ARCHITECTURE STUDENT CONTEST

19th INTERNATIONAL EDITION, HELSINKI 2024

TALLINN UNIVERSITY OF TECHNOLOGY

„LEGO TALO“

ESTONIA | TEAM NR 2

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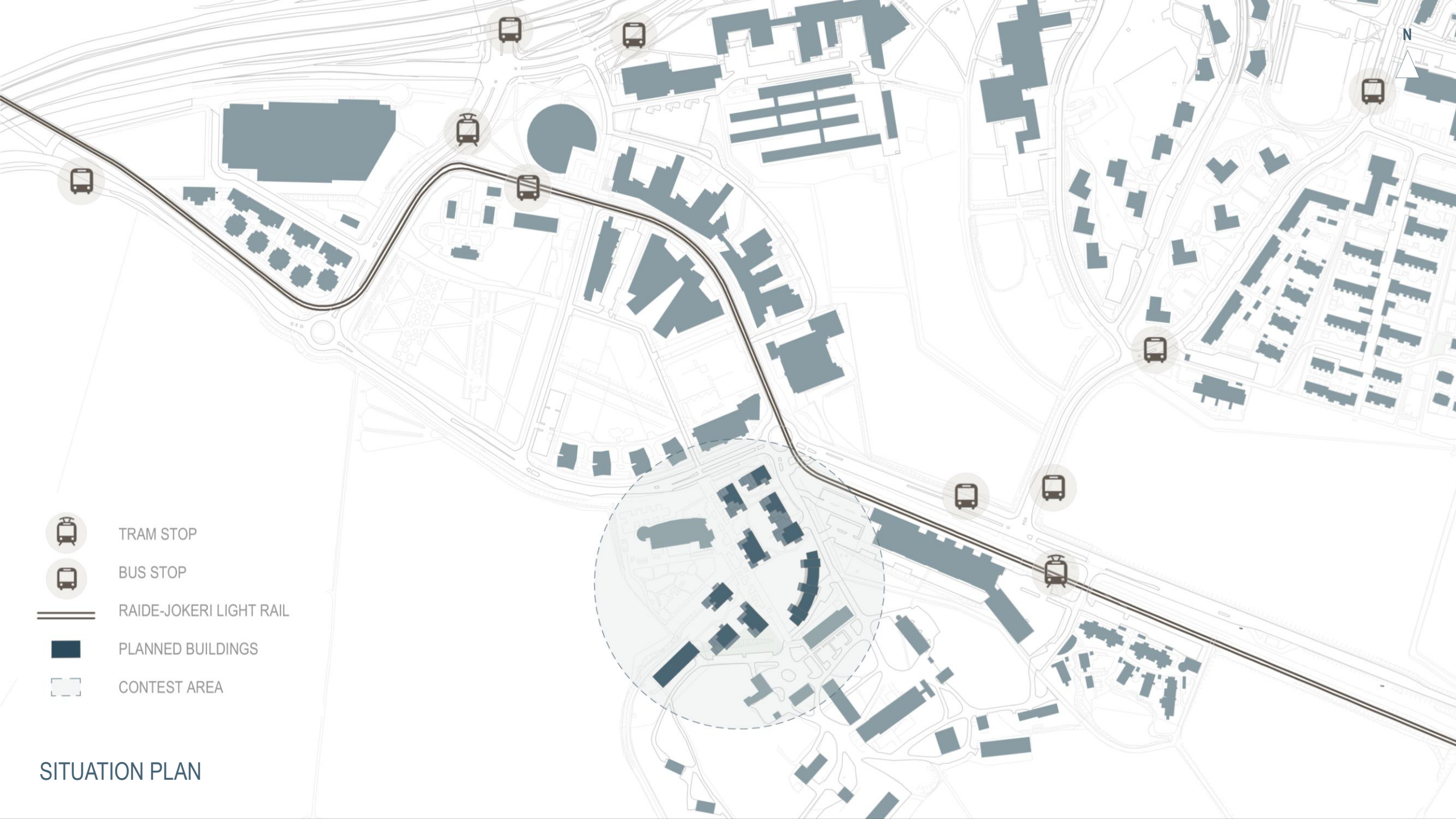
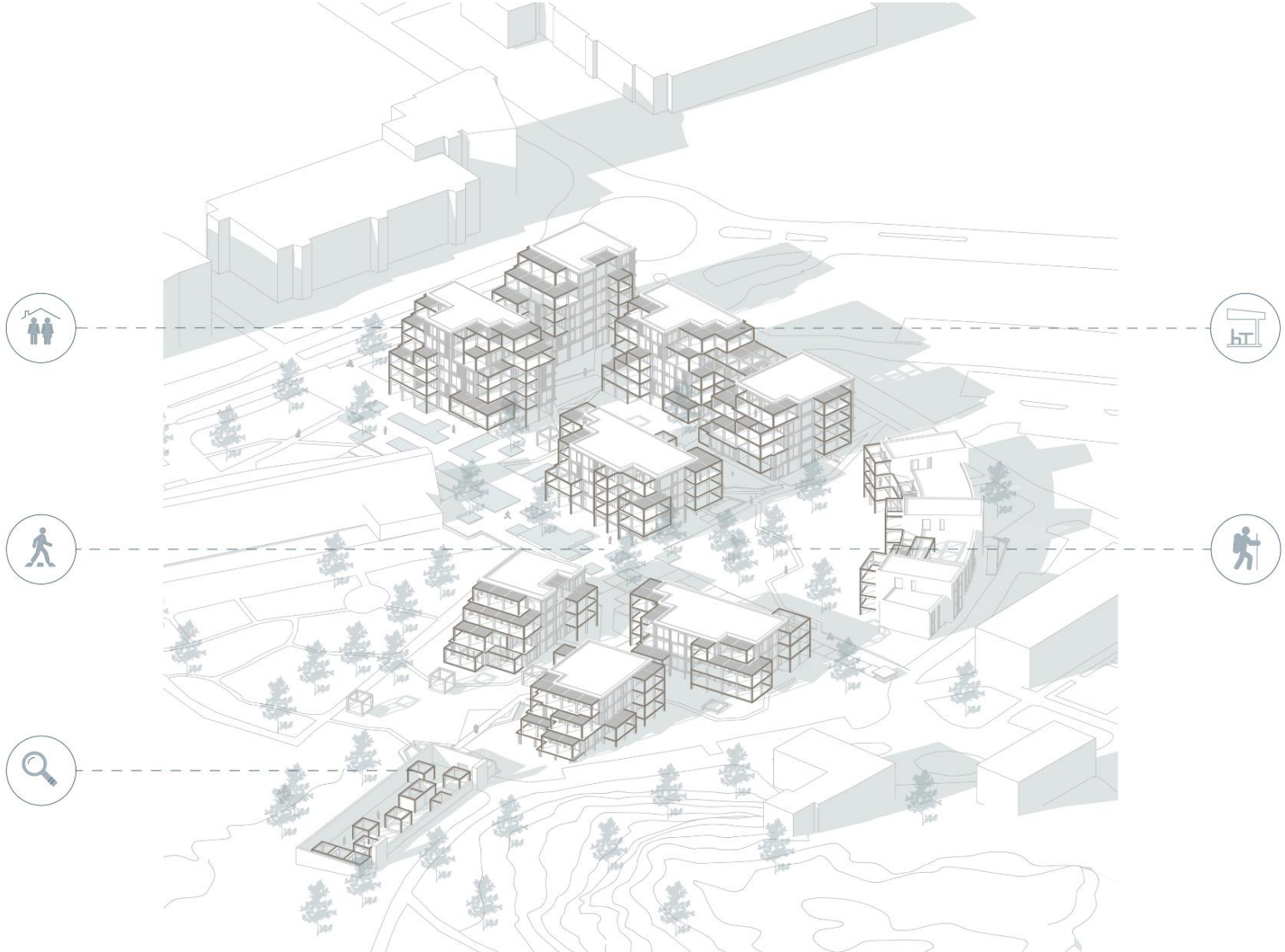
AUTHORS



