

The Old Harbour: The Next Step in the Housing Career of Modern Elderly



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Drawing set | Graduation studio: Advanced Housing Design

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General

User groups

55-67 YEARS OLD

Most likely still working

Possibly moved out children that want to visit

Singles:	or	Couples:	
23-24% Single		76-77%	(2018)
25-30% Single		70-75%	(2047)
(CBS, 2018)			



More active with hobbies and sport

In general healthy, both physical and mental, but still a possibility of either being not healthy



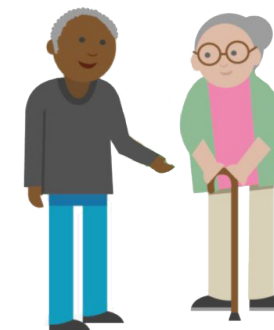
68 + YEARS OLD

Retired

More home

Possibly grandchildren that want to visit

Singles:	or	Couples:	
25-40%		60-75% 68-80	(2018)
>40%		<60% 80+	(2018)
(CBS, 2018)			



More likely to require help:

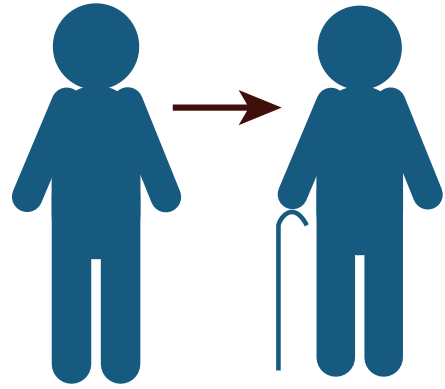
20% at start of retirement to almost 80% at 85+ has trouble with mobility (Schoemaker, Van der Wilk, van Wieren et al, 2011, p. 28)



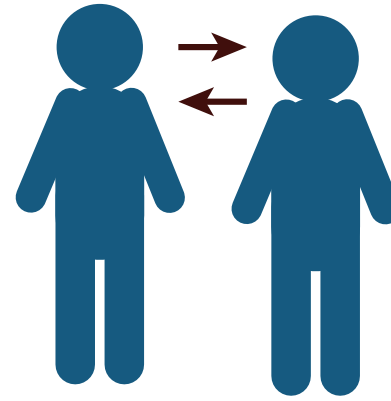
Schoemaker, C. Van der Wilk, E. Van Wieren, S. Zanitnge, E. (2011). Gezond ouder worden in Nederland. RIVM.

CBS. (2018). Honderd jaar alleenstaanden. Retrieved on May 2, 2021 from <https://www.cbs.nl/nl-nl/achtergrond/2018/26/honderd-jaar-alleenstaanden>.

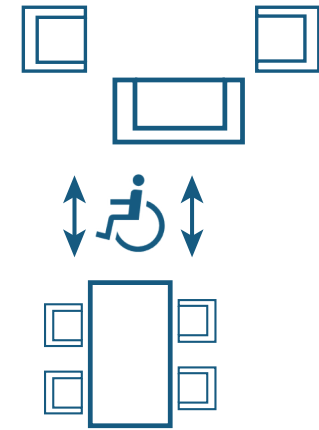
User groups



55 years old as
starting point



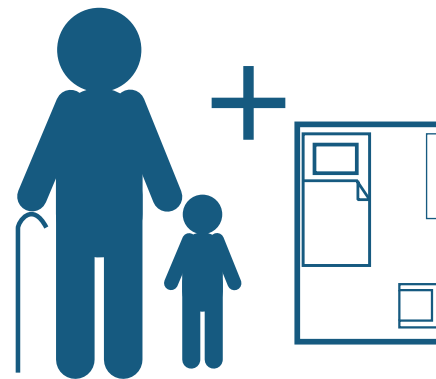
Places for interaction



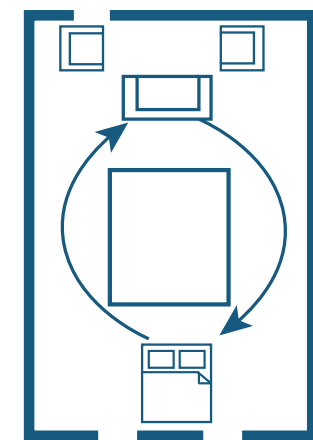
Easy movement



Possibility for care



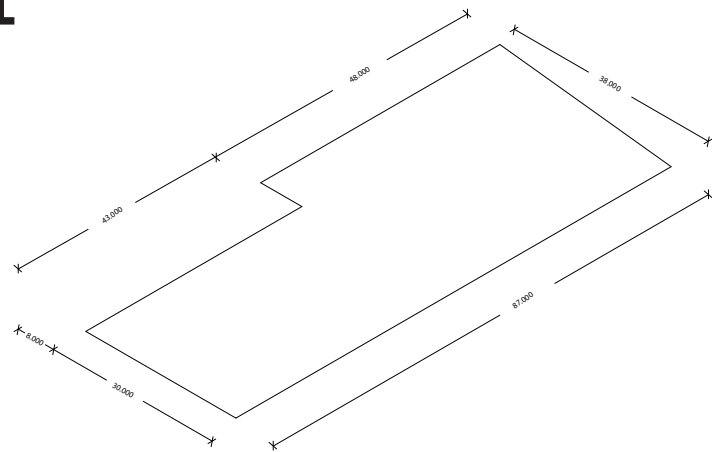
Visiting (grand)
children



Adaptability

Design strategy for the mass

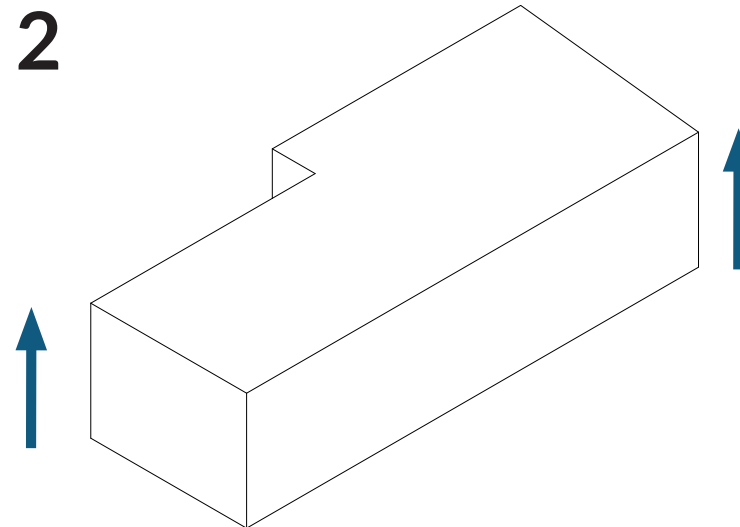
1



The plot

With dimensions

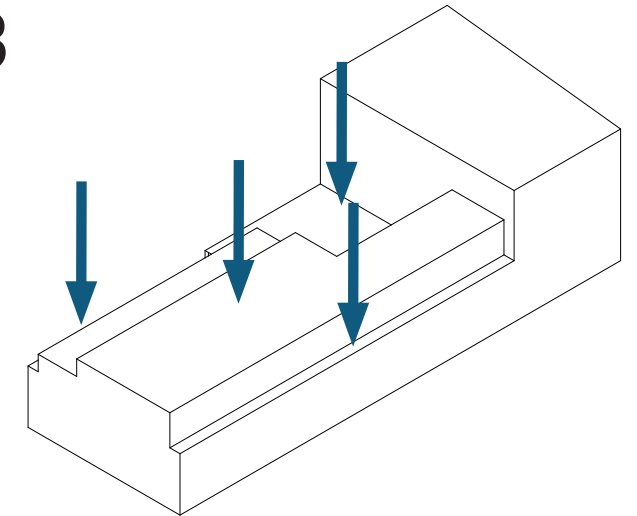
2



Extrusion

Extruding the entire plot until the highest floor

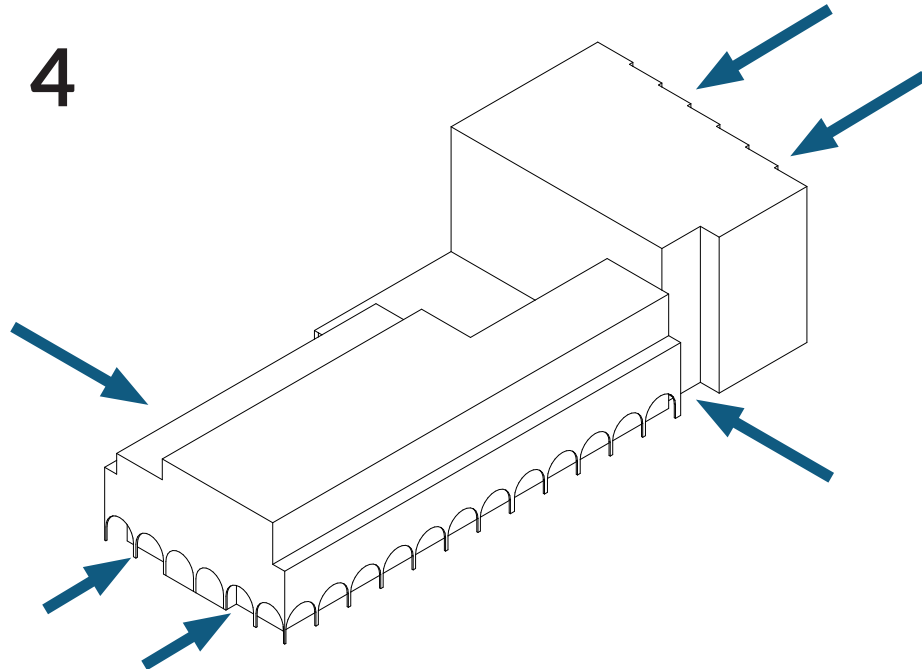
3



Push in levels

Push in levels, especially on the southern side, to create two different parts

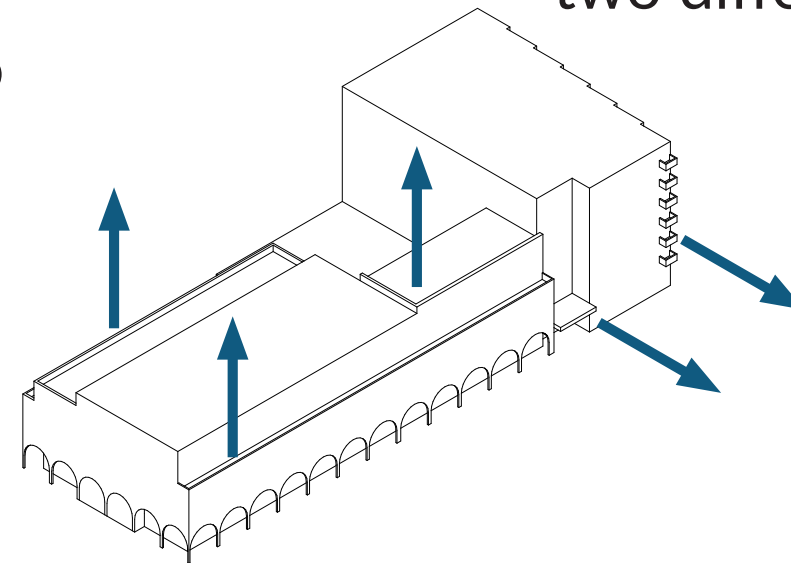
4



Push in facades

Push in the facade on the park side to create an orthogonal floor plan. Also push in the plinth to create a difference with the upper floors

5

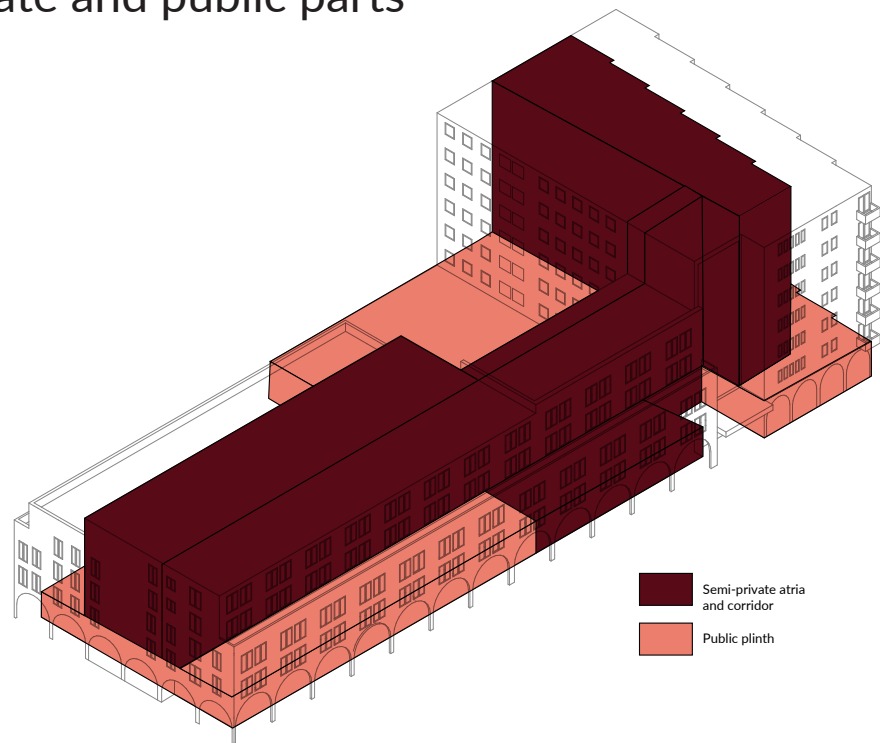


Push in levels

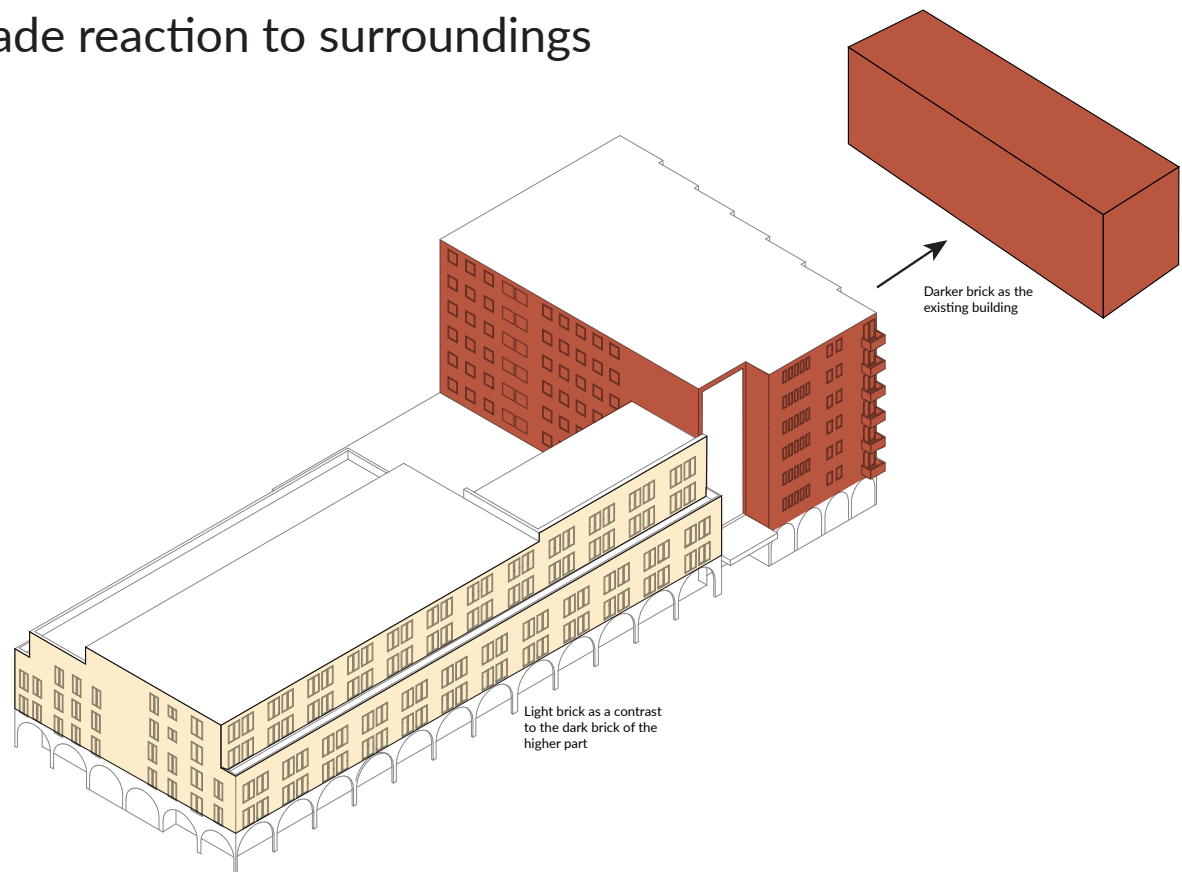
Extrude walls to create balustrades for the terraces. Also extrude balconies on the park side building

