OUR HOME

IN THE MINERVAHAVEN | AMSTERDAM

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TU Delft, Architecture
Dutch Housing Graduation Studio MSc4
Between Standard and Ideals- Havenstad Amsterdam

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RESEARCH & DESIGN

take aways & references

Important input for the design were the '*take aways*' that emerged from the research report. The most important are shown below. In addition, the plan analysis of the Miss Sargfabrik and Tietgen Kollegiet brought me a number of design tools that are used in the design.

☆

A variety of housing types is desired to overcome different lifestyles.

☆

A small, affordable, but full-fledged dwelling, with on top of that shared facilities (laundry, car, guestroom, living room, garden).

☆

Small groups of people with similar life patterns

☆

An adaptable dwelling, to make it future-proof.

☆

Balance between privacy and shared facilities.

Tietgen Kollegiet

Each dwelling cluster has its own collective facilities. The garden is public.

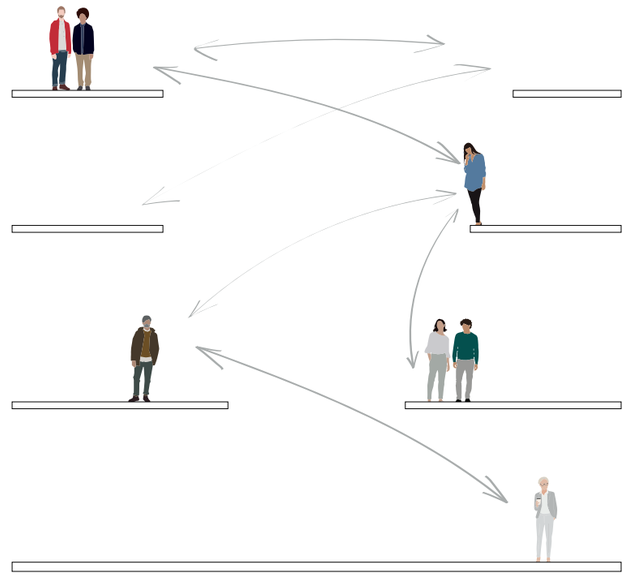
Miss Sargfabrik

Wide galleries that function as outdoorspace for the dwellings. At the same time it is the transition zone between private and collective space.

CONCEPT

co living

This building is about living together and being involved with your fellow residents and immediate environment. By introducing transition zones -the zone between the private and puplic domain- and sightlines, the building stimulates social interaction and commonality.



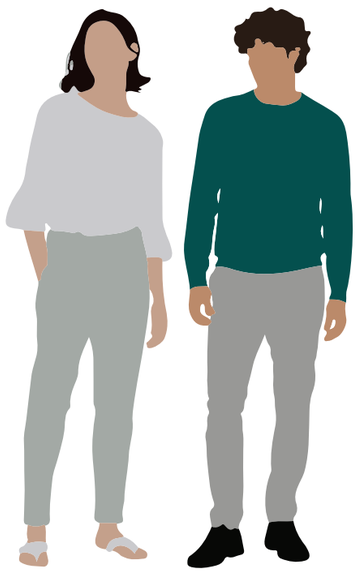
TARGET GROUP

keyworkers

Each city needs key workers; people who are essential for society, such as teachers, caregivers and police. A well-known problem is that these people can hardly find an affordable home in the city of Amsterdam; close to their work. These key workers, consisting of one and two person households, will be the future residents of this co living building at the Minervahaven.

Ineke (49), single. Works as a chemistry teacher at a secondary school. She has an average income.

Her house is a place for relaxation, but she also needs a place to work.



Simone (35) and **Bart** (37), married, no children. Average two-income household. Both working in healthcare; nurse and ambulance staff.

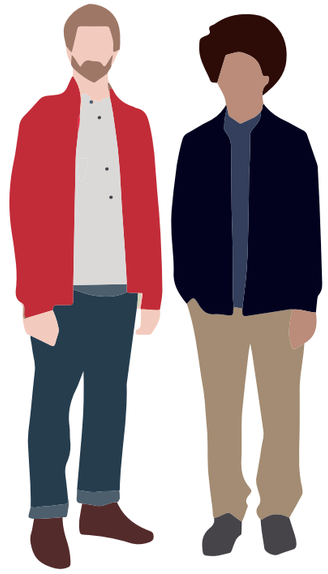
They both have to deal with irregular working hours. They look for company in their direct living environment, but also look for a good place to sleep during daytime.

Michiel (32), single, average income. Works as a nurse.

A real 'people person'; he likes to chat with everybody. Has irregular working hours, so he needs a dark and silent place to sleep.

Camilla (50), divorced, her son (25) lives away from home. She works with the police and has an average income.

She likes it when her son comes by now and then. She regularly works during the night; so social secuity, visibily and access are important to her.

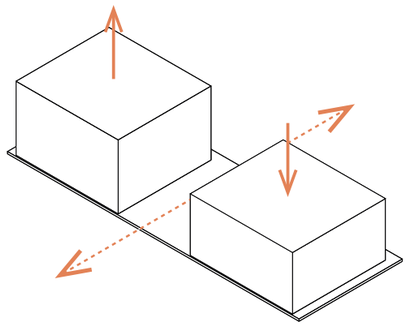


Pieter (28) and **Johan** (35), average two-income household, working in education.

Are happy among people. Need some space to work at home.

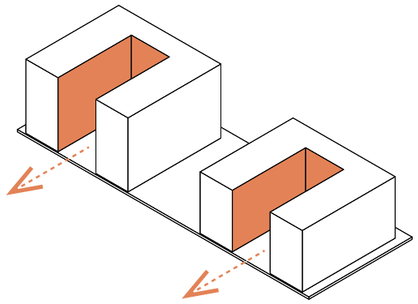
CONCEPT

building volume



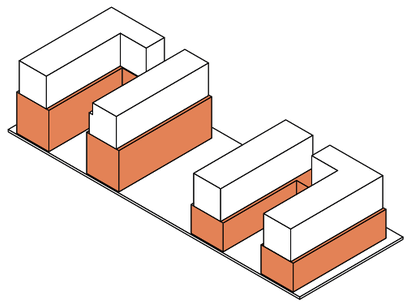
Sightline to both water sides of the Minervahaven pier. The height of the volumes differs in order to blend in with the existing building volumes.

+



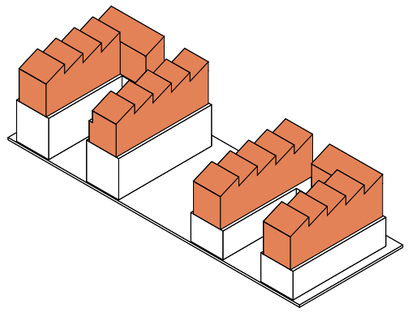
The volume is opened towards the water. Also light is coming in the middle of the volume.

+



The volume is horizontally divided in two parts; the 'heavy' lower part and the 'light' upper part. Setbacks emphasise the difference in materialisation and atmosphere. The lower part refers to the history of the place, as if it has always been there.

+



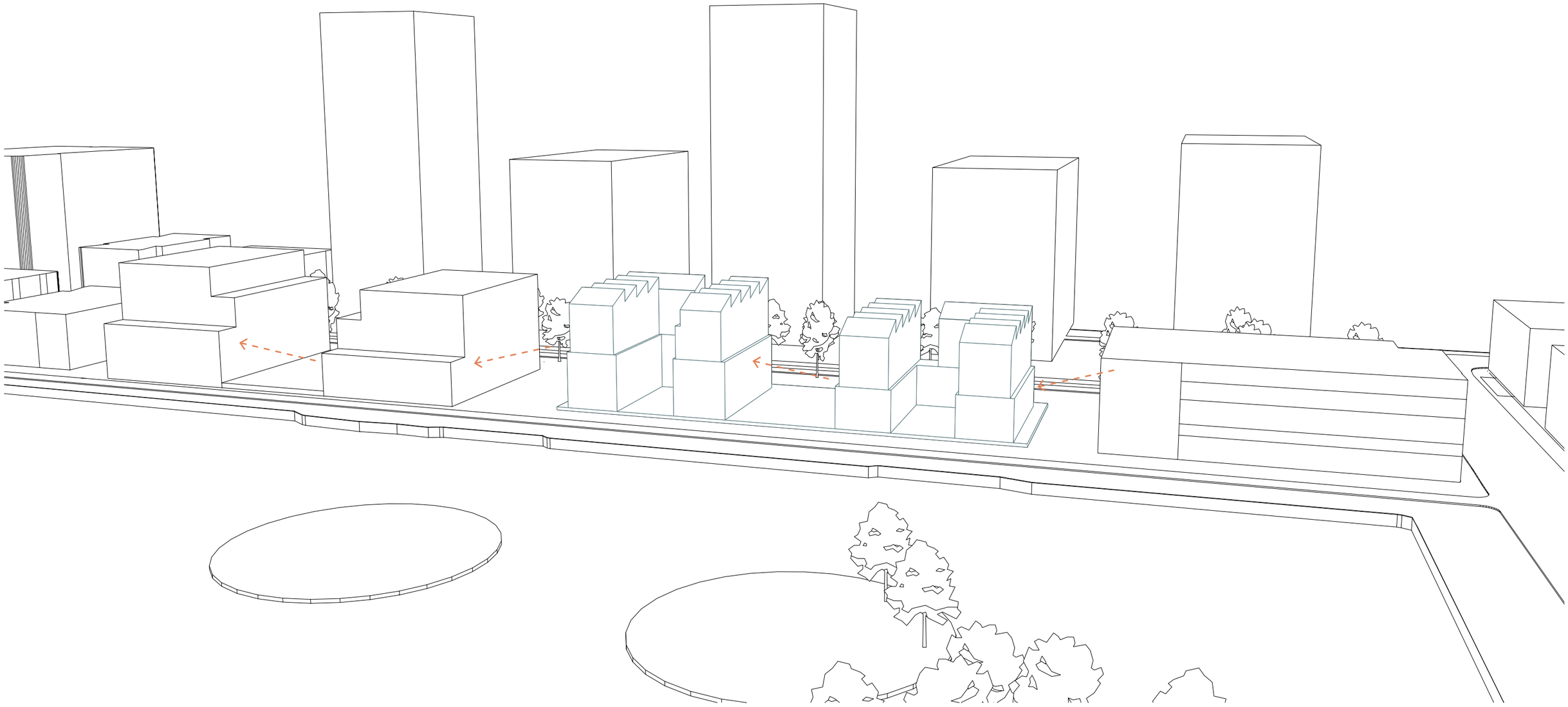
The shape of the volume refers to the industrial history of the Minervahaven.

CONTEXT

Minervahaven 1:500

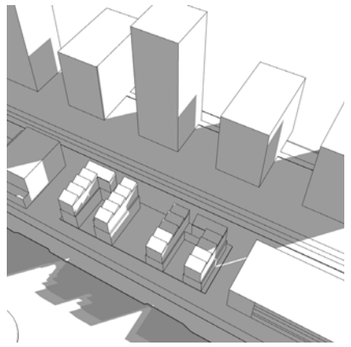
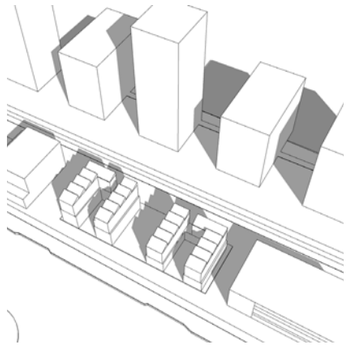
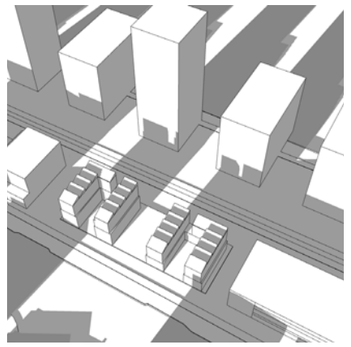
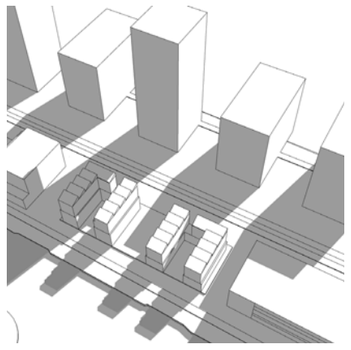
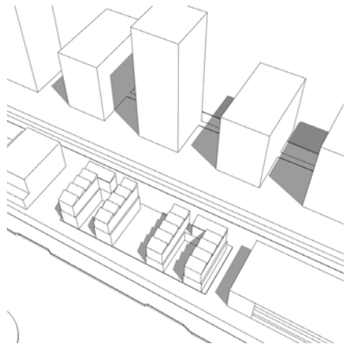
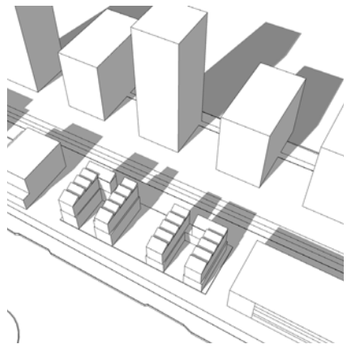
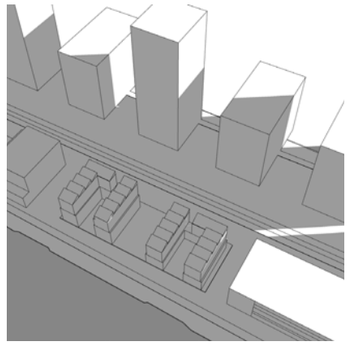
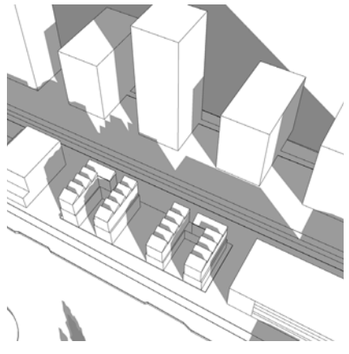
CONTEXT

Minervahaven



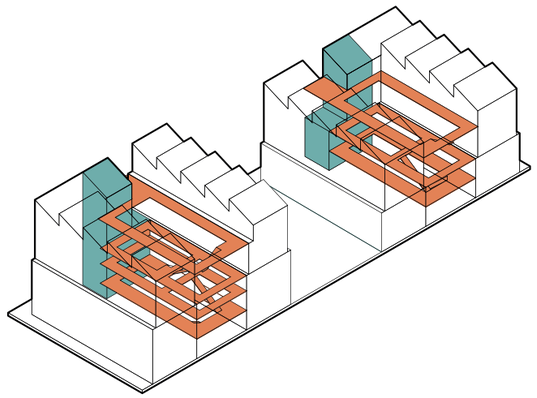
CONTEXT

sun & shadows

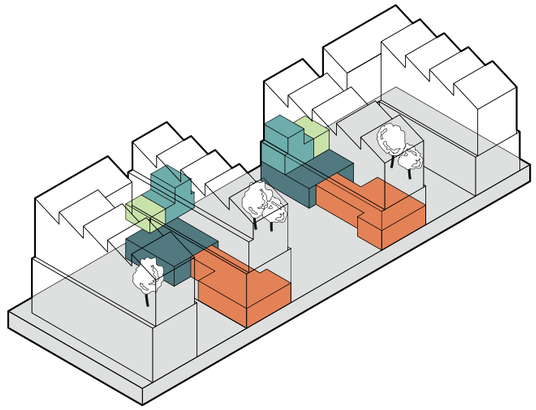
	9.00	14.00	18.00
21 Maart			
21 Juni			
21 December			

