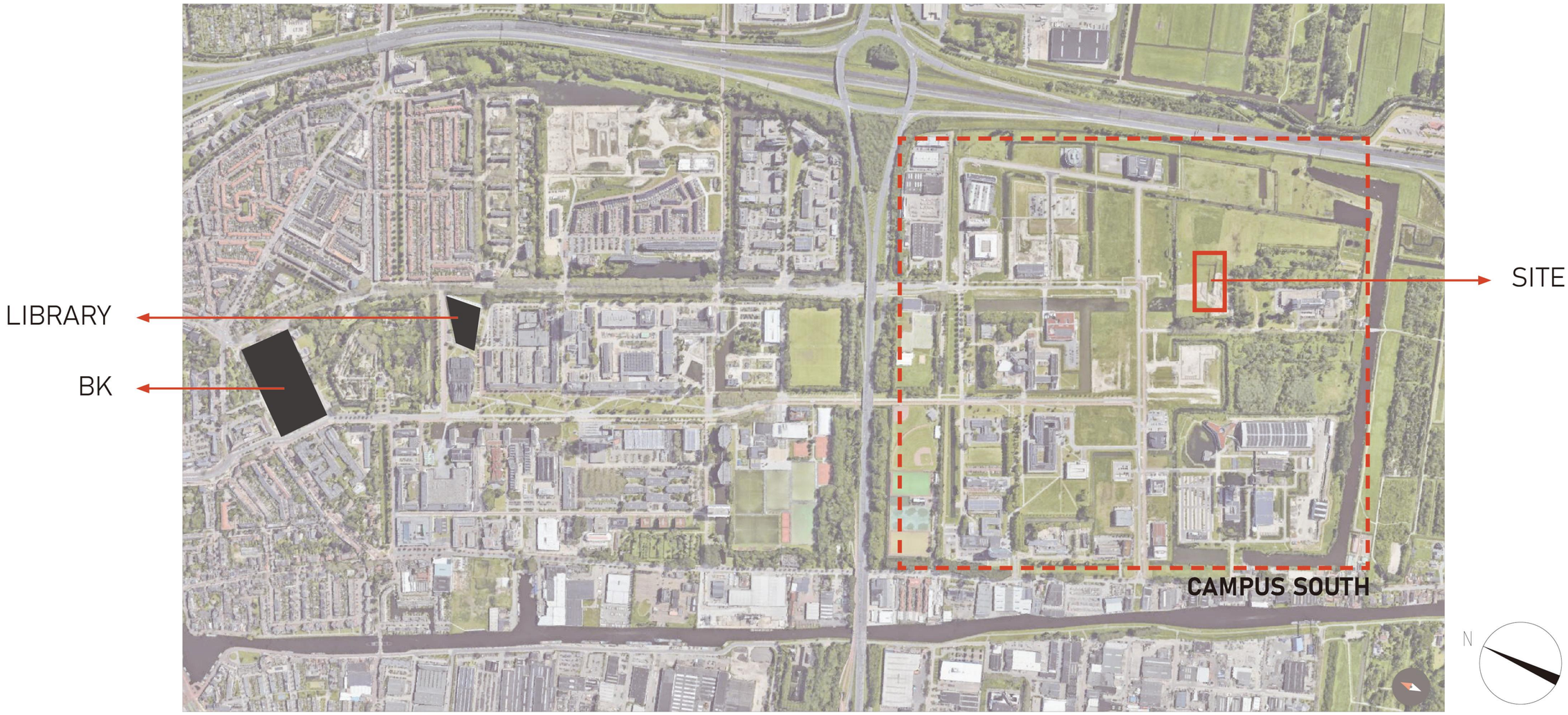
ADAPTABLE TIMBER COMPLEX

From Student Housing To Mixed-use

Yanzhen Wu (Wendy) 5584981
Architecture Engineering
Tutors:
Thomas Offermans
Paddy Tomesen
Gilbert Koskamp
Christien Janssen

SITE LOCATION



Heertjeslaan, TU Delft Campus South (Google Earth)

SITE ANALYSIS - PROGRAM

CURRENT (PHASE 1)

FUTURE (PHASE 2)

- Housing
- Research & Companies
- Education & Research
- Public Service & Entertainment
- Infrustructure

SITE ANALYSIS - GREENERY & WATER

CURRENT (PHASE 1)

FUTURE (PHASE 2)

Buildings

Water

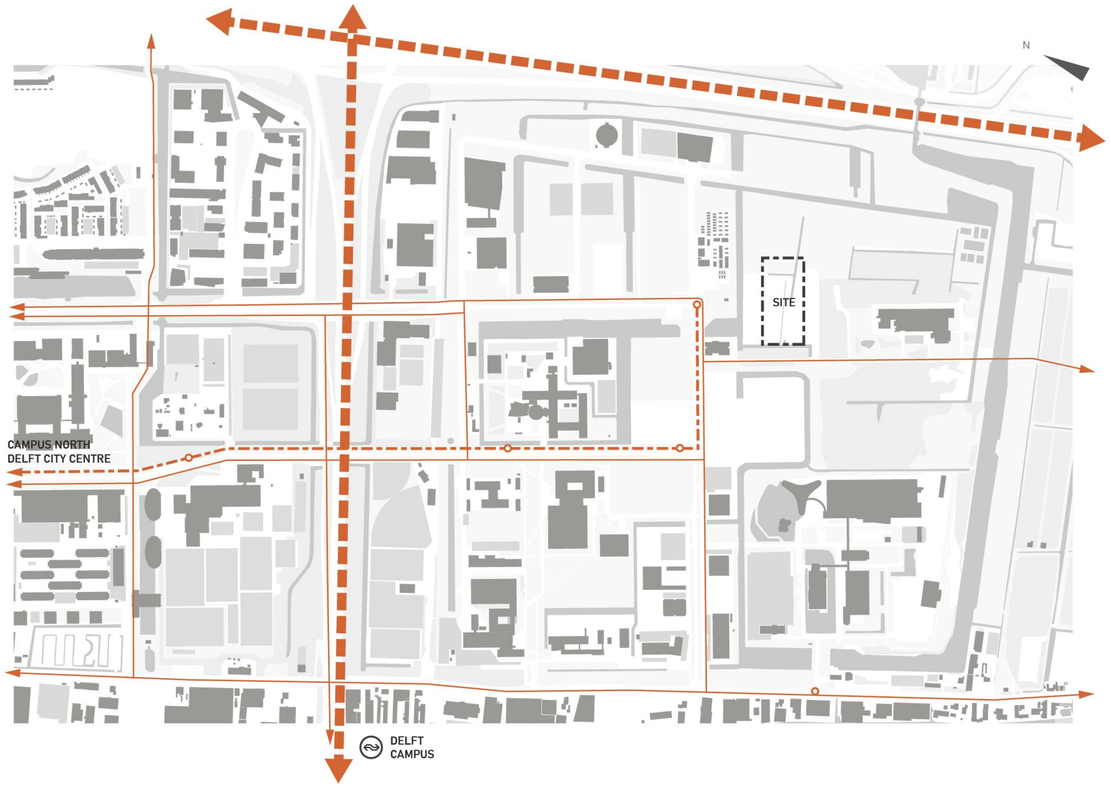
Grassland

Greenery

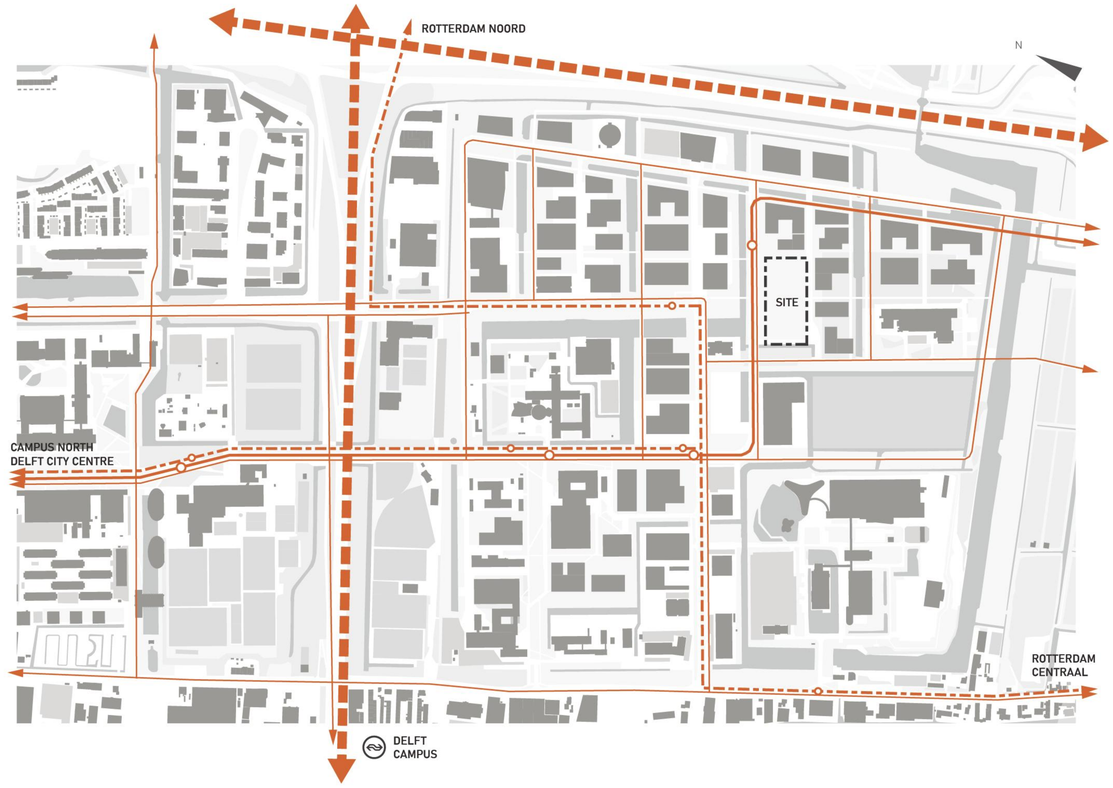
Sport Fields

SITE ANALYSIS - TRANSPORTATION

CURRENT (PHASE 1)



FUTURE (PHASE 2)



Bicycle Lanes

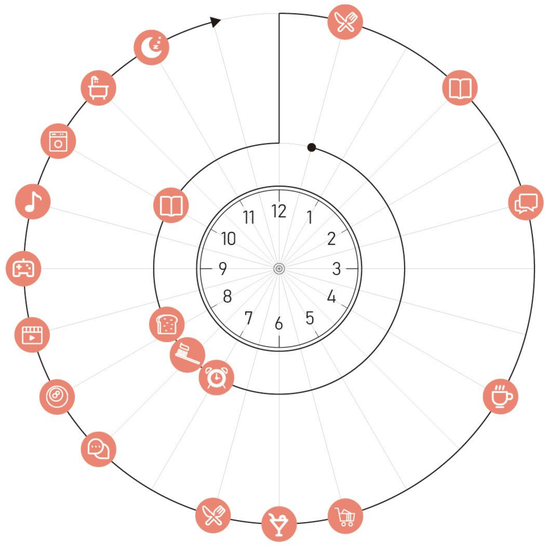
Highway

Bus Lines

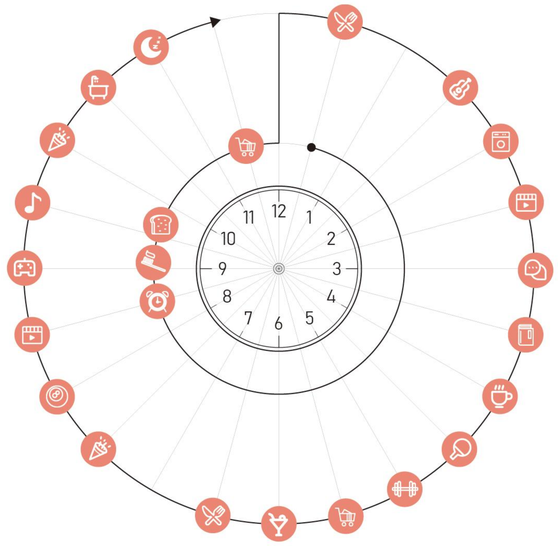
Tram Lines

OCCUPANT & DEMANDS ANALYSIS

CURRENT (PHASE 1)

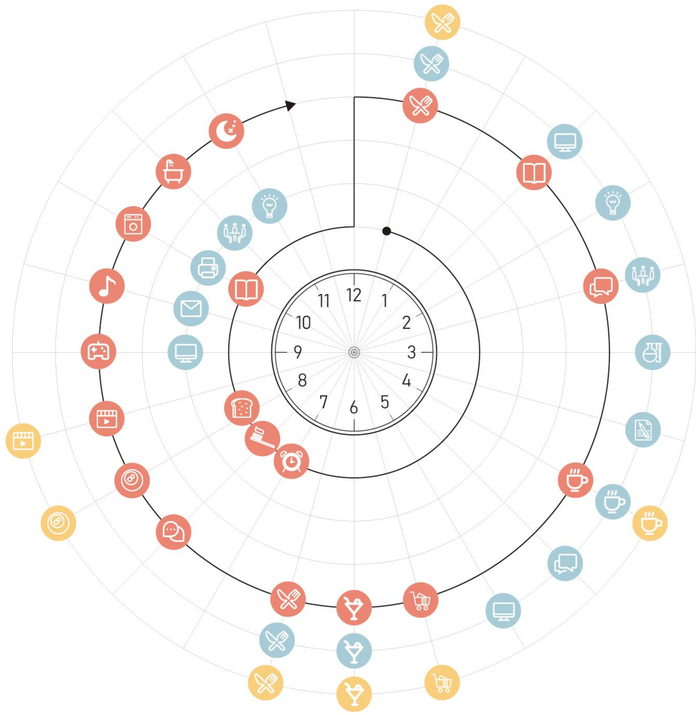


WORKDAY

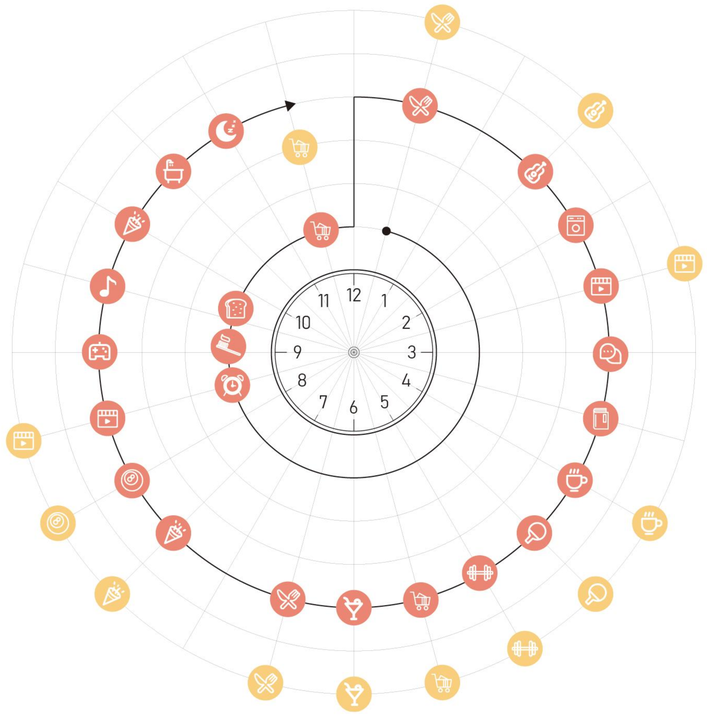


WEEKEND

FUTURE (PHASE 2)



WORKDAY



WEEKEND

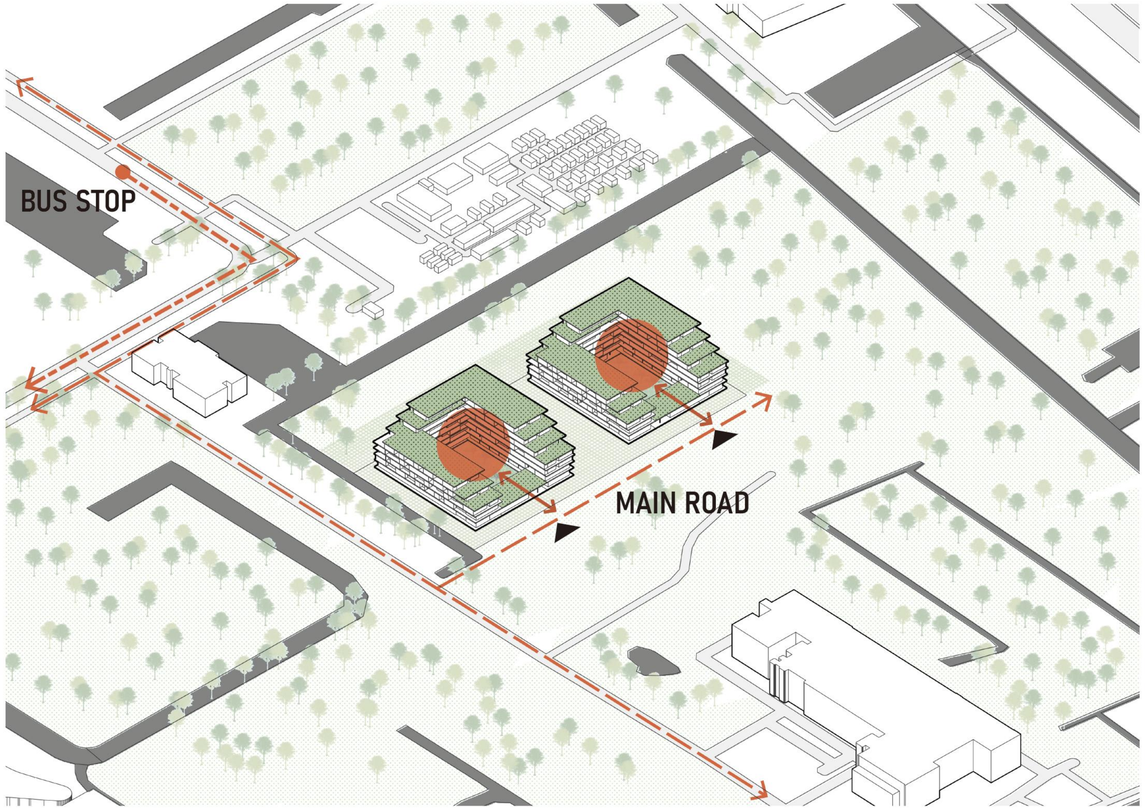
Students

Employees

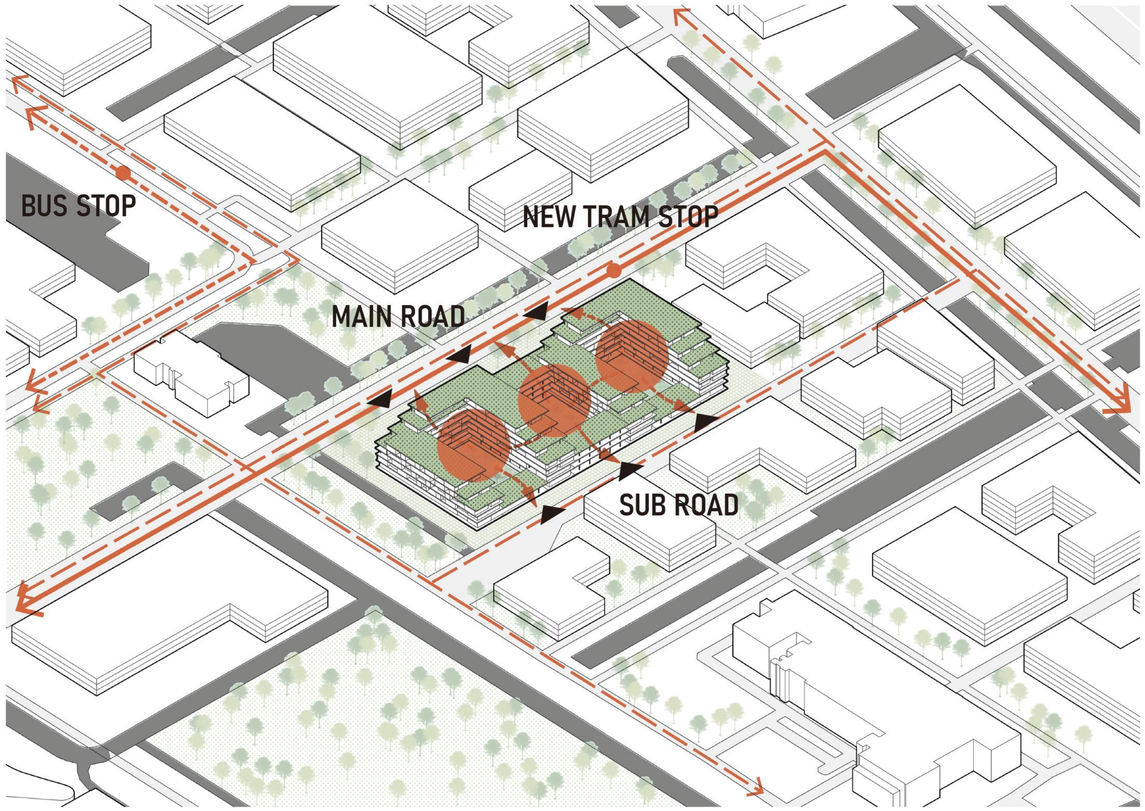
Publics

PROJECT PLANNING - CIRCULATION

CURRENT (PHASE 1)



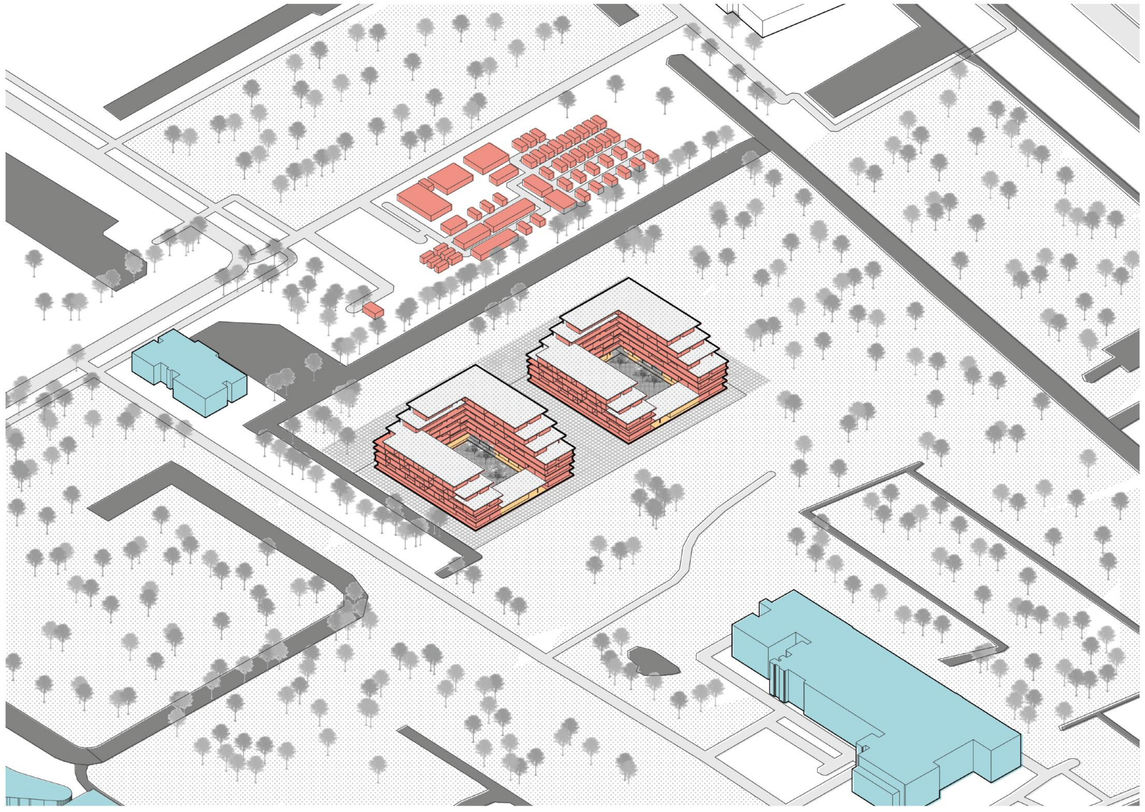
FUTURE (PHASE 2)

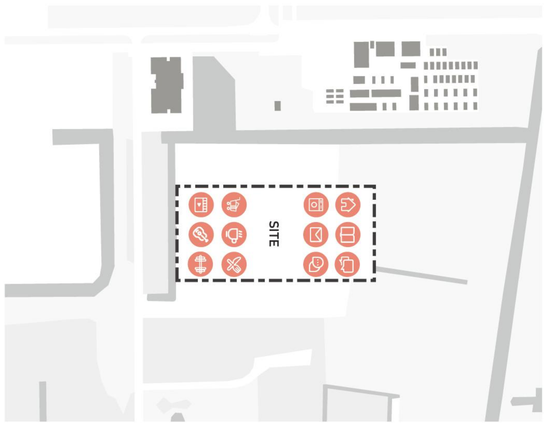


Circulation
Courtyard
Entrance
Bus Line
Tram Line
Bicycle Lane

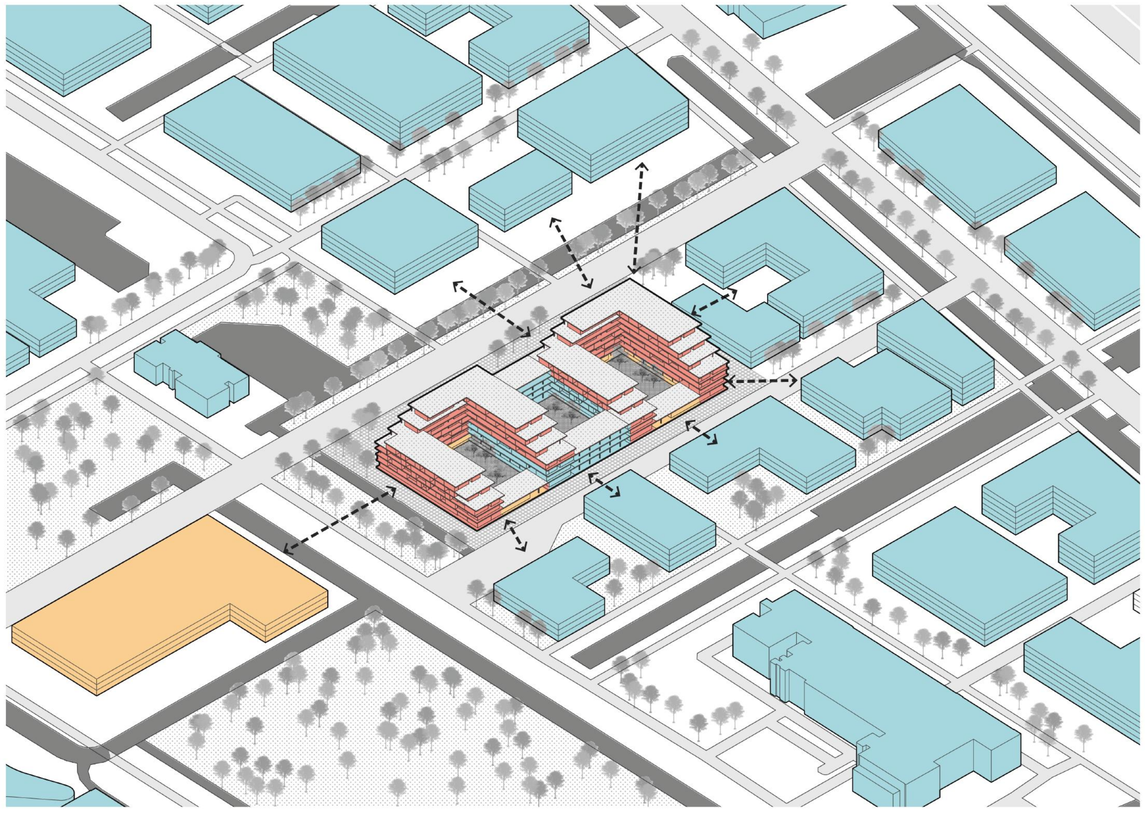
PROJECT PLANNING - PROGRAM

CURRENT (PHASE 1)





