Grochowska Row Revival

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Design Mentor: Roel van de Pas
BT Mentor: Rufus van den Ban

Poland

Warsaw

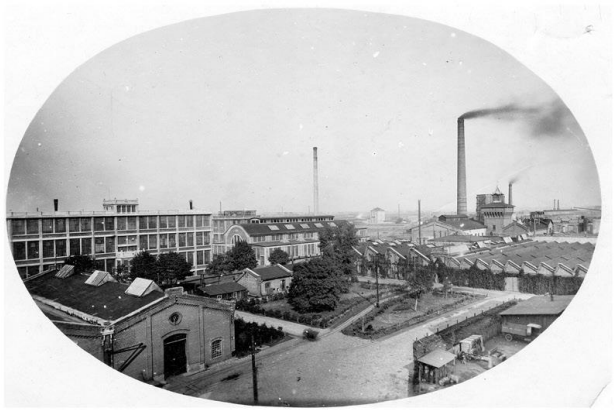
Grochów

(https://earth.google.com/)

https://fotopolska.eu/80386,str.html?map_z=17&f=2284128-foto

~1920s

Grochów district being Warsaw's "far-west", swamps, fields, wooden huts.



https://fotopolska.eu/408985,obiekt.html?map_z=17&f=1371179-foto

~1930s

Growing industrial hub, rail, various factories defining the landscape.

https://mapa.um.warszawa.pl/

1935

First non-timber mass housing constructed for incoming workers, Grochowska street becomes hard surface.

https://fotopolska.eu/1836879,foto.html

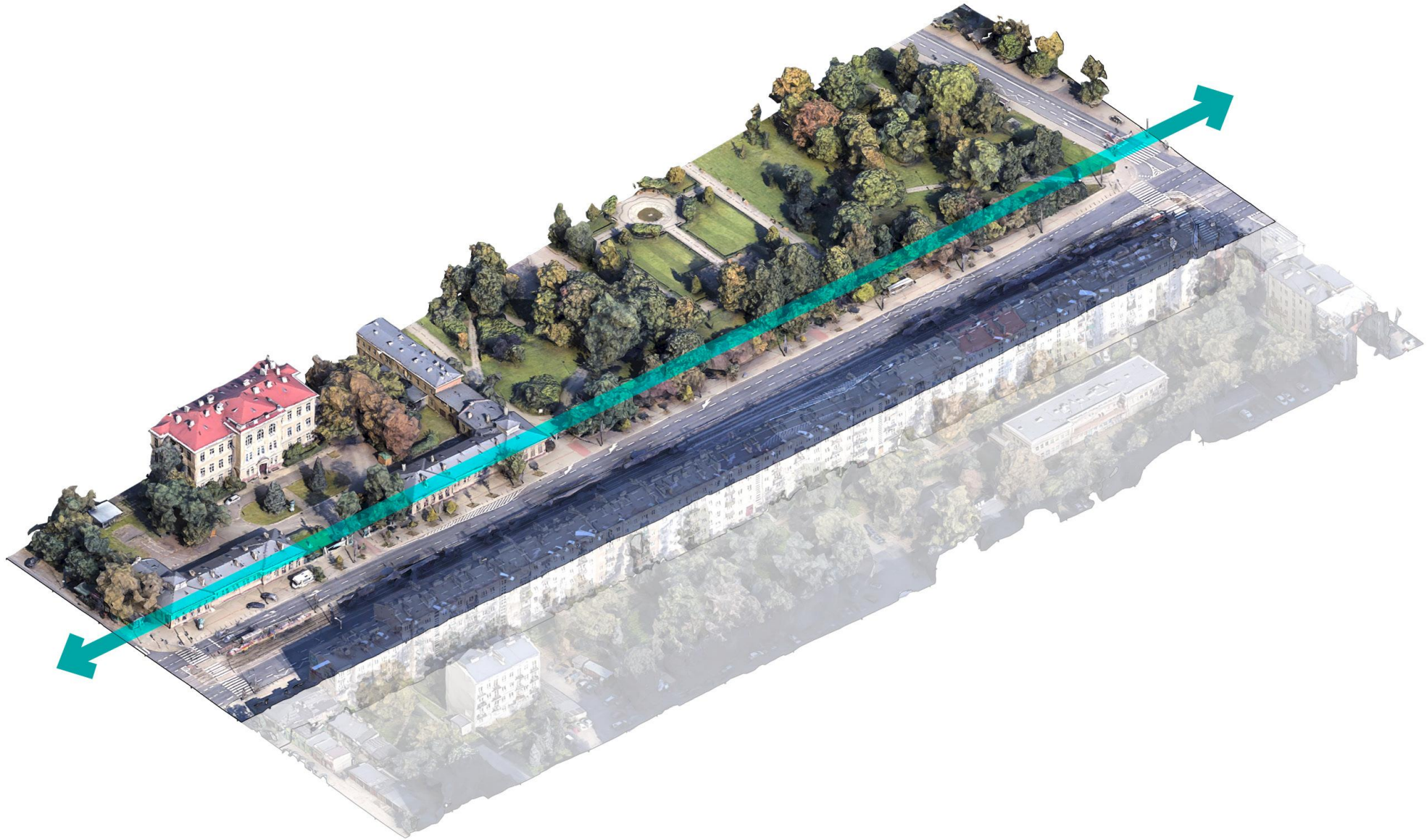
https://fotopolska.eu/1350183,foto.html?o=b295566

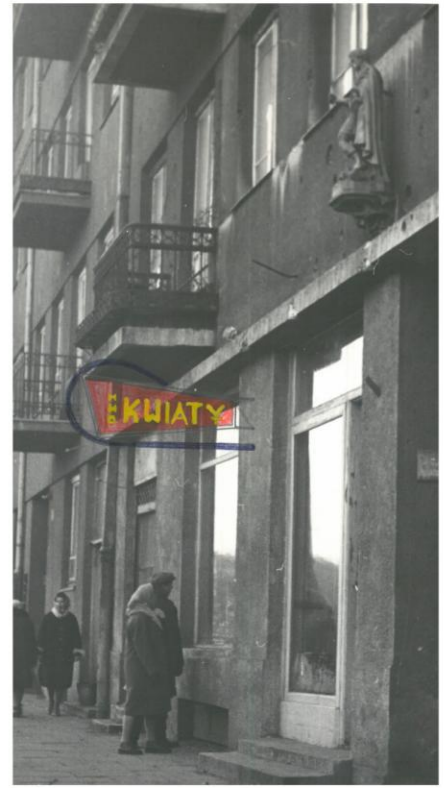
Rapid Growth

Grochów experiences rapid growth during the inter-war period, with factories and new housing directly neighbouring fields and slums.

Mass Housing

Mass housing built just before the war to provide for workers needs, with sewage and running water. Erected in batches, probably by the same teams.

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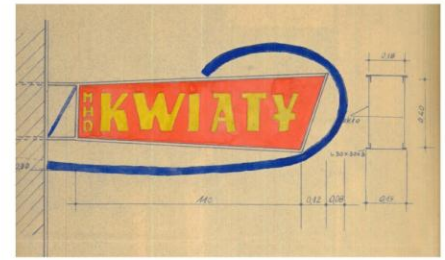
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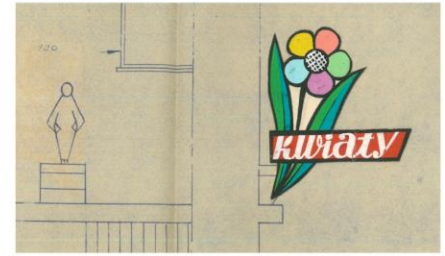
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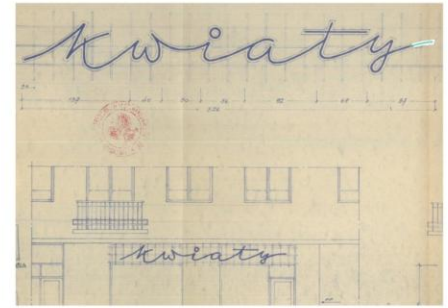
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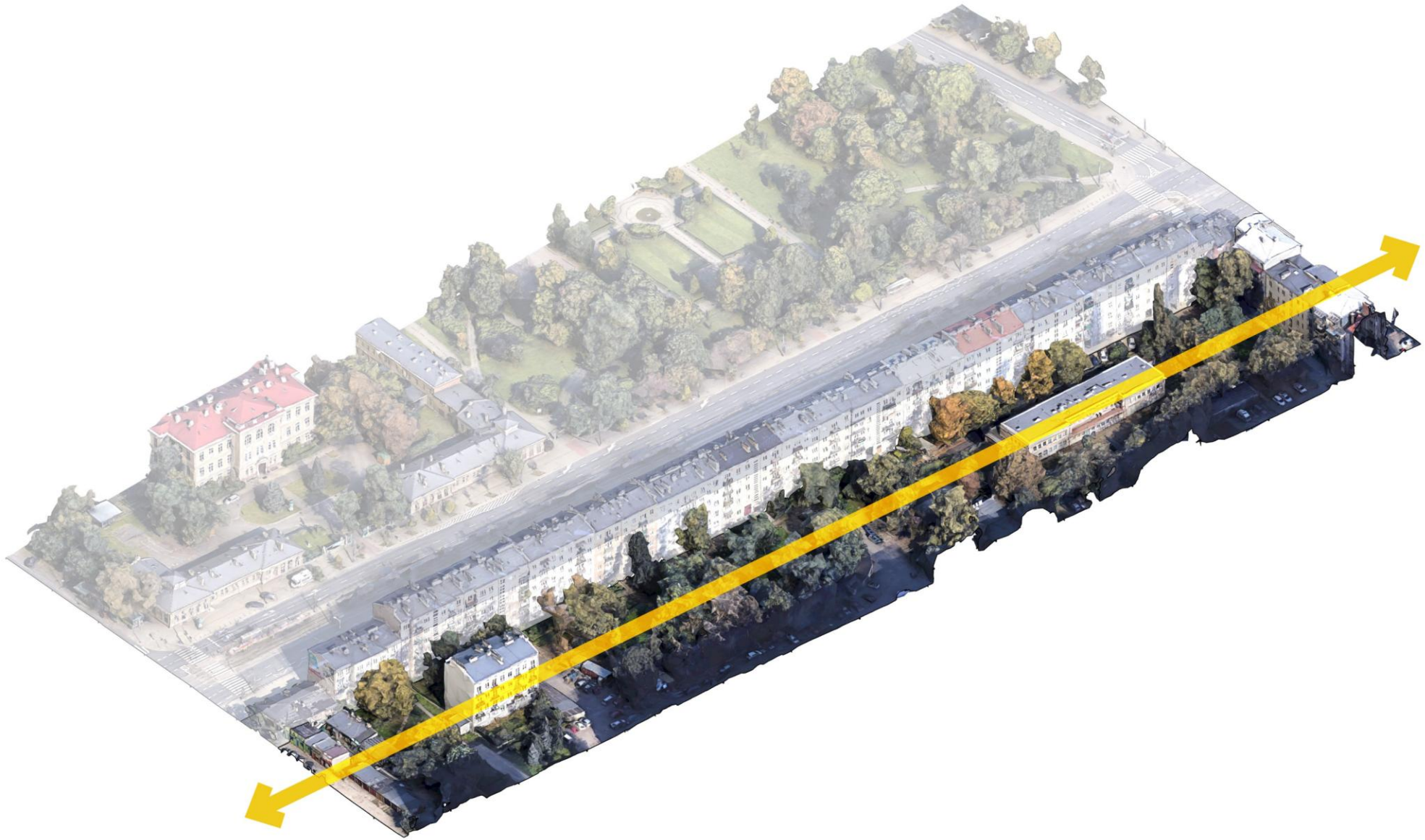
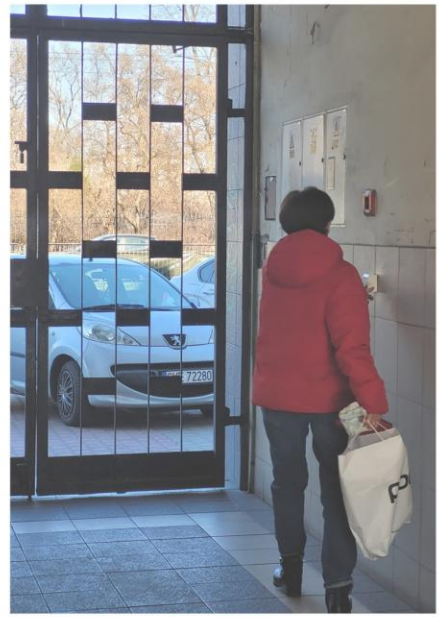



GROCHÓW
FANATYCZNY



Elderly

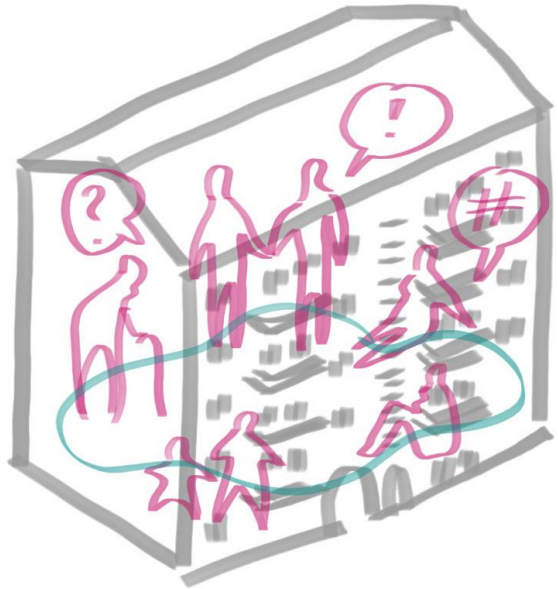
Elderly

Local Family





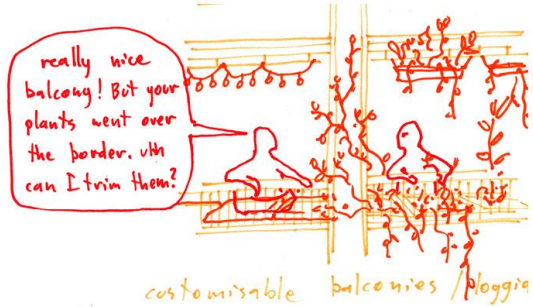

Lively Symbiosis

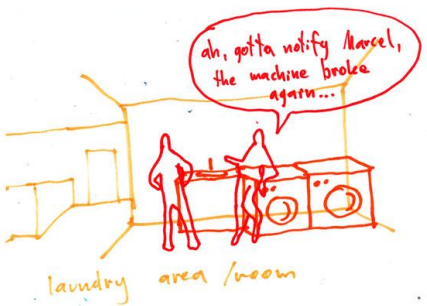


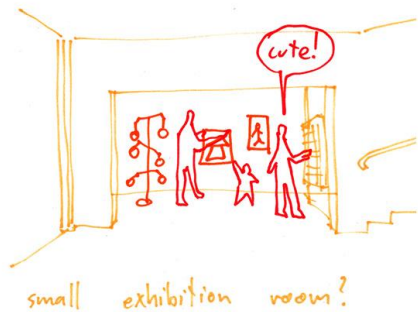
Lively Symbiosis

Building (self)Healing

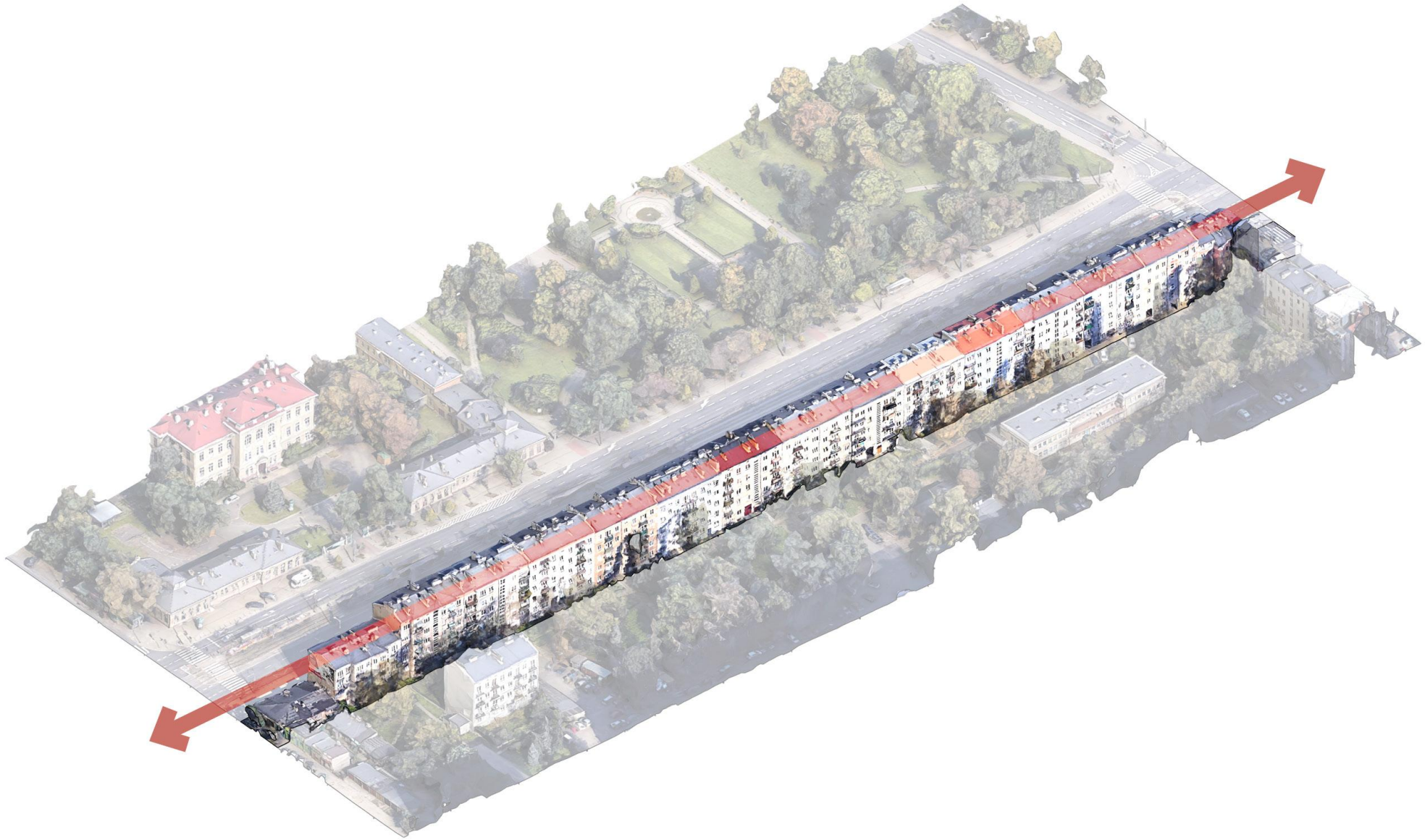
Buildings can “heal themselves” if the community action is strong among residents. How can I facilitate that more with the design?







Can design build community?



Google.pl

Deterioration

Many buildings did not see treatment since construction, bare brick faces the exterior.

Google.pl

Chaotic Progress

Potential for systematic action is overlooked, leading to chaos and deepened inequalities.

Google.pl

User Exclusion

In the process, the needs of users, the most vulnerable, are often forgotten.

Murator.pl

Conservative Practice

Rarely a circular approach is even taken into account in Polish practice.

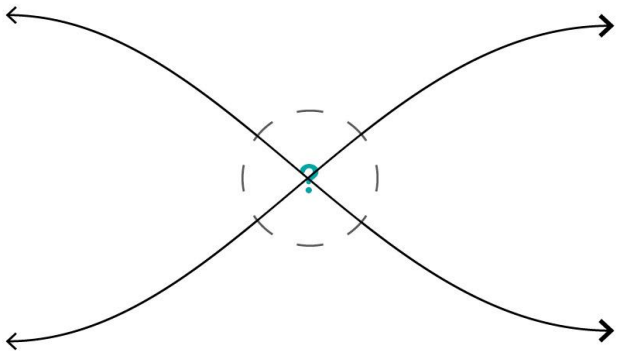
Visible Similarity

Though not modular, such as post-war “big-plate” mass housing, those buildings share key similarities within typology.

http://ukosne.um.warszawa.pl/

Is there more?

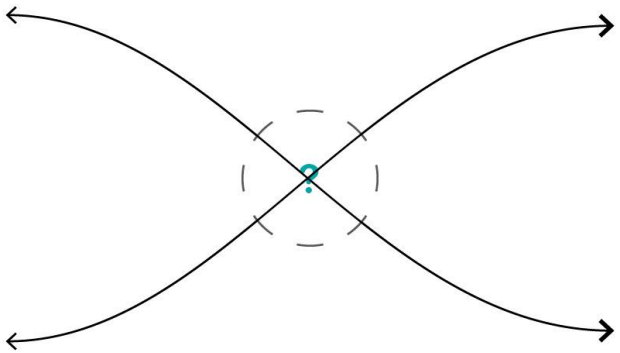
Original averaged Grochowska typology



Comparison to Grochowska typology via DINOv2 foundation model

Checking ismilarity with 3200 buildings from Warsaw. Pre-filtered with geospatial data.

Original averaged Grochowska typology



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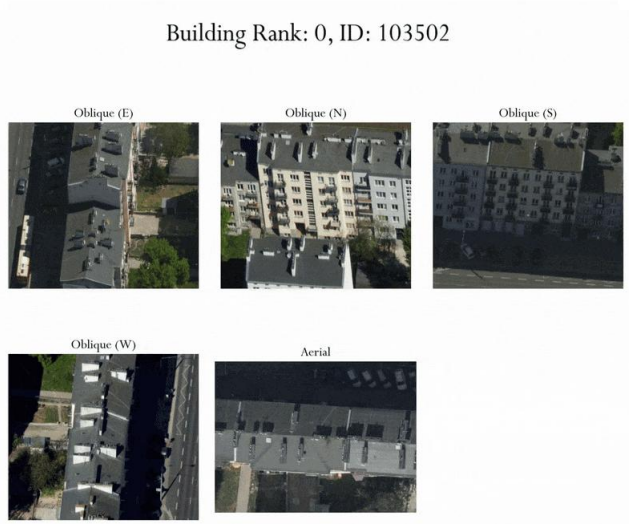


sorting
ranking
empirical analysis

~450 Buildings closely matching Grochowska typology

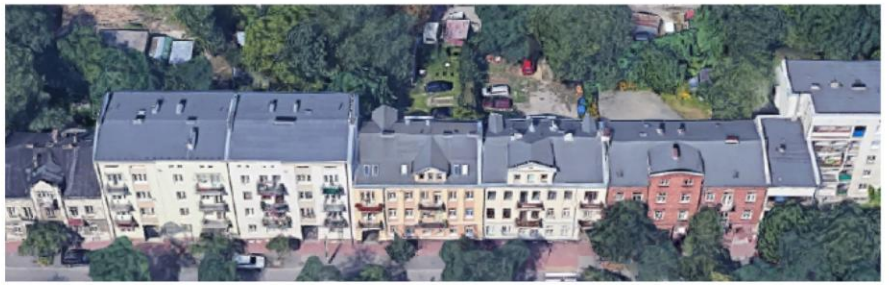
~120 Buildings of exact typological match

Mokotów

Grochowska

Sosnowiec

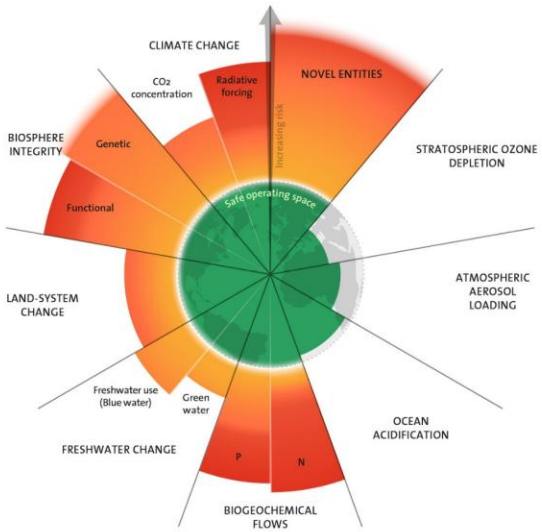
Gdańsk



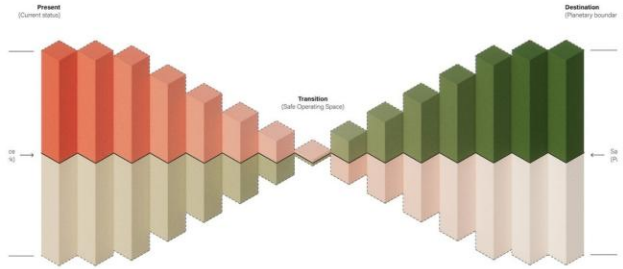
Pruszków

A System! to enable scalable impact

Similar topologies common in other parts of Warsaw and other cities in Poland. There is a potential for considerable, scaled improvement by designing a “system” for refurbishment that could be easily applied to other buildings from this same typology.



stockholmresilience.org



reductionroadmap.dk

dezeen.com

Call for drastic measures

IPCC, EU, WEF, and many other institutions leave no doubt that a paradigm shift is needed to break from the marasmus of climate inaction.

No carbon budget left

Reduction Roadmap, among many, shows that we simply do not have almost any carbon budget left for construction, to stay safe.

Stop building!

We need to reduce emissions by 96%, as estimated by Reduction Roadmap. So we either stop building, or do so completely differently.

www.tegnestuenlokal.dk

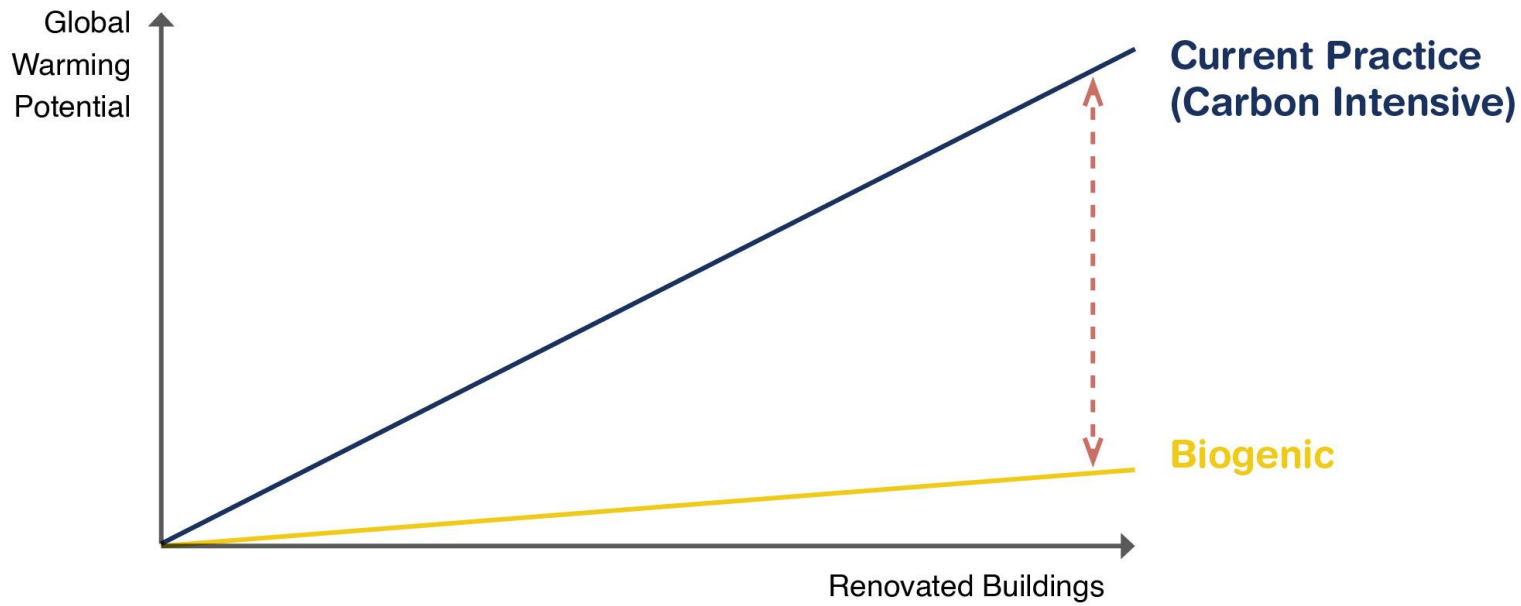
www.tegnestuenlokal.dk

Make use of what's out there first

Better materials or techniques will not save us if we continue building at this rate anyway, but we cannot stop building fully. We must cleverly reuse and upgrade what is available.

Let’s maximise bio-based material use

Biogenic materials are renewable, biodegradable, can store carbon, are proven to be safe by millennia of architecture practice, and we can do even better now, rediscovering them.



Scale makes a difference

Regulations + Habits

Limited Availability

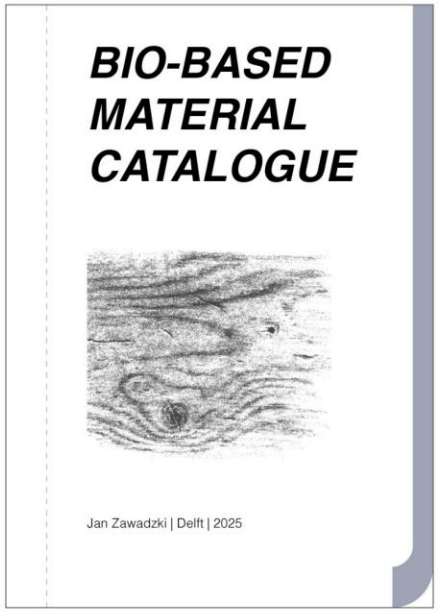
Lack of Knowledge

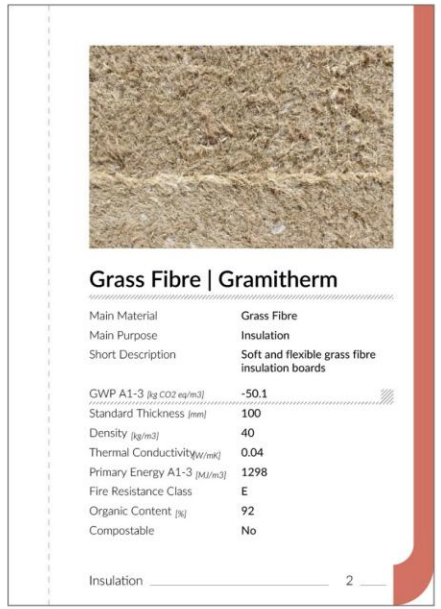
Helping myself and contributing to others

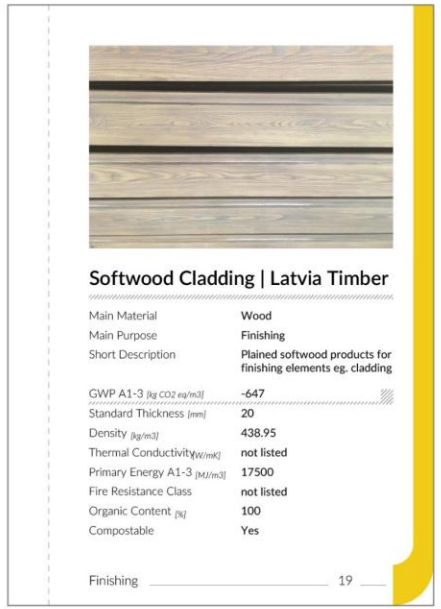
How to integrate bio-based solutions in masonry building retrofitting, considering both technical requirements and user preferences?

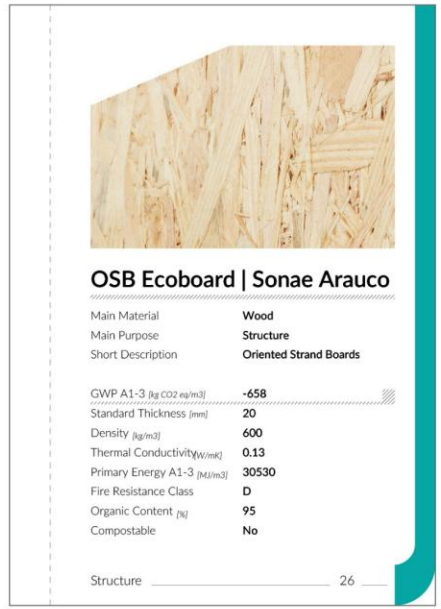
What are the technical requirements while futureproofing masonry buildings?
What are the user needs and priorities in transition towards biobased futureproofing?
How biogenic materials fit into these predefined metrics?
How can an accessible knowledge base of biobased refurbishment strategies help advance their adoption rate?

How to do it right?



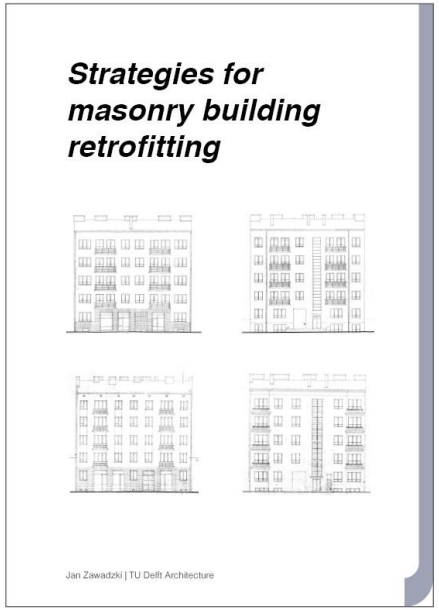


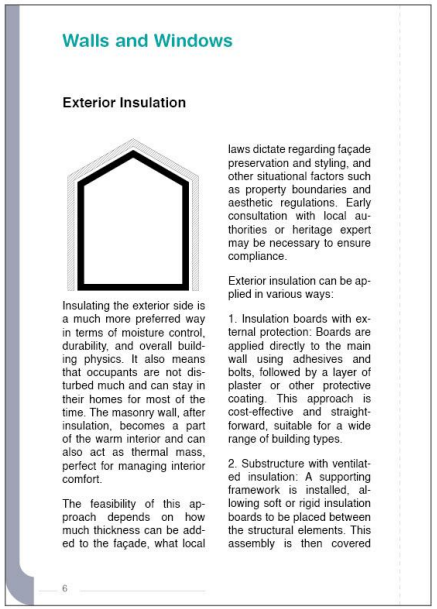


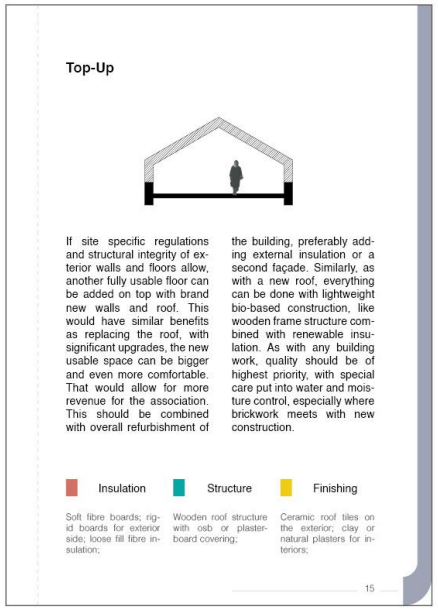


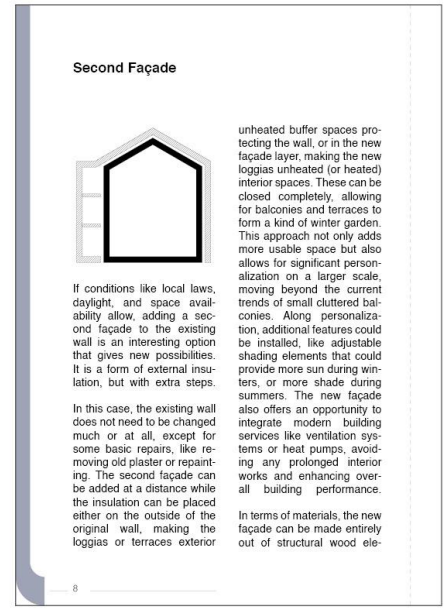
The Catalogue

Of Bio-Based materials suitable for masonry housing refurbishment.









and The Guidebook

Of Refurbishment strategies for inter-war masonry residential housing.

