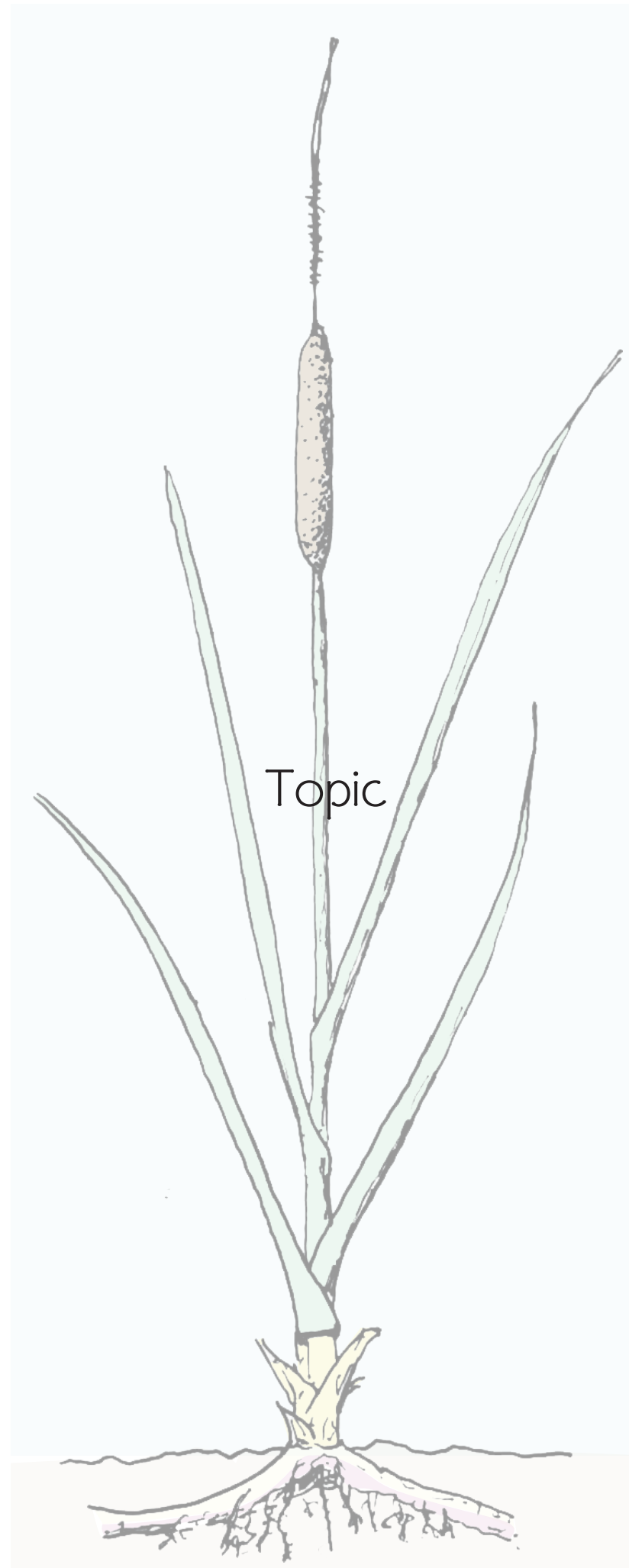


THE NATURE INCLUSIVE CITY



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Summer of Inspiration



Basque Country - 2019



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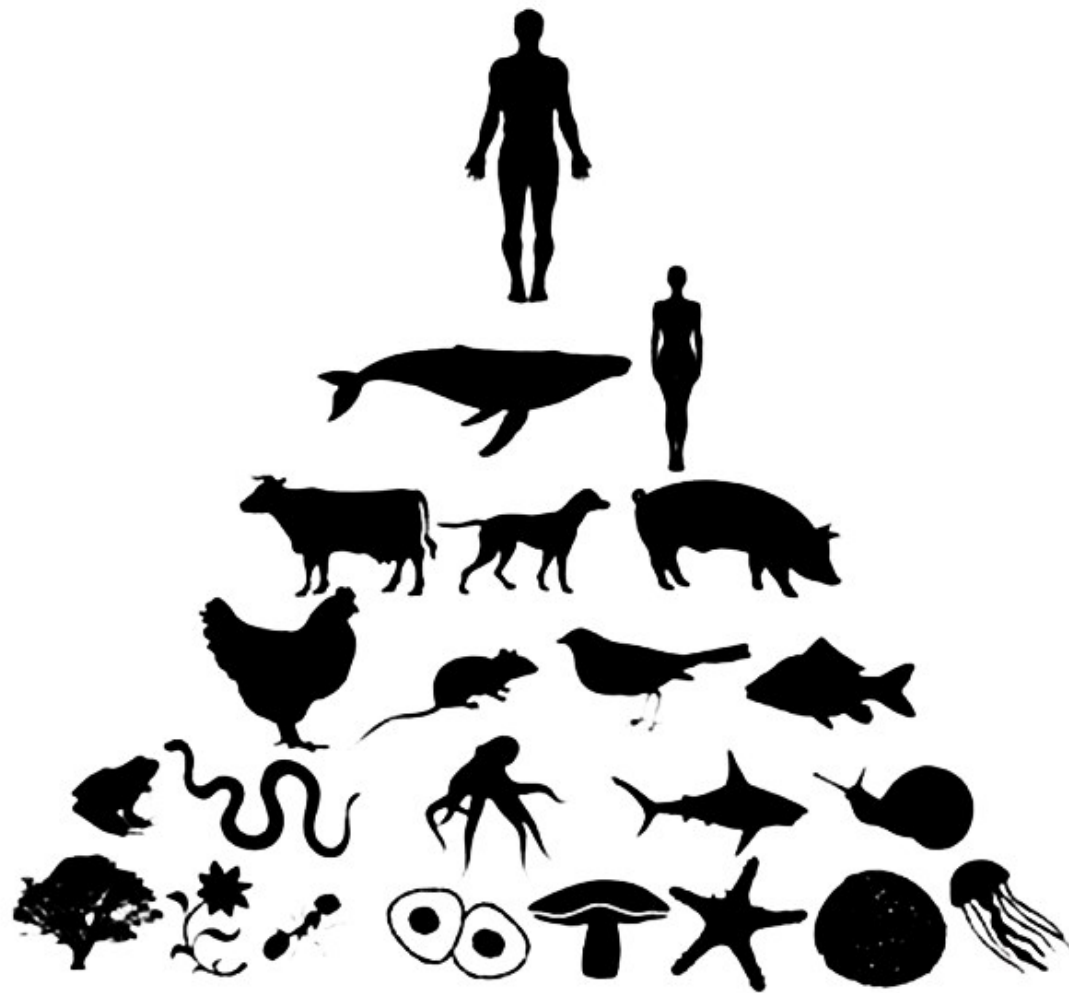
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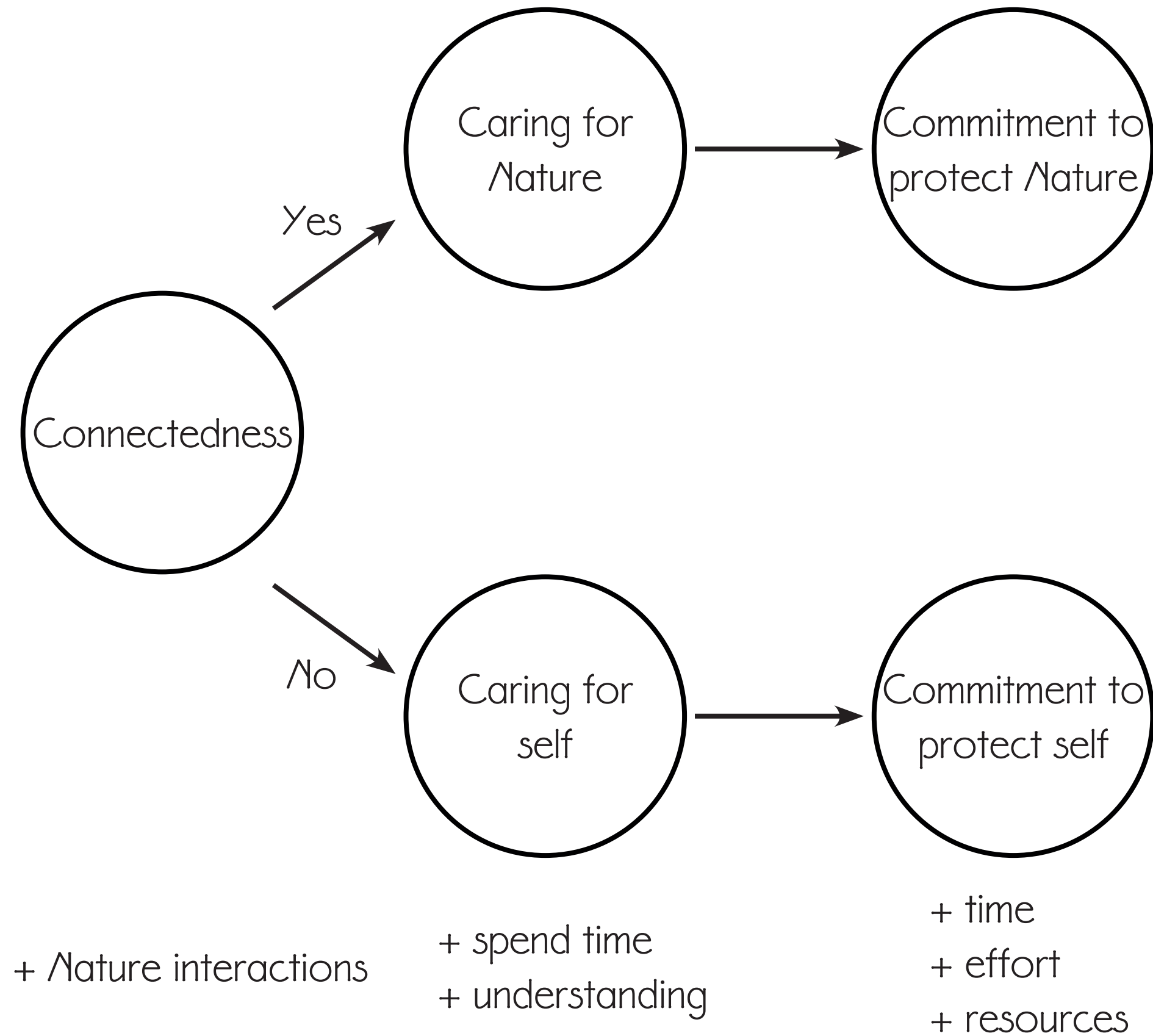
A Nature - Human Separation



Human-Nature separation results in making poor choices for our environment



Connectedness, Caring, Commitment (Schultz, 2002)



Design Assignment

How to design a residential building for young urban families in a highly urban environment
that makes nature an inherent part of the architecture
by using a holistic human-nature relationship as a guiding theme

Design Assignment

How to design a residential building for young urban families in a highly urban environment
that makes nature an inherent part of the architecture
by using a holistic human-nature relationship as a guiding theme

Nature:

“the cosmic reality we can perceive, to the extent that it originated completely or partially without human interference.”
(Westhoff, 1984)

A Holistic human-nature relationship:

A relationship wherein mankind understands the interdependence of the living world and their place in the bigger picture of the earth biosphere.
(Own Definition)



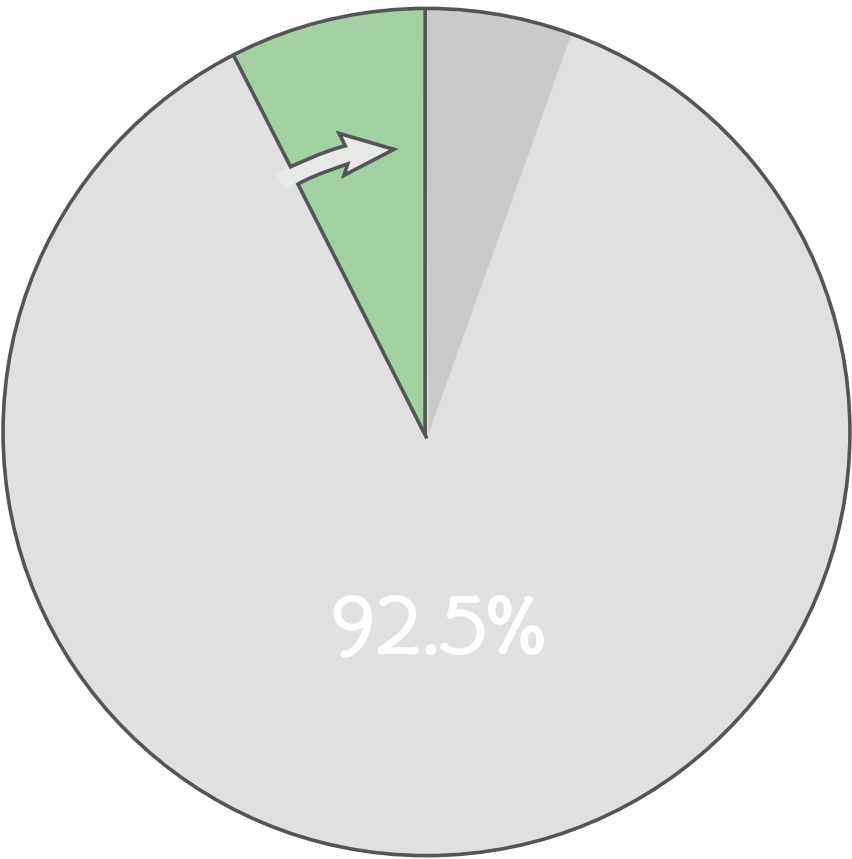
Food and Civilisation



Make the natural process of foodproduction visible in the building

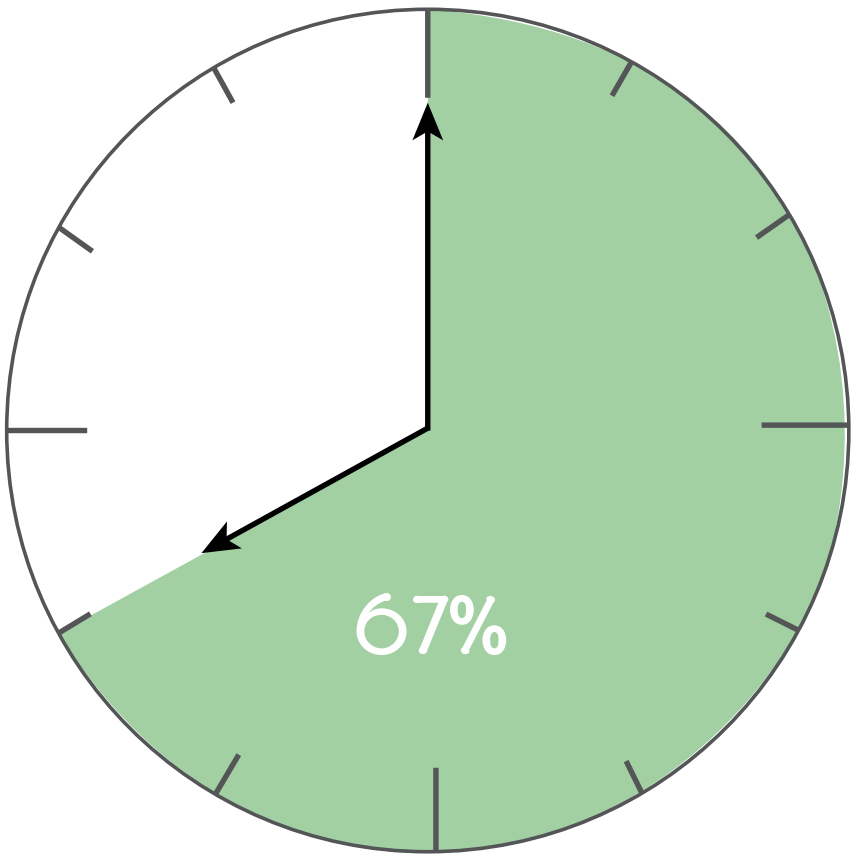
Human-Nature Relationship

An Inside People

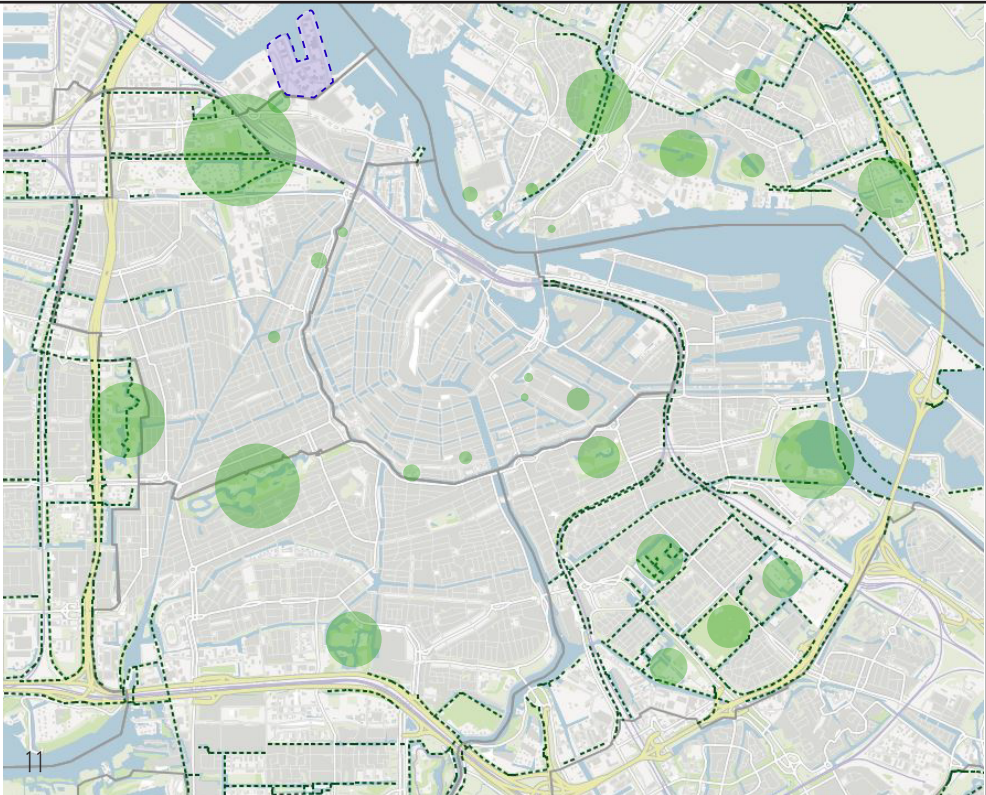


Bring Nature into the Dwelling
Keep cars out of the City

Lack of Time

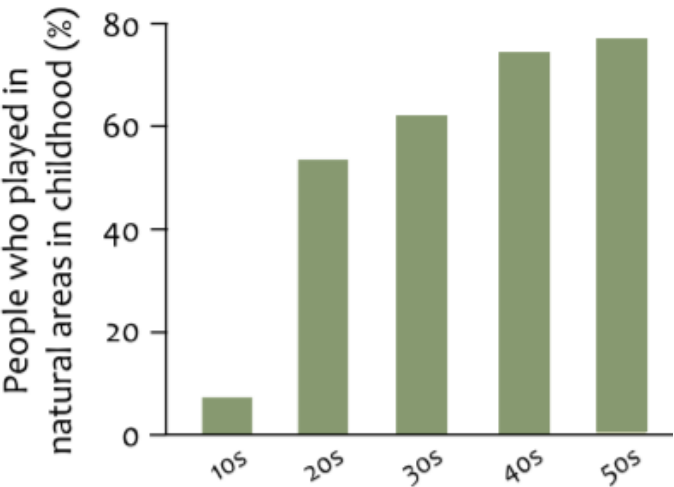


Add Amenities to building block to save time



Denaturized Urbanisation

- Redesign the city fabric to make Nature an inherent part of the city



Changing Nature of Childhood

- Parents fear for childrens safety, 65% mainly plays in private garden
- Create safe spaces for children to play (in Nature)



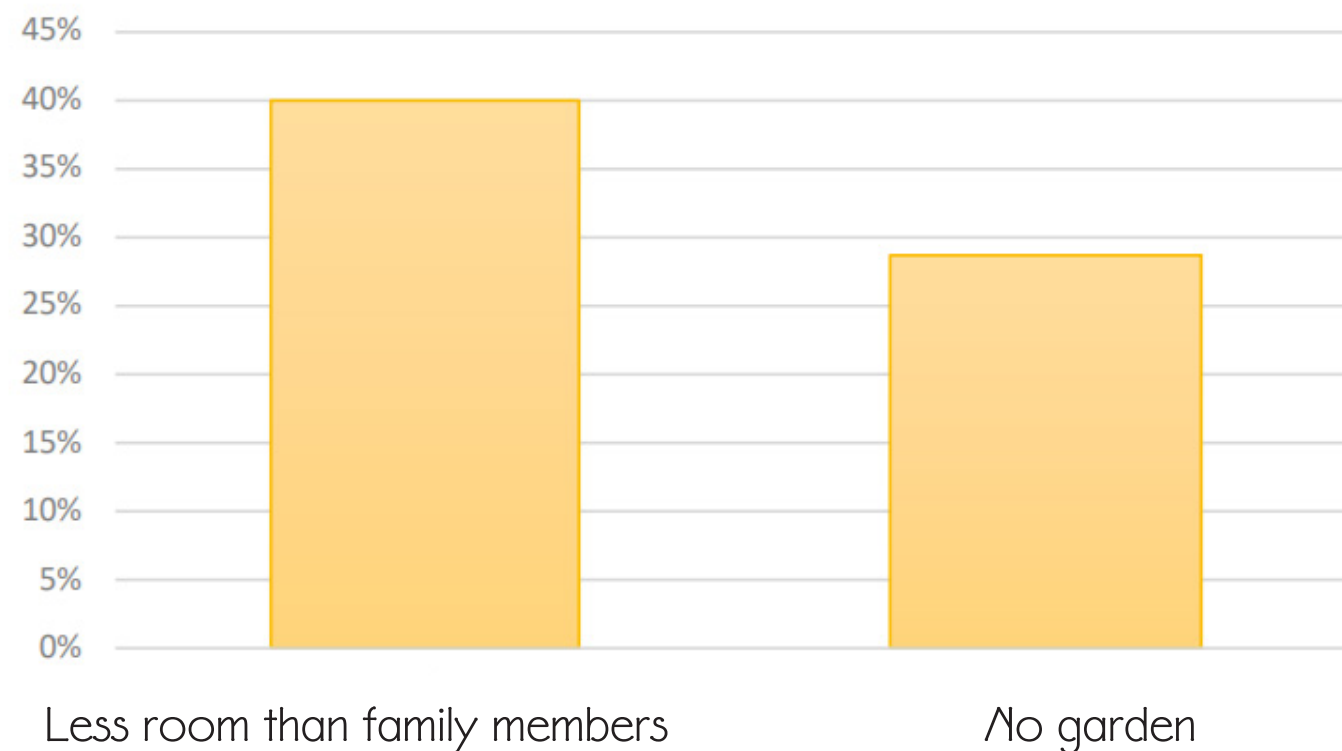
Target Group

Traditional Urban Families (1,5-2 income)



1 in 10 young families left Amsterdam in 2018

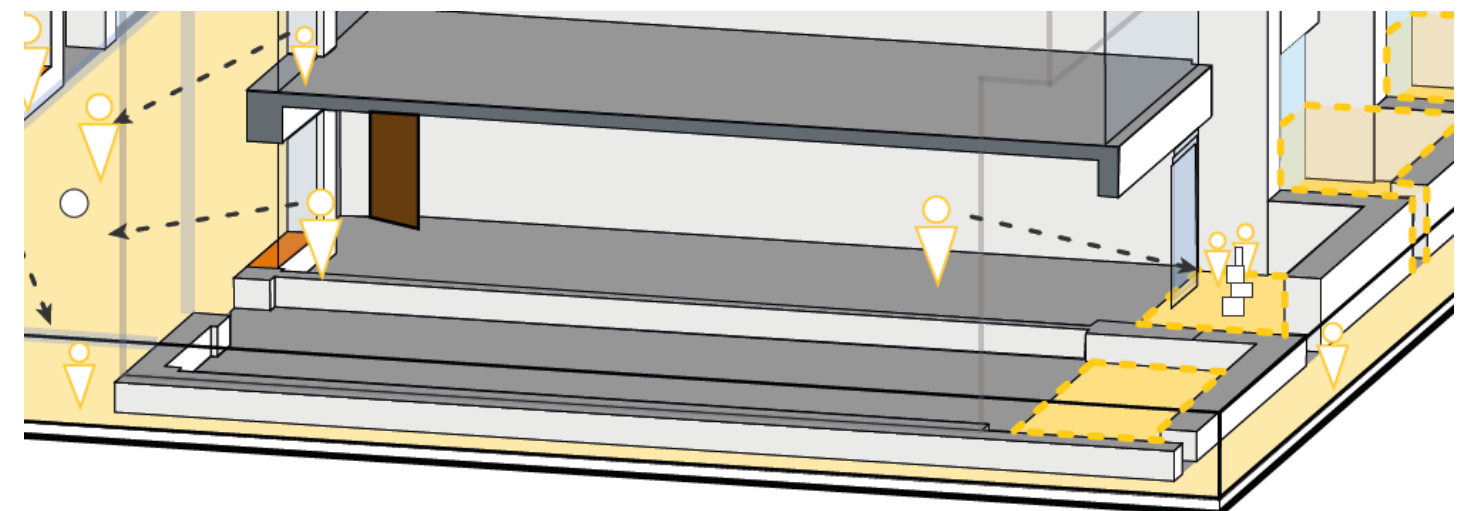
40% of all families leave within 4 years of having first child



Three scales of play



Supervision



- Urban environment but a bit more quiet

Make Nature an inherent part of the architecture

Organic Architecture FLW

IDEA

In Nature and life we see that behind each great design there is a great idea at work - unity through idea

STRUCTURAL CONTINUITY

Almost nothing in Nature is fabricated by piling one element on top of another

HARMONY WITH THE ENVIRONMENT

A design should pay respect to and be formed by features of its site

Horizontal lines acknowledge gravity and relate buildings to the plane of the earth

HUMANITY

Relate to the human size and shape

DISCOVERY OF SPACE

A continuous flow of space - A space should seldom be seen in its entirety





IDEA

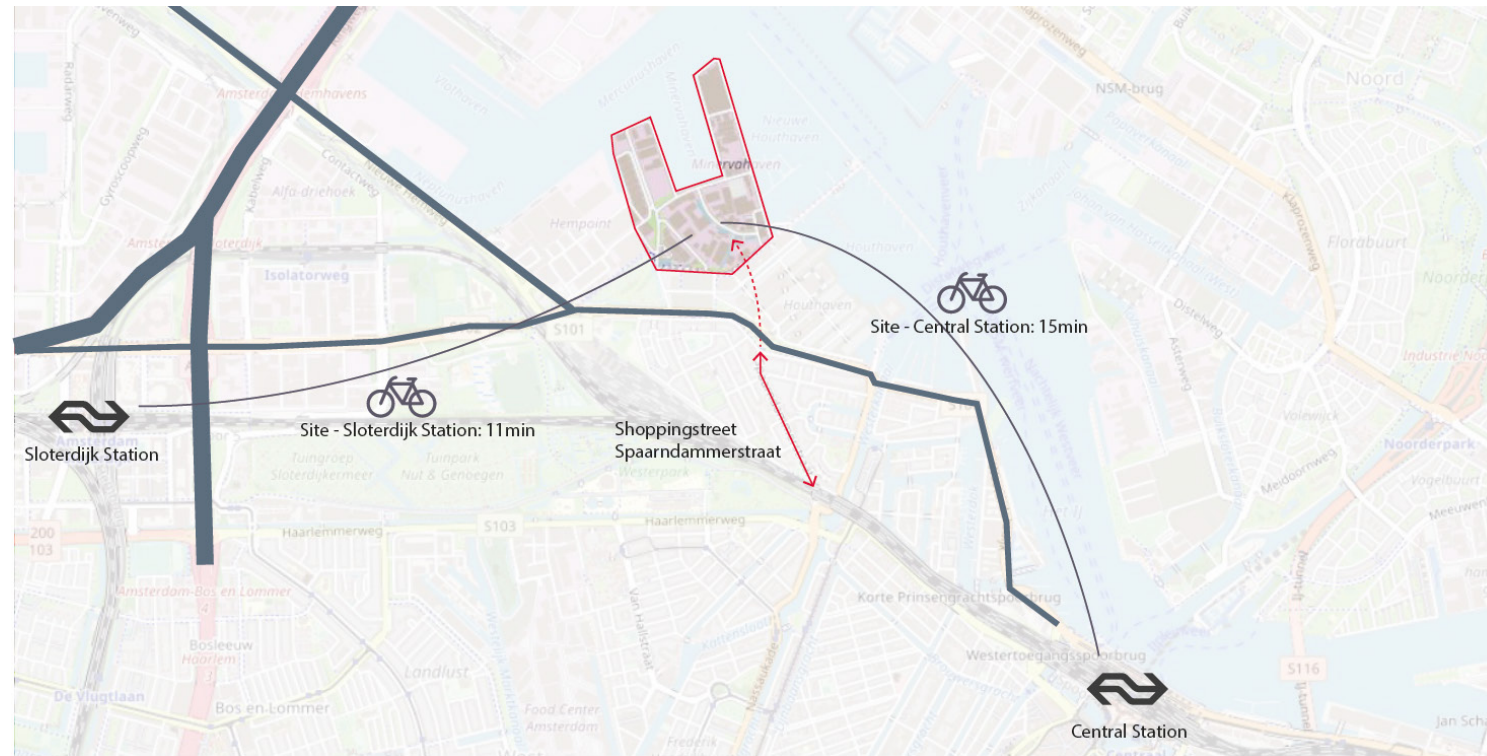


Reedmace or Cattail
Native to the area since 2.5-5 million years
Can be found everywhere by the waterside



Location

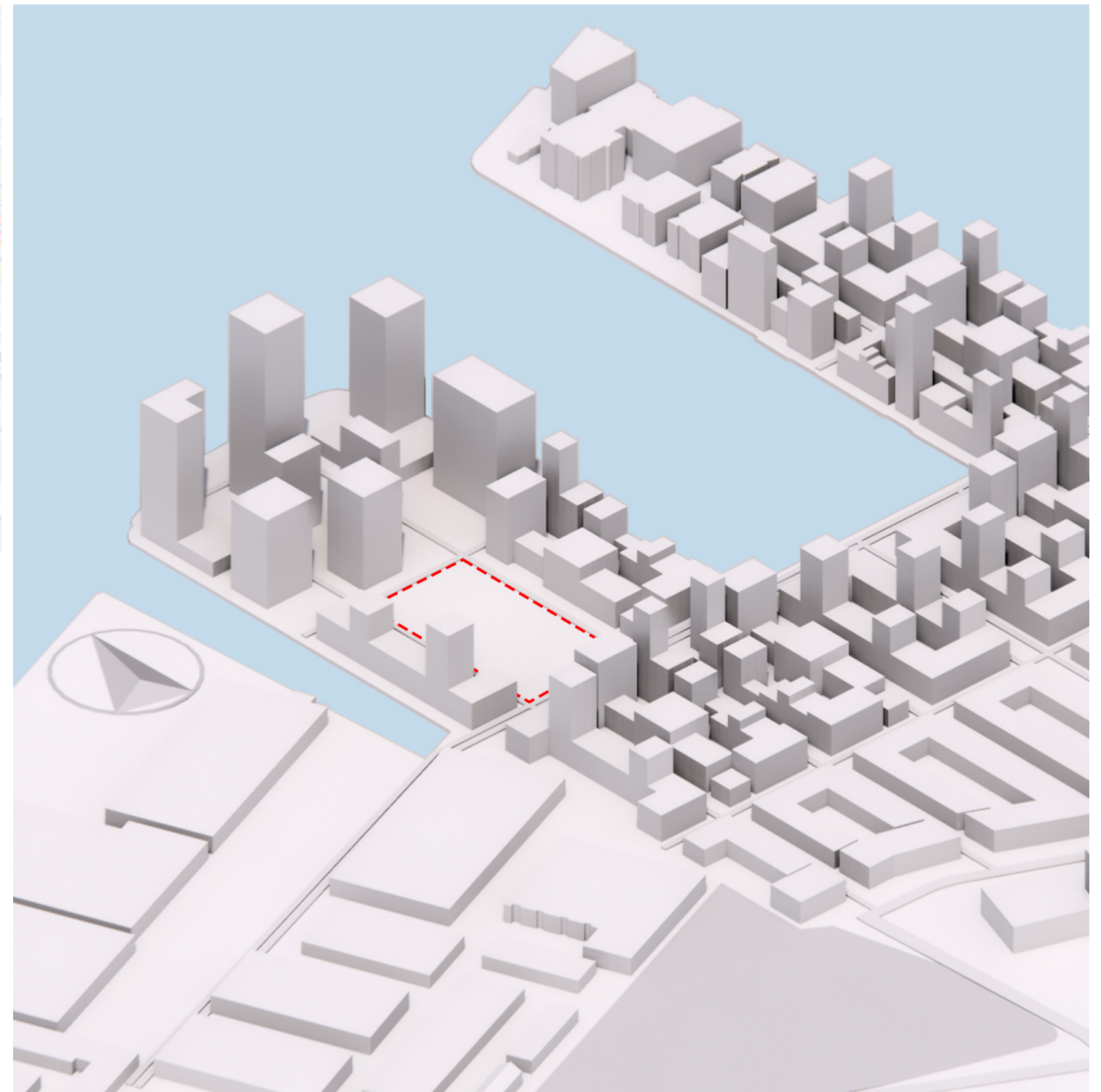
Amsterdam Minerva Harbour



From former industrial area to the density of Manhattan New York



Building Plot



- Hight Density
- Surrounded by buildings
- No easy acces to flora and fauna

Location

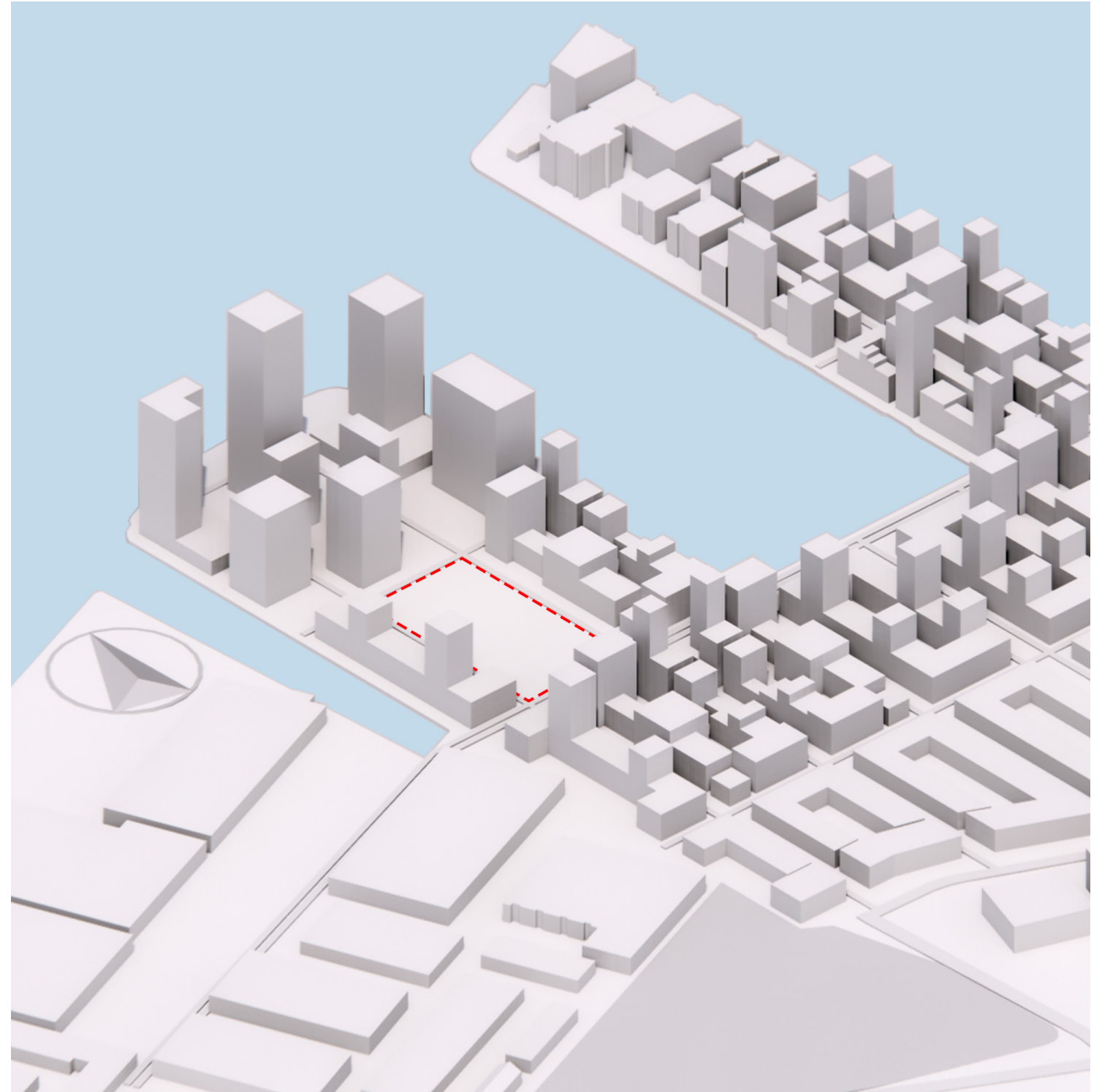
Manhattan New York



From former industrial area to the density of Manhattan New York

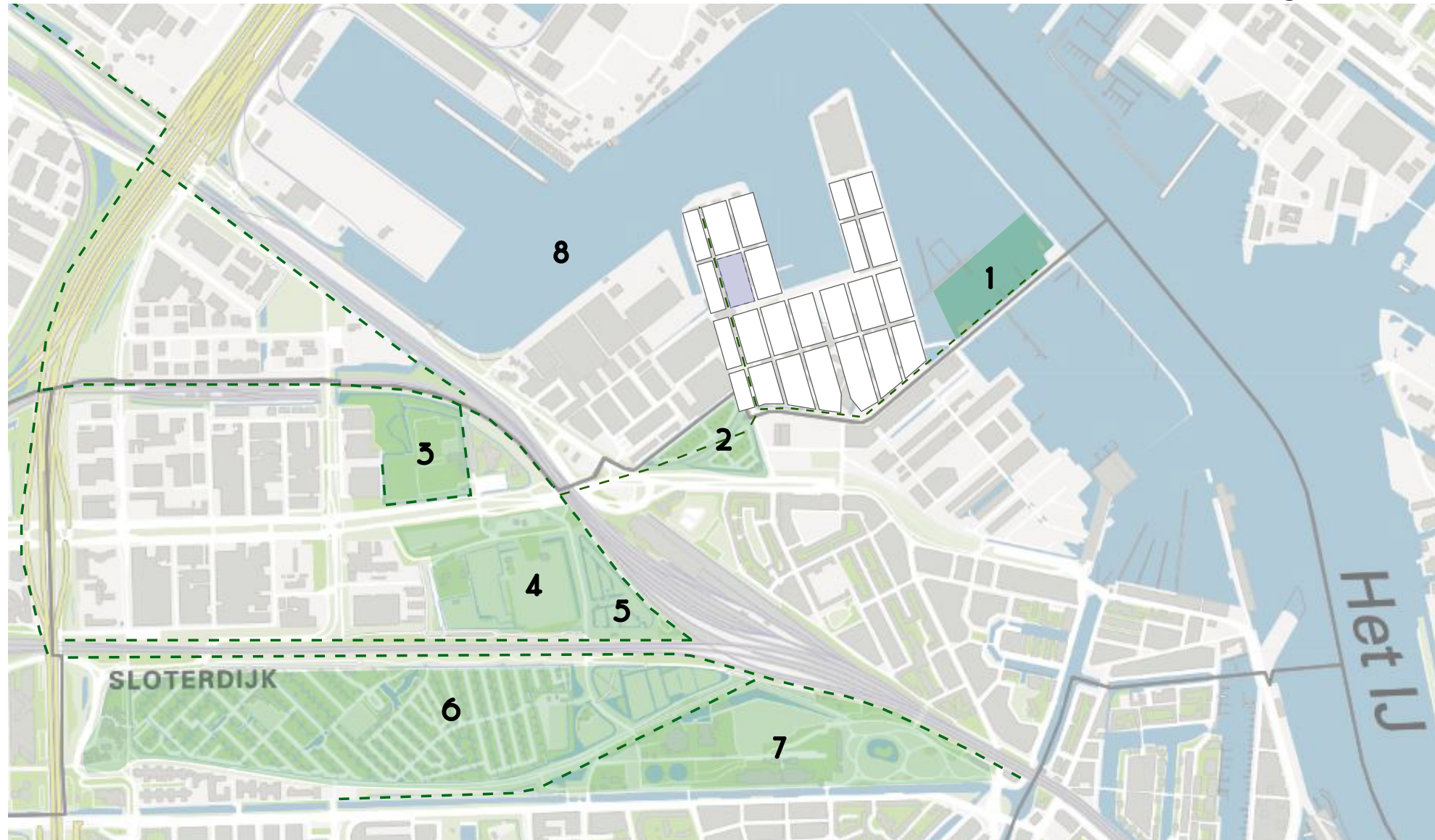


Building Plot



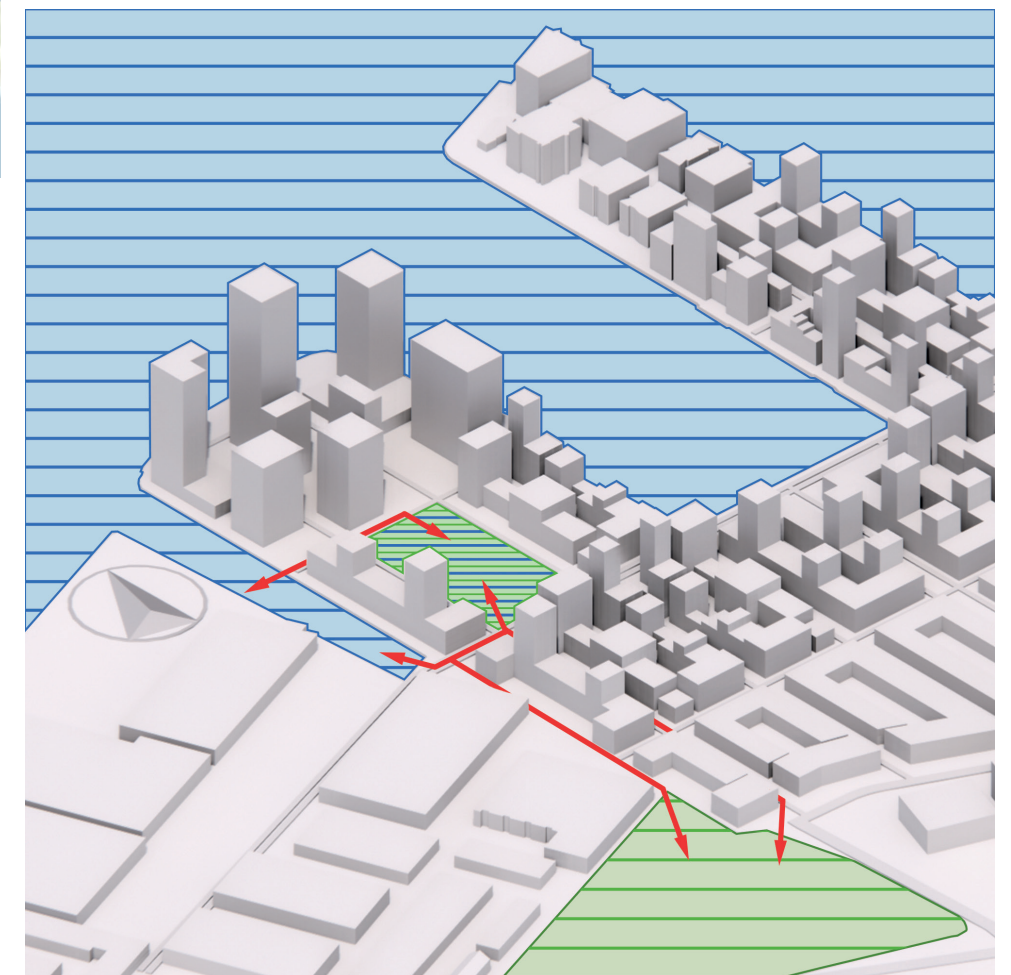
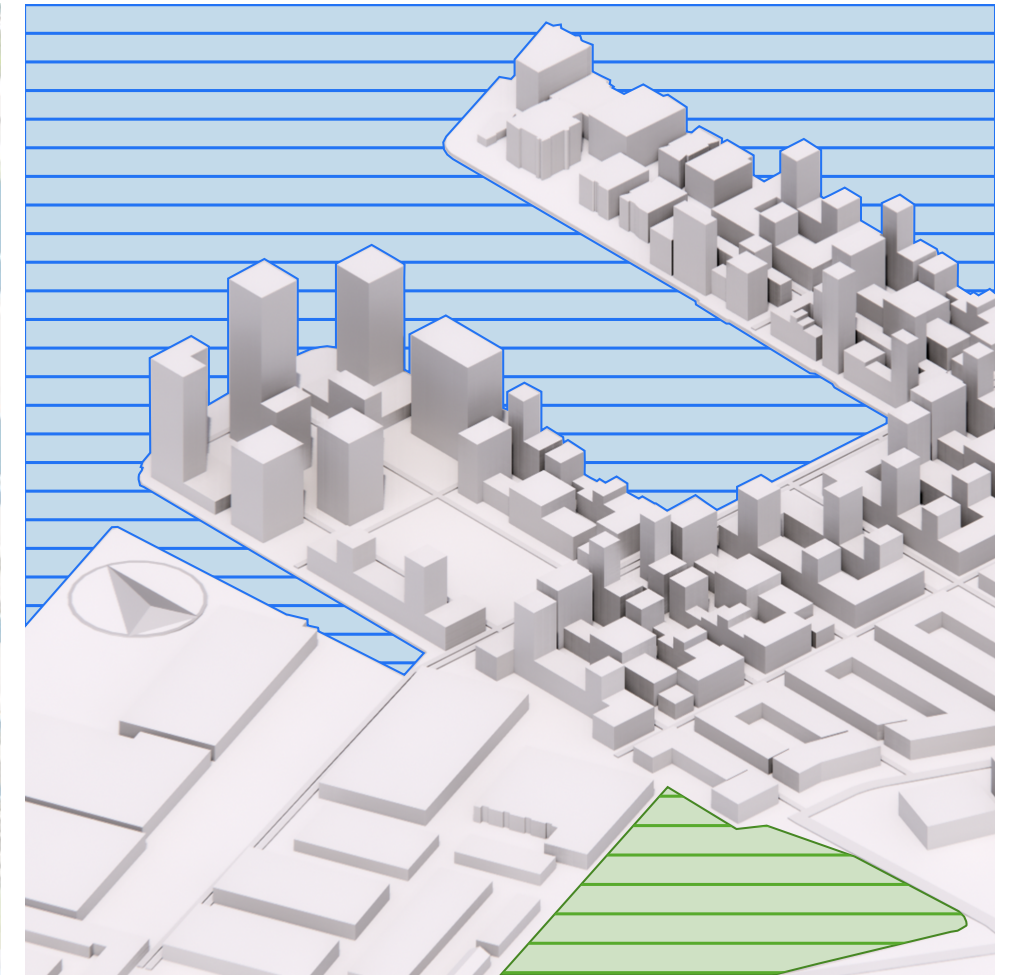
- Hight Density
- Surrounded by buildings
- No easy acces to flora and fauna

Flora and Fauna to Building Block

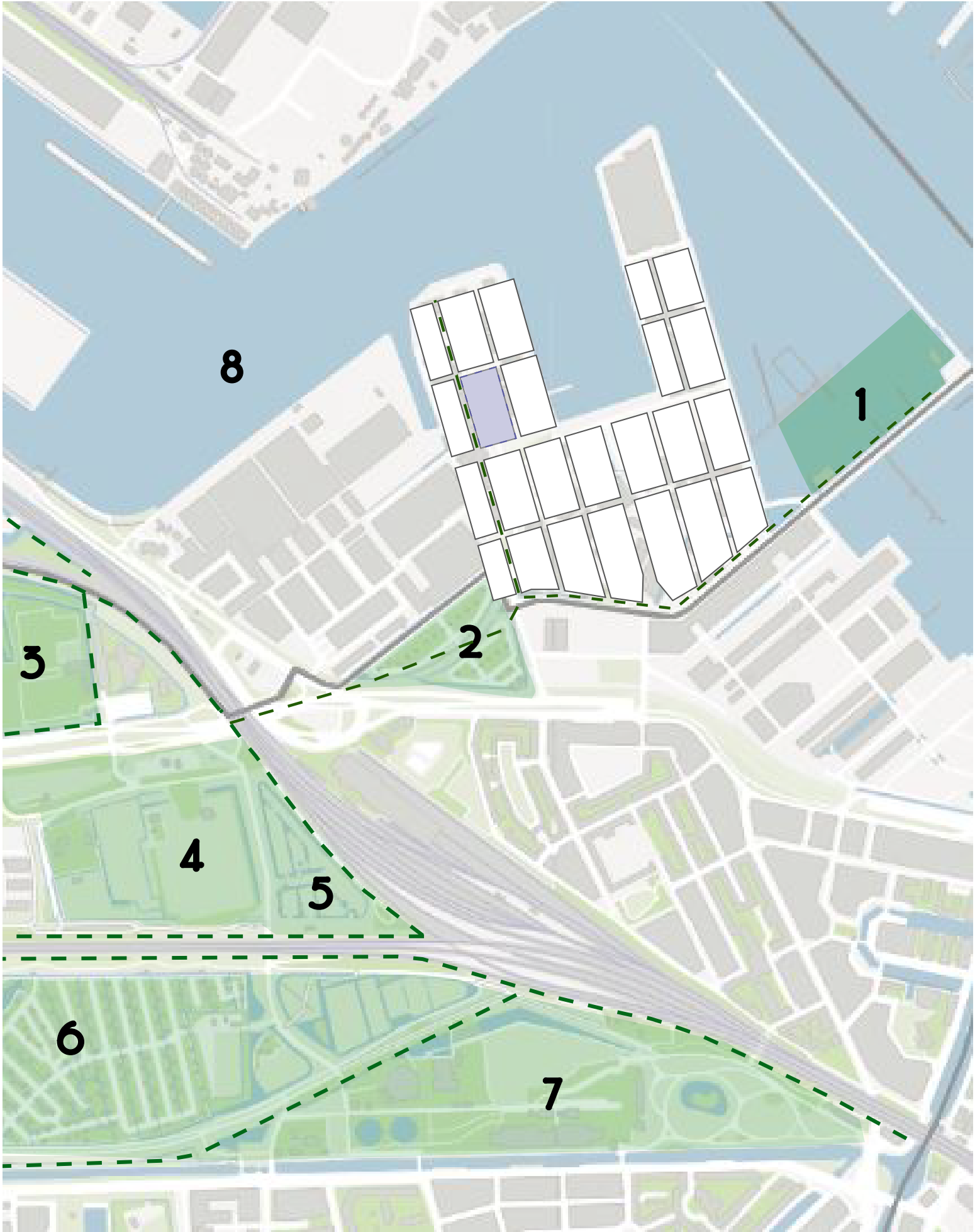
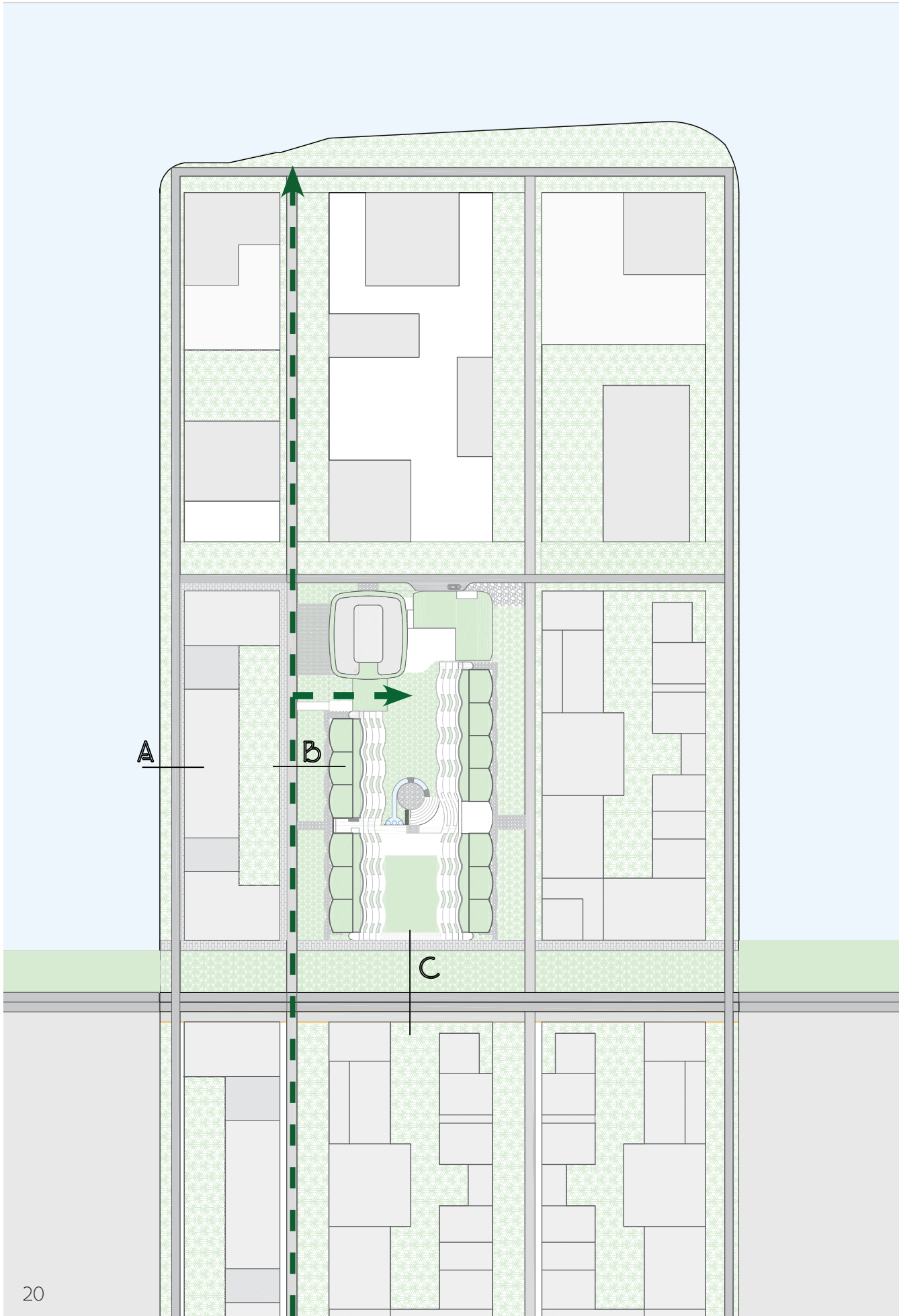