SITUATION PLAN

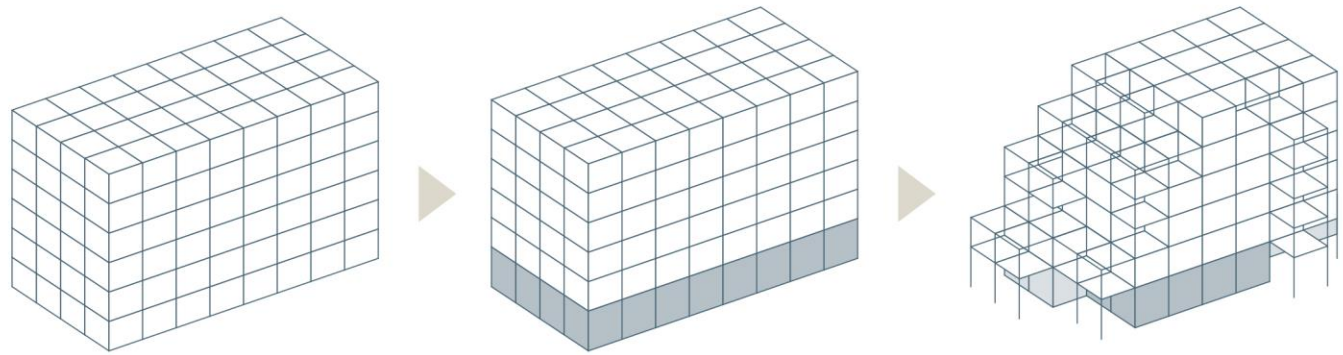

N
VIIKINTIE
MENDELINKUJA
VIIKINTIE
KOETILANTIE
VIIKIN KOETILA
6
6
6
5
4
4
3
4
3
3
LEARNING PATH
UNDERGROUND PARKING

SITE PLAN



AXONOMETRIC VIEW

CONCEPT



MODULARITY

SUNLIGHT

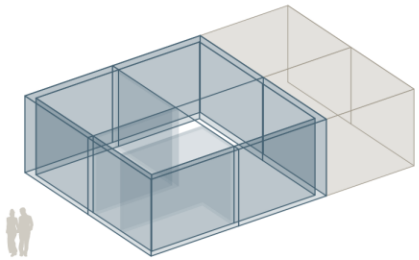
OPEN TO NATURE

VIEWS

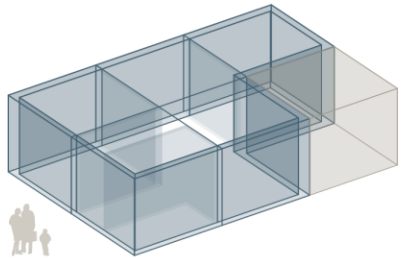
ADAPTABILITY

TIMBER FRAME

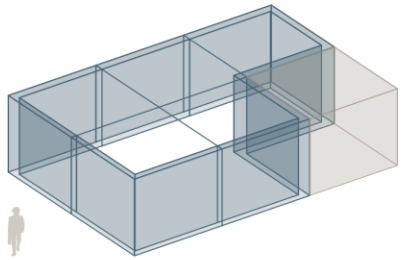
CONCEPT



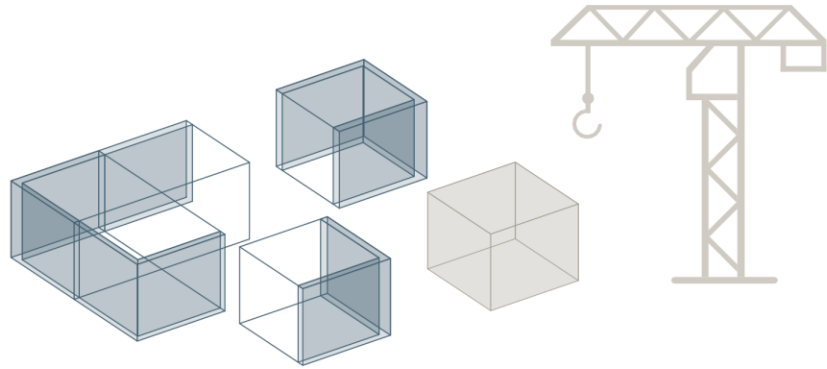
ORIGINAL DWELLING



ADDABLE SPACE

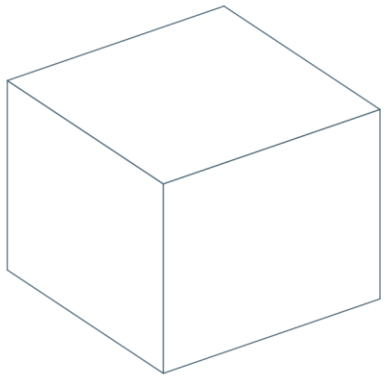


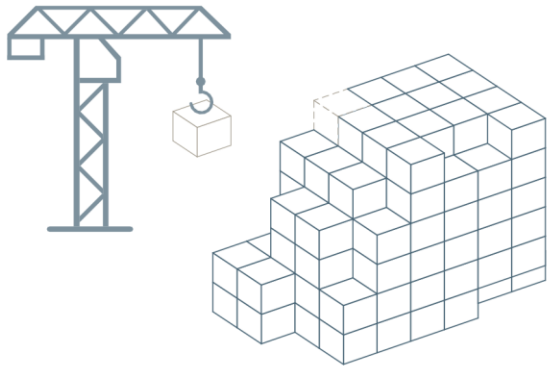
CHANGEABLE FUNCTION



DECONSTRUCTABLE

