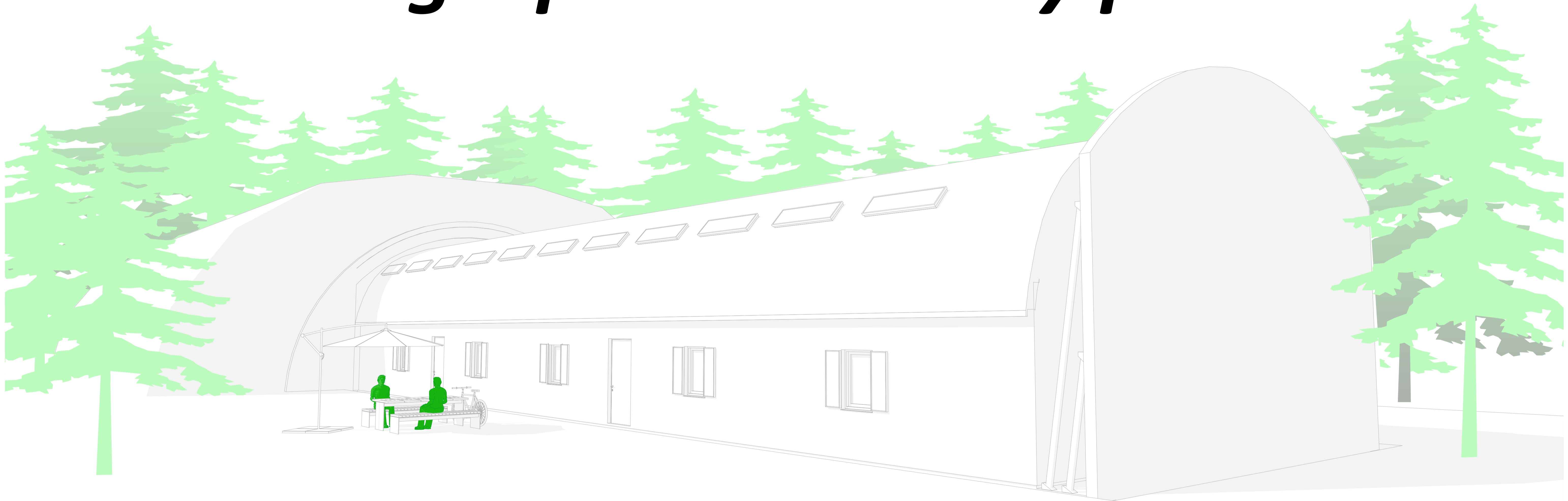


FLOAT hide and see

Final Long Operative Army protection



THE ISSUE:
THE SOLDIERS NEED TO STAY SAFE
FOR THEMSELVES
AND FOR NATO



Location - Rudninkai Training Area



With Google Maps, n.d.
Schematics made by author

0 200 400km



With Google Maps, n.d.
Schematics made by author

2km



With Google Earth, n.d.

0 5 10km

Research- and Design Question



How can spatial strategies contribute to defensive resilience in military base design for its soldiers, using natural materials where feasible?

Research- and Design

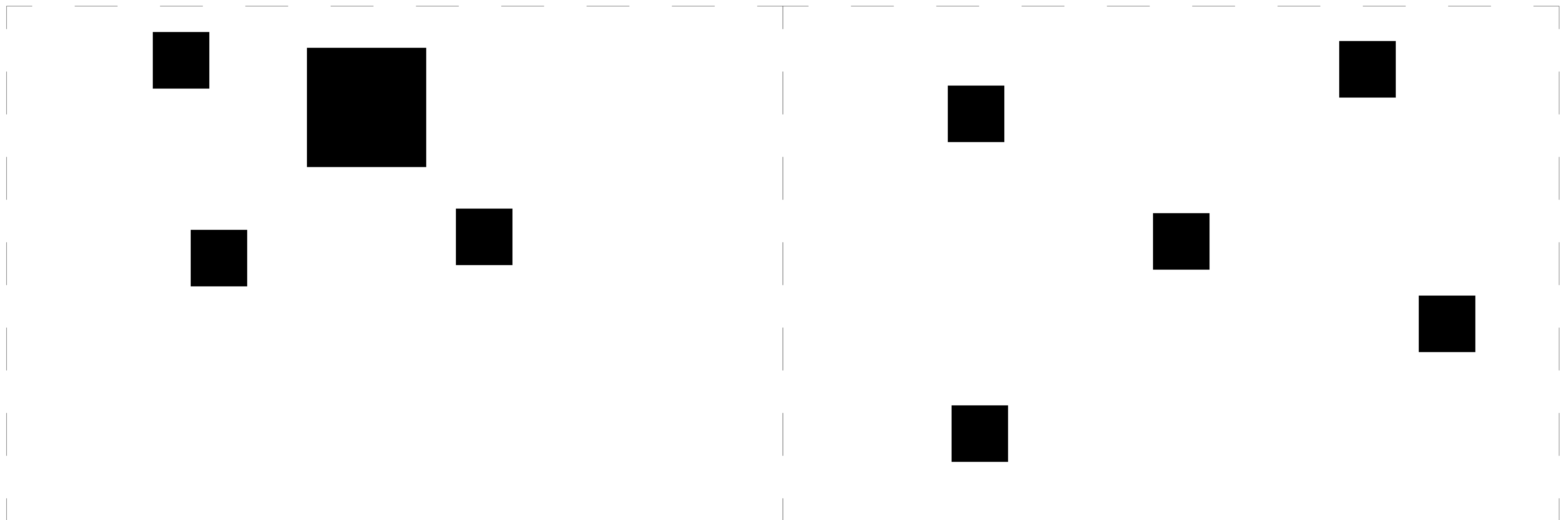
Sub-question:

1. How do compact and dispersed spatial configurations contribute to resilience?

Lostumbo et al. (2013)
Schematics made by author

(a) Centralized plan

(b) Distributed plan



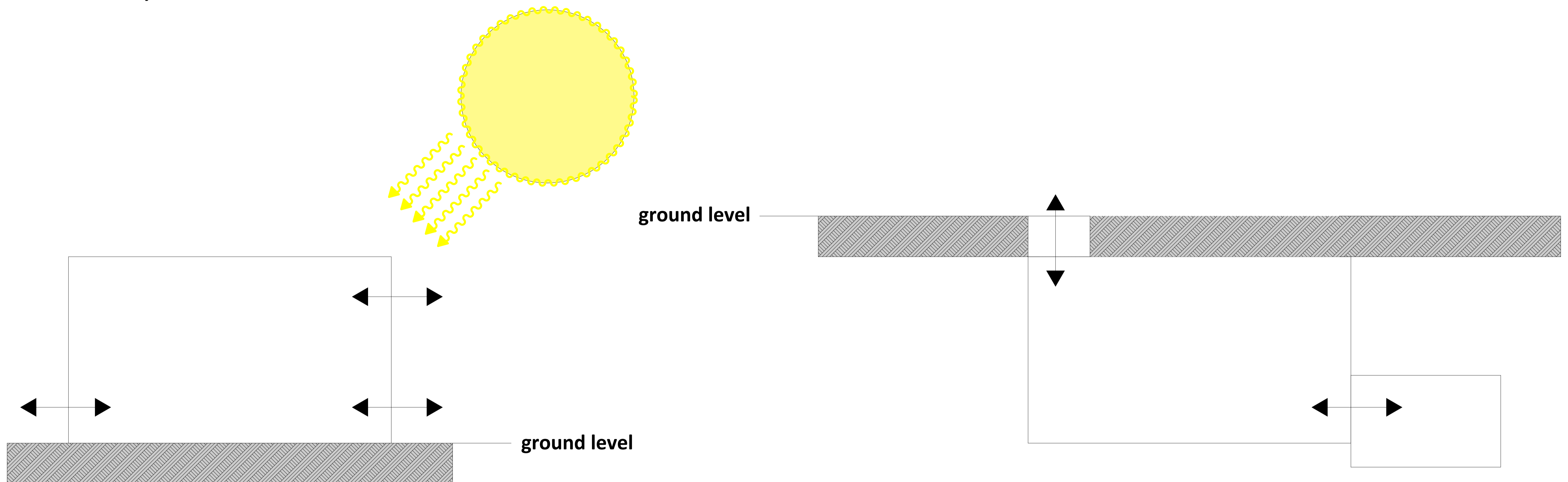
Research- and Design

Sub-question:

2. How does the spatial configuration of earth and building influence safety, environmental comfort, and user perception?

Centrum Ondergronds Bouwen (COB, 2002, p. 17-31)

Schematics by author



Research- and Design

Sub-question:

3. How can soil and timber contribute to a blast resistance base?

Timber: Underdeveloped. (*Mourão et al., 2022*)

Soil: *Cao et al. (2021)*



(a) Cobble filled wall



(b) Sand and soil filled wall

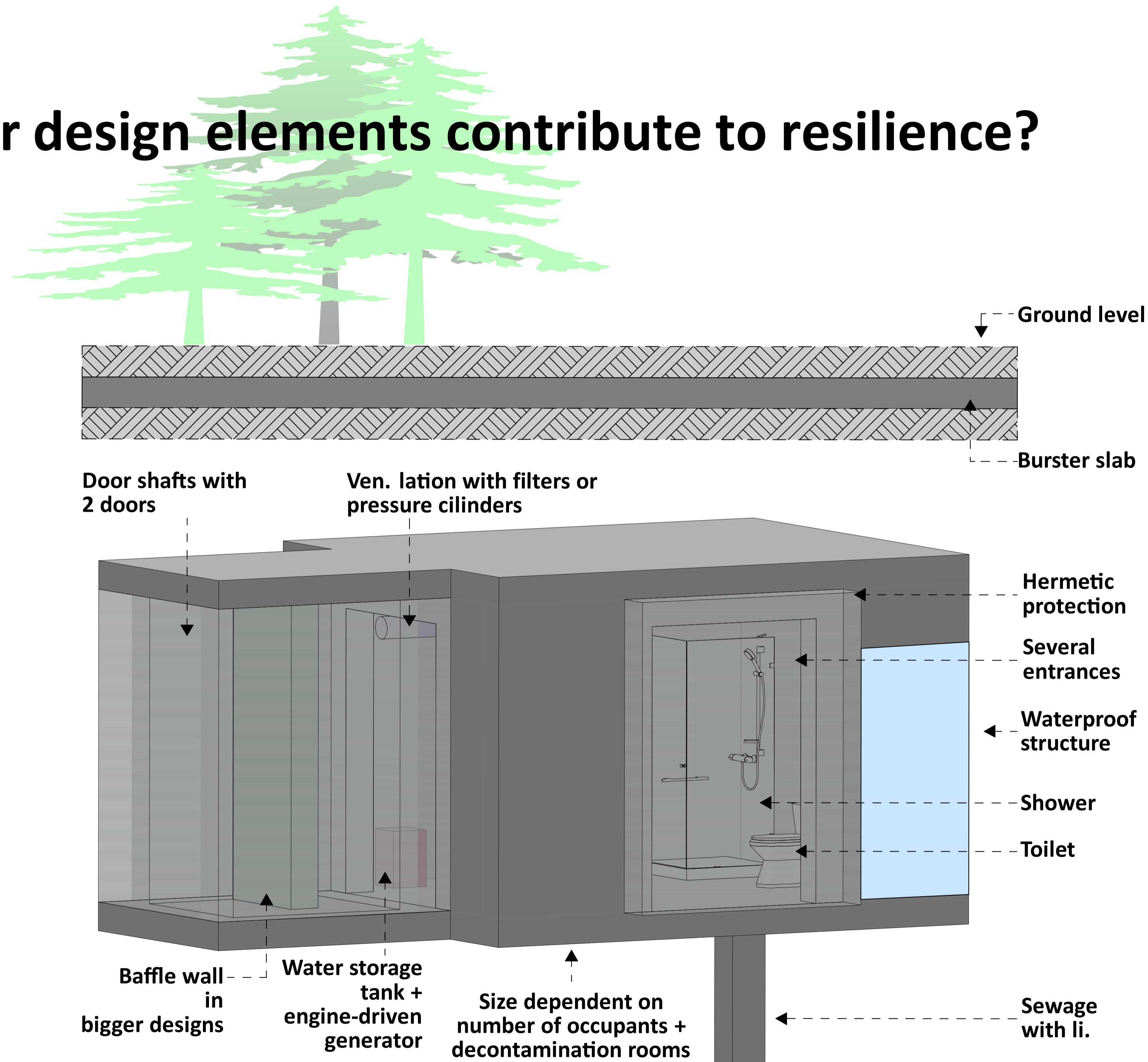
Cao, H., Zhang, Z., Chen, P., Cao, L., Chen, & Chen, Z. (2021). Performance and Application of Rapid Assembling Anti-blast Wall. *IOP Conf. Series: Earth and Environmental Science*, 638, 1-6. doi:10.1088/1755-1315/638/1/012121 Licensed under CC BY-SA 3.0.

Research- and Design

Sub-question:

4. Which bunker design elements contribute to resilience?

Gillett (1943, p. 3-24)
Schematics by author



The Solution

Longitudinal Section



The Solution

Longitudinal Section

FLOAT hide and see

Final Long Operative Army proTection



The Solution

Longitudinal Section

FLOAT hide and see

Final Long Operative Army protection

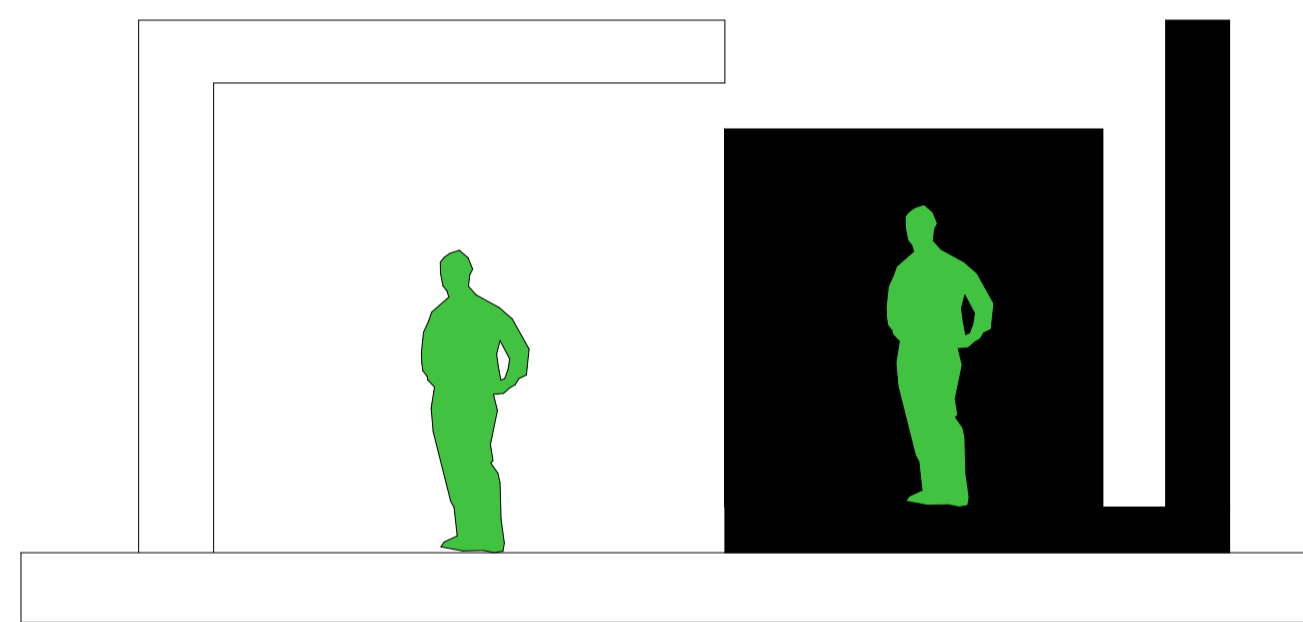


A Radical Solution with a Dynamic Building Design

THE NEW WAY TO DESIGN

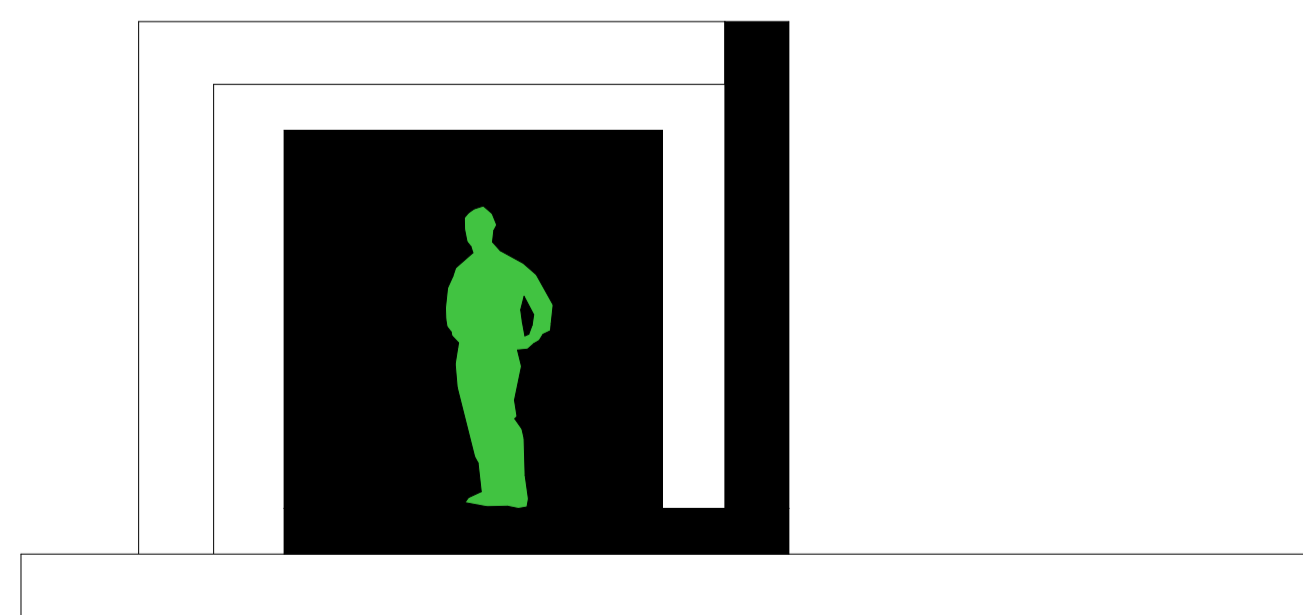
PRE-CONFLICT

**SCENARIO 1:
PEACE-TIME FACILITY FOR
TRAINING AND HOUSING**



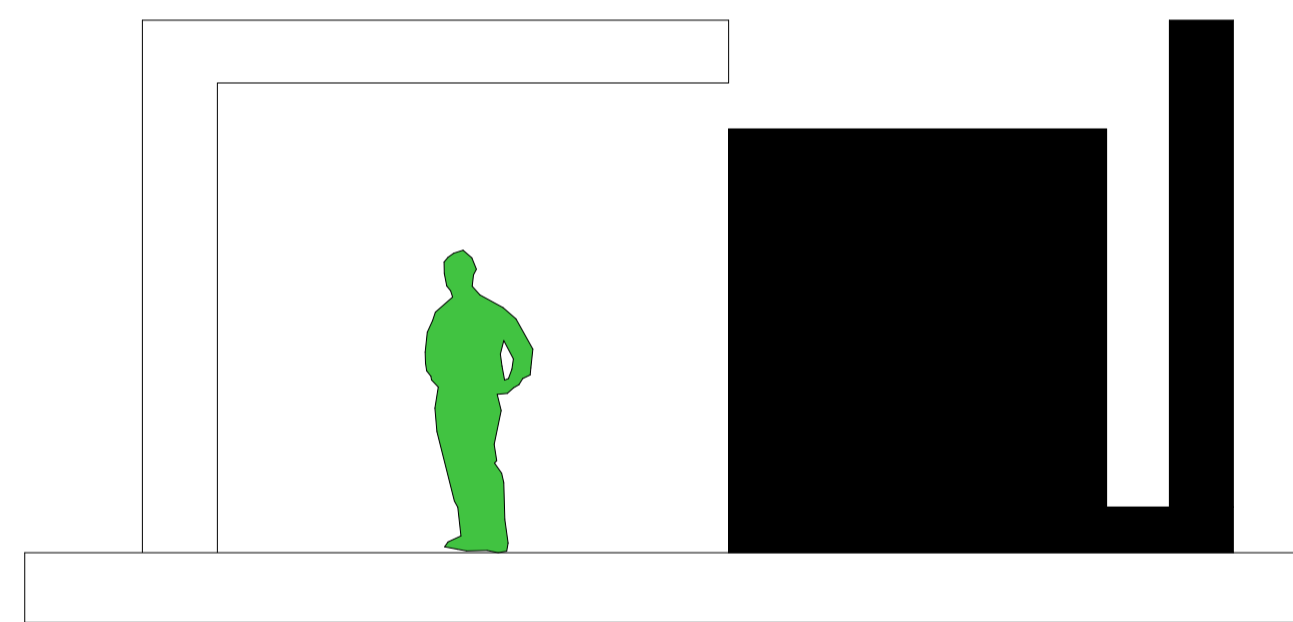
SPRING + SUMMER

AUTUMN + WINTER

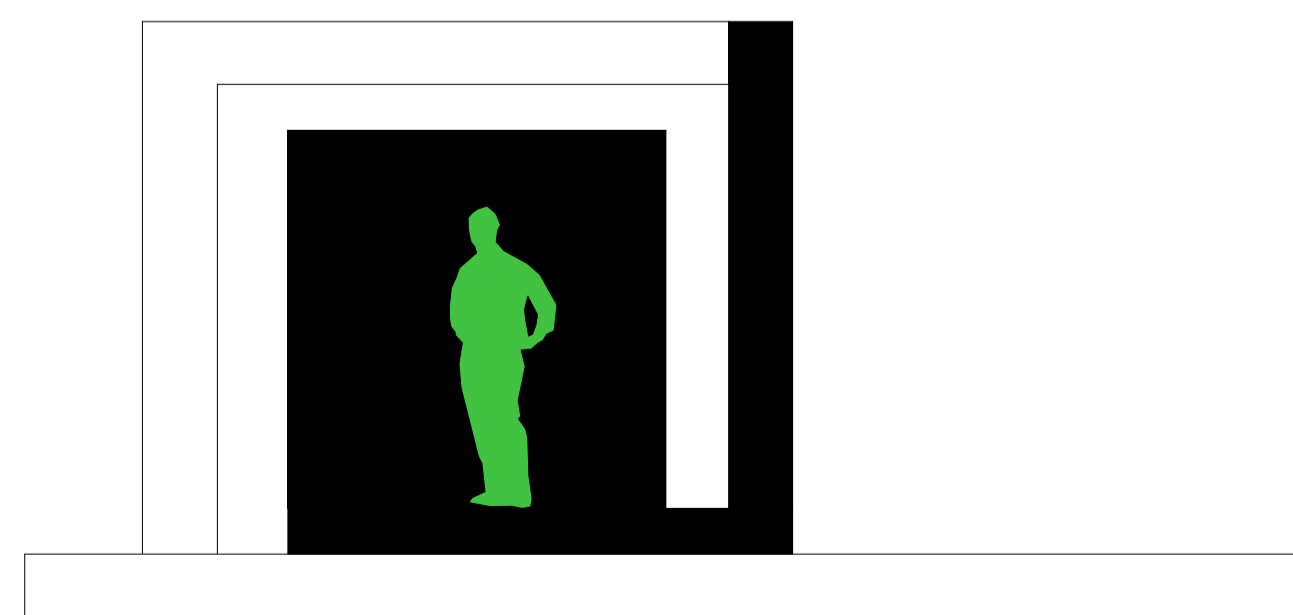


CONFLICT

**SCENARIO 2:
IN HANGAR POSITION FOR
URGENT SHELTER**

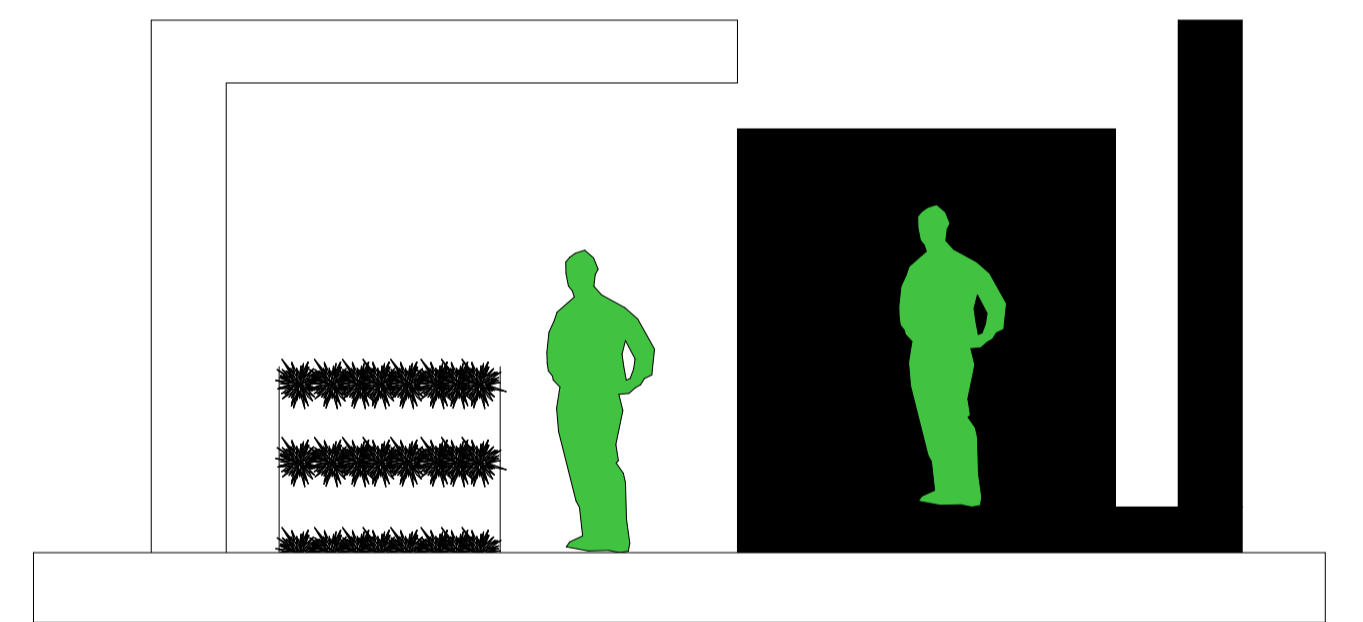


**SCENARIO 3:
IN HANGAR POSITION FOR
HOUSING AND SHELTER**

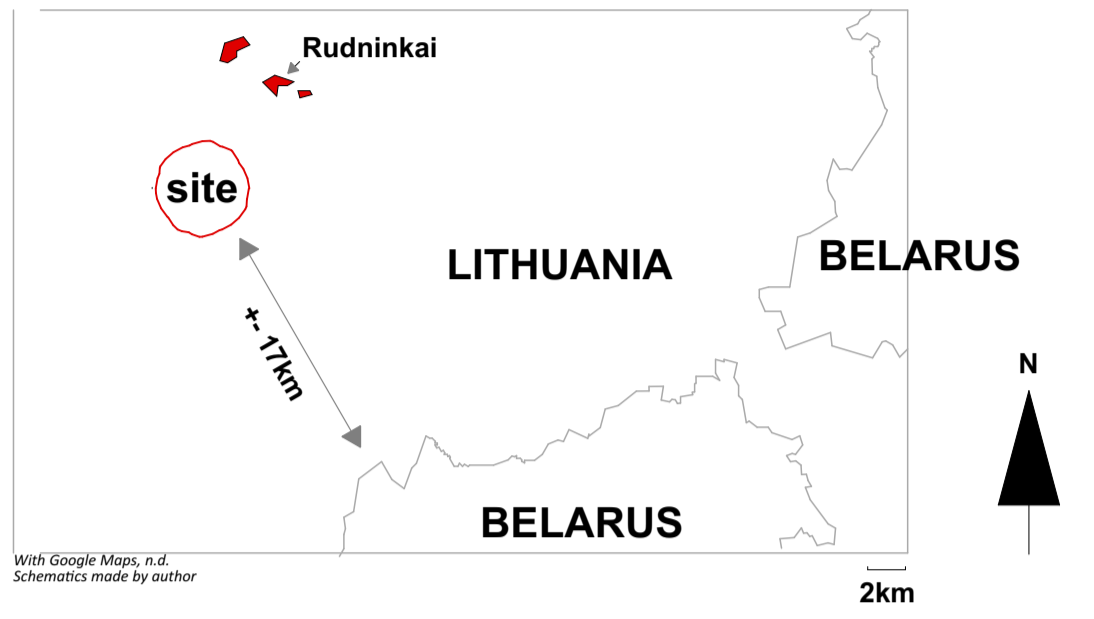


POST-CONFLICT

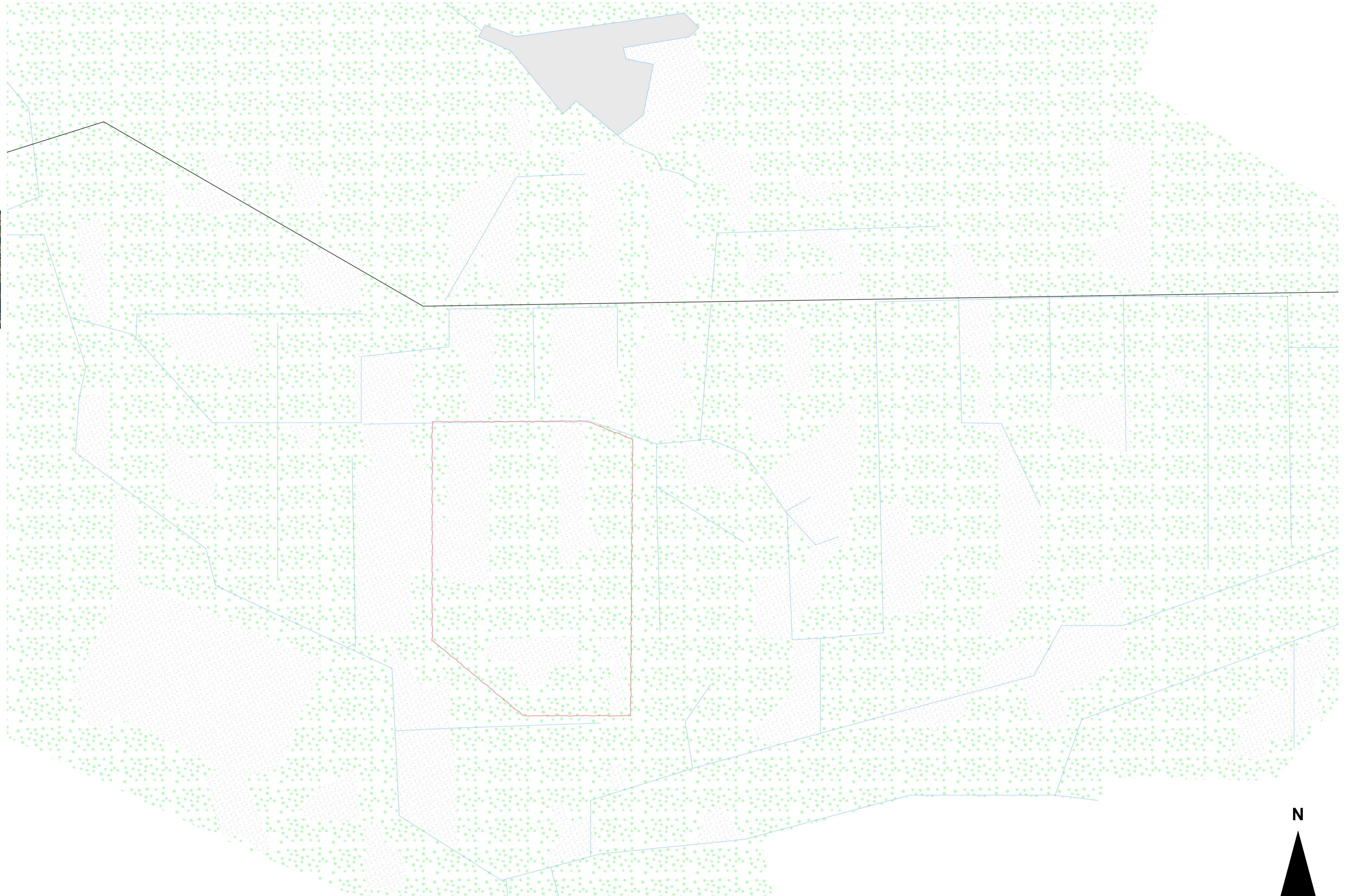
**SCENARIO 4:
LOCAL POPULATION AND
BUSINESS: HYDROPONICS**



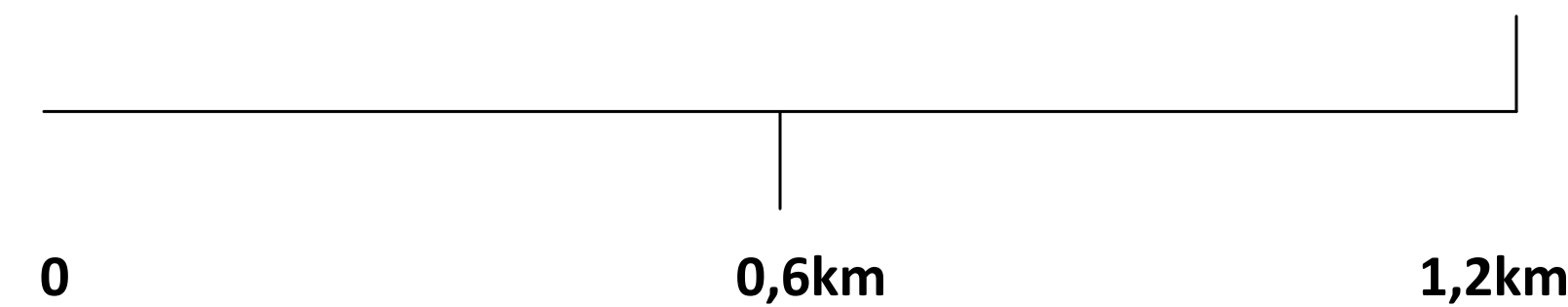
Location



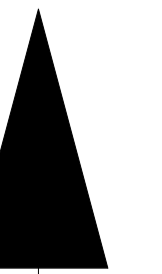
**Lithuania
Rudninkai
Military Training Area**



