

# COLLEGE MAASLAND





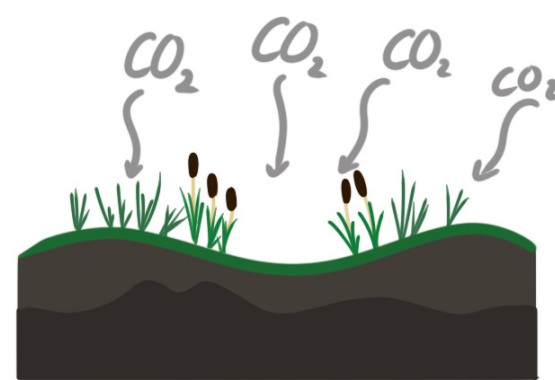
A wide-angle photograph of a wooden boardwalk leading through a wetland landscape. The boardwalk is made of weathered wooden planks and stretches from the foreground towards the horizon. On either side of the boardwalk are clumps of tall, green and yellowish-brown grasses growing out of shallow water. The water reflects the sky and the surrounding vegetation. In the background, a line of trees is visible on the horizon under a blue sky with scattered white clouds.

# HOW DO WE LIVE TOGHETER WITH WATER?

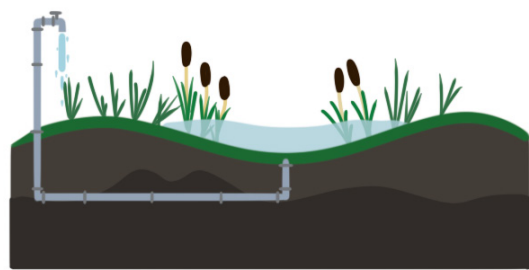


# MASTERPLAN ZUS

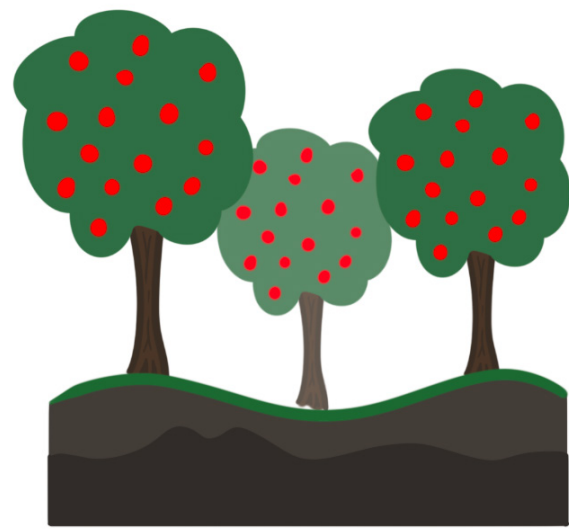
## STRATEGIES:



**Zero CO<sub>2</sub> emissions**  
*CO<sub>2</sub> absorbtion by regrowing Peat*



**Water Purification**  
*Purify water in the landscape to use for households*



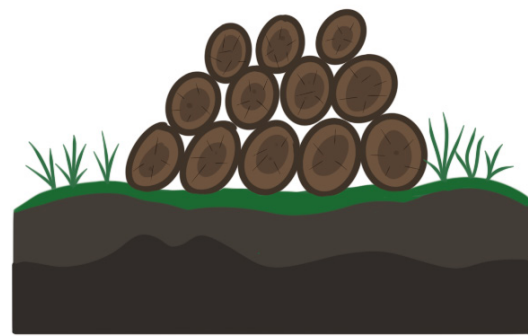
**Food production**  
*Produce food for the urban areas in the landscape*



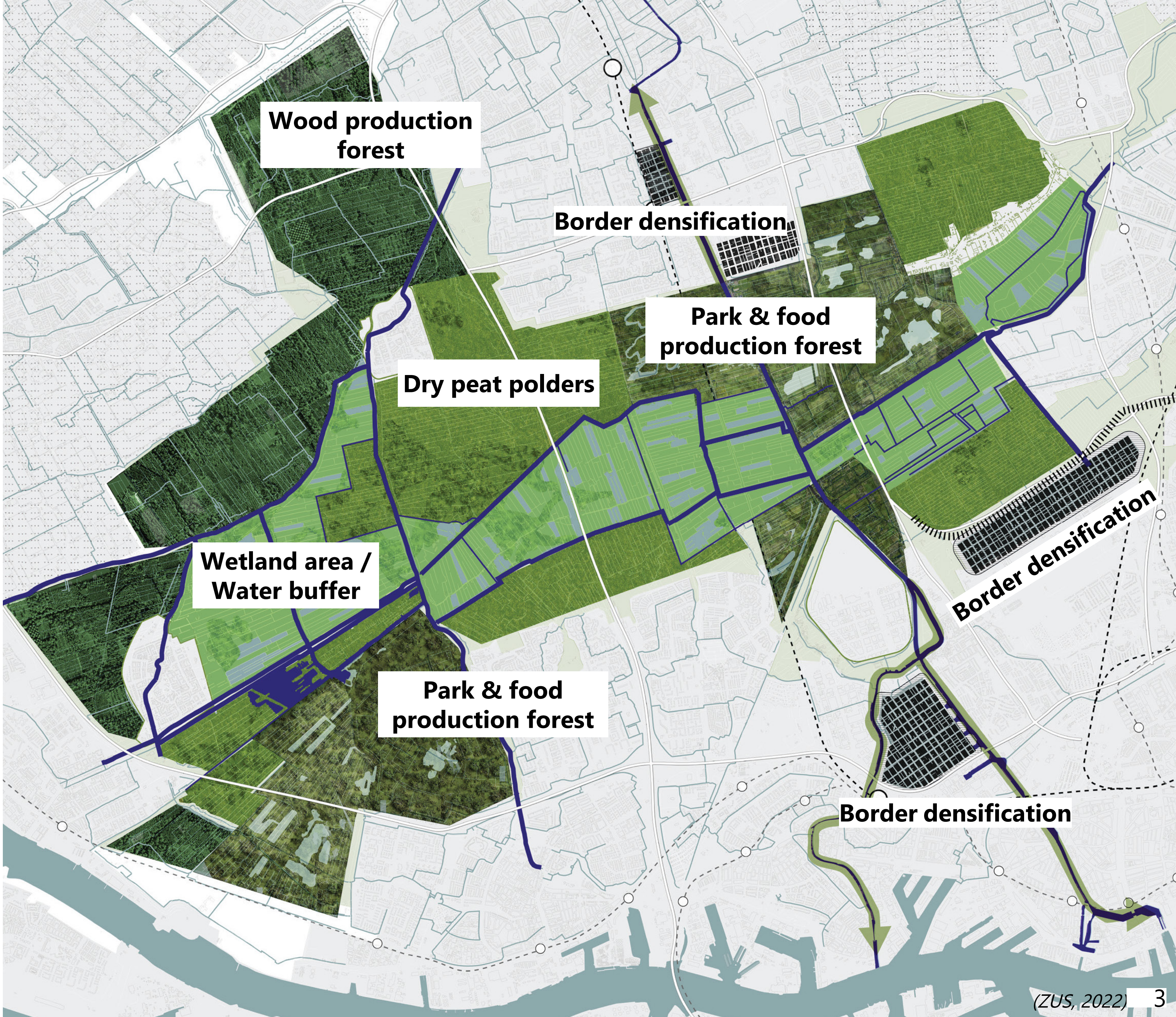
**Water storage**  
*Store water overflow in the landscape (as water buffer)*



**Nature inclusivity**  
*Create a continuous nature inclusive & natural landscape*



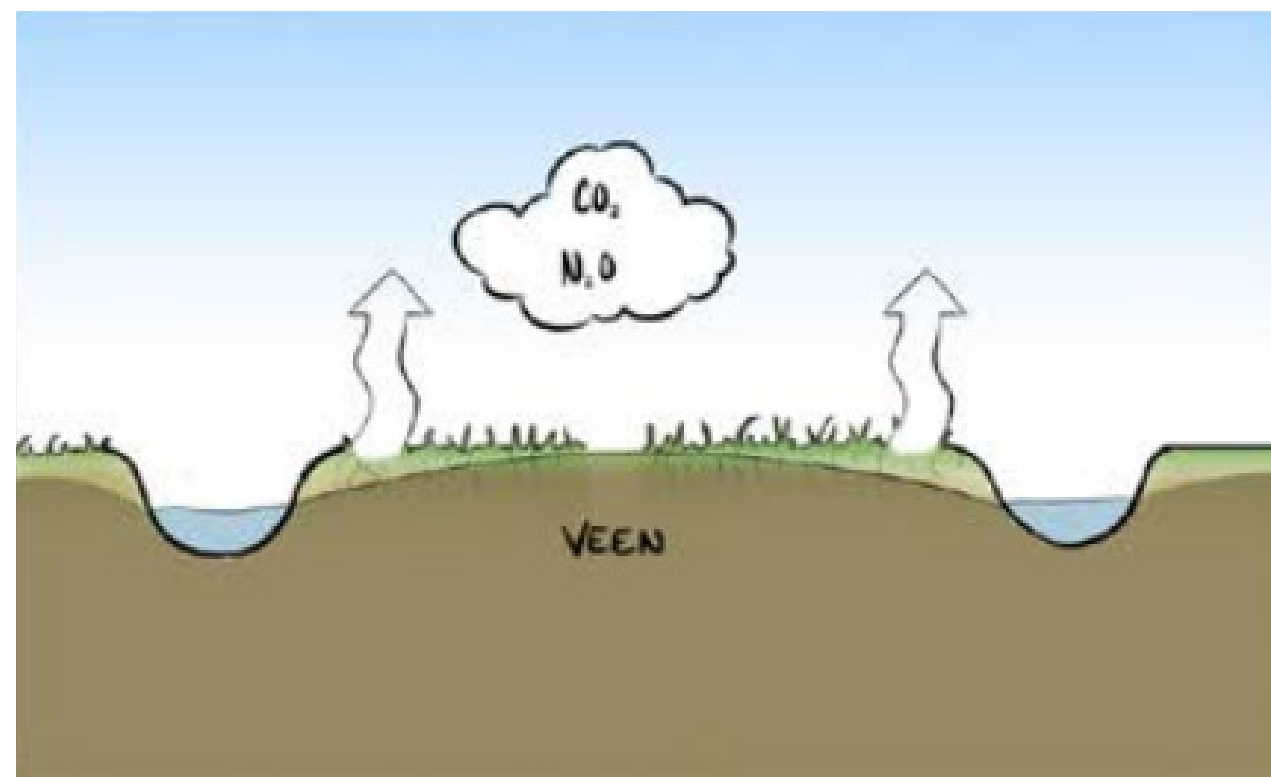
**Wood production**  
*Produce wood and building materials in the landscape*



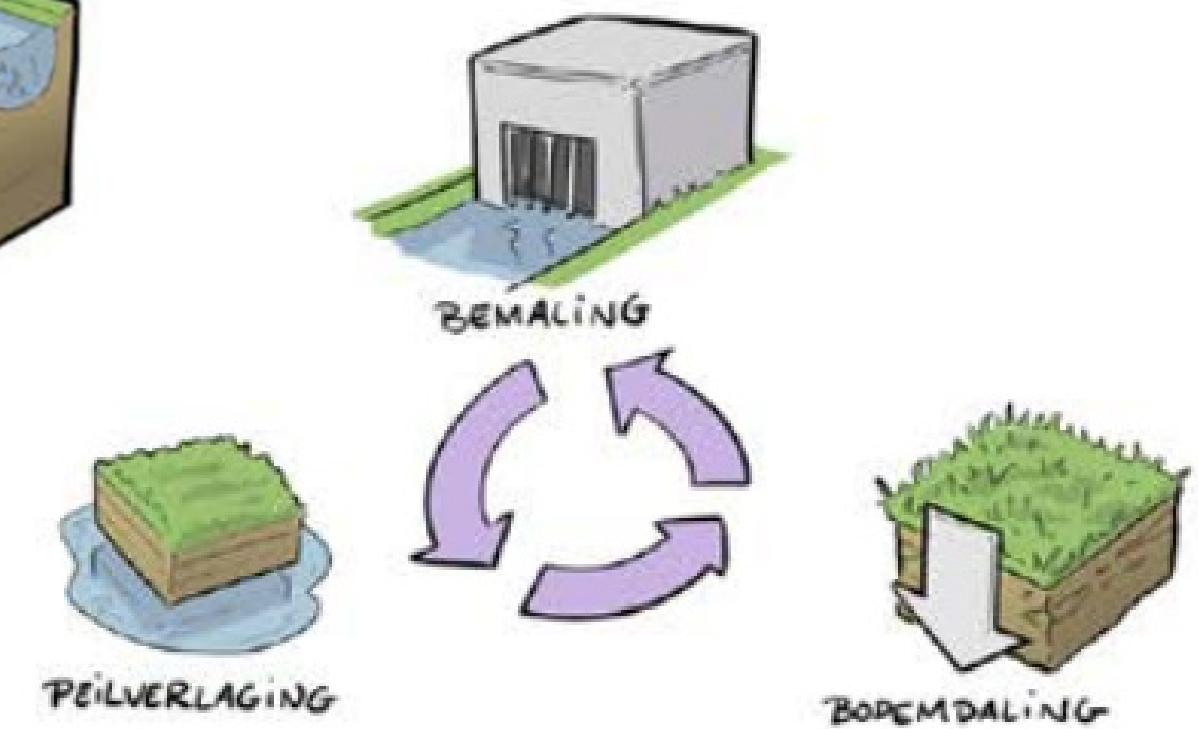
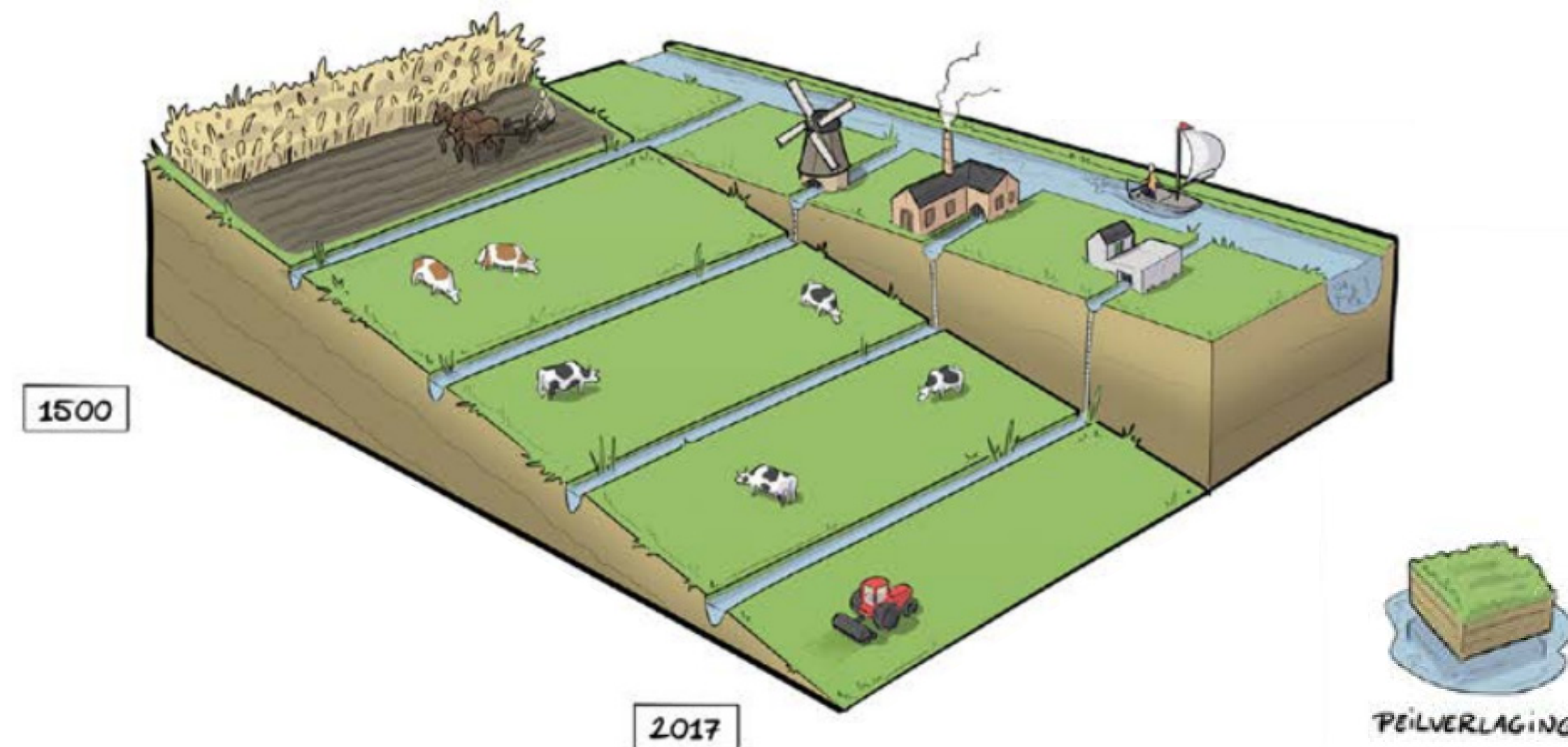


# SUSTAINABILITY THINKING

## SUBSIDENCE OF THE POLDER LANDSCAPE *AND ITS INFLUENCE ON CLIMATE CHANGE*

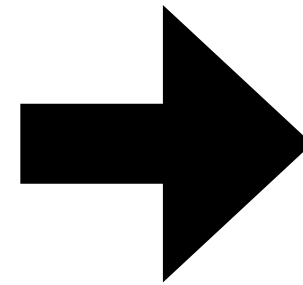


22.6 metric tonnes CO<sub>2</sub> per hectare





## REINTRODUCE WATER TO THE PEAT POLDERS







**WETLAND = LOST FARMLAND**  
**HOW DO WE KEEP IT PRODUCTIVE?**



## **2 SOLUTIONS:**

**1. MOVE FOOD PRODUCTION TO URBAN AREAS**

**2. ADAPT FARMING FOR WETLAND LANDSCAPE**

*2.1 ADAPT FARMING BUSINESS*

*2.2 TEACH A NEW WAY OF FARMING (PALUDICULTURE)*









**Wood harvesting  
forest**

**Polderdike**

**Traditional farm**

**Wetland landscape**

**Farmers' school**

**Maasland village**

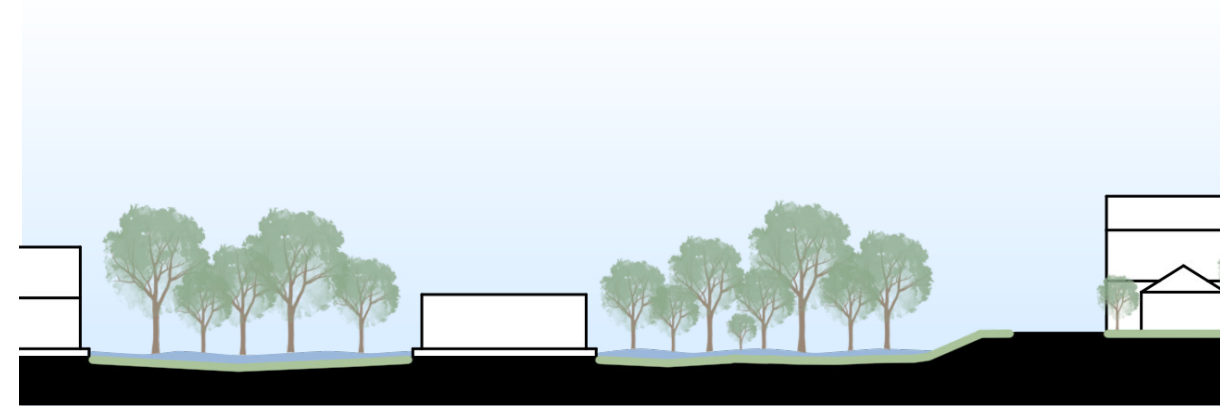


A wide-angle photograph of a wooden boardwalk stretching into the distance through a wetland. The boardwalk is made of weathered wooden planks and is flanked by tall, golden-brown grasses growing in shallow water. The water reflects the sky and the surrounding vegetation. In the background, a line of trees is visible on the horizon under a blue sky with scattered white clouds.

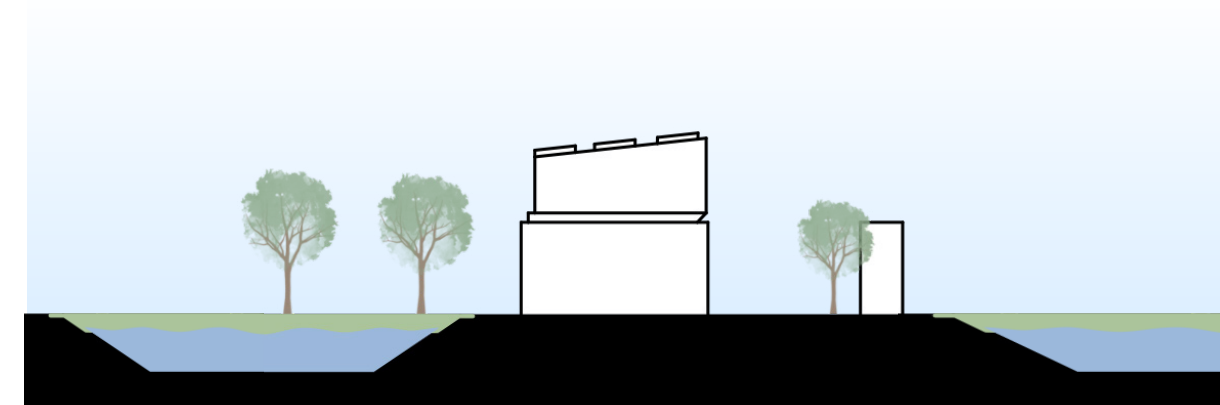
# HOW DO WE LIVE TOGHETER WITH WATER?



