GOOD TRIP

URBAN CARE INFRASTRUCTURES

URBAN HOSPITAL



Casa di cura La Madonnina, Milan

THE STARTING POINT



URBAN HOSPITAL



Bellevue Hospital in New York

URBAN HOSPITAL



Diaconessenhuis Eindhoven

URBAN HOSPITAL



Erasmus MC in Rotterdam

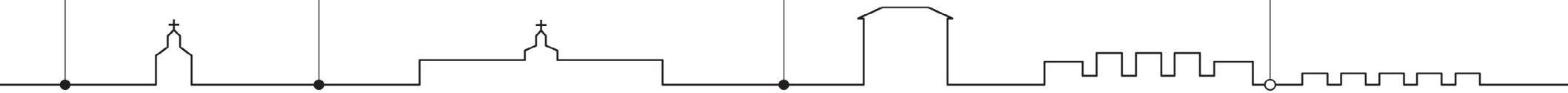
EVOLUTION OF THE HOSPITAL TYPE

c. 910
Infirmary

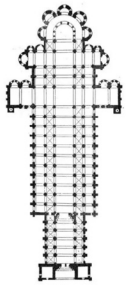
c. 1400-1500
Charity-based Public Institution

c. 1800
Sanitation and Control

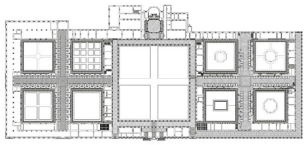
c.1900
Hospital as Factory



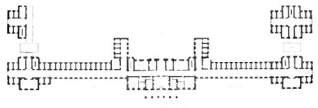
Basilica
Monastery of Cluny



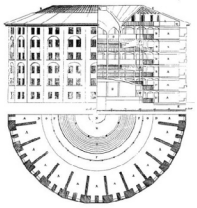
Crossward
Ospedale Maggiore



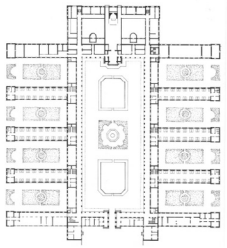
Manor
Bethlehem Hospital



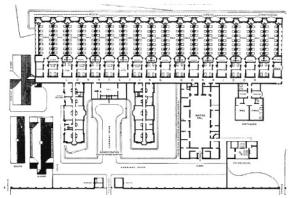
Panoptic
Jeremy Bentham



Pavillion / Nightingale Ward
Hôpital Lariboisière



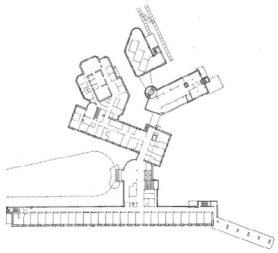
Field Hospital
Royal Victoria Hospital



EVOLUTION OF THE HOSPITAL TYPE

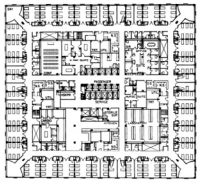
c. 1930
Healing Machine

Sanatoria
Paimio Sanatorium



c. 1950
High-rise Hospital

Block Hospital
Bellevue Hospital



Tower on Podium
Diaconessenhuis
Eindhoven

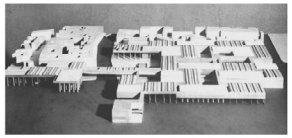


c. 1960
Mega Hospital

Medical Center
McMaster University
Health Sciences Center



Mat
Venice Hospital Corbusier



c. 2000
Medical Complex

University Medical Center
Erasmus Medical Center



2100
Specialization and Decentralization

The New Urban Hospital

?

OSPEDALE MAGGIORE



HOSPITAL AS A SOCIAL PALACE

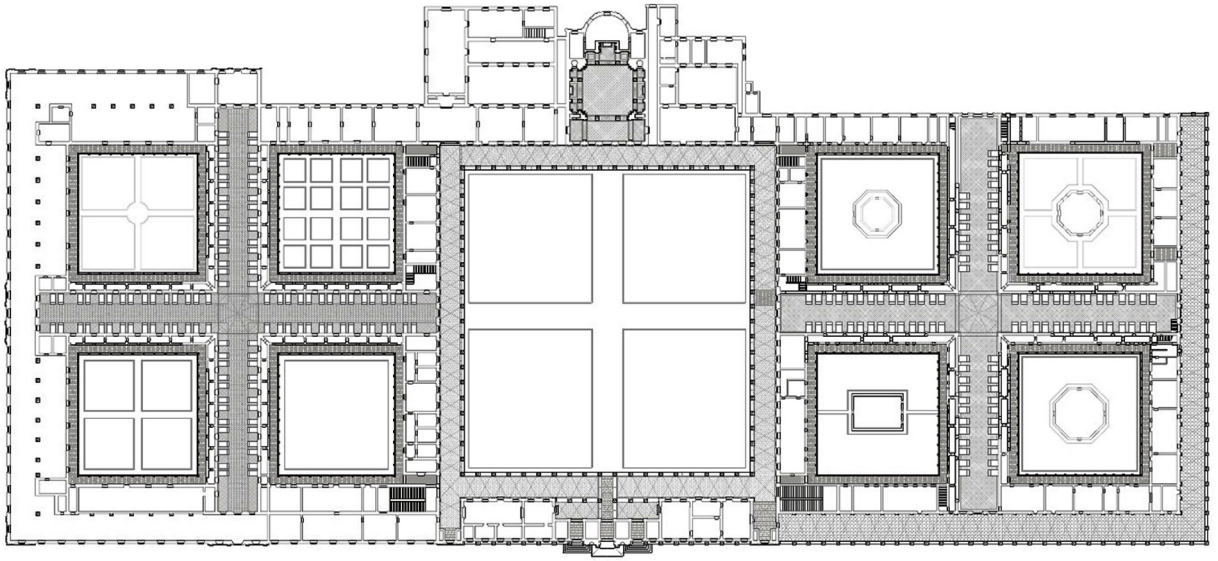


Feast of Forgiveness at the Maggiore Hospital in Milan

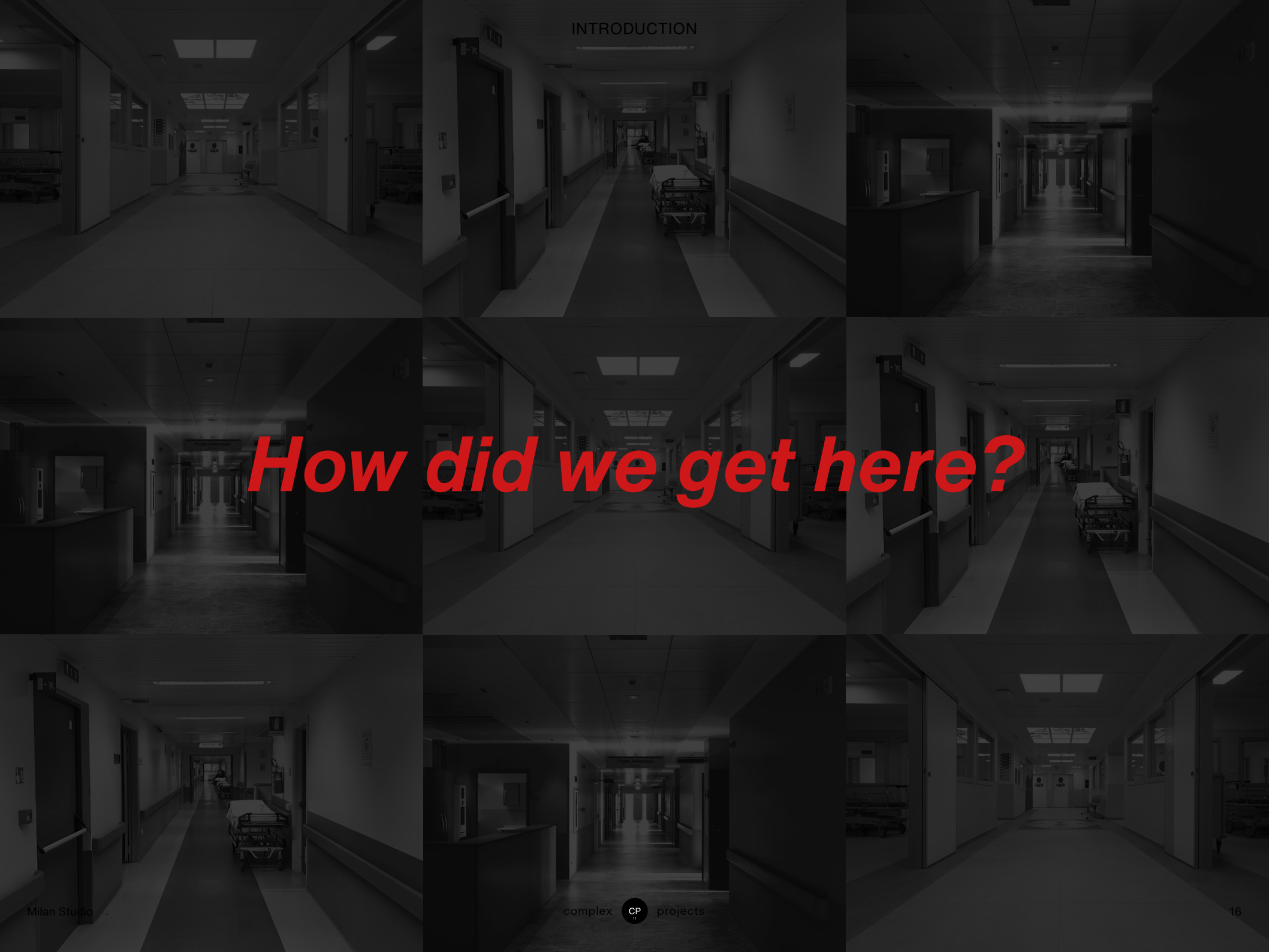
Source: “LA FESTA DEL PERDONO NEI CORTILI DELL’OSPEDALE MAGGIORE DI MILANO”, Giuseppe Ponga

CROSSWARD PLAN

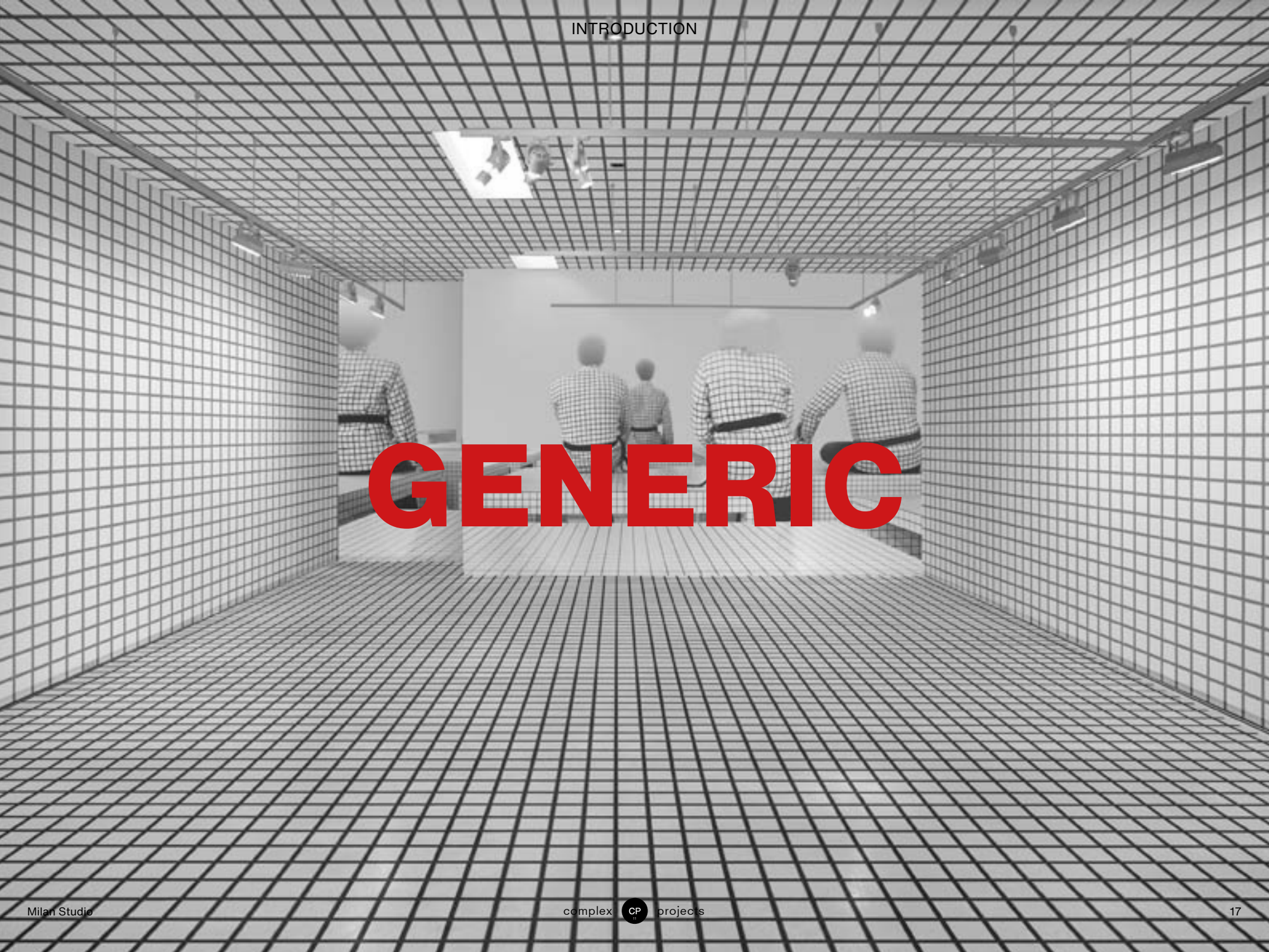




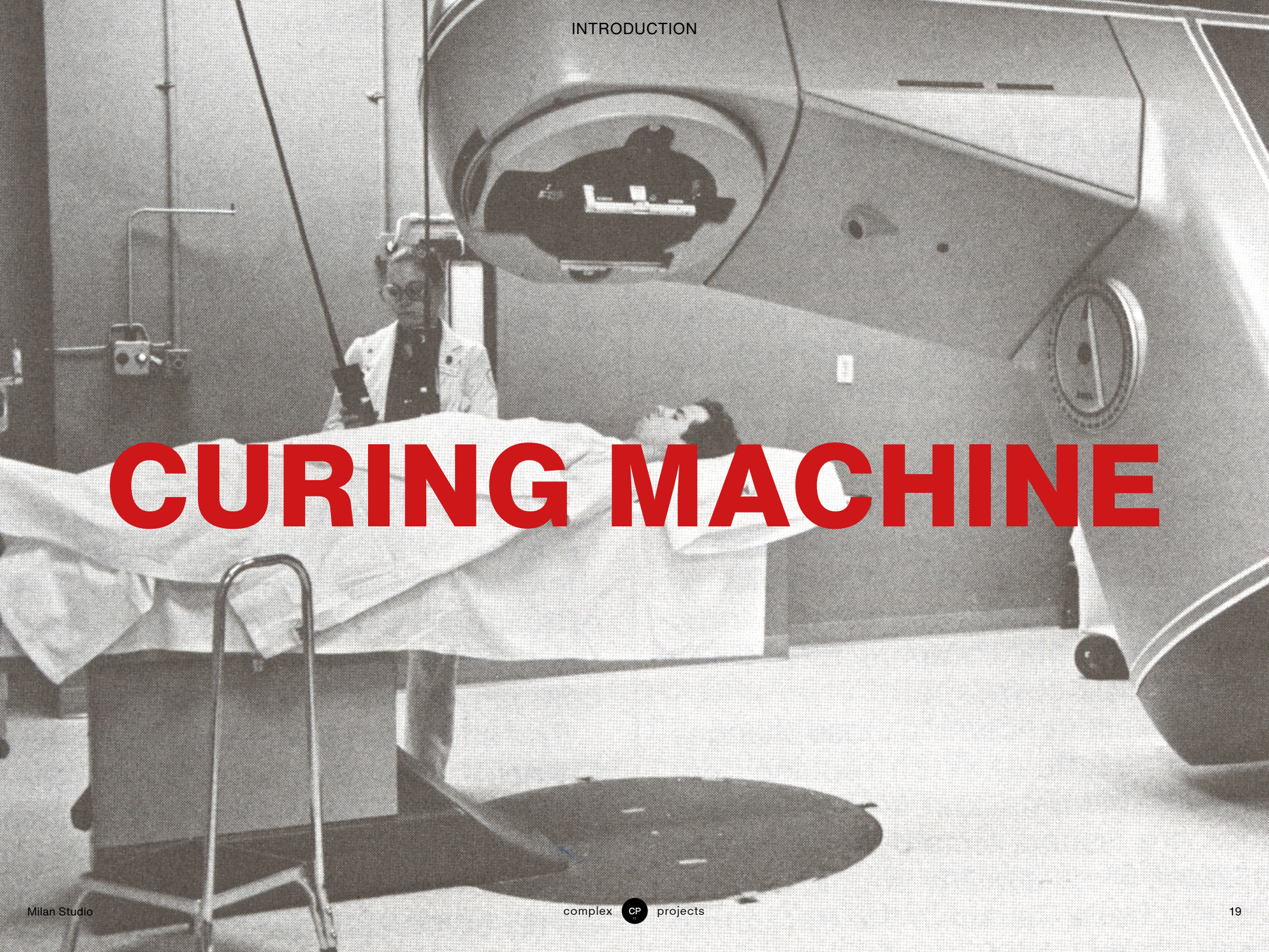

Posta Infermieri



How did we get here?

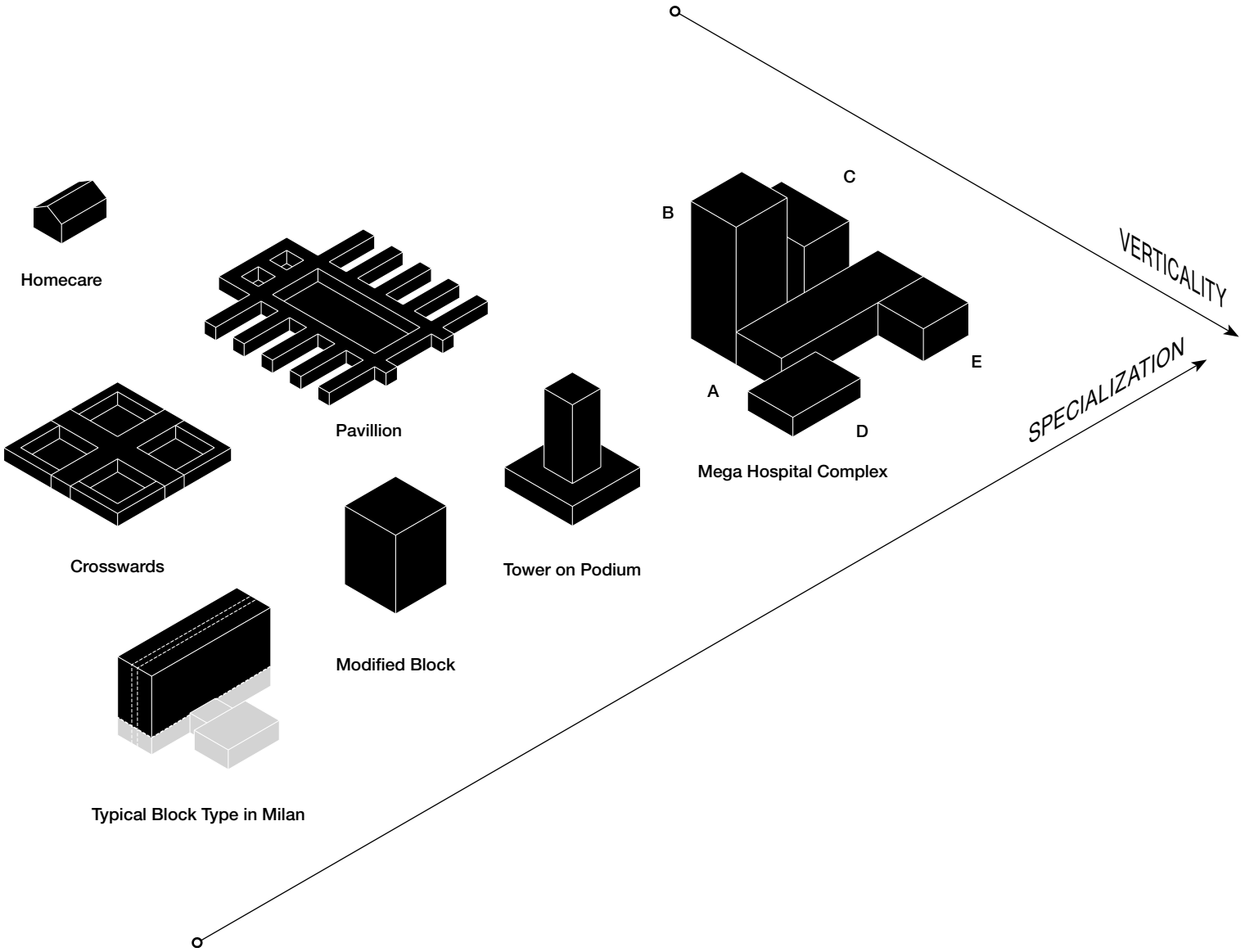

GENERIC


HERMETIC

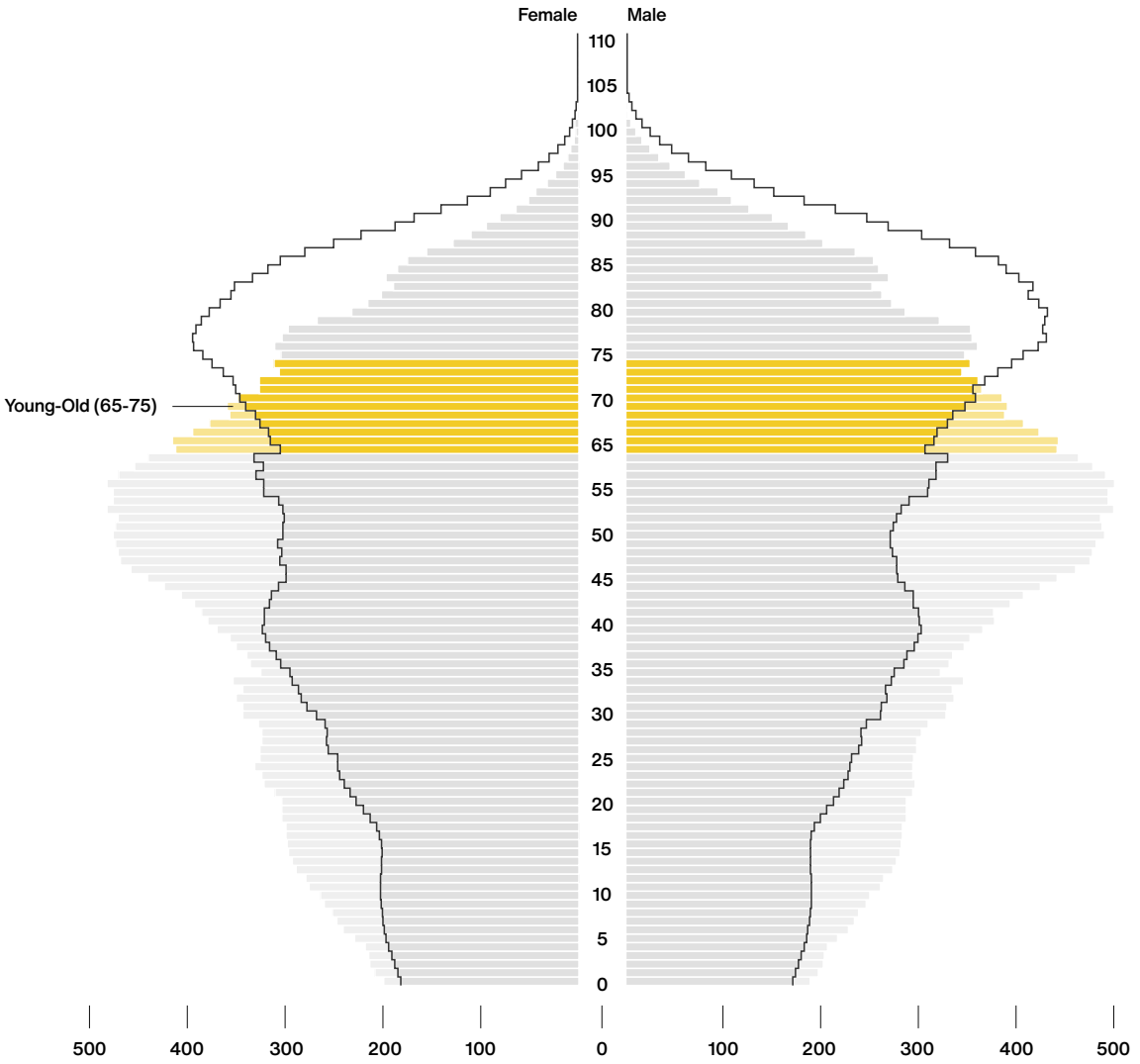


CURING MACHINE

EVOLUTION OF HOSPITAL TYPE IN MILAN



SUPERAGED ITALY

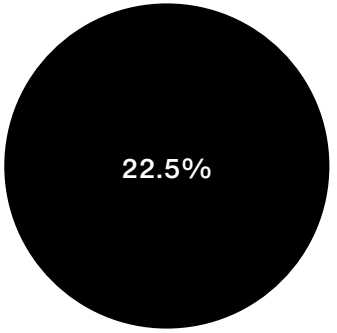


Source: https://www.mckinsey.com/featured-insights/sustainable-inclusive-growth/charts/superaged-like-a-fine-wine

HIGH CANCER MORTALITY

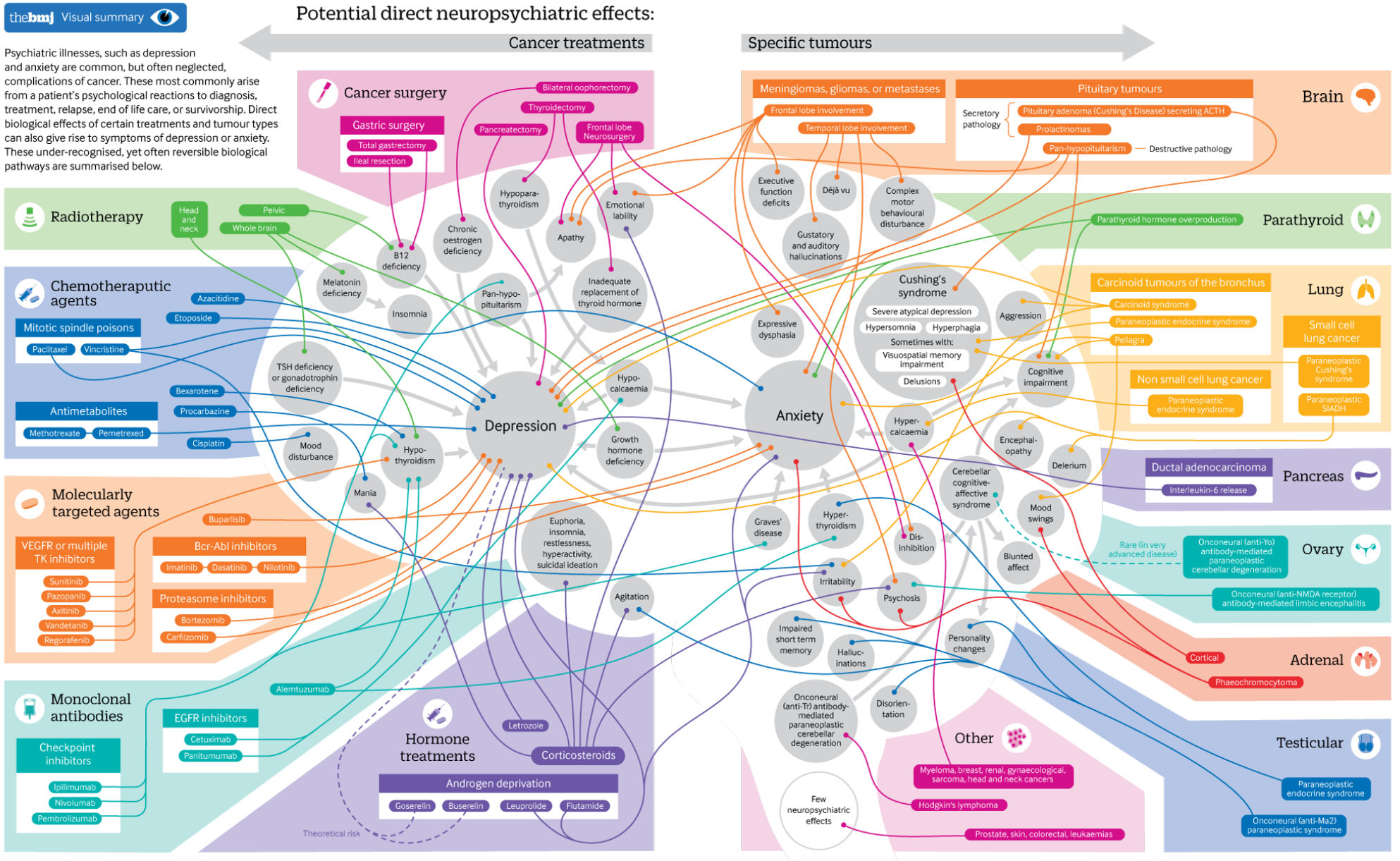


COVID MORTALITY IN ITALY IN 2020



CANCER MORTALITY IN ITALY IN 2020

DEPRESSION AND ANXIETY IN CANCER PATIENTS



 Source: BMJ 2018, doi: https://doi.org/10.1136/bmj.k1415

NOT A BED PROBLEM!



Milan Studio Source: Finantial Times

ON ILLNESS

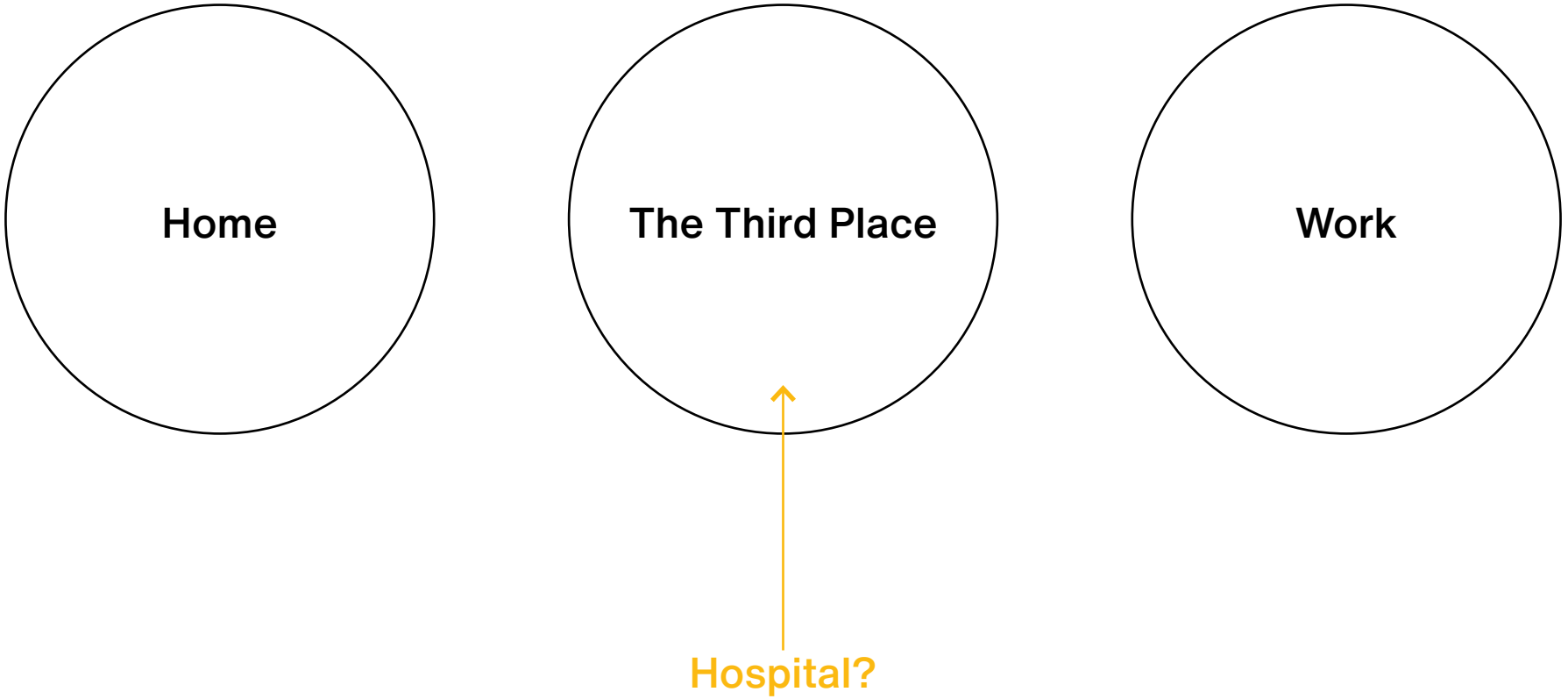


Milan Studio Film still from Amour (2012) by Michael Haneke

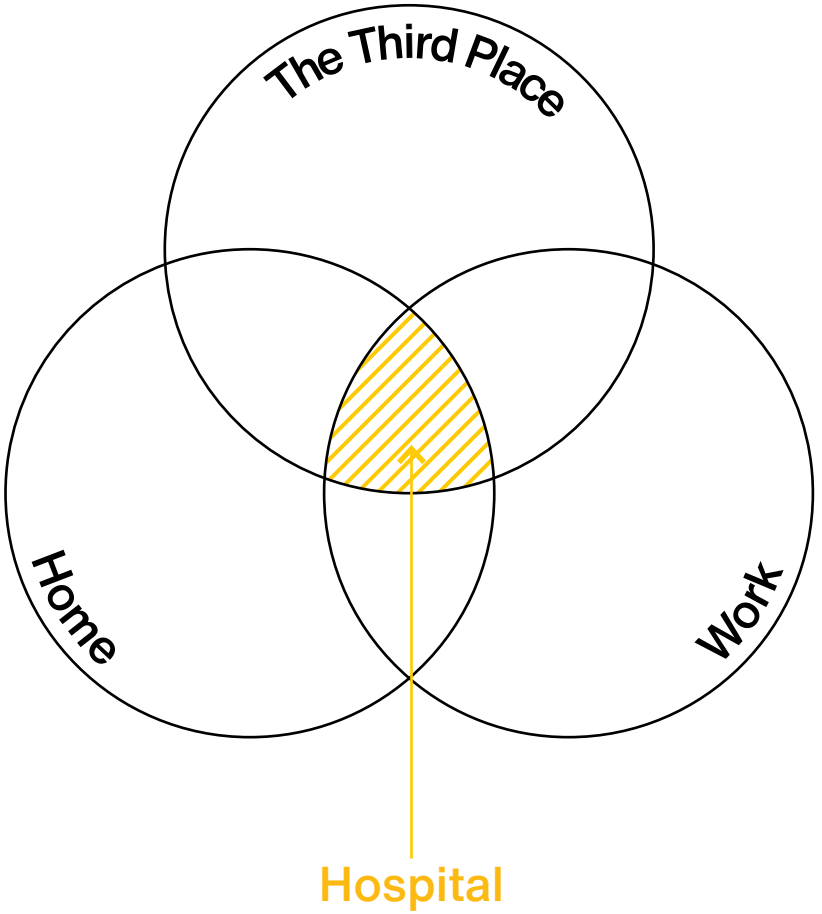
“Illness is the night-side of life, a more onerous citizenship. Everyone who is born holds dual citizenship, in the kingdom of the well and in the kingdom of the sick. Although we all prefer to use only the good passport, sooner or later each of us is obliged, at least for a spell, to identify ourselves as citizens of that other place.”

– Susan Sontag, Illness as Metaphor

BETWEEN HOME AND WORK



BETWEEN HOME AND WORK



WHERE IS PLEASURE?



Milan Studio Film still from La Notte (1961) by Michelangelo Antonioni

WHERE IS PLEASURE?



Milan Studio Film still from Sauna (1992) by Filip Bajon

WHERE IS PLEASURE?



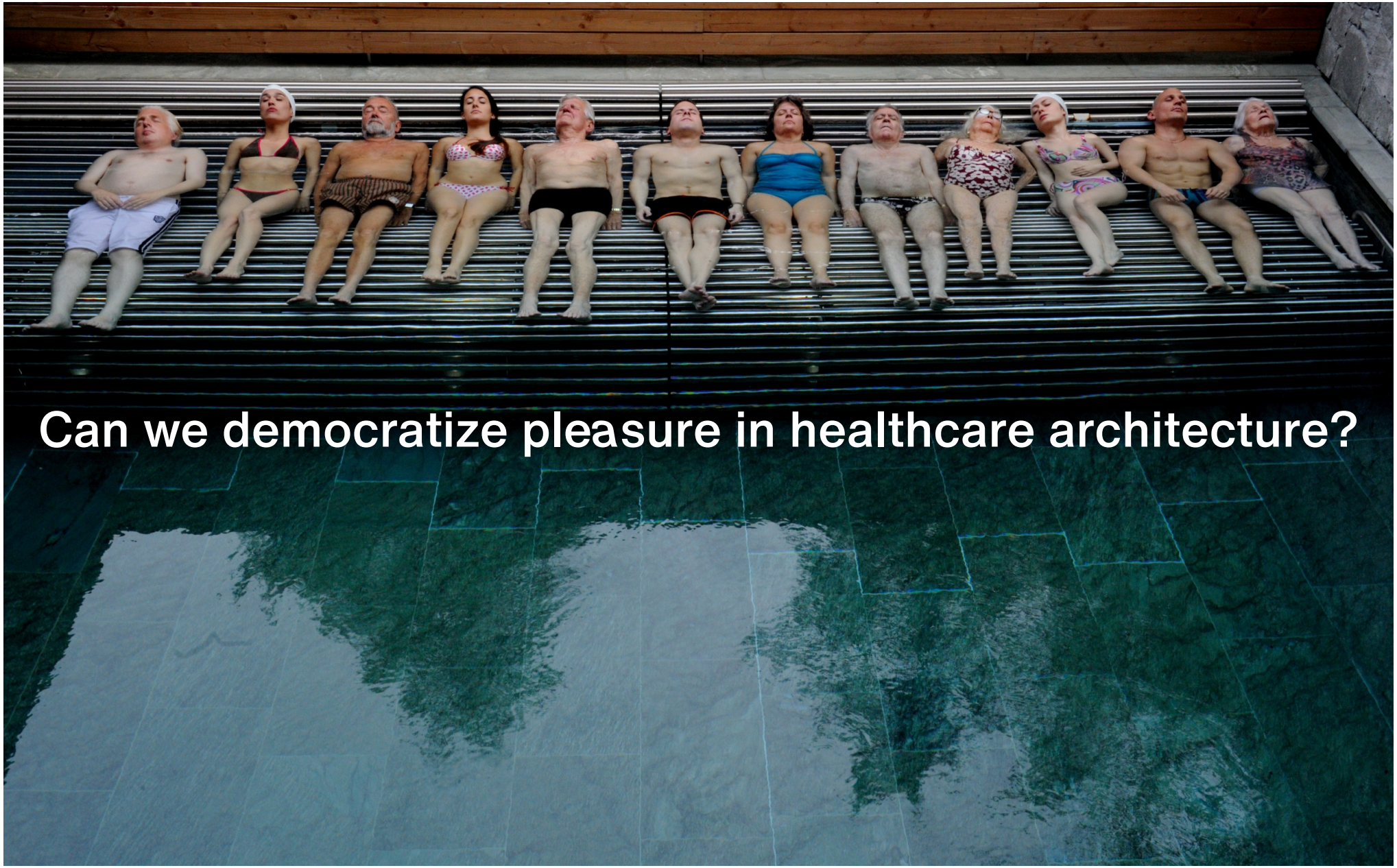
Milan Studio Film still from Allelujah (2022) by Richard Eyre

WHERE IS PLEASURE?



Milan Studio Film still from Youth (2015) by Paolo Sorrentino

WHERE IS PLEASURE?



Milan Studio Film still from Youth (2015) by Paolo Sorrentino

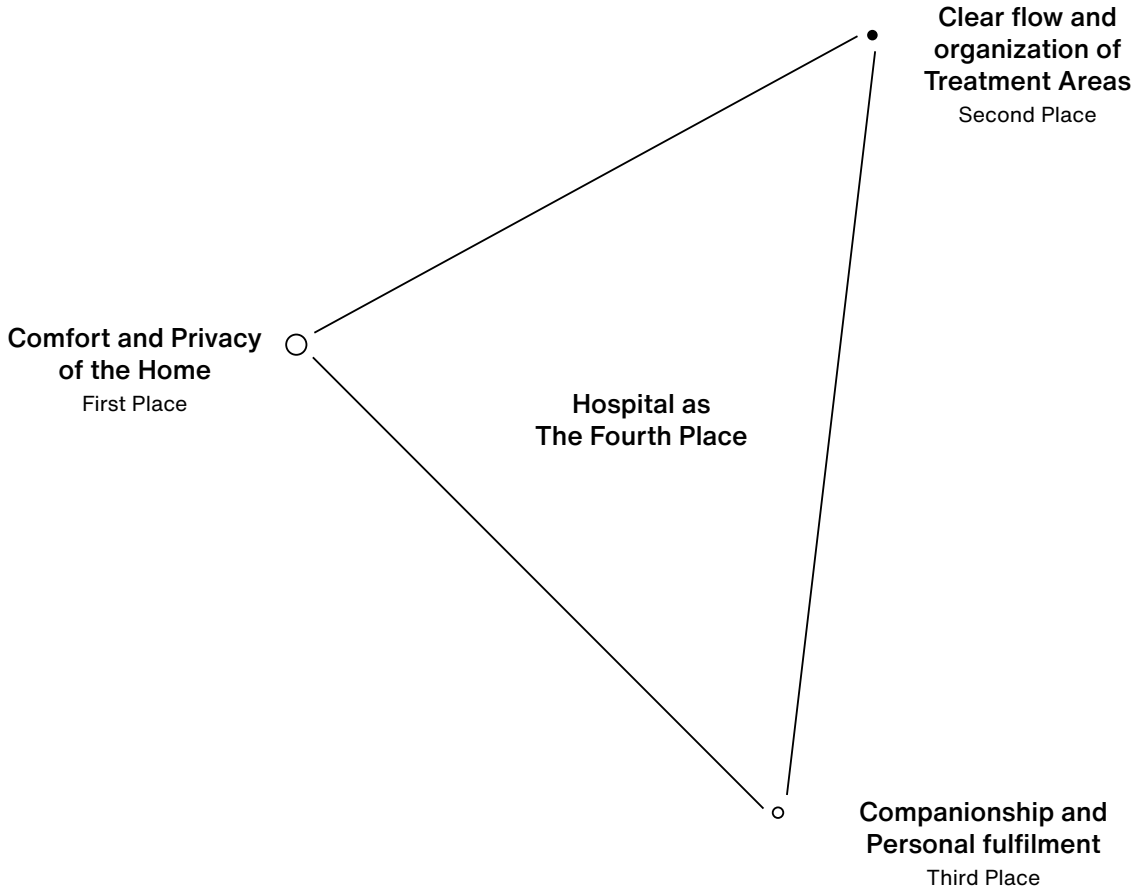
Can architectural pleasure in the urban hospital foster healing and joy of living in people with cancer?


A2



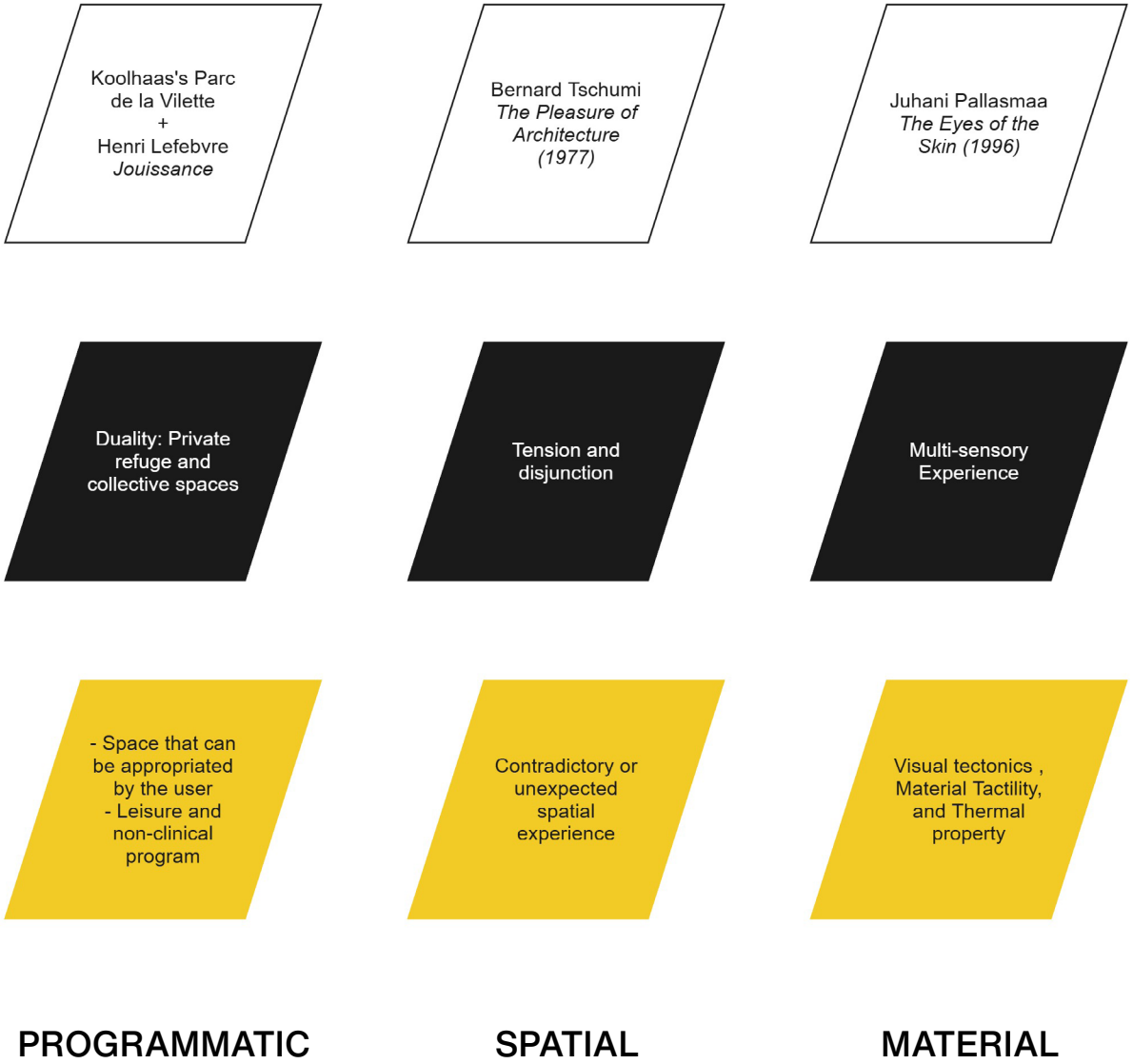
THE HOSPITAL CORRIDOR

THEORETICAL FRAMEWORK



A dichotomy of needs

THEORETICAL FRAMEWORK



KEY SPACE: CORRIDOR



Infant Ward at Dateo Hospital, Living room corridor with nannies and children. Milan, Italy, 1935.