Strenghtening the **Community**

Extending Available **Space**

Giving a Sense of **Agency and Belonging**

Improving **Comfort and Health**

Maximising **Circularity**

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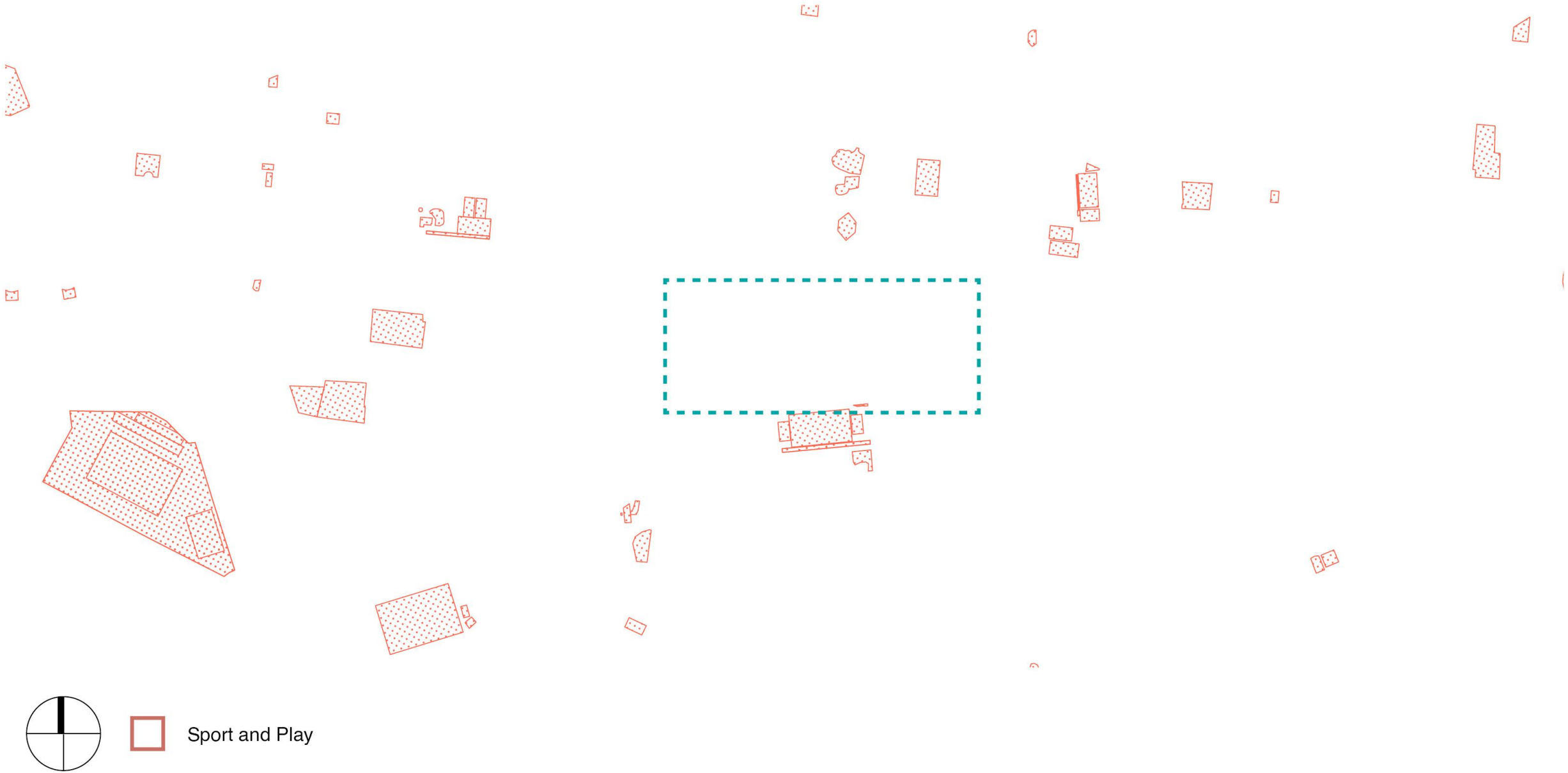
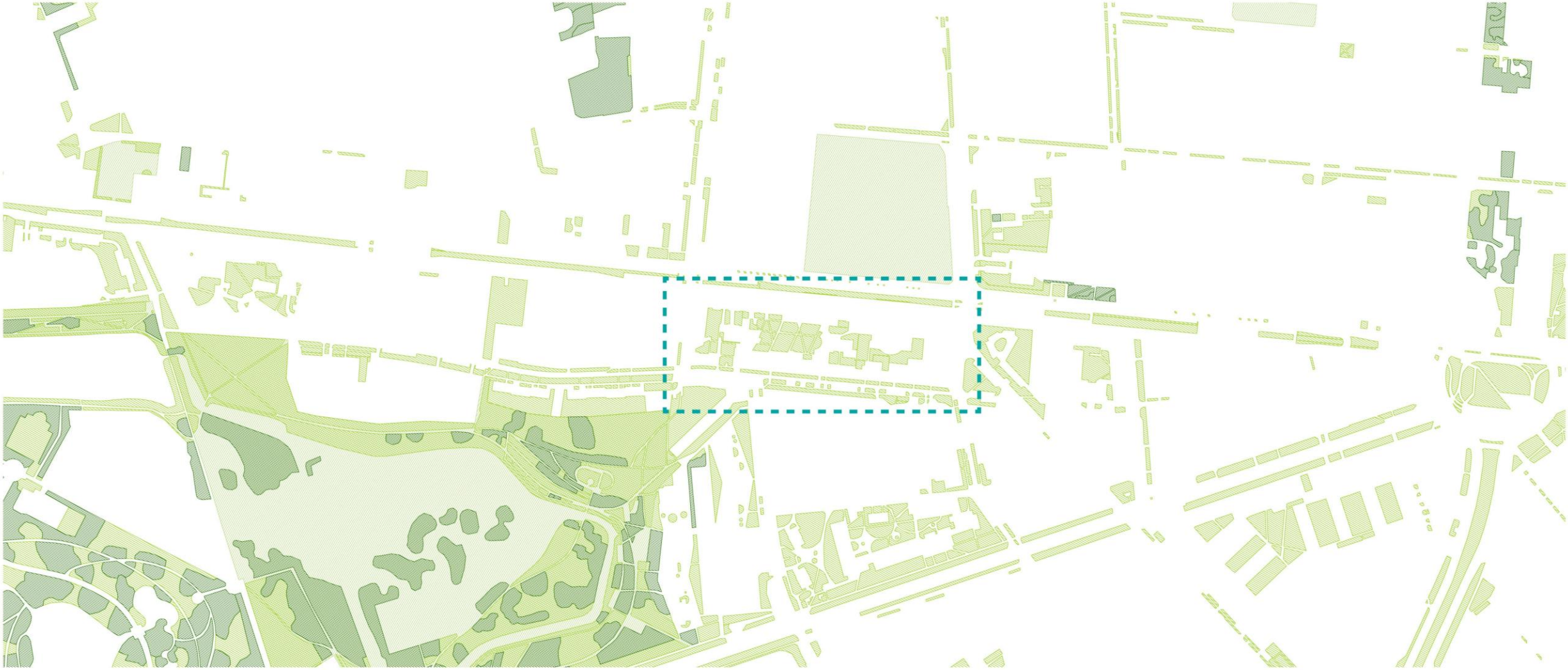
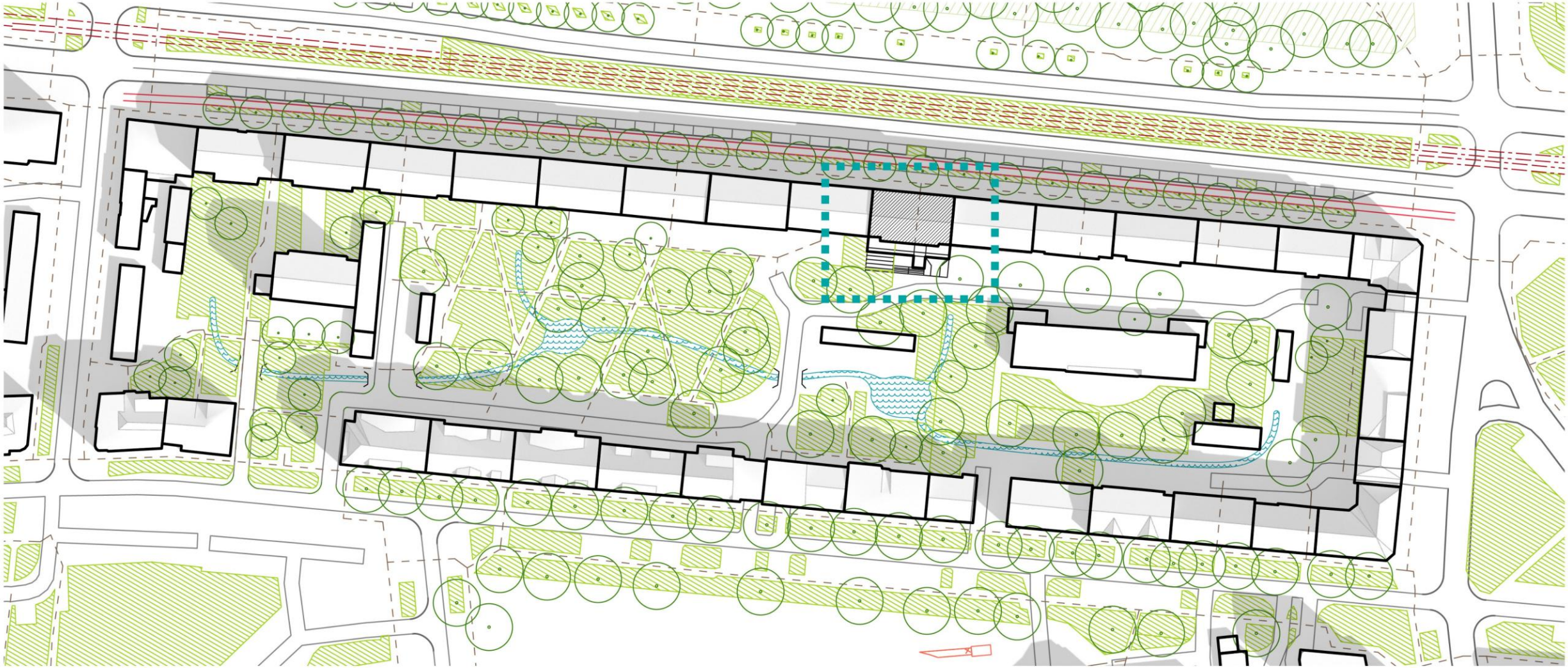
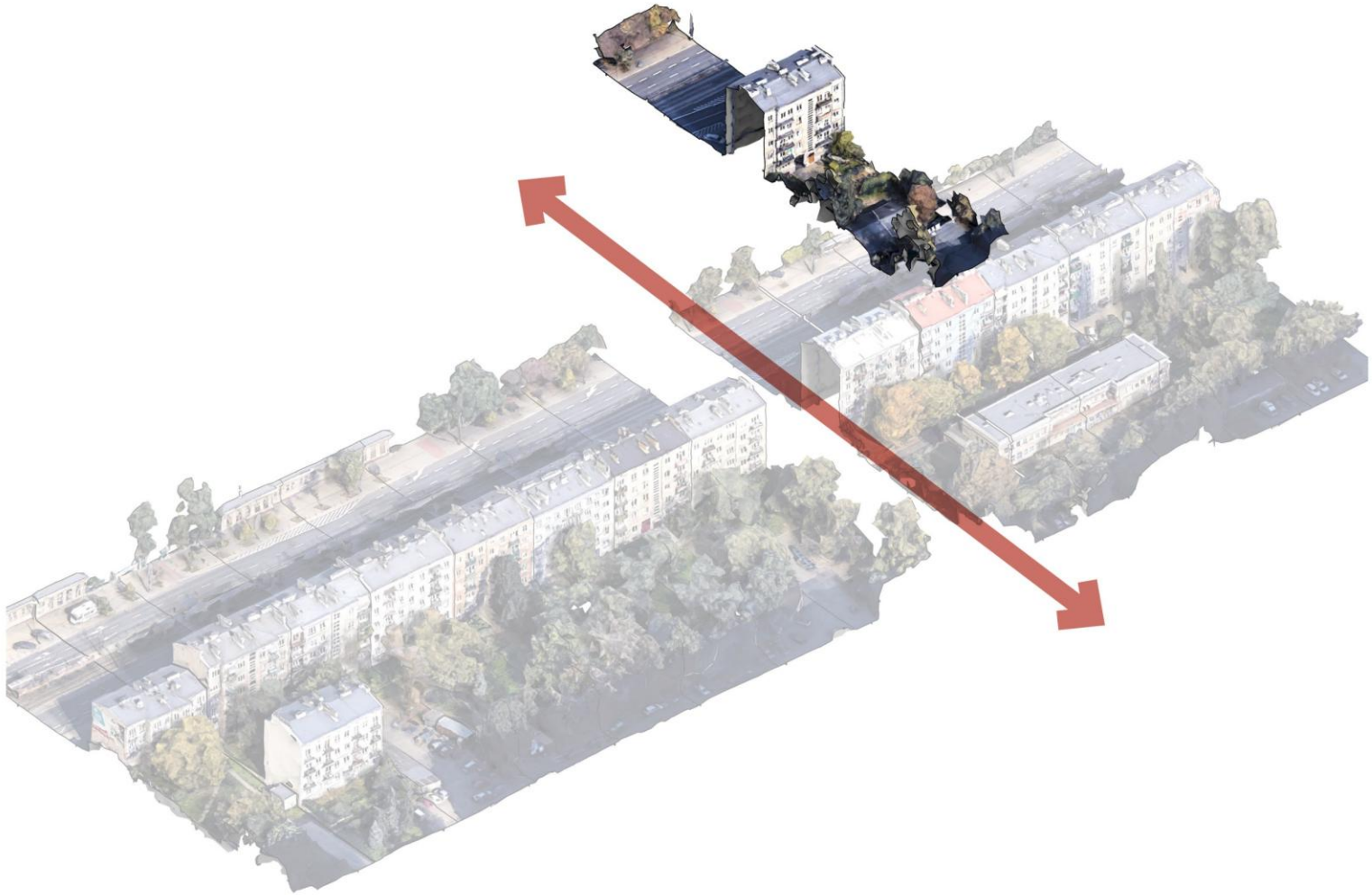
Buildings

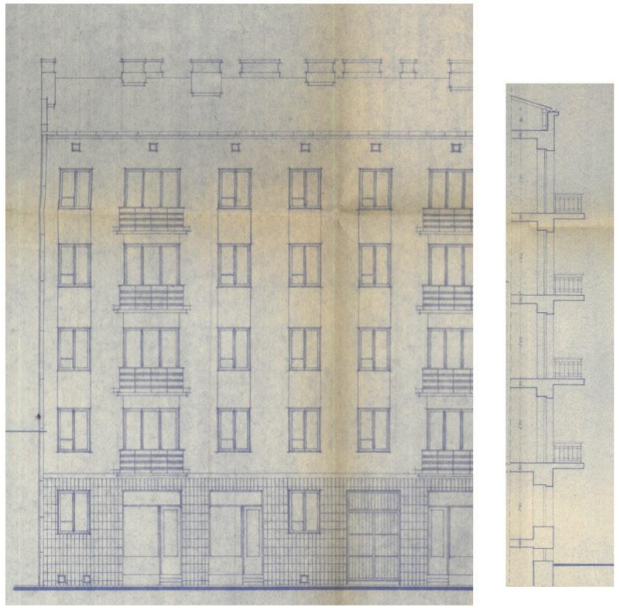

Sport and Play

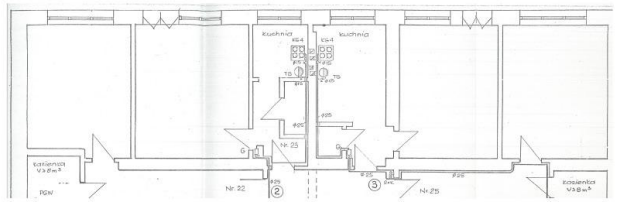


Greenery and Leisure



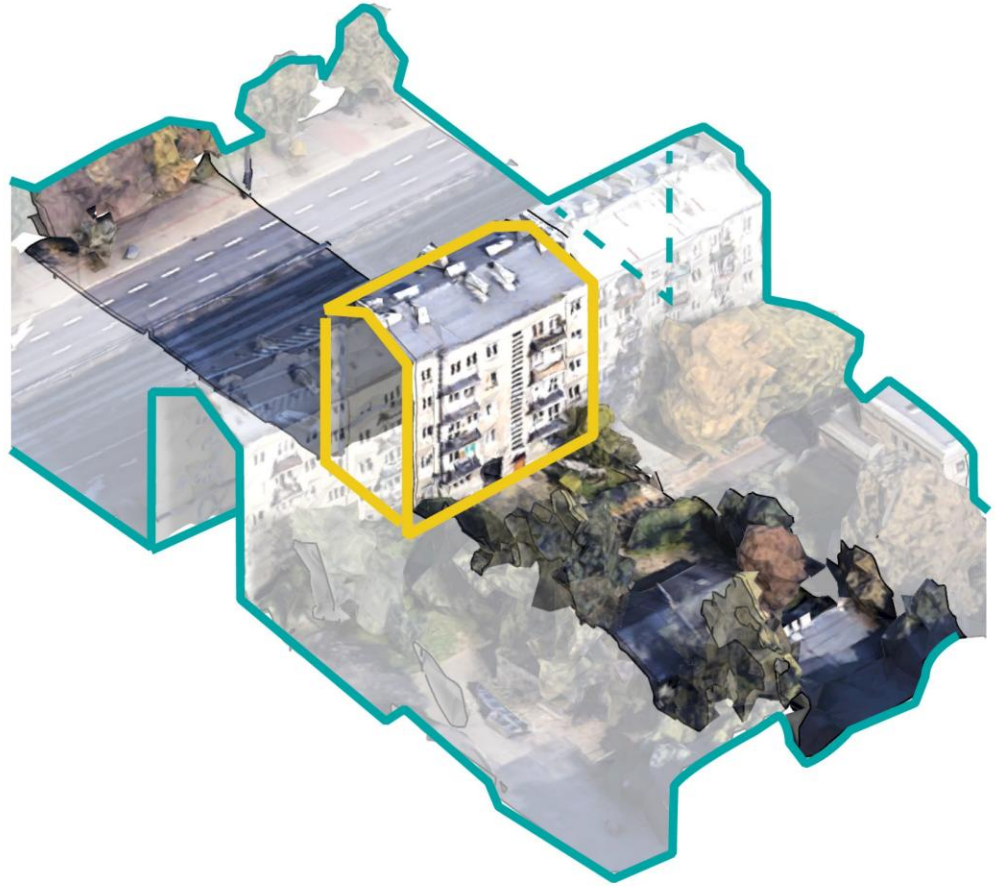


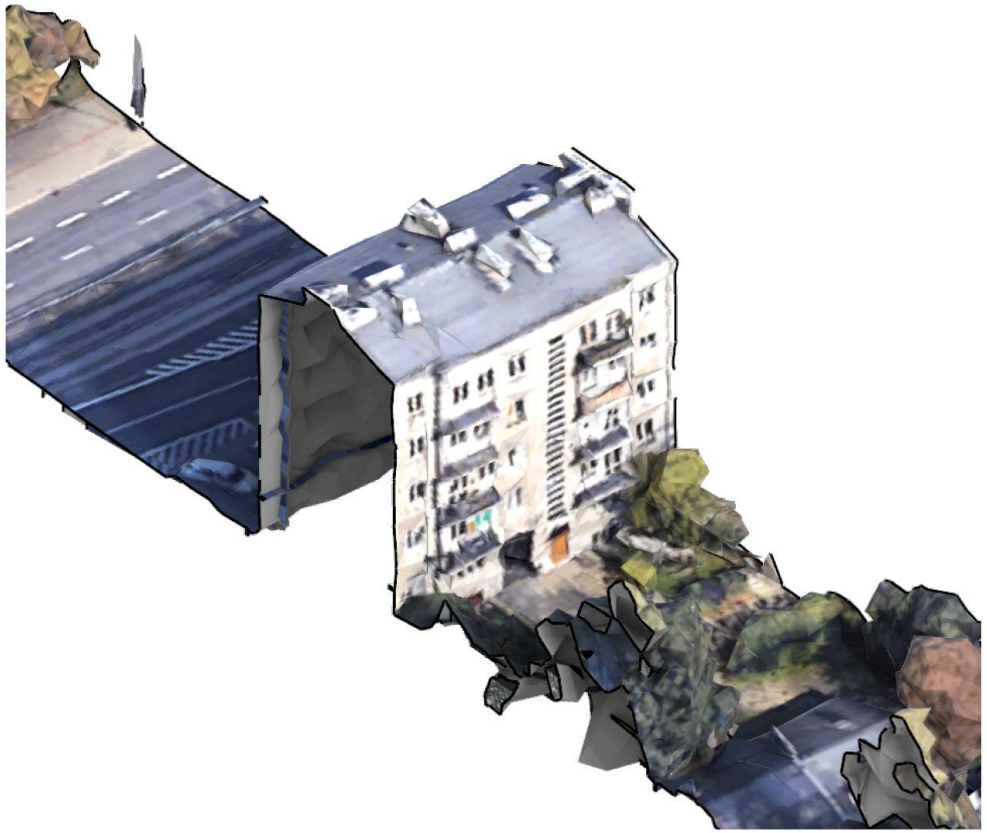


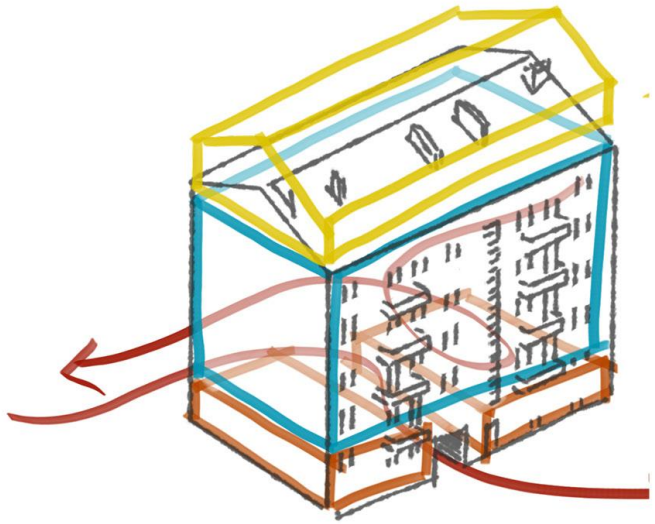


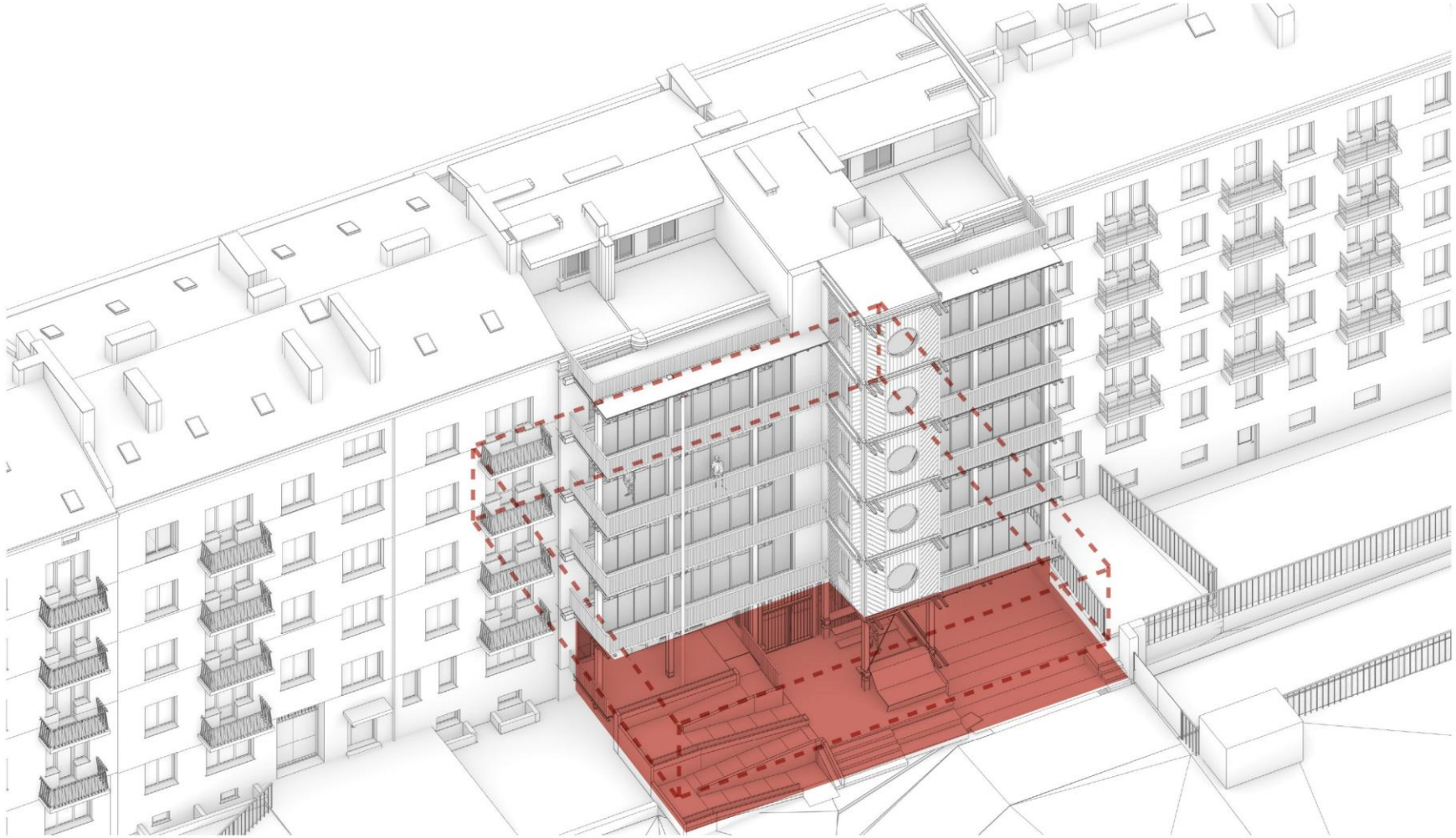
Archiwum Dzielnicy Praga Południe

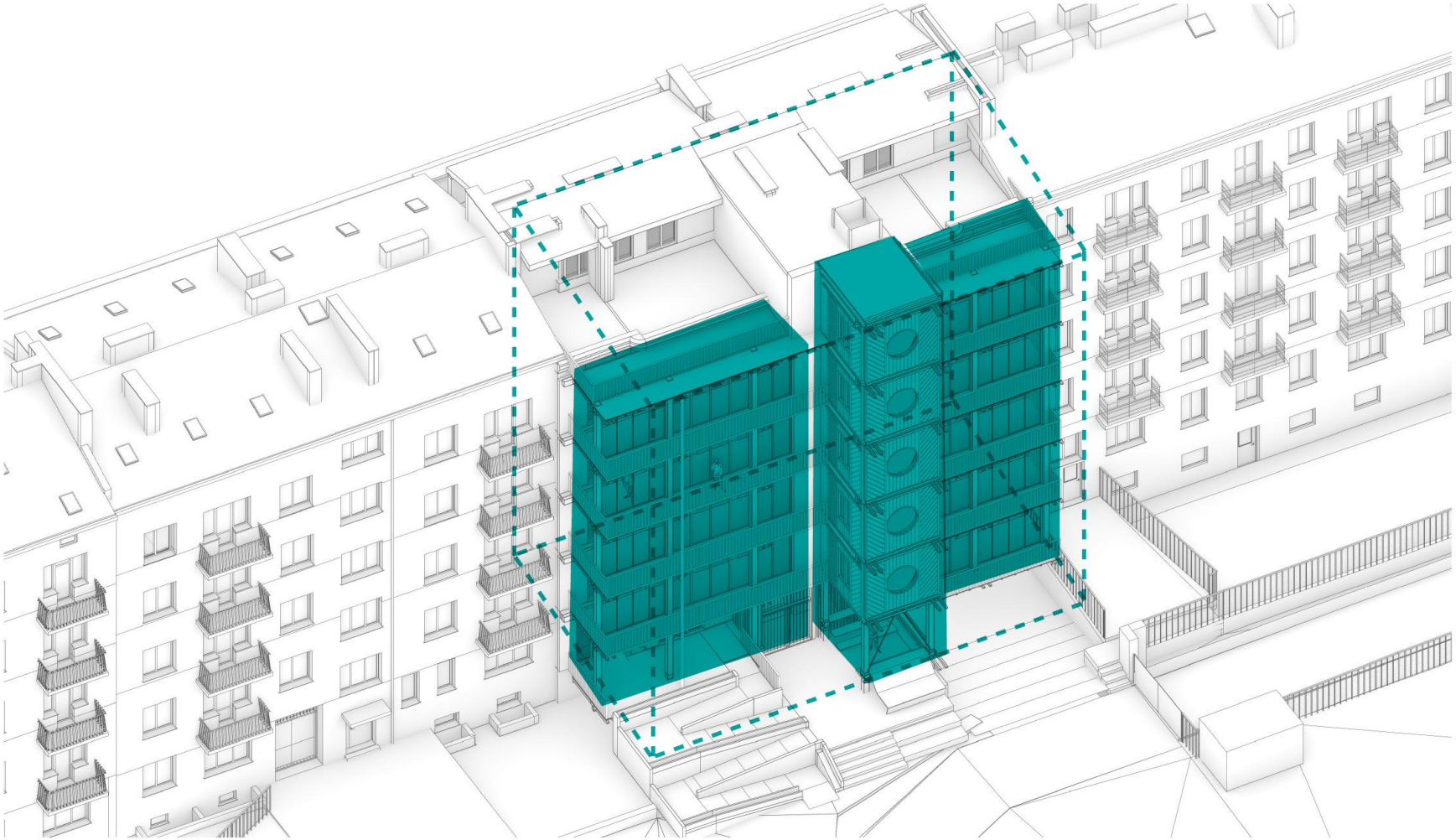
- *730mm mass brick structural walls*
- *300mm Klein brick floors*
- *storage basements*
- *shops and amenities on the groundfloors*
- *5 above ground floors*
- *originally 2 apartments / floor, now ~4 apartments / floor*
- *wooden ventilated roof*
- *small staircase without an elevator*
- *ground floor gate passage leading to the courtyard and entrance*