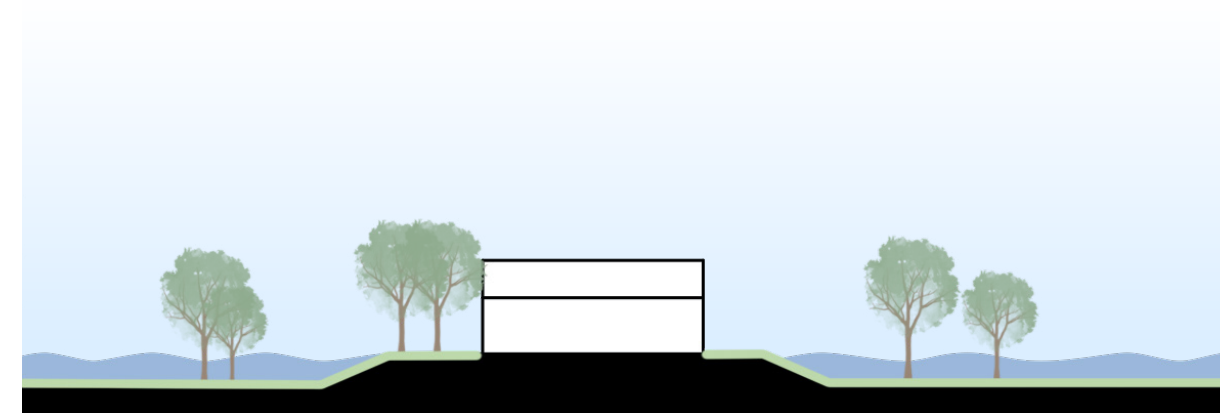
## 4 DIFFERENT STRATAGIES



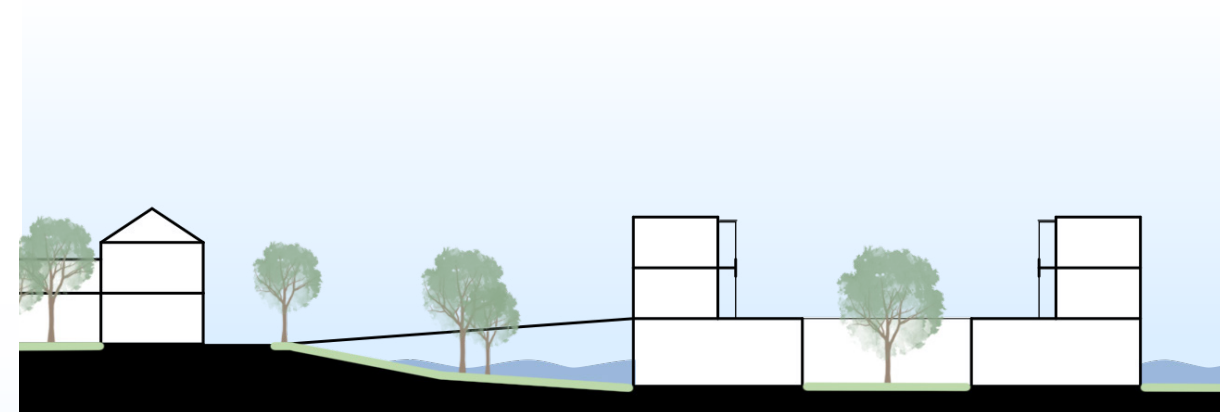
## Build in a less wet area



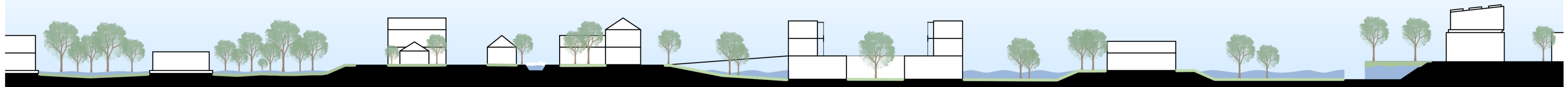
## Use the urban setting and its need for water management



## Build on a mound to raise the building



## Design an adaptable building



## The green haven

## Maaslandvillage

College Maasland

## The new carefarm

## Productive Neighbourhoods



An architectural model of a landscape featuring a cluster of white, angular buildings on a raised platform. The surrounding area is a wetland landscape with a network of water channels and small, green, spindly plants. The model is set against a plain, light-colored background.

**HOW CAN ARCHITECTURE CREATE A PLACE FOR  
STUDENT COMMUNITIES THAT CONNECTS TO ITS  
SURROUNDING WETLAND LANDSCAPE?**



An architectural model of a landscape, likely a wetland or coastal area. The model features a body of water in the background, a series of white, angular buildings in the middle ground, and a foreground of brown, textured material representing land. Several small, green, spiky plants are scattered across the land. The text is overlaid on the model.

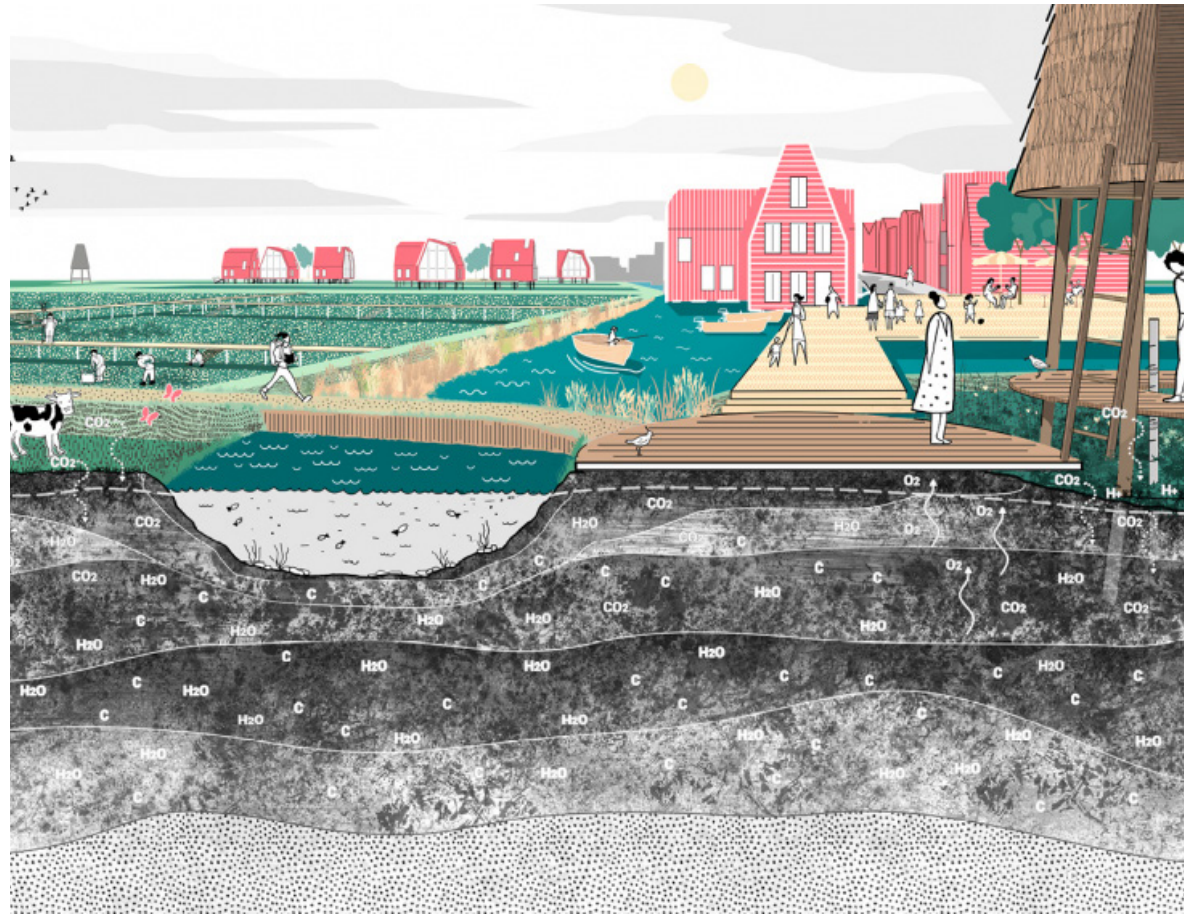
*1. HOW CAN ARCHITECTURE CREATE A PLACE FOR STUDENT COMMUNITIES?*

*2. WHAT ARE WAYS TO CONNECT ARCHITECTURE TO AND PROTECT ARCHITECTURE FROM A WETLAND/WATER LANDSCAPE?*



# CASE STUDIES

## *RE-PEAT*



Similar landscape type

## *XIXI WETLAND ESTATE*



Wetland landscape  
Similar to vision for the project

## *HAFENCITY*



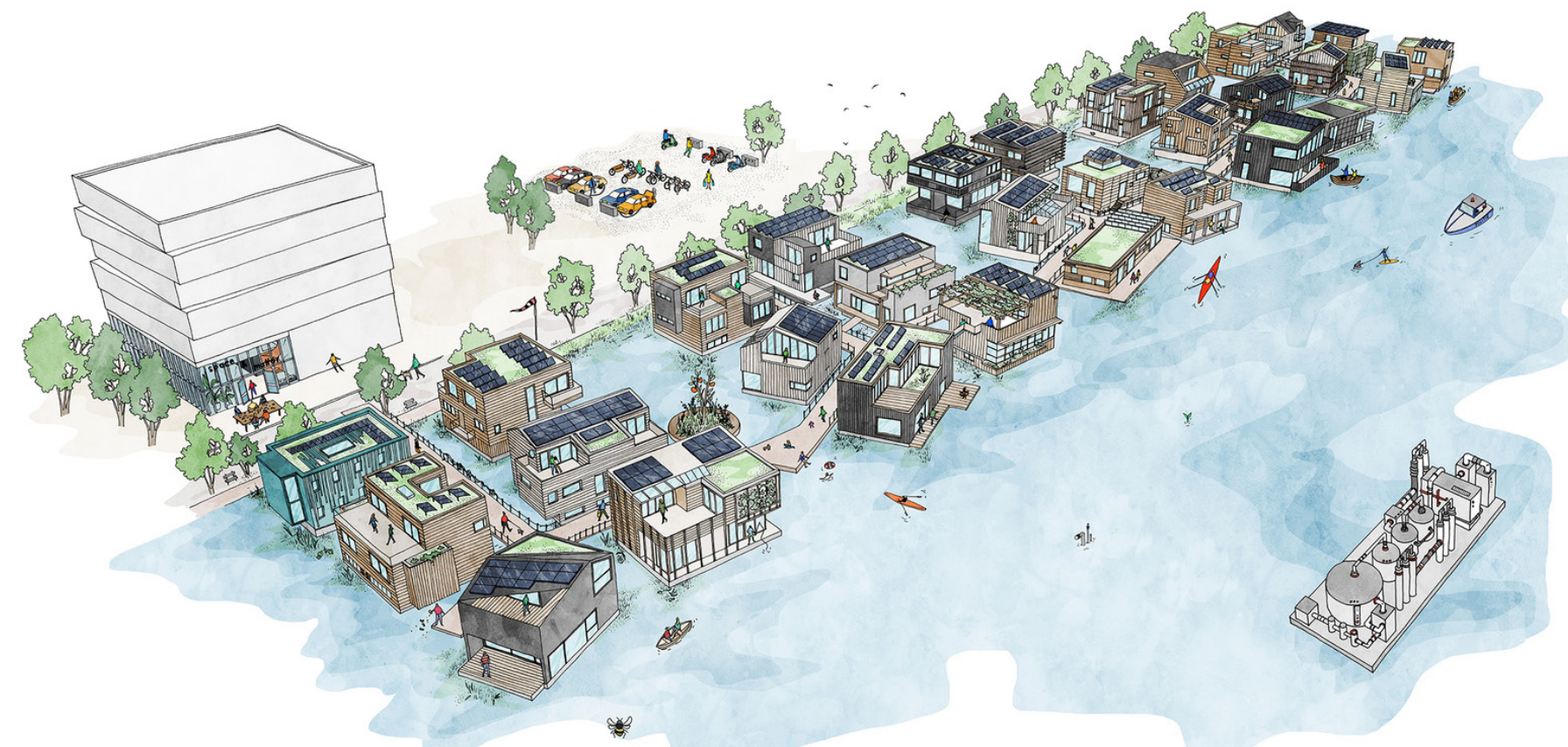
Waterproof plinth

## *DE CEUVEL*



Similar to early design concept

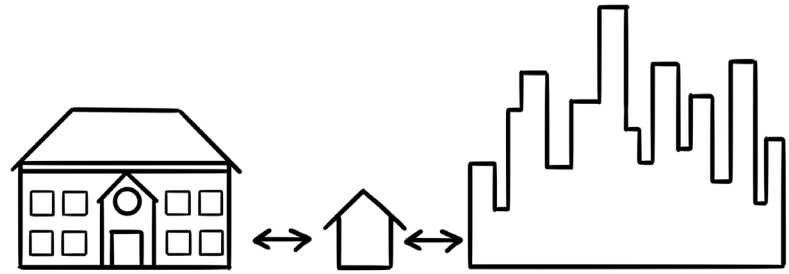
## *SCHOONSHIP*



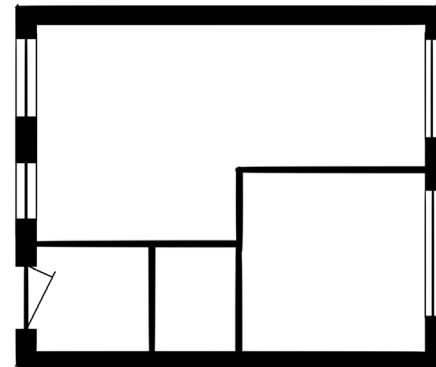
Building on/with water  
Focus on community



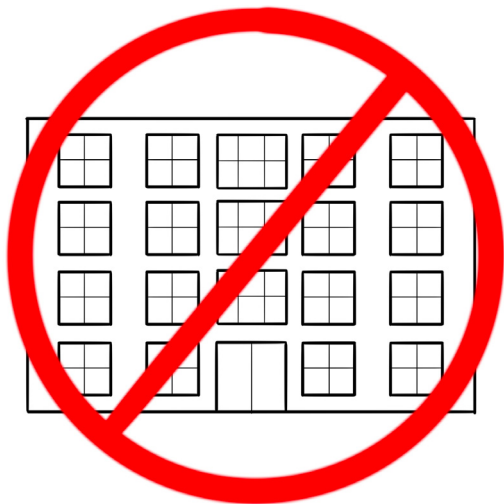
# DESIGN STRATEGIES



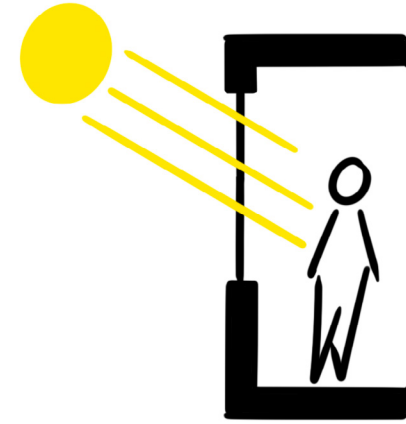
**1. Close intergration with school and connected to the city/village**



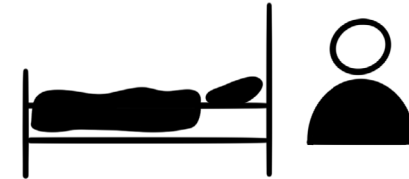
**2. Not large, but functional floorplans**



**3. No institutional character**



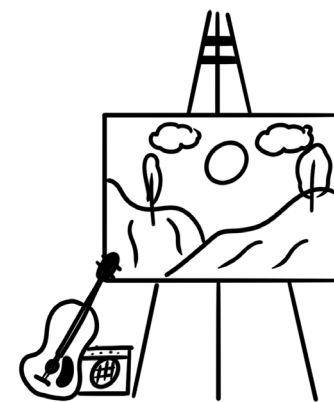
**4. Well-lit rooms**



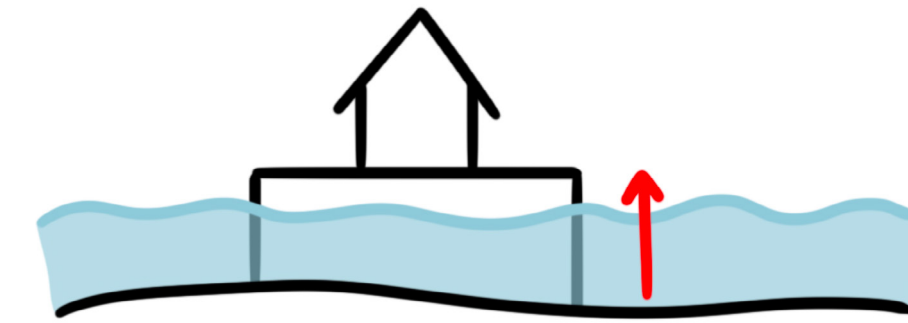
**5. Private bedrooms**



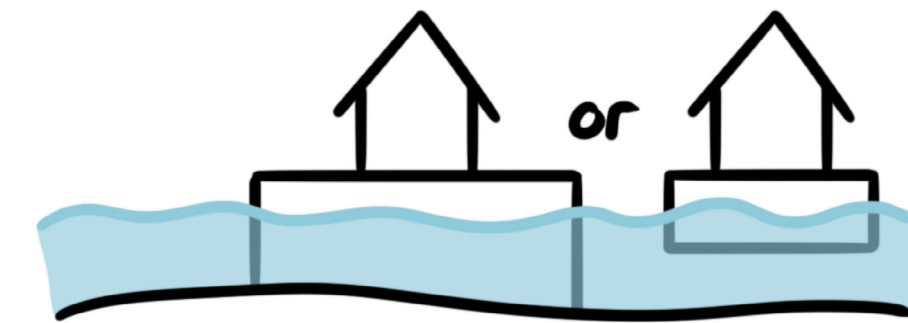
**6. Shared facilities/ common spaces**



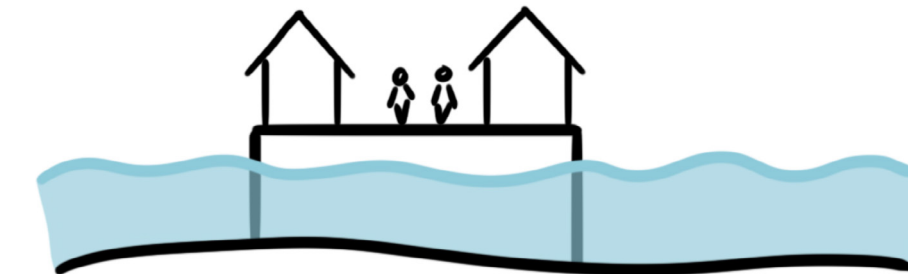
**7. Leave room in architecture for personal expression**



