

"HERE WE GROW"

P5 presentation
aE graduation studio

8 november 2024



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CONTENT

1. Problem statement

2. Context

3. Research & design

4. Urban design

5. Building design

I. PROBLEM STATEMENT

urbanization



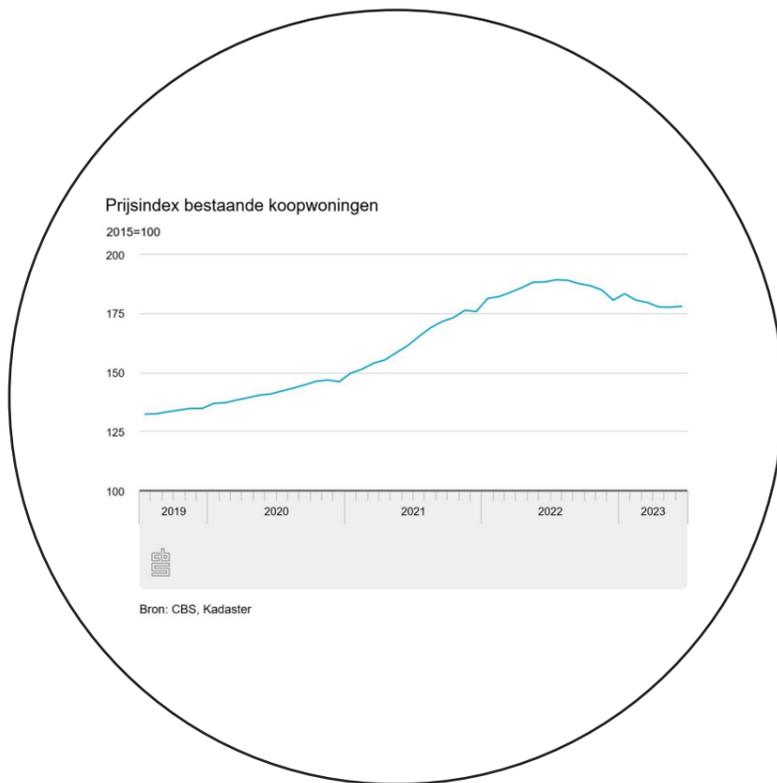
food quality and resilience



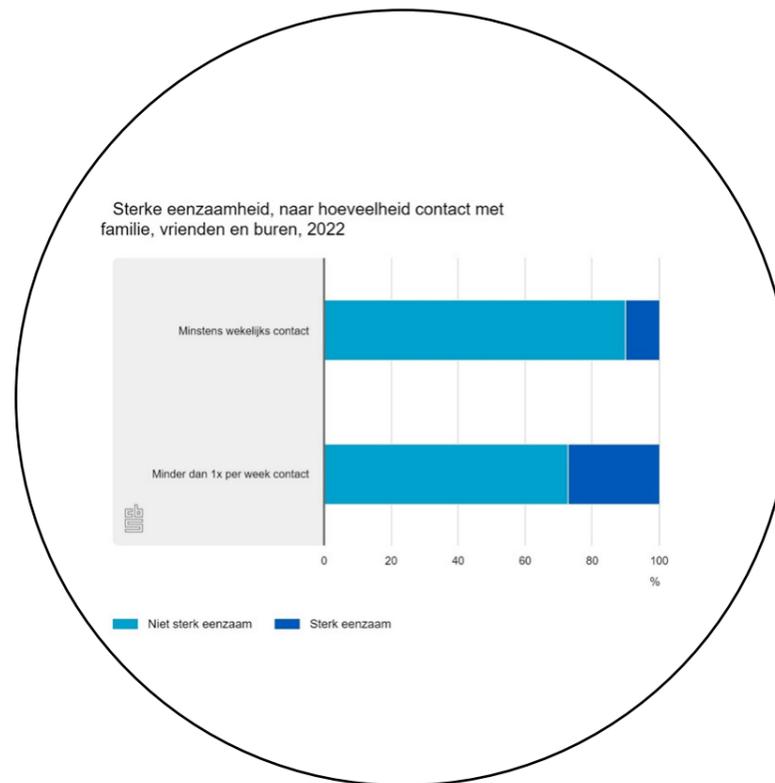
quality of the built environment

URBANISATION

Housing prices



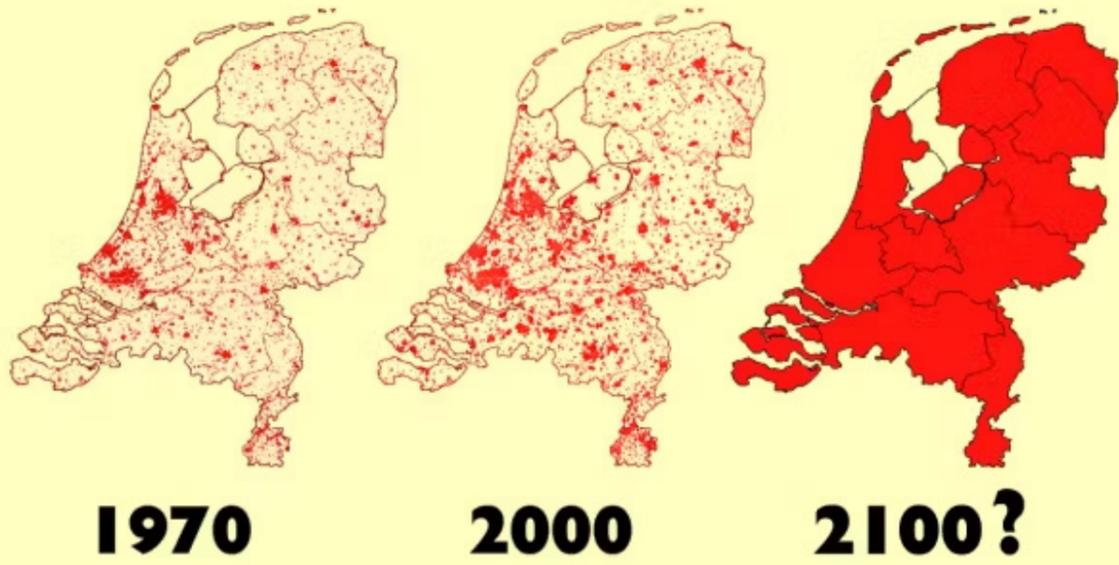
Loneliness



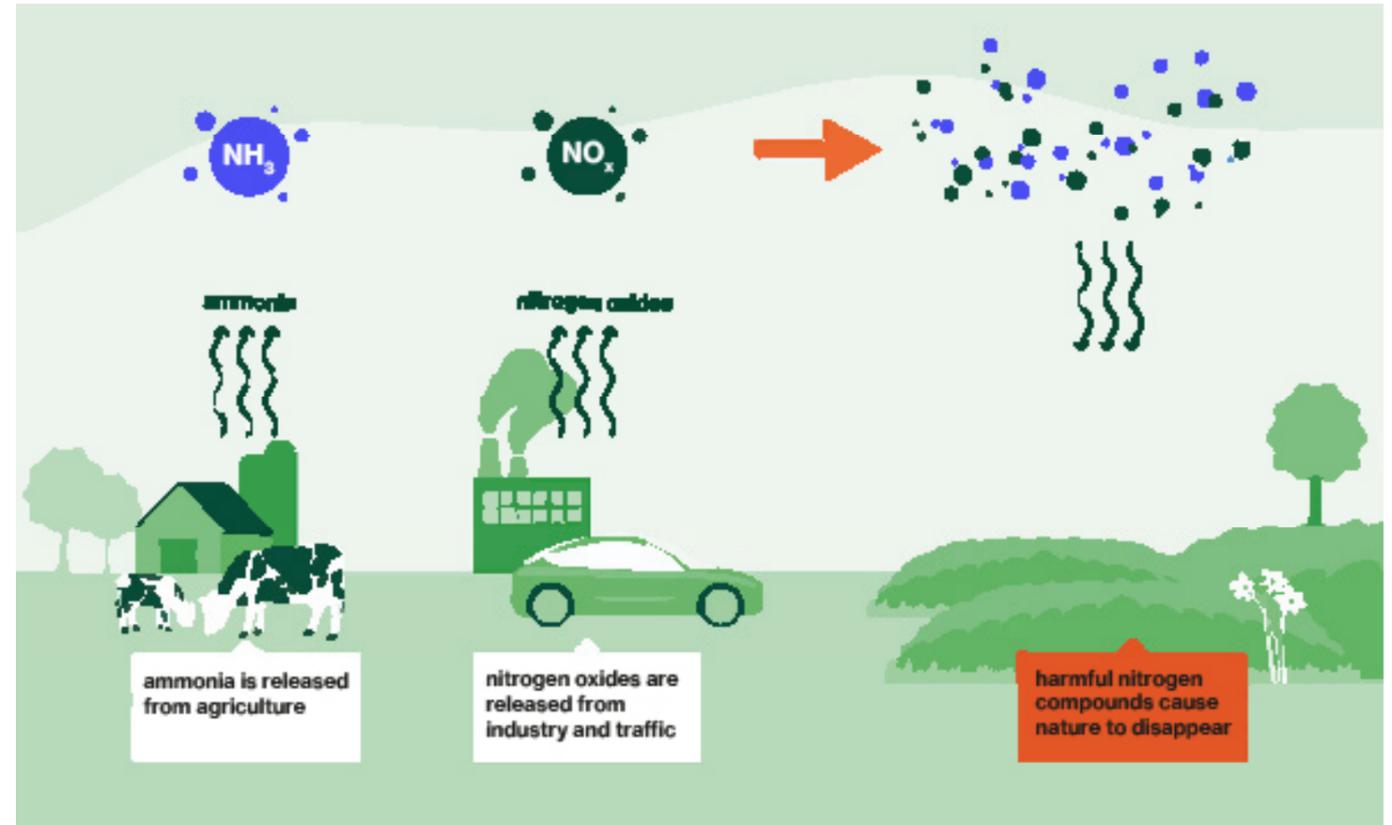
Green in cities



De verstedelijking van Nederland



Zwaga (2014)

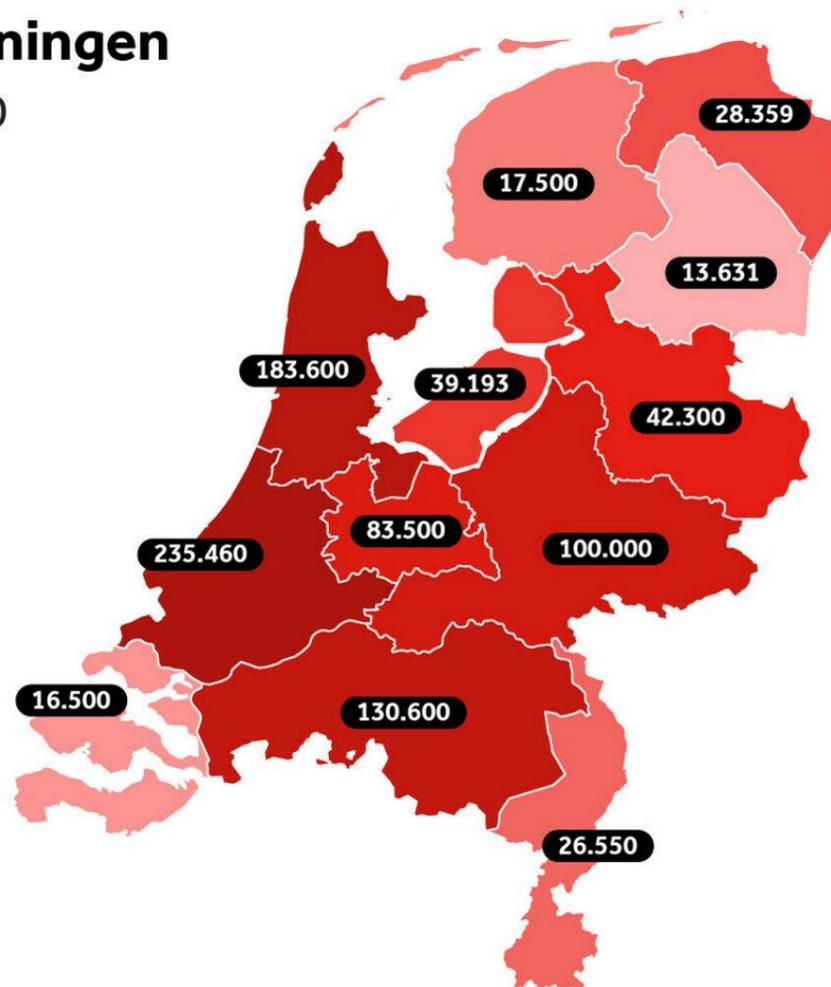


CBS (2022)

Aantal nieuwe woningen per provincie t/m 2030

per provincie t/m 2030

Drenthe	13.631
Zeeland	16.500
Friesland	17.500
Limburg	26.550
Groningen	28.359
Flevoland	39.193
Overijssel	42.300
Utrecht	83.500
Gelderland	100.000
Noord-Brabant	130.600
Noord-Holland	183.600
Zuid-Holland	235.460
totaal	917.193



NOS (2022)

Personal finance

Groeiende kloof tussen huizenprijs Randstad en provincie

12 augustus 2019 11:37 • Aangepast 12 augustus 2019 11:59



f Zoek je een koopwoning, maar wil je niet de hoofdprijs betalen? Kijk dan in de provincie. Het prijsverschil tussen huizen in de provincie en huizen in de Randstad loopt steeds verder op.

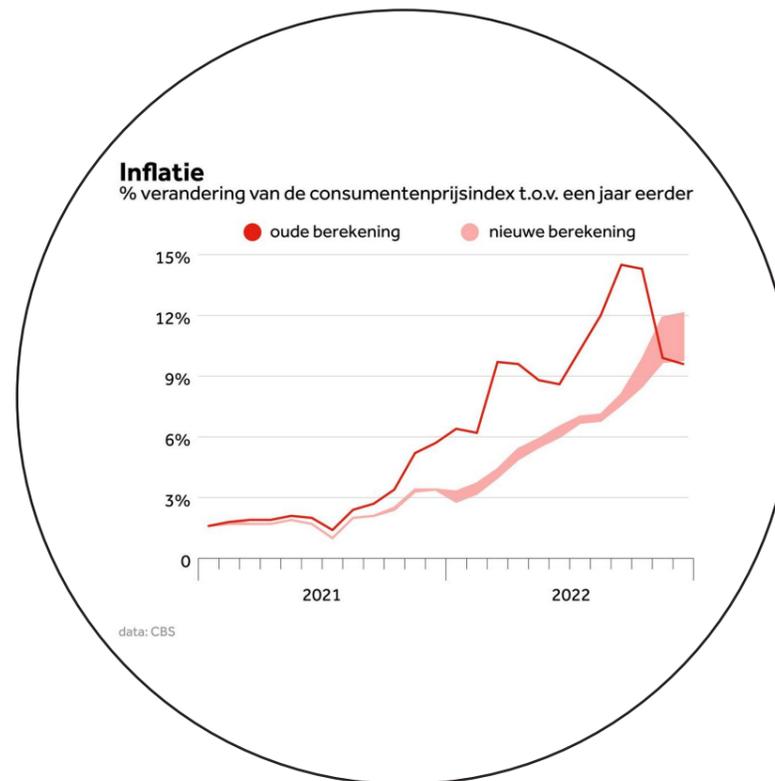
RTL Nieuws (2019)

FOOD QUALITY & RESILIENCE

Processed foods



Pricing of food



Resilience





NOS Nieuws • Donderdag 2 maart 2023, 06:42 •
Aangepast donderdag 2 maart 2023, 11:23



Inflatie stijgt weer; 'Einde aan hogere voedselprijzen pas in de zomer'

De inflatie loopt voor het eerst in maanden weer op. In februari steeg de inflatie van 7,6 naar 8,0 procent. Het is vooral eten en drinken dat nog duurder werd.

In het najaar piekte de inflatie op meer dan 14 procent. Vervolgens liep de inflatie terug, maar daar is nu een eind aan gekomen. Ook in verschillende andere Europese landen liep de inflatie de afgelopen maand op.

NOS (2023)

Lage inkomens het meest de dupe van stijgende voedselprijzen, hoogleraar is bang dat zij ongezonder gaan eten

03-10-2022 18:02 | Geld en werk | Auteur: Casper de Gelder



Gezonde keuzes maken in de supermarkt zal lastiger worden

Bron: ANP

Gerelateerde c



De nog steeds stijgende prijzen in de supermarkt hebben potentieel grote gevolgen voor de volksgezondheid, denkt hoogleraar Jaap Seidell. "Meer mensen zullen naar ongezond voedsel gaan grijpen."



Seidell is hoogleraar Voeding en Gezondheid aan de Vrije Universiteit en maakt zich vooral zorgen om mensen die al een laag inkomen hebben.

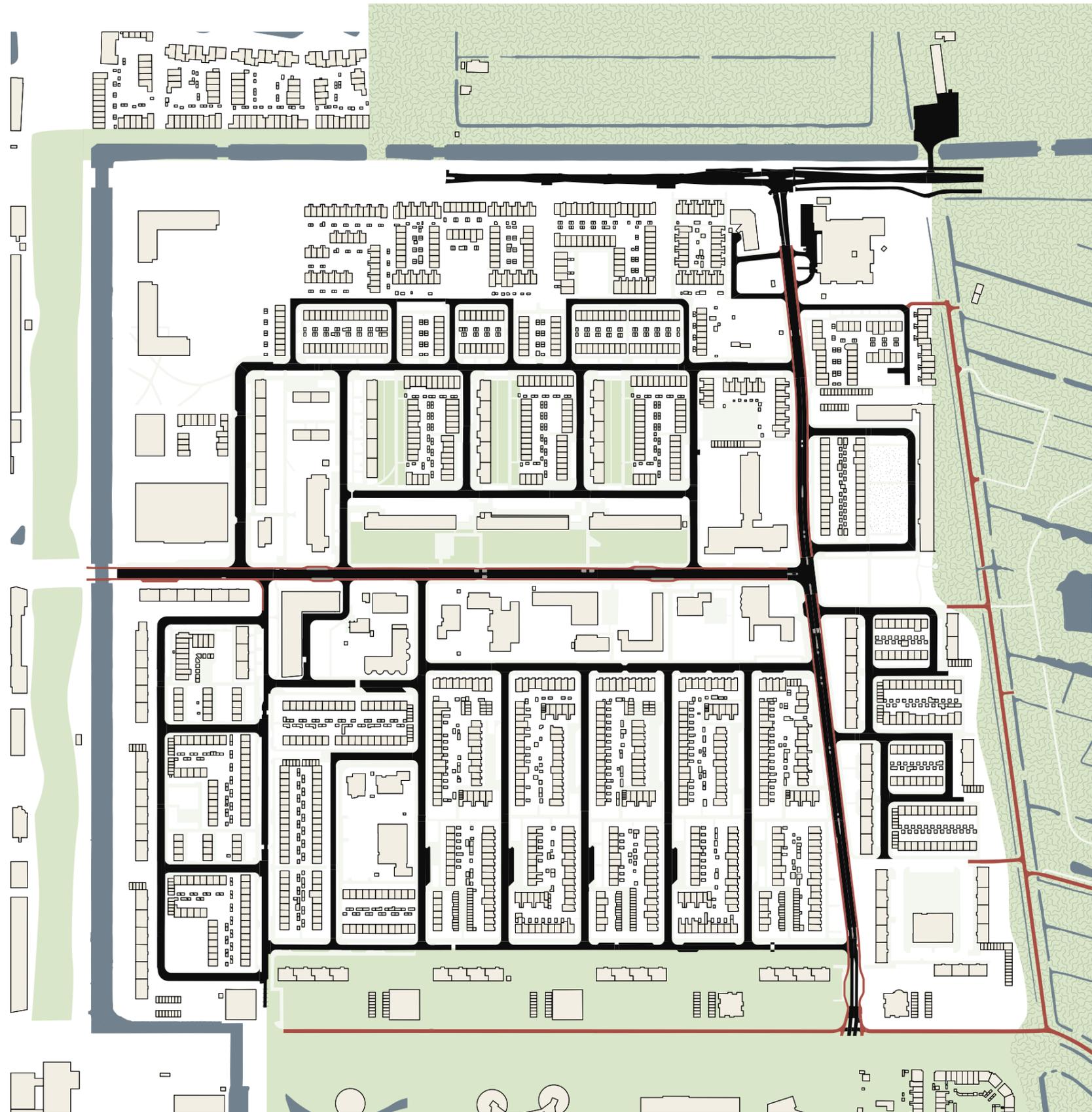
EenVandaag (2023)

QUALITY OF THE BUILT ENVIRONMENT



2. CONTEXT

BOERHAAVE, HAARLEM



SOME NUMBERS

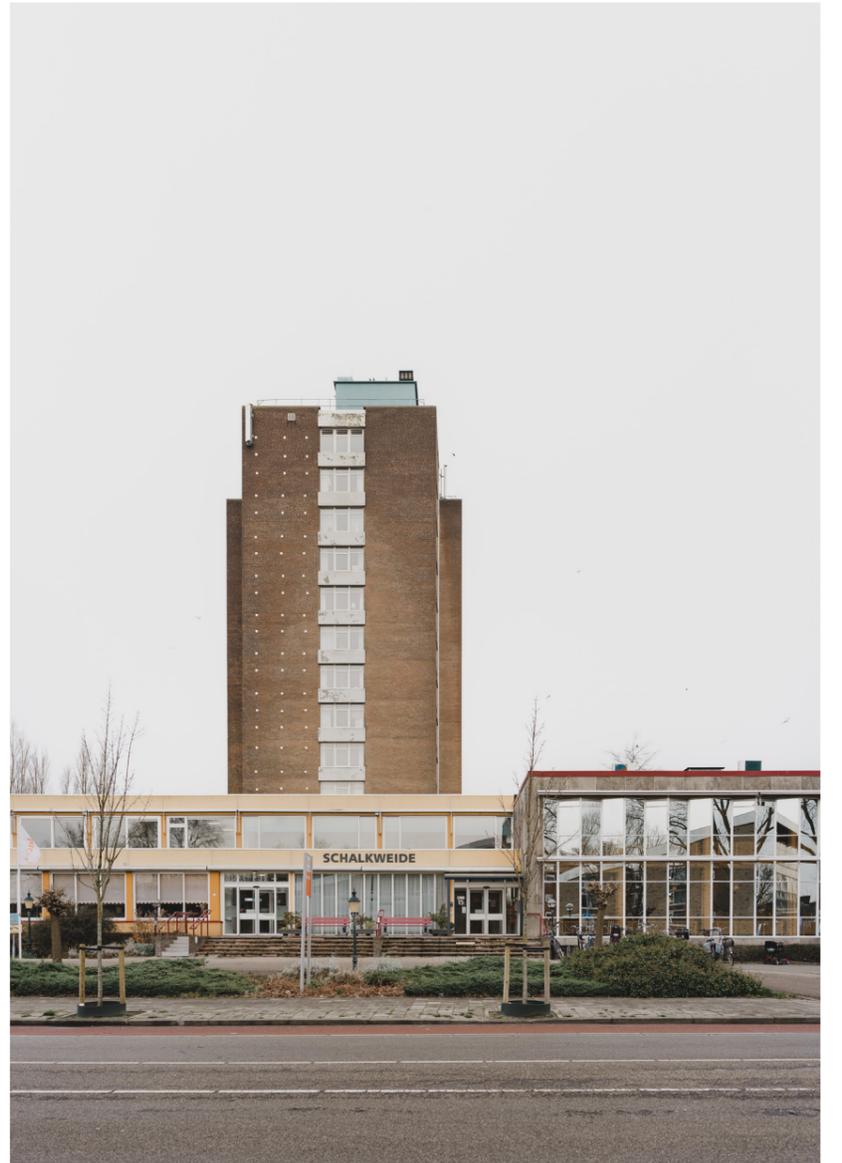
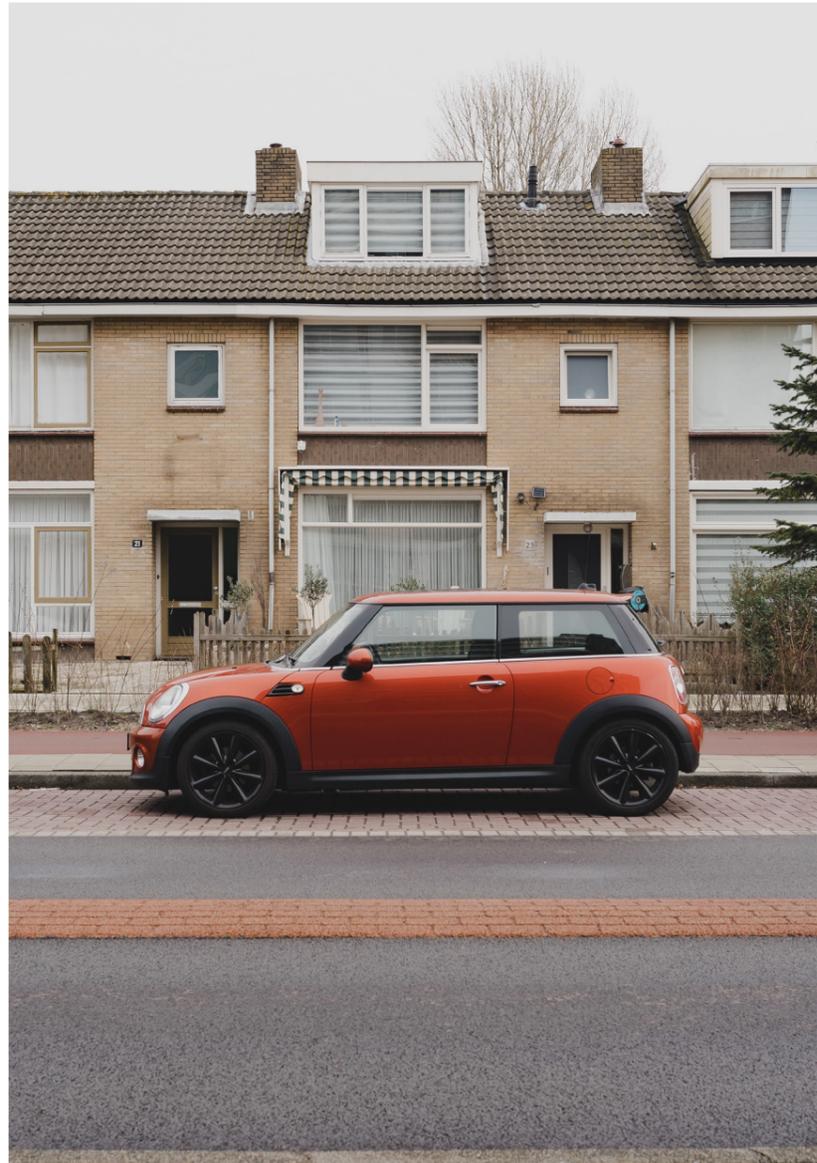
53% of residents aged 18 to 65 in the Boerhaavewijk neighborhood have a moderate or high risk of anxiety or depression.

55% of residents aged 65 or older in the Boerhaavewijk neighborhood feel lonely.

61% of residents aged 65 or older in the Boerhaavewijk neighborhood are overweight.

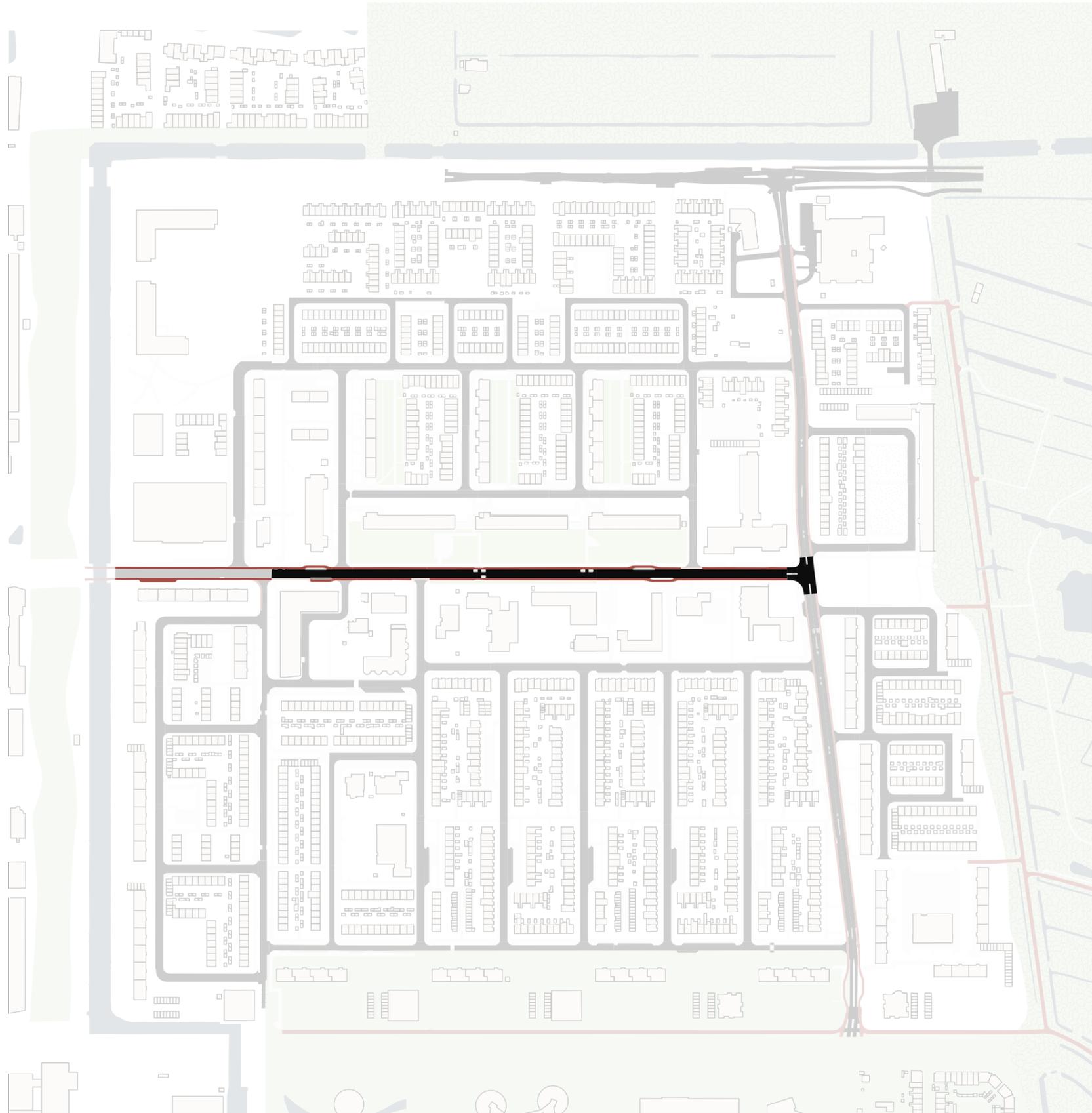
TRANSITIONS BETWEEN DIFFERENT URBAN SCALES







MAIN ROAD: BARRIER





MONO-FUNCTIONAL PUBLIC AREA











3. RESEARCH & DESIGN

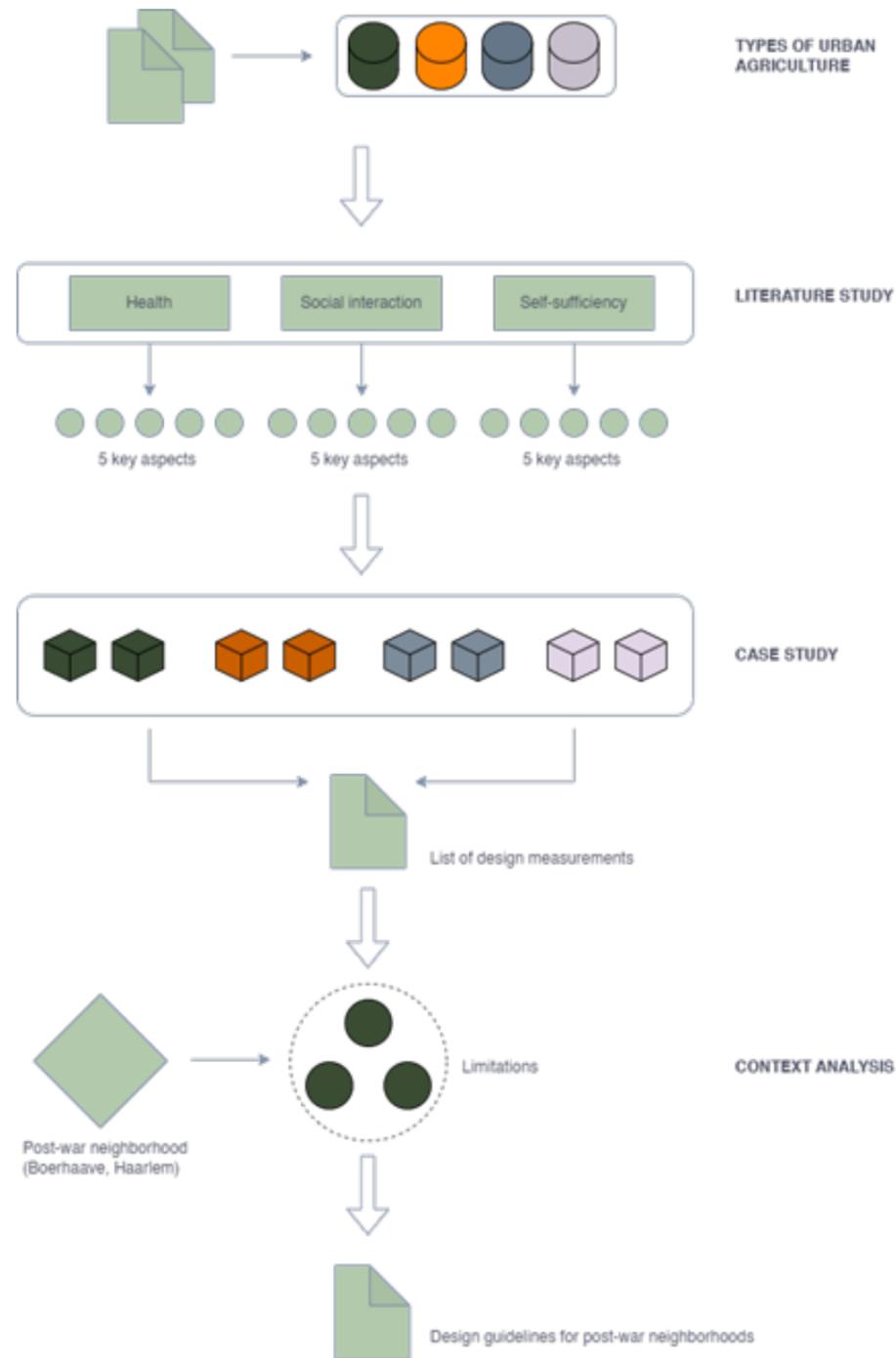
Overall design question:

“How can we design a new mixed-use building that integrates the existing public functions of Boerhaave with urban agriculture in order to create a healthier, social and self-sufficient neighbourhood?”