1:6000

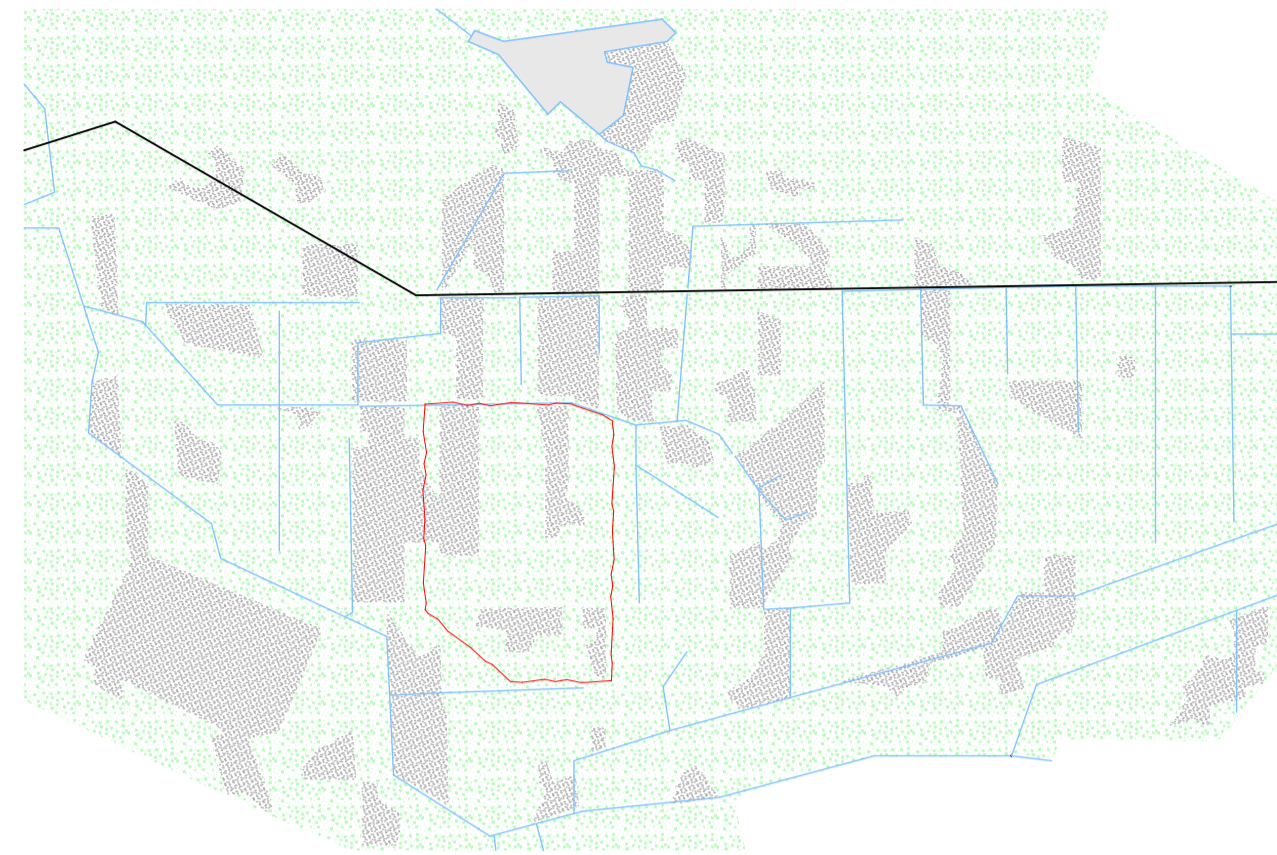


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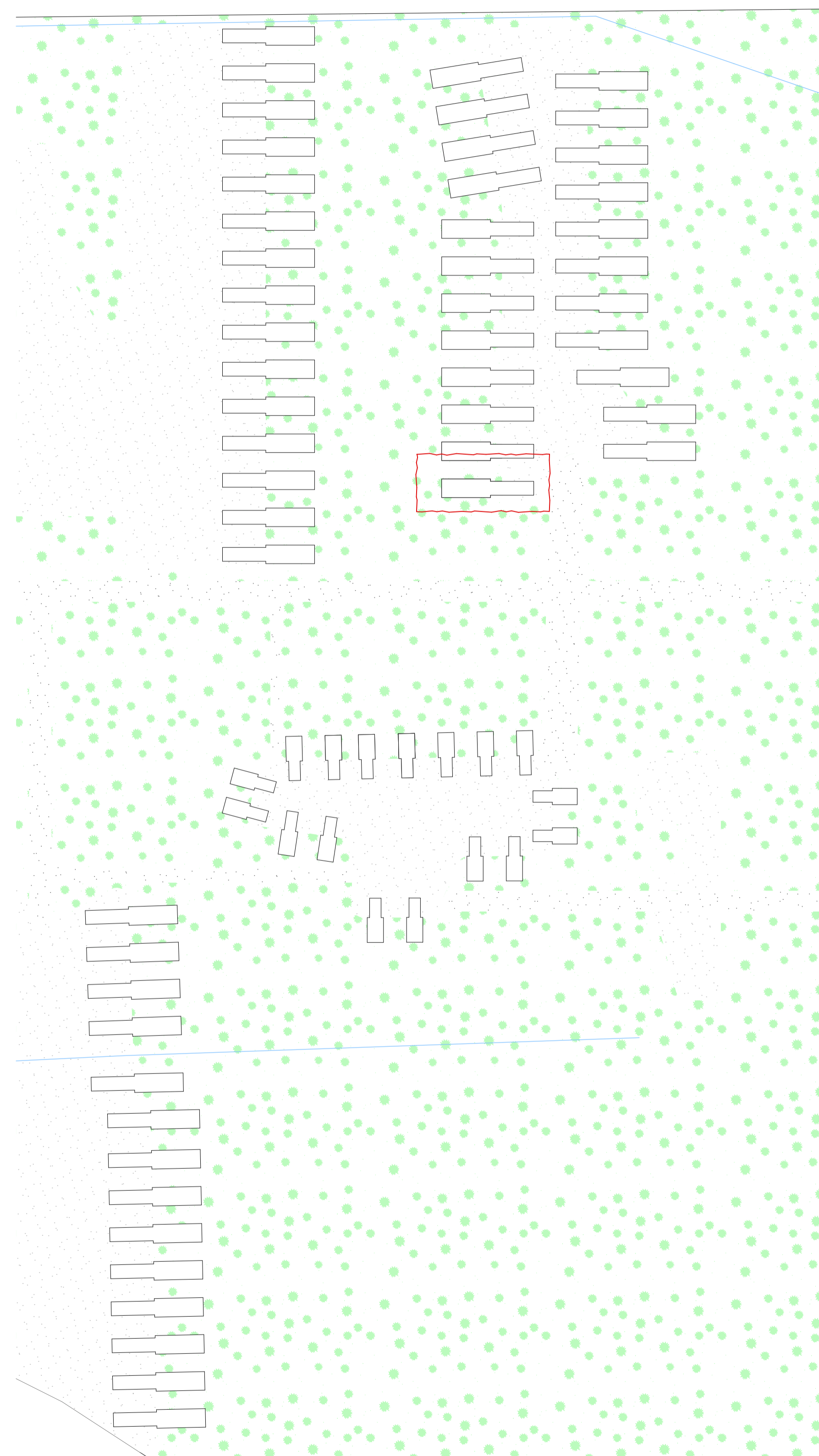


Focus on Location

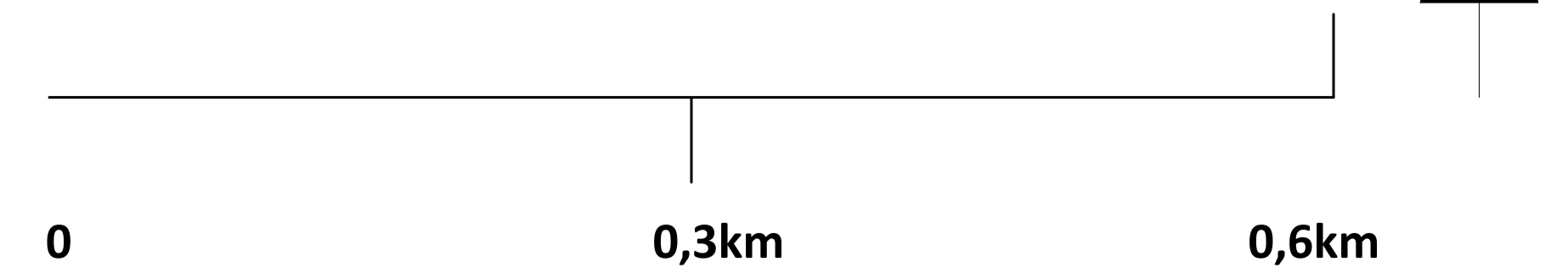
800 pp



Military Area
Location for facilities

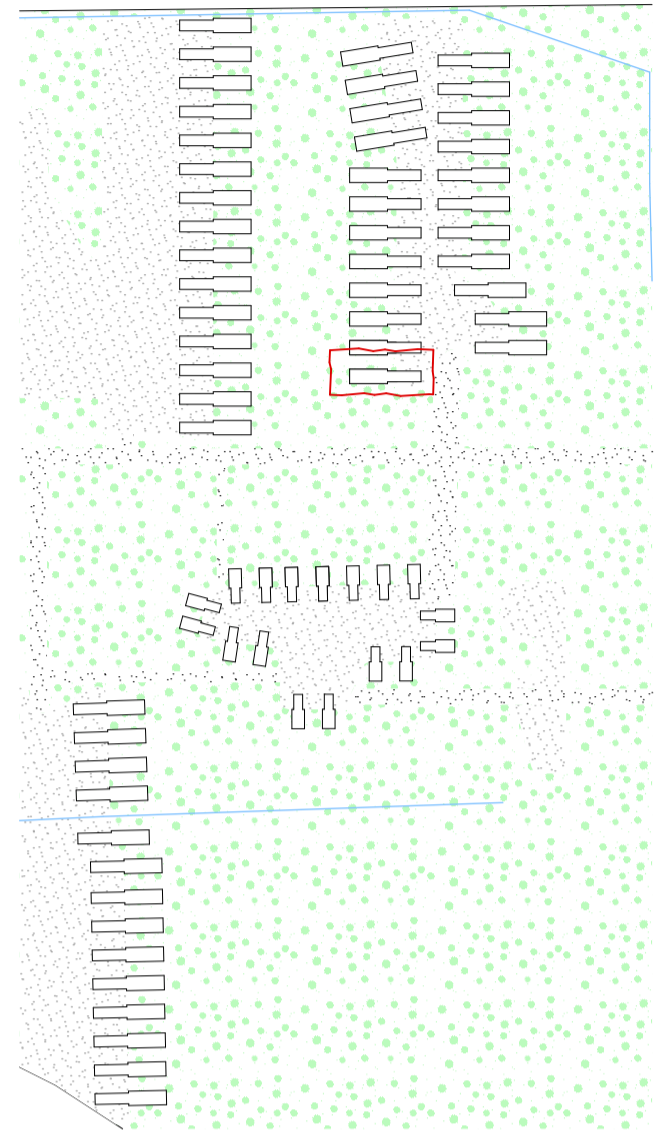


1:3000

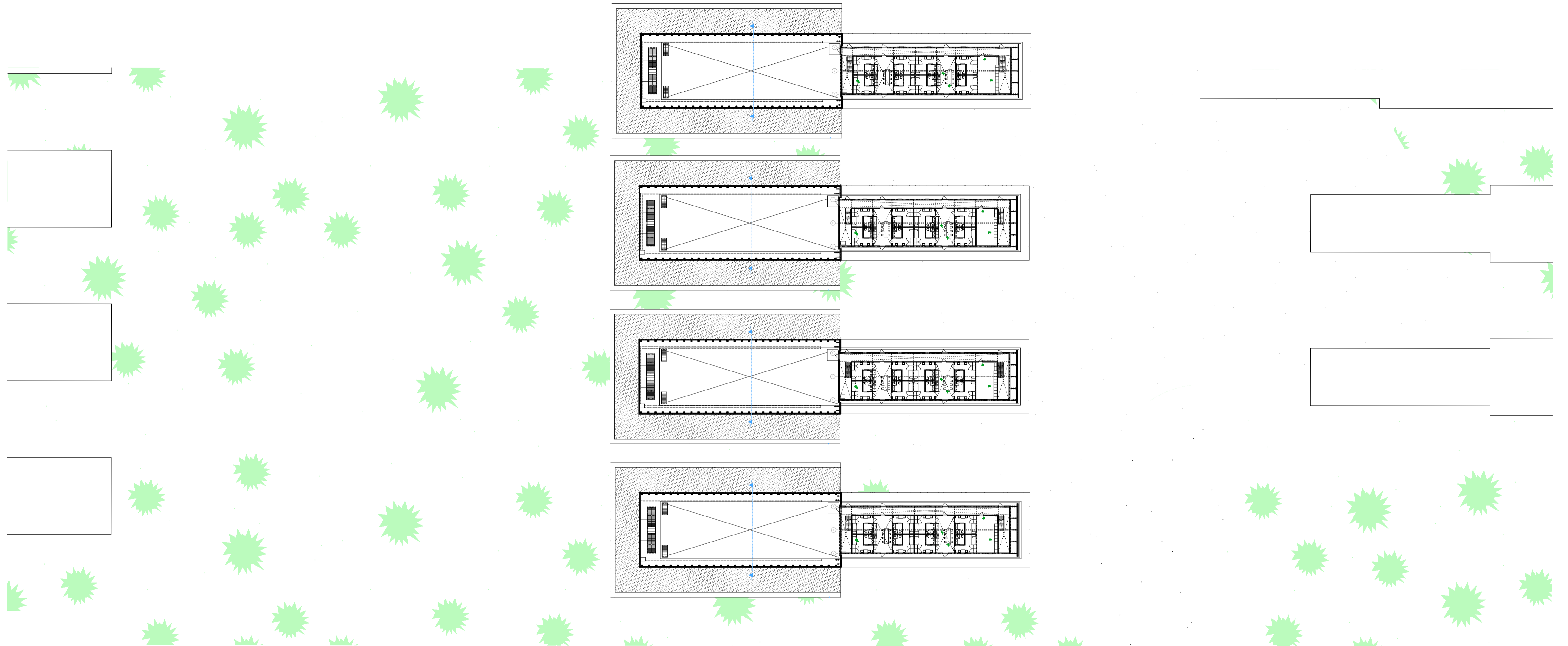


Focus on Location

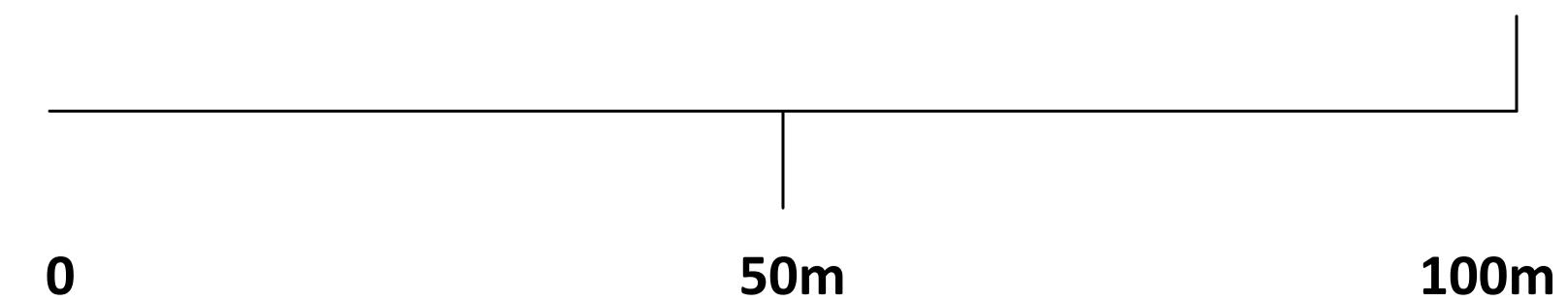
800 pp



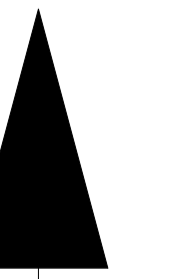
Military Area
Facility Zoom-in



1:500

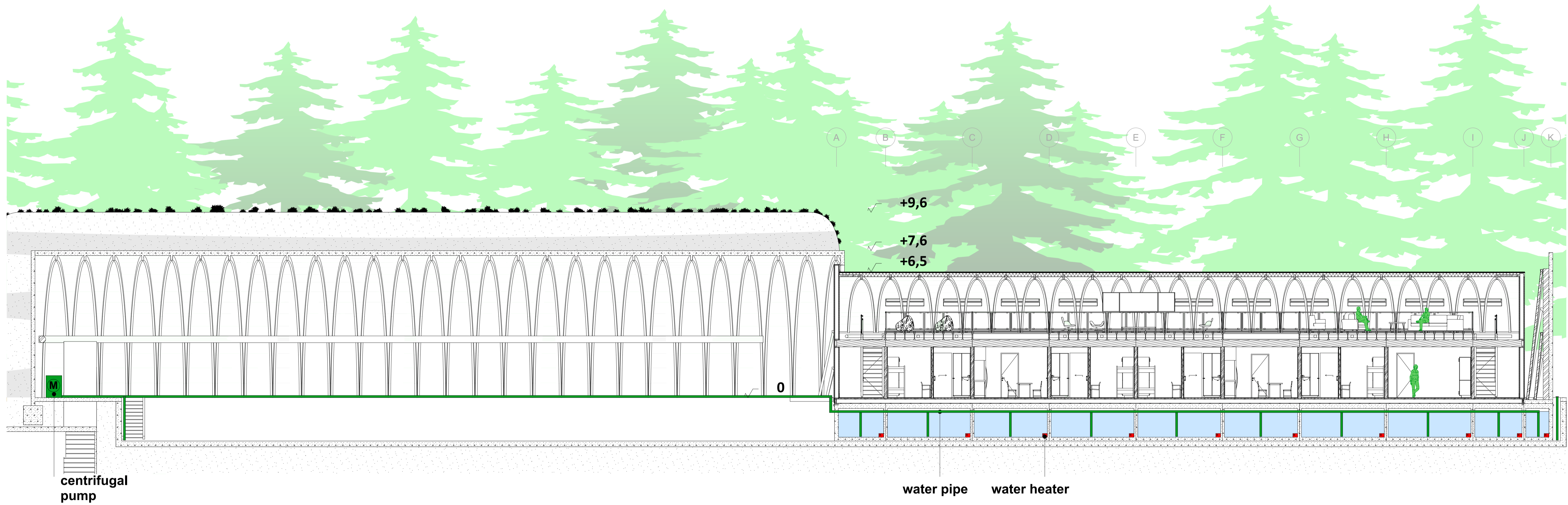


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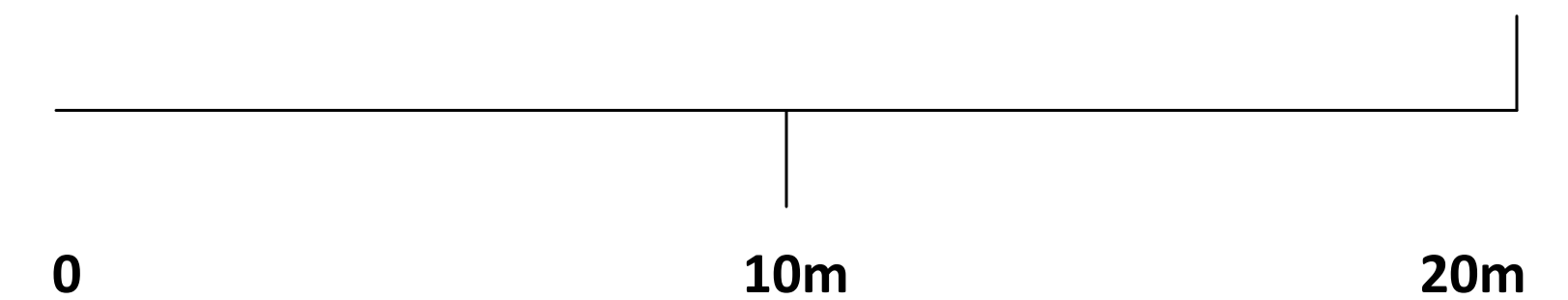