Diagrams explaining general aspects

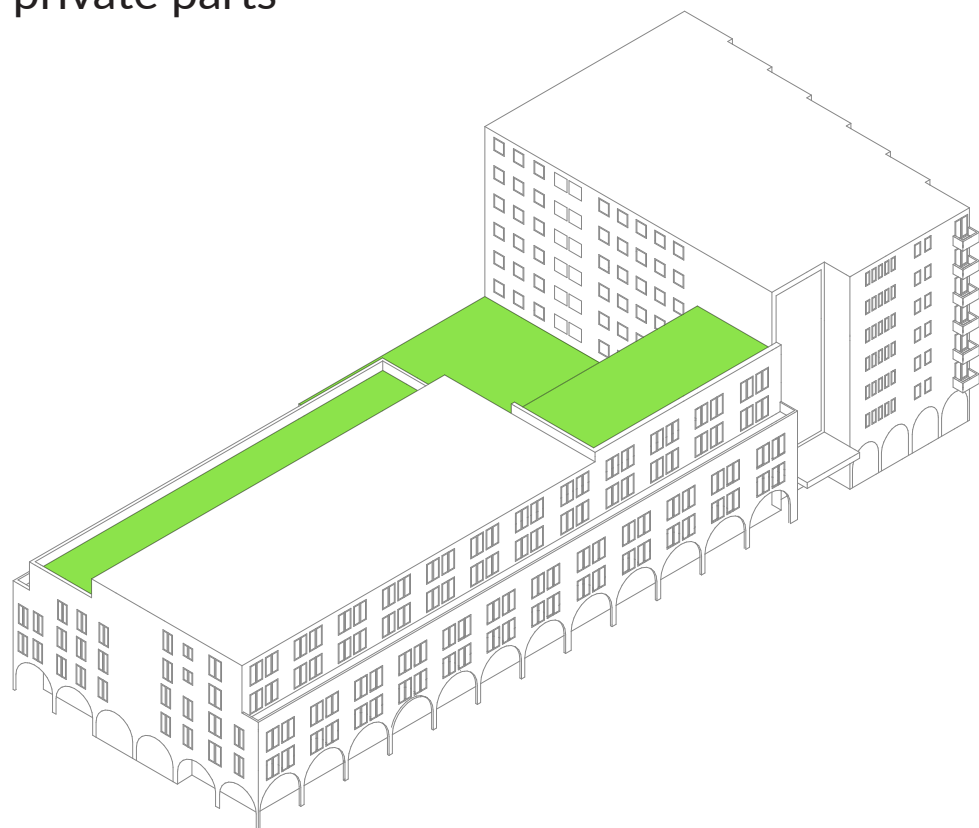
Semi- private and public parts



Facade reaction to surroundings

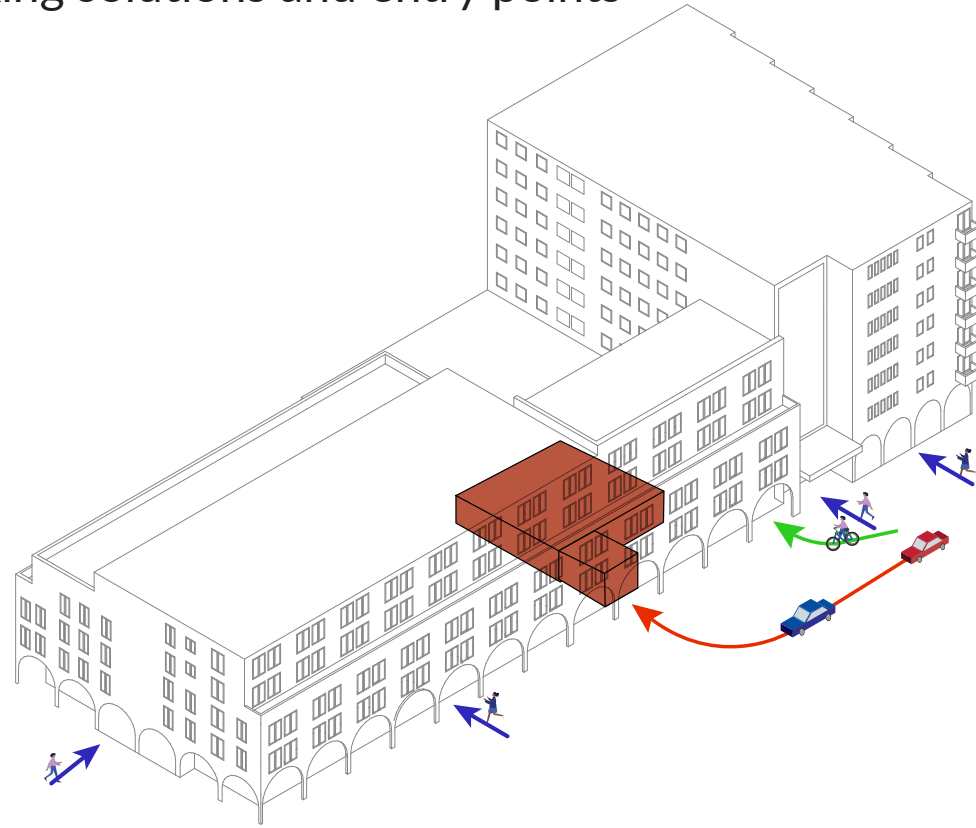


Non-private parts

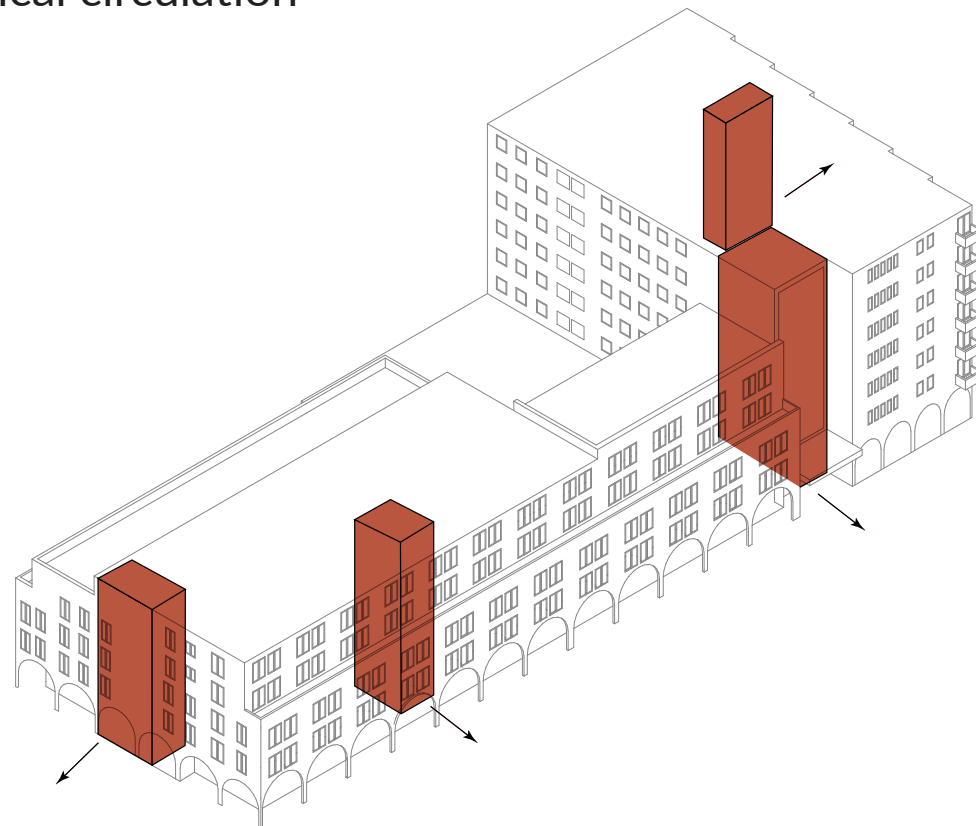


Diagrams explaining general aspects

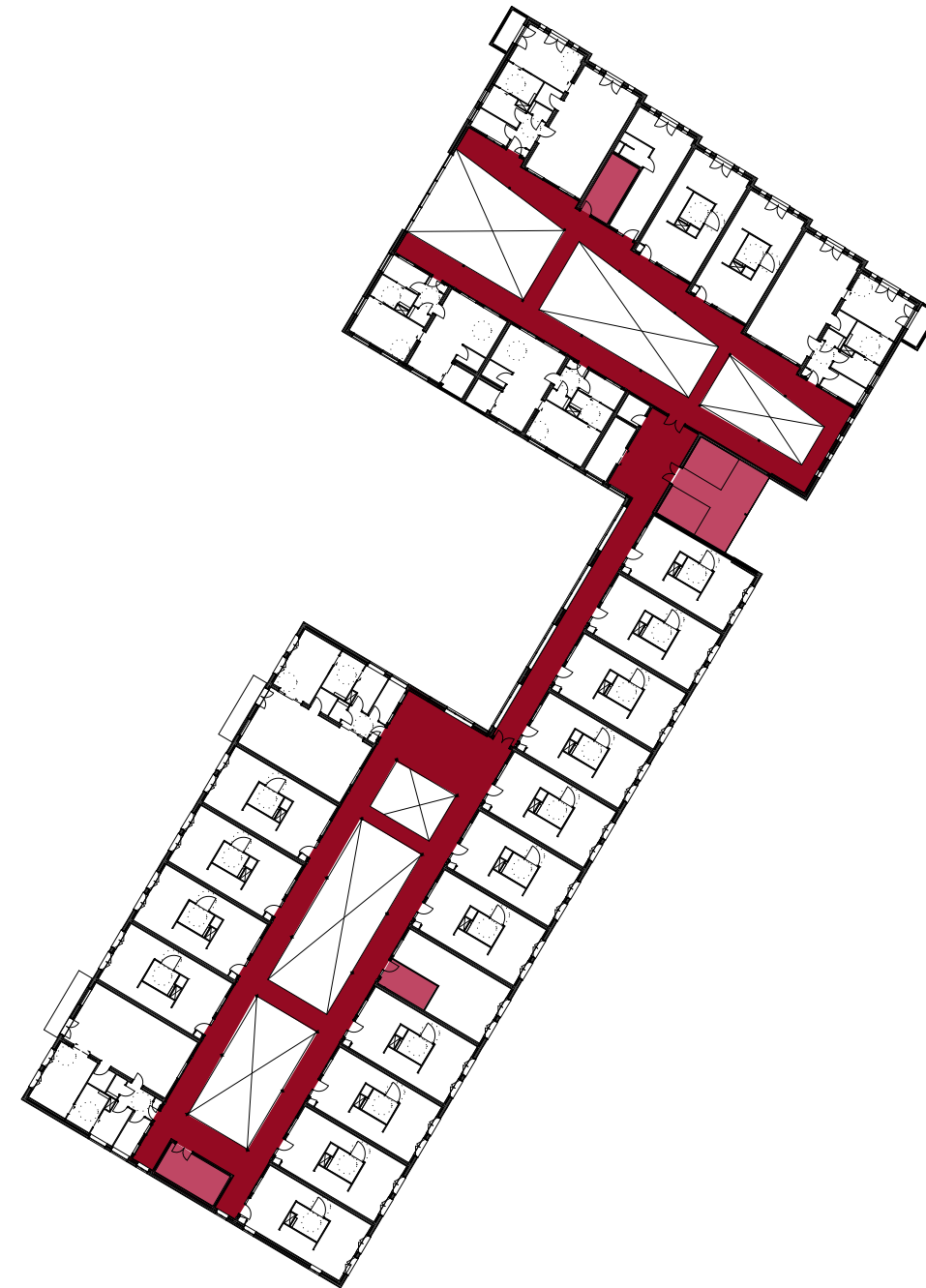
Parking solutions and entry points



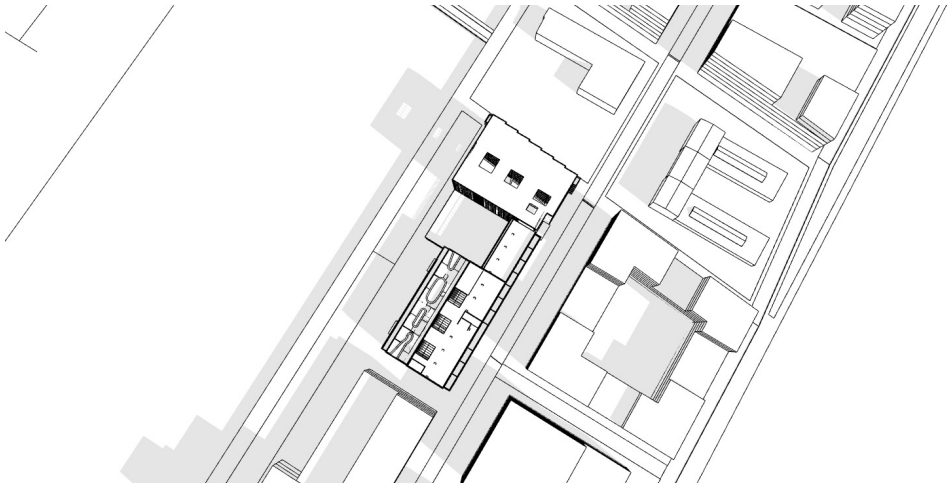
Vertical circulation



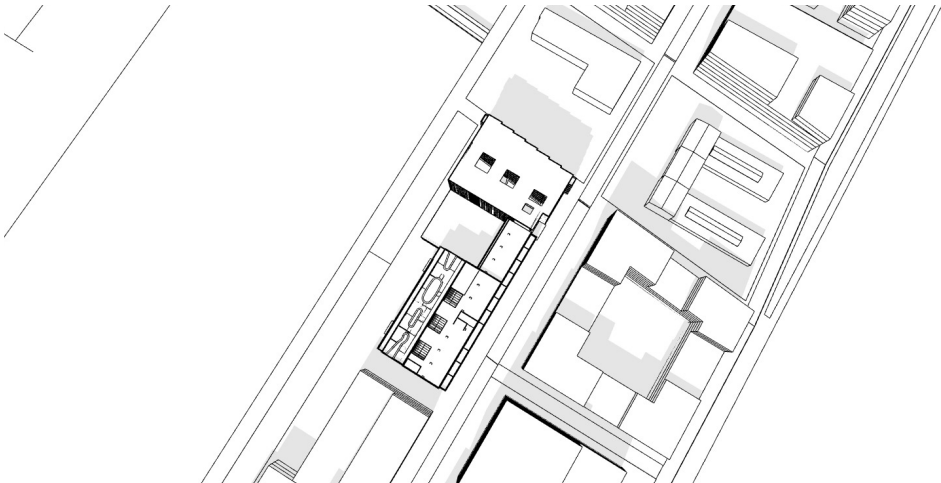
Circulation



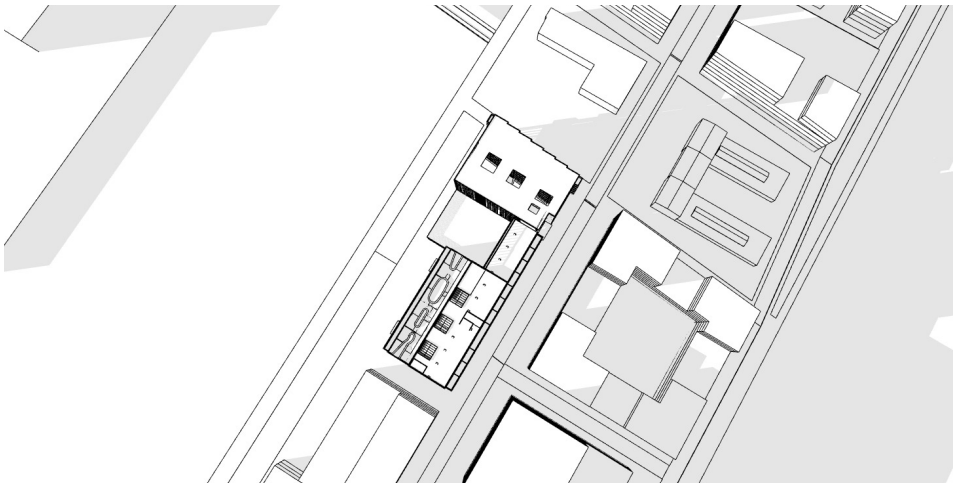
Sun study



March 22 9.00



March 22 13.00



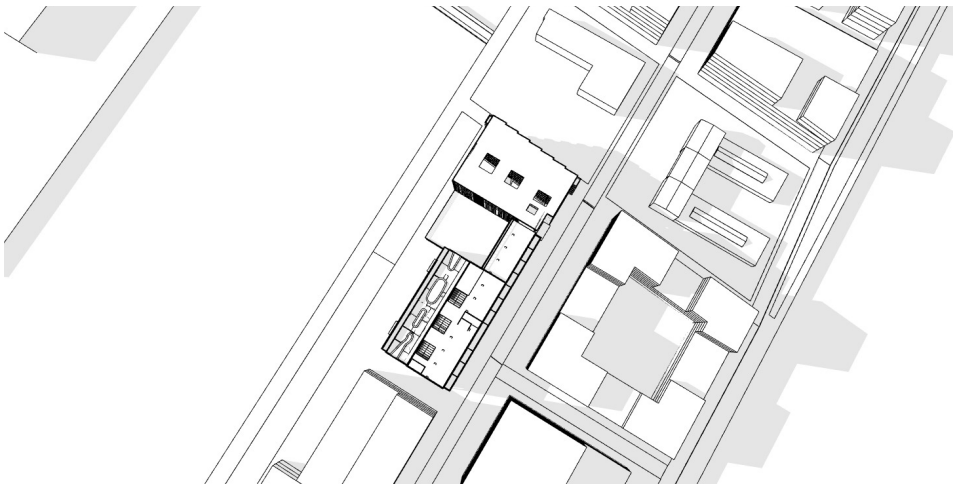
March 22 17.00



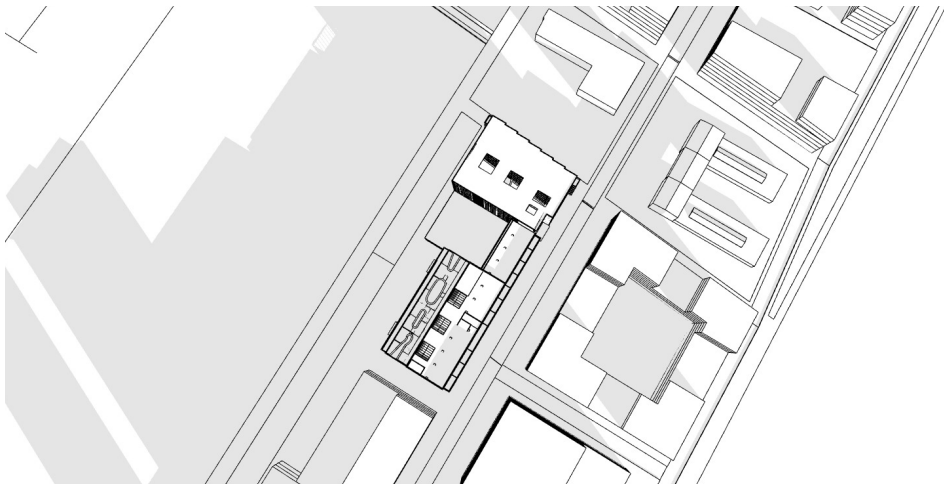
June 22 9.00



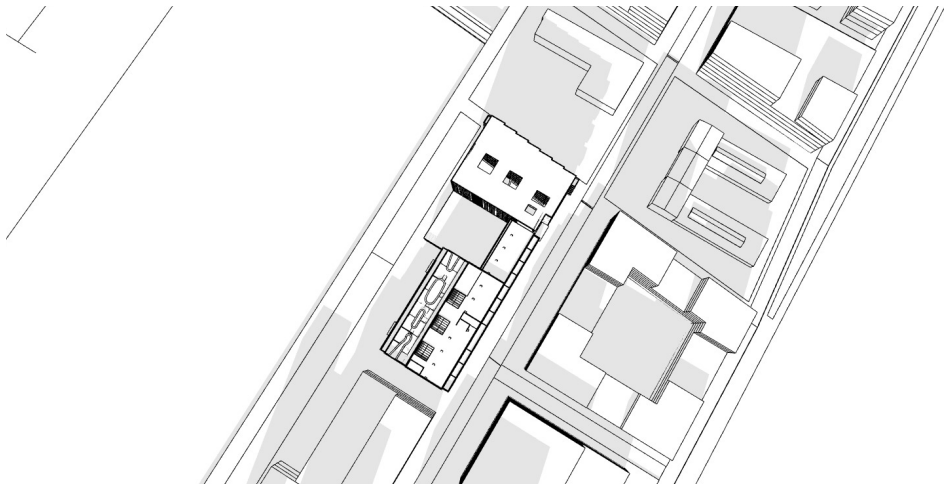
June 22 13.00



June 22 17.00



December 22 9.00



December 22 13.00

Urban




Urban plan : Buildings



- Existing buildings
- My building plot
- New building plots
- Surrounding buildings

Urban plan : Roads



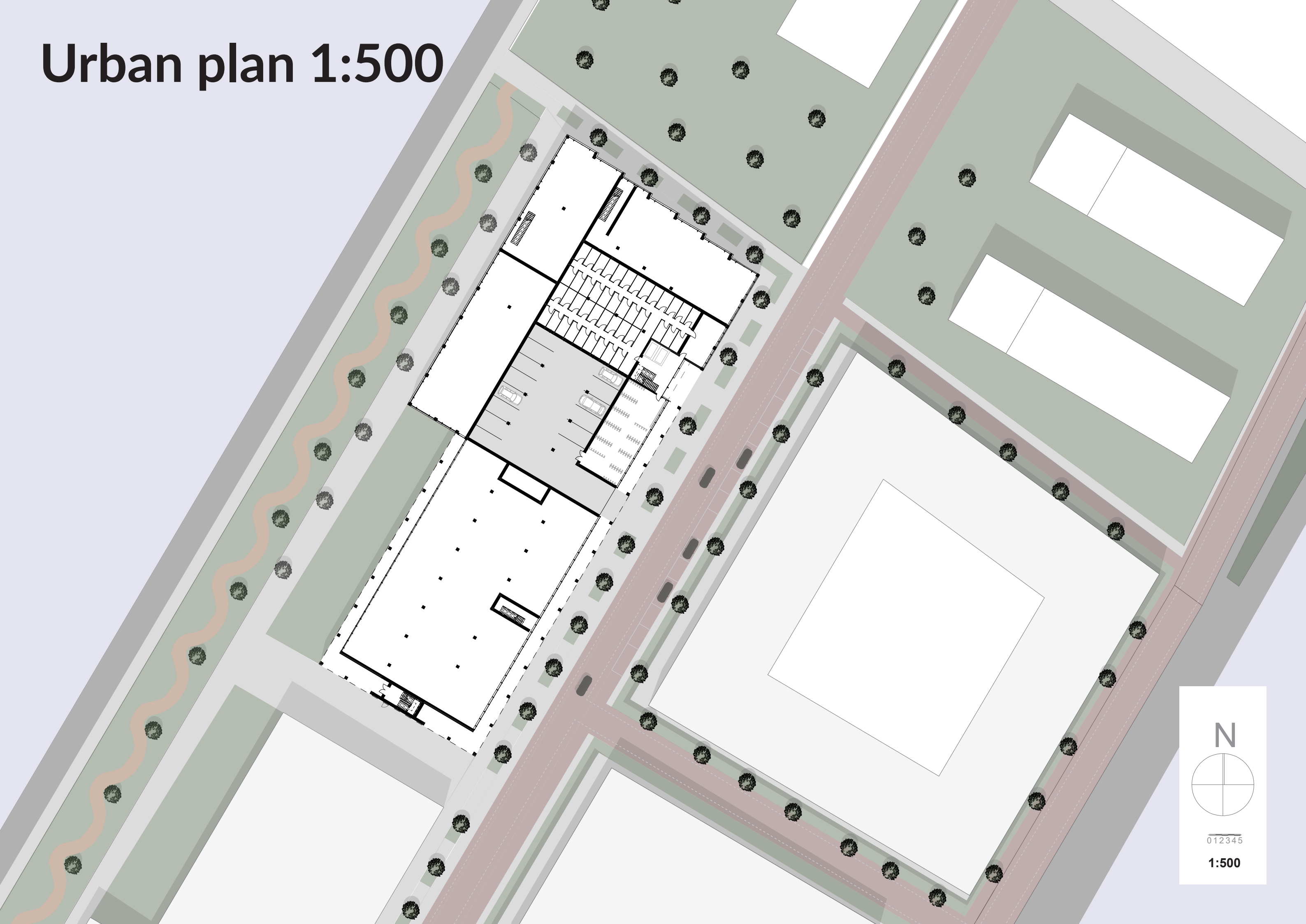
-  Car road
-  Bike and pedestrian road
-  Parking

Urban plan : Green



Green strip

Urban plan 1:500



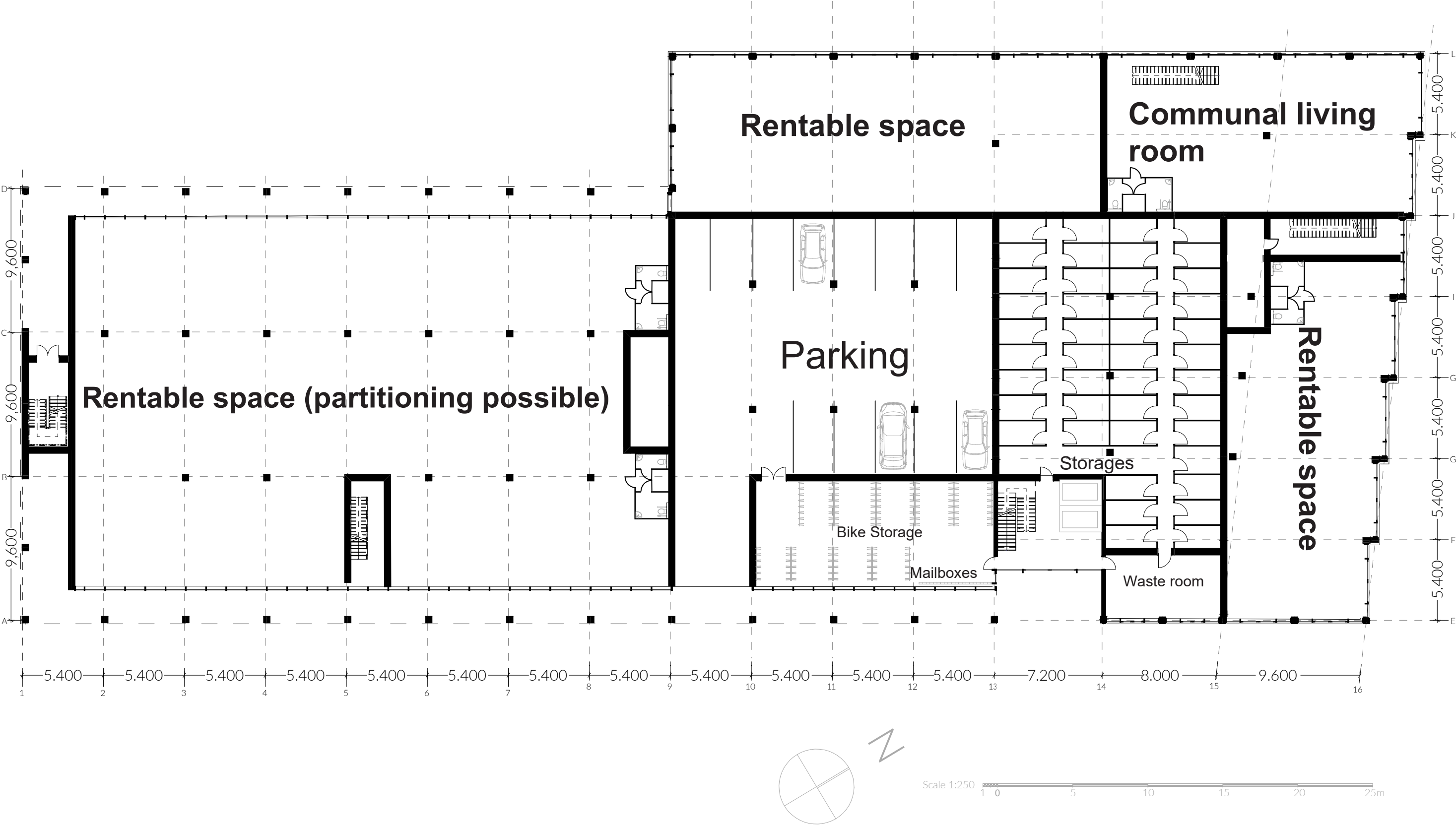
N

012345

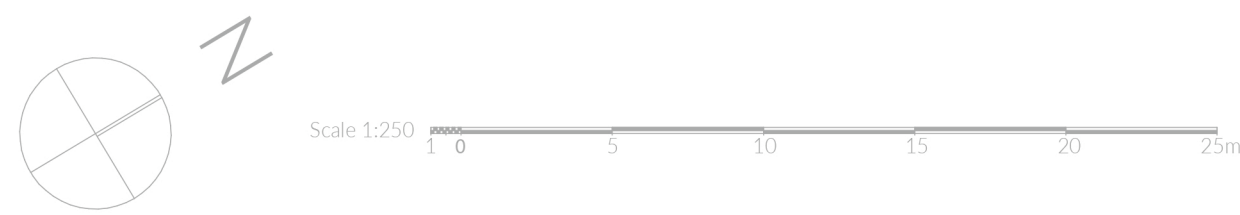
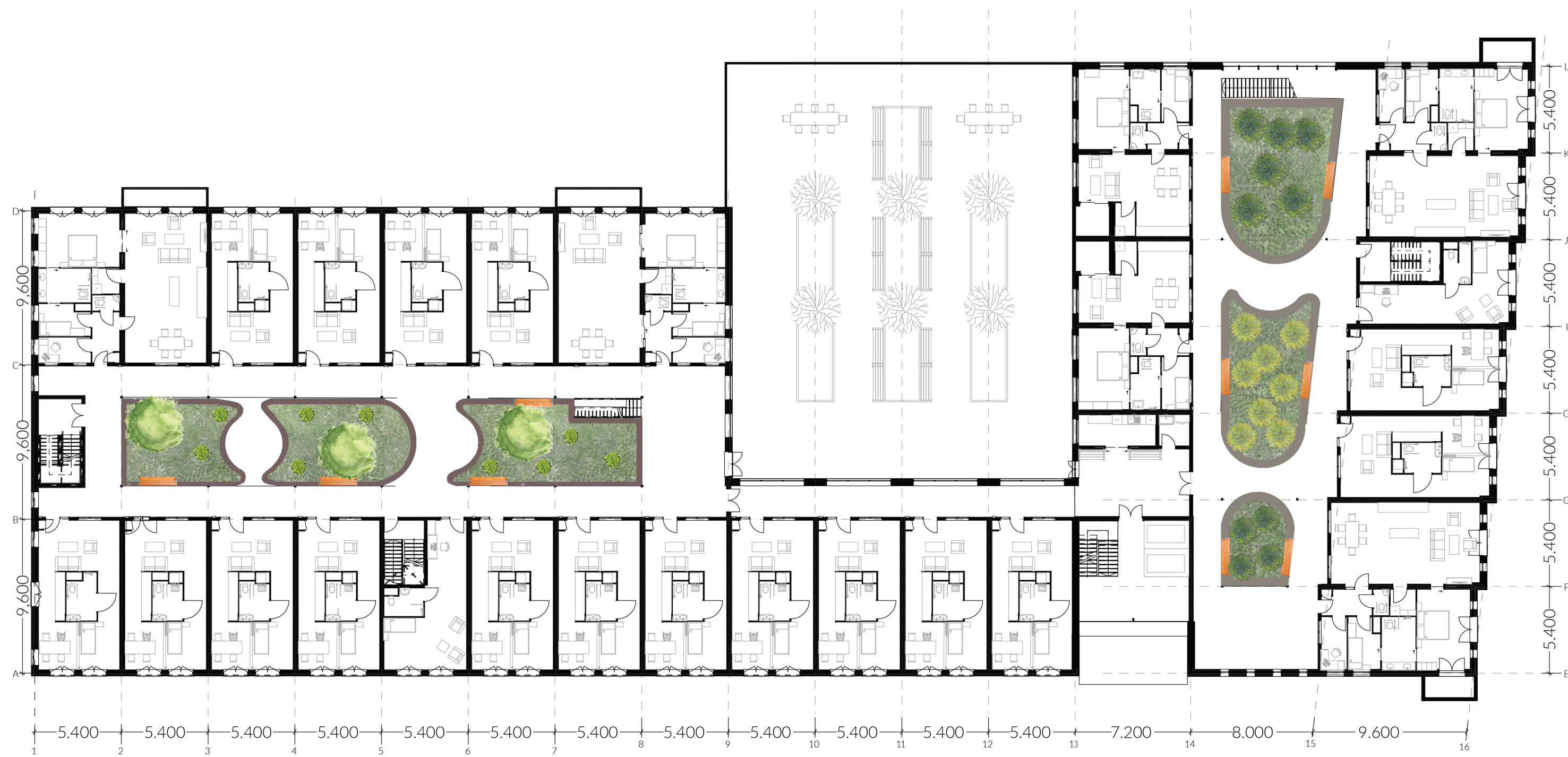
1:500

