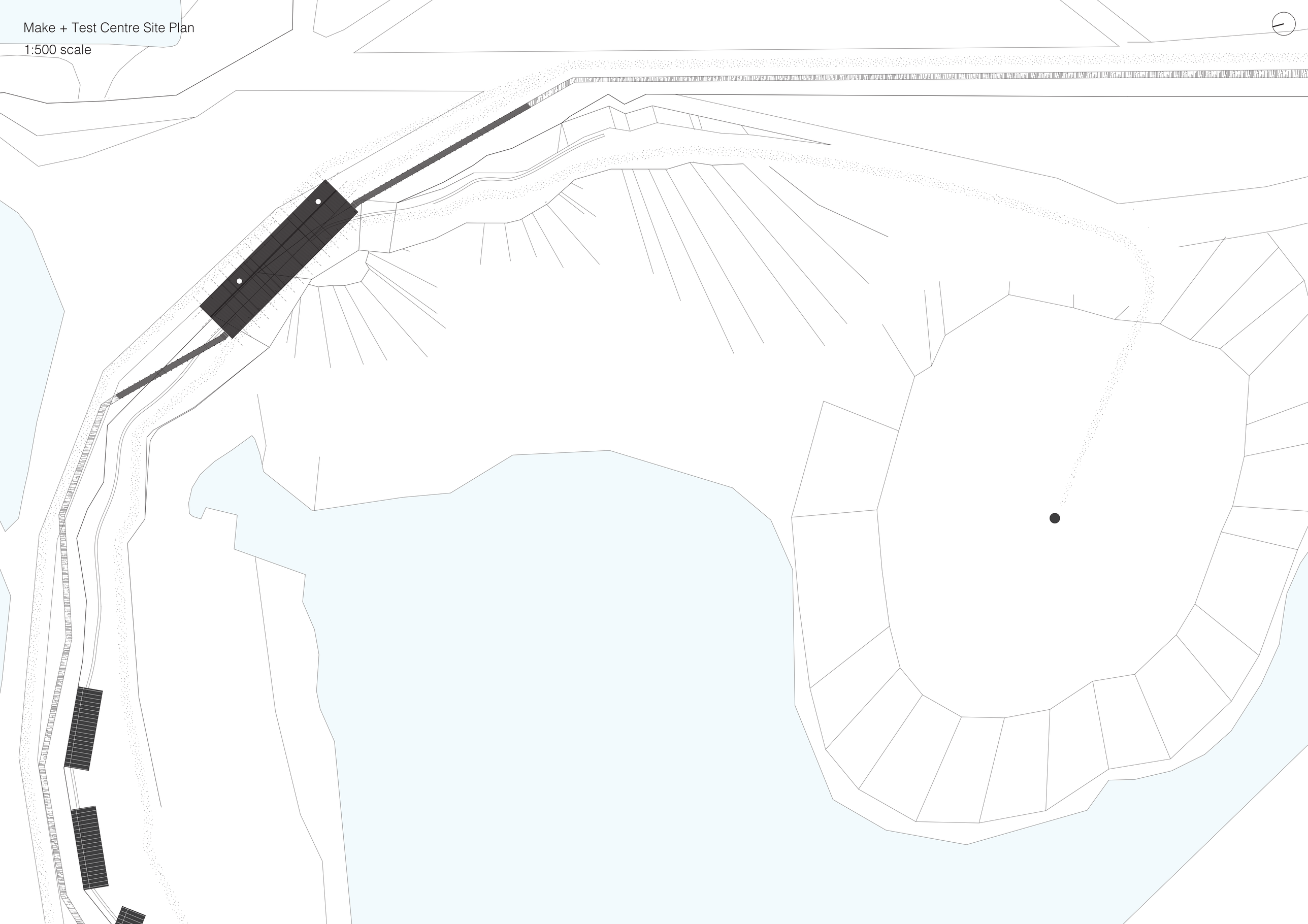
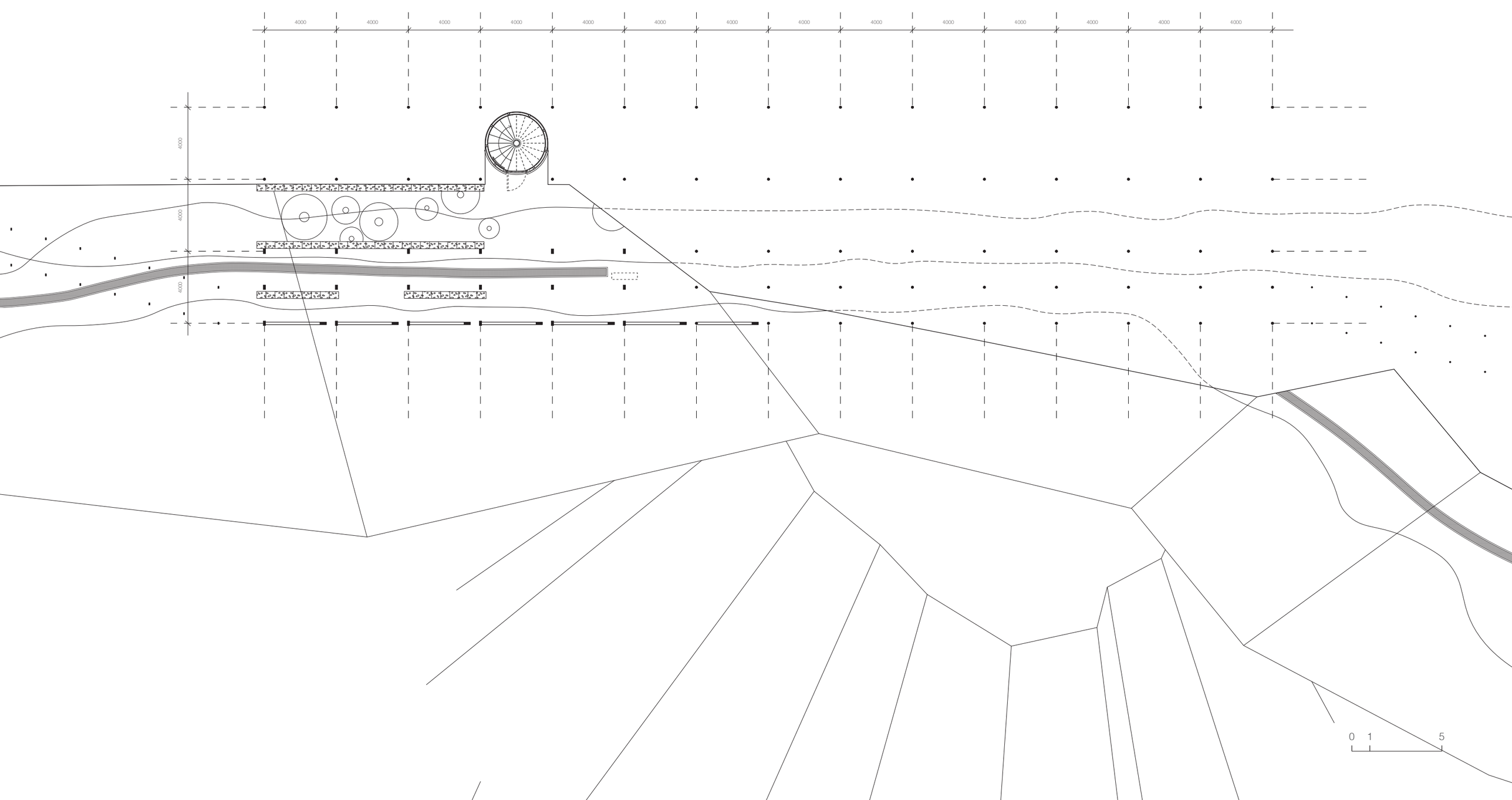
Transition to surplus landscape
1:1000 scale