Longitudinal Section

Water Manipulation - see

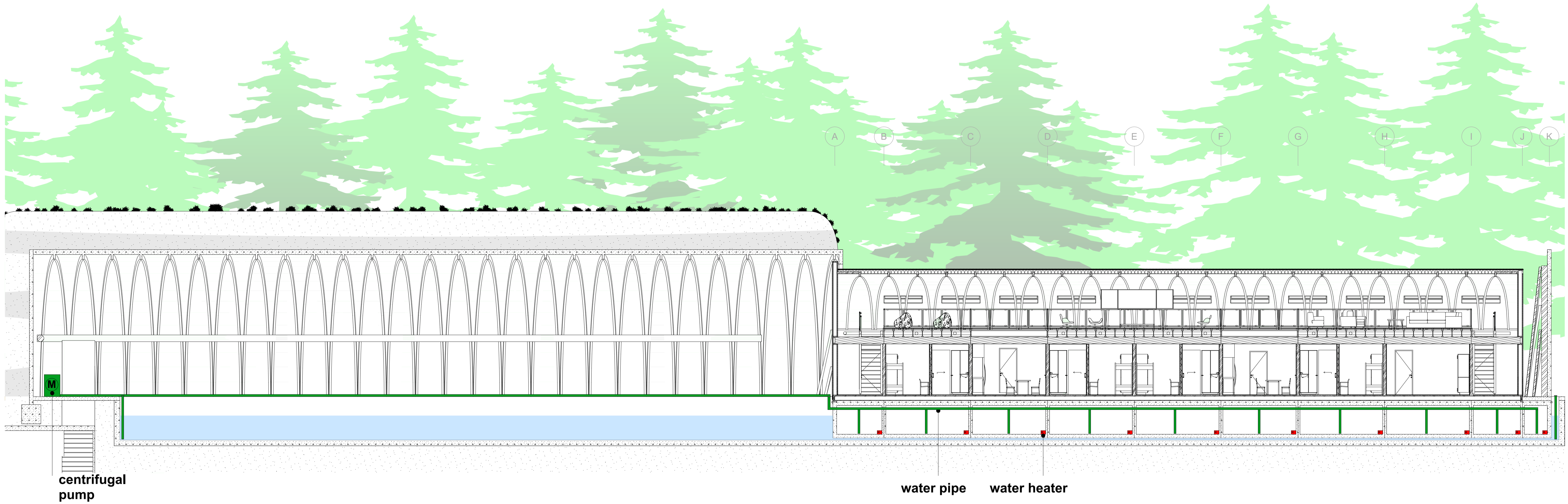


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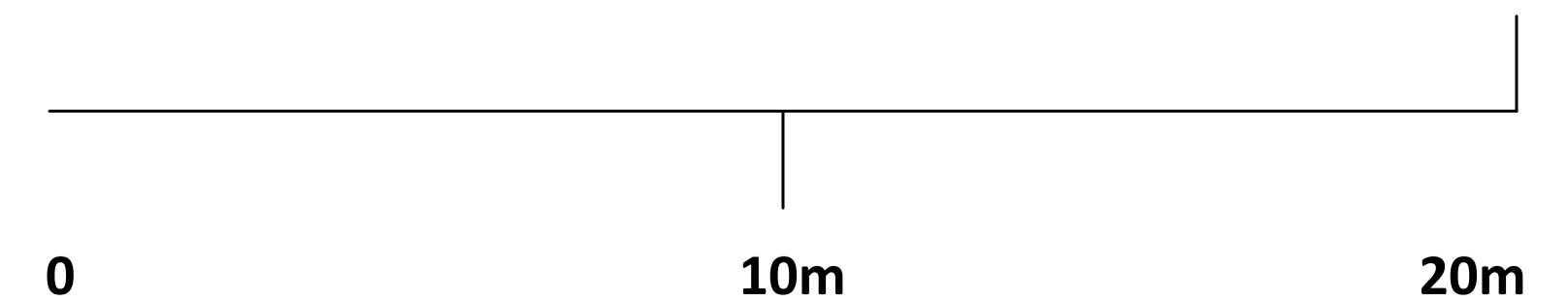
Longitudinal Section