Floor Plans

Ground floor 1:250

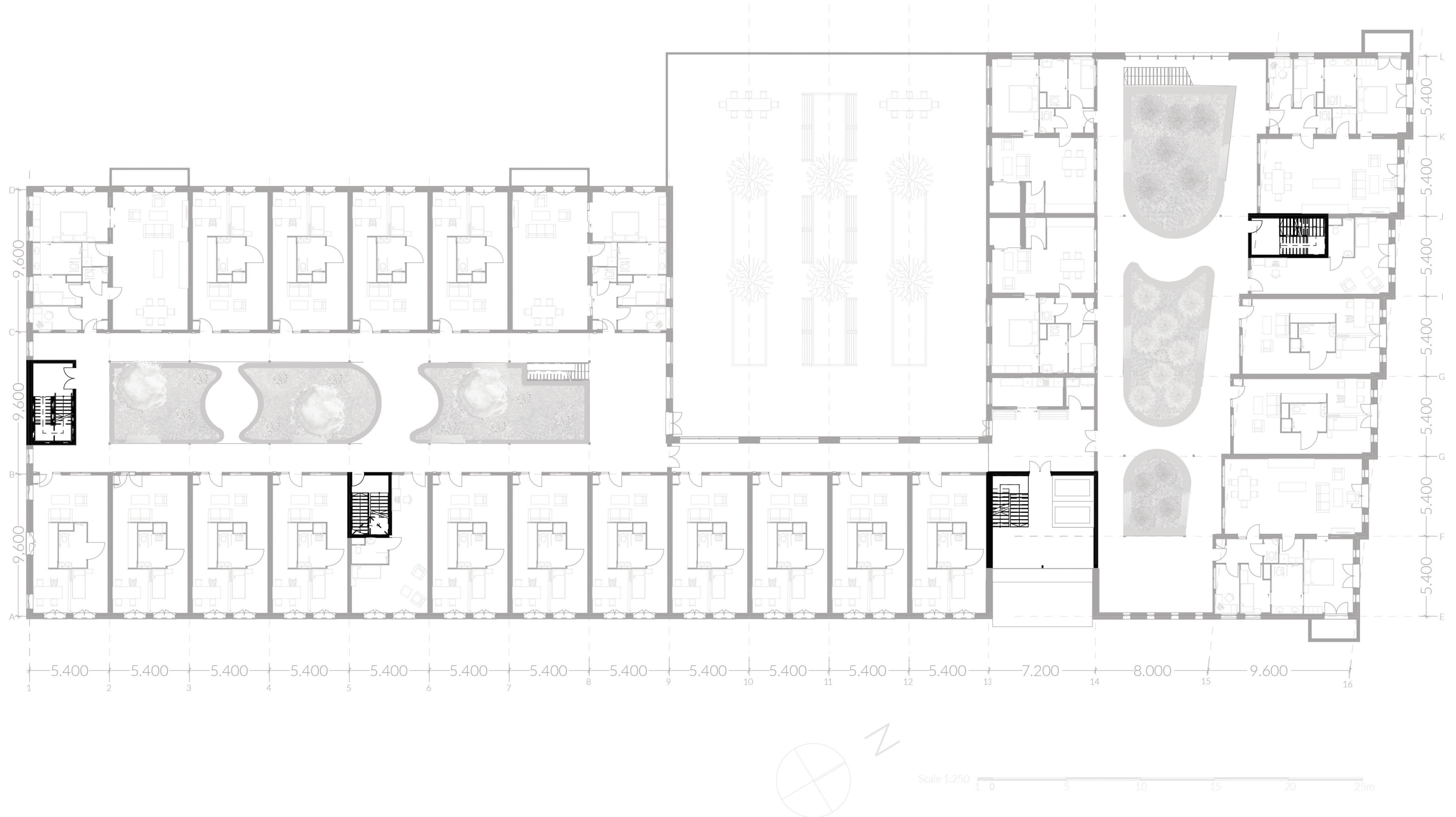


First floor 1:250



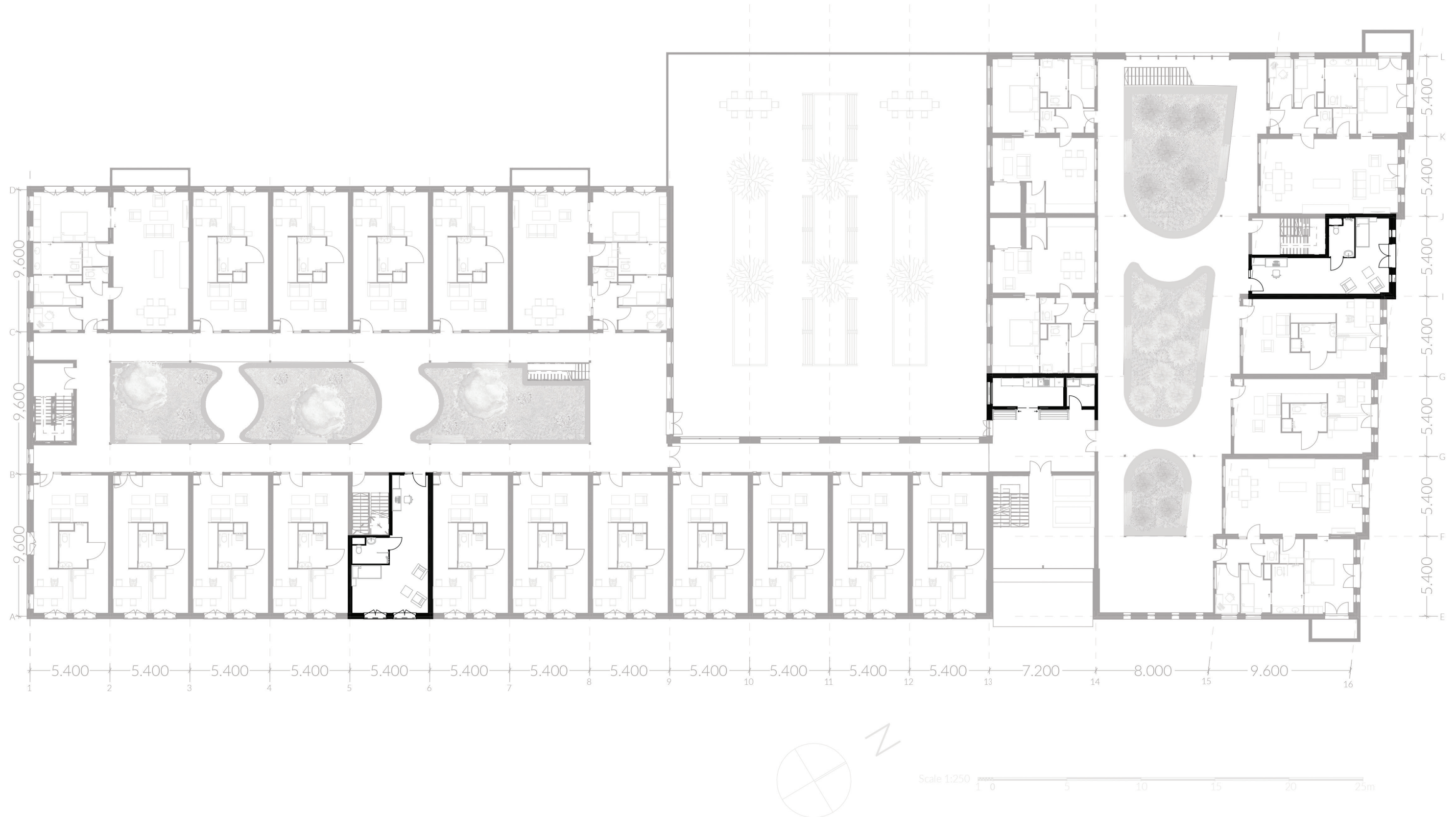
First floor 1:250

vertical circulation points

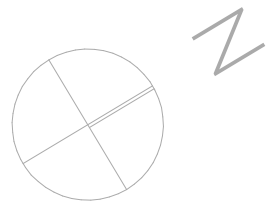
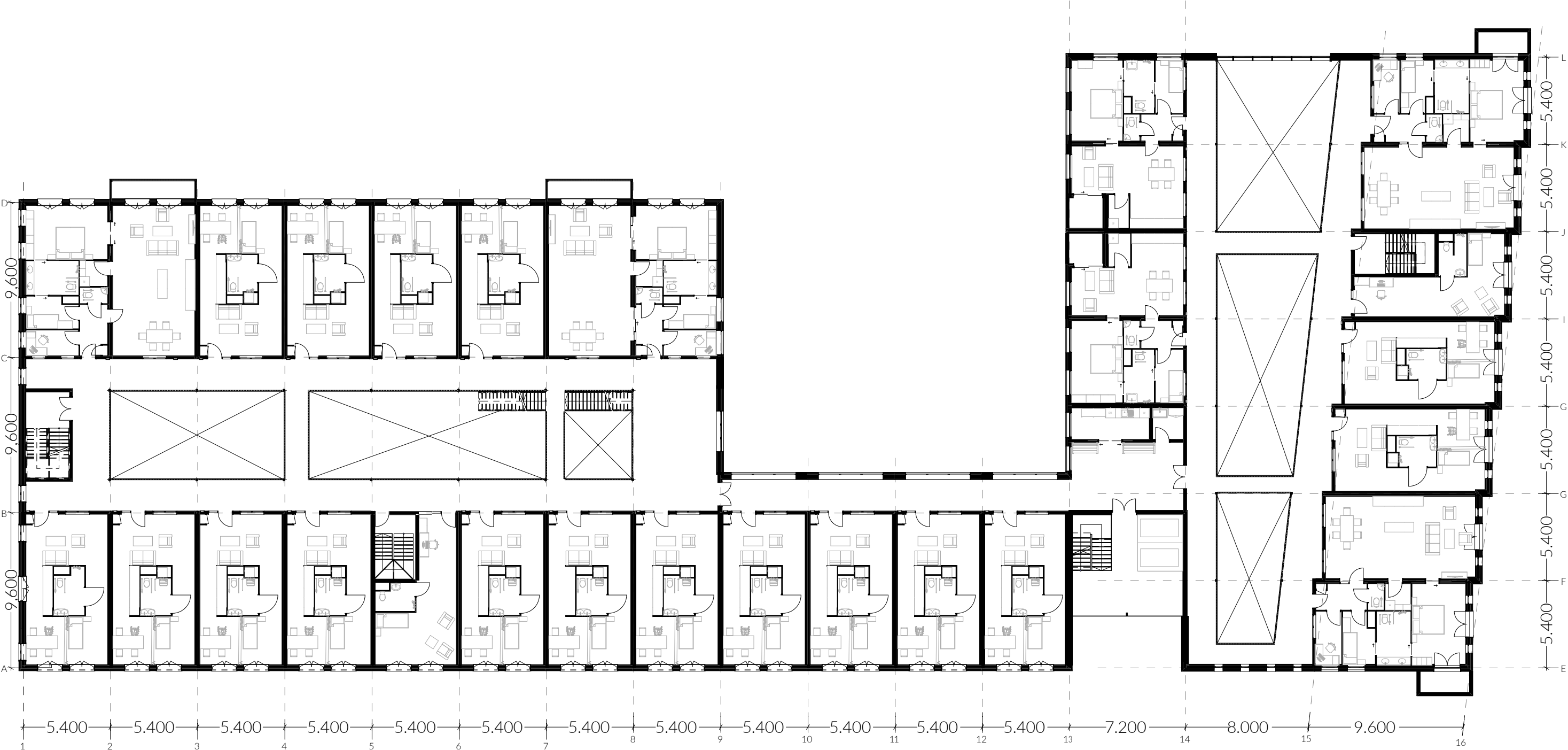


First floor 1:250

Additional functions

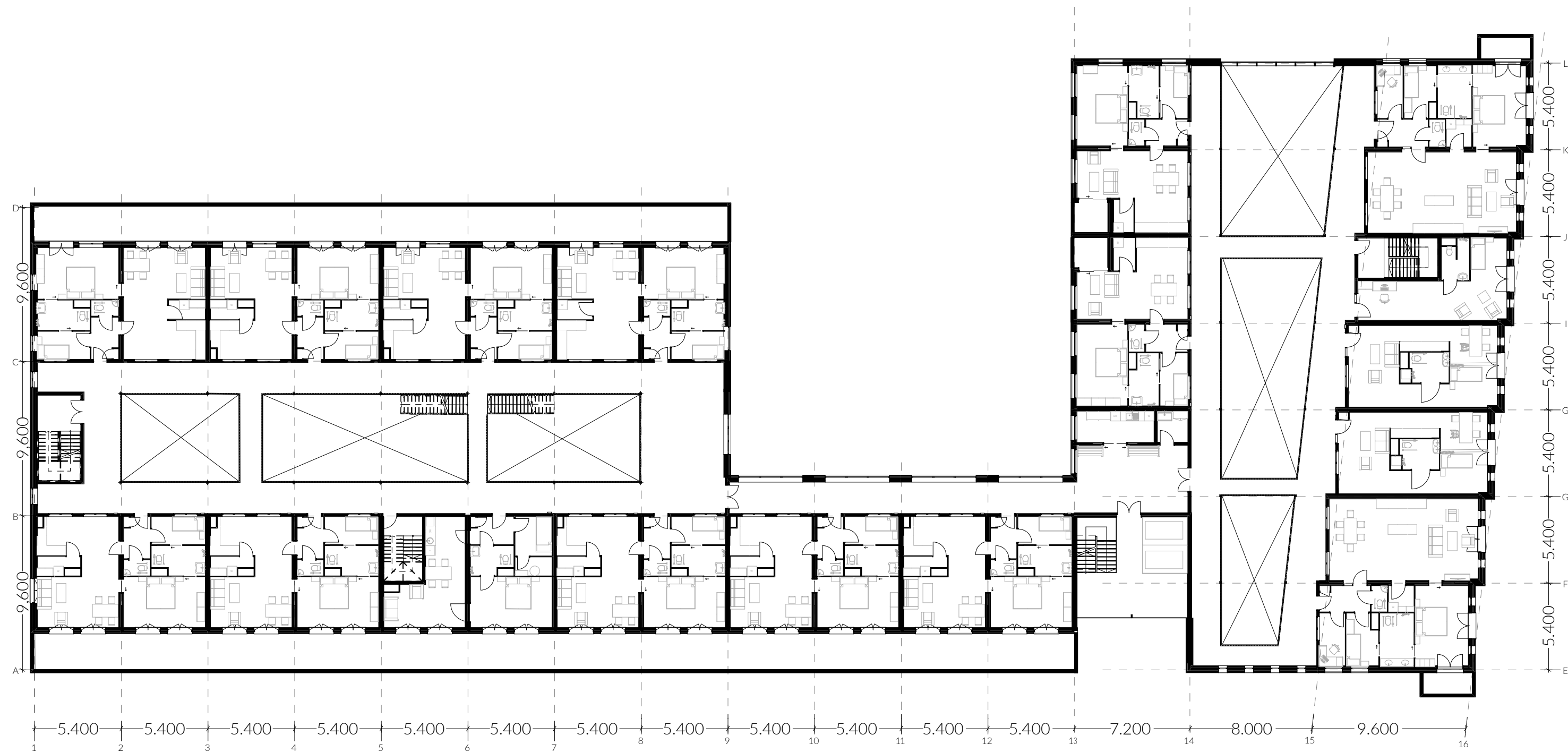


Second floor 1:250

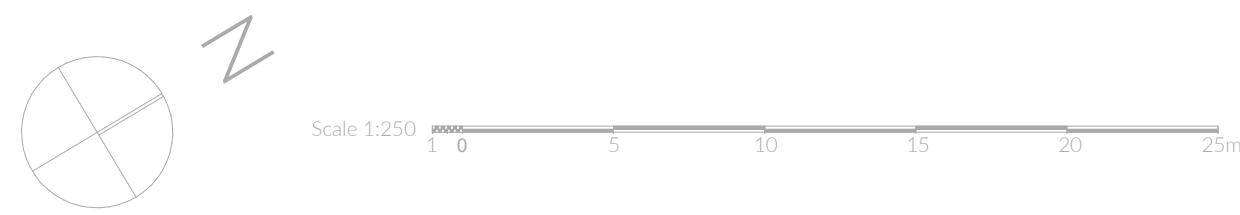
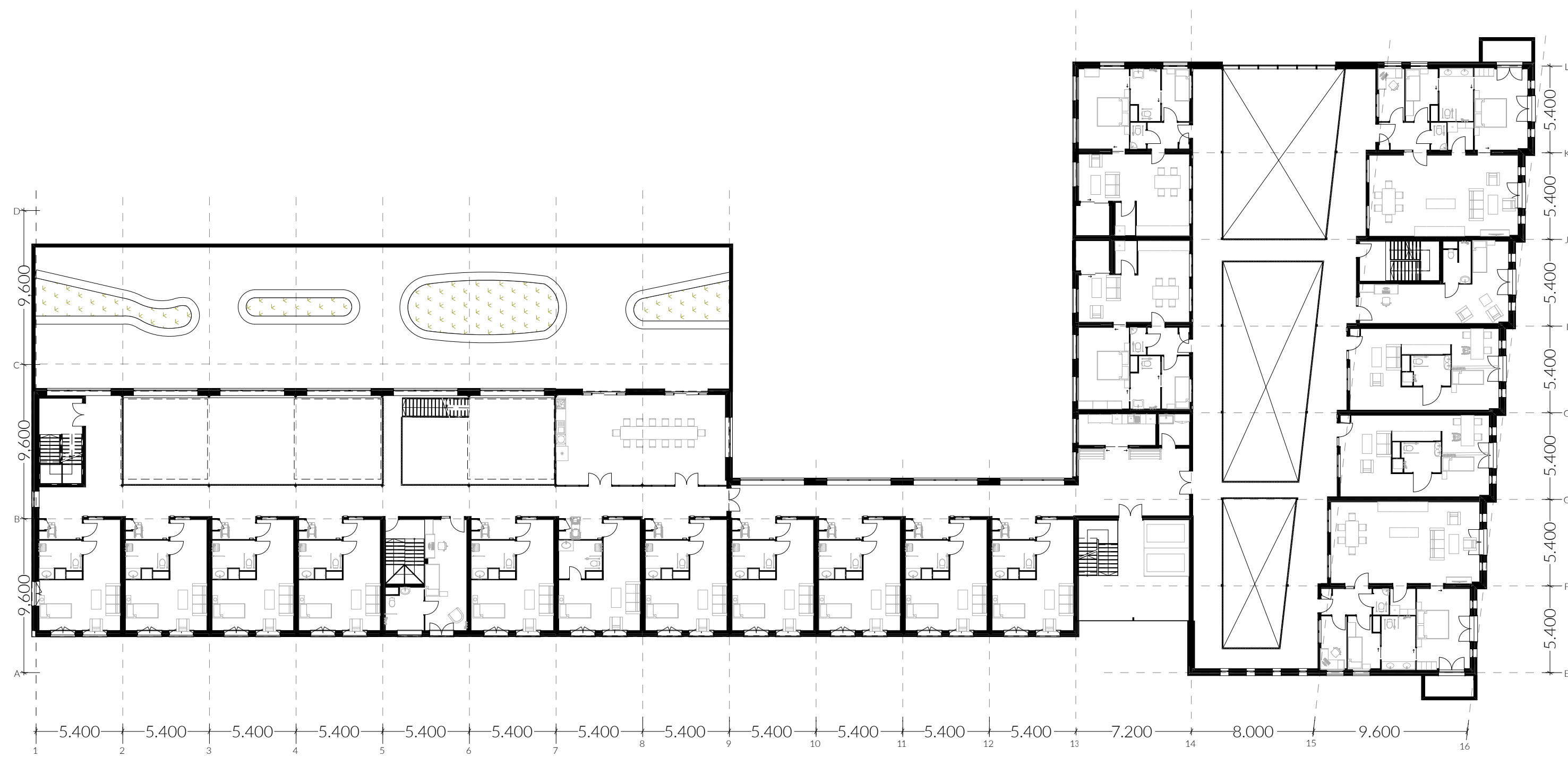


Scale 1:250 1 0 5 10 15 20 25m

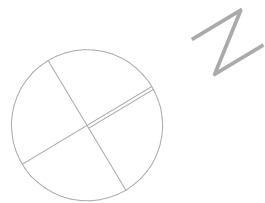
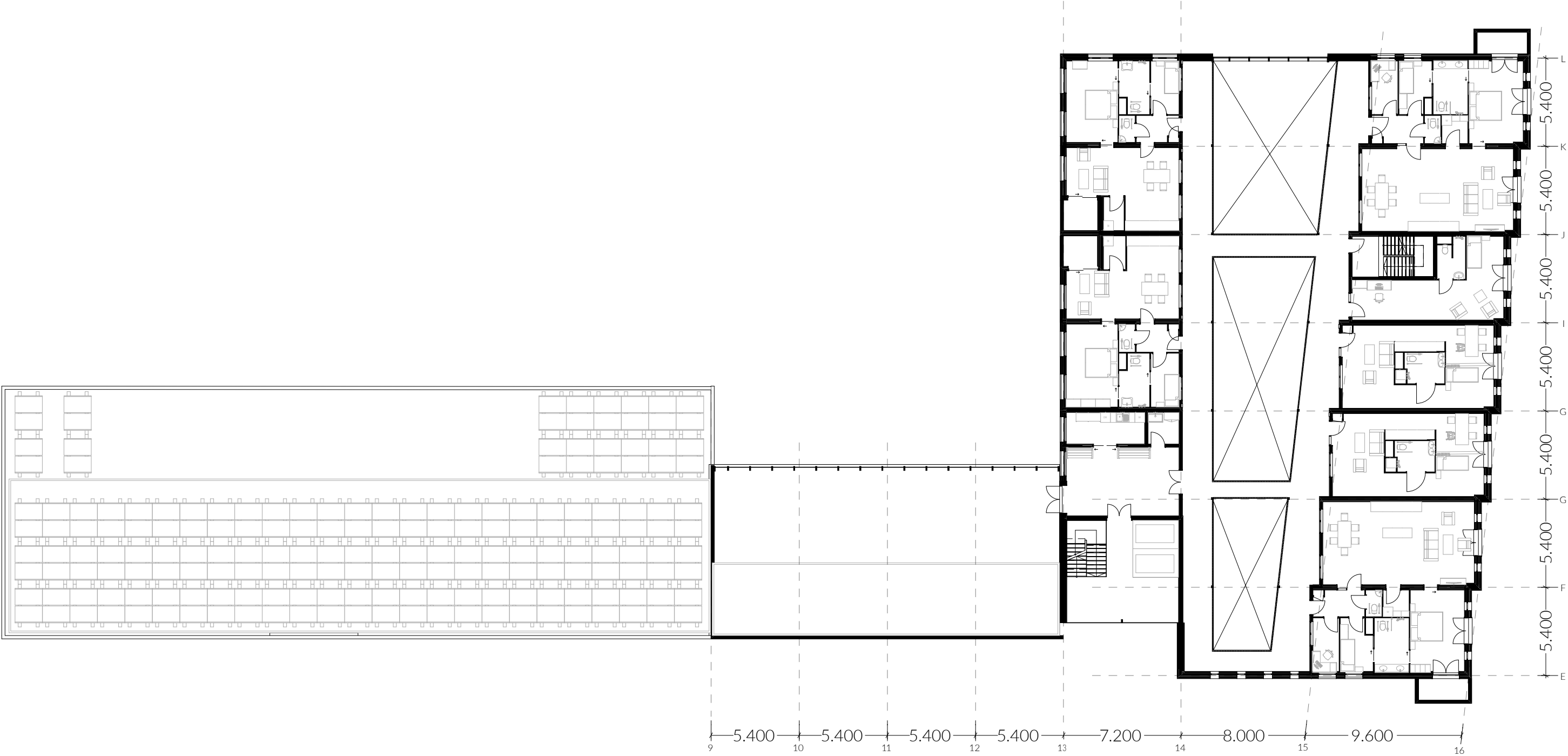
Third floor 1:250



Fourth floor 1:250

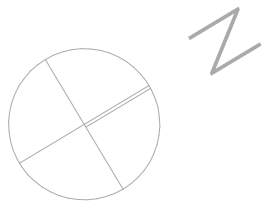
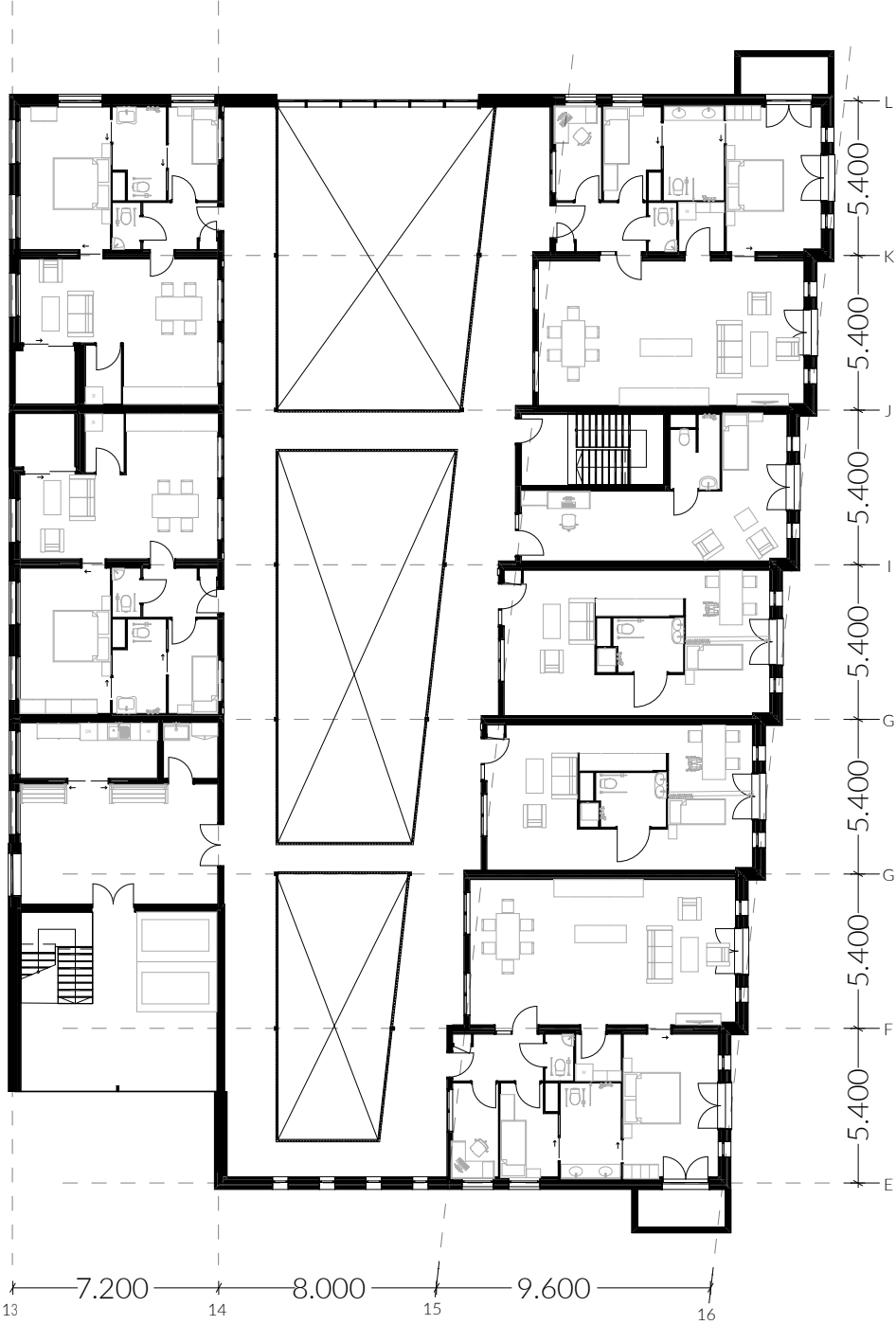


Fifth floor 1:250



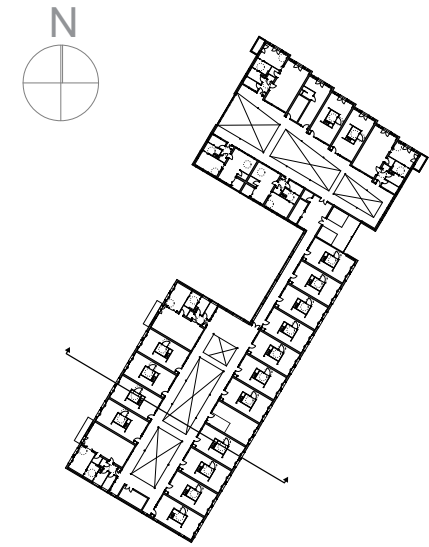
Scale 1:250 1 0 5 10 15 20 25m

Sixth floor 1:250



Scale 1:250 1 0 5 10 15 20 25m

Sections



Section B 1:200

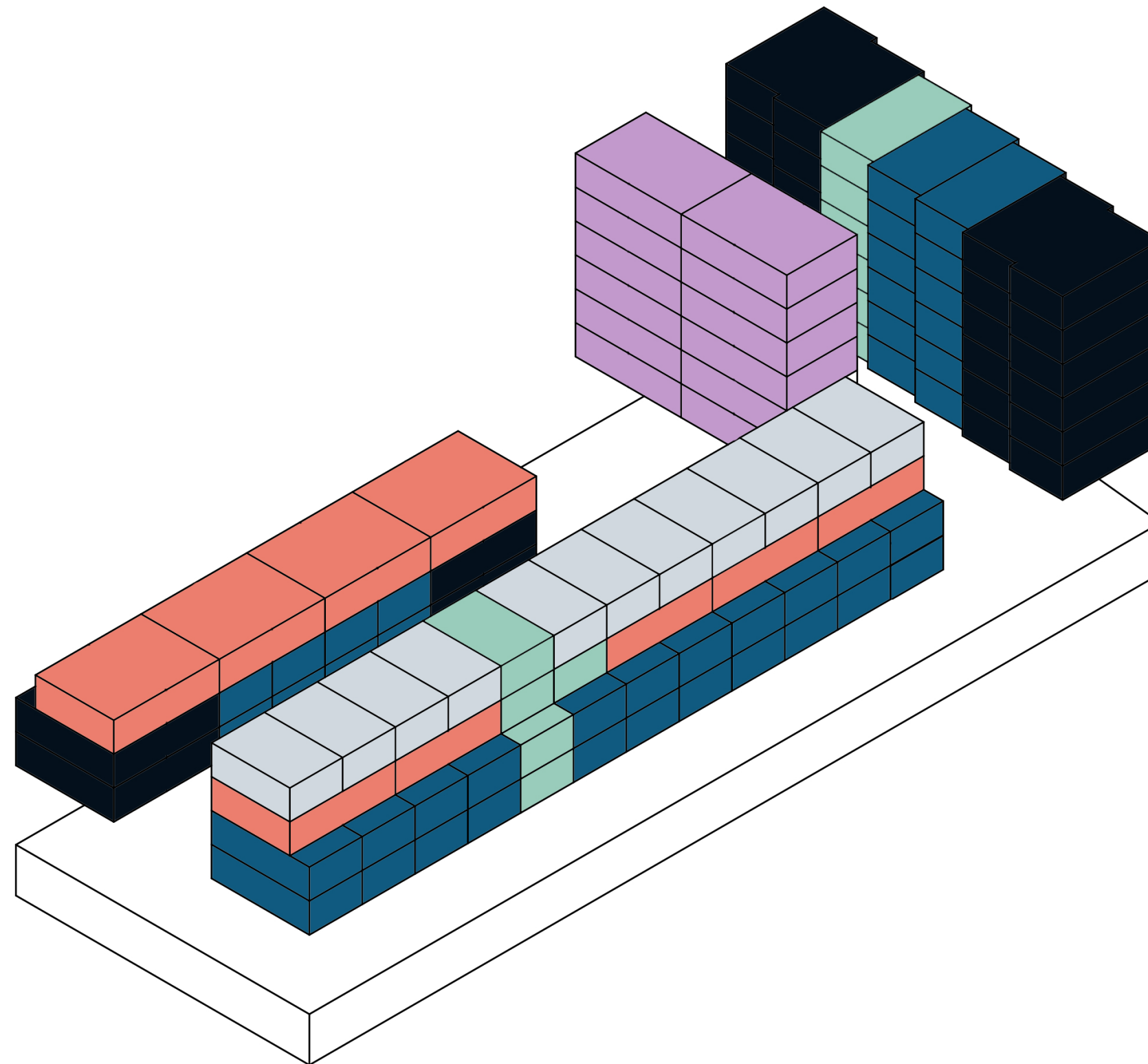
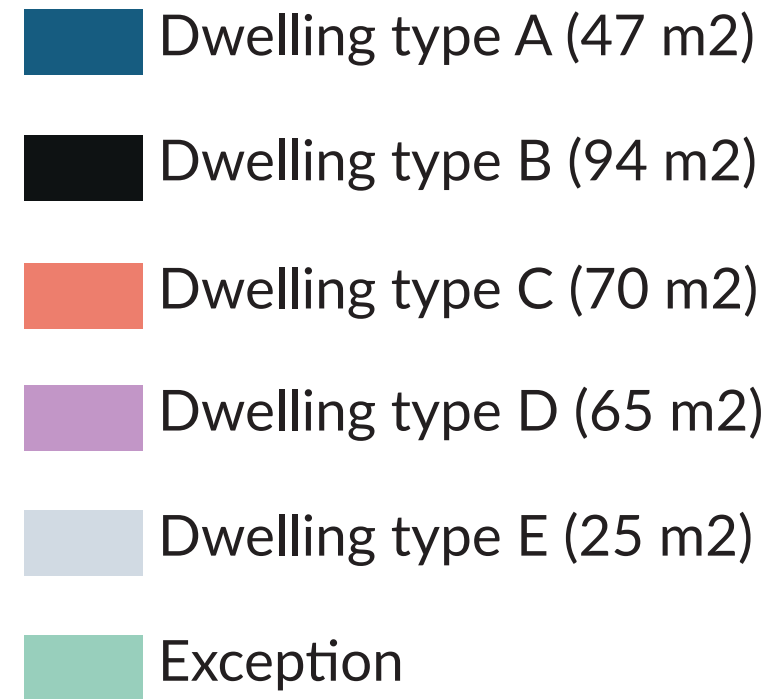