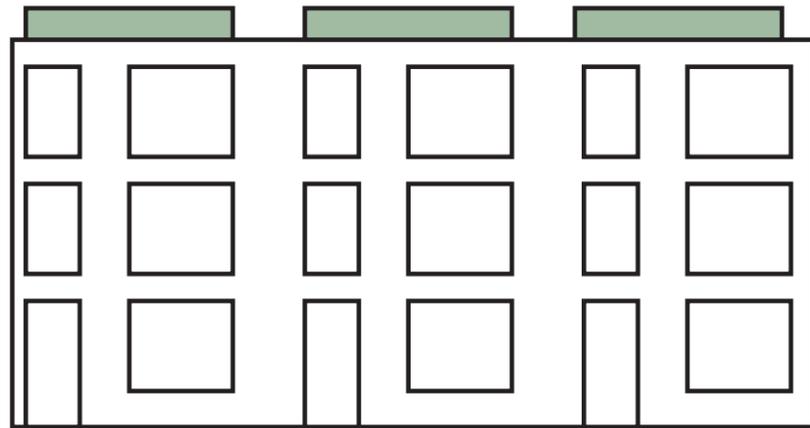
Thematic research question:

“How can the implementation of urban agriculture in post-war neighbourhoods foster self-sufficiency, improve physical and mental health, and promote community engagement?”

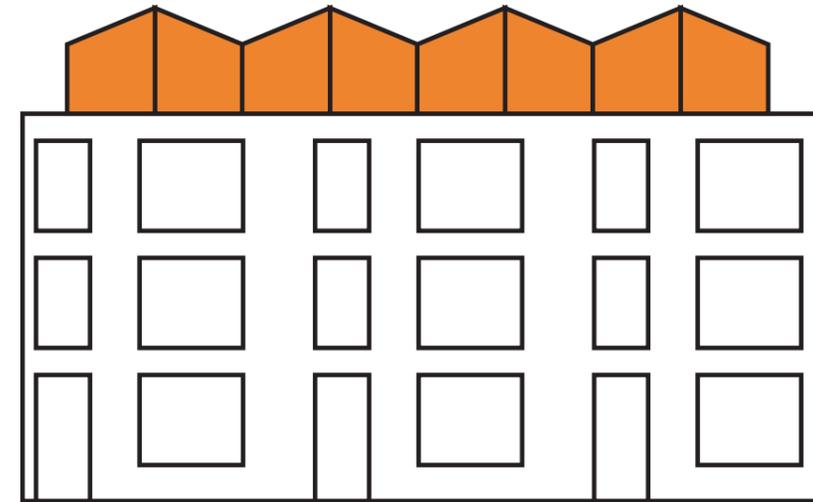
METHODOLOGY



CATEGORIZATION



unconditioned + building integrated



conditioned + building integrated

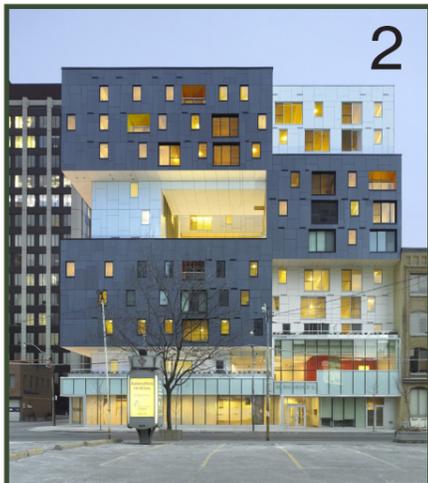
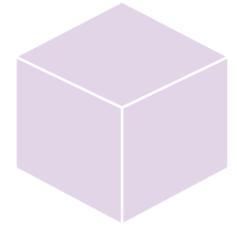
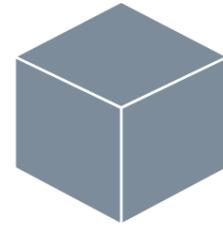
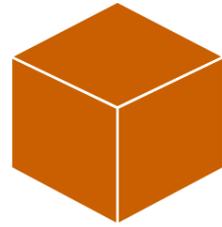
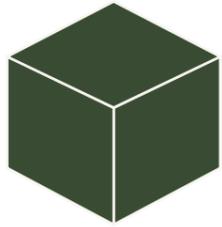


unconditioned + not integrated



conditioned + not integrated

CASE STUDIES



ASSESSMENT CHART

VIA VERDE



HEALTH

GREEN ENVIRONMENT	+
STIMULATING PHYSICAL ACTIVITY	++
STIMULATING FRUIT & VEGETABLE INTAKE	+
STRESS REDUCTION	+
SOCIAL ENVIRONMENT	+

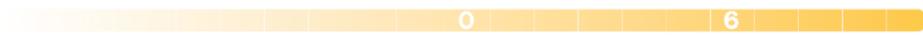


OVERALL SCORE



SOCIAL INTERACTION

SOCIAL RELATIONS	++
COMMUNITY EMPOWERMENT	N.D.
BRIDGING CULTURES	++
COLLECTIVE GARDENING	+
LEARNING FROM EACH OTHER	+



OVERALL SCORE



SELF-SUFFICIENCY

SELF EMPLOYMENT & EDUCATION	++
FOOD SECURITY	+/-
PROFIT FROM SALES	+/-
PROPER NUTRIENT MANAGEMENT	+
FUNDING	-



OVERALL SCORE

60 RICHMOND HOUSING



HEALTH

GREEN ENVIRONMENT	+
STIMULATING PHYSICAL ACTIVITY	+/-
STIMULATING FRUIT & VEGETABLE INTAKE	++
STRESS REDUCTION	+/-
SOCIAL ENVIRONMENT	++

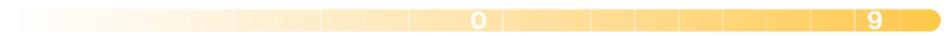


OVERALL SCORE



SOCIAL INTERACTION

SOCIAL RELATIONS	++
COMMUNITY EMPOWERMENT	++
BRIDGING CULTURES	+
COLLECTIVE GARDENING	++
LEARNING FROM EACH OTHER	++



OVERALL SCORE



SELF-SUFFICIENCY

SELF EMPLOYMENT & EDUCATION	++
FOOD SECURITY	-
PROFIT FROM SALES	++
PROPER NUTRIENT MANAGEMENT	+
FUNDING	-



OVERALL SCORE

MOST IMPORTANT RESEARCH FINDINGS

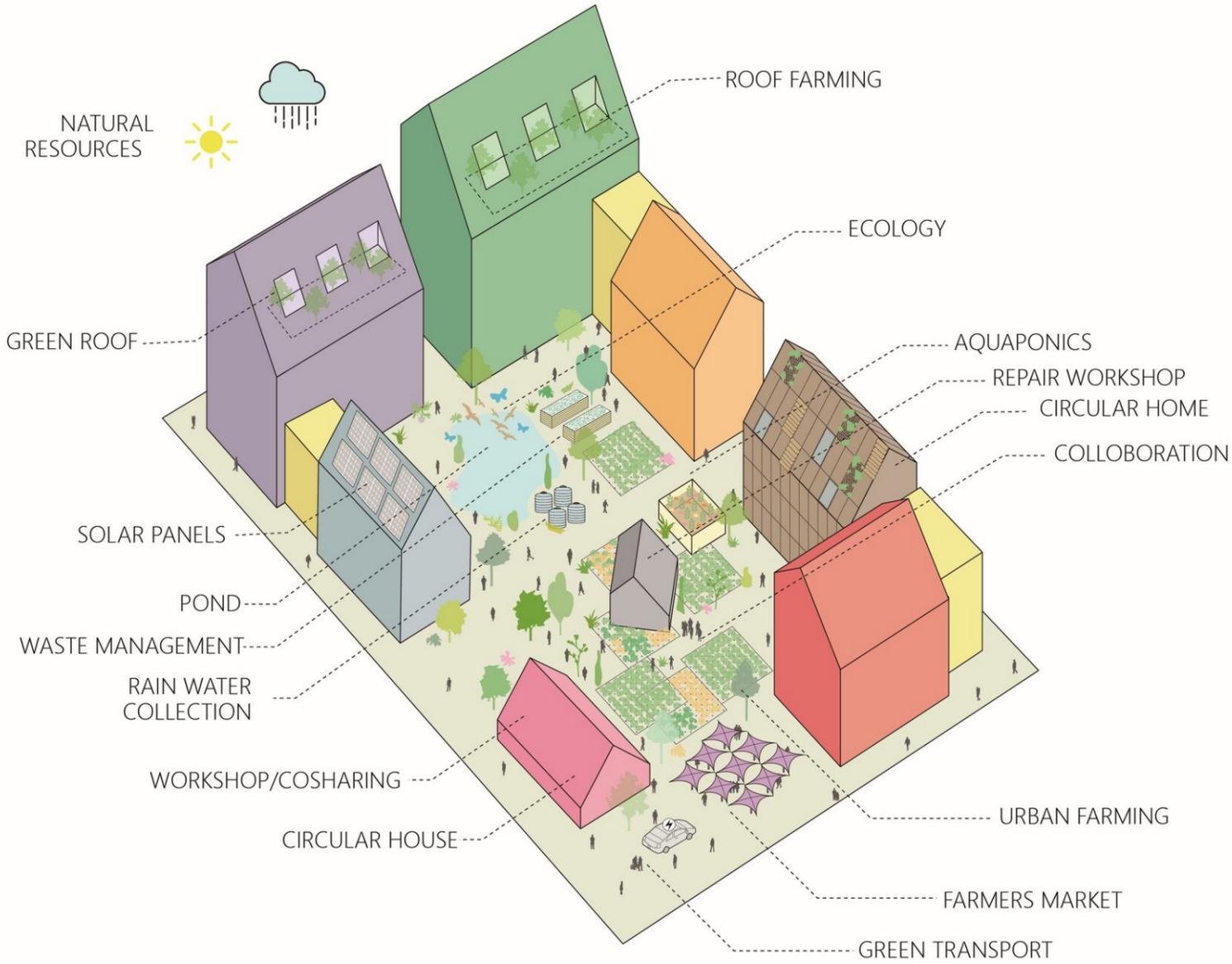
1. Stimulating physical activity by implementing **unconditioned systems** that **require labour**.



2. Improving mental health by designing a **nature-like, green environment.**



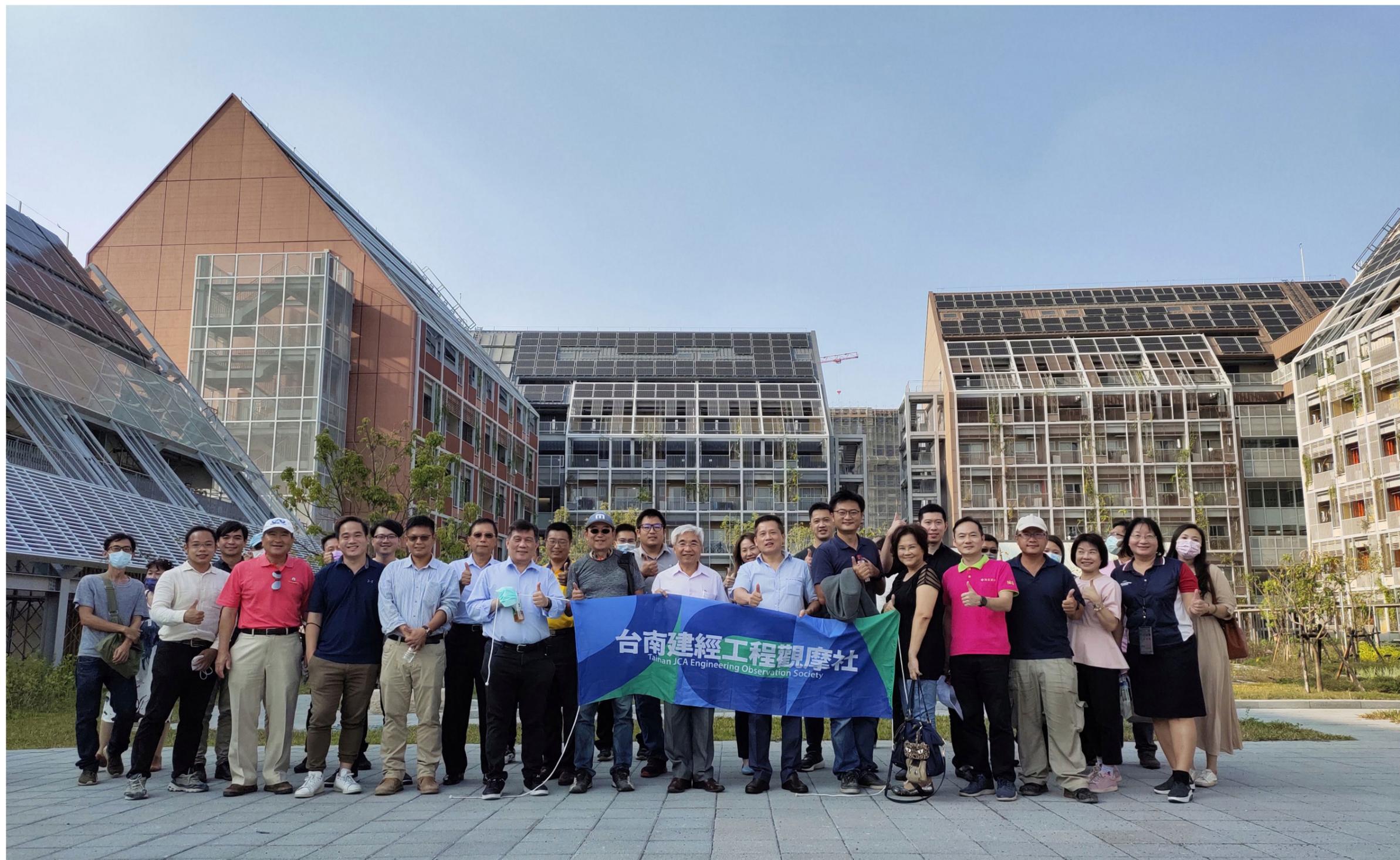
3. Integrating **community focused facilities**, such as communal kitchens, restaurants and other shared spaces.



4. Implementing strategies to **encourage** users to **consume the harvested foods**, for example by introducing cooking workshops, which also promotes community engagement.



5. Desinging spaces for startups



BUSINESS MODEL: LA LOUVE PARIS



The members of La Louve volunteer to carry out the tasks necessary for the smooth running of the supermarket and collectively employ a few employees to coordinate everything.



Each member comes to help at the supermarket for 3 consecutive hours , every 4 weeks, to work the cash register, stock, receive deliveries, clean, carry out administrative tasks, etc.

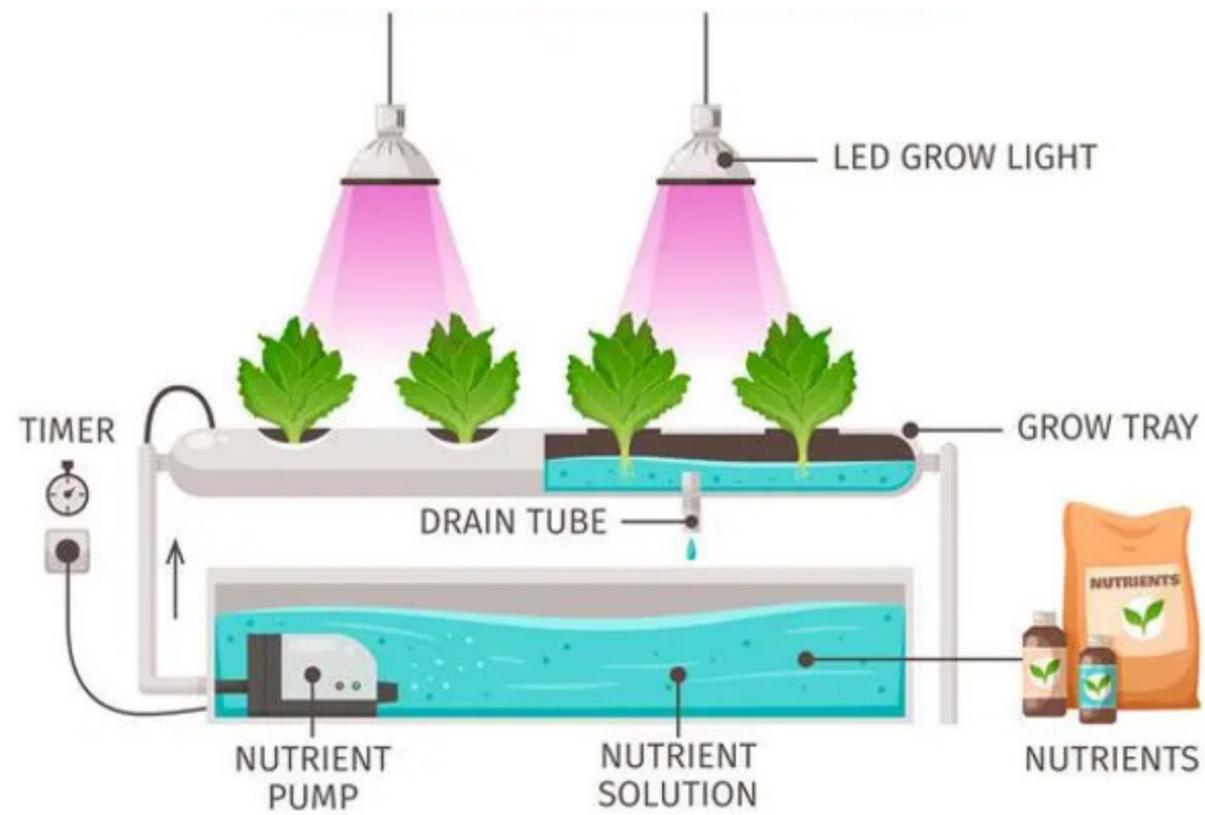


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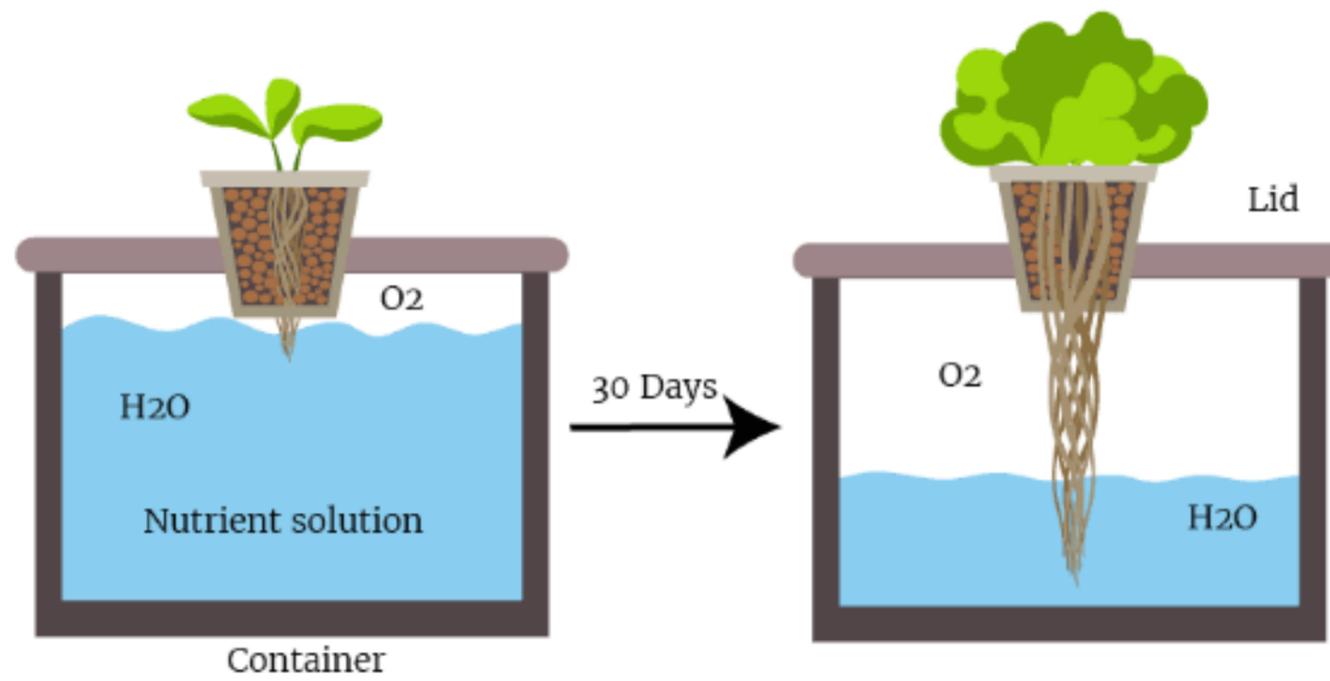
GROWING SYSTEMS: HYDROPONIC



Nutrient Film Technique (NFT)