ADAPTABILITY





CONTROLLED FACTORY ENVIRONMENT

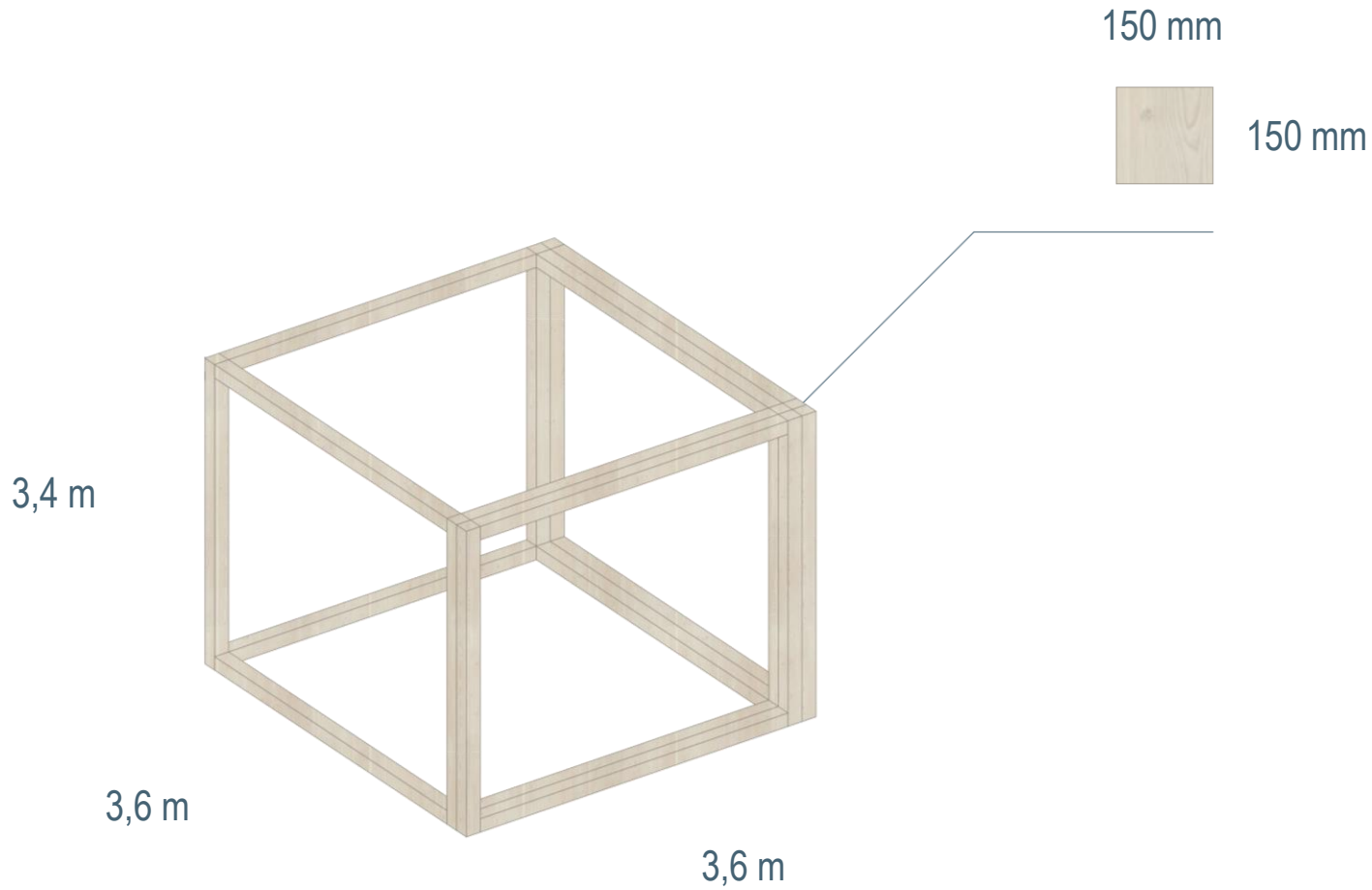
SPEED ON SITE

HIGH QUALITY

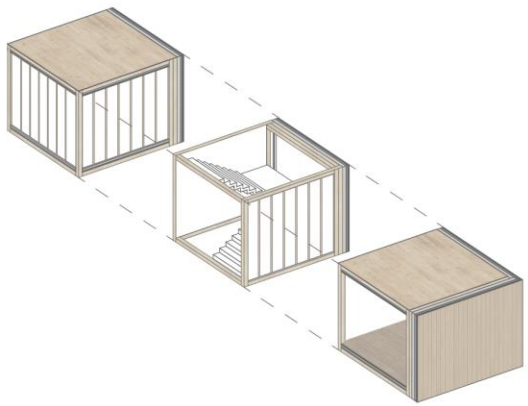
COST-EFFICIENCY

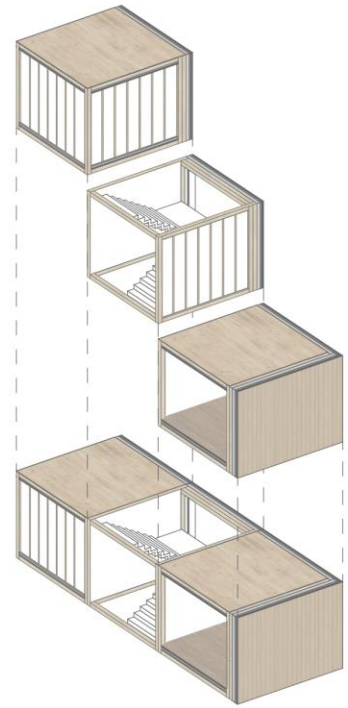
ADAPTABILITY

MODULE SYSTEM BENEFITS

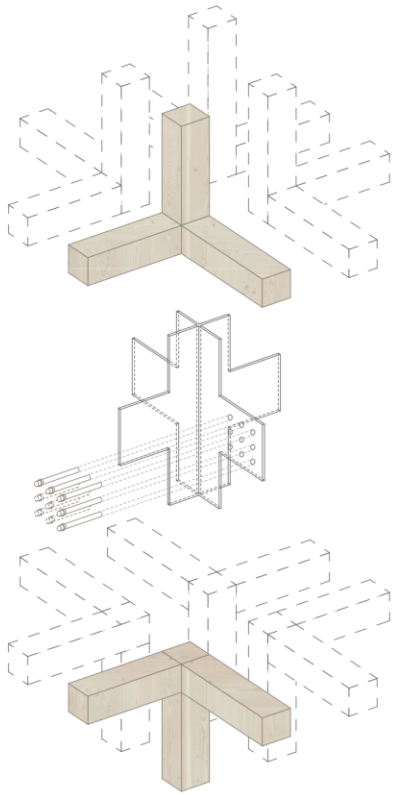


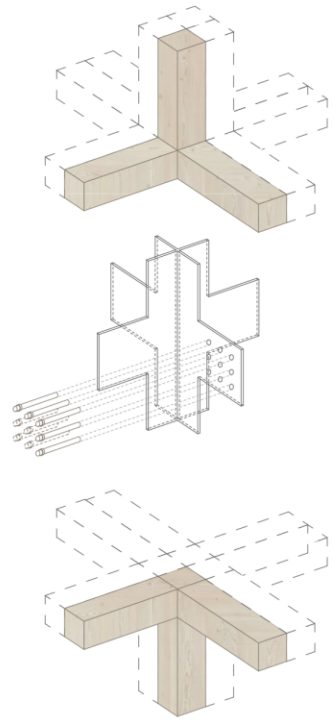
MAIN DIMENSIONS OF MODULE FRAME

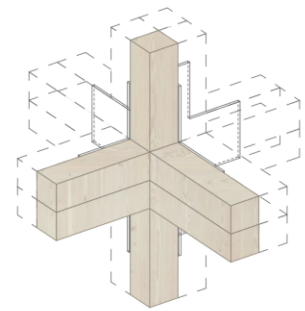




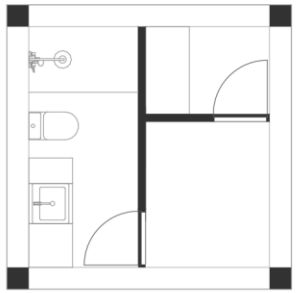
MODULE CONNECTIONS



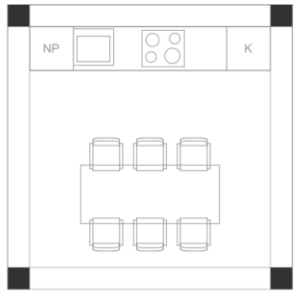




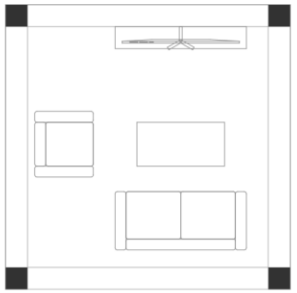
STEEL PLATE CONNECTIONS



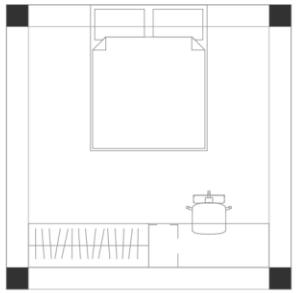
