COMPLEX PROJECTS

SIMBIOSI ARCHITETTURA NATURA

A symbiosis between architecture and greenery

Roos Broeksma | 5828651

07/03/2025

Introduction

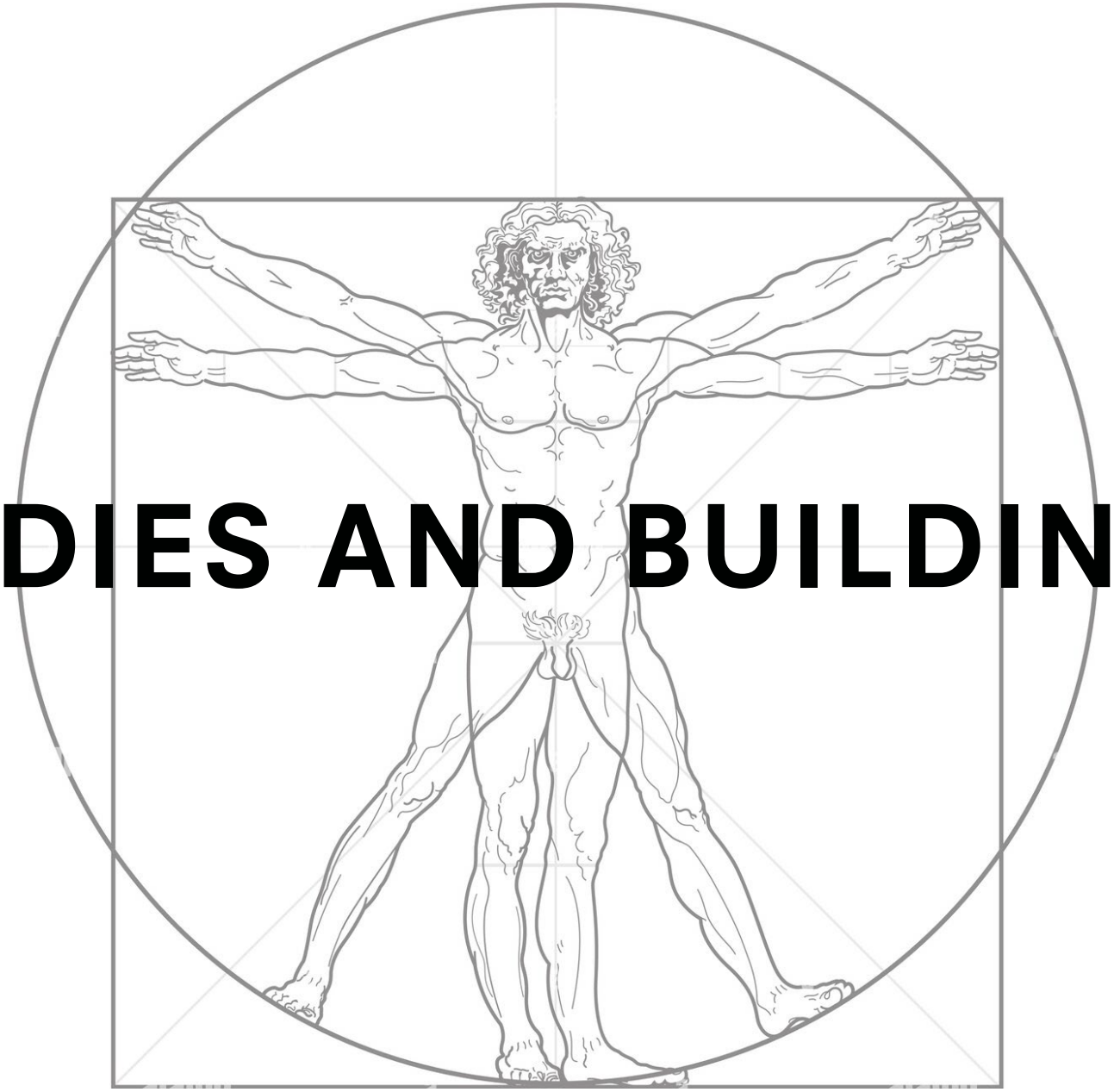
Design brief

Design

Technical development

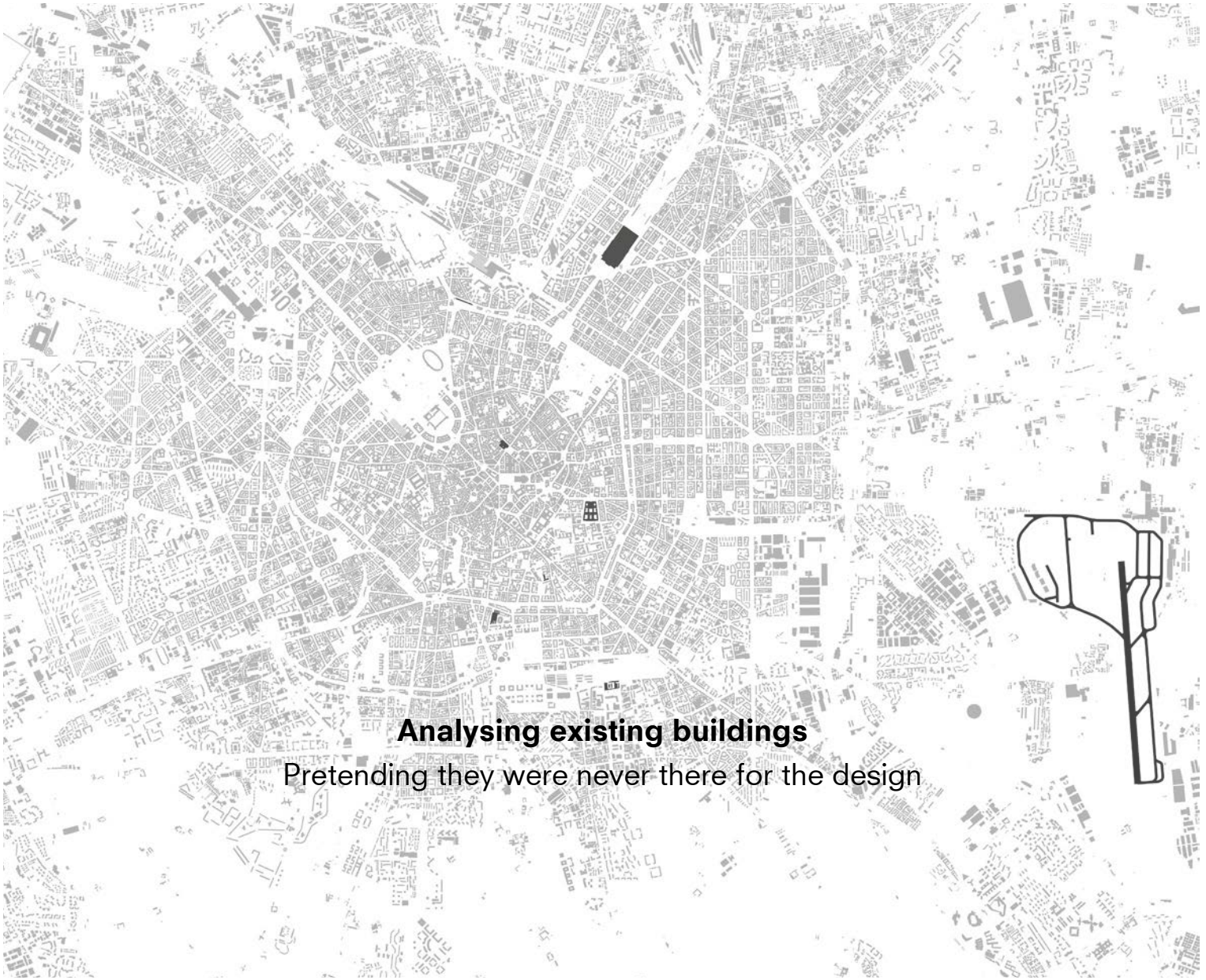
Reflection

STUDIO: COMPLEX PROJECTS



BODIES AND BUILDINGS

‘ONE OF’ MILAN



Analysing existing buildings

Pretending they were never there for the design

ABOUT THE STUDIO METHODS

Lens
Culture

Building type
Library

Thesis topic
A symbiosis between architecture and nature

WHY SYMBIOTIC ARCHITECTURE?

PROBLEM

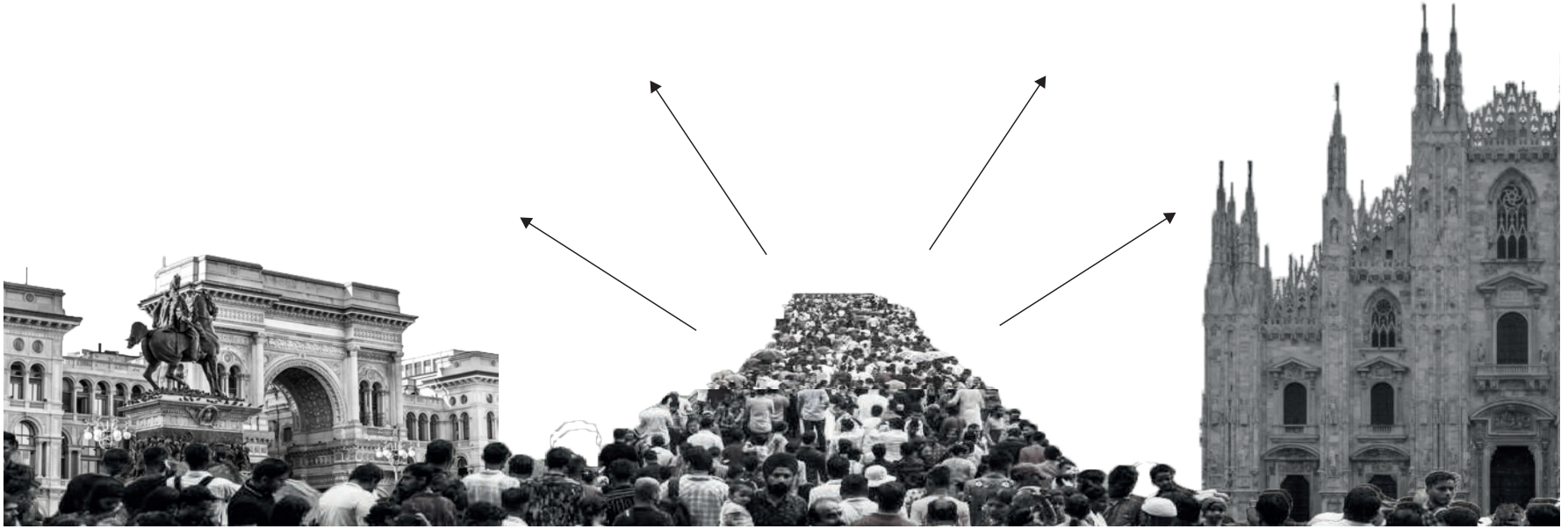
Second biggest city of Italy.
1.4 Million residents

PROBLEM

8,5 million tourists per year
Numbers are expected to grow

PROBLEM

The city is expected to grow even more.



PROBLEM

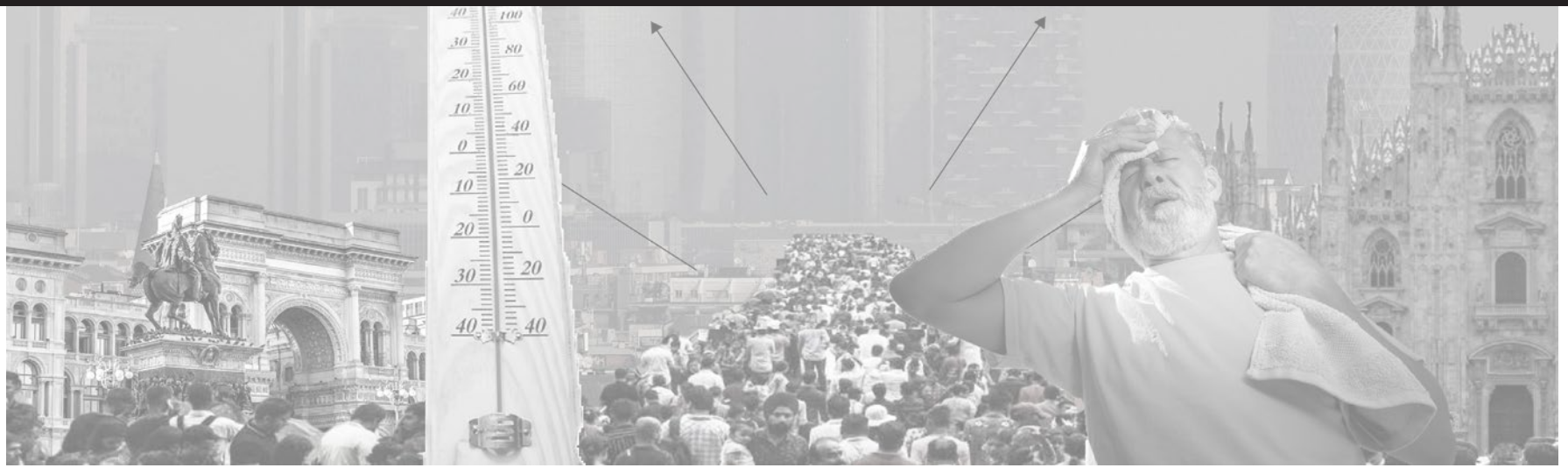
PROBLEM

41% of the city is covered in 'heat islands'
C F
50 120
40 100
30 80
20 60
10 40
0 20
10 0
20 20
30 40
40 40

PROBLEM

PROBLEM

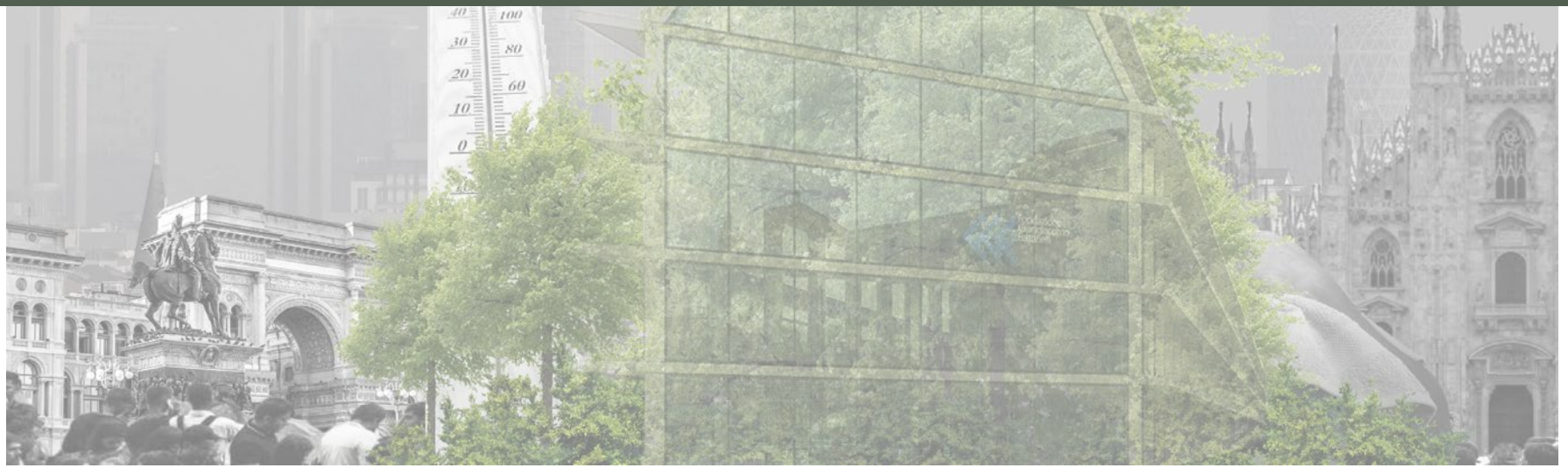
Milan is growing and pollution, heat and health problems are increasing. Green can solve these problems and so more urban nature is needed in the city of Milan.



GRADUATION AMBITION & TOPIC

RESEARCH QUESTION

“How can a symbiosis between a building and greenery be designed for Fondazione Feltrinelli, Microsoft office, and the Ministry of Culture in Milan to enhance environmental sustainability and user experience in office and library spaces?”



Introduction

Design brief

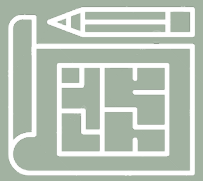
Design

Technical development

Reflection

TOPICS OF THE DESIGN BRIEF

Client



Program

Site

CLIENT

Client

OVERVIEW OF THE CLIENTS

Fondazione Feltrinelli

Microsoft office Italy

Ministry of culture Milan

Municipality of Milan

UNESCO city of literature

COMBINING THE AMBITIONS

THE GREEN KNOWLEDGE HUB OF THE FUTURE

THE CULTURE OF MILAN

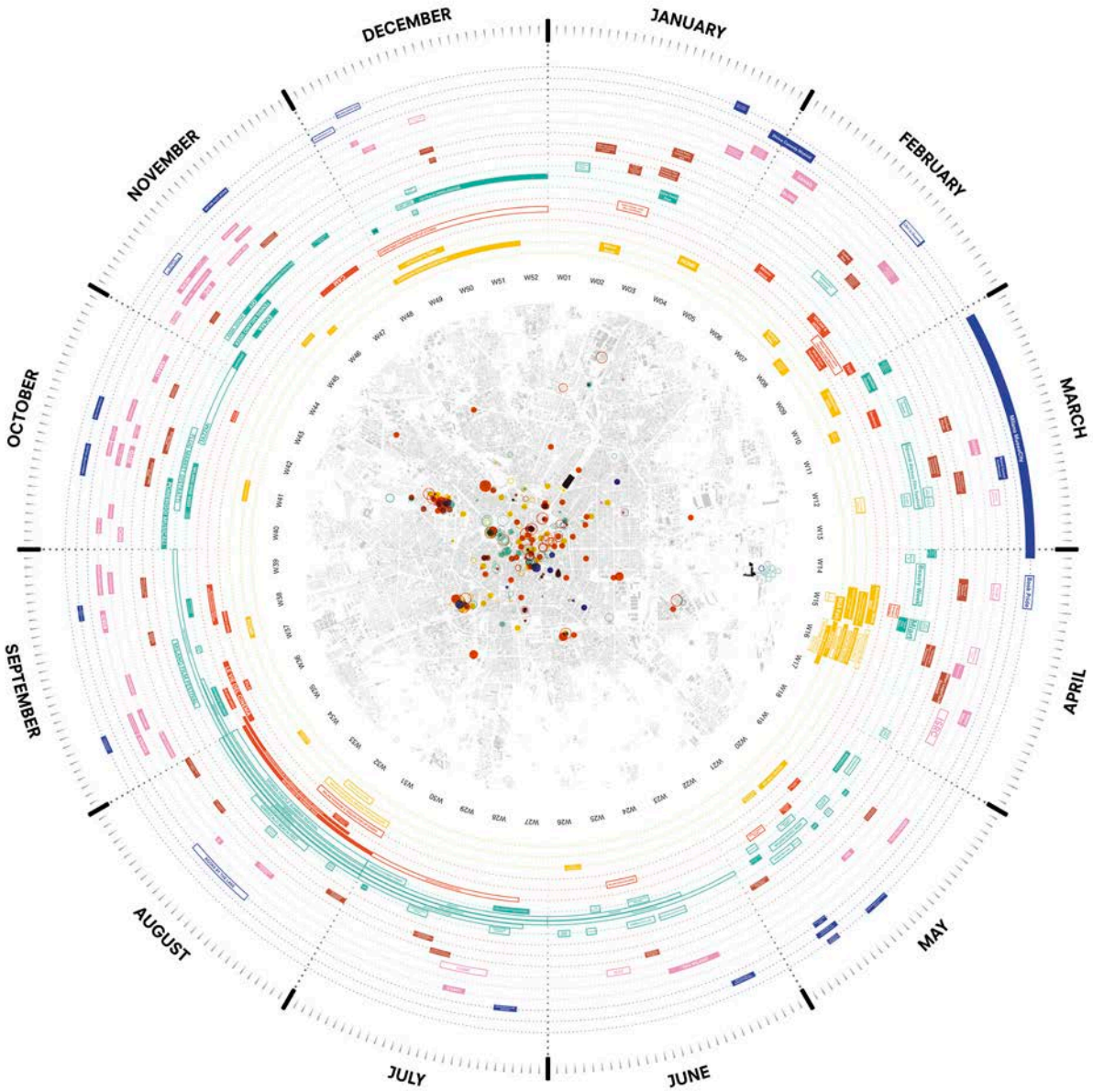
ART & ARCHITECTURE
DESIGN
LITERATURE

MILAN THE CITY OF ...

