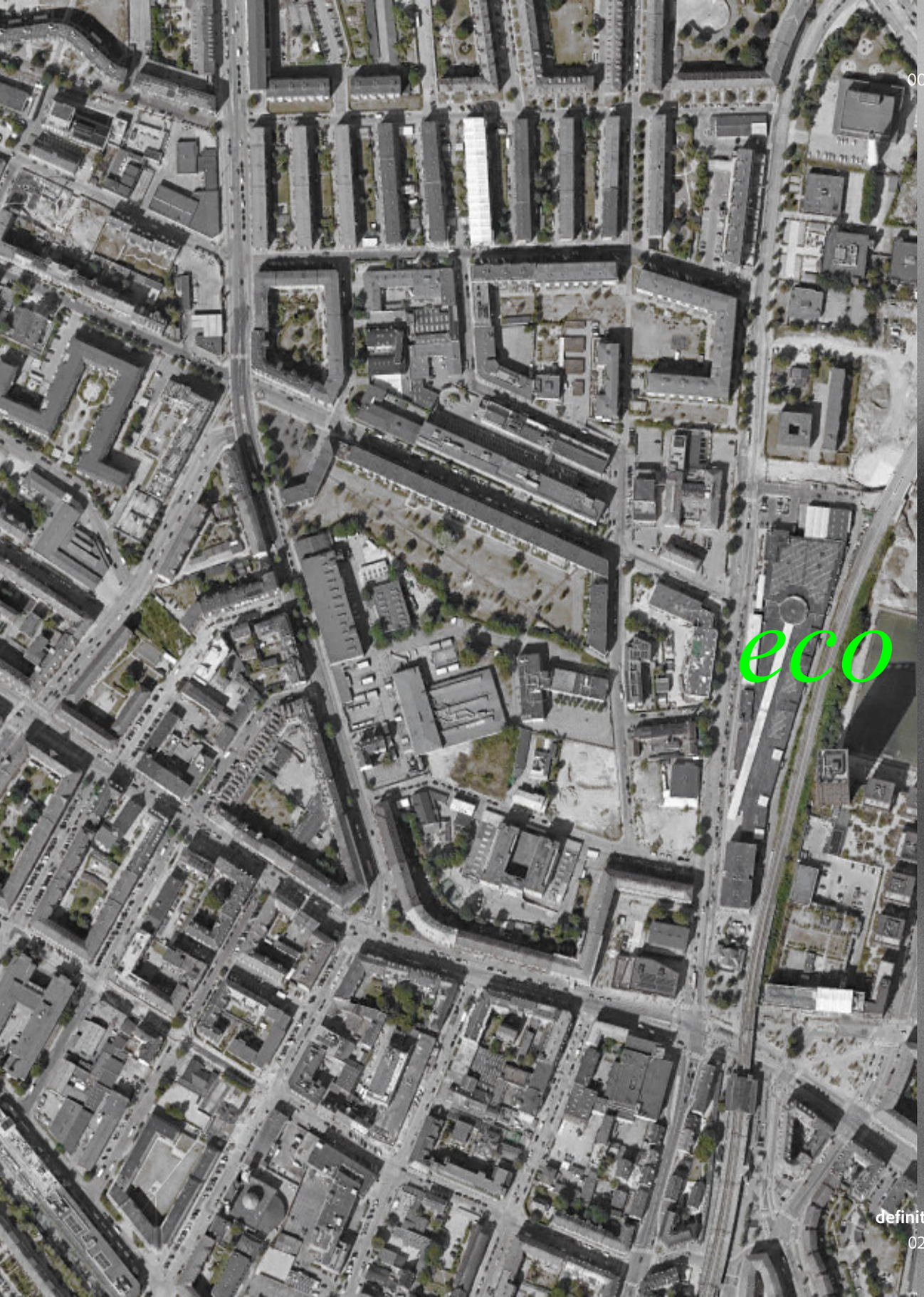
eco-minded landscapes

containment of urban anxiety through architecture



[e-co] ***prefix***

1. The efforts to preserve and sustain the well-being of the natural world; the interconnectedness of living systems.

00

[e-co] ***prefix***

1. the element of a person that enables them to be aware of the world and their experiences, to think, and to feel.



research *by* *design*

the brief *01* theoretical framework

project setting *02* project positioning

site conditions *03* environmental vision

building embedment *04* spatial structure

hybridity and multiplicity *05* programmatic layout

resilience and sustainability *06* technical adaptations

research

by

design

the brief

01

theoretical framework

content

05

hybridity

resilience

the new urban living room

multiplicity

sustainability

healthiness

ku.be house of movement promotes healthiness through playing with space dynamics. *mvrdv (2016)*

hybridity

resilience

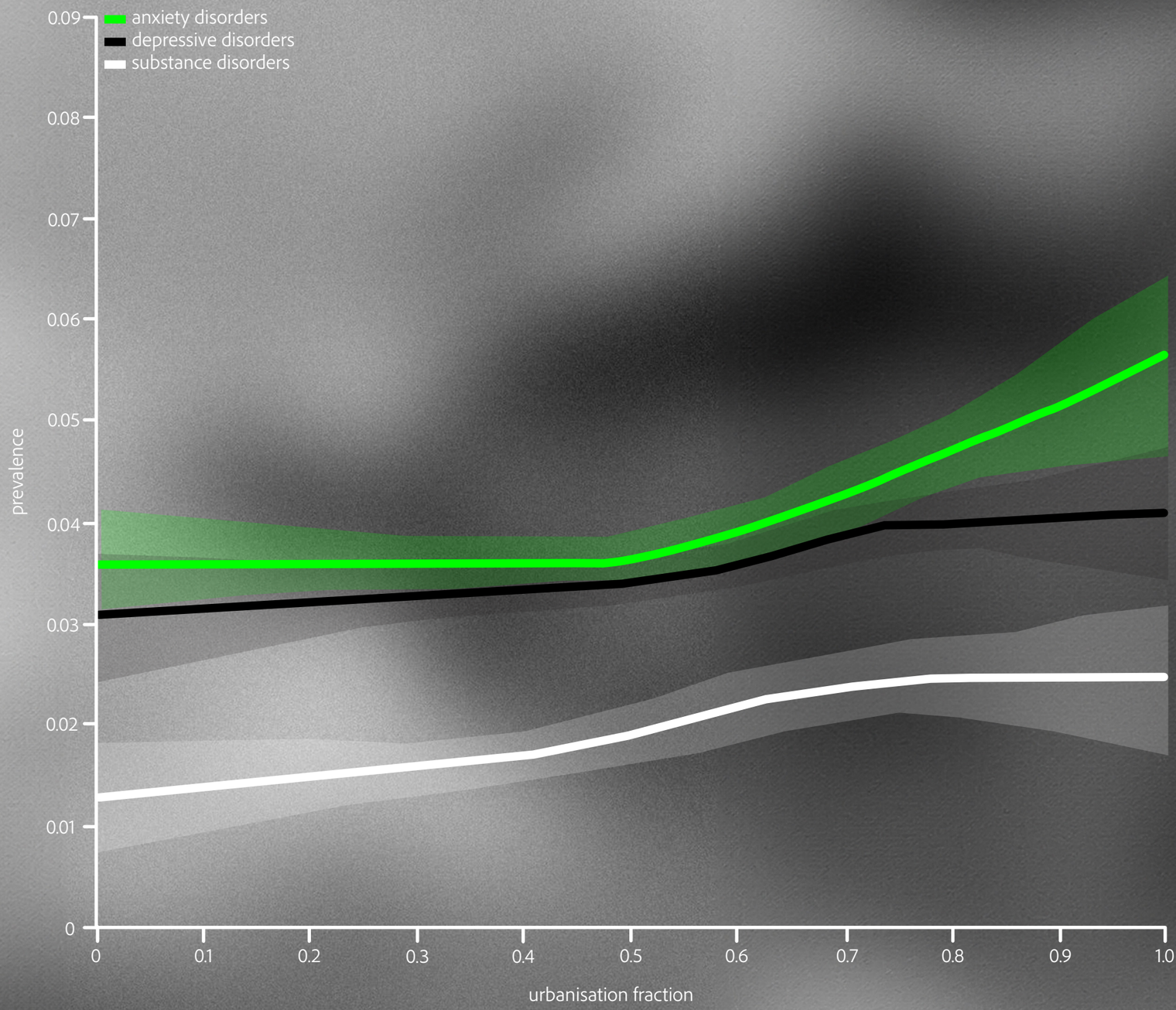
the new urban living room

multiplicity

sustainability

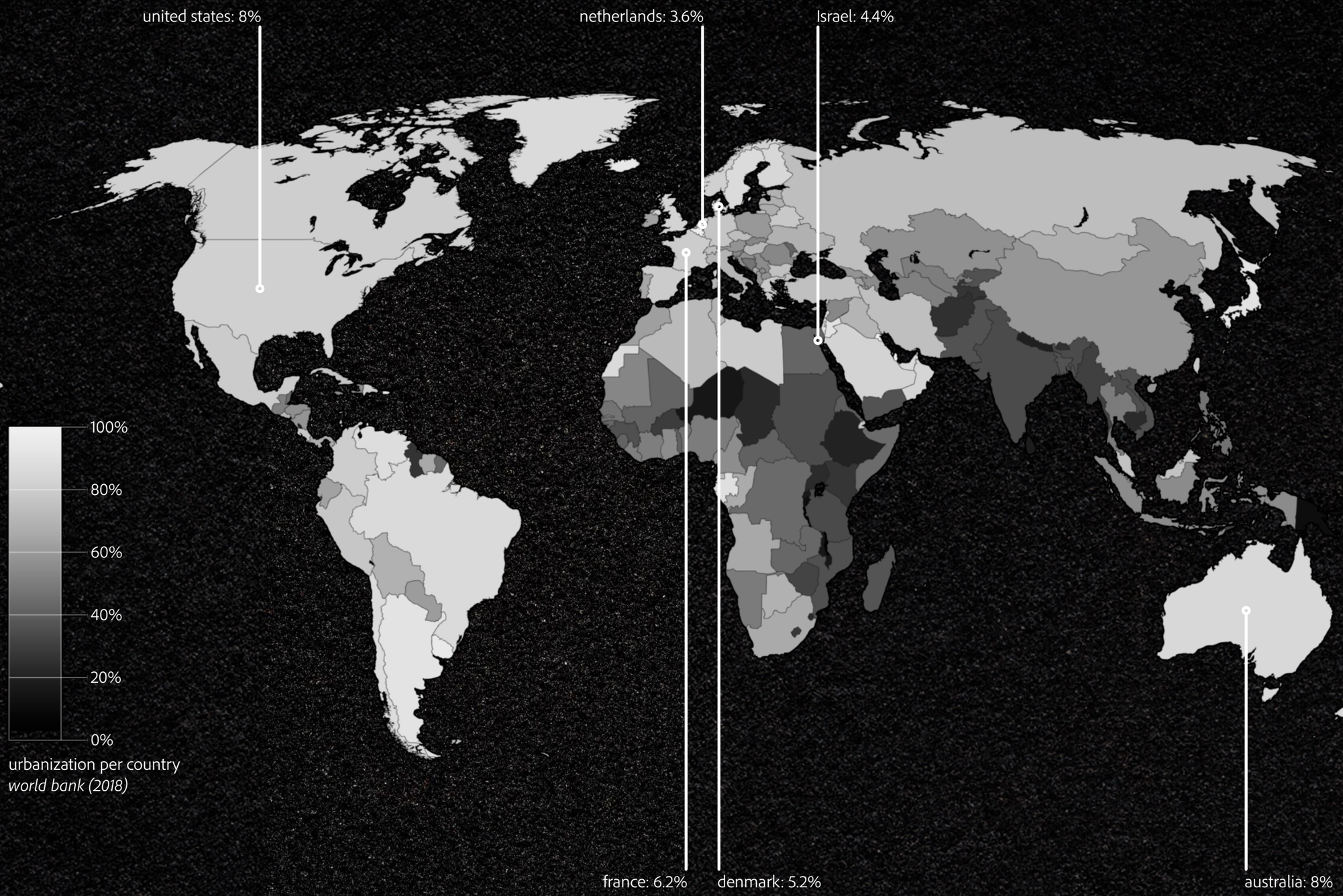
healthiness

relationship between urbanisation and prevelance of cmd's. *van der wal et al. (2021)*



common mental disorders

lifetime prevalence of anxiety disorders is at 5% for hic's and 2.2% for mic's and lic's. *ruscio et al. (2017)*



high income countries

lifetime prevalence of anxiety disorders is at 5% for hic's and 2.2% for mic's and lic's. *ruscio et al. (2017)*



high income countries

eco-minded design

eco-minded design

prospect

prospect and refuge theory suggests that indoor environments should alternate with vast views and more enclosed views to provide a sense of safety and guidance

biomimicry

drawing aesthetic and structural inspiration from nature

refuge

prospect and refuge theory suggests that indoor environments should alternate with vast views and more enclosed views to provide a sense of safety and guidance

biodiversity

treating the building as an ecosystem in itself

sensory variabilty

engaging all the senses into the experience through changes in light, texture and sound to be more present

eco-minded design

prospect

prospect and refuge theory suggests that indoor environments should alternate with vast views and more enclosed views to provide a sense of safety and guidance

zones of decompression, vast views, zenithal light, daylight

biomimicry

drawing aesthetic and structural inspiration from nature

fusing landscape with building, organic forms, messy elements inside

refuge

prospect and refuge theory suggests that indoor environments should alternate with vast views and more enclosed views to provide a sense of safety and guidance

zones of compression, circular hallways, planting

sensory variabilty

engaging all the senses into the experience through changes in light, texture and sound to be more present

designing with different sounds in mind, choosing materials based on textures and seeing light as a material

biodiversity

treating the building as an ecosystem in itself

presence of natural elements such as water gardens, green roofs an attracting local animals

How can eco-minded design inform public buildings to reduce urban anxiety in high income countries?