ENTRYWAY & BATHROOM



KITCHEN & DINING ROOM

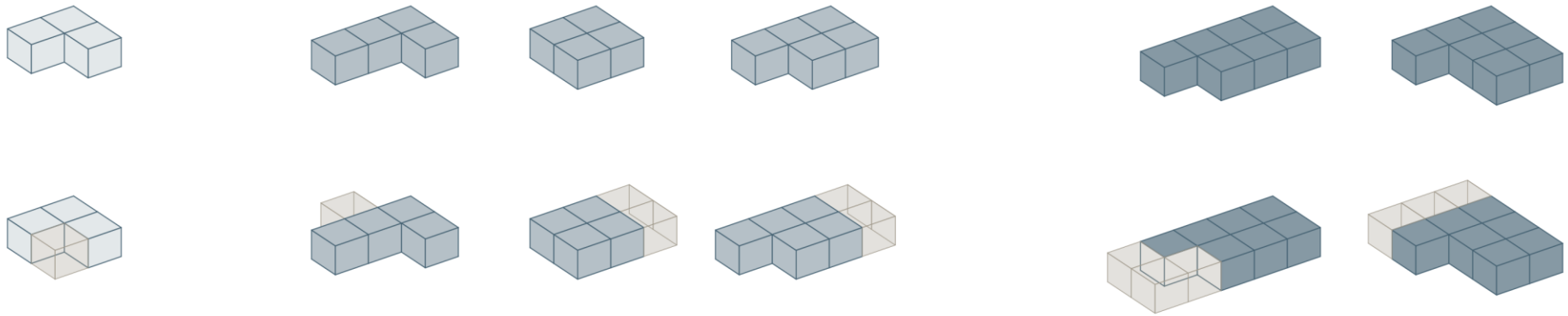


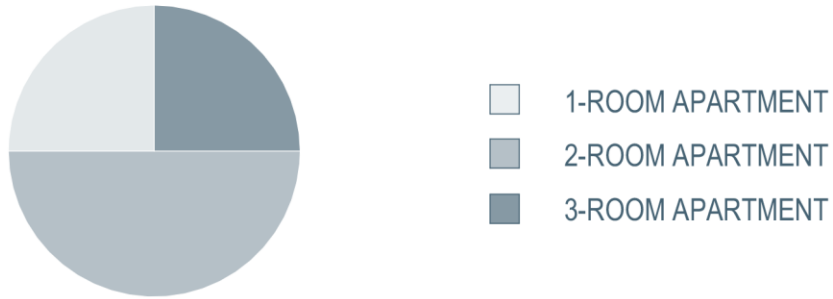
LIVING ROOM



BEDROOM

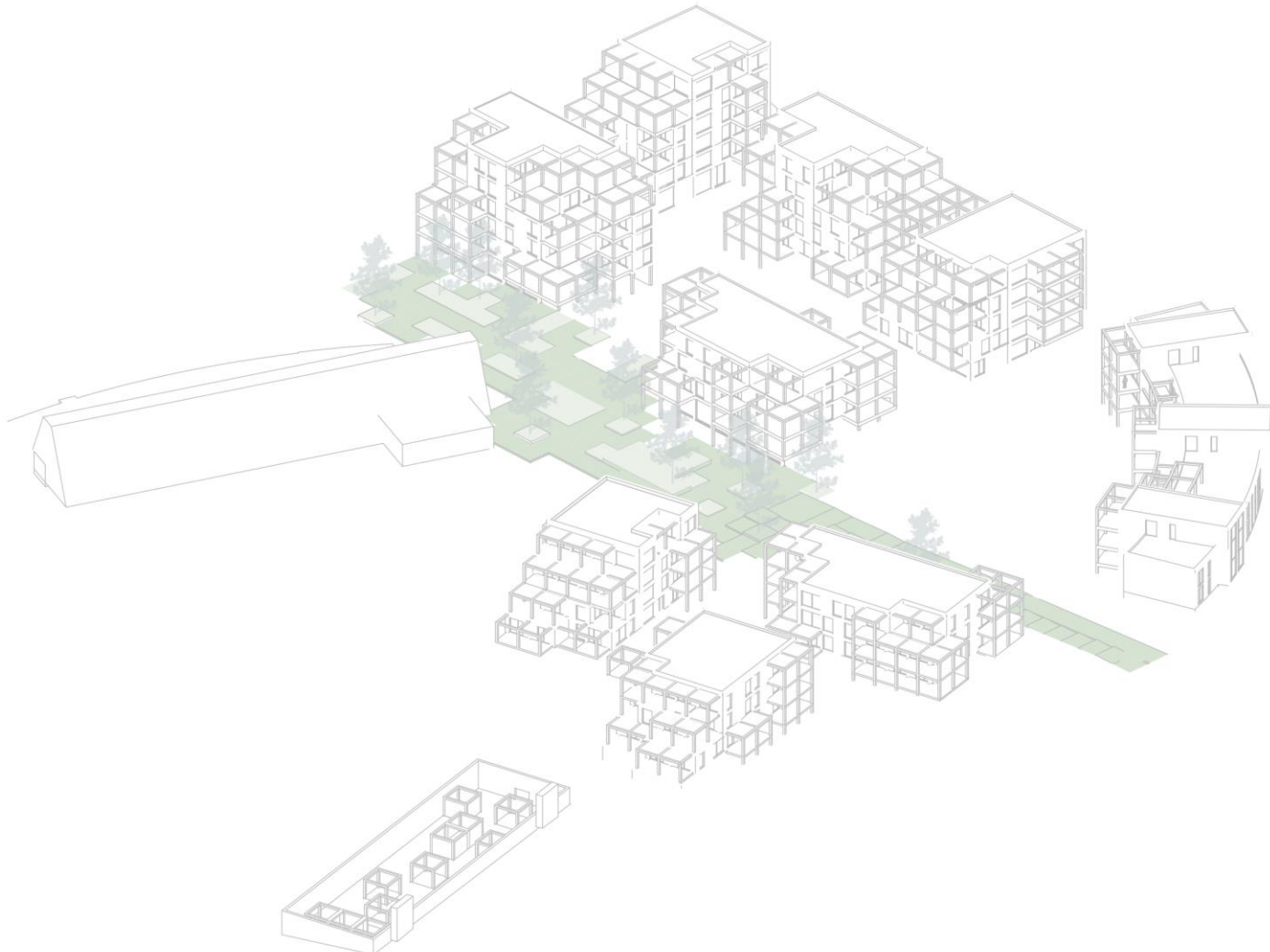
MODULE FUNCTIONS



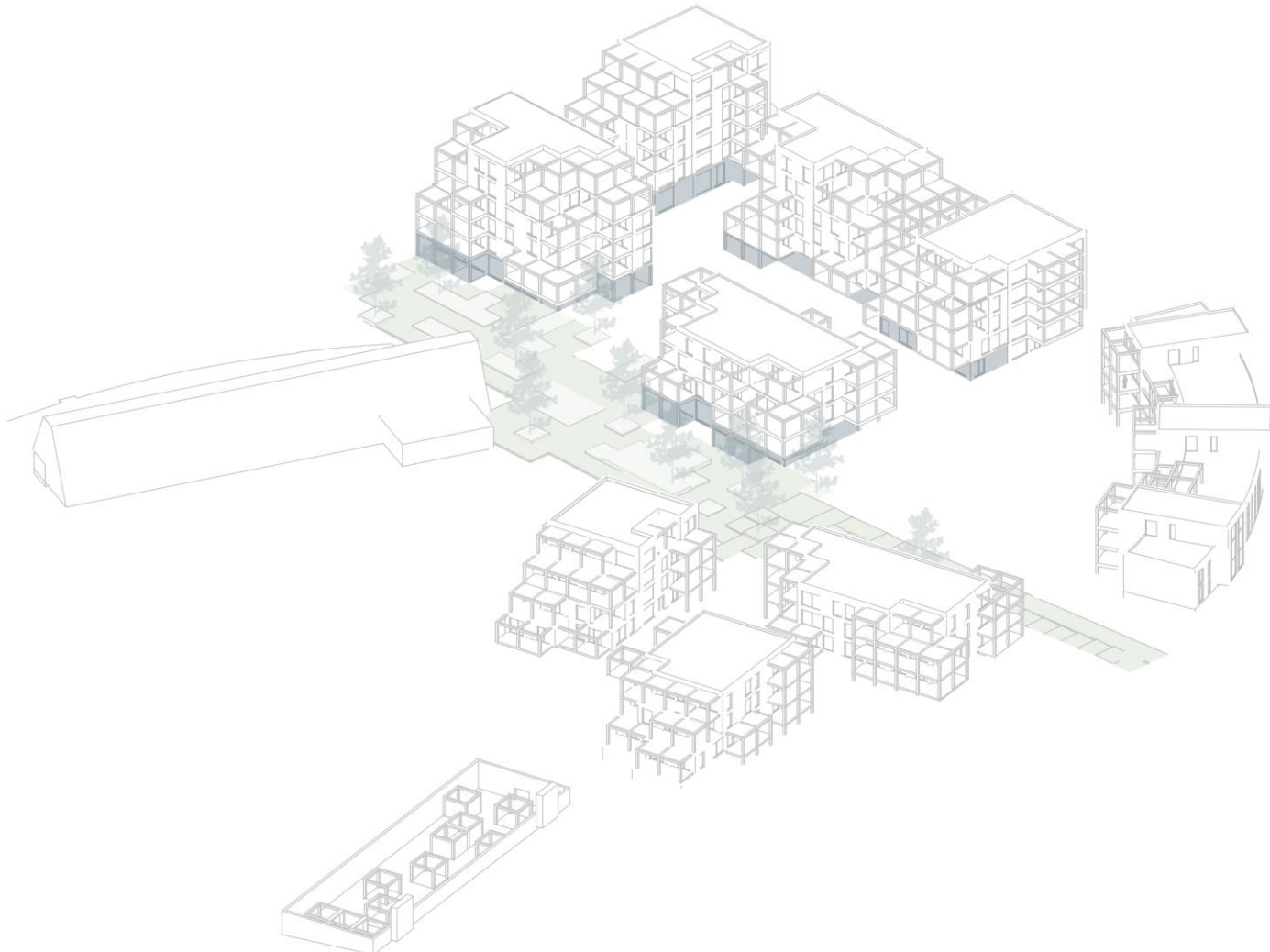


APARTMENT SIZES

PUBLIC SPACE



MAIN STREET

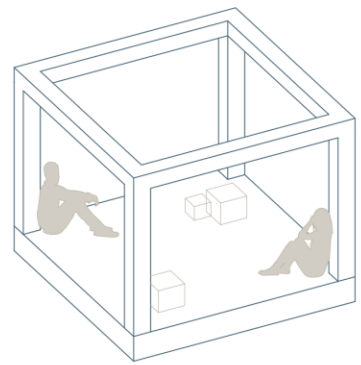


COMMERCIAL SPACES

GROUND FLOOR

PEACE

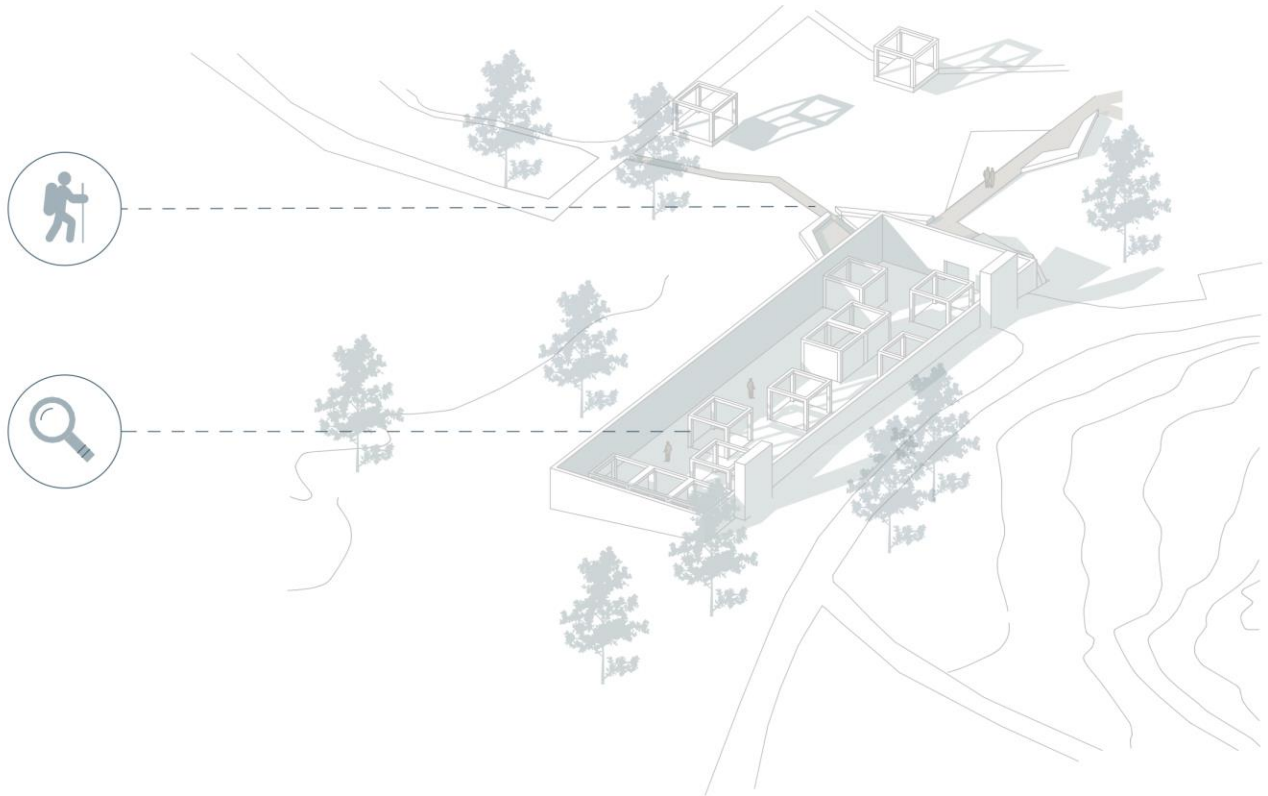
CURIOSITY



CONNECTION

DIVERSE OUTDOOR ENVIRONMENT

LEARNING PATH



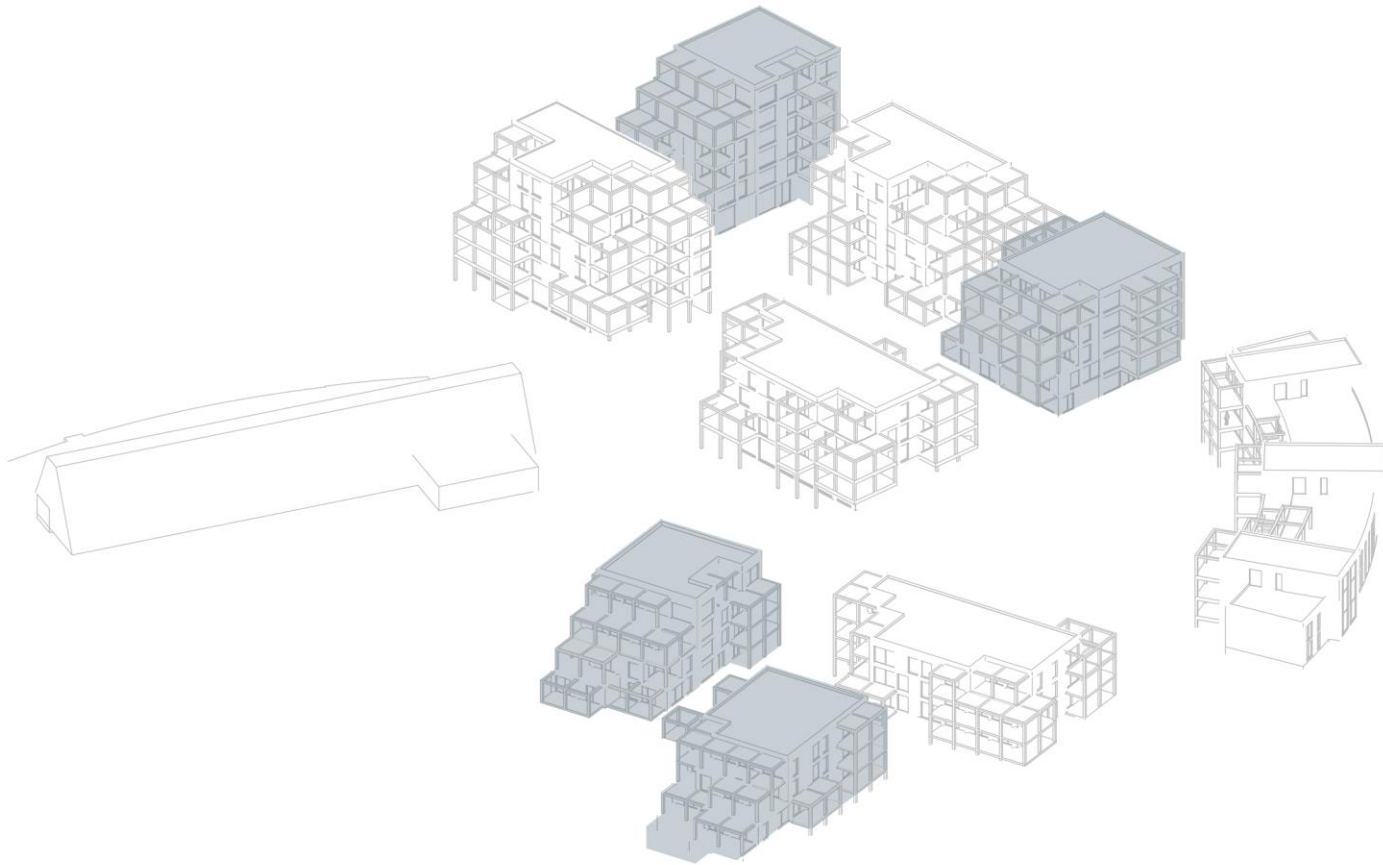
NEW KNOWLEDGE

NATURE

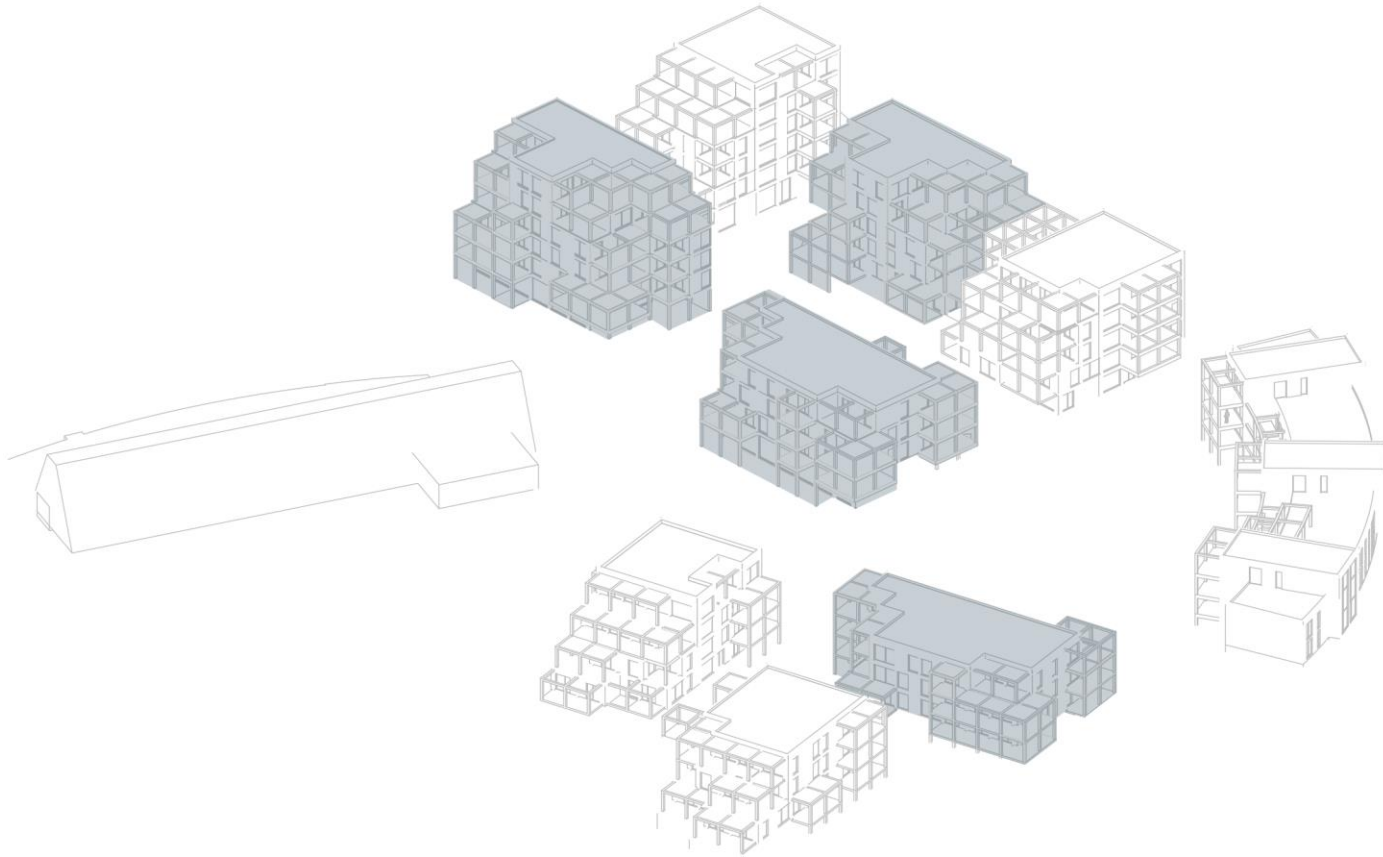
WORKSHOPS

OPEN AIR MUSEUM

