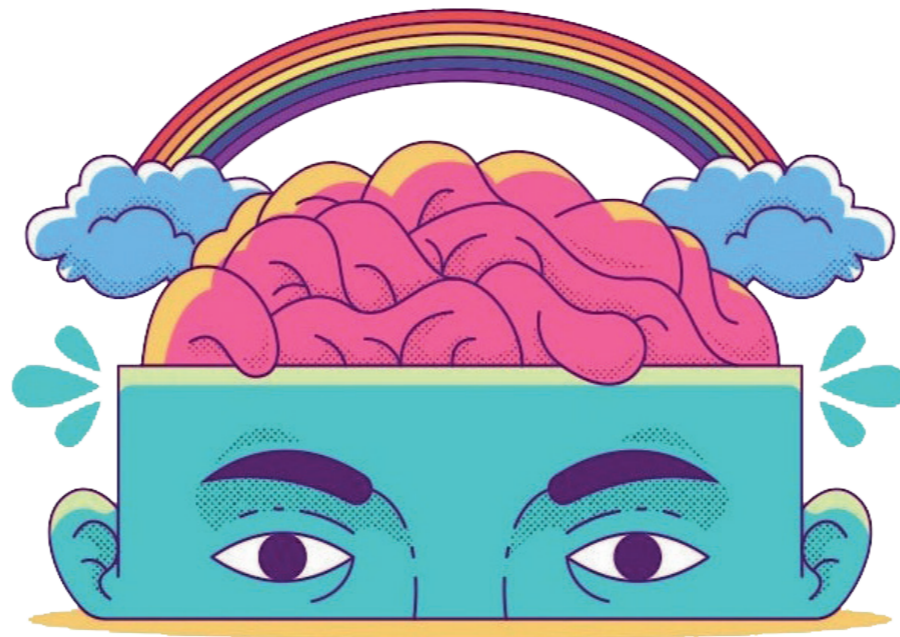


CAMPUS NORTH



PLAY, EXPERIMENT, DISCOVER & LEARN

HERITAGE FOR GENERATIONAL GROWTH

MAYS AL-KORANY

4523687

MENTORS:

ARCHITECTURE : ANNETTE MARX

BUILDING TECHNOLOGY : PIERRE JENNEN

CONTENT

Context
Research
Design
Reflection



CONTEXT

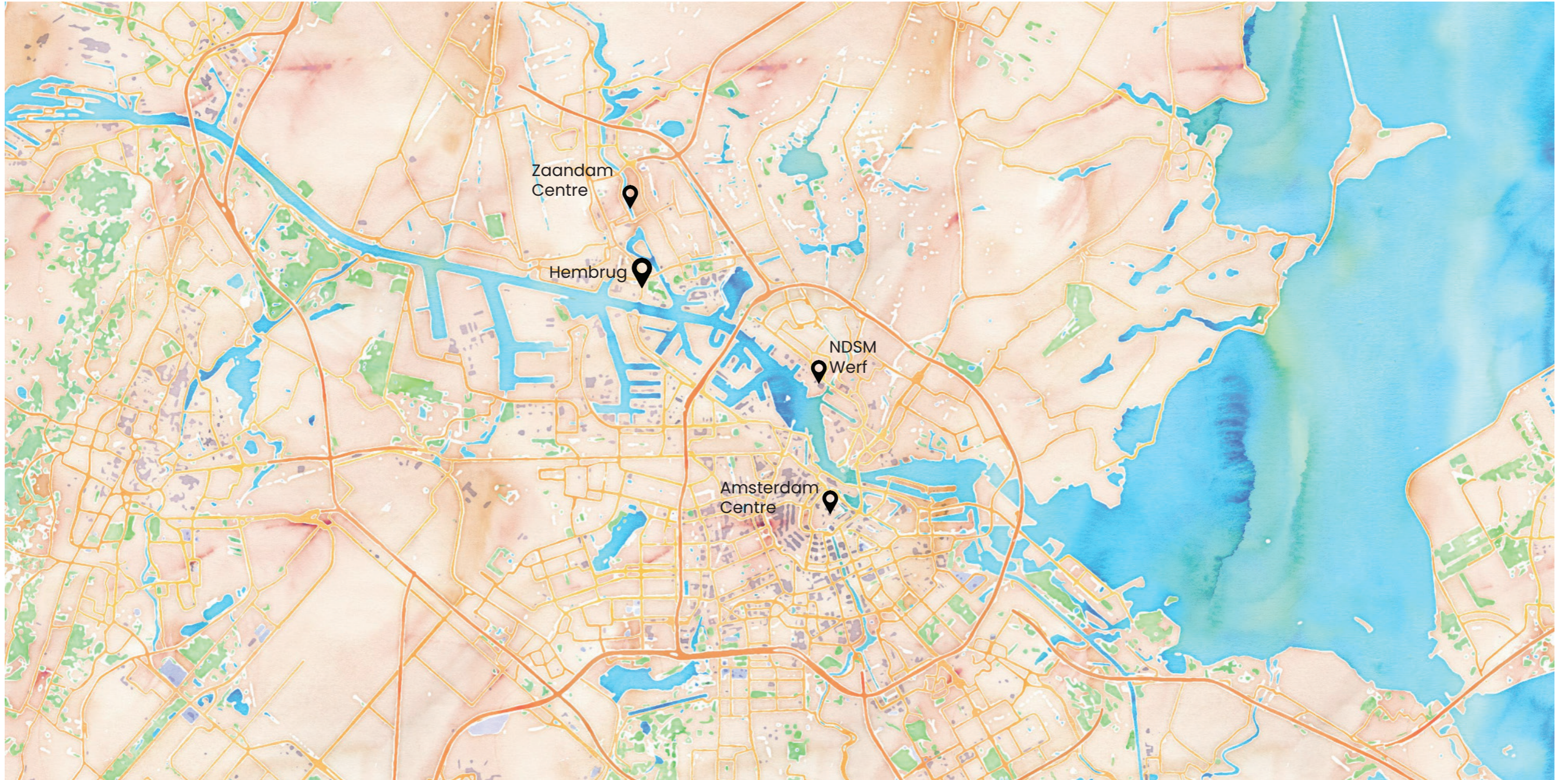
Hembrug, Zaandam

CONTEXT

Hembrug, Zaandam

Campus North

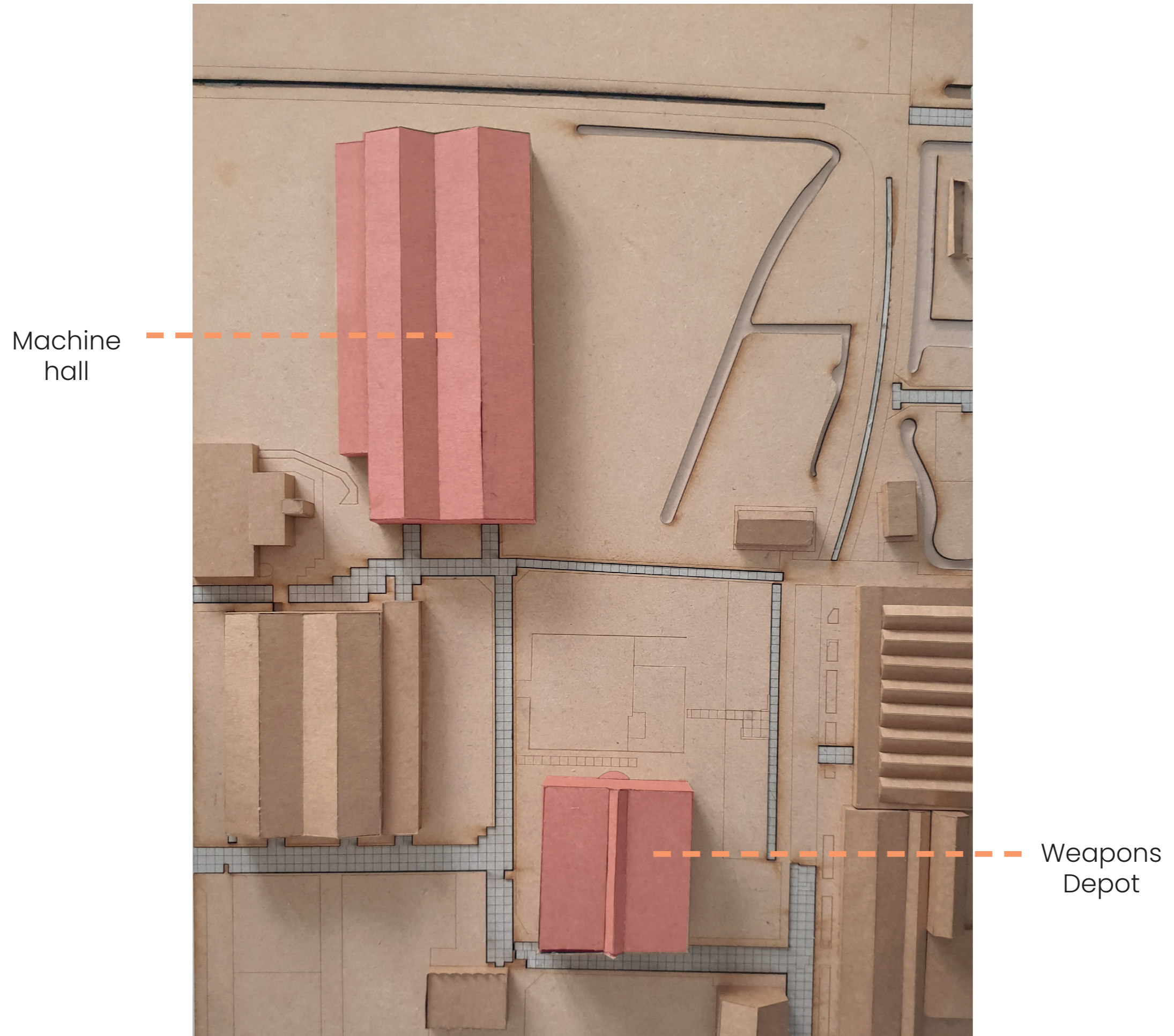
HEMBRUG, ZAANDAM



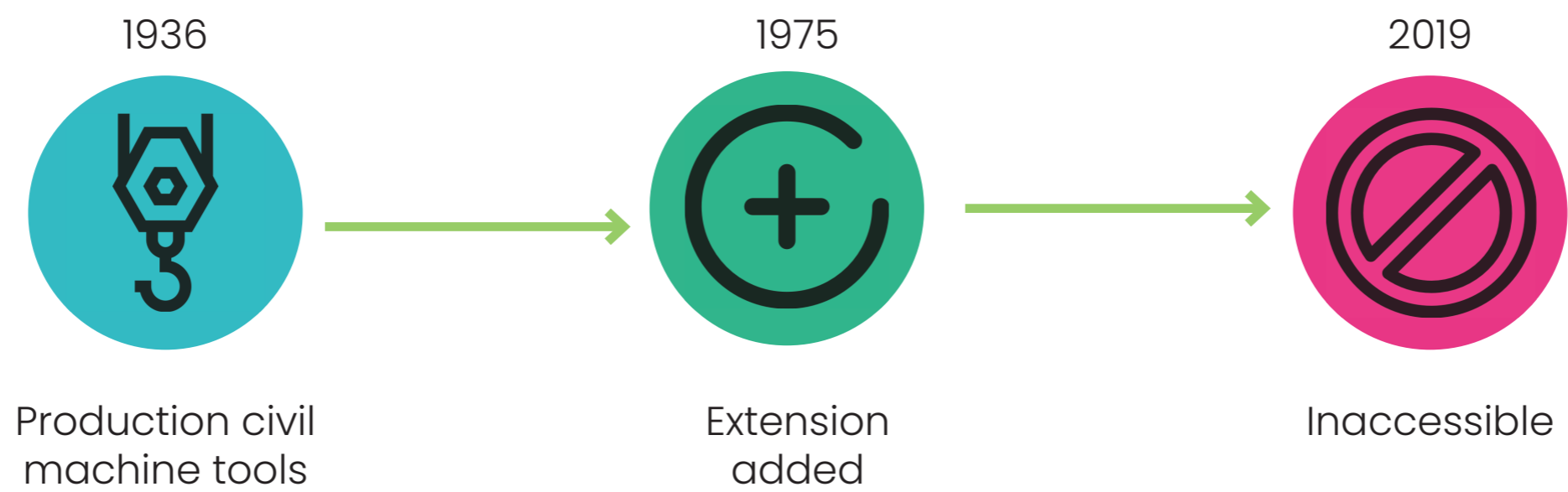


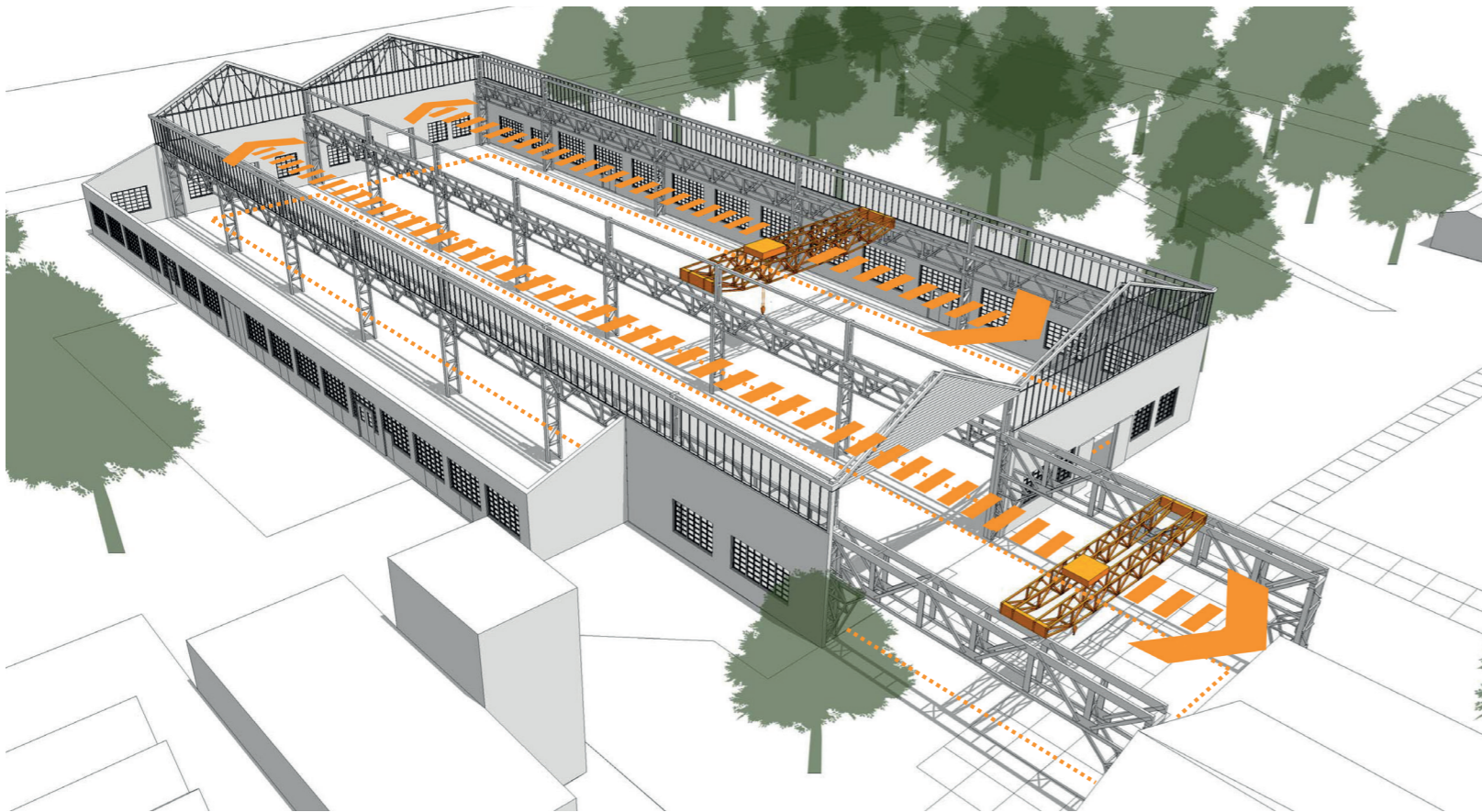
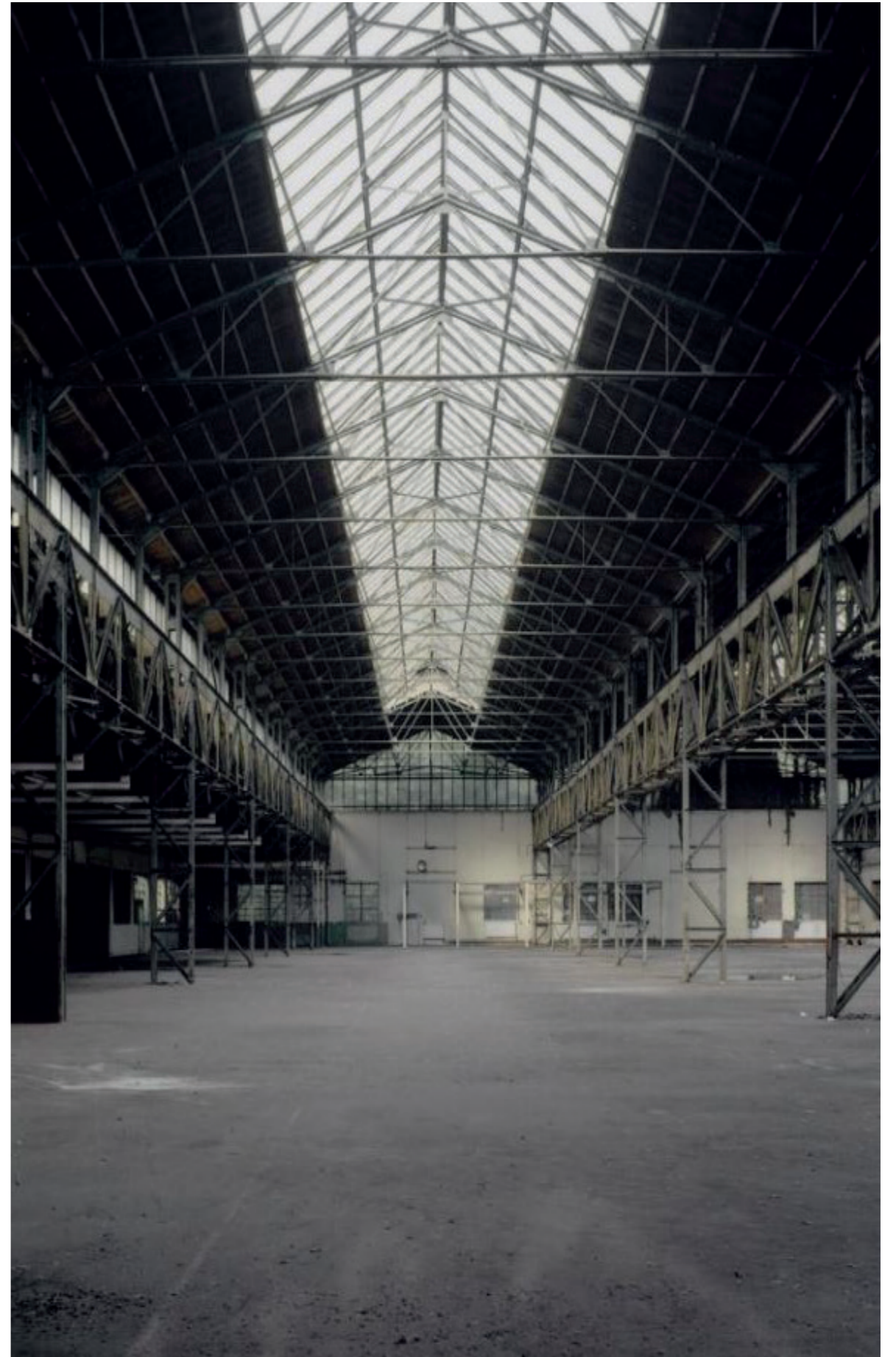


CAMPUS NORTH

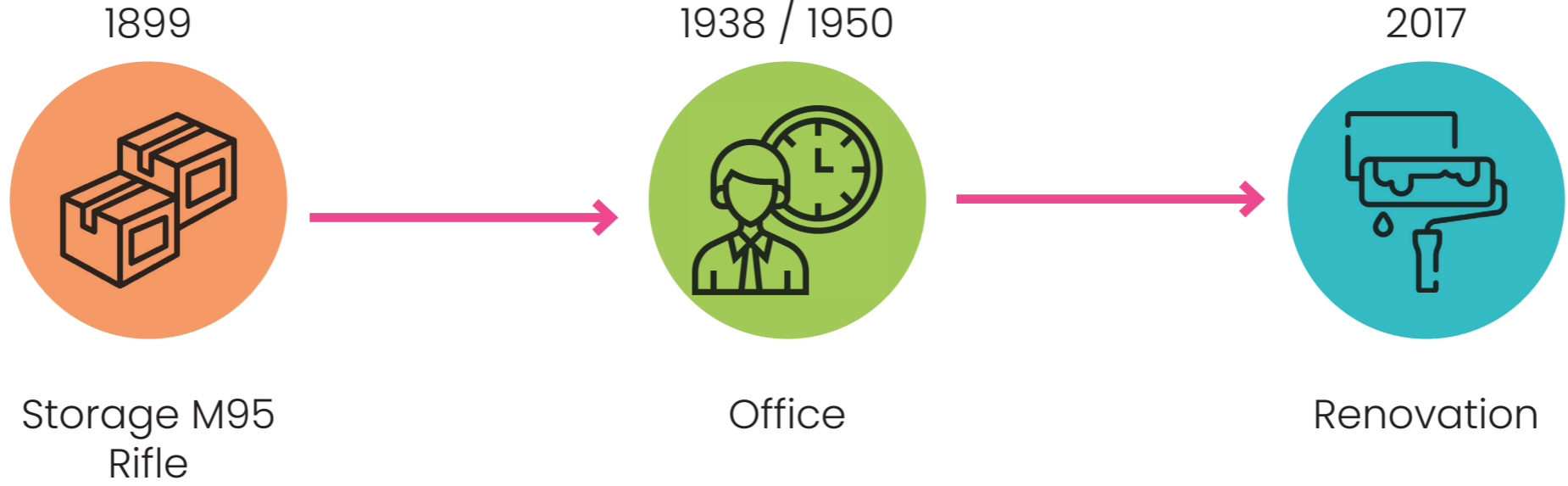


MACHINE HALL



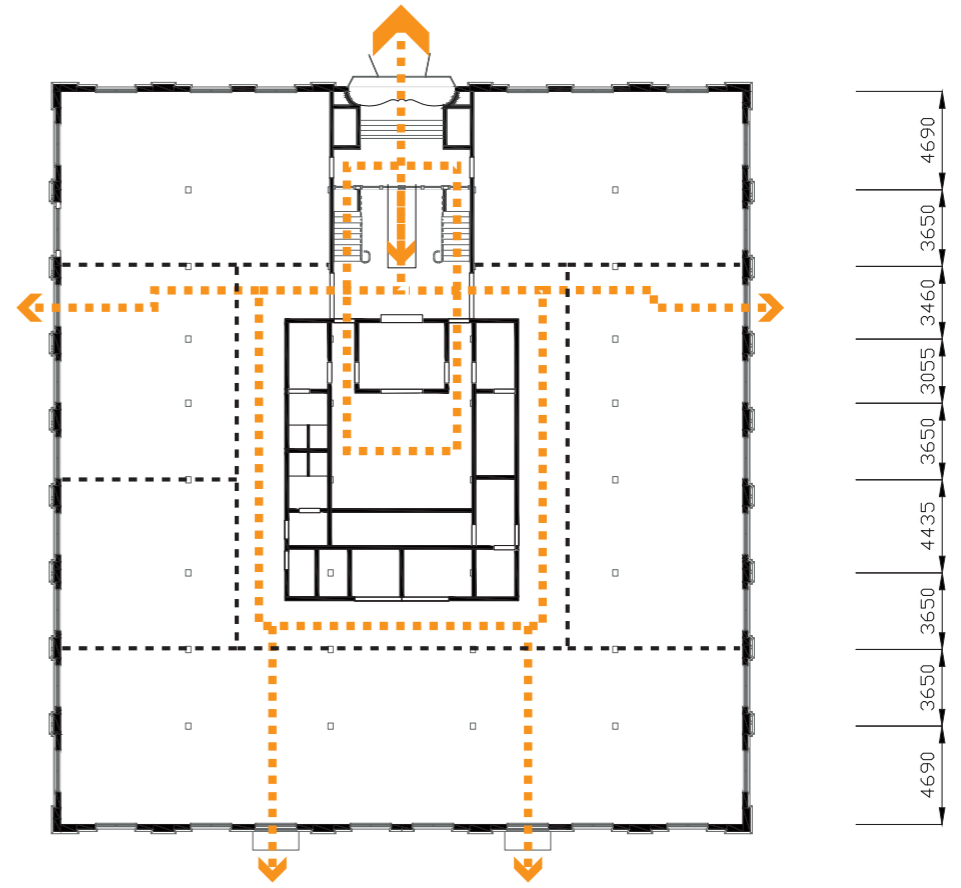


WEAPONS DEPOT

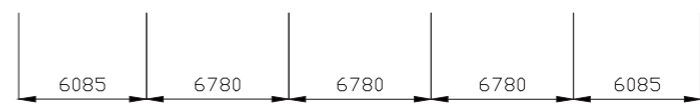
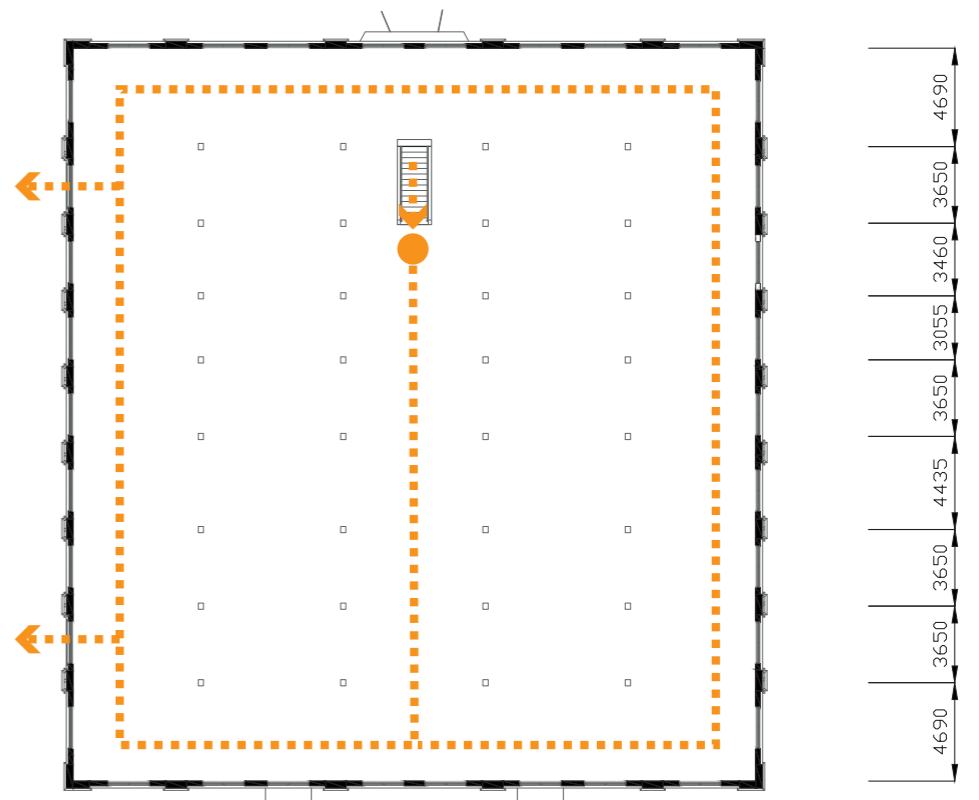


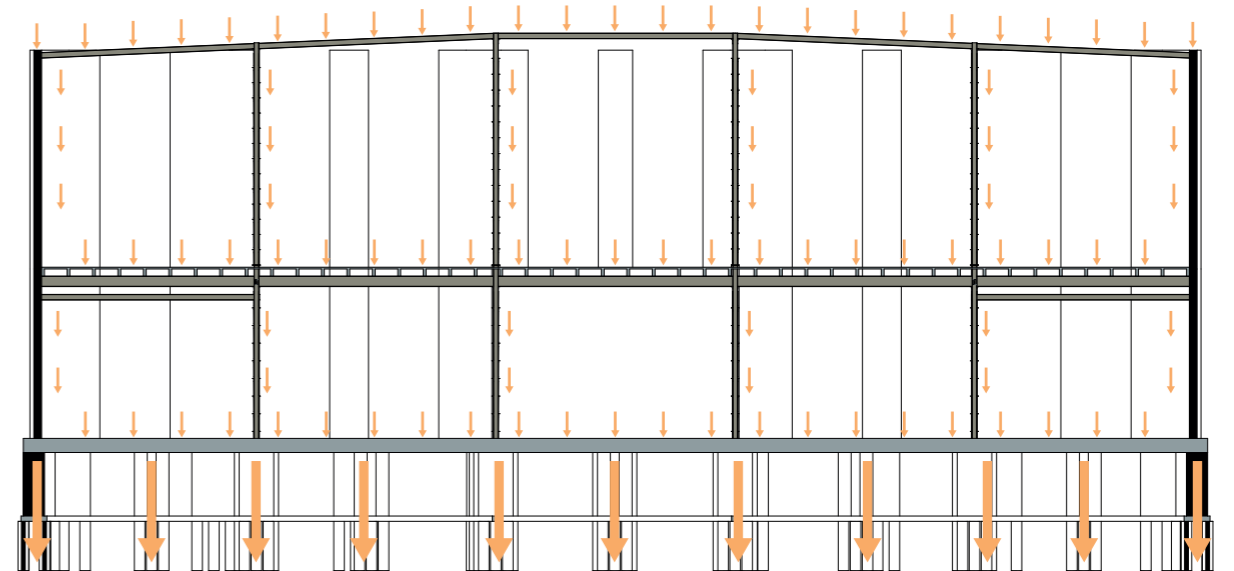
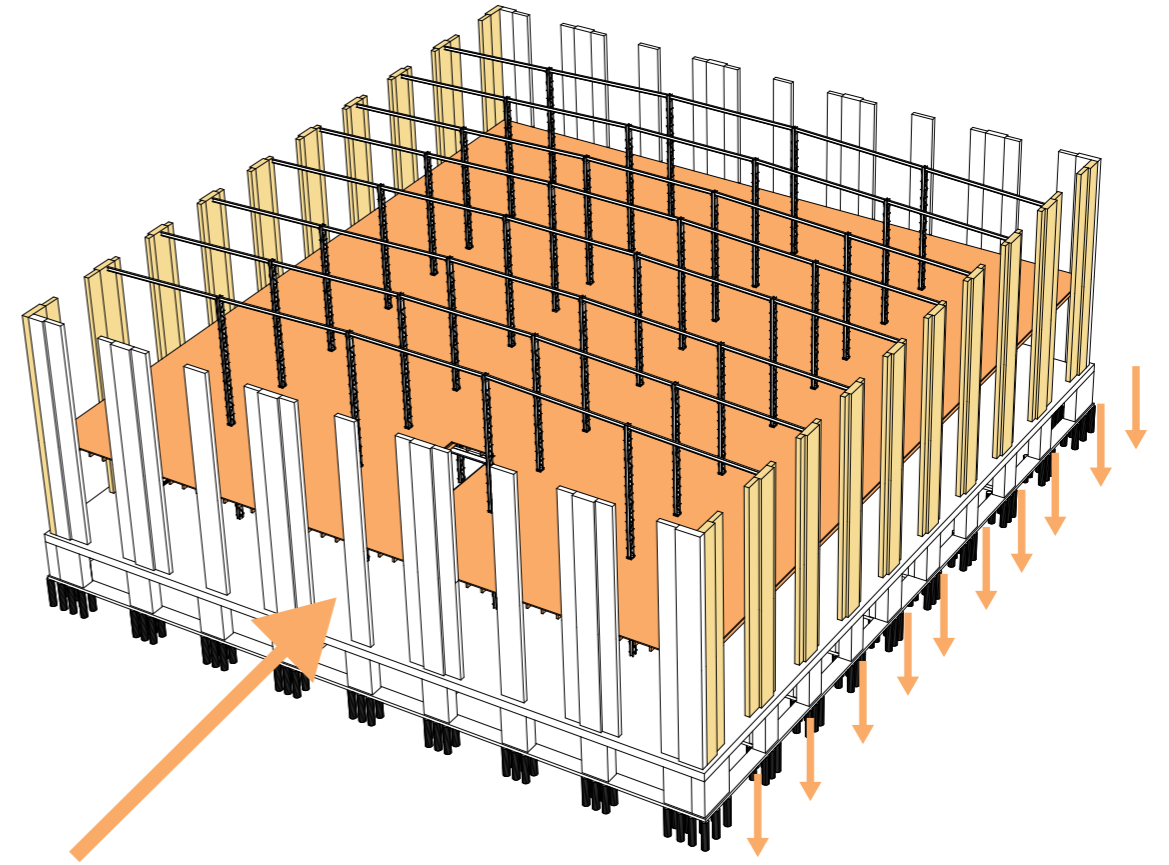
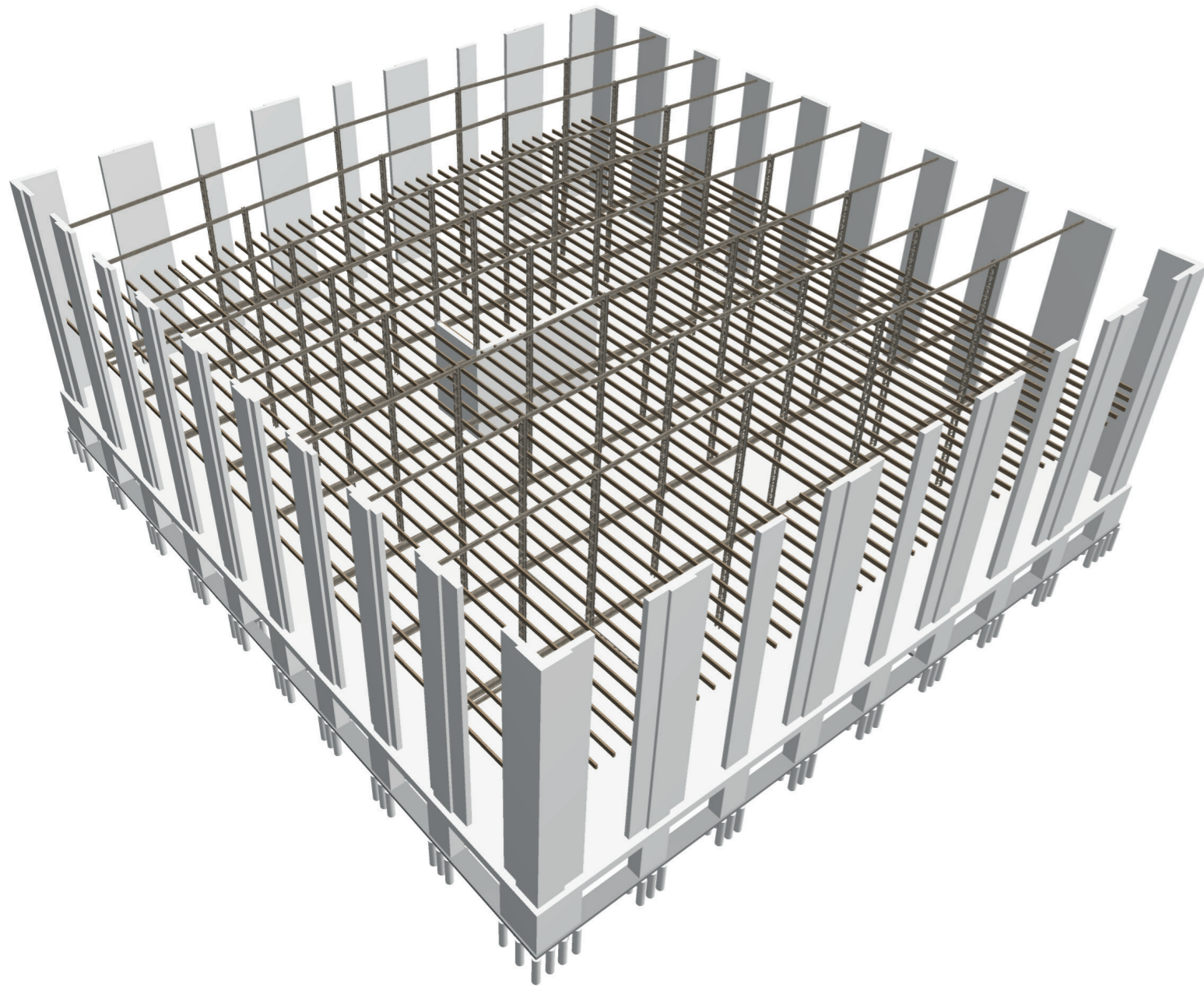


Gf



1st





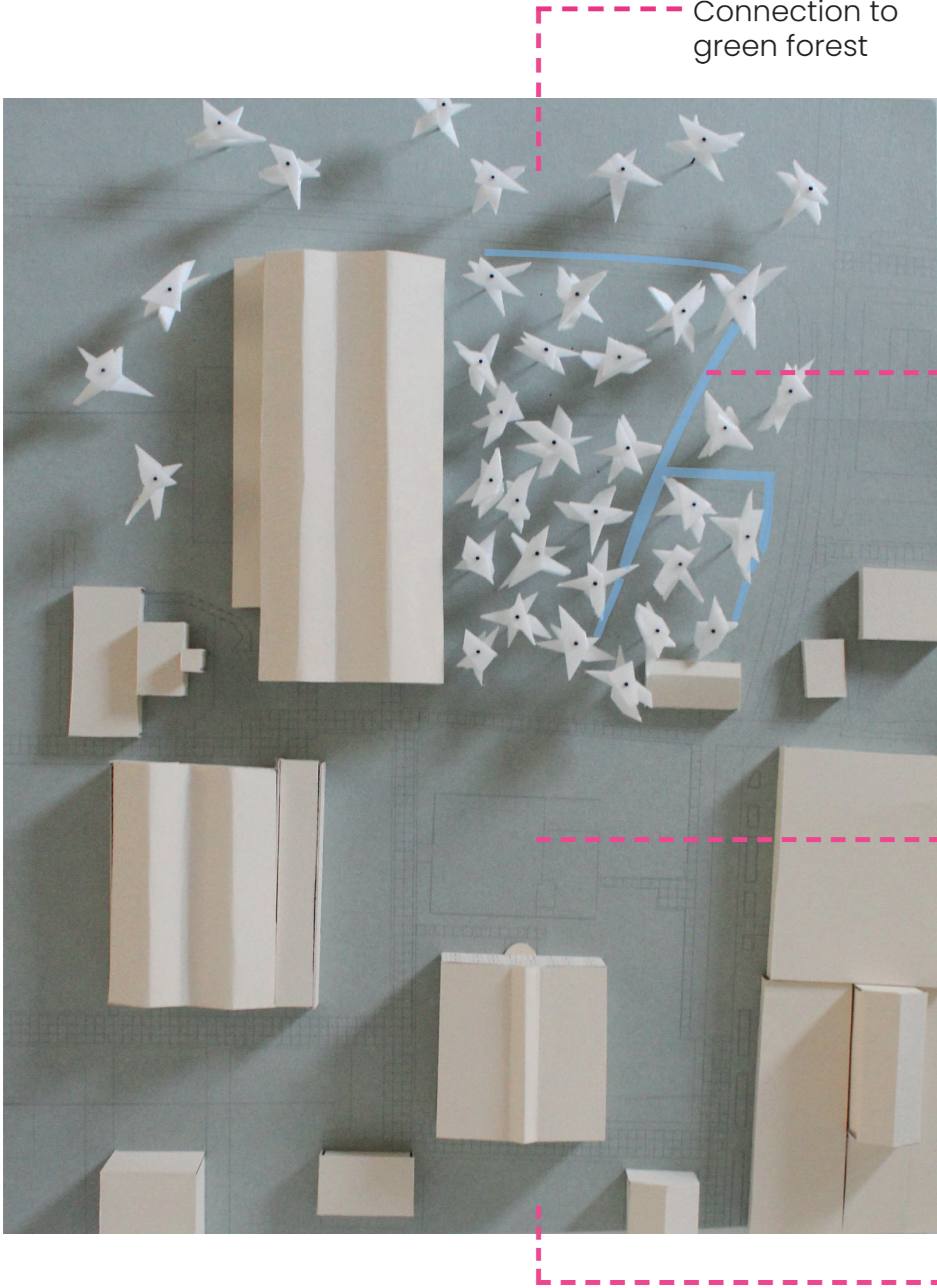




RESEARCH

How did Hembrug influence the character of
Campus North today?