Kratky-method



GROWING SYSTEMS: SOIL-BASED



4. URBAN DESIGN

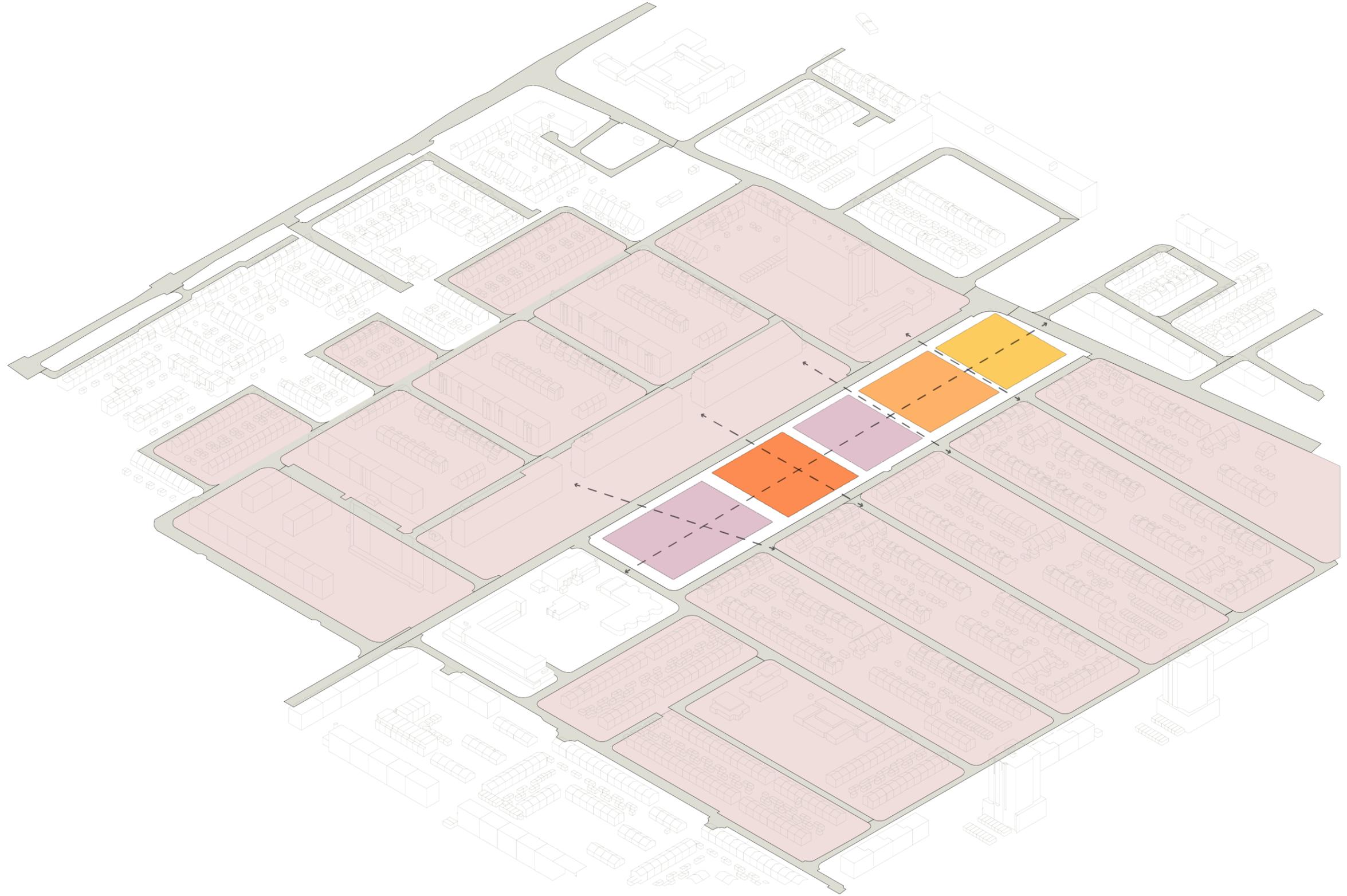
GREEN CORRIDOR



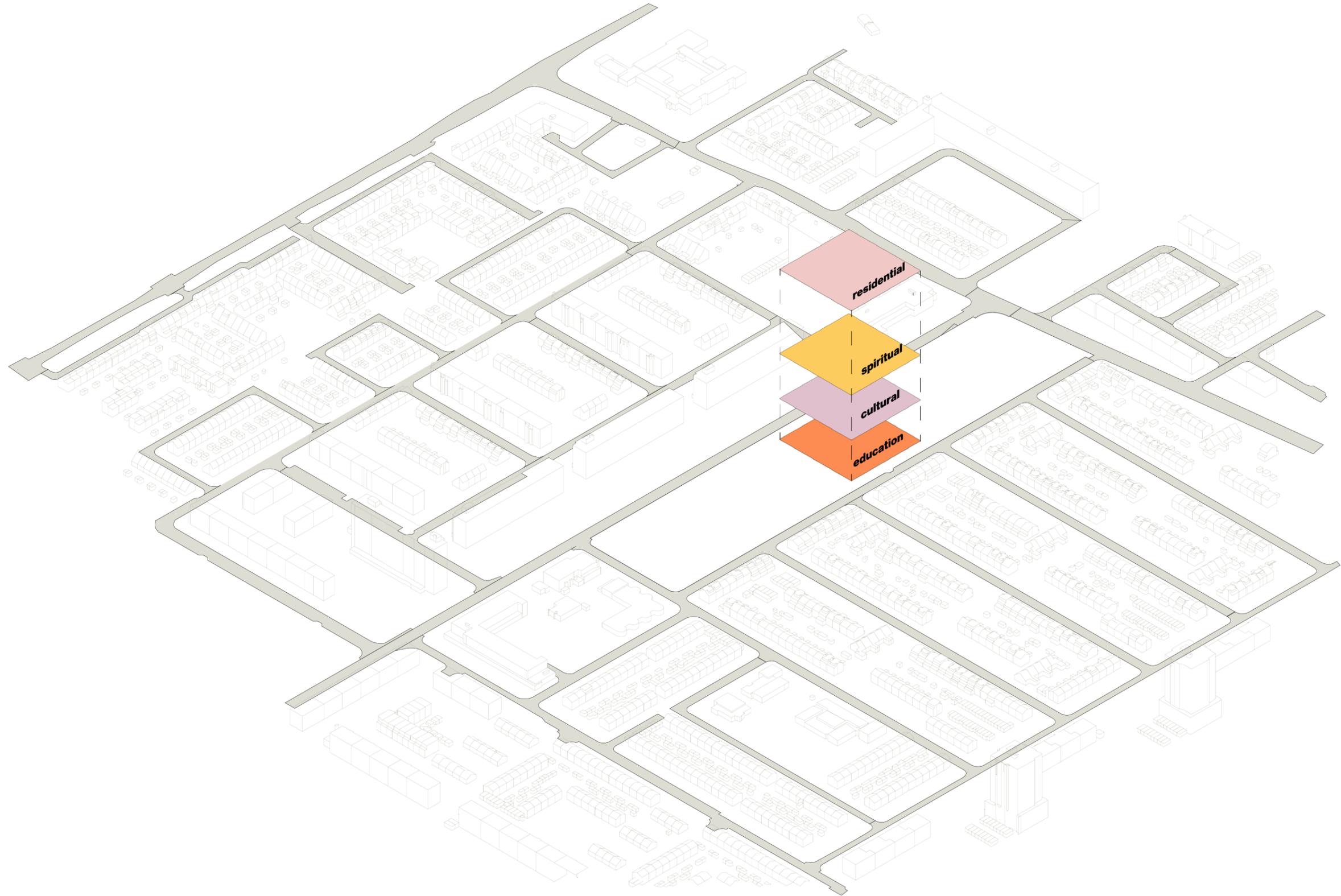
MIXED-USE FUNCTIONS



MIXED-USE FUNCTIONS



MIXED-USE FUNCTIONS





CONNECTION THROUGH



AXIS TOWARDS GREEN ZONE



LANDSCAPING



greening



grindpave

BOOM Landscape: Schalkwijkerhout

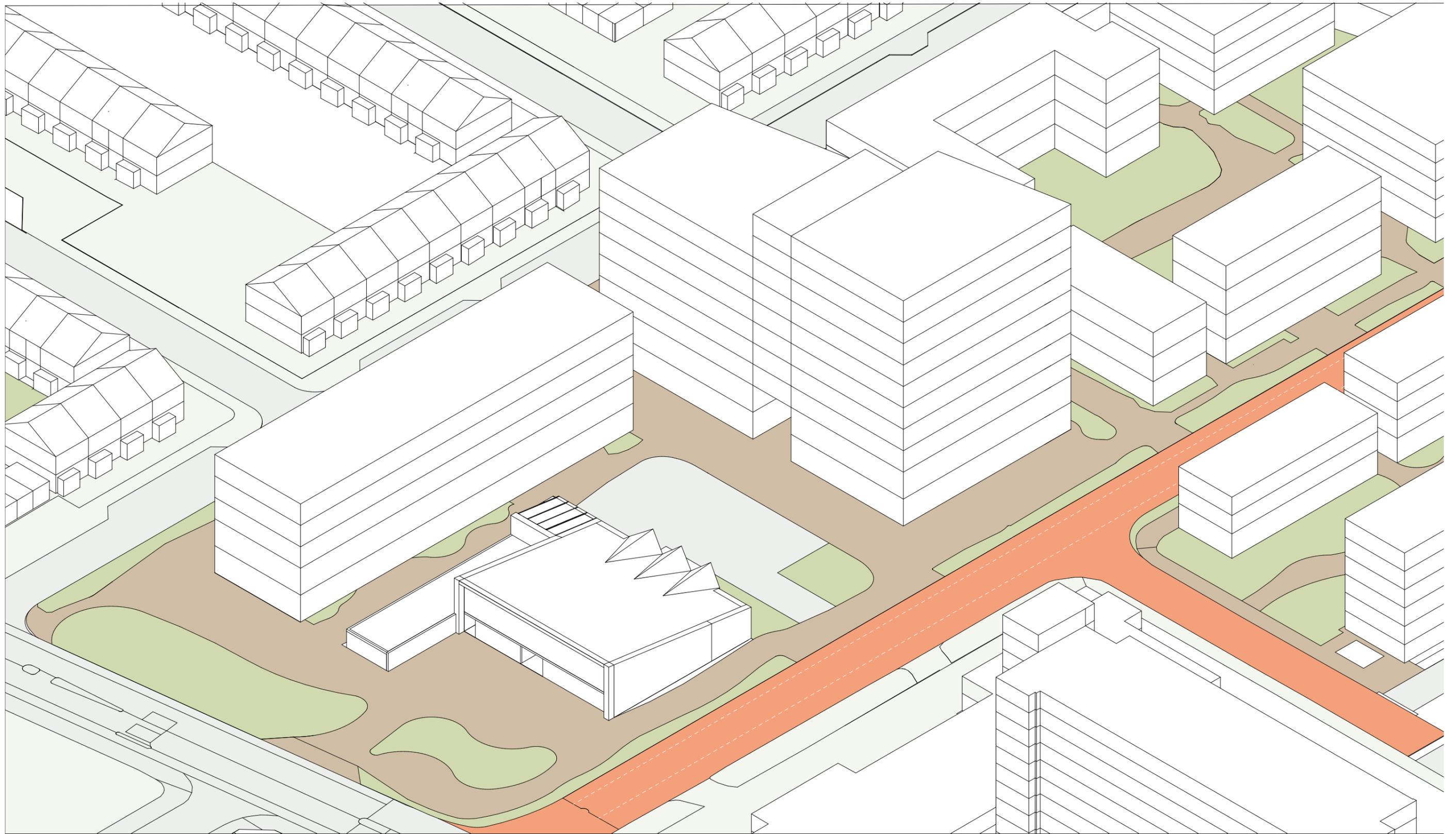


S. BUILDING DESIGN

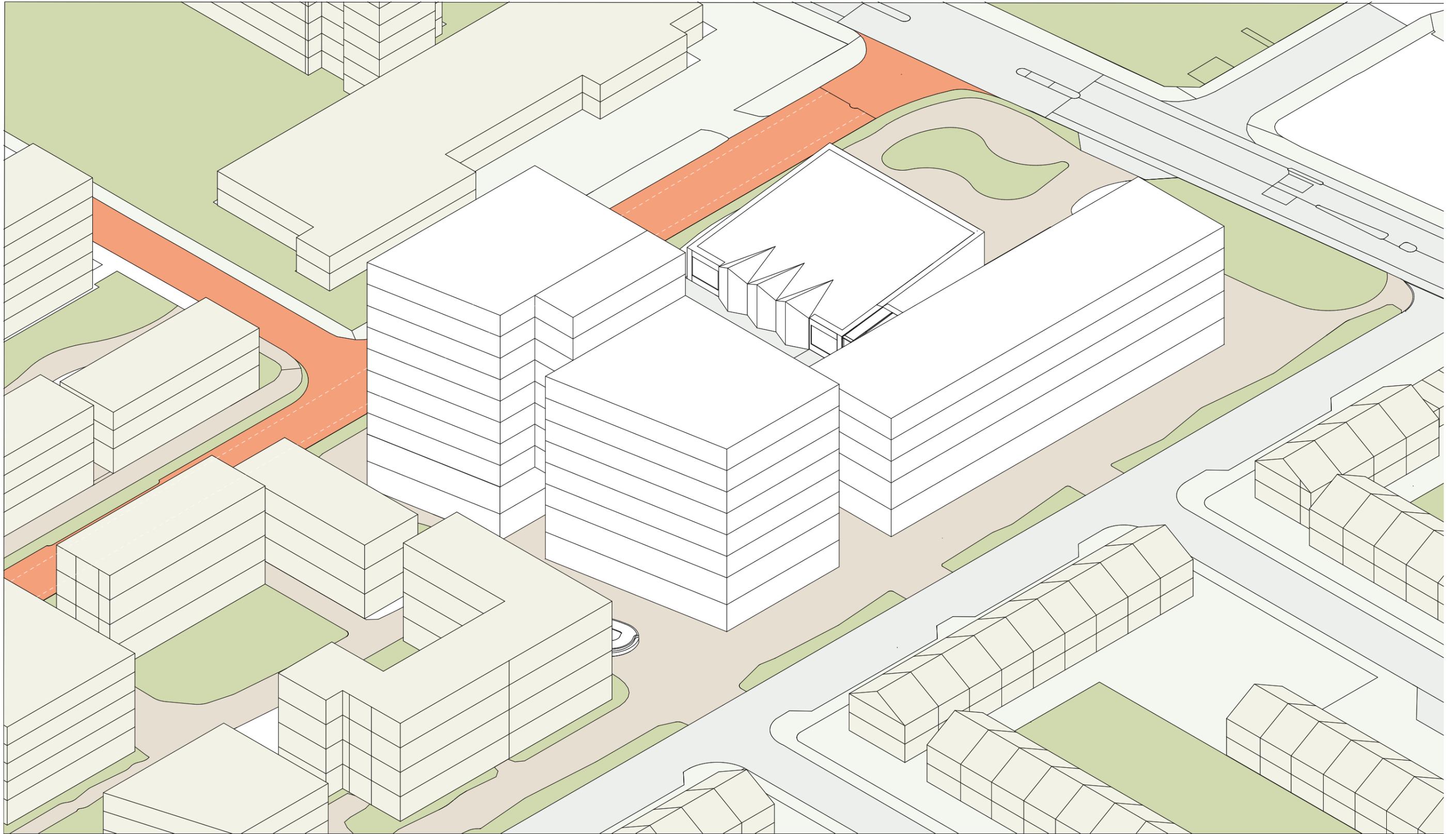




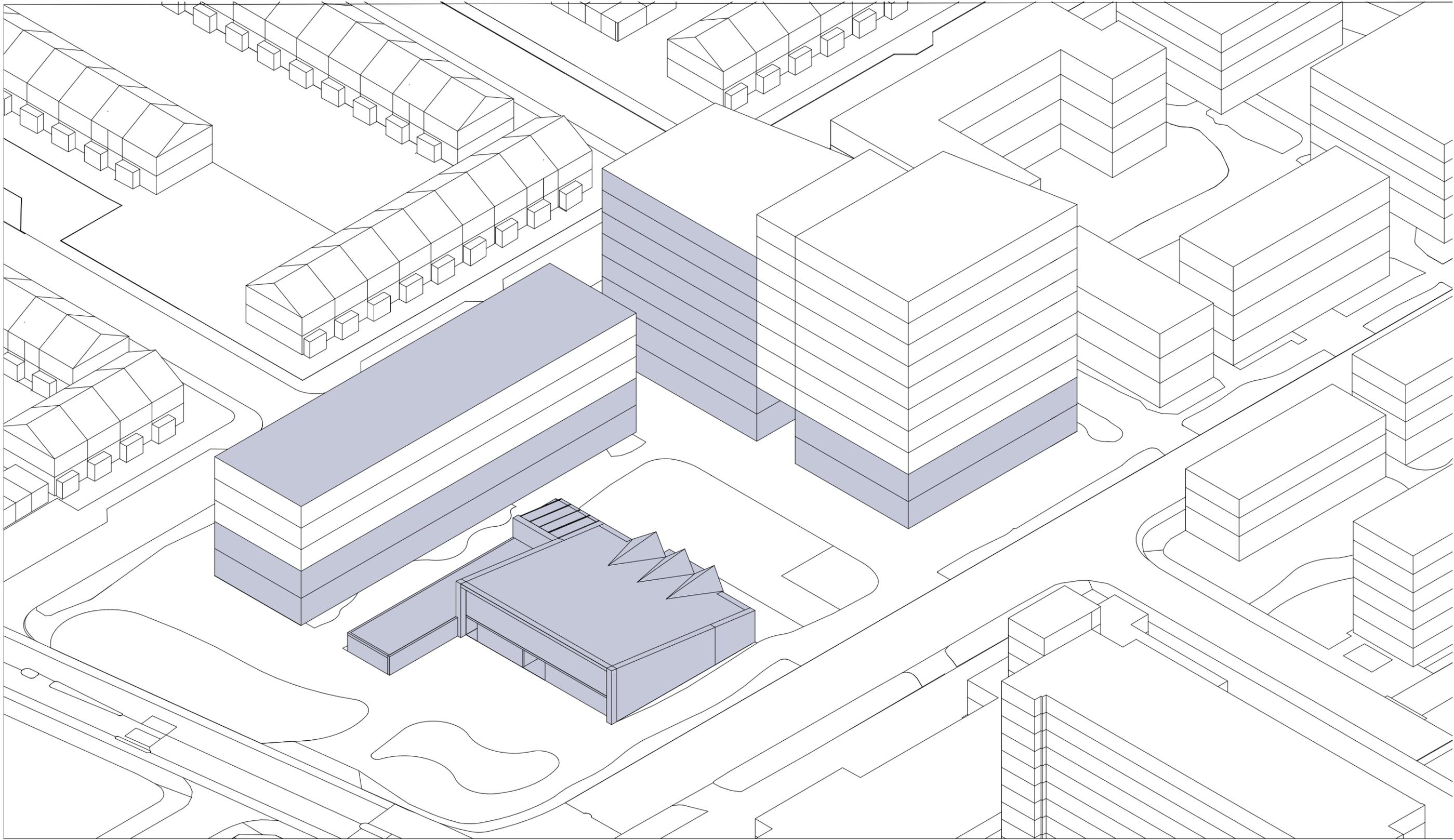
MASSING



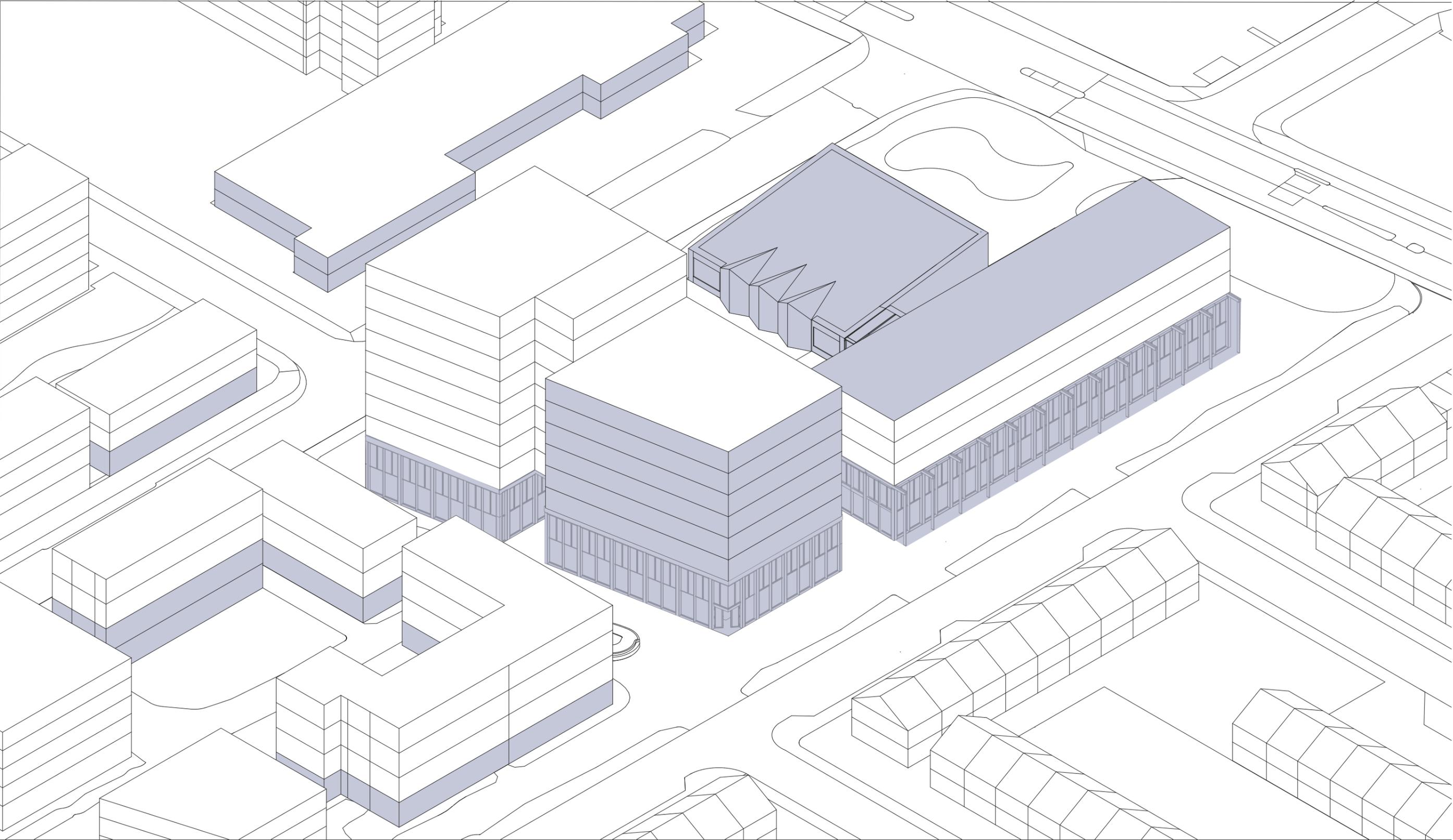
MASSING



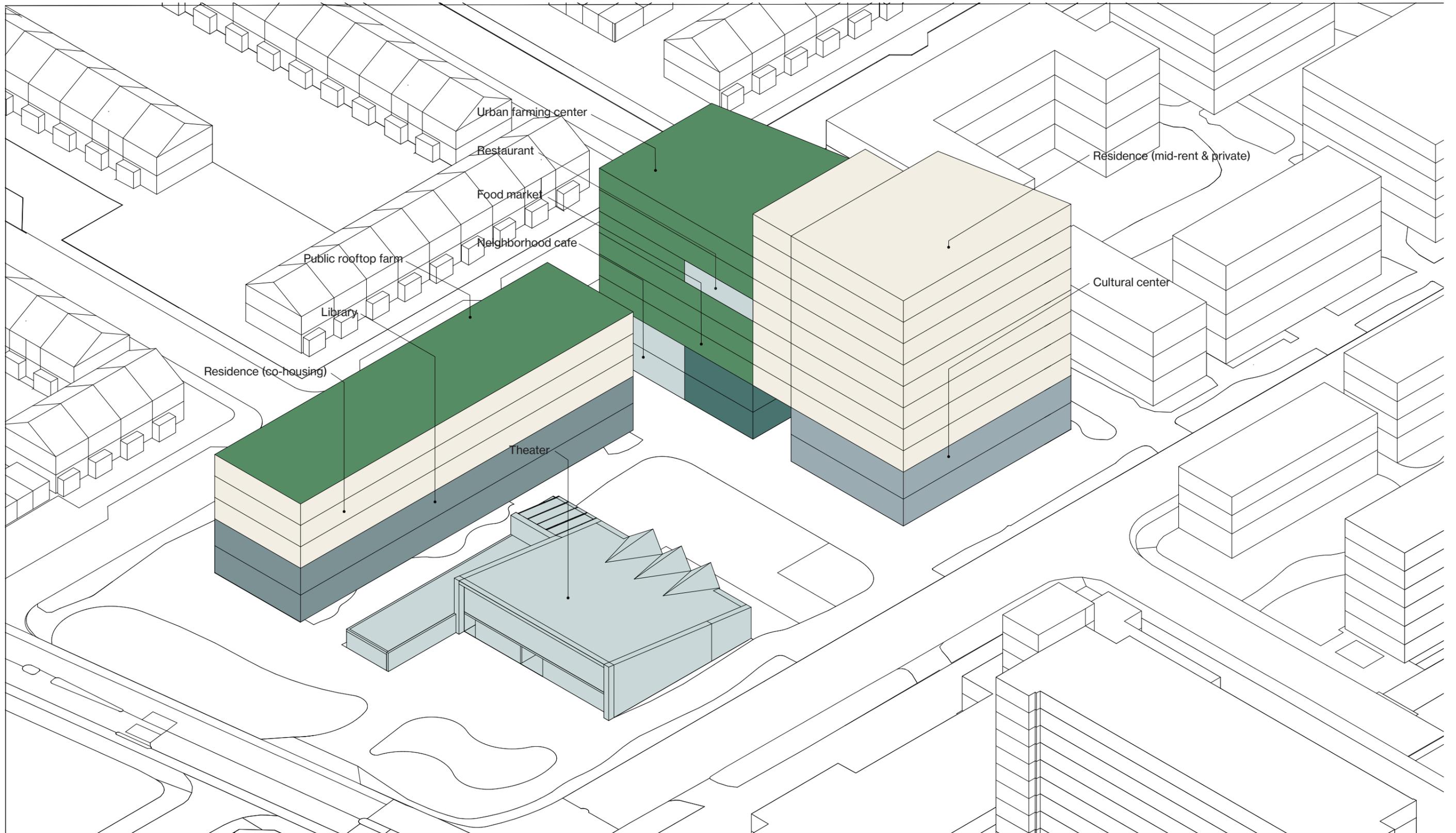
PUBLIC & PRIVATE



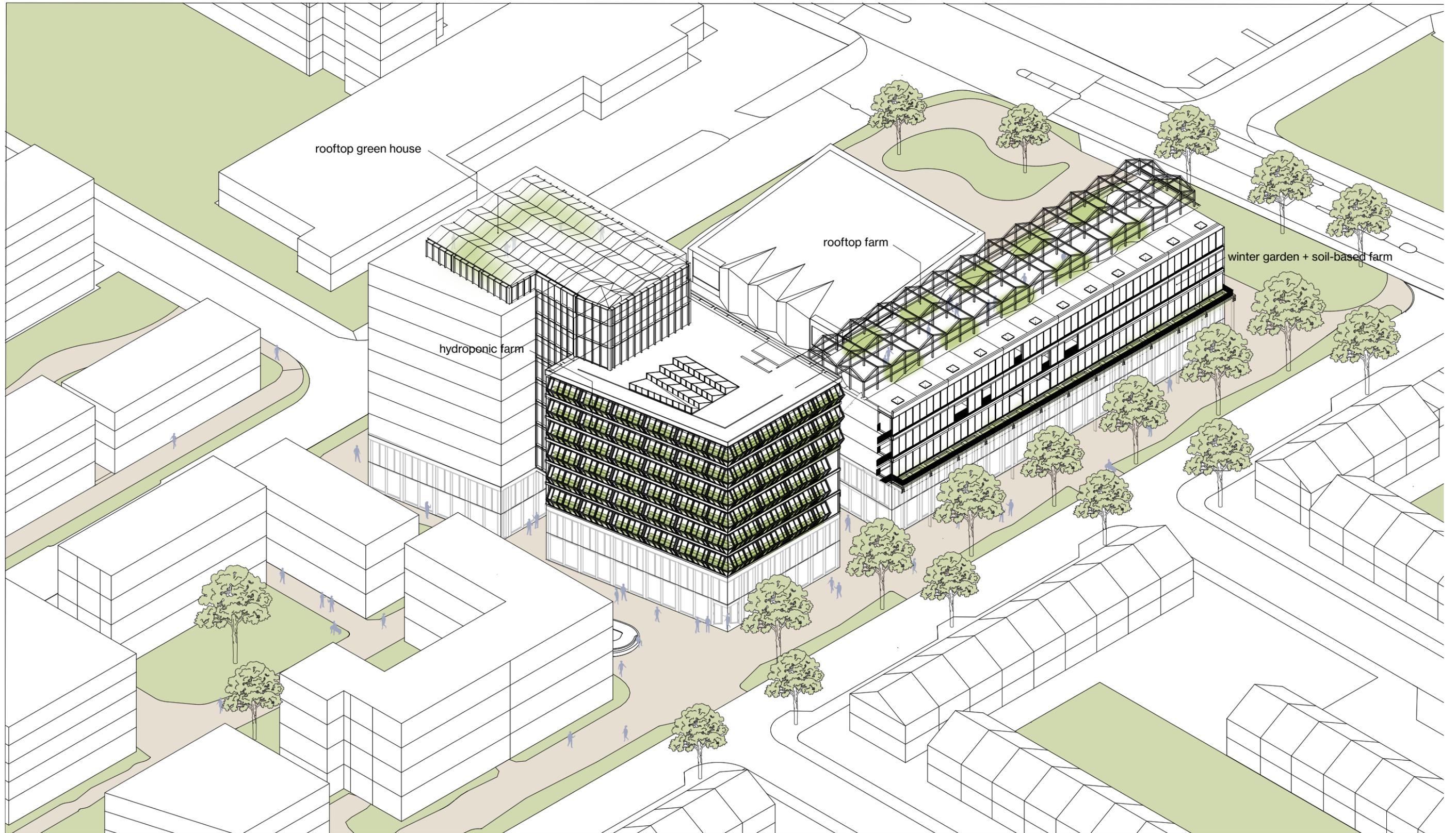
PUBLIC & PRIVATE



PROGRAMME

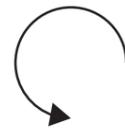


URBAN AGRICULTURE



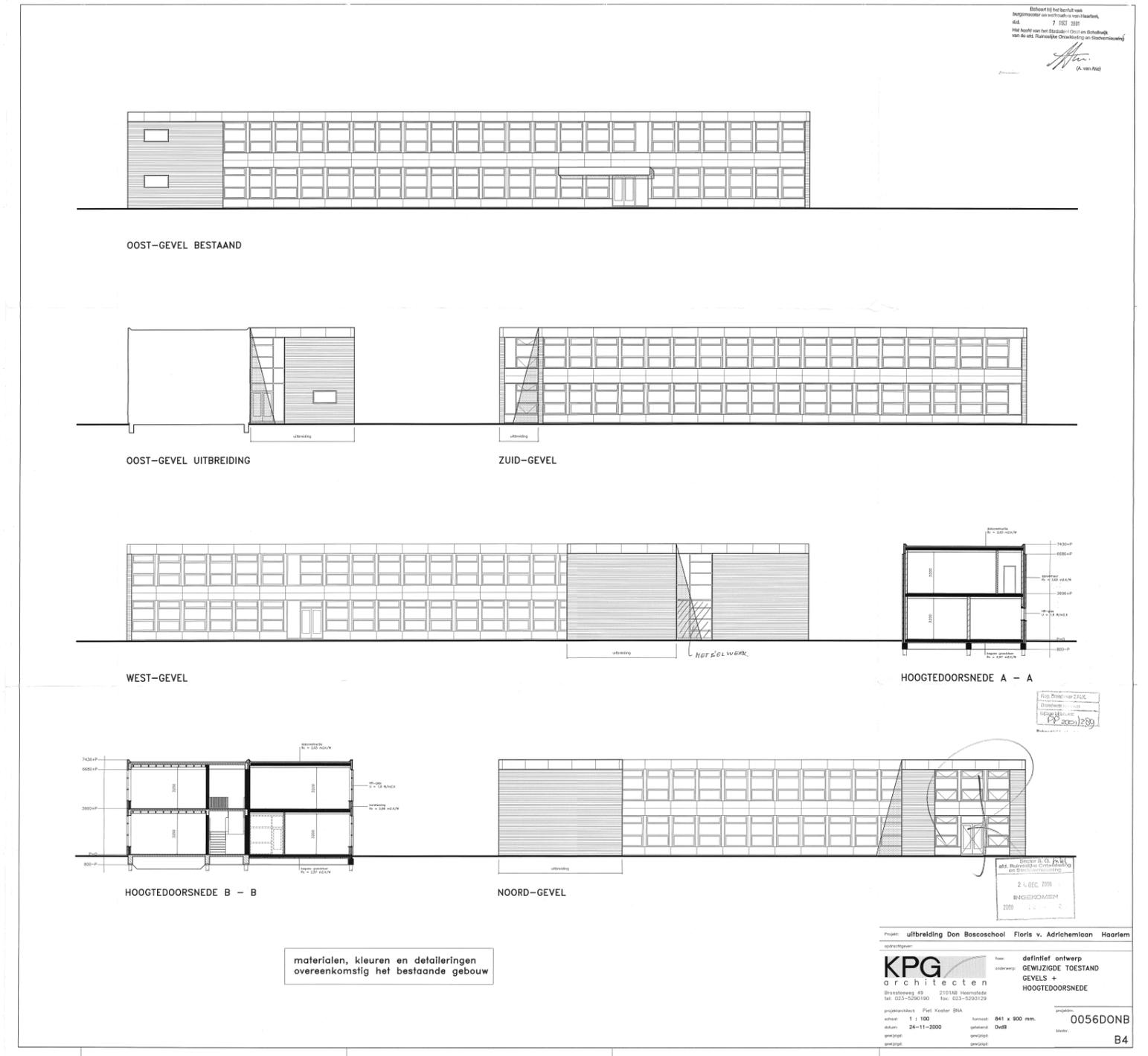
CONSTRUCTION CONCEPT
(THE GRID IS BASED ON WIDTH OF REUSED WINDOWS)