research question

research *by* *design*

the brief

project setting

01

02

theoretical framework

project positioning



copenhagen, denmark

2nd most liveable city in the world 2024

greenery within 300m from all homes

build for the human scale

546km of bycicle lanes

world capital of architectu-re 2023

climate positive in 2035





the fingerplan's edges

bispebjerg, nordvest

'ghettoliste' 2024

1:40000

02

høje
gladsaxepark

utterslev mose

bispebjerg
kirkegaard

ryvangens
naturpark

lersøparken

bellahøjparken







nørrebroparken

fælledparken

assistents kirkegard

1:5000

N

østre anlæg

bispebjerg density/greenery ratio

02

tuborgvej

nordhavnsvej

borupsalle







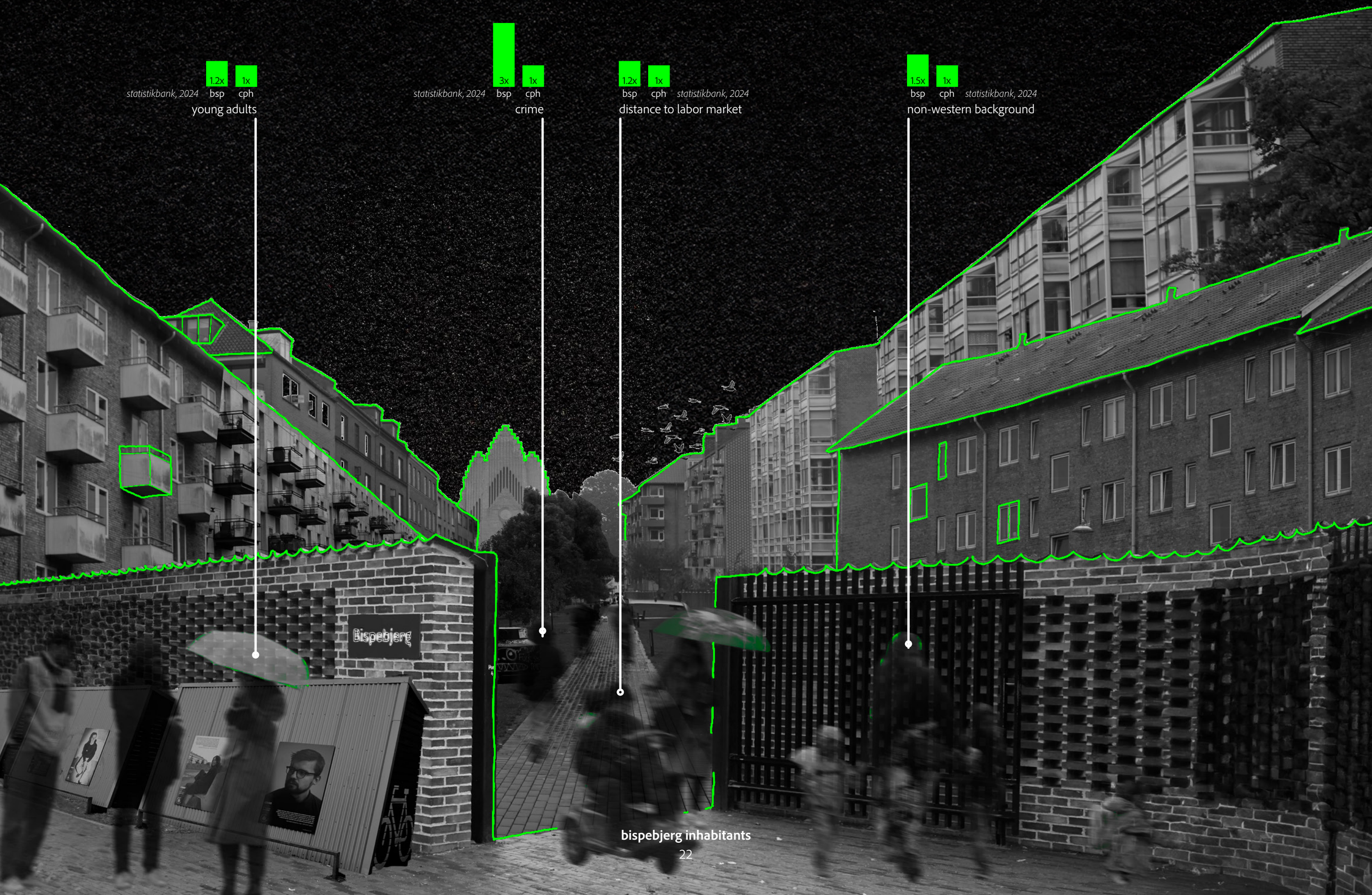
20-30 µg/m³
30-40 µg/m³
40-50 µg/m³

55 DnB
65 DnB
75 DnB

1:5000

N

bispebjerg noise/pollution ratio



bispebjerg inhabitants

30% of total

young adults

crime

distance to labor market

non-western background

bispebjerg inhabitants



"The access to green is so limited, that in summer, people lay on the graves of the people that got buried recently."

Maja, 25



"I often take a detour via Emaljehavenpark to reach Nørrebro station, the atmosphere there is more quiet."

Filip, 24



"Buildings in Nordvest are made to stuff as many people possible. It reminds me of Communism."

Delya, 29



"The hill of 'Den Grønne Firkant' allows me to truly escape the density of the city, within the city itself."

Sophie, 25

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current situation

bispebjerg

rentemestervej

mimersgade

frederiksborgvej

frederikssundsvej

lygten a

nordvest

nørrebroparken

neighbourhood connections

27








03
5
6
15
14
19
2
1



1 current

1 meadow grass
poa pratensis

2 grasses
poaceae

3 mesic meadow
moderately moist soils



2 current

1 tufed hairgrass
deschampsia cespitosa

2 grasses
poaceae

3 maesic meadow
moderately moist soils



3 new

1 brown knapweed
centaurea jacea

2 flower
angiosperms

3 wet meadows
seasonally wet soils



4 new

1 common self-heal
prunella vulgaris

2 flower
angiosperms

3 mesic meadows
moderately wet soils



5 current

1 field poppy
papaver rhoeas

2 flower
angiosperms

3 ruderal ground
nutrient poor soils



6 current

1 horseshoe vetch
hippocrepis comosa

2 flower
angiosperms

3 dry grasslands
sunny, low-nutrient soils



7 new

1 purple loosstrife
lythrum salicaria

2 flower
angiosperms

3 wet meadows
seasonally wet soils



8 new

1 sage
salvia officinalis

2 flower
angiosperms

3 dry grasslands
sunny, low-nutrient soils



9 new

1 snake plant
sansevieria trifasciata

2 flower
angiosperms

3 woodland
shaded, humus-rich soils



10 new

1 dicksonia
dicksonia antarctica

2 fern
pteridophyte

3 woodland
shaded, humus-rich soils



11 new

1 hart's-tongue fern
asplenium scolopendrium

2 fern
pteridophyte

3 woodland
shaded, humus-rich soils



12 new

1 maidenhair fern
adiantum spp.

2 fern
pteridophyte

3 woodland
shaded, humus-rich soils



13 new

1 pothos
epipremnum aureum

2 climbing vine
pteridophyte

3 tropics or indoor
shaded, moist soils



14 current

1 crack willow
salis fragilis

2 tree
arbor

3 wet meadows
seasonally wet soils



15 current

1 european beech
fagus sylvatica

2 tree
arbor

3 woodland
shaded, humus-rich soils

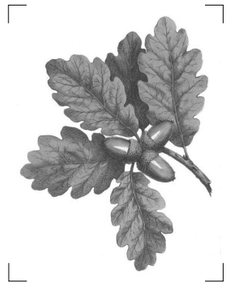


16 new

1 european rowan
sorbus aucuparia

2 tree
arbor

3 woodland
shaded, humus-rich soils



17 new

1 pedunculate oak
quercus robur

2 tree
arbor

3 woodland
shaded, humus-rich soils



18 new

1 rubber tree
ficus elastica

2 tree
arbor

3 tropics or indoor
shaded, moist soils



19 current

1 silver maple
acer saccharinum

2 tree
arbor

3 woodland
shaded, humus-rich soils

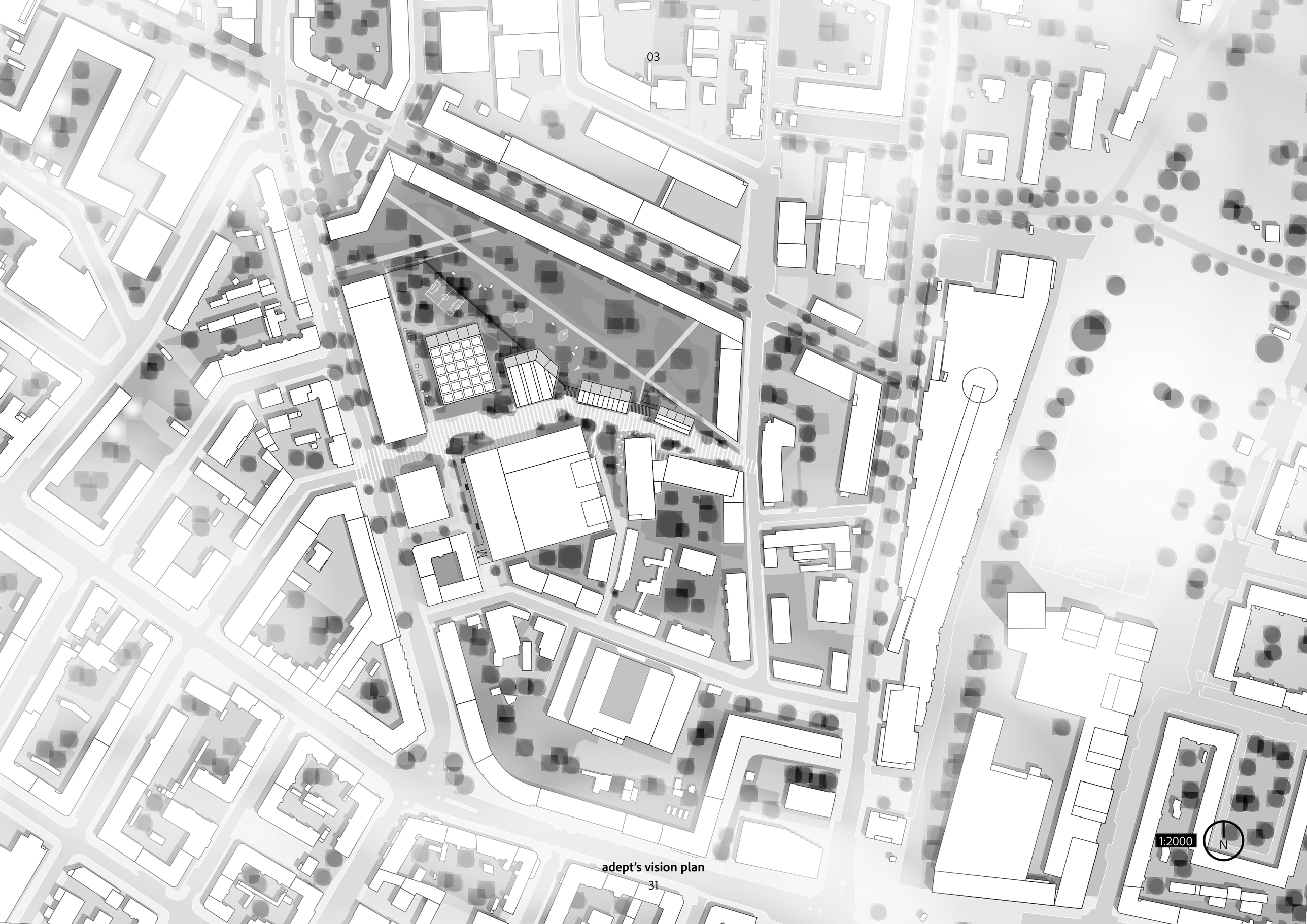


20 new

1 snowy mespilus
amelanchier lamarc-
kii

2 tree
arbor

3 woodland
shaded, humus-rich soils


03
1:2000
N

1:2000

N

future vision plan

03

1:2000

N

extension through densification

dwelling

next: construction

next: main building

next: carpenter

next: metal

transitional area

1:2000

N

Emaljepladsen

Rentemestervej

Frederiksborgvej

Klokkemagerstraebe

Rebslagervej

1:2000

N

hidden accesibility

cityscape



landscape



cavescape





diorama

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04

demolishment to open up

38

04

why?

maximise park presence and creating a hidden gem.

excavation

why?

height differences establish variaty in natural environment

mound formation

04

why?

stimulate curiousity while preserving modesty, and honor existing curvatures

three upper and lower curtain walls

41

view from park

04

why?