FASHION
ECONOMY
SPORTS

Client

THE CULTURAL CALENDAR: MILAN AS A CULTURAL HUB

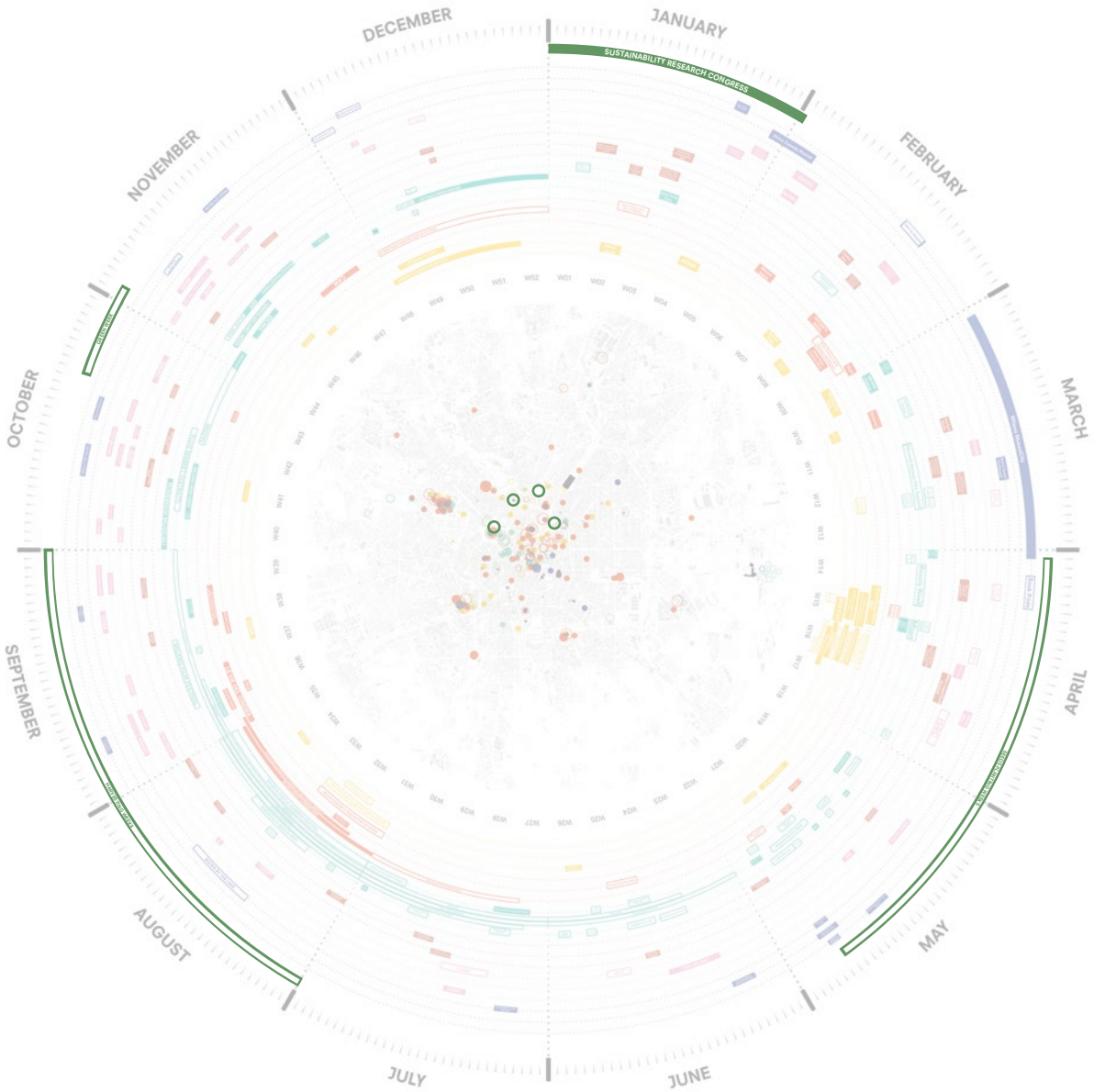


- Design
- Fashion
- Bureaucracy
- Leisure
- Research
- Literature

Product as a part of the group lens research.

Client

ADDING TO THE CULTURAL CALENDAR



- Design
- Fashion
- Bureaucracy
- Leisure
- Research
- Literature
- Greenery

Indication of possible new events regarding green initiatives.

ART & ARCHITECTURE
DESIGN
LITERATURE

MILAN THE CITY OF GREEN INITIATIVES

FASHION
ECONOMY
SPORTS

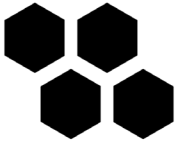
REQUIREMENTS FOR A NICE USER EXPERIENCE

Nature for view, sounds and non-rhythmic stimuli

Water features

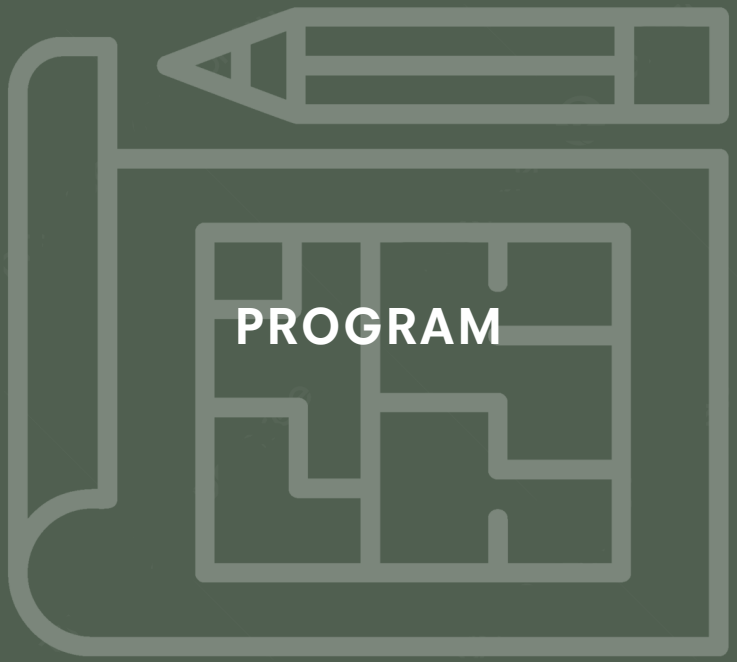
Big façade openings (views, light and connection)

Natural materials



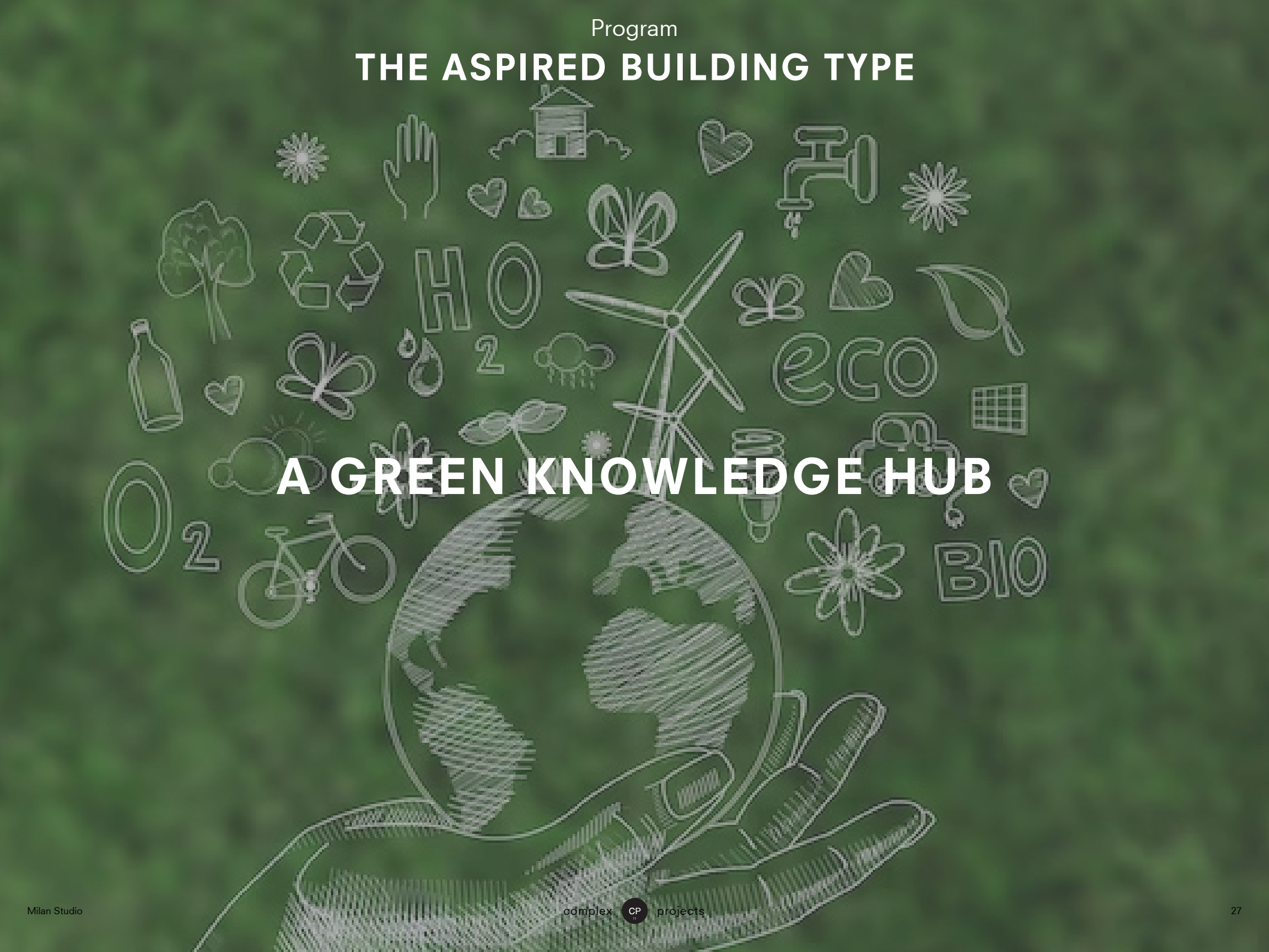
Natural shapes/patterns

The 14 patterns of biophilic design (Terrapin Bright Green, 2024).



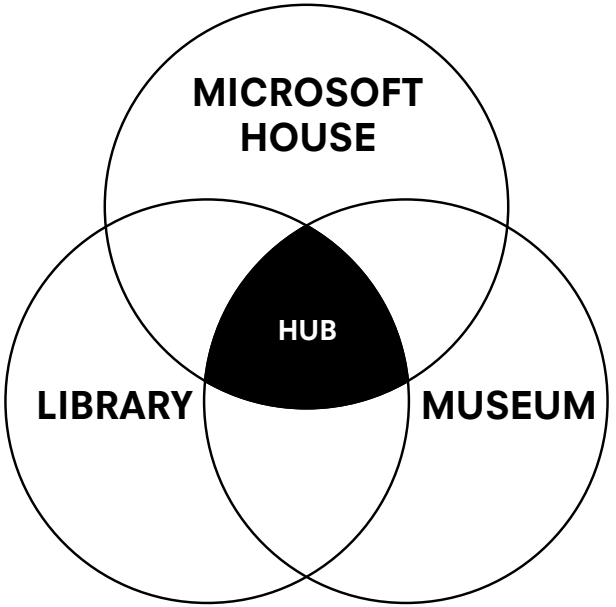
PROGRAM

THE ASPIRED BUILDING TYPE



A GREEN KNOWLEDGE HUB

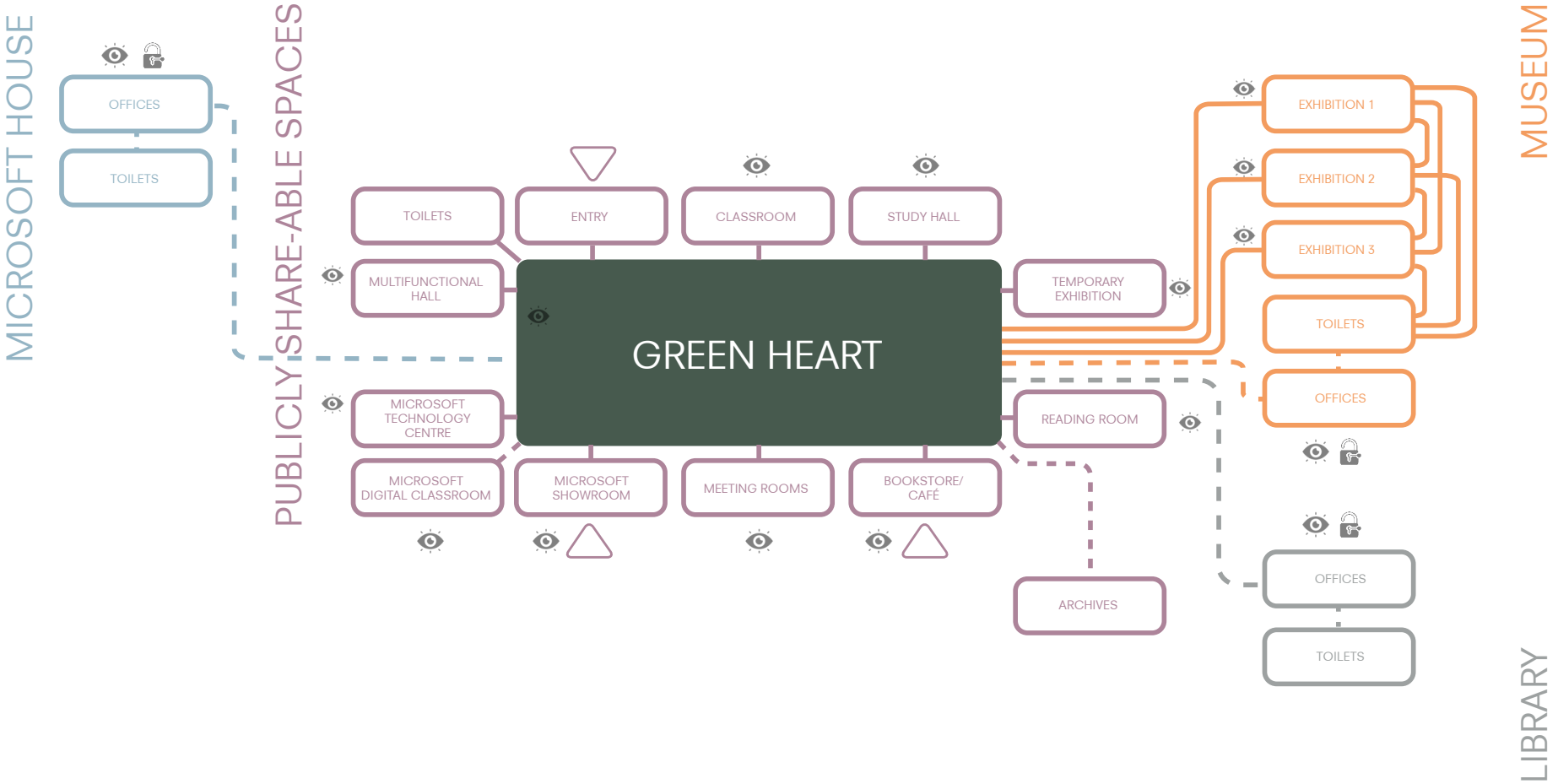
CLUSTERING & COMBINING TO CREATE A HUB



Combining the functions to create one big knowledge hub

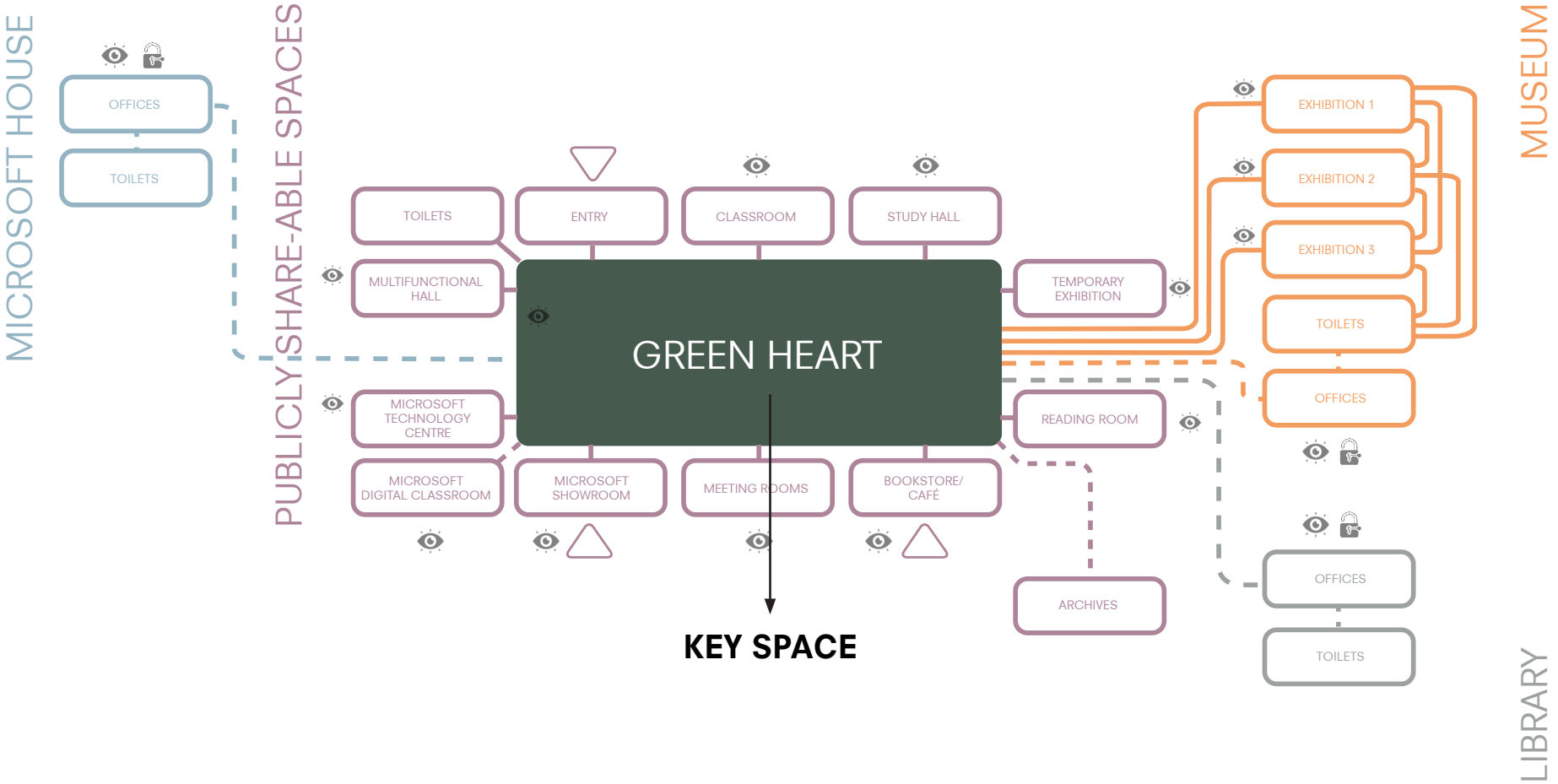
Knowledge hub: “a centre or focal point for the exchange of knowledge, support, development and ideas”.