GREEN AND BLUE AREAS

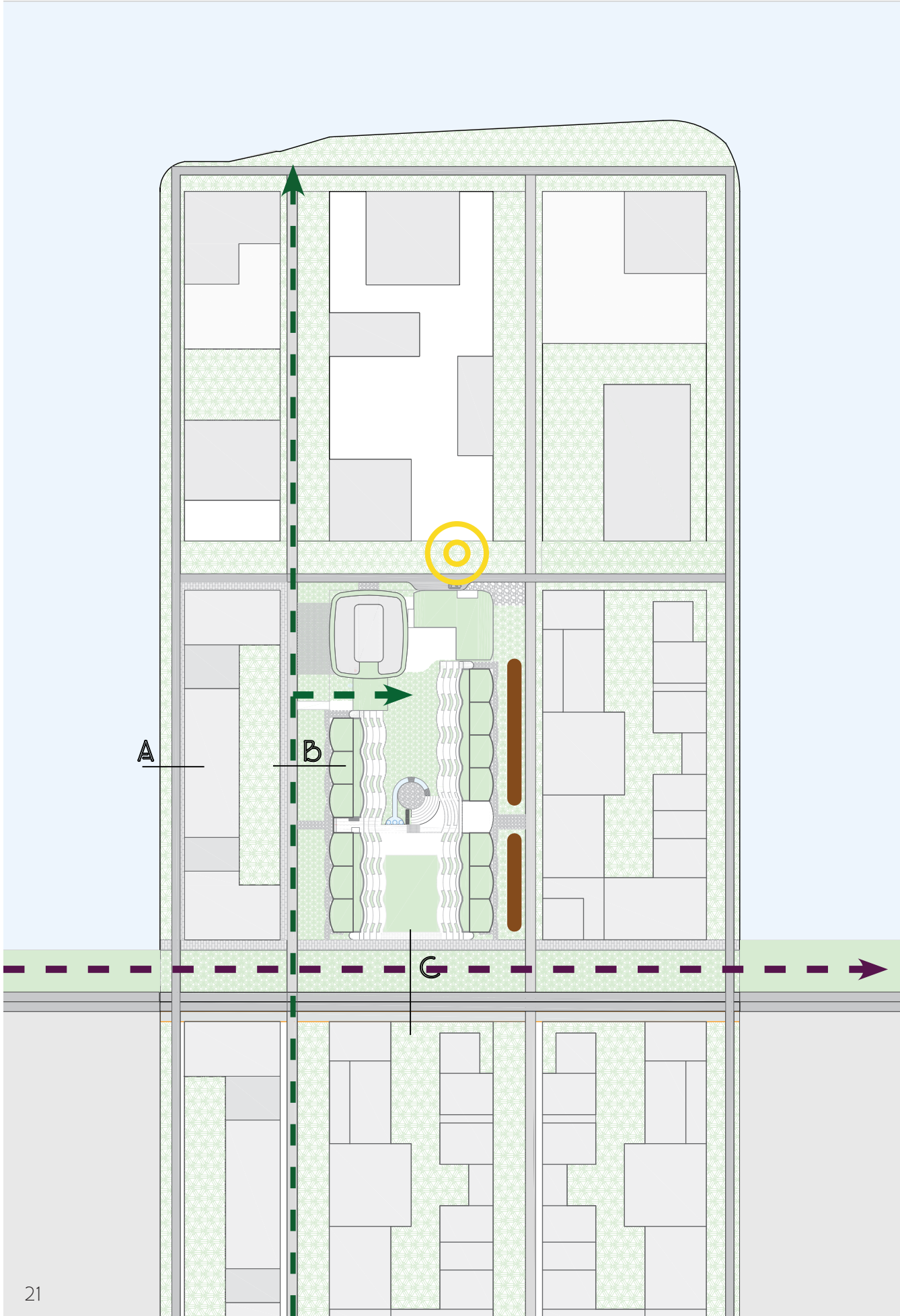
- 1) Planned Parc
- 2) Allotment Gardens - Zonnehoeck
- 3) Sports parc
- 4) St. Barbara Cemetery
- 5) Woeste Westen - natural playground
- 6) Allotment Gardens Sloterdijk Harbour
- 7) Westerpark
- 8) Harbour



Green Corridor



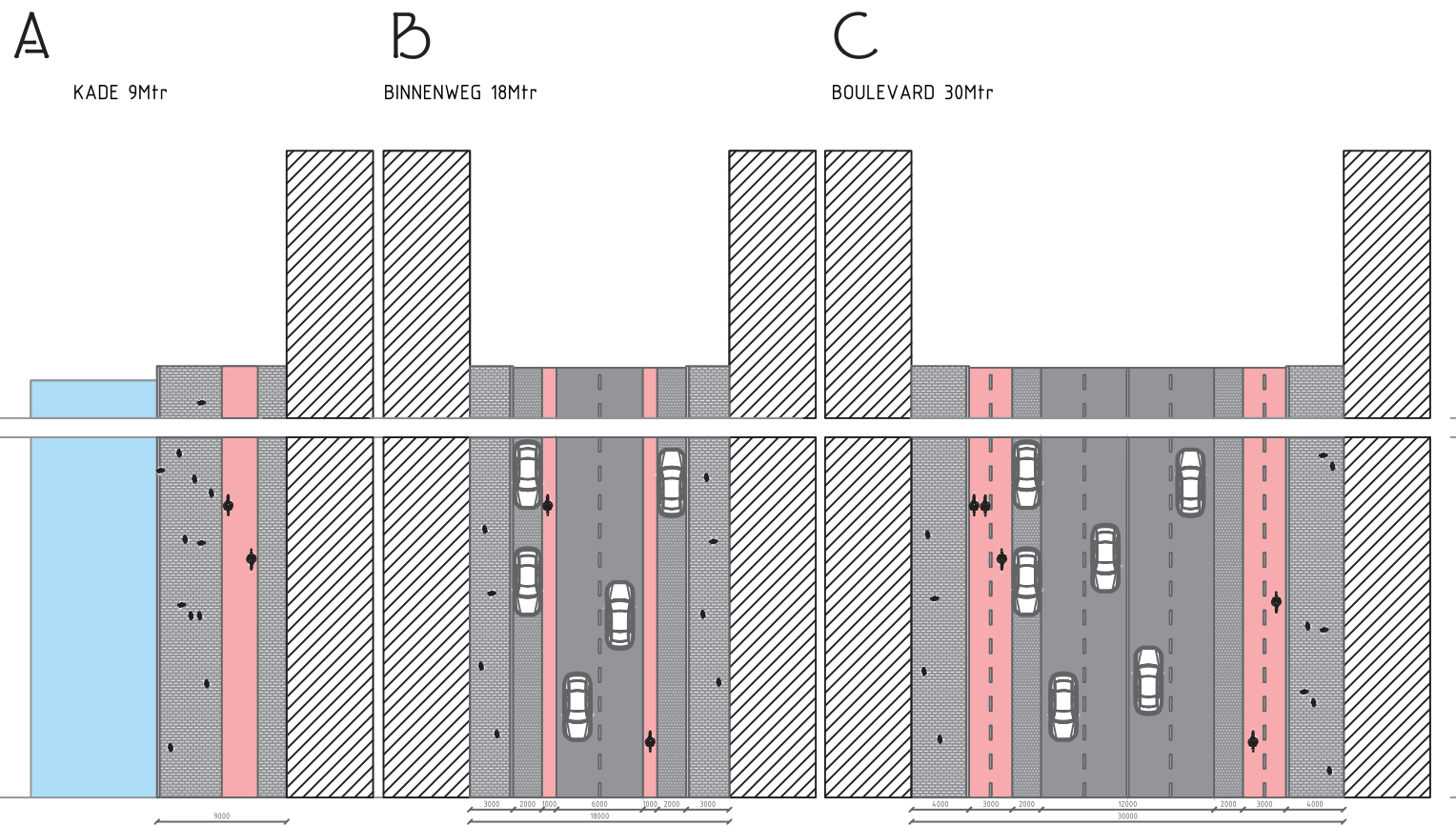
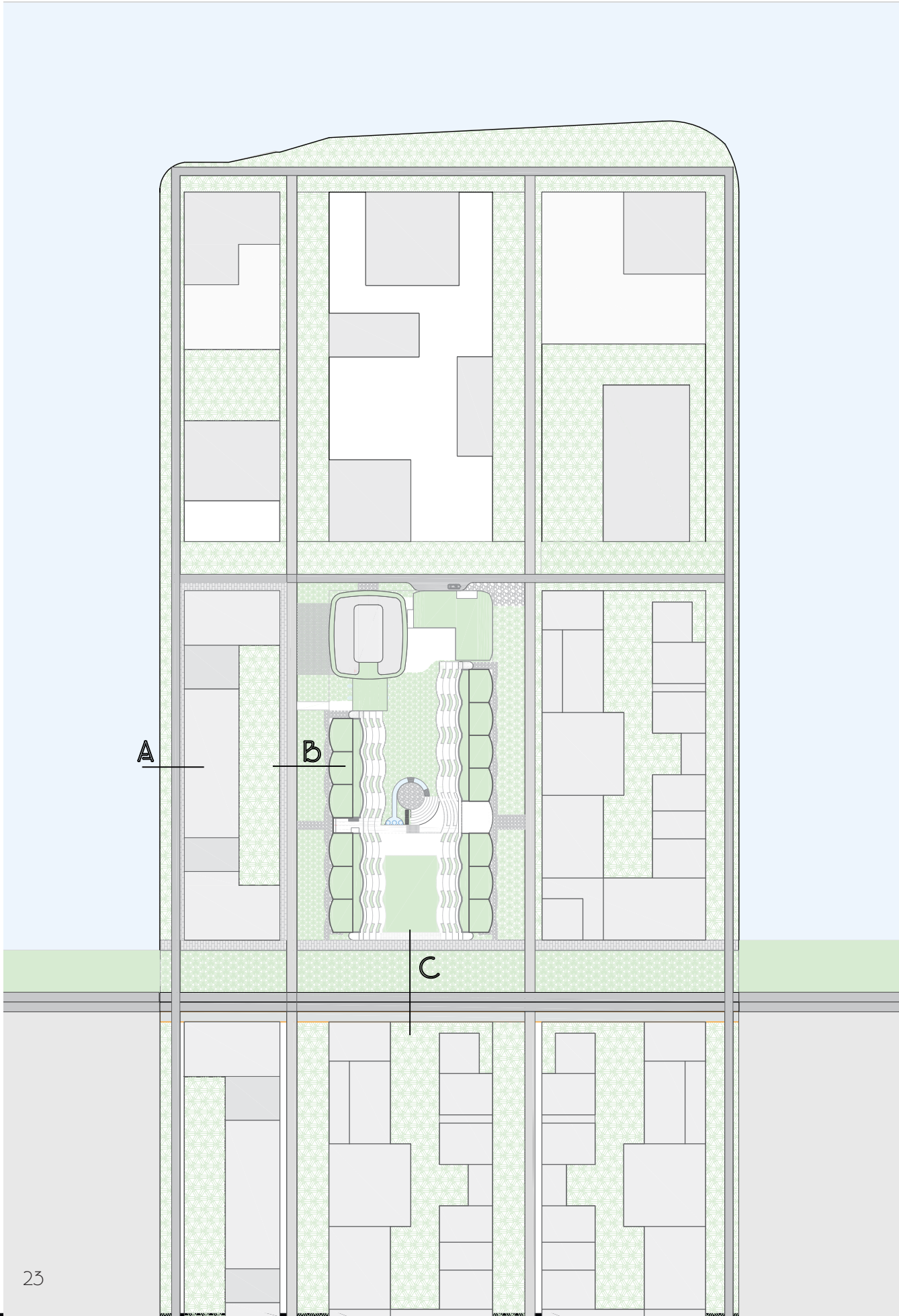
Green Infrastructure



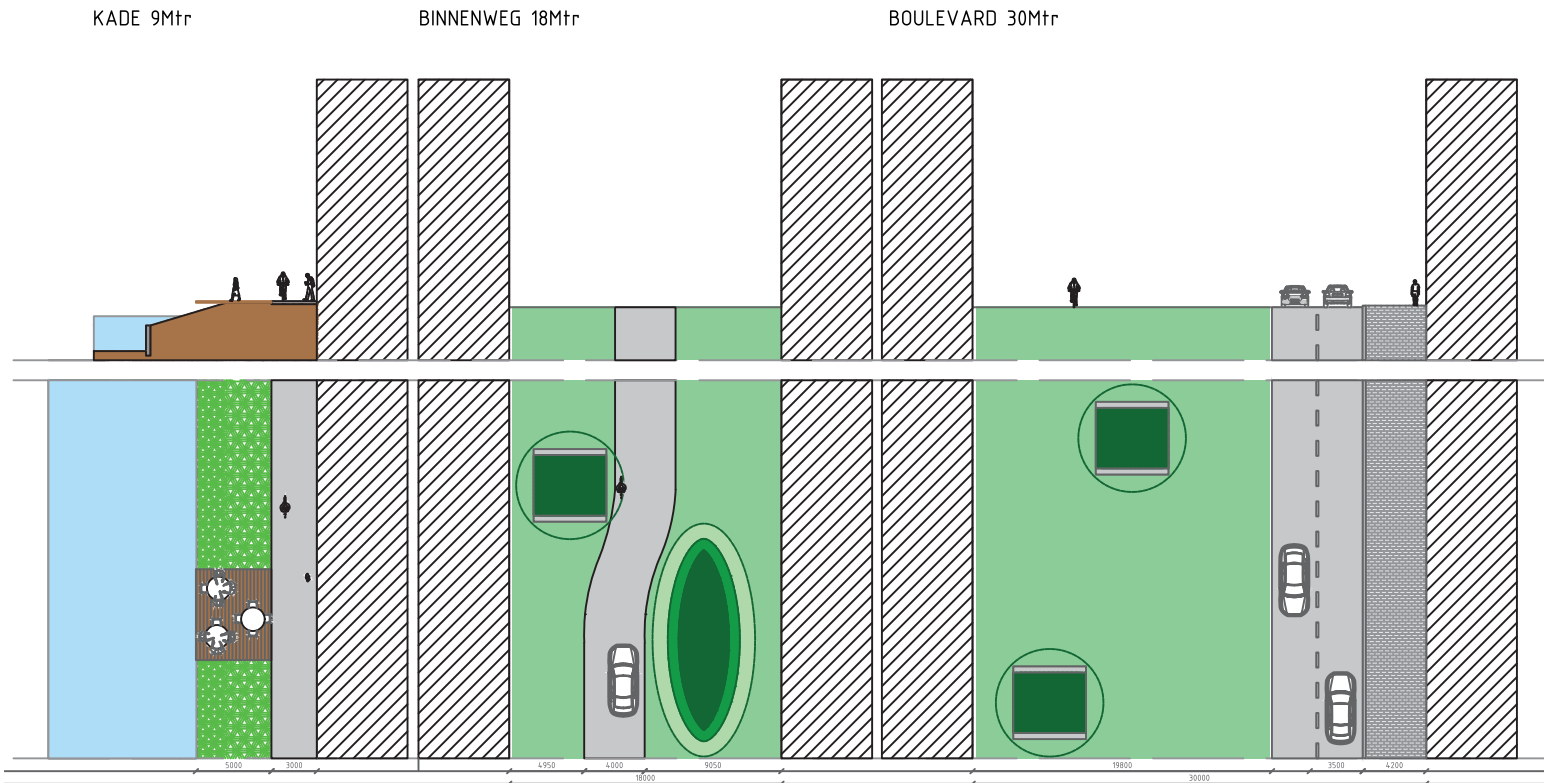
“Car Free” City



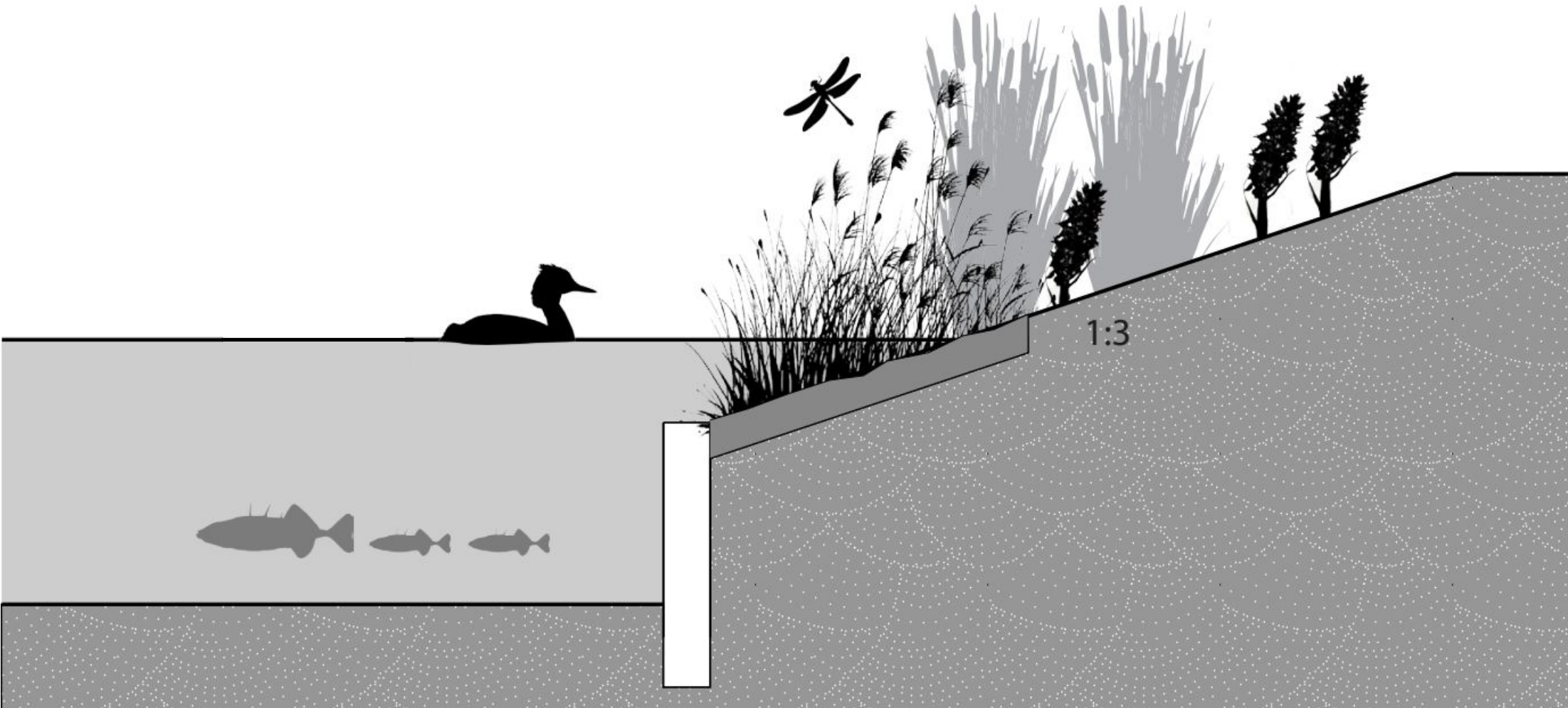
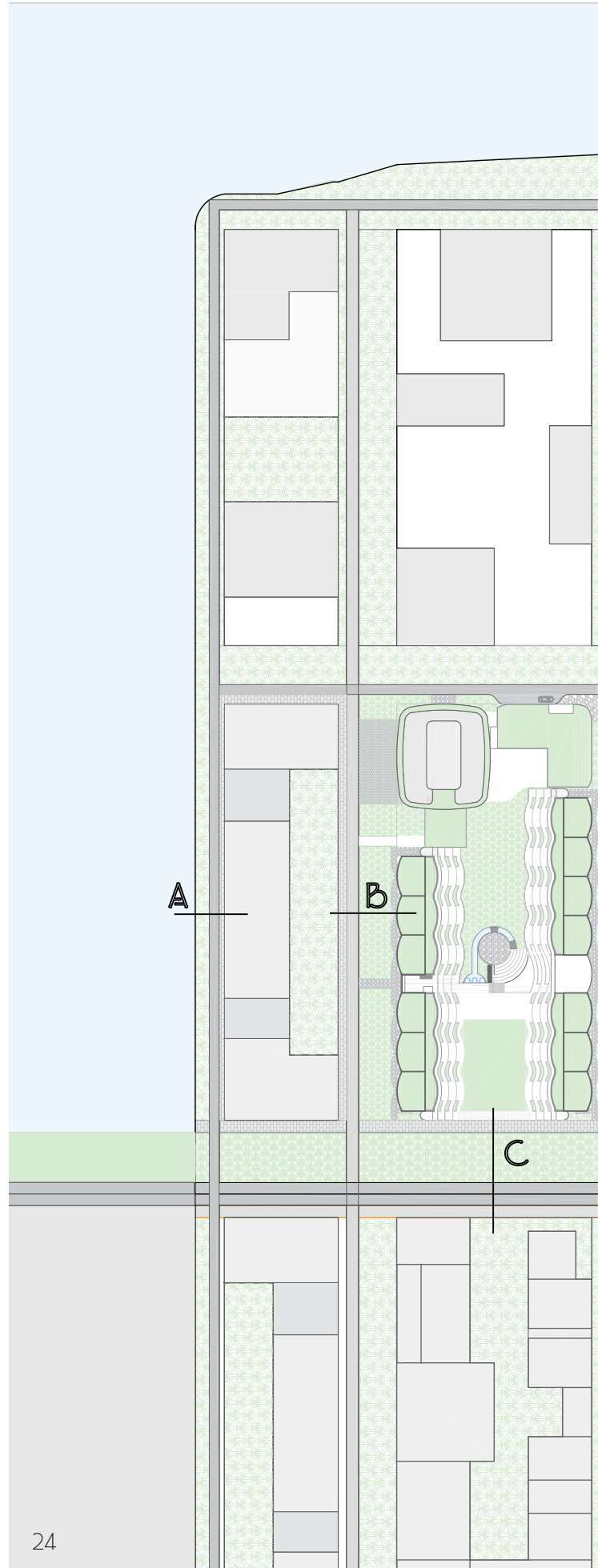
Car Free City - Green Infrastructure



STRAAT PROFIELEN NIEUW



Green Infrastructure Type A - Ecological shore

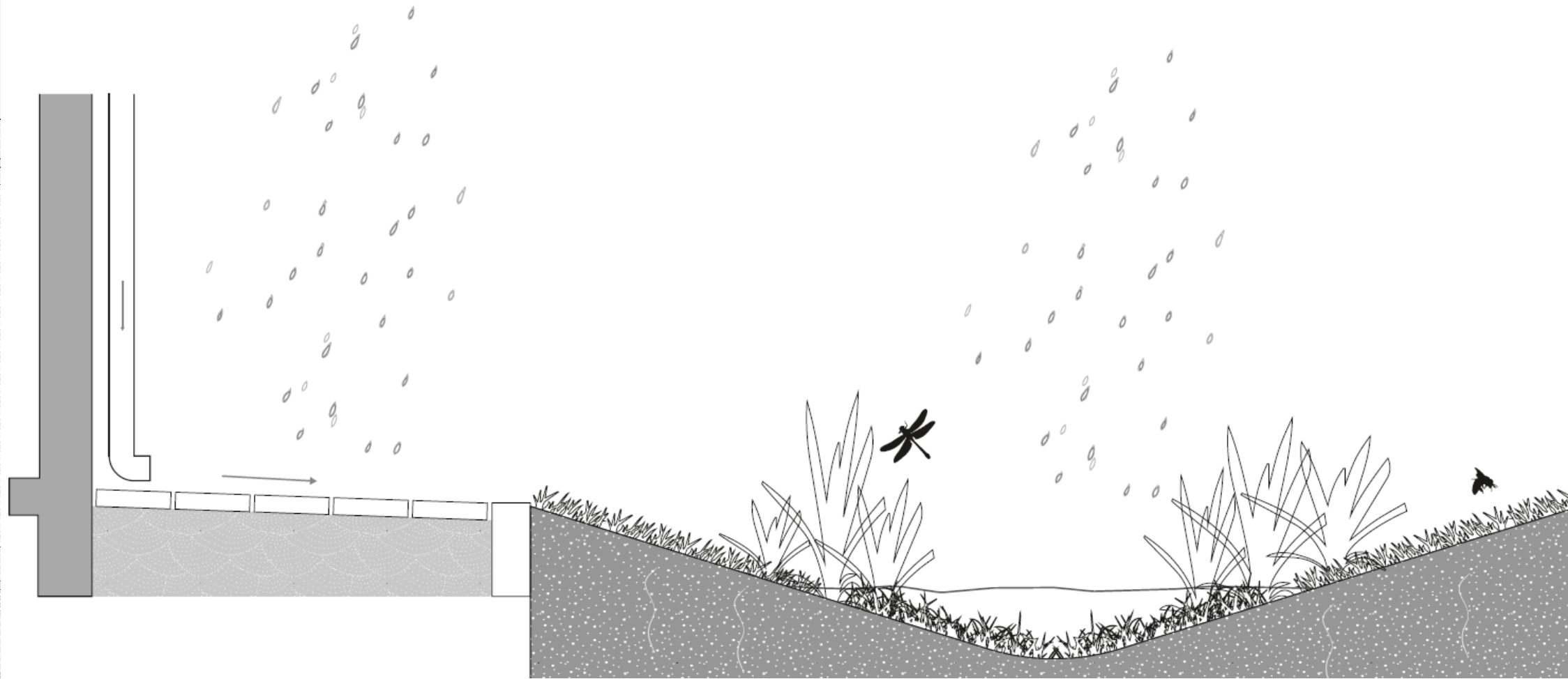
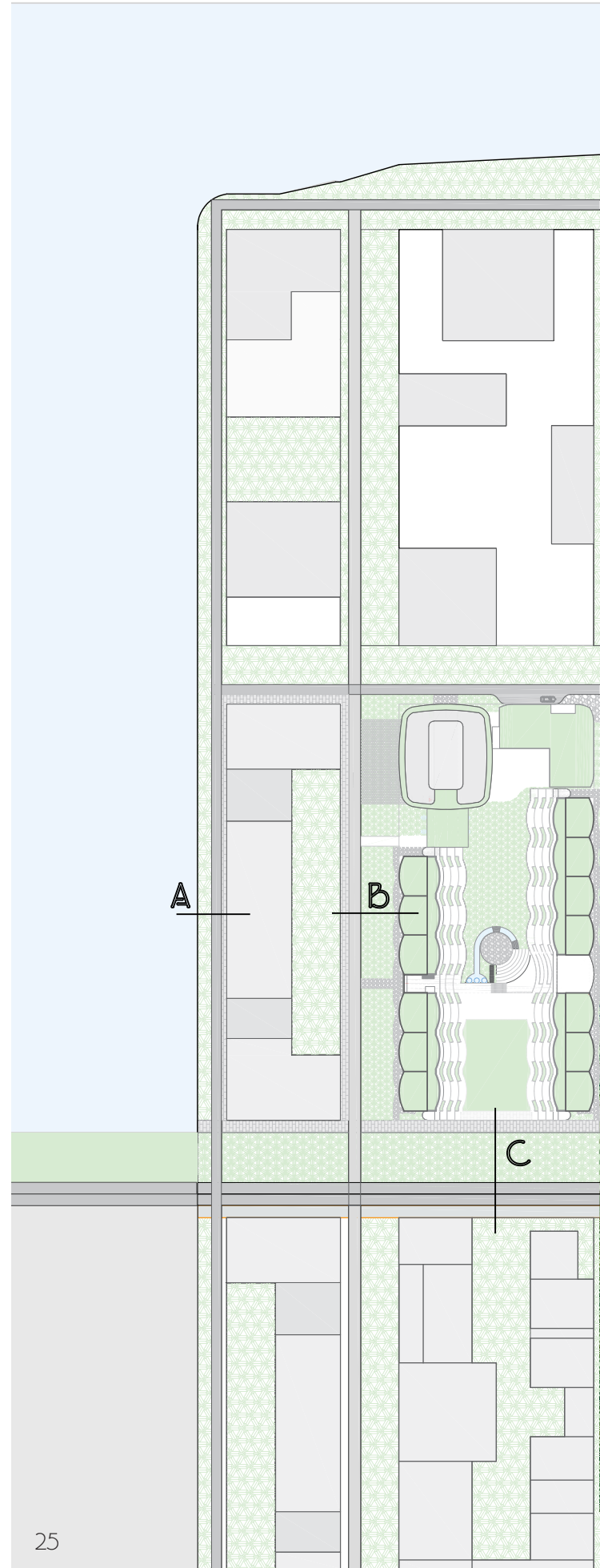


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<https://www.econsultancy.nl/wms/fm/userfiles/content/eyecatcher/nieuwbouw-woningen-ecovriendelijk.jpg>

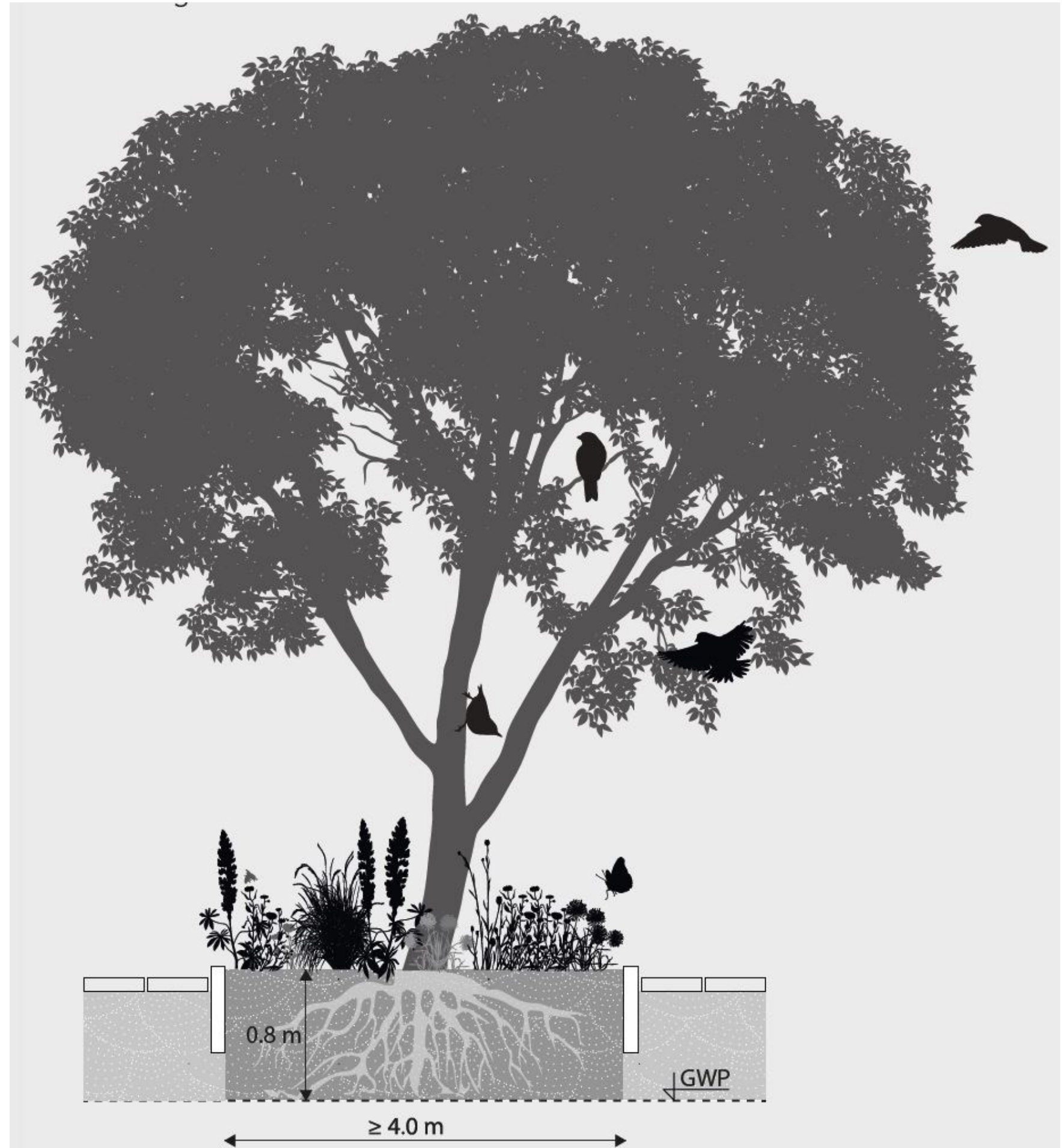
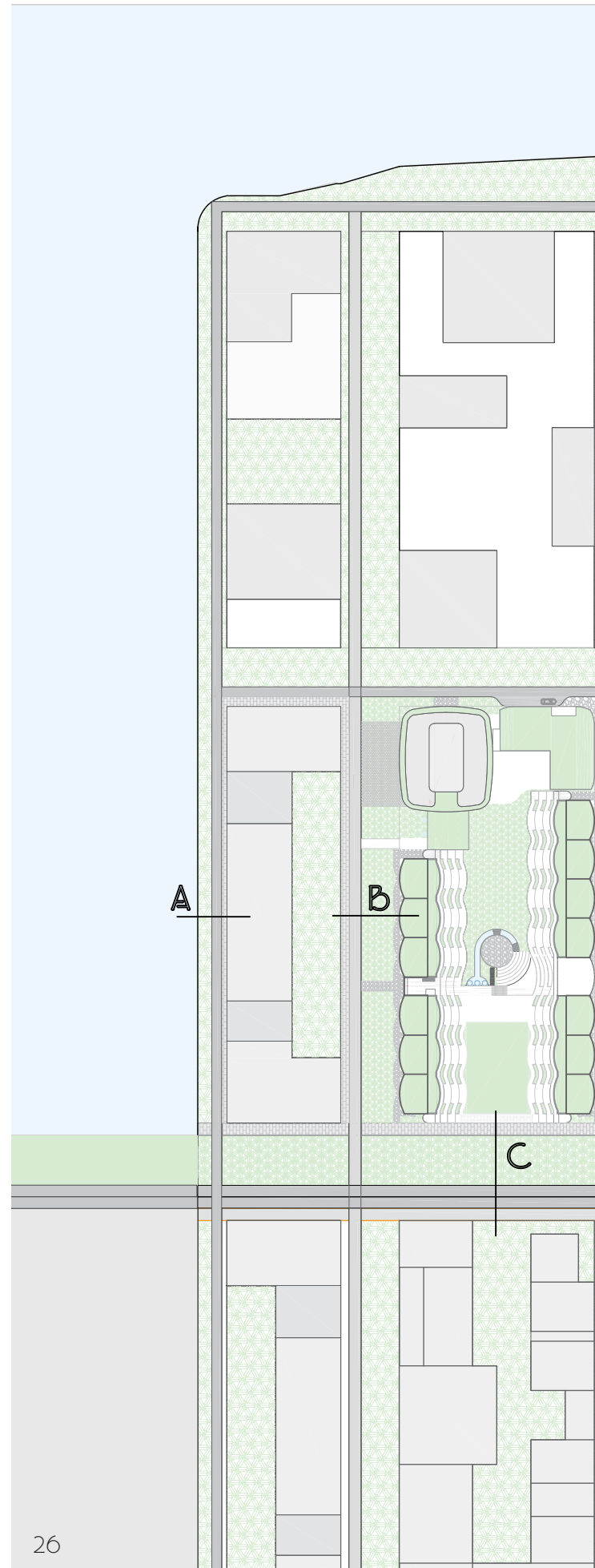
Green Infrastructure Type B/C - Water Infiltration system



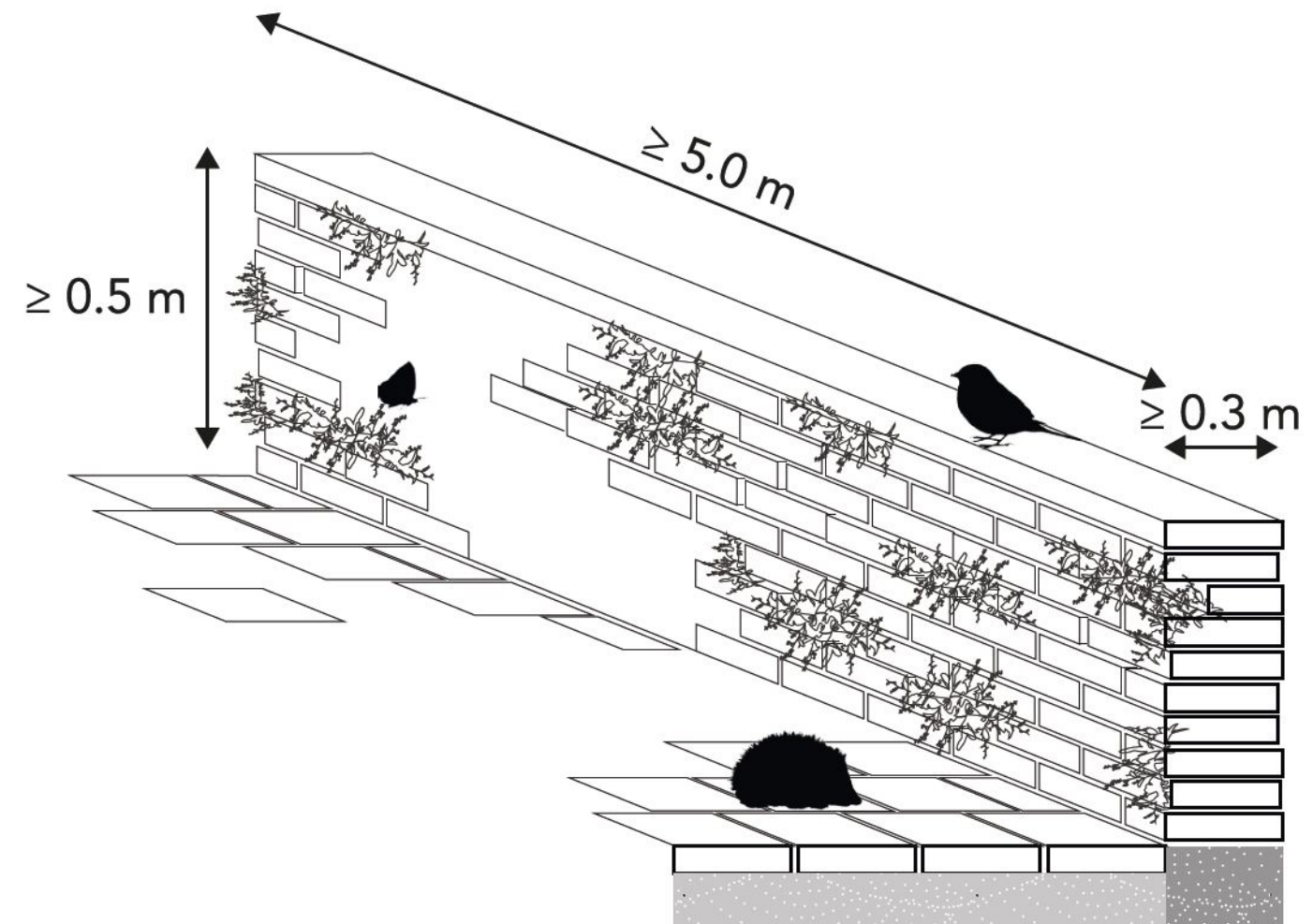
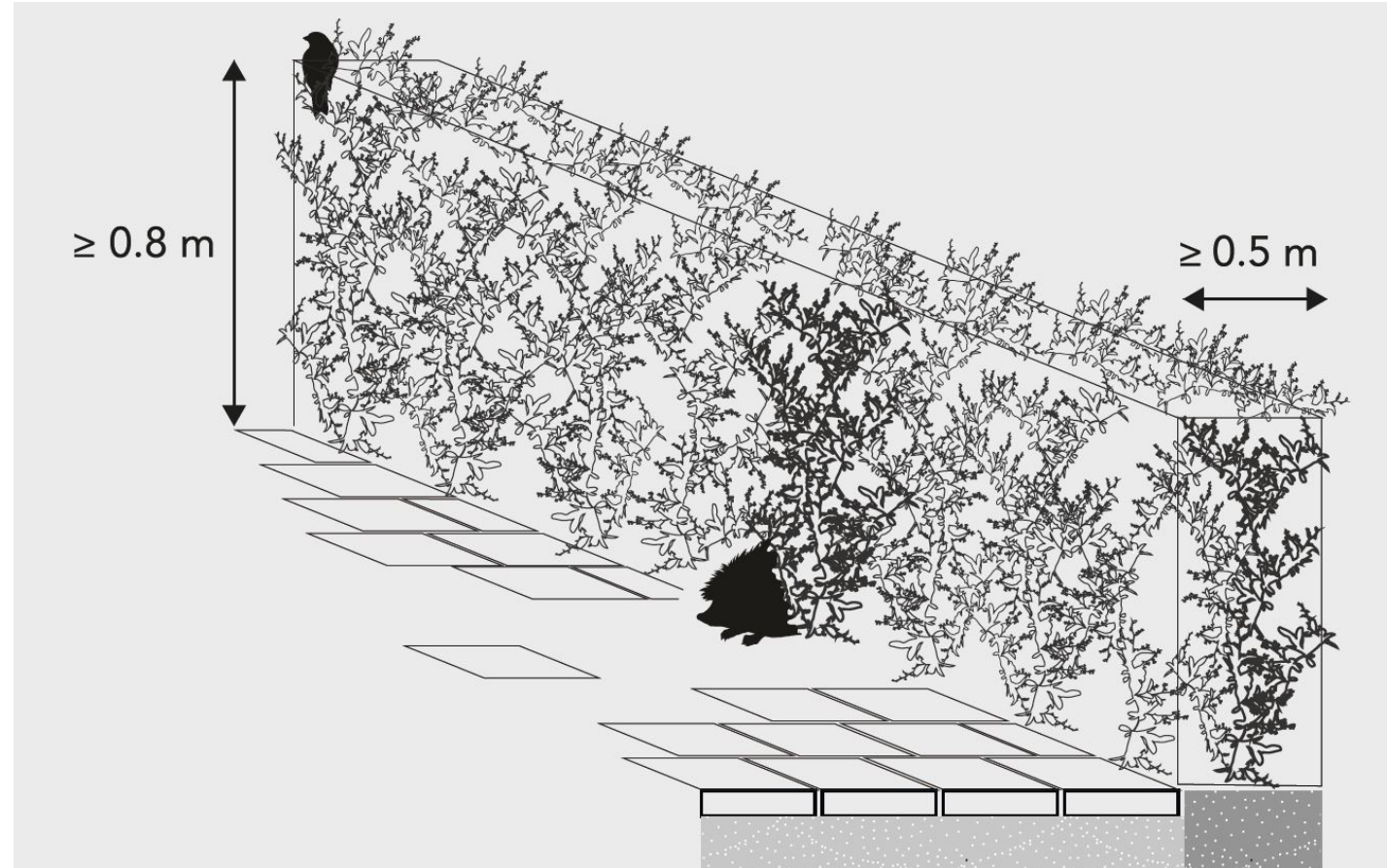
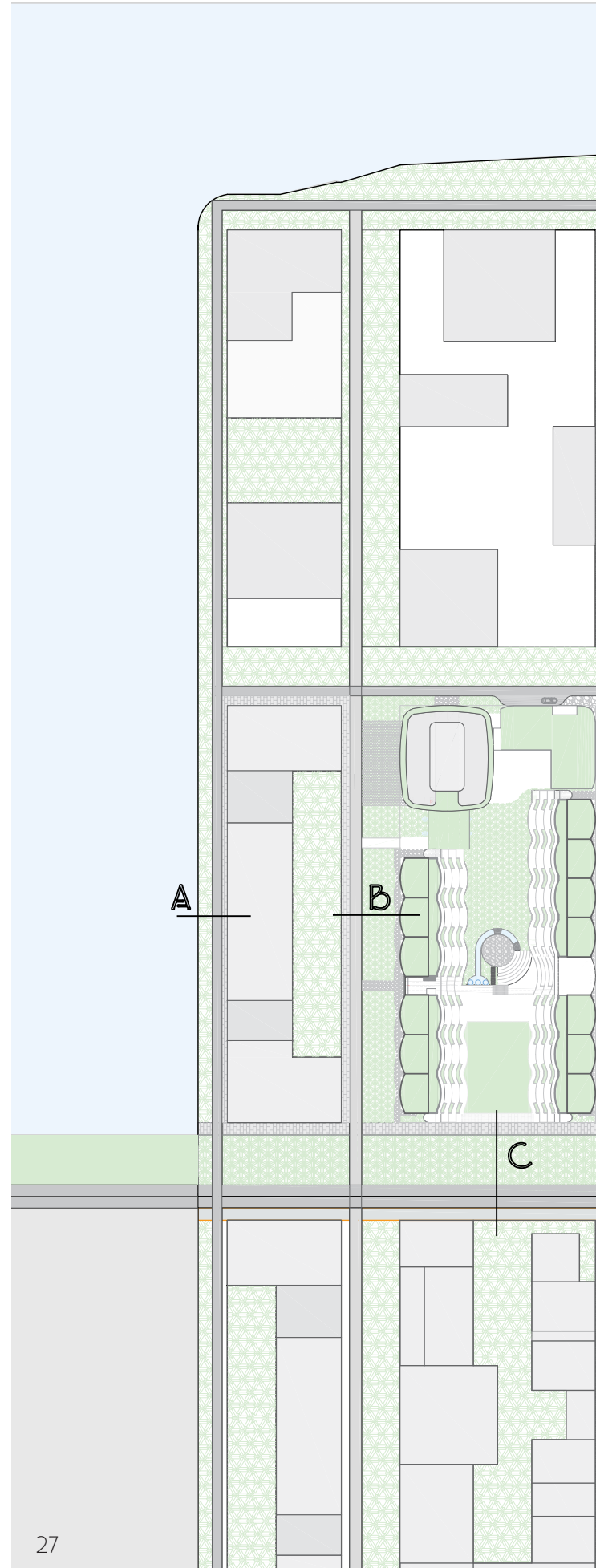
https://issuu.com/gemeenteamsterdam/docs/brochure_nibeo-definitief-web02_1_



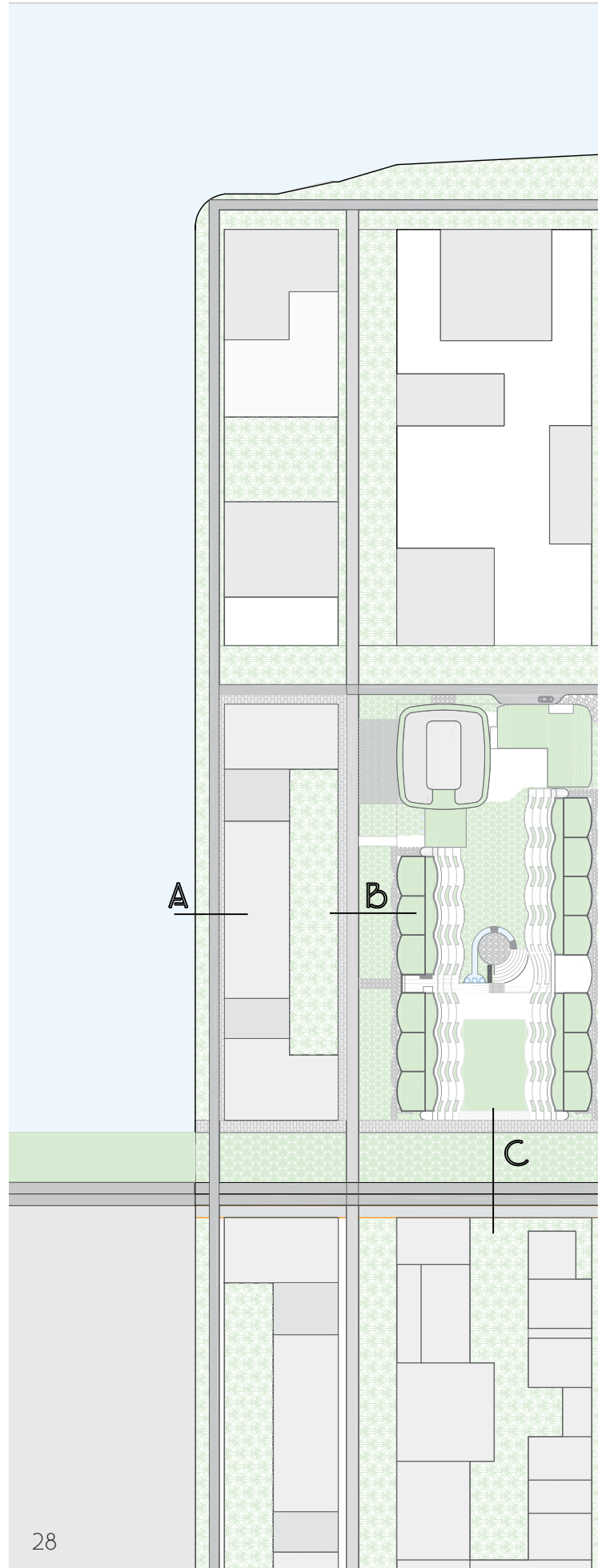
Green Infrastructure Type B/C - Biodiverse Tree Dripline