establish connection between in and outside

zenithal light through skylights

43

research *by* *design*

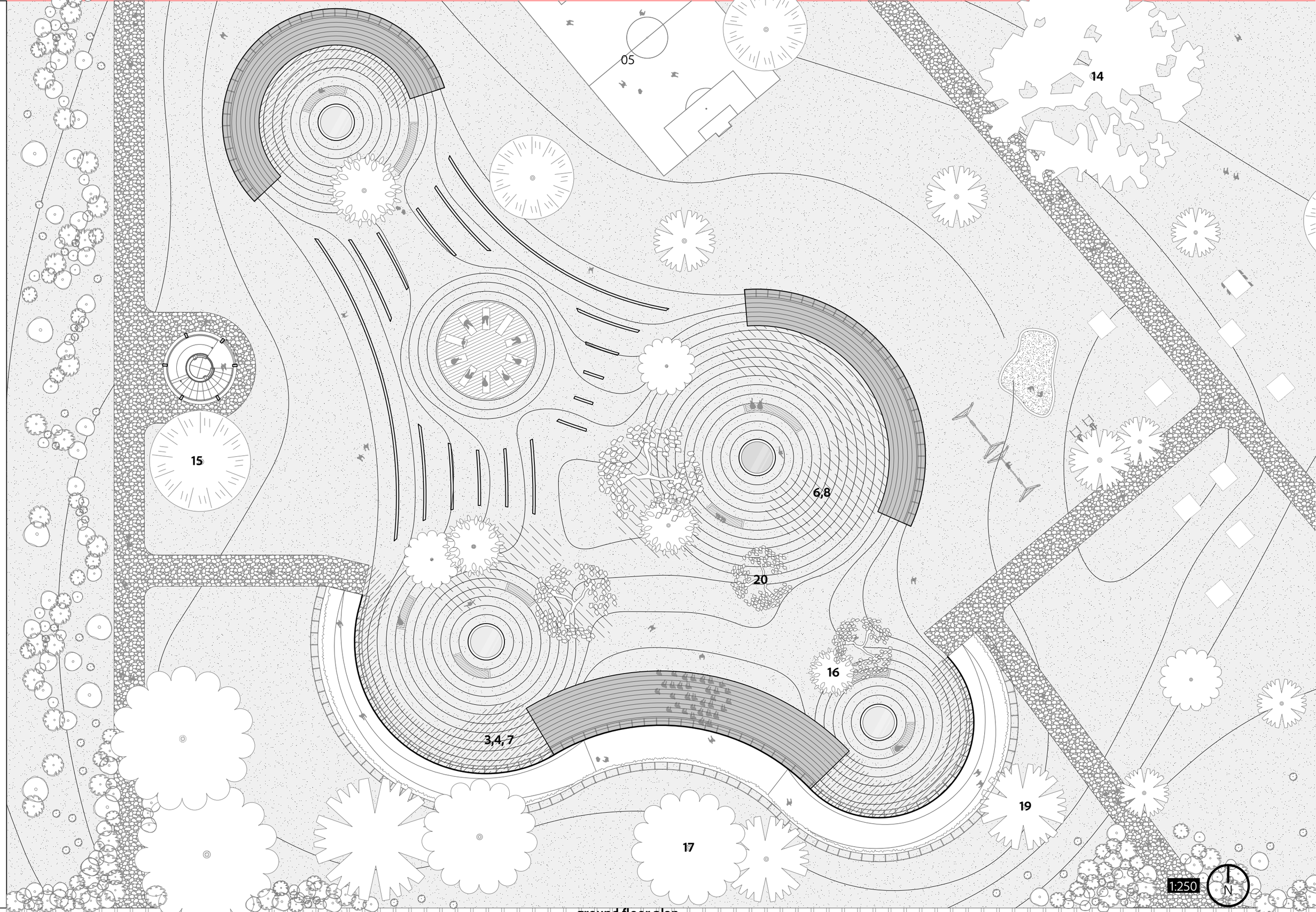
the brief *01* theoretical framework

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ground floor plan



1 current

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poa pratensis

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poaceae

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moderately moist soils



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amelanchier lamarc-
kii

2 tree
arbor

3 woodland
shaded, humus-rich soils



1:160

N

elevation of entrance



1:160

N

elevation of entrance



view from ramp towards entrance

05

building grid system

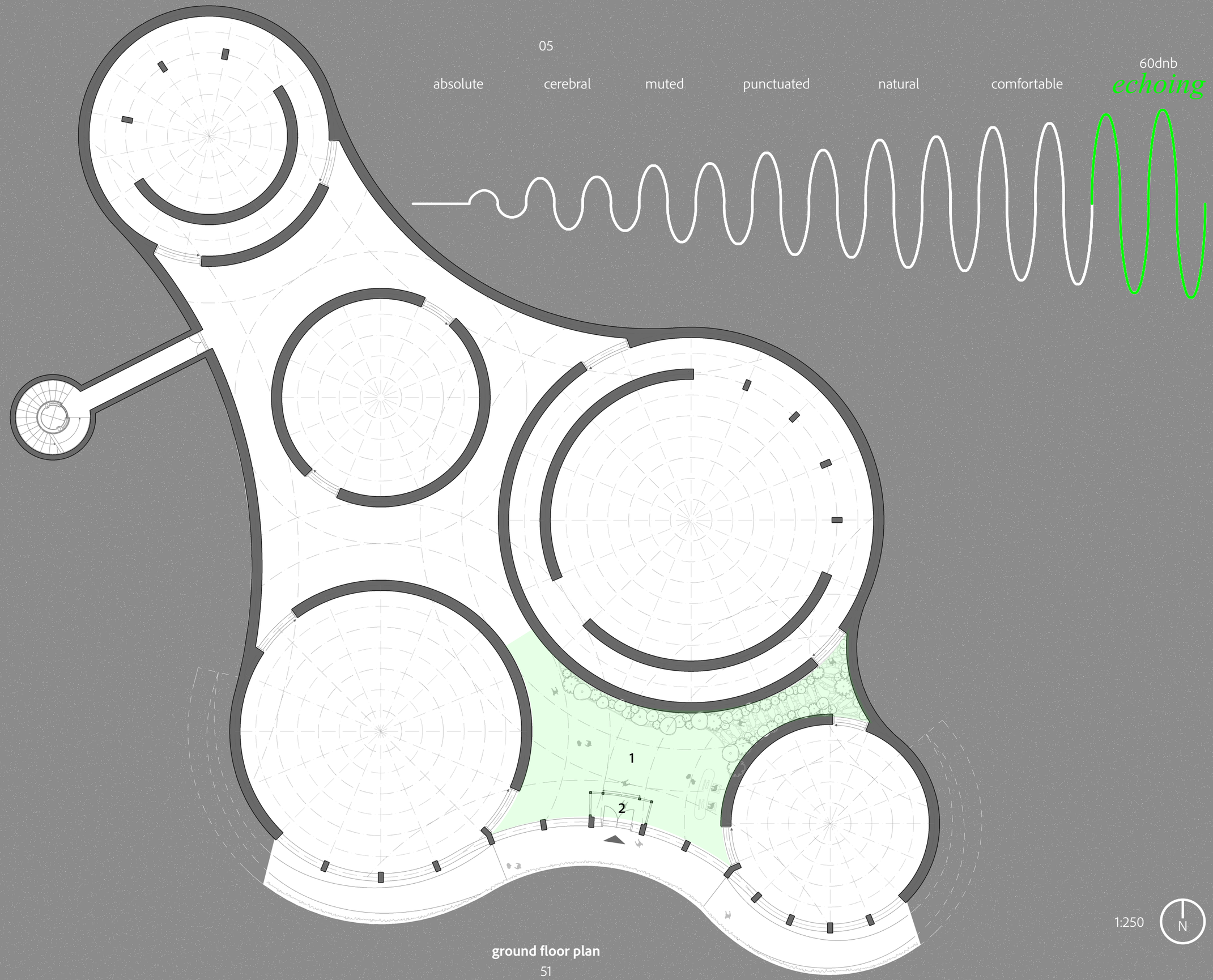
50

1:250

N

05

absolute cerebral muted punctuated natural comfortable 60dnb *echoing*



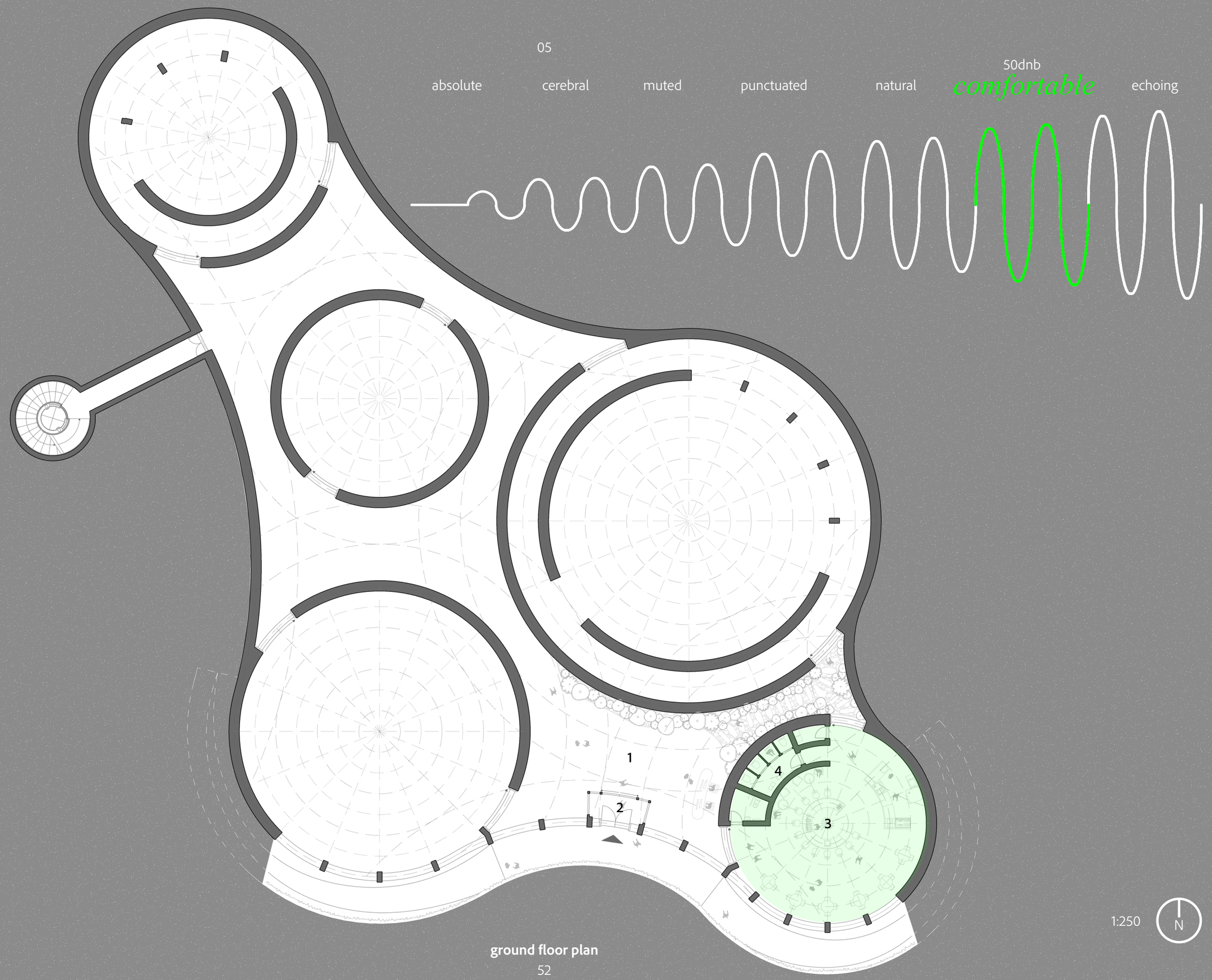
1. entrance hall
2. vestibule

1:250 N

ground floor plan

05

absolute cerebral muted punctuated natural 50dnb *comfortable* echoing



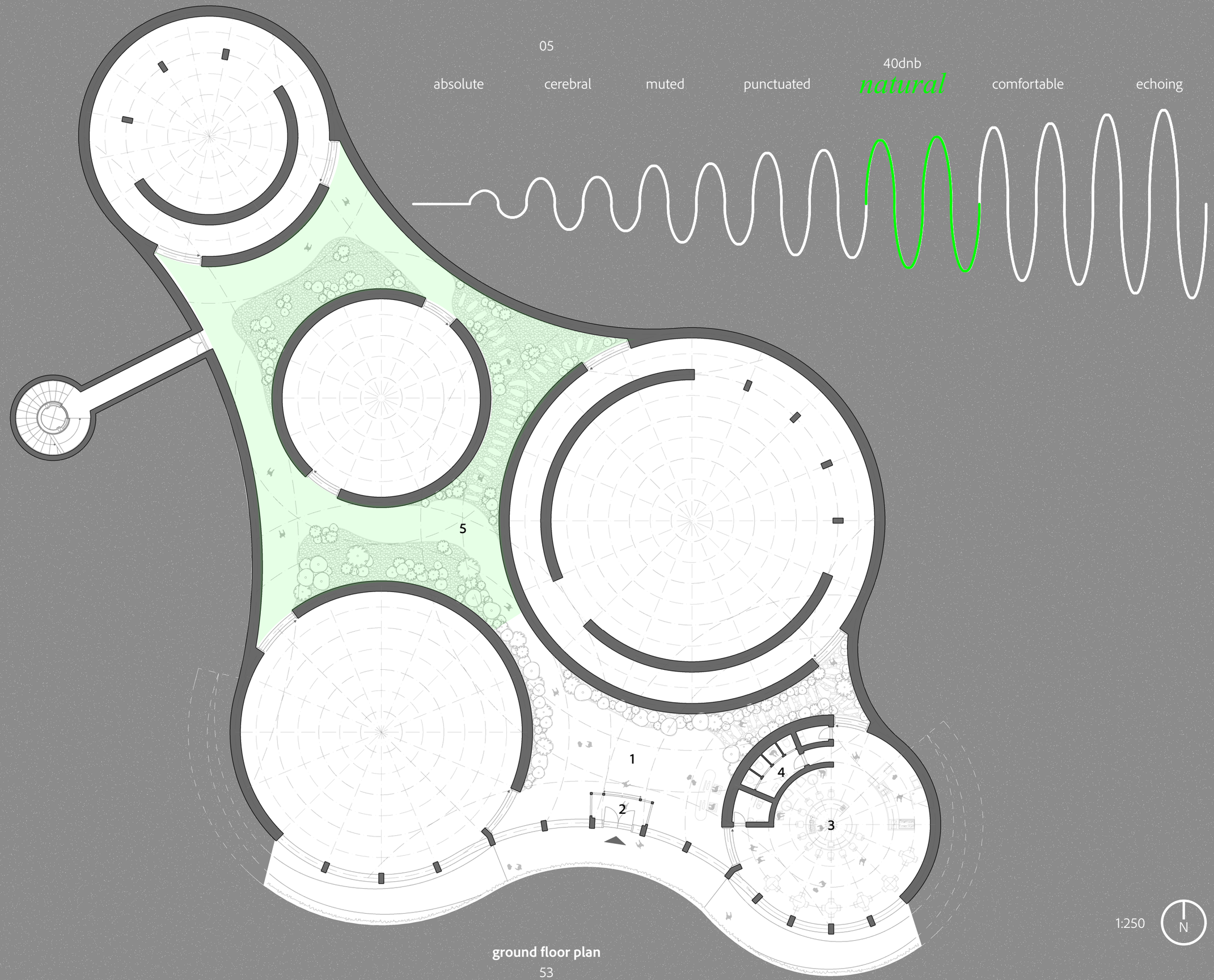
1. entrance hall
2. vestibule
3. therapy café
4. toilets