RELATIONSHIP SCHEME



Public accessible
Privatly accessible
Entry point
Should have views on greenery
Private

GREEN HEART AS A KEY SPACE



Public accessible
Privatly accessible
Entry point
Should have views on greenery
Private

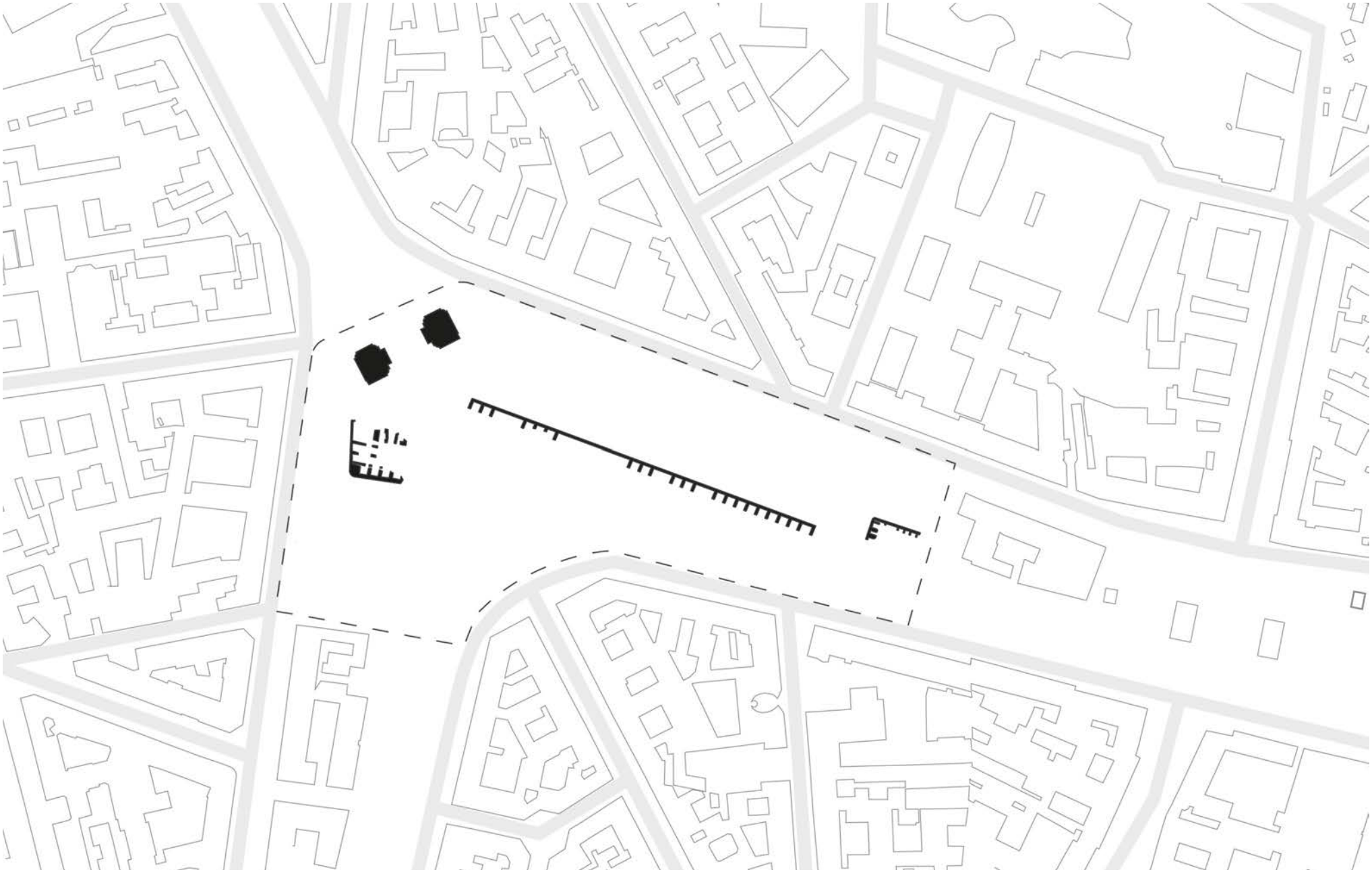
SITE

Site

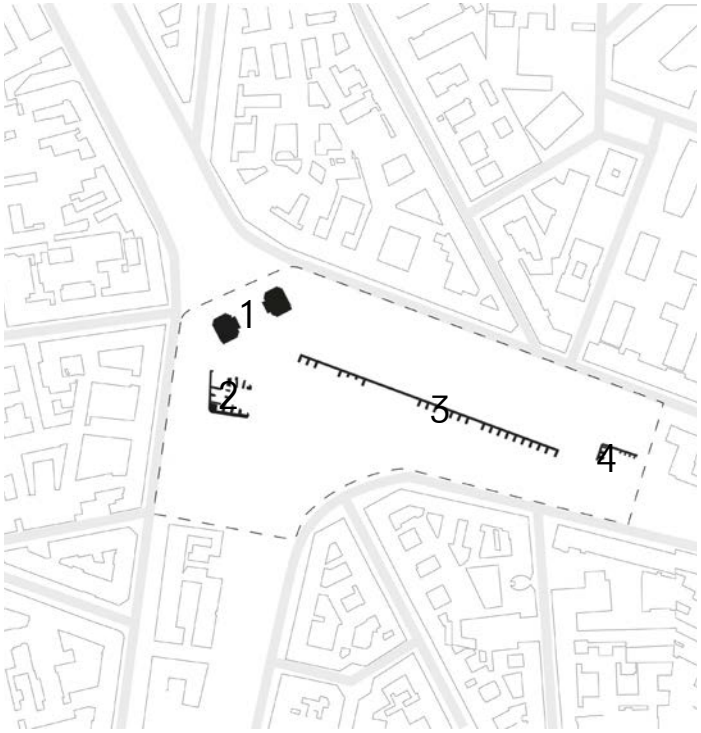
LOCATION OF THE SITE

North of the city centre

GENERAL INFO ABOUT THE SITE

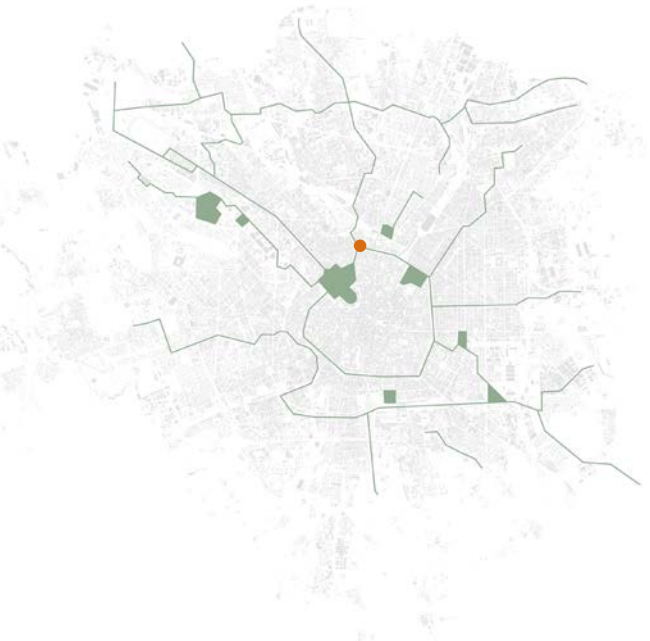


THE SITE AND ITS ARCHAEOLOGICAL REMAINS



THE SITE AS A SPILL IN THE GREEN WEB

L

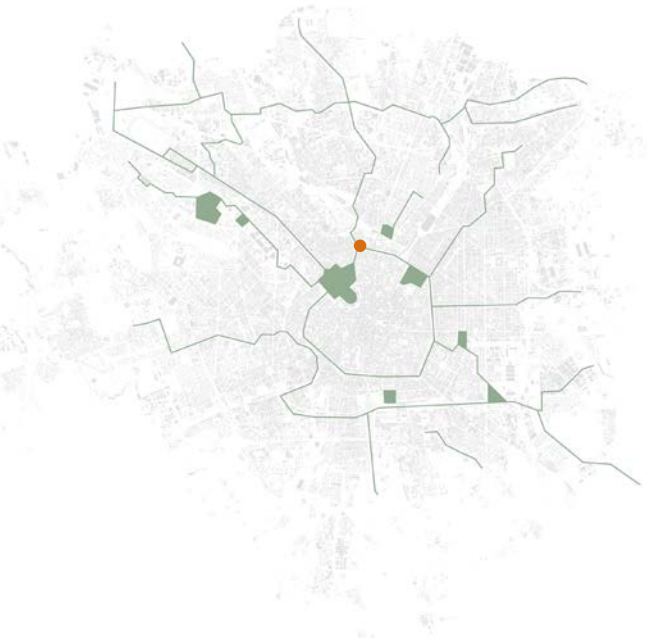


M

S

THE SITE AS A SPILL IN THE GREEN WEB | REALITY

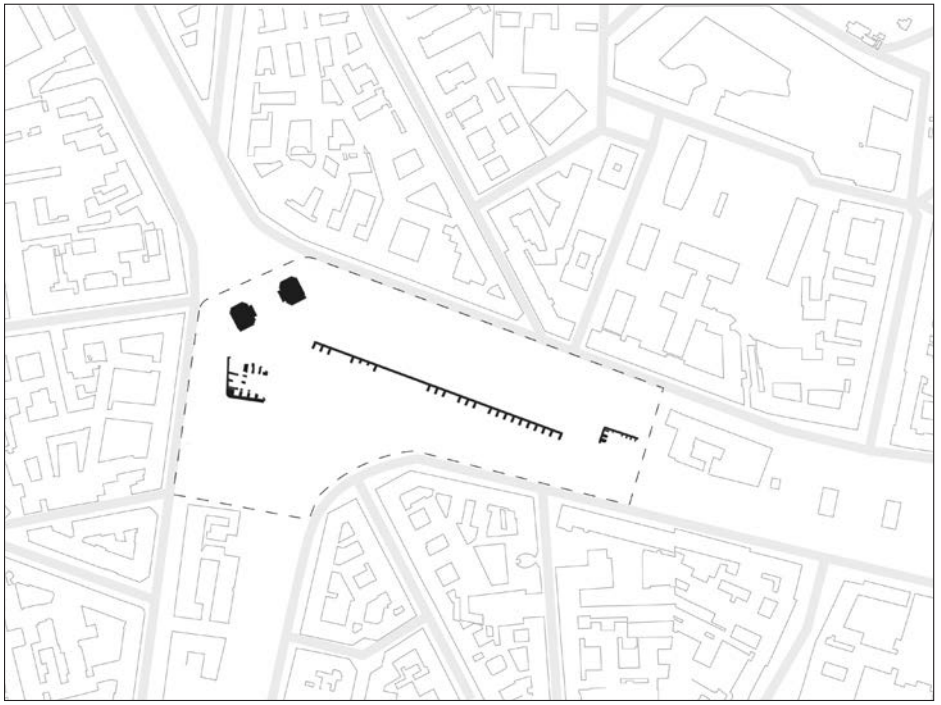
L



M

S

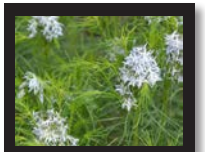
MAIN TAKEAWAYS FROM THE SITE



Archaeology

Green

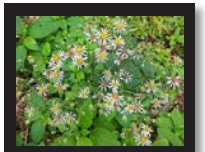
DOMESTIC GREENERY



HUBRICHT'S BLUESTAR

Blooming time

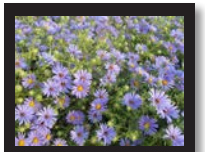
J F M A M J J A S O N D



BIG-LEAF ASTER

Blooming time

J F M A M J J A S O N D



AROMATIC ASTER

Blooming time

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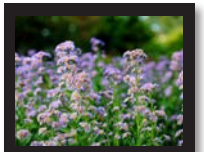
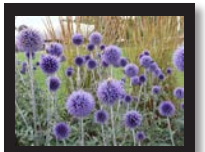


TATARIAN ASTER

Blooming time

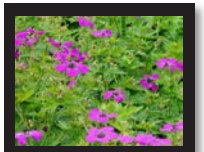
J F M A M J J A S O N D



BLUE GLOBE-THISTLE

Blooming time

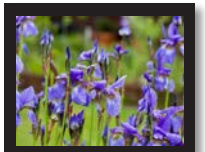
J F M A M J J A S O N D



HYBRID GERANIUM

Blooming time

J F M A M J J A S O N D



SIBERIAN IRIS

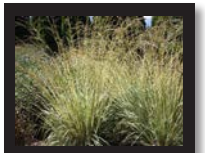
Blooming time

J F M A M J J A S O N D

BLUE STAR KALIMERS / JAPANESE ASTER

Blooming time

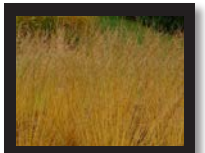
J F M A M J J A S O N D



PURPLE MOOR-GRASS 'DAUERSTRAHL'

Blooming time

J F M A M J J A S O N D



PURPLE MOOR-GRASS 'STRAHLENQUELLE'

Blooming time

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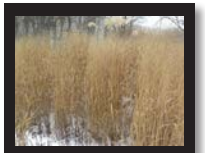

SWITCH GRASS 'CLOUD NINE'

Blooming time

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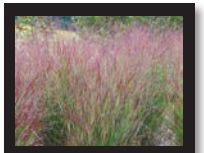

SWITCH GRASS 'SHENANDOAH'

Blooming time

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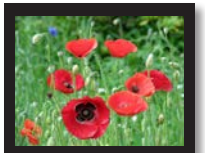
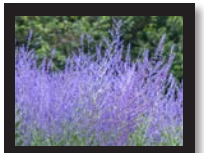


ORIENTAL POPPY

Blooming time

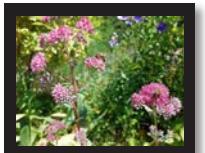
J F M A M J J A S O N D



RUSSIAN SAGE

Blooming time

J F M A M J J A S O N D



ORPINE

Blooming time

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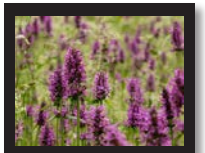

BETONY

Blooming time

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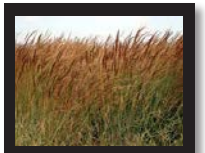
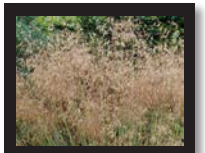


INDIANGRASS

Blooming time

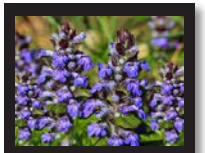
J F M A M J J A S O N D



GOLDEN OATS GRASS

Blooming time

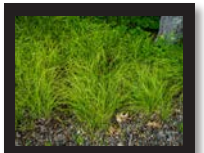
J F M A M J J A S O N D



BUGLEWEED

Blooming time

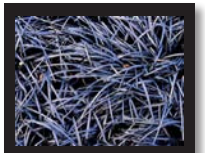
J F M A M J J A S O N D



PENNSYLVANIA SEDGE

Blooming time

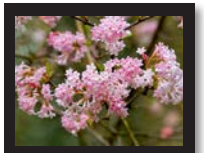
J F M A M J J A S O N D



BLACK MONDO

Blooming time

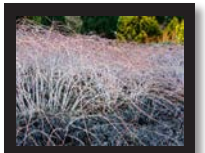
J F M A M J J A S O N D



ARROWWOOD 'DAWN'

Blooming time

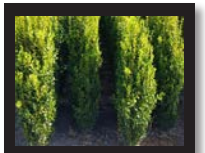
J F M A M J J A S O N D



WHITE-STEMMED BRAMBLE

Blooming time

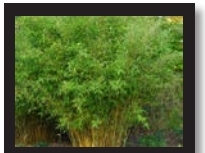
J F M A M J J A S O N D



COMMON BOX 'GRAHAM BLANDY'

Blooming time

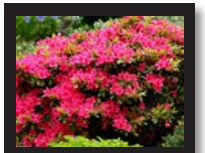
J F M A M J J A S O N D



UMBRELLA BAMBOO

Blooming time - rare

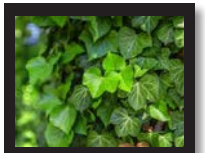
J F M A M J J A S O N D



JAPANESE AZALEA

Blooming time

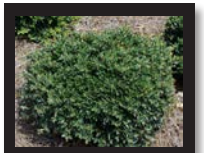
J F M A M J J A S O N D



ENGLISH IVY

Blooming time

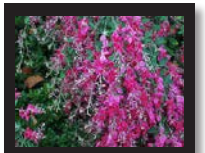
J F M A M J J A S O N D



SOFT TOUCH JAPANESE HOLLY

Blooming time

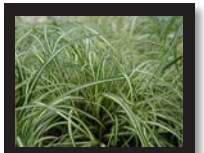
J F M A M J J A S O N D



BUSH CLOVER THUNBERG

Blooming time

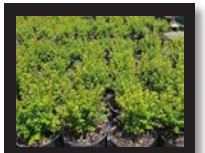
J F M A M J J A S O N D



JAPANESE SEDGE

Blooming time

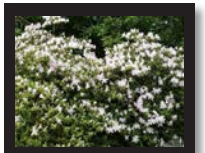
J F M A M J J A S O N D



BOX HONEYSUCKLE

Blooming time

J F M A M J J A S O N D



RHODODENDRON 'PALESTRINA'

Blooming time

J F M A M J J A S O N D

CONCLUSIONS

A green knowledge hub

Organic shapes, patterns and materials

Respect and show the archeology

Introduction

Design brief

Design

Technical development

Reflection

DESIGN AMBITION

Design

CONCEPT

SIMBIOSIS BETWEEN ARCHITECTURE AND NATURE

A PROTECTED GARDEN

Design

CONCEPT

SIMBIOSIS BETWEEN ARCHITECTURE AND NATURE

A PROTECTED GARDEN

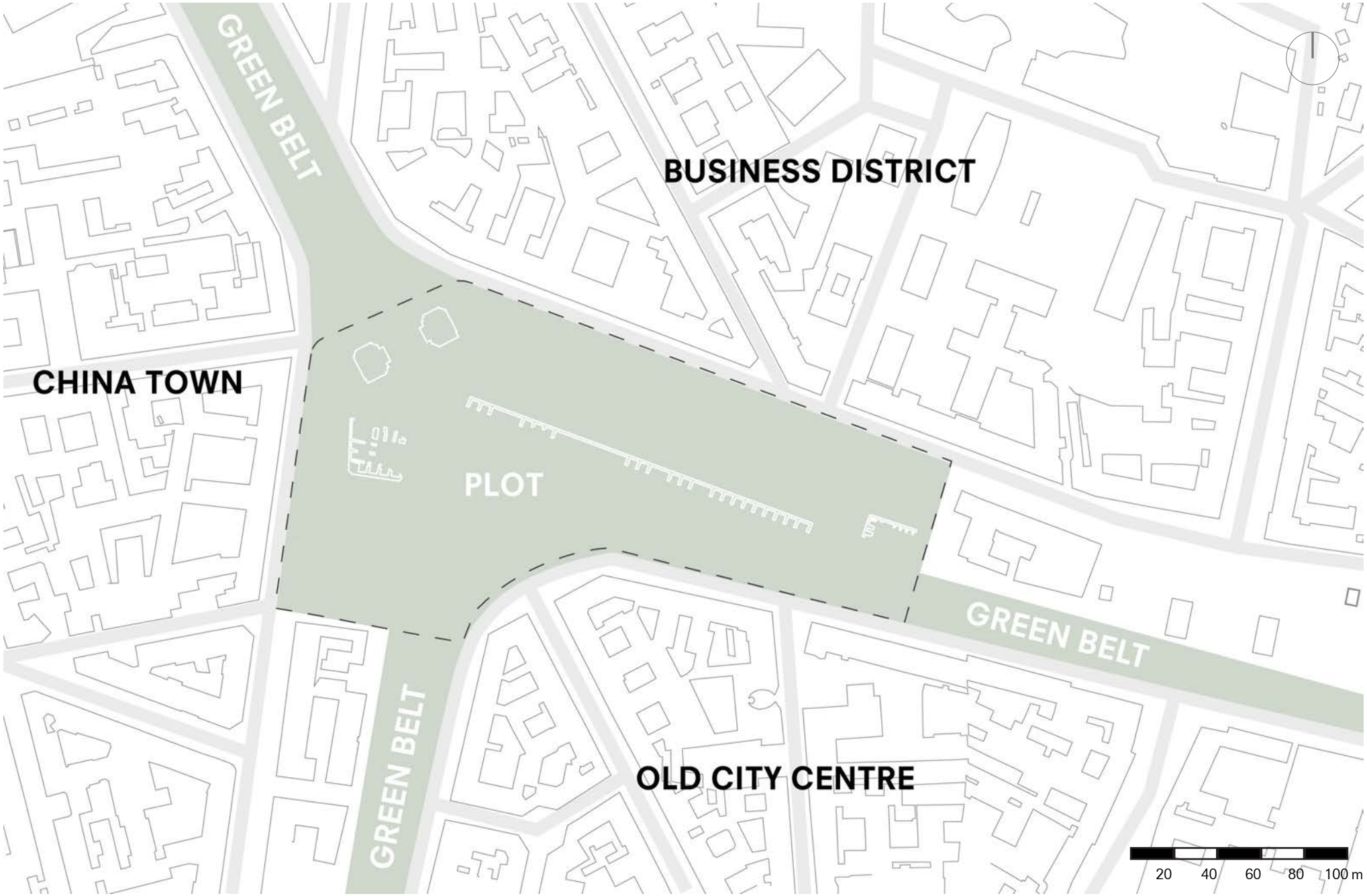
"A green oasis sheltered in between
the hardened and polluted city"

WHAT DOES THE DESIGN LOOK LIKE?