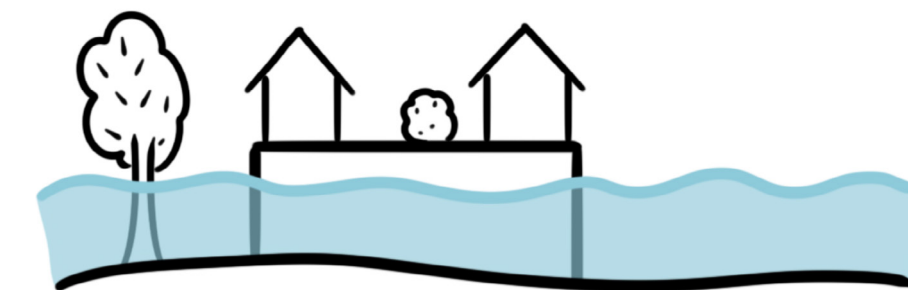
**8. Create a raised ground plane**



**9. Housing on a floating structure or a 'rock' in water**



**10. Make the raised plane a communal meeting space**



**11. Include surrounding landscape in the design**

*LITERATURE RESEARCH*

*CASE STUDIES*

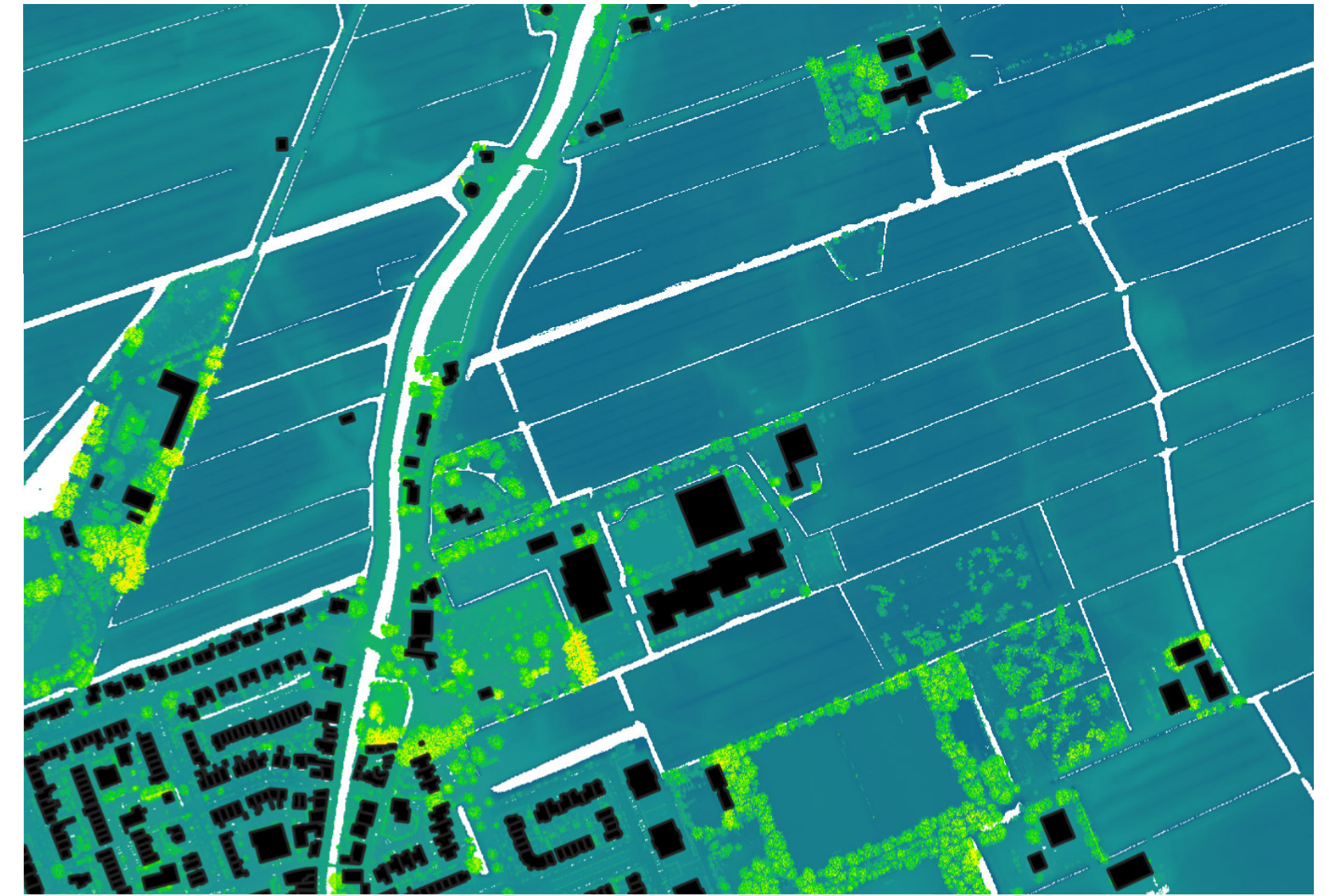




**GREEN STRUCTURE**



**ROAD STRUCTURE**



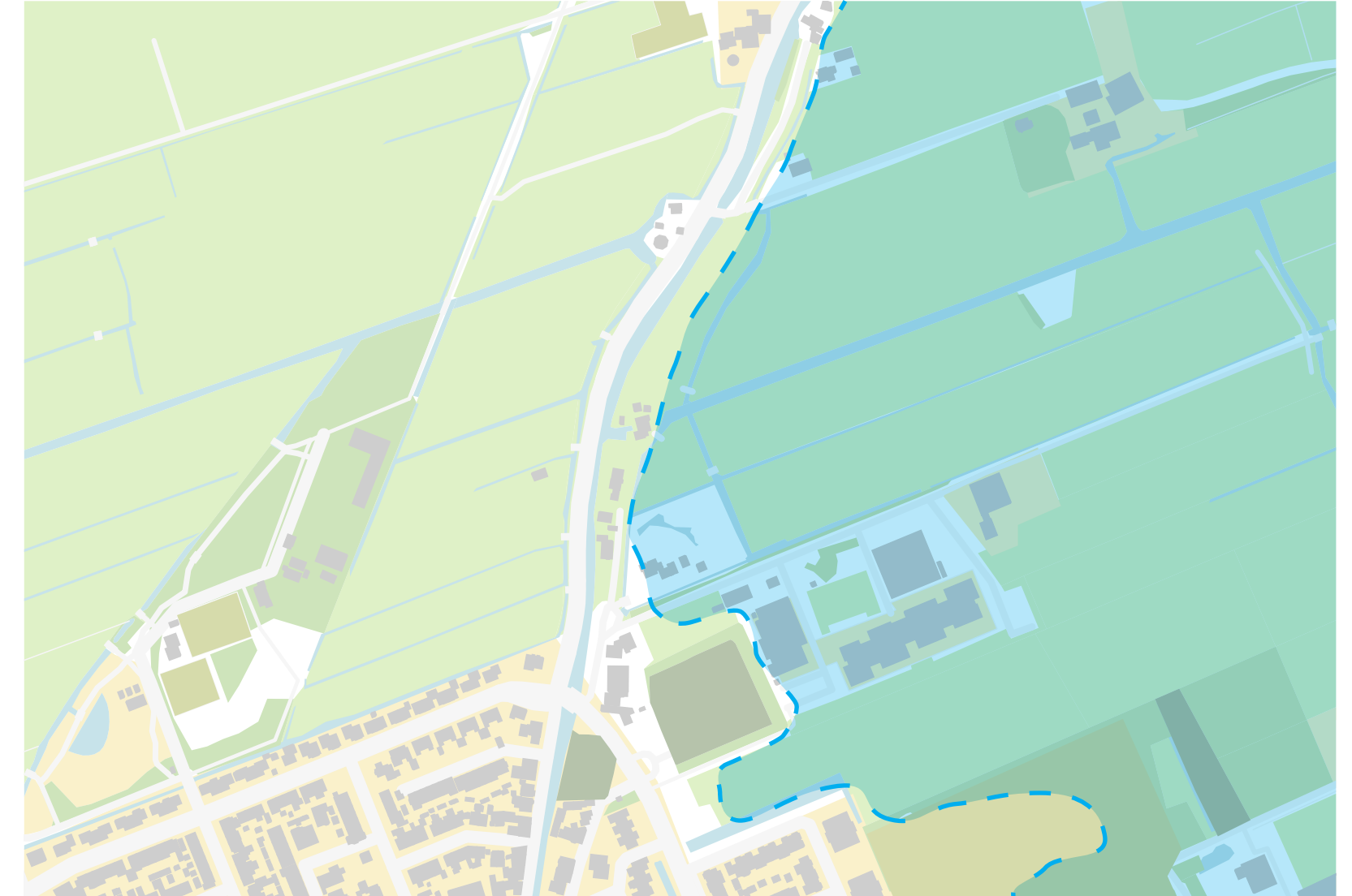
**HEIGHT MAP**



**WATER STRUCTURE**



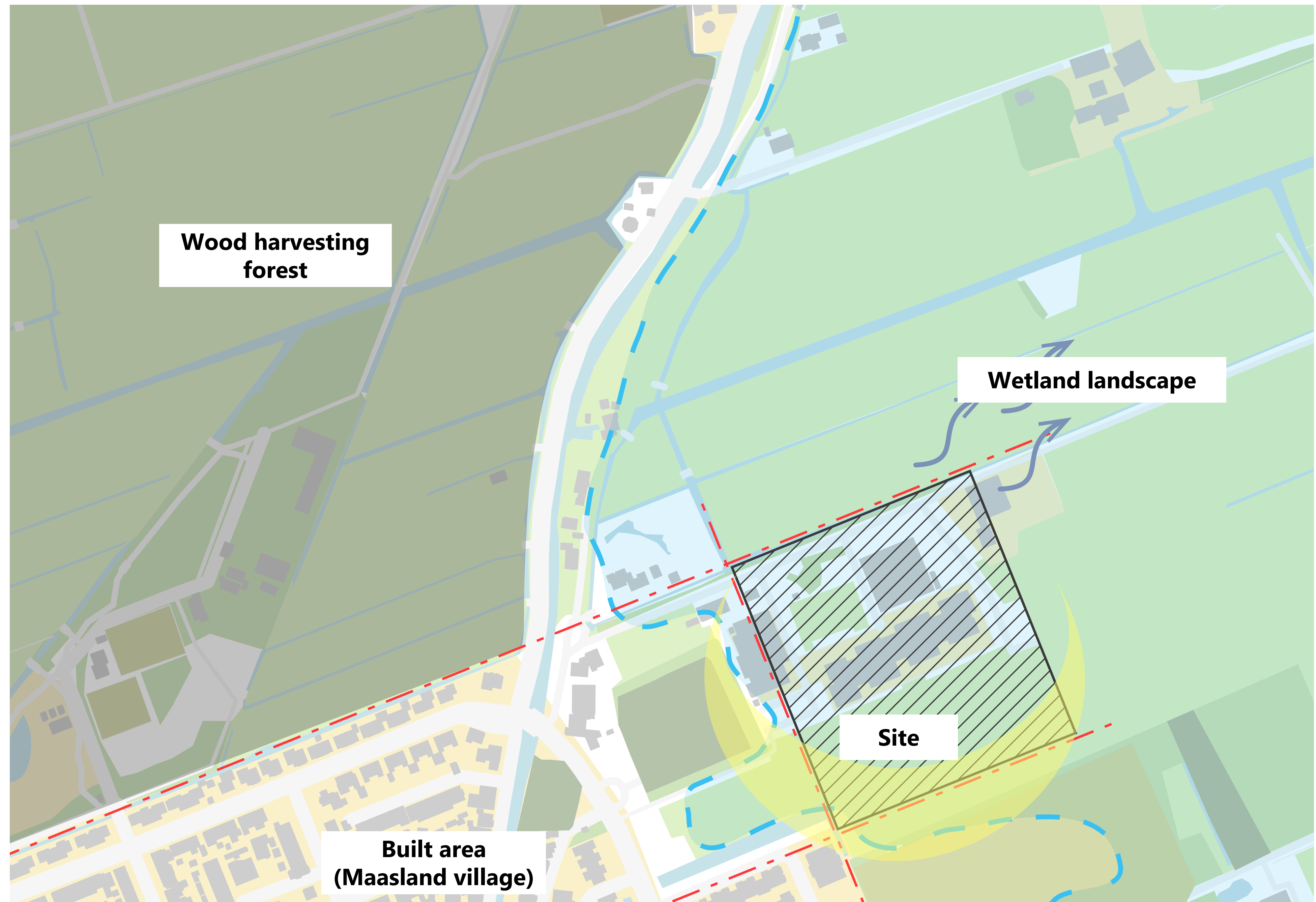
**BUILT STRUCTURE**



**FLOODLINE**









**WHAT IF...**

**REDESIGN THE SCHOOL BUILDING**

*TO CREATE A SPACE FOR STUDENTS*

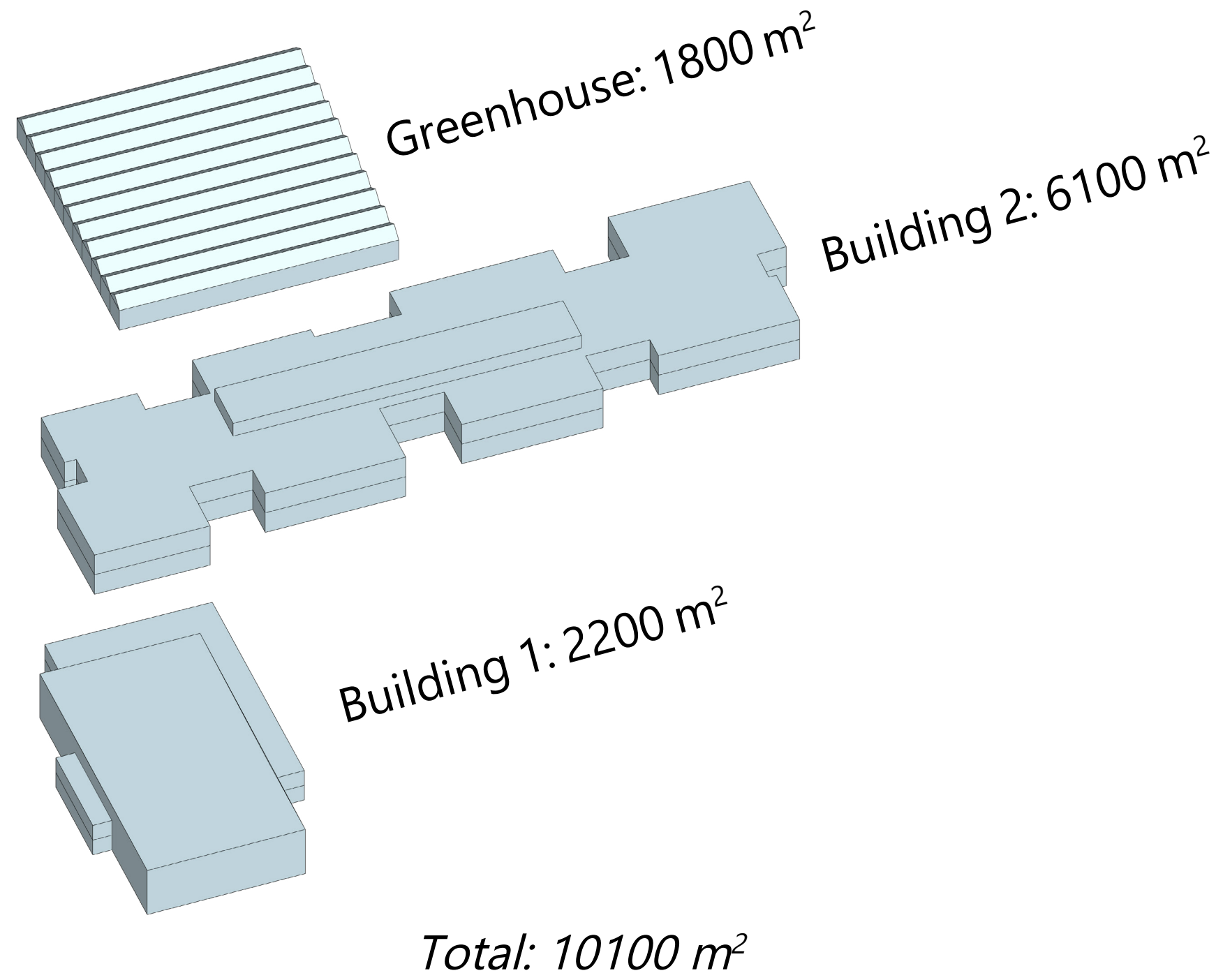
*&*

*CONNECT WITH THE LANDSCAPE*

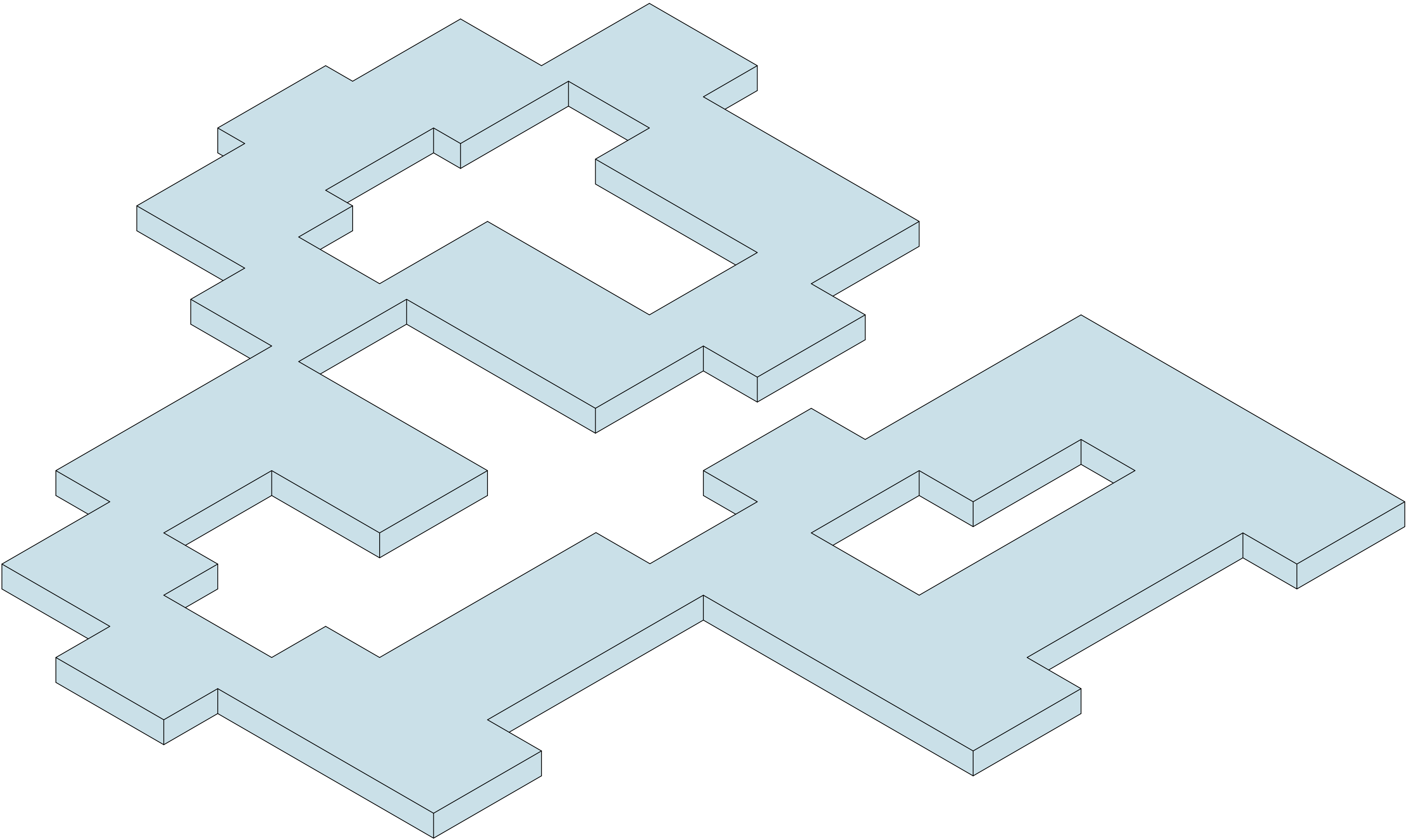


# SCHOOL BUILDING

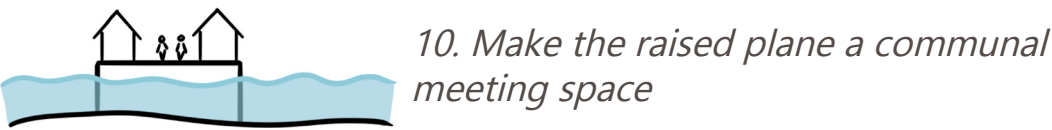
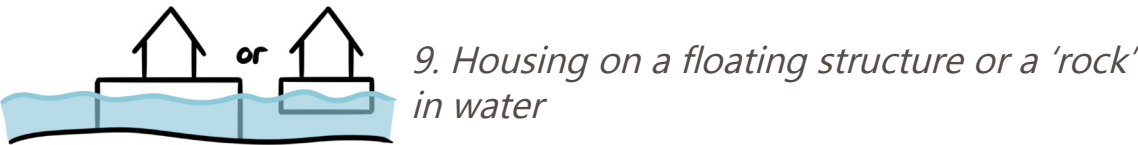
Total floor area school:



Reconfigured floorspace school building:



Total: 11300 m<sup>2</sup> (10% growth + technical spaces for dwellings)