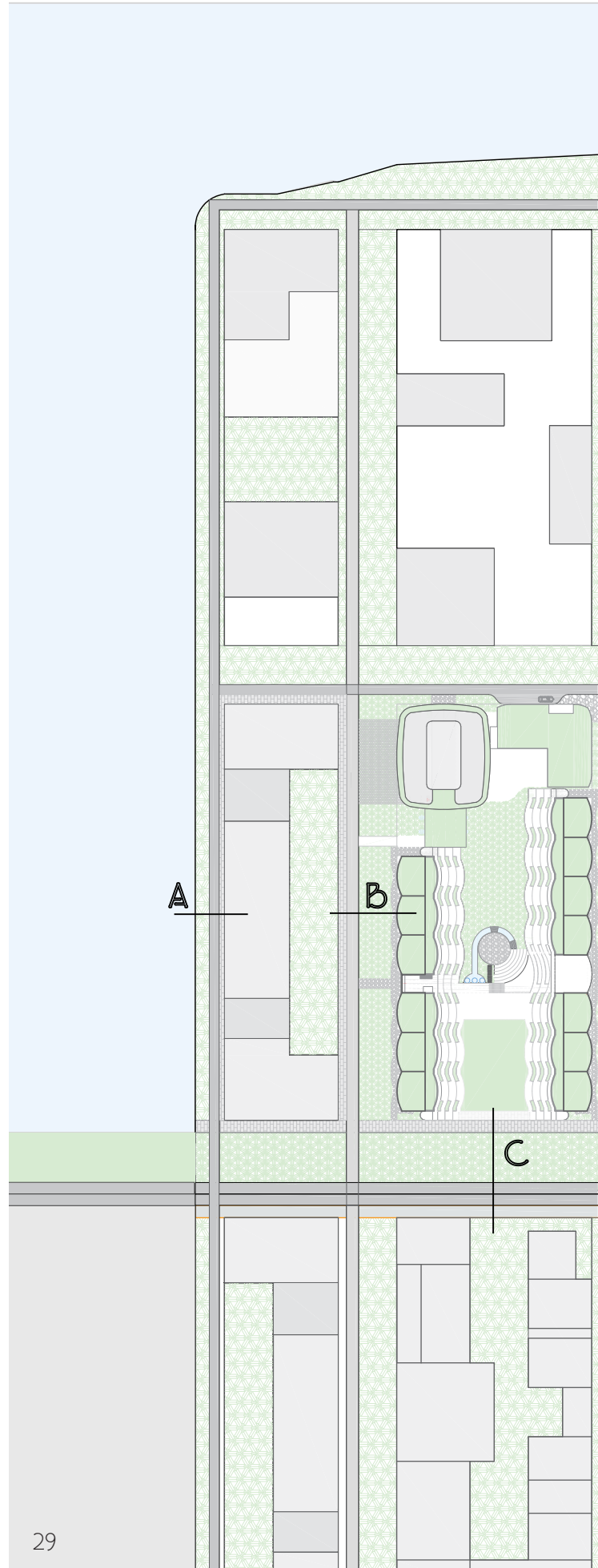
Green Infrastructure Type B/C - Hedges and Rough Walls

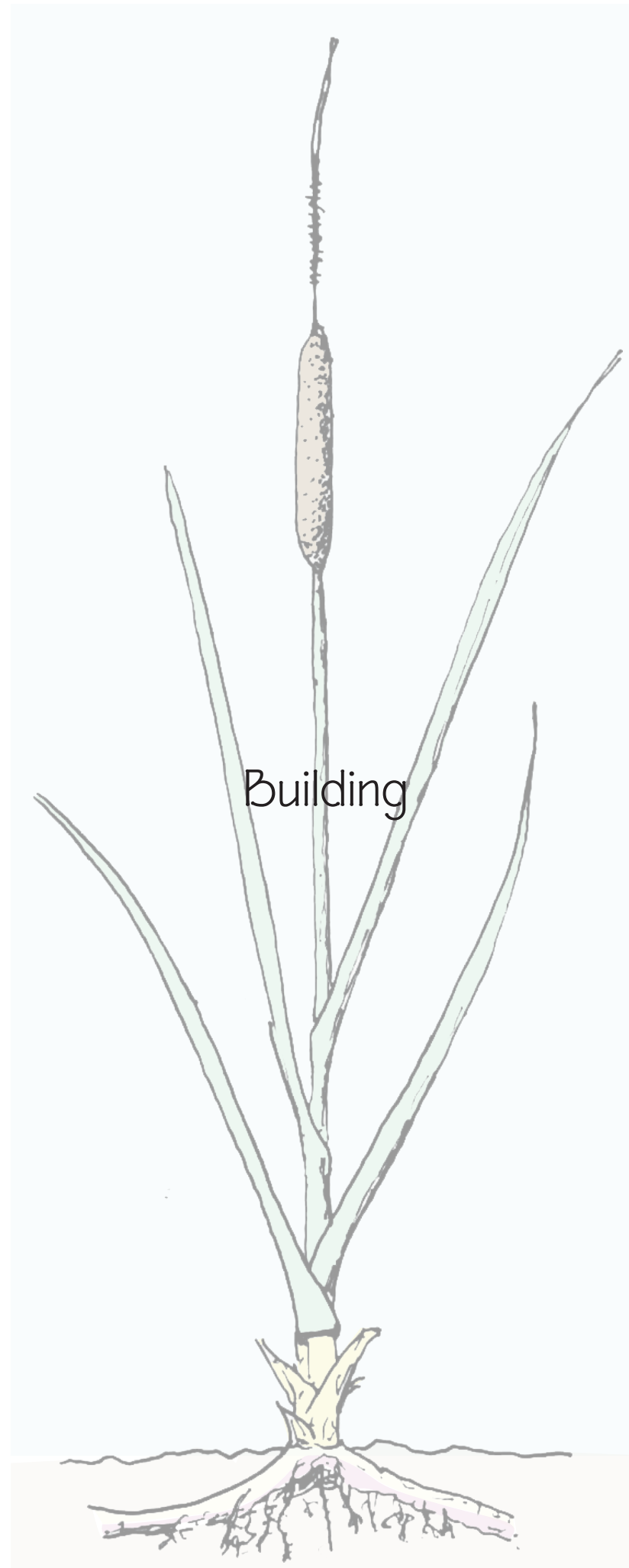


Green Infrastructure Type C- Boulevard

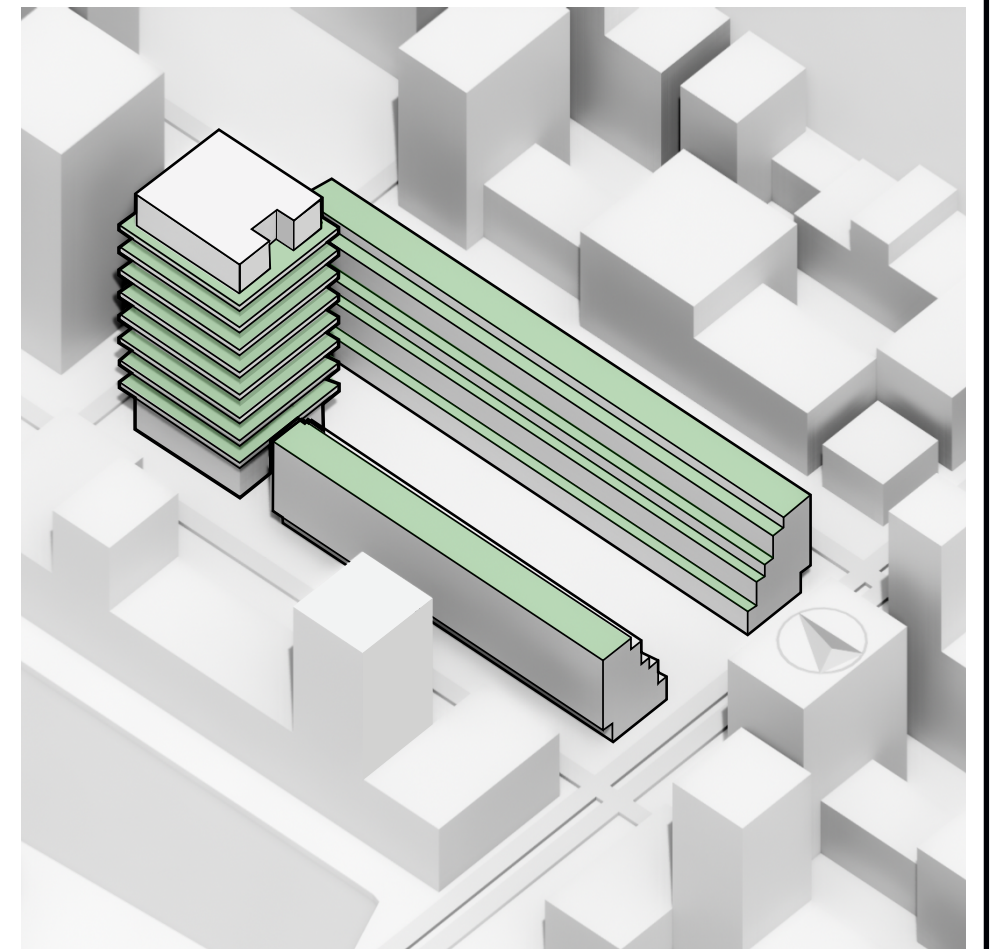
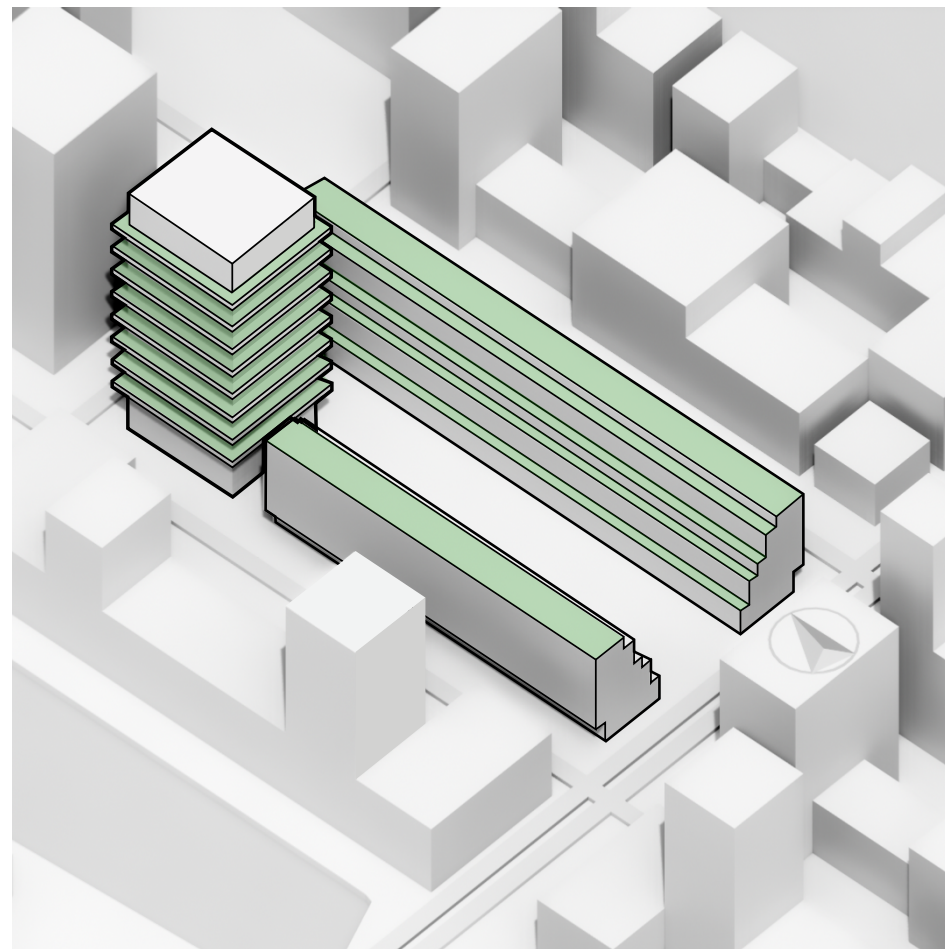
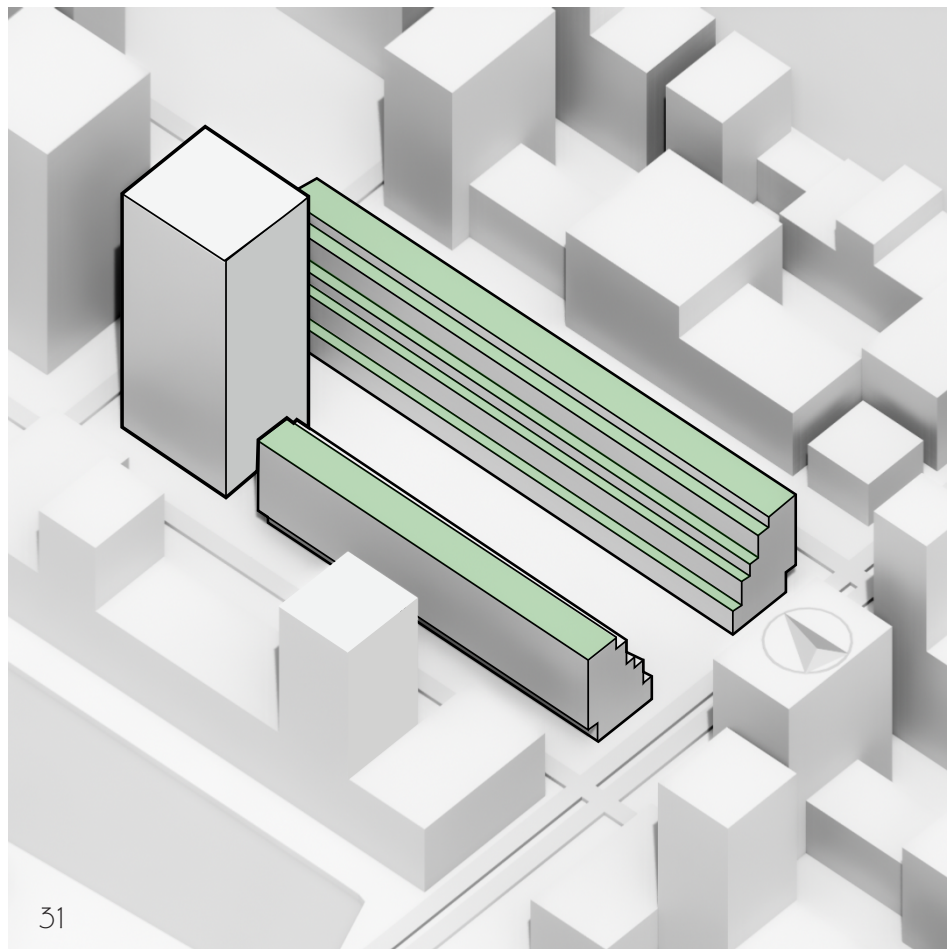
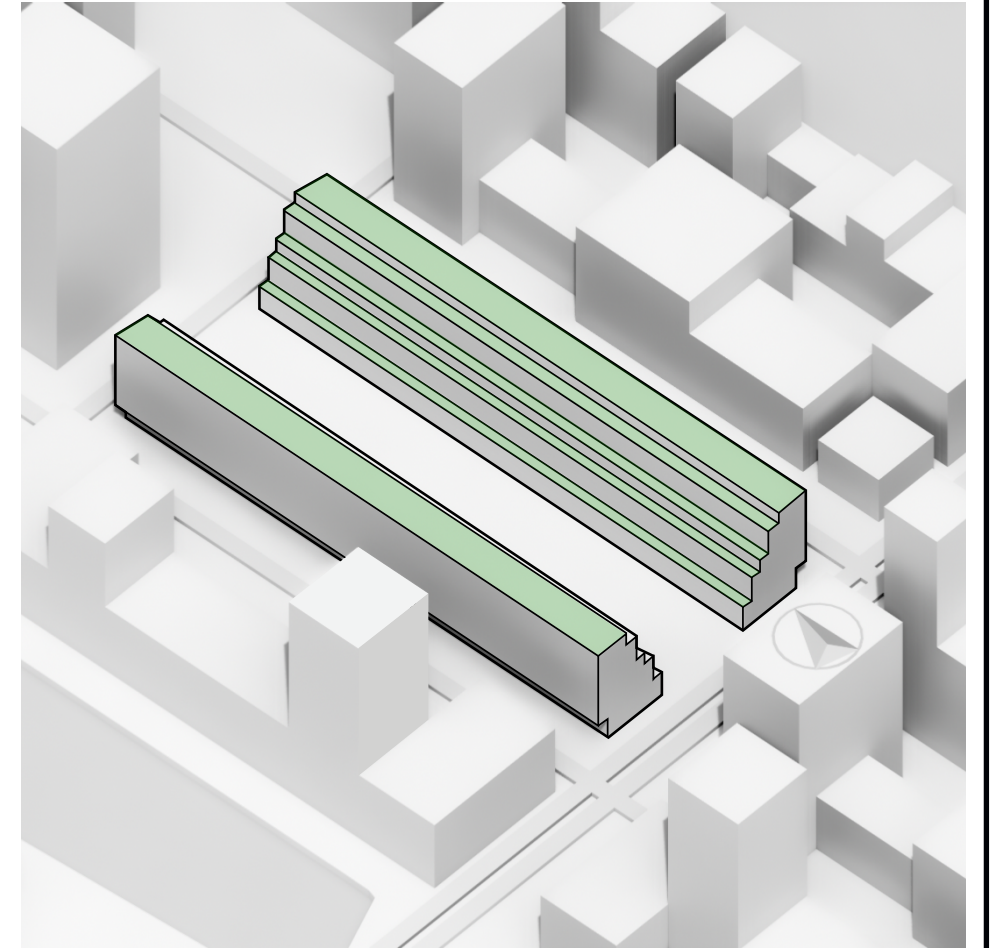
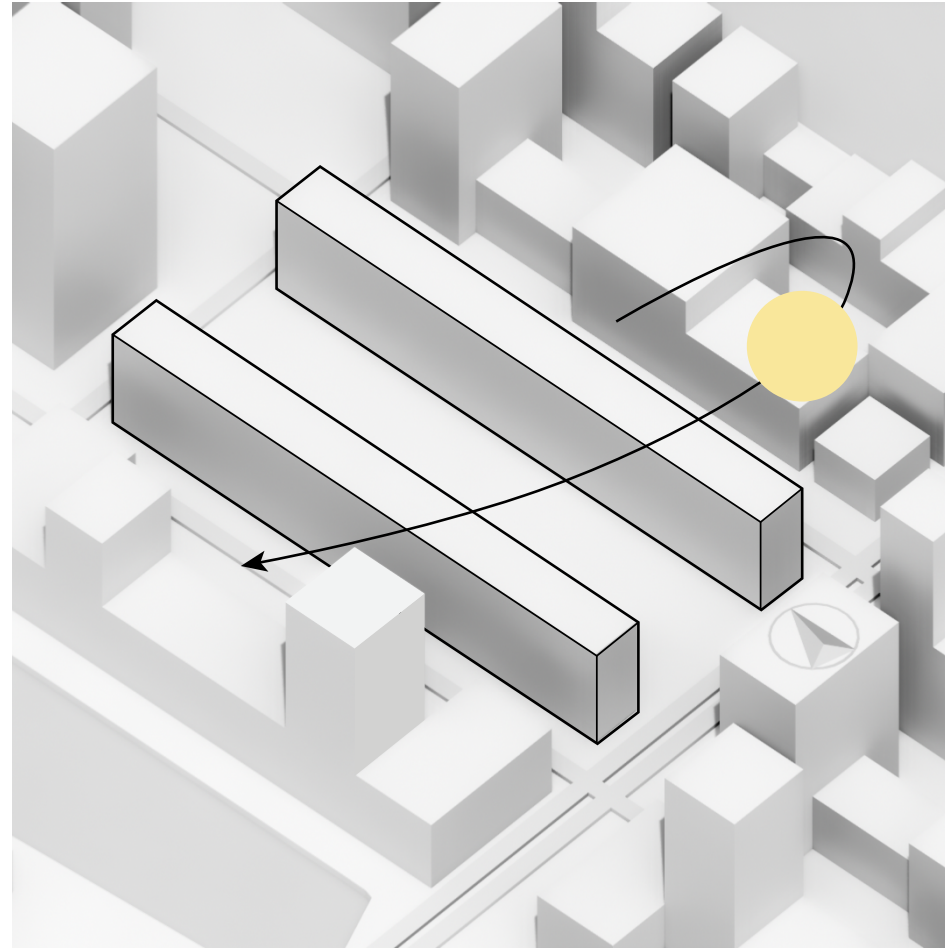
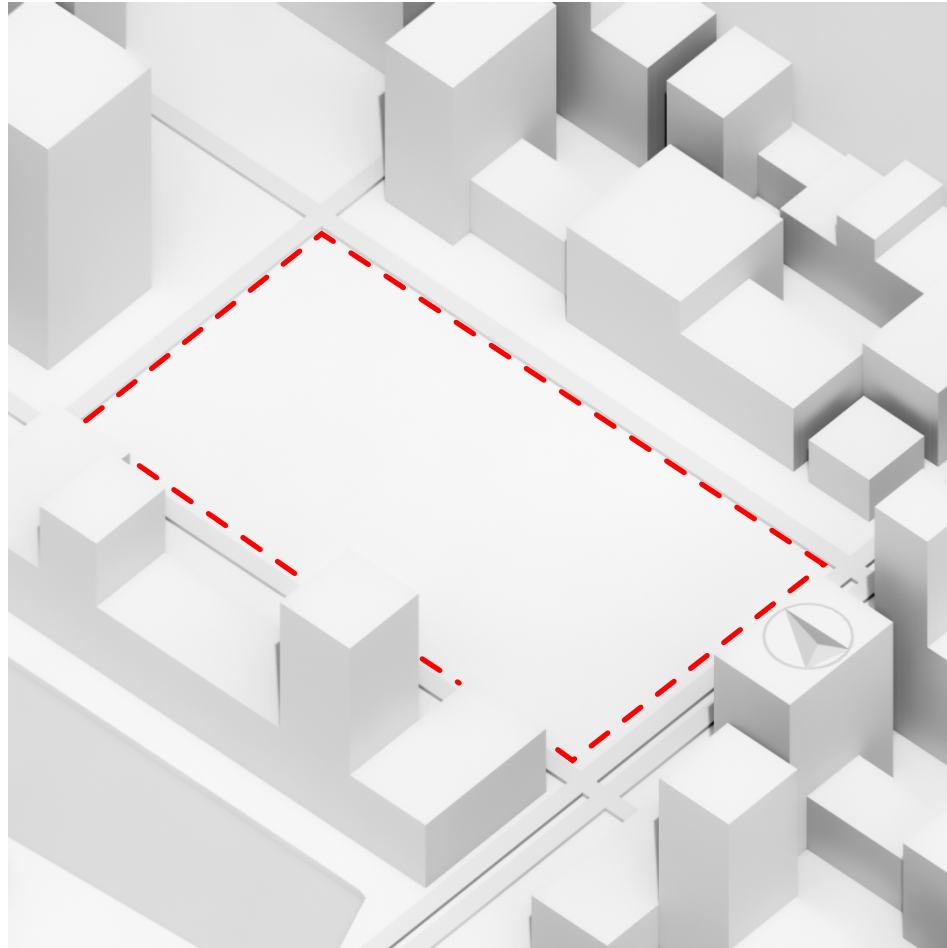


Green Infrastructure Type C- Boulevard

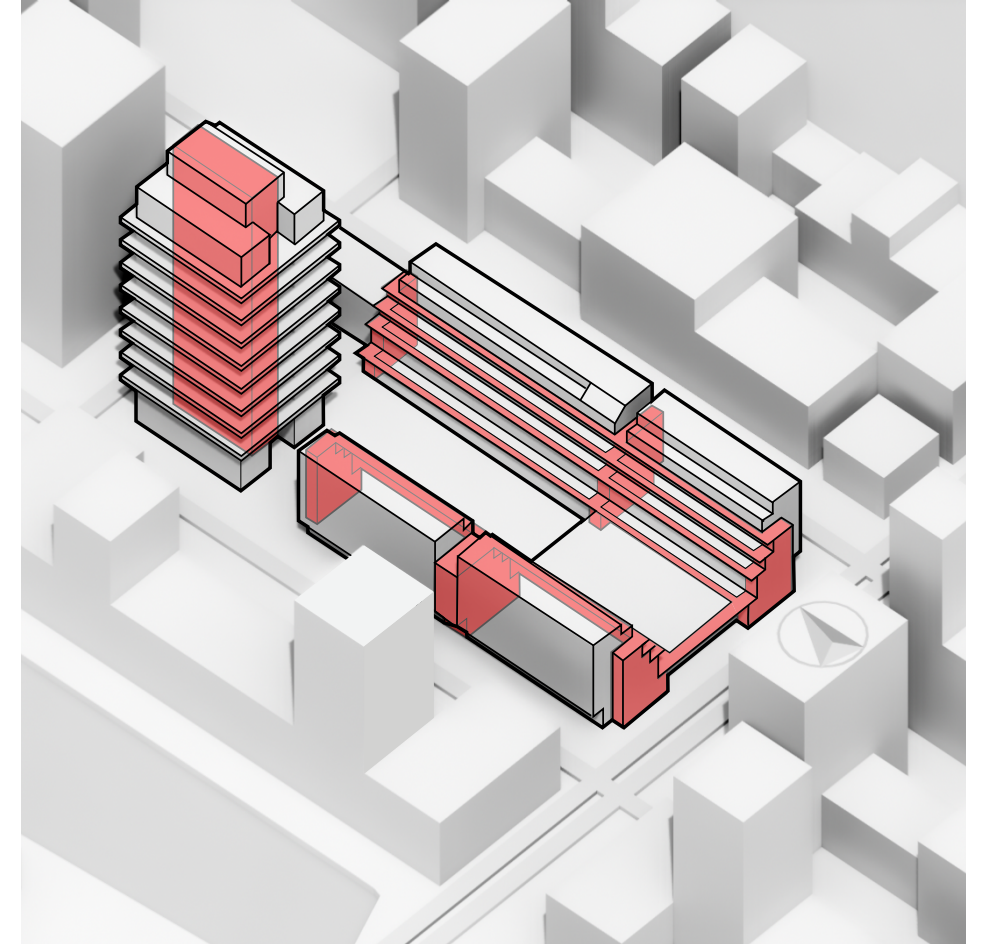
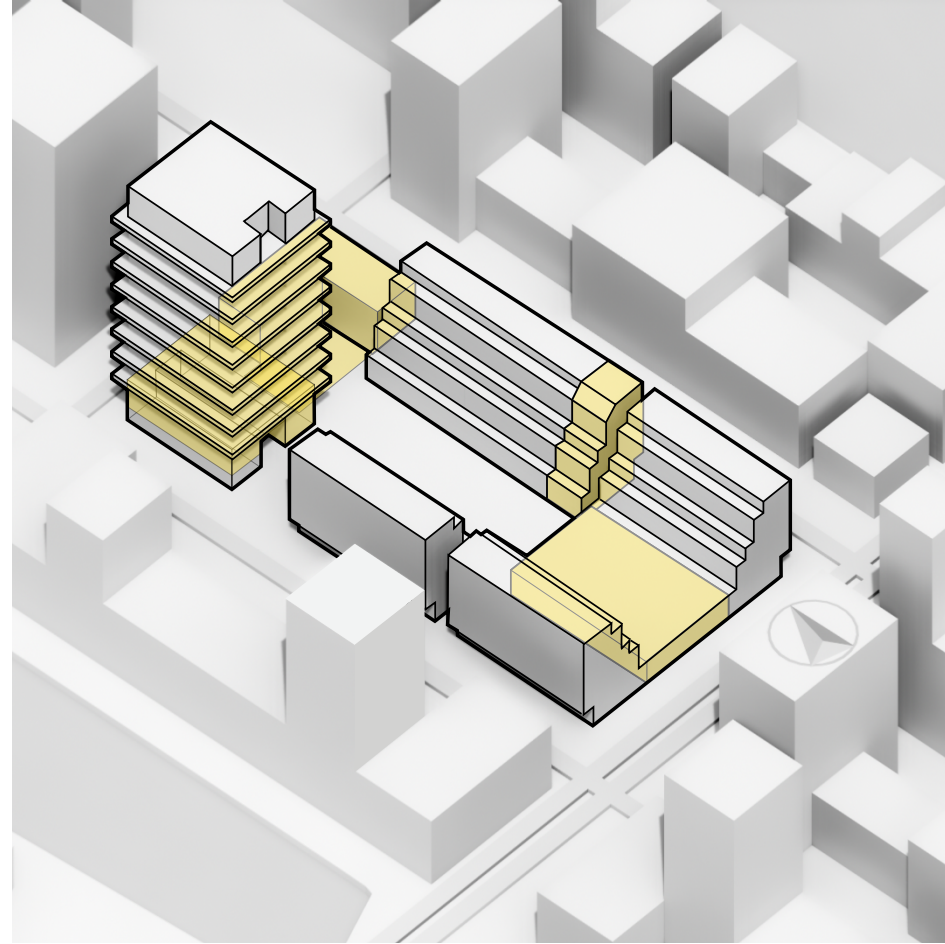
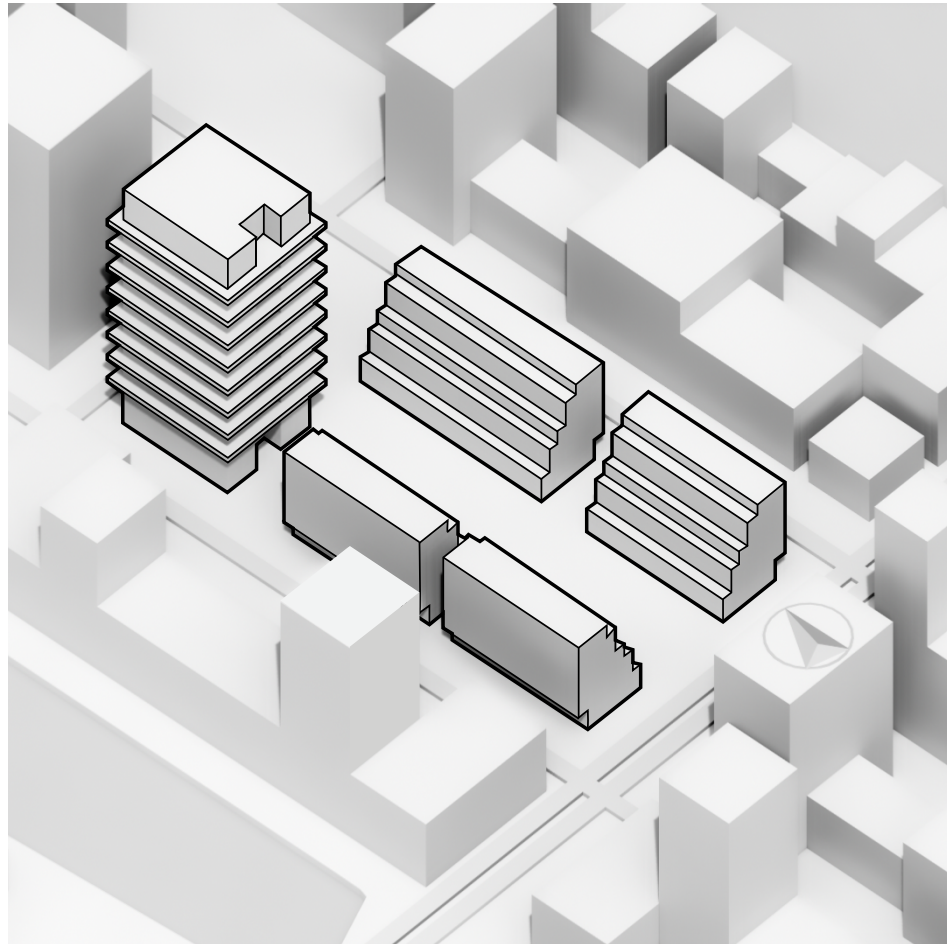




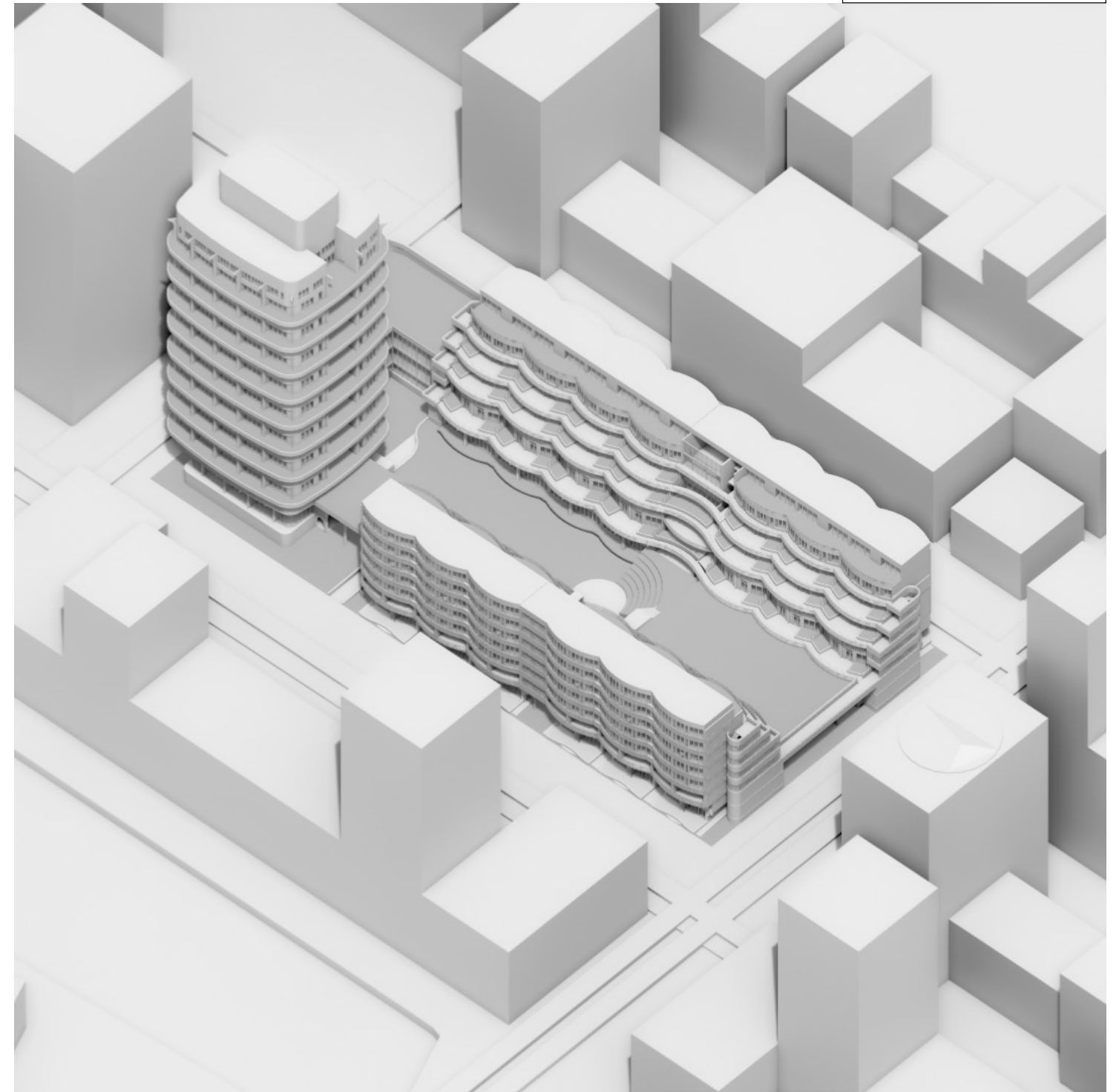
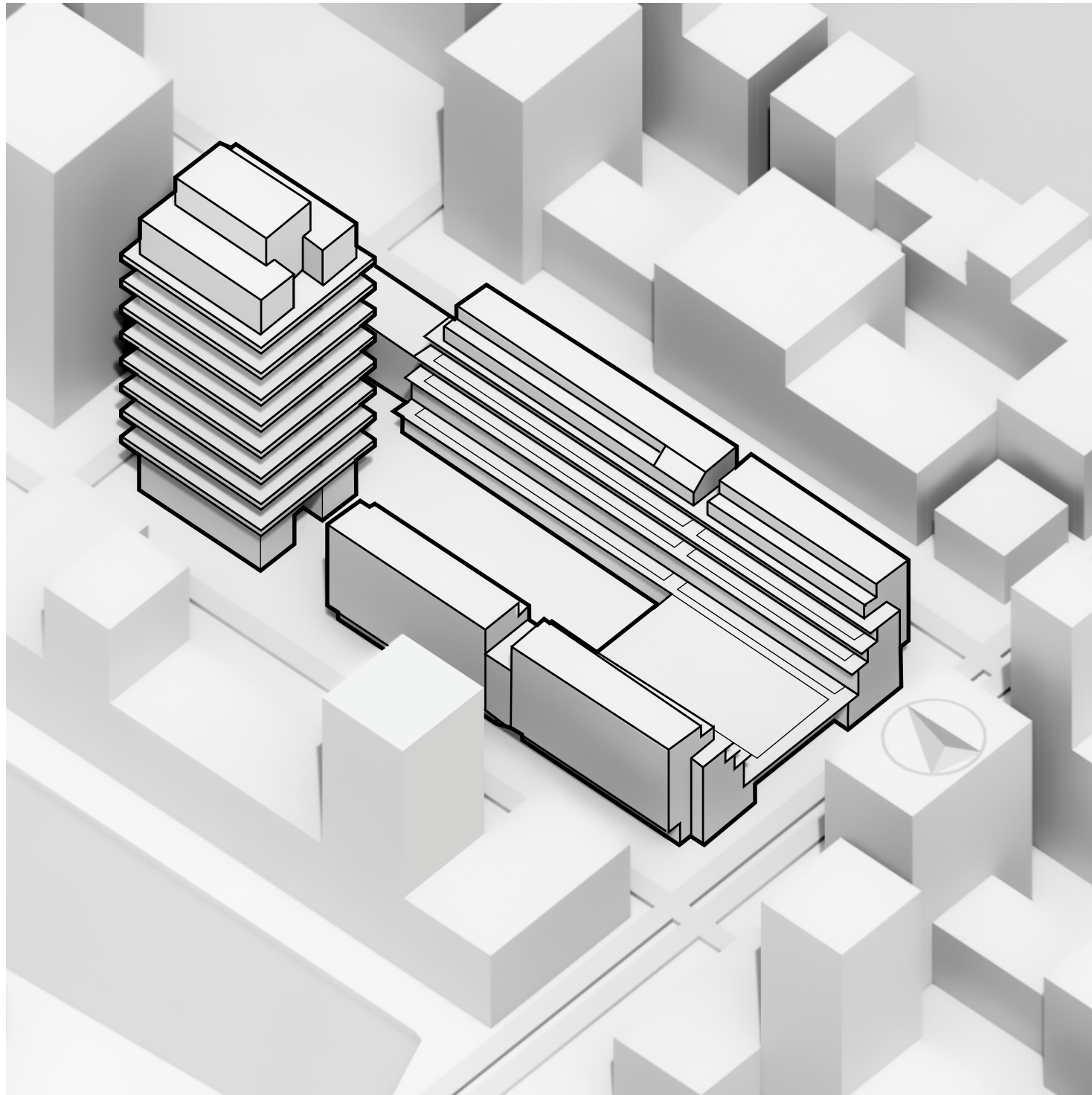
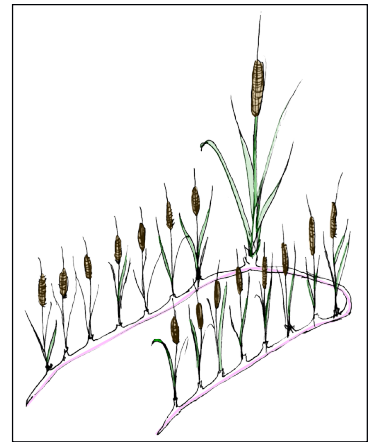
Building Volume



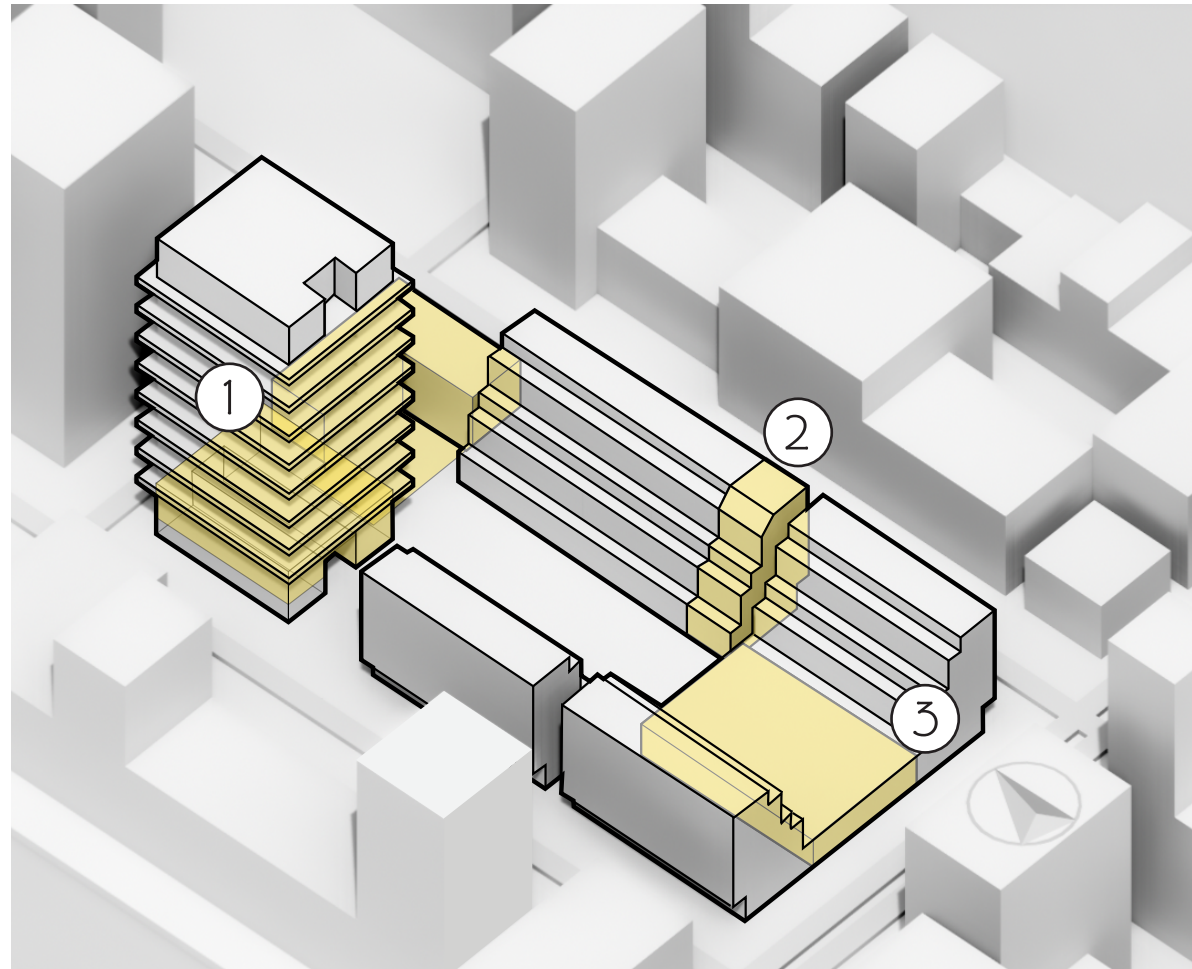
Building Volume



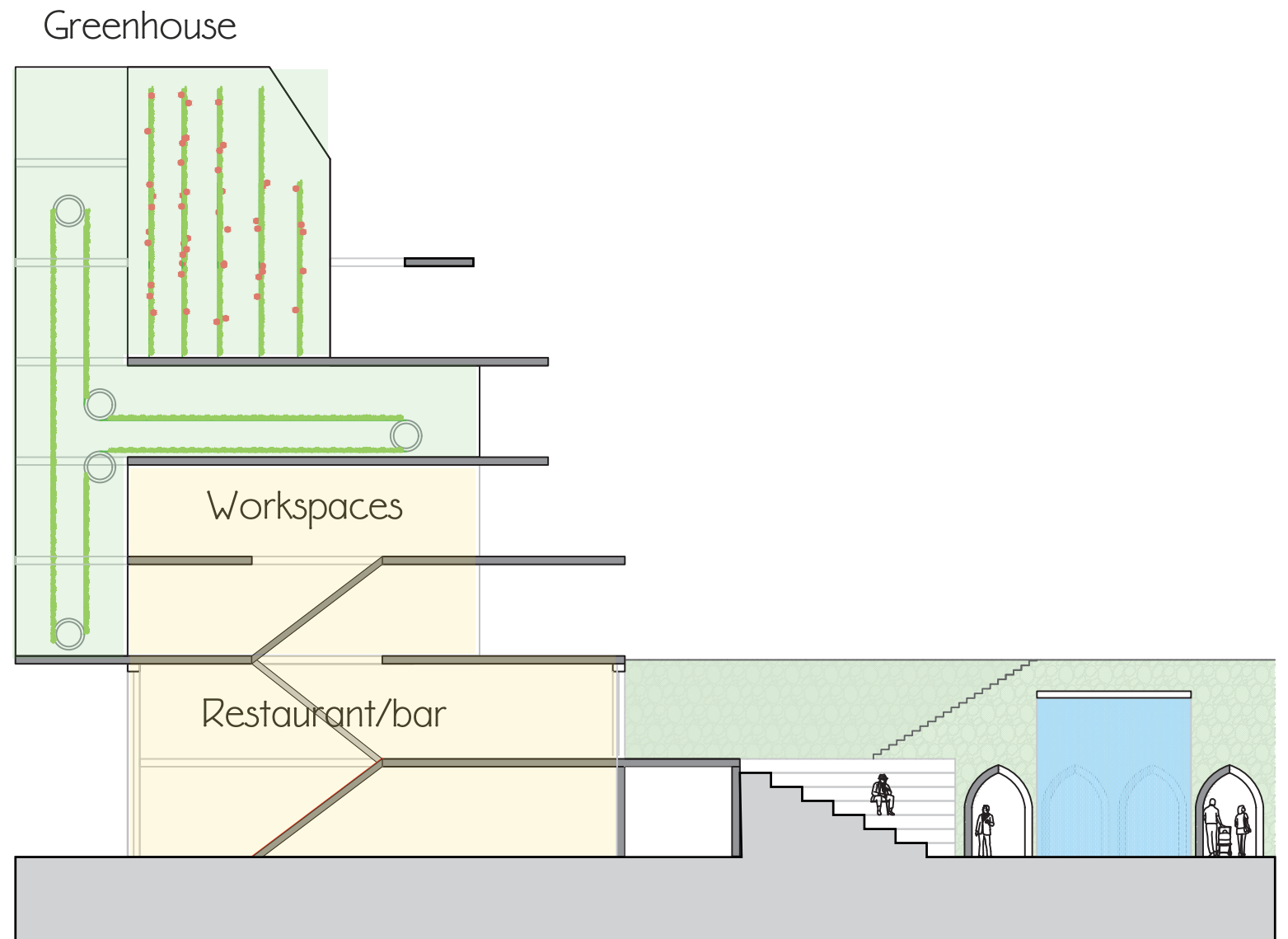
Reedmace superimposed on Building Volume



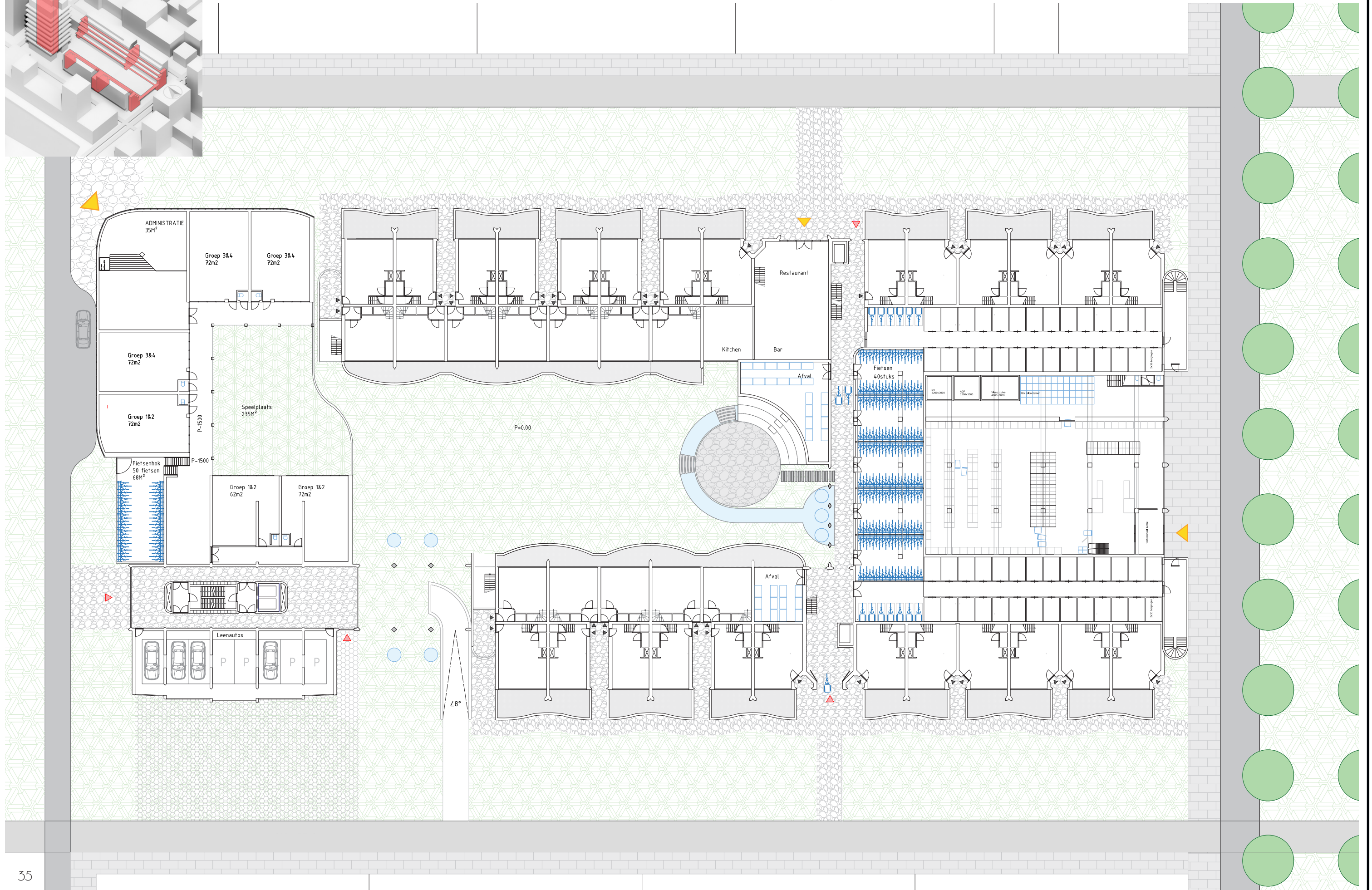
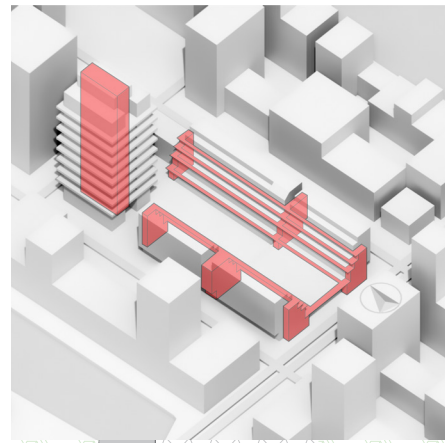
Functions



- 1) Primary school, Workspaces
- 2) Workspaces, Restaurant, Greenhouse
- 3) Zero waste supermarket