KEY SPACE: CORRIDOR



Corridor Reality in Barnsley Hospital

WASTED SPACE



Waiting lounge, Erasmus MC Cancer Institute

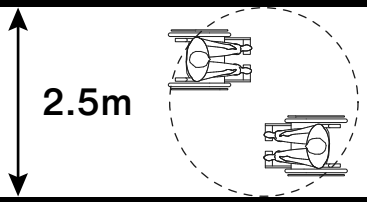
BREAKOUT SPACE

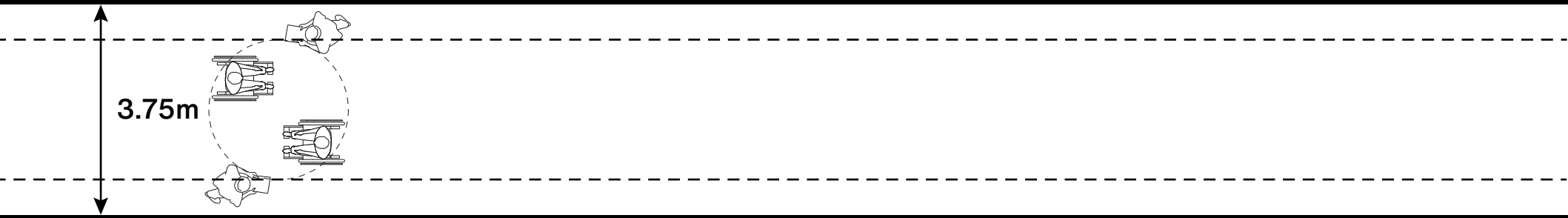


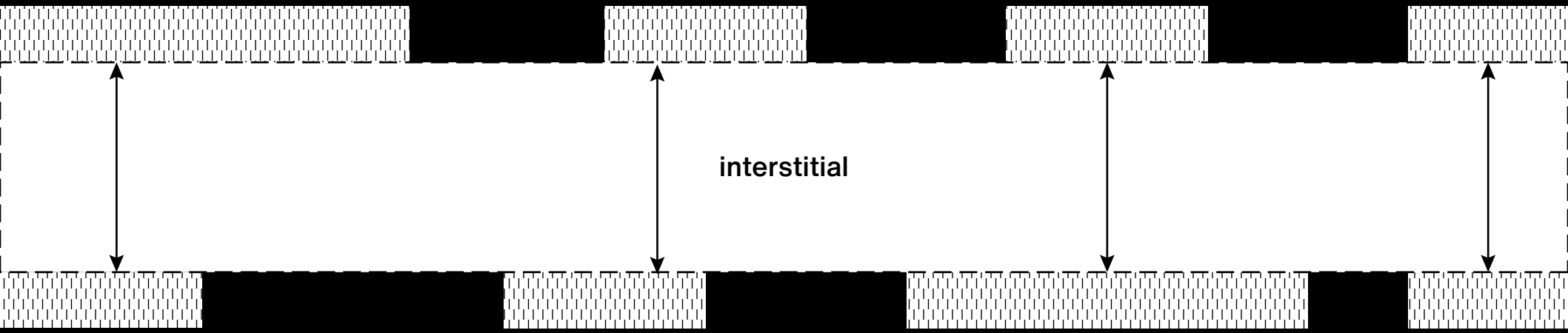
Nurses taking a break in the circulation zone, Diaconessenhuis, 1967

CORRIDOR WEARS MANY HATS

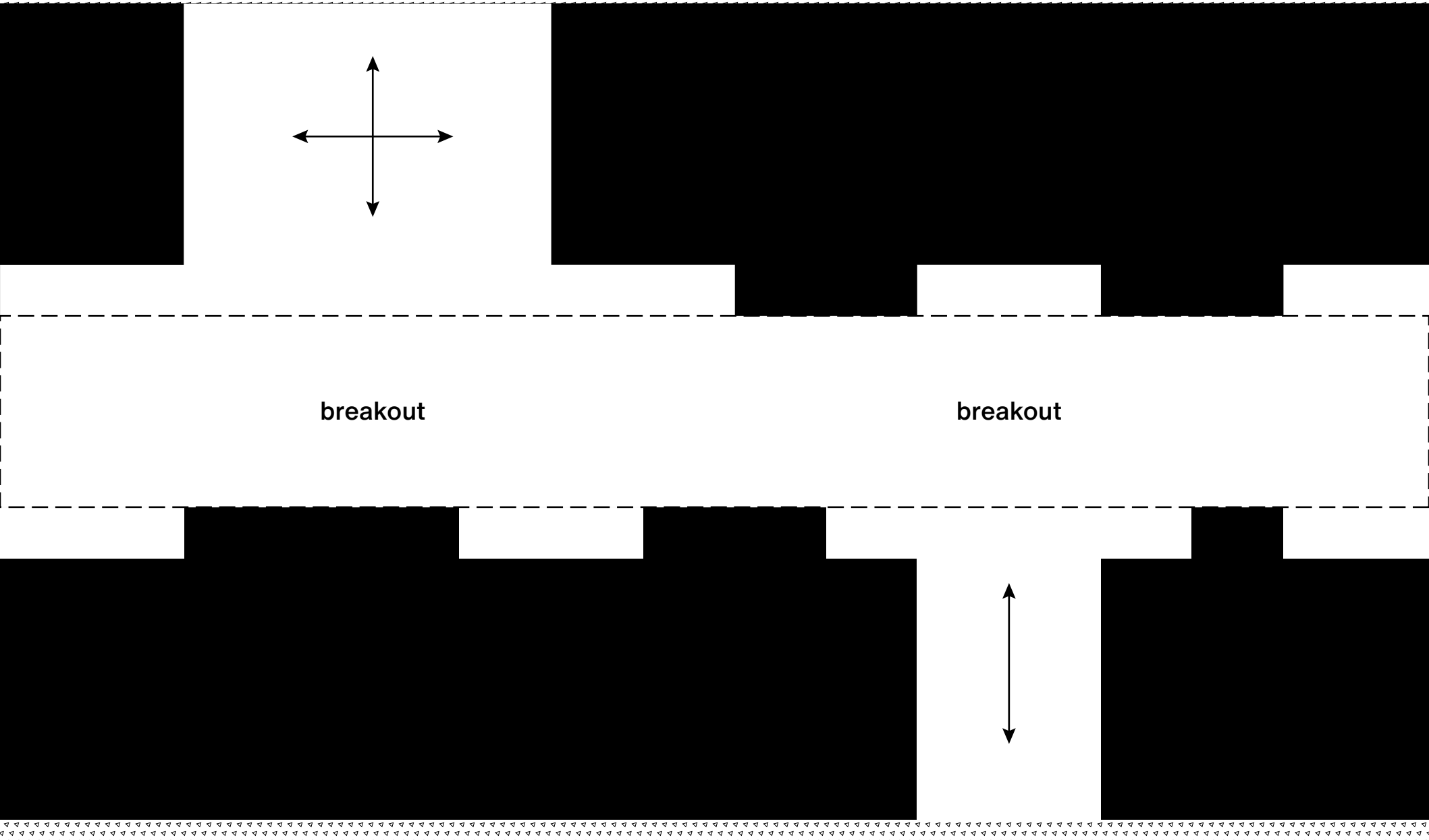
Breakout space for staffs	Consult for treatment	Wait for treatment
Mover space	Retreat from awkward situations	Take a phone call
Take a stroll	Socialize	Avoid socializing


2.5m

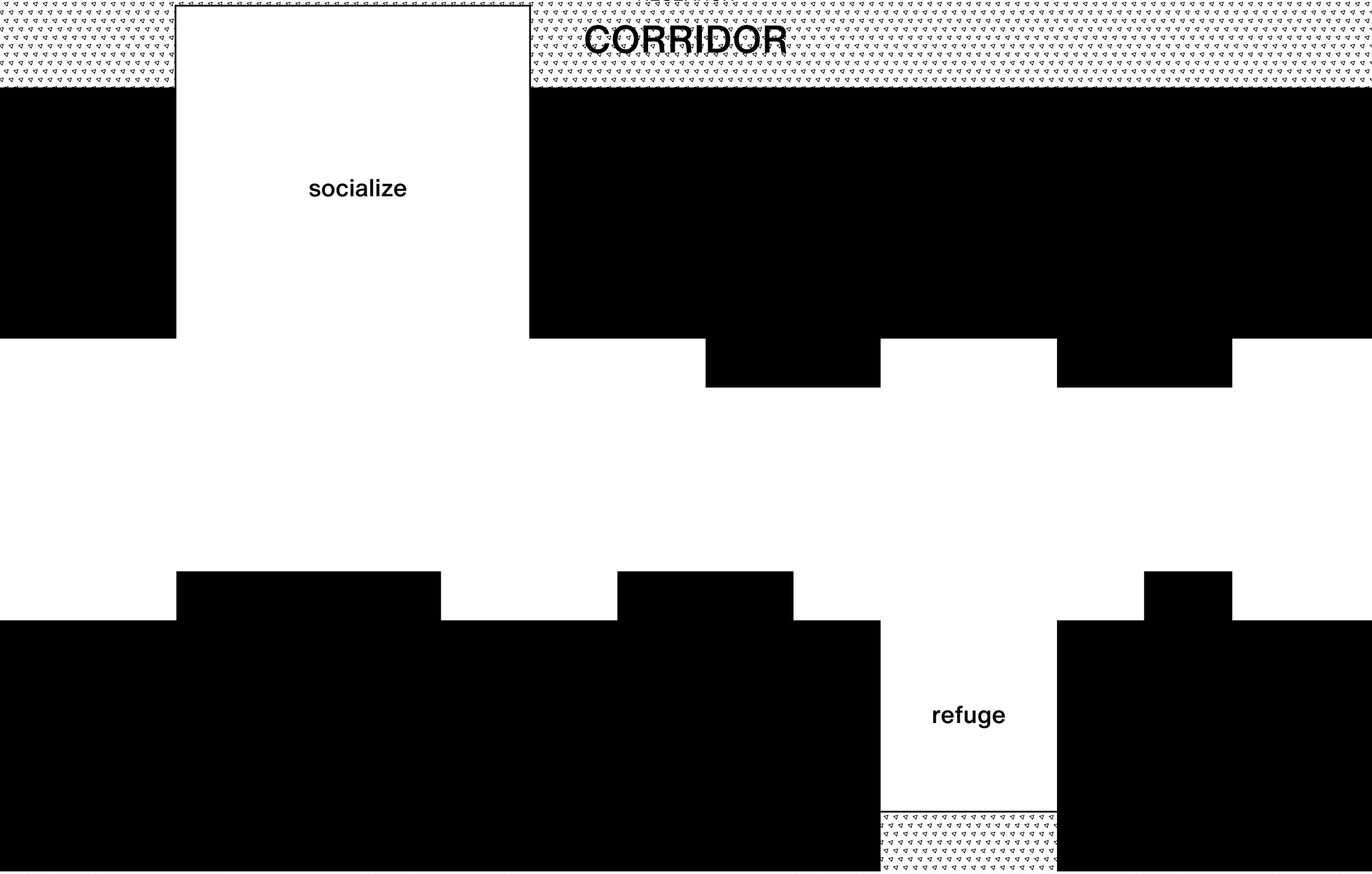

3.75m


interstitial

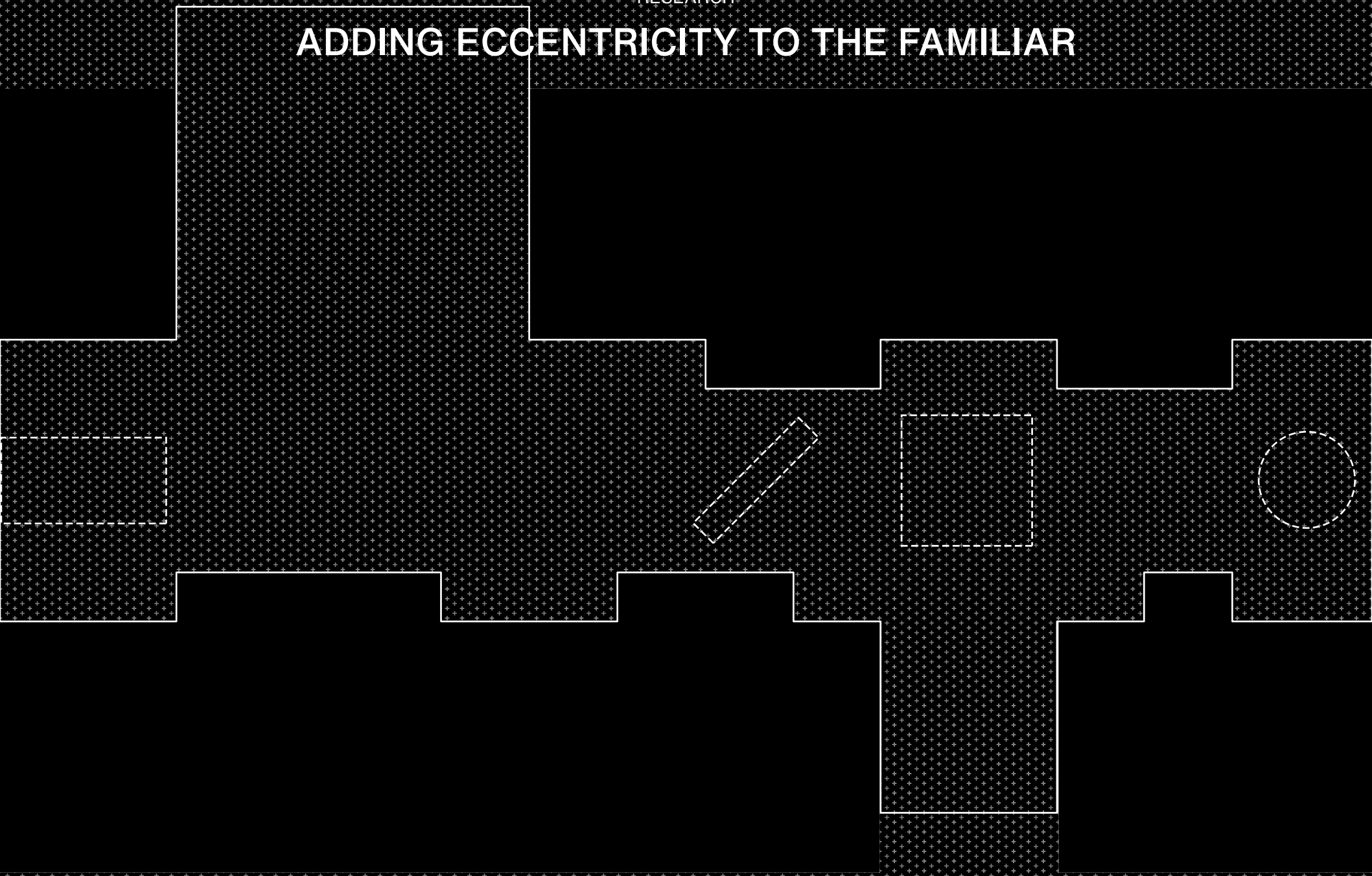
CORRIDOR

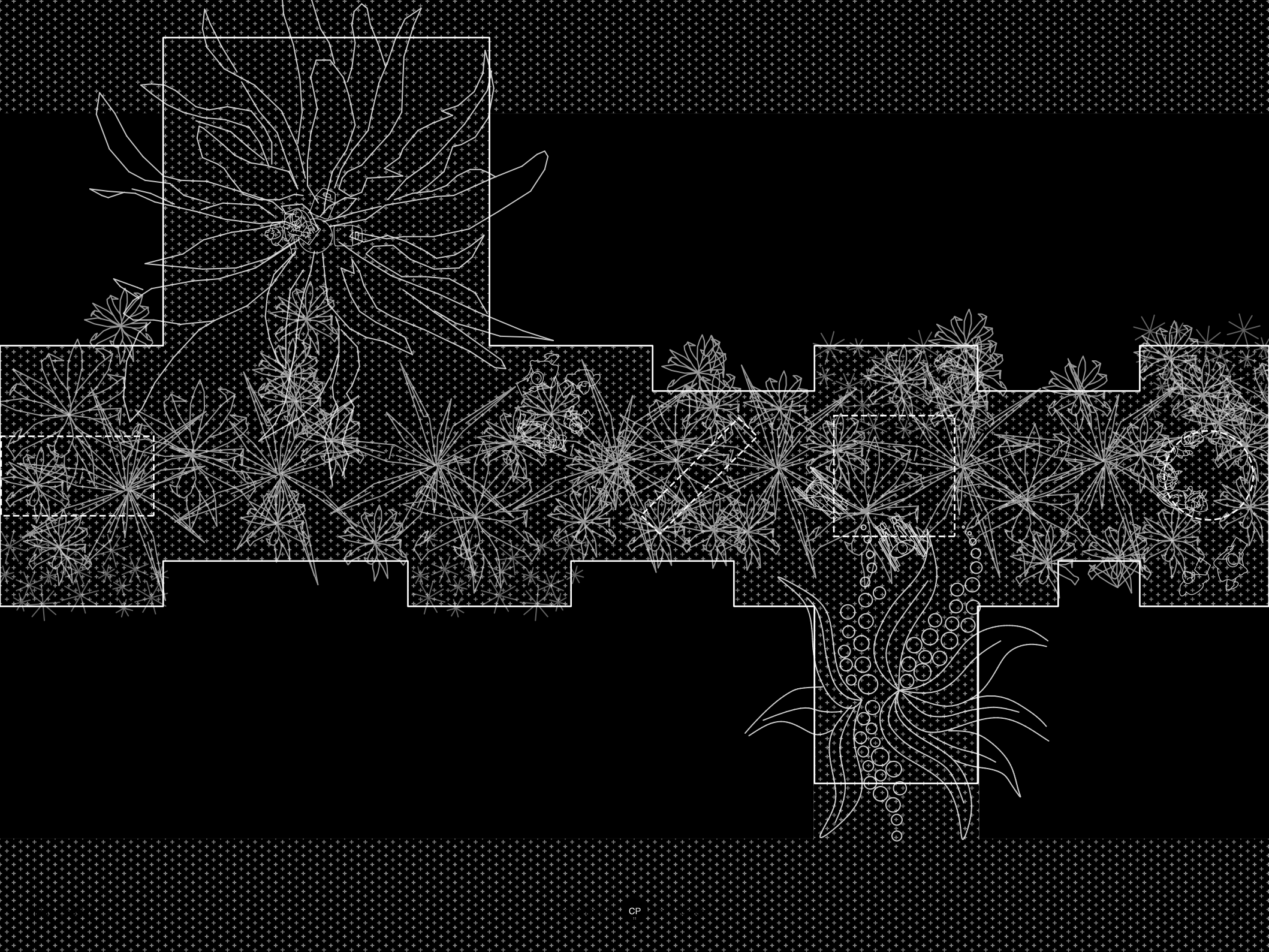


CORRIDOR



ADDING ECCENTRICITY TO THE FAMILIAR




CP

PLEASURE IN THE INTERSTITIAL











 Source: Photo collection by author.

LIFE IN THE INBETWEEN

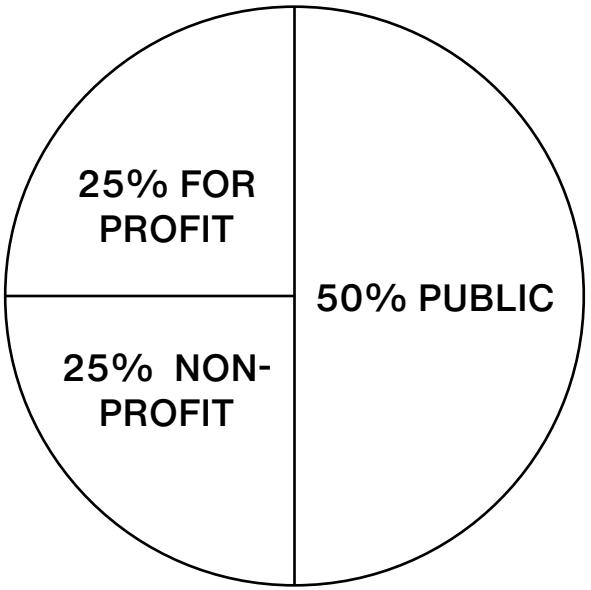


CLIENT

SITE

PROGRAM

PUBLIC PRIVATE PARTNERSHIP



STAKEHOLDERS

Cancer Care Center

Private Healthcare Group

Gruppo San Donato

Partner Hospitals

FONDAZIONE IRCCS ISTITUTO NAZIONALE DEI TUMORI

OSPEDALE SAN RAFFAELE

IEO Istituto Europeo di Oncologia

Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico

Nonprofit & Cancer Research Investors

ECI Organisation of European Cancer Institute – EEIG

MAGGIE'S

AIRC

Governmental & Public Entities

Ministero della Salute

ML MINISTERO del LAVORO e delle POLITICHE SOCIALI

SERVIZIO SANITARIO NAZIONALE

Sistema Socio Sanitario Regione Lombardia

STAKEHOLDERS



FRAME

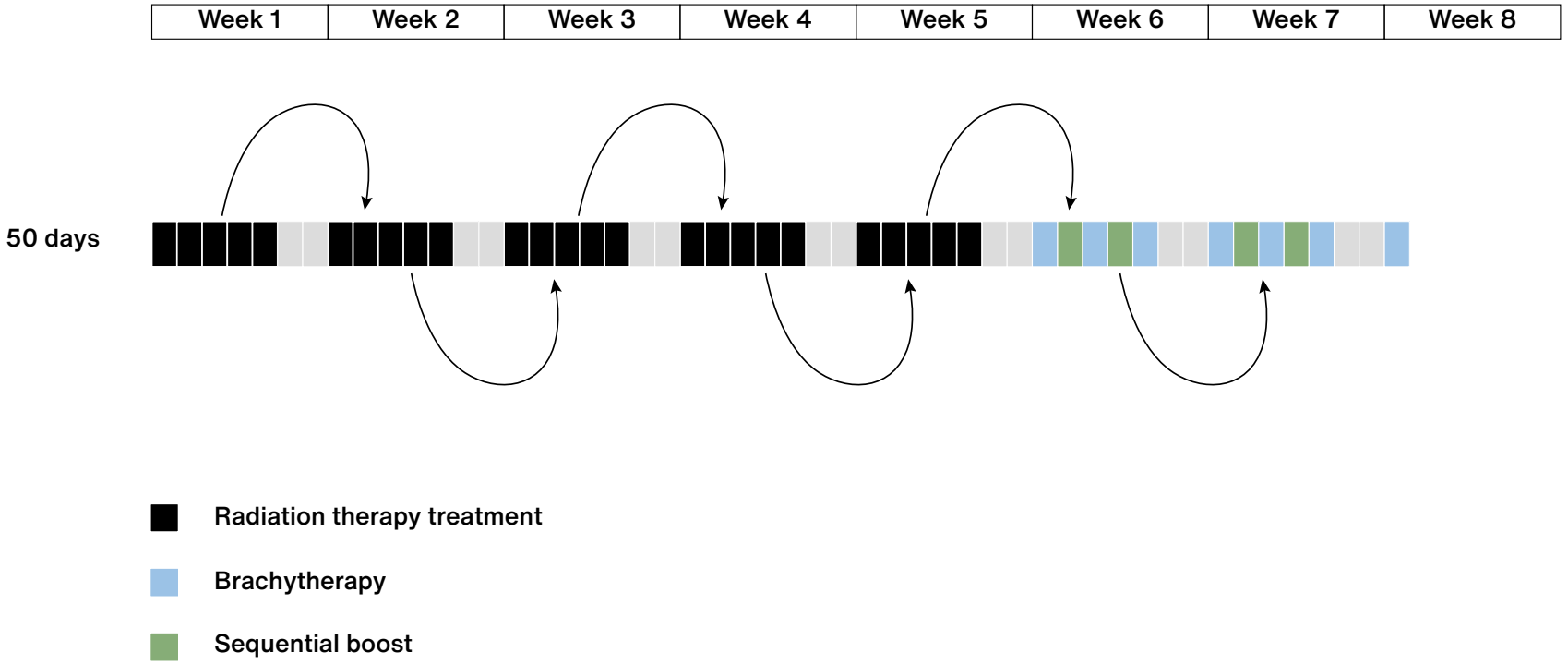
SUBSCRIBE

MAGGIE'S CENTRE BRINGS ITS PATIENT-CENTRIC HEALTHCARE DESIGN TO *ITALY*

PREMIUM 16 JUL 2024 • INSTITUTIONS **BOOKMARK ARTICLE**



RADIOTHERAPY FRACTIONATION SCHEDULE

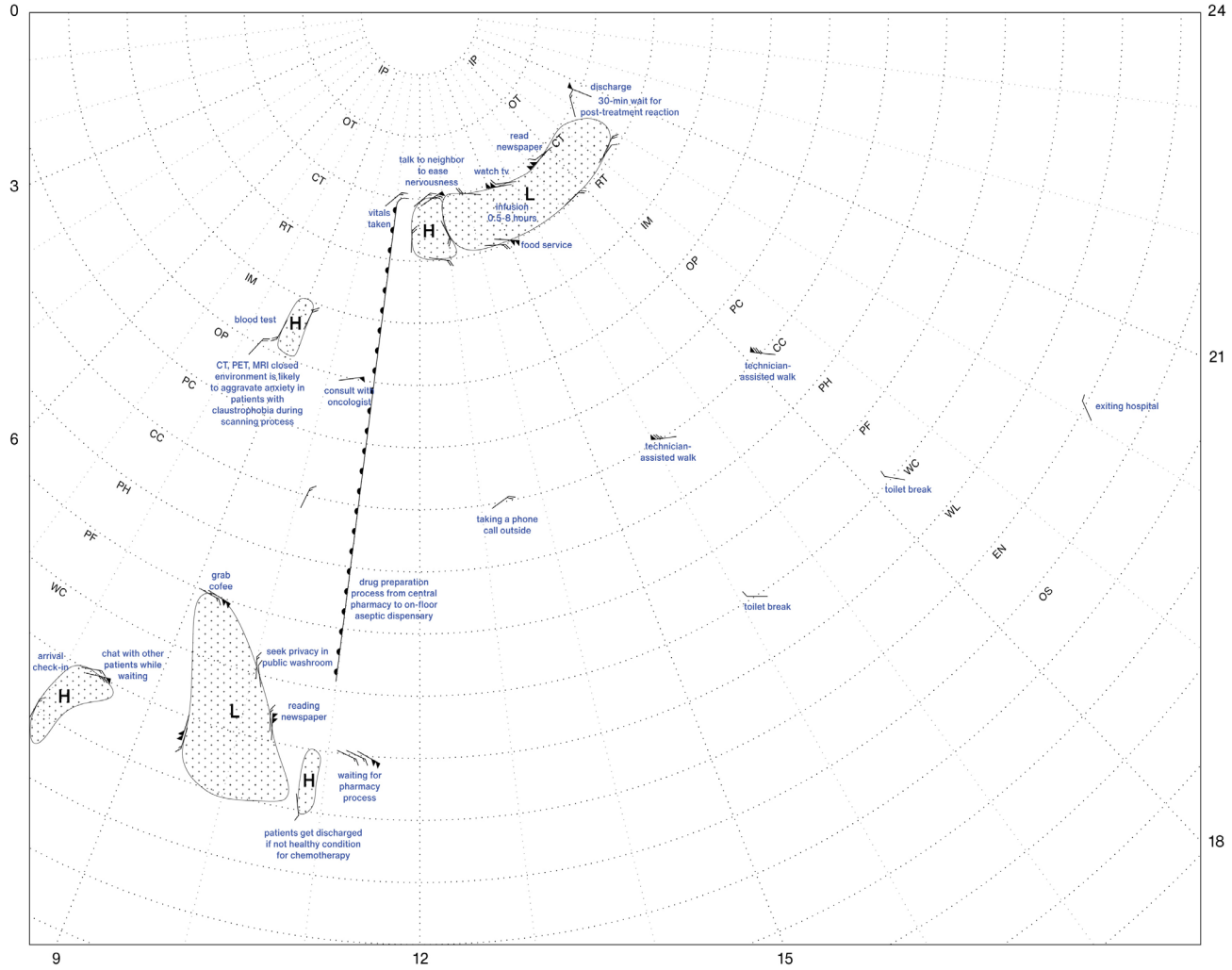


LONG HOURS AT INFUSION BAY















LOCATION			
IP	Inpatient Bed	CC	Circulation Corridor & Stairs
OT	Operating Theatre	PH	Pharmacy
CT	Chemotherapy Bay	PF	Public Facilities (café, restaurants)
RT	Radiotherapy Department	WC	Public Toilet
IM	Imaging & Diagnostics	WL	Waiting Lounge
OP	Outpatient Consult & Exam rooms	EN	Entrance & Reception
PC	Patient Change & Preparation Room	OS	Outside

ACTIVITY TYPE
- Retreating/Resting
- Waiting
- Getting treatment
- Consulting
- Consuming
- Socializing

FRONT (STAFF BACKGROUND ACTIVITIES)

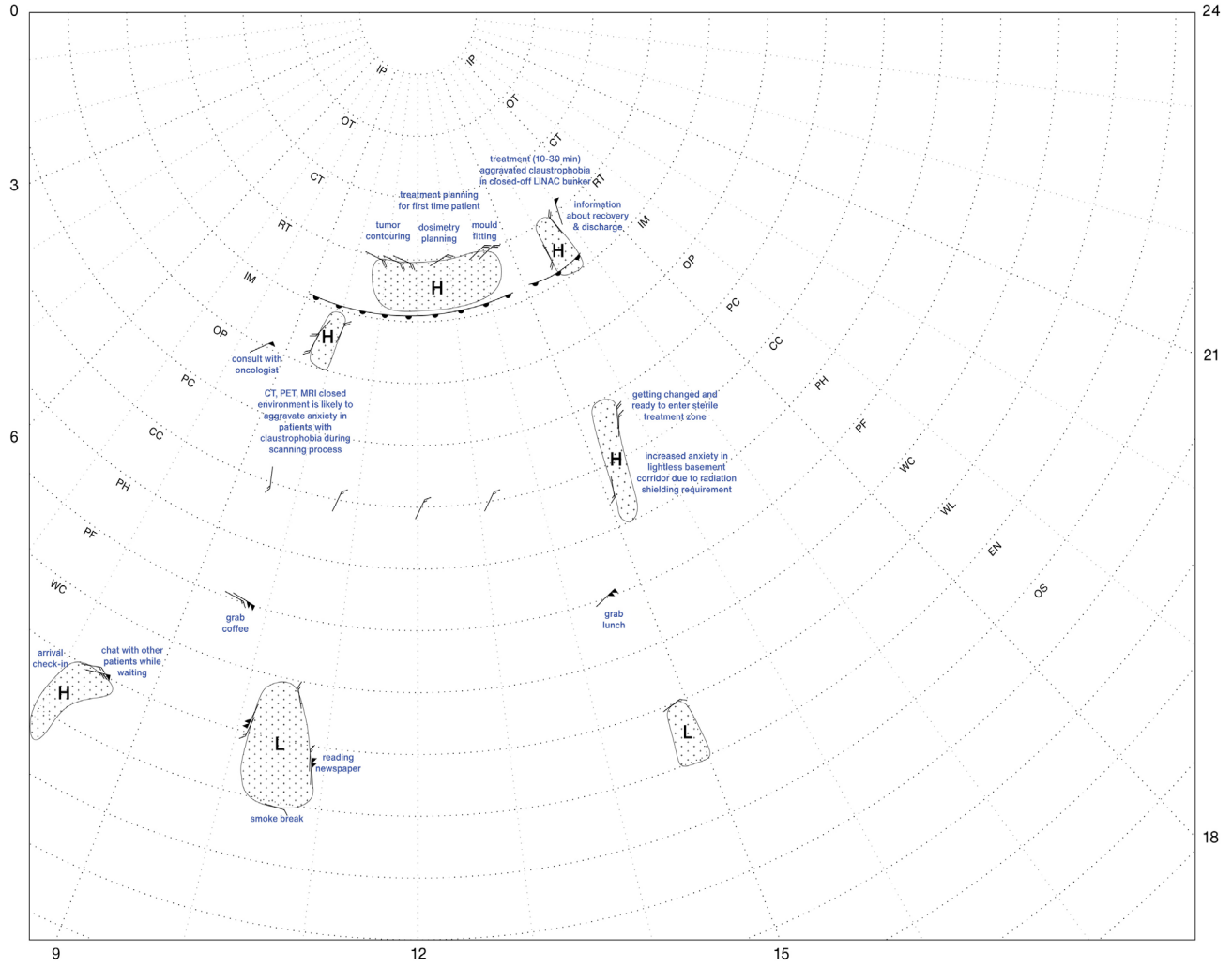
PRESSURE
- H — High stress
- L — Low stimultation

HIGH ANXIETY IN LINAC BUNKER









LOCATION			
IP	Inpatient Bed	CC	Circulation Corridor & Stairs
OT	Operating Theatre	PH	Pharmacy
CT	Chemotherapy Bay	PF	Public Facilities (café, restaurants)
RT	Radiotherapy Department	WC	Public Toilet
IM	Imaging & Diagnostics	WL	Waiting Lounge
OP	Outpatient Consult & Exam rooms	EN	Entrance & Reception
PC	Patient Change & Preparation Room	OS	Outside

ACTIVITY TYPE

- Retreating/Resting
- Waiting
- Getting treatment
- Consulting
- Consuming
- Socializing

FRONT (STAFF BACKGROUND ACTIVITIES)

PRESSURE

- H — High stress
- L — Low stimultation







CLIENT STRATEGY



CHEMOTHERAPY BAY

The typical layout of multi-bed infusion bay ensures surveillance for staffs and creates a condition for encounter. However, it also contributes to lack of privacy.

|

Add more private suite while organize infusion bay closer to public facilities.



CORRIDOR & BREAKOUT SPACES

Kafka-esque corridors are disorientating and often intimidating to patients.

|

Improve wayfinding



RADIATION BUNKER

LINAC machines are located mostly in lightless basement due to structural requirements and radiation-shielding.

|

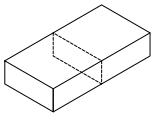
Open up and add light to spaces in radiotherapy basement.

TREATMENT IN NATURE



TYPES OF CANCER HOSPITALS

ONCOLOGY BED WARD



Area in sqm	200–400
Number of floors	1
Long-term stay	Yes (host hospital)

Programs

Multiple therapies

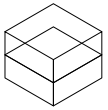
Invasive surgery
+ complementary
therapies

Part of a larger hospital
with patients bed rooms

Surgical in operating theatre of
the host hospital



DAY CANCER CARE CENTER



400–500
1–2
No

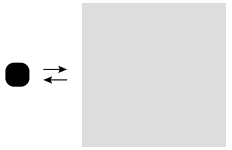
Multidisciplinary patients support
(practical, social, lifestyle, emotional)

Cne-to-one or Group support
Courses and workshops

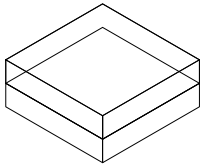
Small-scale

Location near or adjacent to a
cancer hospital

Non-institutional environment as
post-treatment and recovery



SINGLE-THERAPY DAY TREATMENT CENTER



2,400–6,000
1–7
No

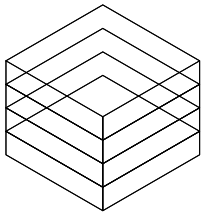
One type of therapy

Proton therapy
or Radiotherapy

Small-scale to medium-scale



MULTI-THERAPEUTIC DAY TREATMENT CENTER

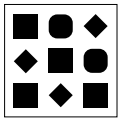


10,000–20,000
2–15
No - Low proportion

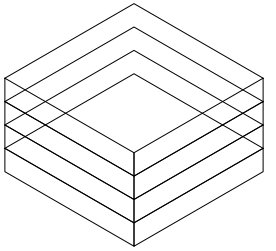
Multiple therapies

Day surgery
Radiotherapy
Chemotherapy
Other therapies
Multidisciplinary patients support

Medium-scale



MULTI-THERAPEUTIC DAY AND LONG-STAY TREATMENT CENTER

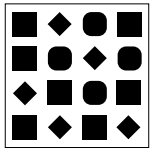


30,000–45,000
5+
Yes

Multiple therapies

Invasive surgery
Radiotherapy
Chemotherapy
Proton therapy
Other therapies
Multidisciplinary patients support

Large medium-scale

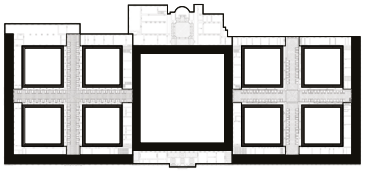


CASE STUDY

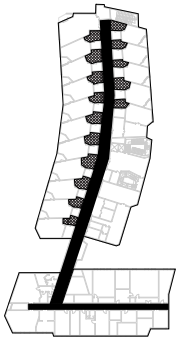
CURE

BENCHMARK: CANCER HOSPITALS

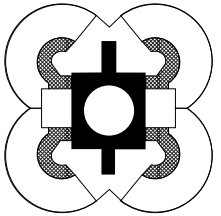
Ospedale Maggiore
Milan, 1456-1465



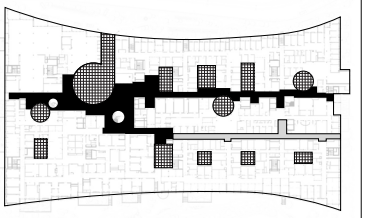
Casa di cura La Madonnina
Milan, 1958



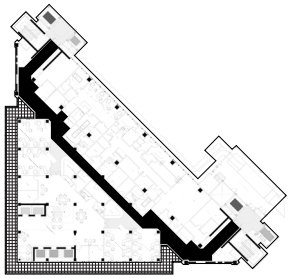
Women's Prentice Hospital
Chicago, 1975



Kinderspital Zurich
Zurich, 2014-2024

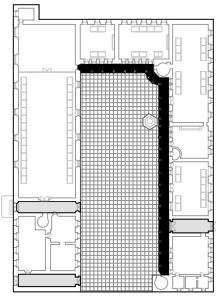


Guy's Hospital Cancer Center
London, 2010-2016

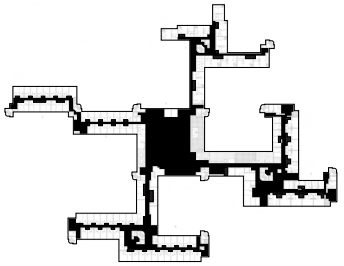


HISTORICAL ***CONTEMPORARY***

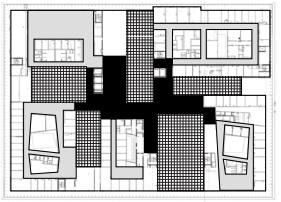
Hotel Dieu de Beaune
Beaune, 1451



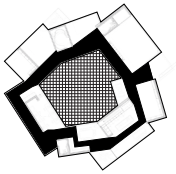
De Drie Hoven Elderly Housing
Amsterdam, 1964-1974



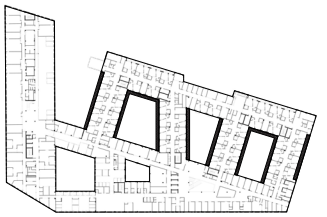
Rehab Basel Rehabilitation Clinic
Basel, 2002



Maggie's Cancer Care Center
Glagow, 2011



Princess Máxima Center
Utrecht, 2018

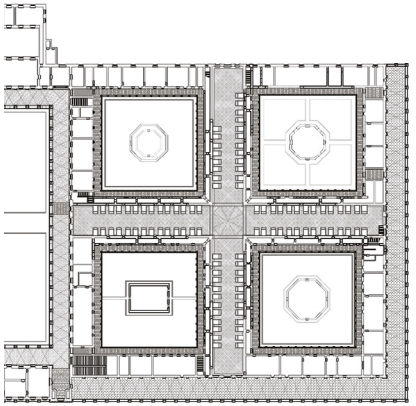


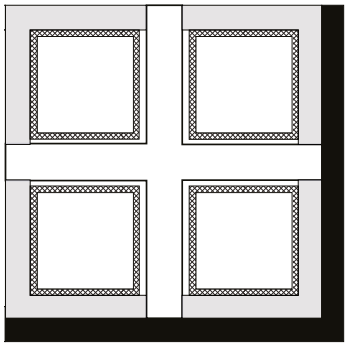
CARE

OSPEDALE MAGGIORE



Courtyards as protagonists





Loggia as threshold between the kindom of the sick and that of the well

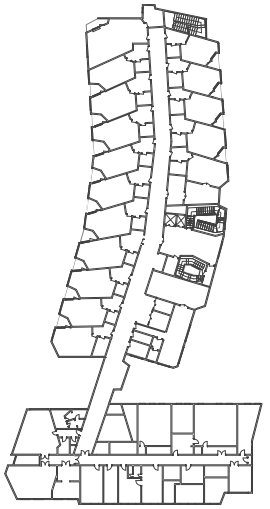
Staff support & Admin	7.4%
Accomodation	16.3%
Public amenities	2.9%
Landscape	36.7%
Building support	14.1%
Circulation	22.6%

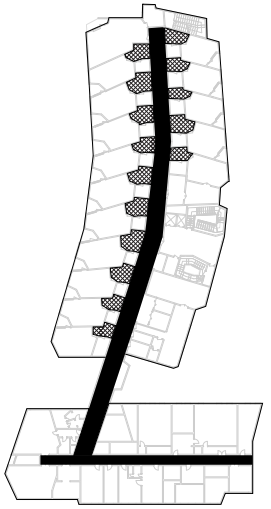
GFA:	~33,000 sqm
Floors:	2
Beds:	288

CASA DI CURA LA MADONNINA



Healing Garden





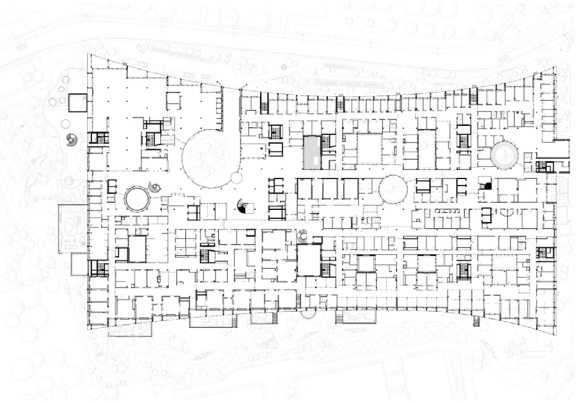
Curved spine

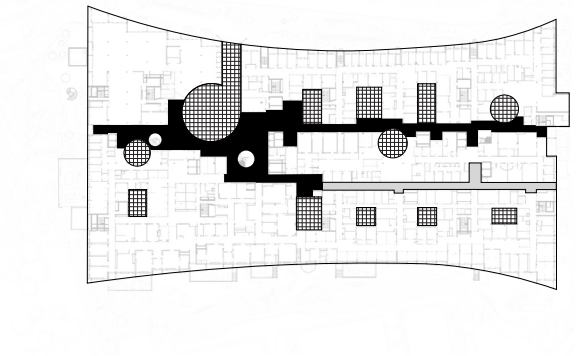
Treatment	8.6%
Diagnosis & Consultation	3.6%
Staff support & Admin	3.7%
Accommodation	33.1%
Public amenities	5.9%
Landscape	13.3%
Building support	10.0%
Circulation	21.7%

GFA:	14,000 sqm
Floors:	8
Beds:	131

KINDERSPITAL







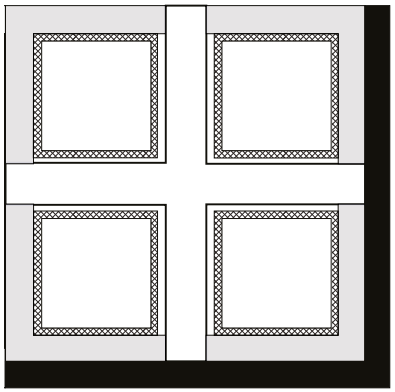
Treatment	15.4%
Diagnosis & Consultation	3.2%
Staff support & Admin	11.0%
Accommodation	11.0%
Leisure & Nonclinical Care	3.7%
Public amenities	2.8%
Landscape	2.7%
Building support	24.0%
Circulation	26.1%

Courtyard as orientation nodes

Main street with squares and alleyways

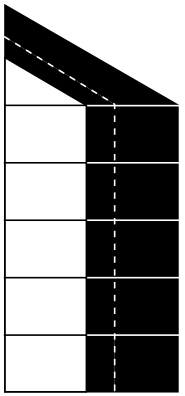
GFA:	~33,000 sqm
Floors:	14
Beds:	200

STRATEGY



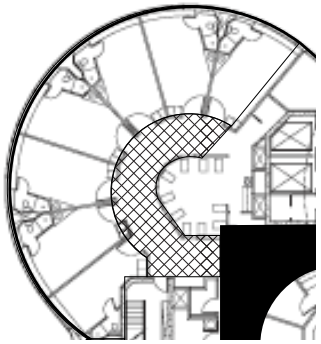
courtyard for air and light

+



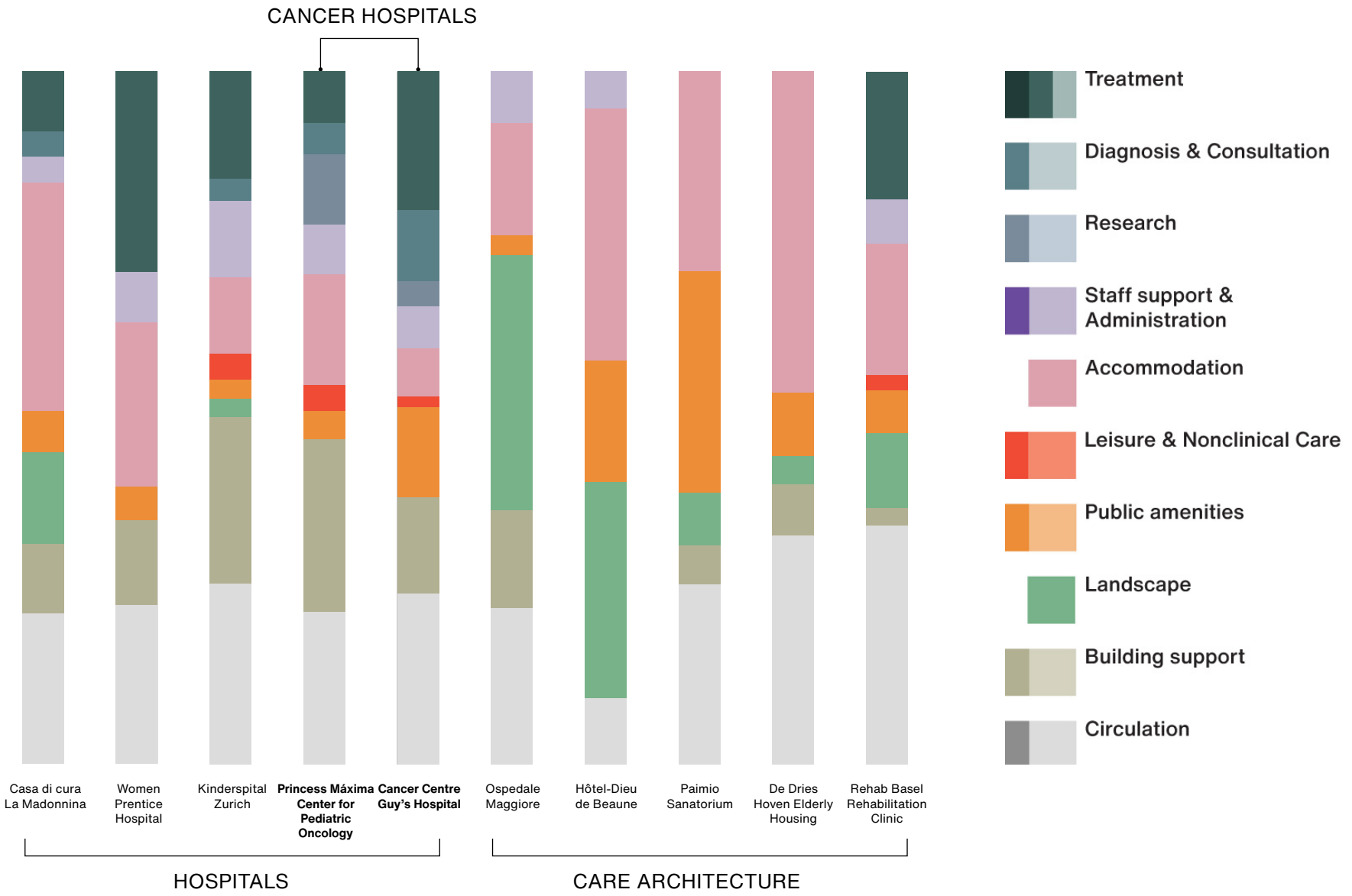
village stacking mixing care-cure functions

+

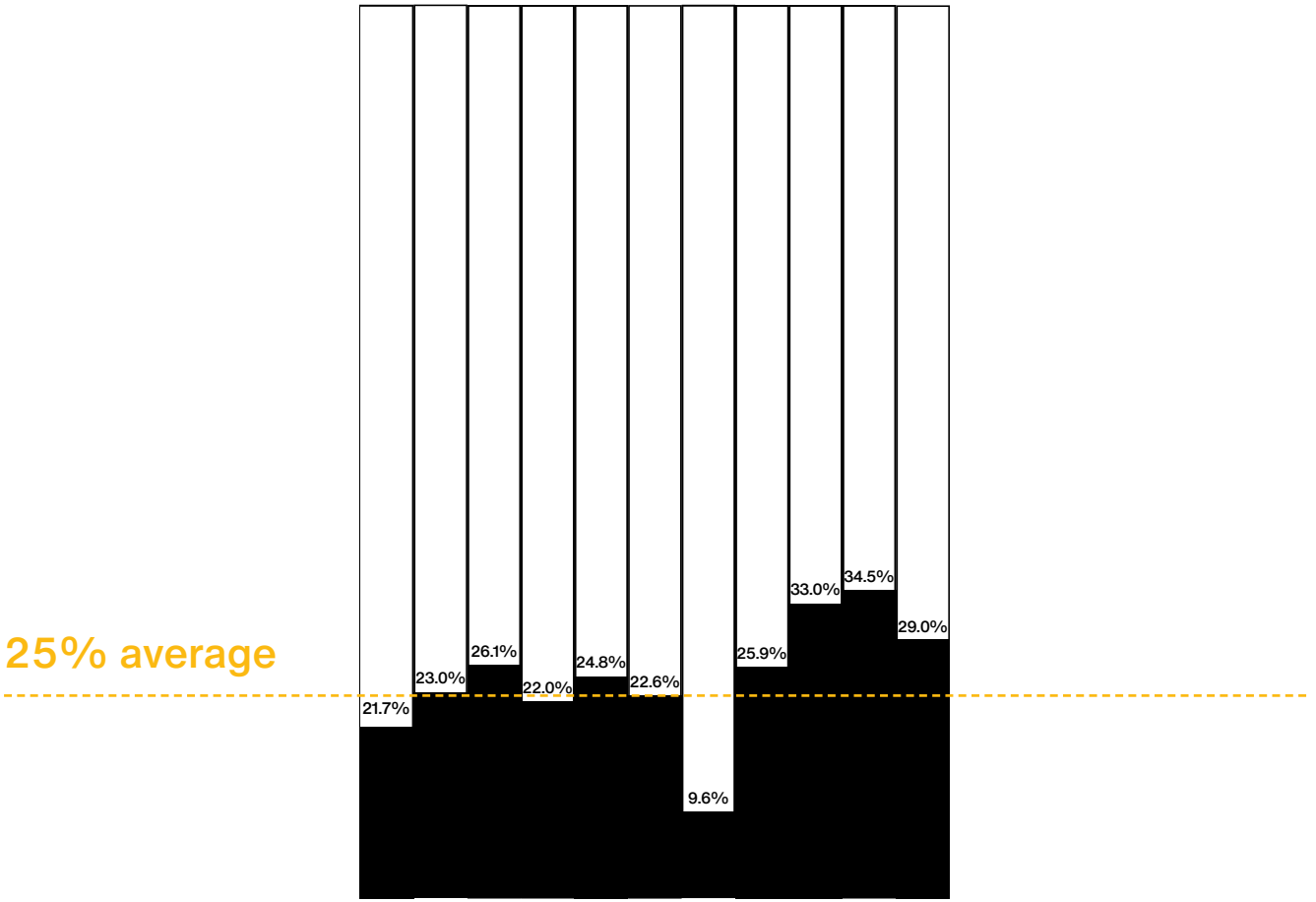


micro-community and introverted public spaces

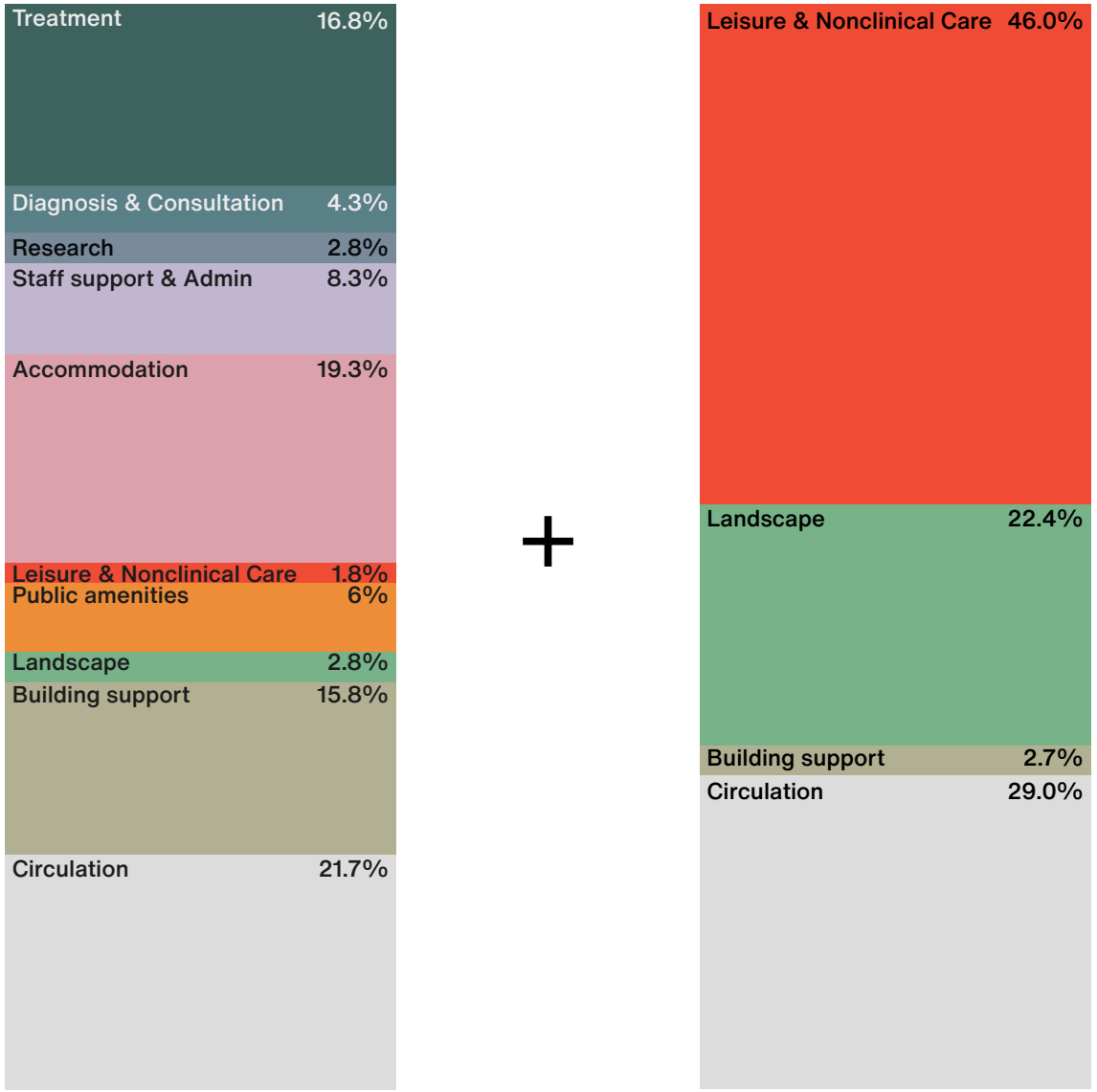
BENCHMARK


CANCER HOSPITALS
Casa di cura La Madonnina
Women Prentice Hospital
Kinderspital Zurich
Princess Máxima Center for Pediatric Oncology
Cancer Centre Guy's Hospital
Ospedale Maggiore
Hôtel-Dieu de Beaune
Paimio Sanatorium
De Dries Hoven Elderly Housing
Rehab Basel Rehabilitation Clinic
HOSPITALS
CARE ARCHITECTURE
Treatment
Diagnosis & Consultation
Research
Staff support & Administration
Accommodation
Leisure & Nonclinical Care
Public amenities
Landscape
Building support
Circulation