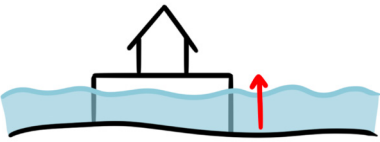
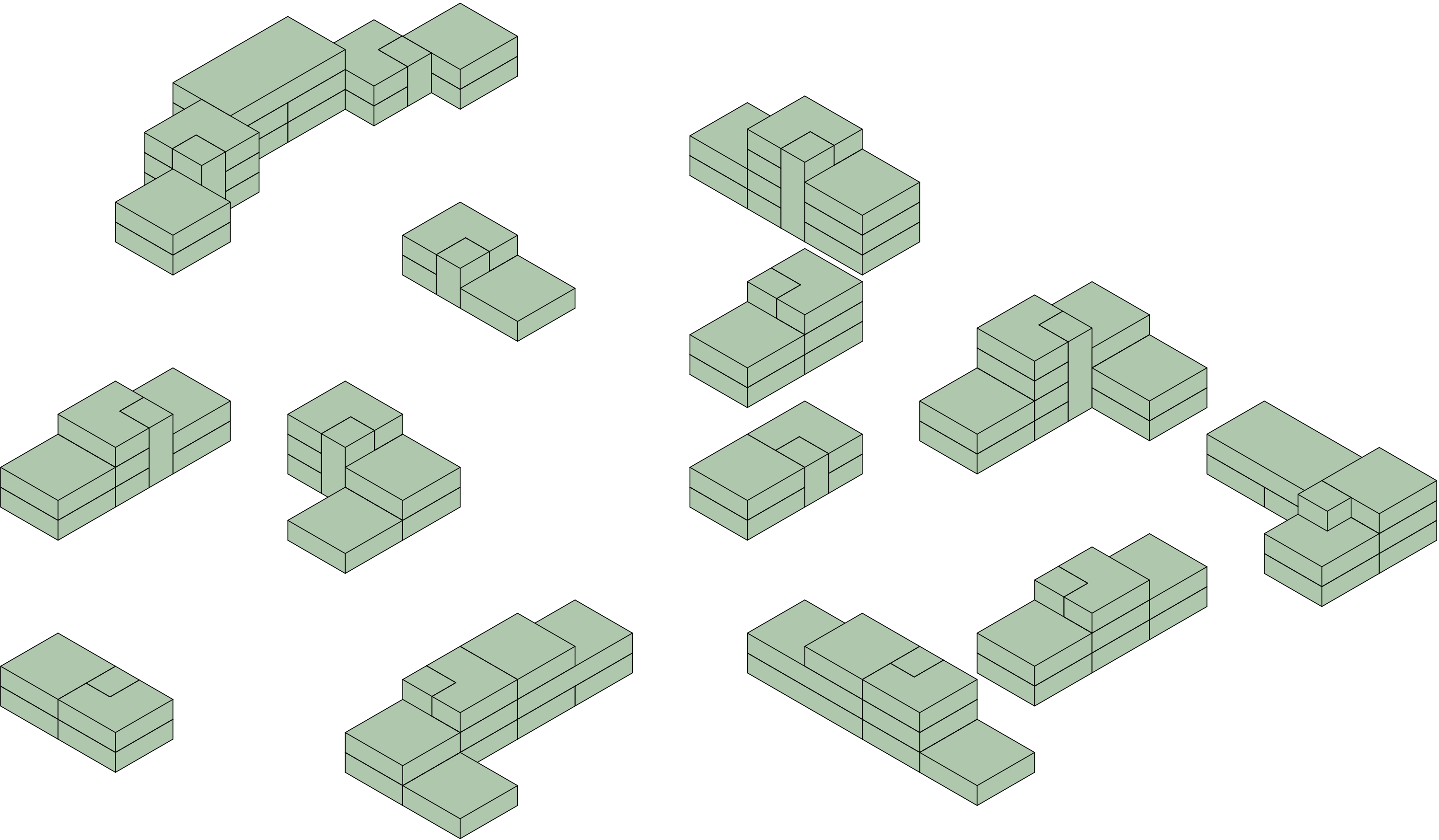




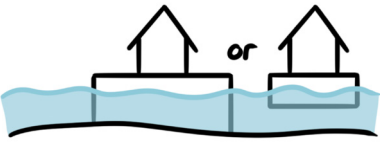
# STUDENT HOUSING

Student dwelling top structures:

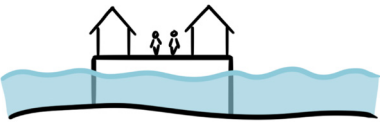
**13 apartment buildings**  
**95 total apartments**  
**space for 595 students**



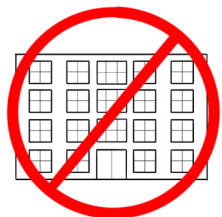
8. Create a raised ground plane



9. Housing on a floating structure or a 'rock' in water



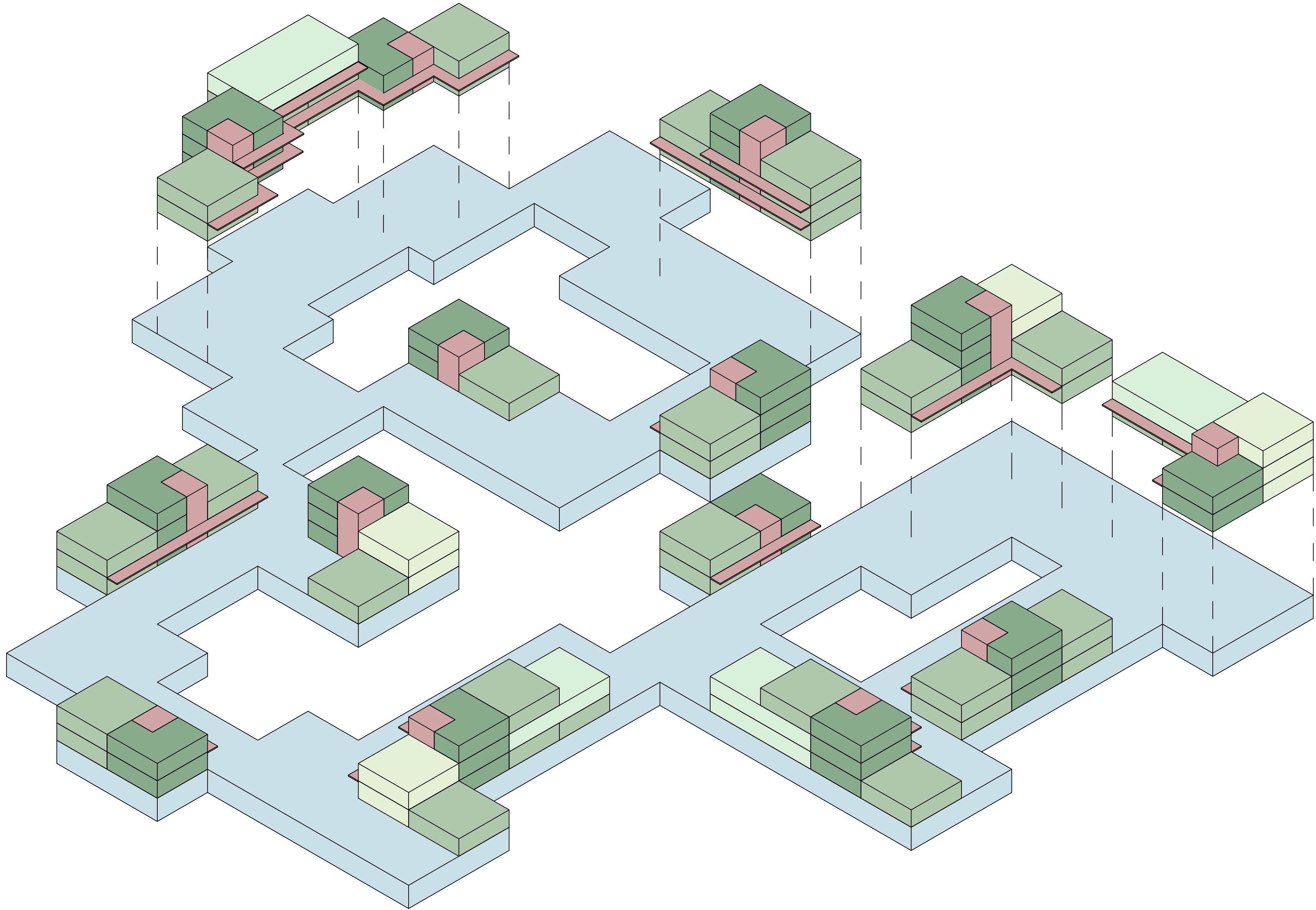
10. Make the raised plane a communal meeting space



3. No institutional character



# BUILDING CONFIGURATION



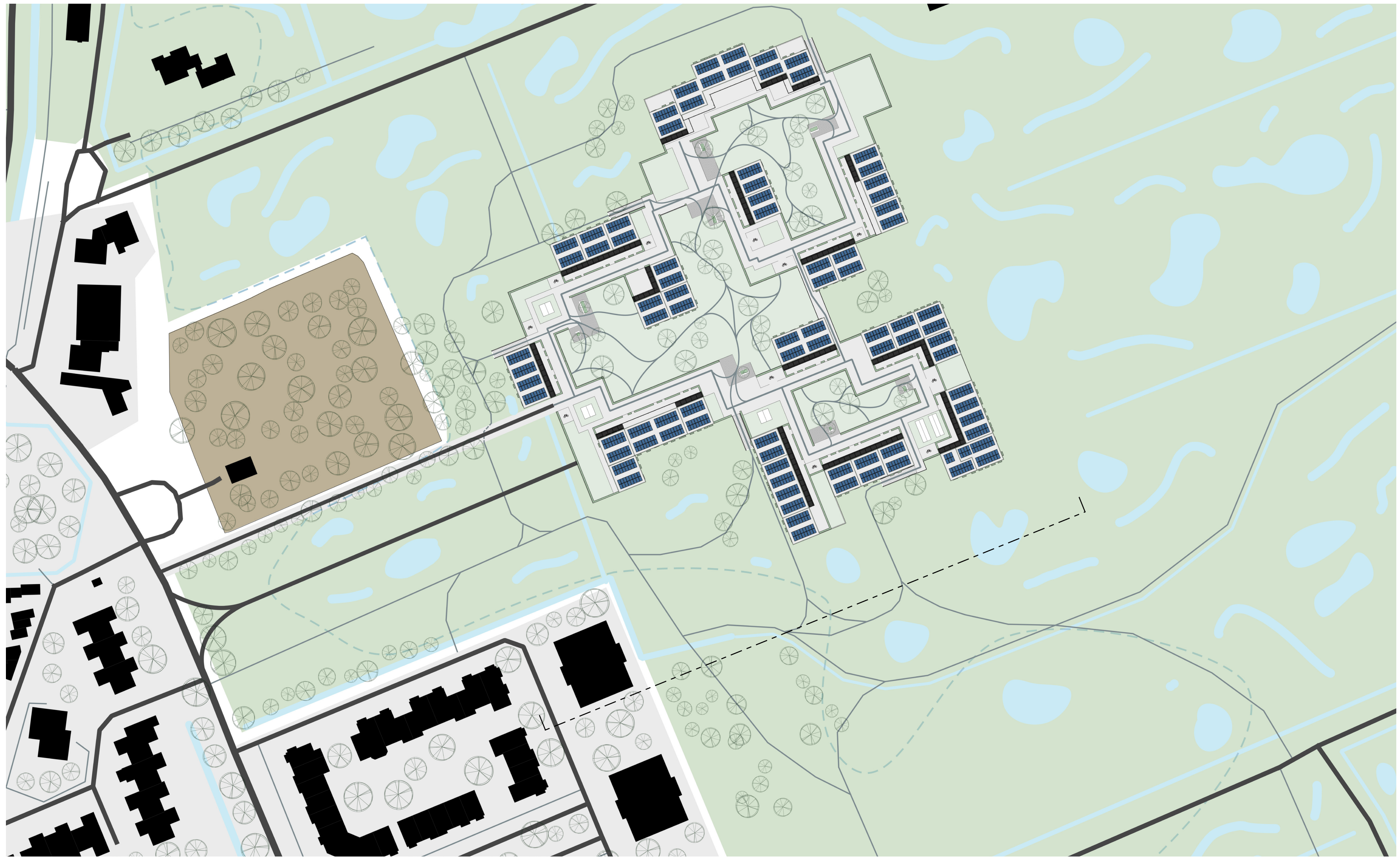




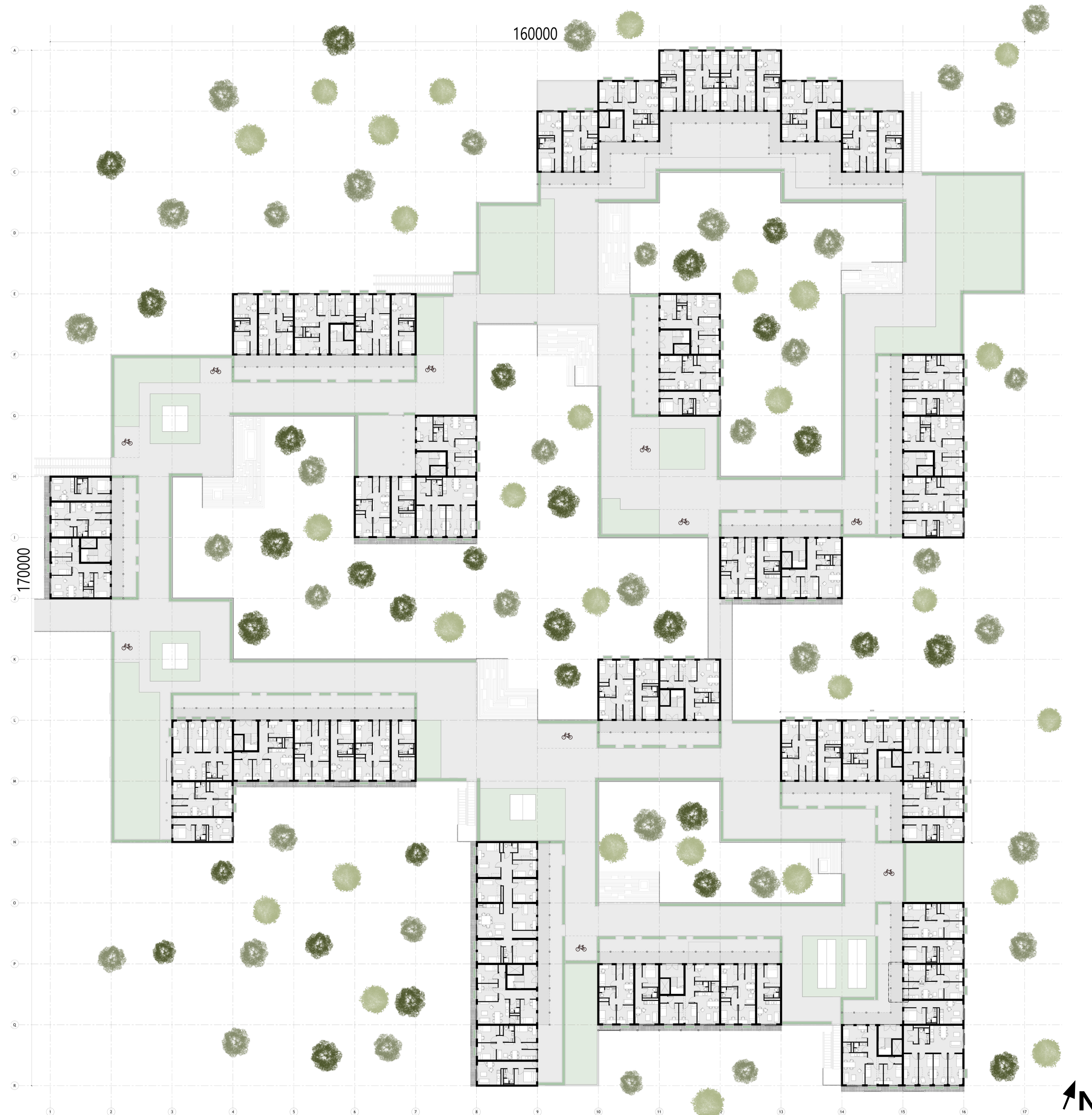












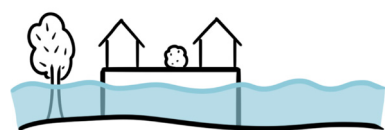




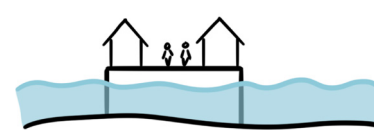








11. Include surrounding landscape in the design

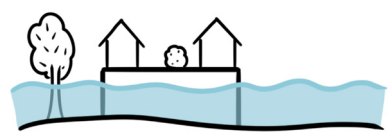


10. Make the raised plane a communal meeting space

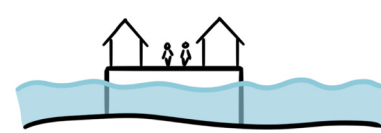


3. No institutional character





11. Include surrounding landscape in the design



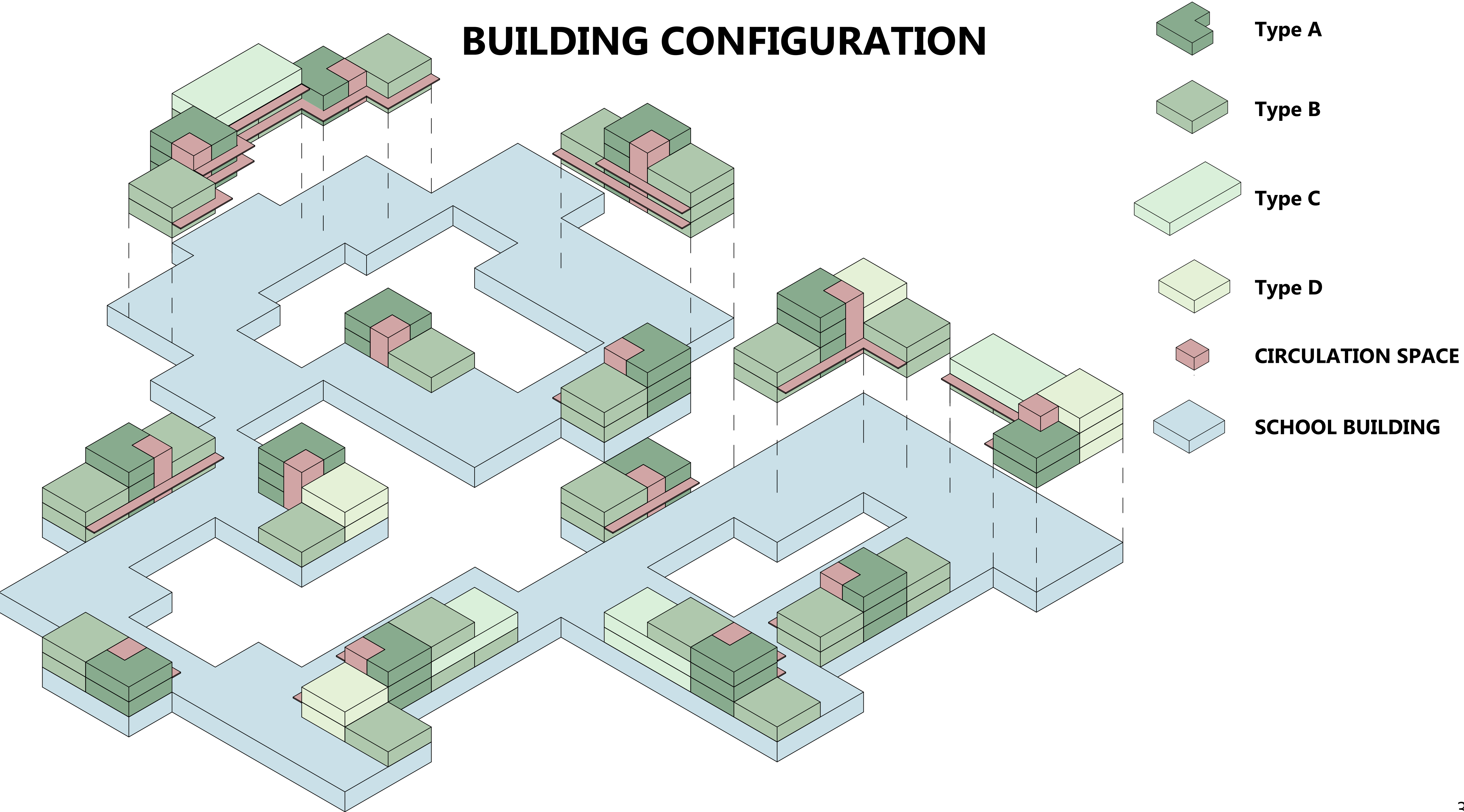
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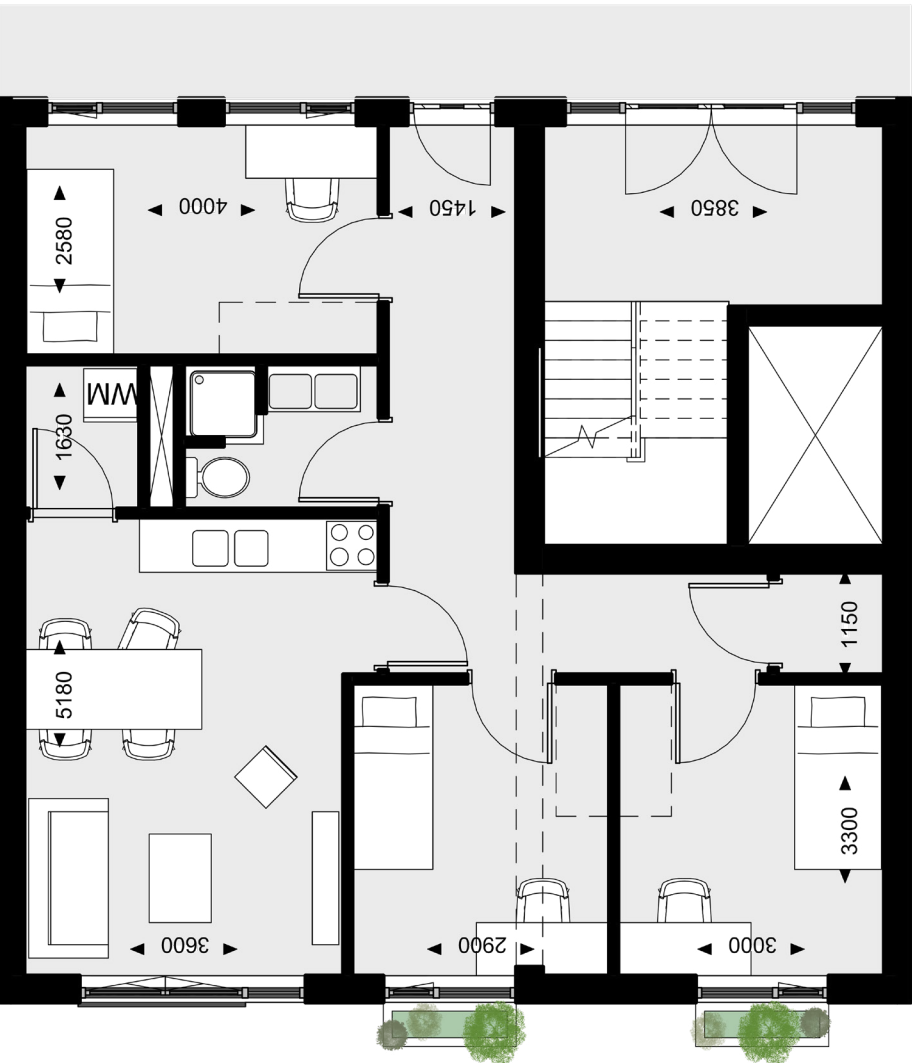
# BUILDING CONFIGURATION