Ground Floor Accessibility



Impressions Entrances



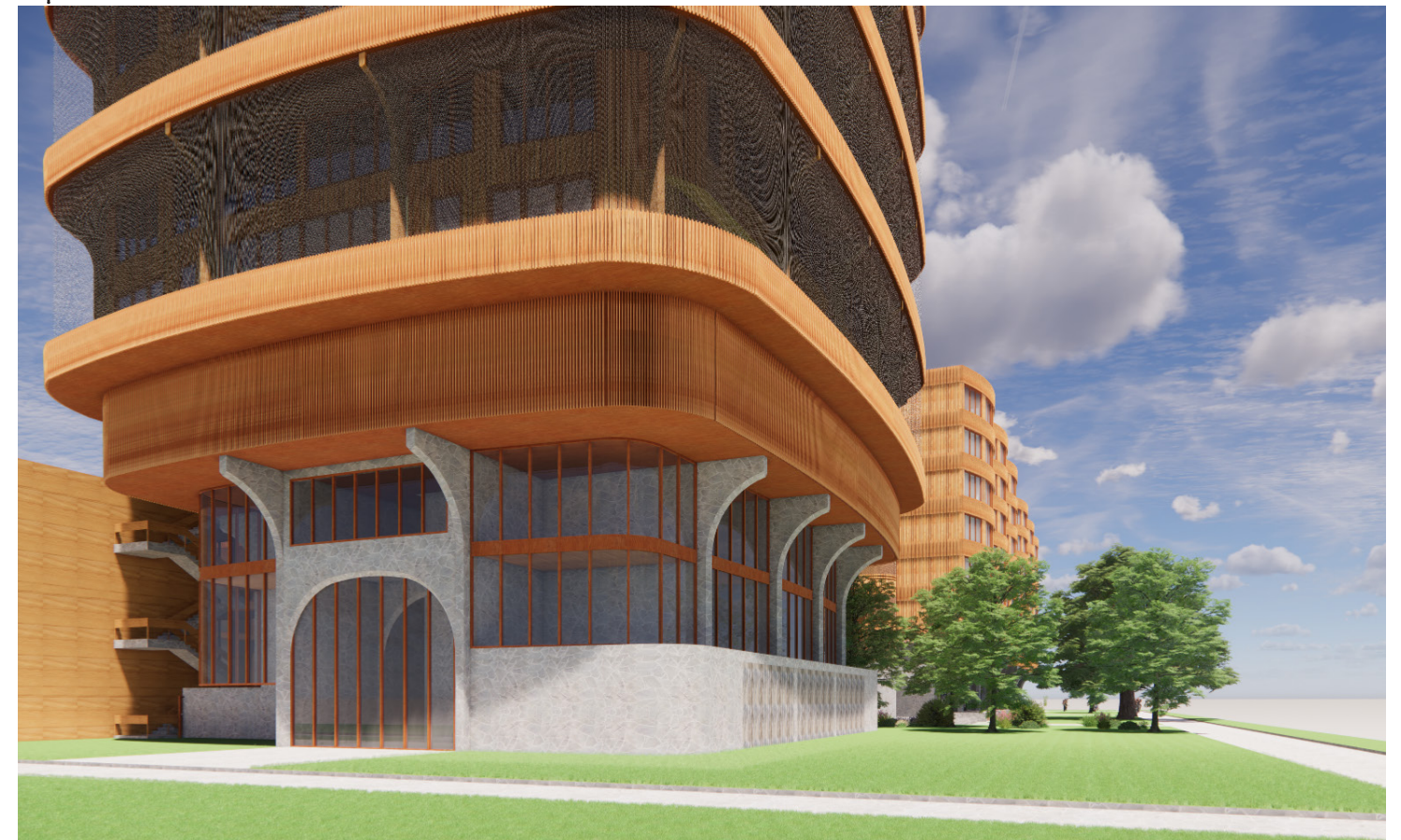
Apartment Block West Entrance



Apartment Block East Entrance

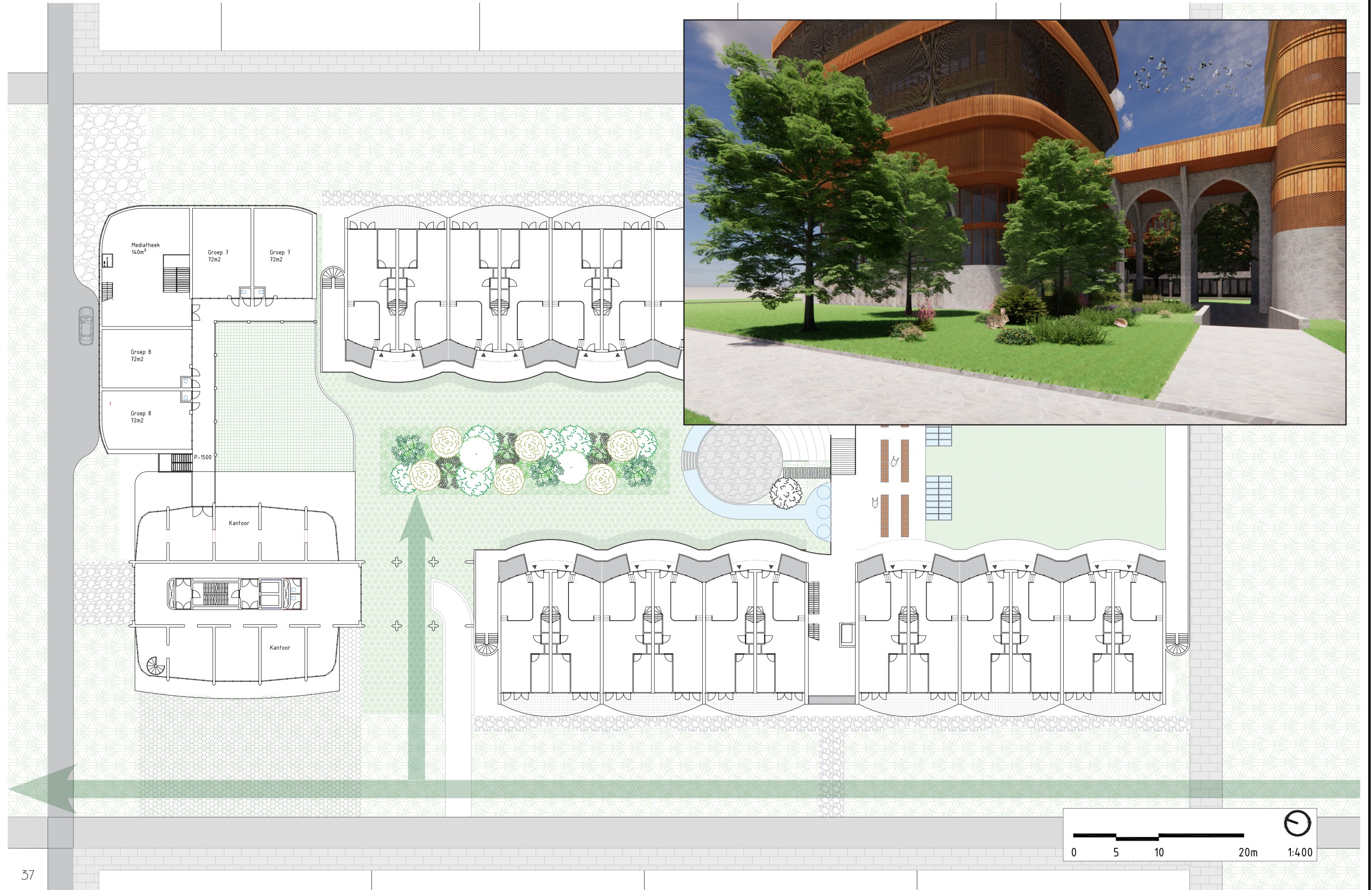


36 Residential Tower South Entrance/ Natural corridor



Residential Tower North Entrance

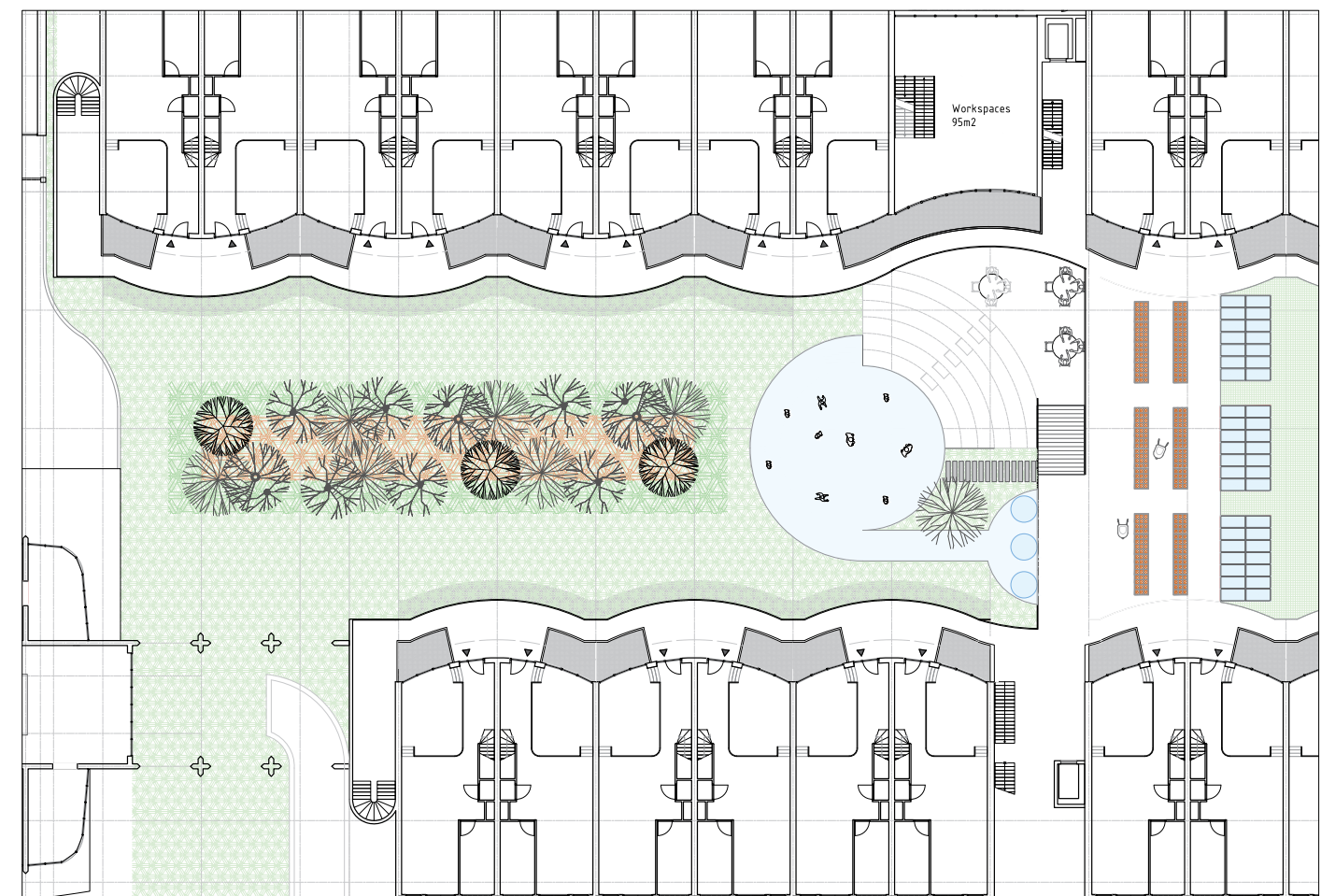
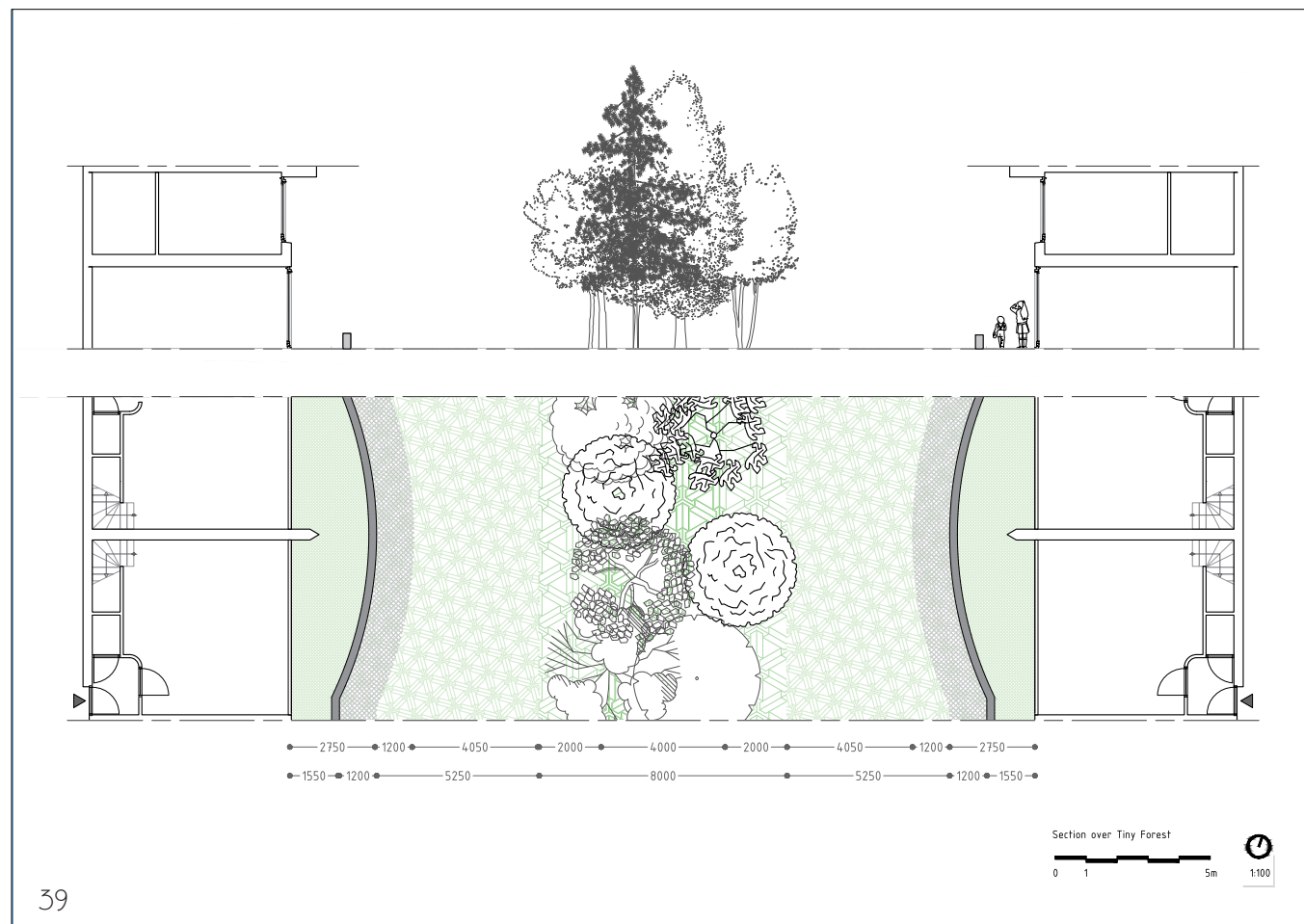
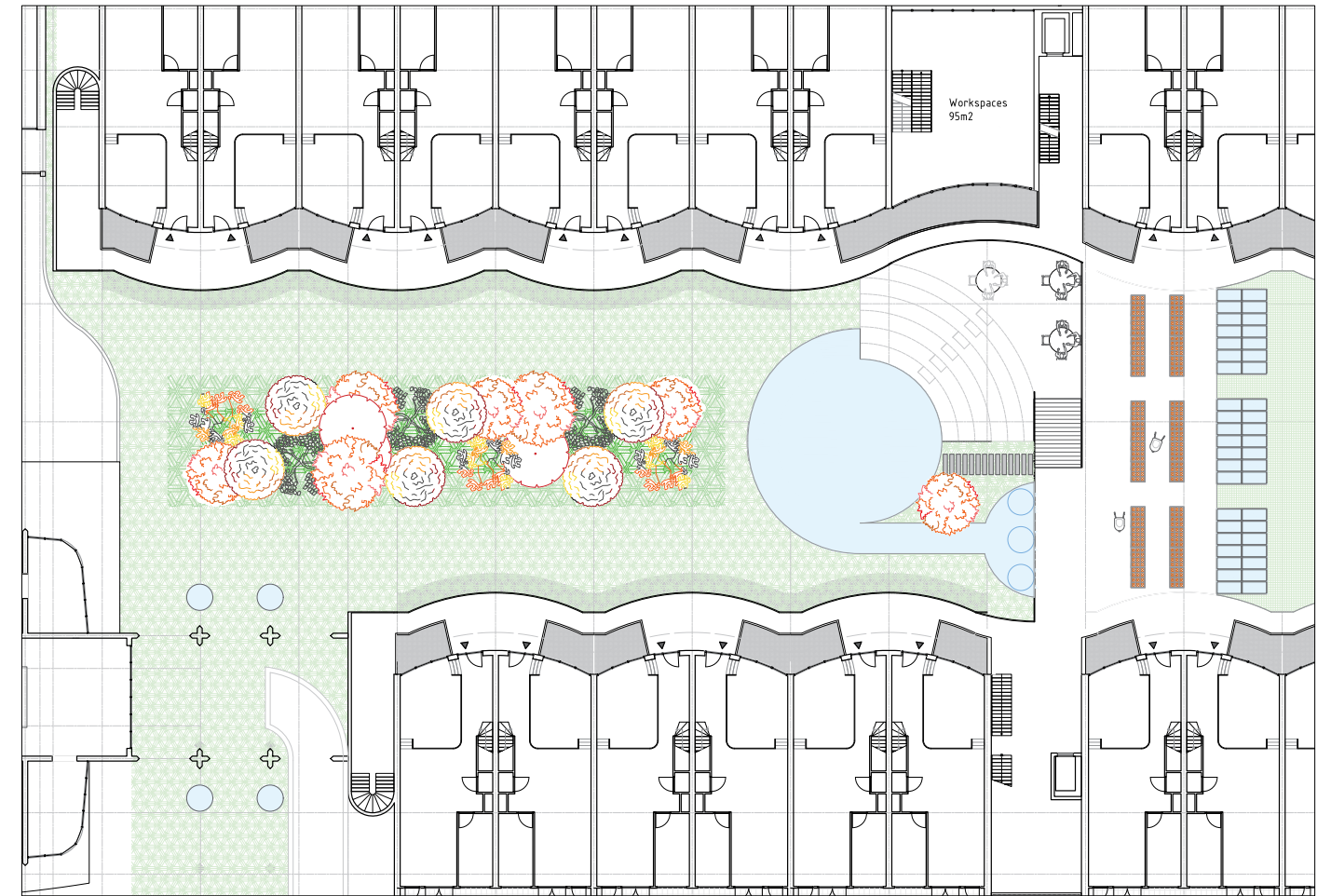
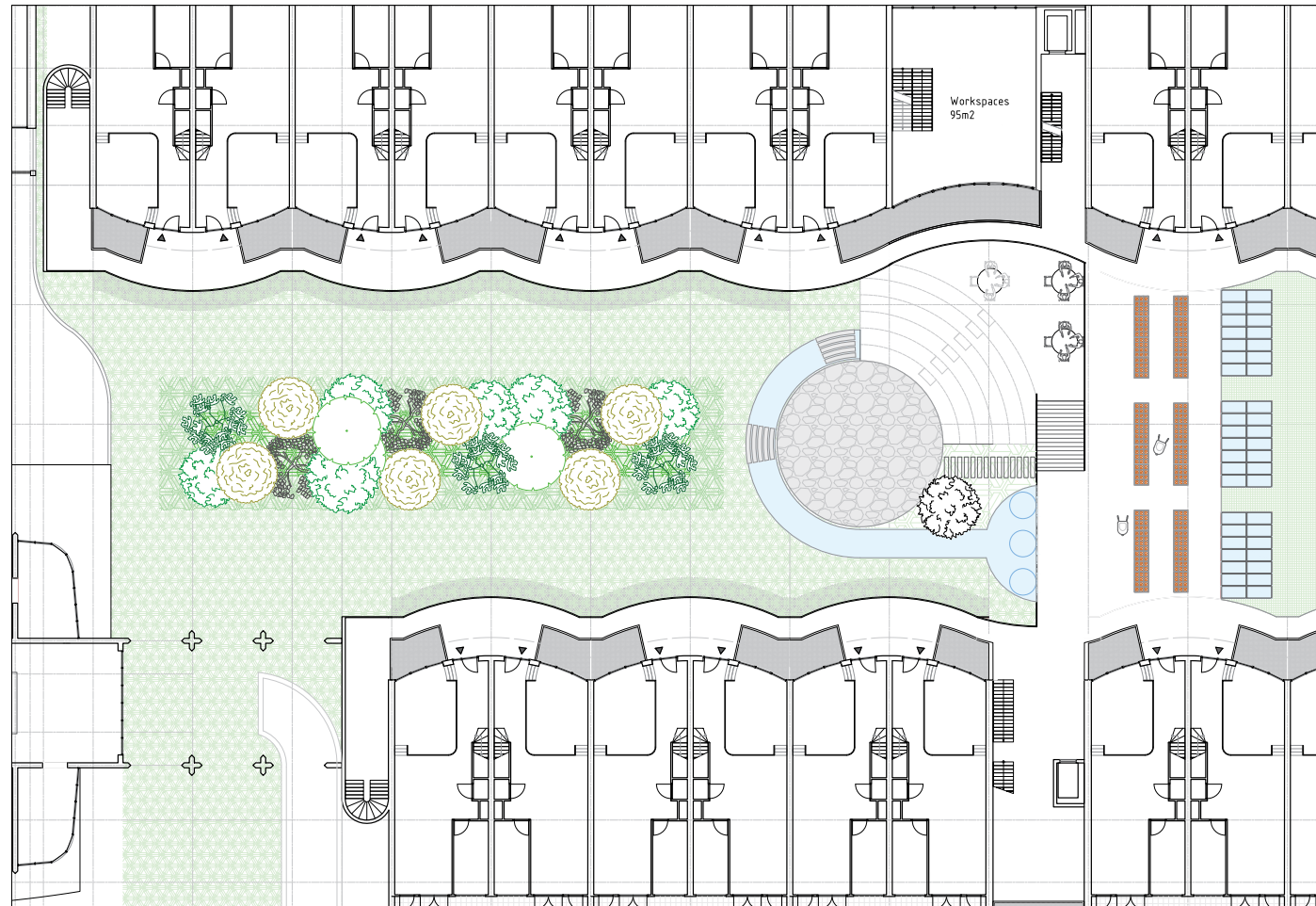
Accessibility Central Park



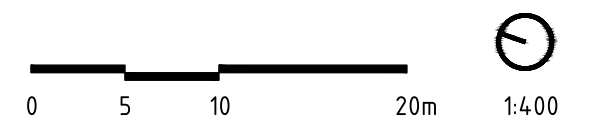
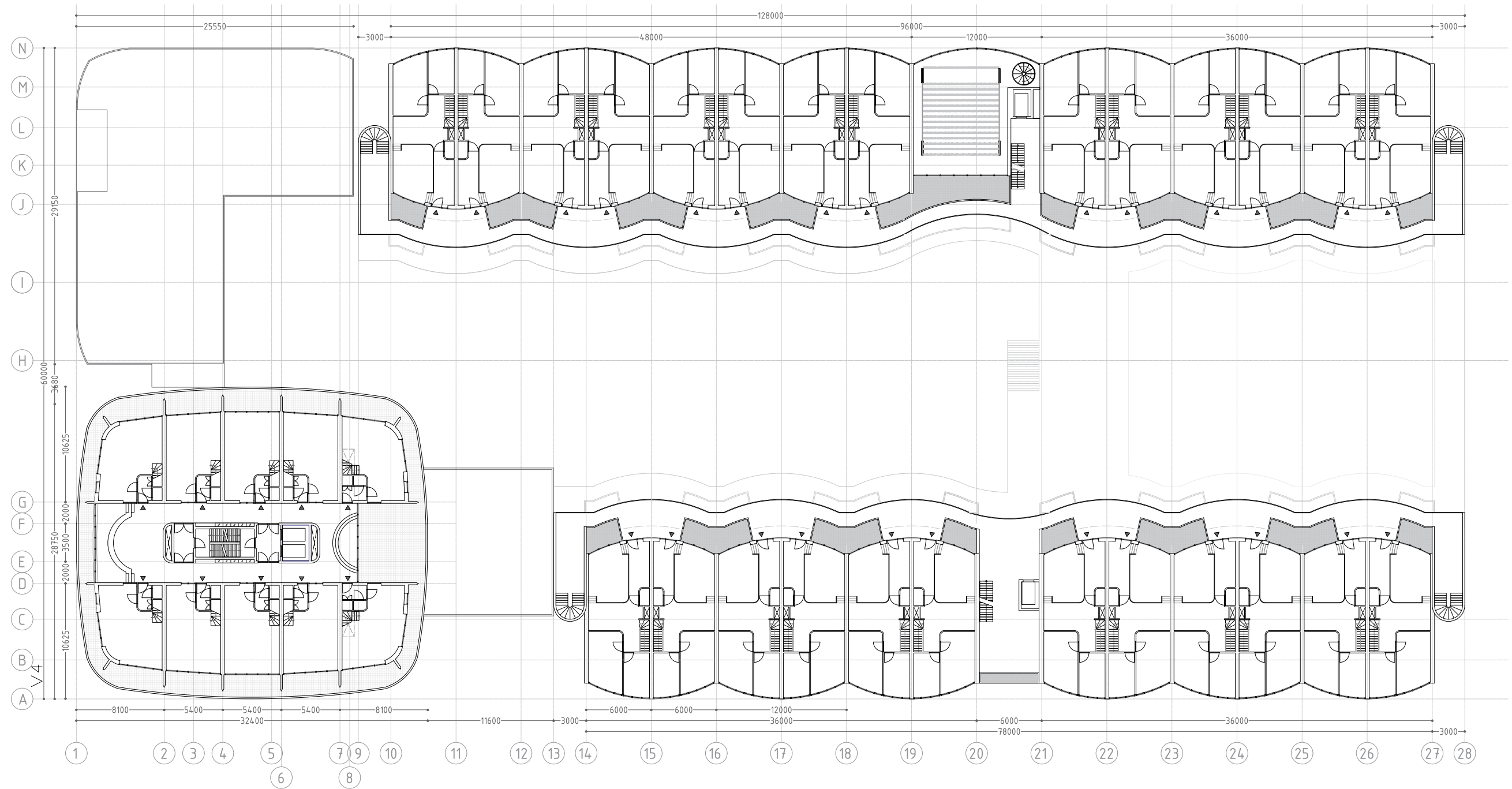
Accessibility Central Park



Seasonal Influences



Floorplan Fourth Floor



Facades



East



North



South

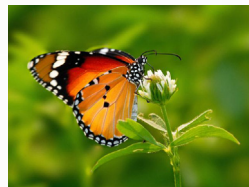
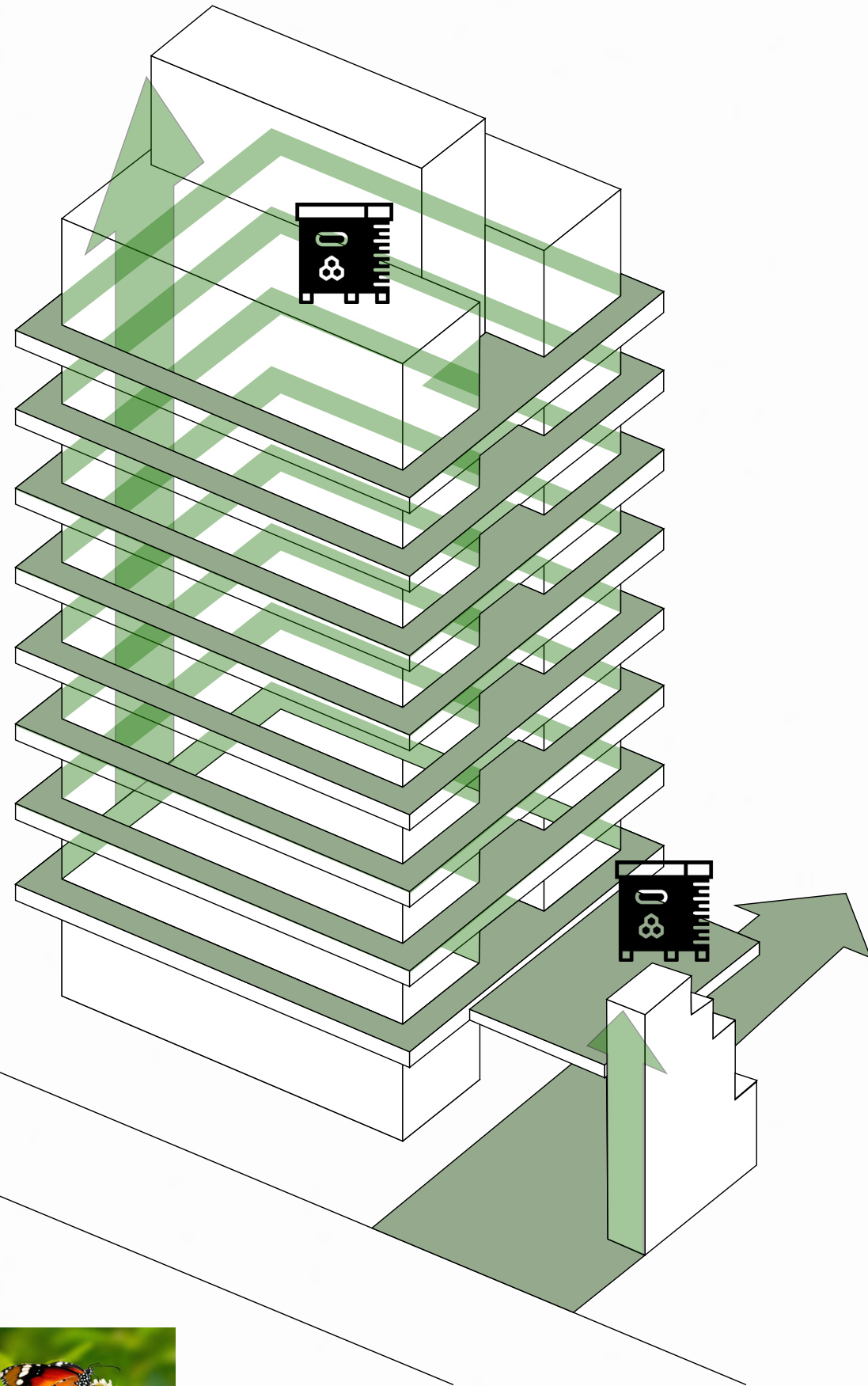


West

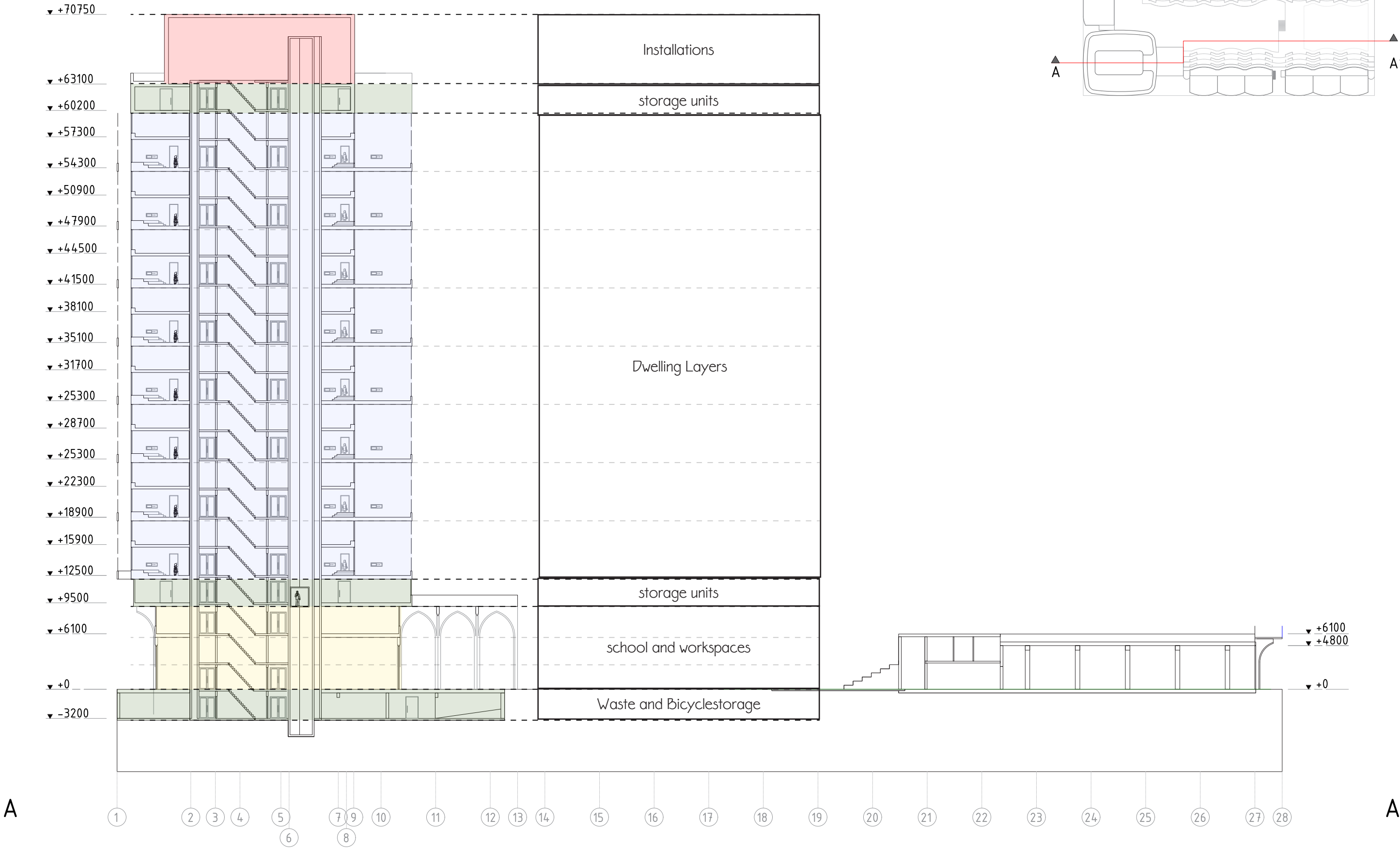
Residential Tower



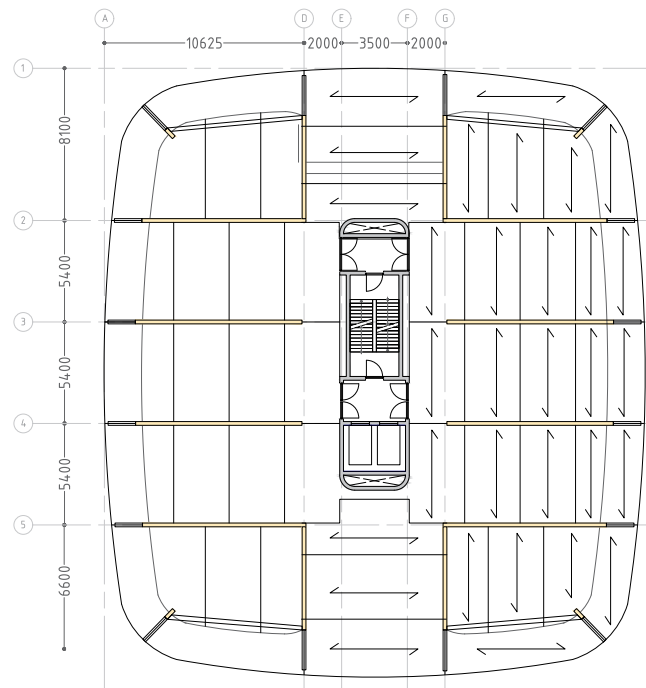
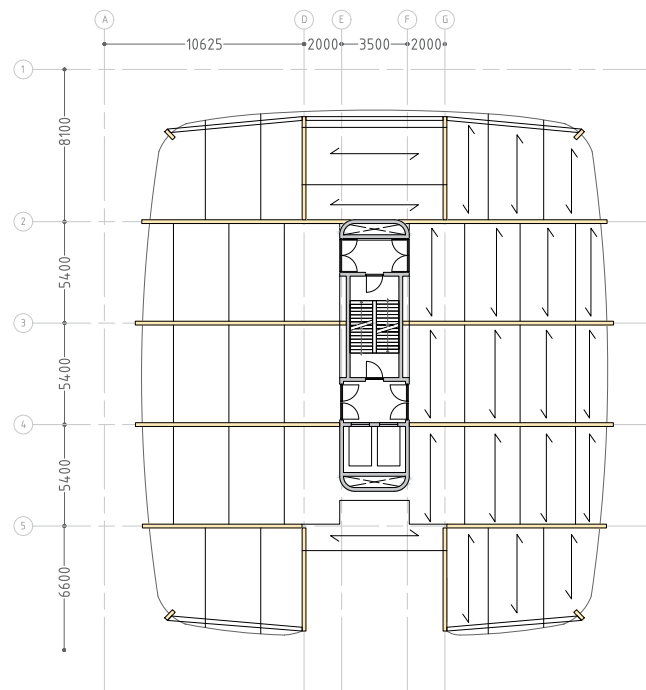
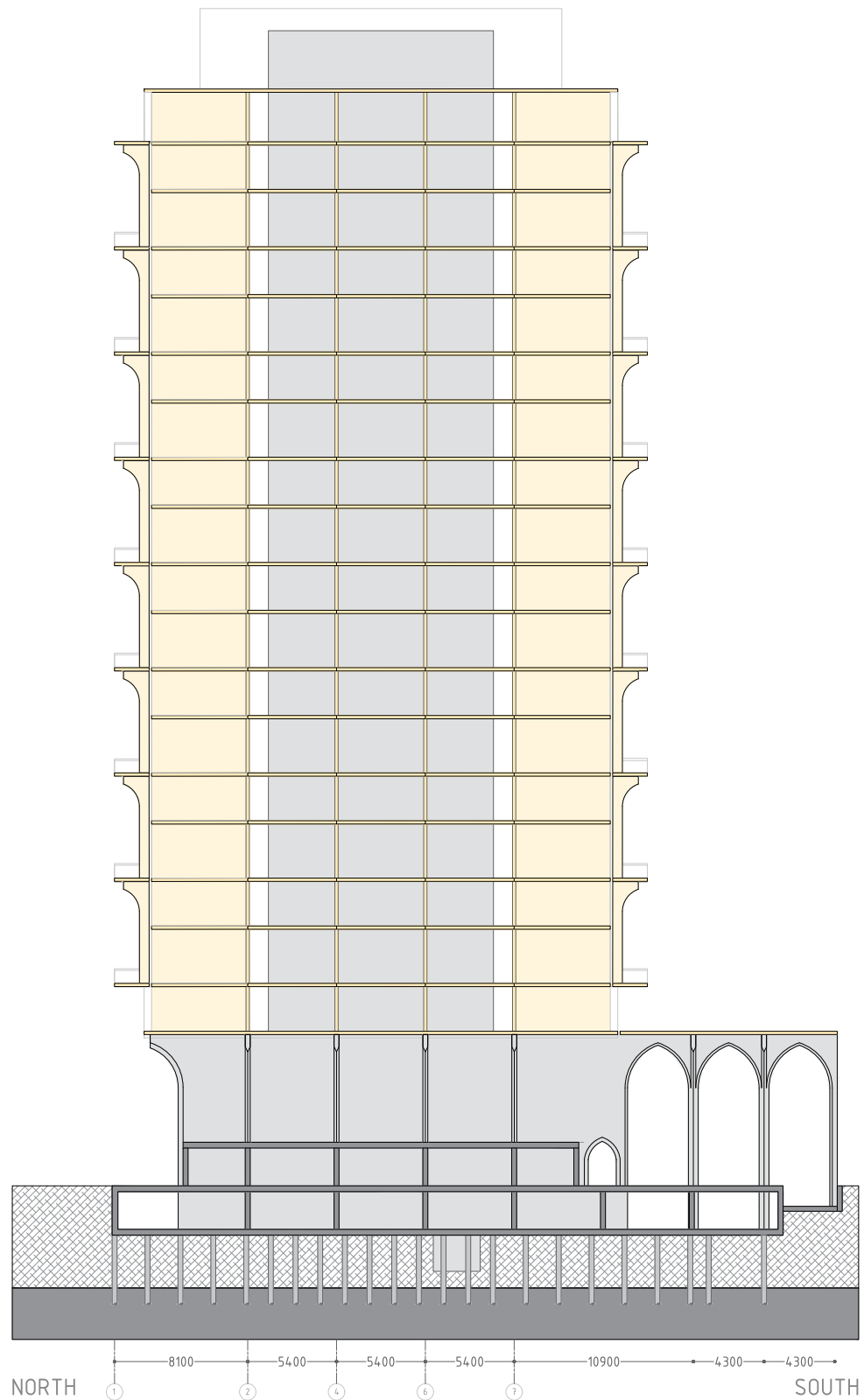
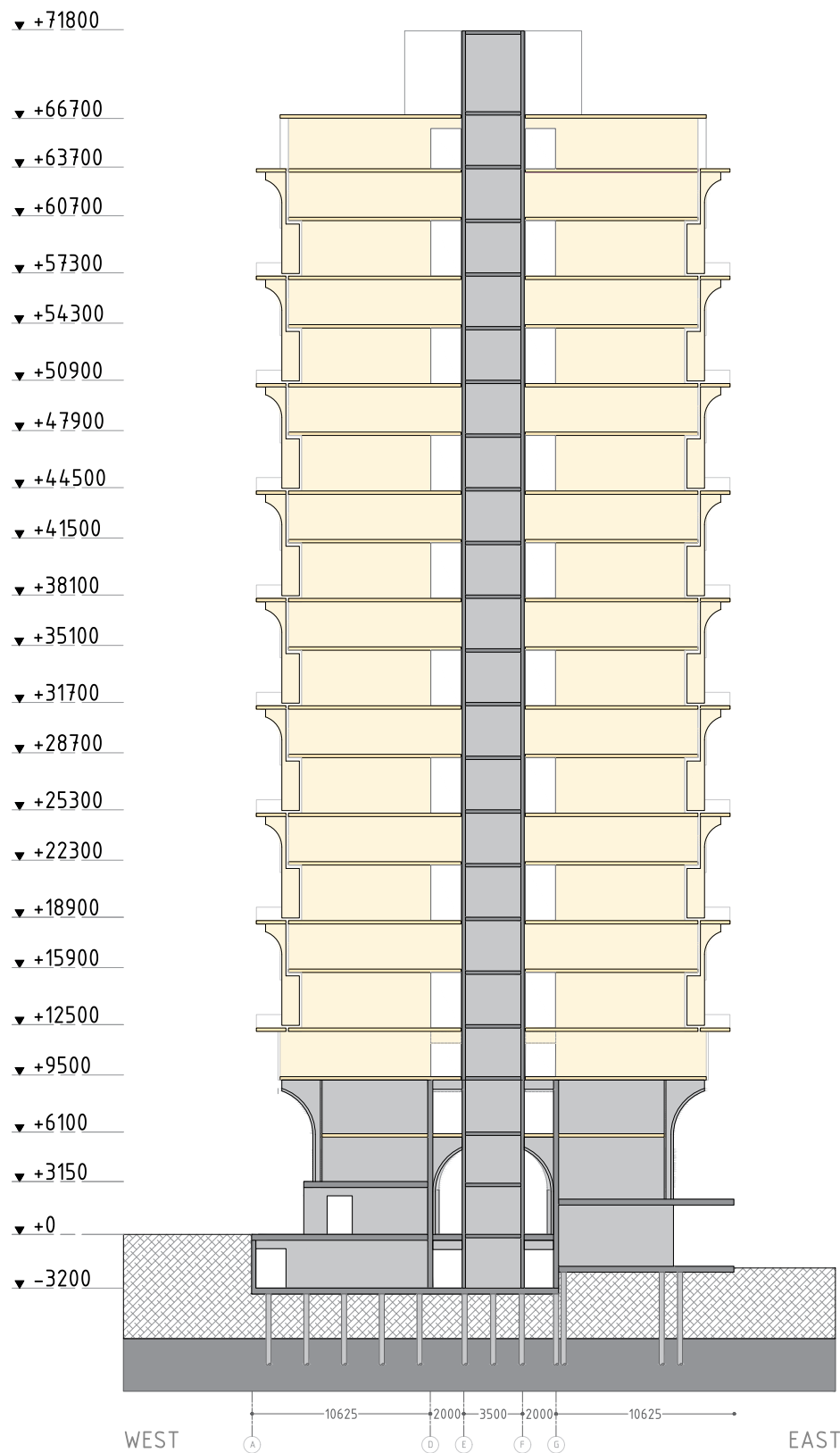
Nature in Residential Tower



Composition Residential Tower



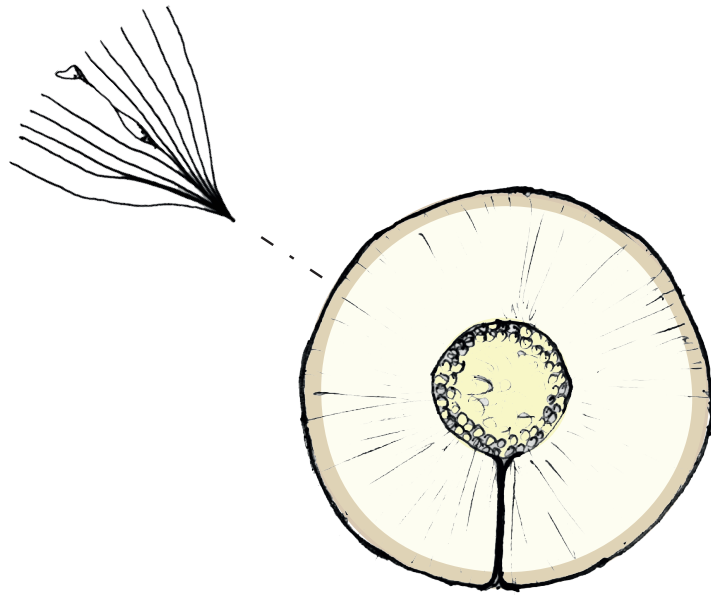
Construction



| | | | |
|---|--------------------------|---|---------------|
| CONSTRUCTIVE PRINCIPLES RESIDENTIAL TOWER | | | |
| - | CLT WALLS AND FLOORS | = | 200 MM |
| | SPANN | = | 5000 MM |
| | FLOOR HEIGHT | = | 3200 MM |
| - | CONCRETE CORE | = | 200 MM |
| | MEASUREMENTS | | 3700X14450 MM |
| - | CONCRETE POLE FOUNDATION | | |



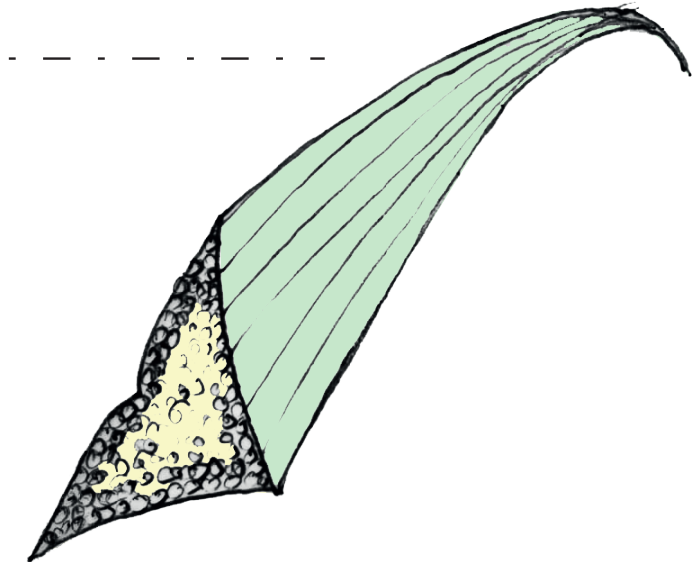
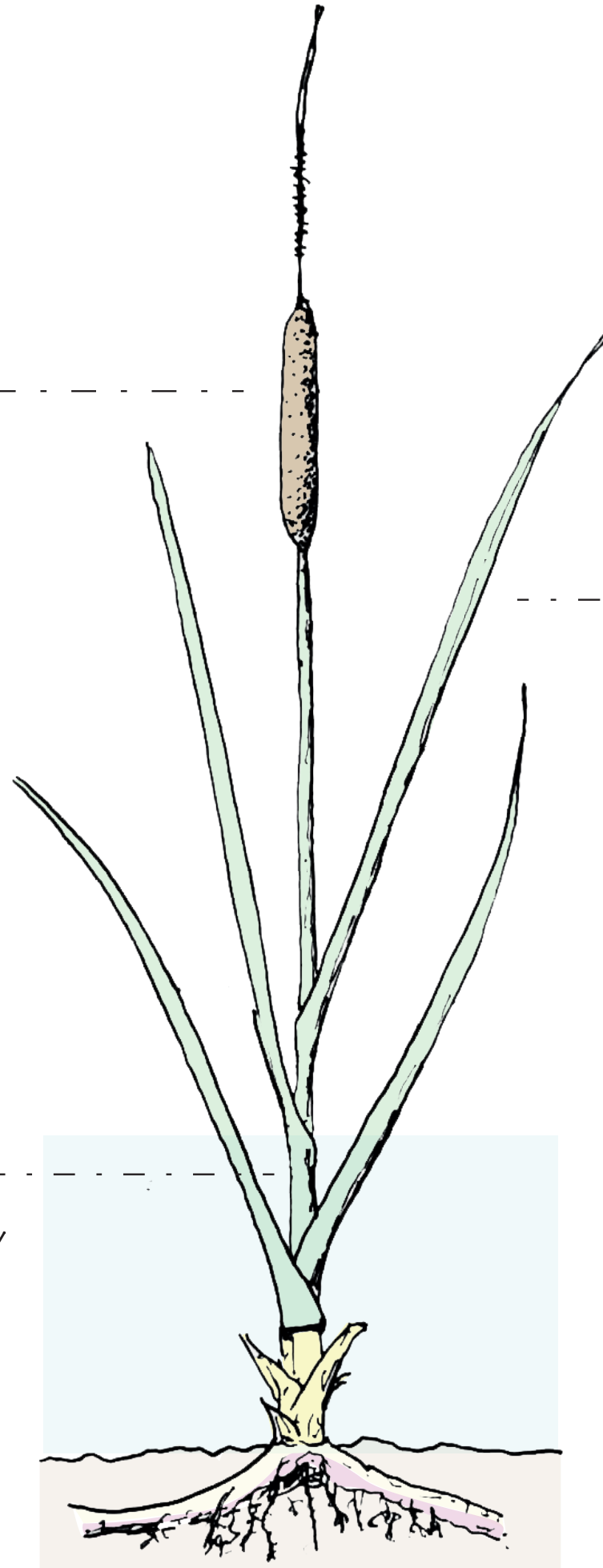
Structural Principles



The seeds are placed around the stem like a coat

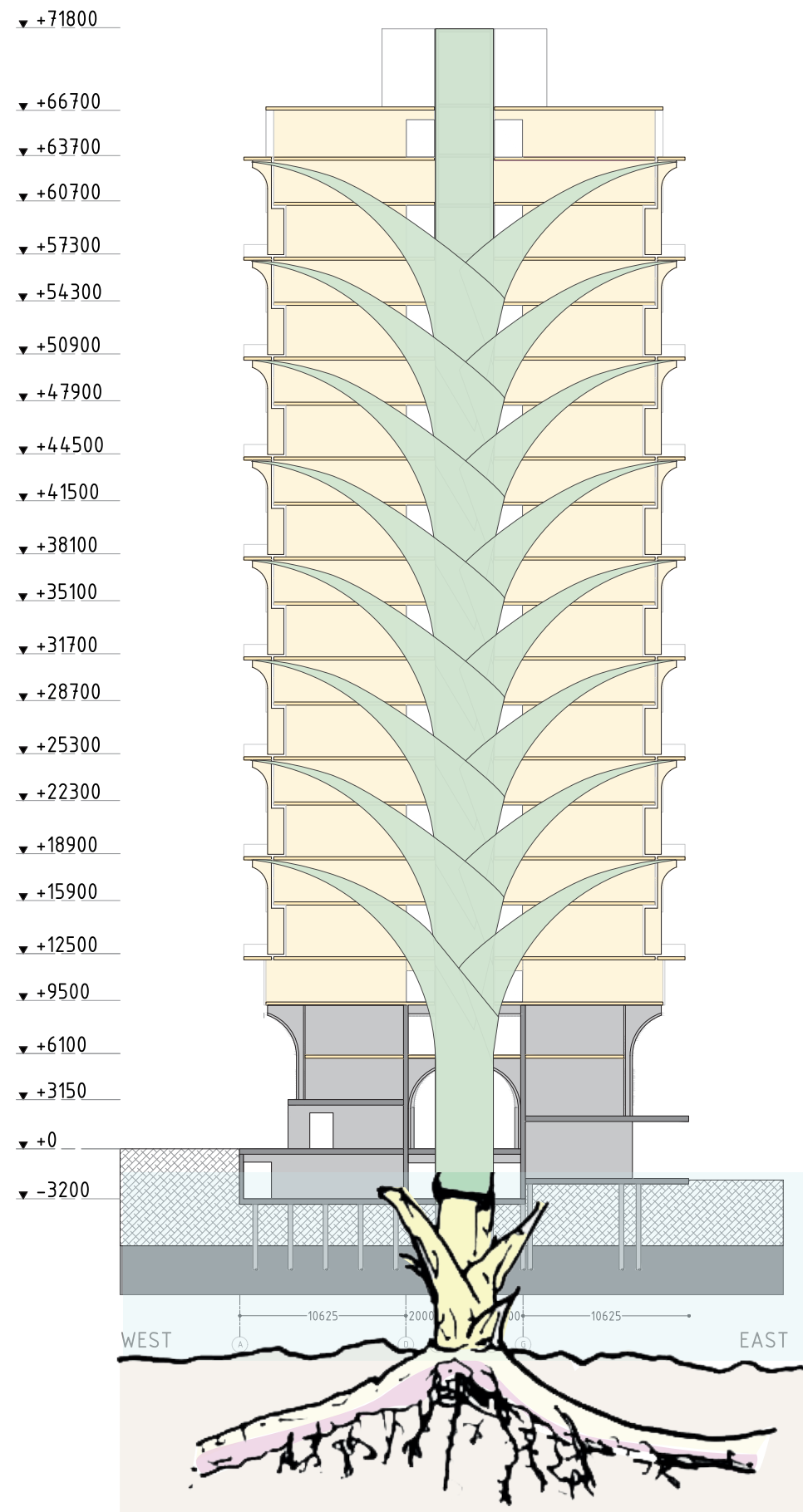


The central round stem provides flexibility and stability and carries oxygen to the root and nutrients to the plant.

