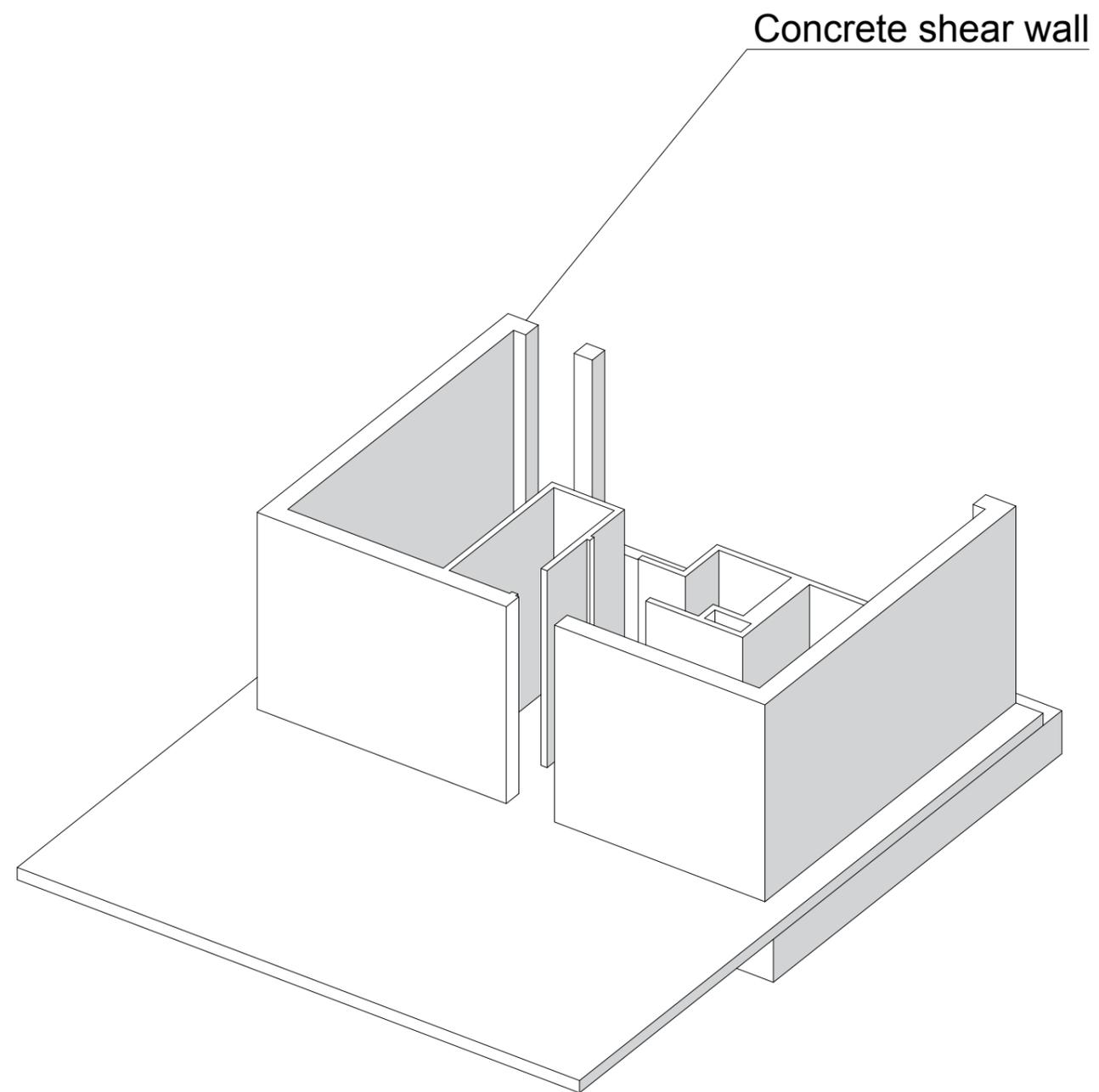
# Concrete floor, wood finishes



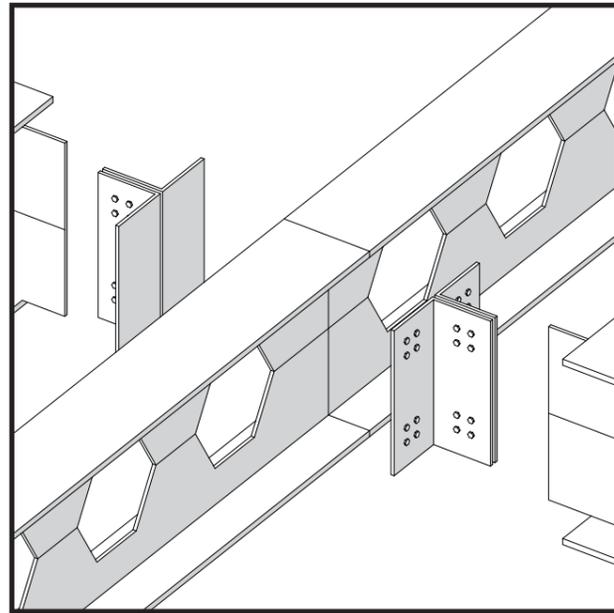
# Facades (Glass, wood, fiber cement boards and recycled-aluminum)



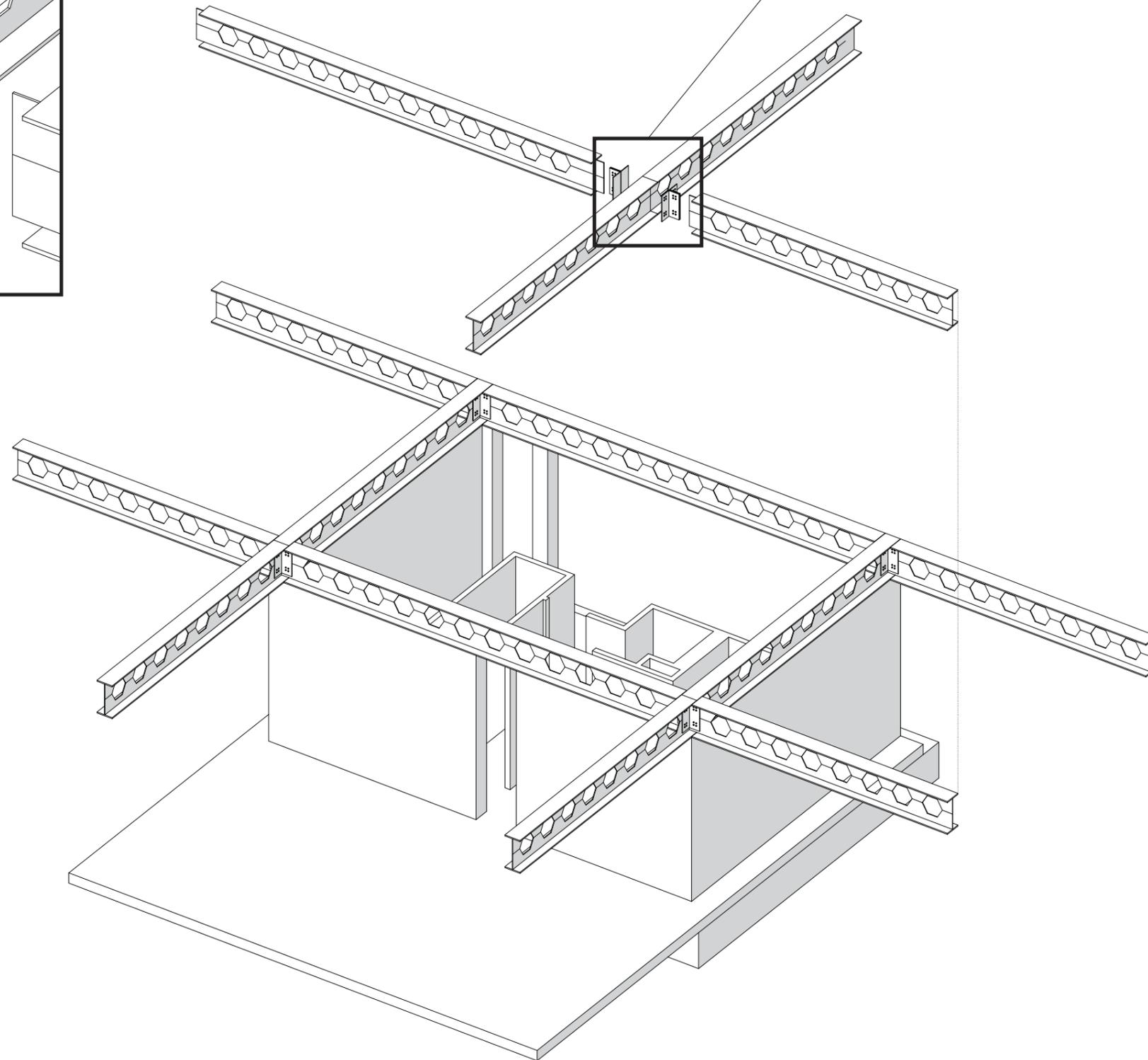
# Building Unit Construction



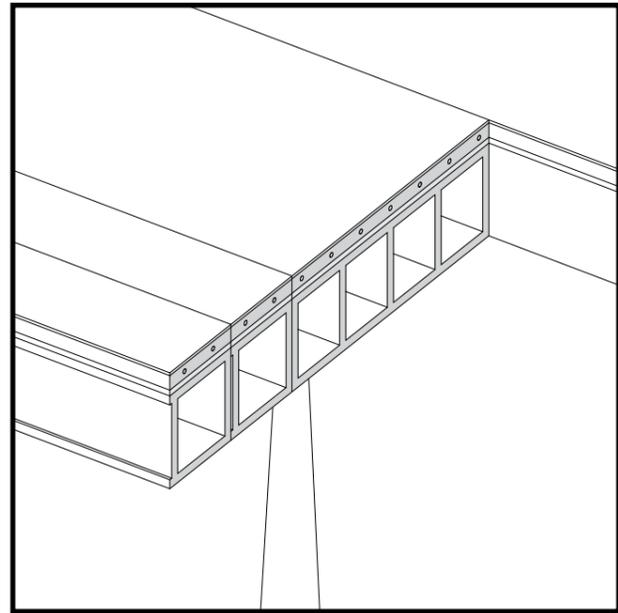
# Building Unit Construction



640 mm castellated beam  
(HEA 450 processed)

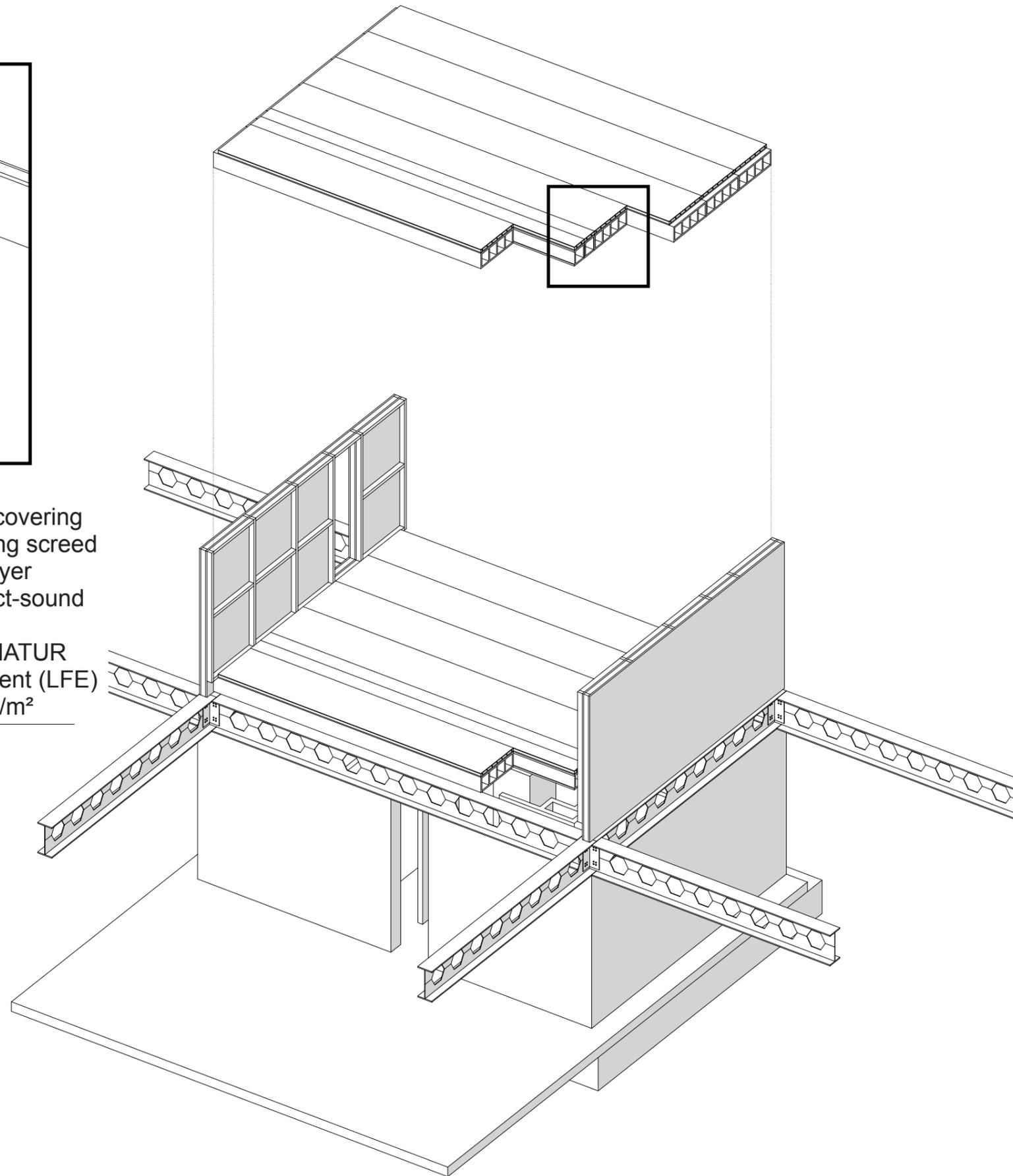


# Building Unit Construction

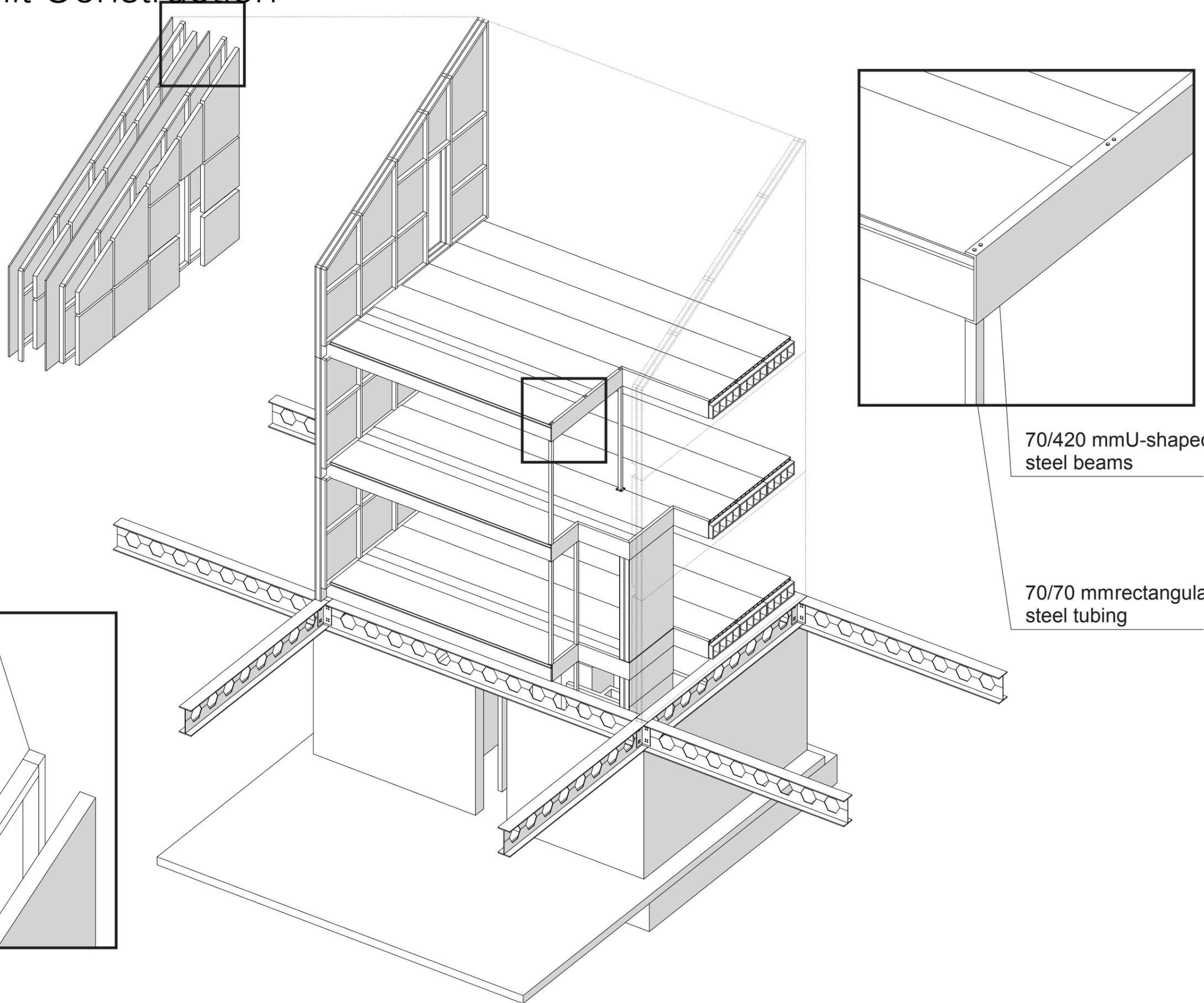


10 mm floor covering  
50 mm heating screed  
separating layer  
20 mm impact-sound  
insulation  
320mm LIGNATUR  
surface element (LFE)  
with fill 50 kg/m<sup>2</sup>