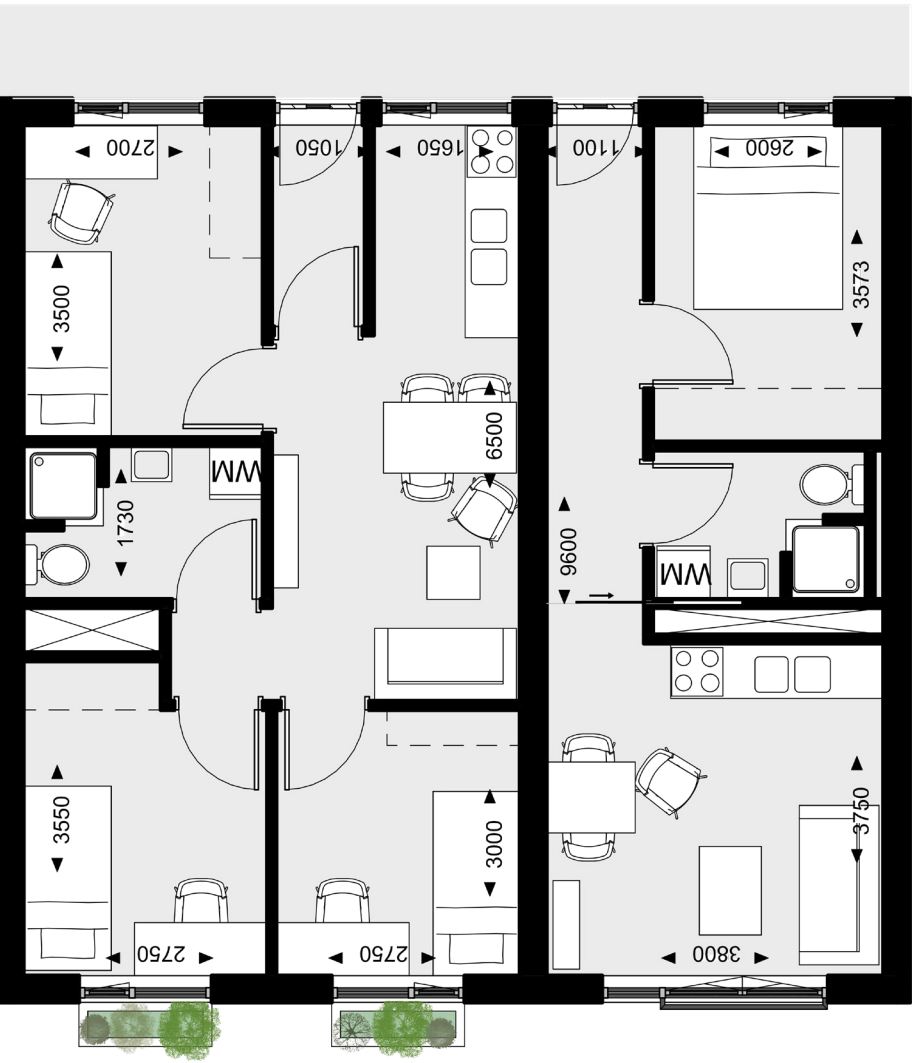


FLOORPLANS

Type A



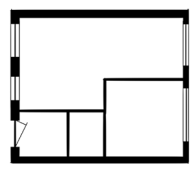
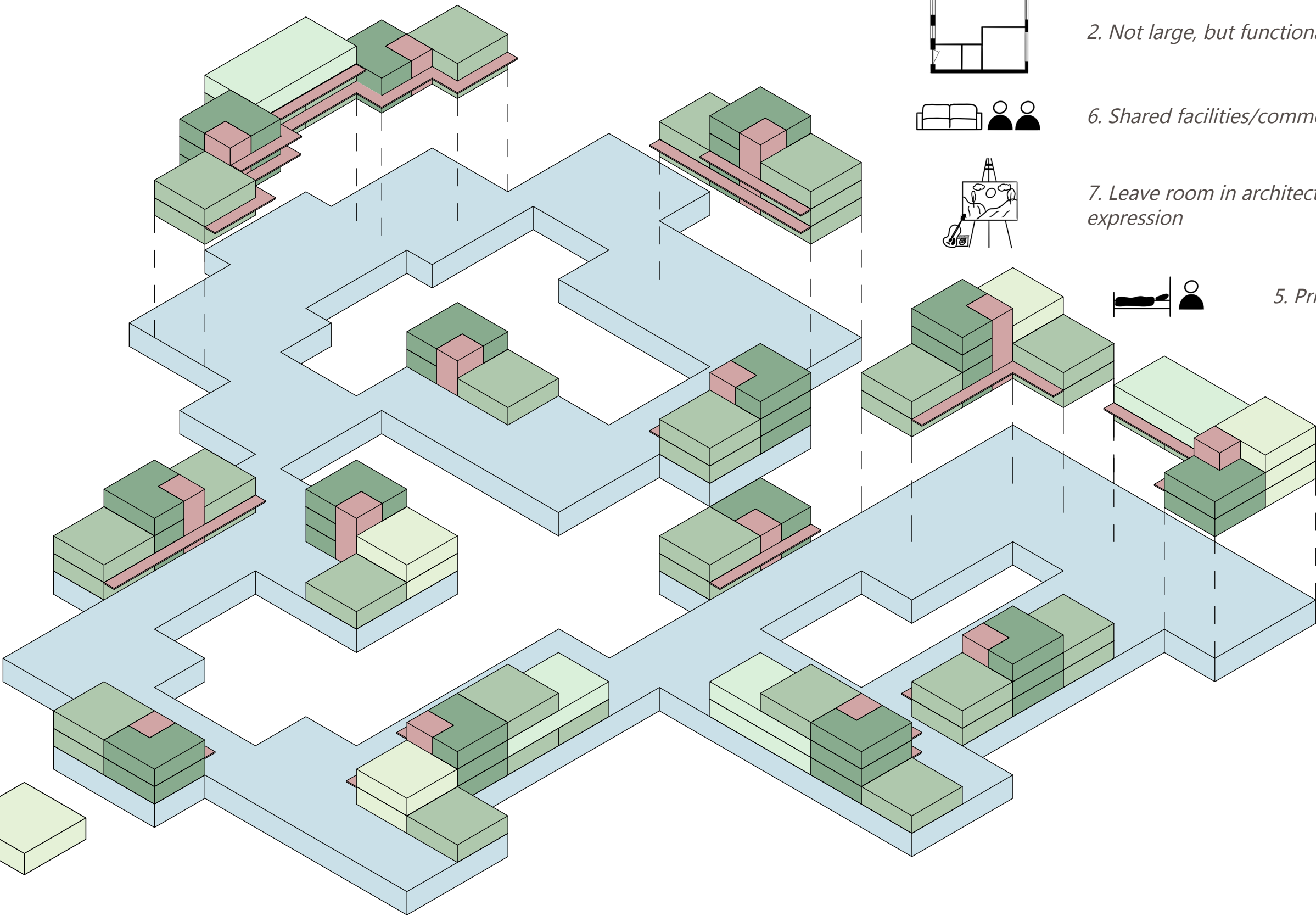
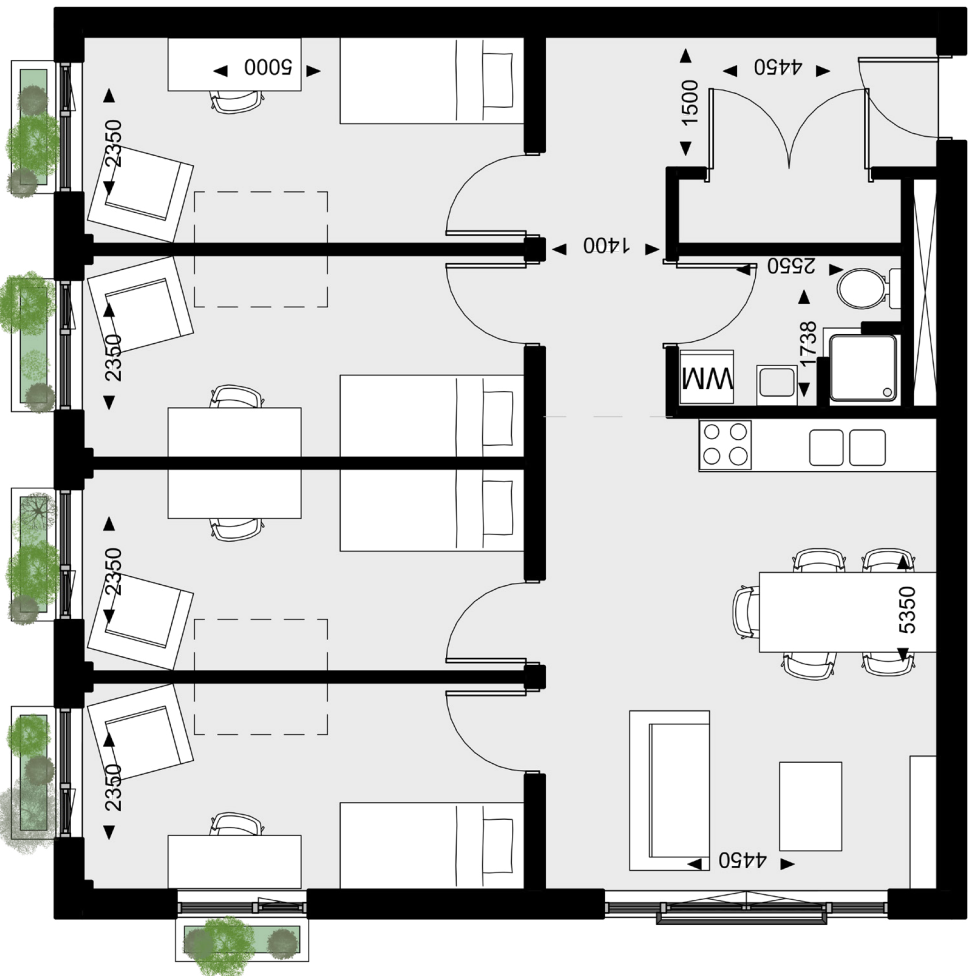
Type B



Type C



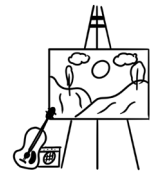
Type D



2. Not large, but functional floorplans



6. Shared facilities/common spaces



7. Leave room in architecture for personal expression



5. Private bedrooms

FACTS & FIGURES

Dwelling type	#	m2	Bedrooms	Living type
Type A	39	80m <sup>2</sup>	3	Shared apartment
Type B1	41	65m <sup>2</sup>	3	Shared apartment
Type B2	41	35m <sup>2</sup>	1 or 2	Apartment
Type C	5	200m <sup>2</sup>	8	Shared ammenties
Type D	10	100m <sup>2</sup>	4	Shared apartment
Total:	136	9.220m <sup>2</sup>	595	Student houses

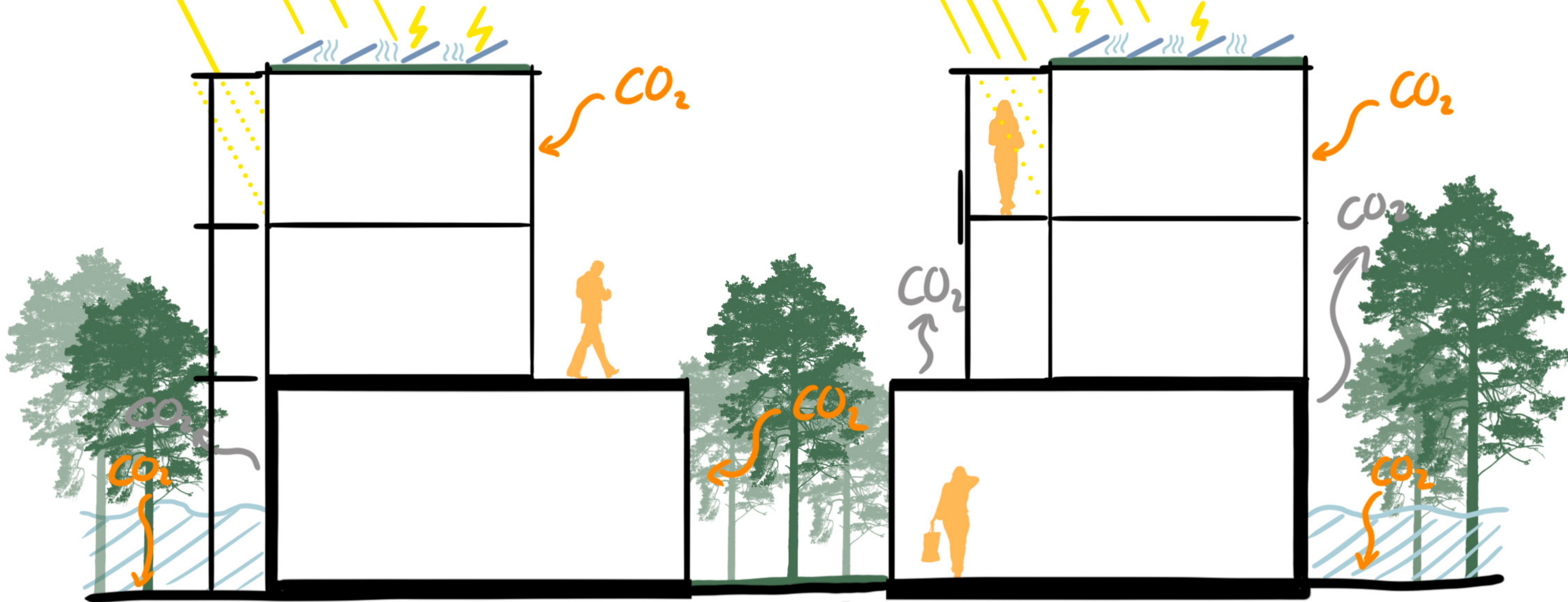


# BUILDING TECHNOLOGY

## AMBITIONS

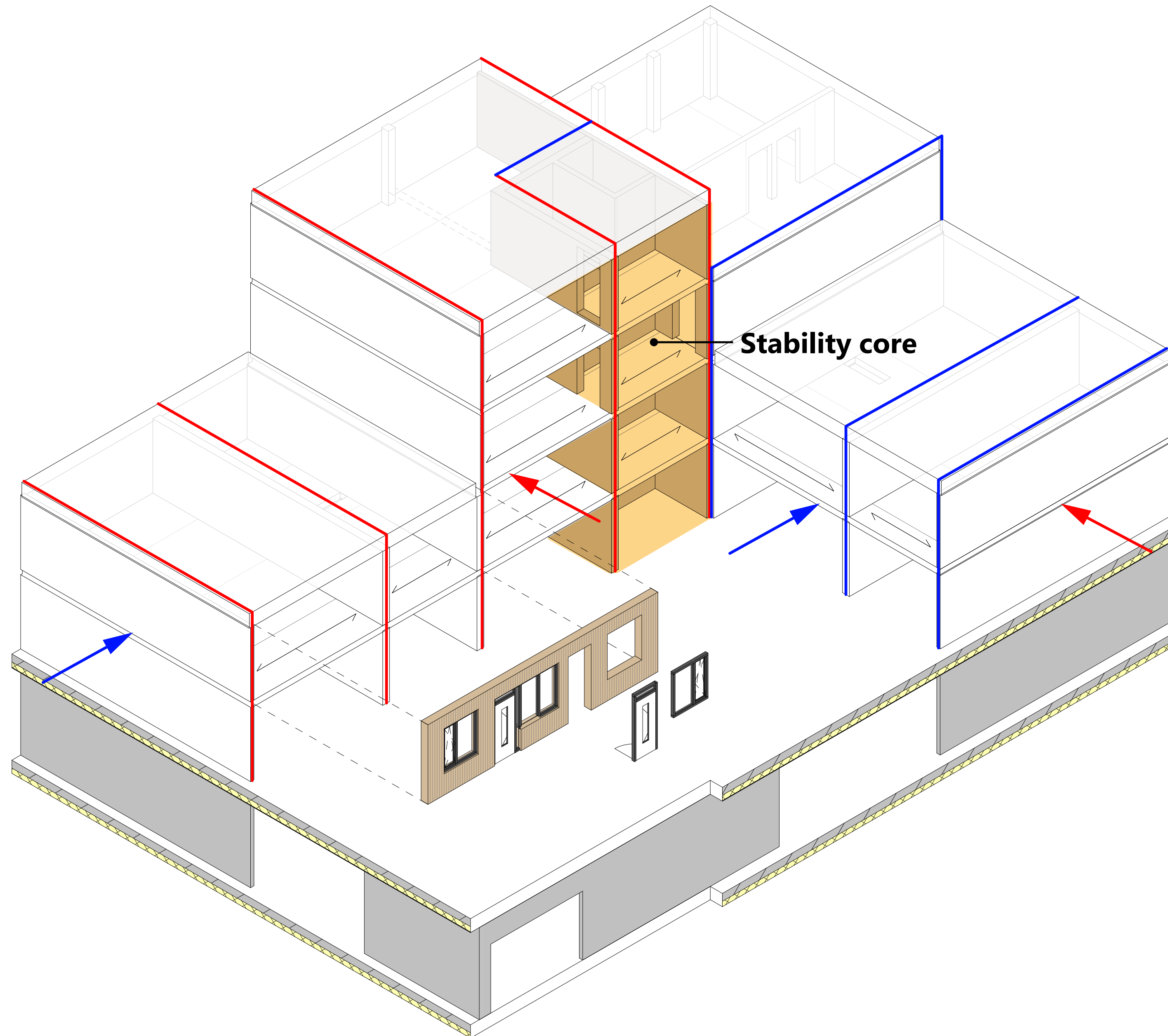
1. Floodproof plinth
2. Maintain functionality in flooded landscape
3. Store CO<sub>2</sub> in soil  
*By regrowing peat*
4. Light top structure
5. Interchangeable dwelling types
6. Capturing Carbon in the structure & façades  
*to offset Carbon footprint of the plinth*

7. Energy efficient ventilation system  
*Shared ventilation system for each block*
8. Renewable heating (and cooling)
9. Lowering heatload on the building
10. Renewable energy supply
11. Extensive green roofscape  
*Low impact greenery on the roofs*





# CLT STRUCTURE



Floor panel sizes 3,3m x 10m

Wall panel sizes 3m x 10m

Stability core



# CARBON CAPTURE

**CO<sub>2</sub> Emissions wood structure & façades**

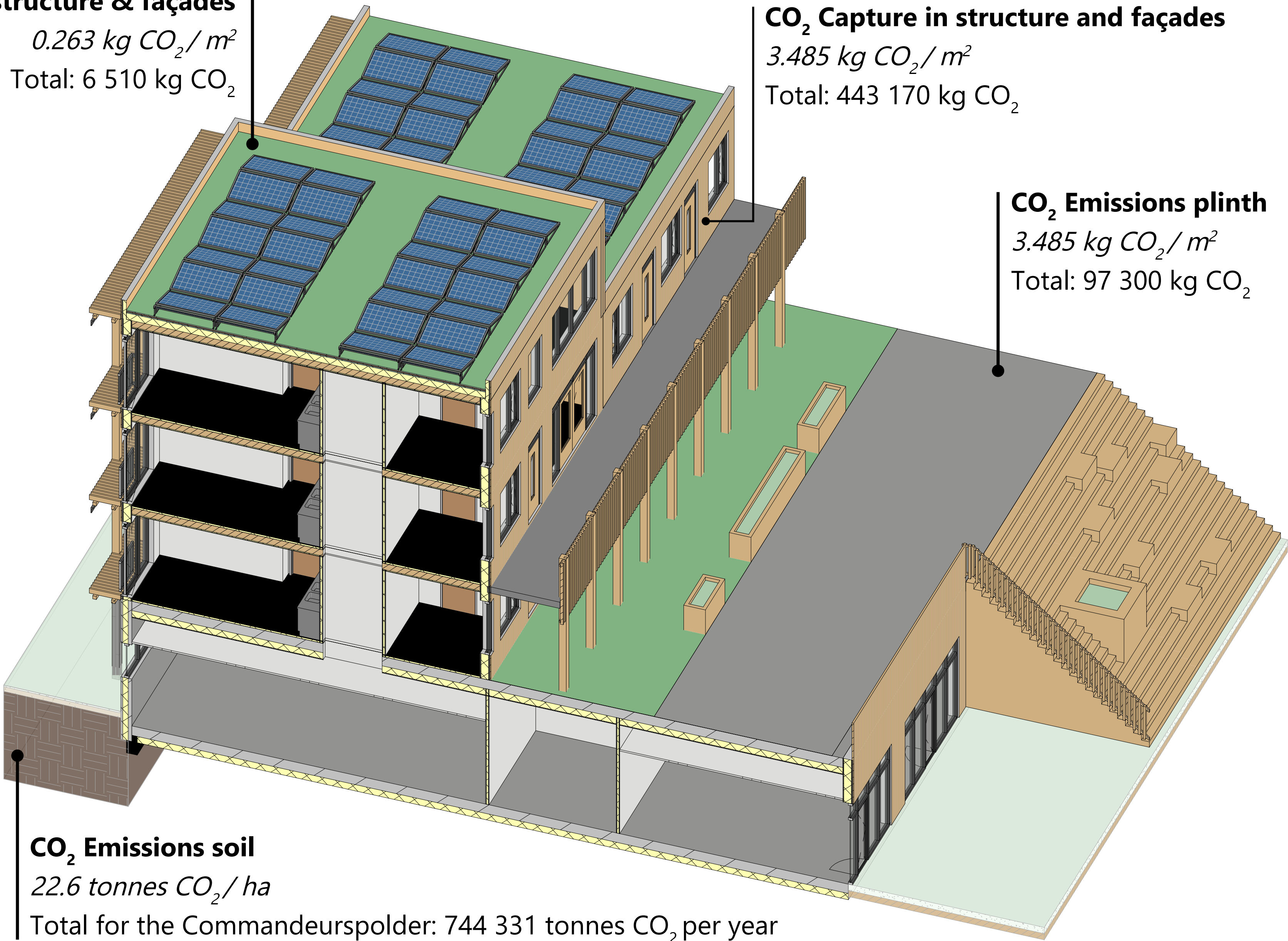
*0.263 kg CO<sub>2</sub>/ m<sup>2</sup>*  
Total: 6 510 kg CO<sub>2</sub>