URBAN DESIGN | CITY SCALE

URBAN DESIGN | CITY SCALE

URBAN DESIGN | NEIGHBOURHOOD SCALE



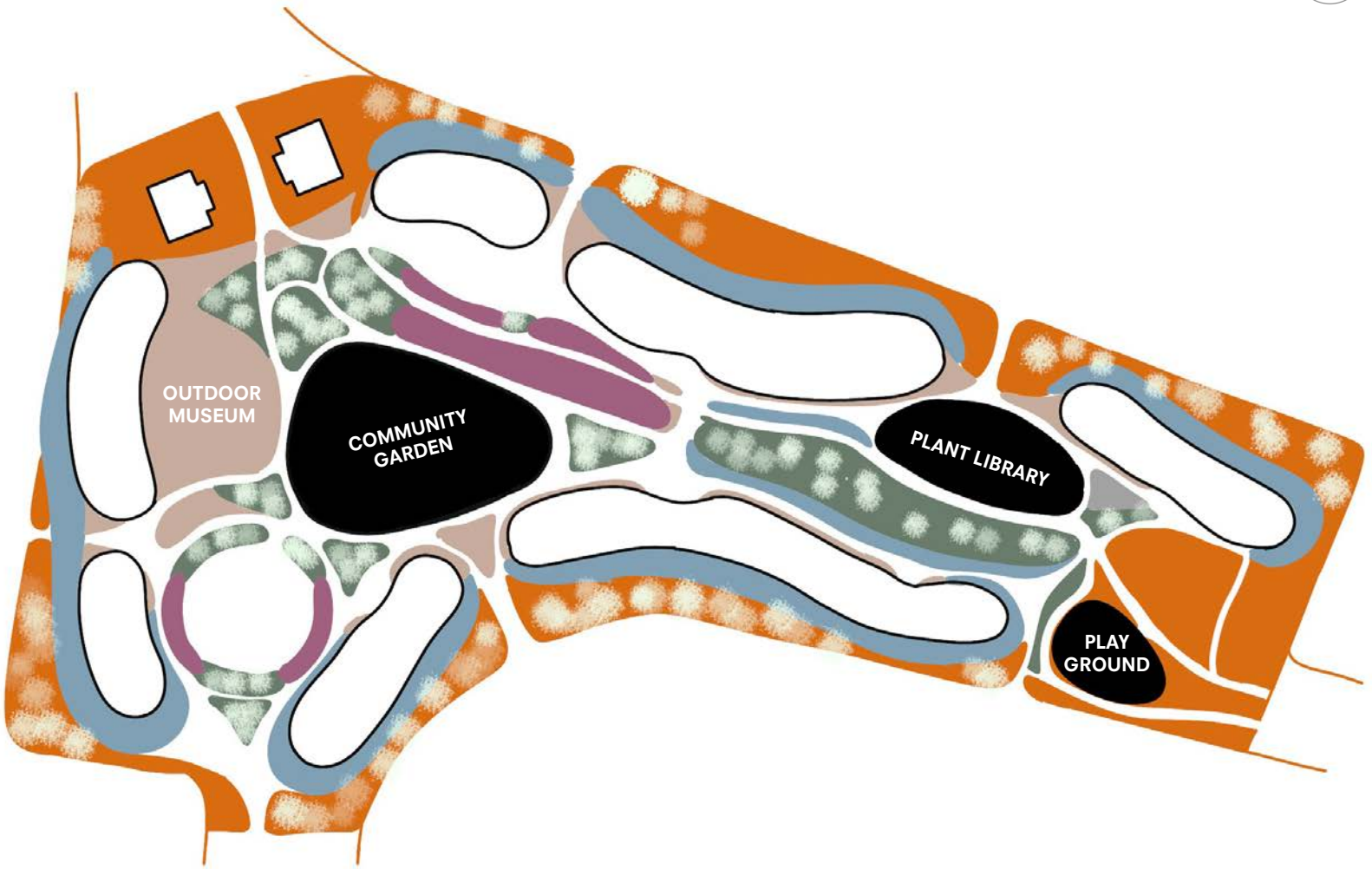
SITE

Design

SITE PLAN

6 12 18 24 30 m

SITE PLAN | PLANT ZONING



LUSH GREENERY FOR VIEWS ON GREEN

HIGH AND LOW EVERGREEN PLANTS AND TREES FOR GREEN YEAR ROUND

Trees	Plants
Olive tree	Common box
Oleander	White stemmed bramble
Bay laurel	Rododendron
Lemon tree	Arrowwood dawn
Rubber tree	Box honeysuckle
Common hazel	Black mondo
	Switch grass 'Shenandoah'

GREEN BUFFER

MIX OF HIGH (LEAVE LOSING) AND LOW (EVERGREEN)

Trees	Plants
Common fig	Common box
Lemon tree	White stemmed bramble
Field maple	Rododendron
Common hazel	Arrowwood dawn
Sycamore	Box honeysuckle
	Black mondo
	Switch grass 'Shenandoah'

NEAR BUILDINGS

LOW MIX OF PLANTS FOR YEAR ROUND GREEN & LOW LEAVE LOSING TREES

Trees	Plants
Pomegranate	Aromatic aster
Cherry blossom	Hybrid geranium
Cherry plum	Poppy
Rose of sharon	Japanese azelea
Common holly	Pendylvania sedge
Lemon tree	Blue star kallmere
	Betony
	Black mondo
	Switch grass 'Shenandoah'

LOW GREENERY FOR VIEWS

MIX OF PLANTS FOR YEAR ROUND GREEN, BUT LOW FOR VIEWS ON CULTURE

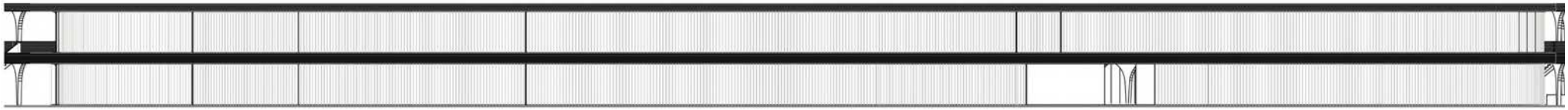
Trees	Plants
None	Aromatic aster
	Hybrid geranium
	Poppy
	Pendylvania sedge
	Blue star kallmere
	Betony
	Black mondo