10 mm floor covering  
50 mm heating screed  
separating layer  
20 mm impact-sound  
insulation  
320mm LIGNATUR  
box element (LKE)  
with fill 50 kg/m<sup>2</sup>



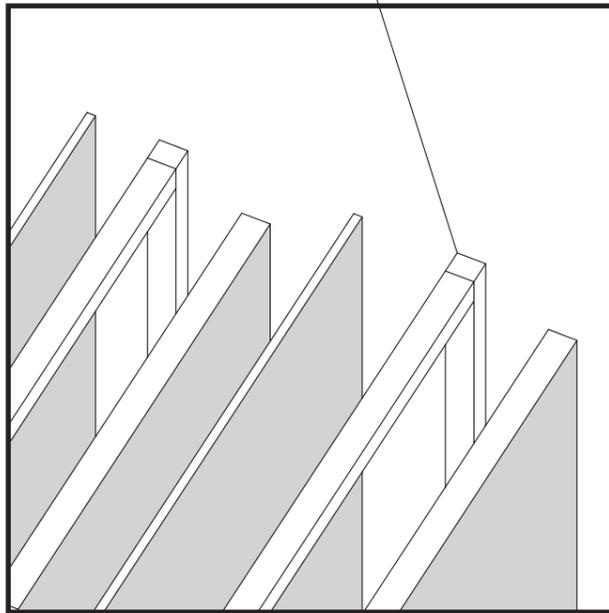
# Building Unit Construction



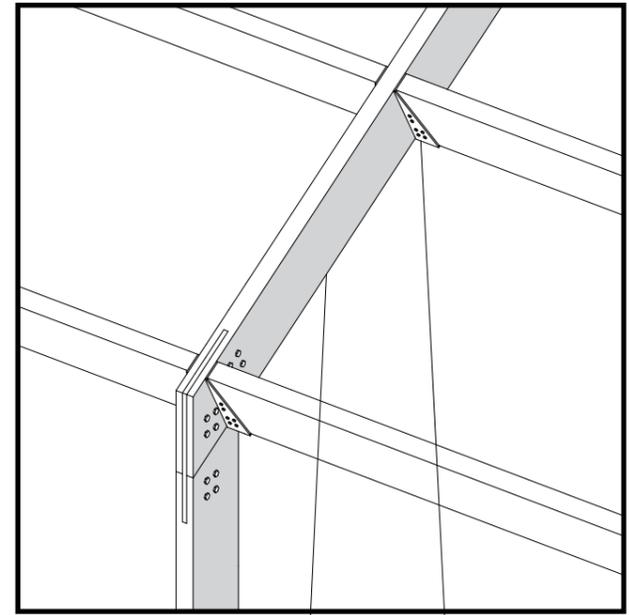
Solid-wood-panel party wall, double-sided, insulated:  
100/60 mm frame  
30 mm lumber-core plywood between 100 mm thermal insulation sandwiched