BUILDING

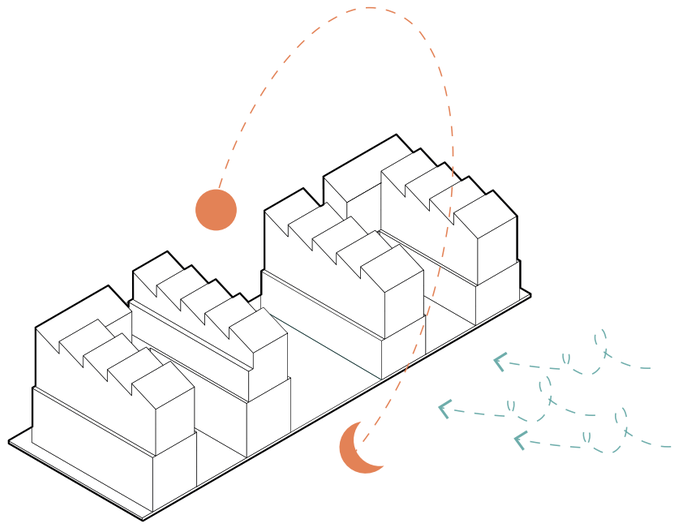
principles



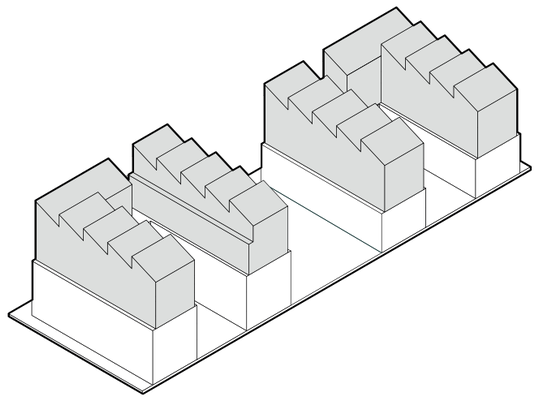
access
main staircase and lift (1st escape route)
+ galleries and stairs (2nd escape route)



private | collective | public
living room, study, laundry, guest room



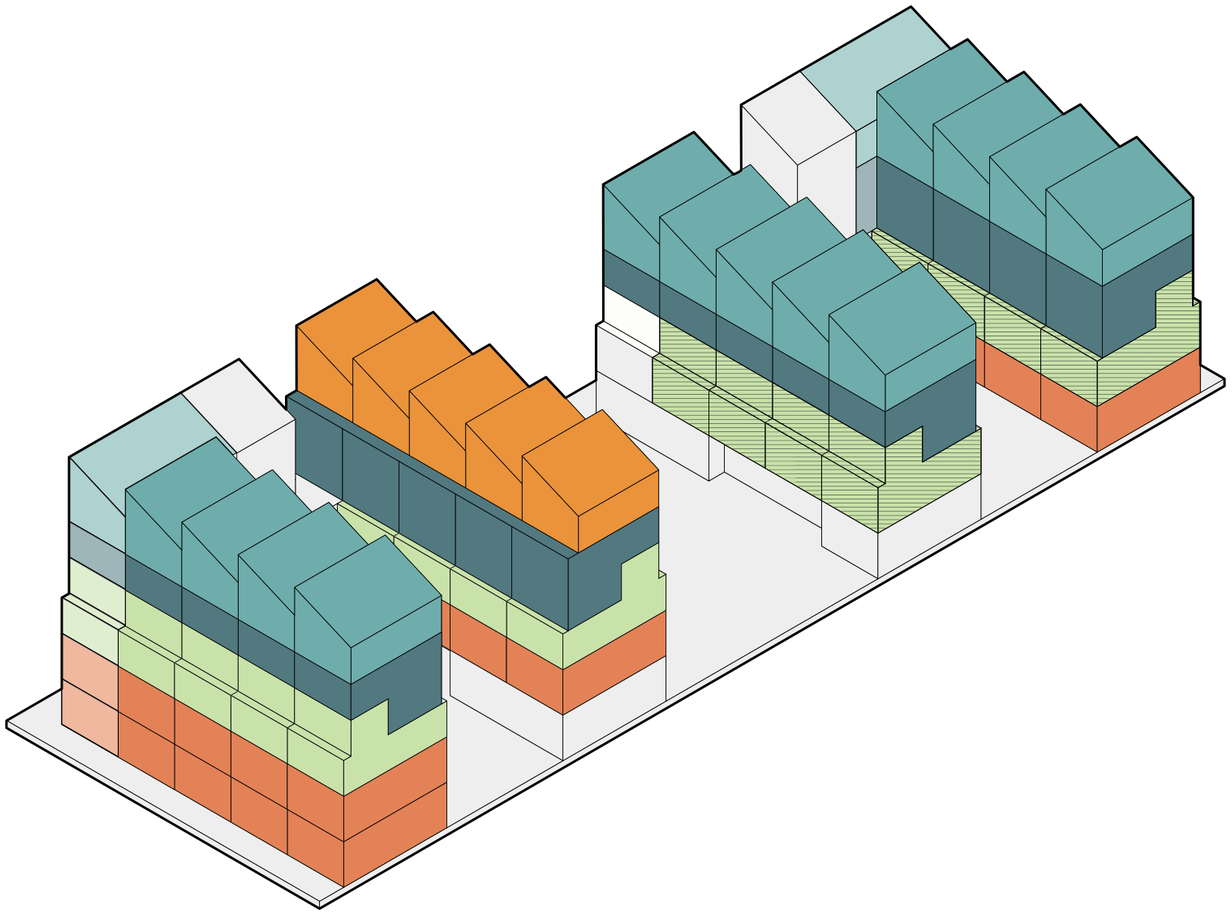
sun | wind



Building mass
2 atmospheres (brick and wood)

BUILDING

dwelling types



Type A 16x
49 m^2

Type A (corner) 4x
57 m^2

Type B 16x
64 m^2
(height 3500 or 2700 mm)

Type B (corner) 2x
72 m^2
(height 3500 or 2700 mm)

Type C 18x
52 m^2
(+12m^2 expanding option dwelling)

Type C (corner) 2x
64 m^2
(+17m^2 expanding option dwelling)

Type D 13x
39 m^2

Type D (corner) 2x
50 m^2

Type E 5x
34 m^2

+

44 + 34 dwellings = 78 dwellings

Total area private dwellings
4021 m^2

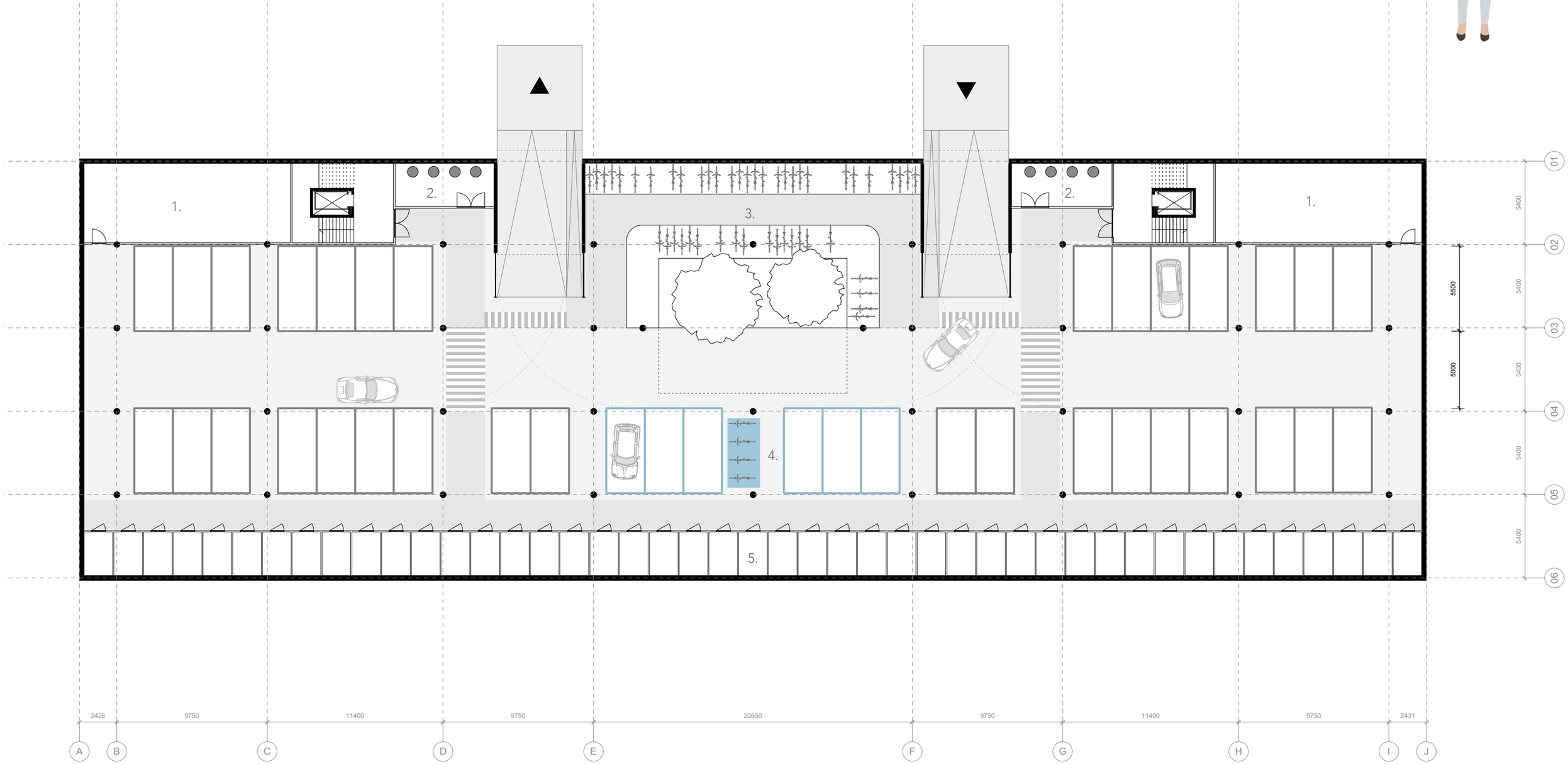
Total area collective spaces
(living, laundry, guest room, study)
456 m^2
(6 m^2 per dwelling extra)

Private/Collective proportion
90% is private, 10% collective

GARAGE

1 : 2 5 0

"The garage is light and clear, especially where the shared electric cars and bikes are"

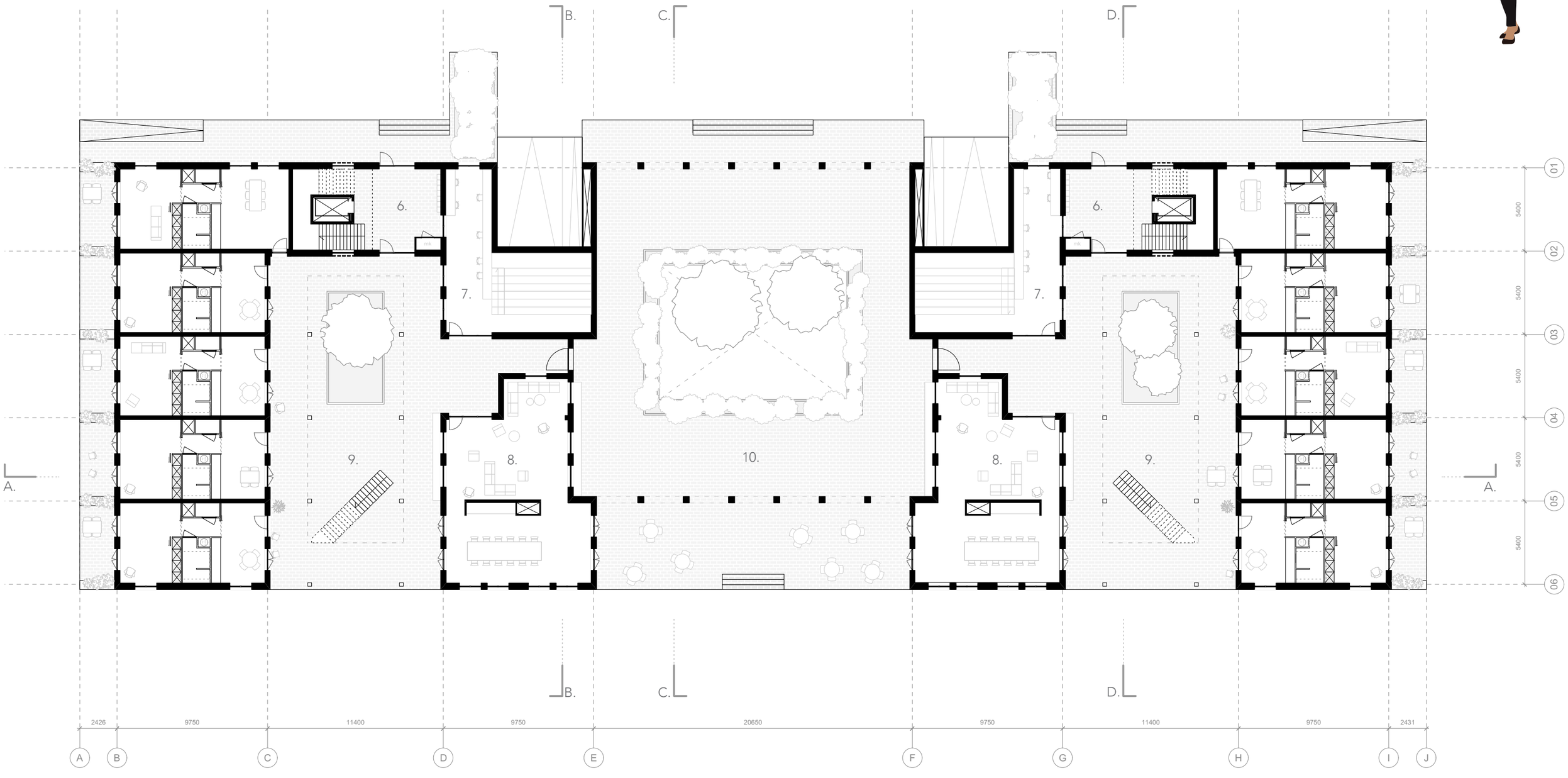


1. Technical area
2. Waste bins
3. Bicycle parking
4. Electric bicycles and cars
5. Storage

GROUND FLOOR

1 : 2 5 0

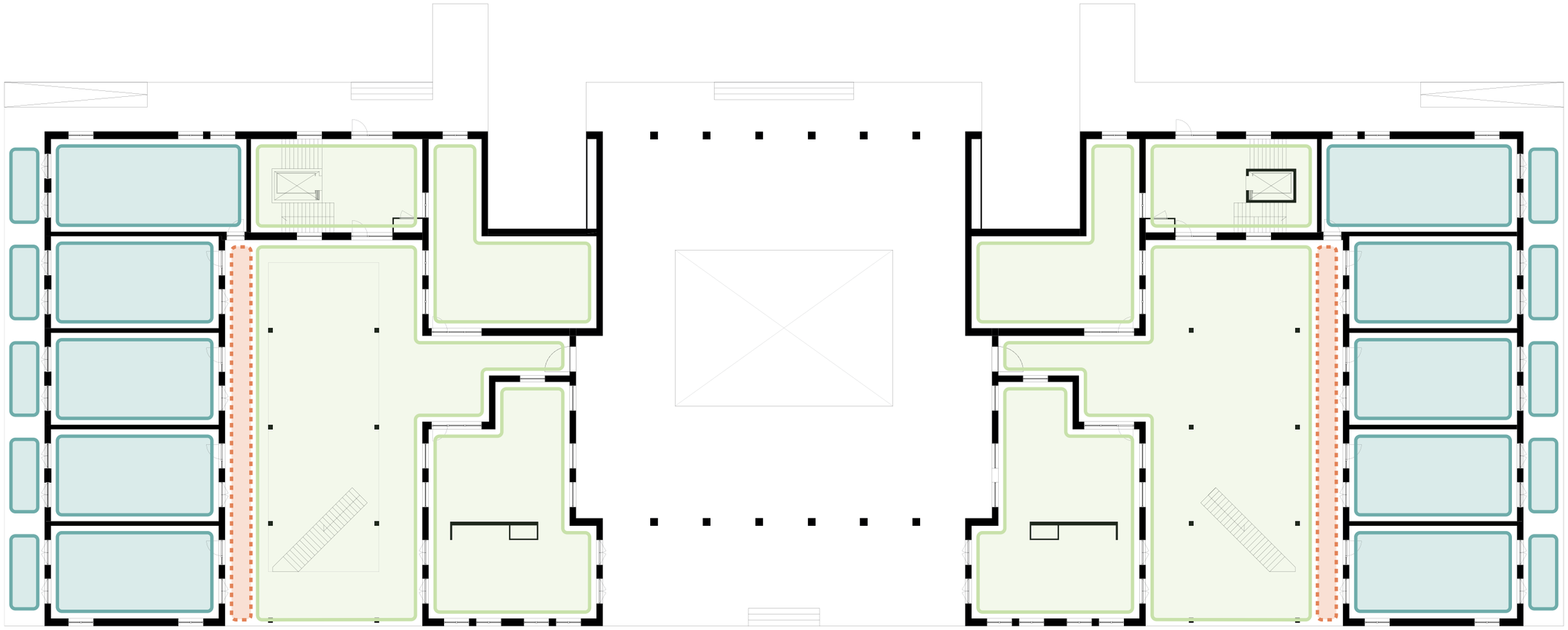
"On the ground floor is the place where I and other residents work. Sometimes we play a movie or have a meeting in our small theatre"