STRUCTURAL GRID



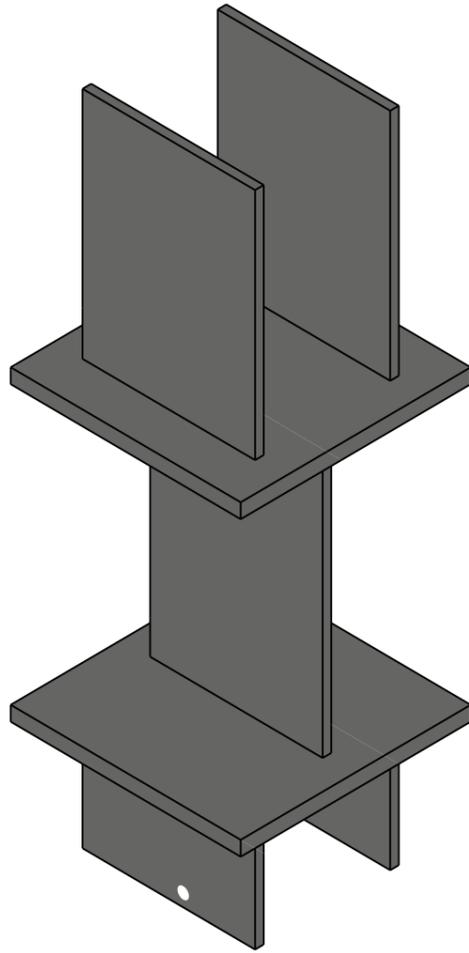
2500mm

2x 2500mm + 100mm window frame
 = 2600mm + 2600mm
 = 5200mm

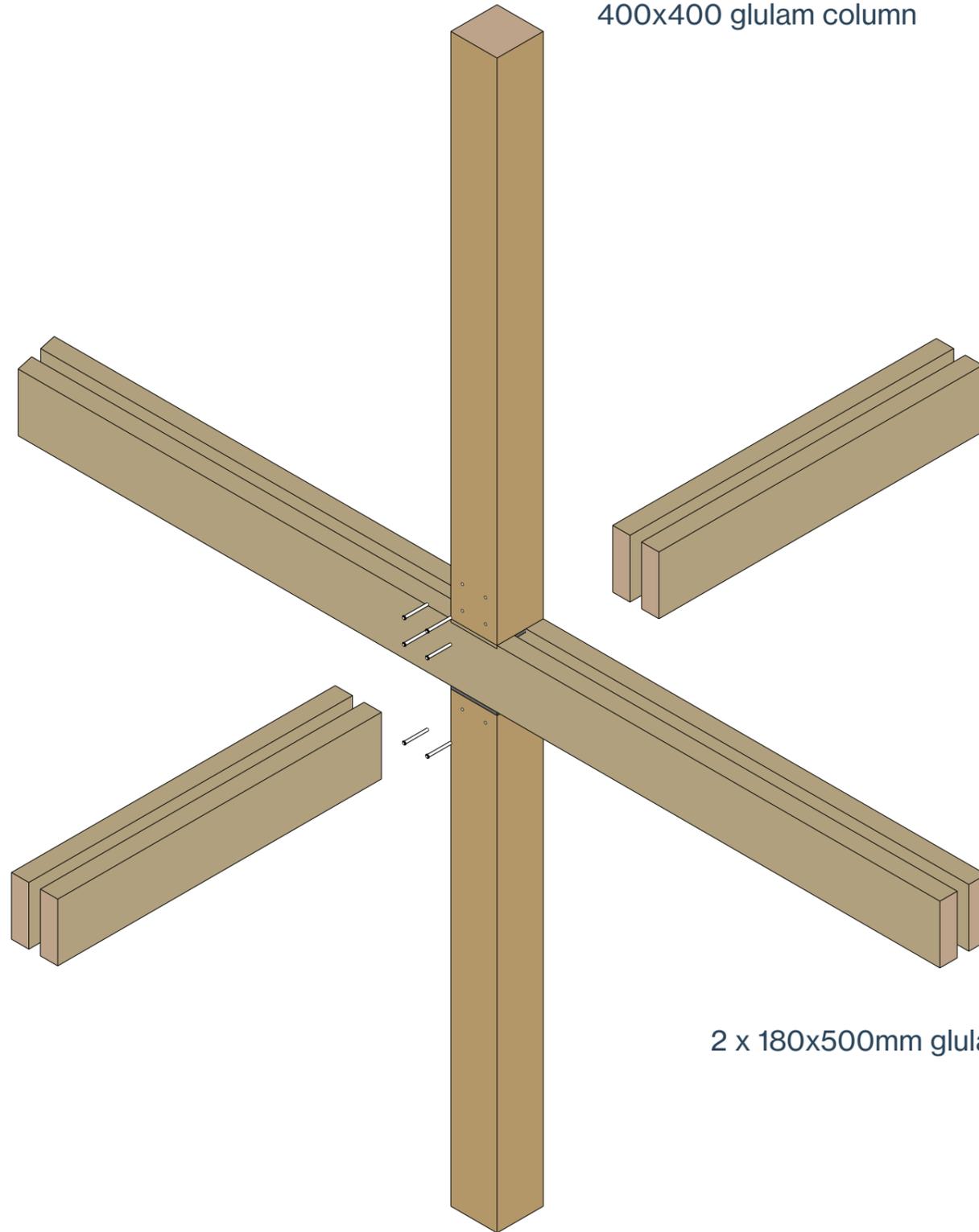


ANATOMY

steel connector



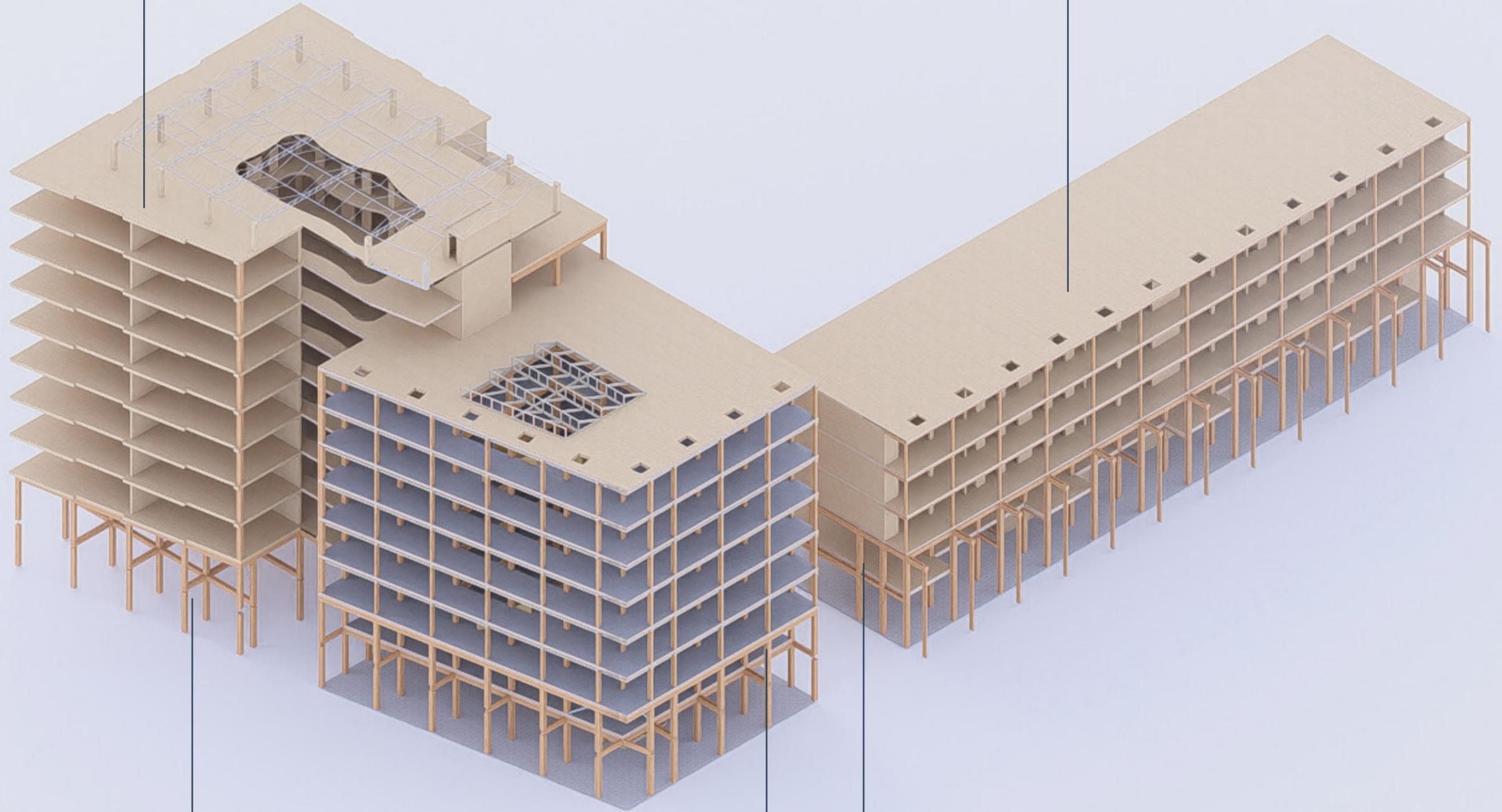
400x400 glulam column



2 x 180x500mm glulam beam

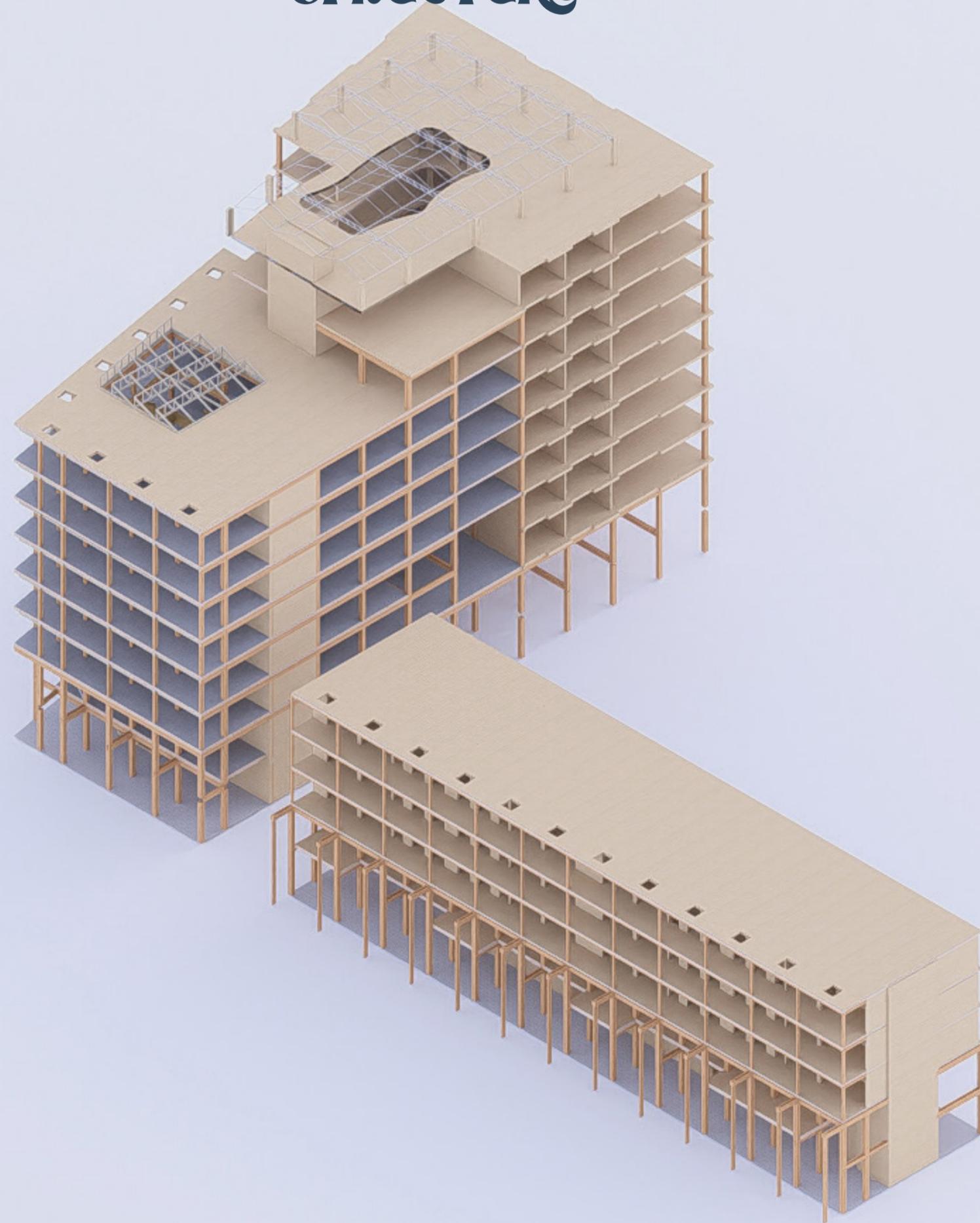
STRUCTURE

CLT floors + CLT walls



CLT floors + glulam columns and beams

STRUCTURE



GROUND FLOOR PLAN



ACCESSIBILITY



CULTURAL CENTER



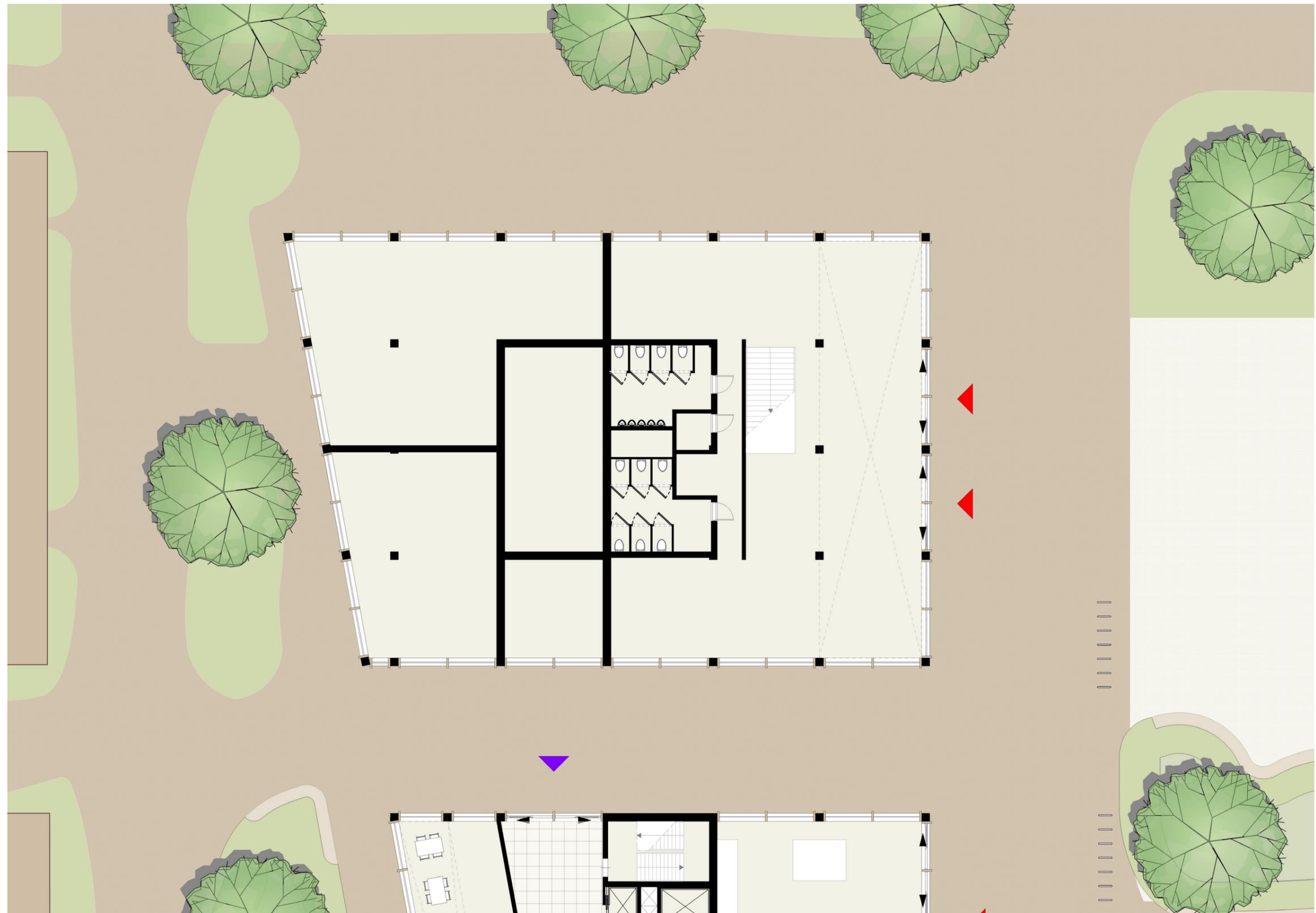
Place for social institutions

Start-ups

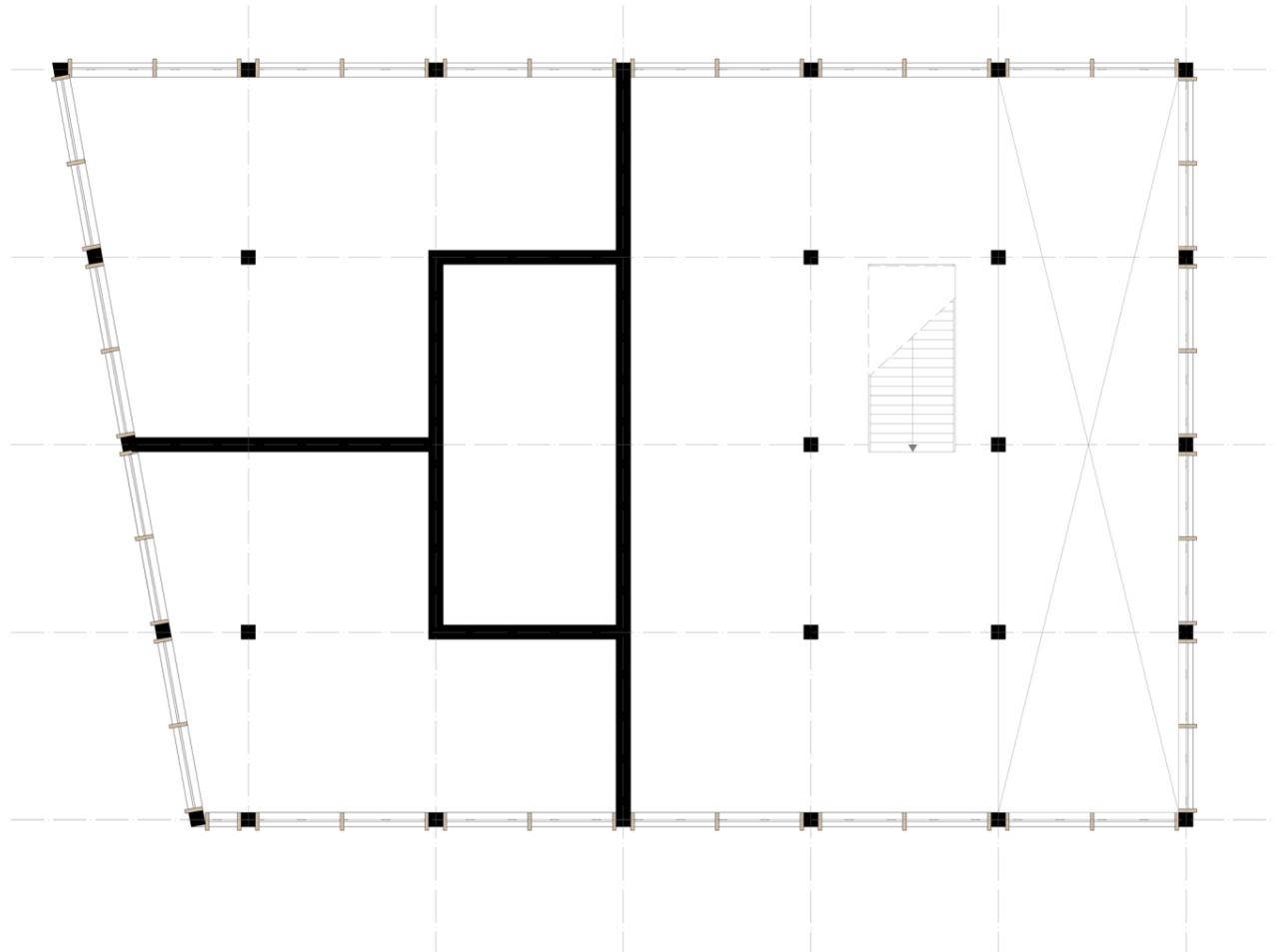
Medical care

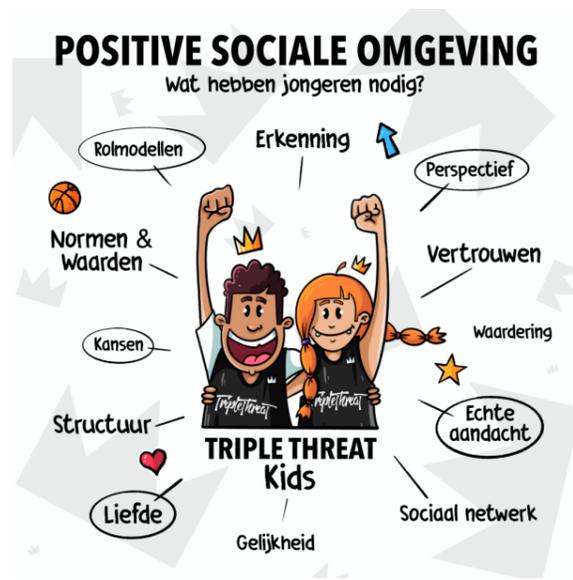
Retail

GROUND FLOOR



FIRST FLOOR





BUURTS



Boerhaavewijk



NEIGHBORHOOD CAFE



Social interaction

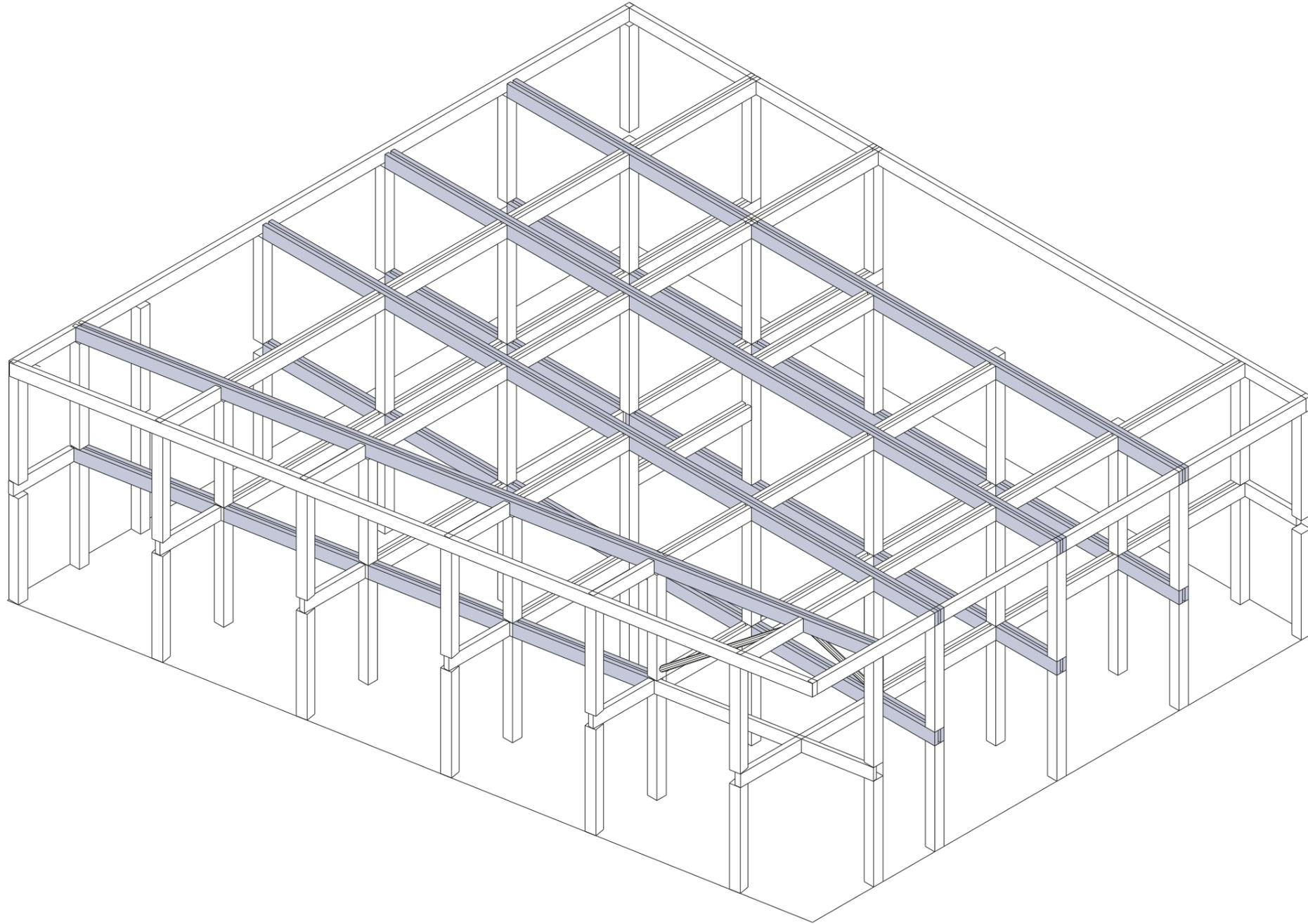
Be involved in the habits of harvesting and cooking with fresh and healthy foods