70/420 mm U-shaped steel beams

70/70 mm rectangular steel tubing

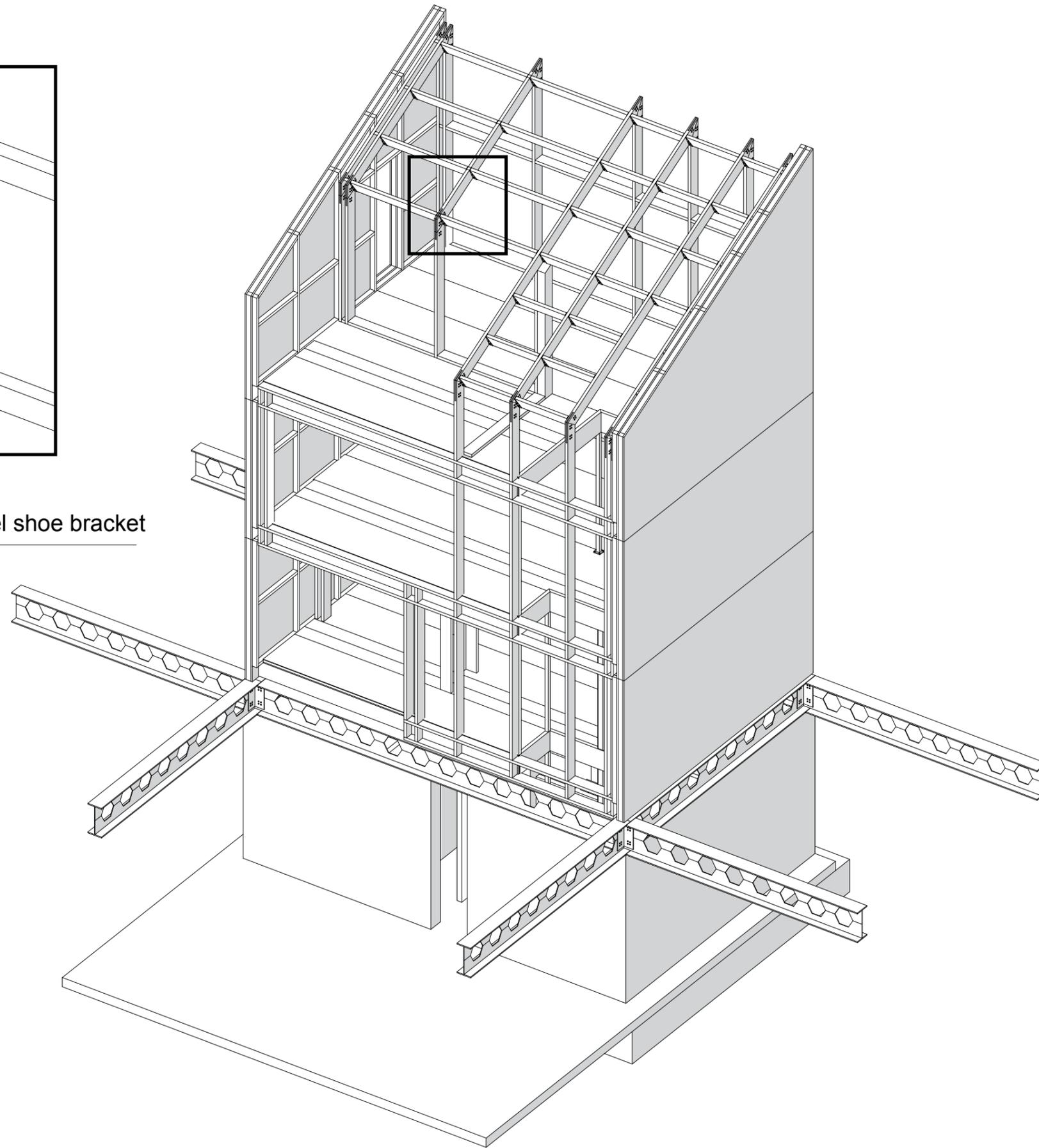


# Building Unit Construction

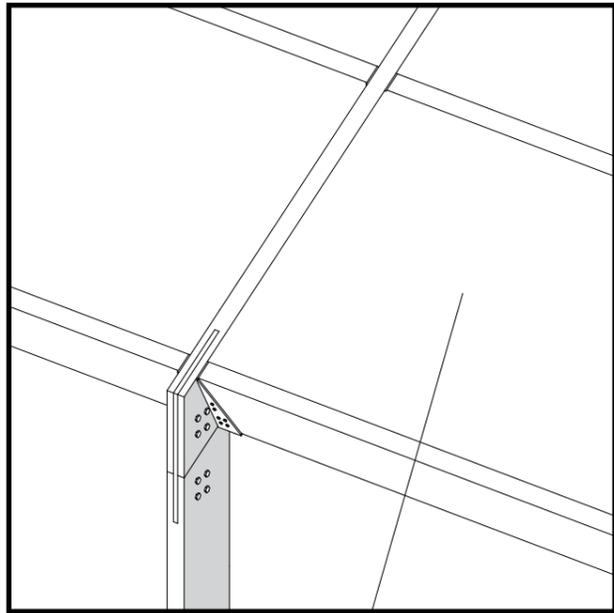


Steel shoe bracket

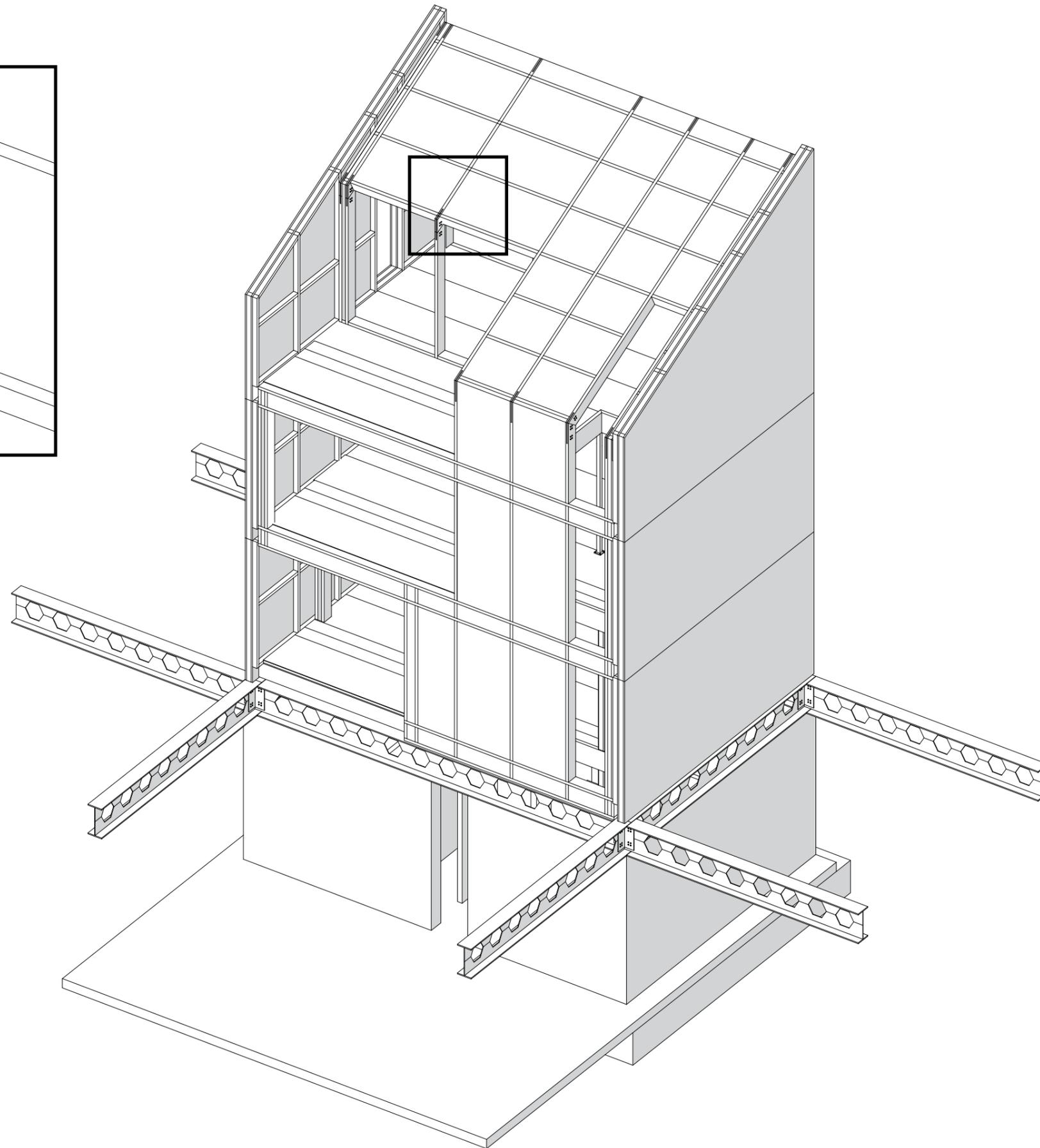
60/220 mm wood keels



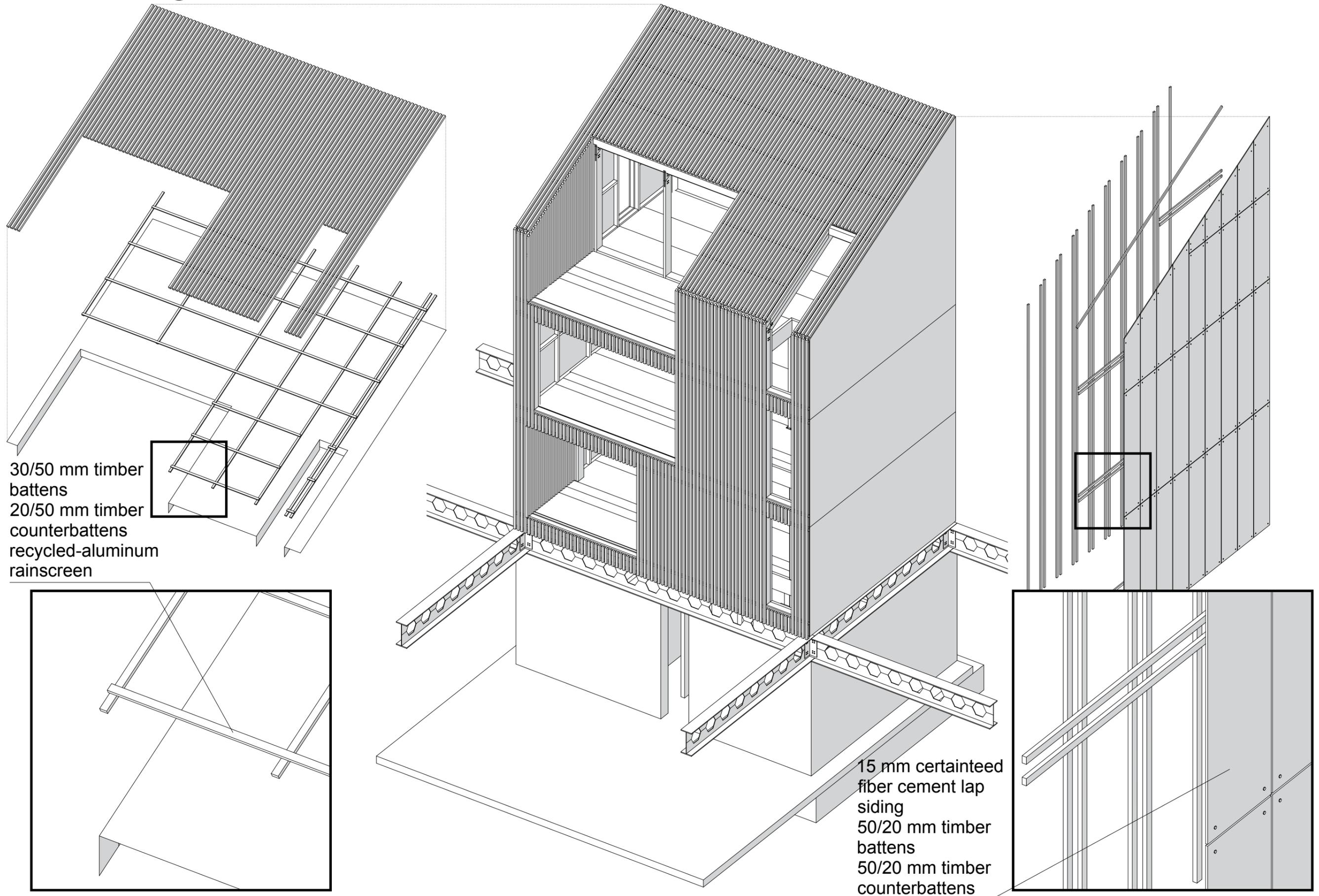
# Building Unit Construction



220 mm rigid  
thermal insulation



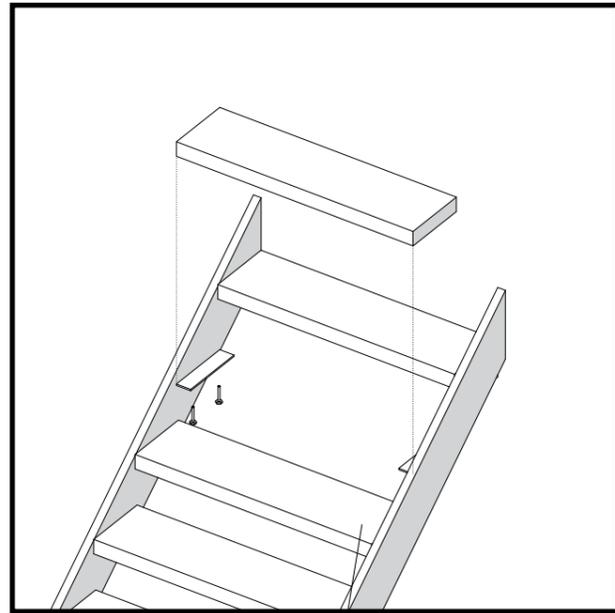
# Building Unit Construction



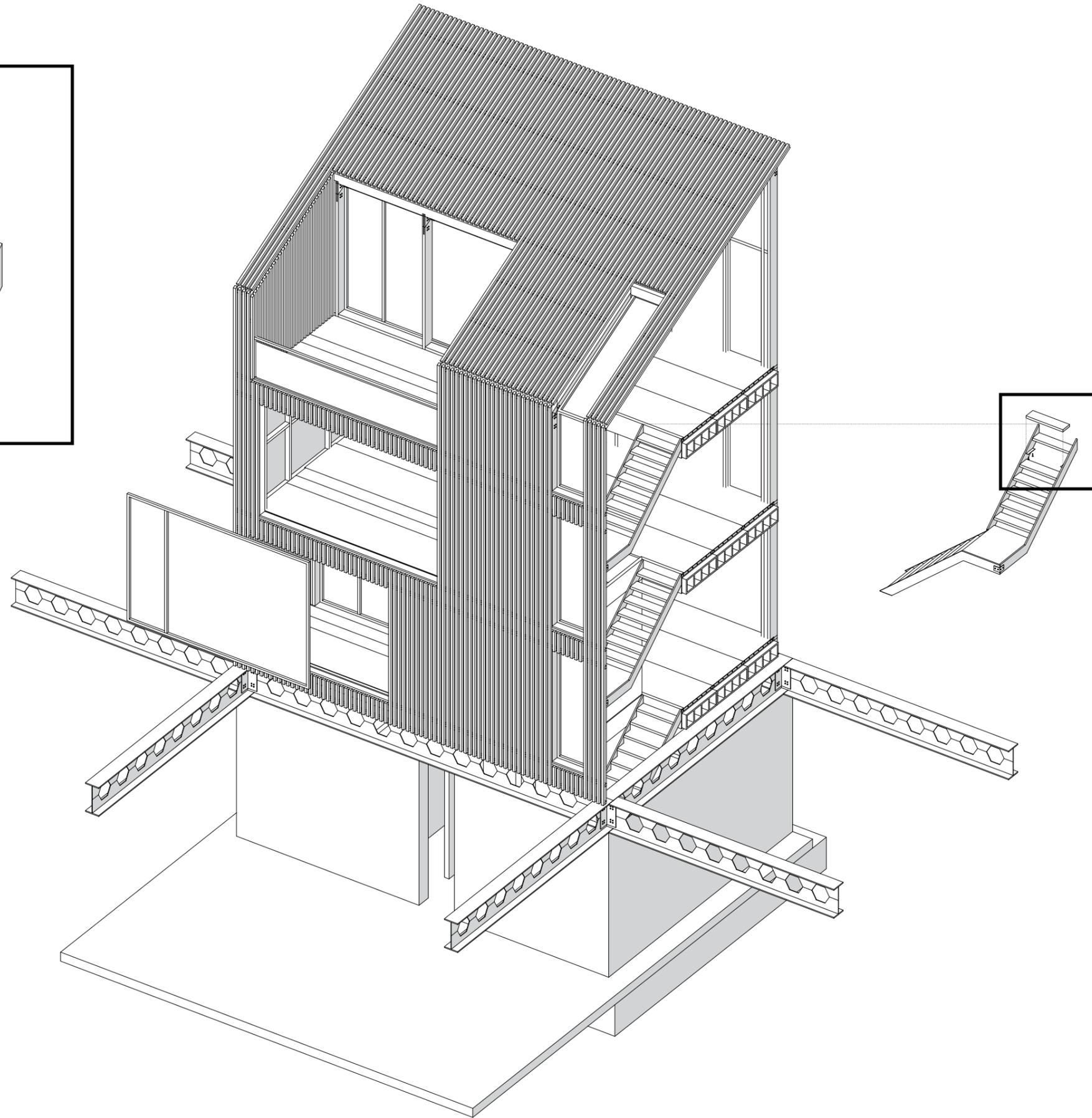
30/50 mm timber battens  
20/50 mm timber counterbattens  
recycled-aluminum rainscreen

15 mm certainteed fiber cement lap siding  
50/20 mm timber battens  
50/20 mm timber counterbattens

# Building Unit Construction



Wooden stair  
treads  
Steel Beam