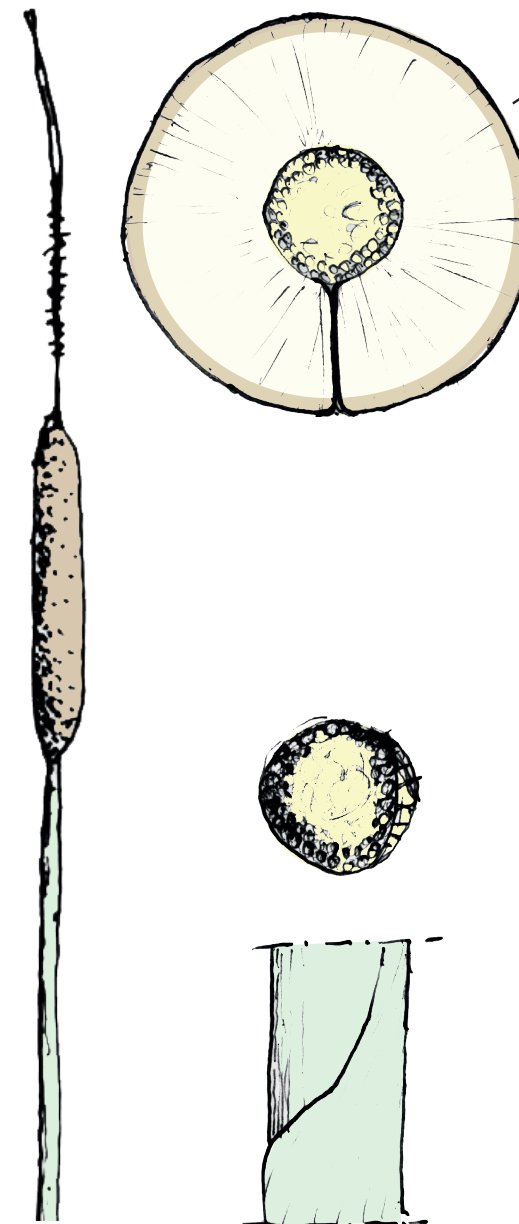


The triangle shape of the reedmace leaves makes them self supportive

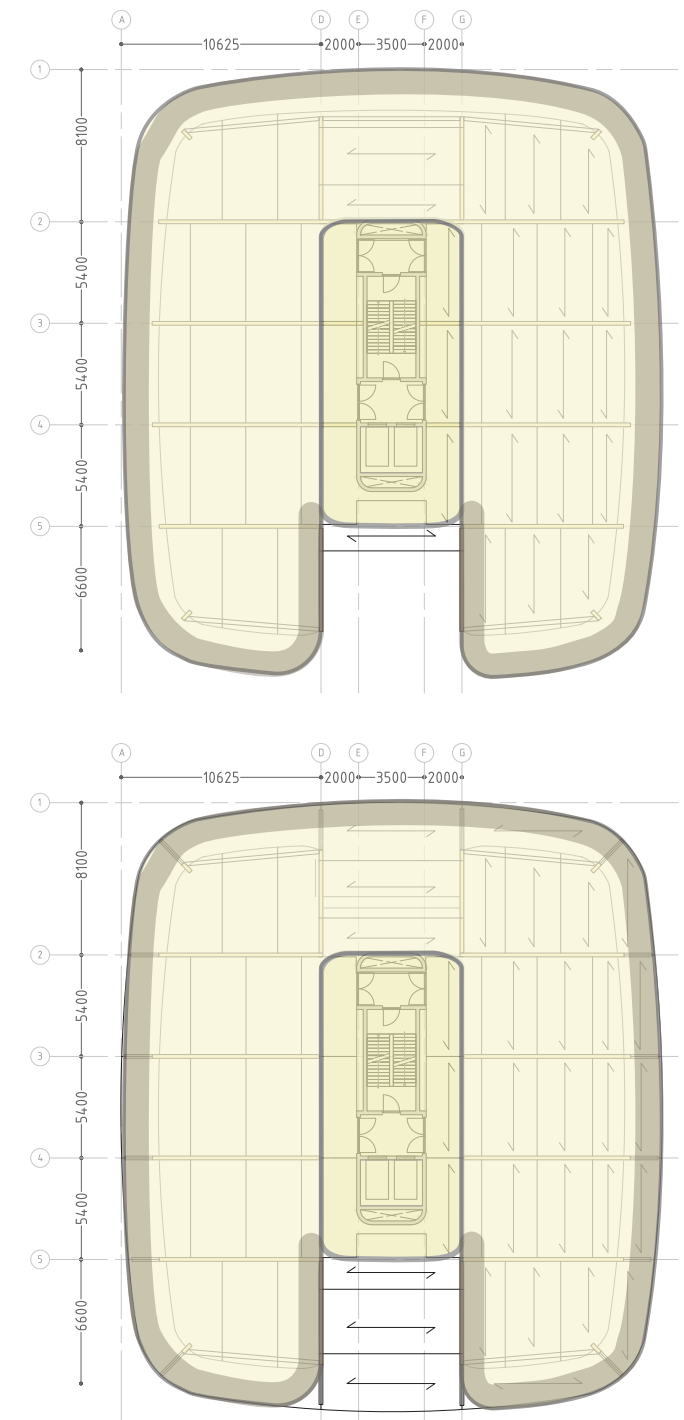
Construction - Reedmace



CLT wall extended to support Gardens



Rising Core and dwellings modeled after lisdodde



| CONSTRUCTIVE PRINCIPLES RESIDENTIAL TOWER | | |
|---|---|---------------|
| - CLT WALLS AND FLOORS | = | 200 MM |
| SPANN | = | 5000 MM |
| FLOOR HEIGHT | = | 3200 MM |
| - CONCRETE CORE | = | 200 MM |
| MEASUREMENTS | | 3700X14450 MM |
| - CONCRETE POLE FOUNDATION | | |



Water

Emergency Overflow



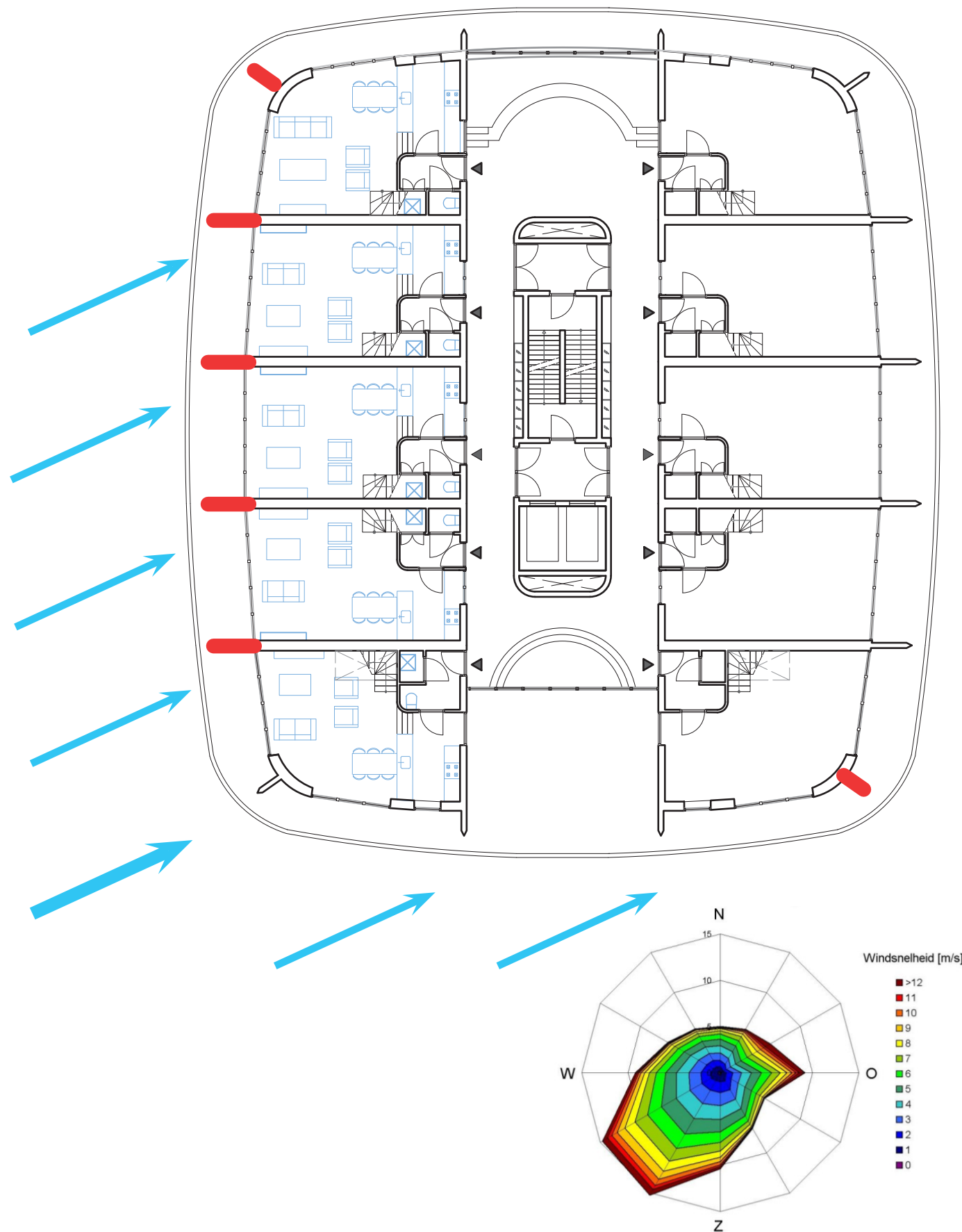
“Polderdak” Water retention system



0 5 10 20m 1:400

Air

Wind study residential tower



https://www.planviewer.nl/imro/files/NL.IMRO.0363.M1401B-PG/T-VG01/b_NL.IMRO.0363.M1401BPG/T-VG01_tb3.pdf

Earth

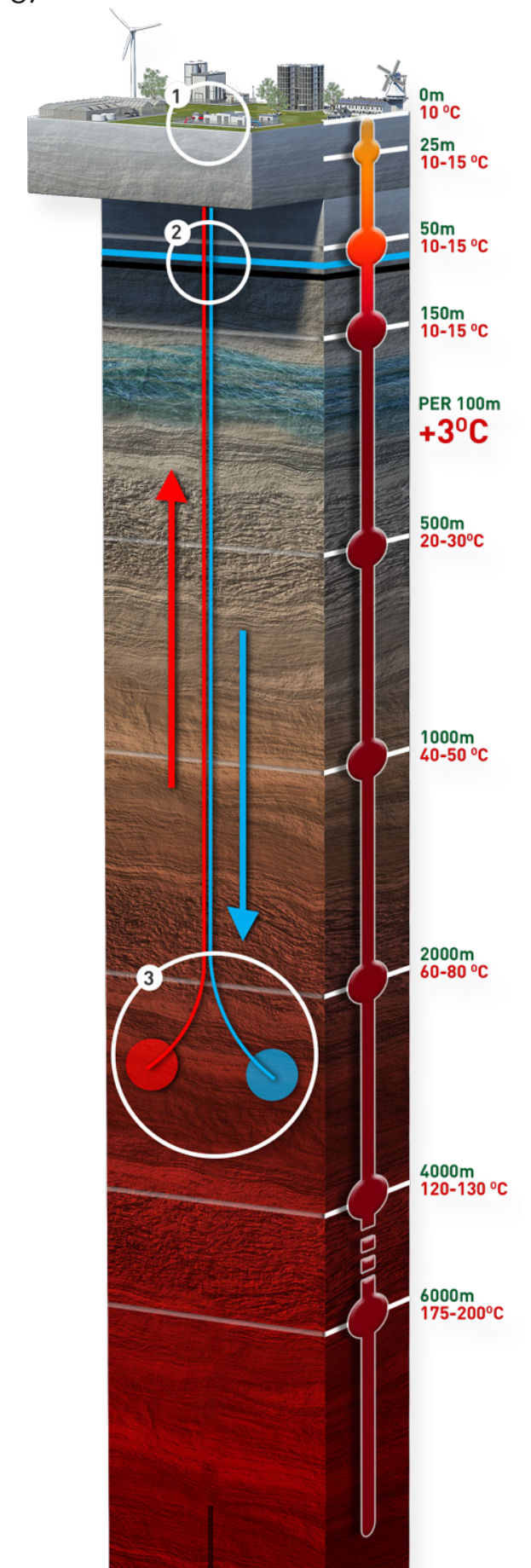
Geothermal Energy

Energy for 4.000 to 10.000 homes
Low temperature heating

Amsterdam gaat stadsbreed boren naar een alternatief voor aardgas

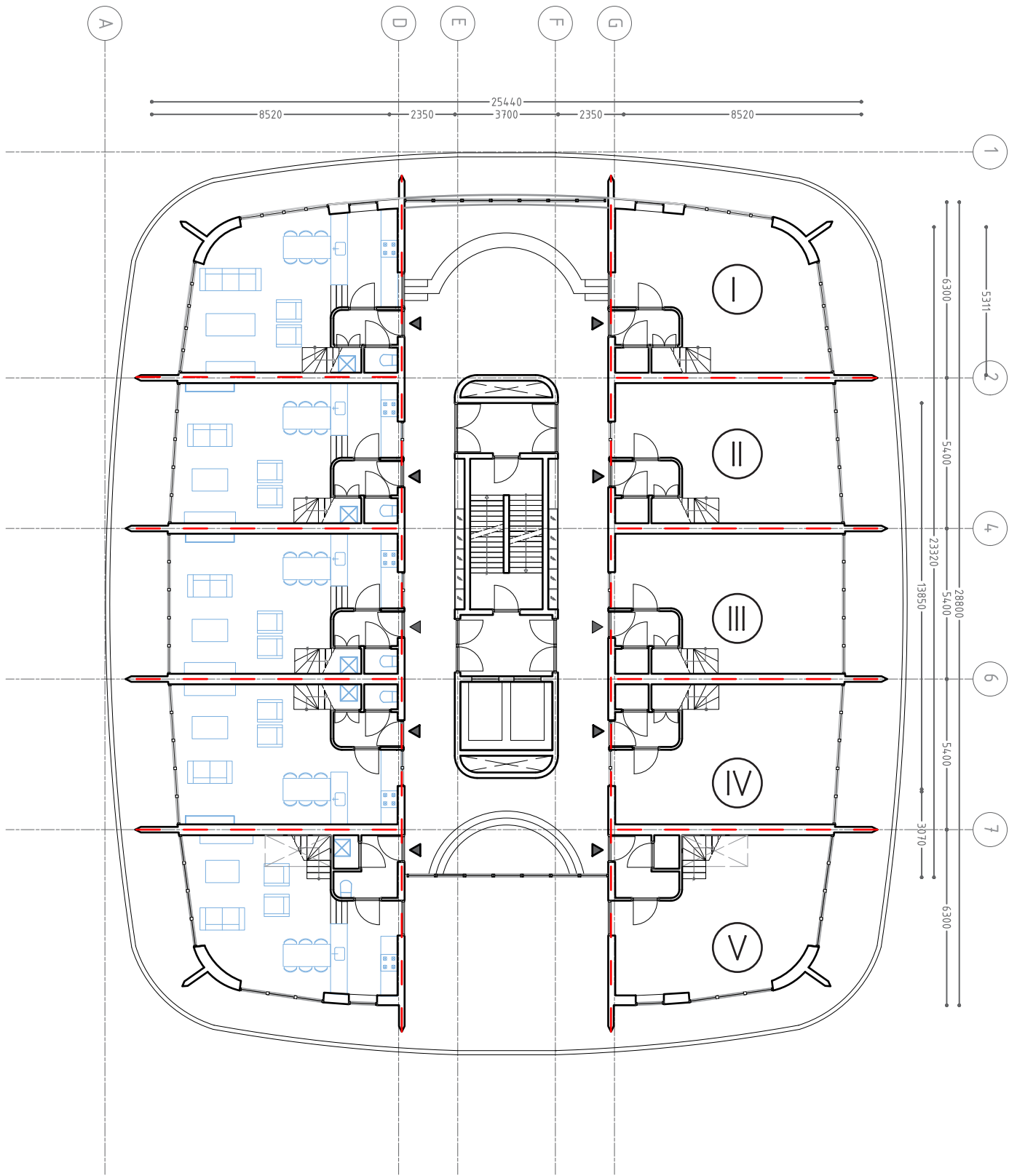
Parool 10-06-2021

<https://www.parool.nl/amsterdam/amsterdam-gaat-stadsbreed-boren-naar-een-alternatief-voor-aardgas~b1e619765/>

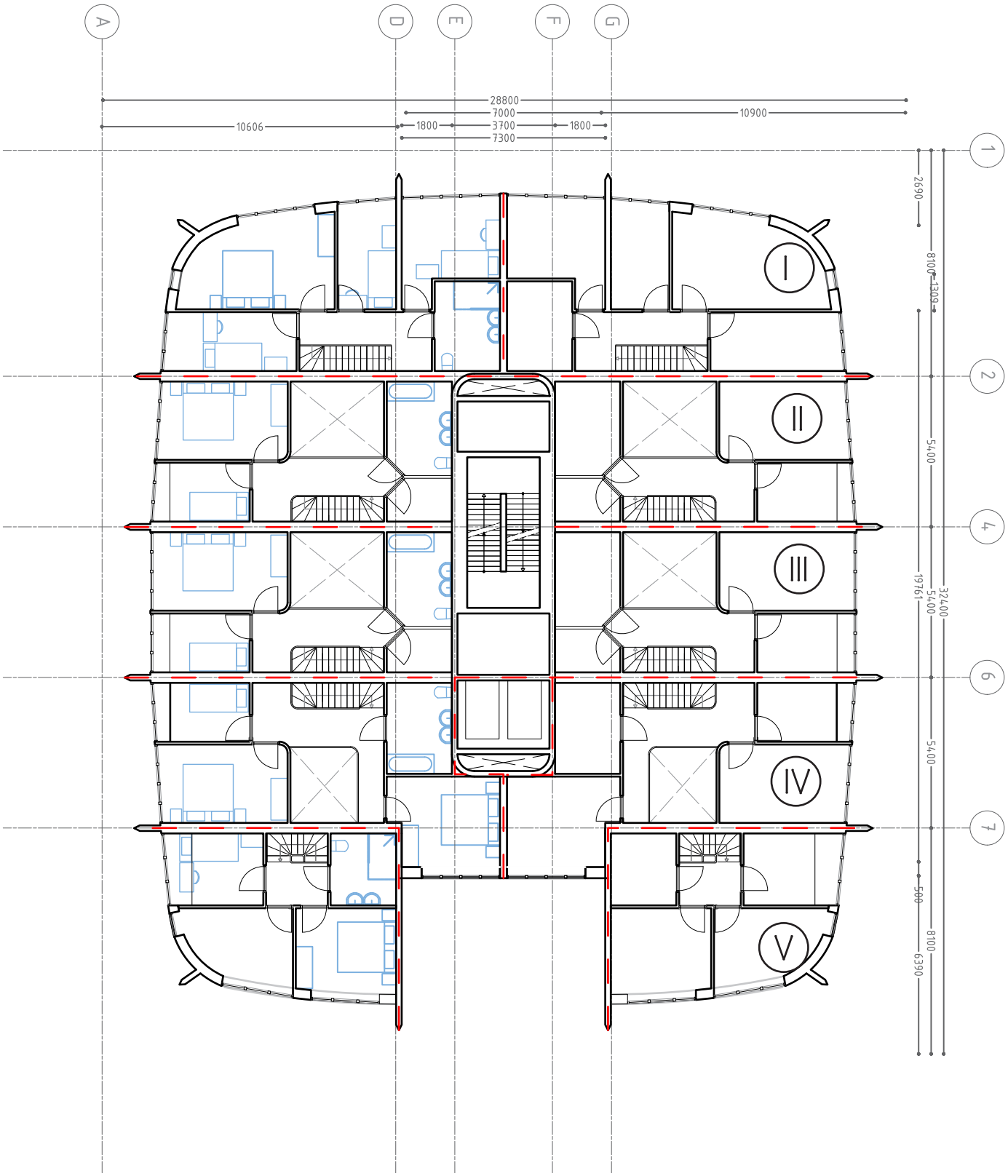


Floorplans Residential Tower 1:200

Fourth Floor



Fifth Floor

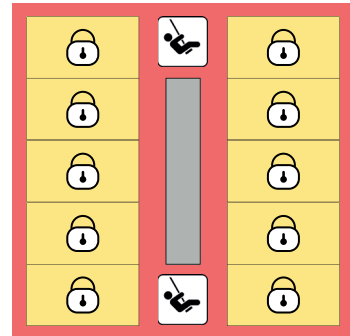


Residential Building

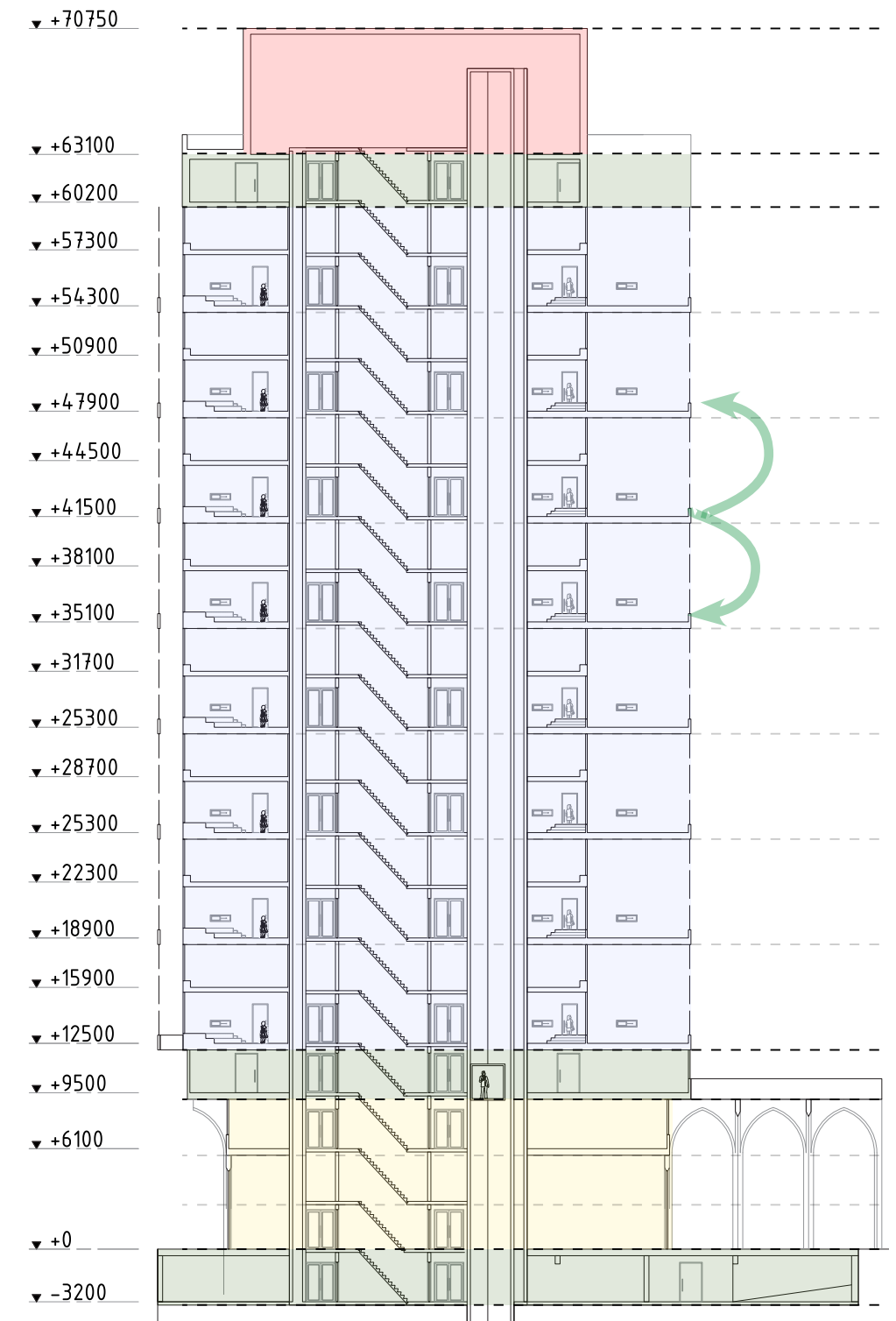
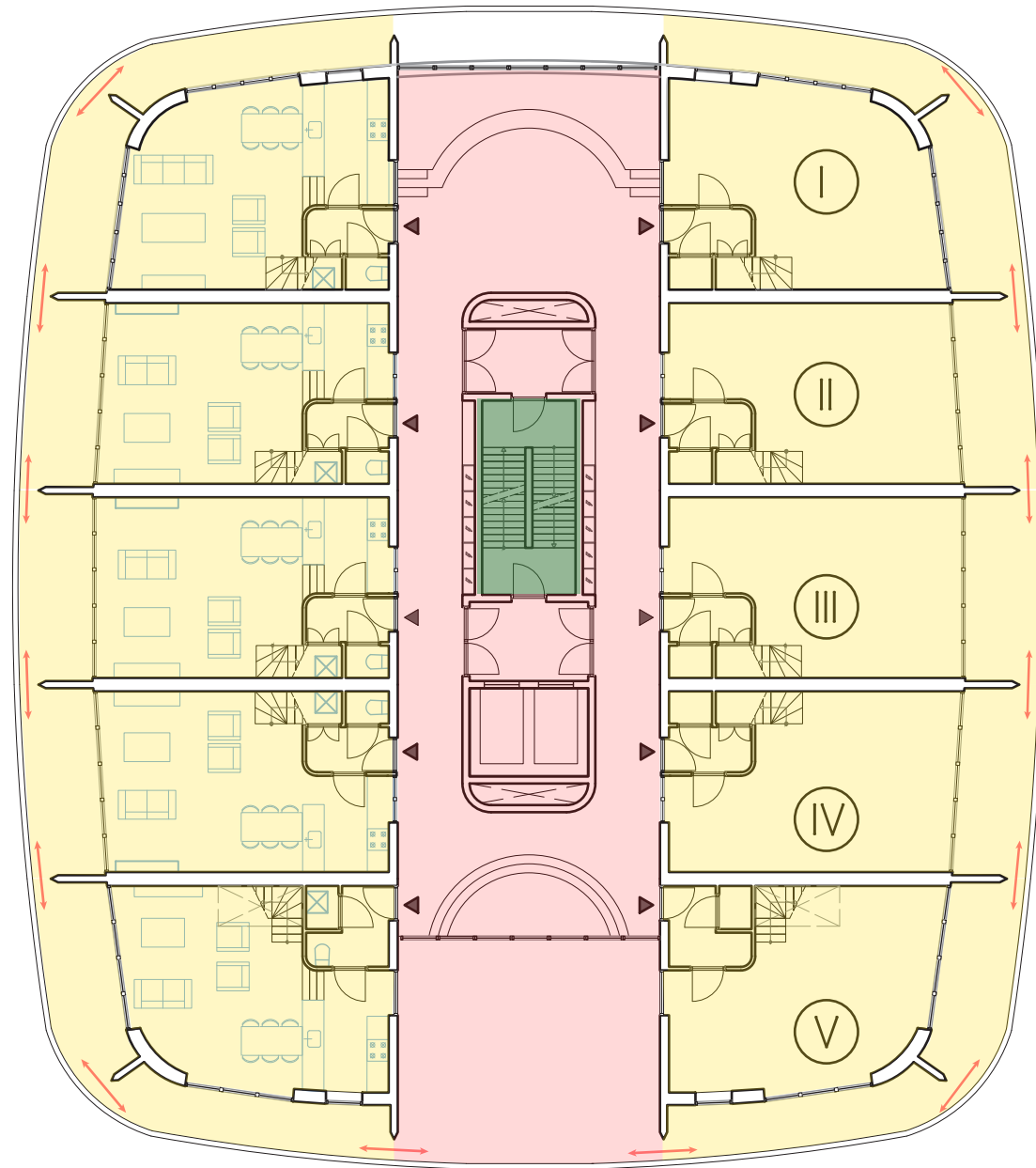


1:200

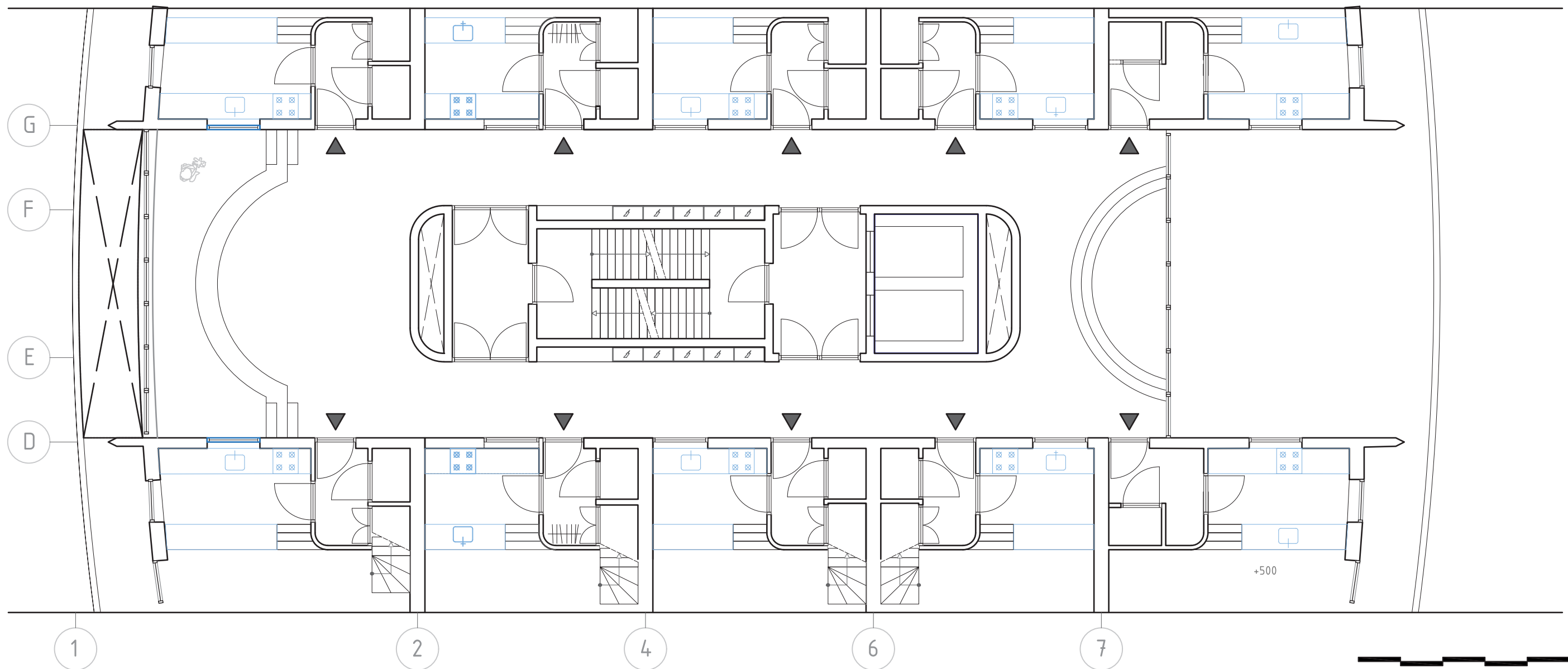
3 scales of Play



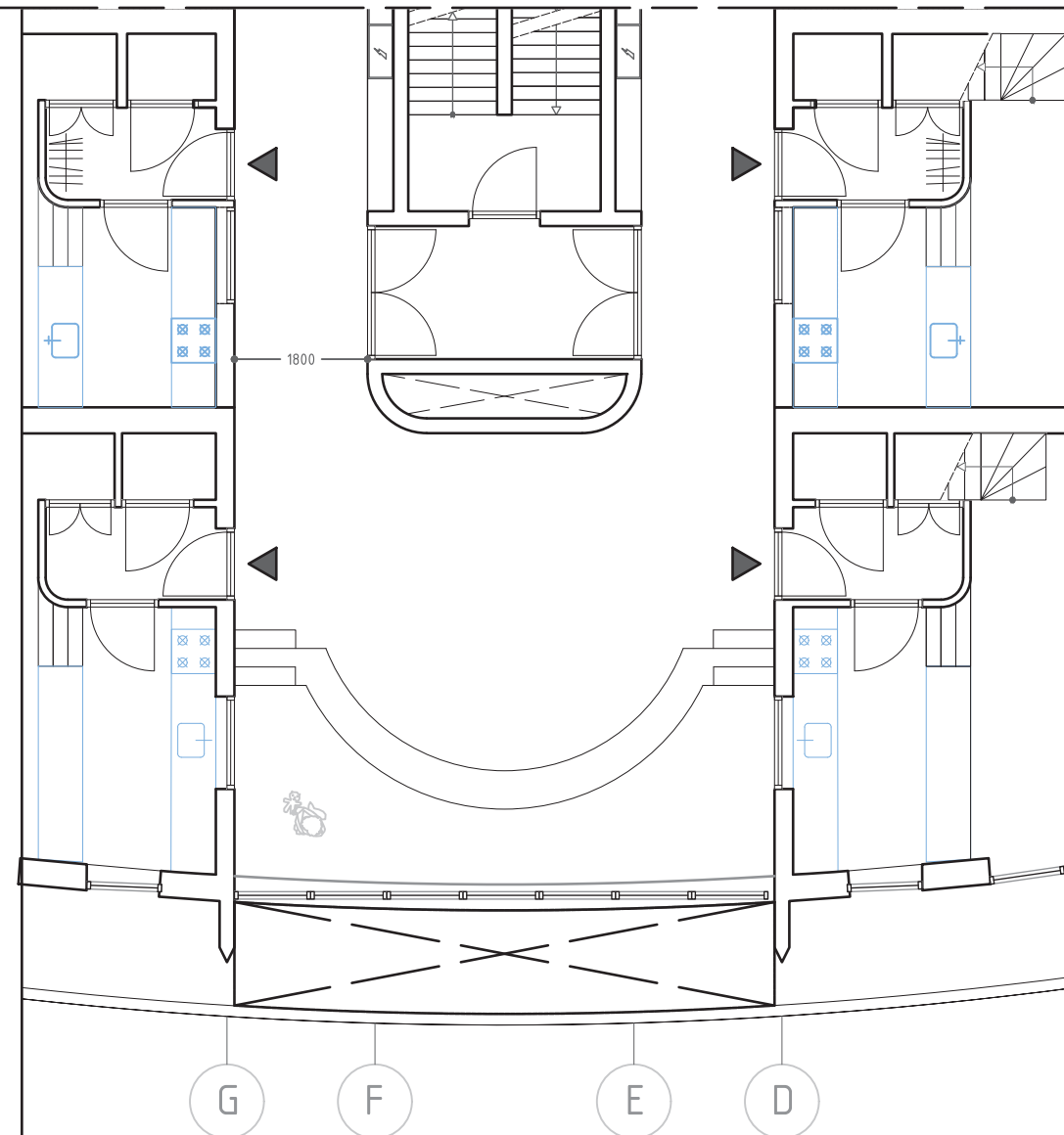
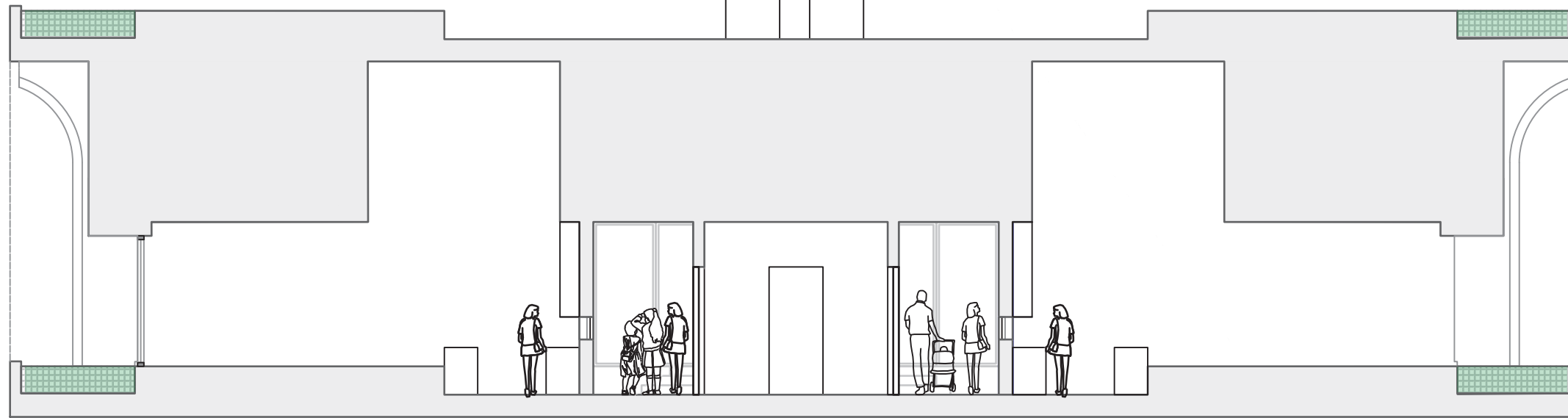
Fourth Floor
Private dwellings/ communal playspace



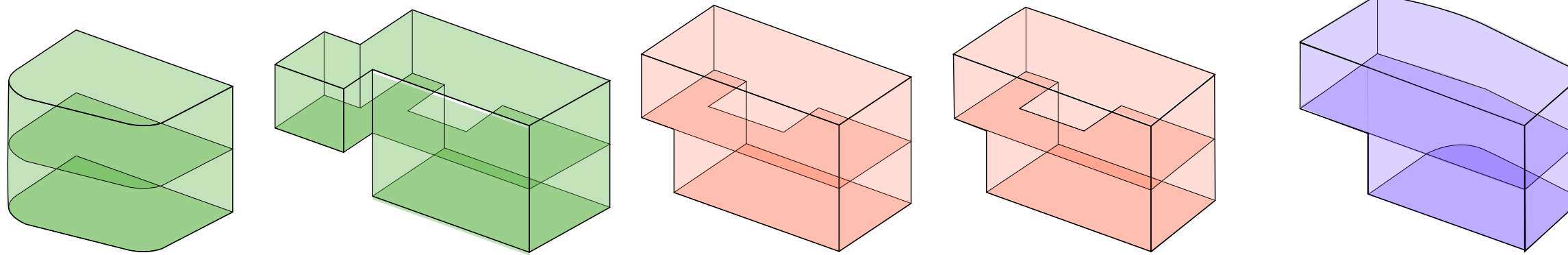
Street In The sky



Kiddy Window



Dwelling Typologie



Ⓥ

2 Children
3 Bdr
80M²

Ⓦ

2 Children
3 Bdr
90M²

Ⓦ

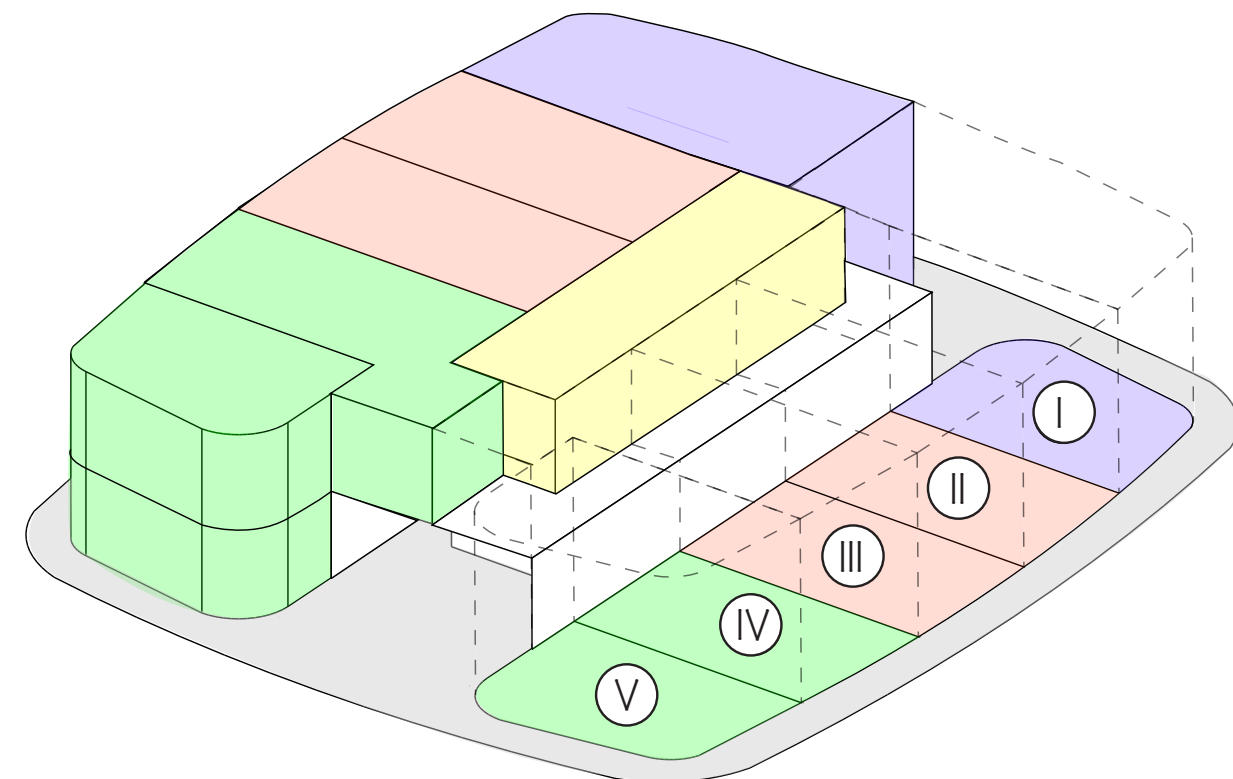
1 Child
2 Bdr
75M²

Ⓦ

1 Child
2 Bdr
75M²

Ⓦ

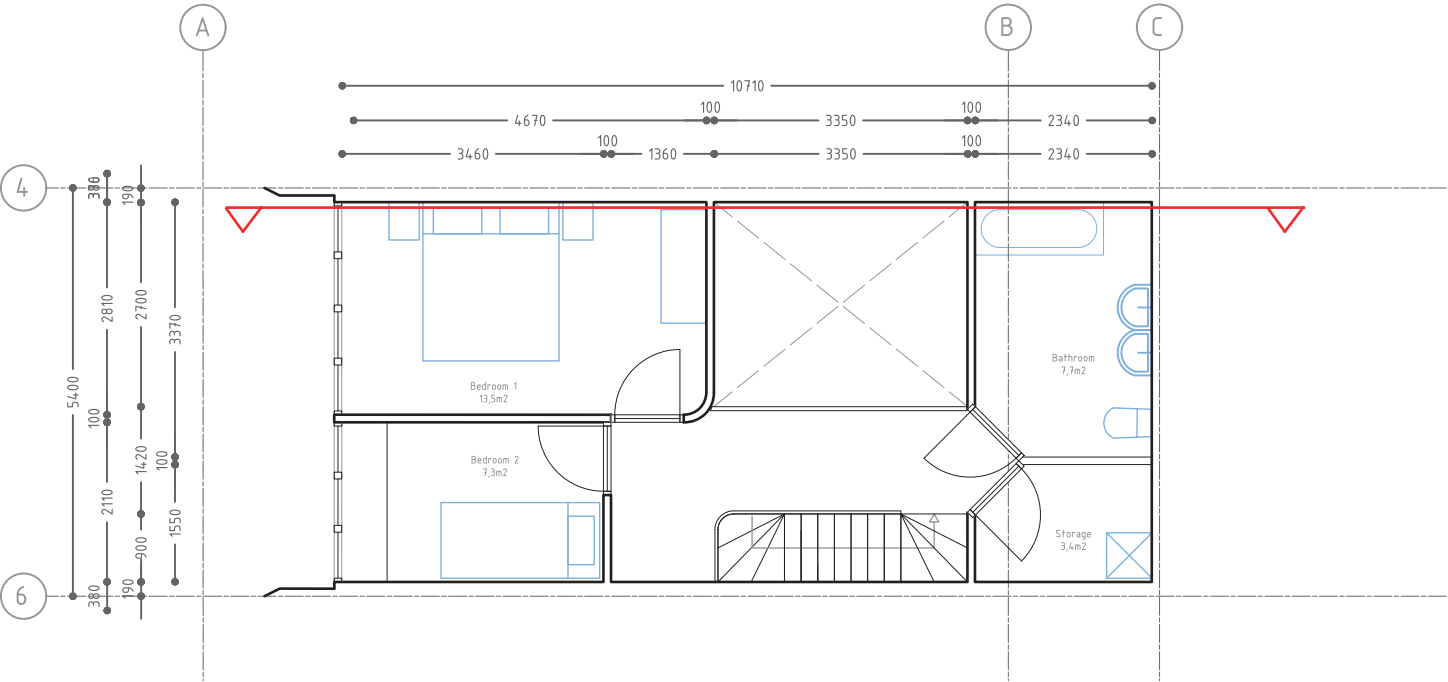
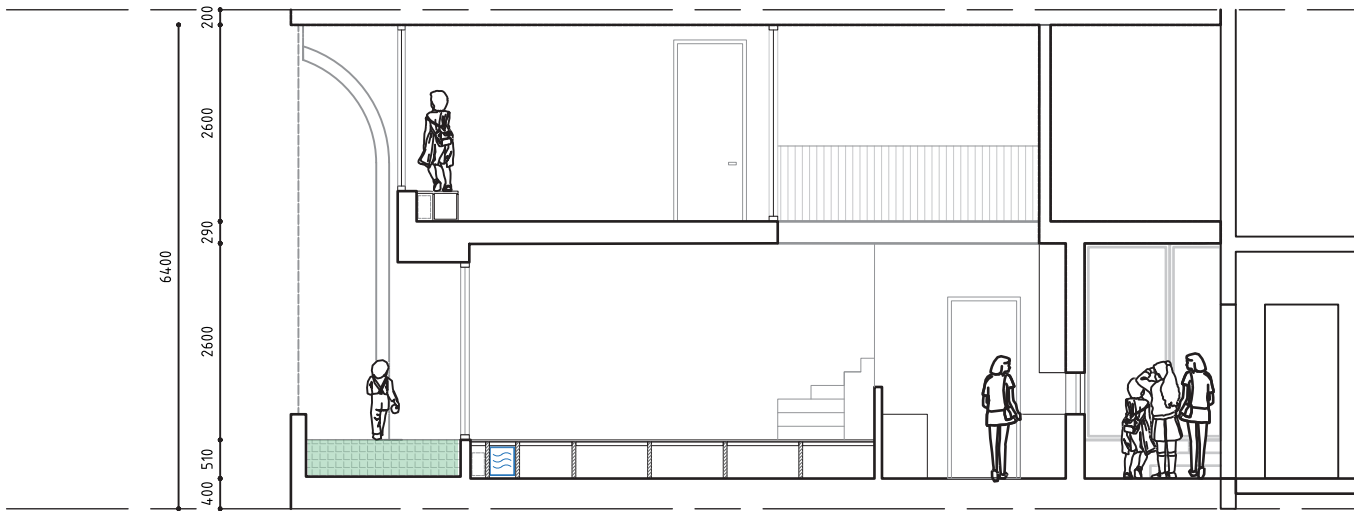
3 KINDEREN
4 SLK
95M²



