

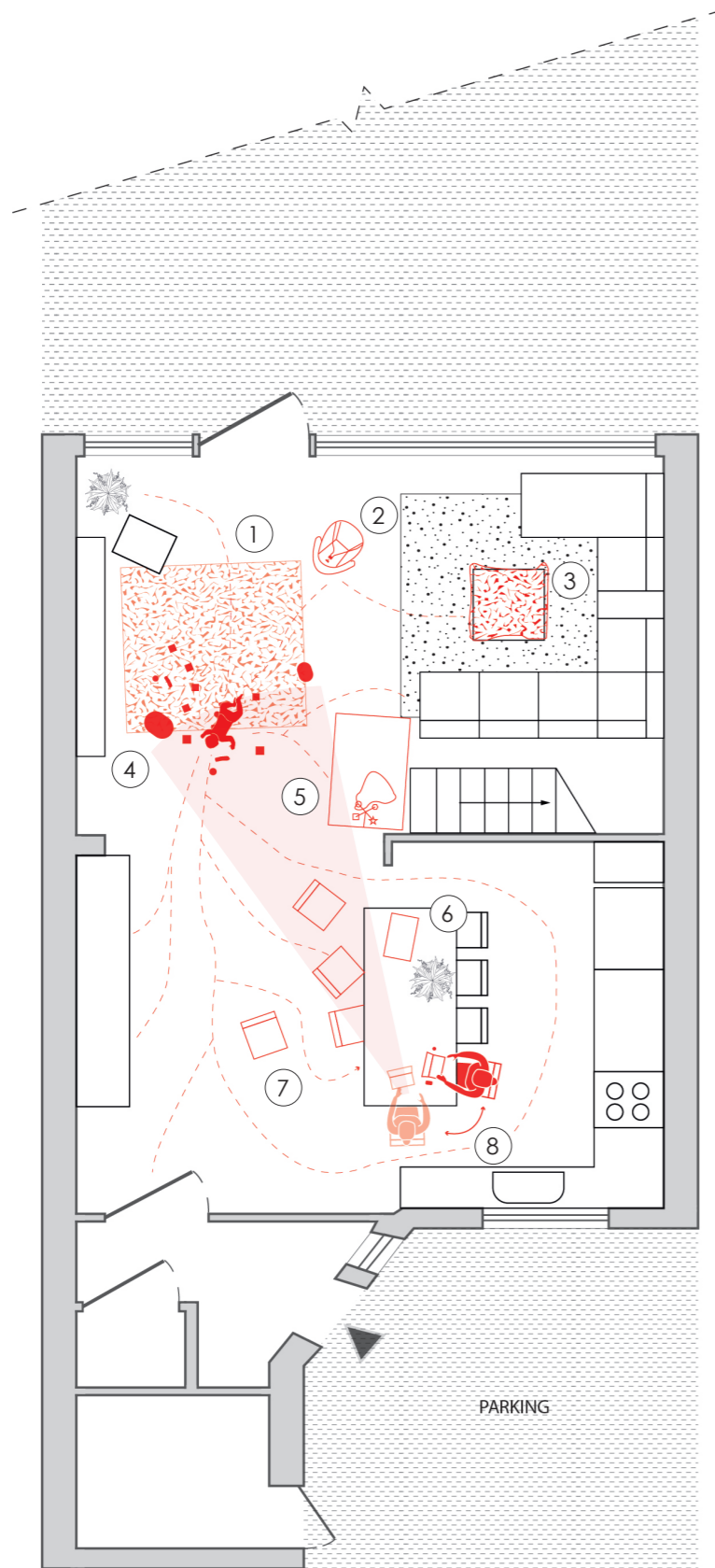
# HOMES THAT WORK

THE ARCHITECTURE FOR HOME WORKING PARENT  
AND URBAN FAMILIES IN DESNE CITIES

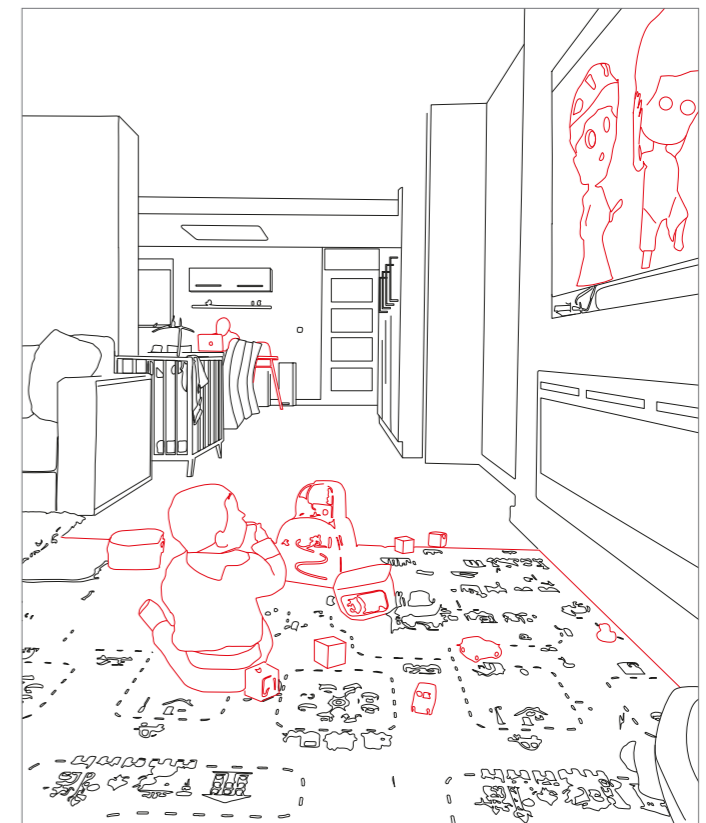
**TUTORS:**  
Theo Kupers  
Ferry Adema  
Anne Kockelkorn  
Pierijn van der Putt

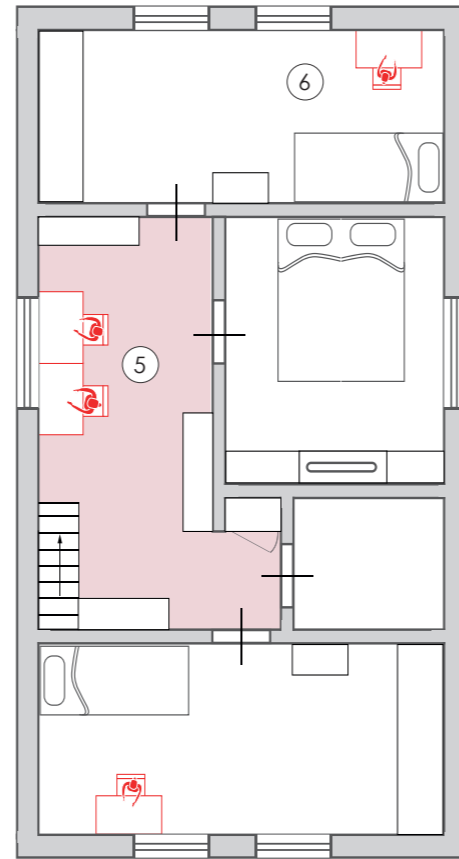
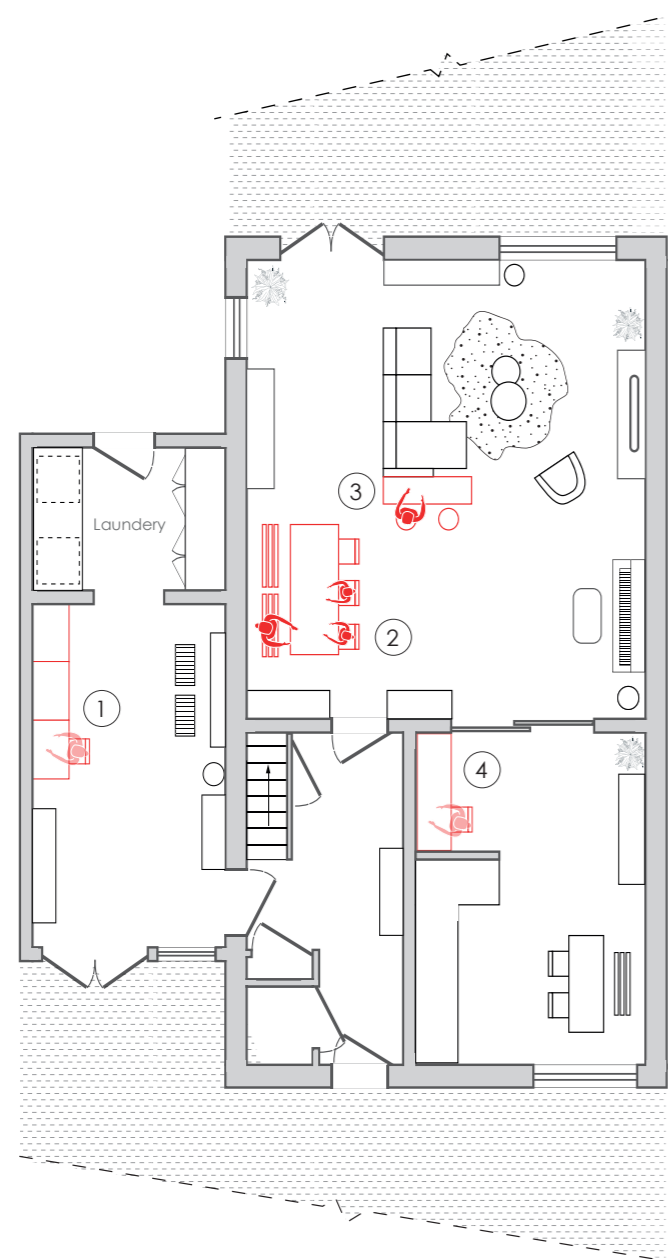
**DELEGATE**  
Paul Chan

**How can family life, child supervision and work-life take place at the same time, in the same dwelling – and how can dwelling design actively support such complex social relations?**

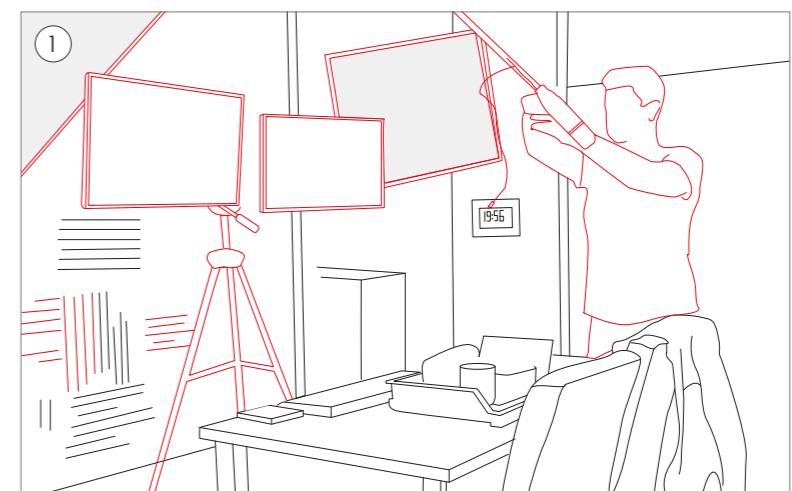
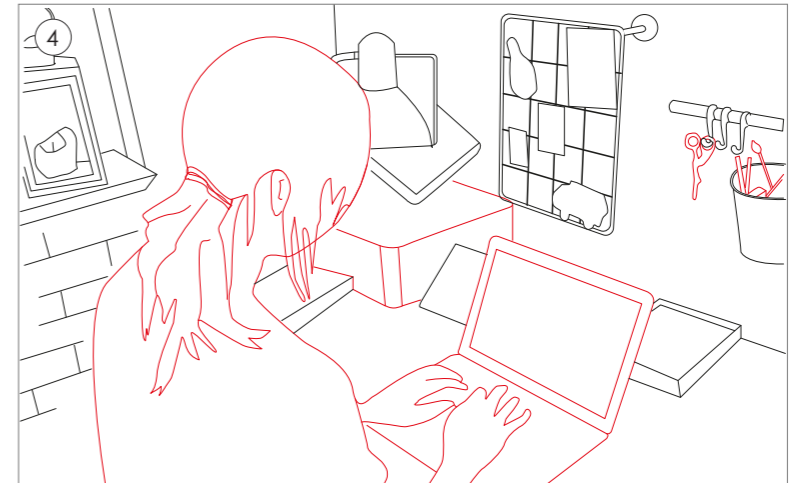
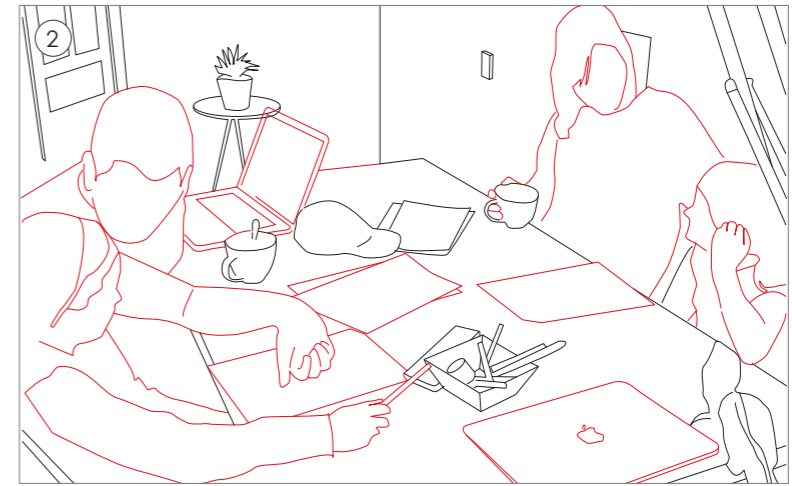


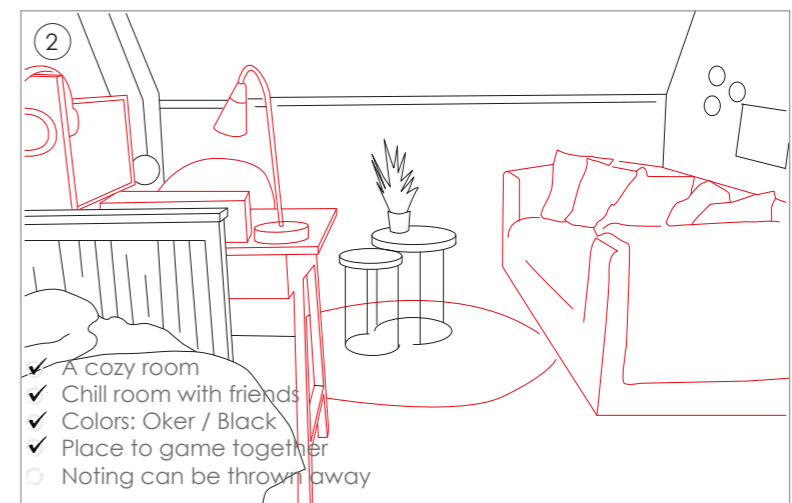
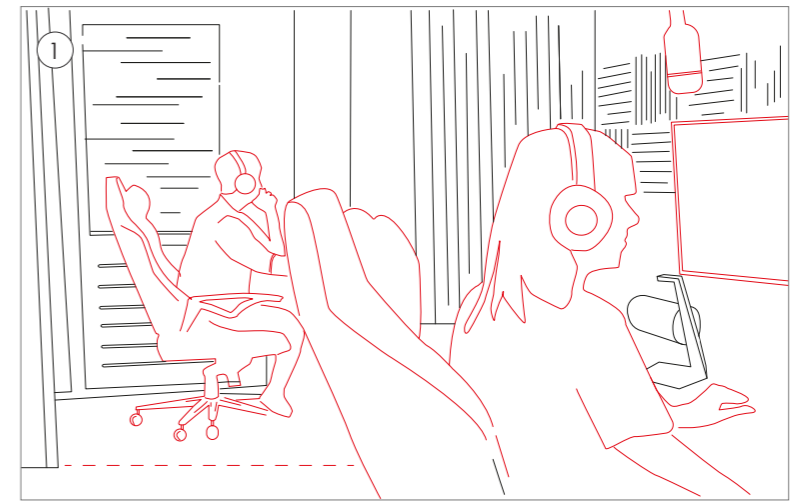
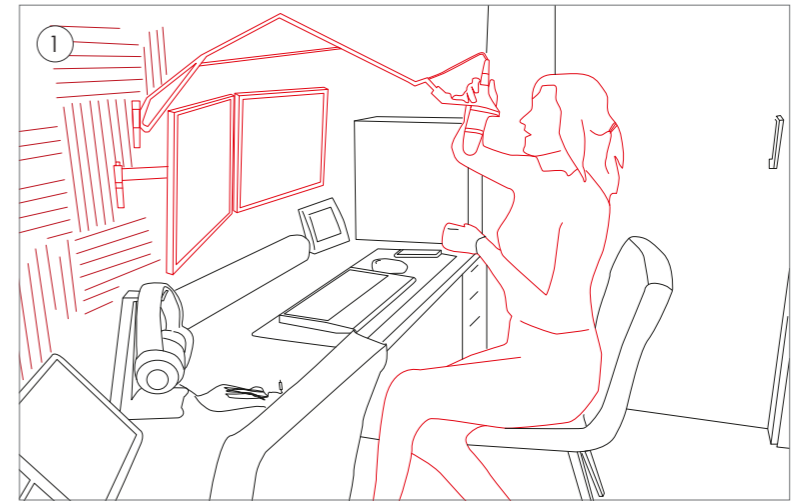
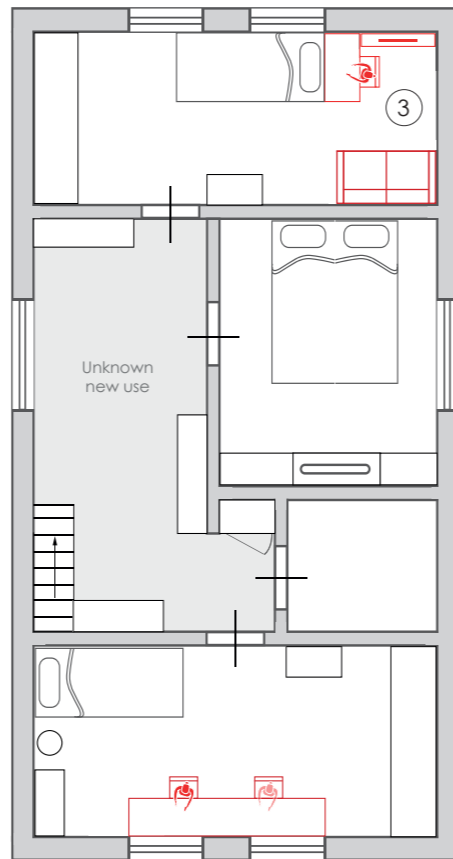
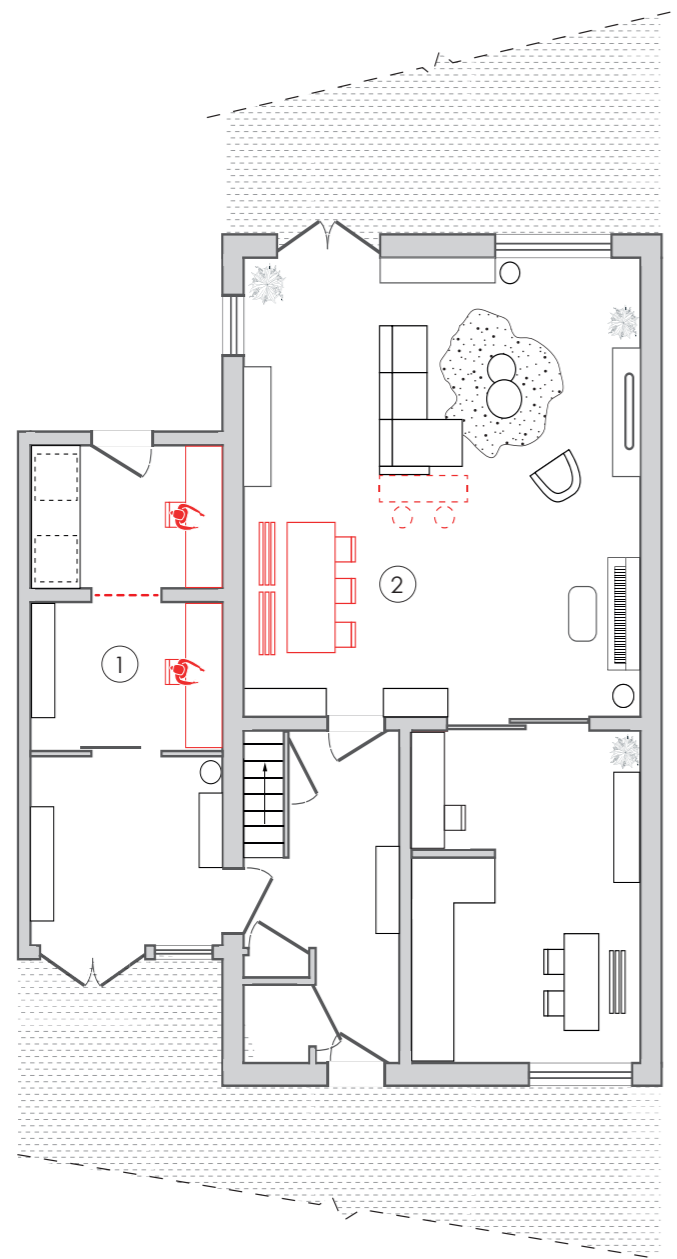
1. Rubber safety mat with a playful pattern.
2. Automatic swinging chair with a safety belt to watch television.
3. Blanket to cover sharp edges of the coffee table.
4. Toys to entertain the toddler during working hours.
5. Playpen blocking stairs to prevent the toddler from going up.
6. Changing pad within reach to minimize care time.
7. The walking route of the child and the disorganization of space.
8. Mother switches her work position for supervision.





1. Craft and paint workshop, occasionally transformed into a live-stream studio.
2. The collective table in the living room is dedicated to waged work and educational activities.
3. A small separate desk allows one parent to work whilst being part of family life.
4. Small craft and edit space for in-between hours.
5. The workspaces of both parents with fixed computers are organized in the hallway on the second floor.
6. Both children have an individual desk.

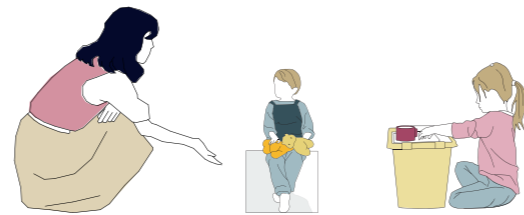




1. The workspace in the hall on the second floor has been moved to the extension. The workplace of both parents has a clear boundary and is separated from family life (live-nearby). The sliding wall allows the parents to work collectively, but also individually without interrupting each other. The new use of the hallway on the second floor is unknown.
2. The collective workspace remains.
3. The children's bedrooms are upgraded as the needs change as they grow older and the private space will be used more intensively.

- ✓ A cozy room
- ✓ Chill room with friends
- ✓ Colors: Oker / Black
- ✓ Place to game together
- Nothing can be thrown away

### Single parent with toddlers



**Household composition:** One-parent household with a home-working mother (Maria) and two toddlers (Rick and Iris).

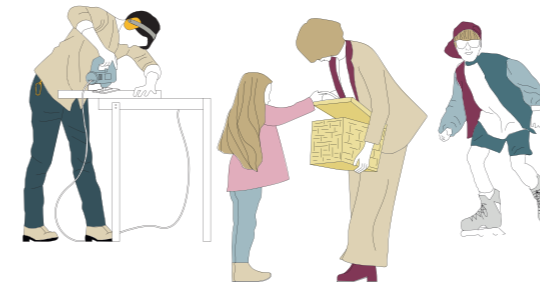
**The character of the children:** *Rick* is very shy and introverted. His mom, her sister, and the two bears are the only ones he feels comfortable with. A 'mommy's child'. *Iris* is in contrast to *Rick* more social, however, she enjoys playing at home and 'doing her own thing'.

**Occupation: (Desk-based)**

Personal blogger and freelance content creator for companies. The job has strict deadlines and often requires zoom meetings. Work is predominantly performed at home from her laptop.

The spatial demand for her occupation is a 'quiet' workplace with a minimum of 5m<sup>2</sup> that also allows parental supervision.