Theme Research

Concept

Site Research

Design

Structural System

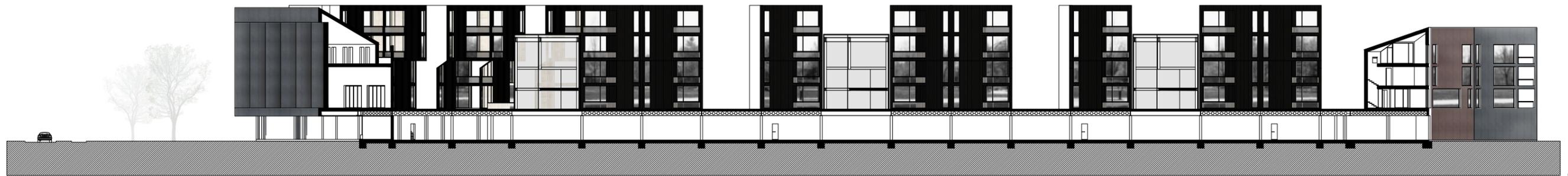
## **Facade and materials**

Housing design

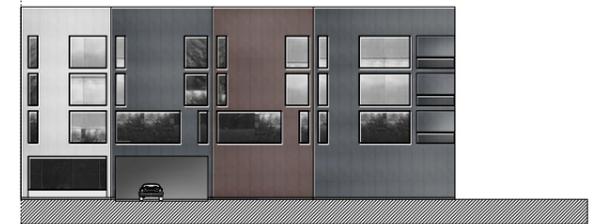
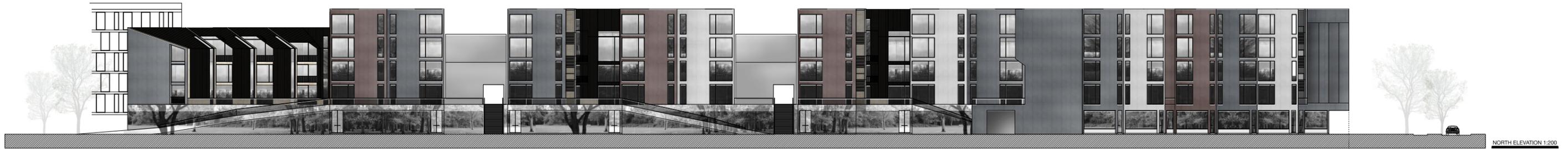
Climate System

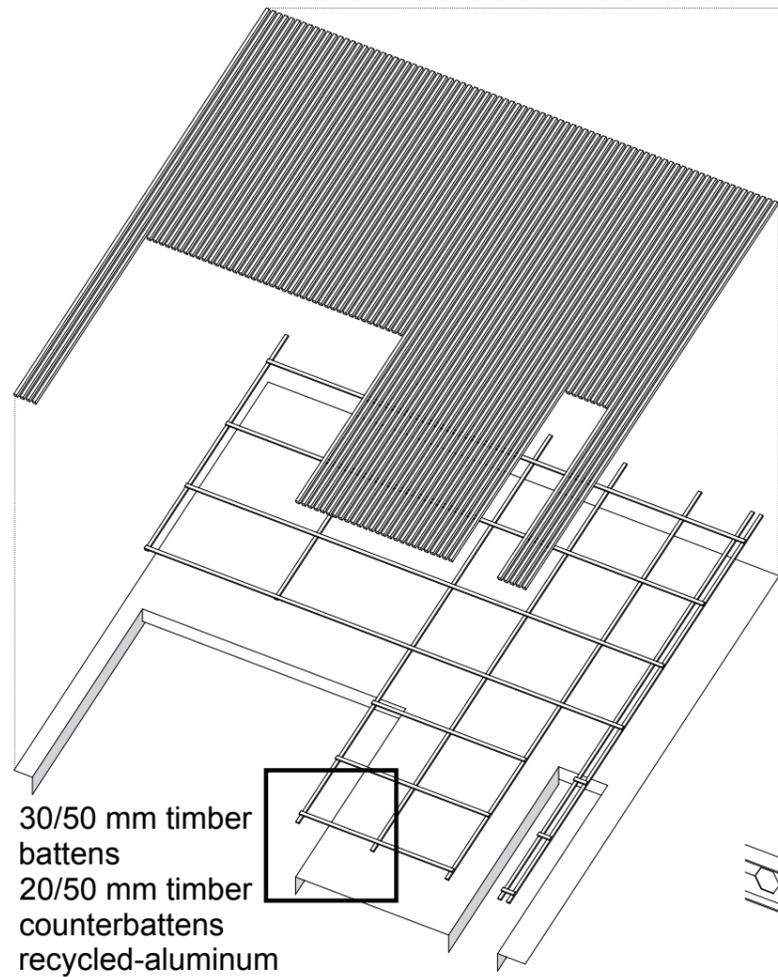
Conclusion

# Elevation facing to inner street

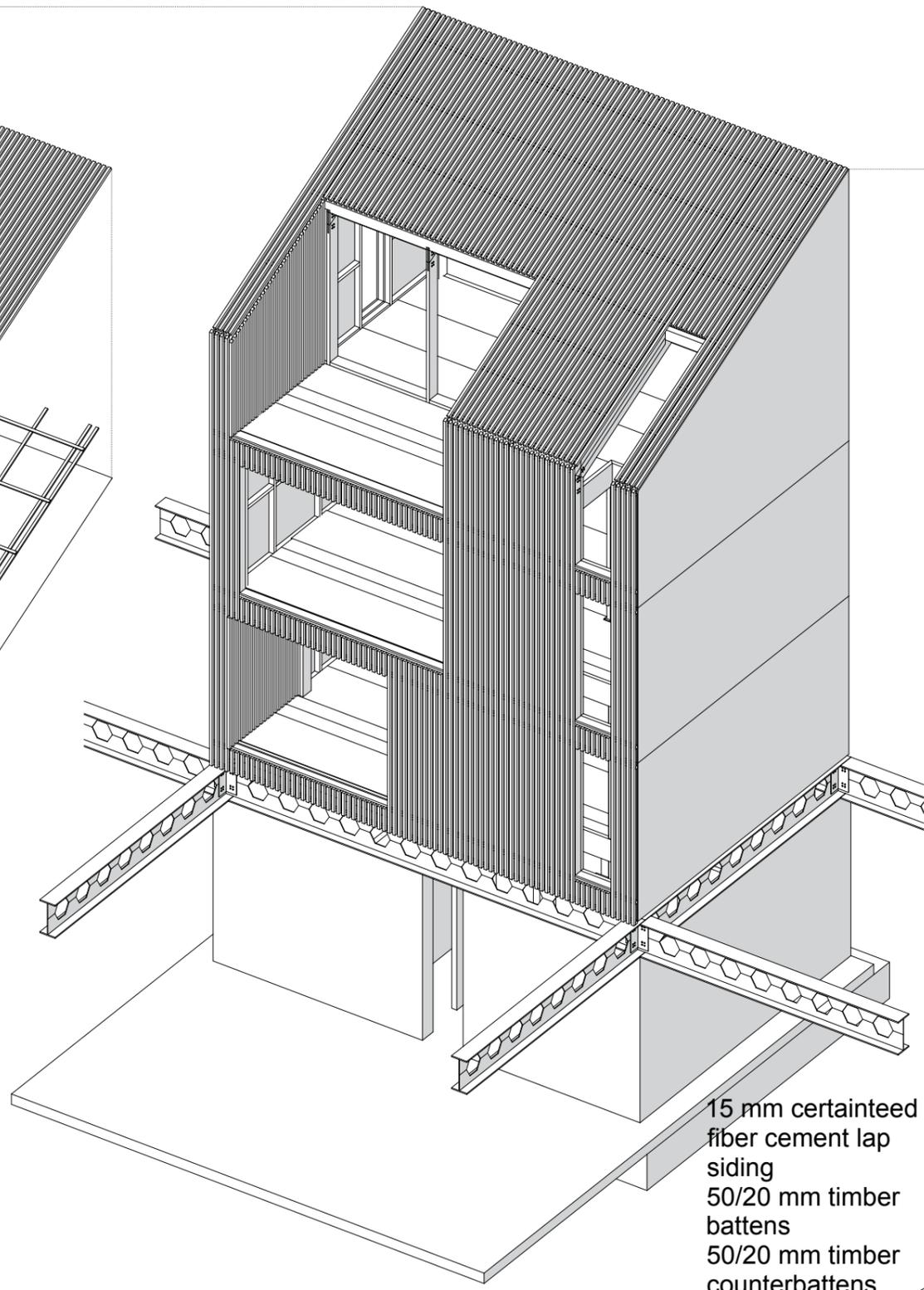
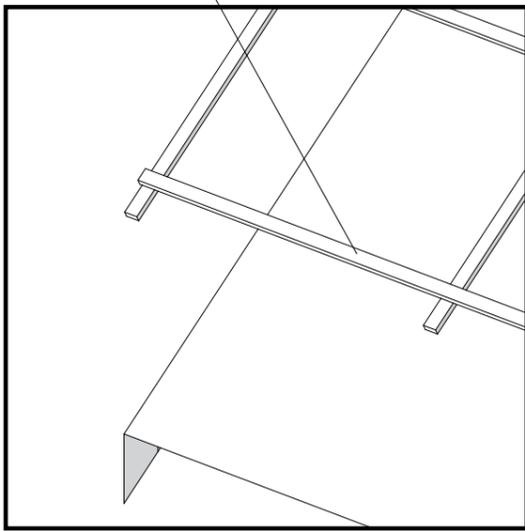


# Elevation facing to courtyard and street

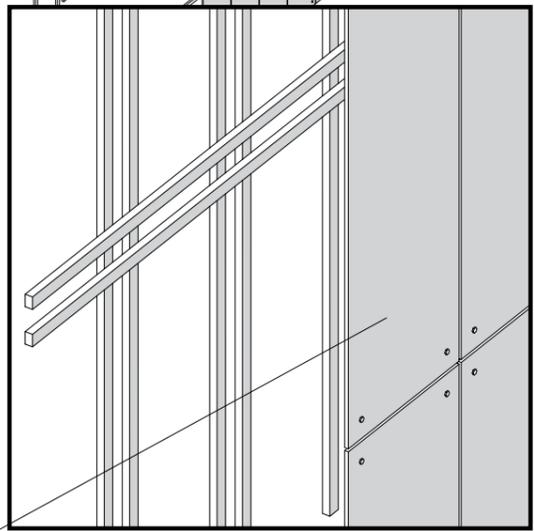
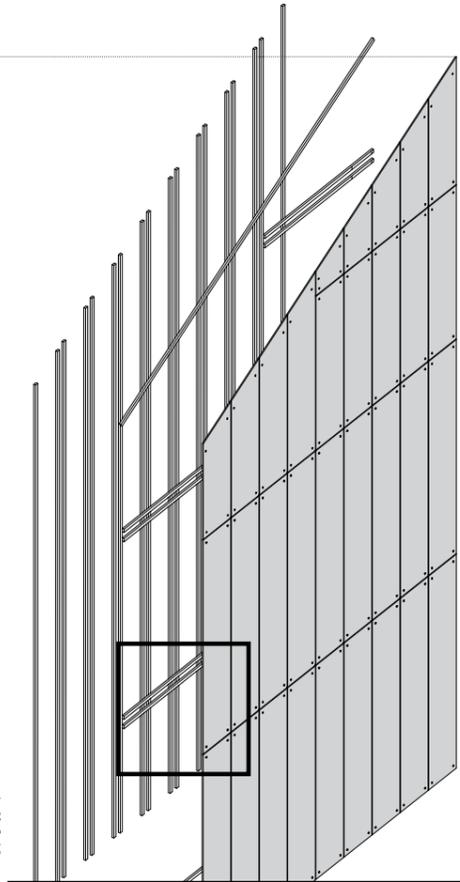




30/50 mm timber battens  
 20/50 mm timber counterbattens  
 recycled-aluminum rainscreen



15 mm certainteed fiber cement lap siding  
 50/20 mm timber battens  
 50/20 mm timber counterbattens