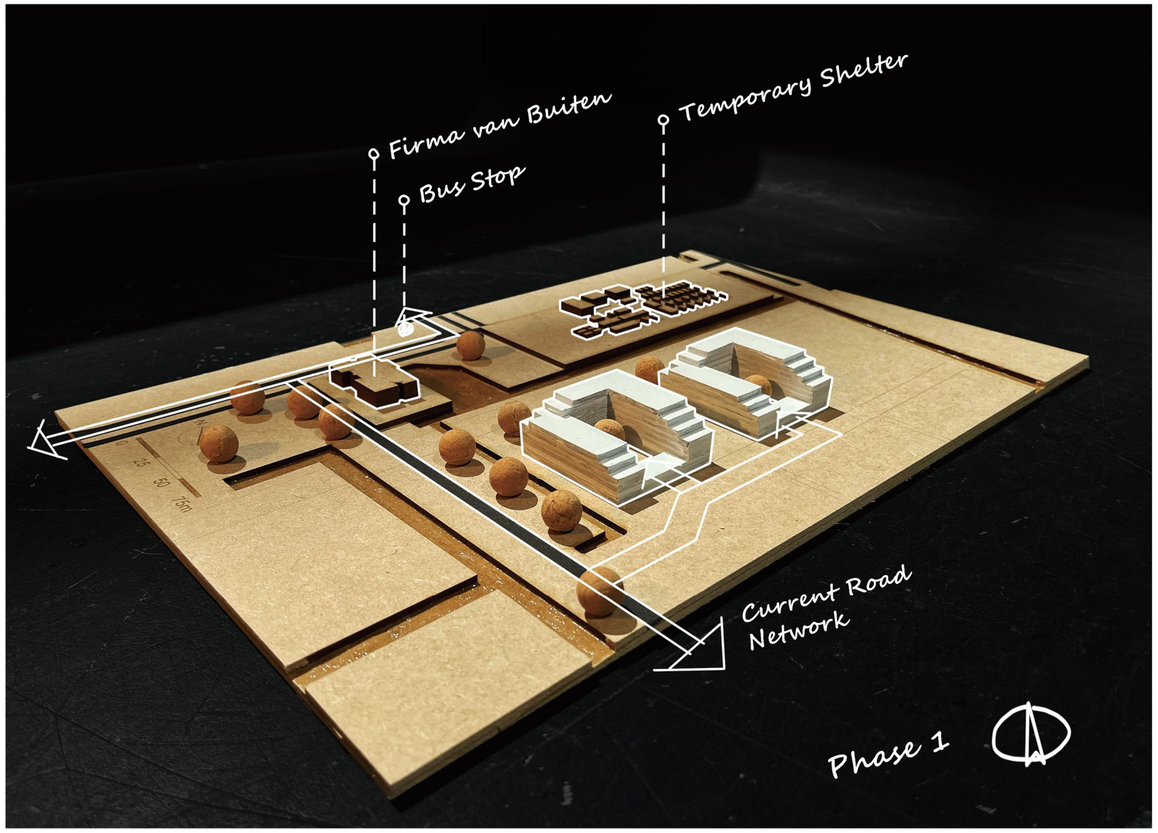
FUTURE (PHASE 2)



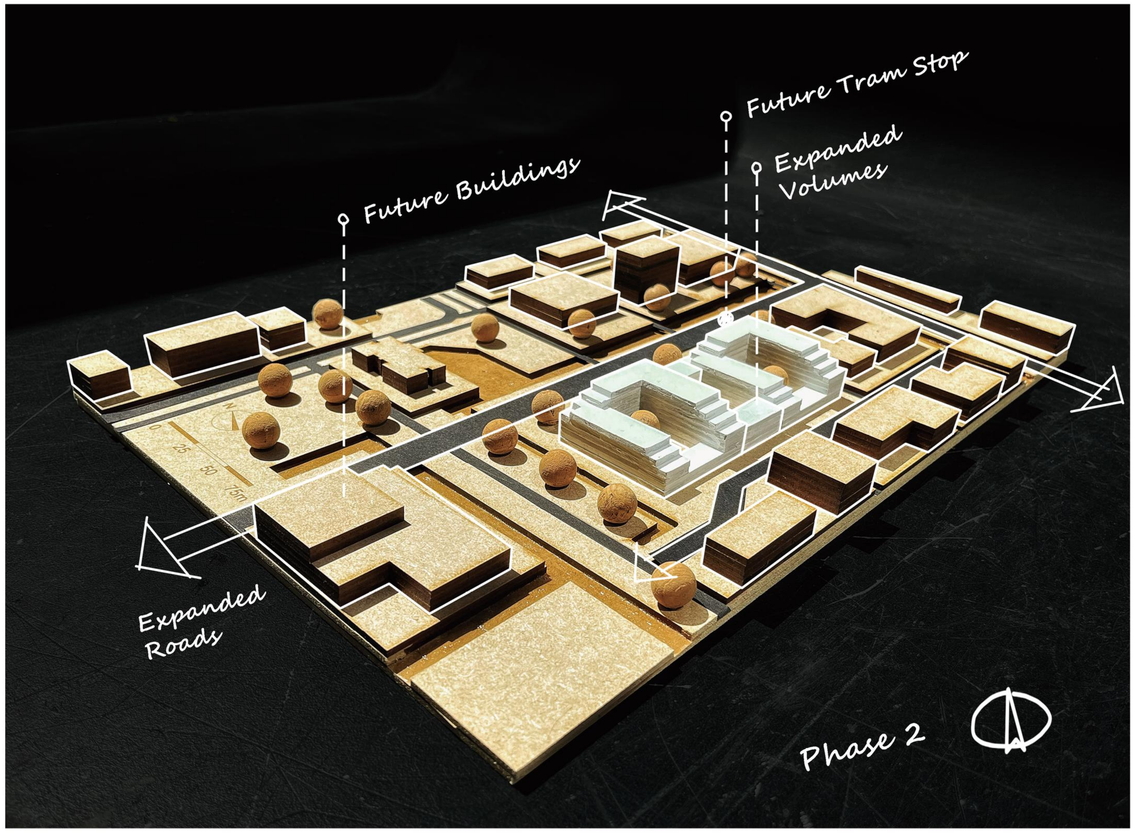
- Housing
- Research & Companies
- Public Service & Entertainment

SITE MODEL

CURRENT (PHASE 1)



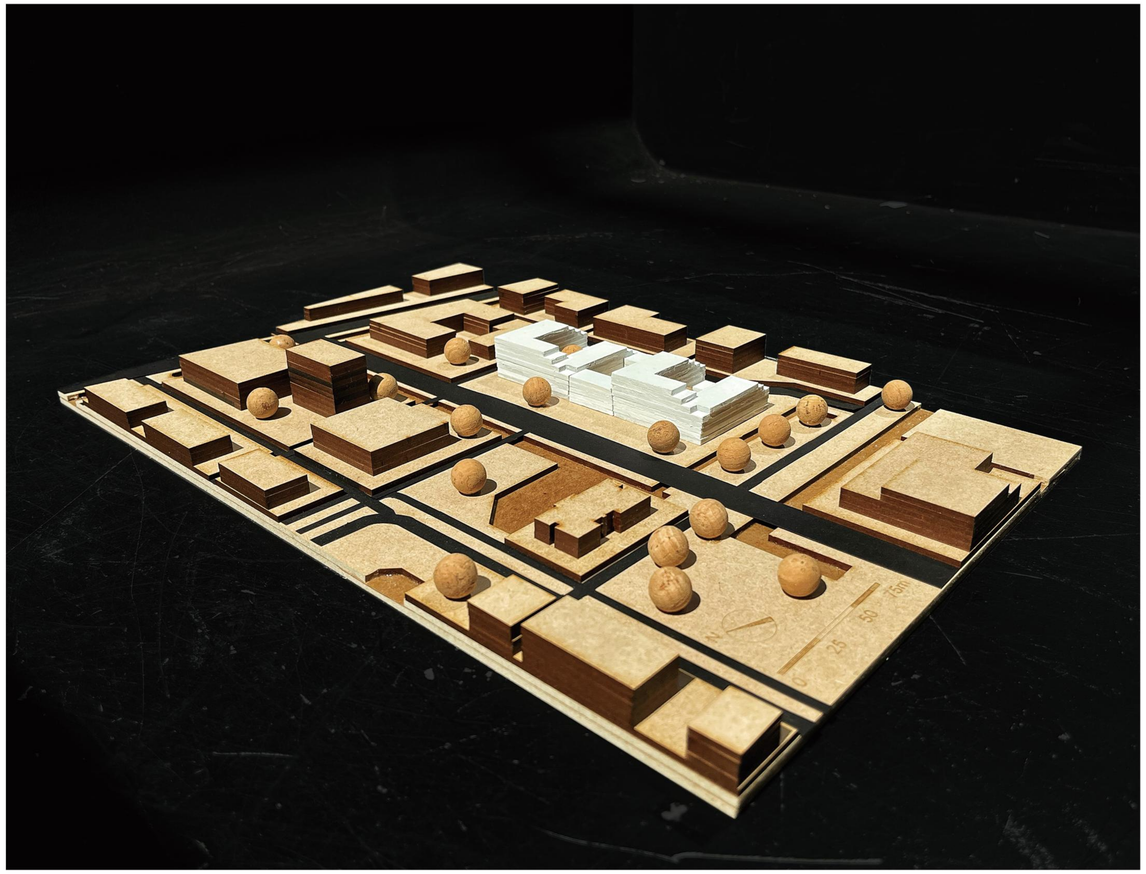
FUTURE (PHASE 2)



SITE MODEL

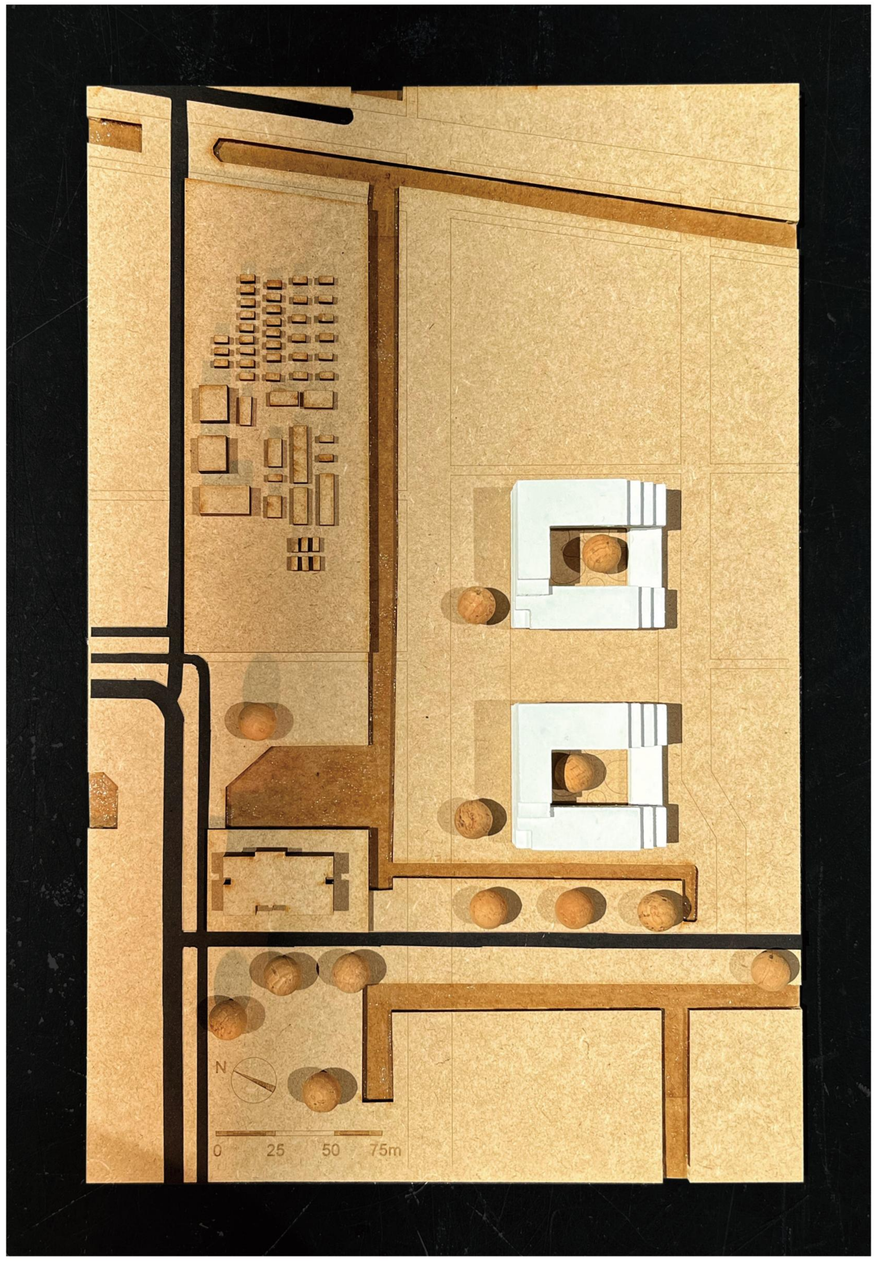
CURRENT (PHASE 1)

FUTURE (PHASE 2)



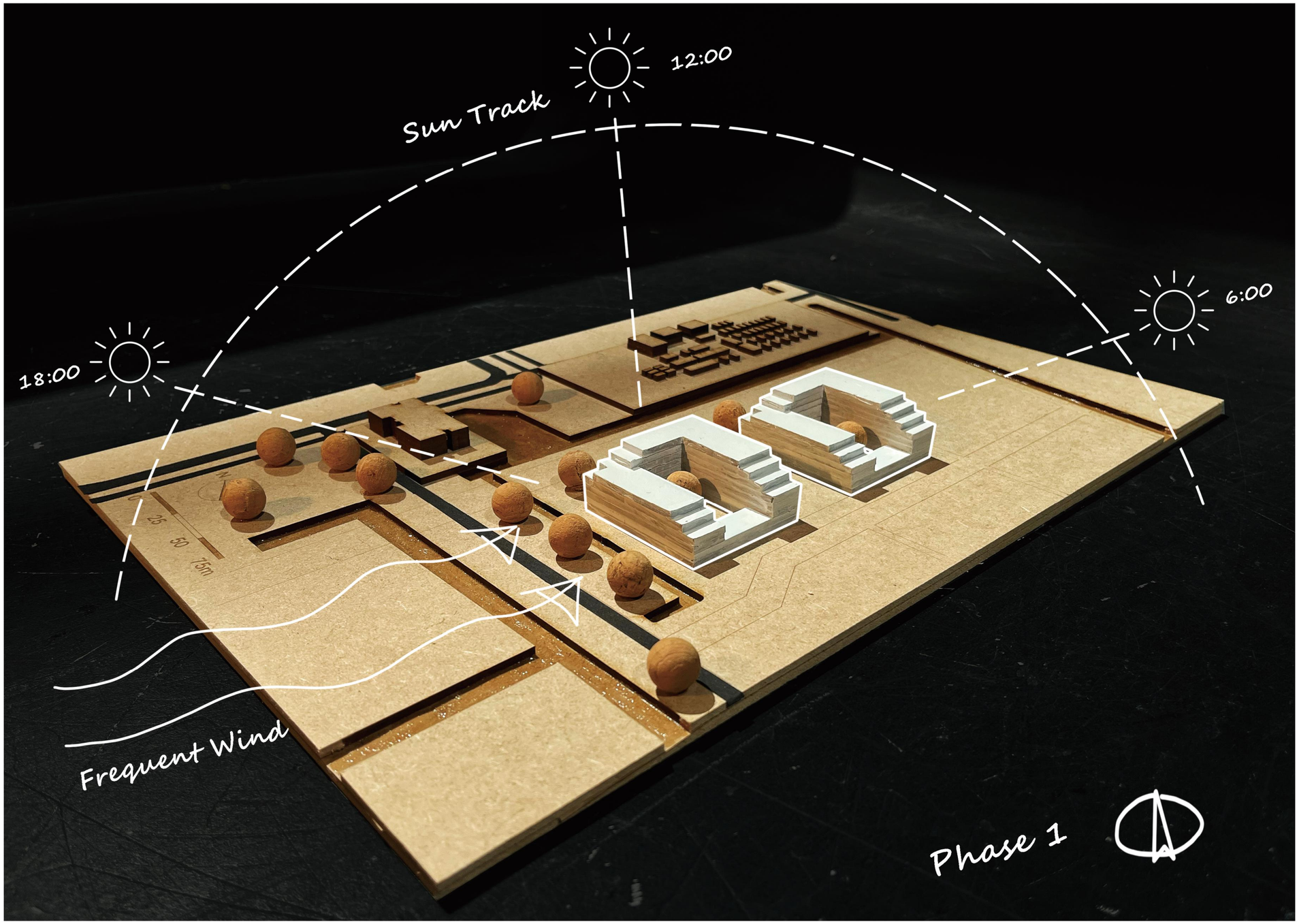
SITE MODEL

CURRENT (PHASE 1)



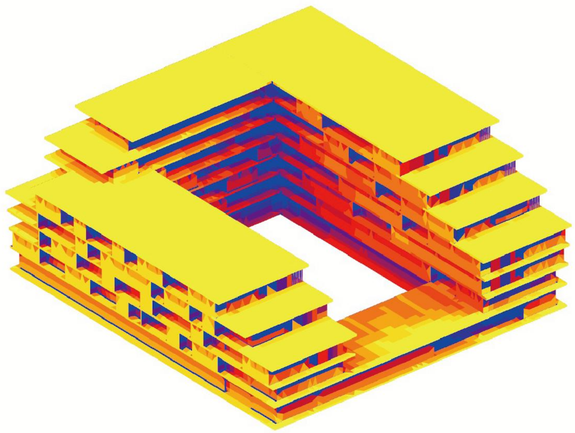
FUTURE (PHASE 2)

CLIMATE CONSIDERATION

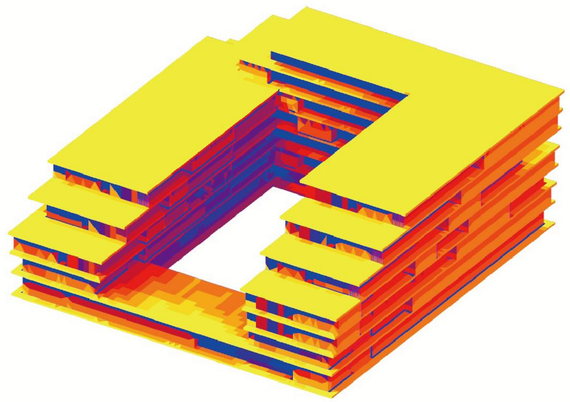


SUNLIGHT ANALYSIS - SUN HOUR

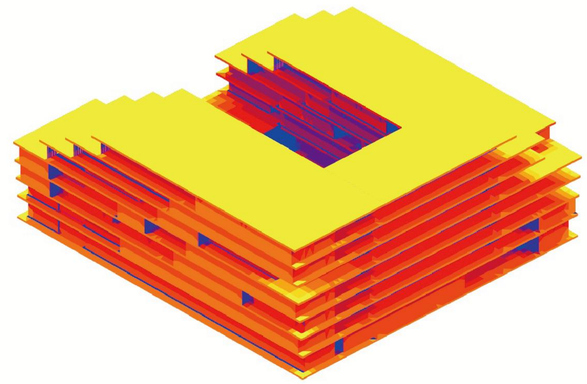
SUMMER SOLSTICE



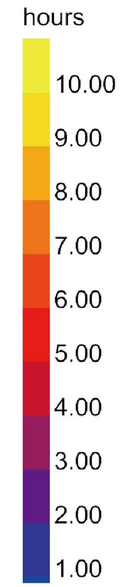
SOUNTH-WEST



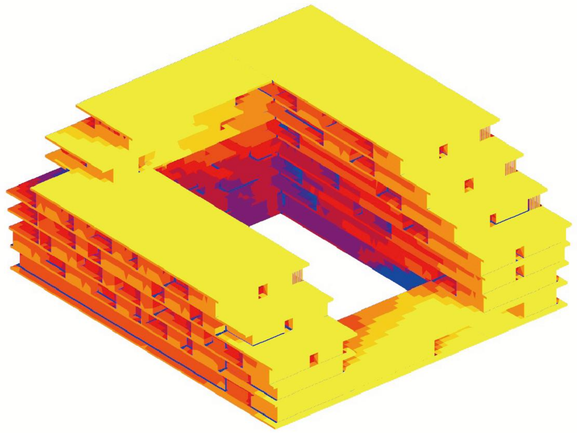
SOUNTH-EAST



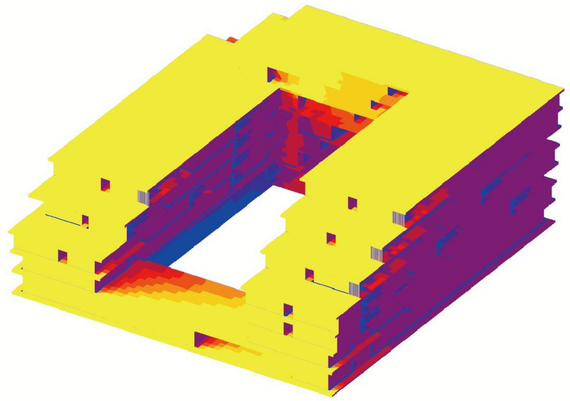
NORTH-EAST



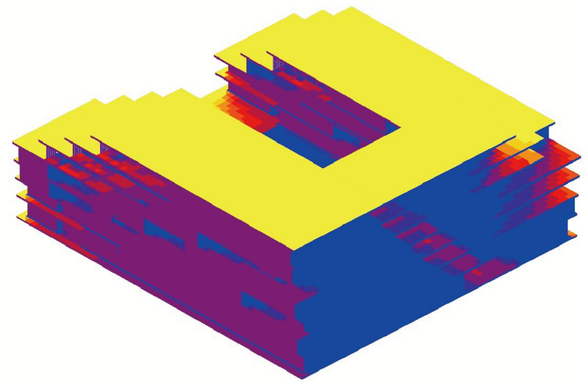
WINTER SOLSTICE



SOUNTH-WEST



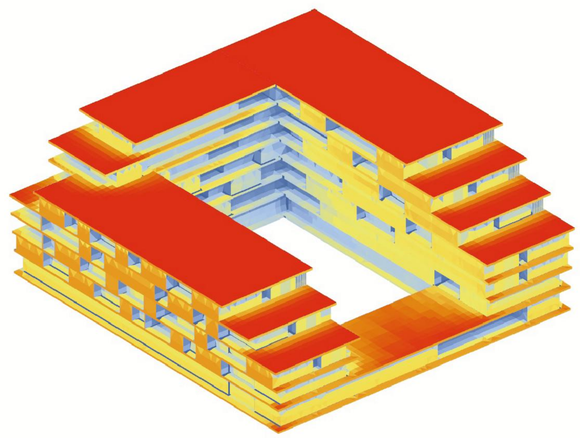
SOUNTH-EAST



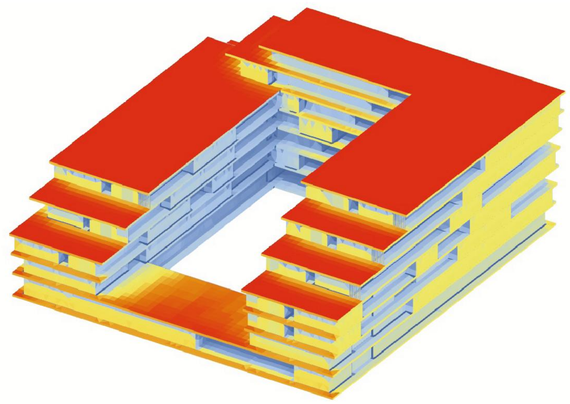
NORTH-EAST

SUNLIGHT ANALYSIS - RADIATION

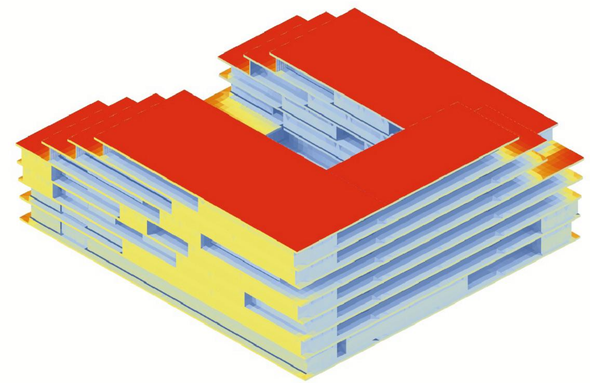
SUMMER SOLSTICE



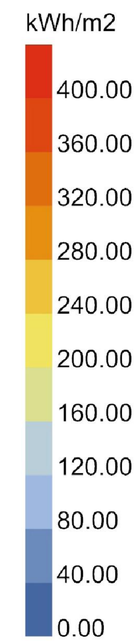
SOUNTH-WEST



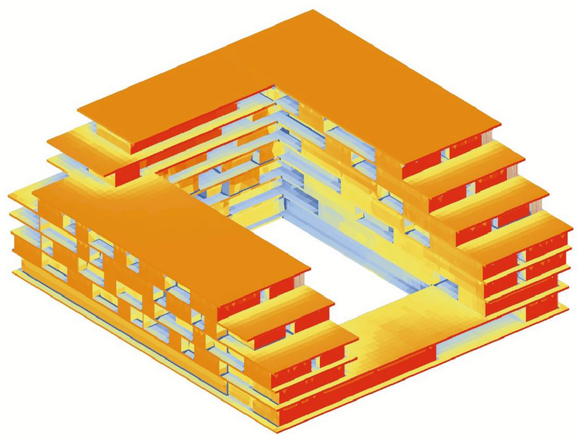
SOUNTH-EAST



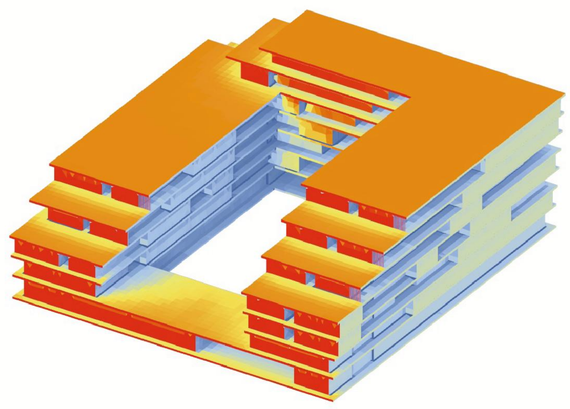
NORTH-EAST



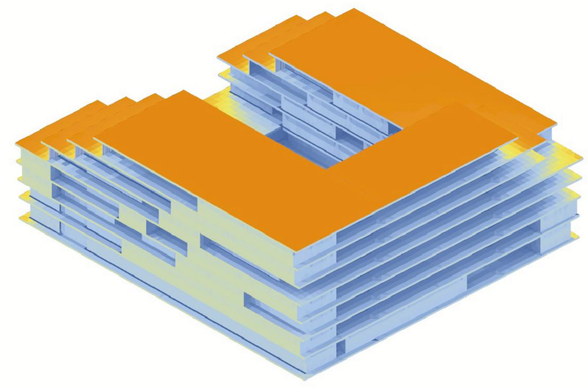
WINTER SOLSTICE



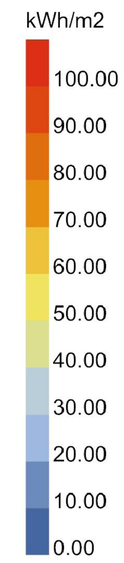
SOUNTH-WEST



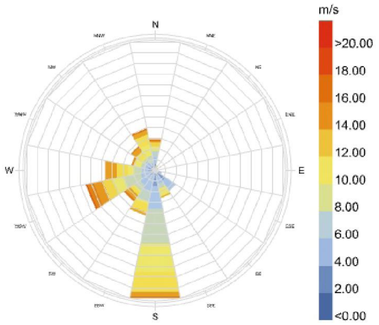
SOUNTH-EAST



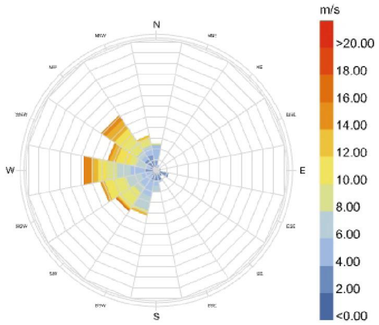
NORTH-EAST



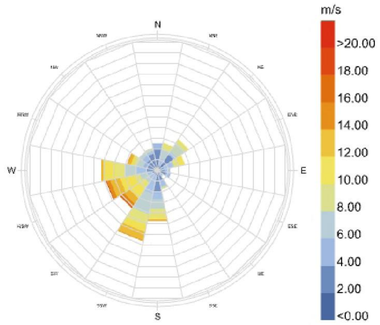
WIND ANALYSIS



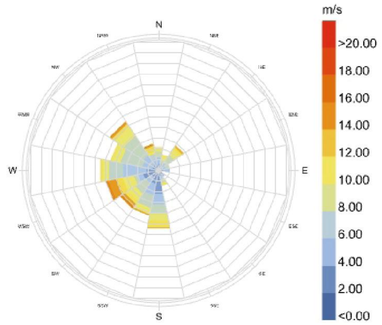
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 1/1 to 1/31 between 0 and 23 @1
Calm for 0.0% of the time = 0 hours.
Each closed polyline shows frequency of 2.0% = 15 hours.