### Nuclear family



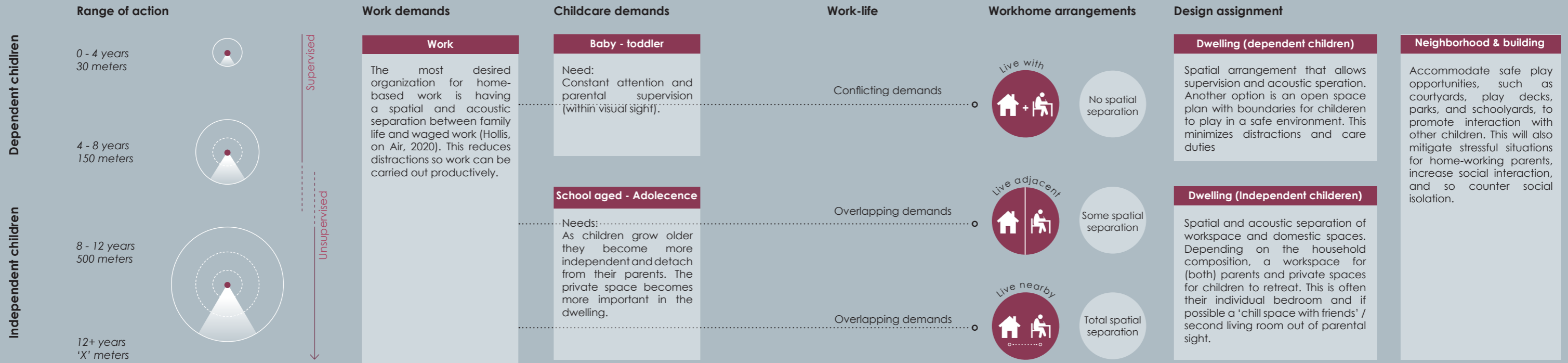
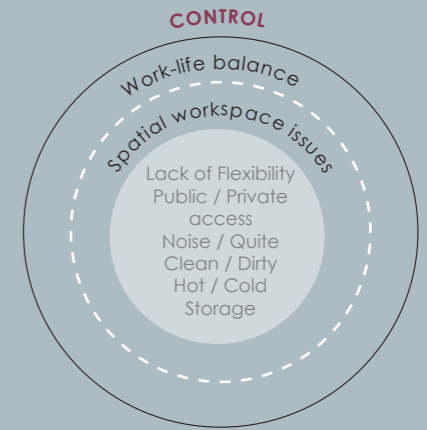
**Household composition:** Two-parent household with home-working parents (Francis and Judith) and pre-school child (*Isa*) and teenager (*Dylan*)

**The character of the children:** *Lisa* and her mom are 'besties' and go out together for a drink or shopping regularly. *Dylan* is the 'ghost' at home as he is hardly at home. If he is, it is only to eat dinner or grab a drink to play further outside.

**Occupation: (Desk-based & Workshop)**

Francis is a commercial broker and also turned his hobby into a small business as a craftsman producing luxury lights on demand. His wife *Judith* is a high school teacher in geography.

The spatial demands for both parents are (shared) workplace which has a relation to family life but is acoustically separated. Francis wishes to have a nice workplace in the neighborhood as crafting in the shared office space turns his wife crazy



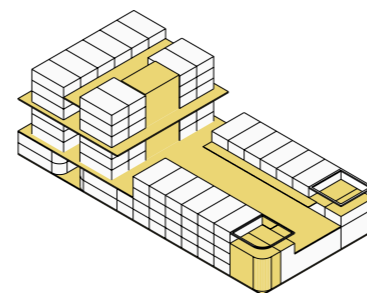
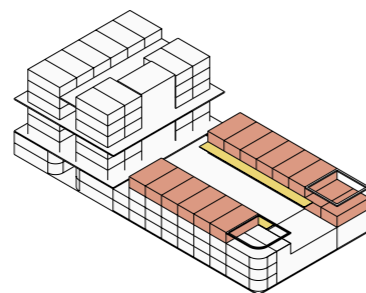
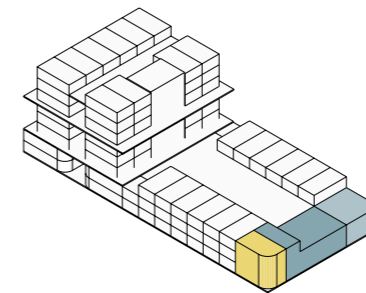
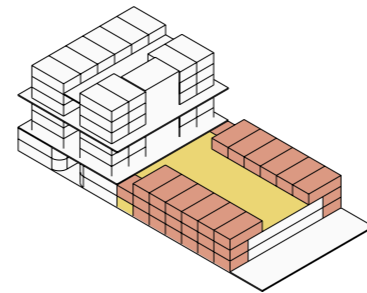
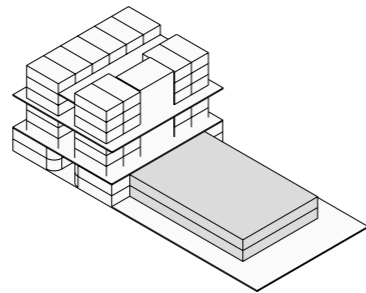
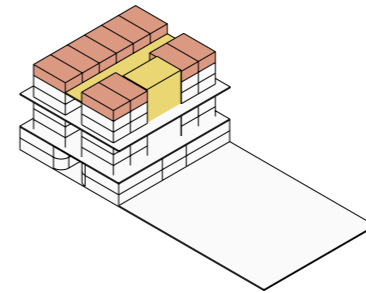
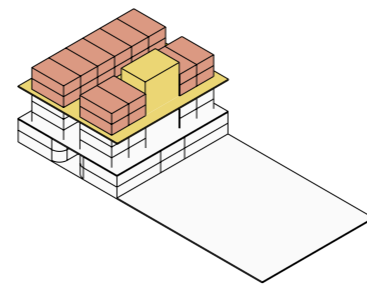
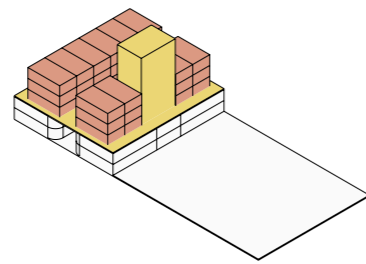
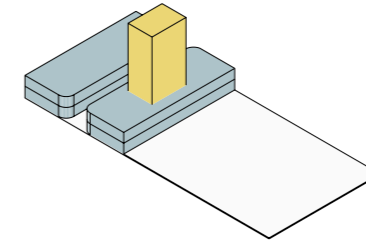
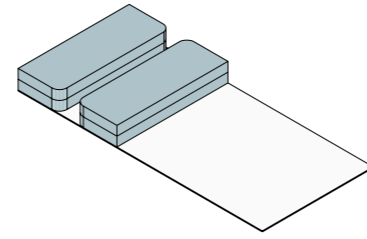
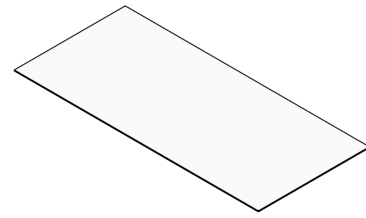
Supervised  
Unsupervised



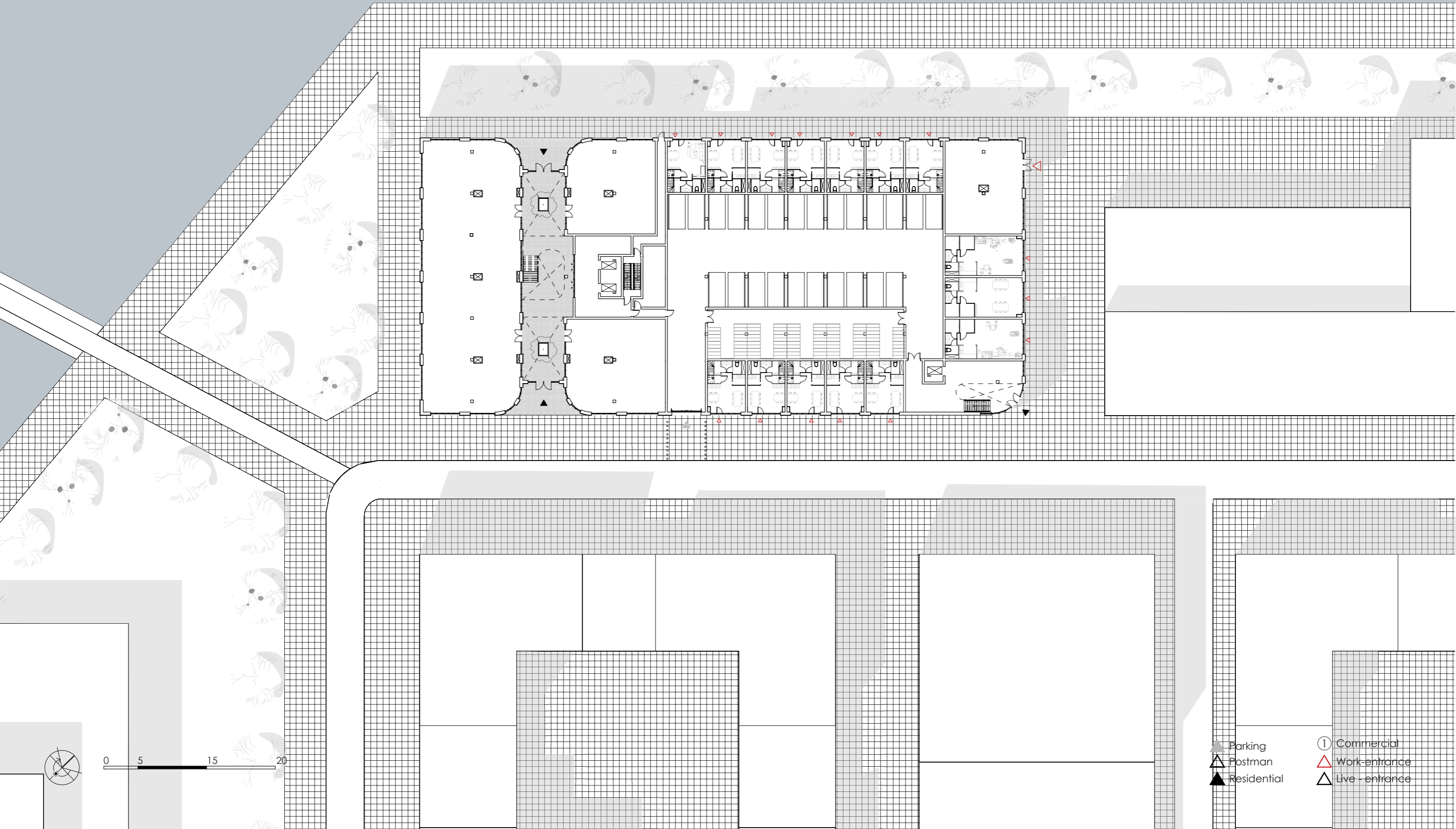
**DESIGN**

**Building concept**

# Building programme

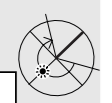


- Dwelling
- Functional
- Commercial
- Work/Play
- Circulation



- ▲ Parking
- ▲ Postman
- ▲ Residential
- ① Commercial
- ▲ Work-entrance
- ▲ Live-entrance

0 5 15 20



Level 01 - Ground floor

6500

8250

6500

8250

6500

5700

5700

5700

5700

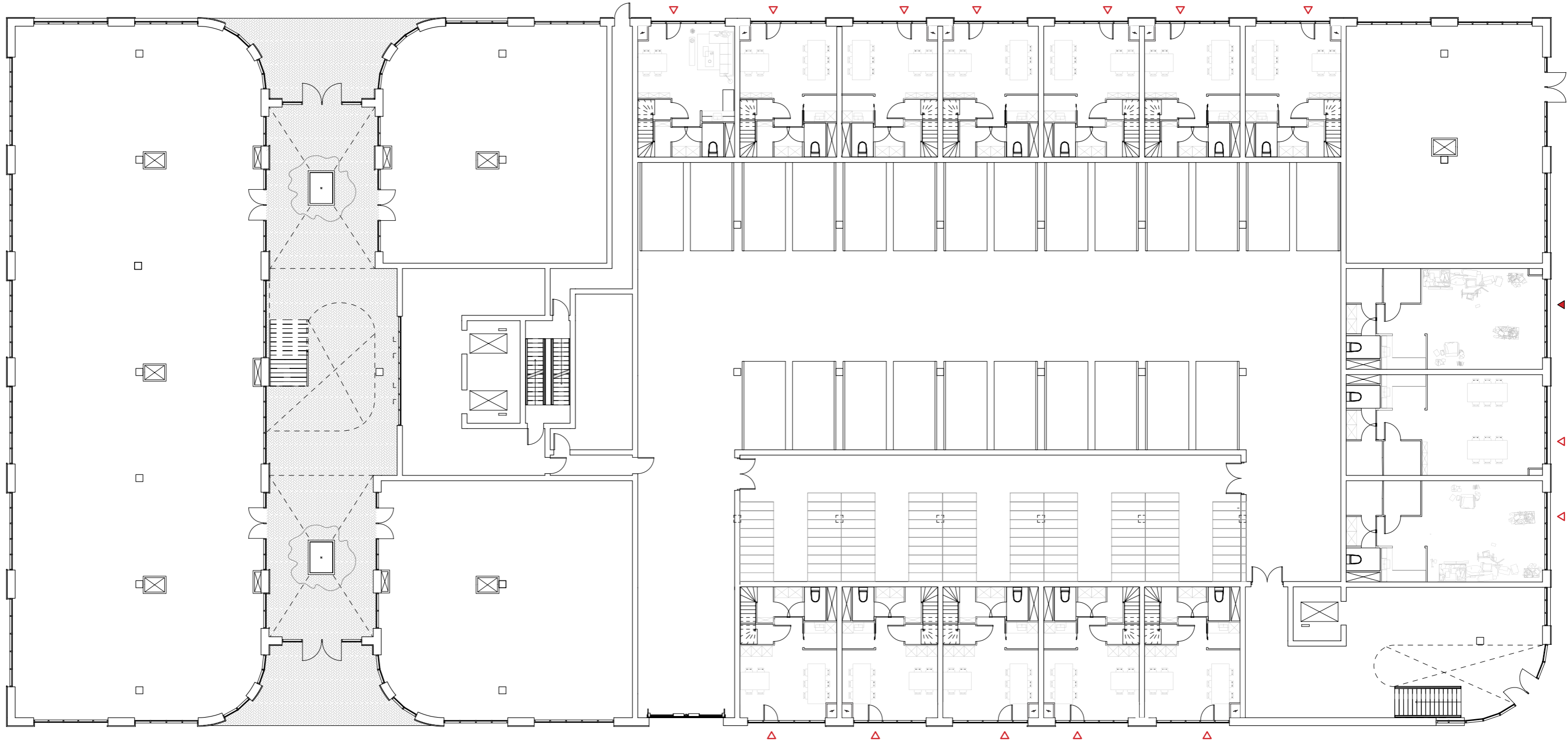
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5700

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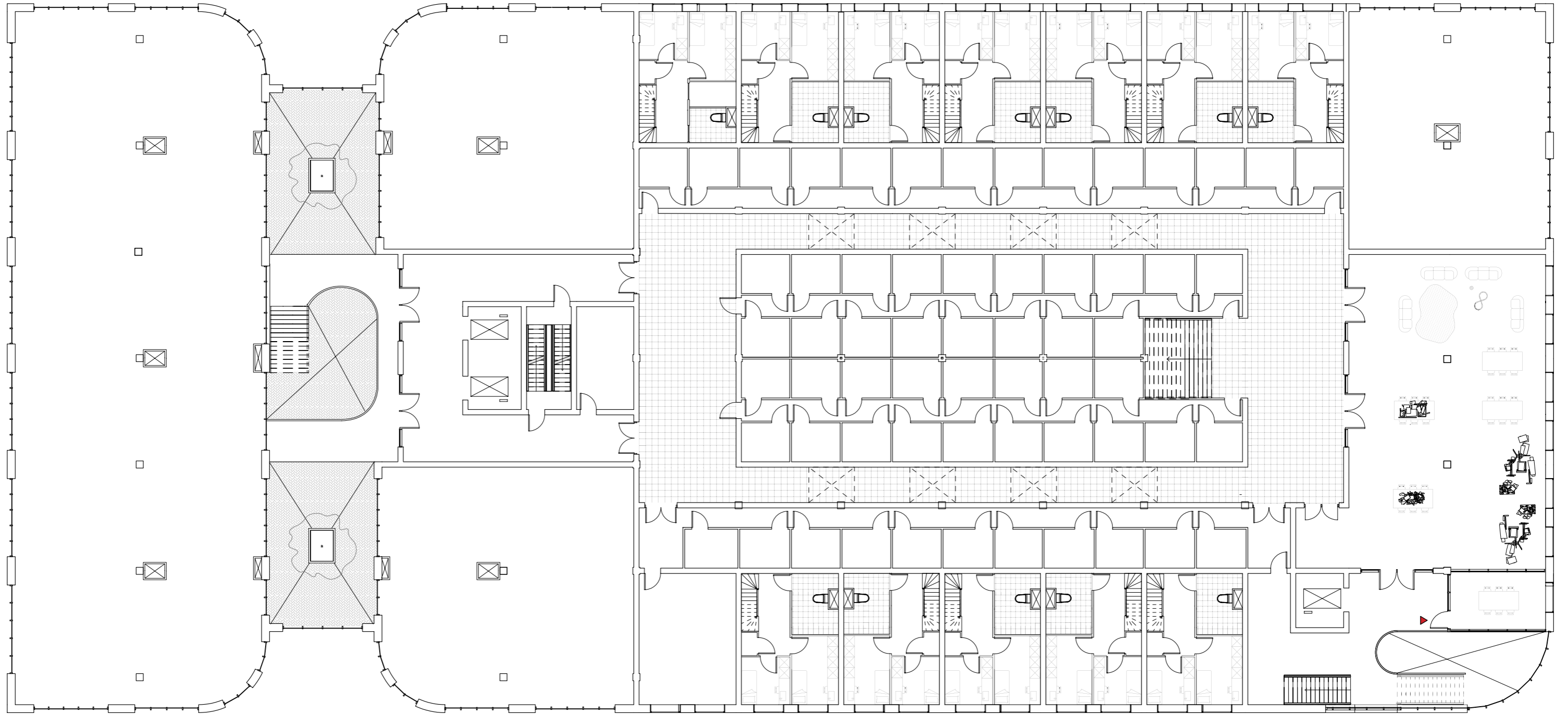
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0 2.5 7.5 12.5m

△ Work-entrance  
▲ Live - entrance

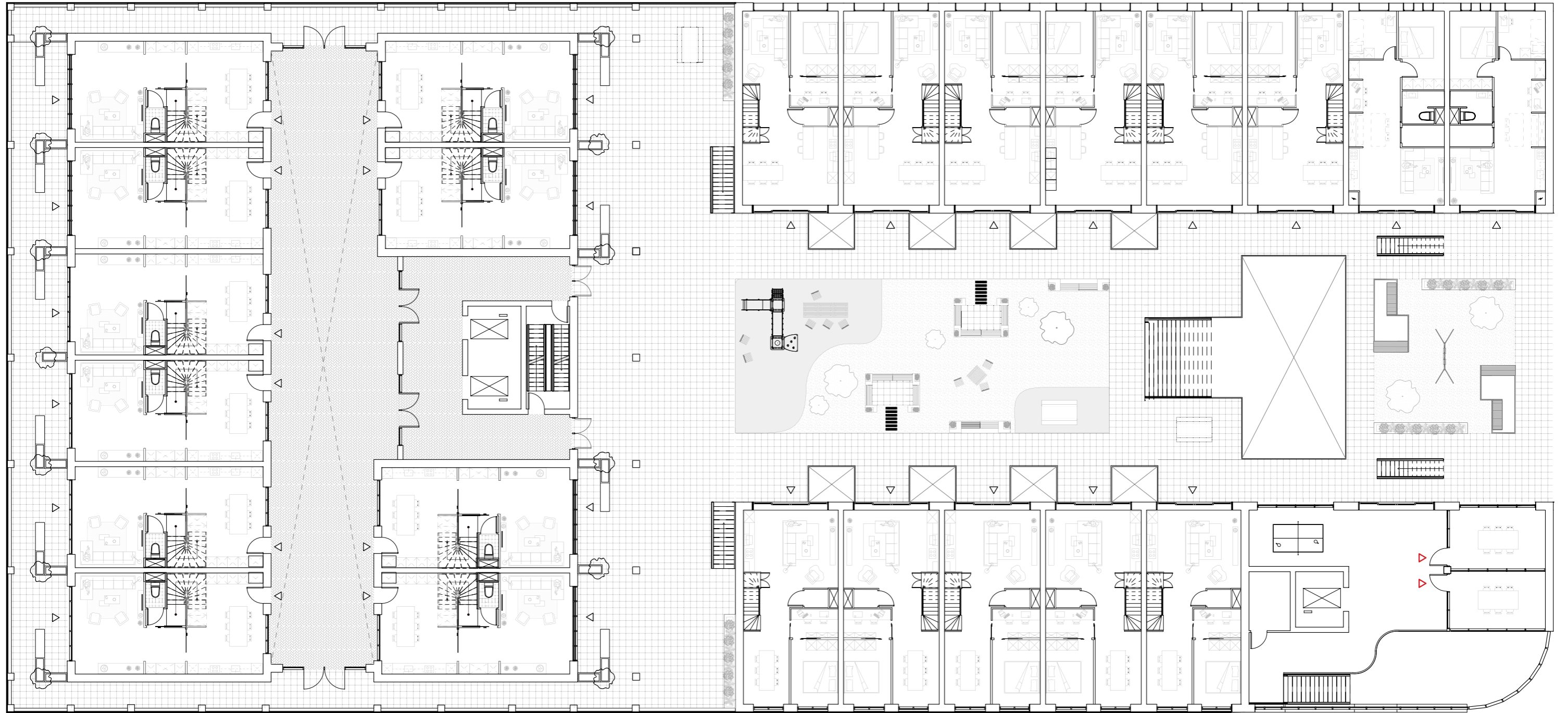
Level 02



0 2.5 7.5 12.5m

△ Work-entrance

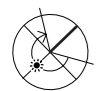
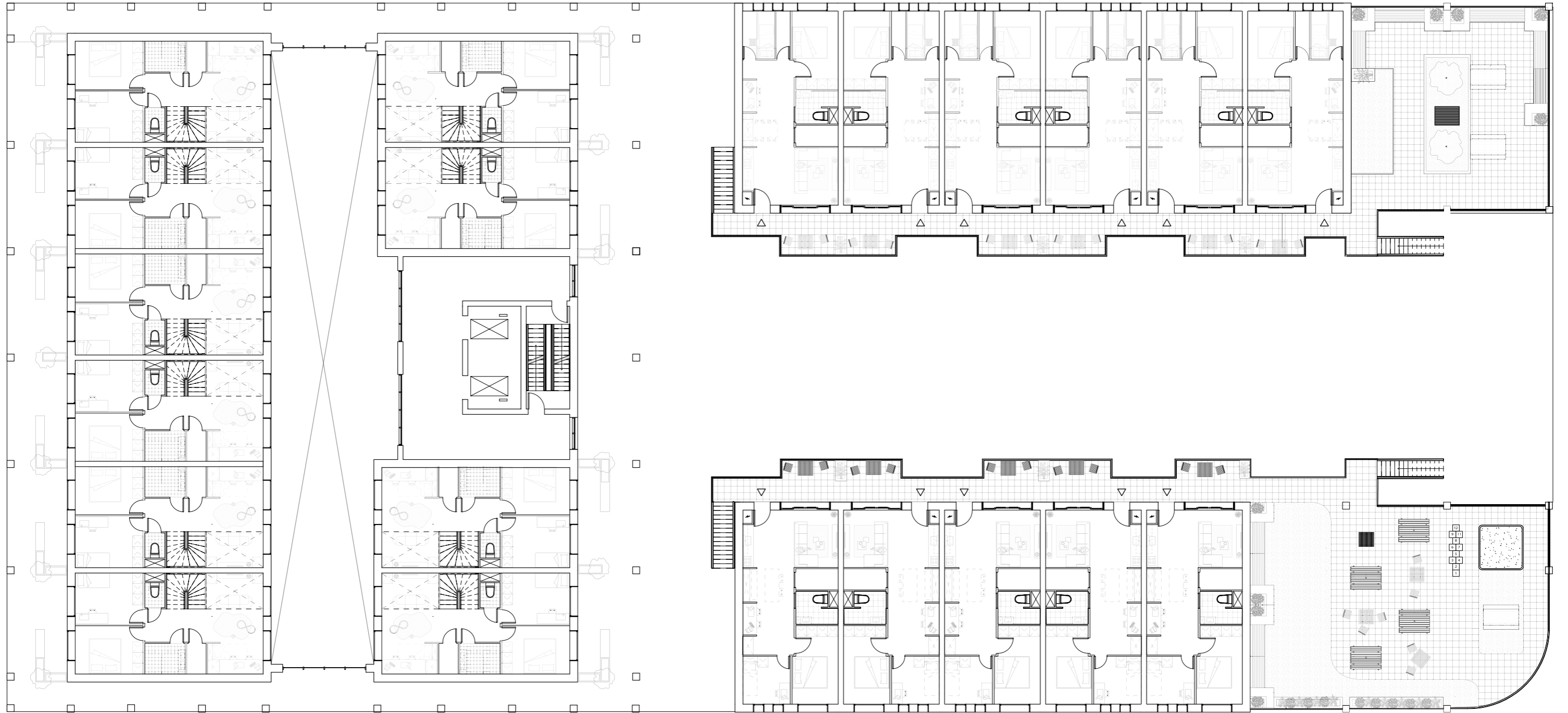
Level 03