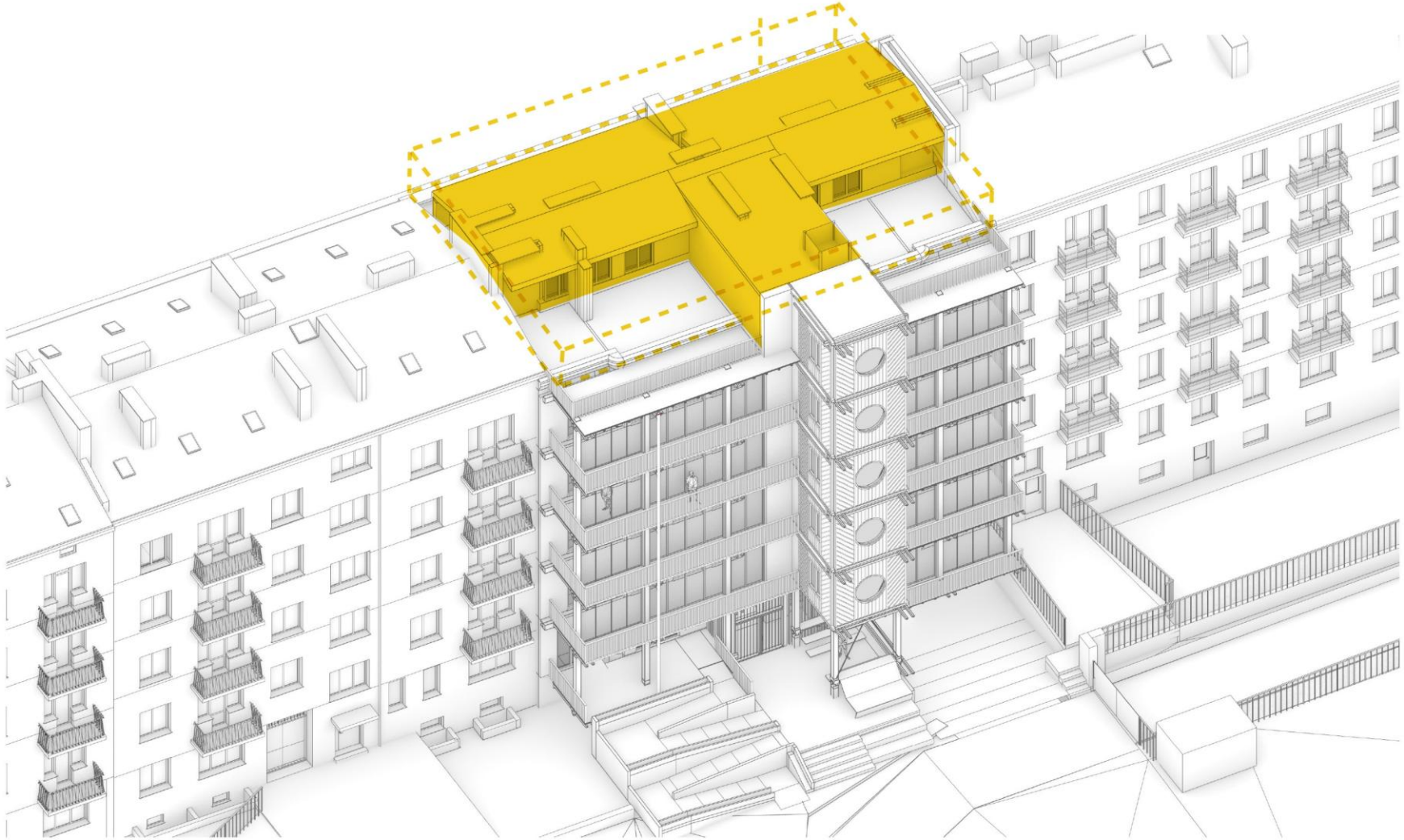


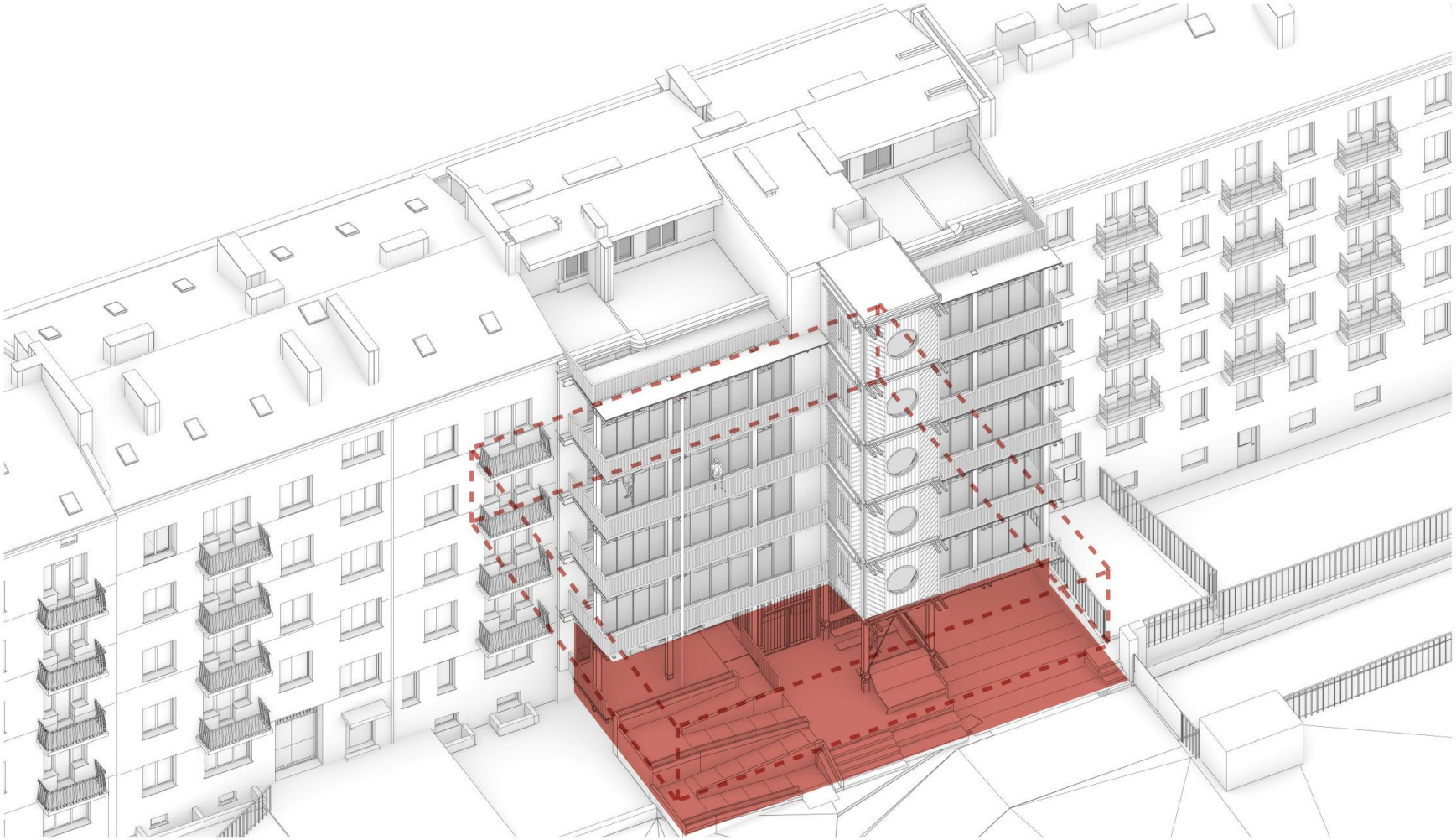




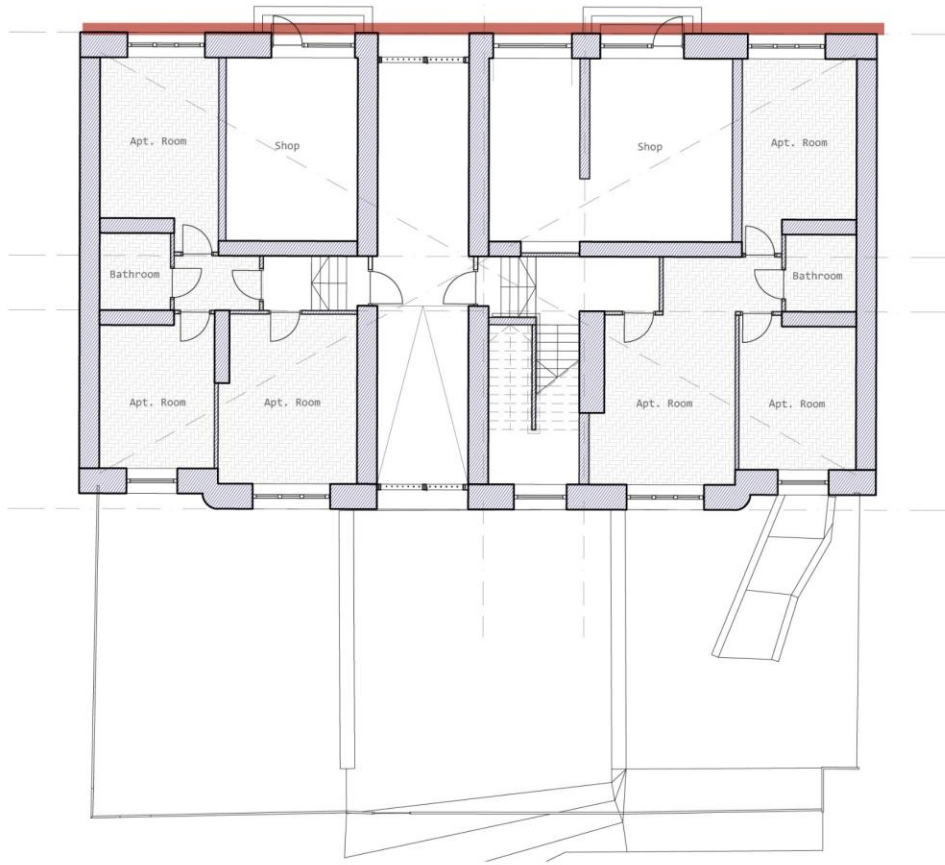






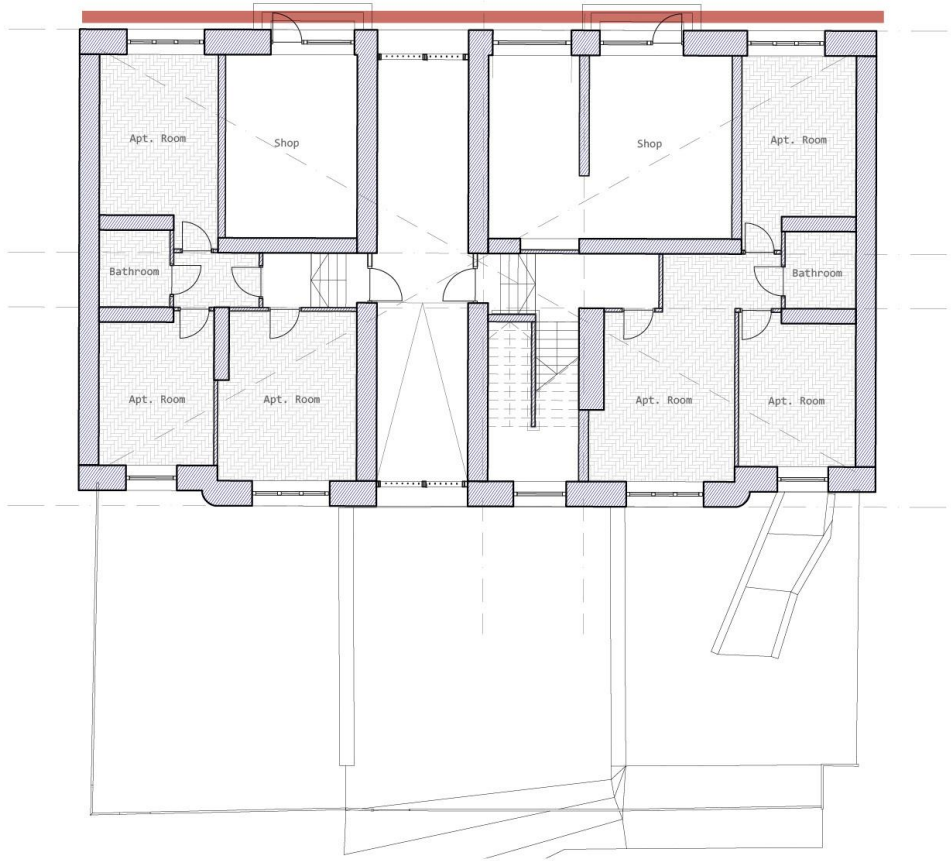


Grochowska Street



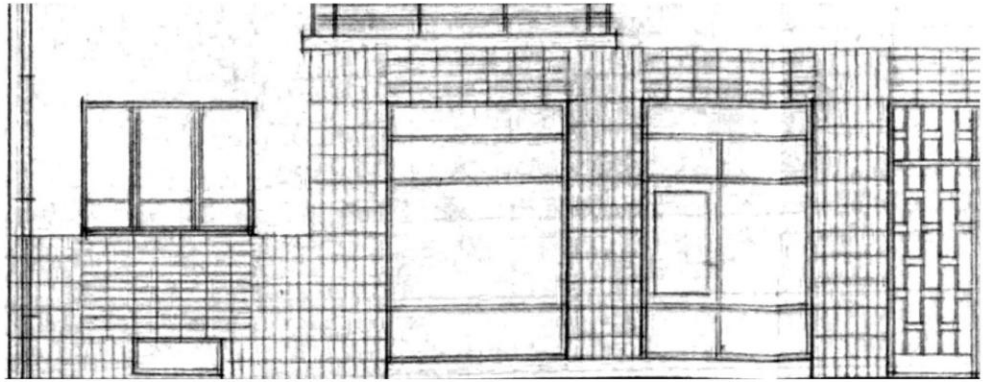
Courtyard

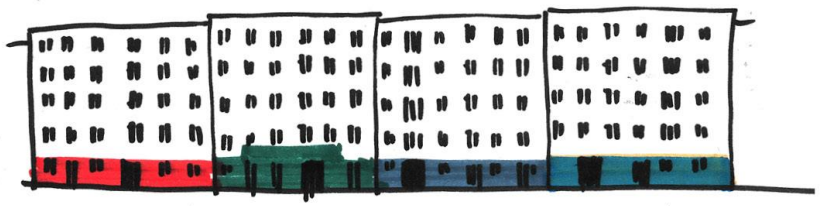
Grochowska Street



Courtyard

google.com



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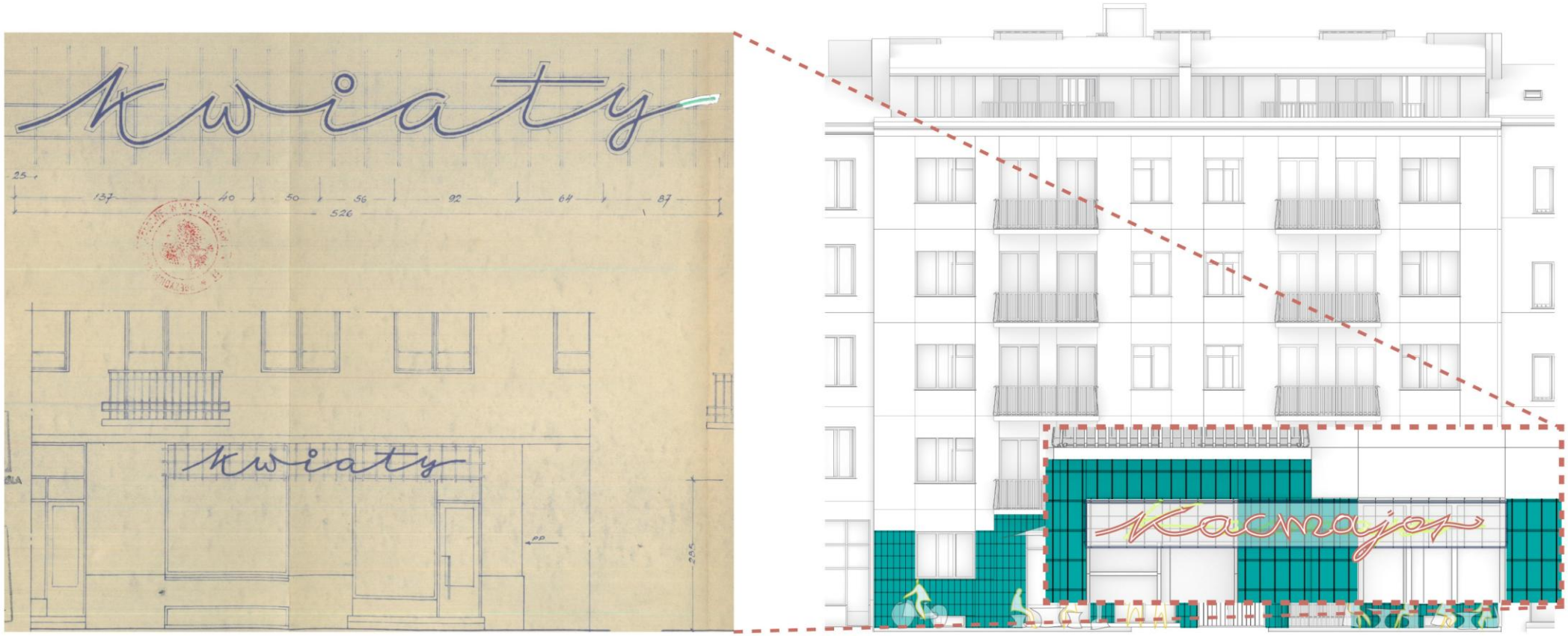
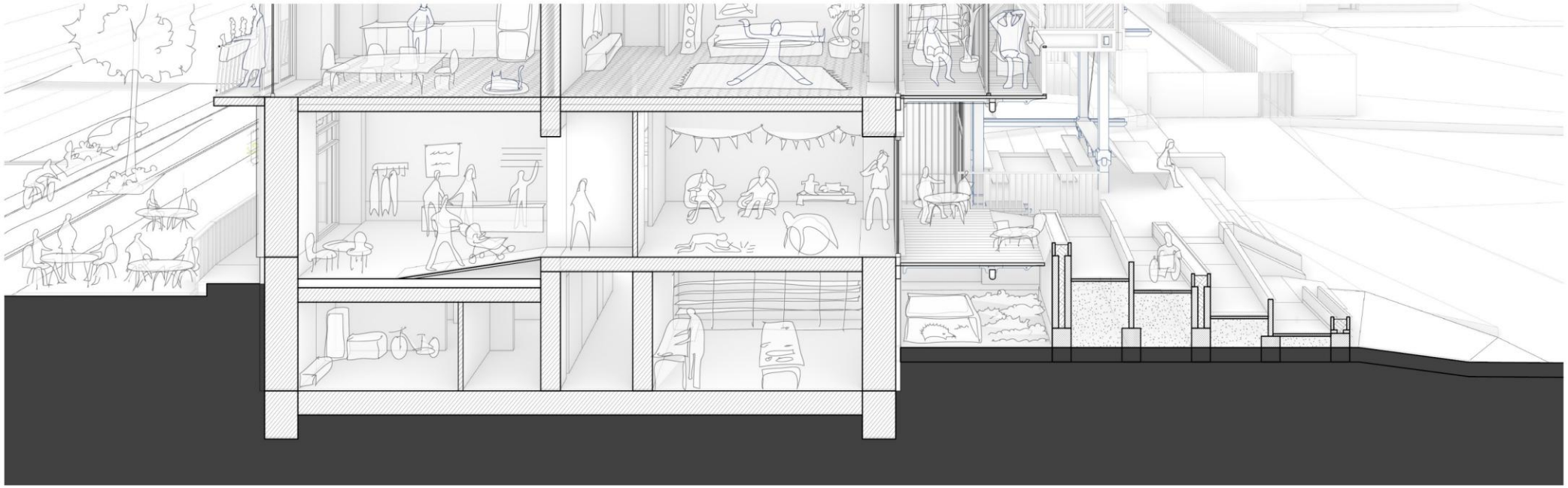
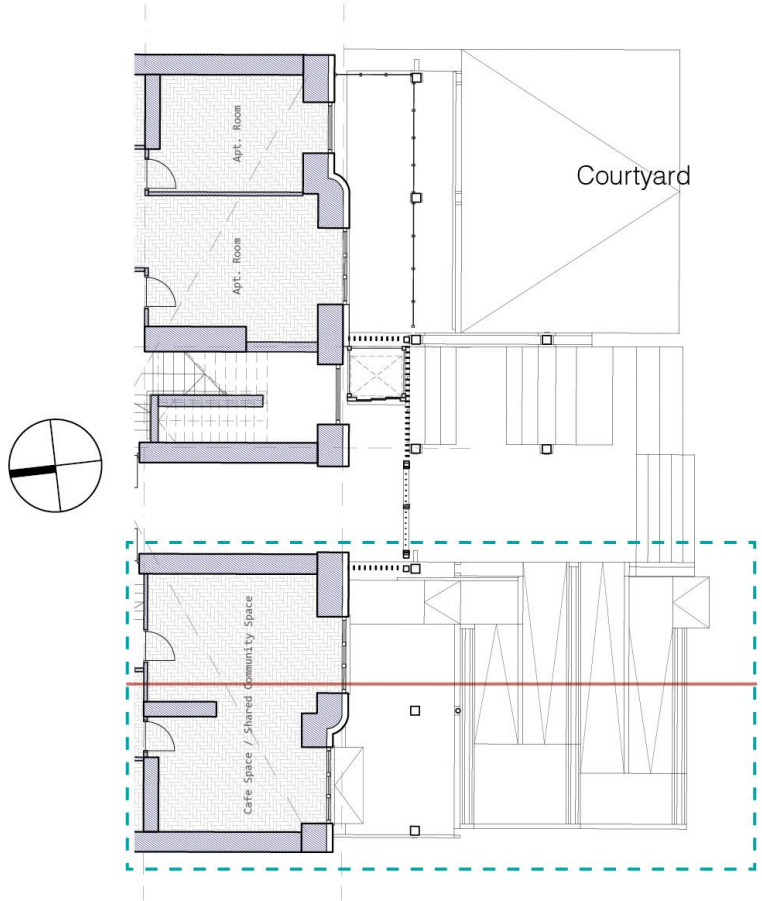