Bridging cultures

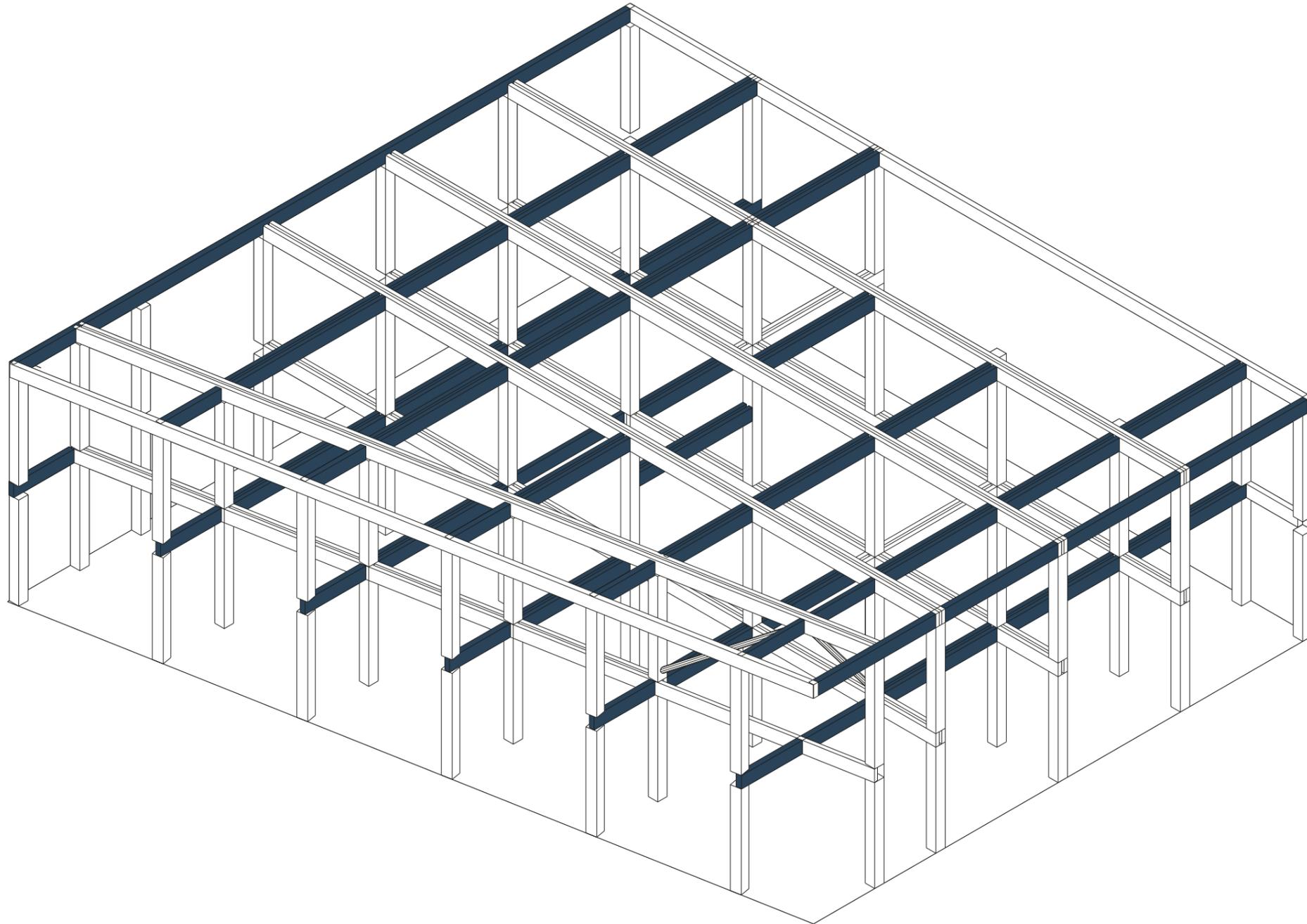




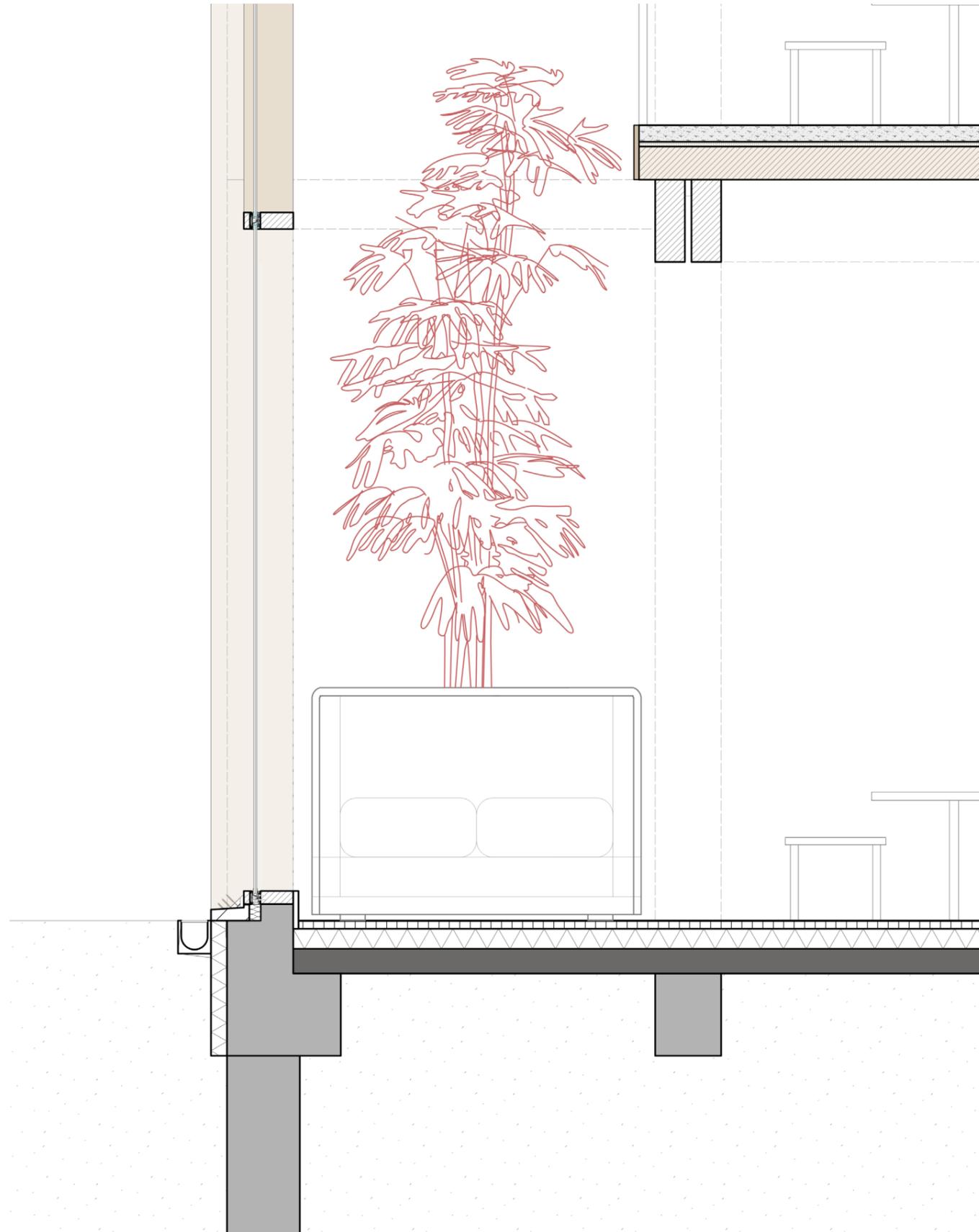
PRIMARY BEAMS



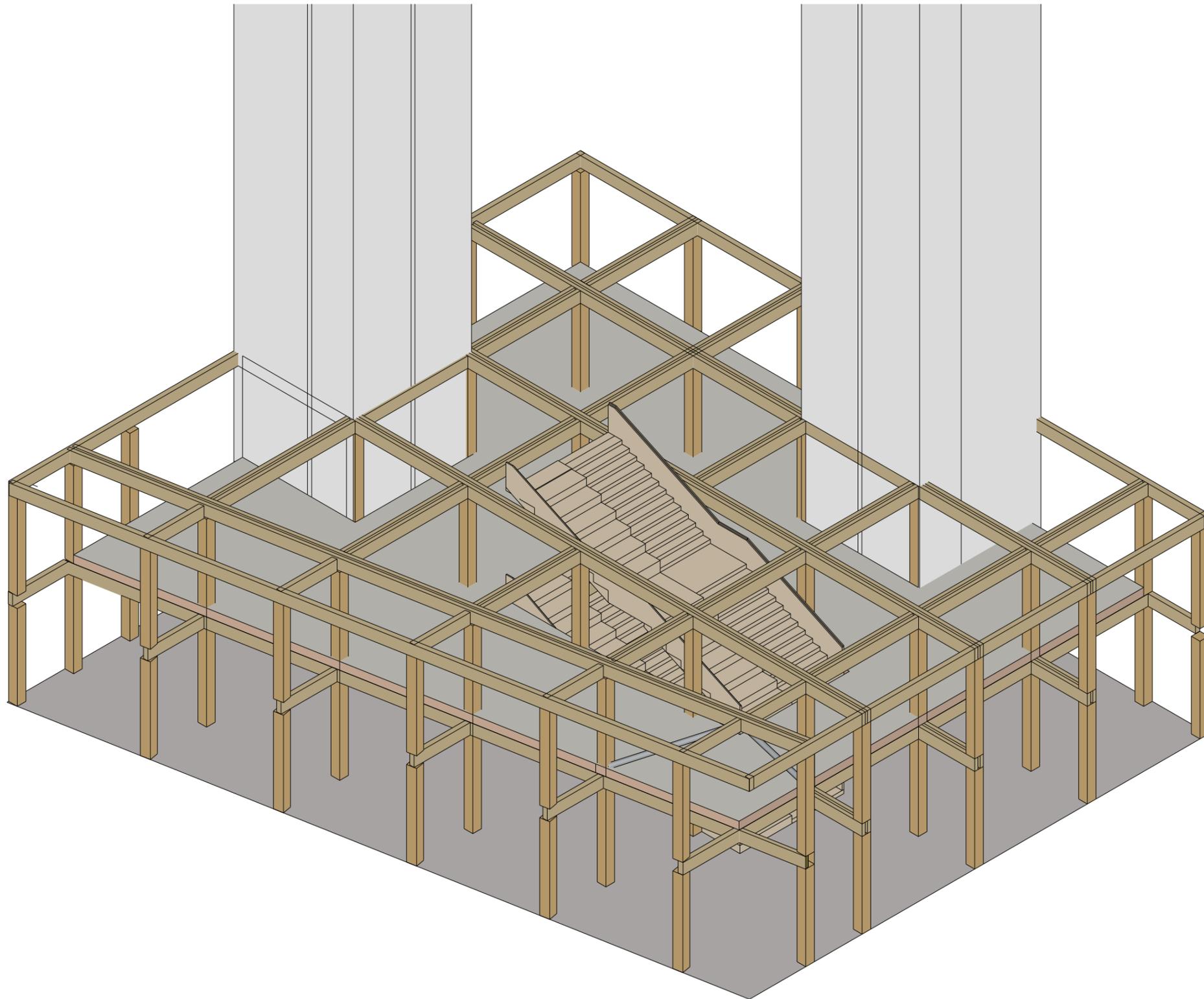
SECONDARY BEAMS



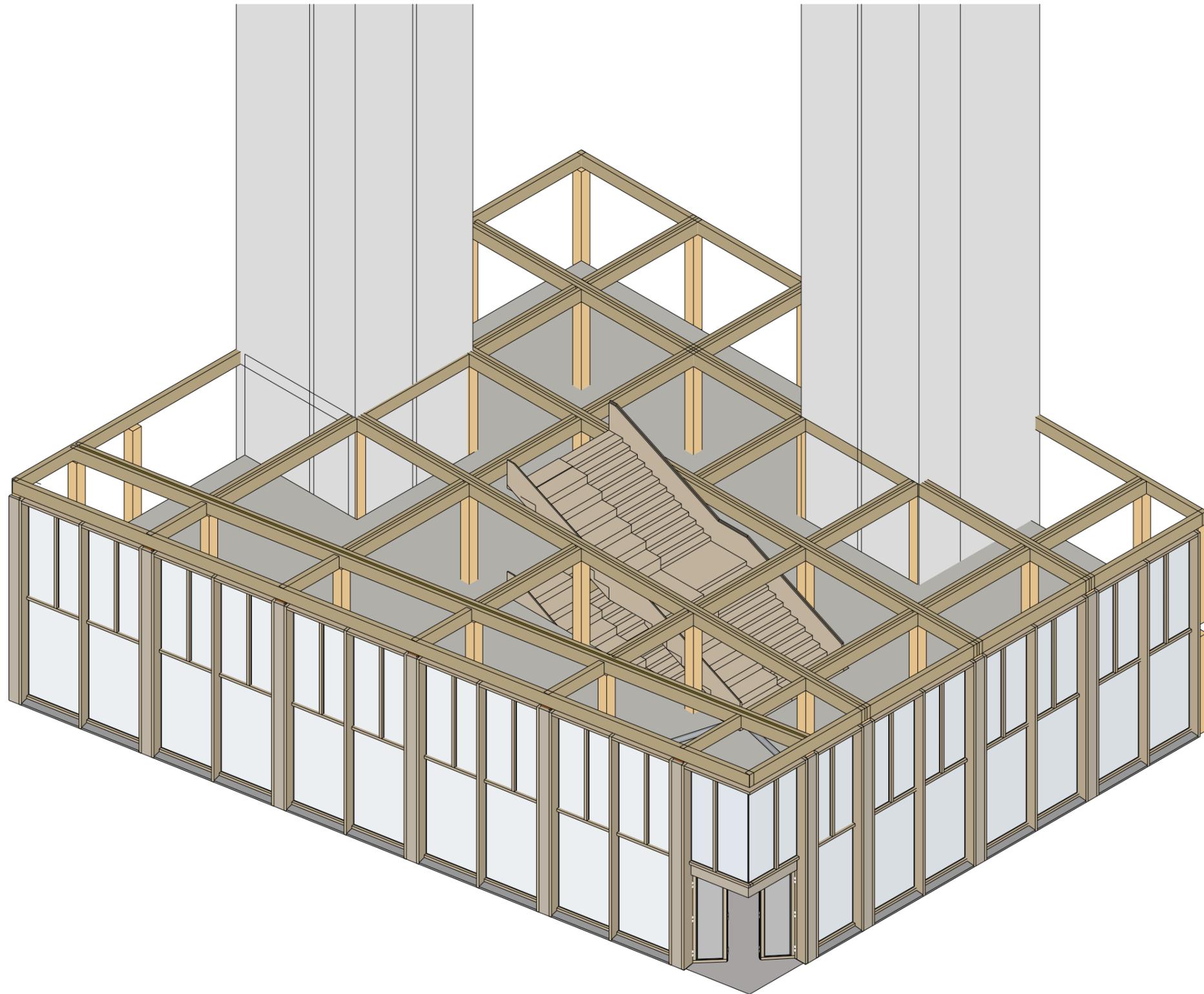
DETAIL



STAIRCASES AND ELEVATORS



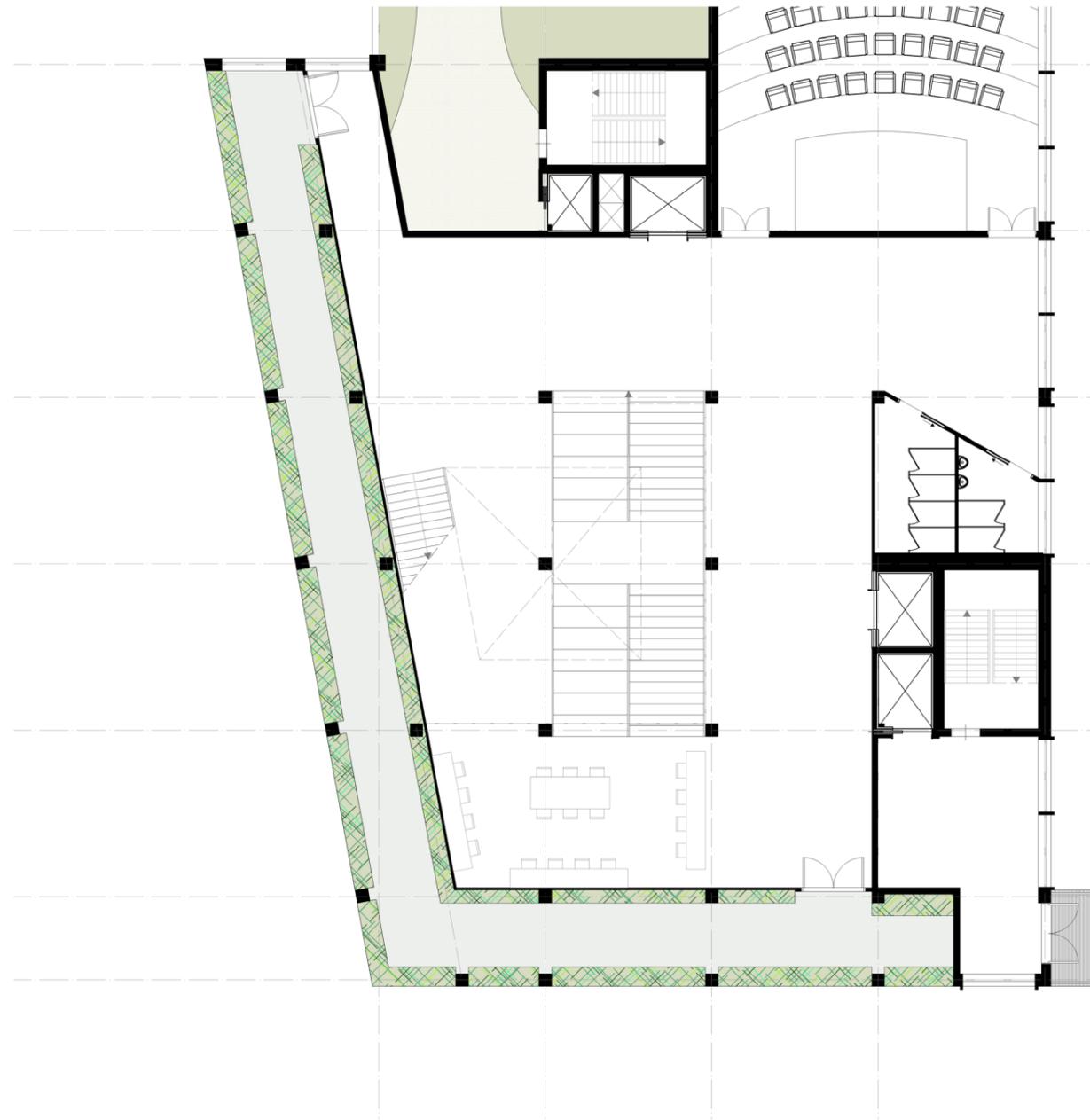
FAÇADE



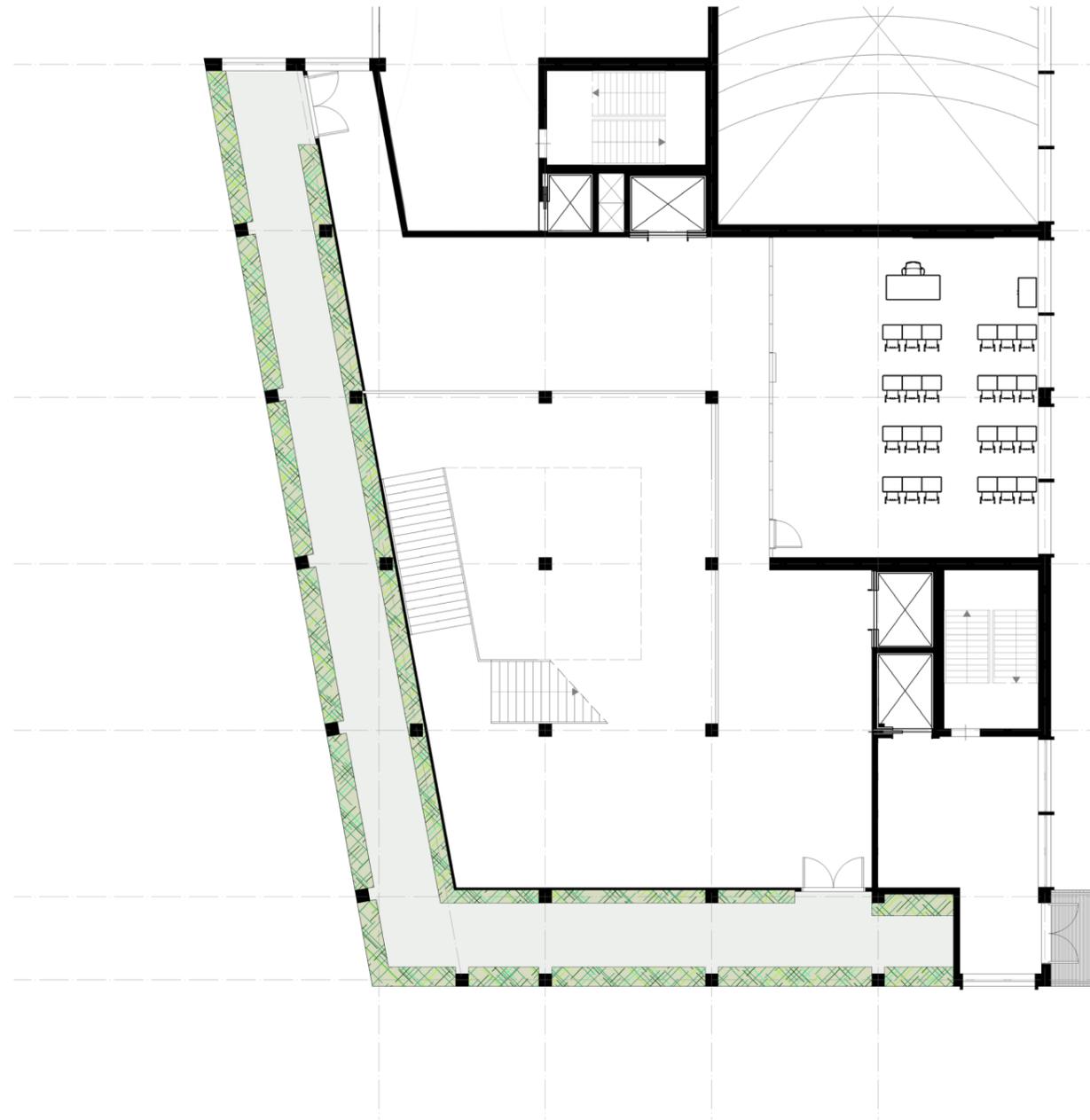
SECOND FLOOR



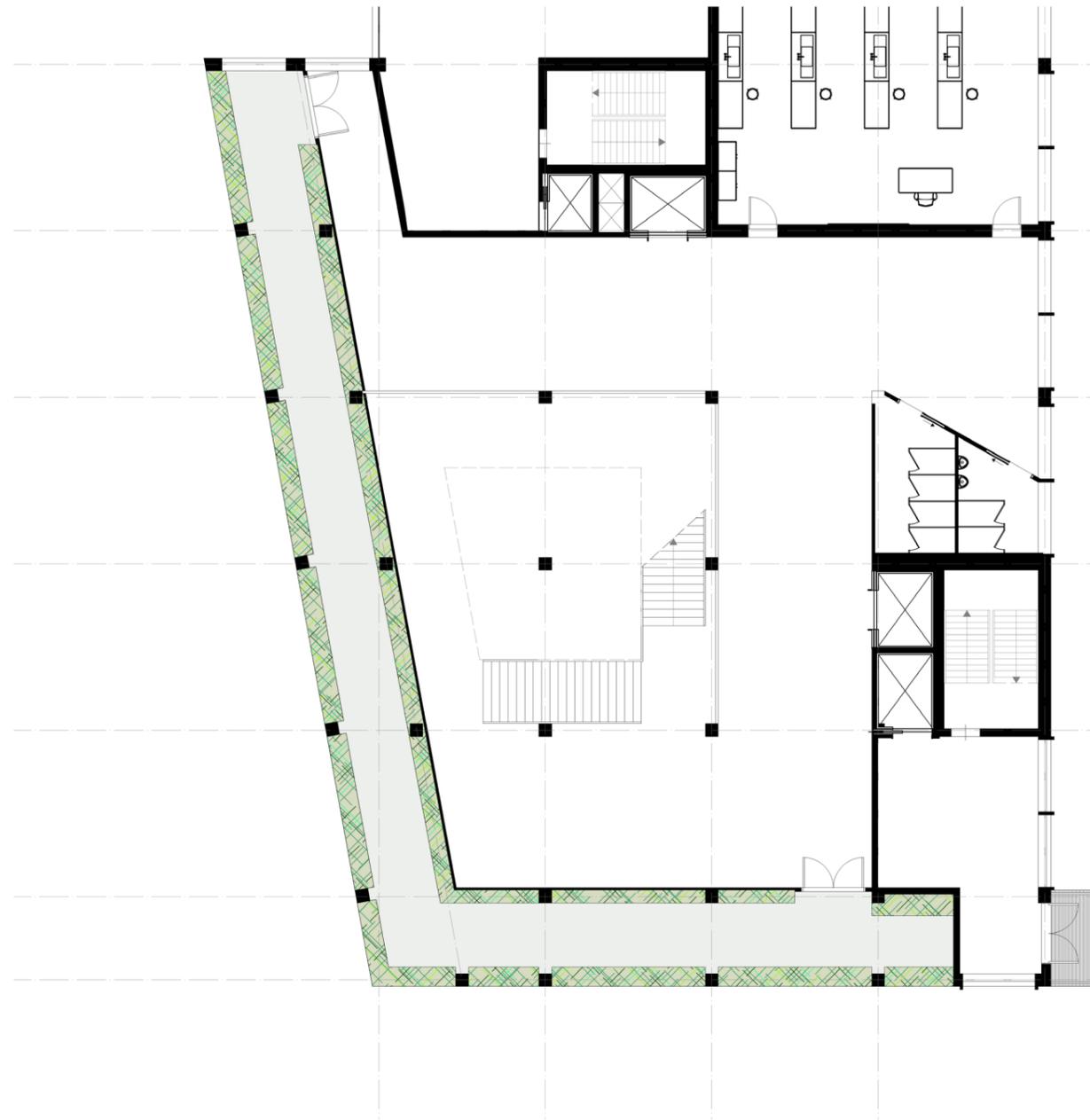
SECOND FLOOR



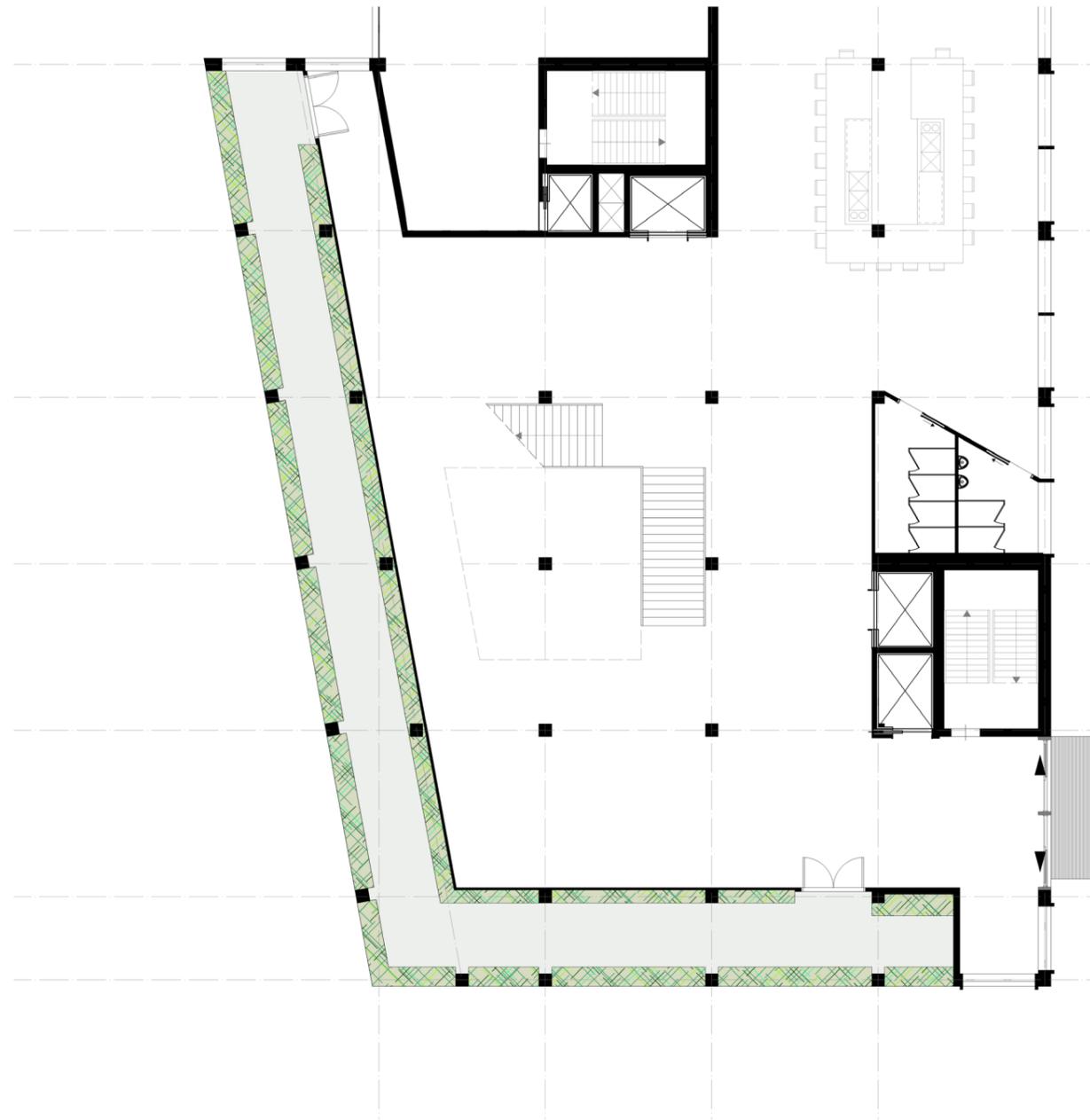
THIRD FLOOR



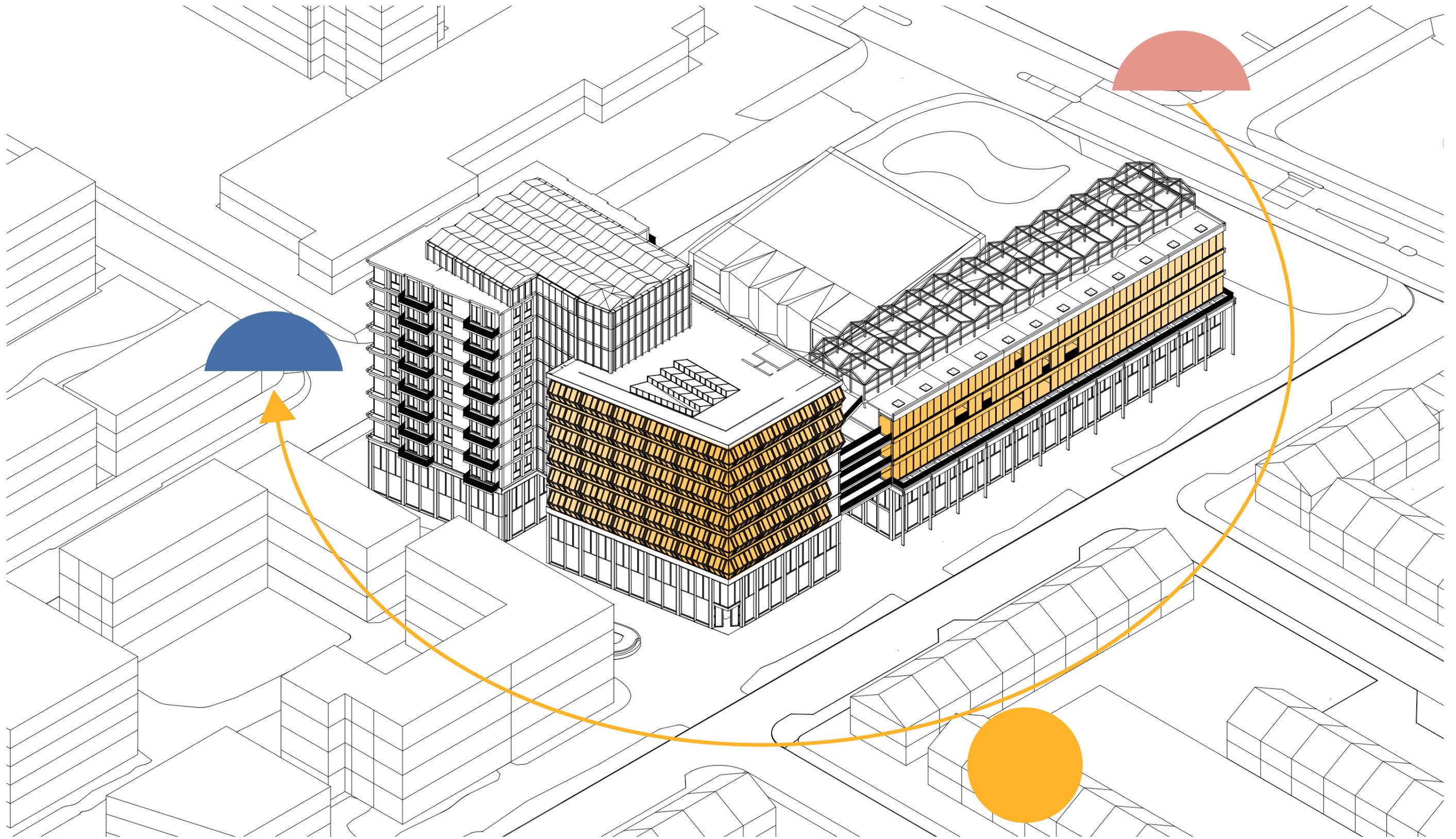
FOURTH FLOOR



FIFTH FLOOR



ORIENTATION



CALCULATION

Hydroponic farming (4 lagen):

Bladgroenten (600 m², 15 kg/m² per jaar):
 $600 \text{ m}^2 \times 15 \text{ kg/m}^2 = 9000 \text{ kg per jaar}$
(Bijv. sla, spinazie, rucola, paksoi, veldsla)

Kruiden (200 m², 15 kg/m² per jaar):
 $200 \text{ m}^2 \times 15 \text{ kg/m}^2 = 3000 \text{ kg per jaar}$
(Bijv. peterselie, tijm, koriander)

Vruchtgewassen (200 m², 15 kg/m² per jaar):
 $200 \text{ m}^2 \times 15 \text{ kg/m}^2 = 3000 \text{ kg per jaar}$
(Bijv. tomaten, paprika's, komkommers)

Soil-based farming:

Vruchtgewassen (150 m², 12 kg/m² per jaar):
 $150 \text{ m}^2 \times 12 \text{ kg/m}^2 = 1800 \text{ kg per jaar}$
(Bijv. tomaten, paprika's, komkommers)

Knolgewassen (100 m², 12 kg/m² per jaar):
 $100 \text{ m}^2 \times 12 \text{ kg/m}^2 = 1200 \text{ kg per jaar}$
(Bijv. radijs, courgettes)

Bladgroenten (hydroponic): 9000 kg per jaar

Kruiden (hydroponic): 3000 kg per jaar

Vruchtgewassen (hydroponic): 3000 kg per jaar

Vruchtgewassen (soil-based): 1800 kg per jaar

Knolgewassen (soil-based): 1200 kg per jaar

De totale geschatte opbrengst per jaar is $9000 + 3000 + 3000 + 1800 + 1200 = \mathbf{18000 \text{ kg per jaar}}$

De gemiddelde Nederlander ongeveer 135 kg groenten per jaar (bron: RIVM).

Op basis van de geschatte opbrengst van 28000 kilogram groenten en kruiden per jaar, kan deze kas voldoende voedsel produceren om ongeveer

$28000/135 = \mathbf{133 \text{ mensen}}$ van groenten en kruiden te voorzien voor een volledig jaar.