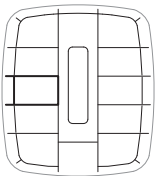
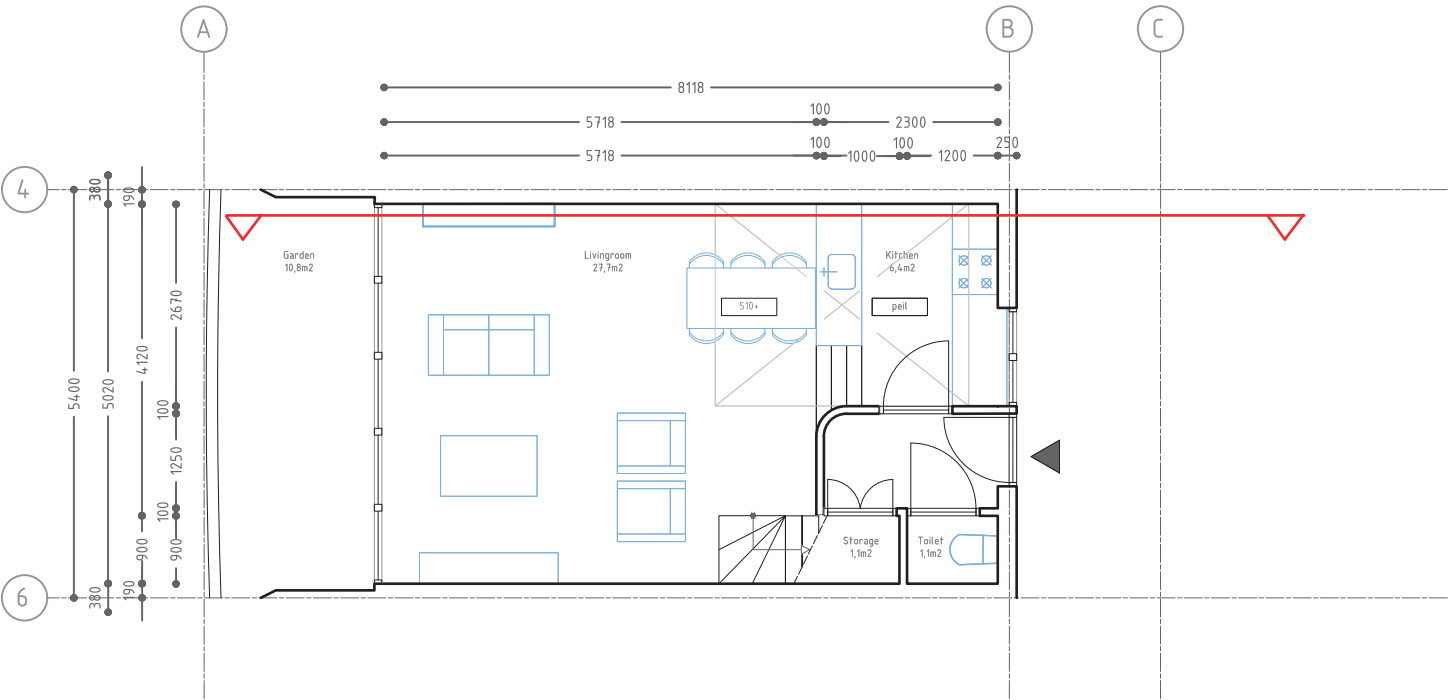
Dwelling Type III Residential Tower

section Dwelling Type III

Fifth Floor



Fourth Floor



Type 3 86 sqm 2 bedroom

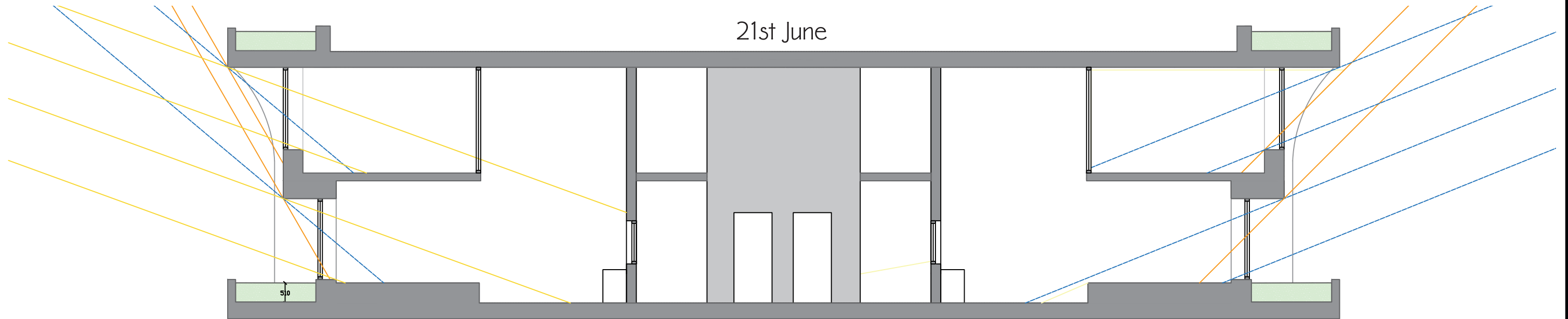


1:100

sun

sun study residential tower 1:100

21st June



West facade

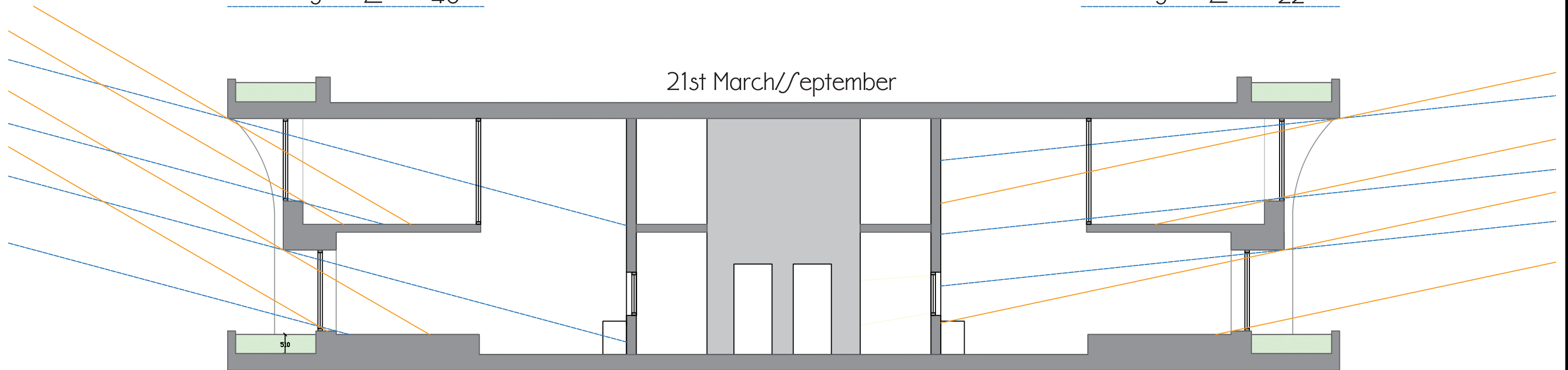
| | | |
|---------|---|----|
| 15:00u | ∠ | 58 |
| 19:30u | ∠ | 20 |
| Average | ∠ | 40 |

Little sun exposure
No need for blinds
Dwellings stay cool

East facade

| | | |
|---------|---|----|
| 5:00u | ∠ | 0 |
| 10:00u | ∠ | 45 |
| Average | ∠ | 22 |

21st March/September



West facade

| | | |
|---------|---|----|
| 15:30u | ∠ | 30 |
| 19:30u | ∠ | 0 |
| Average | ∠ | 15 |

sun exposure
Natural solar heating

East facade

| | | |
|---------|---|----|
| 6:30u | ∠ | 0 |
| 8:40u | ∠ | 12 |
| Average | ∠ | 6 |

Dwelling Type III Residential Tower - Ventilation

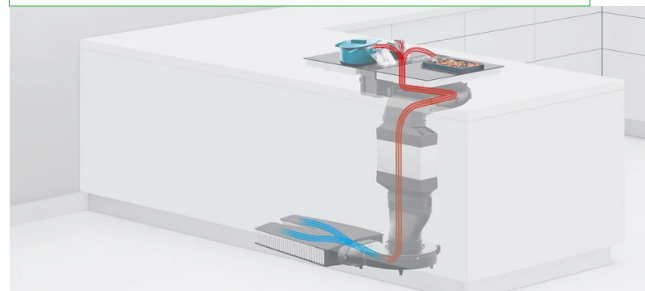
Ventilation system C+ Regulated Electrically pre heated outside air, mechanical disposal

Duco Climatop 60 AK+

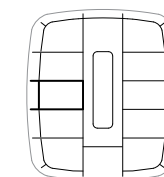
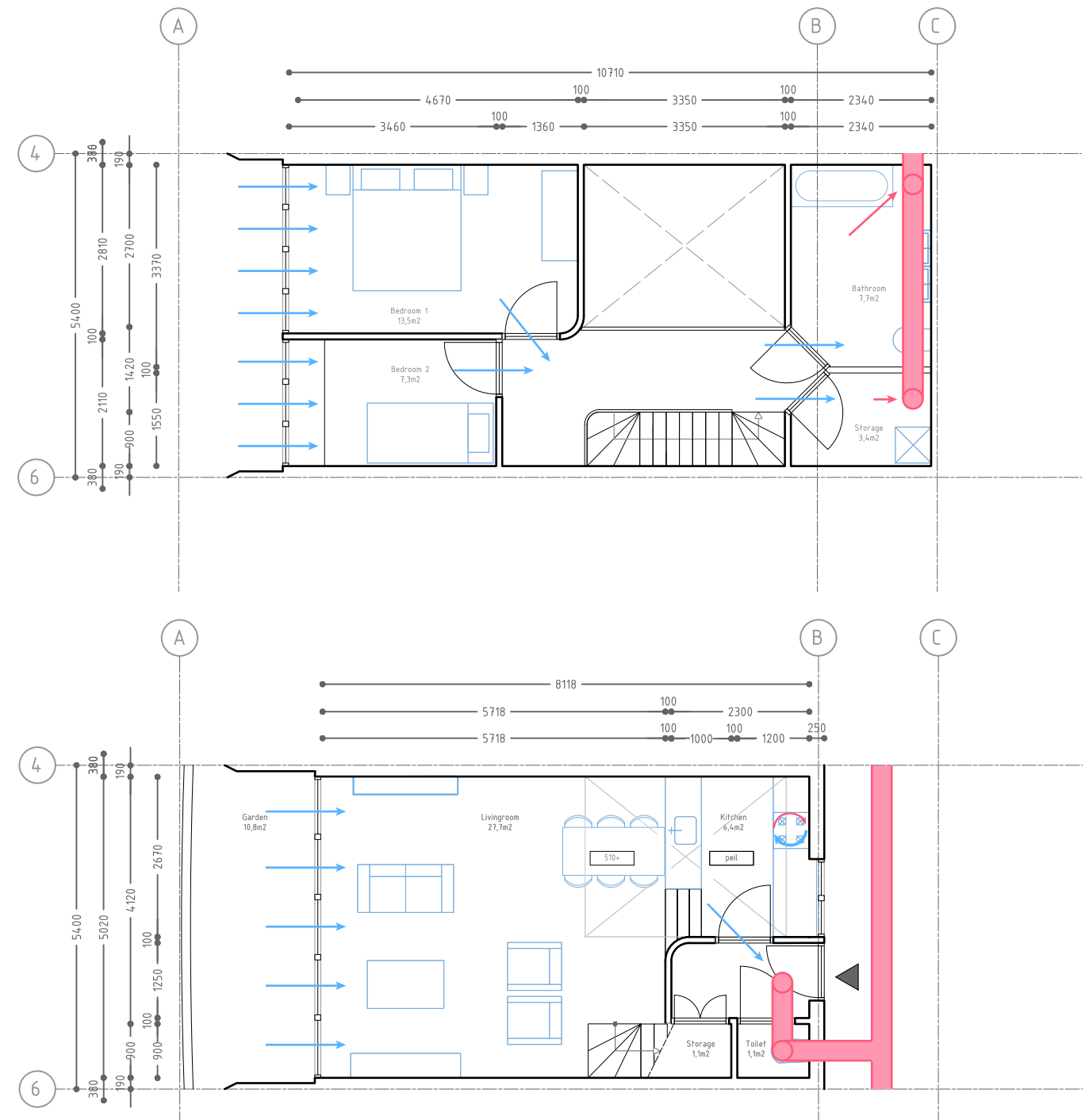


www.duco.eu

BORA Recirculationsystem



https://www.bora.com/fileadmin/_processed_/6/0/csm_2021_BORA_Grafiken_Classic_Umluft_Homepage_736bbec28e.jpg.webp



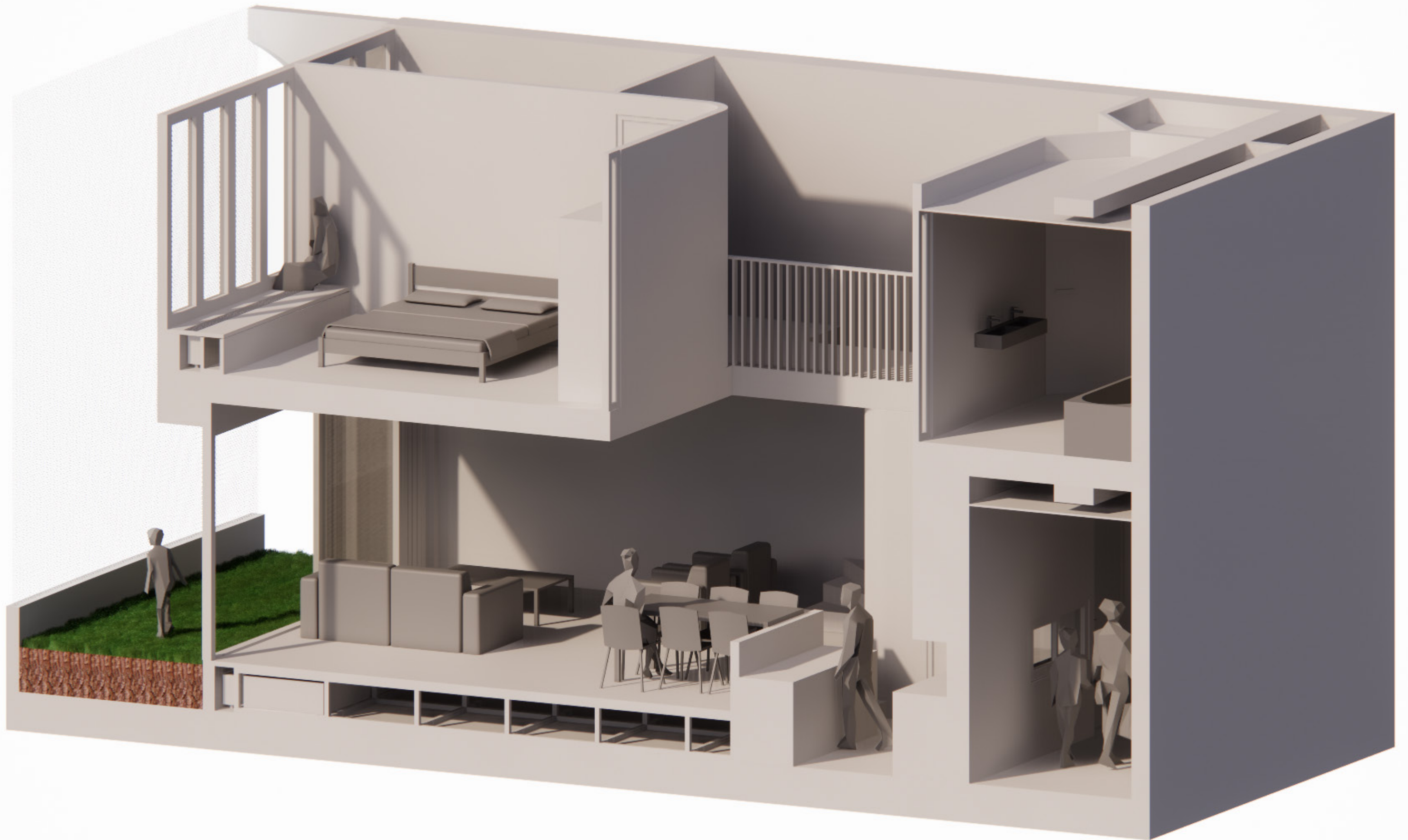
Type 3 86 sqm 2 bedroom

0 1 5m



1:100

Apartment Type III



Gardens Residential Tower

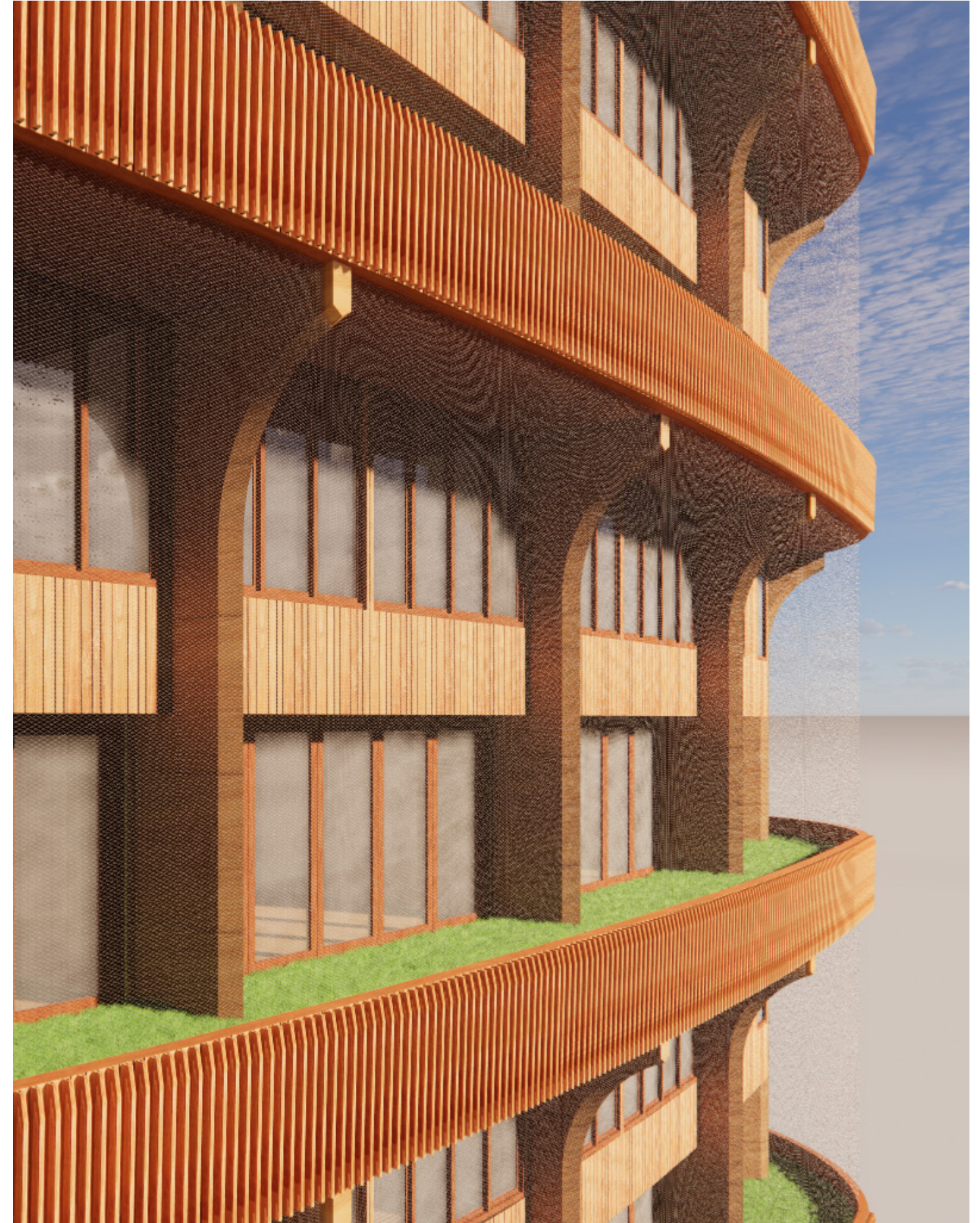
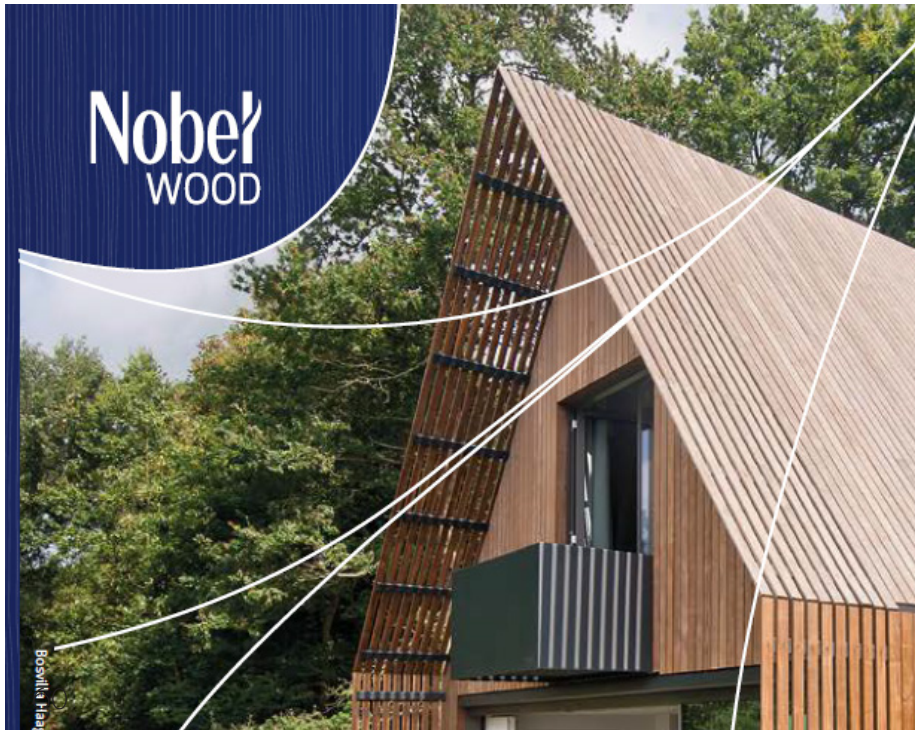


Materialisation

Carlstahl Xtend Colours Gold - Anti Climbing Floor to ceiling fall protection



Nobel Wood Cladding

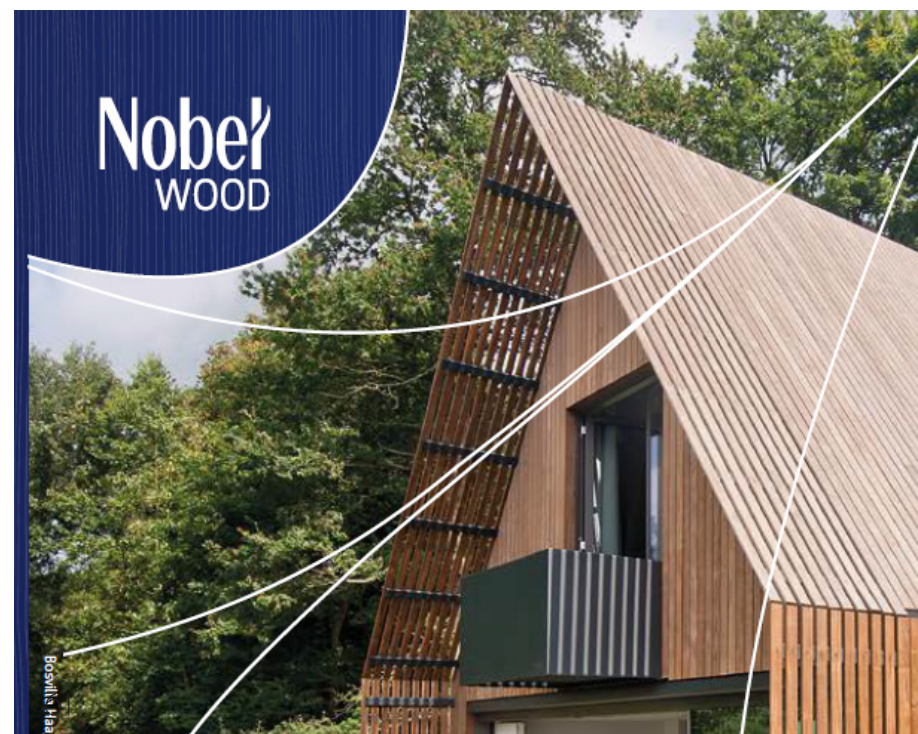


Materialisation

Ageing Nobelwood



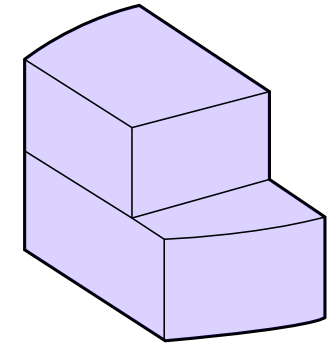
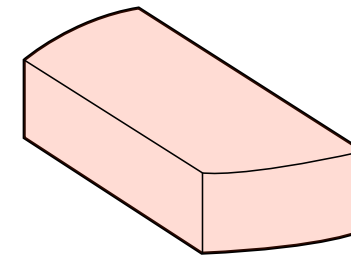
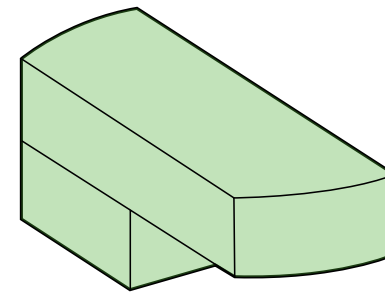
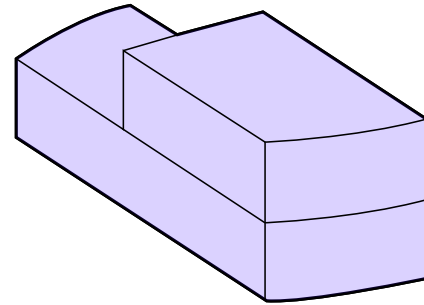
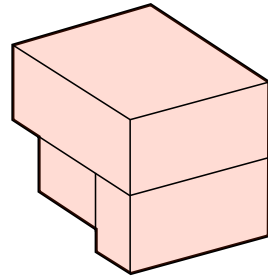
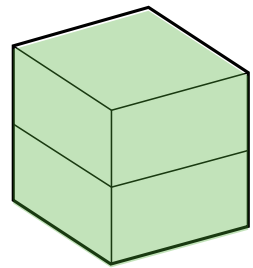
Nobel Wood Cladding



Apartment Block



Typology



Ⓥ 1 child
2 bedroom
72M²

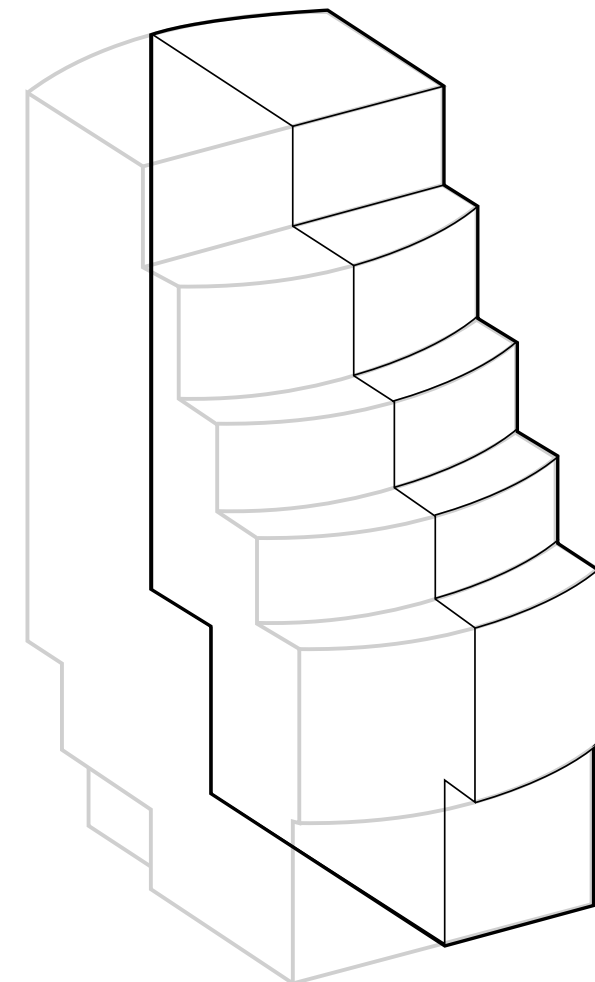
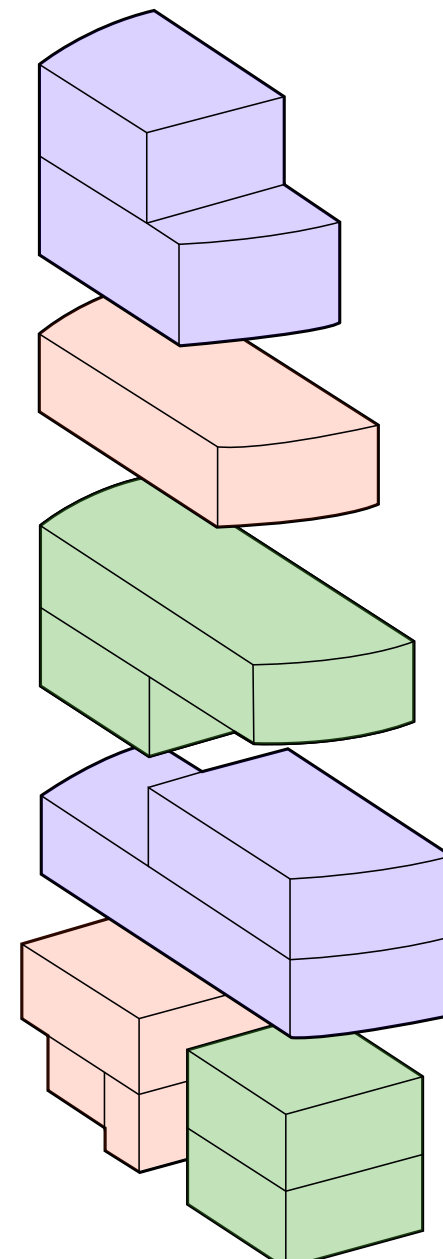
ⓋⓁ 1 child
2 bedroom
74M²

ⓋⓈ 3 children
4 bedroom
121M²

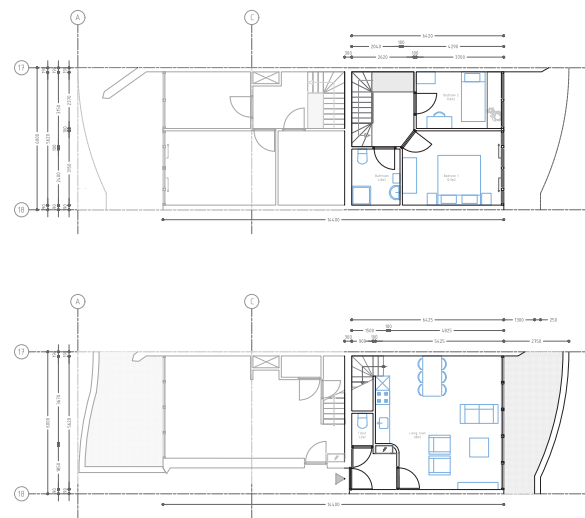
ⓋⓃ 3 children
4 bedroom
120M²

Ⓥ 1 child
2 bedroom
72M²

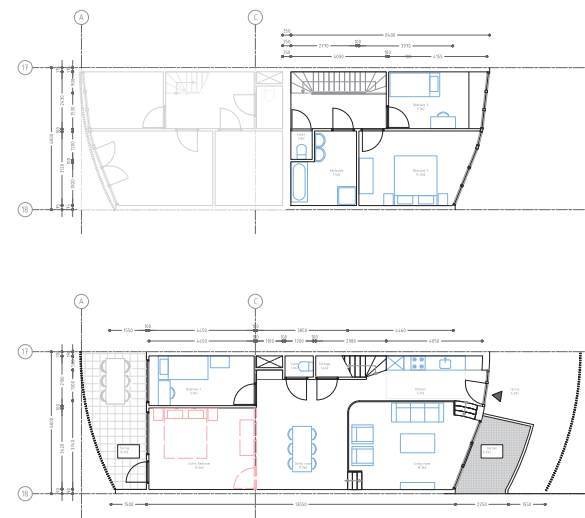
ⓋⓁ 3 children
4 bedroom
108M²



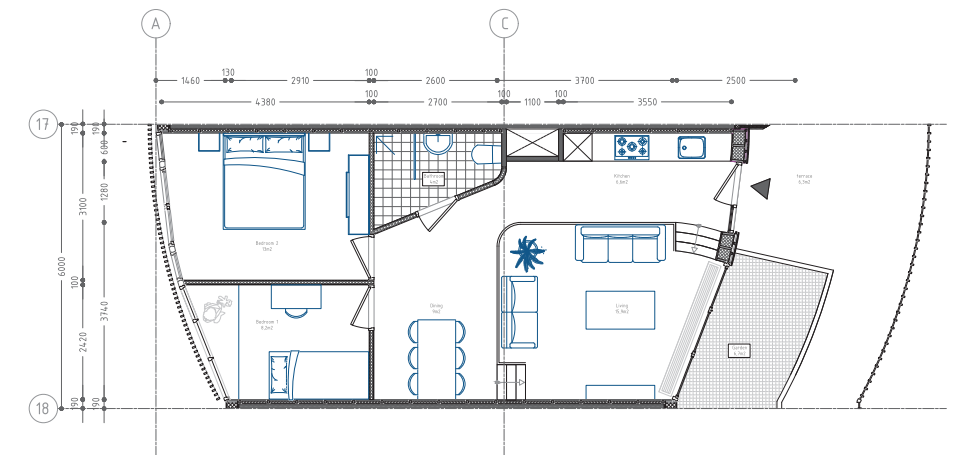
Typology



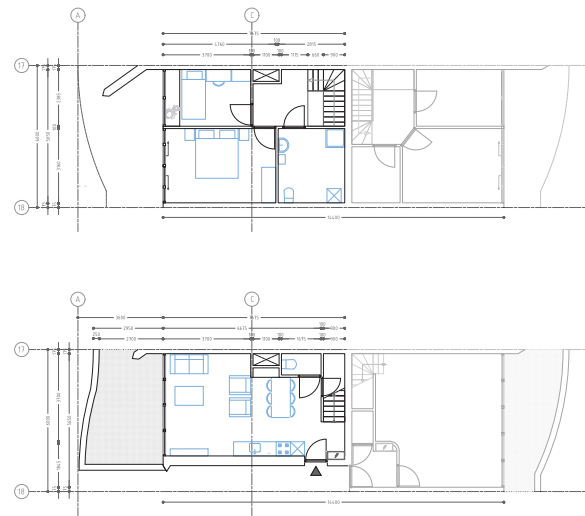
Type 6 72sqm 2 bedroom
0 1 5m 1:100



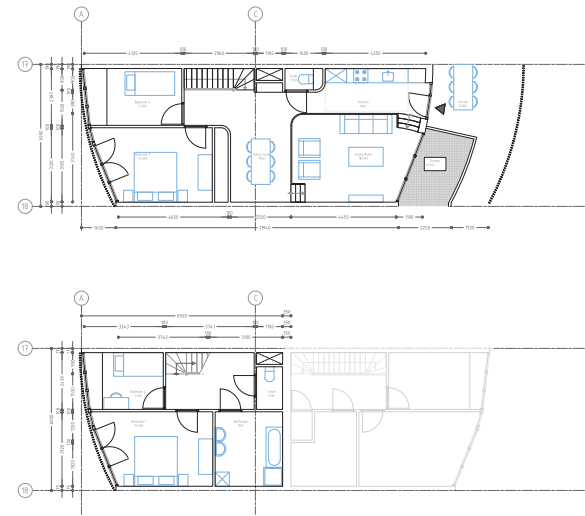
Type 8 123sqm 3 1/4 bedroom
0 1 5m 1:100



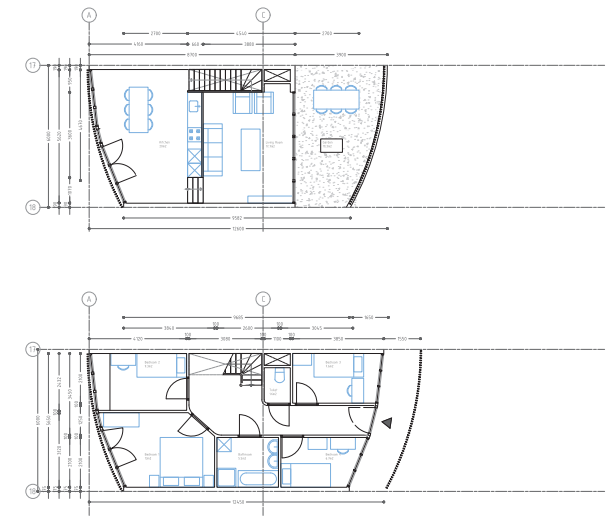
Type 5 62sqm 2 bedroom
0 1 2.5m 1:150



Type 3 74sqm 2 bedroom
0 1 5m 1:100

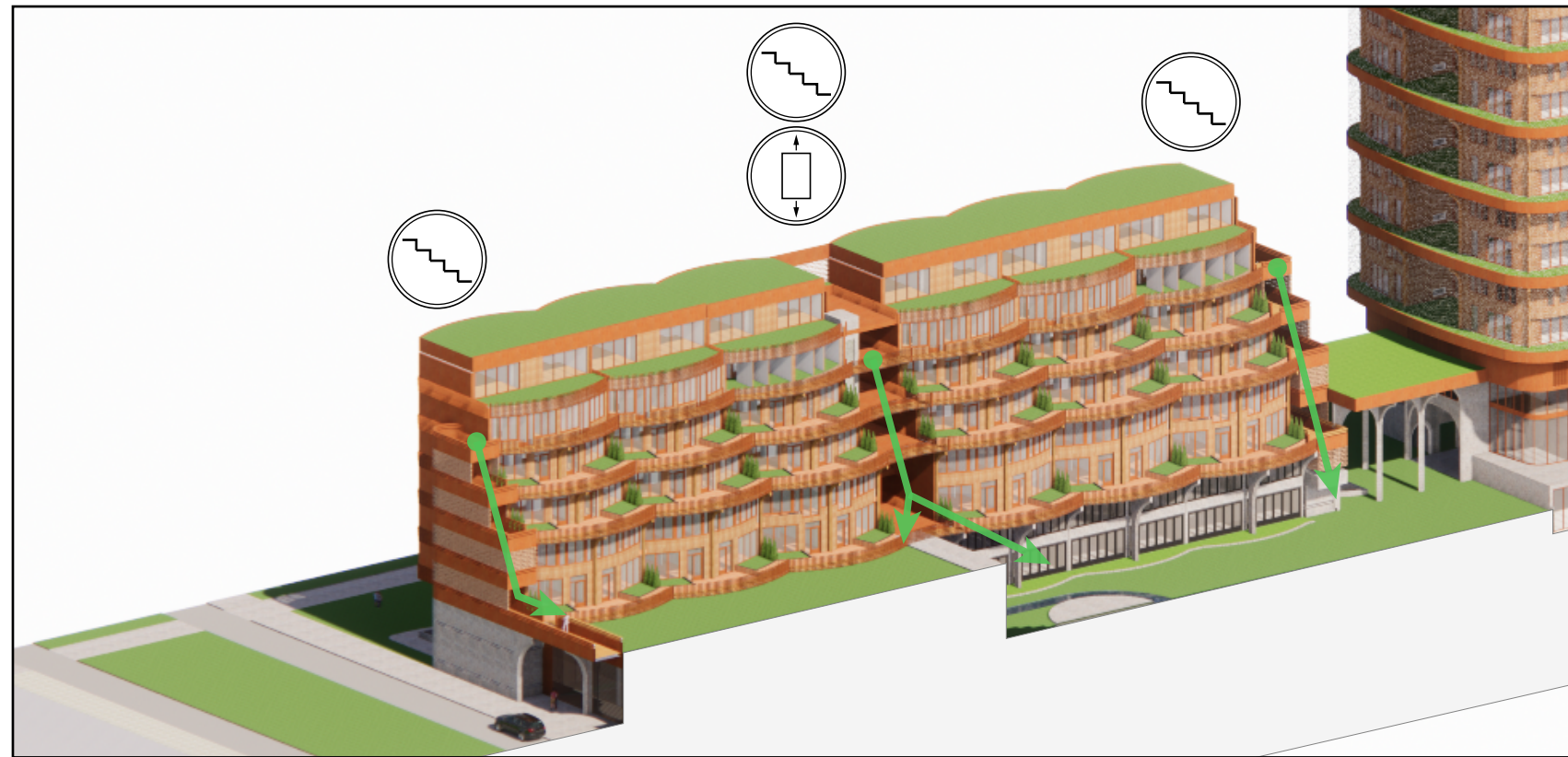


Type 10 120sqm 4 bedroom
0 1 5m 1:100

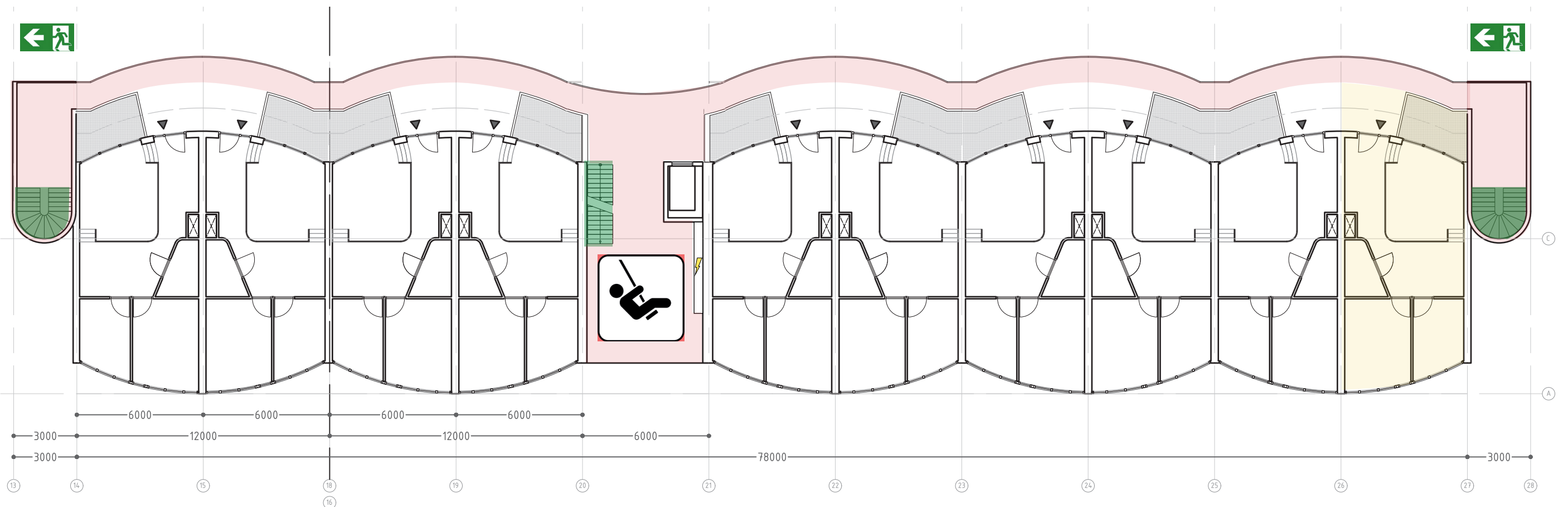
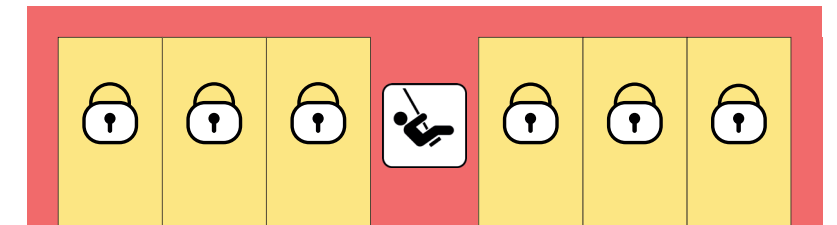


Type 11 168sqm 4 bedroom
0 1 5m 1:100

Accessibility



Private dwellings/ communal playspace

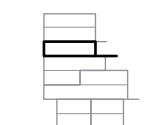
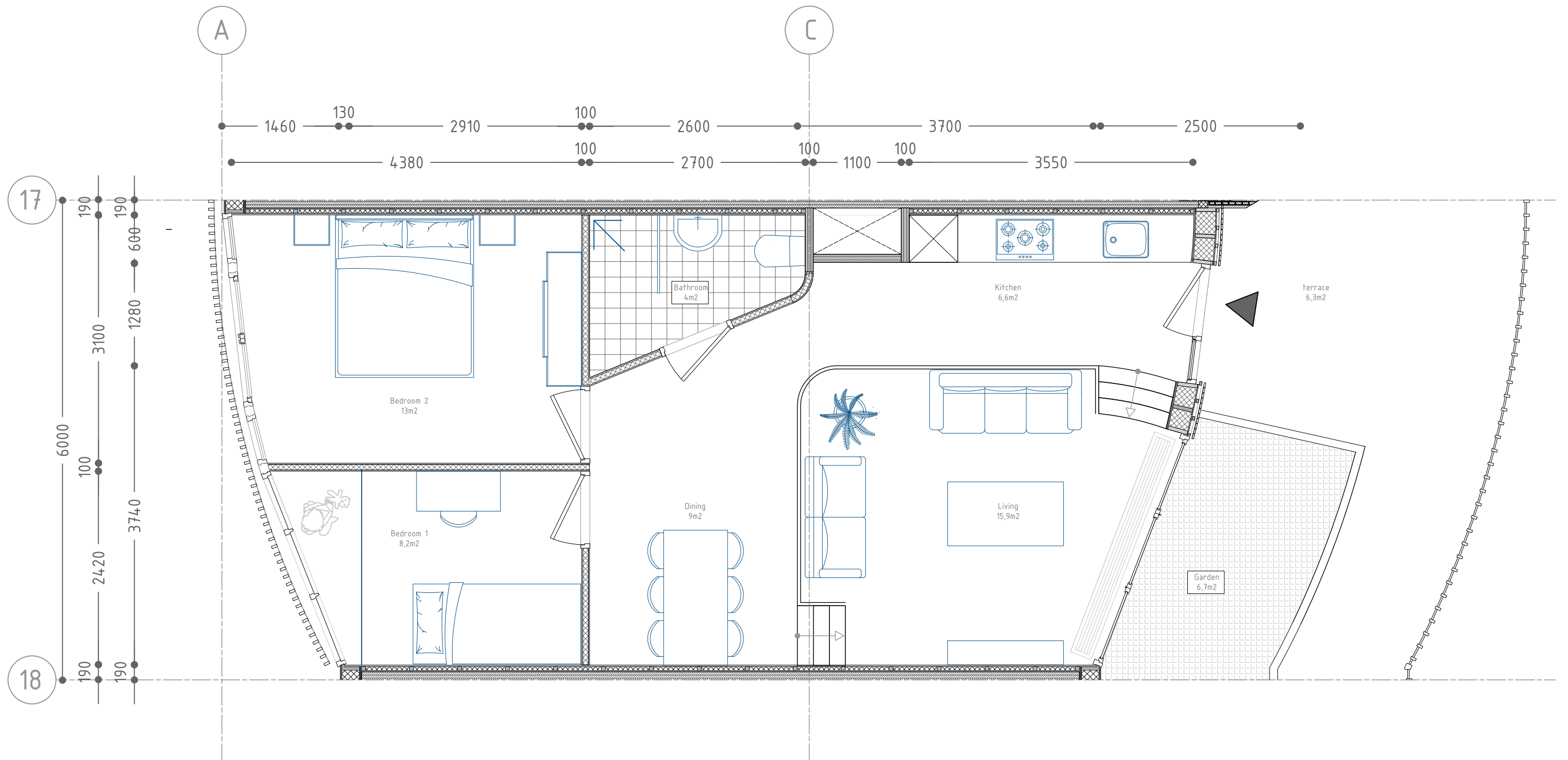


Apartment Block Floor V

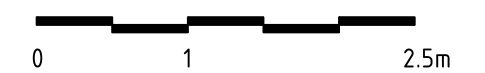


1:200

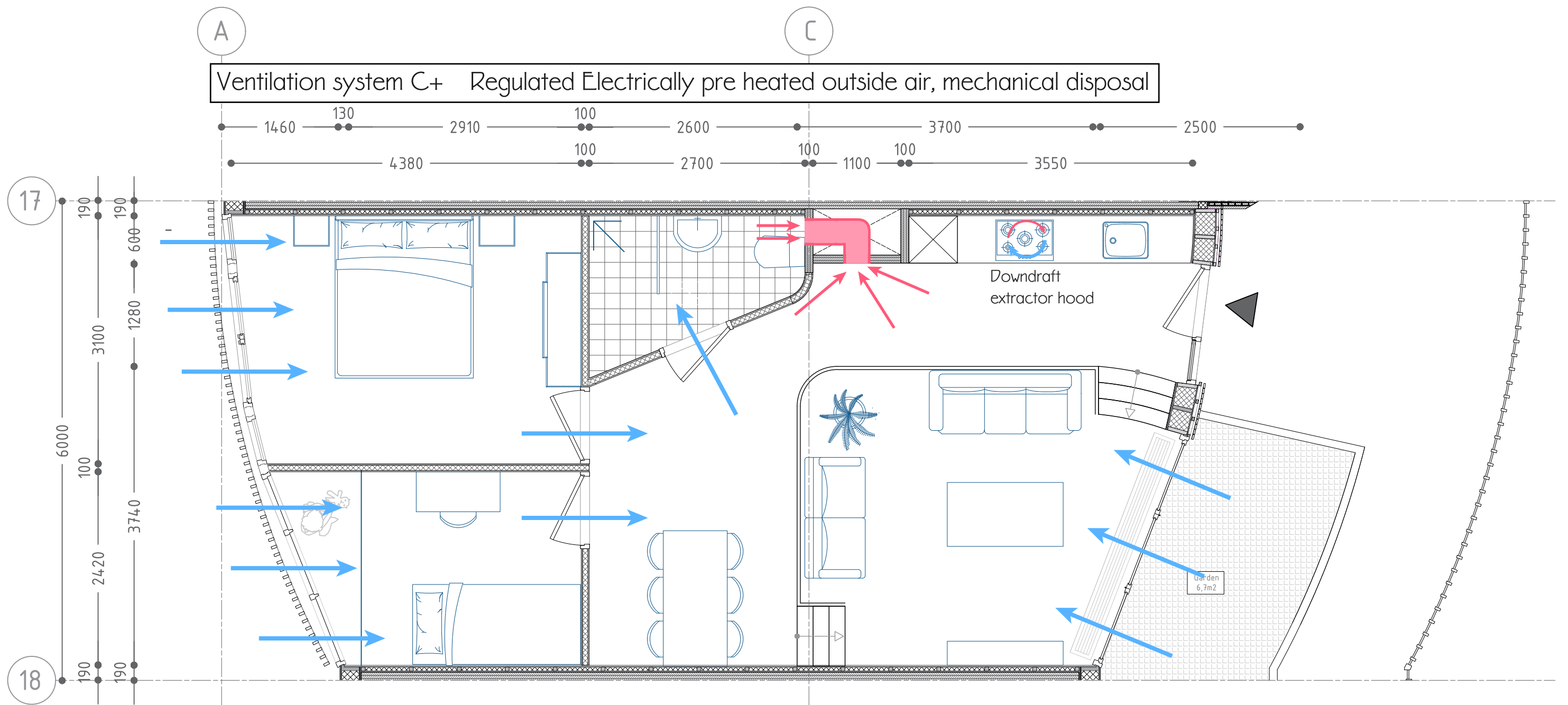
Apartment Type X



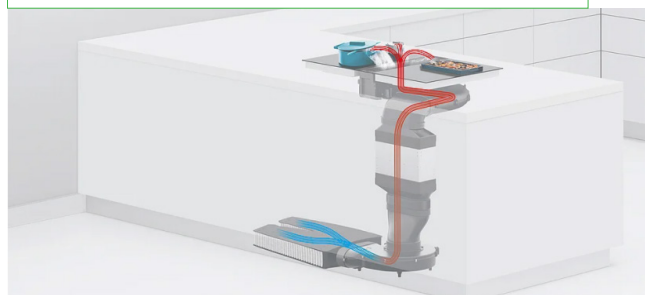
Type 5 62sqm 2 bedroom



Ventilation scheme

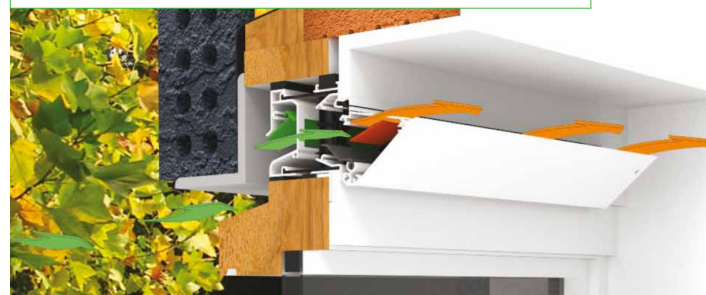


BORA Recirculationsystem

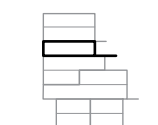


https://www.bora.com/fileadmin/_processed_/6/0/csm_2021_BORA_Grafiken_Classic_Umluft_Homepage_736bbec28e.jpg.webp