Make + Test Centre Site Plan

1:500 scale



Level -1 Plan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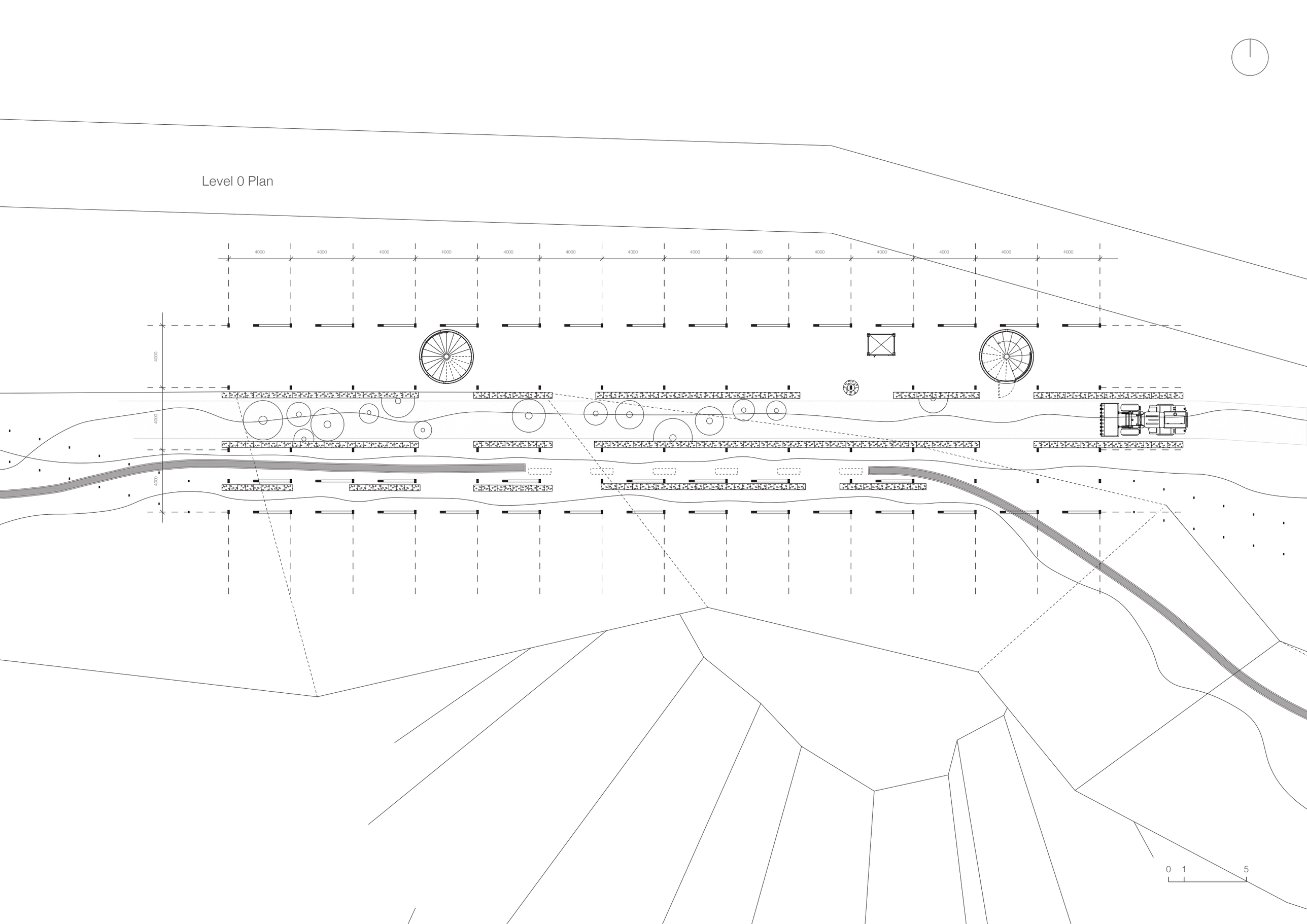
Level 0 Plan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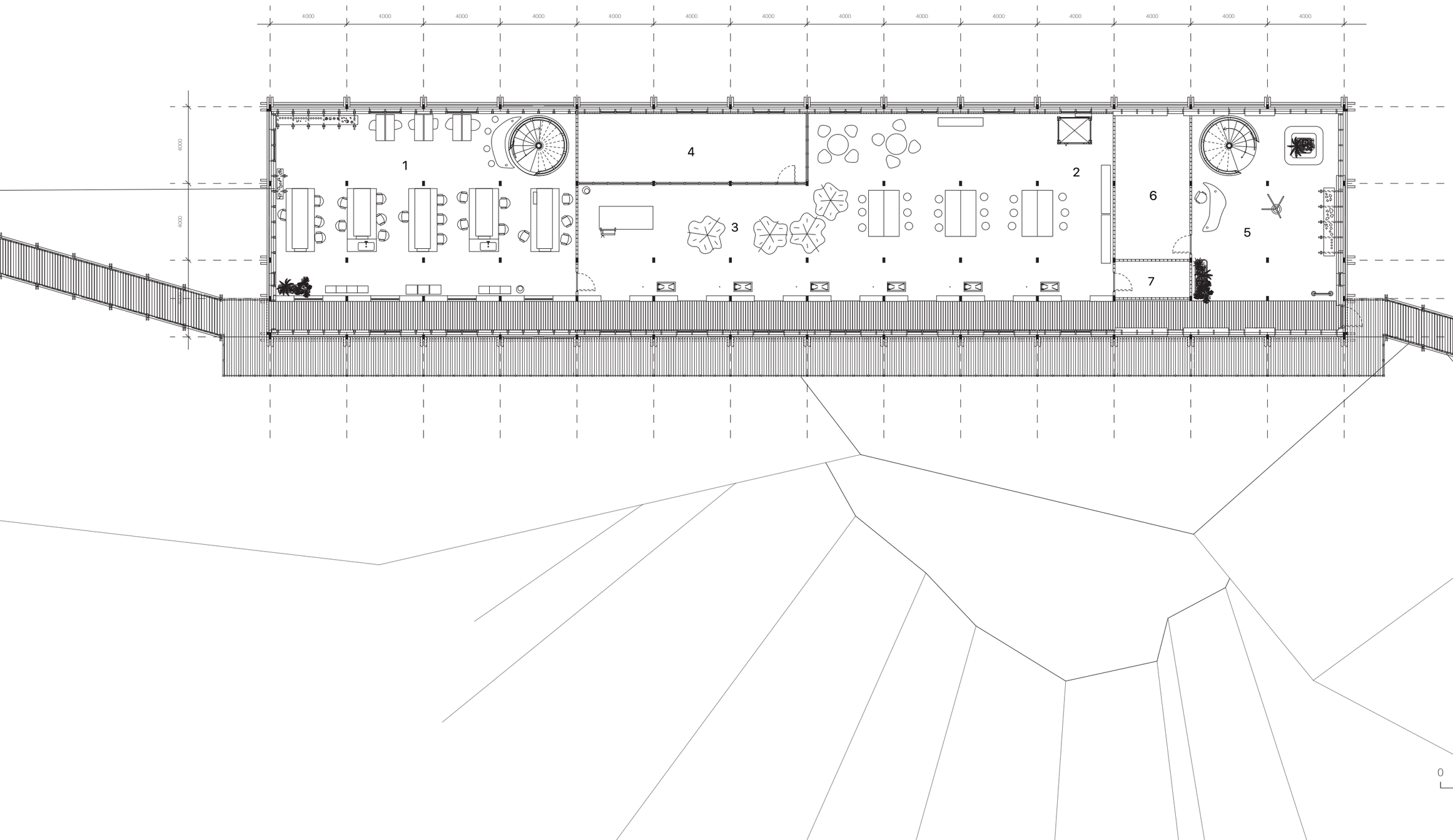
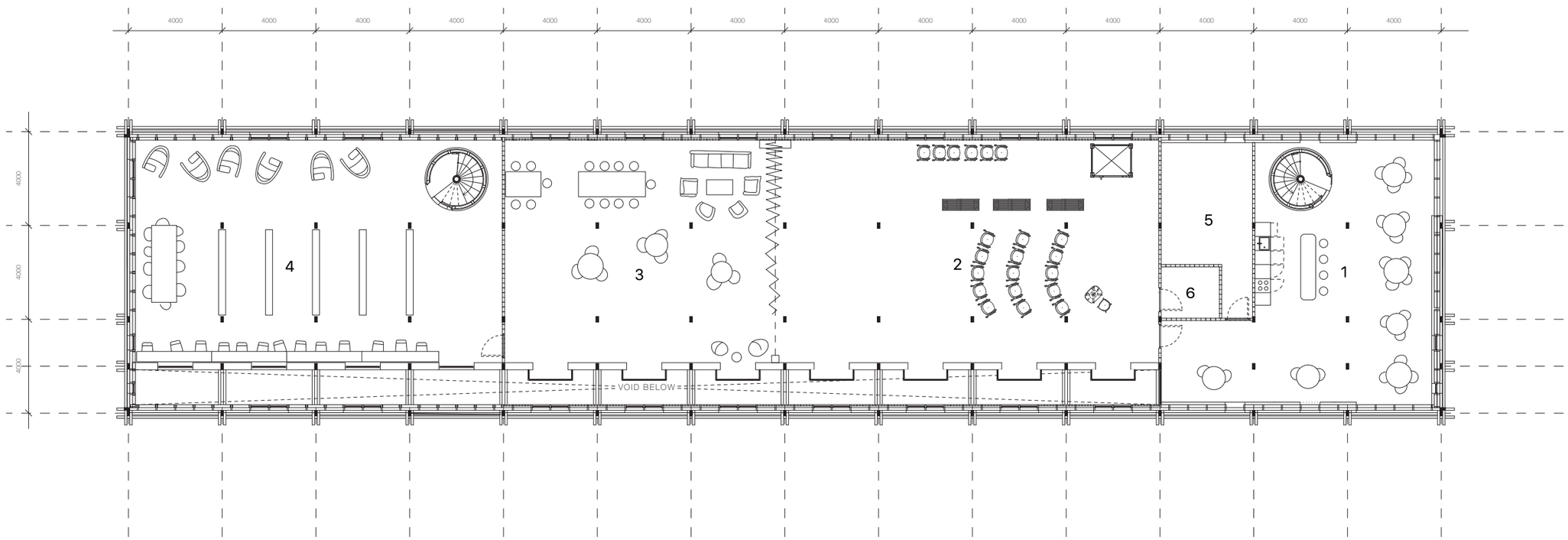
Level 1 Plan