CIRCULATION



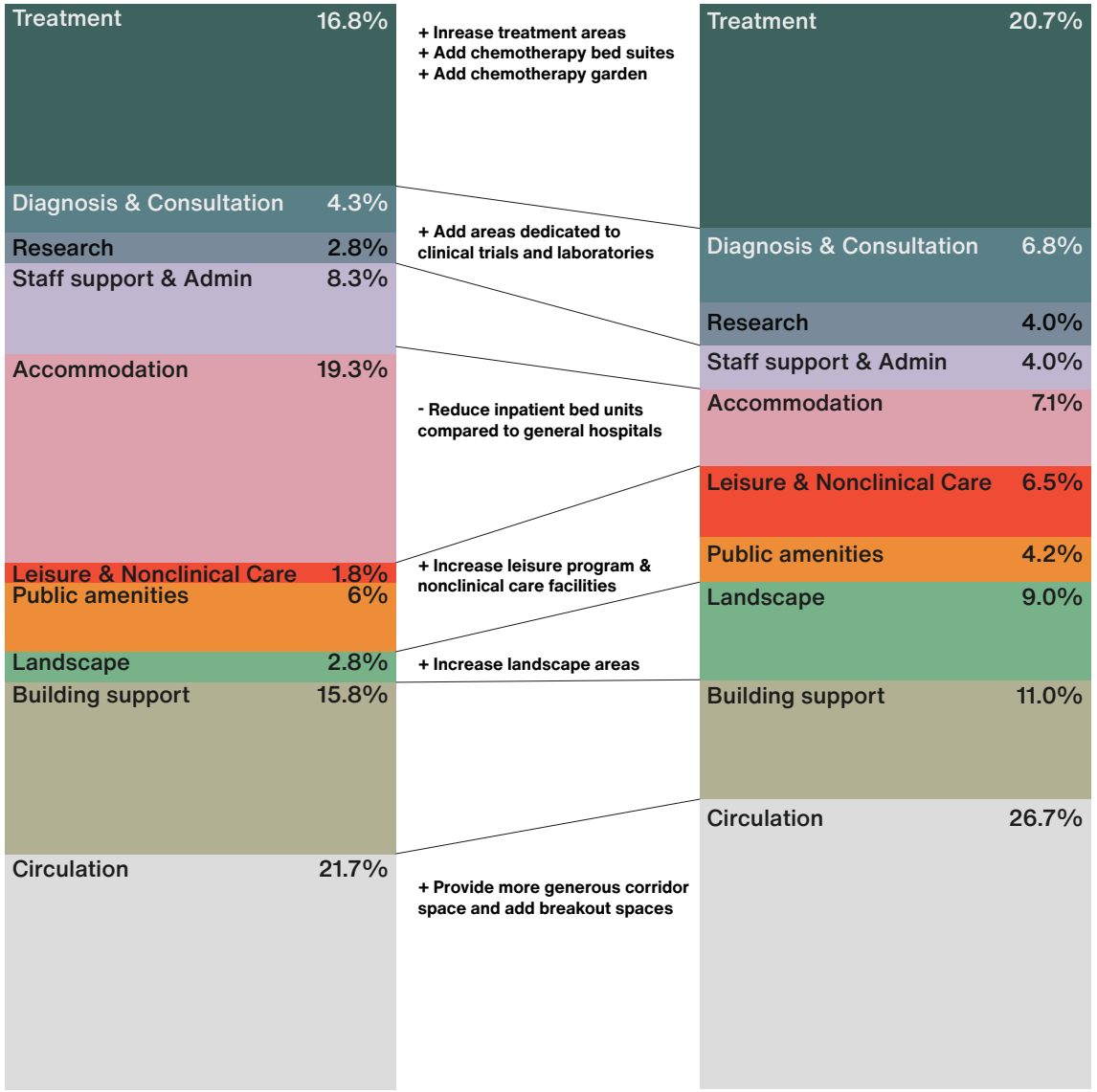
PROGRAM BAR



BENCHMARK AVERAGE

MAGGIE'S BRIEF

PROGRAM BAR

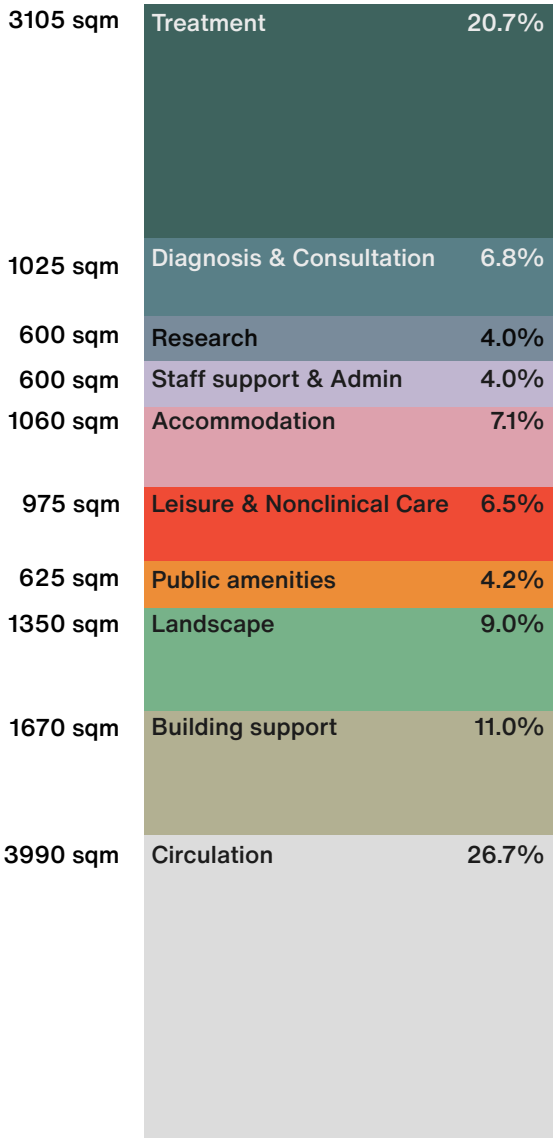


BENCHMARK AVERAGE

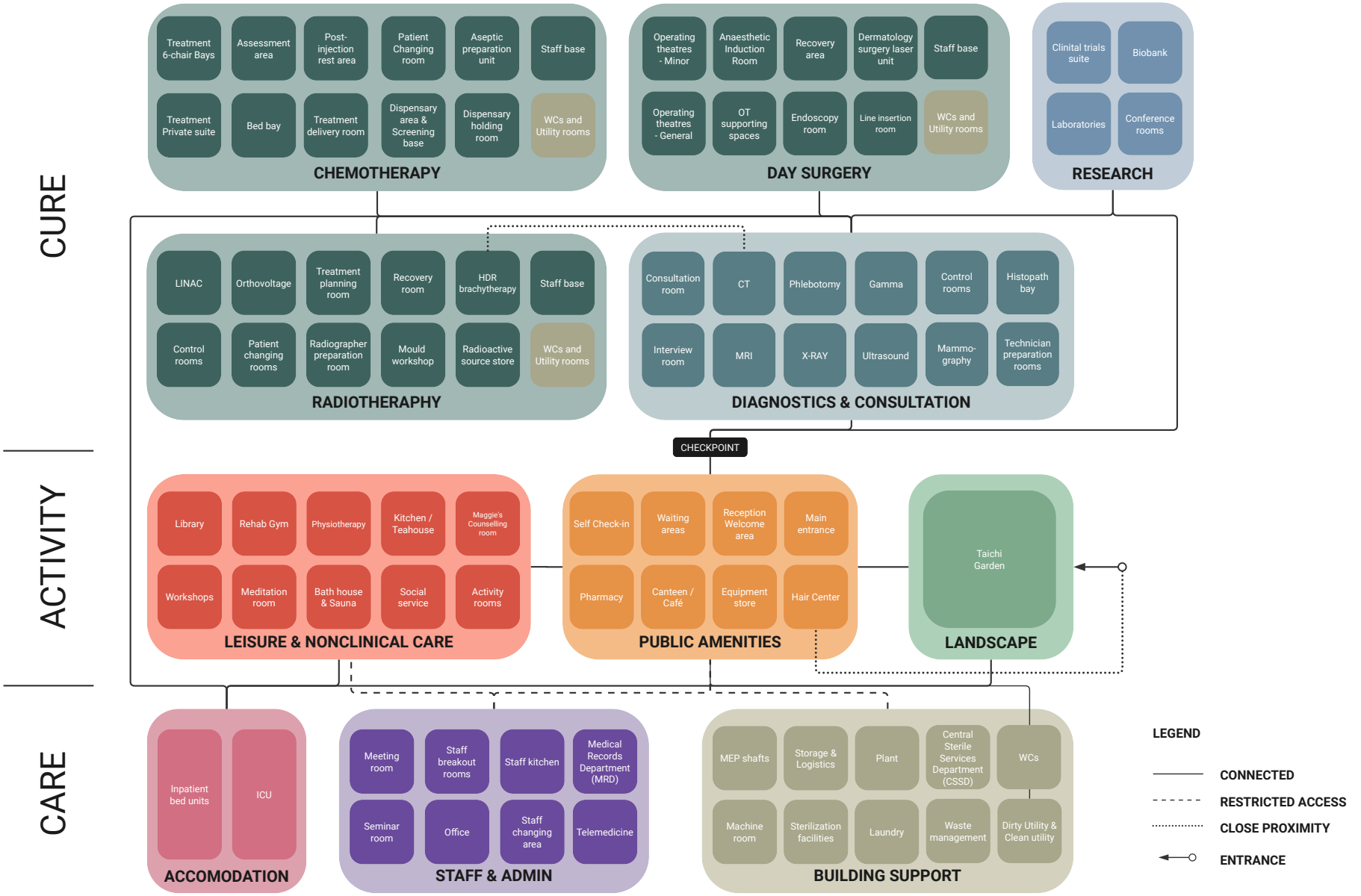
RE-PROGRAM

PROGRAM BAR

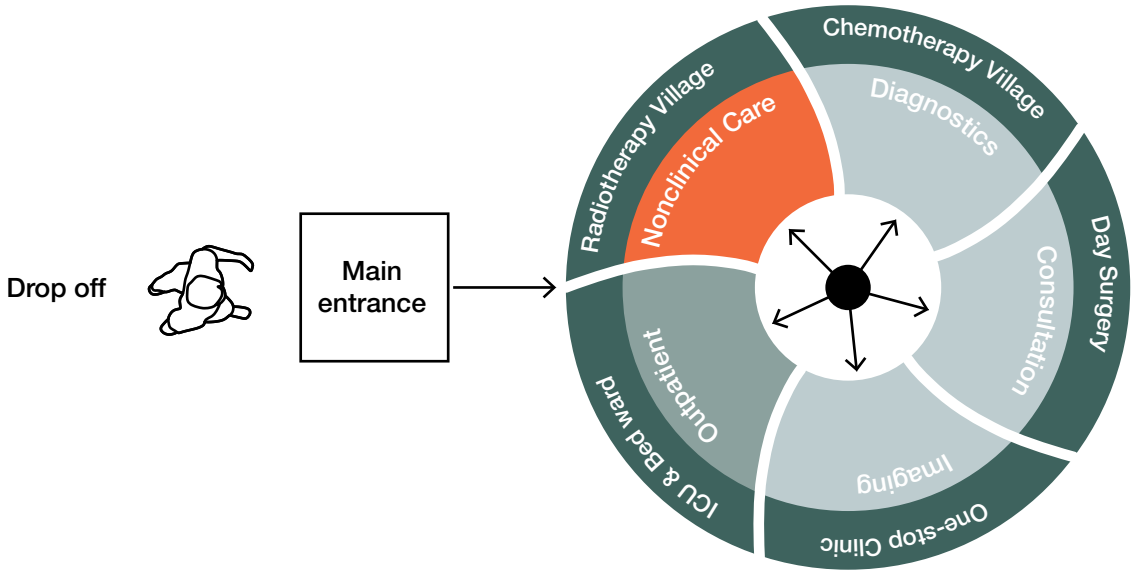
15,000 sqm

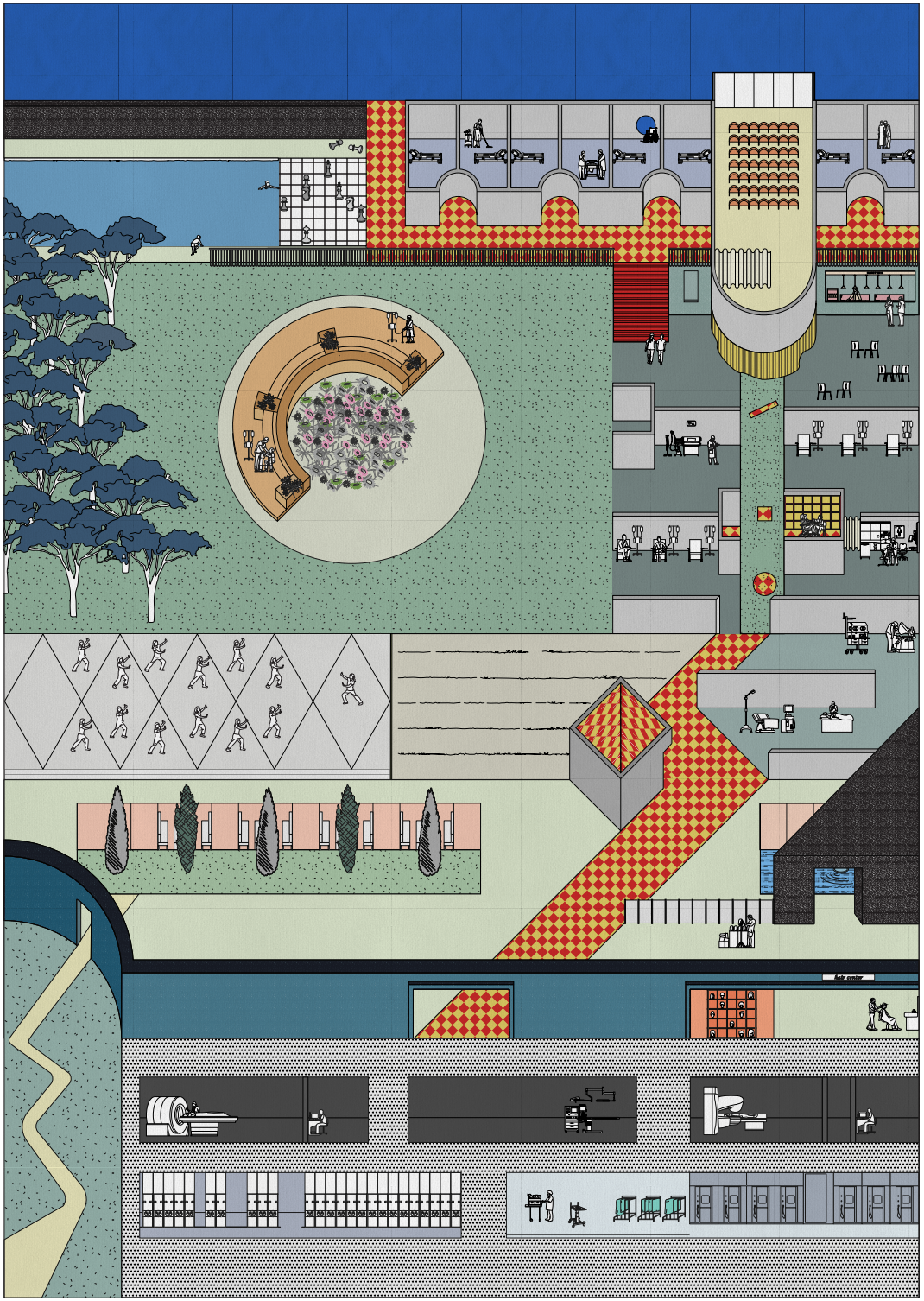


RELATION SCHEME



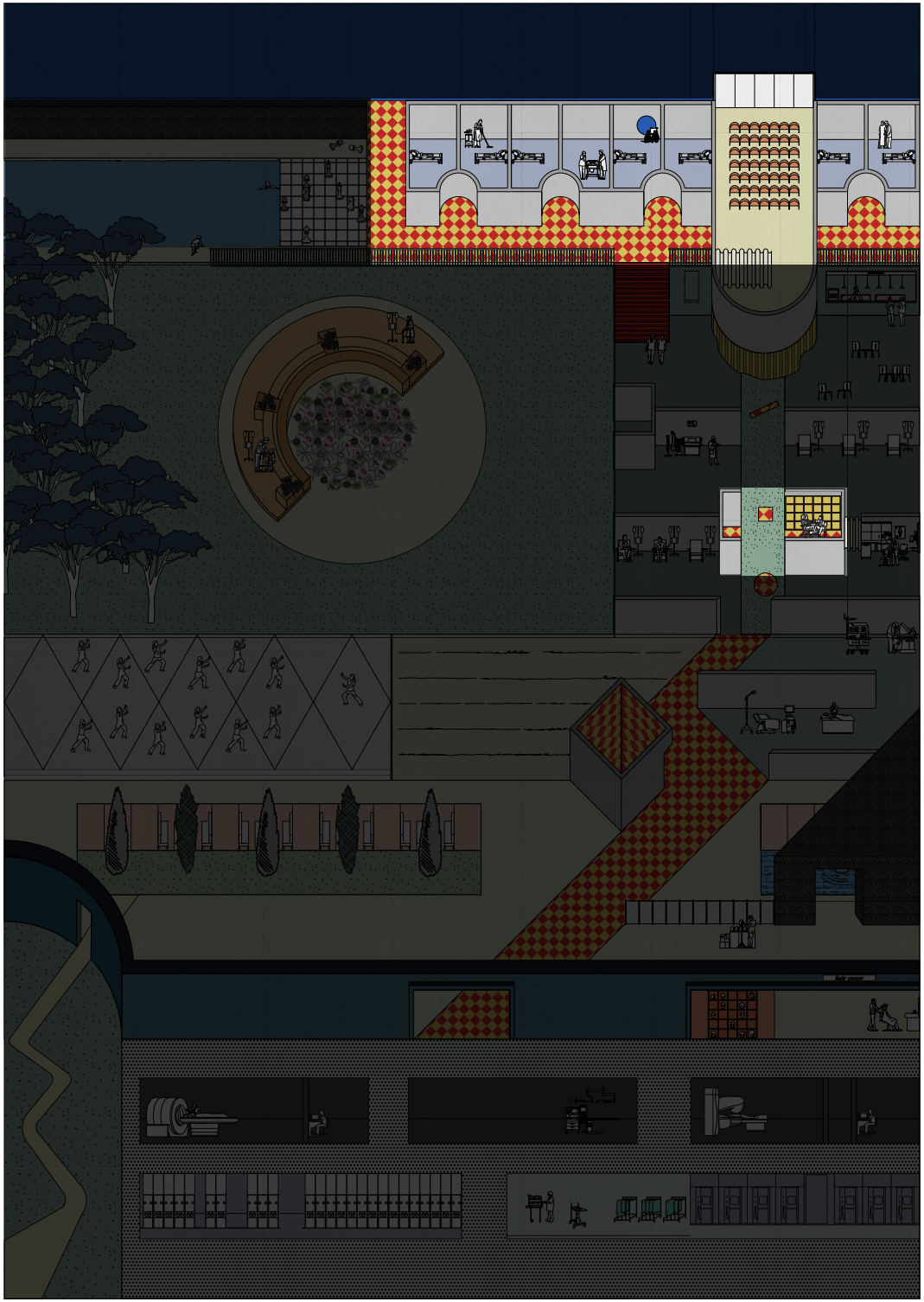
PROGRAM ORGANIZATION SCHEME



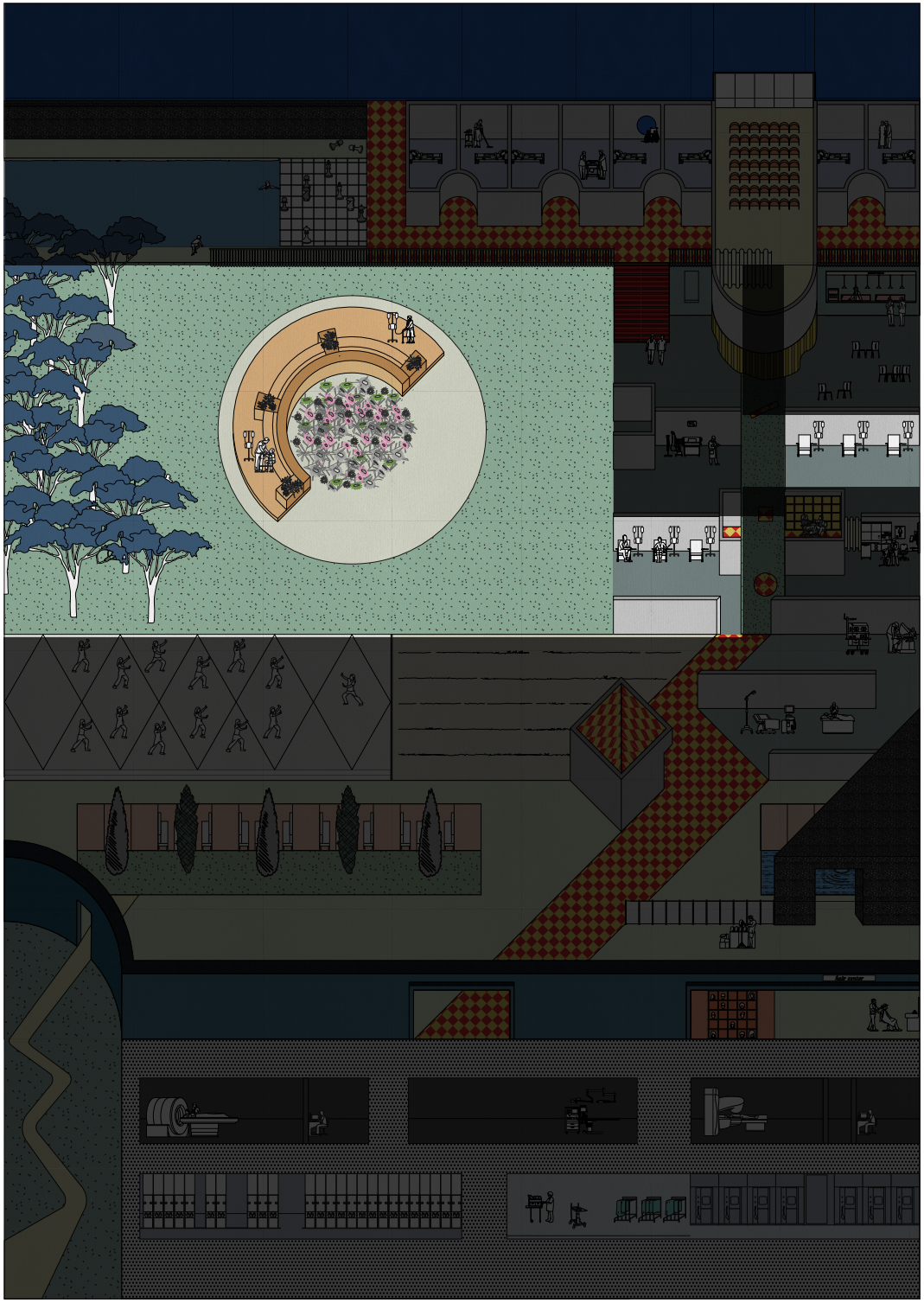




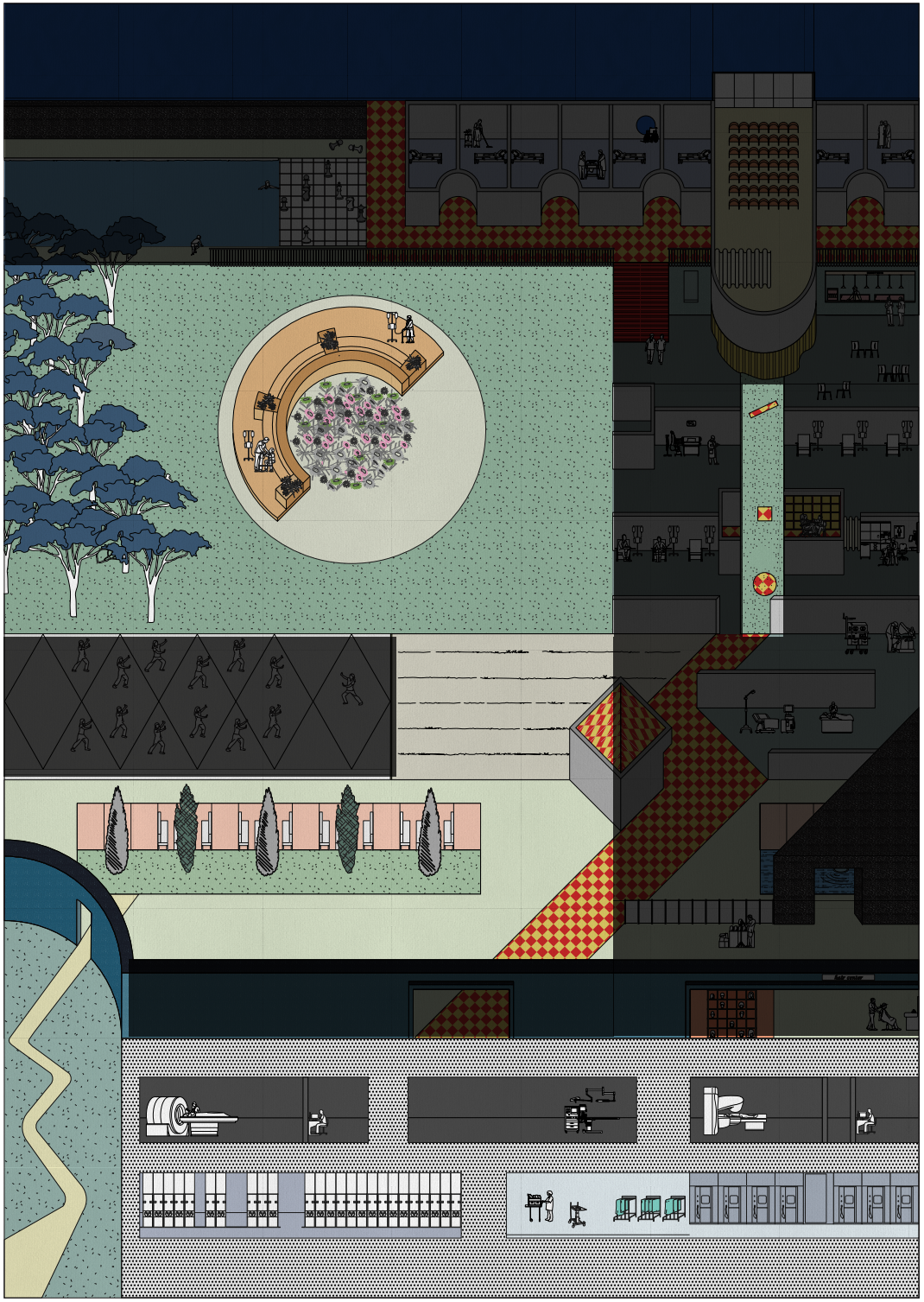
ADD LEISURE PROGRAM
RELATED TO IMPROVING
PSYCHOLOGICAL AND
PHYSICAL HEALTH



CREATE INTERSTITIAL SPACES FOR SOCIAL ENCOUNTERS OR RETREAT



OFFER DIFFERENT SPACES
FOR CHEMOTHERAPY
INCLUDING CHEMO GARDEN

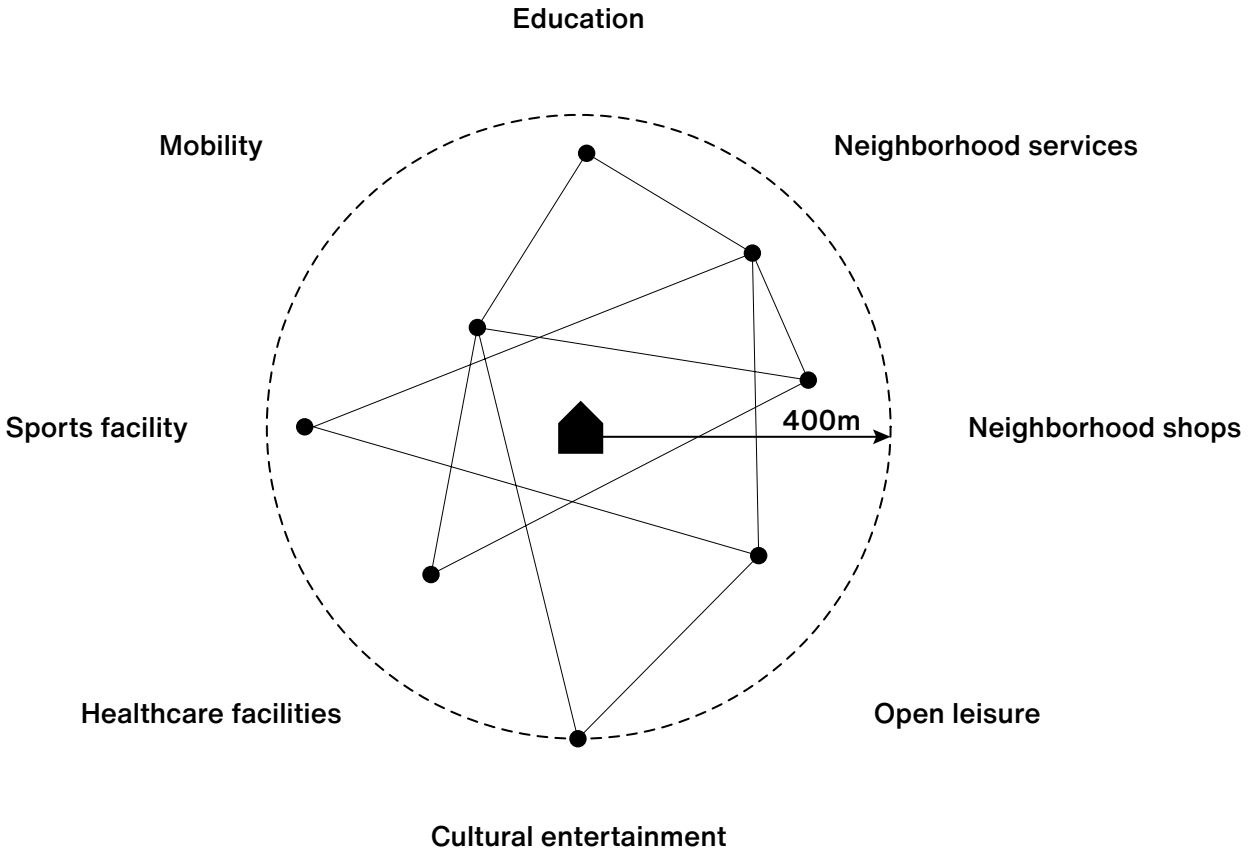


AND LOTS OF GREEN SPACES
AND LIGHT INTO
RADIOTHERAPY BASEMENT

HOSPITAL IN THE CITY



15-MINUTE CITY



URBAN SCALE: MILAN

1. Proximity to socio-cultural public space

Observation: Sports facilities for elderly are lacking in the center.

2. Expanding urban green

Observation: Milan is making initiatives to grow more tree-lined rows and expand parks.

3. Pedestrian-friendly area

Observation: Narrow and limited pavement widths within zone 1 (city center). Quadronno is also located in the area indicated to promote more human-scale and active public ground floor.

4. Walkability in 15-minute city

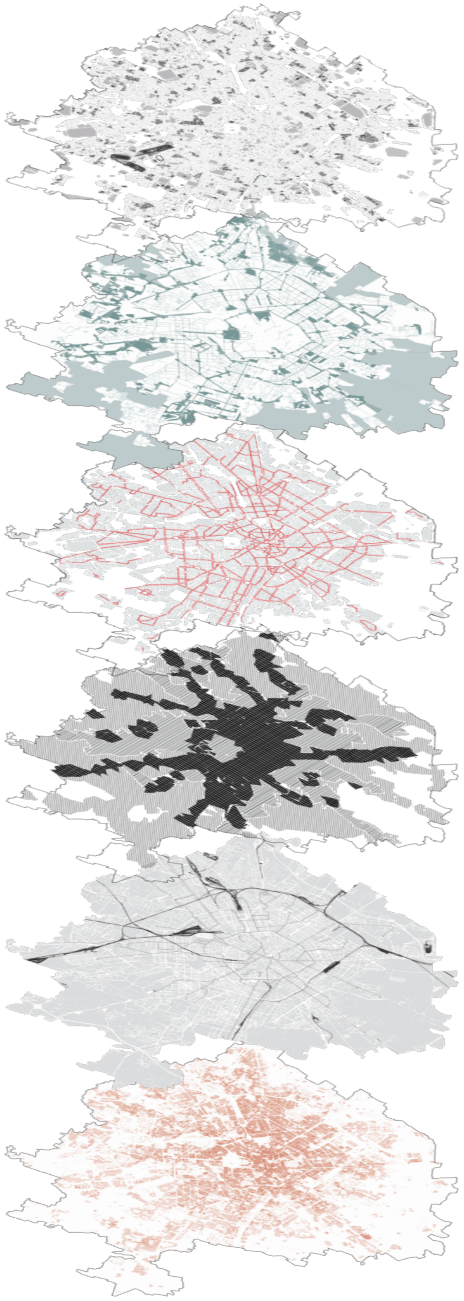
Observation: This analysis helps to speculate of a network of cancer care centers throughout the 15-minute city.

5. Transport network

Observation: Milan has an extensive internal transport network, but residents also utilize cars extensively.

6. Areas with high patient footfall

Observation: The concentration of housing along the rings means higher demand in healthcare facilities.



INCLUSIVE INFRASTRUCTURES

GREEN AND BLUE INFRASTRUCTURE

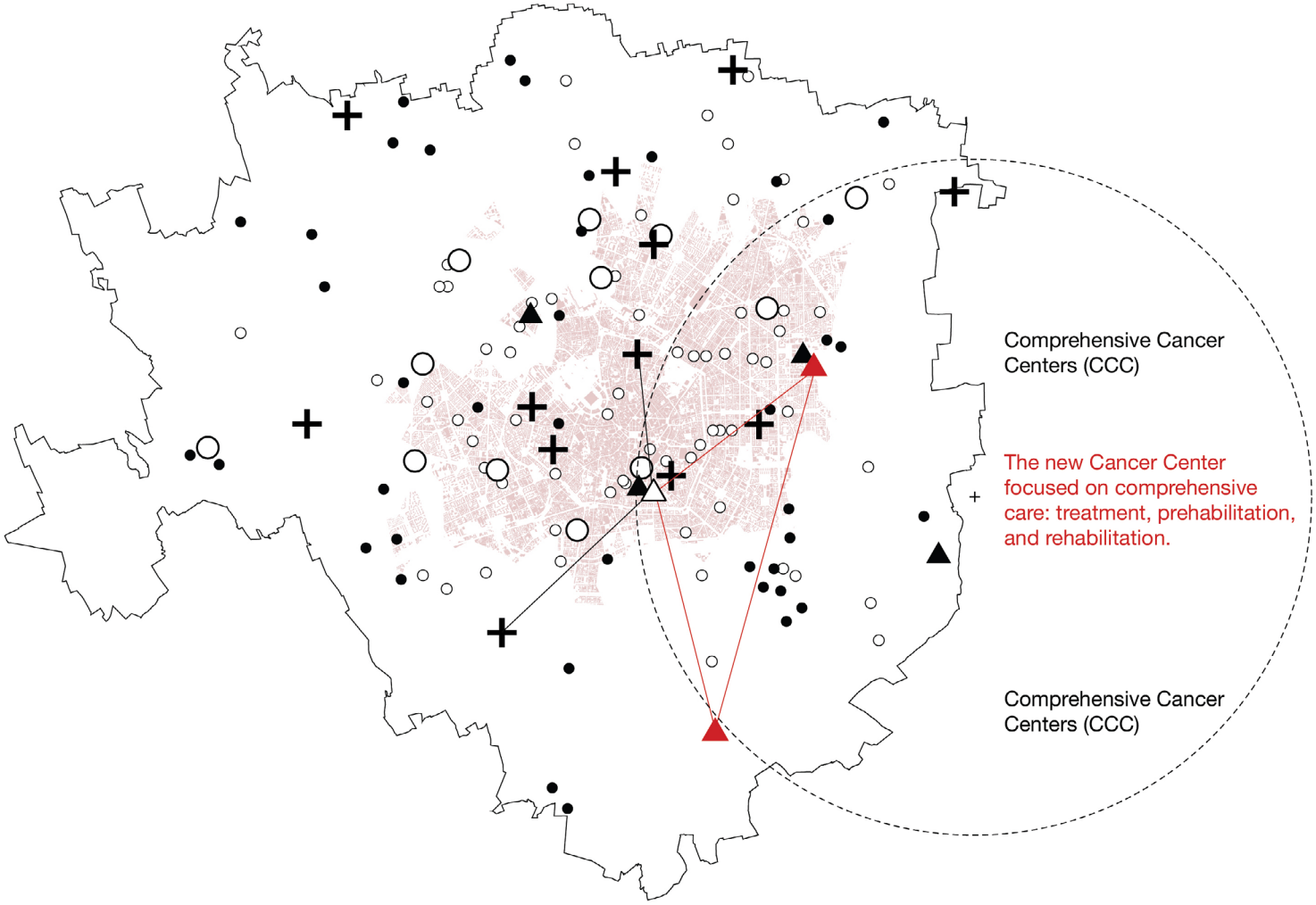
PAVEMENT WIDTH

400-METER REACH FROM PUBLIC TRANSPORT

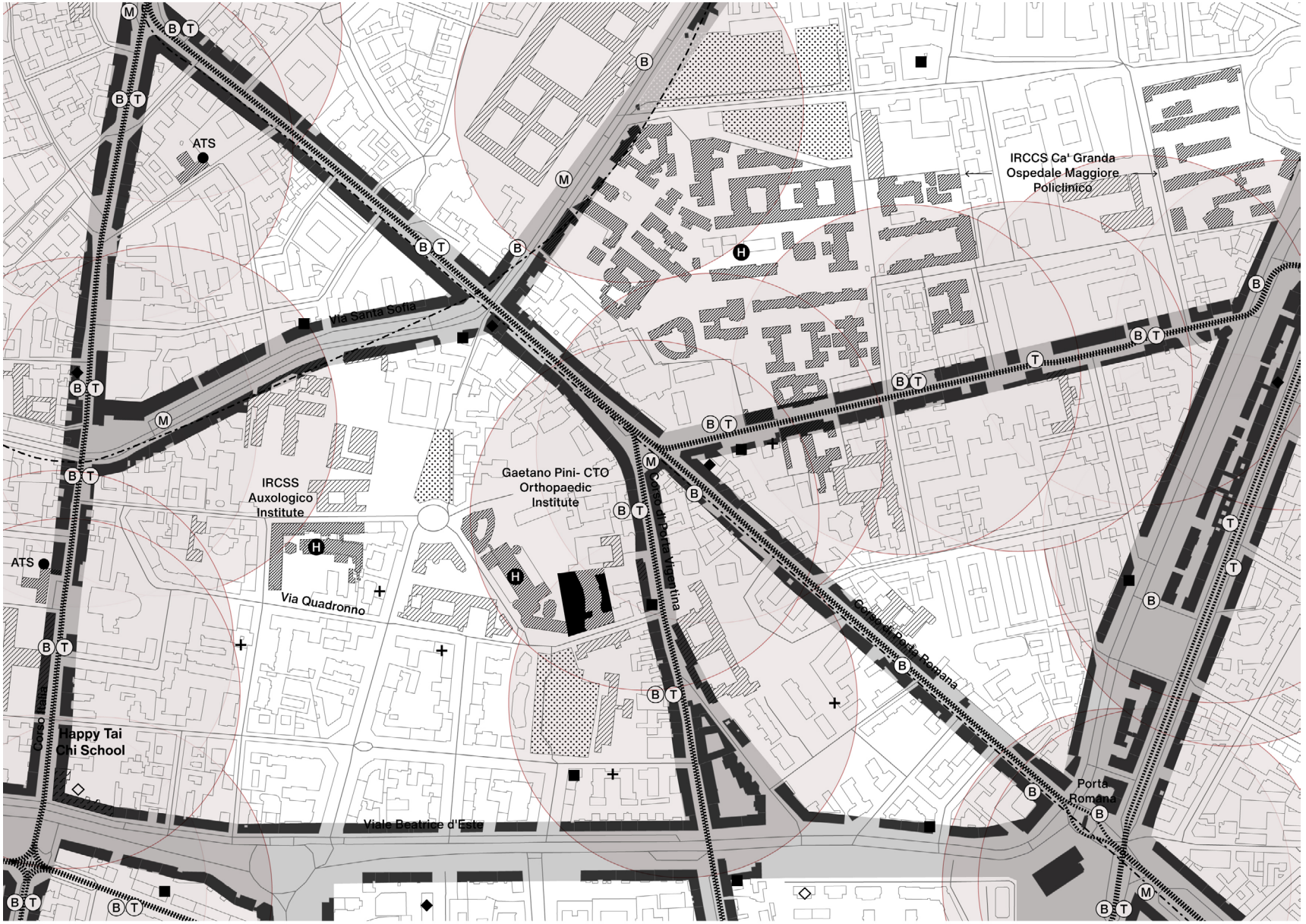
TRANSPORT SYSTEM

HOUSING DENSITY

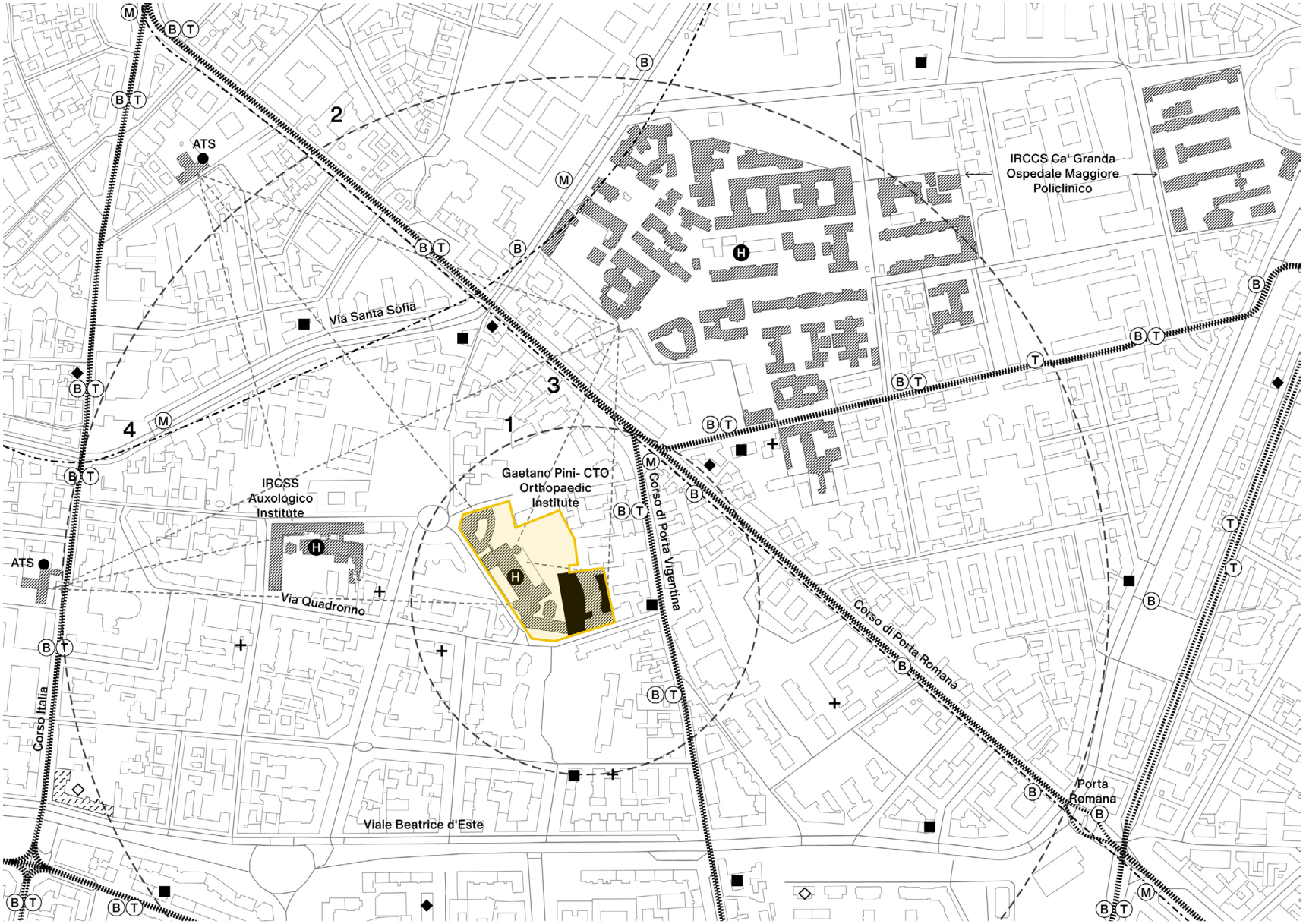
MILAN CANCER CARE NETWORK



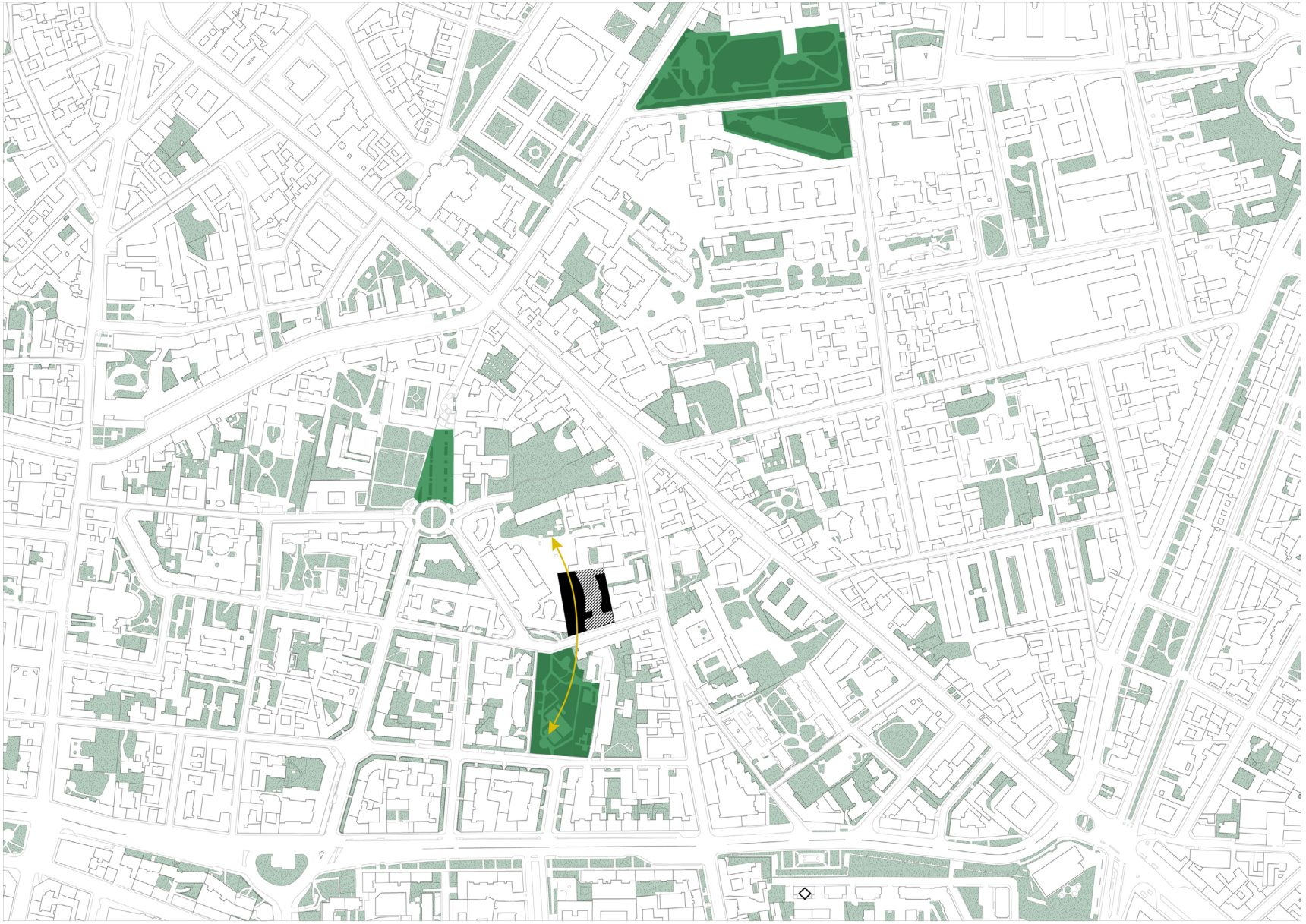
QUADRONNO NEIGHBORHOOD



HOSPITALS


IRCCS Ca' Granda
Ospedale Maggiore
Policlinico
ATS
Via Santa Sofia
IRCSS
Auxologico
Institute
Gaetano Pini- CTO
Orthopaedic
Institute
Corso di Porta Vigentina
Via Quadronno
Corso di Porta Romana
Corso Italia
Viale Beatrice d'Este
Porta
Romana
1 5-min walking distance (400 m)
2 15-minute walking distance (1,2 km)
3 Metro line M3
4 Metro line M4
Metro/Bus/Tram station
Tram line
Commercial fronts
Trees
Medical-related facilities
Sports facilities
Parks
Schools
Private polyclinic (GP)
Public health service (ATS)
Pharmacy
Rehabilitation / Physio facilities
0
50
100
200 m

PARKS



1 5-min walking distance (400 m)
2 15-minute walking distance (1,2 km)
3 Metro line M3
4 Metro line M4

Ⓜ Ⓑ Ⓣ Metro/Bus/Tram station
Tram line
Commercial fronts
Trees

Medical-related facilities
Sports facilities
Parks
Schools

Private polyclinic (GP)
Public health service (ATS)
Pharmacy
Rehabilitation / Physio facilities

0 50 100 200 m

SITE VISIT



Pavement from the Park



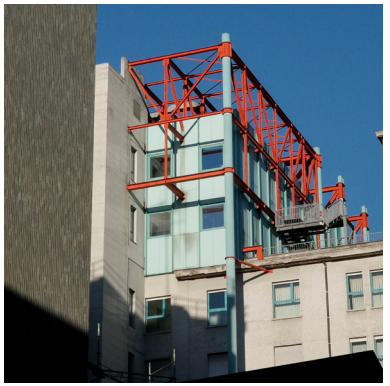
Oriana Fallaci Park



Nearby Residential Buildings



Main Streetfront entrance



Adjacent Orthopaedic Hospital

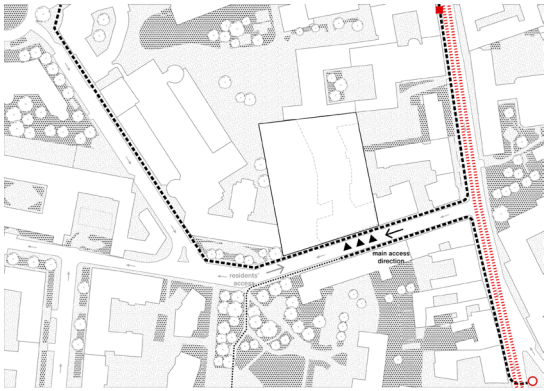


Adjacent School Soccer Field

BUILDABLE SITE



SITE STRATEGIES



Distinct and visible volume from the main street Corso di Porta Vigentina

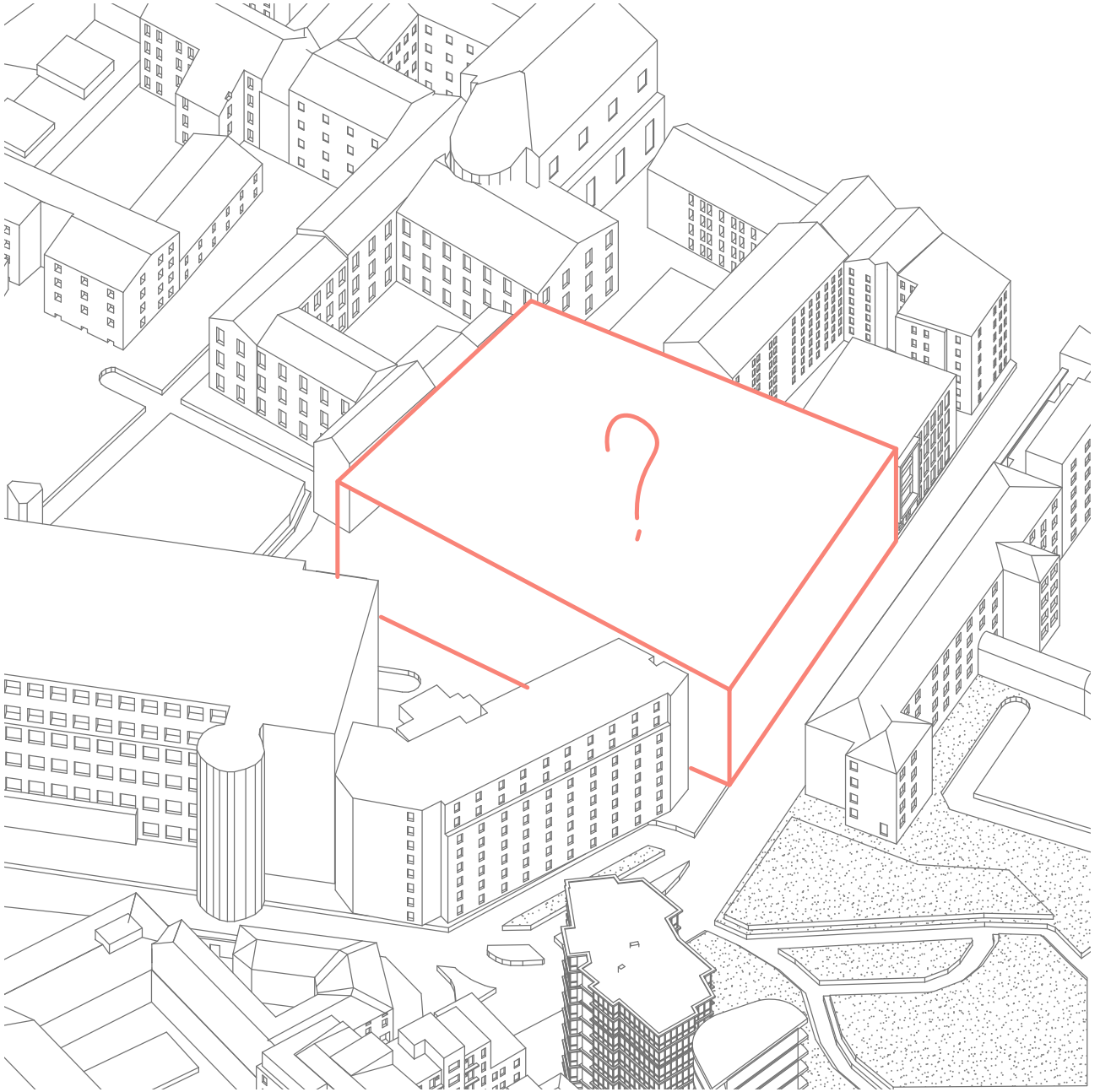


Engagement with facing park



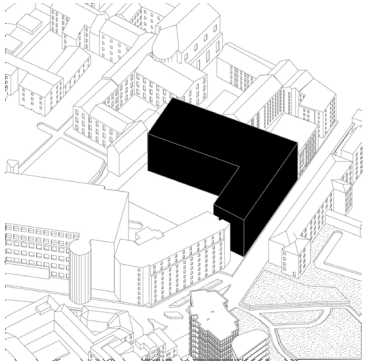
Active public ground floor with human scale façade