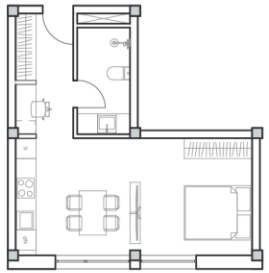
NEW BUILDINGS



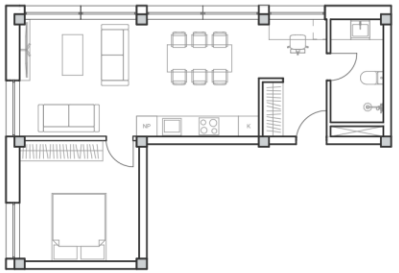
BUILDING TYPE A



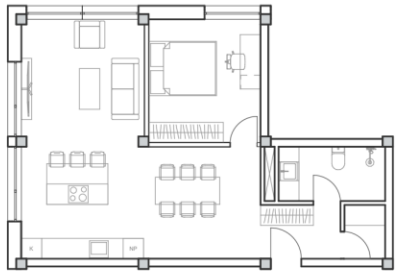
BUILDING TYPE B



S



M



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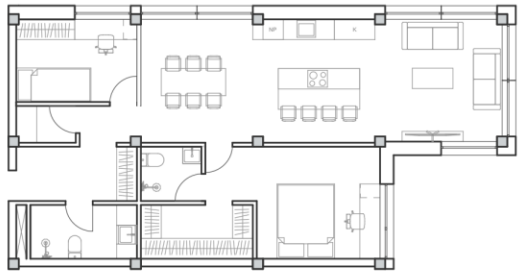


XL

APARTMENT SIZES

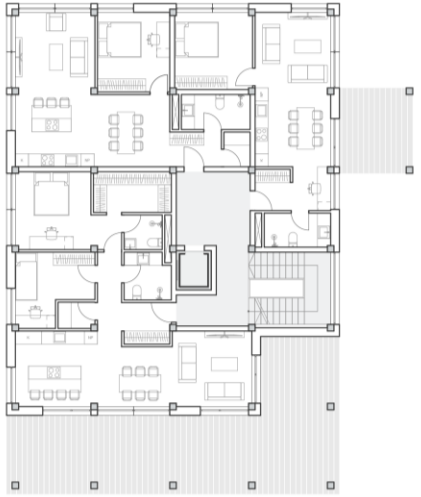
2ND FLOOR

STUDIO 35,0 M²
2- BEDROOM 2x 48,0 I 59,5 M²
3- BEDROOM 85,5 M²

3RD & 4TH FLOOR

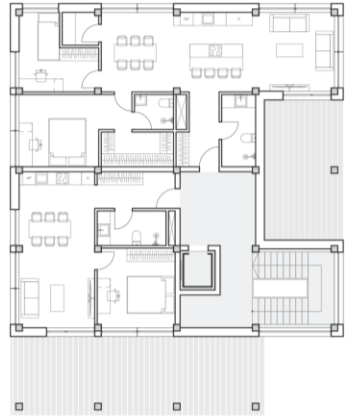
STUDIO 35,5 M²
2- BEDROOM 48,0 I 59,5 M²
3- BEDROOM 84,5 M²

5TH FLOOR



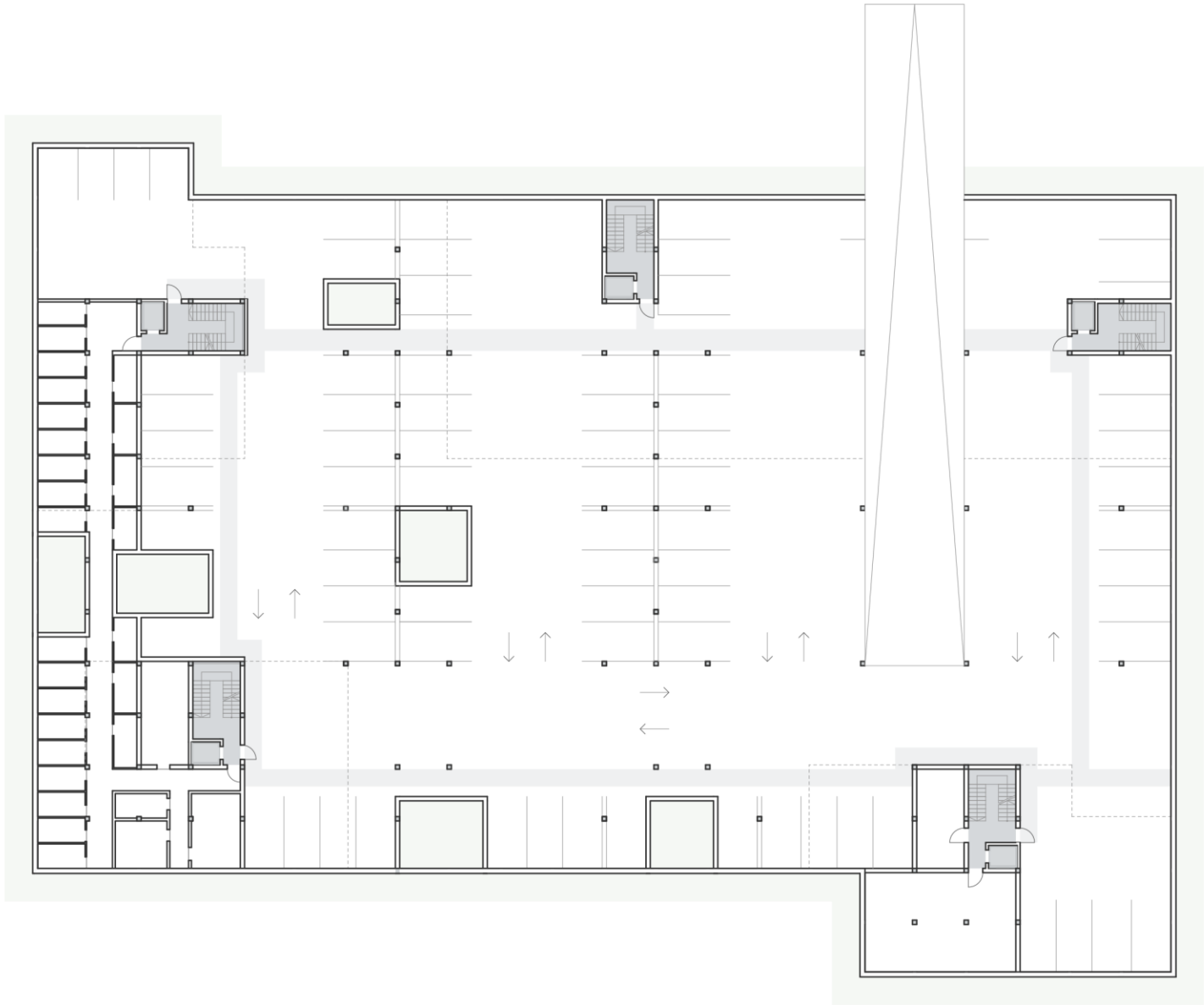
2- BEDROOM 48,0 I 59,5 M²
3- BEDROOM 84,5 M²

