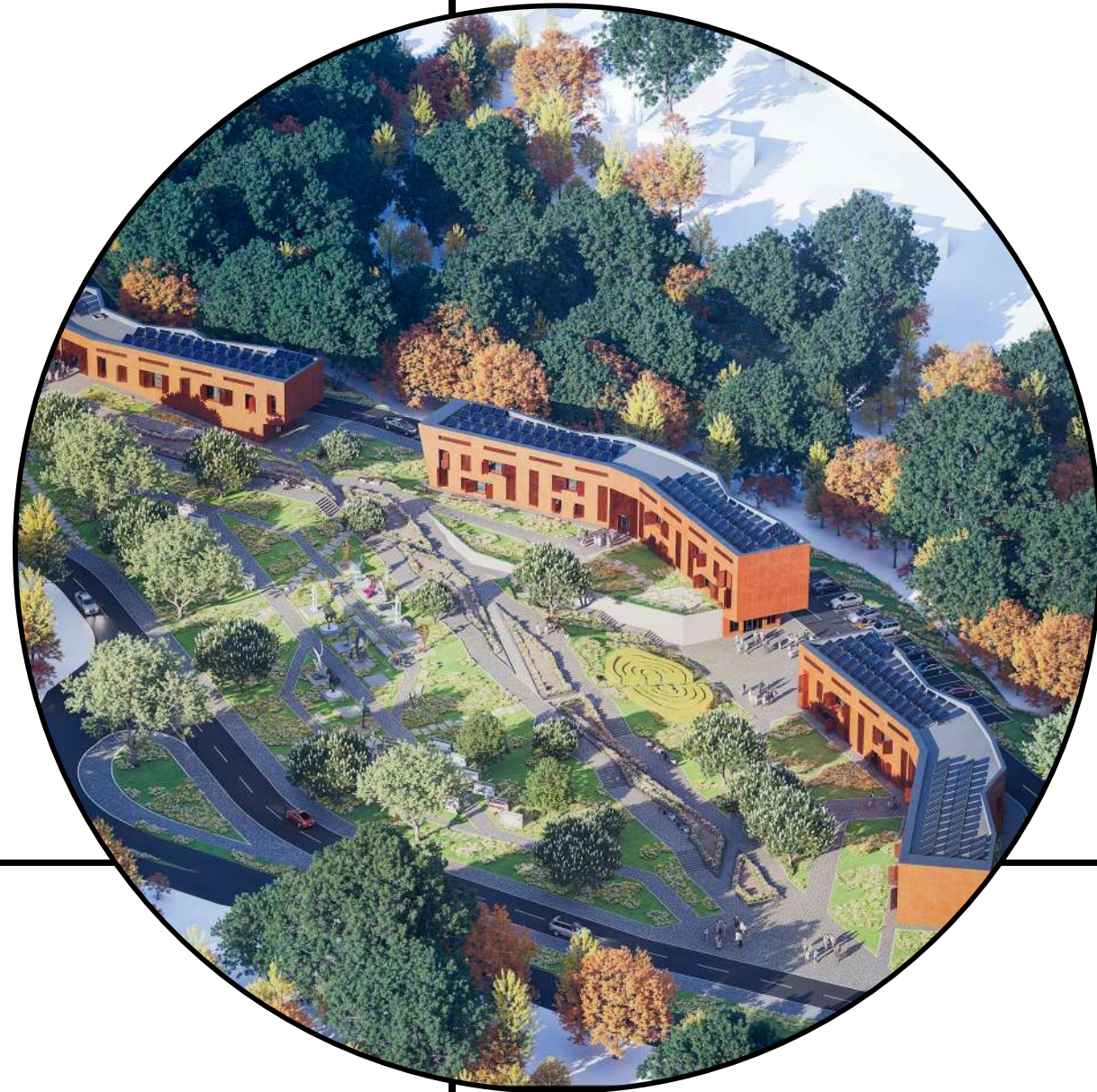


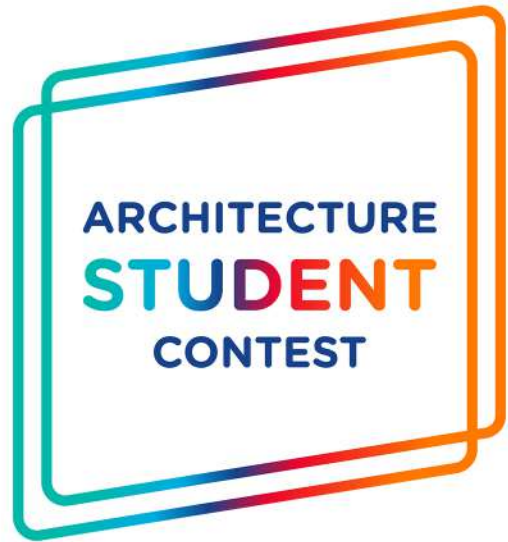
**ARCHITECTURE STUDENT CONTEST**  
**20<sup>th</sup> INTERNATIONAL EDITION, NORD ISÈRE 2025**

SAINT GOBAIN