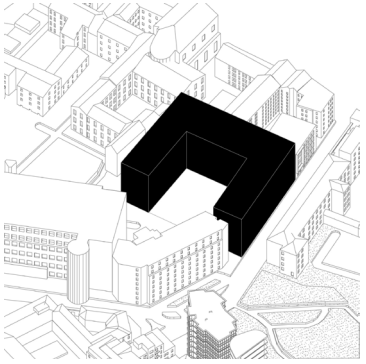
PROGRAM VOLUME

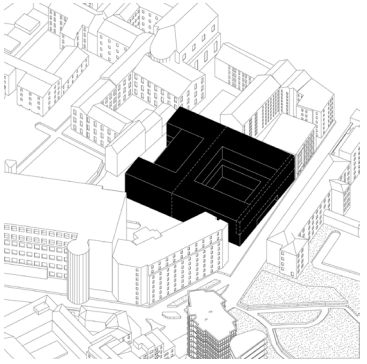


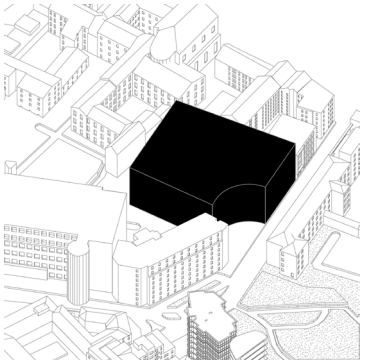
15,000 sqm

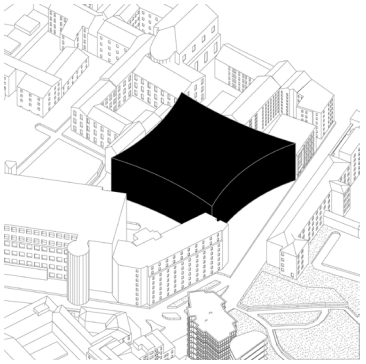
SITE MASSING

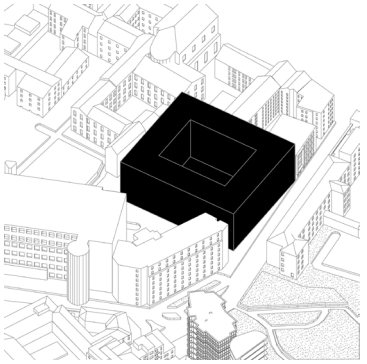

L-SHAPE

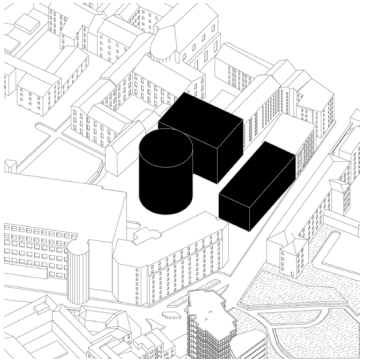

U-SHAPE

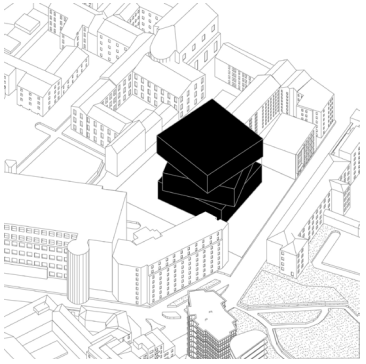

DUAL

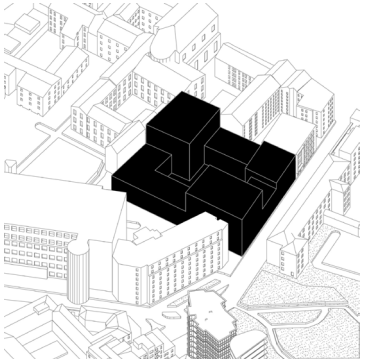

BITE


STRETCH


COURT


VILLAGE


TWIST


CAPS

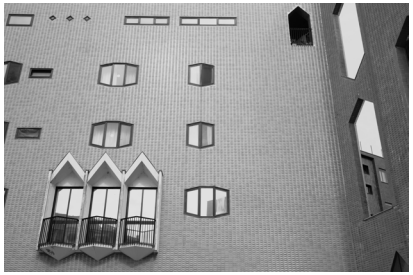
MATERIAL GROUP

MILAN MATERIAL IDENTITY













MILAN MATERIAL EVOLUTION

1400

Renaissance



Terracotta



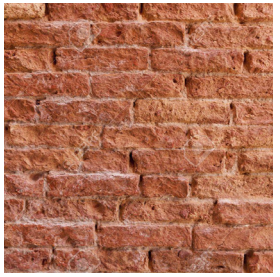
Timber

1600

The Birth of Modern Science



Stone



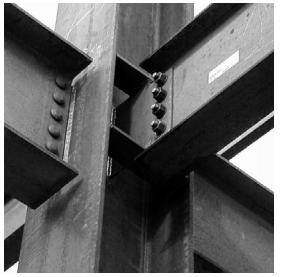
Bricks

1800

The Birth of Industrial Revolution



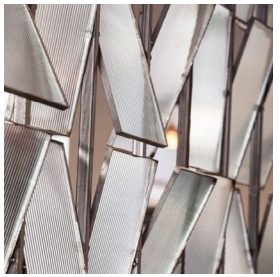
Concrete



Steel

1900

The Second Industrial Revolution



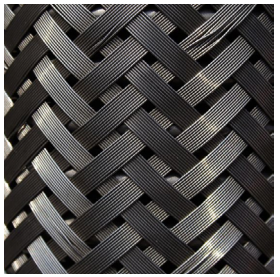
Glass



Reinforced Concrete

2000

Modern Technology



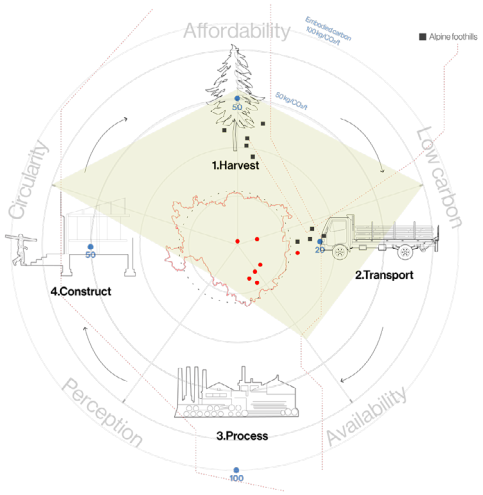
Carbon Fibre



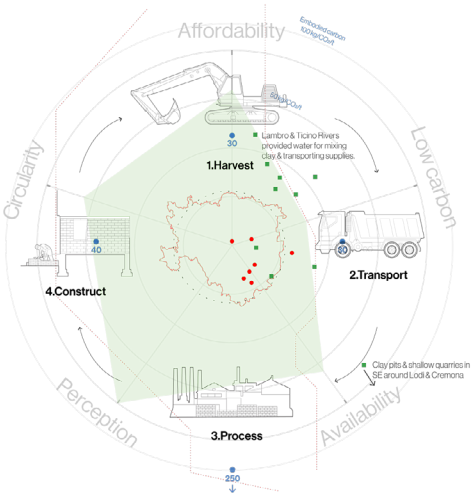
Sustainable Wood

2100

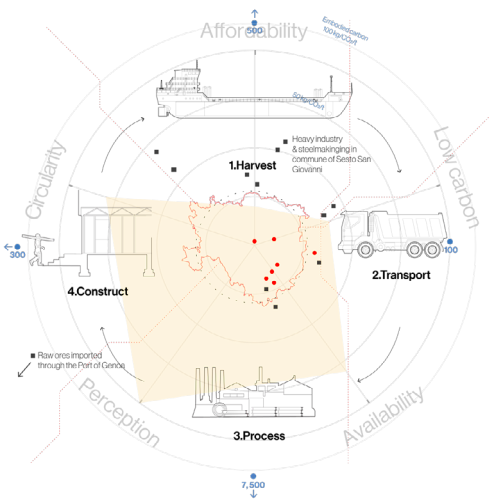
THE NARRATIVE OF EXTRACTION



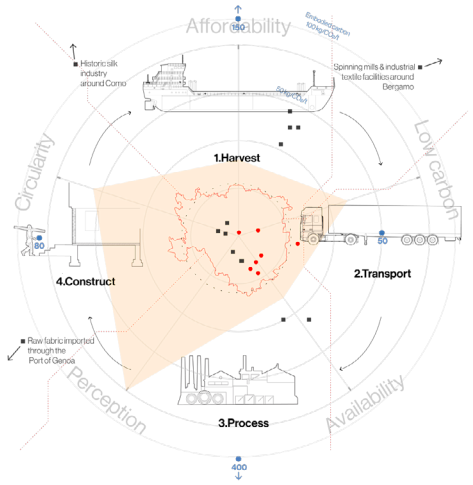
Timber



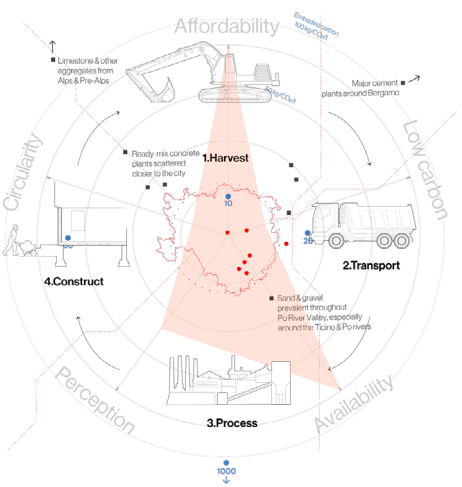
Clay / Bricks



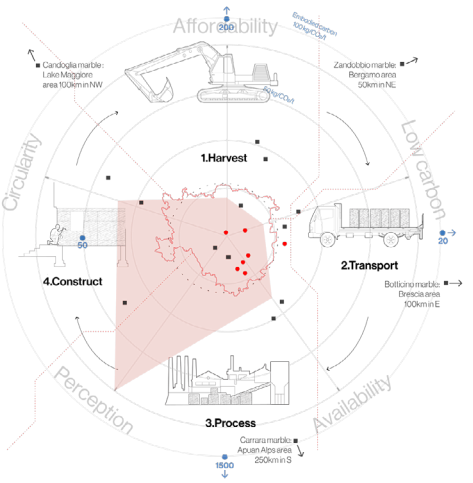
Steel



Textile



Concrete



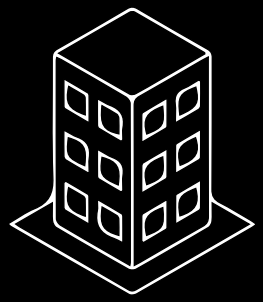
Marble

MATERIAL STRATEGY



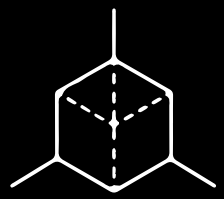
URBAN SCALE

Show a **map of Milan** (45 km radius), extracting materials and textures tied to its identity. Highlight how this informs the building's material strategy.



BUILDING SCALE

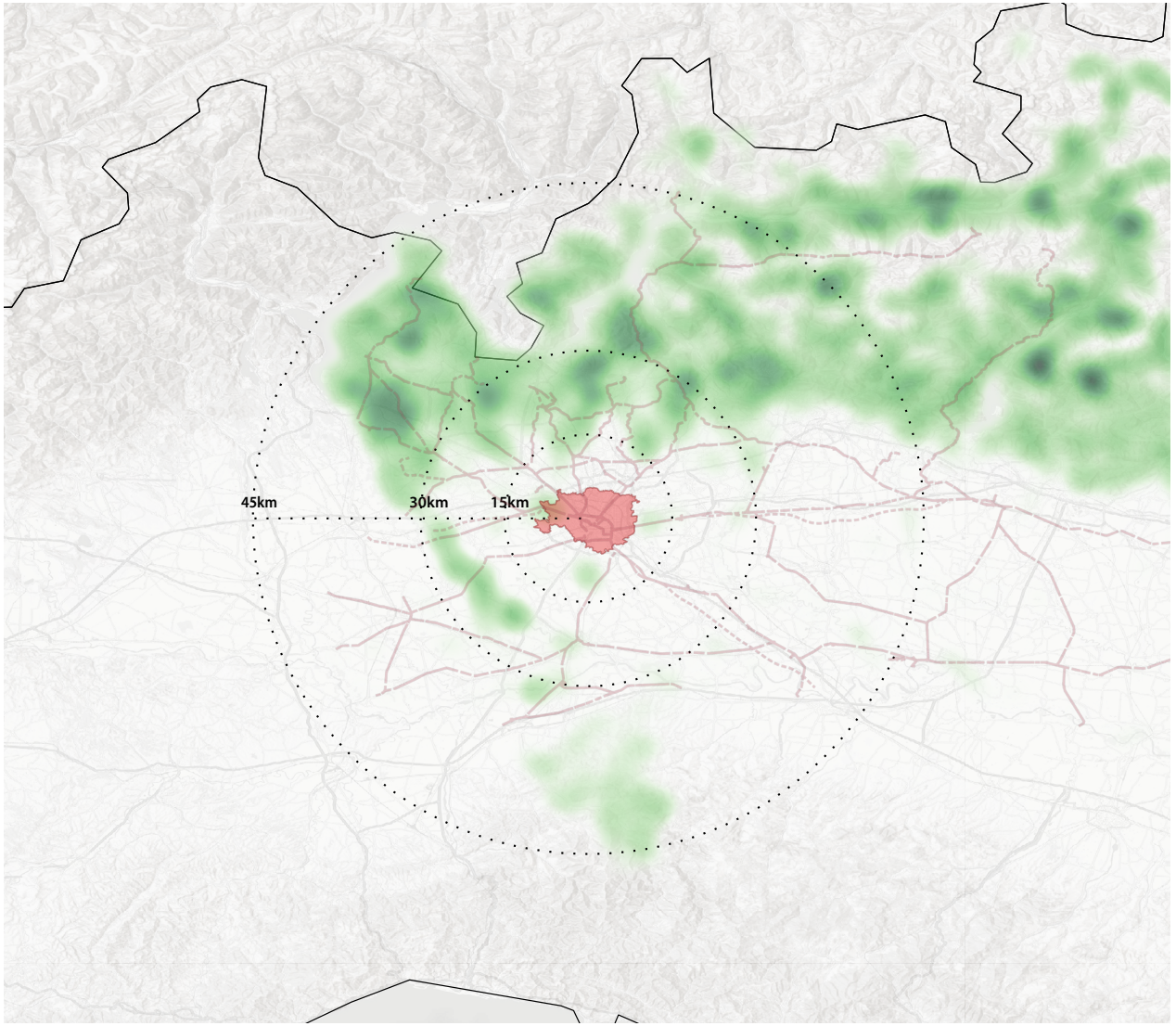
Design 50%+ of components for disassembly or reuse using modular systems and reversible connections. Show this through **diagrams or sequences**.



DETAIL SCALE

Provide a **1:50 detail** of a key element reflecting Milan's identity, focusing on materials, craftsmanship, and integration with the disassembly strategy.

MATERIAL FOCUS: TIMBER

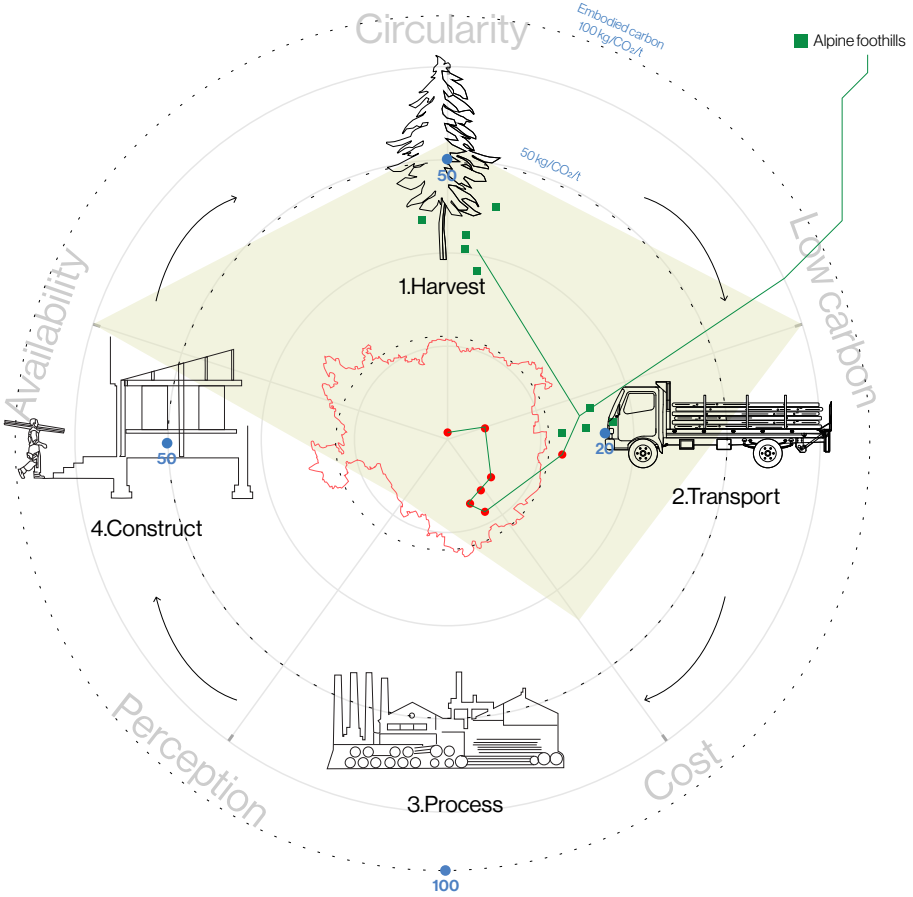


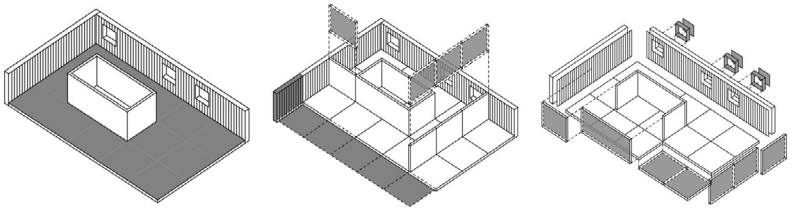
Logging areas

1: 700,000

0 10 20 30 km

TIMBER AND DESIGN FOR DISASSEMBLY (DFD)