YEAR ROUND YIELD



LETTUCE
SPINACH
ROCKET
BOK CHOY
ARUGULA

PARSLEY
DILL
MINT

TOMATO
CAPSICUM
CUCUMBER
PEPPERS

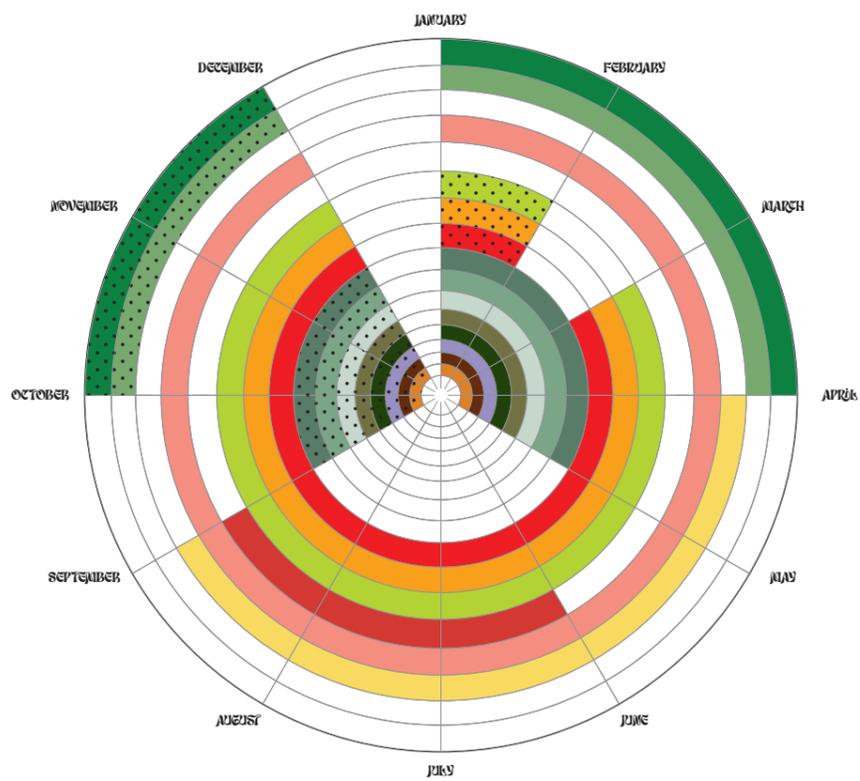
RADISH
ZUCCHINI

KALE
CHINESE CABBAGE

HERE WE GROW



DAYTIME



LETTUCE
SPINACH
ROCKET
BOK CHOY
ARUGULA

PARSLEY
DILL
MINT

TOMATO
CAPSICUM
CUCUMBER
PEPPERS

RADISH
ZUCCHINI

KALE
CHINESE CABBAGE



NIGHTTIME



LETTUCE
SPINACH
ROCKET
BOK CHOY
ARUGULA

PARSLEY
DILL
MINT

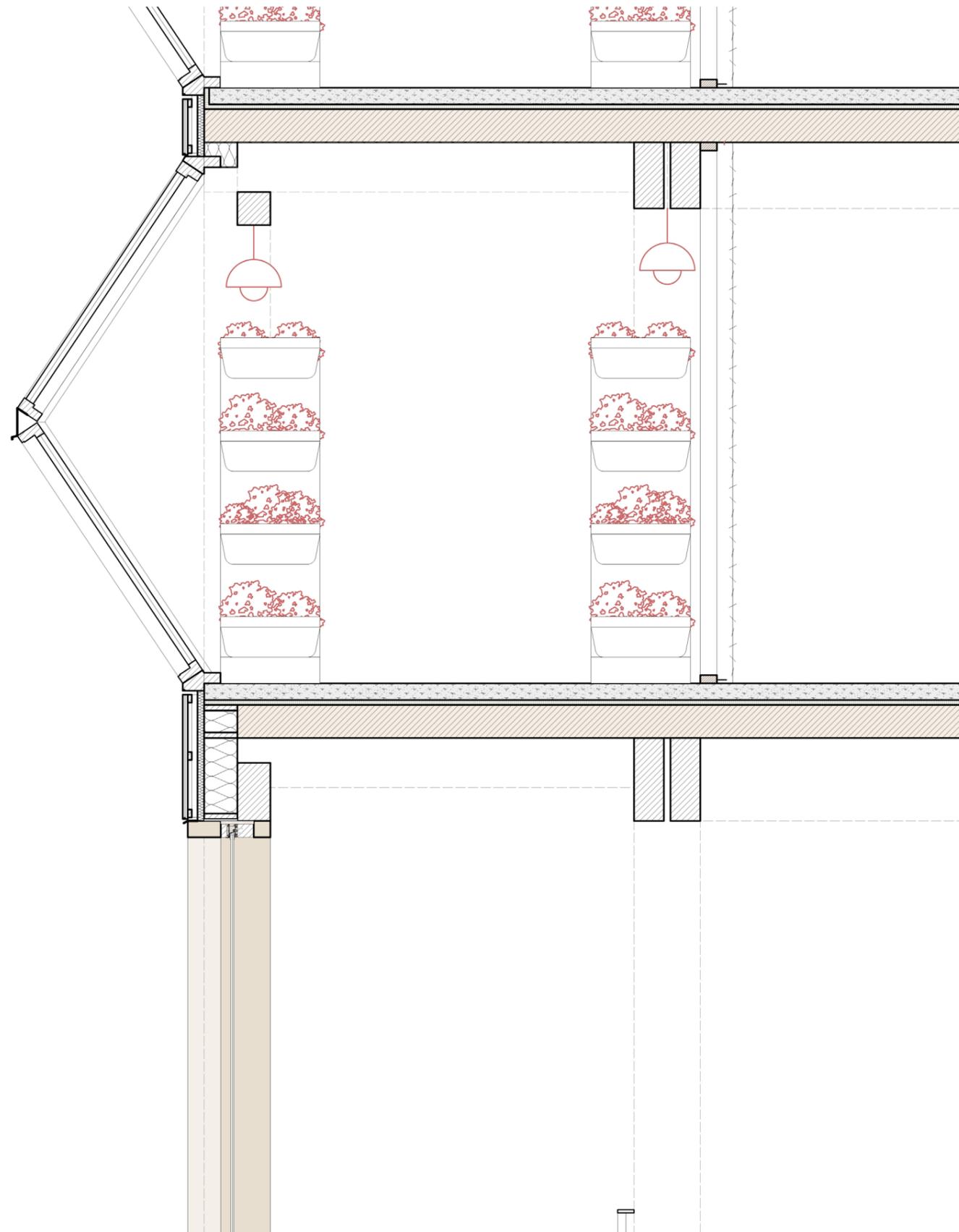
TOMATO
CAPSICUM
CUCUMBER
PEPPERS

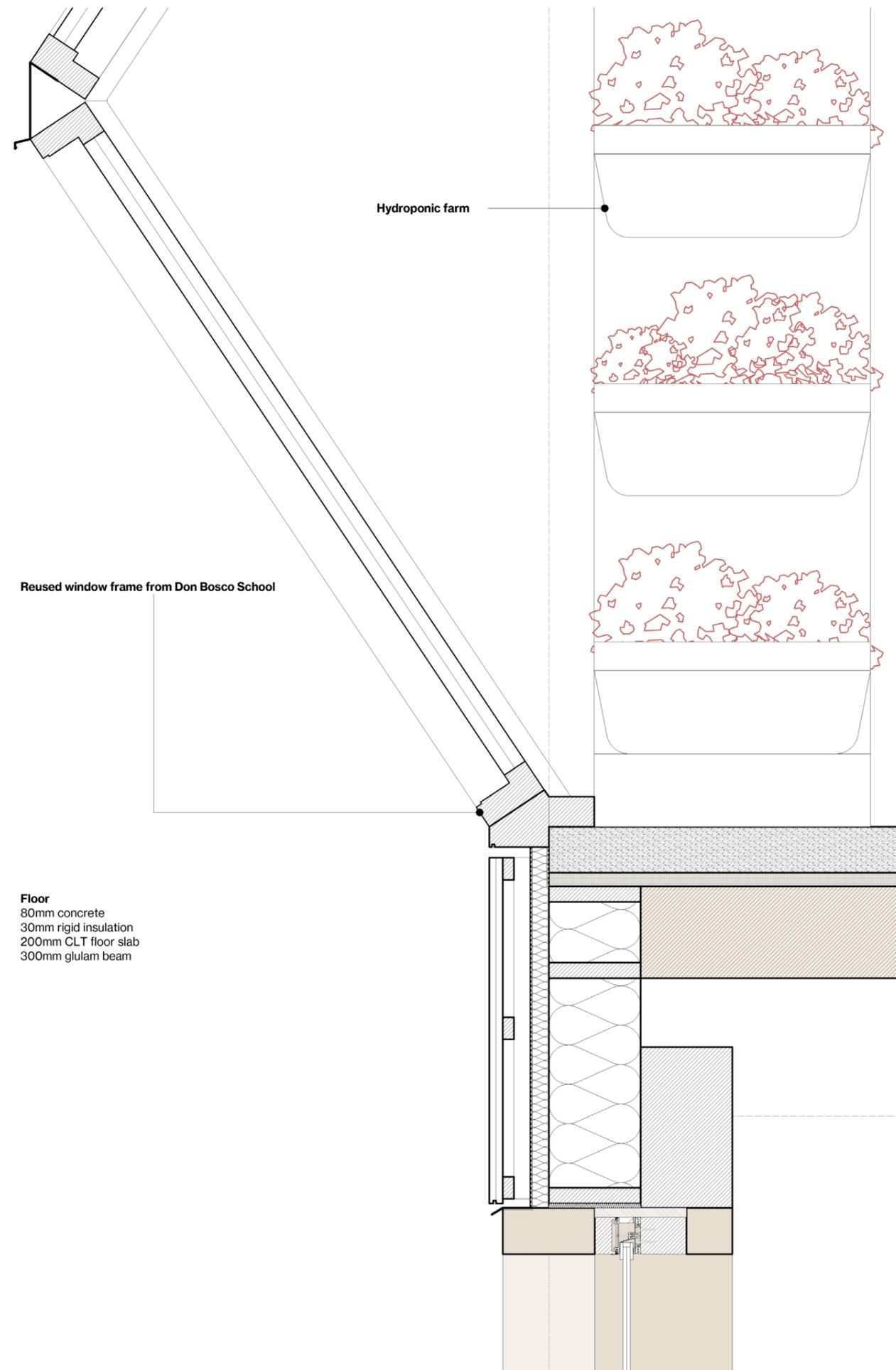
RADISH
ZUCCHINI

KALE
CHINESE CABBAGE



HYDROPONIC FARM SECTION



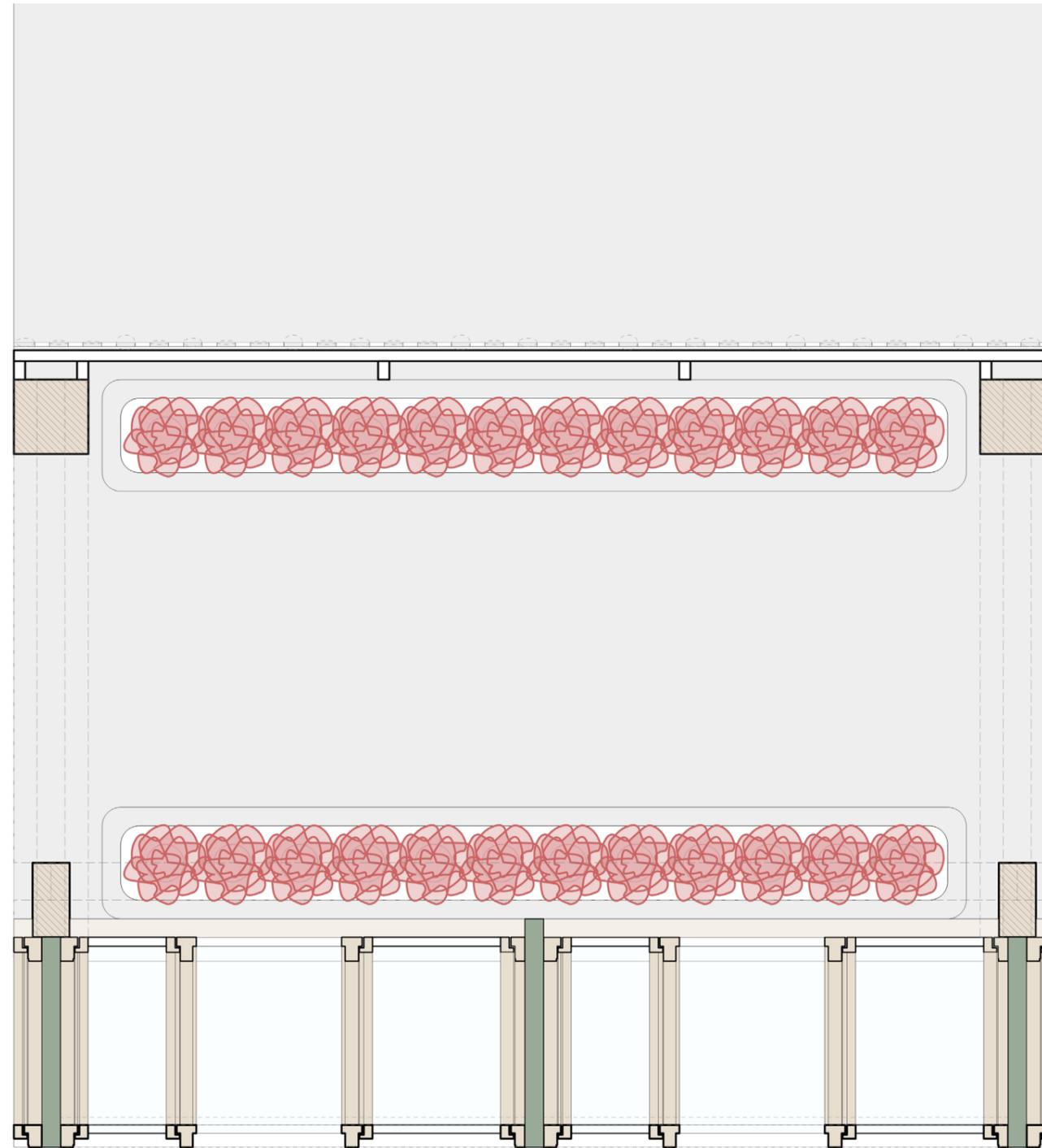


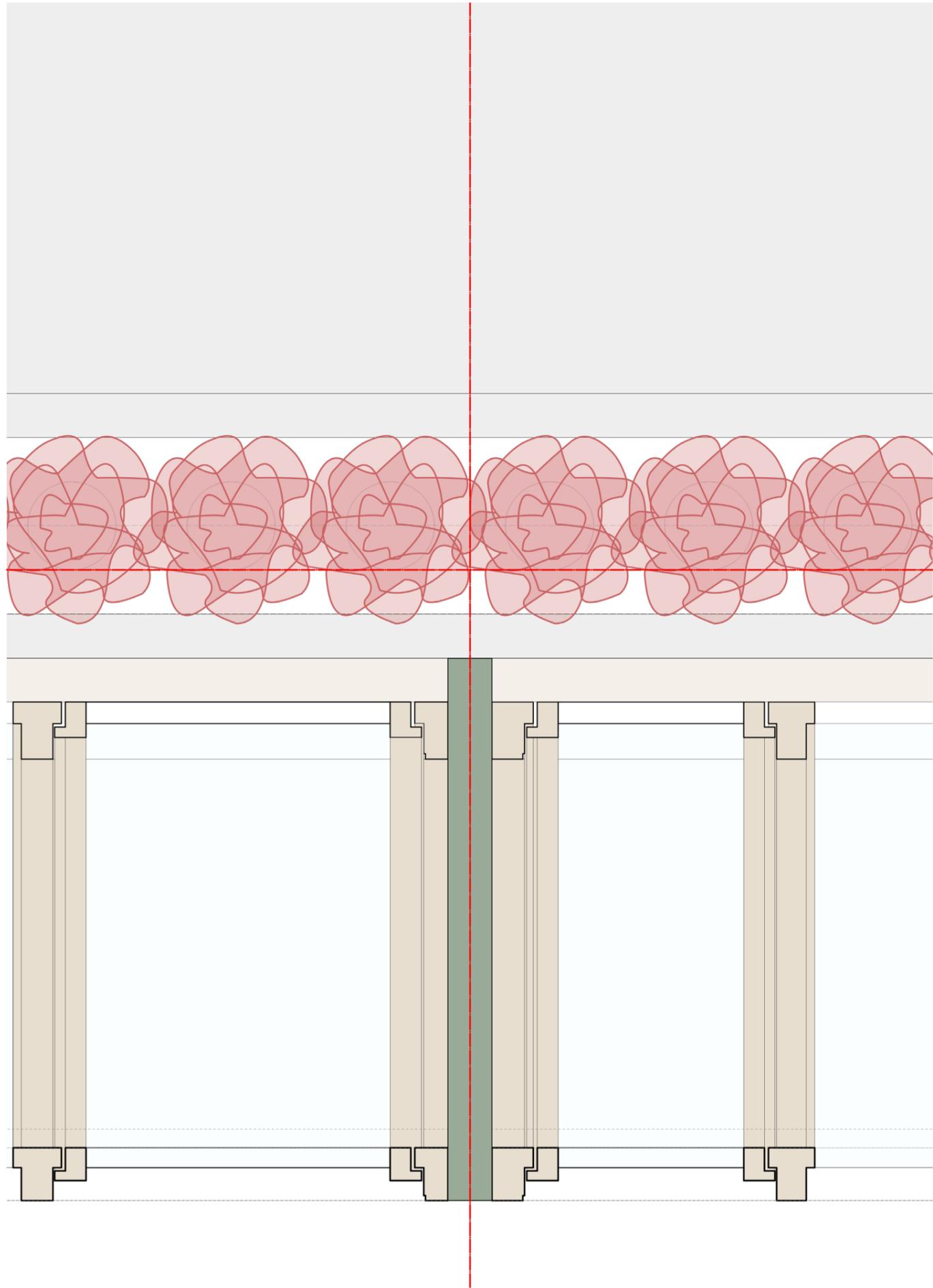
Hydroponic farm

Reused window frame from Don Bosco School

Floor
 80mm concrete
 30mm rigid insulation
 200mm CLT floor slab
 300mm glulam beam

HYDROPONIC FARM HORIZONTAL SECTION









LIBRARY

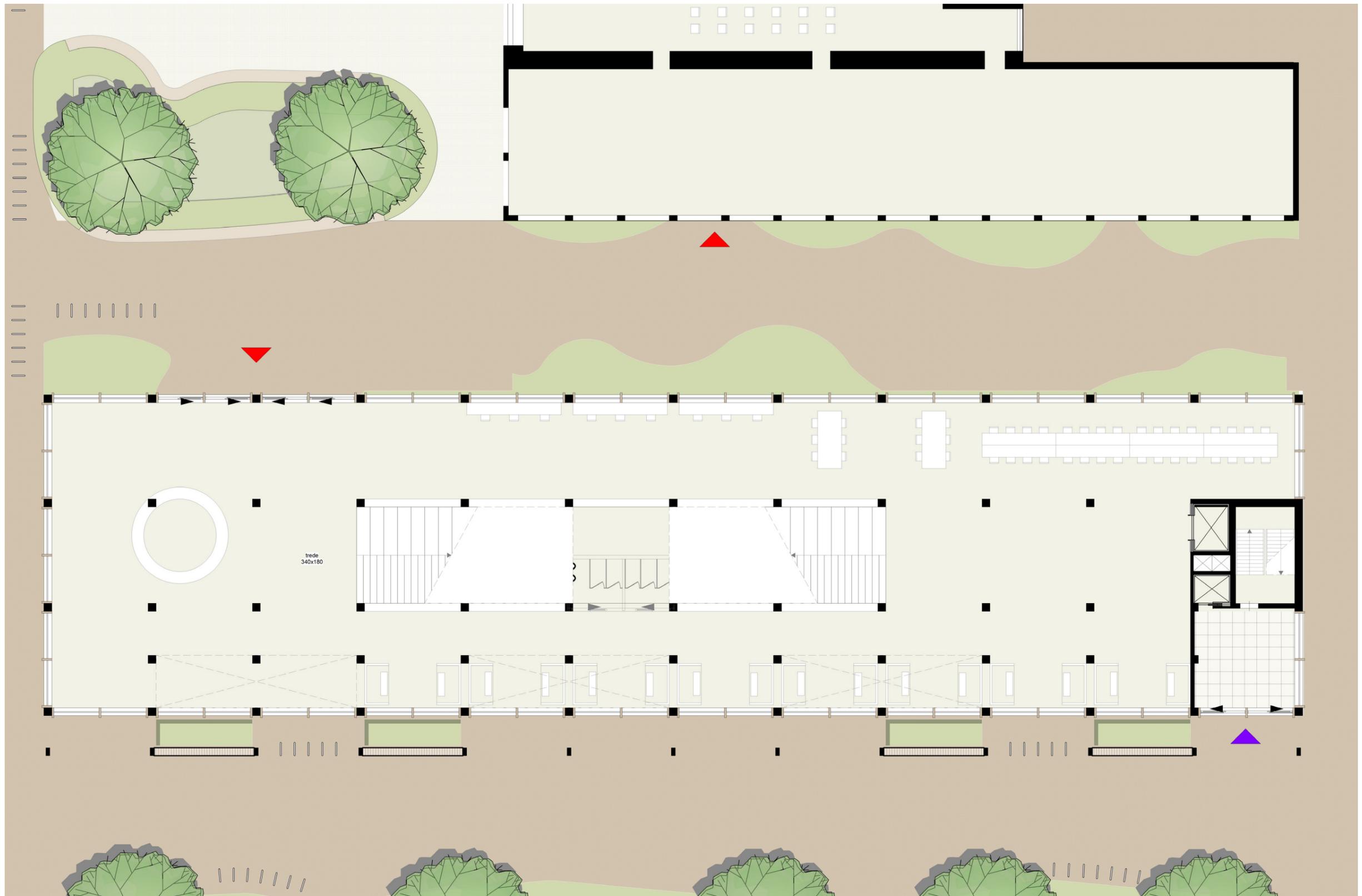


Open education

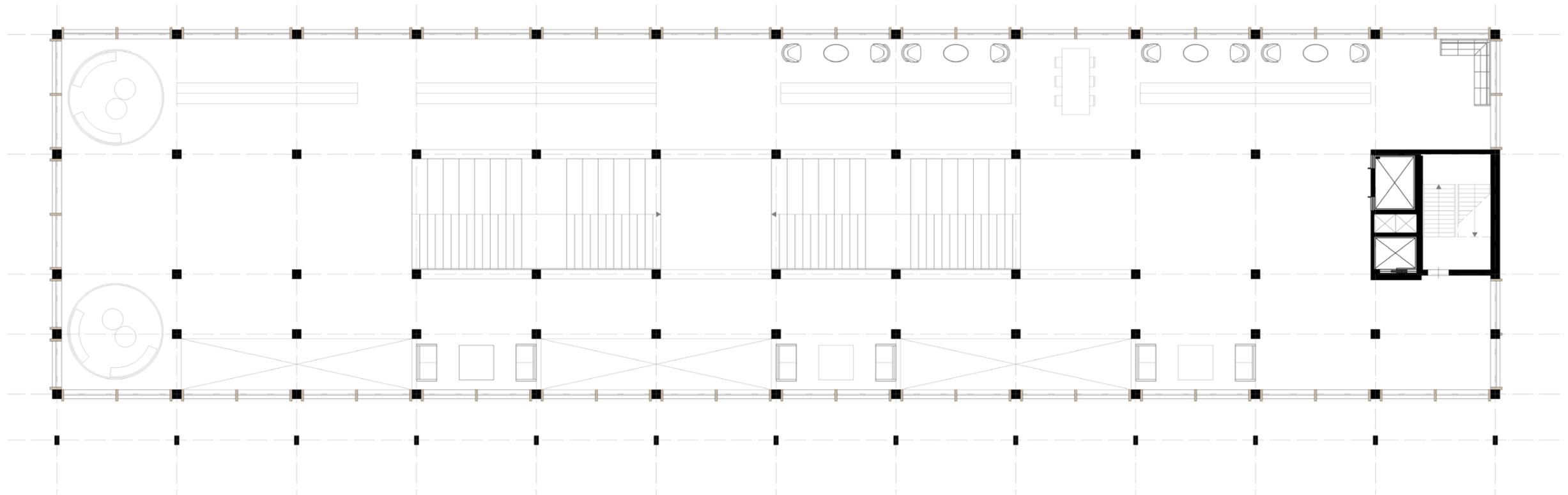
Cultural heritage and knowledge

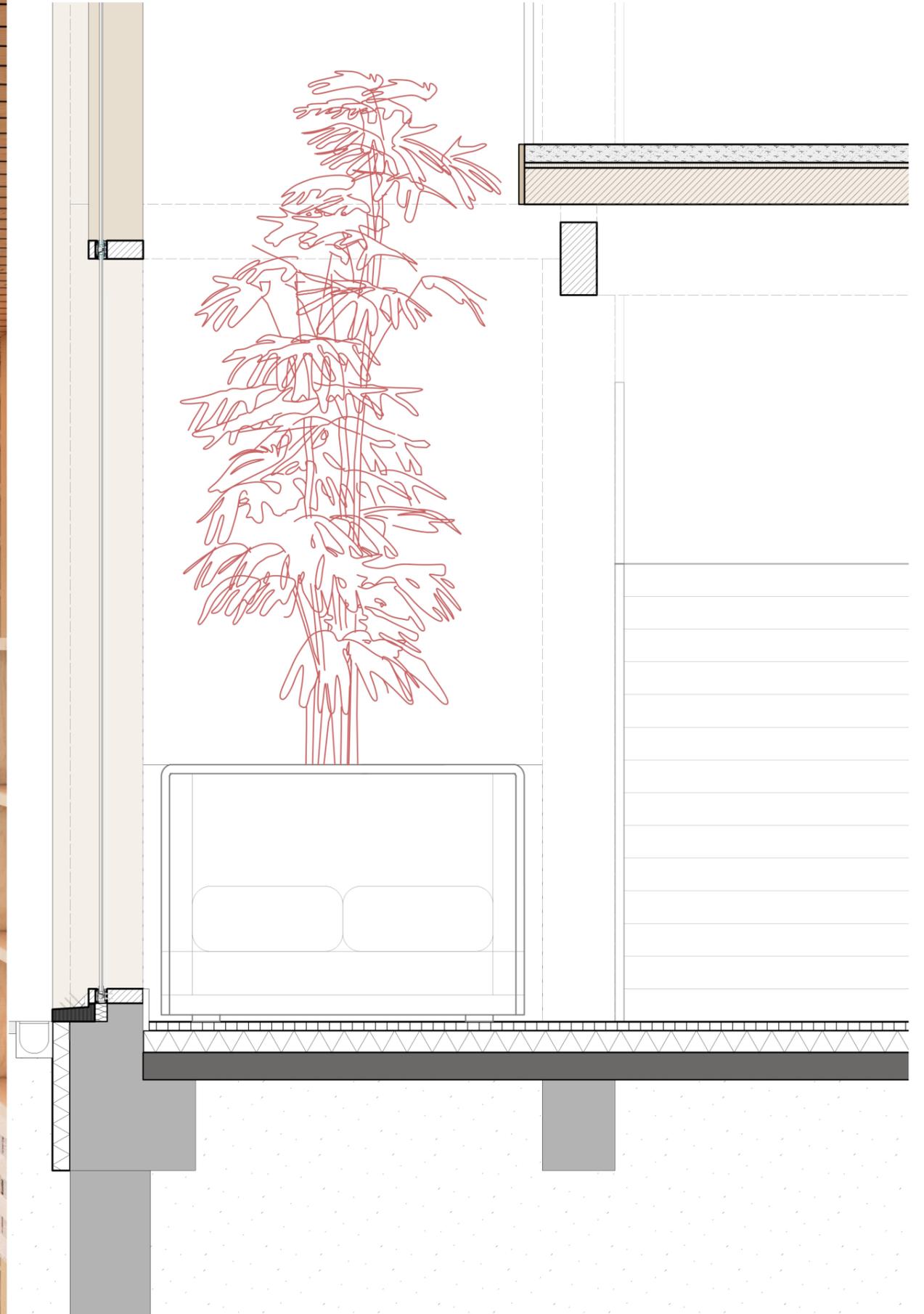
Toy lending for kids

GROUND FLOOR

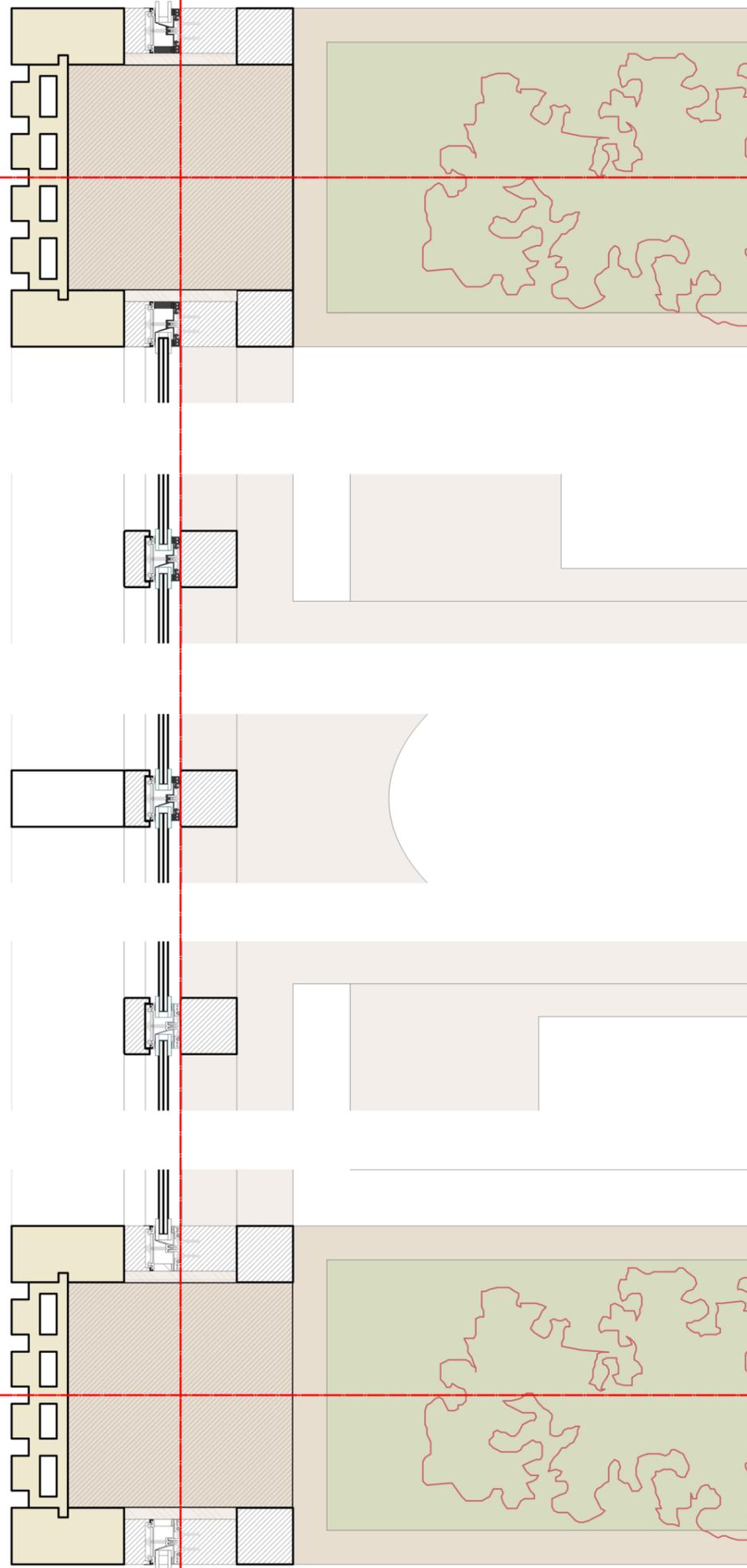


FIRST FLOOR

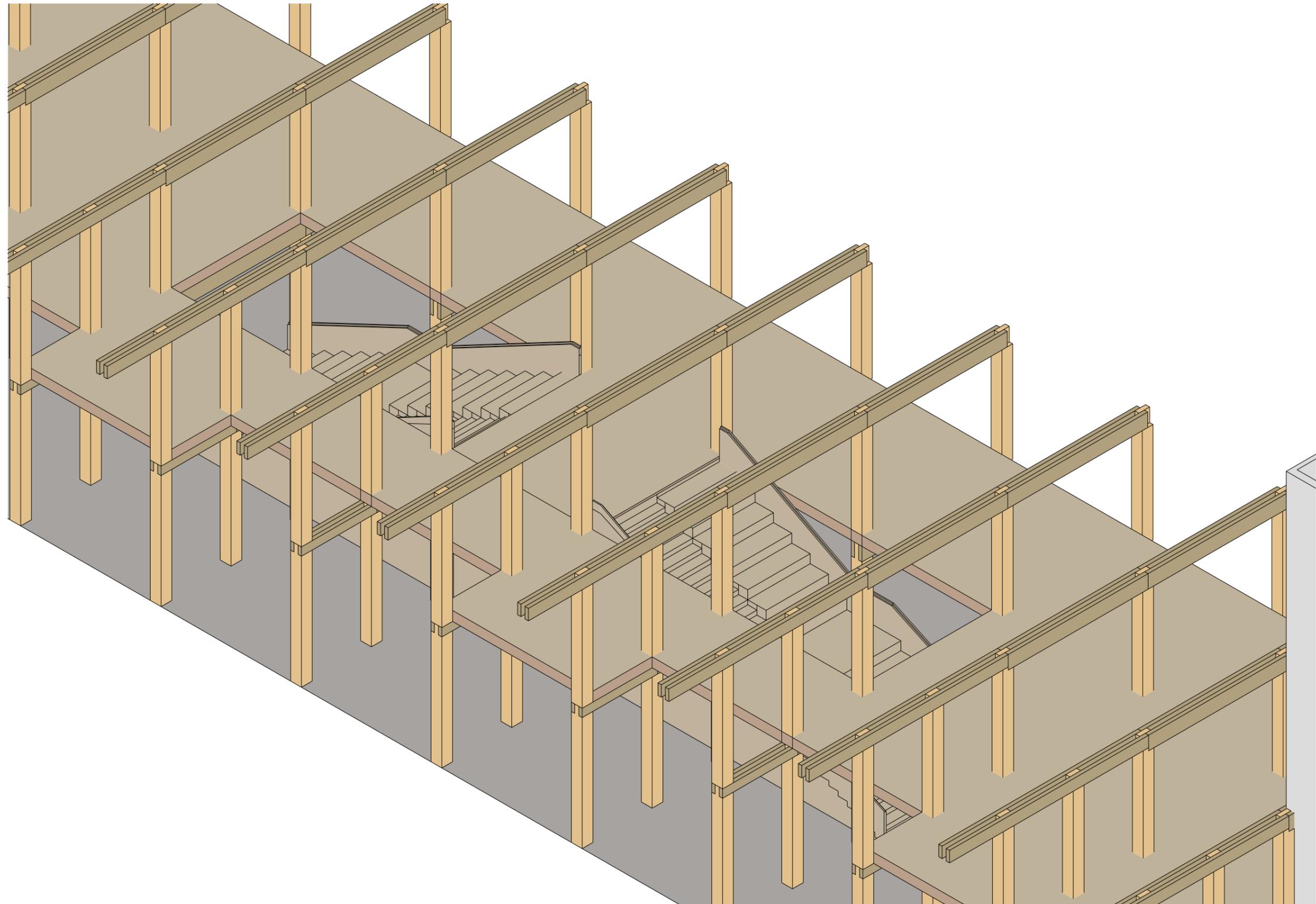




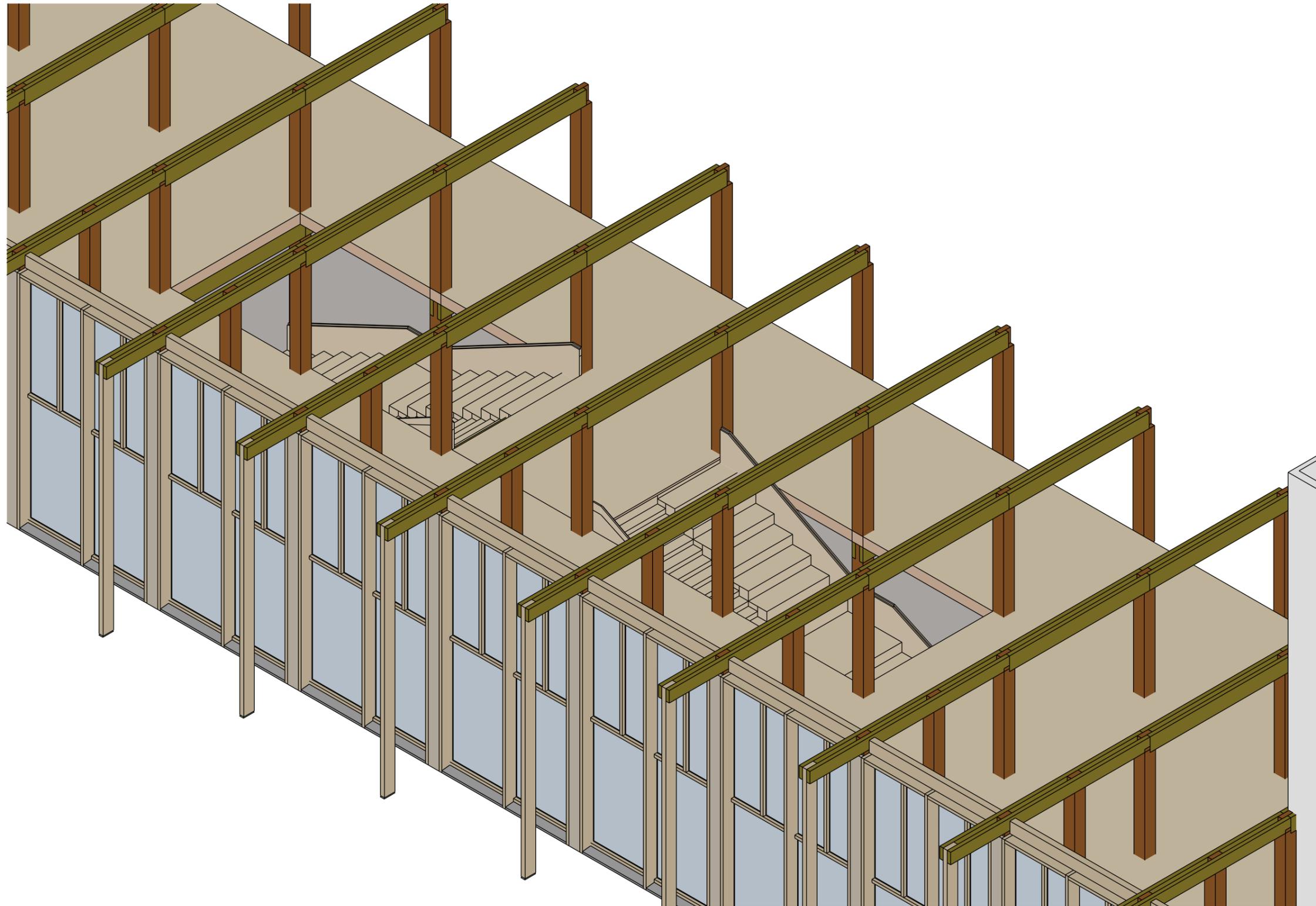
Facade frame construction
fraké frame
solid wood panel, engraved
400x400mm glulam column
curtain wall