6. Main entrance
7. Study | home theatre
8. Living room
9. Collective courtyard
10. Public square

DOMAINS

private | collective | public



Private

Collective

Transistion zone

Public

* Based on the design tools (the transition zone and clustering of dwellings and shared facilities) I found in the plan analysis of the Miss Sargfabrik and the Tietgen Kollegiet.

FIRST FLOOR

1 : 2 5 0

"When my son is over, he can sleep in our shared guest room"

11. Laundry room
12. Guest room

SECOND FLOOR

1 : 2 5 0

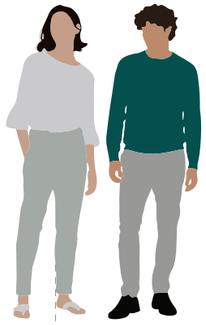
"The laundry room is shared, so you don't need a machine for yourself "

11. Laundry room
12. Guest room

THIRD FLOOR

1 : 2 5 0

"We have a bench and plants on the gallery in front of our house, this gives it a personal touch. We love to sit there, because of the interaction with neighbours"

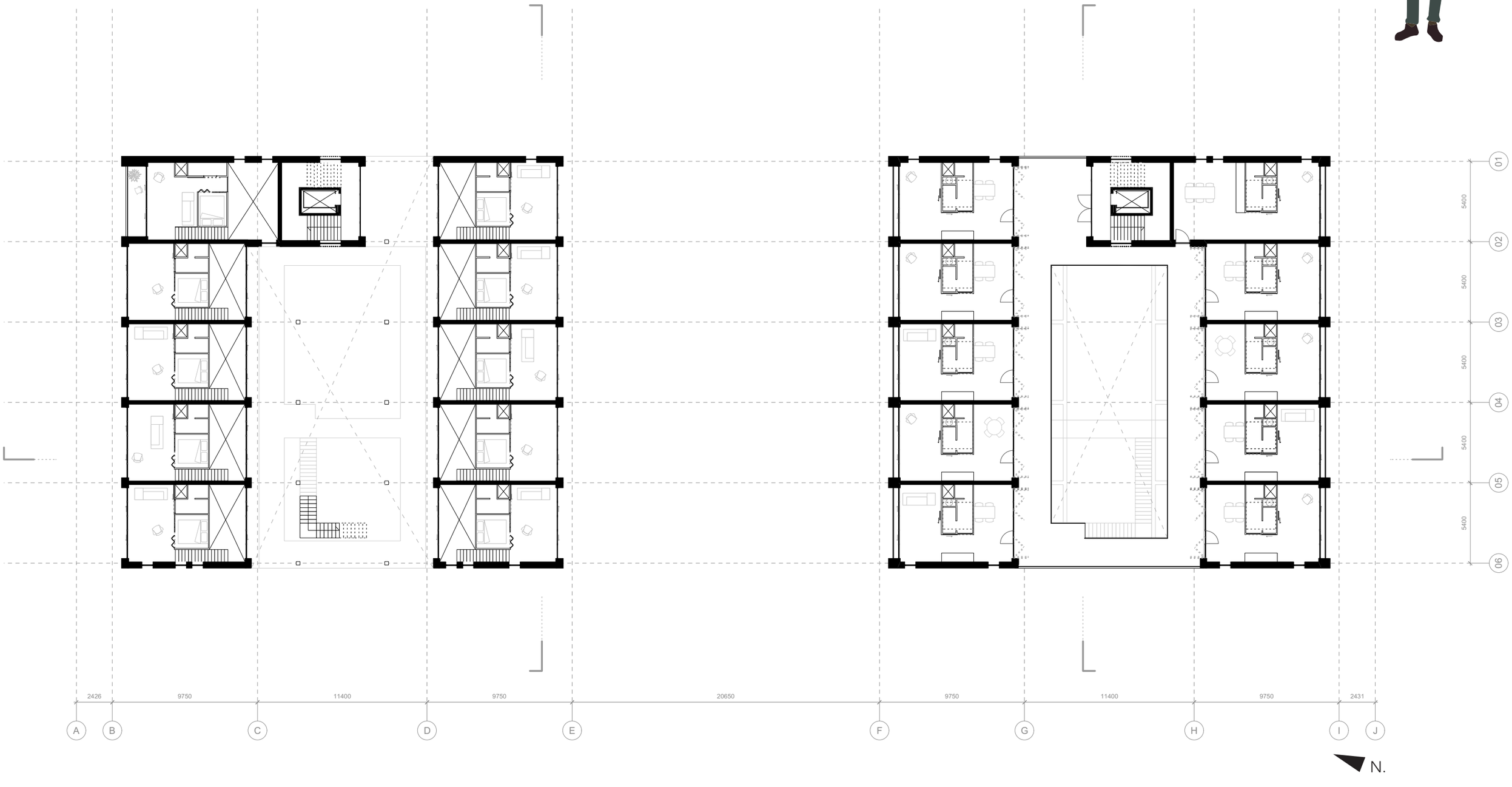


12. Guest room

FOURTH FLOOR

1 : 2 5 0

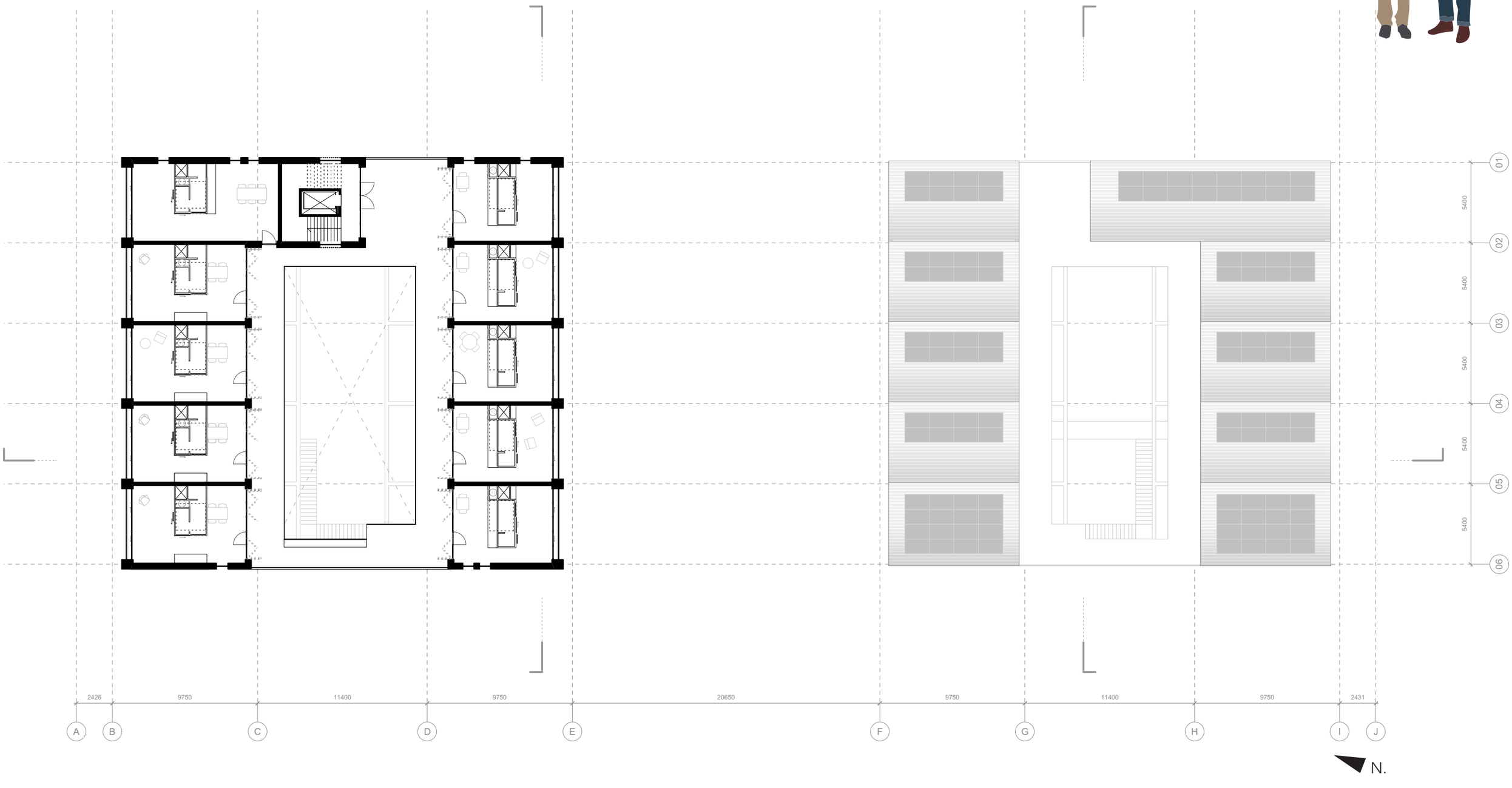
"When I am sitting in front of my house, I enjoy the view over the water and the company of my neighbours"



FIFTH FLOOR

1 : 2 5 0

"In summer our living space is expanded by opening the folding doors"



WEST FAÇADE

1:250

EAST FAÇADE

1 : 2 5 0

FAÇADES

1:250

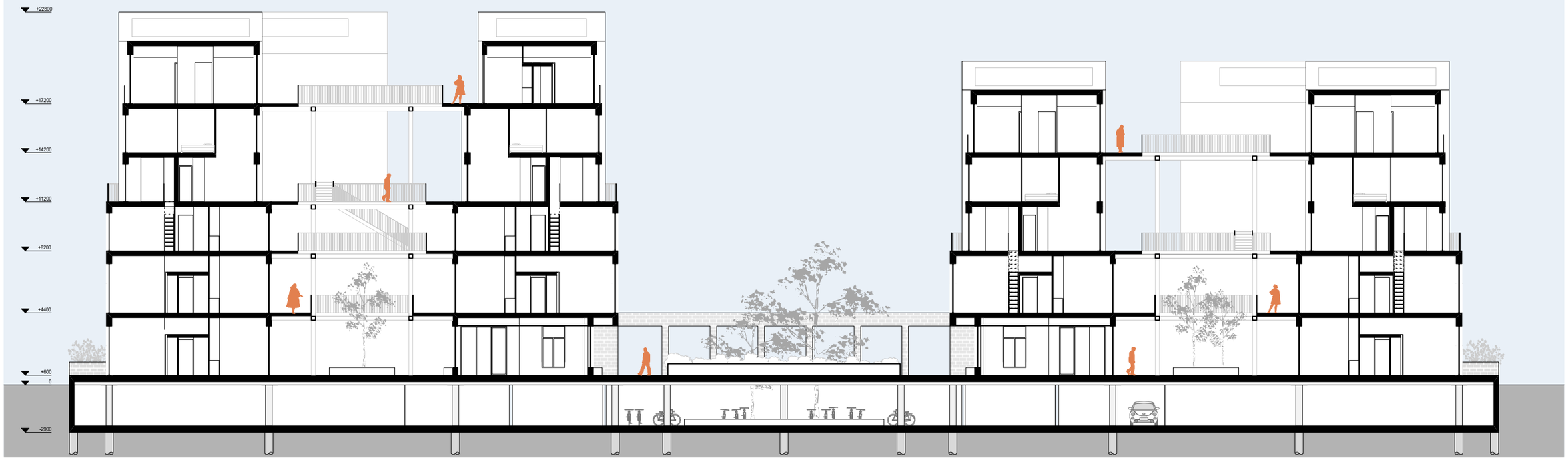
CROSS SECTIONS

1:250

LONGITUDINAL SECTION

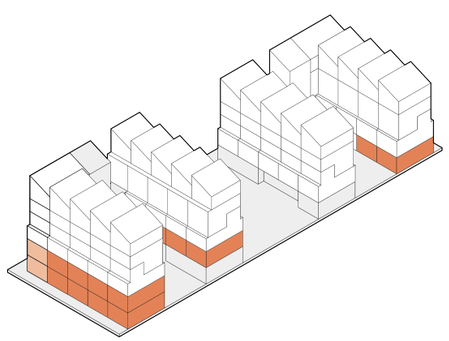
1 : 2 5 0

"On the ground floor is our *Starbucks* at home; here we read the newspaper or have a chat with other residents. Sometimes we invite family and friends over for a party"