0 2.5 7.5 12.5m

△ Work-entrance  
△ Live - entrance

Level 04

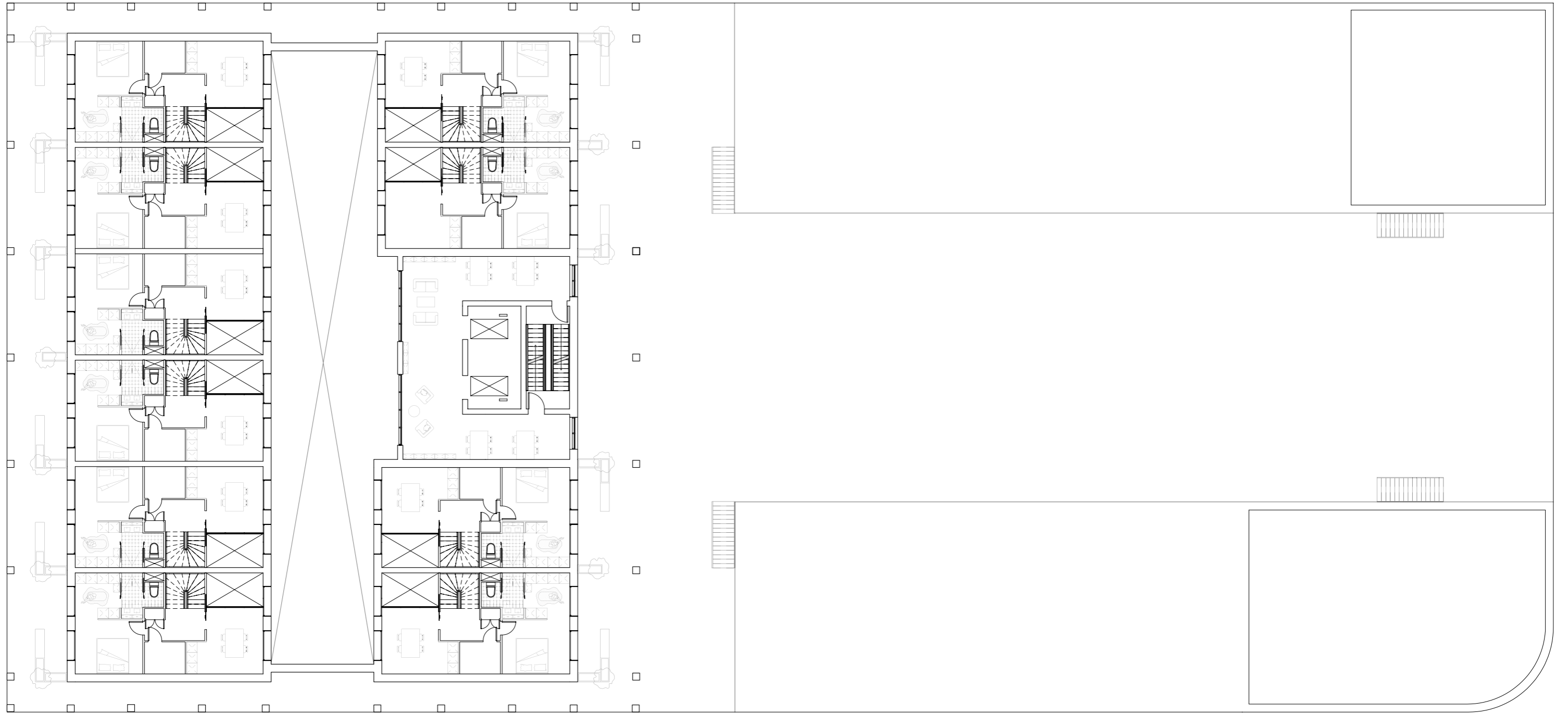


0 2.5 7.5 12.5m

△ Live - entrance

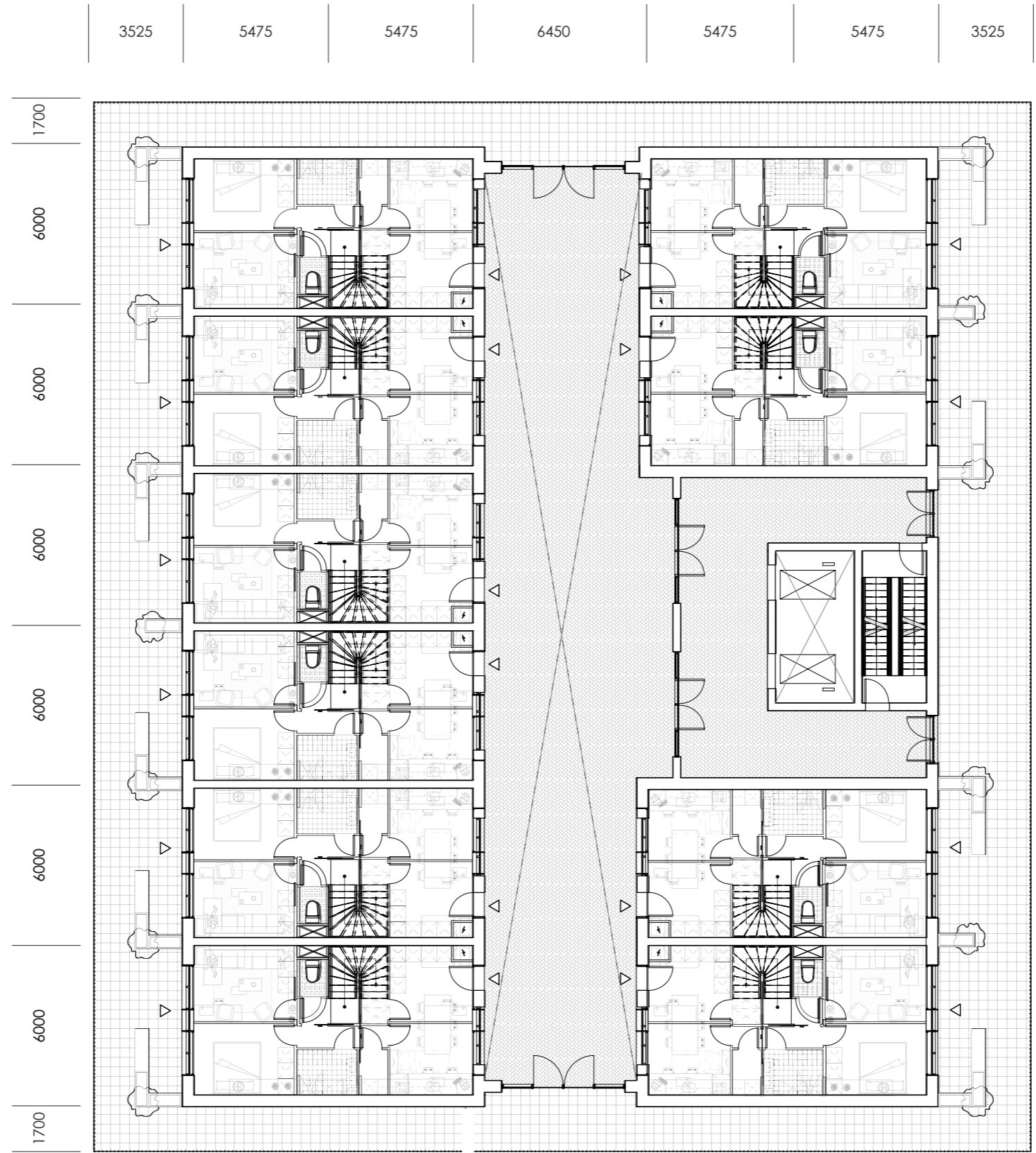


Level 05



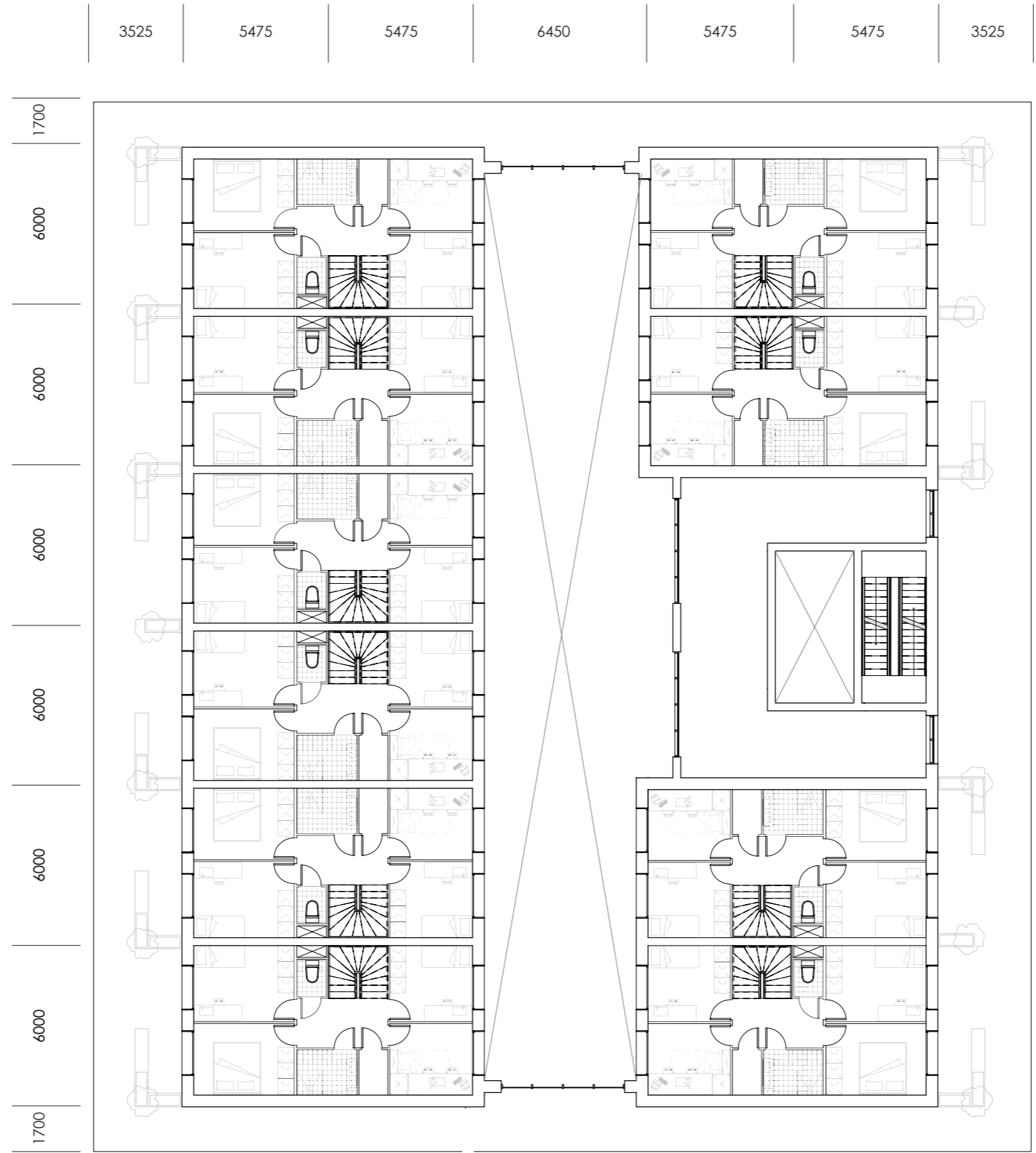
0 2.5 7.5 12.5m

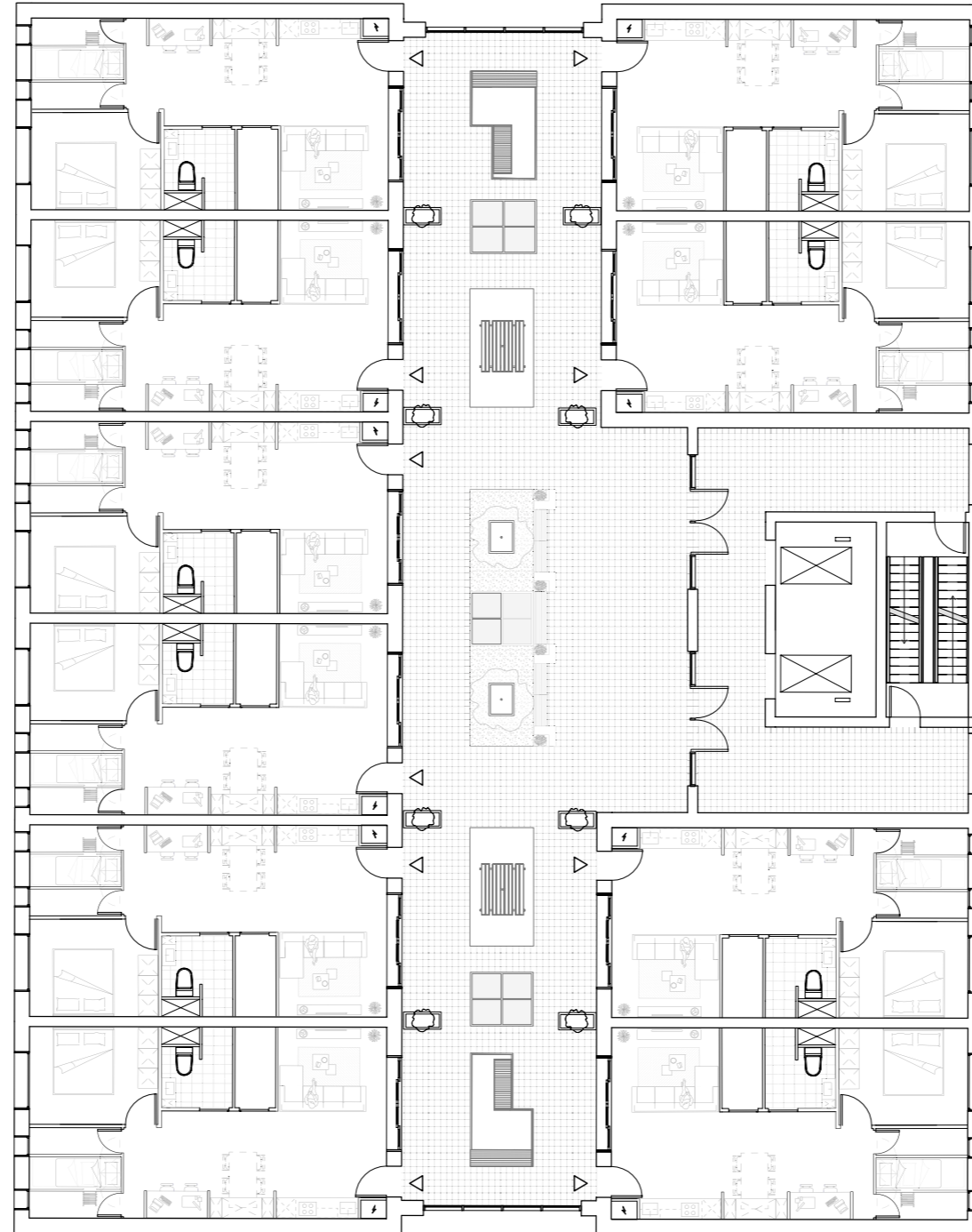
Level 06



△ Live - entrance

Level 07





0 2.5 7.5 12.5m

△ Live - entrance

References Facade



South Facade



# West Facade



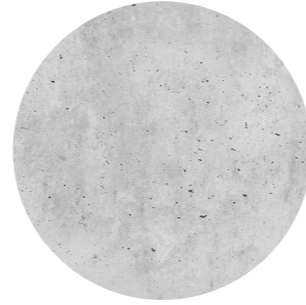
Aluminium paneling and window



Aqua Grijs Zwart WF - Kameleon collectie



Aluminium rainwater pipe



Concrete penants



North Facade





East Facade

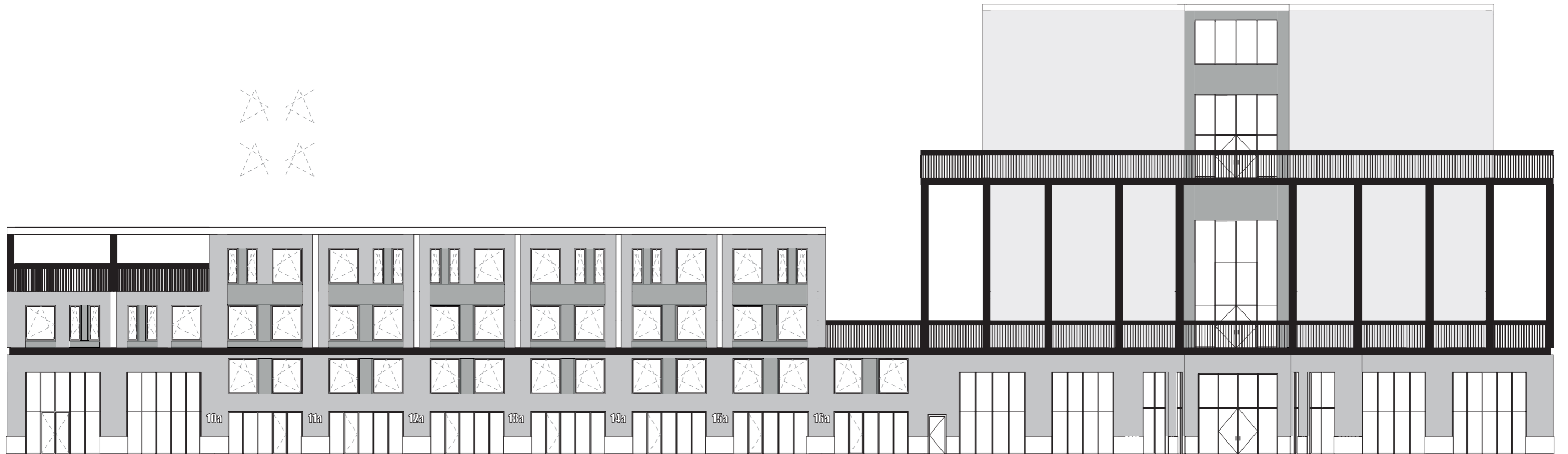


0 2.0 6.0 10m

South Facade



West Facade



0 2.0 6.0 10m

North Facade

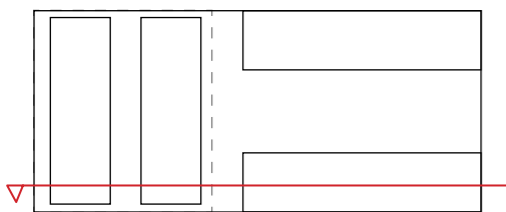


East Facade



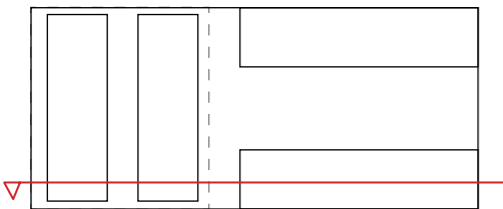
0 2.0 6.0 10m

Section



0 2.0 6.0 10m

Section

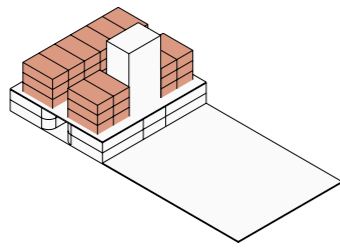


0 4.0 12 20m

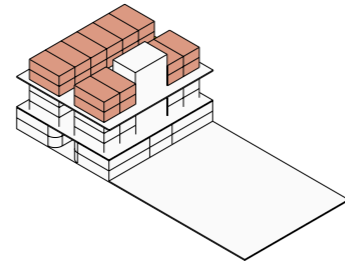
**Dwelling Units**



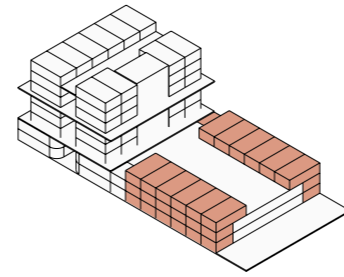
## Overview Units



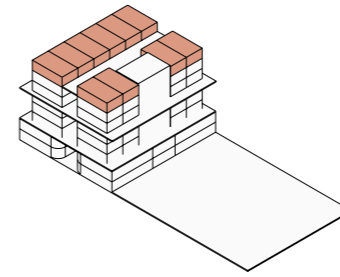
**Unit A1** (03 levels)  
Amount: 10  
Area: 179.5m<sup>2</sup>



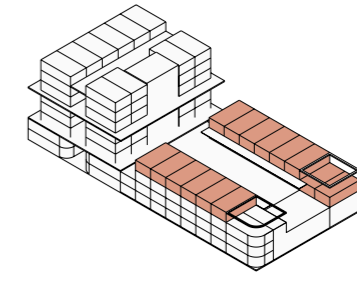
**Unit A2** (02 levels)  
Amount: 10  
Area: 119.7m<sup>2</sup>