**CO<sub>2</sub> Capture in structure and façades**

*3.485 kg CO<sub>2</sub>/ m<sup>2</sup>*  
Total: 443 170 kg CO<sub>2</sub>

**CO<sub>2</sub> Emissions plinth**

*3.485 kg CO<sub>2</sub>/ m<sup>2</sup>*  
Total: 97 300 kg CO<sub>2</sub>



**CO<sub>2</sub> Emissions soil**

*22.6 tonnes CO<sub>2</sub>/ ha*

Total for the Commandeurspolder: 744 331 tonnes CO<sub>2</sub> per year



# BENG CALCULATION

## 3 VARIATIONS:

### 1. Standard settings

- Triple glazing
- Type C ventilation
- Hot & Cold storage in the ground
- PV panels

### 2. Double glazed windows

- Double glazing
- Type C ventilation
- Hot & Cold storage in the ground
- PV panels

### 3. Ventilation type D

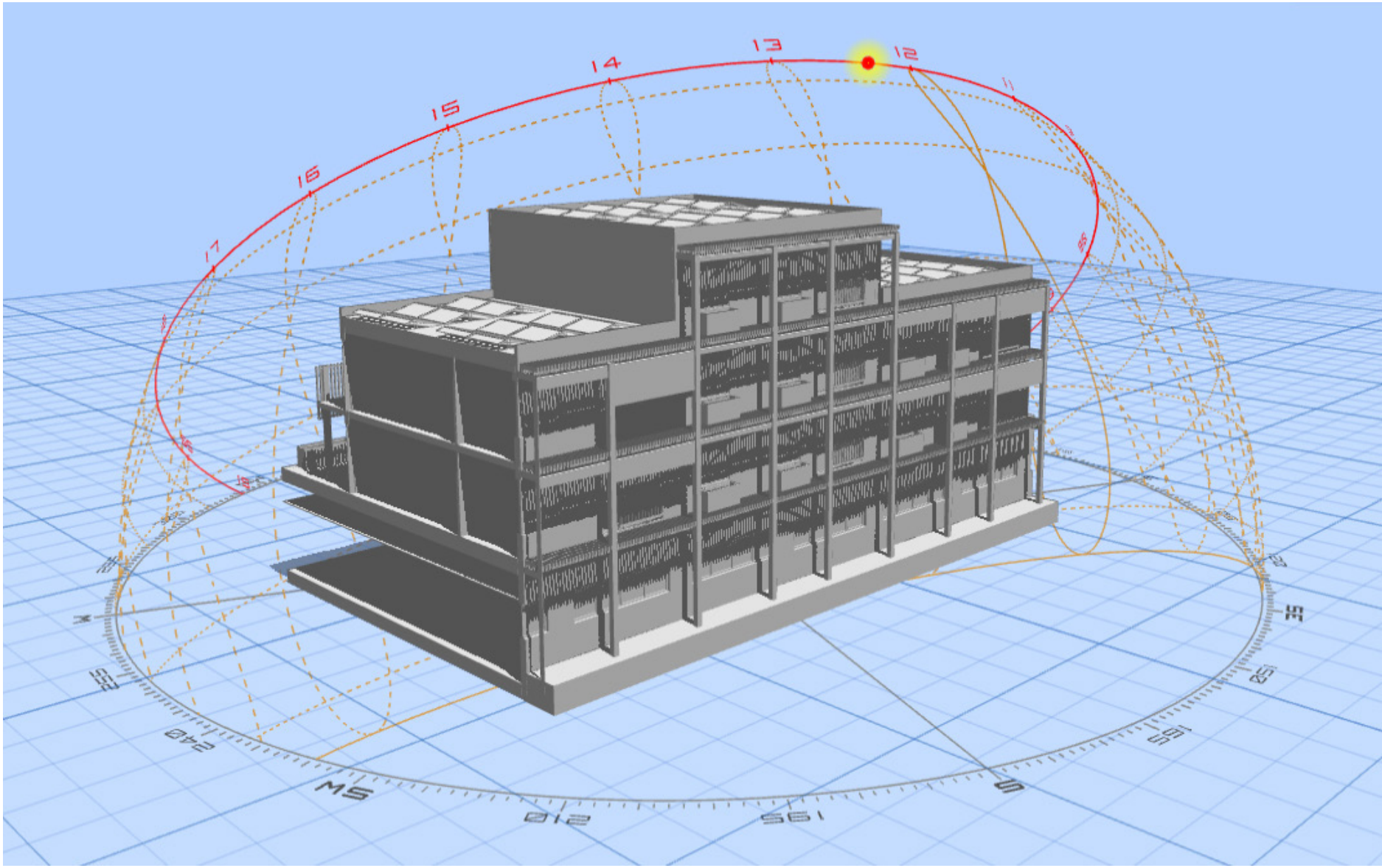
- Triple glazing
- Type D ventilation
- Hot & Cold storage in the ground
- PV panels

Beng 1Beng 2Beng 3																
variant	energiebehoefte [kWh/m²]		fossiel [kWh/m²]		hernieuwbaar [%]		CO <sub>2</sub> -emissie TO <sub>juli;max</sub>			elektriciteit gebruik op meter [kWh]			energiegebruik [kWh]			
	eis	resultaat	eis	resultaat	eis	resultaat	[kg]	Without Cooling	With Cooling	gebouwge	Niet gebouwgeb. 27.000 opgewekte elek.	totaal	verw.	tapw.	koel	vent.
basisberekening	76,37	55,93 ✓	50,00	9,95 ✓	40,0	90,7 ✓	2.041	2,85	0,00	30.095	24.091	33.004	13.538	13.835	815	1.907
Double glazed windows	76,37	70,24 ✓	50,00	15,85 ✓	40,0	87,4 ✓	3.251	2,95	0,00	33.654	24.091	36.563	16.883	13.835	1.029	1.907
Type D ventilation	76,37	55,93 ✓	50,00	4,74 ✓	40,0	94,4 ✓	972	4,13	0,00	26.951	24.091	29.860	7.949	13.835	928	4.238