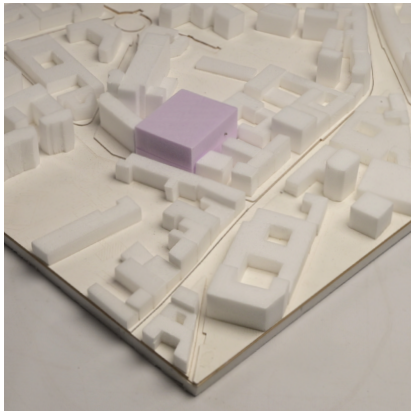
Multifuntionality
No disassembly

Transformability
Partial disassembly & reuse

Demountability
Full disassembly & reuse

MASSING STUDY

THE STARTING POINT

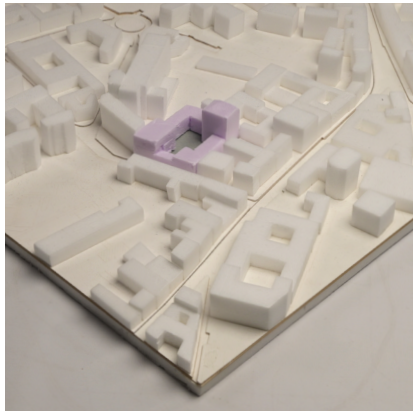


15,000 m²

MASSING STUDY



CLIENT

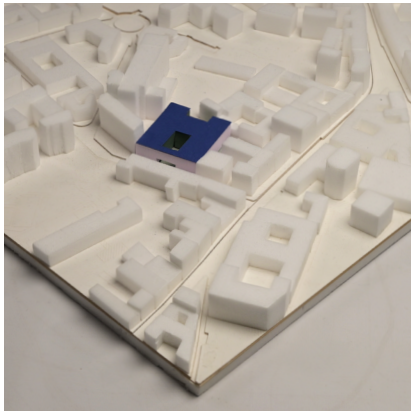


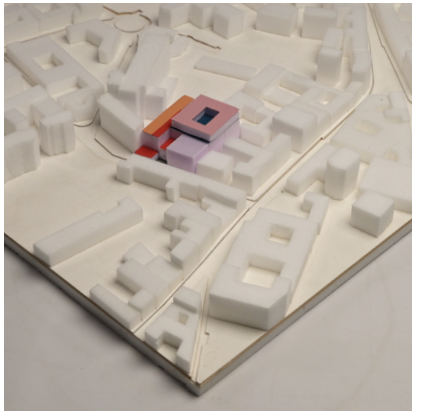




PROGRAM

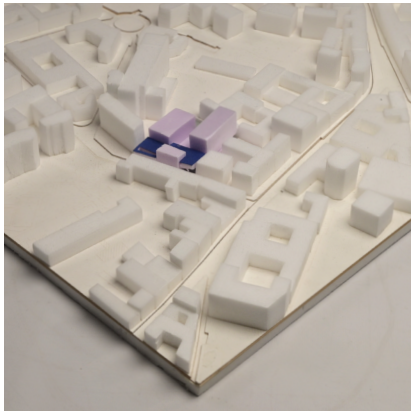


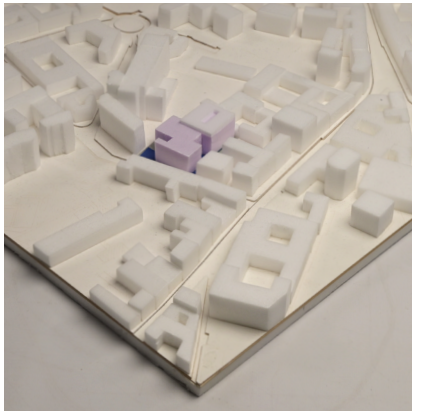




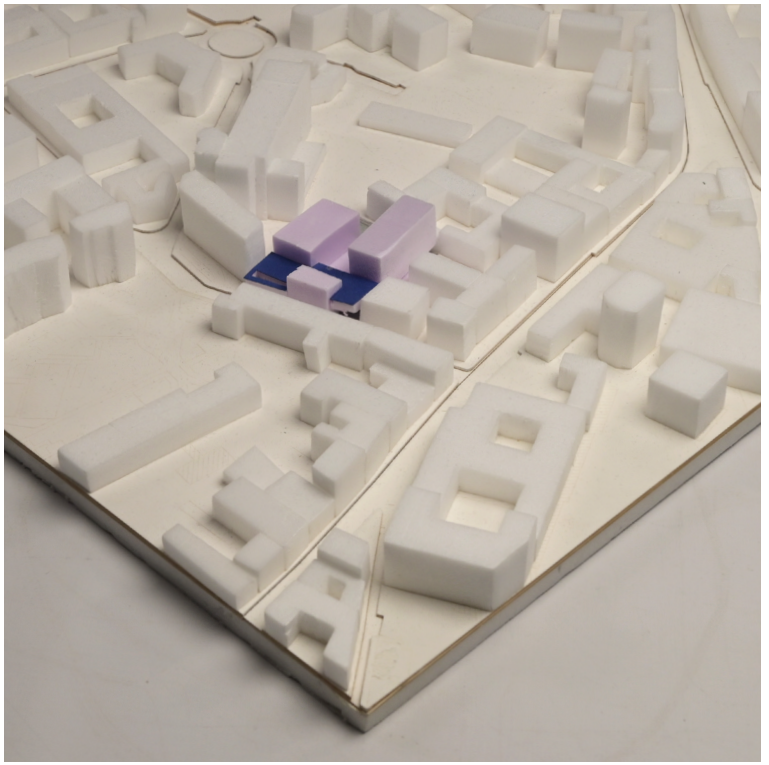
SITE







BREAK DOWN THE MASS



COMPACT EFFICIENT HOSPITAL



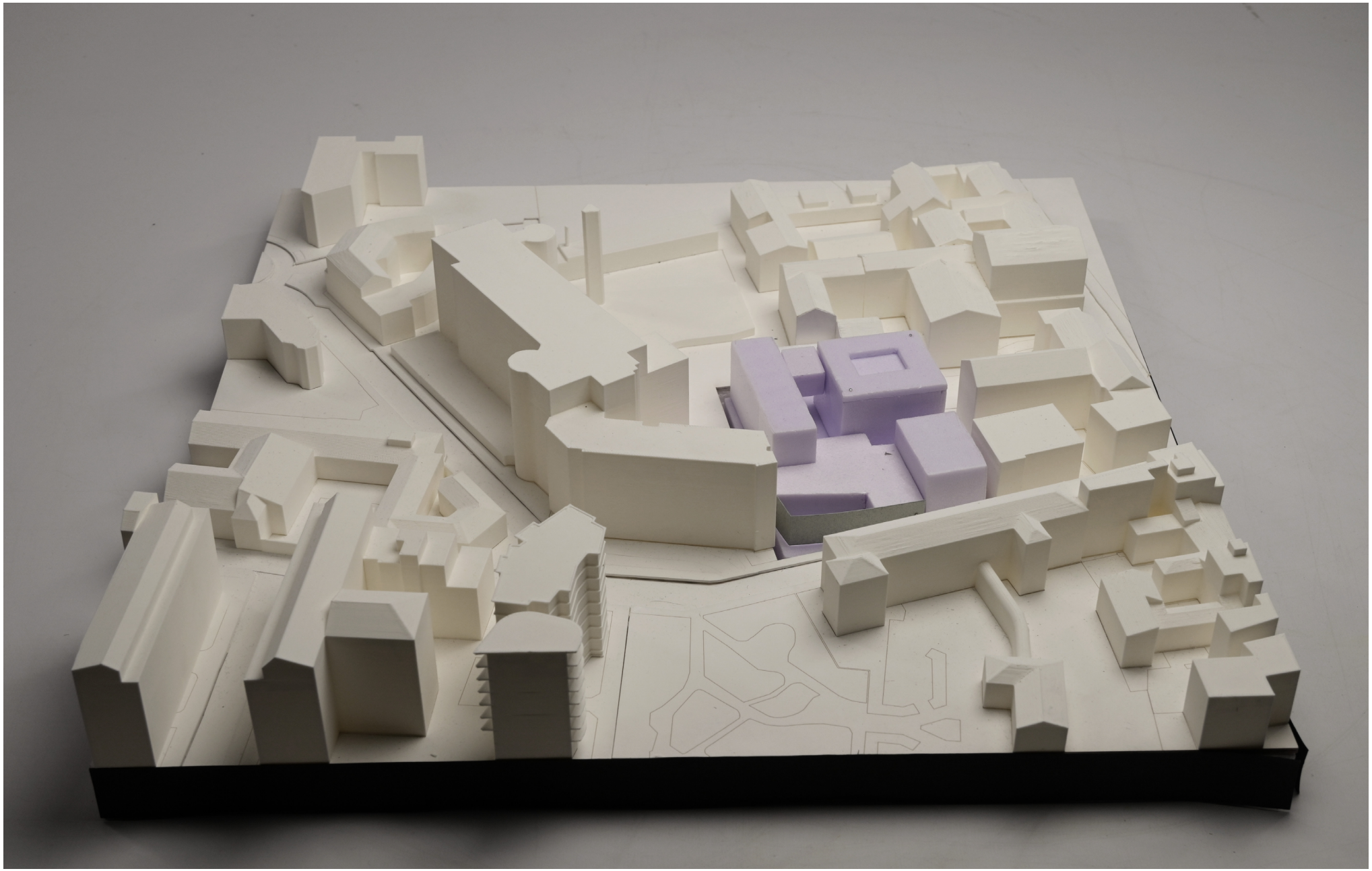
INEFFICIENT HOSPITAL



MUSEUM HOSPITAL



RETURN TO URBAN LINES



OPEN TO THE PARK



PASSAGE VARIATIONS



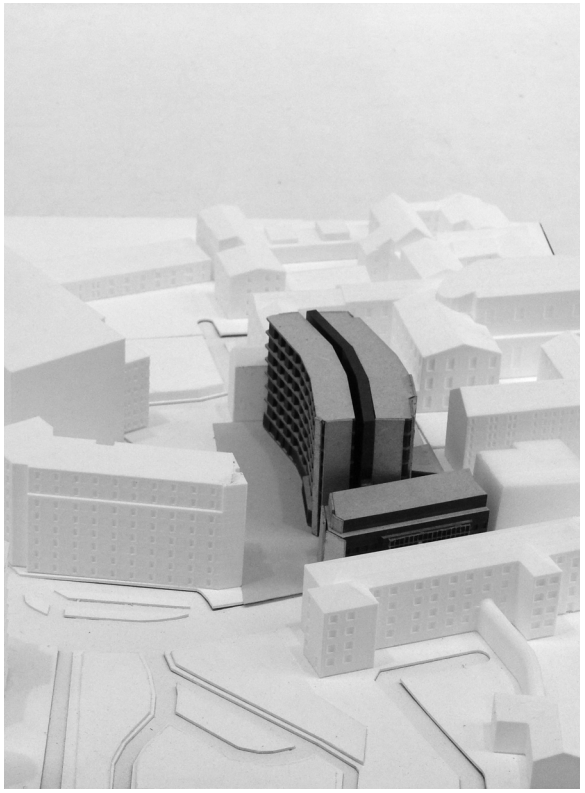
PROGRAMMATIC BLOCKING



MASSING PROPOSAL



MASSING COMPARISON

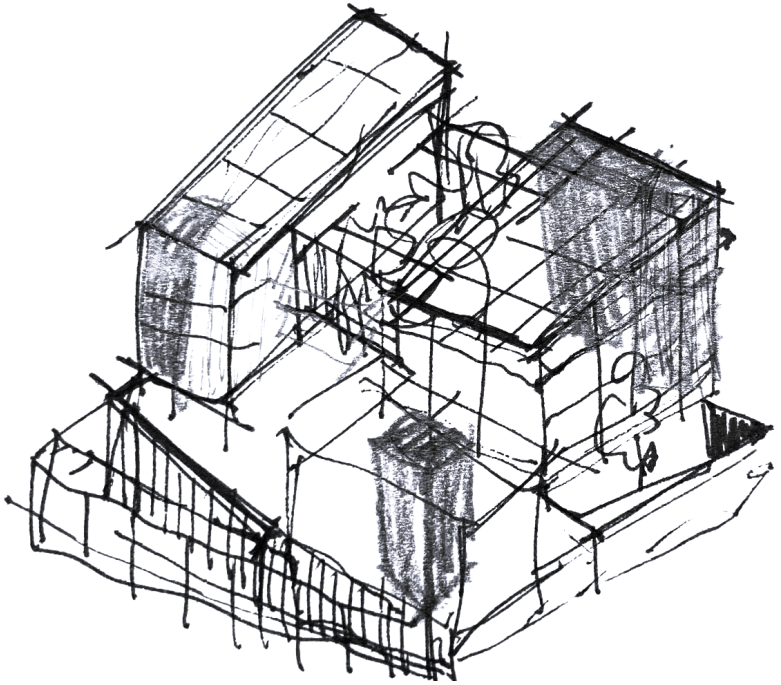


Clinica La Madonnina

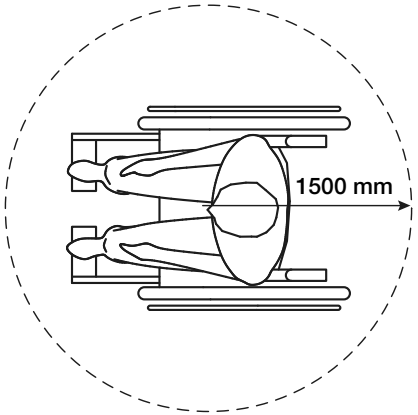


Quadronno Cancer Center

HOSPITAL IN A PARK



1.5-METER WHEELCHAIR TURNING RADIUS

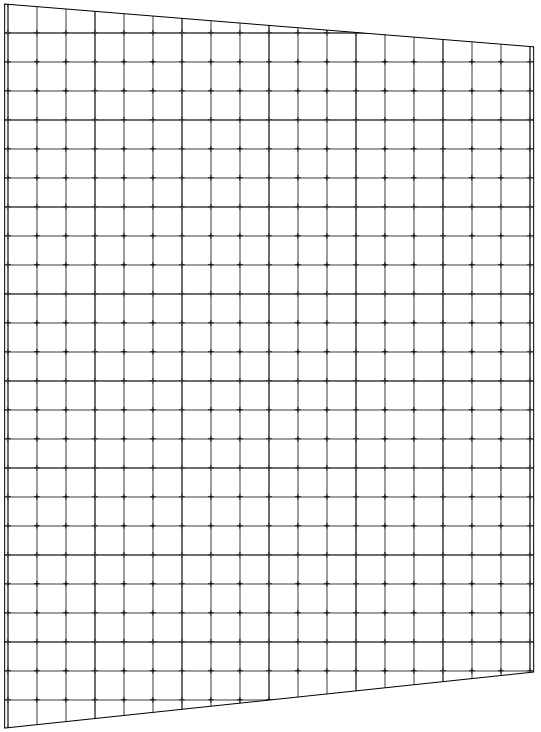


3-METER CORRIDOR

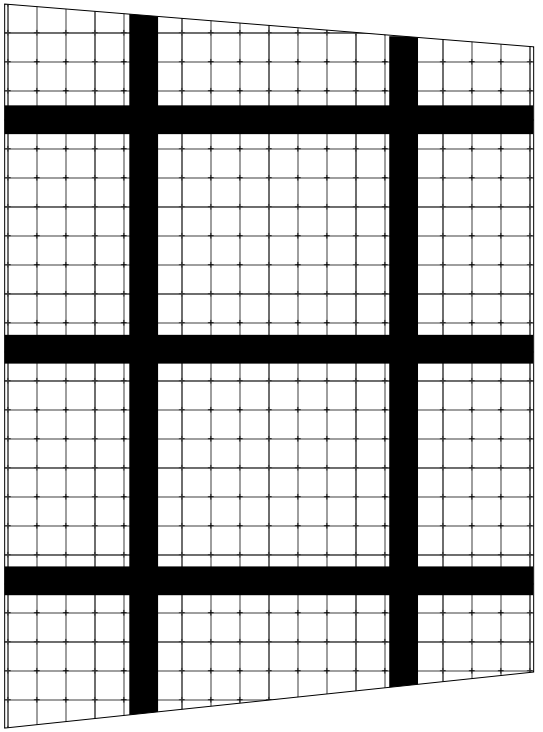
MASSING

3 X 3

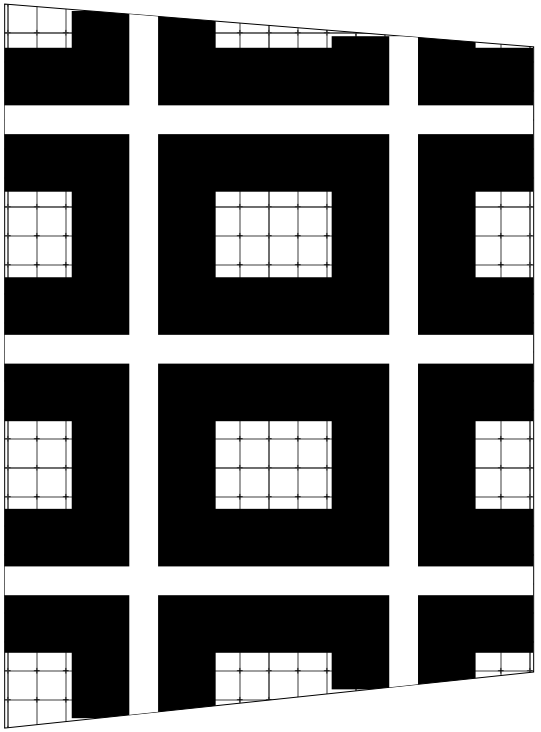
PLOT



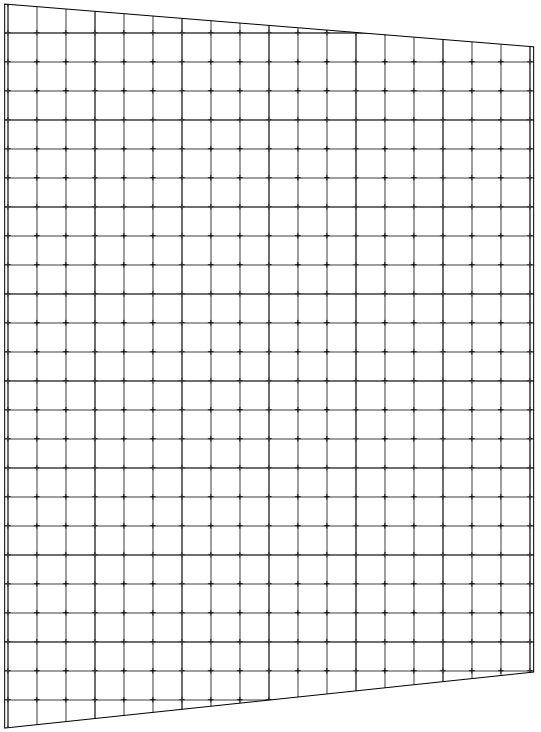
TYPICAL HOSPITAL CORRIDOR



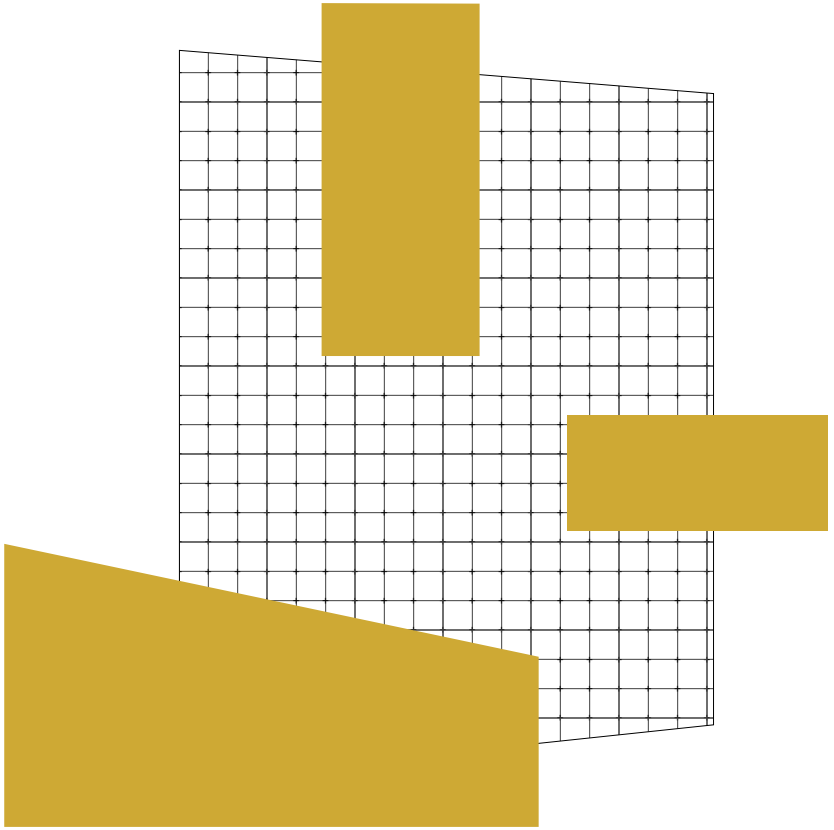
~~STRICTLY EFFICIENT~~



STARTING WITH THE GRID



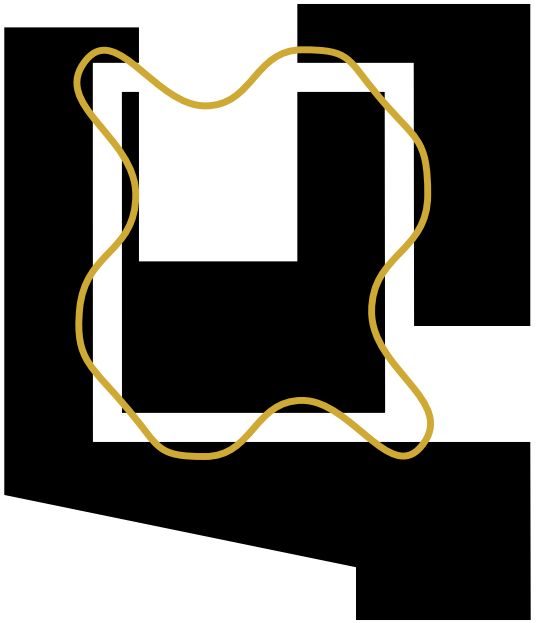
CONTEXT AS ENABLING CONSTRAINTS



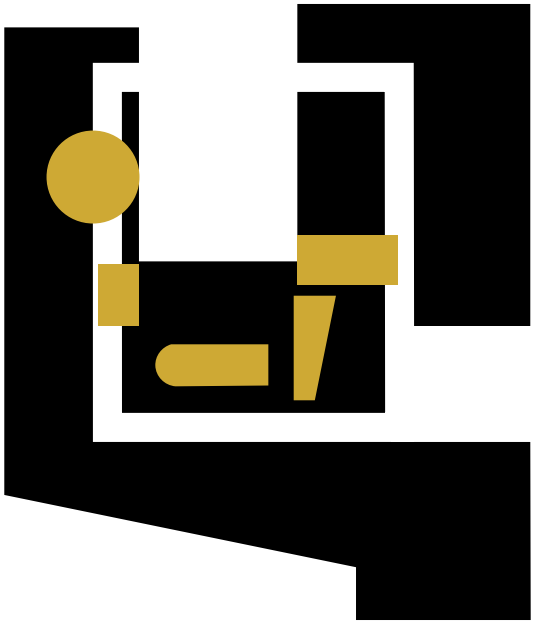
POROSITY



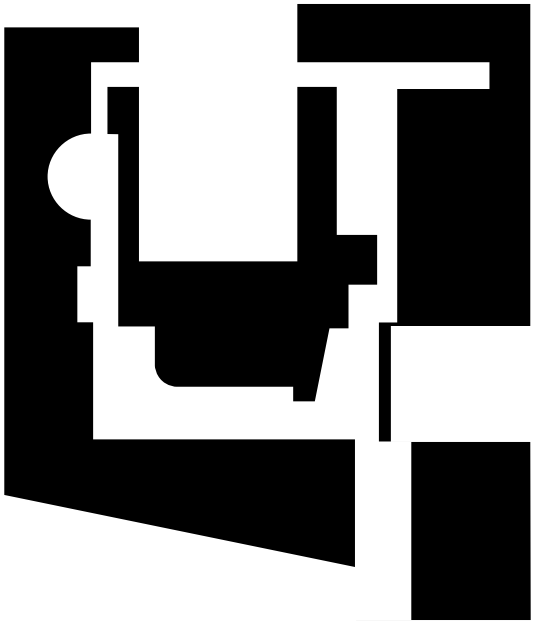
LOOP



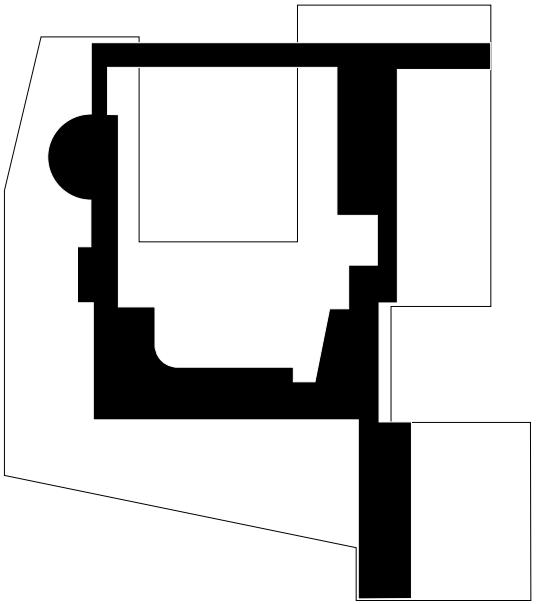
OBLIQUE FUNCTIONS



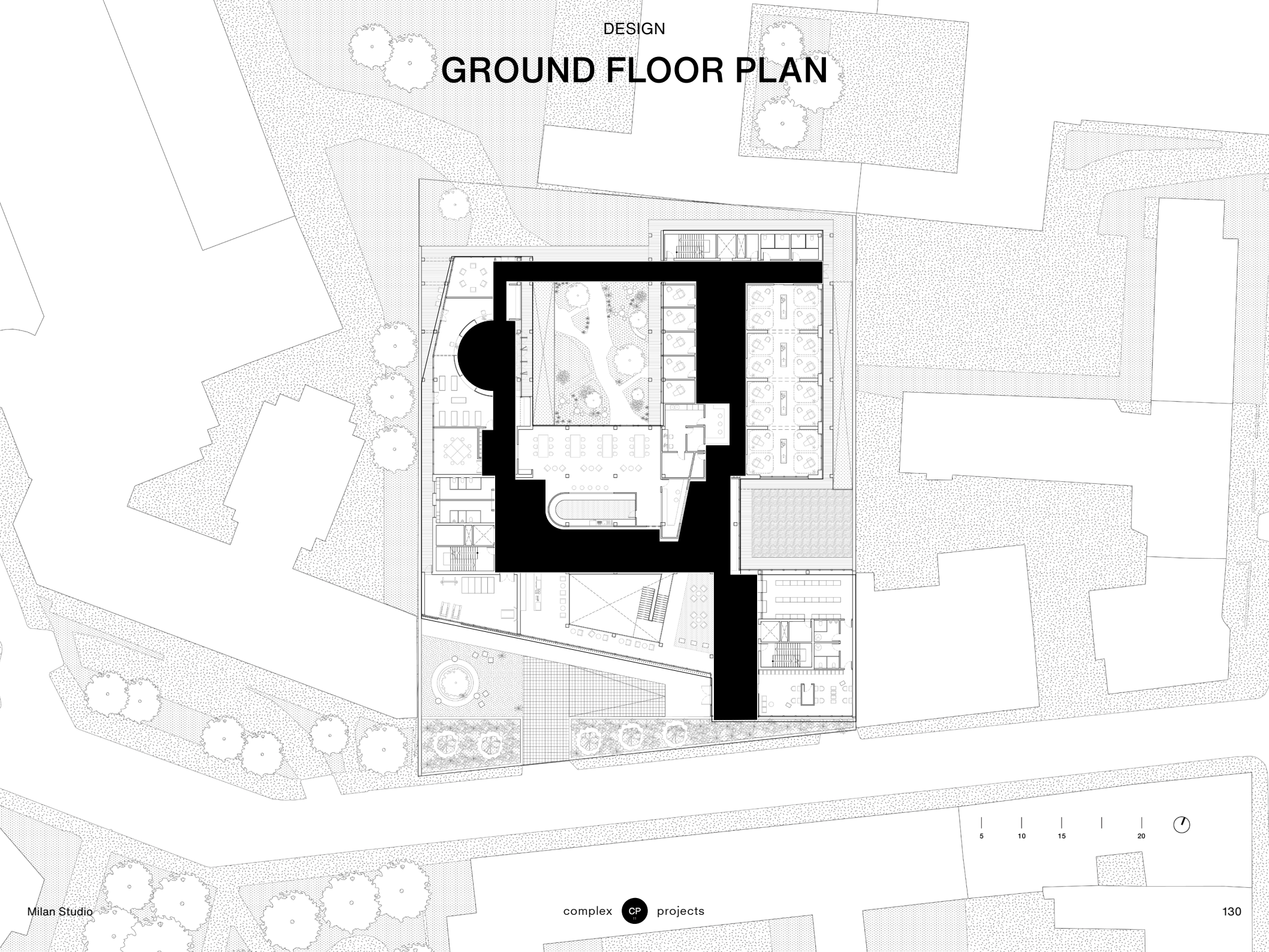
CIRCULATION VOID



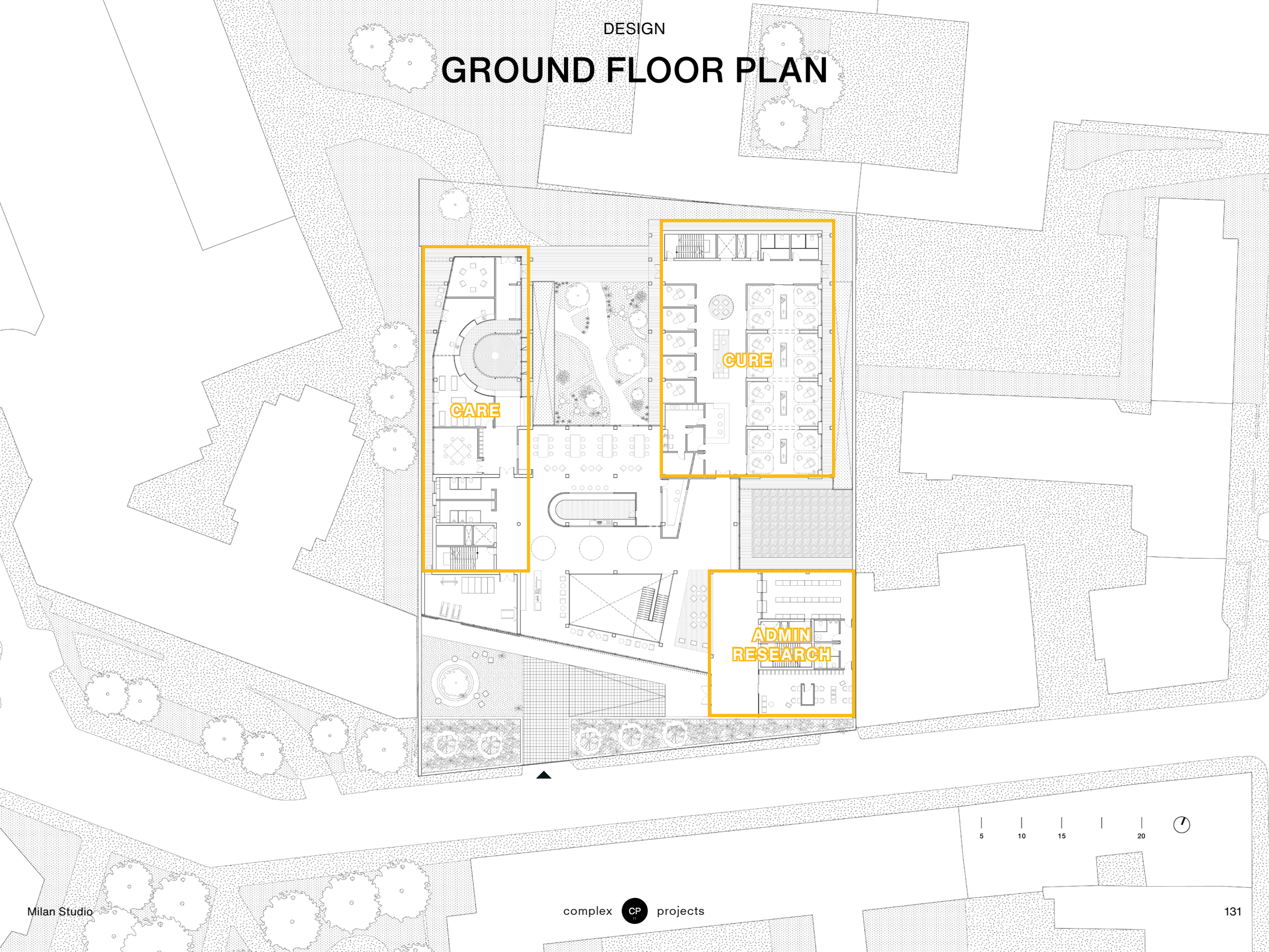
THE NEW CORRIDOR



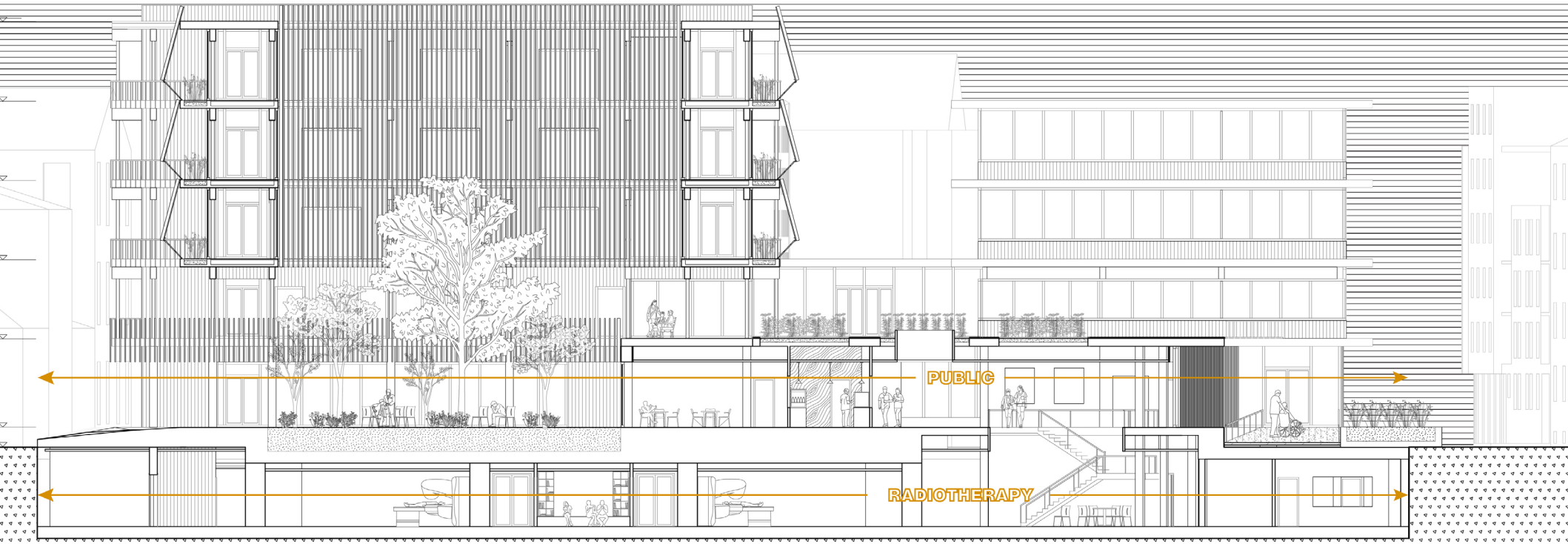
GROUND FLOOR PLAN



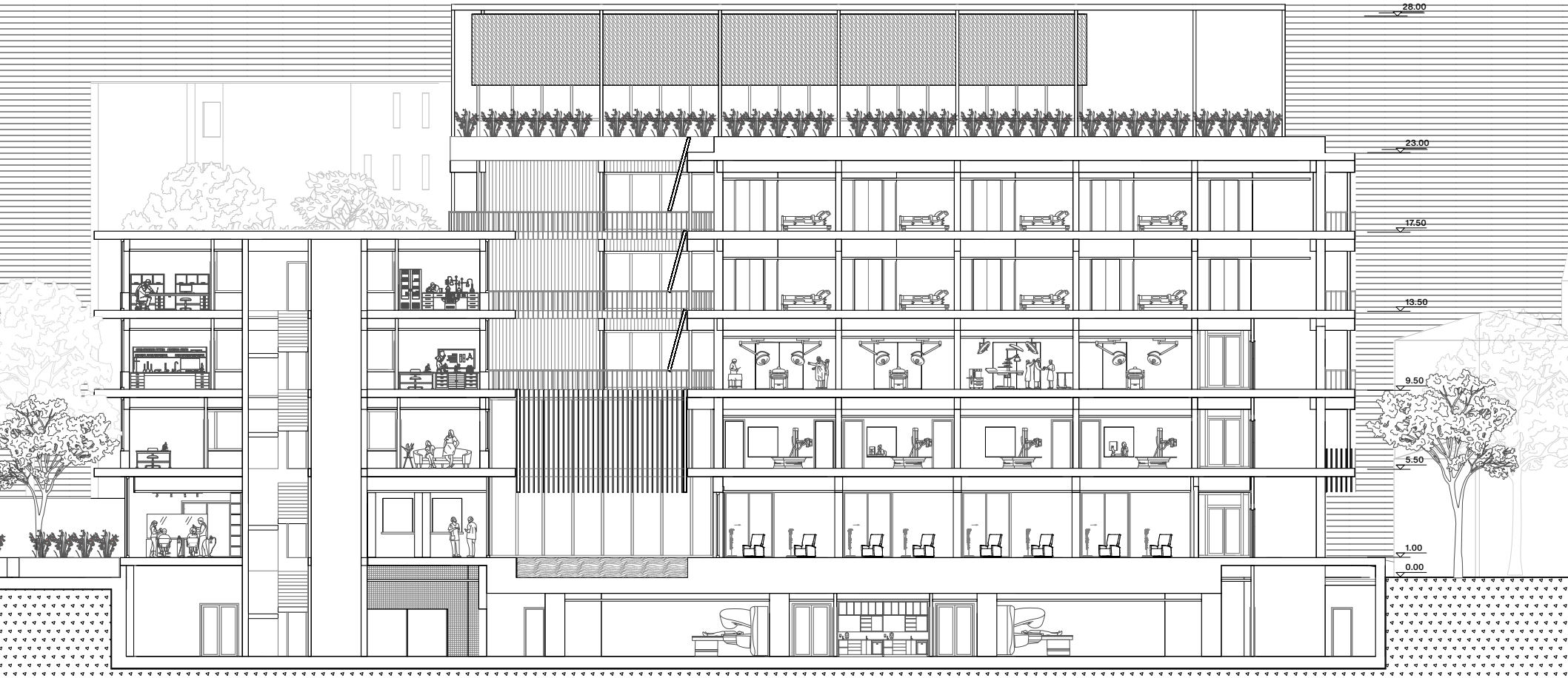
GROUND FLOOR PLAN



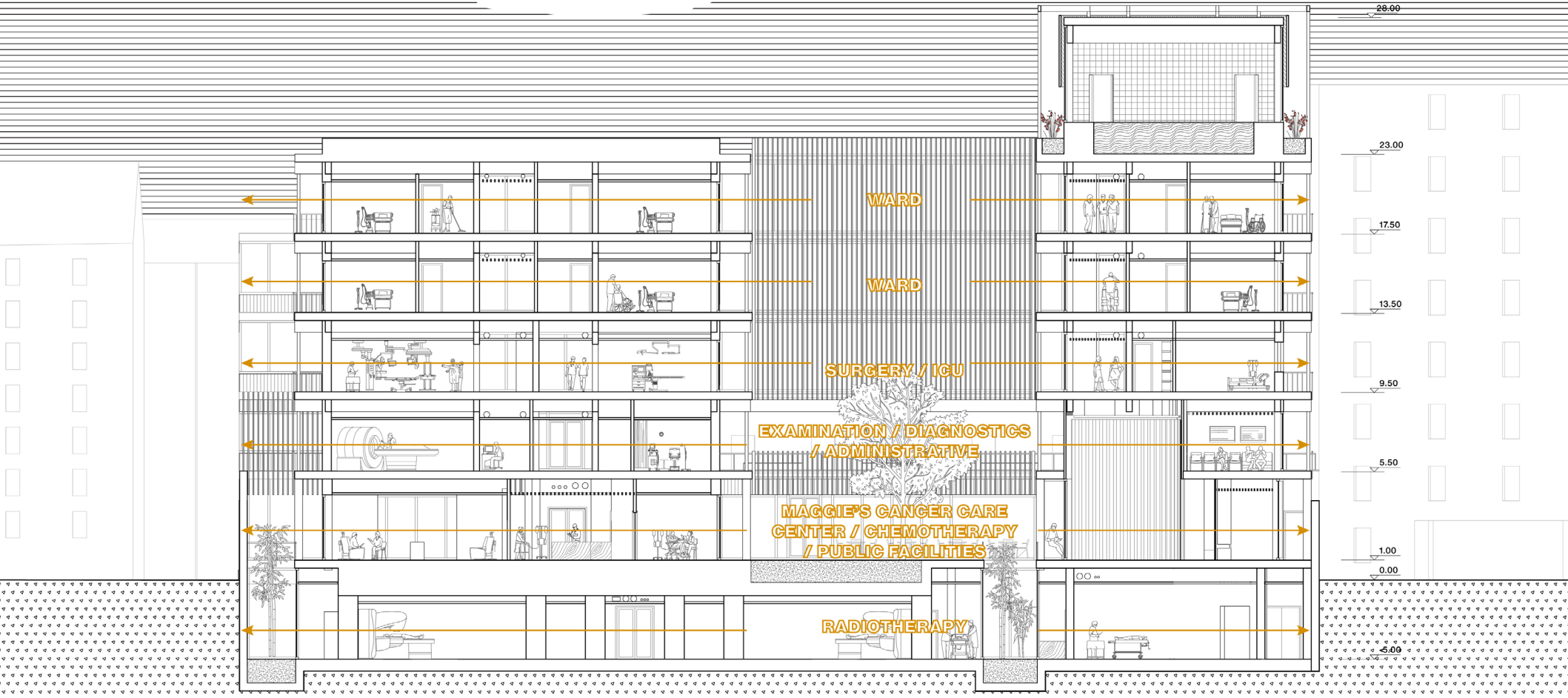
SECTION A-A



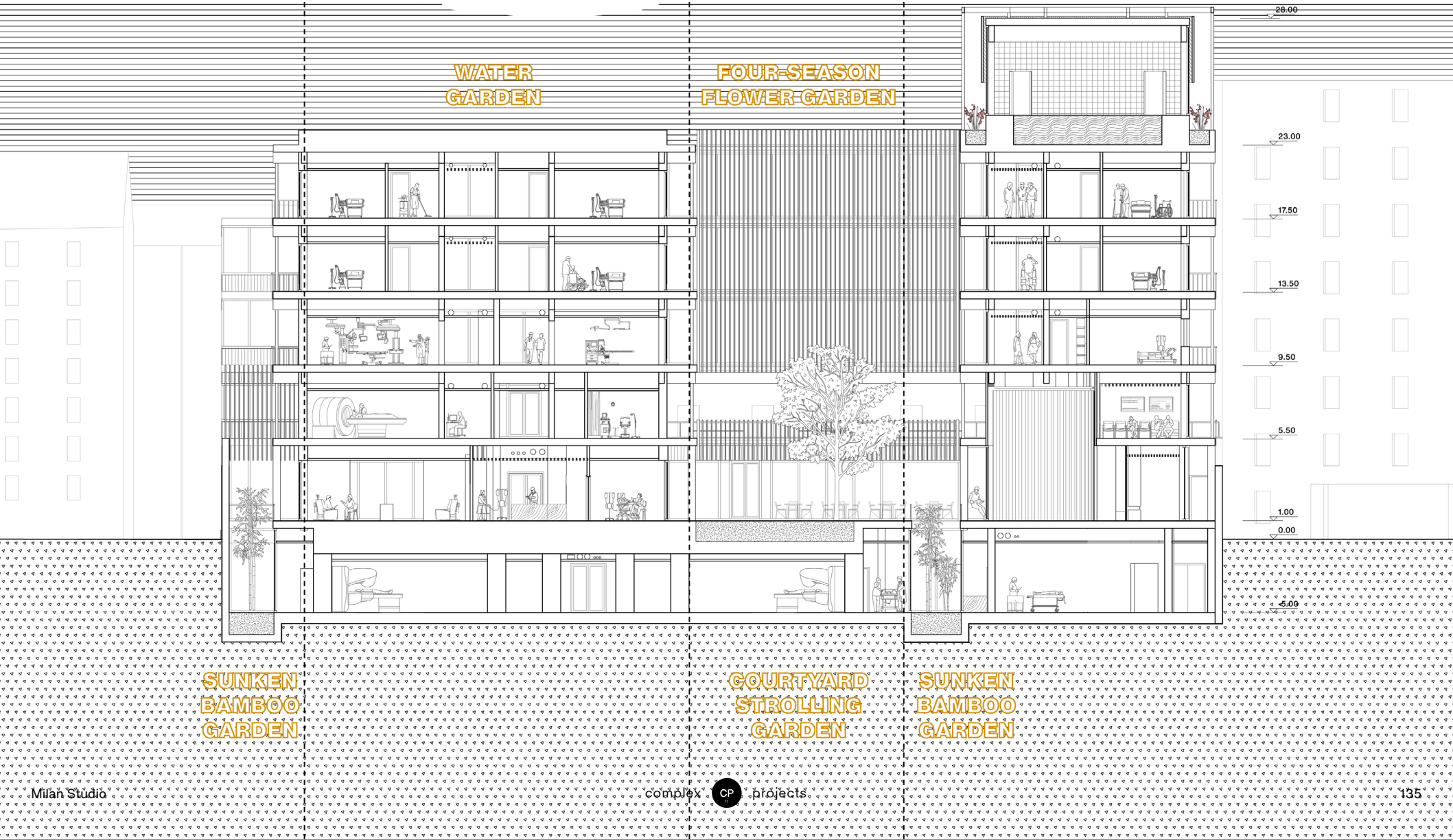
SECTION B-B



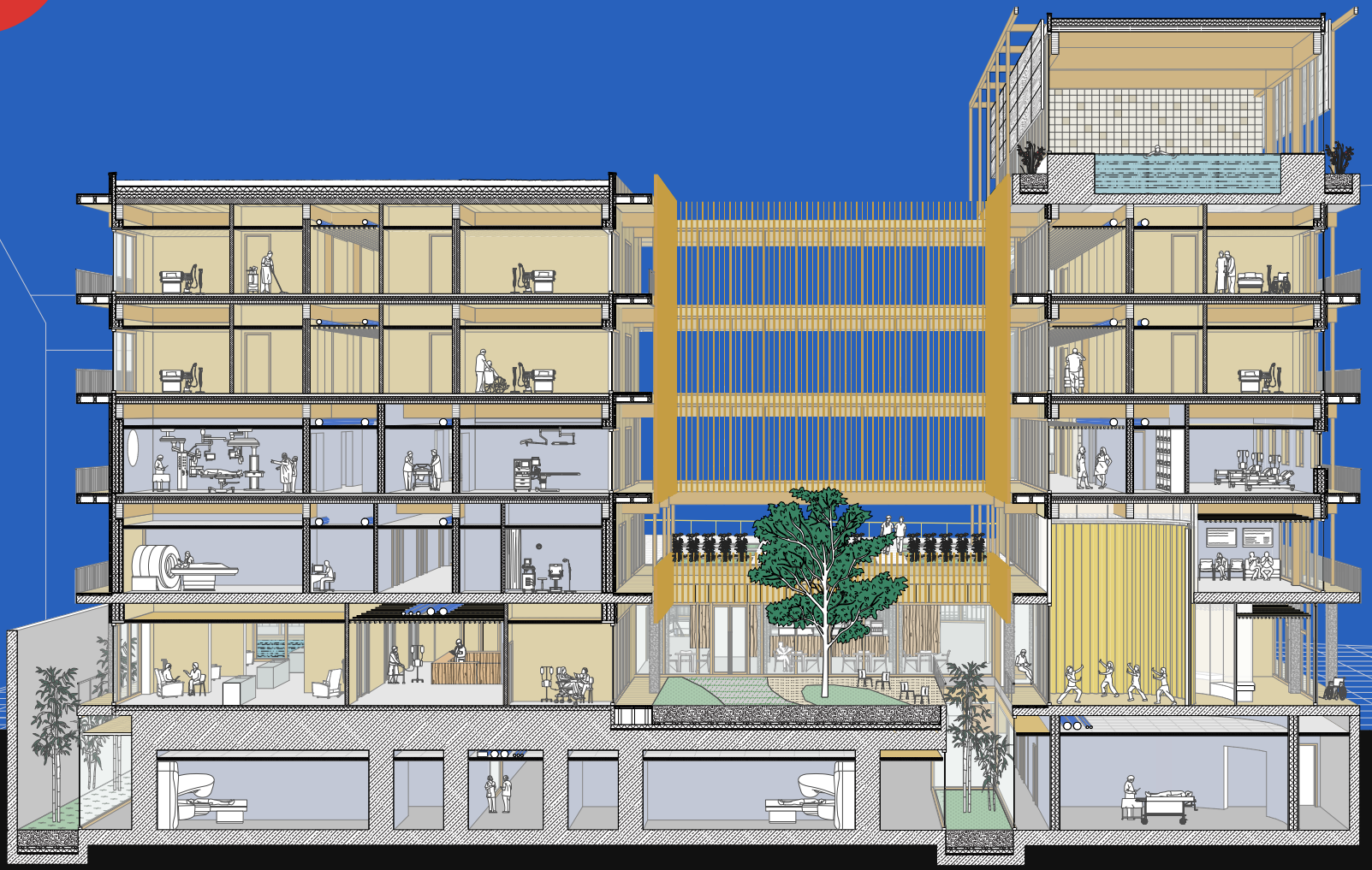
SECTION C-C


28.00
23.00
17.50
13.50
9.50
5.50
1.00
0.00
-5.00
WARD
WARD
SURGERY / ICU
EXAMINATION / DIAGNOSTICS
/ ADMINISTRATIVE
MAGGIE'S CANCER CARE
CENTER / CHEMOTHERAPY
/ PUBLIC FACILITIES
RADIOTHERAPY

SECTION C-C

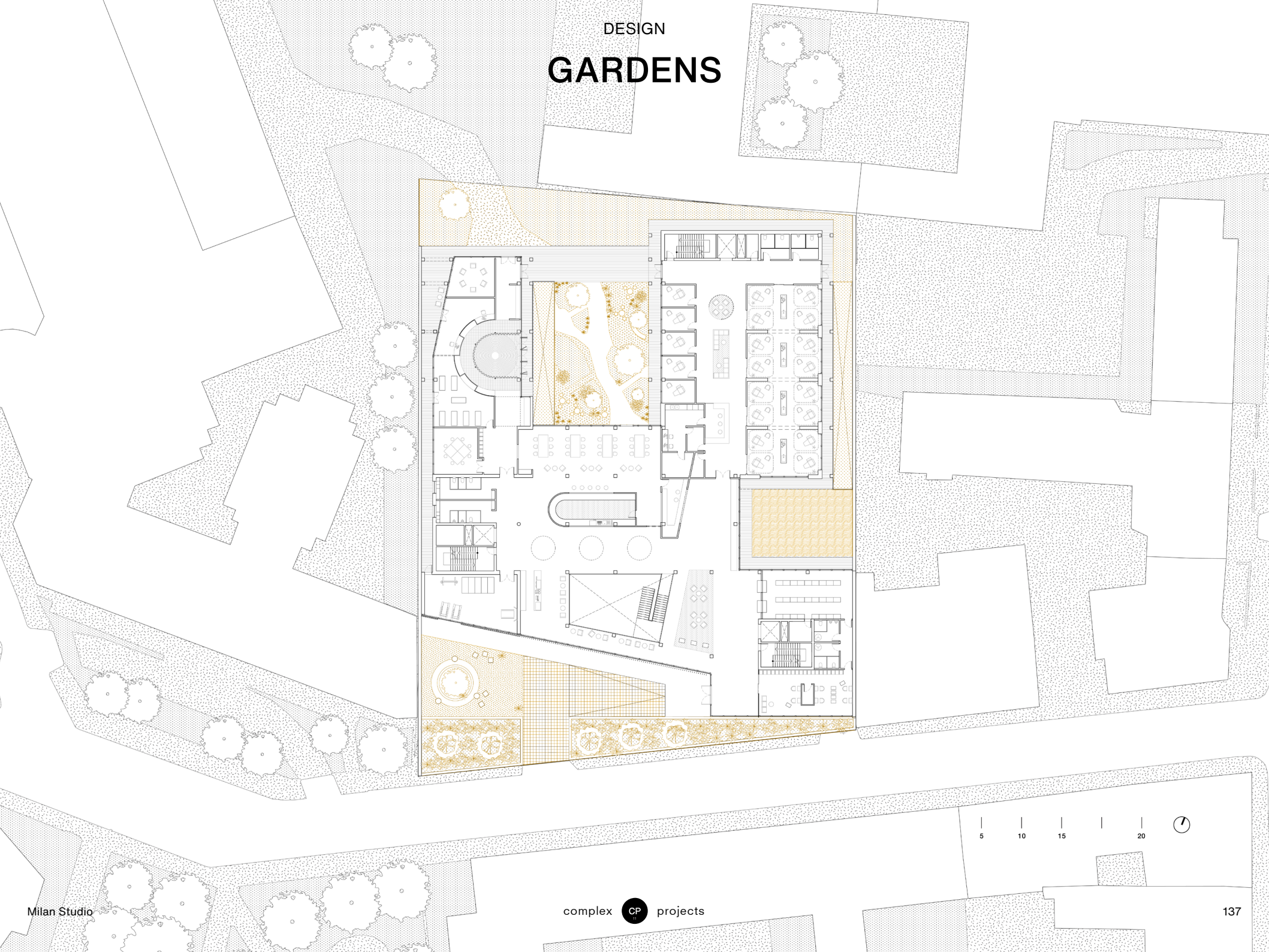

WATER GARDEN
FOUR-SEASON FLOWER GARDEN
28.00
23.00
17.50
13.50
9.50
5.50
1.00
0.00
-5.00
SUNKEN BAMBOO GARDEN
COURTYARD STROLLING GARDEN
SUNKEN BAMBOO GARDEN

SECTION C-C



DESIGN

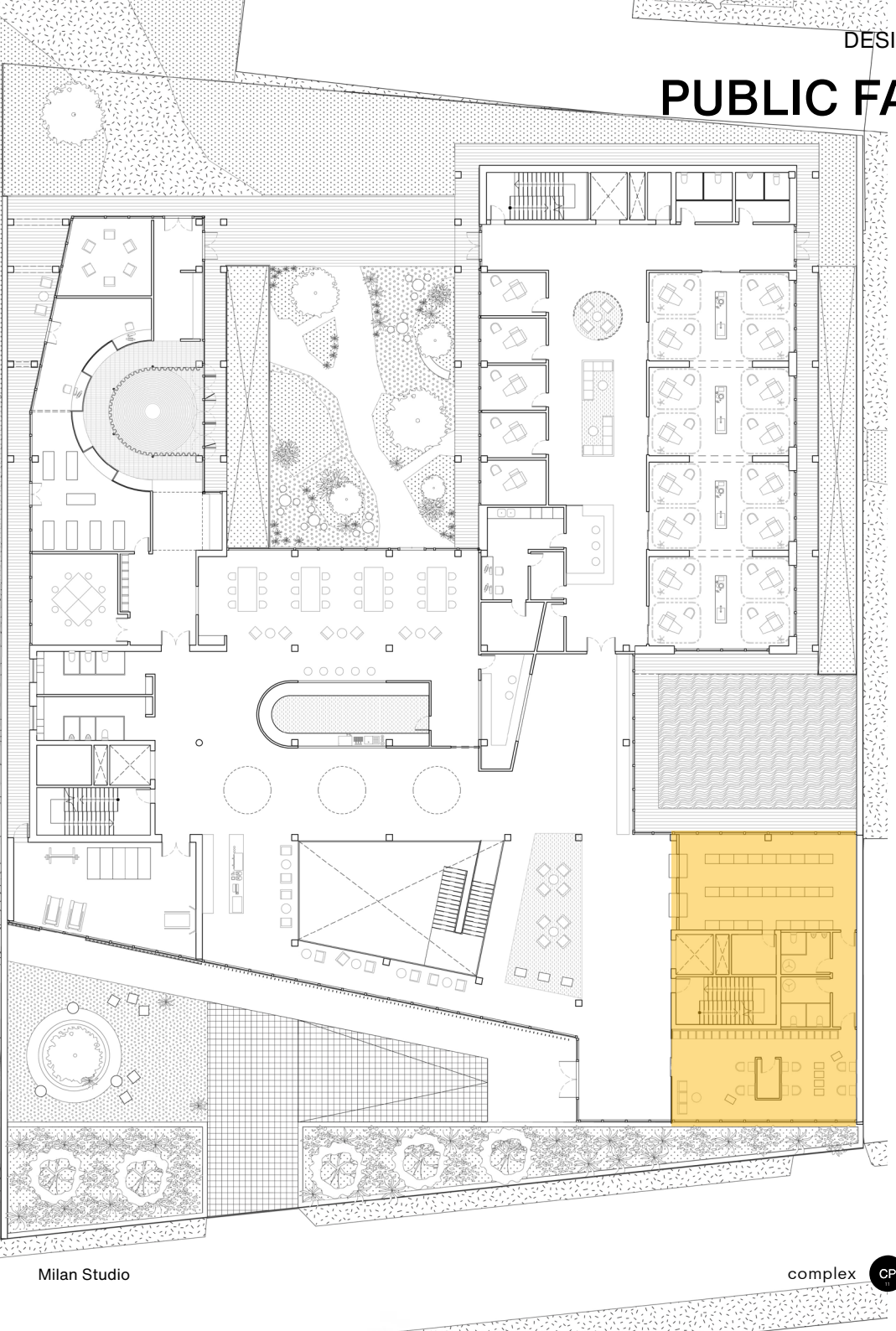
GARDENS

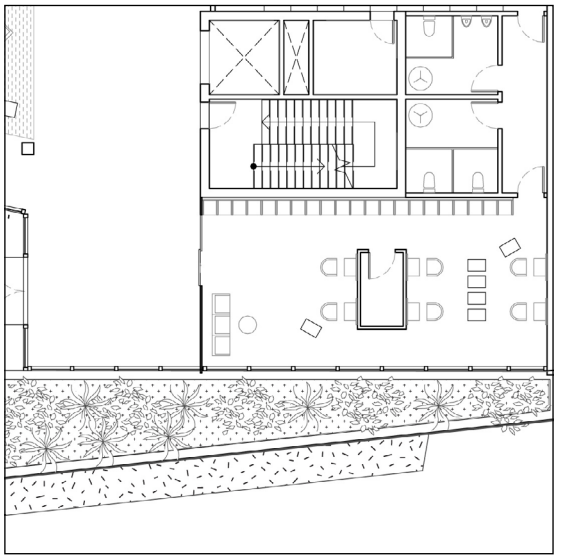


ENTRANCE GARDEN

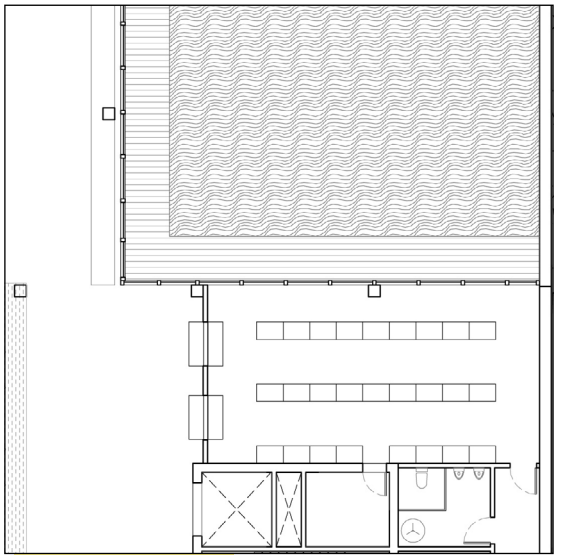


PUBLIC FACILITIES



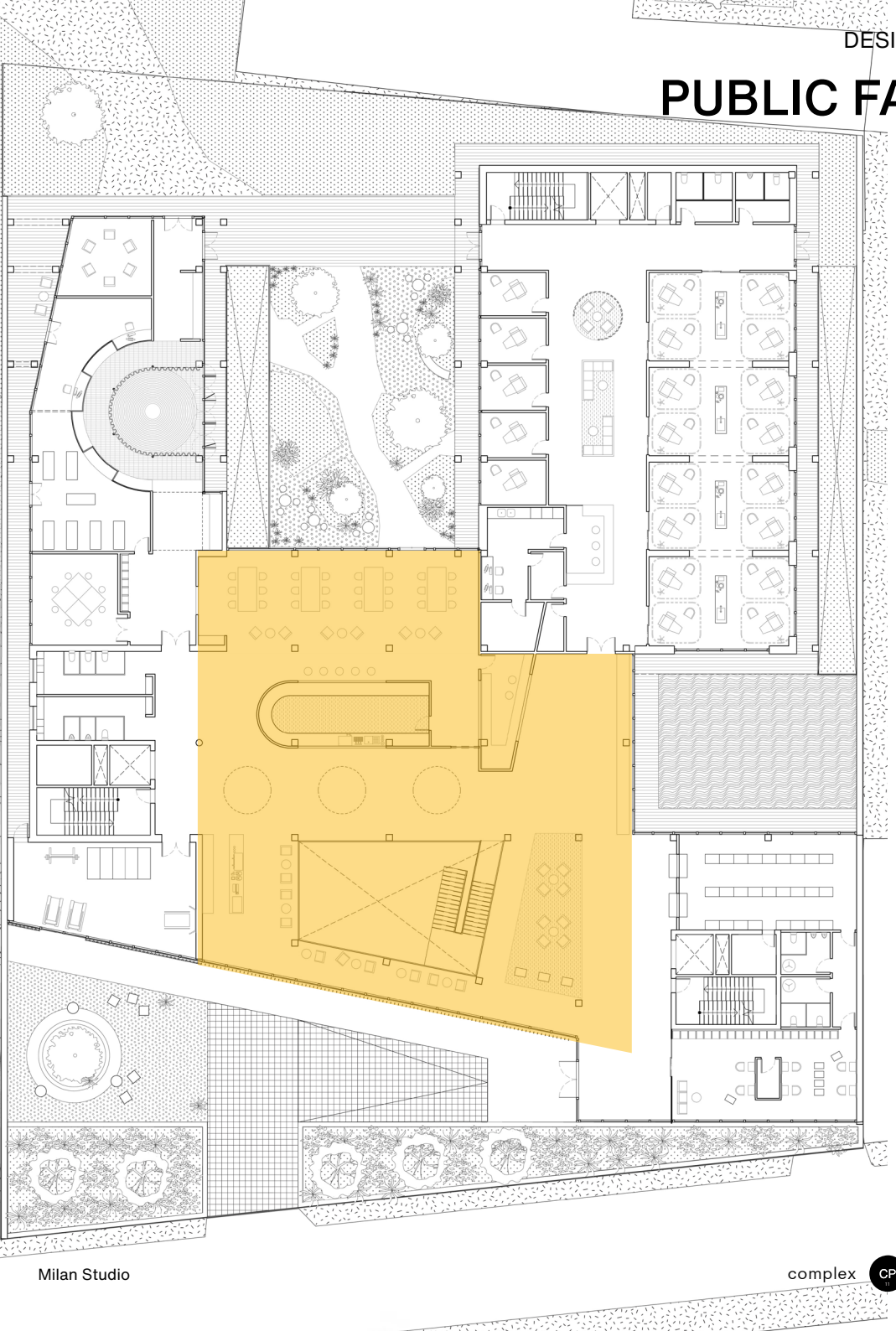


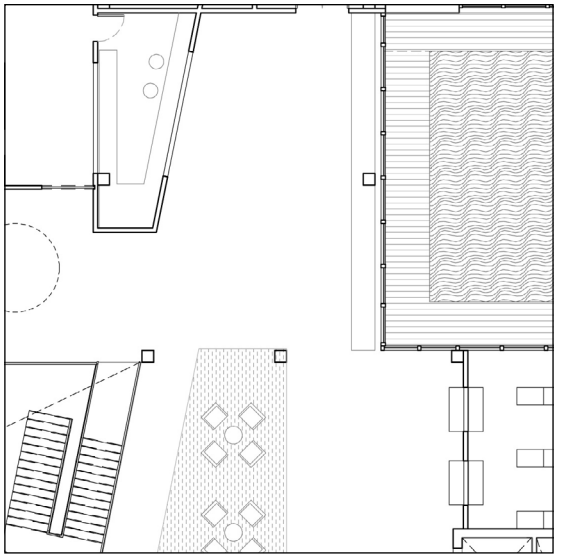
Hair Center



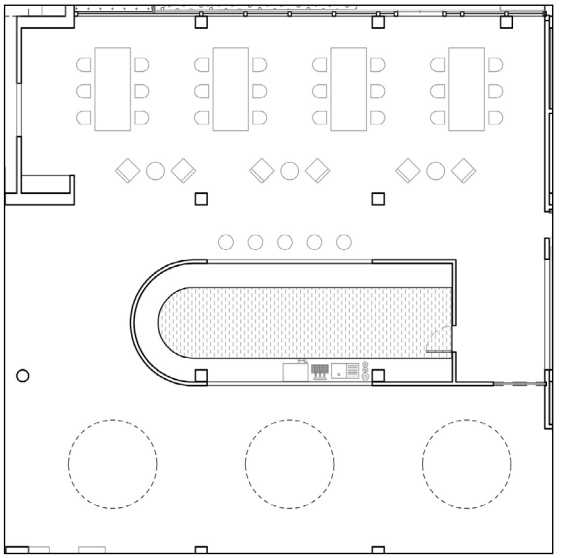
Pharmacy

PUBLIC FACILITIES





Reception

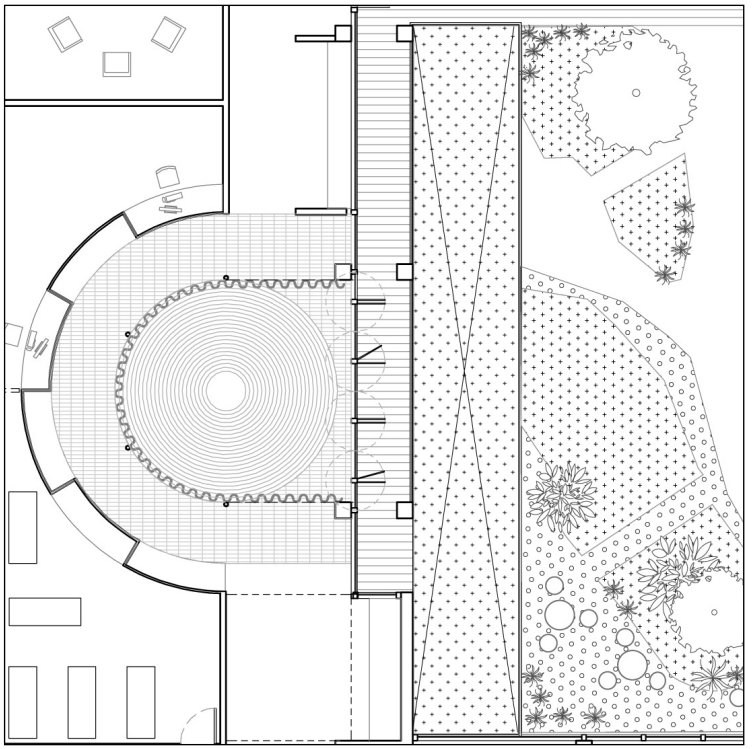


Cafeteria - Restaurant

MAIN FOYER - CAFETERIA

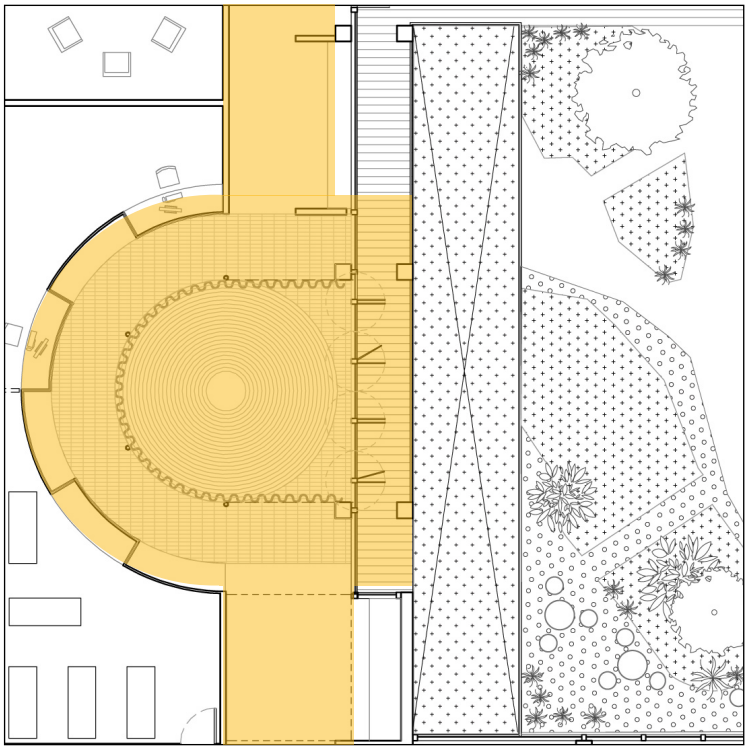


CARE “LIVING ROOM”



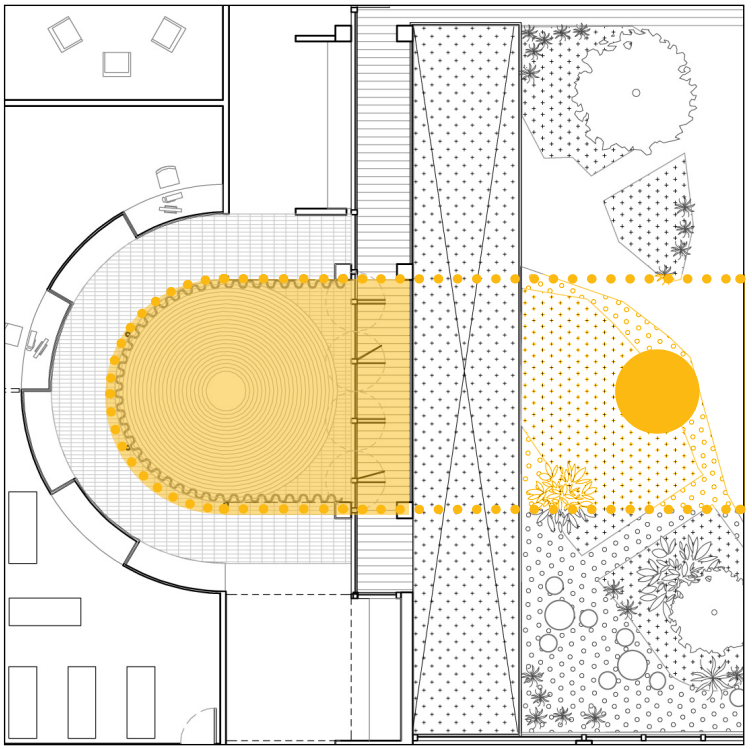
Adaptable Care “Living Room”

CARE CORRIDOR



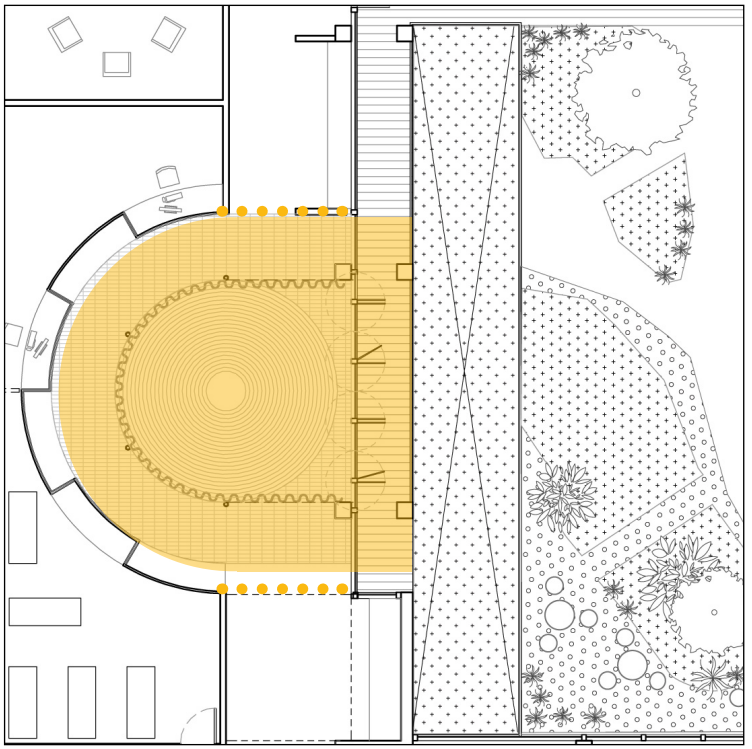
Scenario 1: Open door, open curtain
Social corridor

