

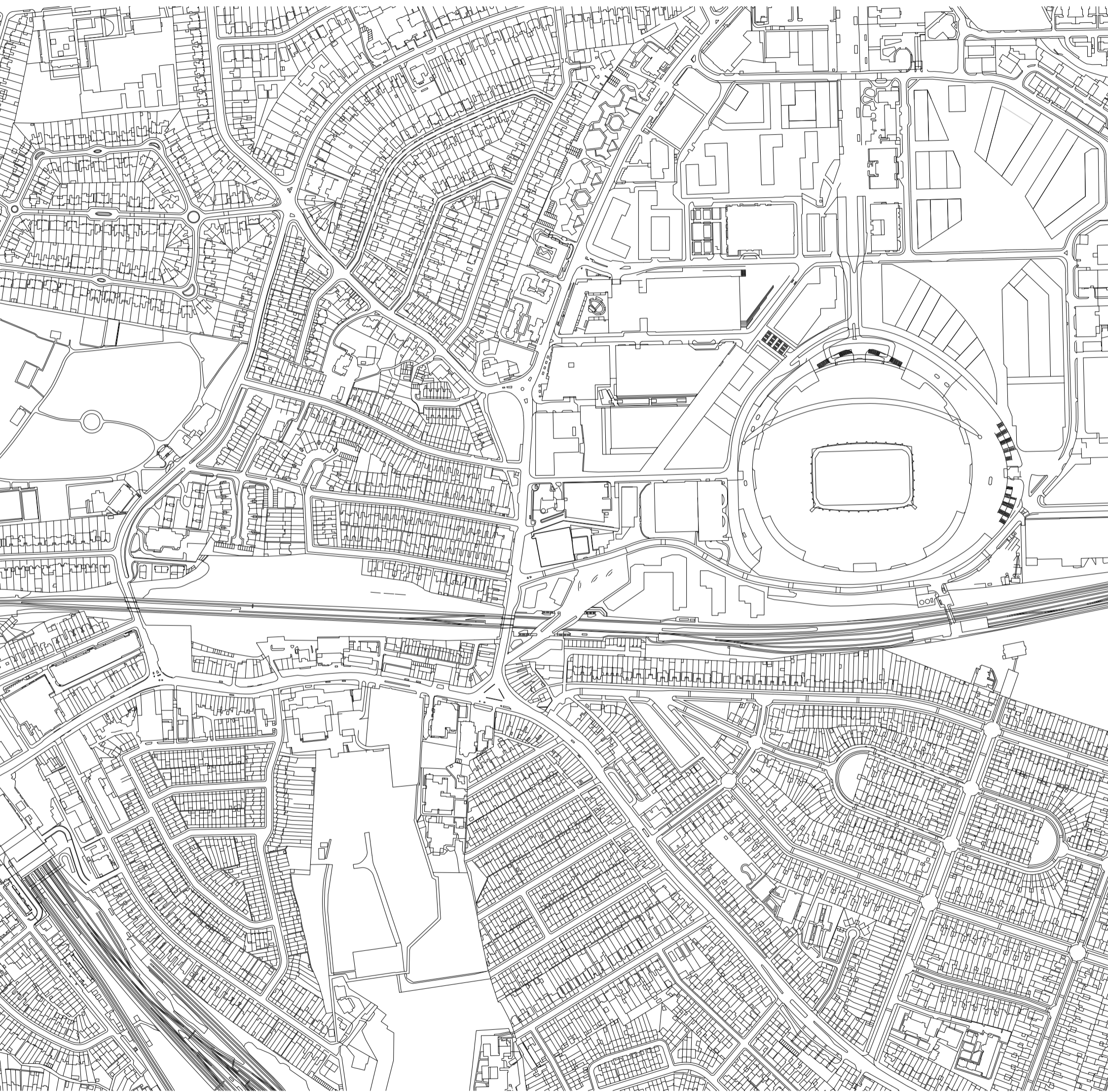
North Sea: Landscapes of
Coexistence
Transitional Territories Studio
2018-2019

Appendix II
Building Technology
Drawing Set

Jimmy Lei
The State of Speculation:
Underlying Mechanisms of Built
Environment Procurement

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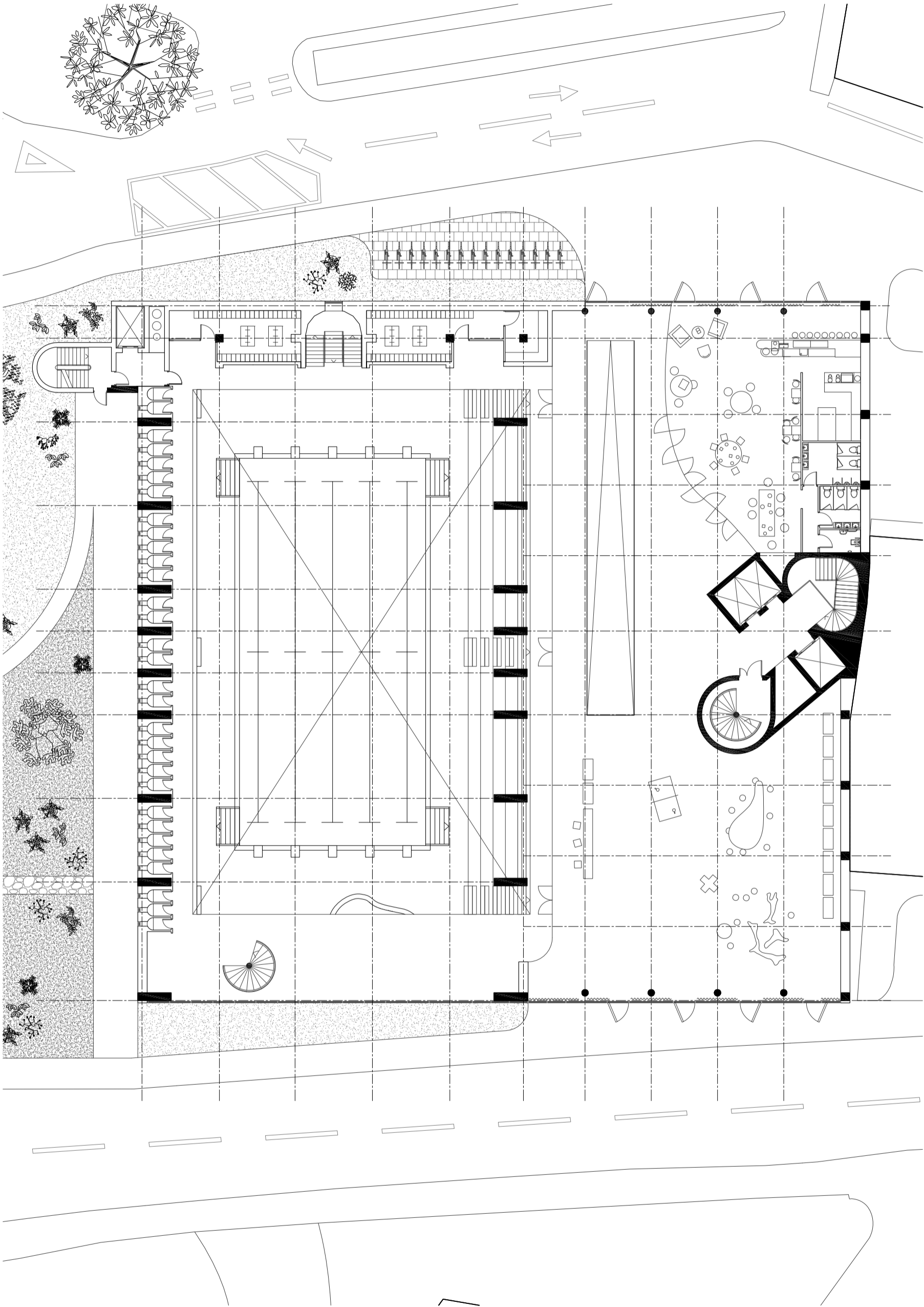
Location Plan
0 Level 1:5000

0

250m



1. General Arrangement

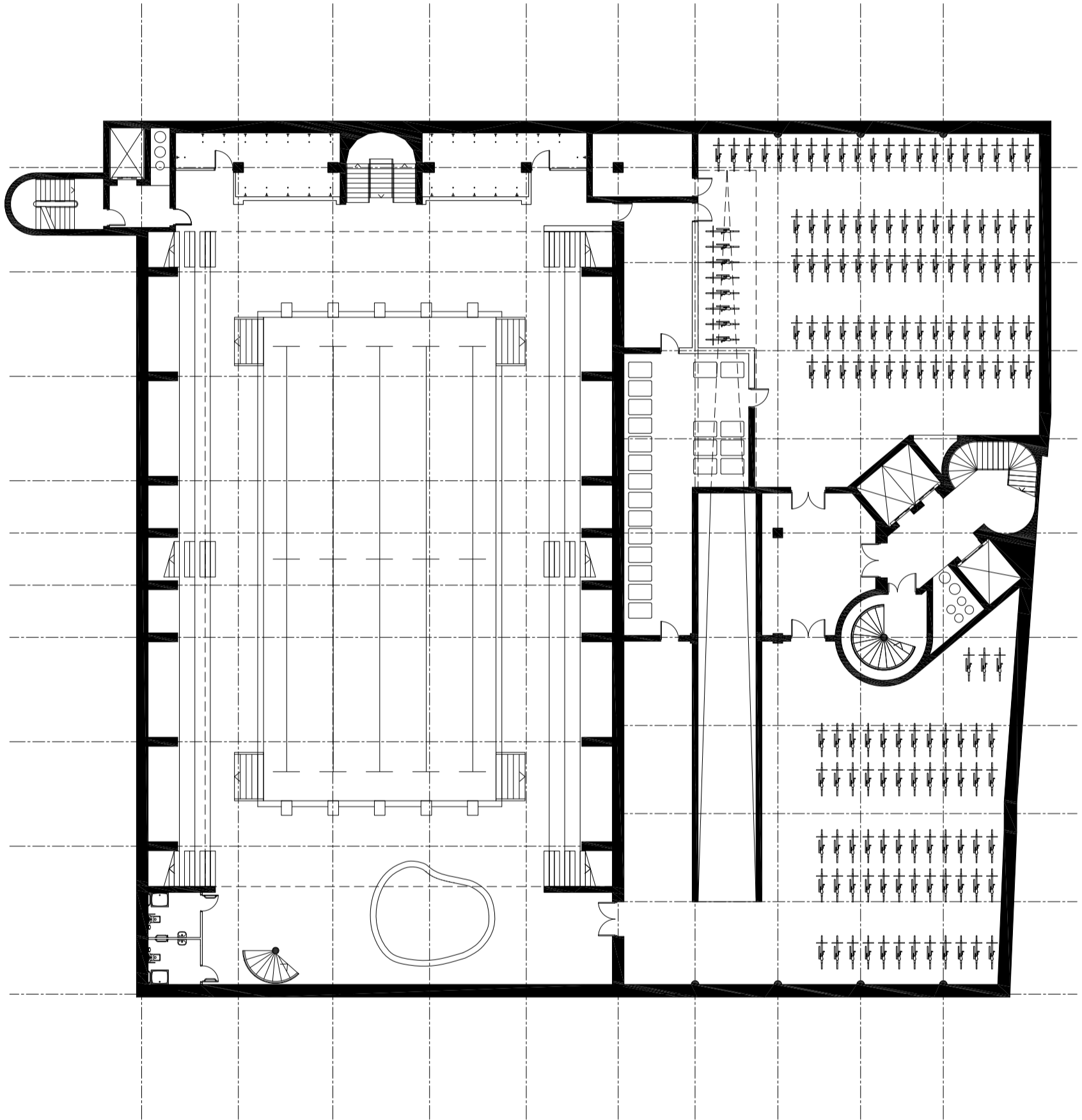


Ground Plan
0 Level 1:250

0

12.5m



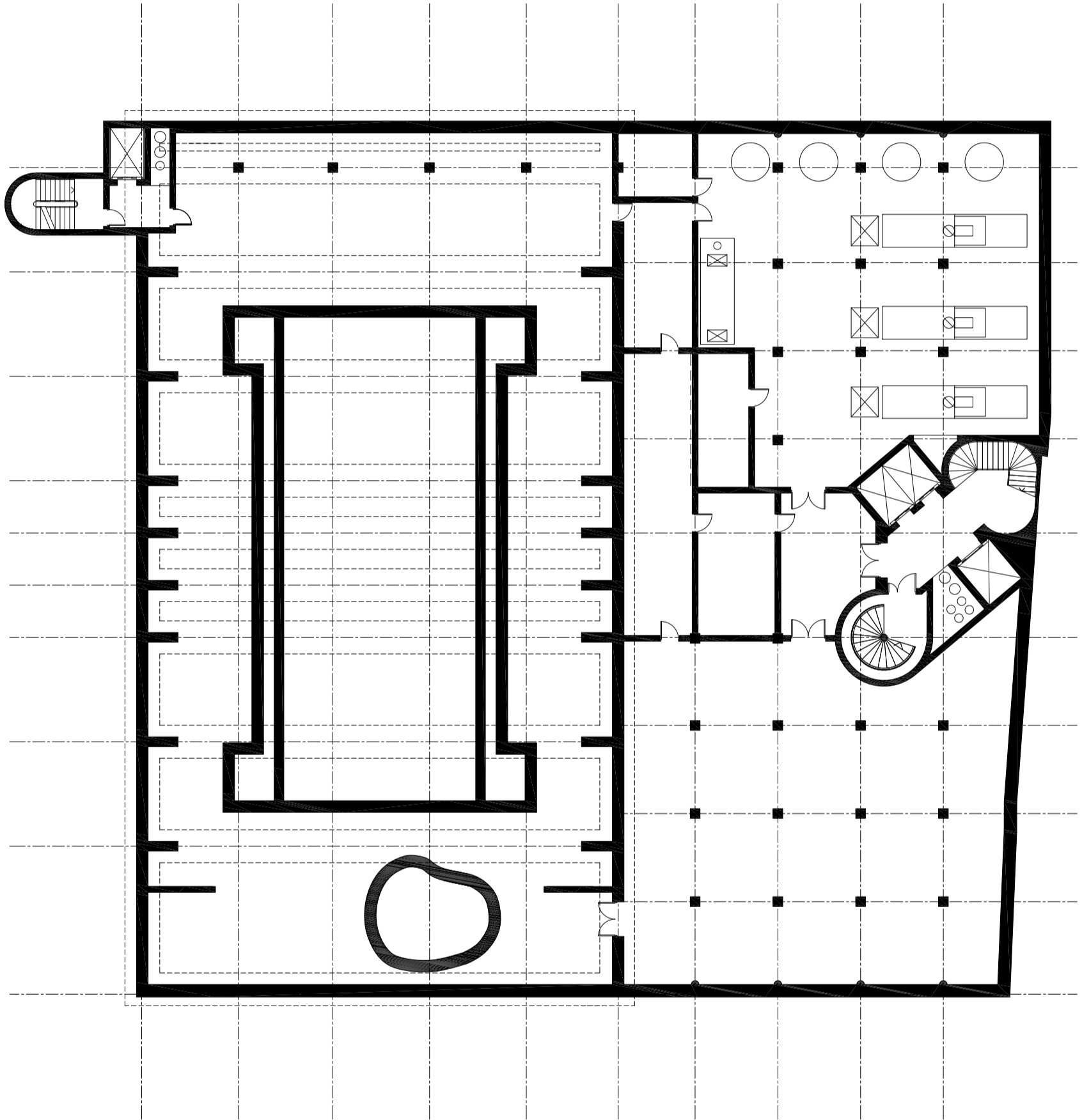


Lower Ground Floor Plan
-1 Level 1:250

0

12.5m



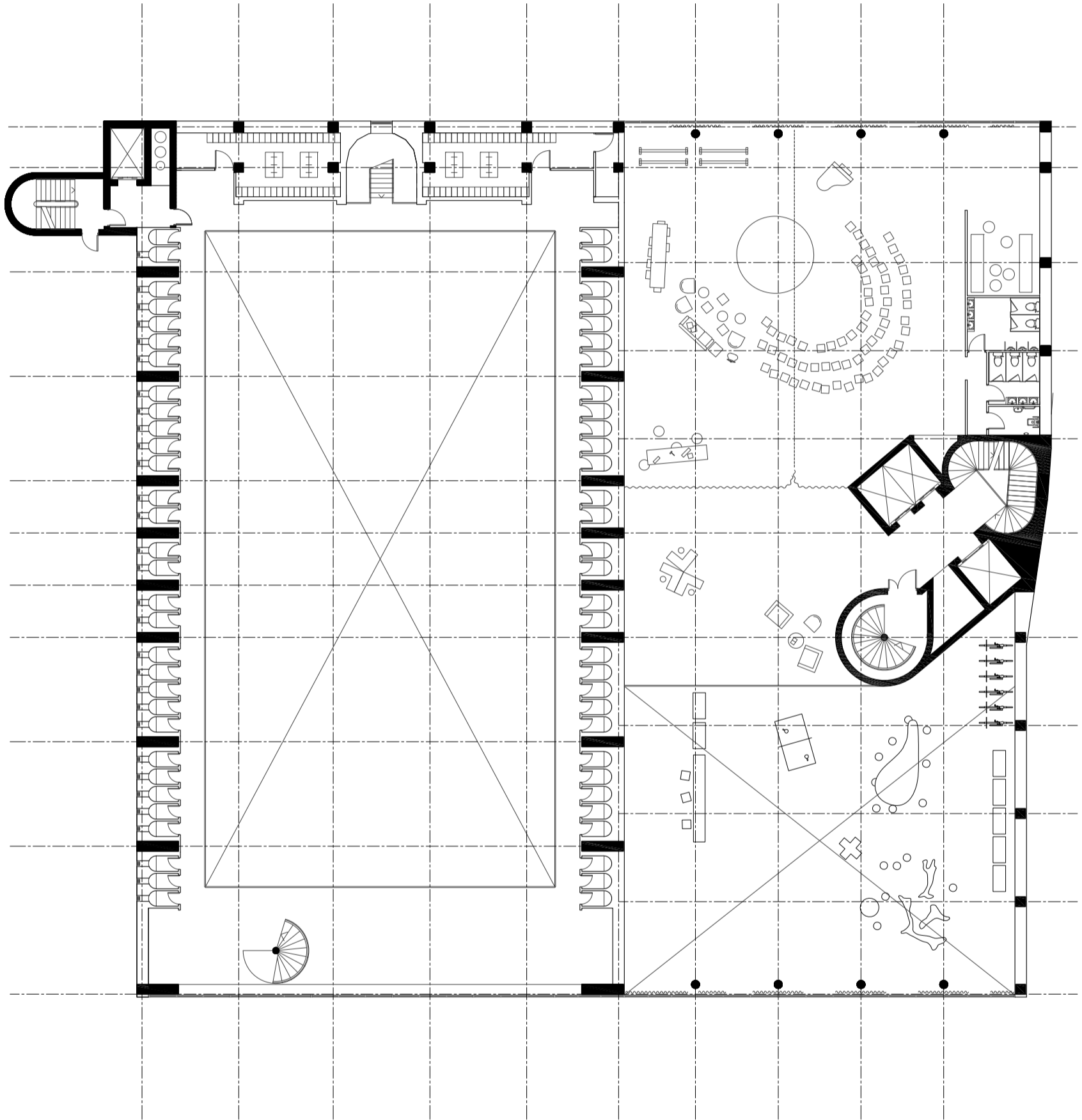


Underground Plan
-2 Level 1:250

0

12.5m



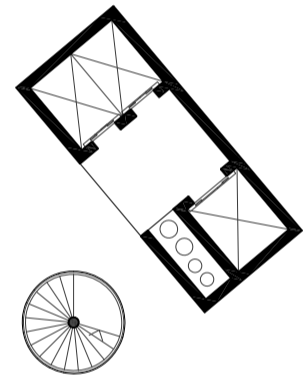
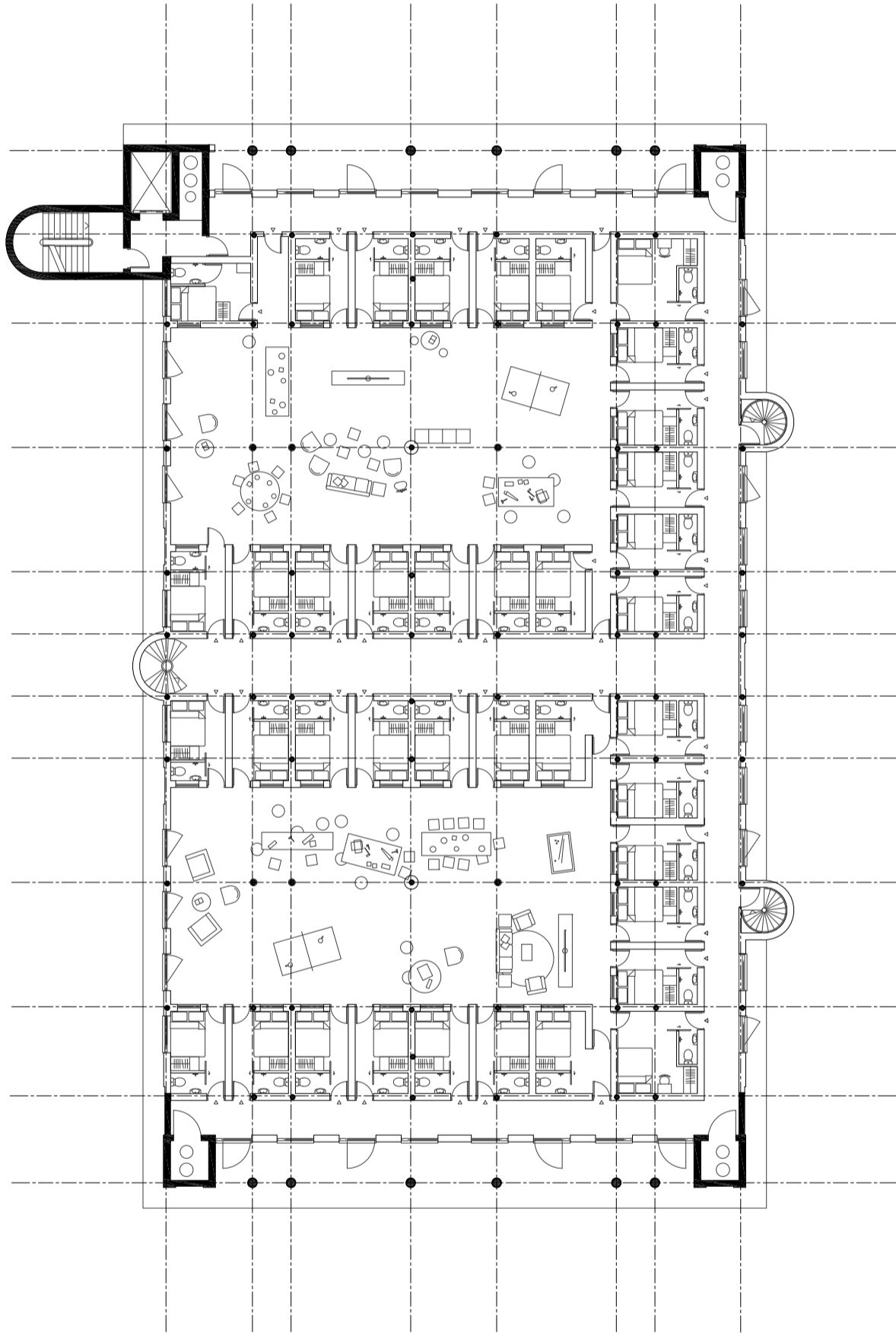