1 Research labs
2 Makerspace
3 1:1 prototyping
4 Wood workshop
5 Exhibition area
6 WC's
7 Store

0 1 5

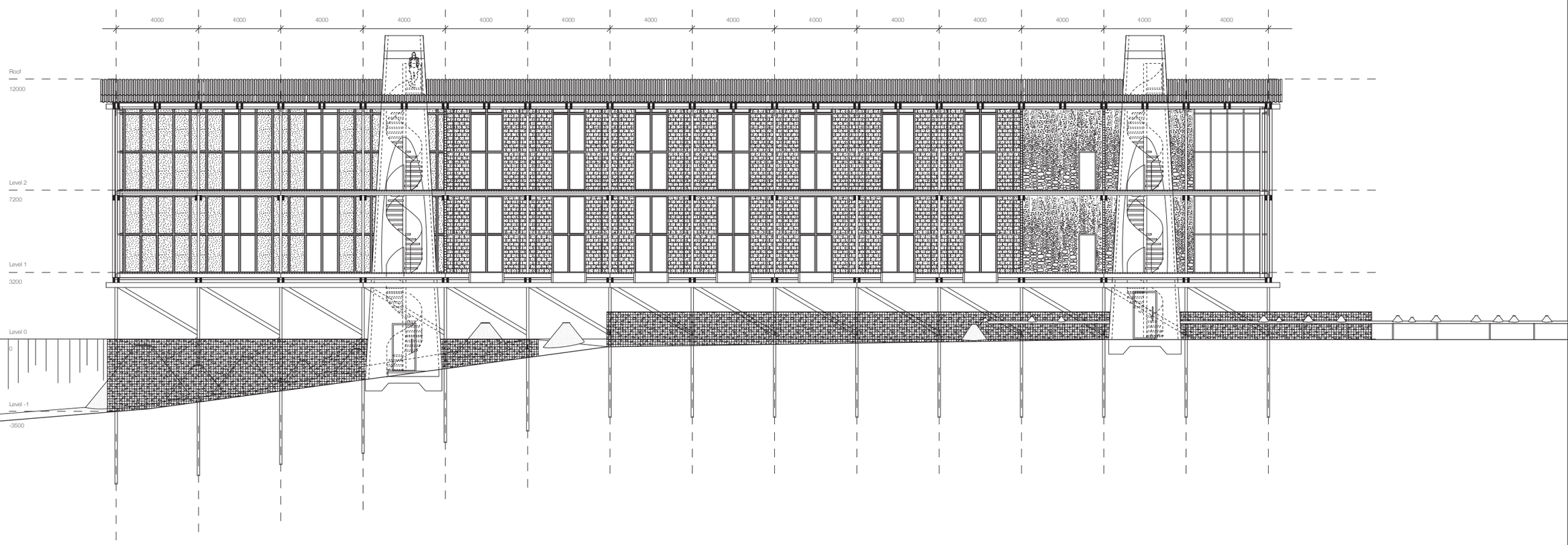
Level 2 Plan



1 Community kitchen
2 Meeting Hall
3 Living Room
4 Library
5 WC's
6 Store

0 1 5

Section AA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Roof
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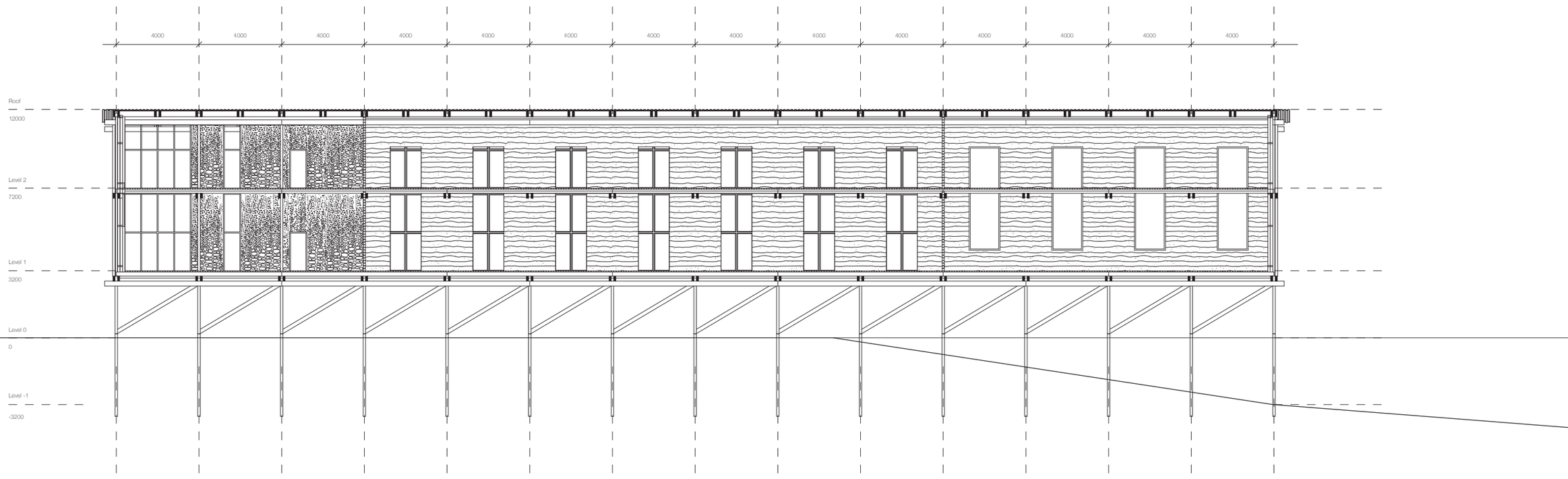
Level 2
7200
Level 1
3200
Level 0
0
Level -1
-3500

Section BB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Roof
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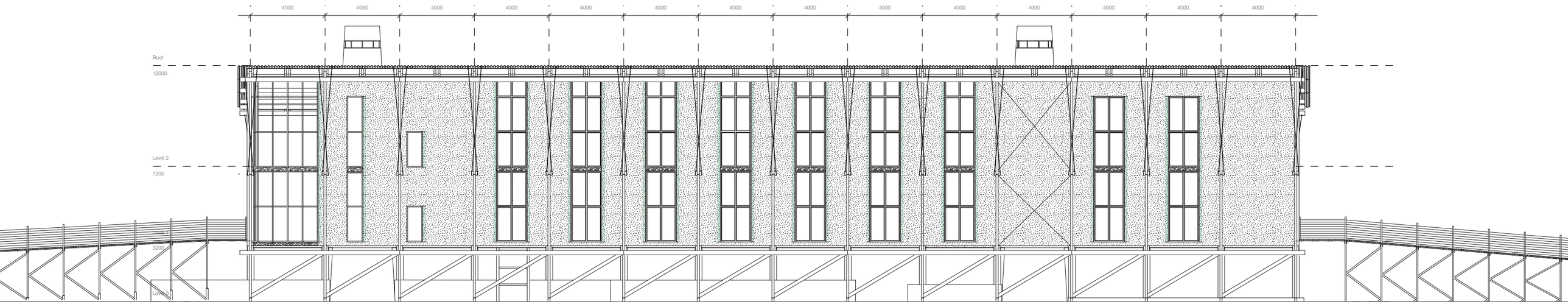
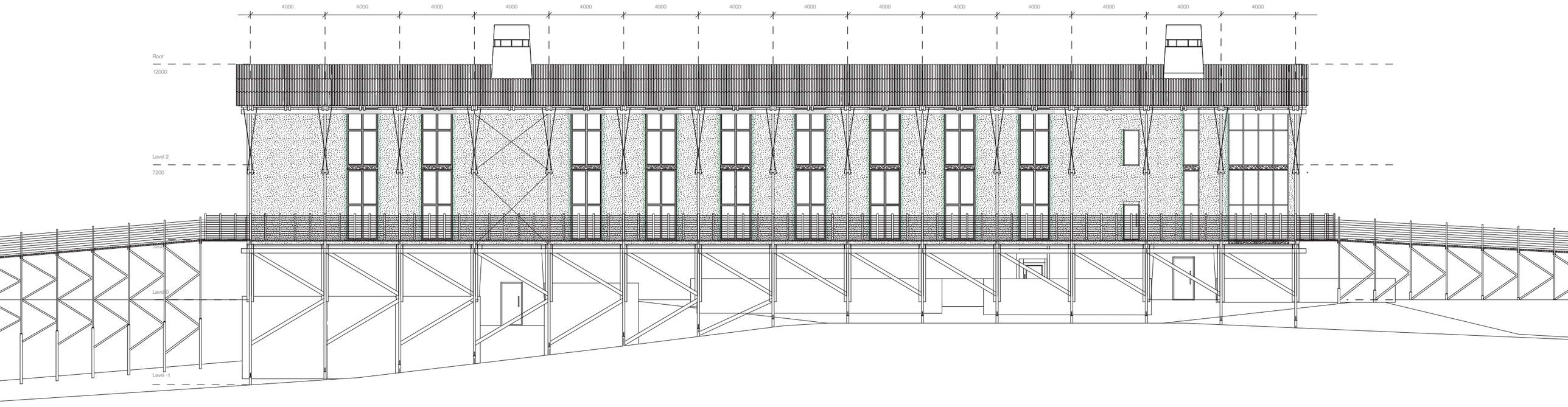
Level 2
7200
Level 1
3200
Level 0
0
Level -1
-3200