# References



Theme Research

Concept

Site Research

Design

Structural System

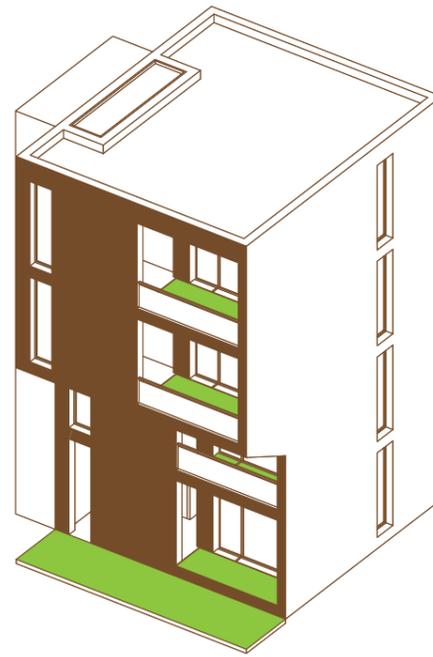
Facade and materials

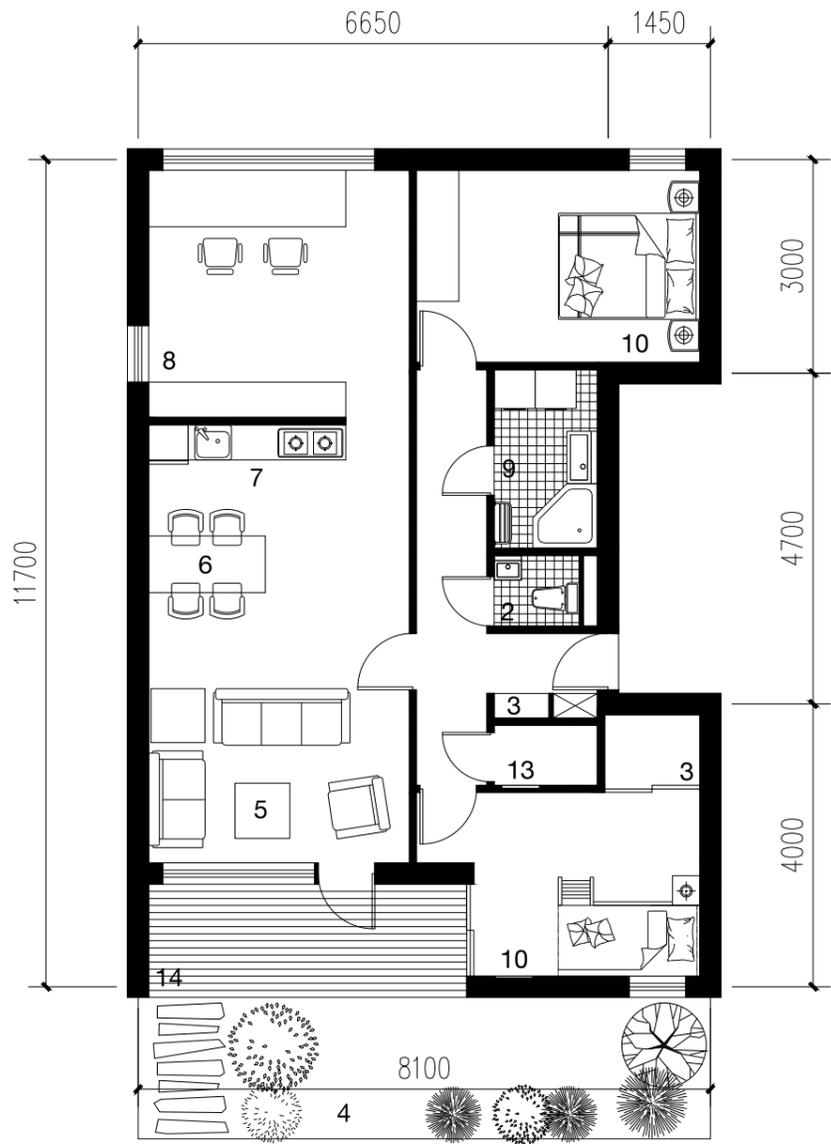
**Housing design**

Climate System

Conclusion

# Apartment A&B

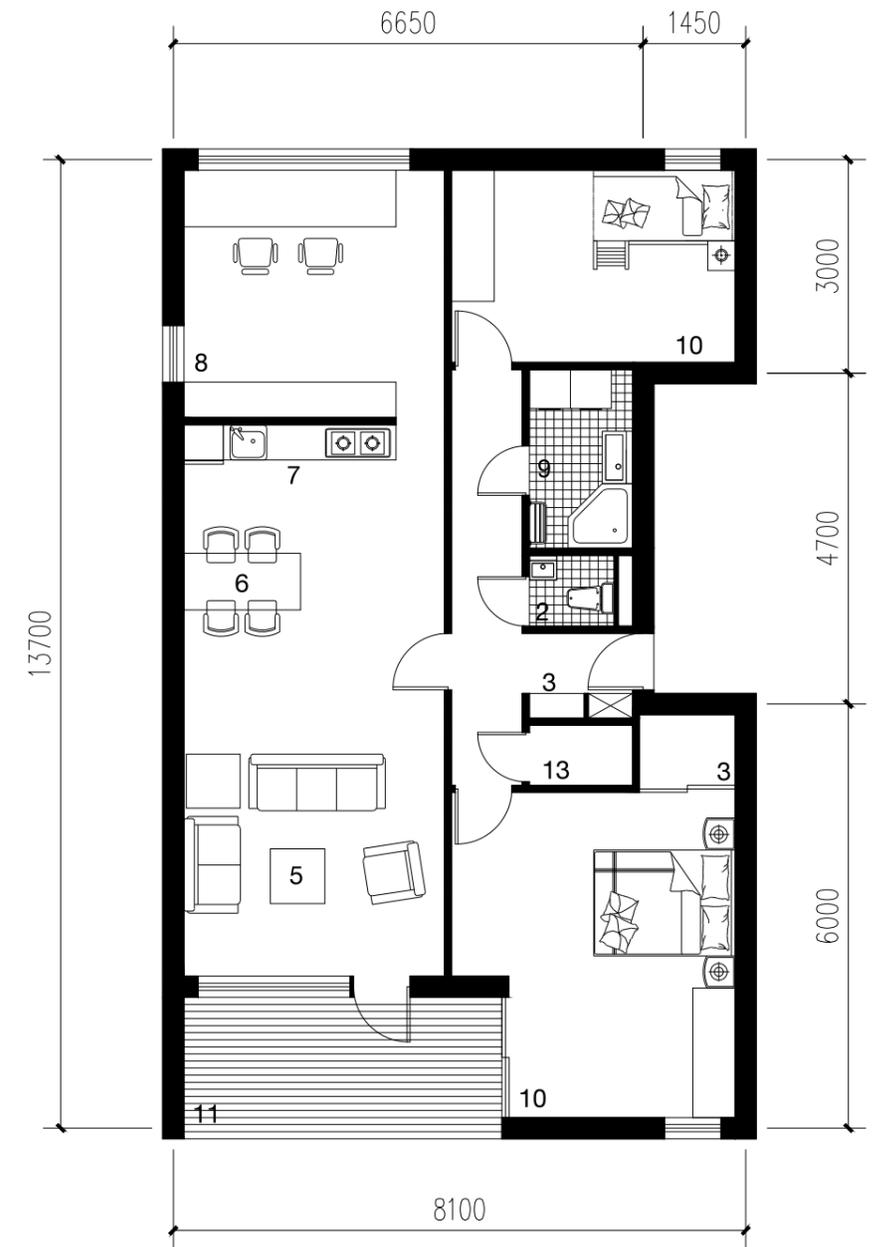




APARTMENT A - 1ST F

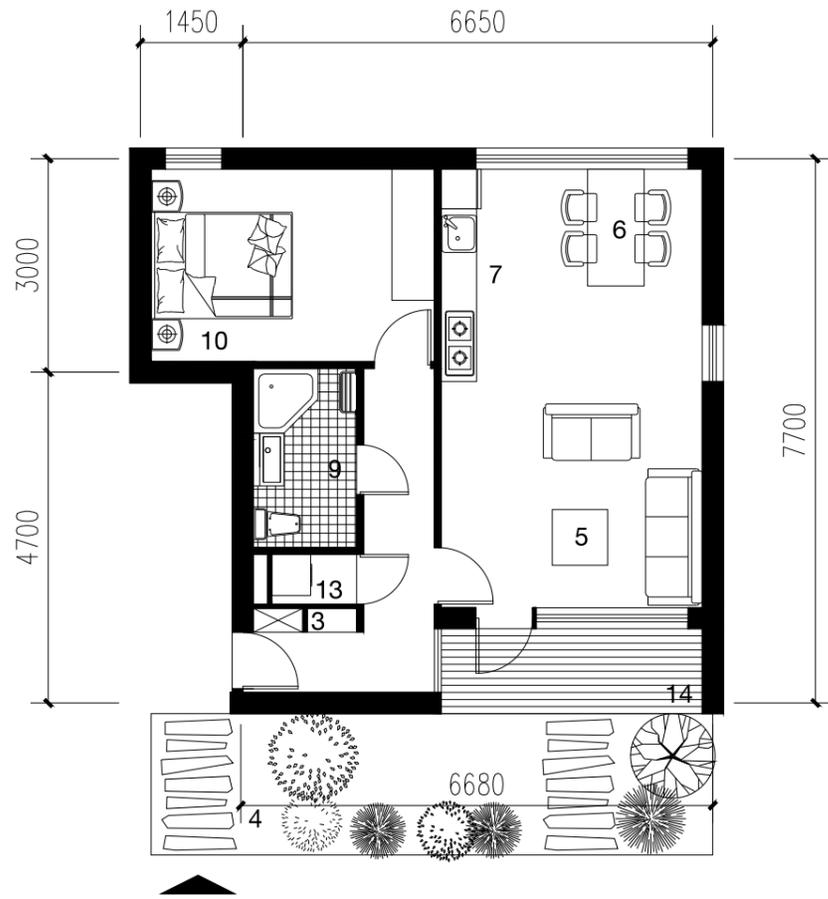


APARTMENT A - 2ND F

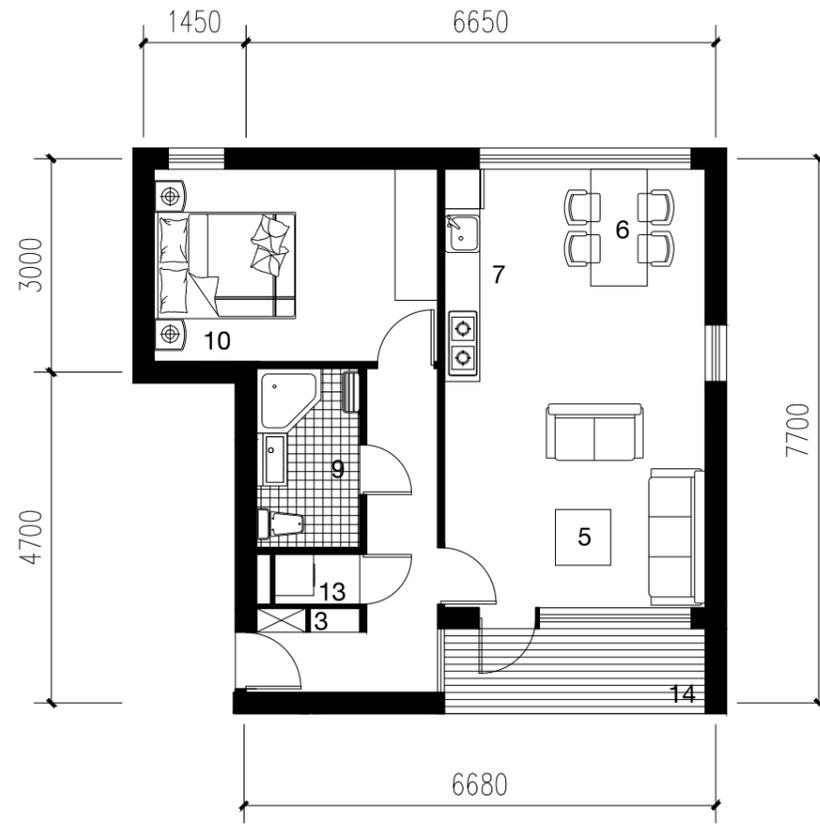


APARTMENT A - 3RD & 4TH F

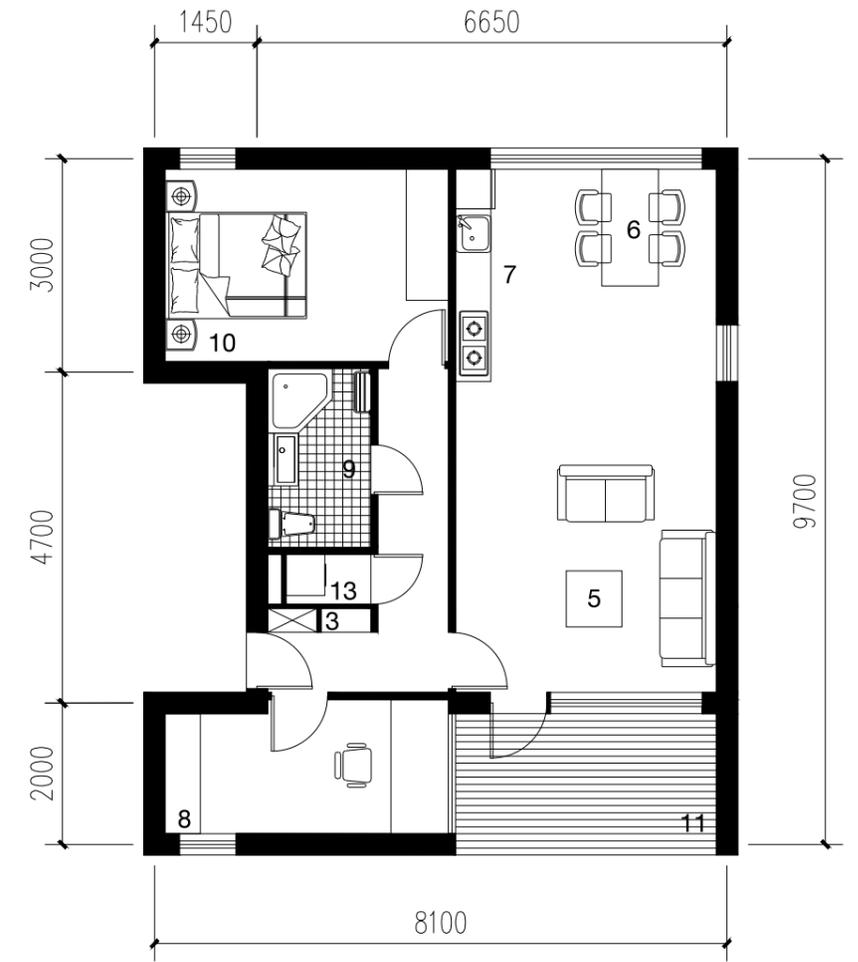




APARTMENT B - 1ST F



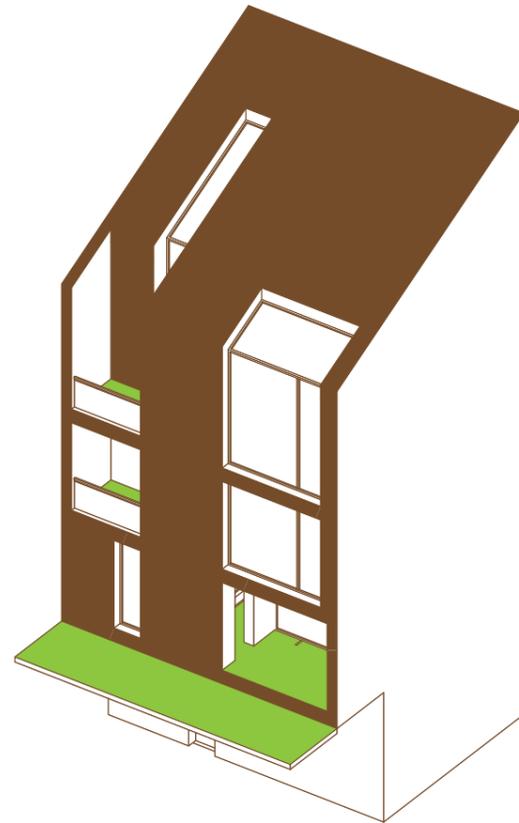
APARTMENT B - 2ND F

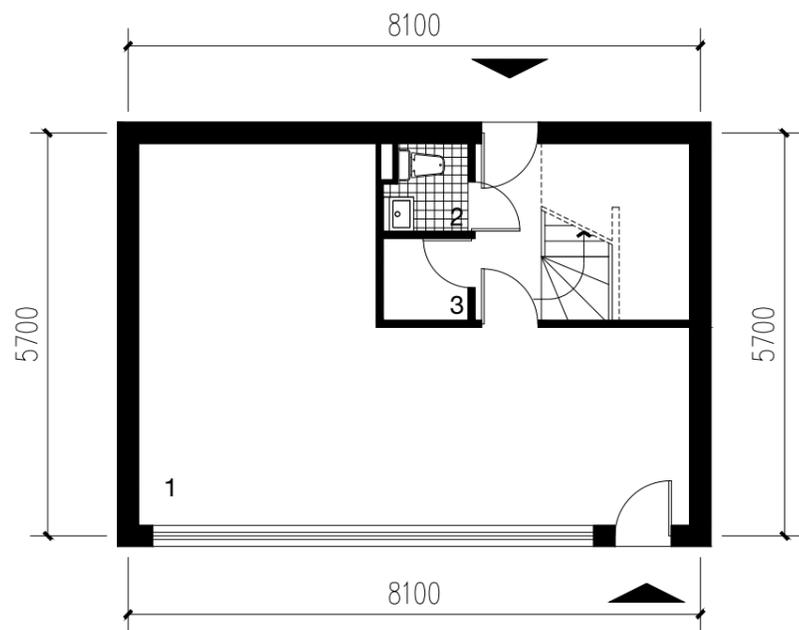


APARTMENT B - 3RD & 4TH F

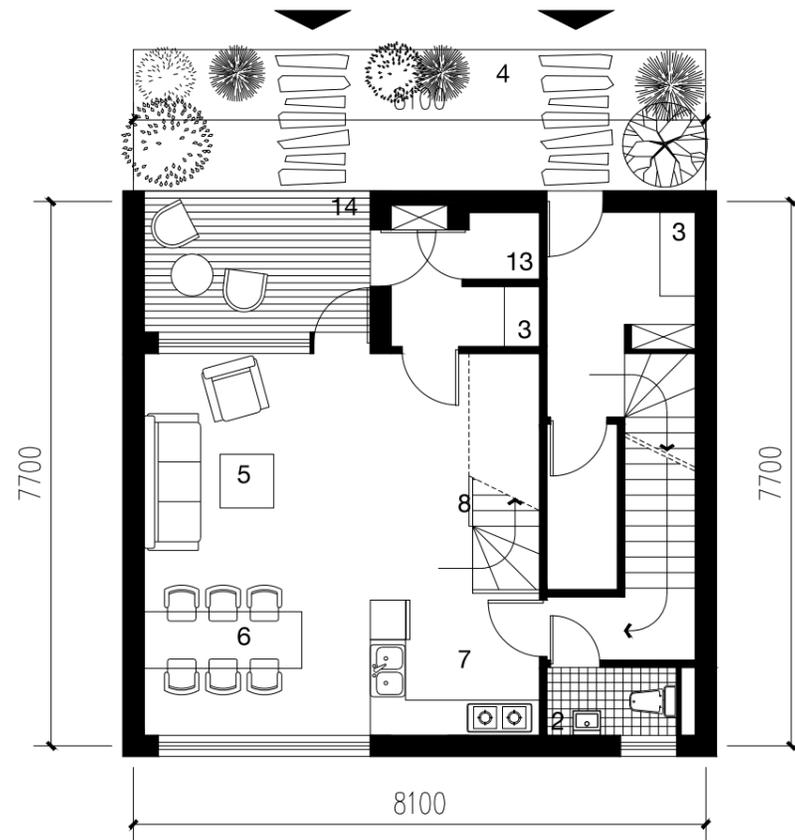


# Duplex A&B

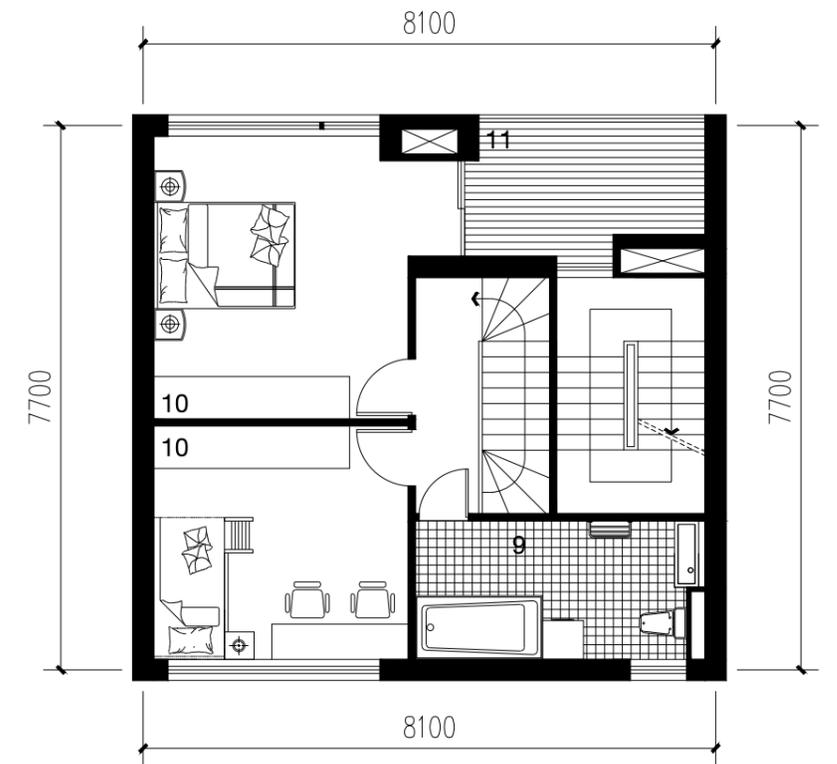




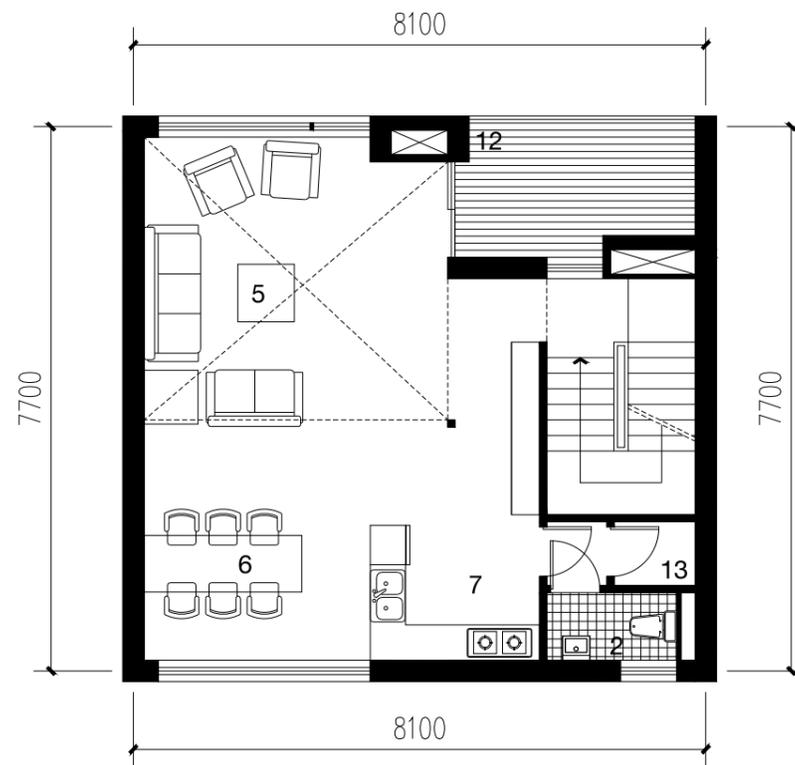
DUPLEX A - BG F



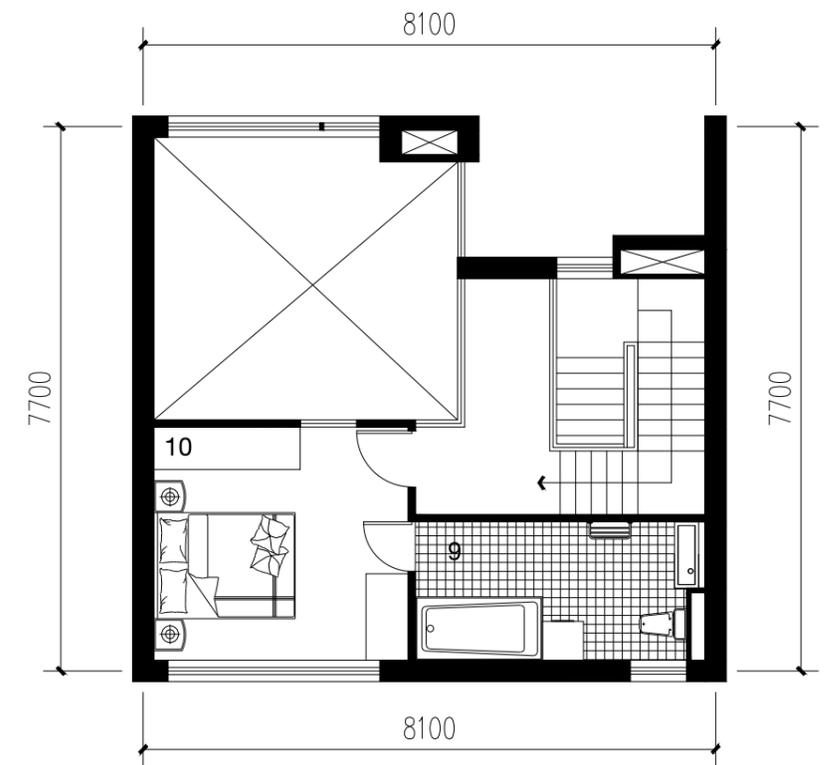
DUPLEX A - 1ST F



DUPLEX A - 2ND F

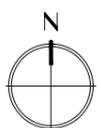


DUPLEX B - 3RD F



DUPLEX B - 4TH F

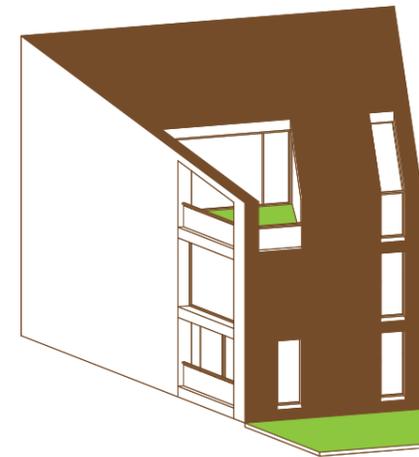
- 1 MULTIFUNCTION
- 2 TOILET
- 3 FREE SPACE
- 4 FRONT GARDEN
- 5 LIVING ROOM
- 6 DINING ROOM
- 7 KITCHEN
- 8 STUDY
- 9 BATHROOM
- 10 BEDROOM
- 11 BALCONY
- 12 ROOF GARDEN
- 13 TECHNICAL ROOM
- 14 DECK