Second Floor Plan
2 Level 1:250

0

12.5m





A

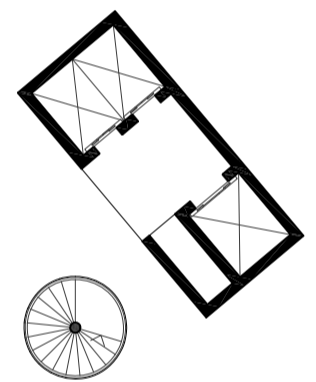
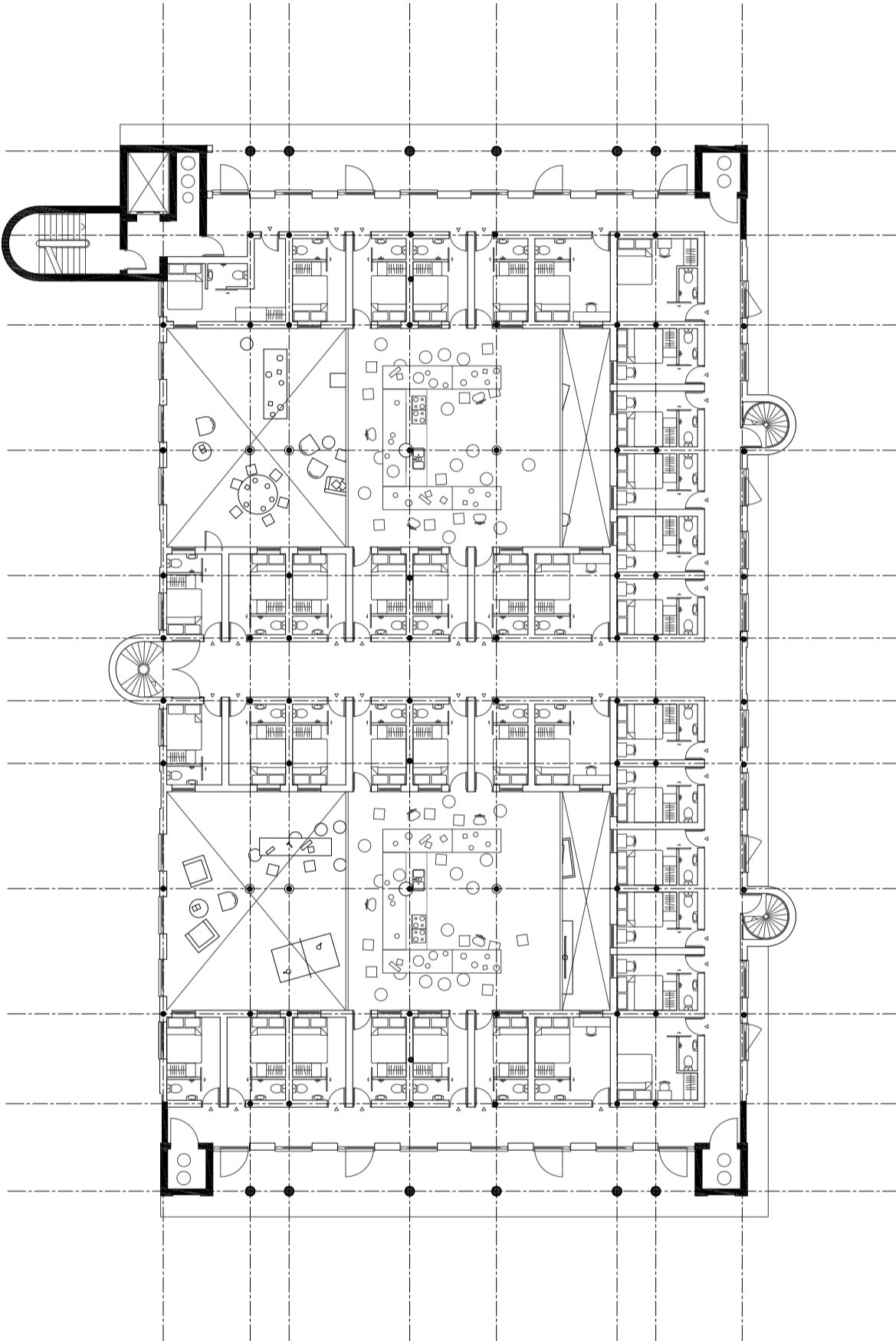
A

Amenities with a view collective Plan
5 Level 1:250

0

12.5m





Amenities with a view collective Plan
6 Level 1:250

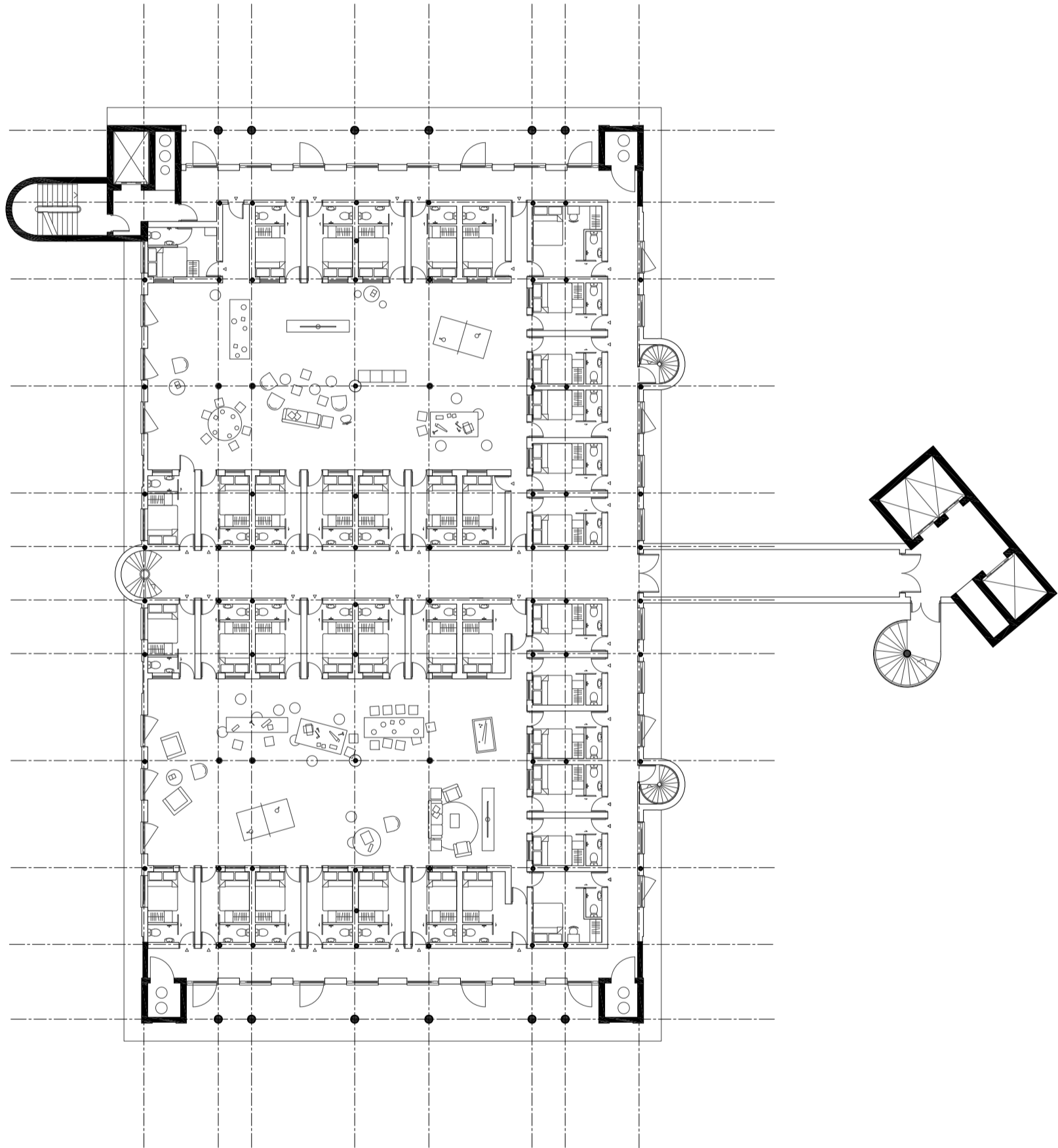
0

12.5m



A

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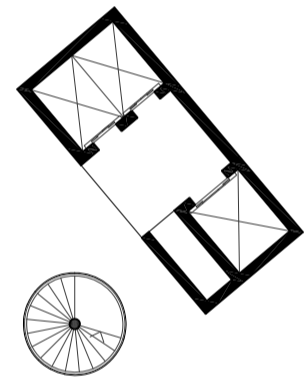
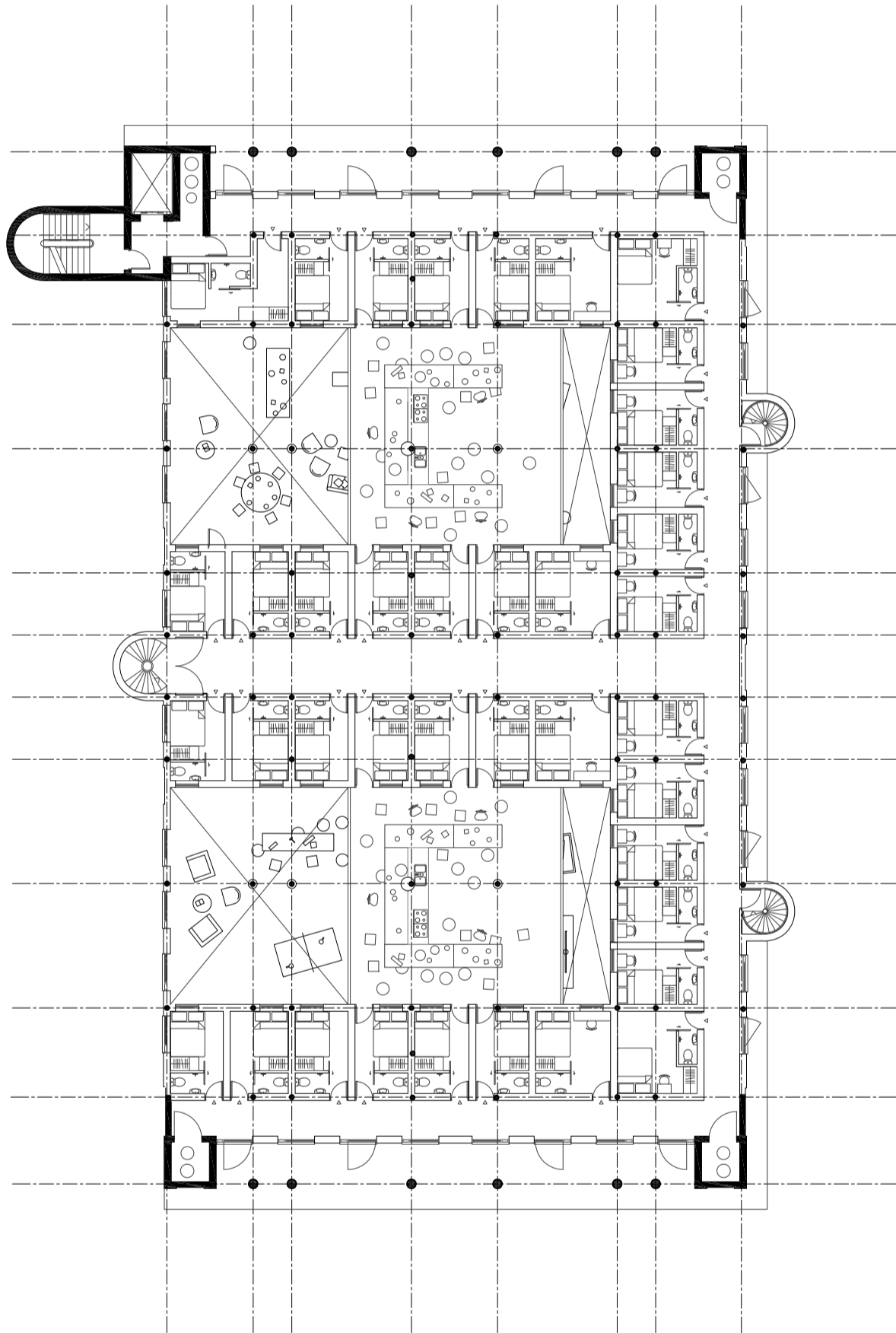


Amenities with a view collective Plan
7 Level 1:250

0

12.5m





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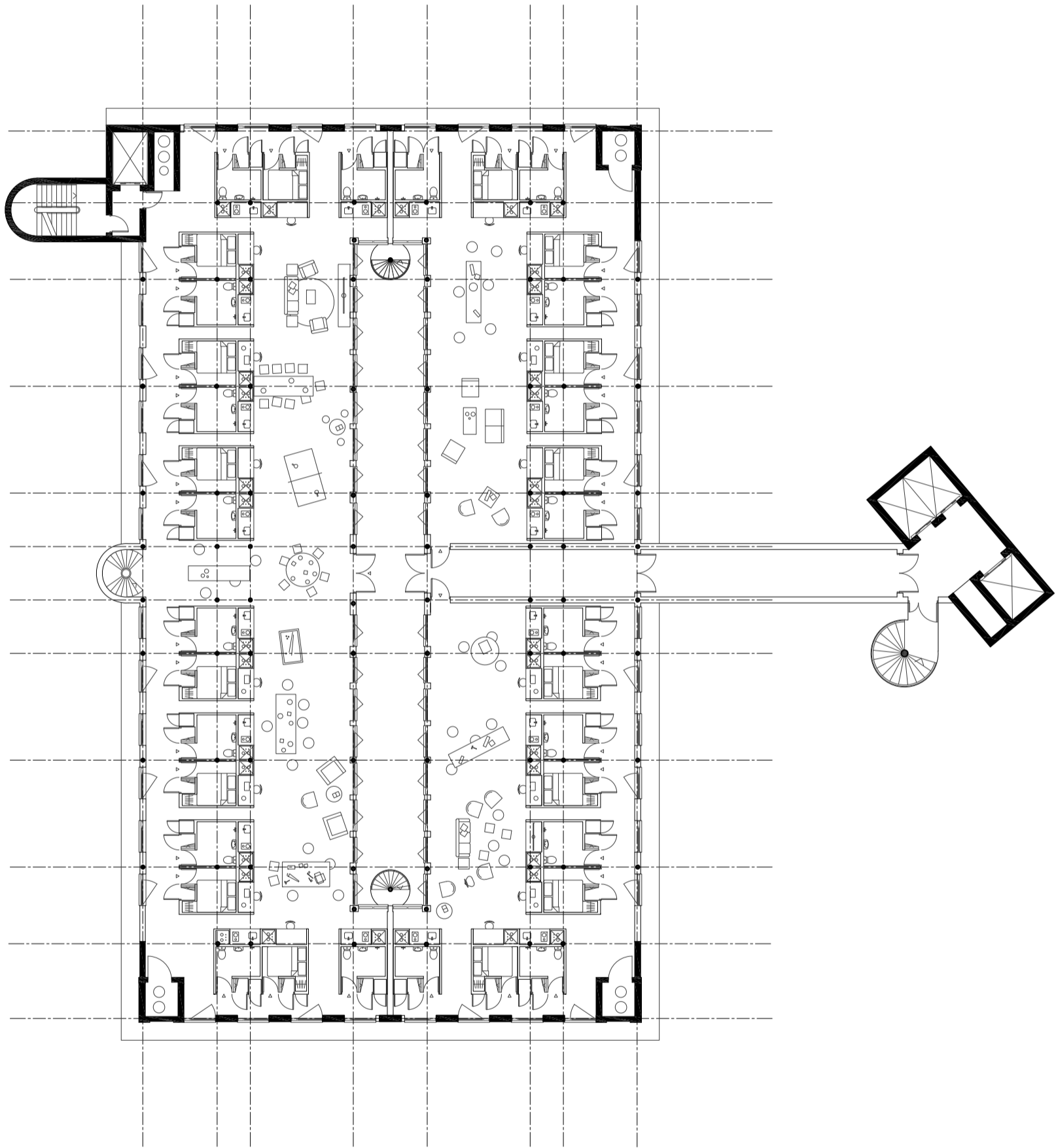
A

Amenities with a view collective Plan
8 Level 1:250

0

12.5m





Shared Amenities Collective Plan
9 Level 1:250

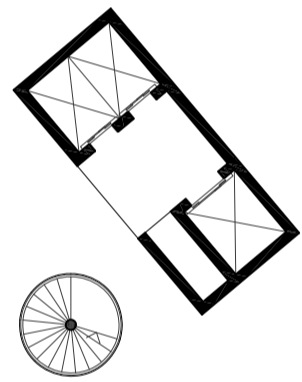
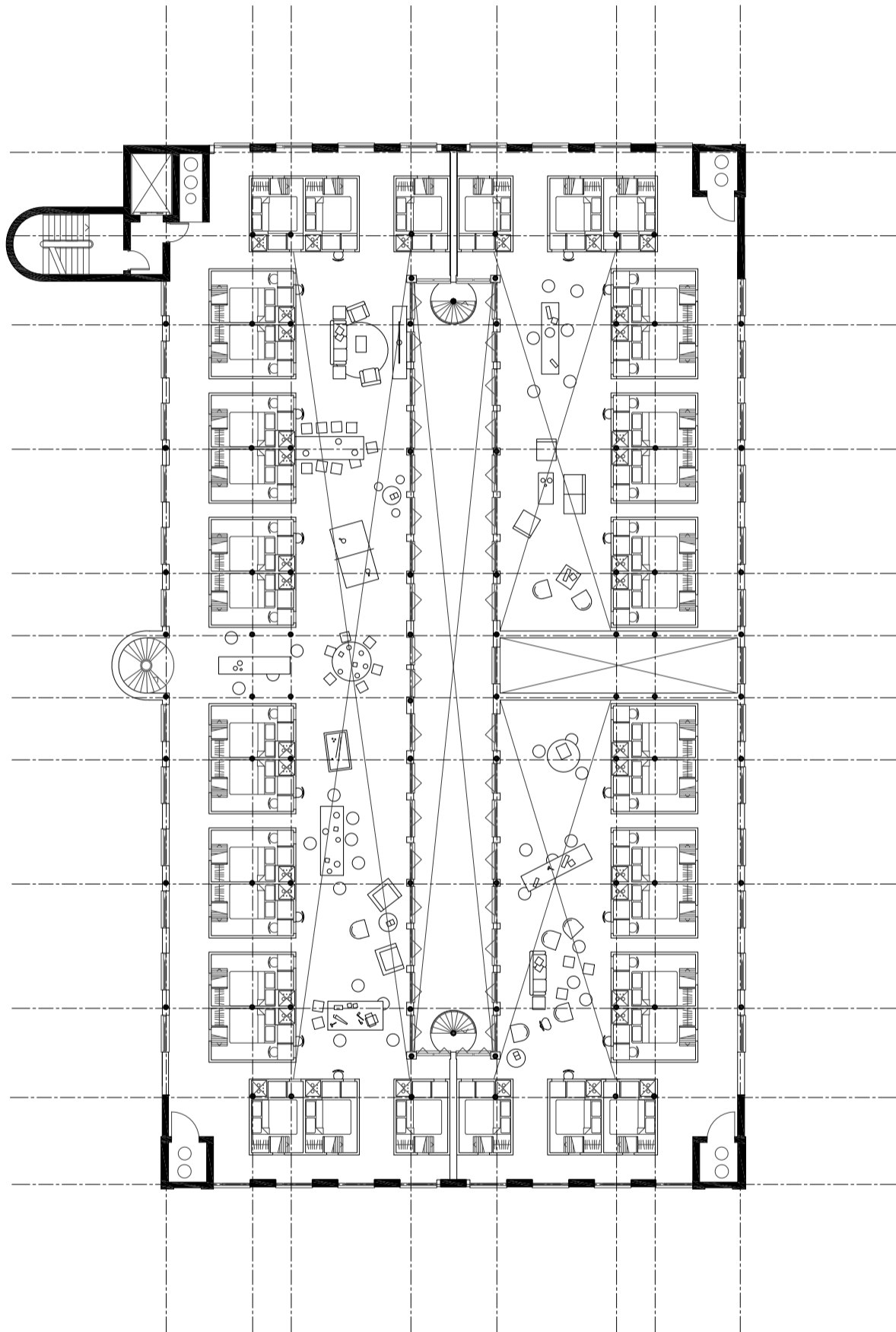
0