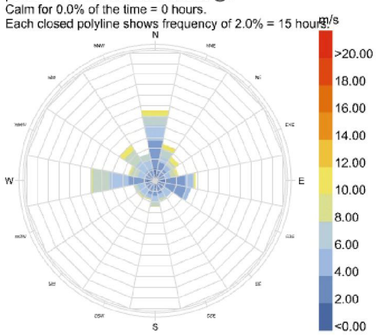
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 2/1 to 2/28 between 0 and 23 @1
Calm for 1.64% of the time = 11 hours.
Each closed polyline shows frequency of 2.3% = 15 hours.



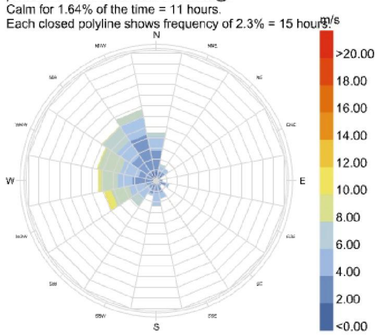
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 3/1 to 3/31 between 0 and 23 @1
Calm for 1.34% of the time = 10 hours.
Each closed polyline shows frequency of 2.0% = 15 hours.



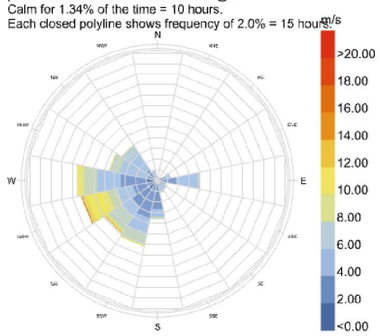
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 4/1 to 4/30 between 0 and 23 @1
Calm for 0.14% of the time = 1 hours.
Each closed polyline shows frequency of 2.1% = 15 hours.



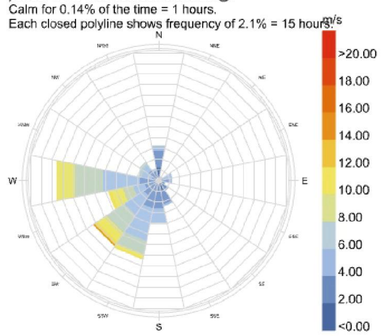
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 5/1 to 5/31 between 0 and 23 @1
Calm for 0.27% of the time = 2 hours.
Each closed polyline shows frequency of 2.0% = 15 hours.



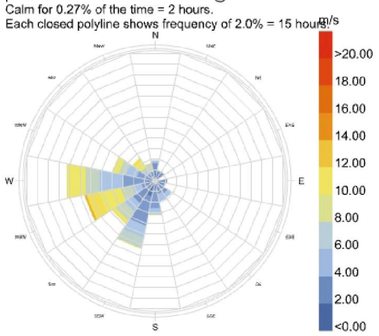
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 6/1 to 6/30 between 0 and 23 @1
Calm for 0.56% of the time = 4 hours.
Each closed polyline shows frequency of 2.1% = 15 hours.



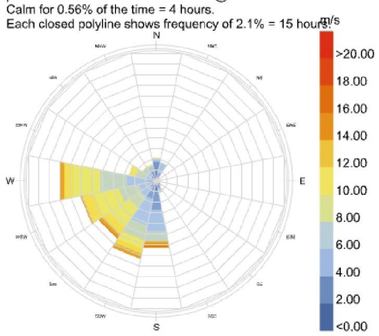
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 7/1 to 7/31 between 0 and 23 @1
Calm for 0.0% of the time = 0 hours.
Each closed polyline shows frequency of 2.0% = 15 hours.



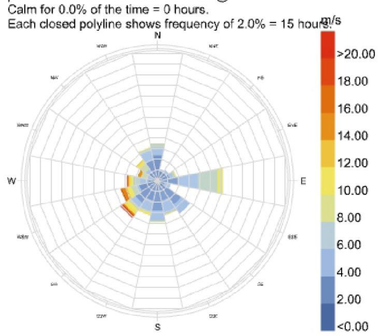
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 8/1 to 8/31 between 0 and 23 @1
Calm for 0.4% of the time = 3 hours.
Each closed polyline shows frequency of 2.0% = 15 hours.



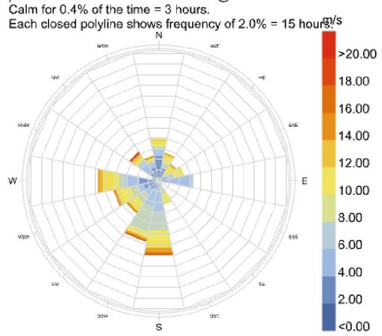
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 9/1 to 9/30 between 0 and 23 @1
Calm for 0.69% of the time = 5 hours.
Each closed polyline shows frequency of 2.1% = 15 hours.



Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 10/1 to 10/31 between 0 and 23 @1
Calm for 1.21% of the time = 9 hours.
Each closed polyline shows frequency of 2.0% = 15 hours.



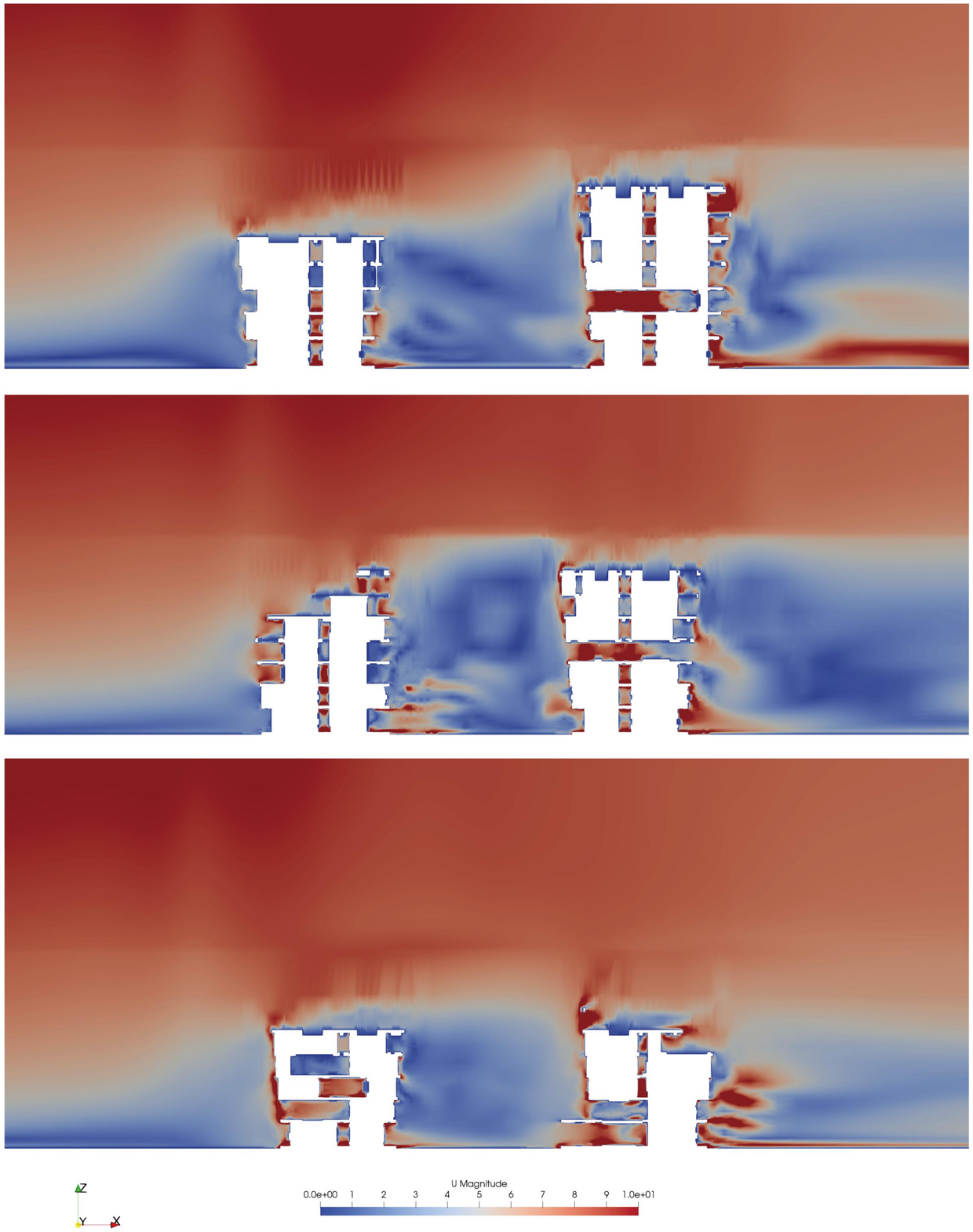
Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 11/1 to 11/30 between 0 and 23 @1
Calm for 1.81% of the time = 13 hours.
Each closed polyline shows frequency of 2.1% = 15 hours.



Wind Speed (m/s)
city: AMSTERDAM
country: NLD
time-zone: 1.0
source: IWEC Data
period: 12/1 to 12/31 between 0 and 23 @1
Calm for 0.0% of the time = 0 hours.
Each closed polyline shows frequency of 2.0% = 15 hours.

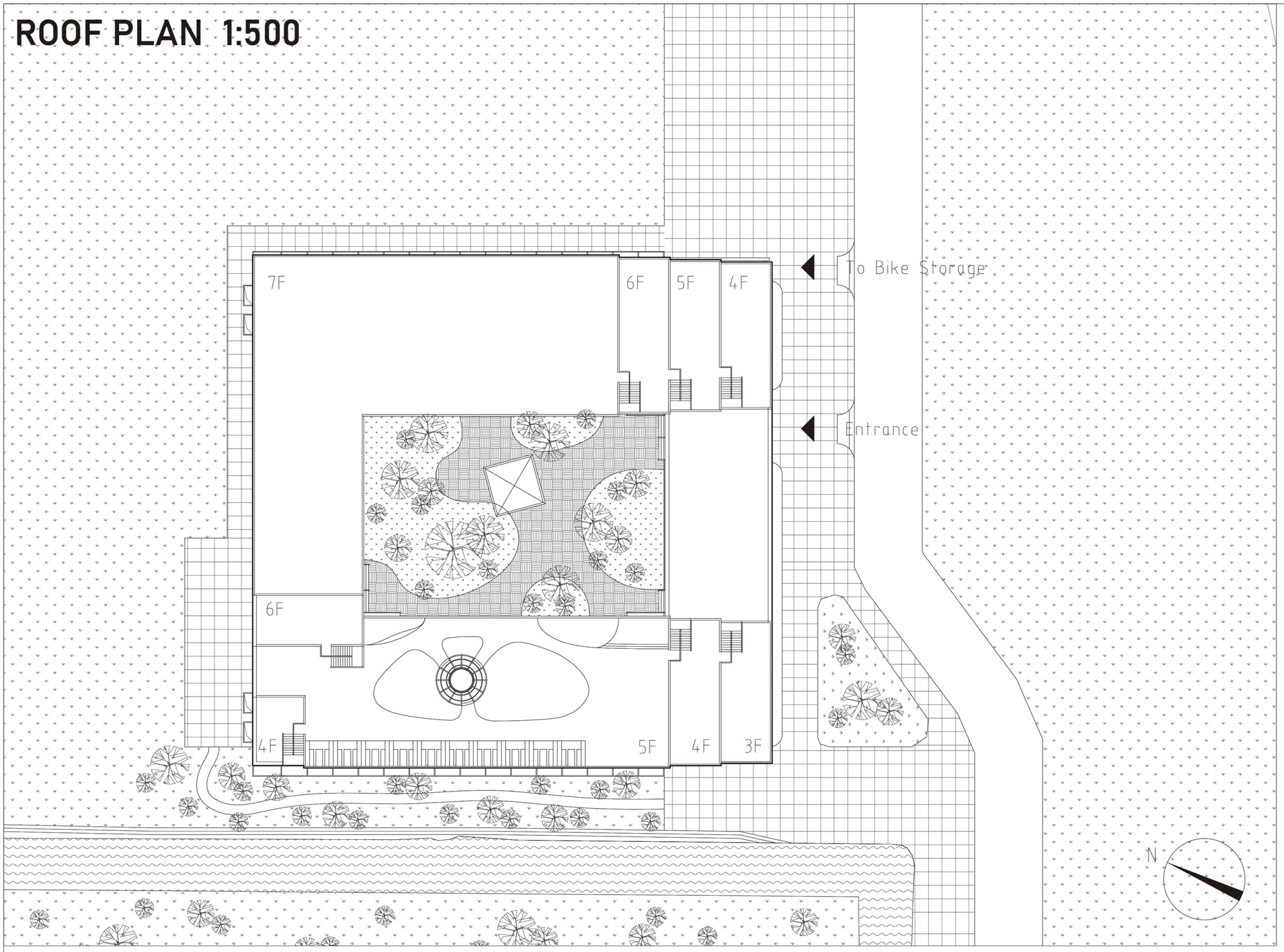
WIND DATA IN ONE YEAR

WIND ANALYSIS



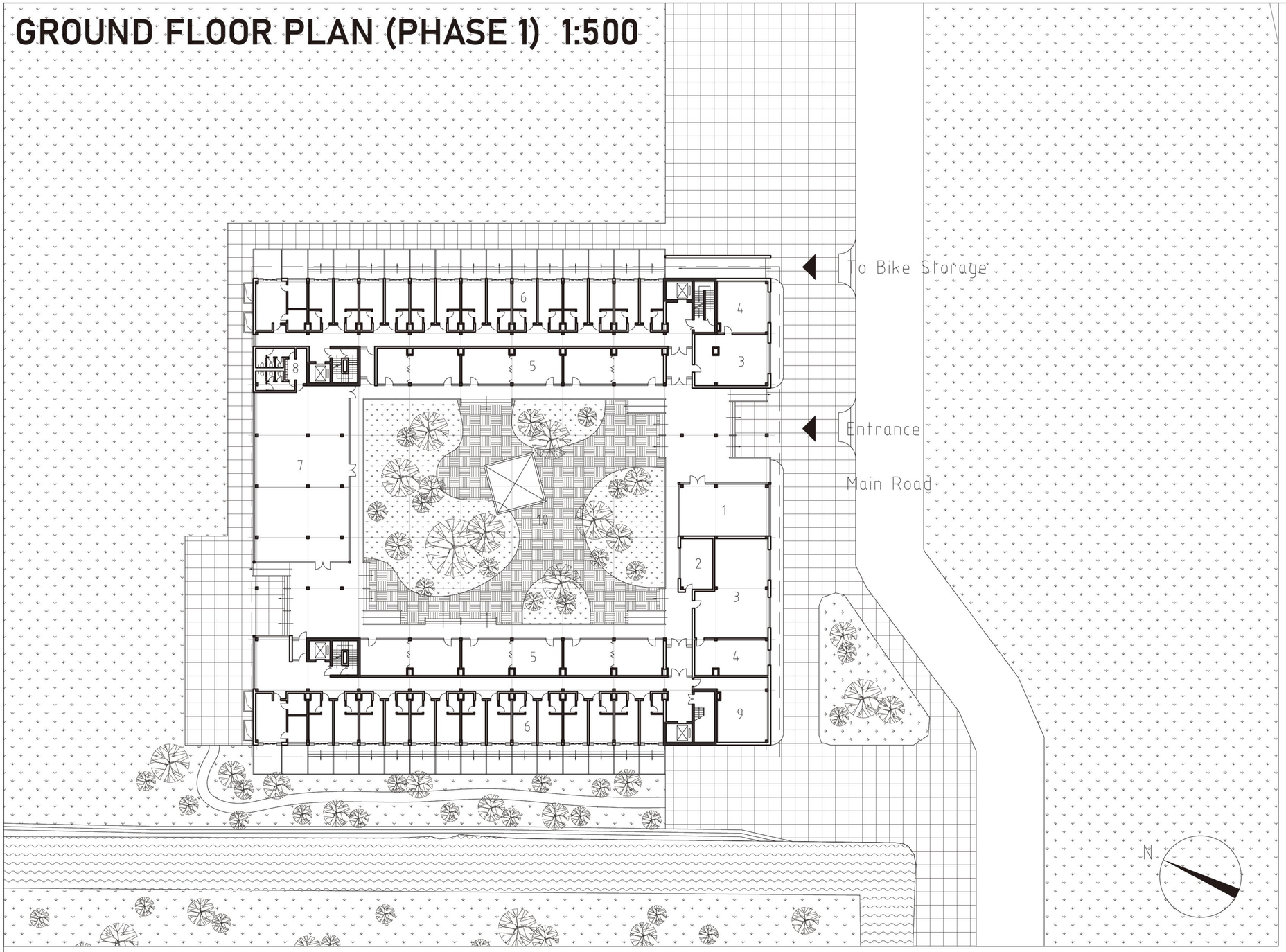
Wind Speed (m/s) Simulation
Location of Data: Amsterdam
Frequent Wind Direction: from west to east
Average Wind Speed: 6m/s

ROOF PLAN 1:500



Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Roof Plan (Phase 1)	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:500	Date	17-May-2023

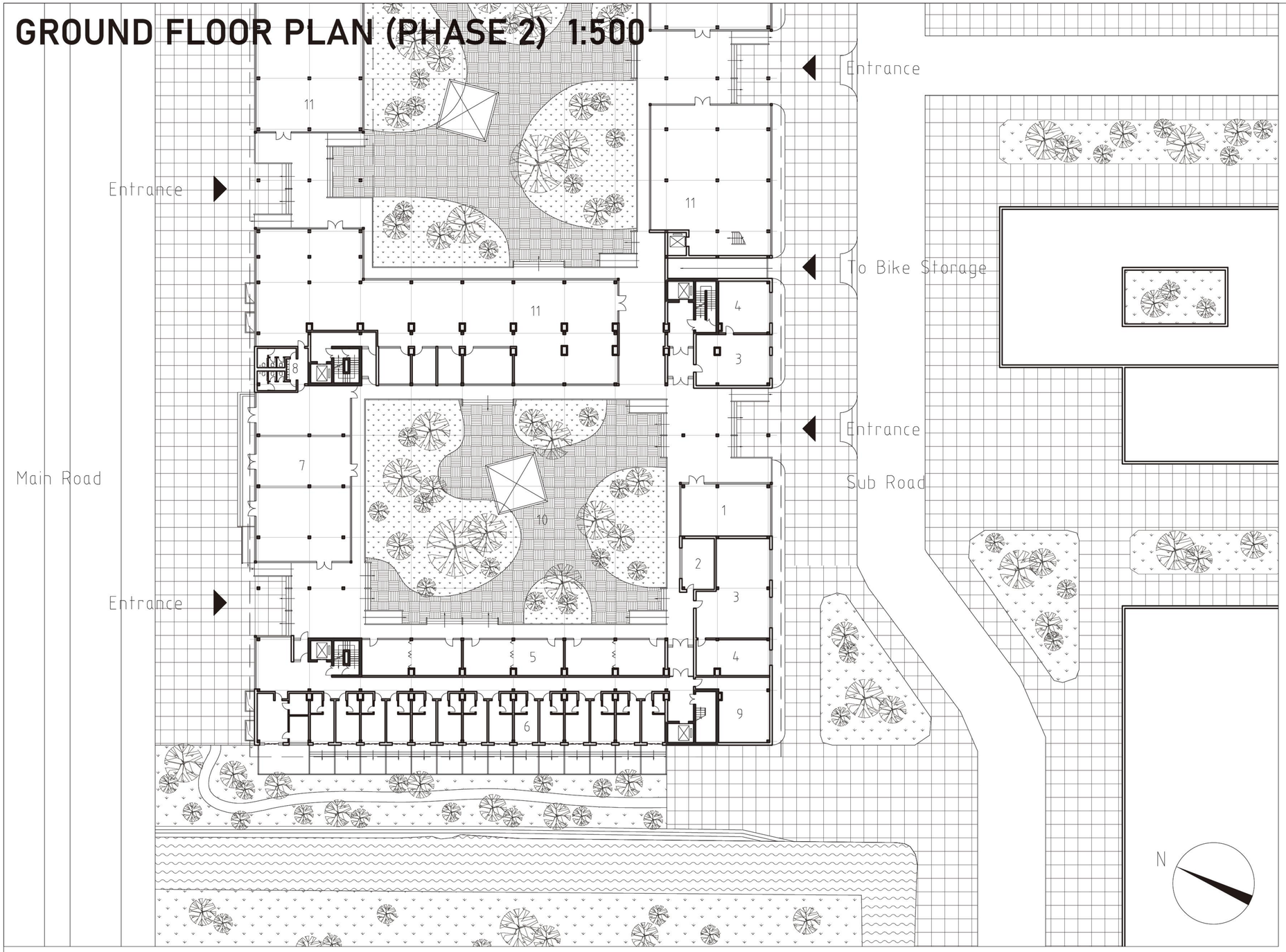
GROUND FLOOR PLAN (PHASE 1) 1:500



1 Cafe
2 Staff Room
3 Mailbox
4 Laundry
5 Self Study, Activity
6 Rooms
7 Gym, Groceries
8 Toilet
9 Mechanical Room
10 Courtyard

Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Ground Floor Plan (Phase 1)	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:500	Date	17-May-2023

GROUND FLOOR PLAN (PHASE 2) 1:500



1 Cafe
2 Staff Room
3 Mailbox
4 Laundry
5 Self Study, Activity
6 Rooms
7 Gym, Groceries, Restaurant
8 Toilet
9 Mechanical Room
10 Courtyard
11 Offices

Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Ground Floor Plan (Phase 1)	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:500	Date	17-May-2023

FIRST FLOOR PLAN 1:300

FIRST FLOOR PLAN 1:300

Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	First Floor Plan	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:300	Date	17-May-2023

SECOND FLOOR PLAN 1:300

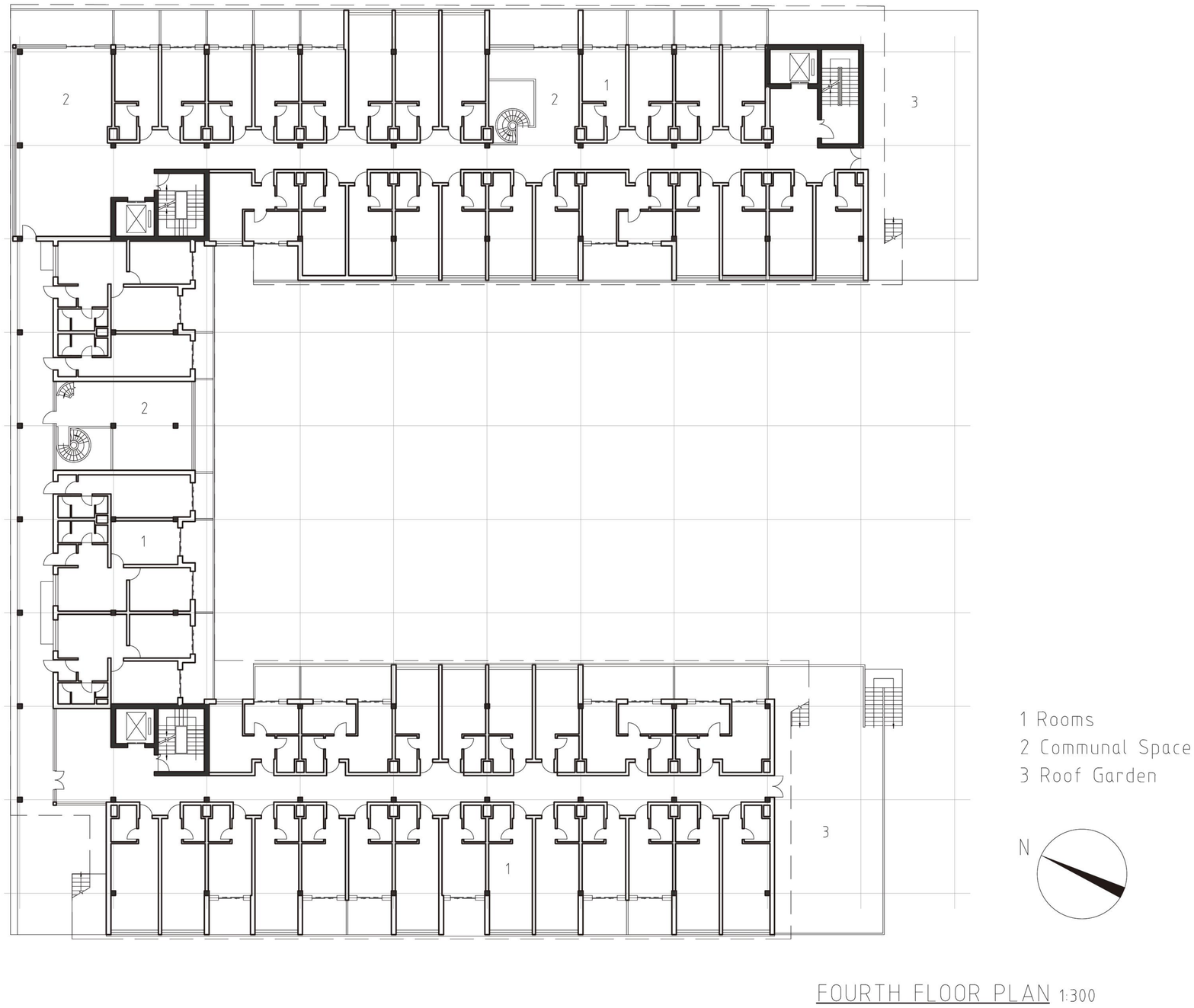
SECOND FLOOR PLAN 1:300

Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Second Floor Plan	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:300	Date	17-May-2023