1:250 N

ground floor plan

05

absolute cerebral muted punctuated 40dnb *natural* comfortable echoing



1. entrance hall
2. vestibule

3. therapy café
4. toilets

5. cave garden

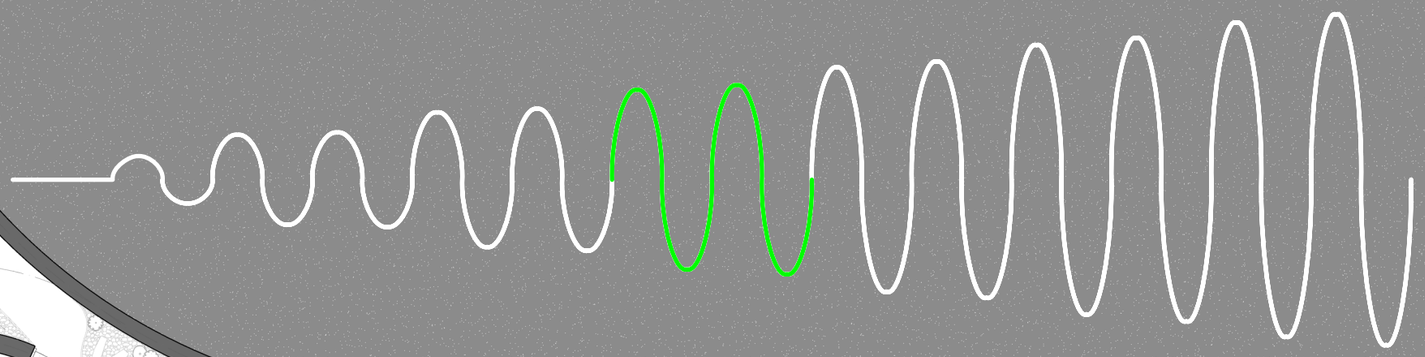
1:250 N

ground floor plan

05

absolute cerebral muted *punctuated* natural comfortable echoing

40dnb



1. entrance hall
2. vestibule

3. therapy café
4. toilets

5. cave garden

6. punctuated workspace
- holistic movement
- sound healing

7. lockers
8. toilets
9. storage

1:250

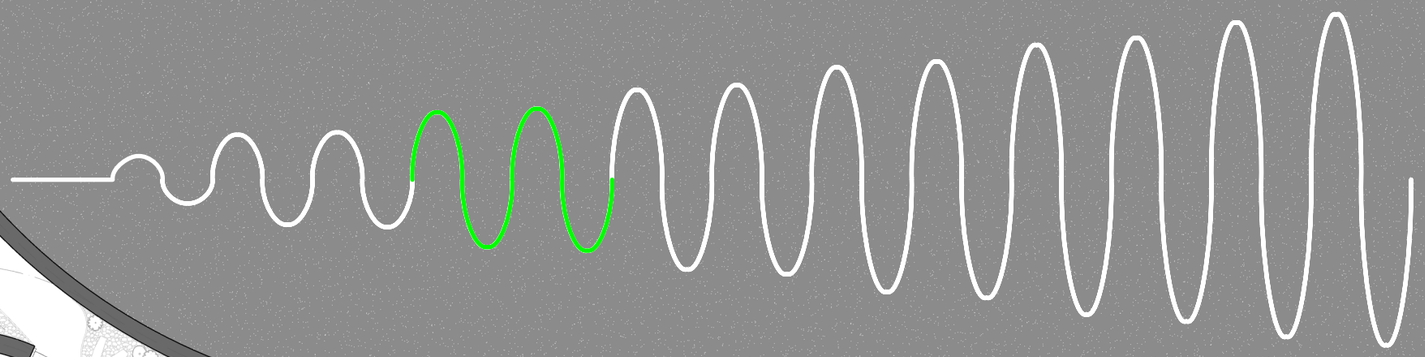
N

ground floor plan

05

30dnb

absolute | cerebral | *muted* | punctuated | natural | comfortable | echoing



1. entrance hall
2. vestibule

3. therapy café
4. toilets

5. cave garden

6. punctuated workspace
- holistic movement
- sound healing

7. lockers
8. toilets
9. storage

10. library

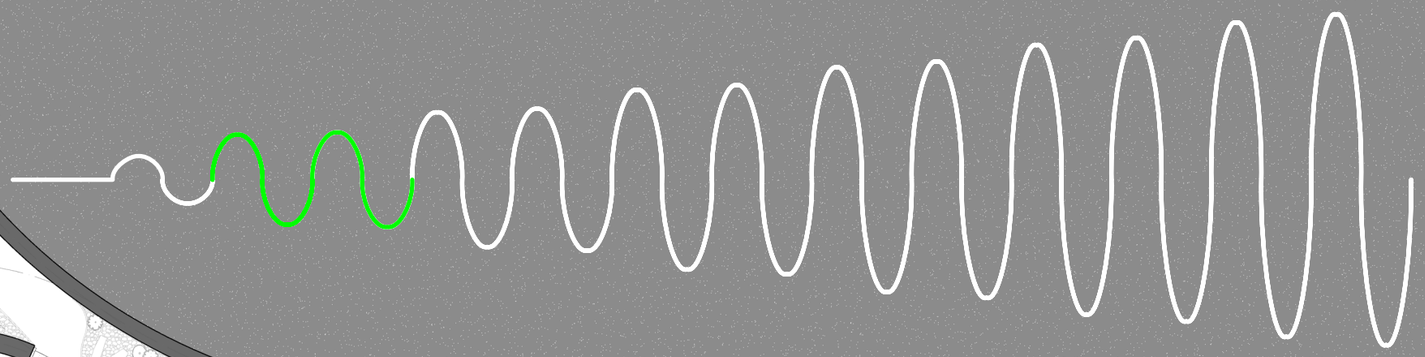
1:250

N

ground floor plan

05
20dnb

absolute | *cerebral* | muted | punctuated | natural | comfortable | echoing



1. entrance hall
2. vestibule

3. therapy café
4. toilets

5. cave garden

6. punctuated workspace
- holistic movement
- sound healing

7. lockers
8. toilets
9. storage

10. library

11. ceribral sanctuary
- meditation
- breathwork
- prayer

12. water garden
13. technique (water sisterne, air handling unit)
14. storage

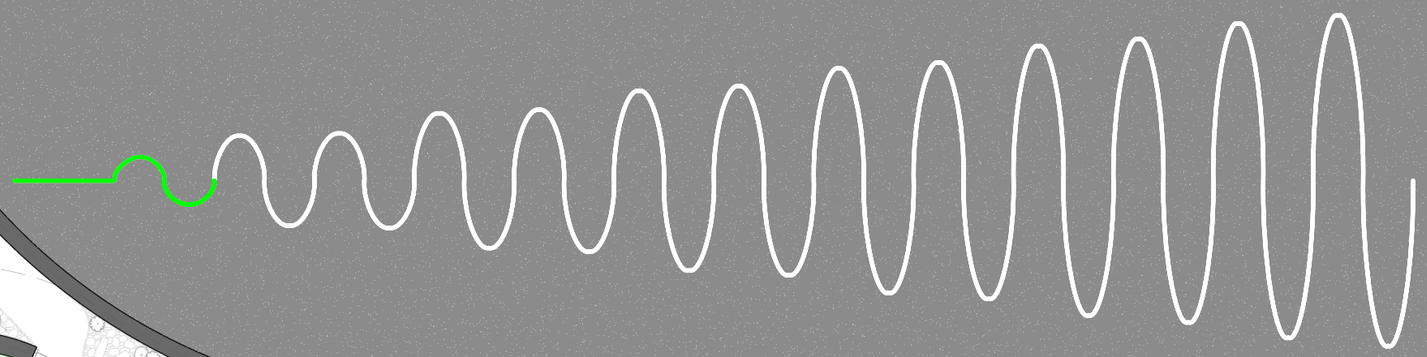
1:250

N

ground floor plan

-9dnb
absolute

cerebral muted punctuated natural comfortable echoing



1. entrance hall
2. vestibule

3. therapy café
4. toilets

5. cave garden

6. punctuated workspace
- holistic movement
- sound healing

7. lockers
8. toilets
9. storage

10. library

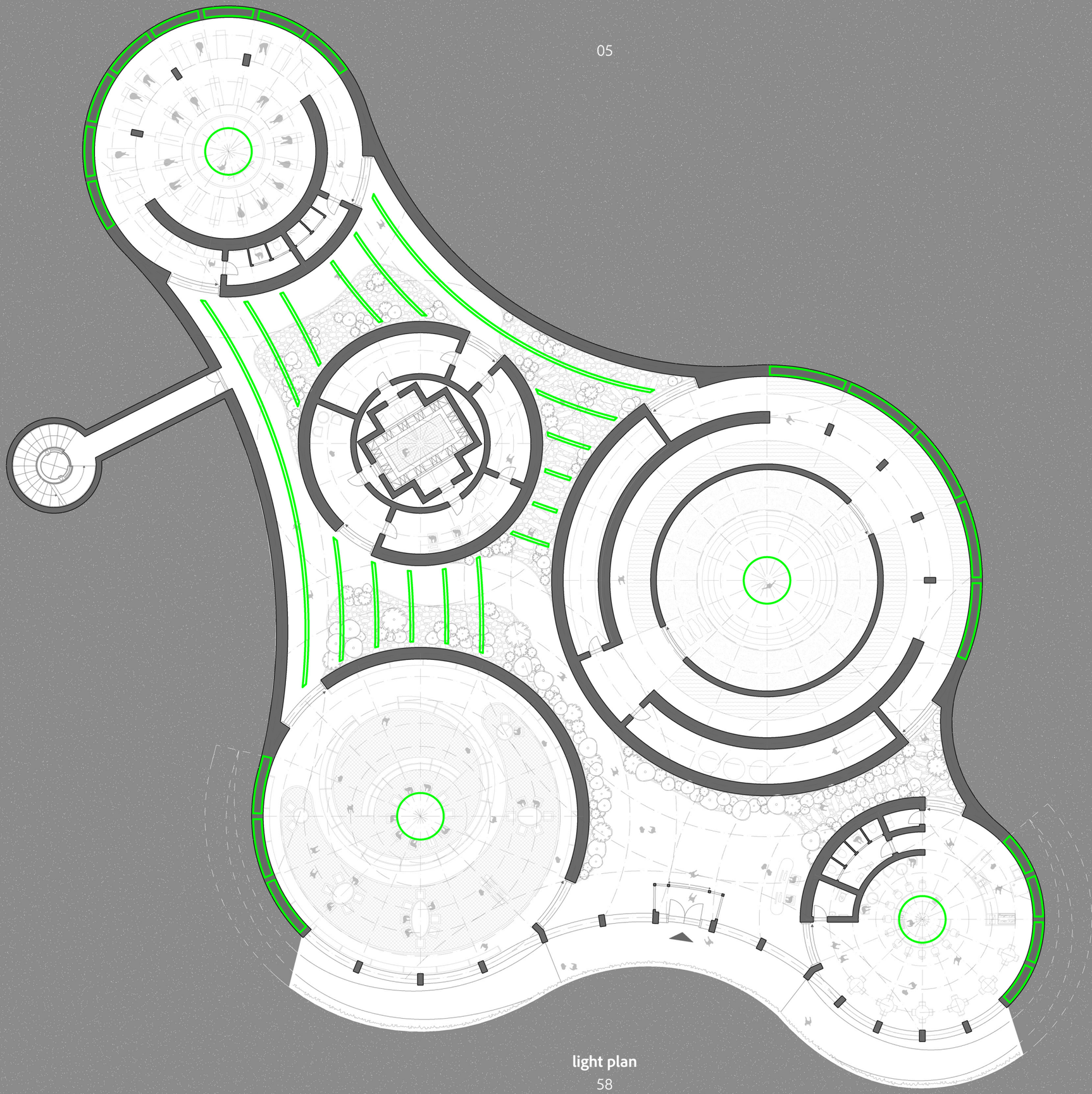
11. ceribral sanctuary
- meditation
- breathwork
- prayer

12. water garden
13. technique (water sisterne, air handling unit)
14. storage

15. anchoic chamber
16. waiting room
17. regulation office
18. technique
19. storage