12.5m



A

A



Shared Amenities Collective Plan
10 Level 1:250

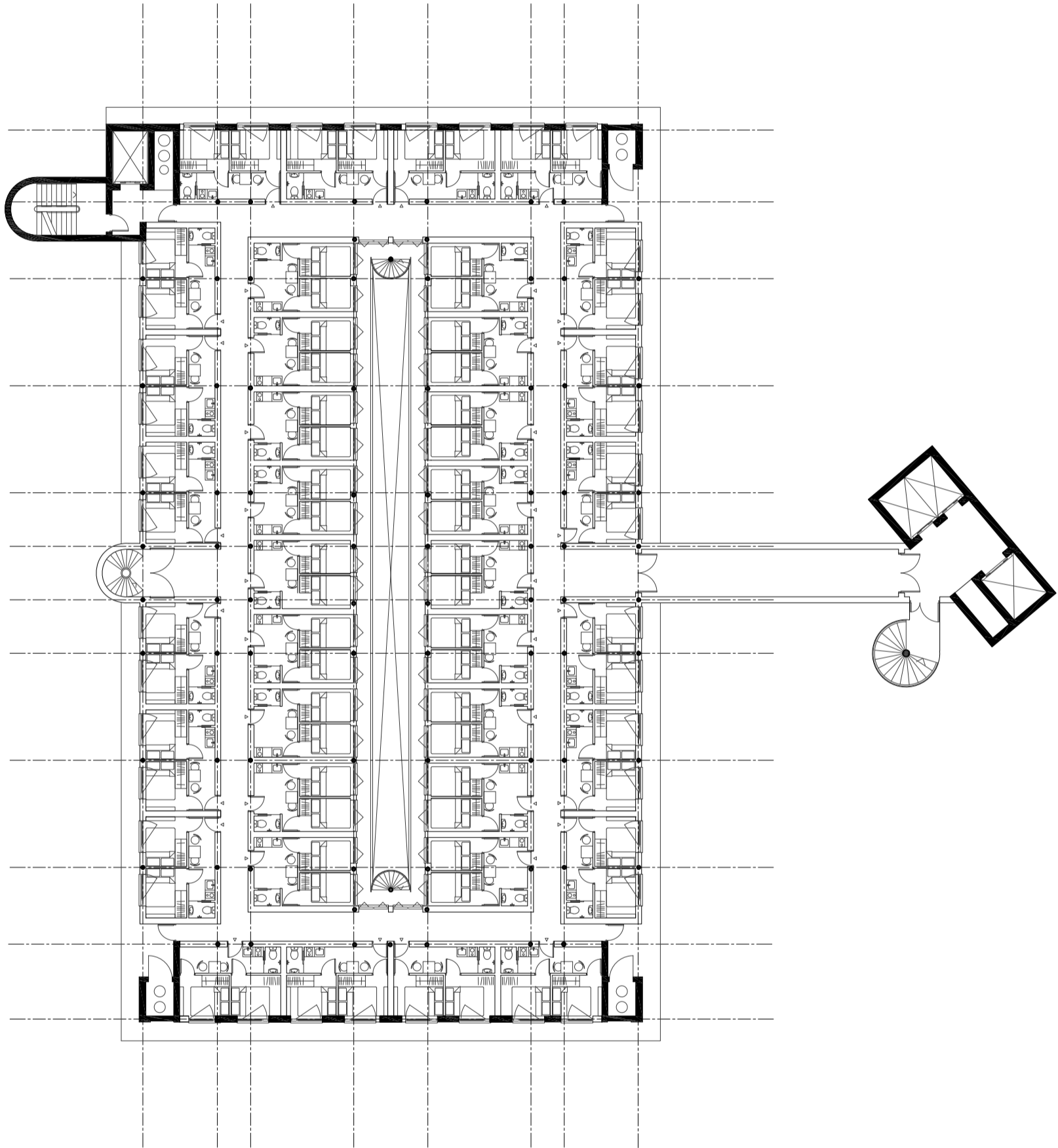
0

12.5m



A

A



Family Units Plan
11 Level 1:250

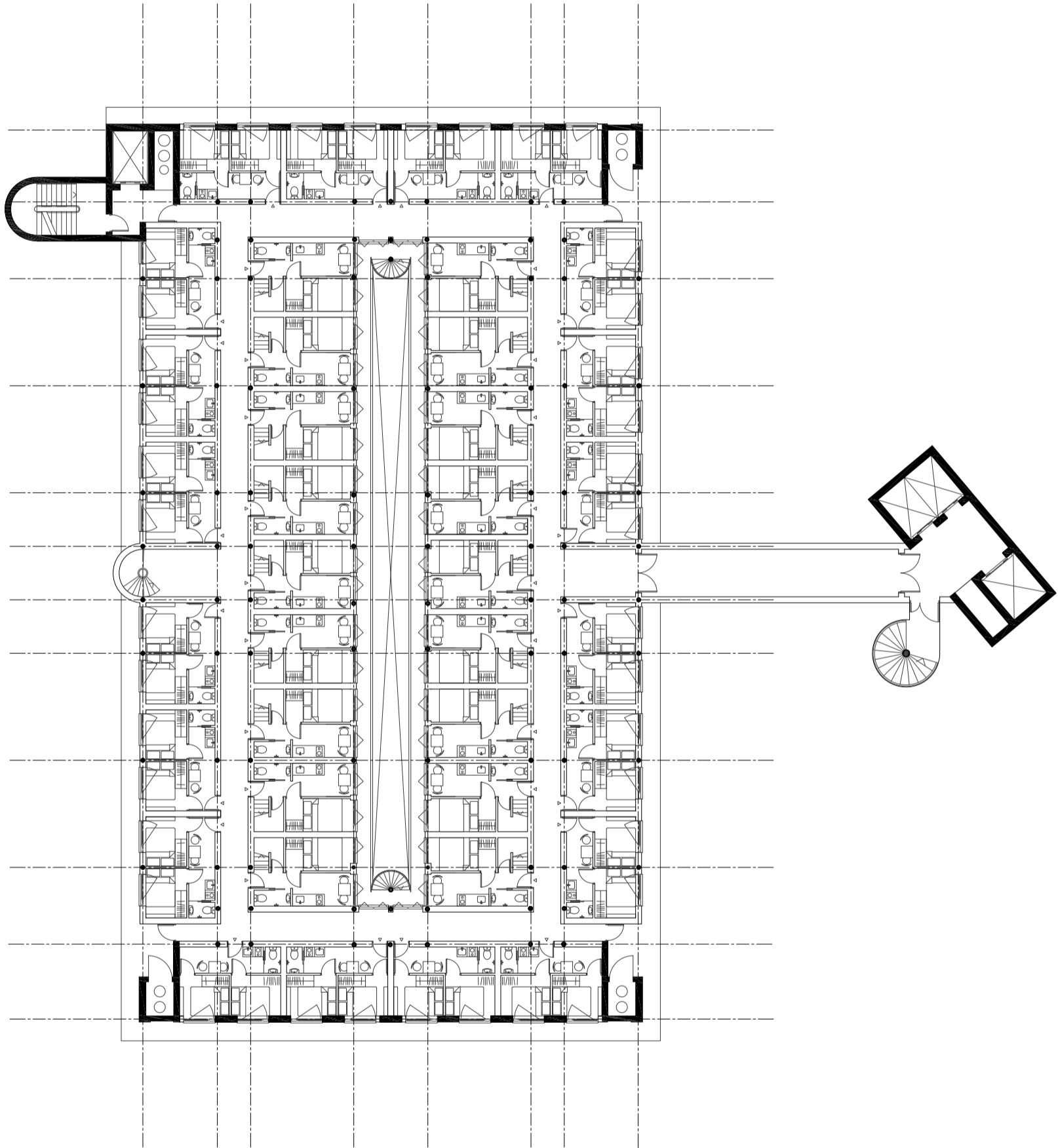
0

12.5m



A

A

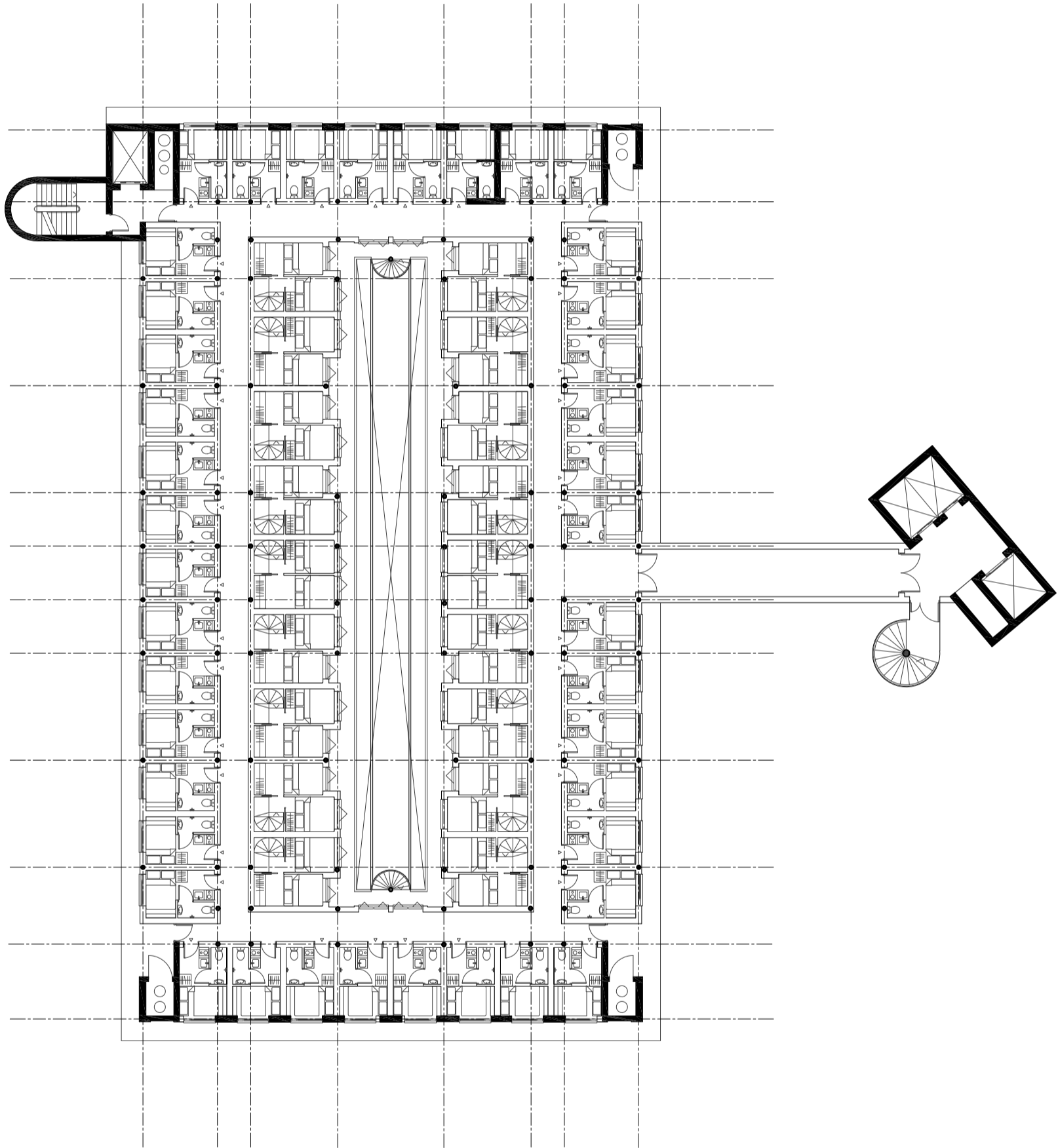


Duplex Family Units and Family Unit Plan
12 Level 1:250

0

12.5m



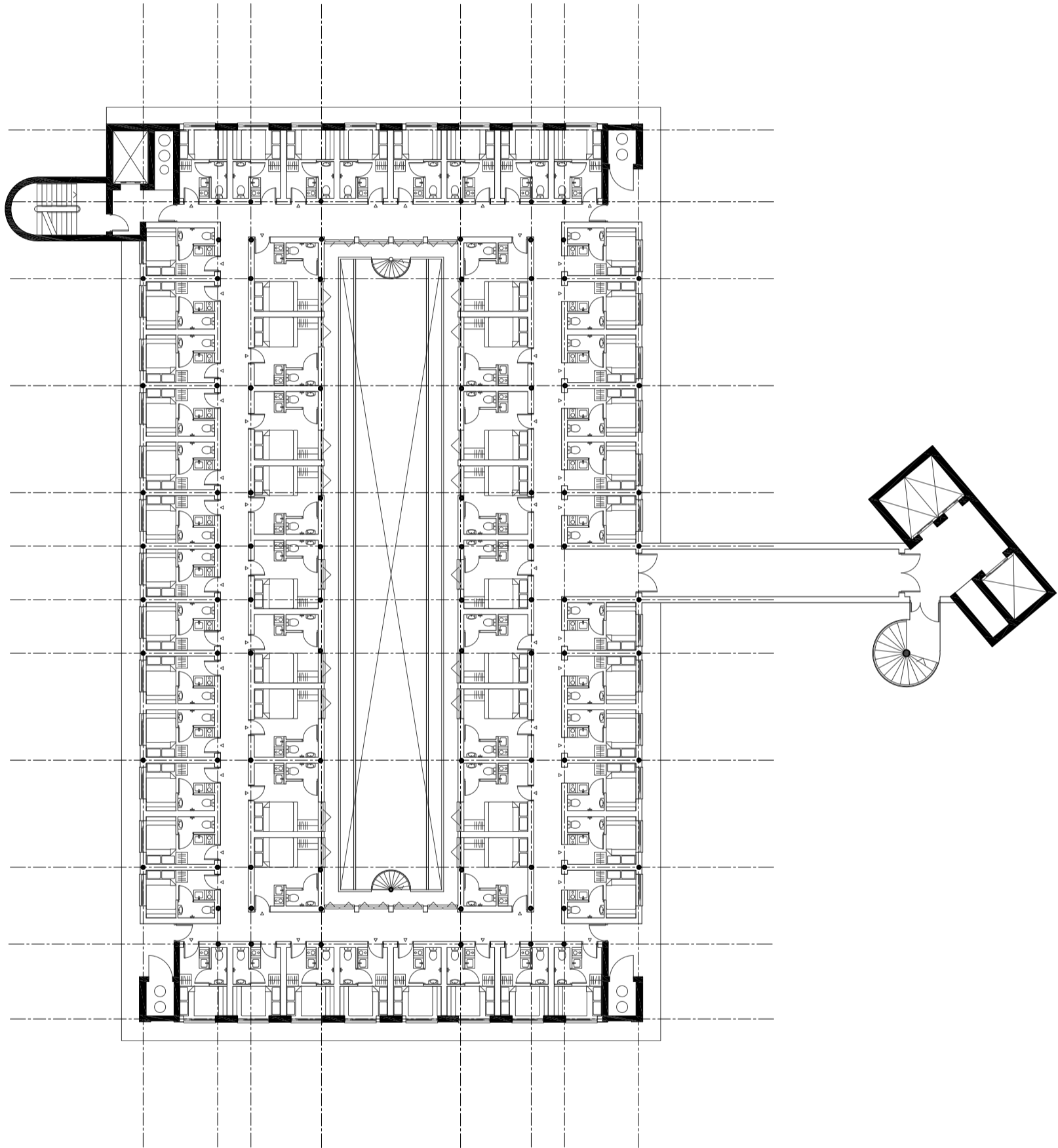


Duplex Family Units and Hyper Individual Cells Plan
13 Level 1:250

0

12.5m





Hyper Individual Cells Plan
14 Level 1:250

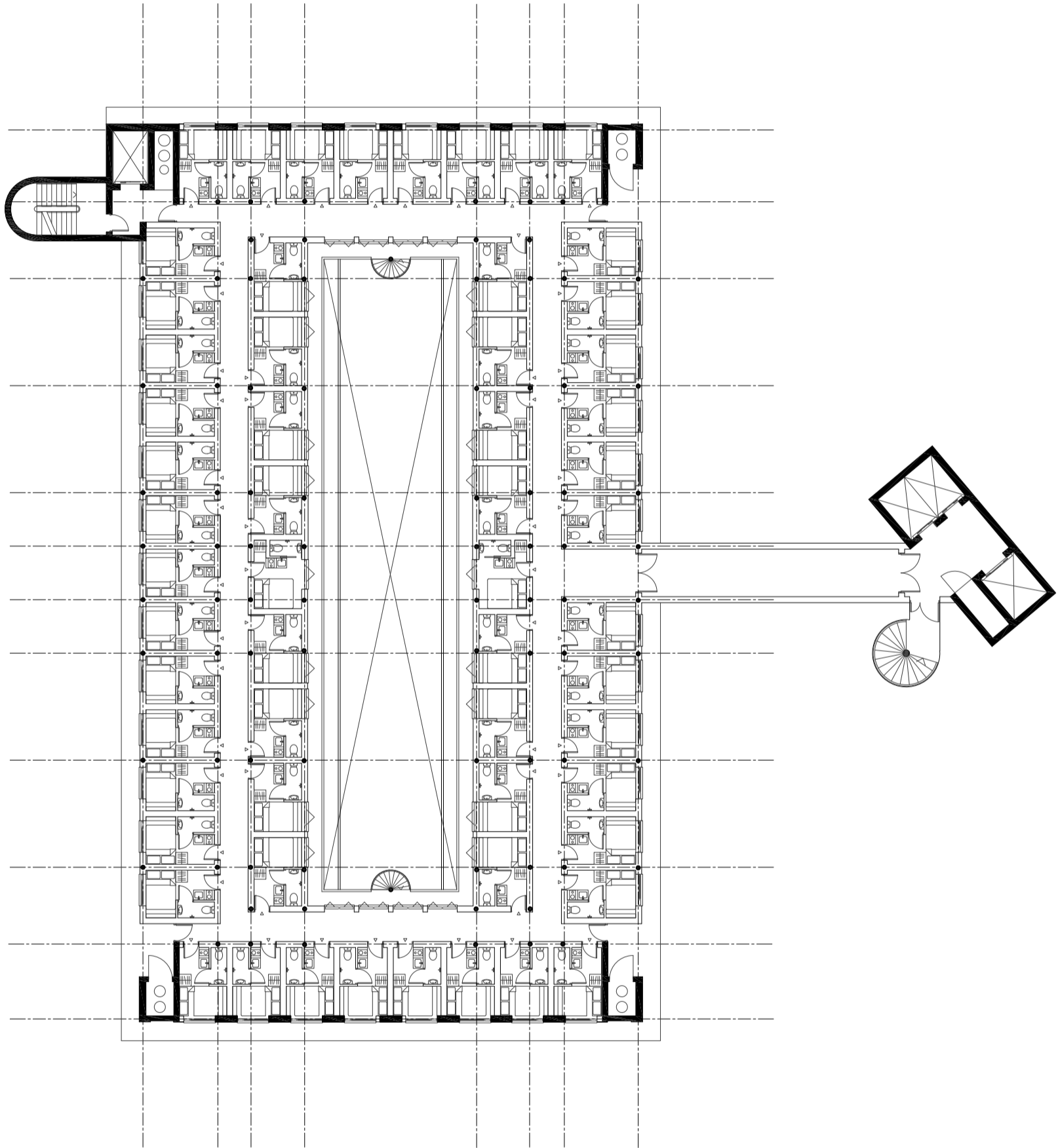
0

12.5m



A

A

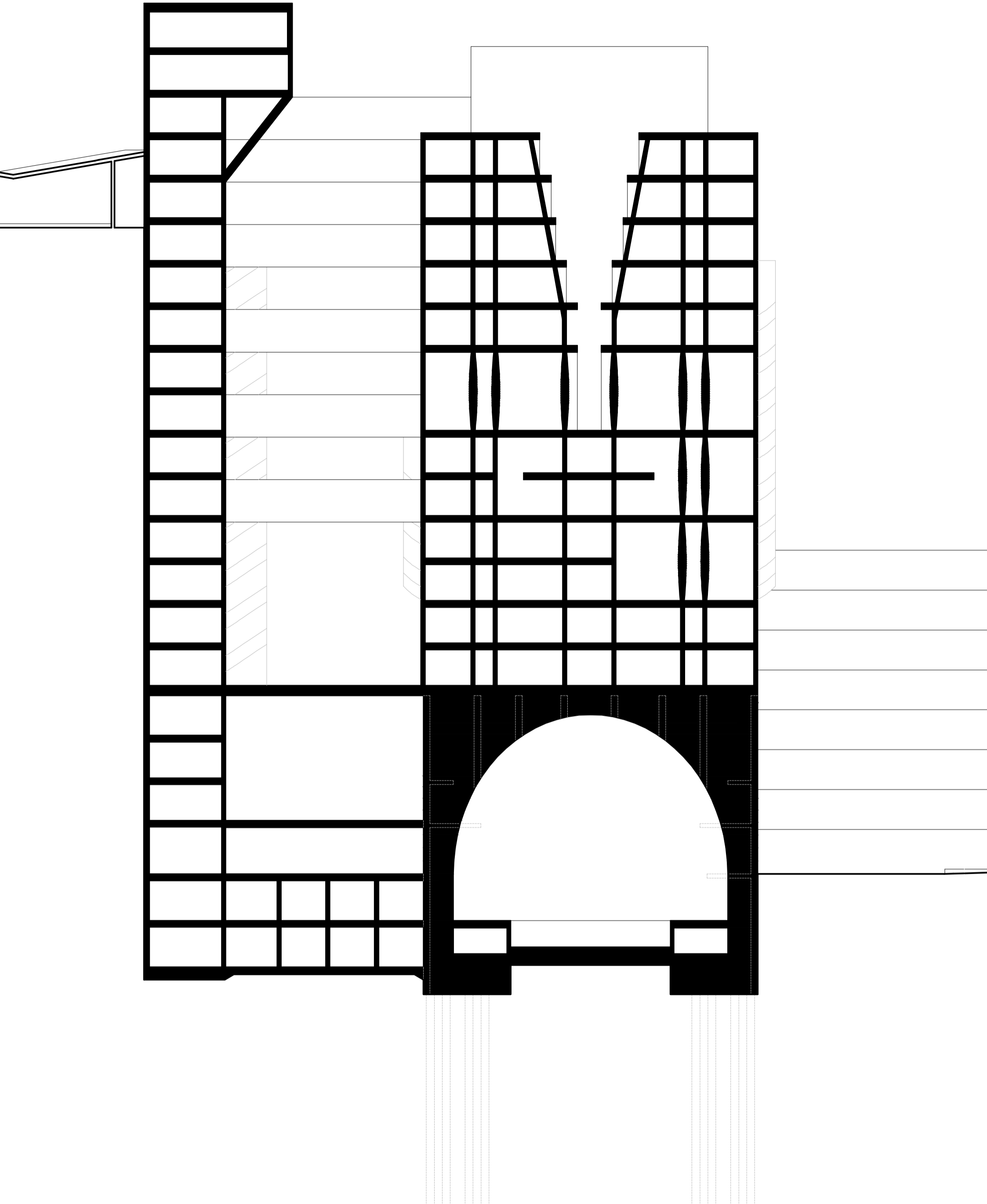


Hyper Individual Cells Plan
15 Level 1:250

0

12.5m

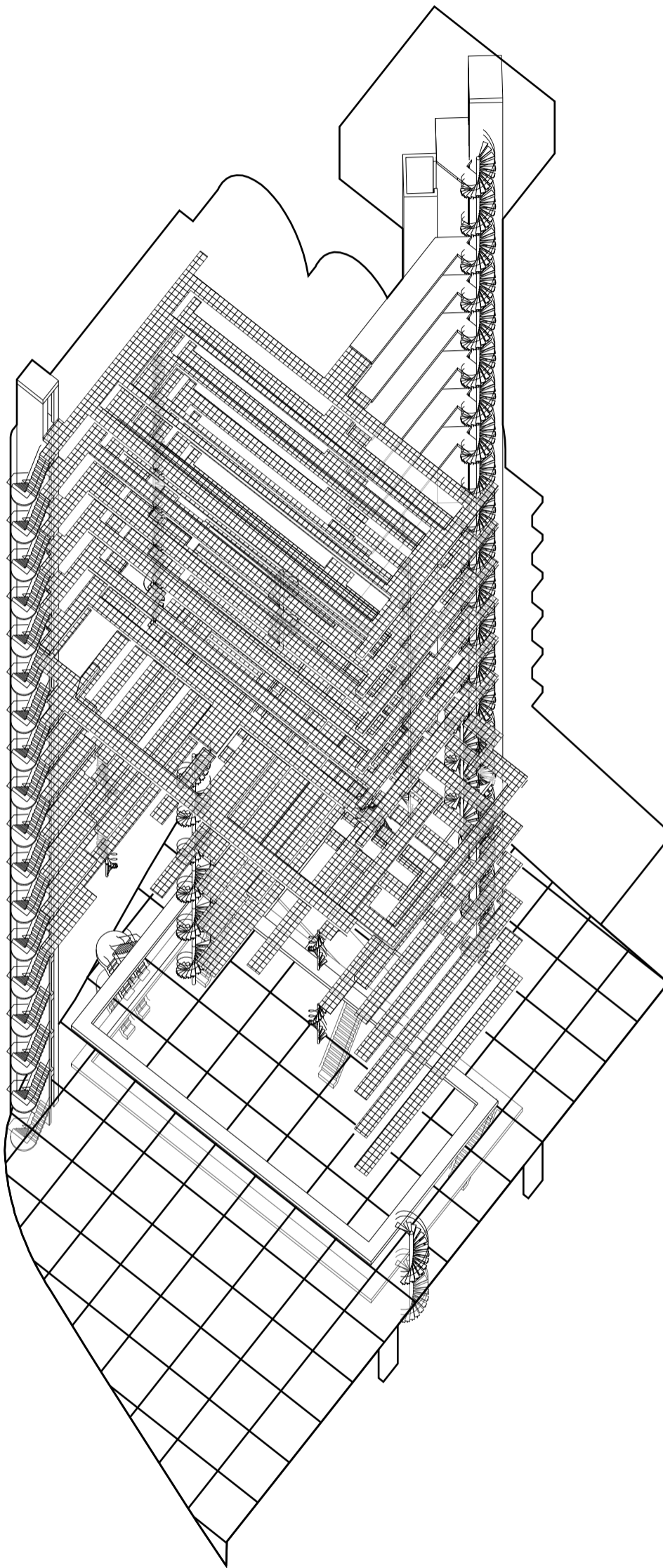




Section AA
1:250

0 12.5m

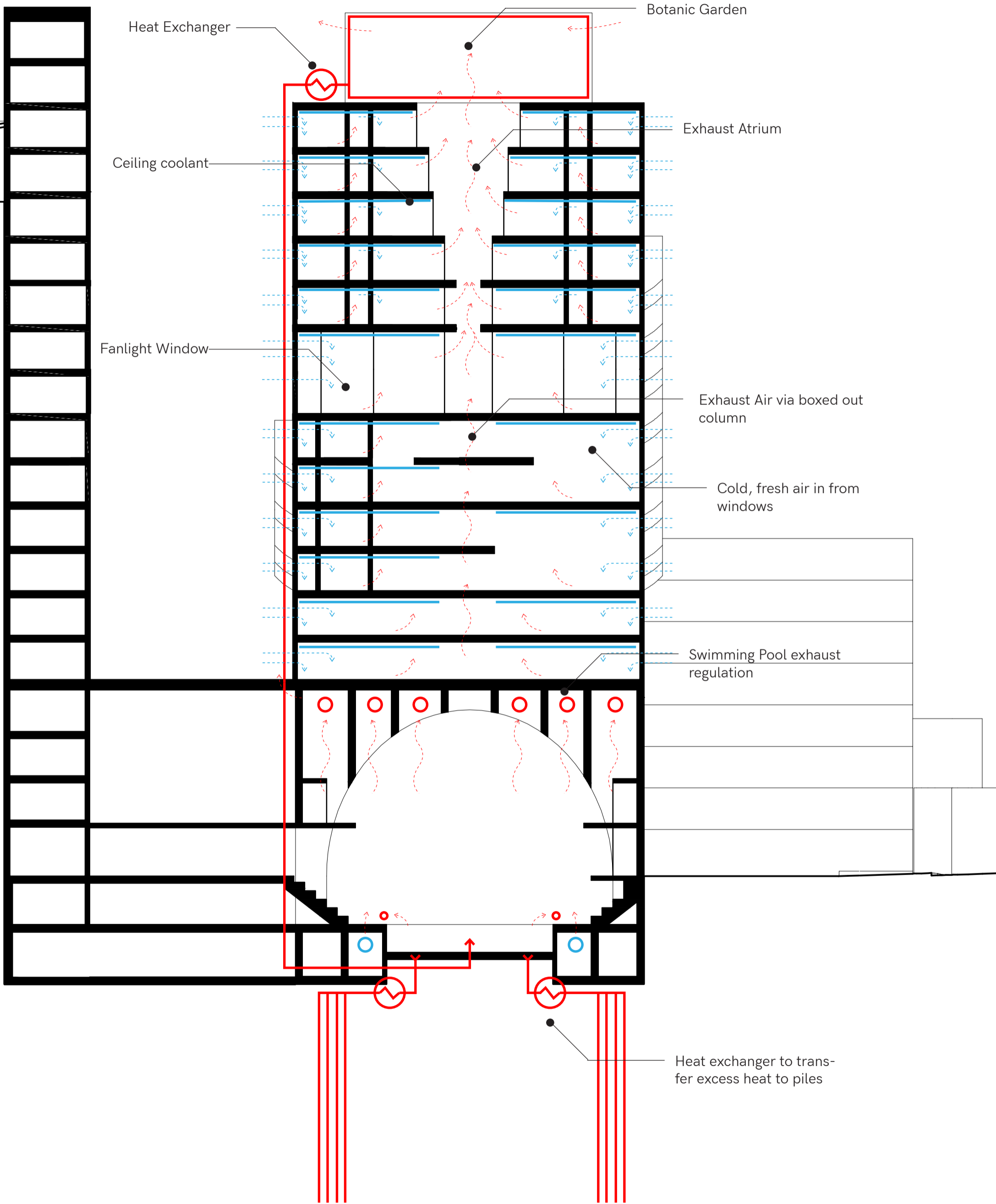




2. Climate Strategy

The primary climate concept is to utilise the two programs, the botanic garden and the swimming pool, to generate a condition that is relatively stable in the living quarters throughout the year. This objective is achieved by utilising the botanic garden on the roof as a solar collector. The glazed structure traps heat from the sun and, with heat exchangers, is used to heat up water that can be circulated throughout the concrete building such that the building mass stores this heat and slowly emits it throughout the day. The pool acts as a coolant in the summer, excess heat in the building and from the sun is used to heat up the pool for regular use (water used by the solar collector and the pool do not cross-contaminate to avoid the spreading of chlorine) and any further excess heat is transferred via heat exchangers to a separate liquid system that stores the energy in deep geothermal piles underground.