THIRD FLOOR PLAN 1:300

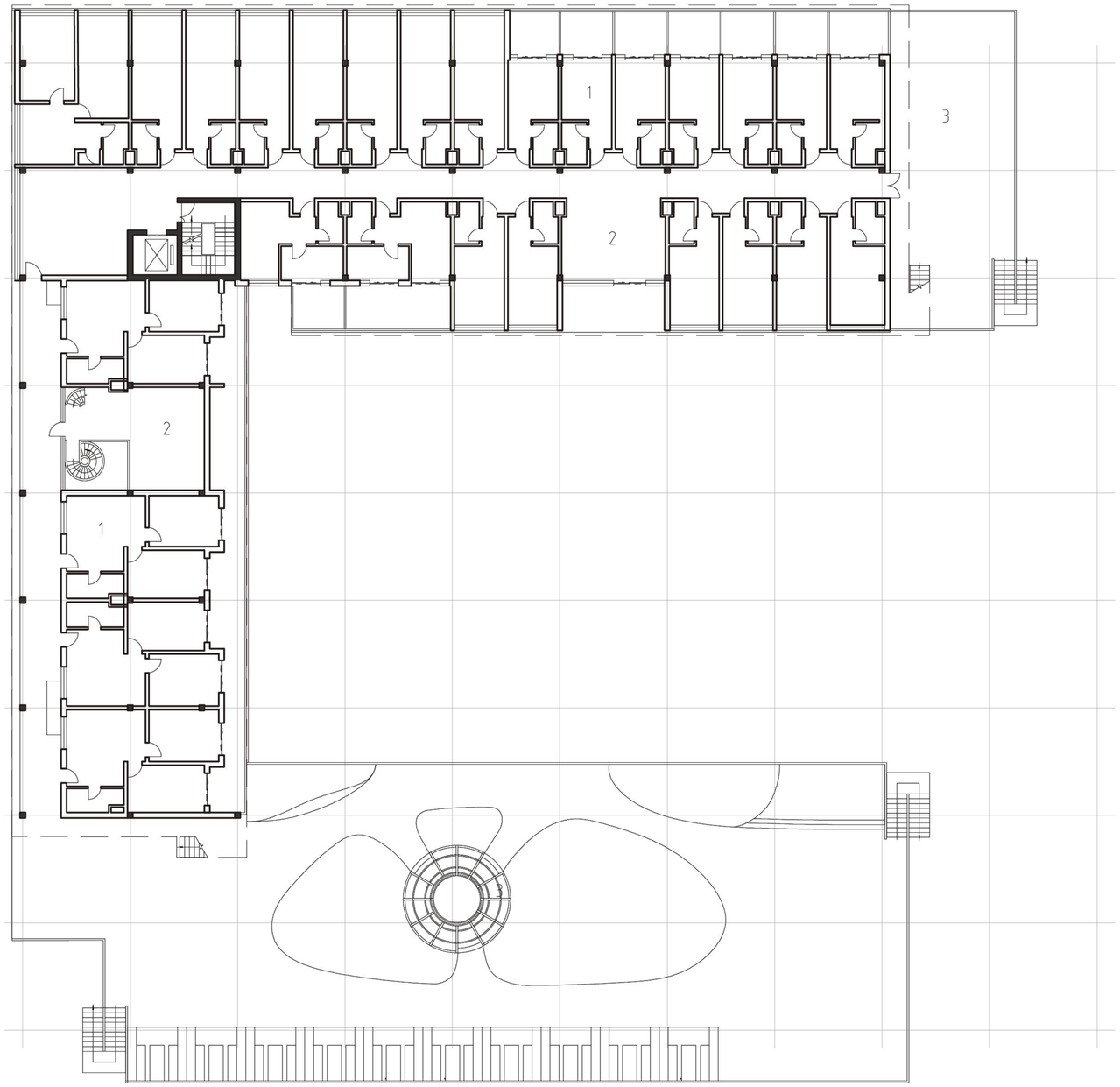
Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Third Floor Plan	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:300	Date	17-May-2023

FOURTH FLOOR PLAN 1:300



Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Fourth Floor Plan	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:300	Date	17-May-2023

FIFTH FLOOR PLAN 1:300



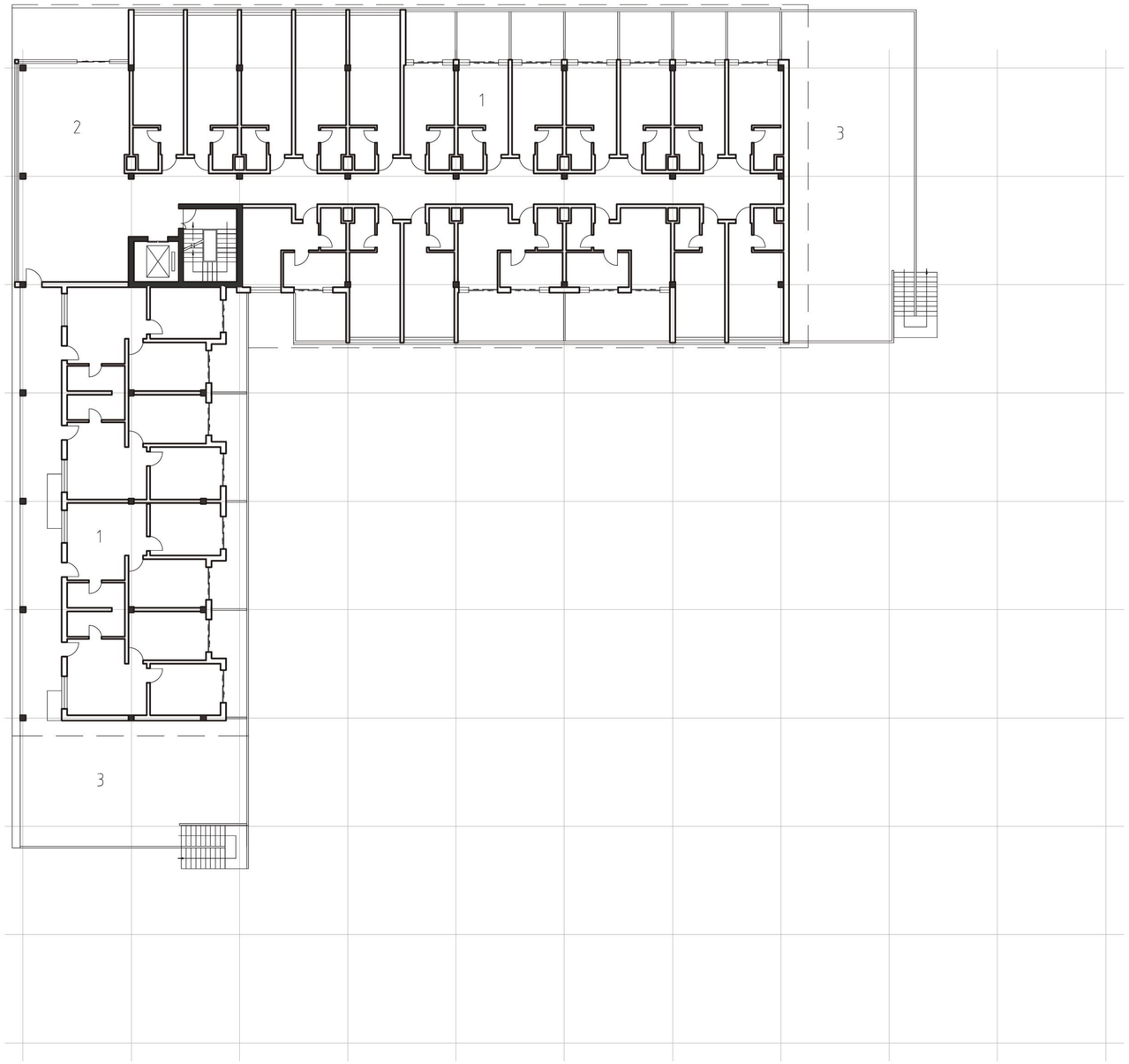
1 Rooms
2 Communal Space
3 Roof Garden

N

FIFTH FLOOR PLAN 1:300

Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Fifth Floor Plan	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:300	Date	17-May-2023

SIXTH FLOOR PLAN 1:300



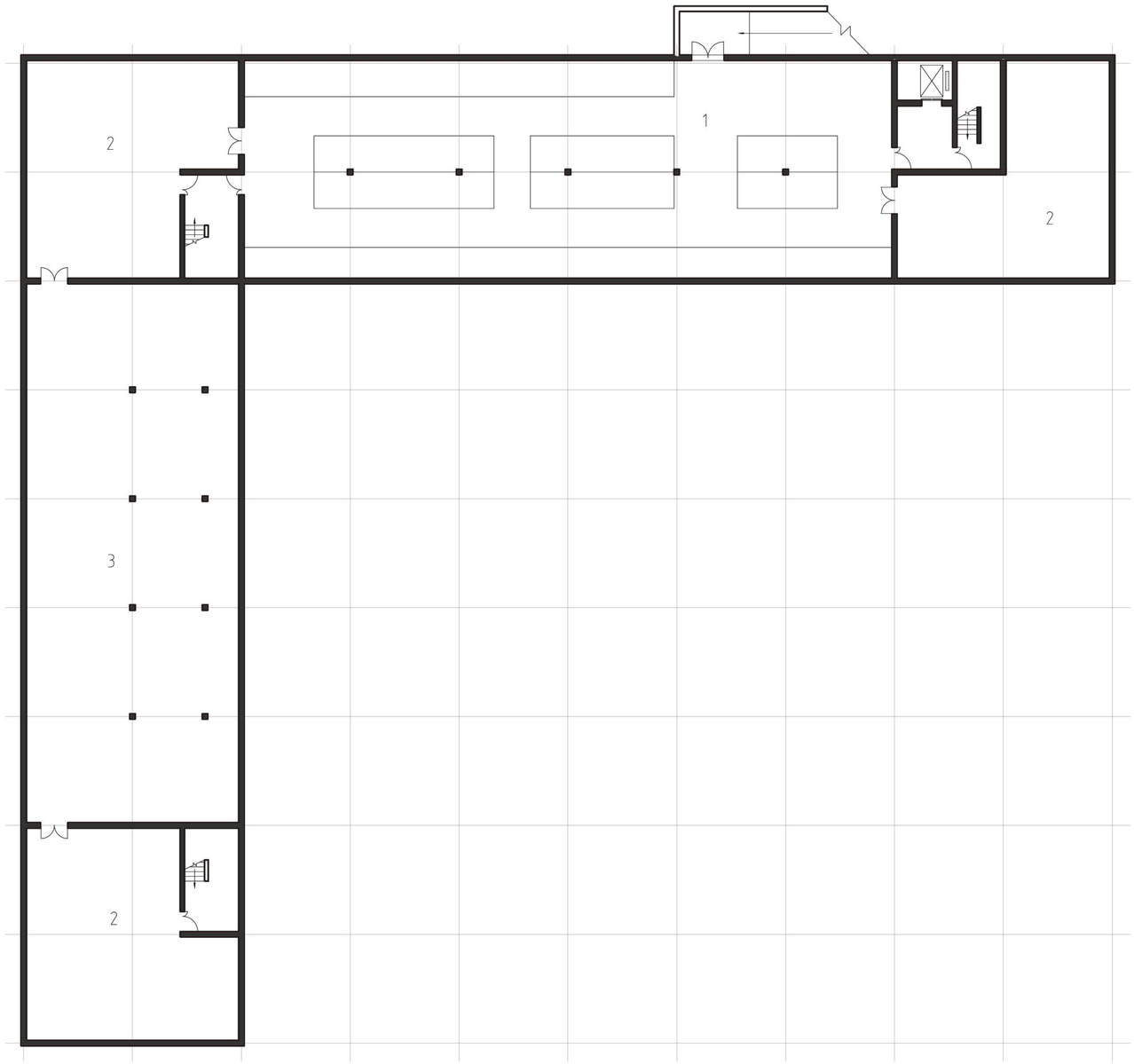
1 Rooms
2 Communal Space
3 Roof Garden

N

SIXTH FLOOR PLAN 1:300

Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Sixth Floor Plan	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:300	Date	17-May-2023

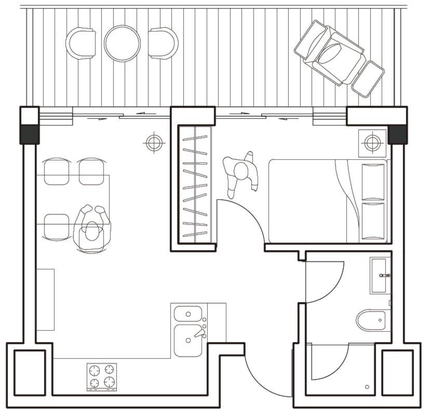
BASEMENT PLAN 1:300

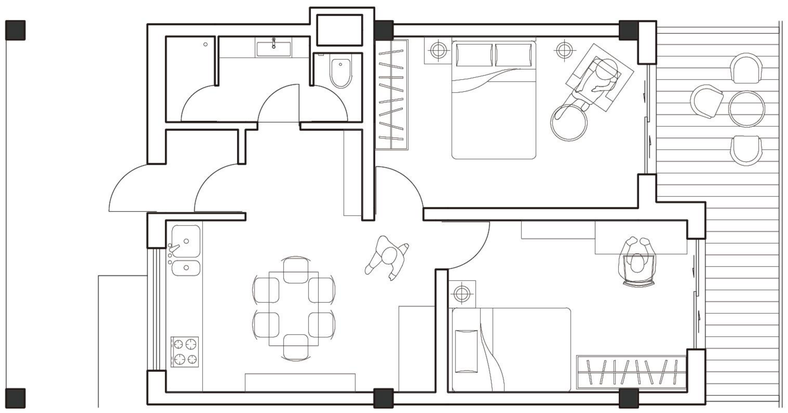


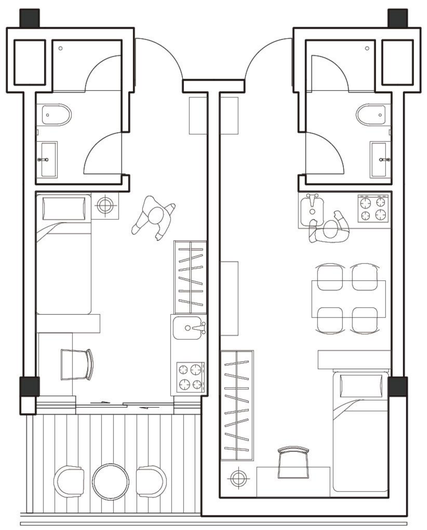
1 Bike Storage
2 Mechanical Room
3 Water Treatment & Storage

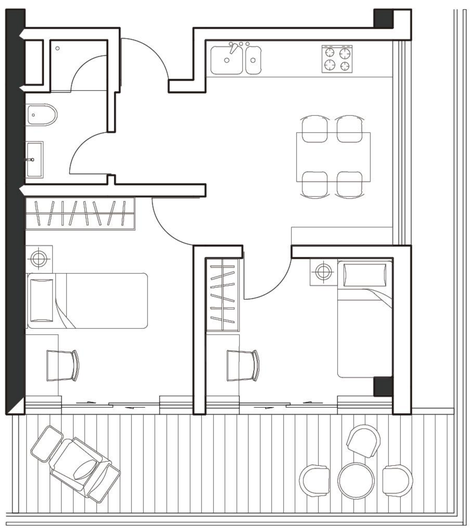
Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Basement Plan	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:300	Date	17-May-2023

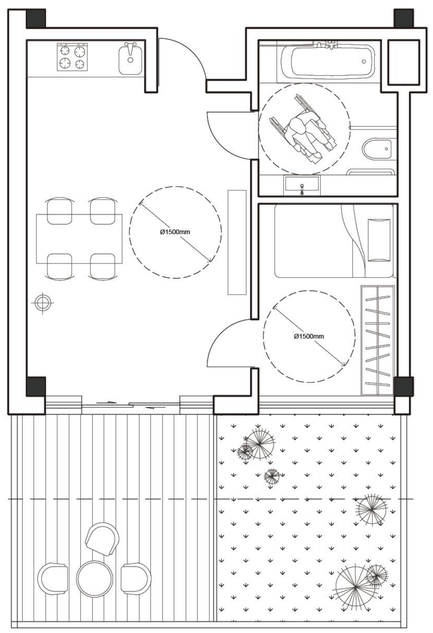
ROOM UNITS 1:100

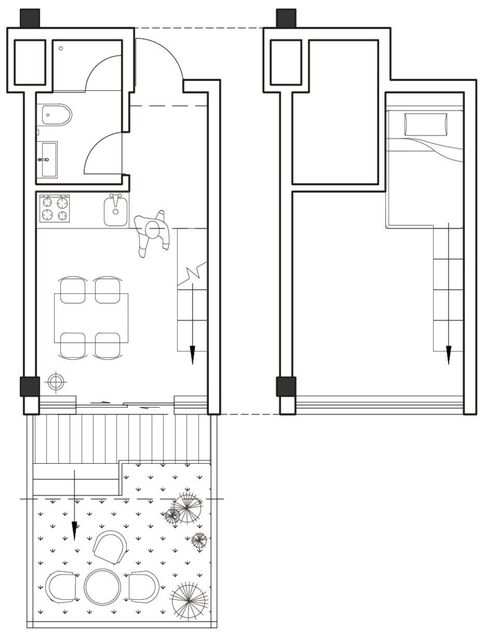






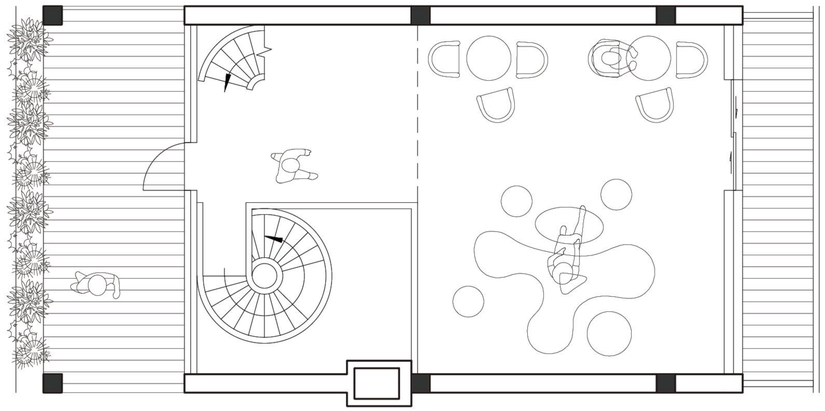


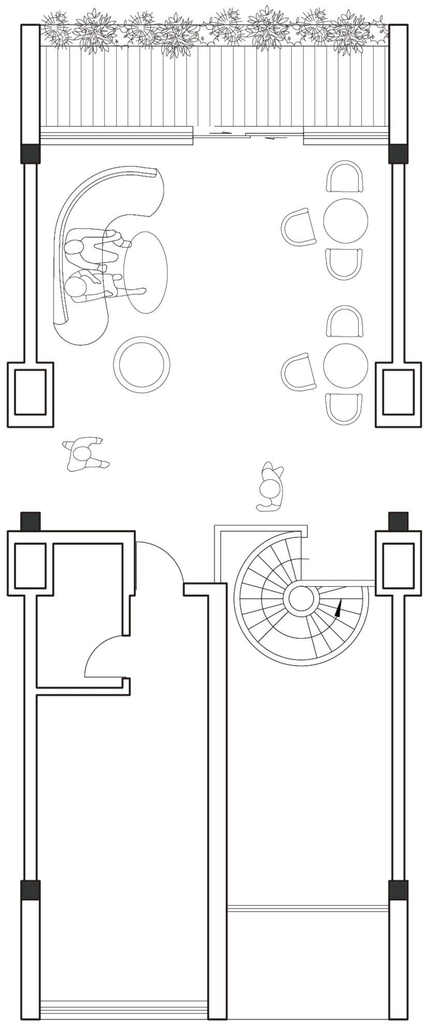


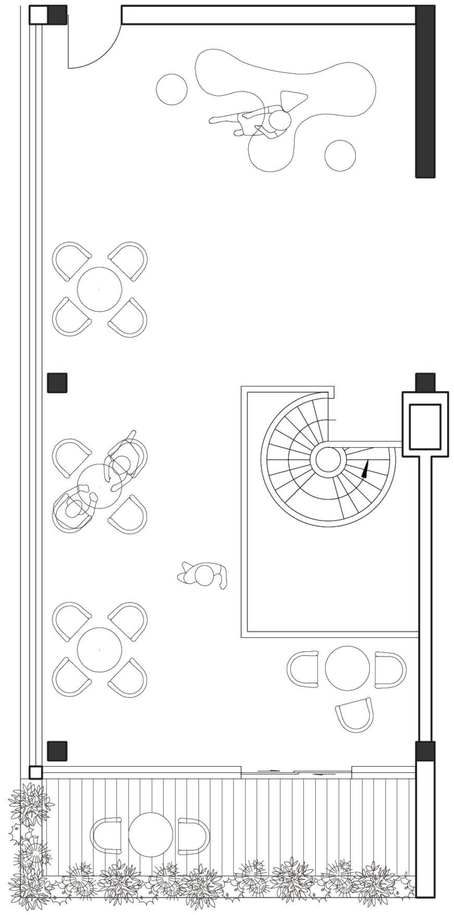


Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Room Units	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:100	Date	17-May-2023

COMMUNAL SPACE 1:100

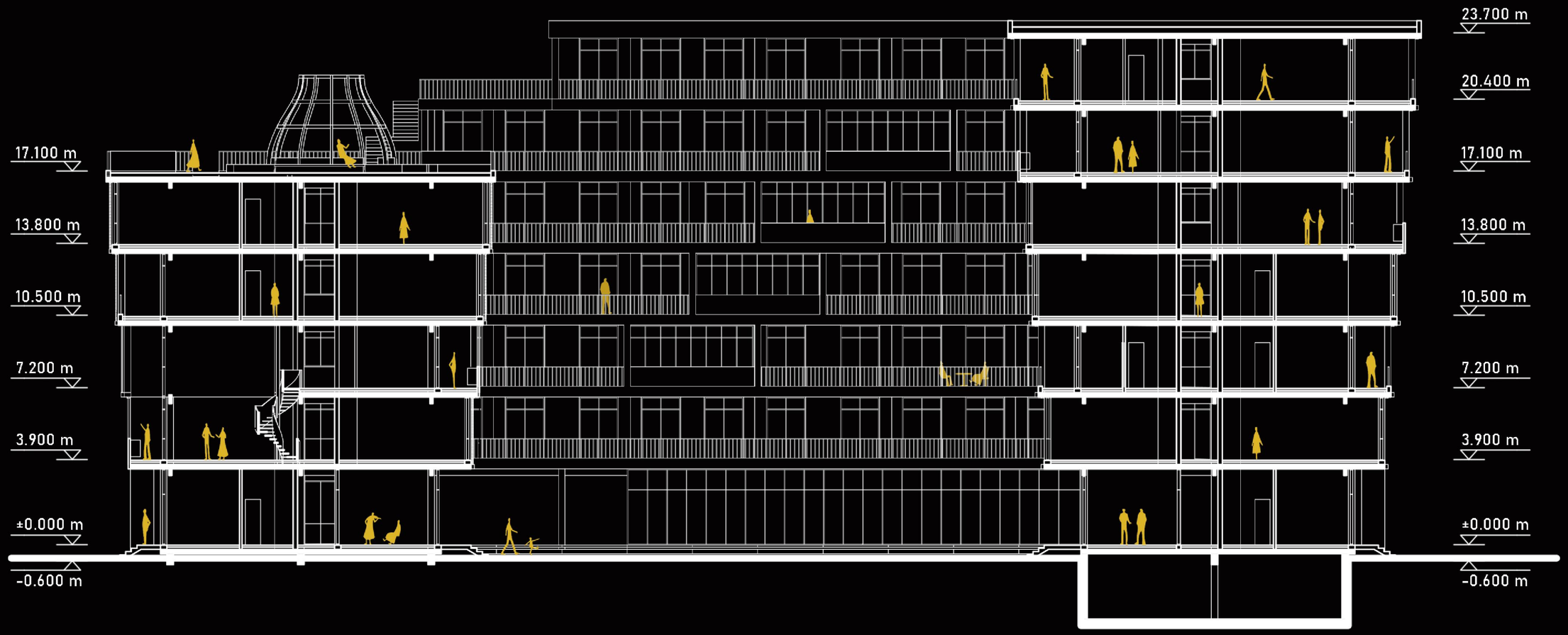




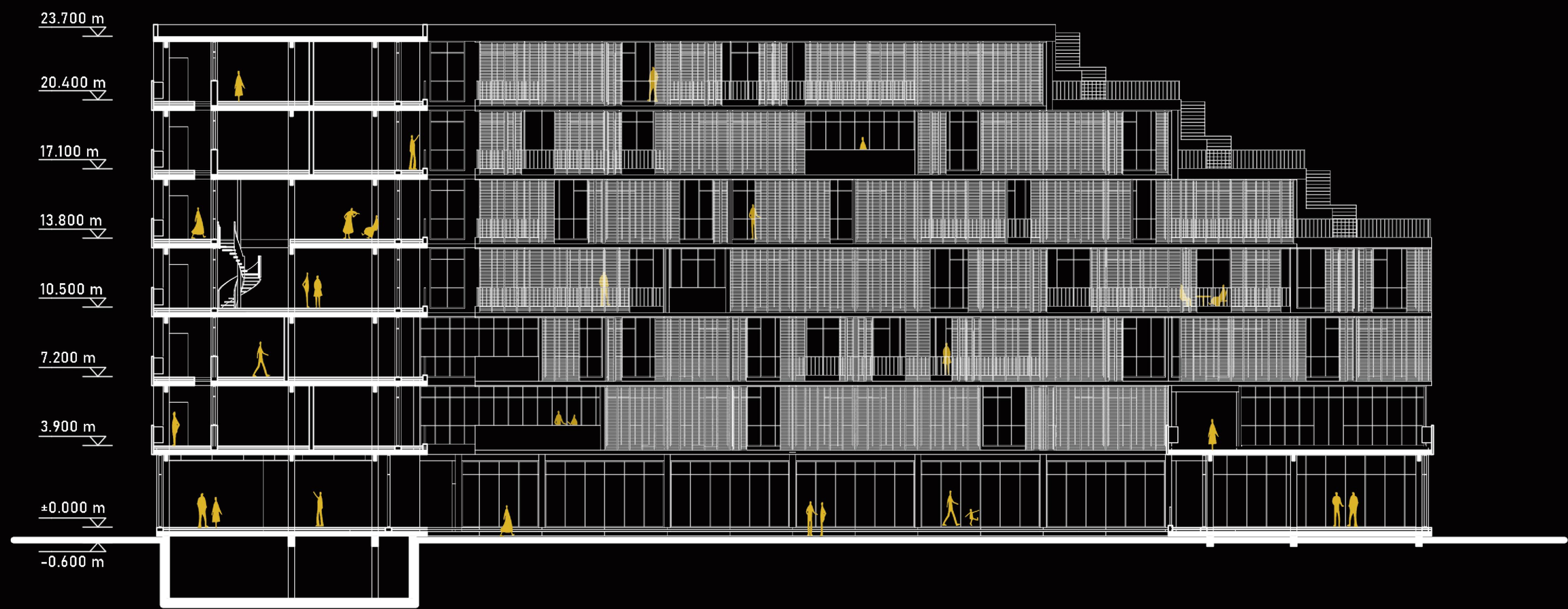


Project	Adaptable Timber Complex	Student	Yanzhen Wu (5584981)	Title	Communal Space	Number	
Studio	Architecture Engineering	Tutors	Thomas Offermans, Paddy Tomesen, Gilbert Koskamp	Proportion	1:100	Date	17-May-2023