DWELLING

1:100 | type A | 49m²

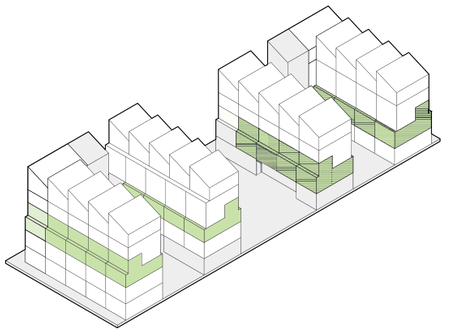


DWELLING

axonometry | type A | 49m²

DWELLING

1:100 | type B | 64m²

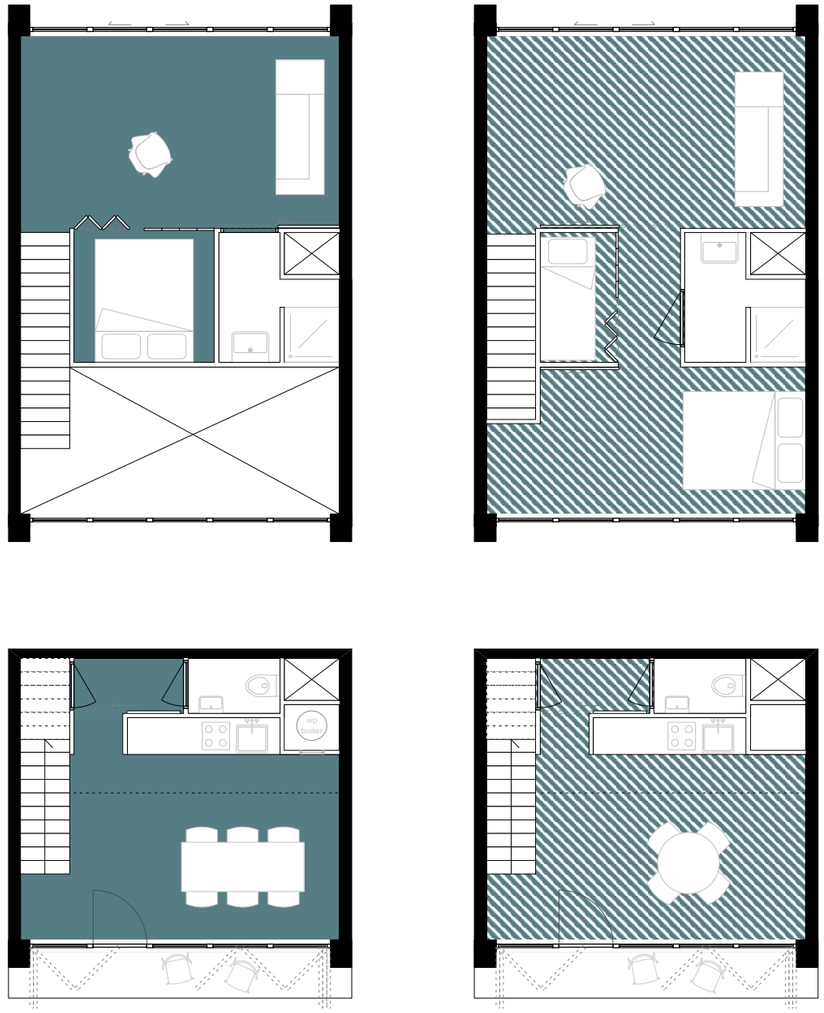


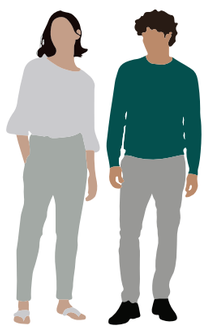
DWELLING

axonometry | type B | 64m²

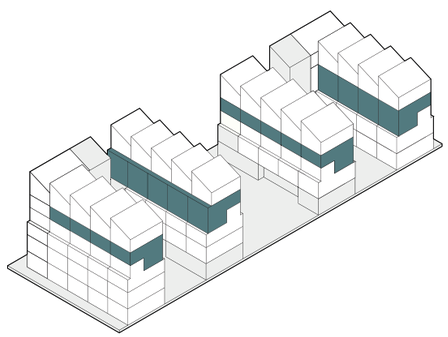
DWELLING

1:100 | type C | 51-64m²



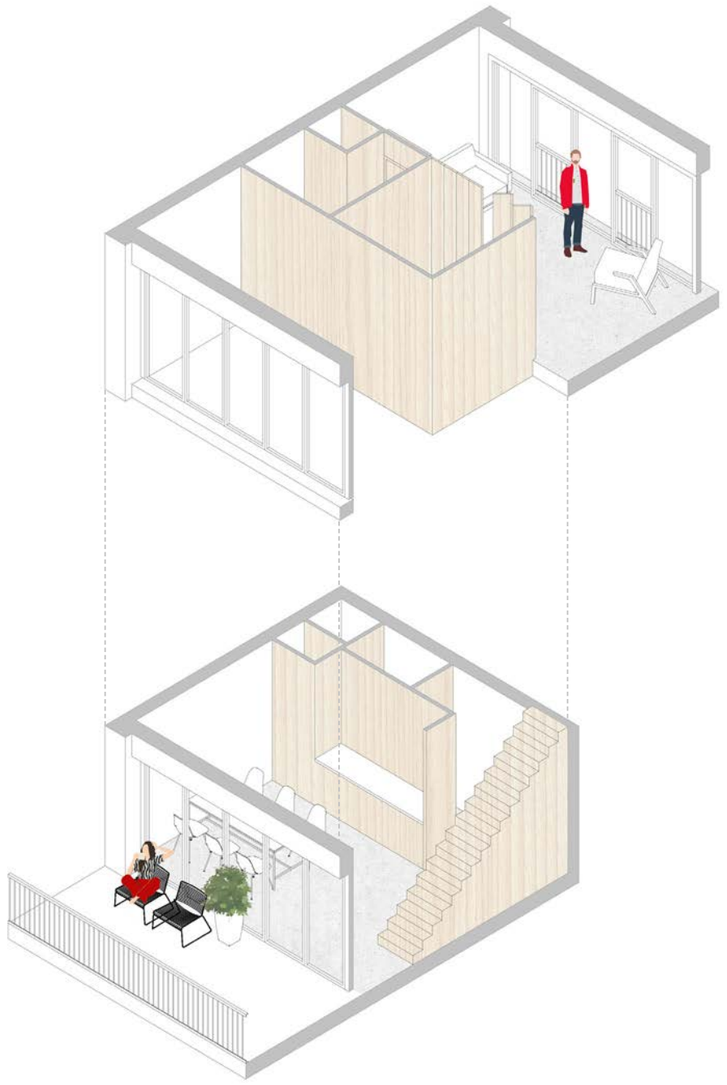


"This dwelling has a *bedstee*, which makes it possible to sleep more easily during daytime"



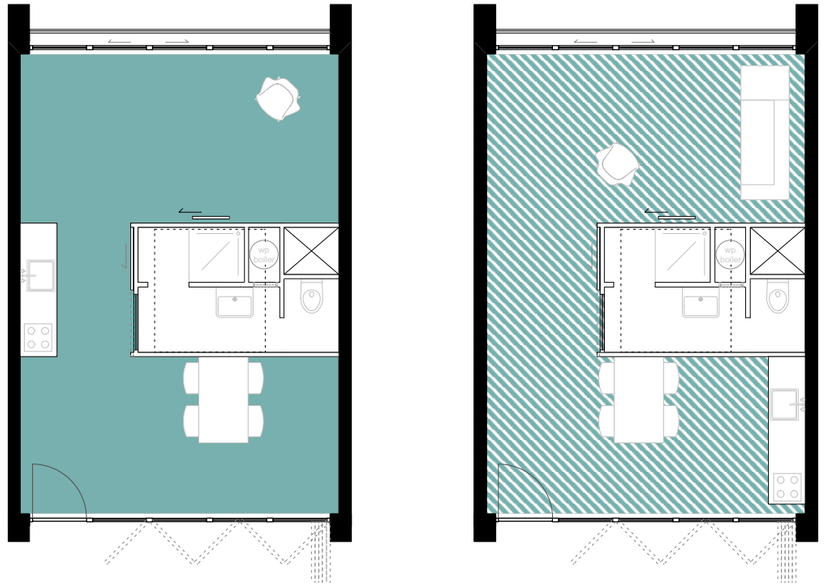
DWELLING

axonometry | type C | 51-64m²

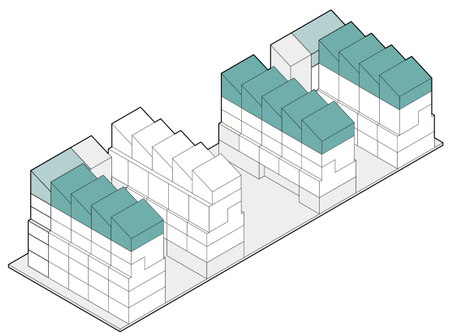


DWELLING

1:100 | type D | 39m²

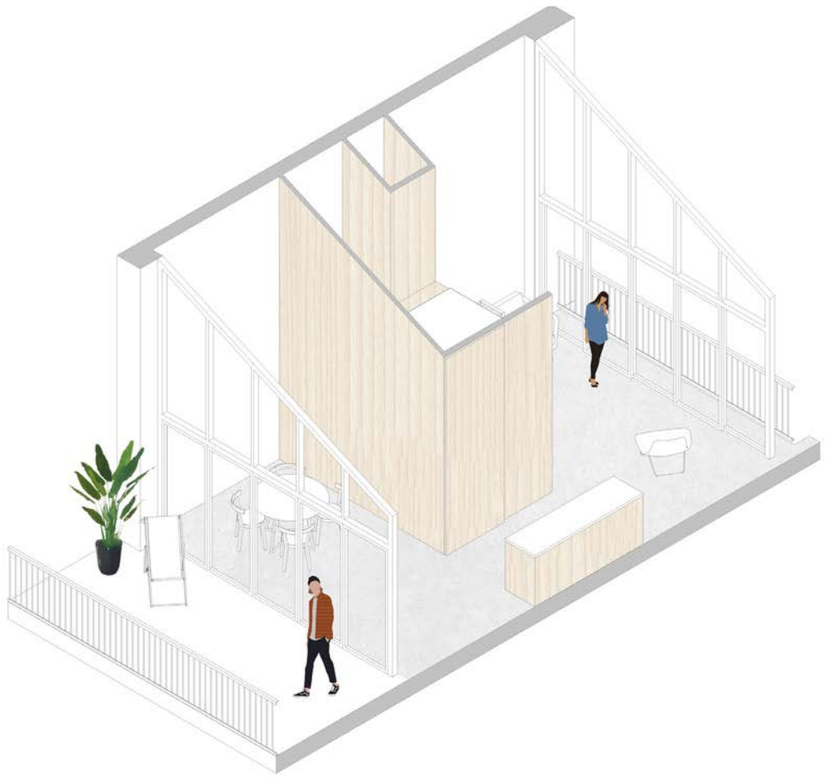


"Most dwellings here are relatively small, but spacious because of the height. Perfect for me, because it is much more affordable"



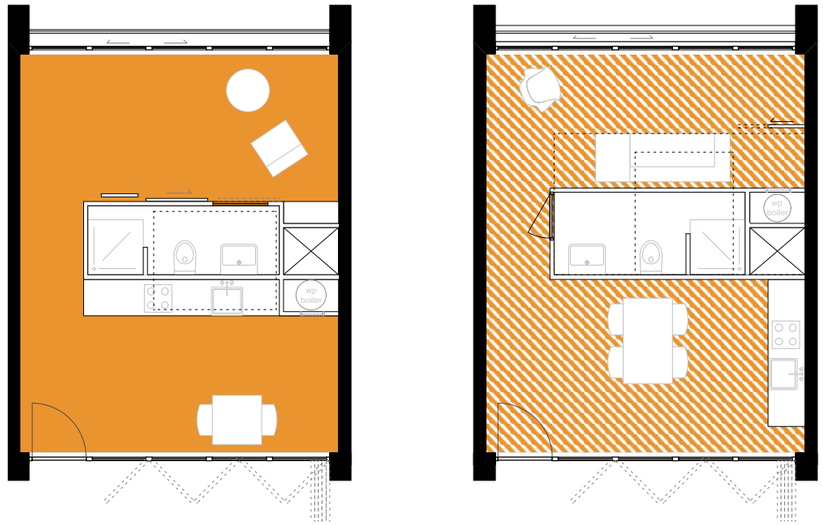
DWELLING

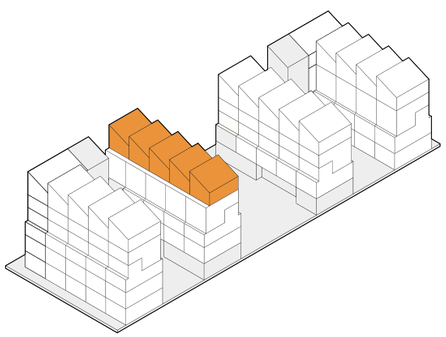
axonometry | type D | 39m²



DWELLING

1:100 | type E | 34m²



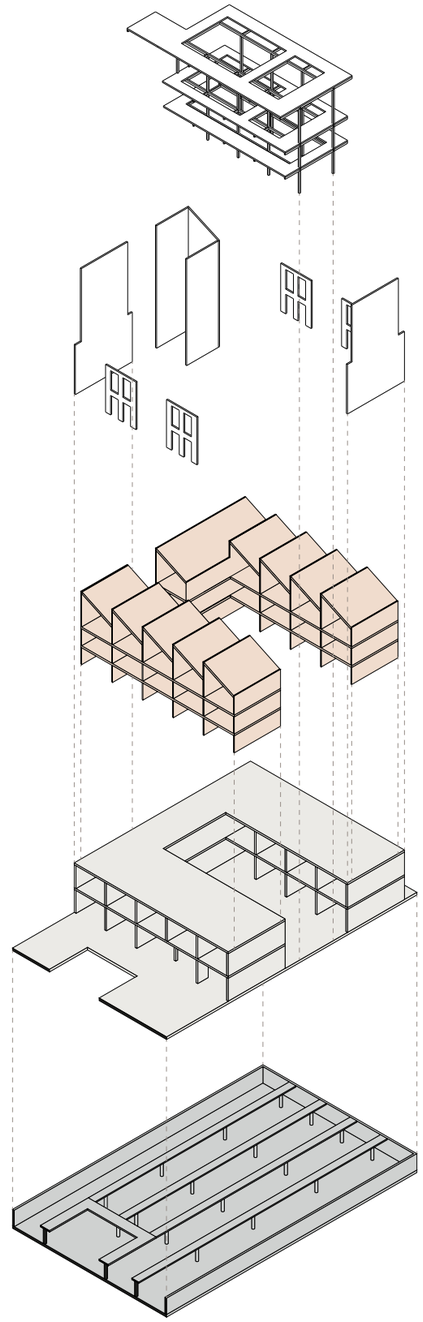


DWELLING

axonometry | type E | 34m²

CONSTRUCTION

principle



Steel construction

Steel columns and beams
Prefabricated concrete floors
Hight = 1/30 * l = 1/30 * 6 = 0,2 m
Column = l/25 = 6/25 = 0,24 m

Stability

CLT: stability through clamping
Concrete: reinforced walls and facade elements + stiff core (walls main staircase and lift)

Cross Laminated Timber (CLT)