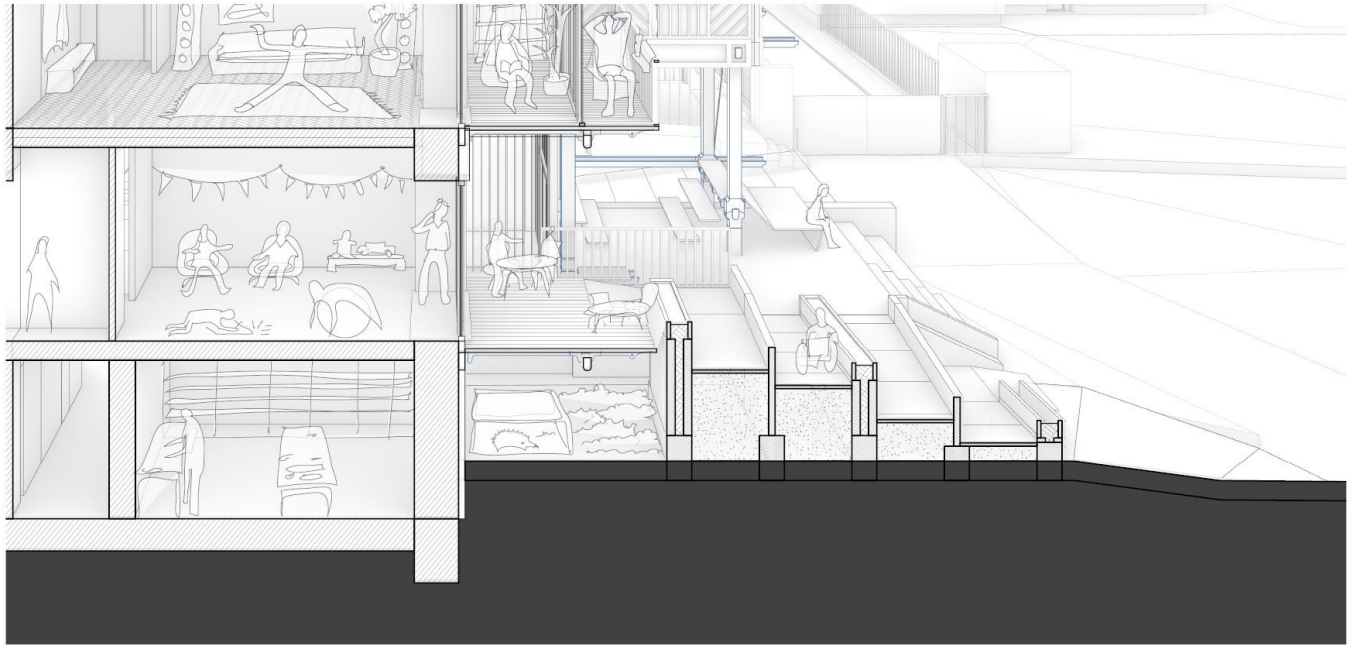
Vibrant past


Kacmajor

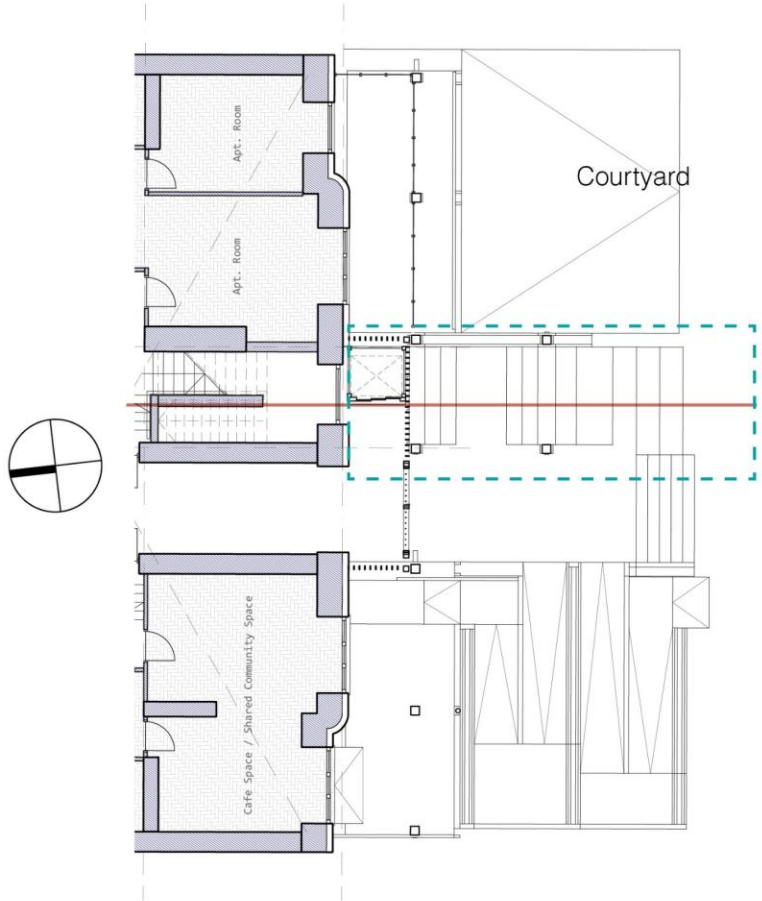


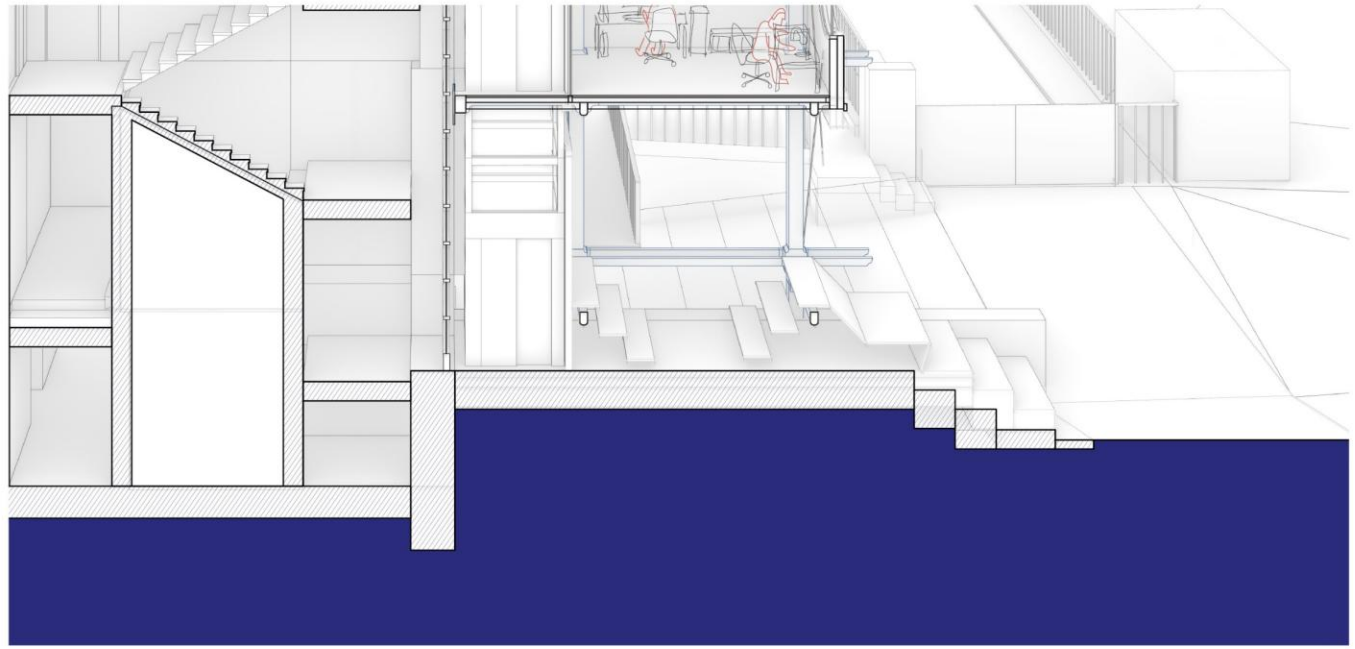
Life on the ground floor





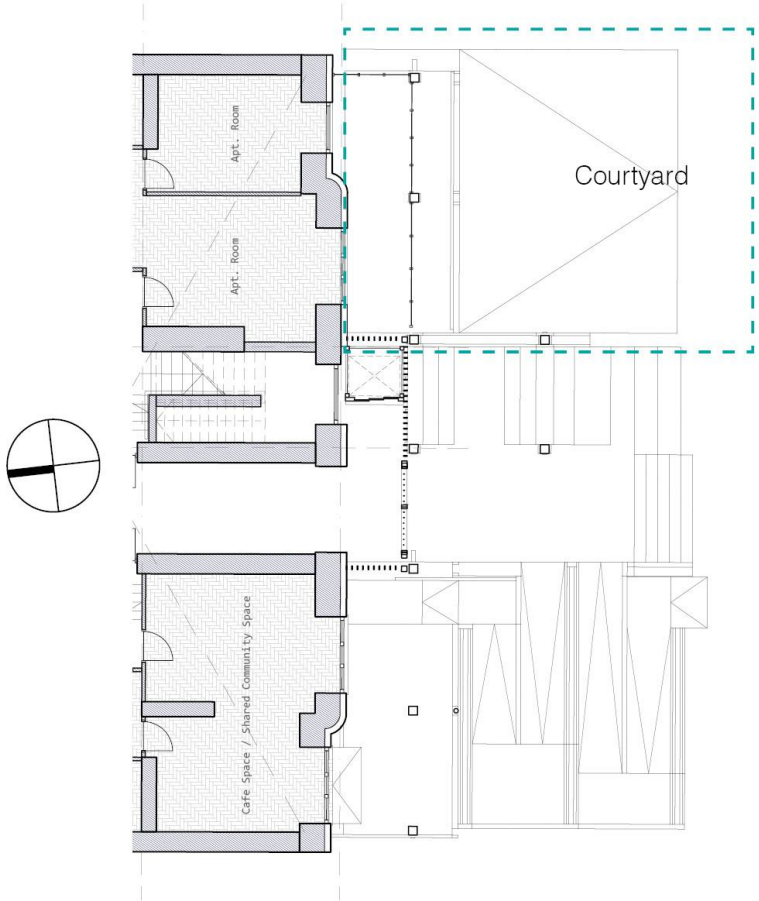
Community space for everybody



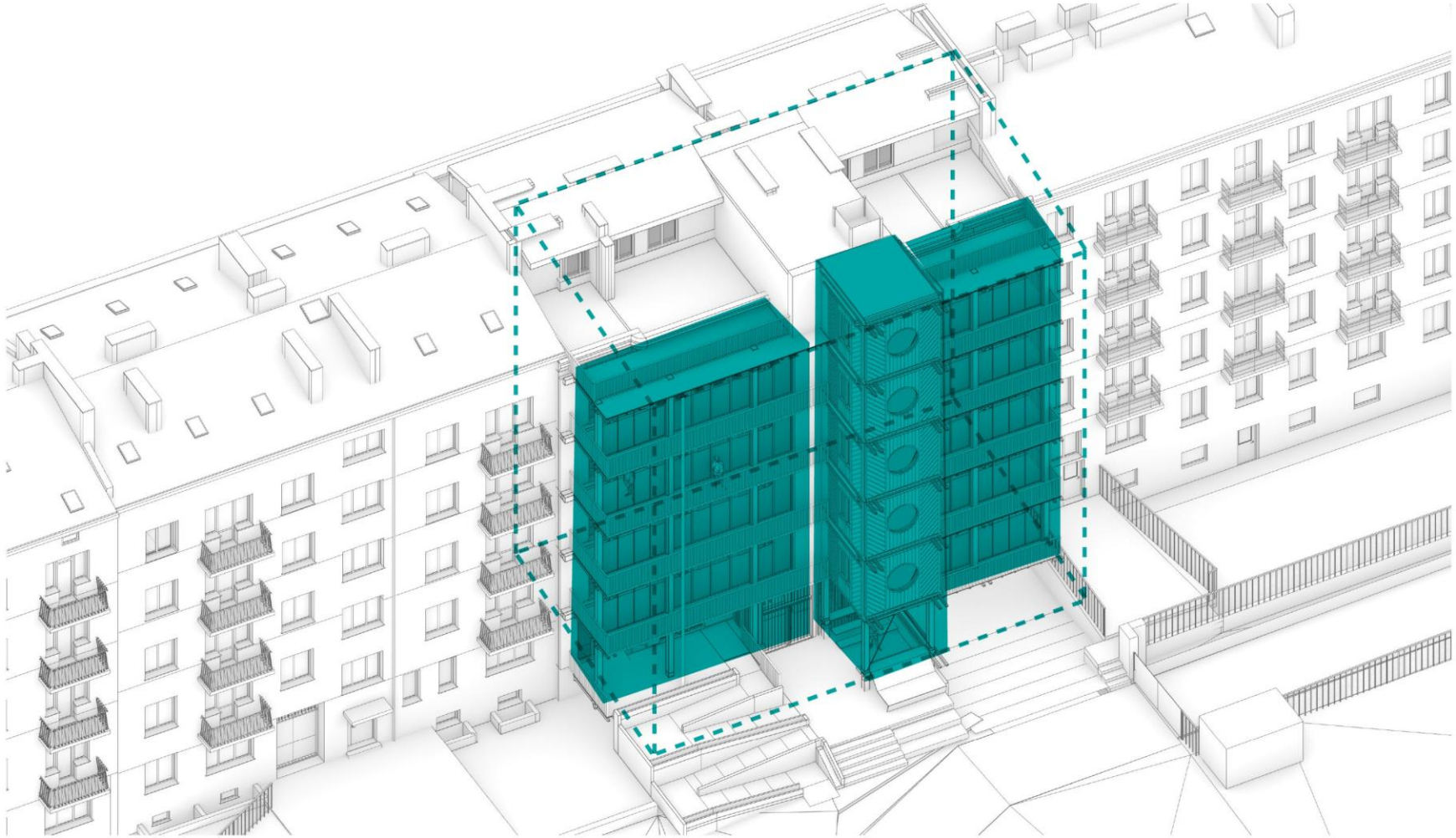


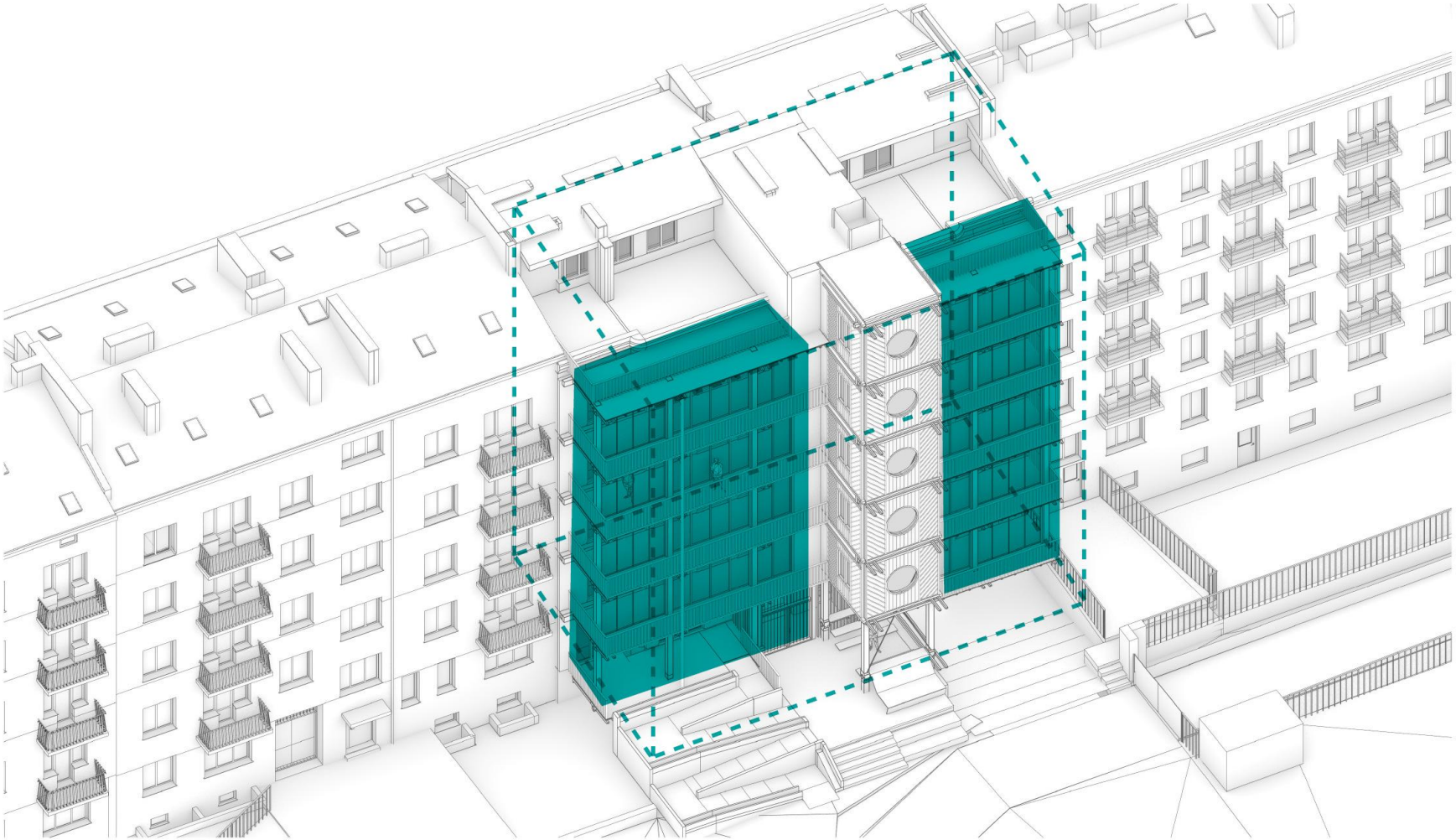
Waiting for a friend

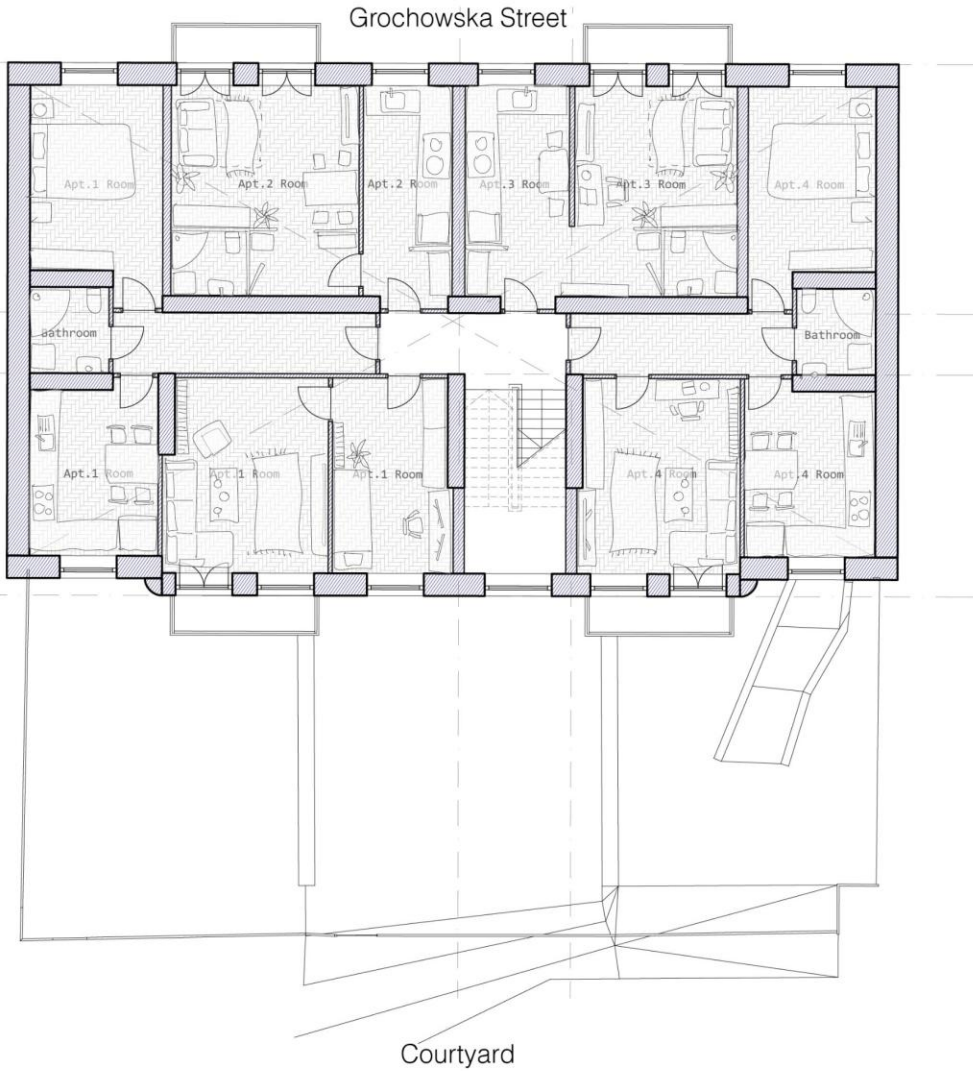
Or policing the courtyard

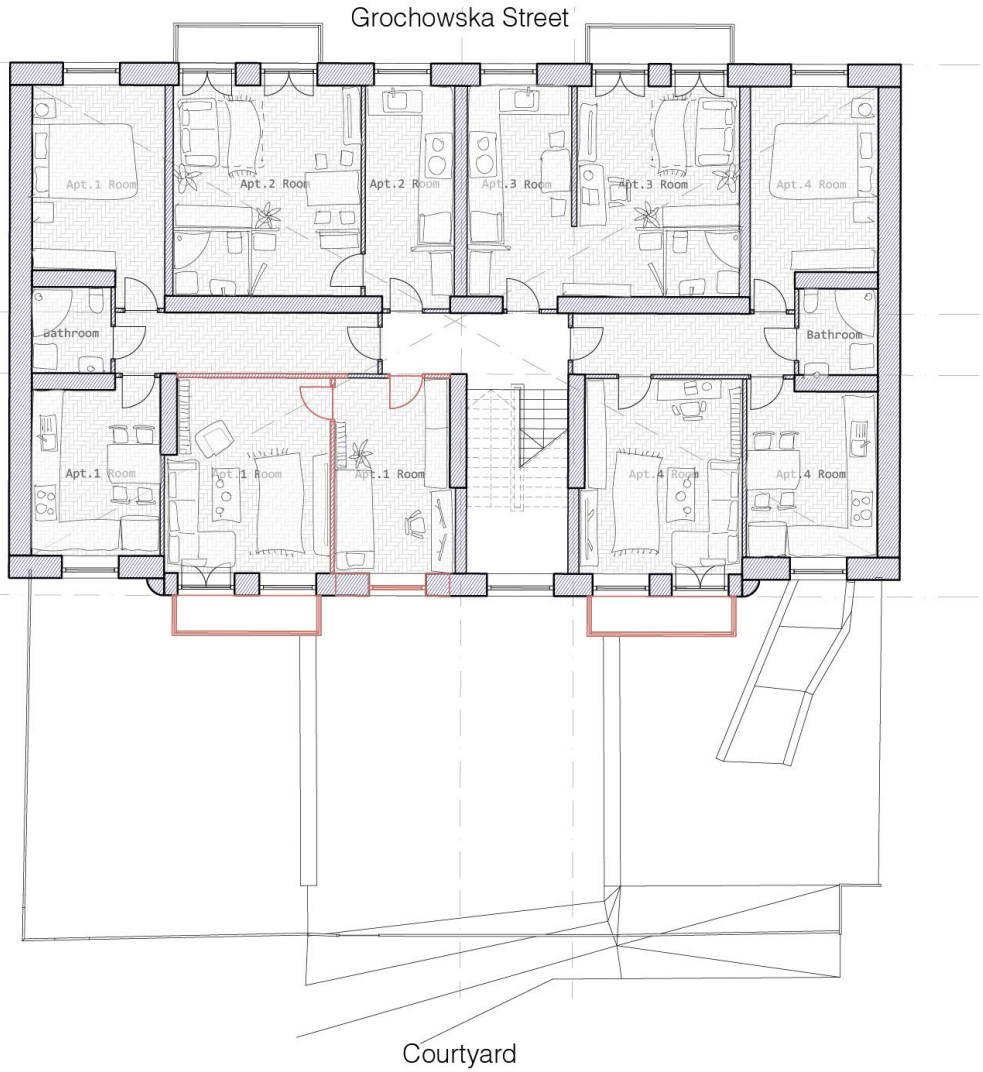


Bicycles safely stored



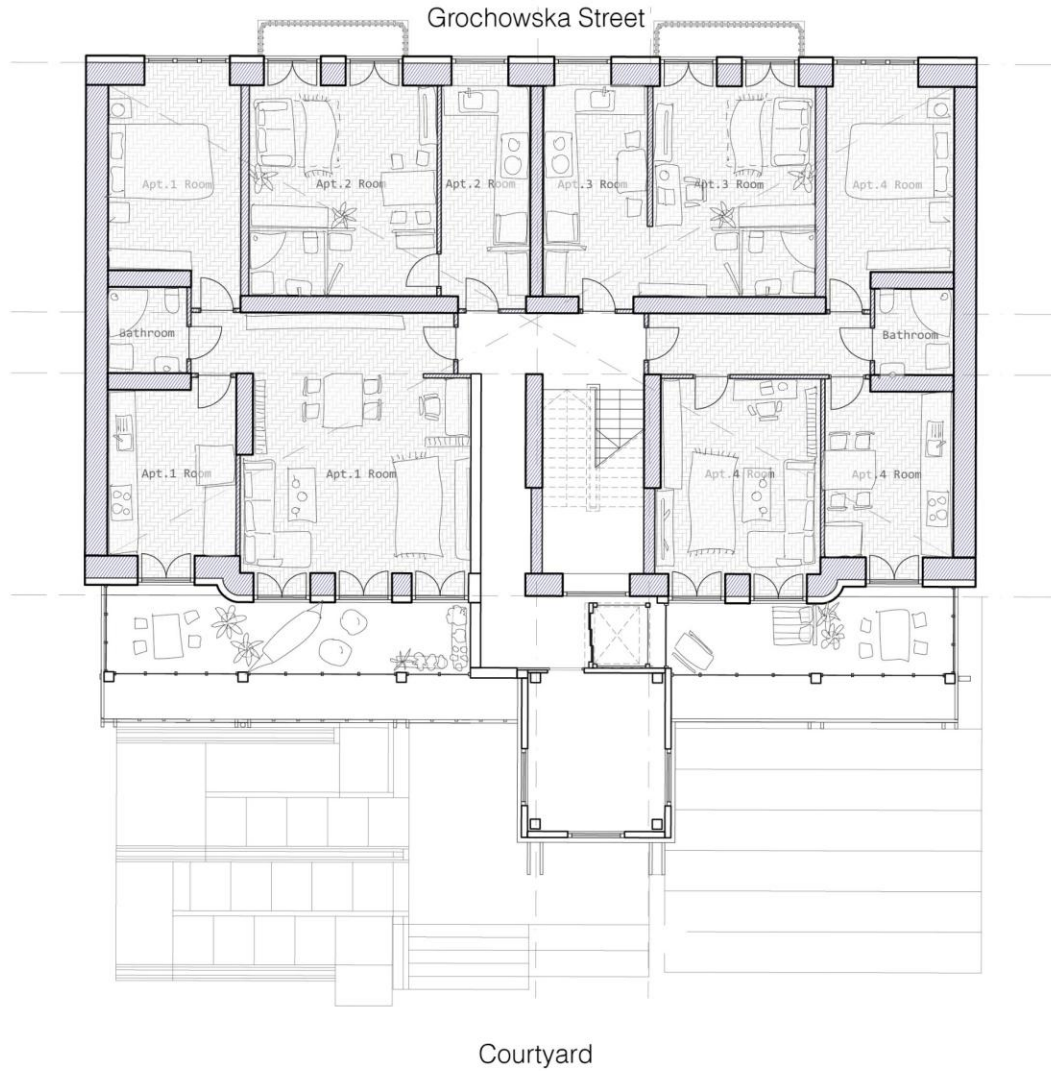


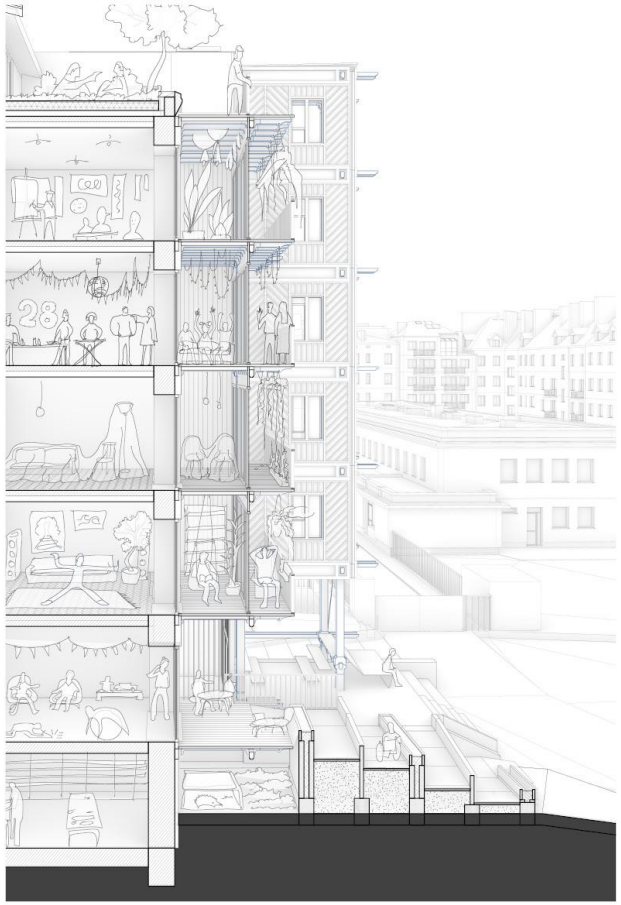

Grochowska Street
Apt.1 Room
Apt.2 Room
Apt.2 Room
Apt.3 Room
Apt.3 Room
Apt.4 Room
Bathroom
Bathroom
Apt.1 Room
Apt.1 Room
Apt.1 Room
Apt.4 Room
Apt.4 Room
Courtyard

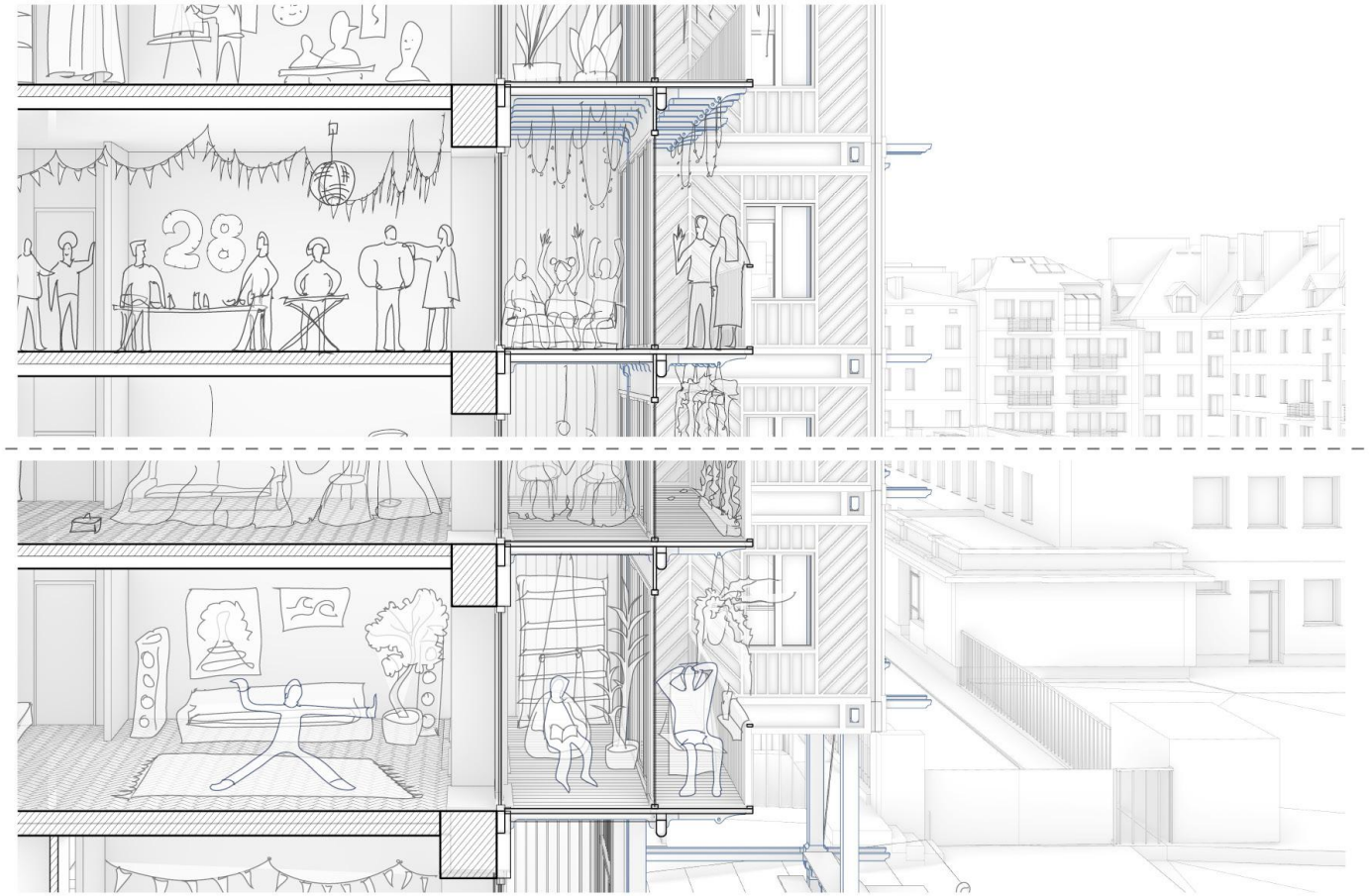

Grochowska Street
Apt.1 Room
Apt.2 Room
Apt.2 Room
Apt.3 Room
Apt.3 Room
Apt.4 Room
Bathroom
Bathroom
Apt.1 Room
Apt.1 Room
Apt.1 Room
Apt.4 Room
Apt.4 Room
Courtyard


Grochowska Street
Apt.1 Room
Apt.2 Room
Apt.2 Room
Apt.3 Room
Apt.3 Room
Apt.4 Room
Bathroom
Bathroom
Apt.1 Room
Apt.1 Room
Apt.4 Room
Apt.4 Room
Courtyard


Grochowska Street
Apt.1 Room
Apt.2 Room
Apt.2 Room
Apt.3 Room
Apt.3 Room
Apt.4 Room
Bathroom
Bathroom
Apt.1 Room
Apt.1 Room
Apt.4 Room
Apt.4 Room
Courtyard

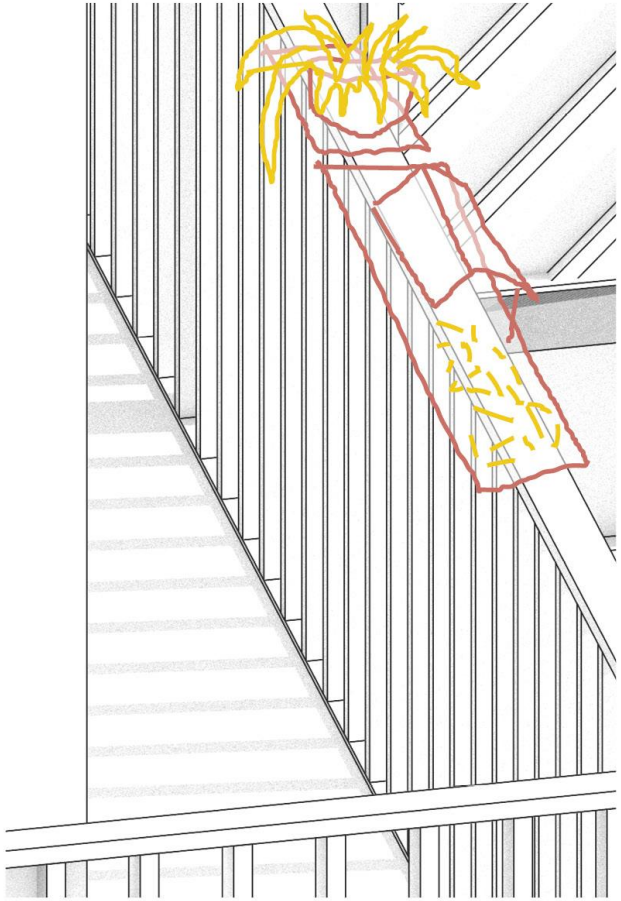

Grochowska Street
Apt.1 Room
Apt.2 Room
Apt.2 Room
Apt.3 Room
Apt.3 Room
Apt.4 Room
Bathroom
Bathroom
Apt.1 Room
Apt.1 Room
Apt.4 Room
Apt.4 Room
Courtyard

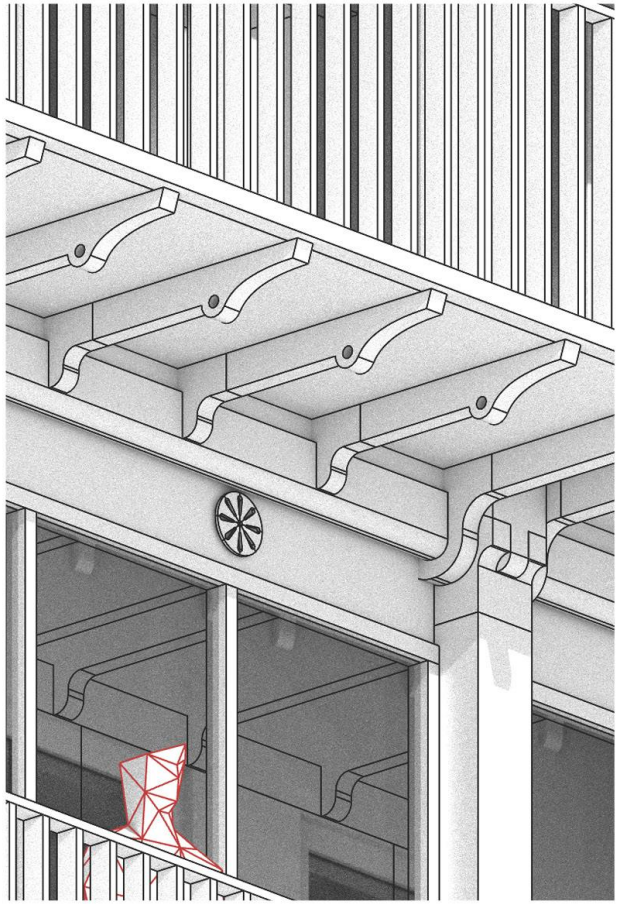


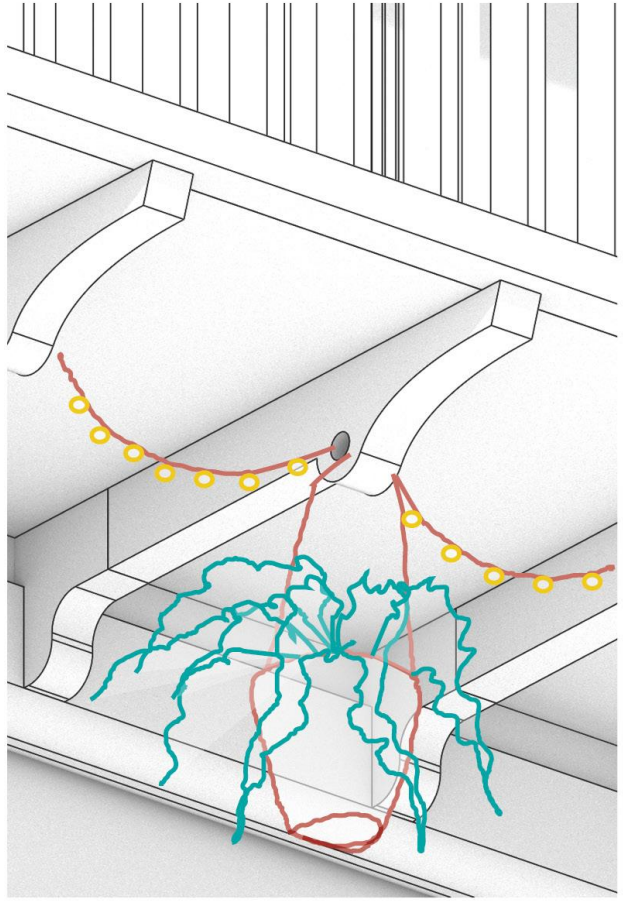


New possibilities

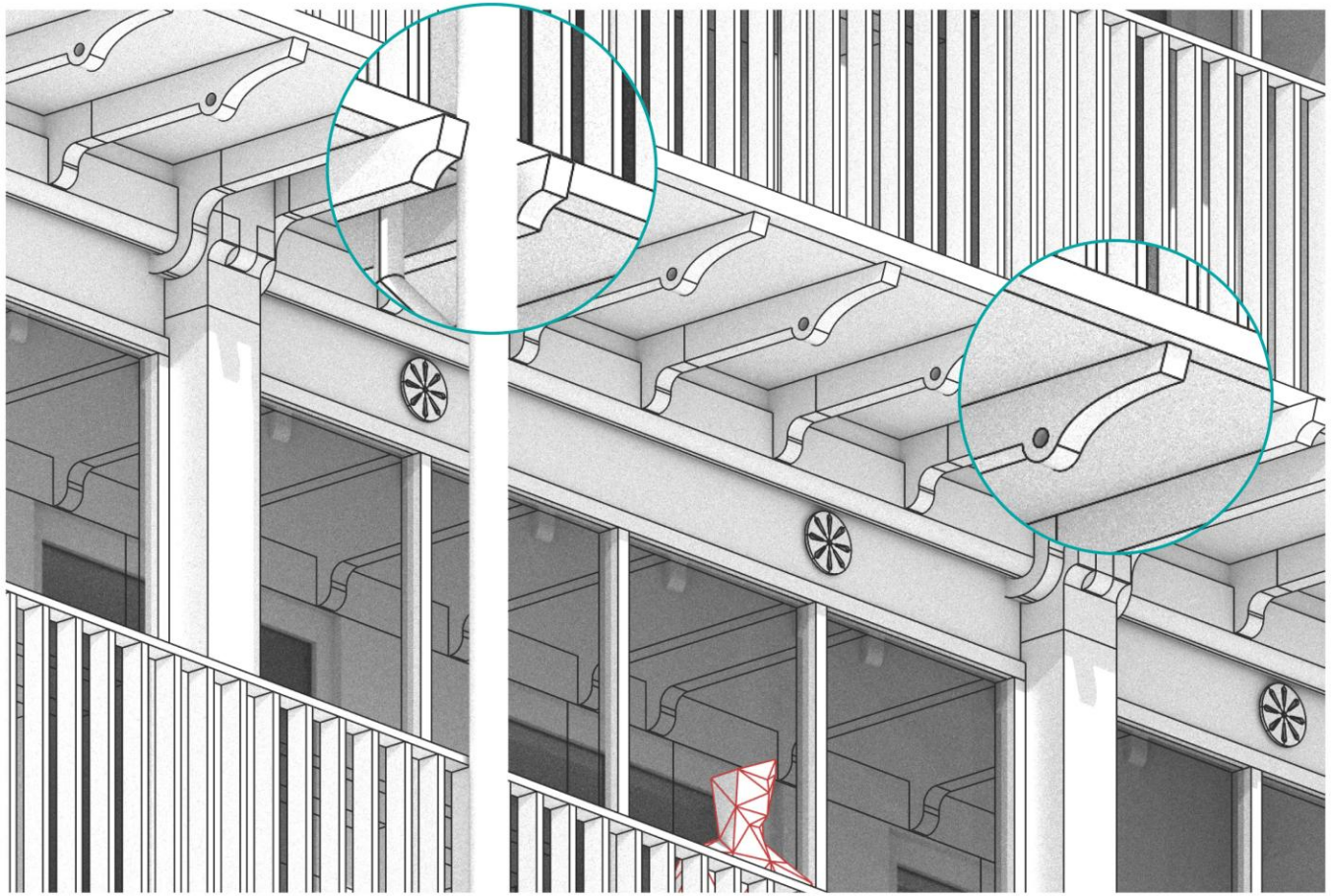
Make it your own!







New affordances



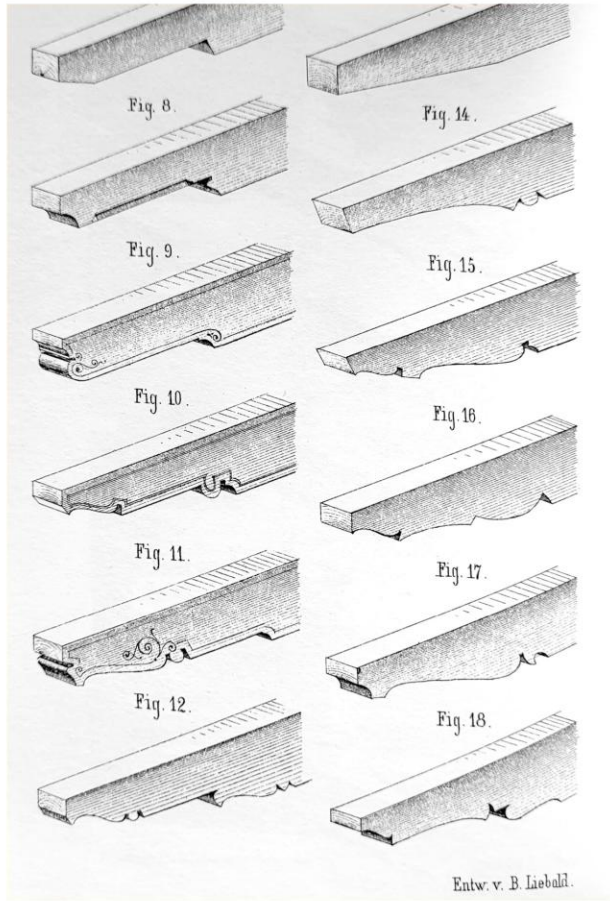
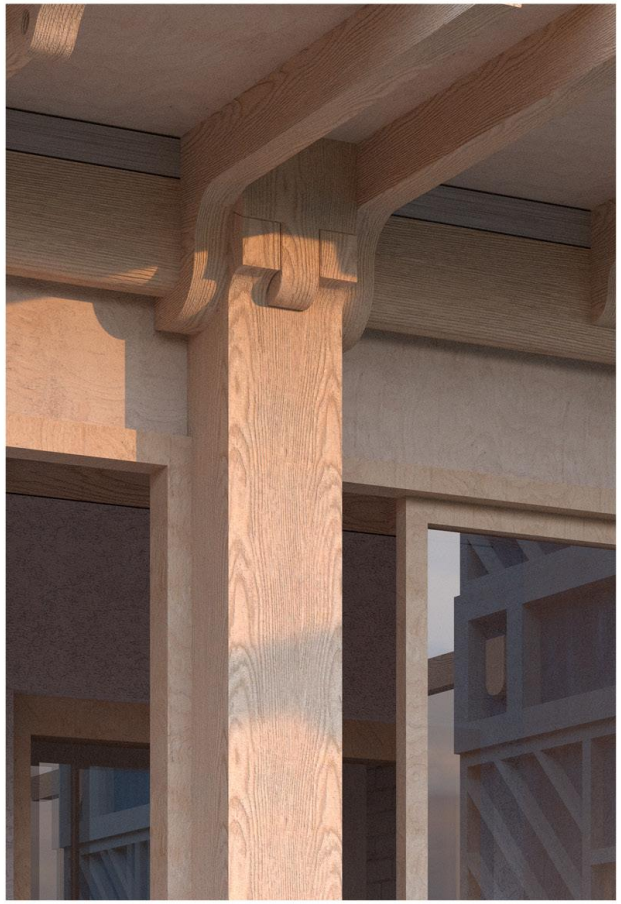
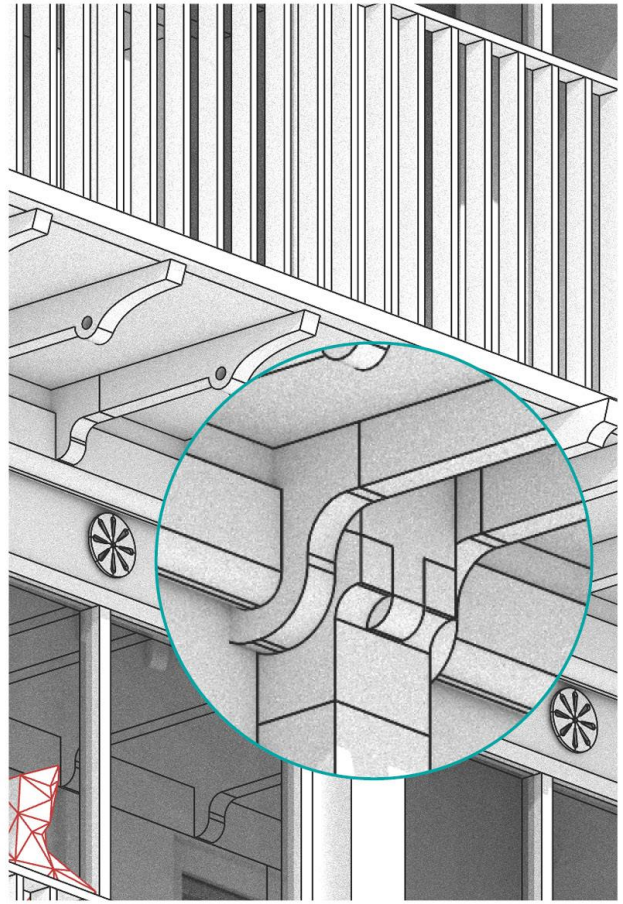
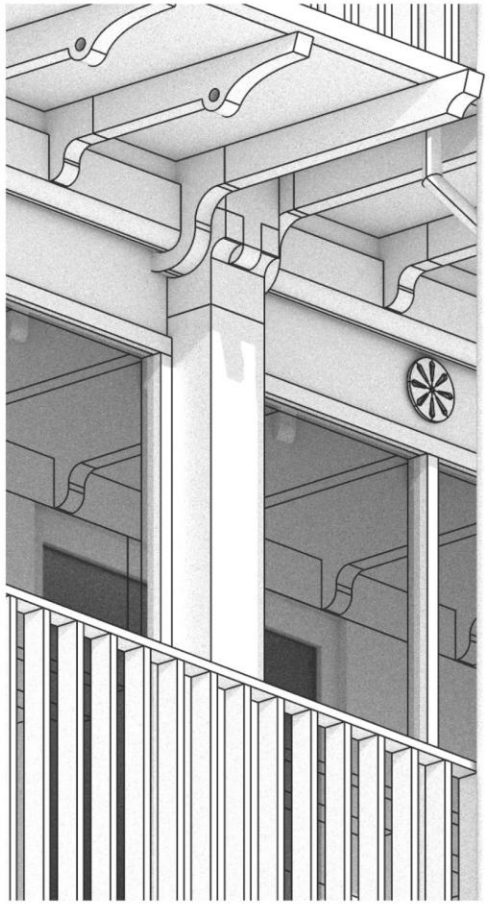
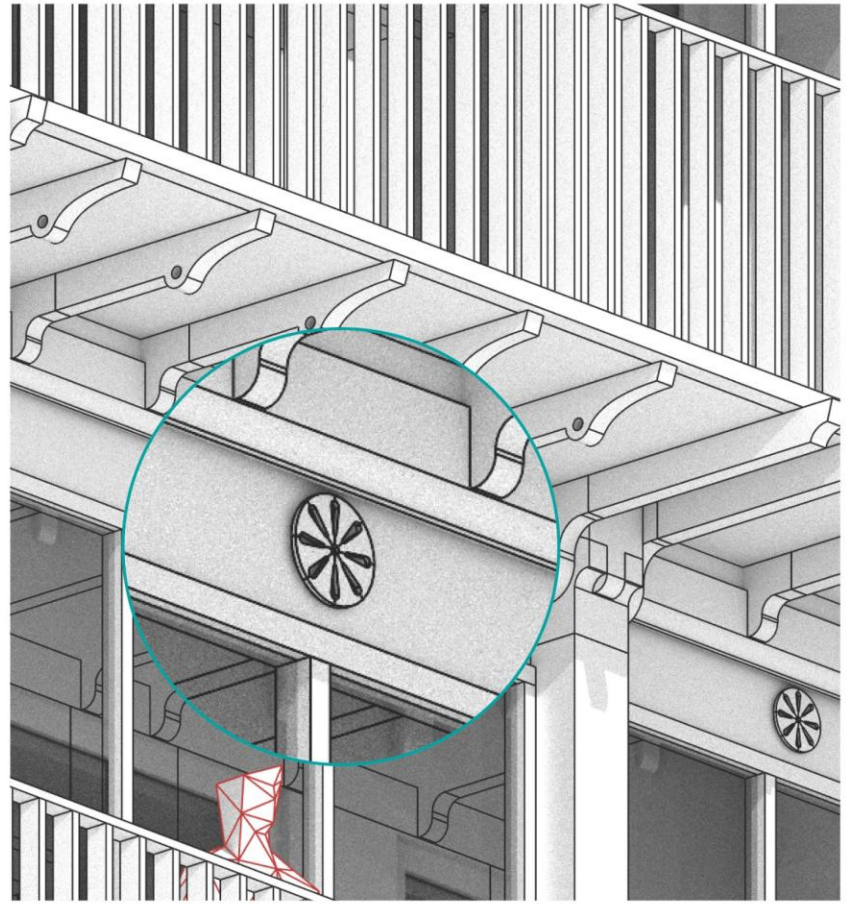


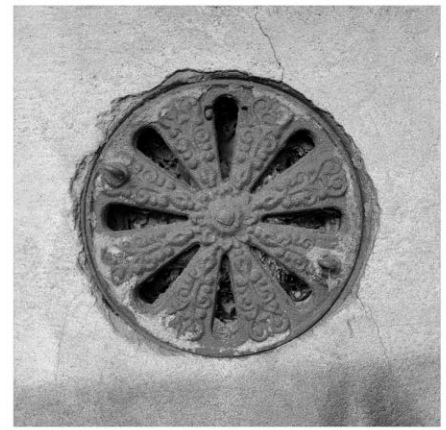
Fig. 8.
Fig. 14.
Fig. 9.
Fig. 15.
Fig. 10.
Fig. 16.
Fig. 11.
Fig. 17.
Fig. 12.
Fig. 18.
Entw. v. B. Liebold.