SECTION 1-1 1:200

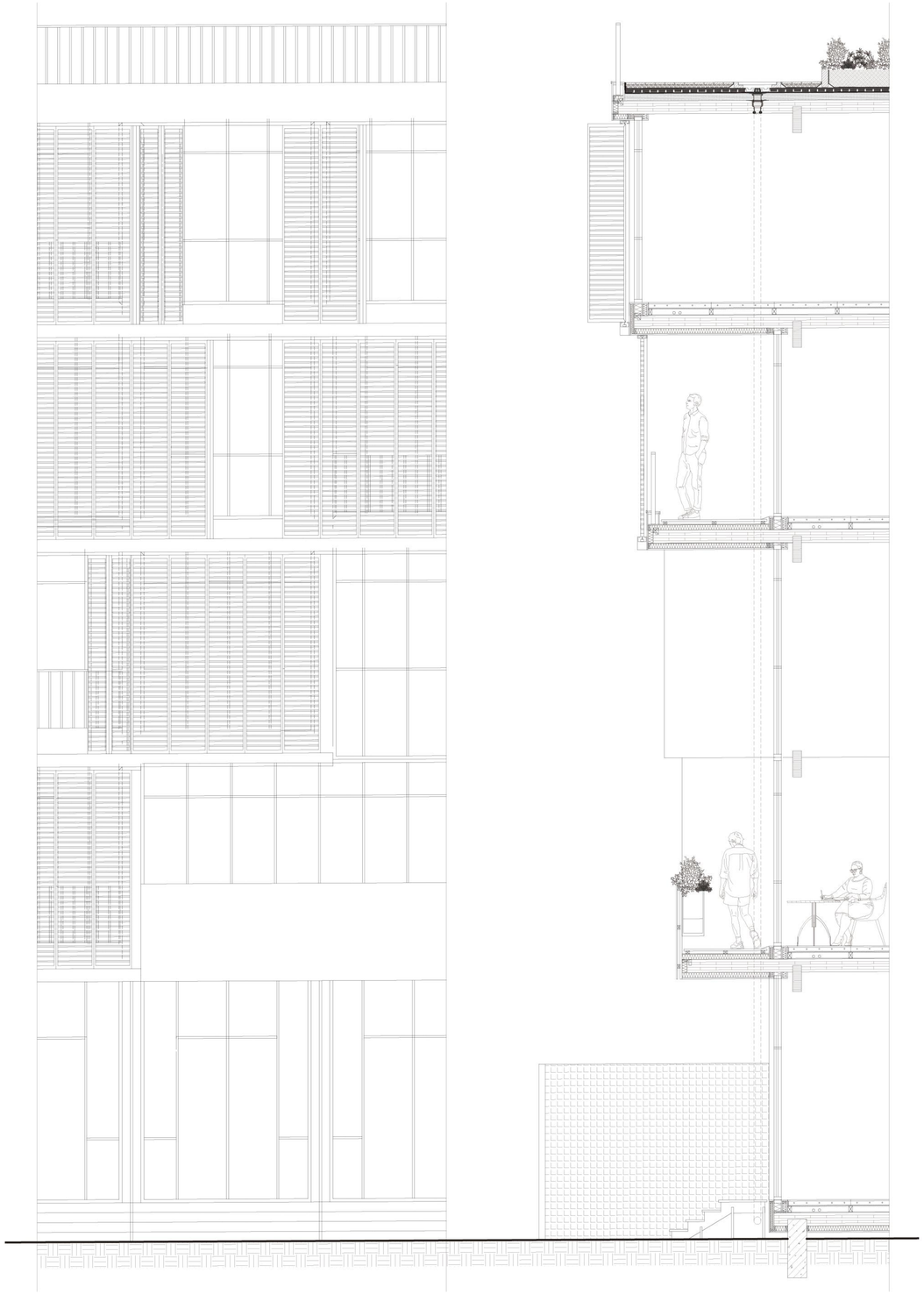


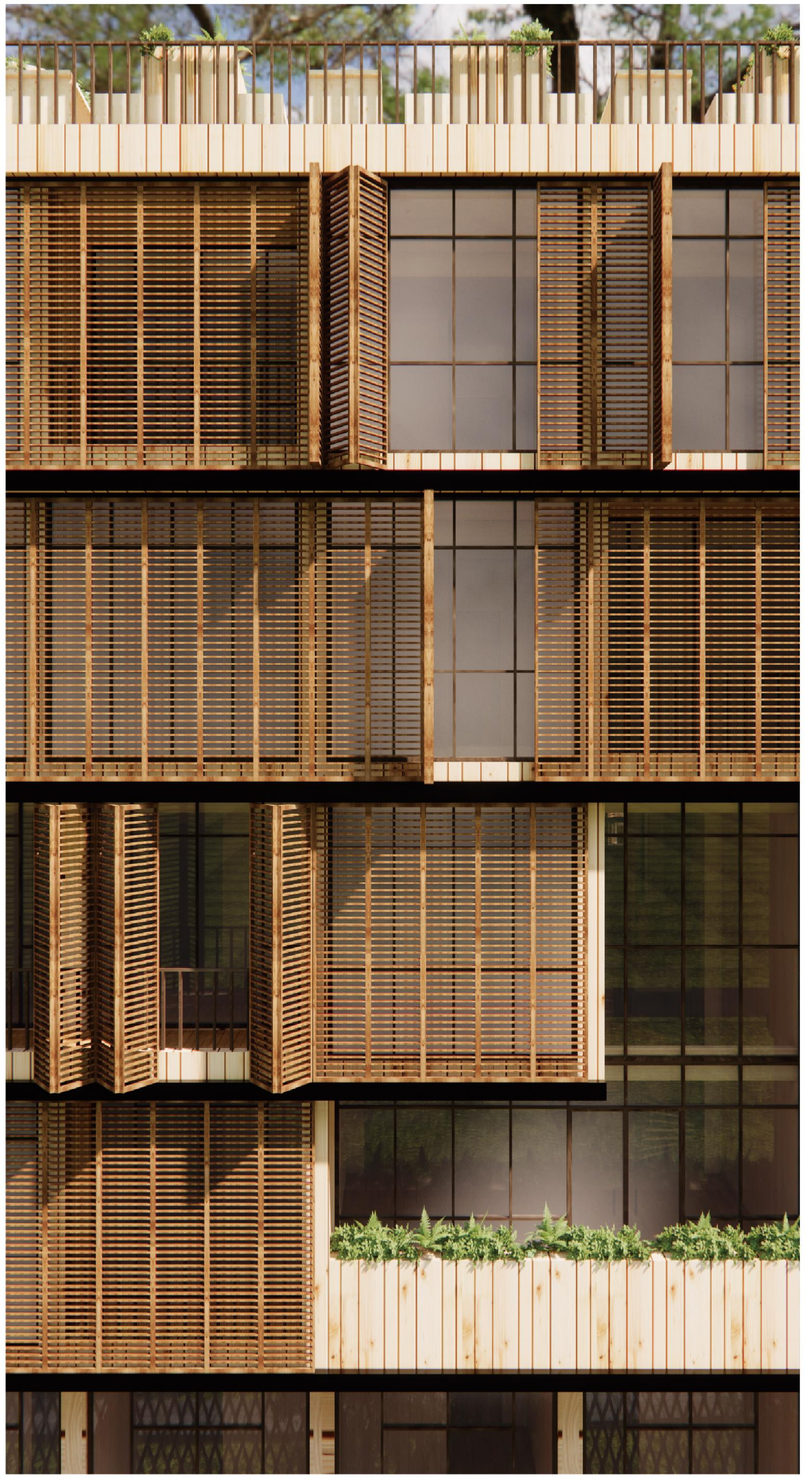
SECTION 2-2 1:200



WEST FACADE 1:300

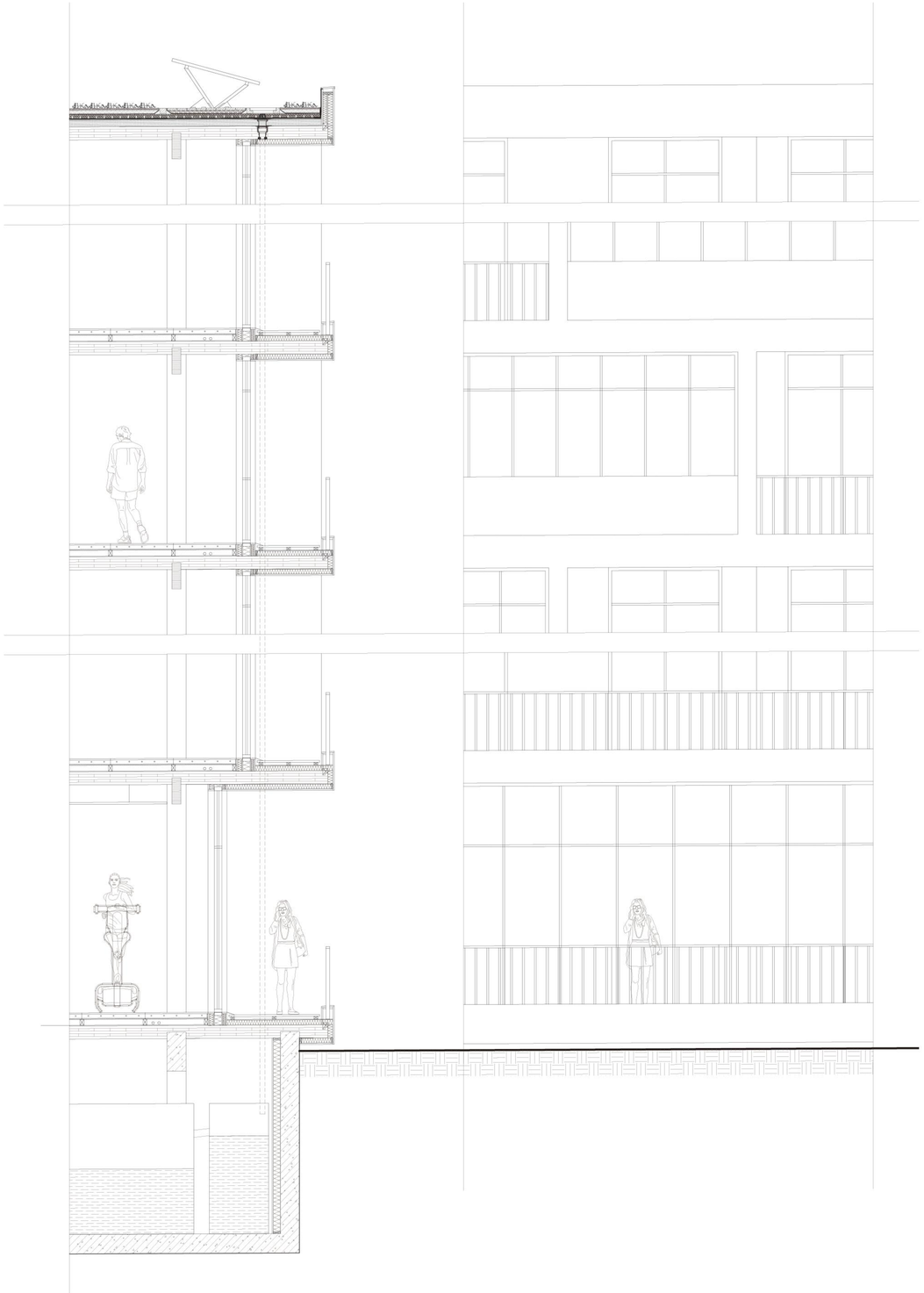
WEST FACADE 1:50





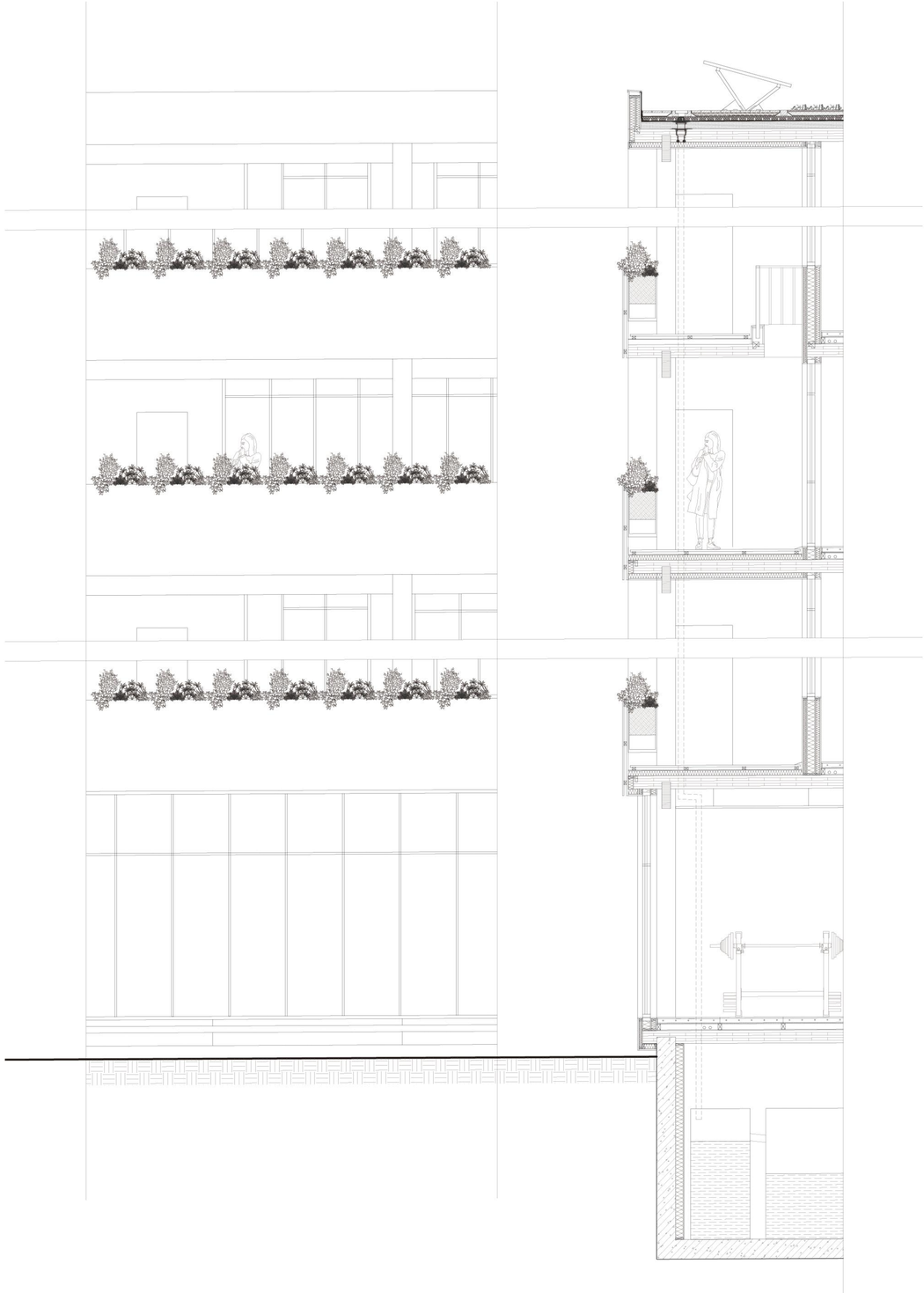
SOUTH FACADE 1:300

SOUTH FACADE 1:50

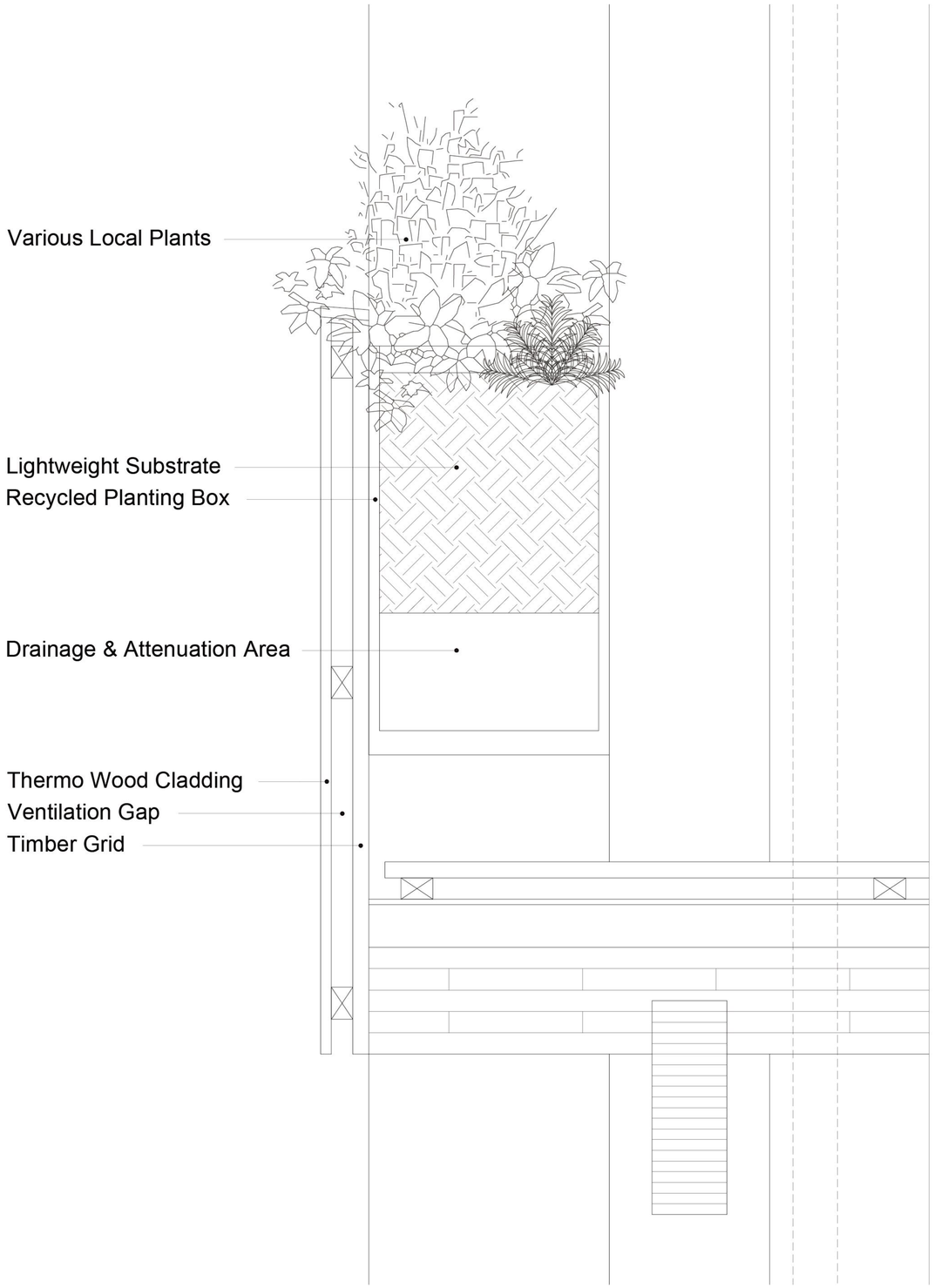


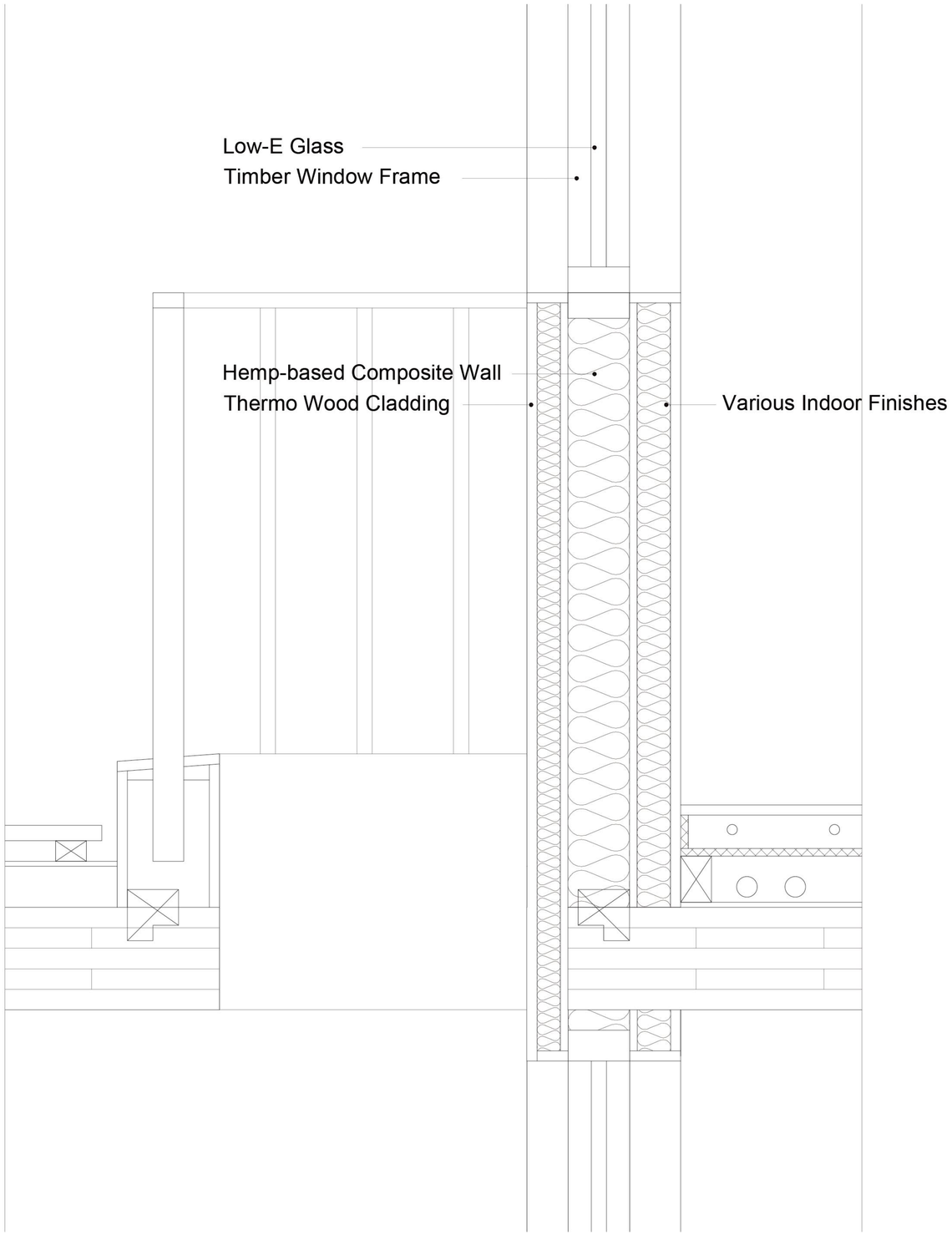
NORTH FACADE 1:300

NORTH FACADE 1:50

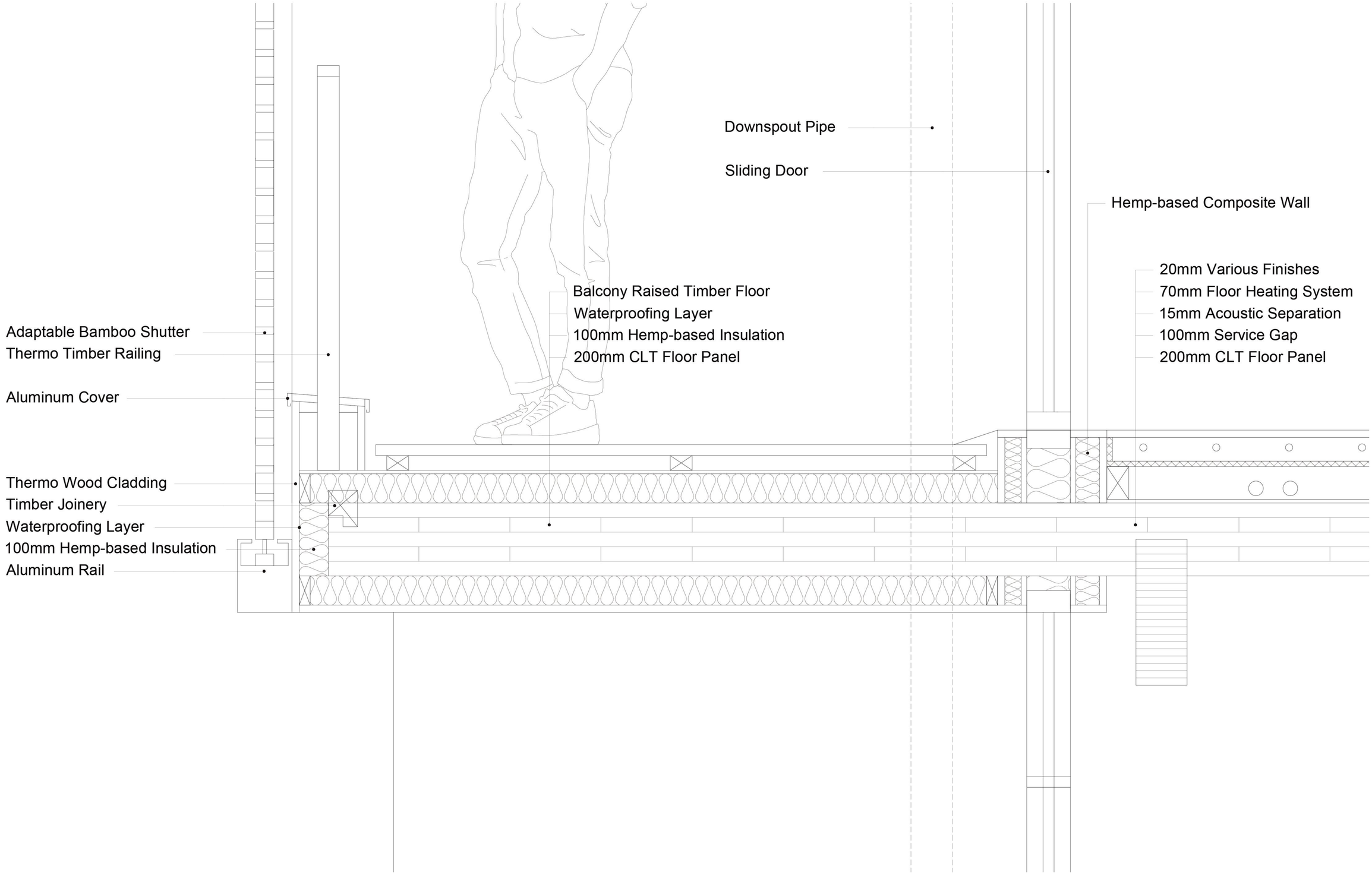


DETAILS - OUTDOOR CORRIDOR 1:10

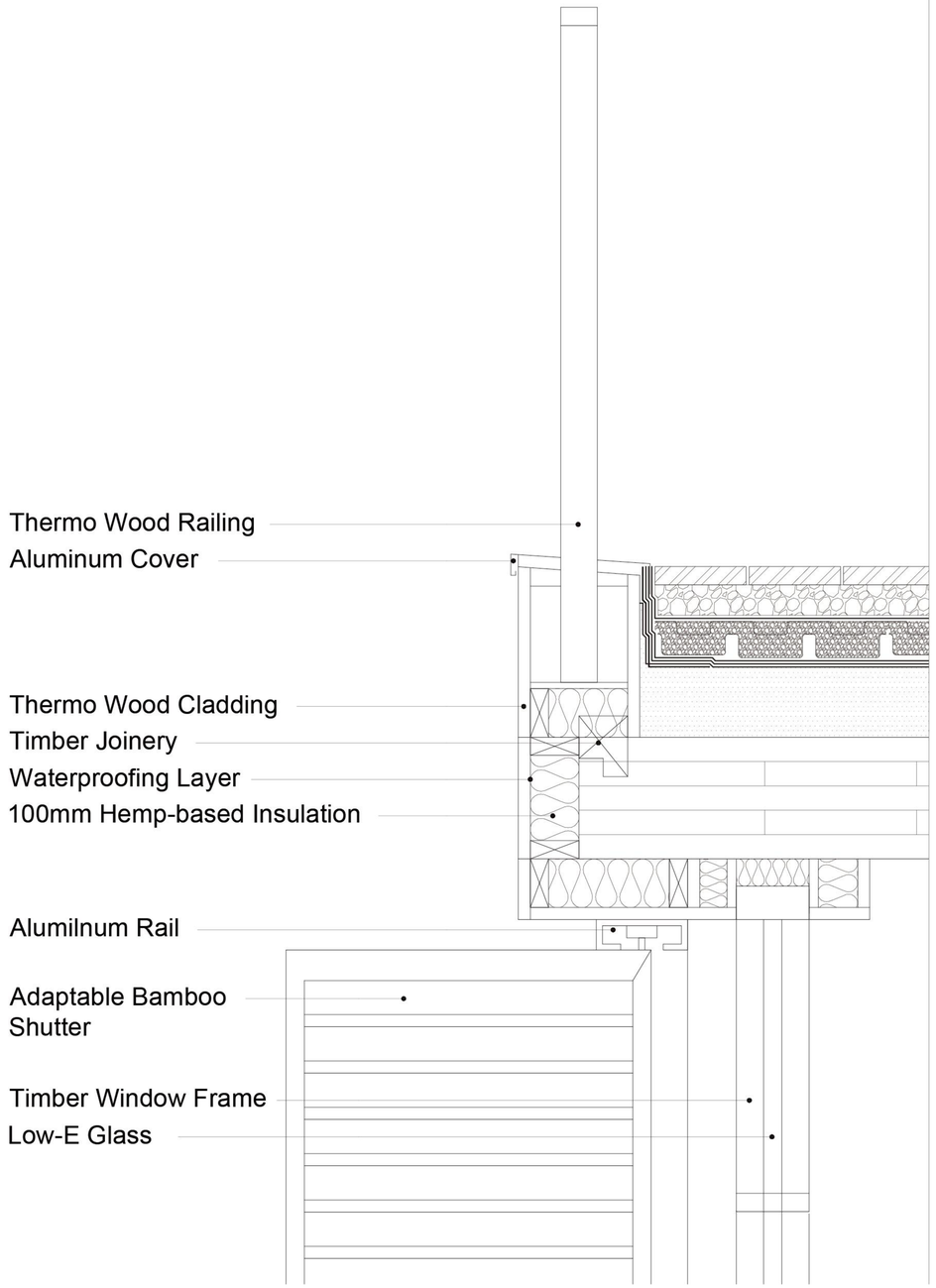


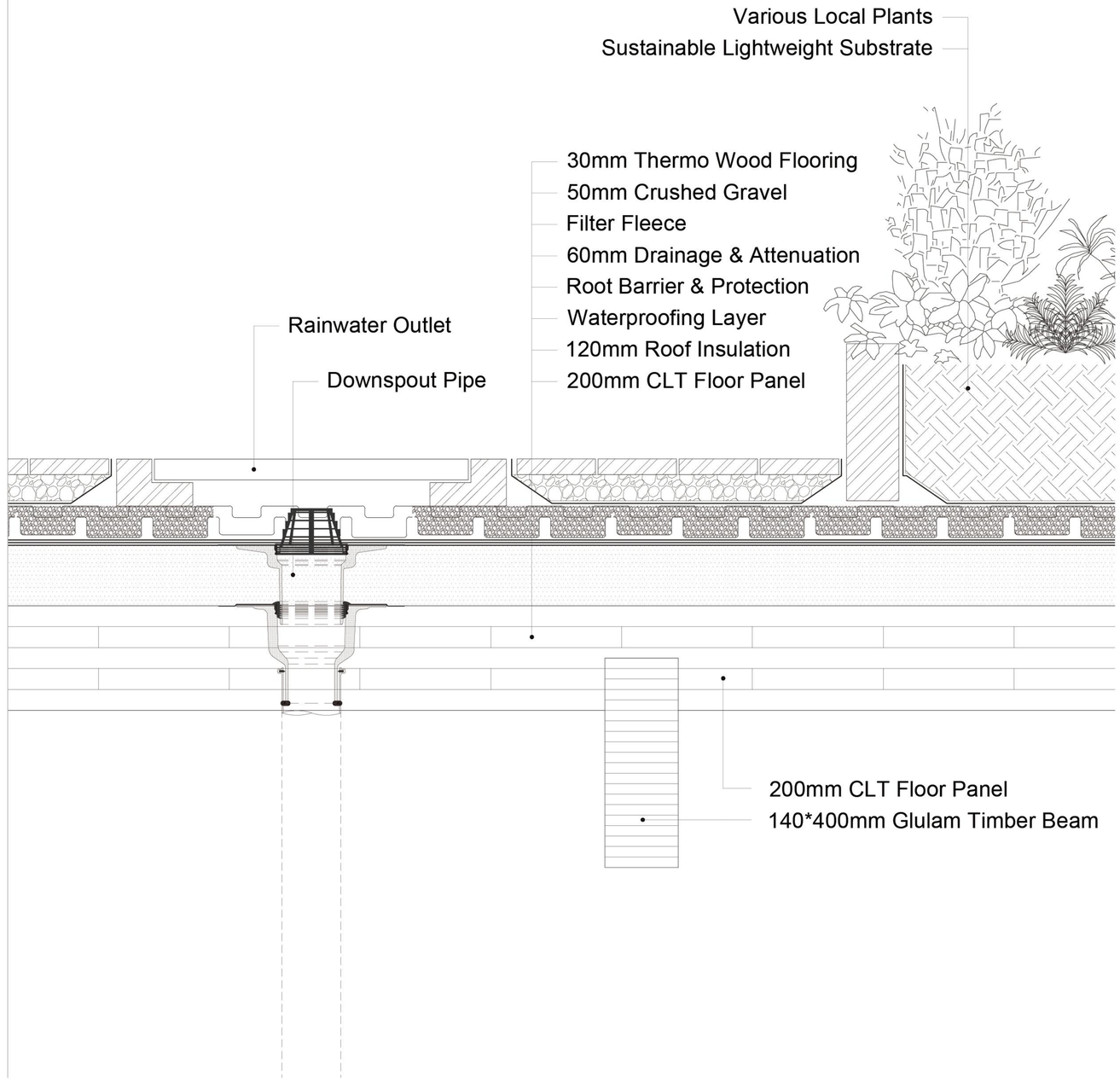


DETAILS - ROOM BALCONY 1:10

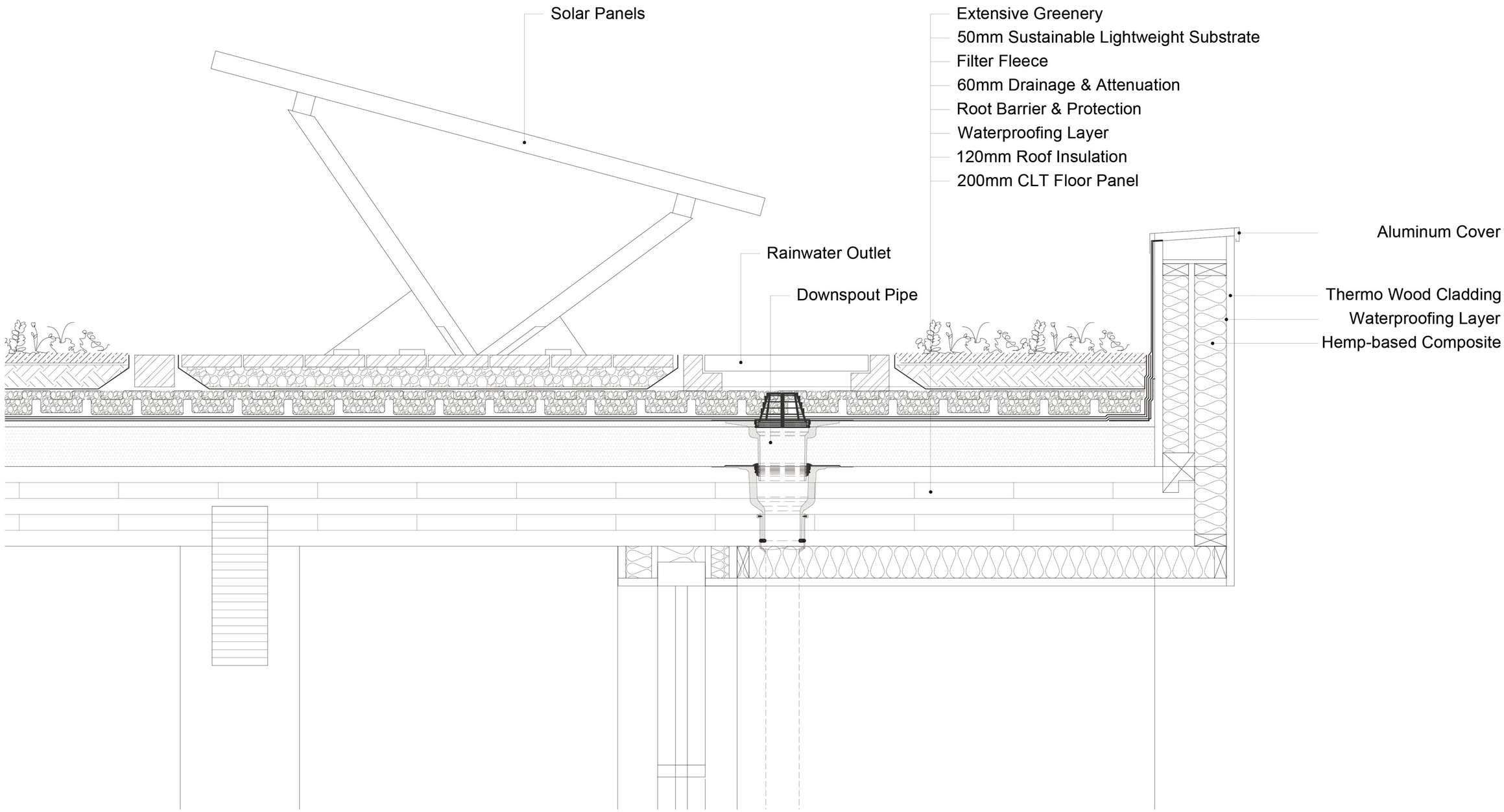


DETAILS - ROOF GARDEN 1:10

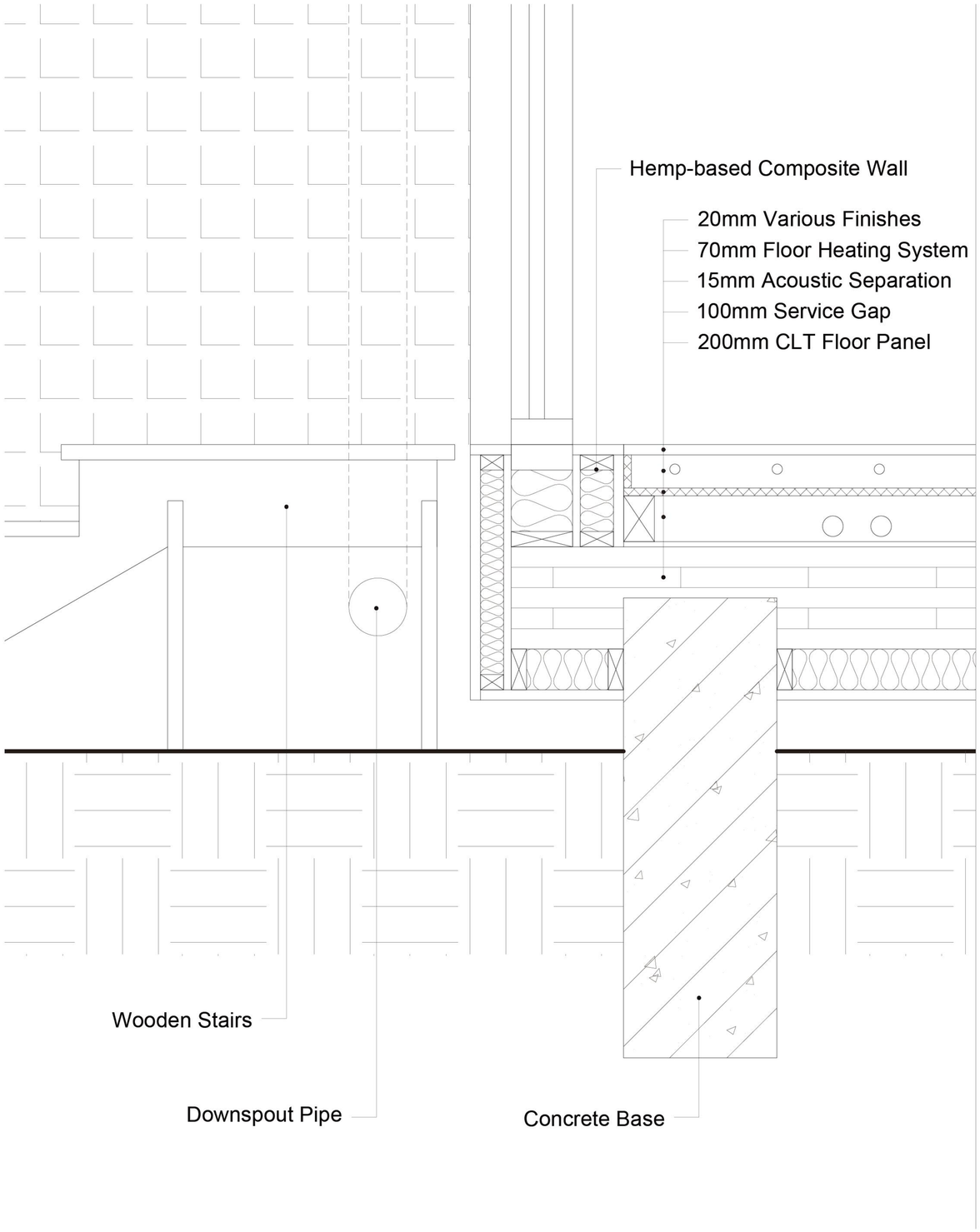


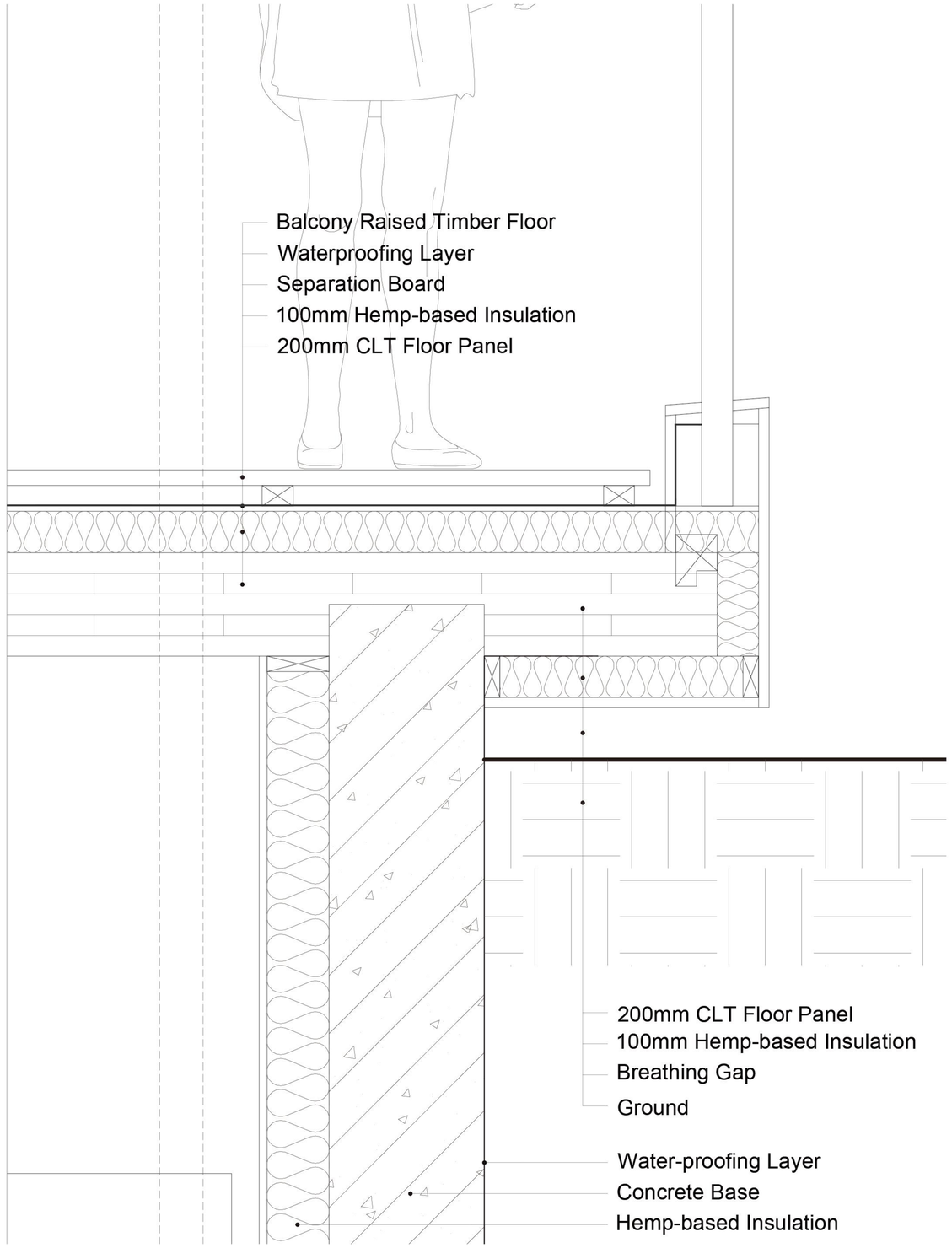


DETAILS - FUNCTIONAL GREEN ROOF 1:10

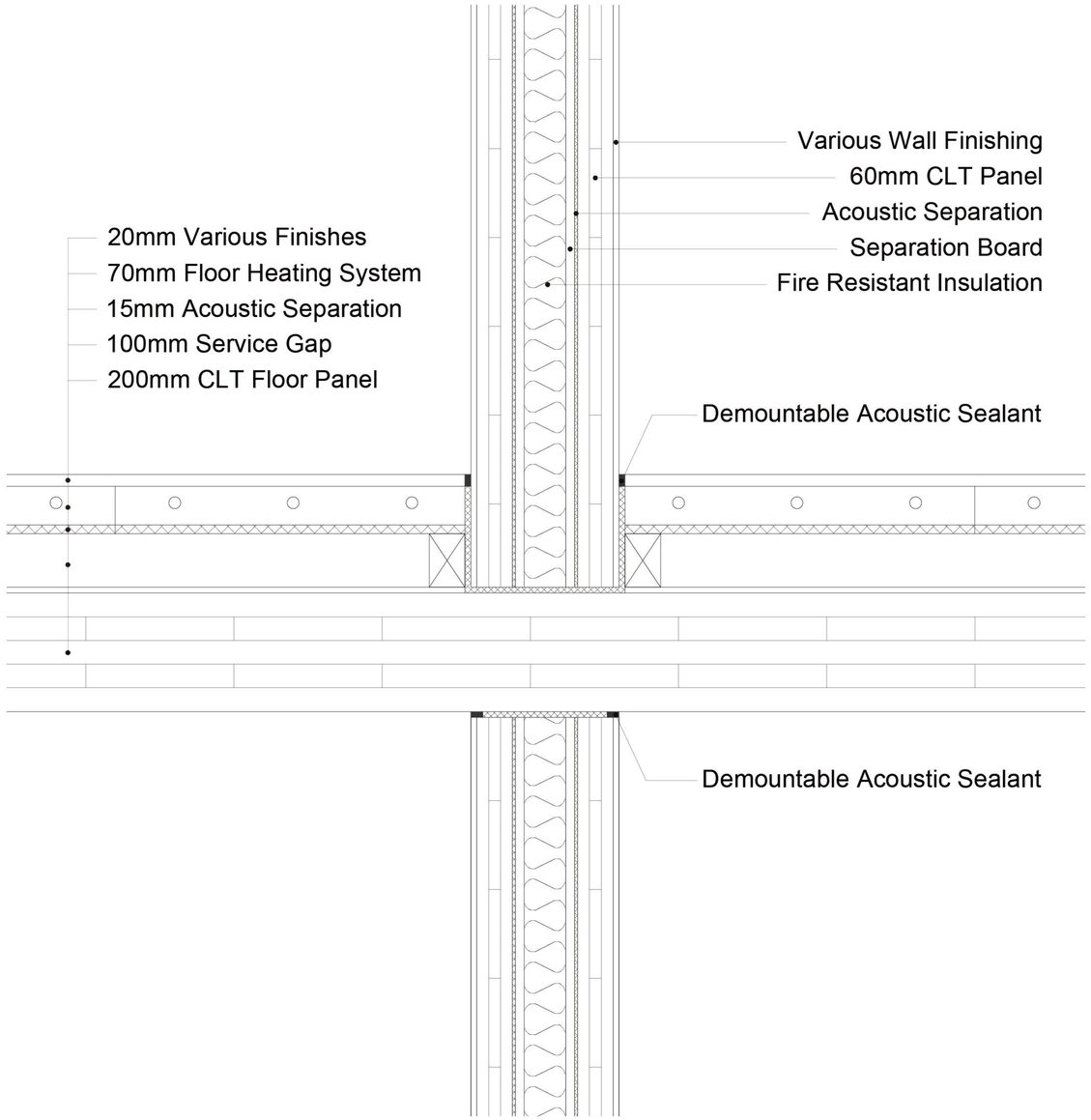


DETAILS - FOUNDATION 1:10

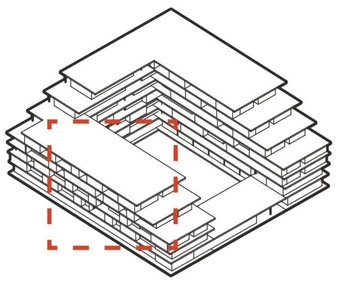




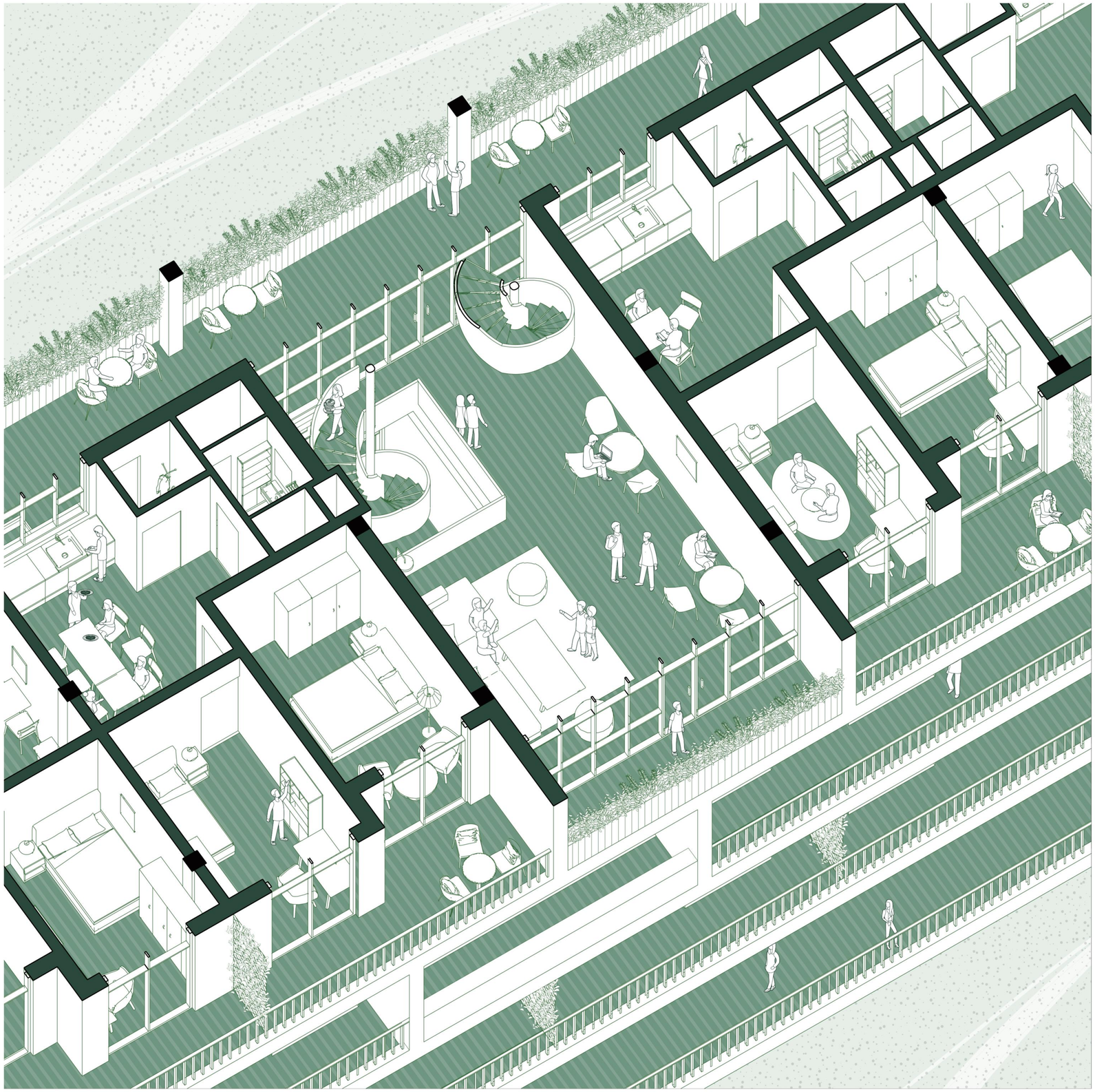
DETAILS - SEPARATION WALL 1:10

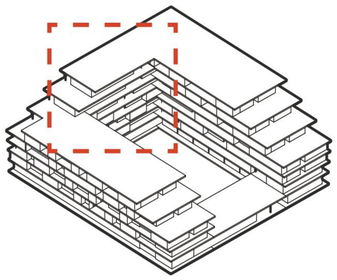


EAST/WEST WING