Section C 1:200

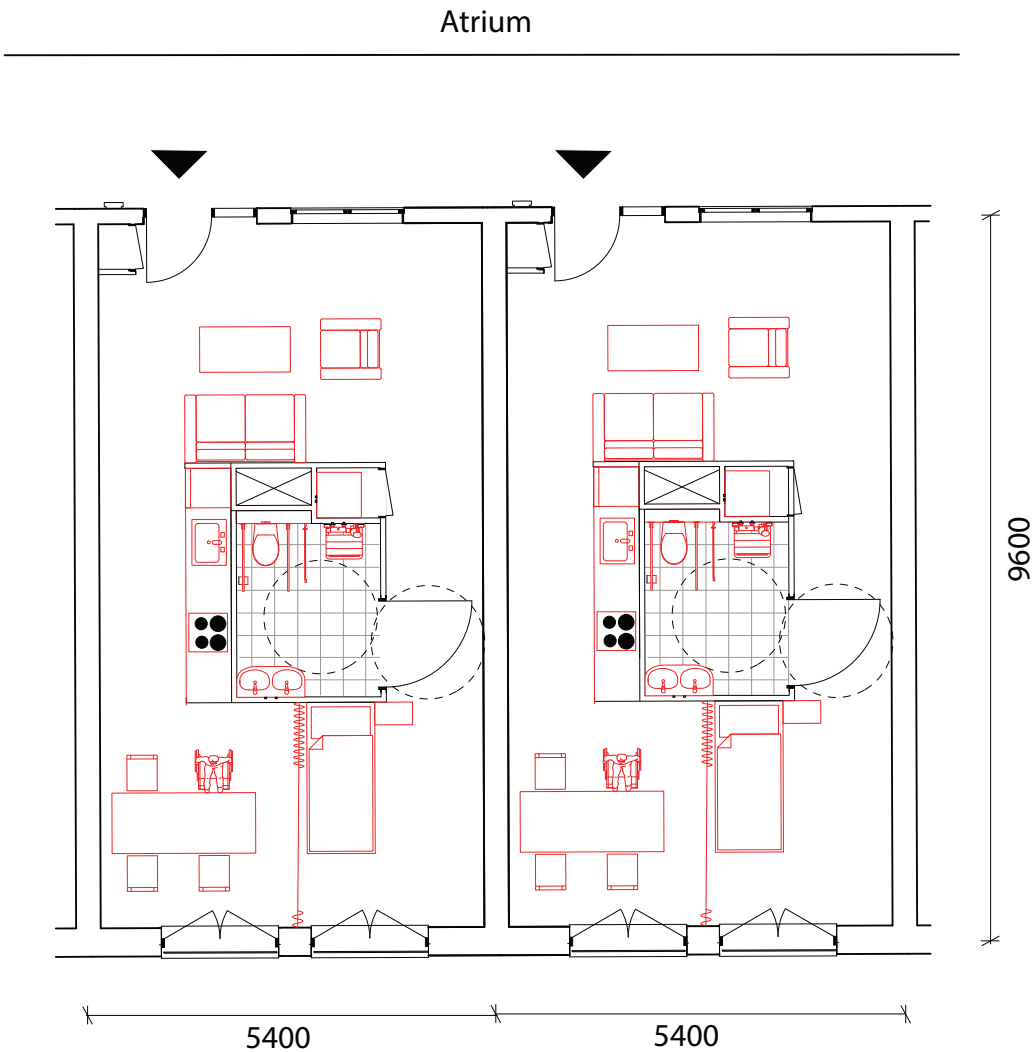


Dwellings

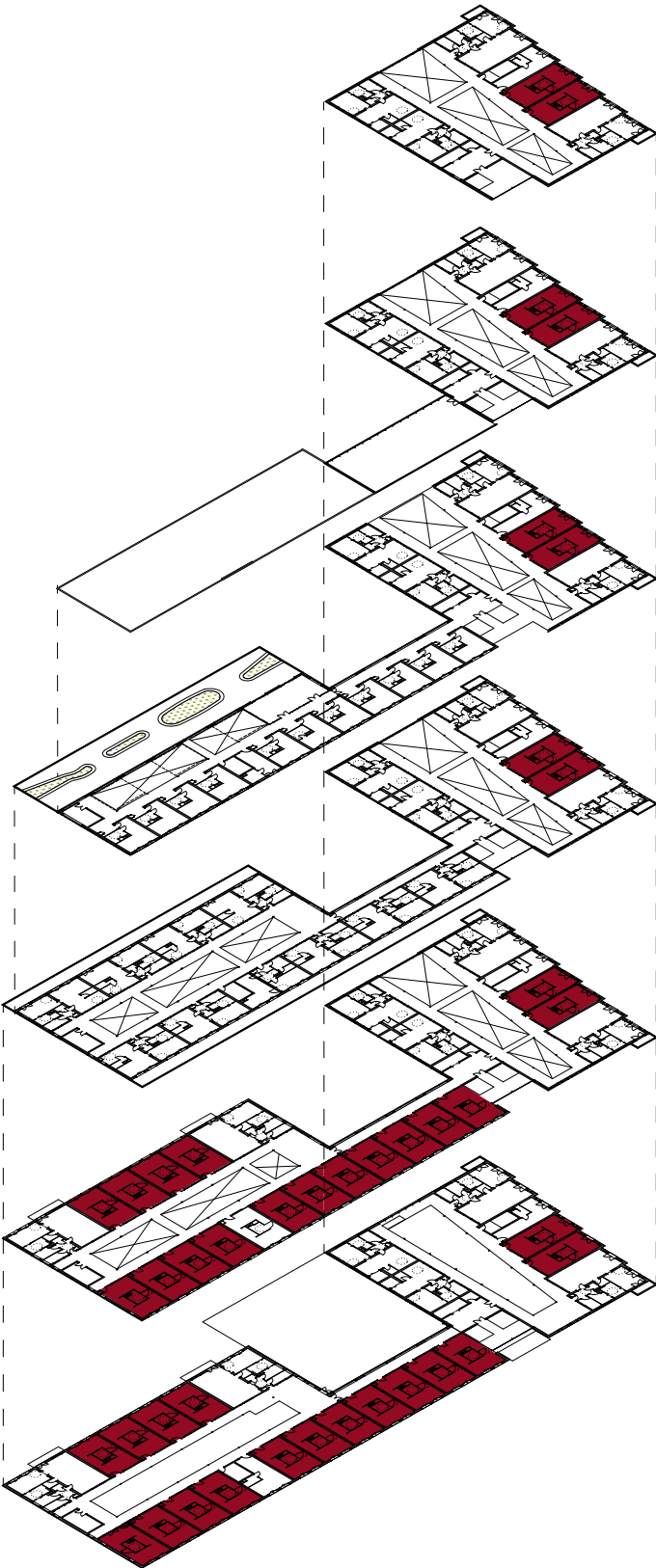
Dwelling location



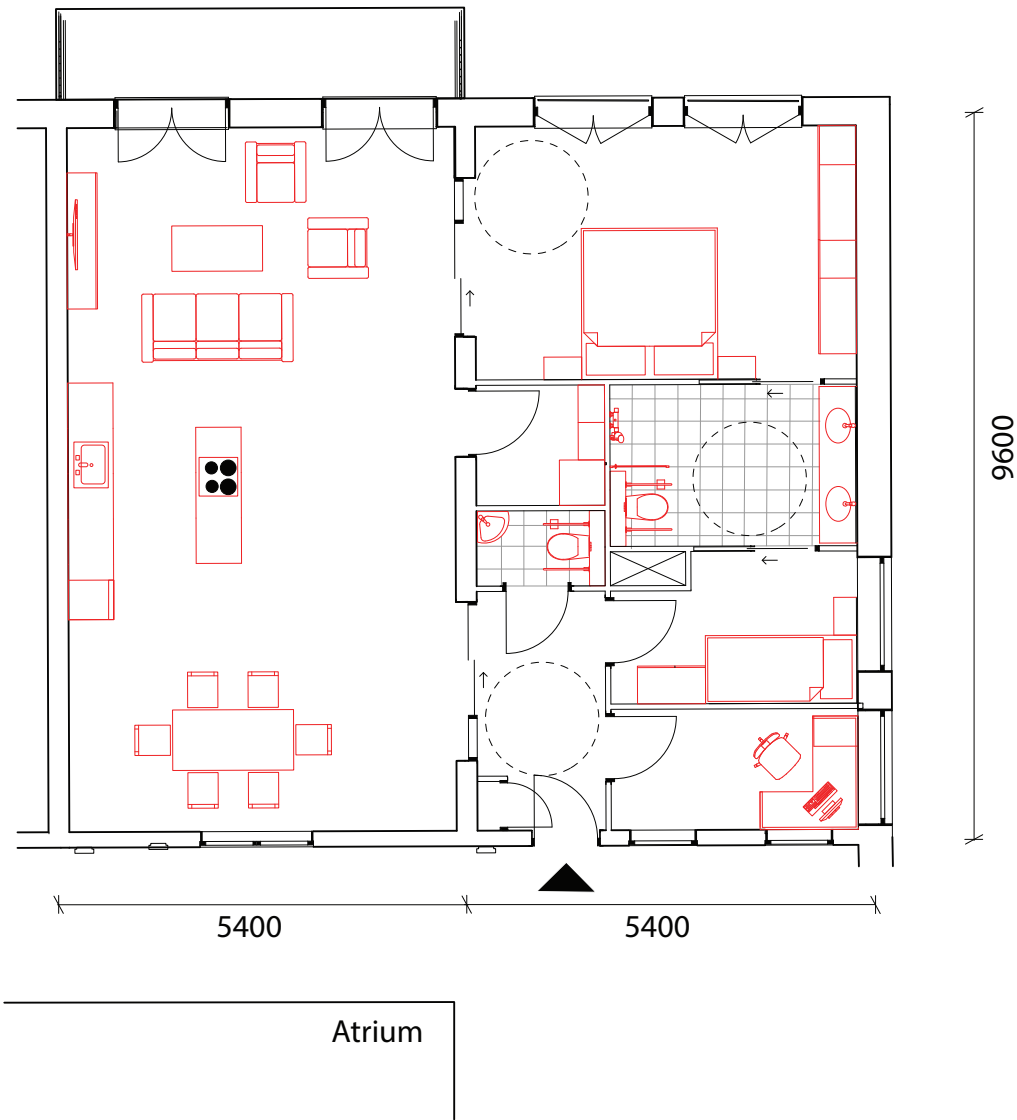
Dwelling A 1:100



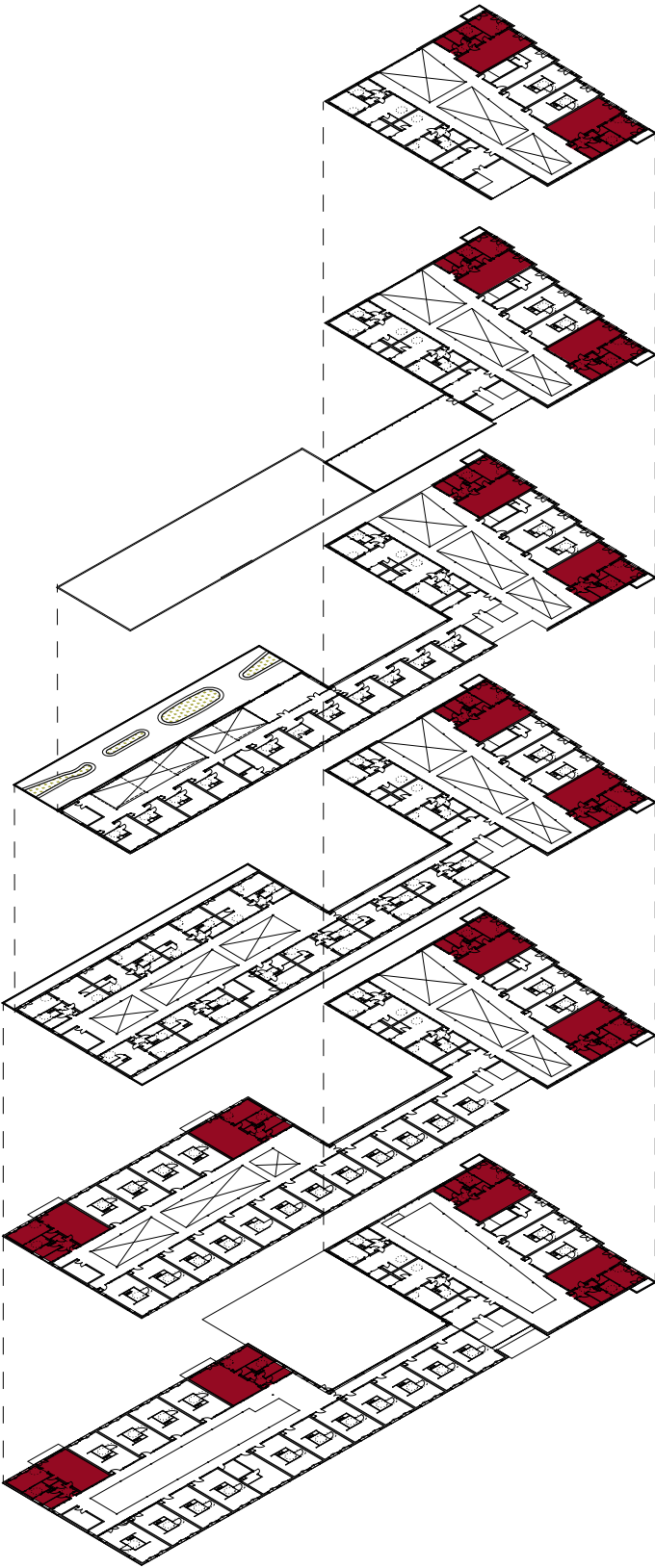
Dwellings E (47 m2) are marked in Red
Number of dwellings: 42



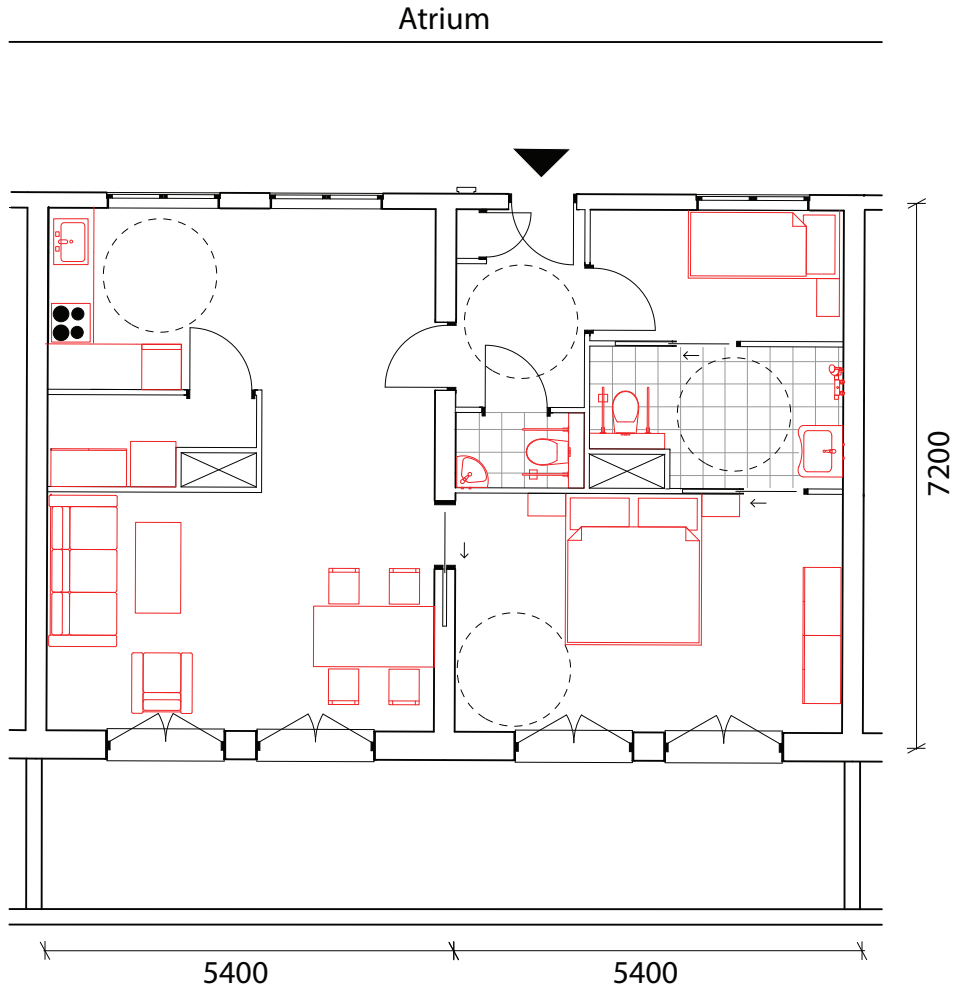
Dwelling B 1:100



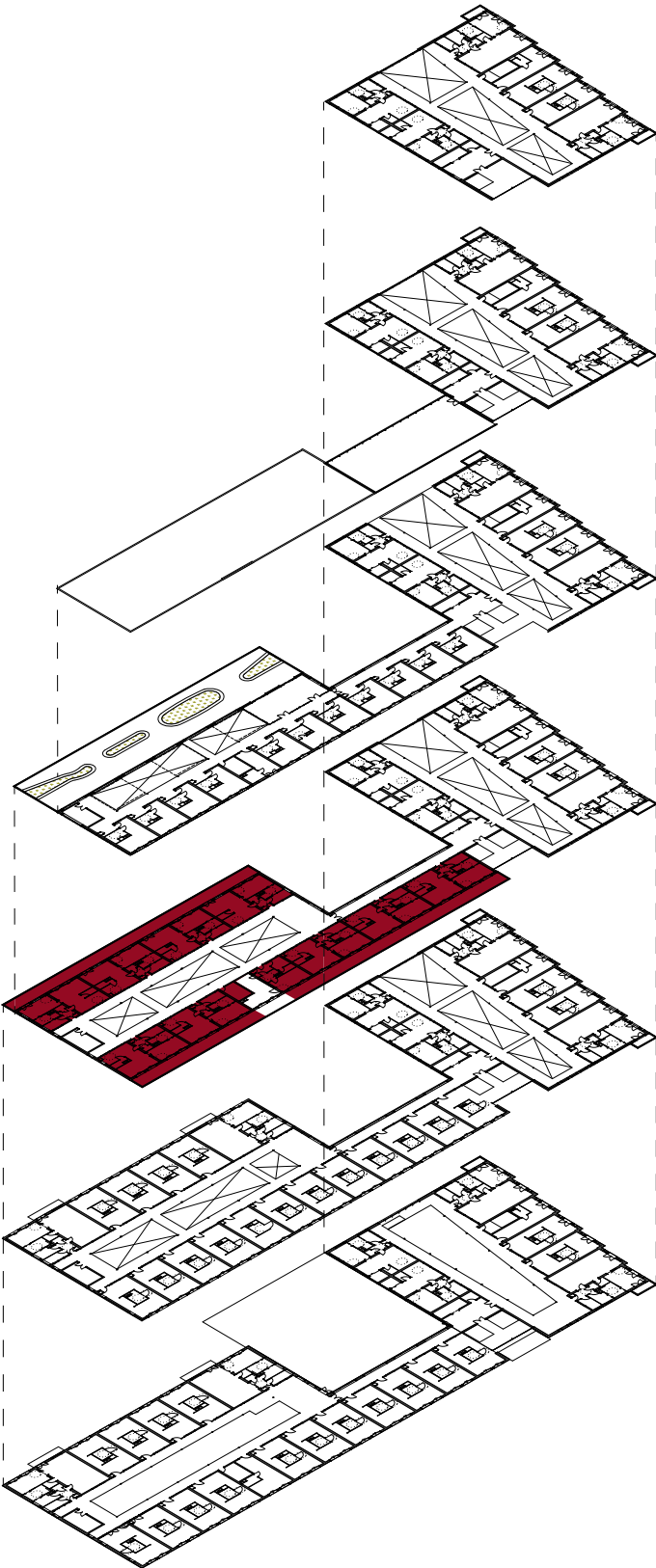
Dwellings B (94 m2) are marked in Red
Number of dwellings: 16



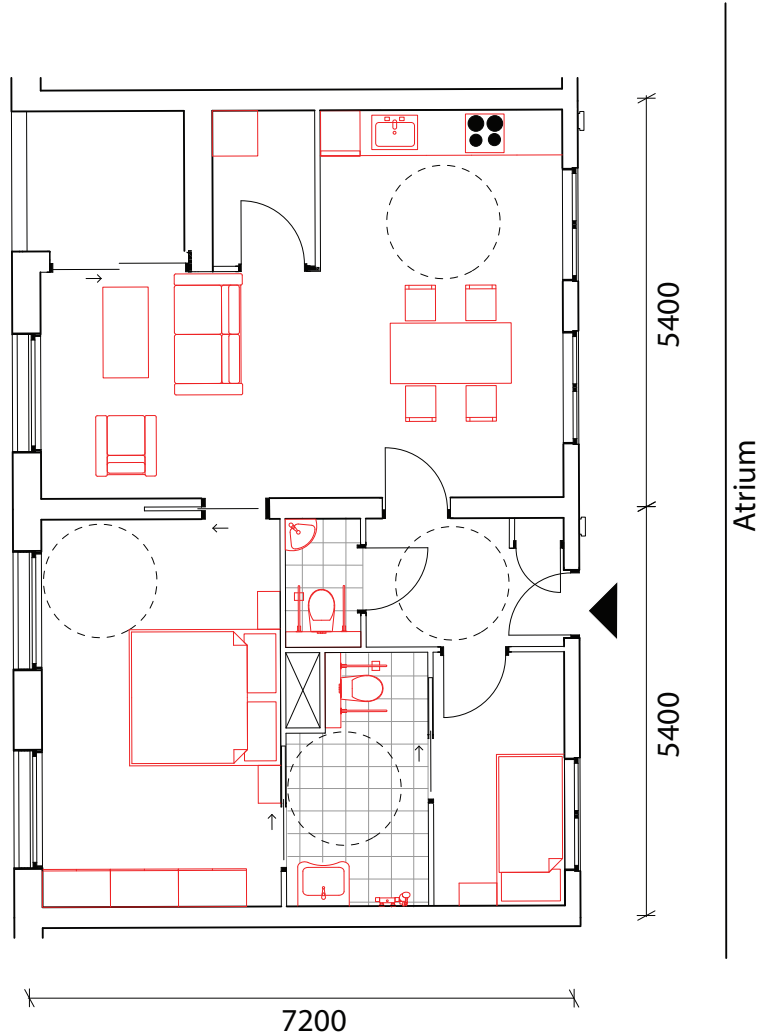
Dwelling C 1:100



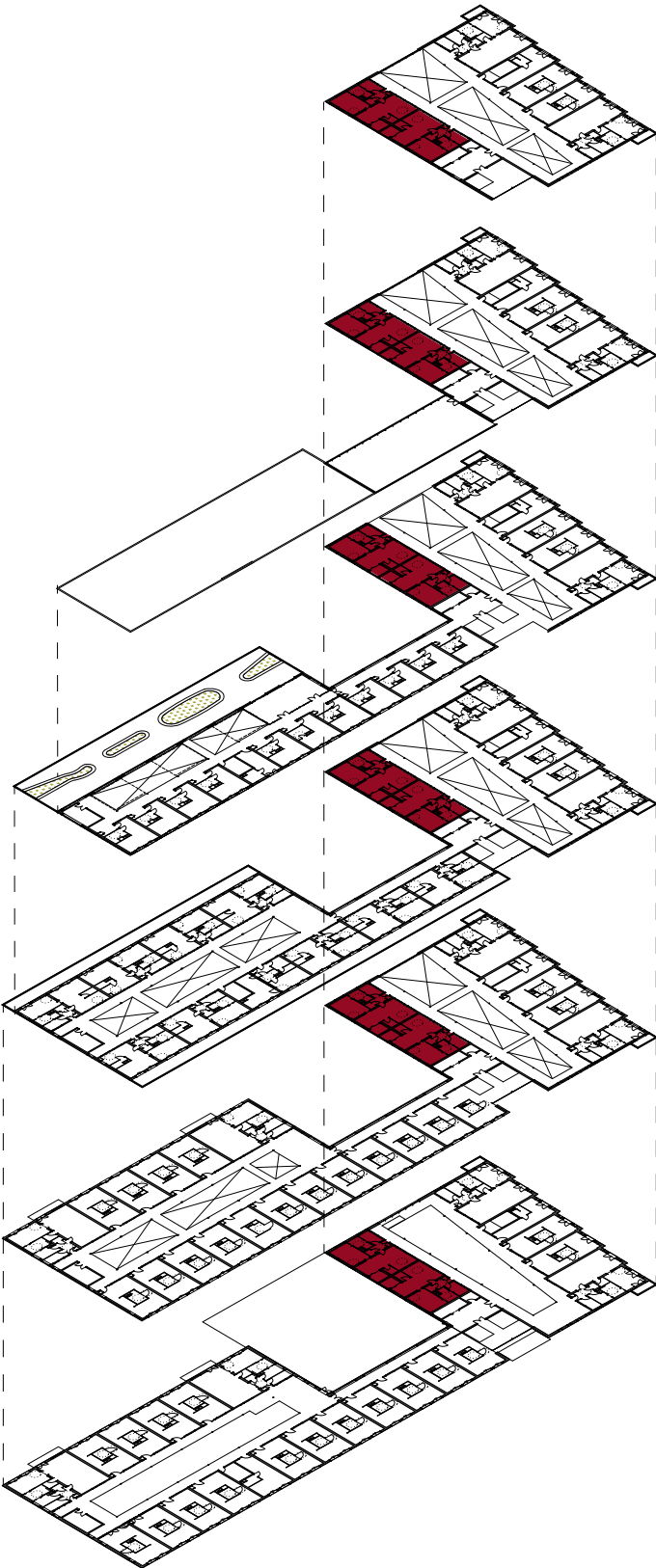
Dwellings C (70 m²) are marked in Red
Number of dwellings: 12