Design

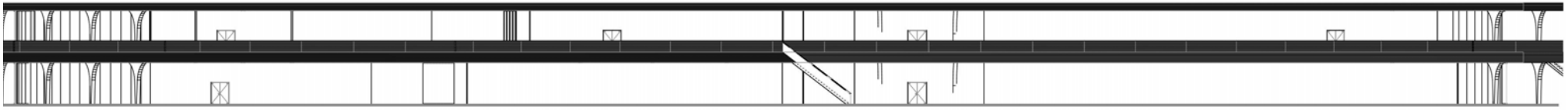
ENCLOSING THE GARDEN

6 12 18 24 30 m

OPENING TOWARDS THE GARDEN | FAÇADES



STREET ELEVATION | FORMAL



GREEN HEART ELEVATION | OPEN

5 10 15 20 25 m

Design

DIFFERENT FAÇADES

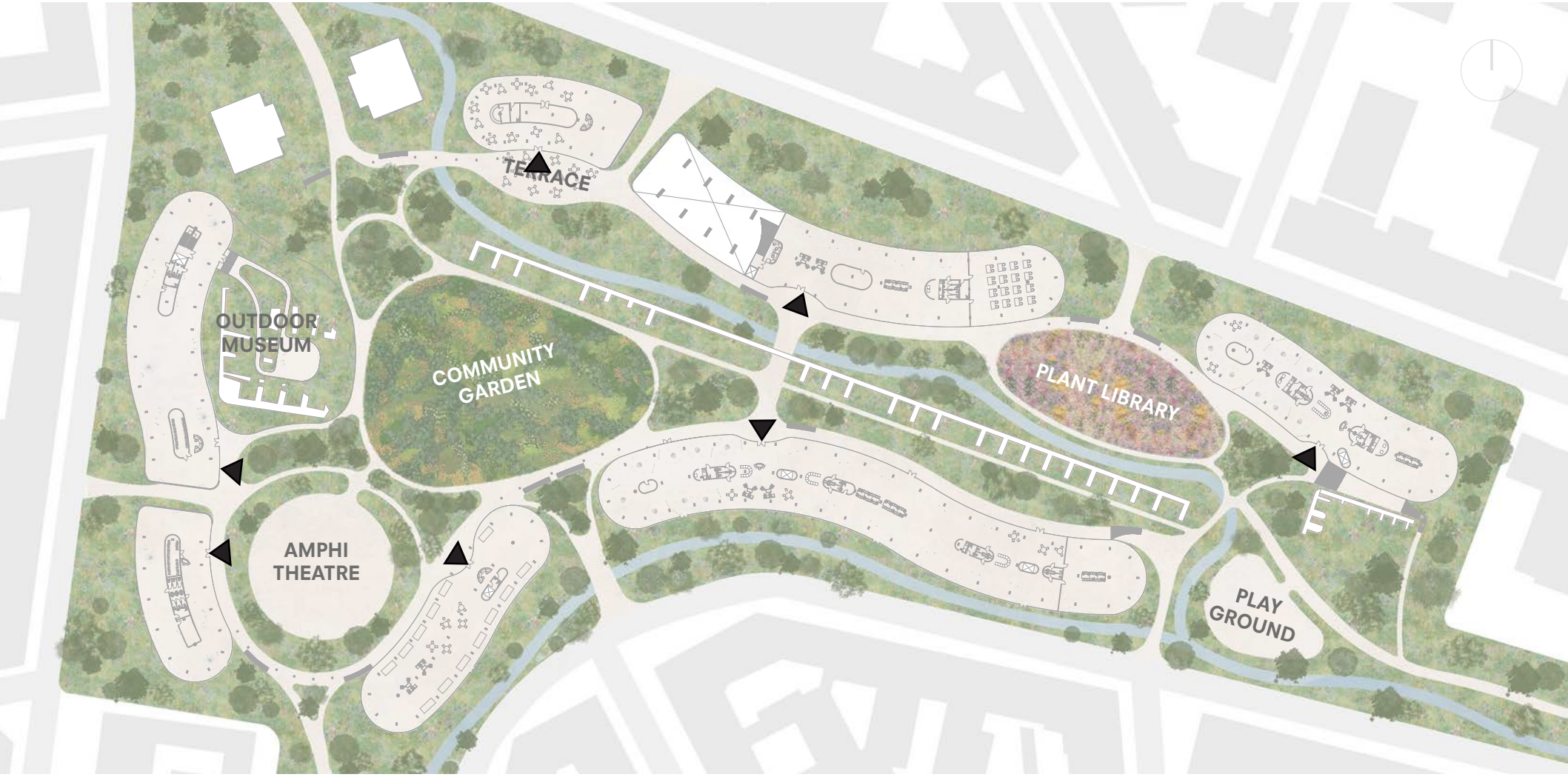
SPACES FOR THE CULTURE OF GREENERY & ARCHAEOLOGY

6 12 18 24 30 m

INVITING PEOPLE INTO THE GARDENS

6 12 18 24 30 m

ENTRIES FROM GARDEN



6 12 18 24 30 m

LET’S TAKE A WALK

Design

ROUTE

Design

ROUTE

Design

ENTERING THE GARDEN

Design

ROUTE

Design

ARCHEOLOGY VIEWING SEATS IN THE GREEN HEART

Design

ROUTE

Design

COMMUNITY GARDEN

Design

ROUTE

Design

MUSEUM

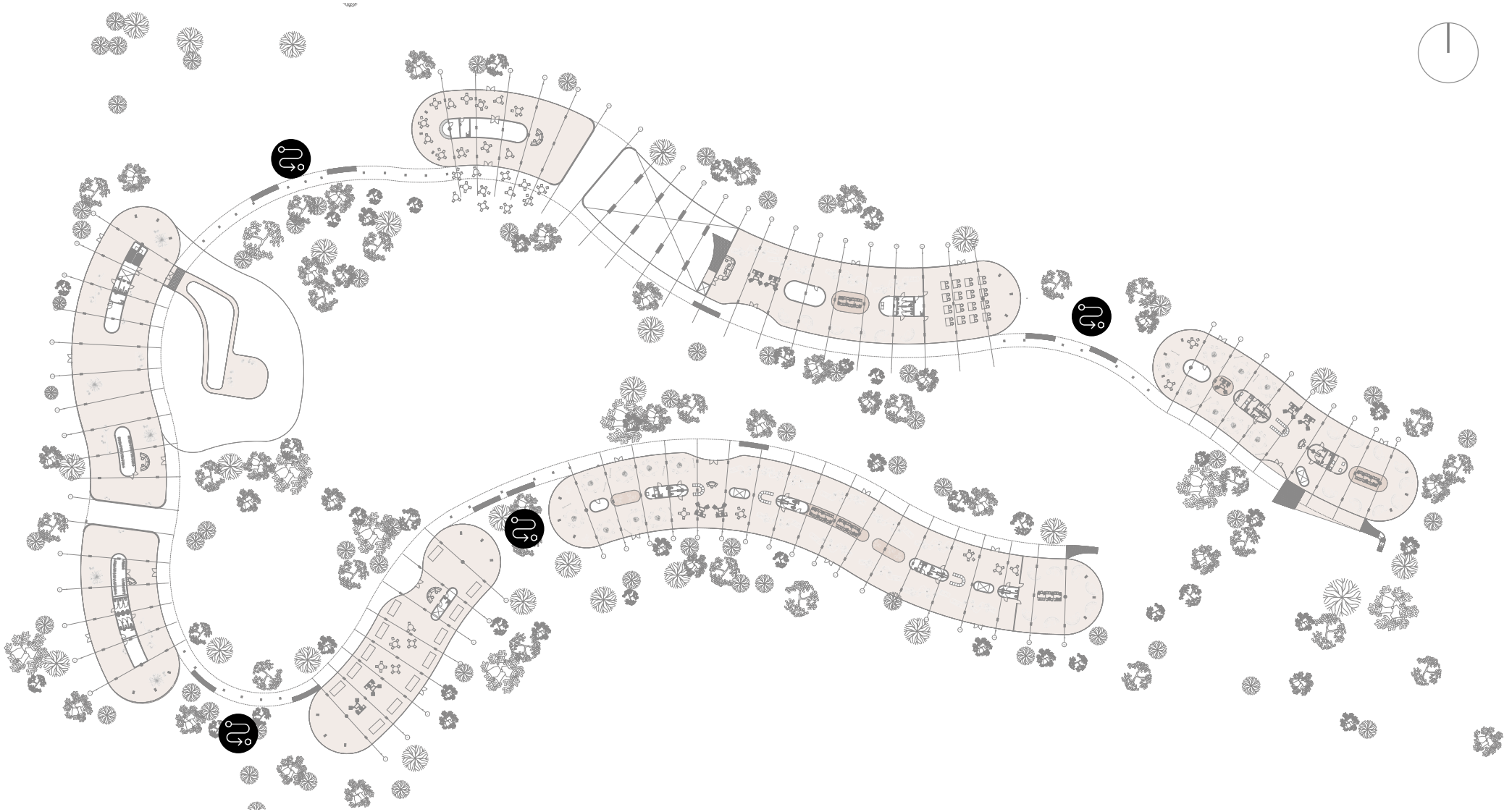
Design

ROUTE

Design

OUTDOOR MUSEUM

PROGRAMMATIC CONNECTIONS | ROUTING



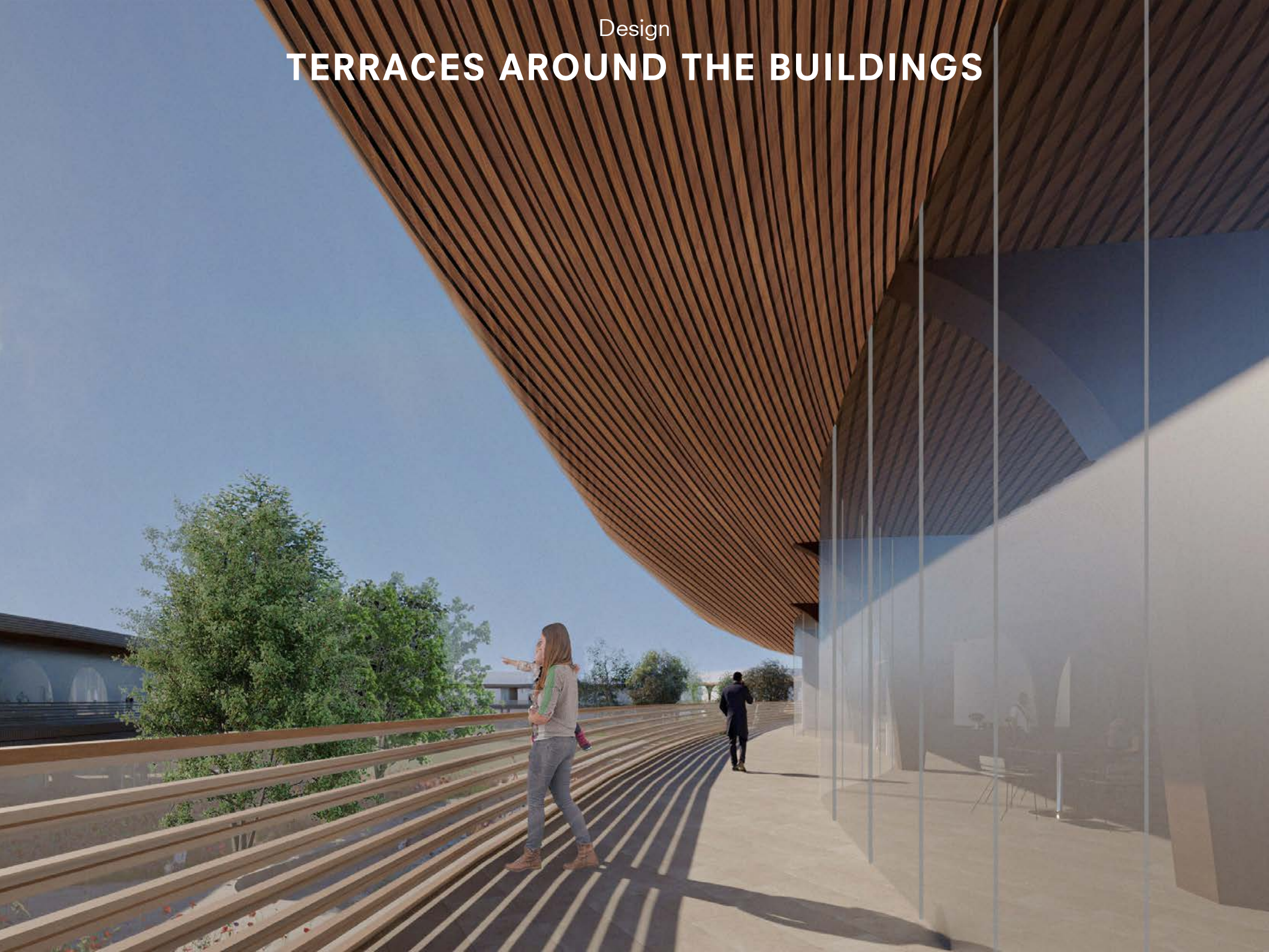
6 12 18 24 30 m

Design

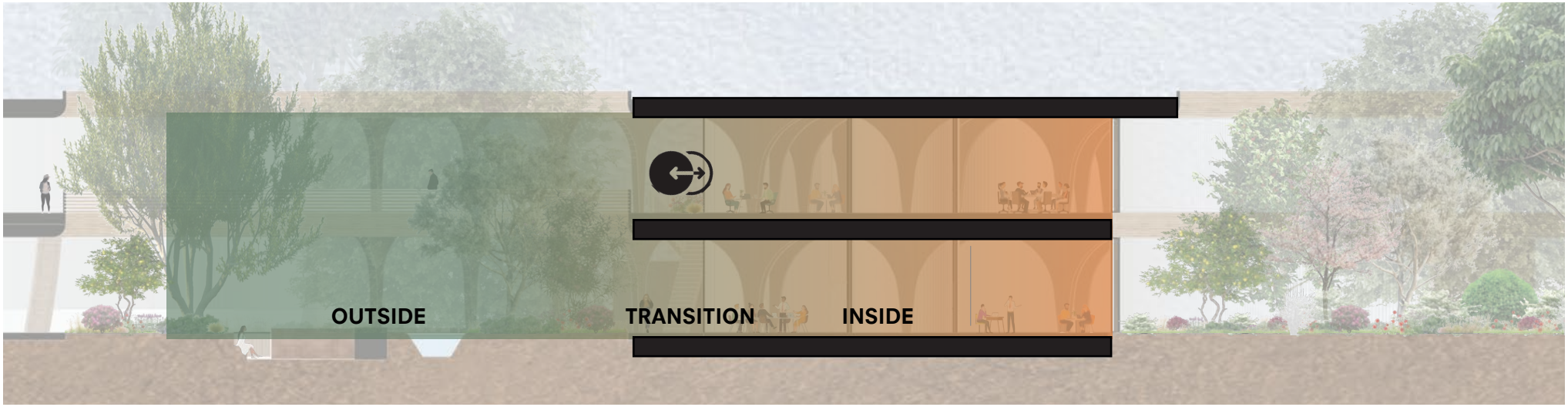
BRIDGES BETWEEN BUILDINGS

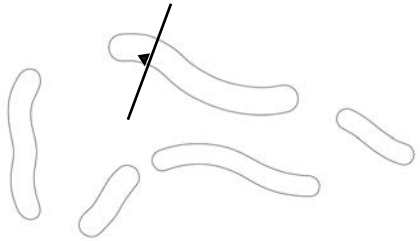
Design

TERRACES AROUND THE BUILDINGS



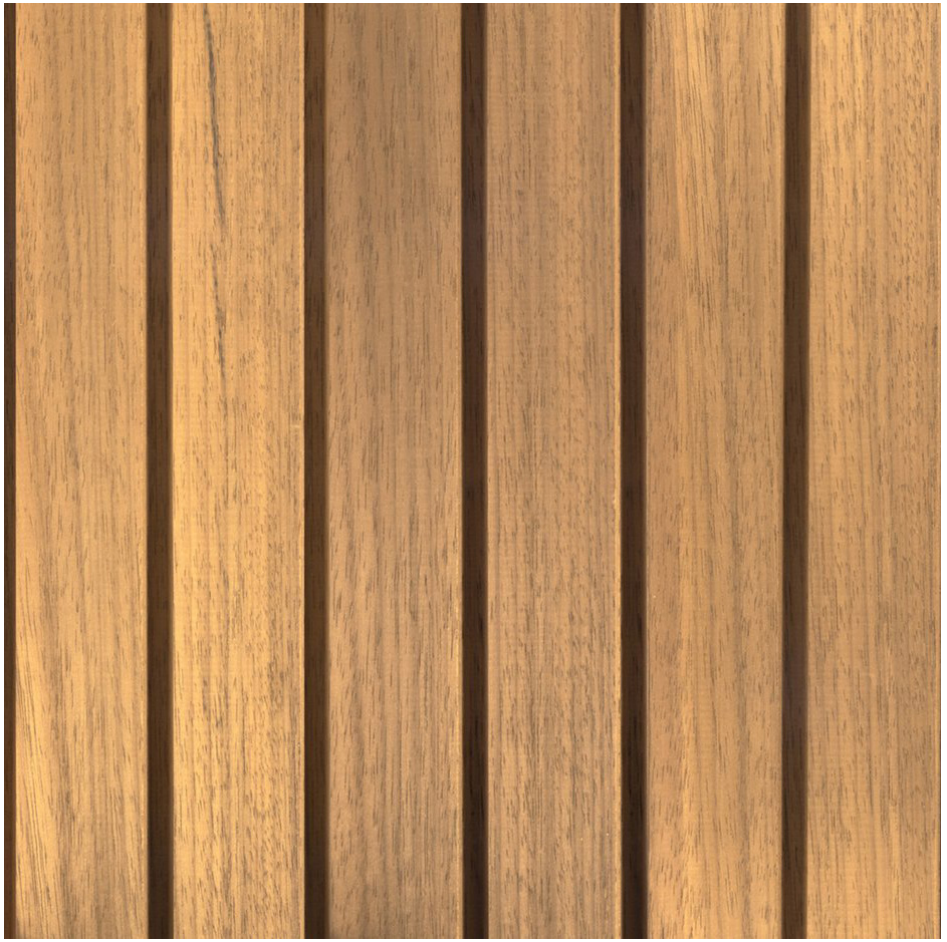
TERRACES AS TRANSITIONAL ZONES





2 4 6 8 10 m

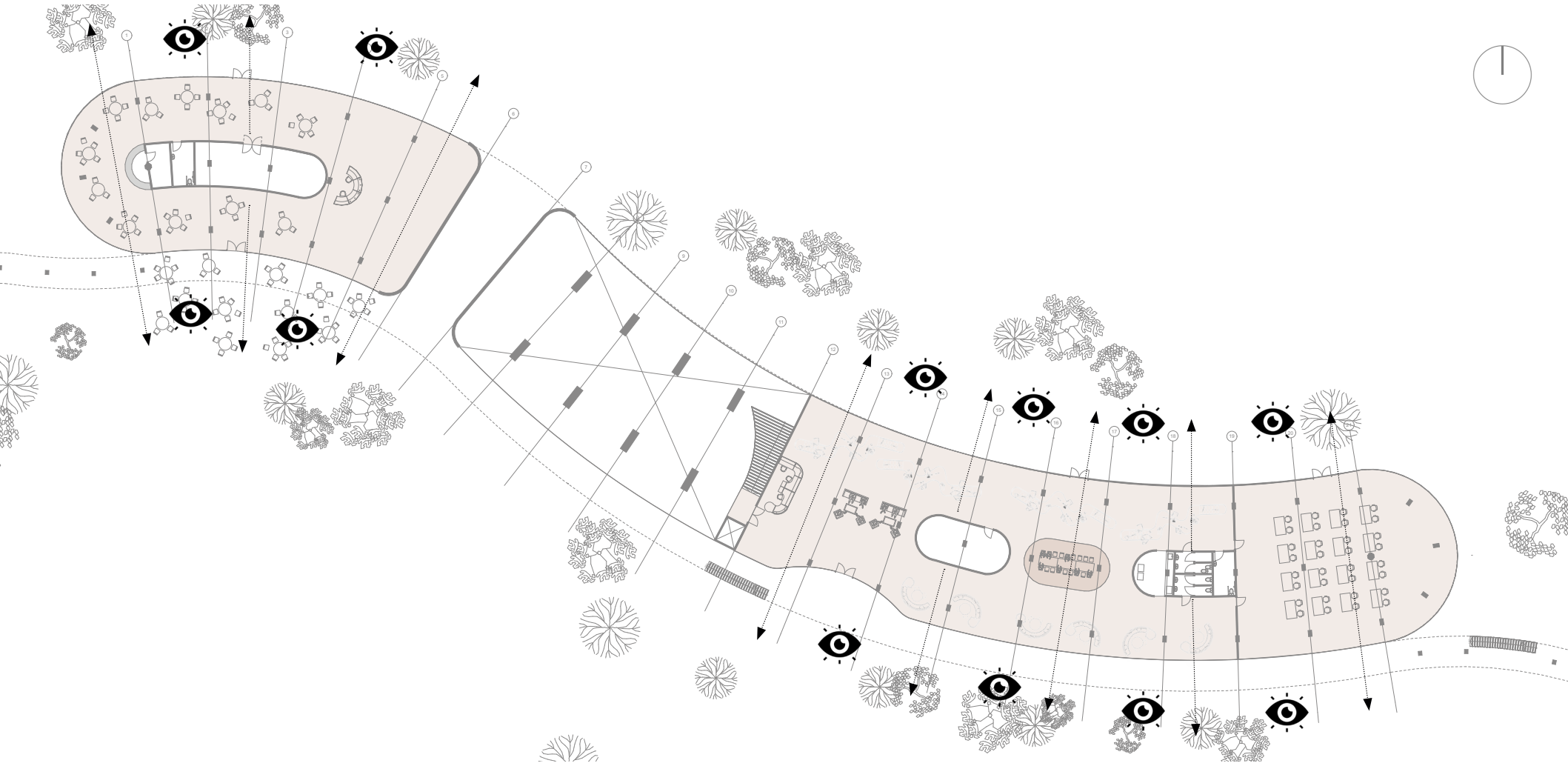
MATERIALITY

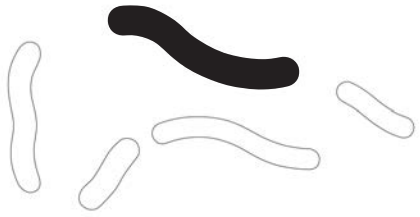


Plato wood impregnated spruce wood cladding

Beige Italian limestone floor tiles

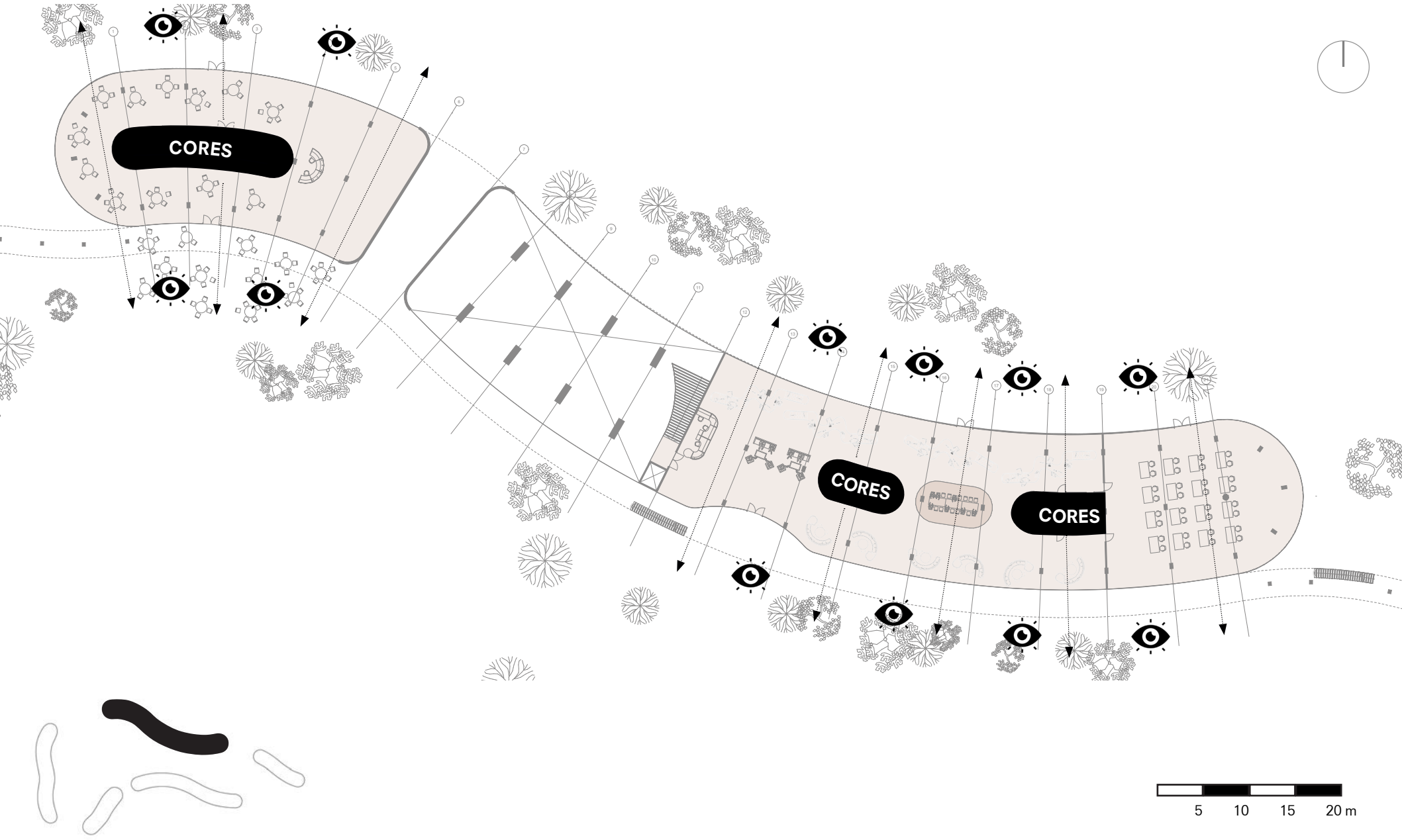
CONNECTION TO OUTDOORS | OPEN FLOOR PLAN





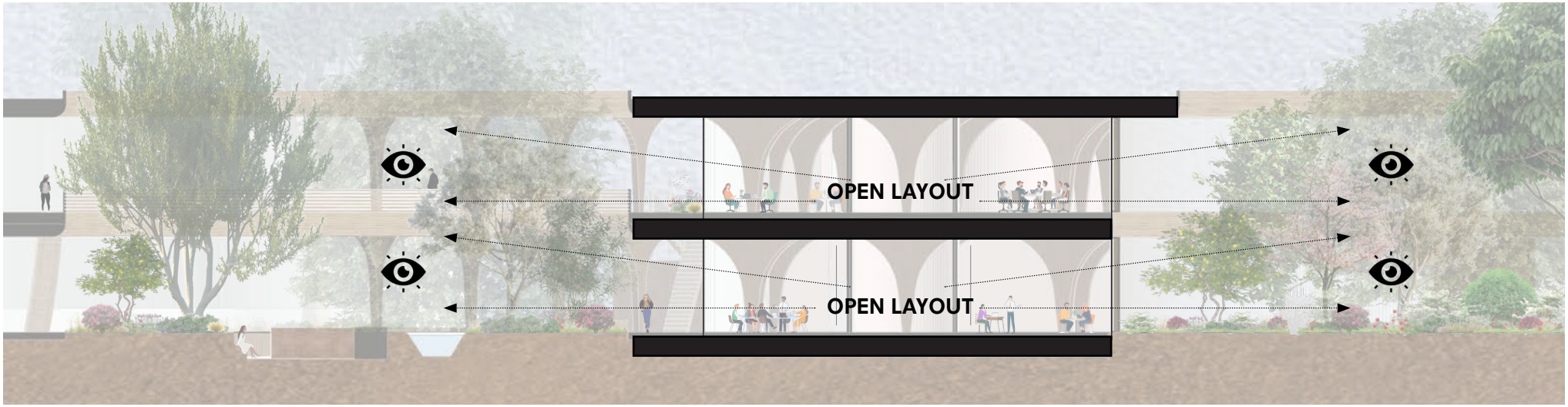
5 10 15 20 m

CONNECTION TO OUTDOORS | OPEN FLOOR PLAN



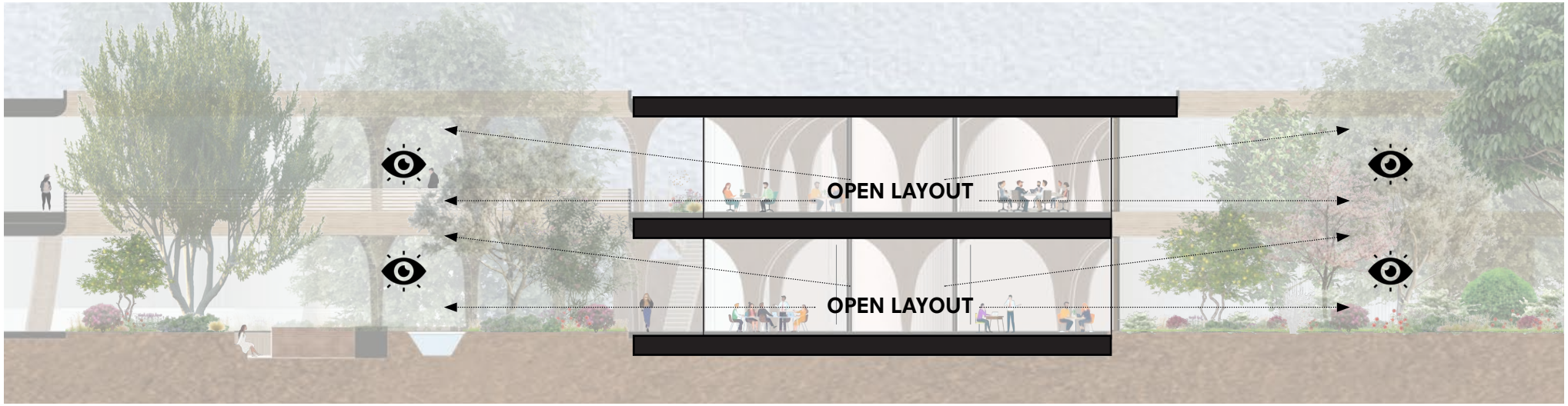
Design

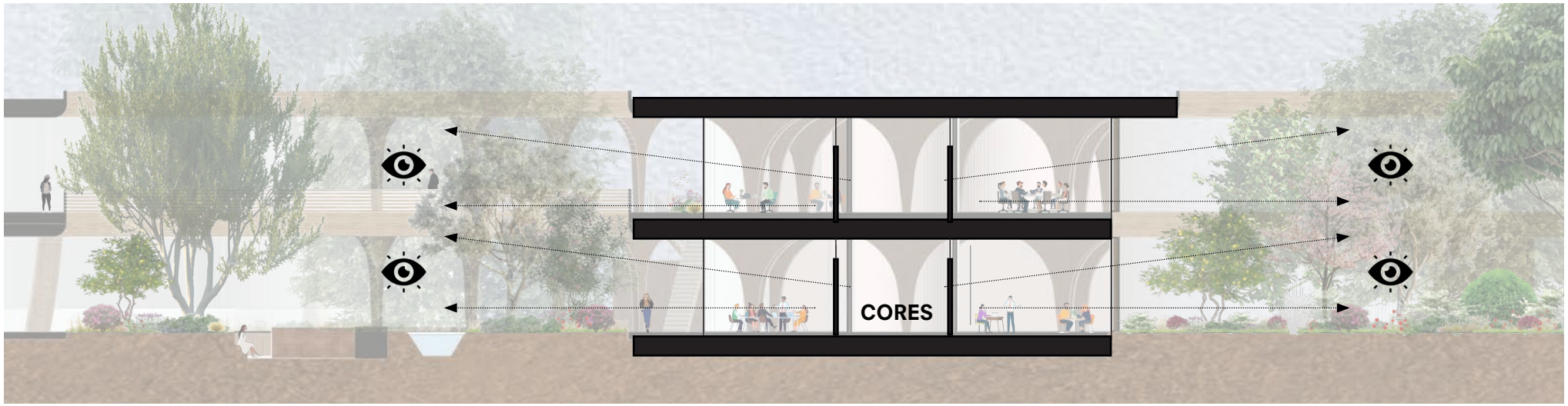
OPEN FLOOR PLAN



2 4 6 8 10 m

OPEN FLOOR PLAN





2 4 6 8 10 m

Design

INDOOR & OUTDOOR CONNECTION

HOW WILL THE BUILDING BE BUILT?