NORTH WING





COMMUNAL SPACE

NORTH WING COMMUNAL SPACE IN THE SUMMER

COMMUNAL SPACE

NORTH WING COMMUNAL SPACE IN THE WINTER

COMMUNAL SPACE

WEST WING COMMUNAL SPACE IN THE MORNING

COMMUNAL SPACE

WEST WING COMMUNAL SPACE IN THE AFTERNOON

FUTURE VISION

FUTURE VIEW OF TRANSFORMATION, INDOOR

ROOF GARDEN

WEST WING MULTI-FUNCTIONAL ROOF GARDEN

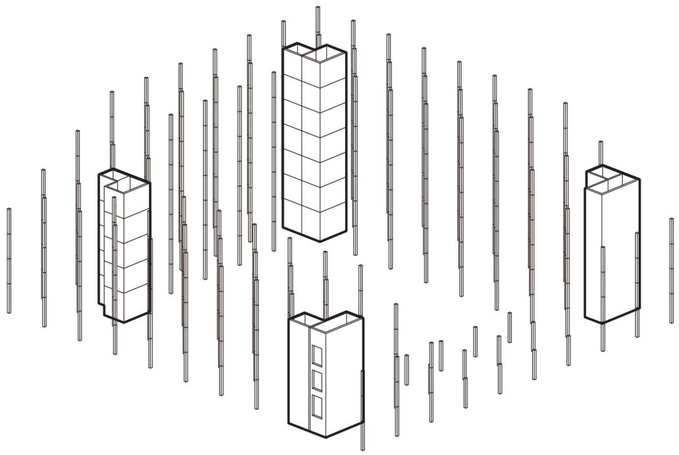
STREET VIEW

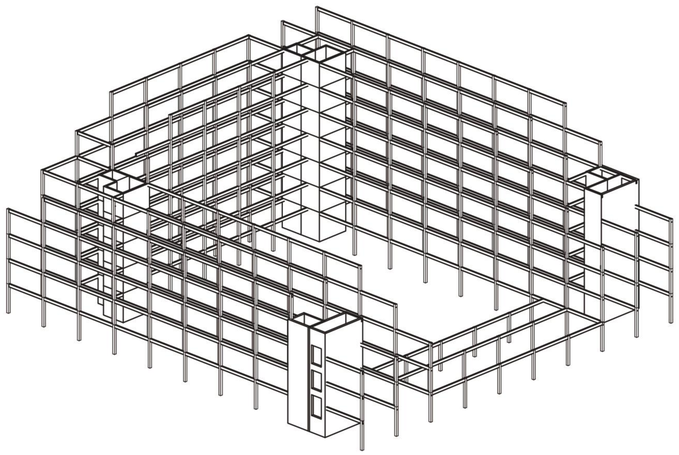
WEST WING MULTI-FUNCTIONAL ROOF GARDEN

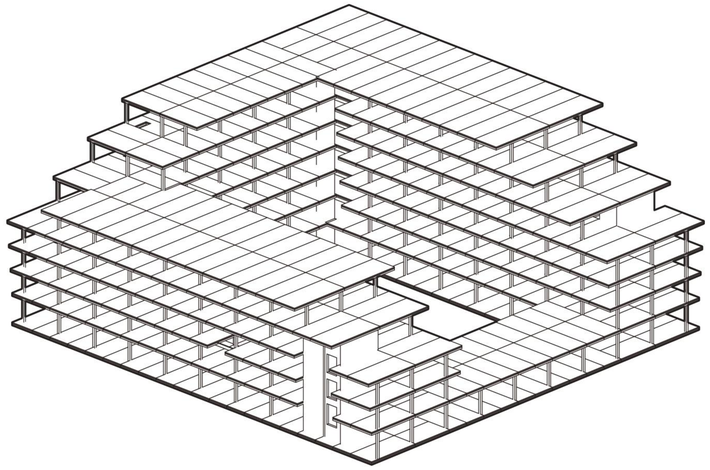
FUTURE VISION

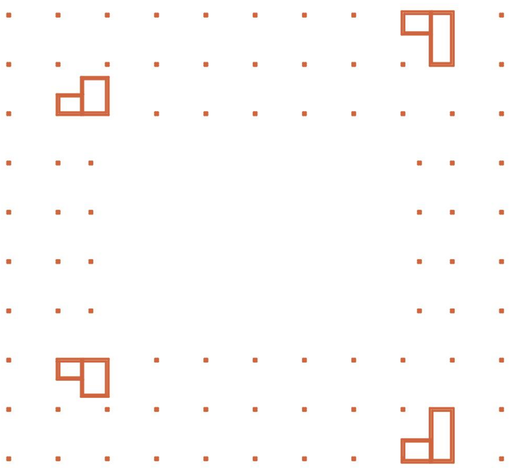
FUTURE VIEW OF TRANSFORMATION, STREET VIEW

TIMBER STRUCTURE

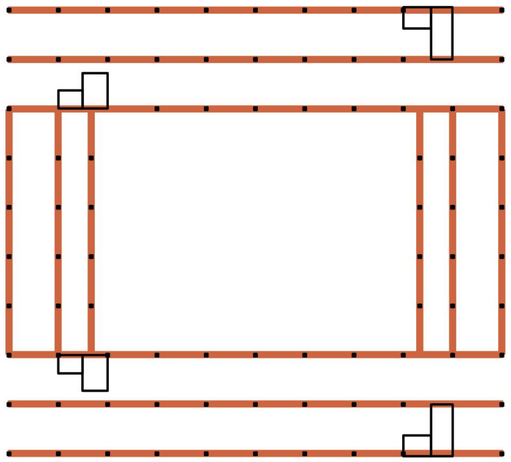




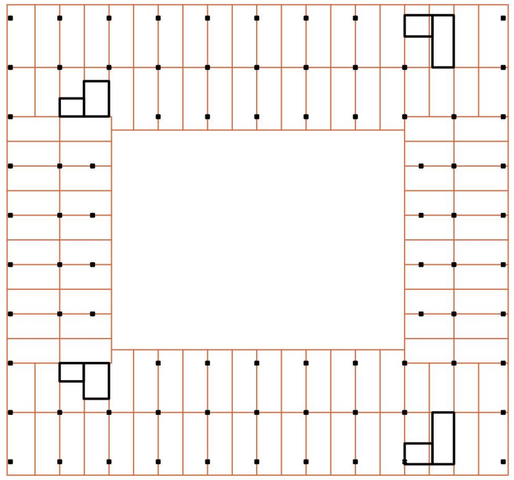




COLUMNS & CORES

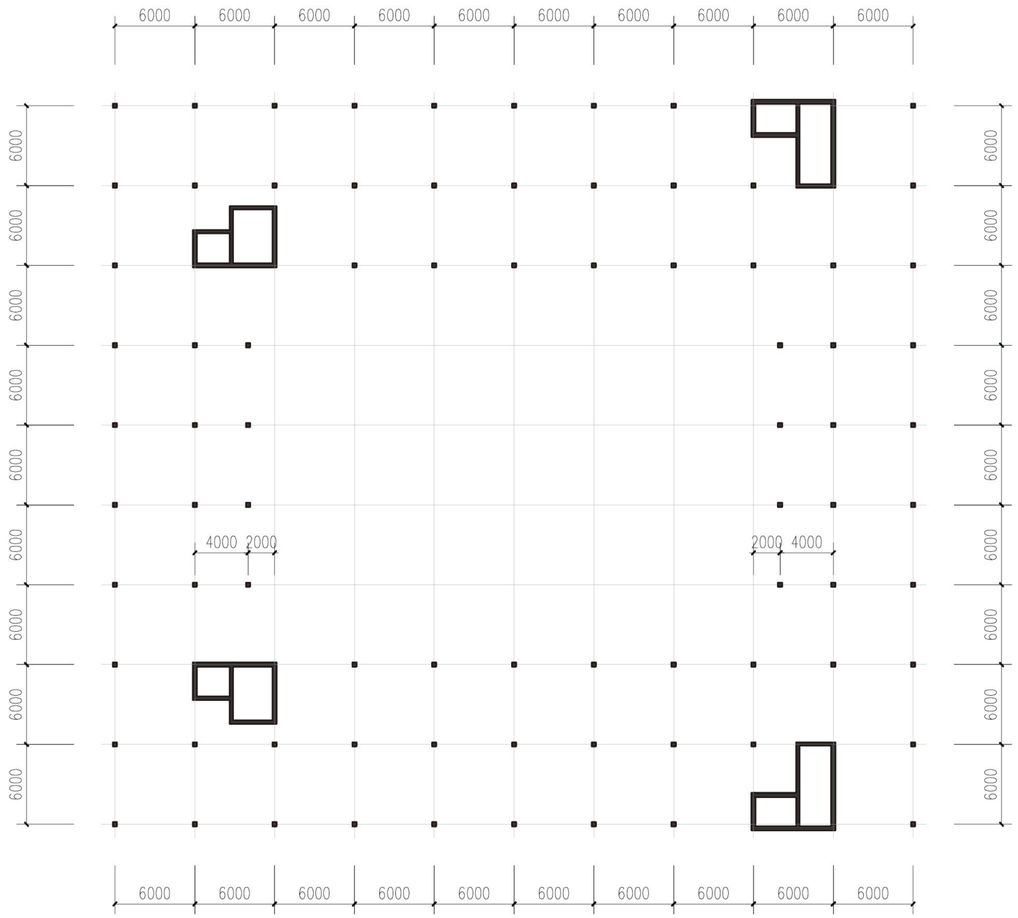


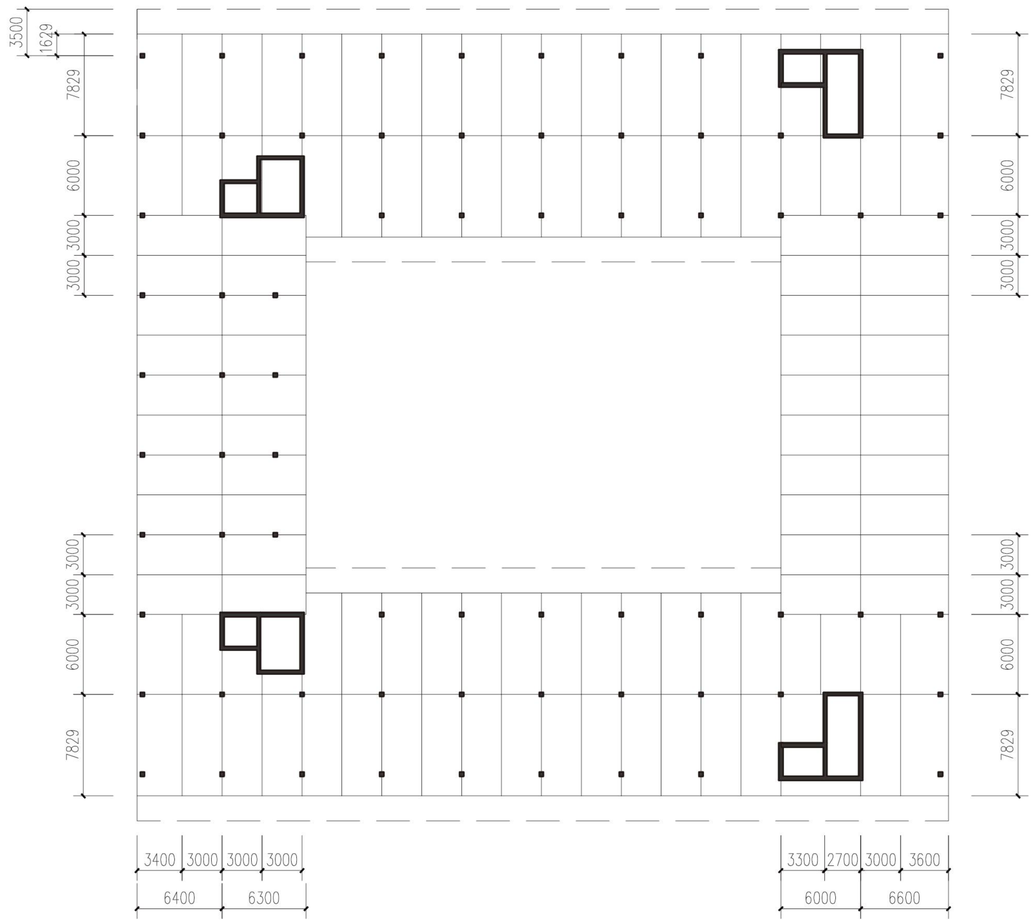
ONE-SIDE BEAMS



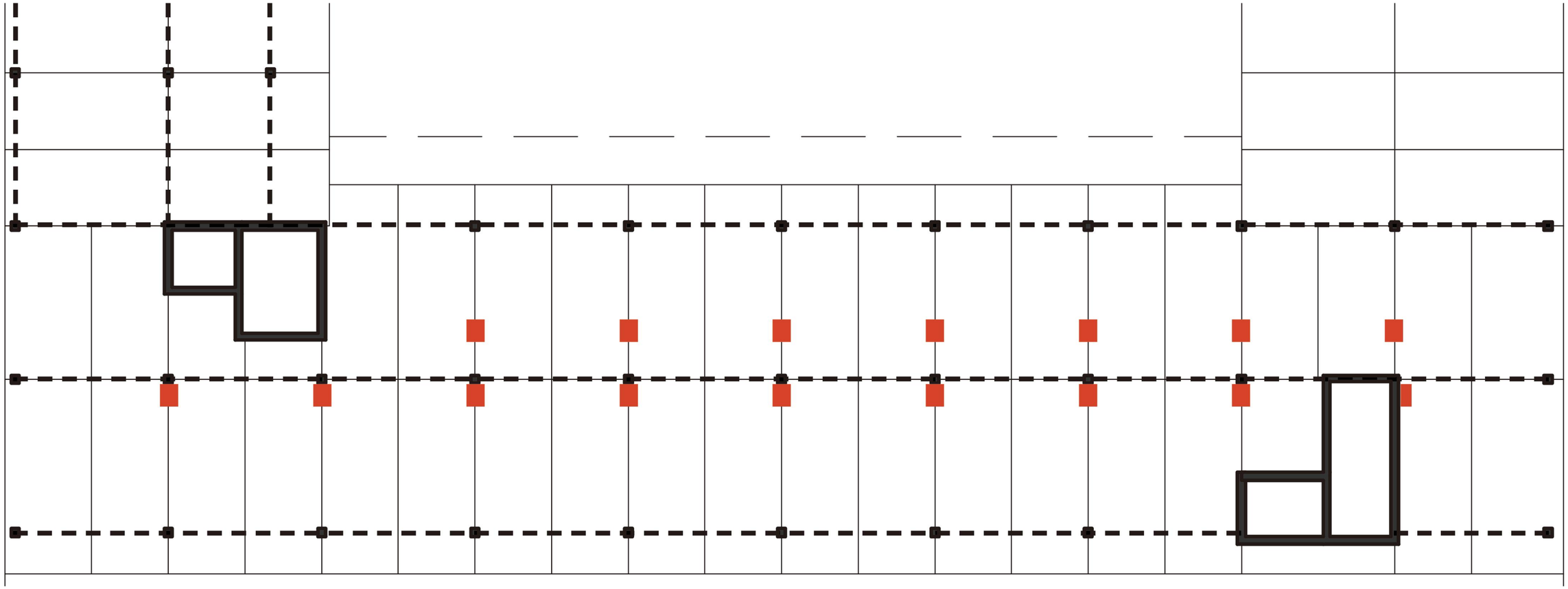
SLABS

TIMBER STRUCTURE





DETACHED SERVICE SHAFTS

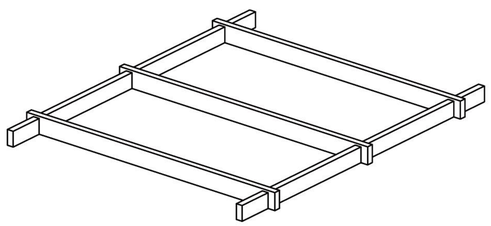


Shafts

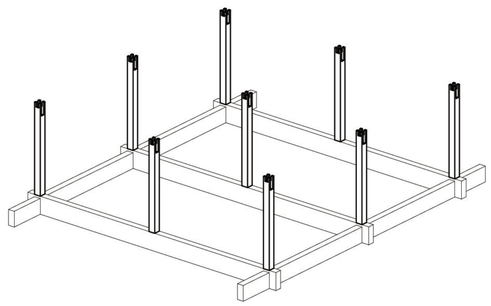