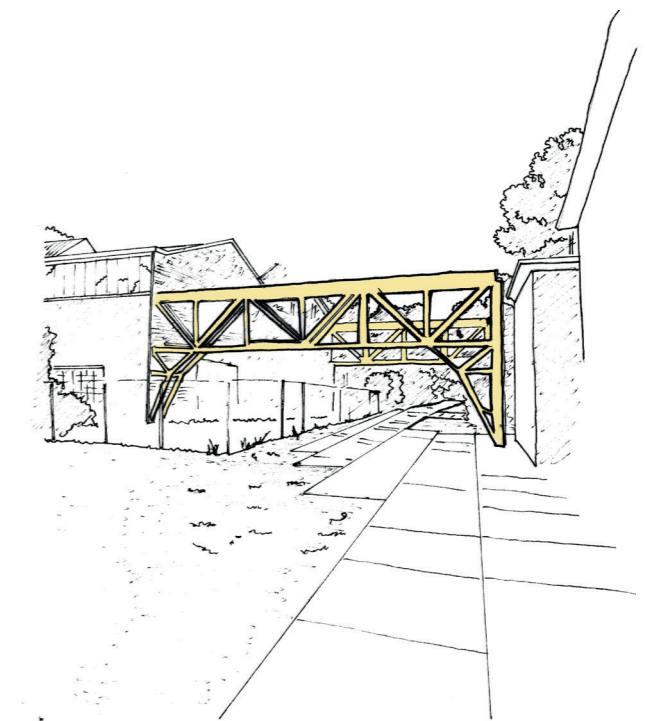
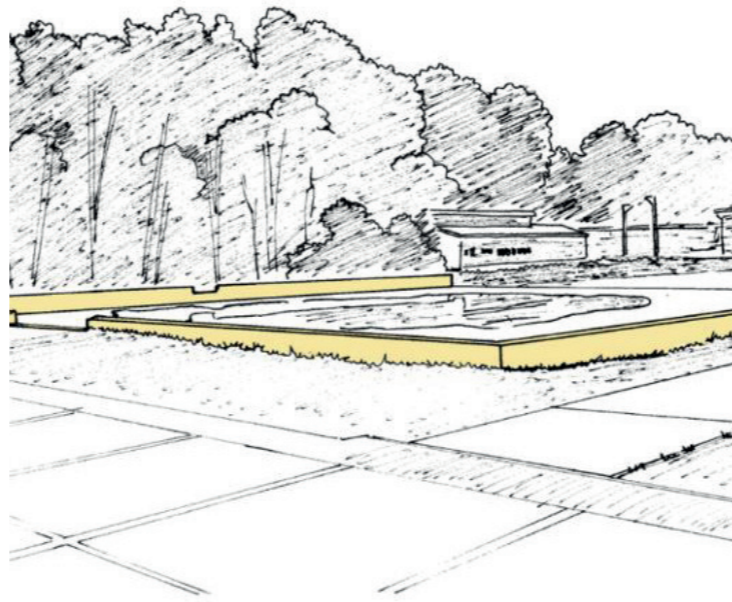
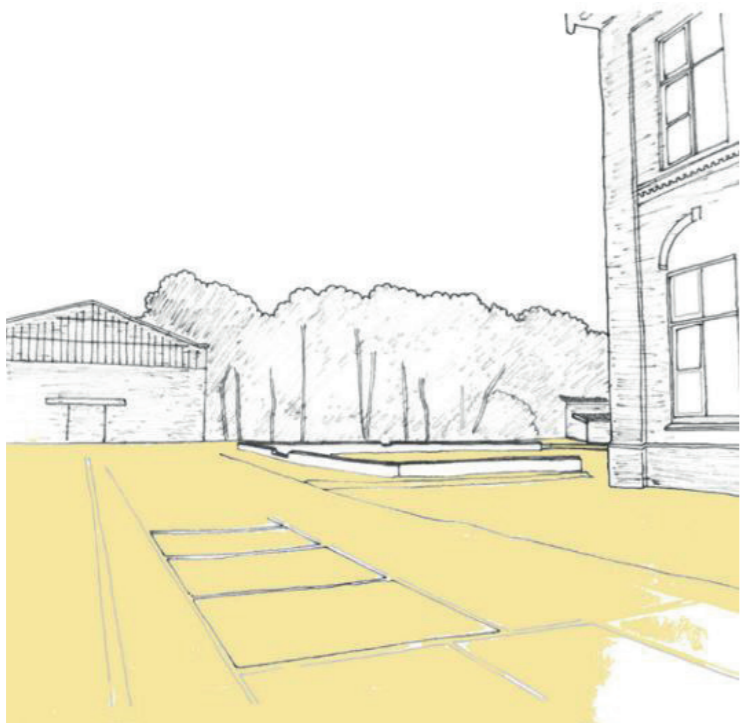
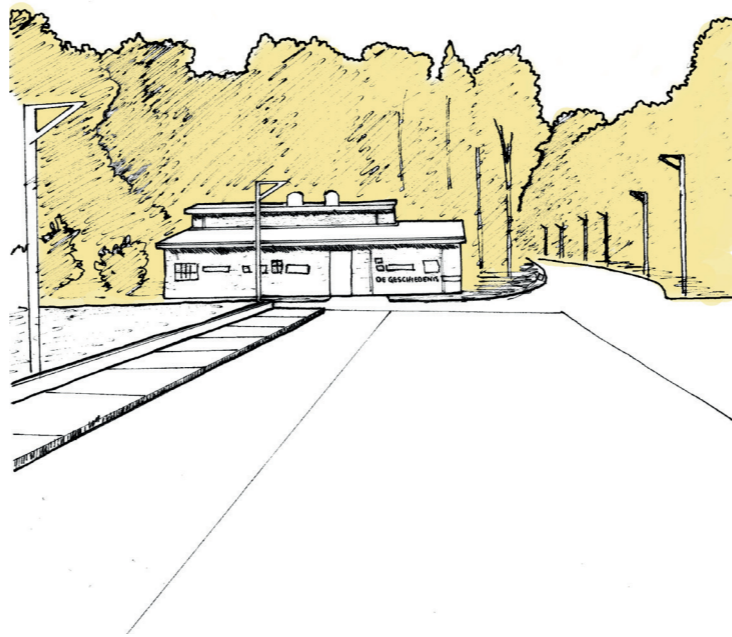
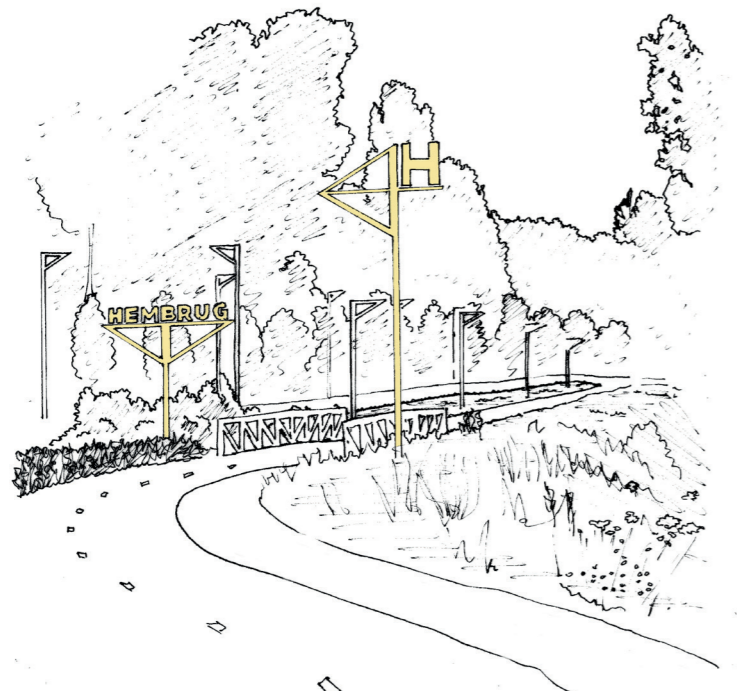


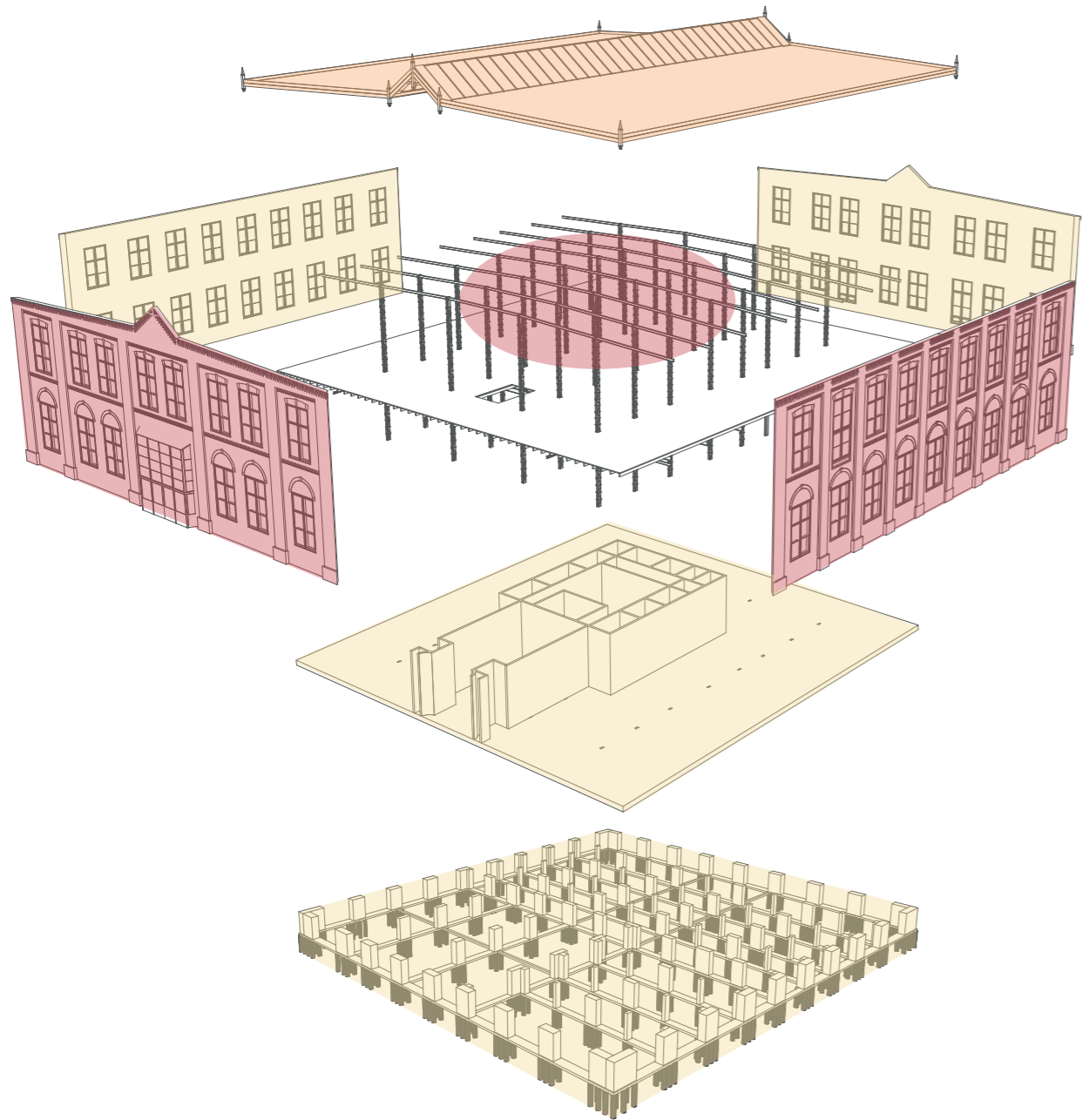
Connection to green forest

Connection to water

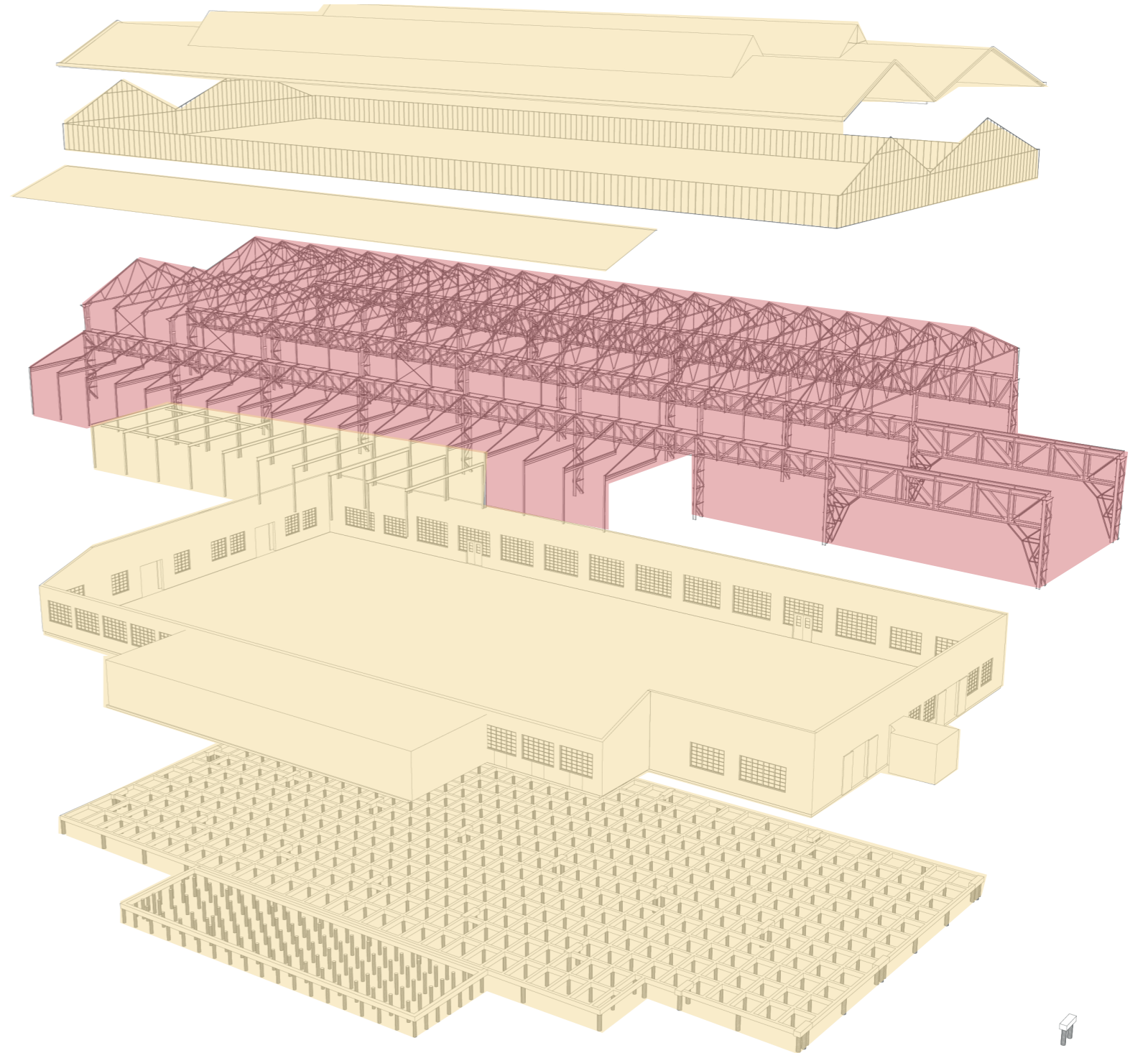
Square as connecting tool

Open field





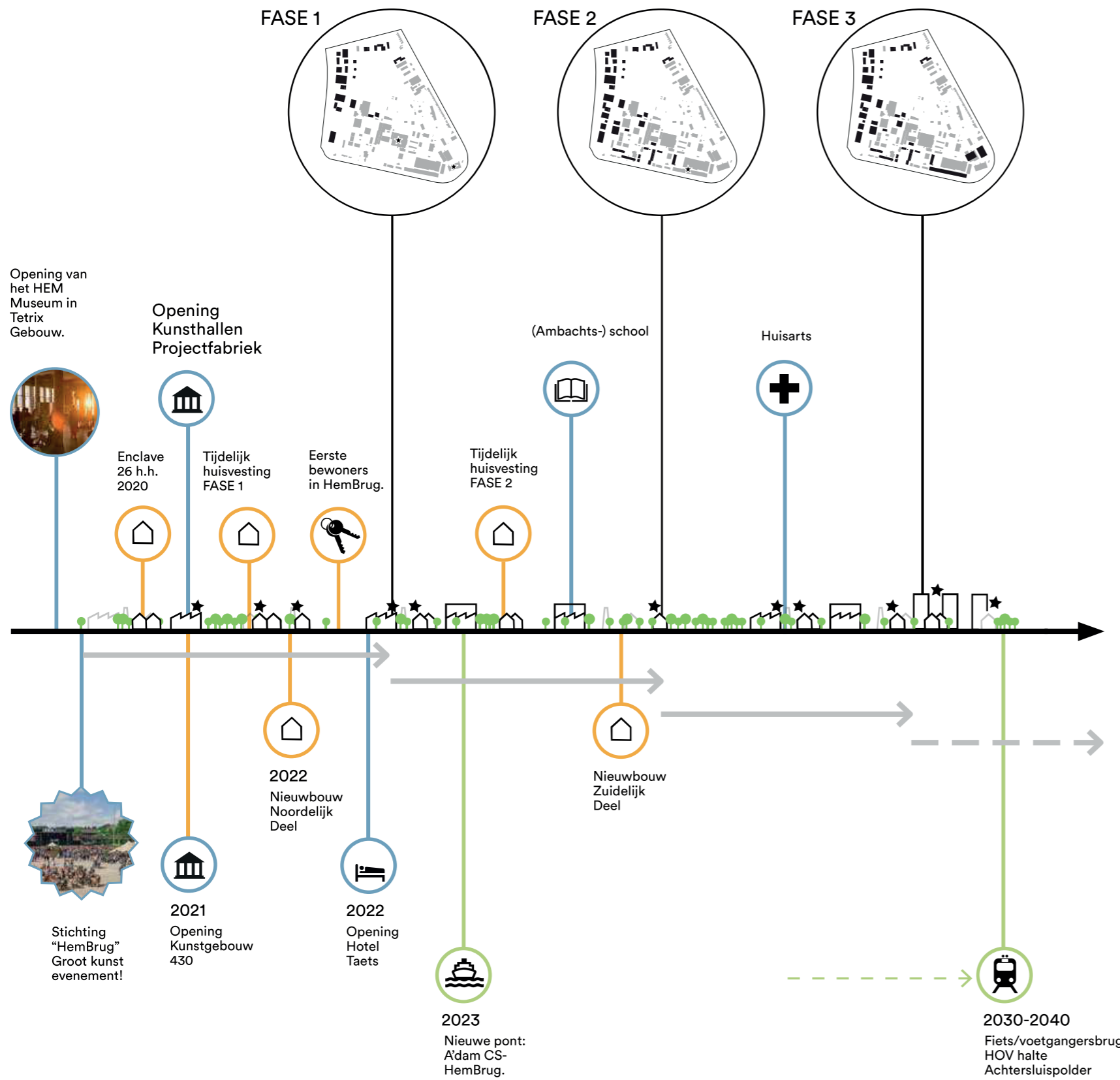
WEAPONS DEPOT



MACHINE HALL

- Preserve
- Restore/ repair
- Room for renewal

What does the future hold for the Hembrug terrain and how does our society play into it?

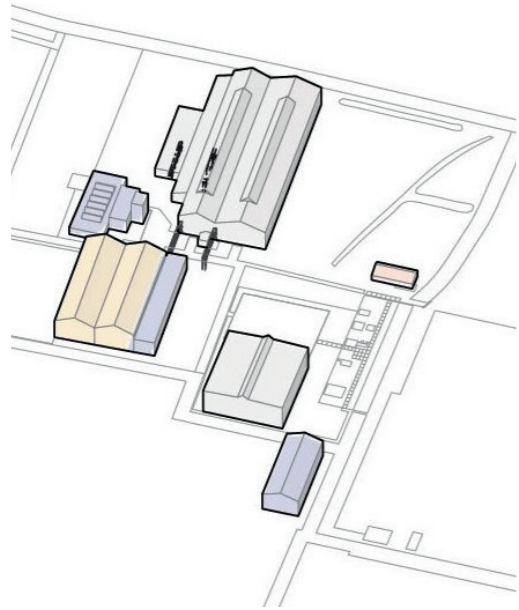


'Hembrug:
 from a closed, former
 military industrial estate
 to an accessible and
 attractive mixed area
 for living, culture,
 nature and business'





DESIGN INPUT



Hembrug & Campus North qualities

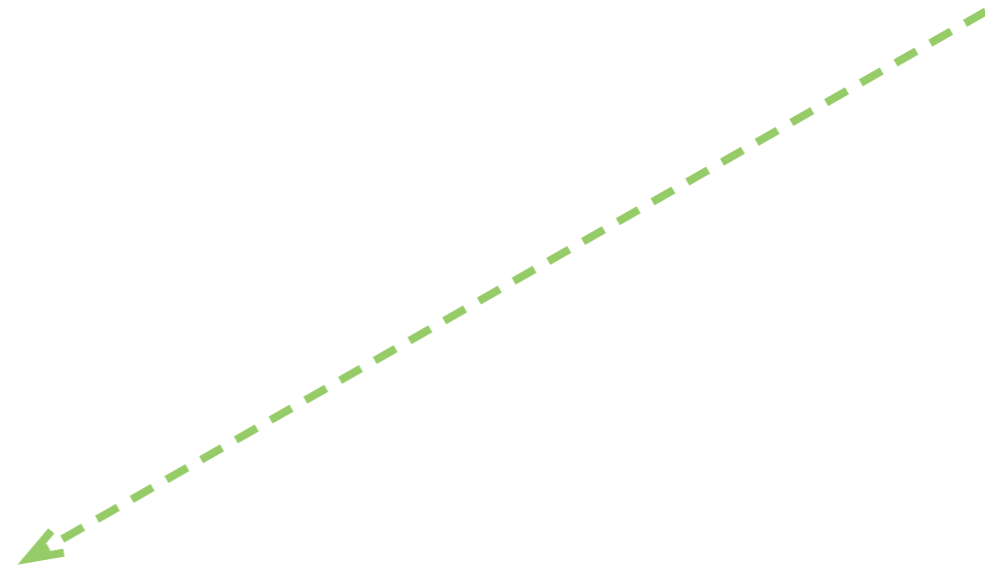
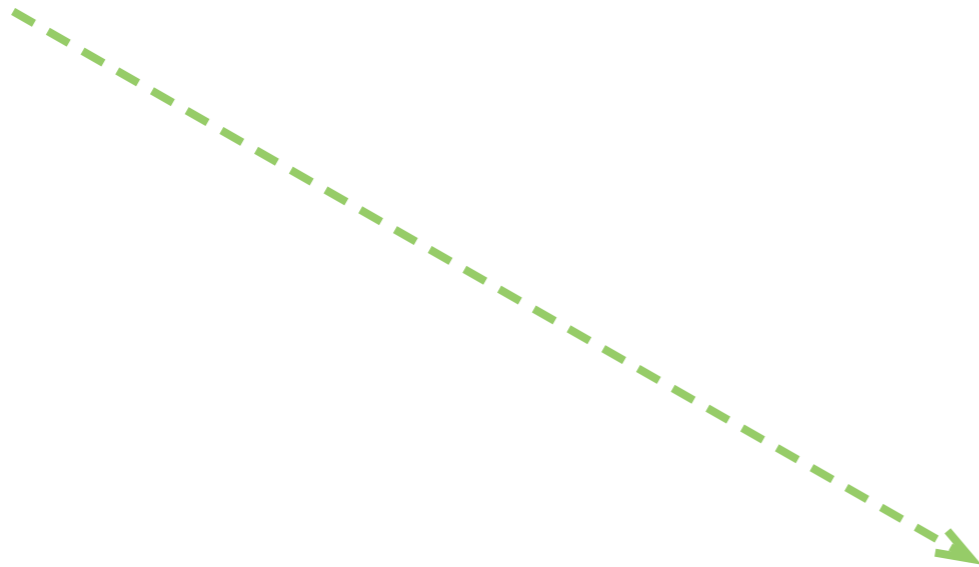


Integrate design with future masterplan



Improve a social dilemma

DESIGN



DESIGN

How can the green character of Campus North be used to create an environment for children and fit into the future plans for Hembrug?

POSITION IN HERITAGE & ARCHITECTURE



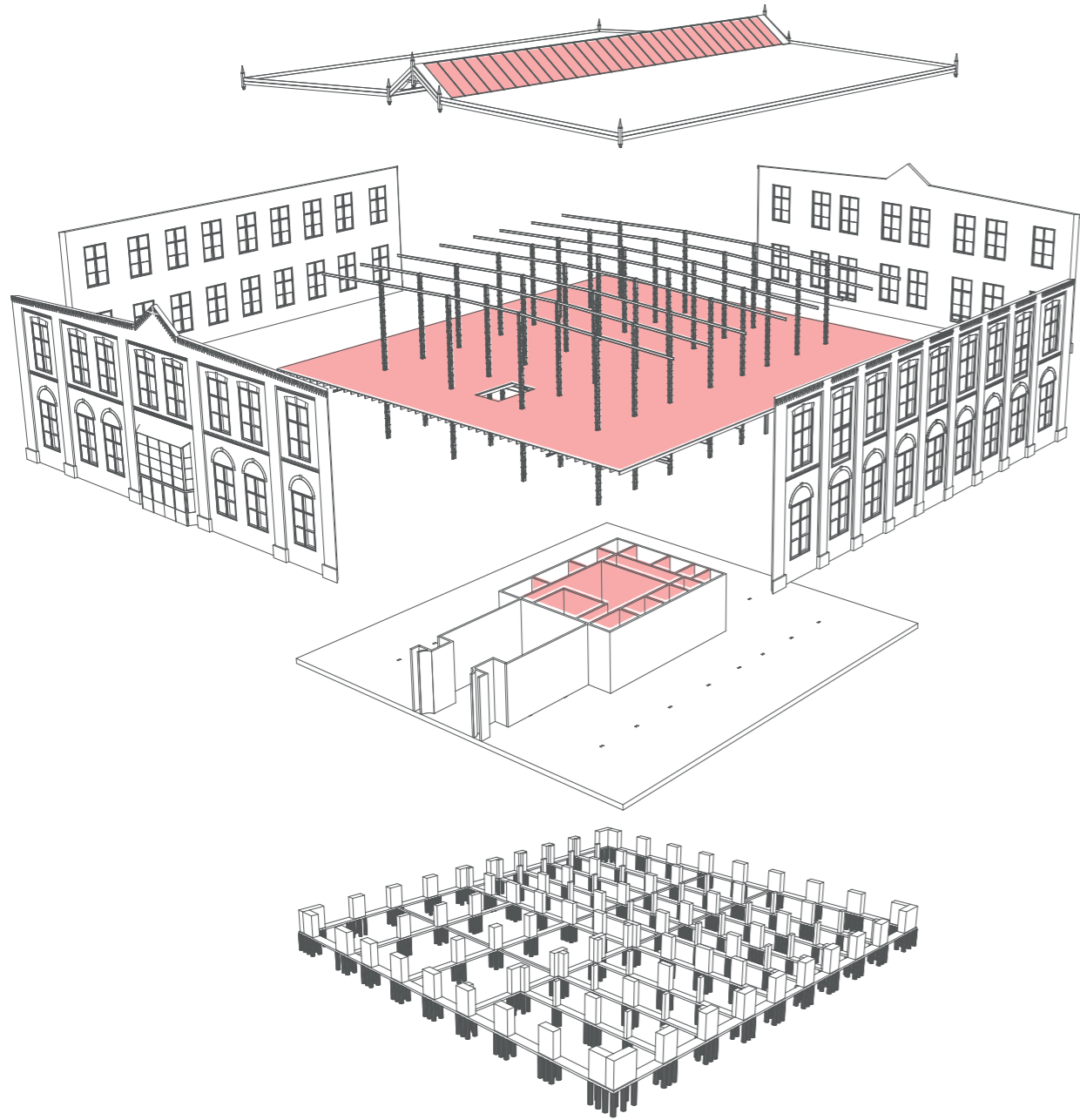
UNFINISHED BUILDINGS OR ARCHITECTURE CAN BE CONSIDERED MORE COMPREHENSIBLE, READABLE AND MORE STIMULATING.

THERE IS A CERTAIN QUALITY THAT LIES WITH WORKING WITHIN WHAT IS THERE.

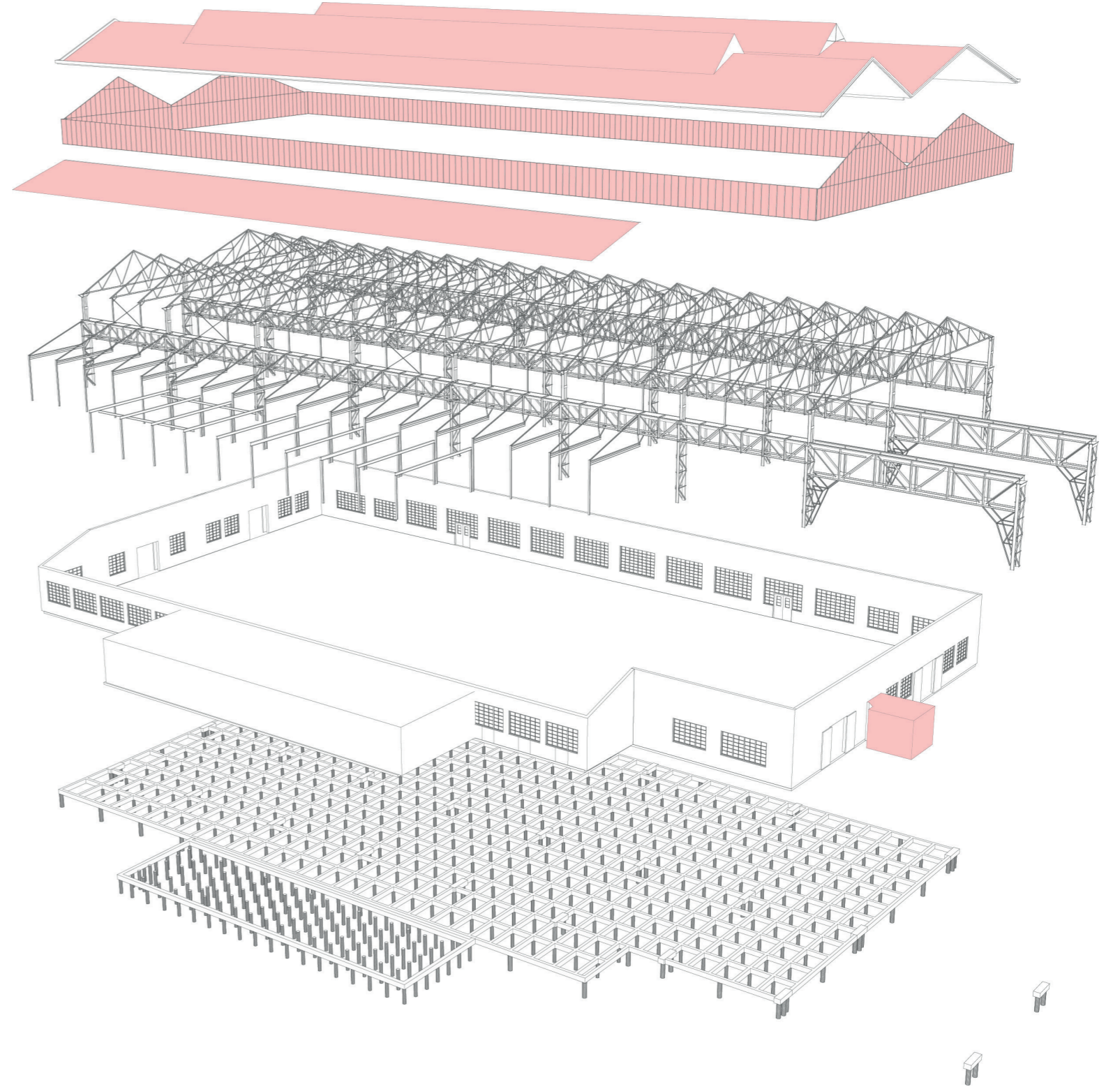
**Reduce
Reuse
Recycle**
➔

Architecture as Resource
German Pavilion
13th International Architecture Exhibition
La Biennale di Venezia 2012
Edited by
Muck Petzet / Florian Heilmeyer

PRESERVATION PLAN



WEAPONS DEPOT



MACHINE HALL

Parent | Child

Parent + Child



2 YEARS OLD



5 YEARS OLD



8 YEARS OLD



12 YEARS OLD



Needs & Developments

- * A safe place to play & explore
- * Adult supervision
- * Stimulative play

- * Lots of social interaction
- * Place for bigger play and dramatic play
- * Tactile play

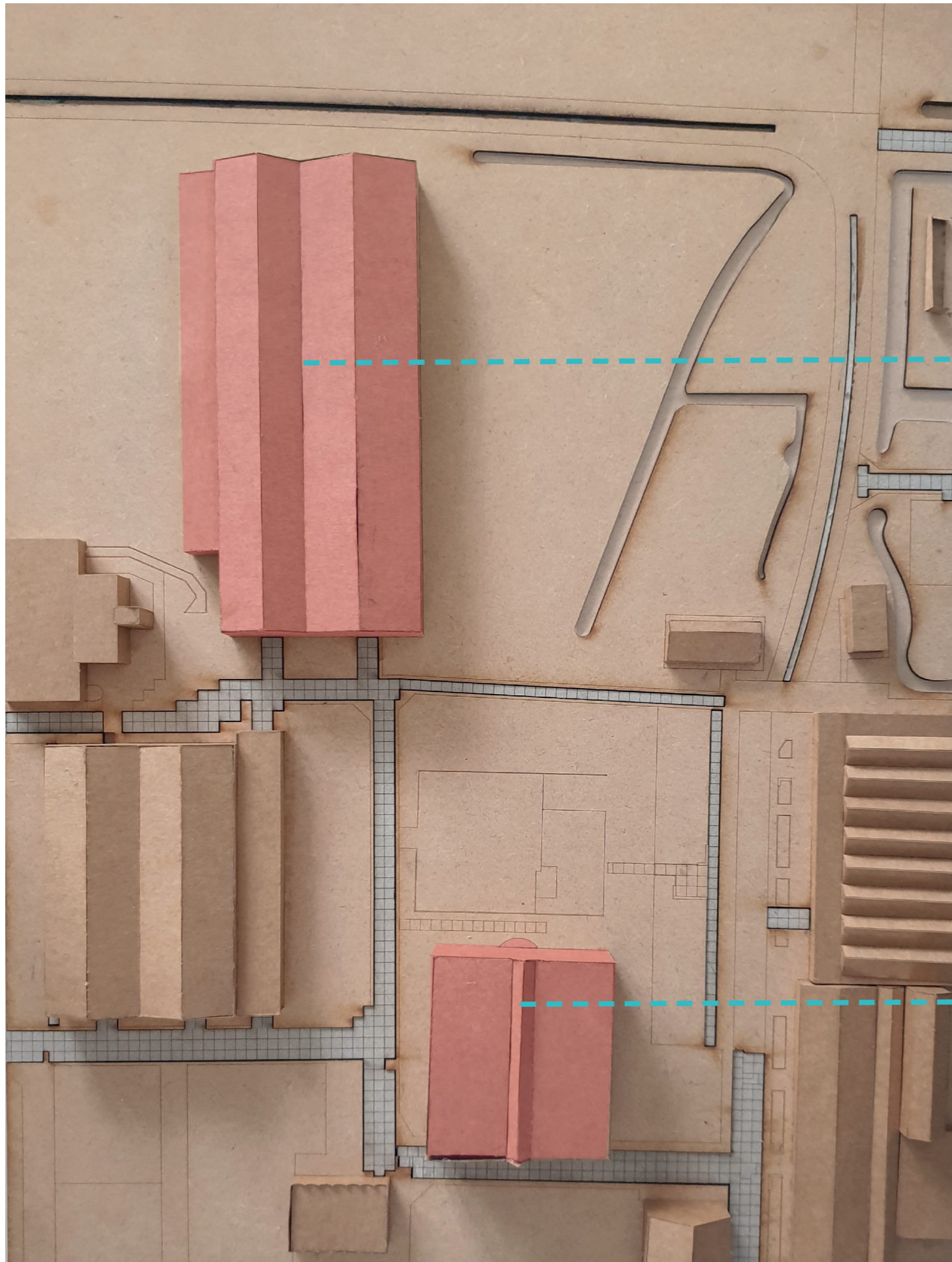
- * Finer tasks to increase smaller muscle skills
- * social interactions are important
- * Independent play

- * Looks to peers for approval
- * a lot of social play
- * (team) sports/ activities