Water Manipulation - see



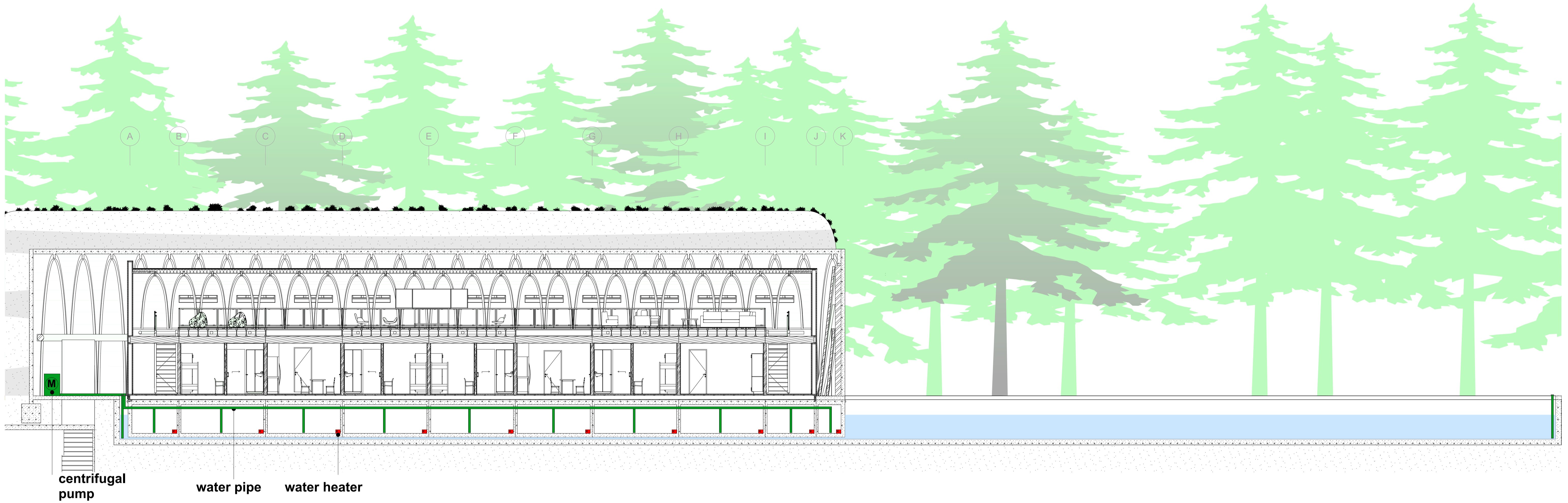
float

1:100

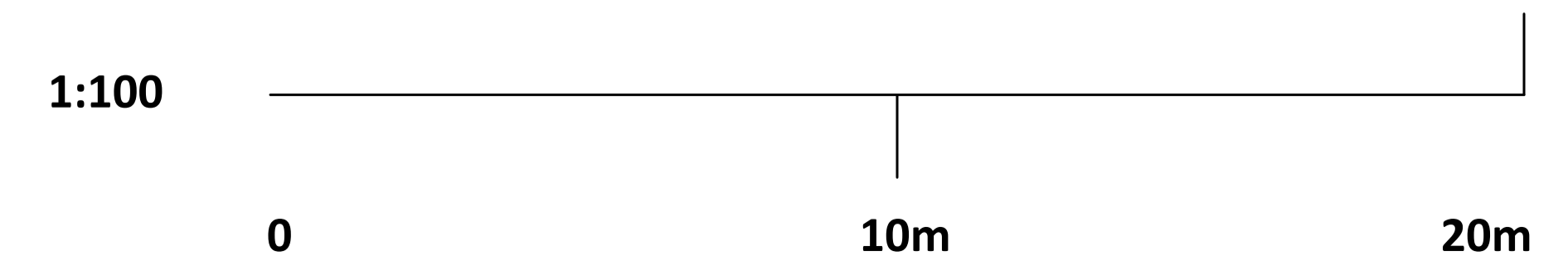


Longitudinal Section

Water Manipulation - hide

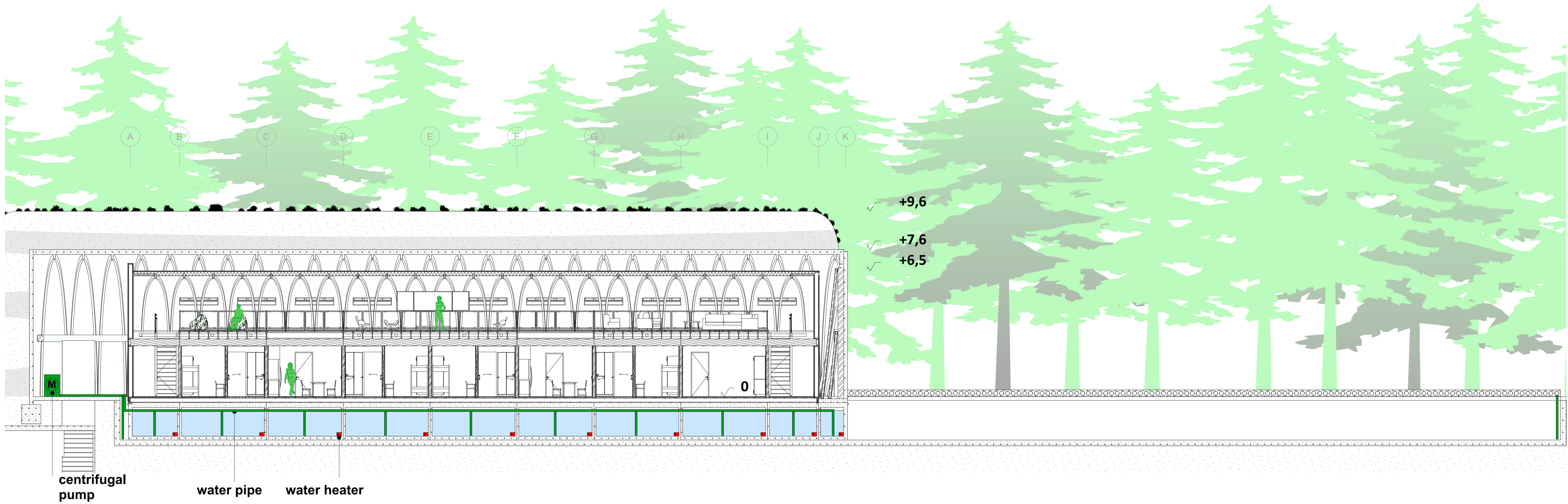


float

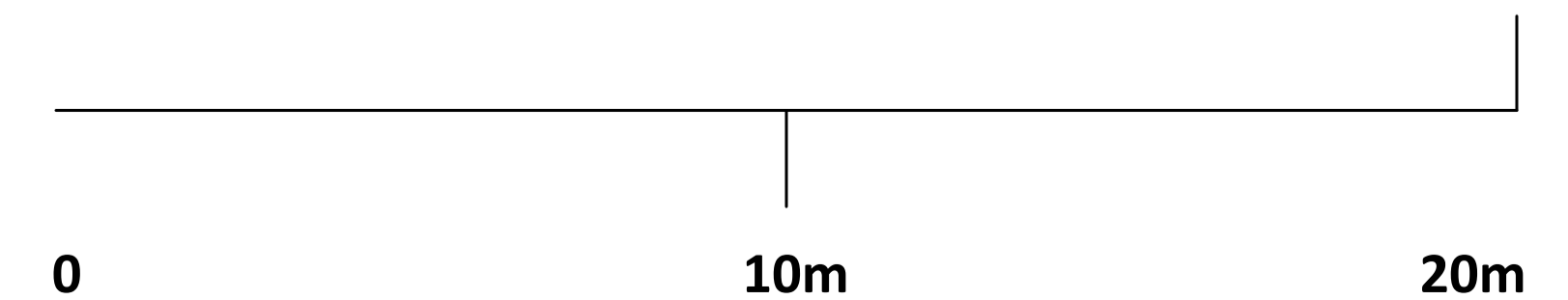


Longitudinal Section

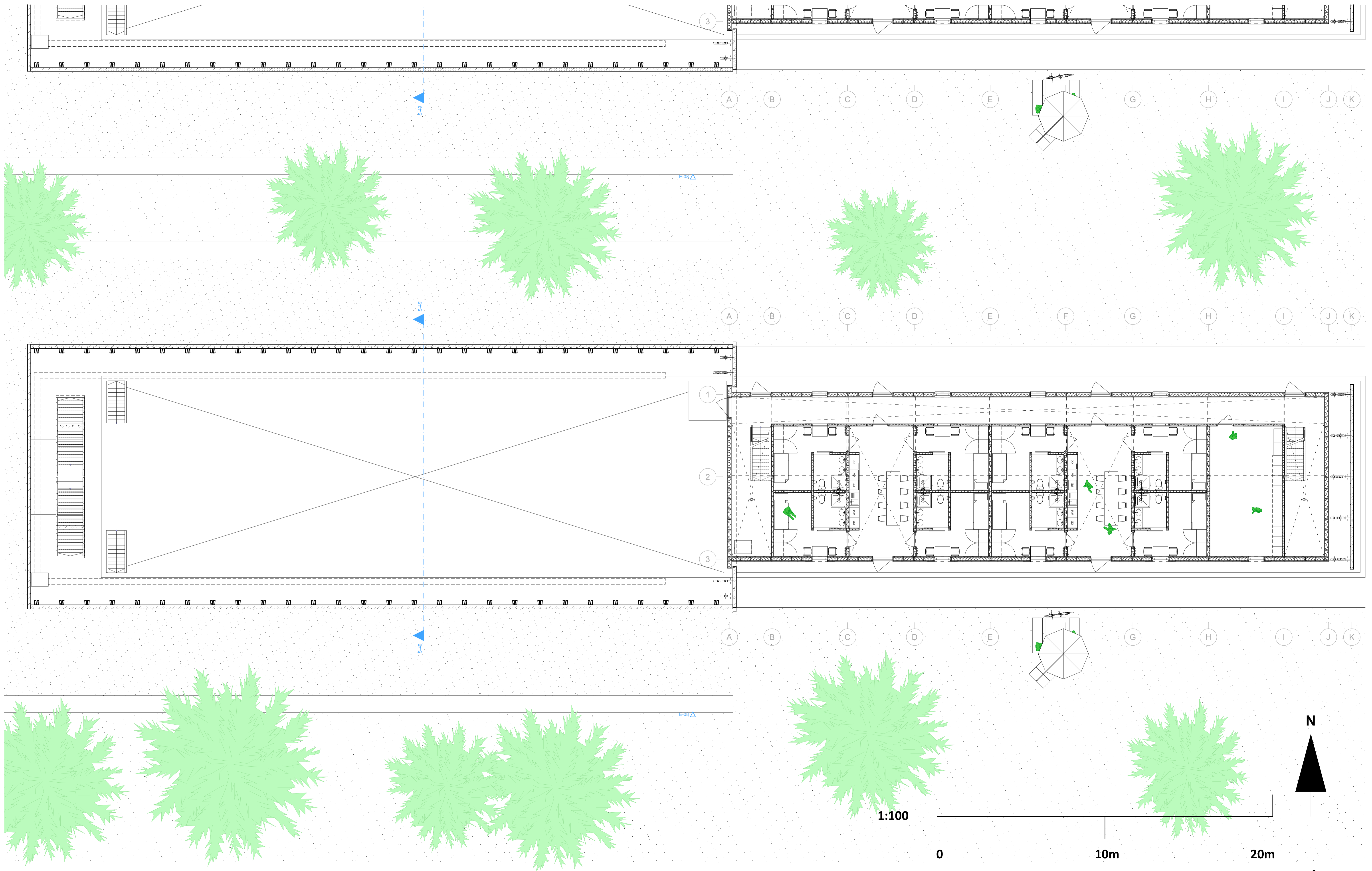
Water Manipulation - hide



1:100

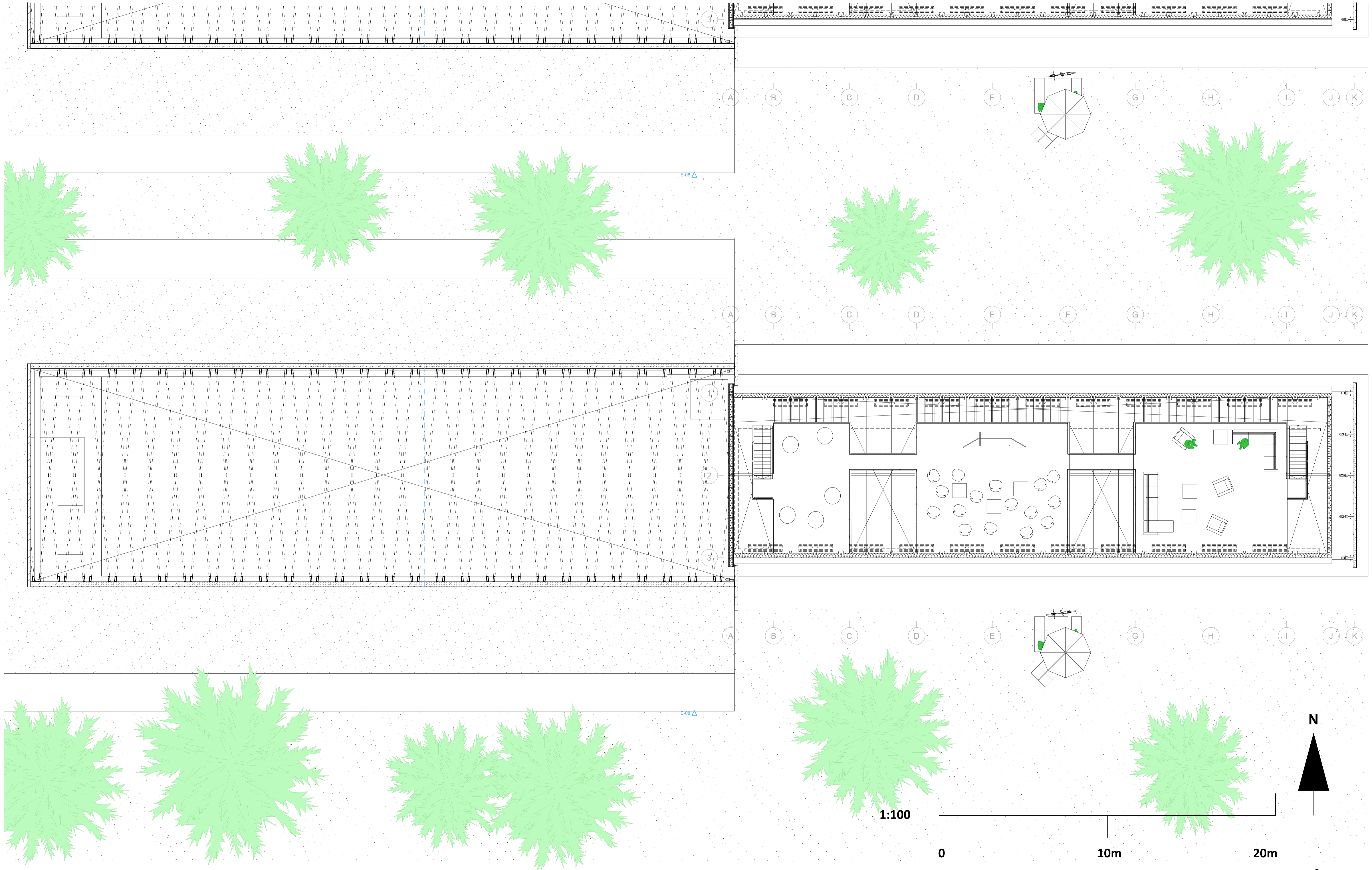


Floor Plan - Pre-conflict Ground Floor



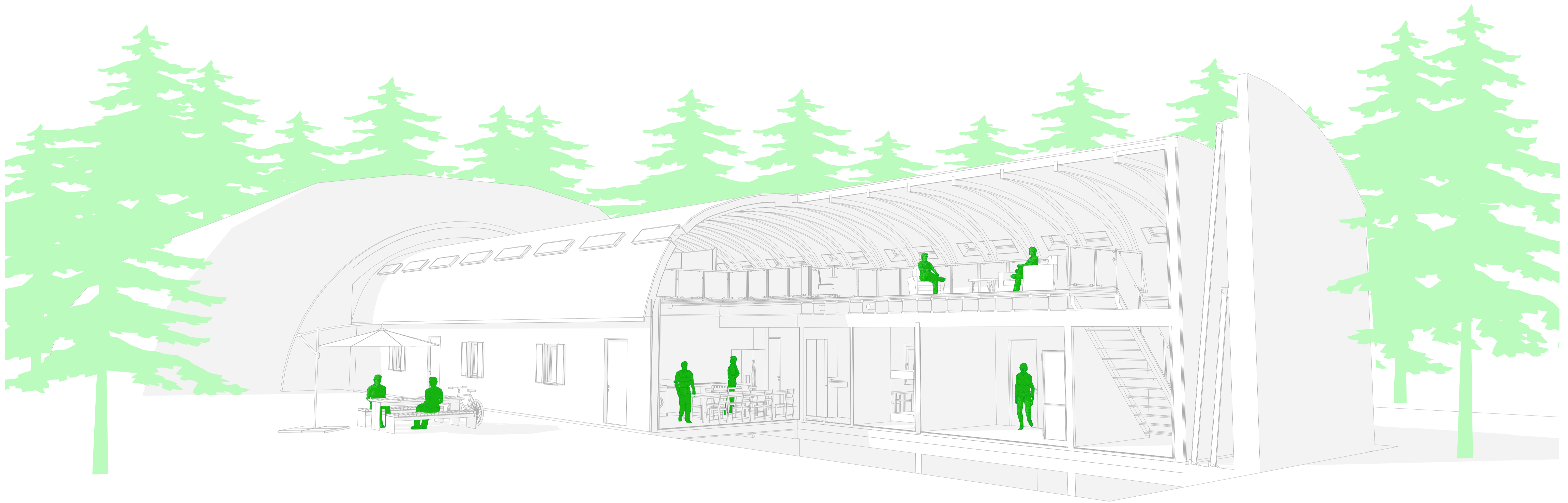


Floor Plan - Pre-conflict 1st Floor (+3,4m)

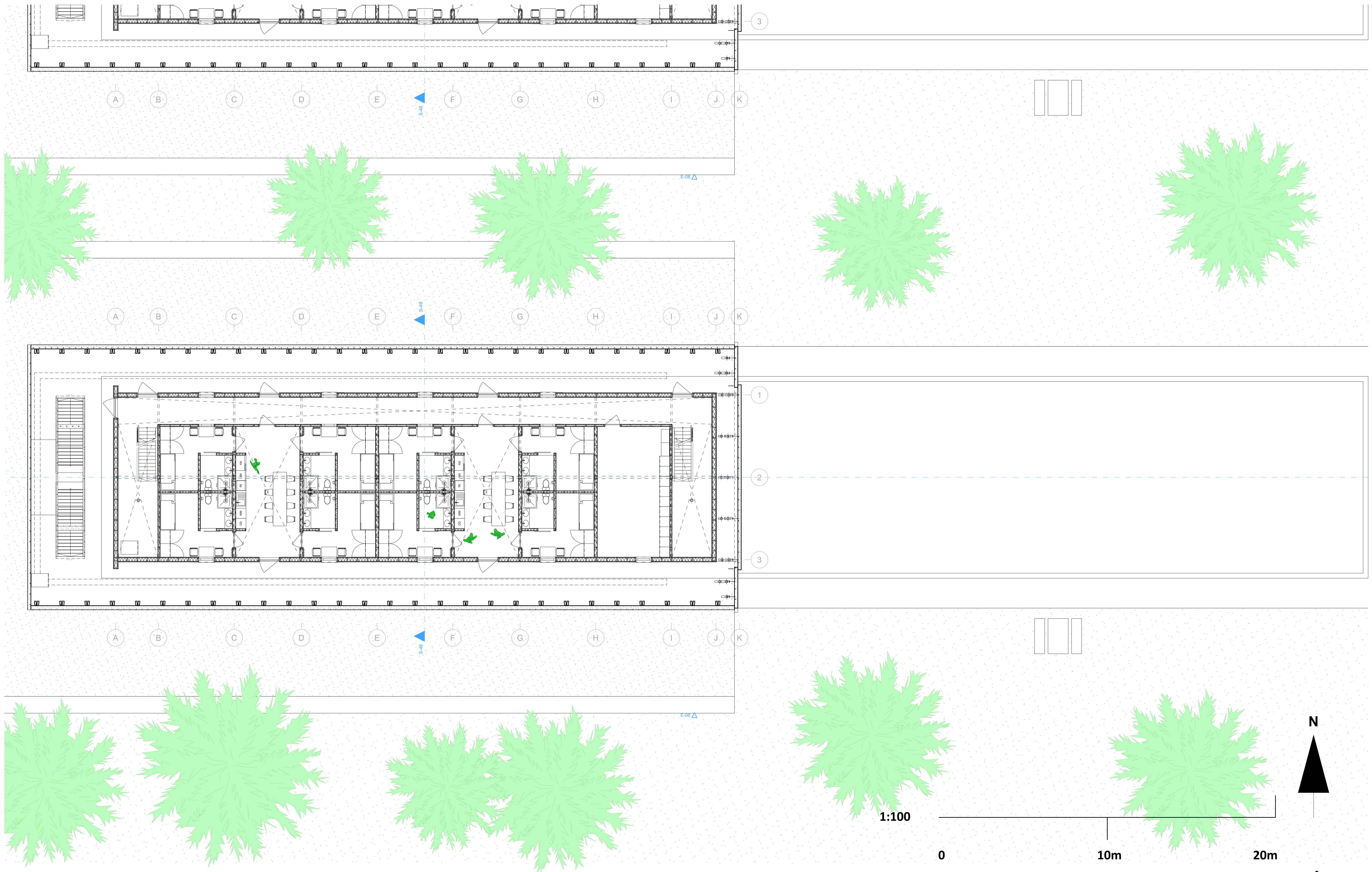




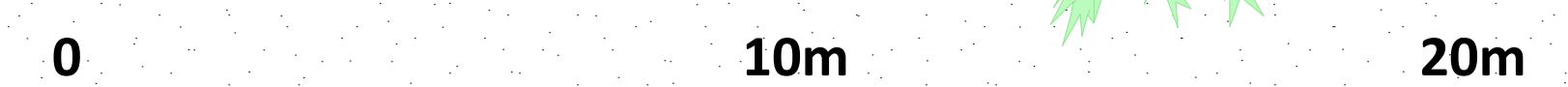
Cut-out View - see



Floor Plan - Pre-conflict / Conflict Ground Floor



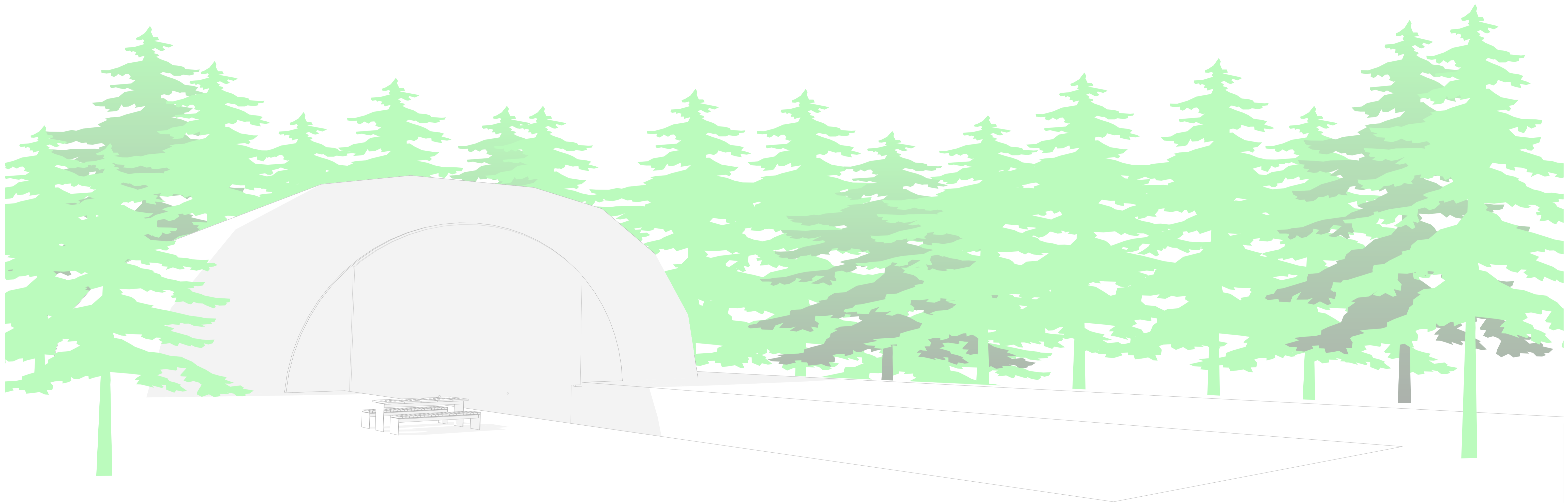
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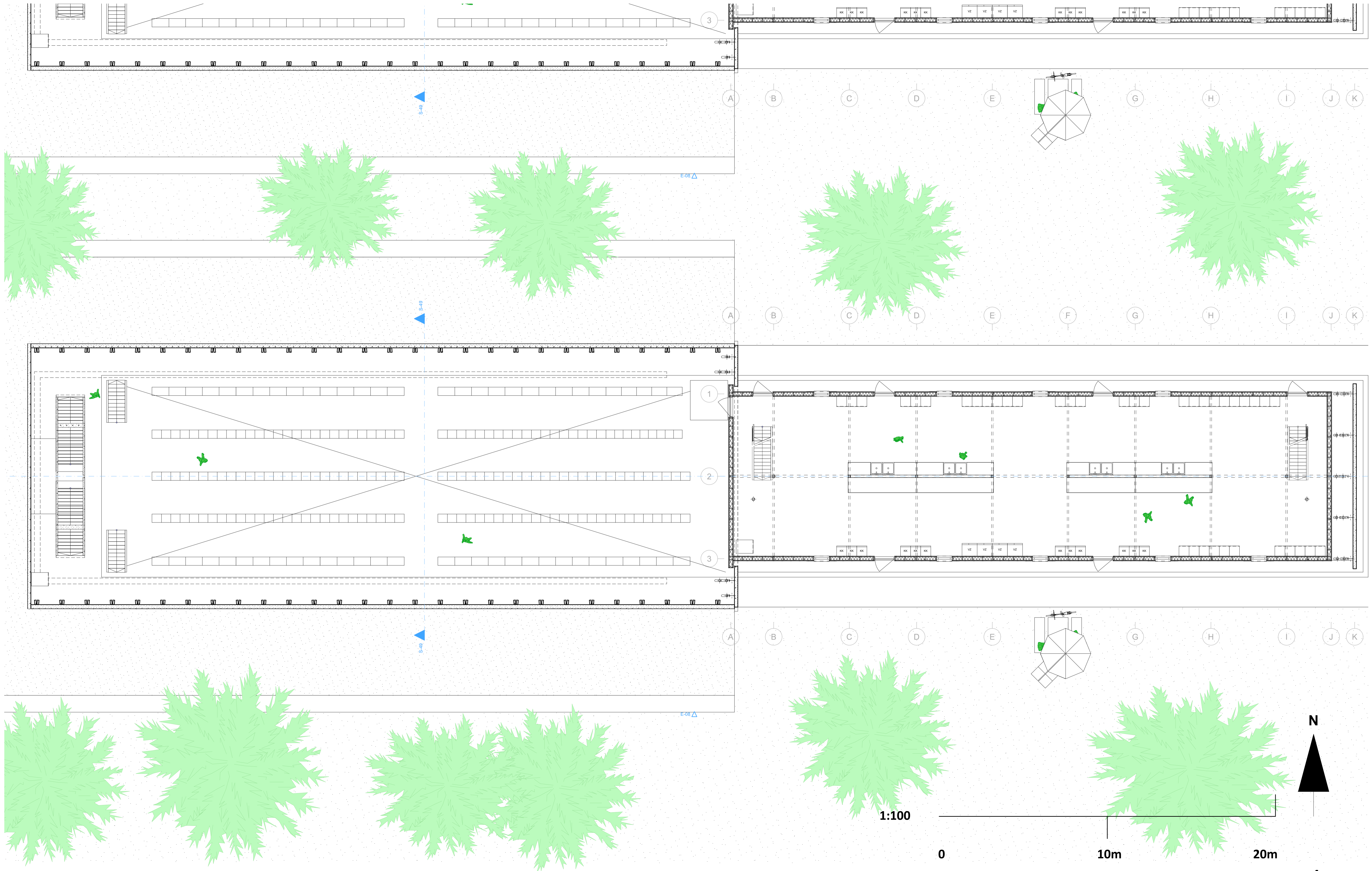