6TH FLOOR



2- BEDROOM 48,5 M²
3- BEDROOM 84,5 M²

BUILDING TYPE A FLOOR PLANS



-1 PARKING FLOOR

CRADLE TO GRAVE (A1-A4, B4-B5, C1-C4)

<320	A
320-360	B
360-400	C
400-440	D
440-480	E
480-520	F
>520	G

kg CO_2e/m^2

301

CO_2 2 139 Tonnes CO_2e

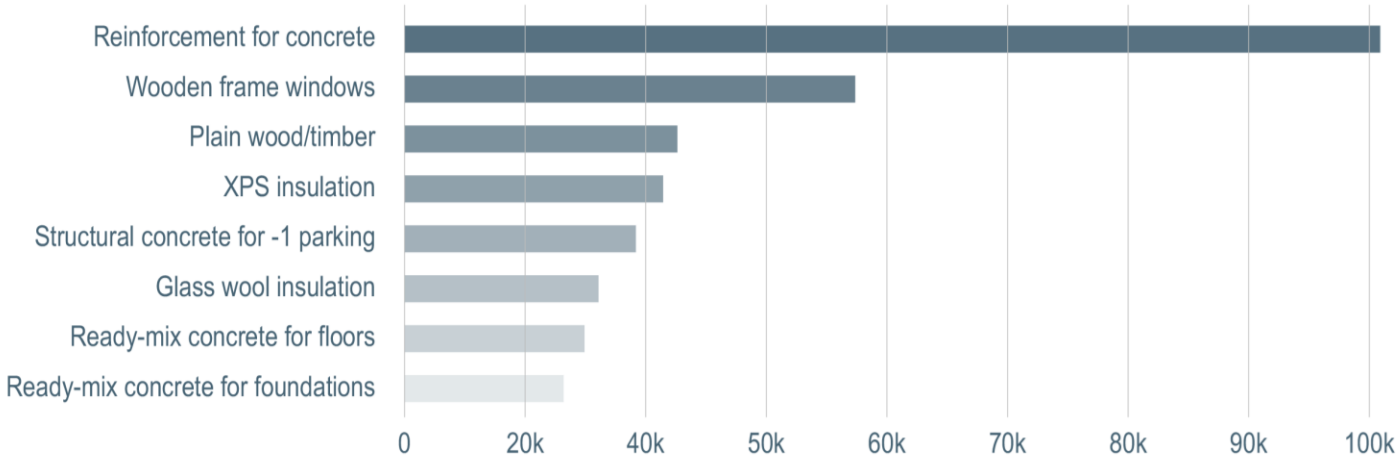
21,92 kg $CO_2e/ m^2/$ year

106 957 € Social cost of carbon

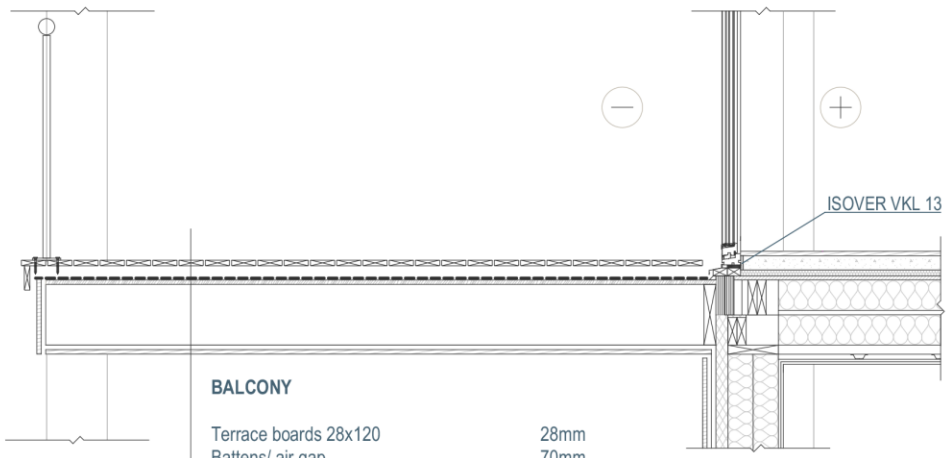
ENERGY EFFICIENCY

Building shell average U-value	0,30 W/m^2K
Average external U-value	0,07 - 0,13 W/m^2K
Average openings U-value	0,70 W/m^2K
Air tightness	0,6 1/h
Annual heating energy	14,90 kWh/m^2a
Annual cooling energy	0,00 kWh/m^2a
Primary energy	**93,85 kWh/m^2a** **A**

MOST CONTRIBUTING MATERIALS Global warming kg CO2e - Resource types



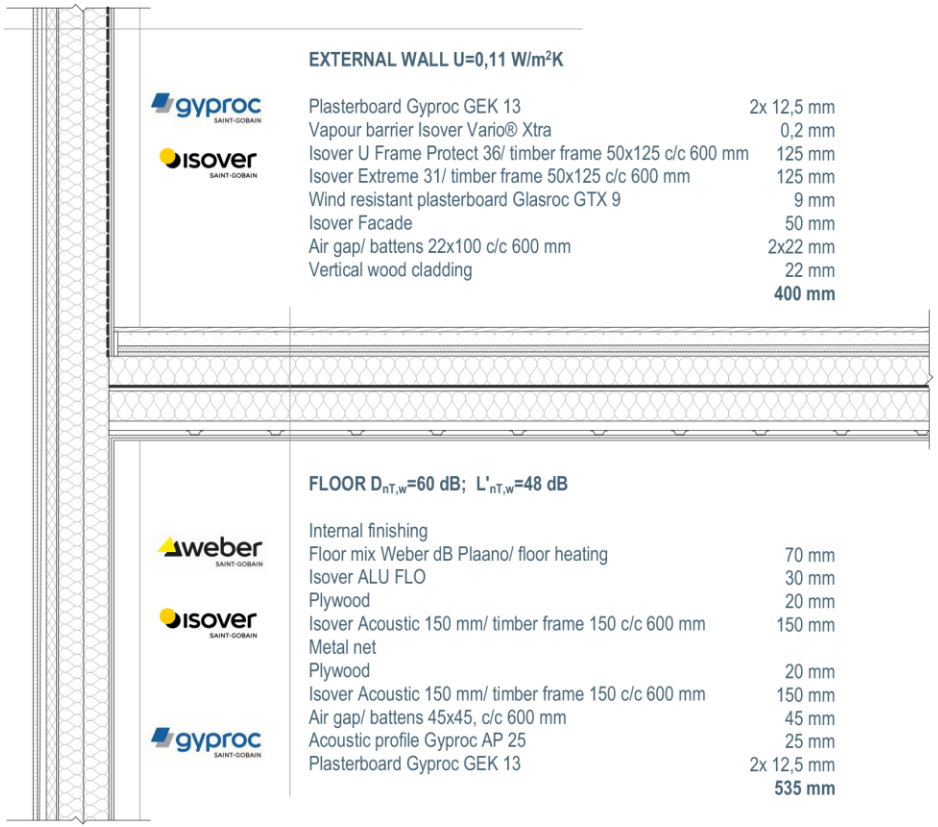
LCA AND ENERGY EFFICIENCY ANALYSIS



BALCONY

Terrace boards 28x120	28mm
Battens/ air gap	70mm
Roof covering 1x SBS	
Moisture resistant chipboard 22mm	22 mm
Timber frame	300 mm
Battens/ air gap	22 mm
Wood cladding	22 mm
	464 mm

BALCONY DETAIL | SECTION 1-1



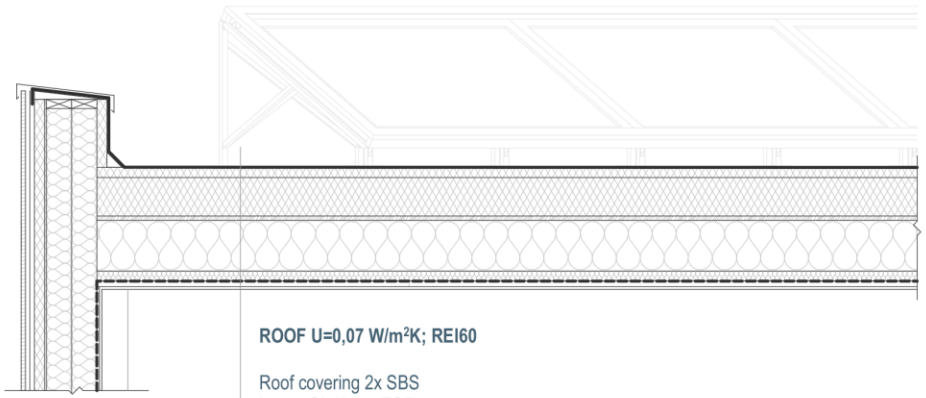
EXTERNAL WALL U=0,11 W/m²K

Plasterboard Gyproc GEK 13	2x 12,5 mm
Vapour barrier Isover Vario® Xtra	0,2 mm
Isover U Frame Protect 36/ timber frame 50x125 c/c 600 mm	125 mm
Isover Extreme 31/ timber frame 50x125 c/c 600 mm	125 mm
Wind resistant plasterboard Glasroc GTX 9	9 mm
Isover Facade	50 mm
Air gap/ battens 22x100 c/c 600 mm	2x22 mm
Vertical wood cladding	22 mm
	400 mm