Introduction

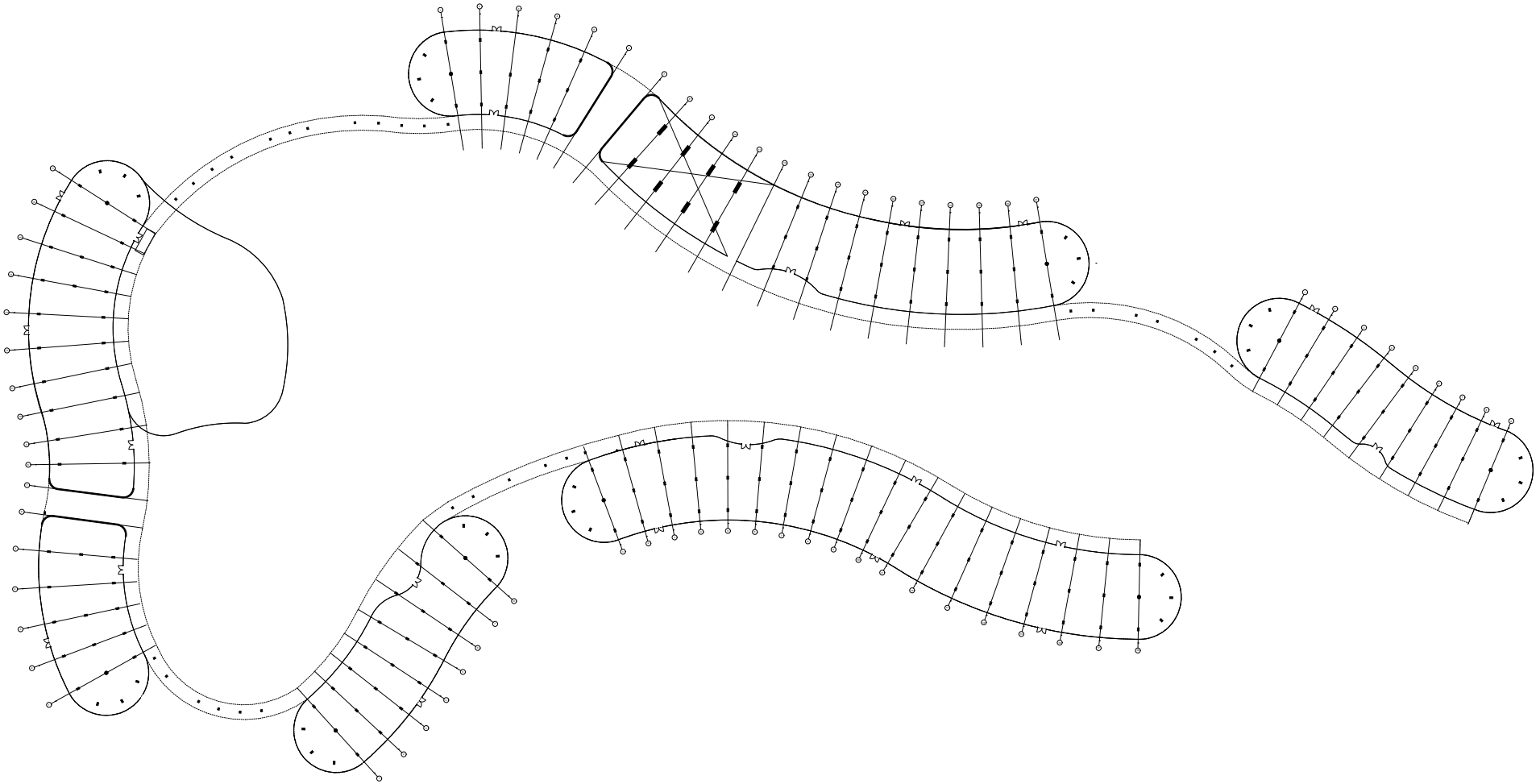
Design brief

Design

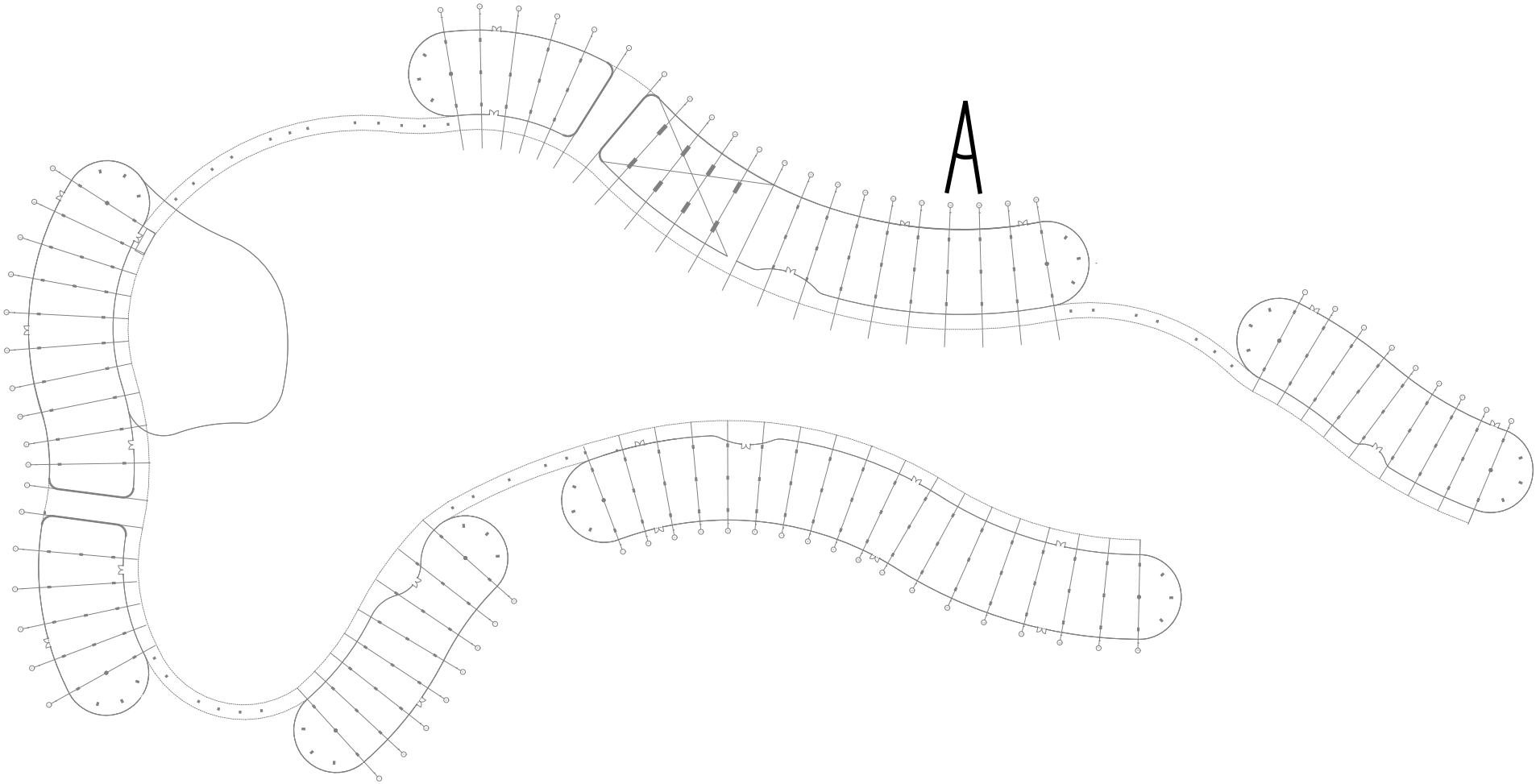
Technical development

Reflection

ORGANIC SHAPES TO BUILDABLE STRUCTURES | REPETITION

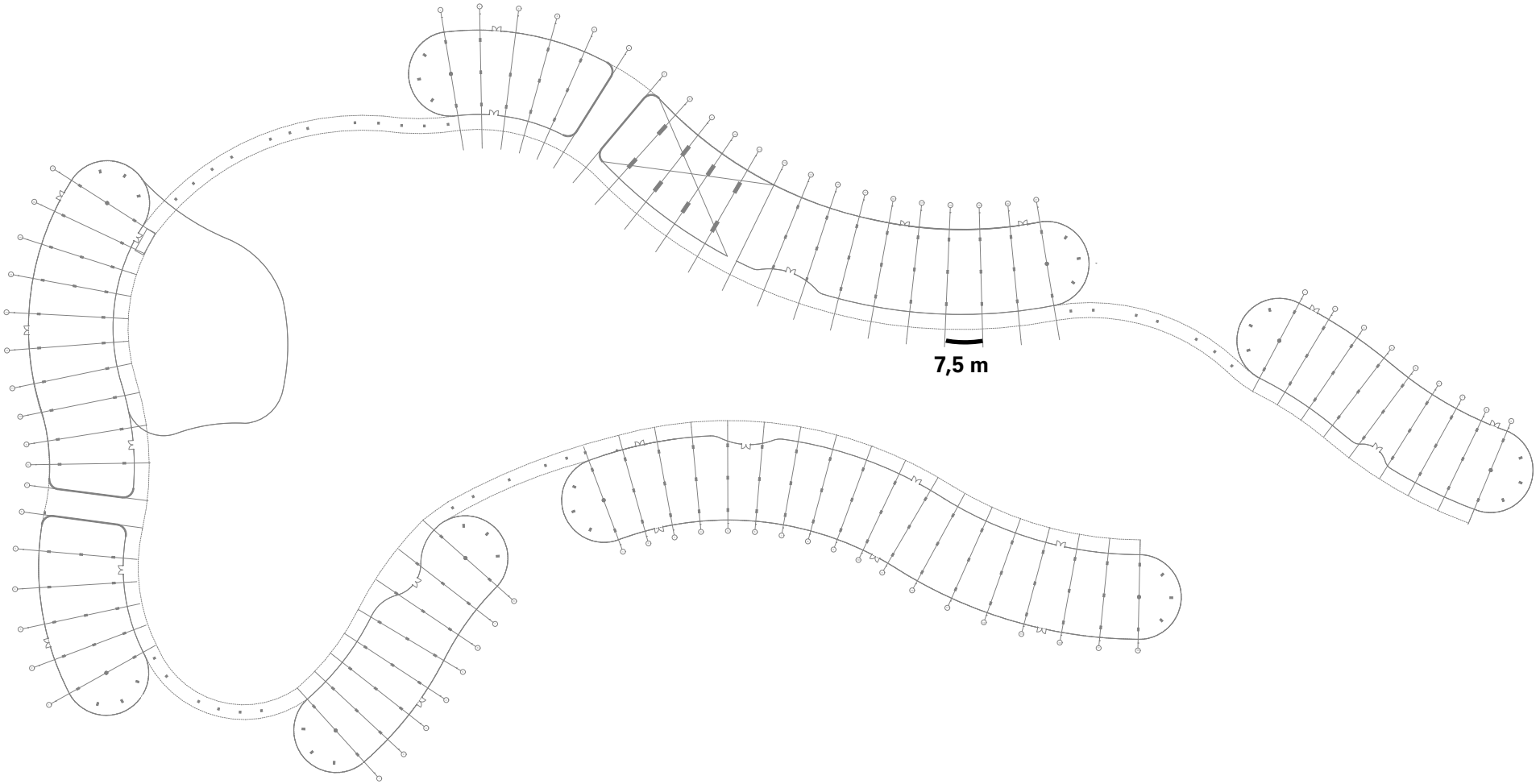


STRUCTURE UNDER AN ANGLE

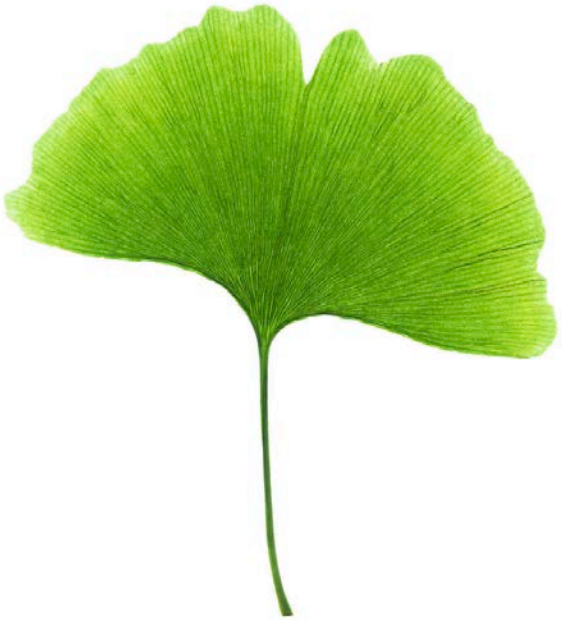


Technical development

STRUCTURE UNDER AN ANGLE

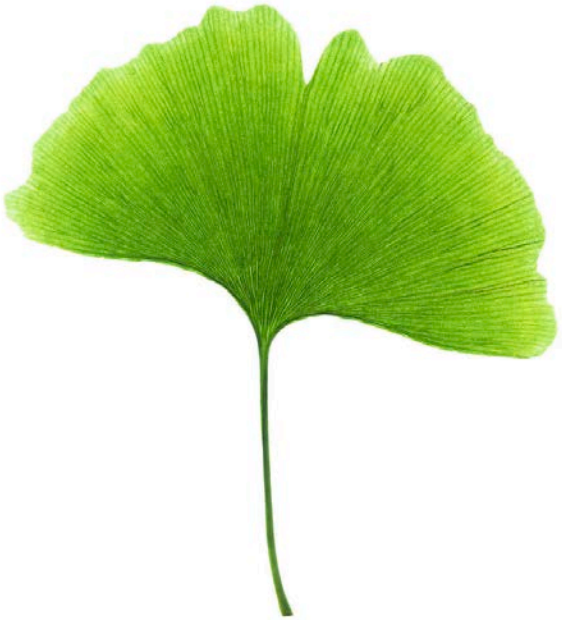


STRUCTURE | REFERRING TO NATURAL SHAPES

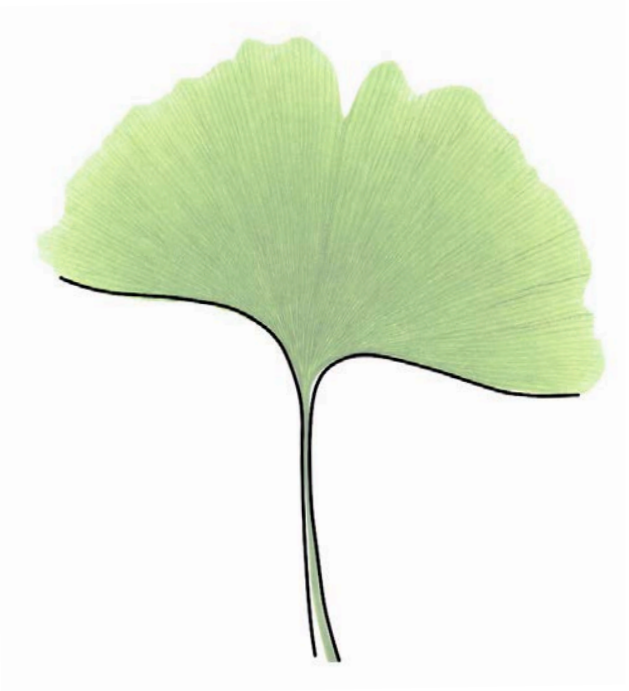


GINKGO LEAVE | NATURAL SHAPE

STRUCTURE | REFERRING TO NATURAL SHAPES

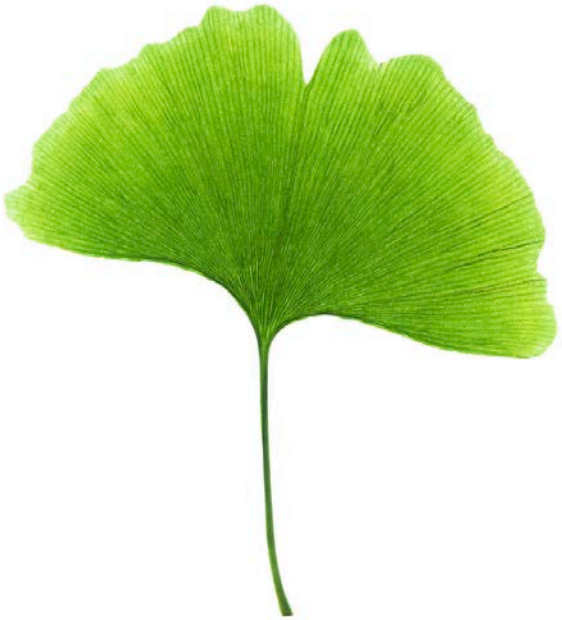


GINKGO LEAVE | NATURAL SHAPE

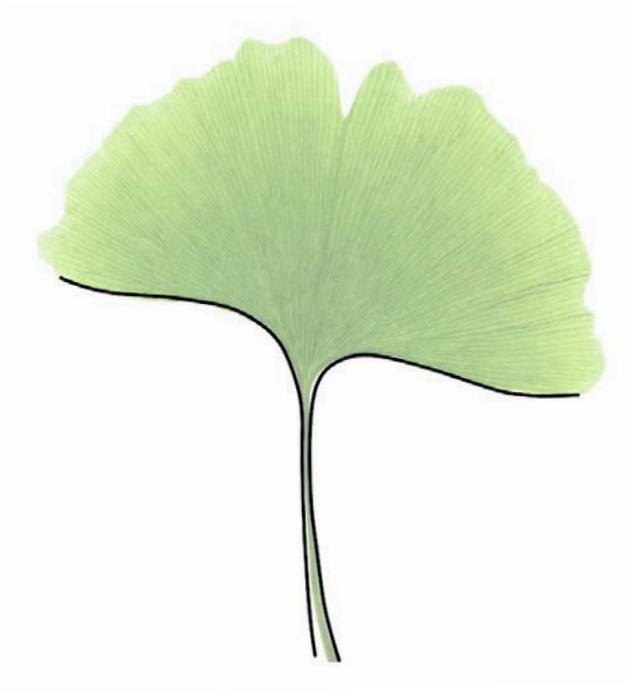


CONTOURS OF GINKGO SHAPE

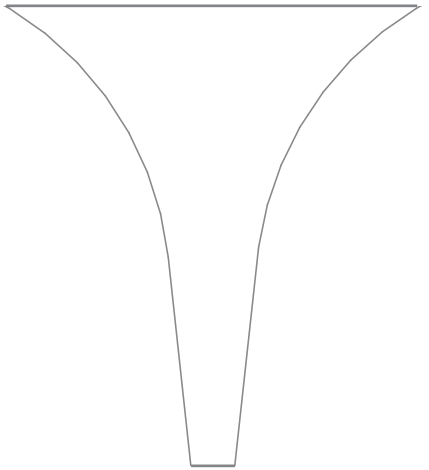
STRUCTURE | REFERRING TO NATURAL SHAPES



GINKGO LEAVE | NATURAL SHAPE

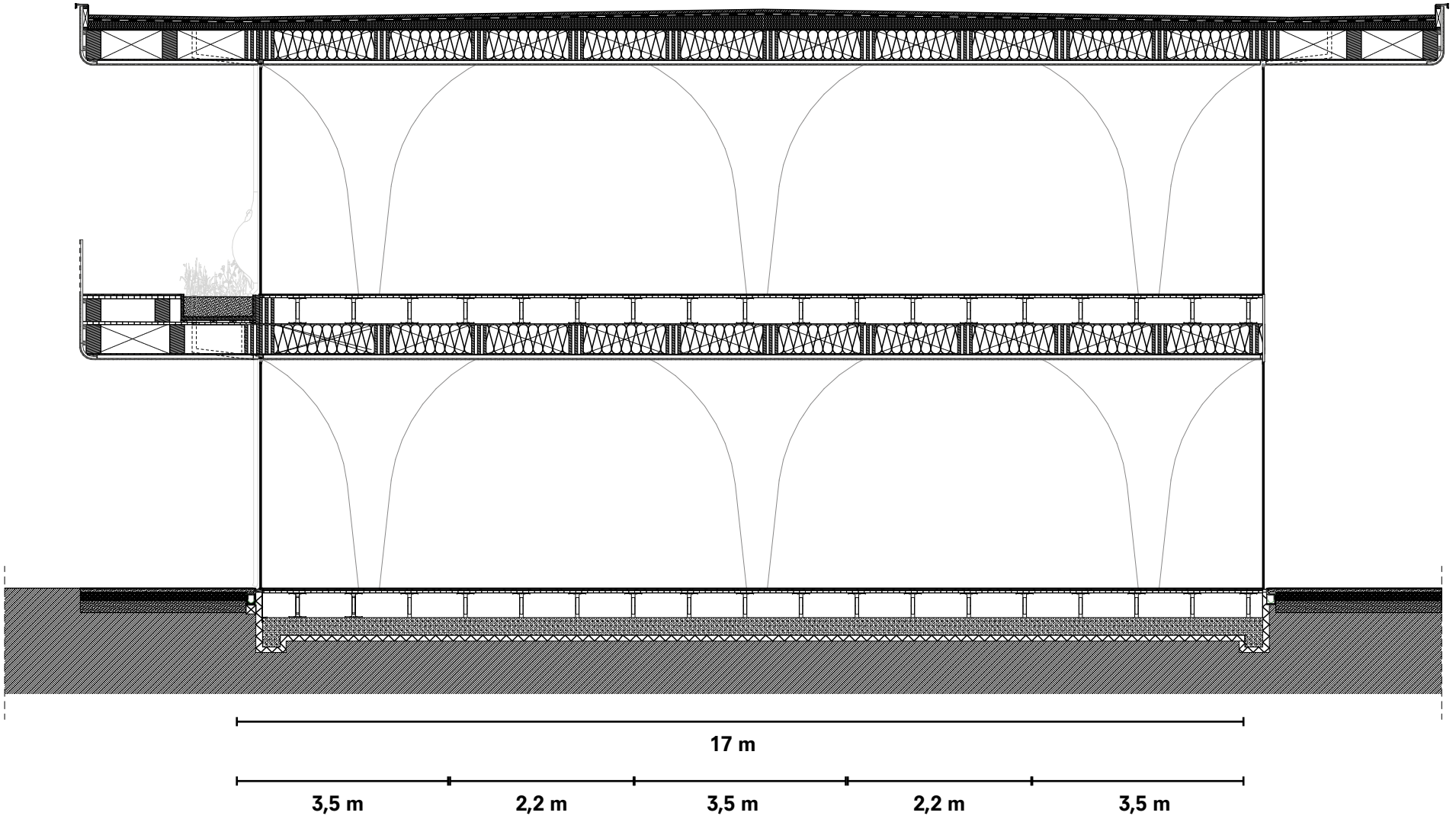


CONTOURS OF GINKGO SHAPE

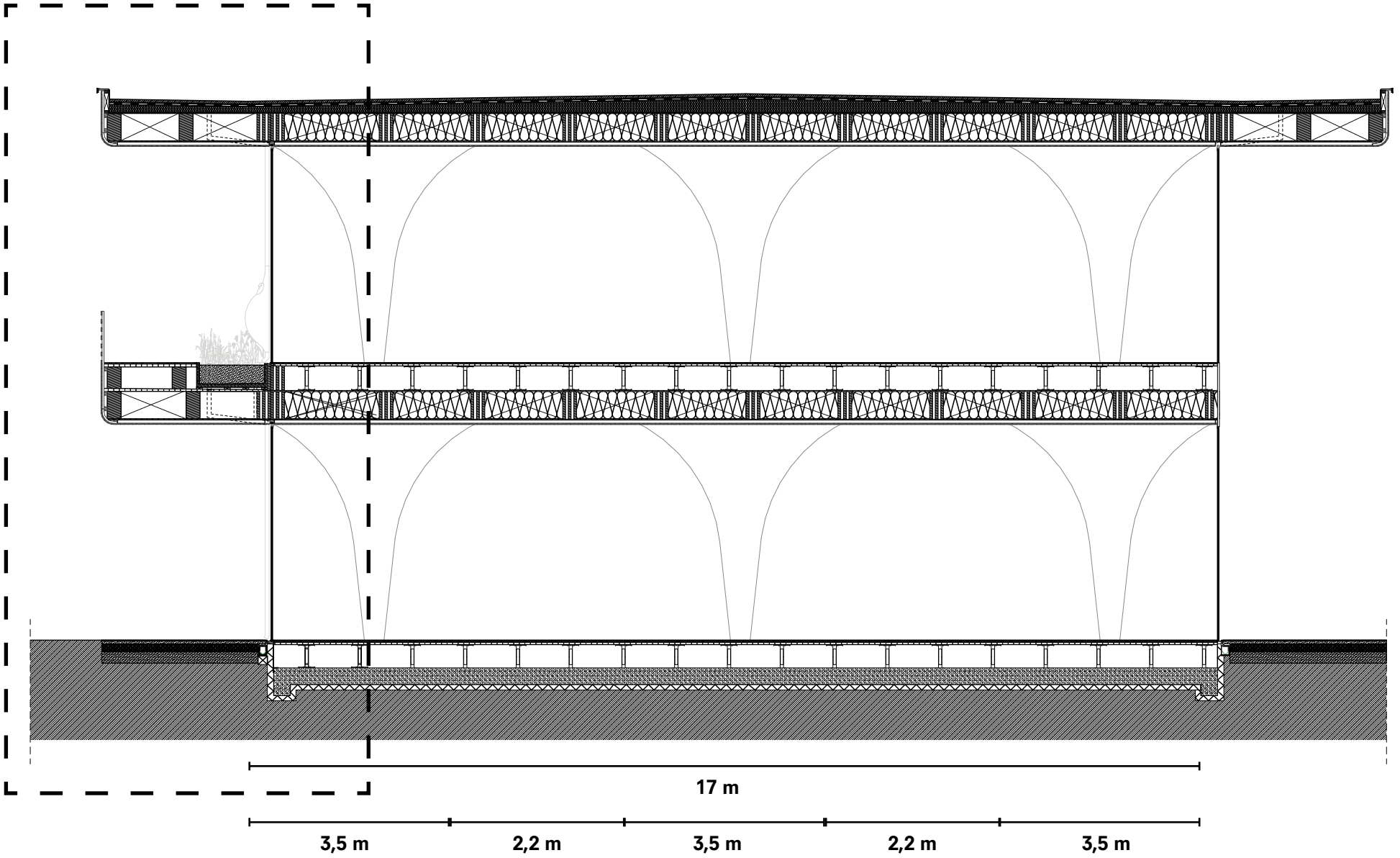


ORGANIC SHAPED COLUMN

CONSTRUCTION ELEMENTS | IN SECTION



CONSTRUCTION ELEMENTS I IN SECTION



Technical development

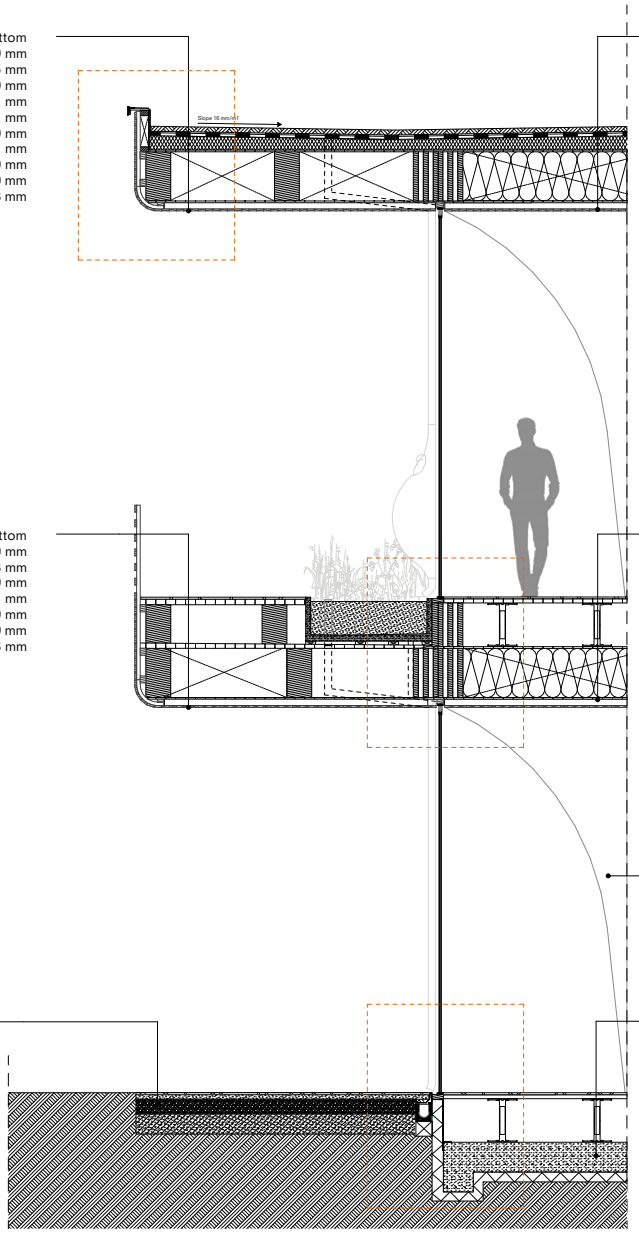
FACADE SECTION

Roof terrace: top > bottom
- Substrate 50 mm
- Filtering layer 15 mm
- Water retention layer 30 mm
- Protective layer 1 mm
- Waterproofing 1 mm
- Sloped wood fiber insulation 100 mm