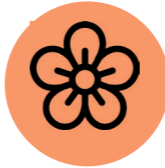
Activities & Recreation

Parent





INDOOR GARDEN



MAKE SHOPS



WATERPLAY



WORK SPACES



THEATRE



PAINTING



MUSIC



WORK SPACES



CAFÉ



READING

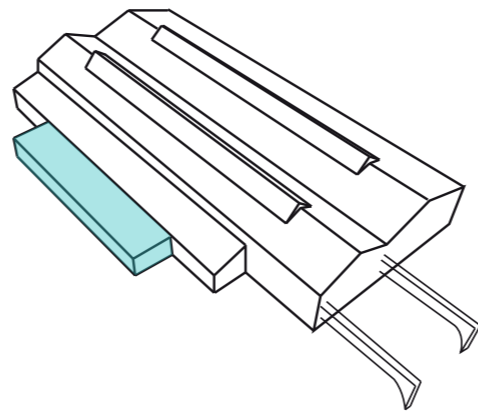


DANCE





MACHINE HALL

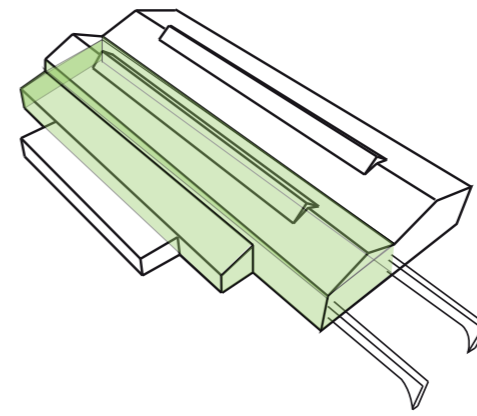


FLOOR	3860 M2
WATERPLAY	360 M2
WORK/ MAKE	1714 M2
INDOOR GARDEN	1717 M2

OCCUPANCY RATE
X 0.125 60 PEOPLE



WATERPLAY



FLOOR	3860 M2
WATERPLAY	360 M2
WORK/ MAKE	1714 M2
INDOOR GARDEN	1717 M2

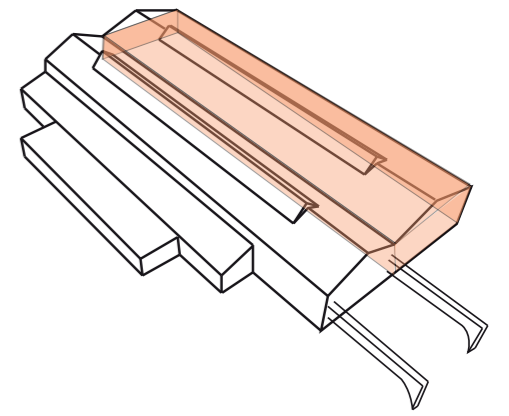
OCCUPANCY RATE
X 0.125 230 PEOPLE



MAKE SHOPS

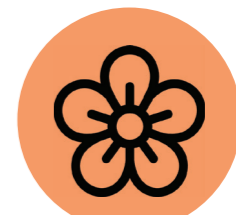


WORK SPACES

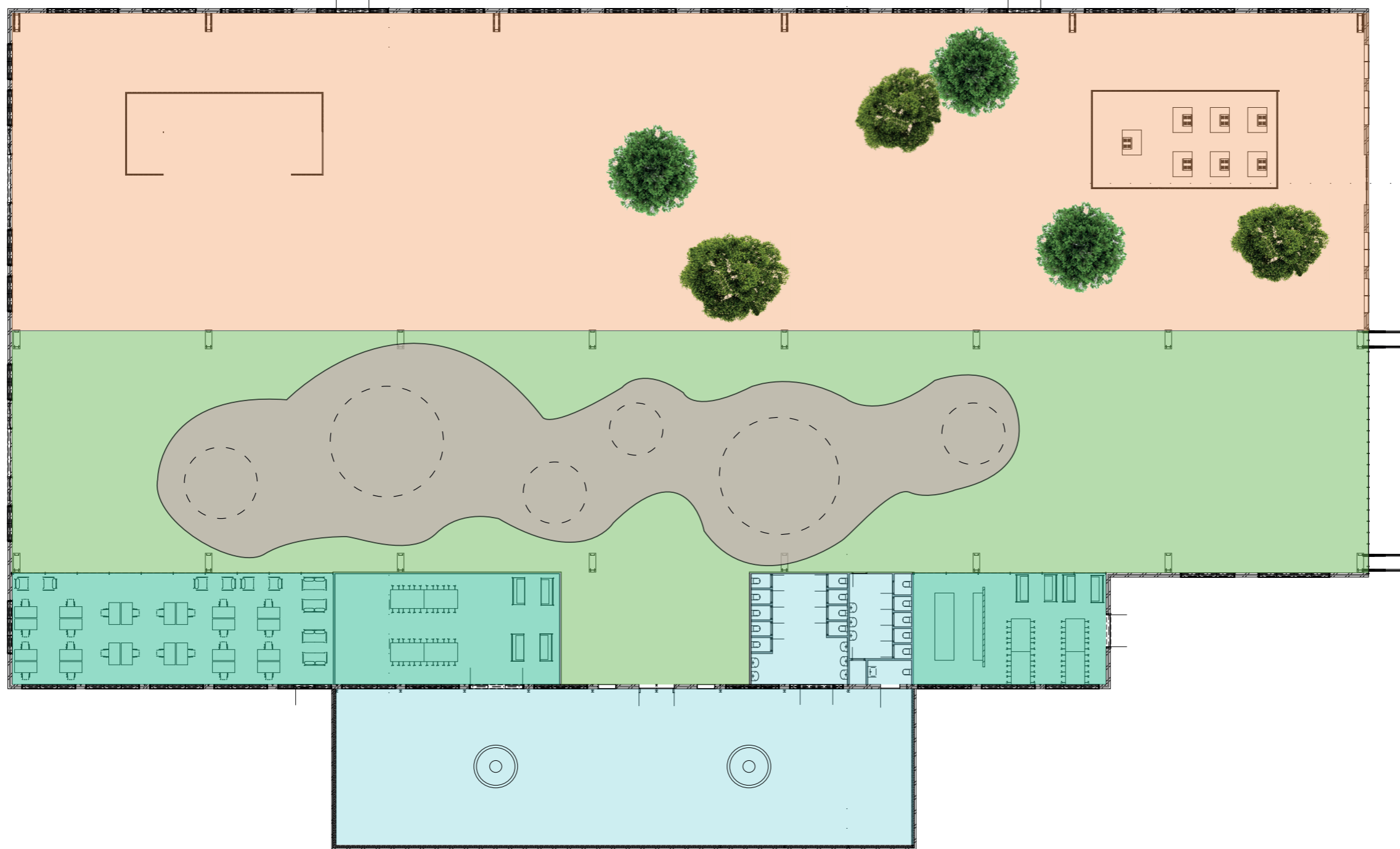


FLOOR	3860 M2
WATERPLAY	360 M2
WORK/ MAKE V	1714 M2
INDOOR GARDEN	1717 M2

OCCUPANCY RATE
X 0.125 225 PEOPLE



INDOOR GARDEN

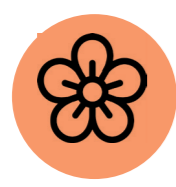


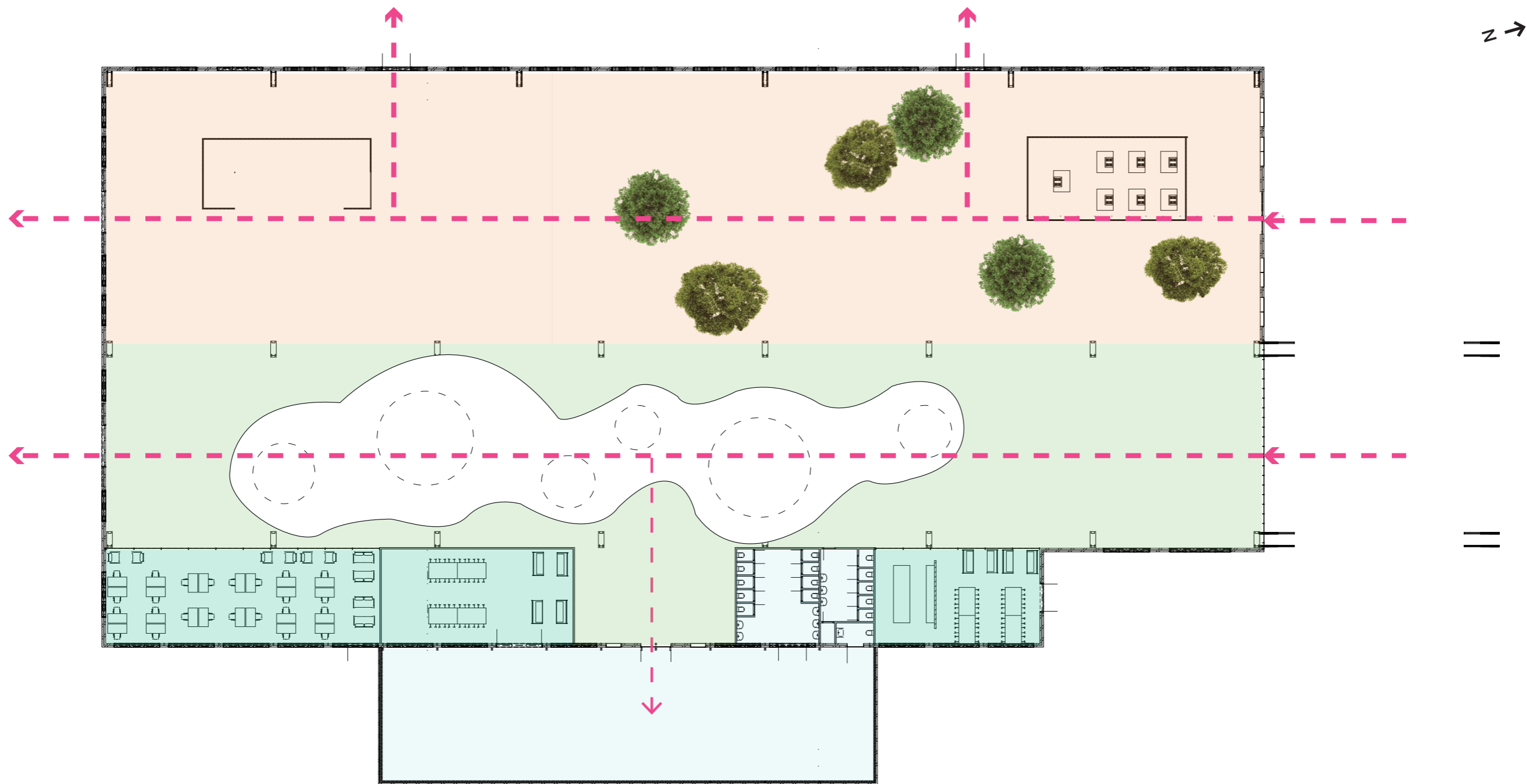
INDOOR GARDEN

MAKE SHOPS

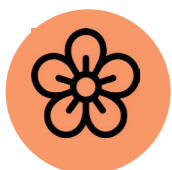
WATERPLAY

WORK SPACES





INDOOR GARDEN



MAKE SHOPS



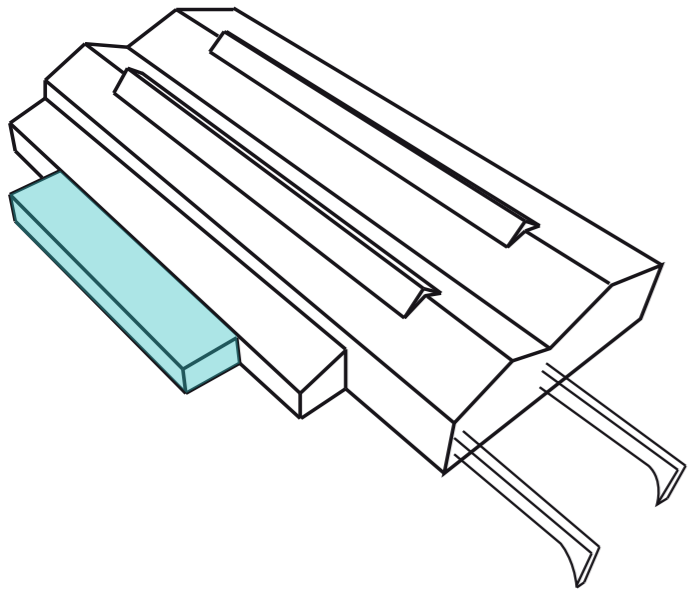
WATERPLAY



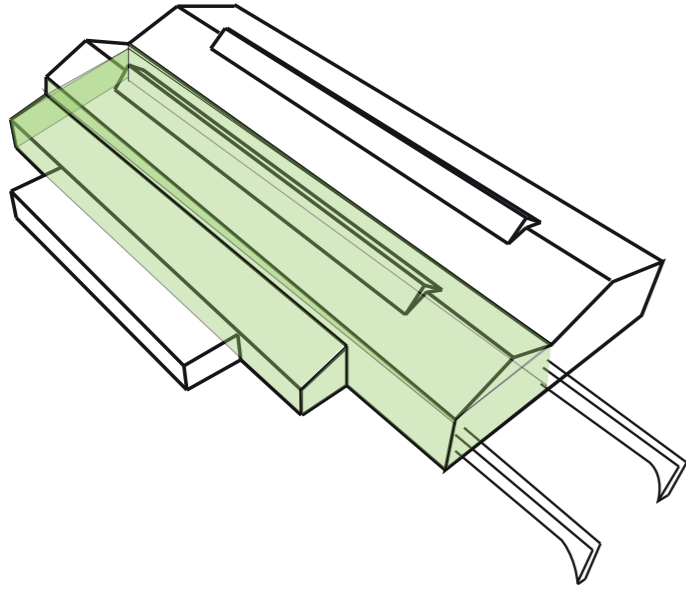
WORK SPACES



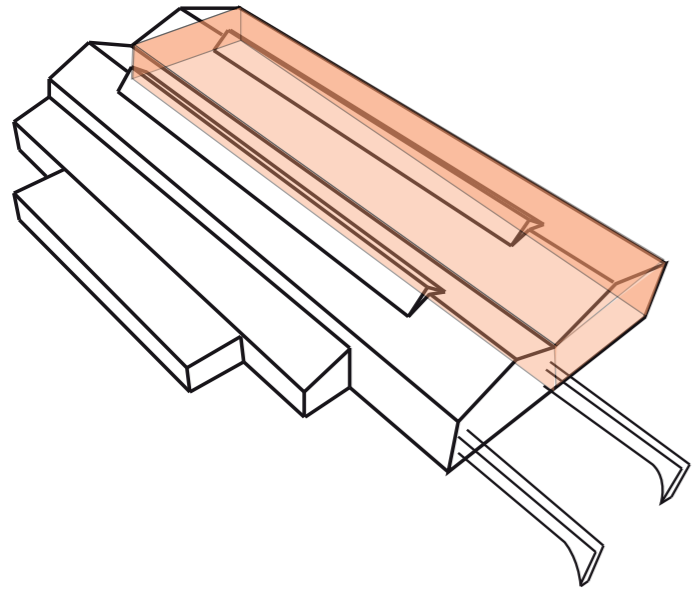
WATERPLAY



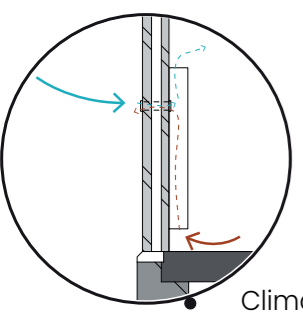
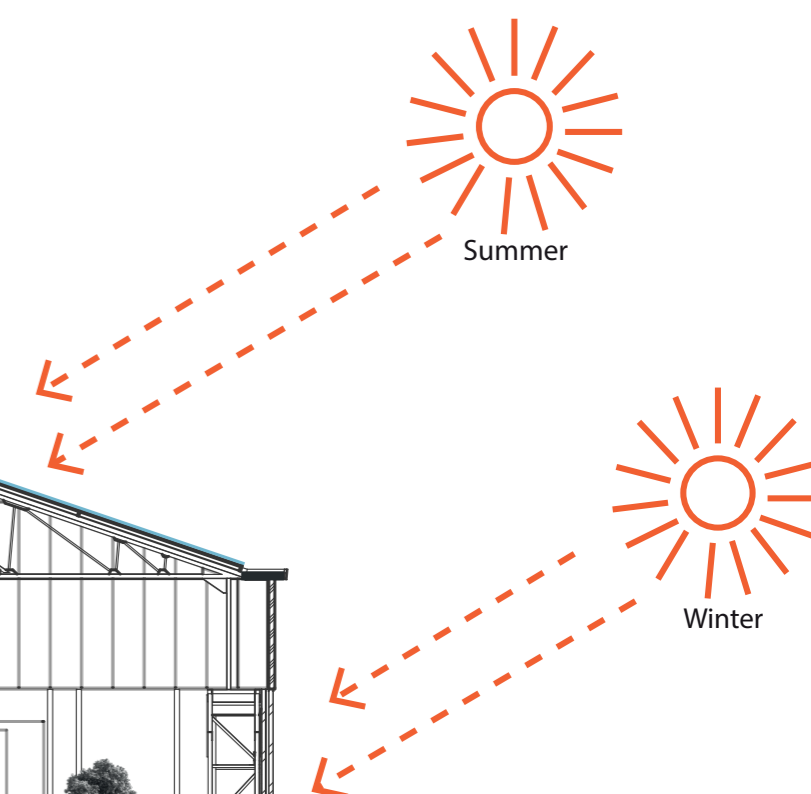
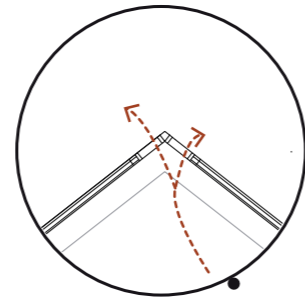
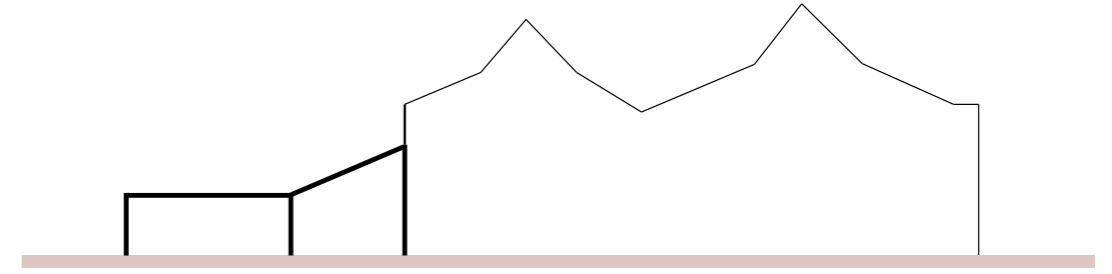
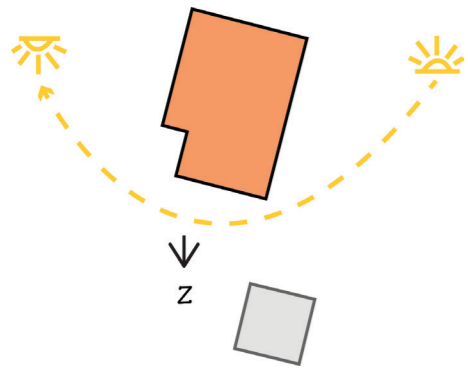
WORK SPACES AND MAKE SHOPS



INDOOR GARDEN



CLIMATE SECTION



PV film on roof

HR++

HR++

T= 15-18°C

T= 18-20 °C

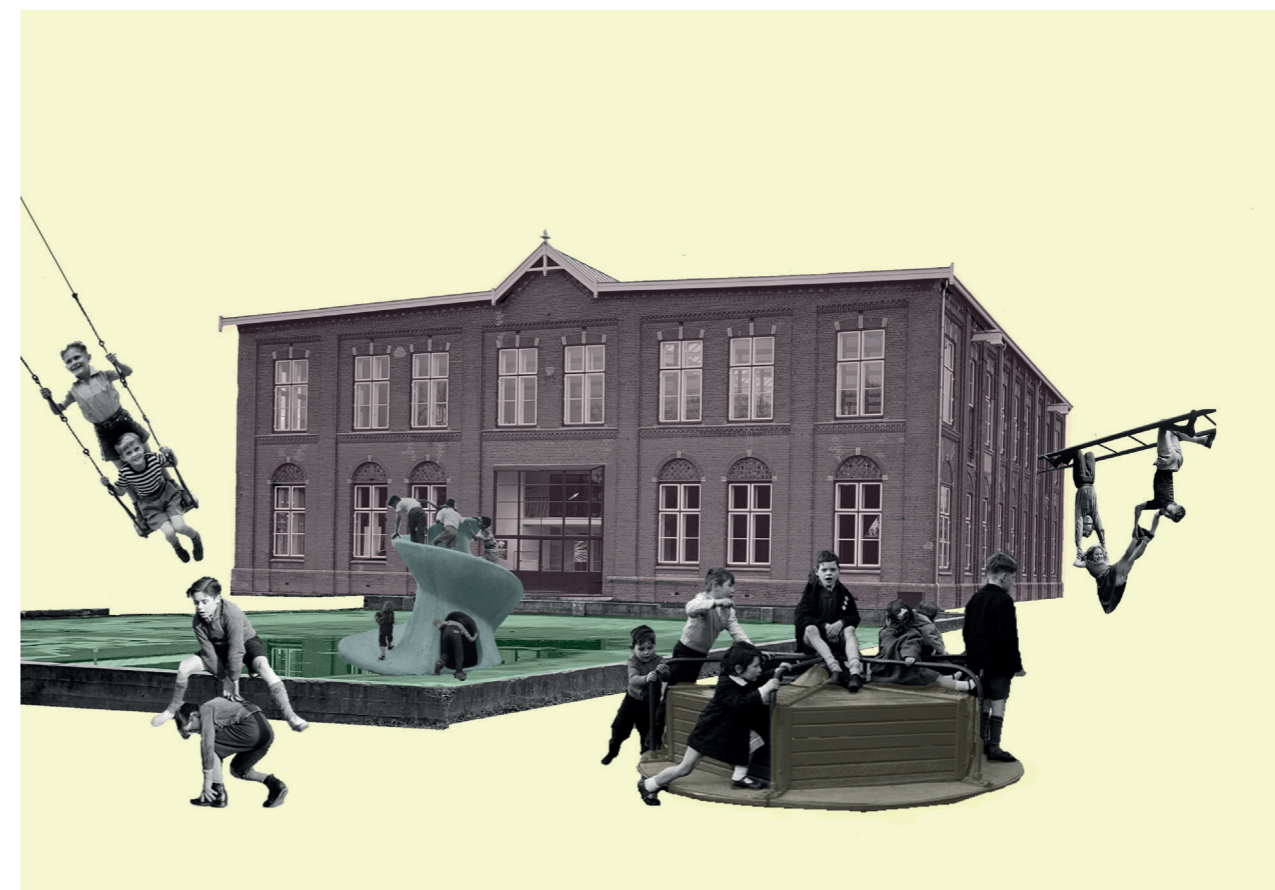
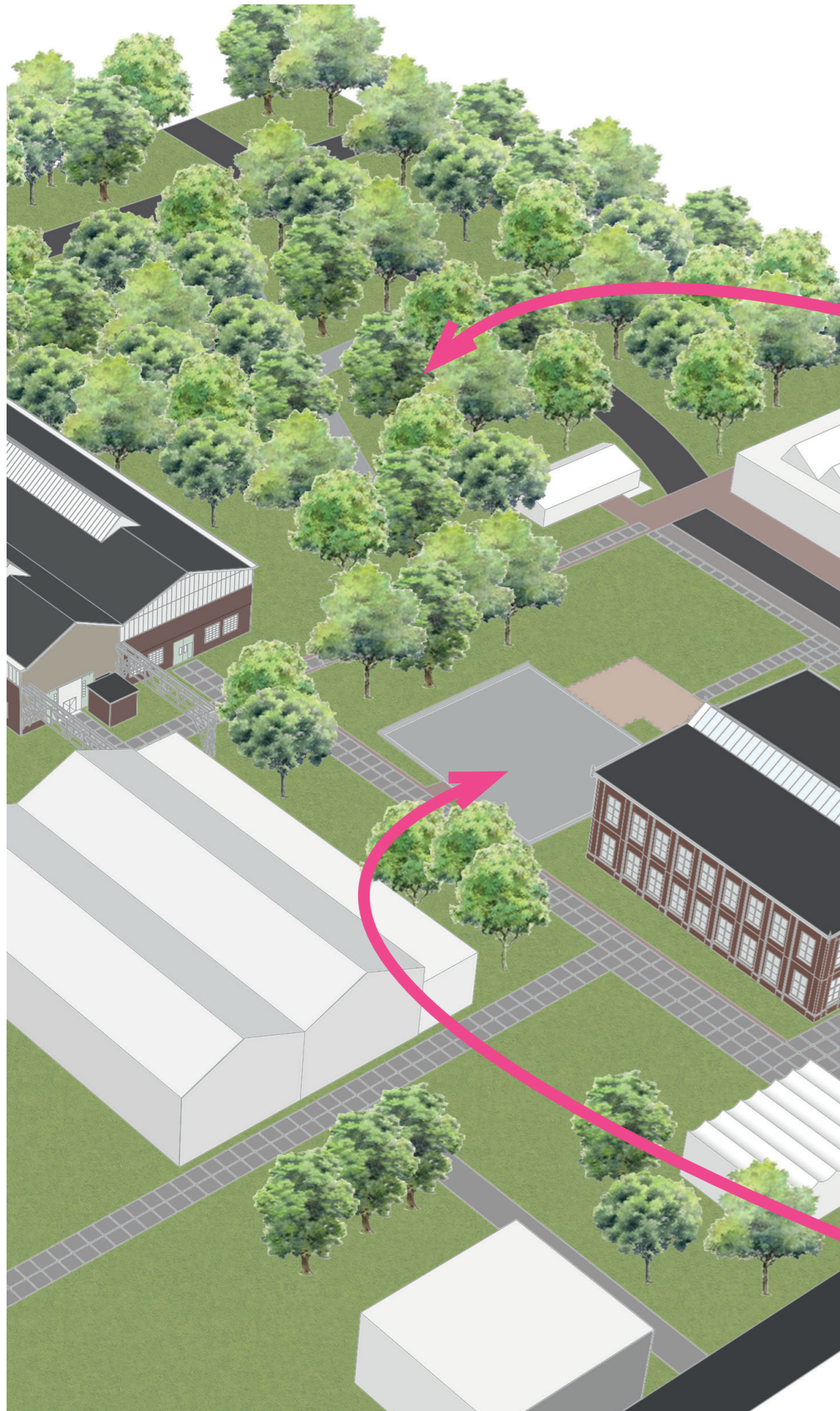
Warmed by sun

Green house as thermo buffer.
Pre-heating in winter.
Leaf water evaporation for cooling in summer.

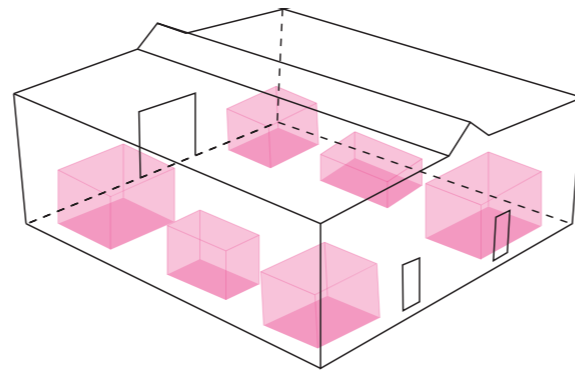
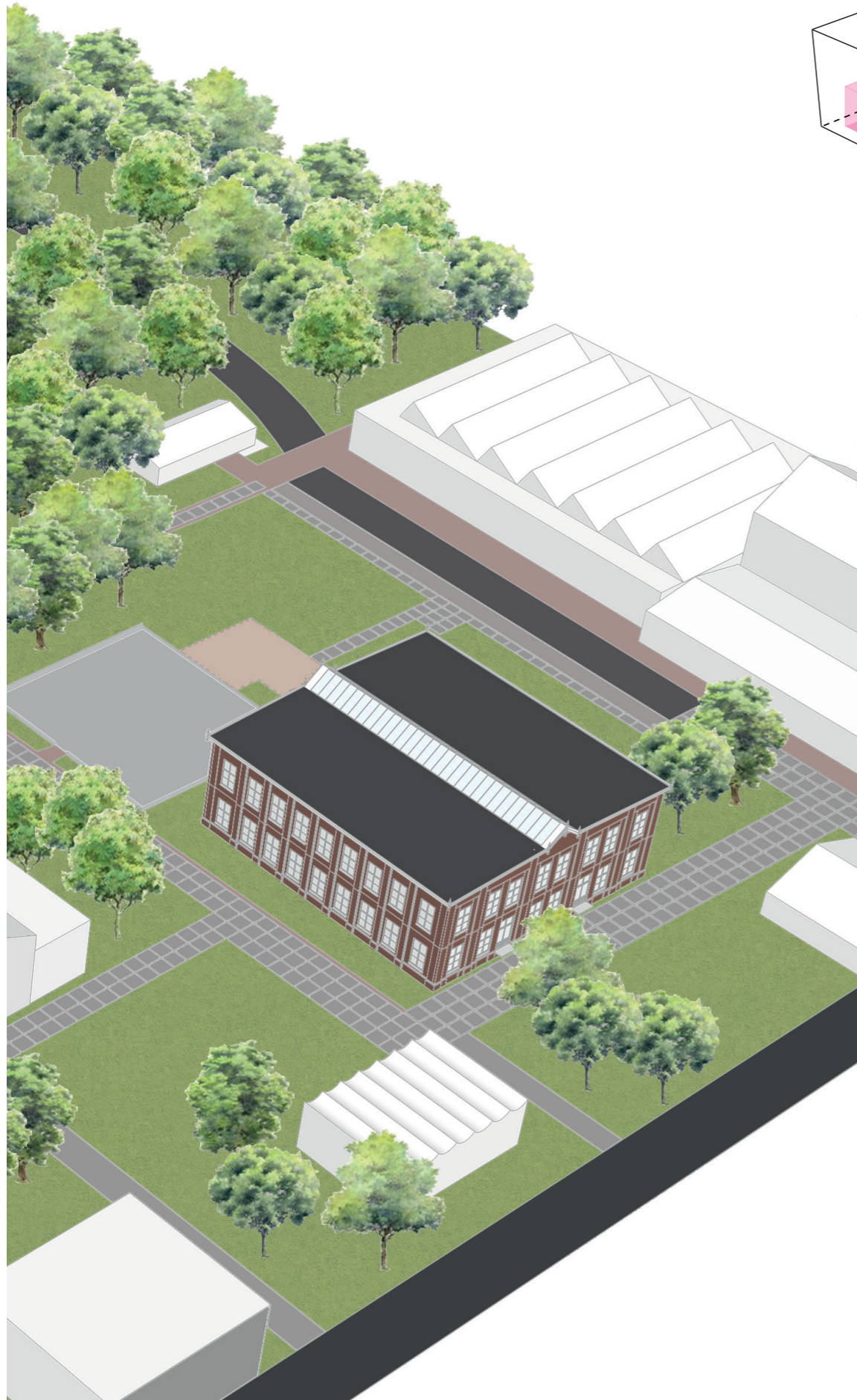
Surplus electricity is stored in electricity grid

Aquathermie in North Sea Canal

CONNECTING PLACES

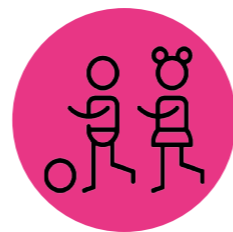


WEAPONS DEPOT

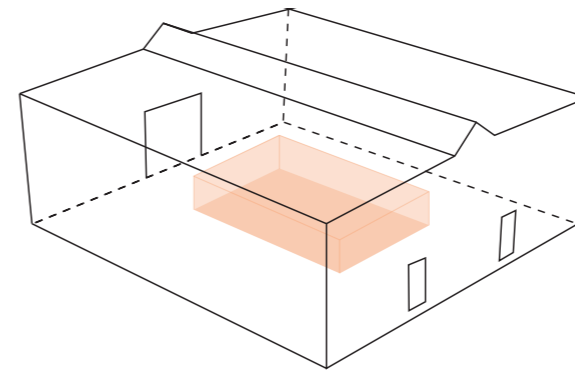


FLOORS 1377 M²
 WORKSHOPS 358 M²
 CAFÉ 118 M²
 WORKSPACES 271 M²

OCCUPANCY RATE
 X 0.125 52 PEOPLE



WORKSHOPS AND
 PLAY

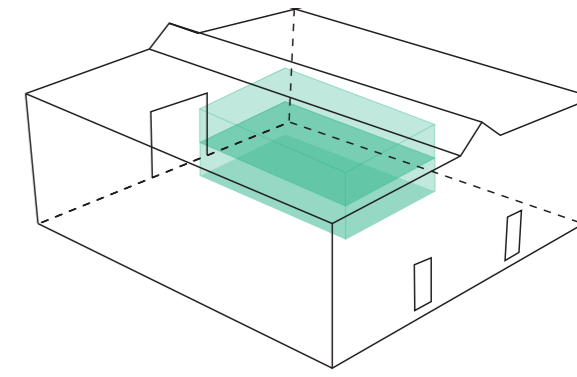


FLOORS 1377 M²
 WORKSHOPS 358 M²
 CAFÉ 118 M²
 WORKSPACES 271 M²

OCCUPANCY RATE
 X 0.125 22 PEOPLE



CAFÉ

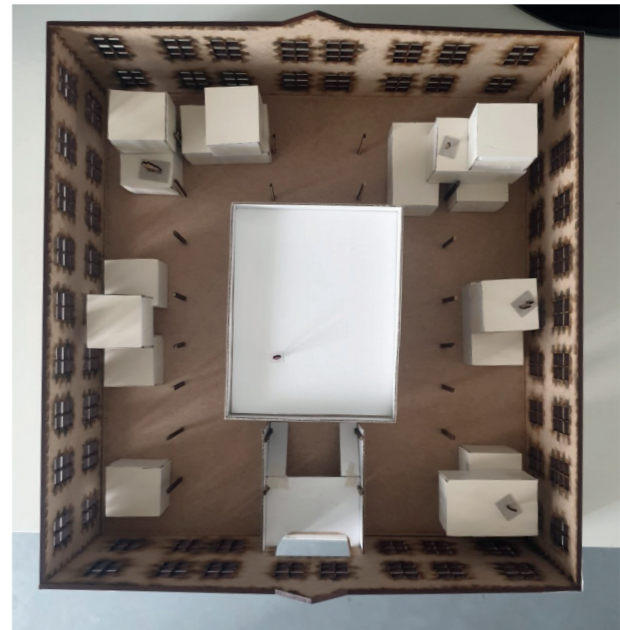
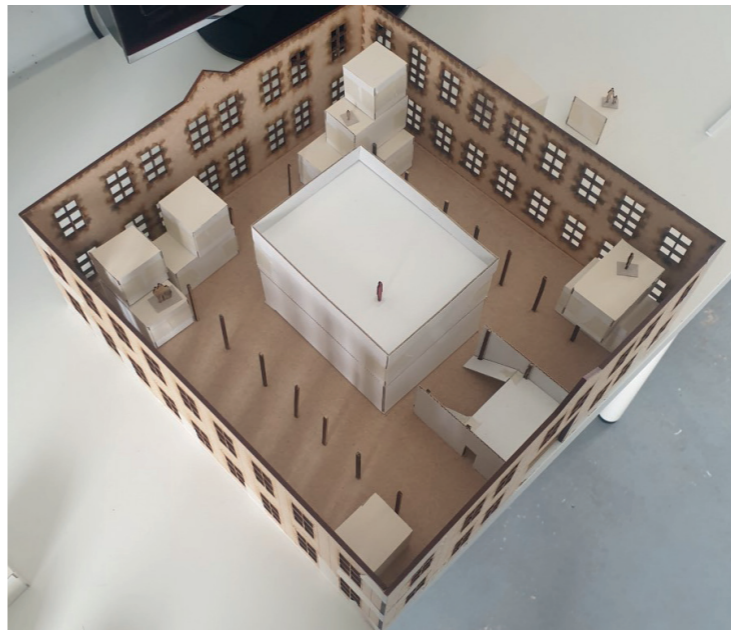
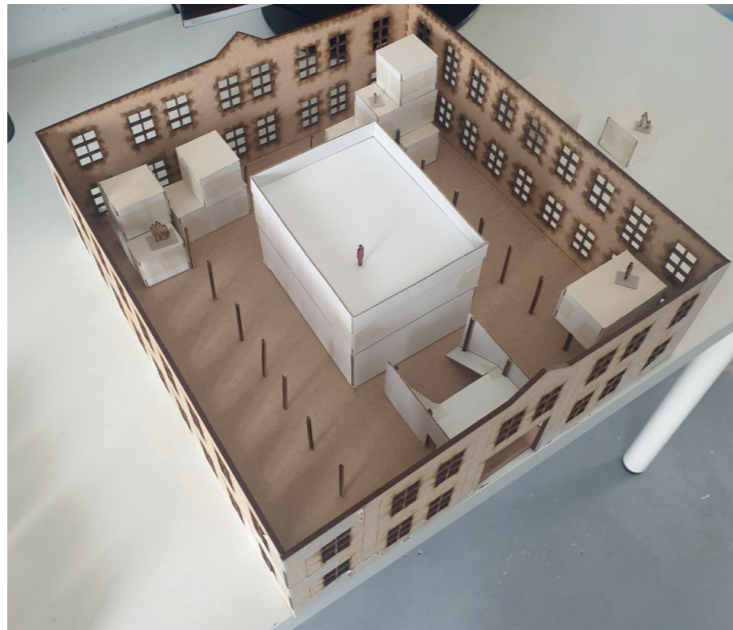
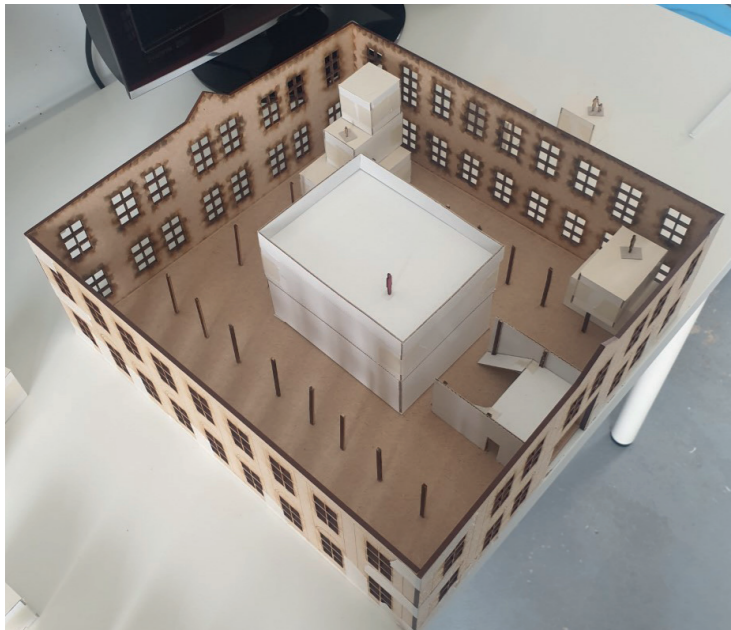
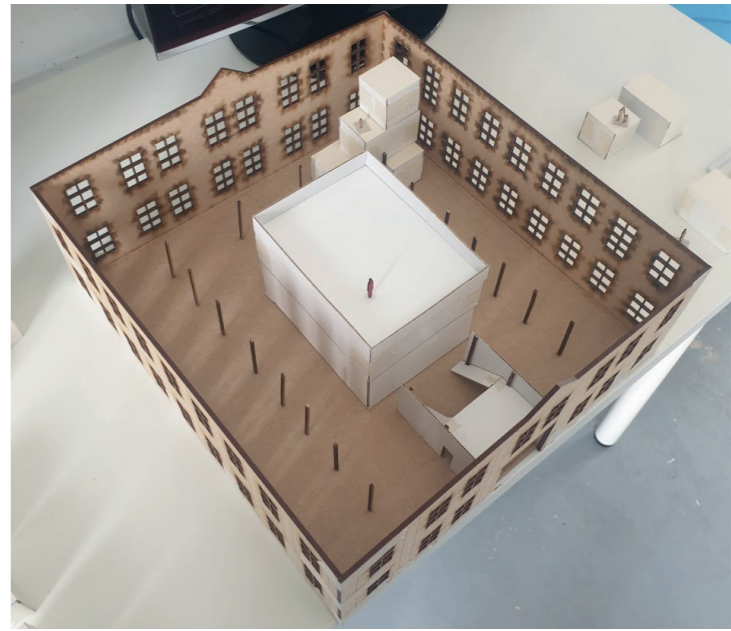
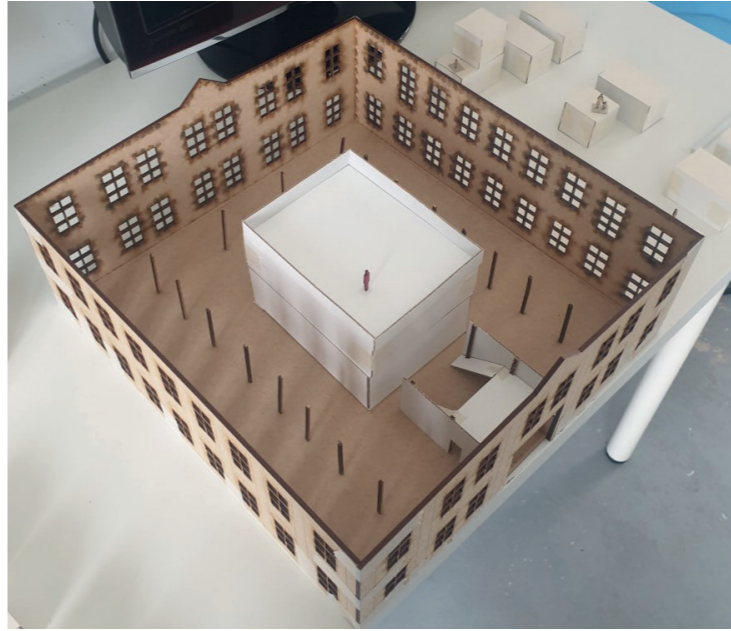
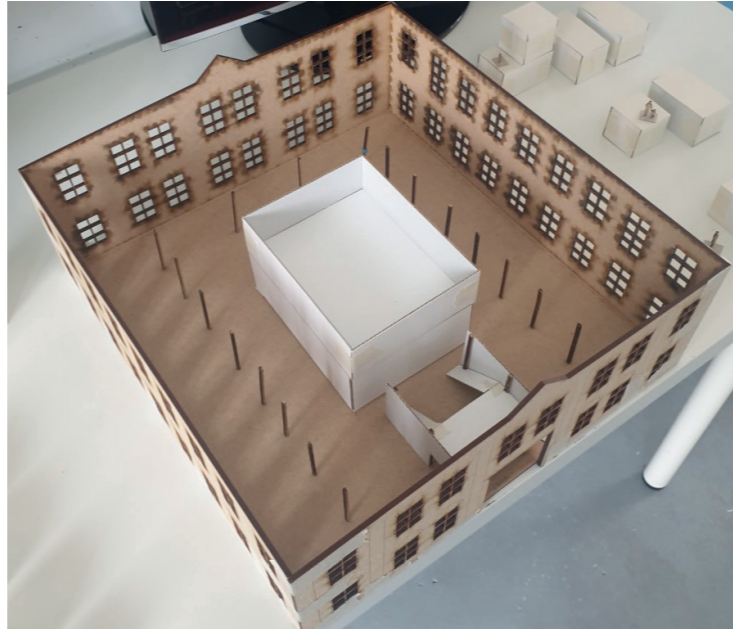
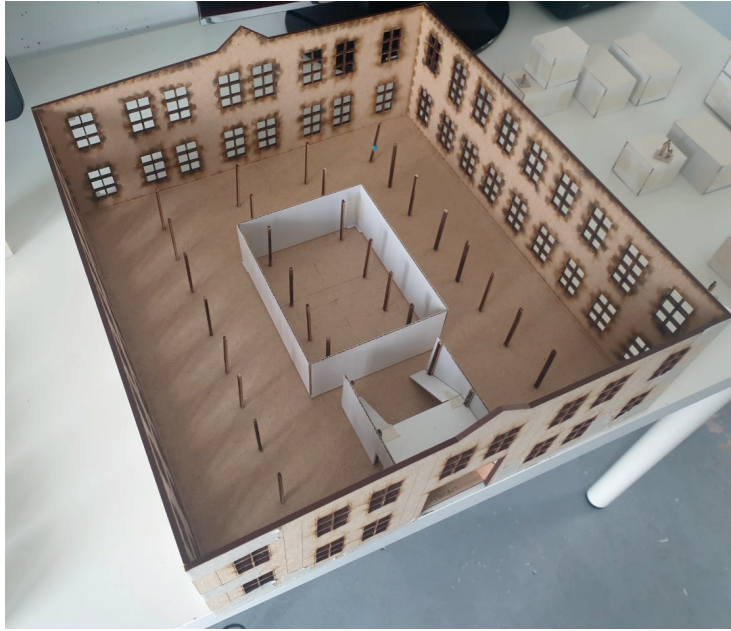