Dwelling D 1:100



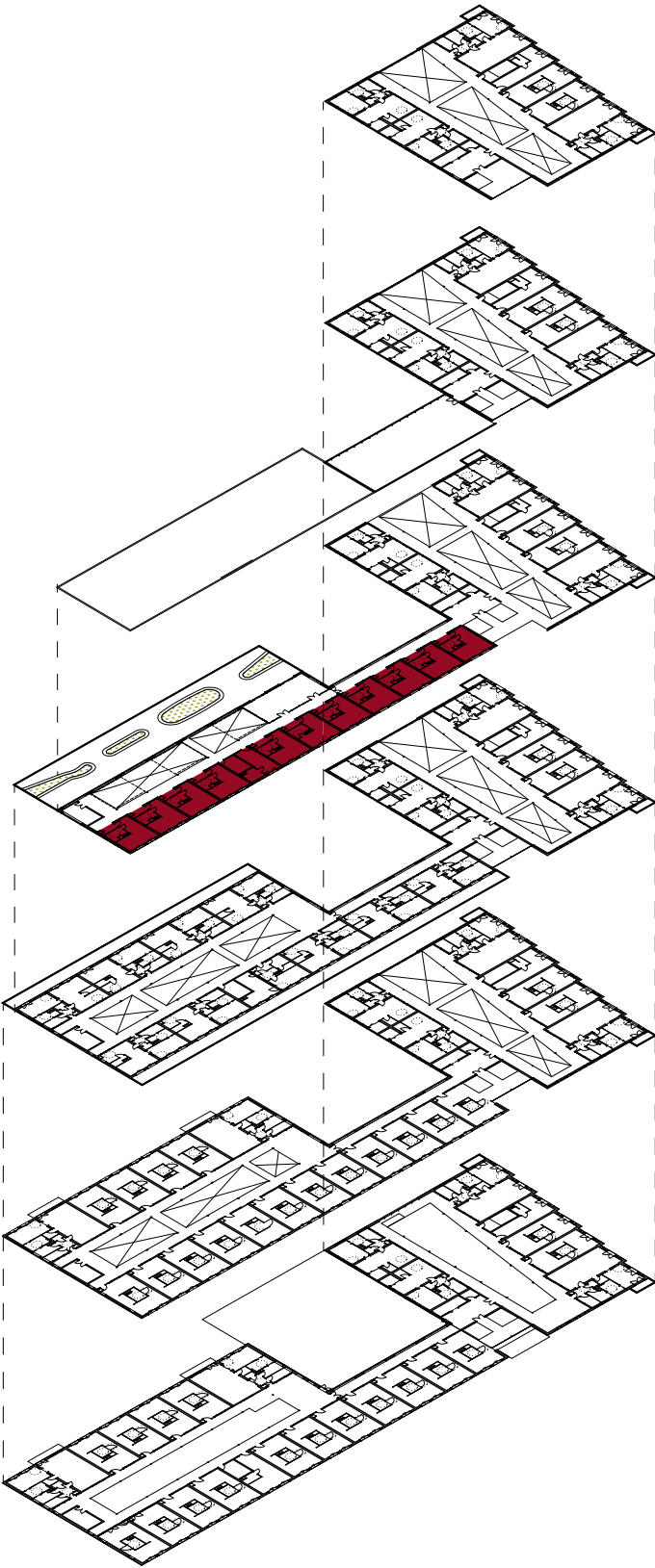
Dwellings D (65 m²) are marked in Red Number of dwellings: 12



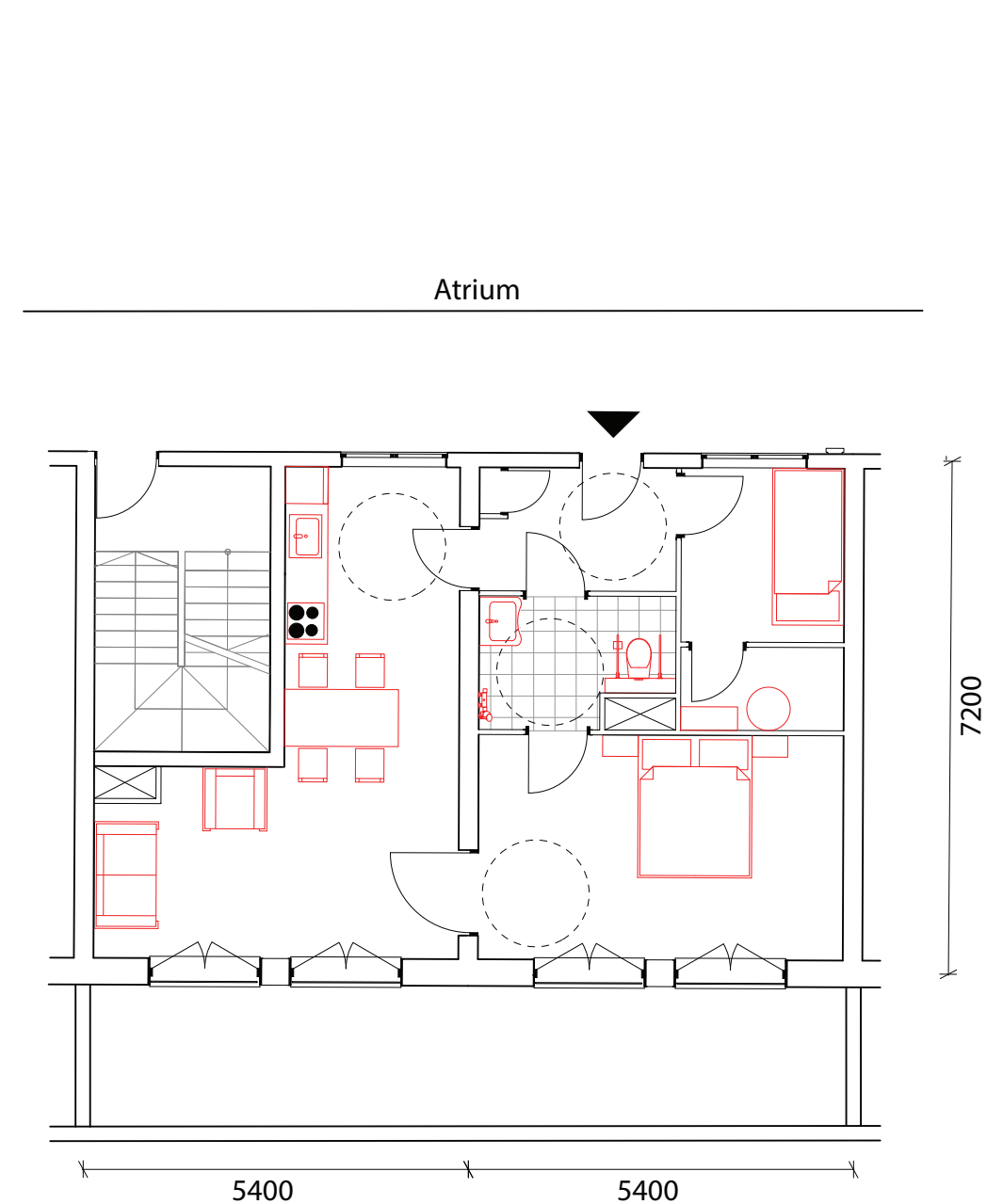
Dwelling E 1:100



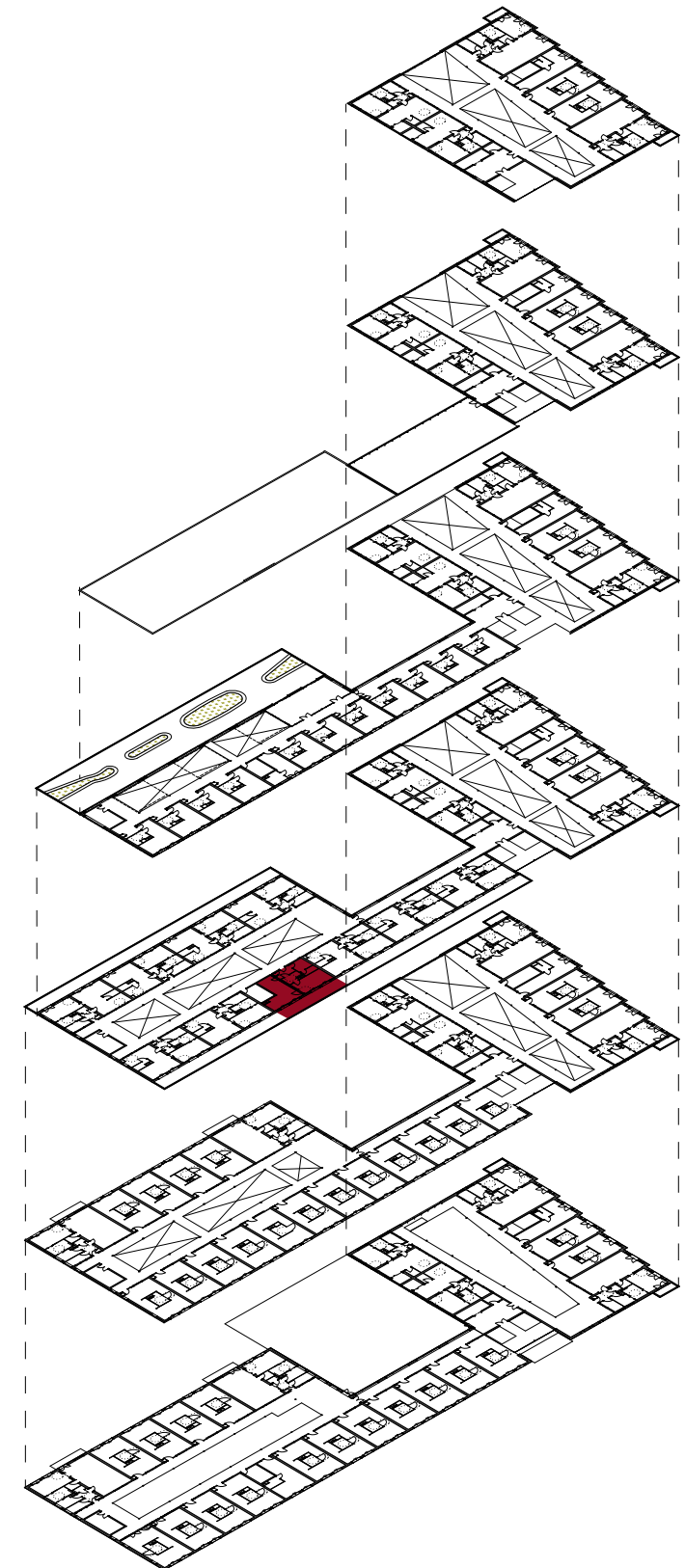
Dwellings E (25 m²) are marked in Red
Number of dwellings: 11



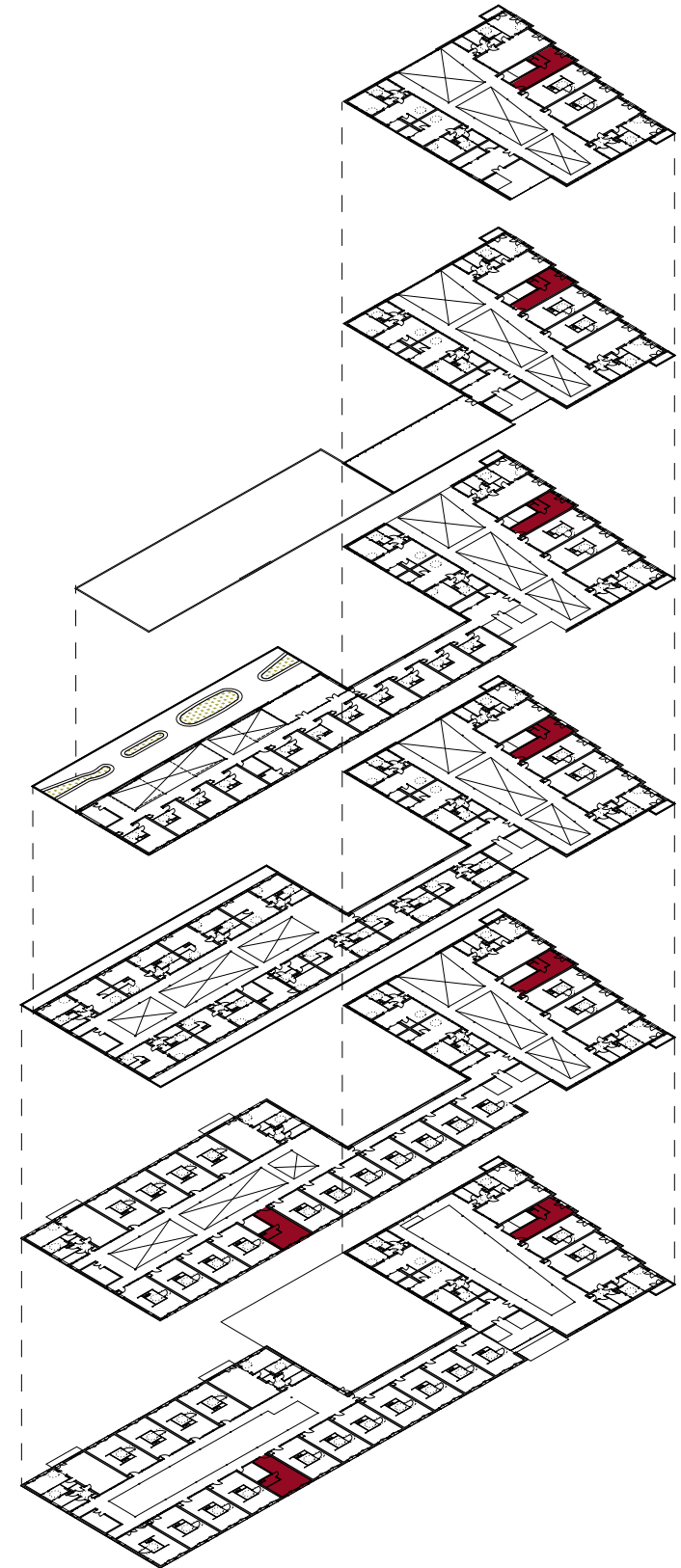
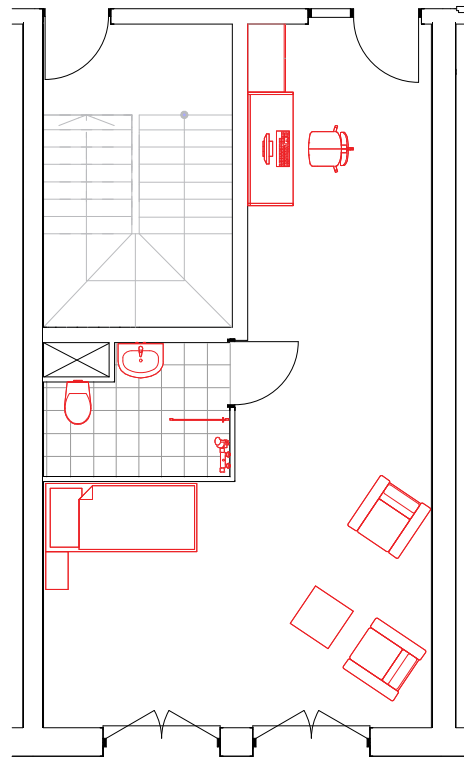
Dwelling around staircase floor plan 1:100



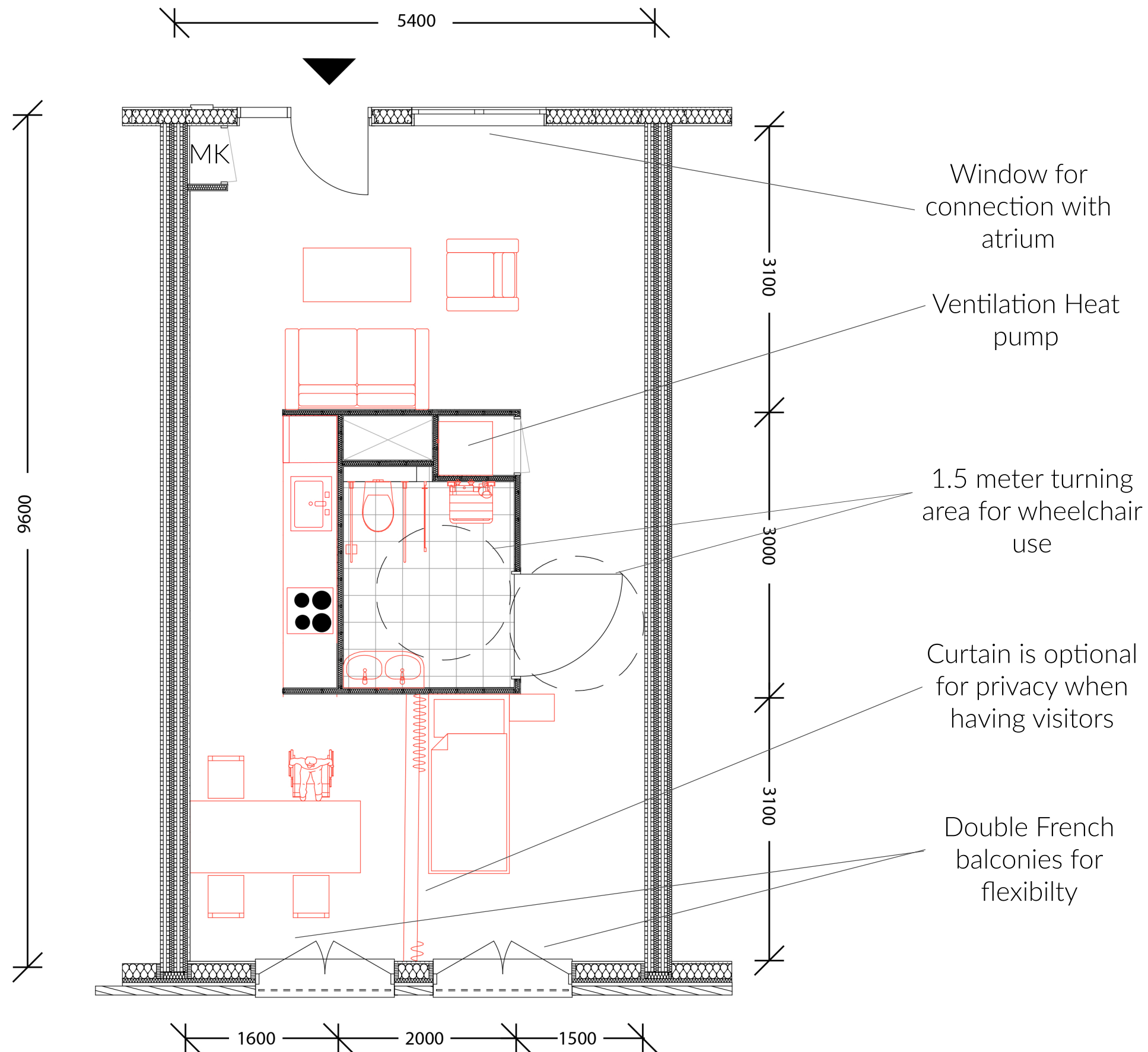
The Medium dwelling around a staircase (60 m²) is marked in Red
Number of dwellings: 1



Dwelling around staircase floor plan 1:100



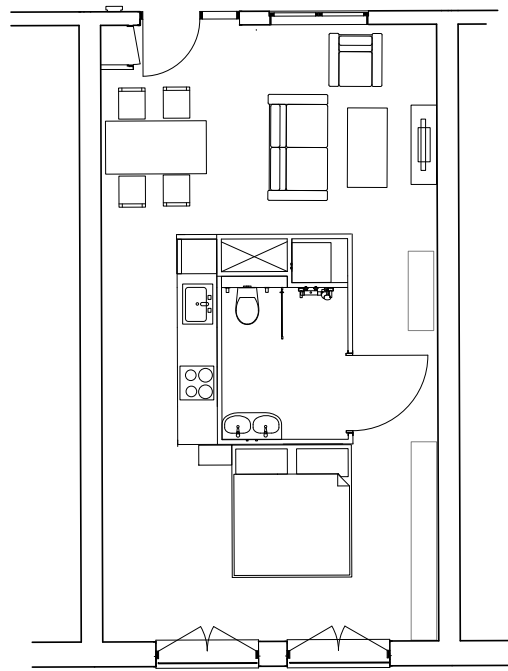
Dwelling A 1:50



The studio dwelling is, apart from the care units on the fourth floor, the smallest dwelling. Since the dwelling is meant for older people who don't have children living at home any more, this dwelling is suitable for both the growing number of single elderly as well as couples. The dwelling only has the wet core in the middle as fixed part, apart from that everything is flexible in the dwelling. If the resident decides to change the living room position, they can do that. The windows on both side of the dwelling also allow for this.

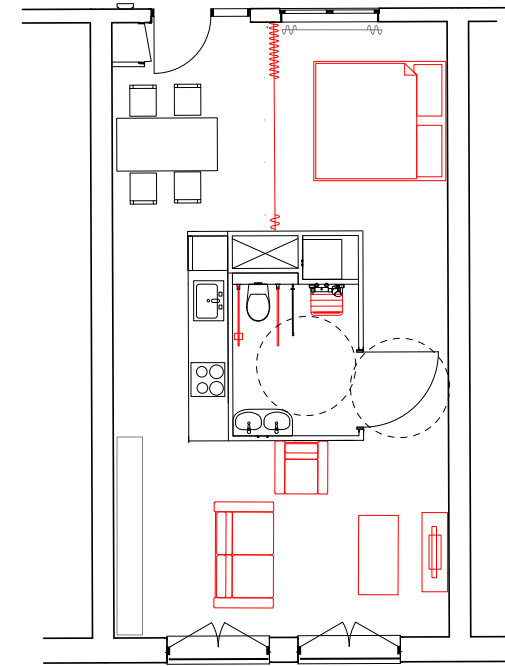
Dwelling A Changes over time

Floor plan Dwelling type A at 55 years old



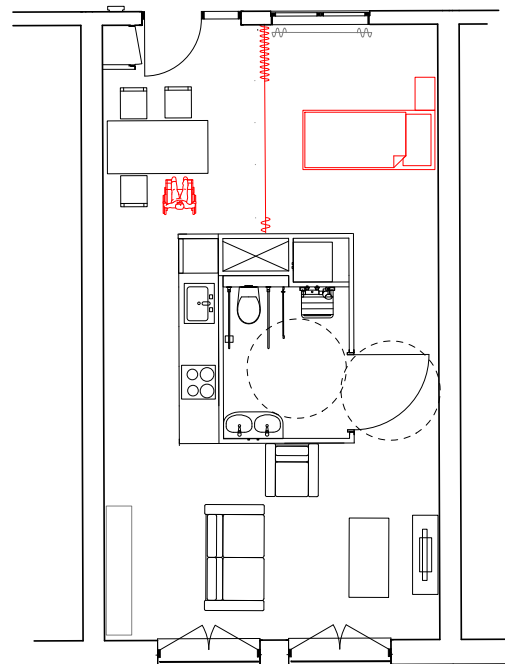
In the starting position for the man, he uses the part that is located towards the outside facade as a large bedroom area. The part near the atrium is used as a combination of the living and dining area. The wide hallway next to the bathroom is now used for large wardrobes or other storage items.

Floor plan Dwelling type A at 65 years old



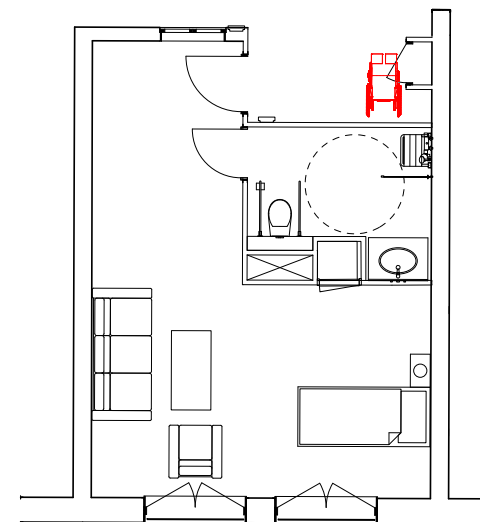
After about ten years he decides to change the layout slightly. So he installs a curtain in the area near the atrium and moves his bedroom towards that part as well and moved the living room towards the part facing the outside to get a little bit more privacy during the day.

Floor plan Dwelling type A at 75 years old

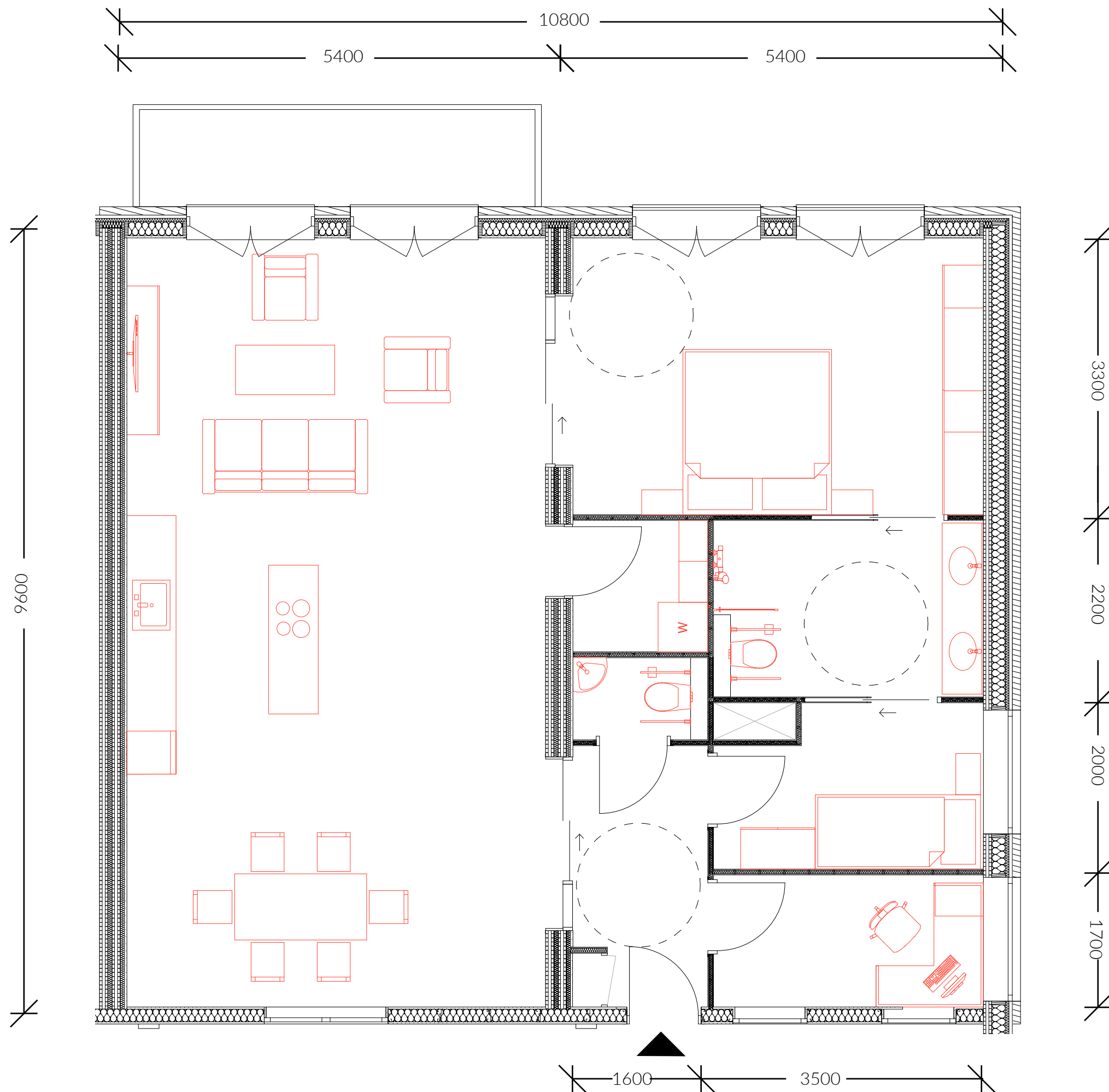


At 75 the movement becomes slightly worse, therefore several stand up aids are installed in the bathroom and the bed is changed to a special bed that allows for easy access. Because of the flexibility of the dwelling, the loss of mobility does not mean that the man has to move to another building.

Floor plan Dwelling type A at 85 years old



At age 85 the resident can't take care of himself any more and he needs 24 hour per day help. Therefore he can no longer live in the studio dwelling. However because there are care units in the building, he can move to one of those. This means that he can keep living in the building, near to people he knows.