**Unit B** (03 levels)  
Amount 12  
Area: 120.5m<sup>2</sup>

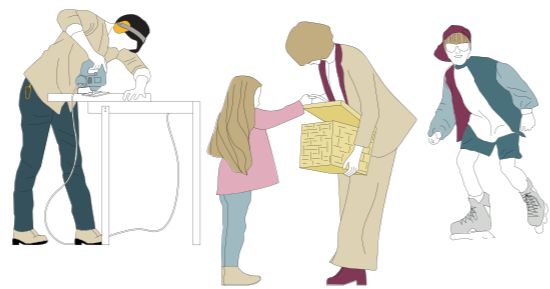


**Unit C 10**  
Amount: 10  
Area: 59.4m<sup>2</sup>

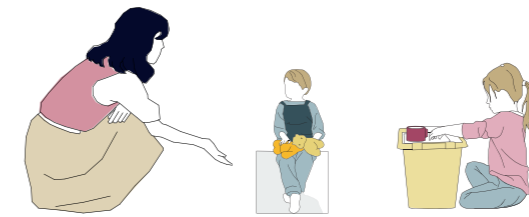


**Unit C**  
Amount: 14  
Area: 59.85

### Modern nuclear family



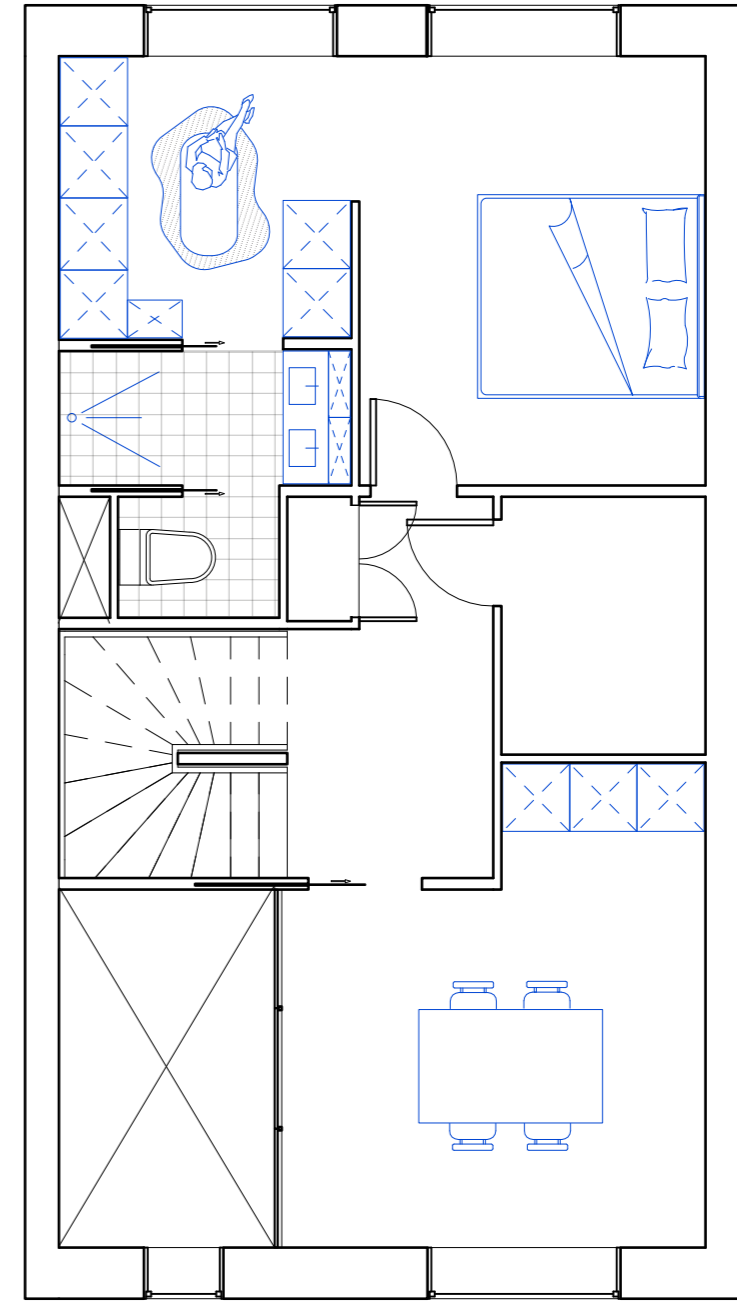
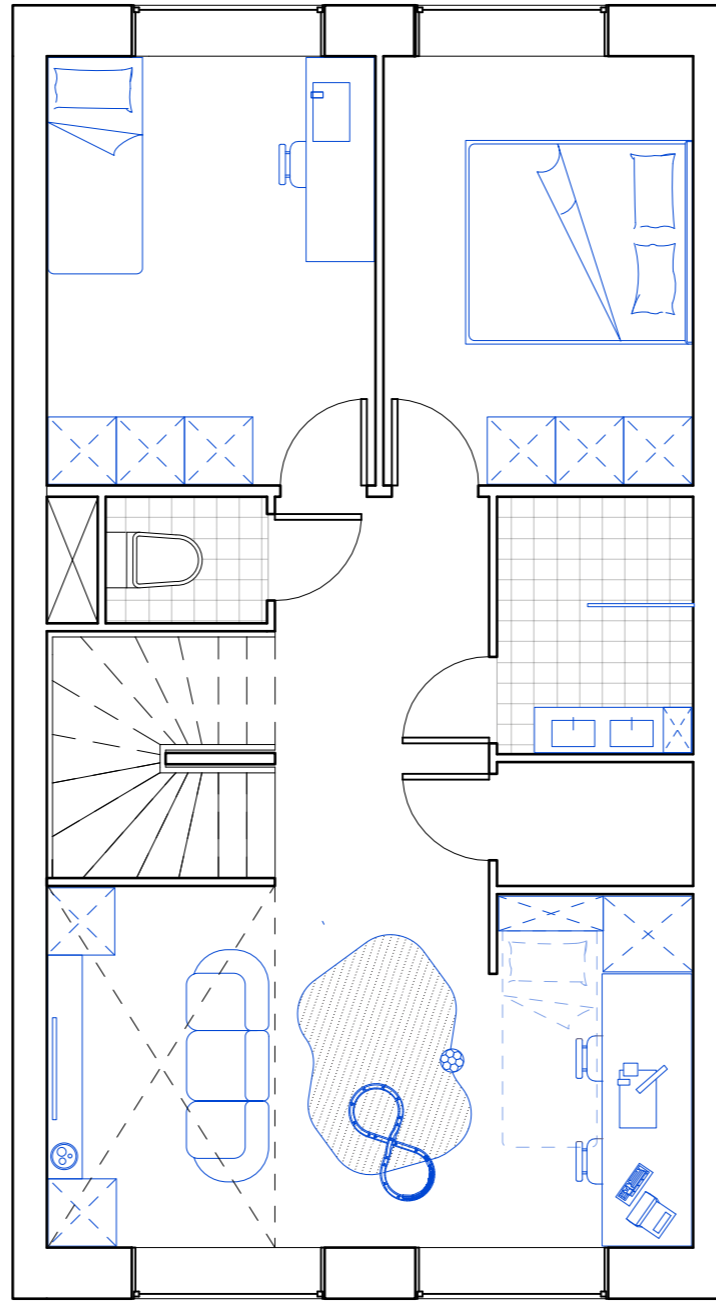
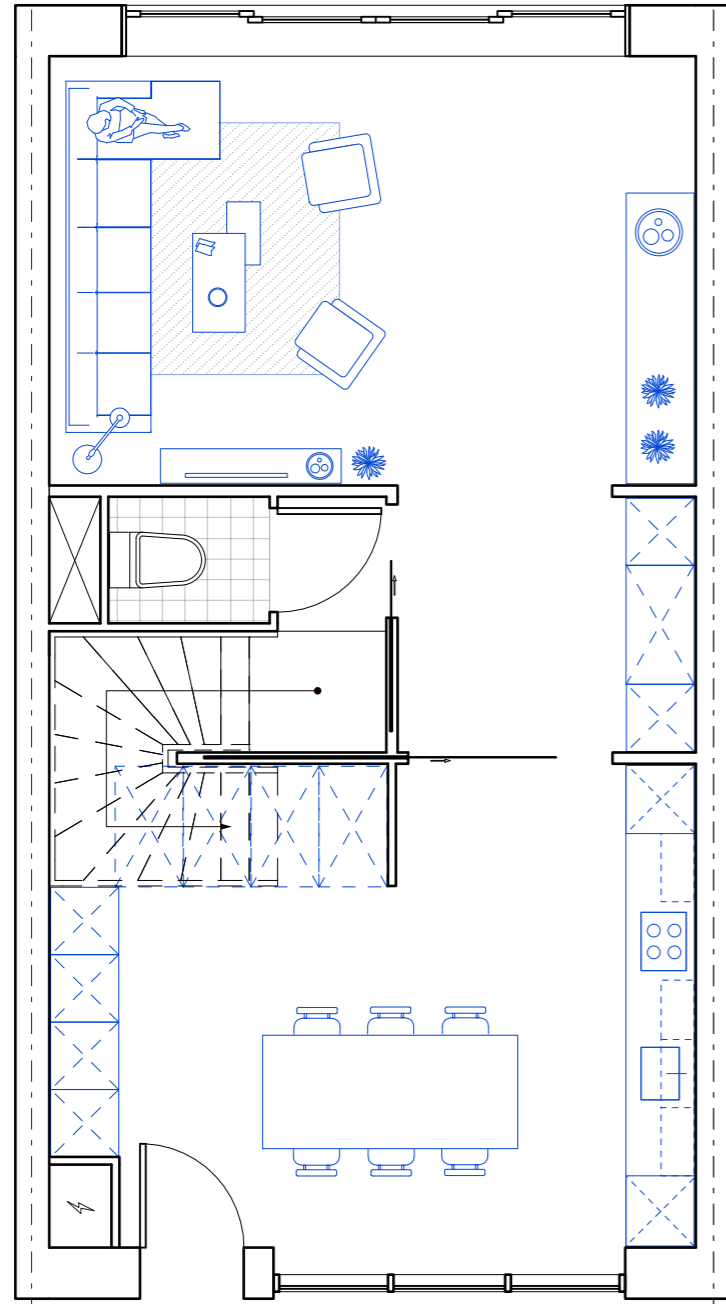
### Single parent with toddlers



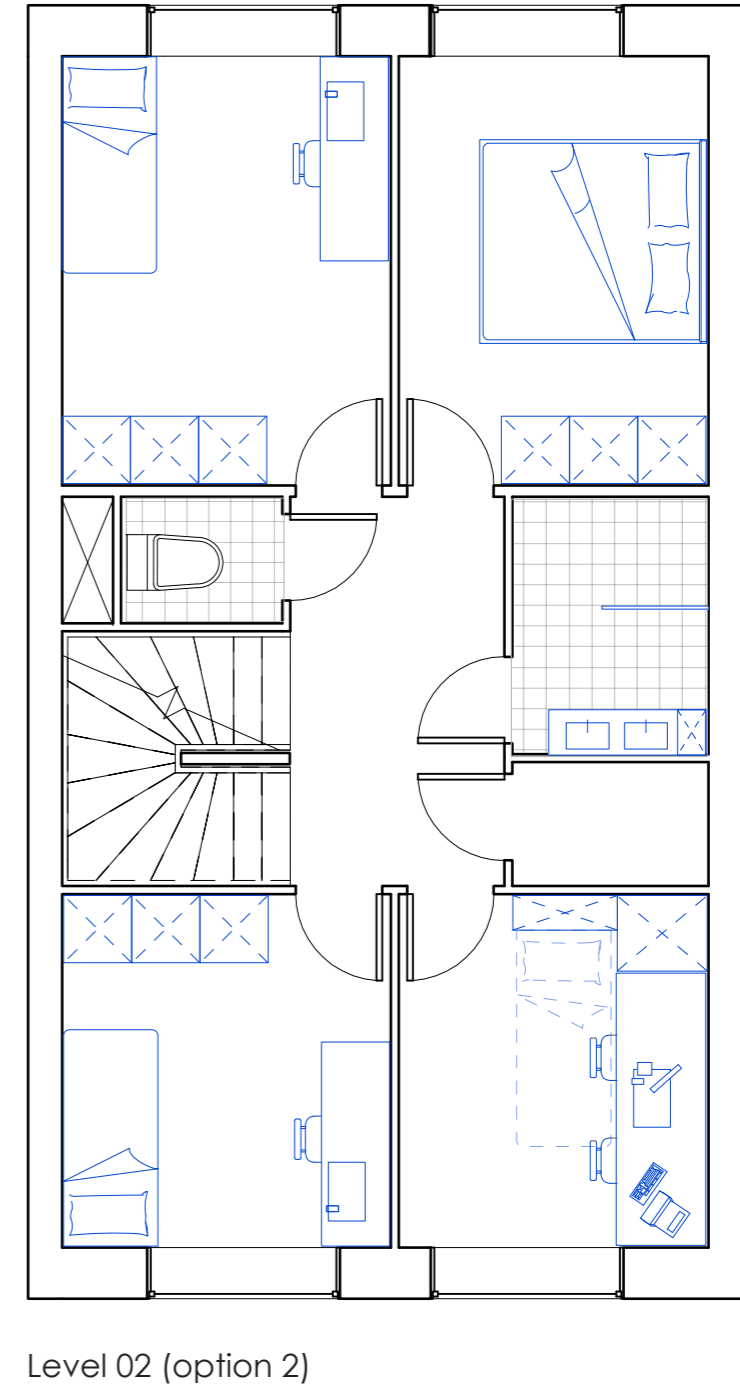
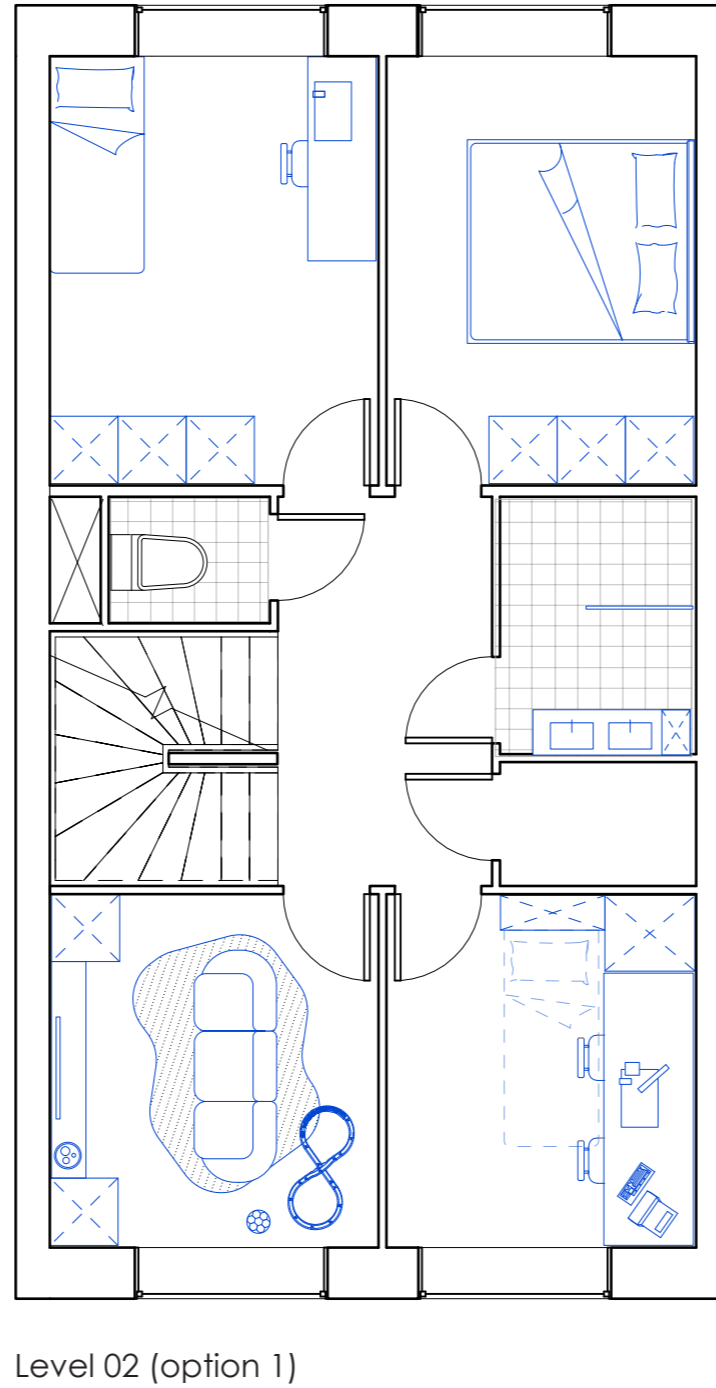
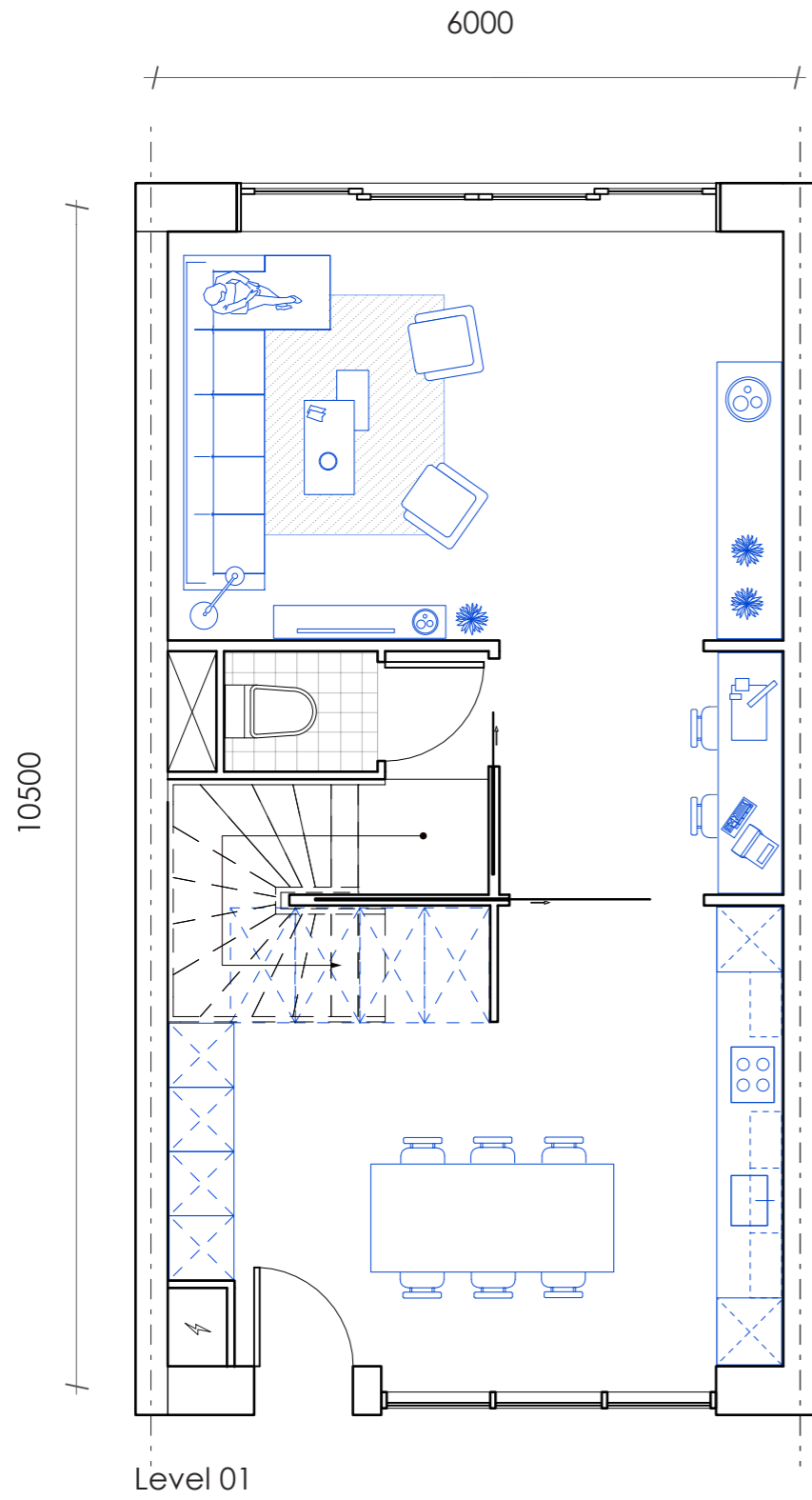
UNIT A1 (03 levels)

6000

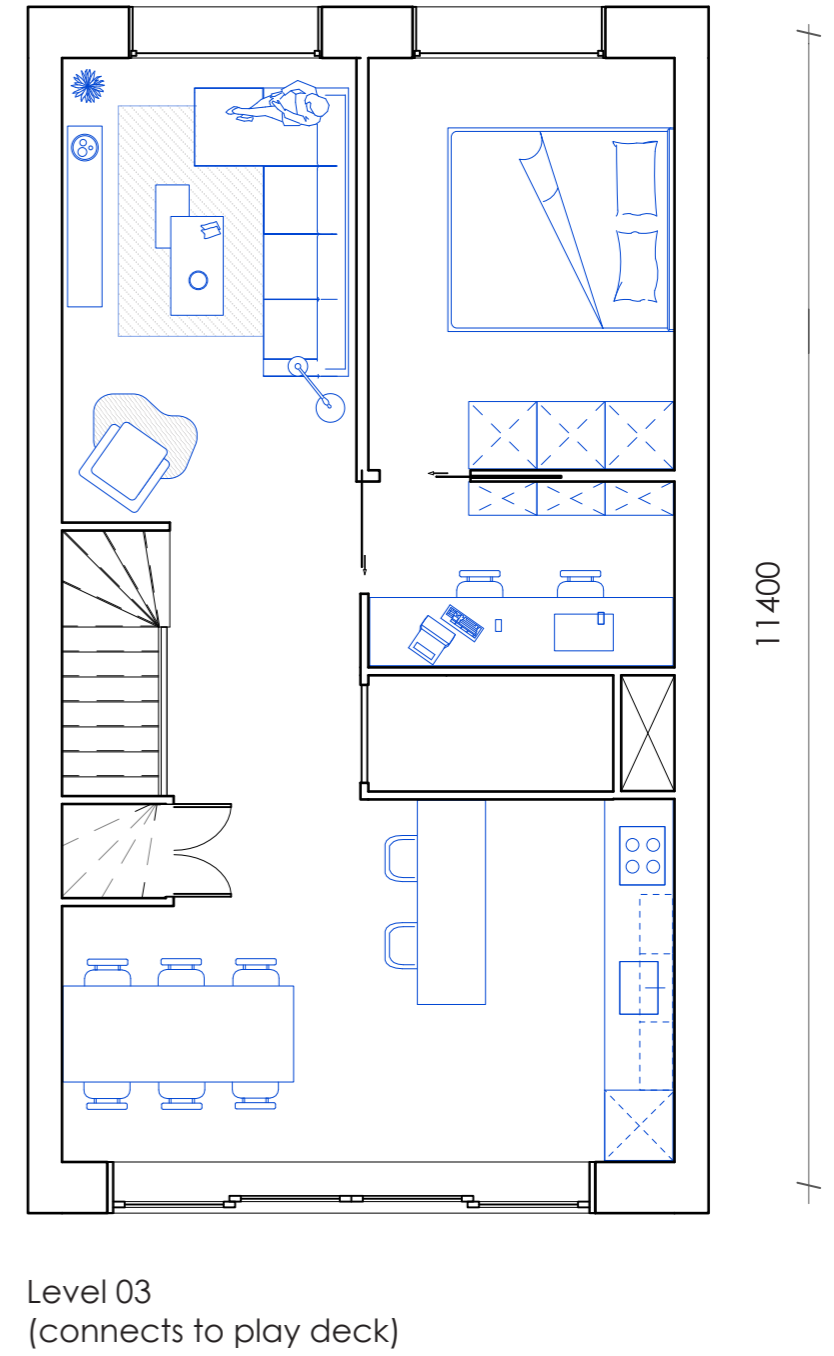
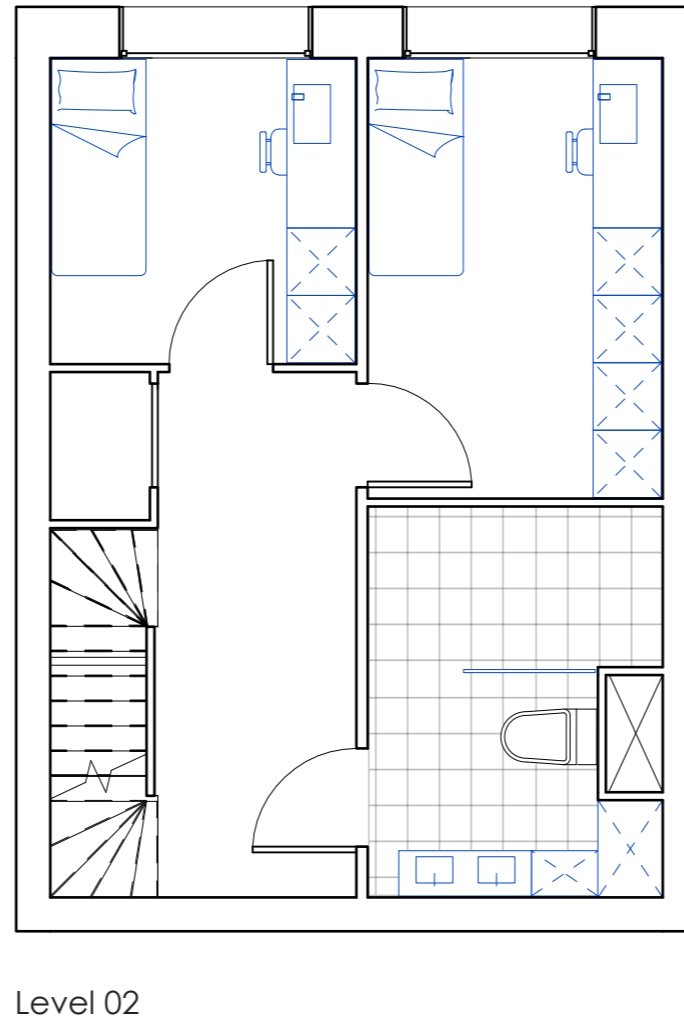
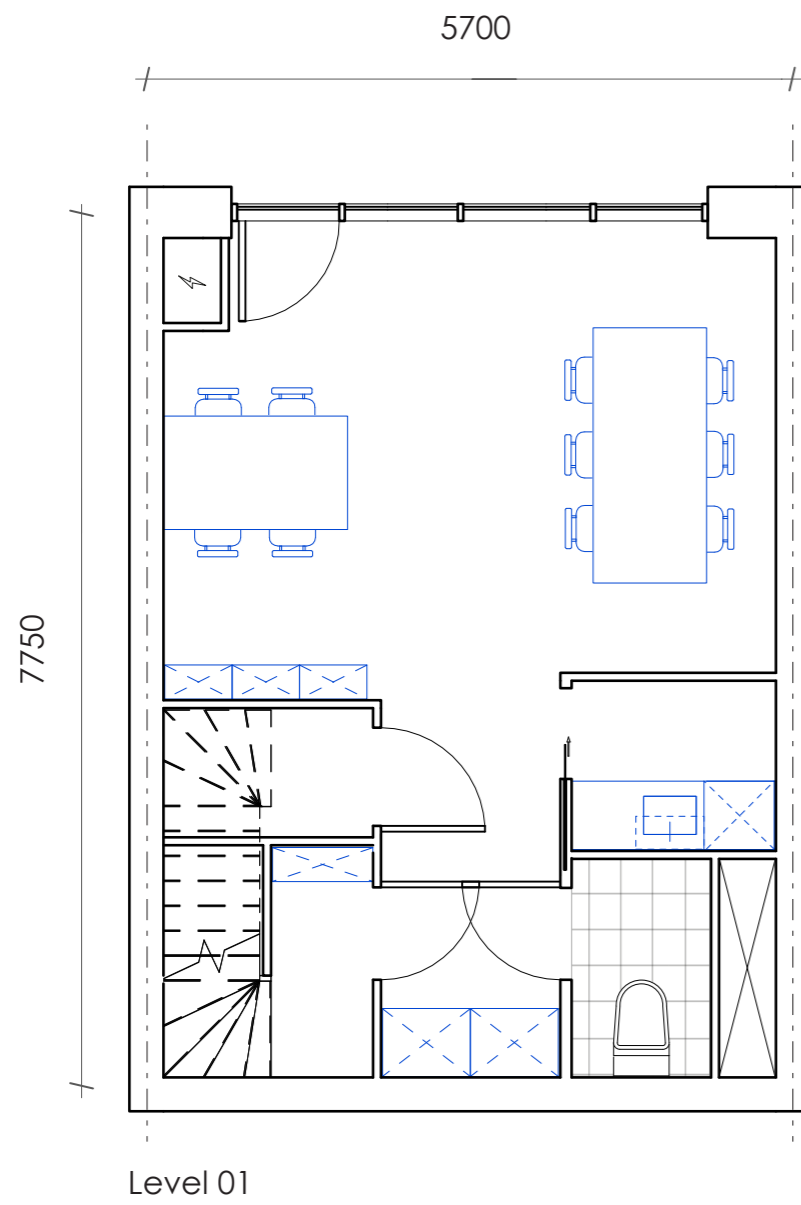
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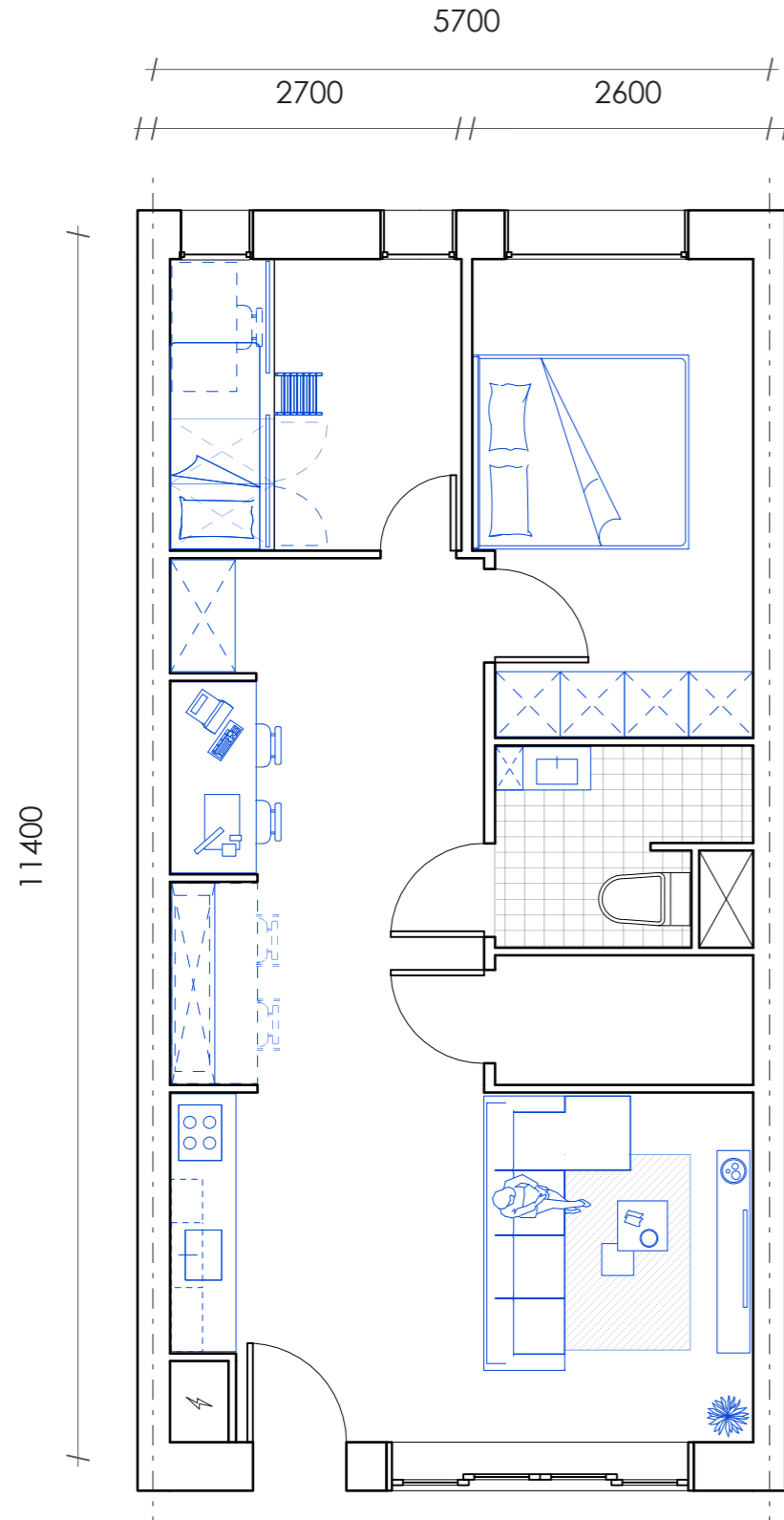
UNIT A2 (02 levels)