Fresh air is drawn in via ventilation shutters that are placed in each unit that has an external facing window. This air is controlled using a combination of underfloor liquid heating and liquid coolants in the ceiling. These elements are strategically placed to encourage the movement of air. Exhaust air is predominantly channelled into the corridor space where it is cooled before it enters internal living units. The air leaves the floor via the central atrium space inducing the stack effect for efficient air exchange. The atrium is directly connected to the botanic garden where the carbon-heavy exhaust air is cleaned.



Heat Exchanger

Botanic Garden

Exhaust Atrium

Ceiling coolant

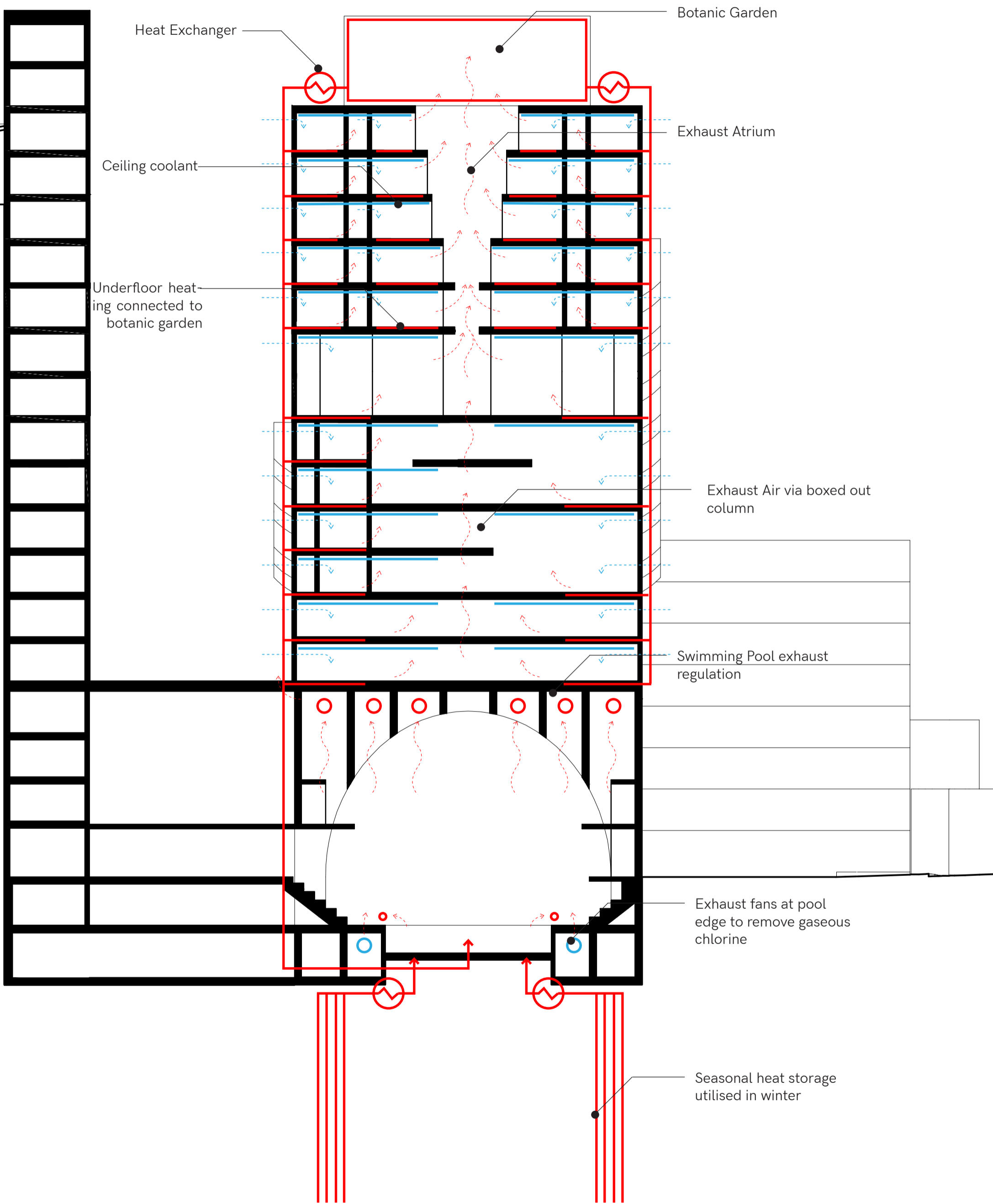
Fanlight Window

Exhaust Air via boxed out column

Cold, fresh air in from windows

Swimming Pool exhaust regulation

Heat exchanger to transfer excess heat to piles



Heat Exchanger

Botanic Garden

Ceiling coolant

Exhaust Atrium

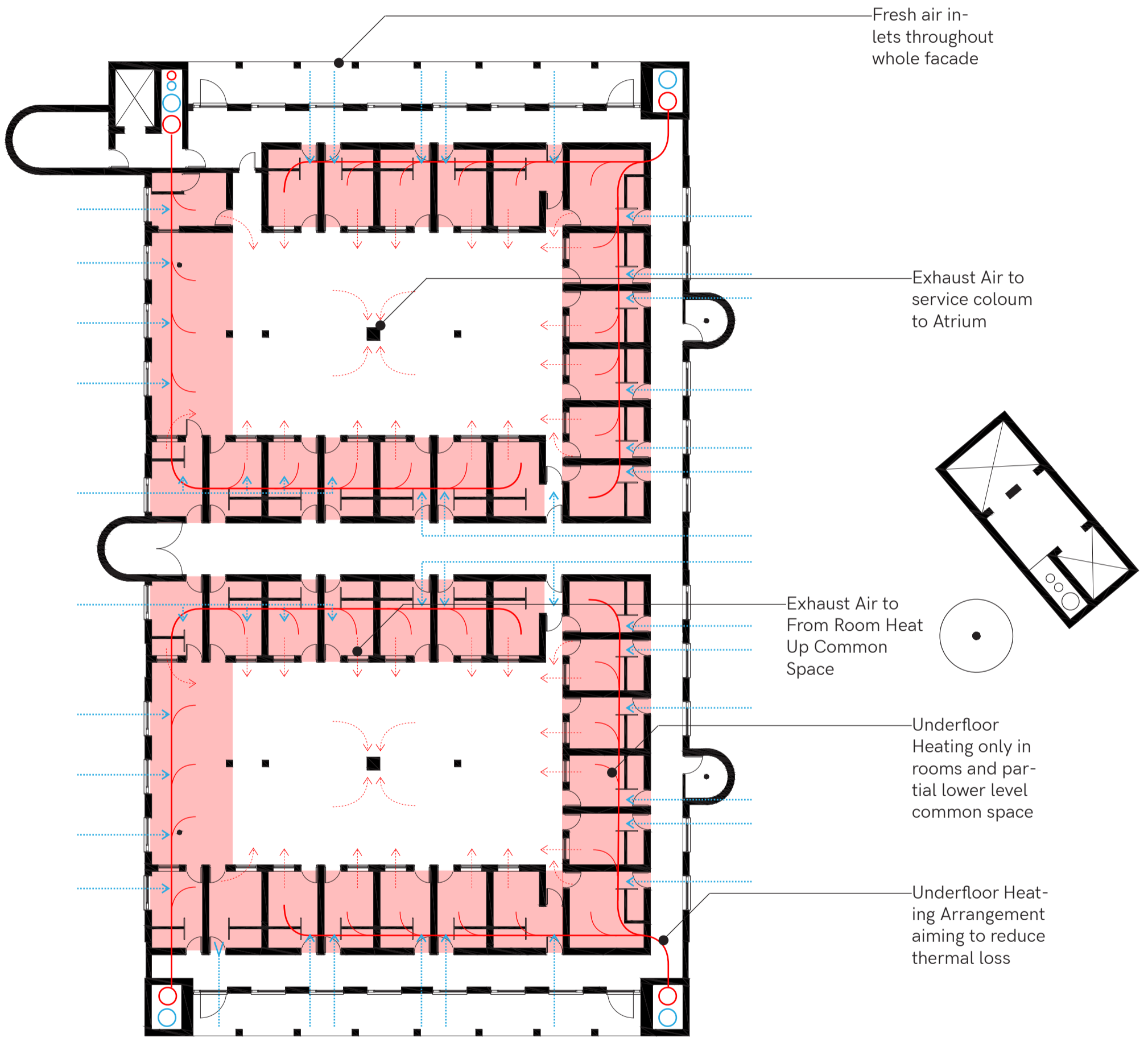
Underfloor heating connected to botanic garden