Floors 2/3/4
prefabricated CLT walls and floors

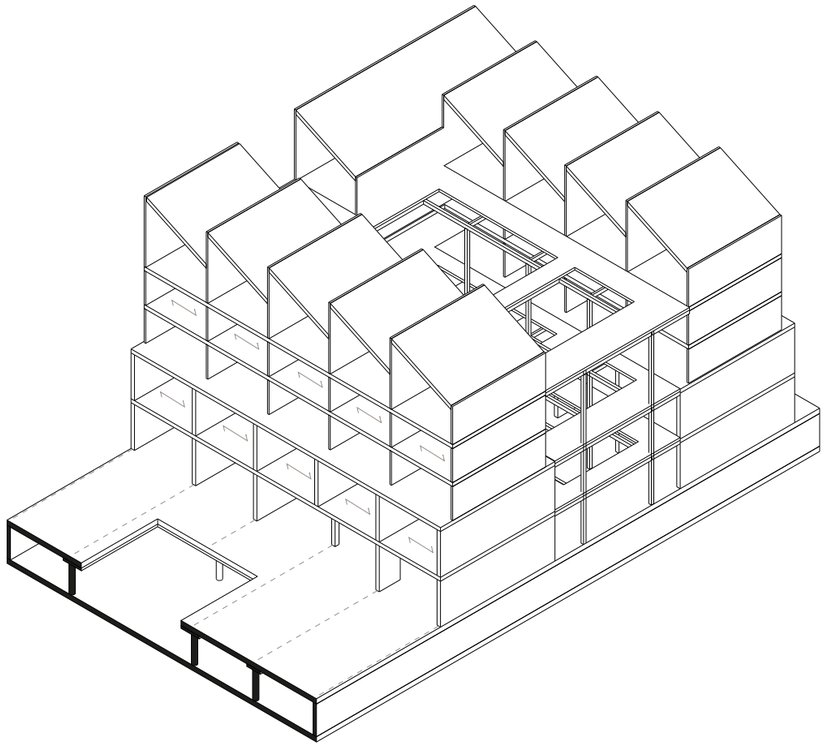
Concrete

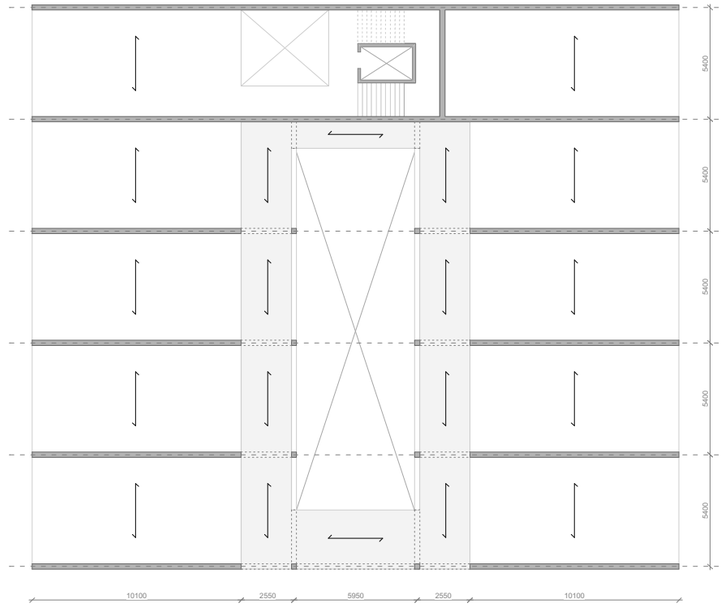
Garage + floors 0/1
Prefabricated walls and façade elements
Prefabricated floors *(Breedplaatvloer)*

Reiforced beams in garage

CONSTRUCTION

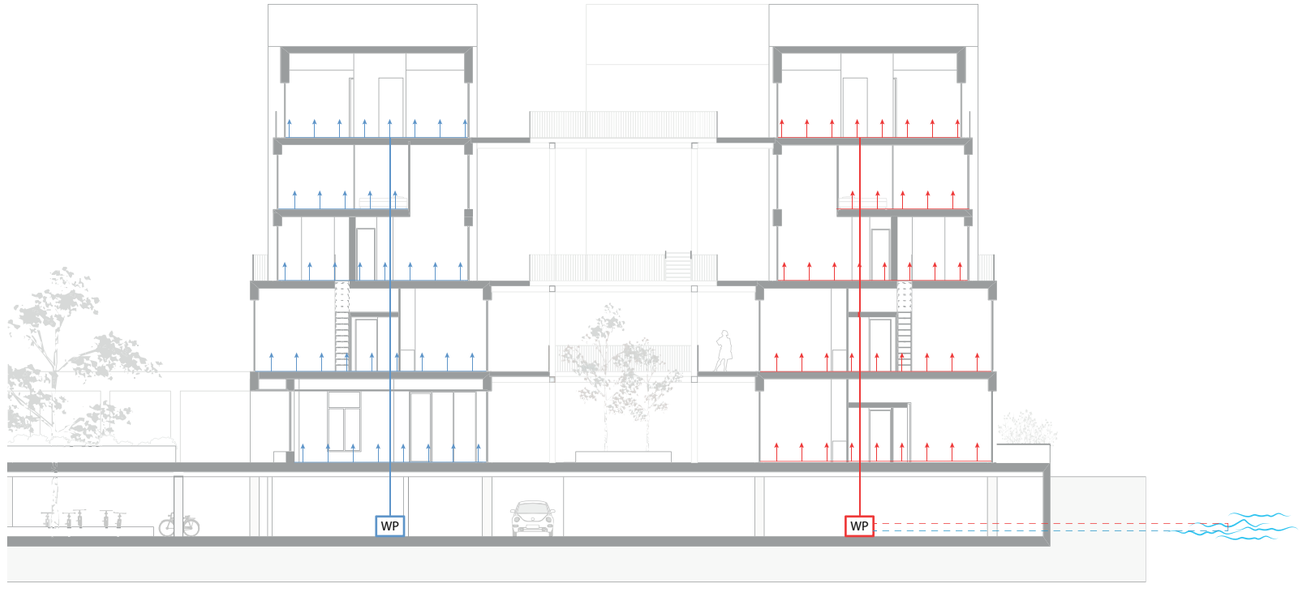
principle





CLIMATE

principles

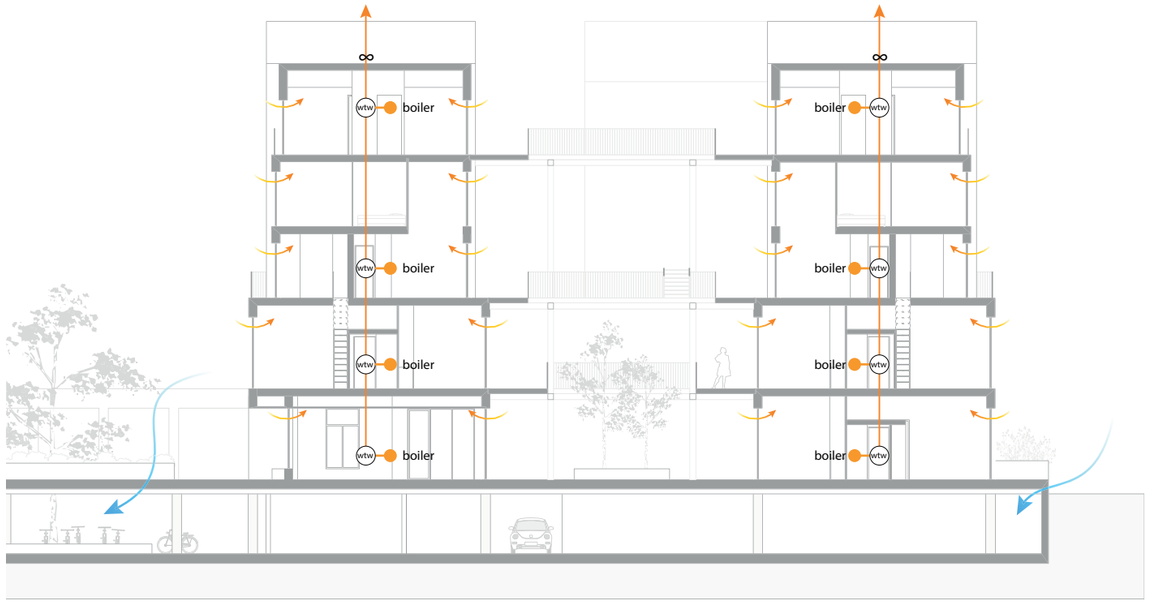


Heating & cooling

Heat pump water-water (using water of harbour)
Low temperature floor heating (winter)
Floor cooling (summer)

CLIMATE

principles

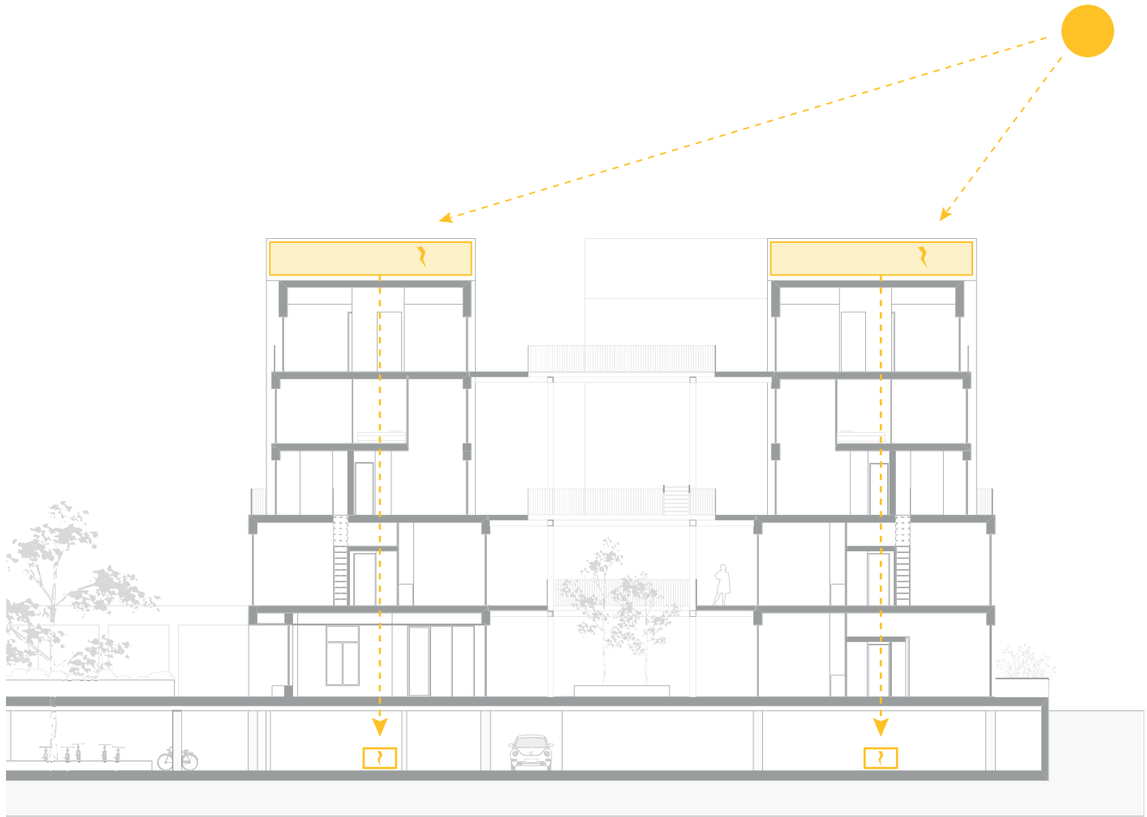


Hot water & ventilation

Hot water: heat pump boiler in each house, that uses heated exhaust air (WTW).
Dimensions heat pump boiler (100L, 2pers.) = 1.20x0.5x0.5 m)
Shower water heat recovery installation (WTW shouwer drain, Technea Joulia inline)
Natural ventilation (DUCO self-regulating and pre-heating ventilation grills).
Central mechanical exhaust (extraction boxes on the roof)

CLIMATE

principles

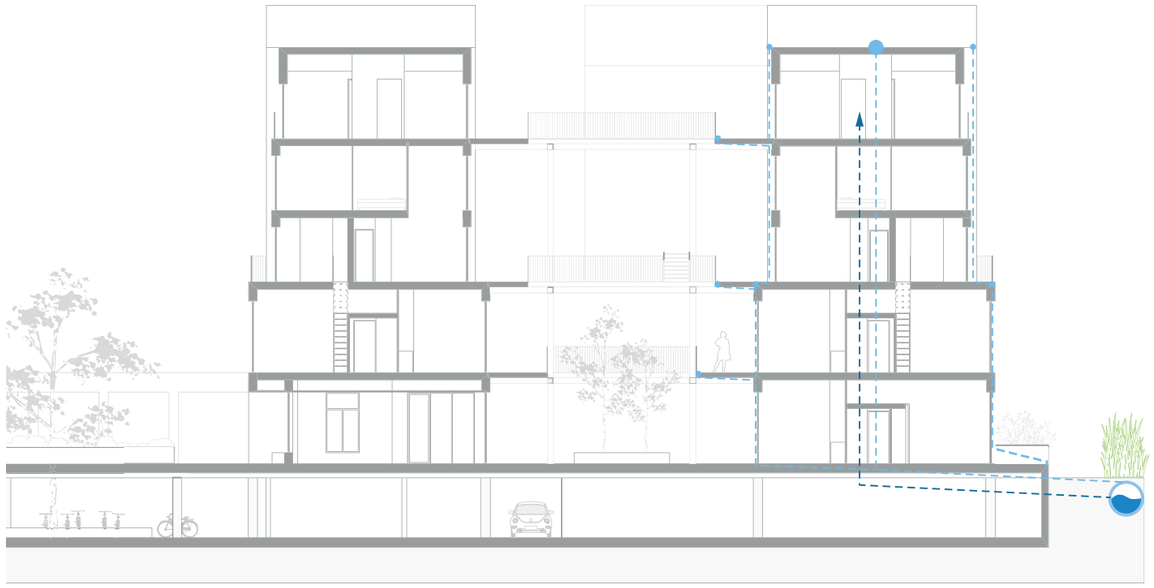


Sun

196 solar panels (angle of 25°, monocristalline black)
Residual heat of the solar panels, can be used as an addition to the heating system of the building.
1650*1000 (dimensions)
Sun protection glass is used.

CLIMATE

principles



Water system

Water is collected, filtered (helophyte filter) and stored. This water is used for flushing toilets, washing machines and outside watertap (50% saving on drinking water).Therefore two systems are needed, one for drinking water and one for household water. Main water drain is inside the building (Geberit Pluvia, negative pressure system).

Water storage tank: 30-40 m3 per building (2 tanks on each side) (Neonline rainwater tank).The dimensions are based on (1) the characteristics and square meters of the roof surface, (2) the average annual rainfall in the Netherlands, (3) the water that gets lost, (4) the efficiency of the filter and (5) a factor 0,06.

Roof surface: 800m^2
Annual rainfall Amsterdam: 900m^2
Rainfall on the roof: 800*900=720m^3
Part of that is lost (80%): 567m^3
Efficiency of filter (85%): 490m^2
Factor 0,06: 30m^2

It is important to note that the tank should not be too large. Occasionally it must overflow, in order to change the water. The helophyte filters are located on both sides of the building and are each 175-200m^2.

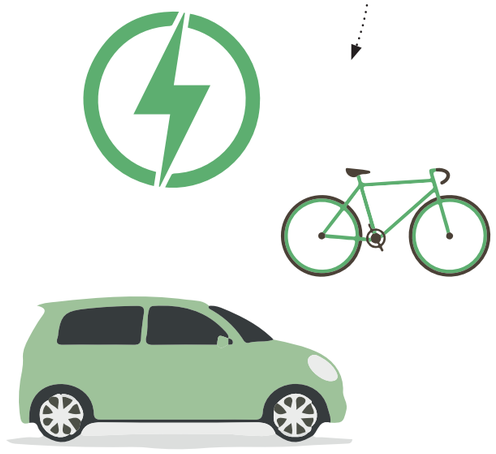
SUSTAINABILITY

living consciously

People who live in a building like this, are probably socially concerned and have chosen a certain lifestyle. A building that is about sharing and social/environmental responsibility fits with the target group.