FLOOR $D_{nT,w}$=60 dB; $L'_{nT,w}$=48 dB

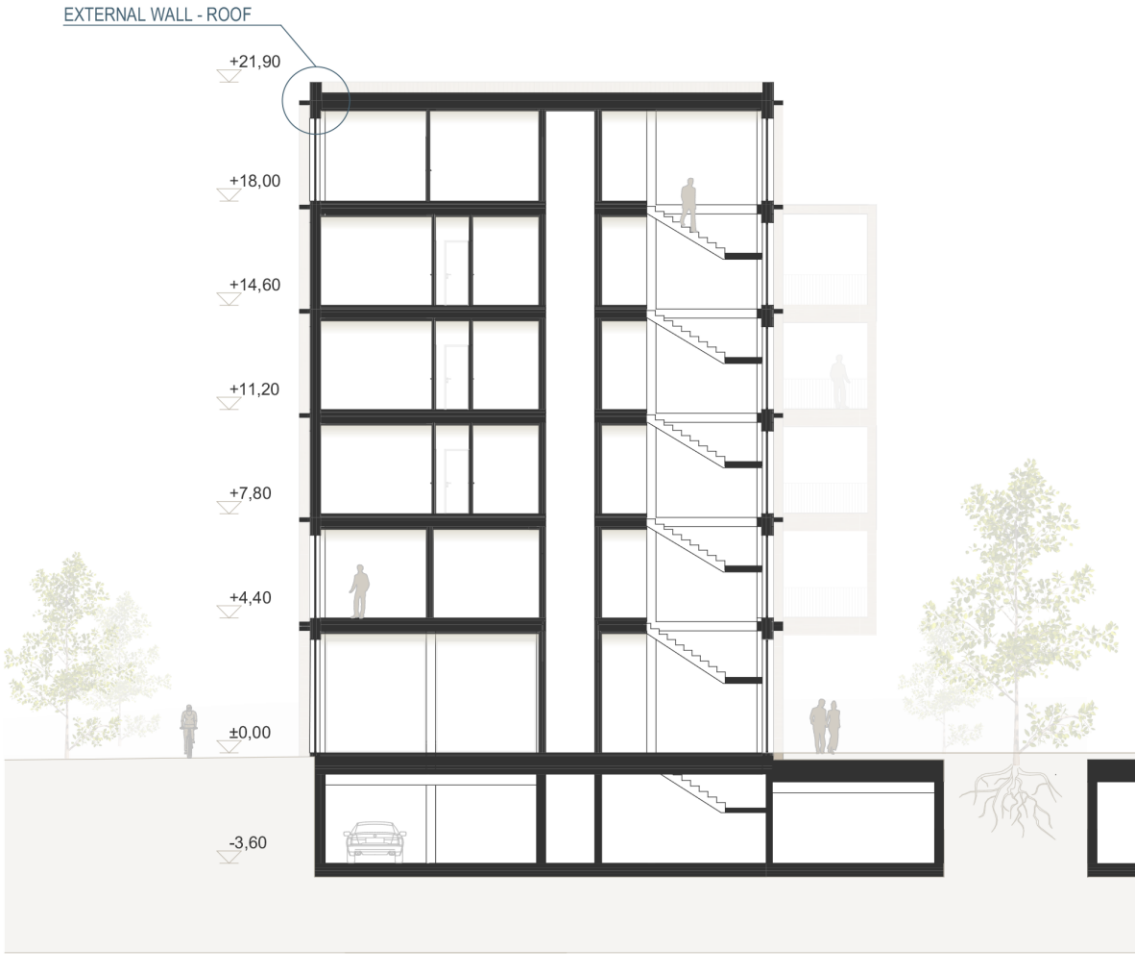
Internal finishing	
Floor mix Weber dB Plaano/ floor heating	70 mm
Isover ALU FLO	30 mm
Plywood	20 mm
Isover Acoustic 150 mm/ timber frame 150 c/c 600 mm	150 mm
Metal net	
Plywood	20 mm
Isover Acoustic 150 mm/ timber frame 150 c/c 600 mm	150 mm
Air gap/ battens 45x45, c/c 600 mm	45 mm
Acoustic profile Gyproc AP 25	25 mm
Plasterboard Gyproc GEK 13	2x 12,5 mm
	535 mm

FLOOR AND EXTERNAL WALL DETAIL | SECTION 2-2

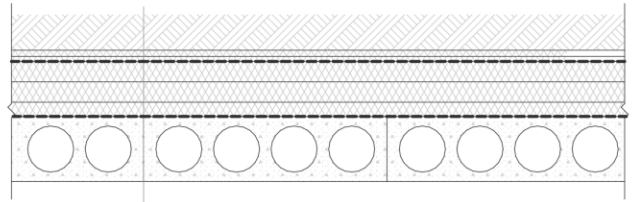


ROOF U=0,07 W/m²K; REI60

Roof covering 2x SBS	
Isover OL HeavyTOP	50 mm
Isover OL-P	190 mm
OSB board	22 mm
Isover Extreme 31/ timber frame 45x95 c/c 600	250 mm
Vapour barrier Isover Vario® Xtra	
Isover U Frame Protect 36/ battens 45x145 c/c 1200 mm	50 mm
Air gap/ battens 28x70 c/c 300 mm	28 mm
Plasterboard Gyproc GF 15	15 mm
	607 mm

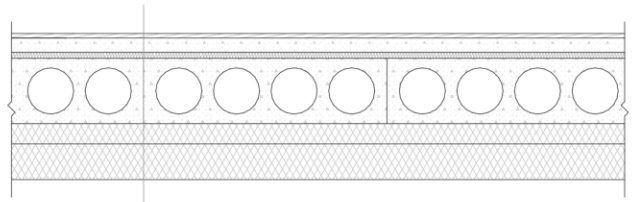


ROOF DETAIL | SECTION 2-2



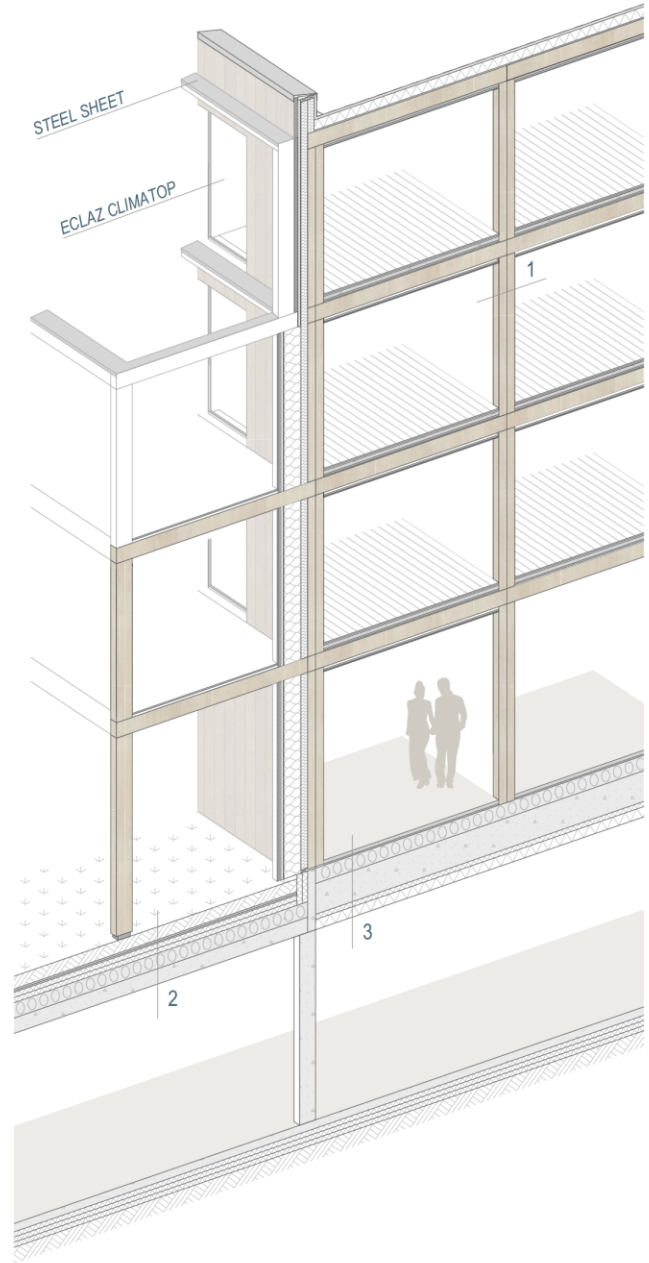
2 UNDERGROUND PARKING GREEN ROOF U=0,10 W/m²K

Soil	
Isover Flora 30mm	30mm
Drainage mat	25mm
Root barrier	
Jackon Super XPS 300	2x100 mm
Jackon Super XPS 300	70 mm
Hydroisolation	
HCE 320 hollow core slabs	320 mm
	520 mm



3 UNDERGROUND PARKING CEILING U=0,10 W/m²K

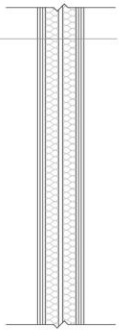
Weber dB Plaano	70 mm
Isover ALU FLO	30 mm
HCE 320 hollow core slabs	320 mm
Isover FS5	100 mm
Isover Garage	175 mm
	695 mm



-1 PARKING CEILING AND ROOF | AXONOMETRIC SECTION

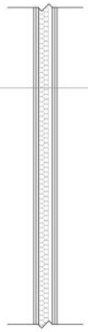
1 WALL BETWEEN APARTMENTS $D_{nT,w}$=60 dB; EI60