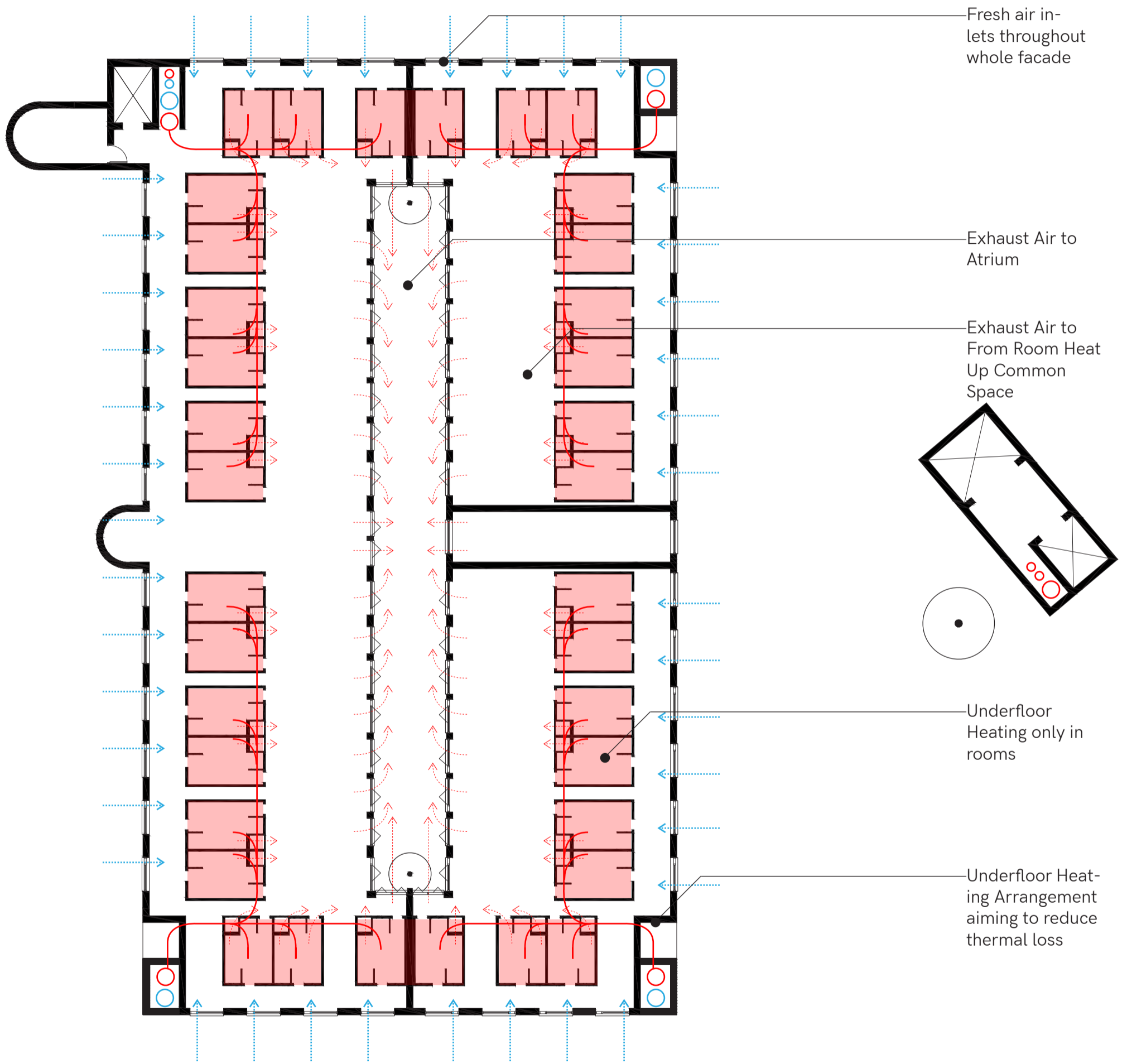
Exhaust Air via boxed out column

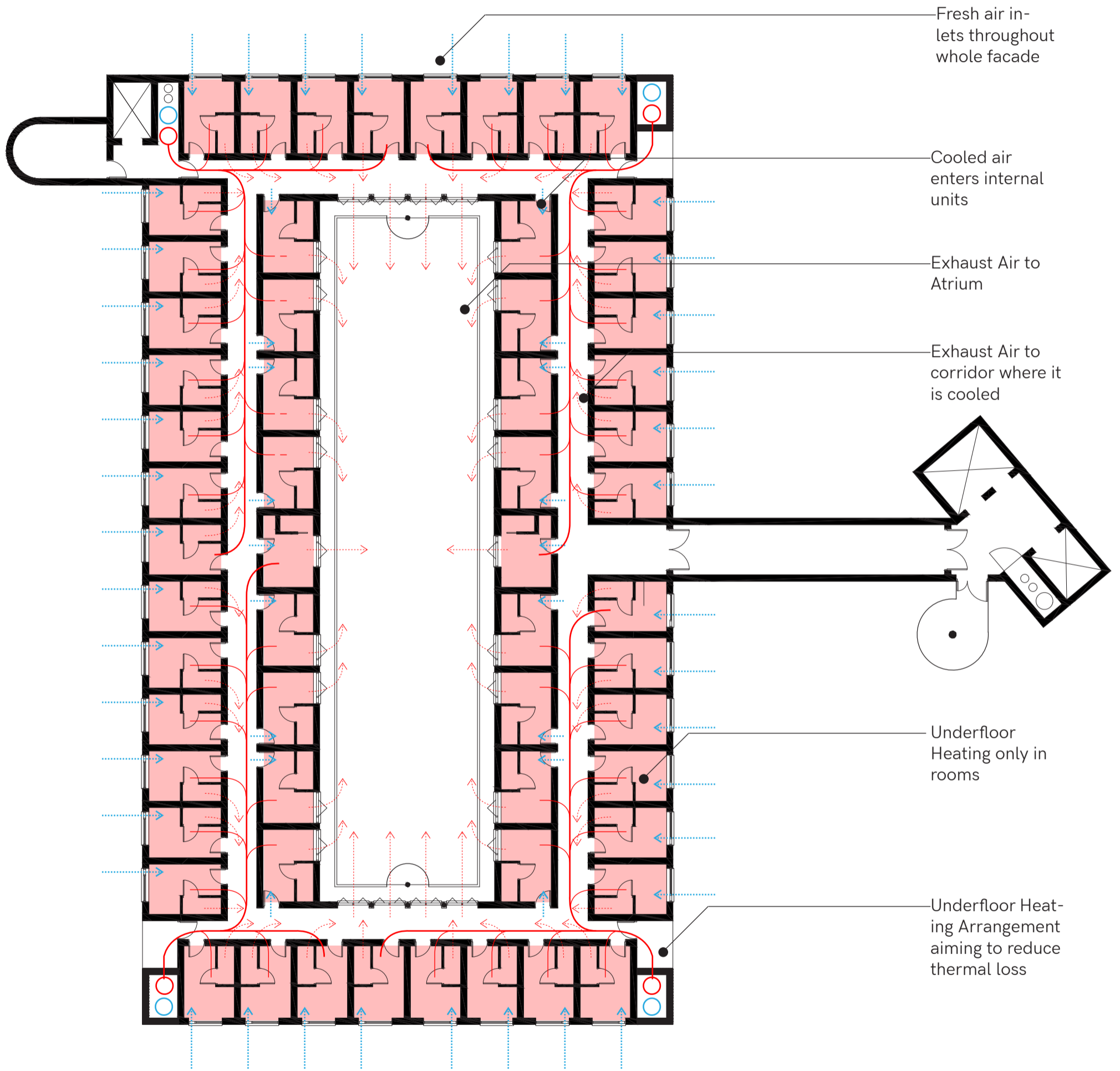
Swimming Pool exhaust regulation

Exhaust fans at pool edge to remove gaseous chlorine

Seasonal heat storage utilised in winter

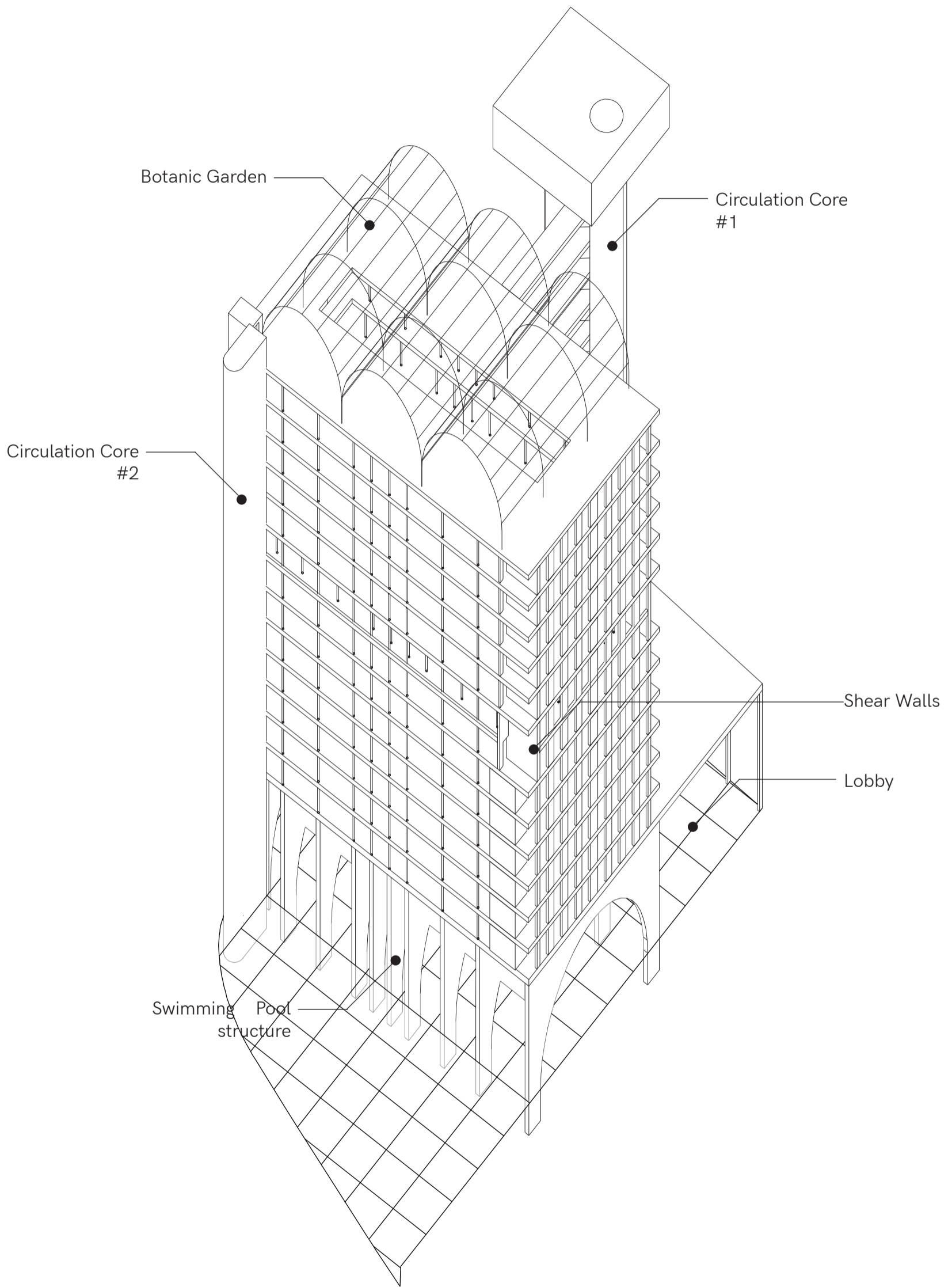


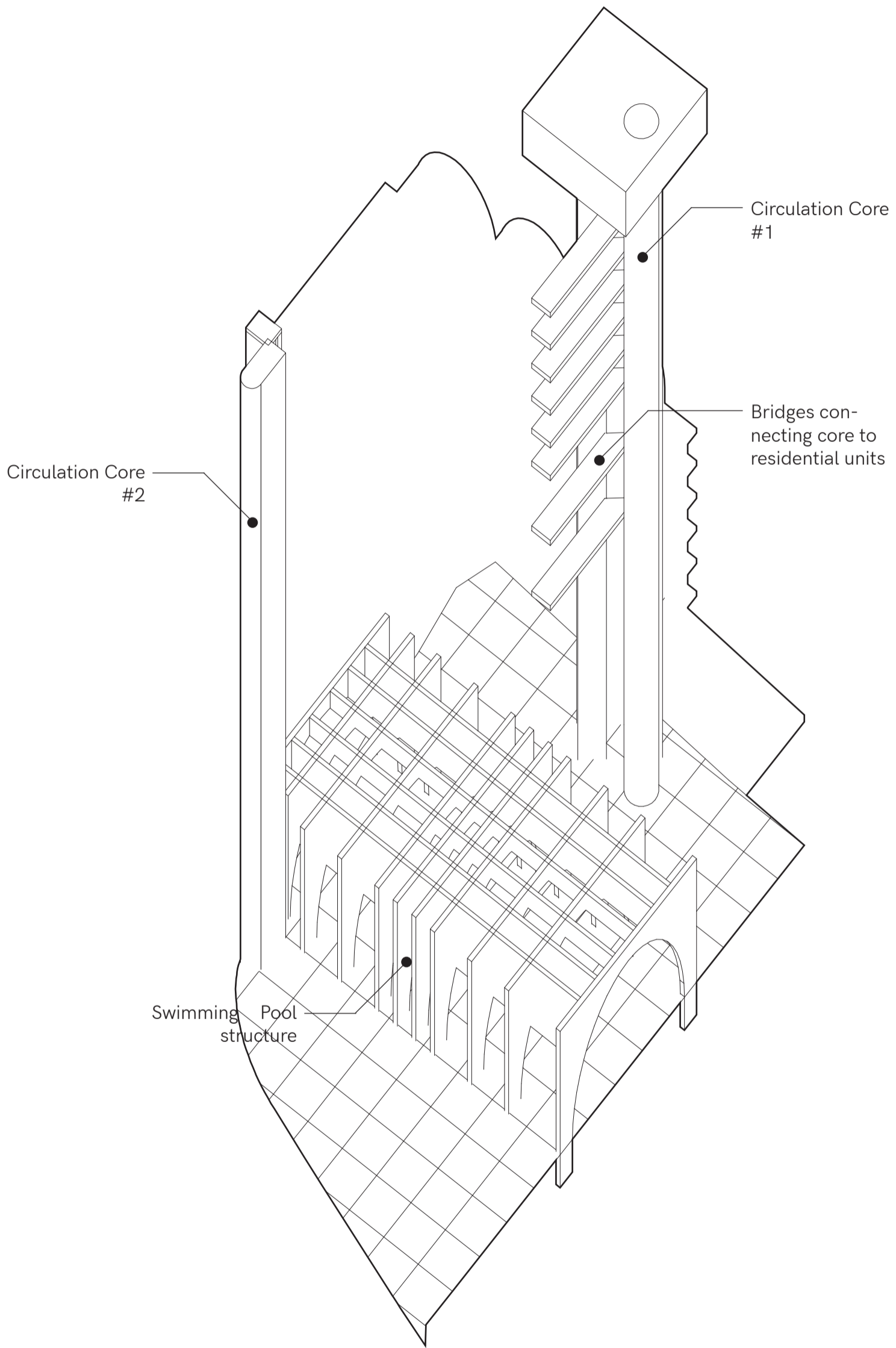




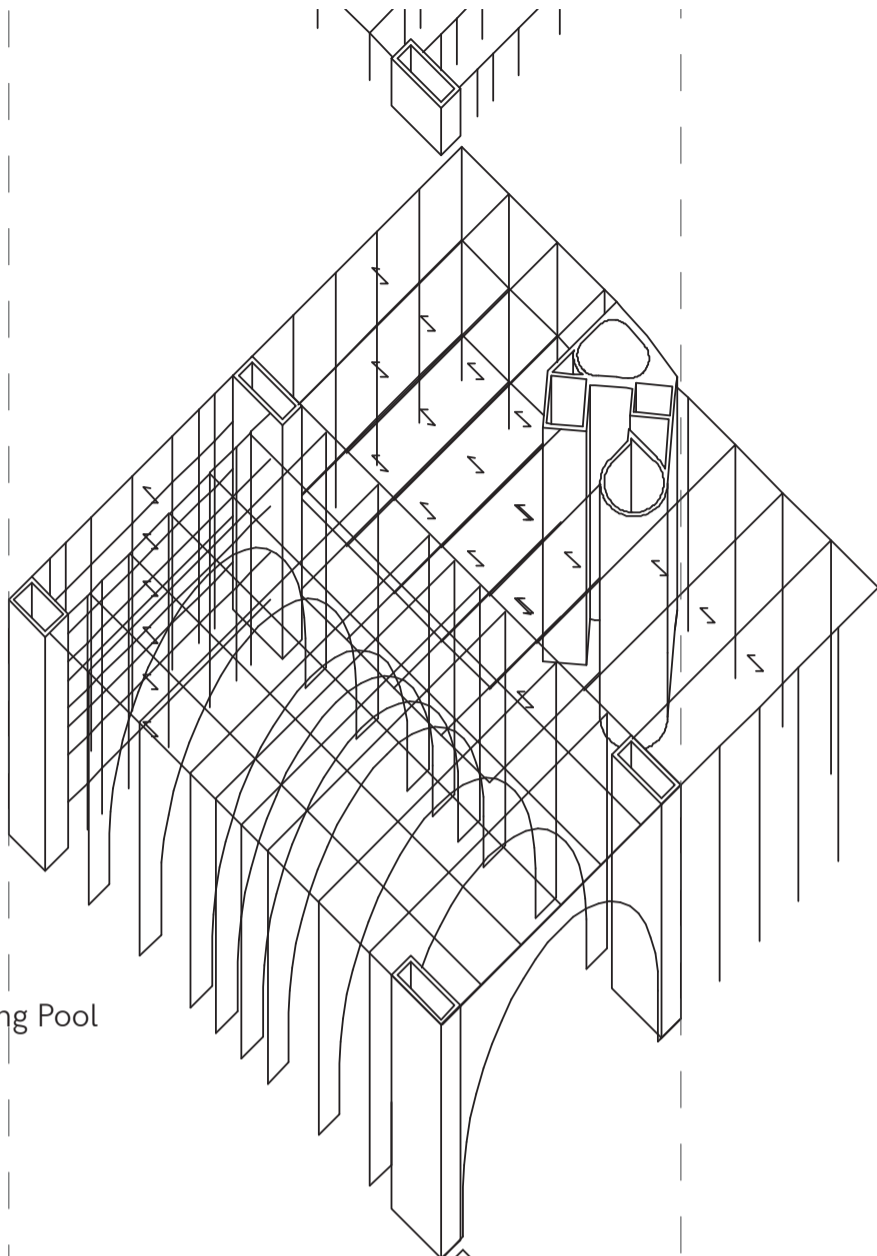
3. Structural Strategy

The structure is primarily a concrete frame tower that sits on a series of concrete arches that provide the necessary open floor plan for the program of a swimming pool. The structure is stabilised at four corners with a circulation core to the north and shear walls in the three other corners, these shear walls also form the machine space for electric and water circulation. At the top of the tower sits a botanic garden that is covered by a lightweight glazed steel structure. Flanking the primary building is large covered lobby space whose primary structural principle is based on portal frames, due to its low height, stability is only provided at the centre in the form of a large core.

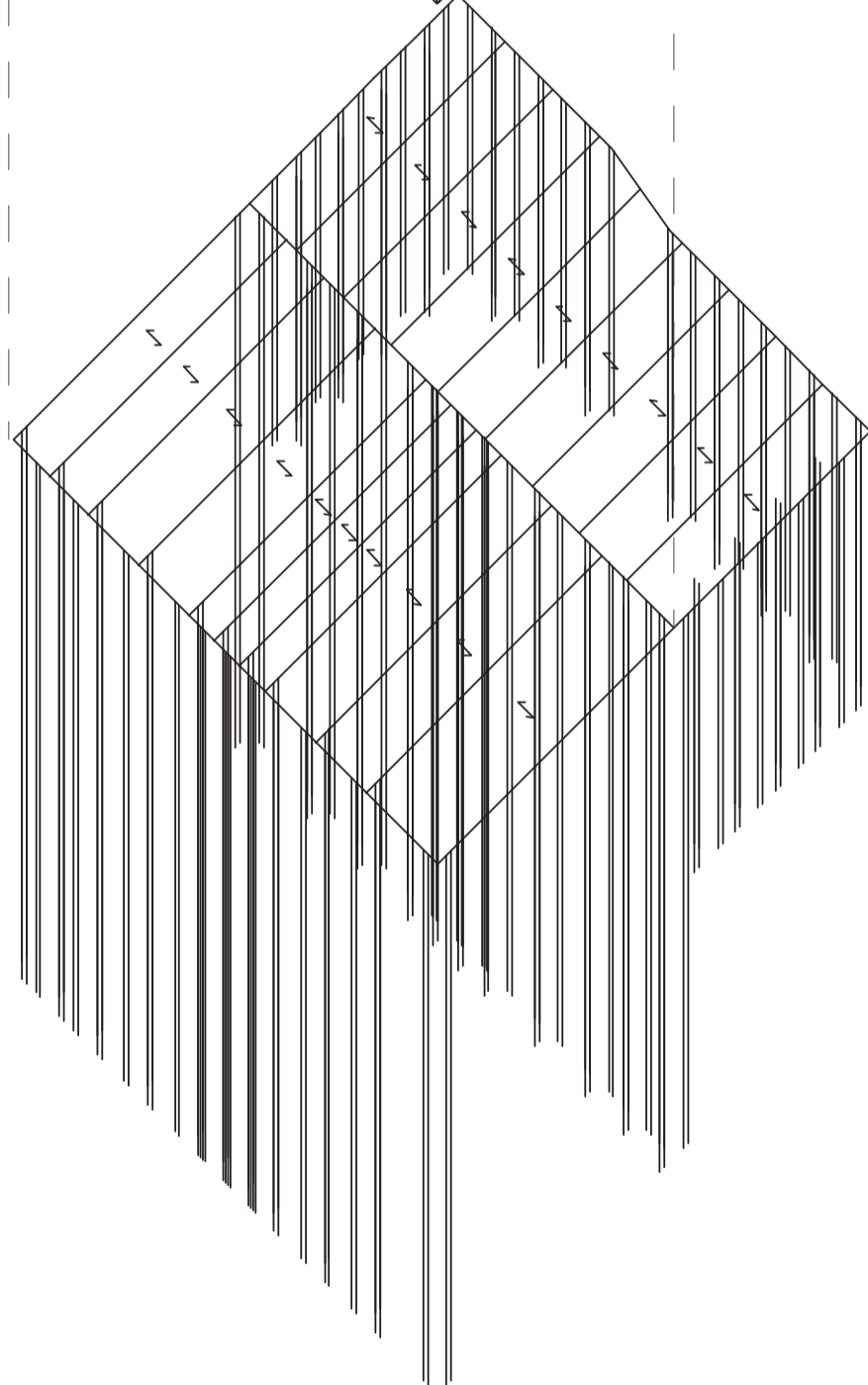




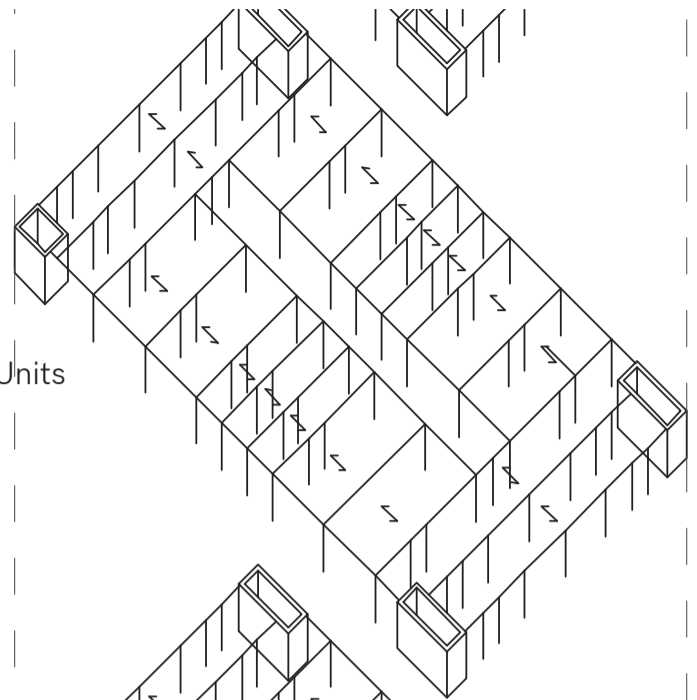
Swimming Pool
& Lobby



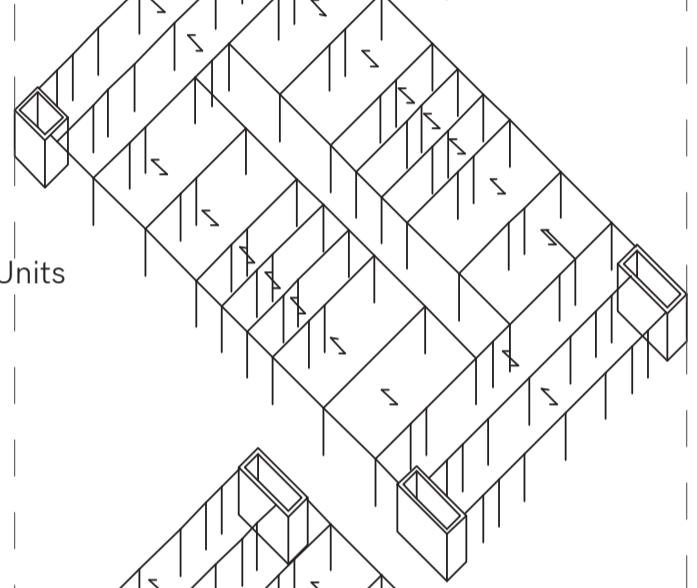
Foundation



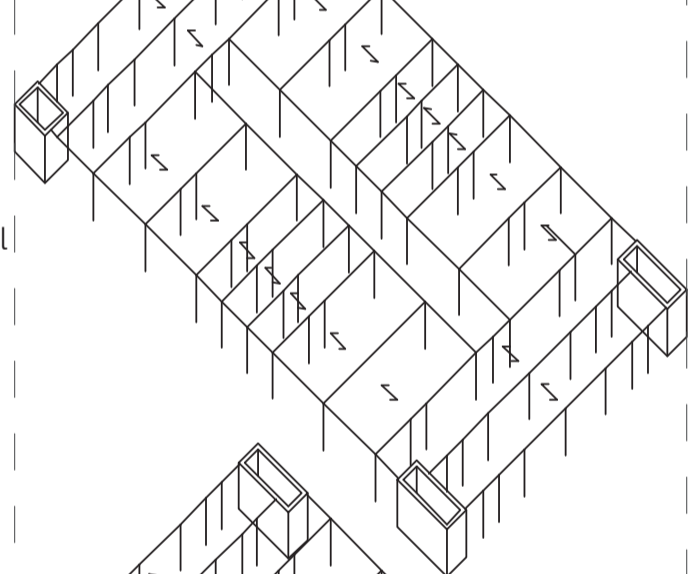
Collective Units
#1



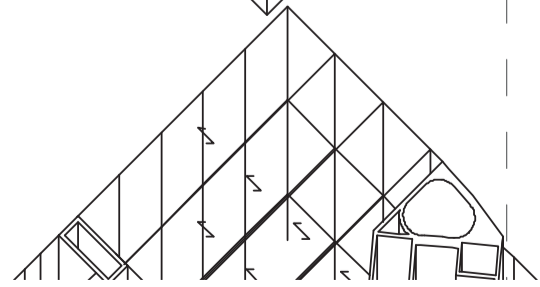
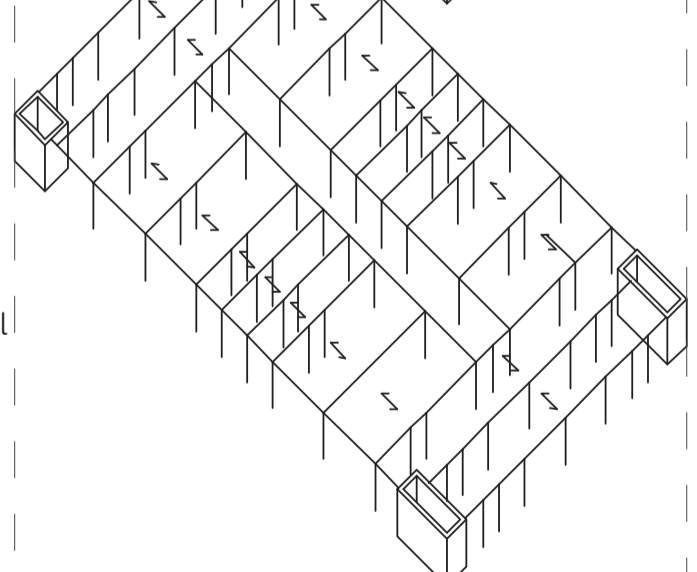
Collective Units
#1