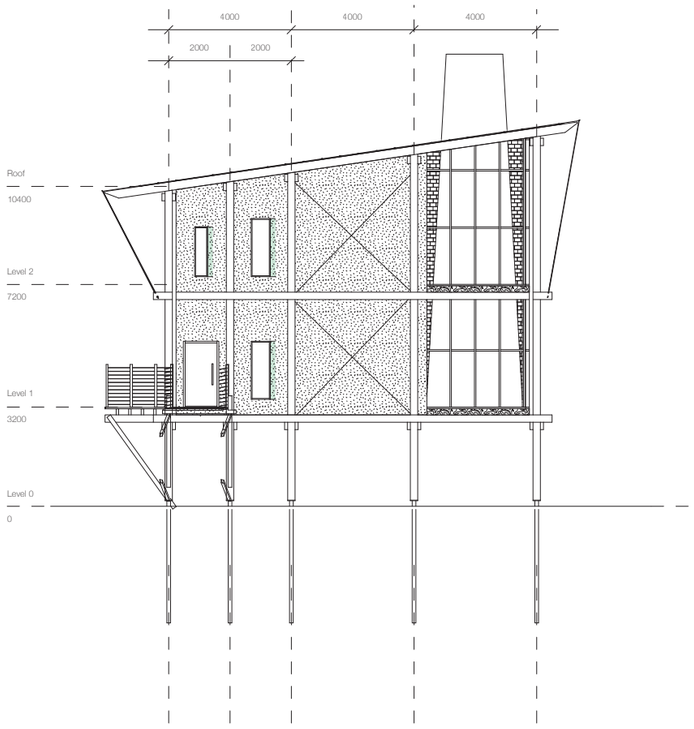
North Elevation



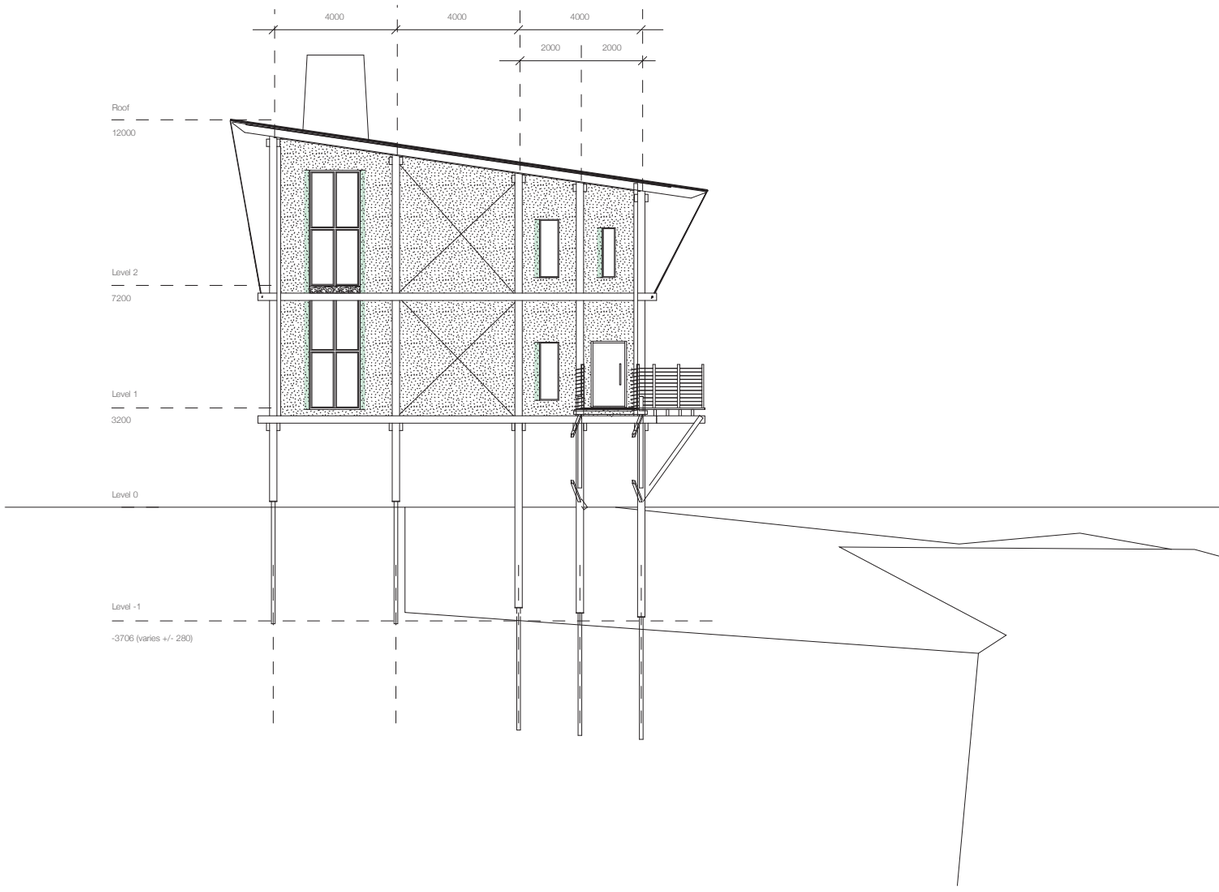
South Elevation



East Elevation

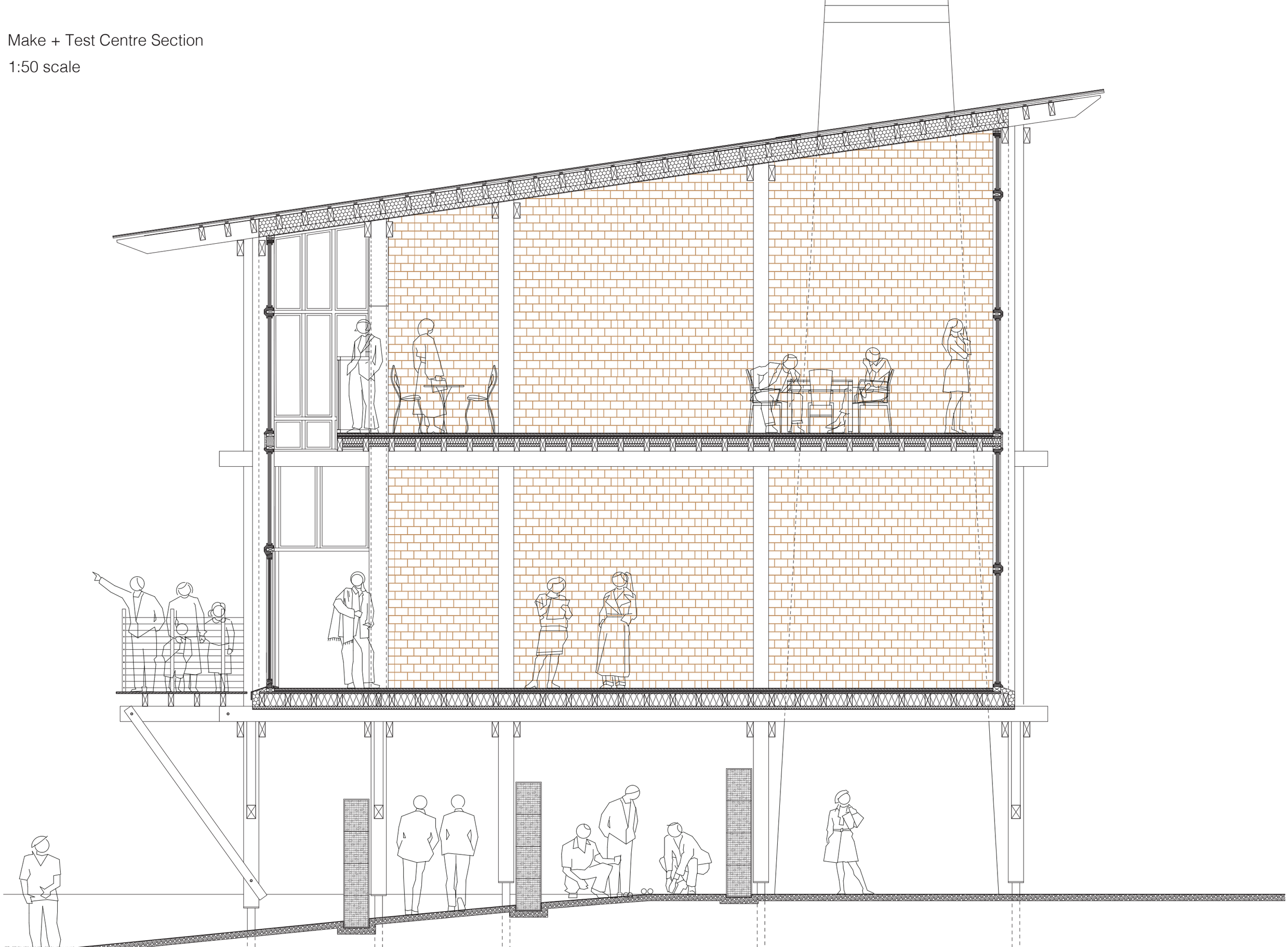


West Elevation



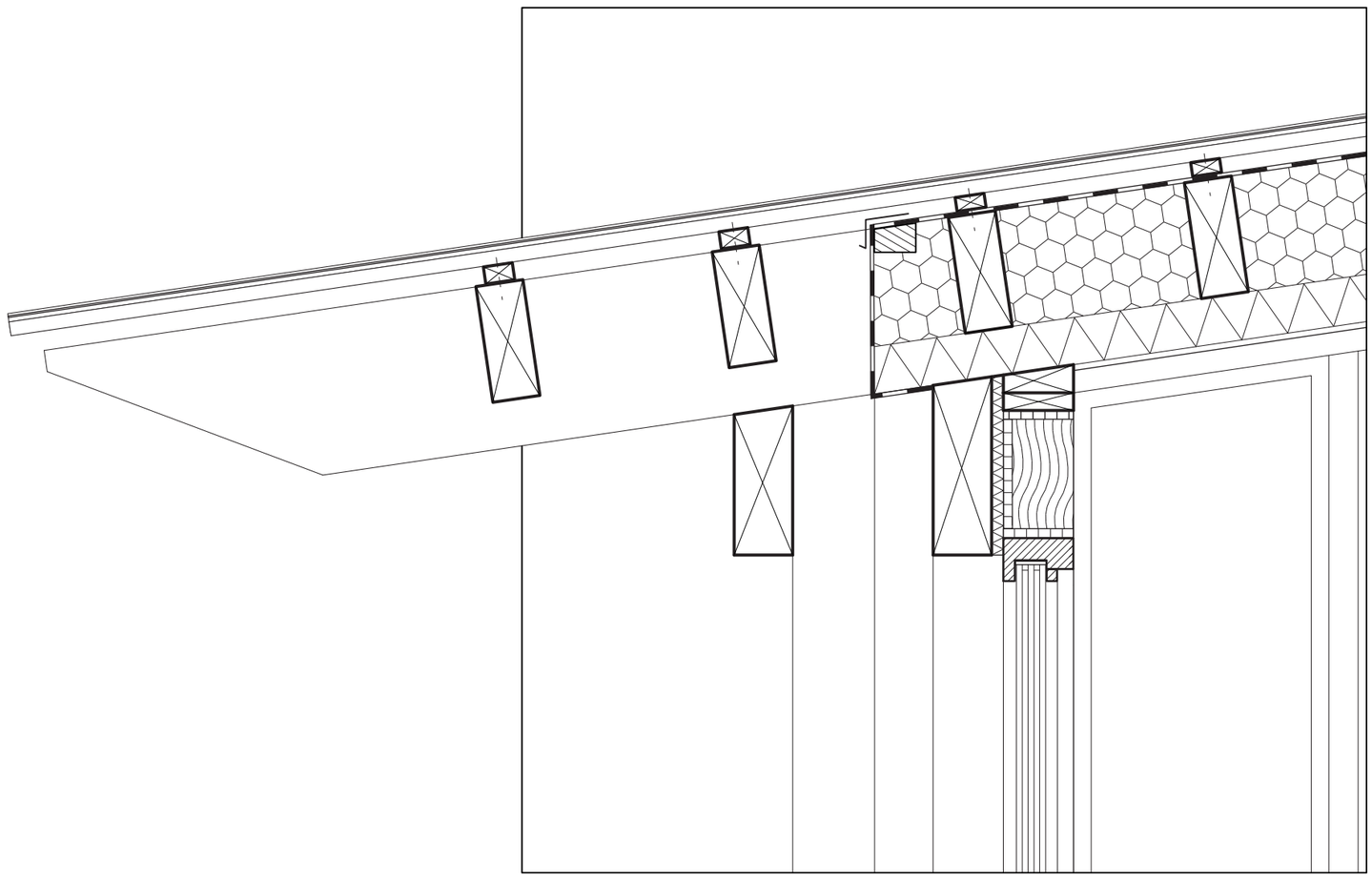
Make + Test Centre Section

1:50 scale