Duco Climatop 60 AK+



www.duco.eu



Type 5 62sqm 2 bedroom

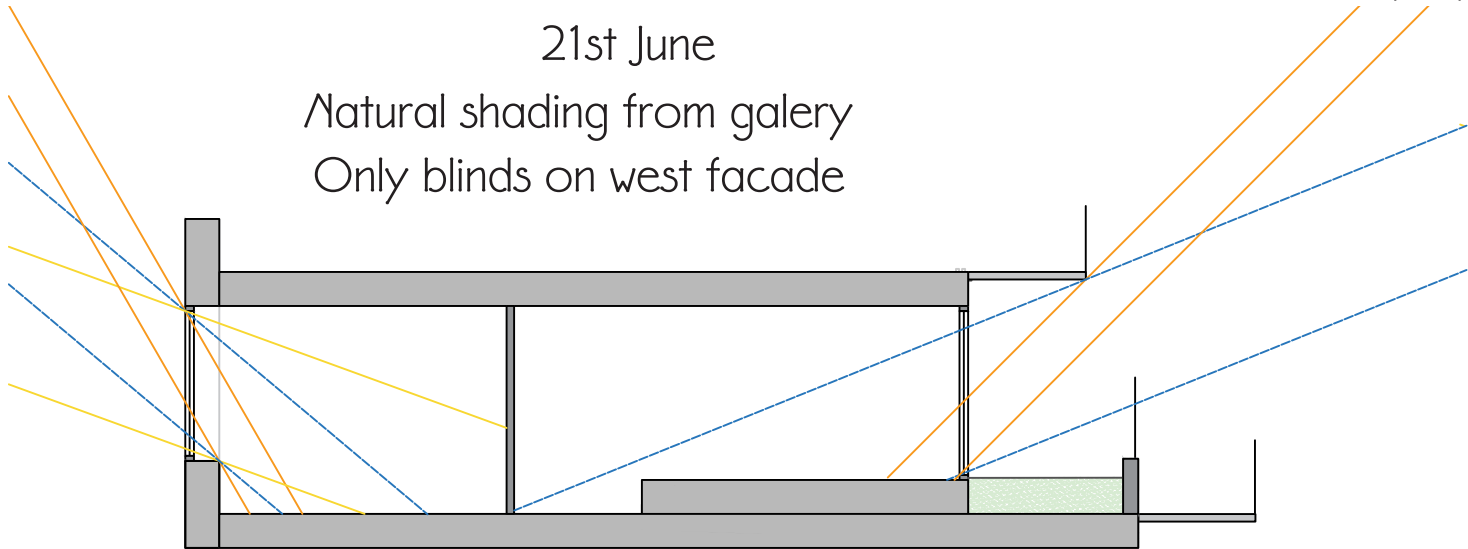
0 1 2.5m



sun study apartments 1:100

21st June

Natural shading from galery
Only blinds on west facade



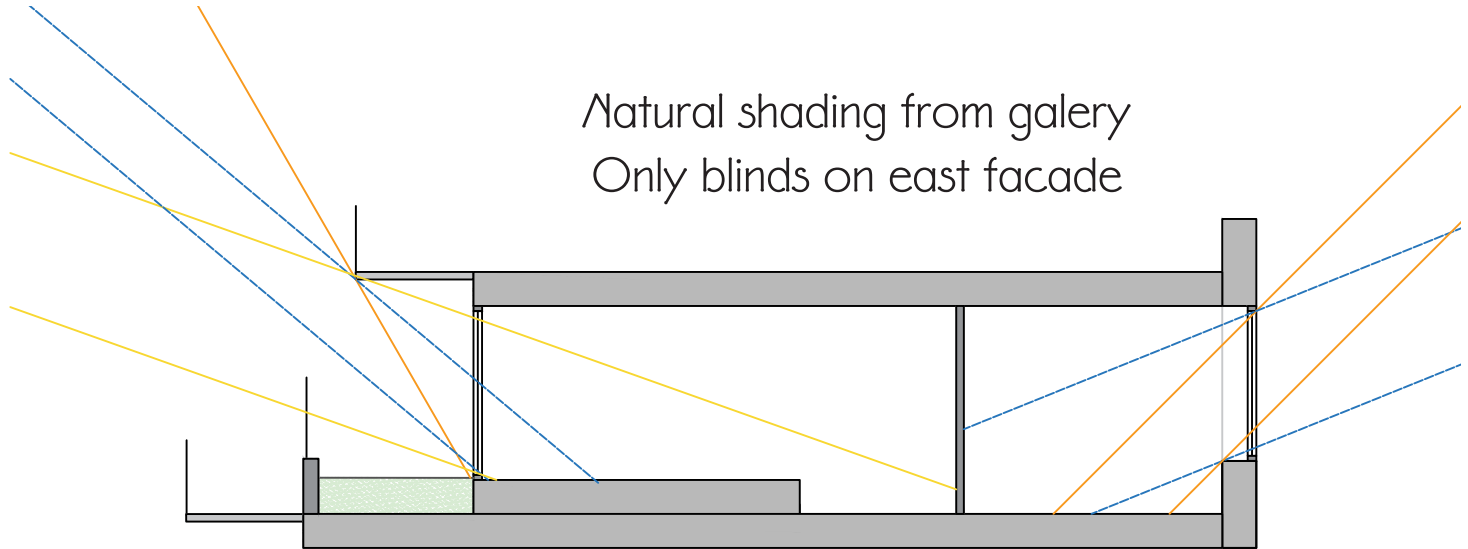
West facade

East facade

| | | |
|---------|---|----|
| 15:00u | ∠ | 58 |
| 19:30u | ∠ | 20 |
| Average | ∠ | 40 |

| | | |
|---------|---|----|
| 5:00u | ∠ | 0 |
| 10:00u | ∠ | 45 |
| Average | ∠ | 22 |

Natural shading from galery
Only blinds on east facade



West facade

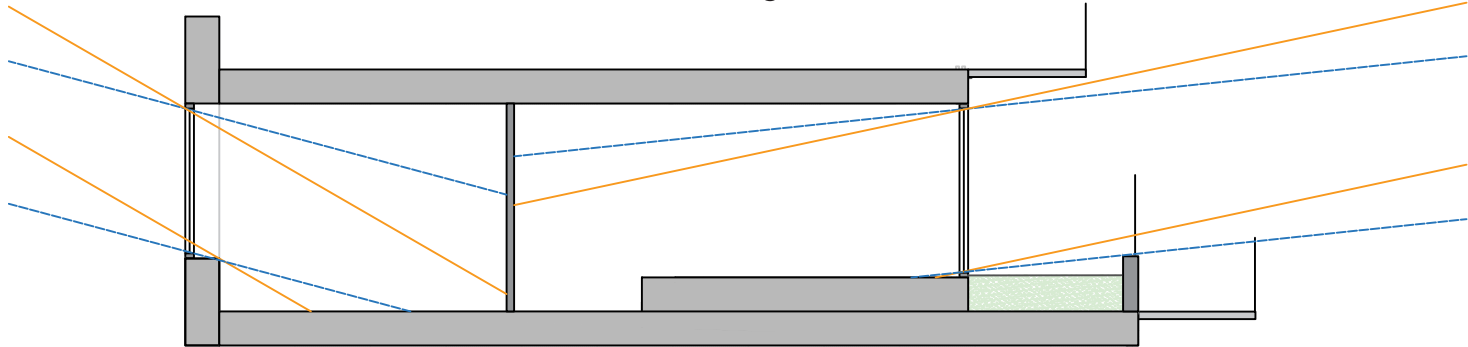
East facade

| | | |
|---------|---|----|
| 15:00u | ∠ | 58 |
| 19:30u | ∠ | 20 |
| Average | ∠ | 40 |

| | | |
|---------|---|----|
| 5:00u | ∠ | 0 |
| 10:00u | ∠ | 45 |
| Average | ∠ | 22 |

21st March/september

Natural solar heating



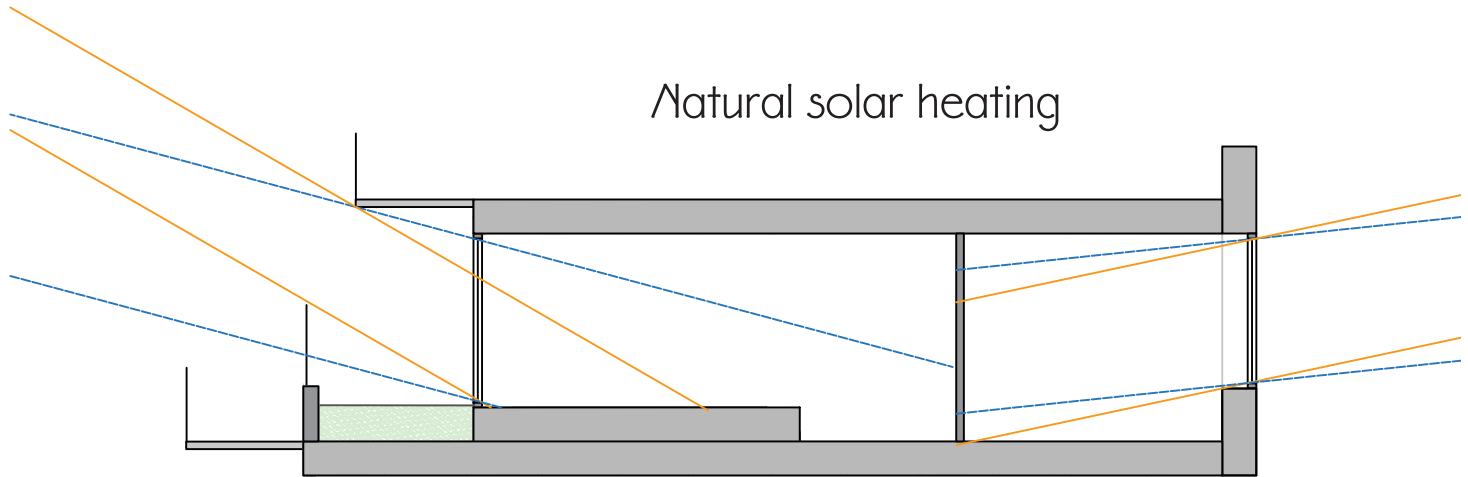
West facade

East facade

| | | |
|---------|---|----|
| 15:30u | ∠ | 30 |
| 19:30u | ∠ | 0 |
| Average | ∠ | 15 |

| | | |
|---------|---|----|
| 6:30u | ∠ | 0 |
| 8:40u | ∠ | 12 |
| Average | ∠ | 6 |

Natural solar heating



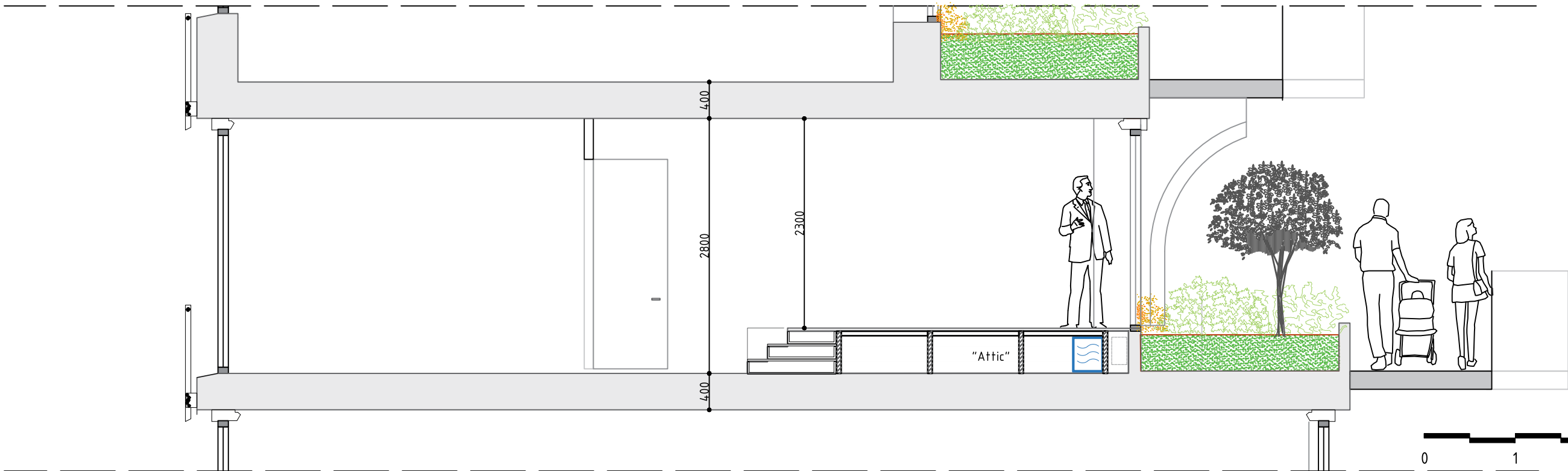
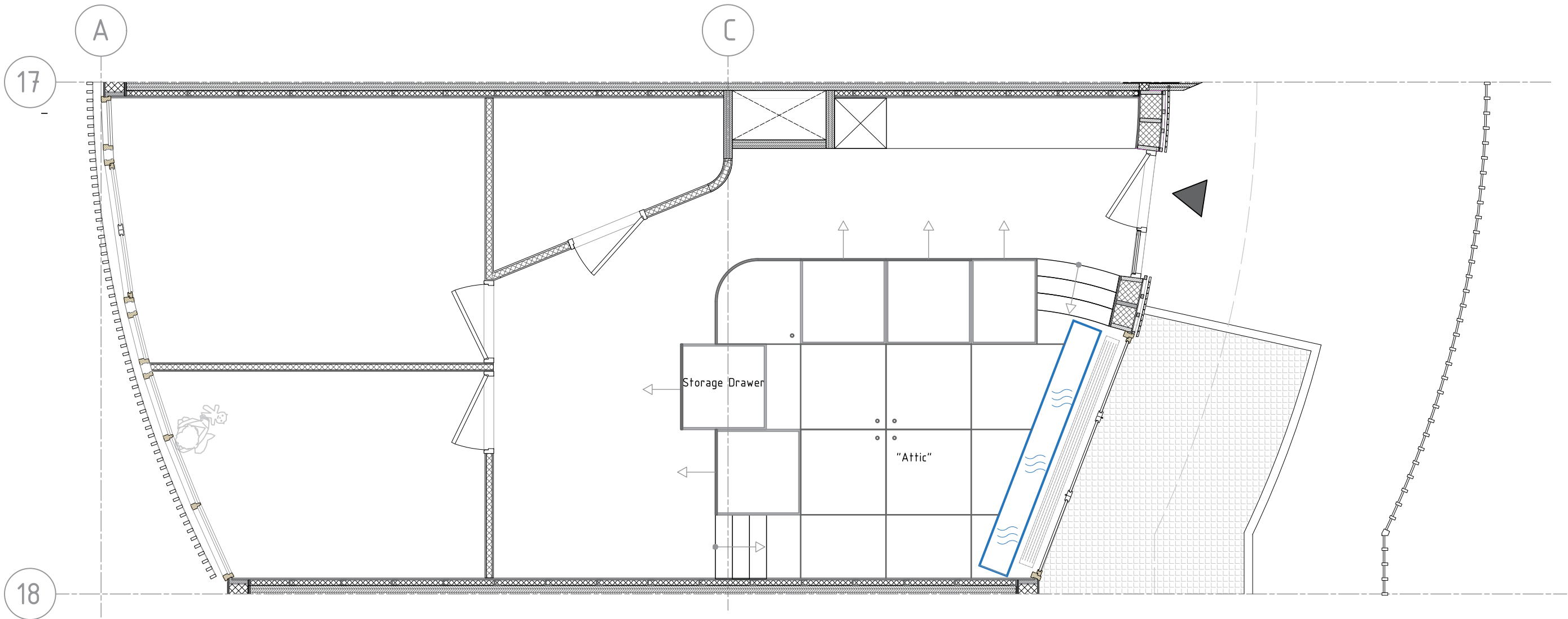
West facade

East facade

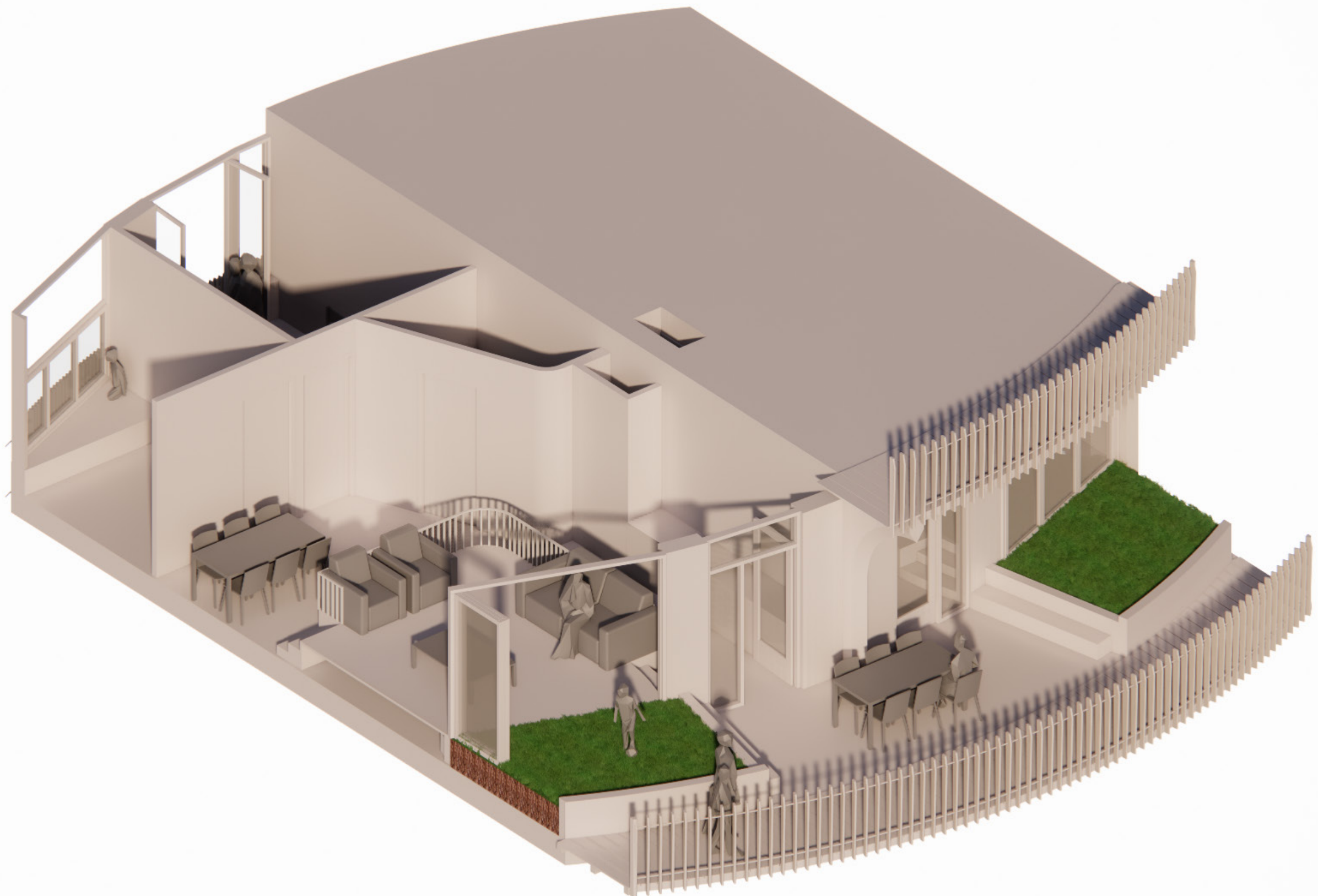
| | | |
|---------|---|----|
| 15:30u | ∠ | 30 |
| 19:30u | ∠ | 0 |
| Average | ∠ | 15 |

| | | |
|---------|---|----|
| 6:30u | ∠ | 0 |
| 8:40u | ∠ | 12 |
| Average | ∠ | 6 |

Raised Living Room



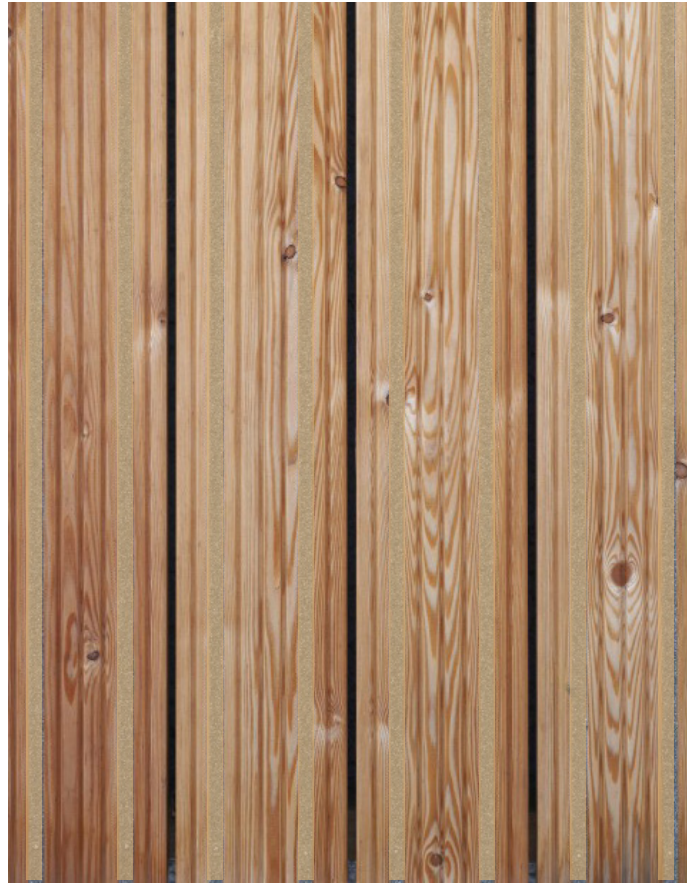
Impression Apartment Type X



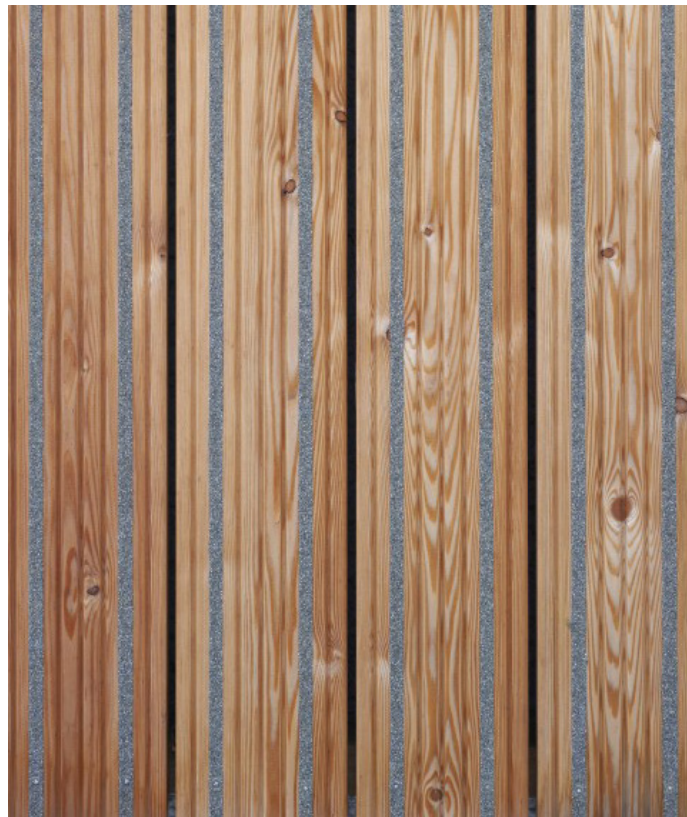
Impressions Front yard and gallerie



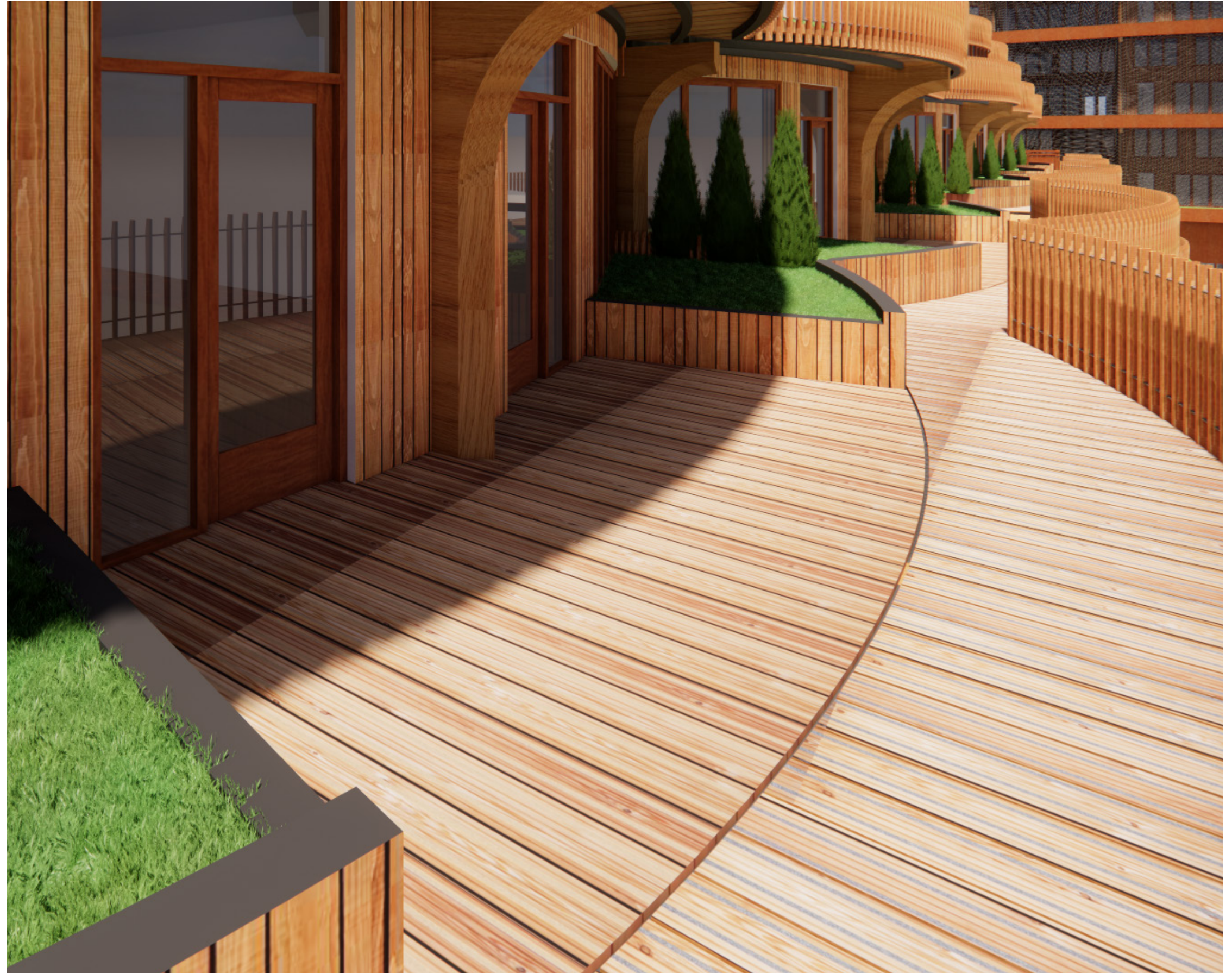
Materialisation



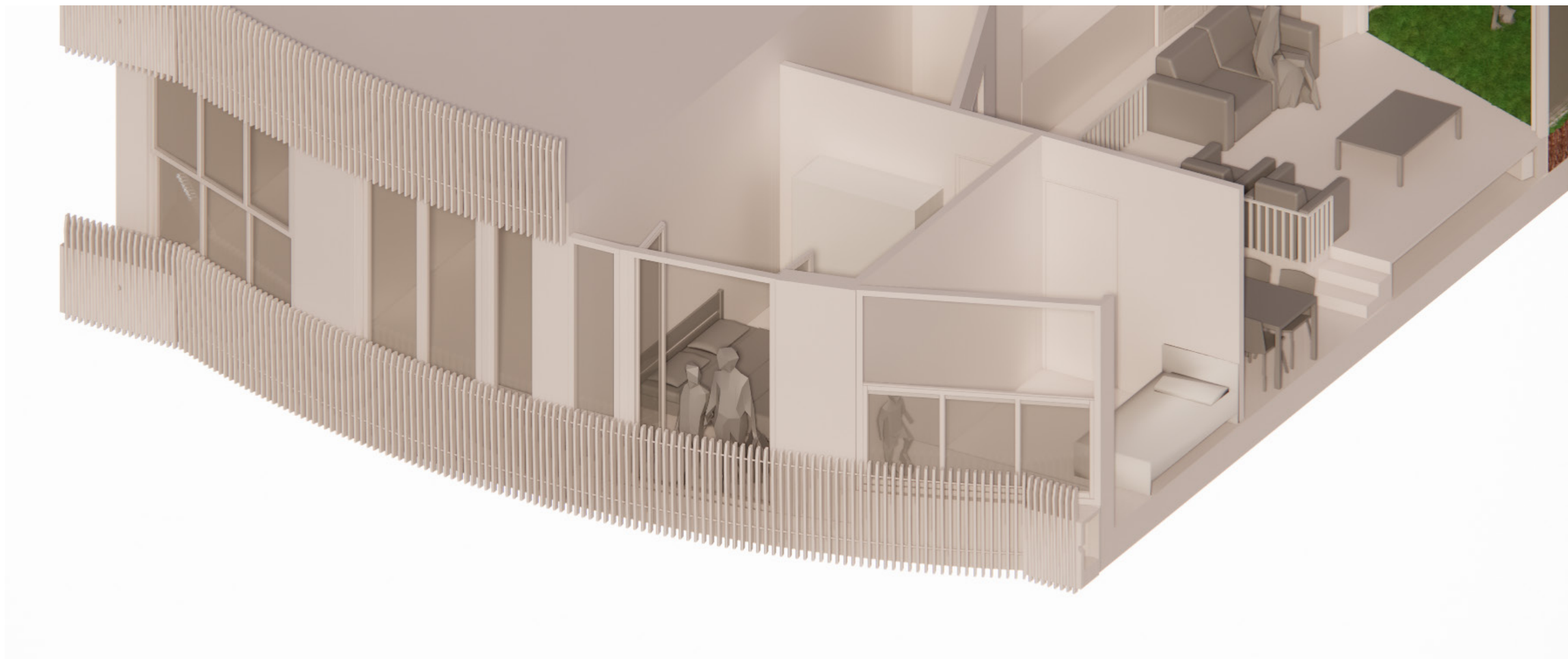
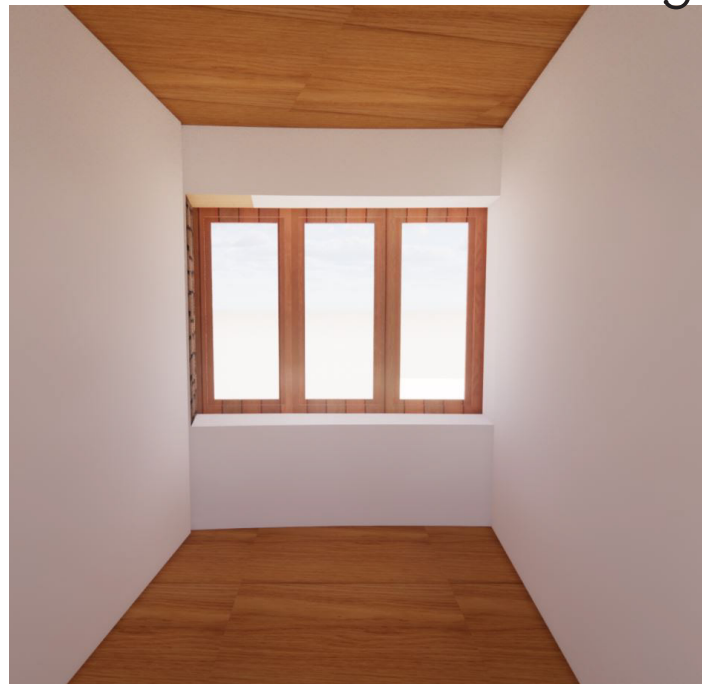
Larch Decking Antislip - Terrace



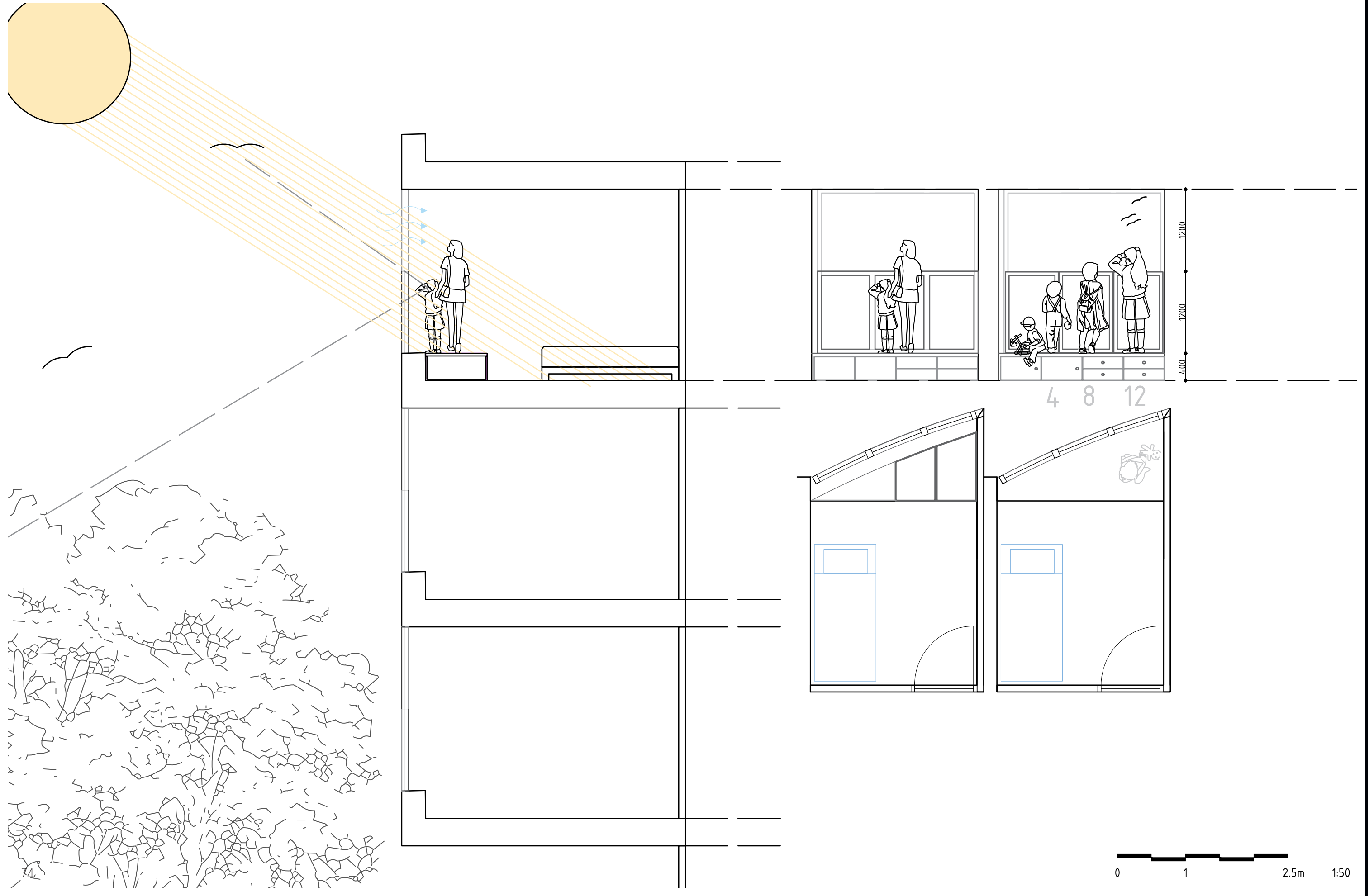
Larch Decking Antislip - Galery



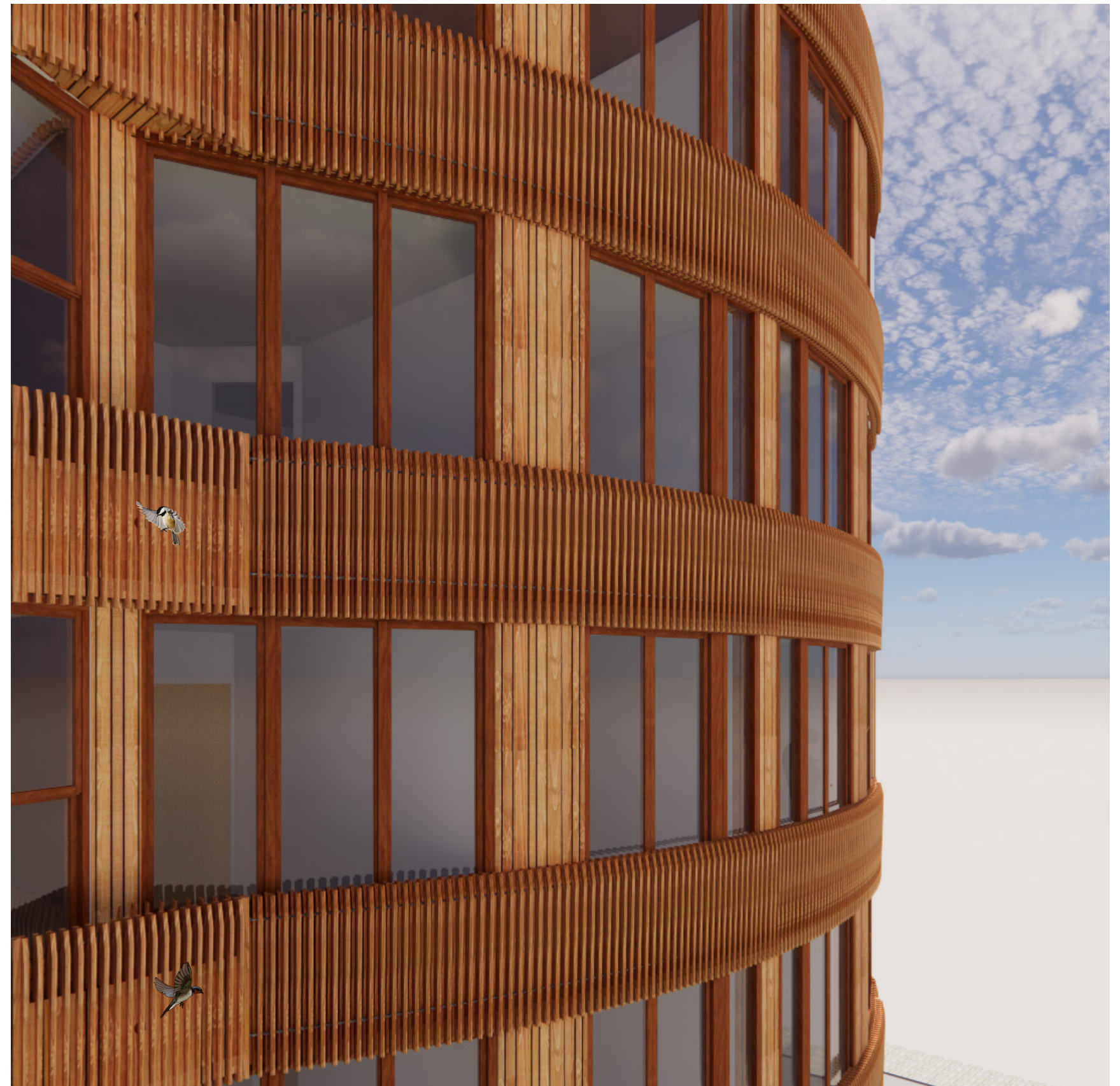
Living in a Box



Children's Balcony

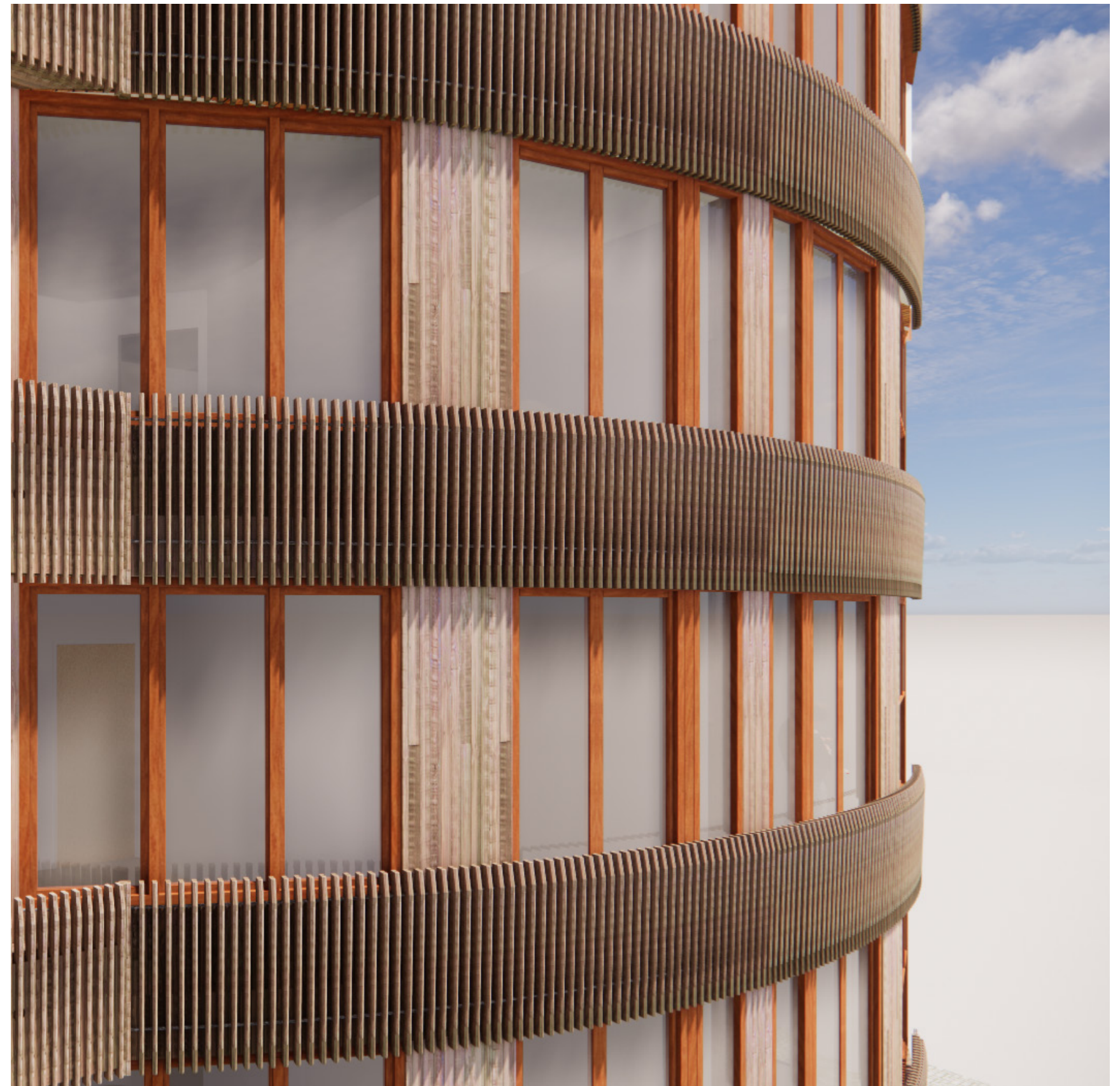


Materialisation



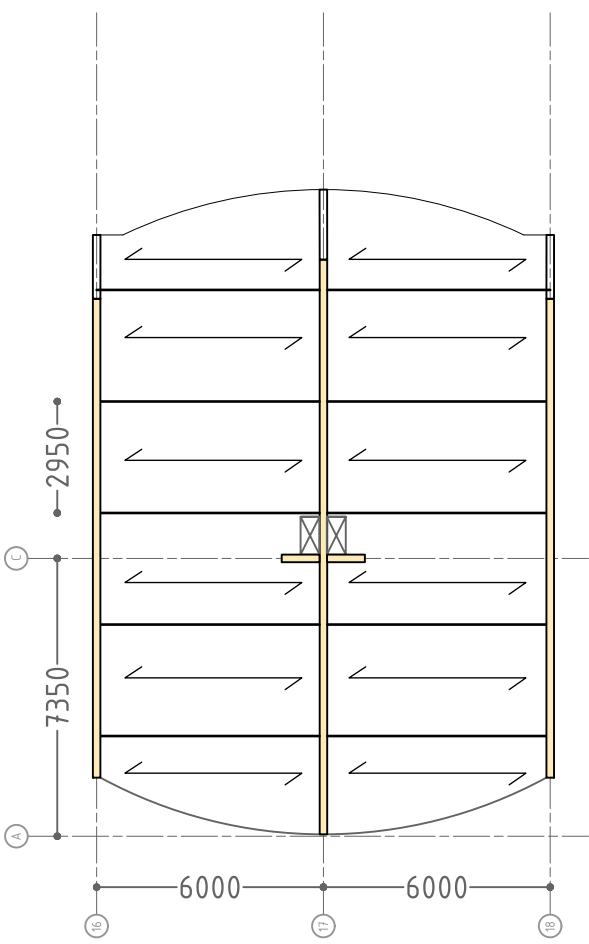
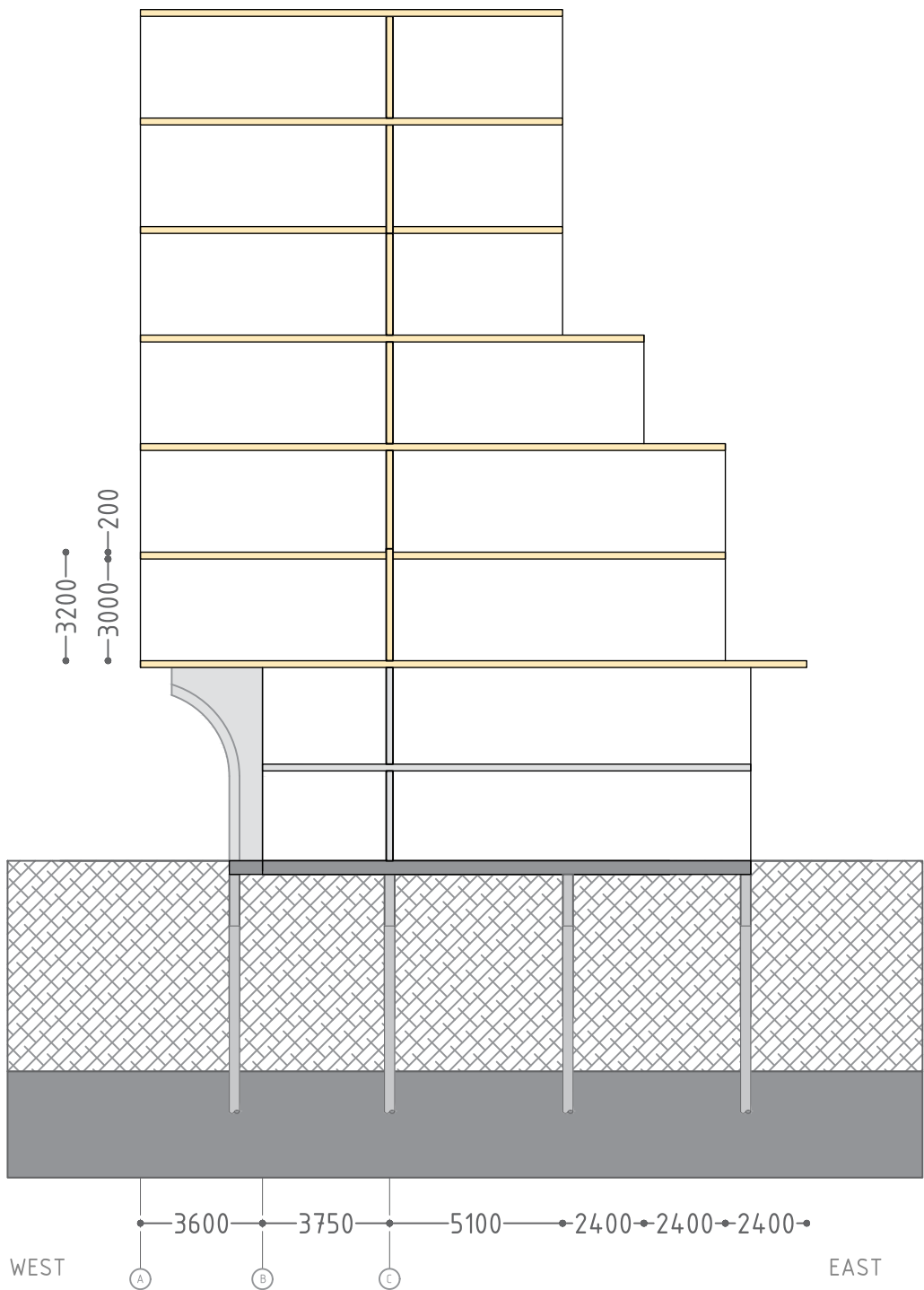
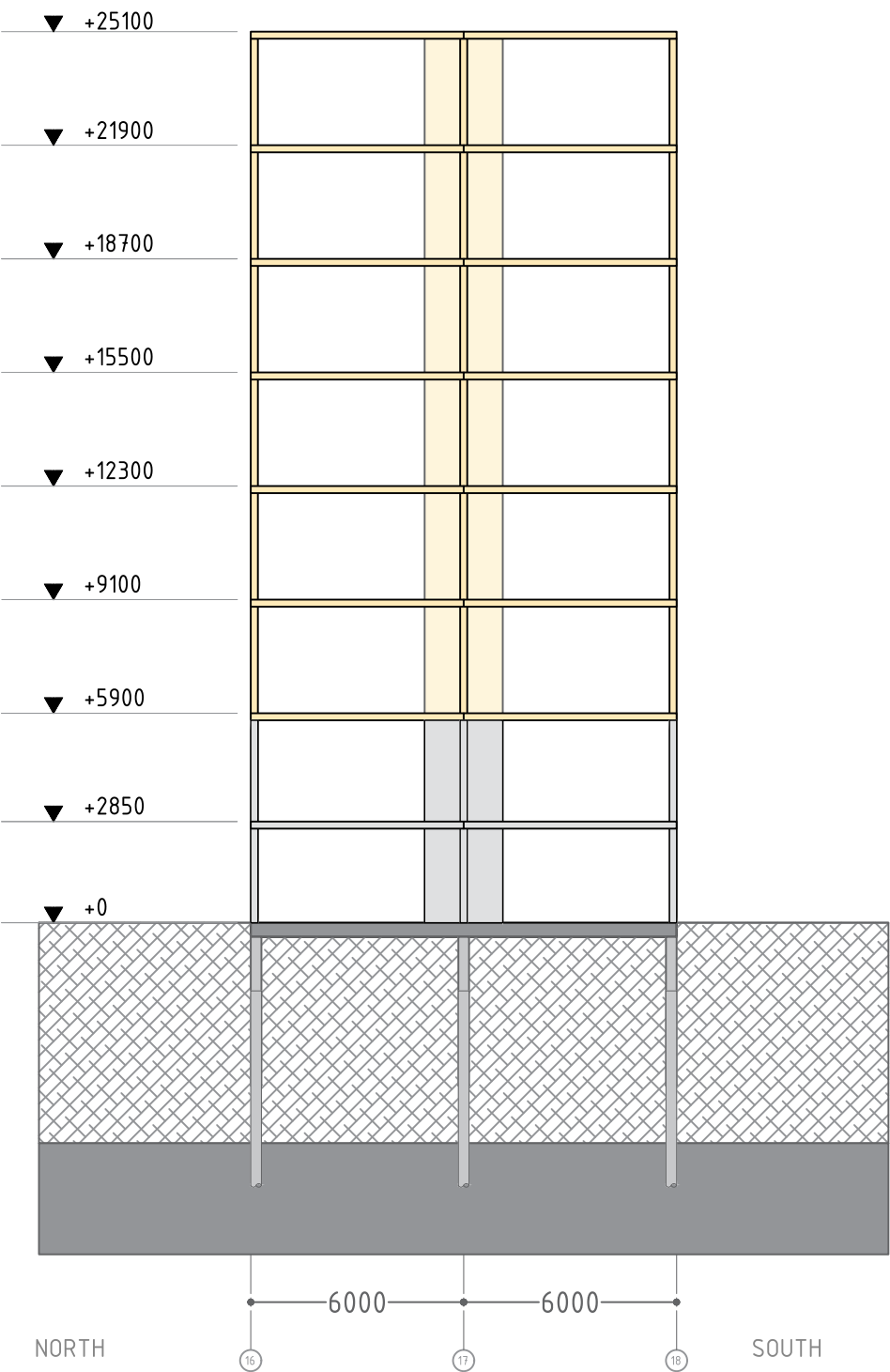
Nobelwood - Facade cladding and railing.

Materialisation

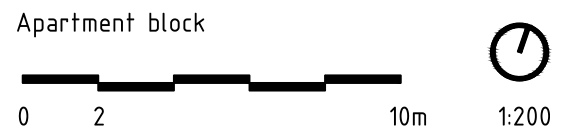


Nobelwood - Facade cladding and railing. Weathering will eventually turn the facades a natural grey. shadowing will provide variation in the facade.