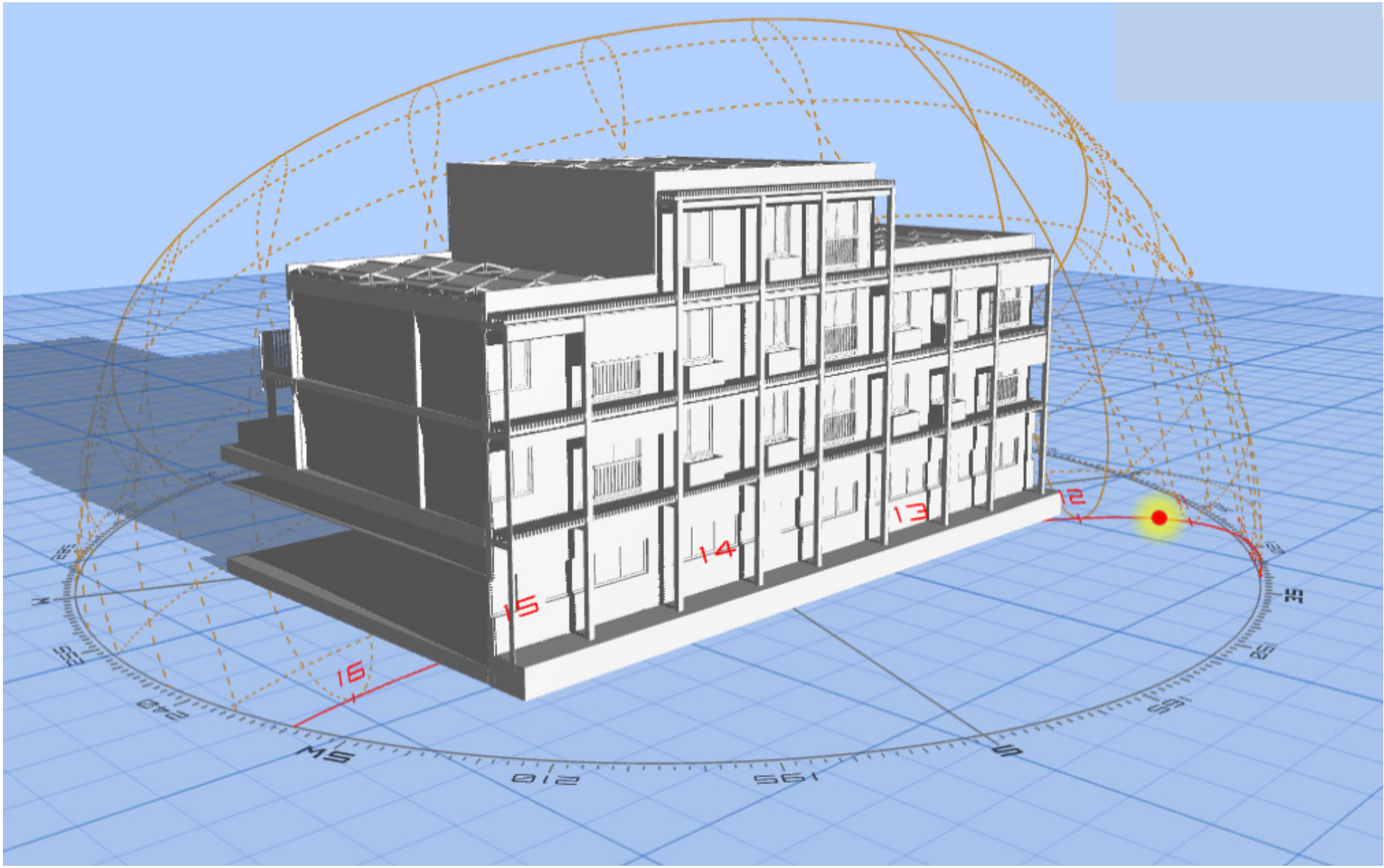
4  
1  
6



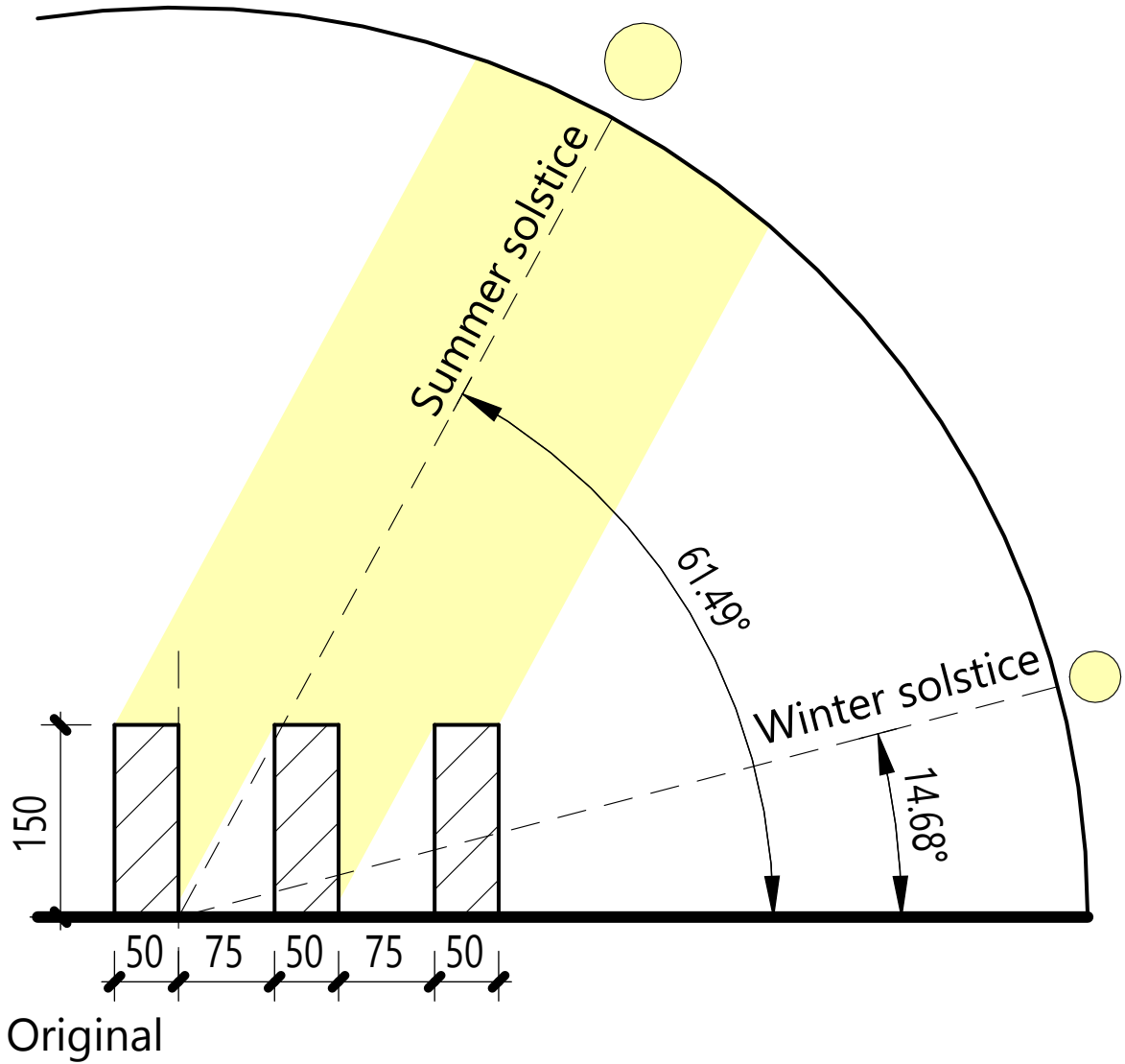
# SOLAR ANALYSIS



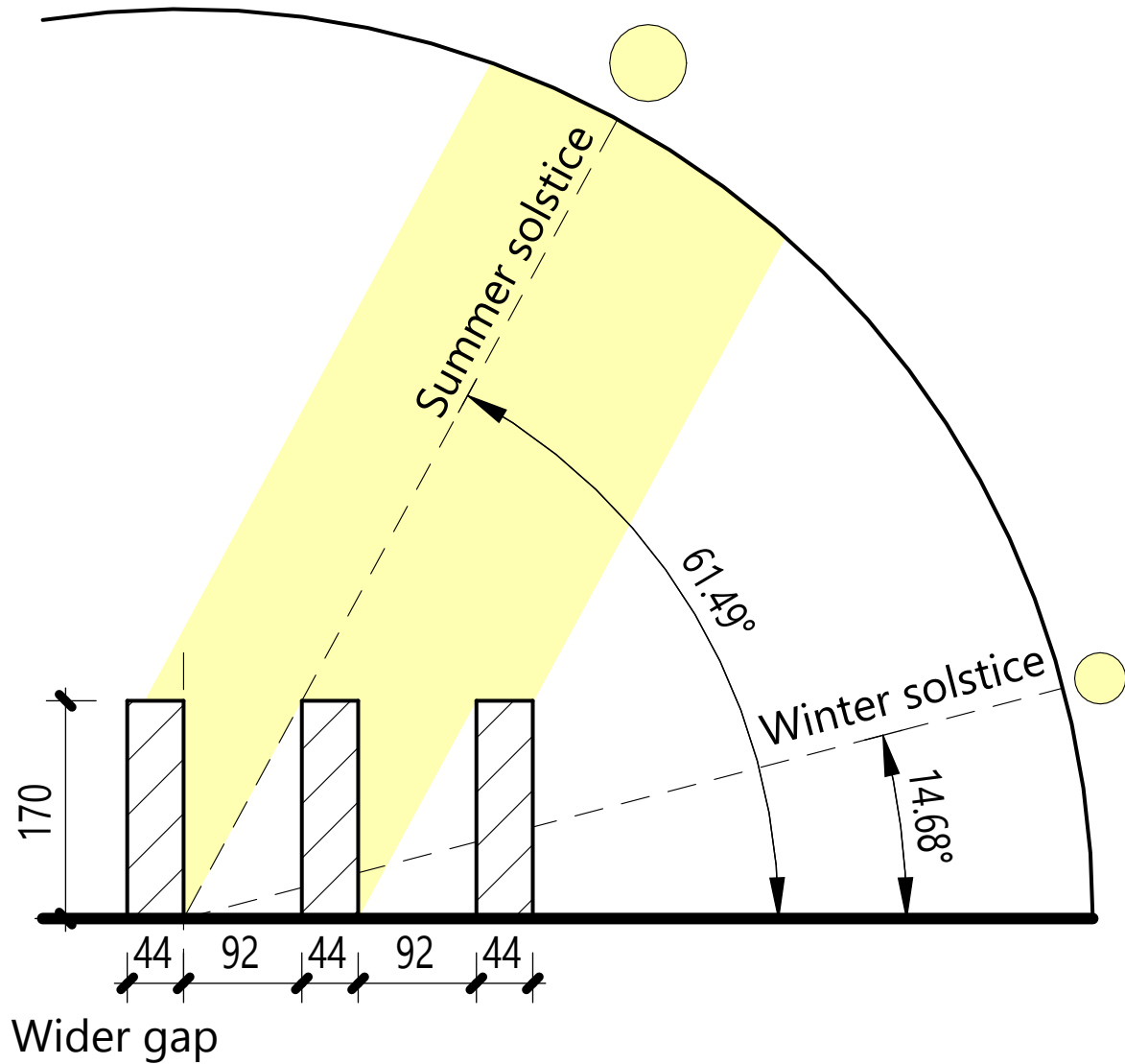
Summer solstice



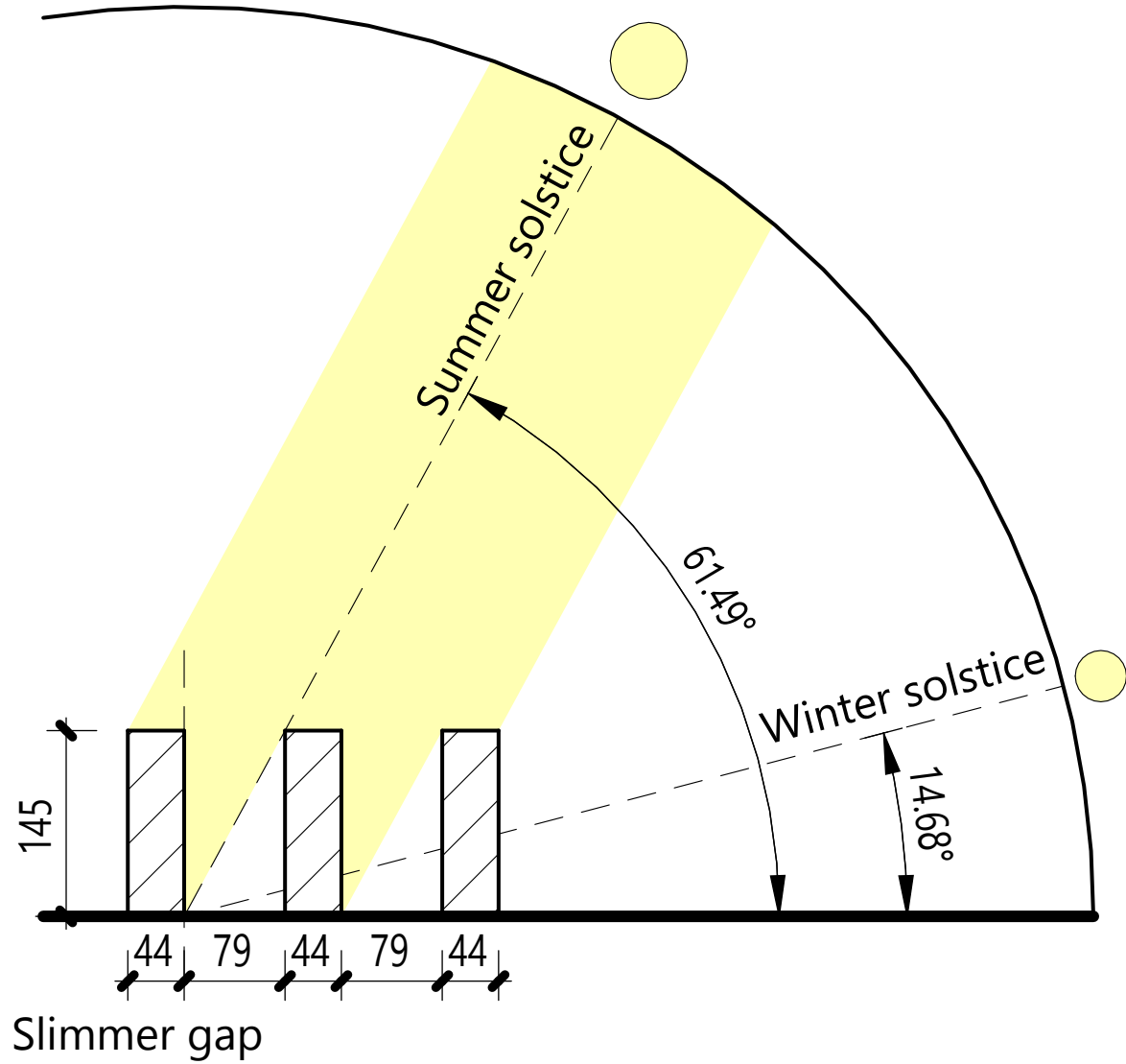
Winter solstice



Original



Wider gap



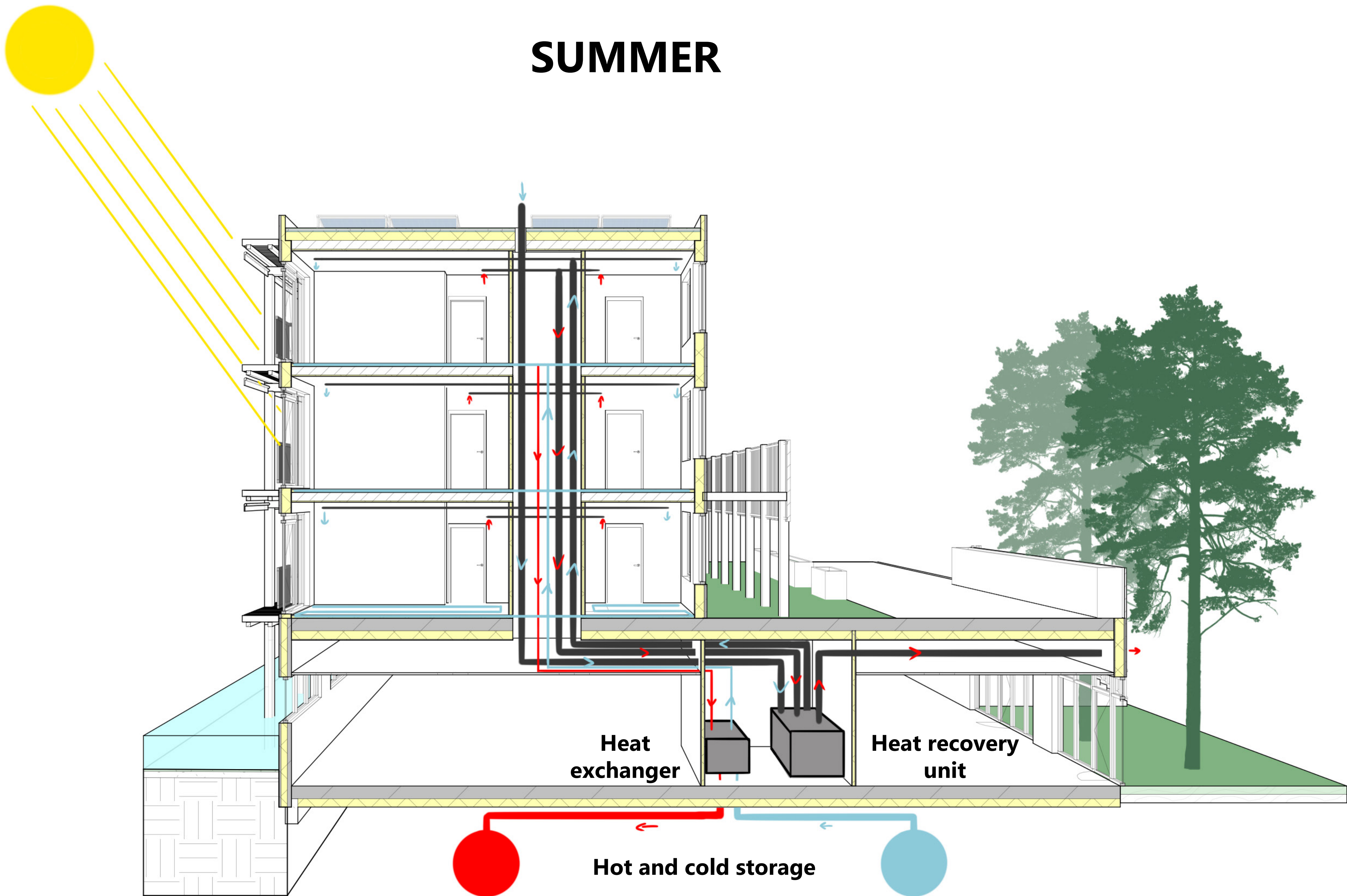
Slimmer gap





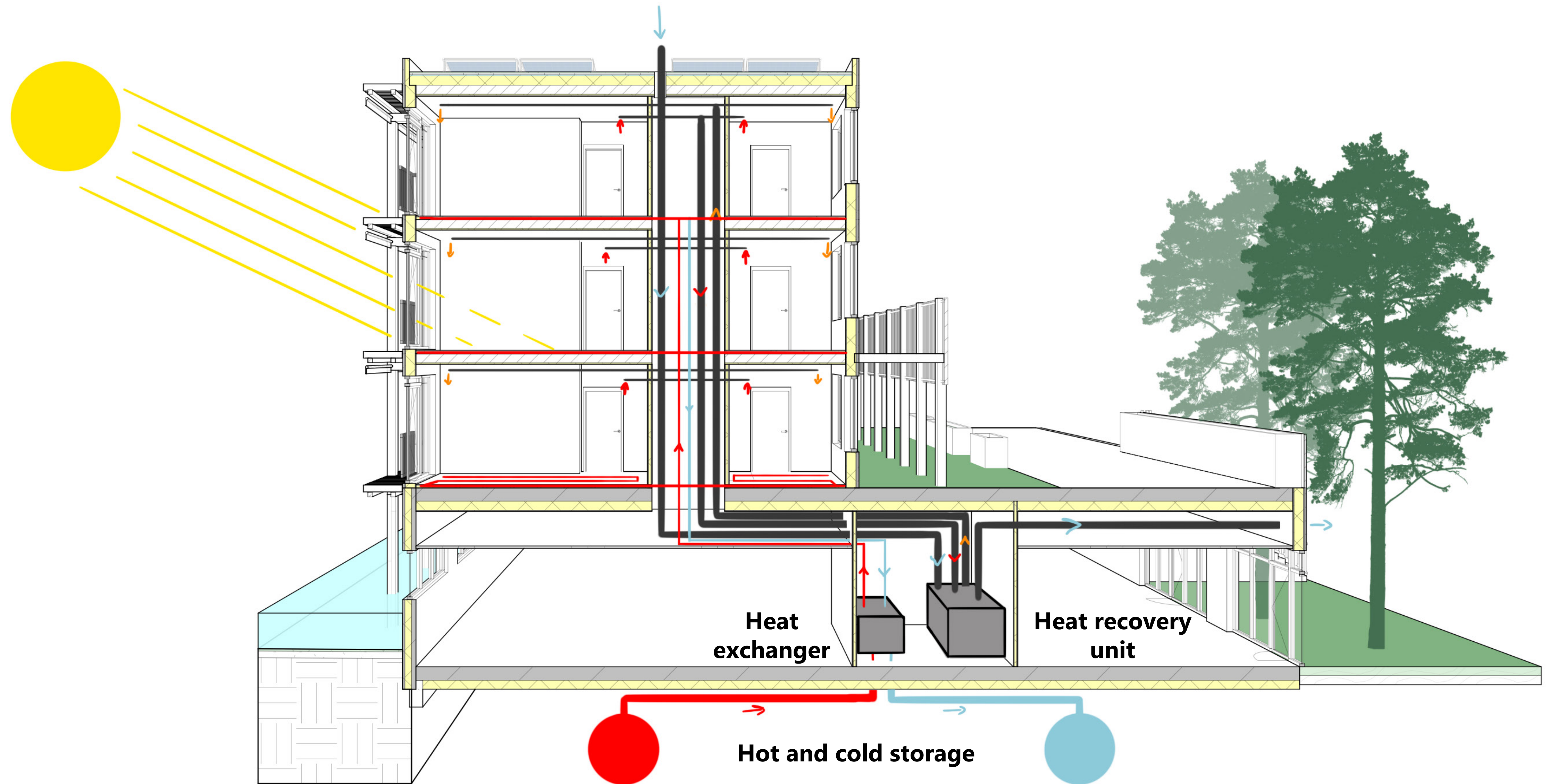


SUMMER

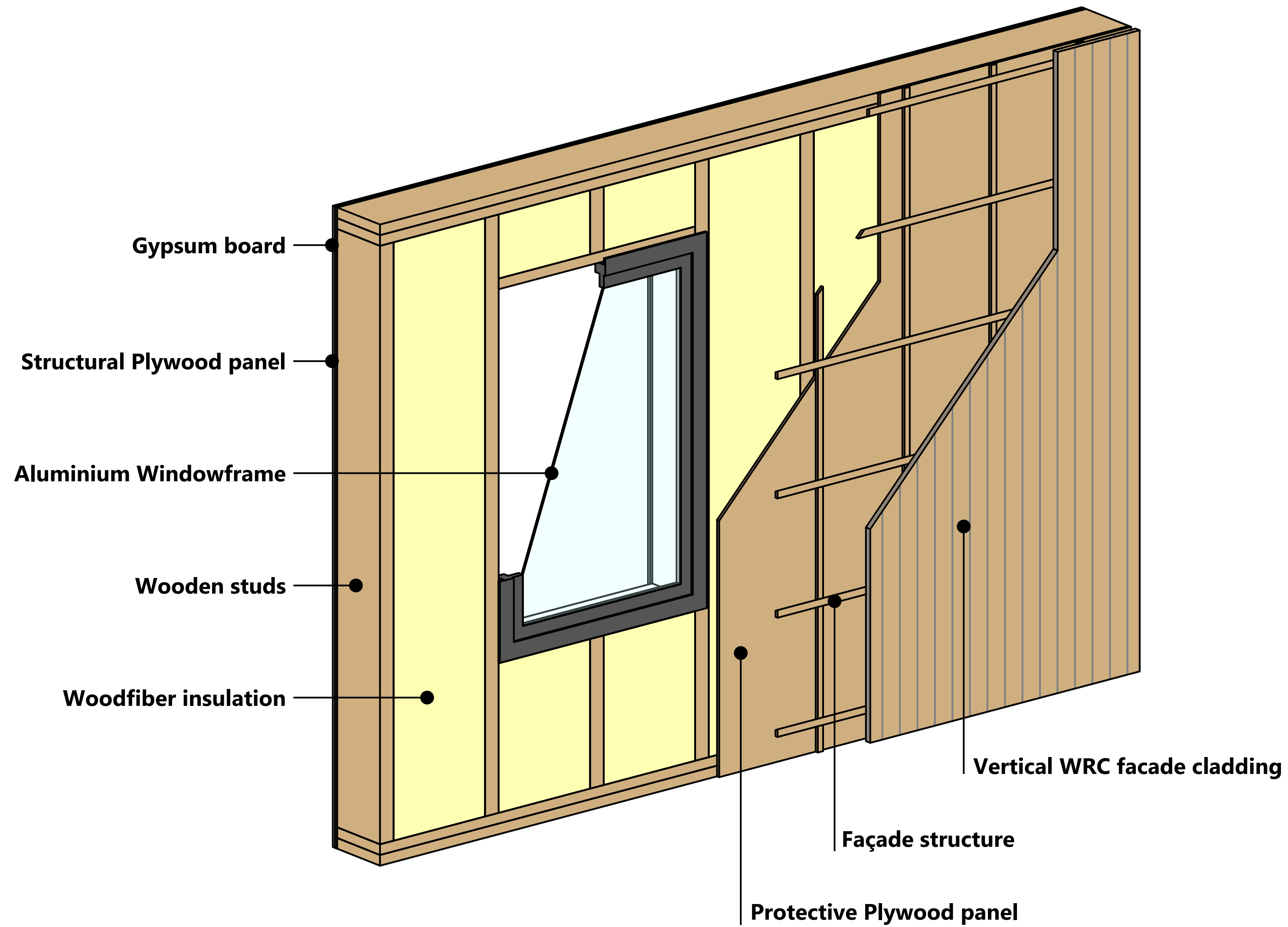




# WINTER





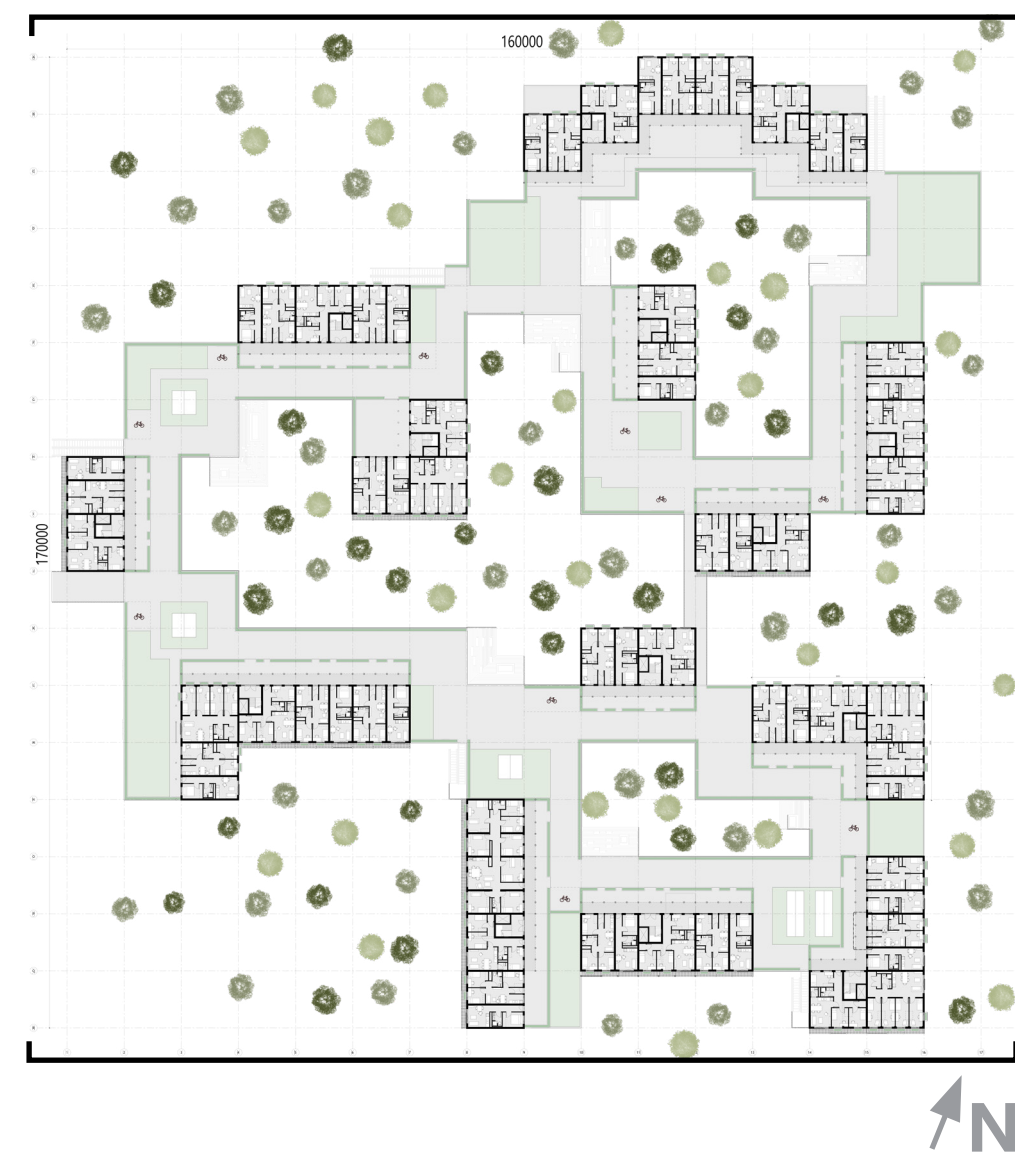




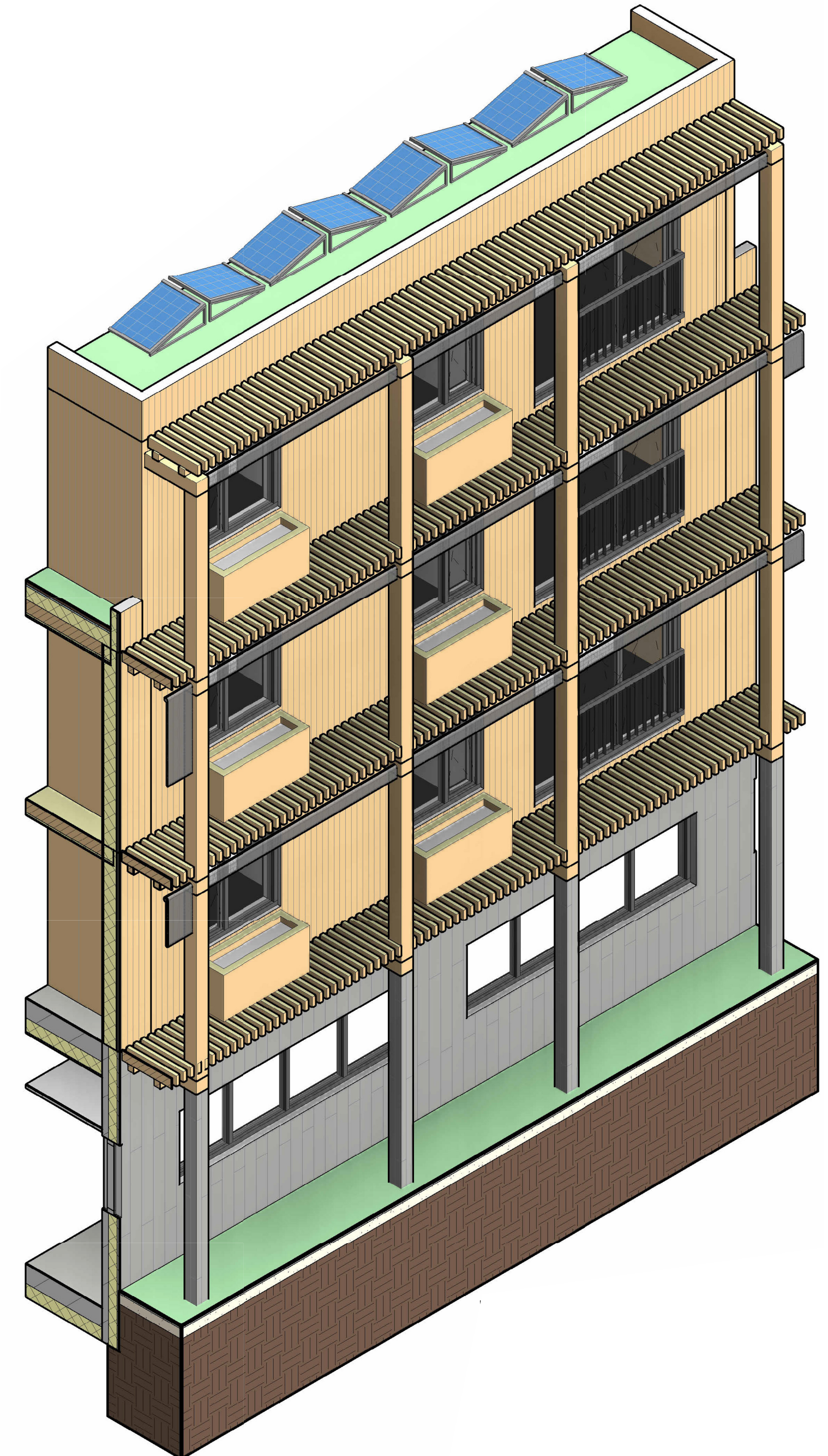
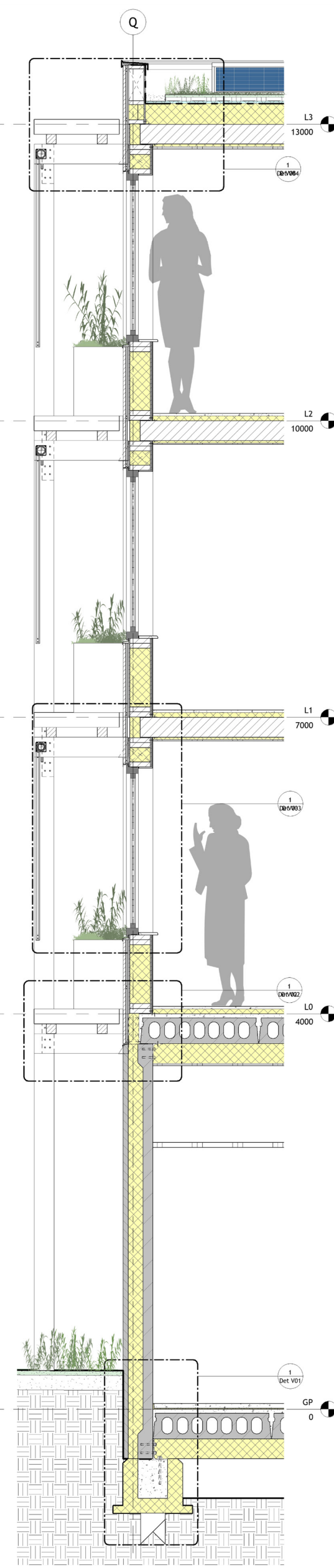
# COLLEGE MAASLAND