1:250 N

ground floor plan

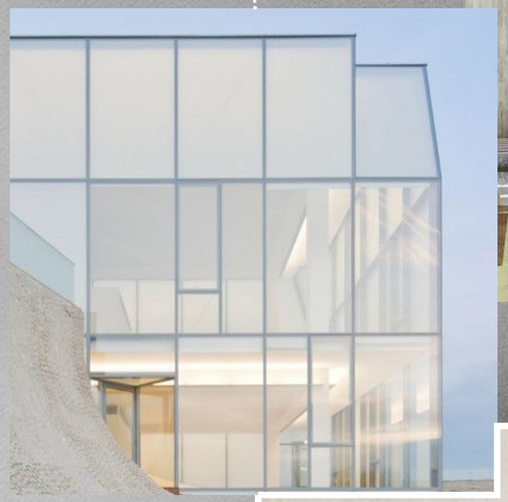


1:250

N

light plan

lightning



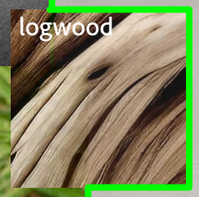
lifestyle



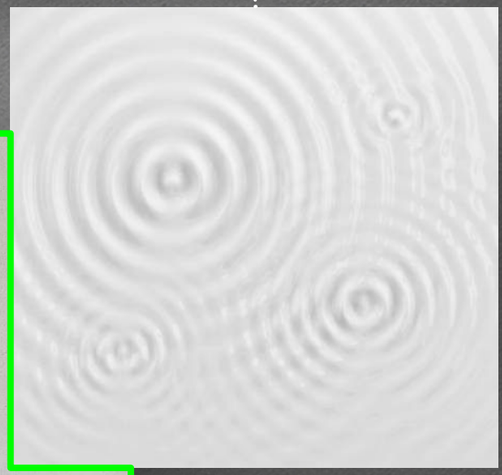
wall

polished

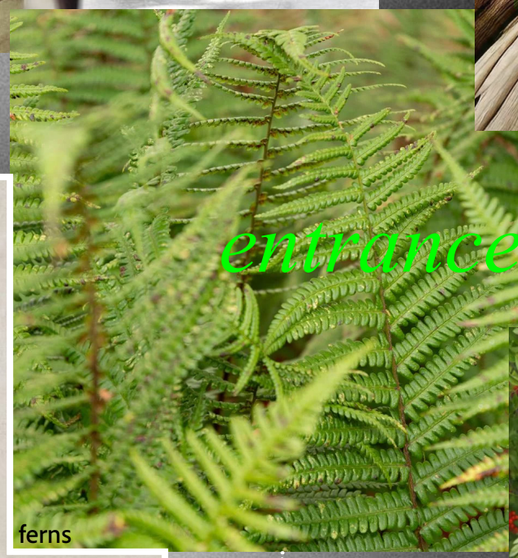
logwood



form



entrance, echo



ferns

european rowan



baswa phon



satin polish

moraine grind



floor

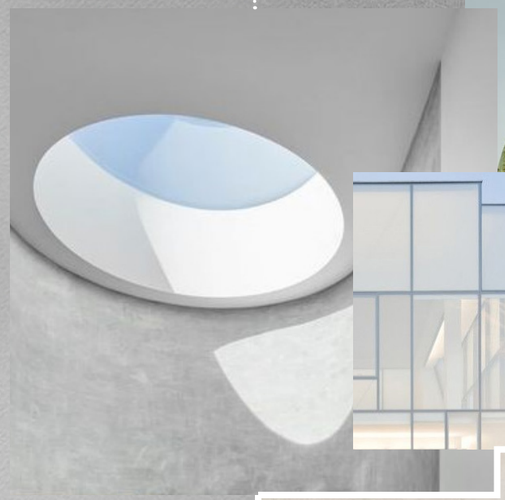
furniture

palette

ceiling

materialization moodboards

lightning



lifestyle





danish oak

wall

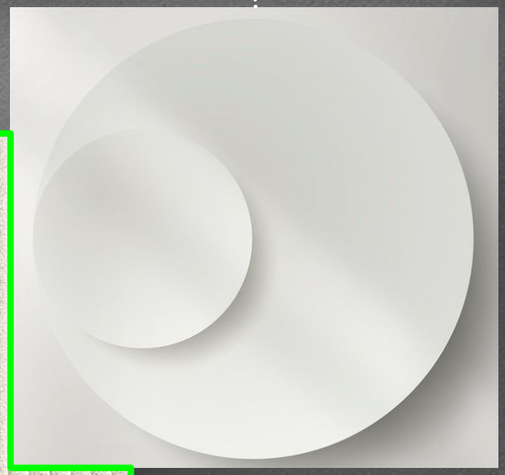
ribbed



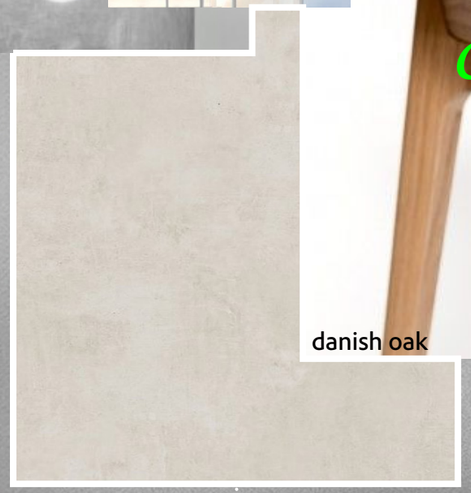
concrete aggregates



form







floor

furniture

palette

ceiling

café, comfortable



materialization moodboards

lightning



lifestyle



maidenhair





wall

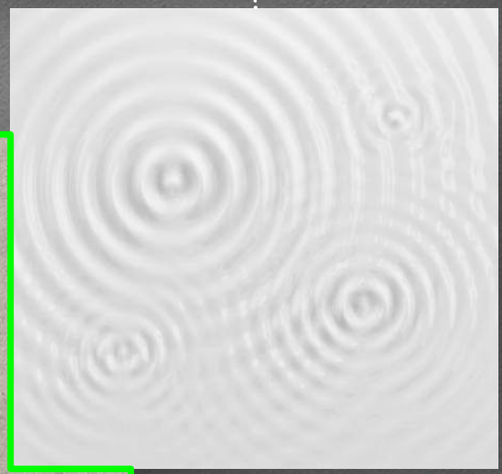
regular rustic

cave, natural



tongue fern

form





floor

furniture

palette

ceiling

materialization moodboards

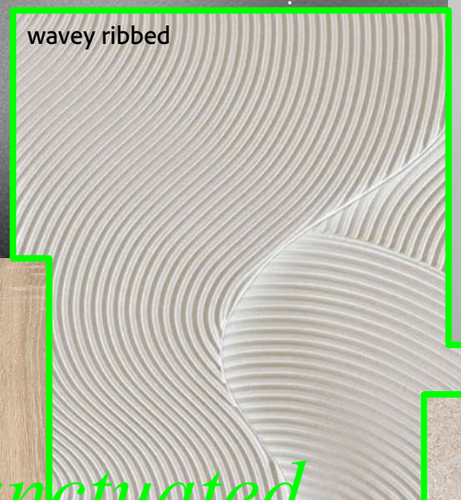
lightning



lifestyle



wall



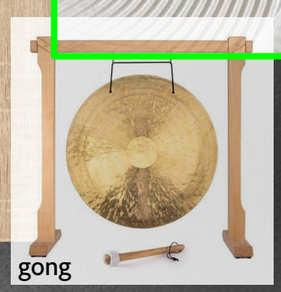
form



holistic, punctuated









floor

furniture

palette



ceiling

materialization moodboards

lightning

lifestyle

wall

form





porous



library, muted







flatweave wool



floor

furniture

palette

ceiling

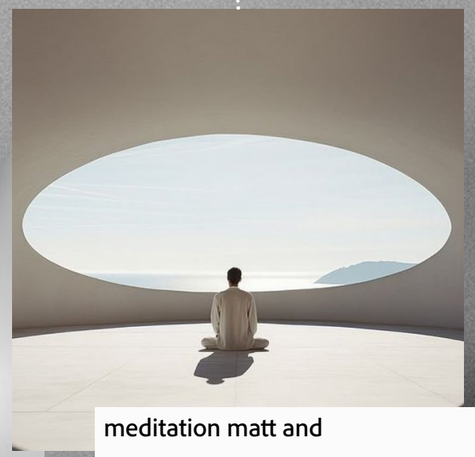


materialization moodboards

lightning



lifestyle



meditation matt and



wall

rough



form



introspection, cerebral

water and sand





floor

furniture

palette



ceiling



materialization moodboards

lightning

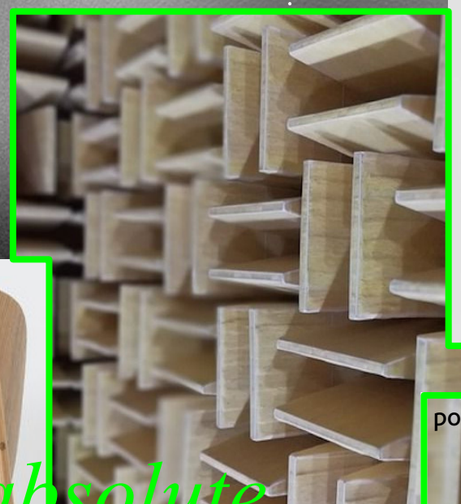
lifestyle

wall

form



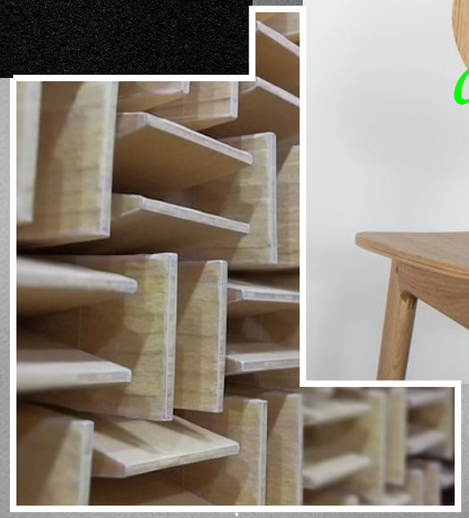








anchoic, absolute





polyurethaan foam

floor

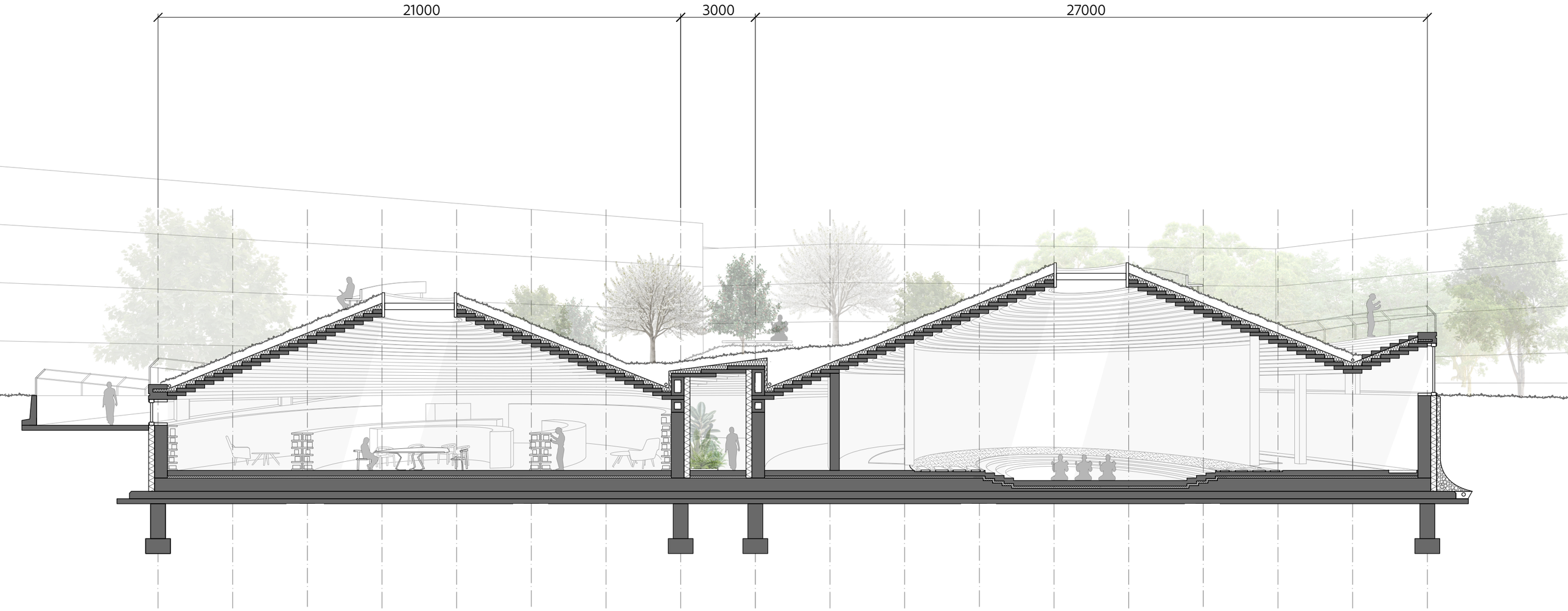
furniture

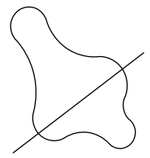
palette

ceiling



materialization moodboards

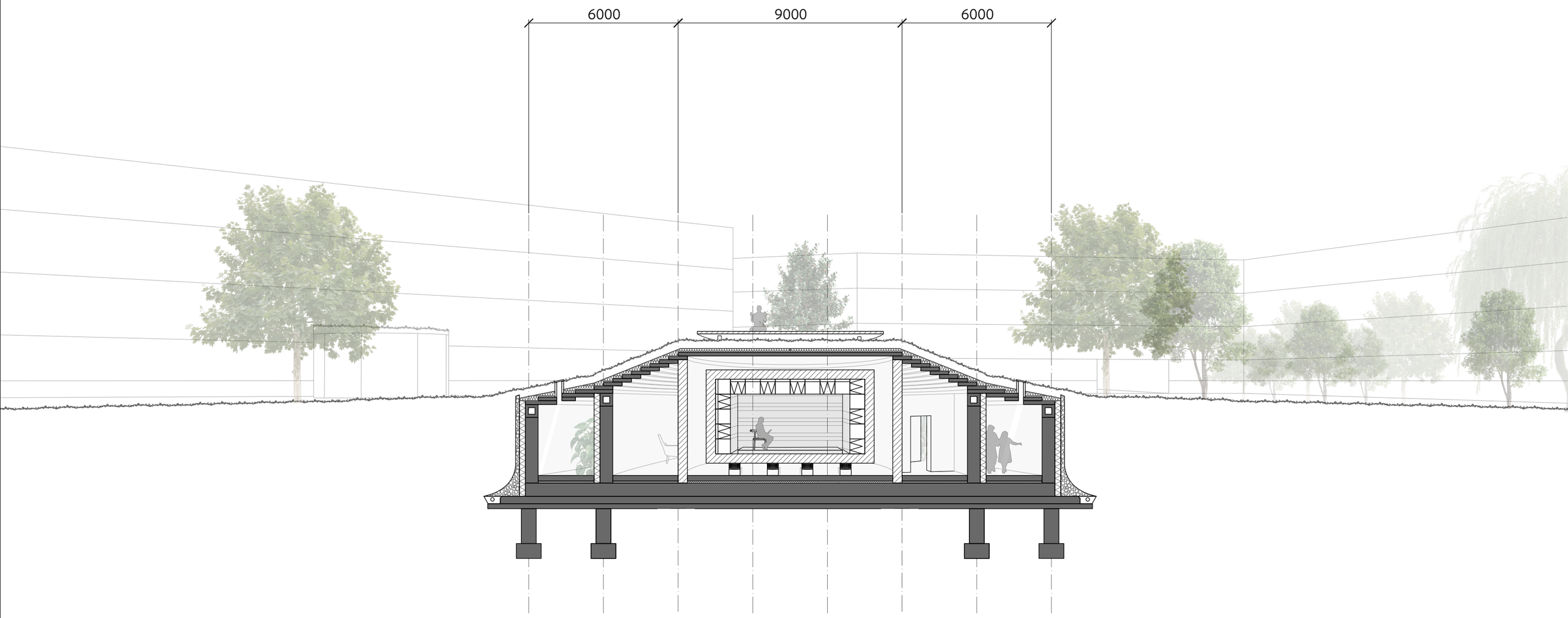


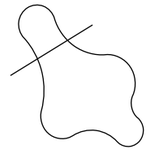


1:150

N

library and sanctuary landscape embedment





1:150

N

anchoic chamber landscape embedment





natural cave garden



cerebral introspective sanctuary



research *by* *design*

the brief *01* theoretical framework

project setting *02* project positioning

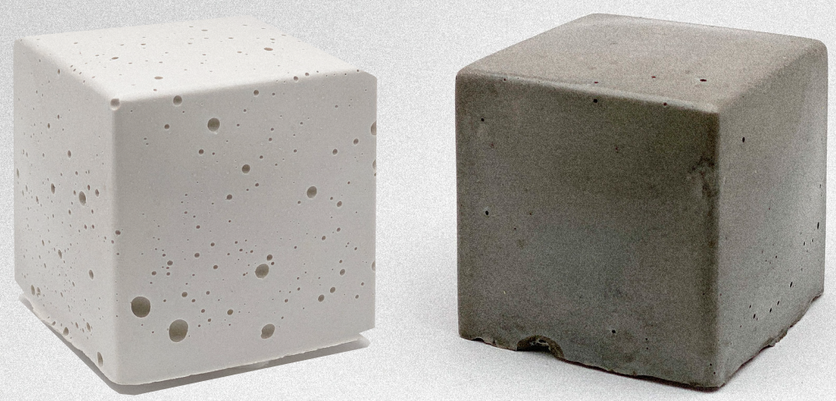
site conditions *03* environmental vision