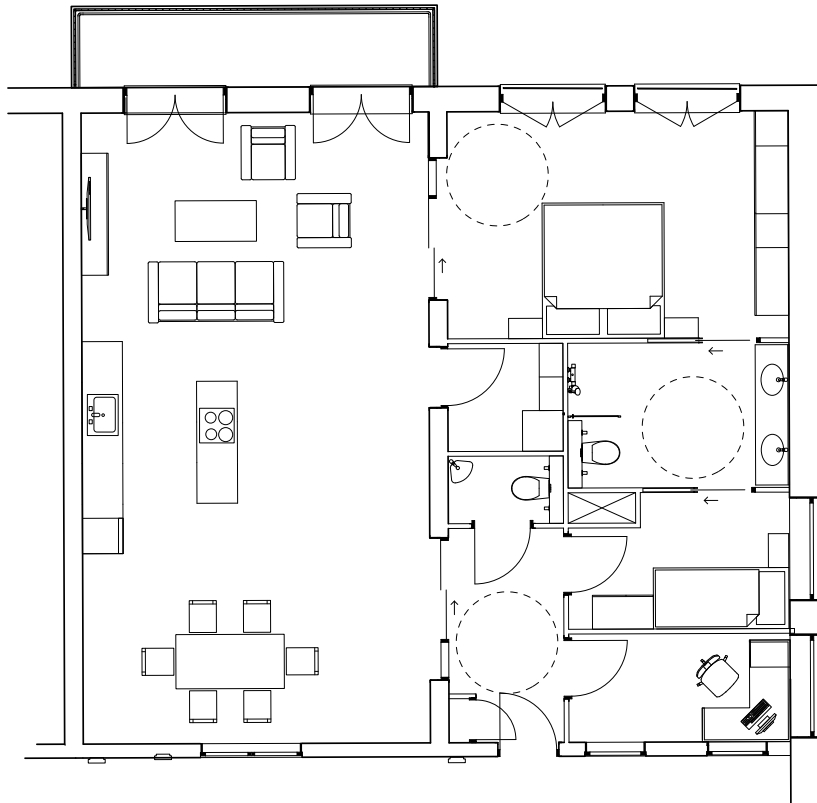
Dwelling B

1:50

On the left is the base floor plan visible. There is a slight change for the dwelling on the park side, but it only changes the access points towards the different rooms as well as the balcony location. But the basis is the same. The main feature is the large living room which spans the whole depth of the dwelling, with a large kitchen in the middle. The other part of the dwelling has 3 bedrooms/ office rooms. There is a separate toilet and bathroom and a storage area. The two bedrooms can be combined into a larger rooms if necessary.

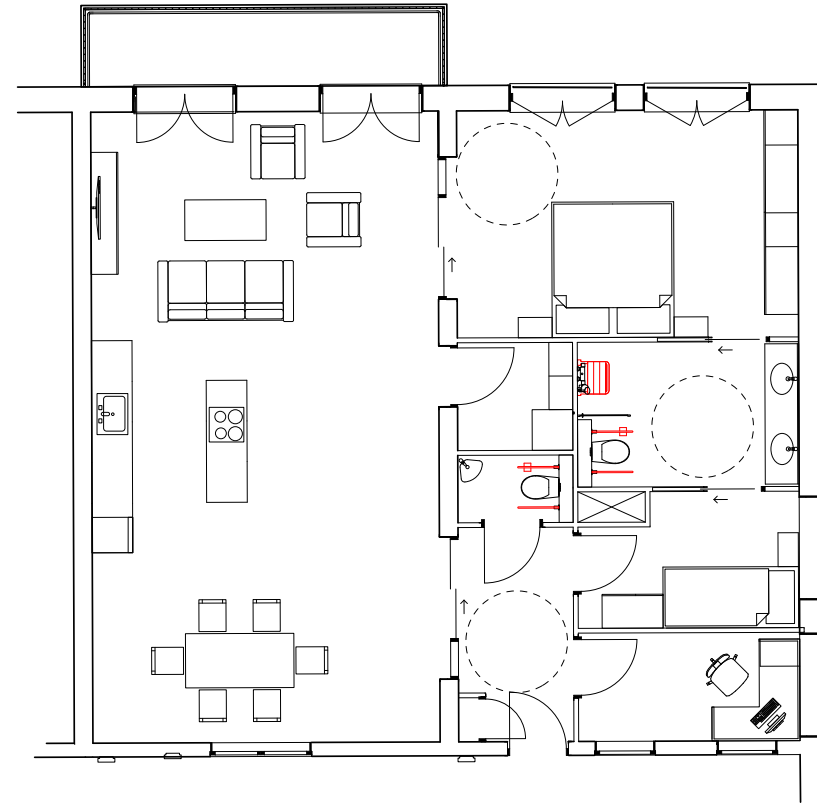
Dwelling B Changes over time

Floor plan Dwelling type B at 55 years old



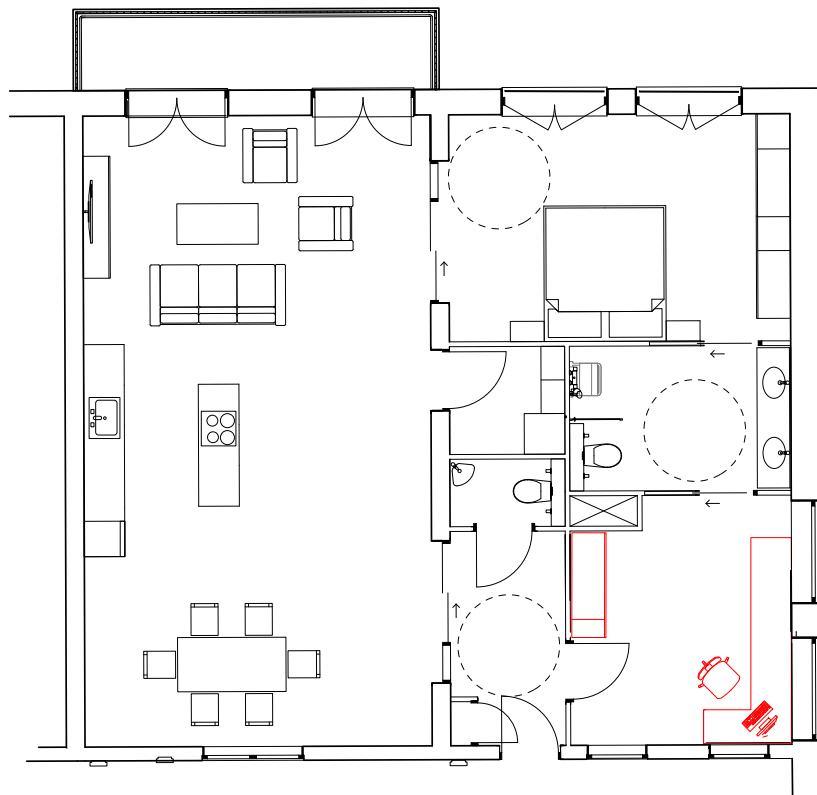
The base dwelling as shown on the previous page. The office space can be used by one of the still working residents and the bedroom can be used by one of the visiting children.

Floor plan Dwelling type B at 65 years old



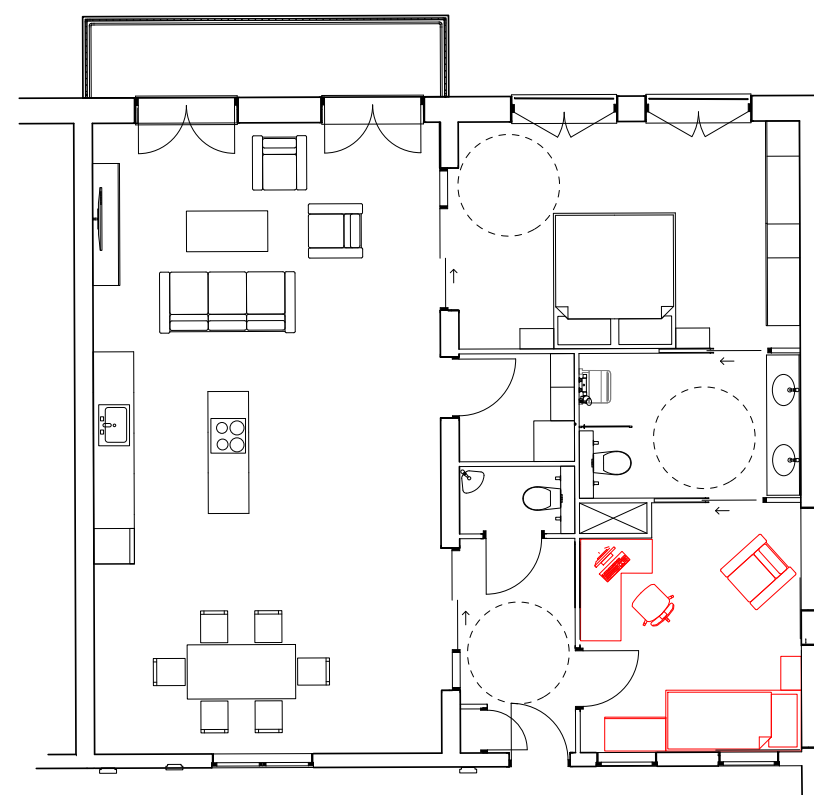
Not much has changed at 65, but there are stand up aids installed in the bathroom. The bedroom is now used by the new grandchild of the couple.

Floor plan Dwelling type B at 75 years old



Most of the dwelling has stayed the same. Even though mobility has declined, the dwelling is still perfectly usable. The grandchildren don't sleep over anymore, so the couple decided to combine the 2 smaller rooms and create a large hobby room.

Floor plan Dwelling type B at 85 years old



The two residents are now 85 and need care 24 hours a day. Since they are wealthy and have extra space, they decide to keep living in the dwelling and transform the hobby room into a nursing room so they can have the care they need in their own dwelling.

Facades

Park side elevation 1:250



Street side elevation 1:250



Alley elevation 1:250

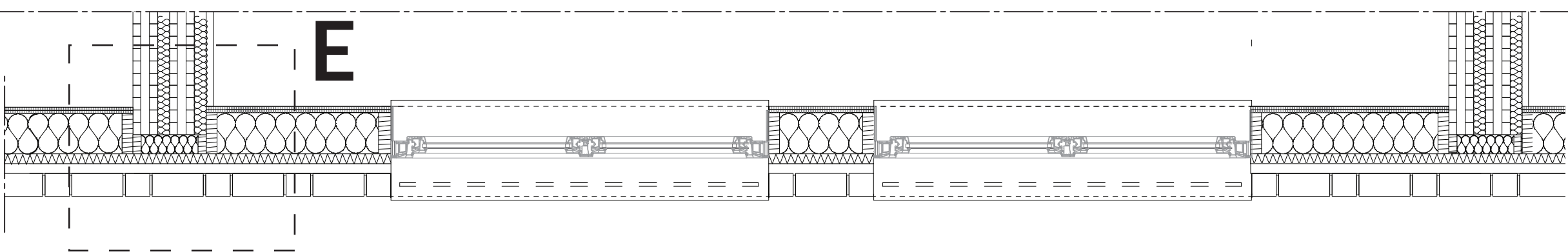
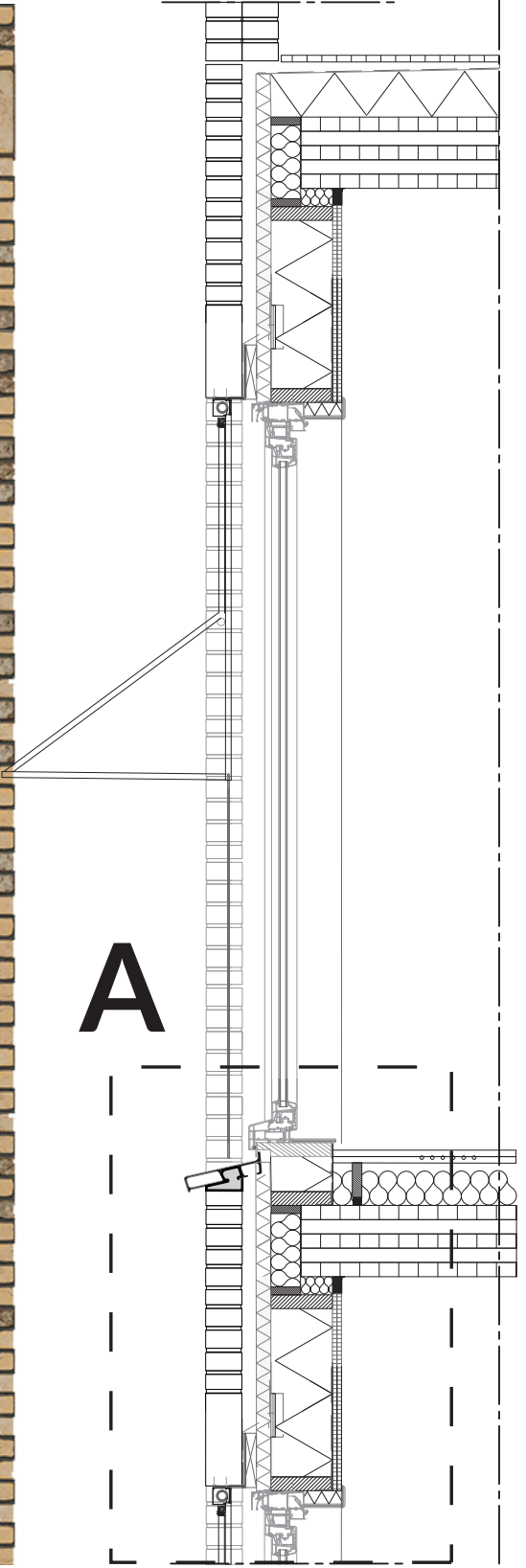