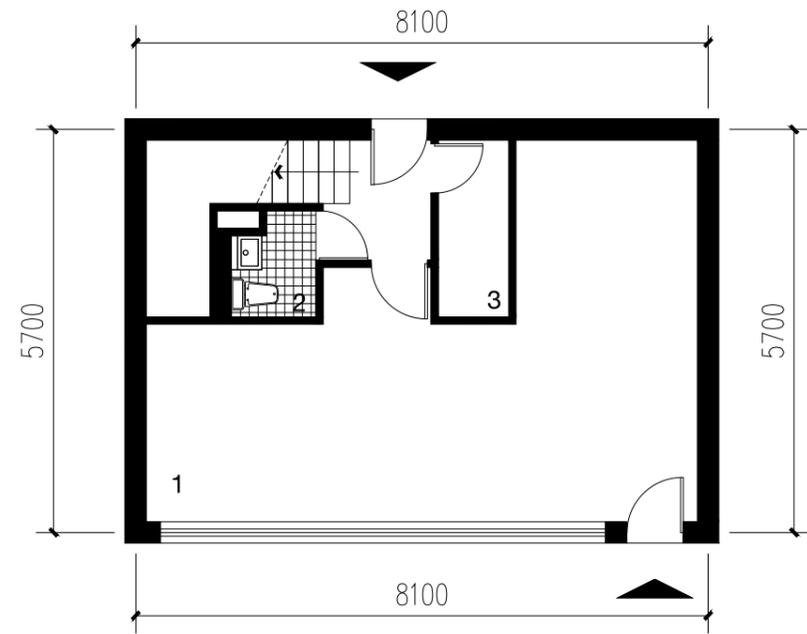




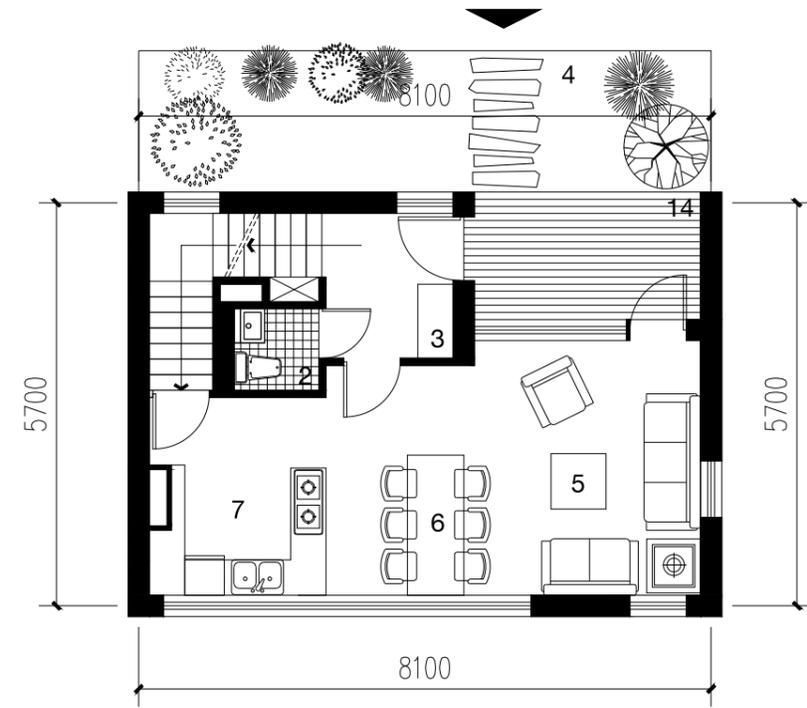


# House A,B,C

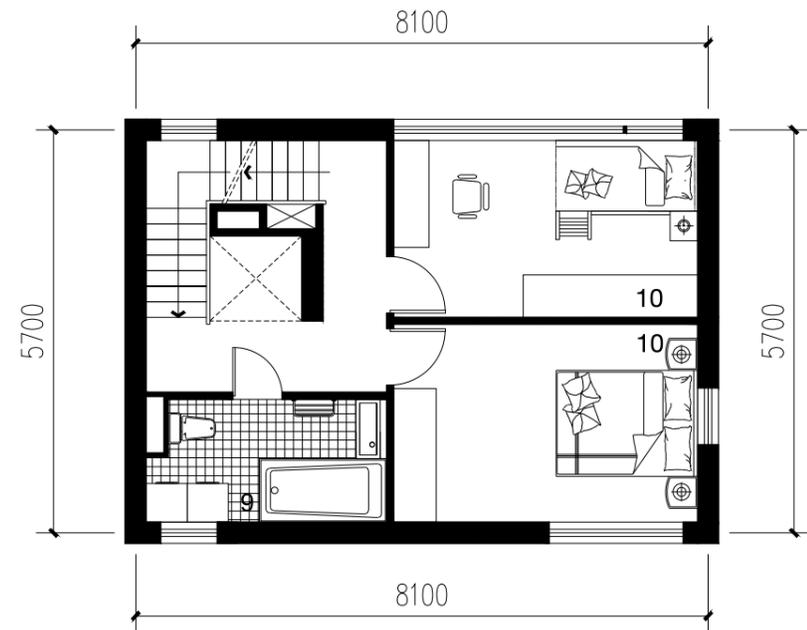




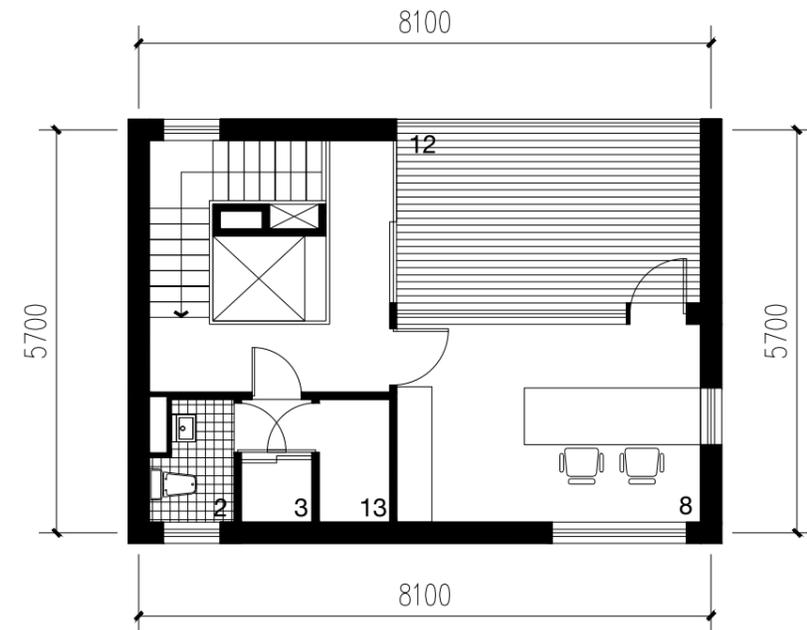
HOUSE A - BG F



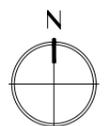
HOUSE A - 1ST F

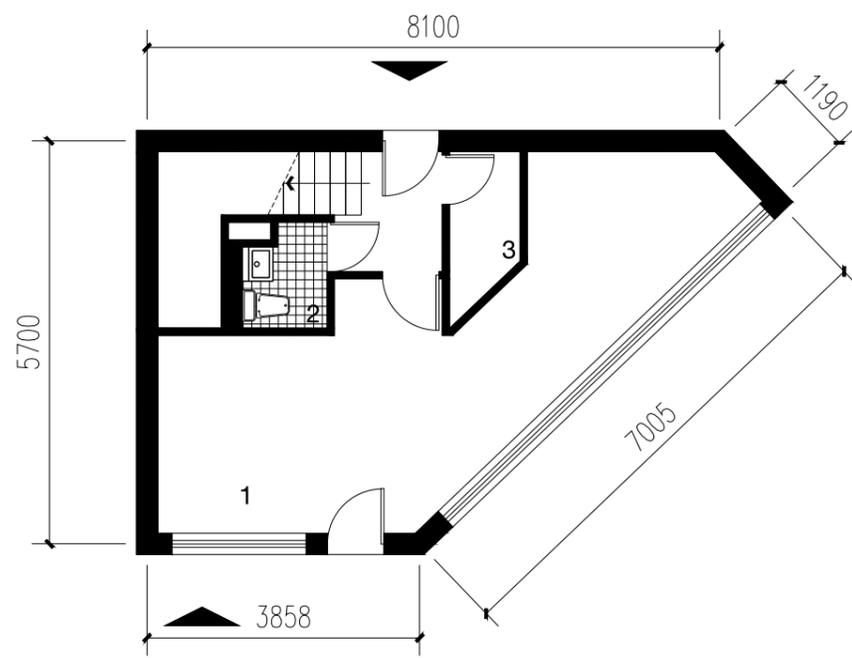


HOUSE A - 2ND F

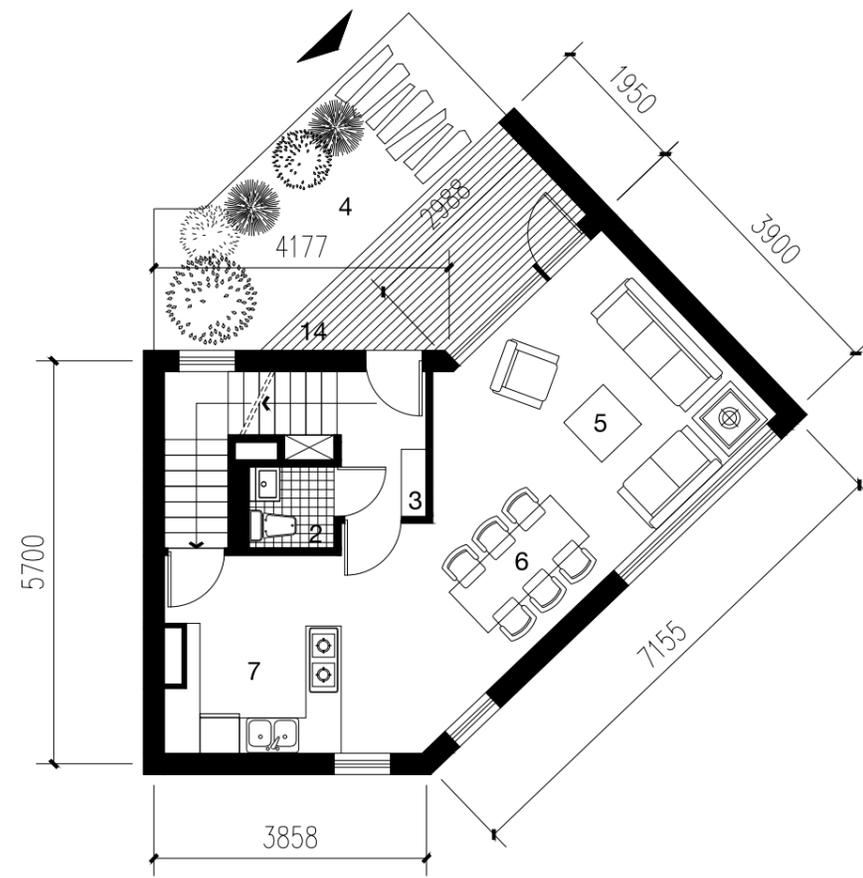


HOUSE A - 3RD F

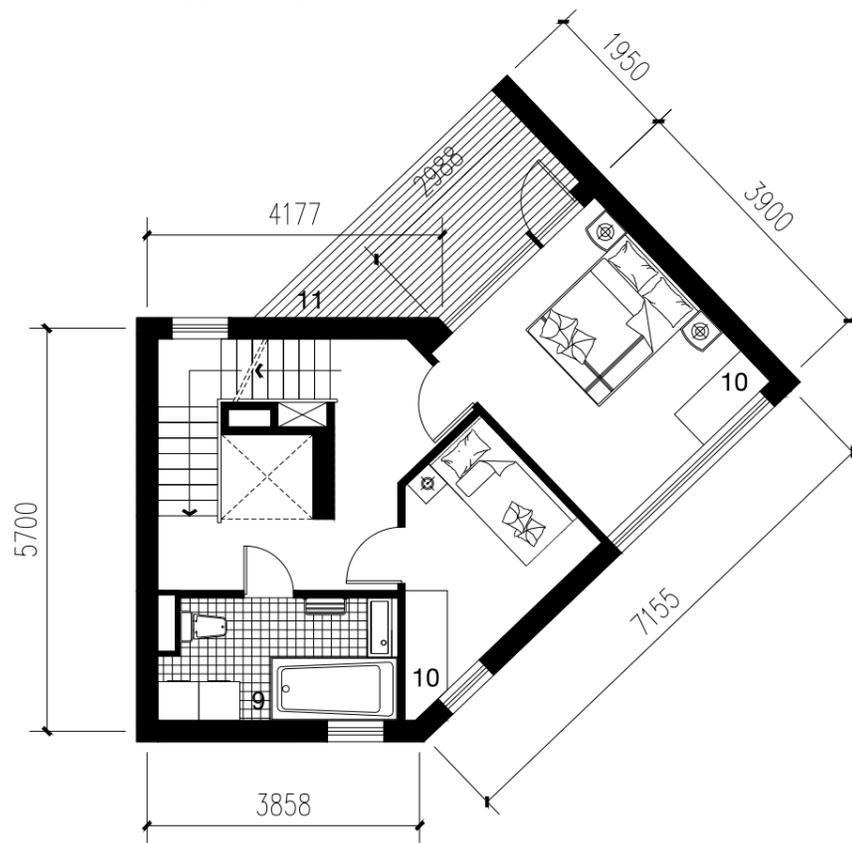




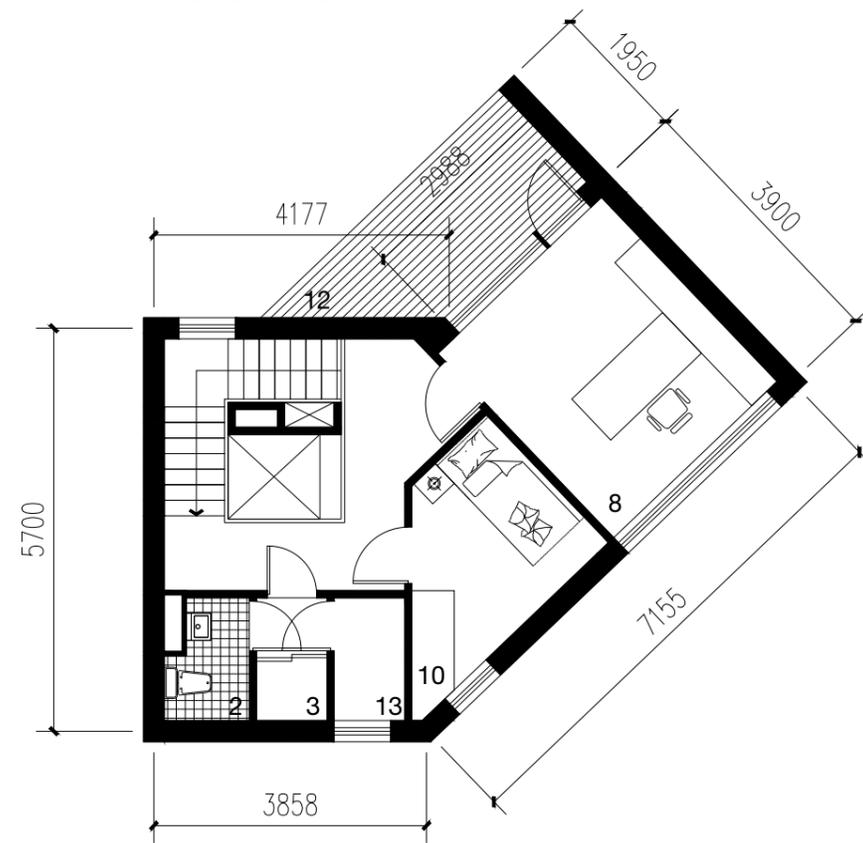
HOUSE B - BG F



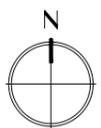
HOUSE B - 1ST F

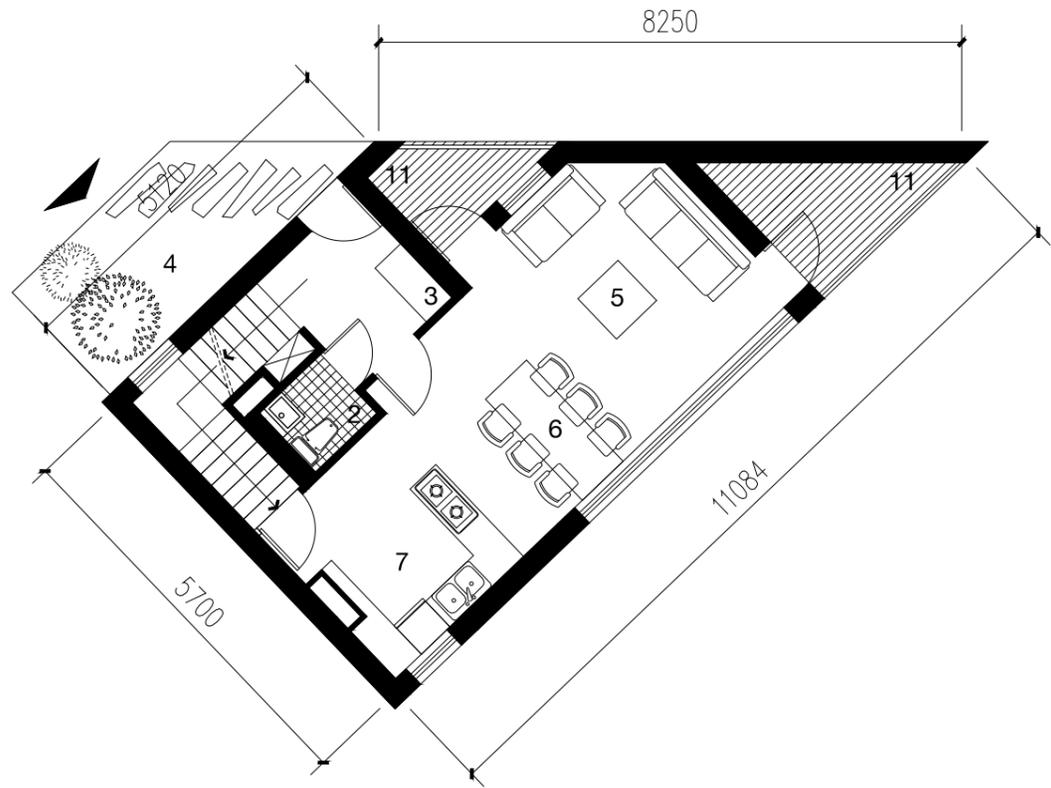


HOUSE B - 2ND F