building embedment *04* spatial structure

hybridity and multiplicity *05* programmatic layout

resilience and sustainability *06* technical adaptations

circular concrete



geopolymer concrete

emission reduction of 40-80% co2/kg/m3

high strength concrete 30-60 Mpa

high thermal and fire resistance > 1000°C

recycled concrete aggregates

promotes circular economy

reduces waste and carbon footprints

time and cost effective

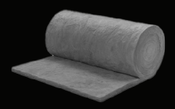
concrete as main construction material

circular concrete

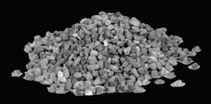


concrete as main construction material

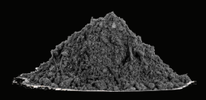
recycle



1 +0km
mineral wool



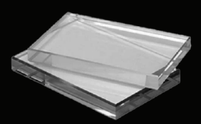
2 +0km
concrete aggregates



3 +0km
sandey, clayey excavation



4 +3km
decorative logwood



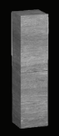
5 +7km
multiply laminated & orae



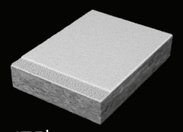
6 +7km
flatweave wool



7 +10km
aluminium aggregates

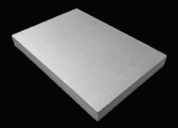


8 +15km
danish furniture oak

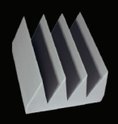


9 +175km
baswa phon ceiling

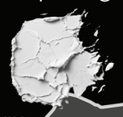
reduce



10 +200m
xps foam



11 +10km
low freq. wedges



12 +10km
microcement finishings



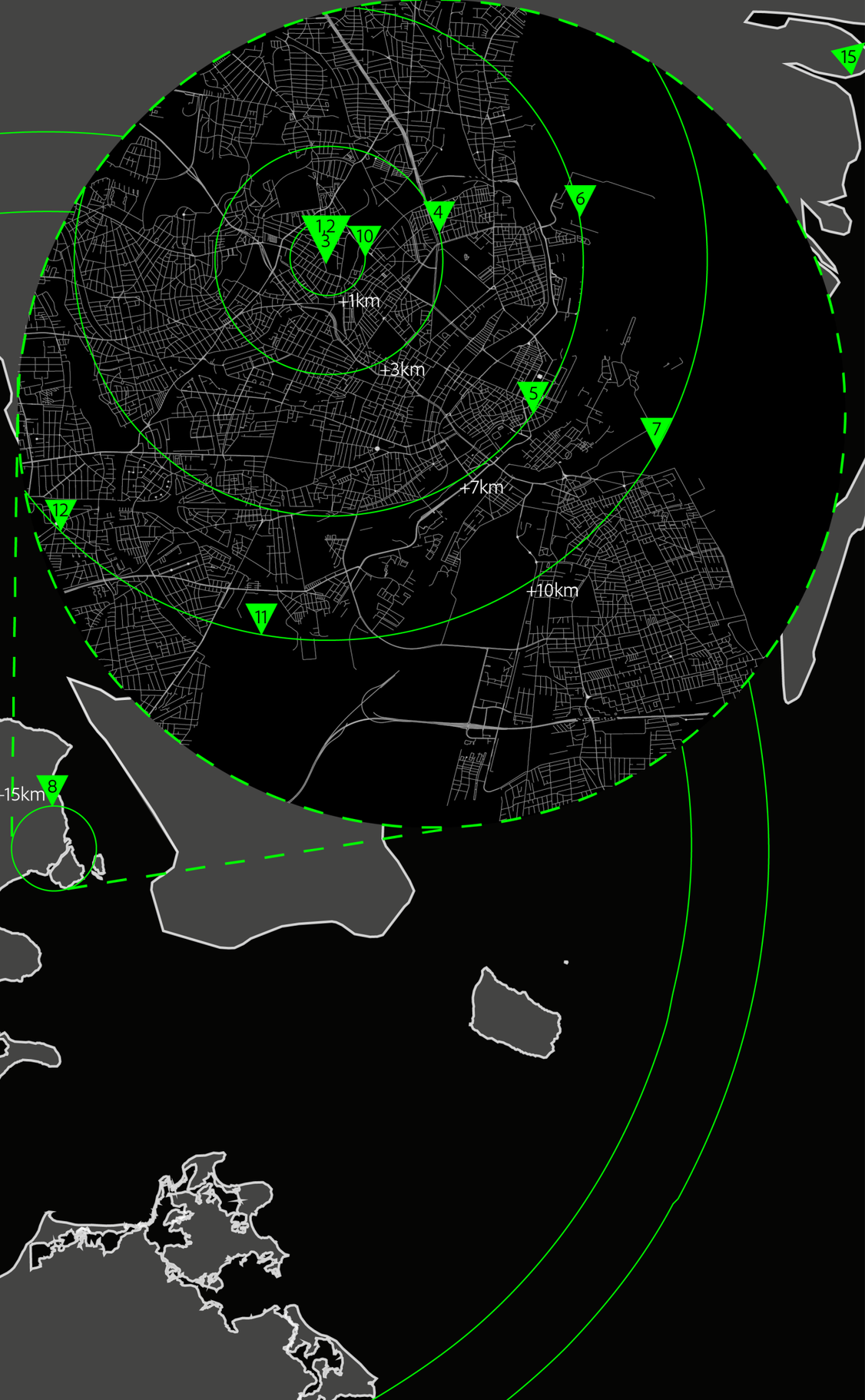
13 +175km
drainage gravel



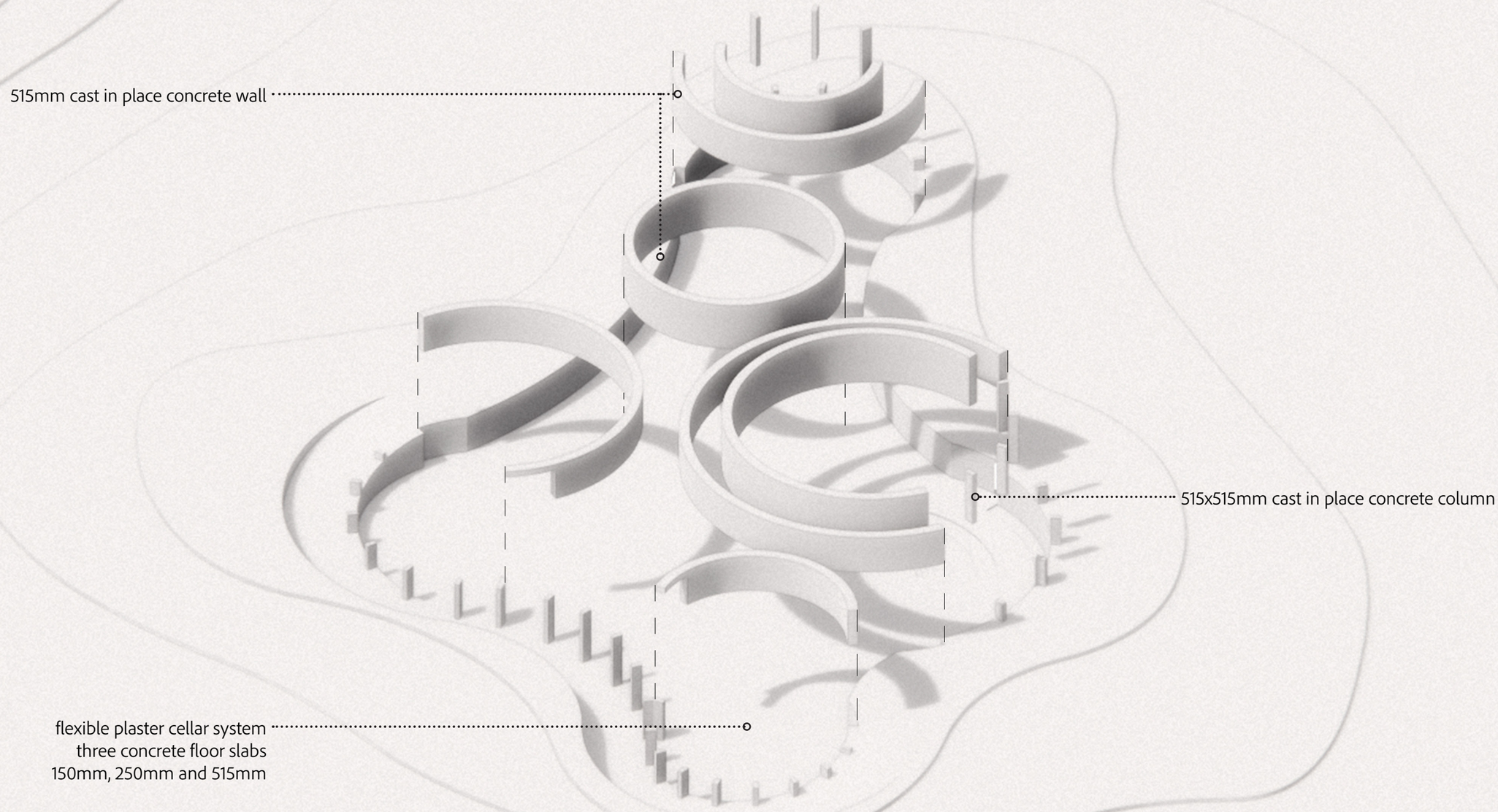
14 +200km
danish biodiversity seed mixture

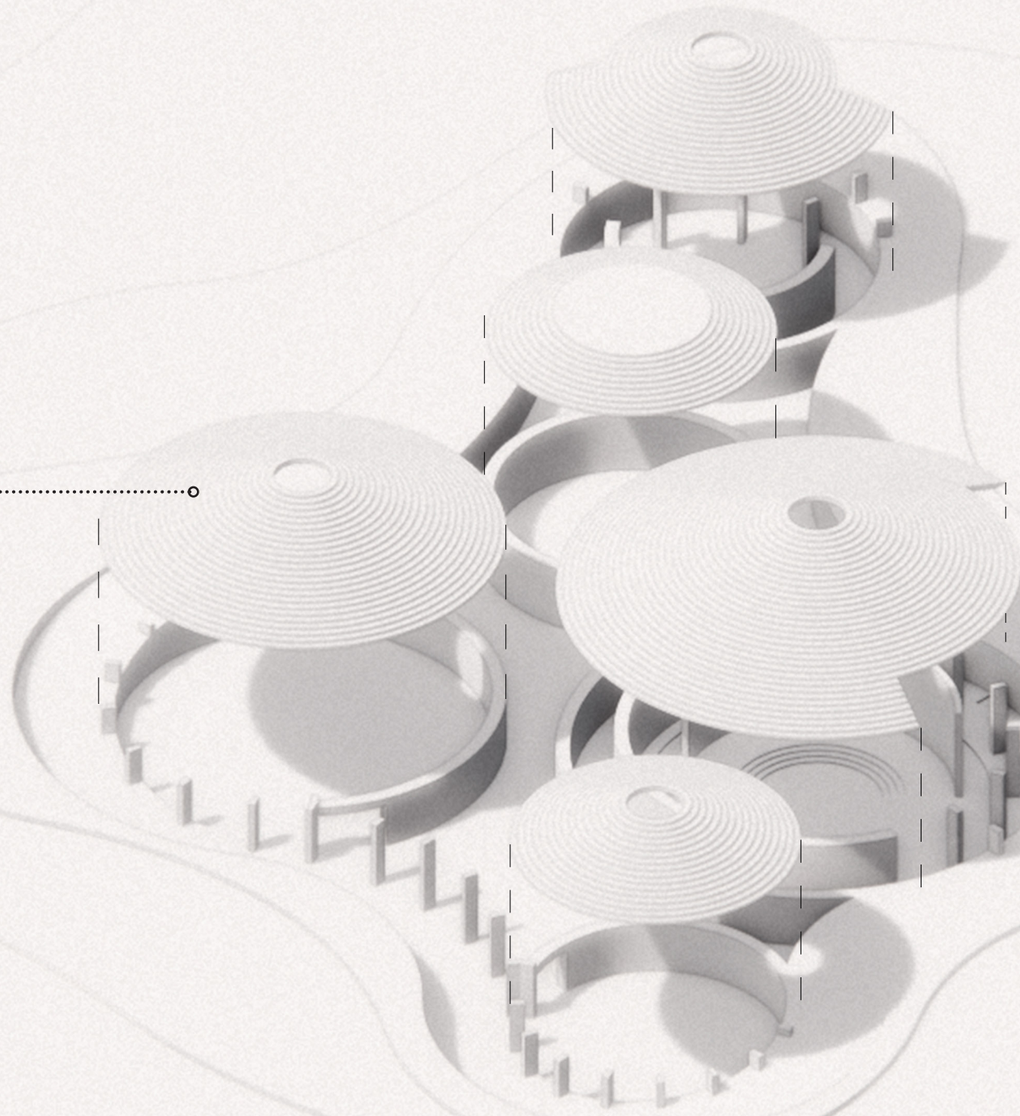


15 +900km
geopolymer concrete



(danish) material origins


515mm cast in place concrete wall
515x515mm cast in place concrete column
flexible plaster cellar system
three concrete floor slabs
150mm, 250mm and 515mm



circular prefab concrete moulds 150x750mm

five domes

2900

10250

21750

7100

10

06

11

9

18

12

13

16

1:75

N

library detailed

79



1 current

1 meadow grass
poa pratensis

2 grasses
poaceae

3 mesic meadow
moderately moist soils



2 current

1 tufed hairgrass
deschampsia cespitosa

2 grasses
poaceae

3 maesic meadow
moderately moist soils



3 new

1 brown knapweed
centaurea jacea

2 flower
angiosperms

3 wet meadows
seasonally wet soils



4 new

1 common self-heal
prunella vulgaris

2 flower
angiosperms

3 mesic meadows
moderately wet soils



5 current

1 field poppy
papaver rhoeas

2 flower
angiosperms

3 ruderal ground
nutrient poor soils



6 current

1 horseshoe vetch
hippocrepis comosa

2 flower
angiosperms

3 dry grasslands
sunny, low-nutrient soils



7 new

1 purple loosstrife
lythrum salicaria

2 flower
angiosperms

3 wet meadows
seasonally wet soils



8 new

1 sage
salvia officinalis

2 flower
angiosperms

3 dry grasslands
sunny, low-nutrient soils



9 new

1 snake plant
sansevieria trifasciata

2 flower
angiosperms

3 woodland
shaded, humus-rich soils



10 new

1 dicksonia
dicksonia antarctica

2 fern
pteridophyte

3 woodland
shaded, humus-rich soils



11 new

1 hart's-tongue fern
asplenium scolopendrium

2 fern
pteridophyte

3 woodland
shaded, humus-rich soils



12 new

1 maidenhair fern
adiantum spp.