Water side elevation 1:250



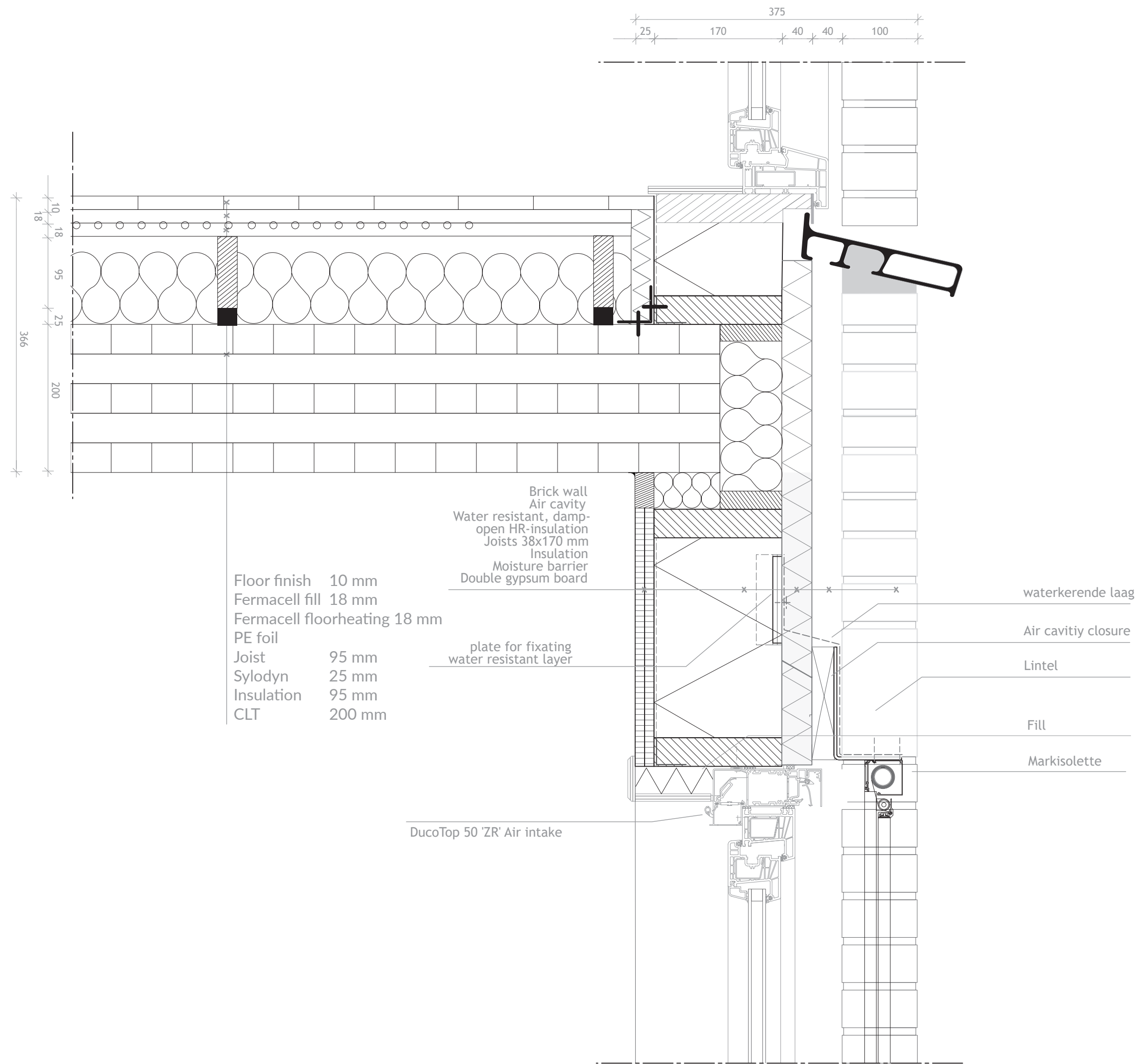


Facade 1:50

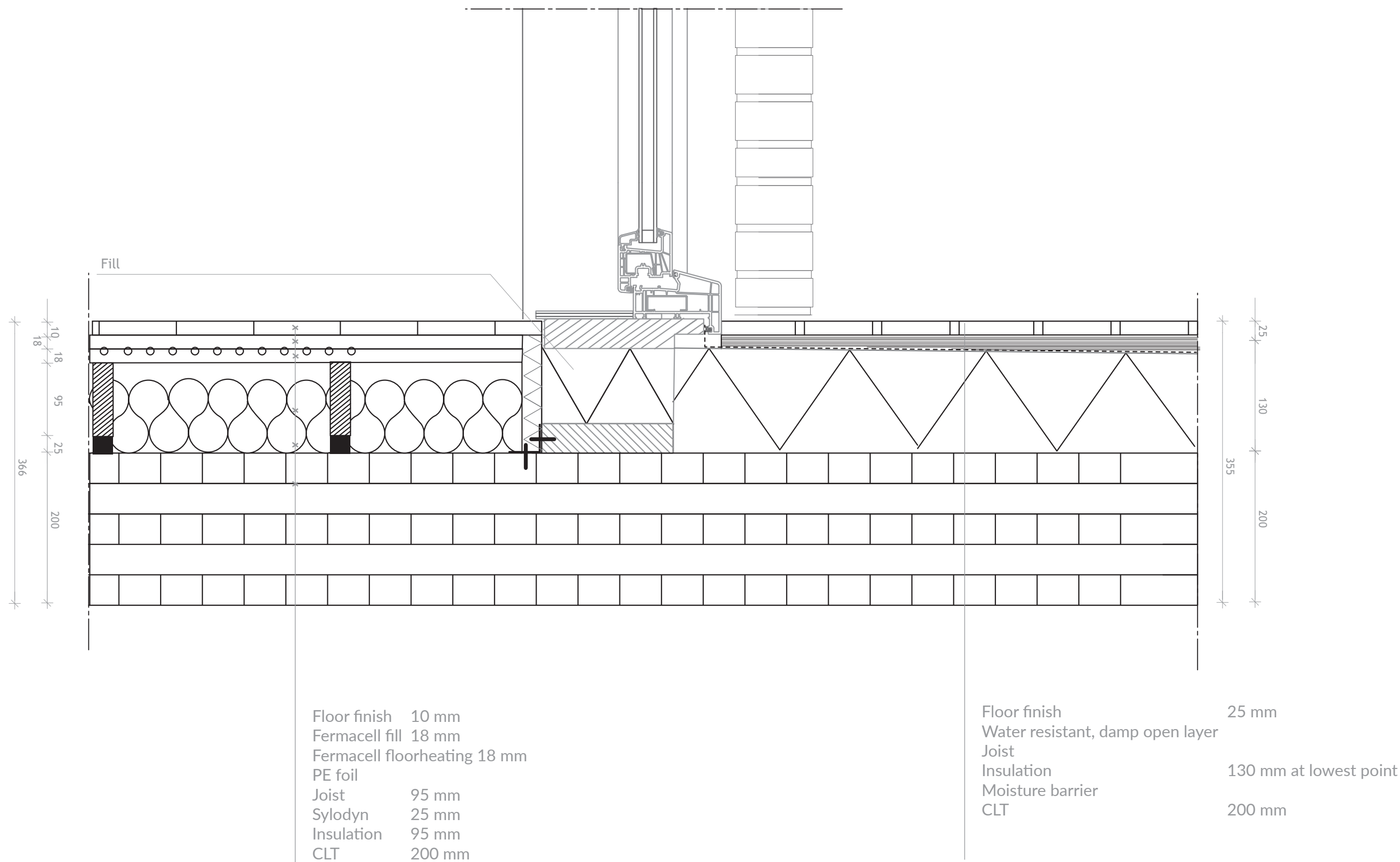


1:20

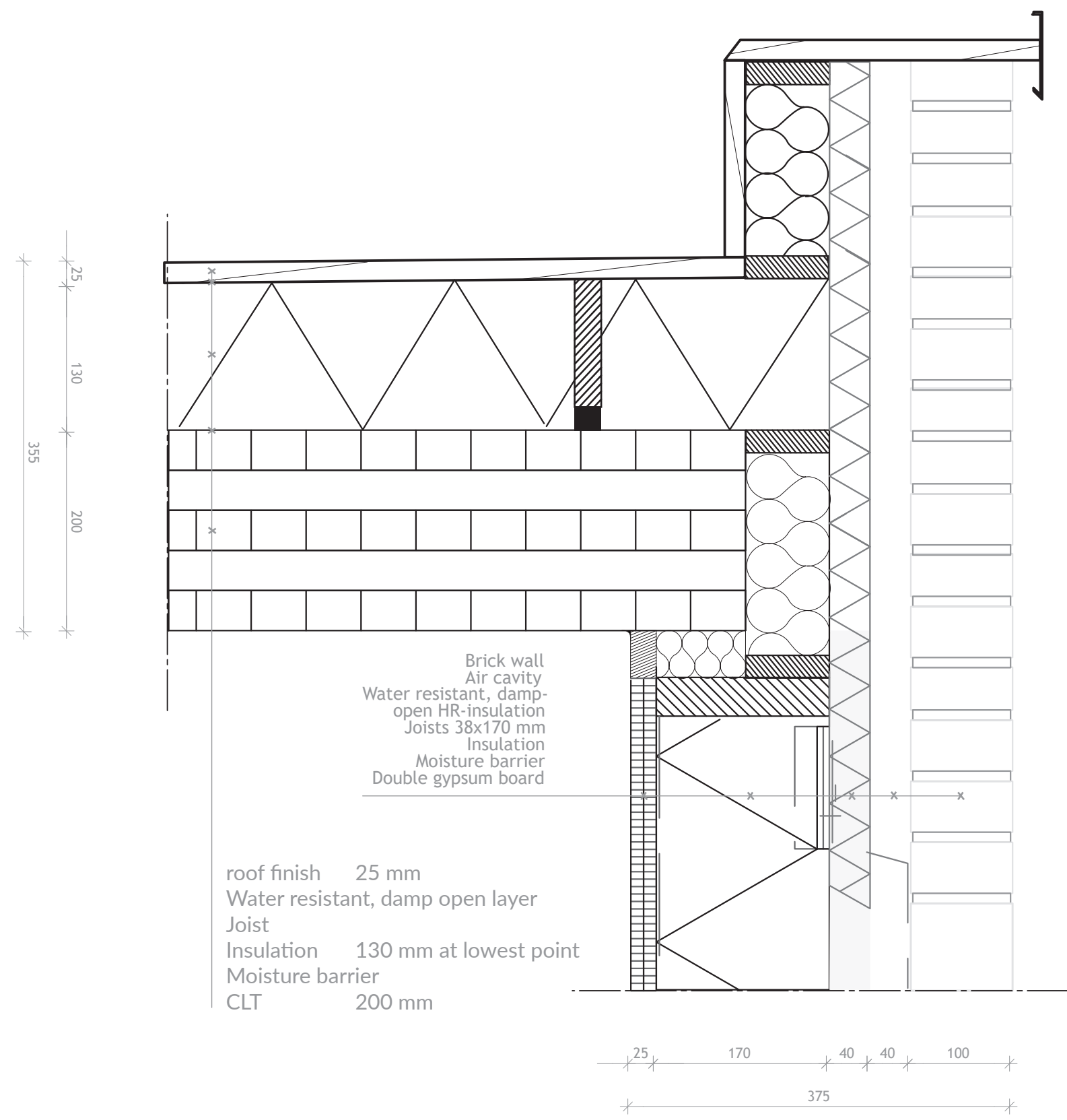
1:5 A



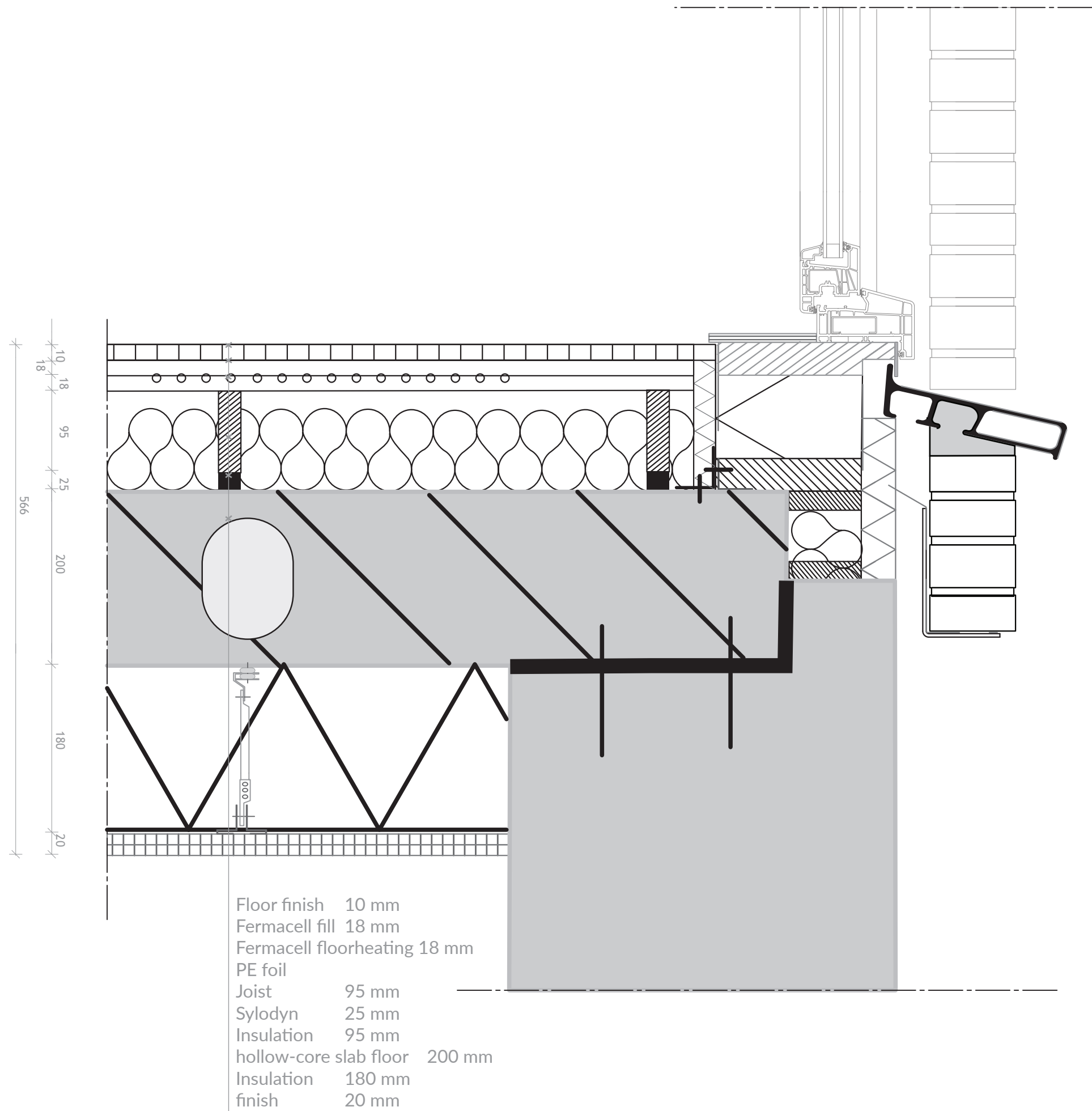
1:5 B



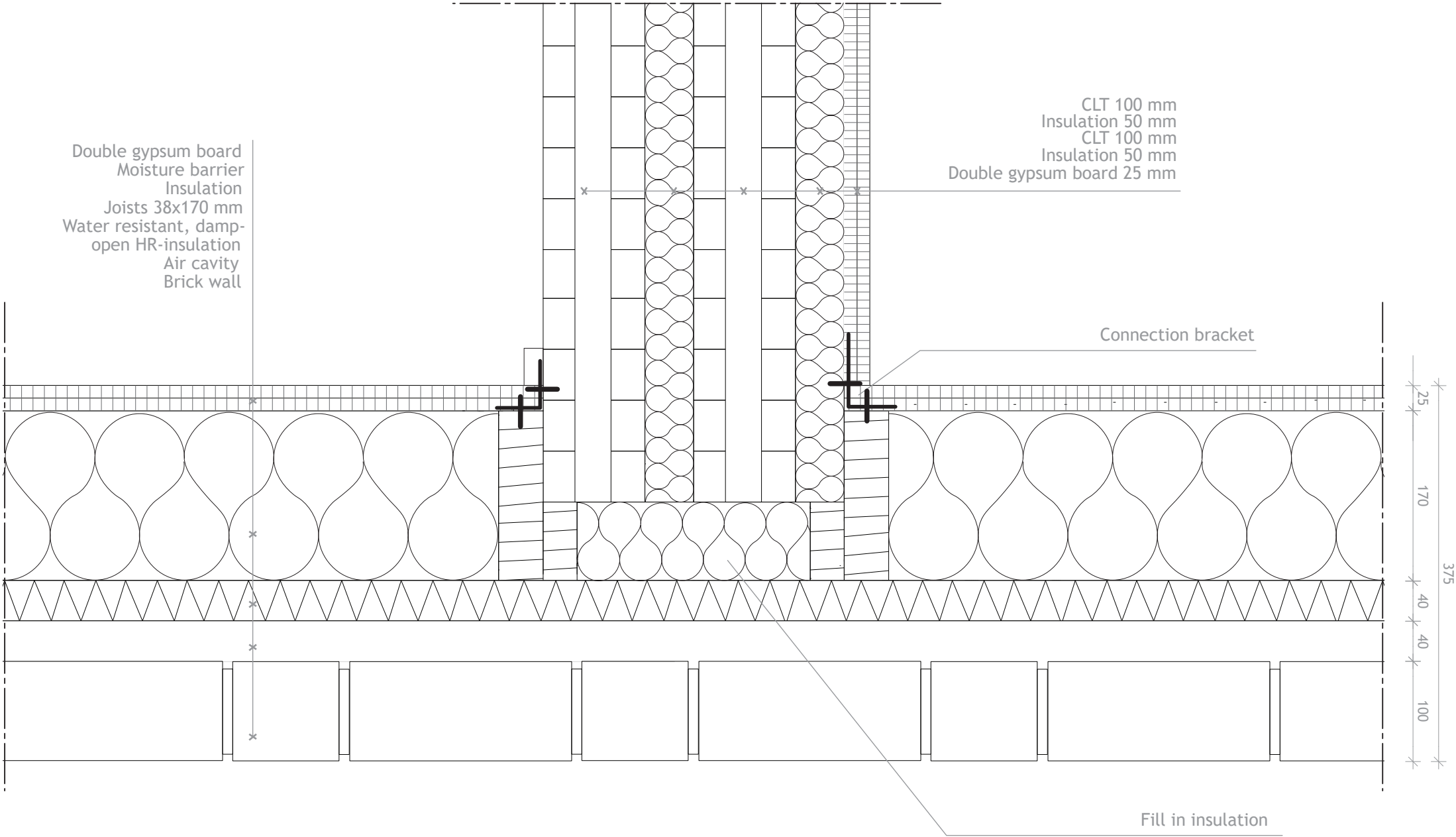
1:5 C



1:5 D

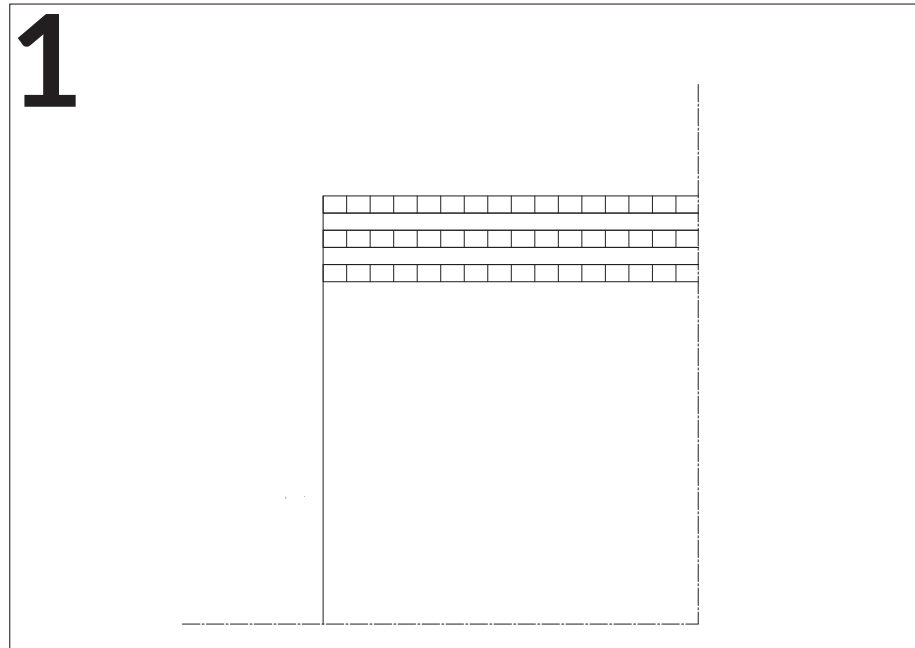


1:5 E



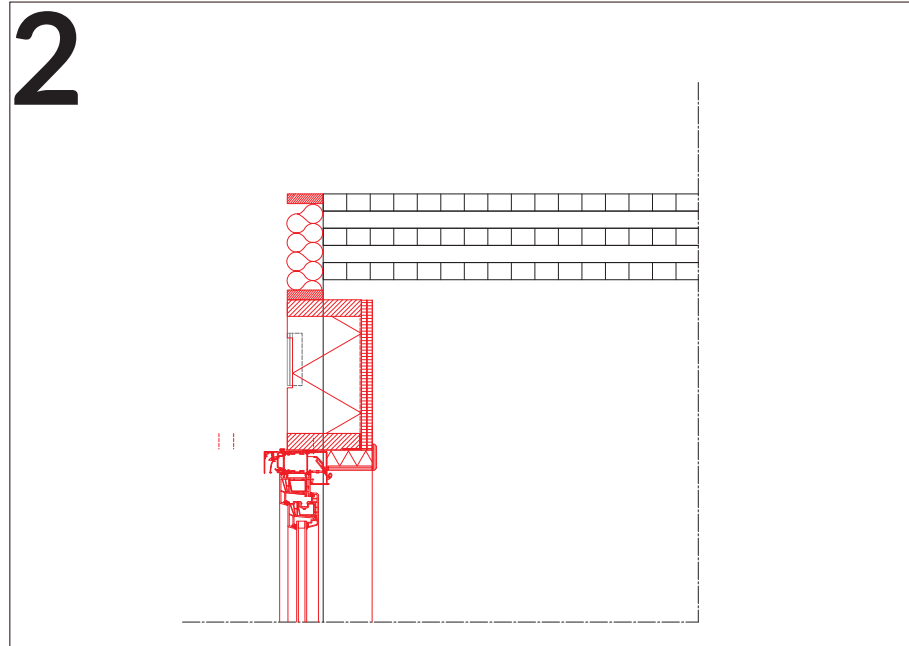
Facade assembly

1



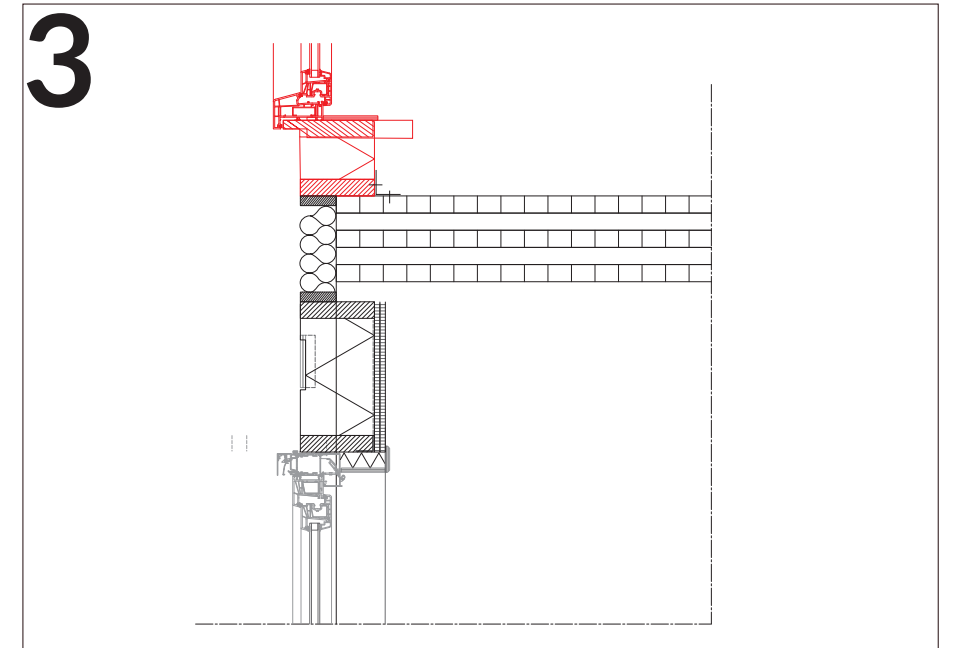
CLT floor is placed on CLT walls

2



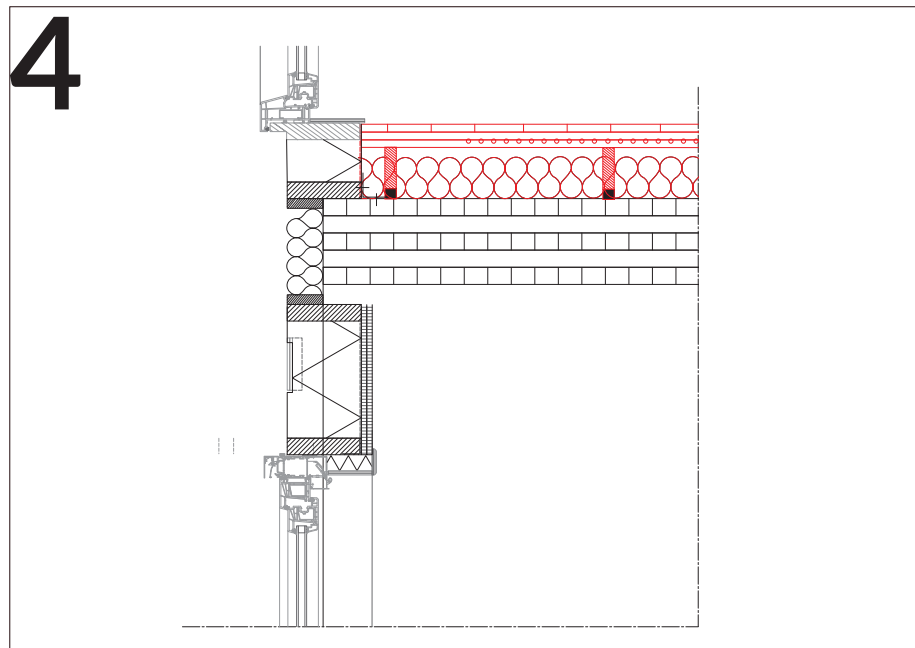
Prefab wood skeleton facade element is placed between the floors

3



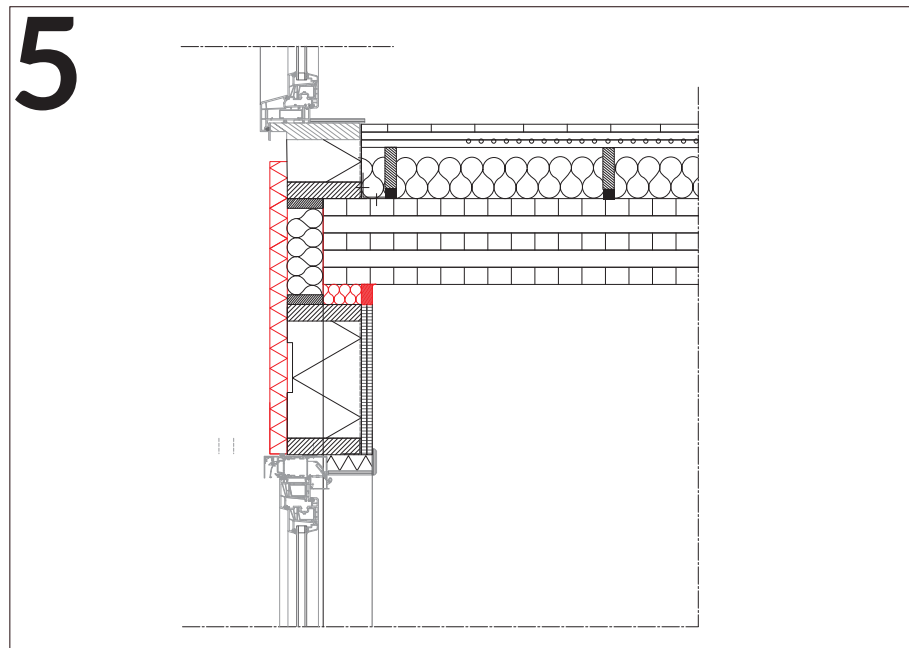
Prefab wood skeleton facade element is placed on the upper floor

4



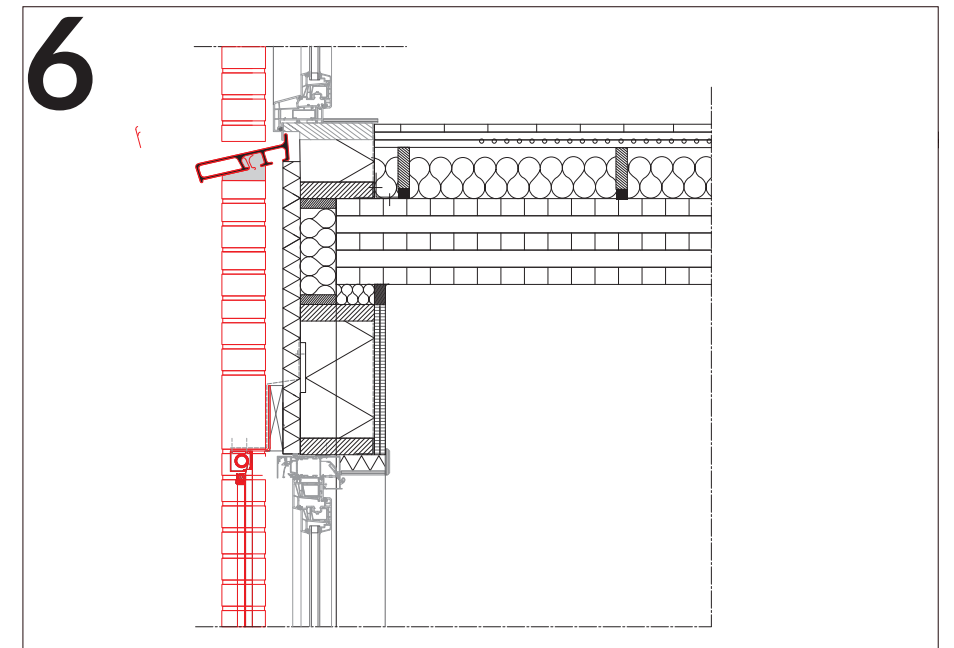
Noise insulation and the floor finishes are placed

5



The gaps in between the wood skeleton elements are insulated and a final layer of insulation is placed on the outside

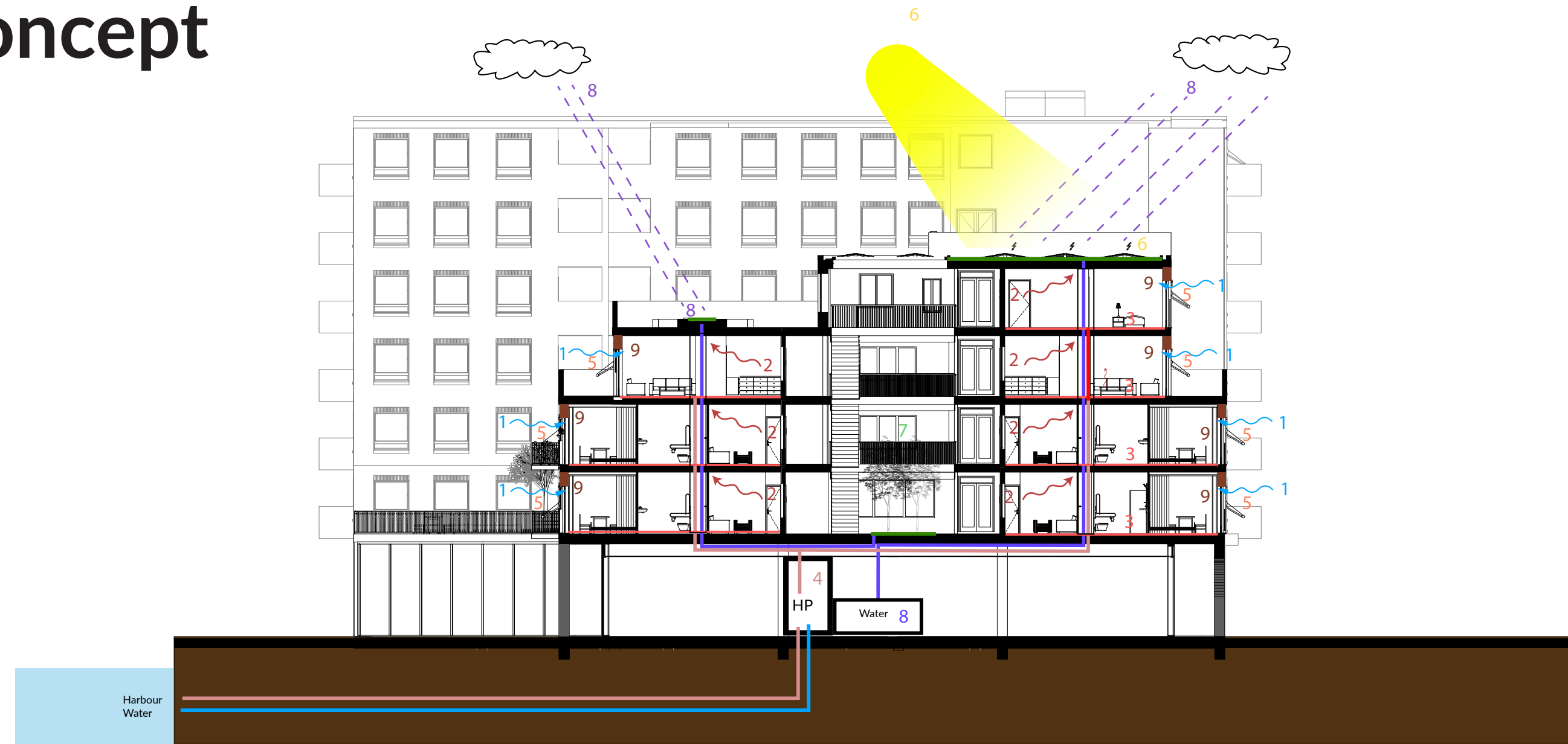
6



The facade is finished with a brick layer and the markisolette shading system is placed

Climate and Construction

Climate and sustainability concept



1 Natural ventilation in

2 Mechanical ventilation in combination with a heatpump

3 Floorheating

4 Heat pump using harbour water

5 Screens on east and west facades

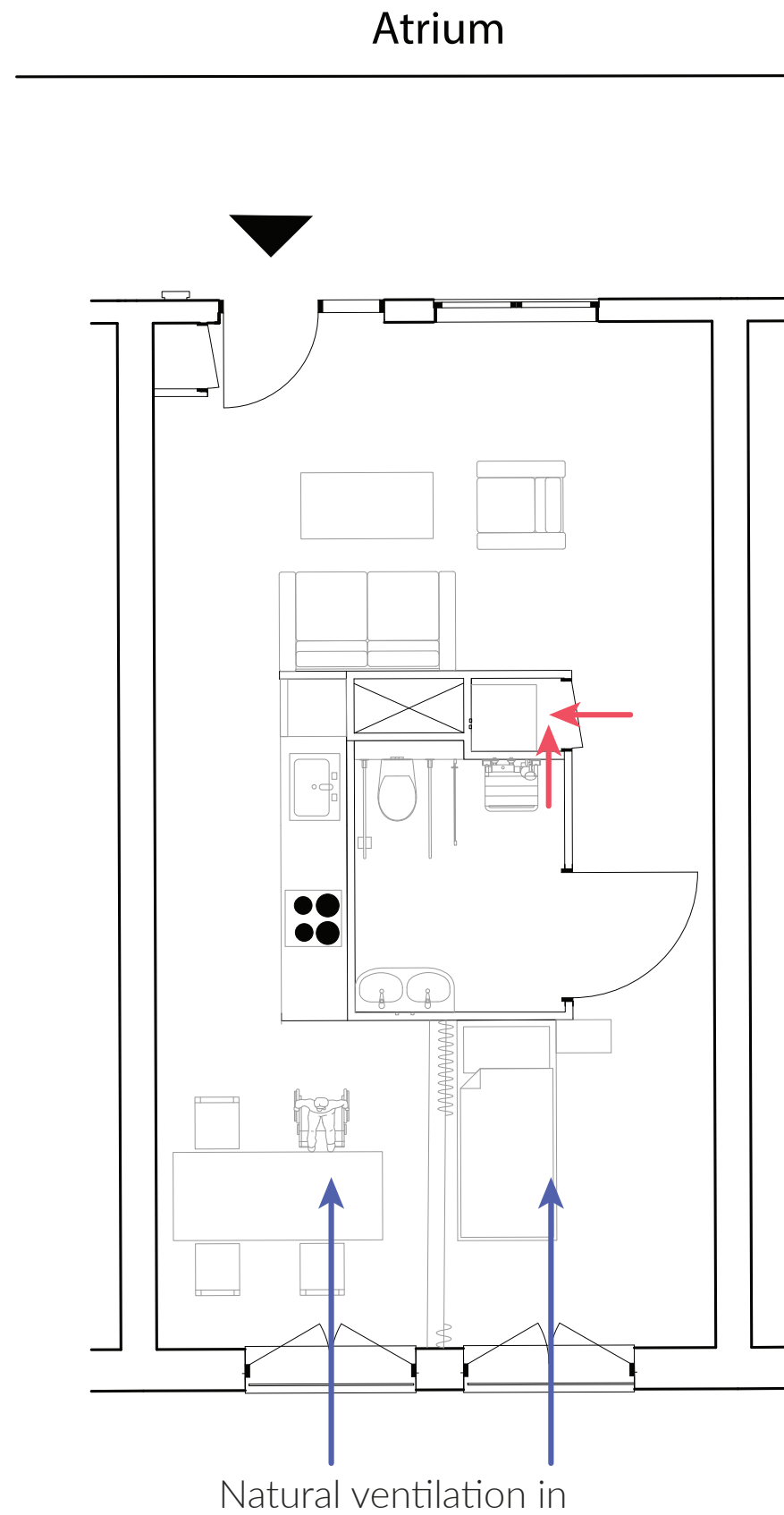
6 solar panels for energy production

7 Water for the inner garden in the atrium

8 Water for the inner garden in the atrium

9 Prefab wood skeleton wall panels with a brick finish

Ventilation



The ventilation is done with a natural input of ventilation through grilles installed above the French balcony doors. The air is exhausted mechanically and the air is used for the heat pump.