FLOORS 1377 M²
 WORKSHOPS 358 M²
 CAFÉ 118 M²
 WORKSPACES 271 M²

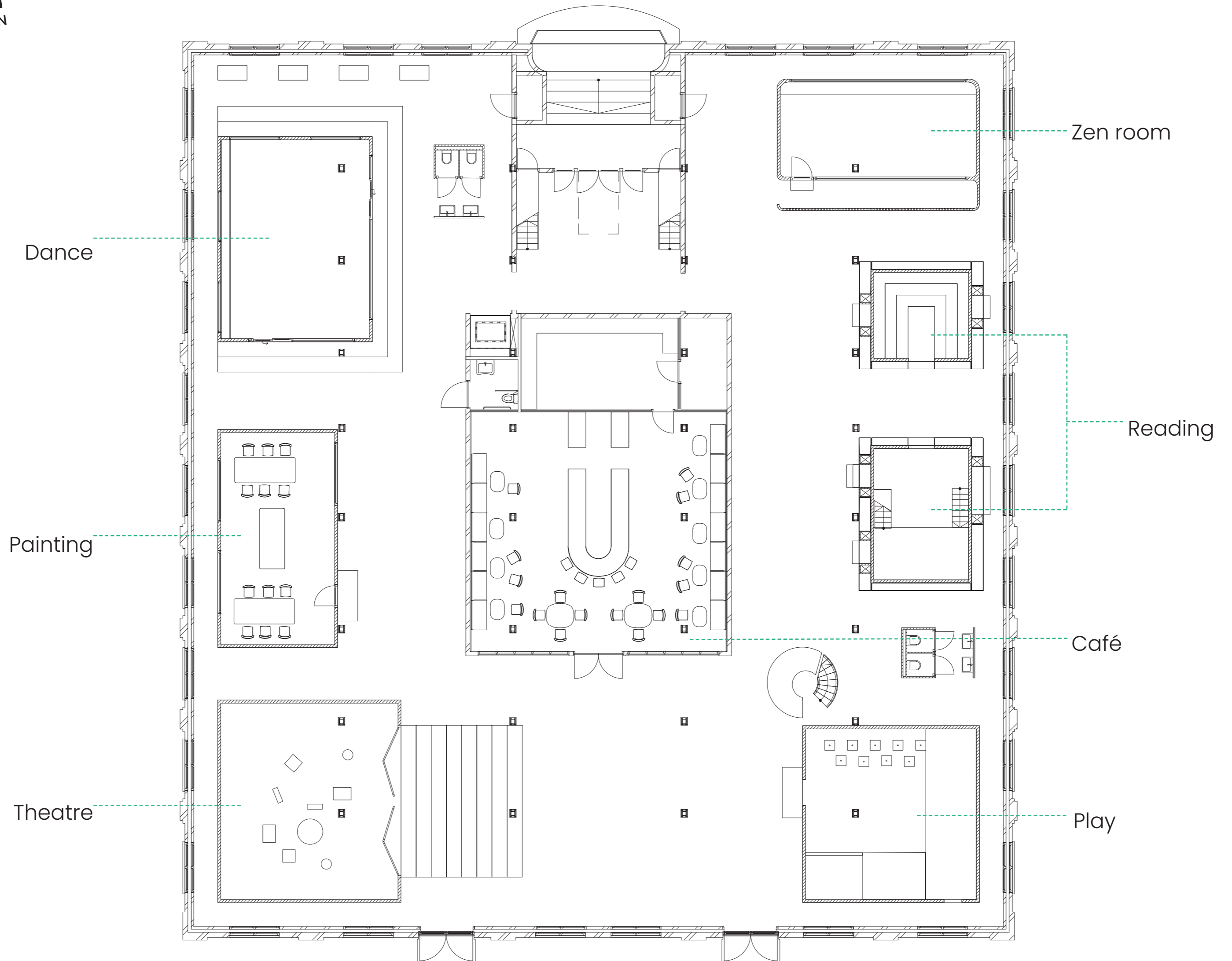
OCCUPANCY RATE
 X 0.125 38 PEOPLE



WORKSPACES



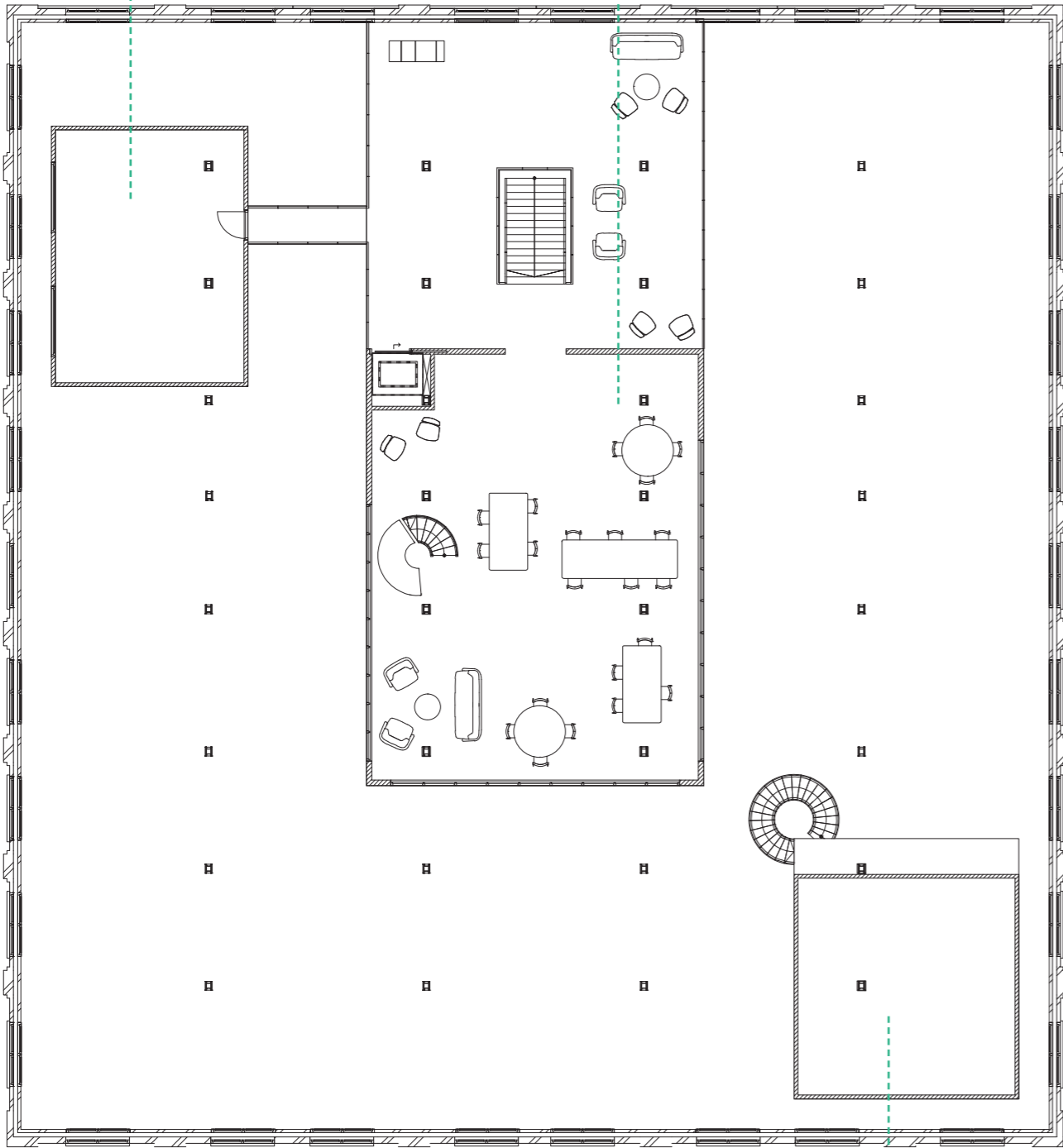
GROUND FLOOR





Music

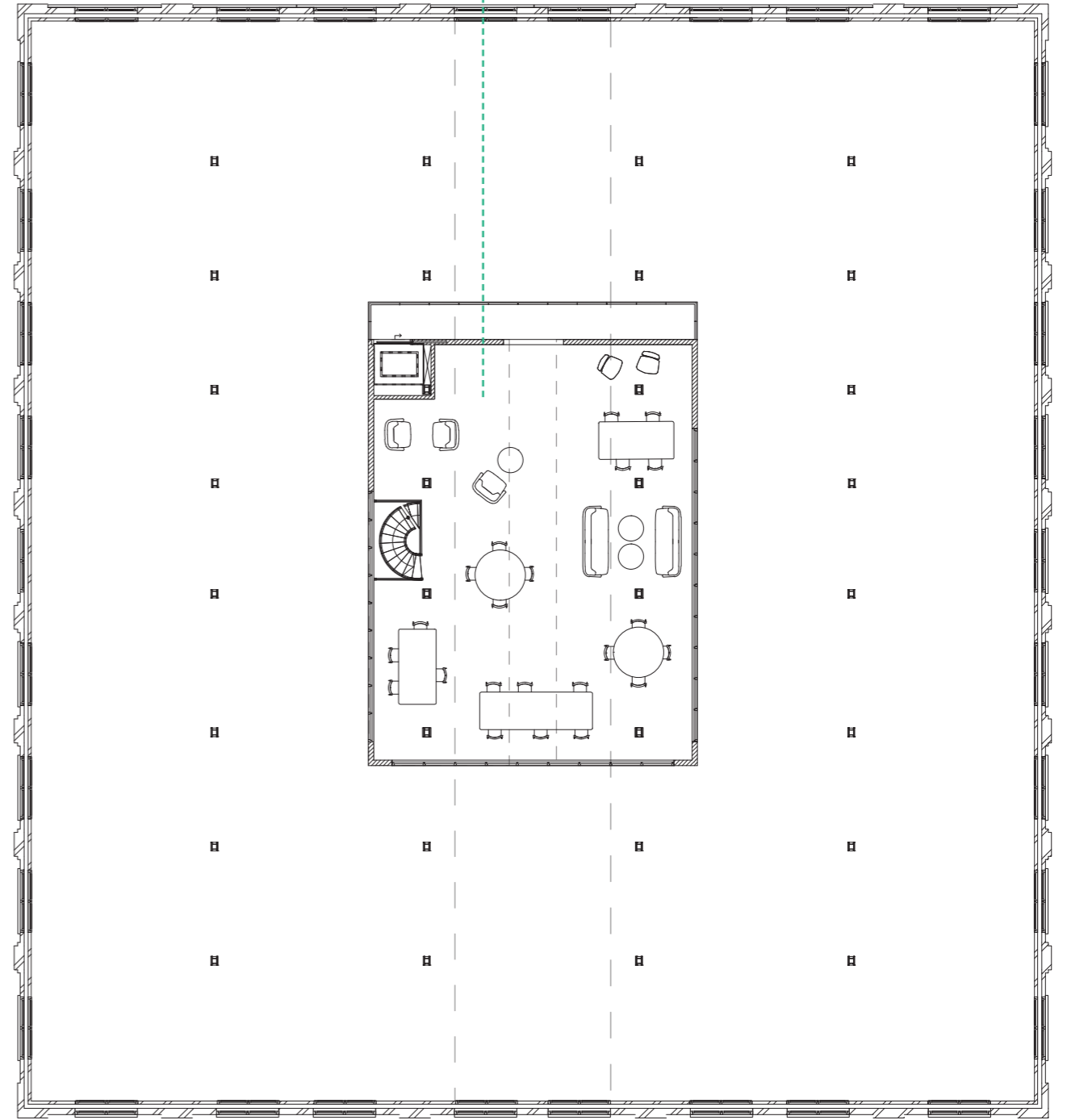
Work



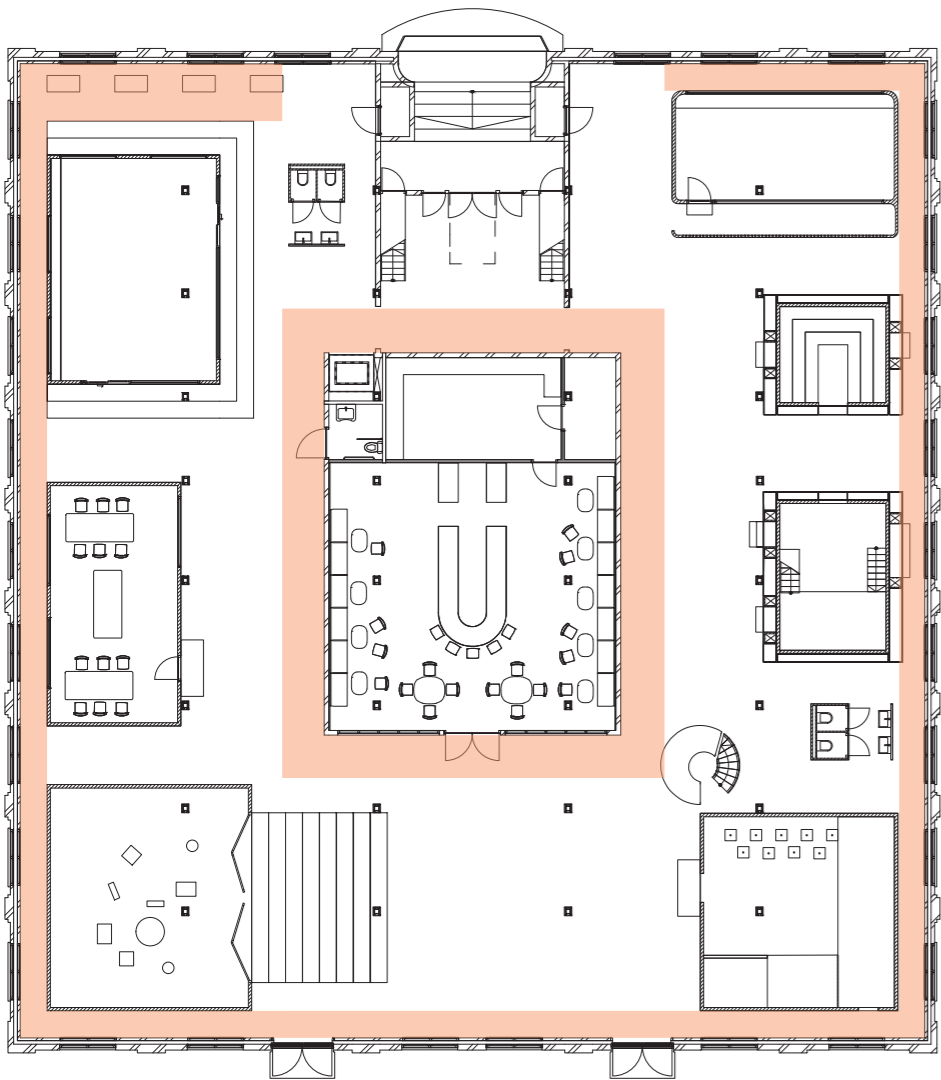
First Floor

Play

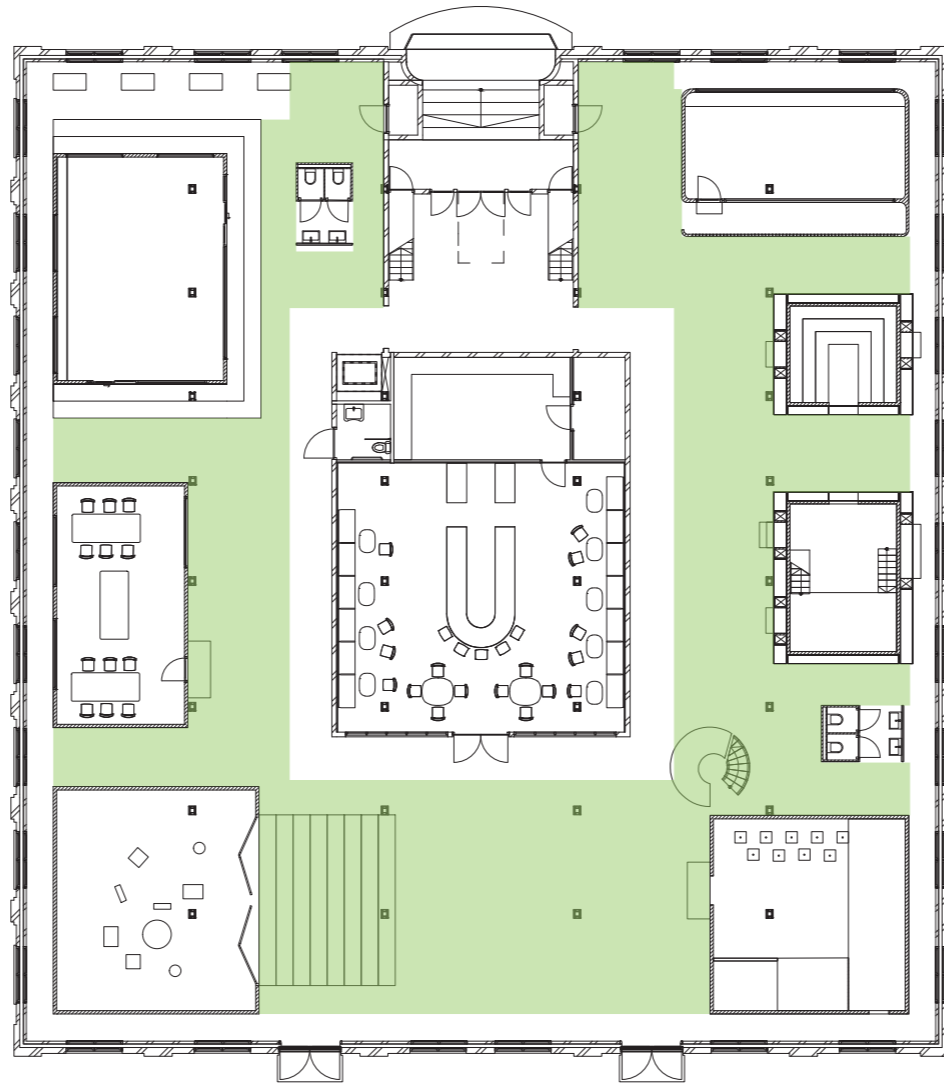
Work



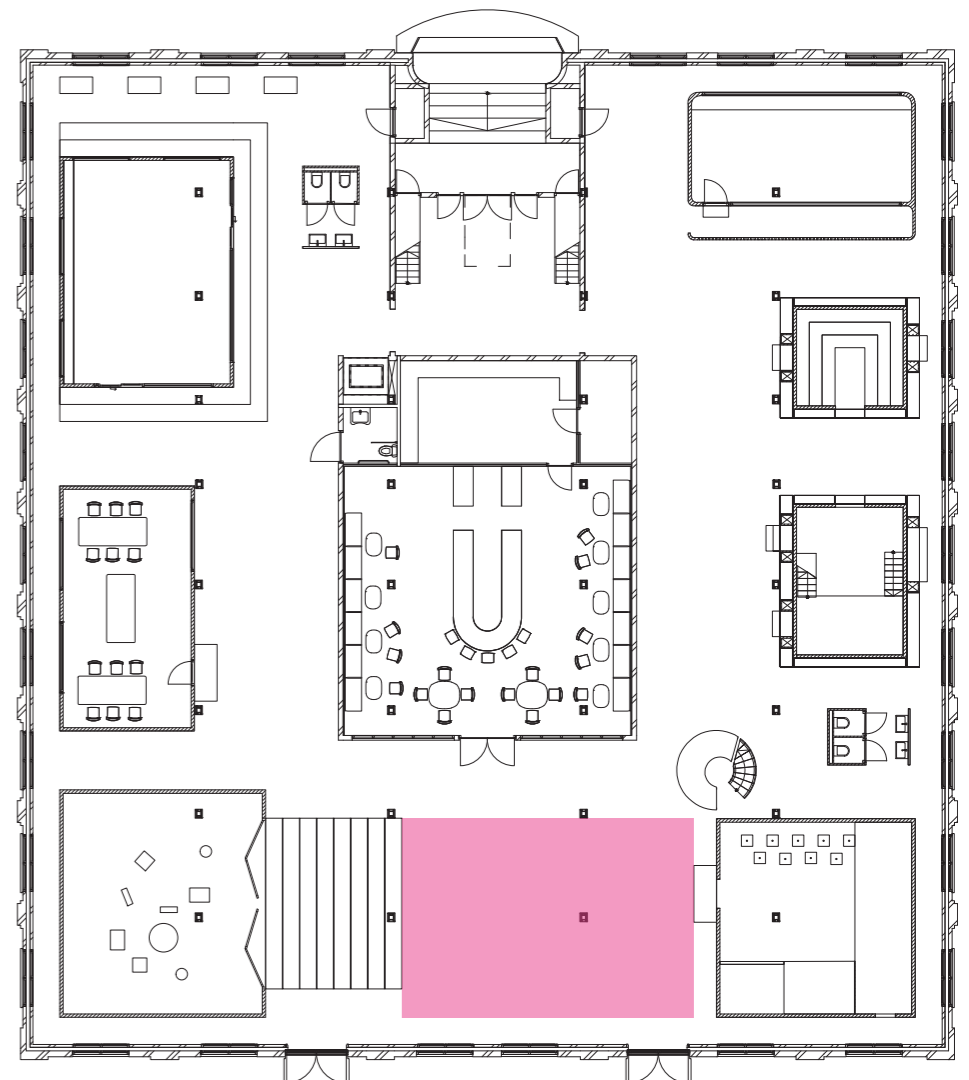
Second floor



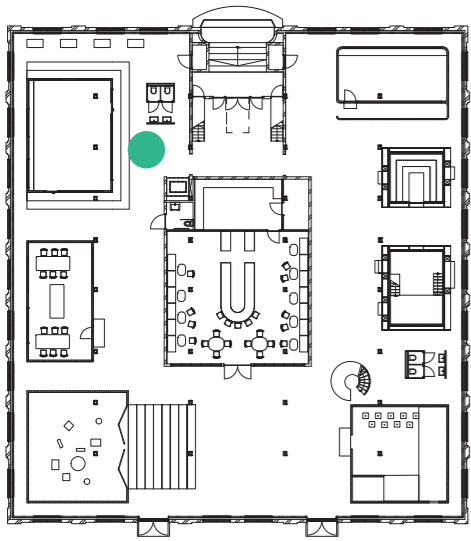
Circulation

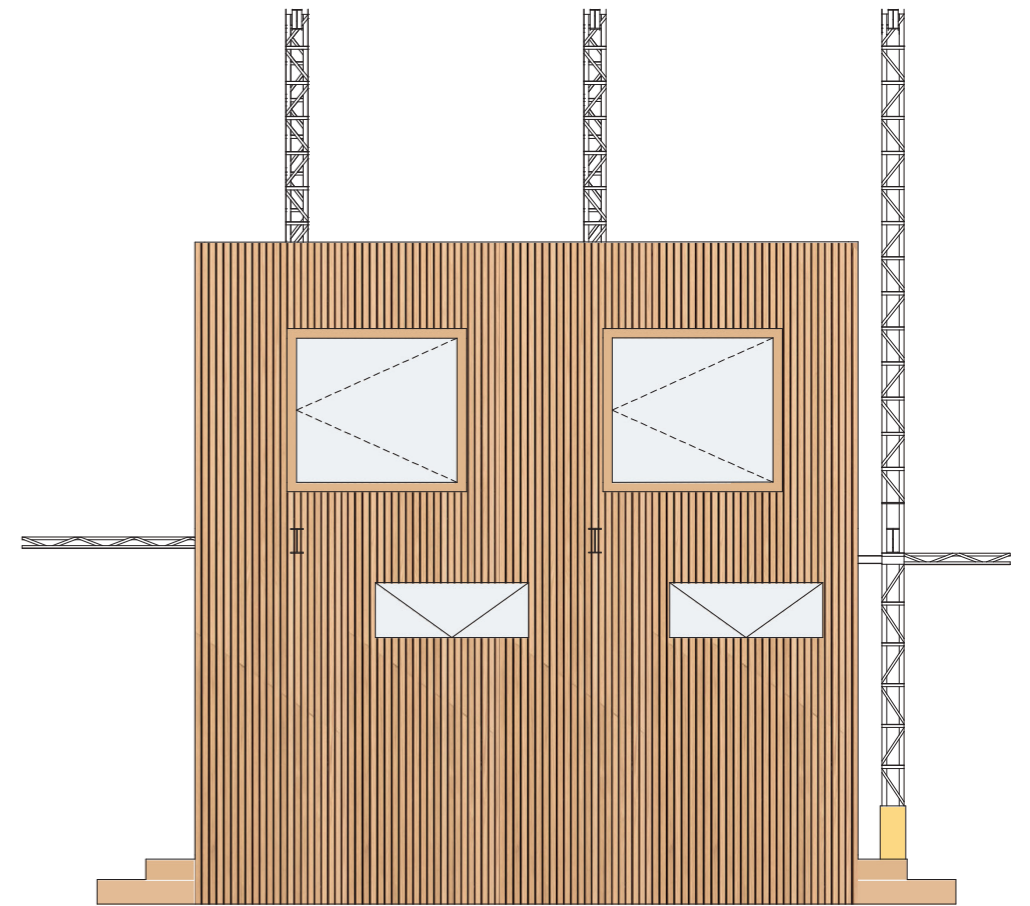
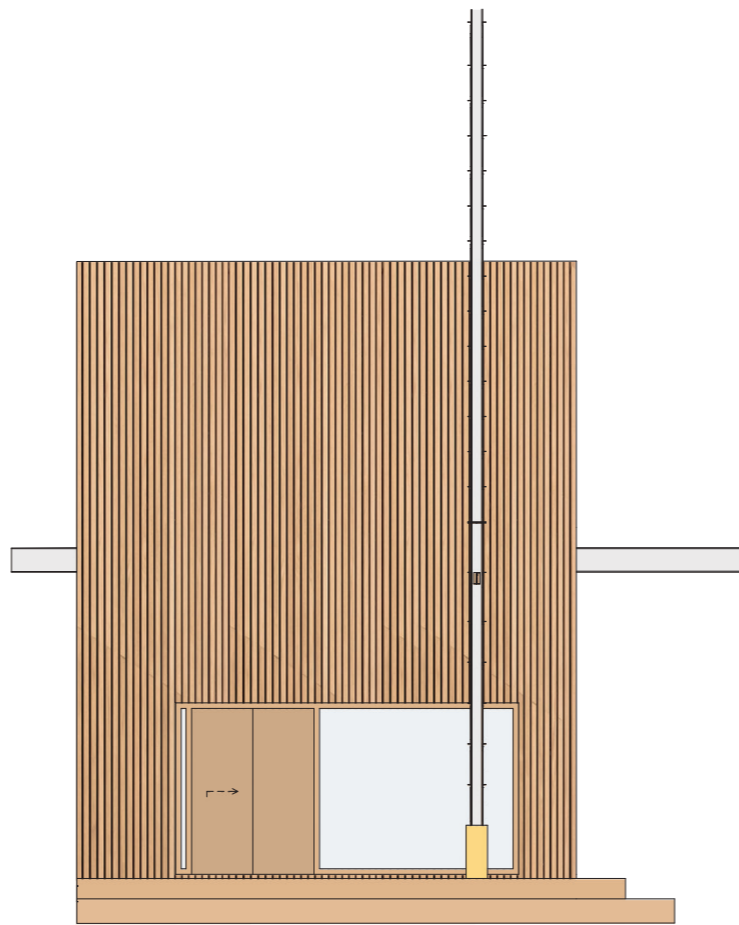
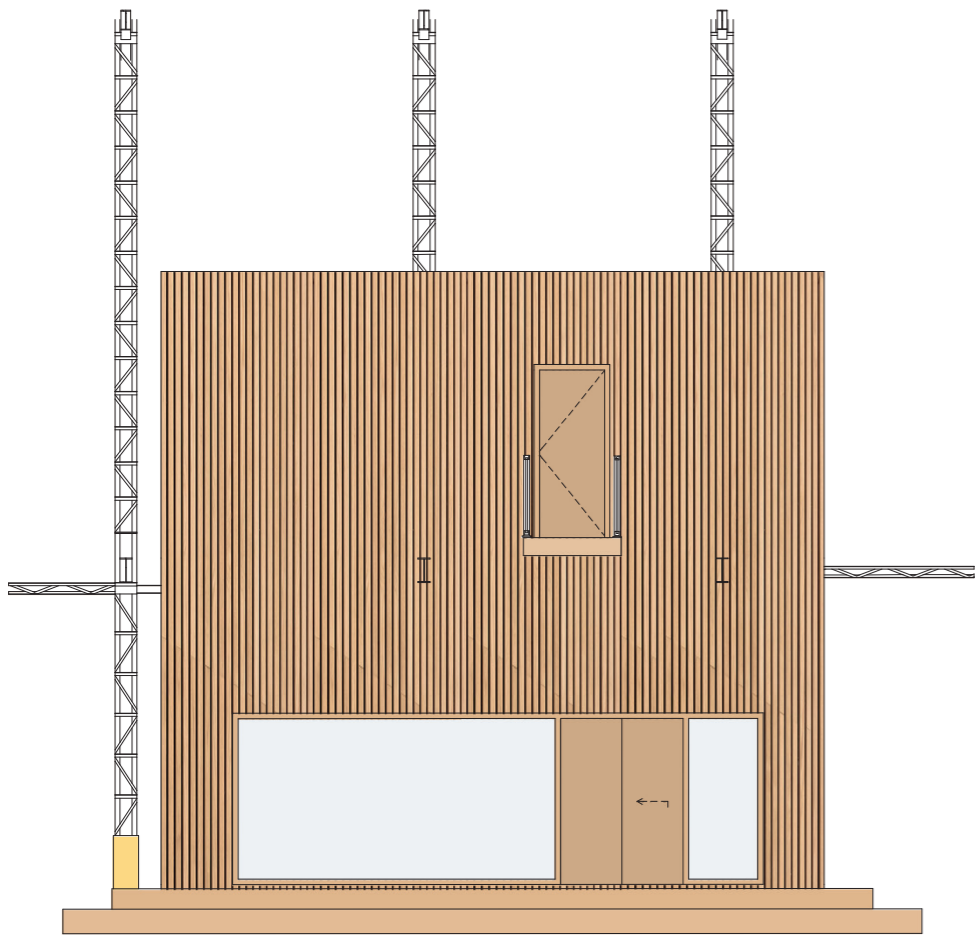
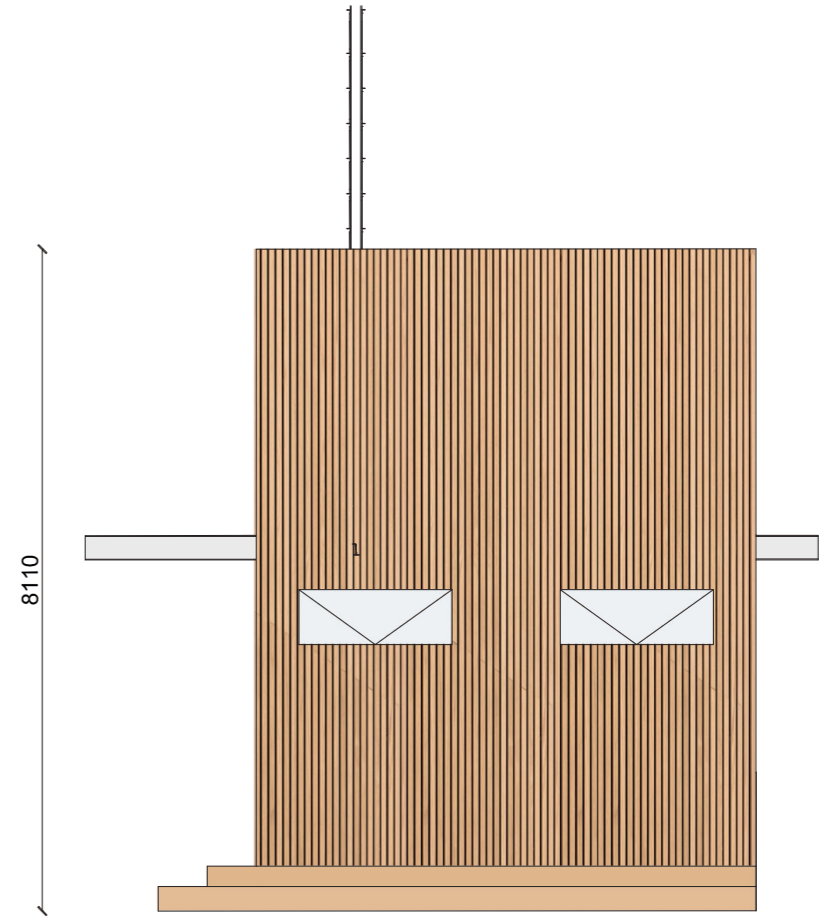
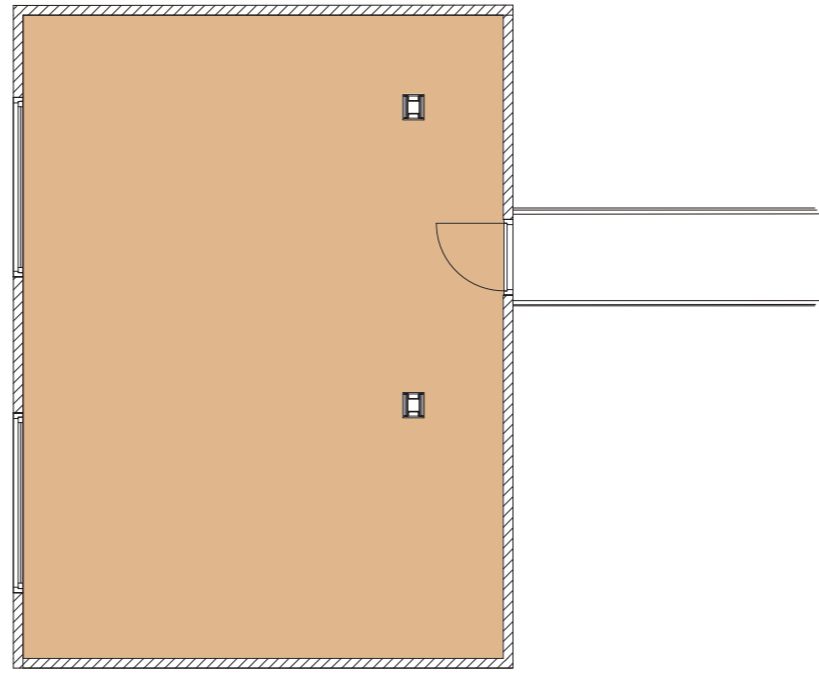
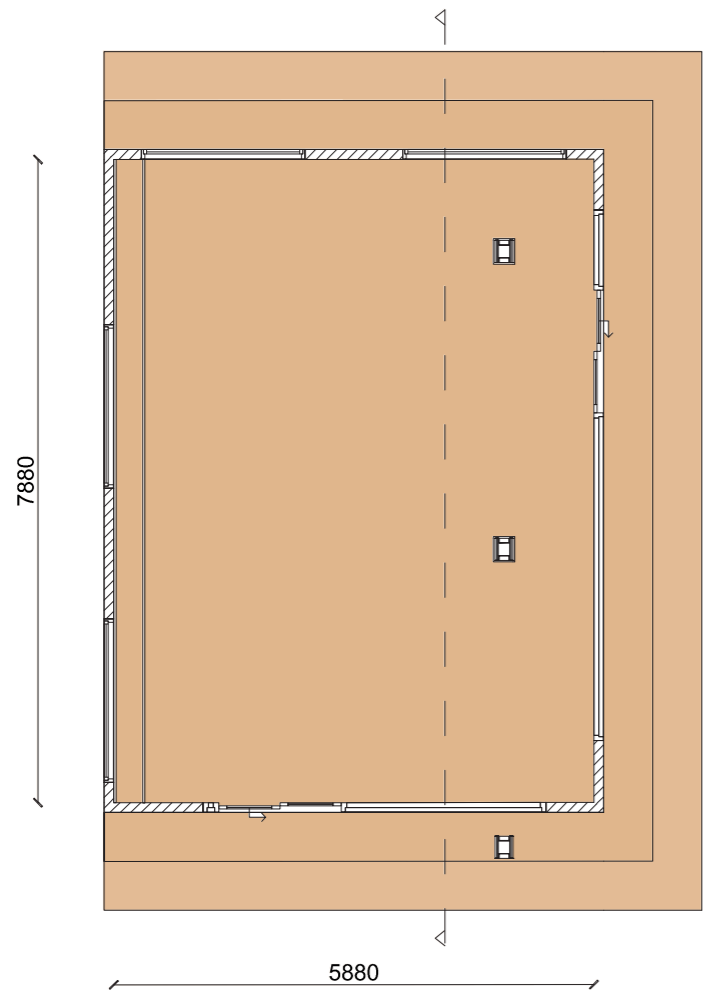


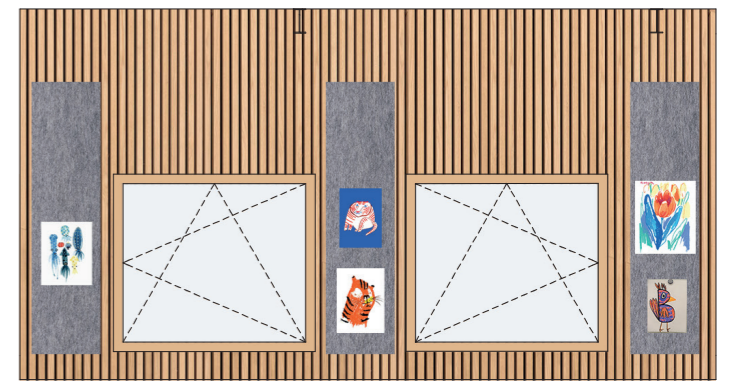
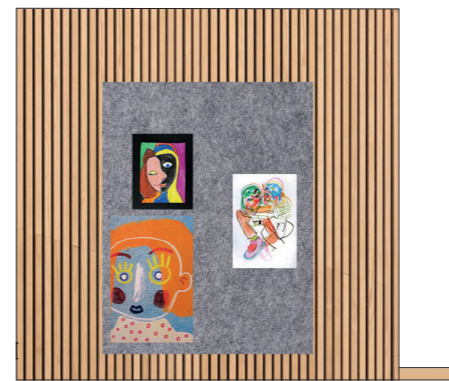
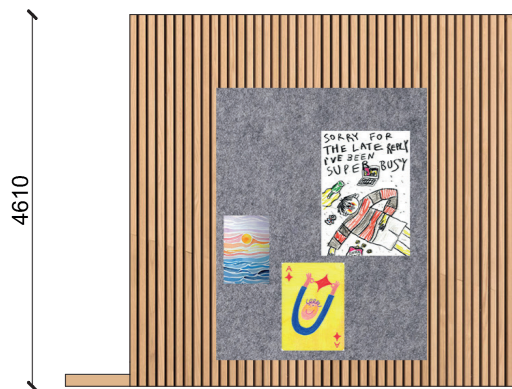
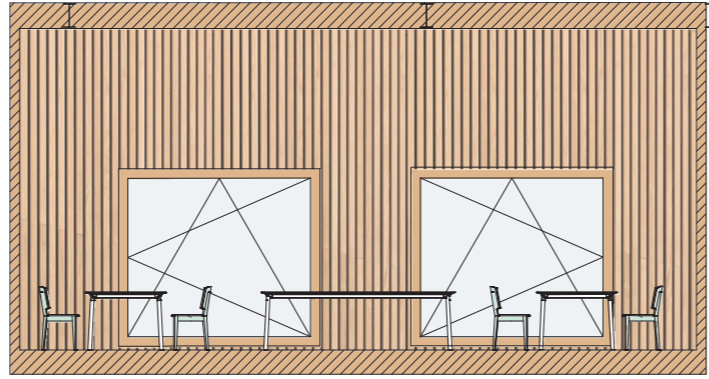
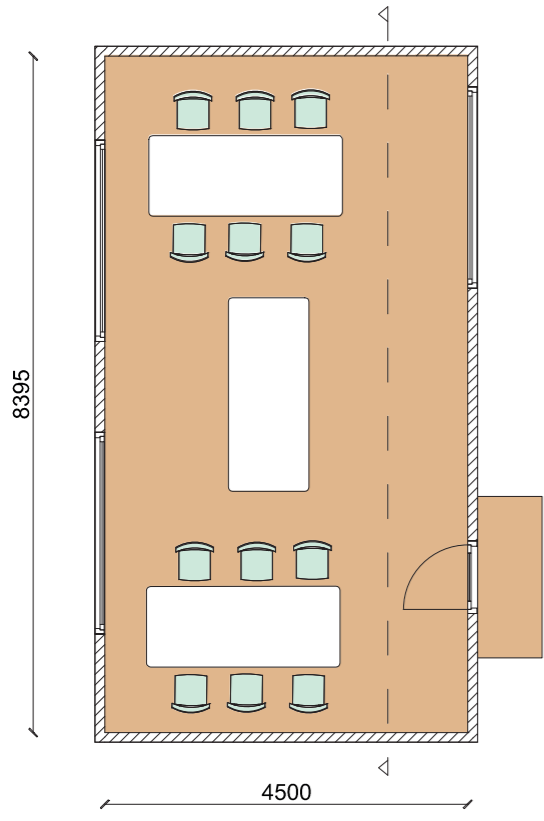
Play