MEDITATION ROOM



Scenario 2: Open door, drawn curtain
Meditation Room

YOGA SESSION - GROUP THERAPY



Scenario 3: Closed door, open curtain
Yoga Session - Group Therapy

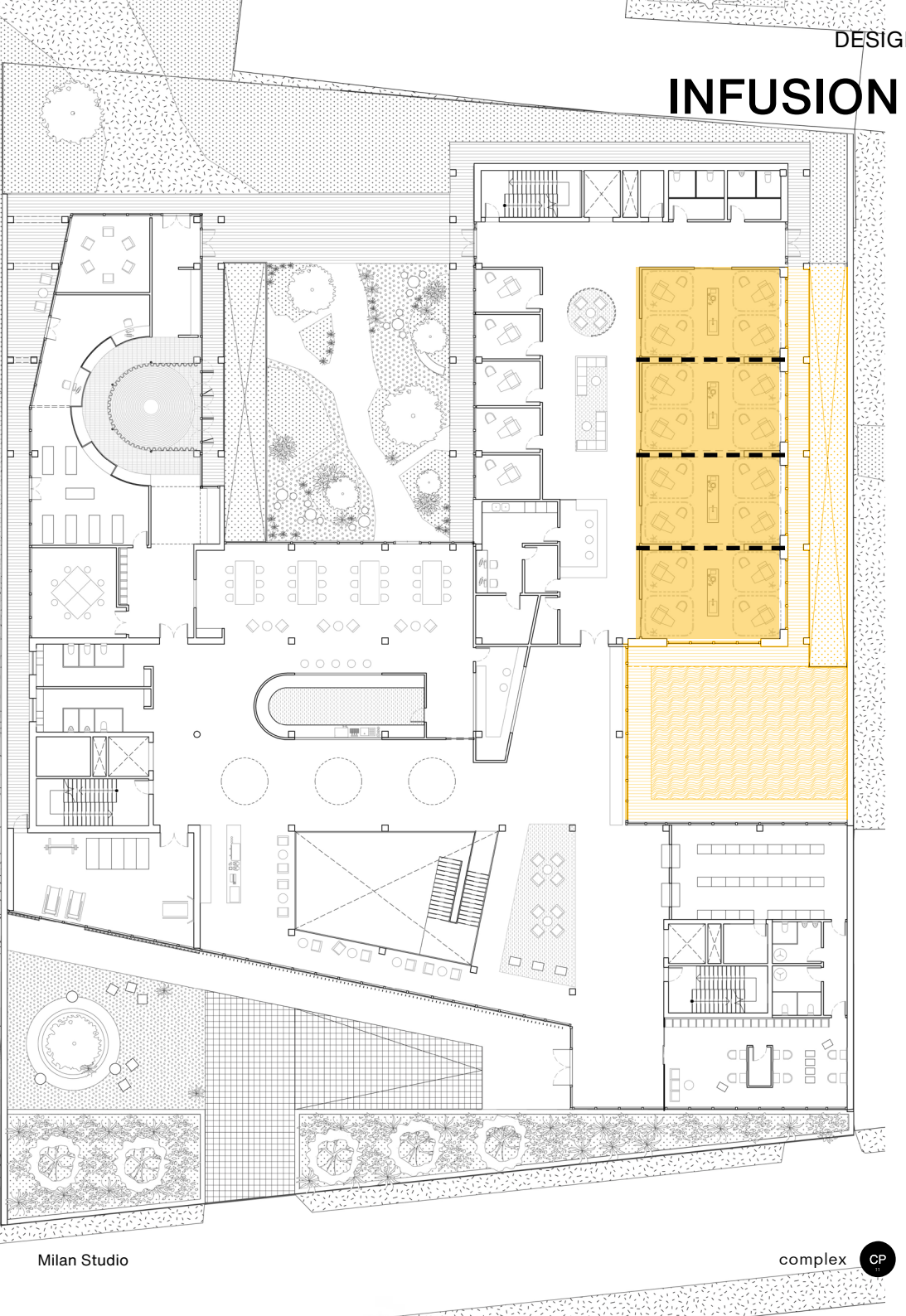
CARE CORRIDOR

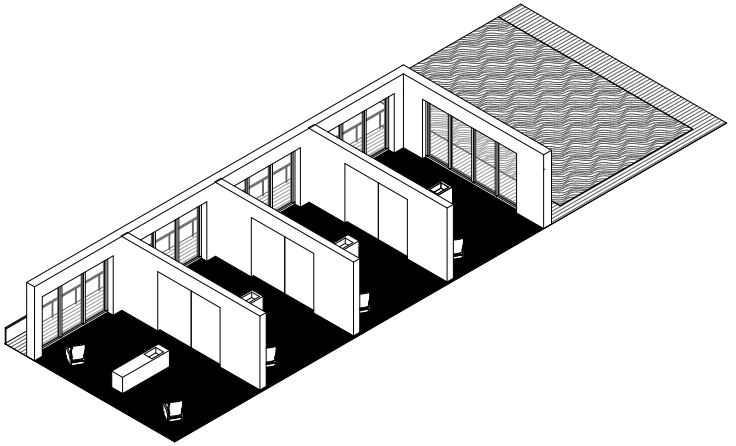


CARE LIVING ROOM

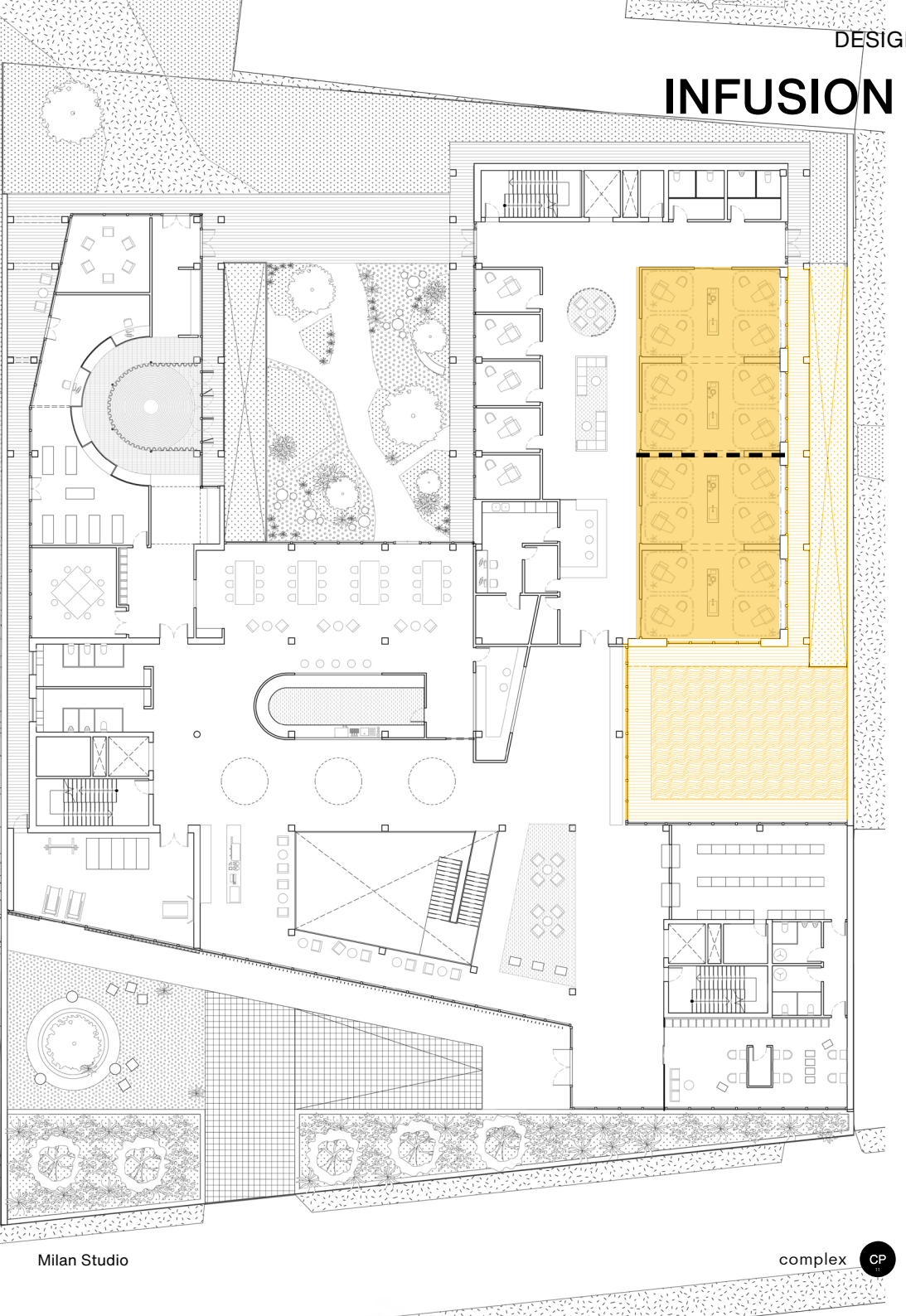


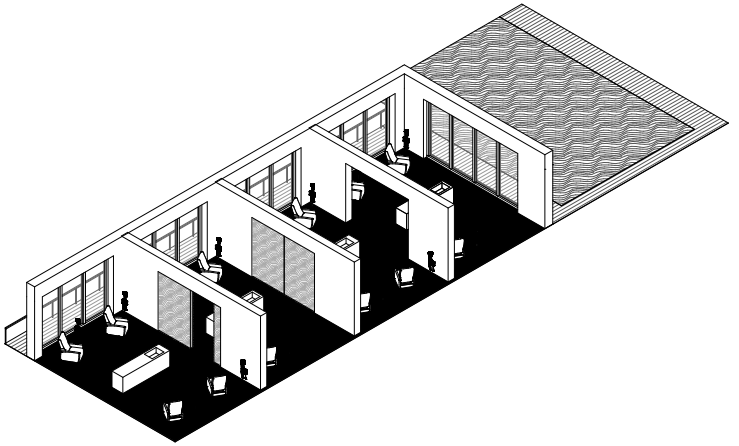
INFUSION BAY - S



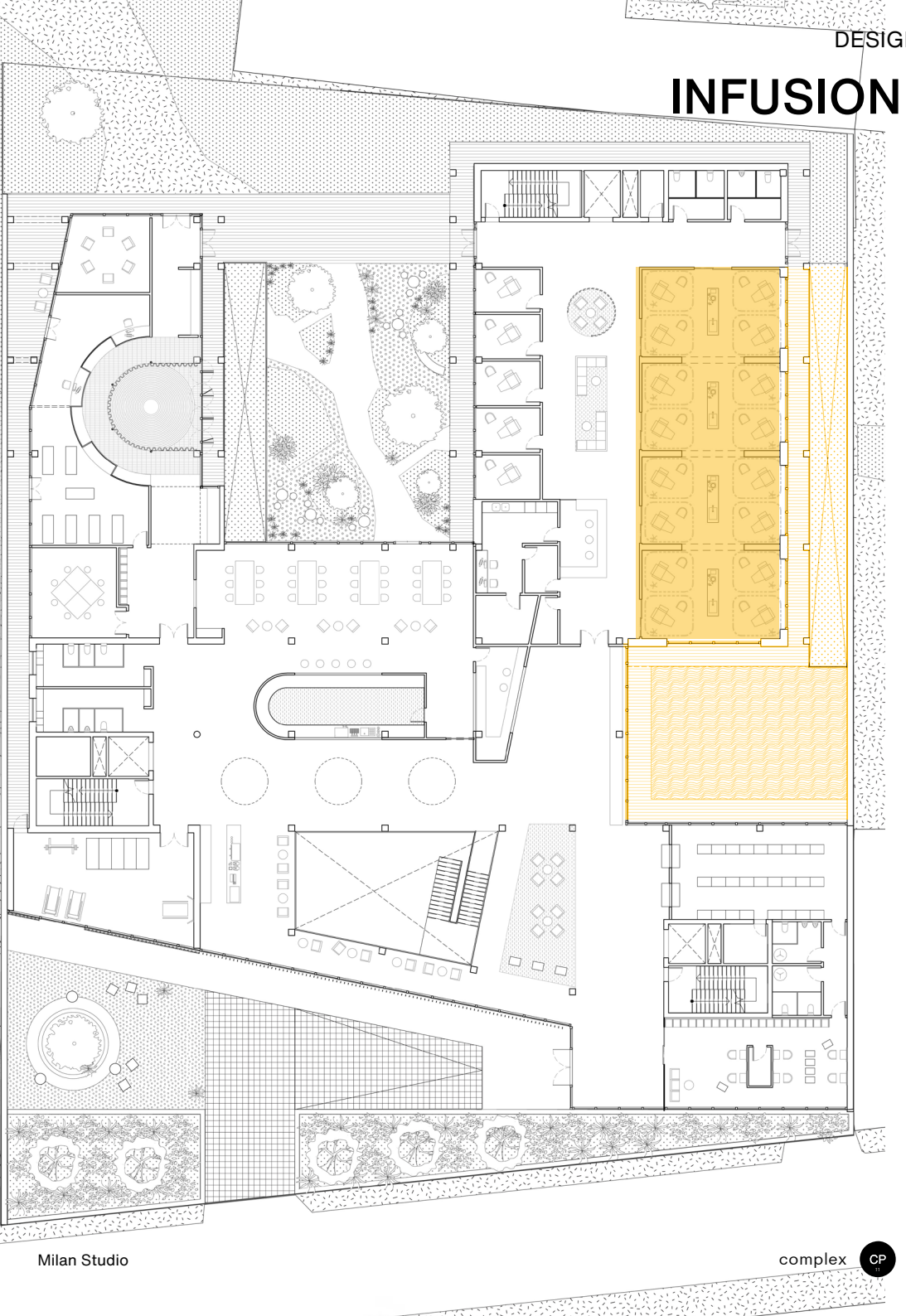


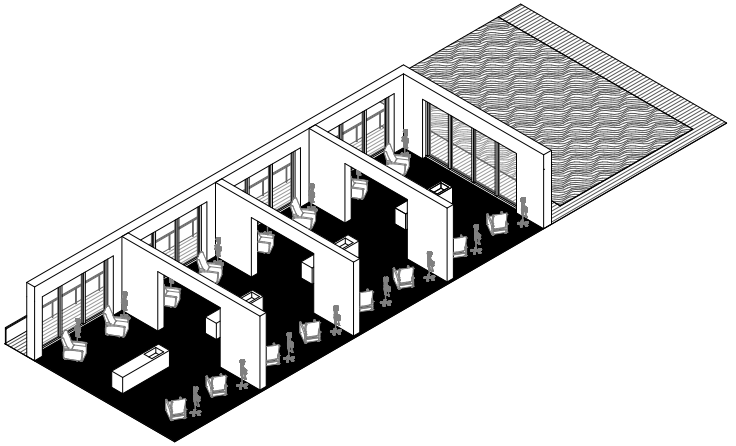
INFUSION BAY - M





INFUSION BAY - L





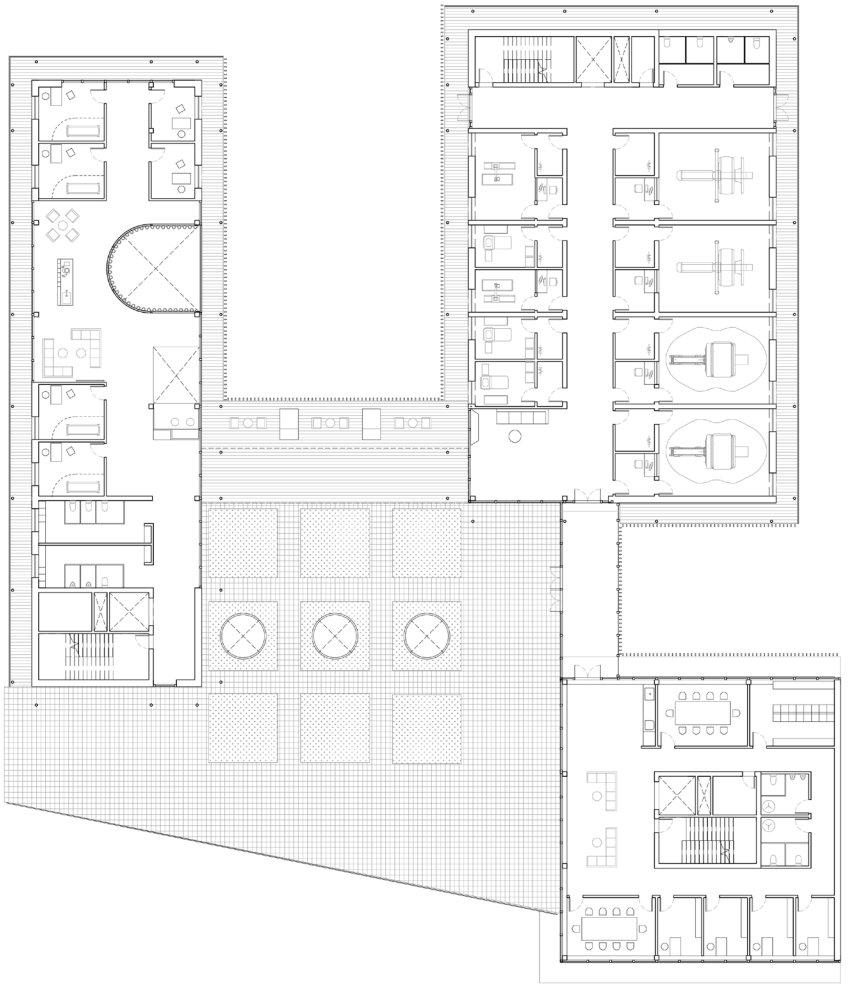
CHEMOTHERAPY INFUSION BAY



WATER GARDEN

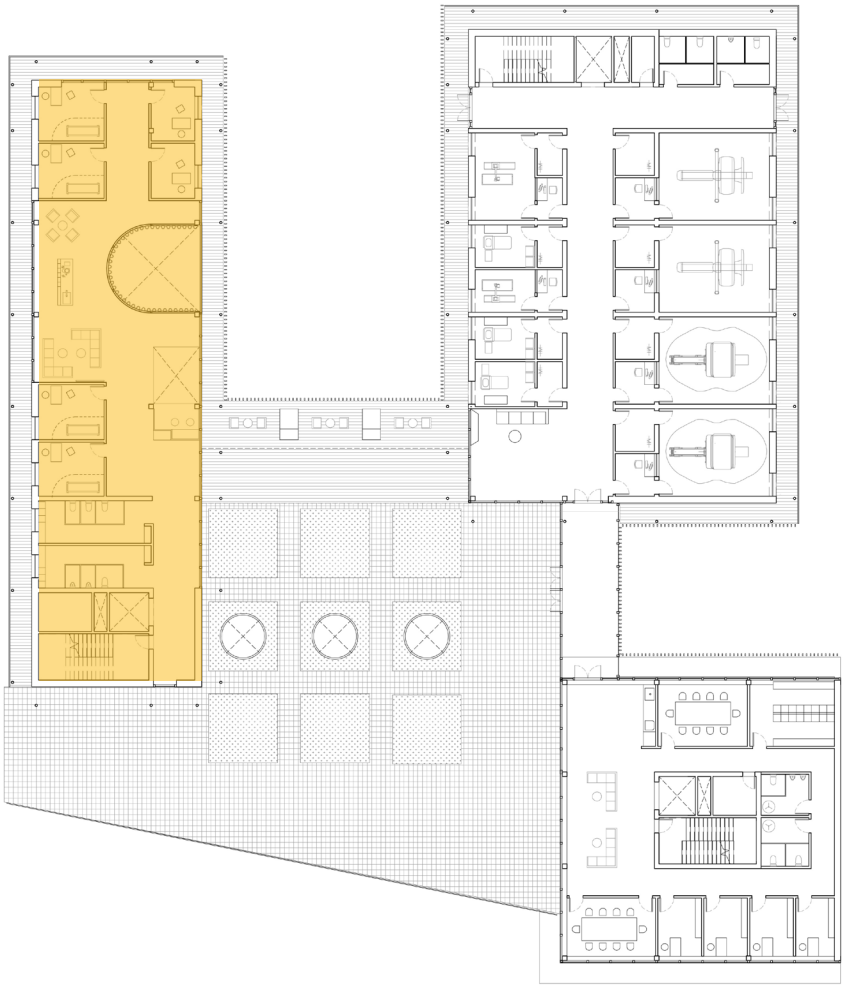


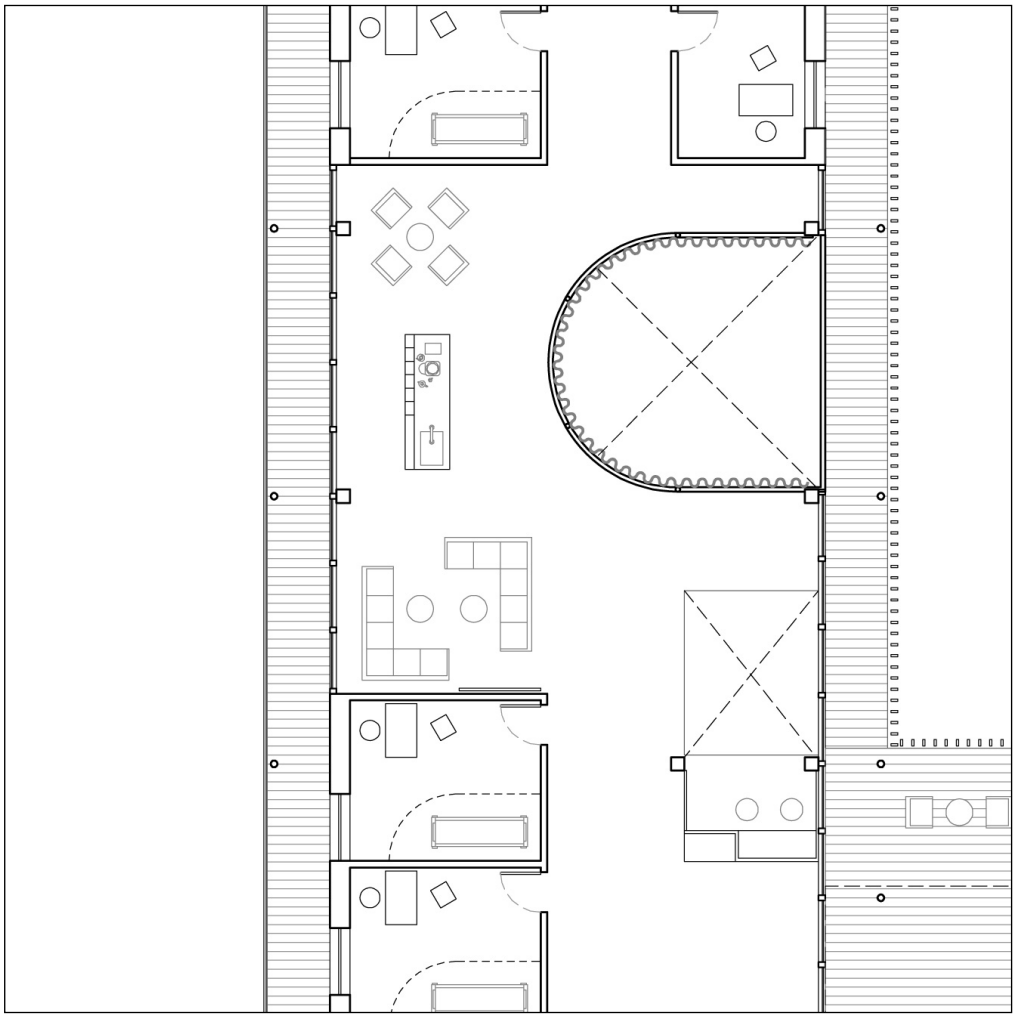
FIRST FLOOR PLAN



5 10 15 20

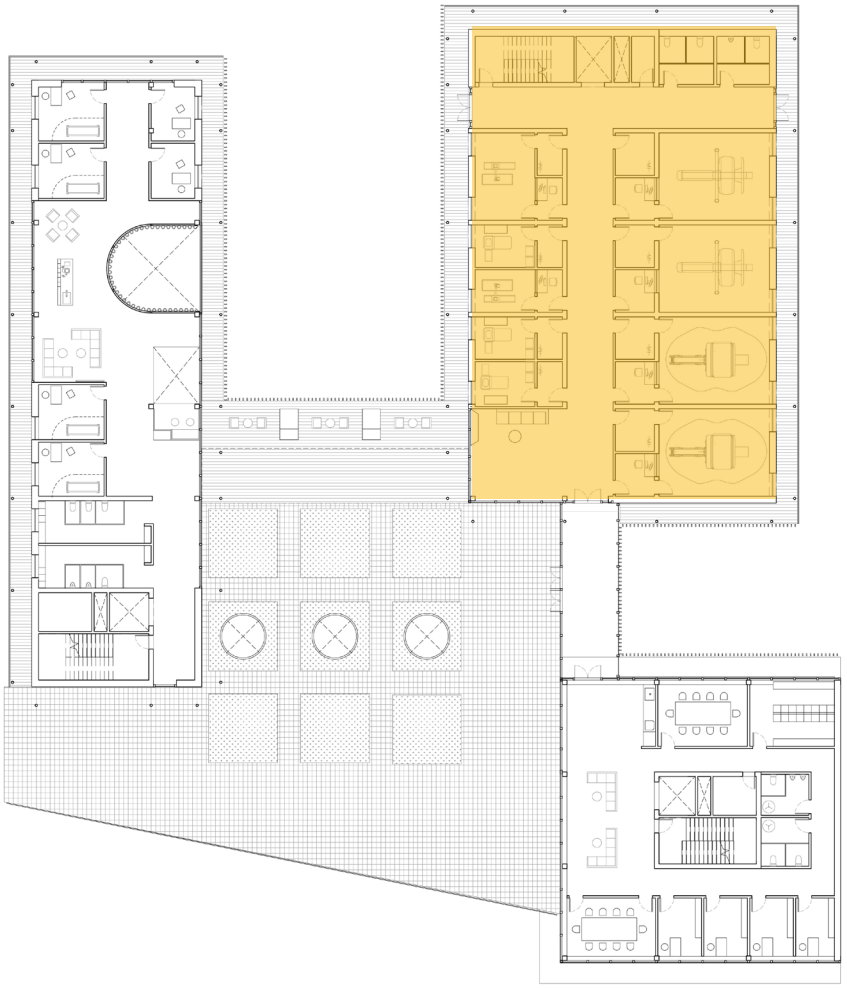
OUTPATIENT CLINIC

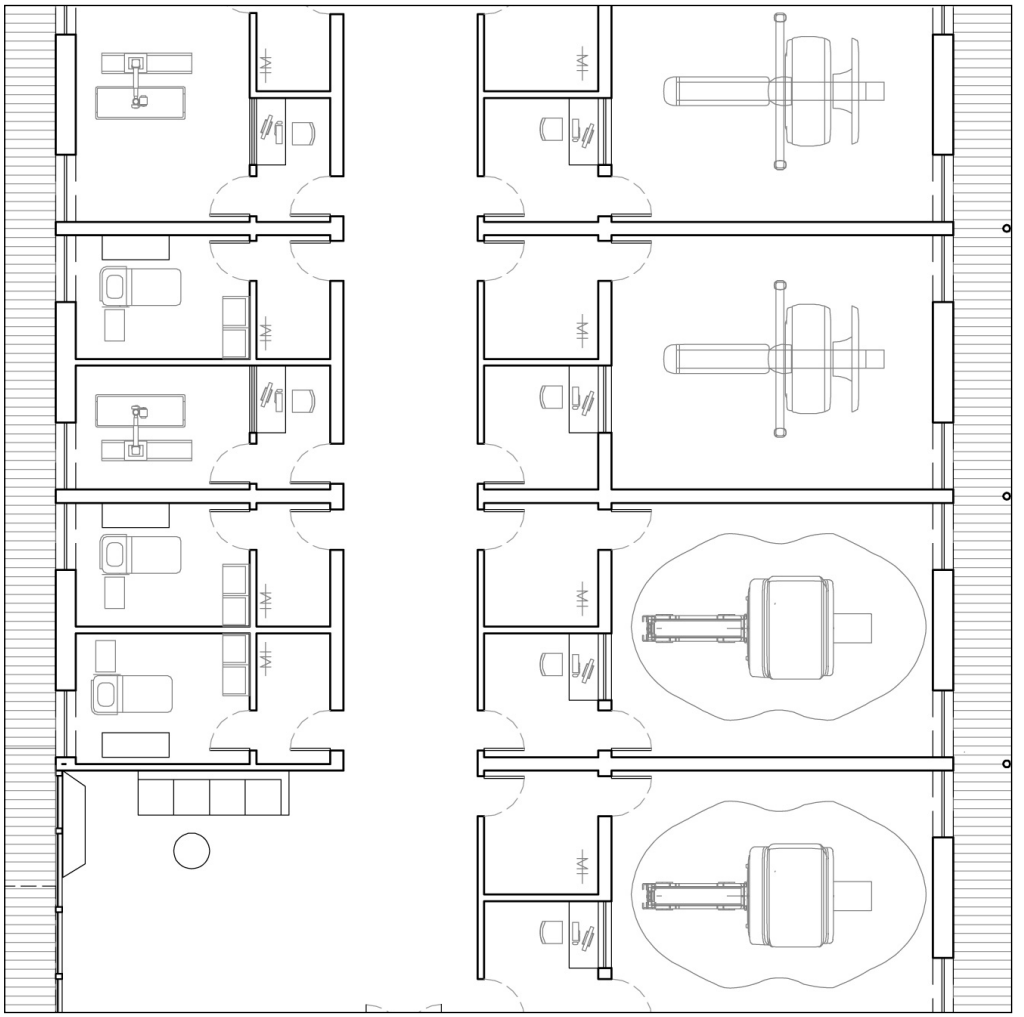




Examination Rooms and Waiting Lounge

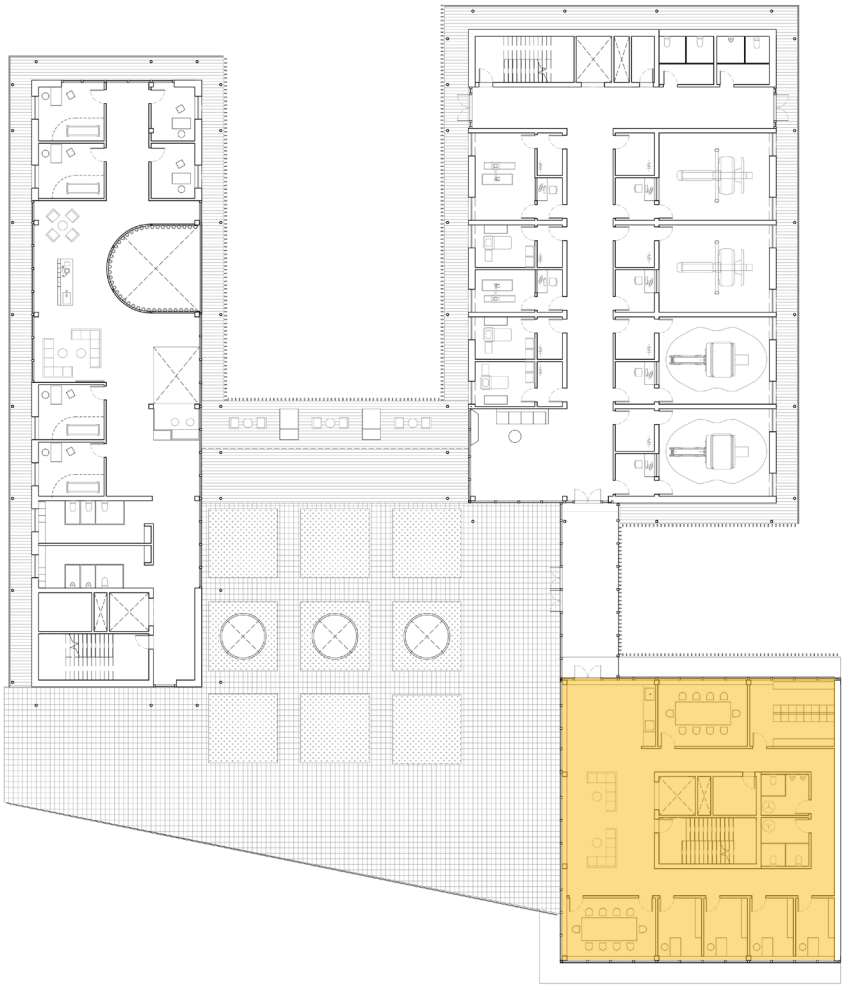
IMAGING AND DIAGNOSTICS

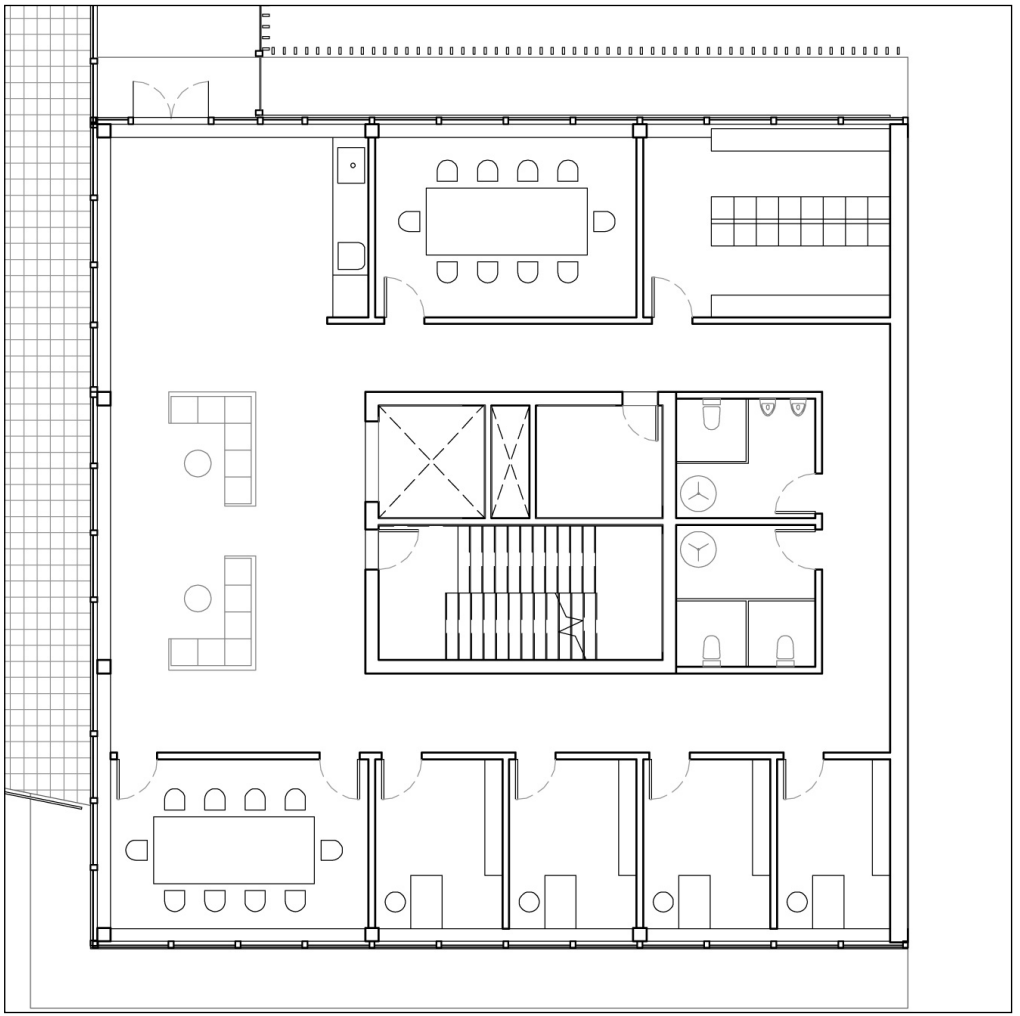




Imaging and Diagnostics

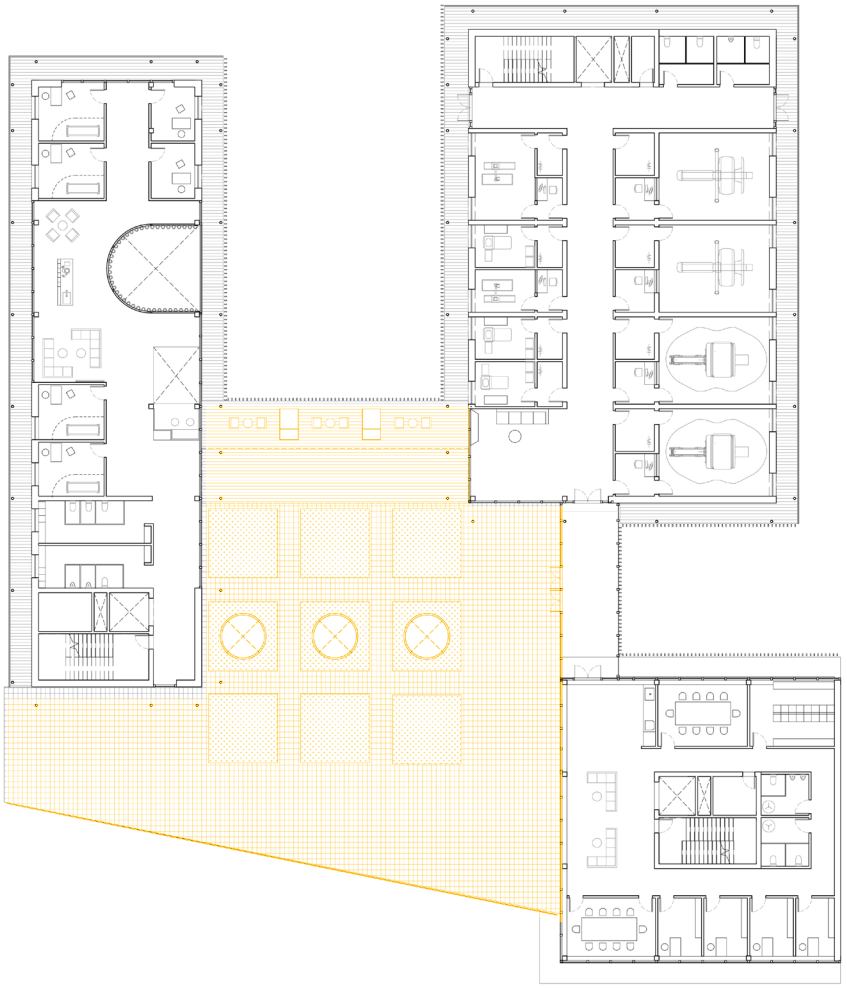
ADMINISTRATION

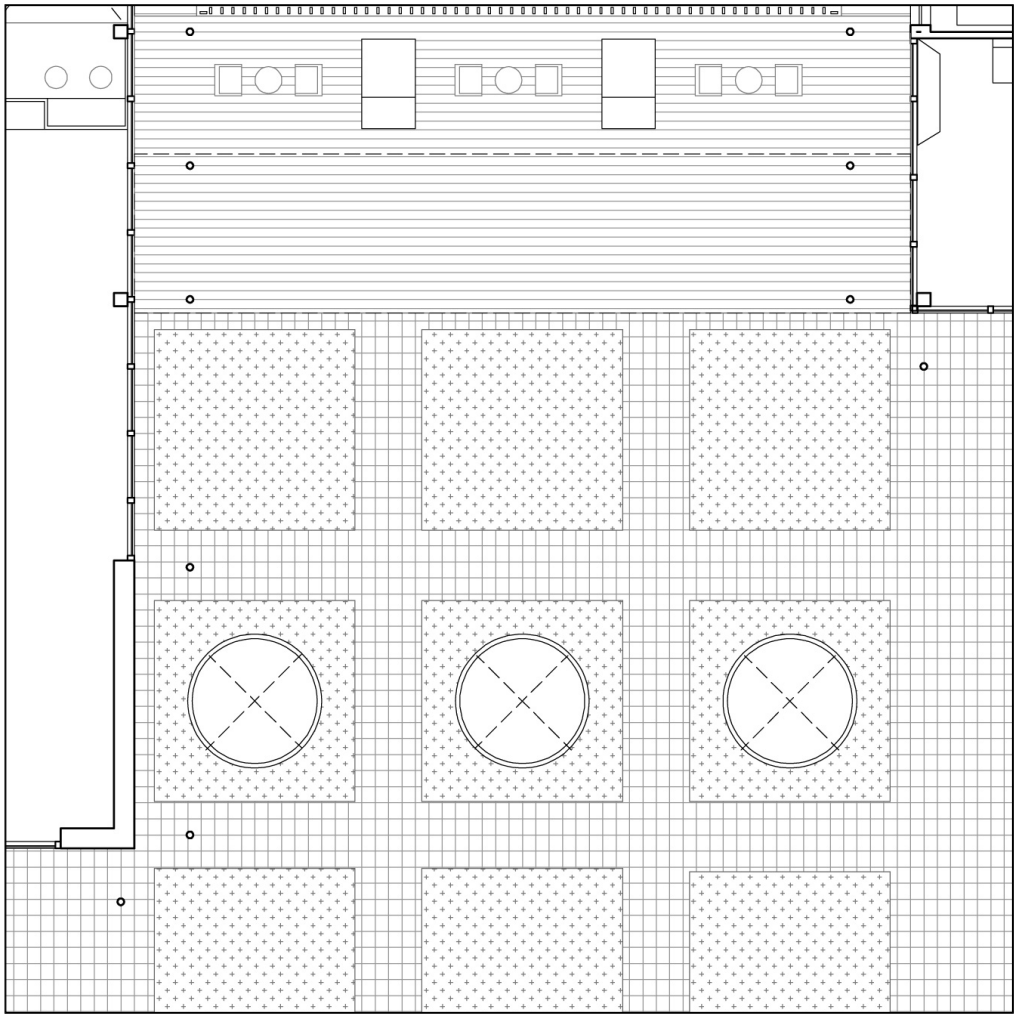




Staff Vestiaire & Administrative Offices

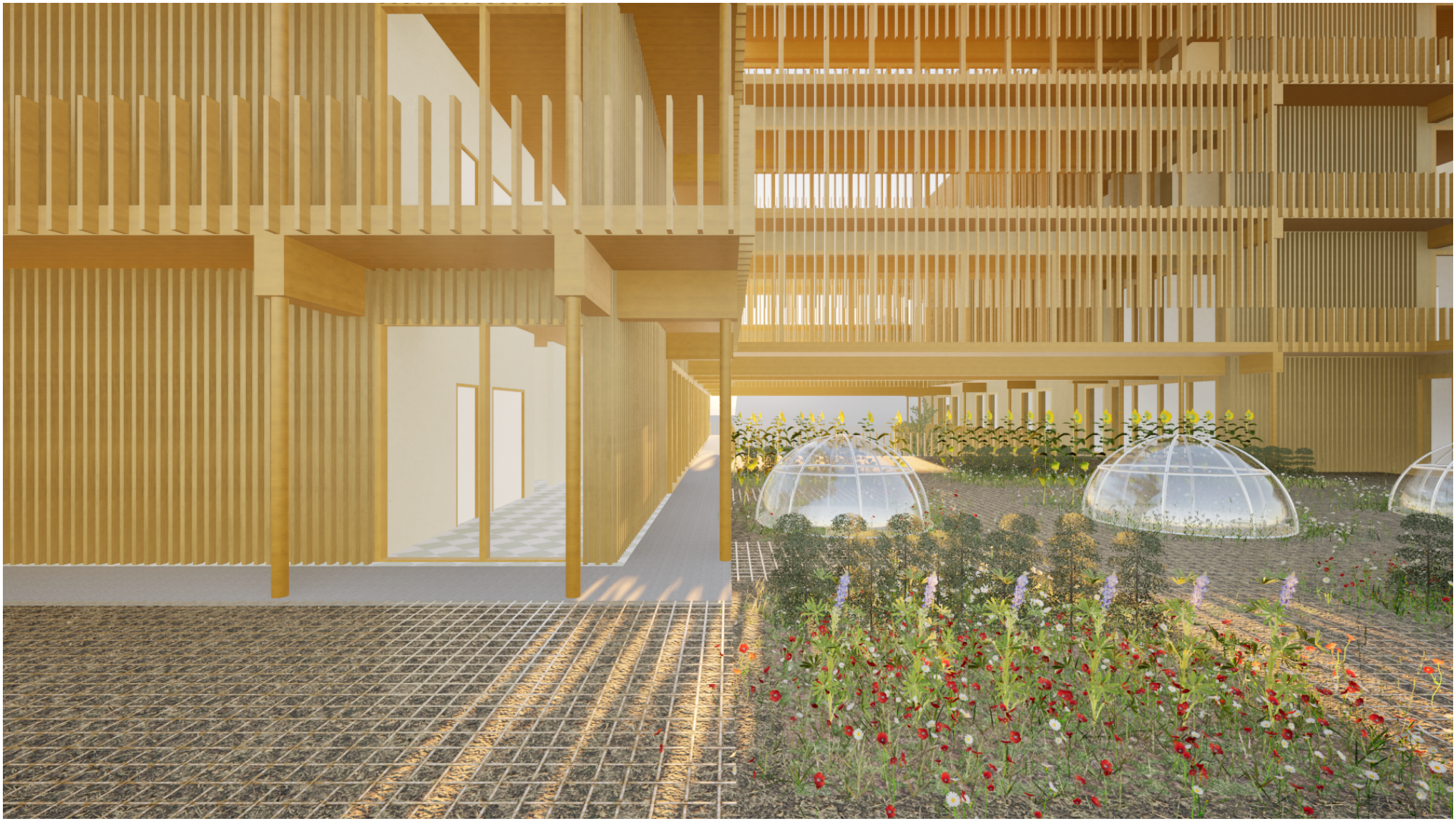
FOUR-SEASON FLOWER GARDEN





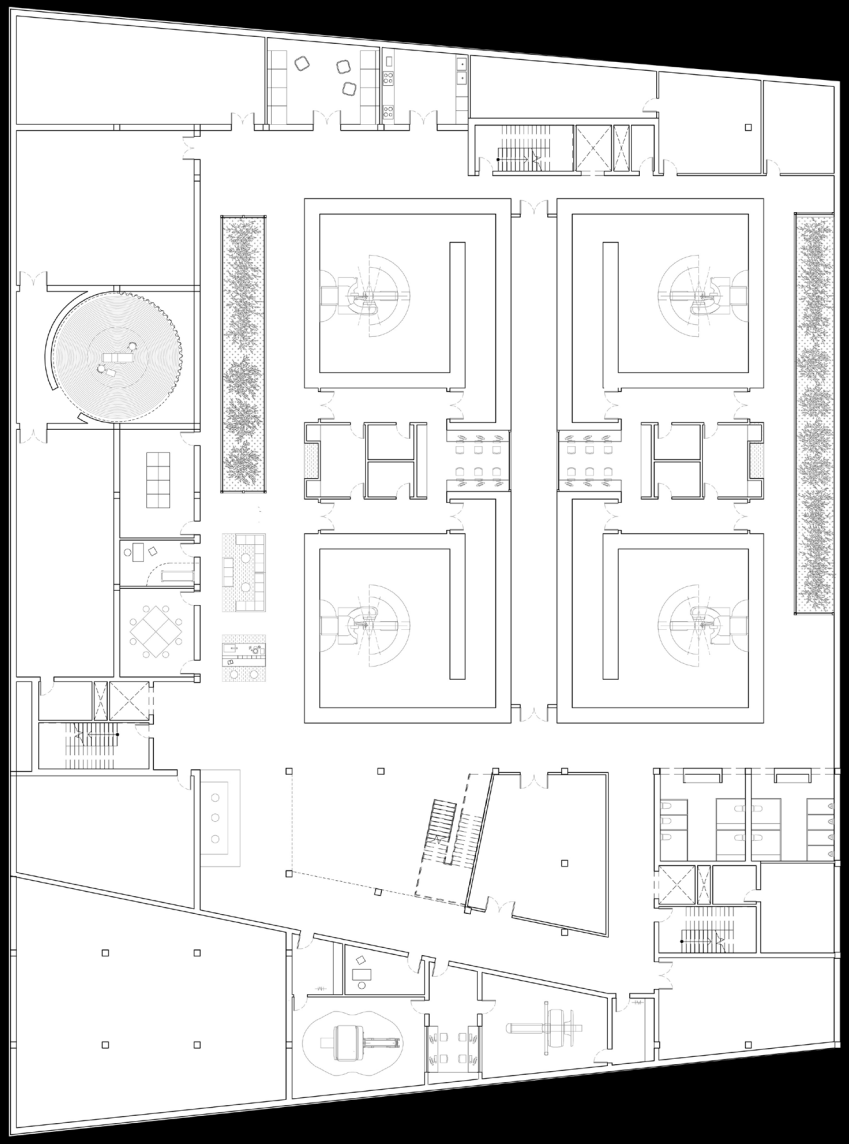
Patio Flower Garden

FOUR-SEASON FLOWER GARDEN

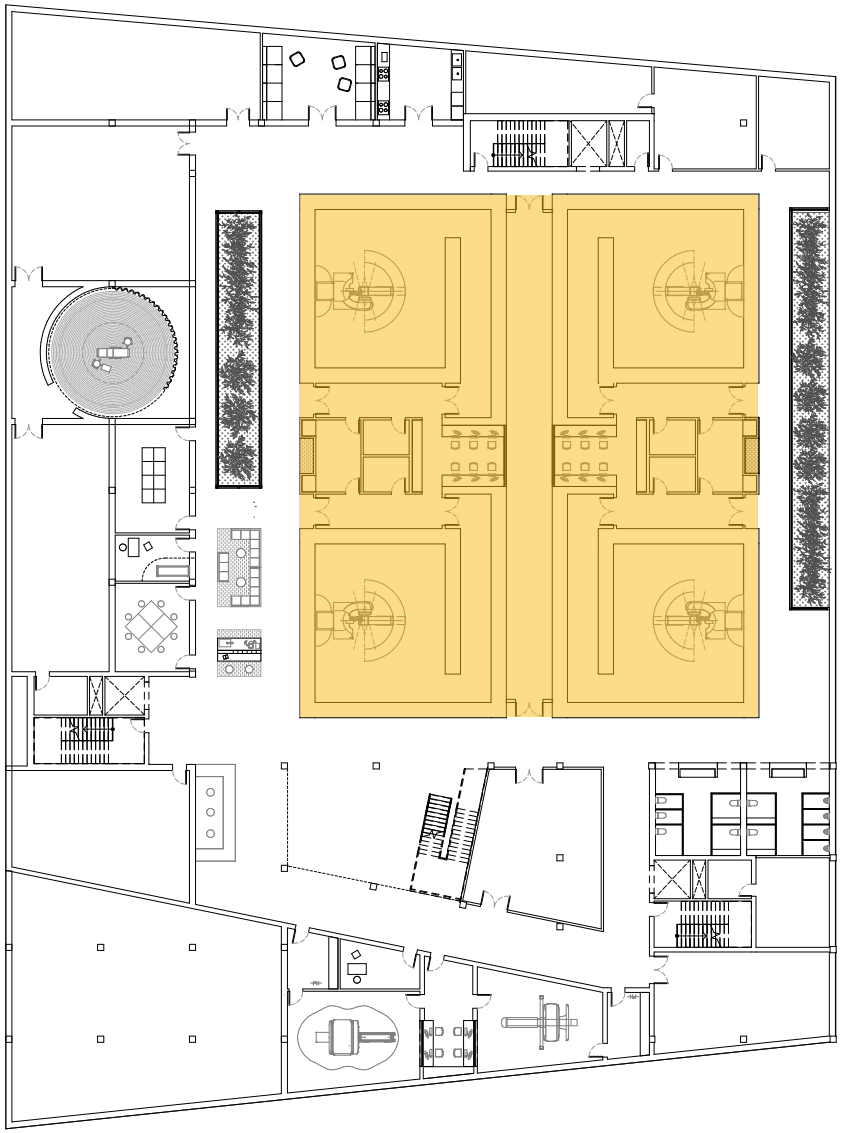


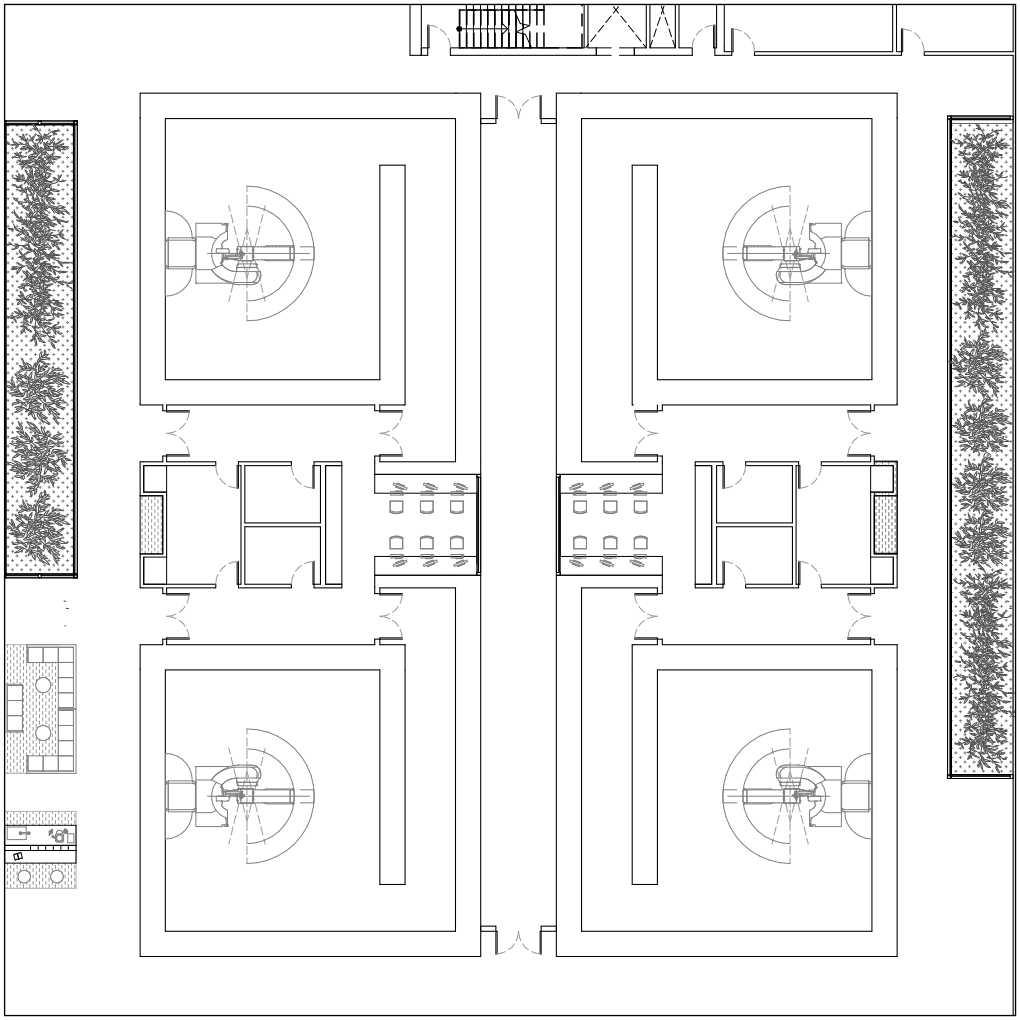
DESIGN

BASEMENT PLAN

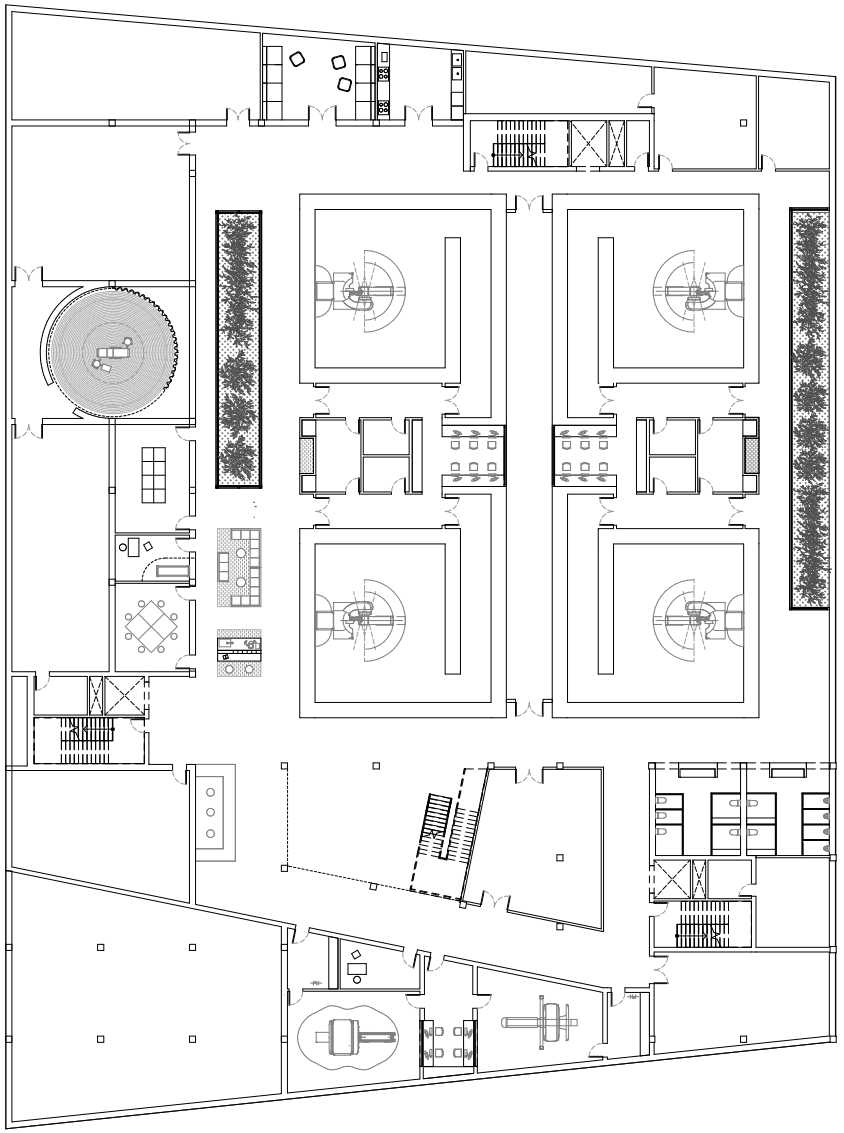


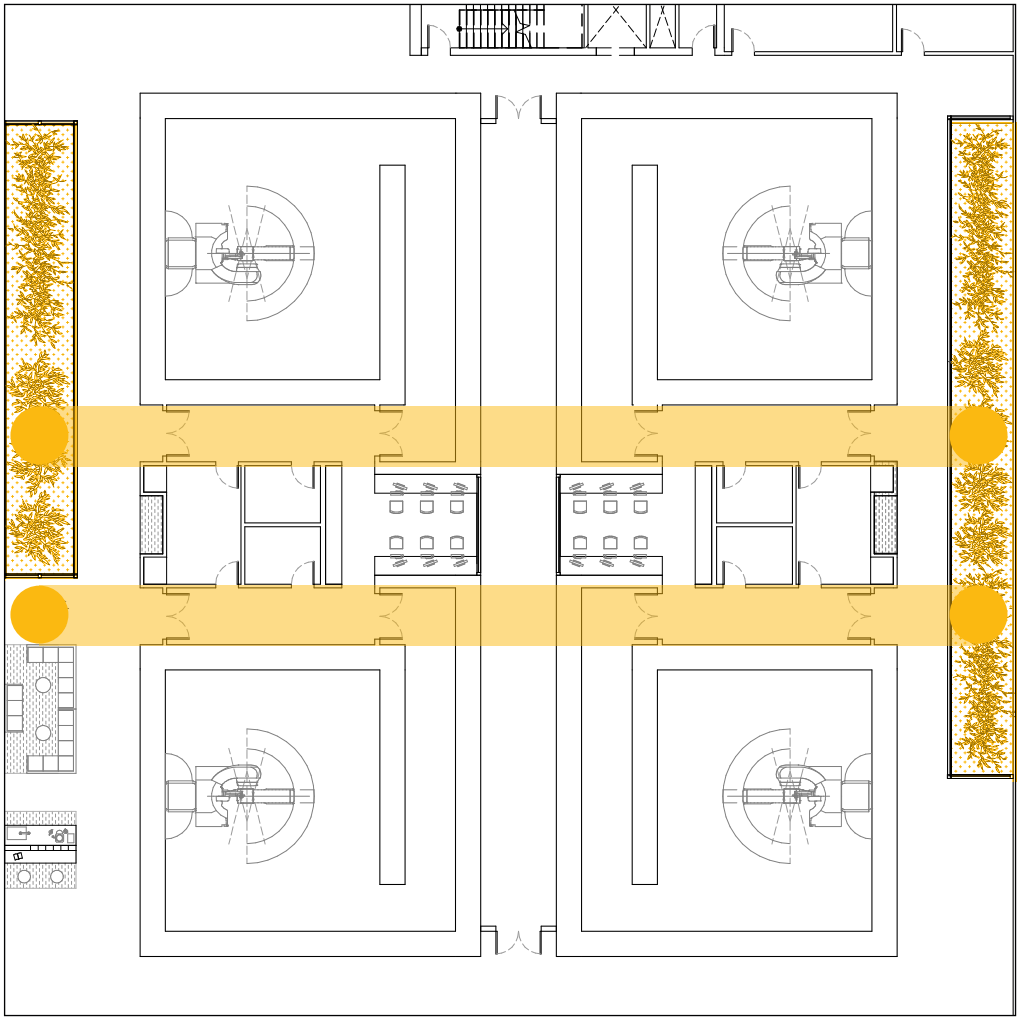
RADIOTHERAPY LINAC BUNKERS



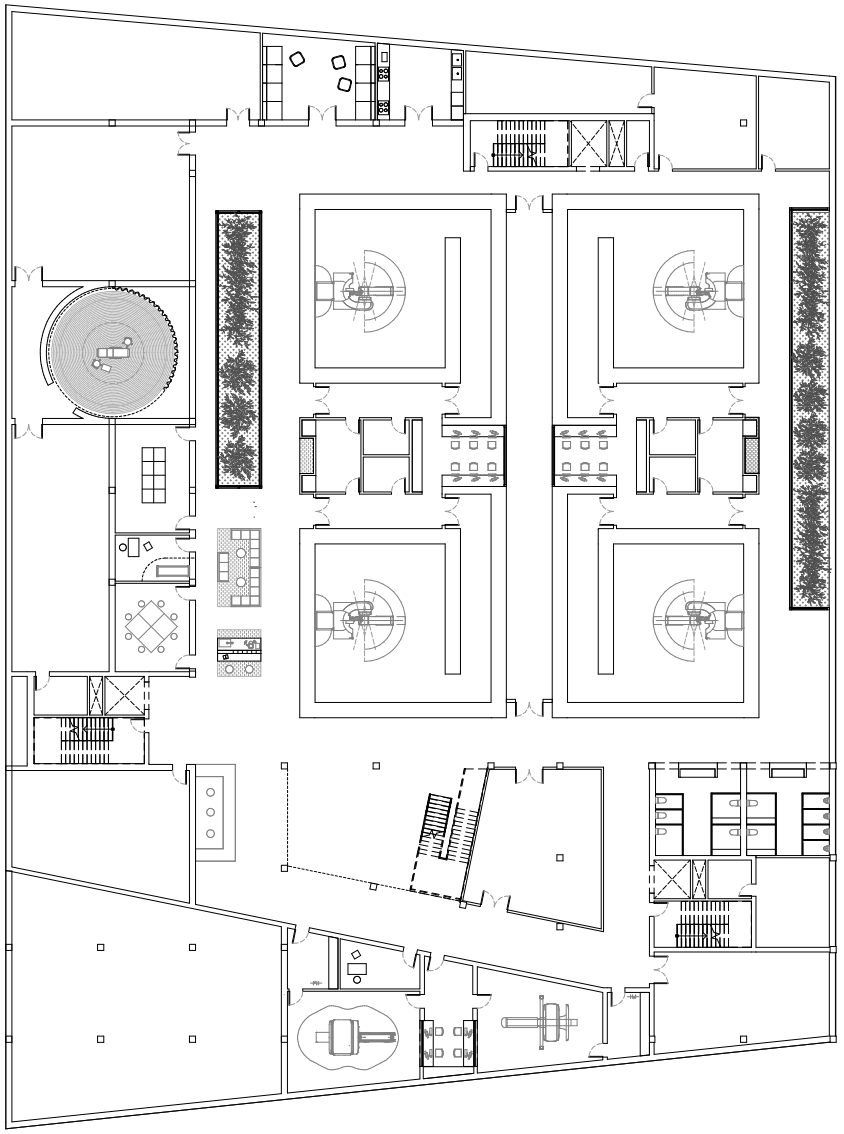


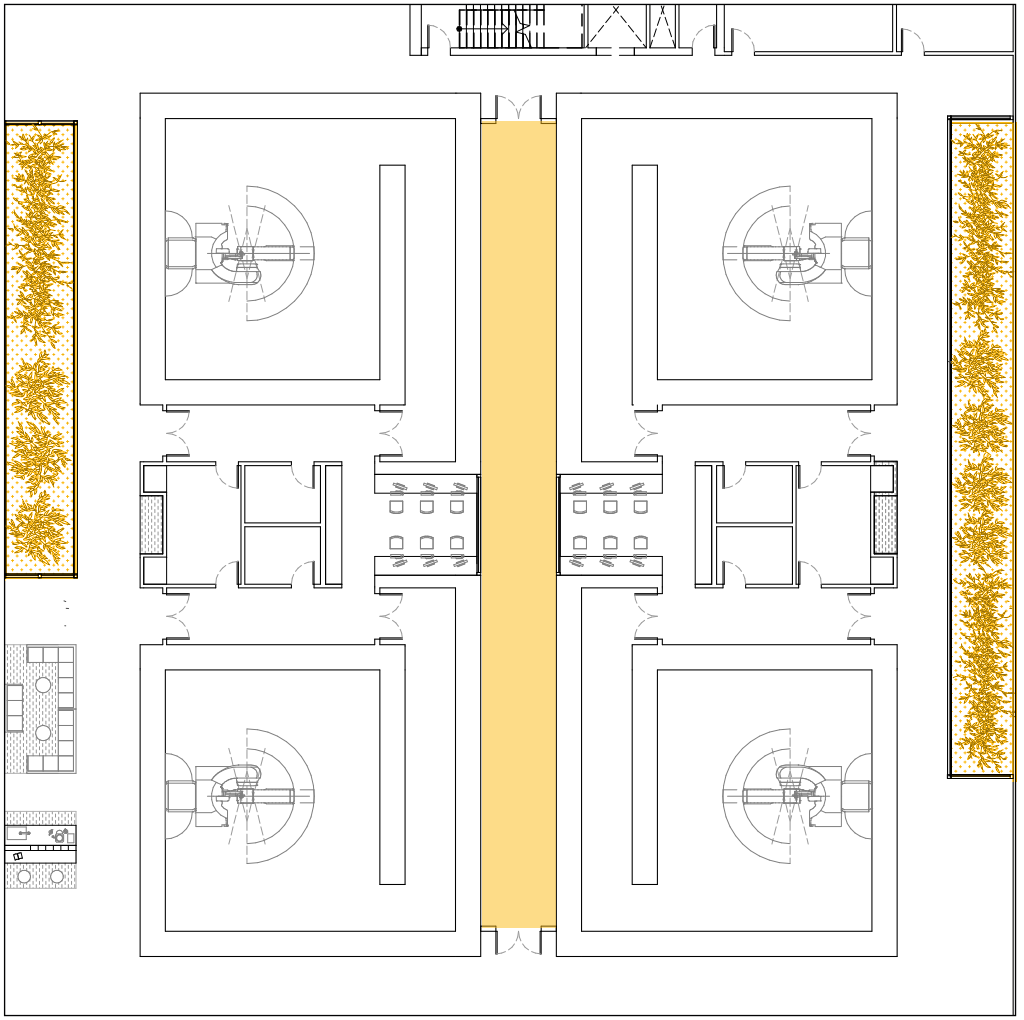
PATIENTS CORRIDOR



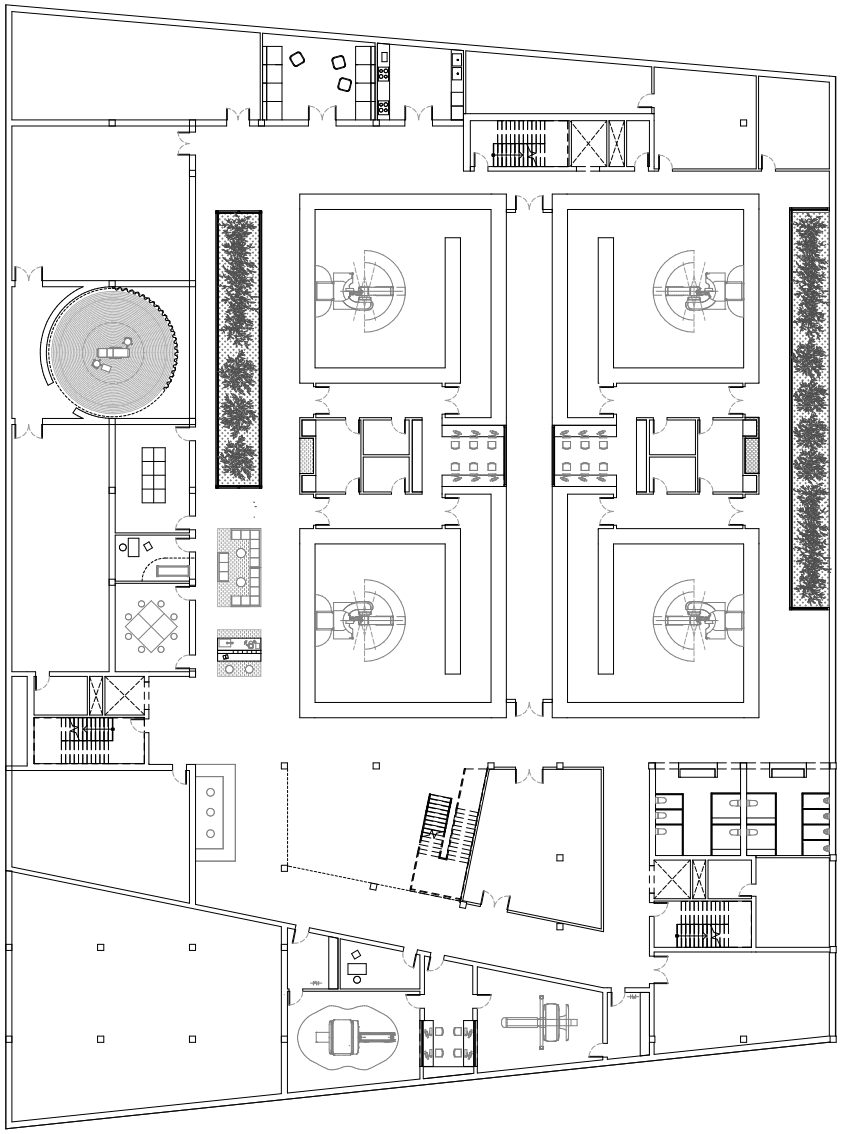


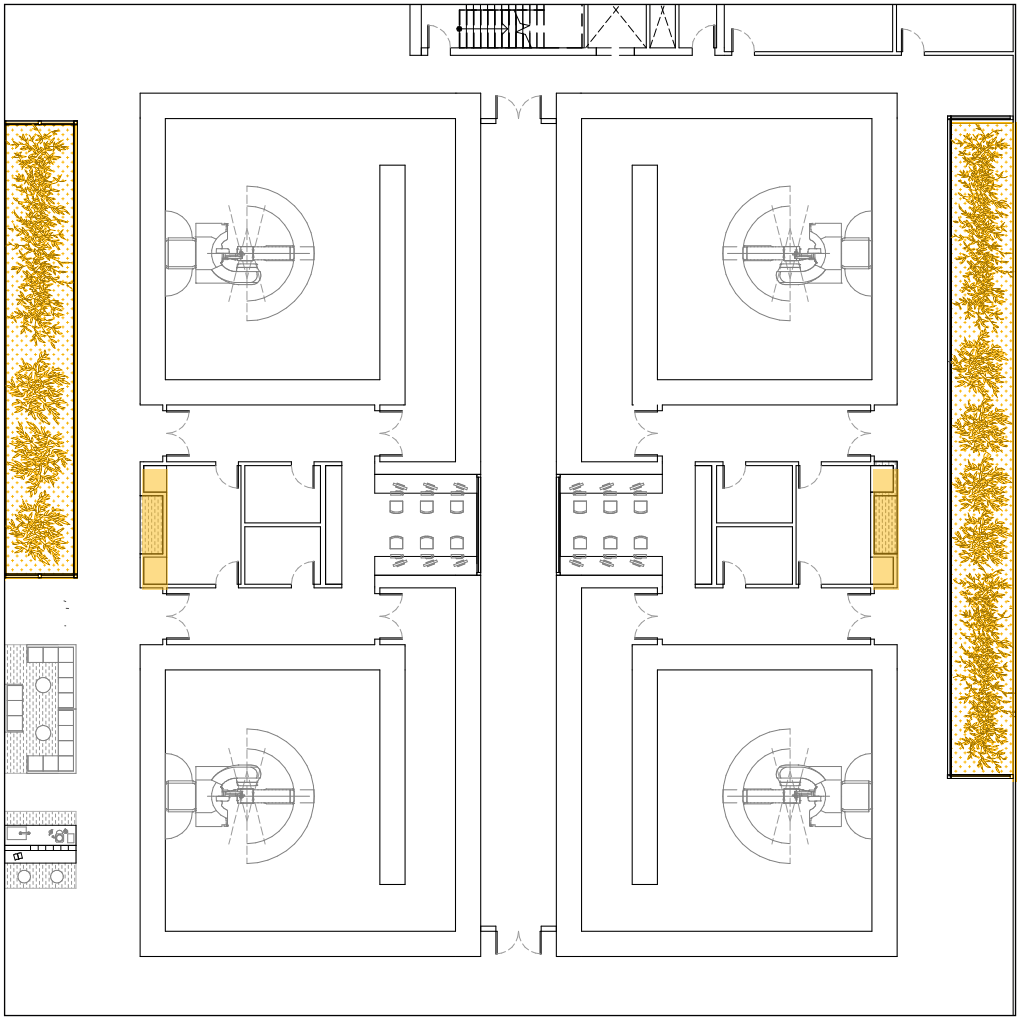
STAFF CORRIDOR



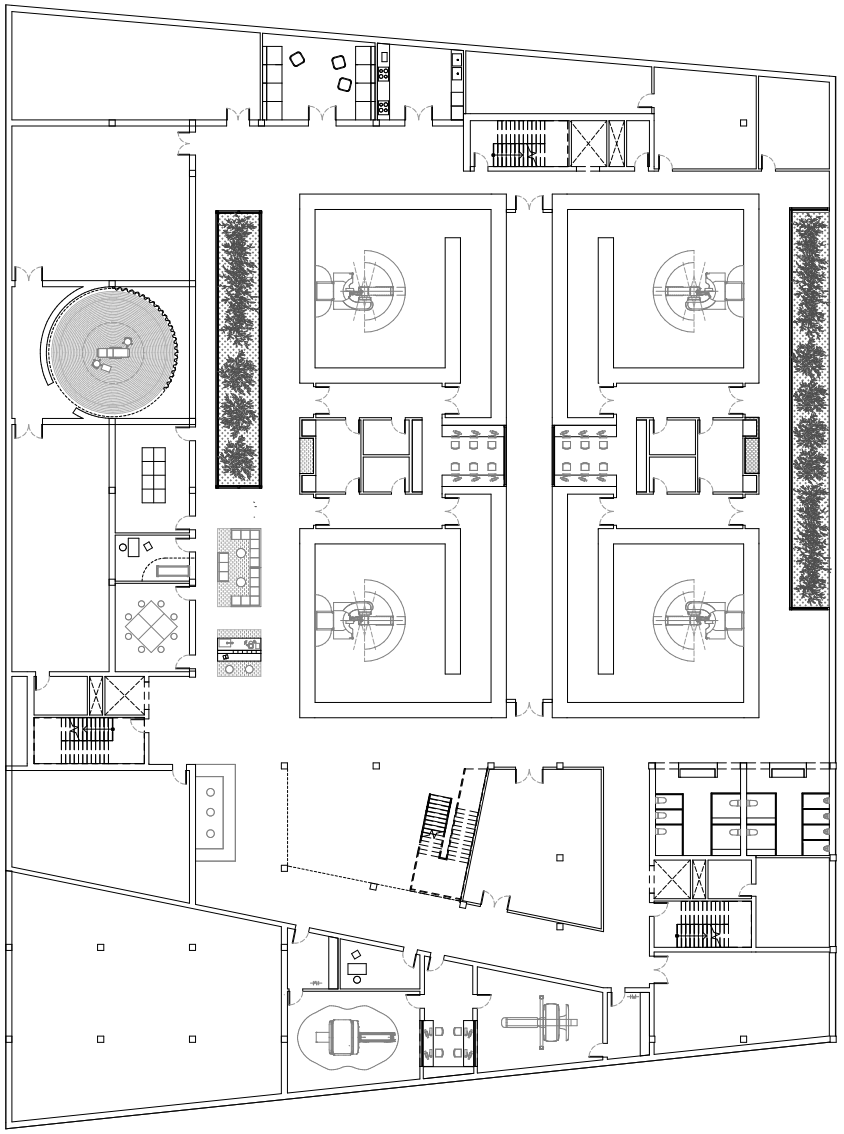


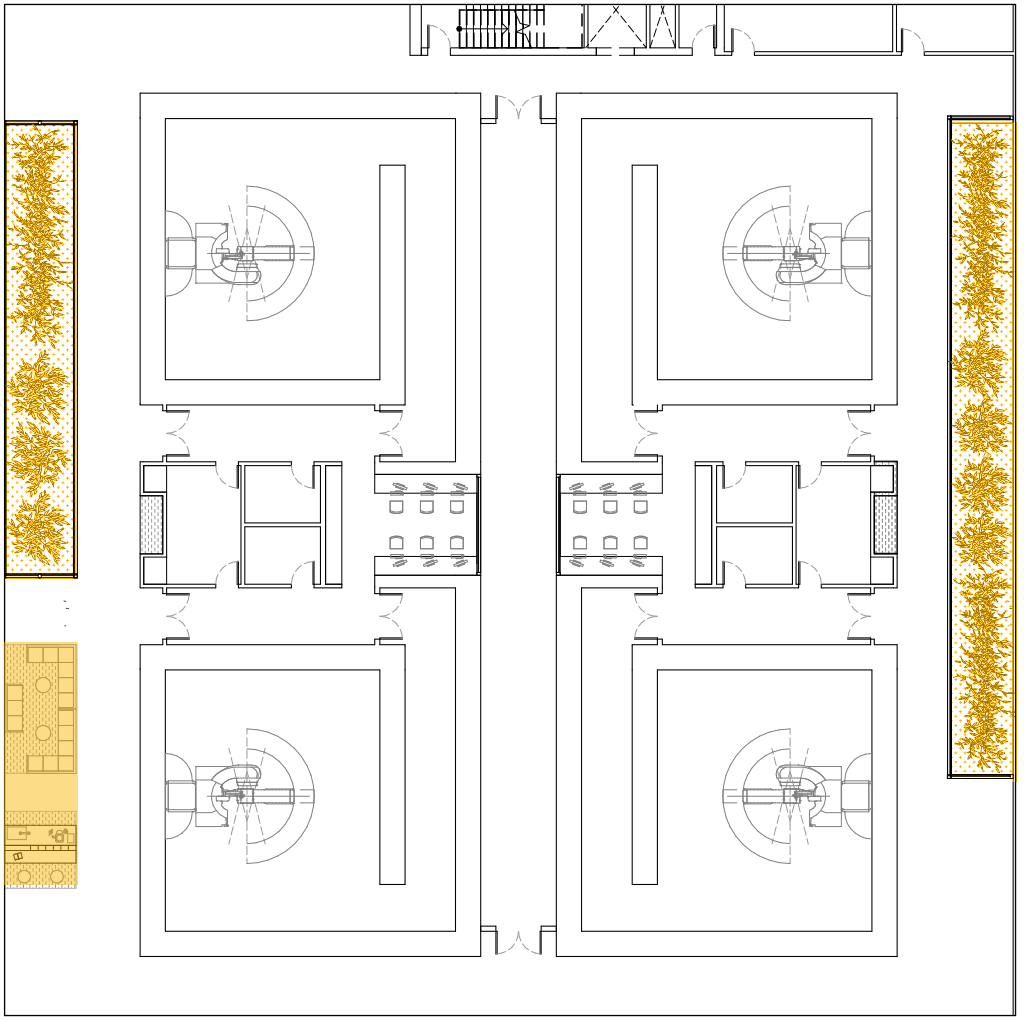
NICHE FOR PAUSE





CAREGIVER WAITING LOUNGE





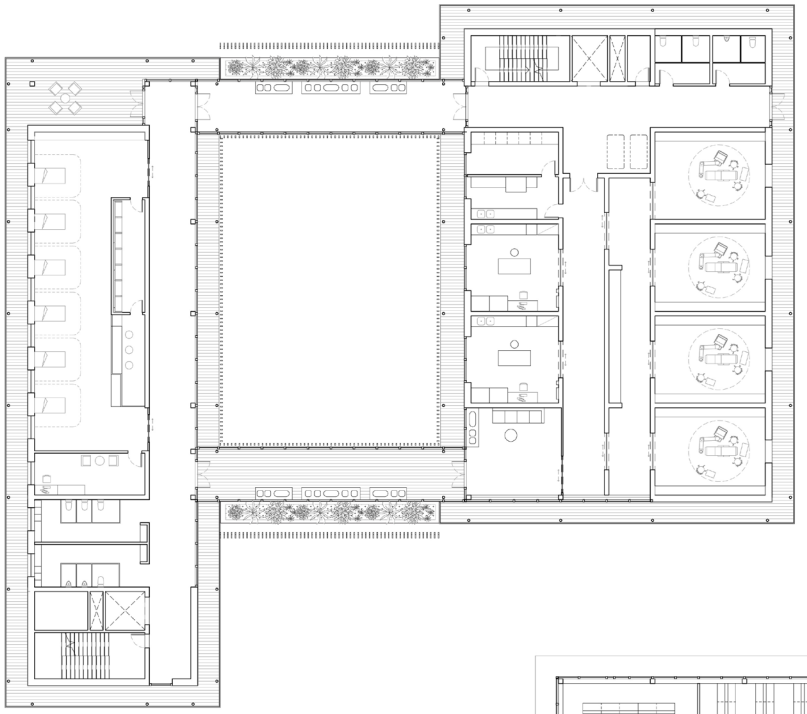
RADIOTHERAPY FOYER

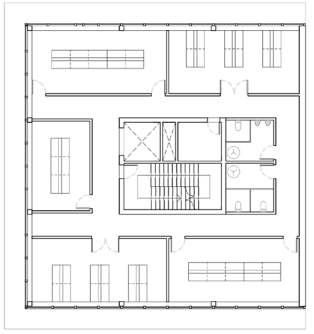


SUNKEN BAMBOO GARDEN



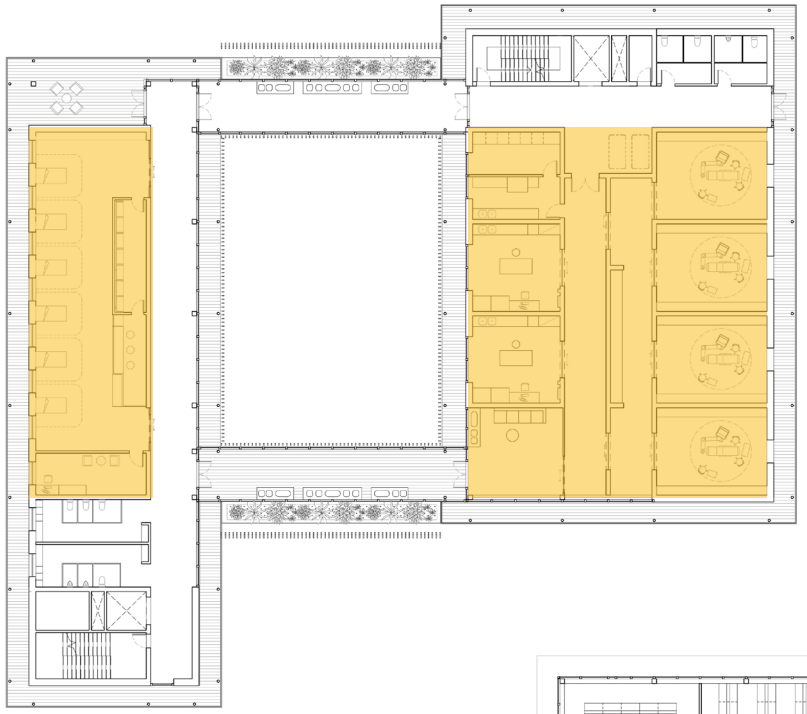
SECOND FLOOR PLAN