Sustainability

CLT construction



<https://www.hrb.be/wat-is-clt/>

- Less CO2
- Renewable source
- Lighter -> Less emission during transport

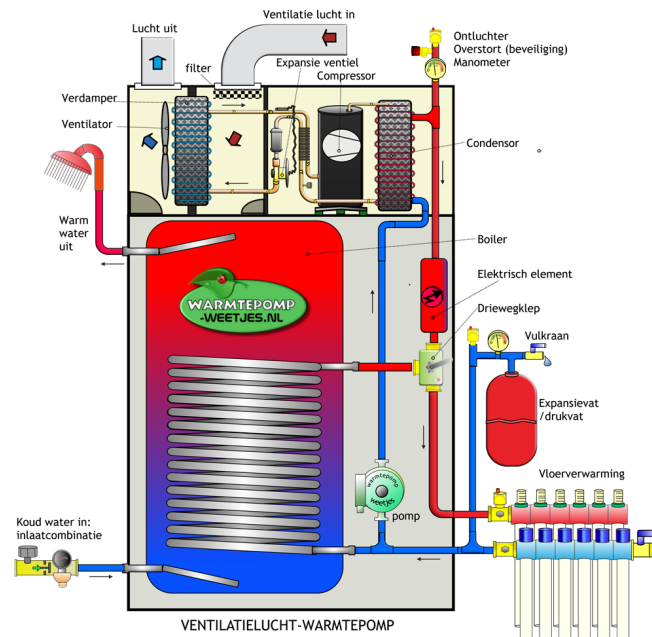
Prefab wood skelton facade elements



<https://www.frieslandprefab.nl/pages/houtskeletbouw>

- Made in a factory
- Easy instalation
- Quicker building time

Heat pump



<https://warmtepomp-weetjes.nl/soorten/ventilatielucht-warmtepomp/>

- Heating up the dwelling using the mechanical ventilation air
- In addition to harbour water heat pump
- Partly powered by solar panels

Solar panels

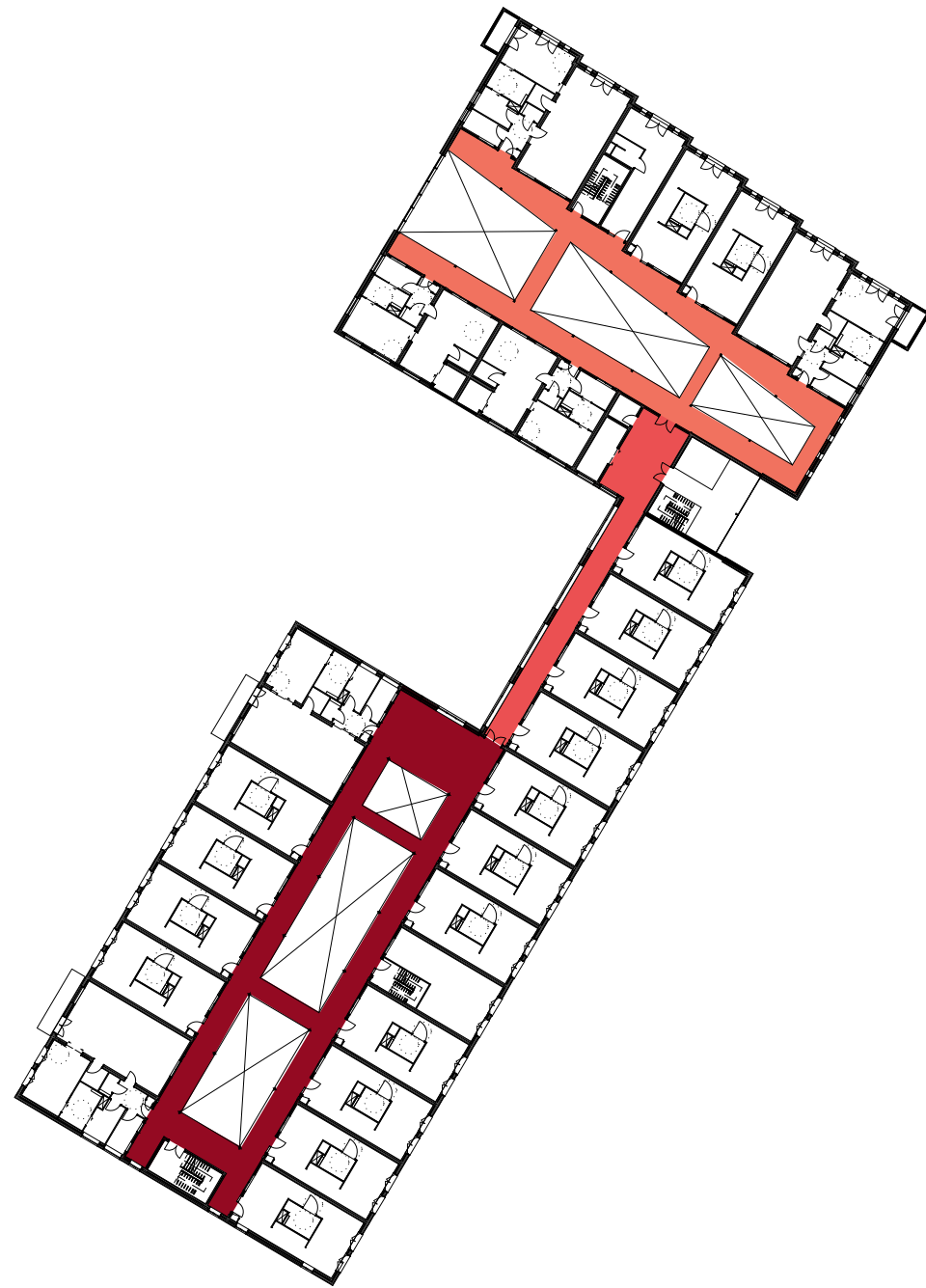


<https://www.zonnepanelen.net/oost-west-zonnepanelen/>

- East-West orientation to increase number of solar panels placed
- Used to power the dwellings and heat pump
- Sedum in between, to decrease the urban heat island effect

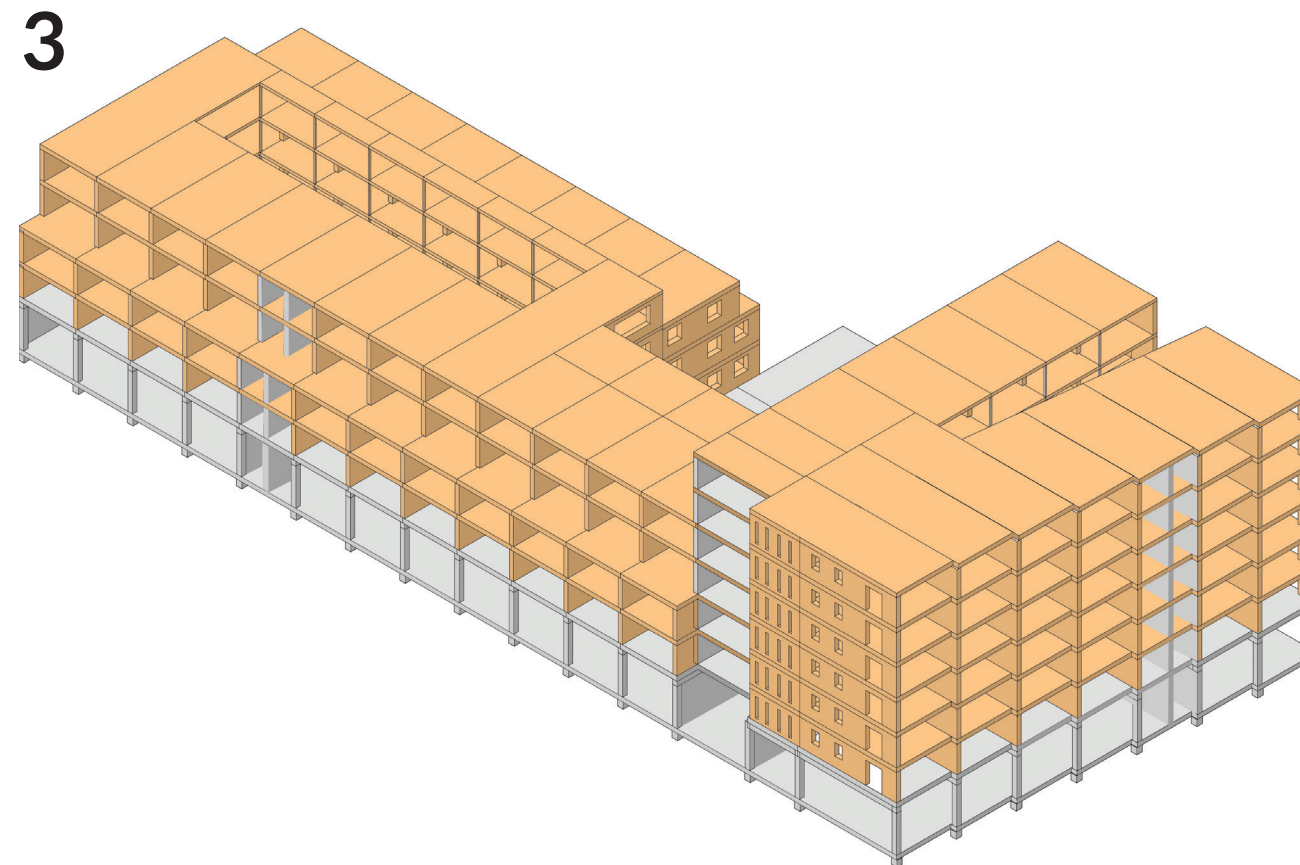
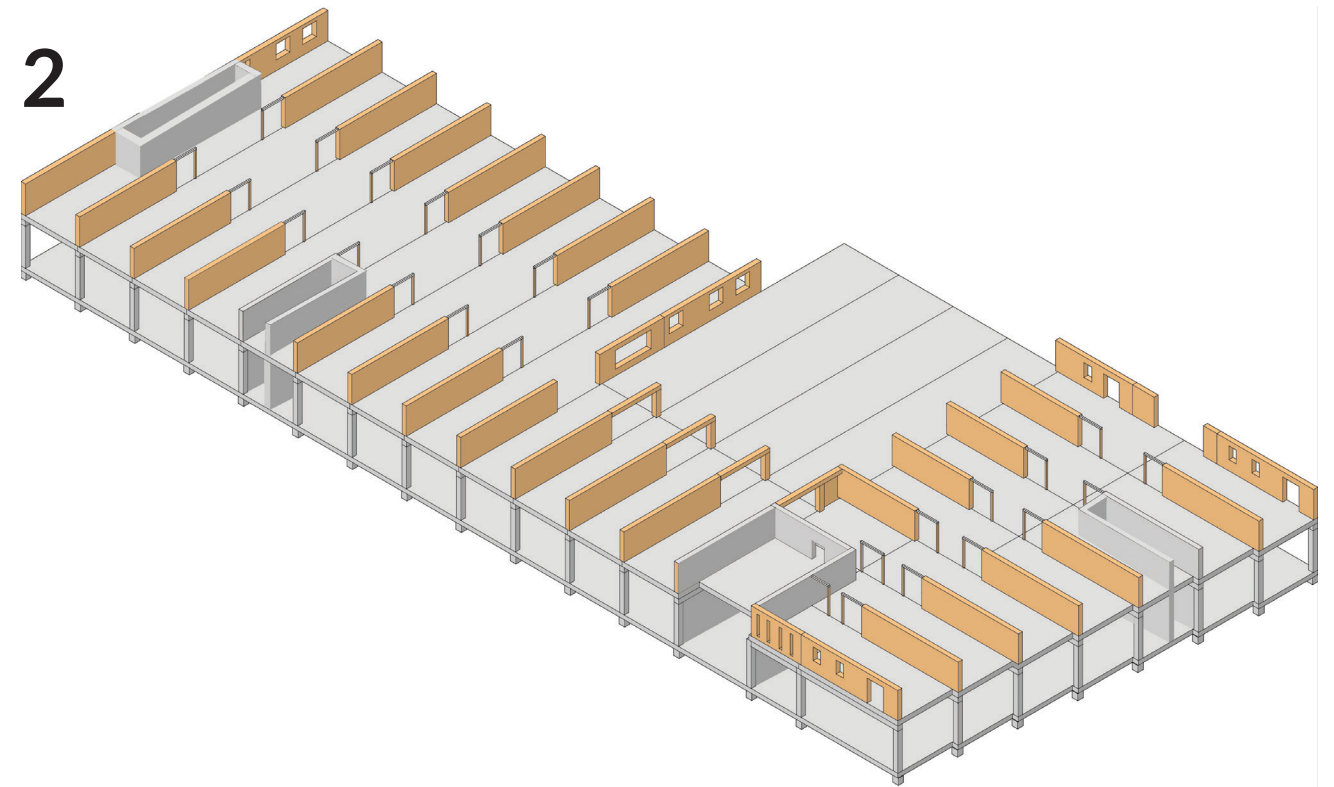
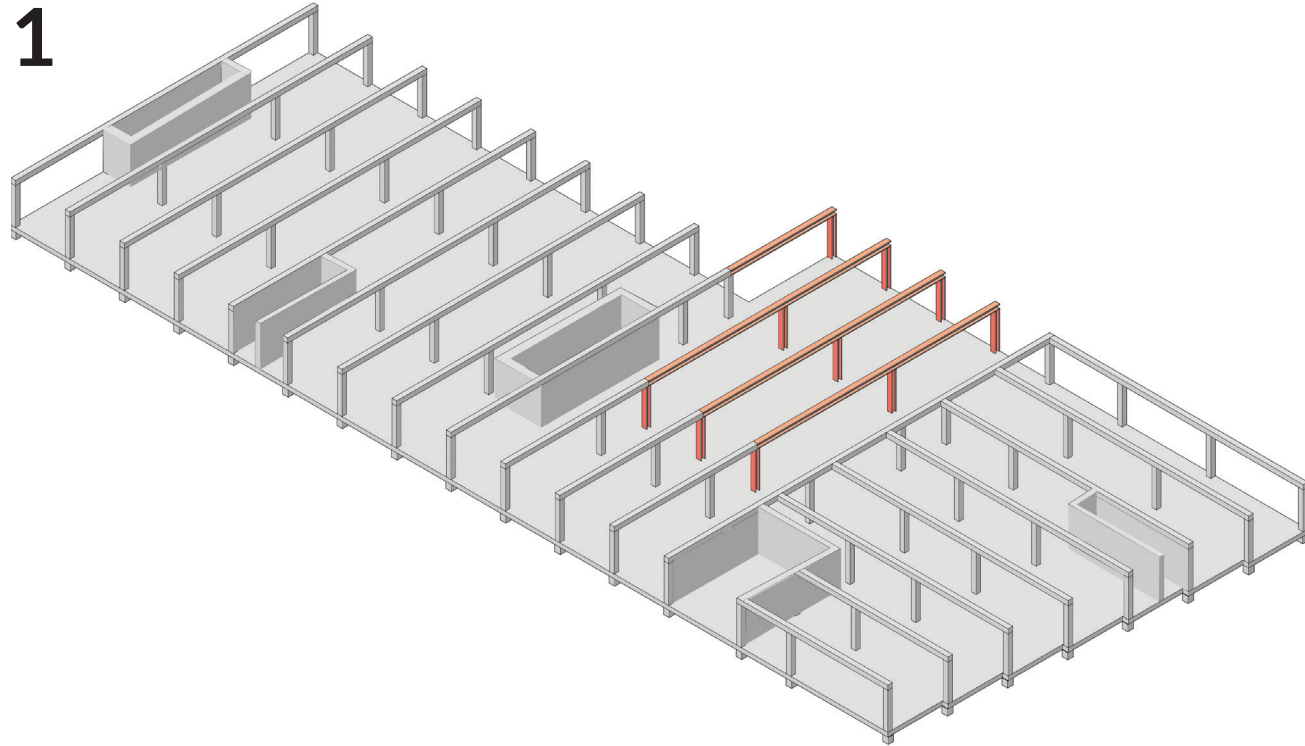
Safety

Fire compartments



In addition to that, the atrium is equipped with glass smoke curtains hanging down, to allow slow the smoke down and making sure that not all the smoke goes up at once.

Construction



Load bearing concept

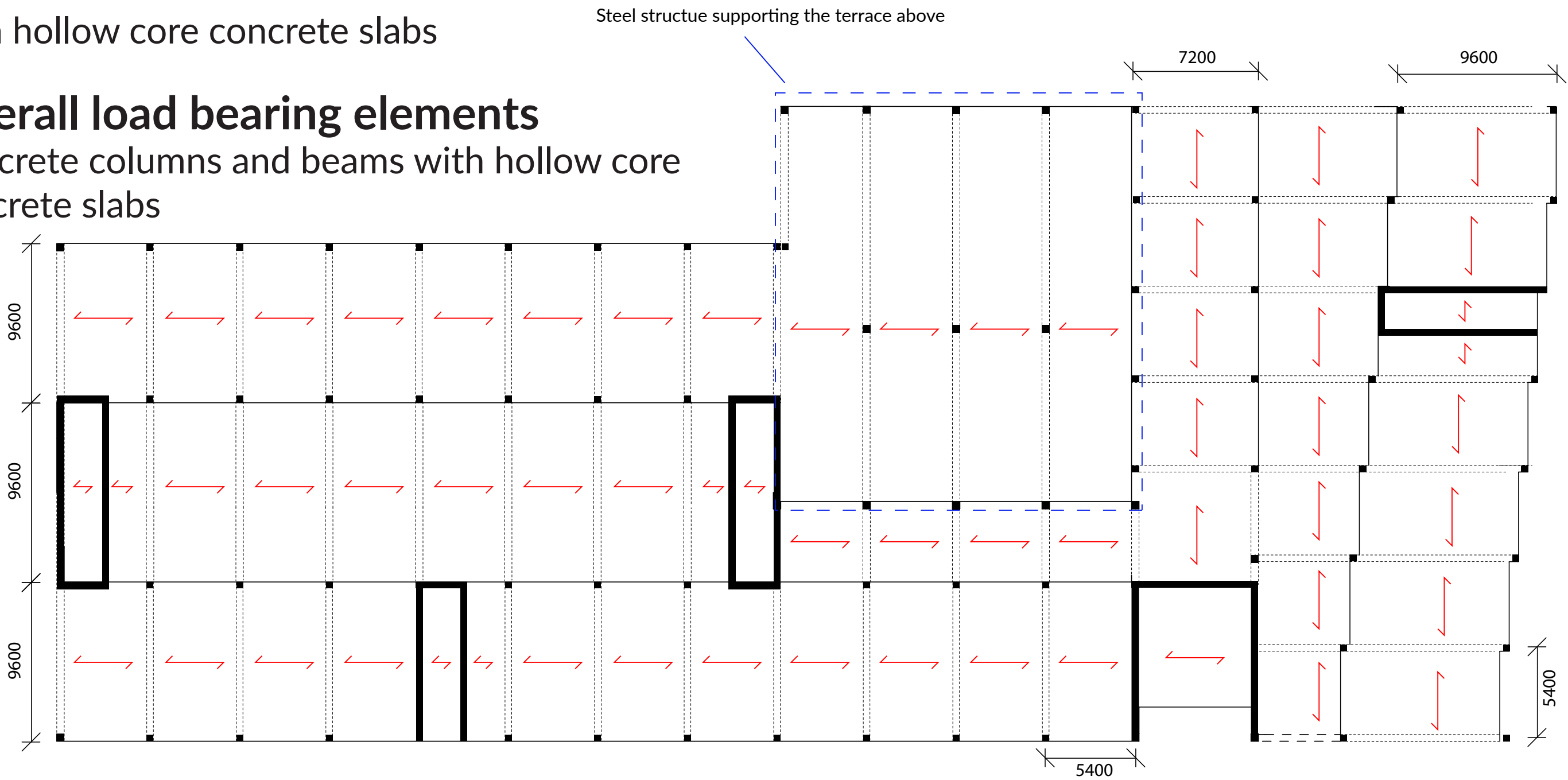
Terrace load bearing elements

Steel column and beam construction

with hollow core concrete slabs

Overall load bearing elements

Concrete columns and beams with hollow core concrete slabs



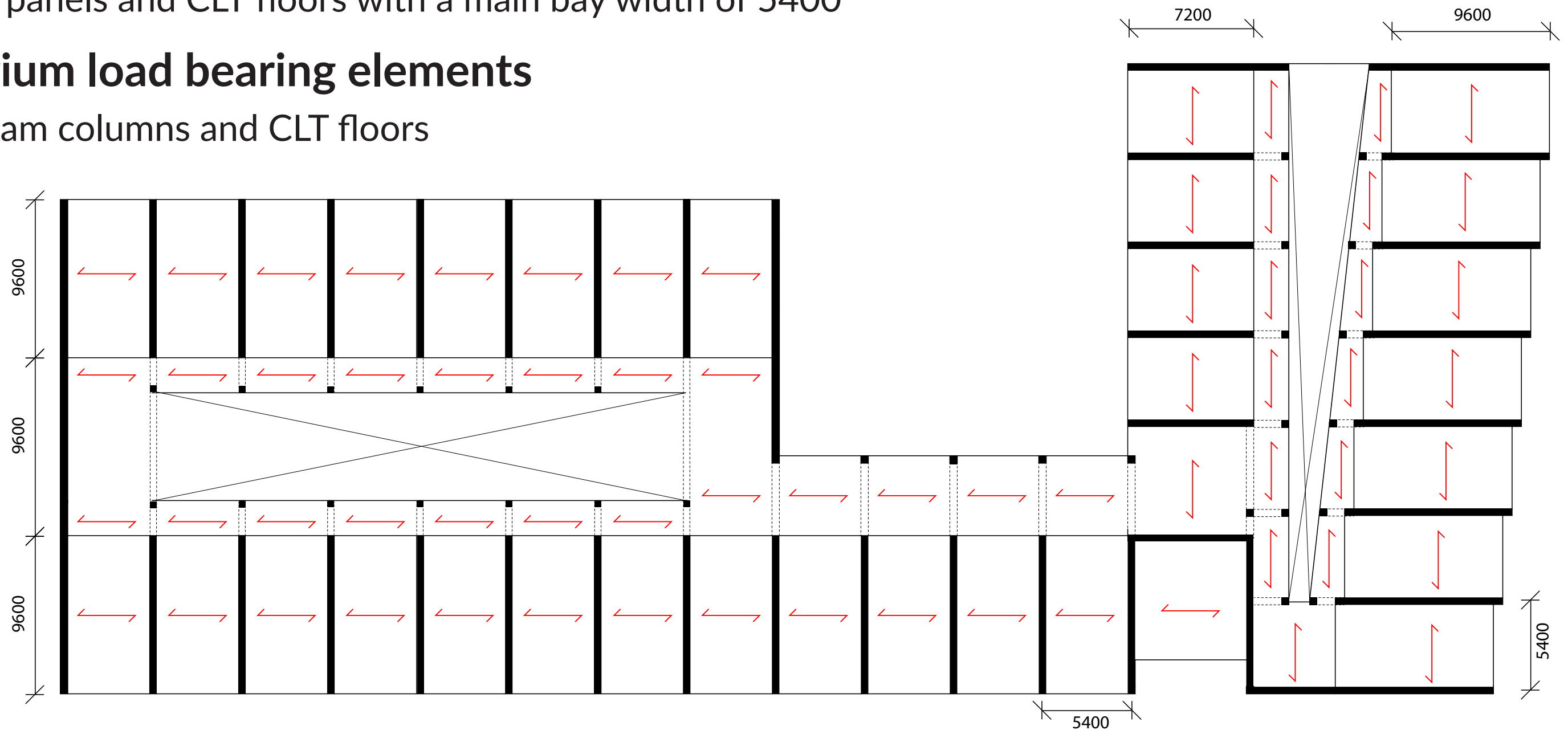
Load bearing concept

Dwelling load bearing elements

CLT panels and CLT floors with a main bay width of 5400

Atrium load bearing elements

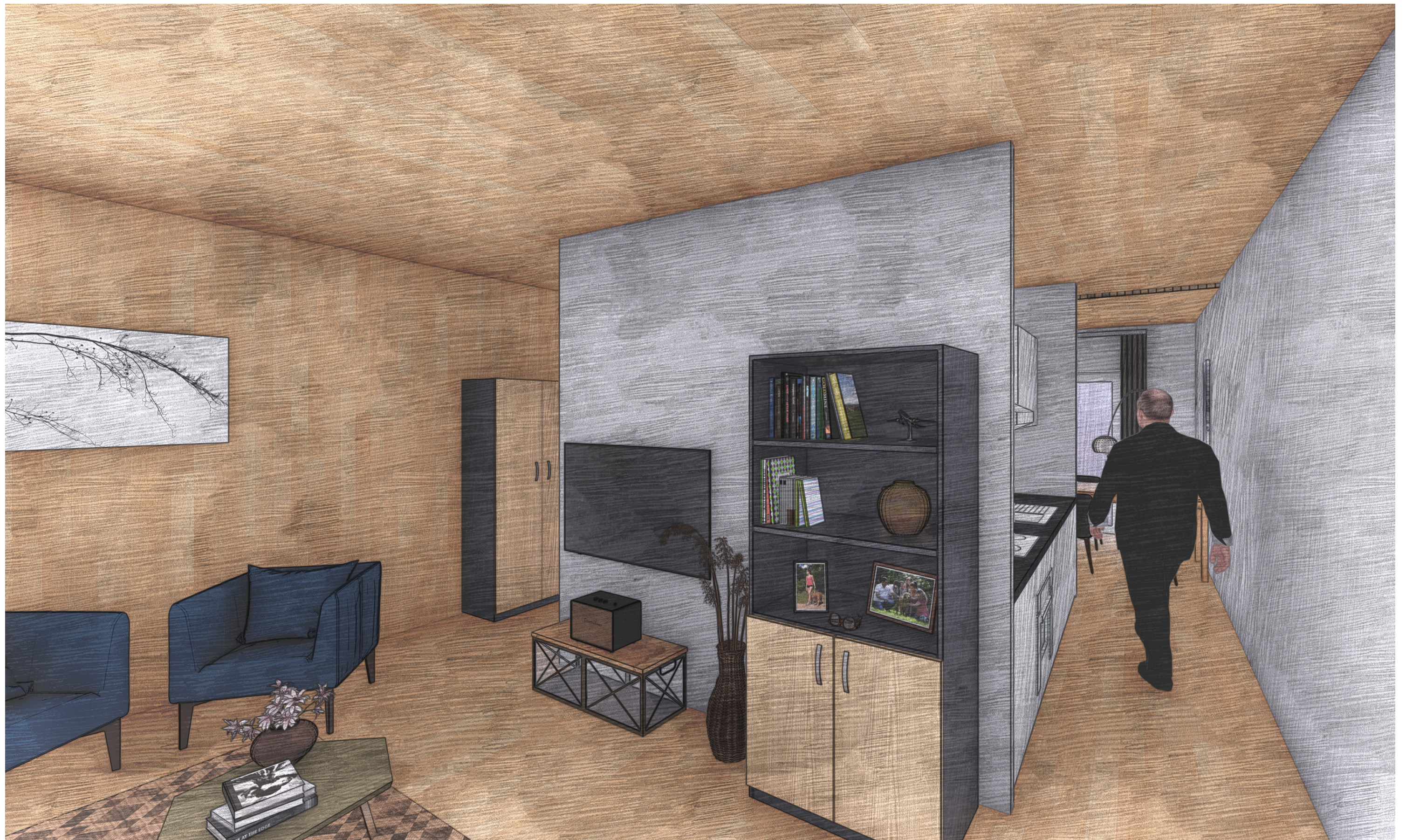
Glulam columns and CLT floors



Impressions

Studio

Inside a studio dwelling (A)



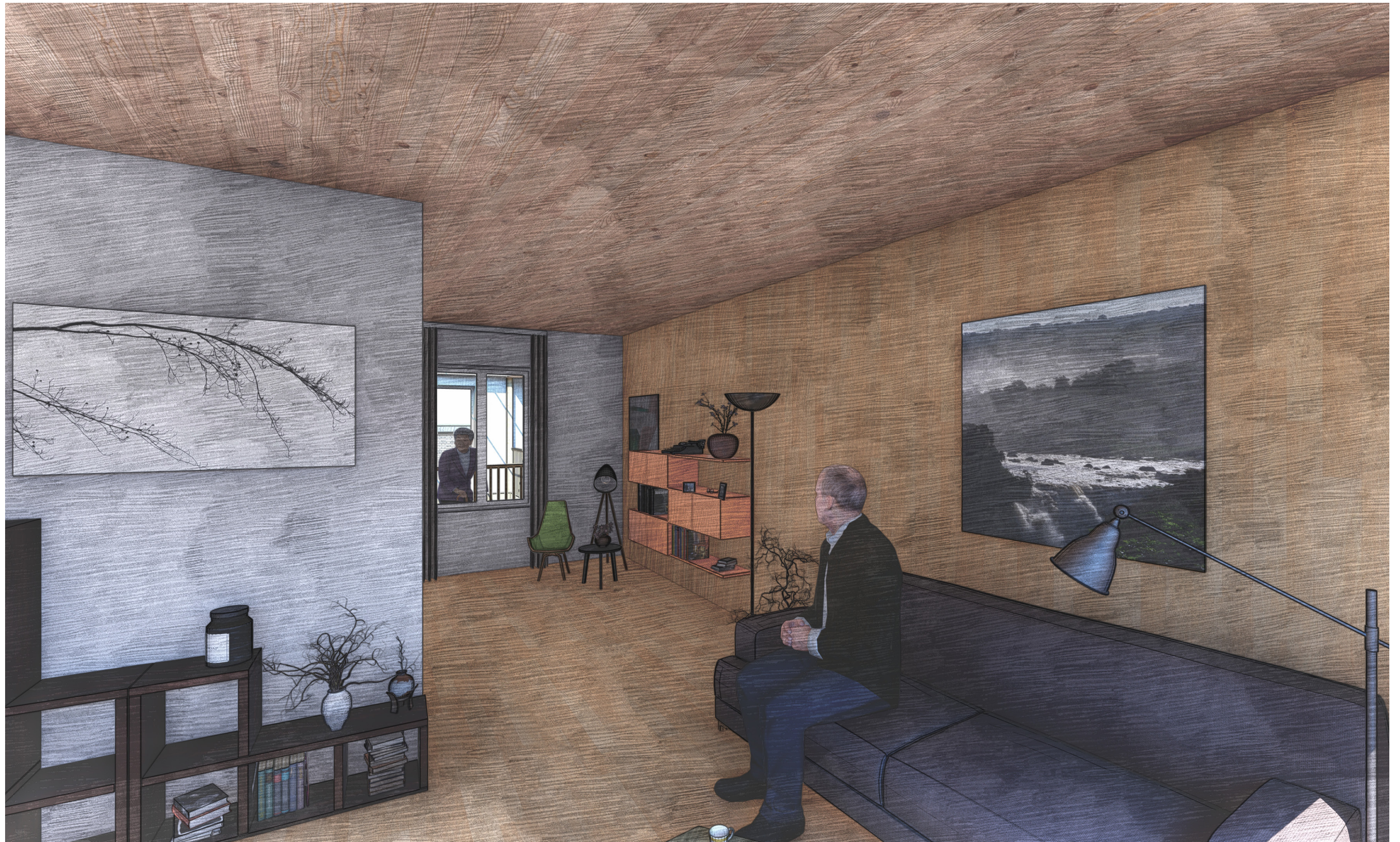
Large dwelling

Inside a large dwelling (B)



Care unit

Inside a care unit dwelling (E)



Care unit

Outside care unit dwelling (E)



Atrium with trees

The atrium of the lower part of the building



Atrium with trees

The atrium of the lower part of the building



Atrium with small bushes

Atrium of higher part of the building,
Facing the harbour



Connecting part

View towards harbour and roof terrace



Large terrace

The terrace on the first floor, where the residents can meet and enjoy the view of the harbour



Outside on the water front

The building as visible from the water front



Outside

The building as visible from the park



Outside

In front of the main entrance



Outside

From across the street