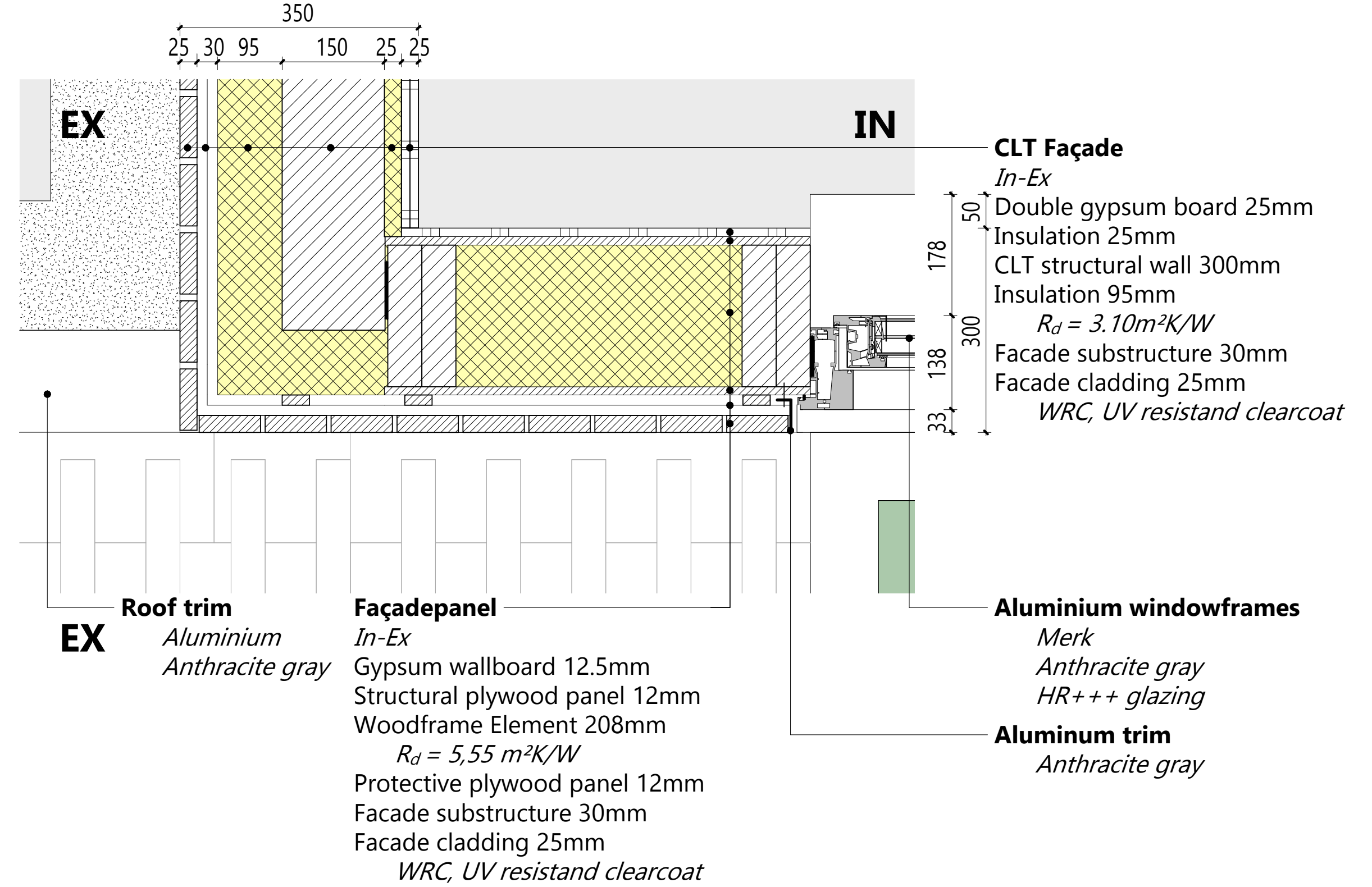
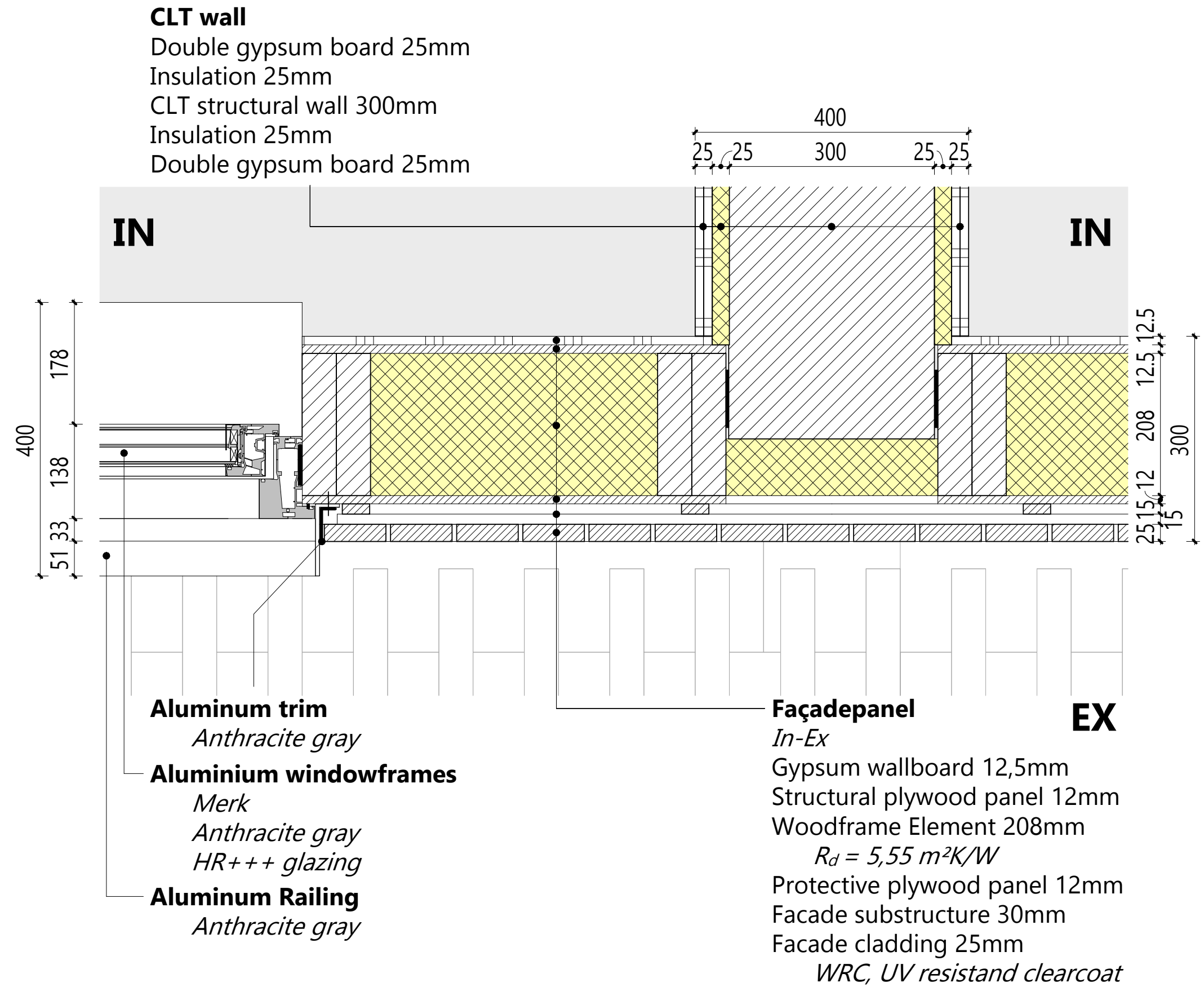




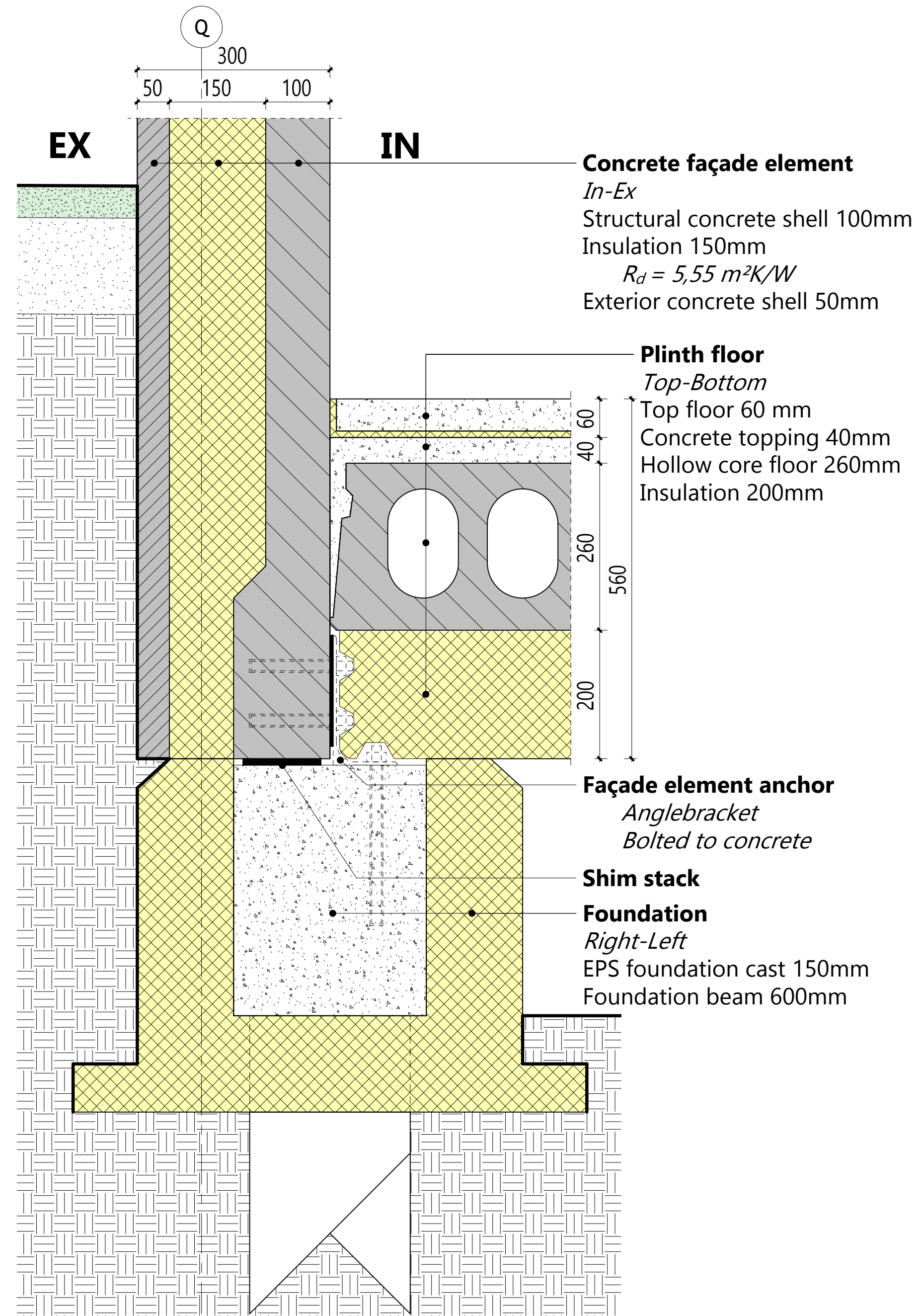




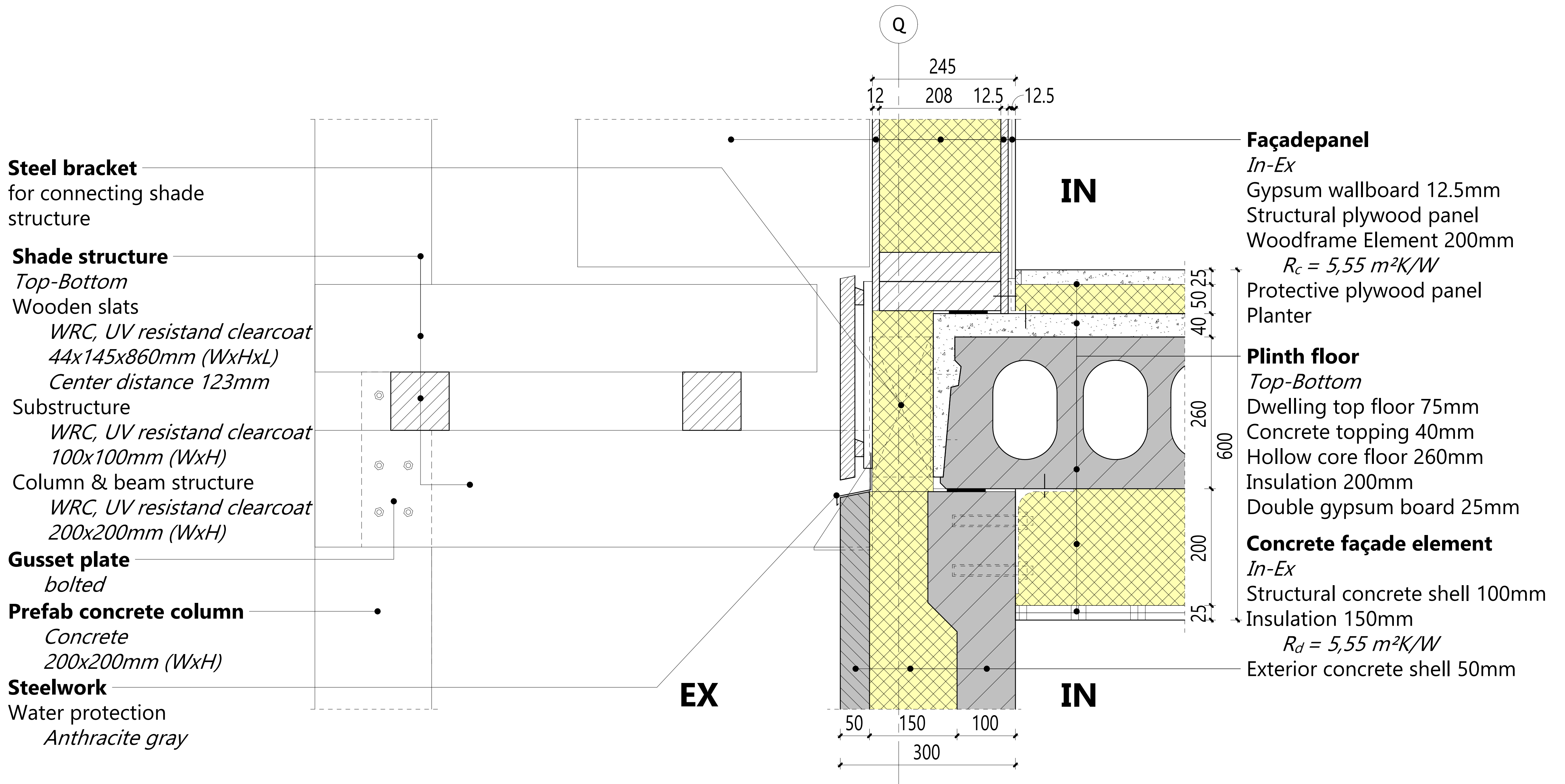




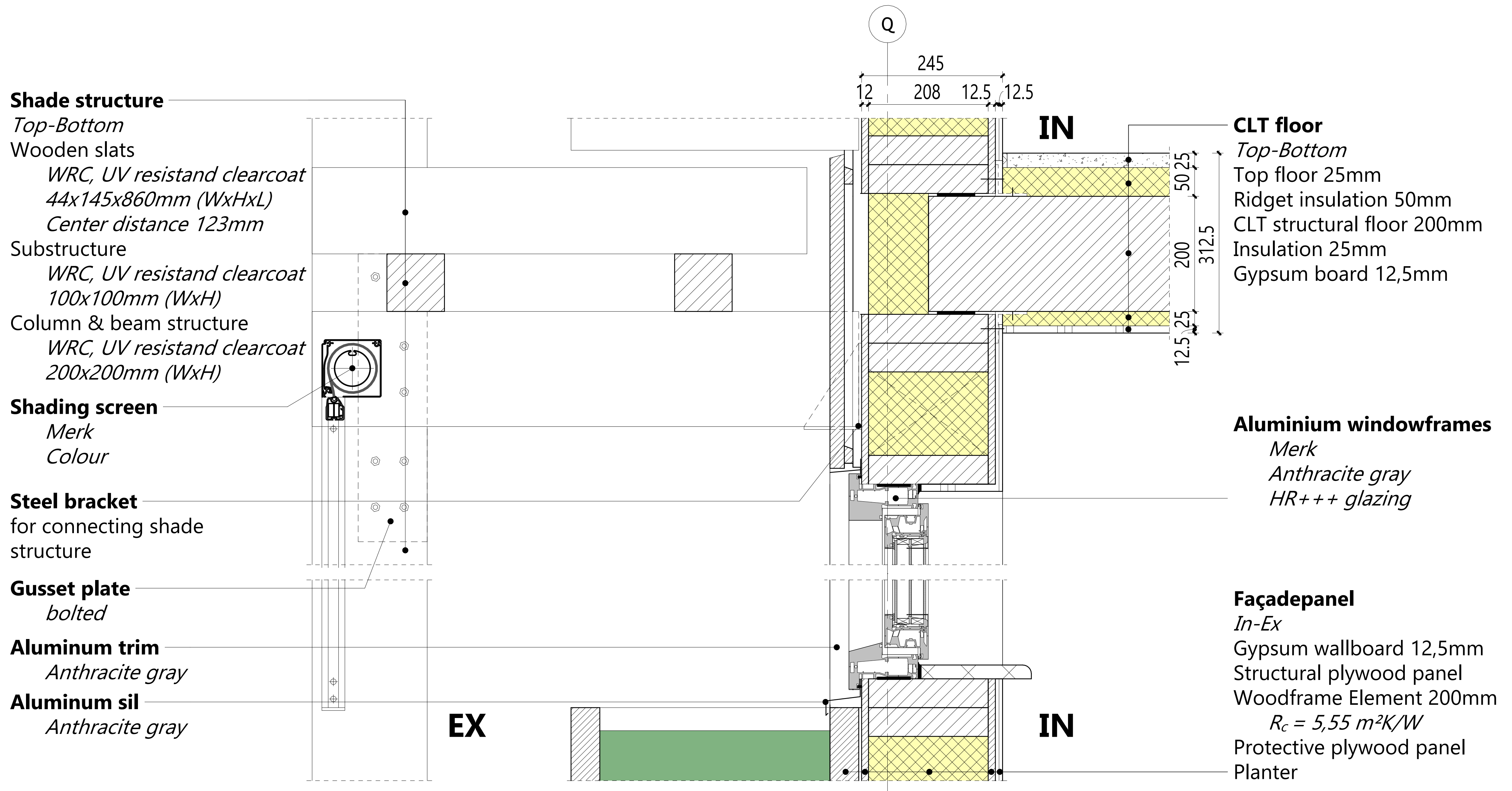














**Roof trim**

Aluminium  
Anthracite gray

**Shade structure**

Top-Bottom  
Wooden slats  
WRC, UV resistand clearcoat  
50x150x860mm (WxHxL)  
Substructure  
WRC, UV resistand clearcoat  
100x100mm (WxH)  
Column & beam structure  
WRC, UV resistand clearcoat  
200x200mm (WxH)

**Steel bracket**

for connecting shade  
structure

**Gusset plate**

bolted

**Shading screen**

Merk  
Colour

**Aluminum sil**

Anthracite gray

**Aluminum trim**

Anthracite gray

**Aluminium windowframes**

Merk  
Anthracite gray  
HR+++ glazing

**Parapet**

Right-Left

Woodframe element 170mm  
Facade substructure 30mm  
Facade cladding 25mm  
WRC, UV resistand clearcoat

**CLT floor**

Top-Bottom

Sedum 35mm  
Substrate 40mm  
Water retention crates 25mm  
ca. 22,5 l/m<sup>2</sup>  
Waterproofing layer  
Insulation 210mm  
 $R_d = 6,10 \text{ m}^2\text{K/W}$   
CLT structural floor 200mm  
Insulation 25mm  
Gypsum board 12,5mm

**Façadepanel**

In-Ex

Gypsum wallboard 12.5mm  
Structural plywood panel 12mm  
Woodframe Element 208mm  
 $R_c = 5,55 \text{ m}^2\text{K/W}$   
Protective plywood panel 12mm  
Facade substructure 30mm  
Facade cladding 25mm  
WRC, UV resistand clearcoat