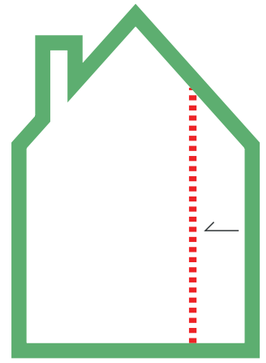
Materials:

From the Netherlands (bricks/wood)
Low maintenance
Long lifespan (modificated Dutch wood)
Frog brickwork (less bricks are needed)
Warm appearance
Link to the history of the Minervahaven



Sharing:

Electric cars
Electric bikes
Common rooms (laundry room, guest room, living room, study, garden)
Social contact

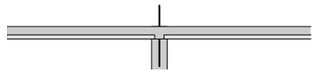


Dwellings:

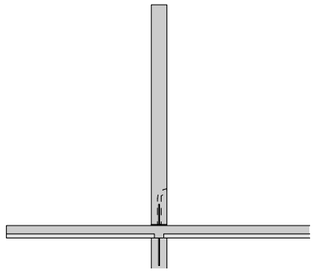
Smaller dwellings/households
Sharing common spaces/utensils
Good insulation
Triple glass
LED
Enrgy saving lift Otis

ASSEMBLY

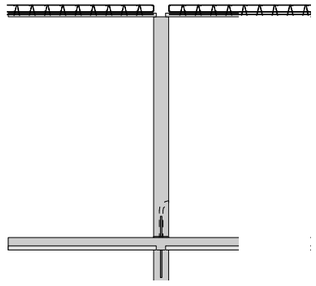
façade



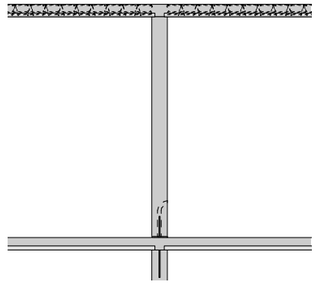
1. Prefabricated concrete wall and floor, a steel pin is sticking out.



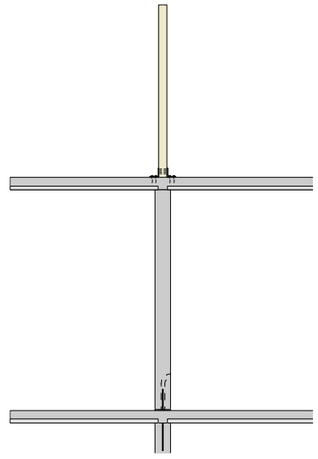
2. A crane is used to place the prefab walls. The steel pin fits into a slot in the wall. By pooring this slot, a firm connection is made.



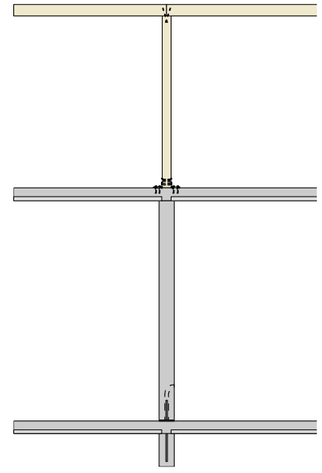
3. The prefab concrete slab floors (breedplaatvloer), are placed on the wall.



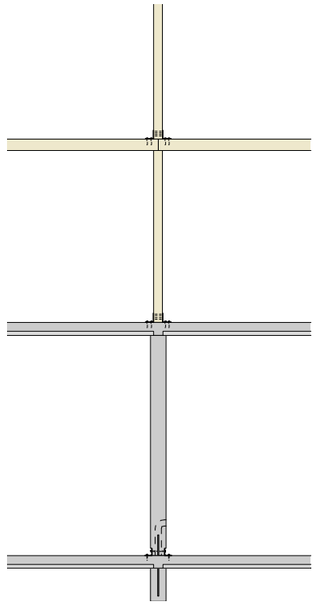
4. The floor is poored.



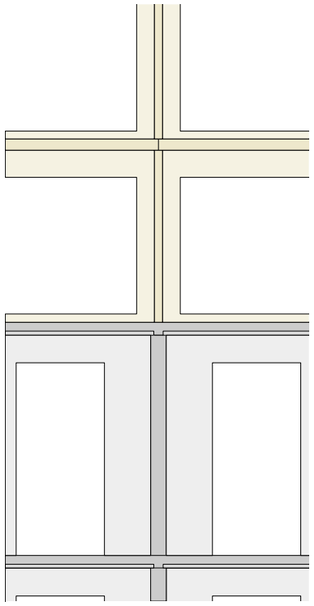
5. When the concrete floor is cured, the Cross Laminated Timber (CLT) wall can be placed. The dimensions of these elements are 2800x7800.



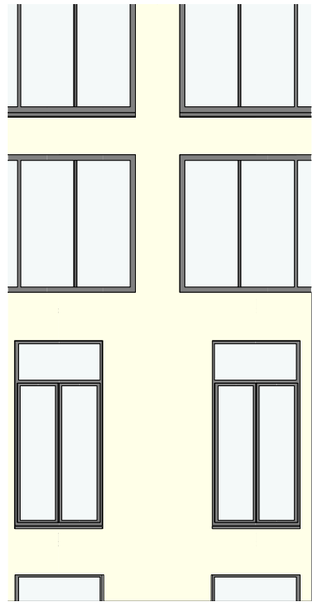
6. On top of the CLT load bearing wall, the CLT floors are placed. These elements are 2600x5400.



7. Then the next CLT load bearing wall can be placed.



8. When the load bearing walls and floors are in place, the prefab façade elements of CLT and concrete (2800x5200) are attached with steel corners.



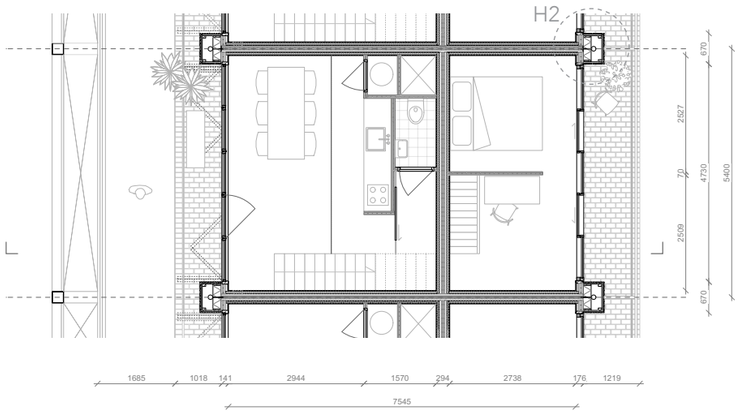
9. *Stelkozijnen*, sills and windowframes are placed. Then the insulation is attached.

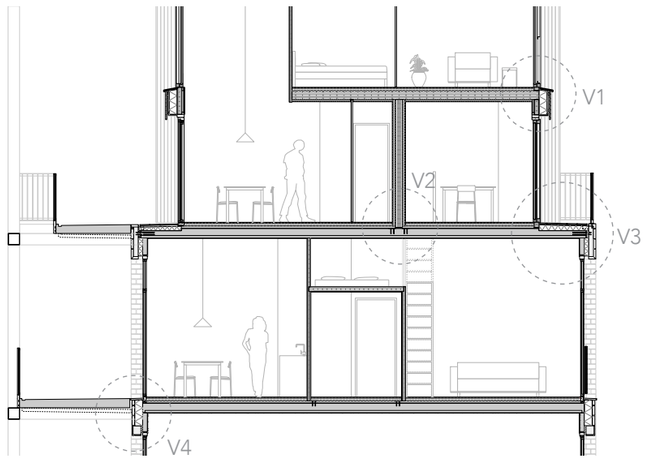
10. Façade cladding is applied on site: brickwork, prefab lintels and timber slats.

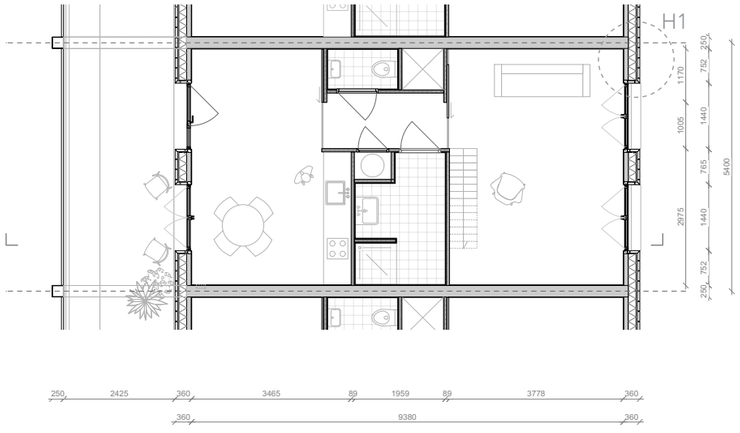
11. Finally the balustrades are attached.