Cut-out View - hide

FLOAT hide

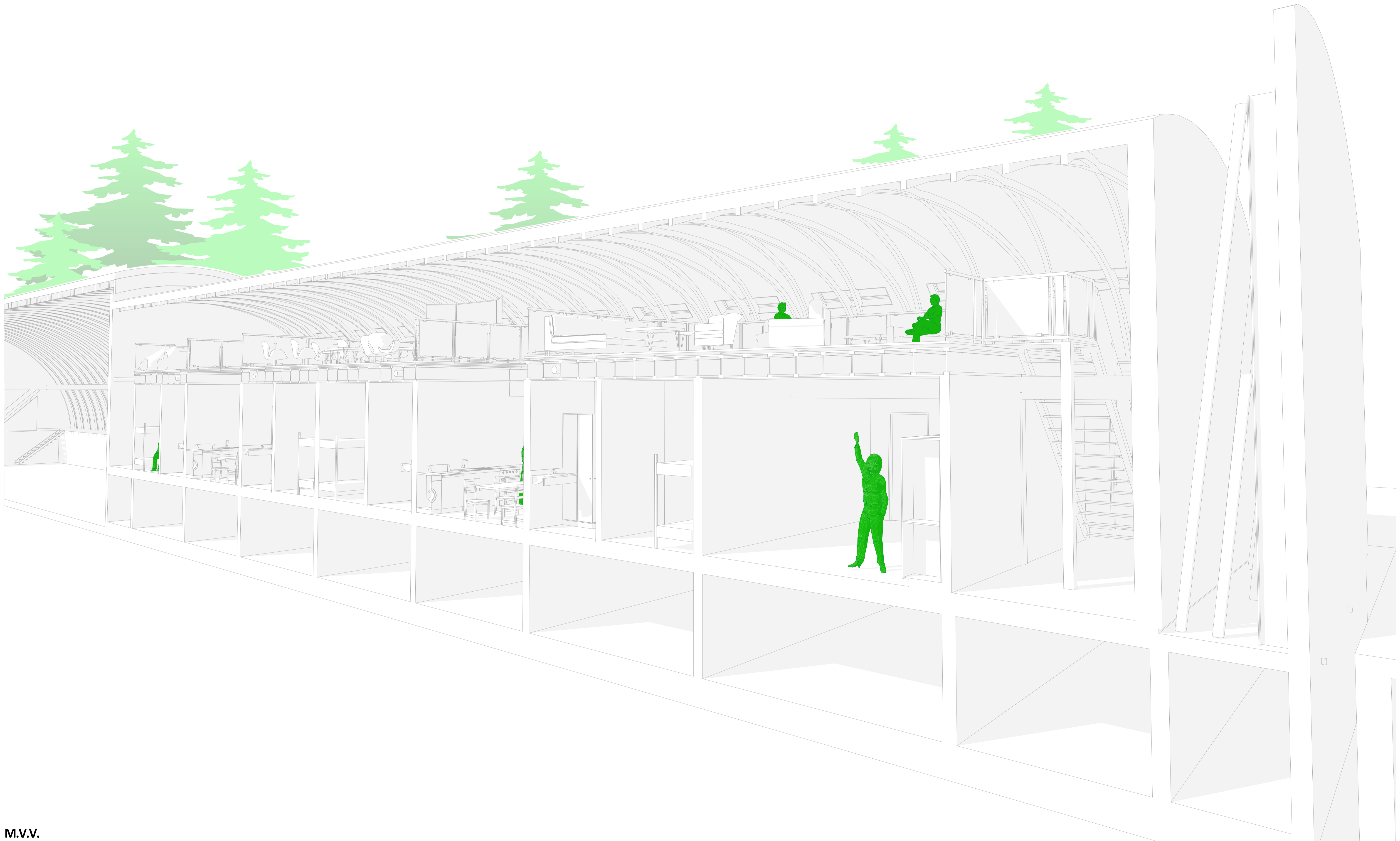


Floor Plan - Post-conflict Ground Floor

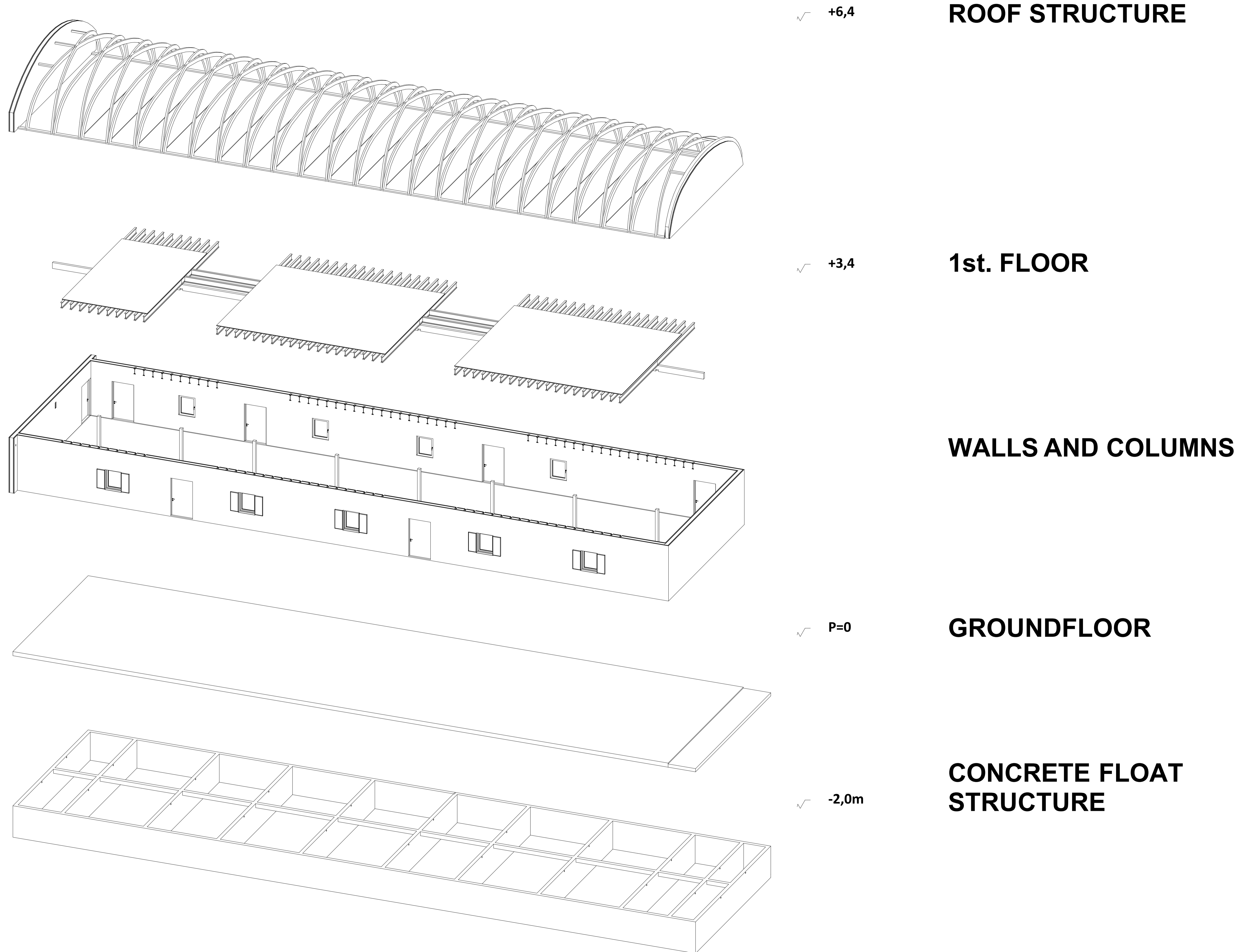




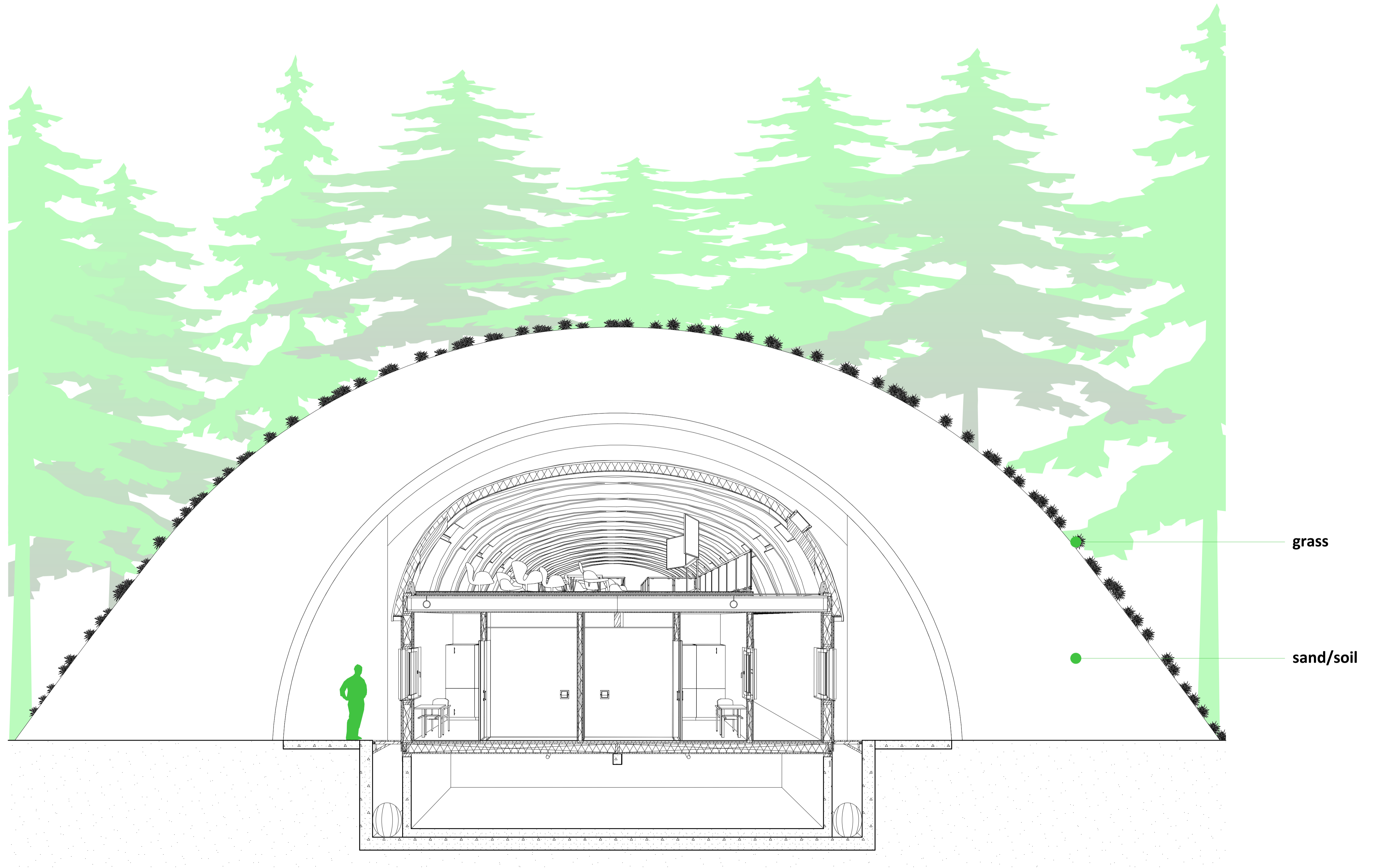
Cut-out View - see



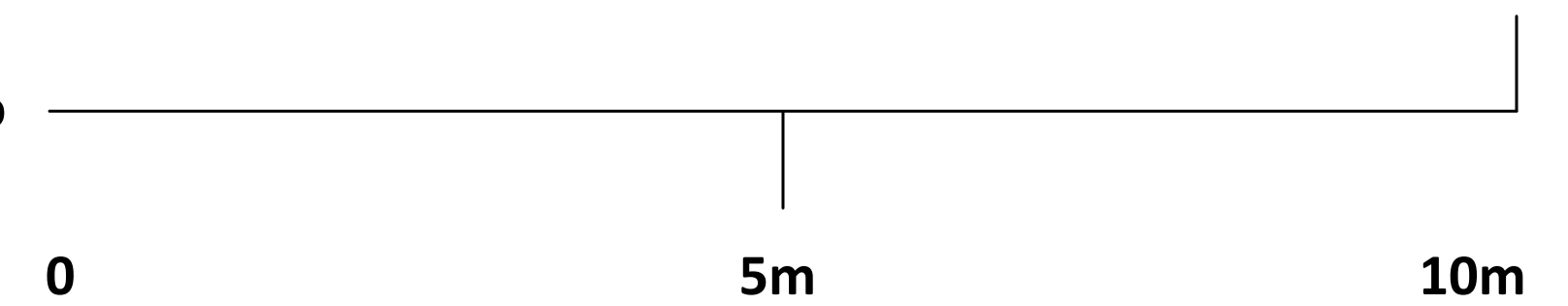
Axonometry of Load-bearing Structure



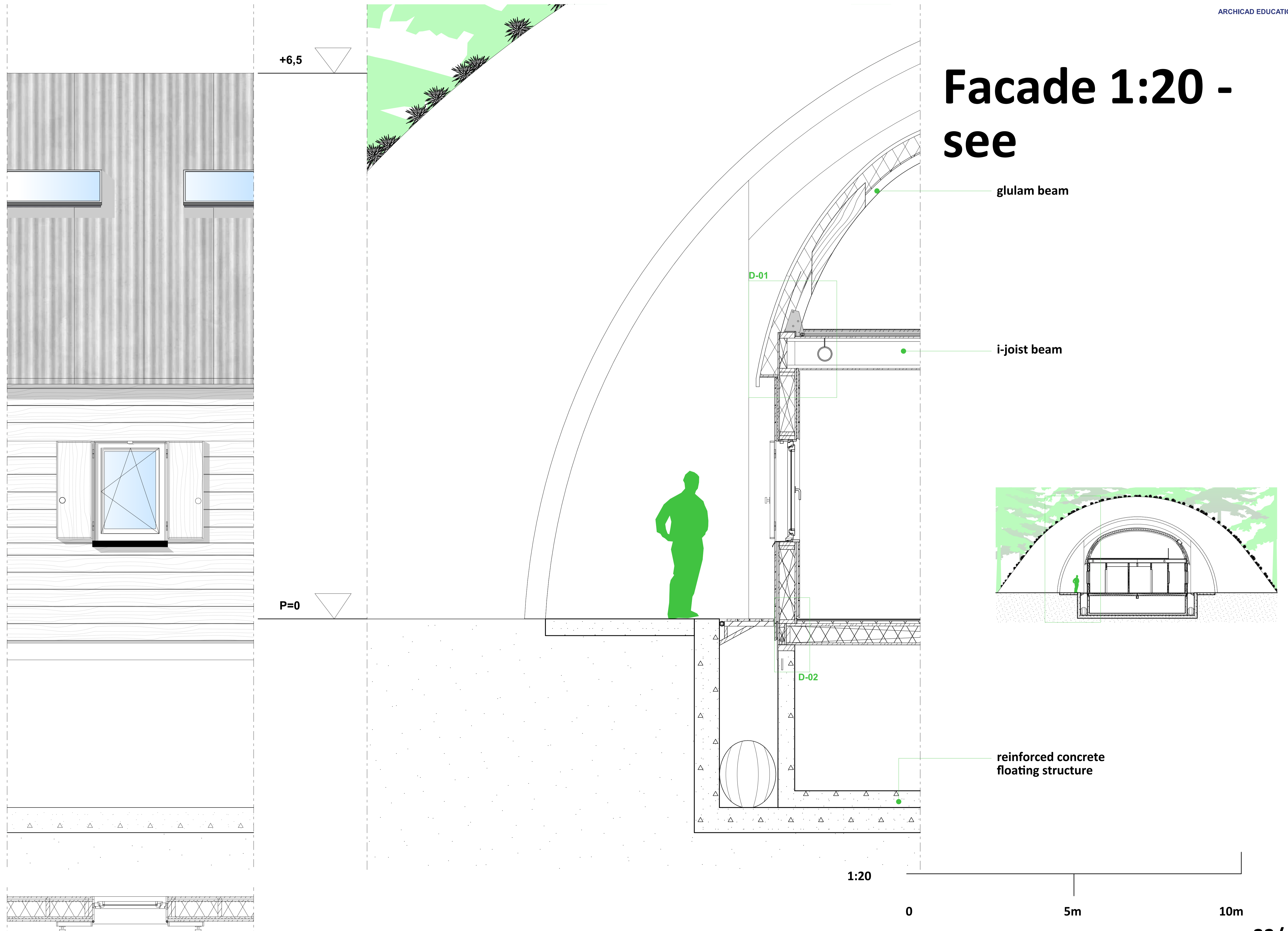
Cross-section - see



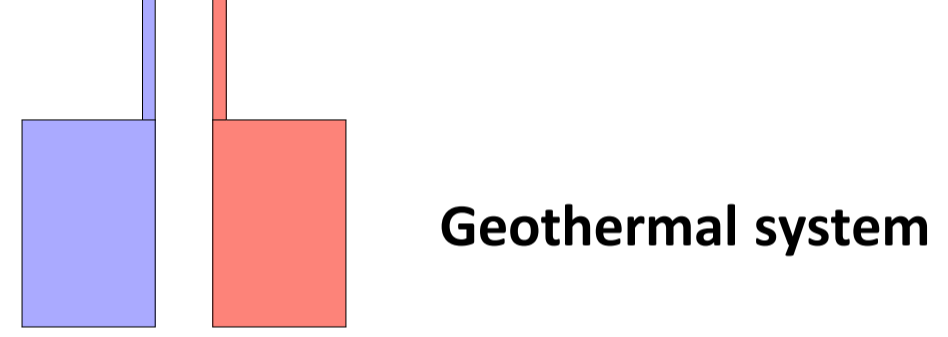
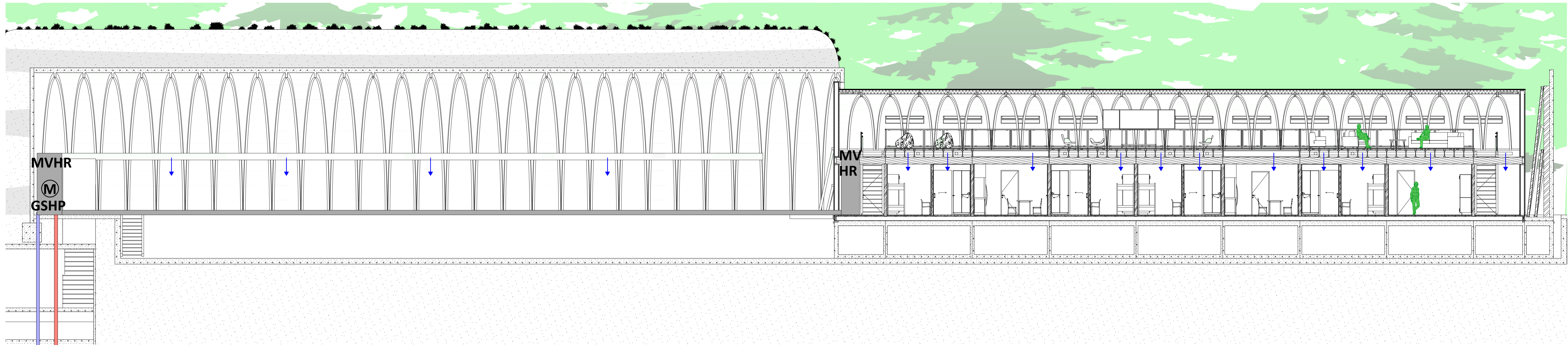
1:100
scaled to
1:50



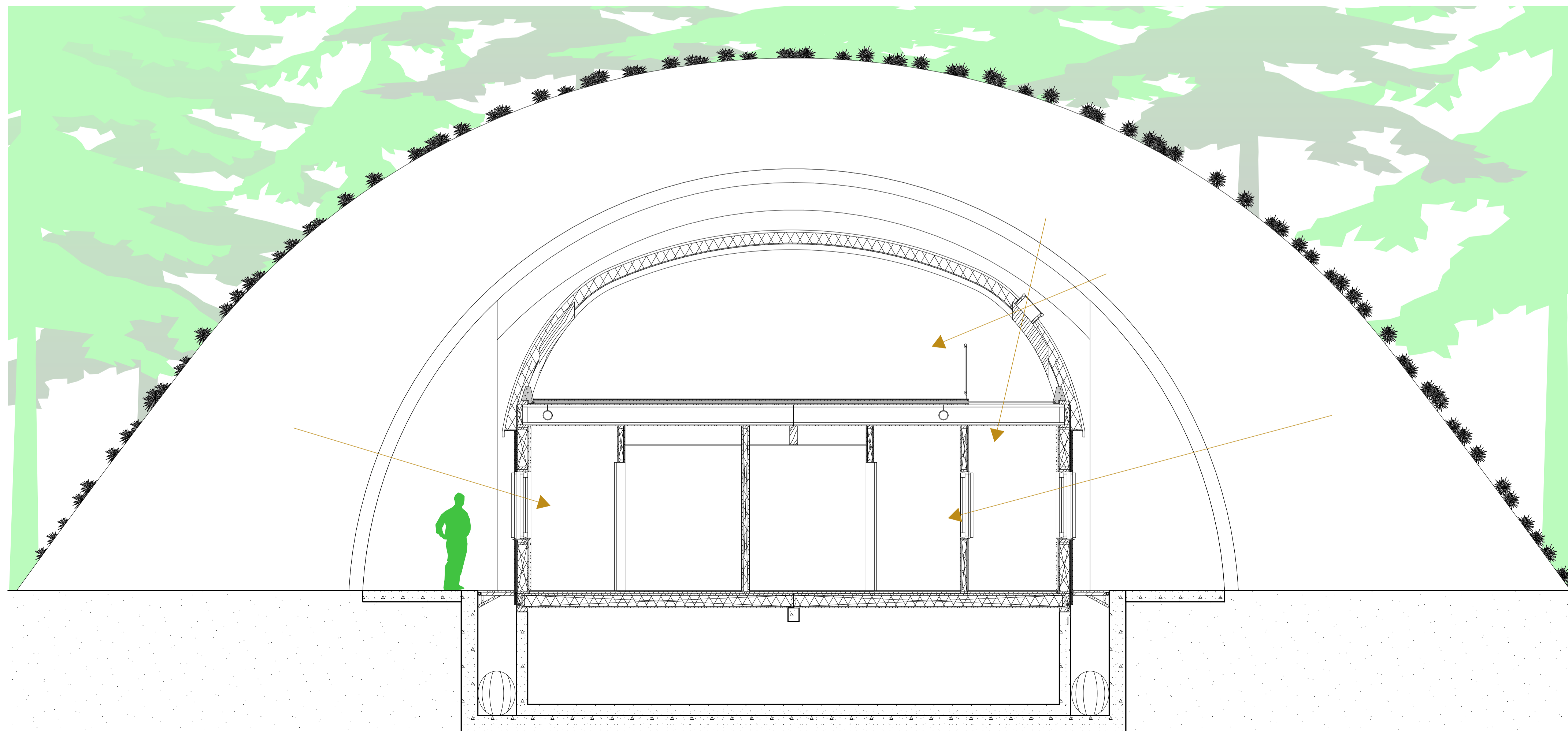
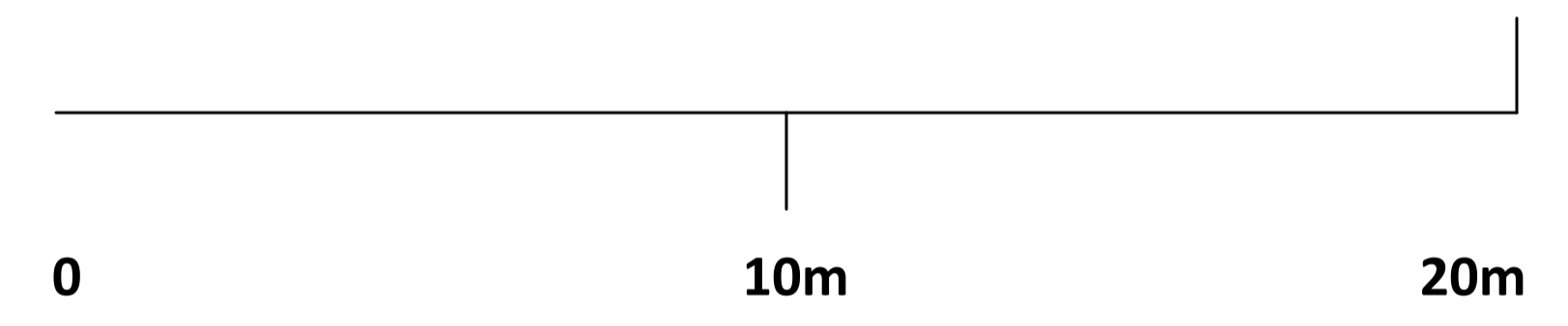
Facade 1:20 - see