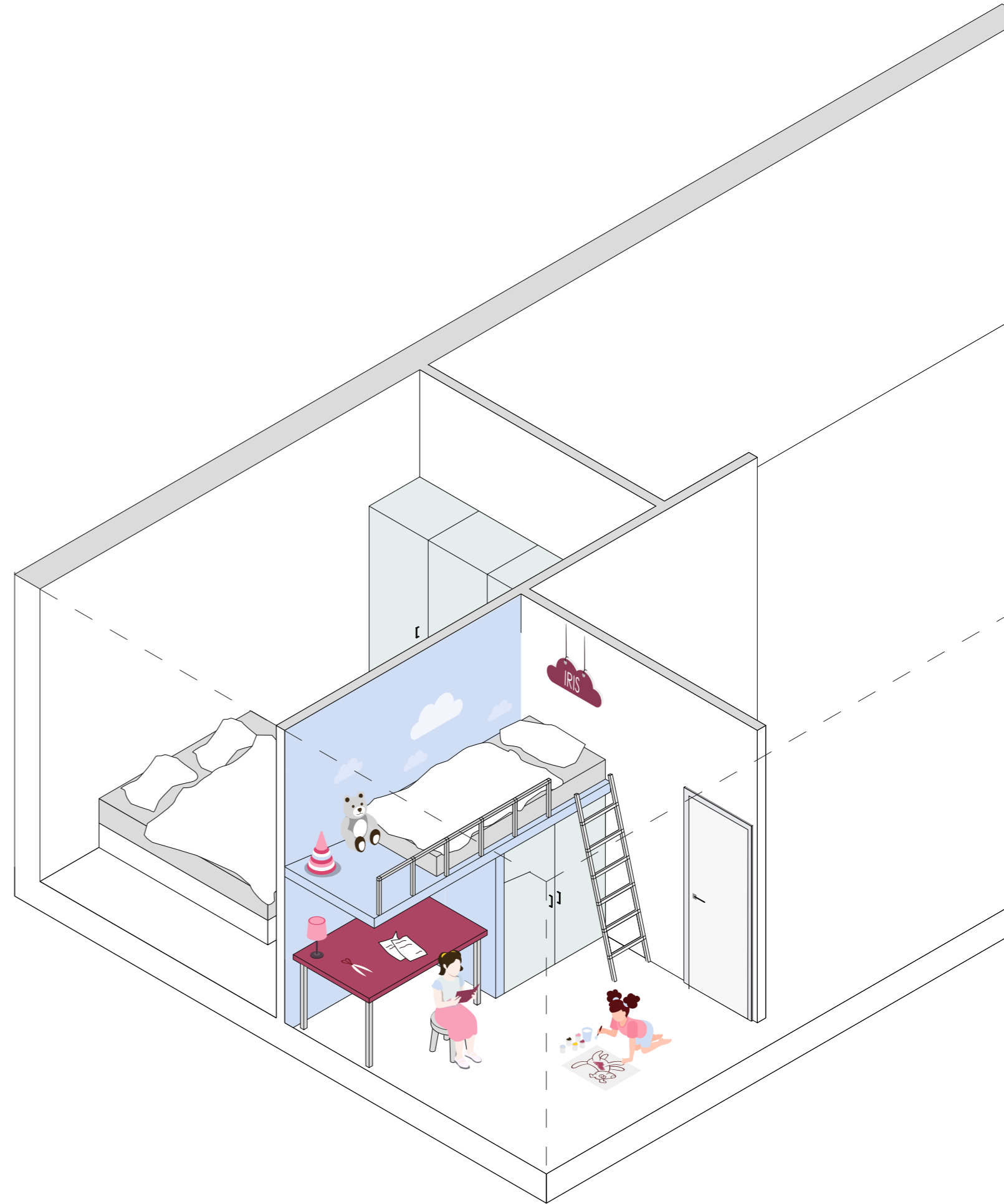
UNIT B

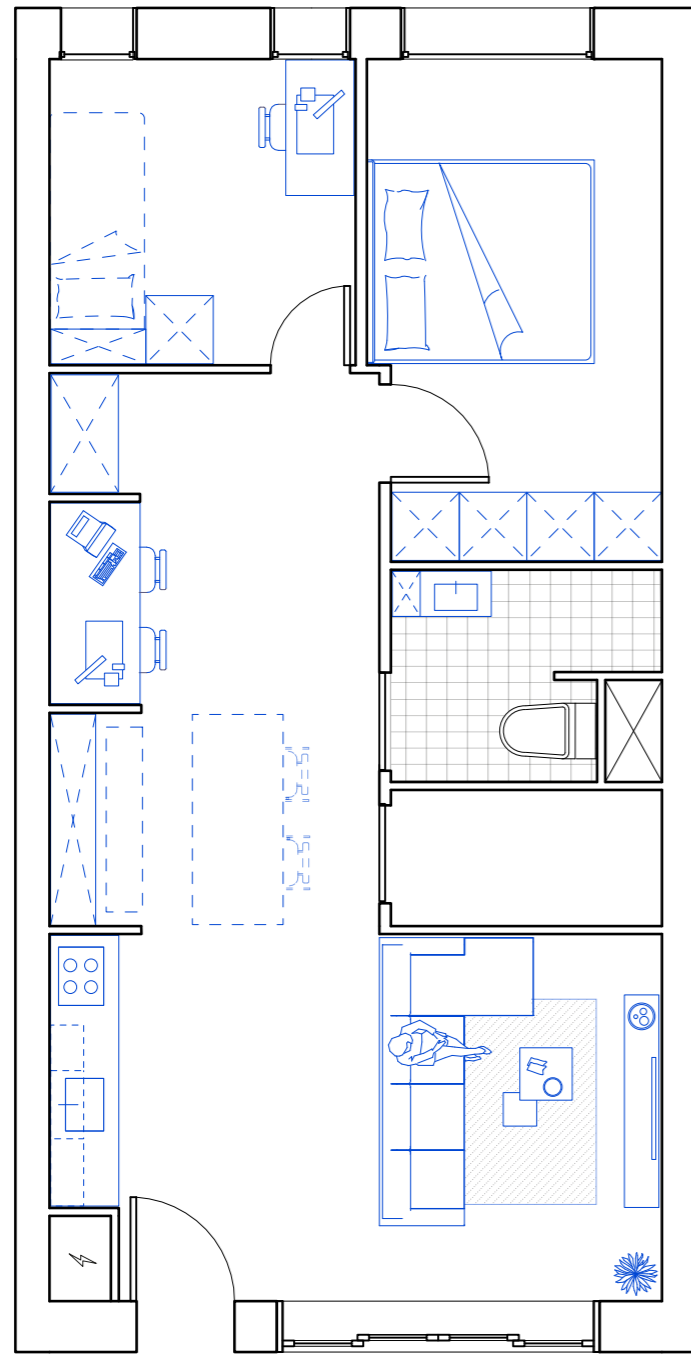


Unit C

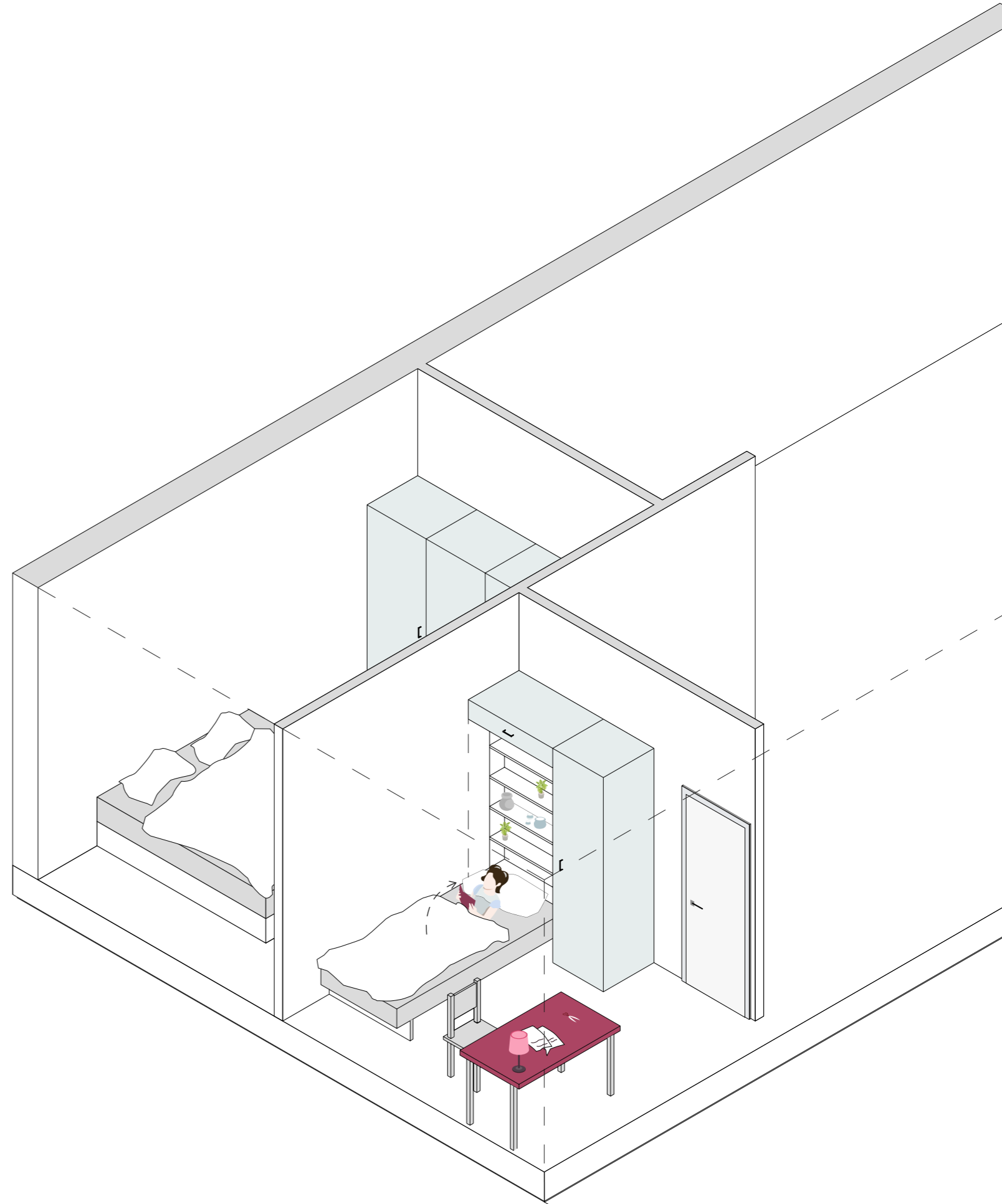


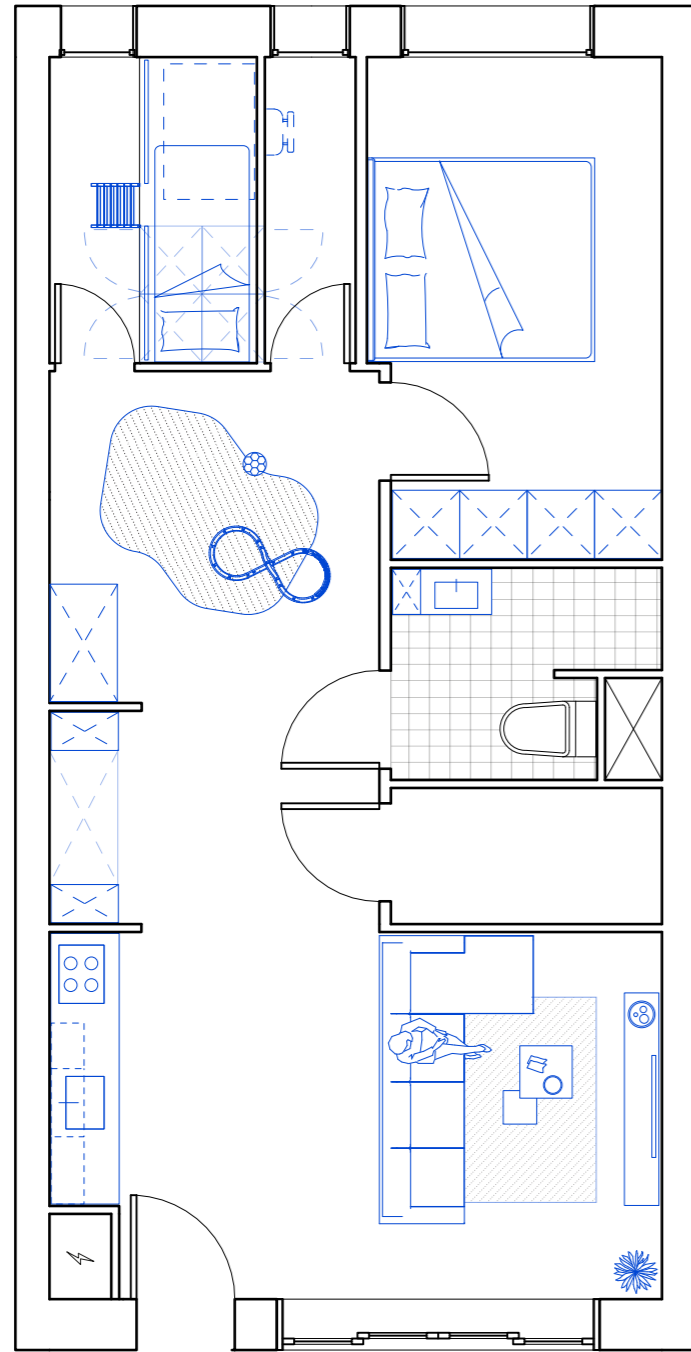
Stacking of bed and desk (Bunkbed)