Columns

Beams

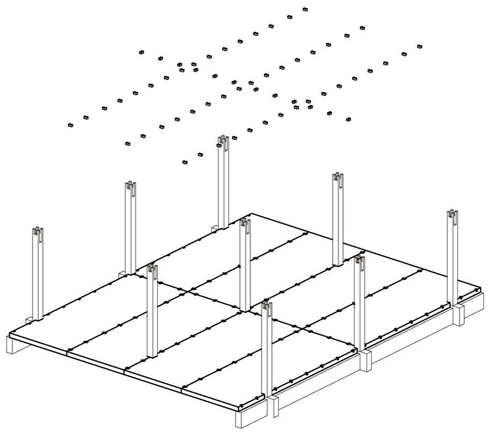
CONSTRUCTION PROCESS



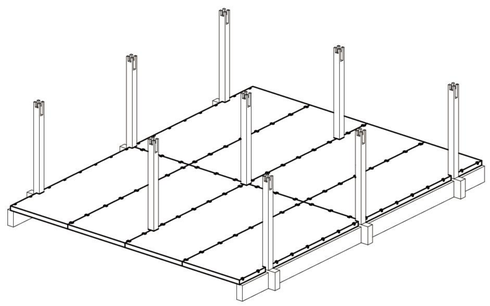
FOUNDATION



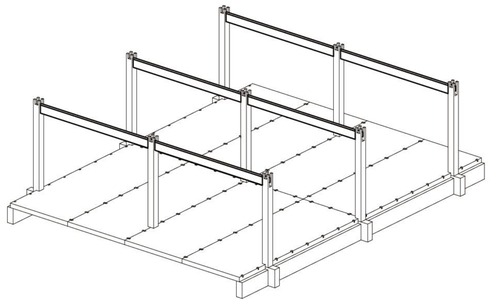
COLUMN



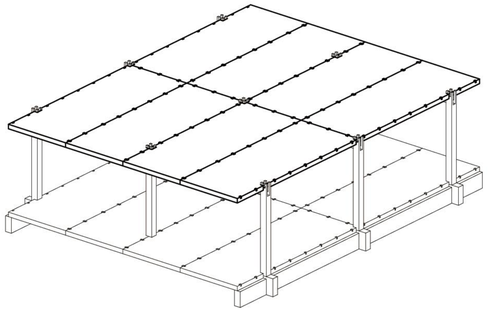
SLAB WITH X-CONNECTOR



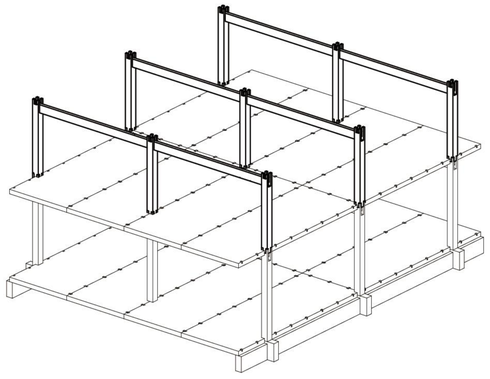
SLAB



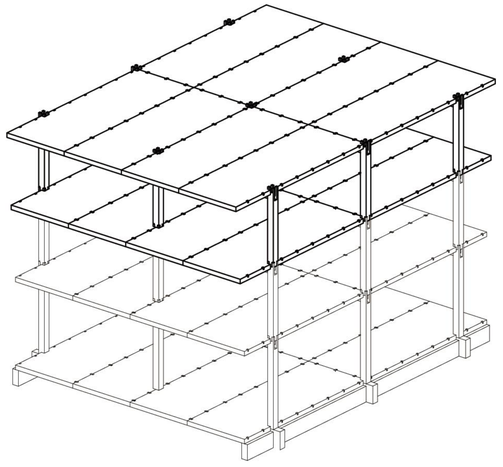
BEAM



SLAB

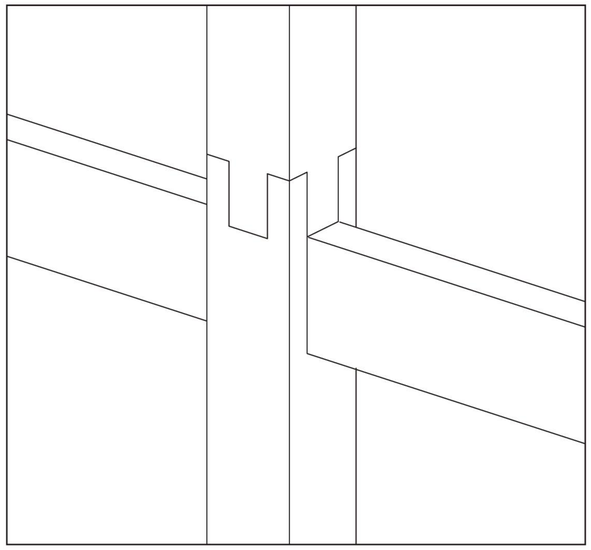


UPPER FLOORS

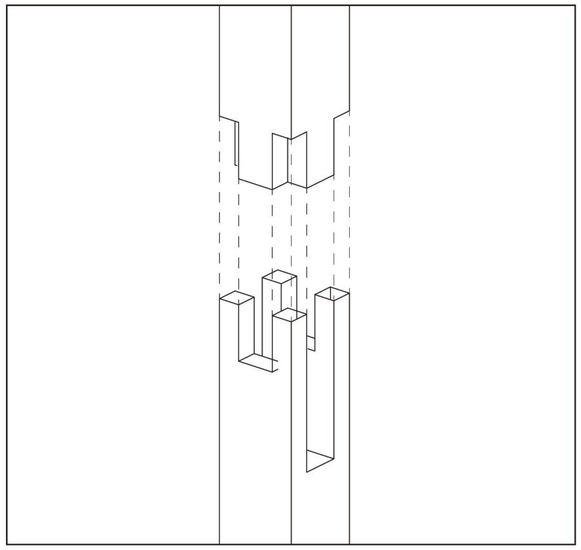


UPPER FLOORS

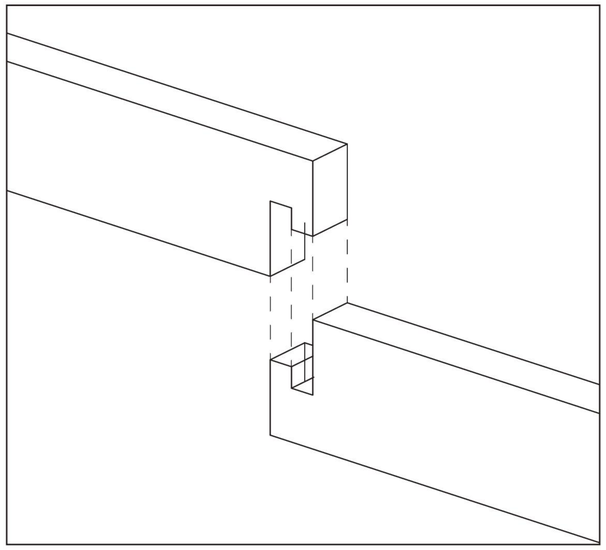
TIMBER JOINERY



COLUMN & BEAM



COLUMN & COLUMN



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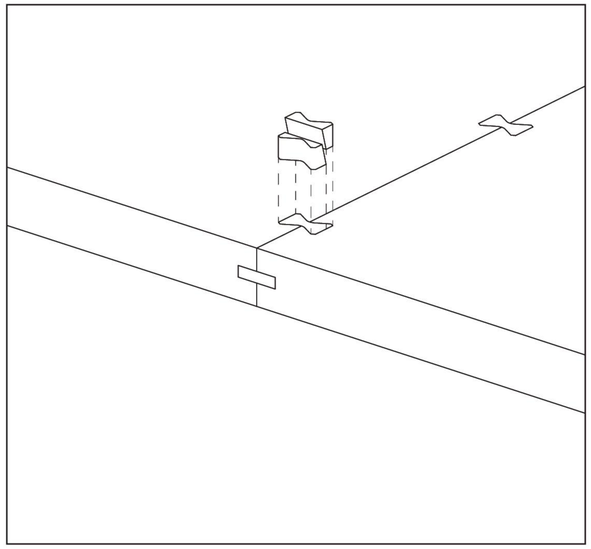

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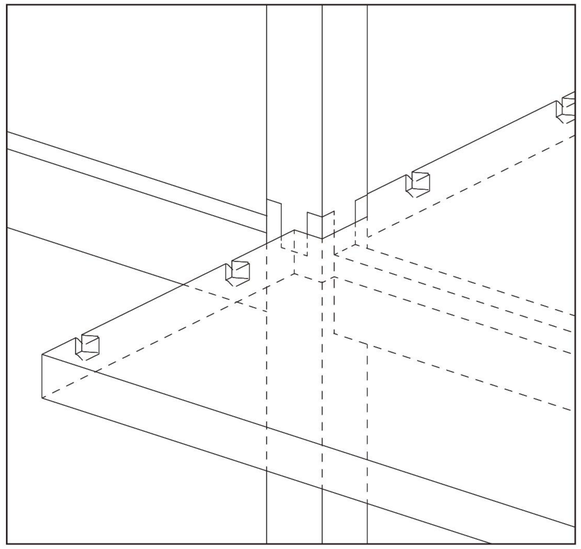
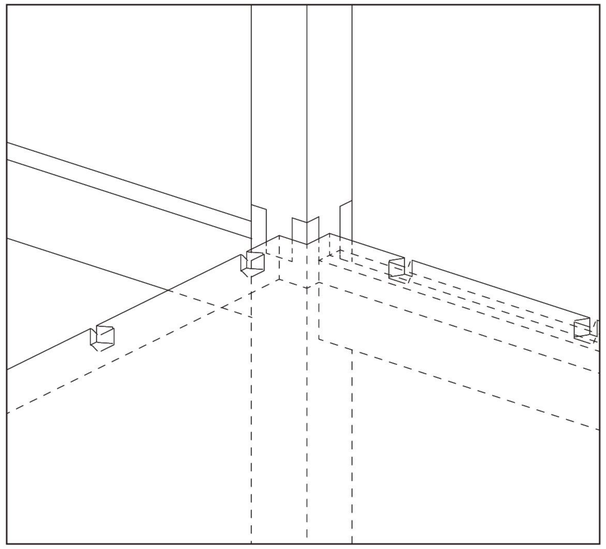
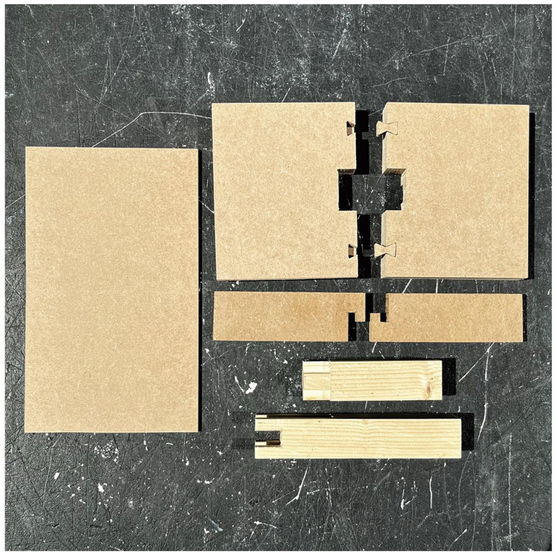
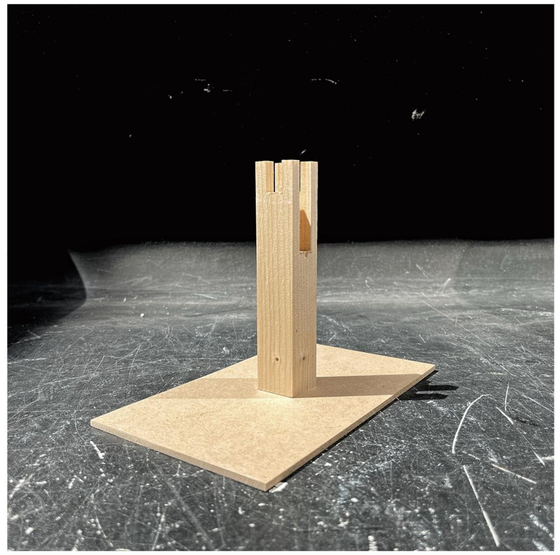
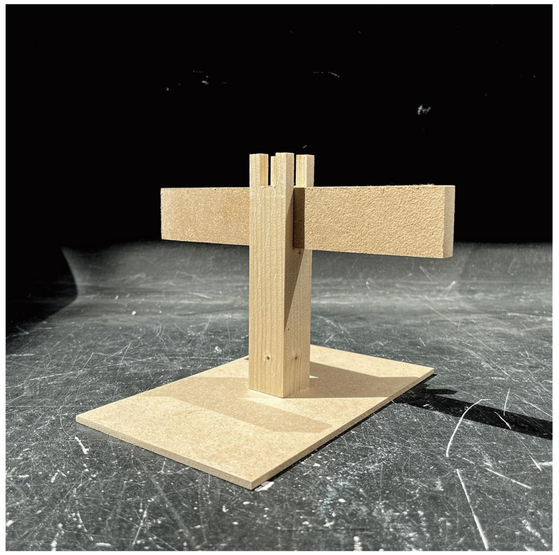
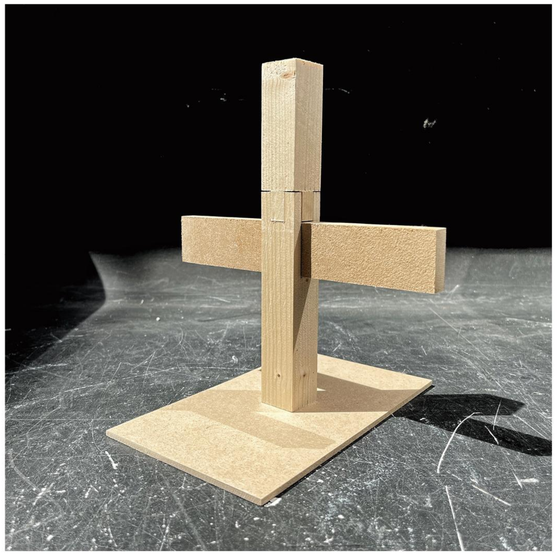
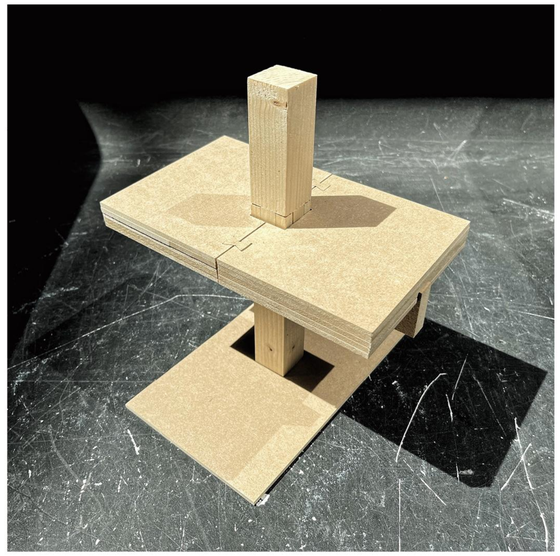
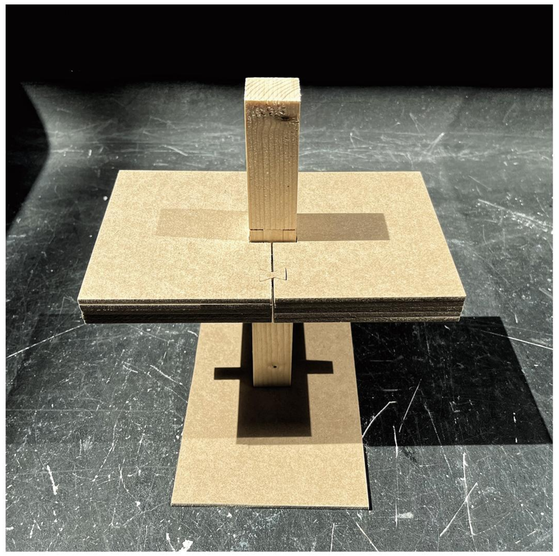