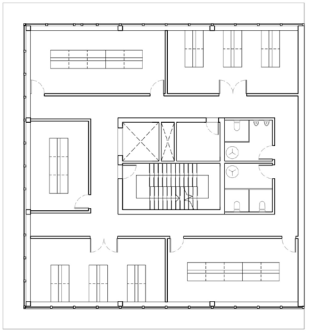


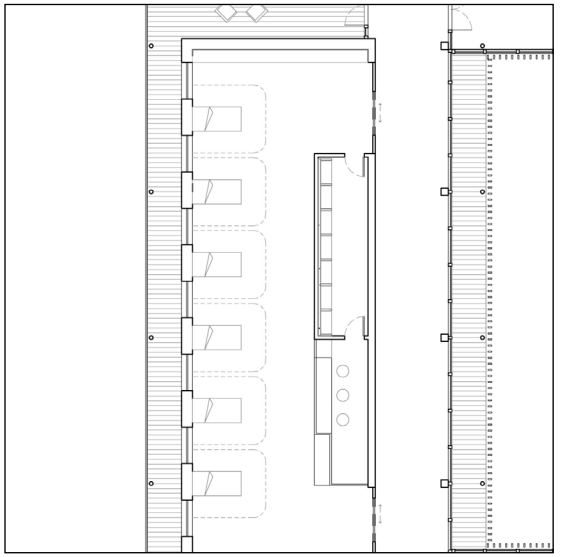


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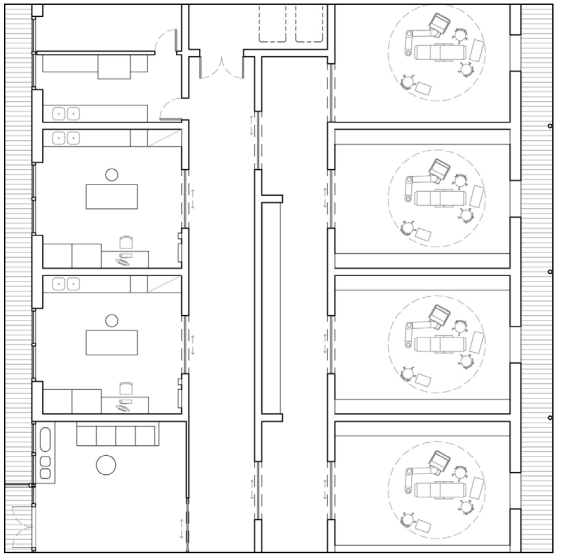
SECOND FLOOR PLAN





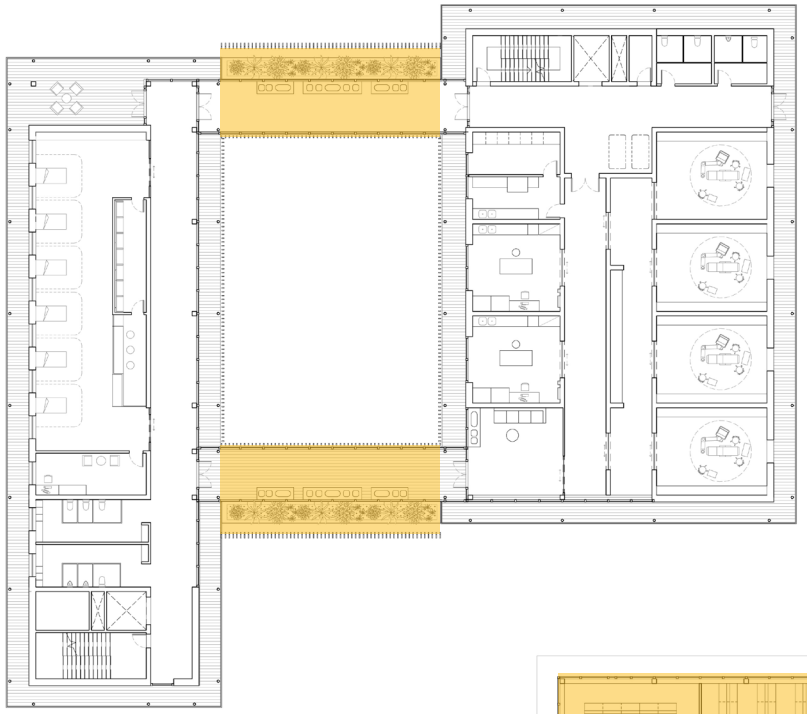


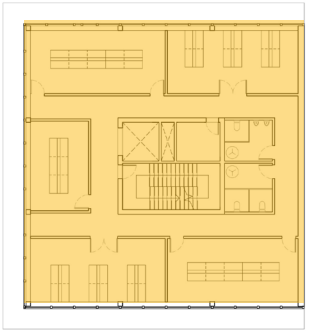
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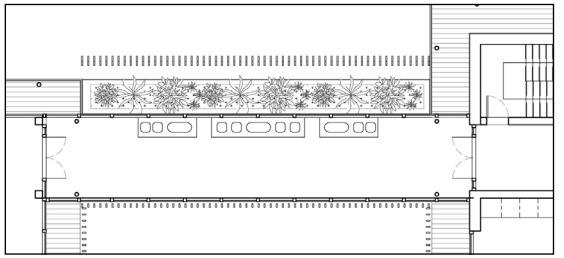


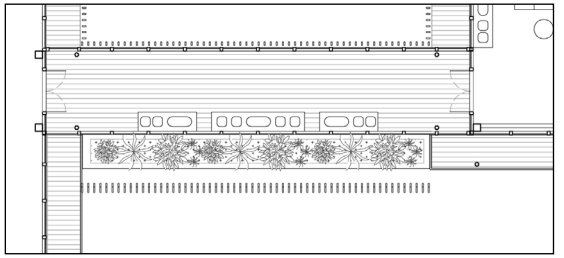
Operating Theatres

SECOND FLOOR PLAN

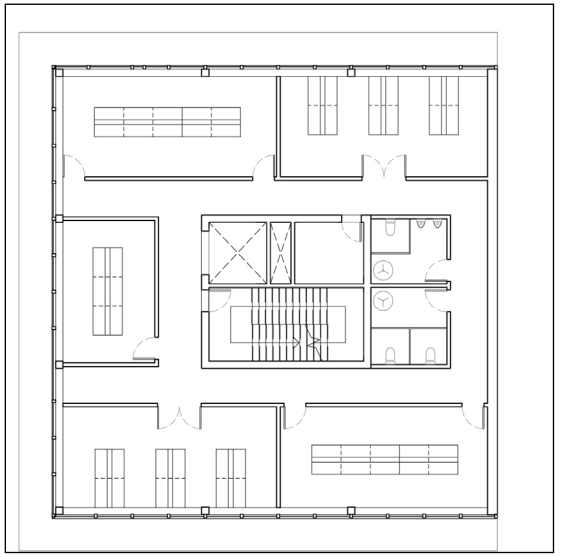






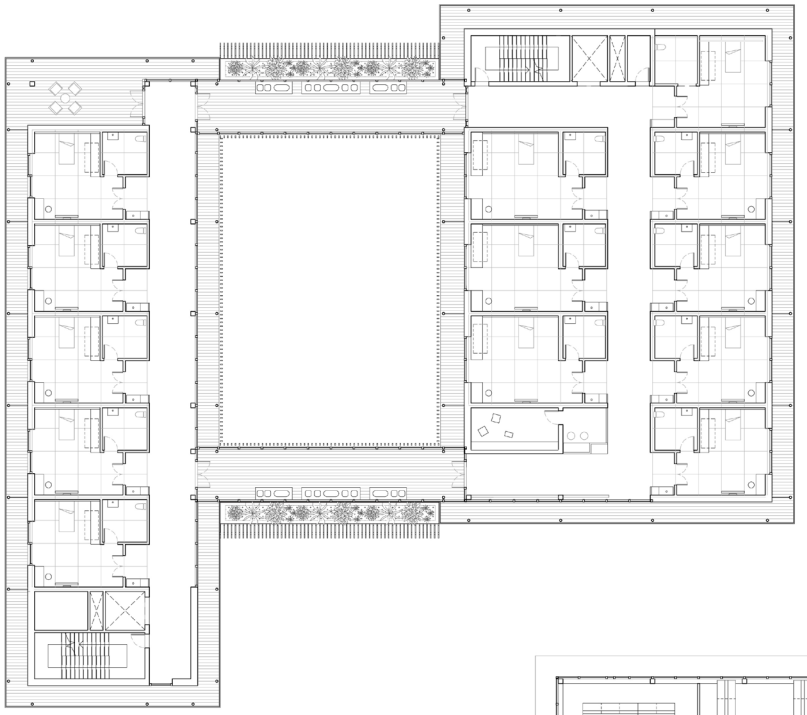


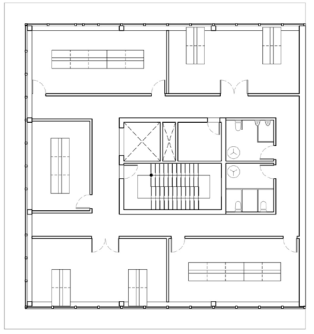
Passage



Laboratories

THIRD-FOURTH FLOOR PLAN





5 10 15 20

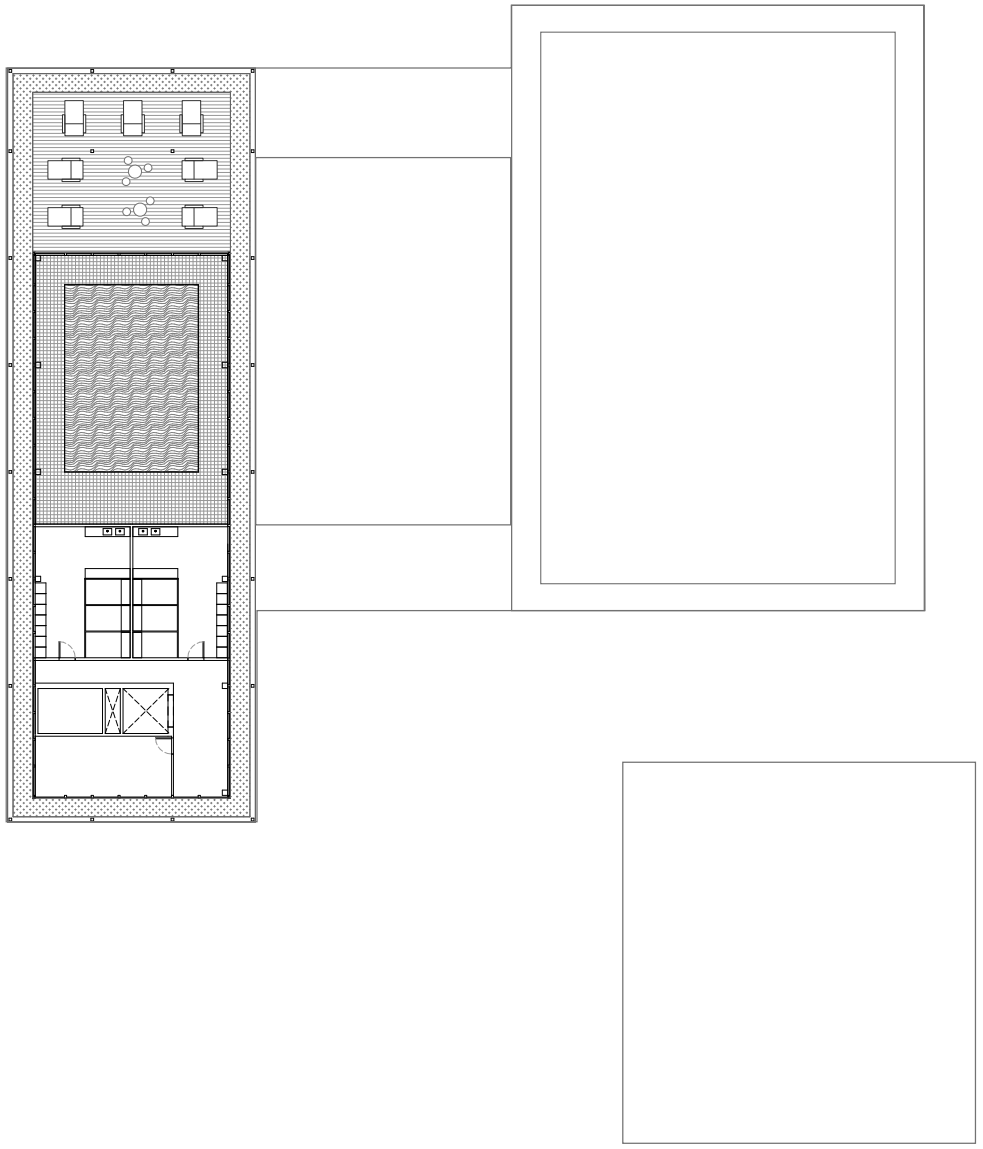
HALF-CLIMATE PASSAGE



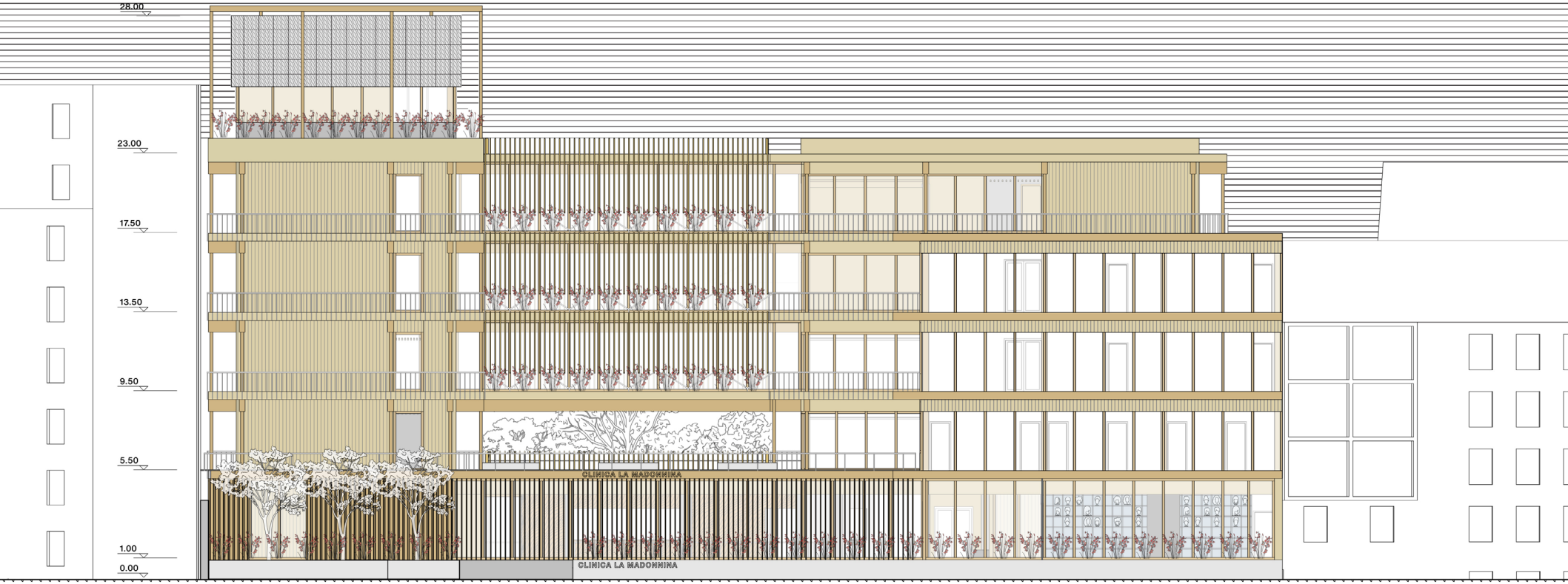
CENTRAL COURTYARD



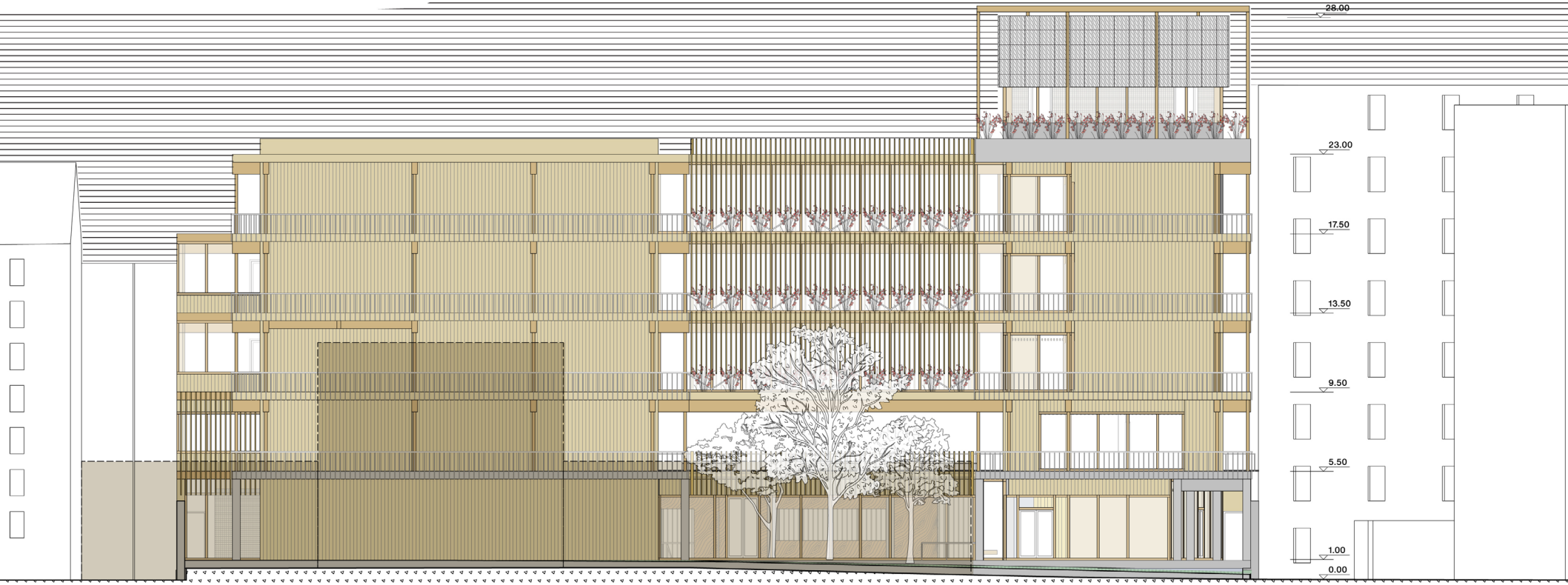
FIFTH FLOOR PLAN - BATHHOUSE



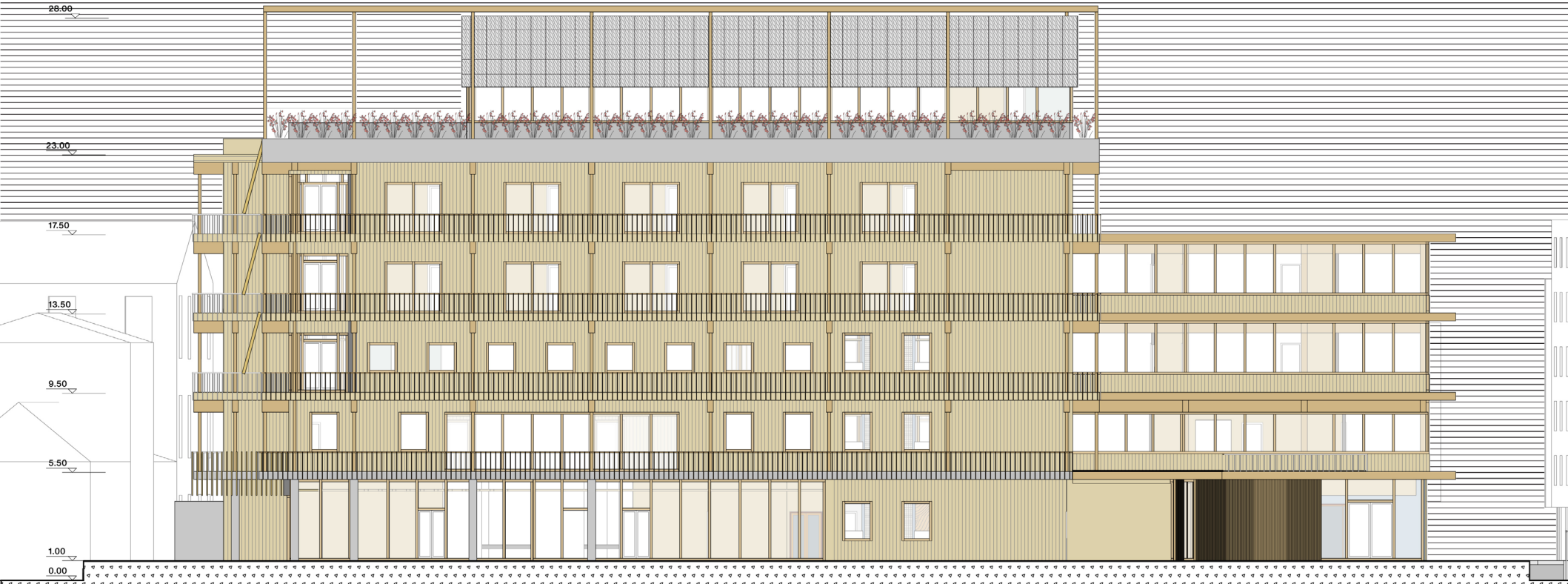
SOUTH ELEVATION



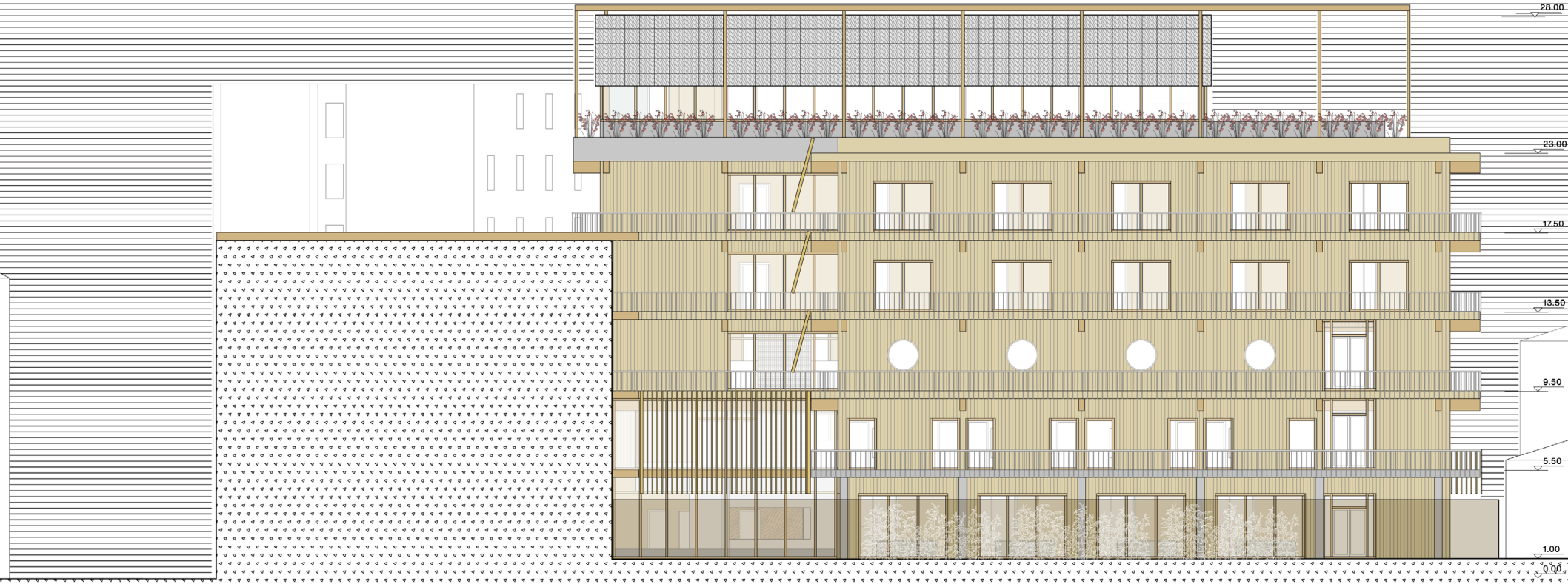
NORTH ELEVATION



WEST ELEVATION



EAST ELEVATION



MATERIAL THEMES

















Western Red cedar
Frames and trims

Thermally treated pine
Façade lamellas

Light Swiss maple
Interior flooring and ceiling

Stamped concrete
Linac Bunker, cores, ground floor structure

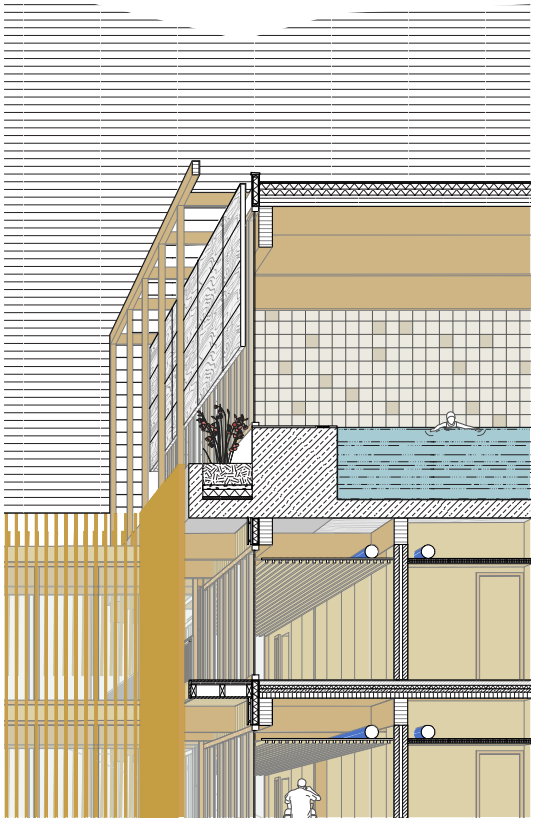
MATERIAL THEMES



Modular Mycellium Panels with biopolymer coatings

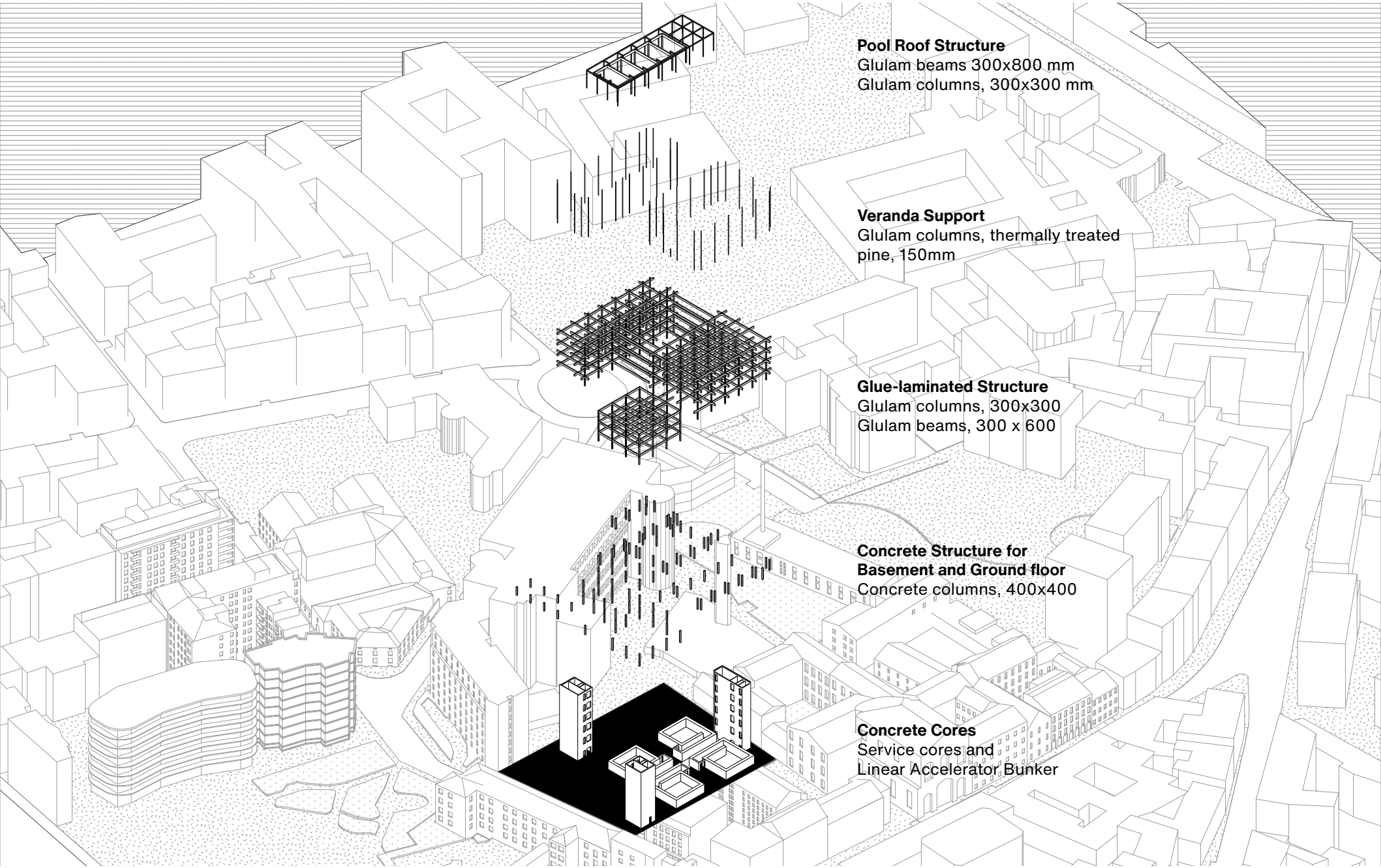


Different materialization for bathhouse: Care > Cure



Ventilated façade system

STRUCTURE



Pool Roof Structure
Glulam beams 300x800 mm
Glulam columns, 300x300 mm

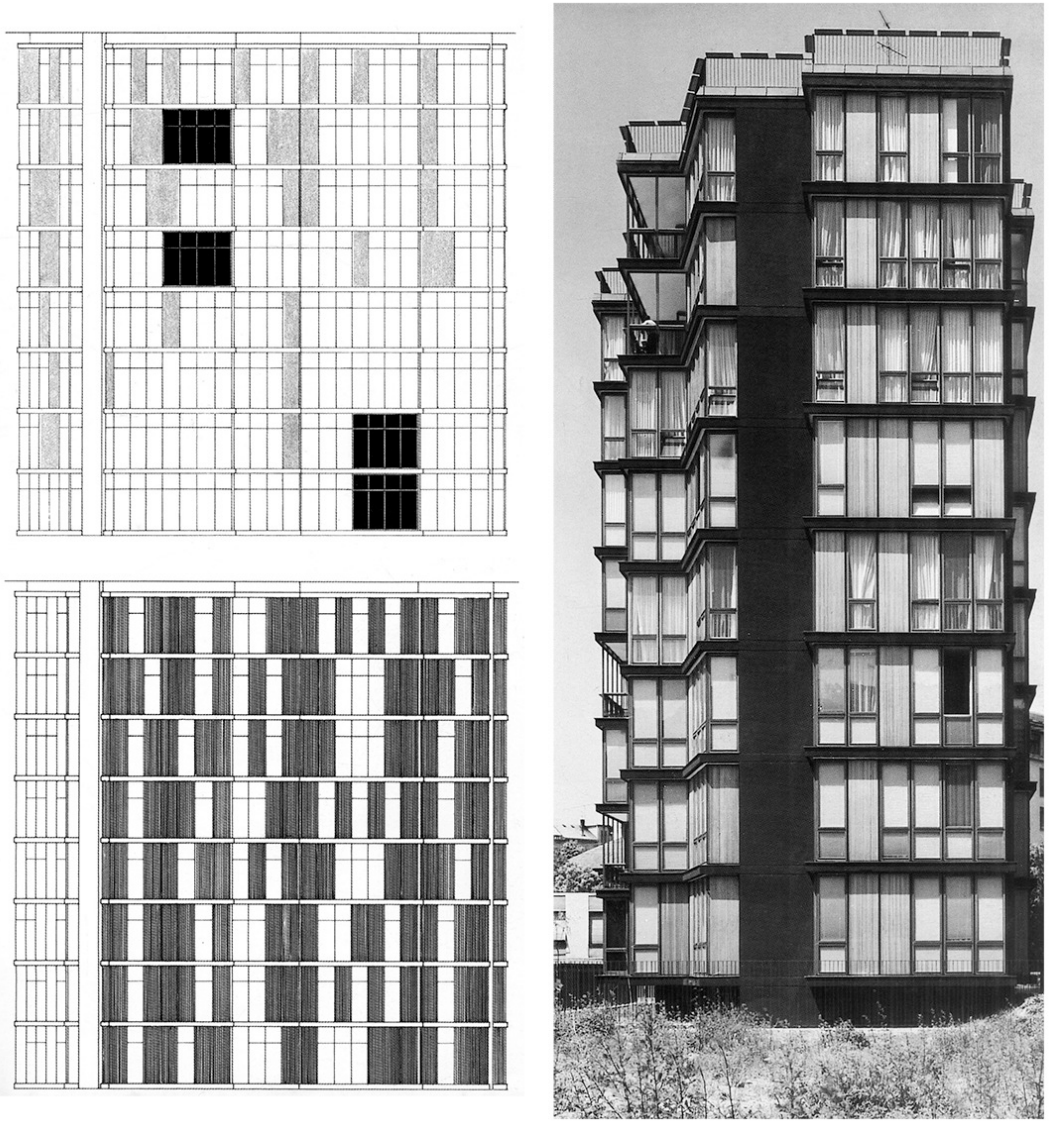
Veranda Support
Glulam columns, thermally treated pine, 150mm

Glue-laminated Structure
Glulam columns, 300x300
Glulam beams, 300 x 600

Concrete Structure for Basement and Ground floor
Concrete columns, 400x400

Concrete Cores
Service cores and
Linear Accelerator Bunker

MILAN FACADE

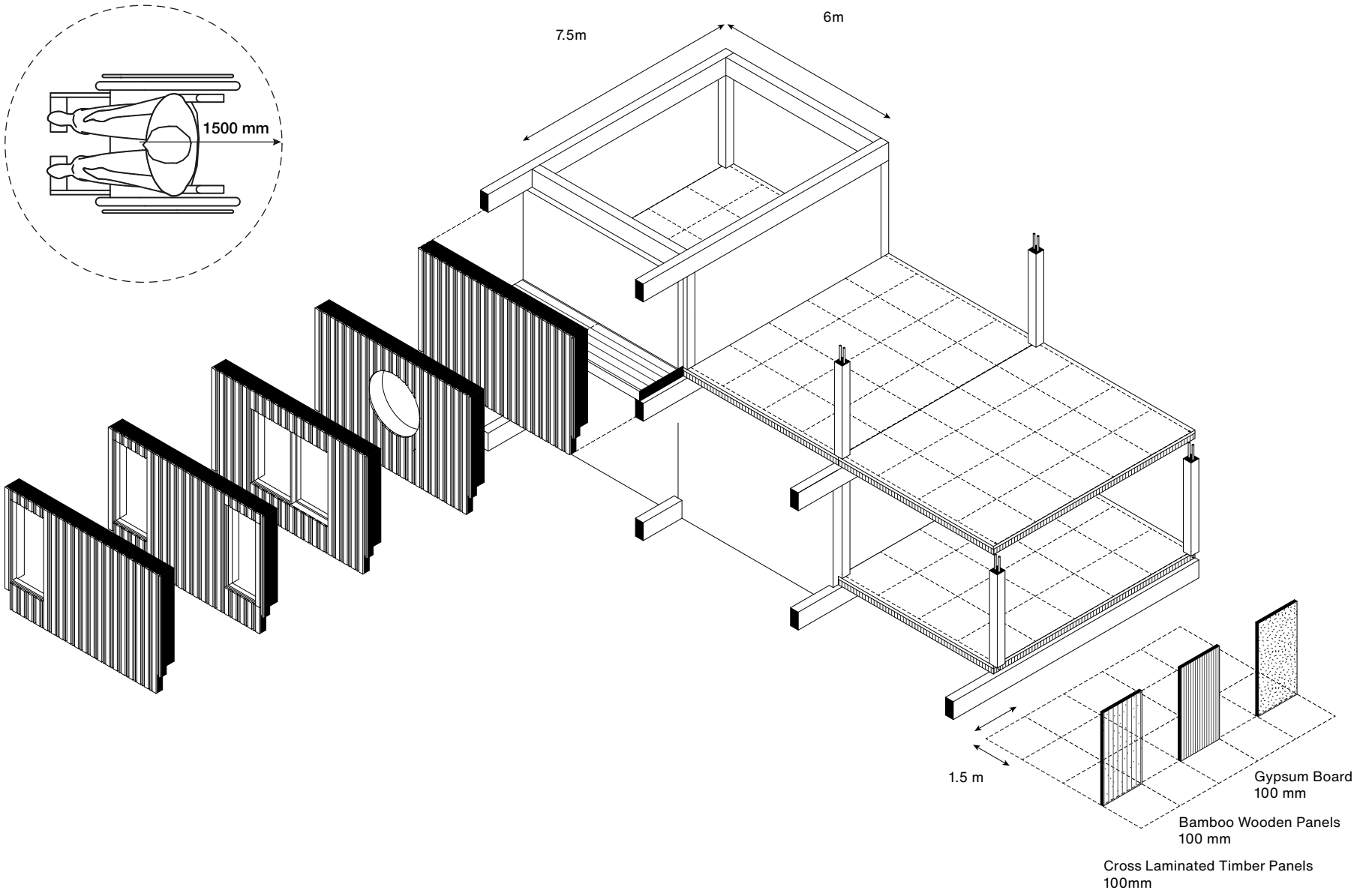


Prefabrication of wooden slatted panels, Via Quadronno, by architects
Angelo Mangiarotti and Bruno Morassutti