2 fern
pteridophyte

3 woodland
shaded, humus-rich soils



13 new

1 pothos
epipremnum aureum

2 climbing vine
pteridophyte

3 tropics or indoor
shaded, moist soils



14 current

1 crack willow
salis fragilis

2 tree
arbor

3 wet meadows
seasonally wet soils



15 current

1 european beech
fagus sylvatica

2 tree
arbor

3 woodland
shaded, humus-rich soils

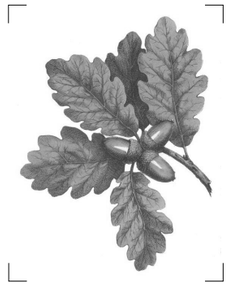


16 new

1 european rowan
sorbus aucuparia

2 tree
arbor

3 woodland
shaded, humus-rich soils



17 new

1 pedunculate oak
quercus robur

2 tree
arbor

3 woodland
shaded, humus-rich soils



18 new

1 rubber tree
ficus elastica

2 tree
arbor

3 tropics or indoor
shaded, moist soils



19 current

1 silver maple
acer saccharinum

2 tree
arbor

3 woodland
shaded, humus-rich soils



20 new

1 snowy mespilus
amelanchier lamarc-
kii

2 tree
arbor

3 woodland
shaded, humus-rich soils

06

6000

9000

6000

p +4150

p = 0

p - 1200

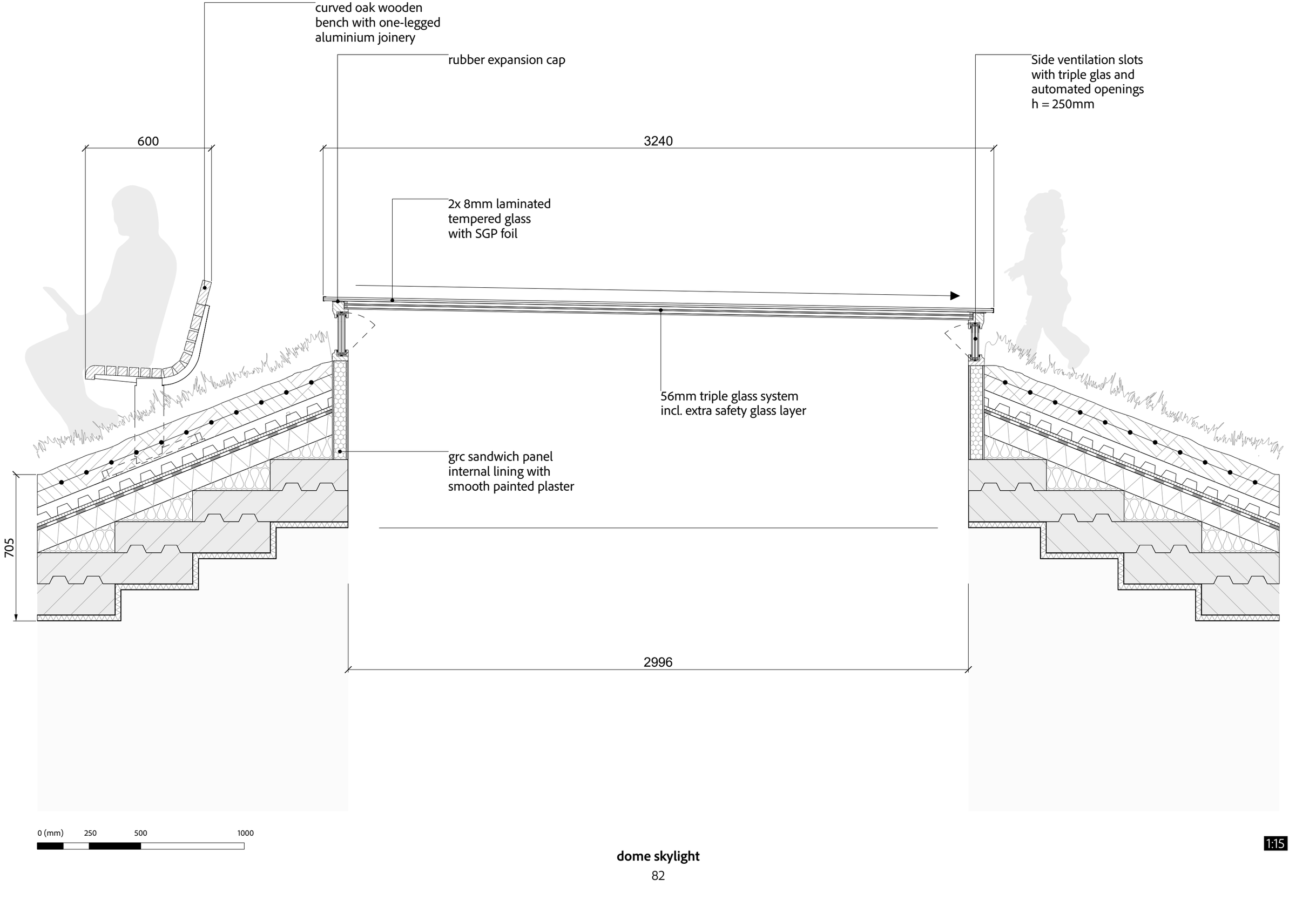
p -4300

p -6300

1:75

N

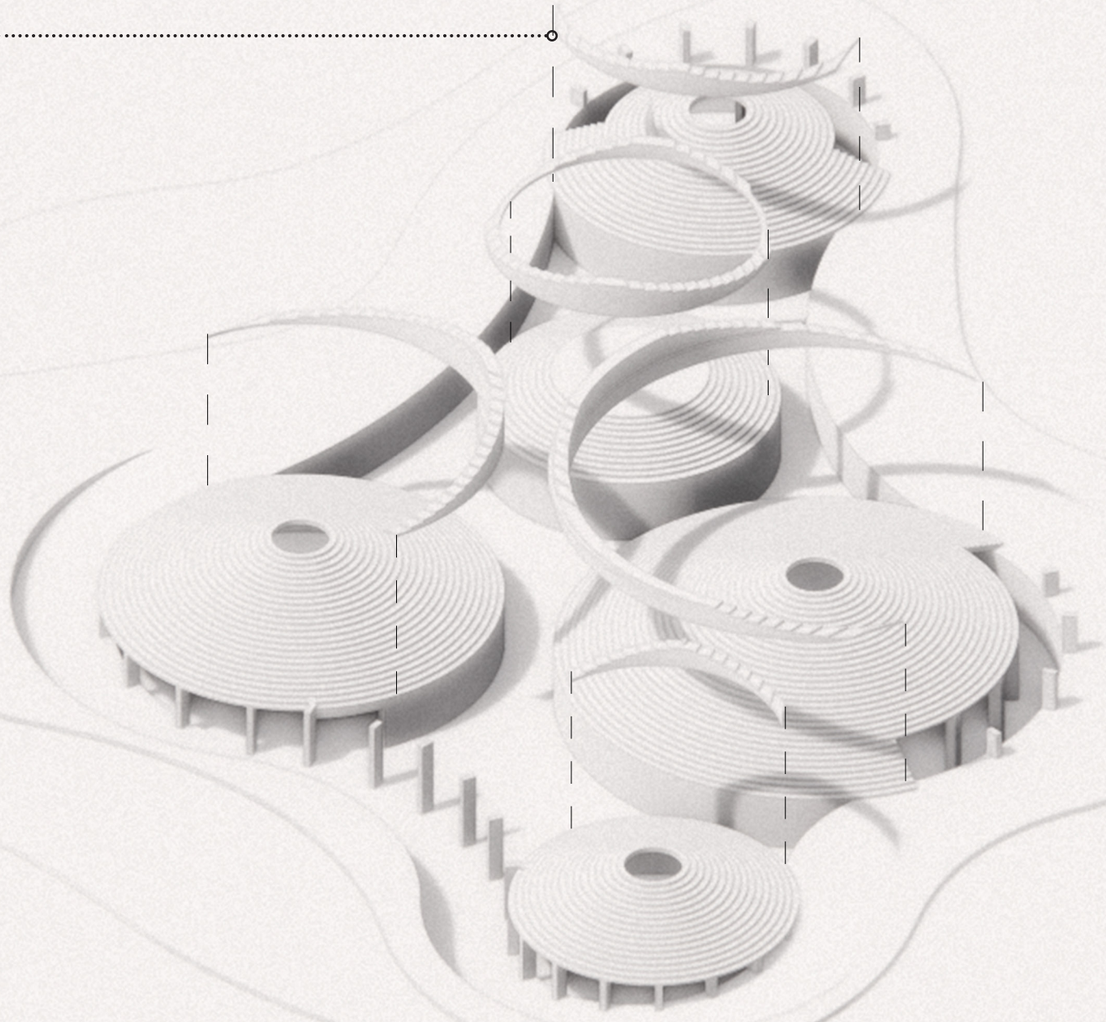
library detailed



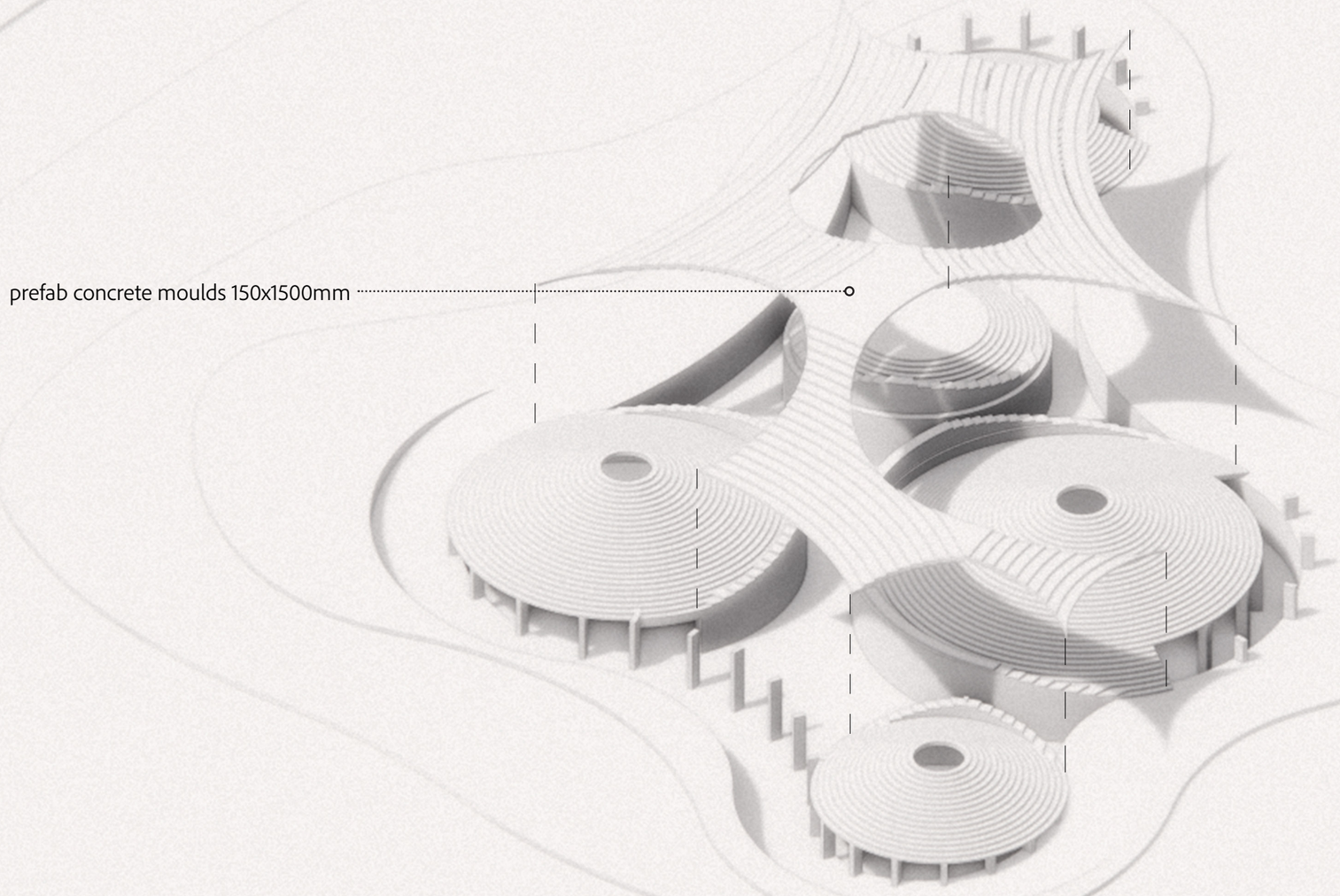
1:15

dome skylight

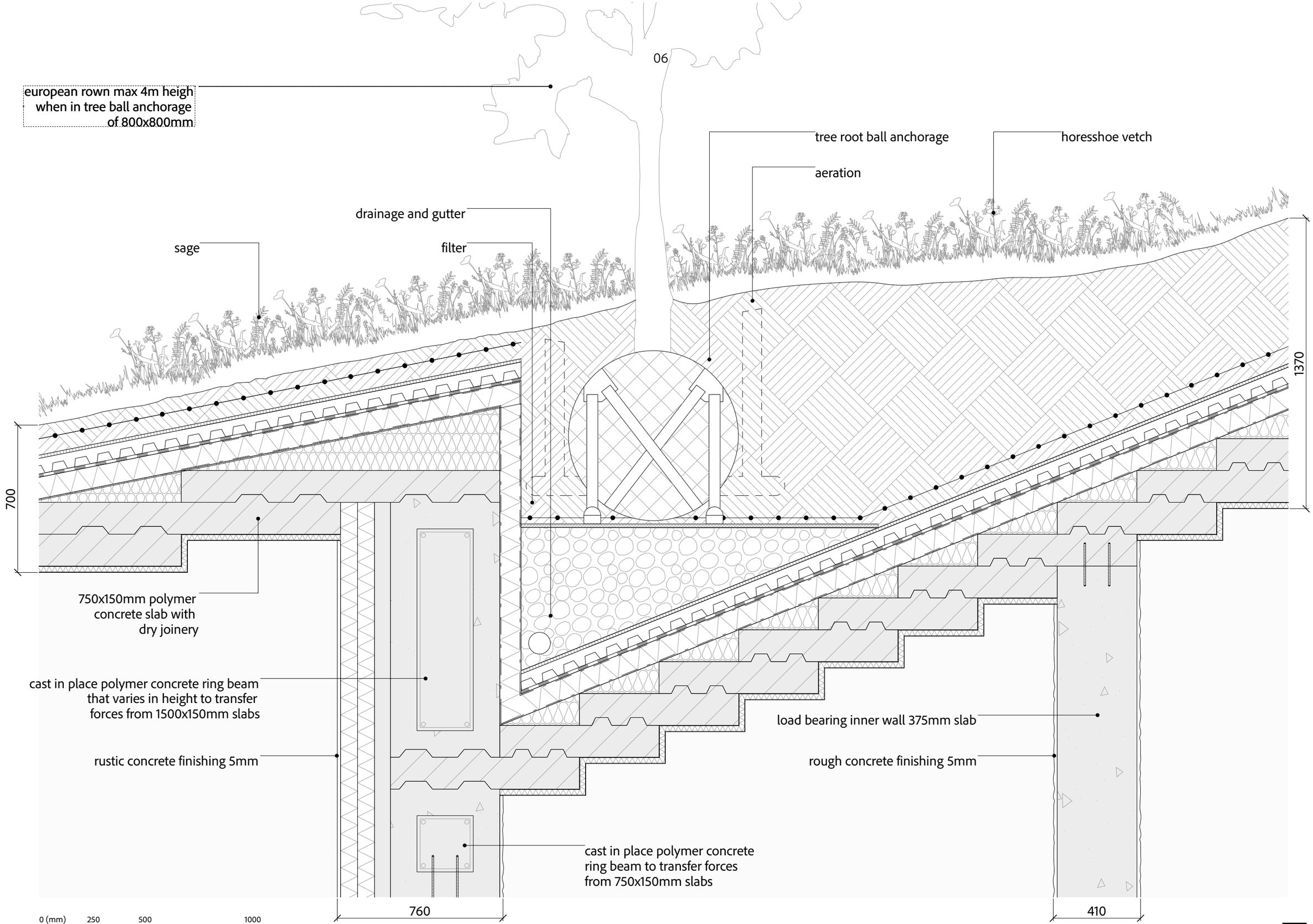
150x750mm variable
cast in place concrete ring beams