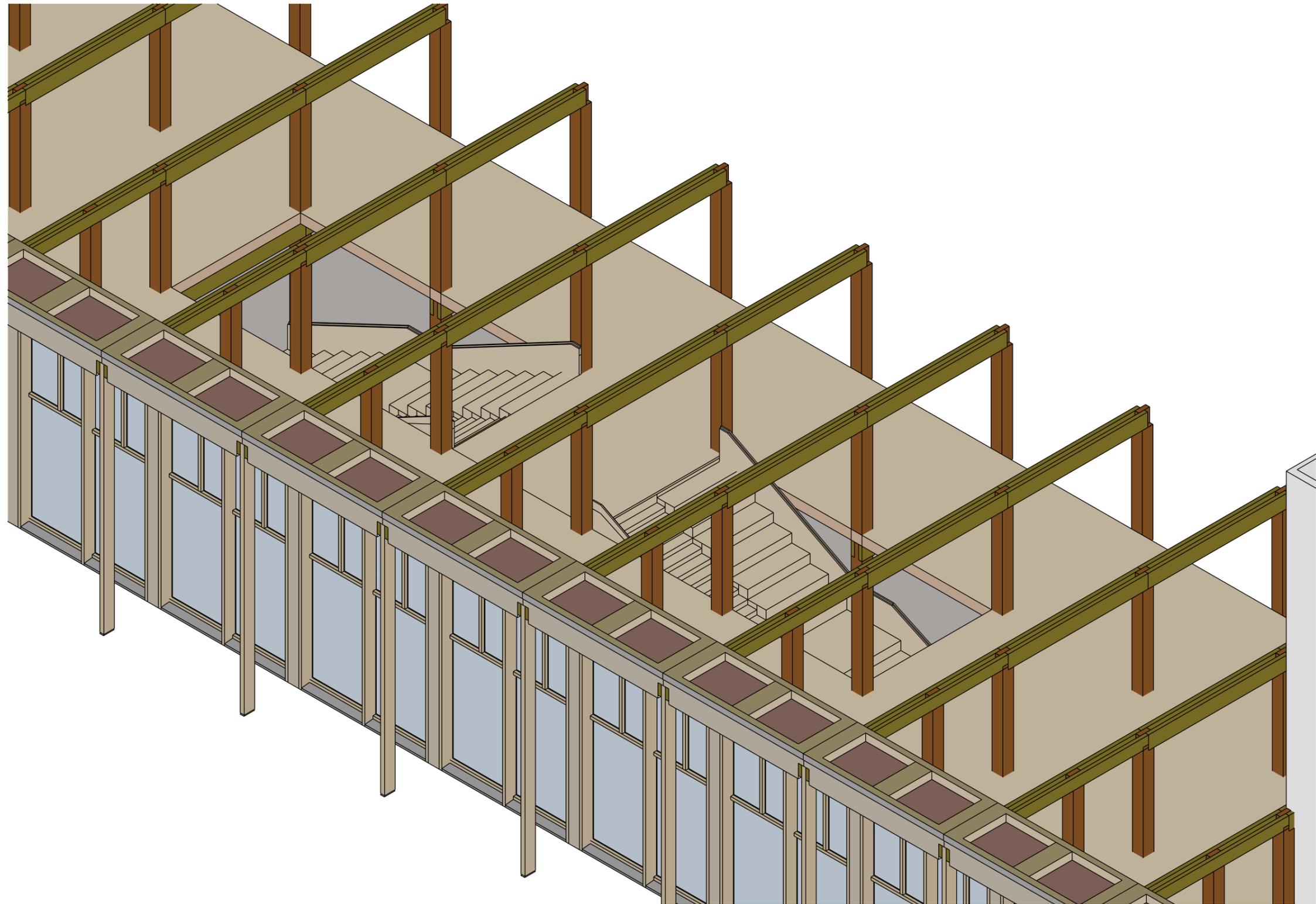
CONSTRUCTION ANATOMY LIBRARY



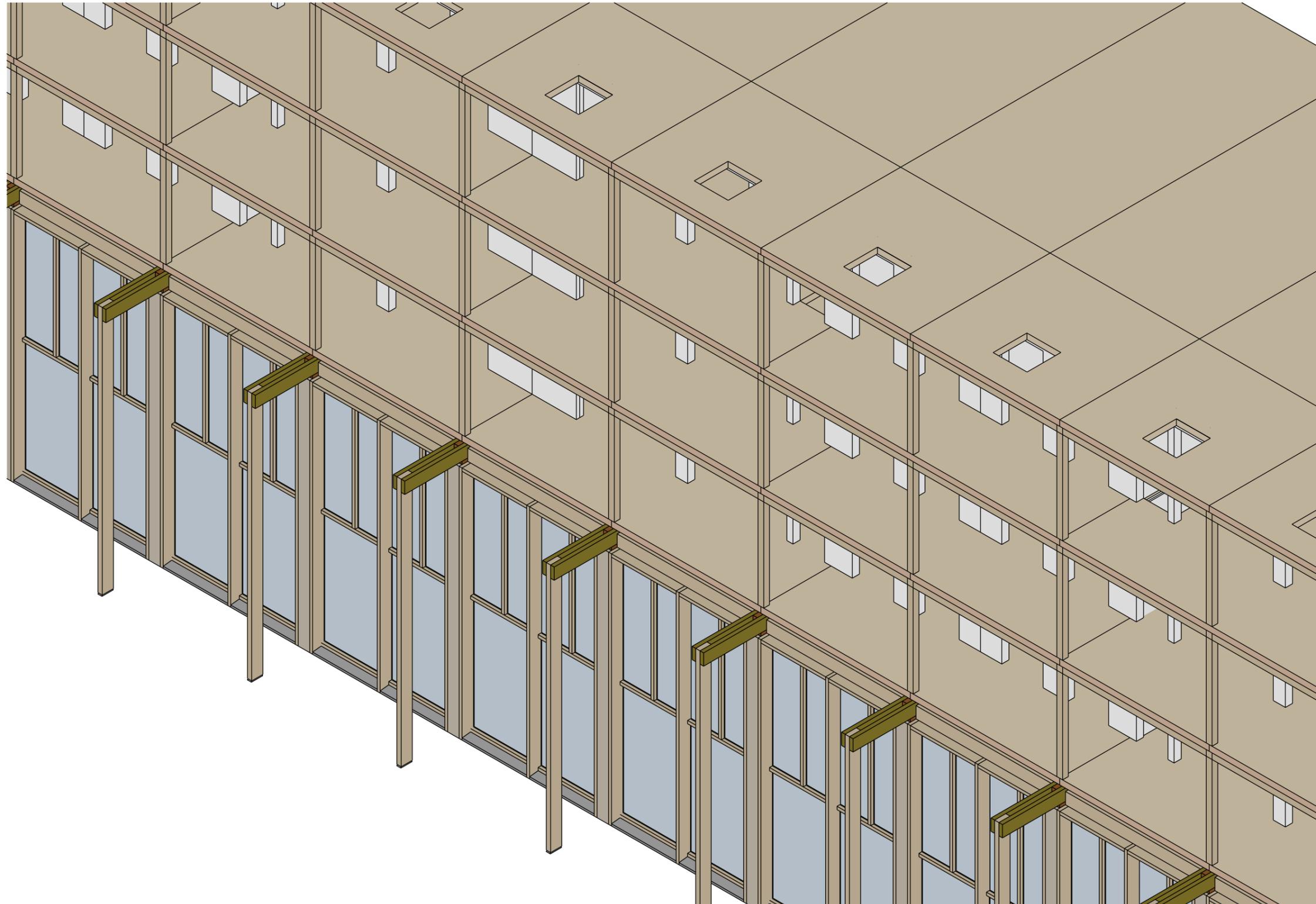
FAÇADE



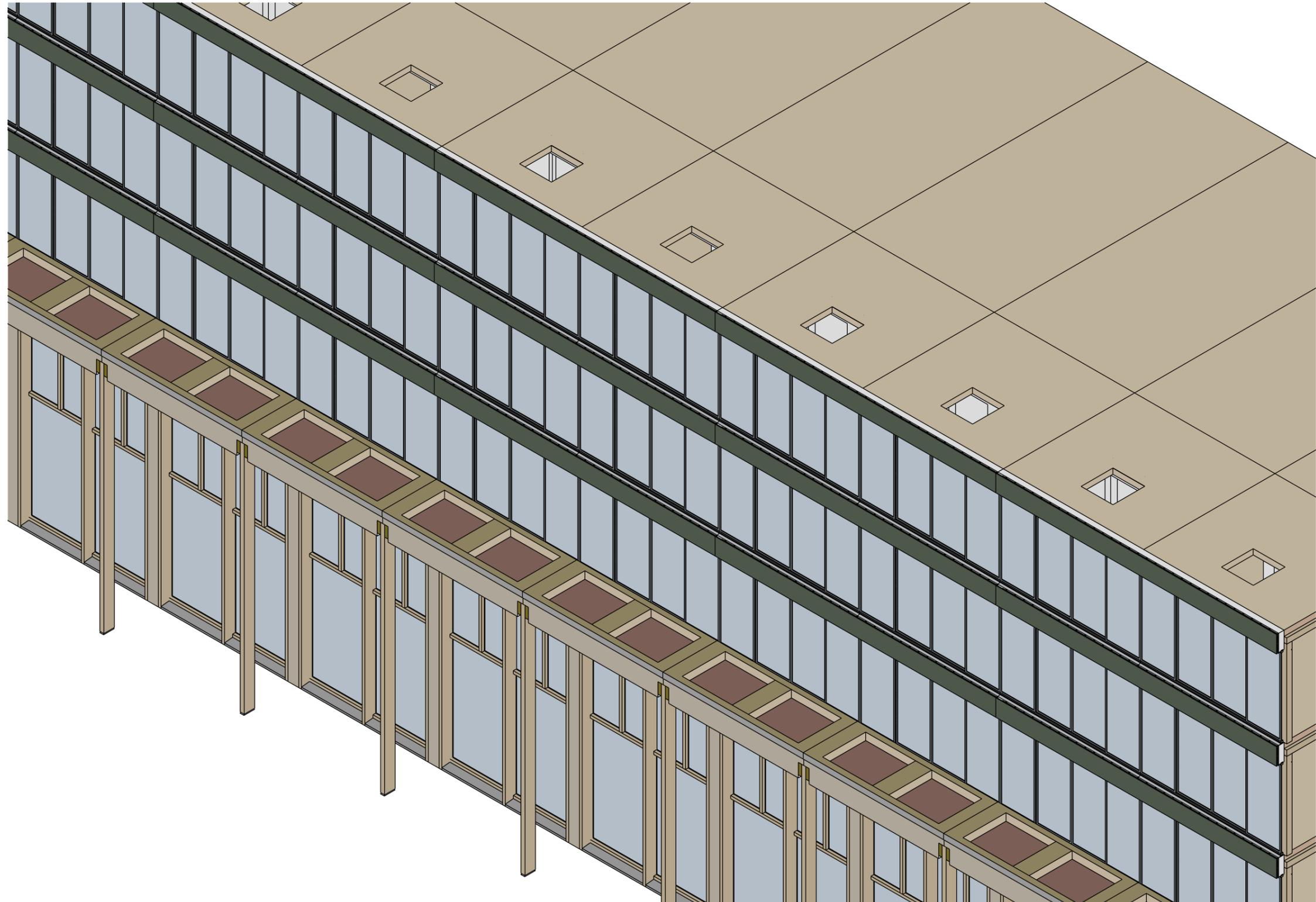
PLANTERS

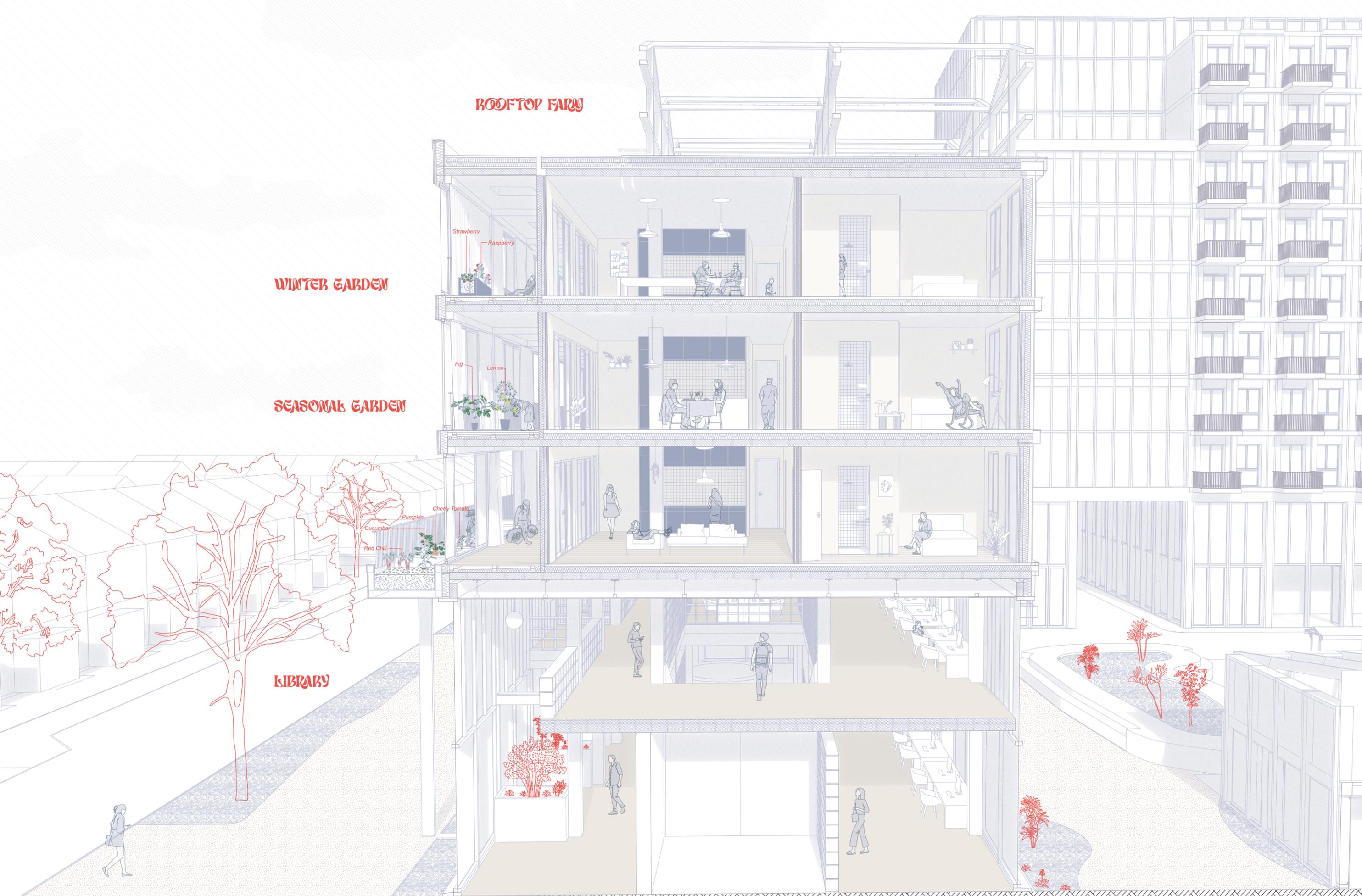


CLT LOAD BEARING WALLS FOR DWELLING UNITS



WINTER GARDEN FACADE





ROOFTOP FARM

WINTER GARDEN

SEASONAL GARDEN

LIBRARY

Strawberry

Raspberry

Fig

Lemon

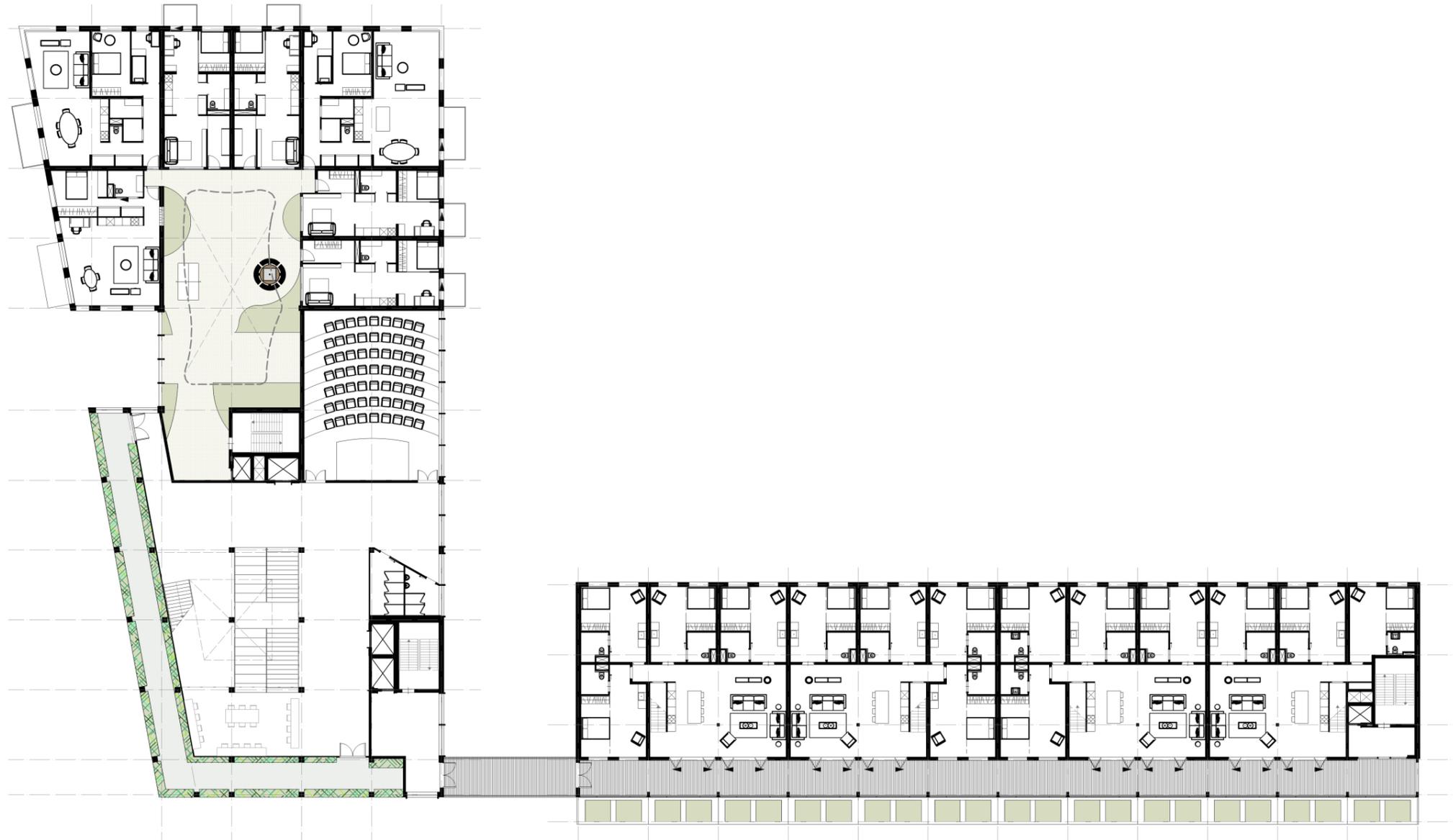
Cherry Tomato

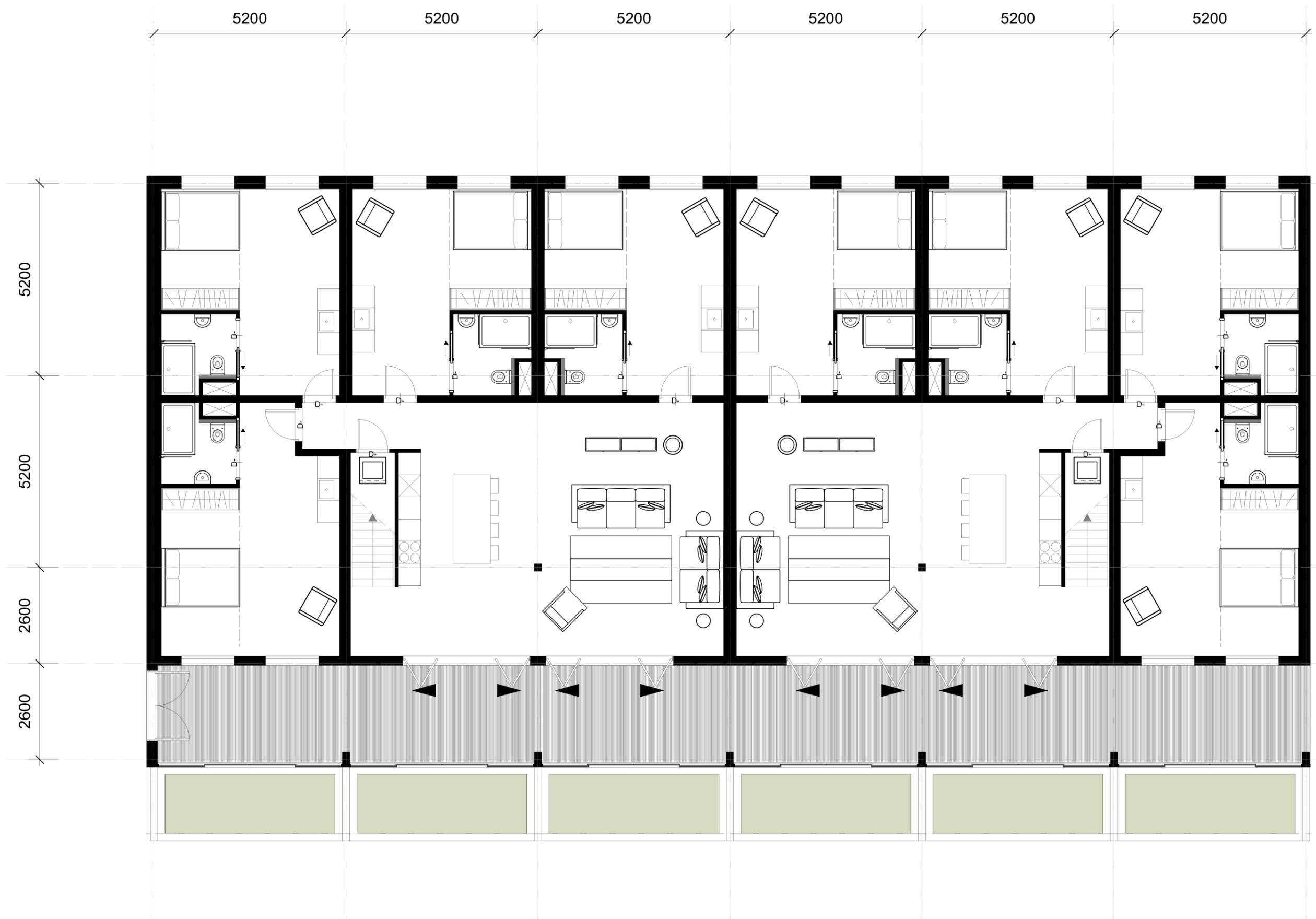
Cucumber

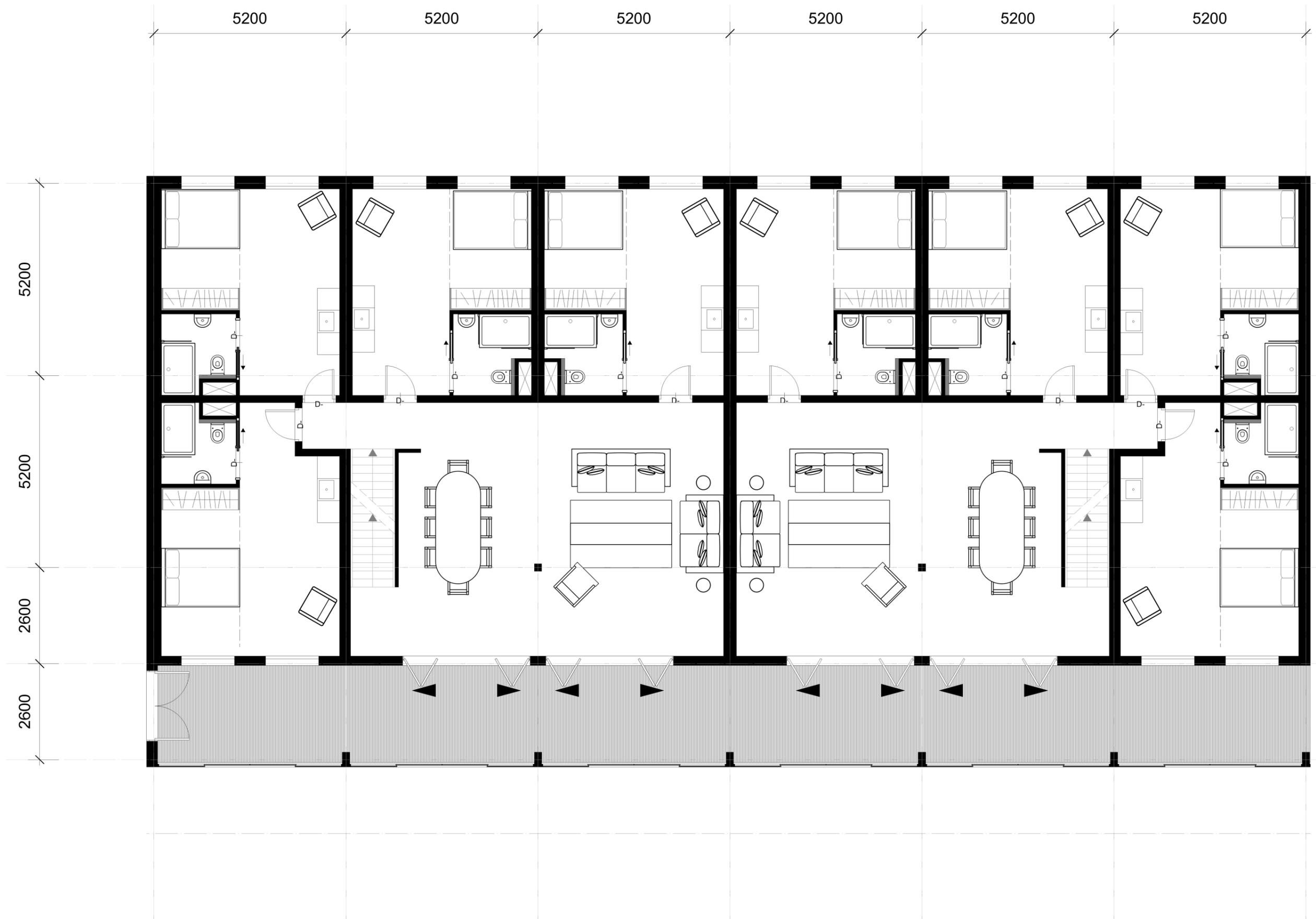
Pumpkin

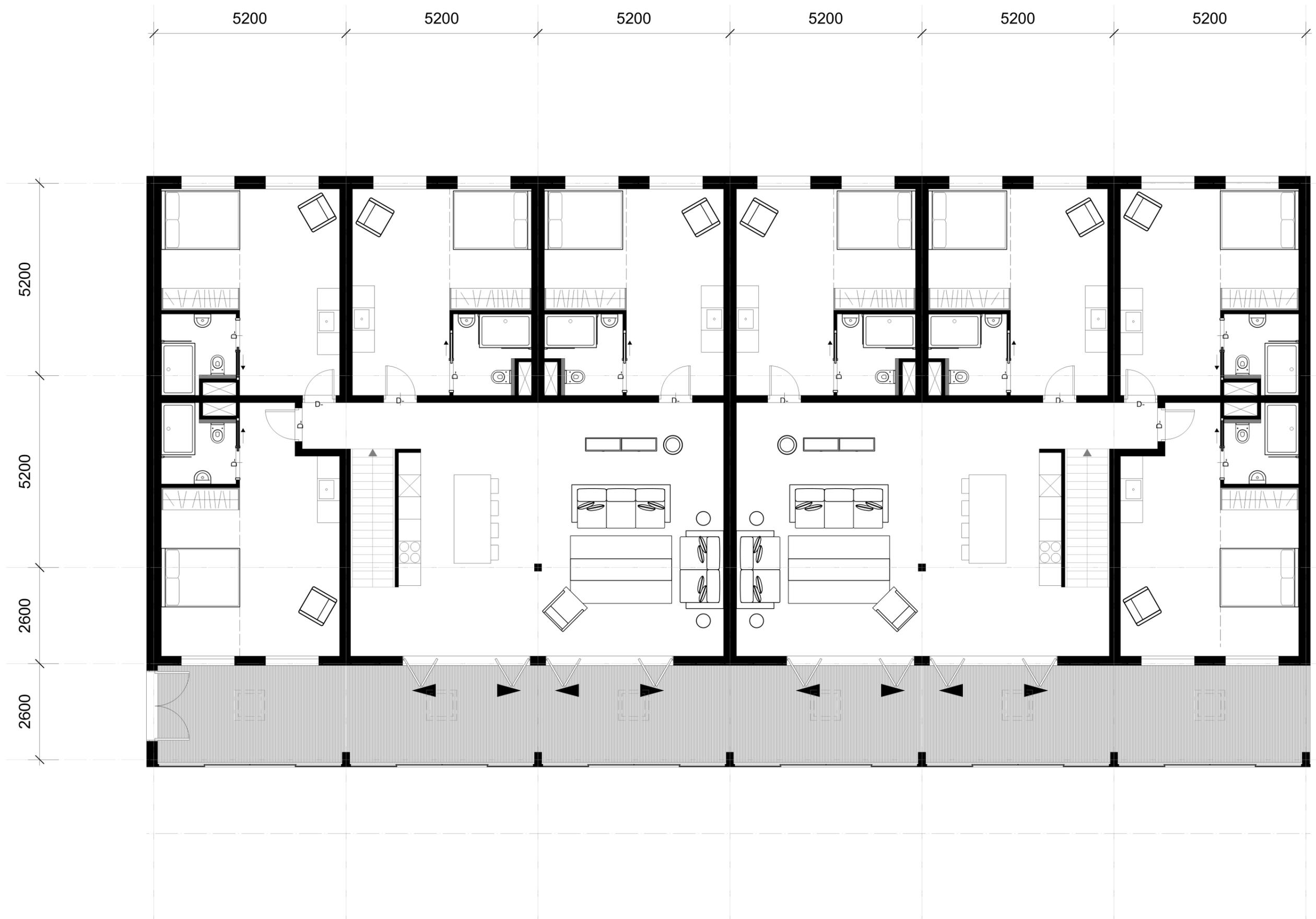
Red Chili

SECOND FLOOR











WINTER GARDEN & SEASONAL GARDEN



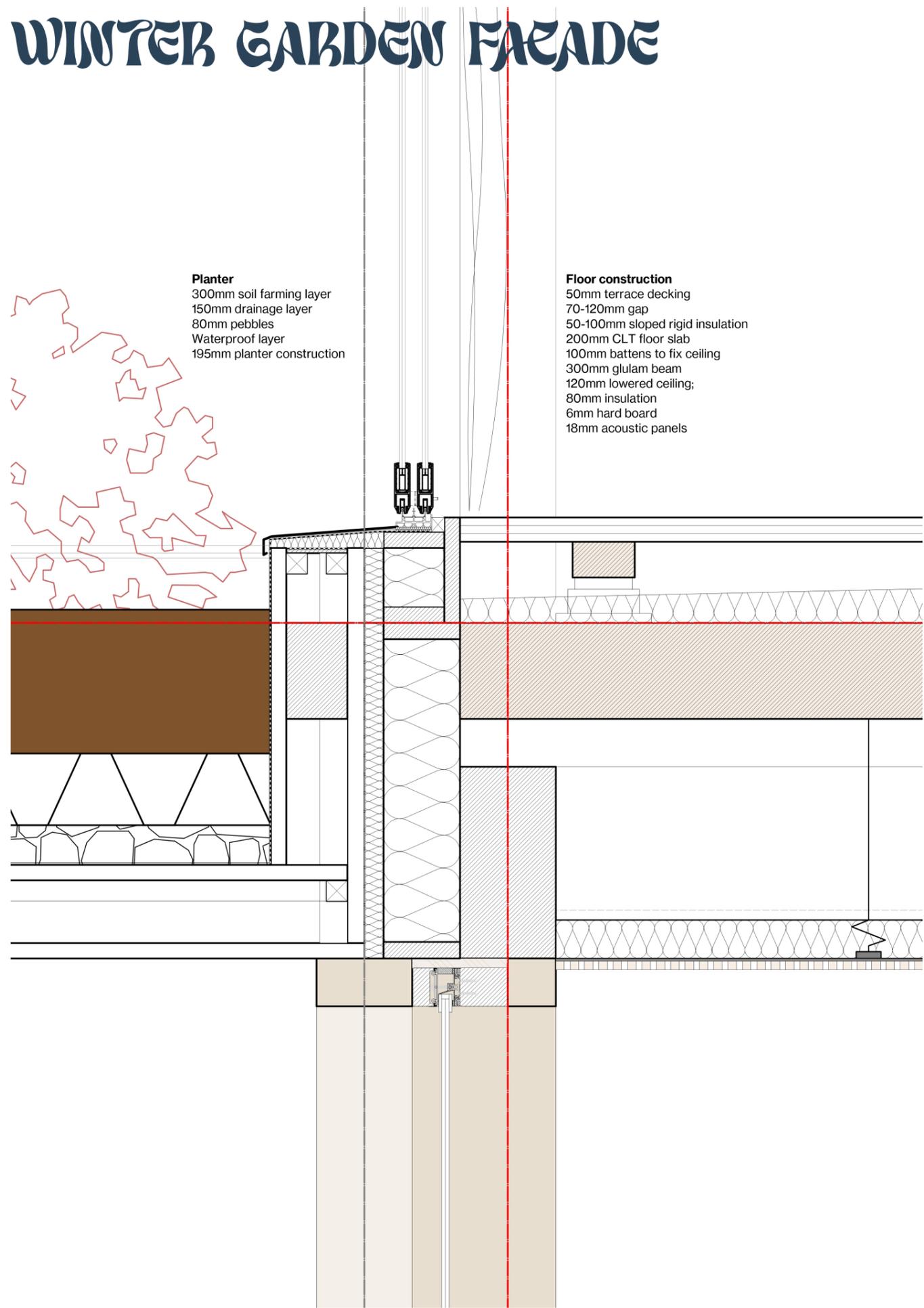
WINTER GARDEN FAÇADE

Planter

- 300mm soil farming layer
- 150mm drainage layer
- 80mm pebbles
- Waterproof layer
- 195mm planter construction

Floor construction

- 50mm terrace decking
- 70-120mm gap
- 50-100mm sloped rigid insulation
- 200mm CLT floor slab
- 100mm battens to fix ceiling
- 300mm glulam beam
- 120mm lowered ceiling;
- 80mm insulation
- 6mm hard board
- 18mm acoustic panels