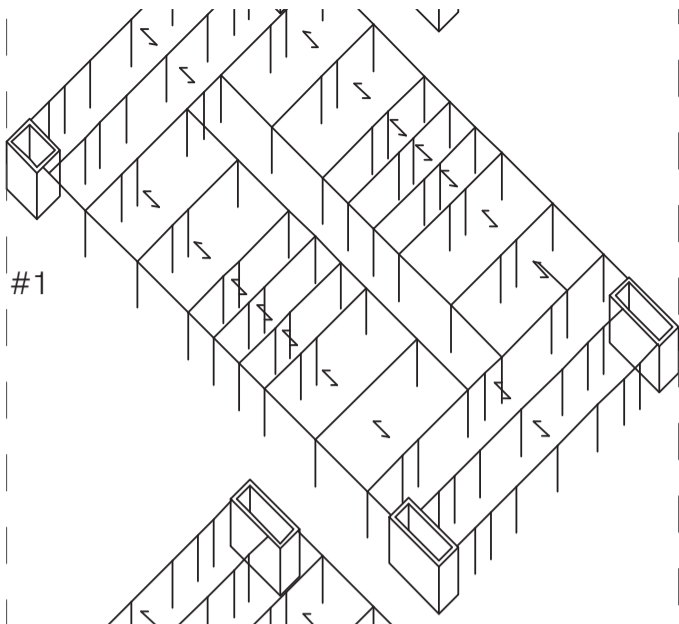
Office Level



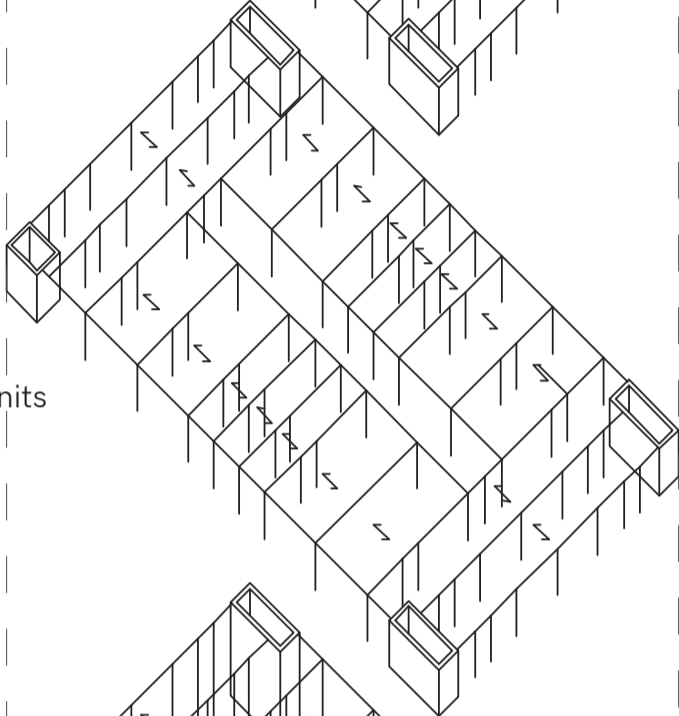
Office Level



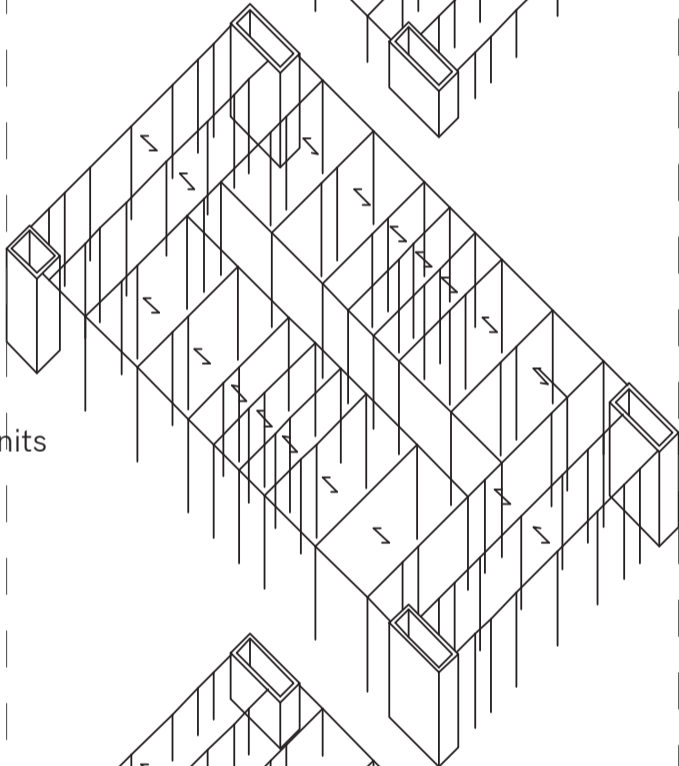
Family Units #1



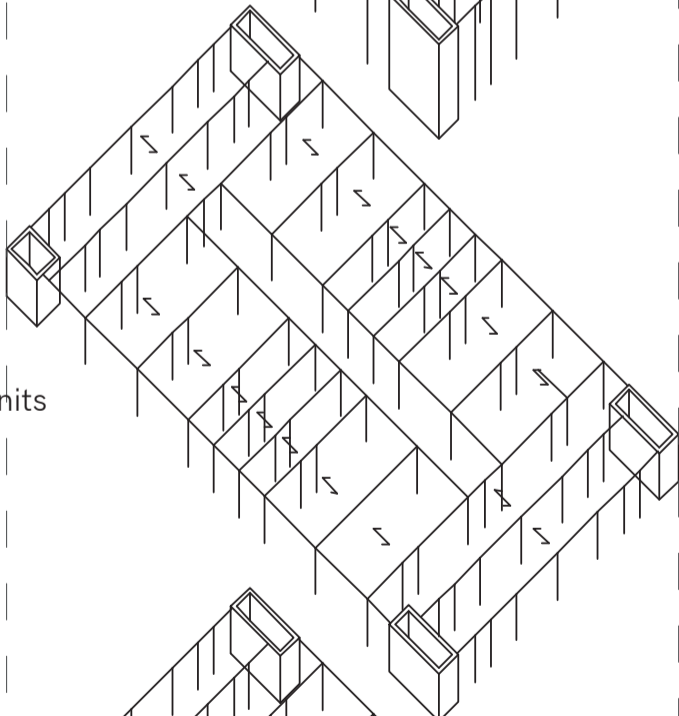
Collective Units #2



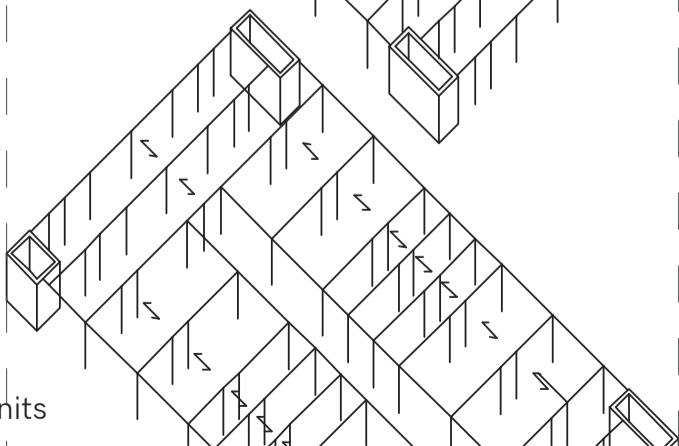
Collective Units #2



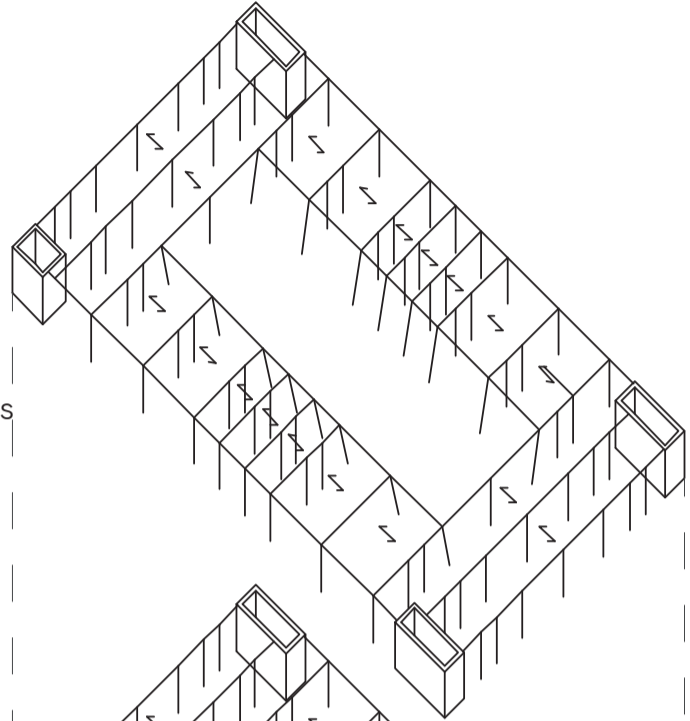
Collective Units #1



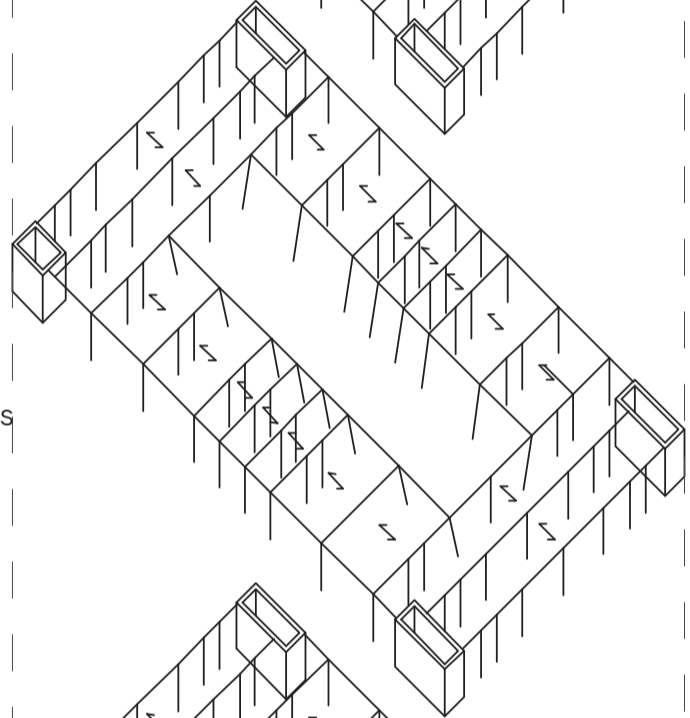
Collective Units #1



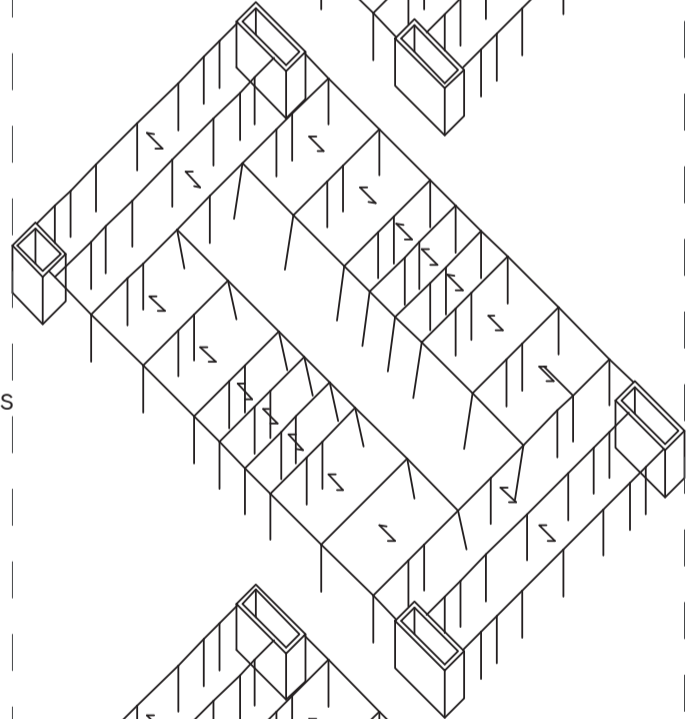
Single Units



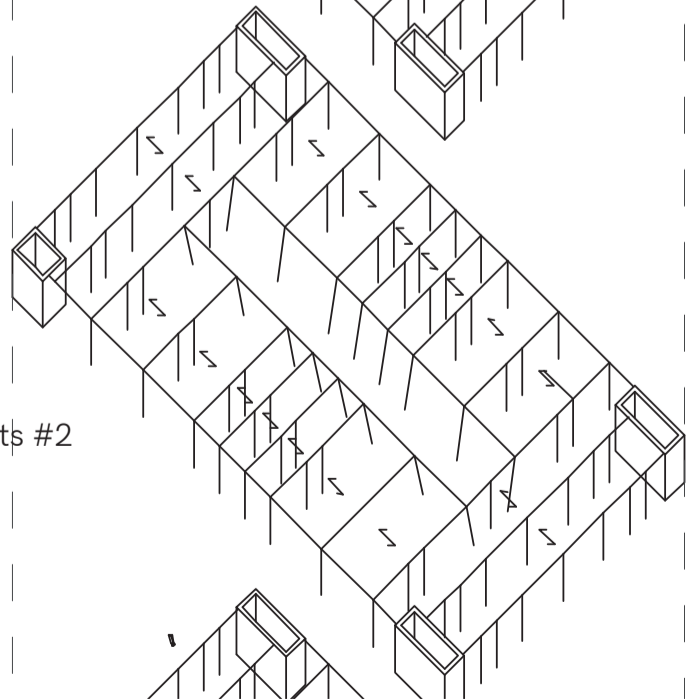
Single Units

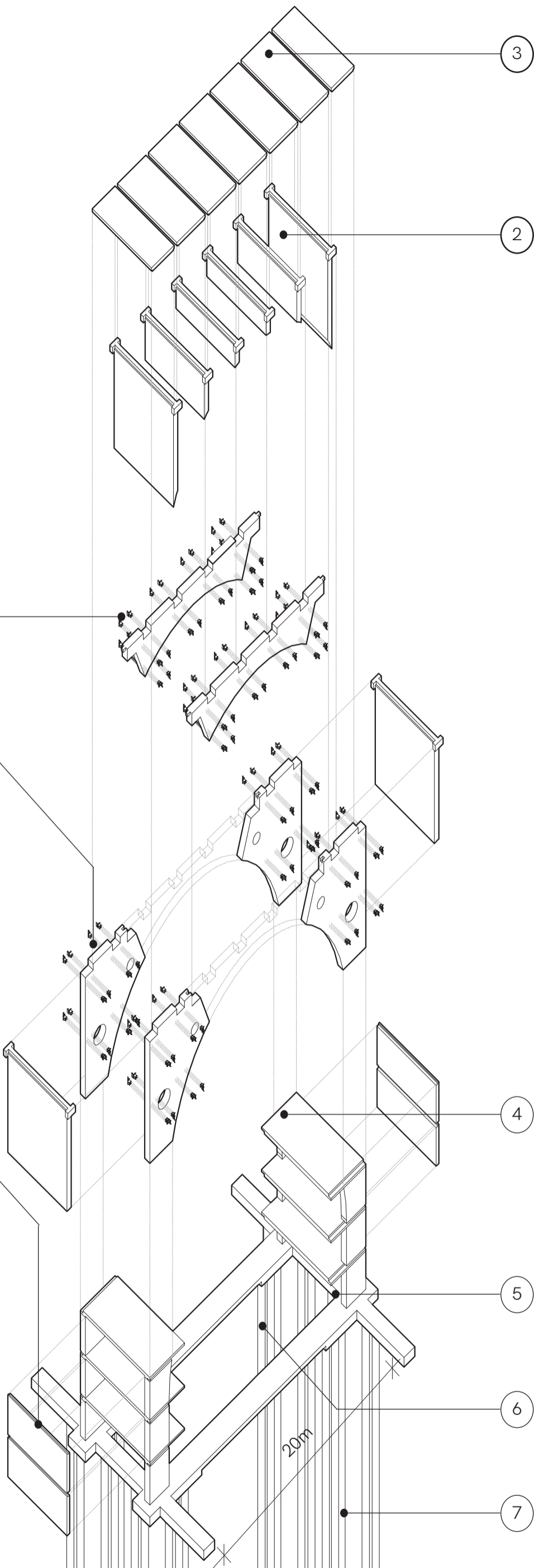


Single Units



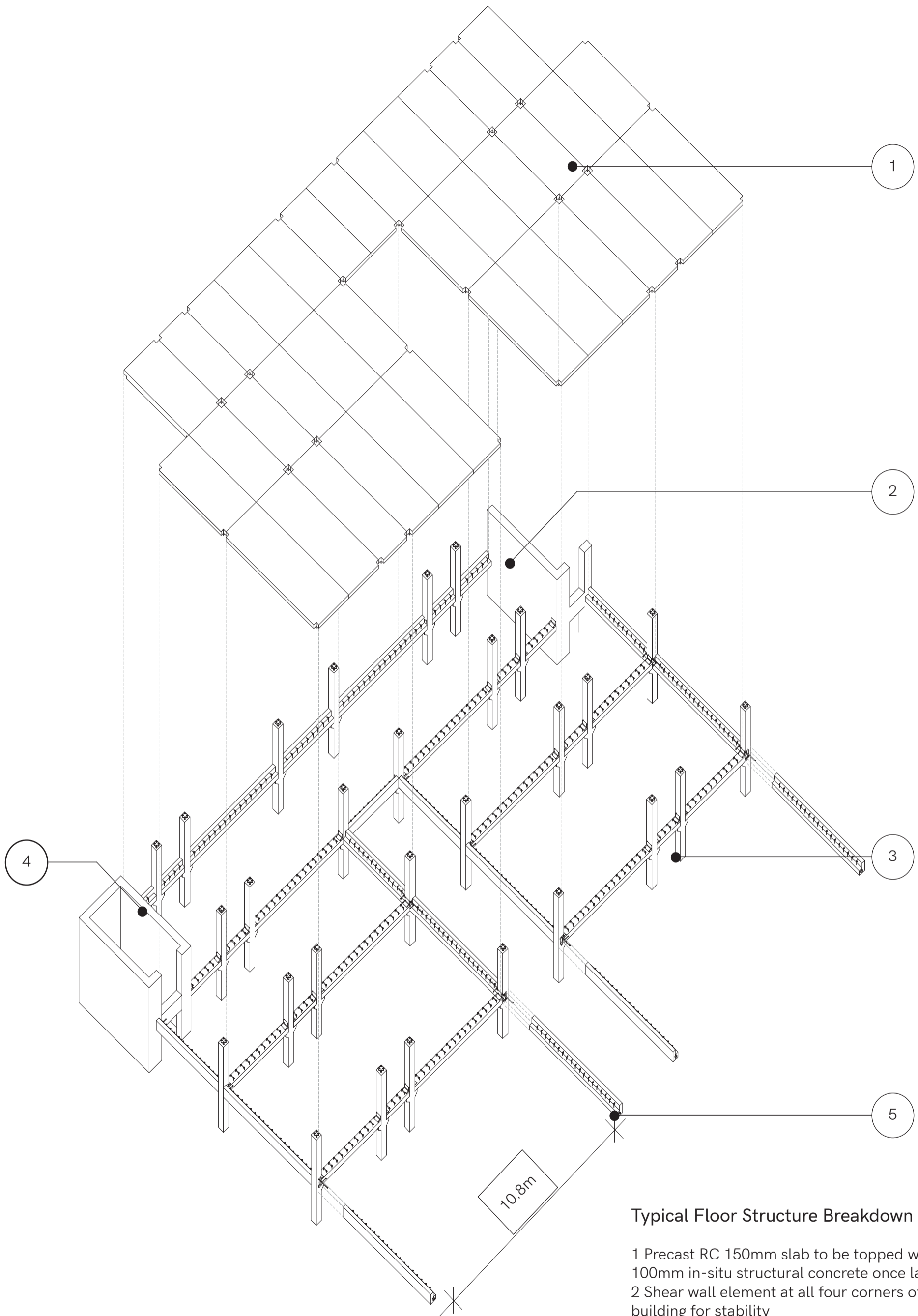
Family Units #2





Swimming Pool Structure Breakdown

- 1 Precast 600mm RC arch elements to be assembled on site @max 7.5m c/c
- 2 Precast 500mm RC beam elements to be joint by cast and bracket/bolts to arch elements
- 3 Precast 250mm RC slabs to be topped with 100mm in-situ structural concrete once laid
- 4 In-situ 350mm RC slabs to form box element supporting the erection of each arch. Structure to become changing room floors
- 5 1250x800mm RC Ring beam connecting each arch
- 6 2000x800mm RC beams to tie ends of arches together to prevent splaying
- 7 600mm Bored piles to sit the surrounding the footprint of arch element, forming a T-shape
- 8 Retaining walls

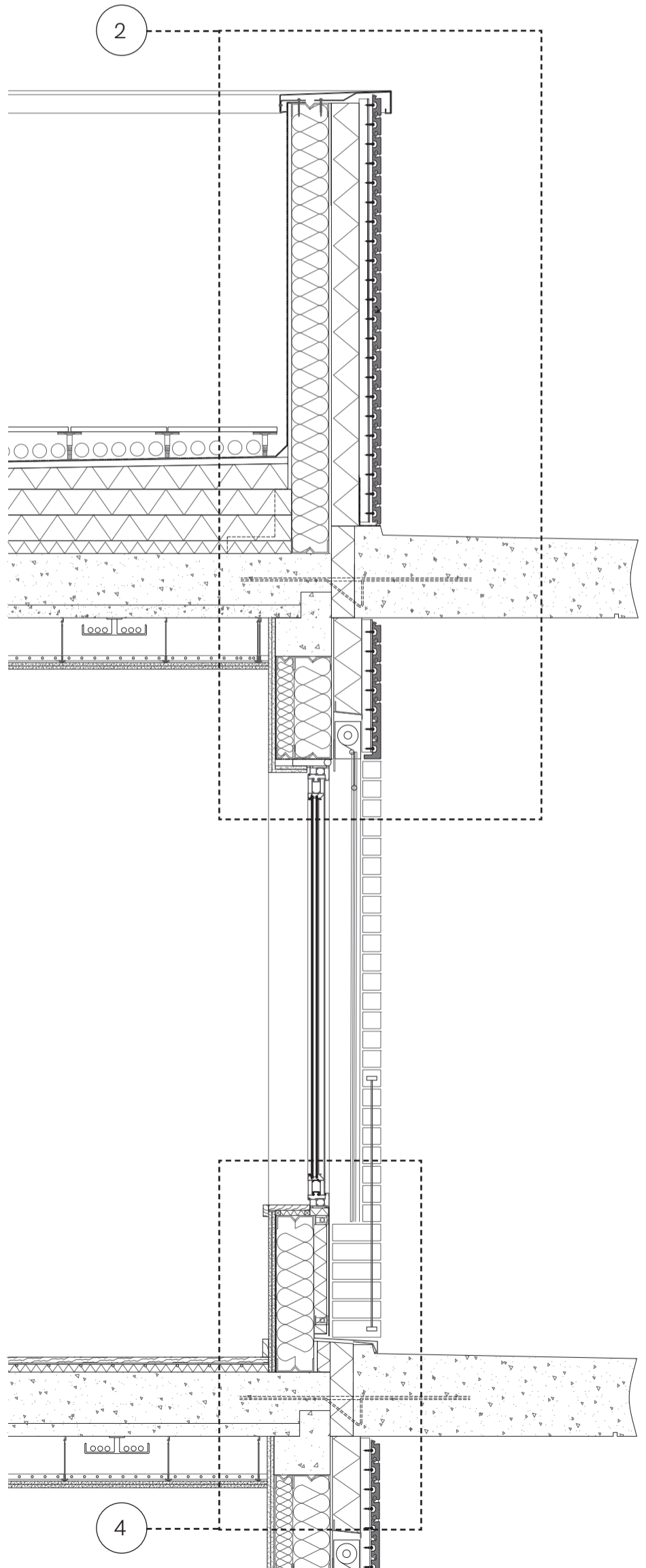
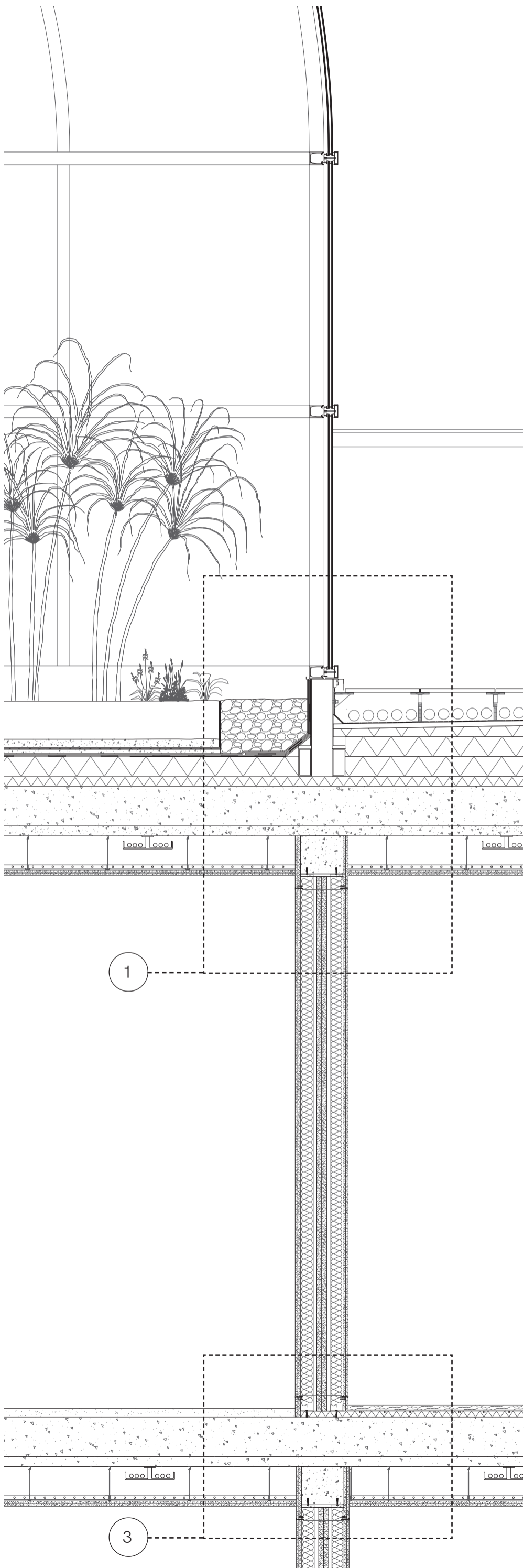


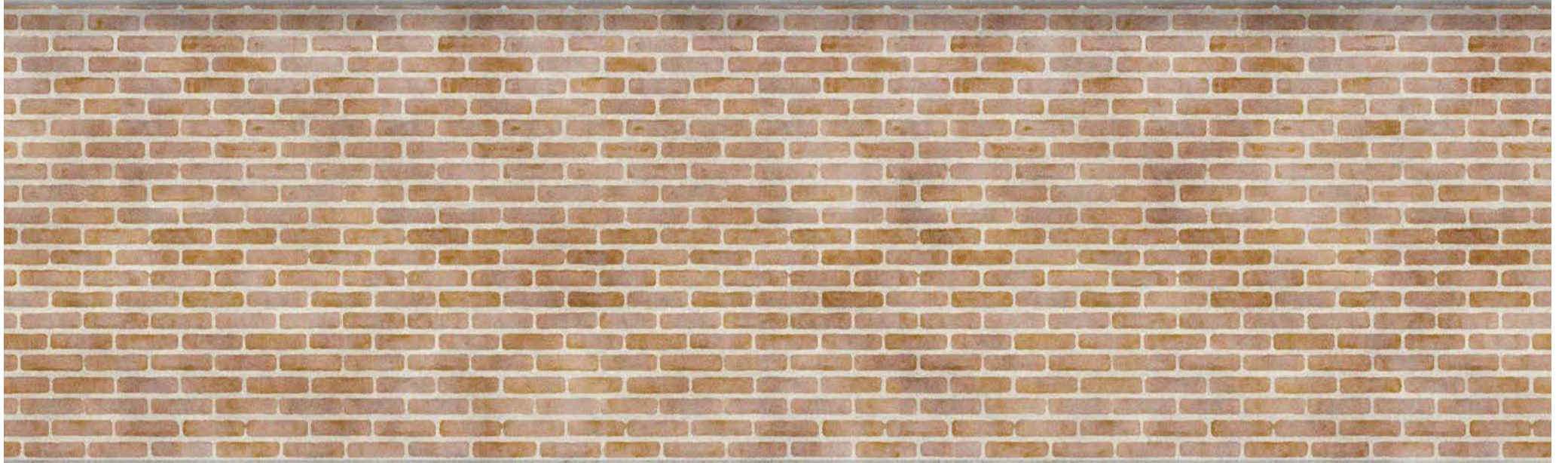
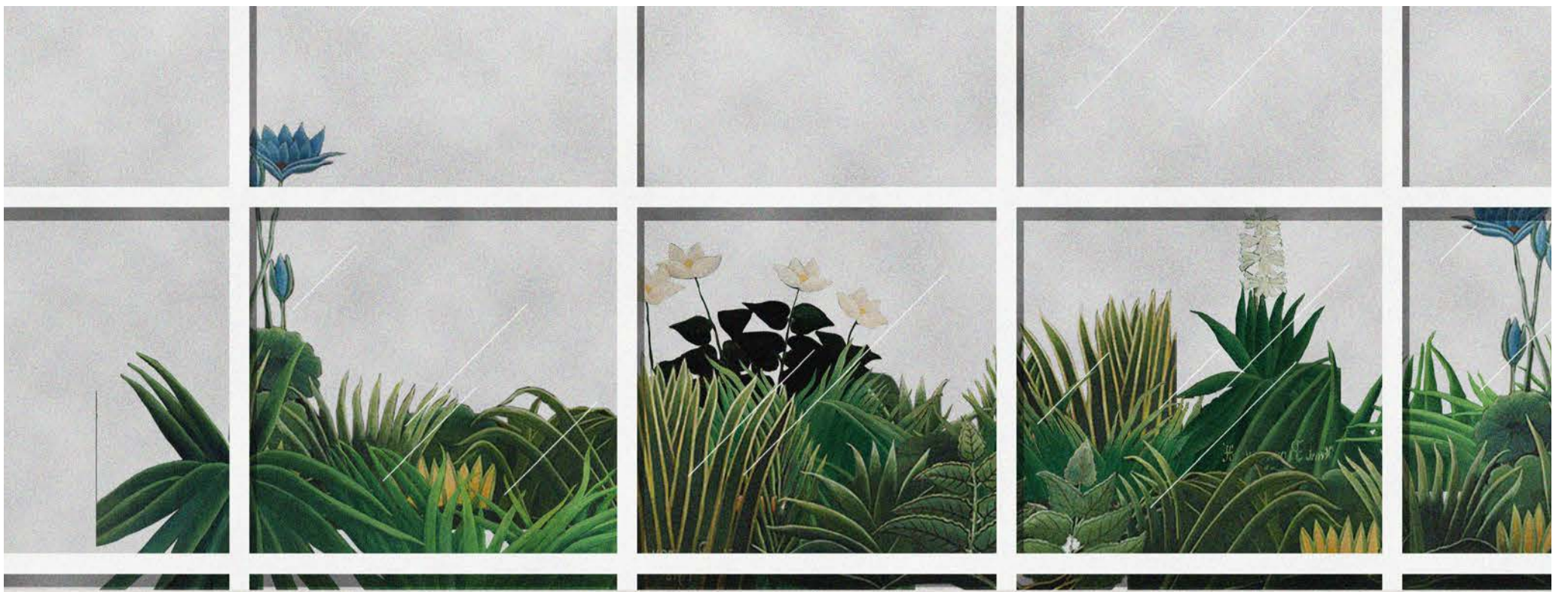
Typical Floor Structure Breakdown

- 1 Precast RC 150mm slab to be topped with 100mm in-situ structural concrete once laid
- 2 Shear wall element at all four corners of building for stability
- 3 Precast RC 200x200mm column with cast in steel studs to be bolted to connecting plate @max 5.4m c/c
- 4 Elevator shaft acting as shear wall element
- 5 Precast RC 300x400mm beam element with cast in loops to join with column tie bar