FRAGMENT

overview







FAÇADE FRAGMENT

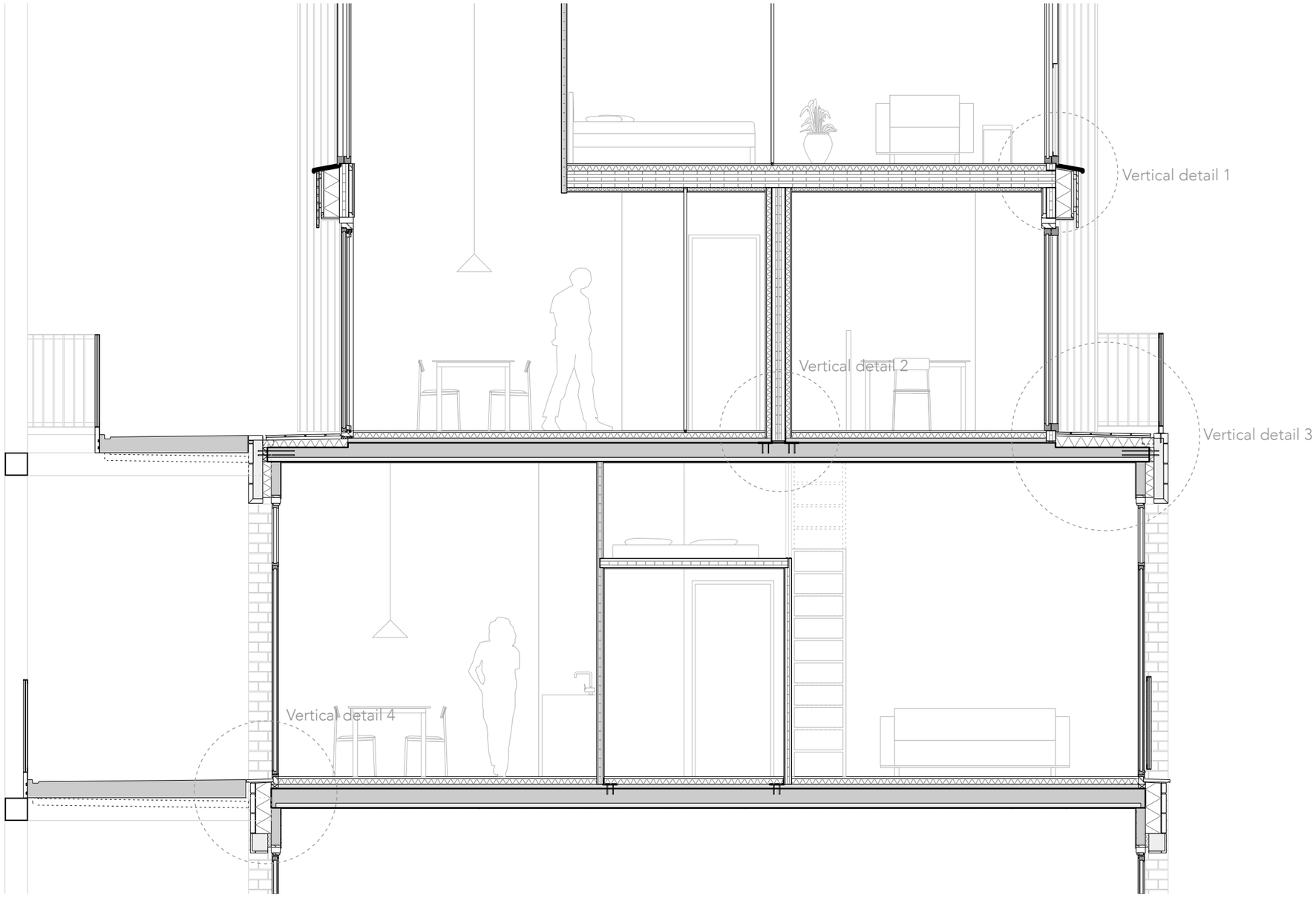
1 : 5 0

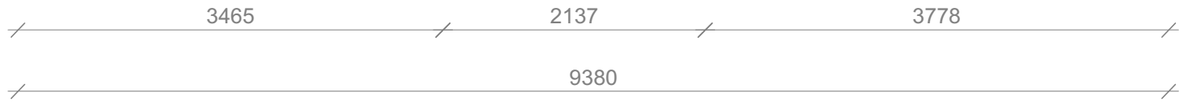
FAÇADE FRAGMENT GALLERY

1 : 5 0

SECTION FRAGMENT

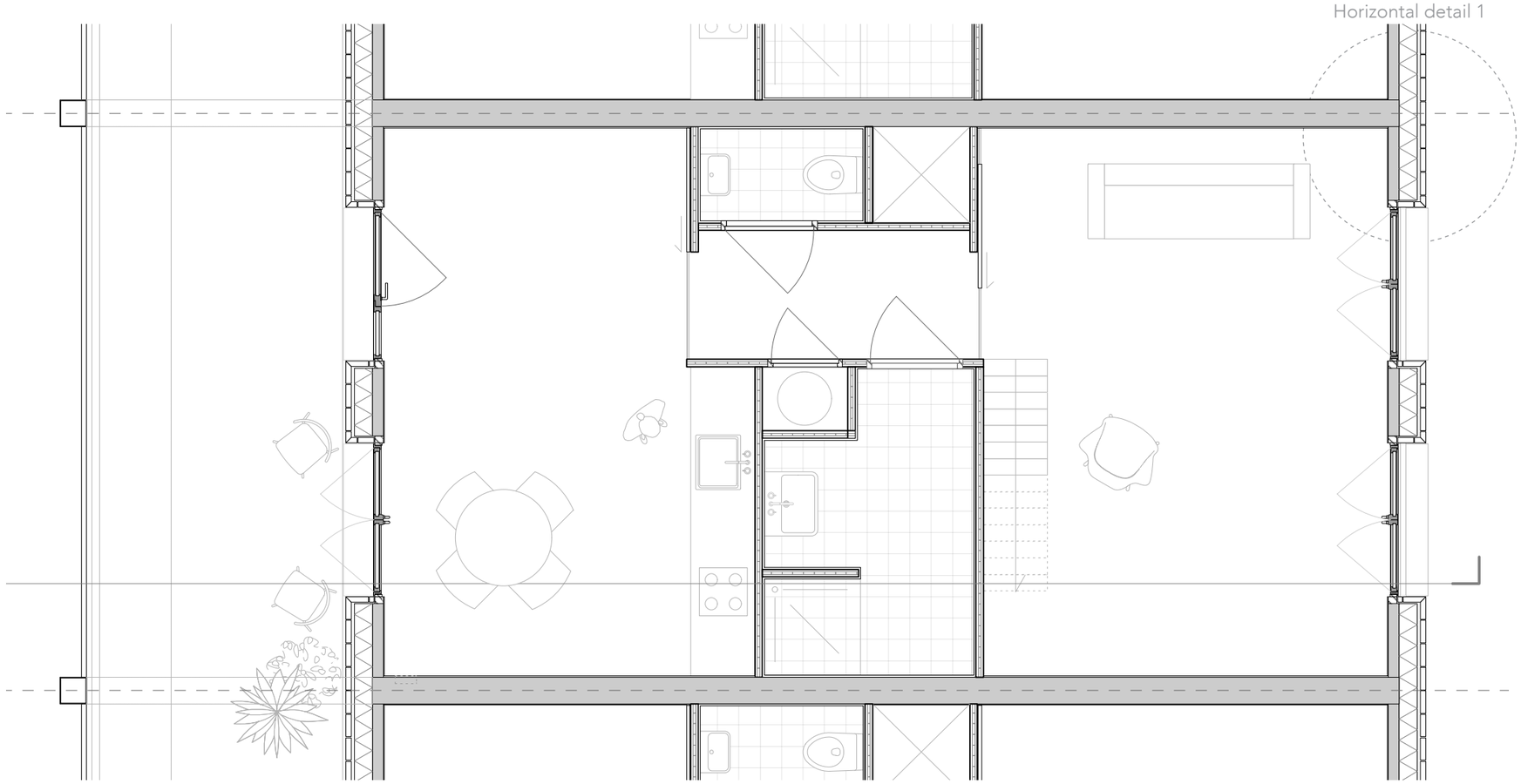
1 : 5 0





PLAN +1 FRAGMENT

1 : 5 0

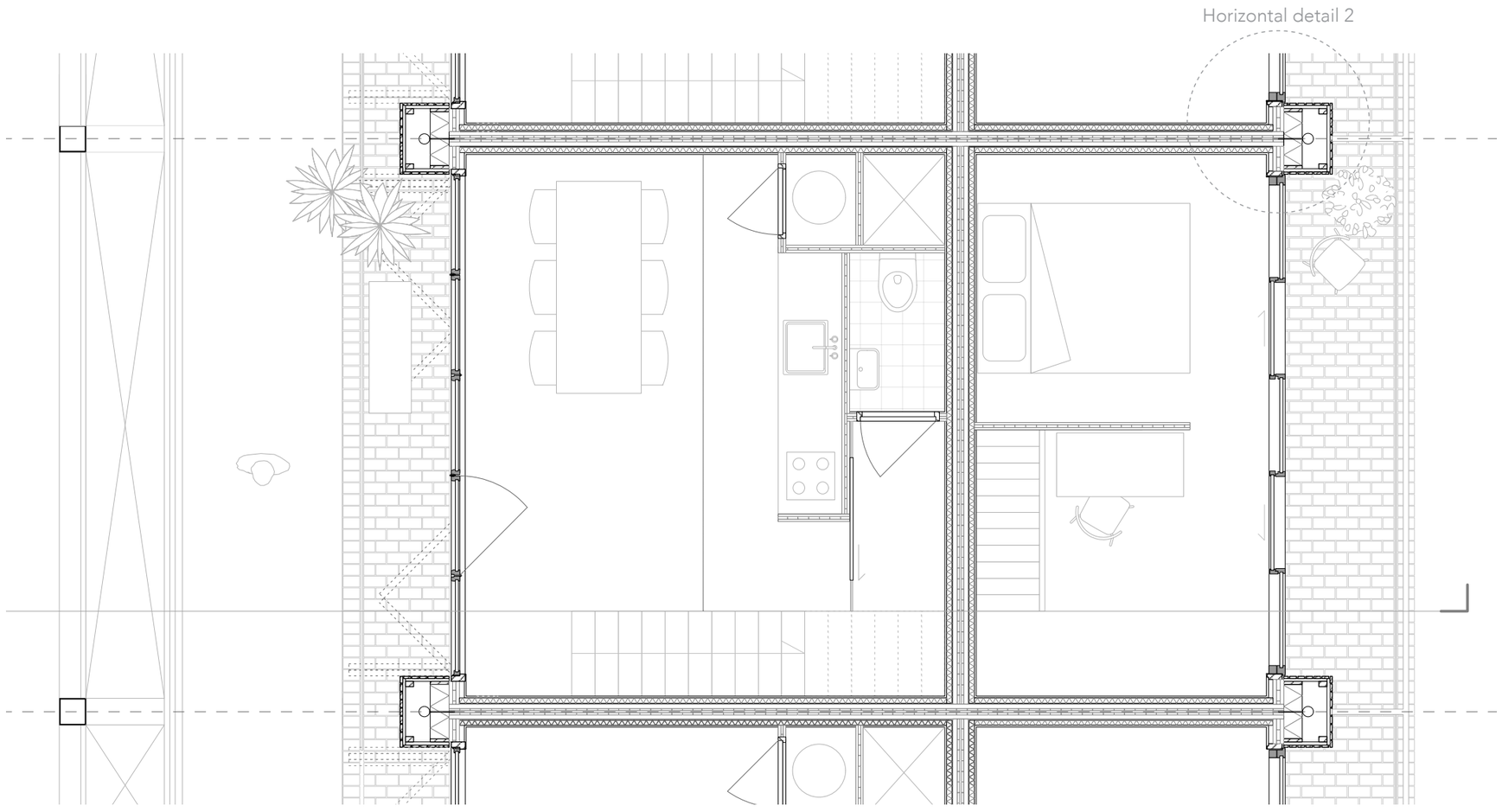


250 2425 360 3465 89 1959 89 3778 360

360 9380 360

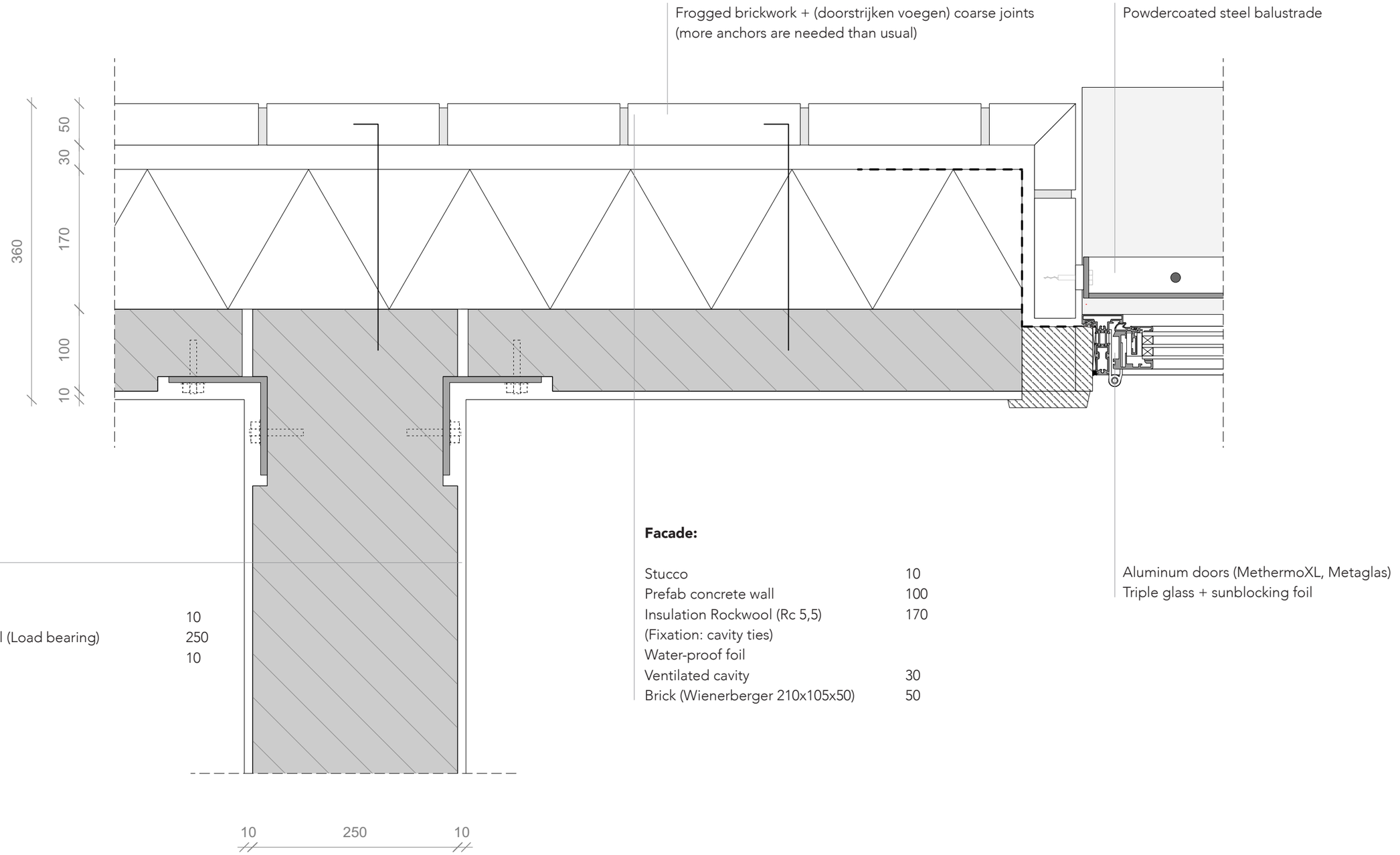
PLAN +2 FRAGMENT

1 : 5 0



DETAIL H1

1 : 5



Seperating wall

Stucco	10
Prefab concrete wall (Load bearing)	250
Stucco	10

Facade:

Stucco	10
Prefab concrete wall	100
Insulation Rockwool (Rc 5,5)	170
(Fixation: cavity ties)	
Water-proof foil	
Ventilated cavity	30
Brick (Wienerberger 210x105x50)	50

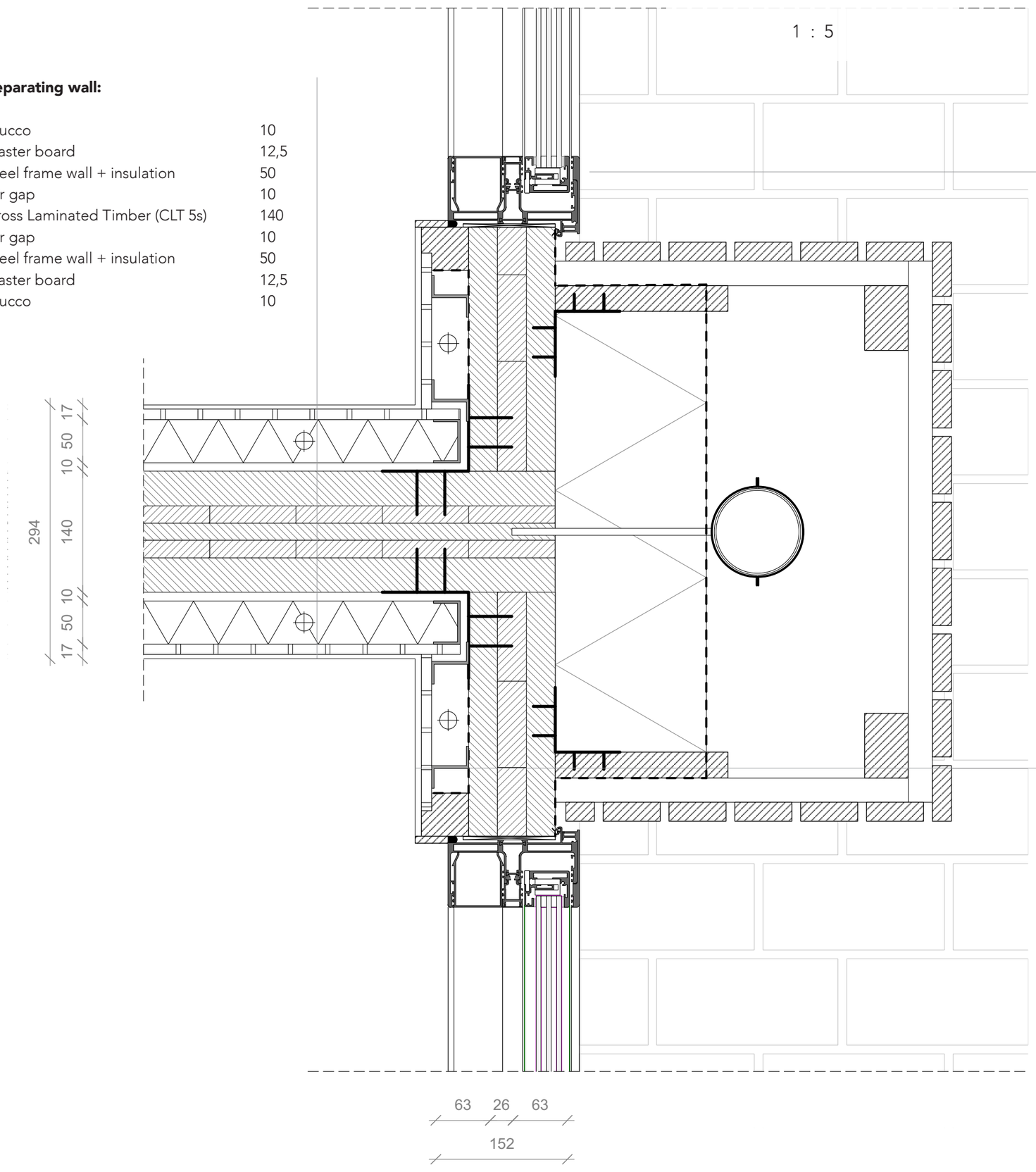
Aluminum doors (MethermoXL, Metaglas)
Triple glass + sunblocking foil

DETAIL H2

1 : 5

Separating wall:

Stucco	10
Plaster board	12,5
Steel frame wall + insulation	50
Air gap	10
Cross Laminated Timber (CLT 5s)	140
Air gap	10
Steel frame wall + insulation	50
Plaster board	12,5
Stucco	10



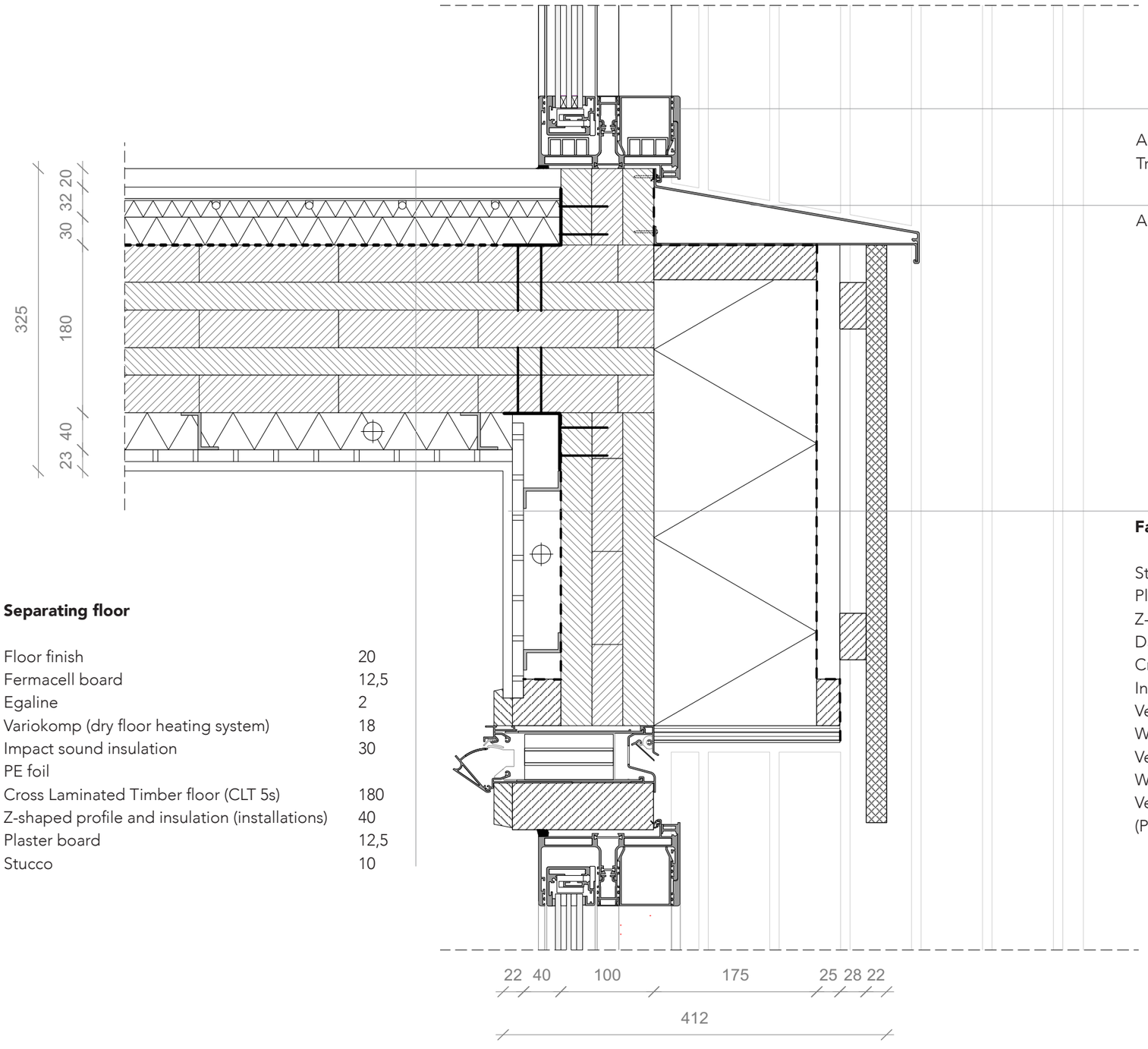
Aluminum sliding doors (MethermoXL, Metaglas)
Triple glass + sunblocking foil