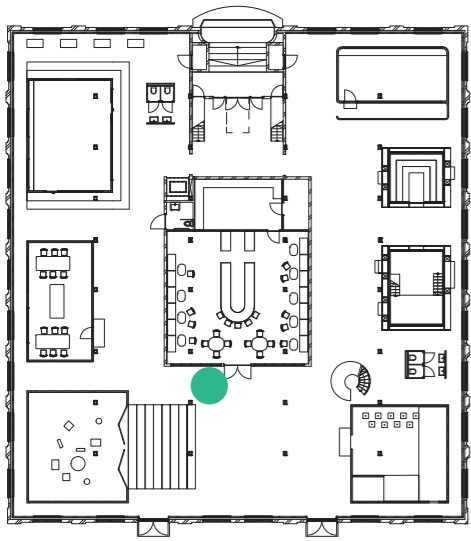


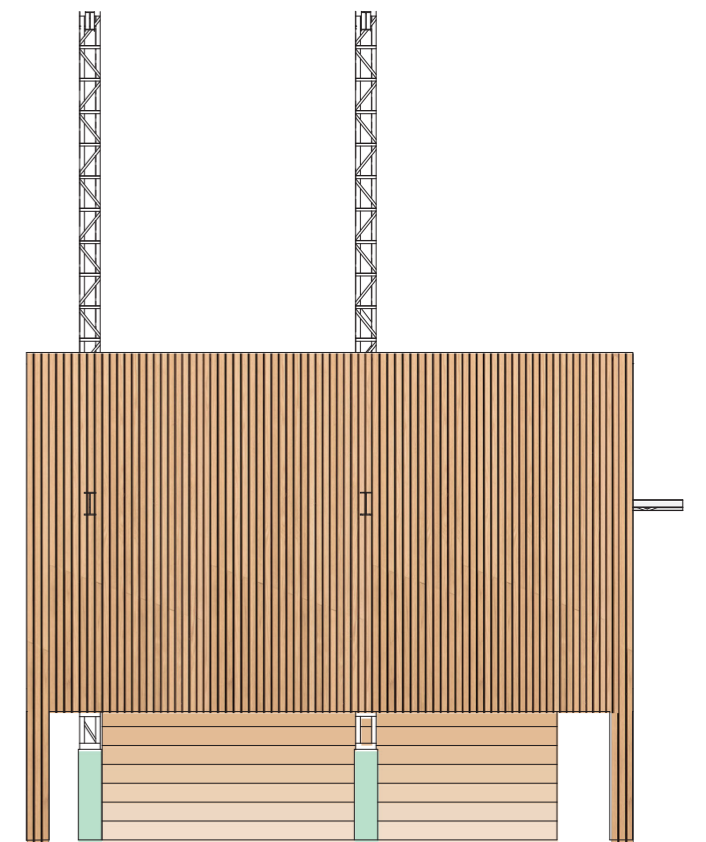
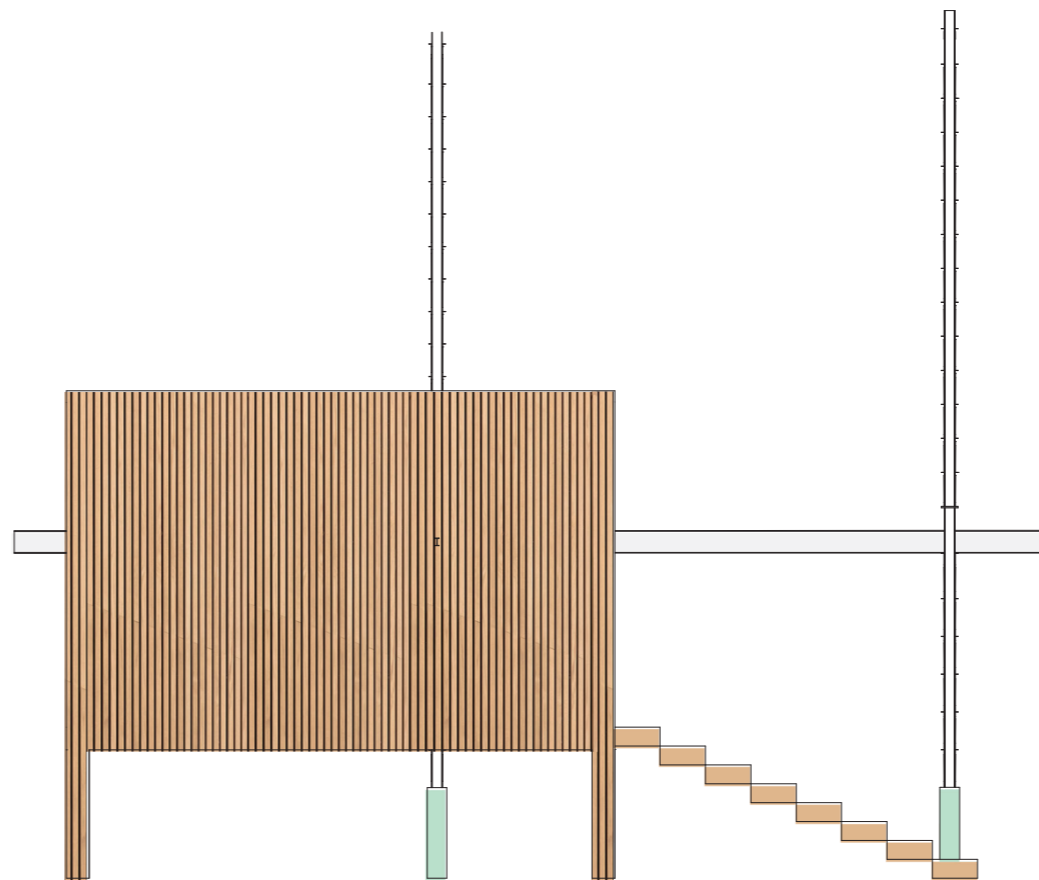
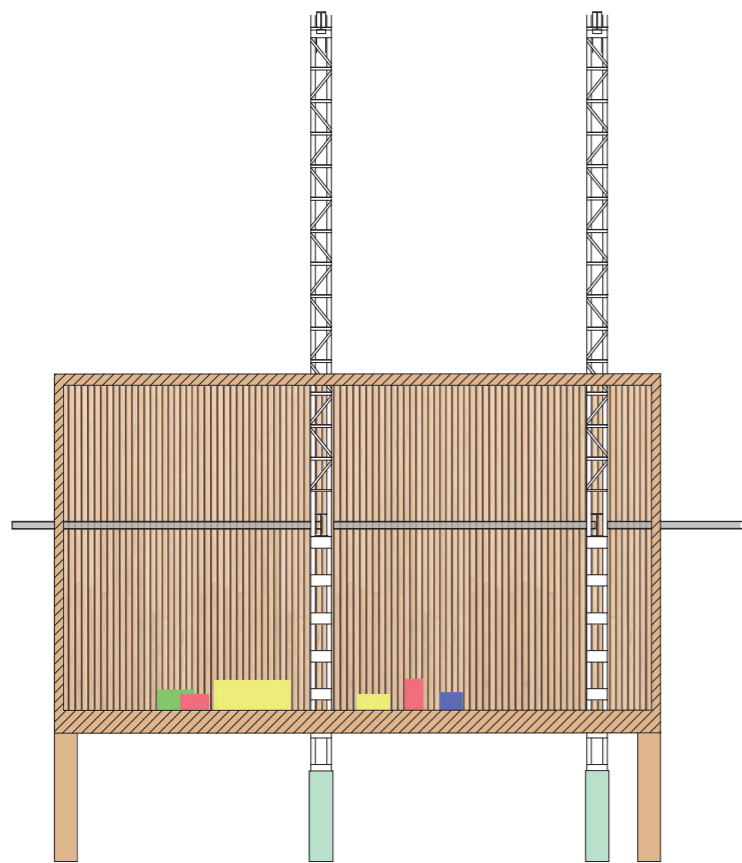
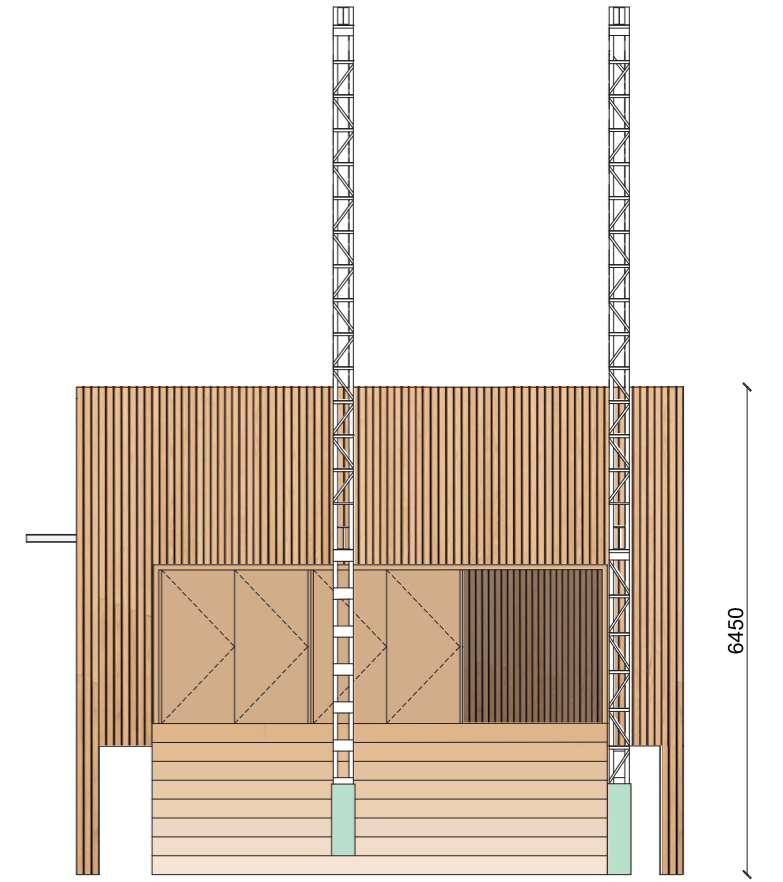
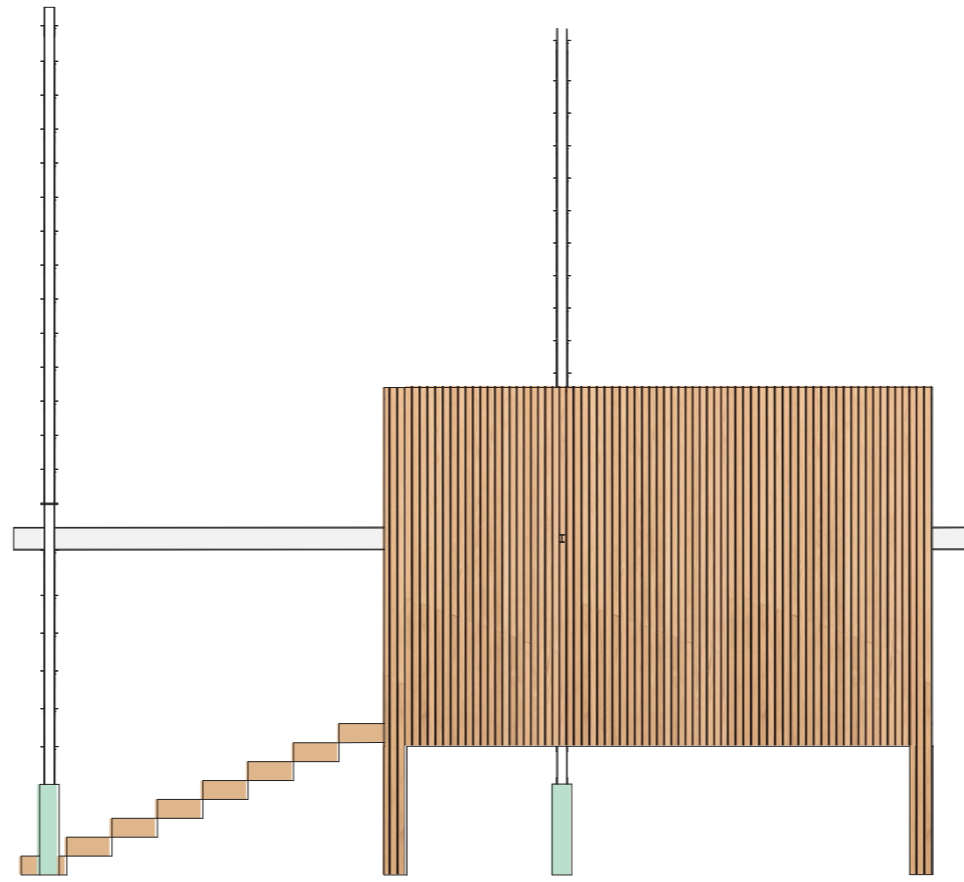
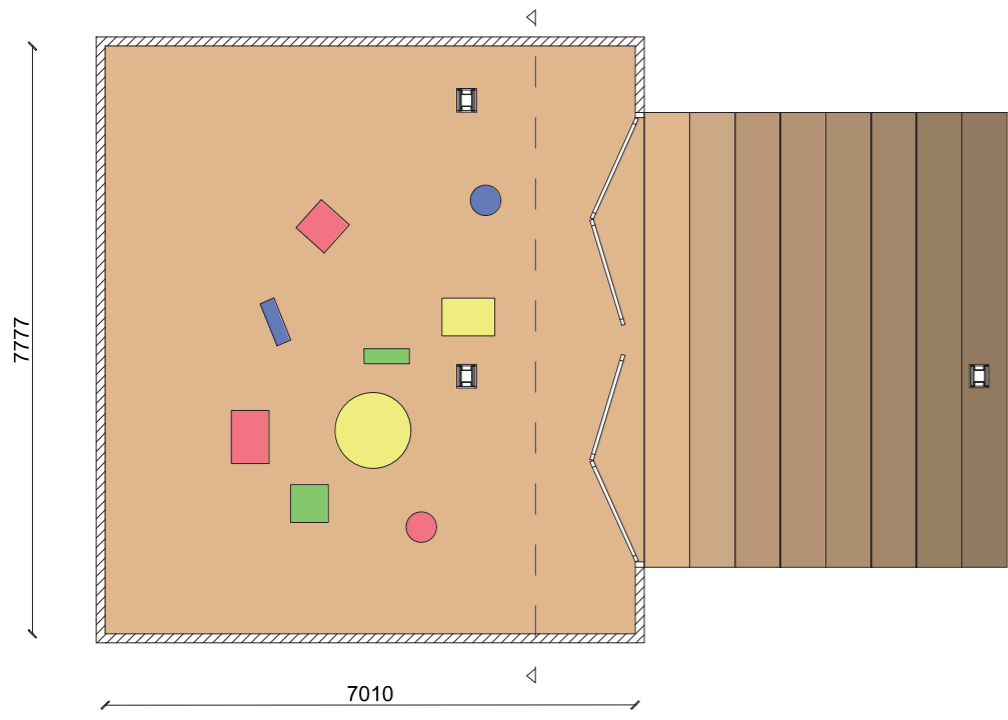
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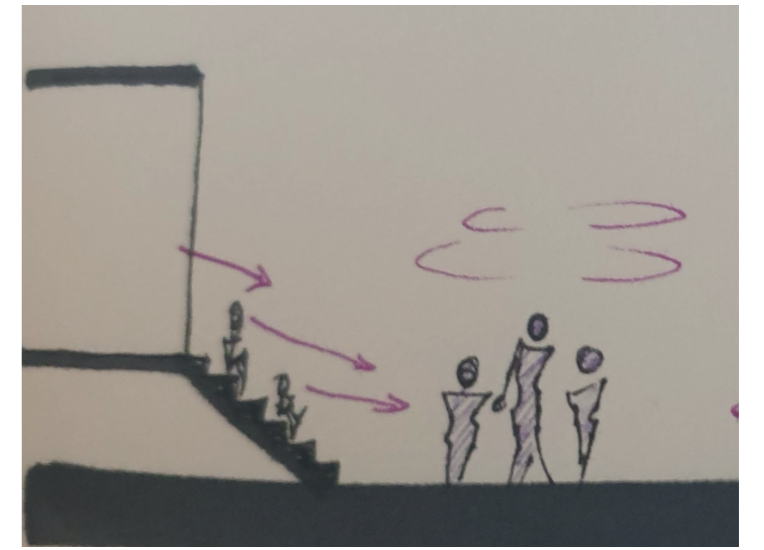
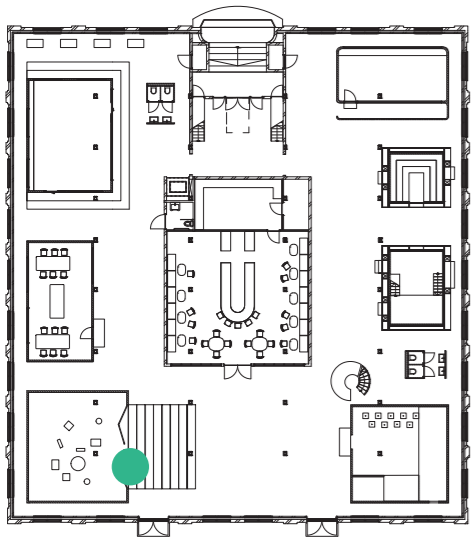


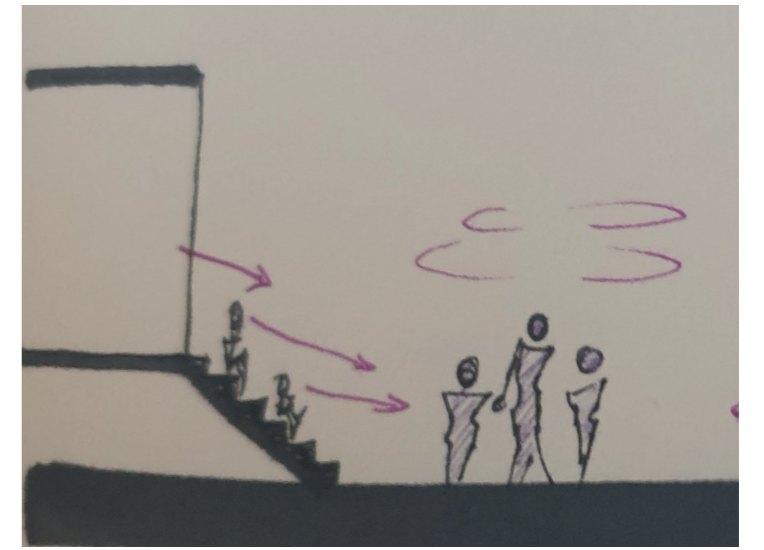
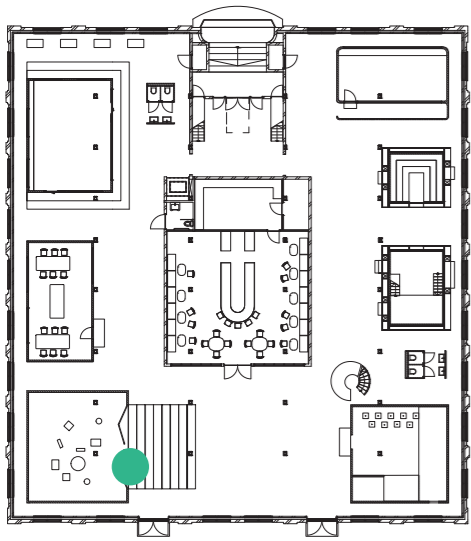


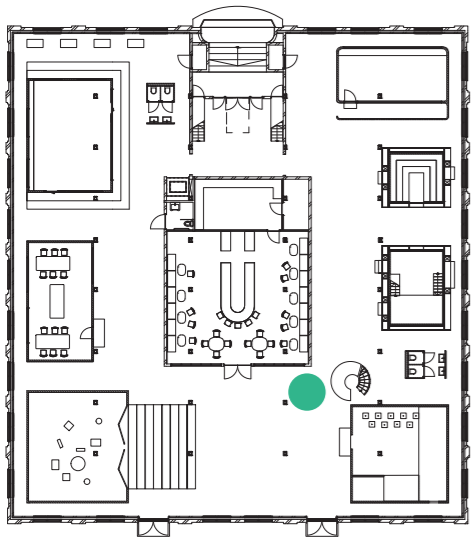


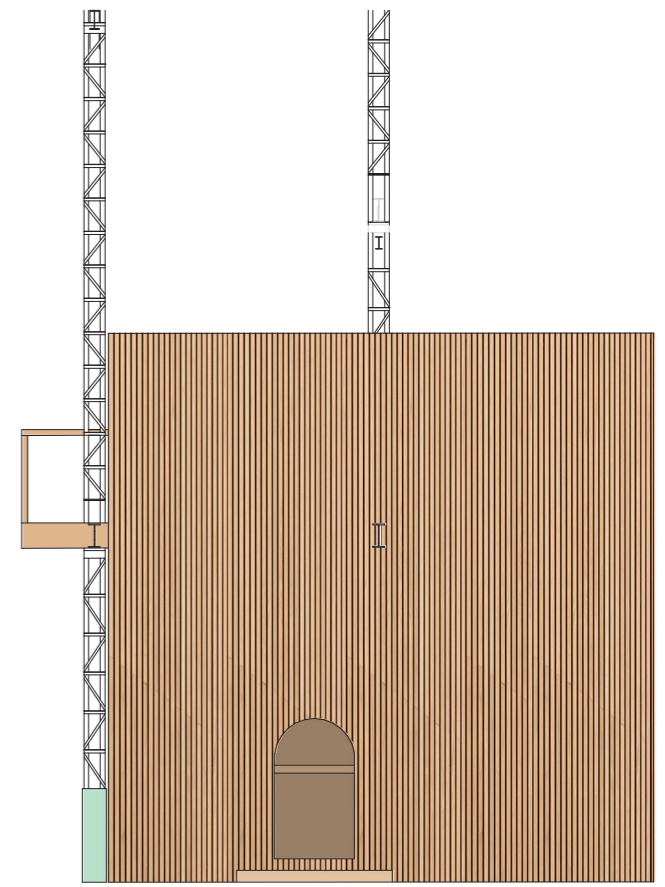
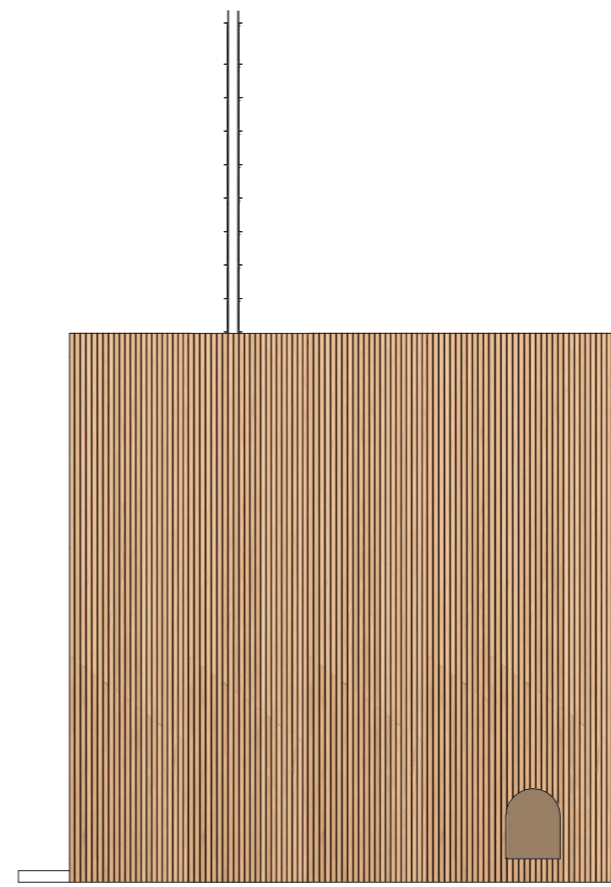
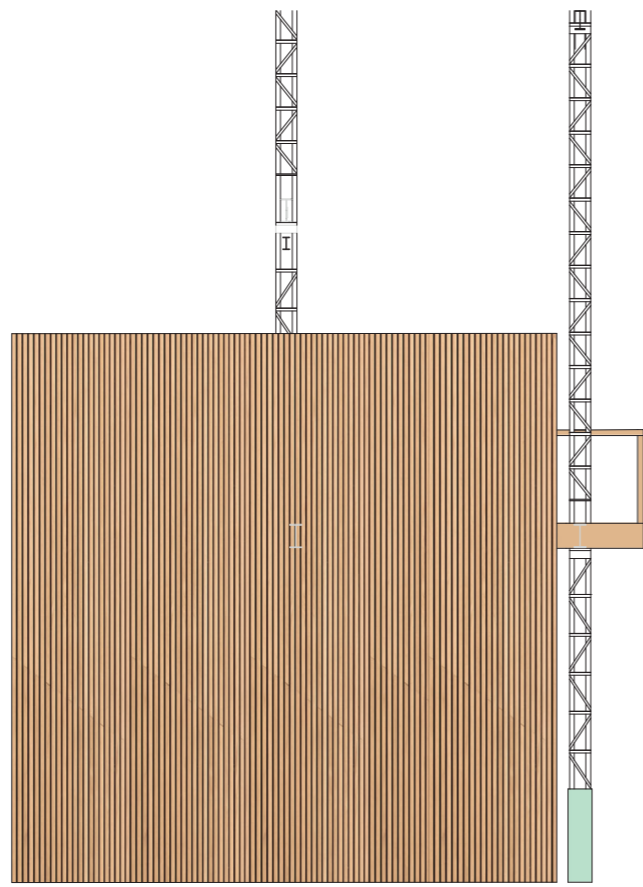
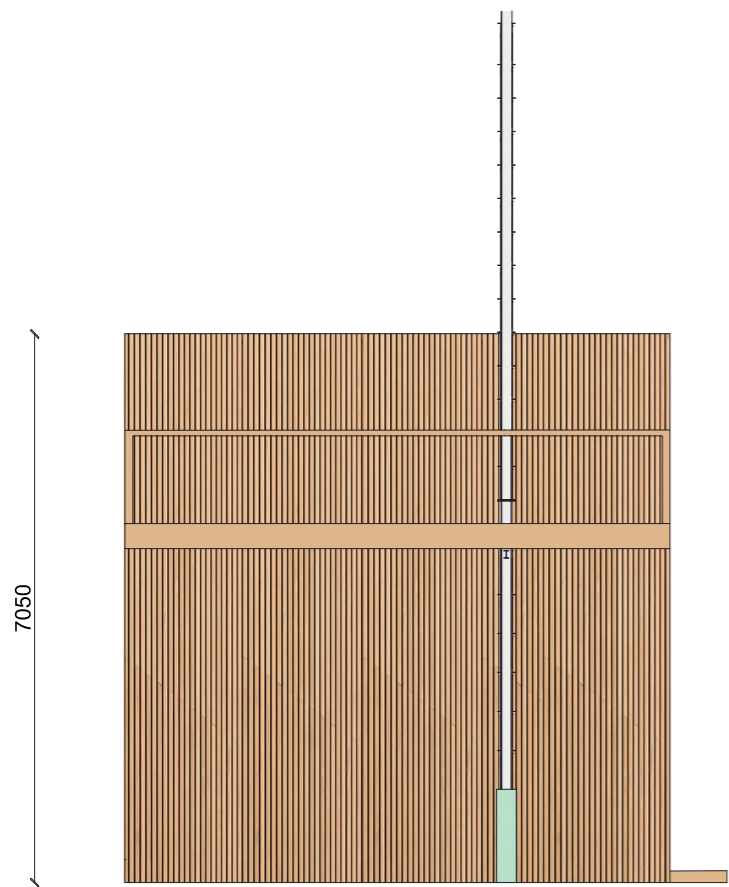
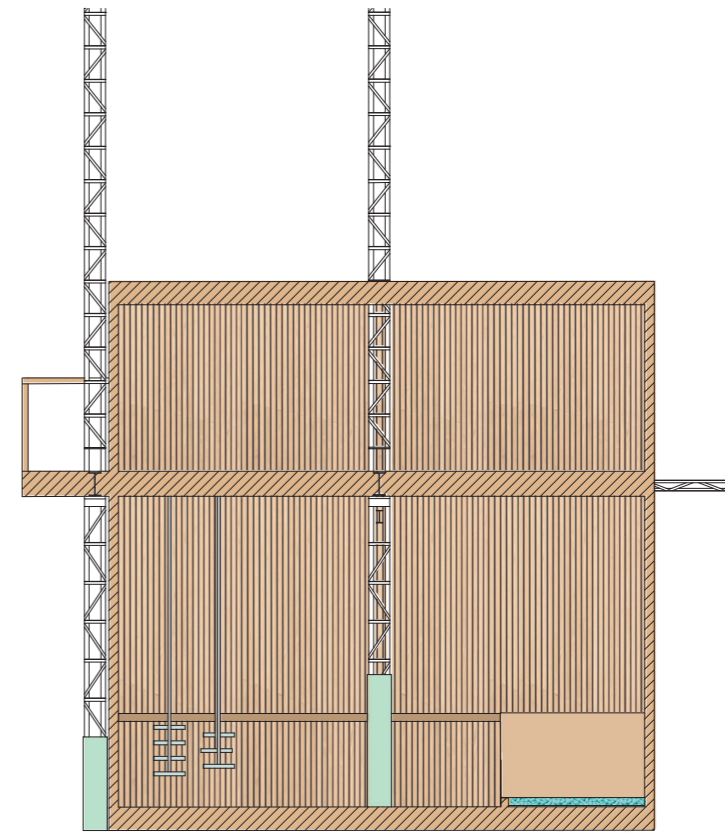
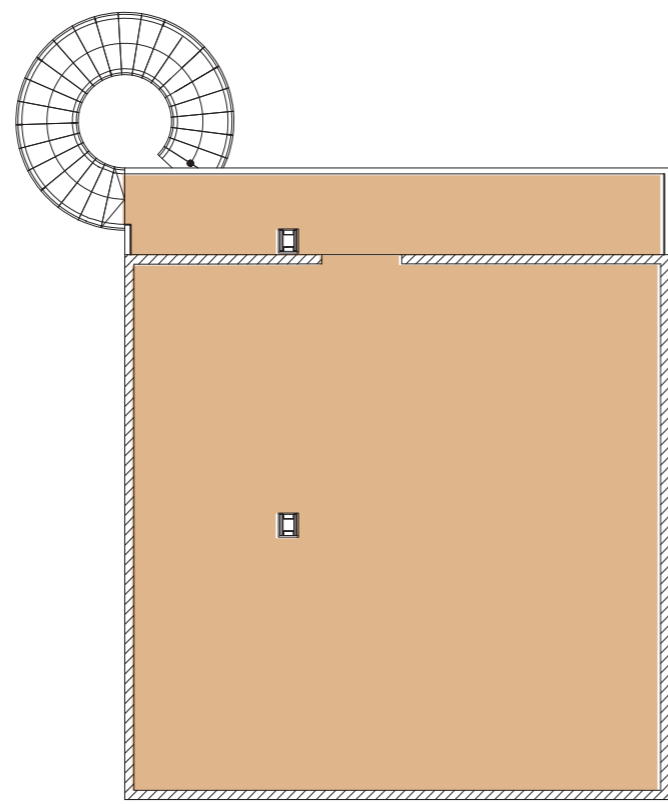
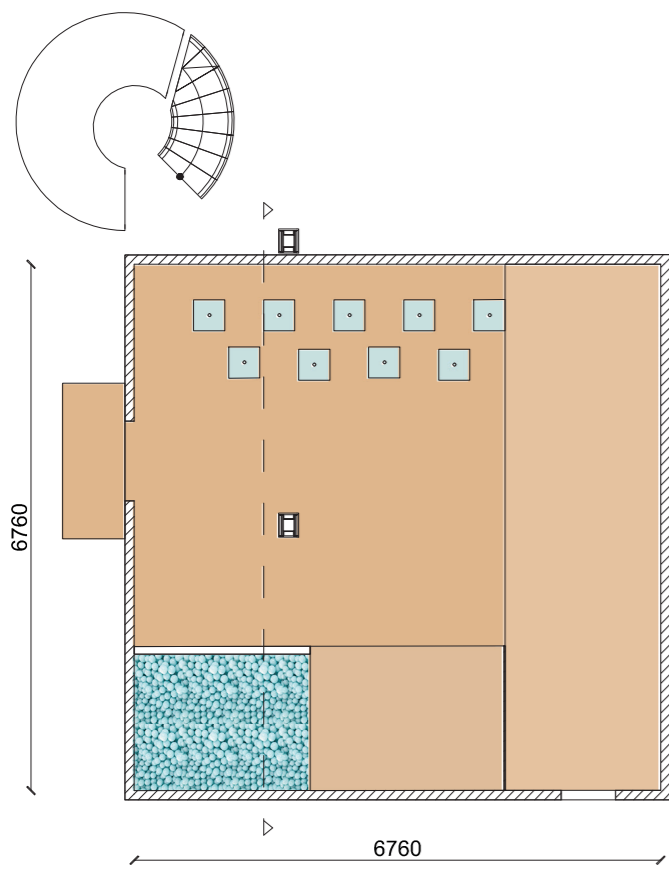


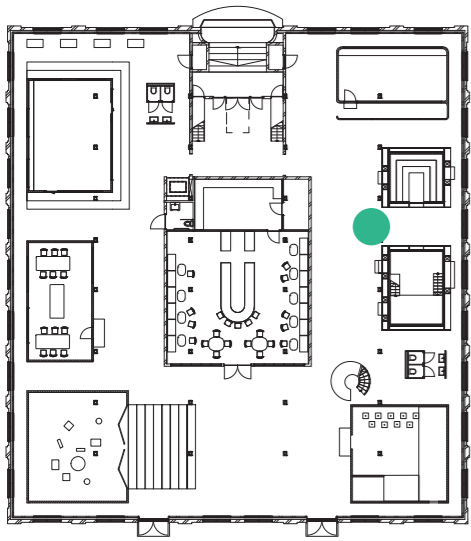


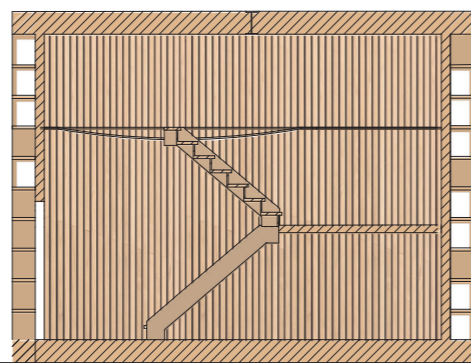
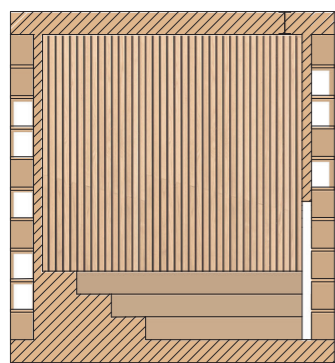
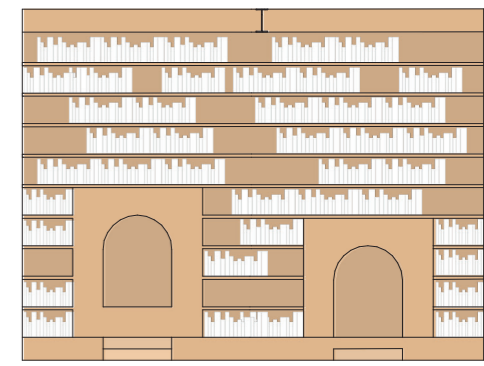
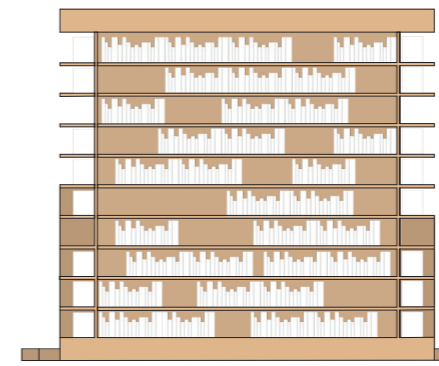
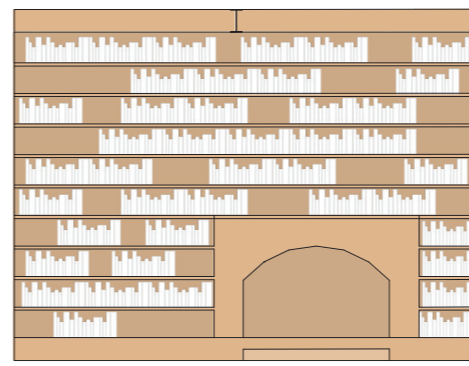
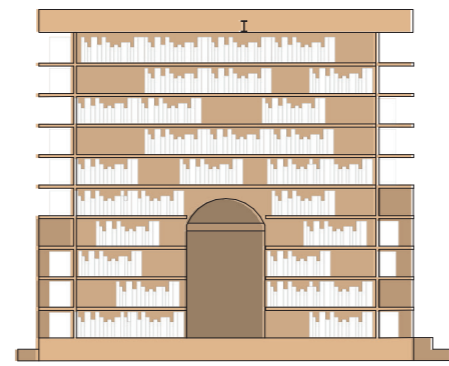
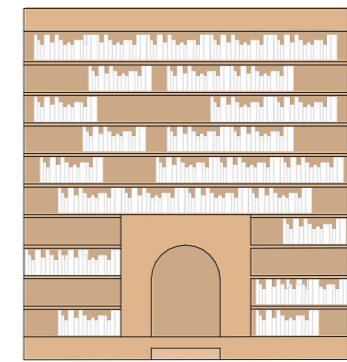
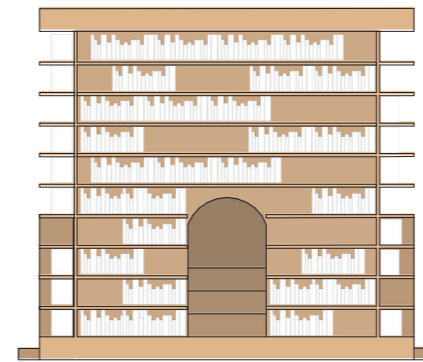
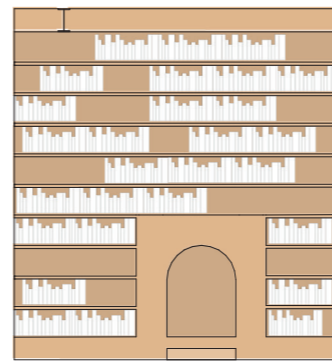
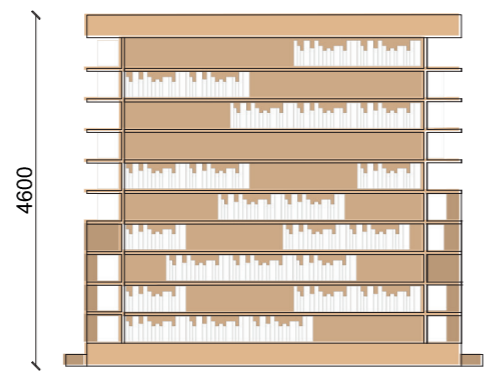
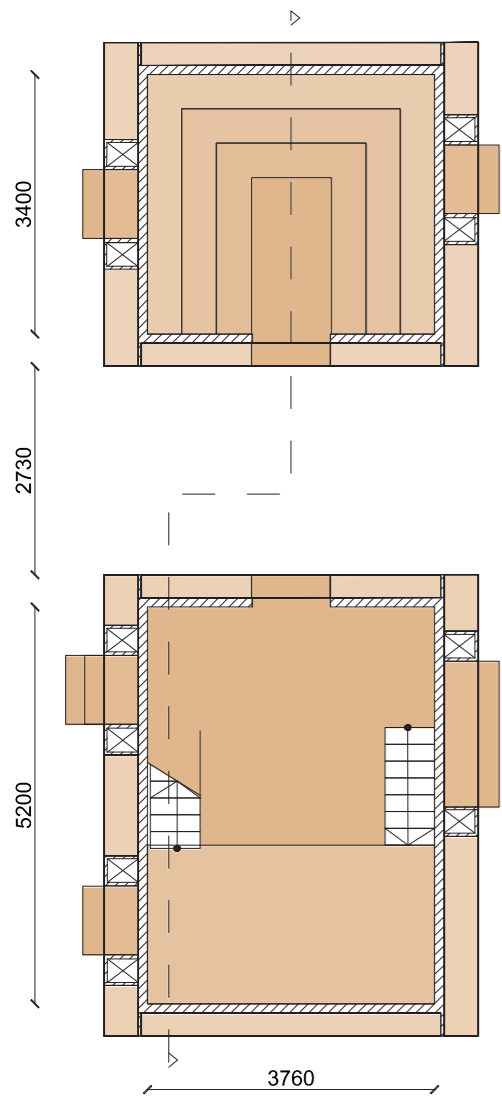


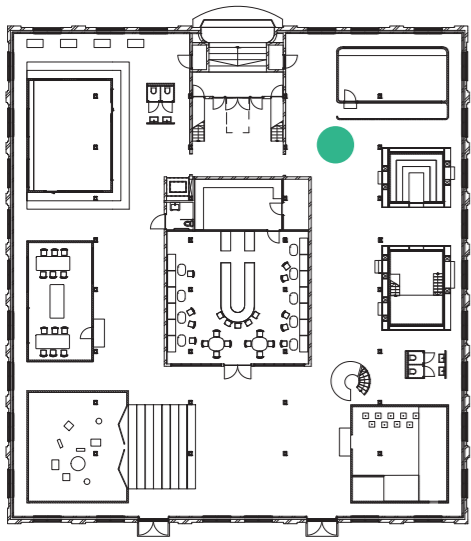


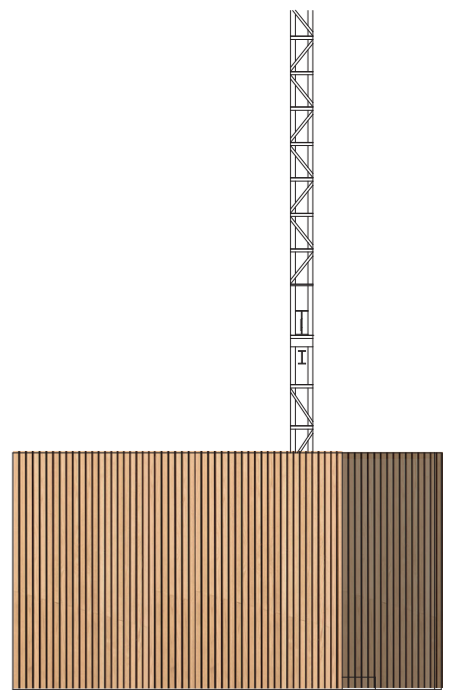
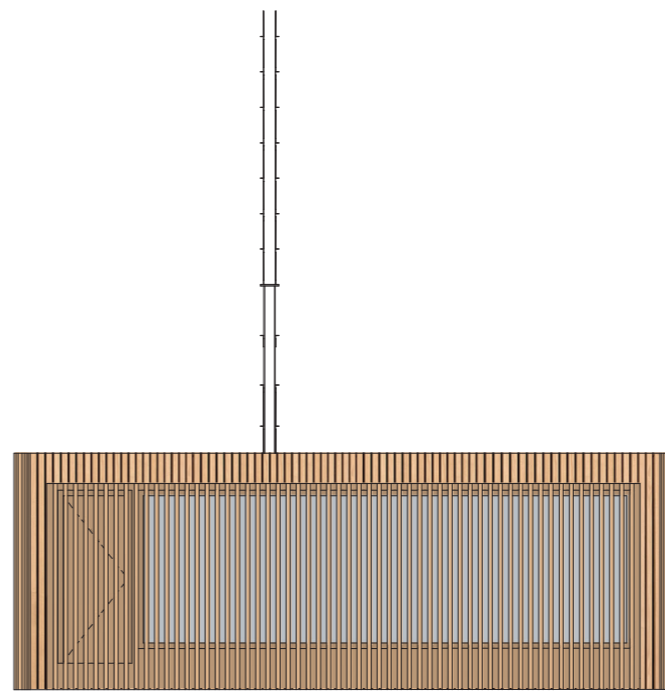
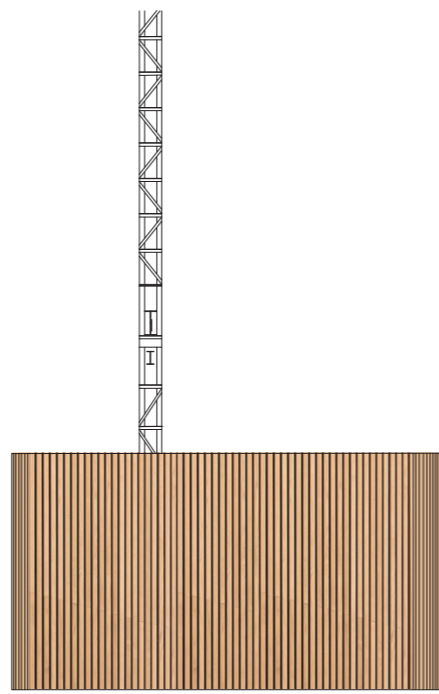
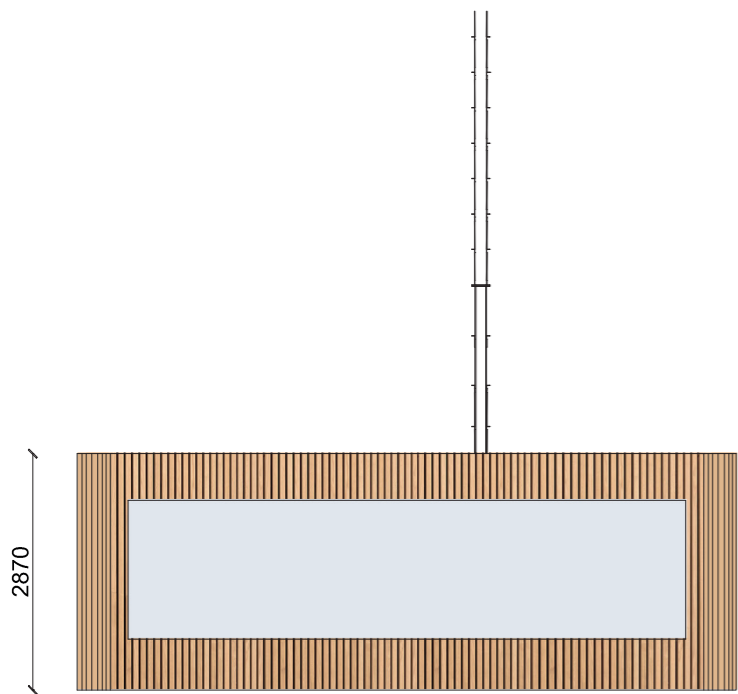
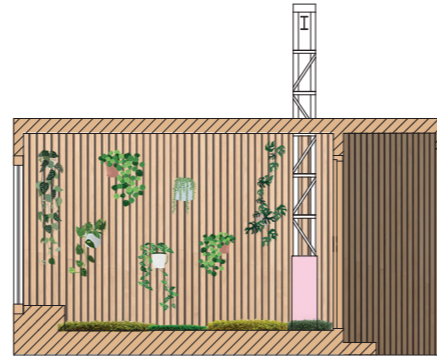
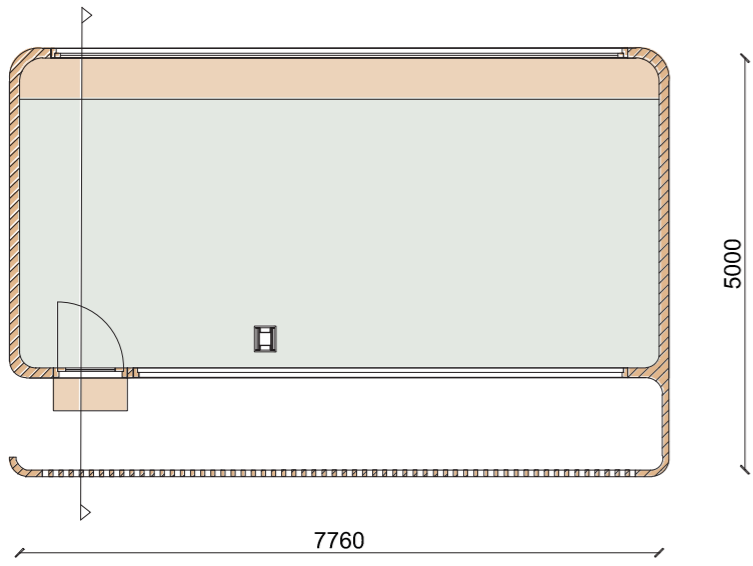