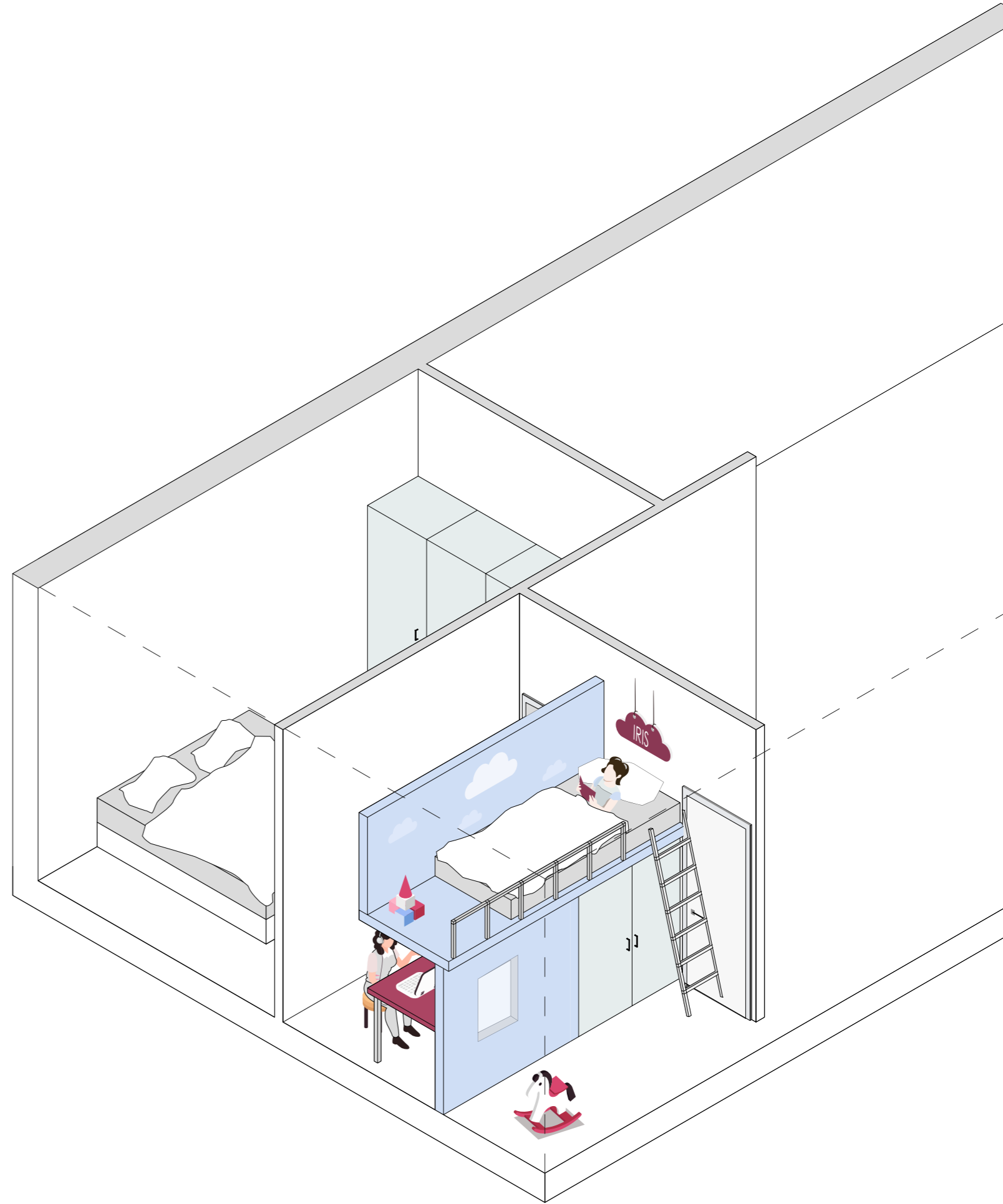


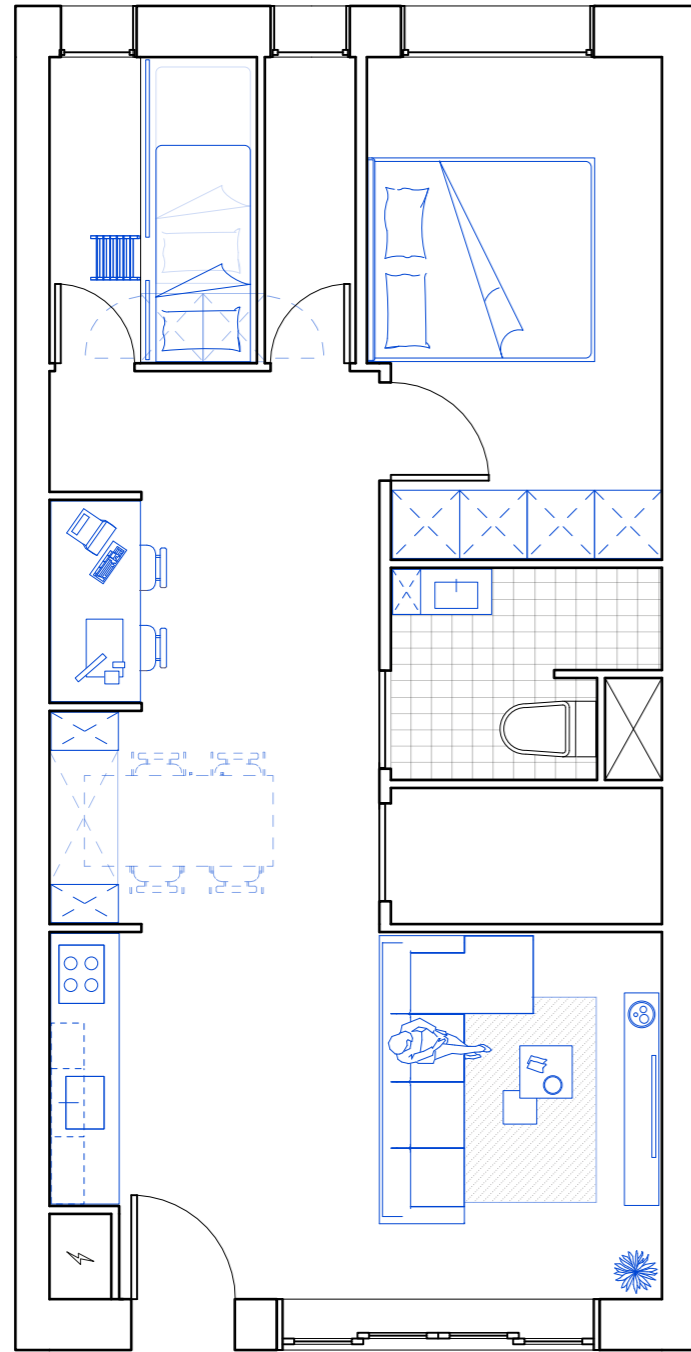
Murhpey bed and workspace



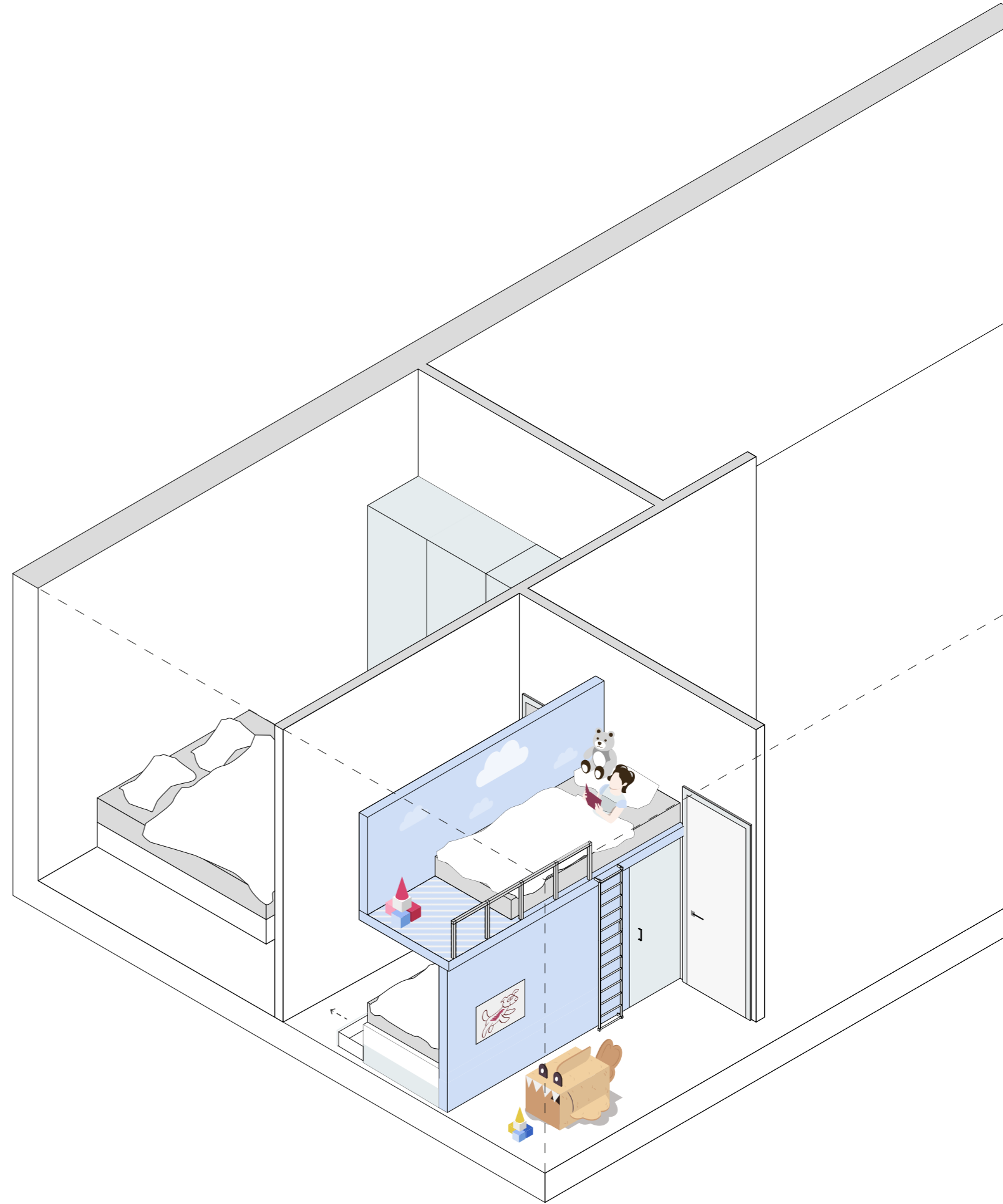


Stacking of bed and desk **in two separate spaces**



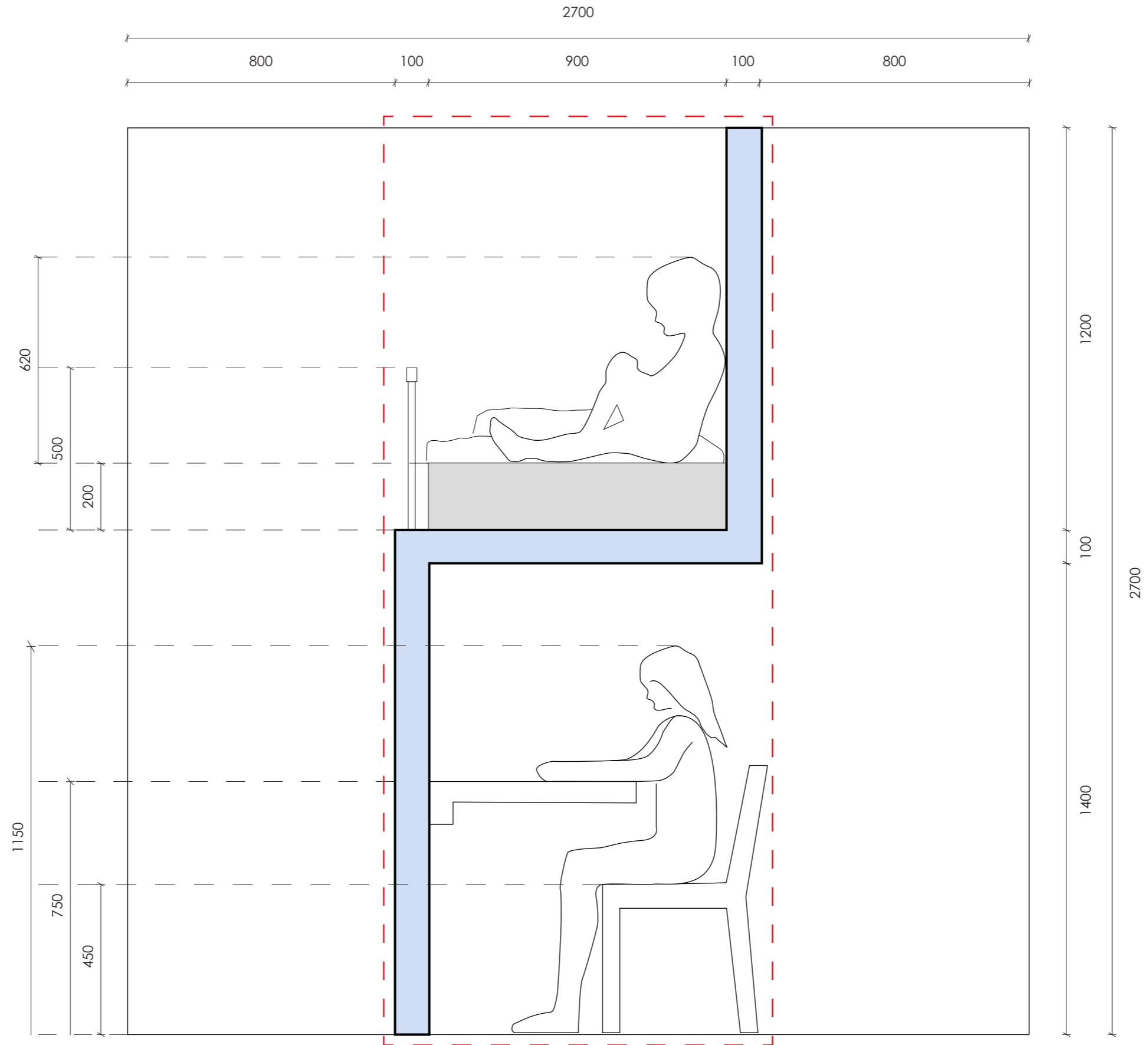


Stacking of bed and desk **in two separate spaces**



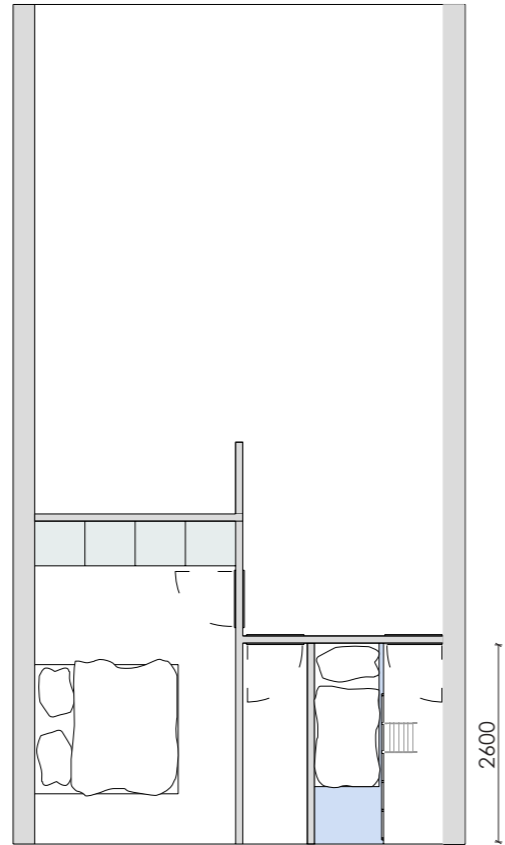
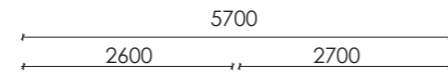
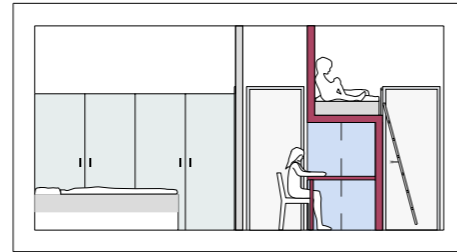


Component  
(furniture)

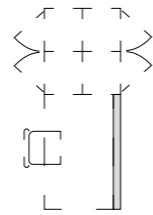


Component  
(furniture)

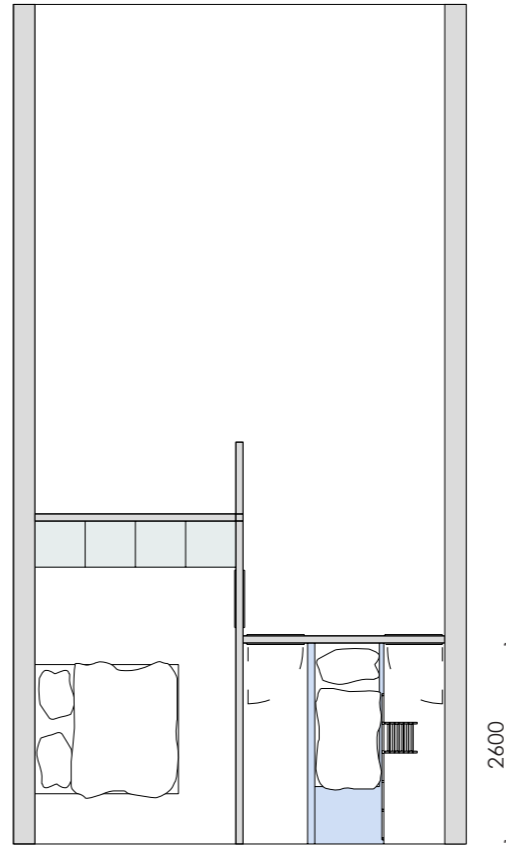
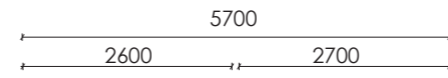
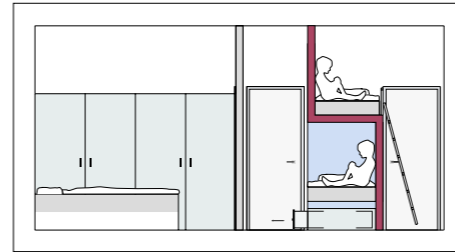
Workspace and bedroom



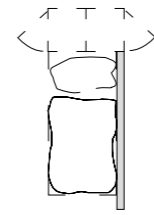
Storage space for both rooms, and workspace underneath the bed in separate spaces.



Two bedrooms



(smaller) storage space for both rooms and stacking of two beds in separate spaces.



Climate concept

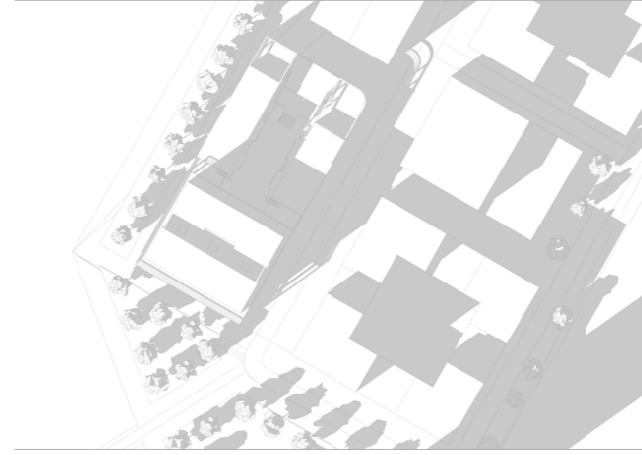
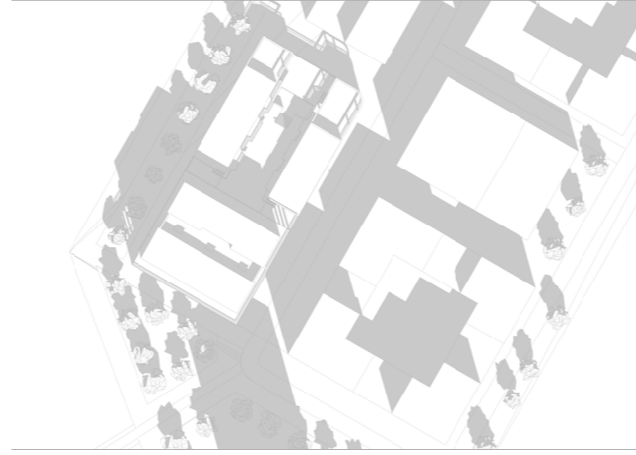
Solar study

09:00

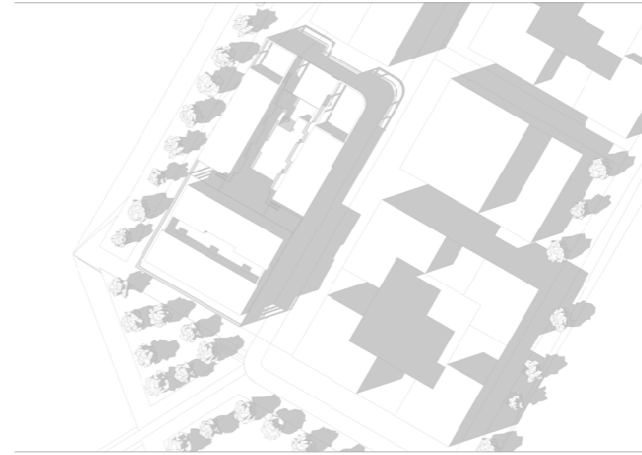
12:00

16:00

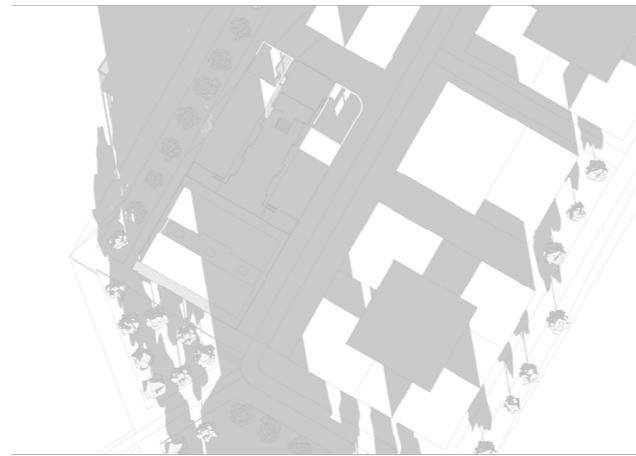
March

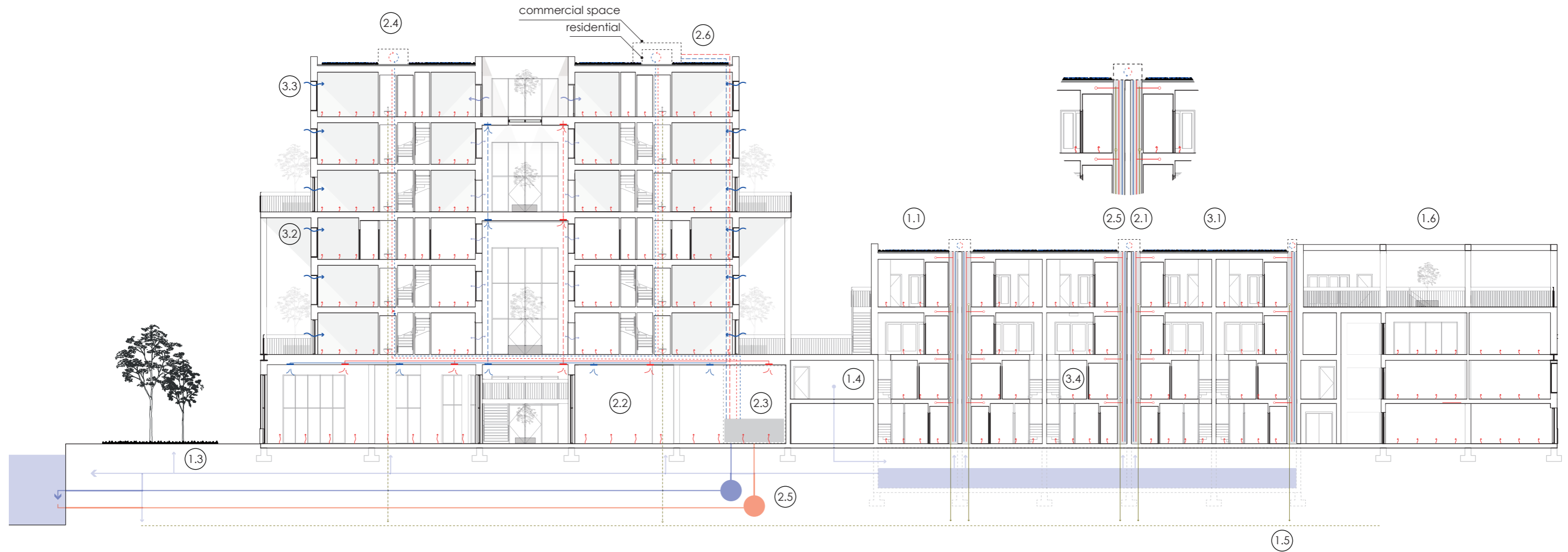


June



December





**Rainwater management:**

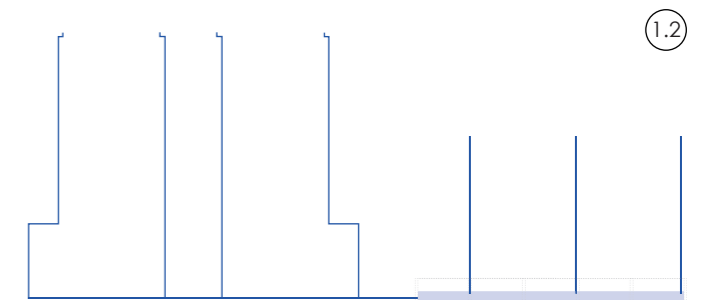
- 1.1 Rainwater absorbed by the green roof
- 1.2 Excess water drained along facade/shafts and collected in the basin
- 1.3 Re-use of filtered rainwater for irrigation of deck, flushing toilet, irrigation of public greenery, and in case of overflow direct excess water to Nieuwe Maas or sewage.
- 1.4 Re-use filtered greywater of collective washing machines
- 1.5 Sewerage
- 1.6 Green deck and trees in building and public space to reduce heat island effect and increase biodiversity.

**Ventilation system:**

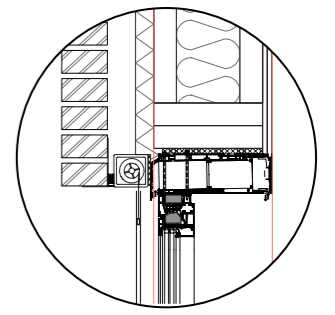
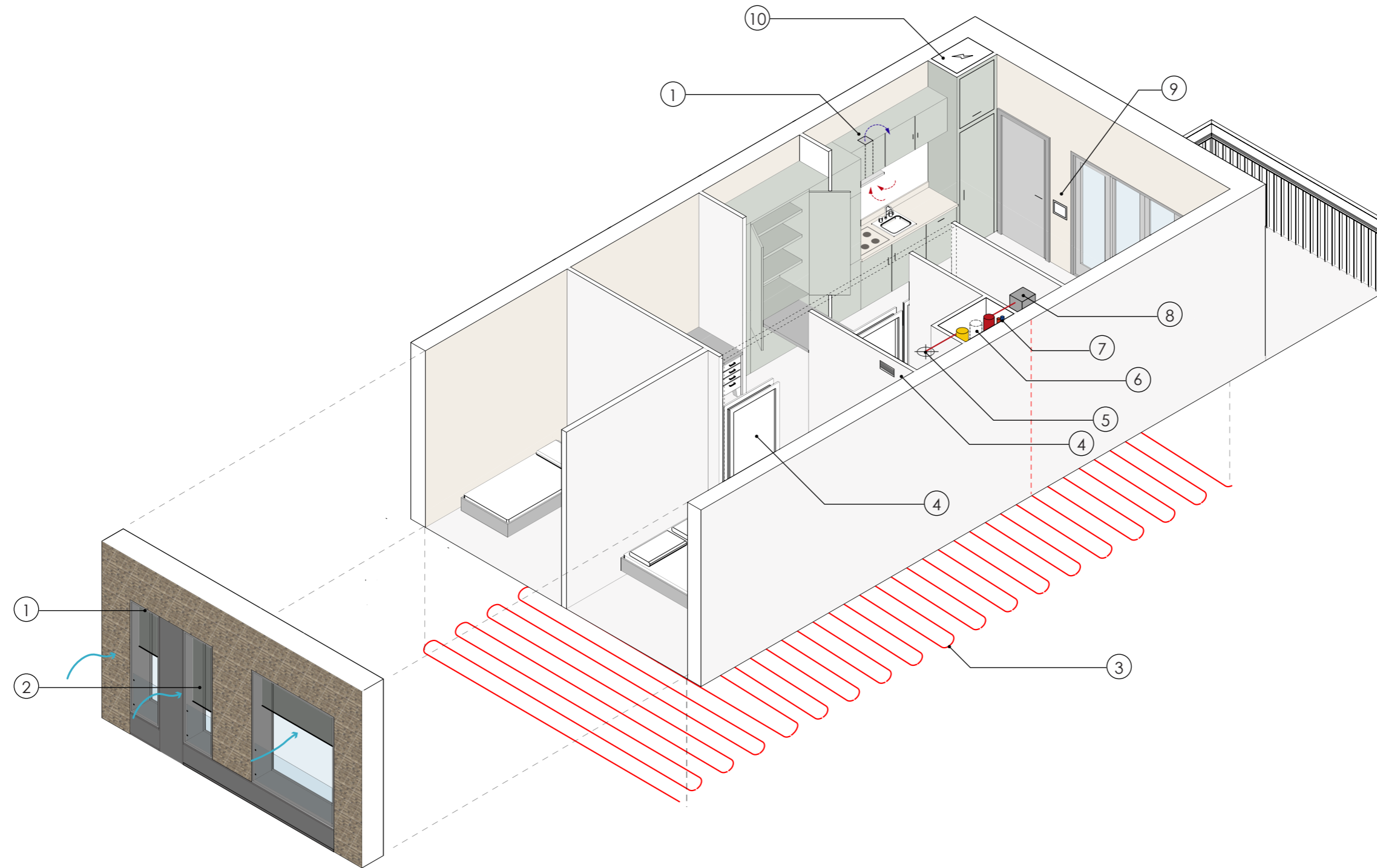
- 2.1 Natural supply and mechanical extraction for the residential program
- 2.2 Mechanical supply and extract for the commercial program
- 2.3 Heat pump
- 2.4 Mechanical extraction unit with heat recovery
- 2.4 Use harbour water for heat recovery
- 2.5 Sewerage venting
- 2.6 Separation inlet and outlet ventilation for clean air (smell)

**Heating and electric installations**

- 3.1 PVT panels for heat and electricity
- 3.2 Sun shading (screen, trees & circulation construction)
- 3.3 Preheating fresh air in winter
- 3.4 Floor heating & cooling



1.2

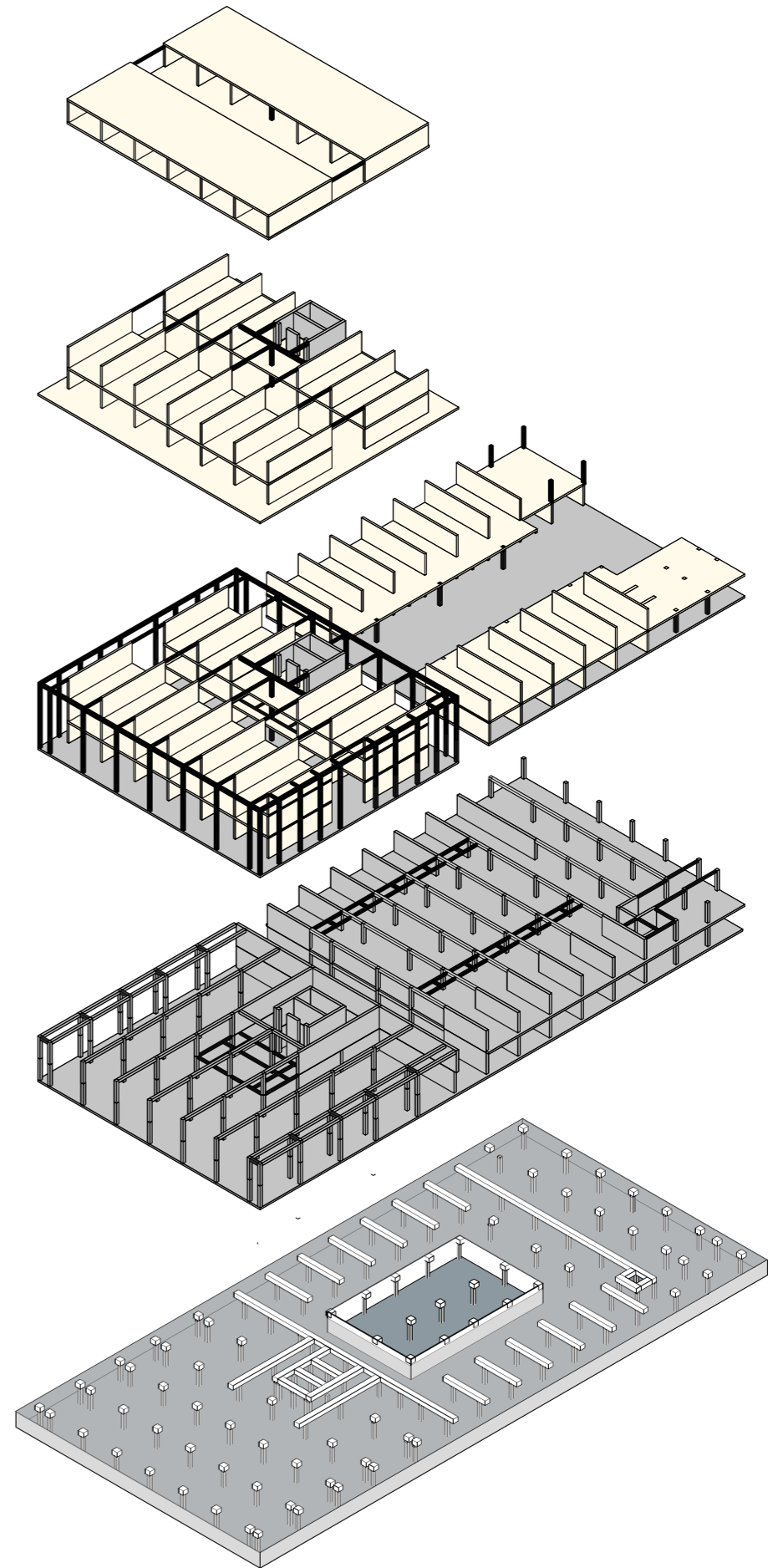
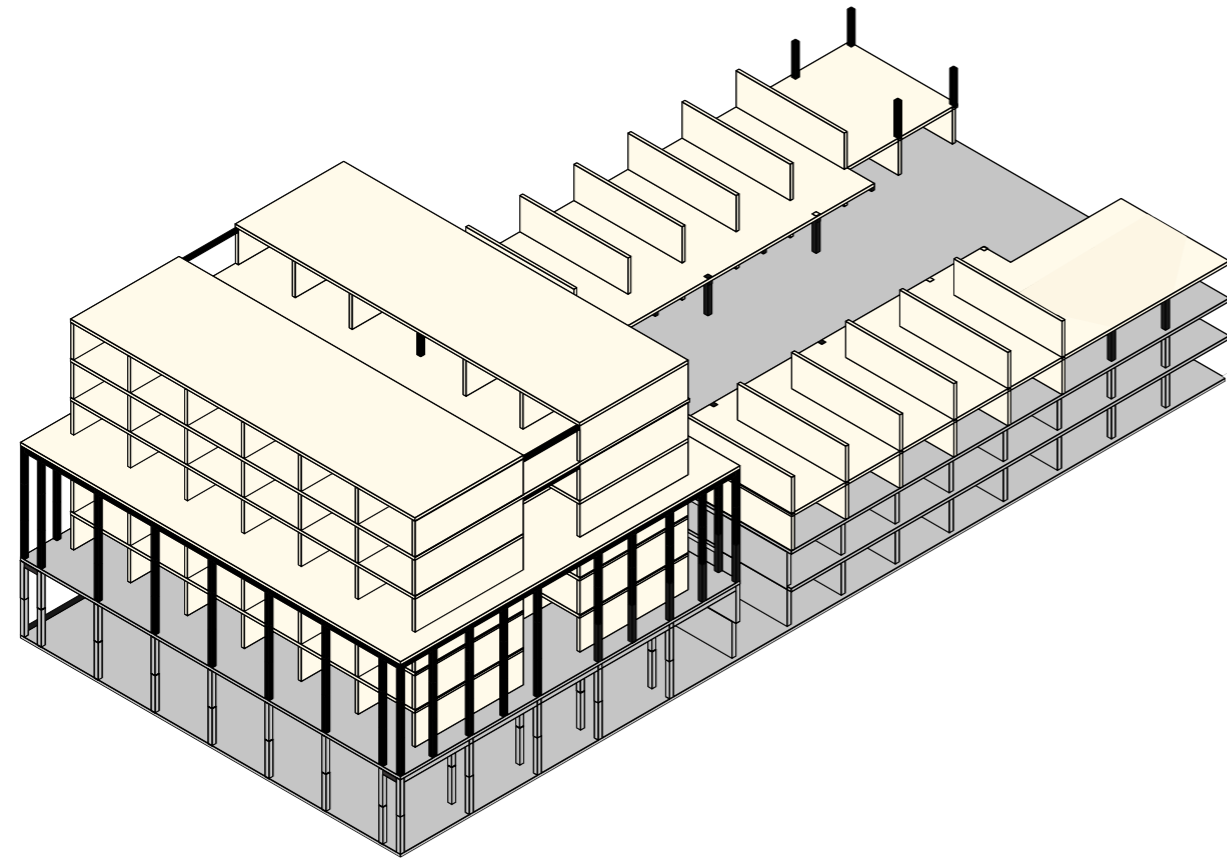