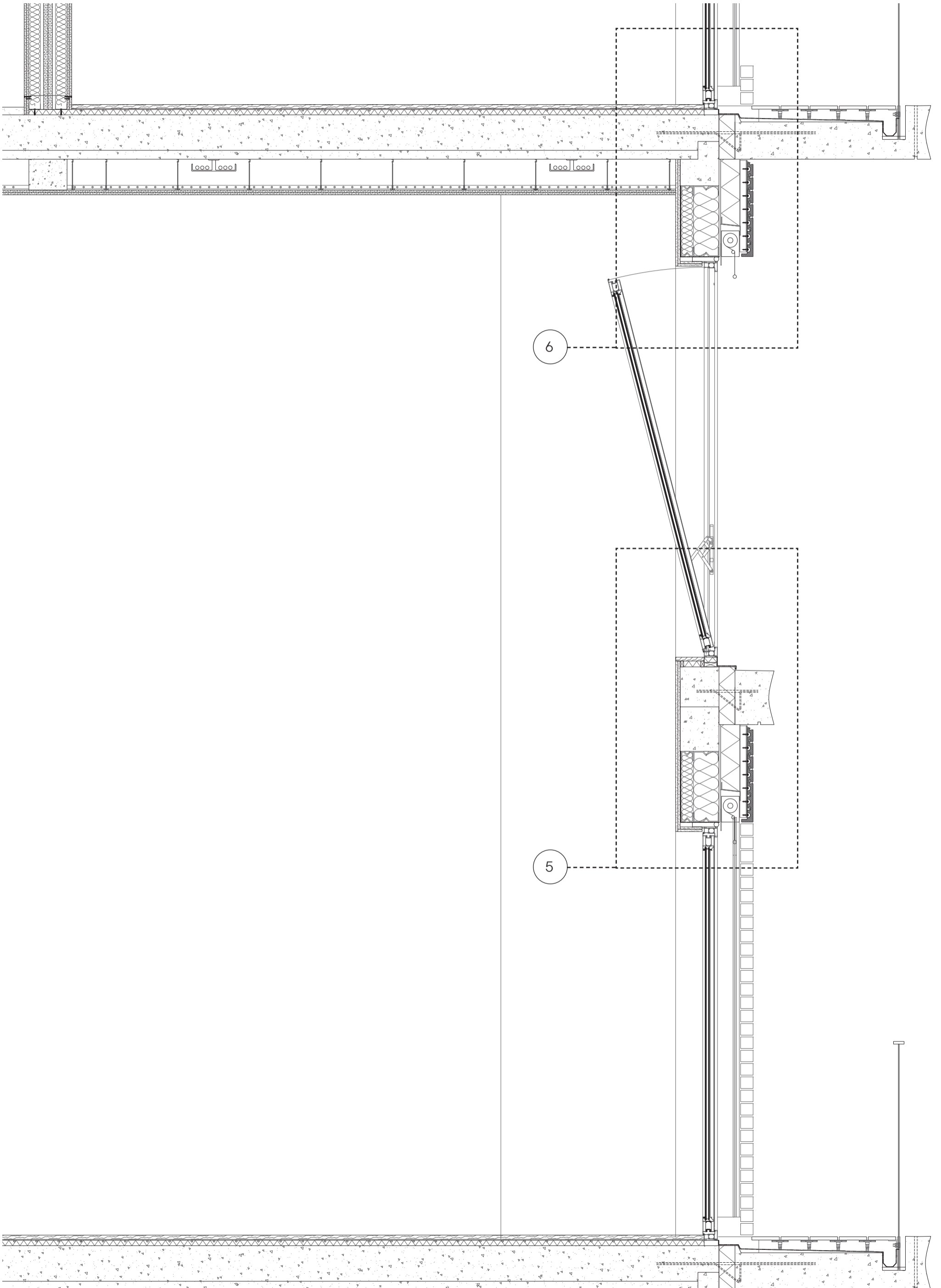
4. Details

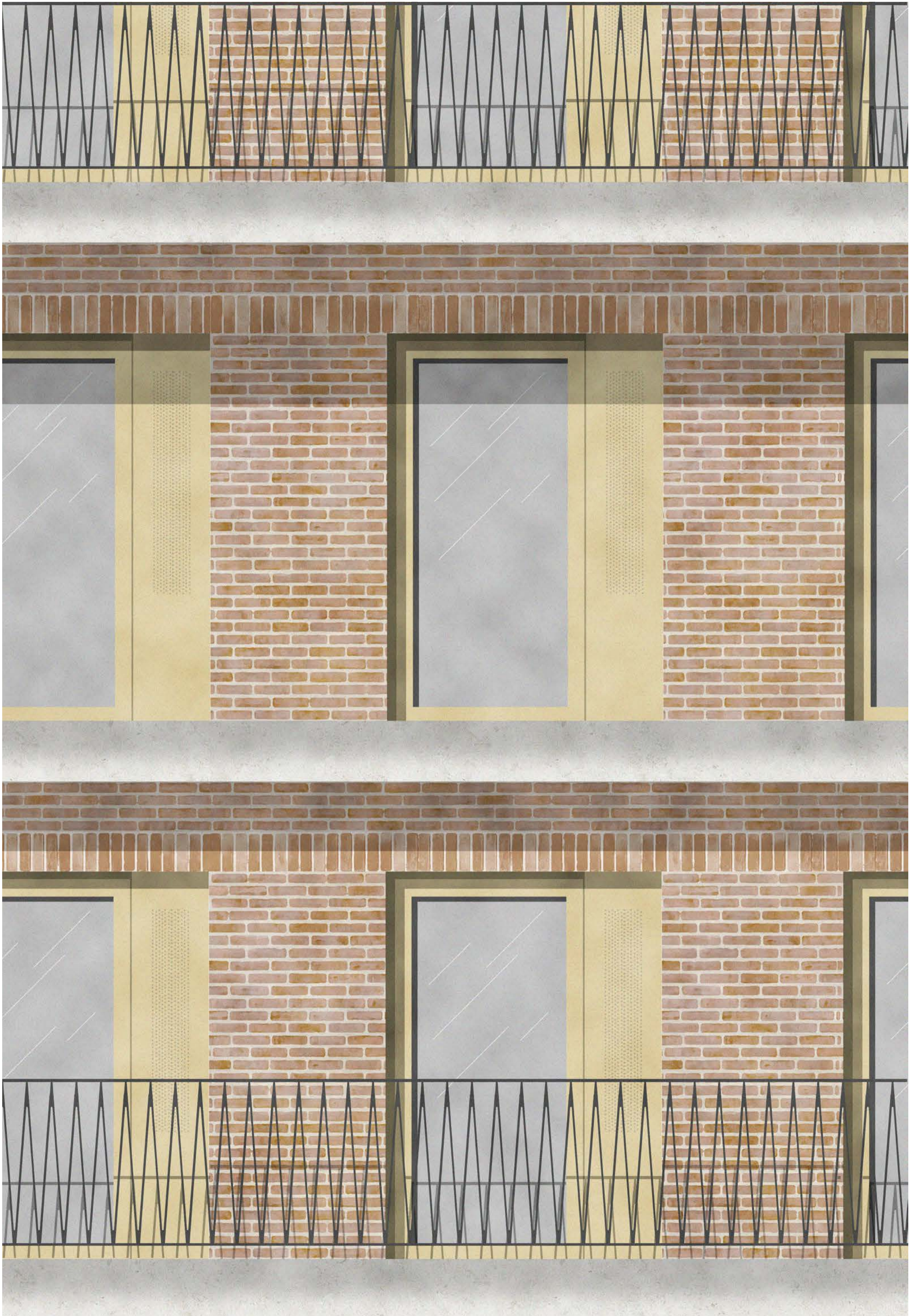
South Facing Facade Section, 15
- 16F; 1:20 @A3



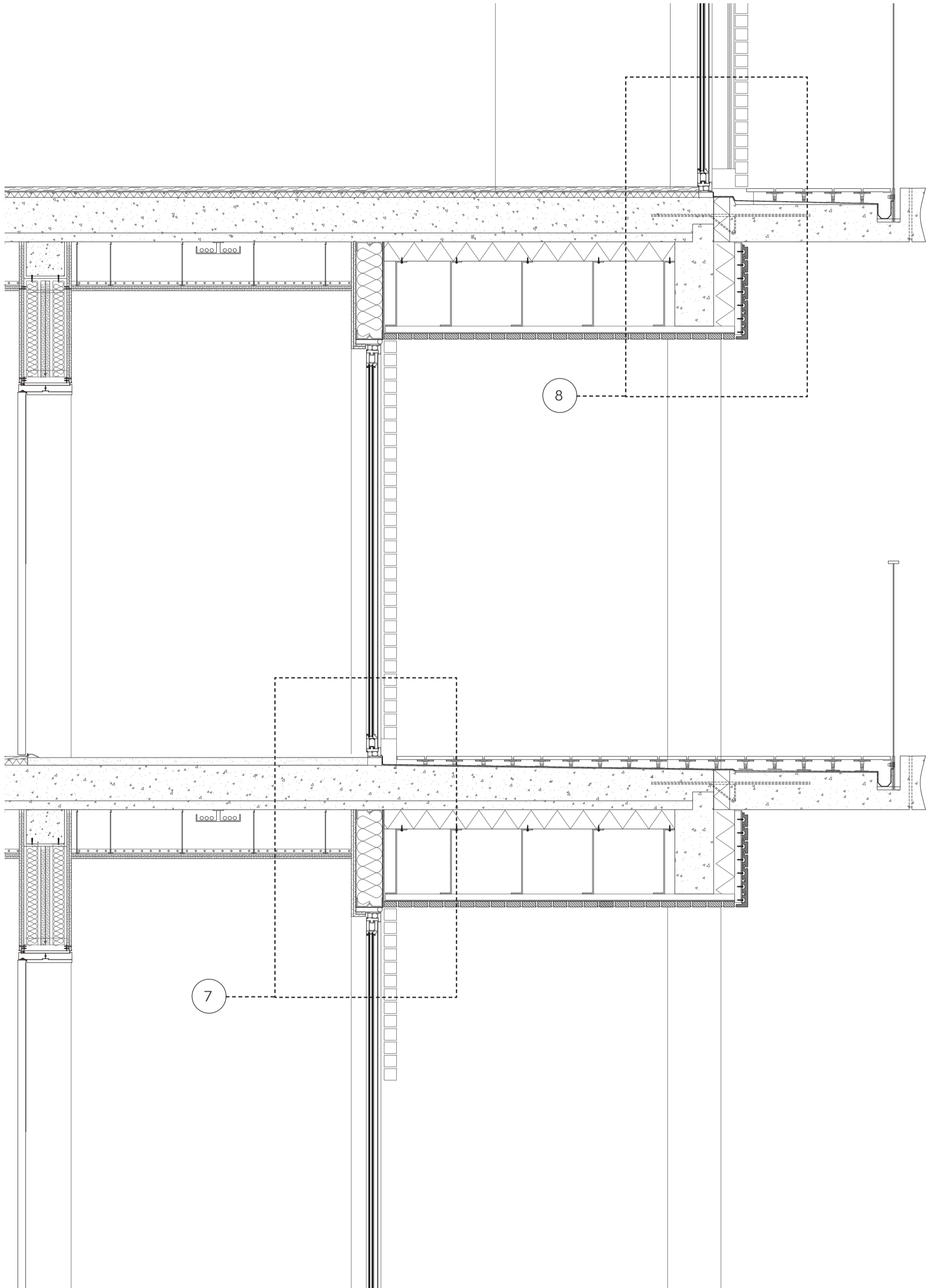


South Facing Facade Section, 8 -
10F; 1:20 @A3



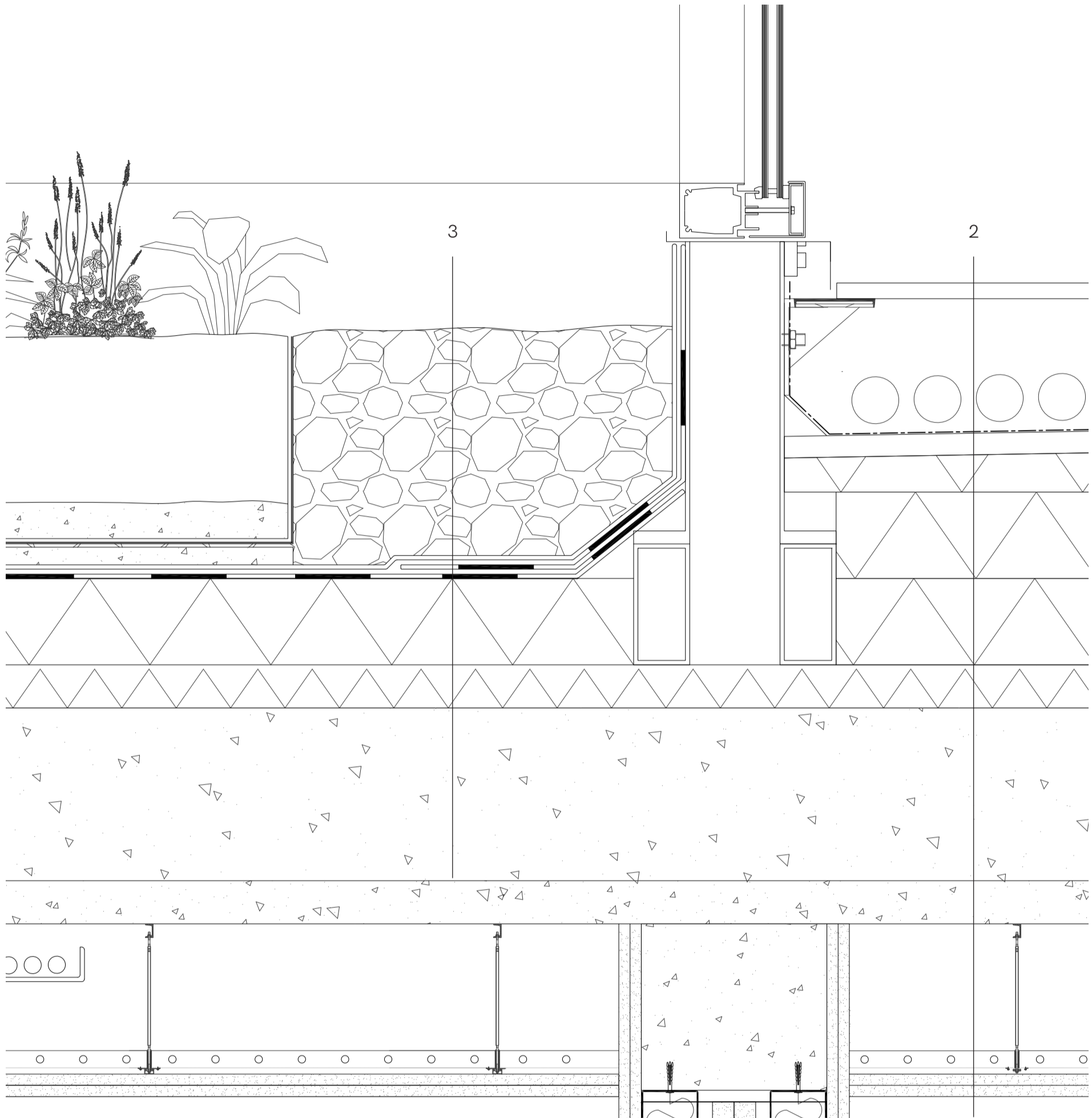


South Facing Facade Section, -
9F; 1:20 @ A3





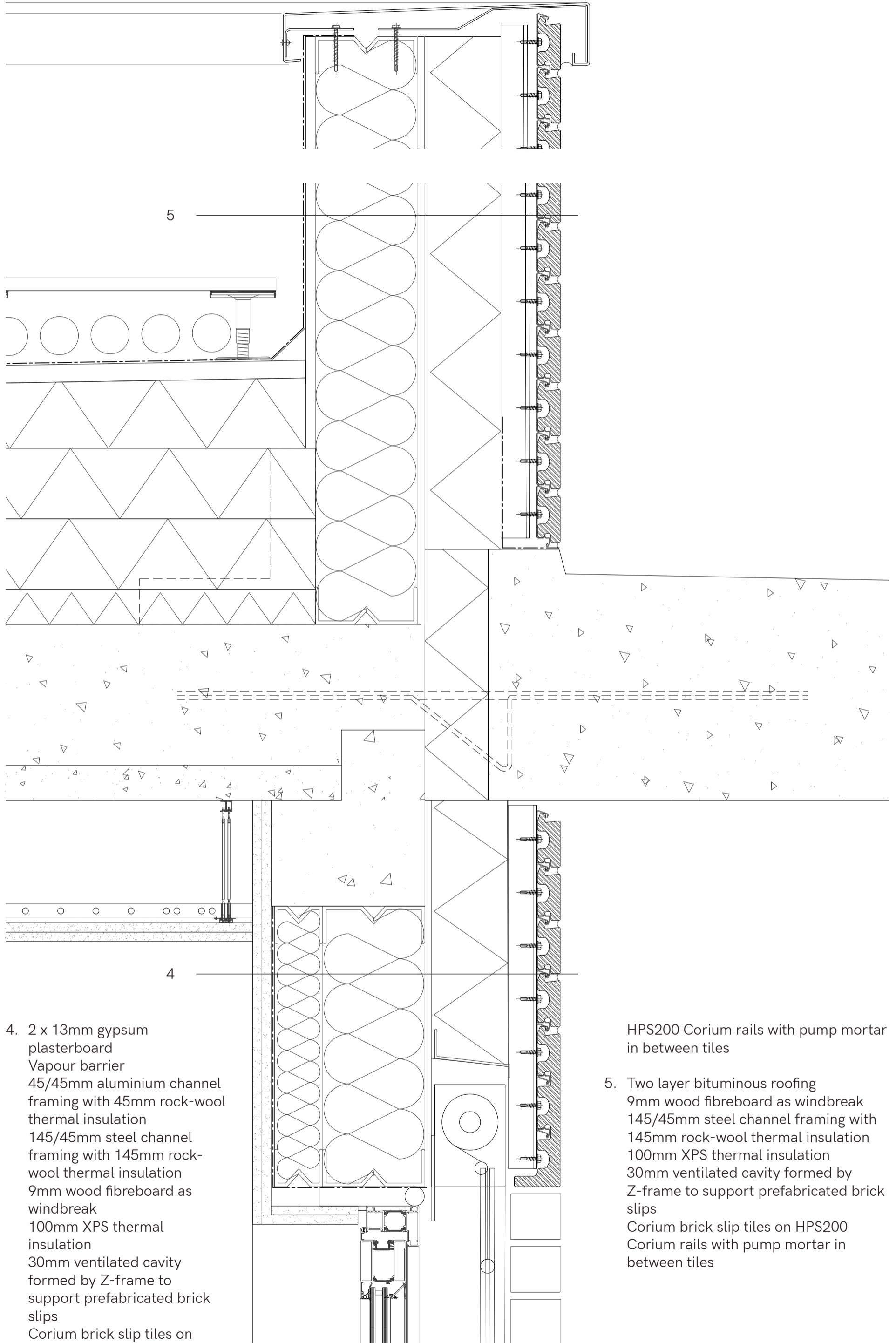
Detail 01 - Terrace and Green
Roof Build Up 1:5@A3



1. 2 x 13mm gypsum plasterboard
Suspended coolant pipes
140mm cavity for services
250mm reinforced concrete slab
Underfloor heating on 30mm XPS sheeting
5mm impact-sound insulation
23mm Douglas fir flooring
2. 18mm external stone decking
90-160mm air gap/pedestals
50mm gravel bed
Two layer bituminous roofing
20mm rigid foam plastic sheeting
100-40mm insulation finished

- to falls
2 x 100mm extruded polystyrene thermal insulation
50mm rock-wool thermal insulation
128mm trapezoidal-section metal sheeting
Vapour barrier
250mm reinforced concrete slab
140mm cavity for services
Suspended coolant pipes
2 x 13mm gypsum plasterboard

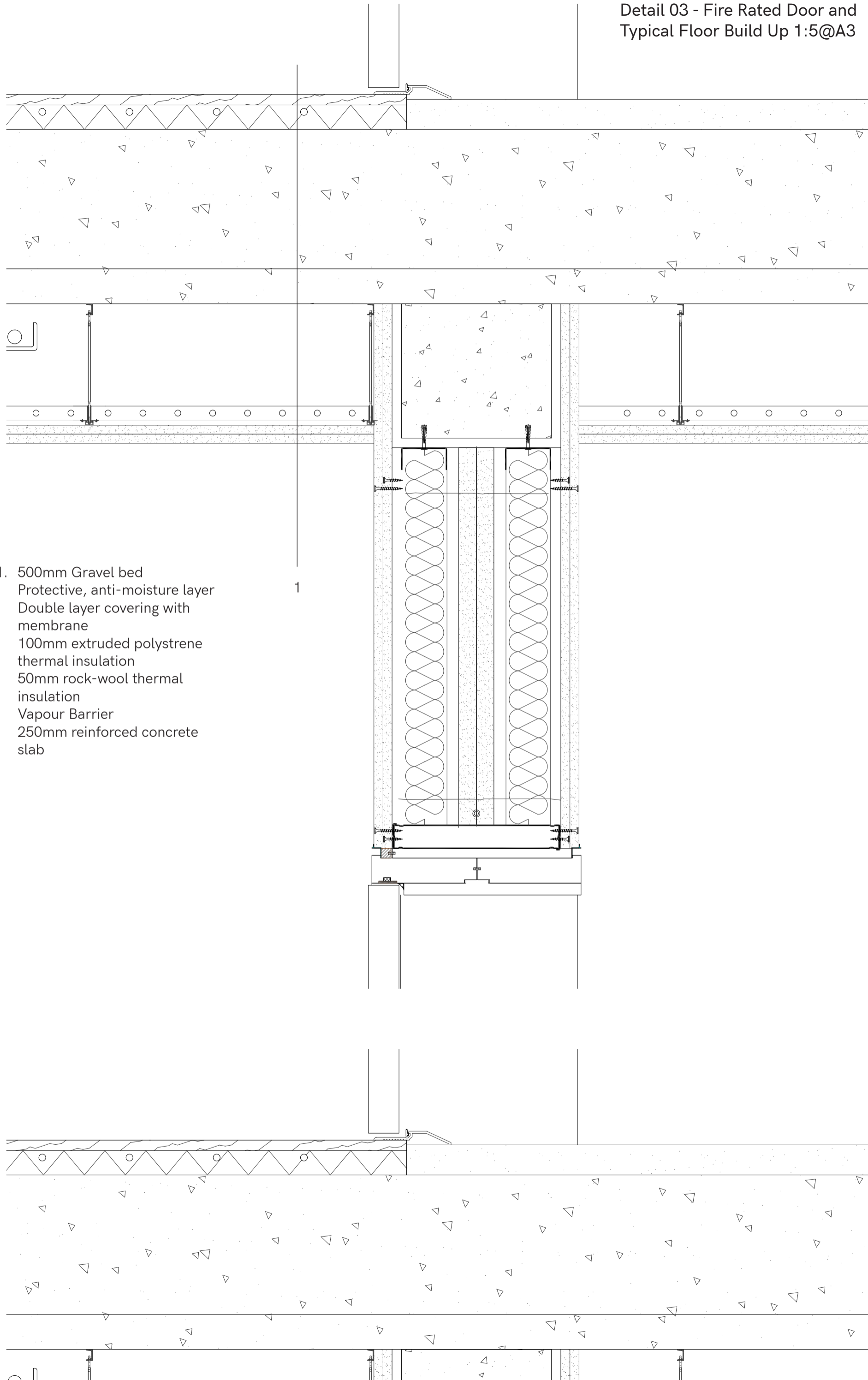
3. 500mm Gravel bed
Protective, anti-moisture layer
Double layer covering with membrane
100mm extruded polystyrene thermal insulation
50mm rock-wool thermal insulation
Vapour Barrier
250mm reinforced concrete slab



4. 2 x 13mm gypsum plasterboard
Vapour barrier
45/45mm aluminium channel framing with 45mm rock-wool thermal insulation
145/45mm steel channel framing with 145mm rock-wool thermal insulation
9mm wood fibreboard as windbreak
100mm XPS thermal insulation
30mm ventilated cavity formed by Z-frame to support prefabricated brick slips
Corium brick slip tiles on