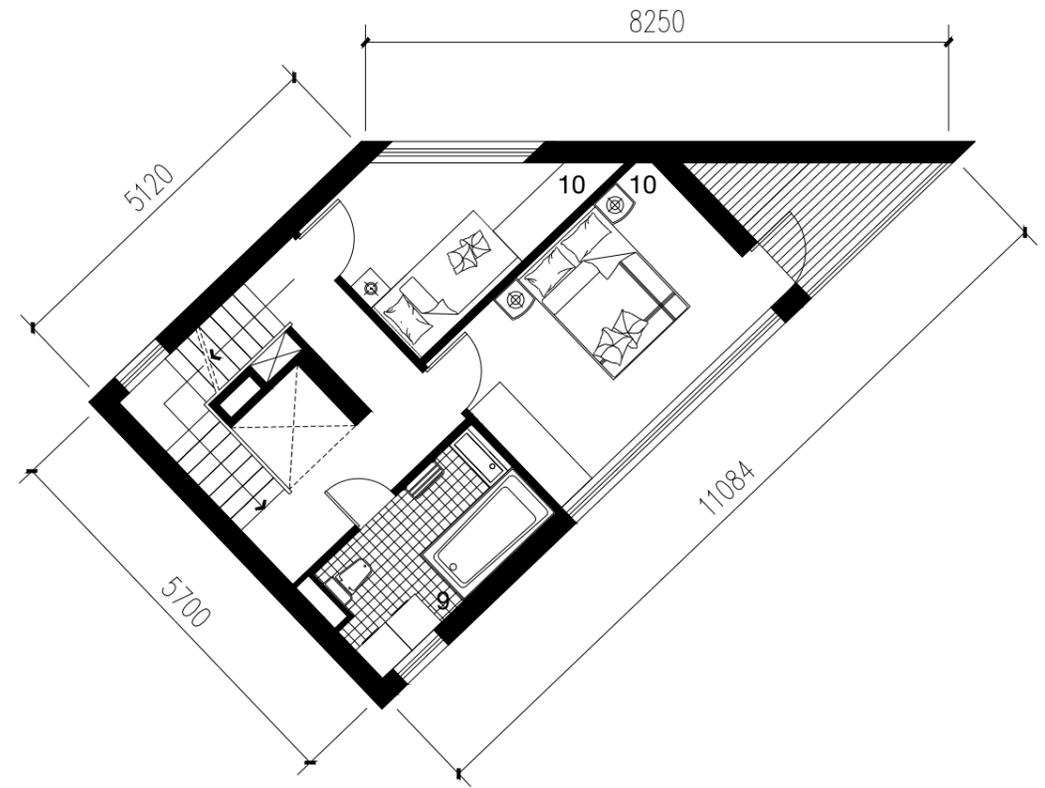


HOUSE B - 3RD F

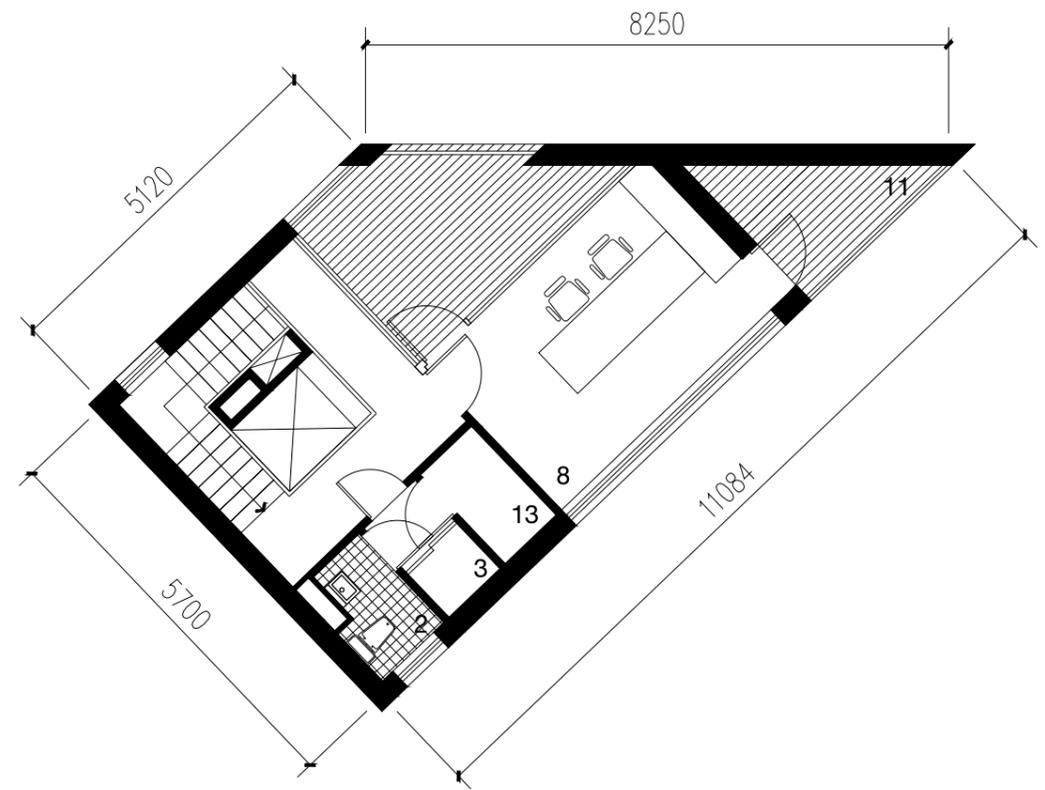




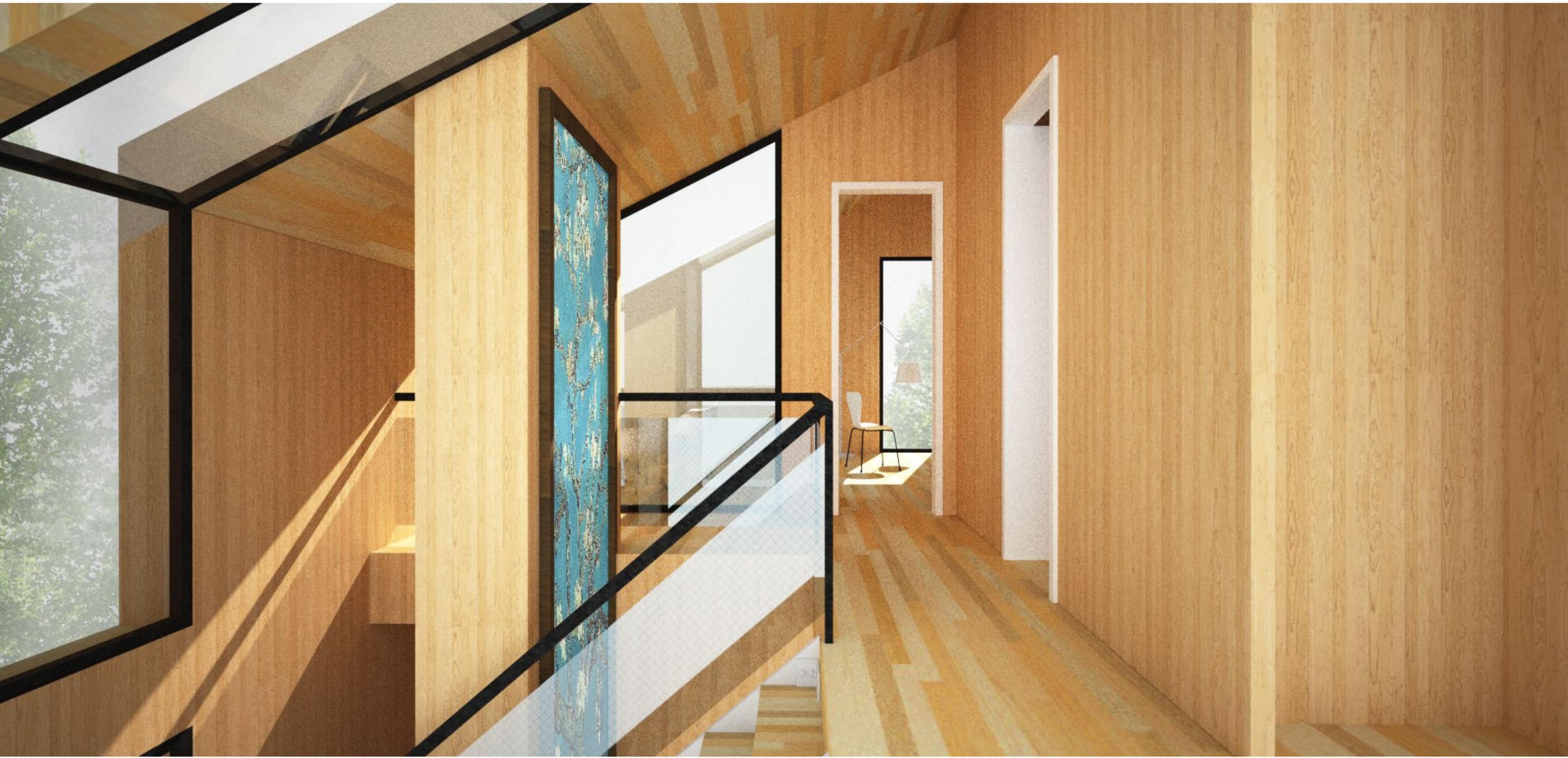
HOUSE C - 1ST F



HOUSE C - 2ND F



HOUSE C - 3RD F



Theme Research

Concept

Site Research

Design

Structural System

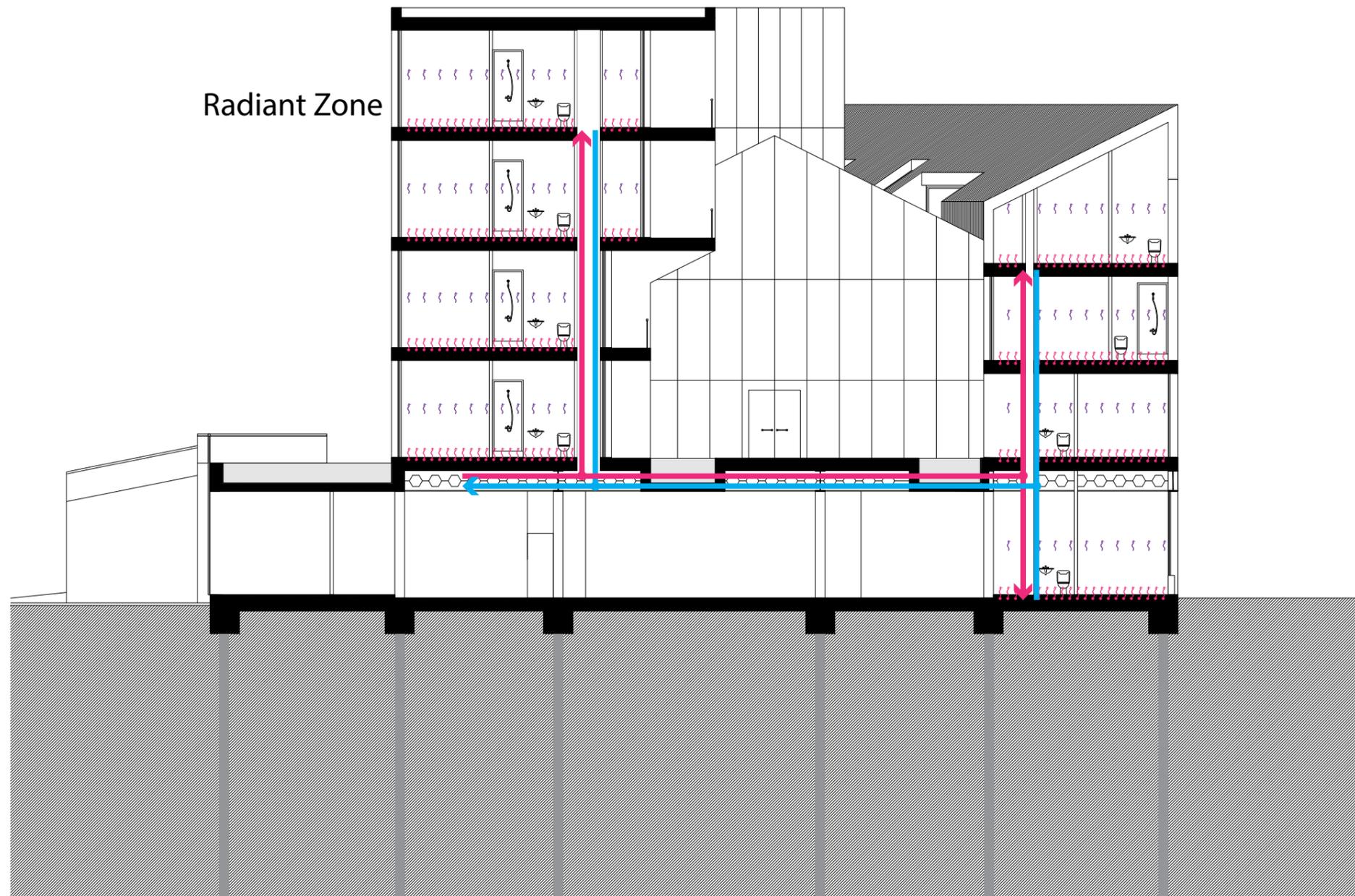
Facade and materials

Housing design

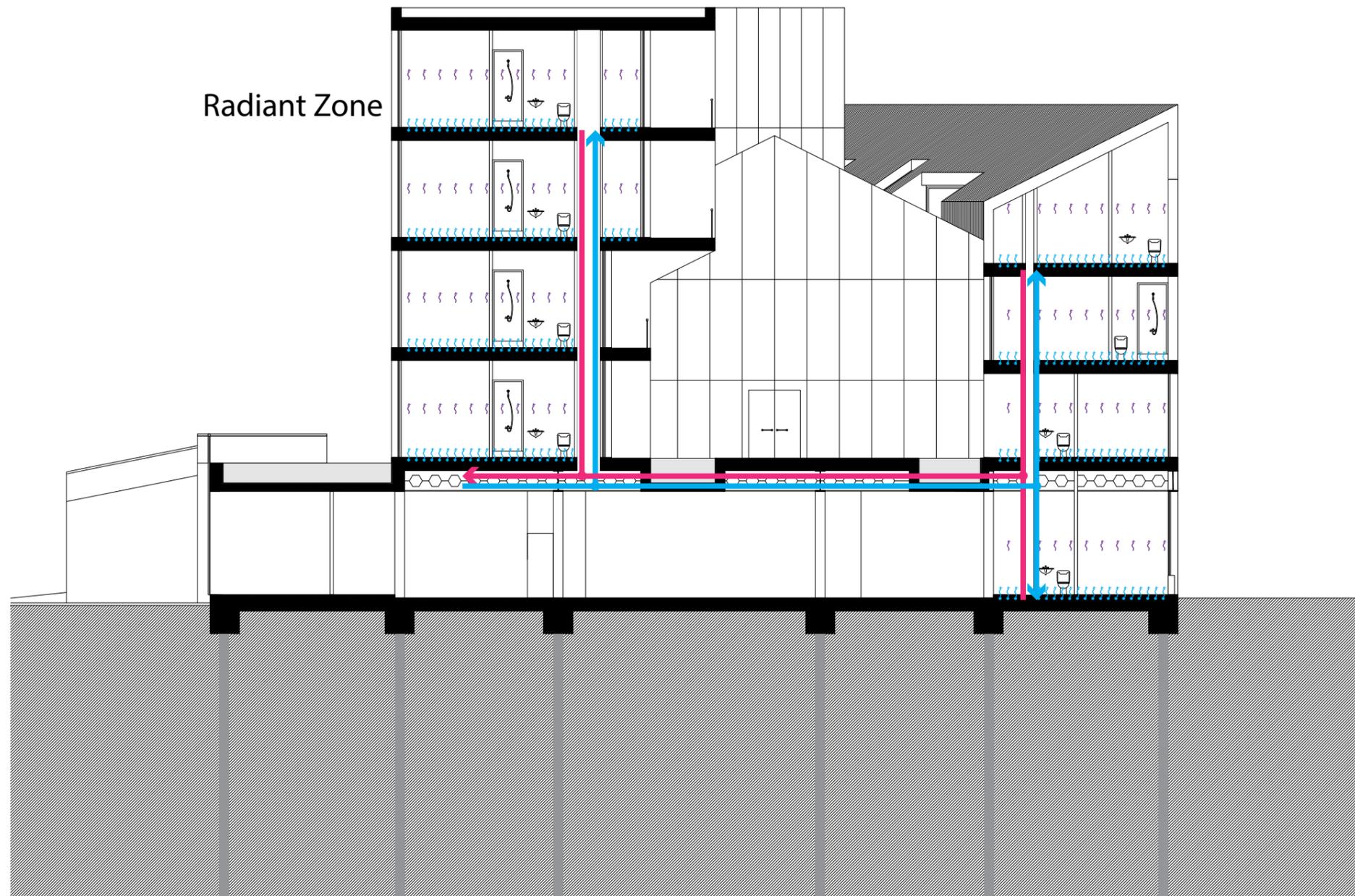
**Climate System**

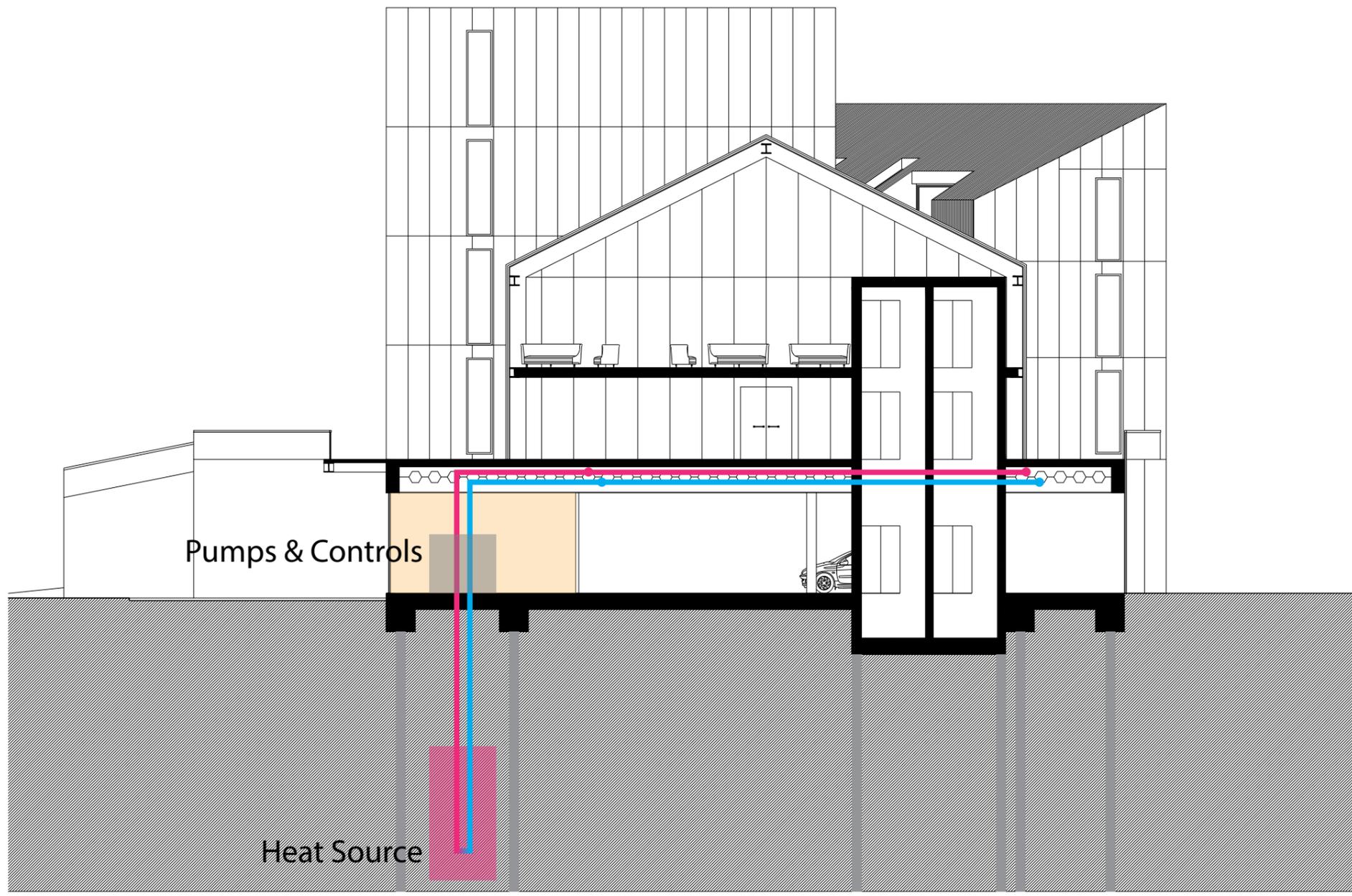
Conclusion

# Ground source heat pump for heating and hot water - Heating



# Ground source heat pump for heating and hot water - Cooling

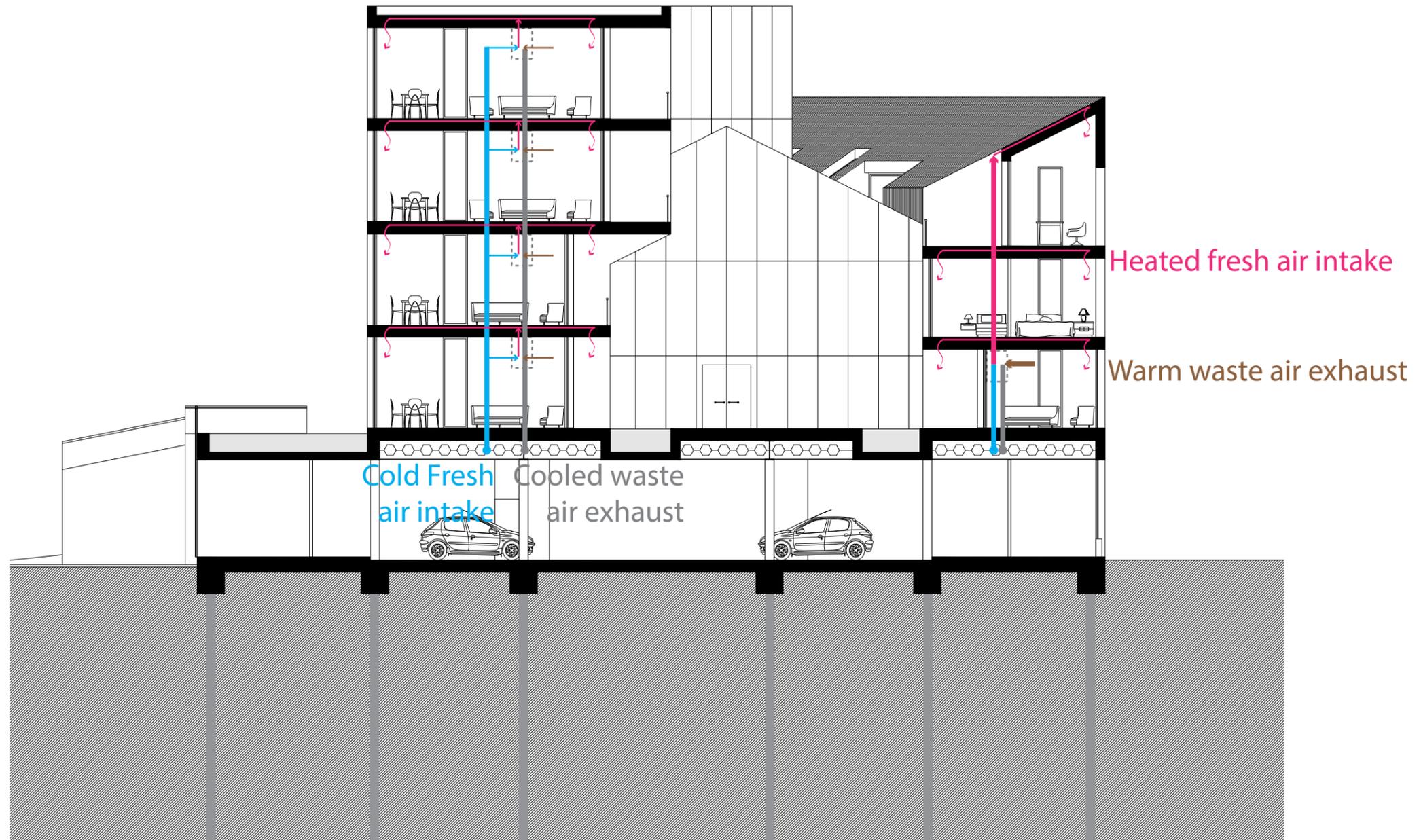