- Vapour barrier 1 mm
- Wooden beam floor 530 mm
- Vertical slats 70 mm
- Platowood impregnated spruce wood cladding 18 mm

Roof: top > bottom
- Substrate 50 mm
- Filtering layer 15 mm
- Water retention layer 30 mm
- Protective layer 1 mm
- Waterproofing 1 mm
- Sloped wood fiber insulation 100 mm
- Vapour barrier 1 mm
- Insulated wooden beam floor 530 mm
- Vertical slats 70 mm
- Platowood impregnated spruce wood cladding 1

Floor terrace: top > bottom
- Limestone beige tile 20 mm
- Underlayment 18 mm
- Computerfloor 400 mm
- Waterproofing 1 mm
- Sloped wooden beam floor 530 mm
- Vertical slats 70 mm
- Platowood impregnated spruce wood cladding 18 mm

Floor: top > bottom
- Limestone beige tile 20 mm
- Underlayment 40 mm
- Computerfloor (installations) 440 mm
- Insulated wooden beam floor 530 mm
- Vertical slats 70 mm
- Platowood impregnated spruce wood cladding 1



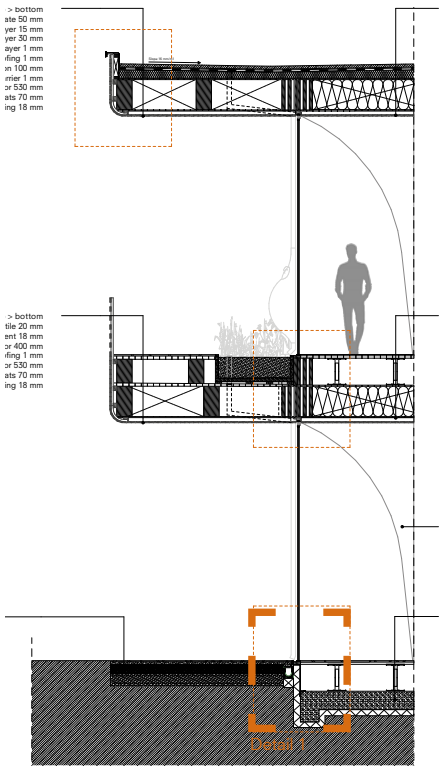
Cross laminated timber column

Floor outdoor terrace:
- Limestone beige tile 20 mm
- Tile glue 5 mm
- Screed 50 mm
- Granular concrete150 mm
- Concrete rubble 200 mm

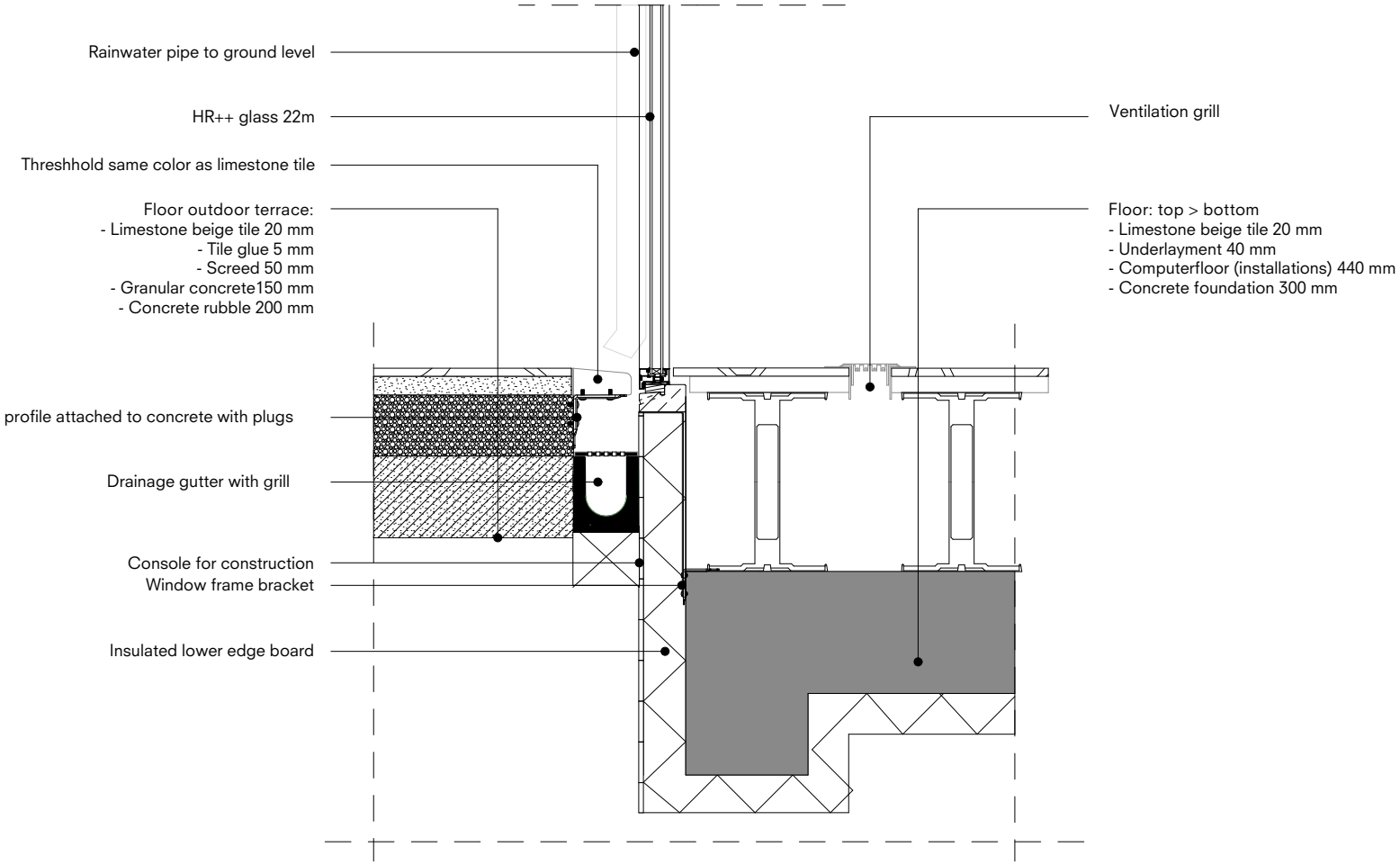
Floor: top > bottom
- Limestone beige tile 20 mm
- Underlayment 40 mm
- Computerfloor (installations) 440 mm
- Insulation 200 mm
- Concrete foundation 800 mm