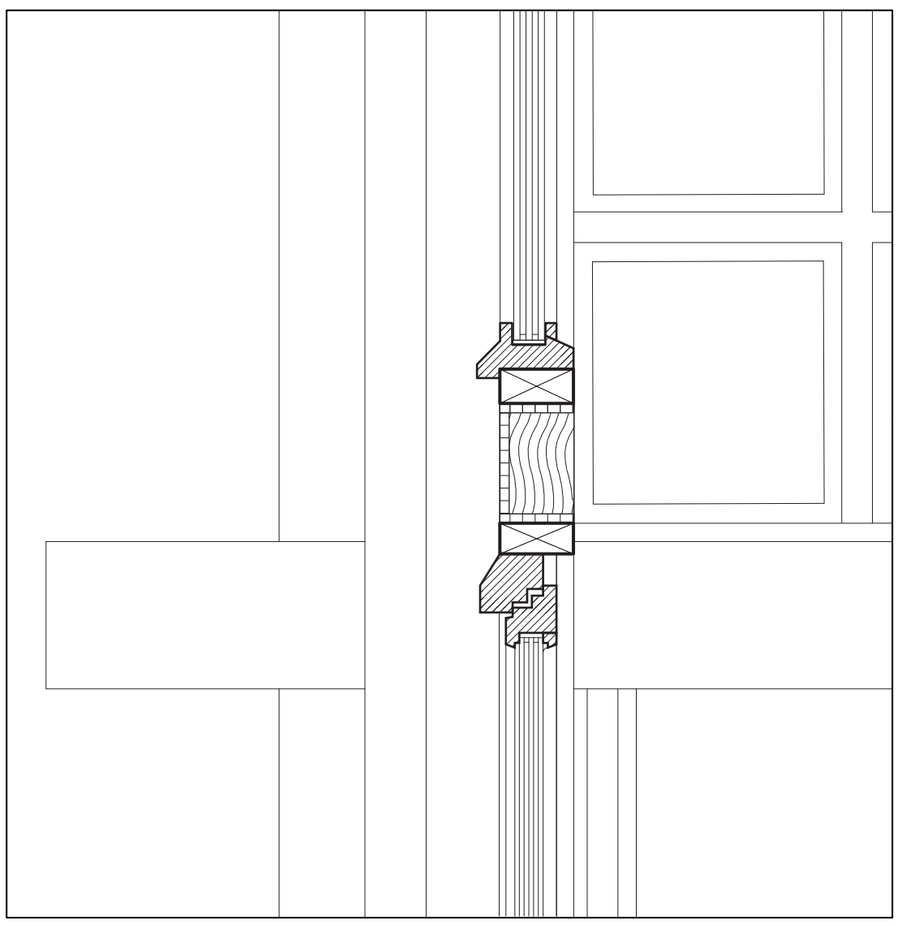


1:10 Details

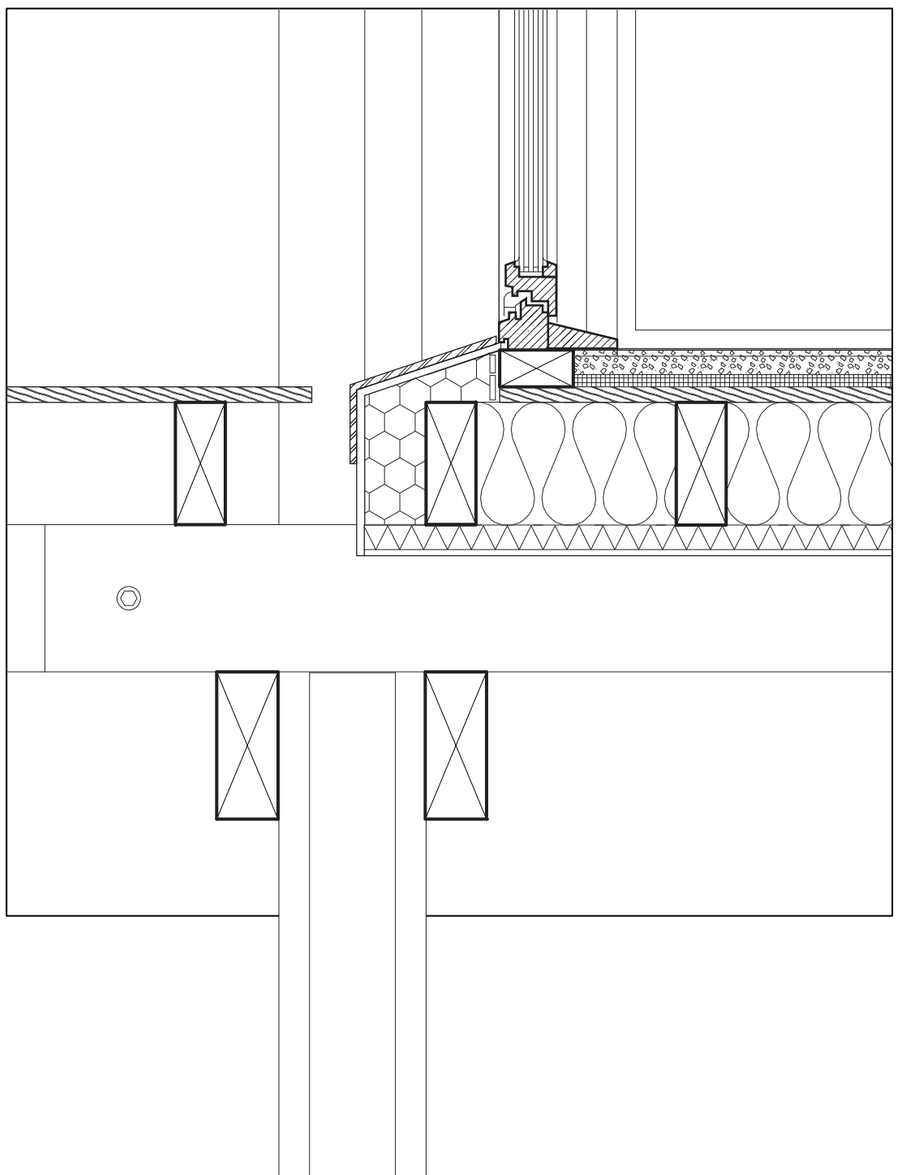
Detail 1 Clerestory window



Detail 2 Window + Door

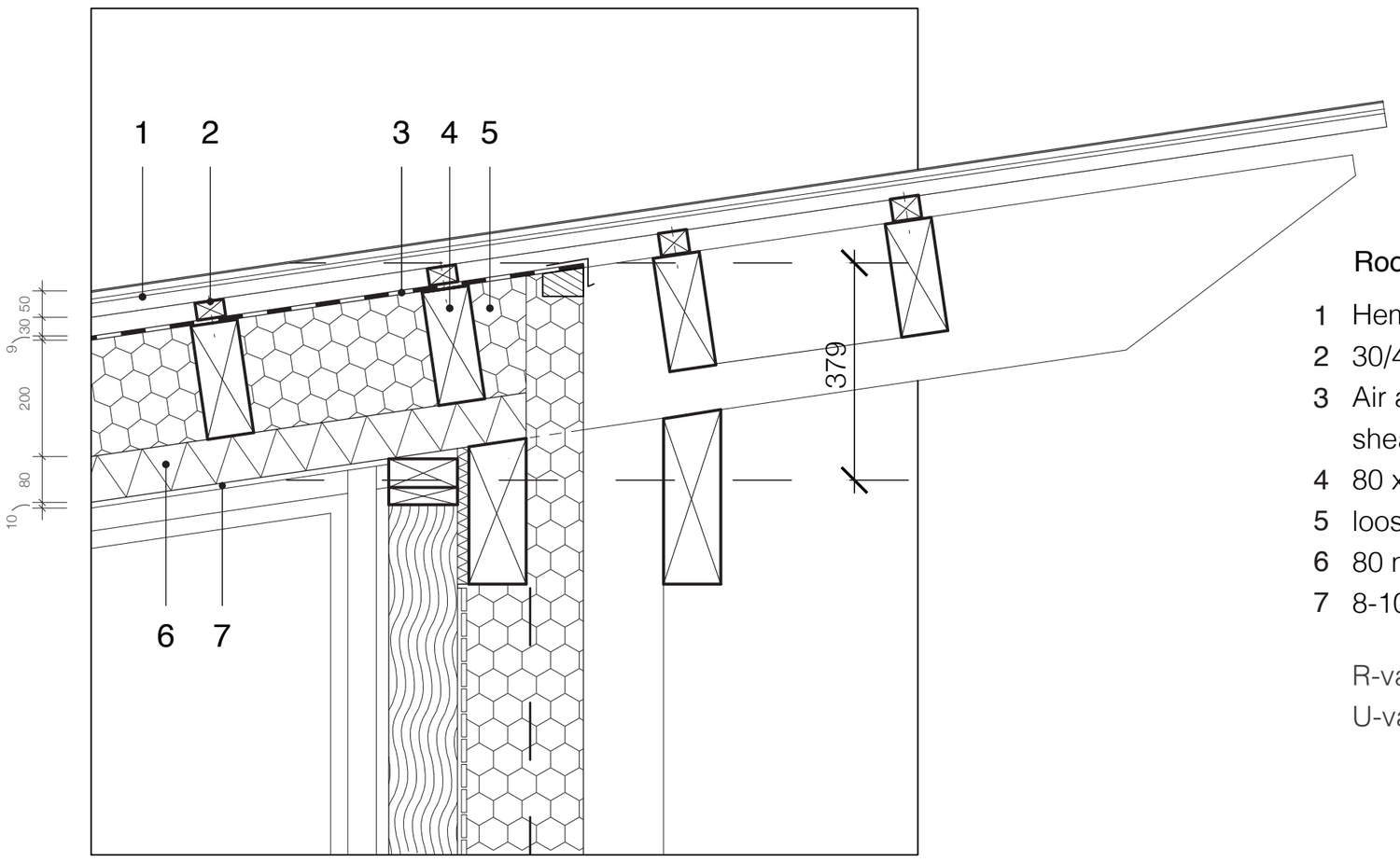


Detail 3 Door Threshold



1:10 Details

Detail 1 Roof

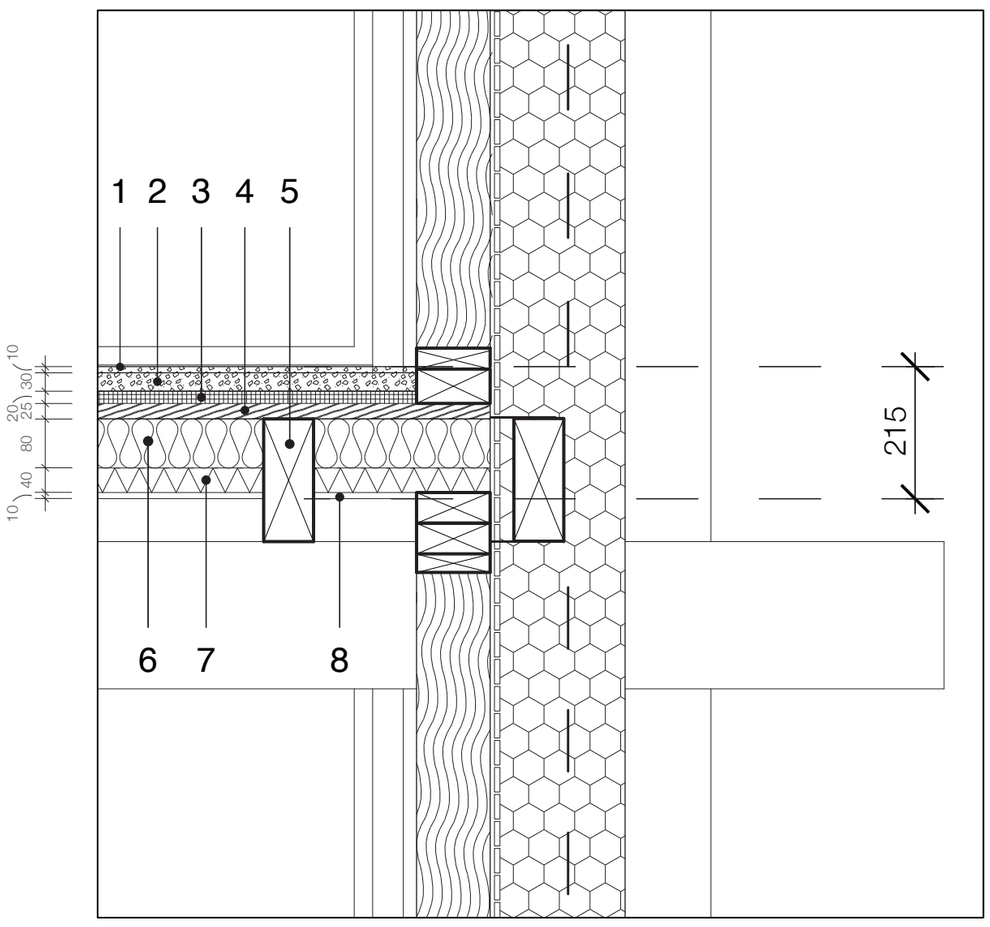


Roof

1 Hemp and sugar composite corrugated sheets
2 30/40 x 50 mm battens and counter-battens
3 Air and weather barrier membrane and timber sheathing
4 80 x 200 mm roof joists with blown cellulose or
5 loose hemp insulation in-between
6 80 mm woodfibre insulation boards
7 8-10 mm clay plaster finish