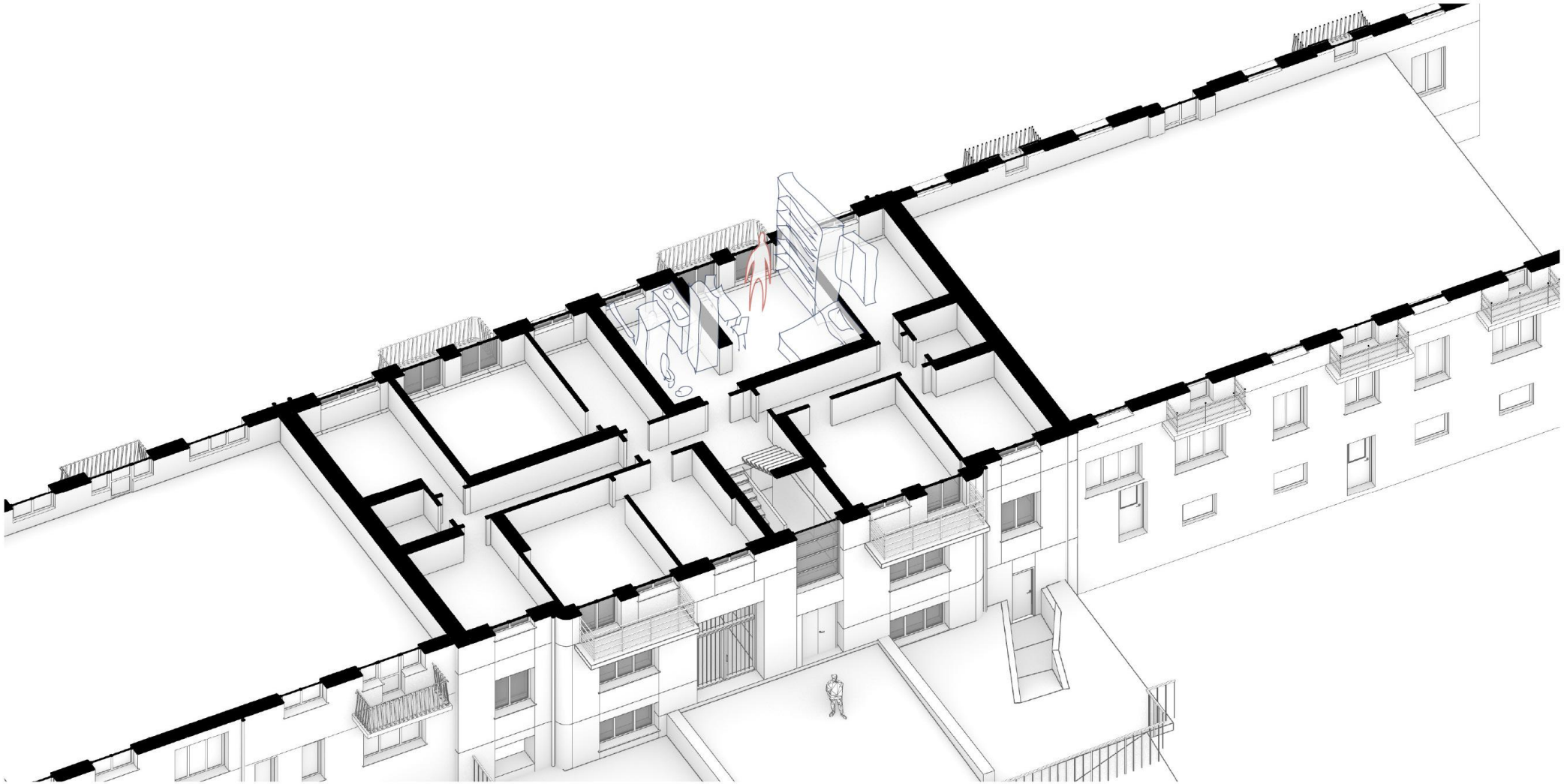


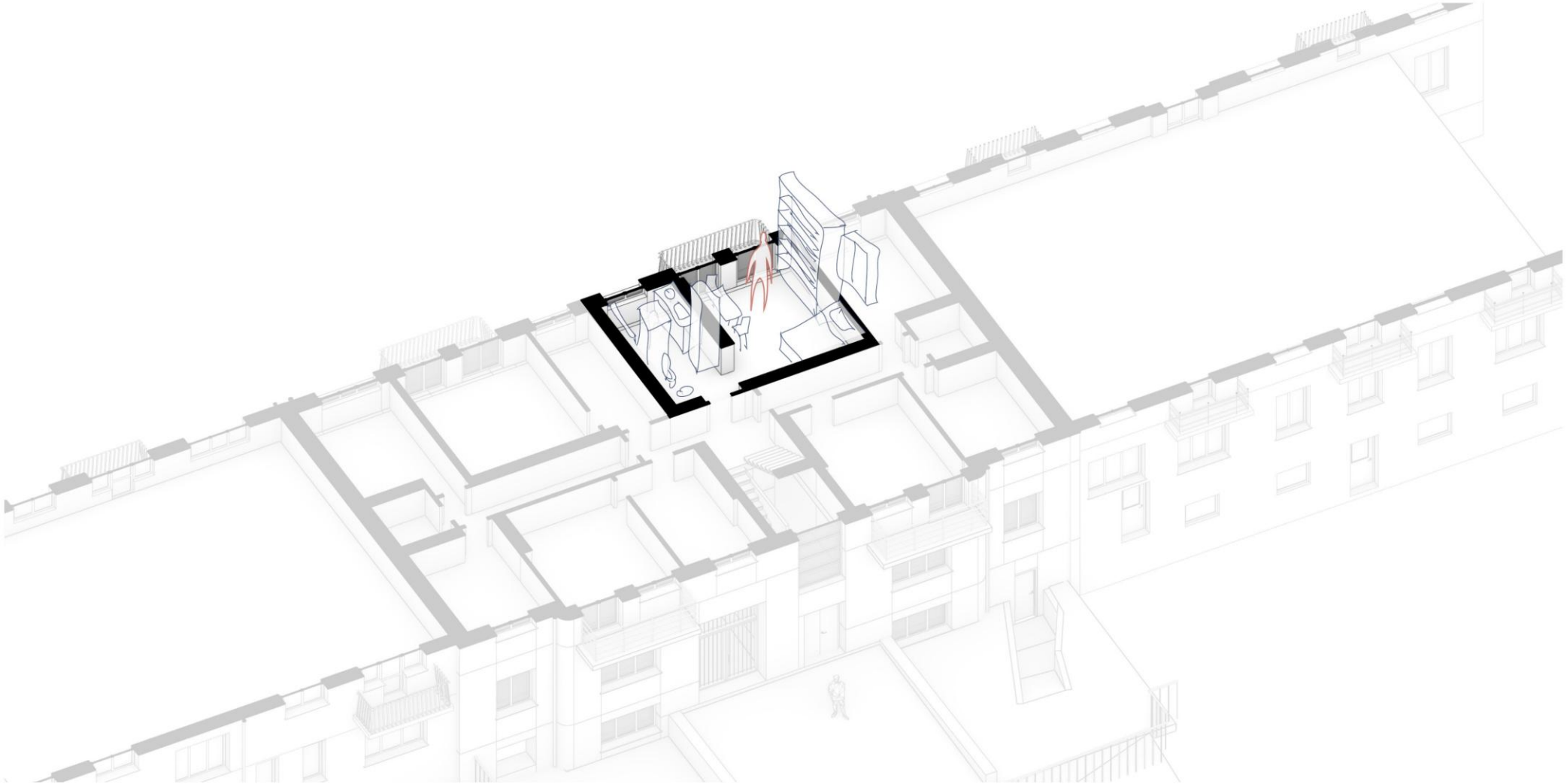


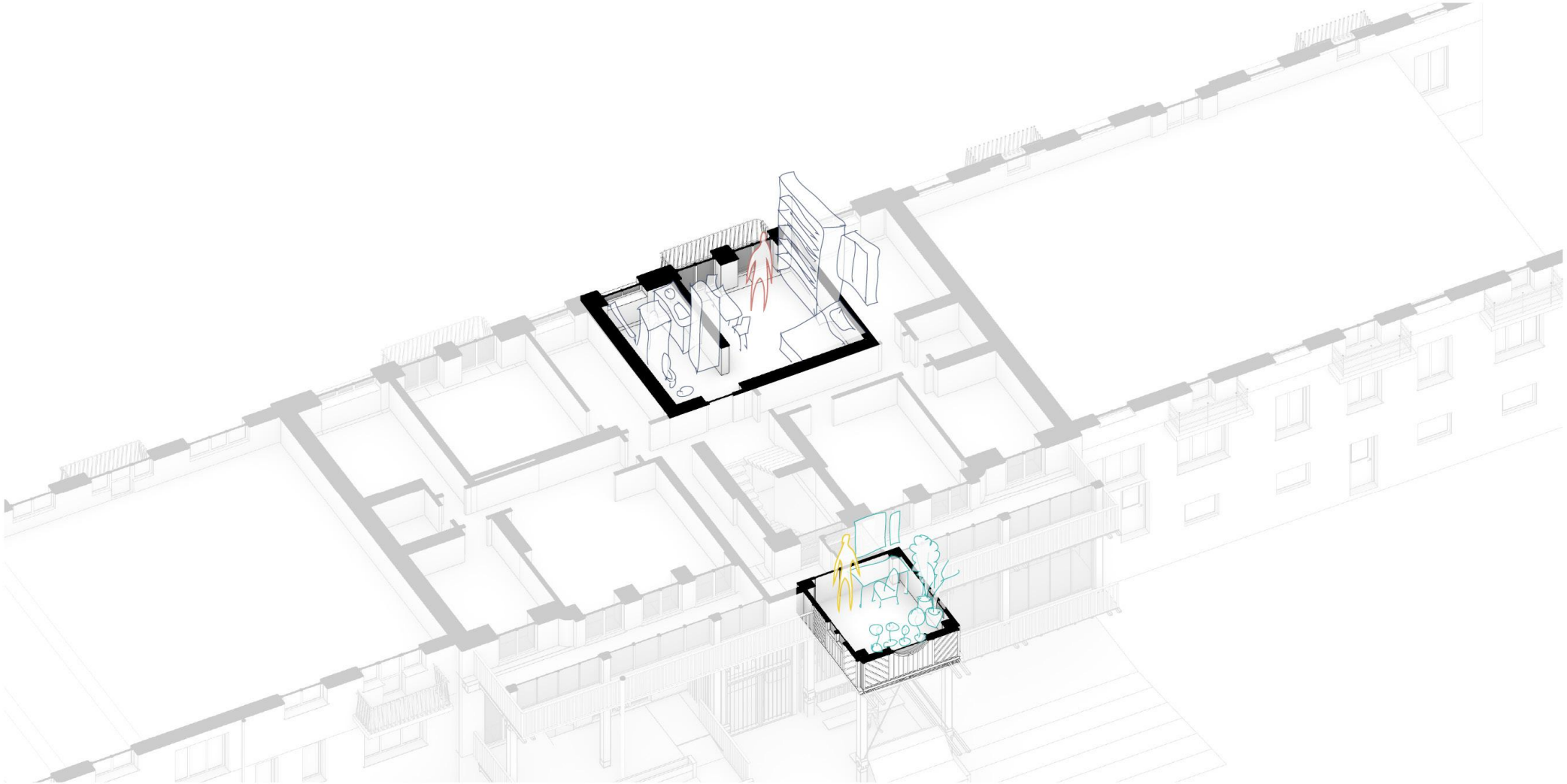


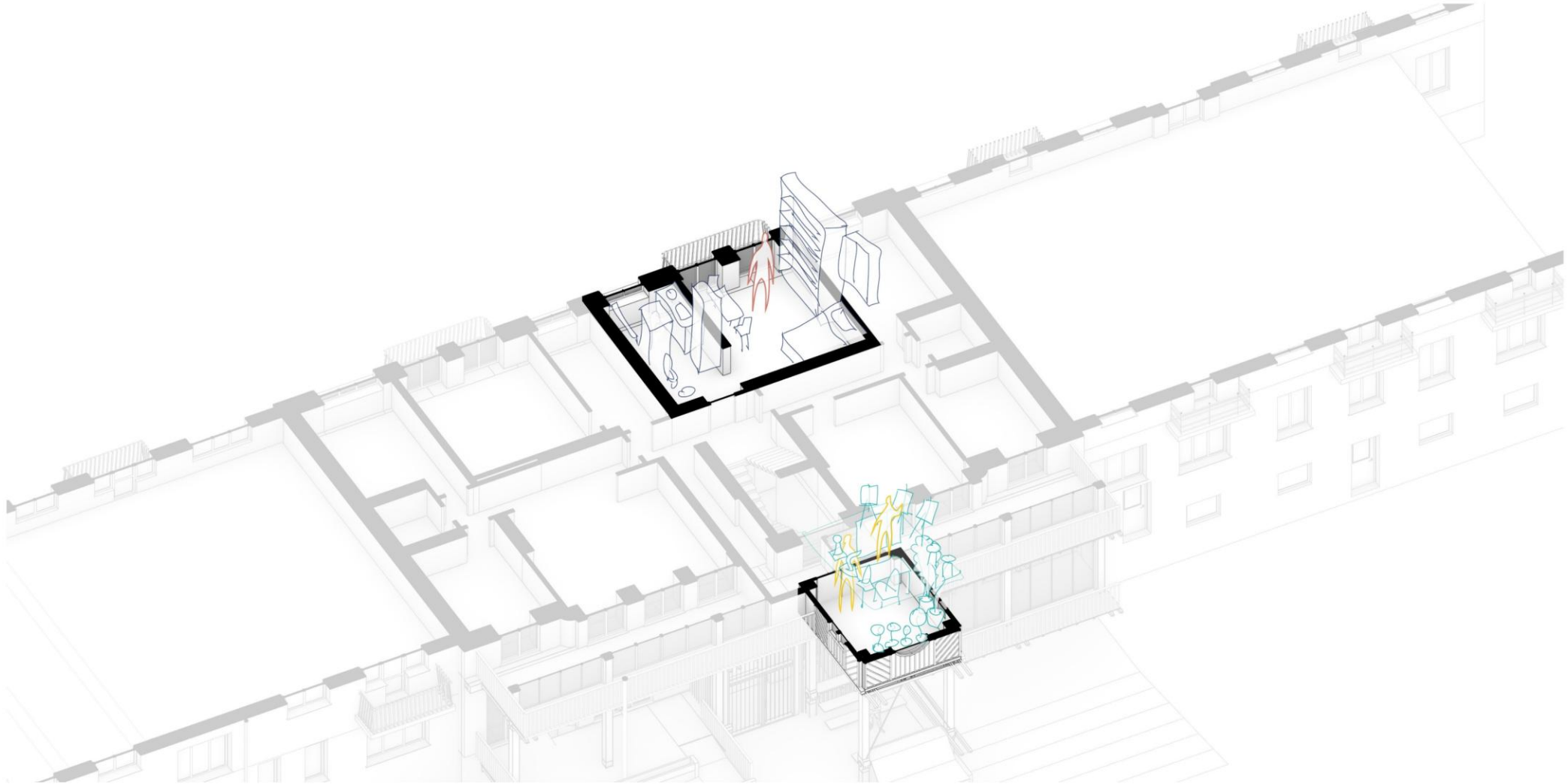


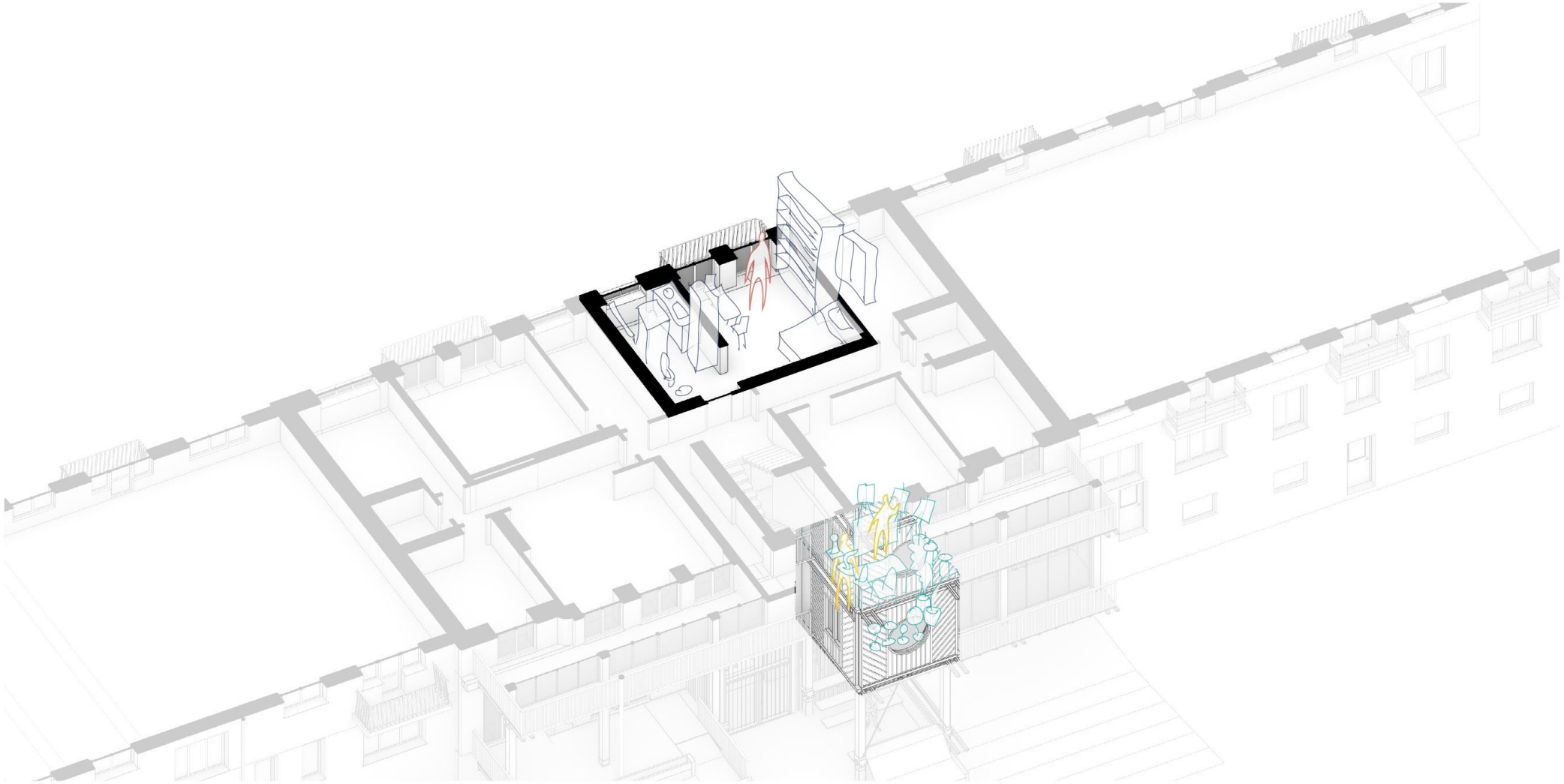


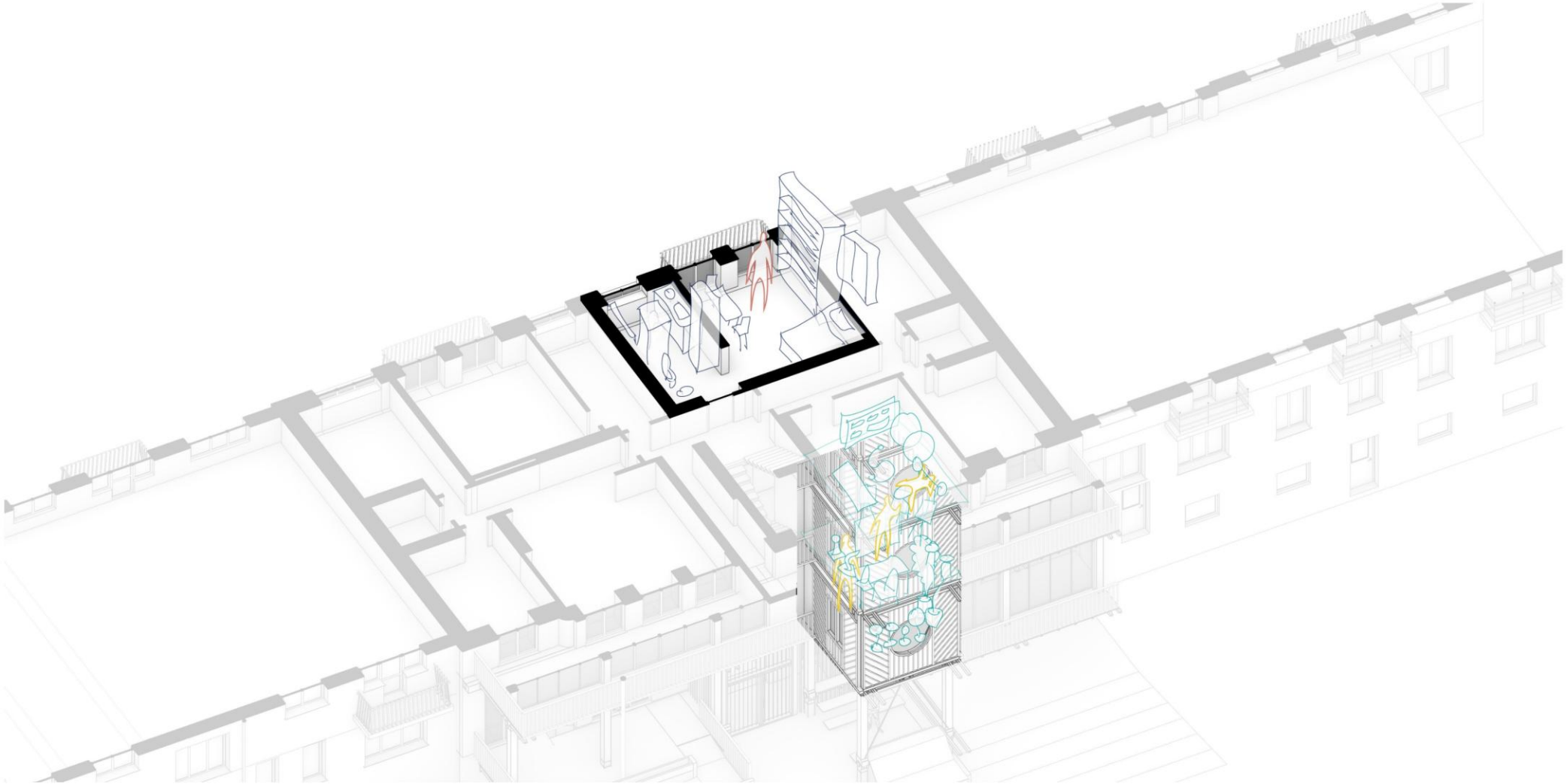


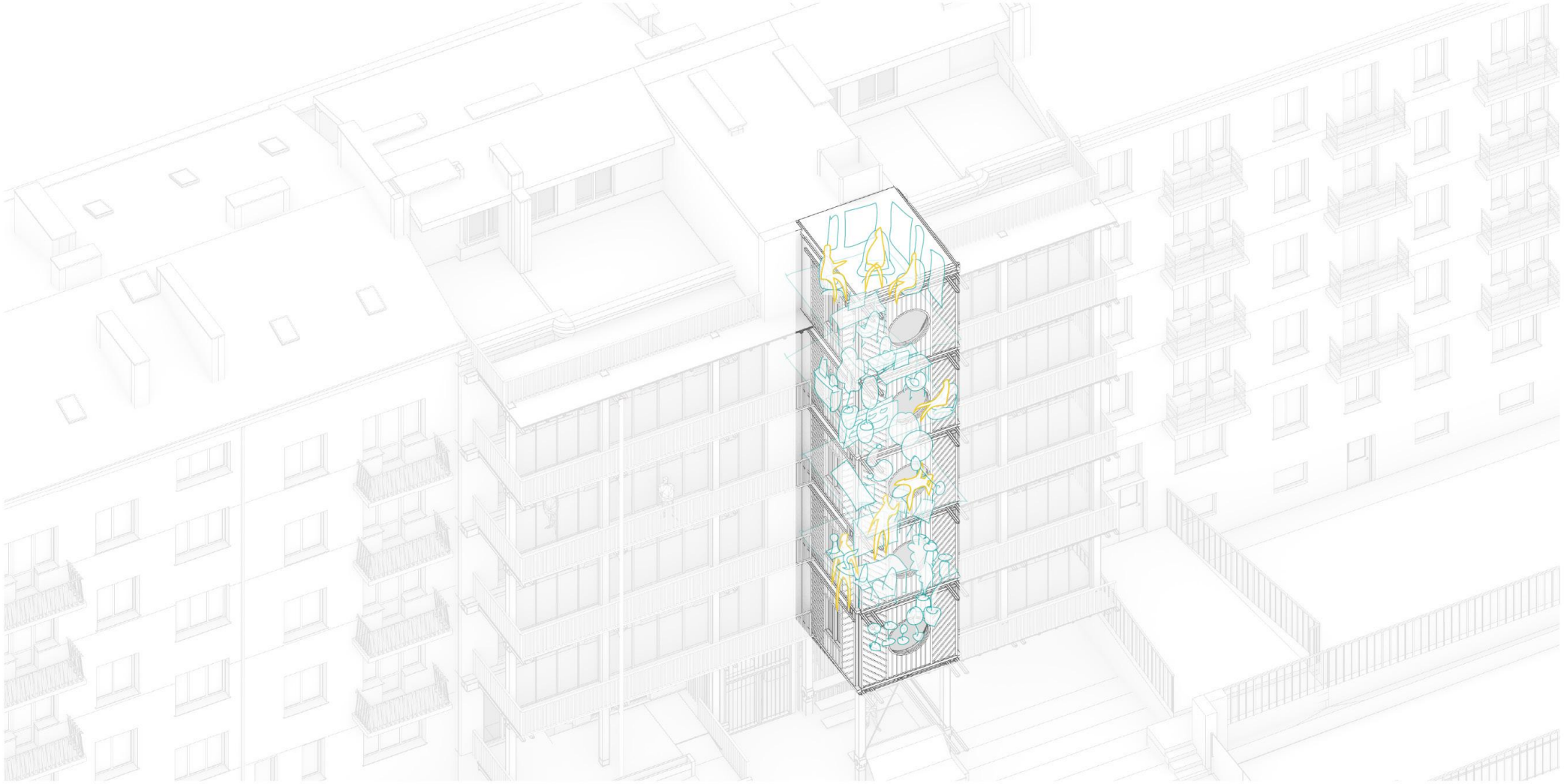


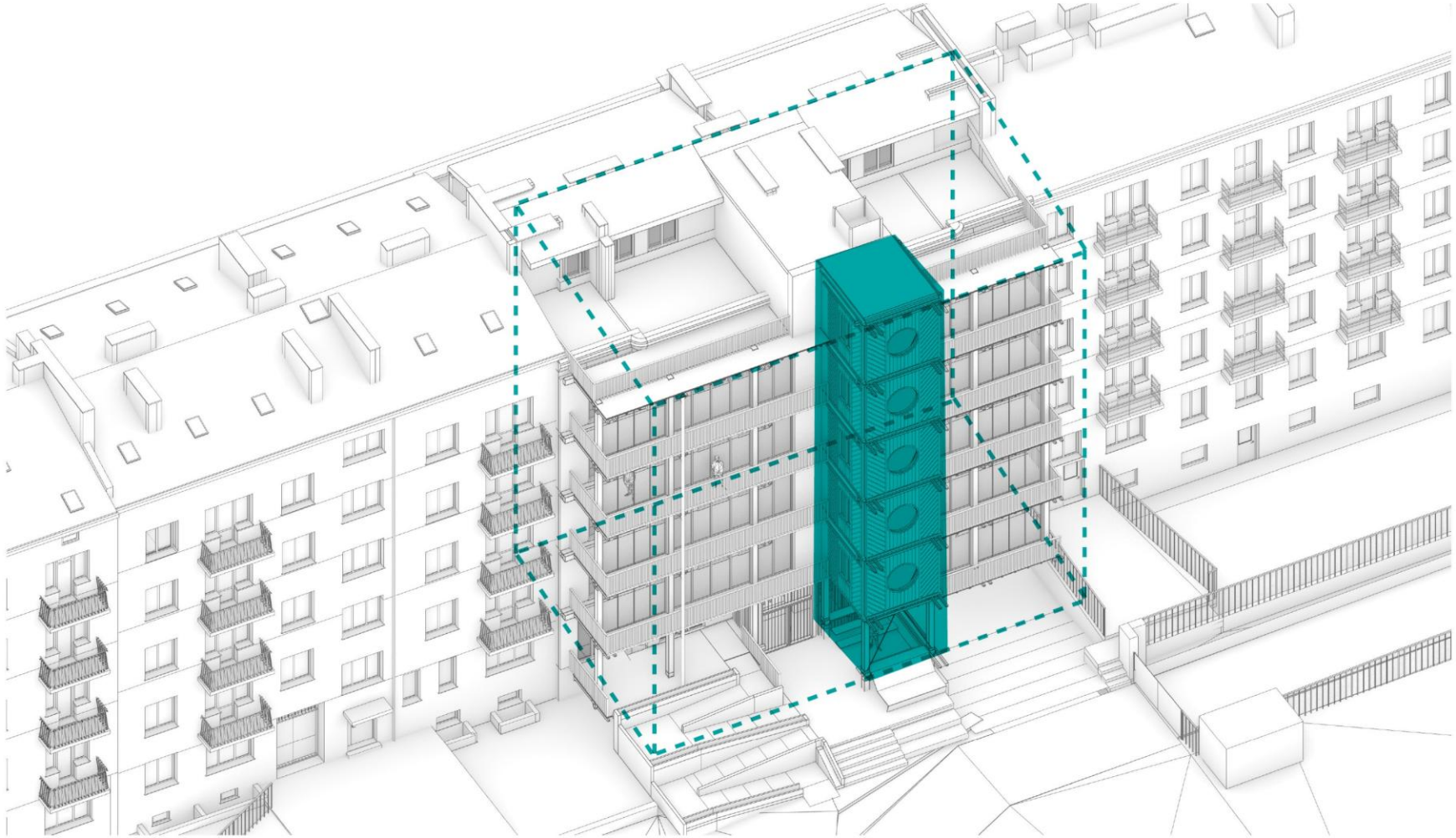


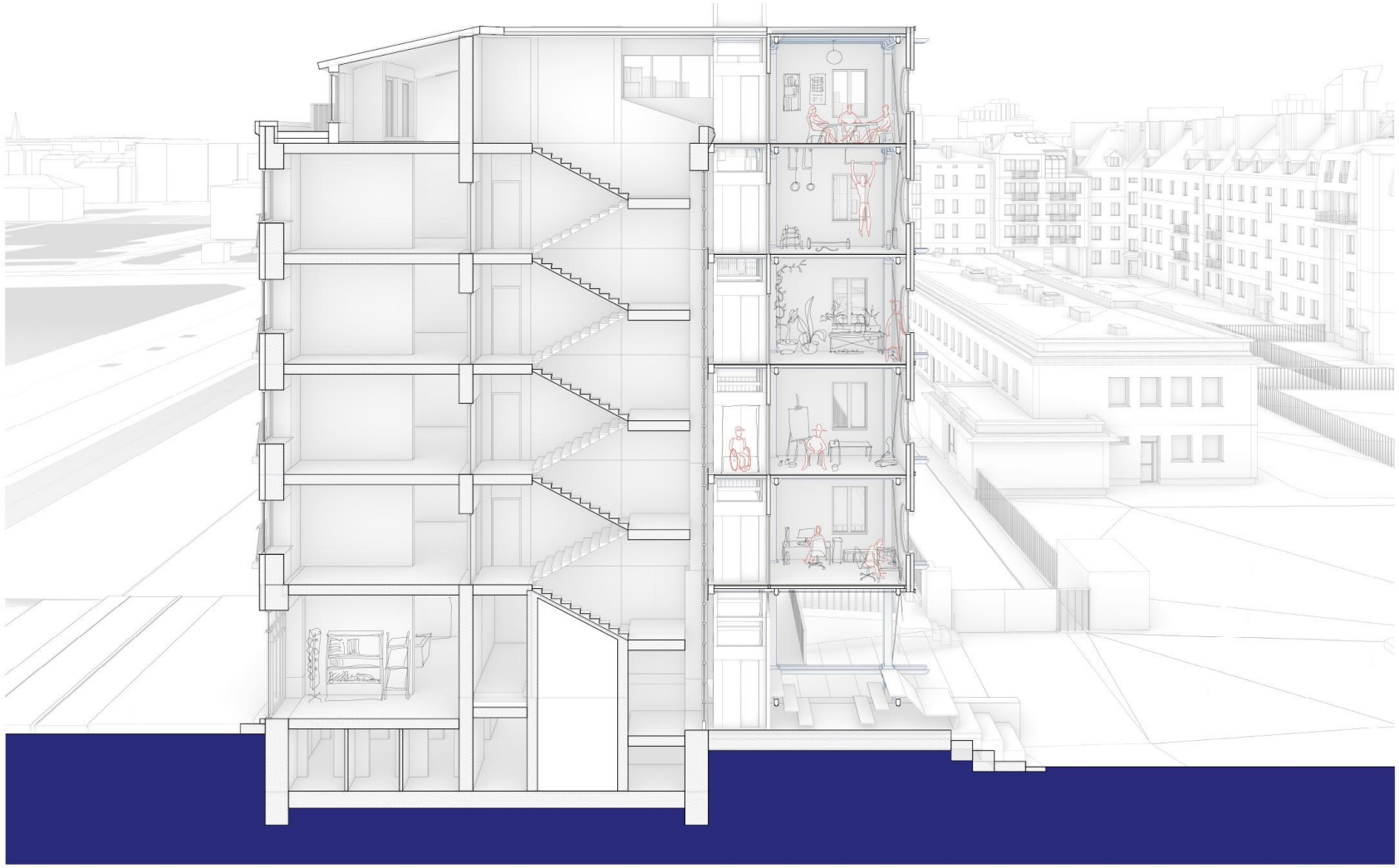


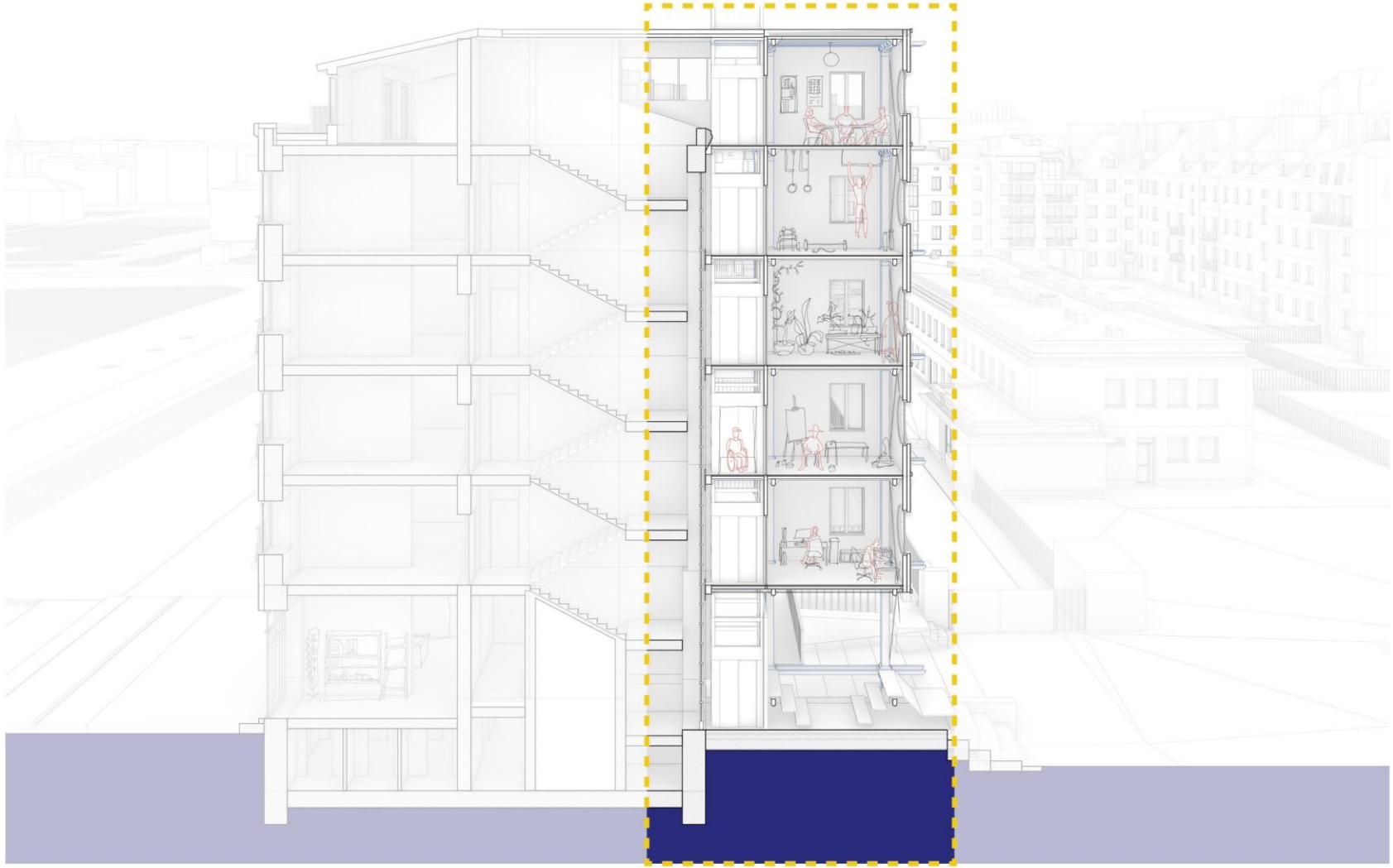