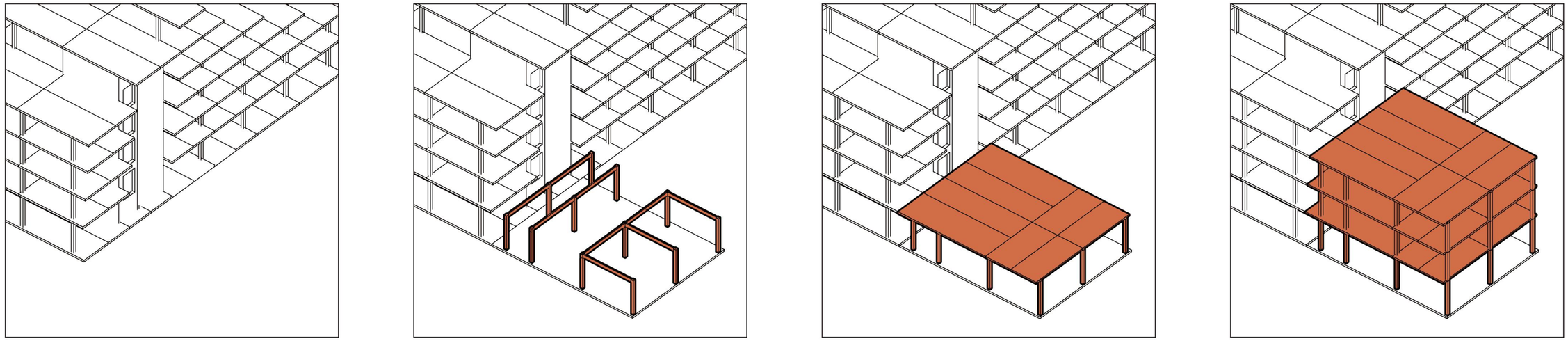
SLAB & COLUMN & BEAM

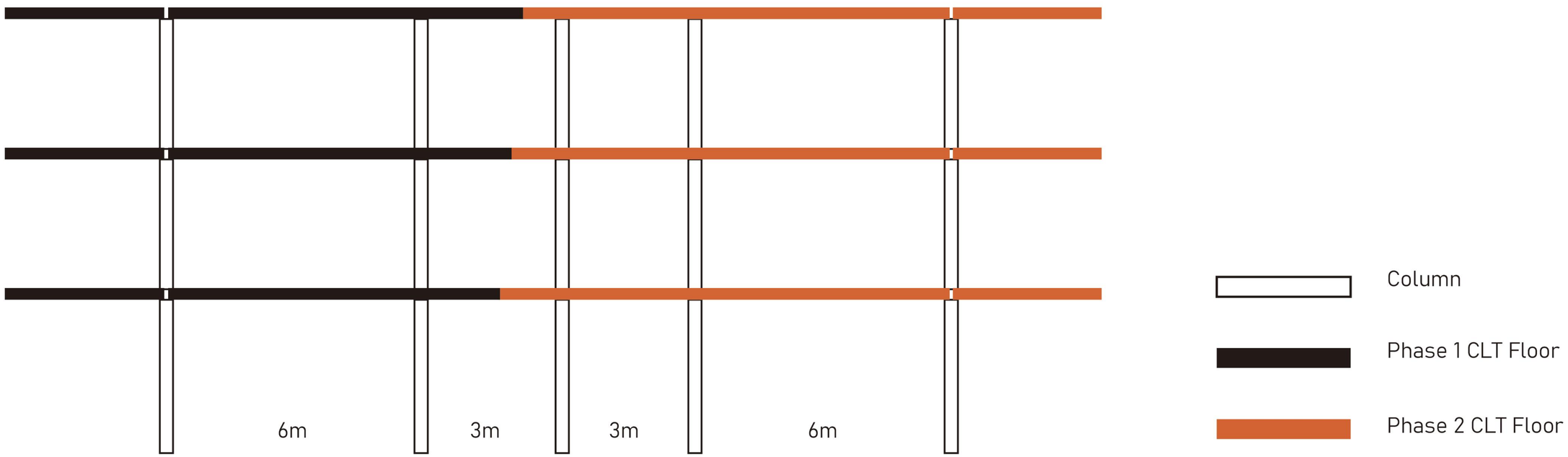
JOINERY MODEL

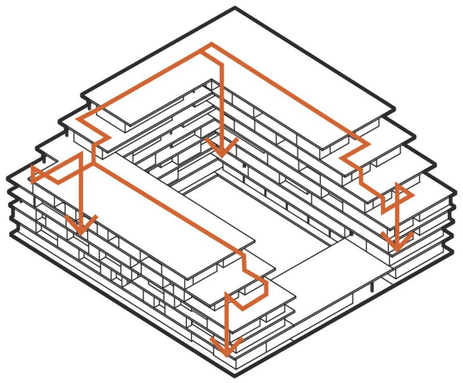



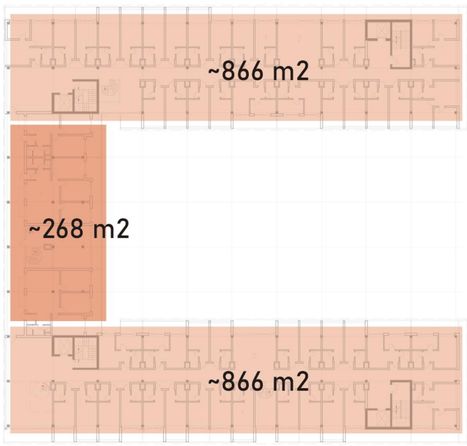

EXPANSION IN PHASE 2



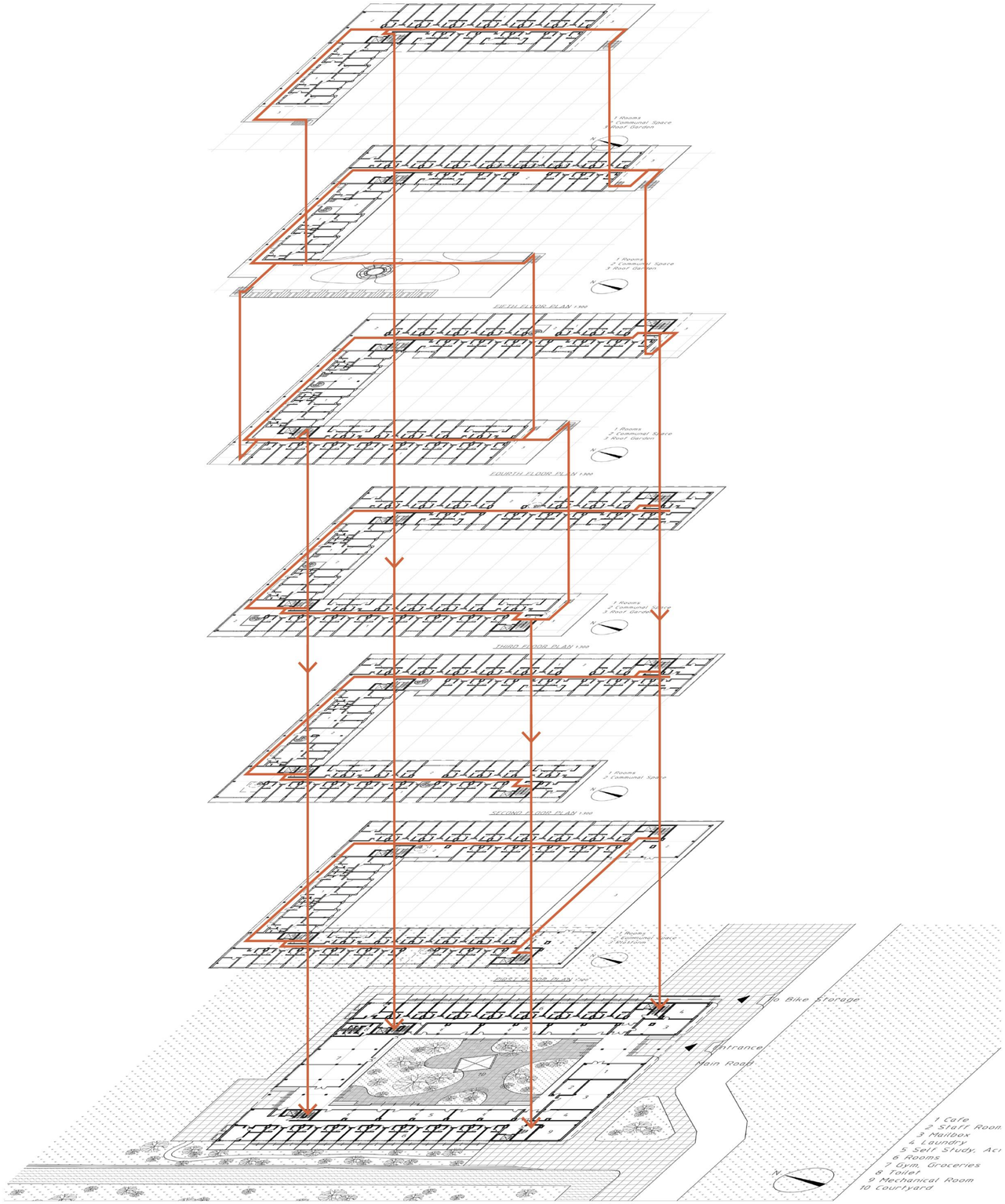


FIRE ESCAPE CIRCULATION

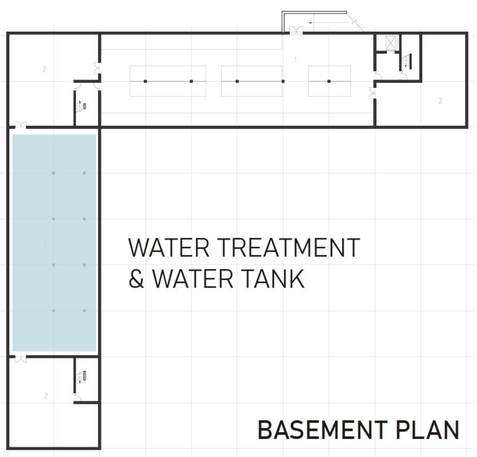


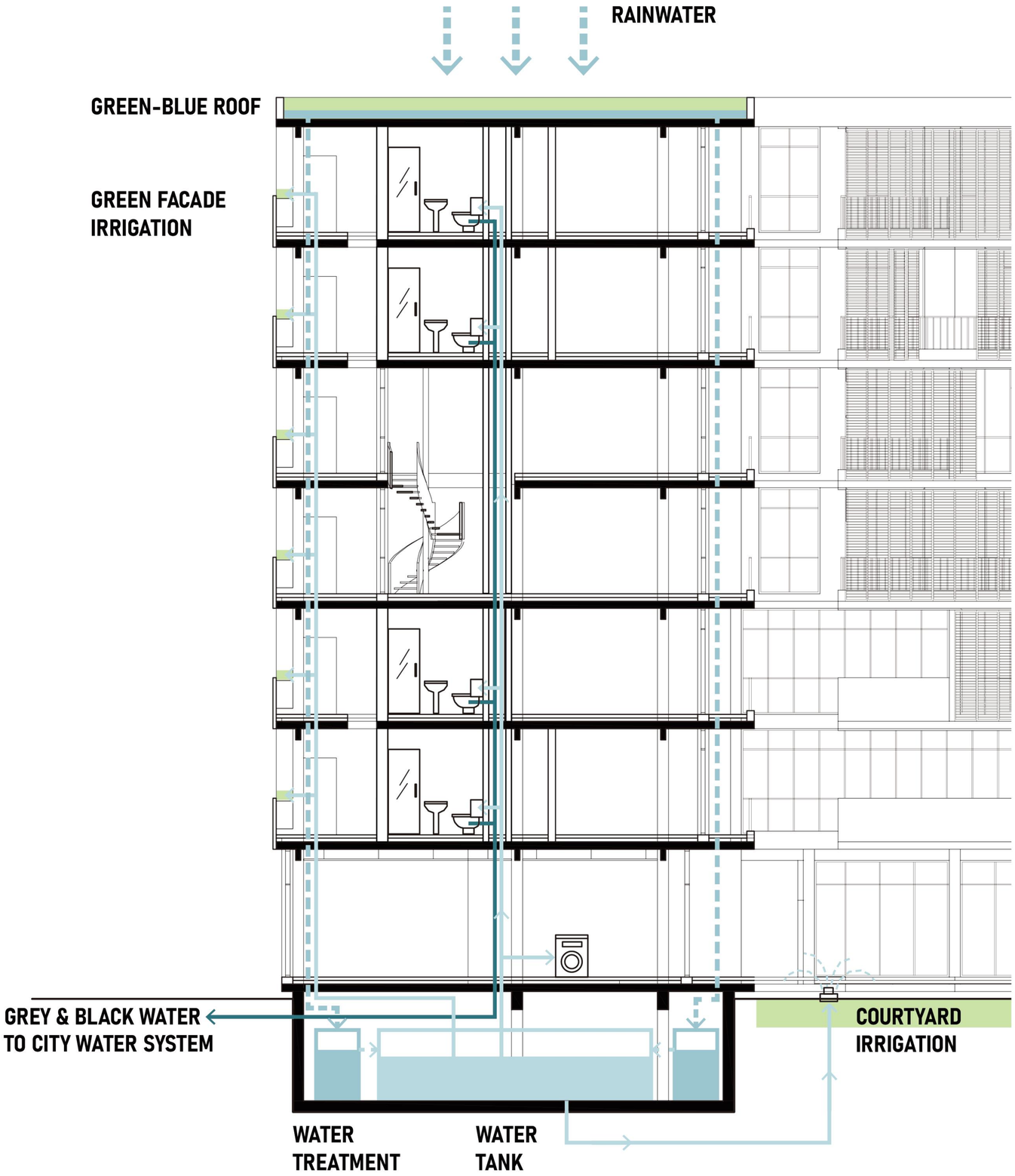


FIRE COMPARTMENT

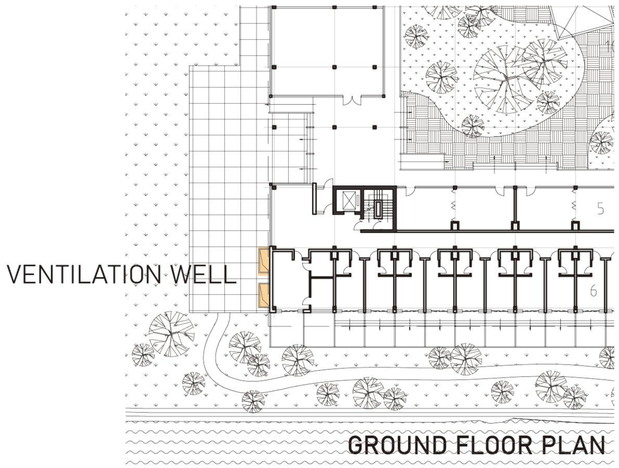


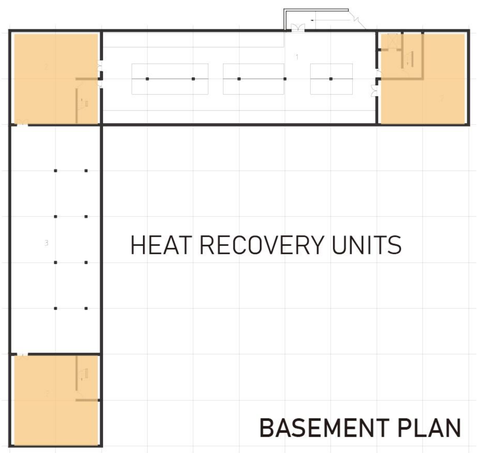
WATER MANAGEMENT

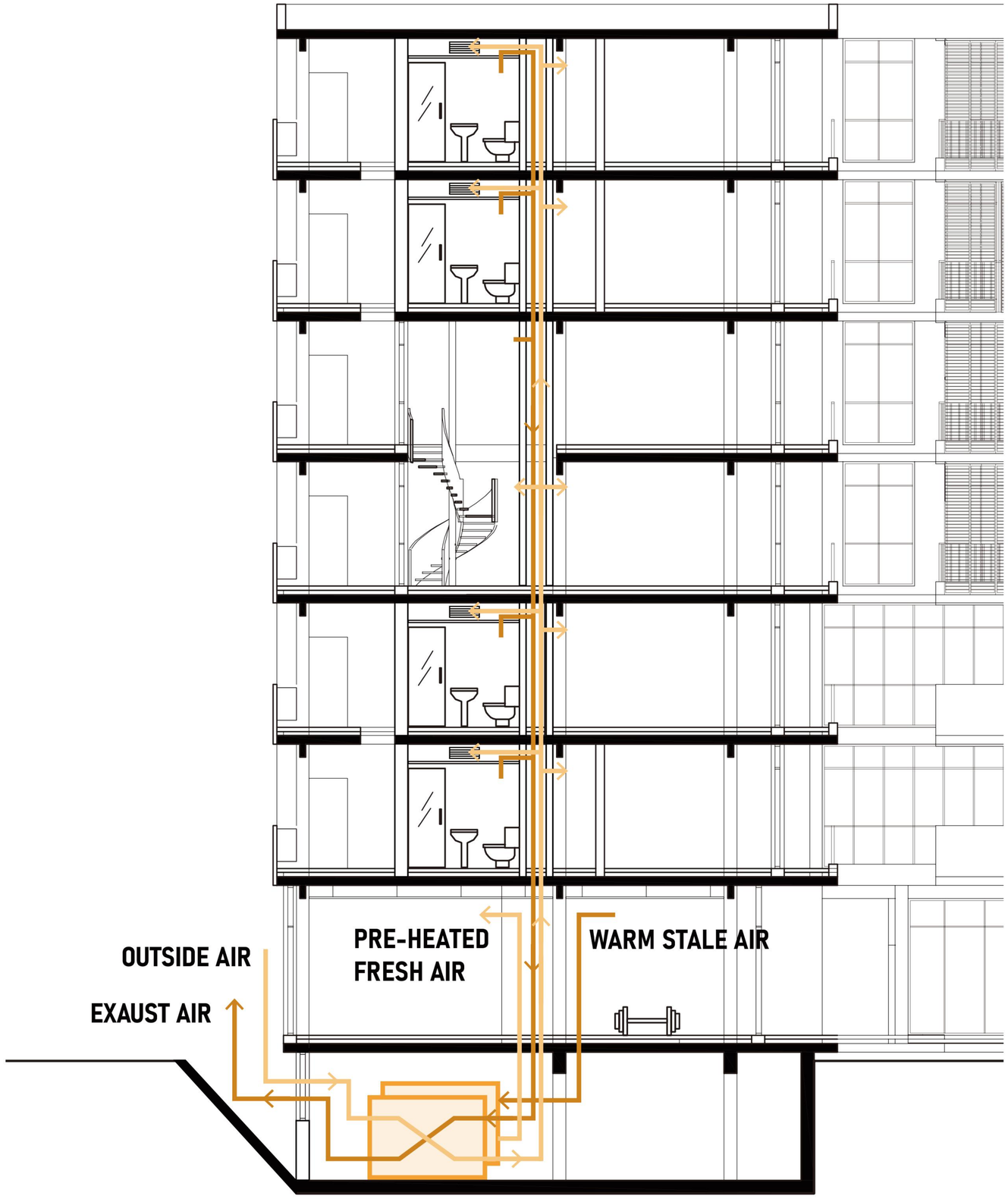




VENTILATION IN WINTER

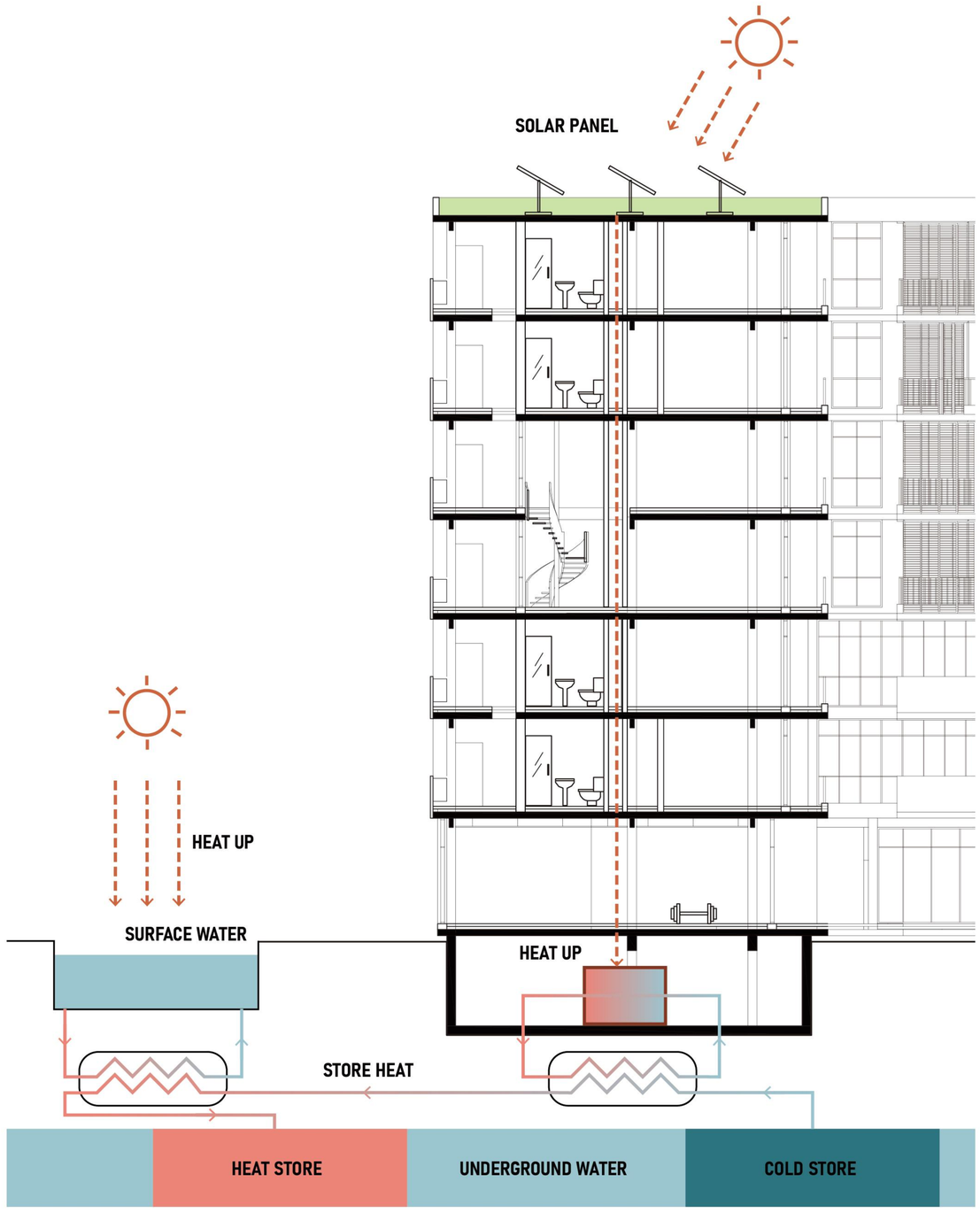




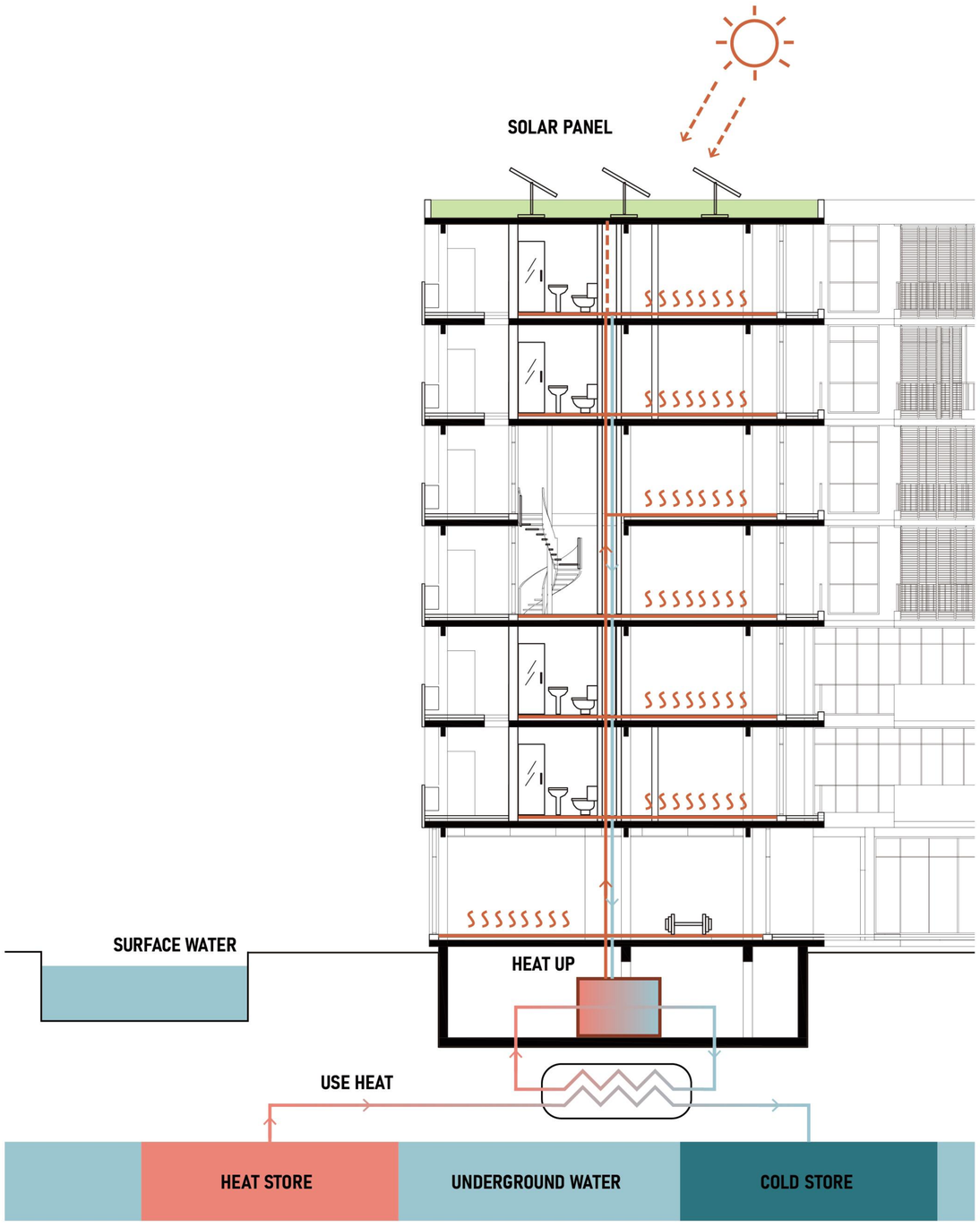


ENERGY SYSTEM

SUMMER



WINTER




This i OOTH: so not intended for spraying!


This is a FOTO BOOTH: so not intended for spraying!


for spraying!


for spraying!


for spraying!


for spraying!


for spraying!