Facade:

Stucco	10
Plaster board	12,5
Z-profile (installations)	43
Damp-proof layer	
Cross Laminated Timber (CLT 3s)	100
Insulation Rockwool (Rc 5,5)	175
Waterproof foil	
(Wooden framework)	
Wooden mullions + slats (vertical)	175+25
Wooden mullions (vertical)	50
Wooden transoms (horizontal)	28
Wooden slats (Platowood Spruce/Vuren)	22
(Platonised wood: hydrothermal modification)	

DETAIL V1

1 : 5



Separating floor

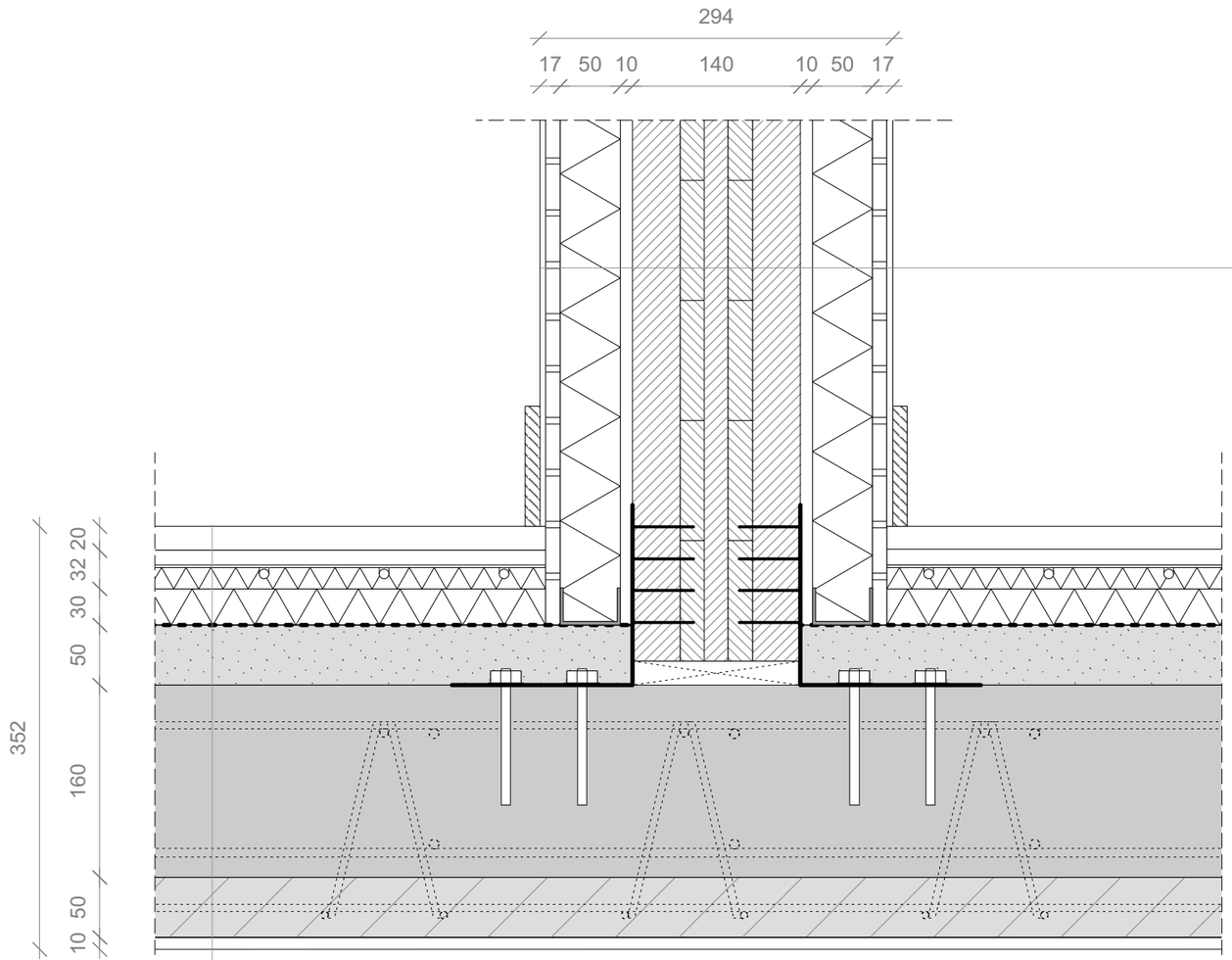
Floor finish	20
Fermacell board	12,5
Egaline	2
Variokomp (dry floor heating system)	18
Impact sound insulation	30
PE foil	
Cross Laminated Timber floor (CLT 5s)	180
Z-shaped profile and insulation (installations)	40
Plaster board	12,5
Stucco	10

Facade:

Stucco	10
Plaster board	12,5
Z-profile (room for installations)	43
Damp-proof layer	
Cross Laminated Timber (CLT 3s)	100
Insulation Rockwool (Rc 5,5)	175
Vertical wooden mullions	175 x 30
Waterproof foil (DPC)	
Vertical wooden mullions	25
Wooden transoms (horizontal)	28 x 50
Vertical wooden slats (Platowood Spruce/Vuren)	22 x 66
(Platonised wood: hydrothermal modification)	

DETAIL V2

1 : 5



Separating wall:

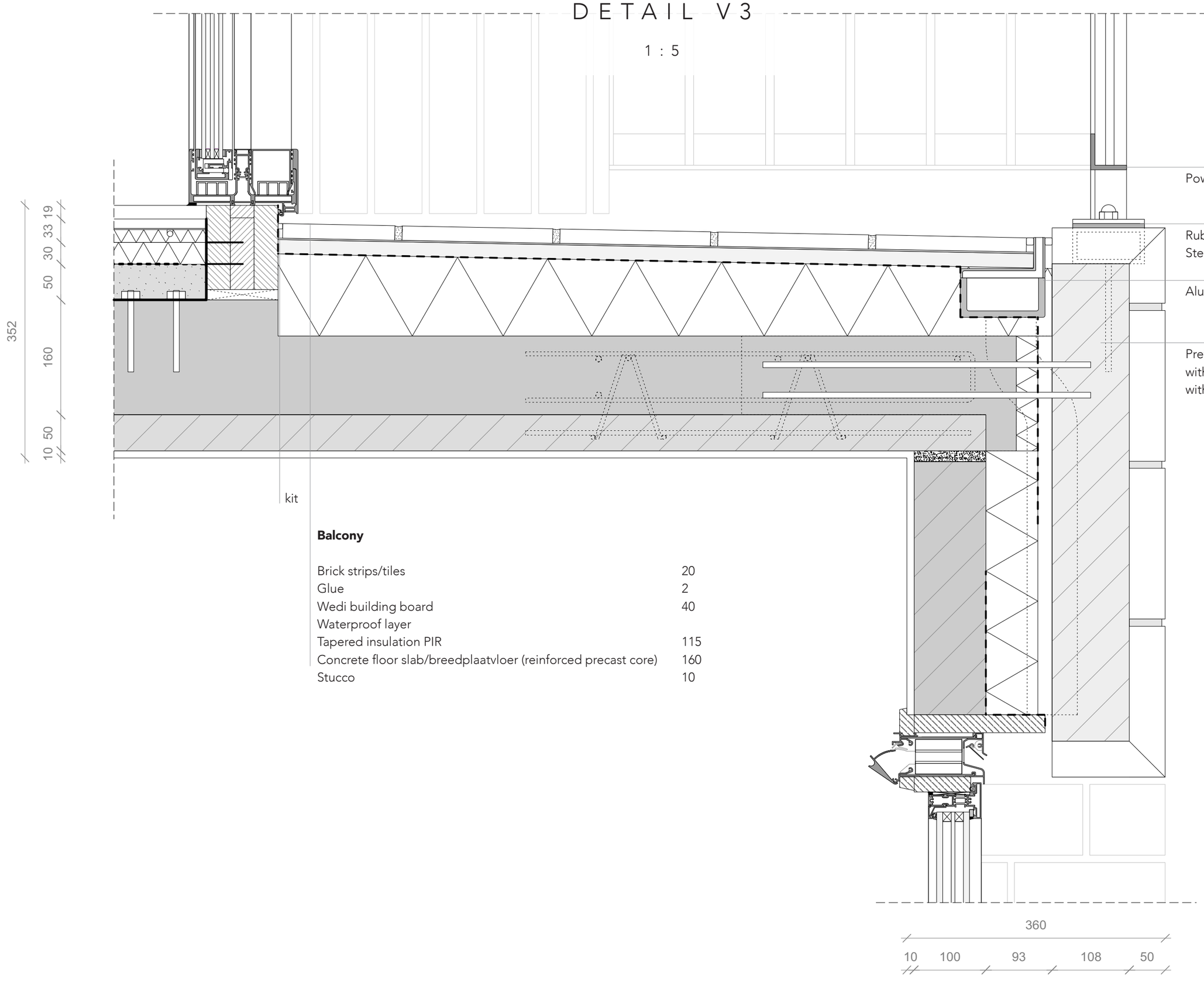
Plinth	12
Stucco	10
Plaster board	12,5
Insulation	50
Air gap	10
Cross Laminated Timber (CLT 5s)	140
Air gap	10
Insulation	50
Plaster board	12,5
Stucco	10
Plinth	12

Separating floor:

Floor finish	20
Fermacell board	12,5
Egaline	2
Variokomp (dry floor heating system, Fermacell board)	18
Impact sound insulation	30
PE foil	
Screed	50
Concrete floor slab/breedplaatvloer (reinforced precast core)	260
Stucco	10

DETAIL V3

1 : 5

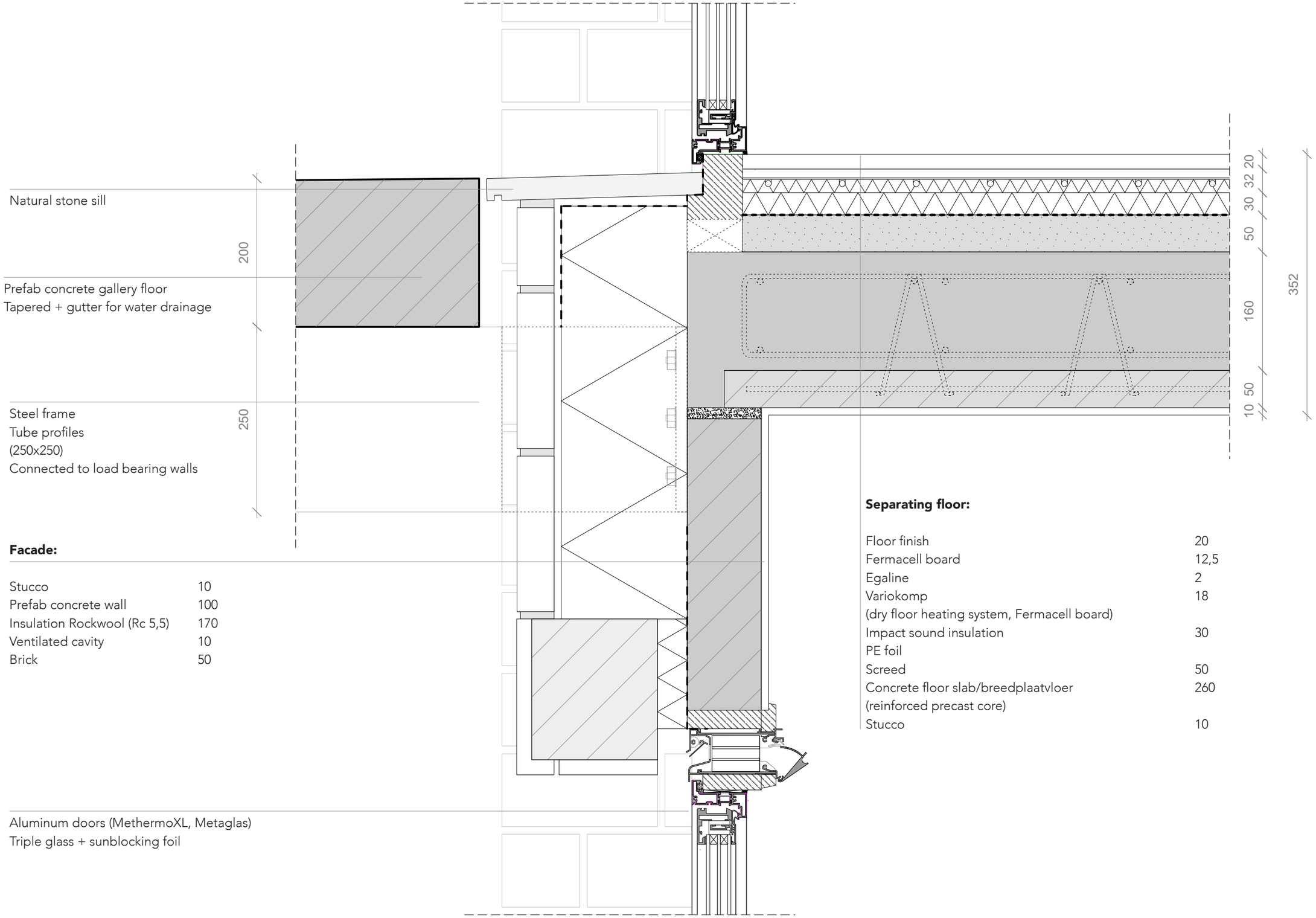


Balcony

Brick strips/tiles	20
Glue	2
Wedi building board	40
Waterproof layer	
Tapered insulation PIR	115
Concrete floor slab/breedplaatvloer (reinforced precast core)	160
Stucco	10

DETAIL V4

1 : 5



Facade:

Stucco	10
Prefab concrete wall	100
Insulation Rockwool (Rc 5,5)	170
Ventilated cavity	10
Brick	50

Separating floor:

Floor finish	20
Fermacell board	12,5
Egaline	2
Variokomp	18
(dry floor heating system, Fermacell board)	
Impact sound insulation	30
PE foil	
Screed	50
Concrete floor slab/breedplaatvloer	260
(reinforced precast core)	
Stucco	10

IMPRESSION

gallery

IMPRESSION

courtyard

IMPRESSION

public square

IMPRESSION

dwelling interior

IMPRESSION

dwelling interior