STRUCTURE IN THE FACADE

DETAILS | INDOOR OUTDOOR CONNECTION



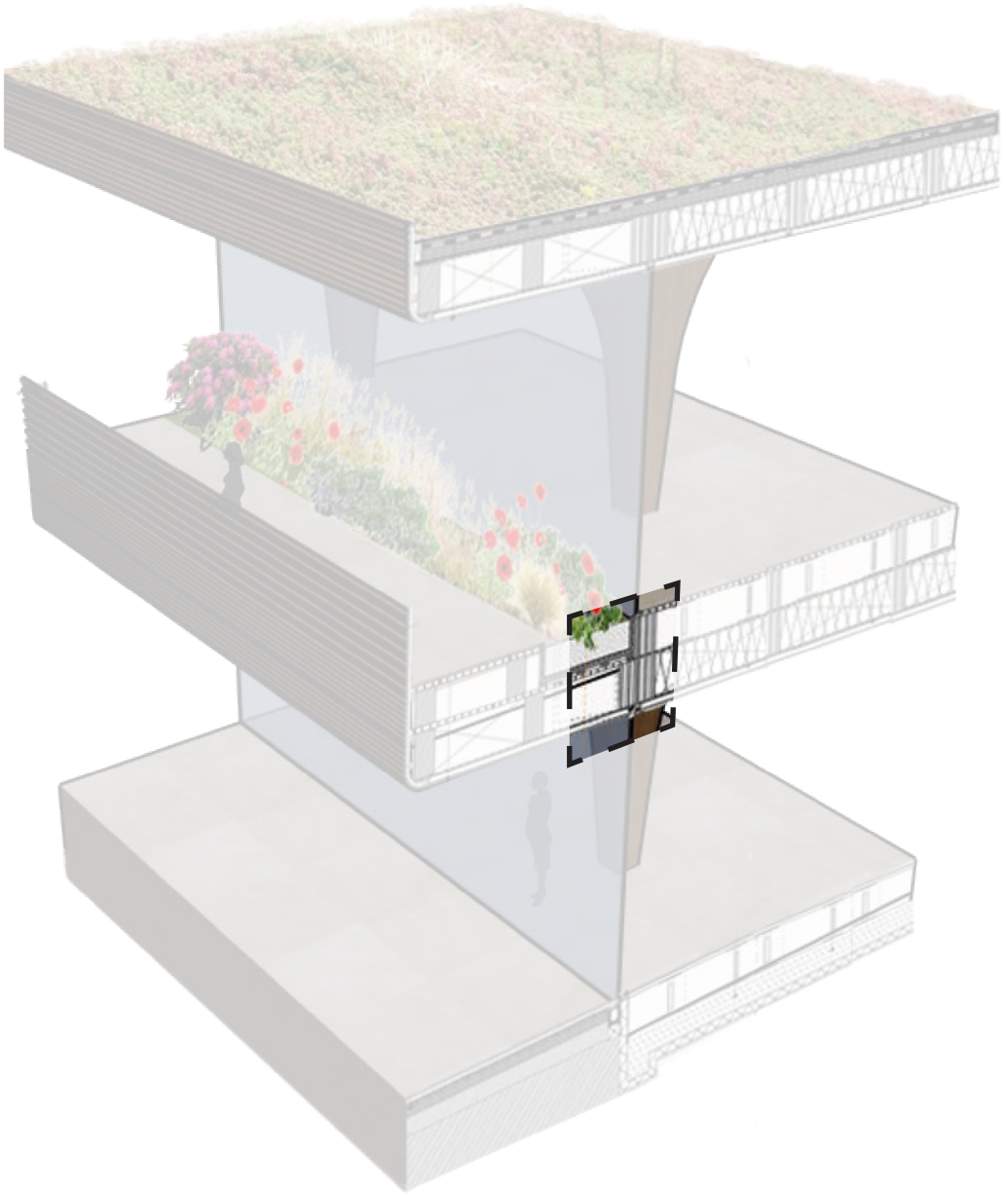
Location of detail



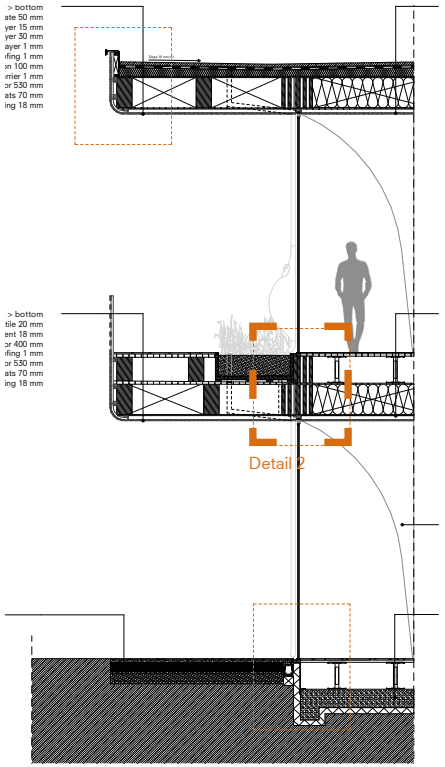
DETAIL 1 | FOUNDATION

0,1 0,2 0,3 0,4 0,5 m

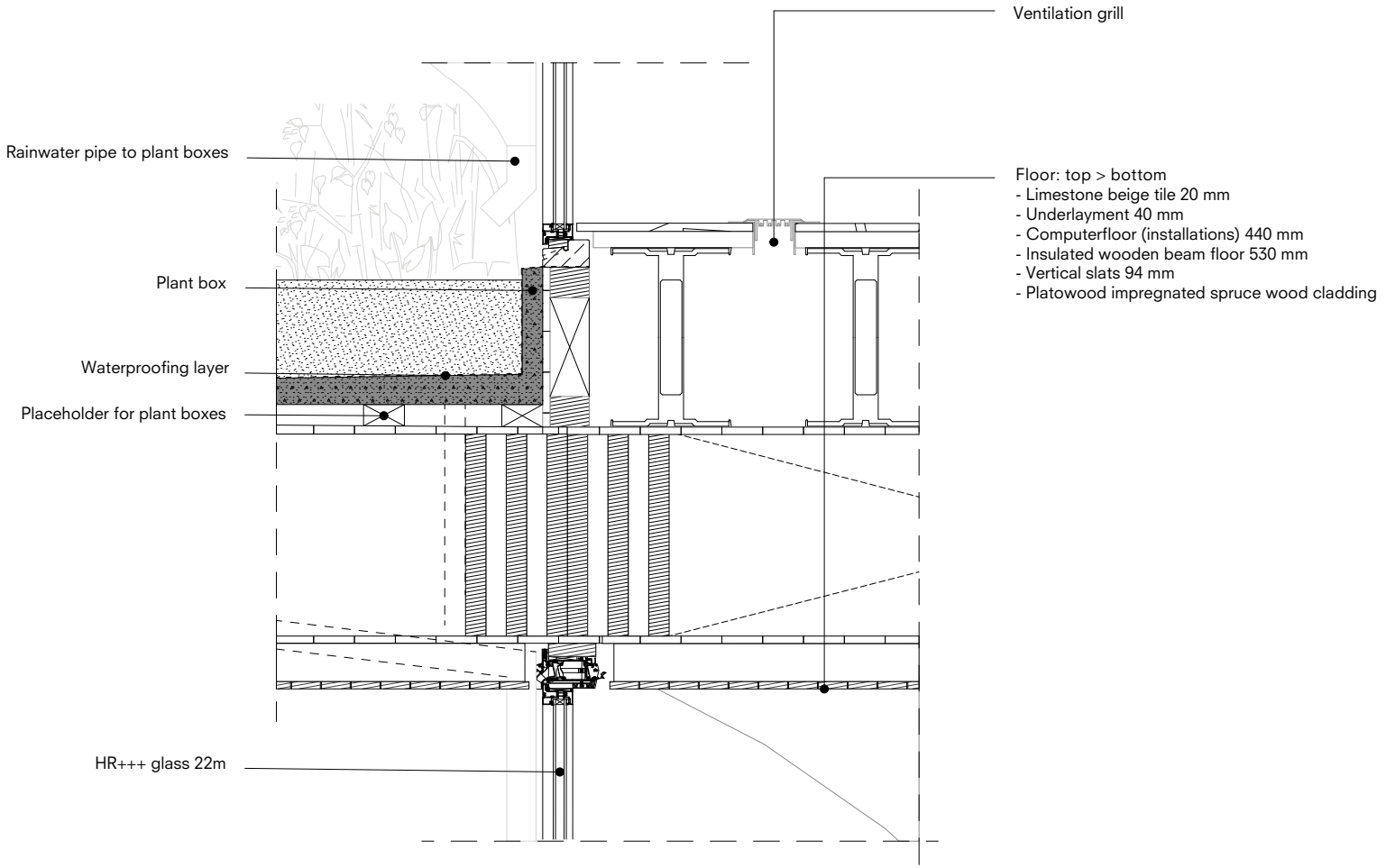
STRUCTURE IN THE FACADE



DETAILS | INDOOR OUTDOOR CONNECTION



Location of detail



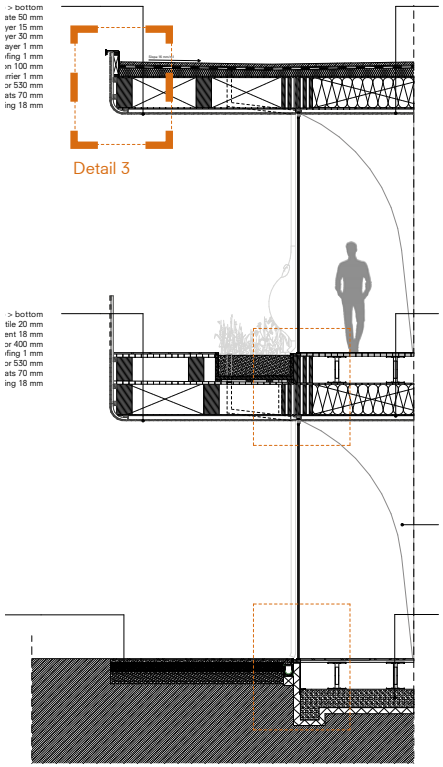
DETAIL 2 | FLOOR TERRACE CONNECTION

0,1 0,2 0,3 0,4 0,5 m

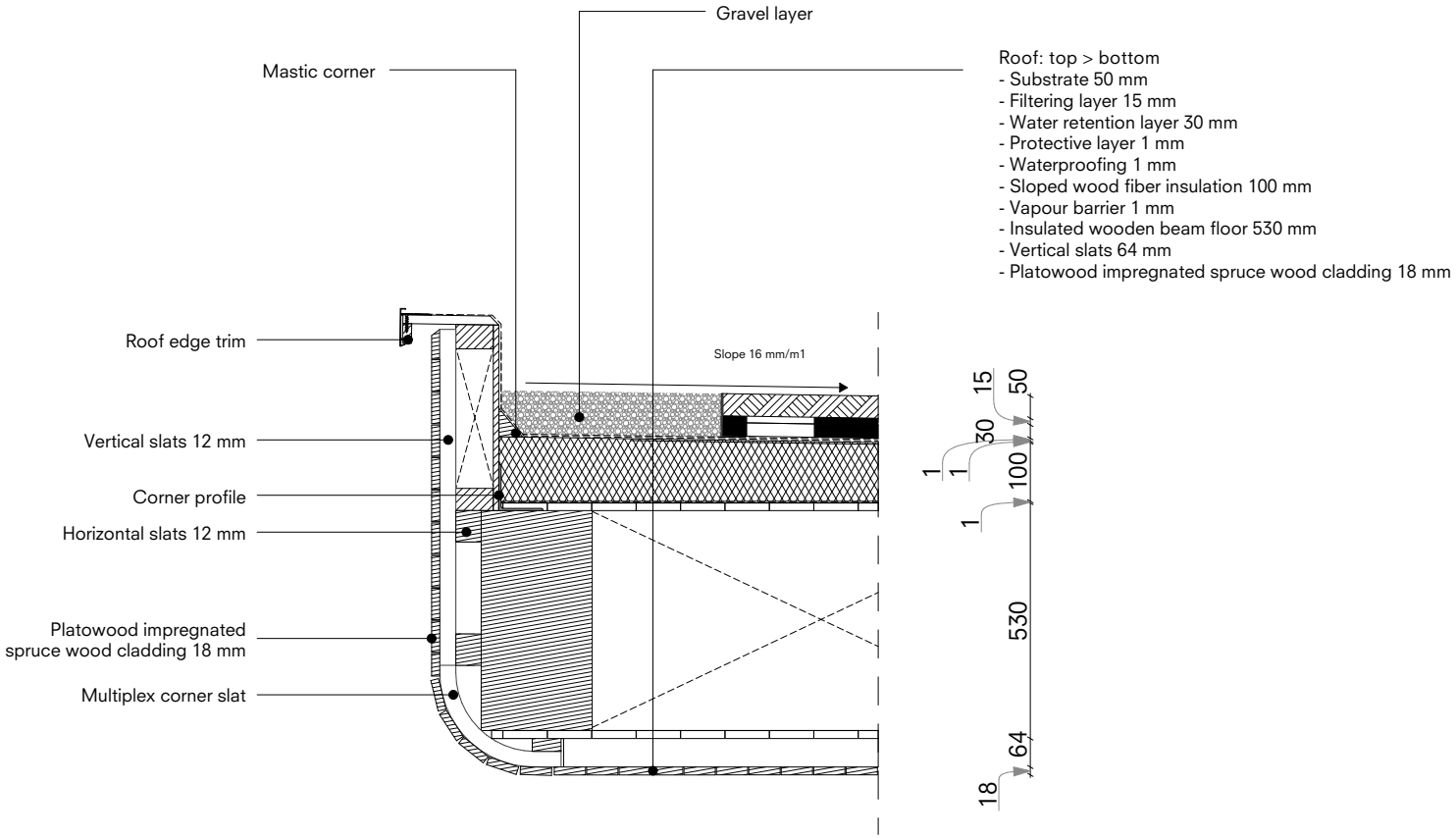
Technical development

STRUCTURE IN THE FACADE

DETAILS | INDOOR OUTDOOR CONNECTION



Location of detail



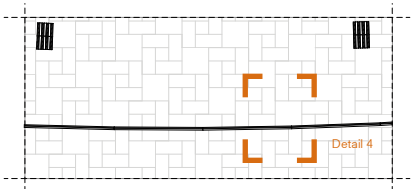
Roof: top > bottom
- Substrate 50 mm
- Filtering layer 15 mm
- Water retention layer 30 mm
- Protective layer 1 mm
- Waterproofing 1 mm
- Sloped wood fiber insulation 100 mm
- Vapour barrier 1 mm
- Insulated wooden beam floor 530 mm
- Vertical slats 64 mm
- Platowood impregnated spruce wood cladding 18 mm

DETAIL 3 | ROOF TERRACE EDGE

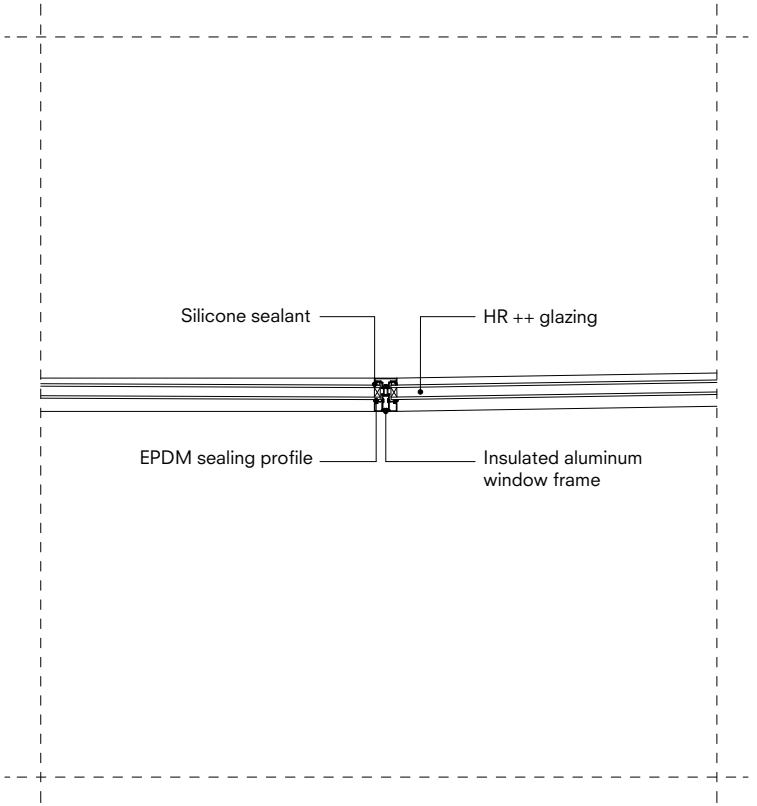
0,1 0,2 0,3 0,4 0,5 m

STRUCTURE IN THE FACADE

DETAILS | INDOOR OUTDOOR CONNECTION



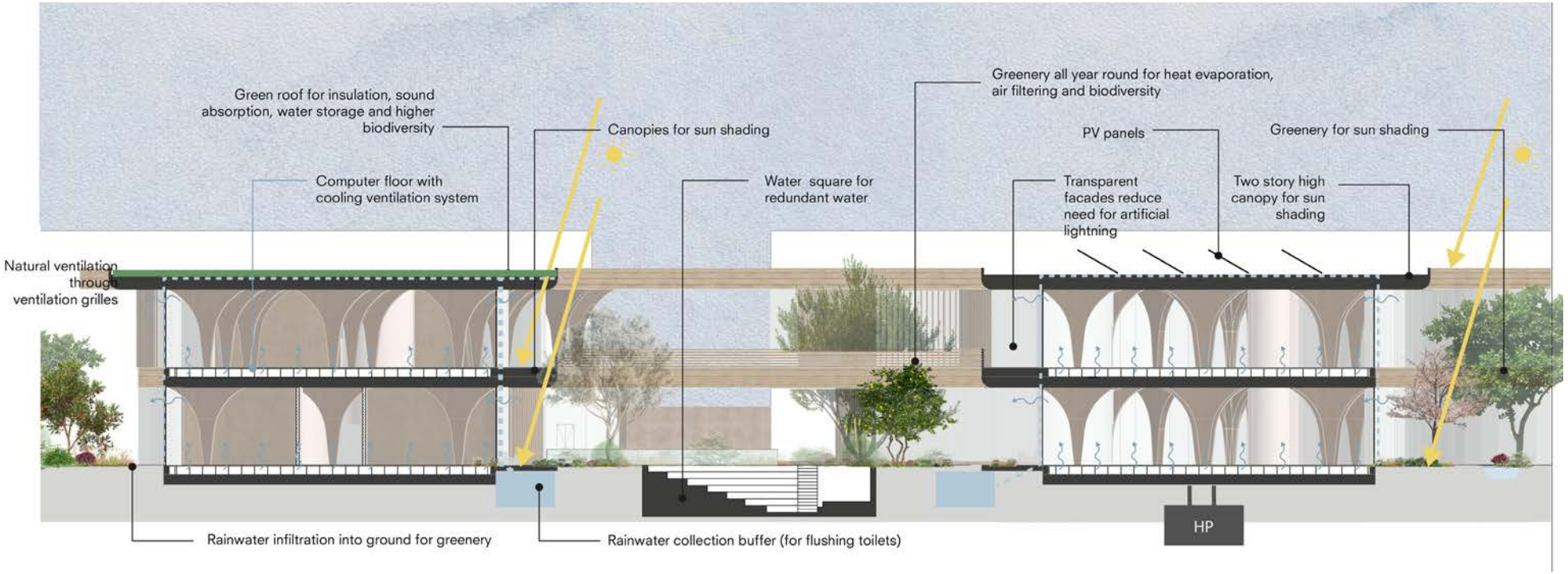
LOCATION OF DETAIL

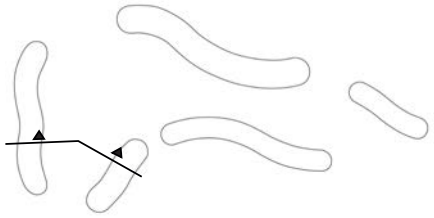


Detail 4 | Horizontal window

0,1 0,2 0,3 0,4 0,5 m

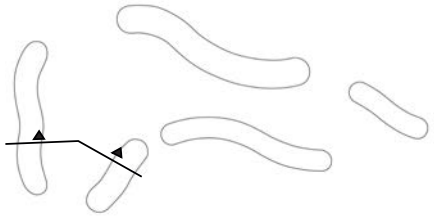
CLIMATE PRINCIPLE | SUMMER





2 4 6 8 10 m

CLIMATE PRINCIPLE | WINTER



2 4 6 8 10 m

Introduction

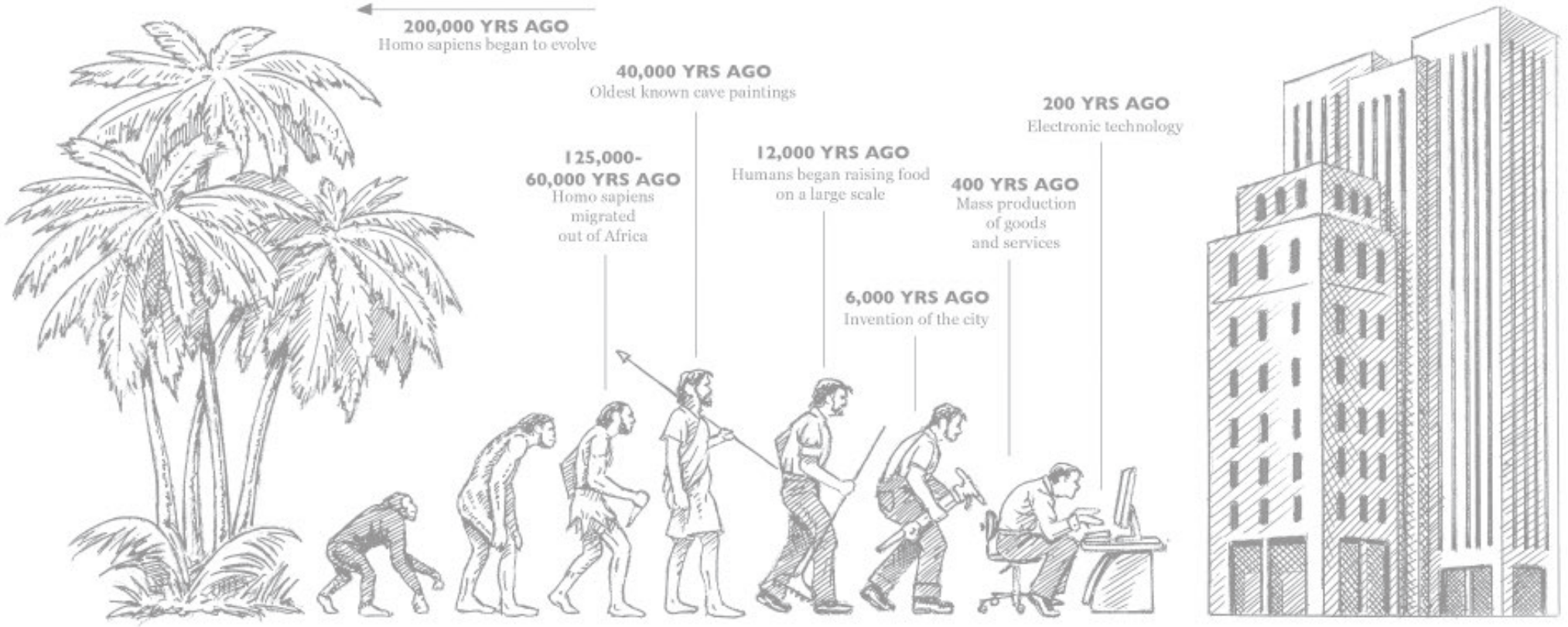
Design brief

Concept

Technical development

Reflection

RESTORING HUMAN SCALE WITH BIOPHILIA



A STEP TO A GREENER MILAN

A STEP TO A GREENER MILAN | THE GREEN KNOWLEDGE HUB

Green lungs around the city

The green knowledge hub

ART & ARCHITECTURE
DESIGN
LITERATURE

MILAN THE CITY OF GREEN INITIATIVES

FASHION
ECONOMY
SPORTS

THANK YOU