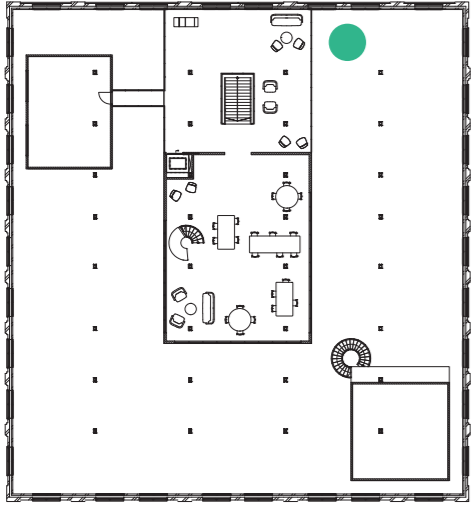


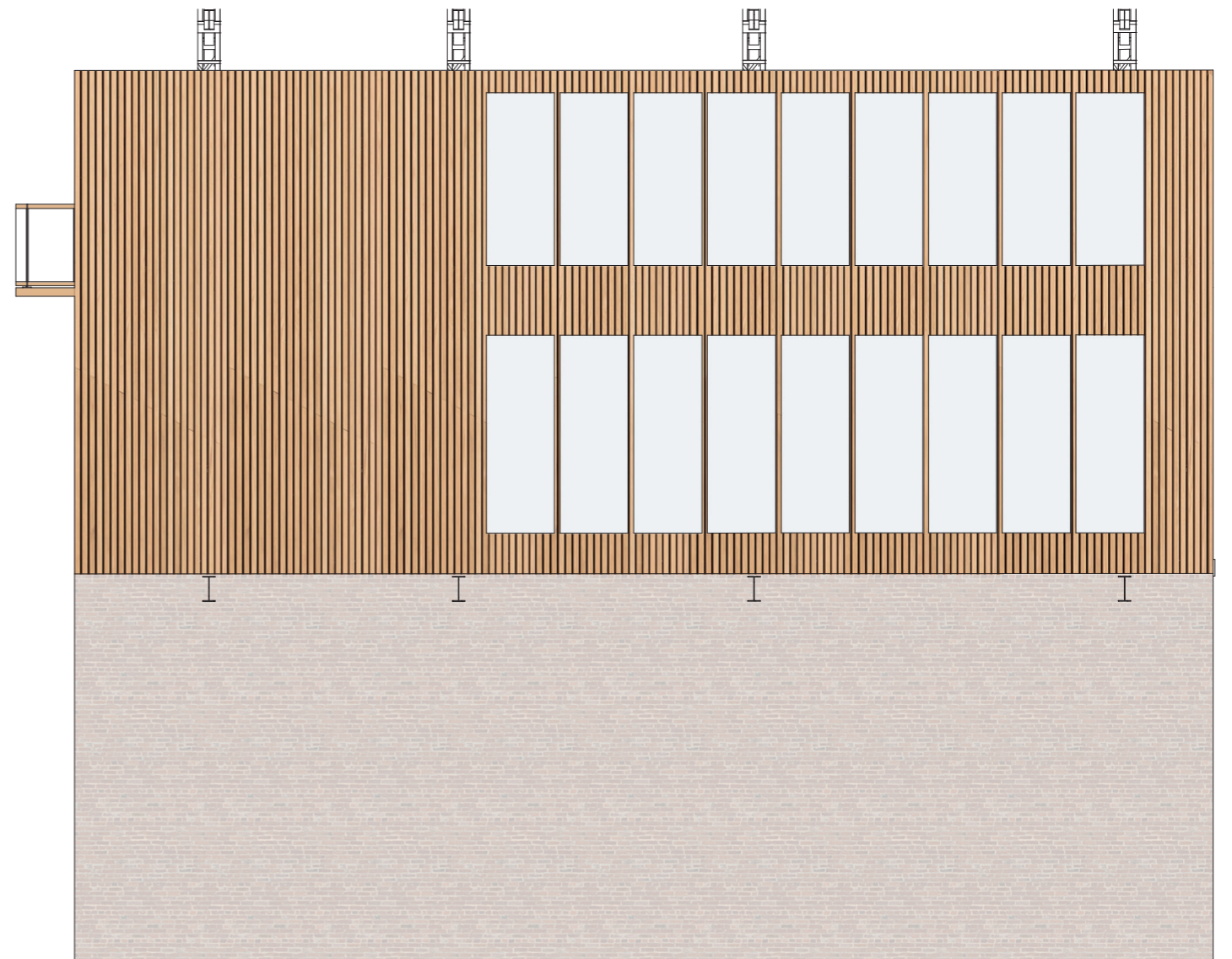
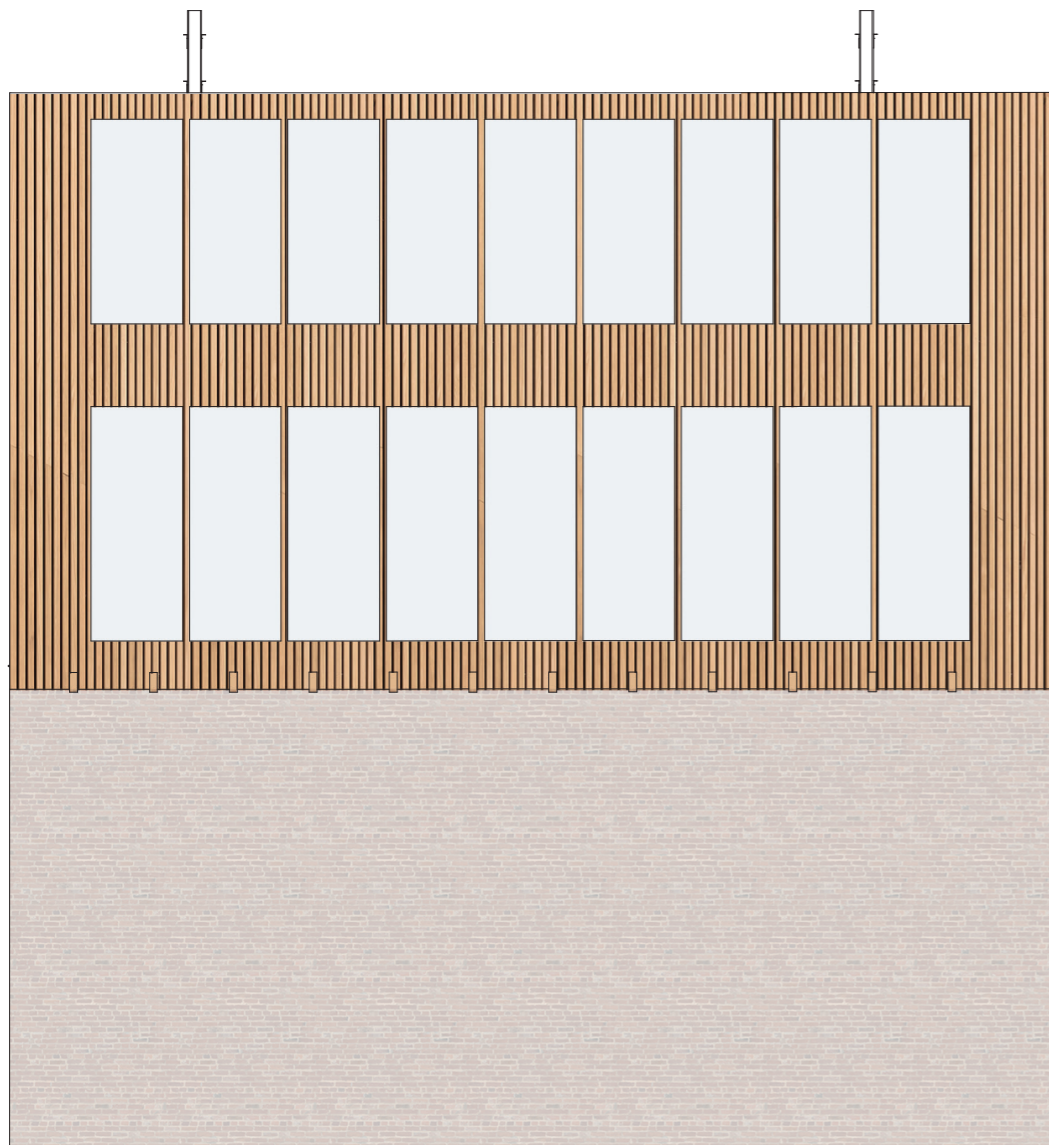
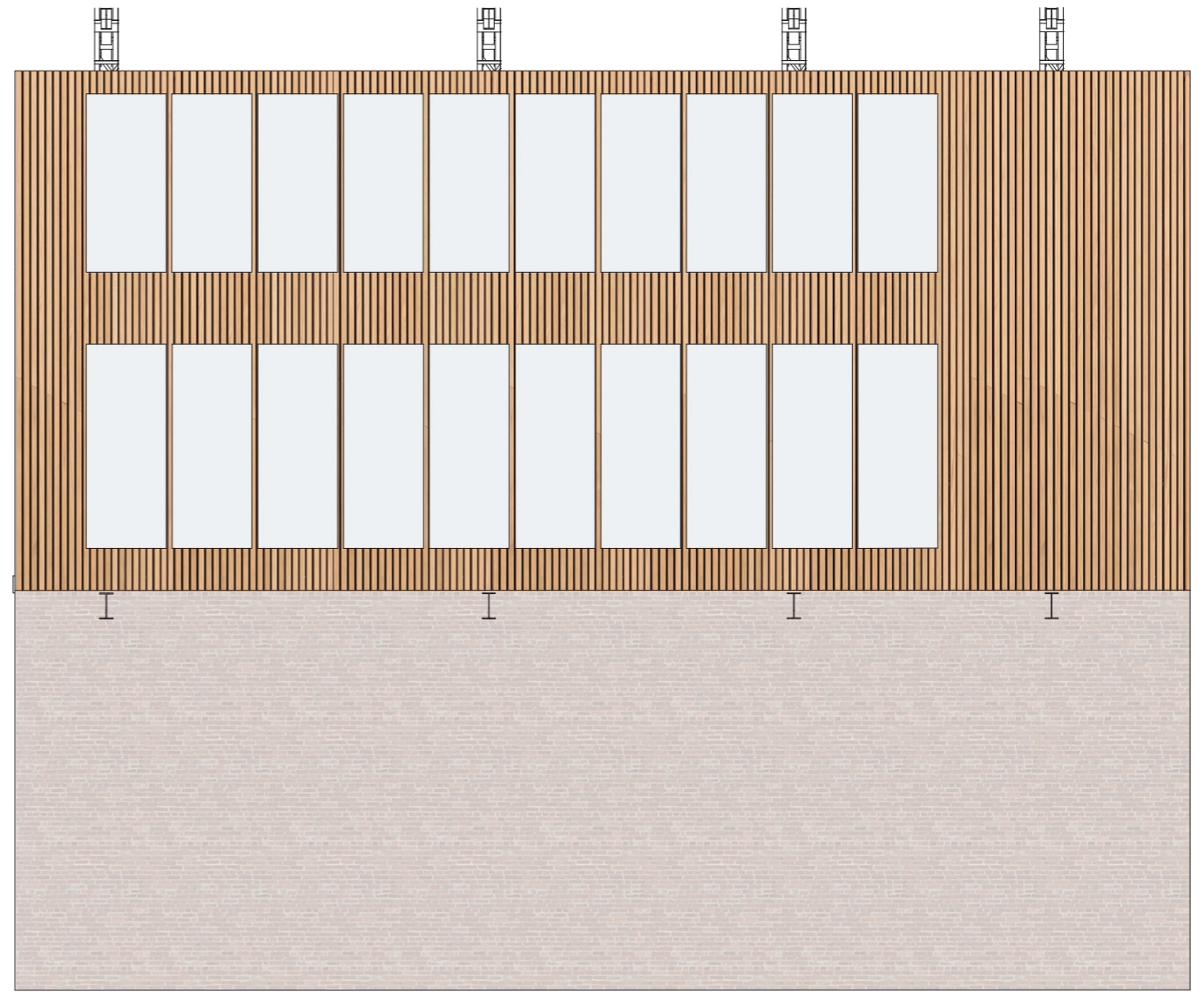
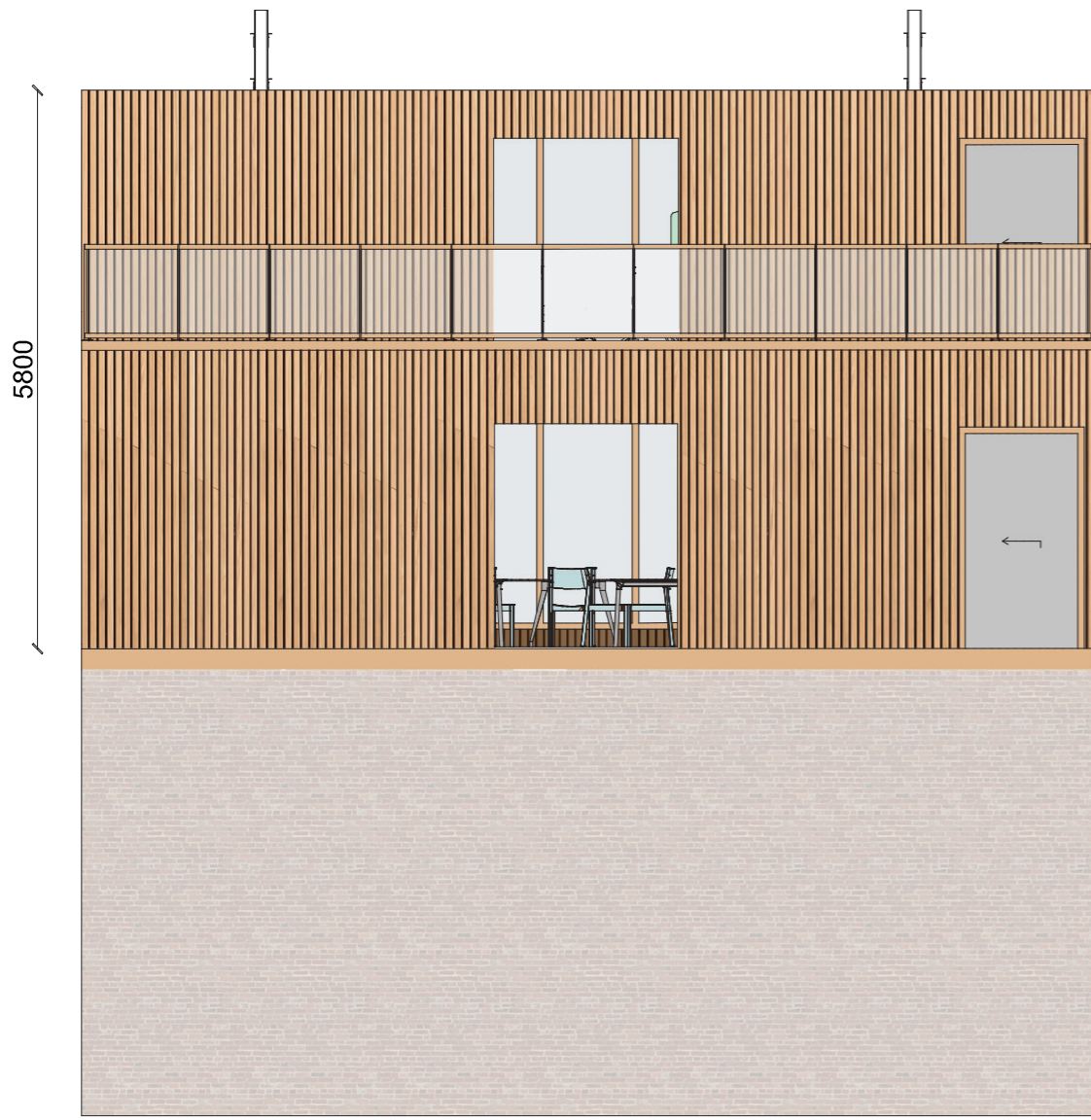


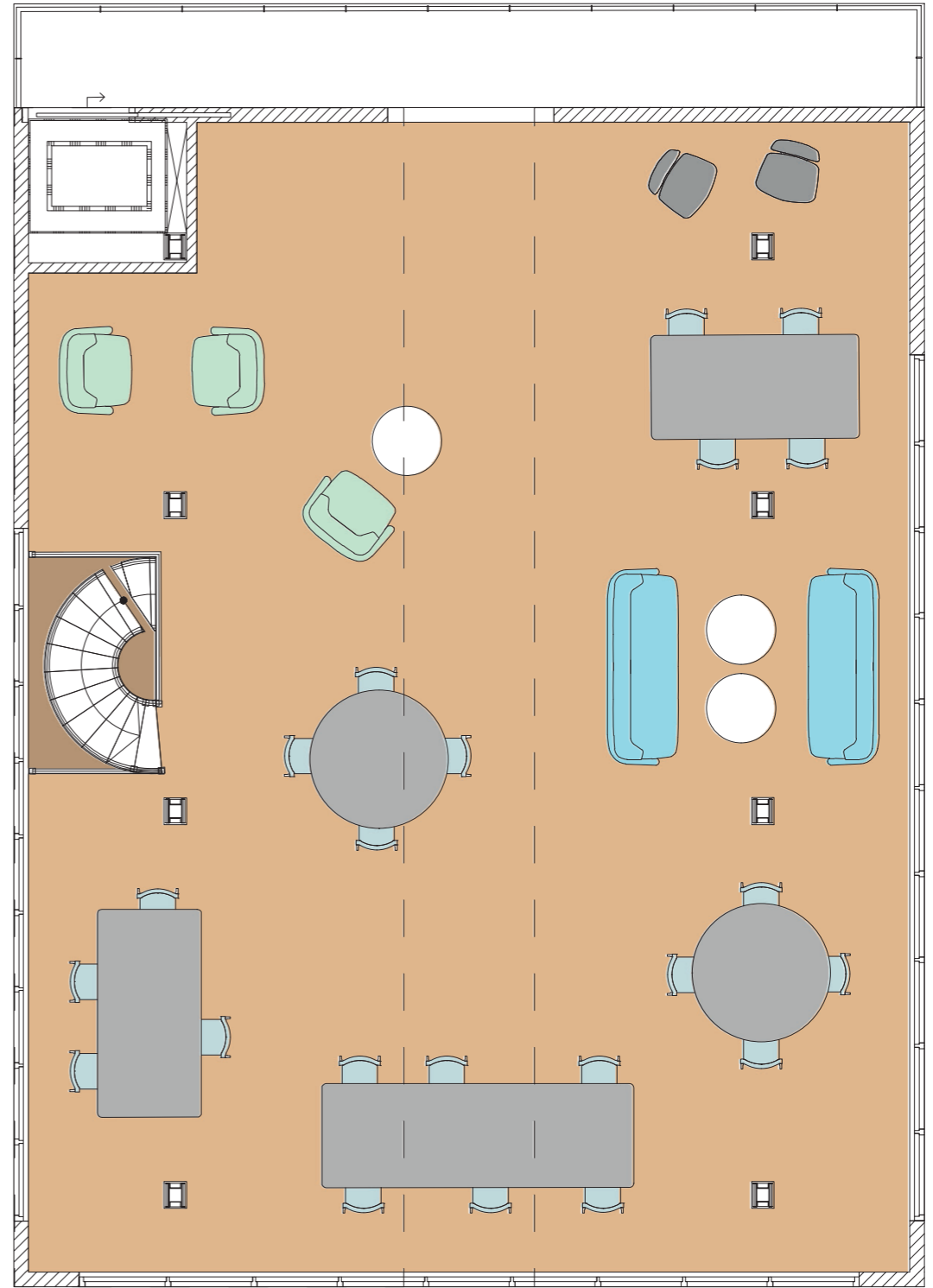
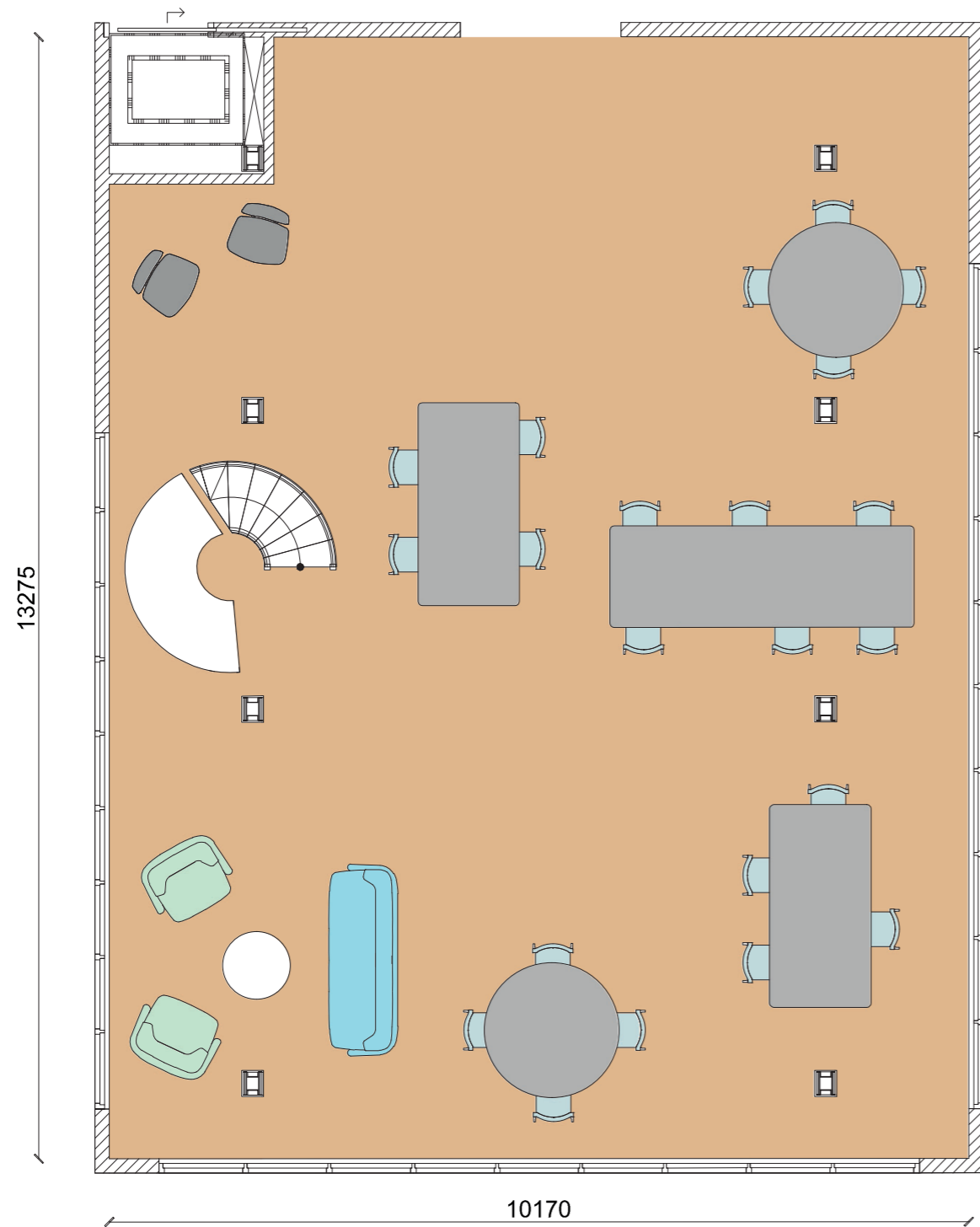


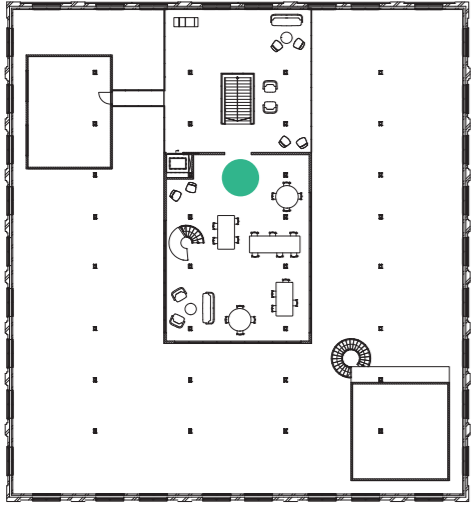








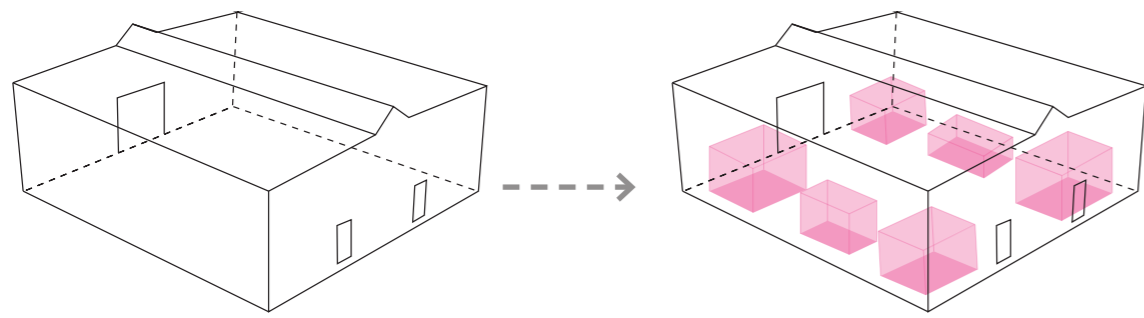




BUILDING TECHNOLOGY

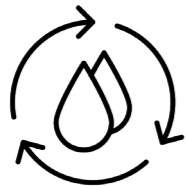
How to create a sustainable design that is futureproof?

1. Reduce energy demand



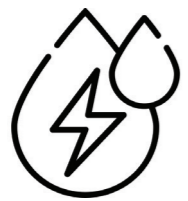
BOX in BOX

2. Reuse the rest energy

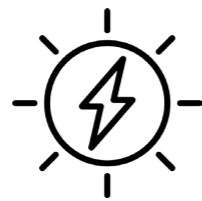


Re-use rainwater to flush toilets

3. Solve the remaining energy demand



Aquathermie



Thin film solar panels

4. Choice of materials

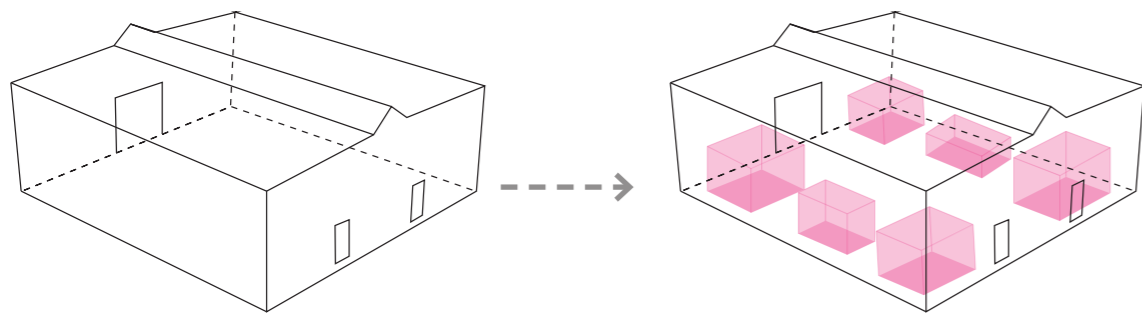


Recycled materials

Local materials

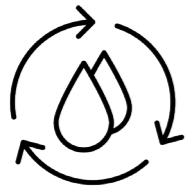
Eco friendly materials

1. Reduce energy demand



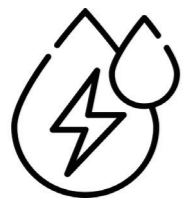
BOX in BOX

2. Reuse the rest energy

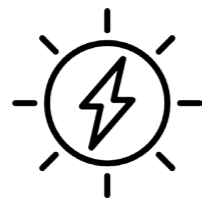


Re-use rainwater to flush toilets

3. Solve the remaining energy demand



Aquathermie



Thin film solar panels

4. Choice of materials



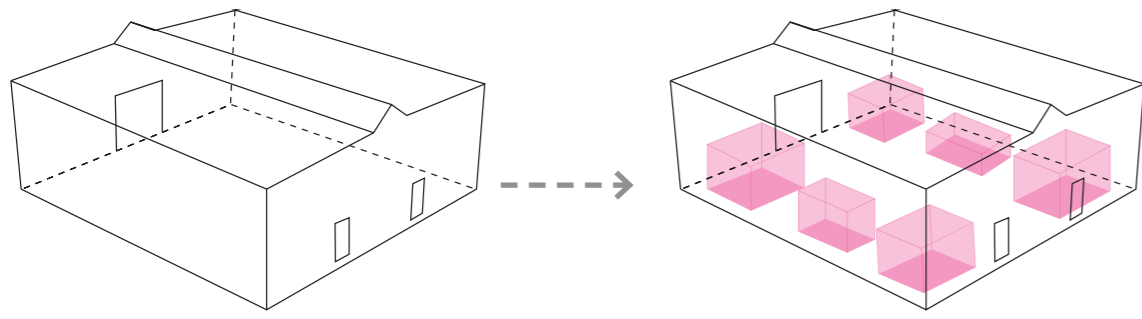
Recycled materials

Local materials

Eco friendly materials

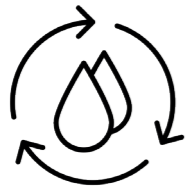


1. Reduce energy demand



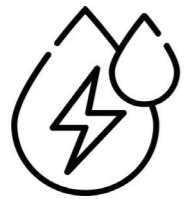
BOX in BOX

2. Reuse the rest energy

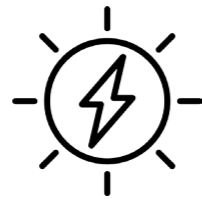


Re-use rainwater to flush toilets

3. Solve the remaining energy demand



Aquathermie



Thin film solar panels

4. Choice of materials

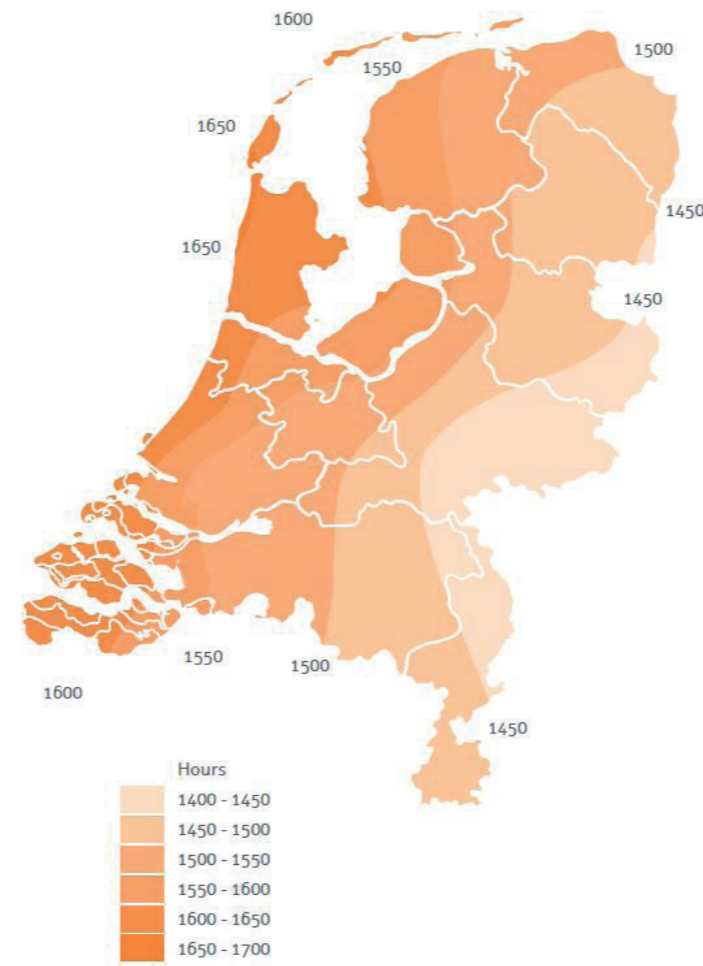


Recycled materials

Local materials

Eco friendly materials

Annual total hours of sunshine in the Netherlands



Richting

Hellingshoek

	10°	20°	36°	50°	60°	70°	85°
West	90	90	85	80	75	70	65
Zuidwest	95	95	100	95	90	85	80
Zuid	95	100	100	100	95	90	80
Zuidoost	95	95	95	95	90	85	80
Oost	90	90	85	80	75	70	65
Noordoost	85	80	70	60	55	50	45
Noord	85	75	60	50	45	40	35
Noordwest	85	80	70	60	55	50	45



MATERIAL PALETTE

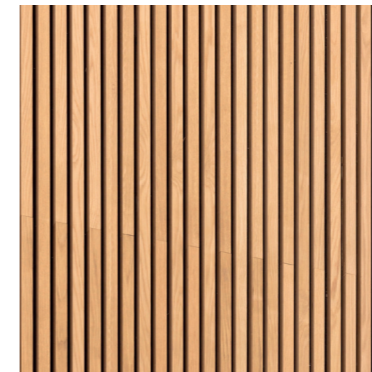
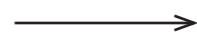
Existing material:

New materials:

Addition

Wall

Brick walls



Floor

Broken tiled floor



Ceiling

Bare construction

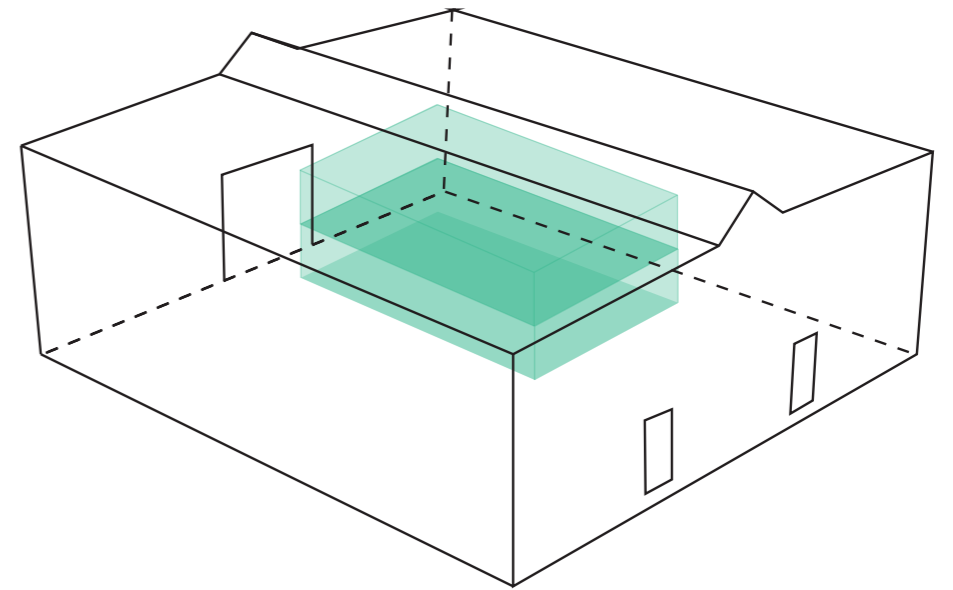
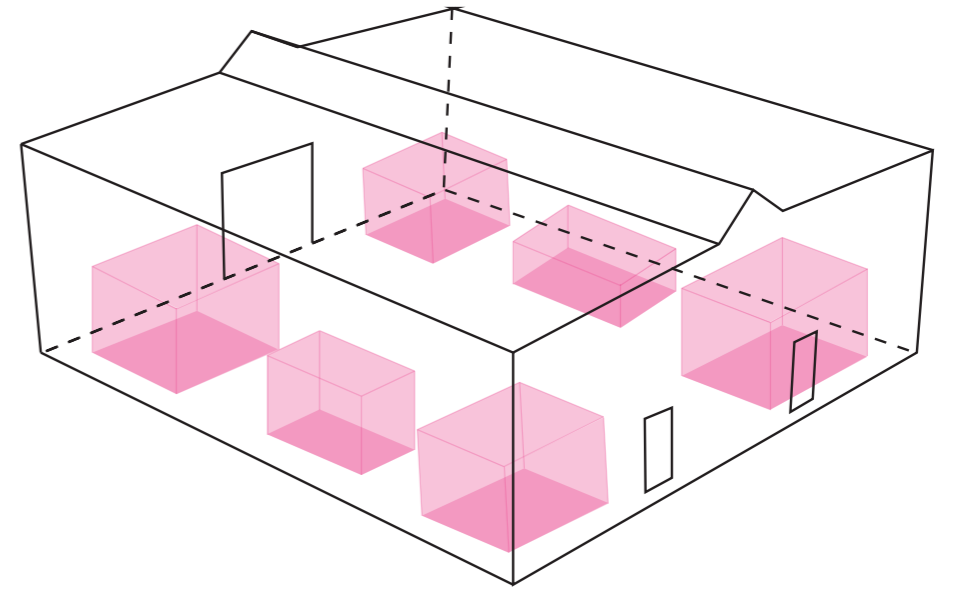
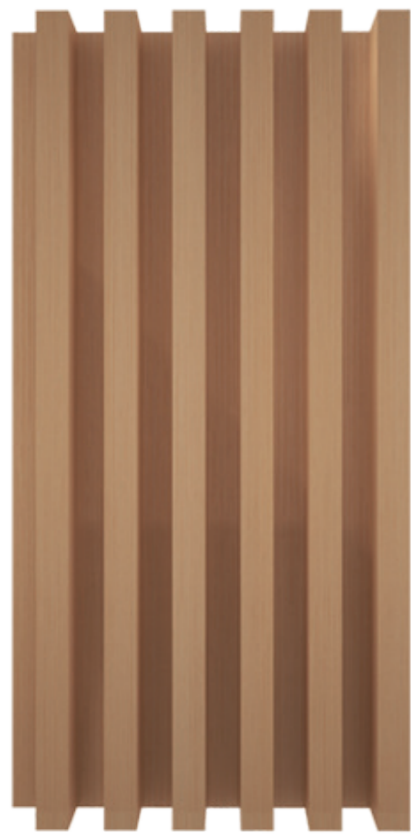


Color scheme

Designated zones



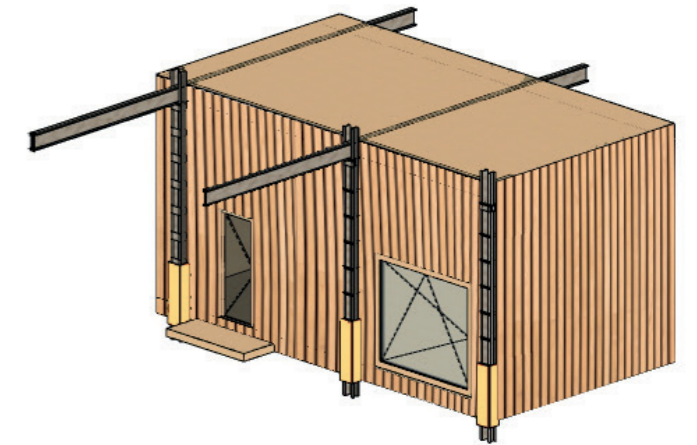
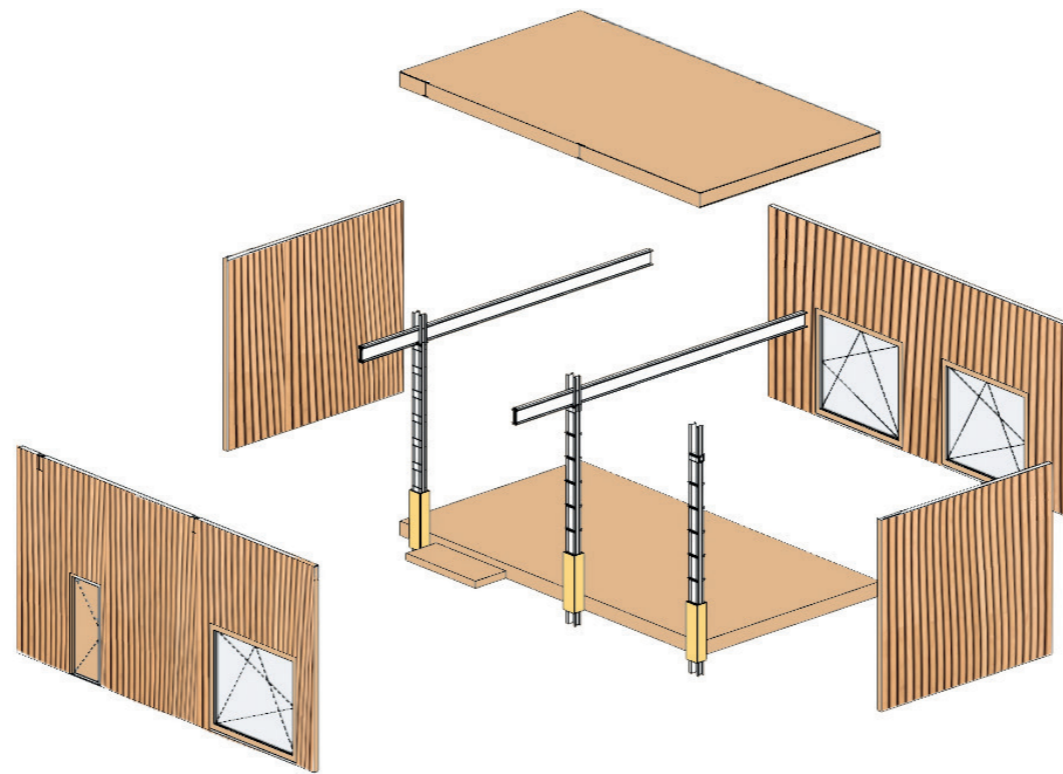
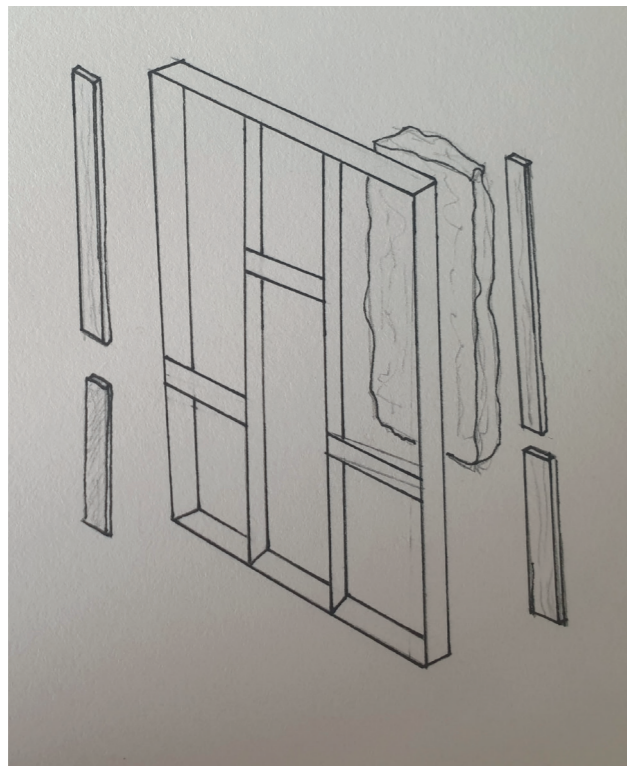
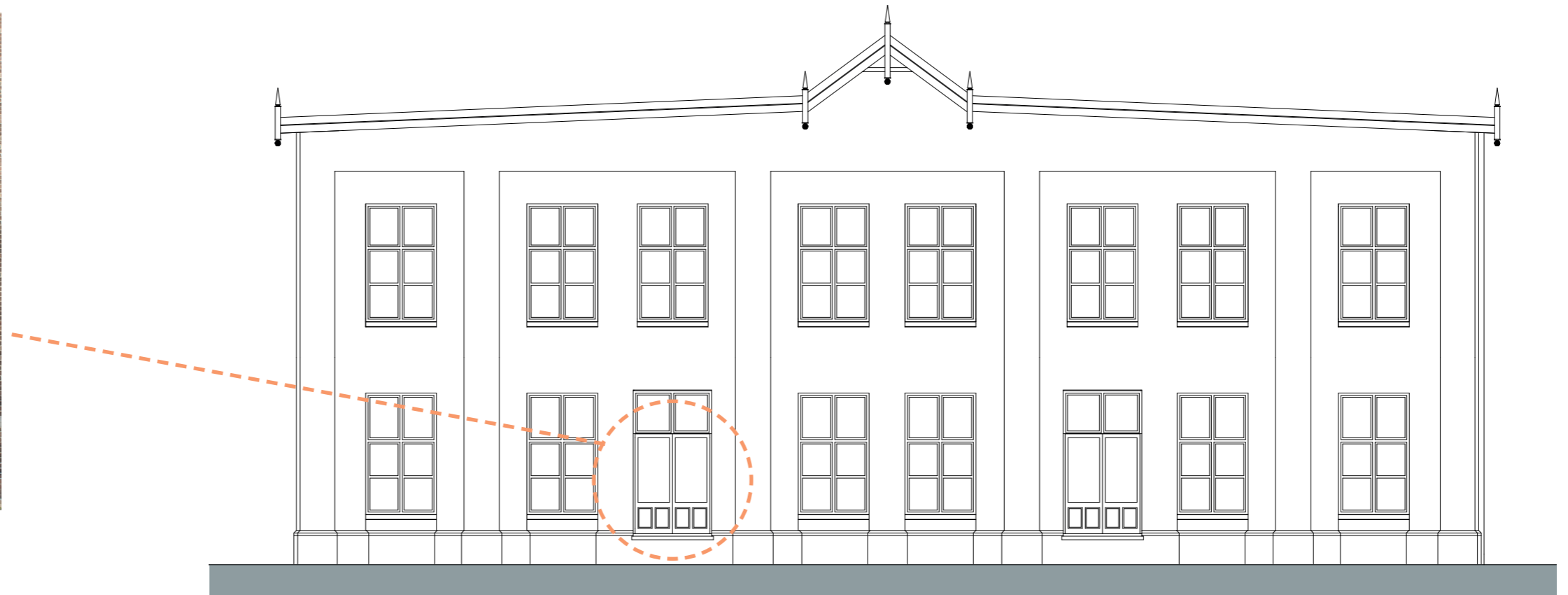
ACOUSTICS