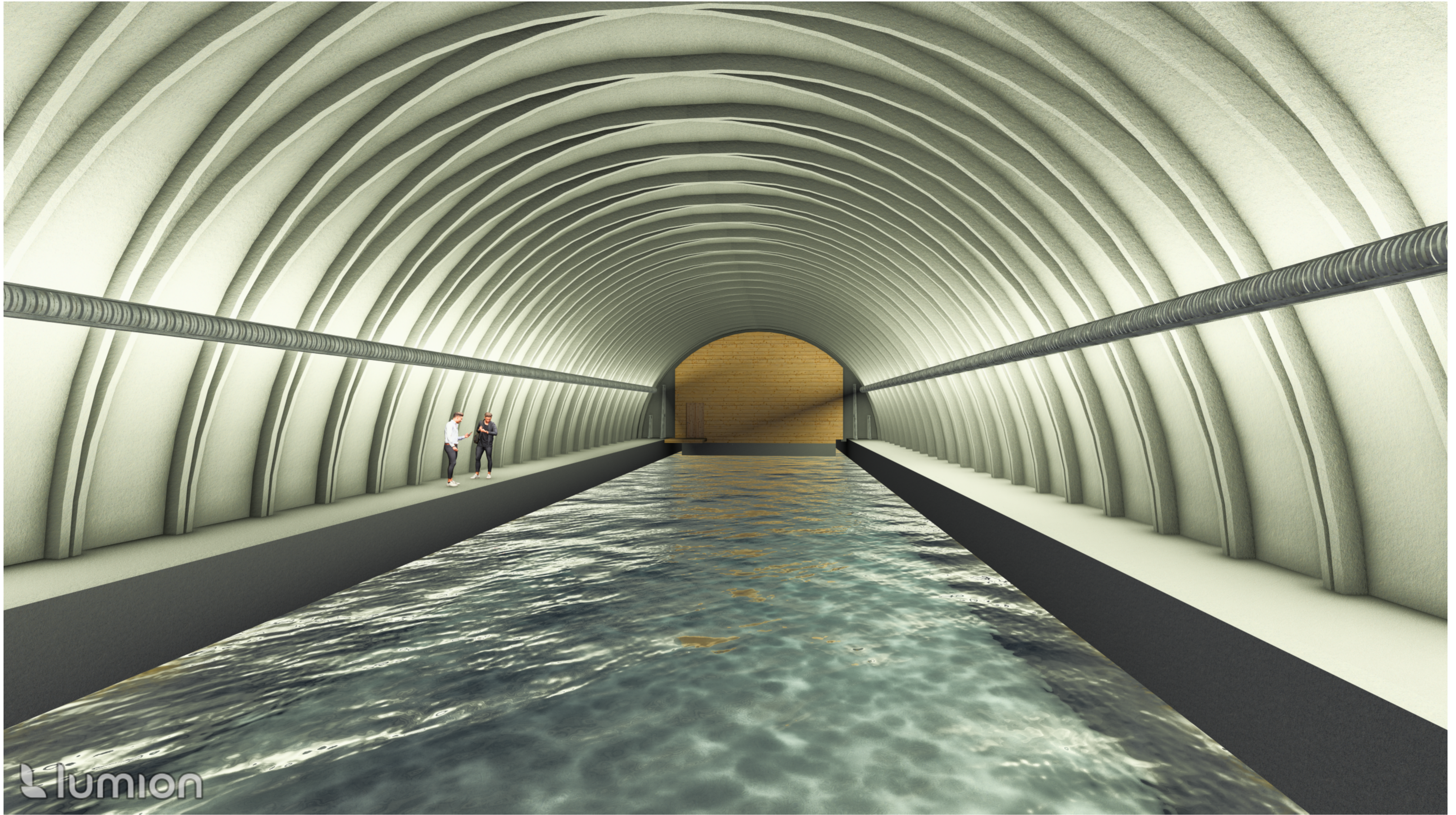


Climate - see



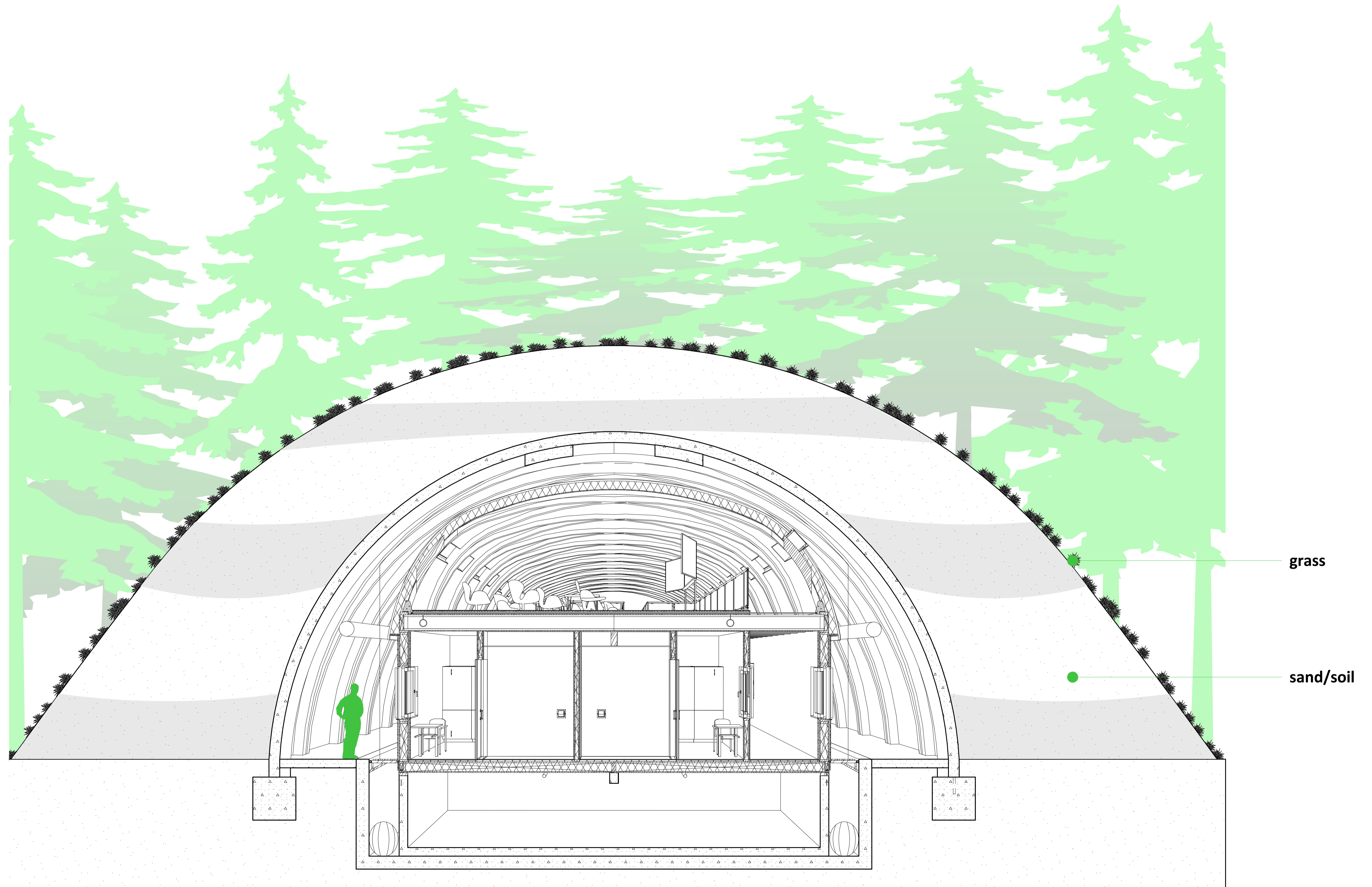
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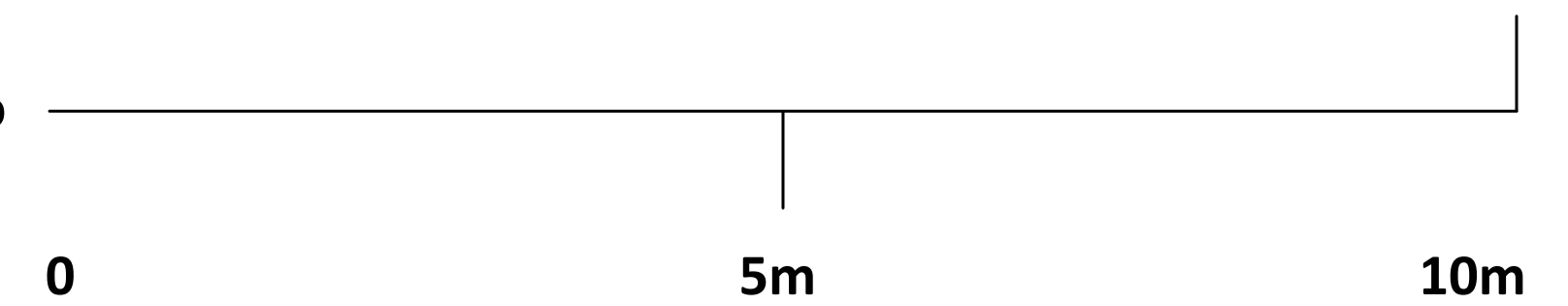


Lumion

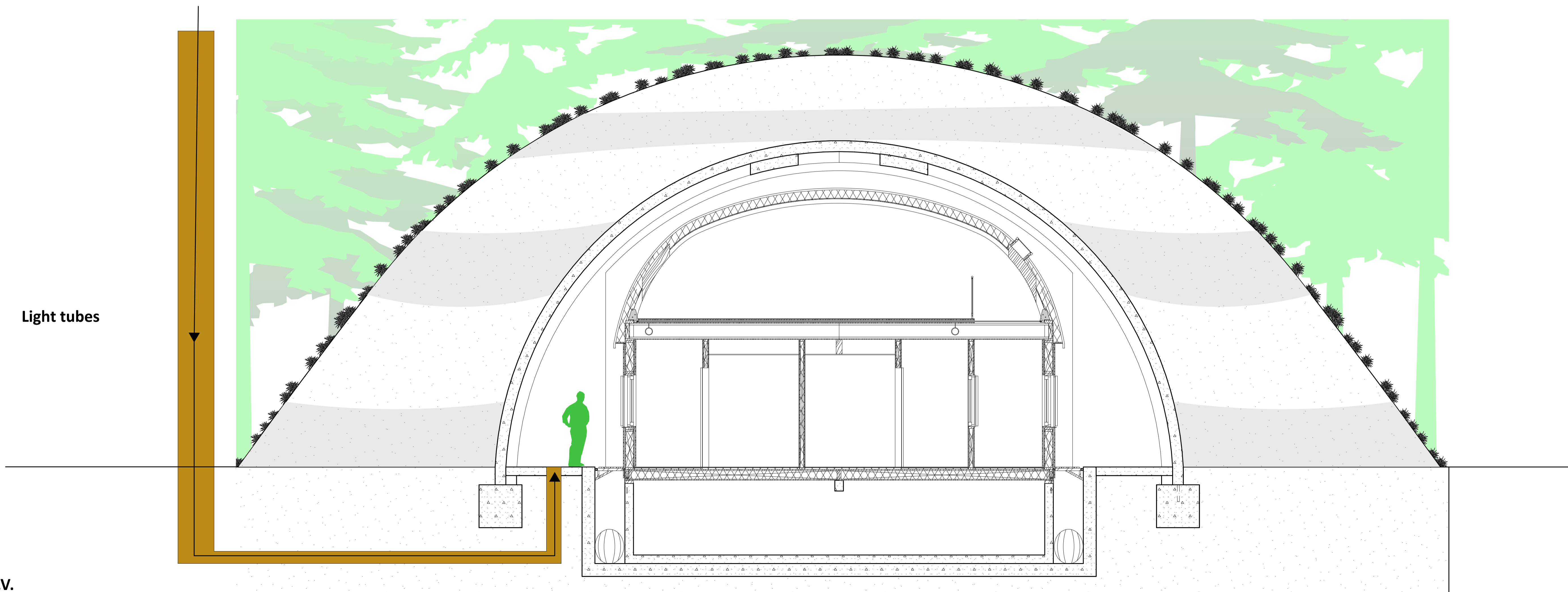
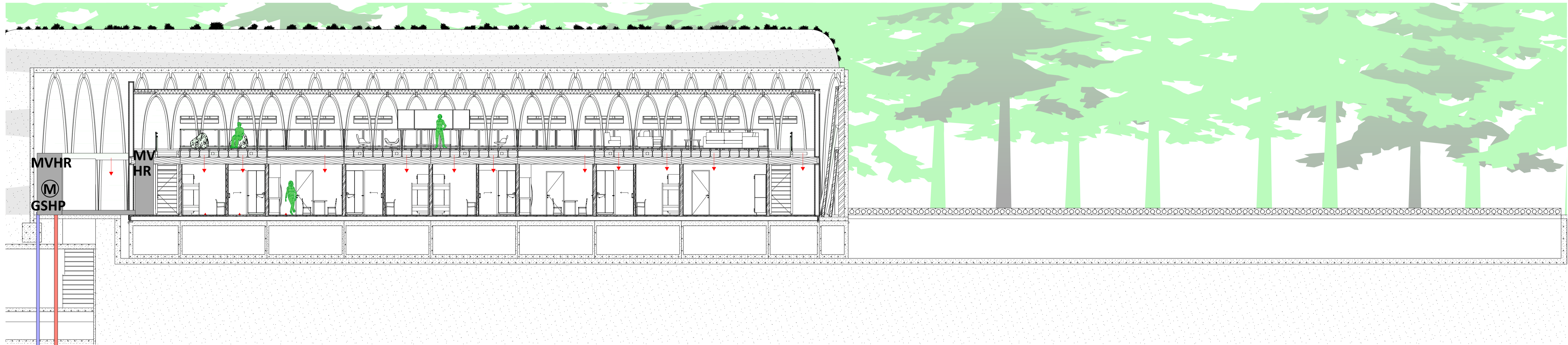
Cross-section - hide