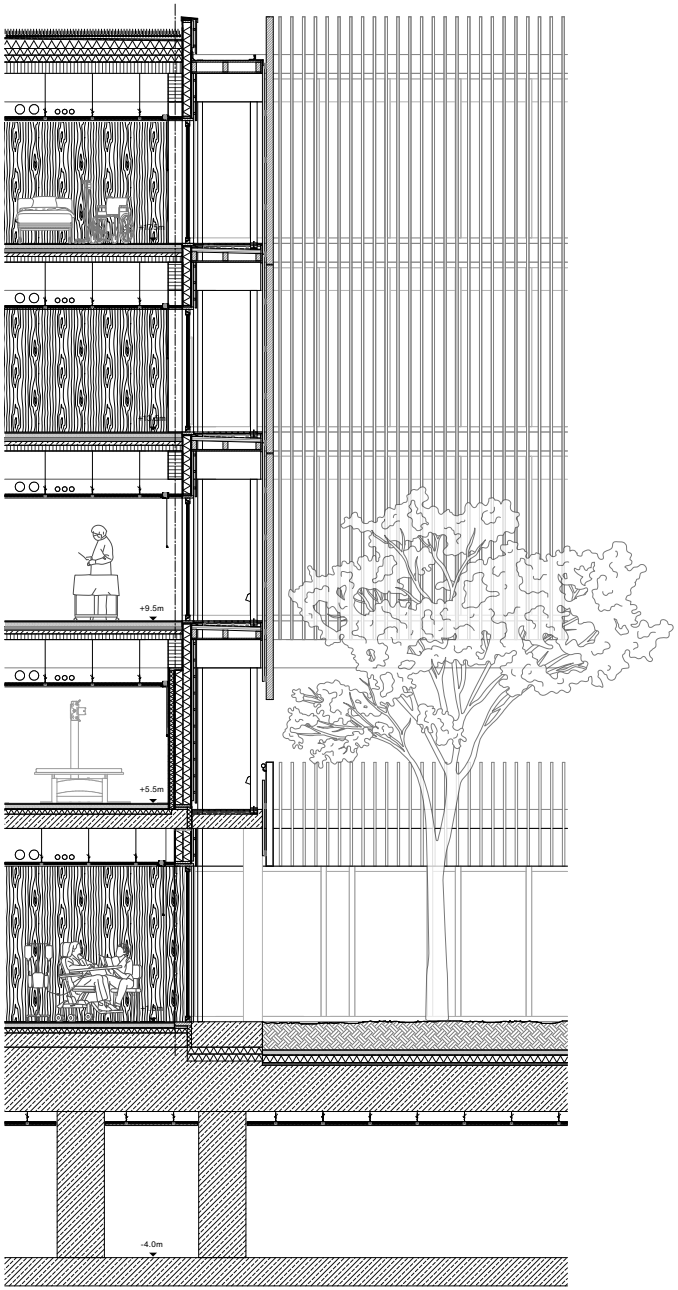
WOOD PLUG-AND-PLAY SYSTEM

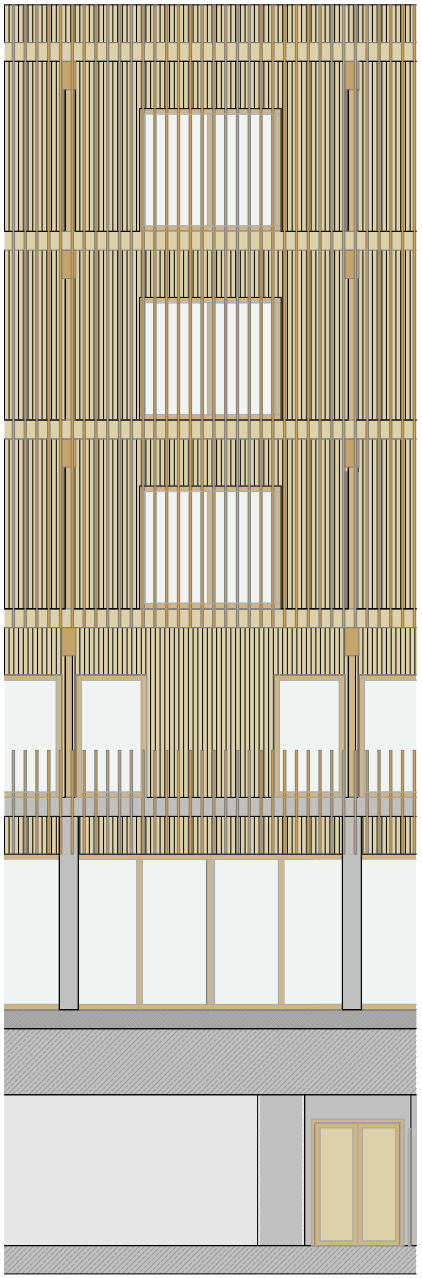


DESIGN FOR DISASSEMBLY: PLUG-AND-PLAY SYSTEM

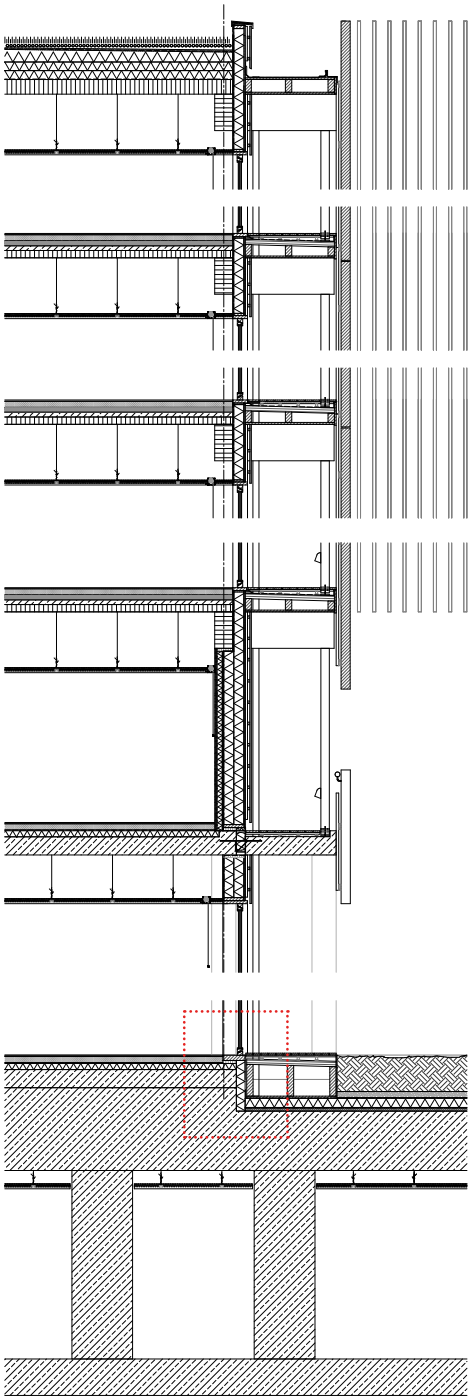


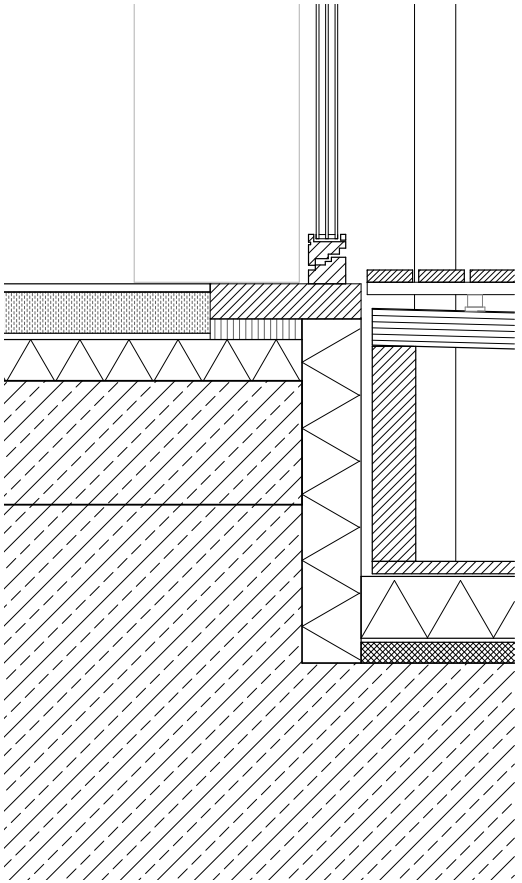
ENVELOPE DETAIL

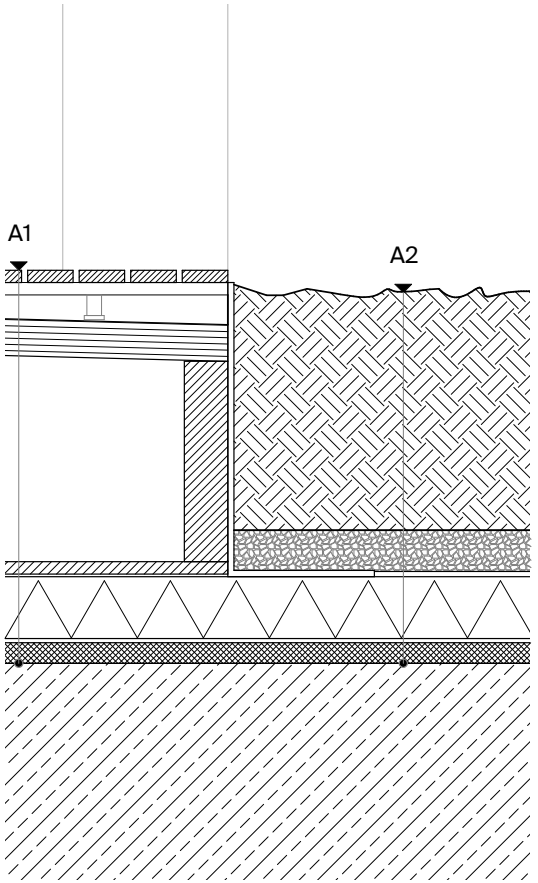




DETAIL A







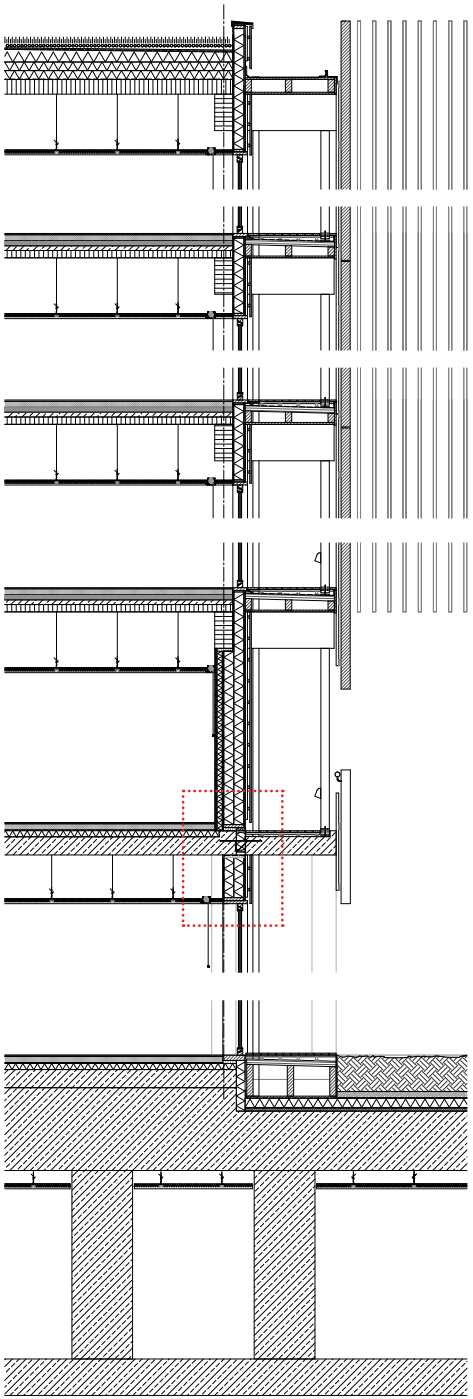
A1

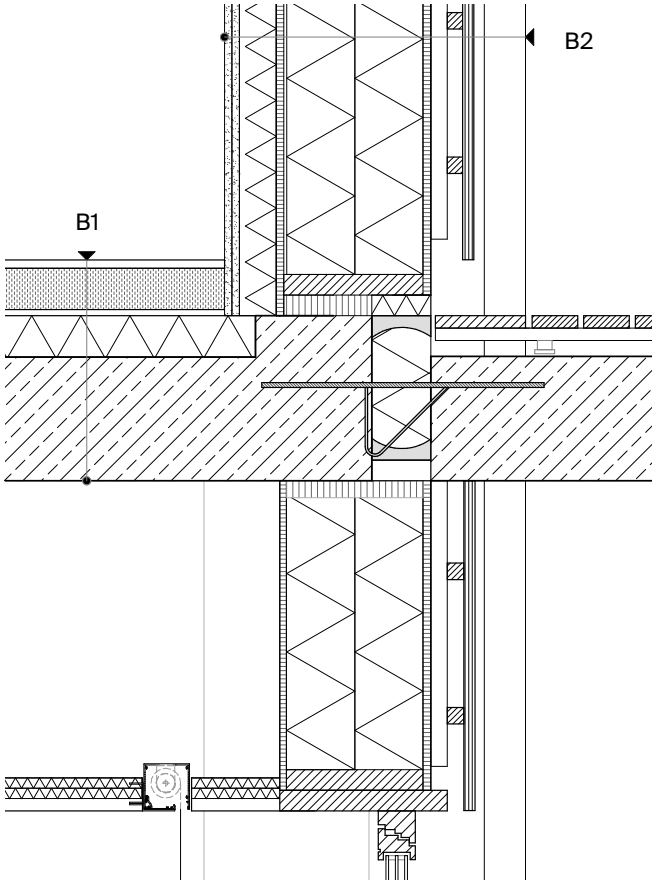
Boards, silver fir, pressure-treated, planed/sanded 30 mm, battens 30 mm, mitered blocks 50– 80 mm
Elastomer bed (impact sound) 20 mm
Waterproofing, plastic membrane, mechanically fastened
Glued laminated board in gradient 1.5 %
Timber blocks 50– 80 mm
Timber boarding, oak 20 mm
Geotextile membrane
Rigid thermal insulation, 150 mm
Waterproofing membrane
Protection screed 50 mm

A2

Topsoil, engineered soil 1000 mm
Drainage layer, gravel, 100 mm
Geotextile membrane
Rigid thermal insulation, 150 mm
Waterproofing membrane
Protection screed 50 mm

DETAIL B

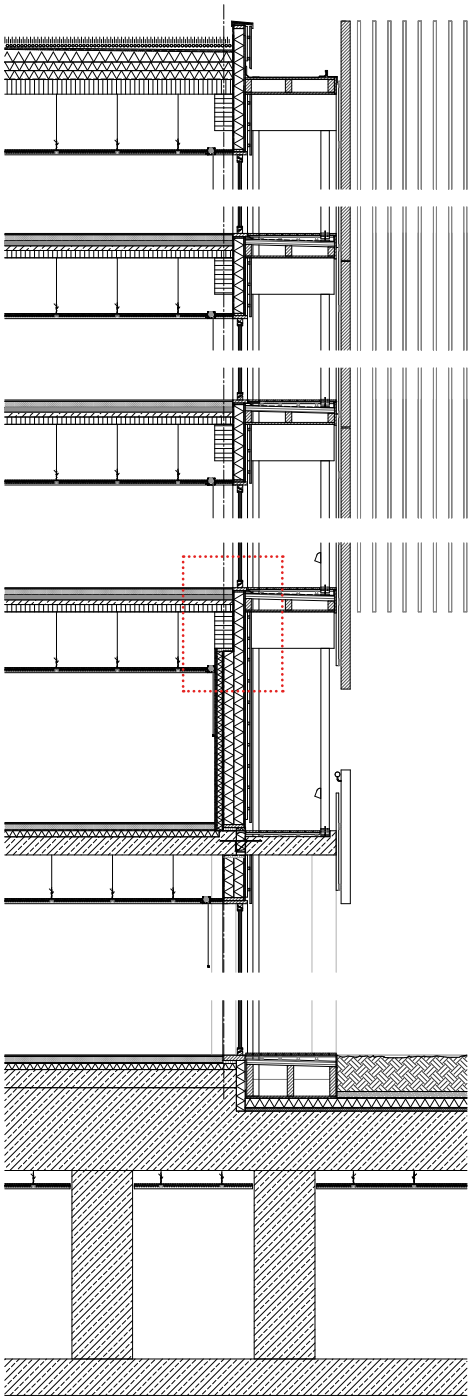


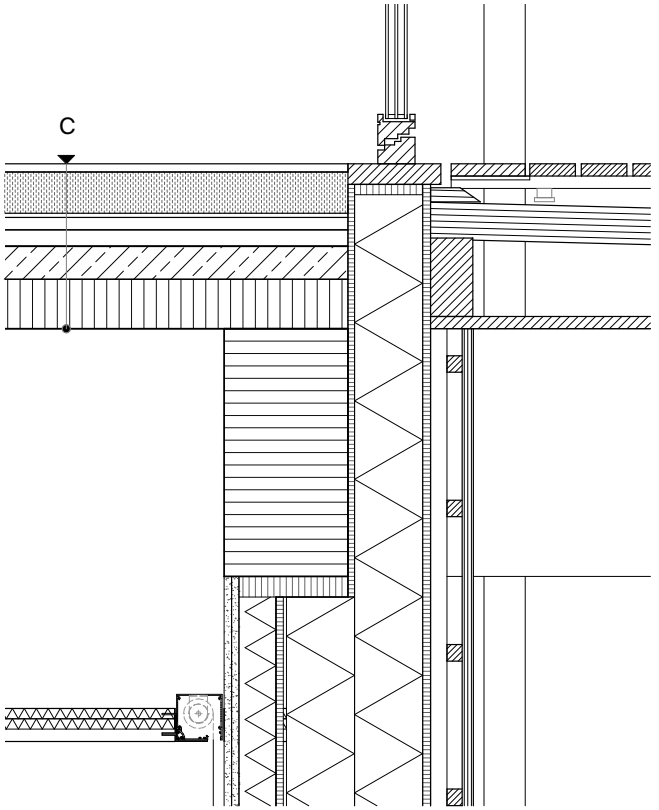


B1 - FLOOR
Flooring, linoleum, 20mm
Anhydride screed, 50 mm
PE foil separating layer
Mineral fibre footfall sound insulation, 100 mm
Concrete slab 100mm
Schöck Isokorb® thermal break
Installation cavity 710mm under slab
Suspended ceiling:
Suspended battens with spring clamps, 25 mm
Cavity insulation between battens, 50 mm
Wood panel, 40mm

B2 - FACADE
Alternate notches boards, thermally treated pine wood. 30 mm
Horizontal battens 40/60 mm
Vertical battens 40/60 mm
Chipboard, cement-bonded with glued joints 18 mm
Frame construction, glulam timber 59/340 mm, inbetween thermal insulation, mineral wool 340 mm
Air resistance level, vapour barrier
OSB panel with glued joints (vapour barrier) 18 mm
Thermal insulation, mineral wool (installation) 75 mm
Interior finish:
Surgery: Plasterboard, 2x 19mm
Else: Parapet backboard, chipboard, oak, veneered 19 mm

DETAIL C



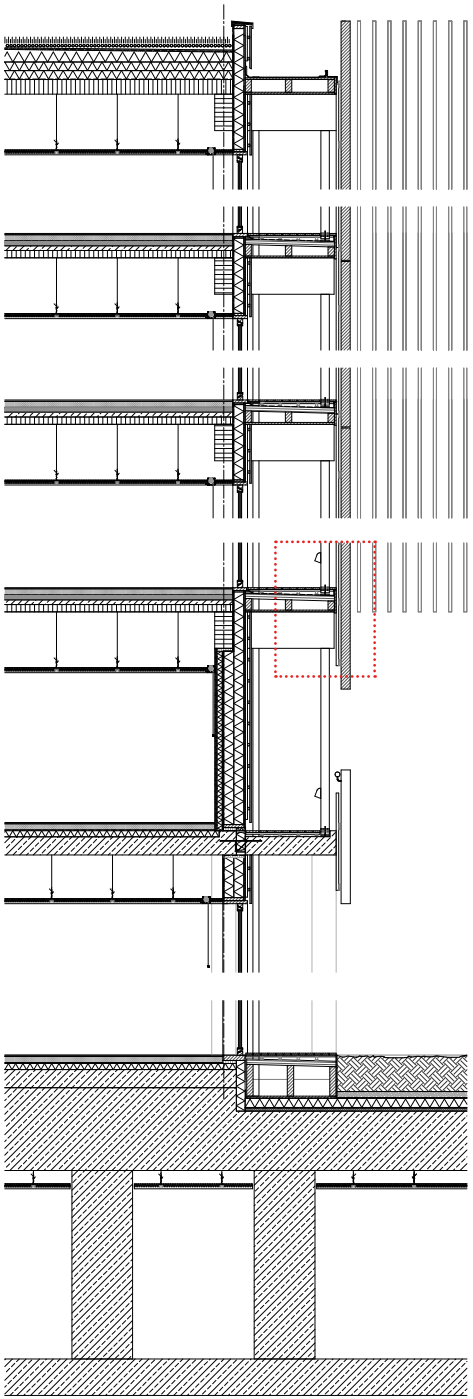


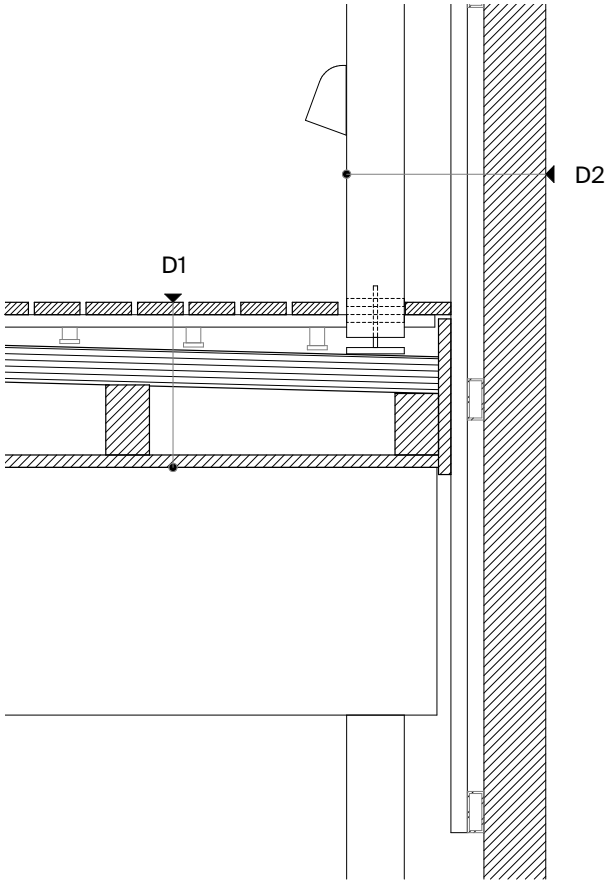
C

FLOOR (COMPOSITE CONCRETE-TIMBER FLOOR)

Flooring, parquet, pine, 20mm
Anhydride screed, 50 mm
PE foil separating layer
Mineral wool footfall sound insulation, 30 mm
Additional mineral fibre insulation, 40 mm
Prefabricated composite timber-concrete (CTC) ceiling, joined with pincel to glulam structure:
Concrete top layer, 80mm
Dowel laminated timber, C24 120mm
Installation cavity 710mm under slab
Suspended ceiling:
Suspended battens with spring clamps 25 mm
Cavity insulation between battens 50 mm
Acoustic panels, white painted, 40mm

DETAIL D





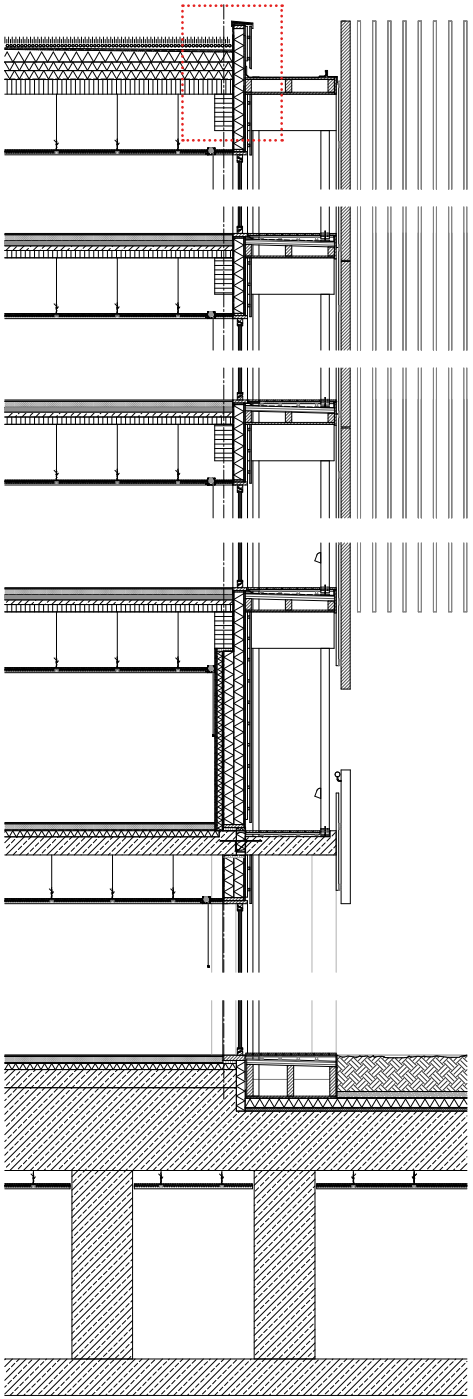
D1 - FLOOR STRUCTURE, VERANDA, 3rd-5th storey

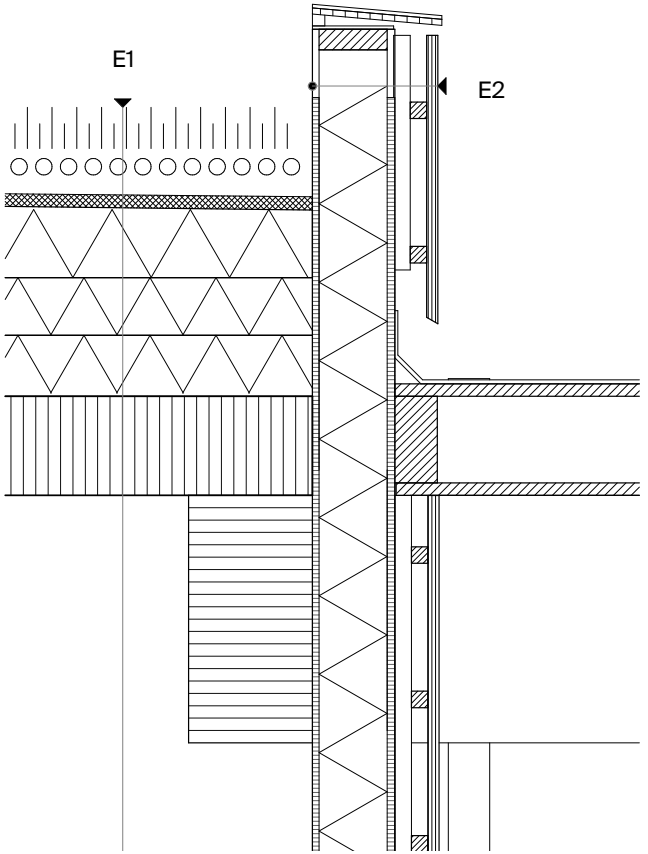
Boards, silver fir, pressure-treated, planed/sanded
30 mm, battens 30 mm, mitered blocks 50– 80 mm
Elastomer bed (impact sound) 20 mm
Waterproofing, plastic membrane, mechanically fastened
Glued laminated board in gradient 1.5 %,
Soffit
Timber boarding, oak 20 mm

D2 - VERTICAL SUPPORT, VERANDA

Vertical wooden slats, motorized control, 150x40mm
Glue-laminated column, round section, thermally treated pine, 150mm, reversible steel knife plate connector

DETAIL E





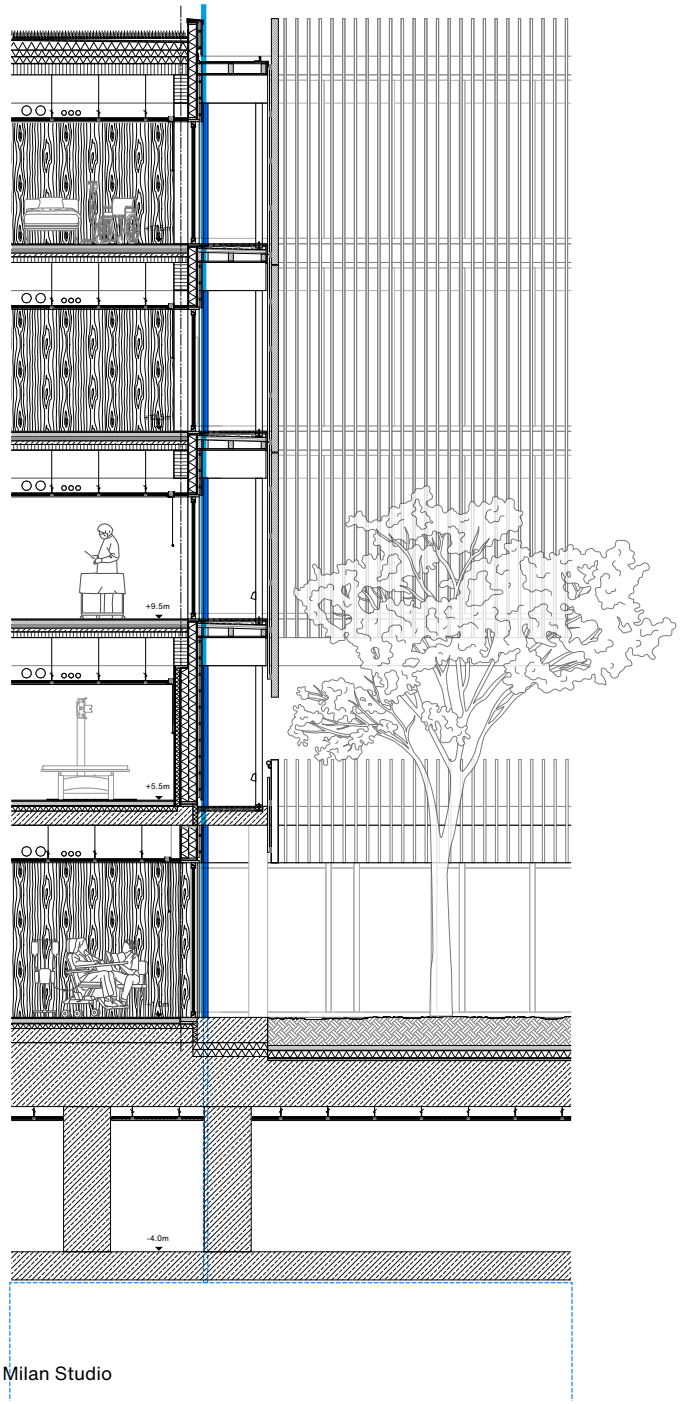
E1 - ROOF

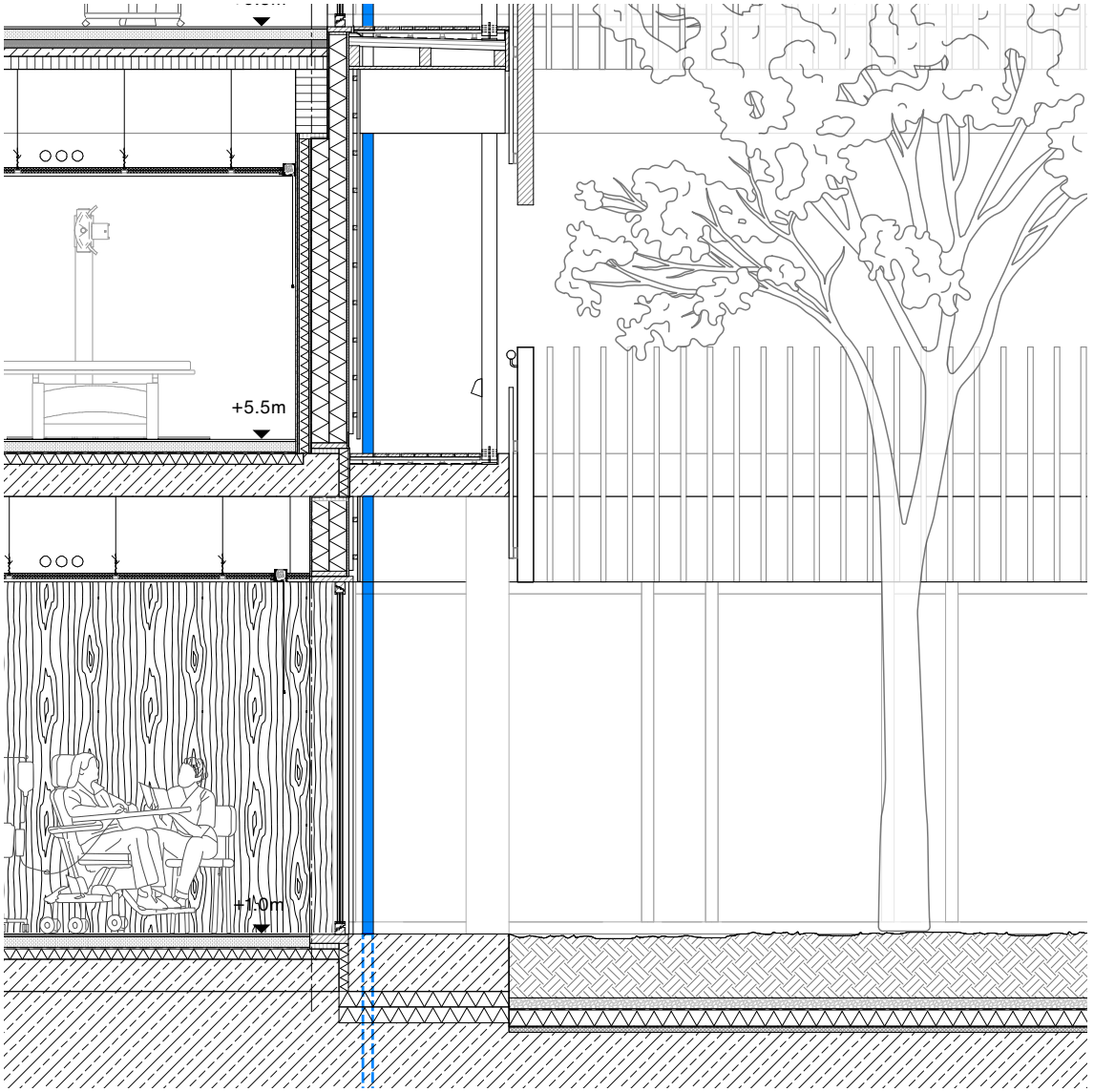
Extensive vegetation 100 mm
Roof waterproofing
Thermal insulation EPS in gradient 10 –140 mm
Thermal insulation EPS 140 mm x 2
Vapour barrier
Cross-laminated timber roof ceiling, 7-layer, 240mm
Installation cavity 600-700mm for medical equipments (var.)
Suspended ceiling:
Suspended battens with spring clamps 25 mm
Cavity insulation between battens 50 mm
Wood ceiling panel, oak

E2 - PARAPET

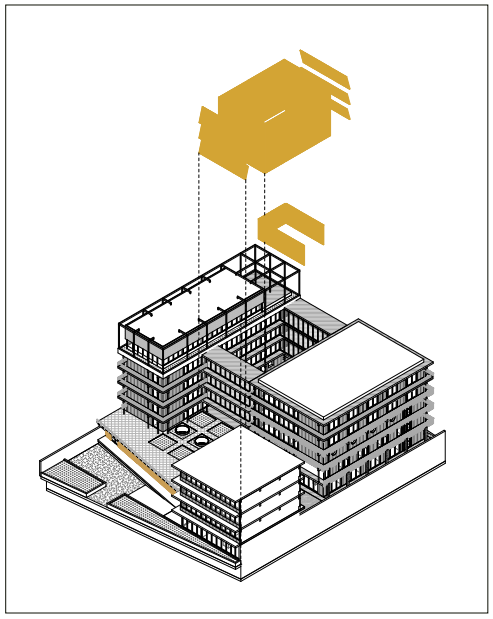
Timber boarding 30 mm
Battens 40/40 mm, counter battens 40/40 mm
Wind seal: paper, gypsum fibreboard 18 mm
Timber structure with thermal insulation, mineral wool 170 mm
Vapour barrier
OSB panel 18 mm, roof waterproofing

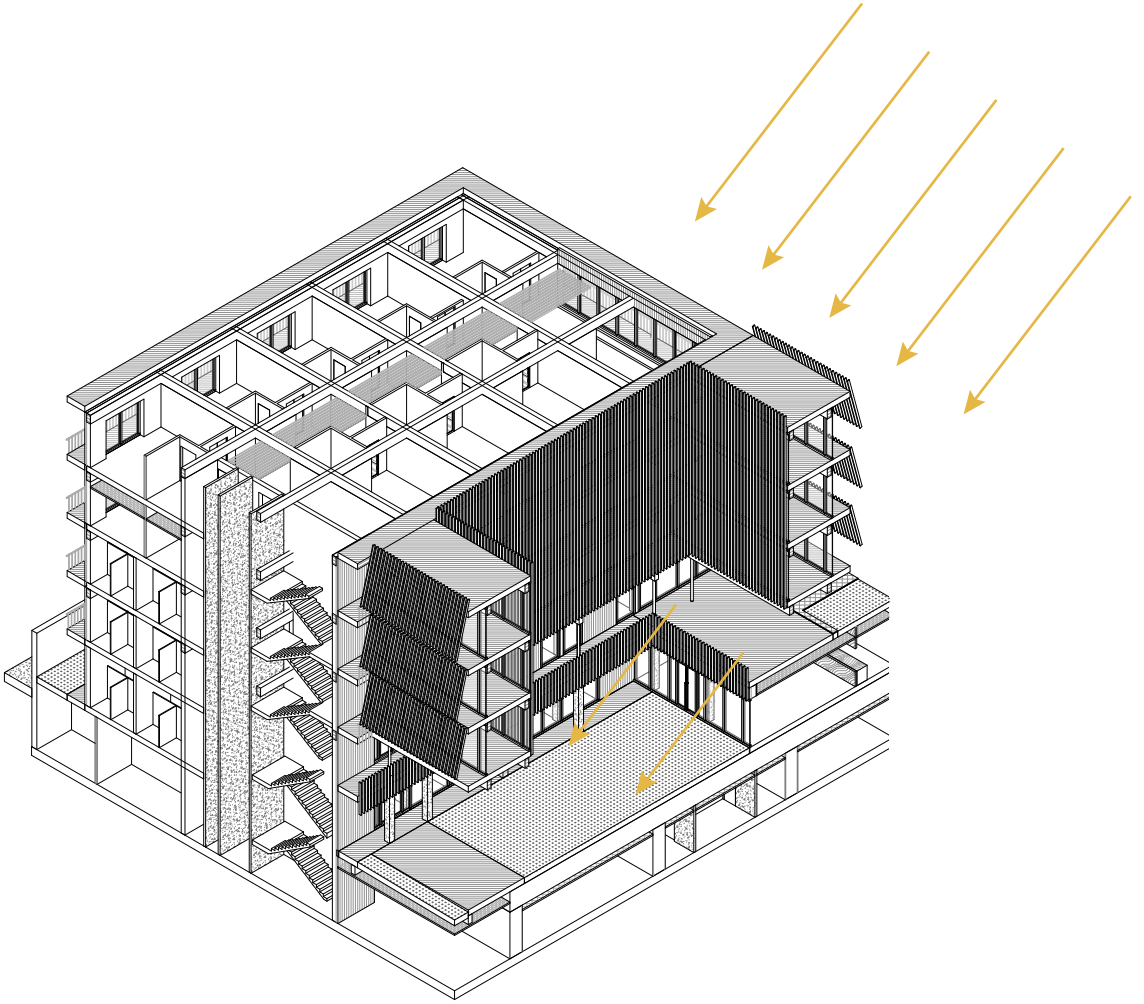
BUILDING DRAINAGE



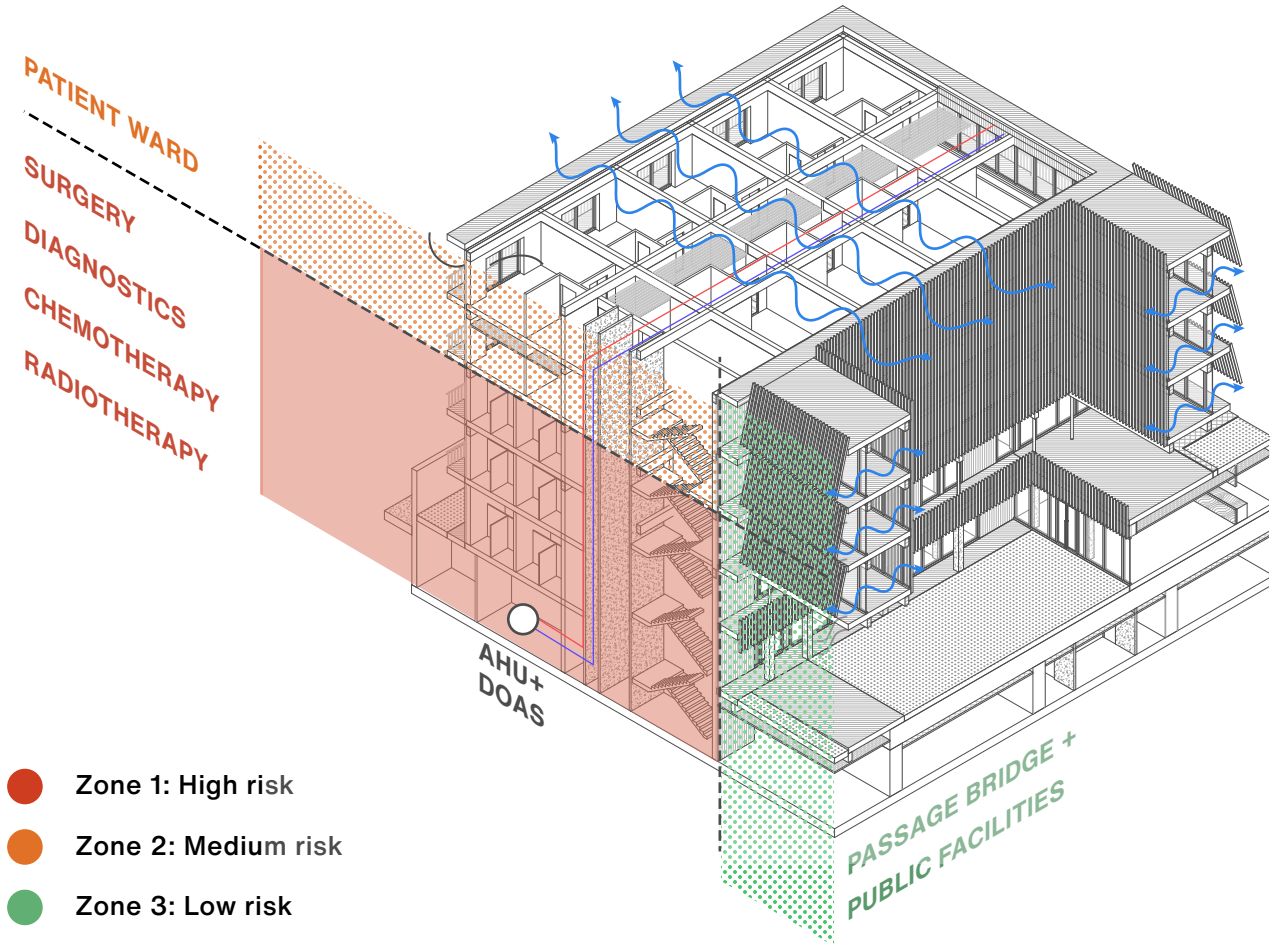


SUN SHADING



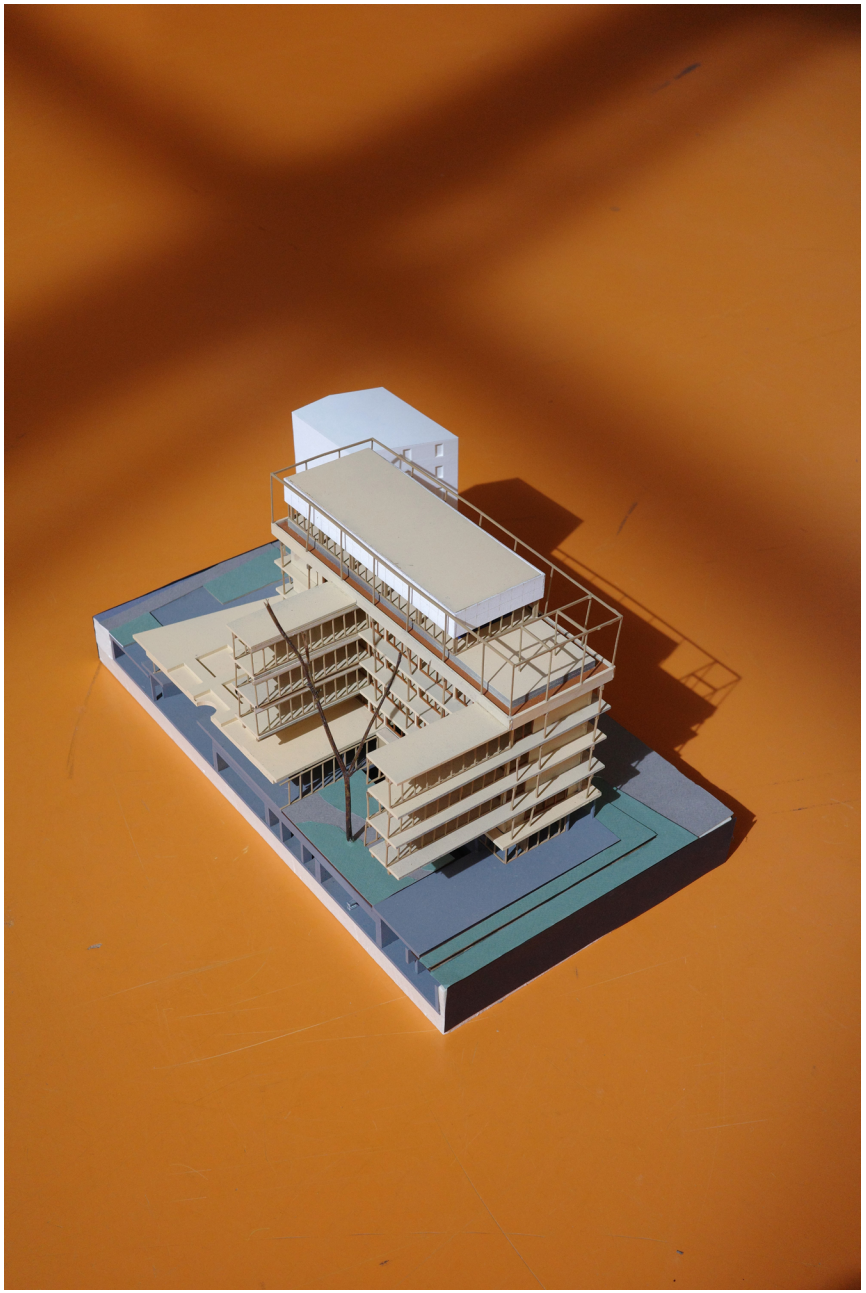


CLIMATE ZONING



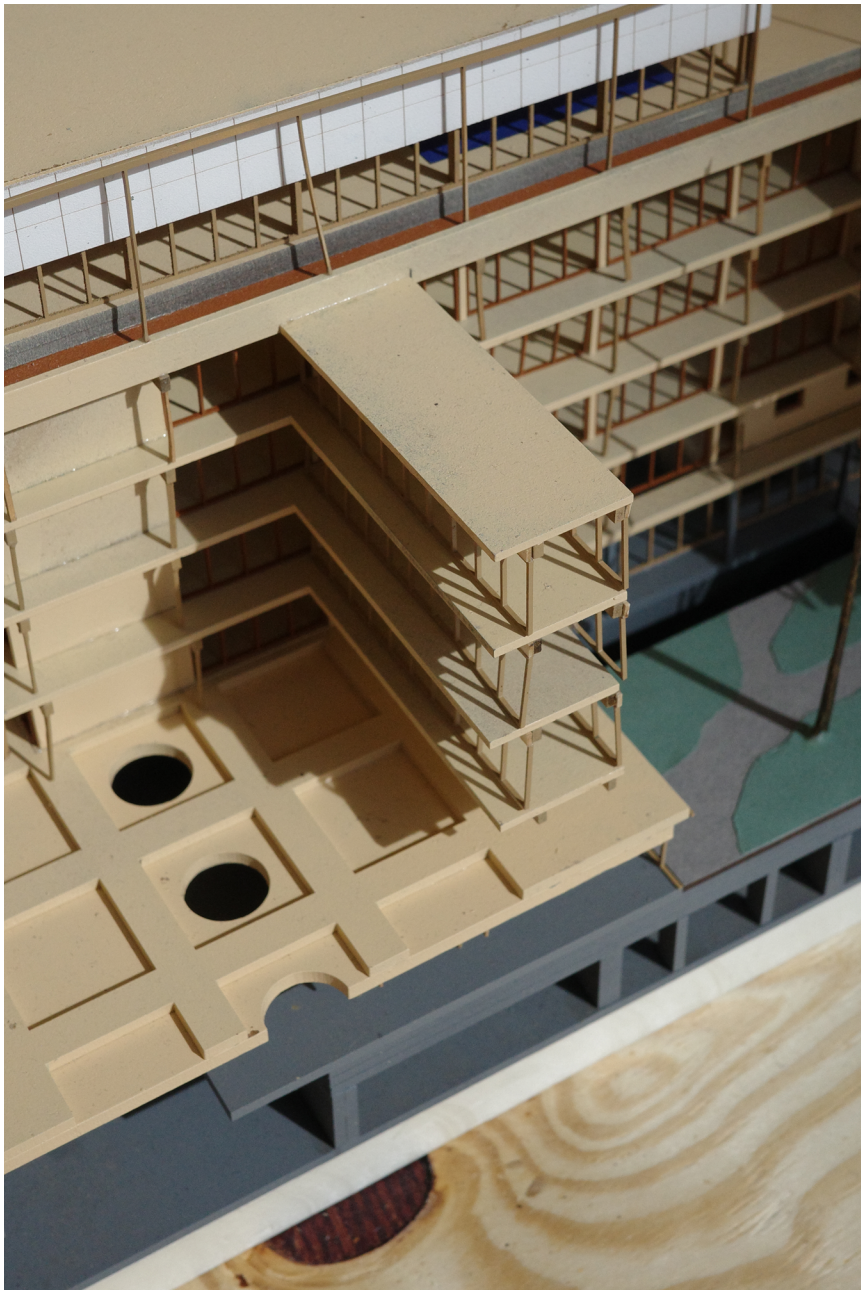


MODEL





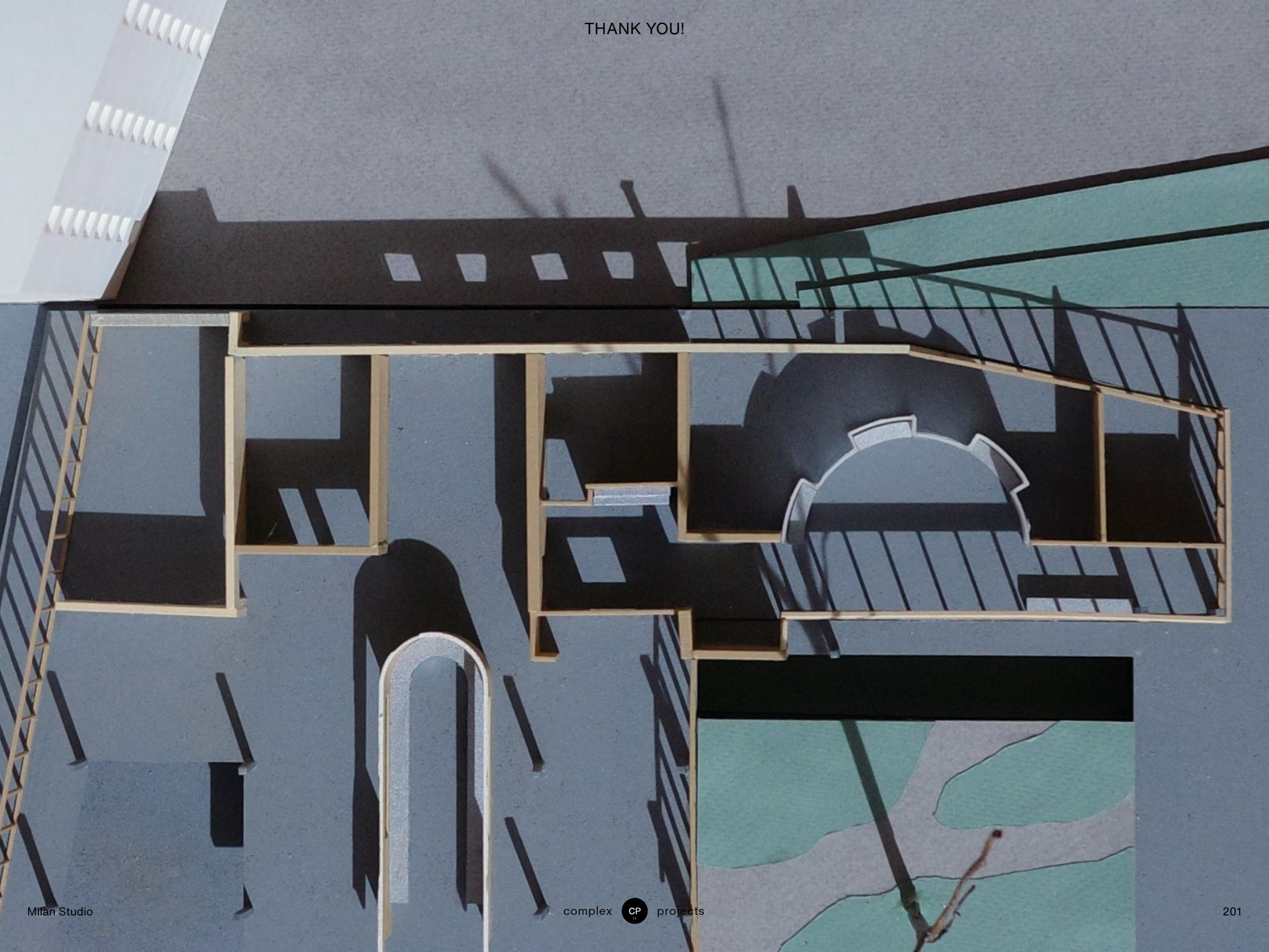











THANK YOU!