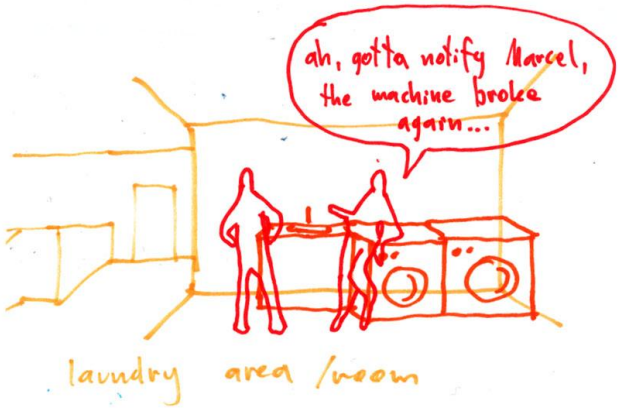


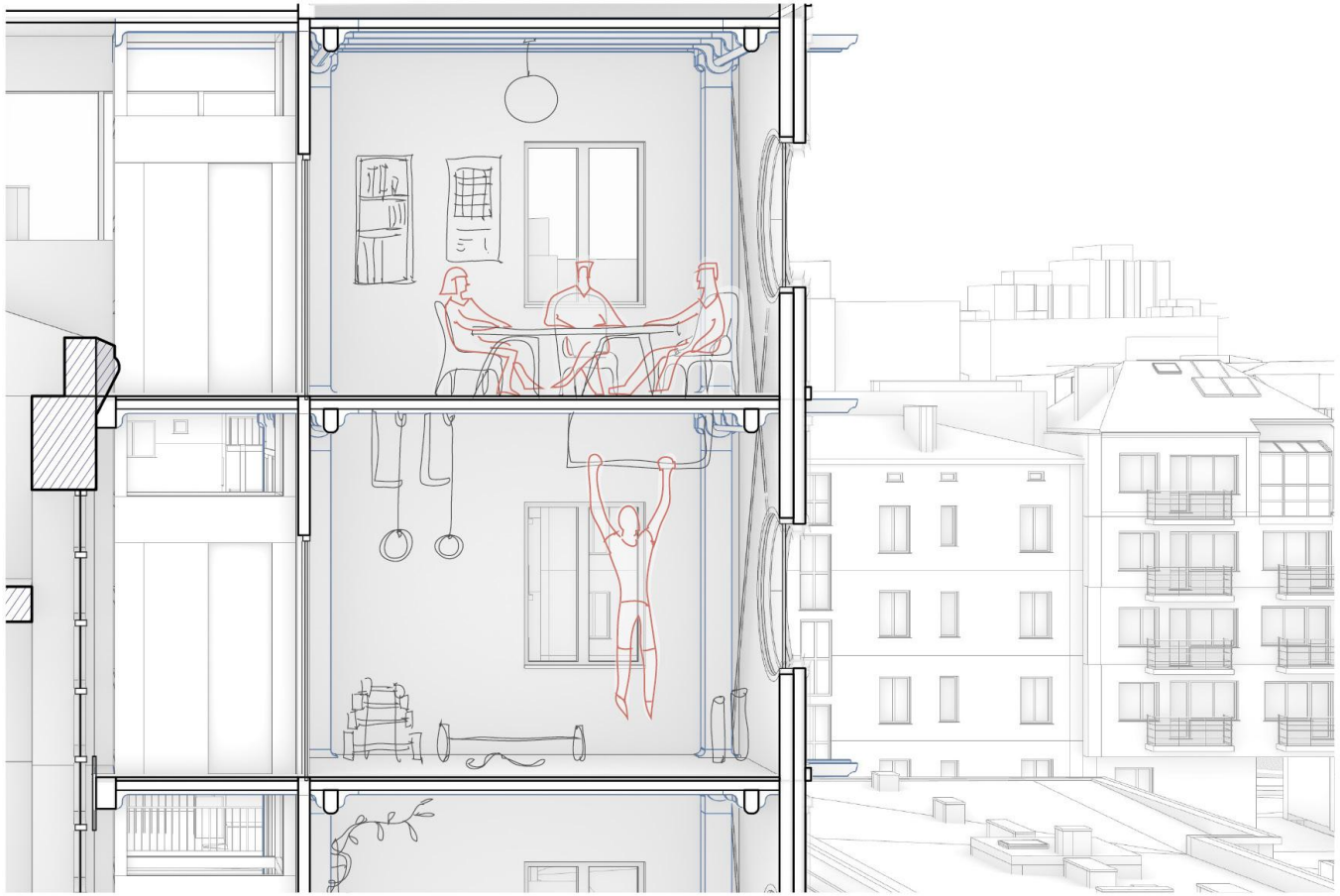


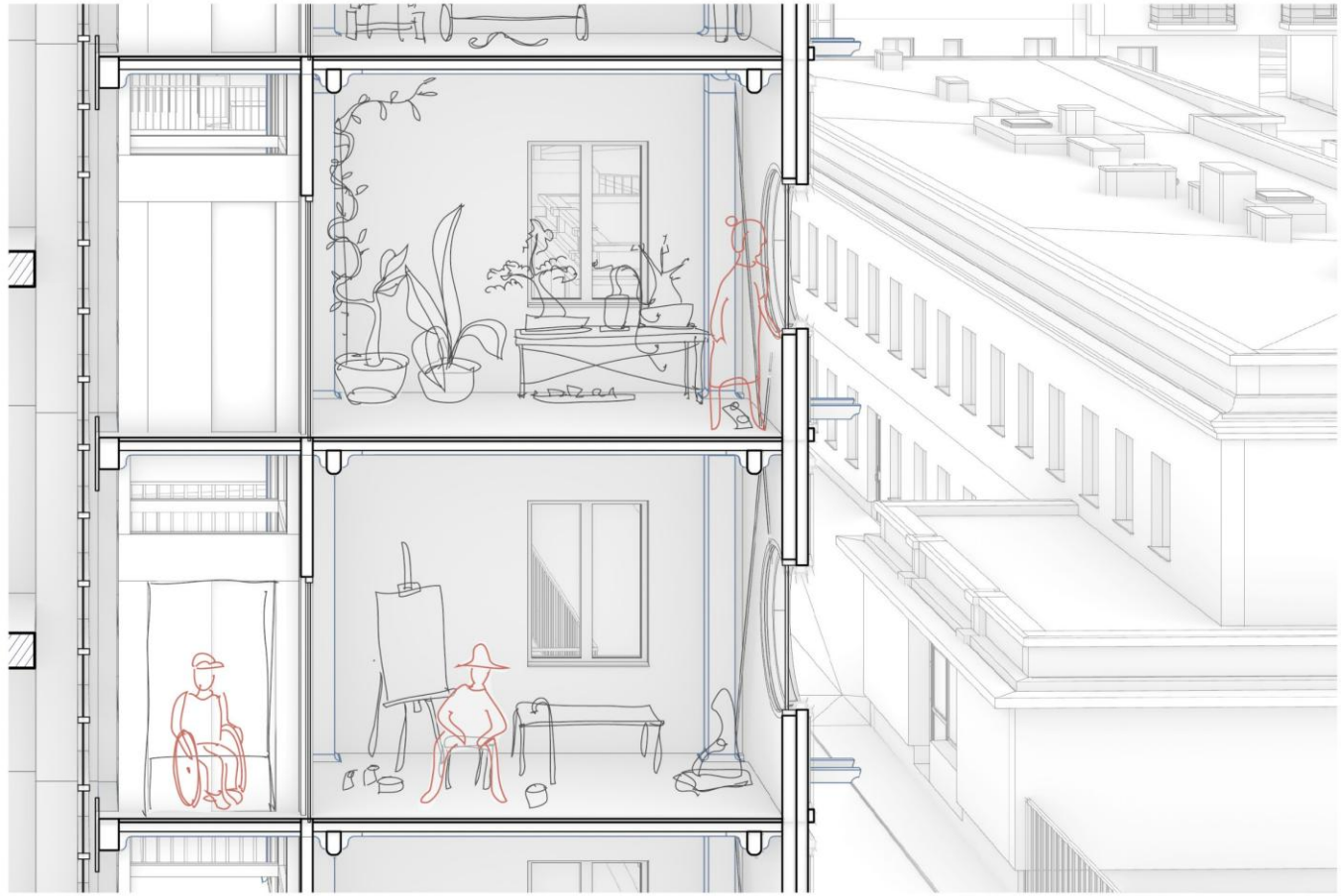


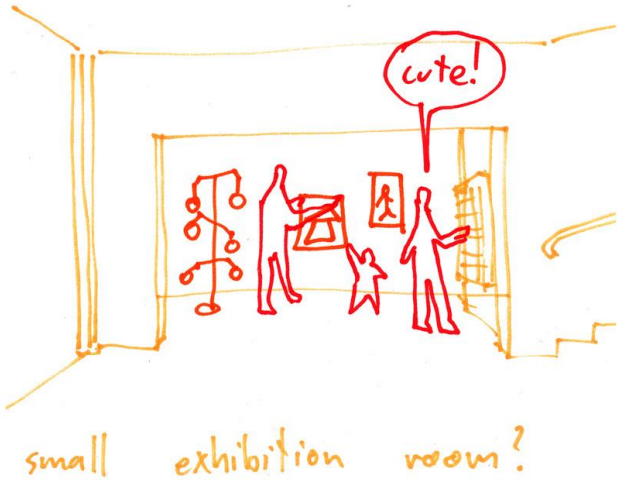


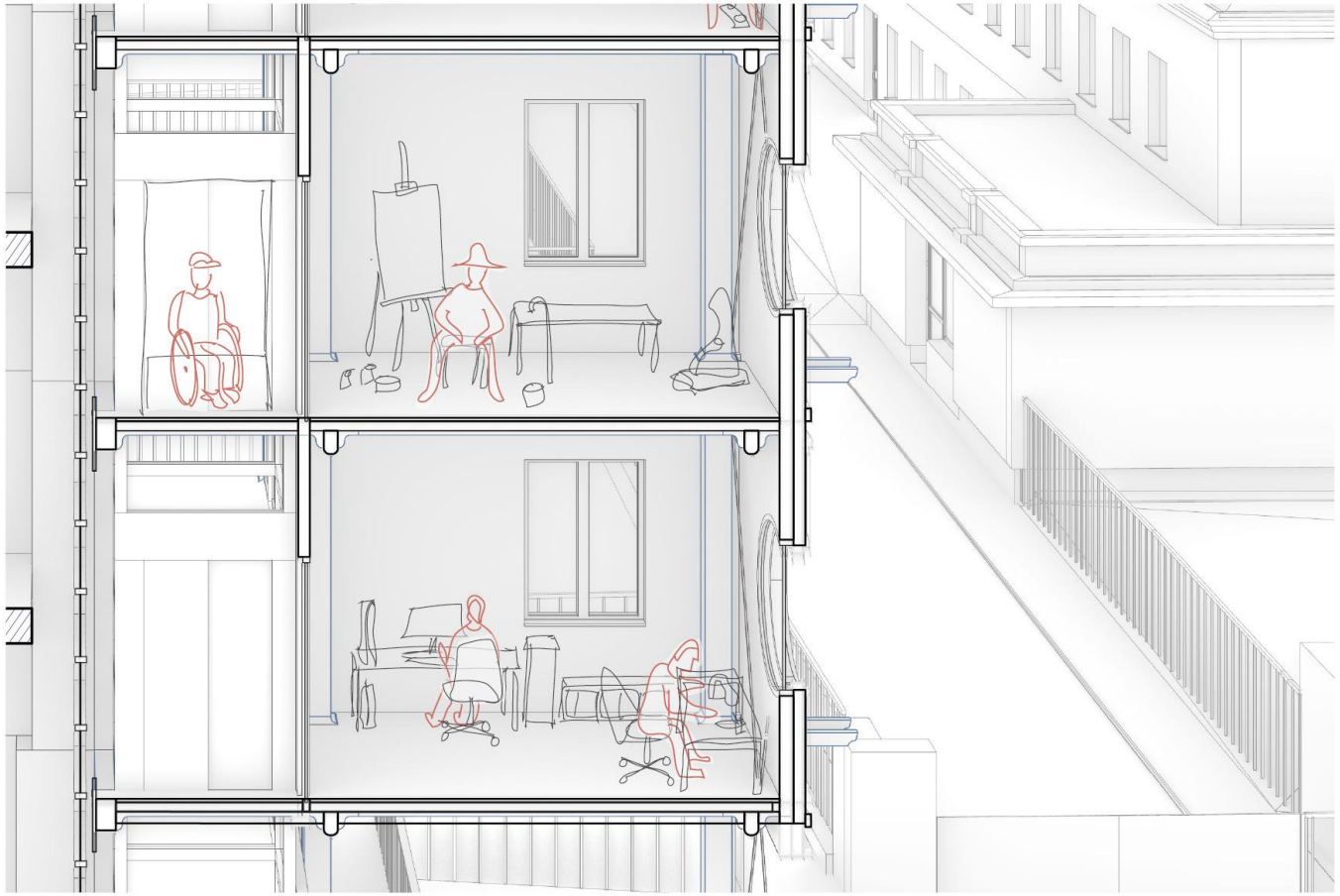



ah, gotta notify Marcel, the machine broke again...
laundry area /room

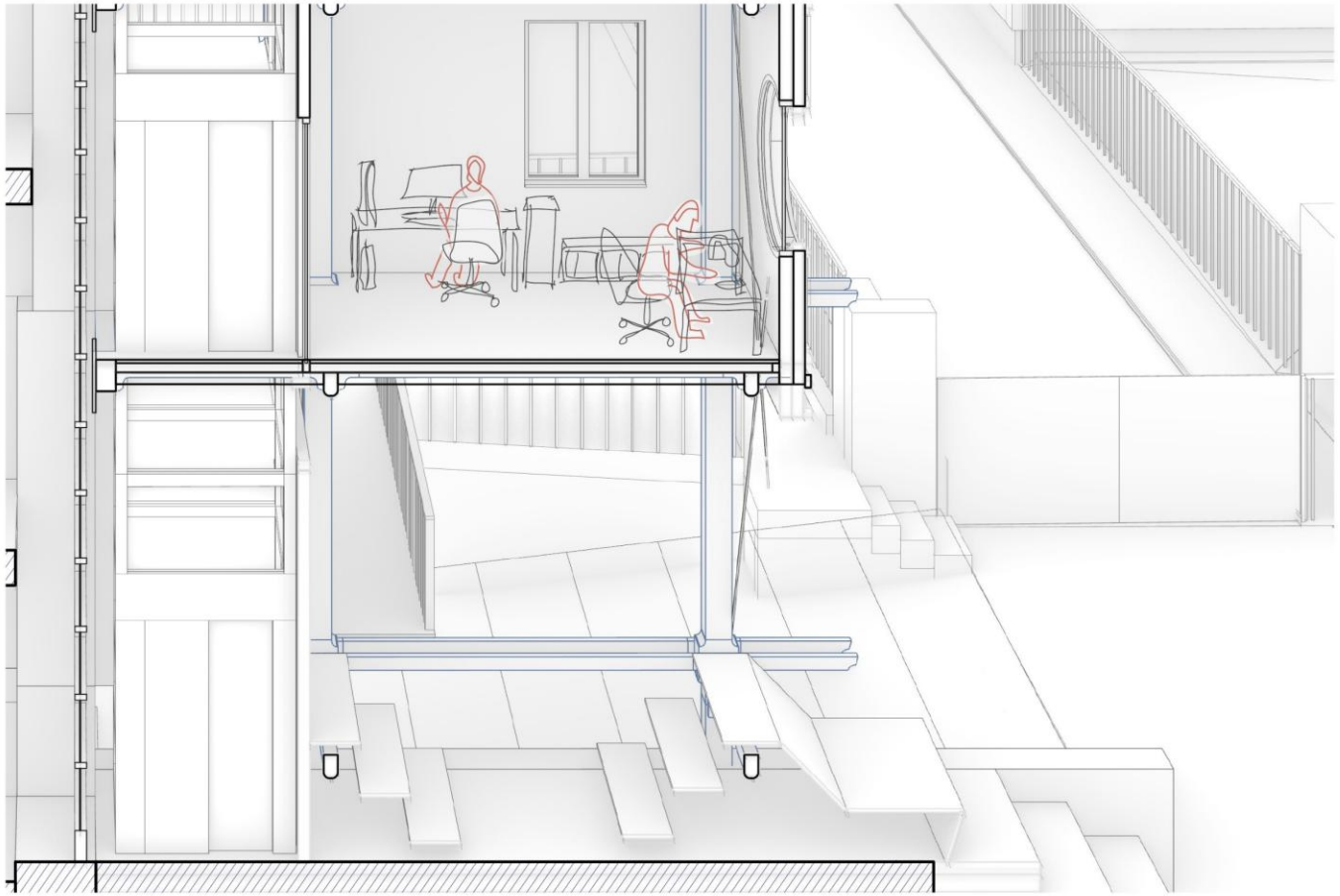


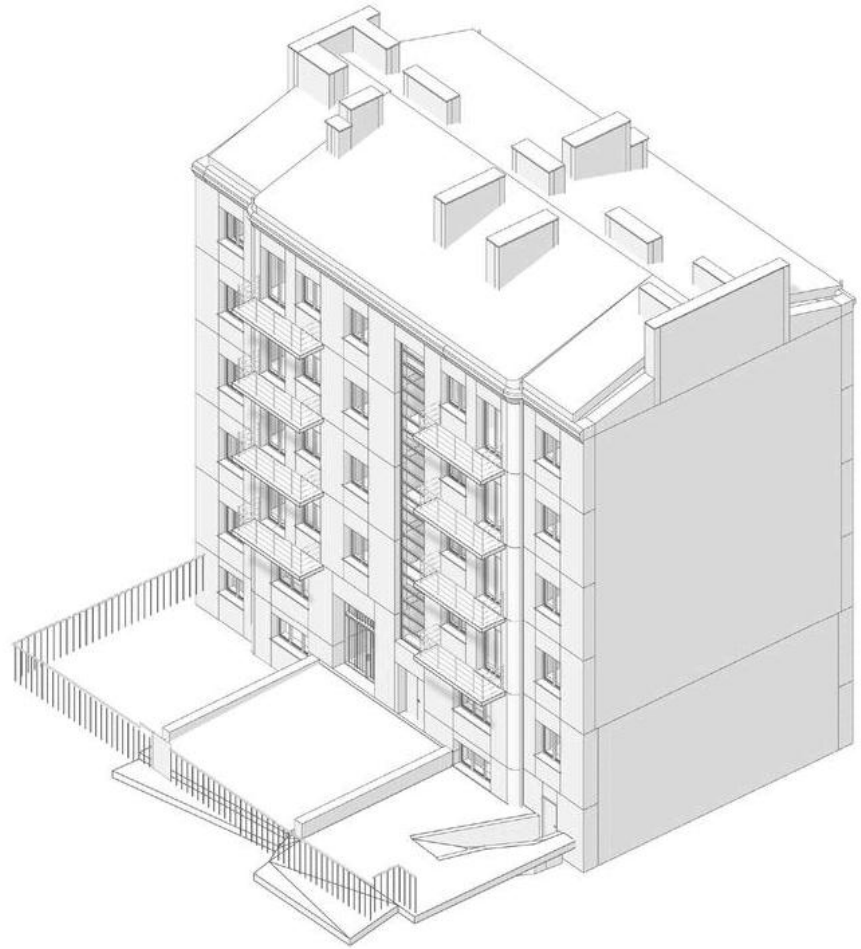


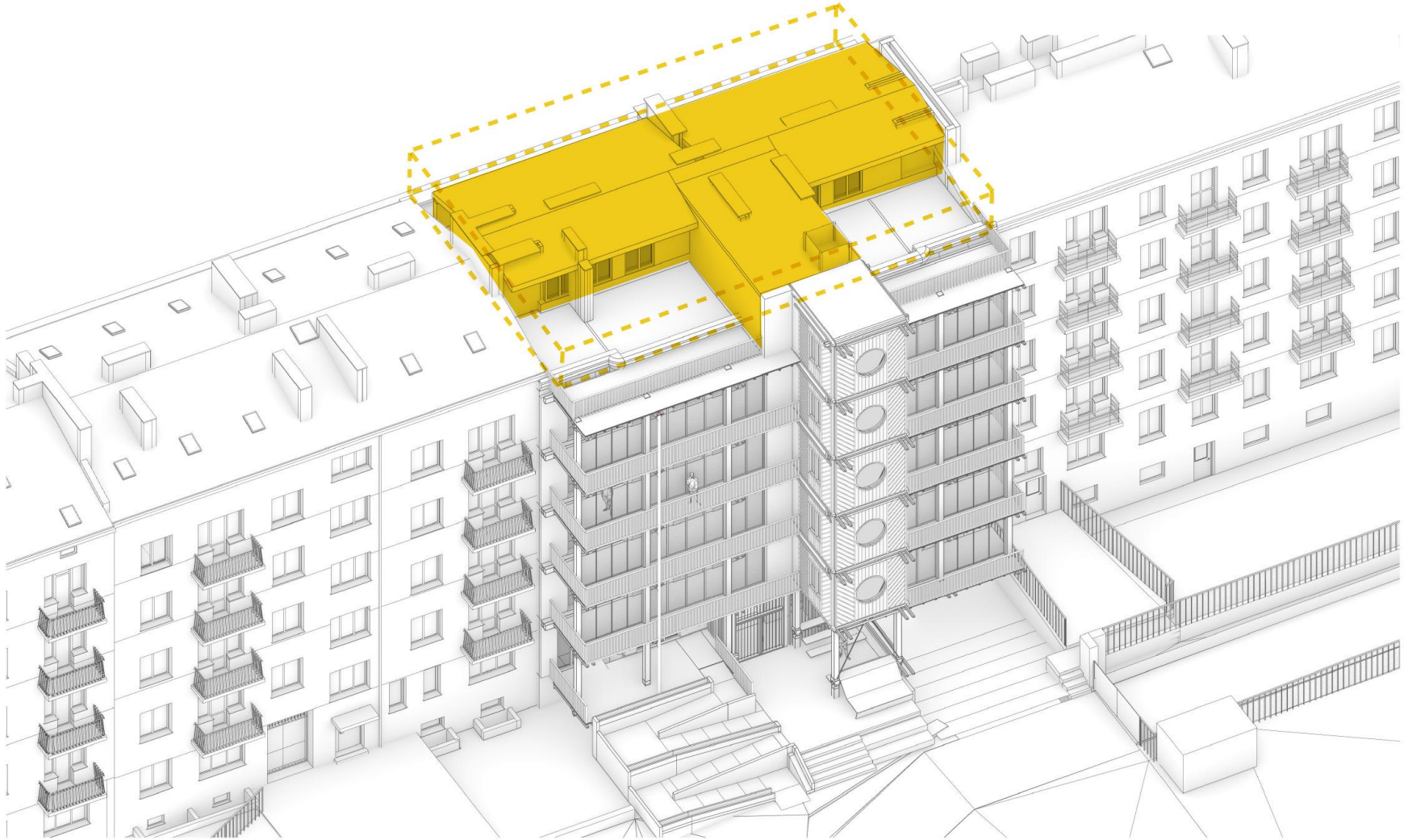

cute!
small exhibition room?