R-value ≈ 7.4 m²K/W
U-value ≈ 0.135 W/m²K

Detail 2 Mid-Floor

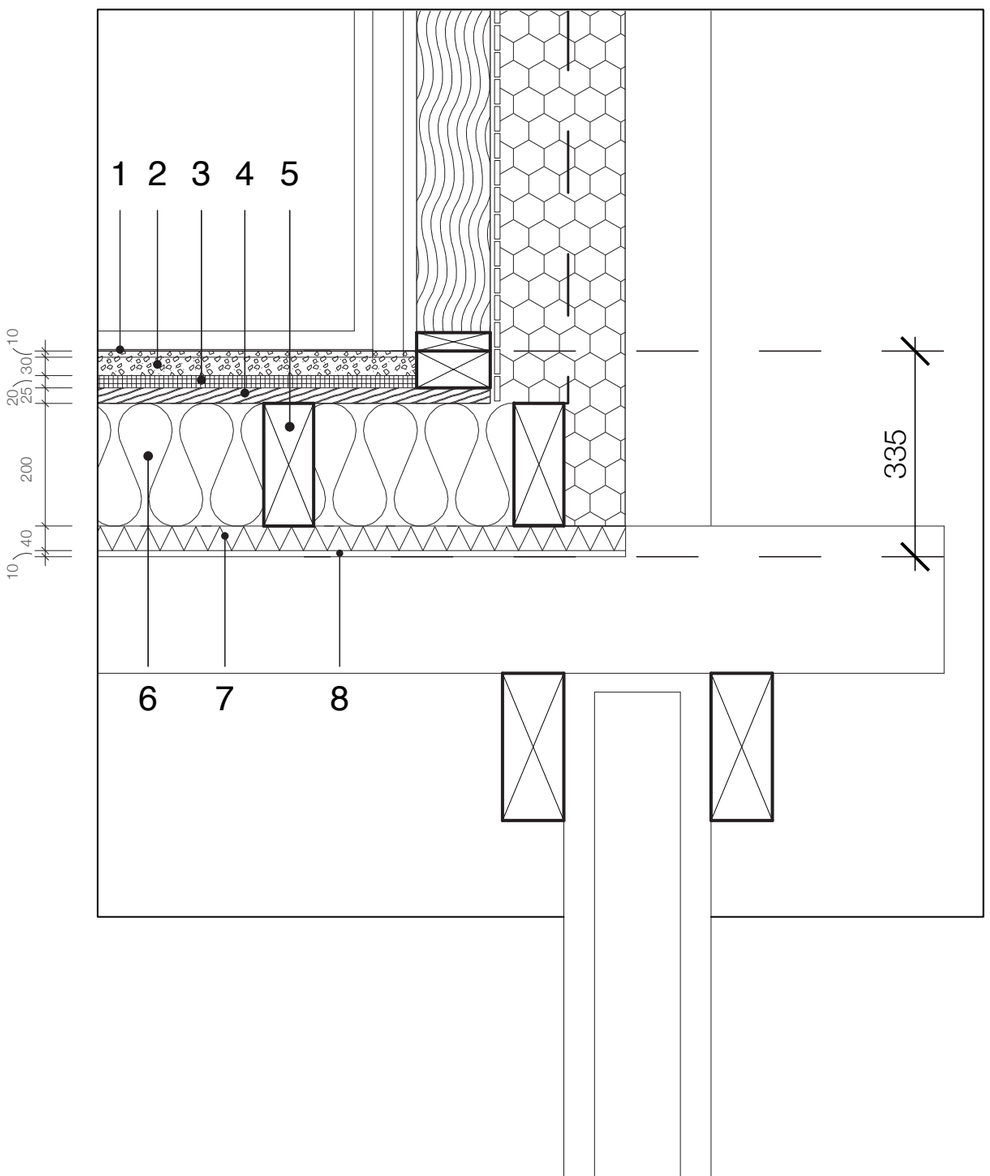


Mid-Floor

1 Cast lime + terazzo (finish) 10-15mm
2 30mm lime-sand screed
3 20 mm recycled natural rubber and cork granulate sound absorbtion mat
4 25 mm oak floor planks
5 80 x 200 mm exposed floor joists with 80 mm
6 hemp fibre batt insulation in-between
7 40 mm wood fibre panels
8 8-10 mm clay plaster finish to soffit

LnT,w ≈ 50-53 dB (impact sound insulation)
DnT,A ≈ 55-58 dB (airborne sound insulation)

Detail 3 Bottom Floor



Bottom Floor

1 Cast lime + terazzo (finish) 10-15mm
2 30mm lime-sand screed
3 20 mm recycled natural rubber and cork granulate sound absorbtion mat
4 25 mm oak floor planks
5 80 x 200 mm exposed floor joists with 200 mm
6 hemp fibre batt insulation in-between
7 40 mm wood fibre panels
8 8-10 mm clay plaster finish to soffit

R-value ≈ 6.67 m²K/W
U-value ~0.15 W/m²K

March and
Sept. 21st

June. 21st

Dec. 21st

S

N

Prevailing winds

Air in

Air out

To WC's

To WC's

Irrigation

Energy Converter

Heat pump

Filter

Rainwater tank

1

2

3

4

5

Climate Principles

1 Deep eaves for shading and natural rainwater fall-off

2 Rammed earth thermal mass

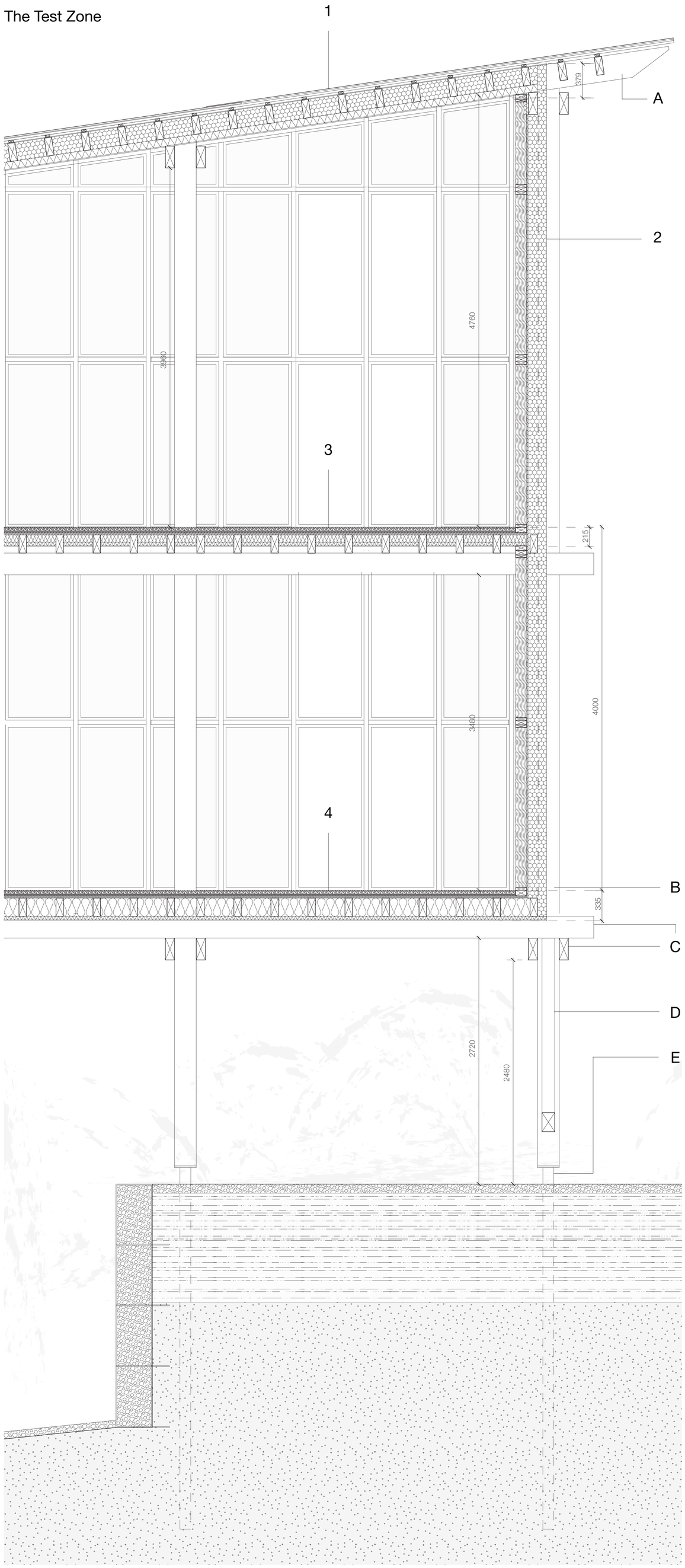
3 Passive cross-ventilation and solar heating from low south-facing windows and high north-facing windows, triple-glazing units for good heat retention