1. Schüco VentoTherm

- 1. Preheating fresh air in winter
- 2. Window screen for sun shading
- 3. Underfloor heating system and cooling grouped per space (verblijfsruimte)
- 4. Gap under door for ventilation or grill in wall for ventilation
- 5. Air extractor
- 6. Sewage
- 7. Hot/cold water
- 8. Unit Heating Pump/Boiler
- 9. Home control system (on demand)
- 10. Fuse box
- 11. Recirculation extractor

**Building technology**

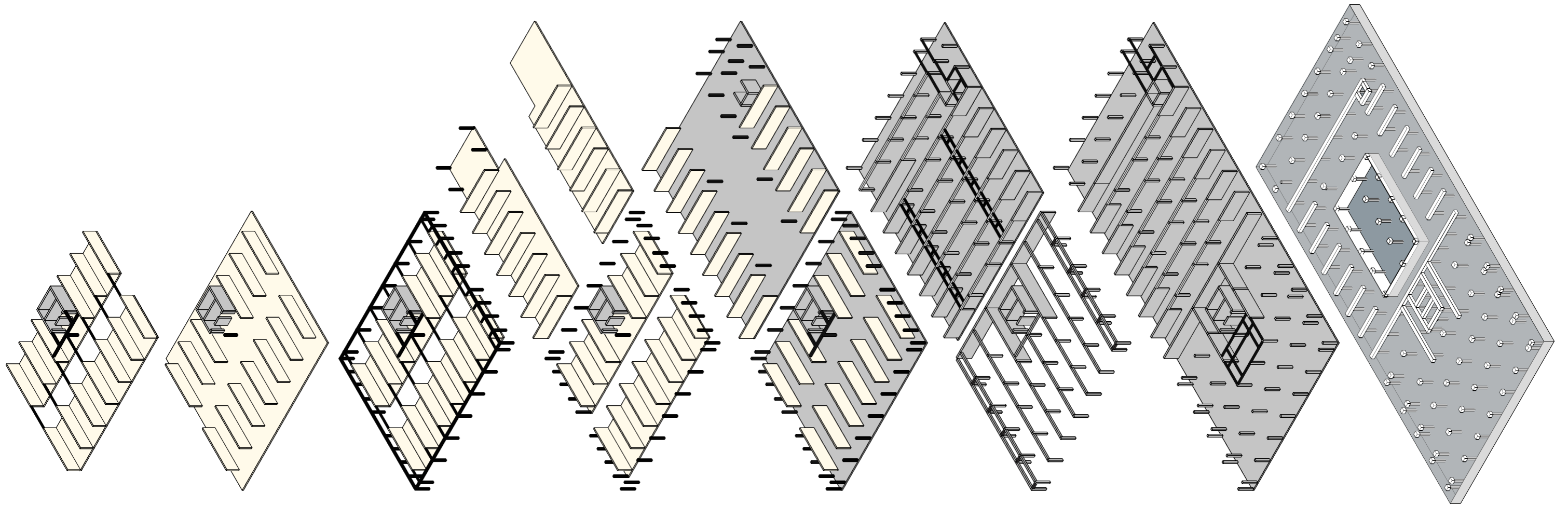
# Building Construction



- CLT
- Concrete
- Steel
- Water basin

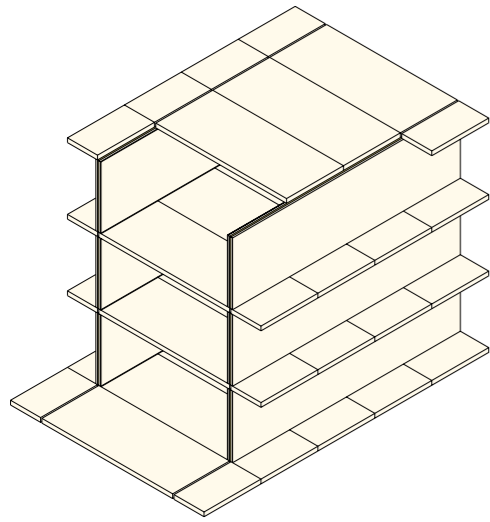


Exploded AXO

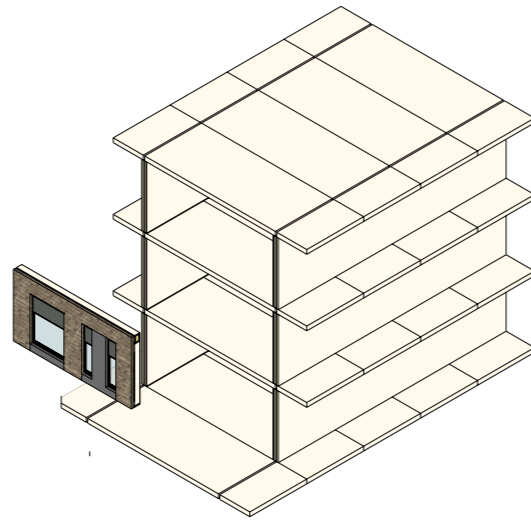


- CLT
- Concrete
- Steel
- Water basin

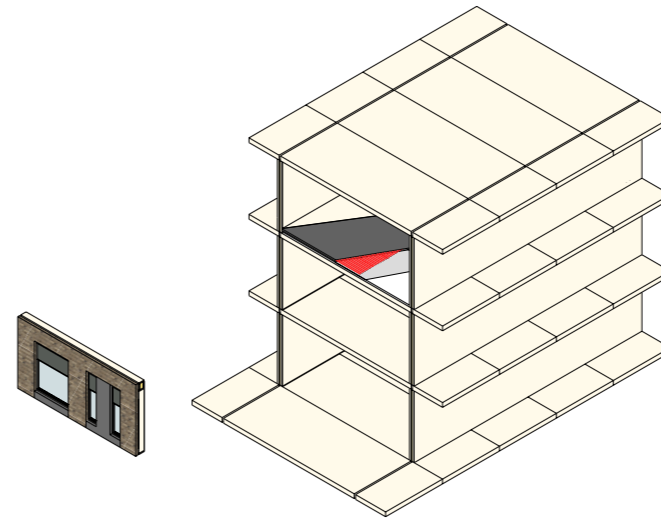
# Assembly



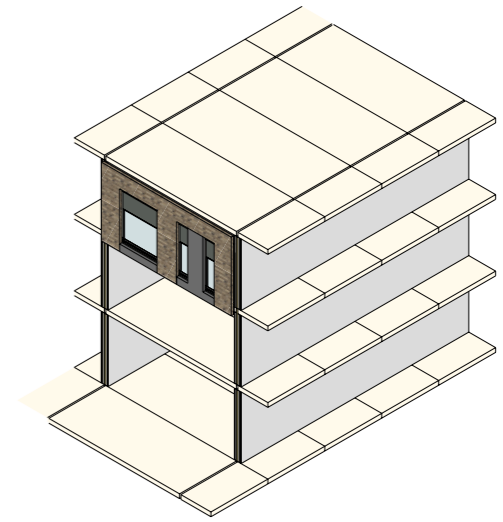
① Build up CLT floor and wall construction.



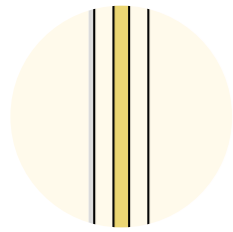
② Placement of the facade and connection it to the floors.



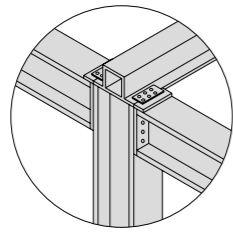
③ Building up the floor (choices made by designer)



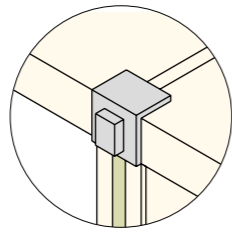
④ Add additional insulation layer and plasterboard for acoustics and fire protection.



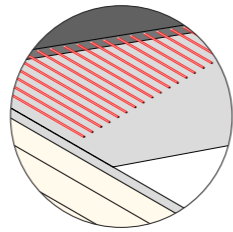
1. Layers prefab CLT wall with insulation



5. Connection beams and column



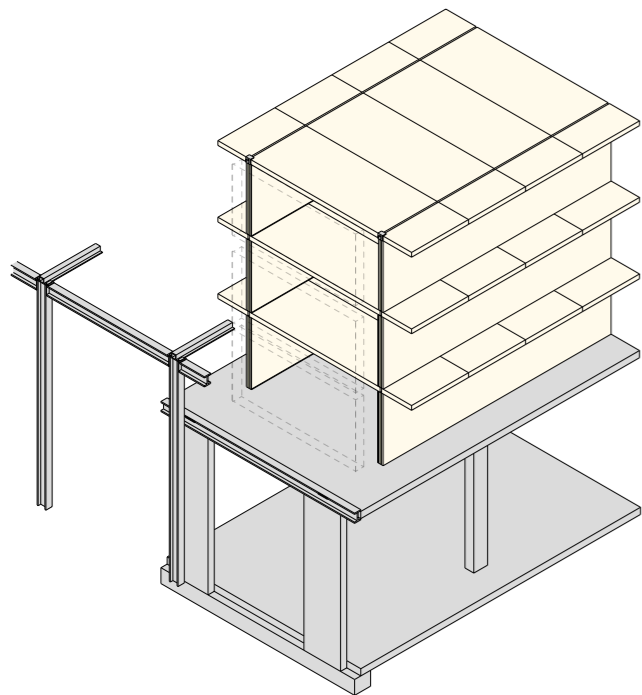
5. Connection to THQ with pin



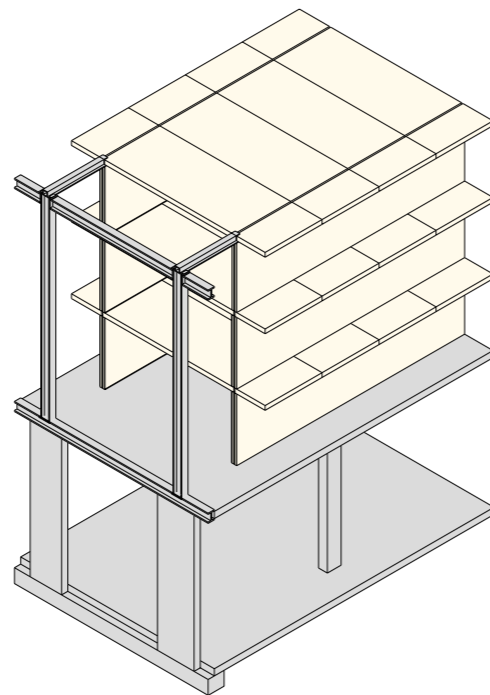
3. Floor assembly



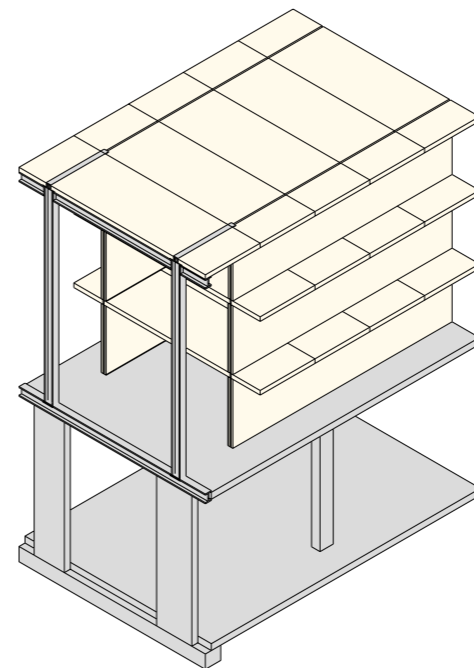
4. Additional layer of acoustic insulation and plasterboard



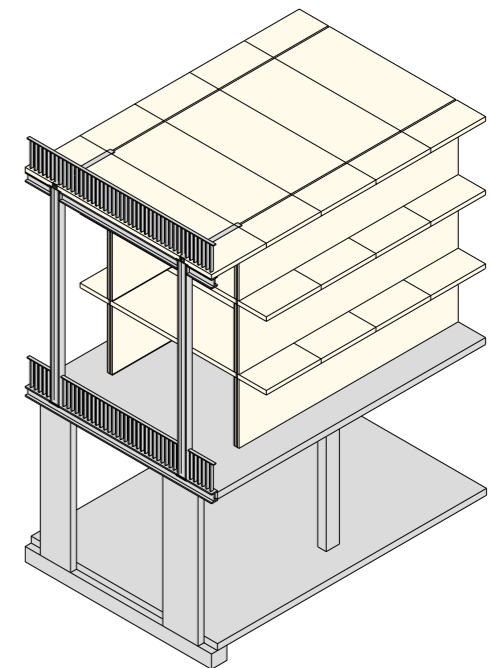
⑤ Connect facades to construction



⑥ Build up the circulation construction after placing the facade.

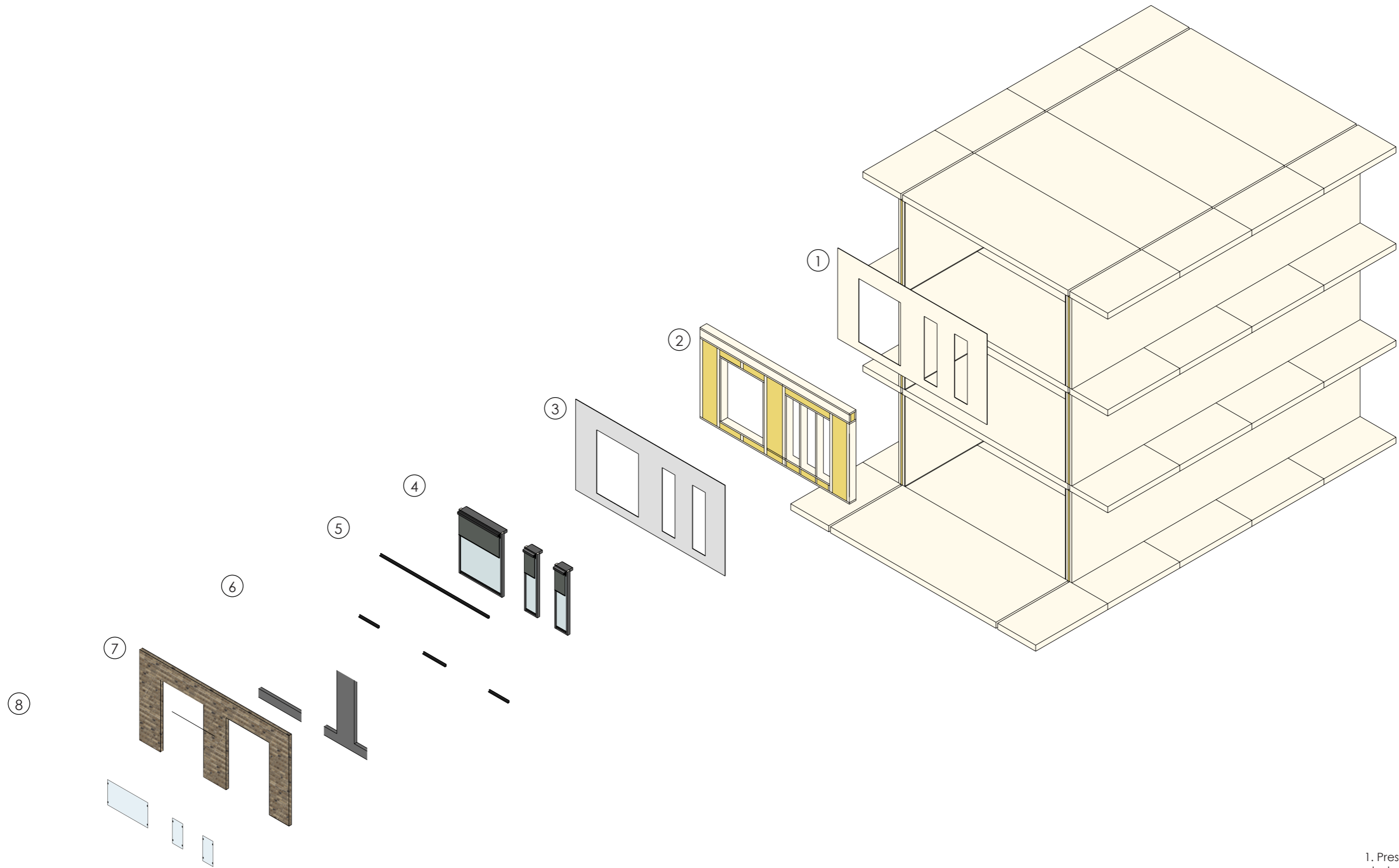


⑦ Place CLT floor between THQ beams (span direction).



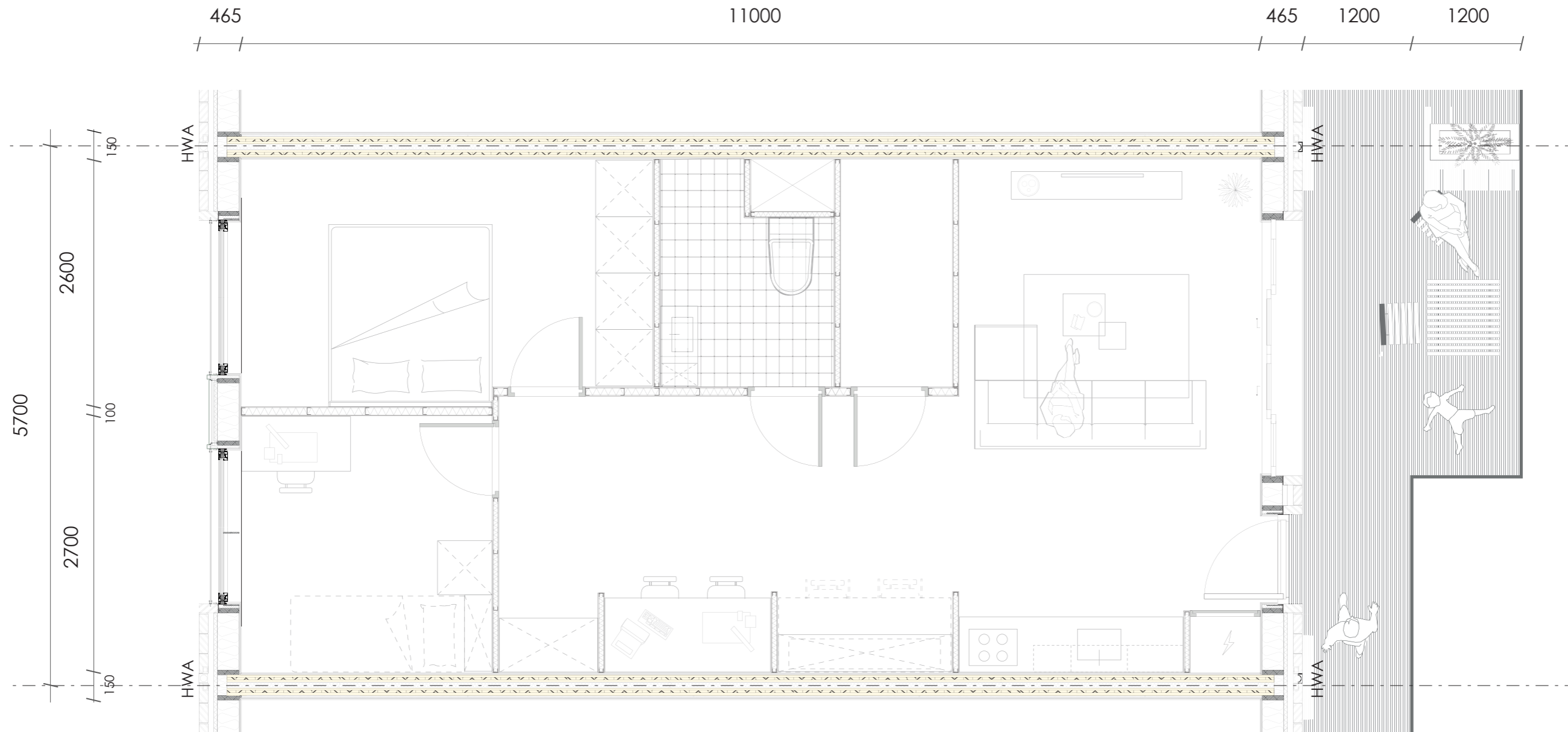
⑧ Placement of railing after all floor layers are stacked.