1:100
scaled to
1:50



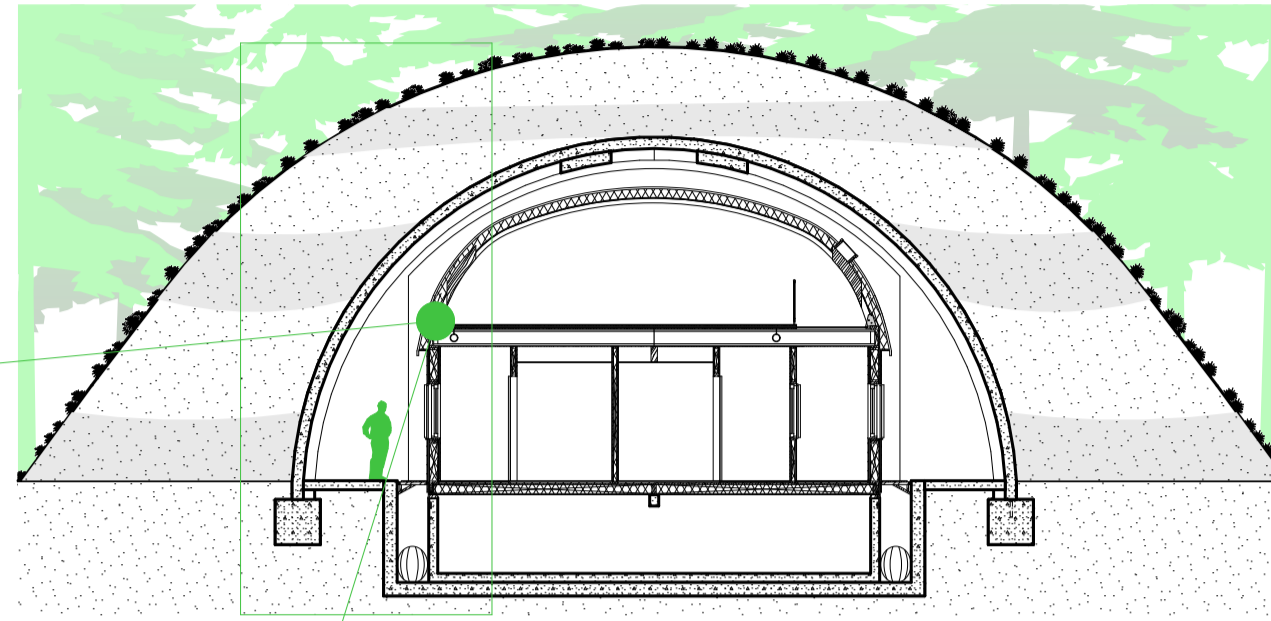
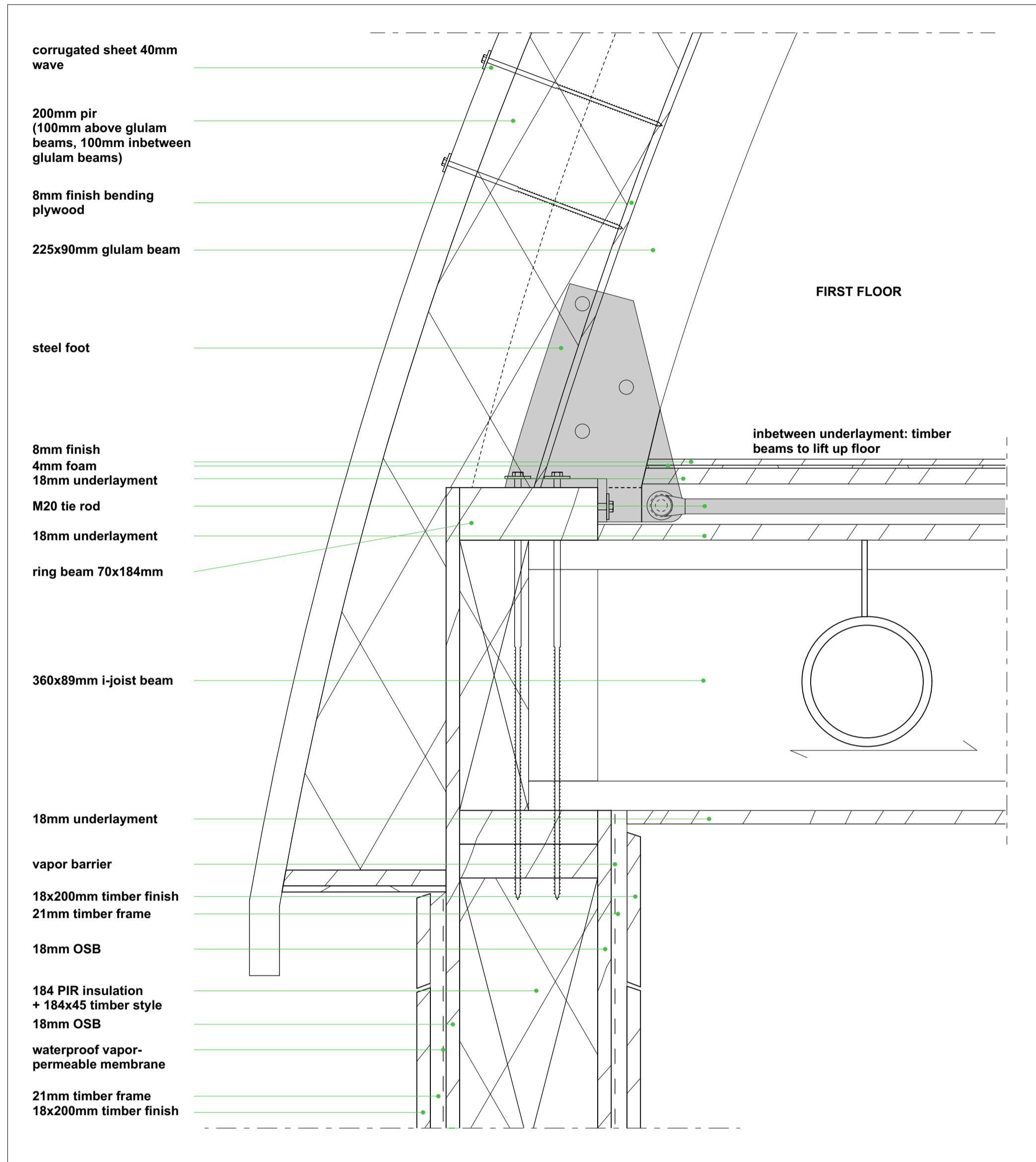
Climate - hide / colder season



Details

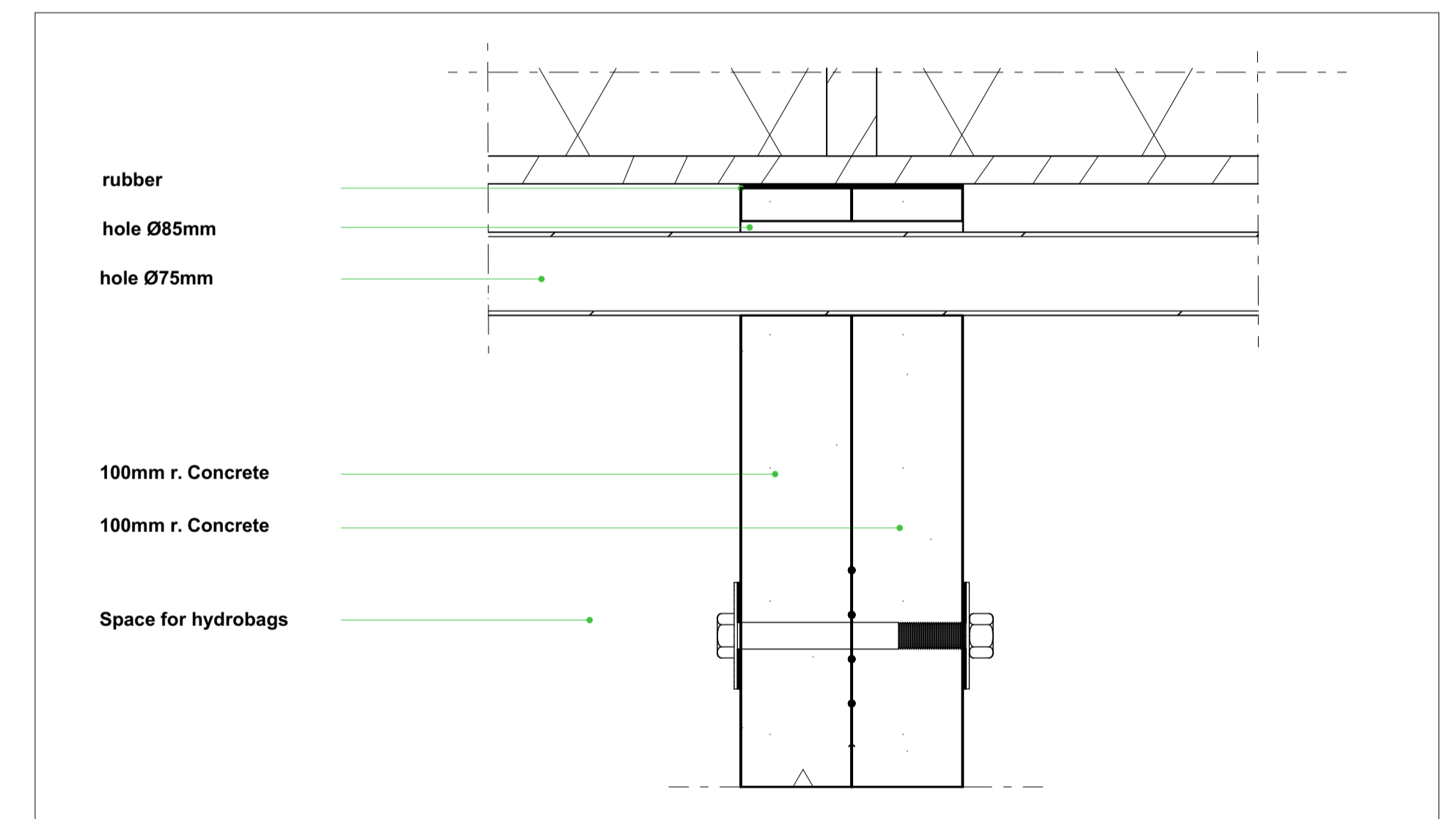
D-01 1:5

Rd = 9

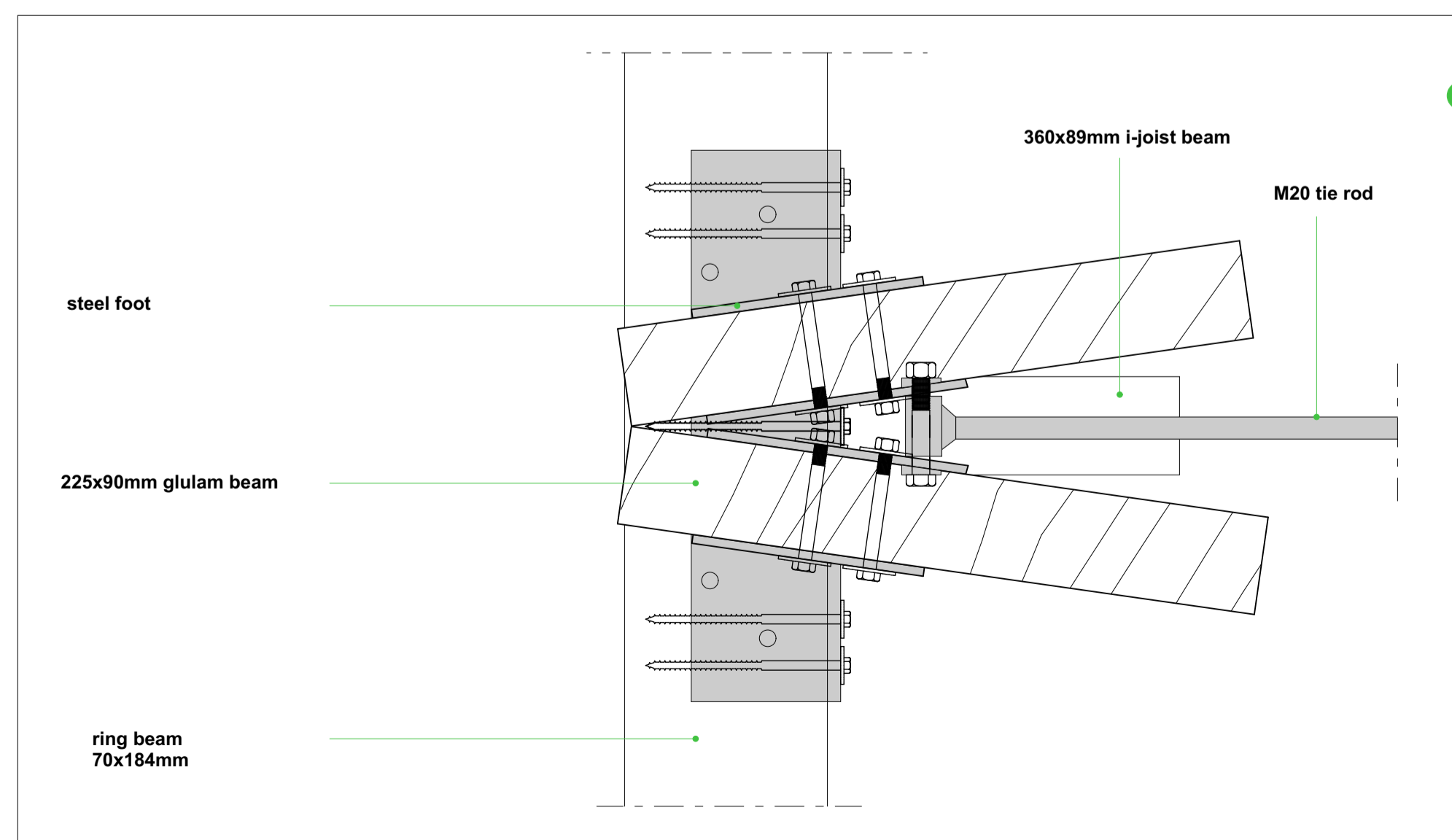


Rd = 9

D-04 1:5 vertical longitudinal detail of floating structure

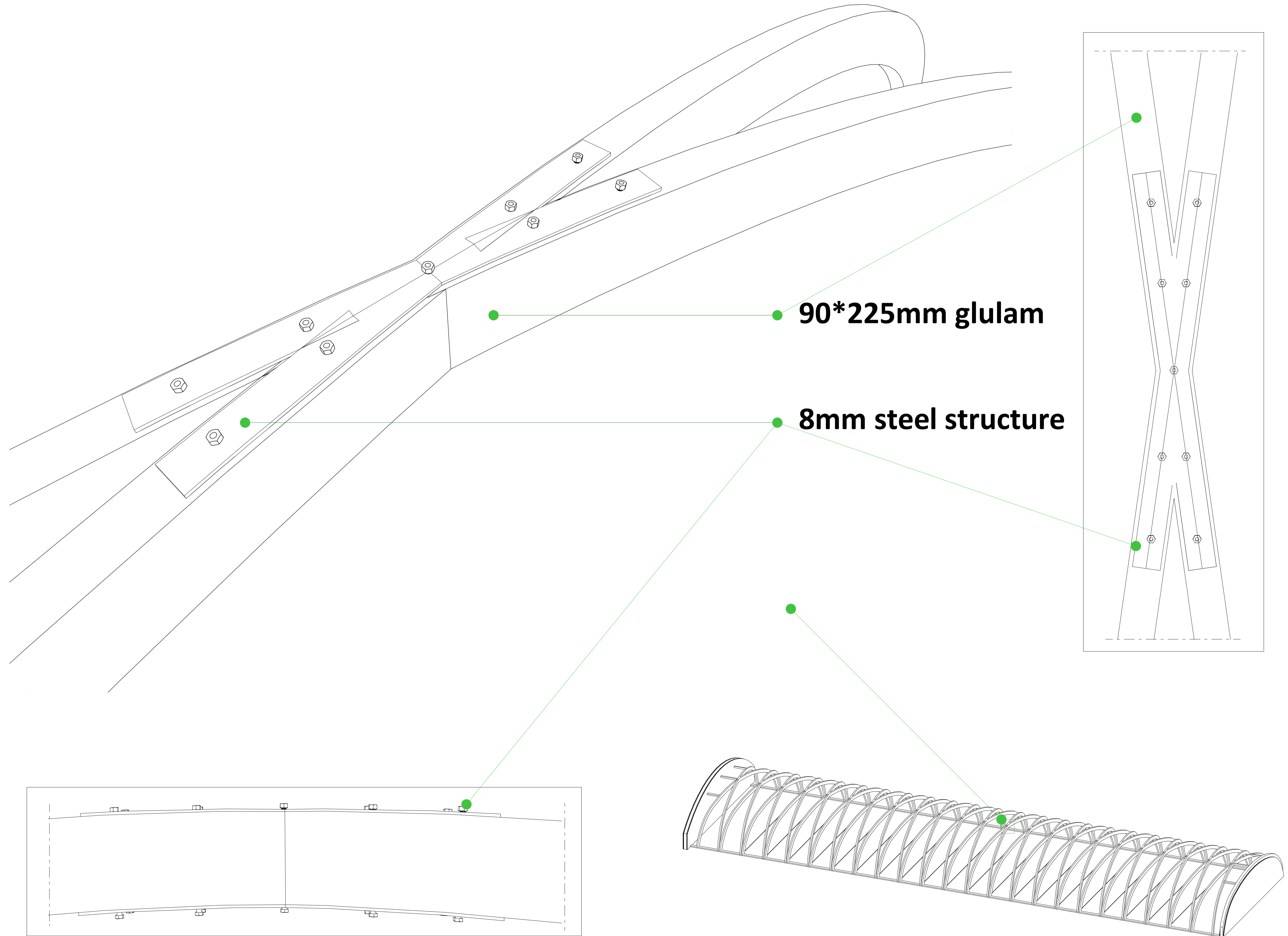


D-03 1:5 horizontal principle detail of D-01

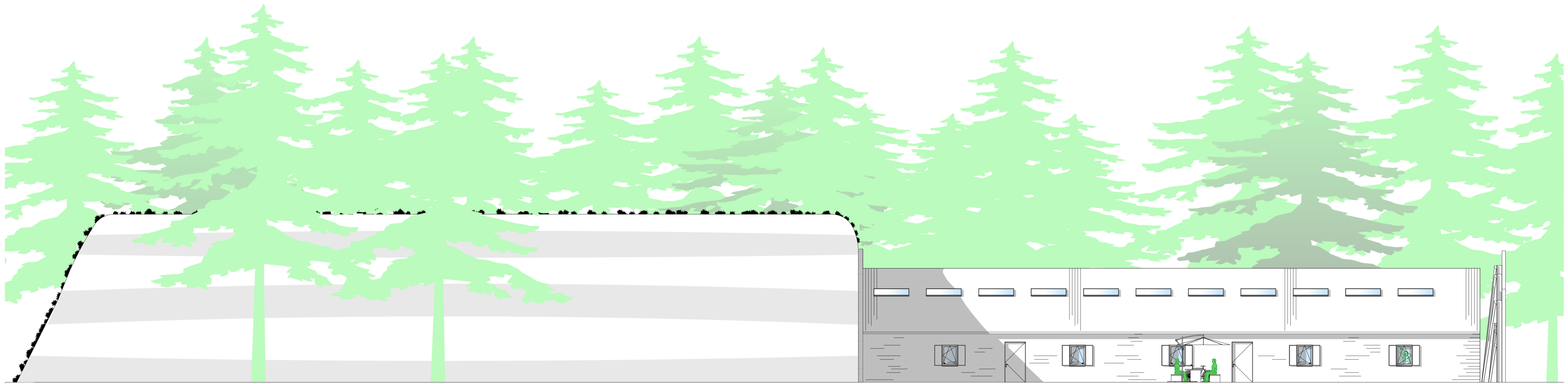


Detail Roof Structure - Crossed Beams

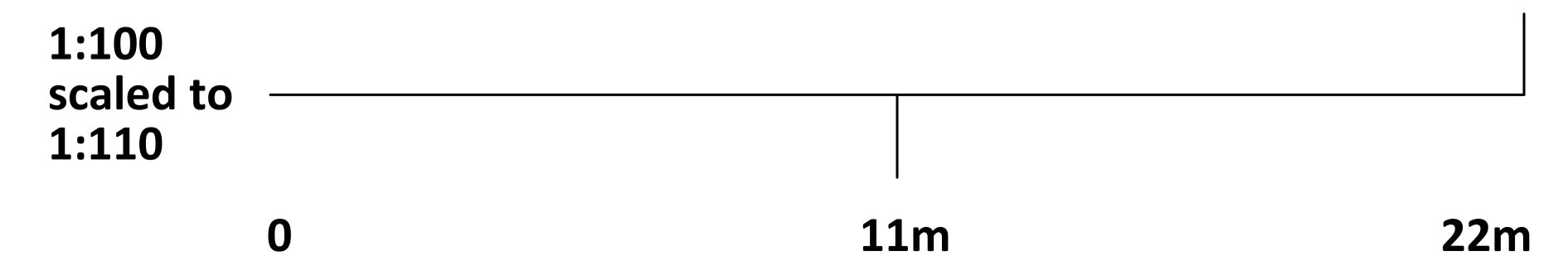
1:5



Facade Impression - see



fixed position summer peace time



FLOAT hide and see



Final Long Operative Army protection