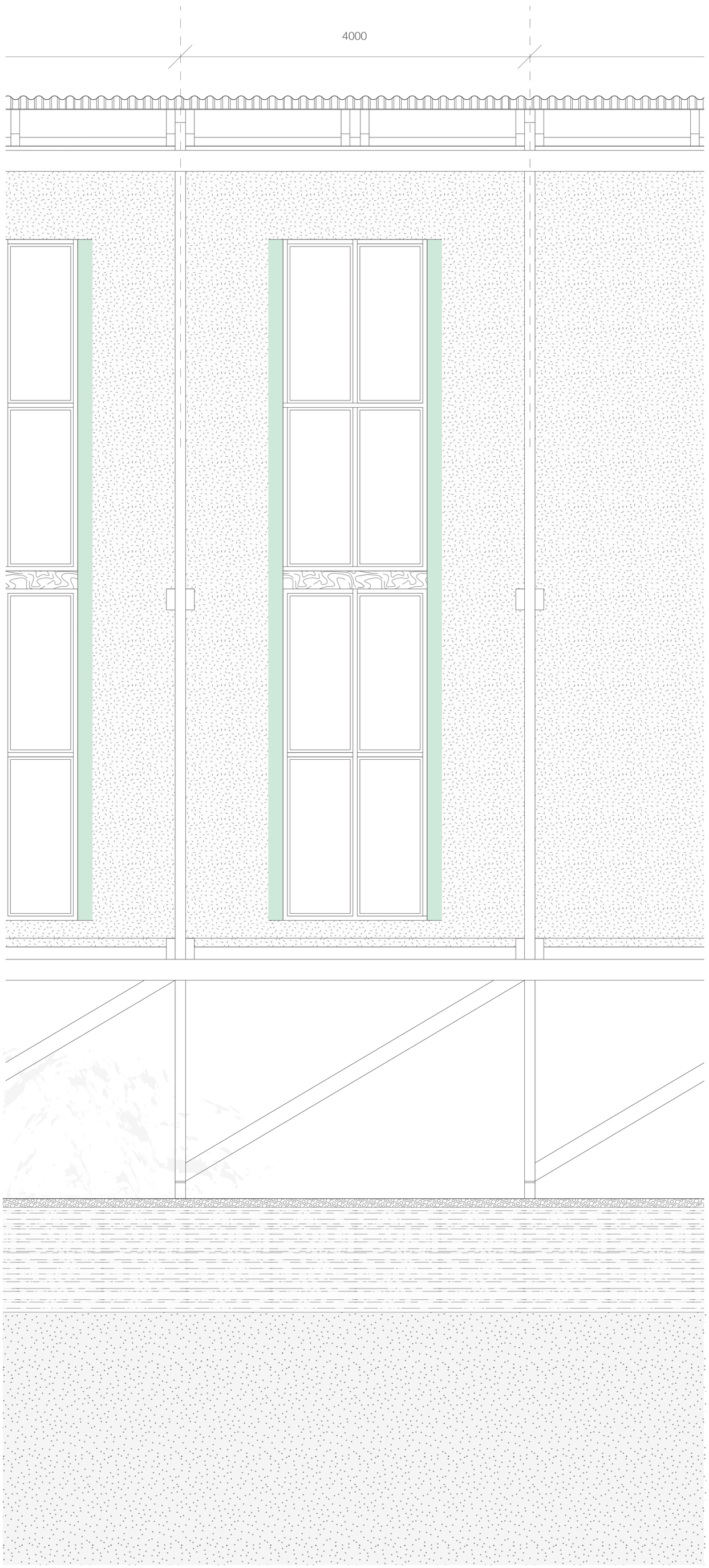
4 Permeable ground surface to allow water collection in tank, filtered and supplied to WC's and floor heating pipes

5 PV energy converted primarily powering the air to water heat pump, supplemented by power form the grid

1:20 Plan, Section and Elevation

The Test Zone





1 Roof

Hemp and sugar composite corrugated sheets
30/40 x 50 mm battens and counter battens
Air and weather barrier membrane and timber sheathing
80 x 200 mm roof joists with blown cellulose or loose hemp insulation in-between
80 mm woodfibre insulation boards
8-10 mm clay plaster finish
R-value ≈ 7.4 m^2K/W
U-value ≈ 0.135 W/m^2K

2 Wall

220 mm low-density spray-applied hemplime onto 120 mm timber framing
Split reed mat
120 x 50 mm timber cross-framing with prefabricated hemplime panels
R-value ≈ 6.9 m^2K/W
U-value ~0.145 W/m^2K

Structure

A Sawn structural timber (Fir) roof beams 120 x 280 mm from Holz Eigelshoven, West German

B Sawn structural timber (Fir) posts 120 x 240 m from Holz Eigelshoven, West Germany

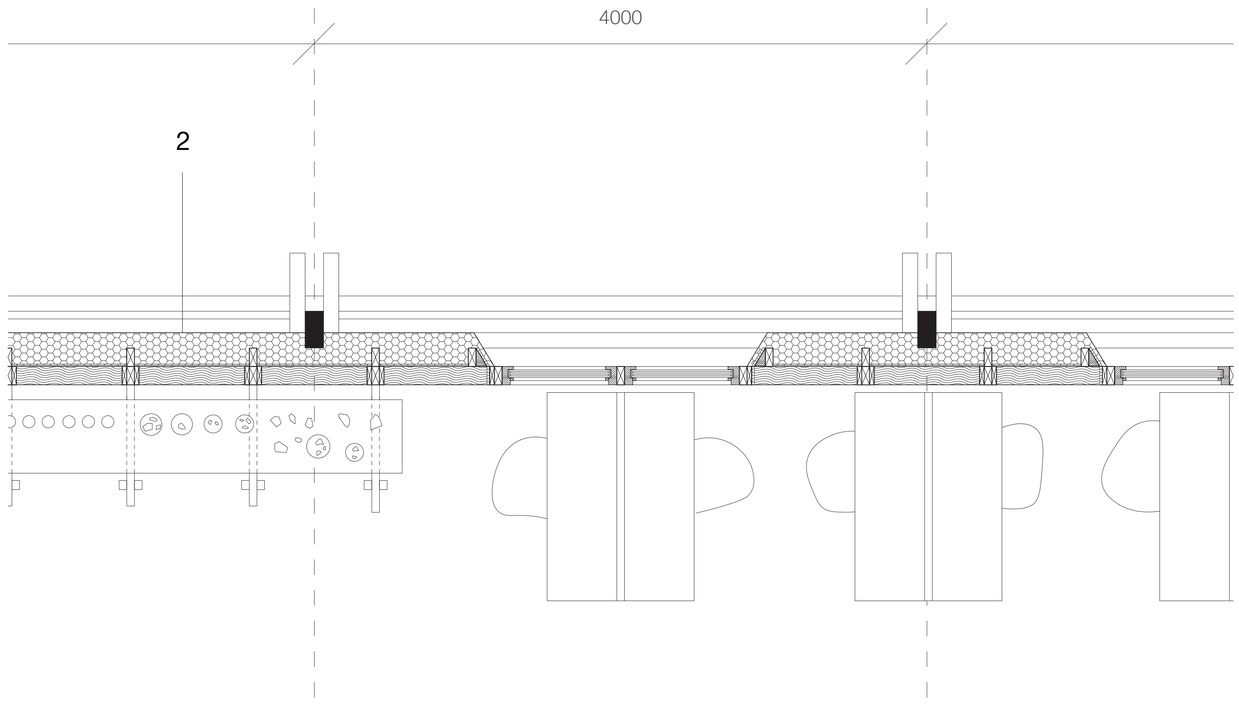
C Cross-supported sawn structural timber Fir beams 100 x 240 mm (13 m length) from Holz Eigelshoven, West Germany

D Diagonal bracing 140 x 180 mm from Holz Eigelshoven, West Germany

E Rotopile (or other) steel screw pile helical foundations: lengths vary across site 2/3/4/6 m (extension piles also available in case needed)

3 Level 2 Floor

Lime-sand screed 30mm with cast lime + terazzo (finish) to top 10-15mm
20 mm recycled natural rubber and cork granulate sound absorbtion mat
25 mm oak floor planks
80 x 200 mm exposed floor joists with 80 mm hemp fibre batt insulation in-between
40 mm wood fibre panels
8-10 mm clay plaster finish to soffit
LnT,w ≈ 50-53 dB (impact sound insulation)
DnT,A ≈ 55-58 dB (airborne sound insulation)

4 Level 1 Floor

Lime-sand screed 30mm with cast lime + terazzo (finish) to top 10-15mm
20 mm recycled natural rubber and cork granulate sound absorbtion mat
25 mm oak floor planks
80 x 200 mm exposed floor joists with 200 mm hemp fibre batt insulation in-between
40 mm wood fibre panels
8-10 mm clay plaster finish to soffit
R-value ≈ 6.67 m^2K/W
U-value ~0.15 W/m^2K