# Assembly Facade

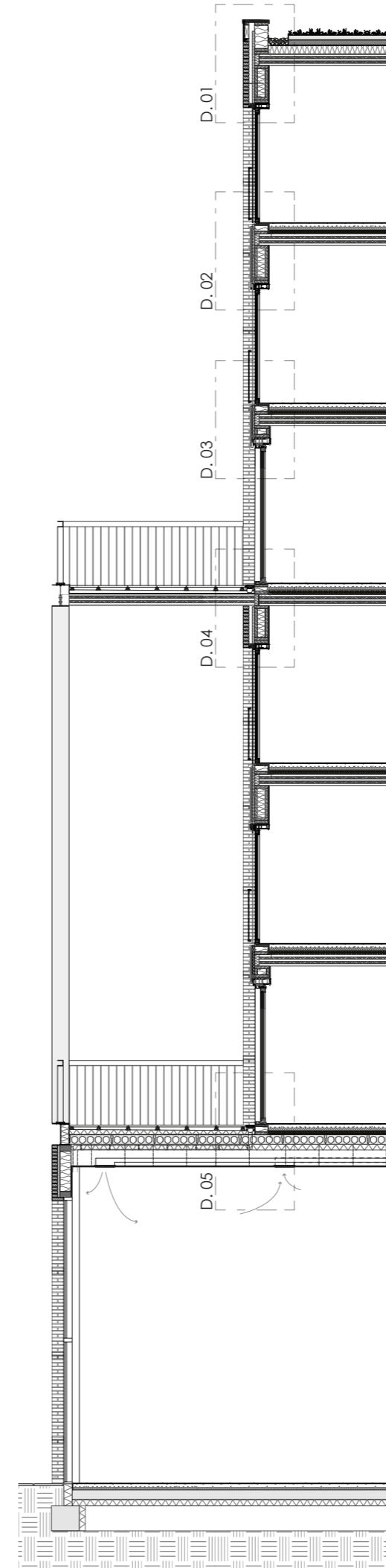


1. Pressed wood and plasterboard
2. Wood frame with insulation (lintel construction)
3. Waterproof membrane
4. Windows and screen
5. Brick lintel
6. Aluminium cassette cladding
7. Brickwork
8. Window fall protection

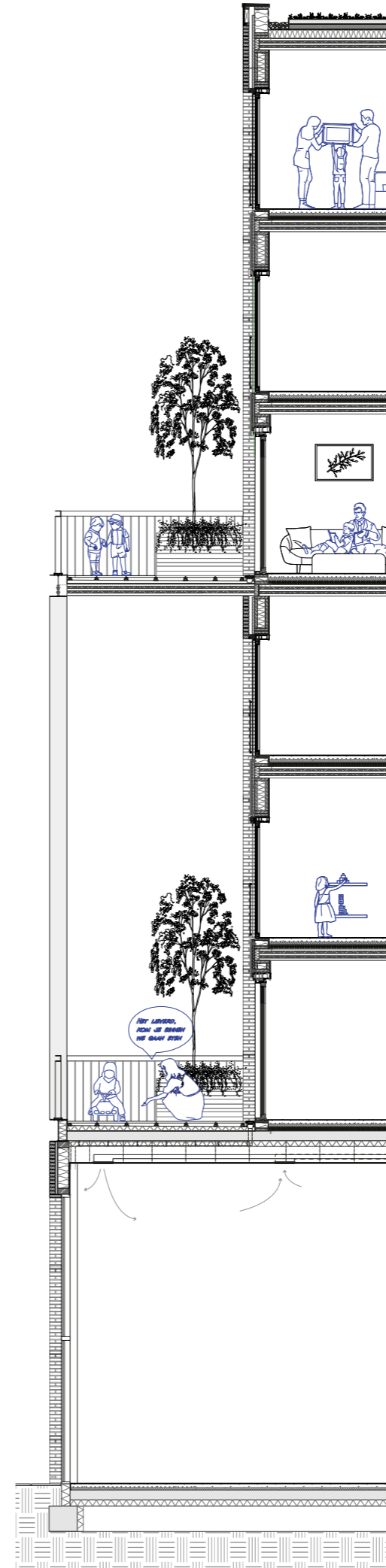
Detailed Plan Unit C



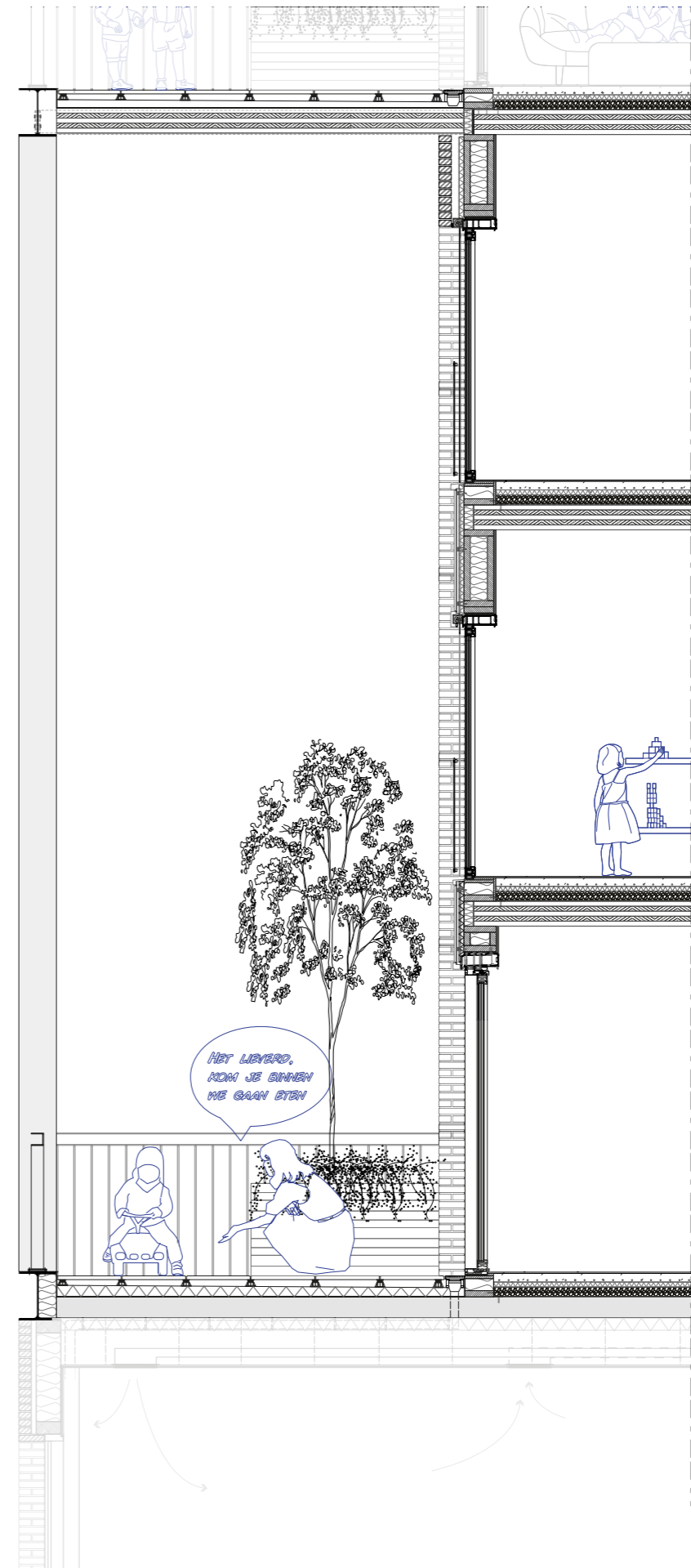
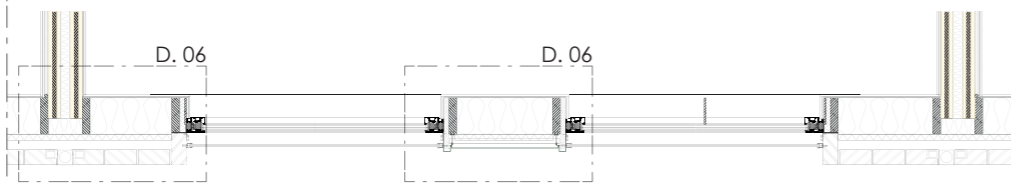
Facade fragment

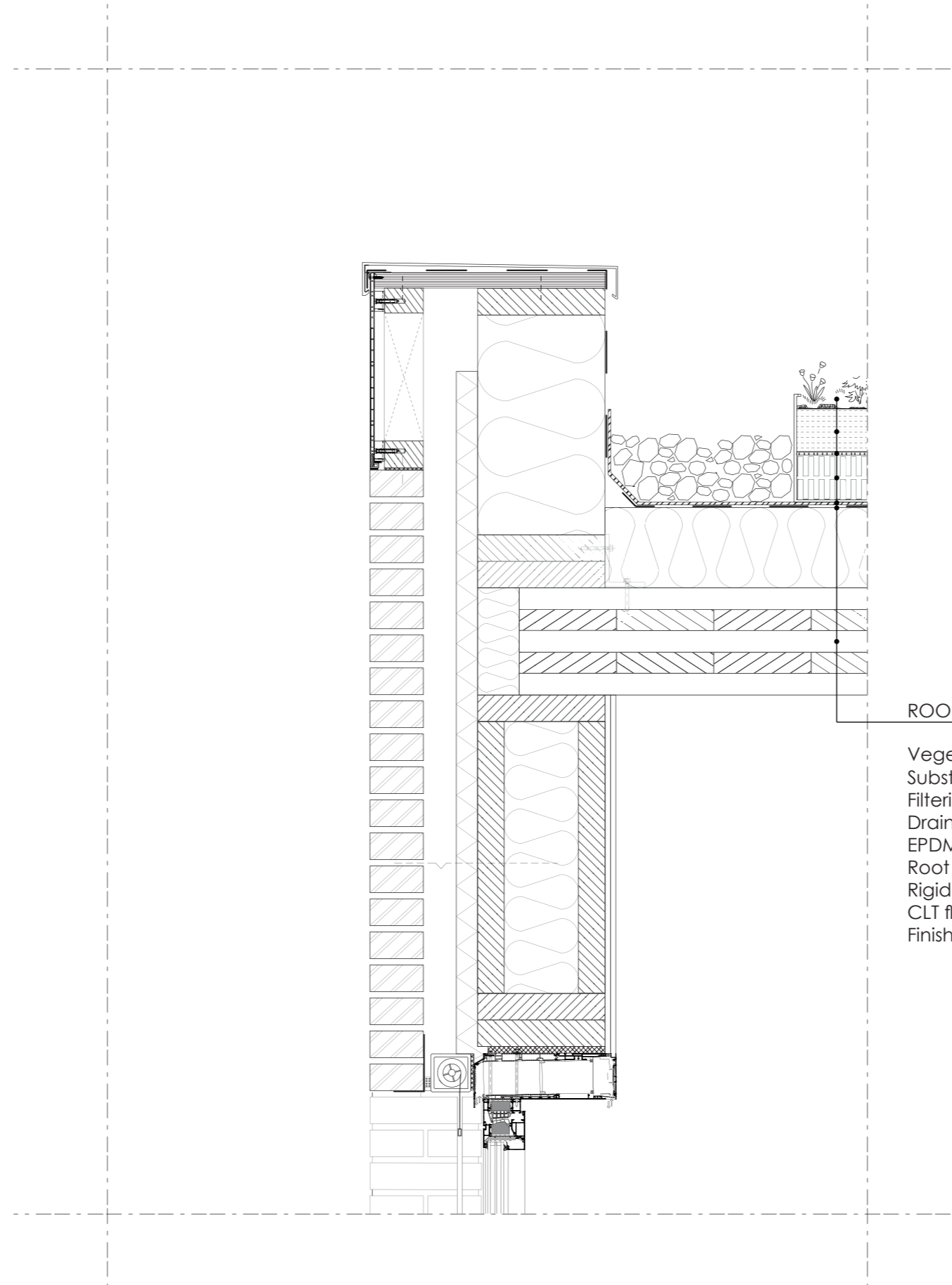


Facade fragment



Facade fragment



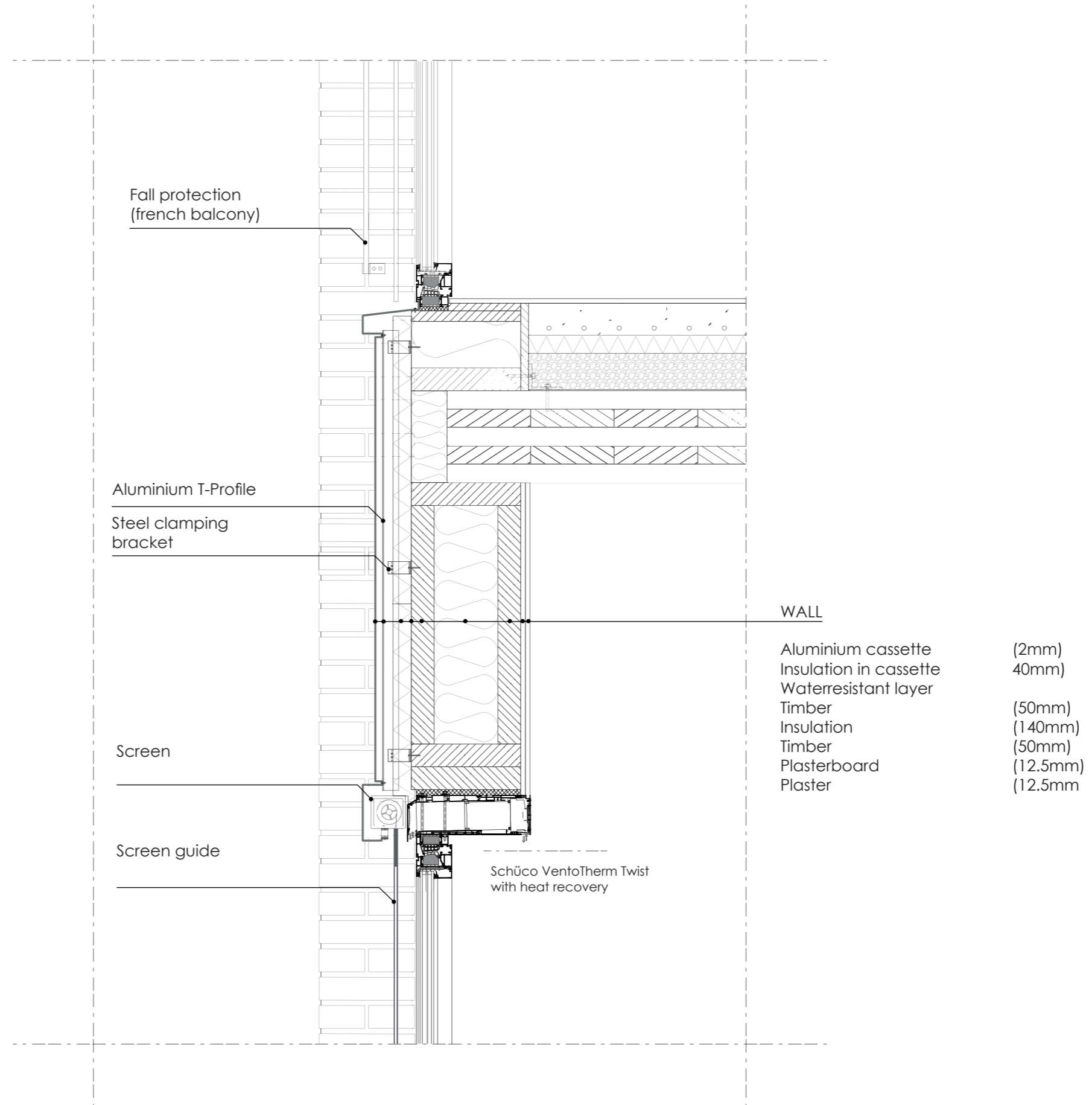


ROOF

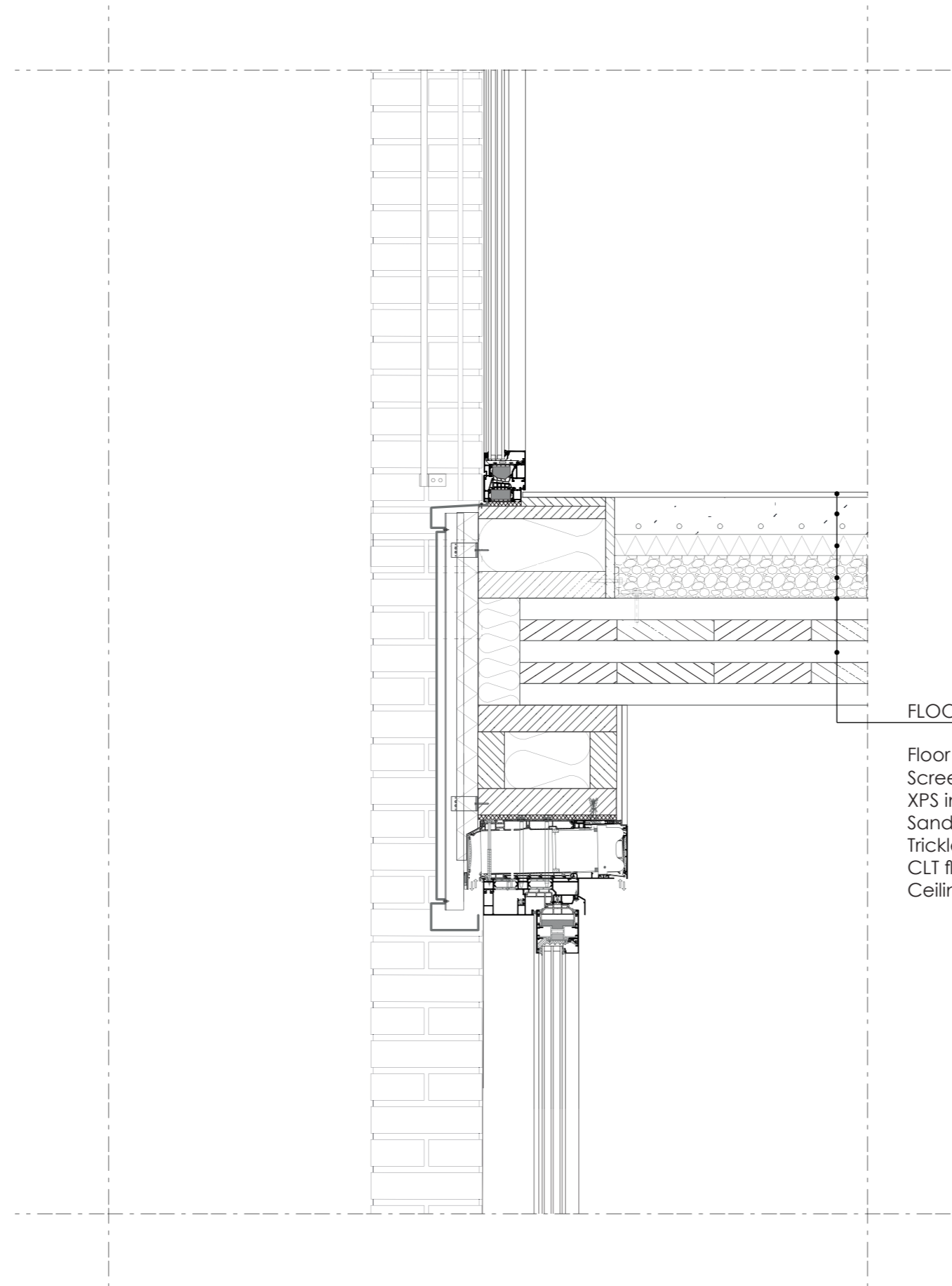
- Vegetation
- Substrate (80mm)
- Filtering Foil
- Drainage and buffer system (90mm)
- EPDM Roofing
- Root resistant sealing
- Rigid Thermal Insulation (150mm)
- CLT floor (200mm)
- Finish



Detail 02



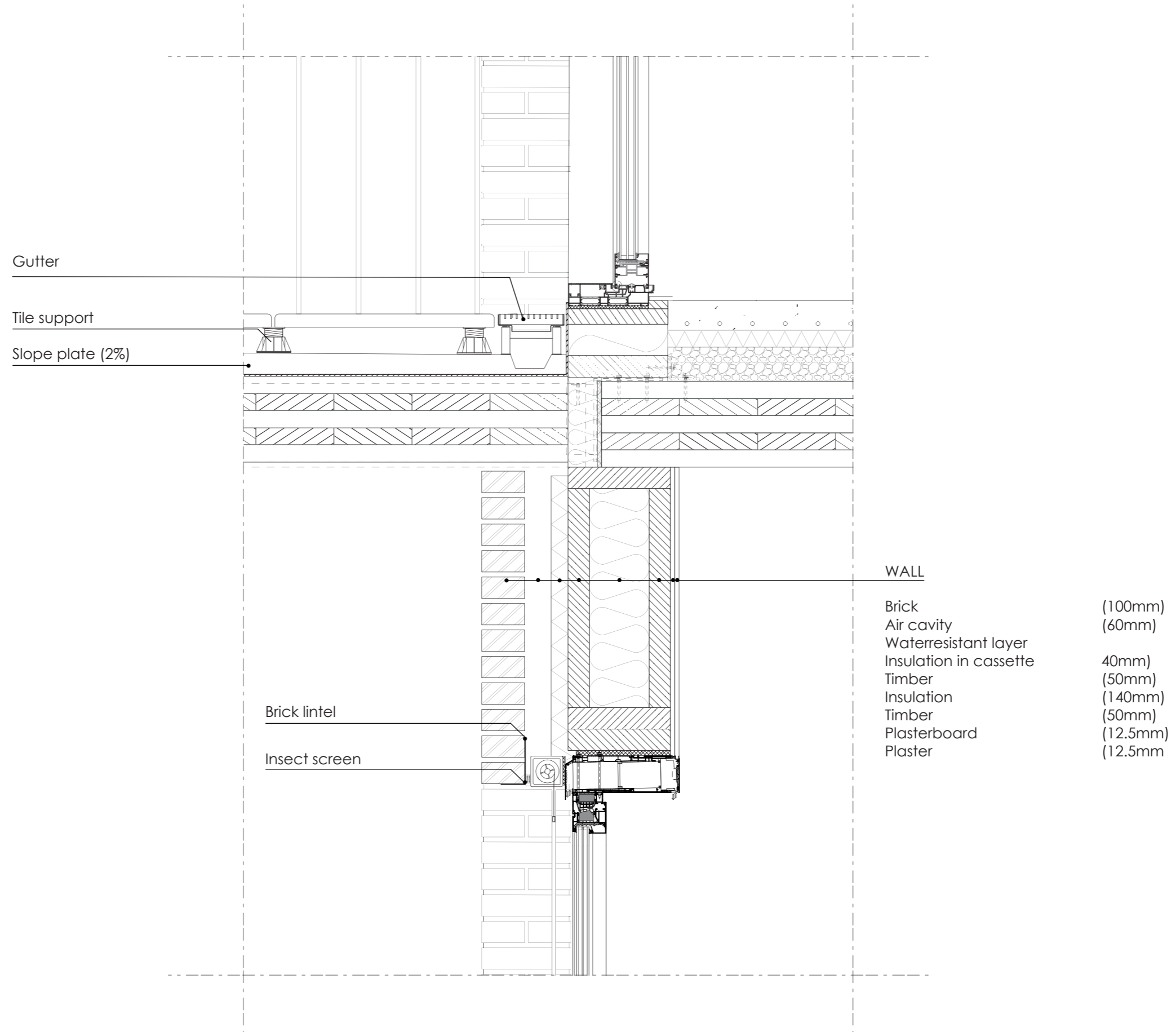
Detail 03



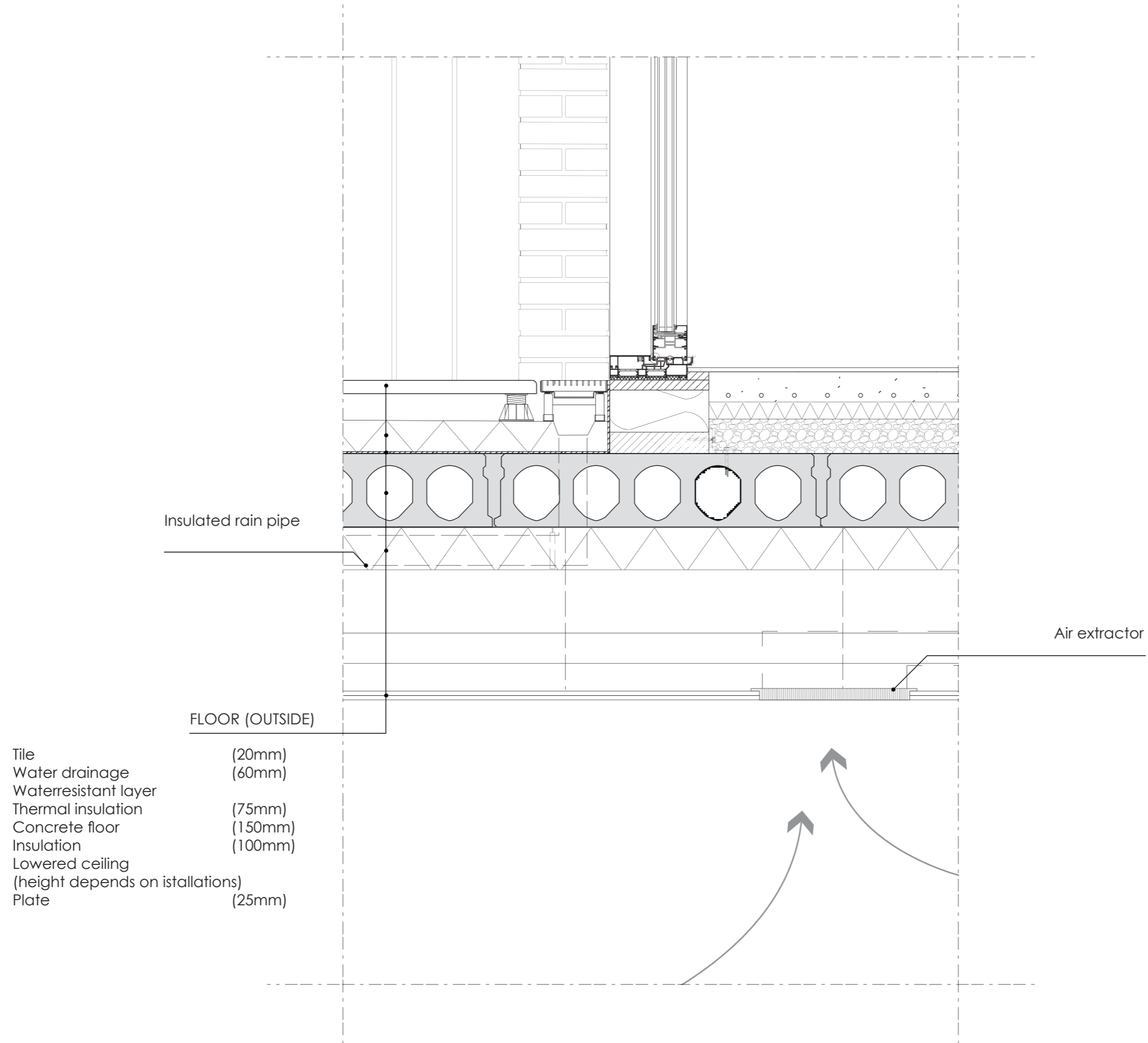
FLOOR

- Floor finish (20mm)
- Screed with floorheating (80mm)
- XPS insulation (30mm)
- Sand layer / chippings (80mm)
- Trickle protection
- CLT floor (200mm)
- Ceiling finish\*

Detail 04



Detail 05



Detail 06