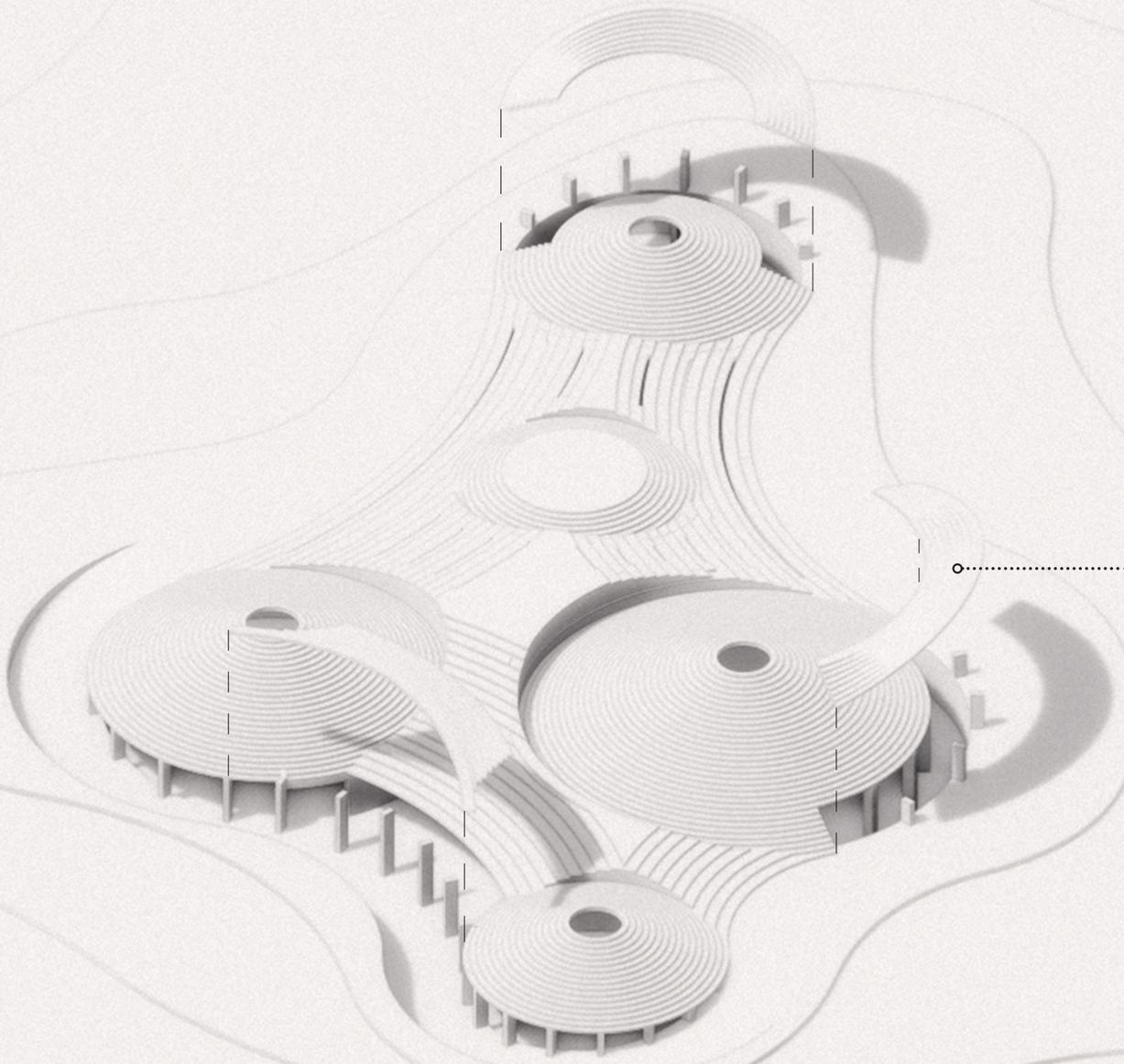
ring beams



second rhythm beams



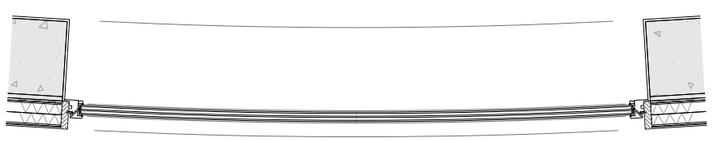
two rhytms come together

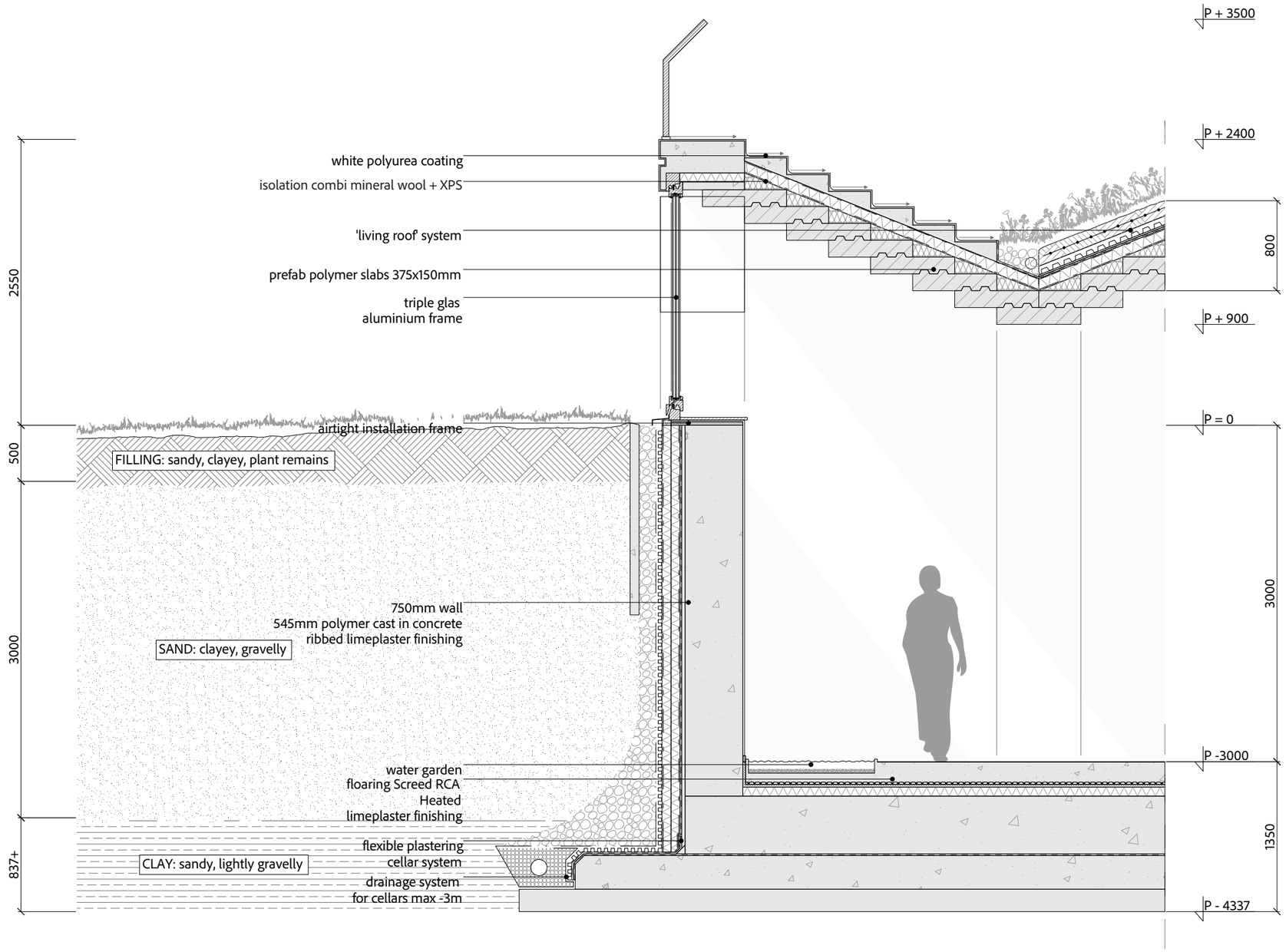


150x750mm curved prefab concrete moulds as extention of domes

uplifted moulds



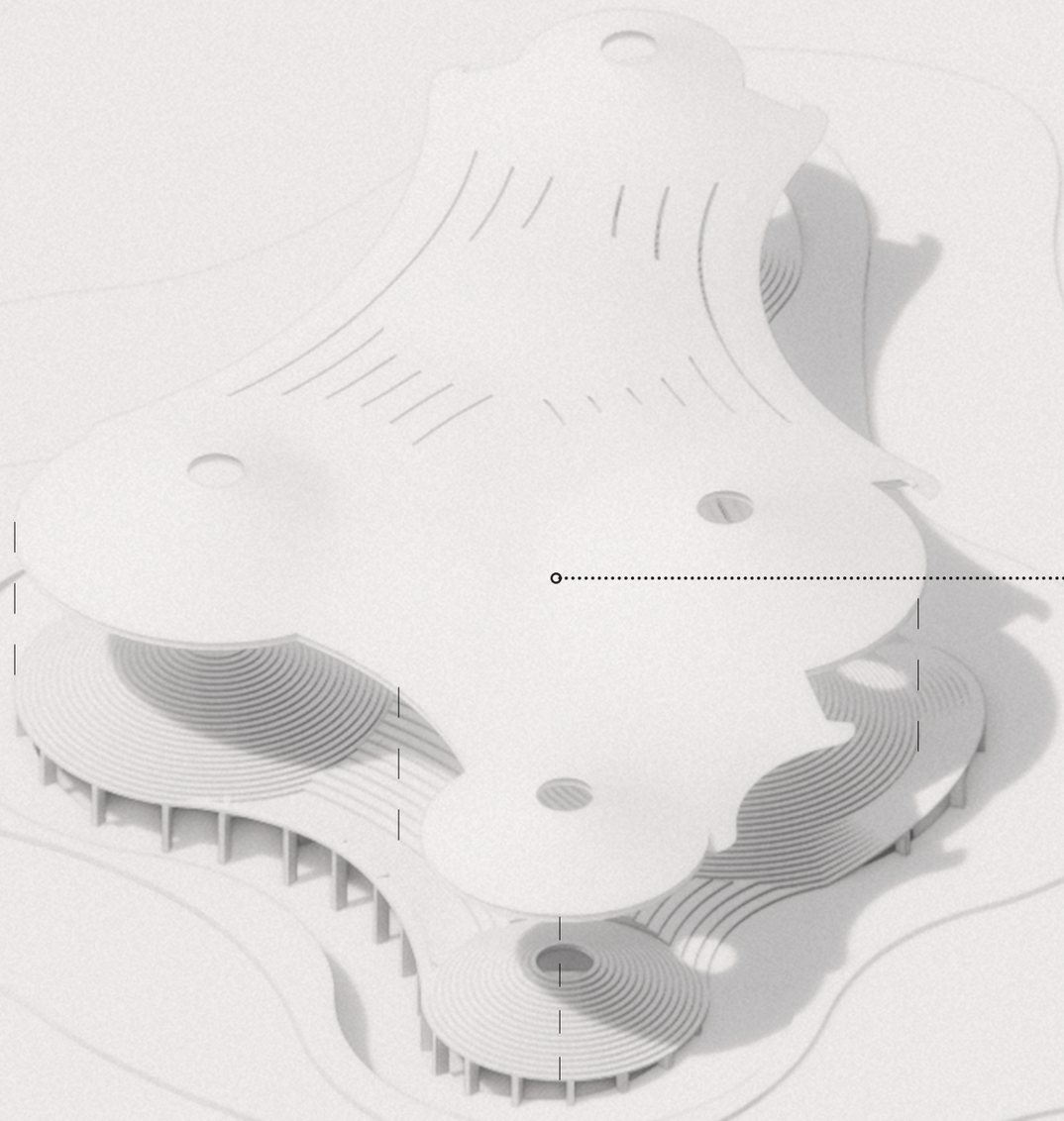




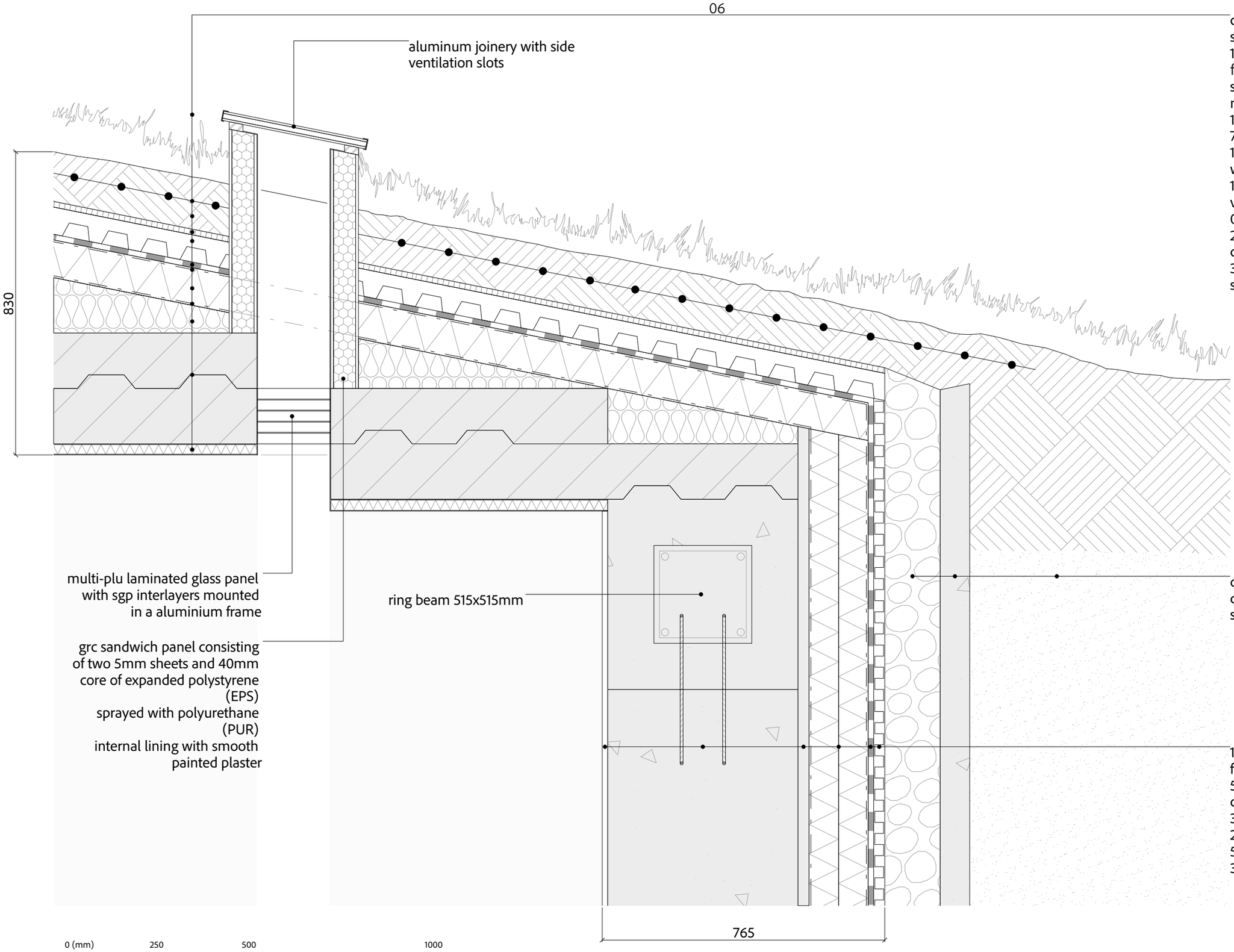
uplifted moulds facade

87

1:40



'living' roof



1:10

roof to field transition

06

16:00

12:00

22:00

08:00

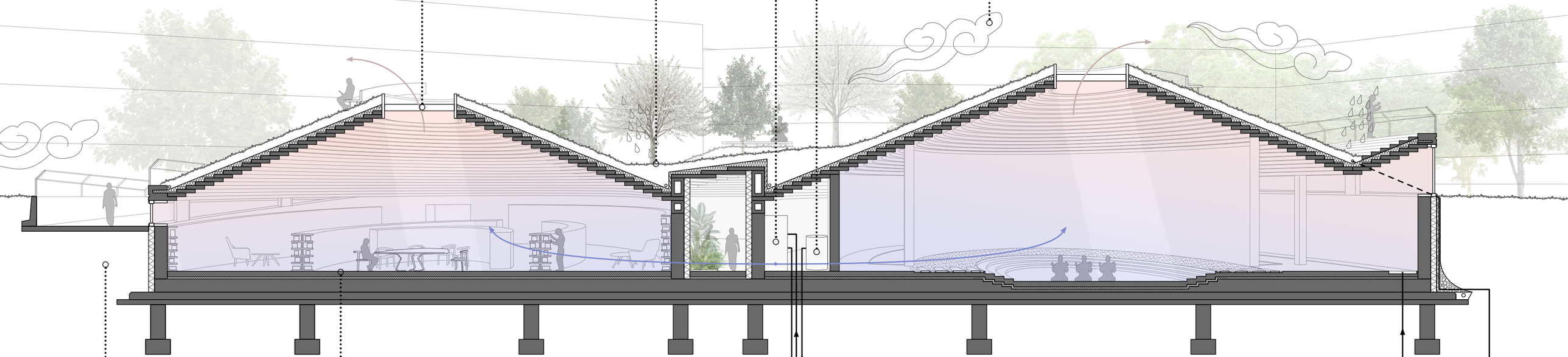
ventilation chimney

green roof and planting against UHI

air handling unit

filter system

natural wind filtering



mass thermal insulation cooling

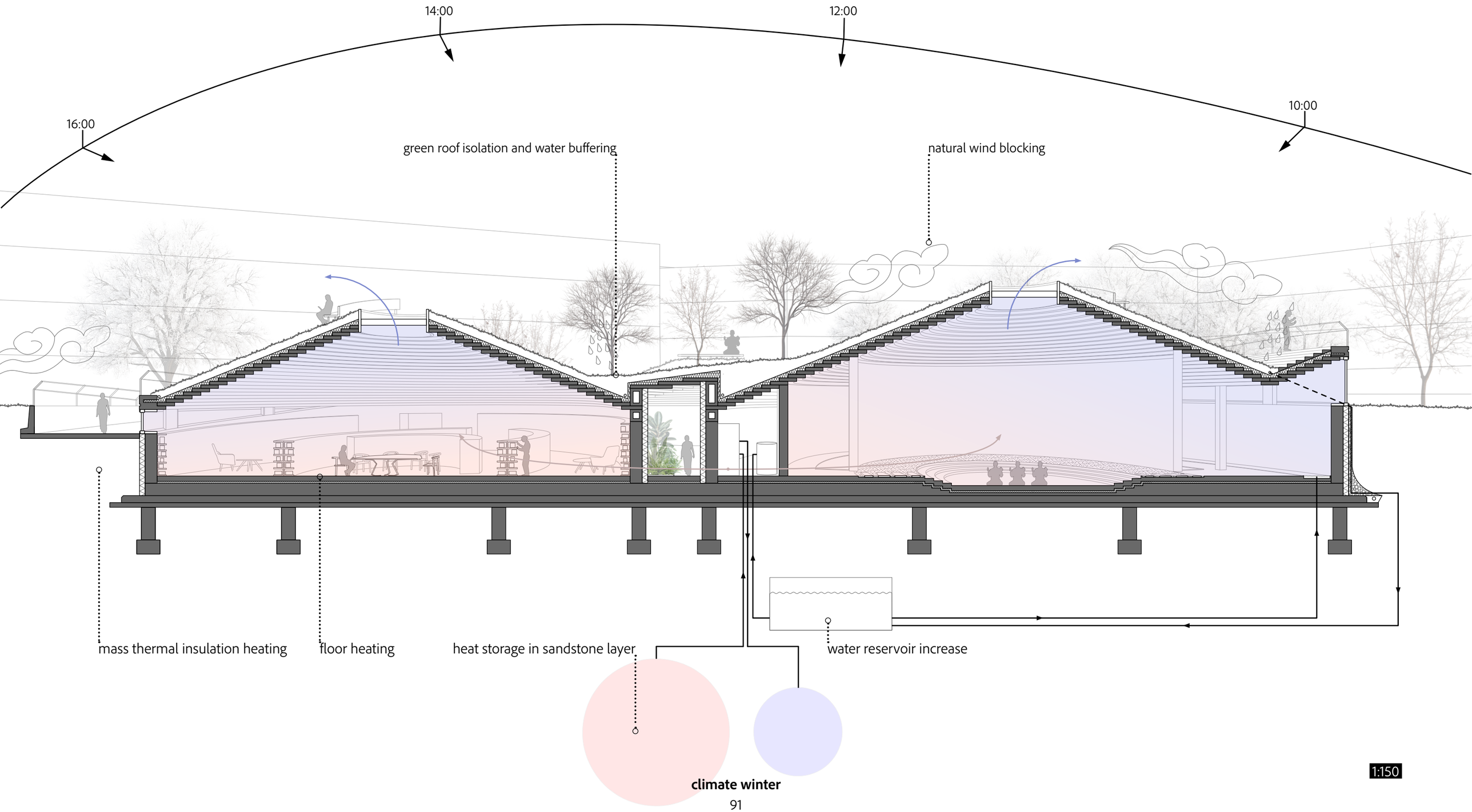
floor cooling

cold storage in sandstone layer & water reservoir

1:150

climate summer

90



climate winter

1:150

how can eco-minded design inform public buildings to reduce urban anxiety in high income countries?