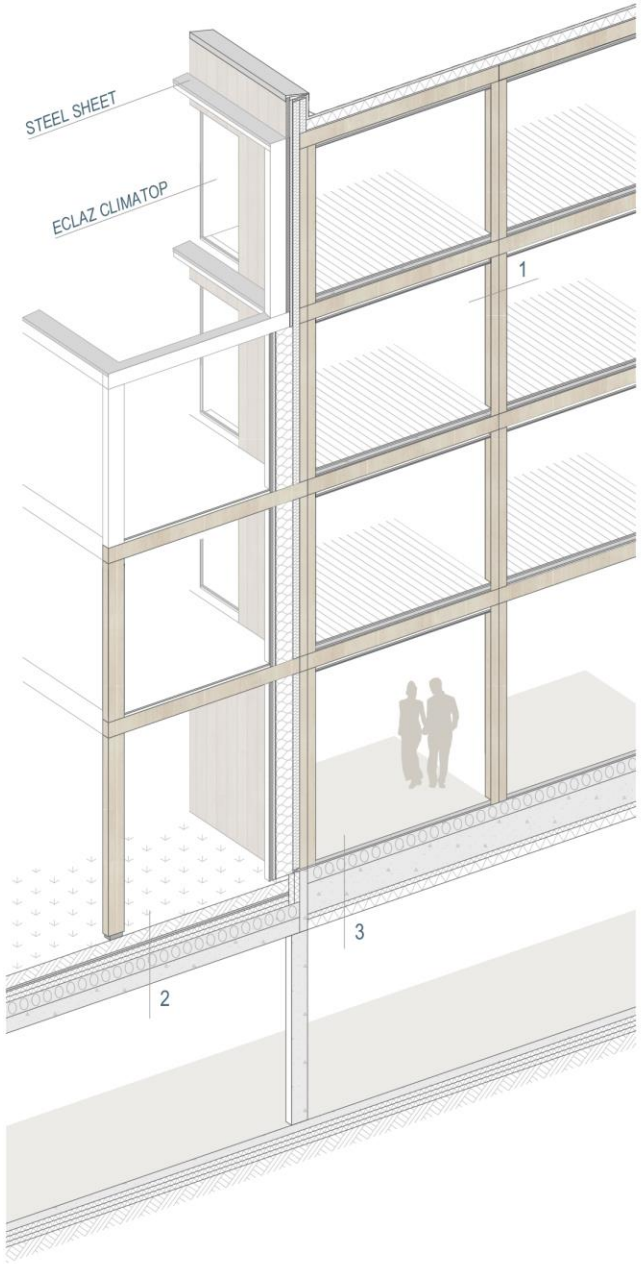
Plasterboard Gyproc GEK13	12,5 mm
Plasterboard Gyproc GN 13	2x12,5 mm
Isover Acoustic/ timber frame 45x66 c/c 600 mm	66 mm
Air gap	20mm
Isover Acoustic/ timber frame 45x66 c/c 600 mm	66mm
Plasterboard Gyproc GN 13	2x12,5
Plasterboard Gyproc GEK13	12,5
	227 mm



WALL BETWEEN ROOMS $D_{nT,w}$=40 dB; EI60

Plasterboard Gyproc GN 13	2x12,5 mm
Isover Acoustic/ timber frame 45x66 c/c 600 mm	50 mm
Plasterboard Gyproc GN 13	2x12,5
	116 mm

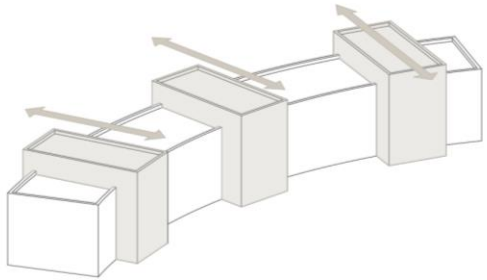




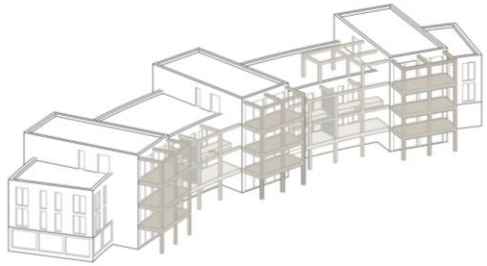
INTERNAL WALLS | AXONOMETRIC SECTION

RECONSTRUCTED BUILDING

ORIGINAL VOLUME



AVOIDING LONG HALLWAYS

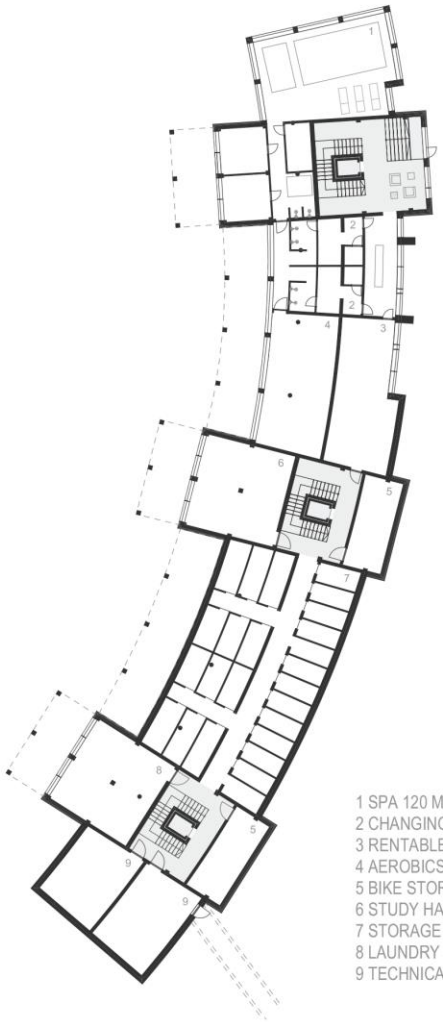


COHESIVE DESIGN

RECONSTRUCTED BUILDING CONCEPT

N

-1 FLOOR

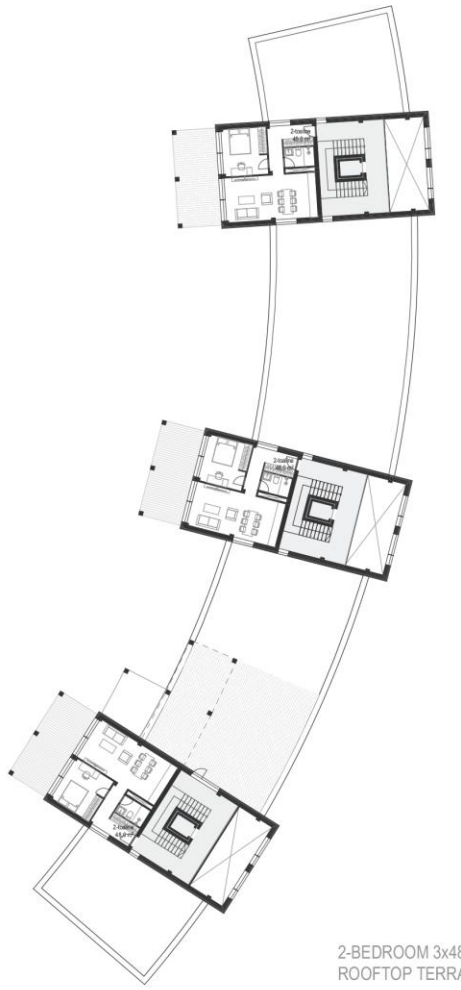


1 SPA 120 M²
2 CHANGING ROOM 19 M²
3 RENTABLE HALL 52,7 M²
4 AEROBICS HALL 54,9 M²
5 BIKE STORAGE 21,5 M²
6 STUDY HALL 50,9 M²
7 STORAGE UNITS 190 M²
8 LAUNDRY 50,9 M²
9 TECHNICAL ROOM 69,0 M²

1ST & 2ND FLOOR

STUDIO 32,0 I 35,5 I 34,5 I 31,0 M²
2-BEDROOM 3x48,0 I 2x 48,5 I 2x 50x5 M²
3-BEDROOM 81,5 I 82,5 M²

3RD FLOOR



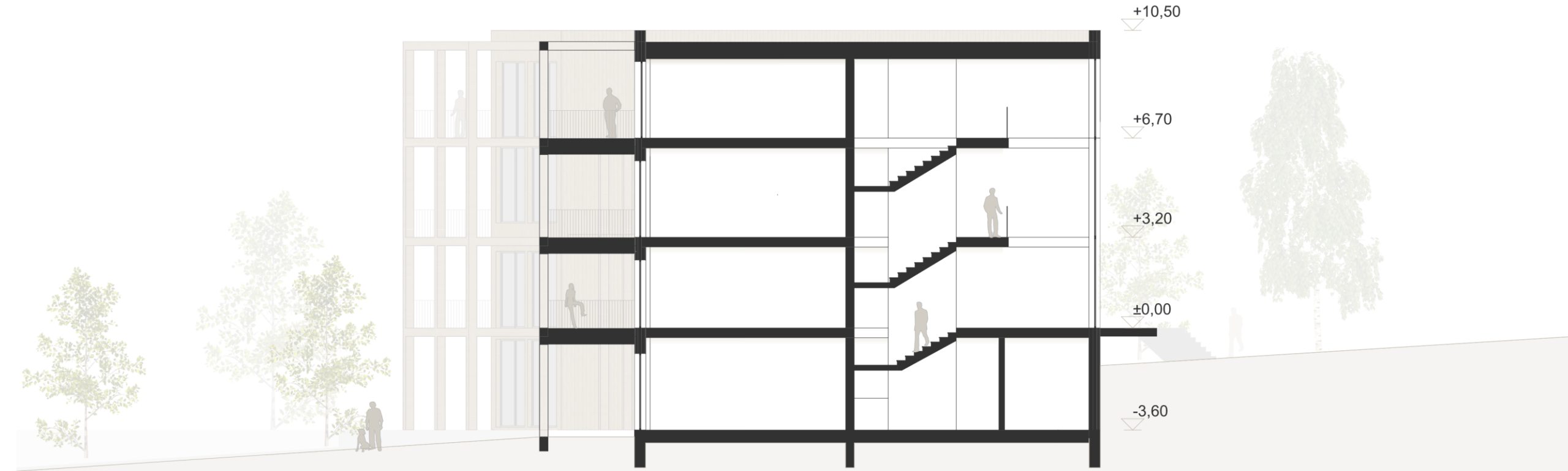
2-BEDROOM 3x48,0 M²
ROOFTOP TERRACE

RECONSTRUCTED BUILDING FLOOR PLANS

NORTHEAST ELEVATION

SOUTHWEST ELEVATION

ELEVATIONS



RECONSTRUCTED BUILDING'S ADDITION SECTION


BAKERY