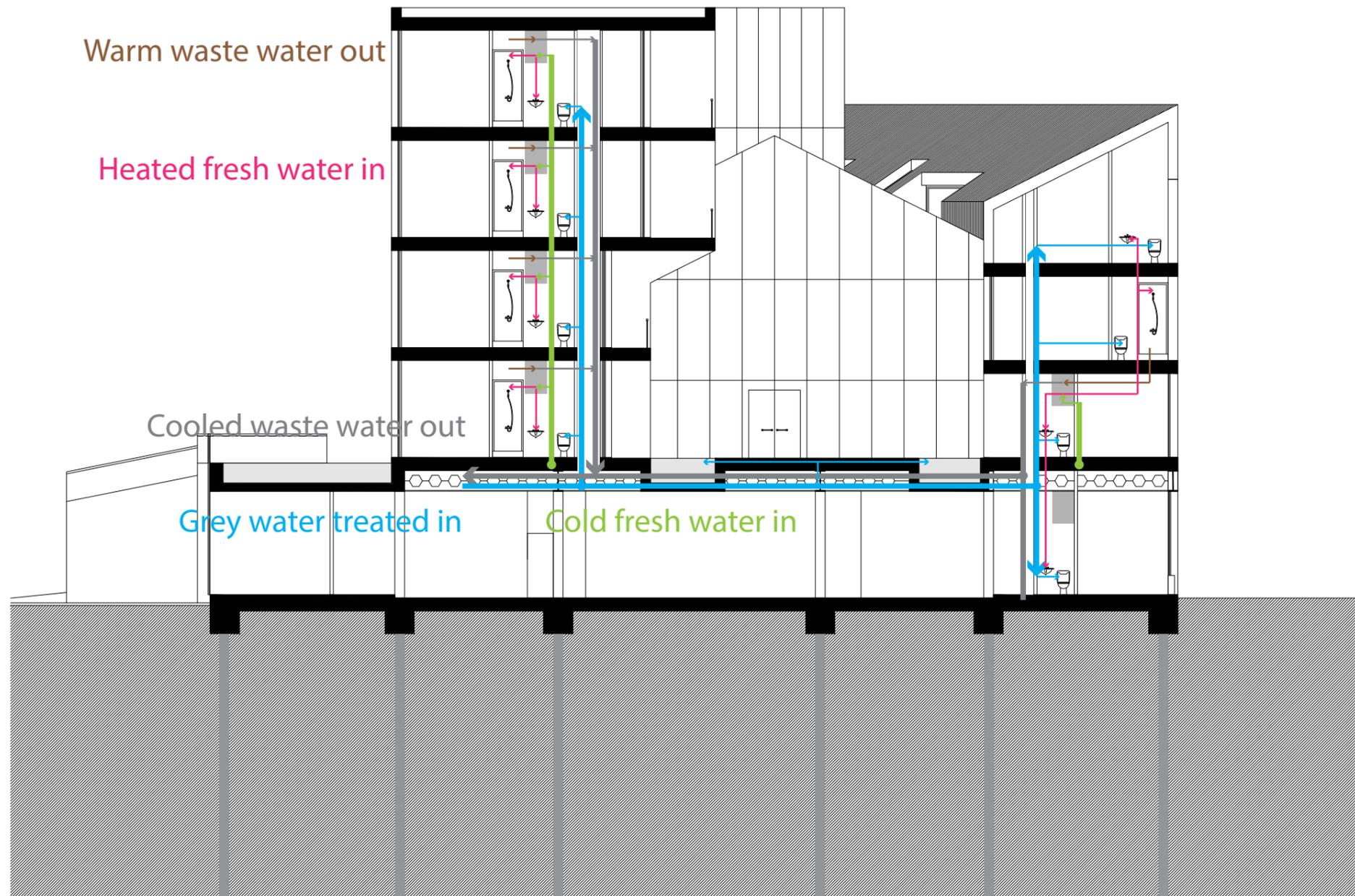
# Natural Ventilation



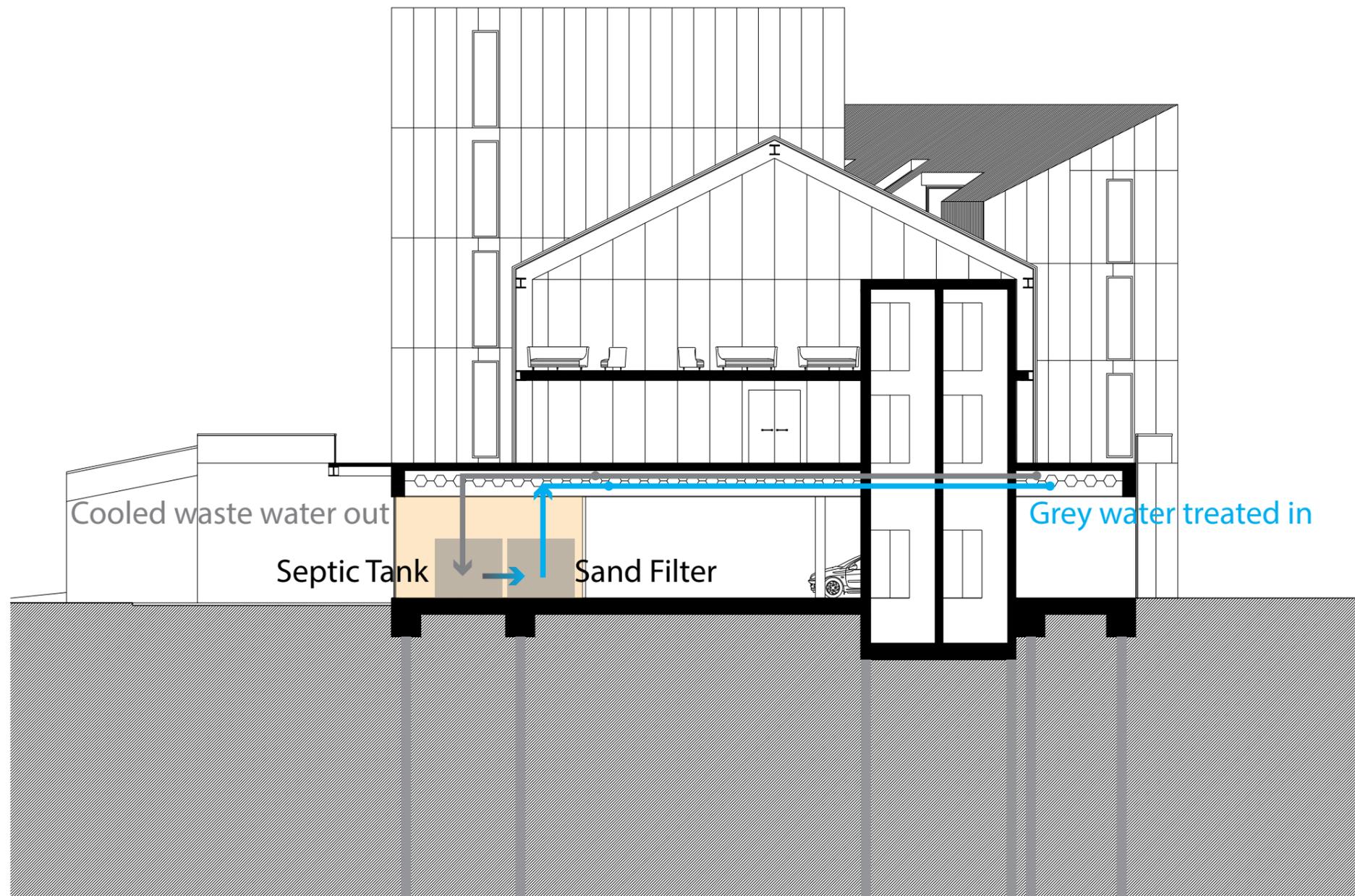
# Heat Exchanger System + Intake/ Exhaust Mechanical Ventilation



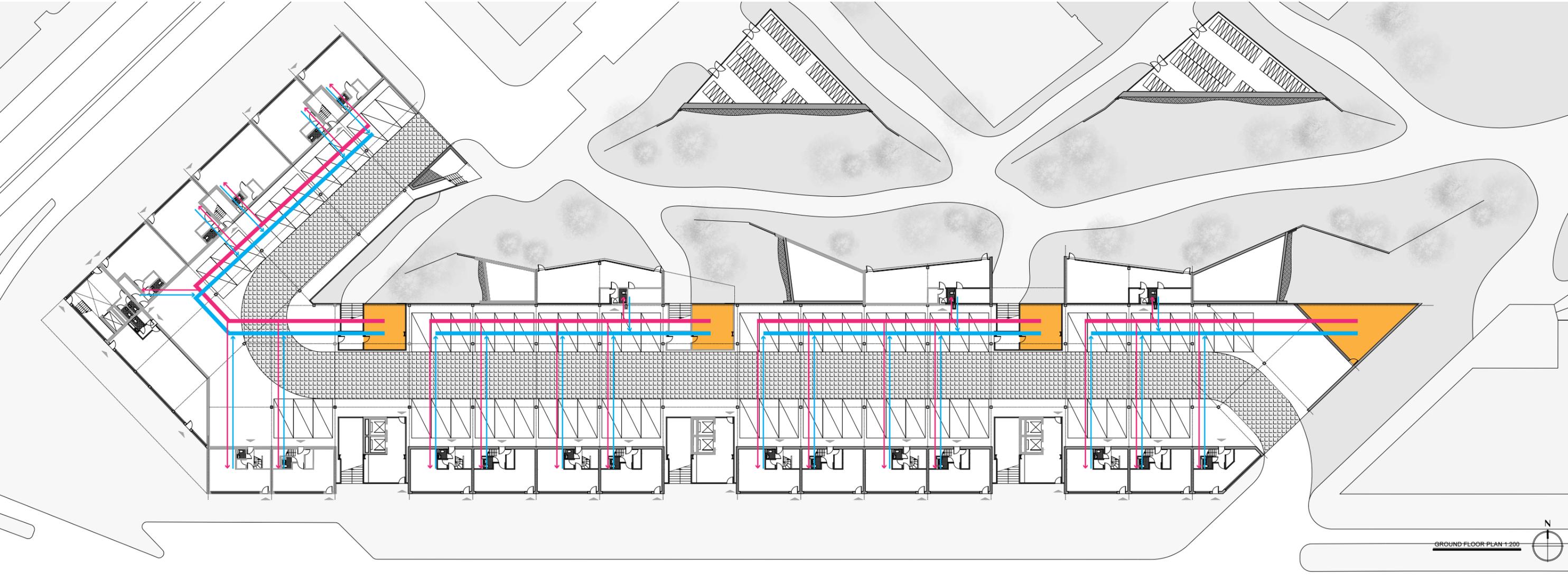
# Greywater Recovery System + Heat Exchanger System



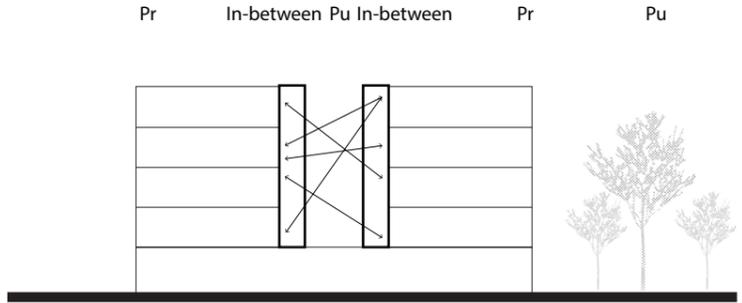
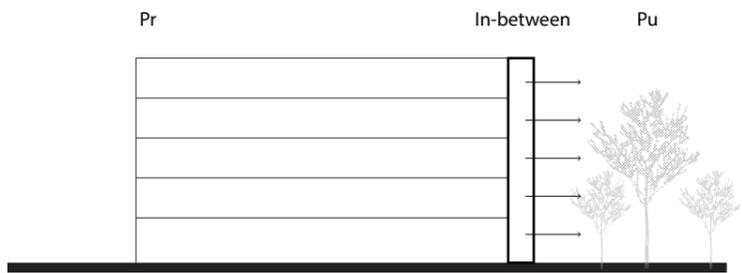
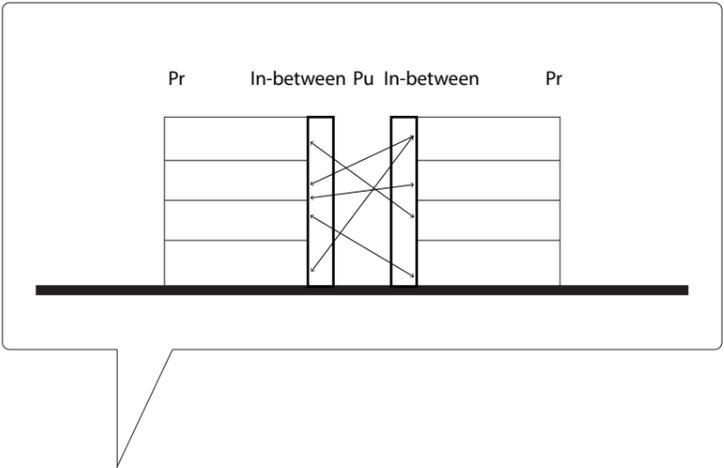
# Greywater Recovery System + Heat Exchanger System

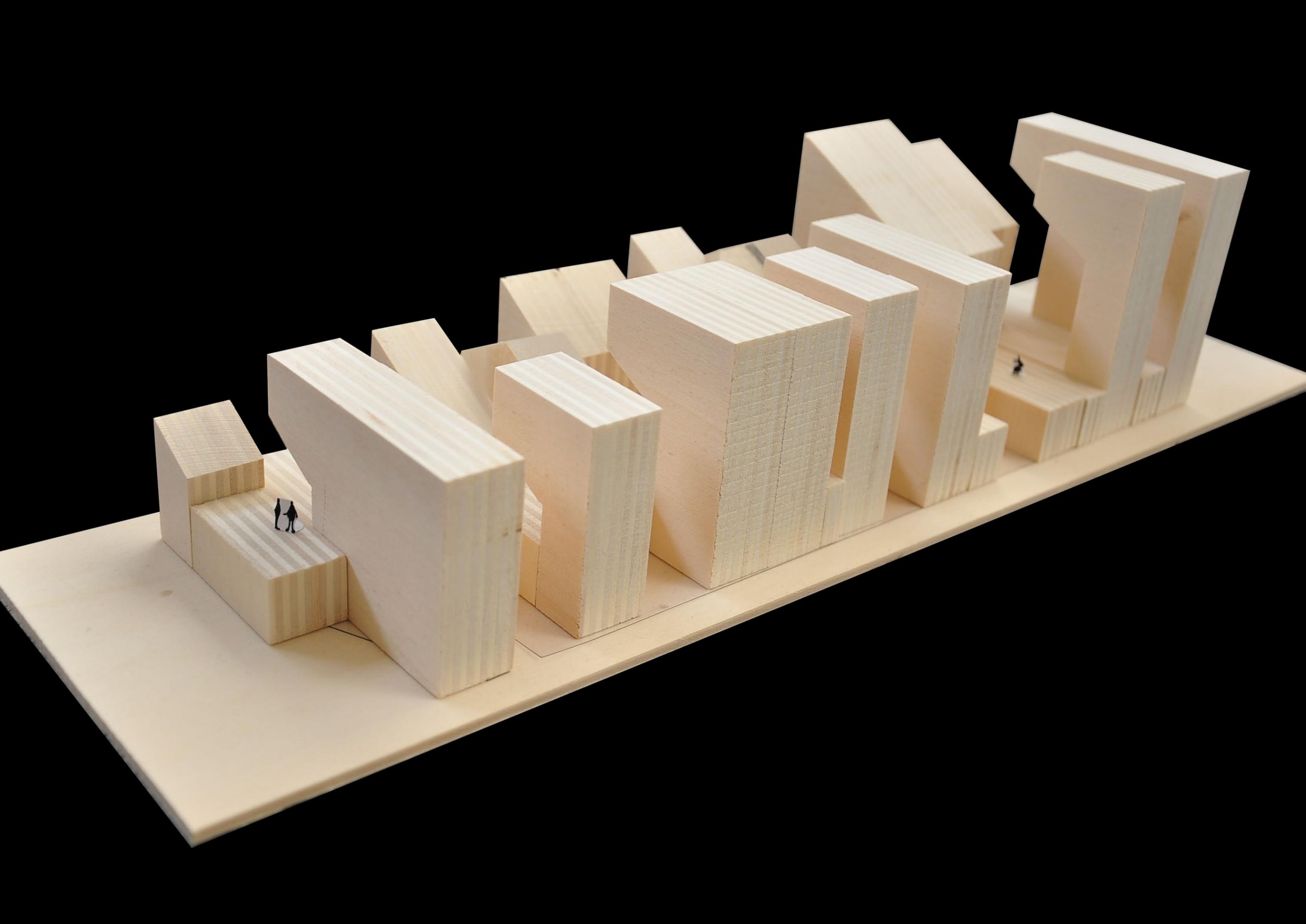


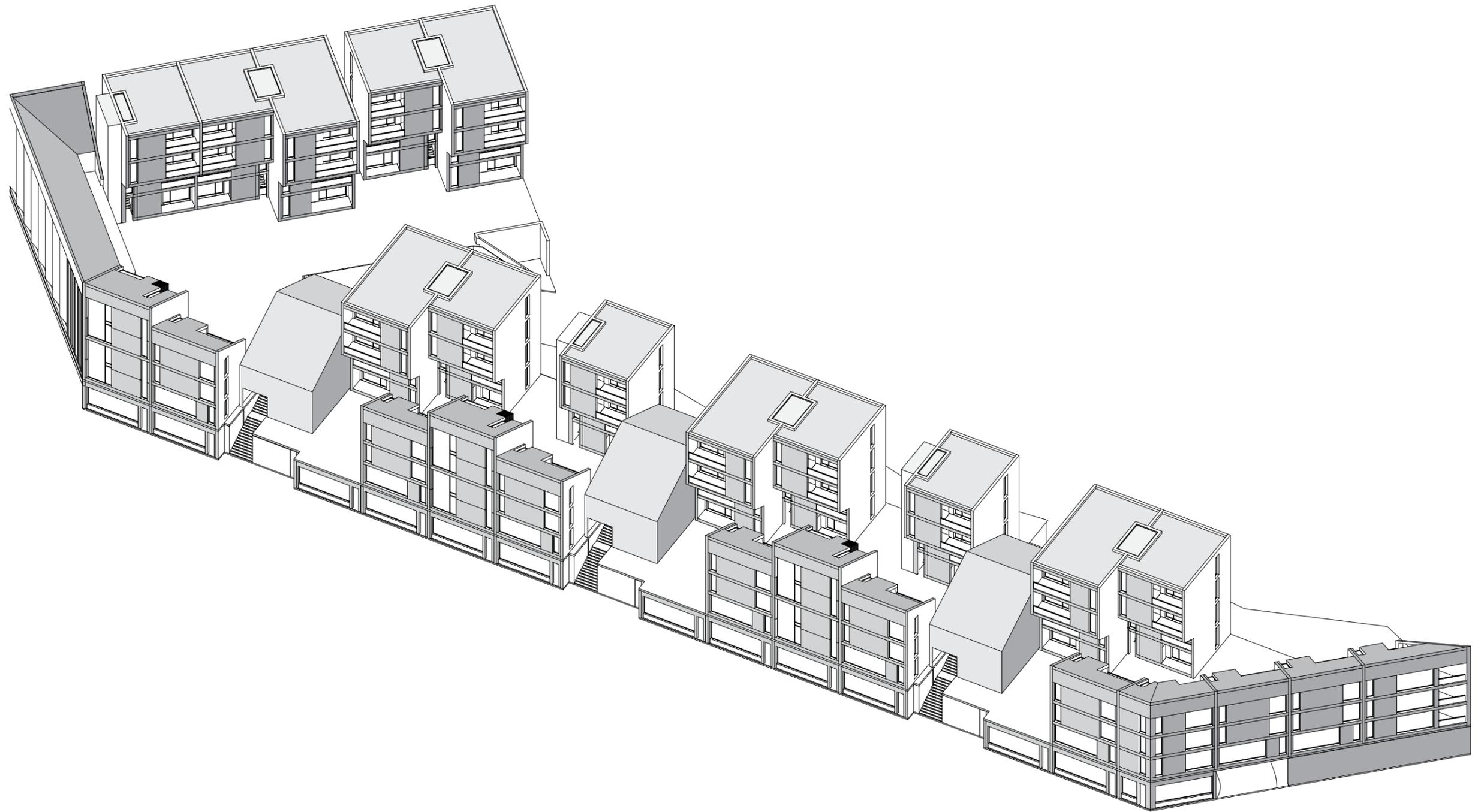
# Distribution of Heat Pump/Controls & Septic Tank/Sand Filter



Conclusion









Thank you for your time!