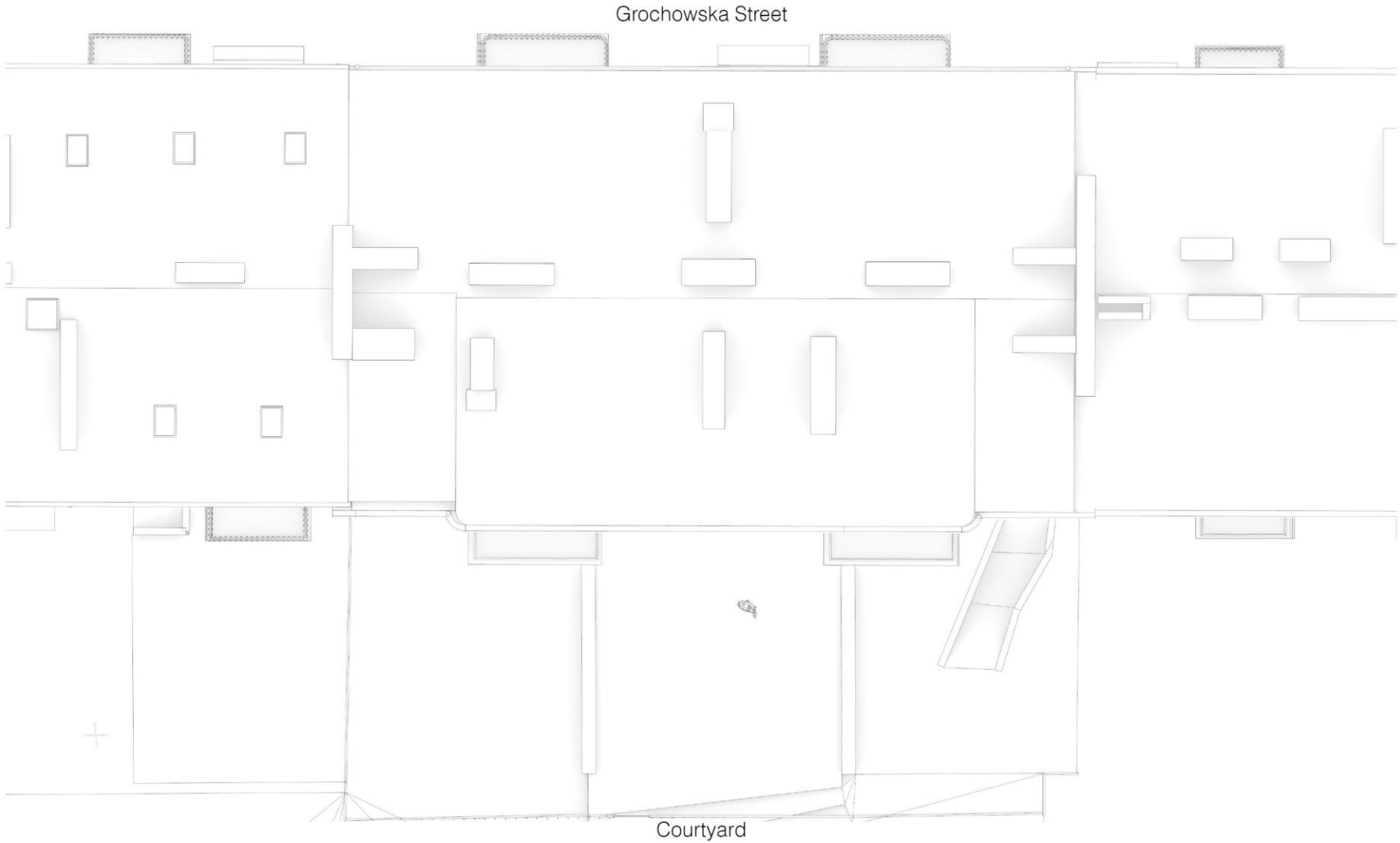


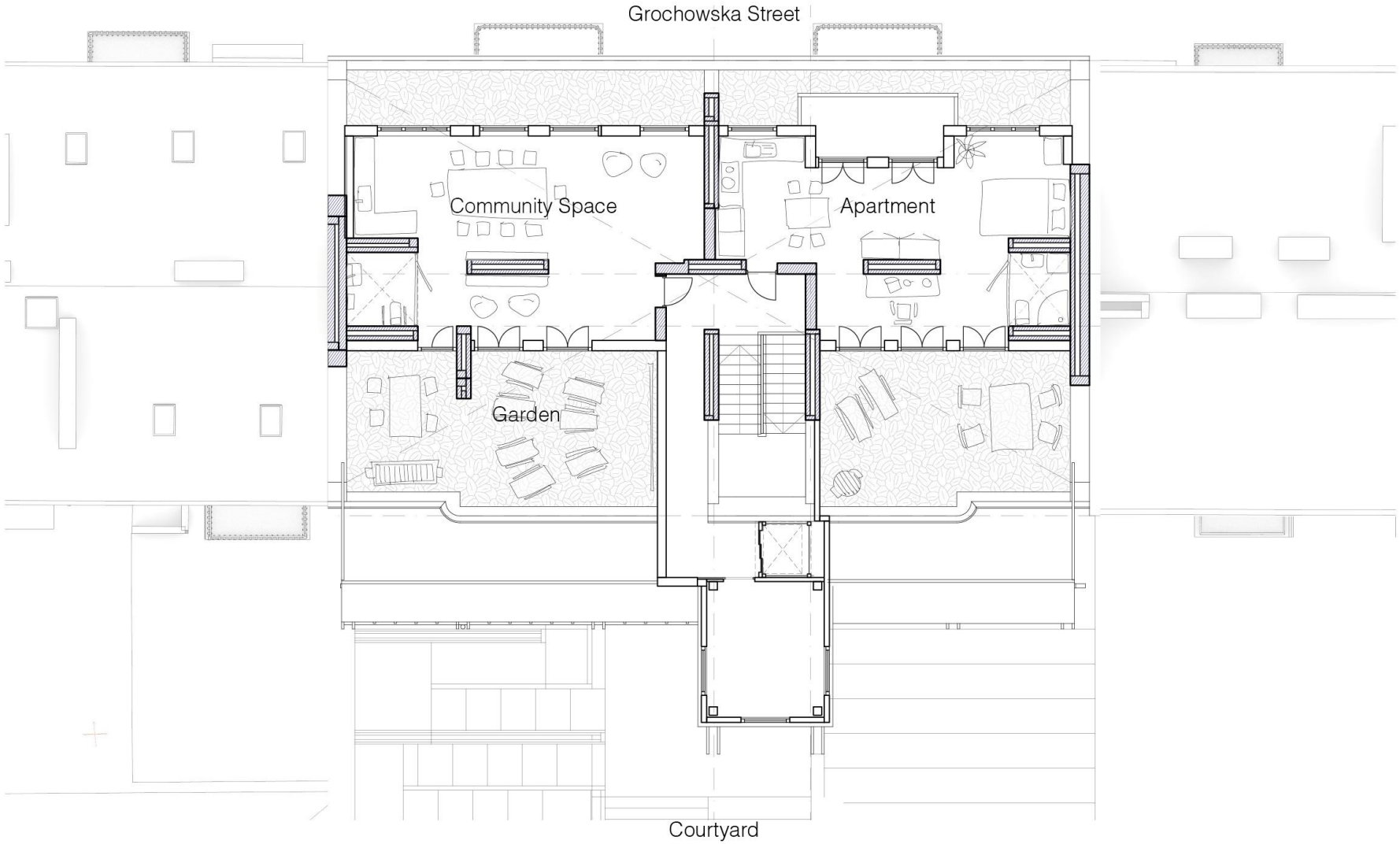

picnic area near the
entrance

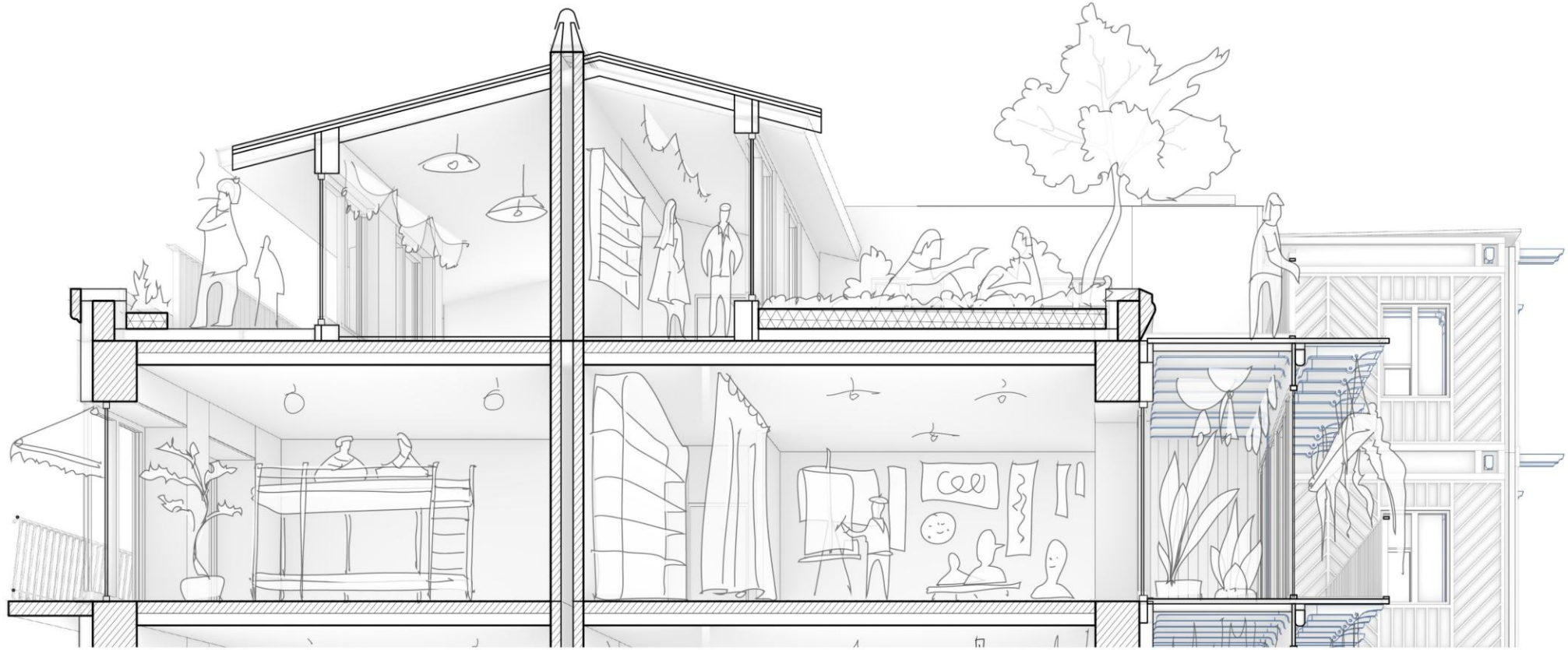




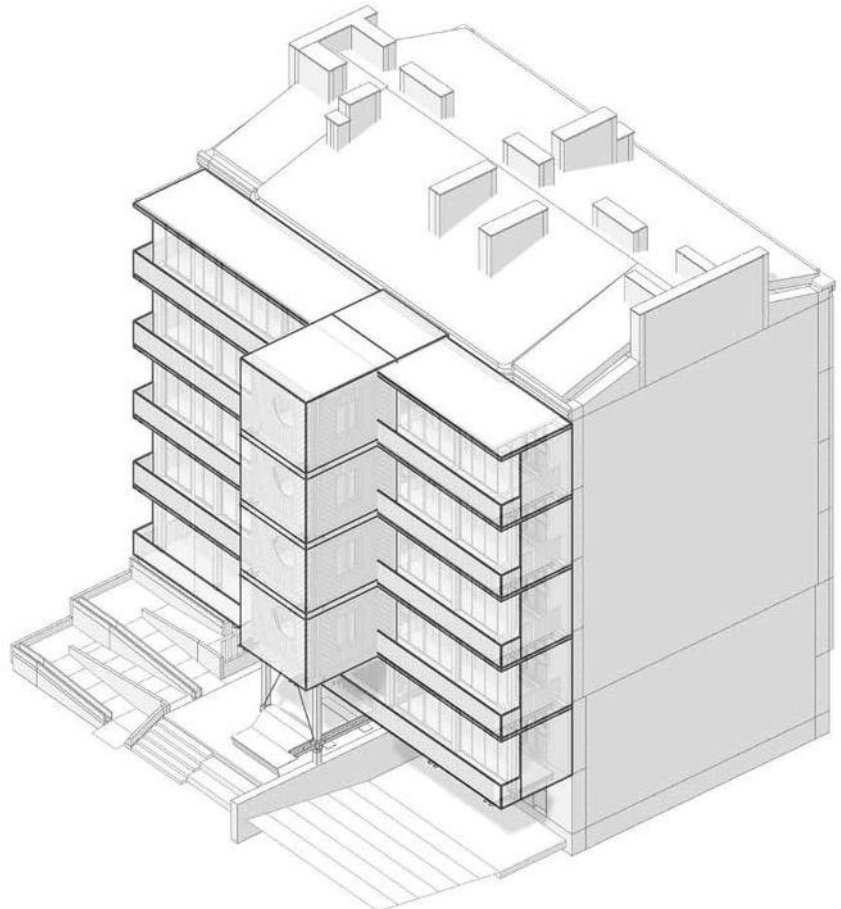


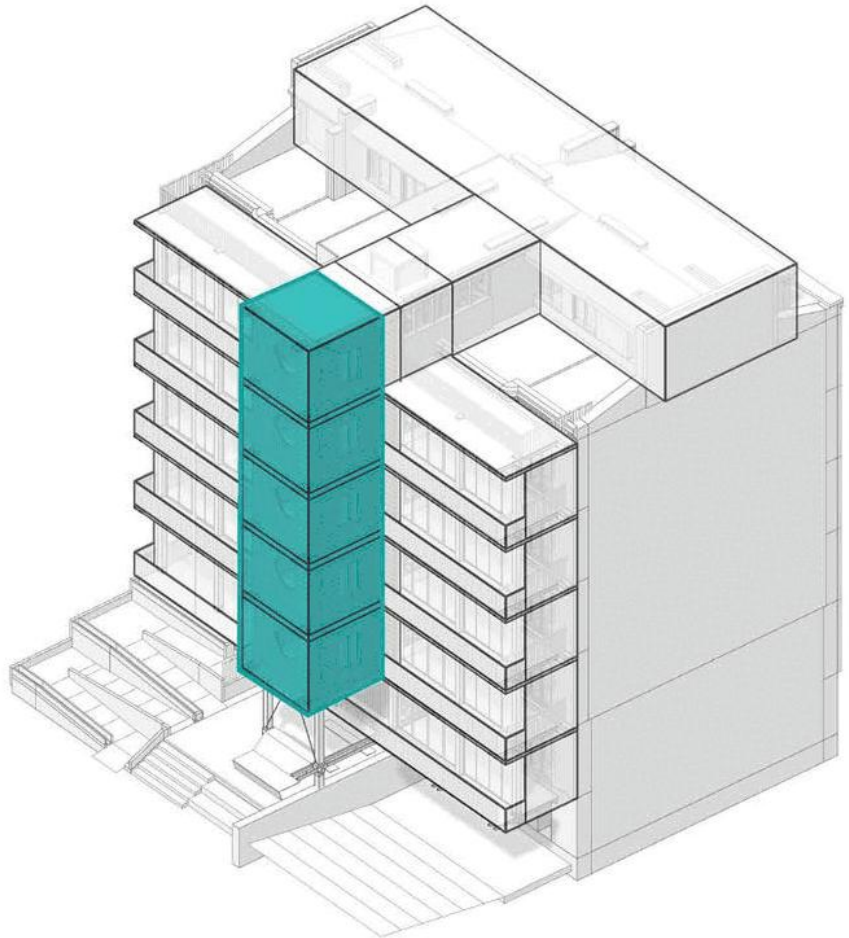

Grochowska Street
Courtyard

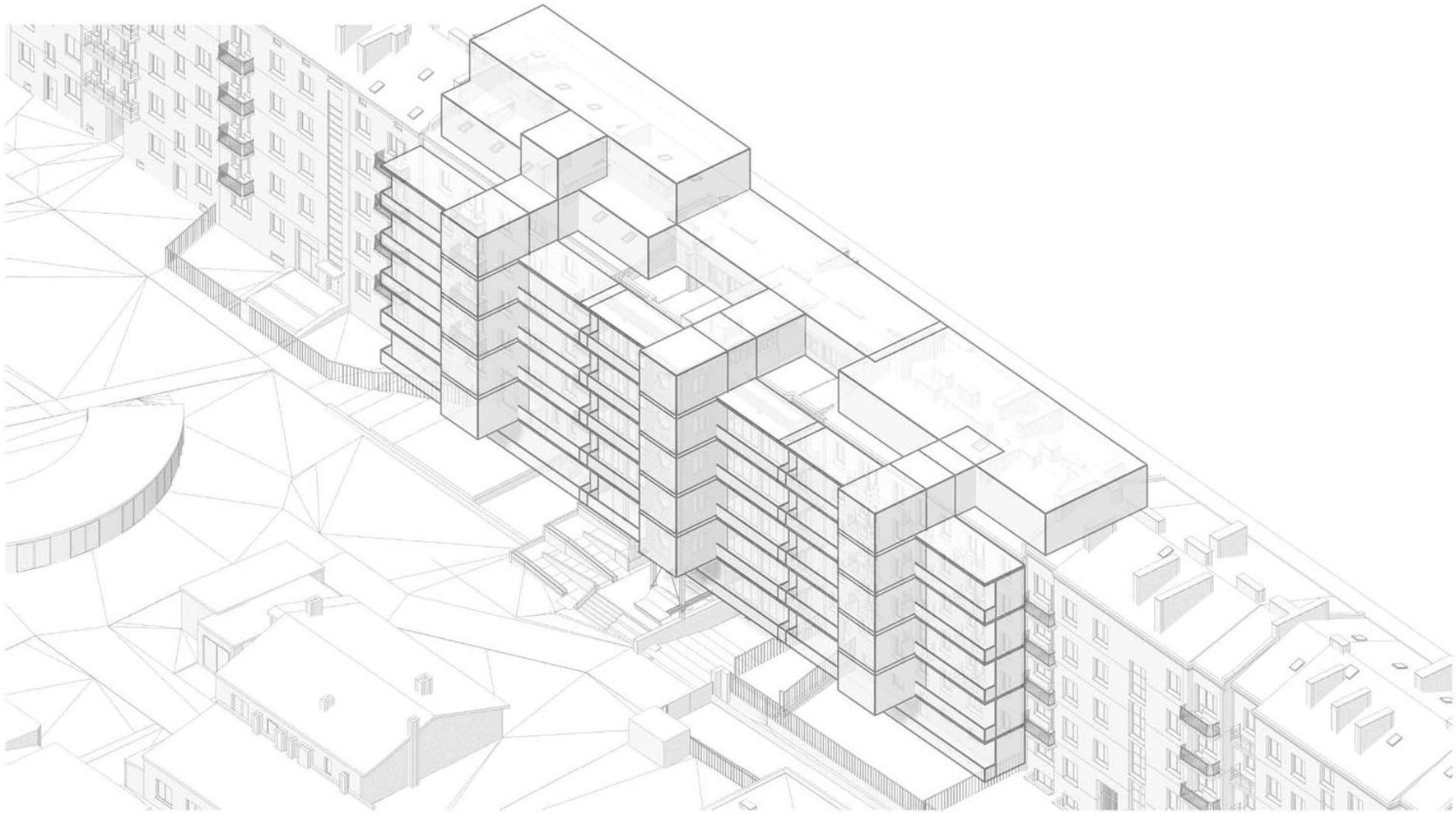

Grochowska Street
Community Space
Apartment
Garden
Courtyard

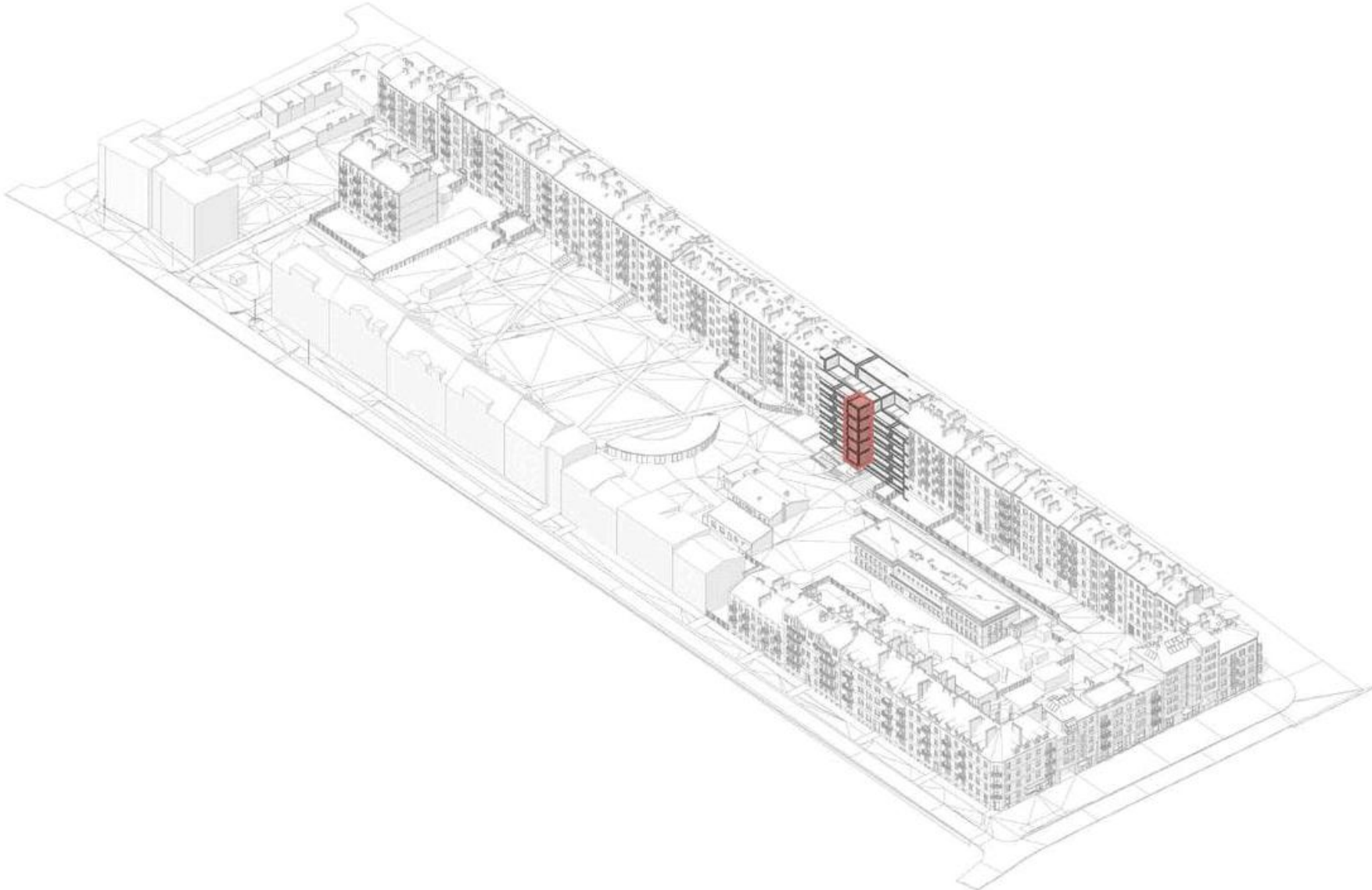


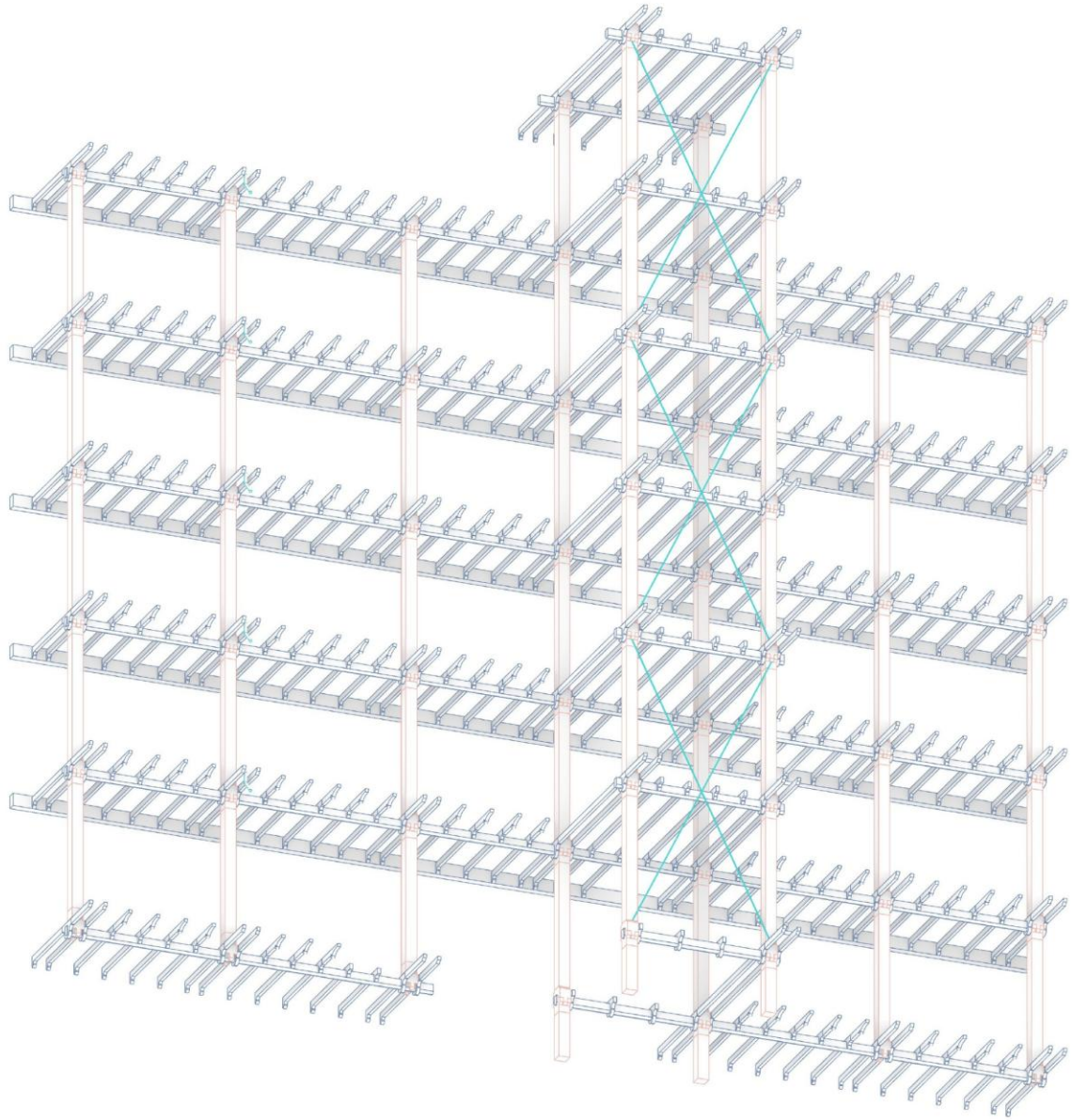
Roof-Top Hang-Outs







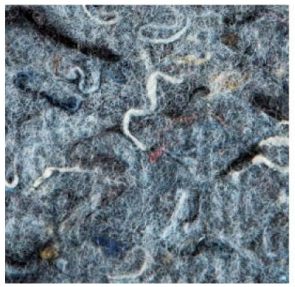







Structure



Insulation



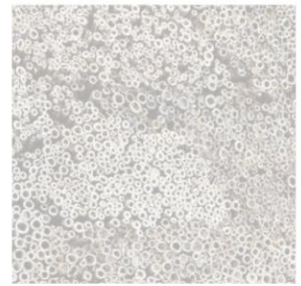

Finishings



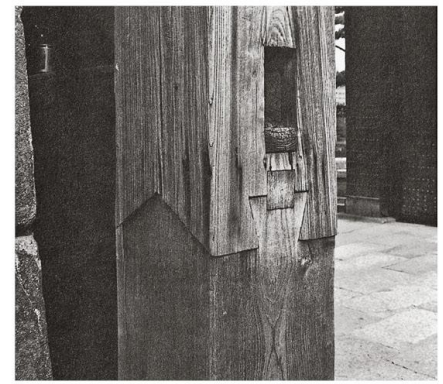

Structure

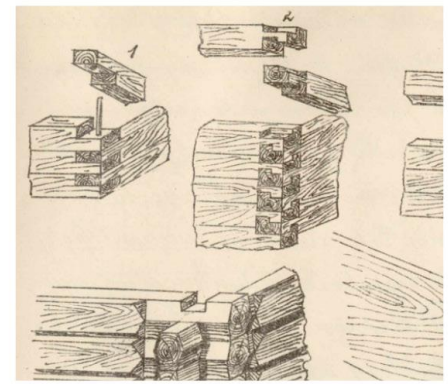



Insulation



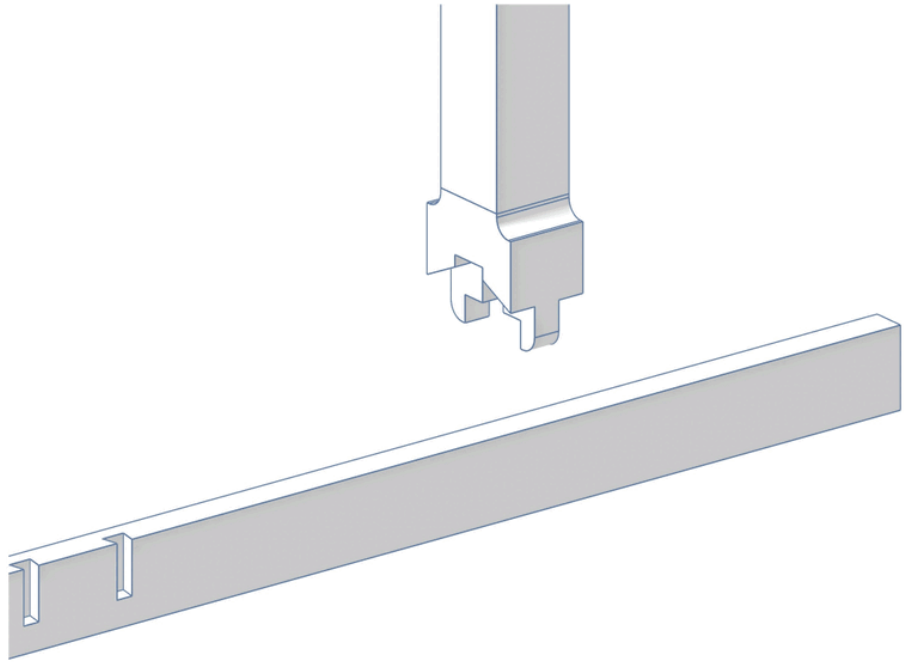

Finishings

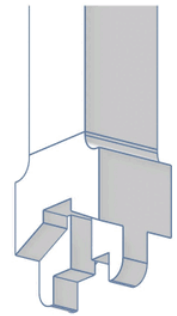


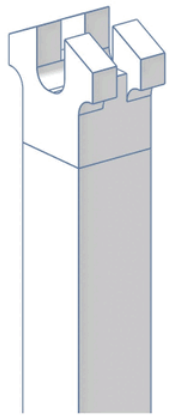


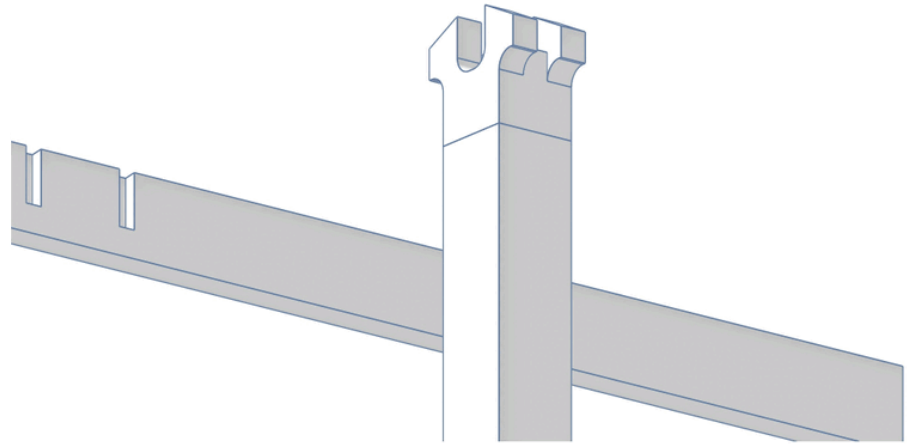
Timber Joinery

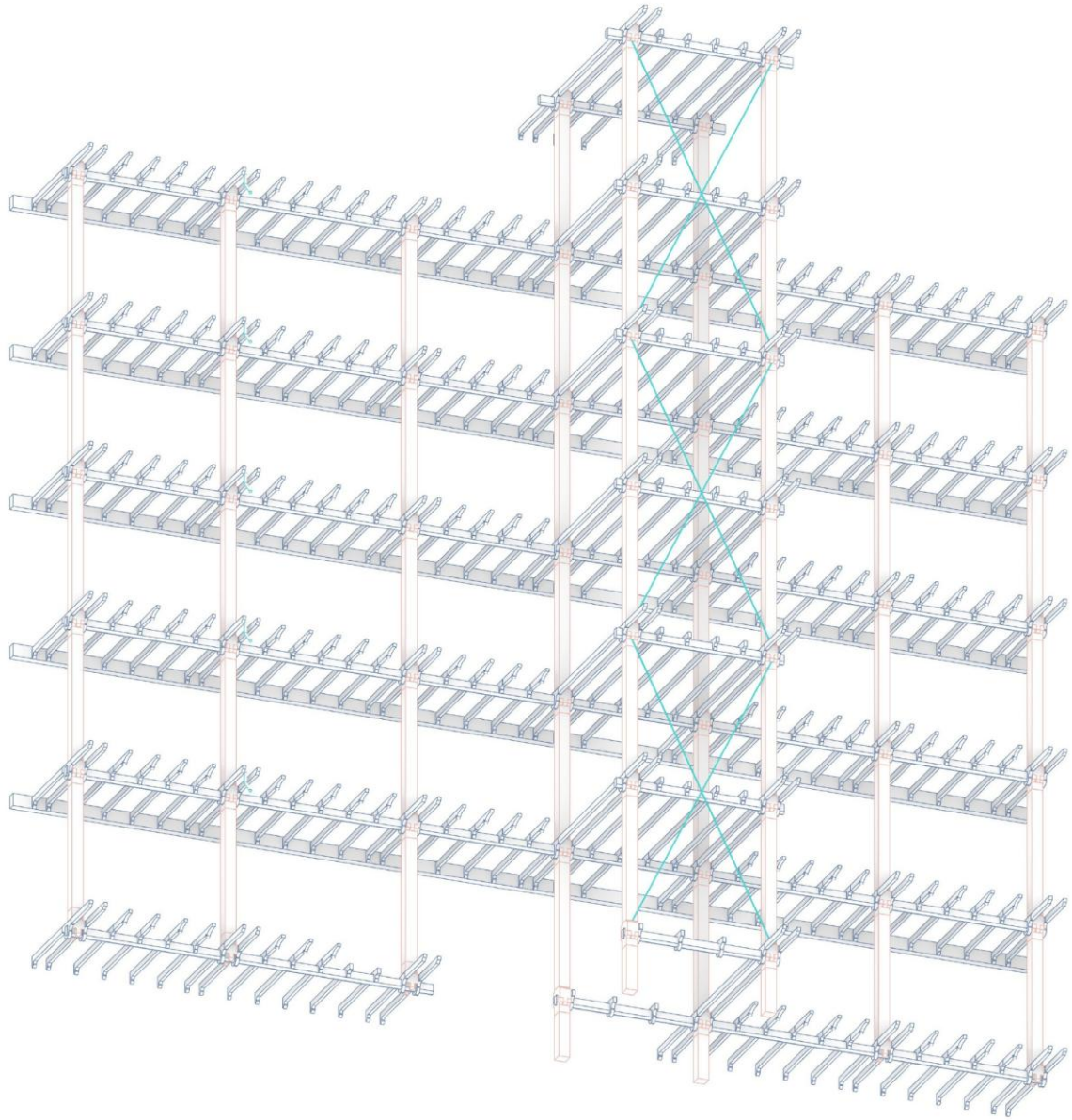
Drawing inspiration from japanese, polish, and modern international approaches to timber joint design.

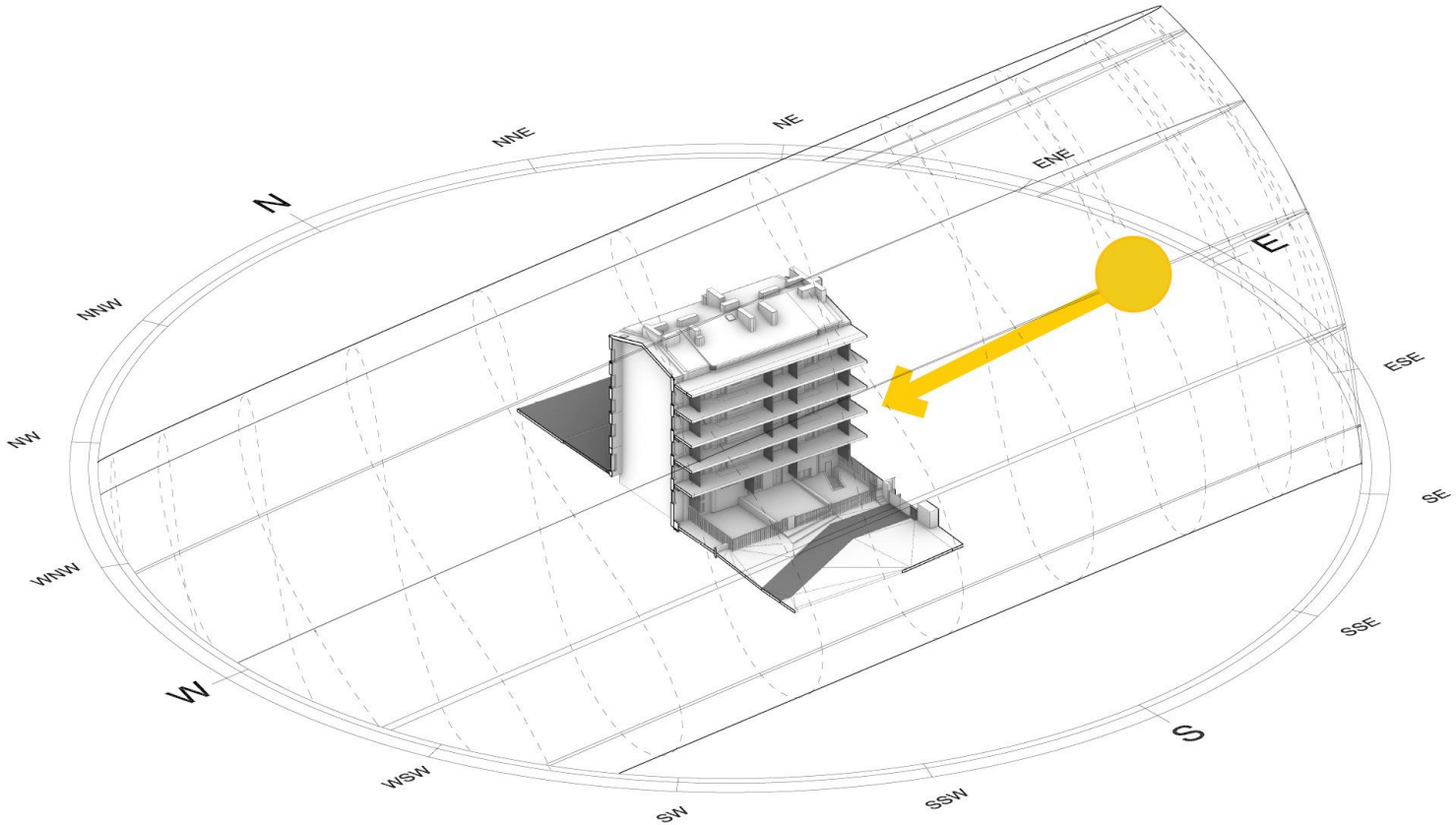








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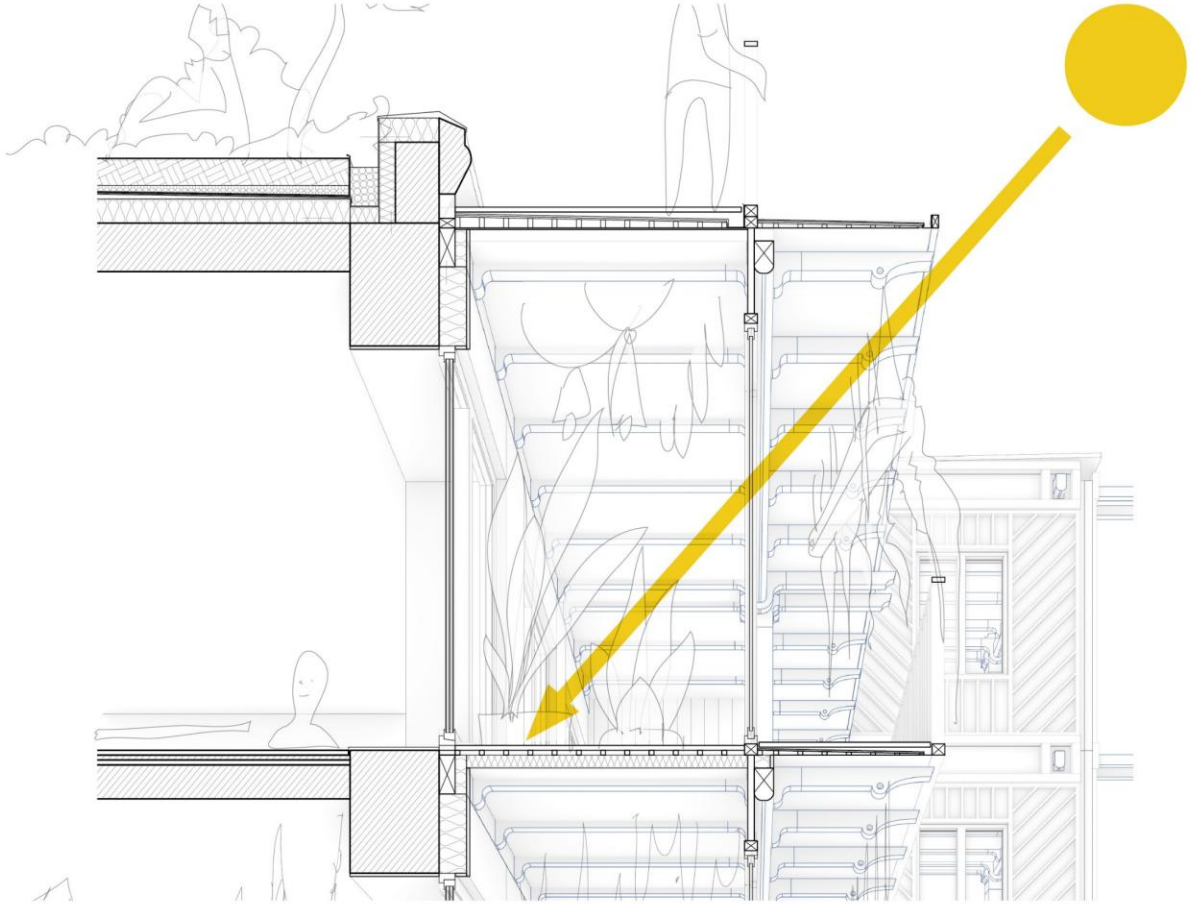
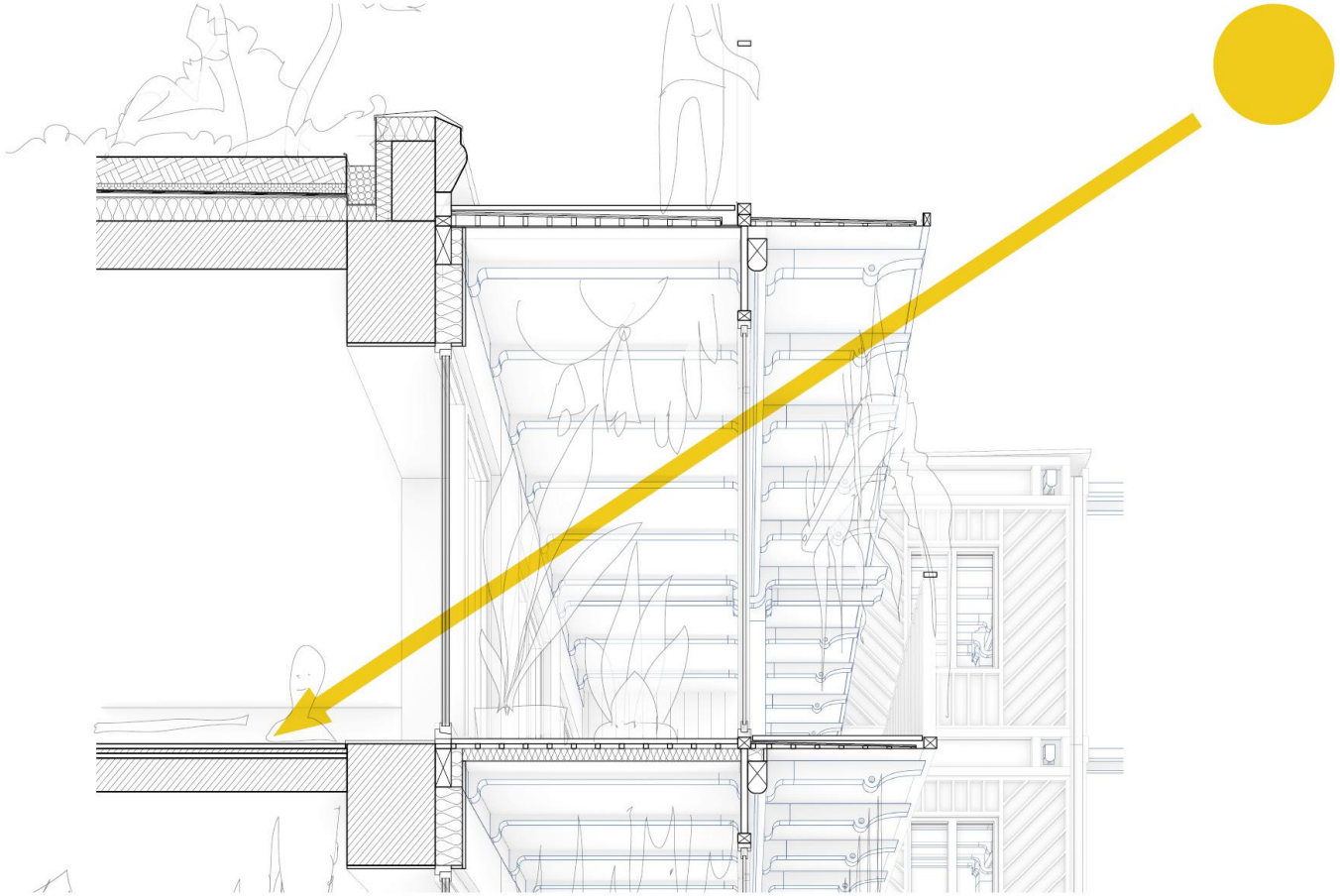
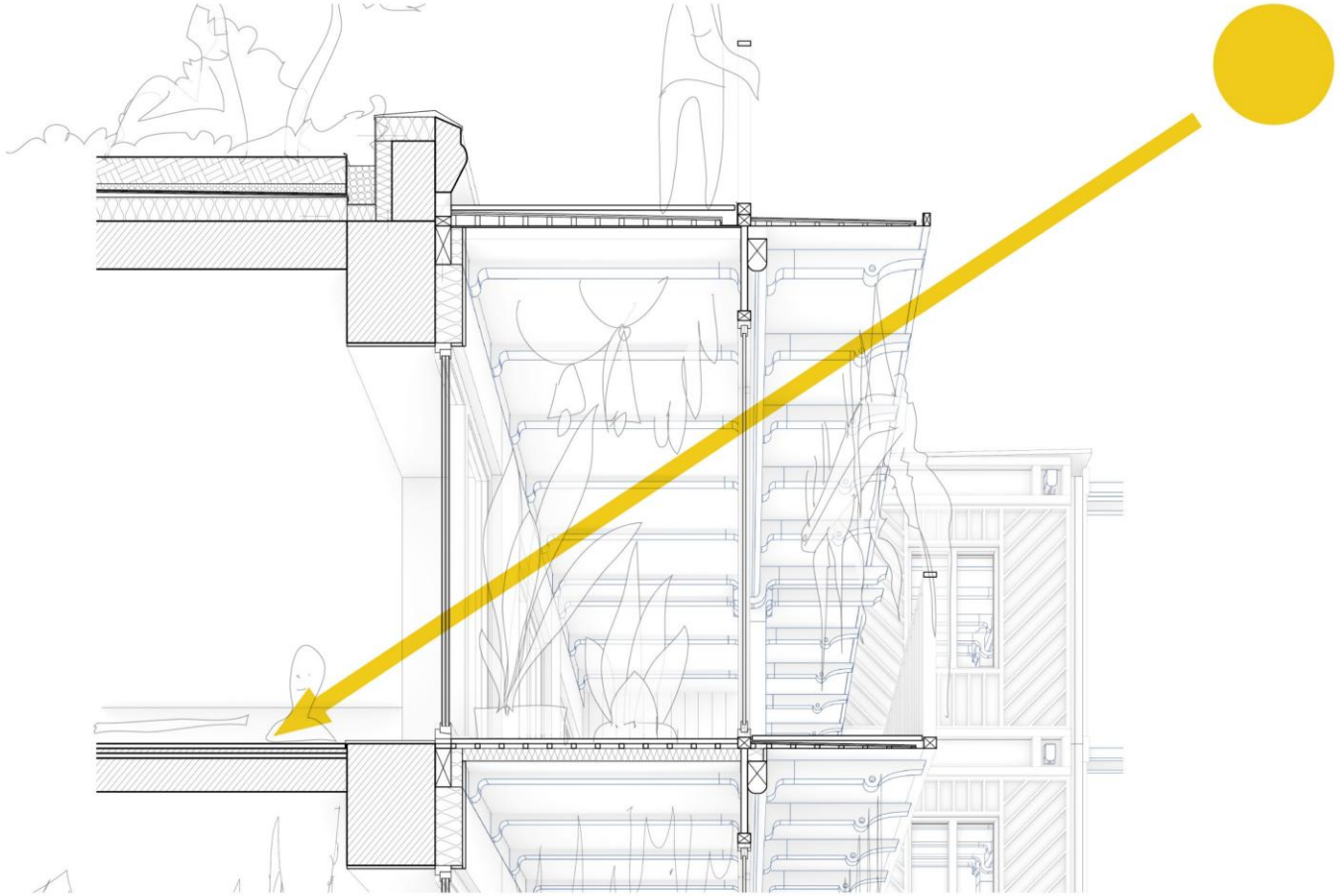
NW
NNW

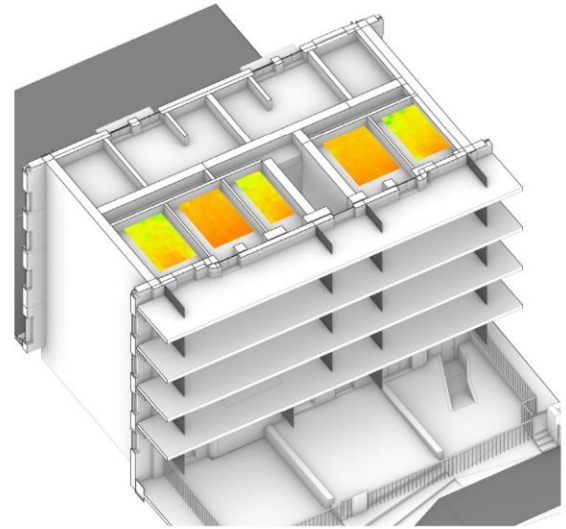


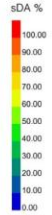
Summer



Winter





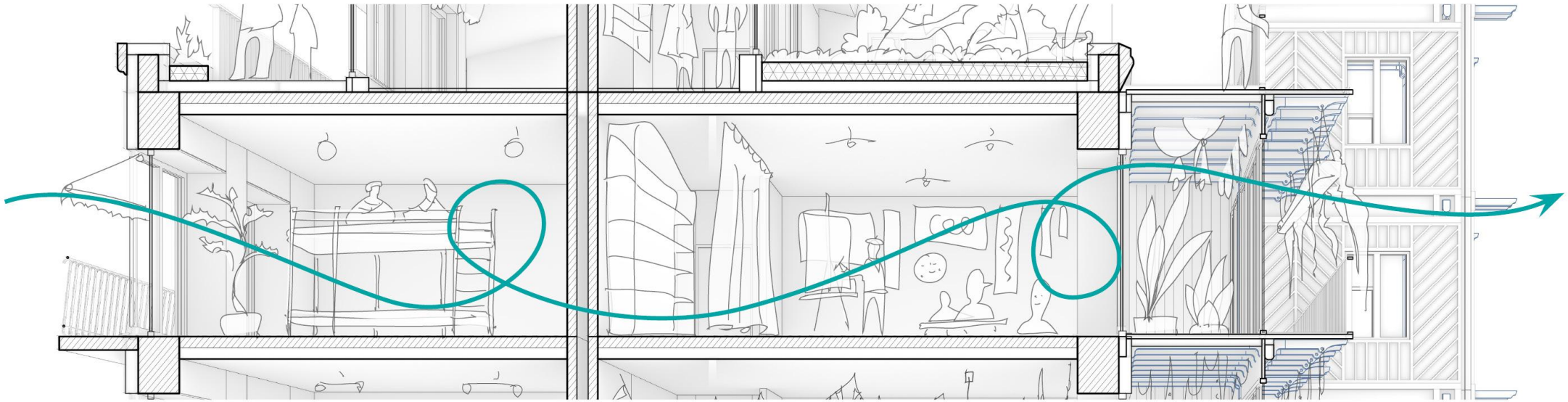


Option 1. Simulation: Spatial Daylight Autonomy (2–3 points, 1-2 points Healthcare)
Demonstrate through annual computer simulations that spatial daylight autonomy300/50% (sDA300/50%) of at least 55%, 75%, or 90% is achieved. Use regularly occupied floor area. Healthcare projects should use the perimeter area determined under EQ Credit Quality Views. Points are awarded according to Table 1.

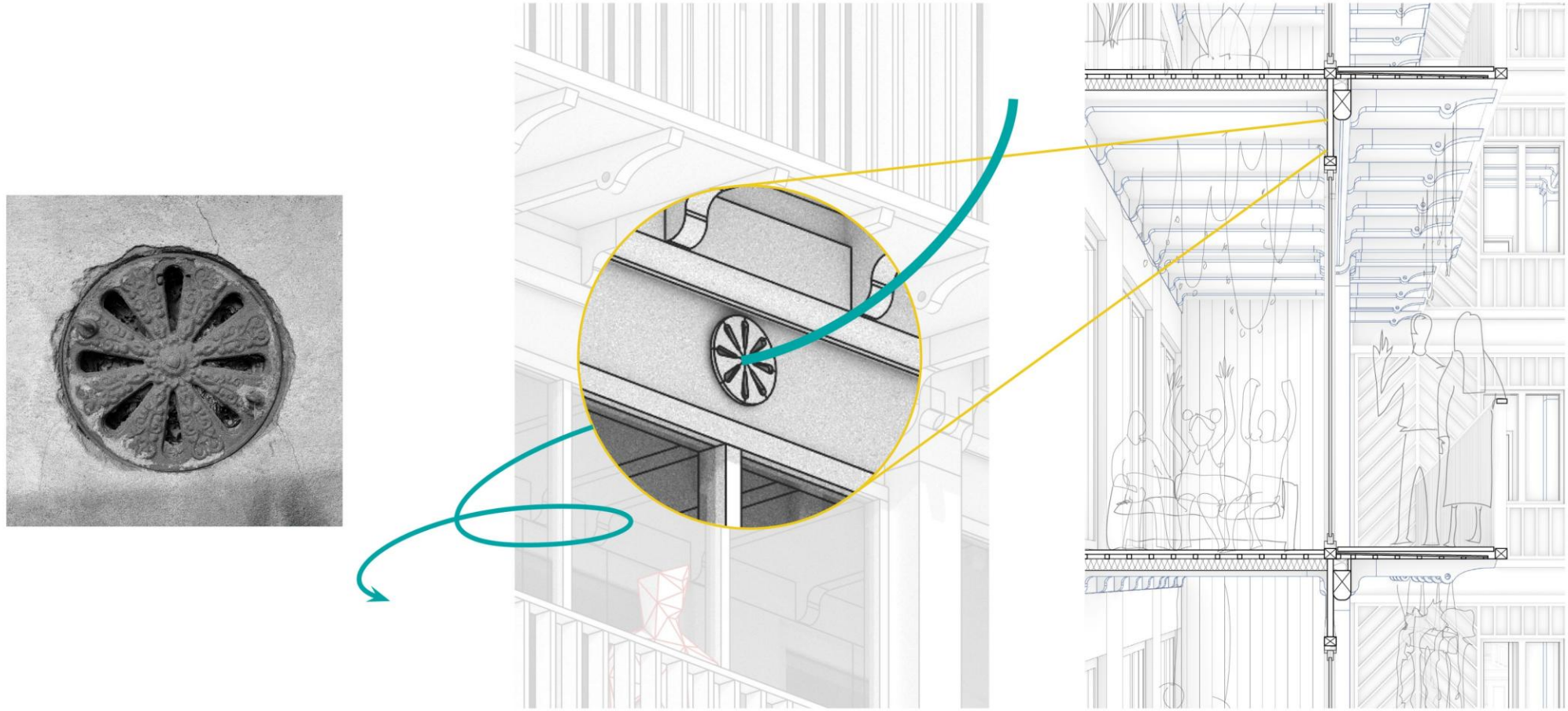
Table 1. Points for daylit floor area: Spatial daylight autonomy
New Construction, Core and Shell, Schools, Retail, Data Centers, Warehouses & Distribution Centers, CI, Hospitality
Points sDA (for regularly occupied floor area)
55% - 2
75% - 3

AND Demonstrate through annual computer simulations that annual sunlight exposure1000,250 (ASE1000,250) of no more than 10% is achieved. Use the regularly occupied floor area that is daylit per the sDA300/50% simulations. The sDA and ASE calculation grids should be no more than 2 feet (600 millimeters) square and laid out across the regularly occupied area at a work plane height of 30 inches (760 millimeters) above finished floor (unless otherwise defined). Use an hourly time-step analysis based on typical meteorological year data, or an equivalent, for the nearest available weather station. Include any permanent interior obstructions. Movable furniture and partitions may be excluded.