TIMBER FRAME BOXES

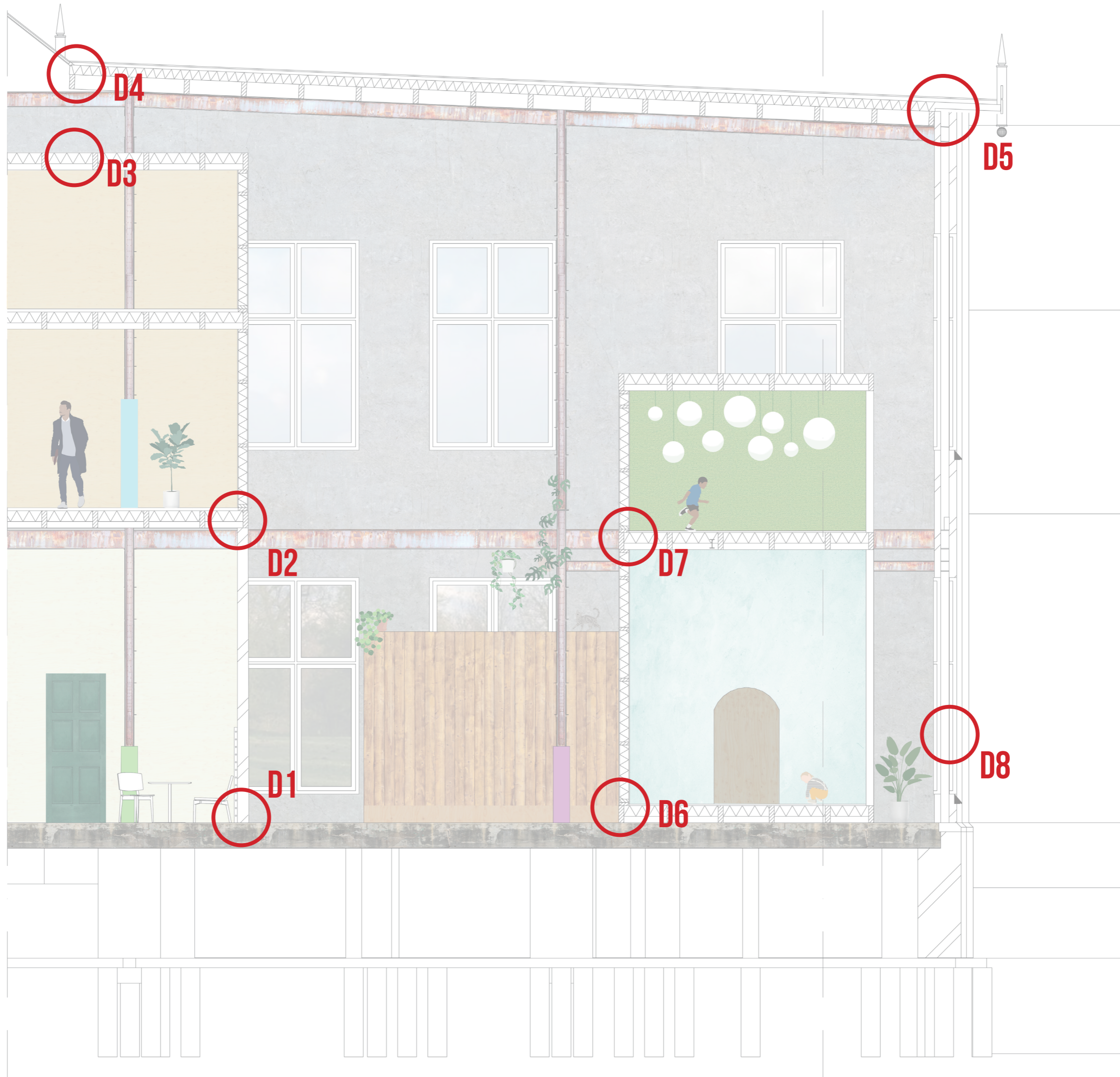


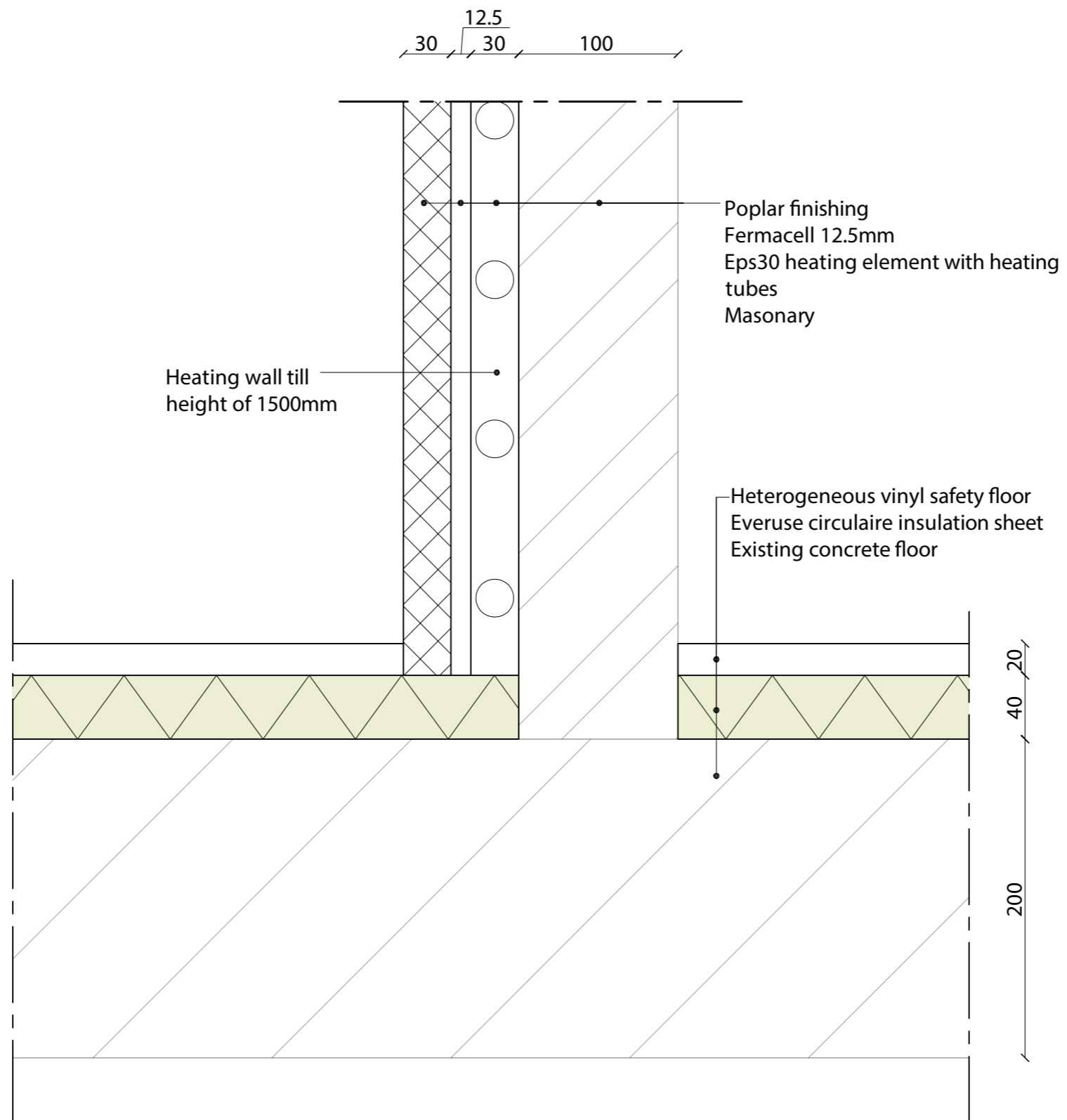
2800 x 2100 mm



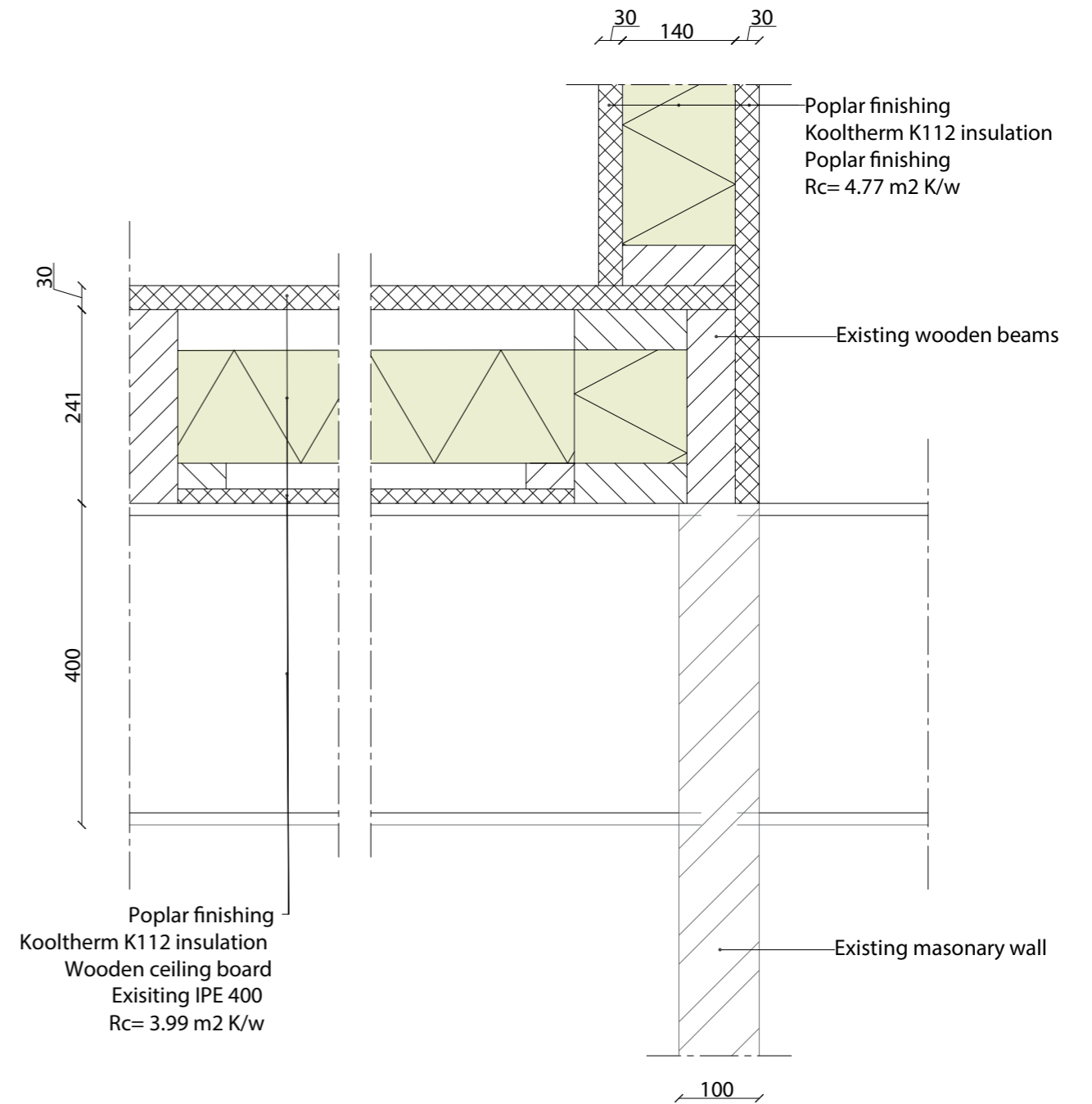


DETAILLING

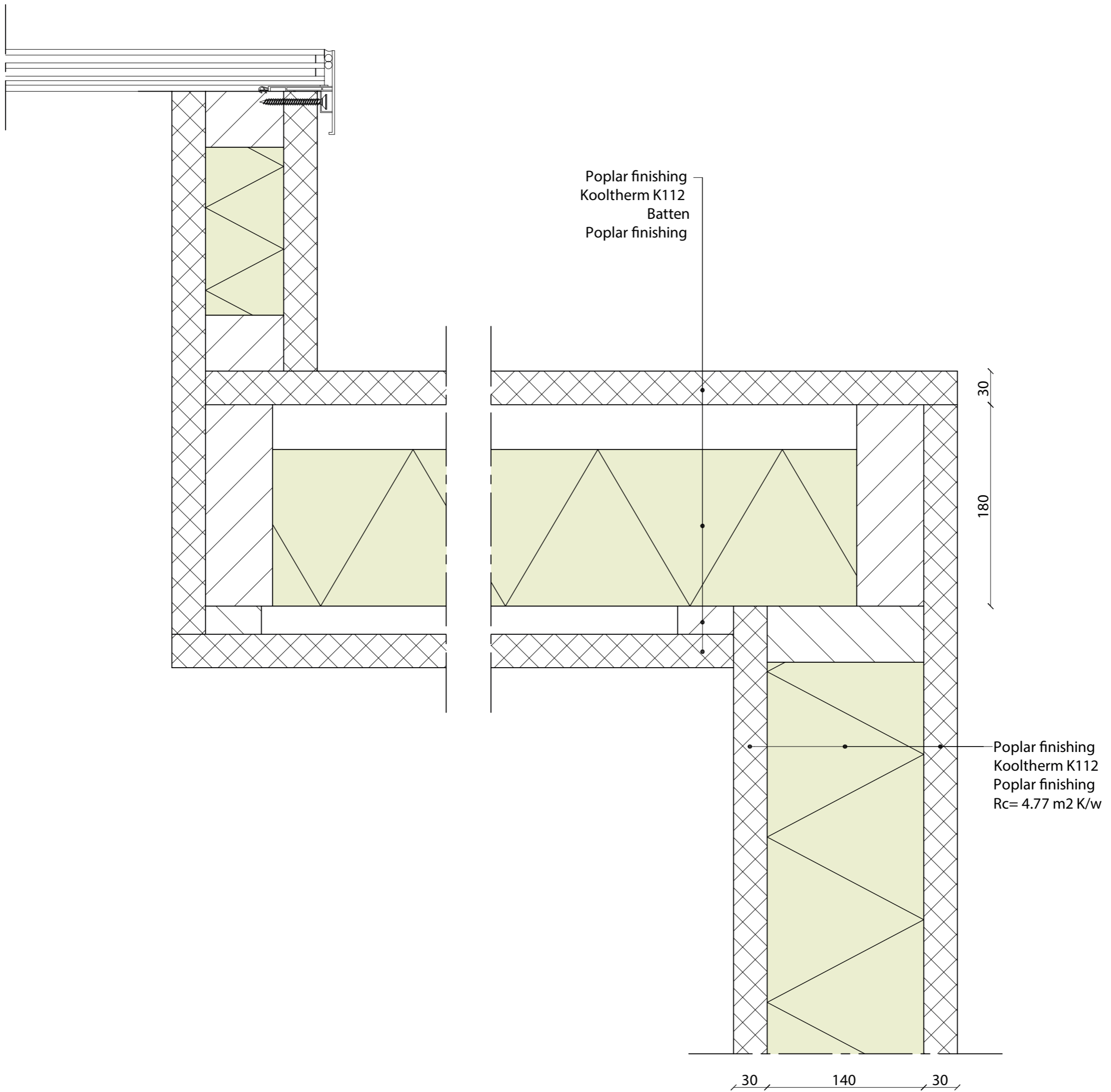




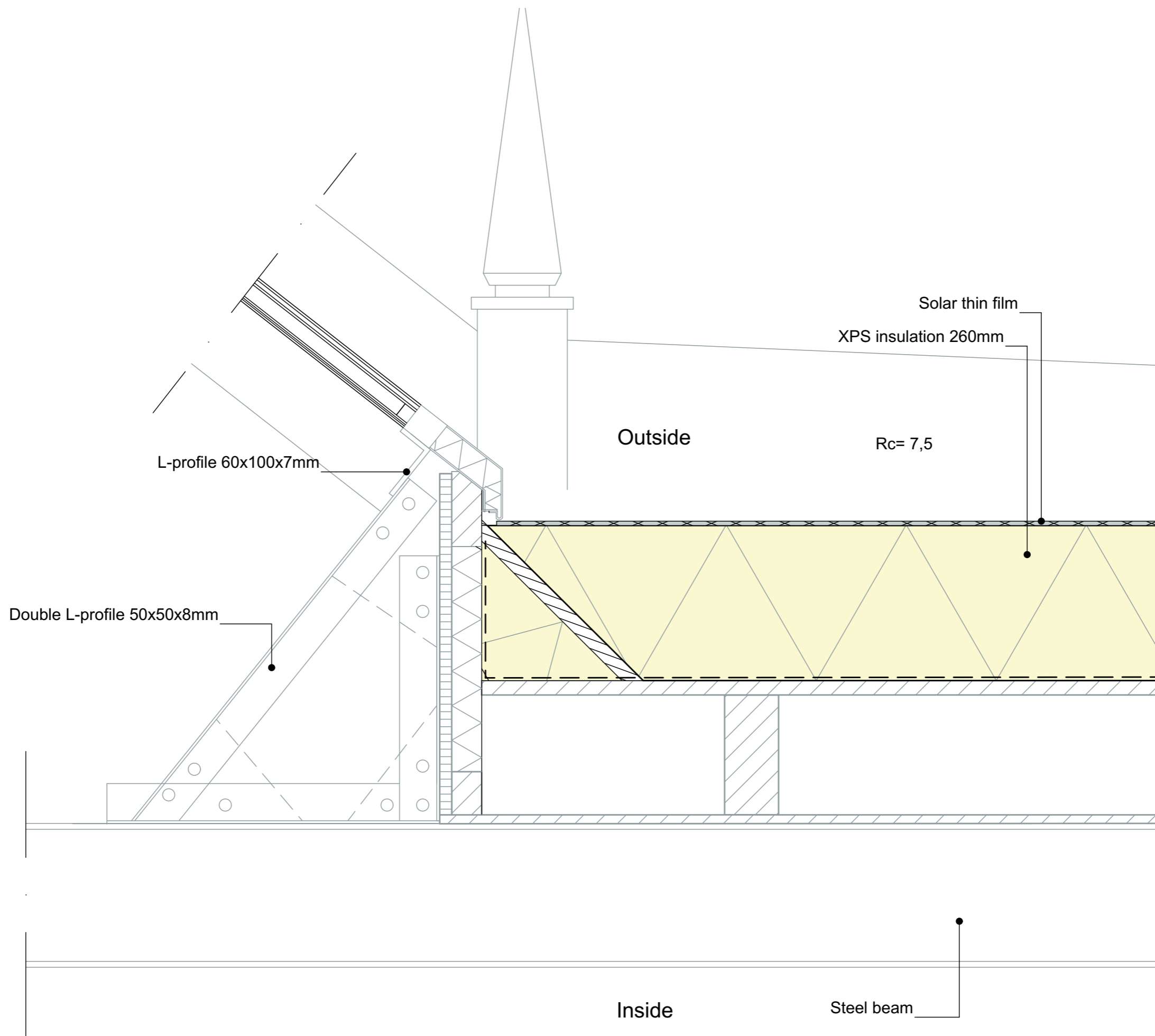
D1: Ground floor with core wall



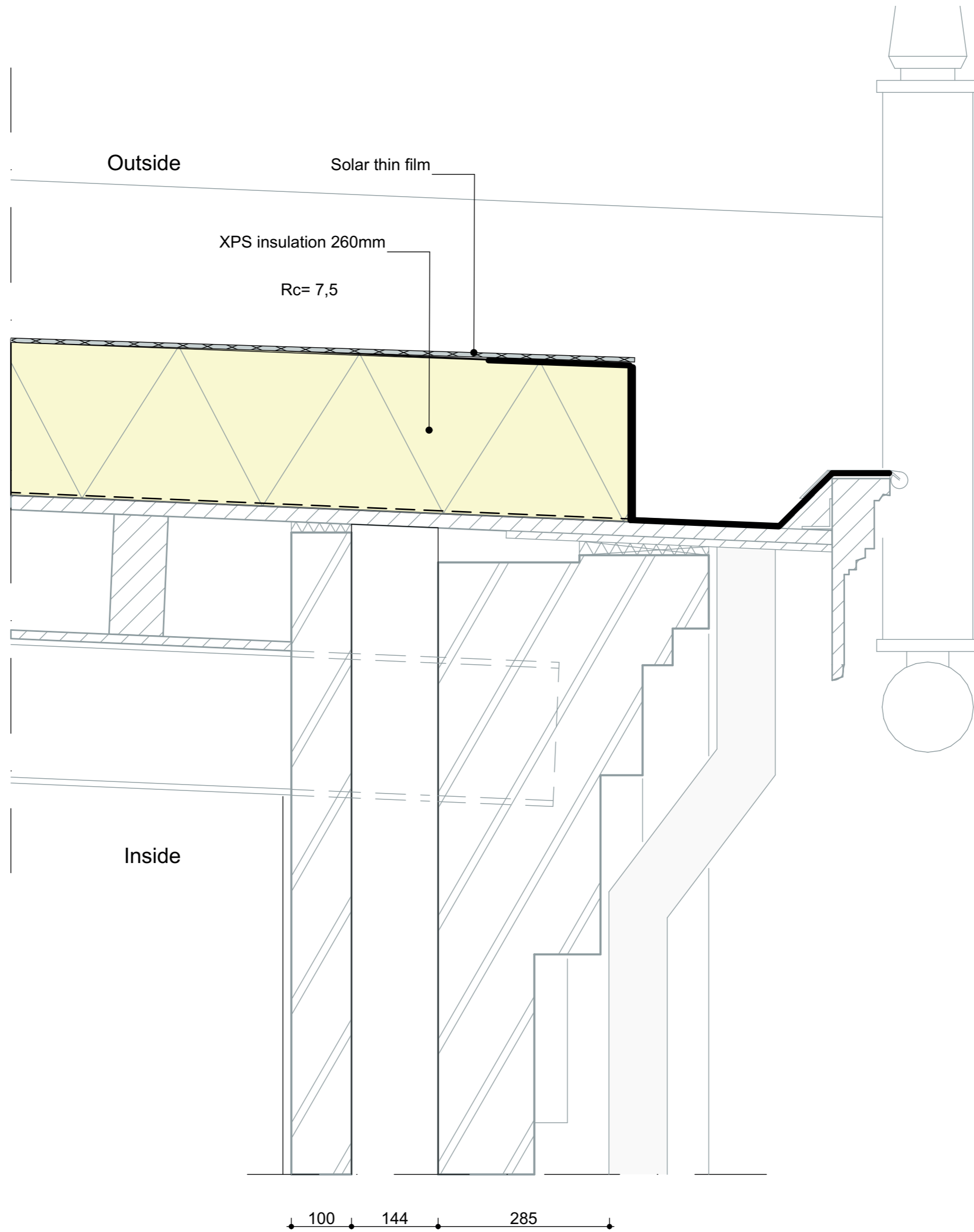
D2: Core wall with timber frame



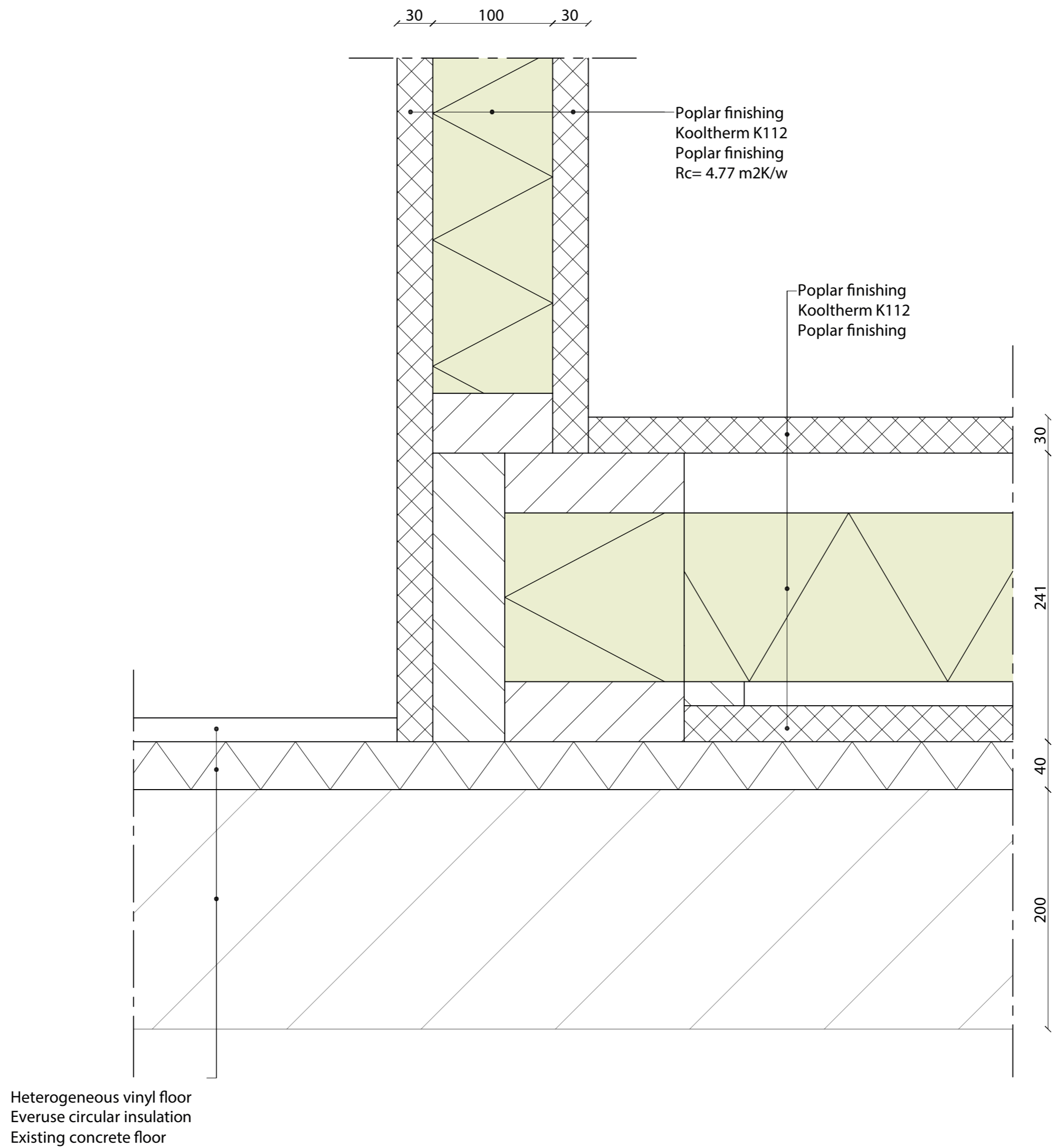
D3: Timber frame with skylight



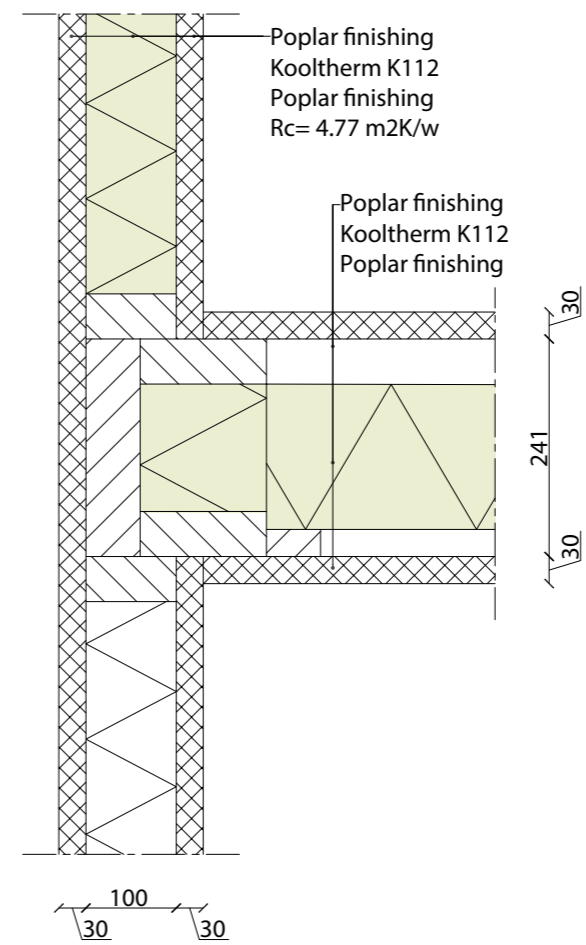
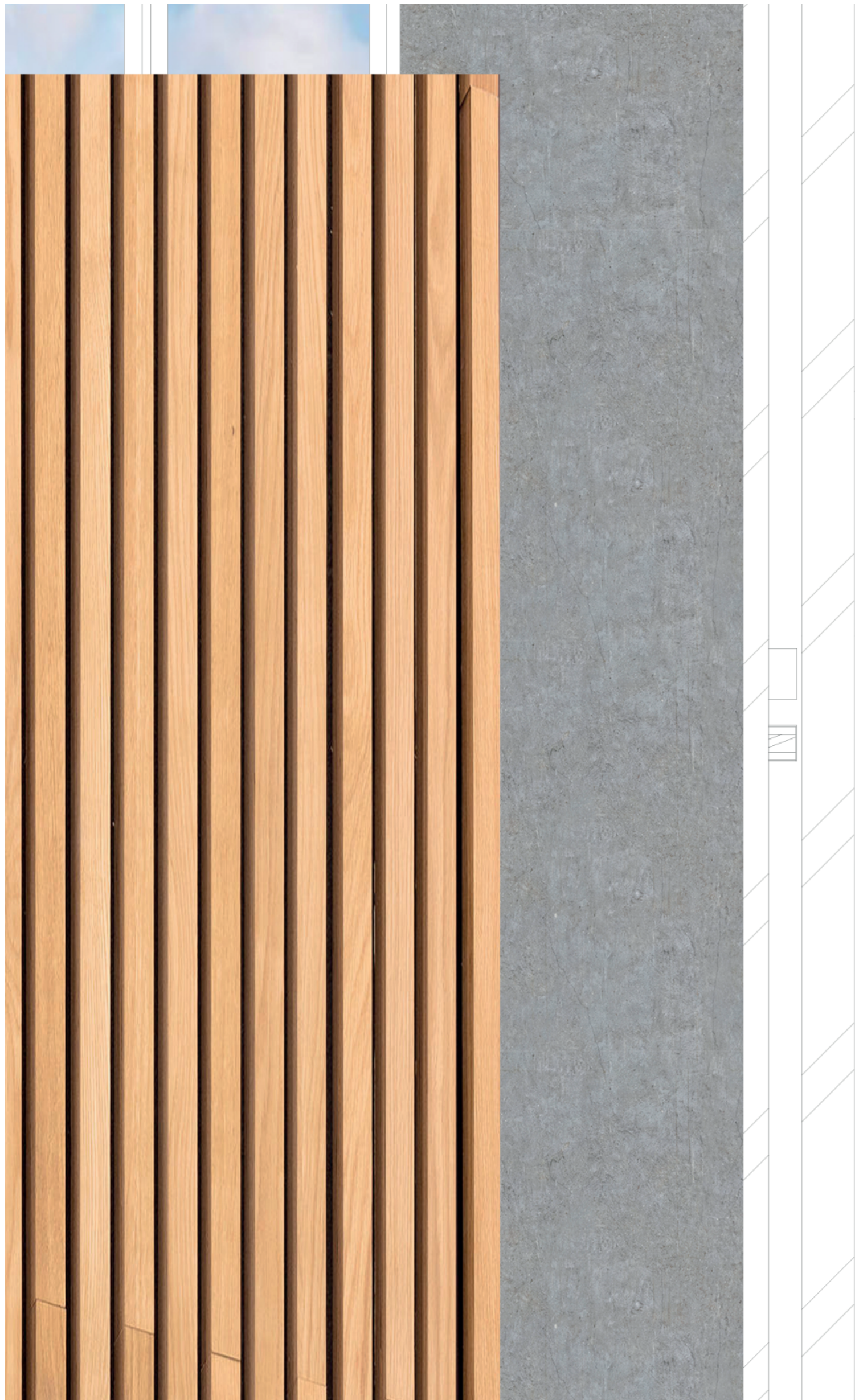
D4: Roof with skylight



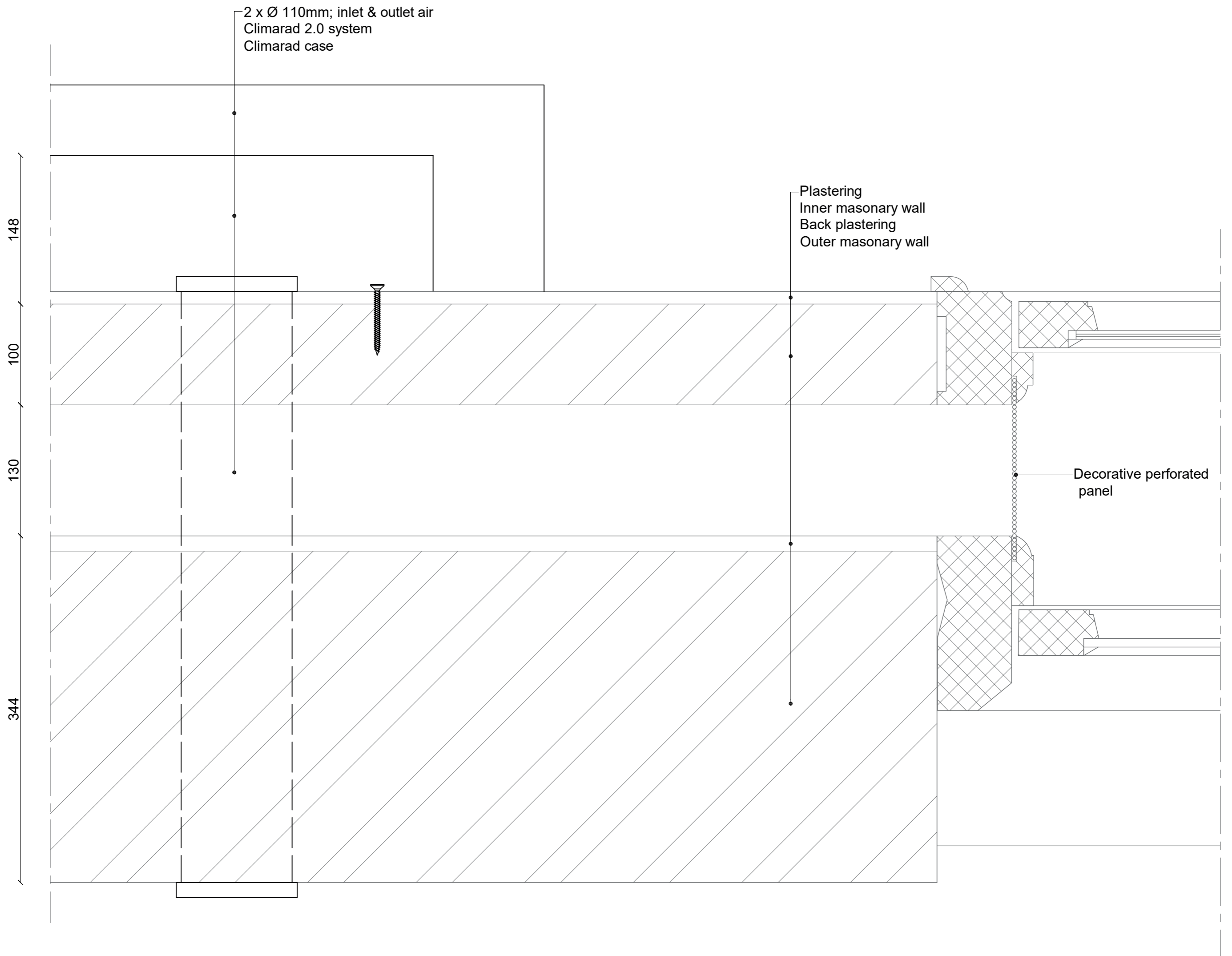
D5: Roof edge



D6: Ground floor with timber frame



D7: Timber frame level



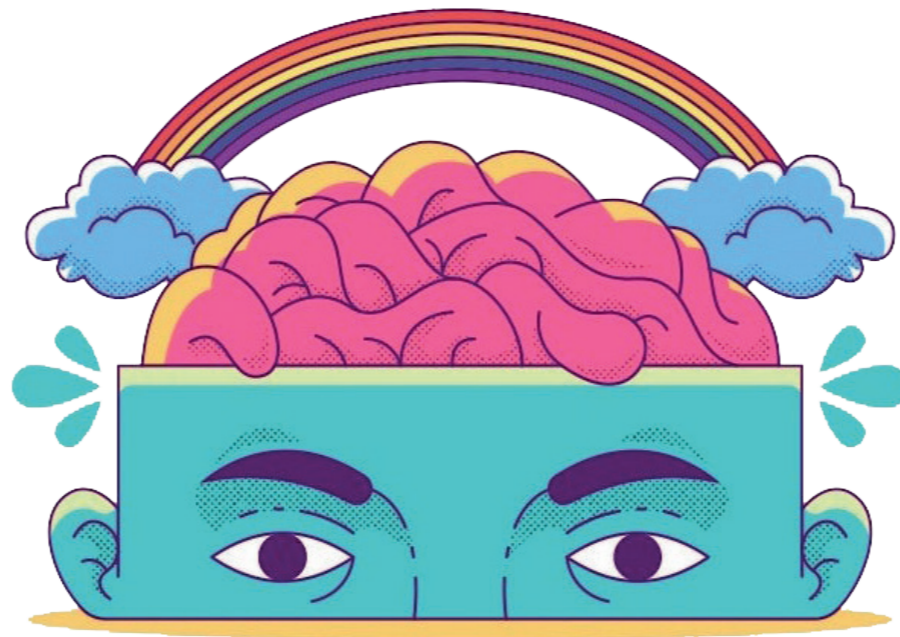
D8: Horizontal detail climarad system

WEAPONS DEPOT: CLIMATE





CAMPUS NORTH



PLAY, EXPERIMENT, DISCOVER & LEARN

HERITAGE FOR GENERATIONAL GROWTH

MAYS AL-KORANY

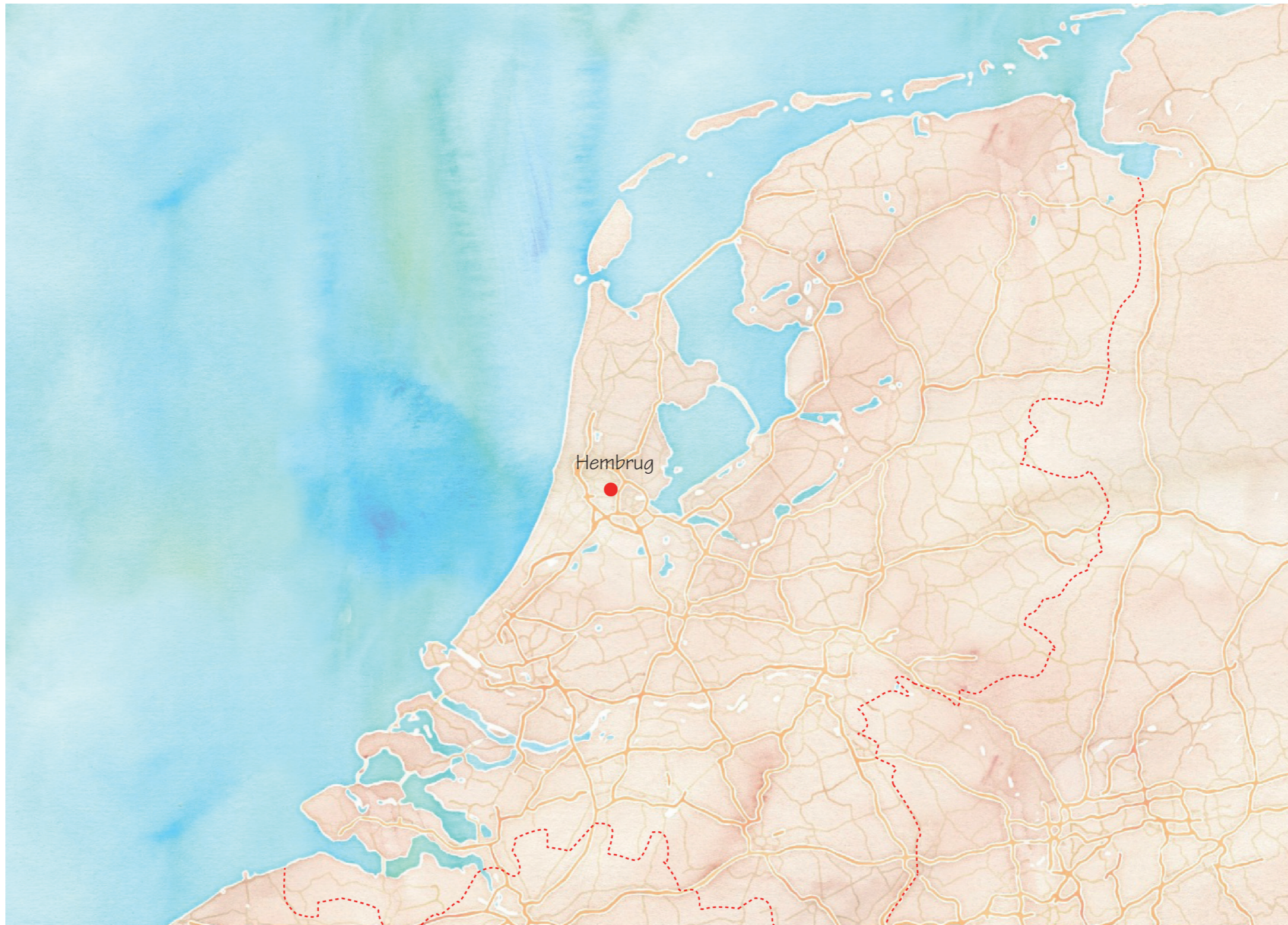
4523687

MENTORS:

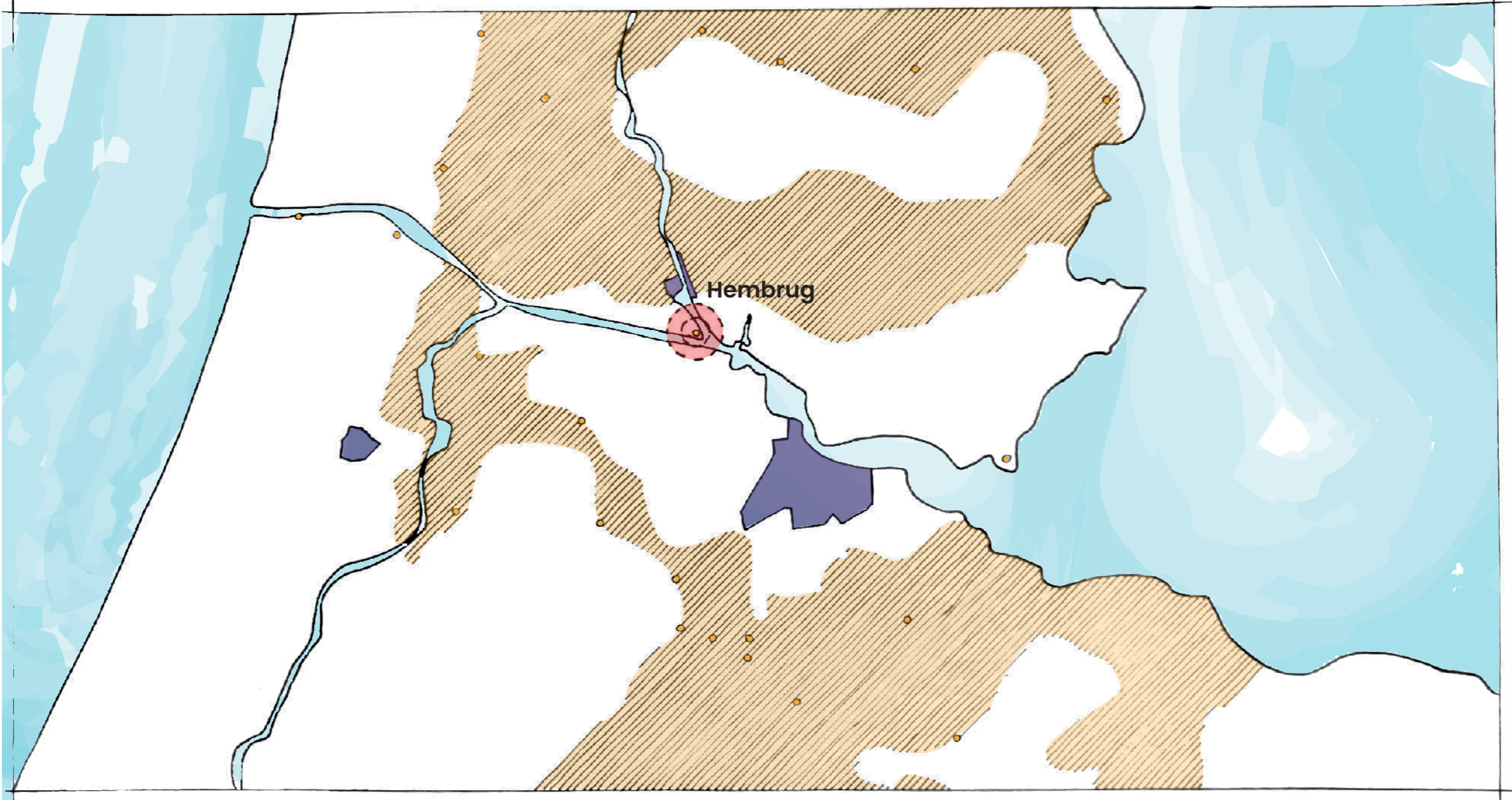
ARCHITECTURE : ANNETTE MARX

BUILDING TECHNOLOGY : PIERRE JENNEN

LOCATION



LOCATION & DEVELOPMENT



1850



The 'Hem'

1874



Reclaiming of land

1905



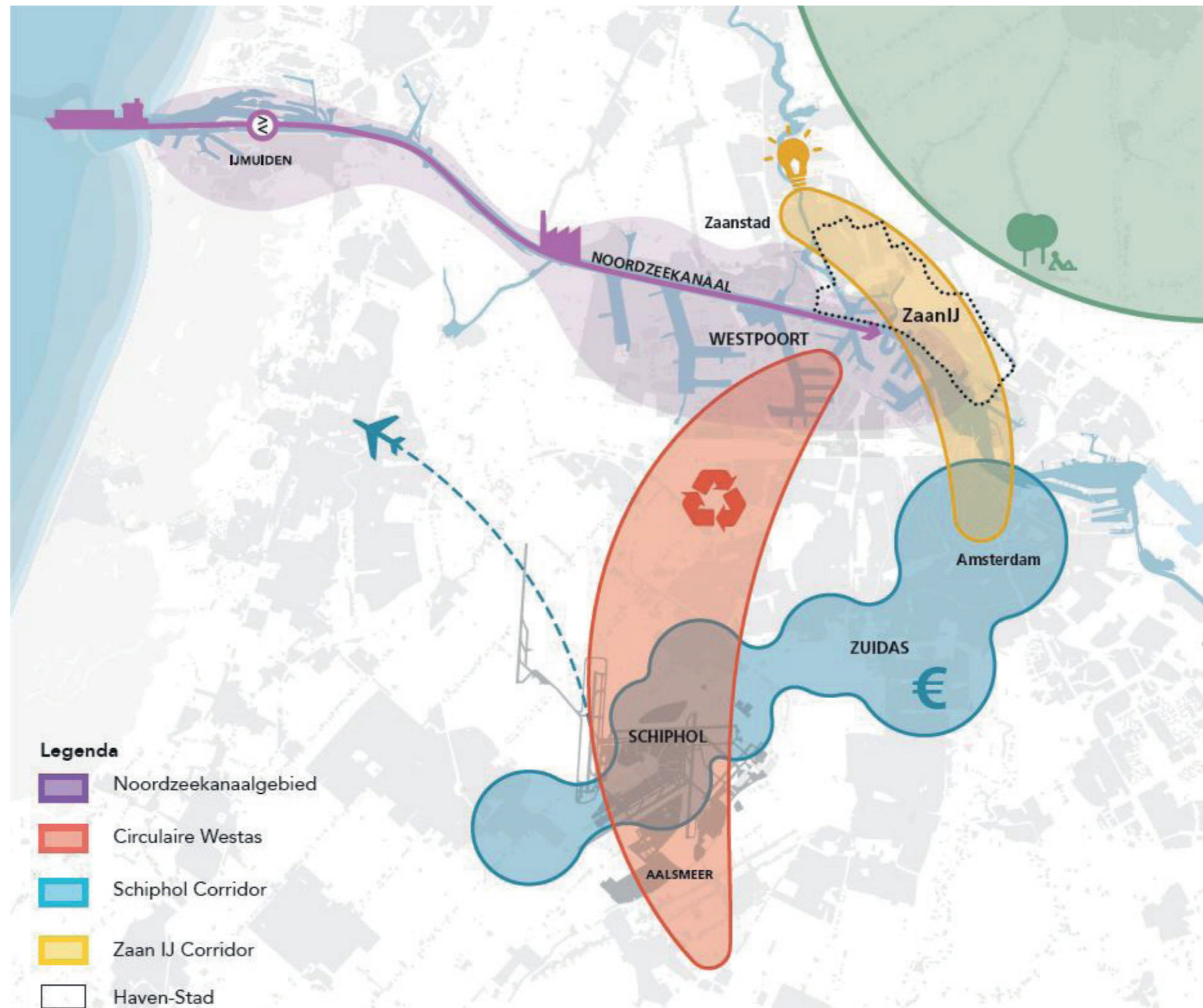
Formation of the Artillerie Inrichtingen

2021



Current situation

THE FUTURE: HAVEN STAD



Zaandam



Amsterdam

Strategic Link



Climate-Friendly & Sustainable



Creative activity, leisure & tourism



Motor traffic

- A Existing entrance through Noordzeekade and the driveway through the Front.
- B New entrance through the Provinciale weg.
- C Boslaan
- D Asymetrische laan

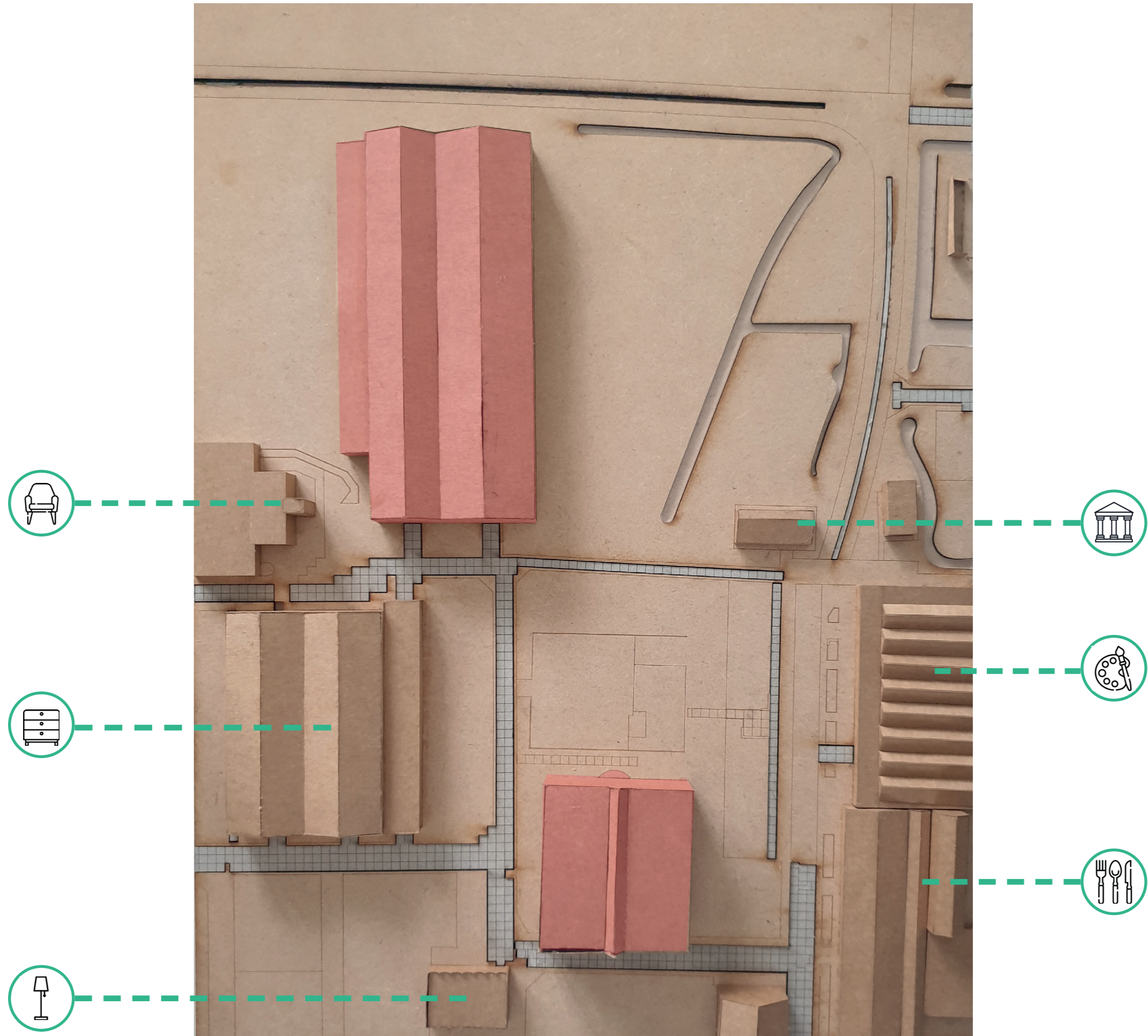


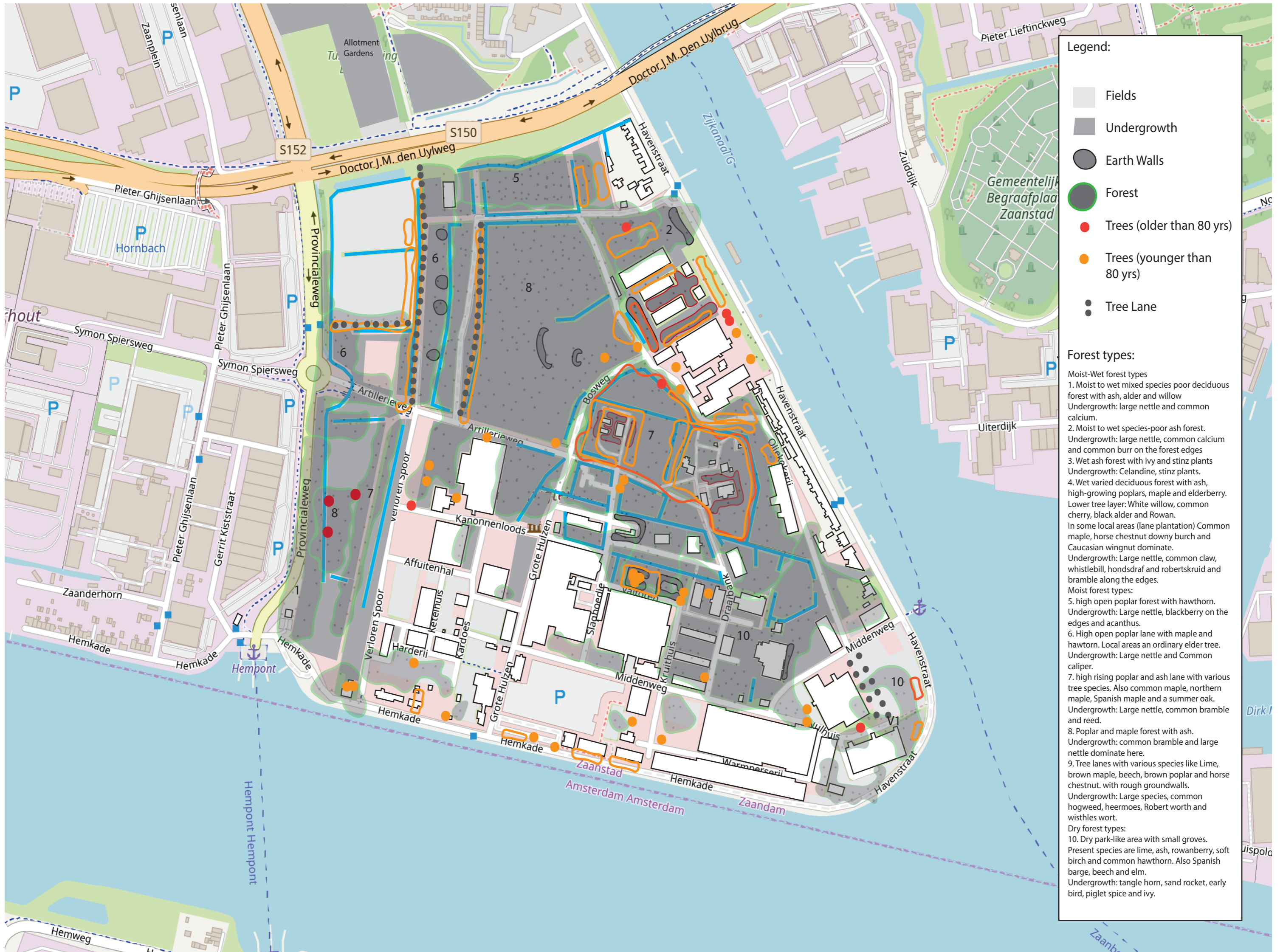
Slow traffic

- 1 Entrances through three paths from the Zaankade
- 2 Entrance through new cycle and walking paths from the drs. J.M. den Uylweg
- 3 Entrance through the old Spoortracé
- 4 Entrance along the green head of the Cape
- 5 Entrances inside the front



EXISTING FUNCTIONS





REFERENCE PROJECTS



Spaces



Respace



Vakwerkhuis



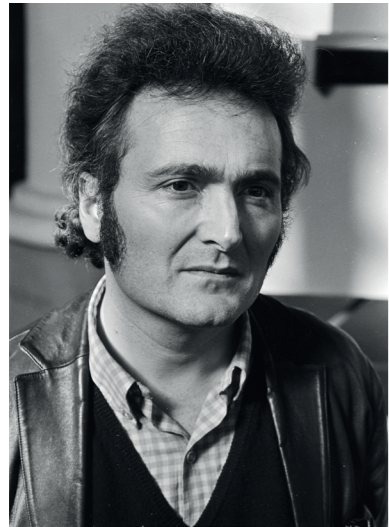
Playville Nursery



Ku.Be

REFERENCE PROJECTS

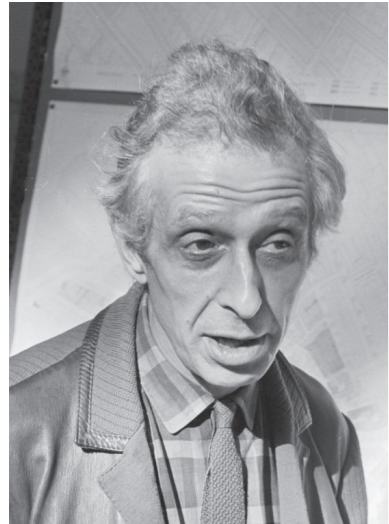
Input



Herman Hertzberger



Montesorri school
Delft

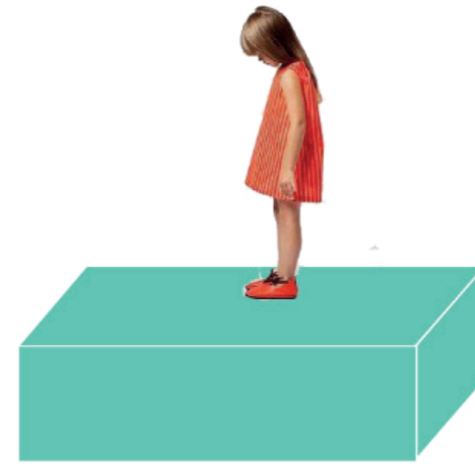


Aldo van Eyck

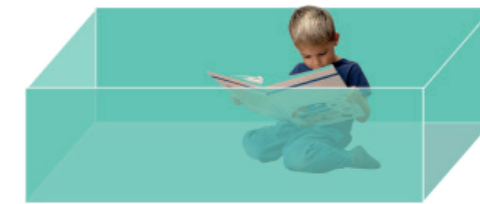


Playgrounds

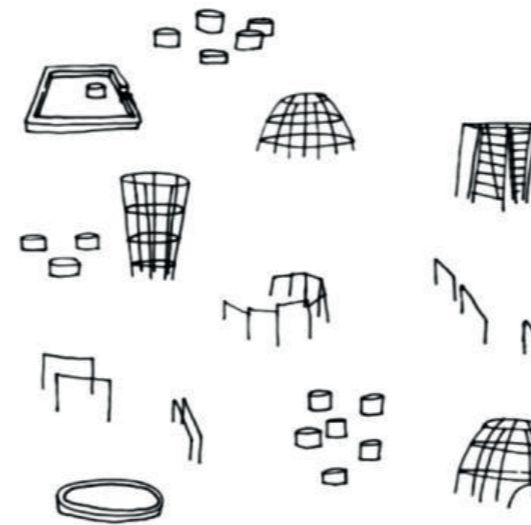
Output



Active



Inactive



Elements

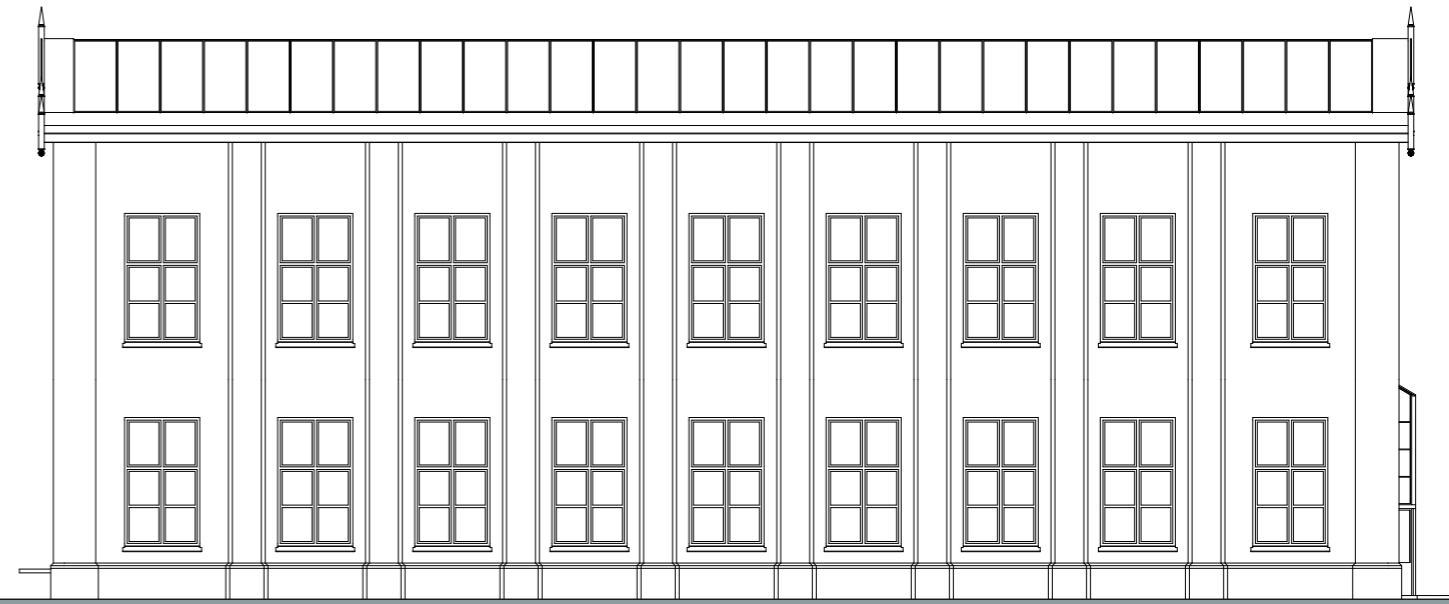


Playscape

FACADES



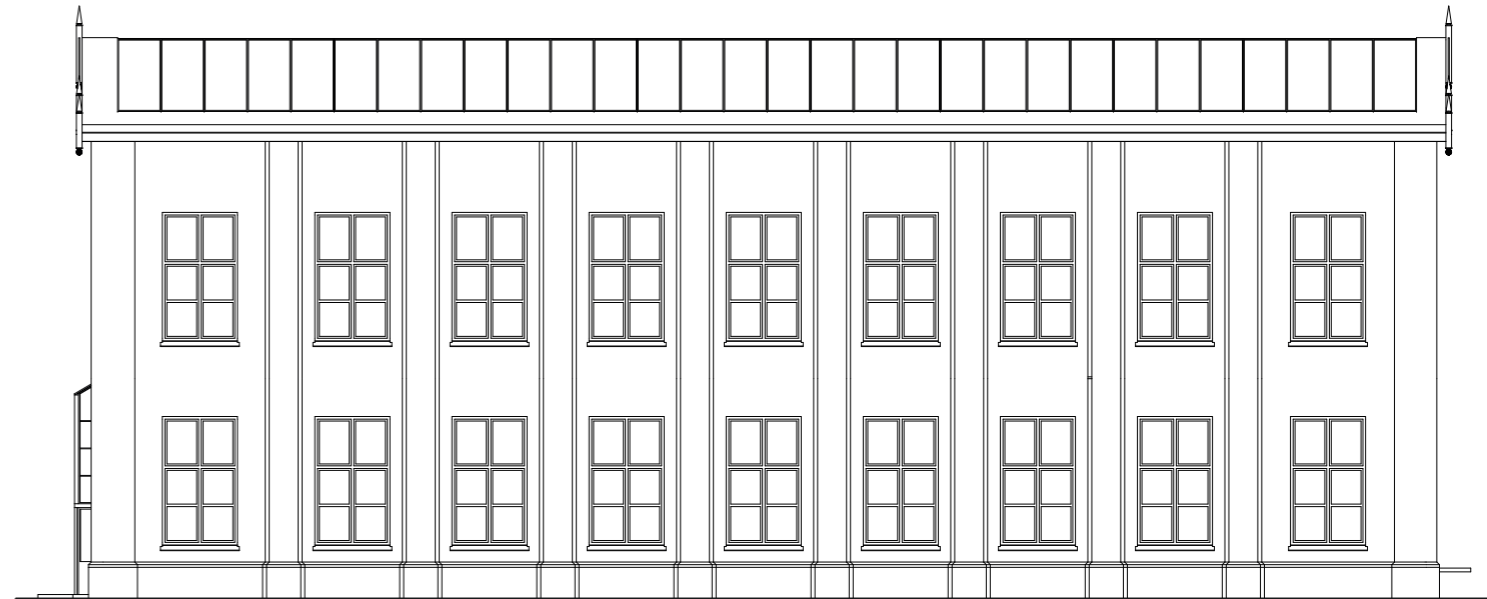
South



East

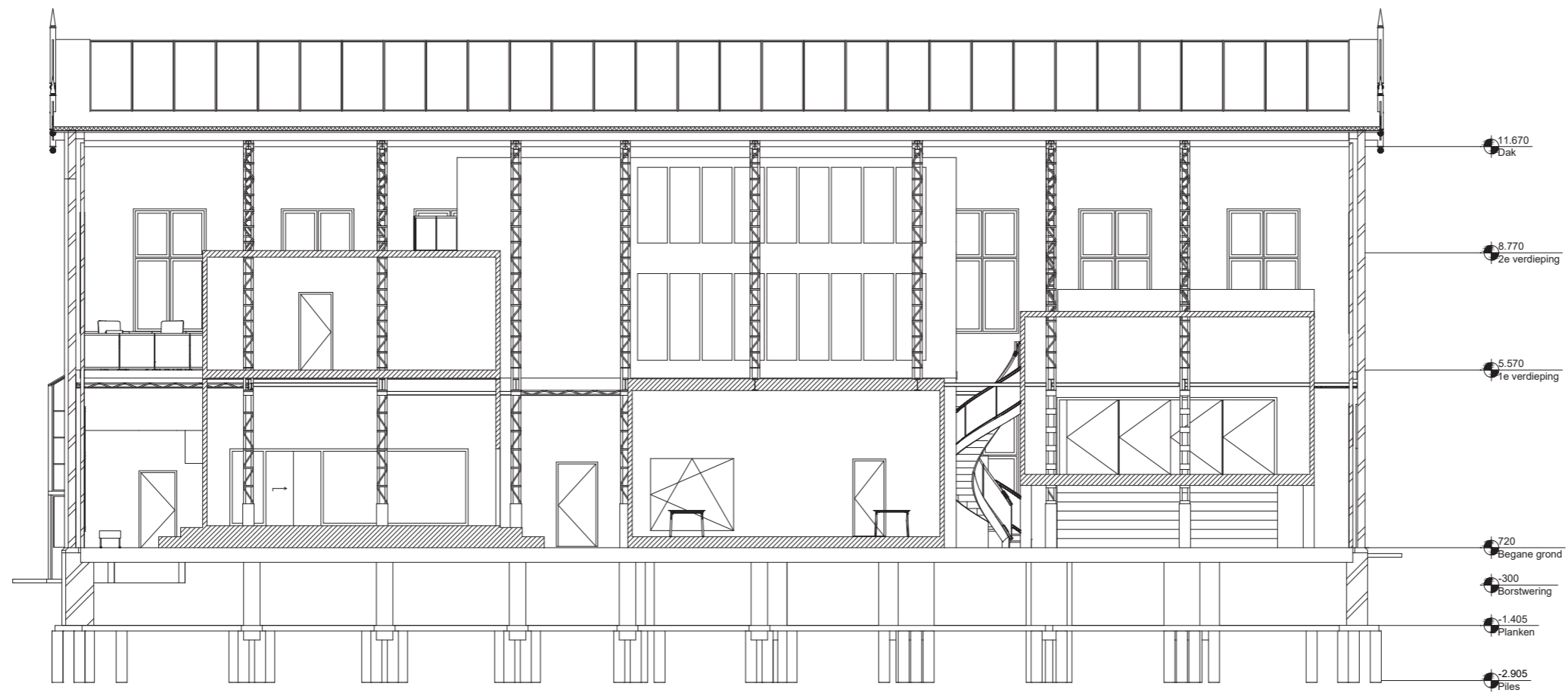


North

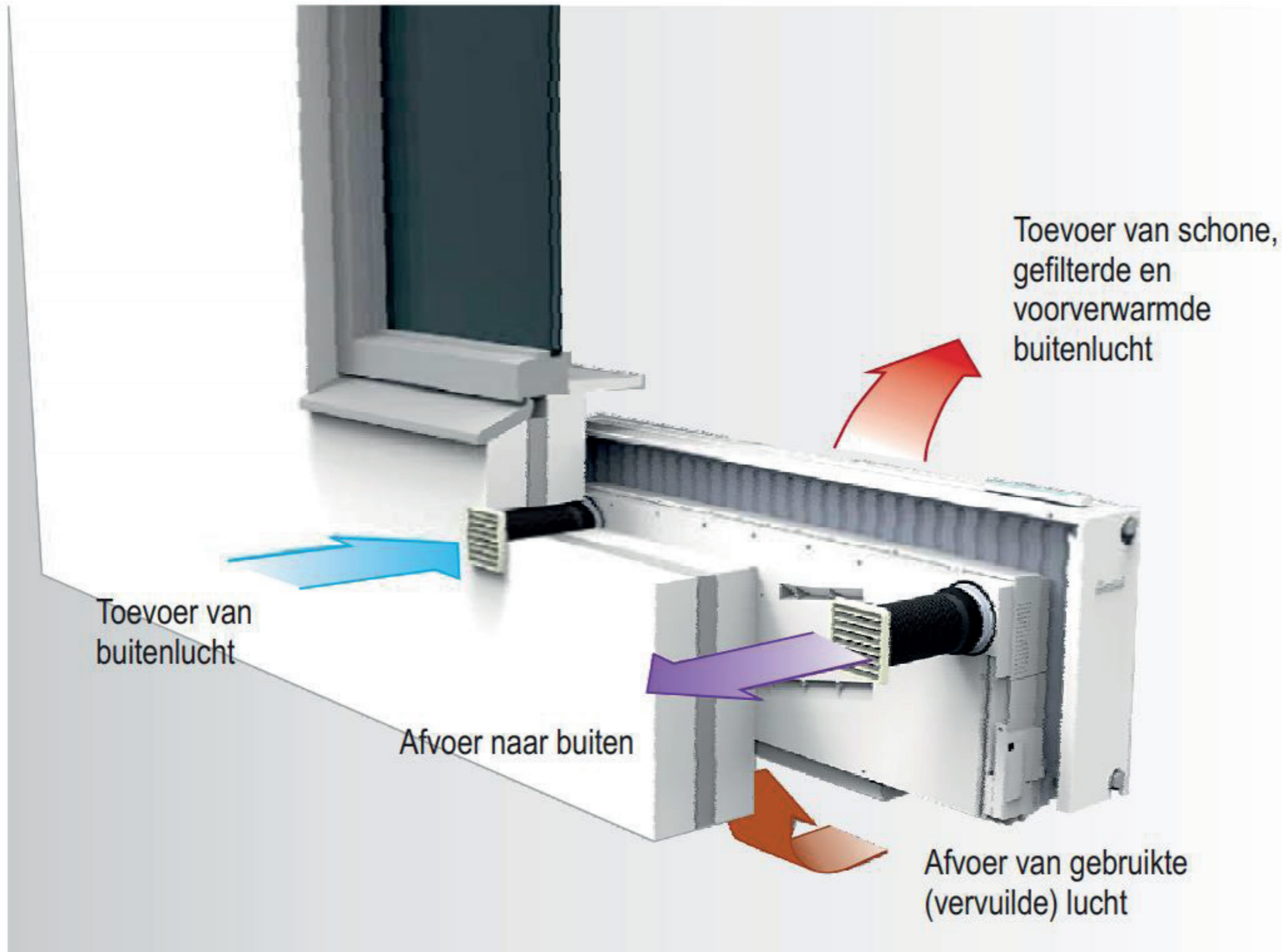


West

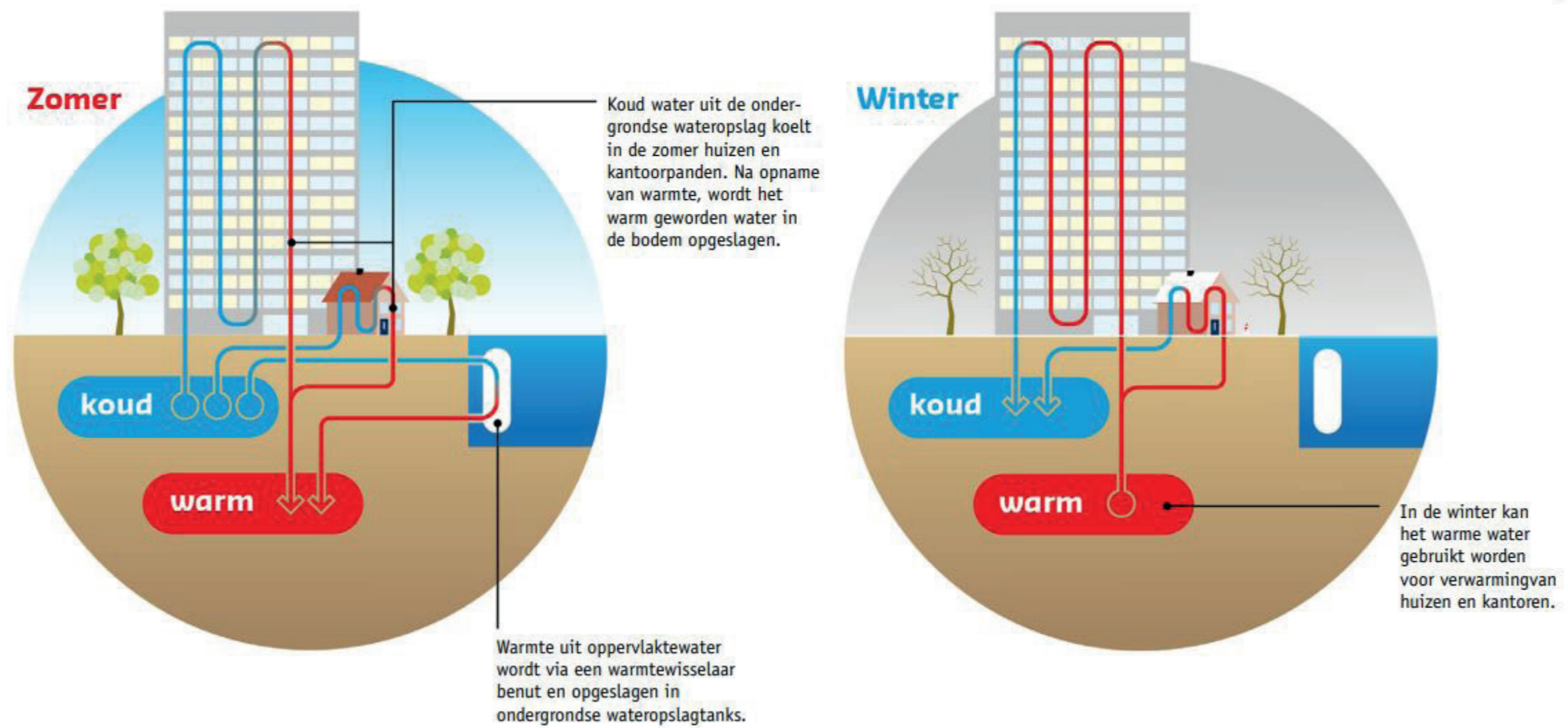
SECTION



CLIMARAD



AQUATHERMIE



ENERGY USAGE

#	Branche en/of rubriek	Gebouwtype	Gas-intensiteit m3/m2	Elek-intensiteit kWh/m2	Totaal kWh/m2
01	kantoor	kantoor	17	60	223
02	zorgsector	ziekenhuis	23	49	278
03	zorgsector	tehuis met overnachting	19	55	243
04	zorgsector	opvang zonder overnachting	20	59	258
05	zorgsector	medische (groeps)praktijk	18	56	229
06	onderwijs	basisschool	15	28	172
07	onderwijs	voortgezet onderwijs	13	37	166
08	onderwijs	MBO/HBO/ universiteit	15	50	193
09	detailhandel	supermarkt	20	254	453
10	detailhandel	winkel zonder koeling	16	100	252
11	horeca	café/restaurant	34	214	549
12	horeca	hotel	25	84	330
13	horeca	vakantiepark	19	39	223
14	horeca	sauna	34	143	478
15	cultuur	museum	17	53	216
16	cultuur	theater	15	115	261
17	sport	sportaccommodatie binnen	16	63	216
18	sport	sportaccommodatie buiten	16	84	240
19	sport	zwembad	51	136	635
20	bedrijfsal	datacenter	10	2003	2104
21	bedrijfsal	garage/showroom	15	50	197
22	bedrijfsal	autoschadeherstelbedrijf	15	54	204
23	bedrijfsal	groothandel met koeling	13	131	254
24	bedrijfsal	groothandel zonder koeling	10	42	140



Electricity needed:

General:
 Weapon depot total floorarea = ca. 1593 m2
 Boxes = ca. 358 m2
 Café = ca. 118 m2
 Workspaces = 271 m2
 Hal/ open space = ca. 846 m2

Electricity use in boxes per year = 45 kWh/m2 (average)
 Electricity use in café = 214 kWh/m2
 Electricity use in Workspaces = 60 kWh/m2
 Electricity use in hal = 20 kWh/m2

Boxes: 358 x 45 = 16110 kWh
 Café: 118 x 214 = 25252 kWh
 Workspaces: 271 x 60 = 16260 kWh
 Hal: 846 x 20 = 16920 kWh

Total = 16110 + 25252 + 16260 + 16920 = 74542 kWh

Heatpump: 1 kWh generated by gas = 5 kWh heat with the heatpump kWh/ m2 (calculated backwards)

Gas needed:
 Boxes = 194 - 45 = 149 kWh/m2
 Café = 549 - 214 = 335 kWh/m2
 Workspaces = 223 - 60 = 163 kWh/m2
 Hal/ open space = 100 kWh/m2

Boxes: 358 x 149 = 53342 kWh
 Café: 118 x 335 = 39530 kWh
 Workspaces: 271 x 163 = 44173 kWh
 Hal: 846 x 100 = 84600 kWh

Total = 53342 + 39530 + 44173 + 84600 = 221645 kWh

221645/ 5 = 44329 kWh electricity is needed for the heatpump to generate 221645 kWh of heat.

Weapons depot needs: 74542 + 44329 = **118871 kWh electricity per year**

Electricity generated:

1 m2 of thin film solar panels 320 Wp can generate 165 kWh per year
 Solar panels on the closed part of the roof:
 1059 m2 solar panels
 1059 x 165 = 174735 kWh generated per year (100%)
 90% solar panel efficiency = **157262 kWh per year**

Richting	Hellingshoek						
	10°	20°	36°	50°	60°	70°	85°
West	90	90	85	80	75	70	65
Zuidwest	95	95	100	95	90	85	80
Zuid	95	100	100	100	95	90	80
Zuidoost	95	95	95	95	90	85	80
Oost	90	90	85	80	75	70	65
Noordoost	85	80	70	60	55	50	45
Noord	85	75	60	50	45	40	35
Noordwest	85	80	70	60	55	50	45

Annual total hours of sunshine in the Netherlands