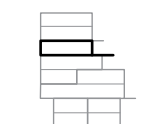
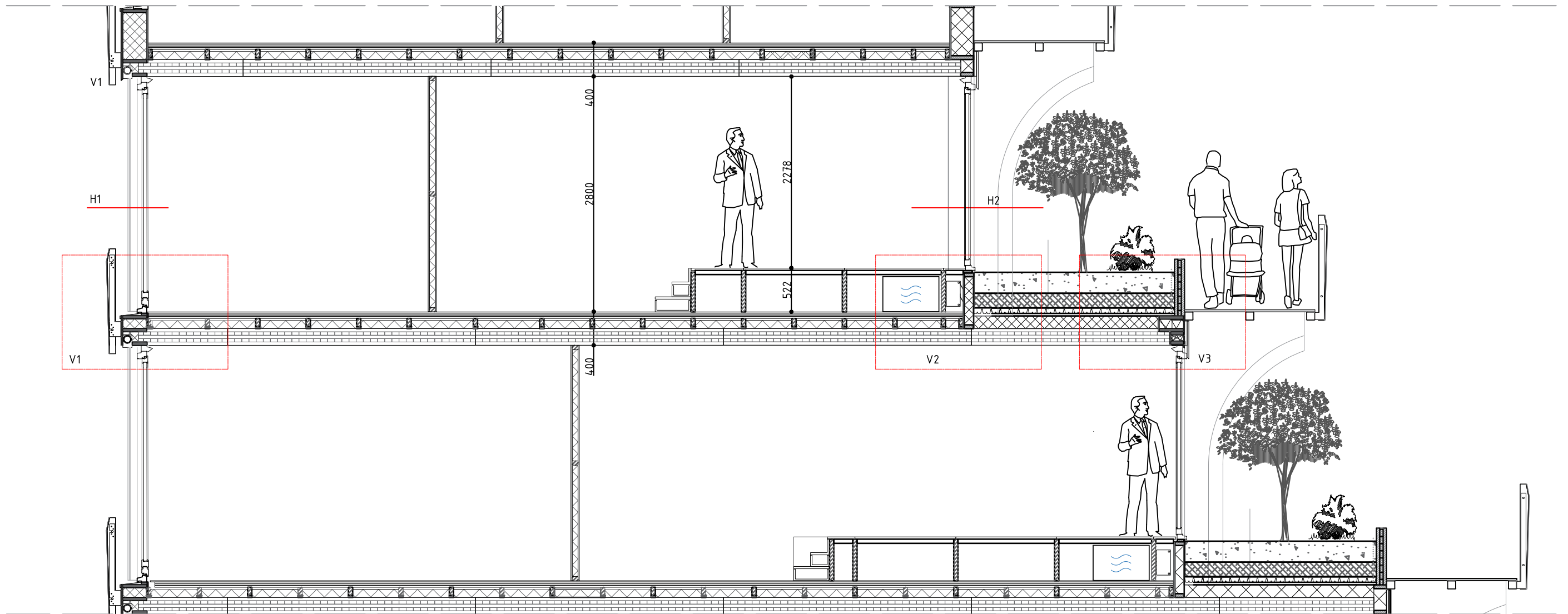
Construction



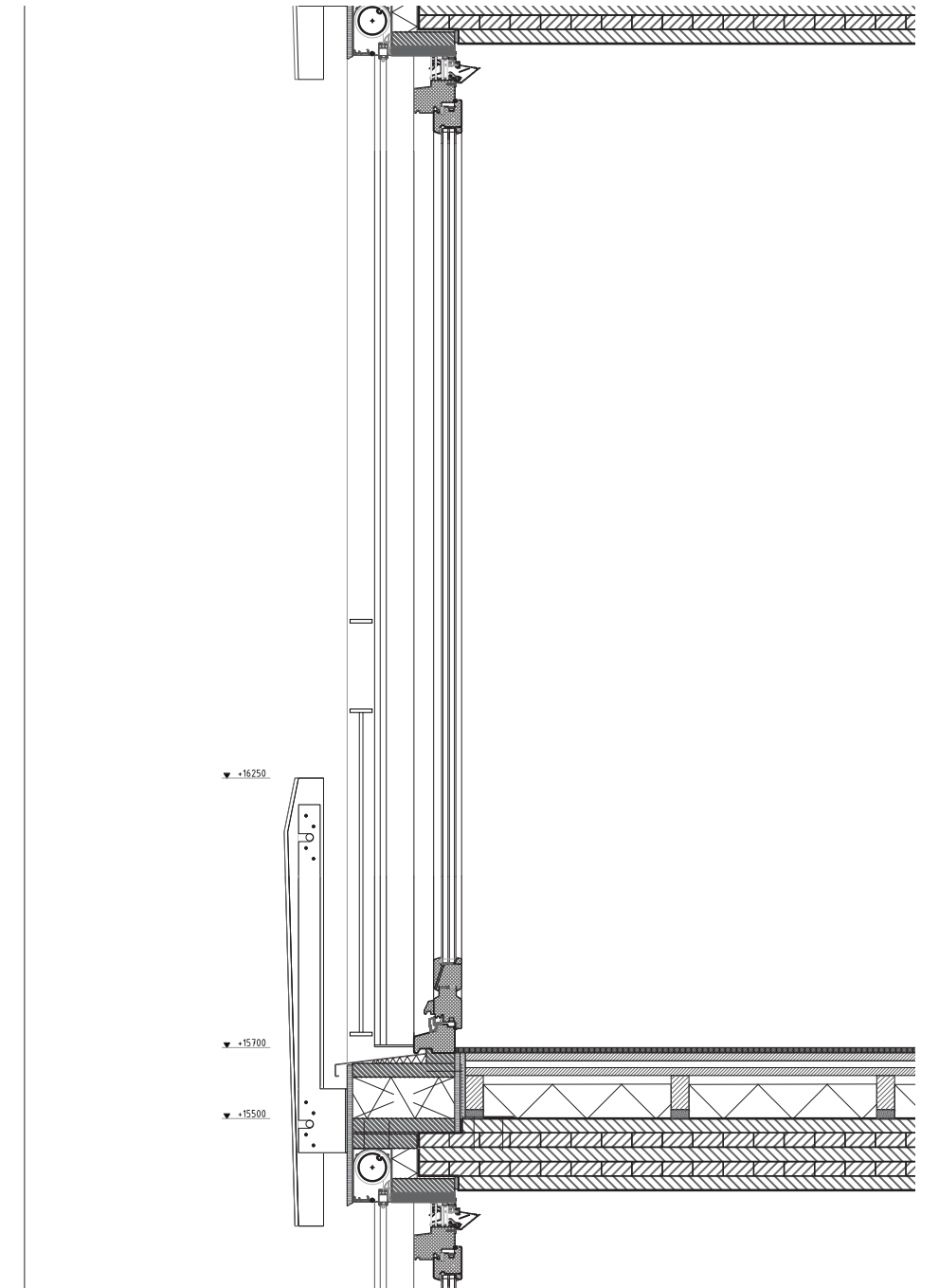
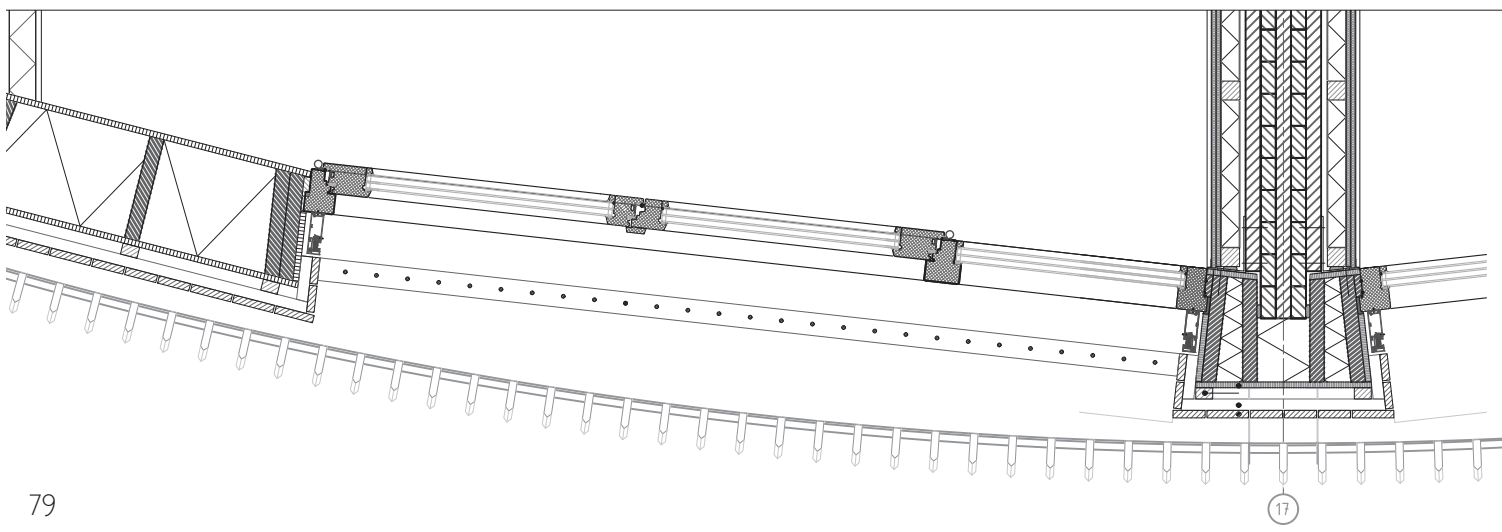
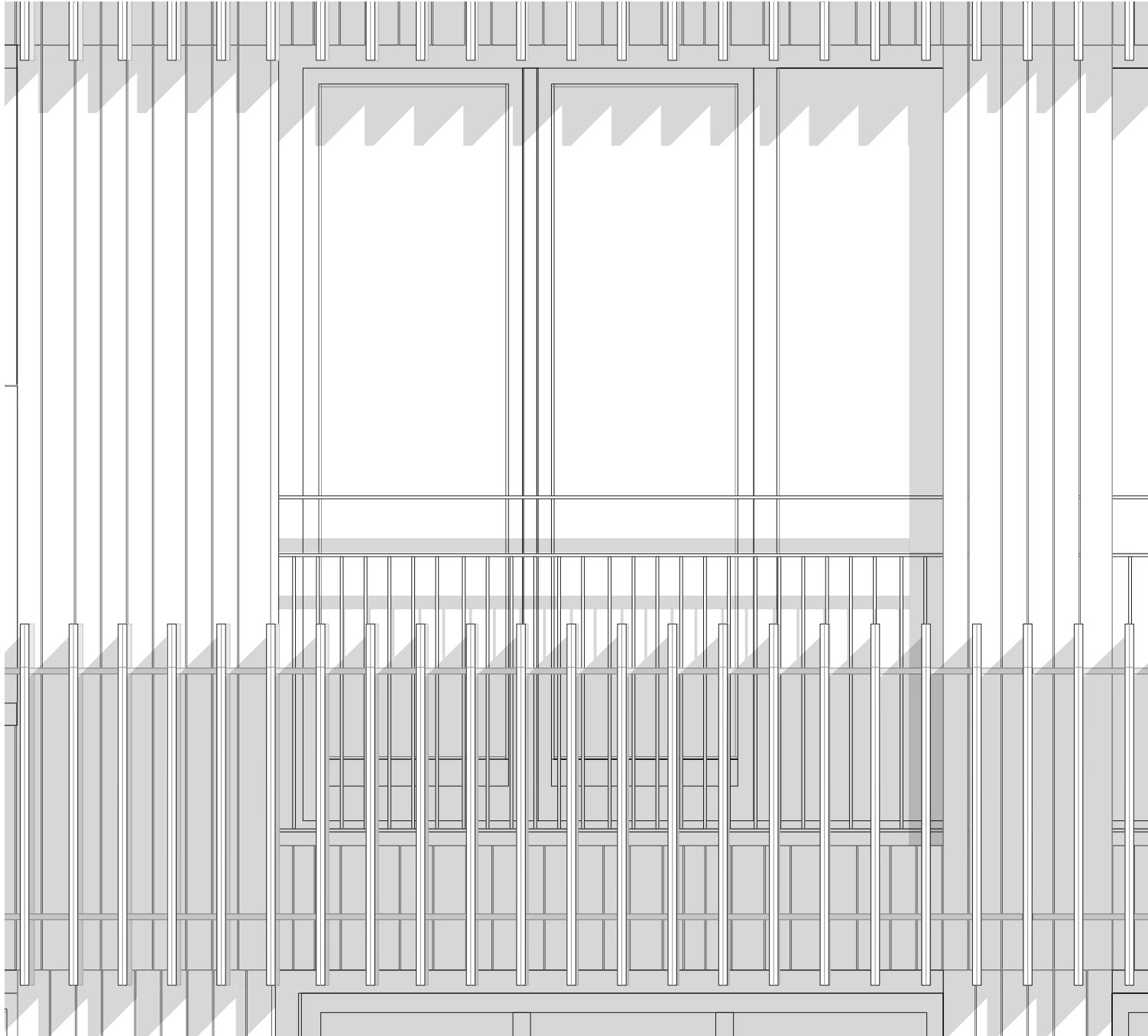
- CONSTRUCTIVE PRINCIPLES APARTMENT BLOCK
- CLT WALLS AND FLOORS = 200 MM
- SPANN = 5800 MM
- FLOOR HEIGHT = 3200 MM
- CLT STABILITY SLAB 200X1000 MM
- CONCRETE POLE FOUNDATION



Overview Construction Details



1 to 20 Facade Fragment



Exploded View Facade Element

Windowframe/ventilation

Multiplex interior finish

Timber frame

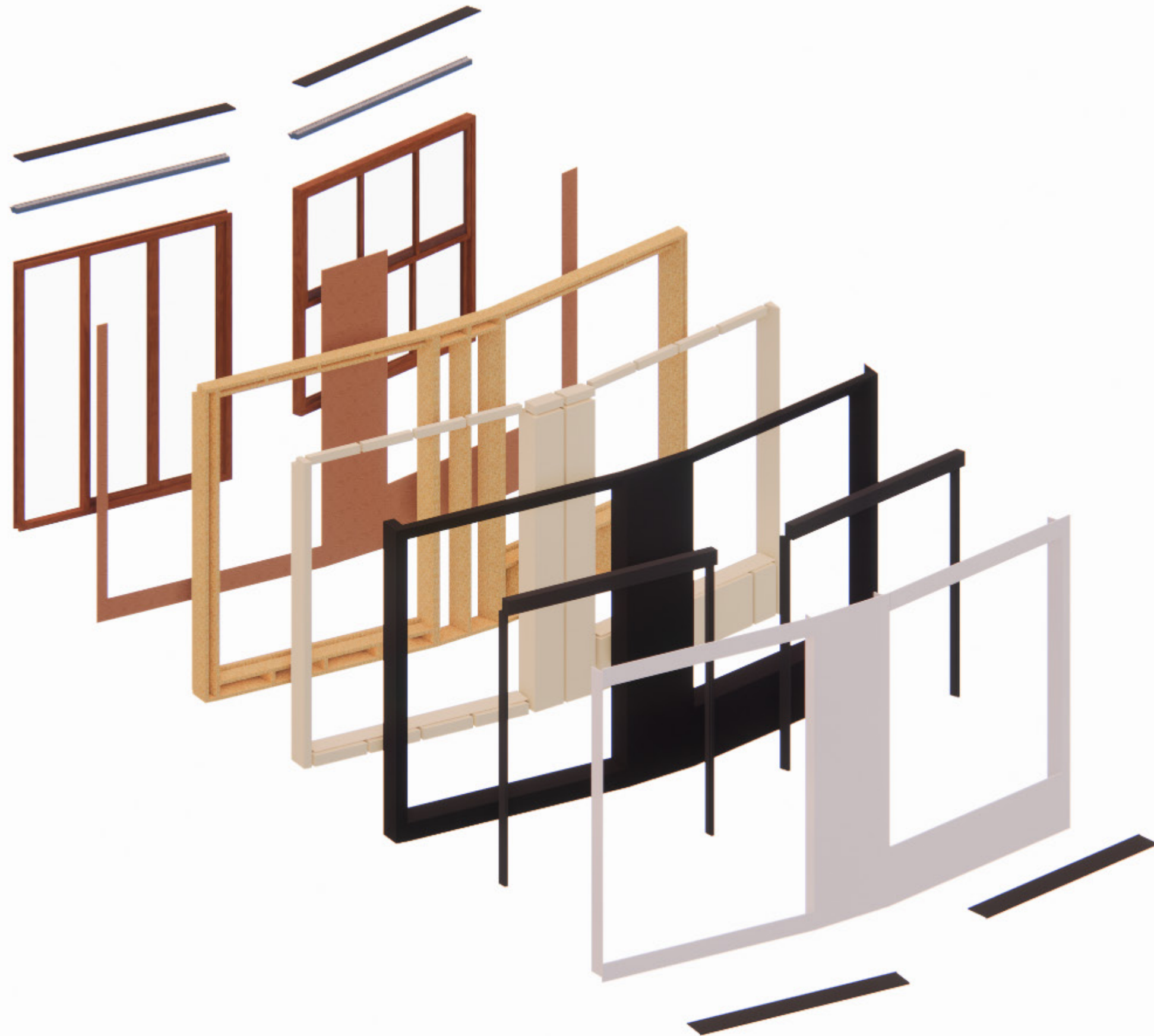
Reedmace insulation

Vapor open foil

Sunscreen

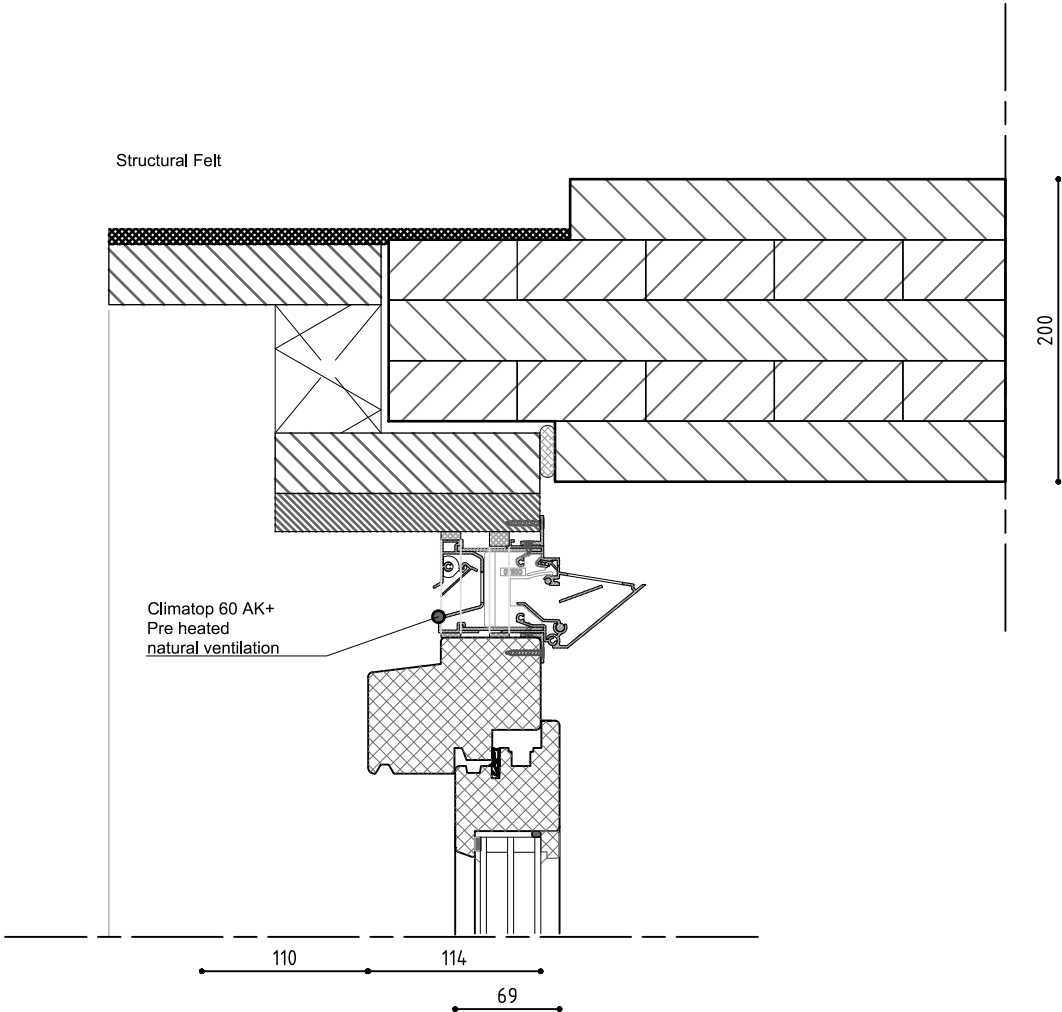
Boarding

Windowsill



Detail V1 step 1

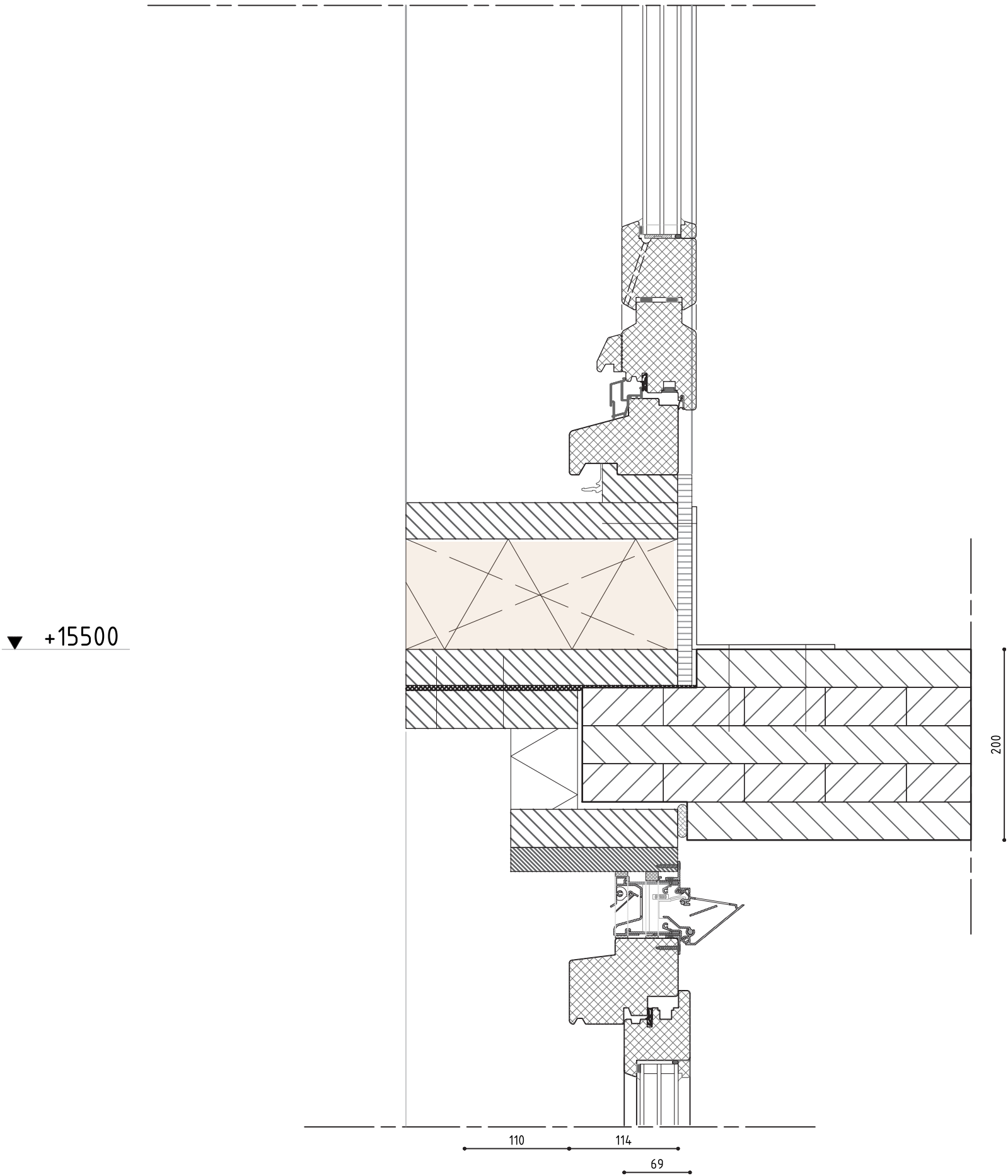
▼ +15500



Detail V1
Separating Floor street facade

0 10 25cm 1:5

Detail V1 step 2

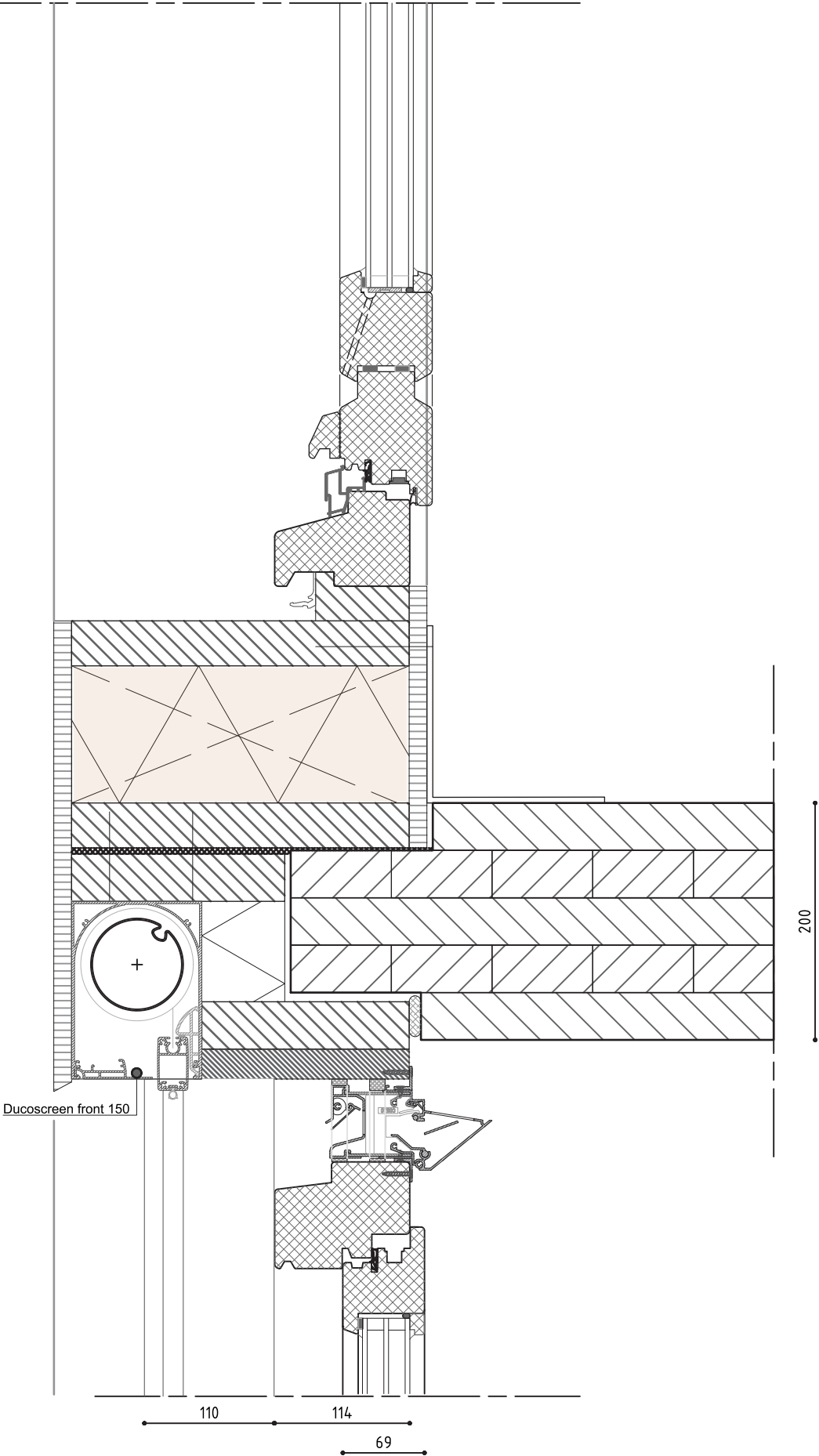


Detail V1
Separating Floor street facade

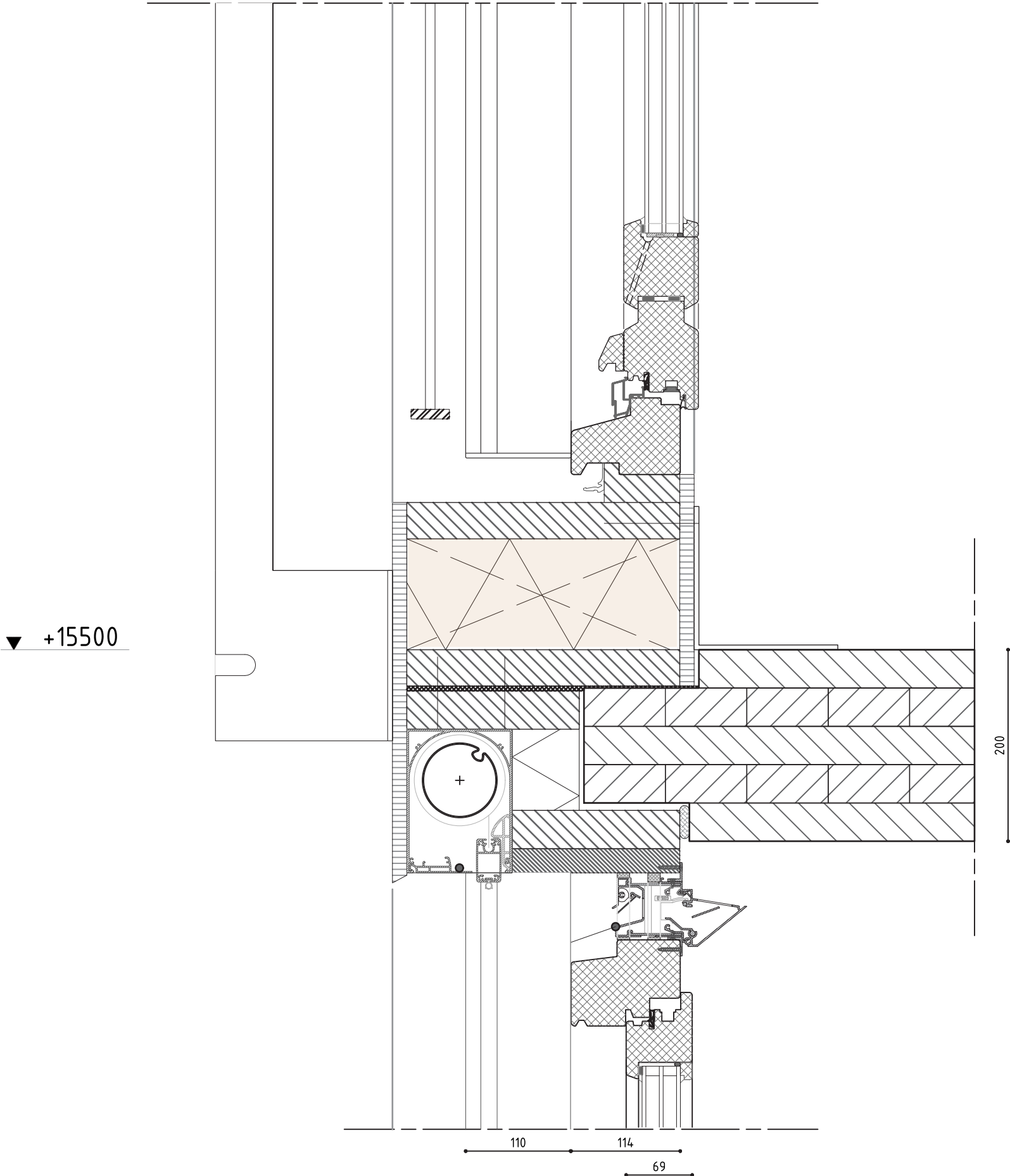
0 10 25cm 1:5

Detail V1 step 3

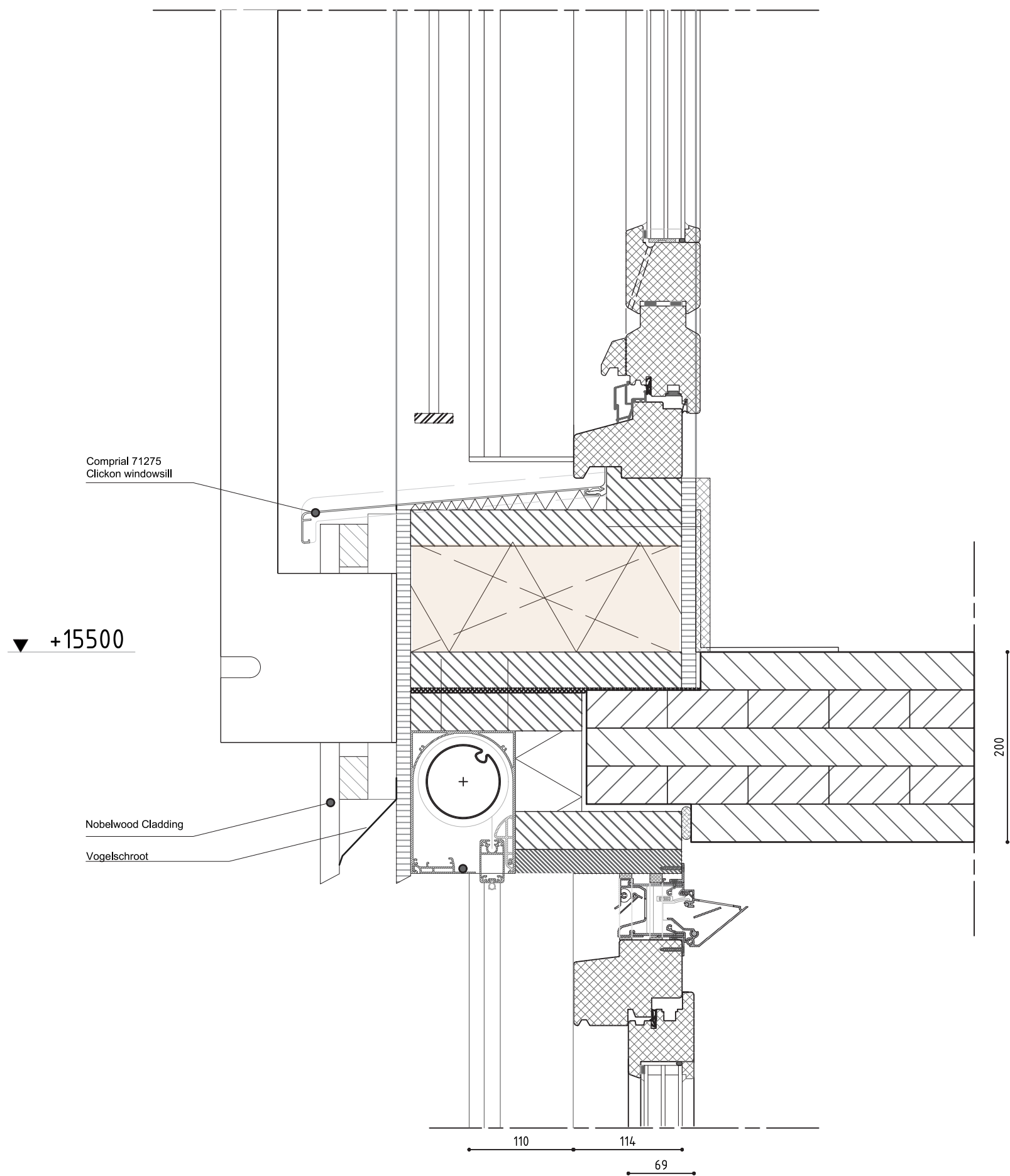
▼ +15500



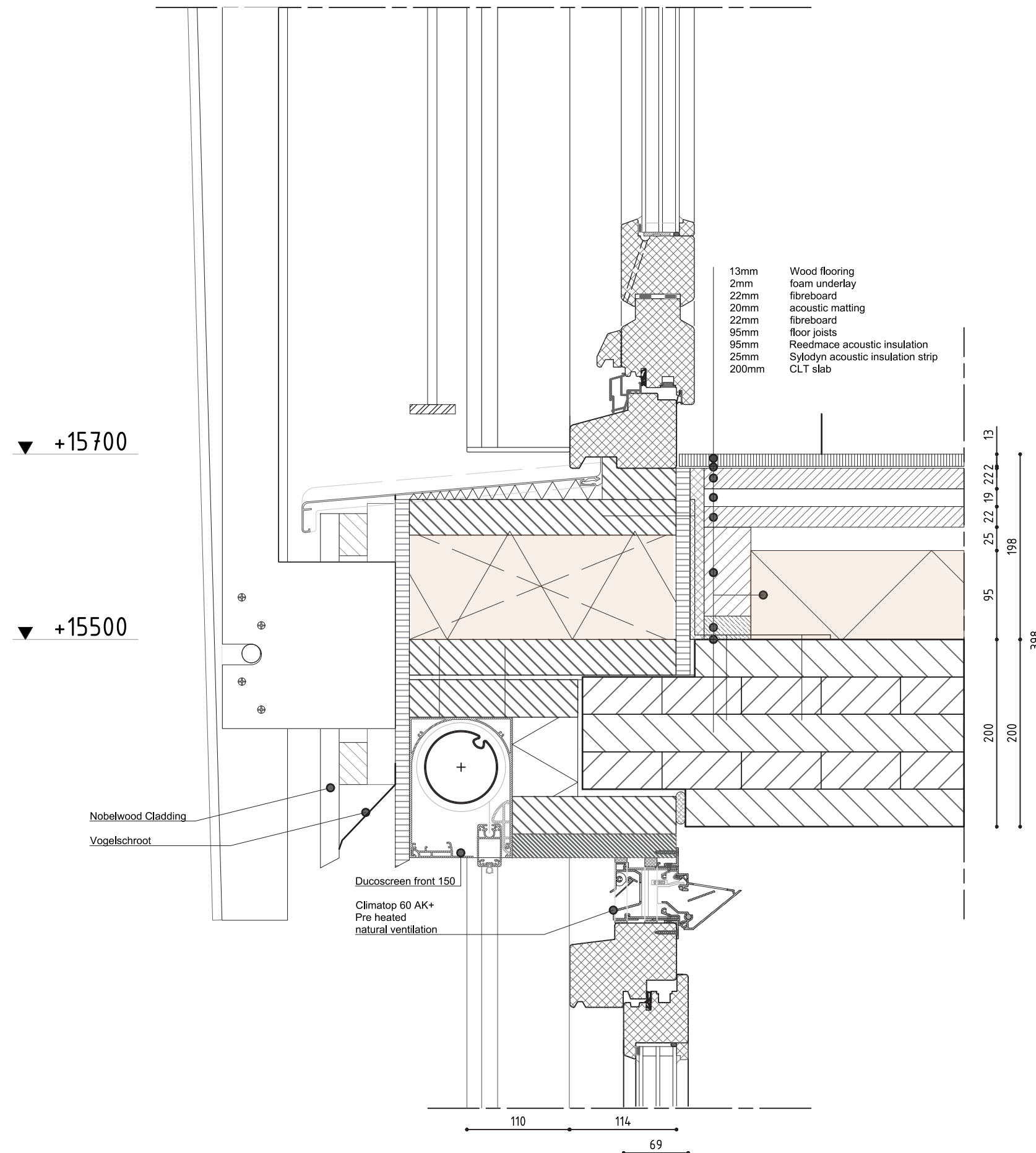
Detail V1 step 4



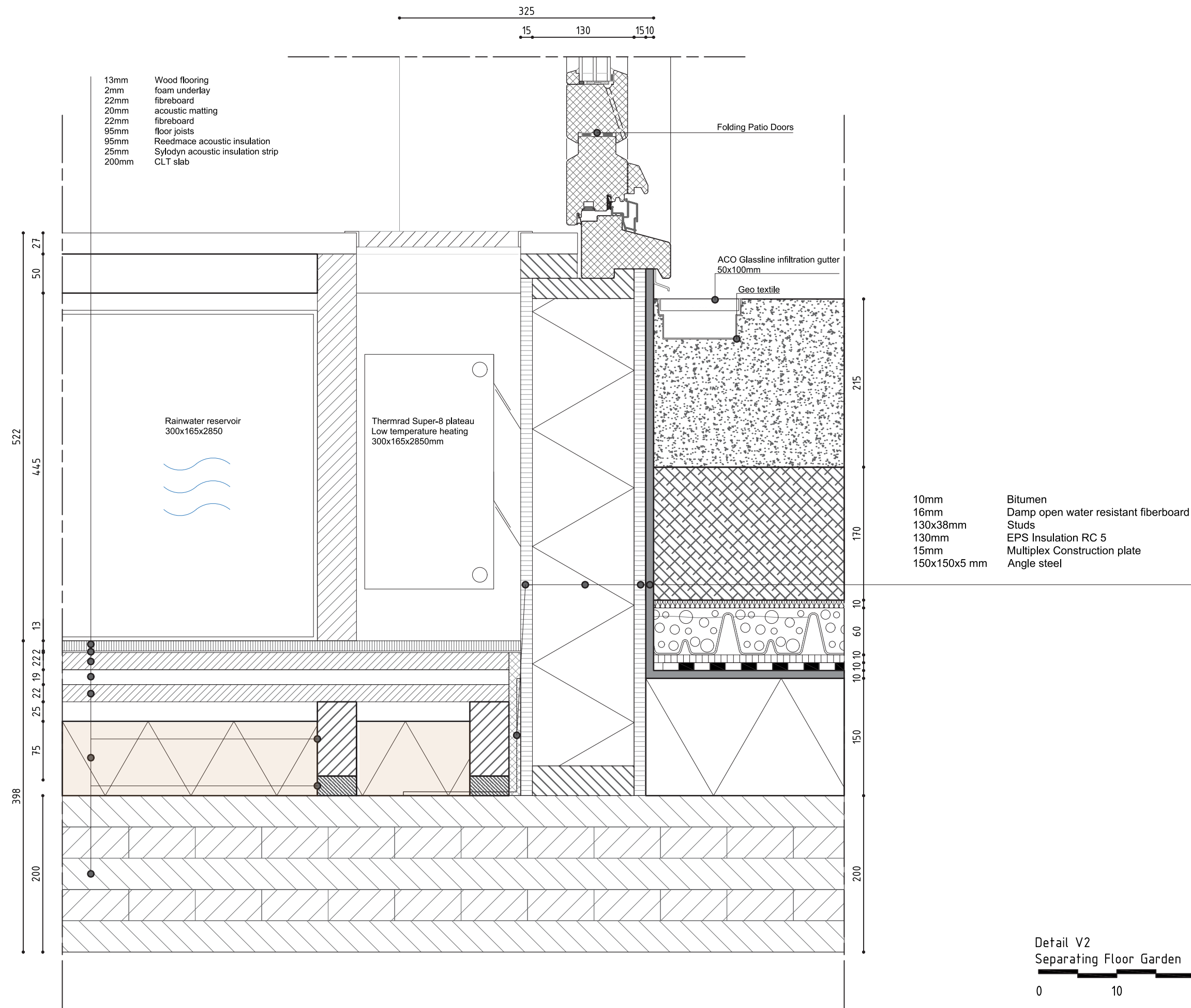
Detail V1 step 5



Detail V1



Detail V2



Detail V3

Vegetation

250mm Optigrün substrate layer I-L
High Water retaining and
draining capacity

170mm Optigrün substrate Layer U
Rot prevention

Optigrün Protect-absorptionlayer RMS 900 (6,0 mm)

Optigrün drainage-bufferlayer FKD 60 BO (60 mm),
Filled with Optigrün drainage-bufferlayer Perl 8/16

10mm Optigrün filterlayer FIL 105

10mm Root resisant roofing

10mm Bitumen Roofing

150mm EPS Pressure resistant insulation RC 5,8

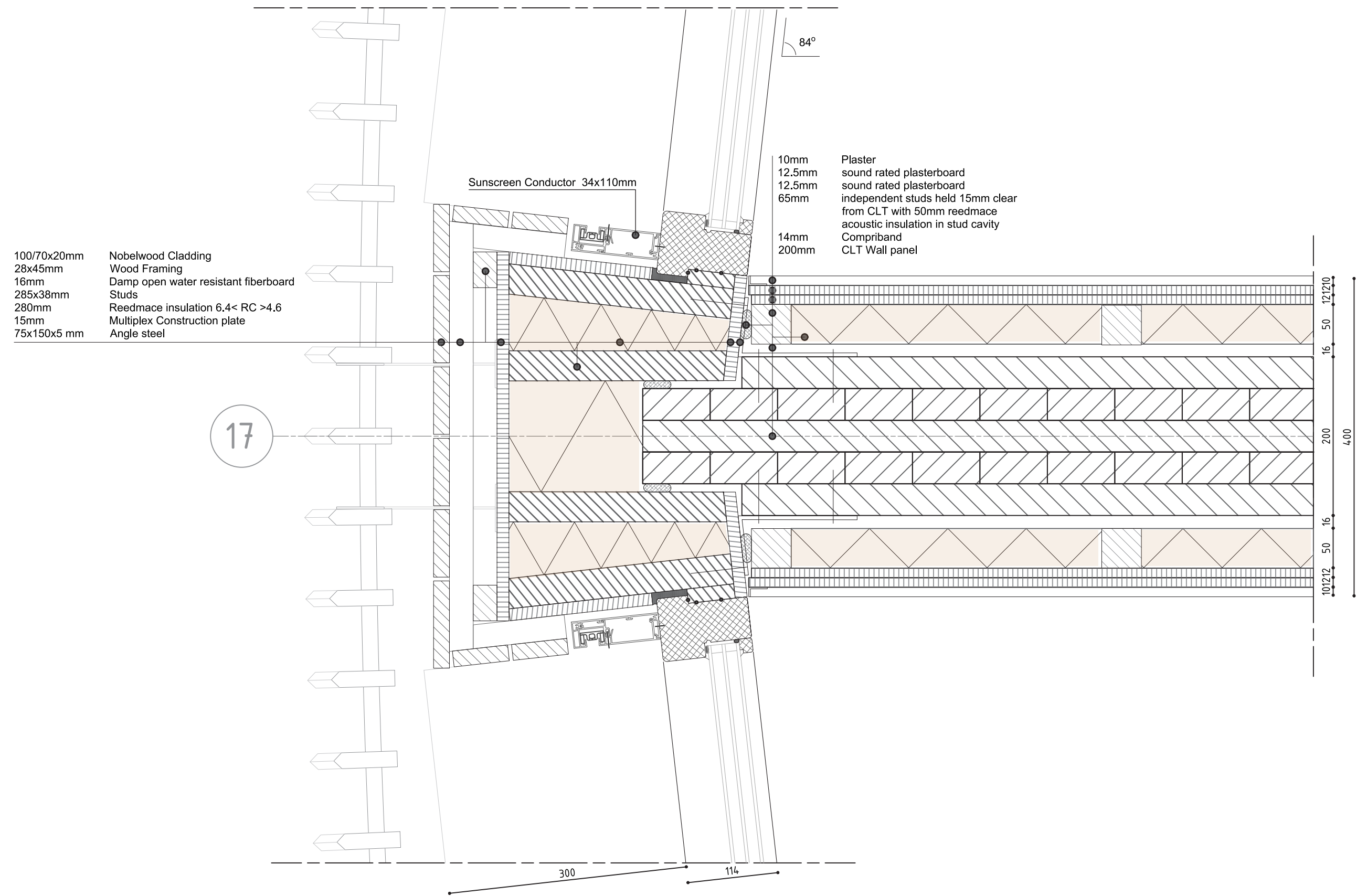
CLT 5 layer 200mm

28x100 mm Larch Decking Board

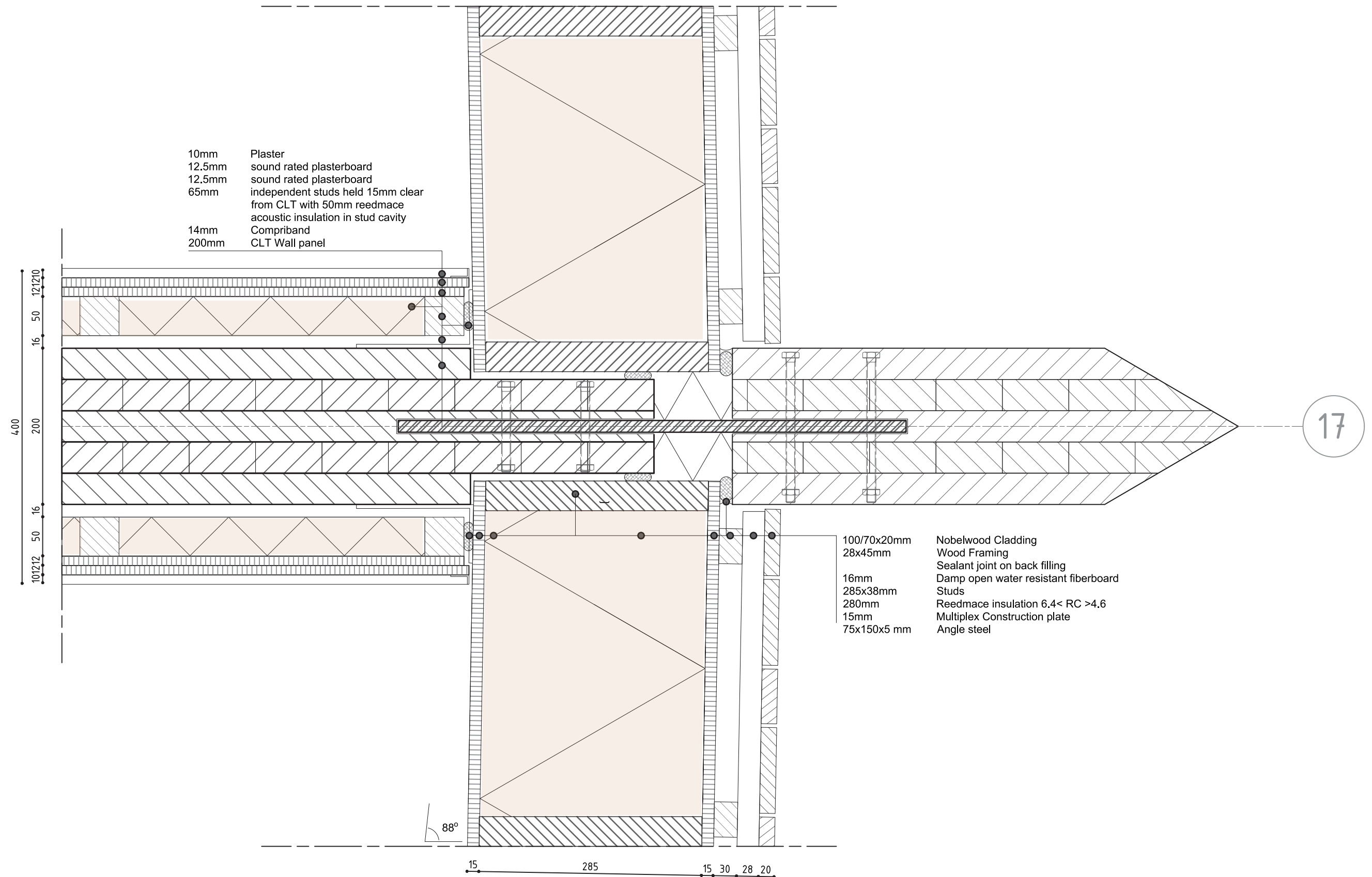
100x100x5 mm Box Profile

100/70x20mm Nobelwood Cladding
28x45mm Wood Framing
16mm Damp open water resistant fiberboard
285x38mm Studs
280mm Reedmace insulation 6,4< RC >4,6
15mm Multiplex Construction plate
75x150x5 mm Angle steel

Detail H1



Detail H2



Discussion

How to design a residential building for young urban families in a highly urban environment
that makes nature an inherent part of the architecture
by using a holistic human-nature relationship as a guiding theme

How to design a residential building for young urban families in a highly urban environment
that makes nature an inherent part of the architecture
by using a holistic human-nature relationship as a guiding theme

Have I made nature an inherent part of the architecture?

The transition between inside and out was softened

Spaces for flora and fauna were created but human interests still came first

The building provides opportunities to interact more with nature and to understand nature deeper.
However, it is still up to the inhabitants to follow through.