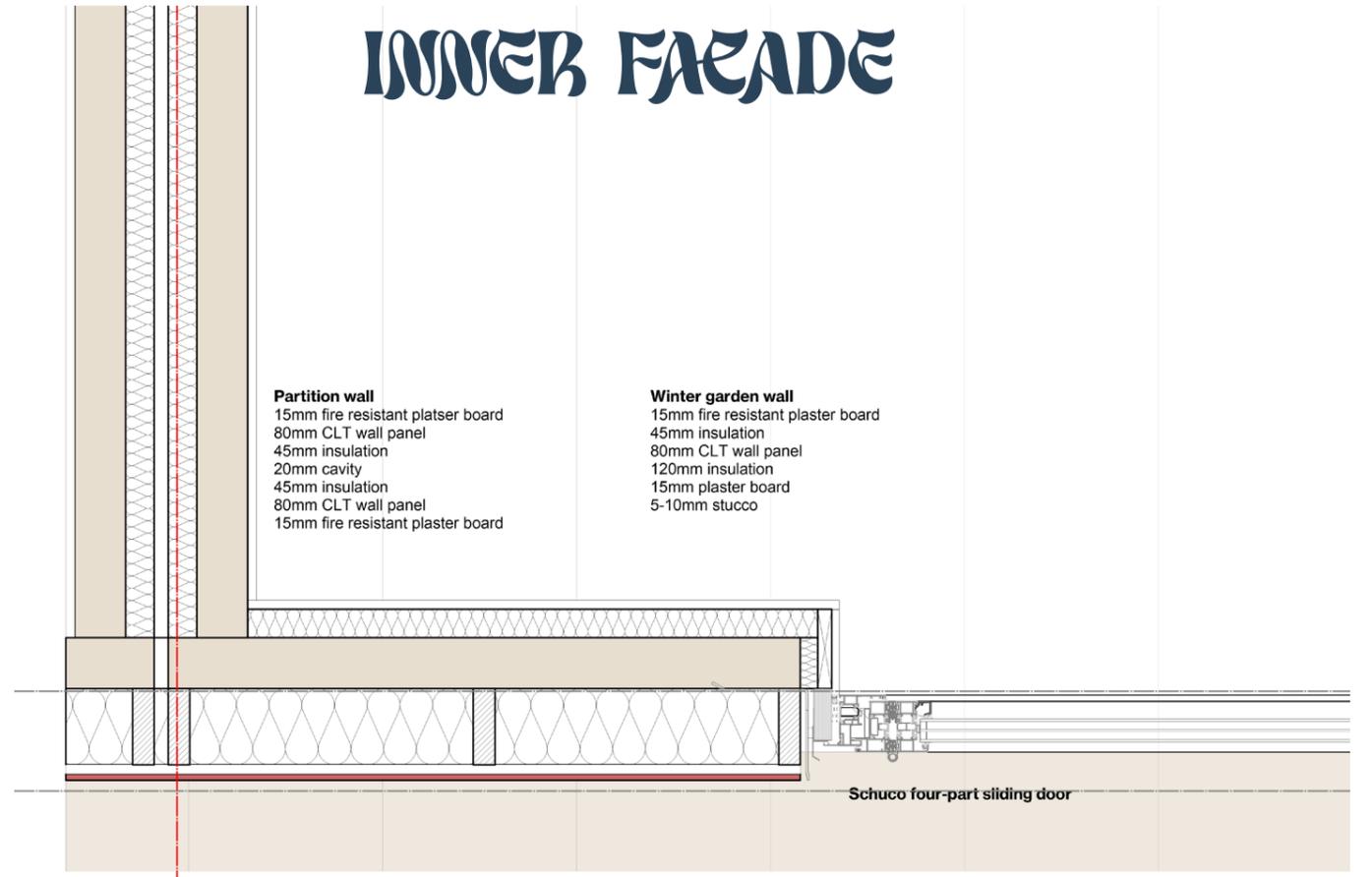
INNER FAÇADE

Partition wall

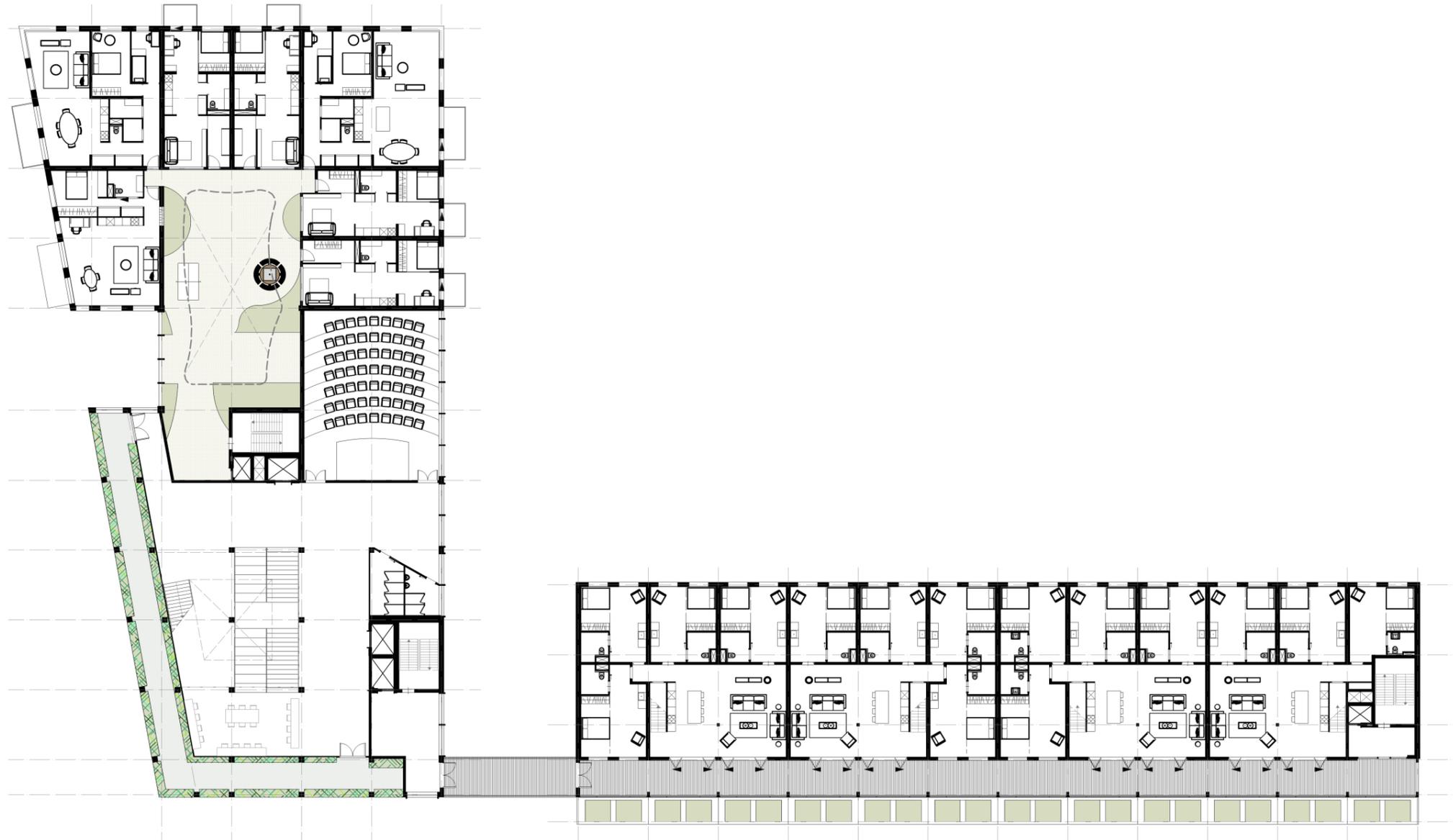
- 15mm fire resistant plaster board
- 80mm CLT wall panel
- 45mm insulation
- 20mm cavity
- 45mm insulation
- 80mm CLT wall panel
- 15mm fire resistant plaster board

Winter garden wall

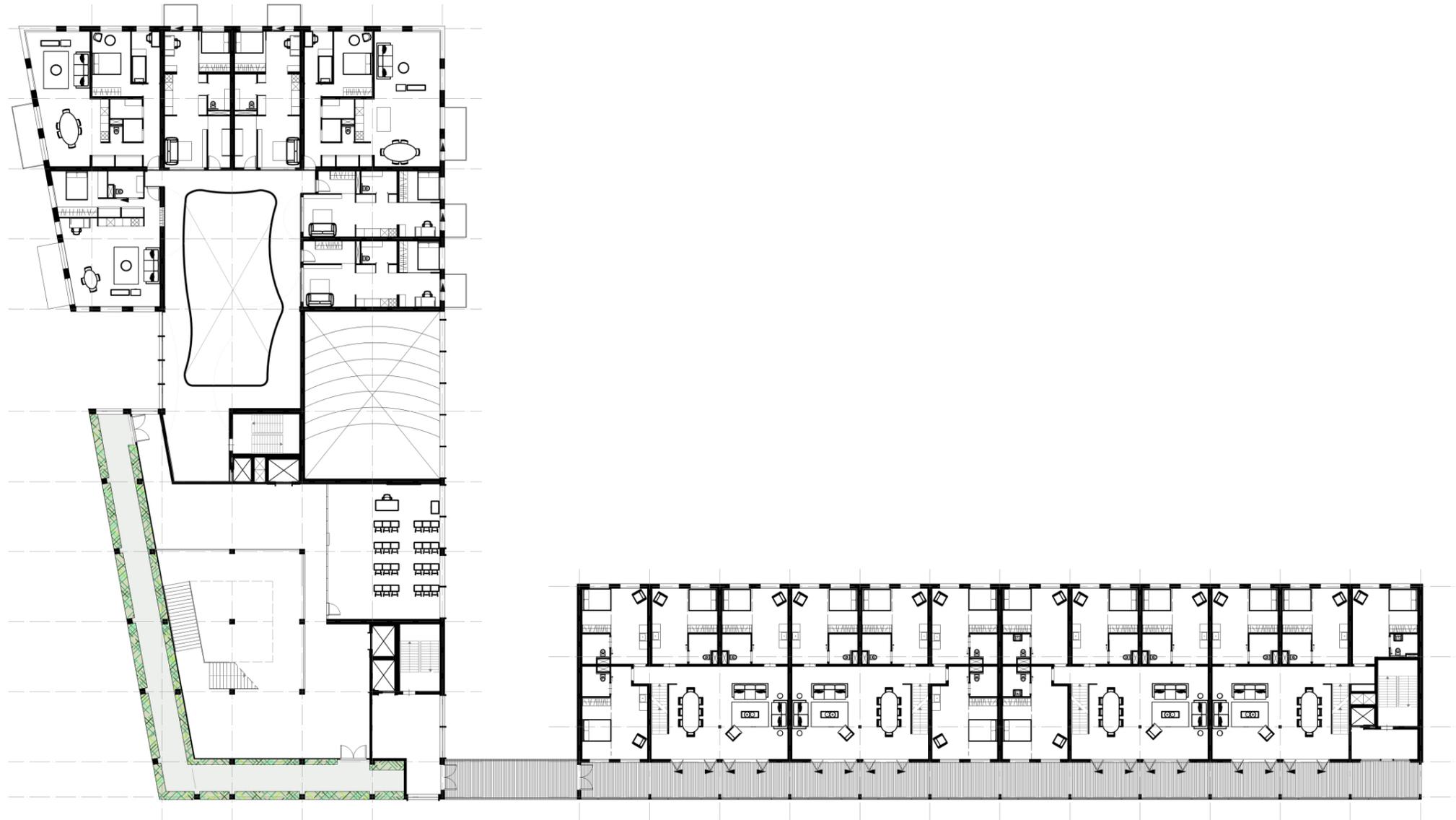
- 15mm fire resistant plaster board
- 45mm insulation
- 80mm CLT wall panel
- 120mm insulation
- 15mm plaster board
- 5-10mm stucco

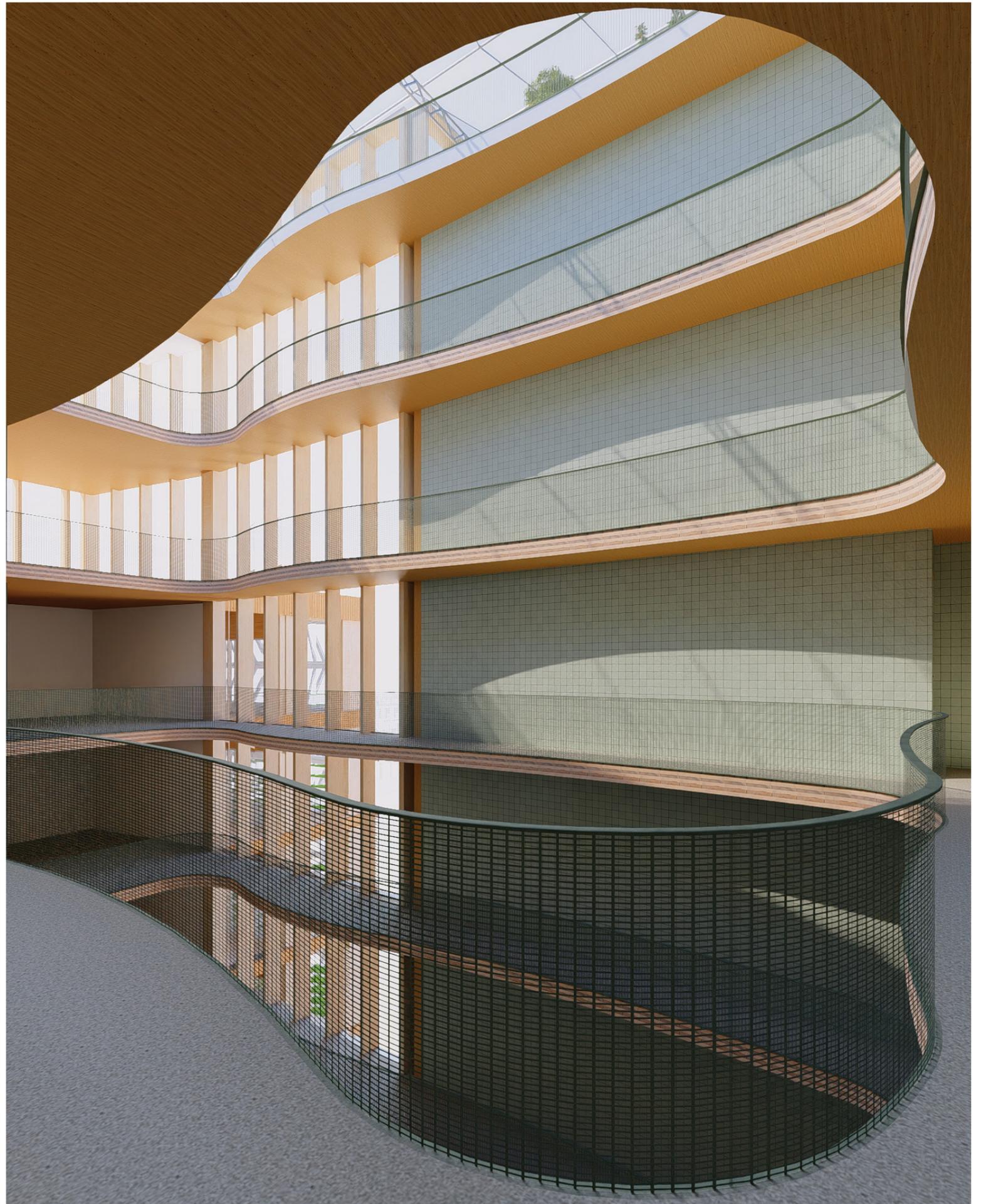


SECOND FLOOR

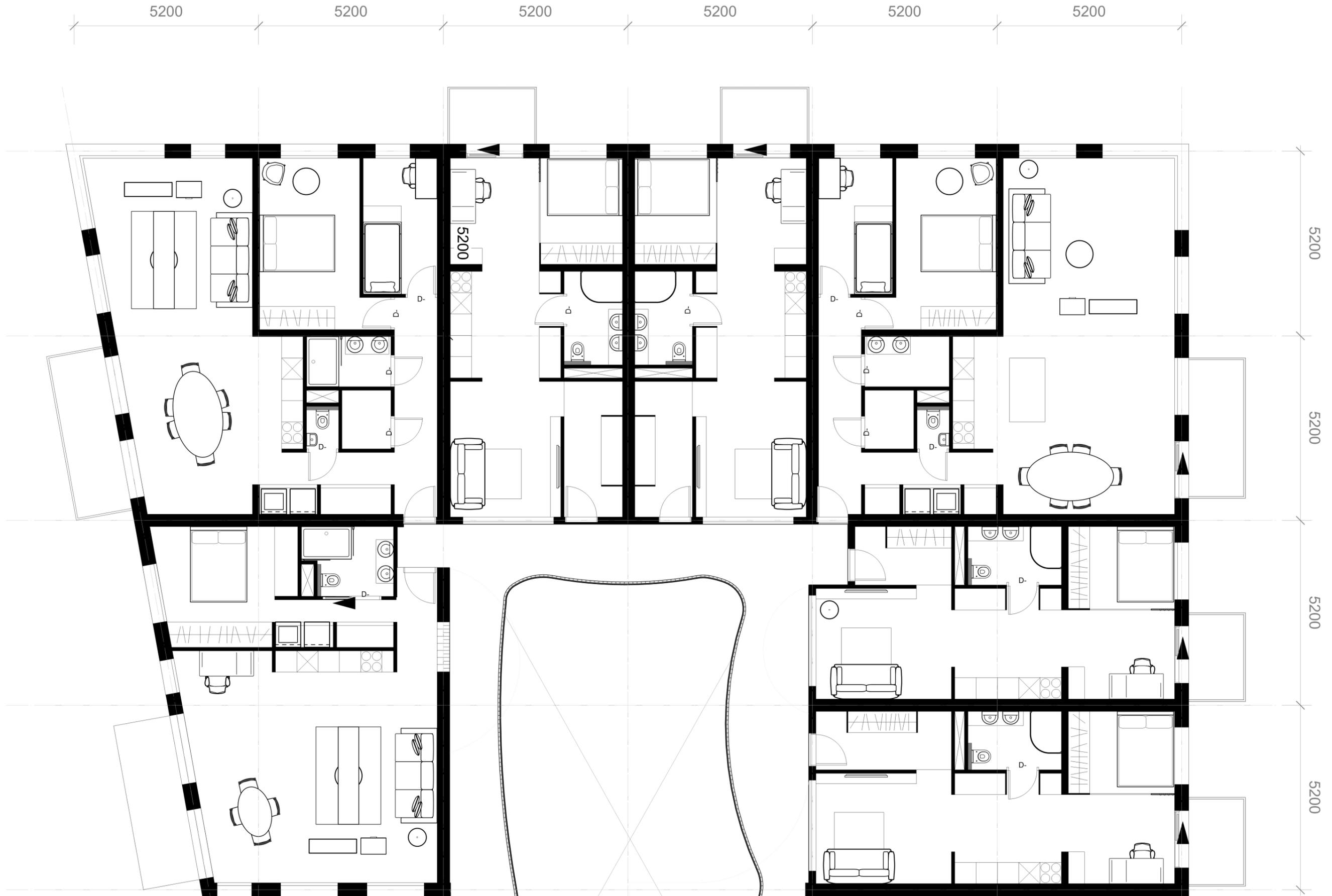


THIRD FLOOR

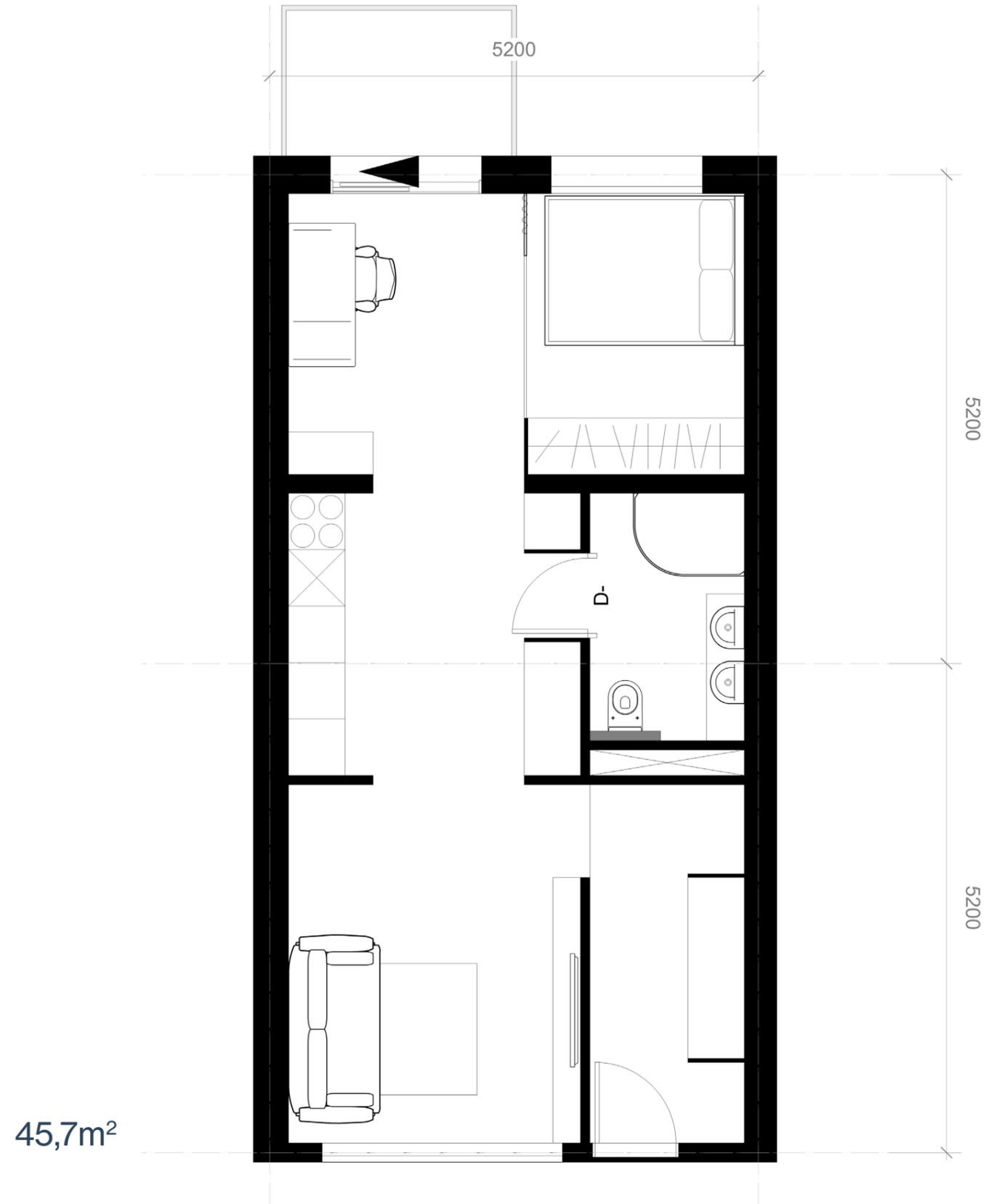




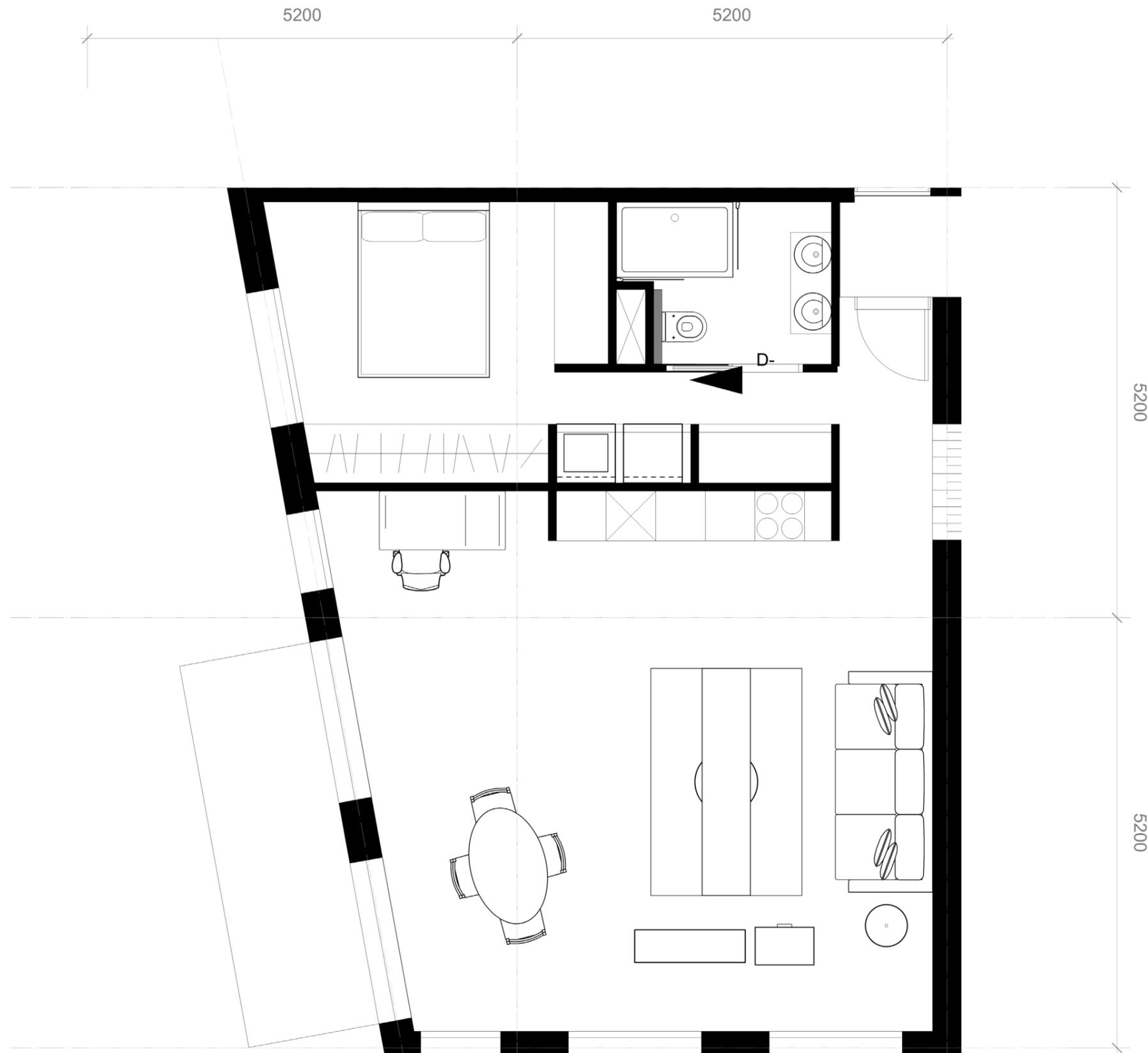
APARTMENTS



COUPLES APARTMENT



COUPLES APARTMENT



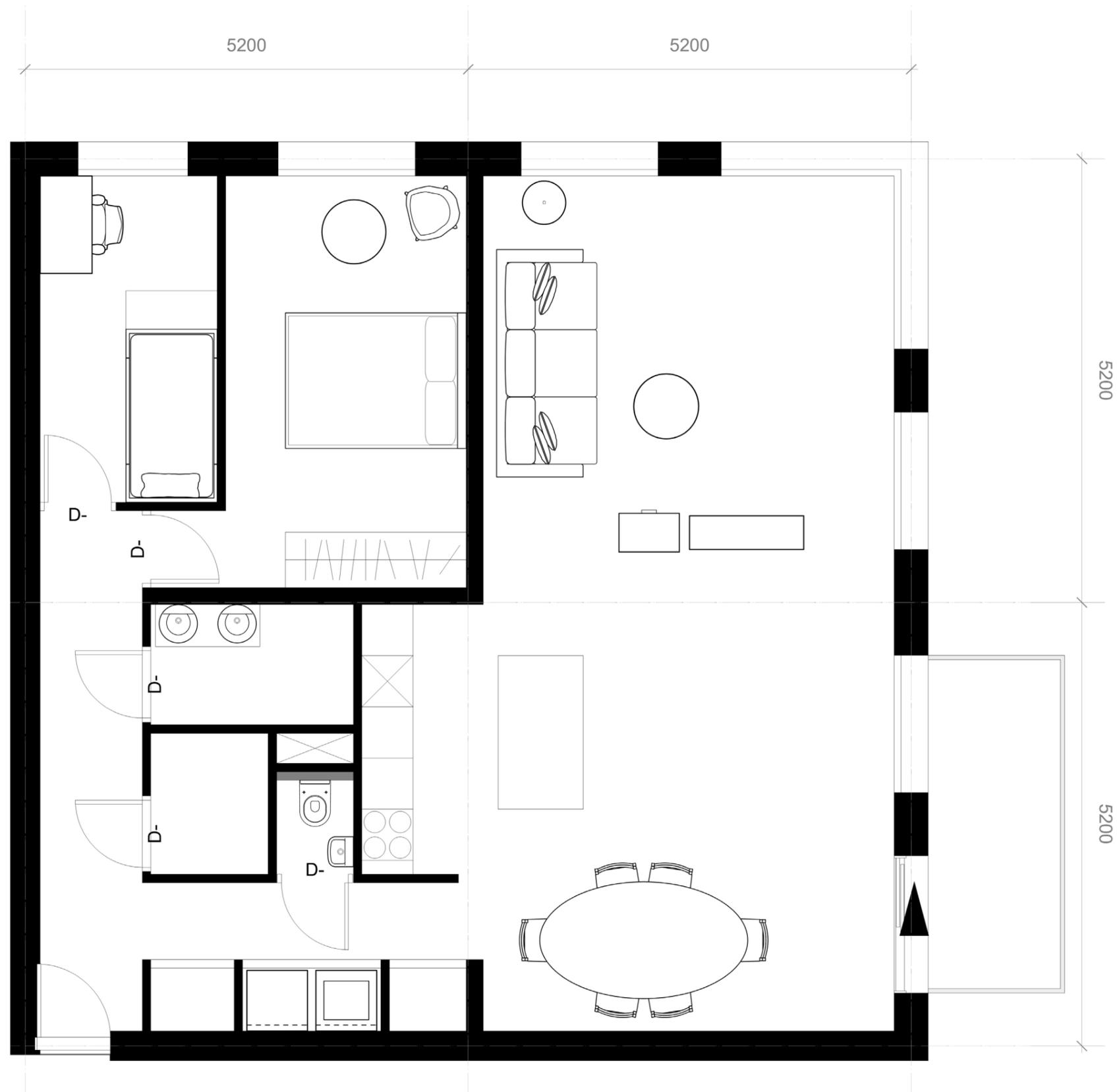
71,9 m²

FAMILY APARTMENT



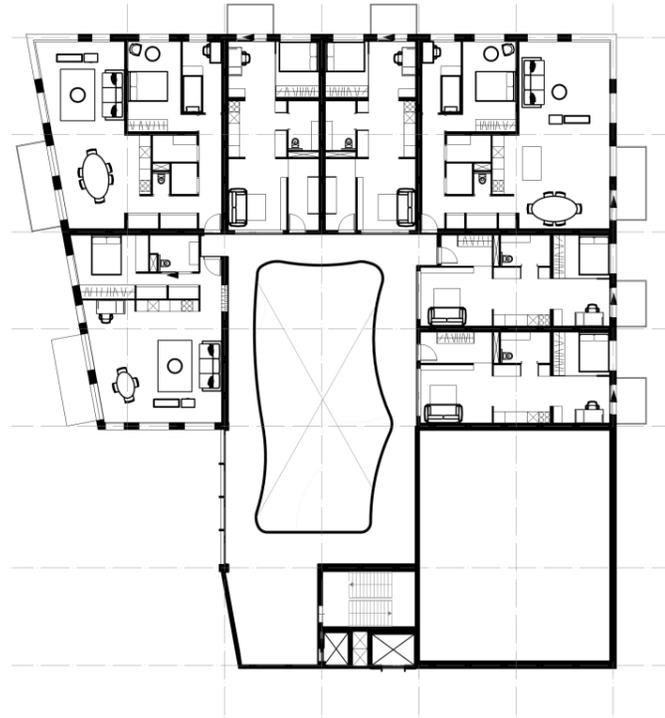
90,8 m²

FAMILY APARTMENT

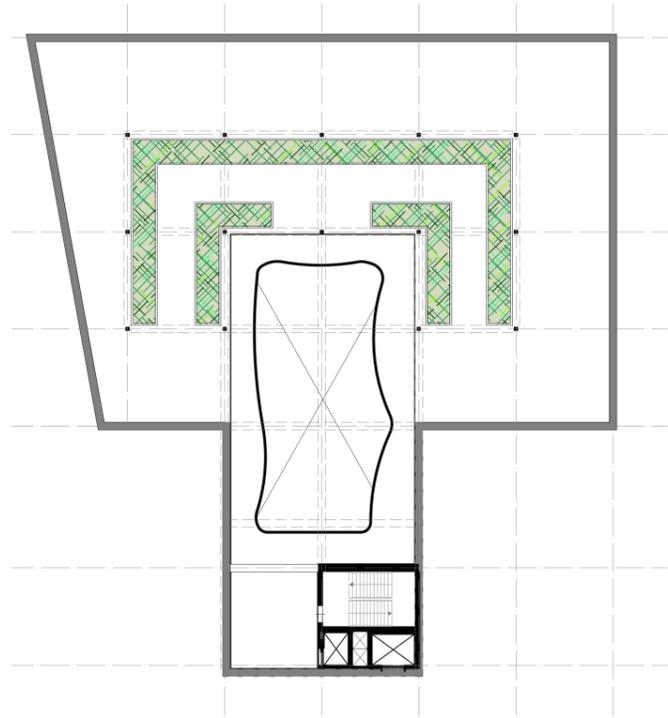


100 m²

NINETH FLOOR



TENTH FLOOR



ROOFTOP FARM