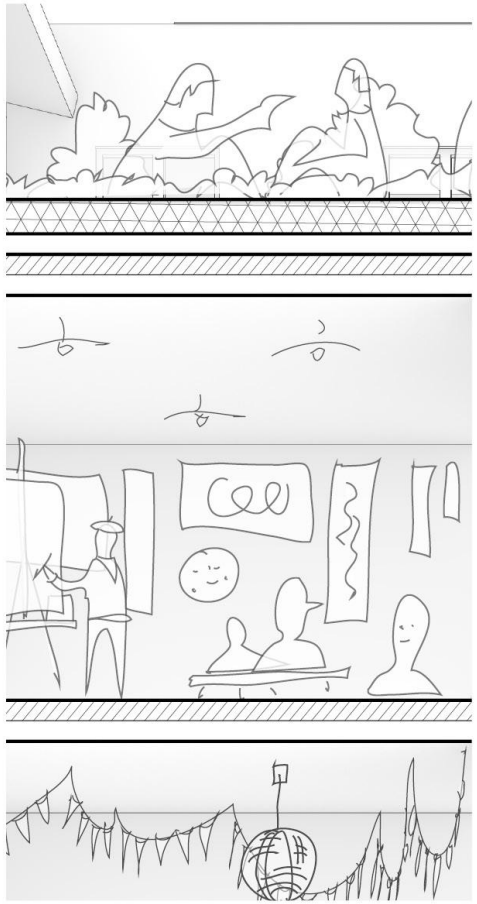
Ensuring Enough Daylight

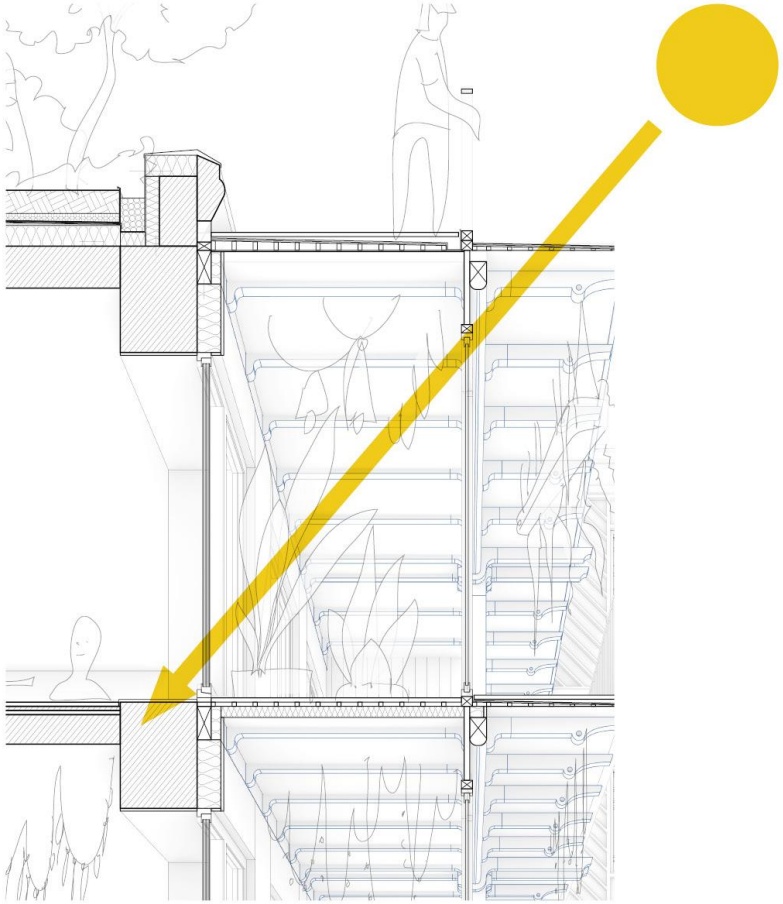


Summer Cross Ventilation

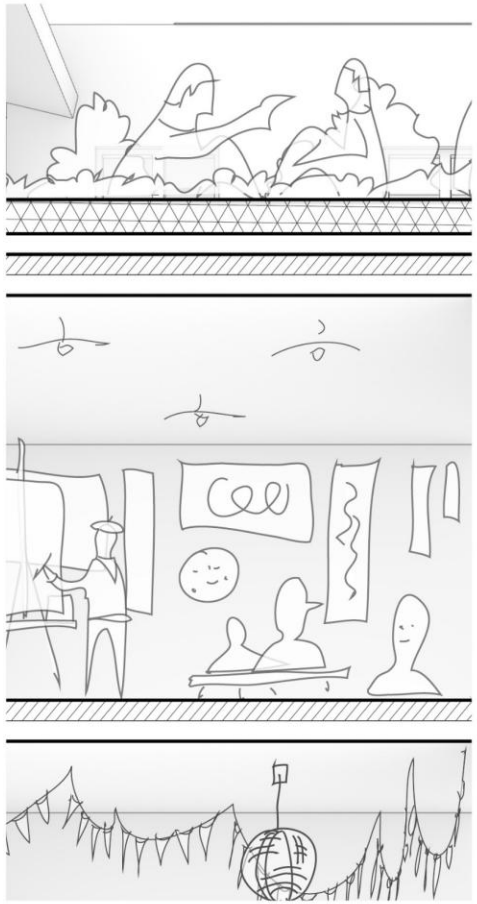


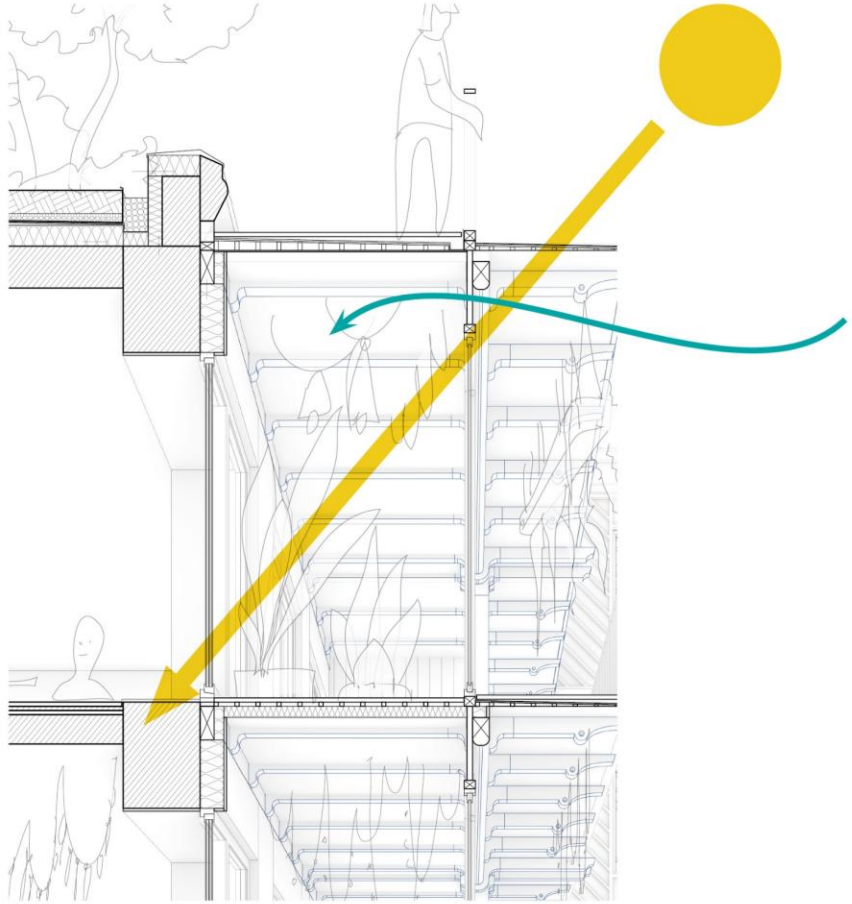
Adjustable Vents



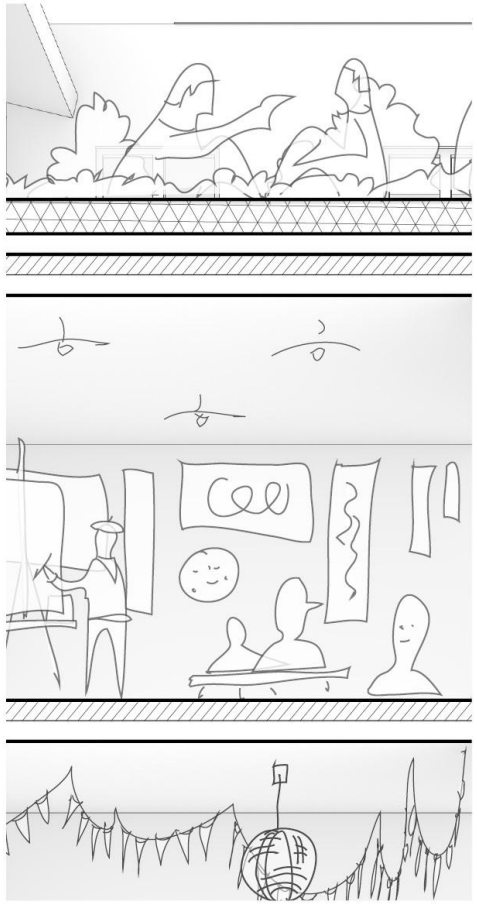


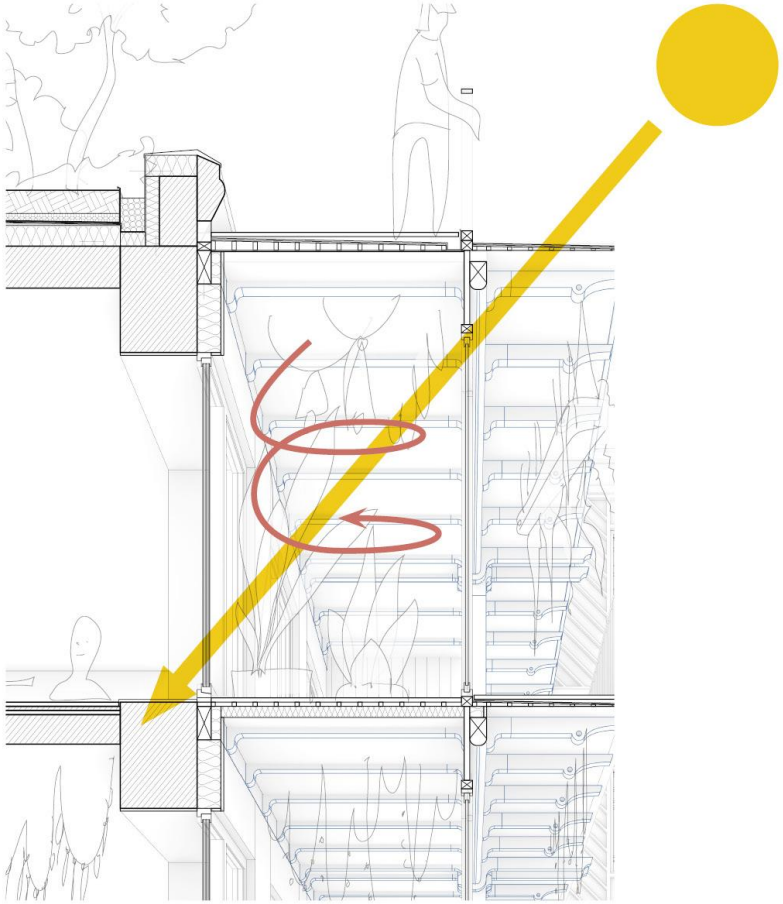
Winter Buffer



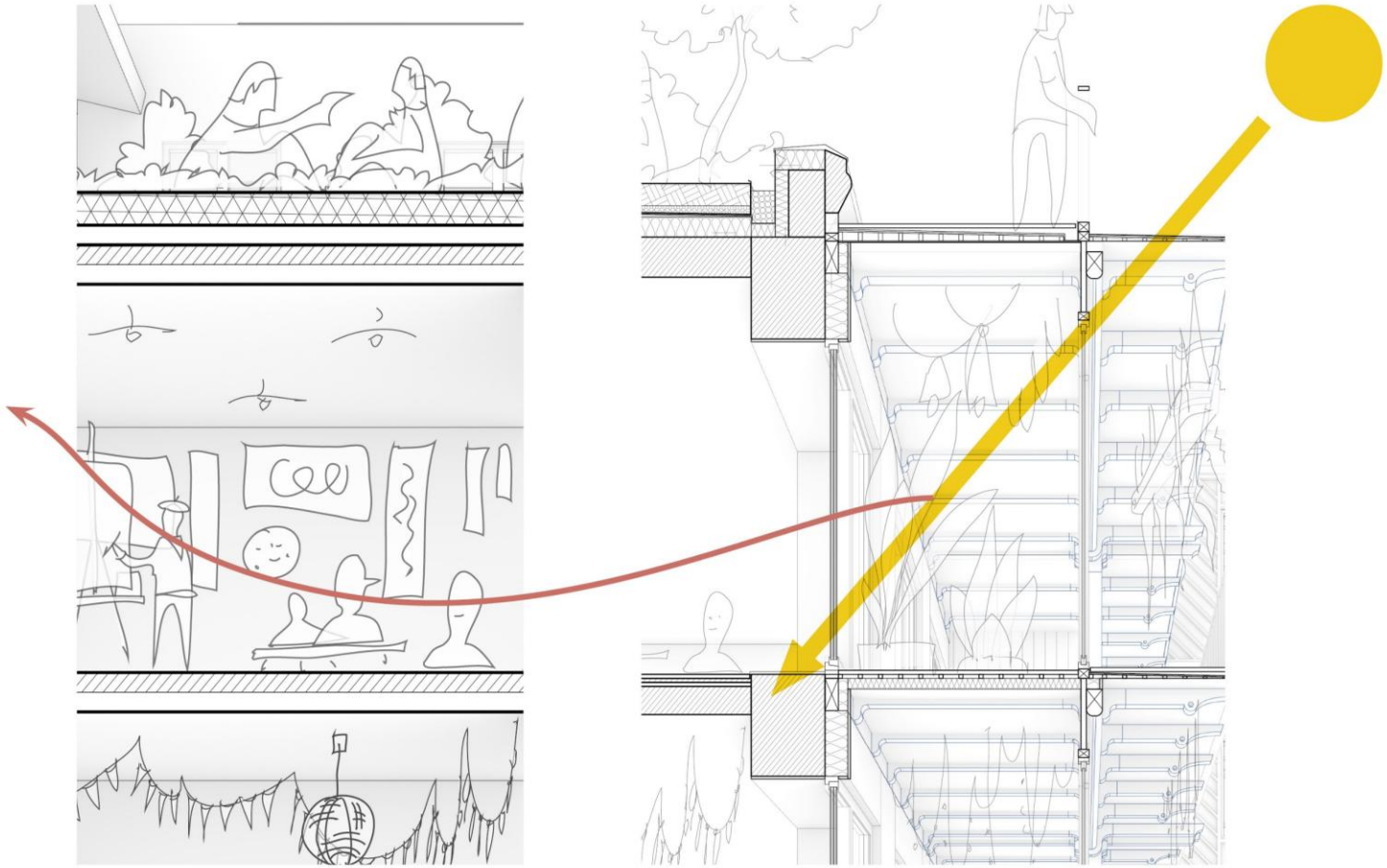


Pre-heating air

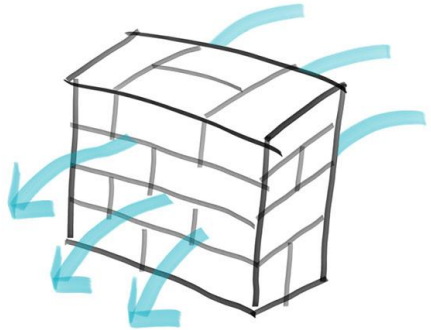


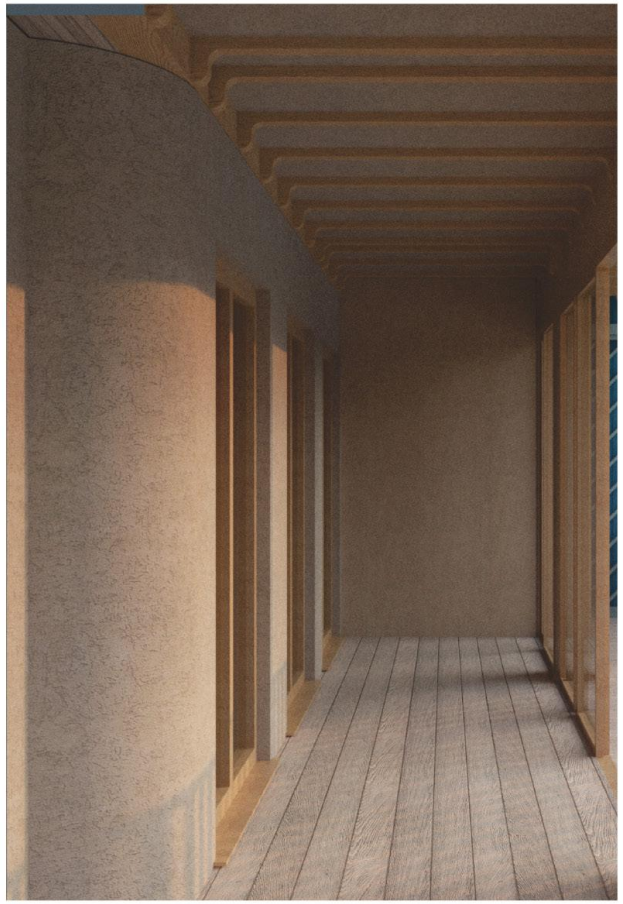


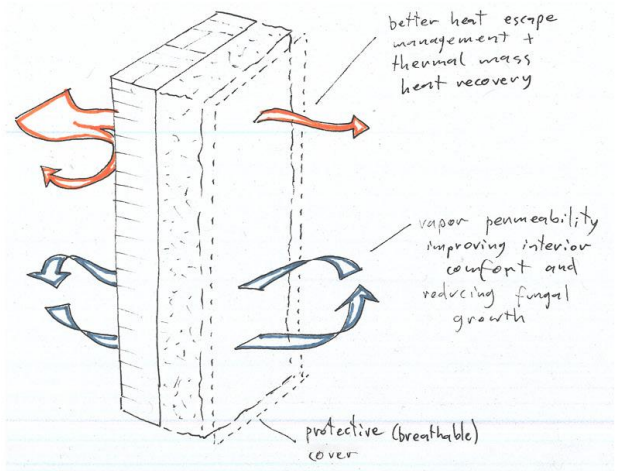
Pre-heating air



Pre-heating air



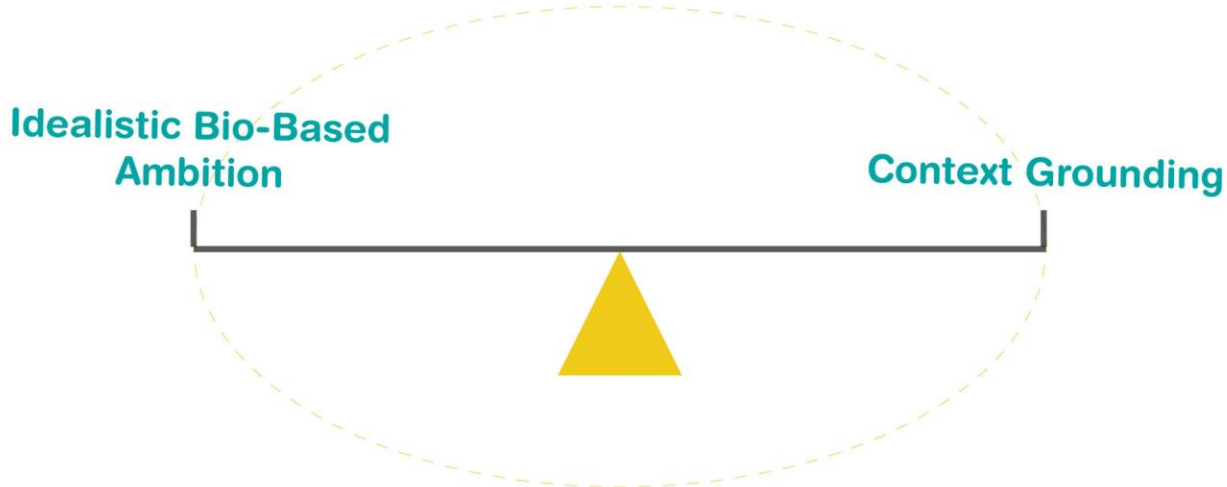


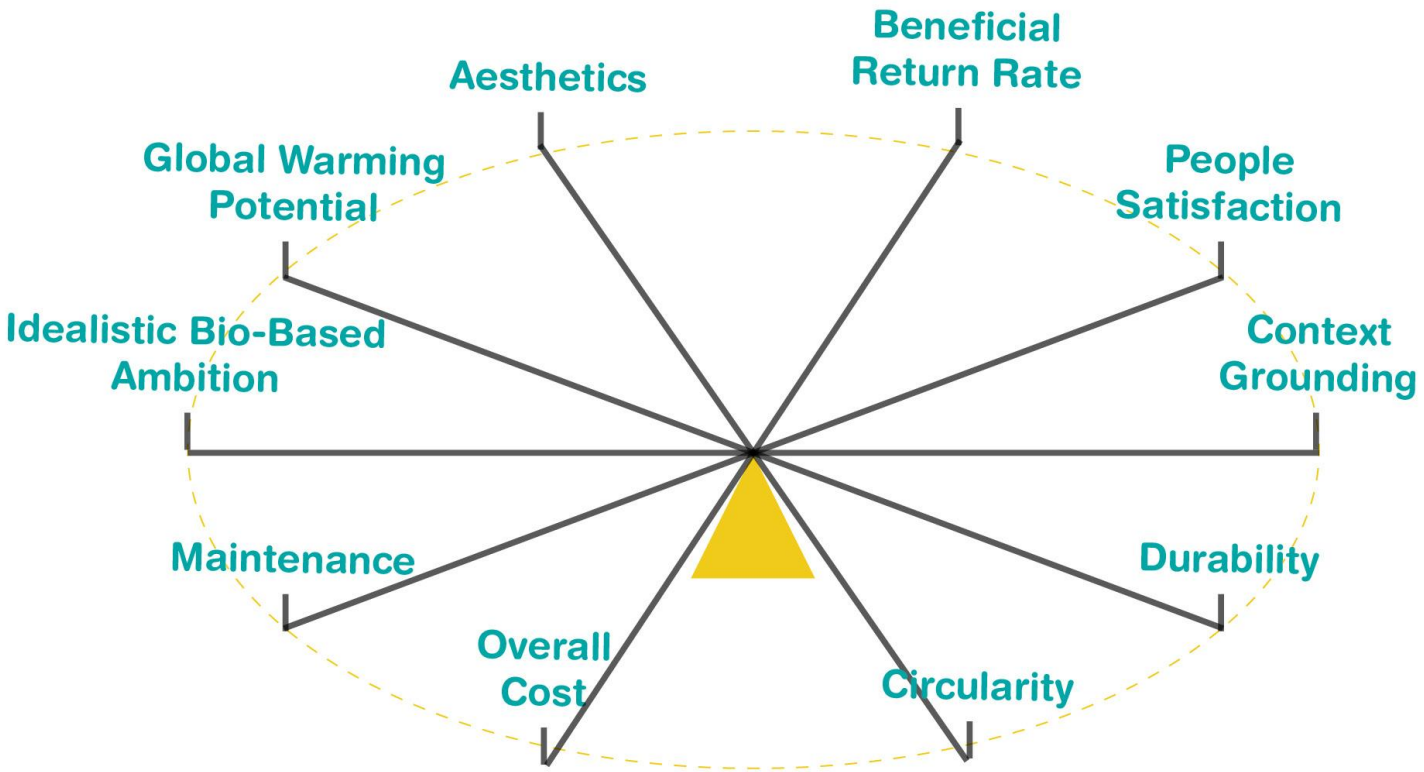


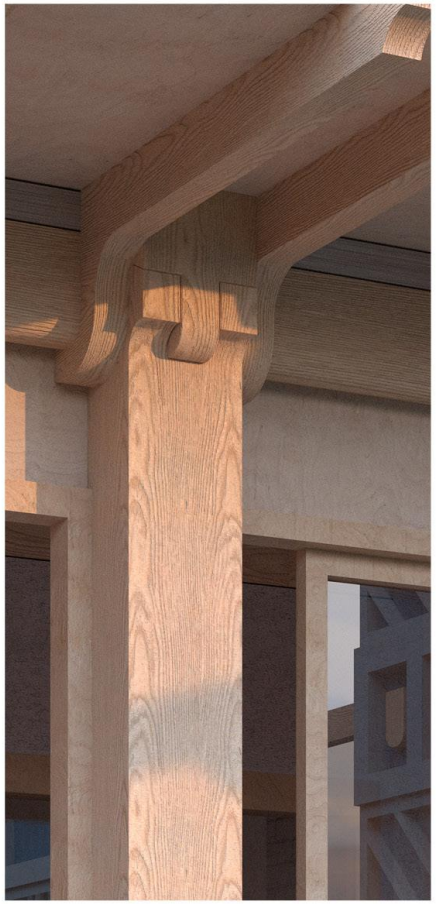
Natural Humidity Management

Bio-Based insulation materials can be bonded with masonry to form a continuous, humidity permeable barrier. That improves indoor comfort and reduces mold issues.

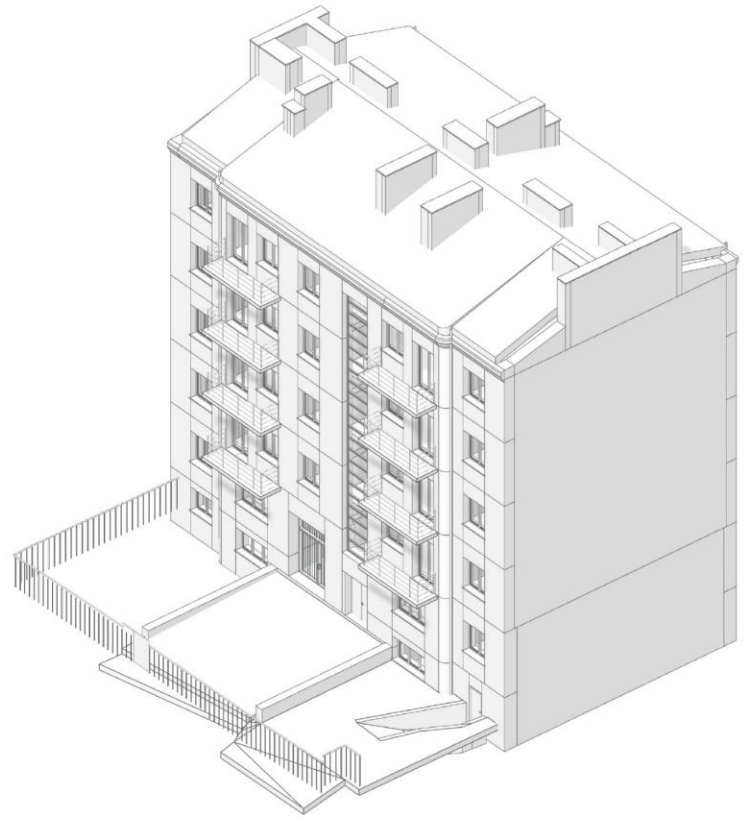

Reflections

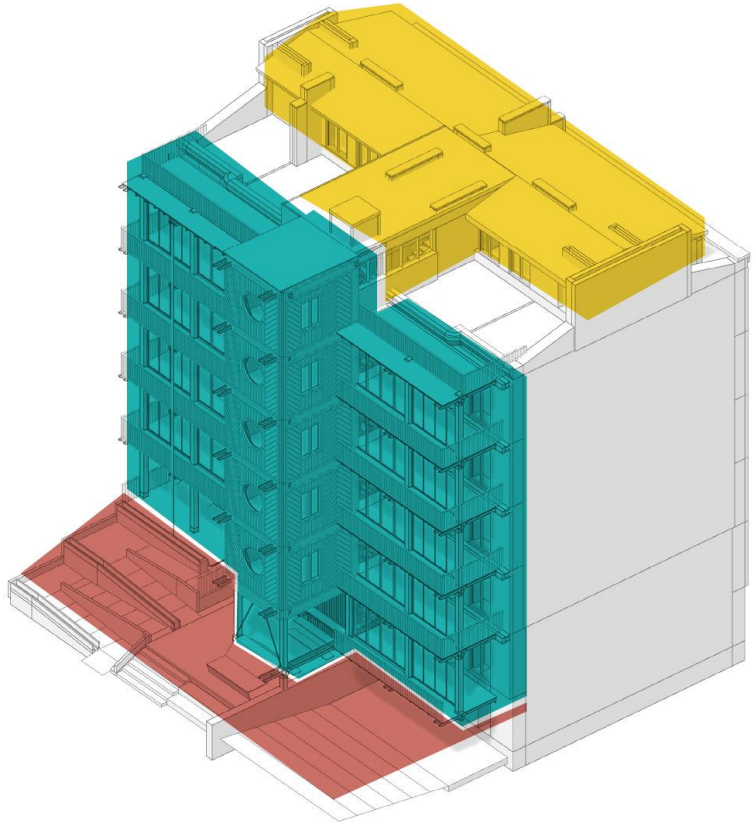

Idealistic Bio-Based
Ambition
Context Grounding

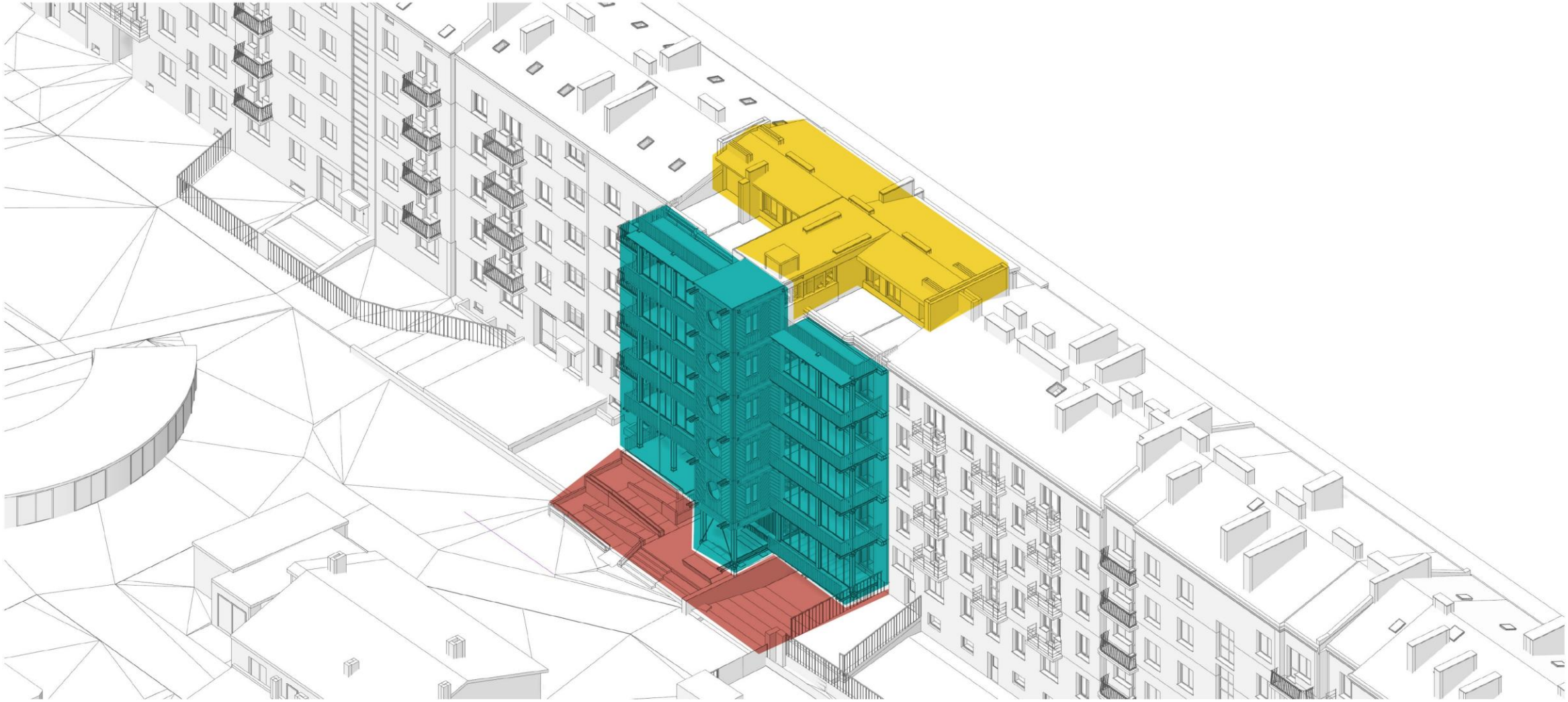

Beneficial
Return Rate
Aesthetics
Global Warming
Potential
People
Satisfaction
Idealistic Bio-Based
Ambition
Context
Grounding
Maintenance
Durability
Overall
Cost
Circularity

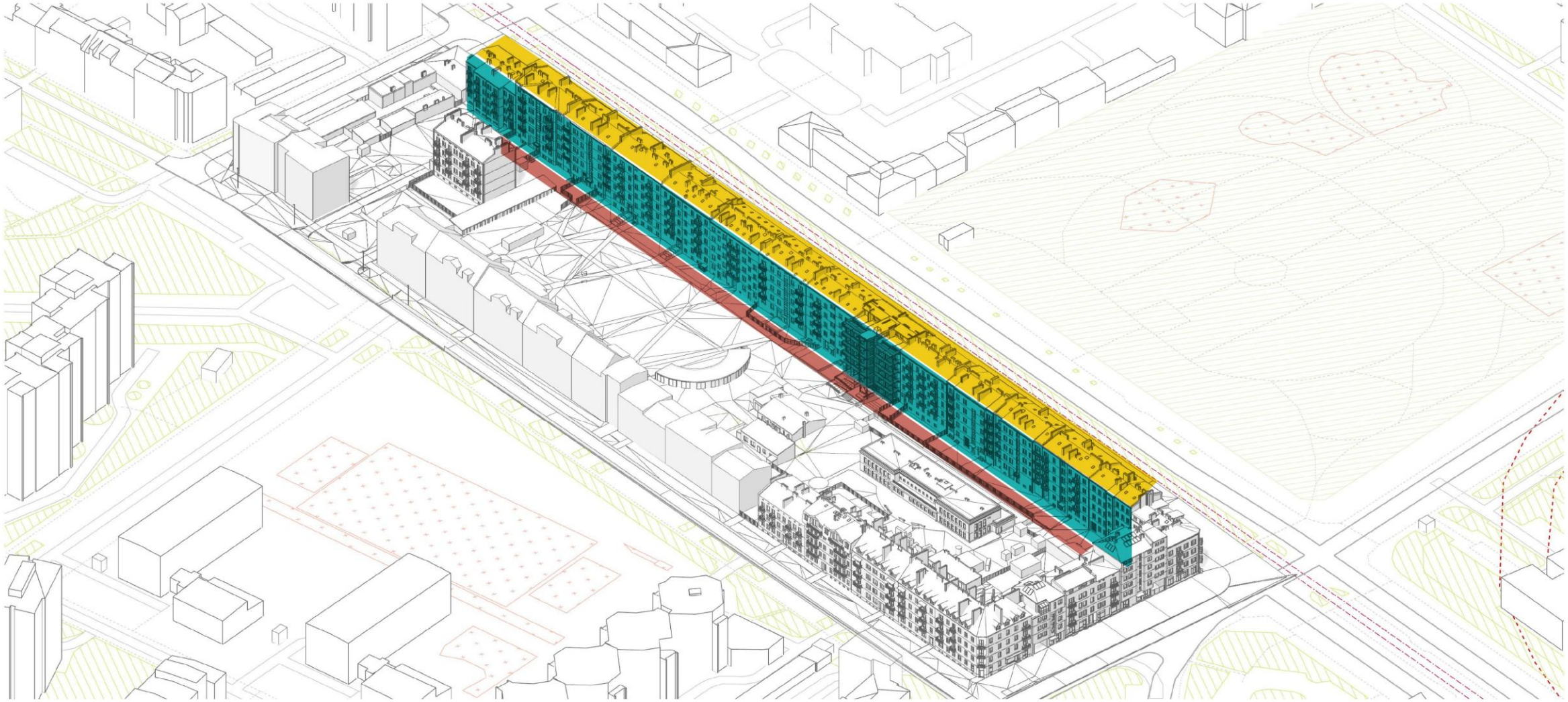


Material Decisions









Hundreds of buildings to benefit

We can start with just one

Thank You!