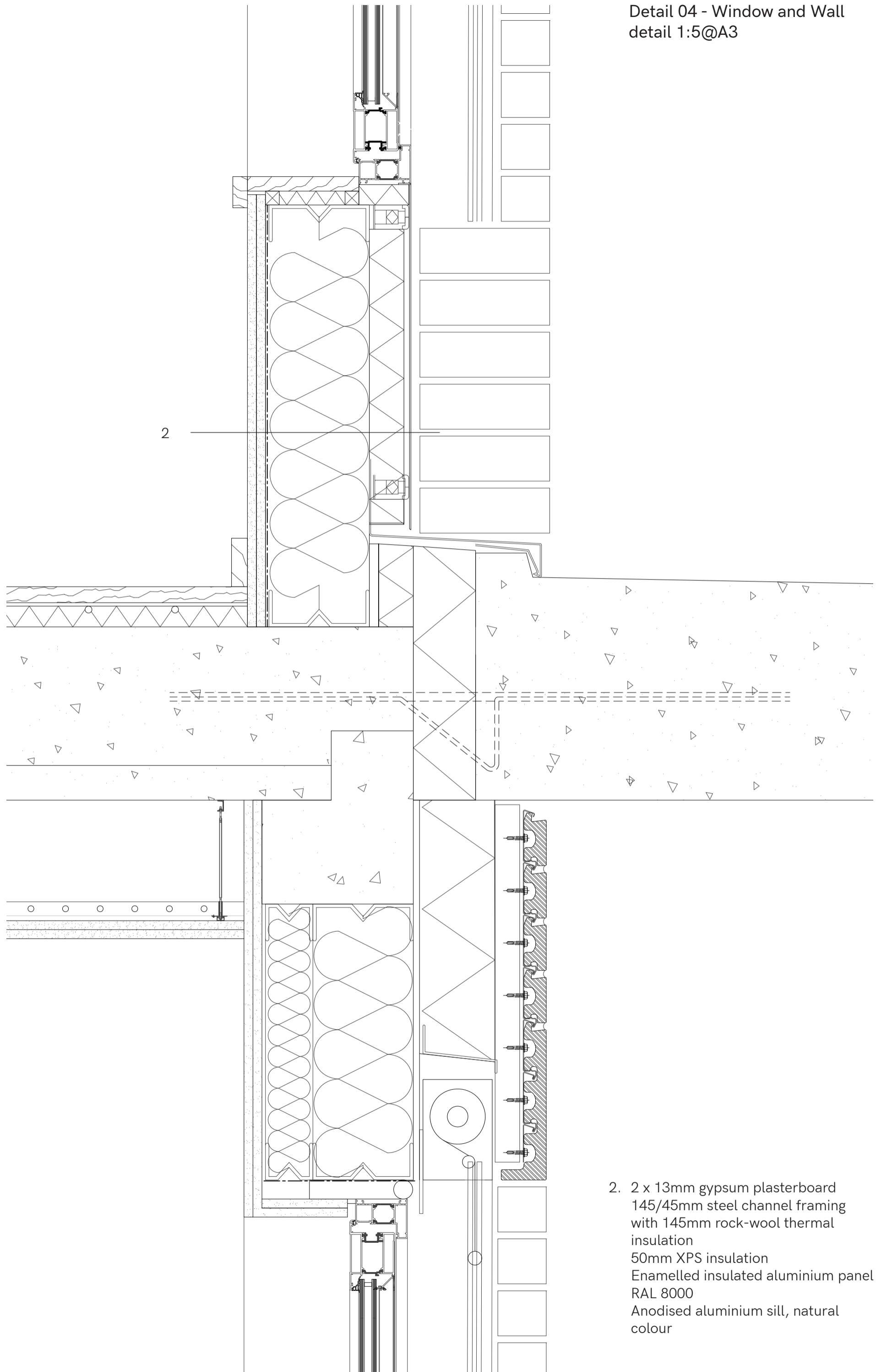
- HPS200 Corium rails with pump mortar in between tiles
5. Two layer bituminous roofing
9mm wood fibreboard as windbreak
145/45mm steel channel framing with 145mm rock-wool thermal insulation
100mm XPS thermal insulation
30mm ventilated cavity formed by Z-frame to support prefabricated brick slips
Corium brick slip tiles on HPS200 Corium rails with pump mortar in between tiles

Detail 03 - Fire Rated Door and
Typical Floor Build Up 1:5@A3



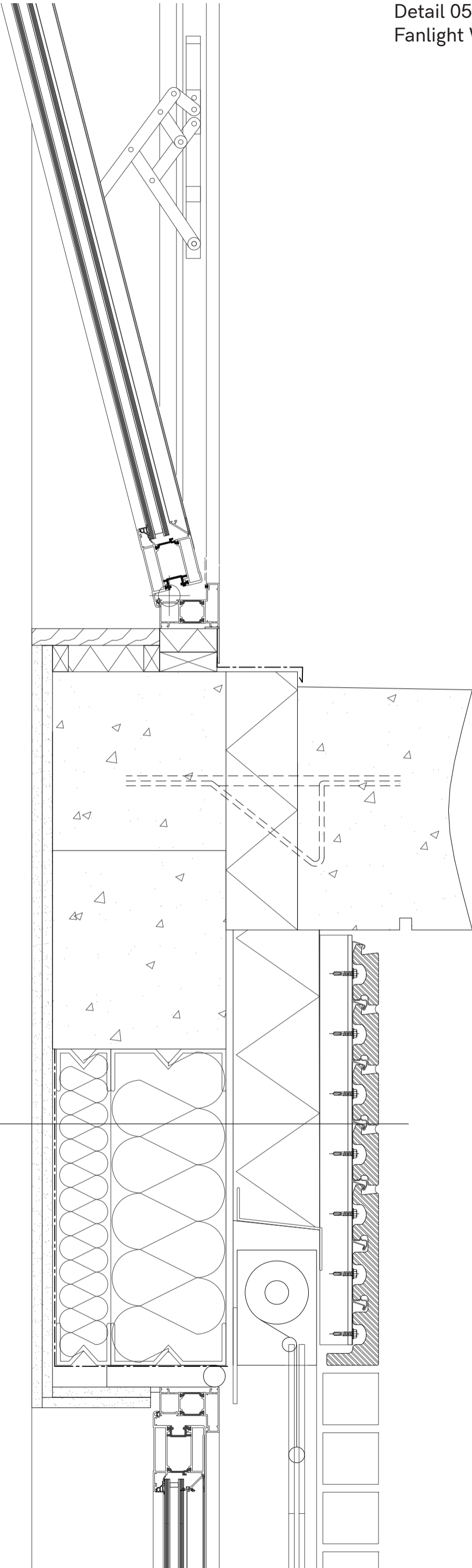
- 1. 500mm Gravel bed
- Protective, anti-moisture layer
- Double layer covering with membrane
- 100mm extruded polystyrene thermal insulation
- 50mm rock-wool thermal insulation
- Vapour Barrier
- 250mm reinforced concrete slab

Detail 04 - Window and Wall
detail 1:5@A3



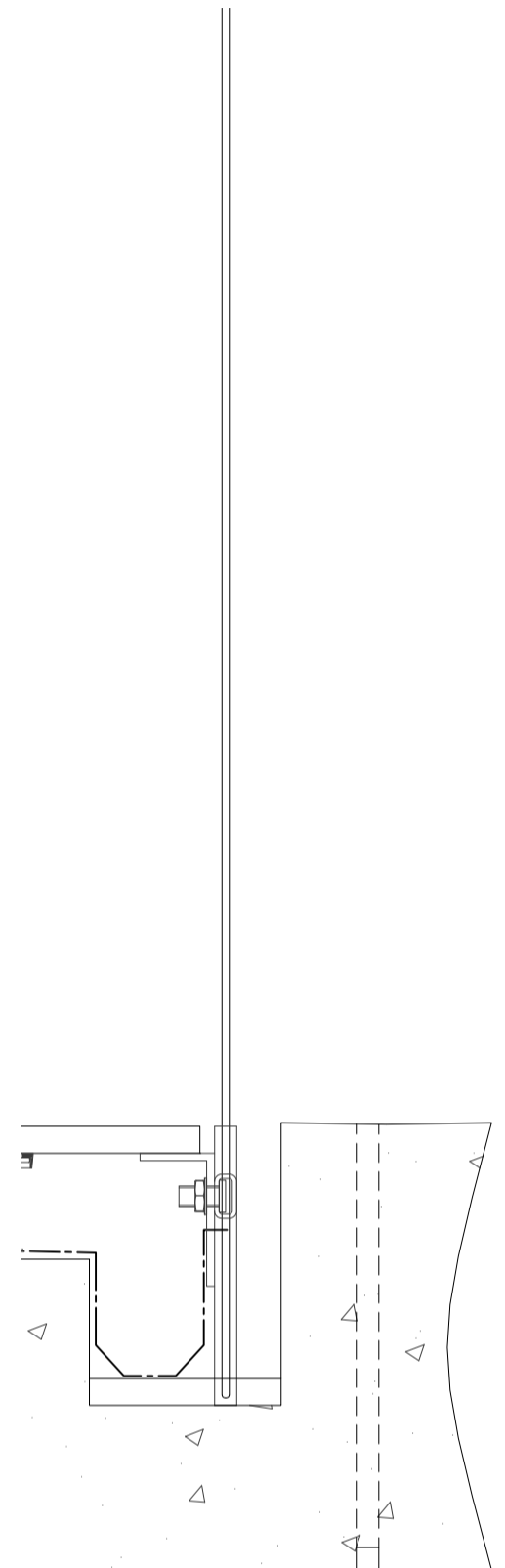
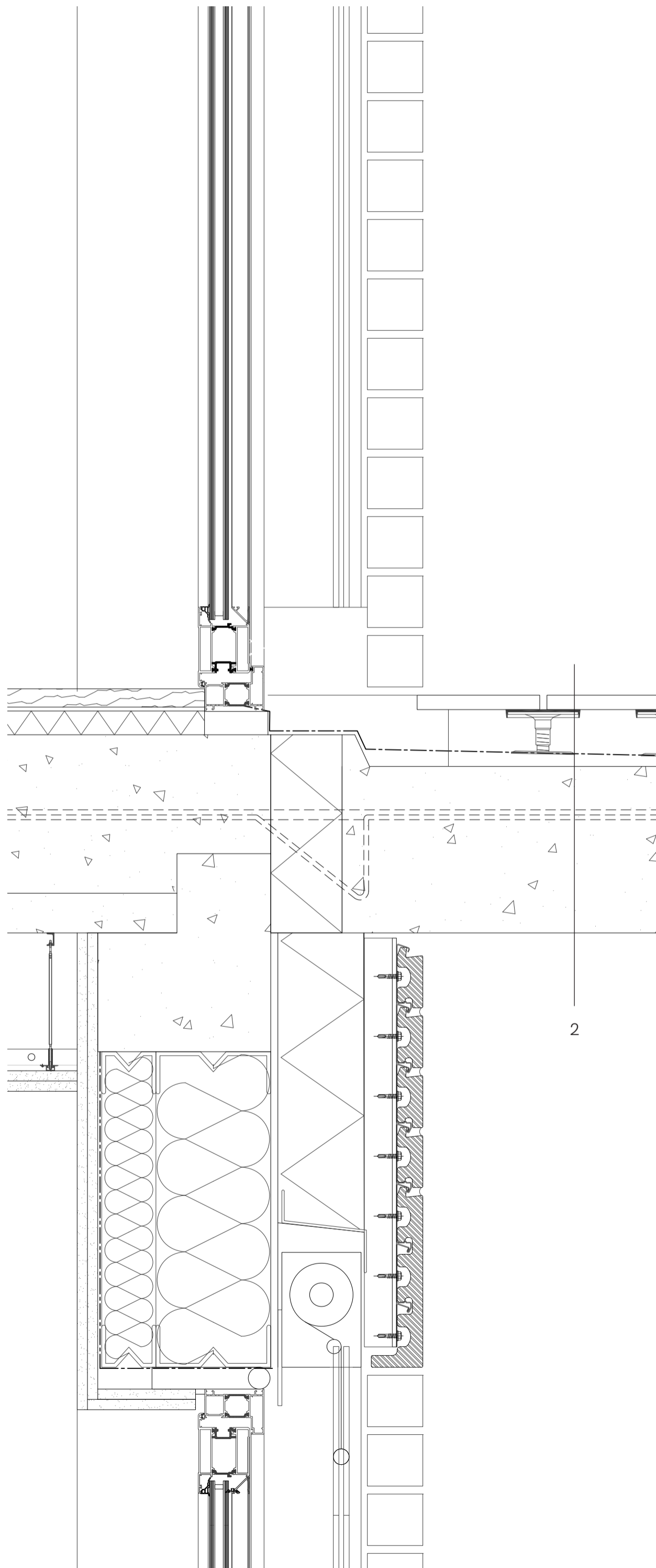
- 2. 2 x 13mm gypsum plasterboard
145/45mm steel channel framing
with 145mm rock-wool thermal
insulation
50mm XPS insulation
Enamelled insulated aluminium panel
RAL 8000
Anodised aluminium sill, natural
colour

Detail 05 - Double Height
 Fanlight Window Detail 1:5@A3



- 1. 2 x 13mm gypsum plasterboard
- Vapour barrier
- 45/45mm aluminium channel framing with 45mm rock-wool thermal insulation
- 145/45mm steel channel framing with 145mm rock-wool thermal insulation
- 9mm wood fibreboard as windbreak
- 100mm XPS thermal insulation
- 30mm ventilated cavity formed by Z-frame to support prefabricated brick slips
- Corium brick slip tiles on HPS200
- Corium rails with pump mortar in between tiles

Detail 06 - Door and Window
detail 1:5@A3



2. 210mm precast fair-faced reinforced concrete slab to be casted with 200mm in-situ structural concrete
65mm air gap to form drainage channel
Stone decking

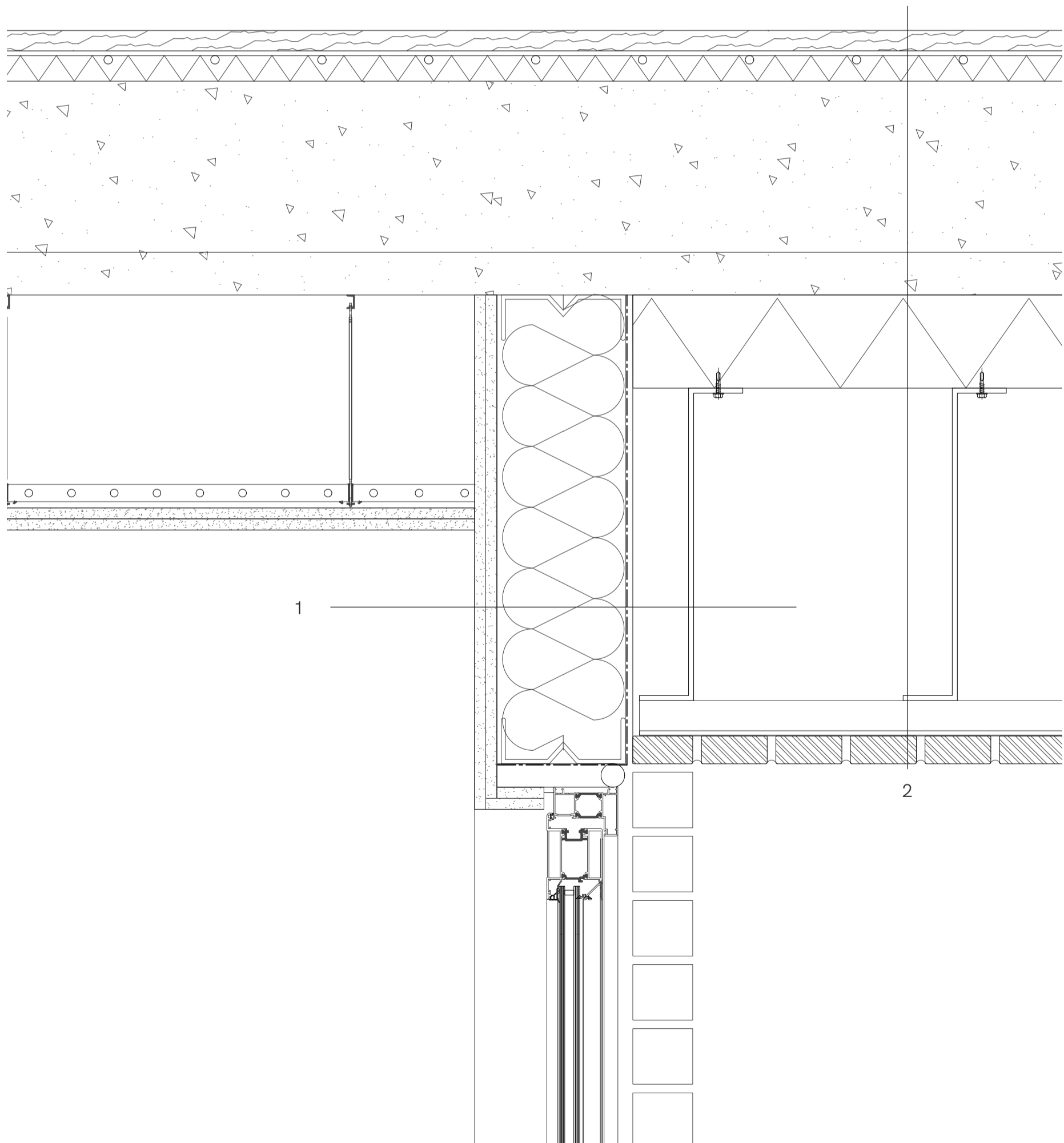
1. 2 x 13mm gypsum plasterboard
145/45mm steel channel
framing with 145mm rock-wool
thermal insulation
Vapour barrier

be casted with 200mm in-situ
structural concrete
65mm air gap to form drainage
channel
Stone decking

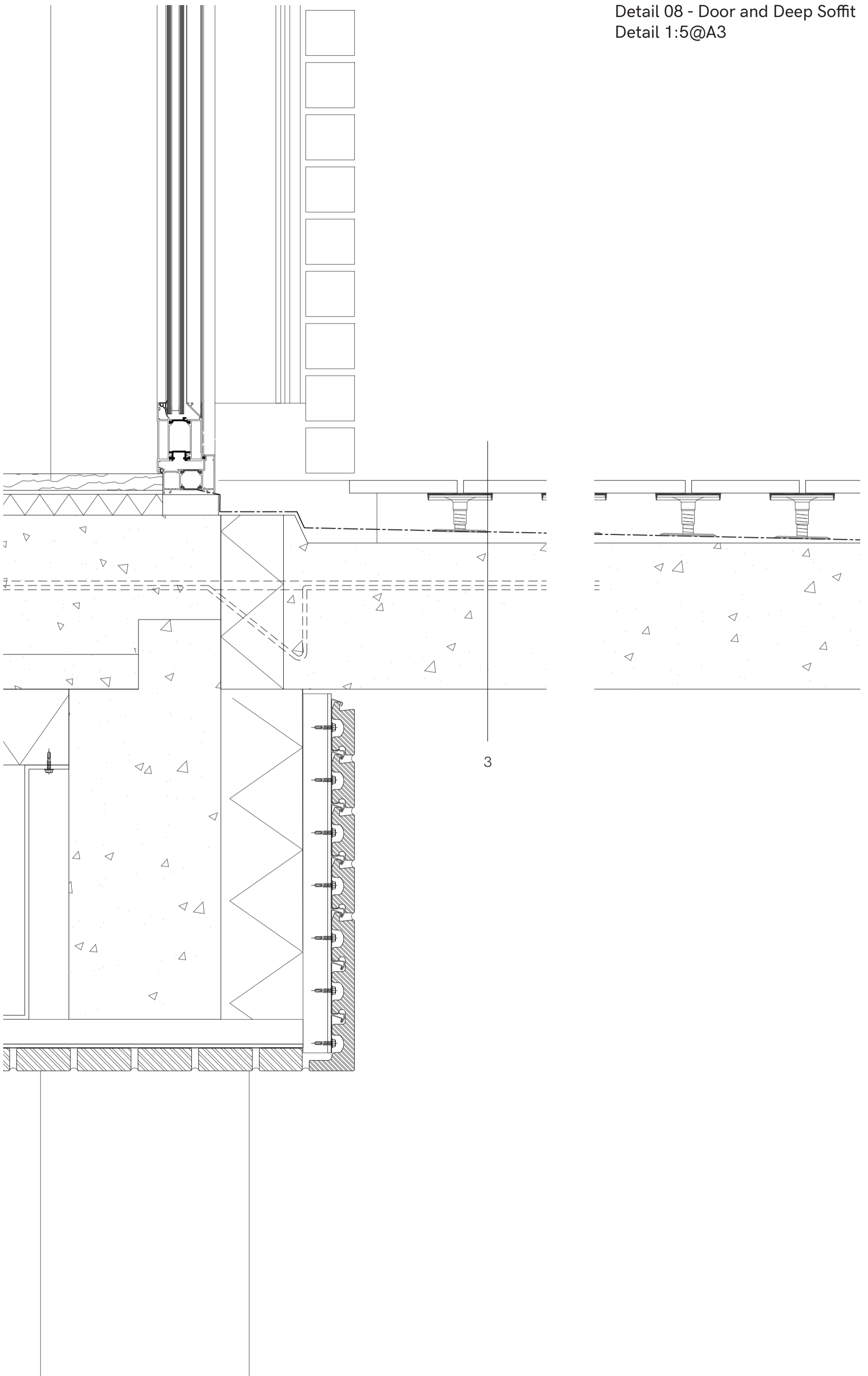
Detail 07 - Deep Soffit and Door
Detail 1:5@A3

2. Corium brick slip tiles on rails
hung by Z-frame
100mm XPS thermal insulation
50mm prefabricated reinforced
concrete slab as formwork
200m structural concrete
poured in-situ
Underfloor heating on 30mm
XPS sheeting
5mm impact-sound insulation
23mm Douglas fir flooring

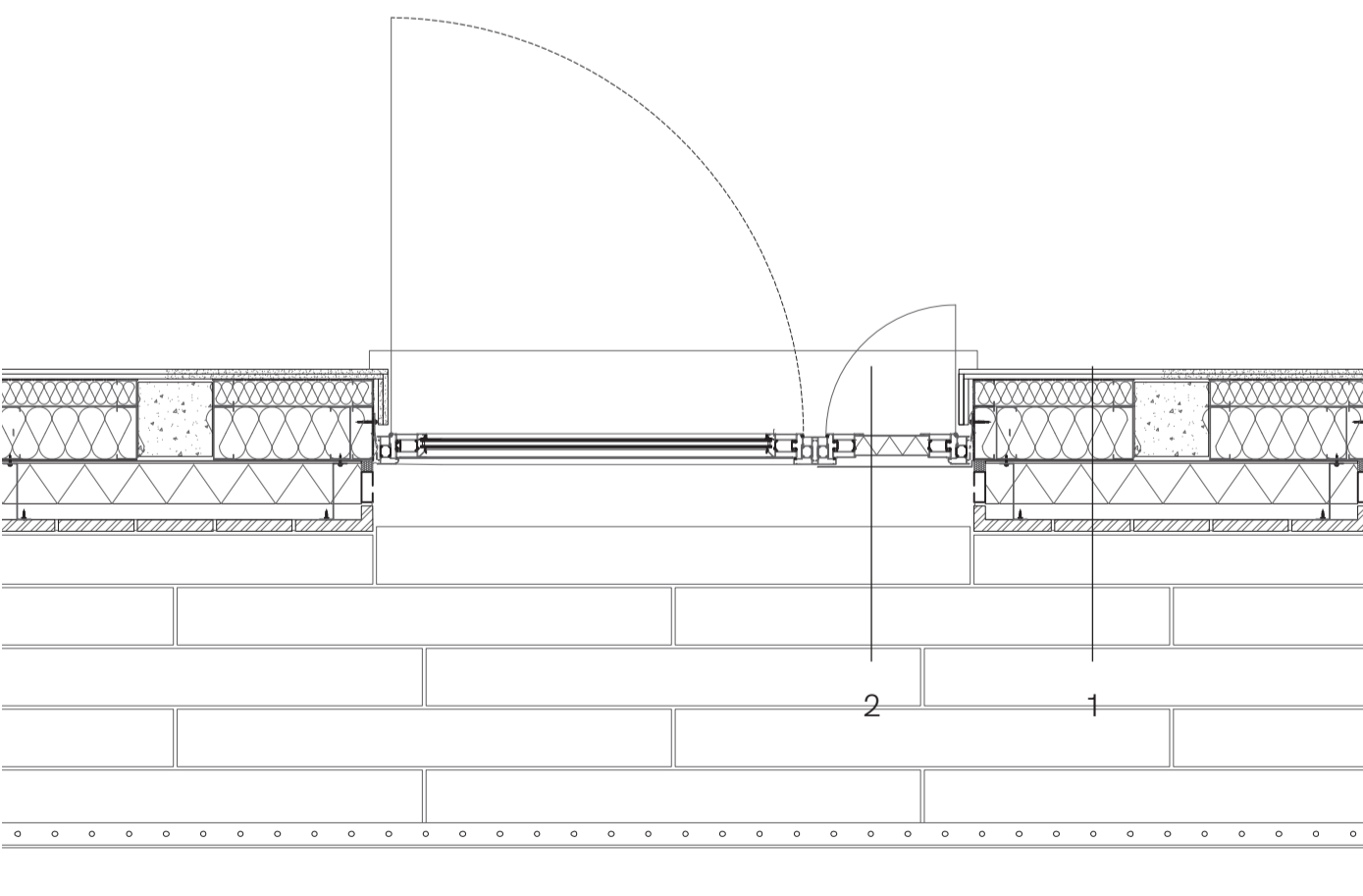
3. 210mm precast fair-faced
reinforced concrete slab to



Detail 08 - Door and Deep Soffit
Detail 1:5@A3



Door Detail Plan 1:20@A3



1. 2 x 13mm gypsum plasterboard
Vapour barrier
45/45mm aluminium channel framing with 45mm rock-wool thermal insulation
145/45mm steel channel framing with 145mm rock-wool thermal insulation
9mm wood fibreboard as windbreak
100mm XPS thermal insulation
30mm ventilated cavity formed by Z-frame to support prefabricated brick slips
Corium brick slip tiles on HPS200 Corium rails with pump mortar in between tiles

Window Detail Plan
1:20@A3



- 2. Aluminium glazed door system with ventilation shutter where shown
- 3. Aluminium glazed window system with ventilation shutter where shown