ARCHITECTURE STUDENT CONTEST



# LINEA NATURA



Kostadin Cholakov



Nicole Chobanova

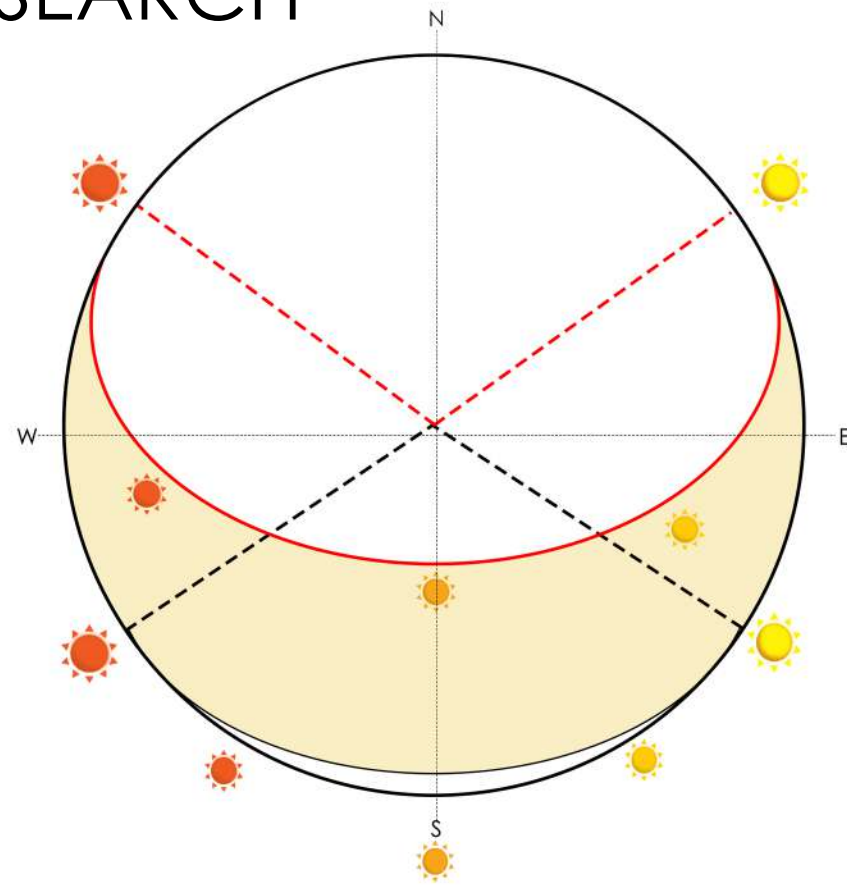


TUTOR:  
Assoc. Prof. Dr. Arch.  
Evgenia Aleksandrova



# RESEARCH

# RESEARCH



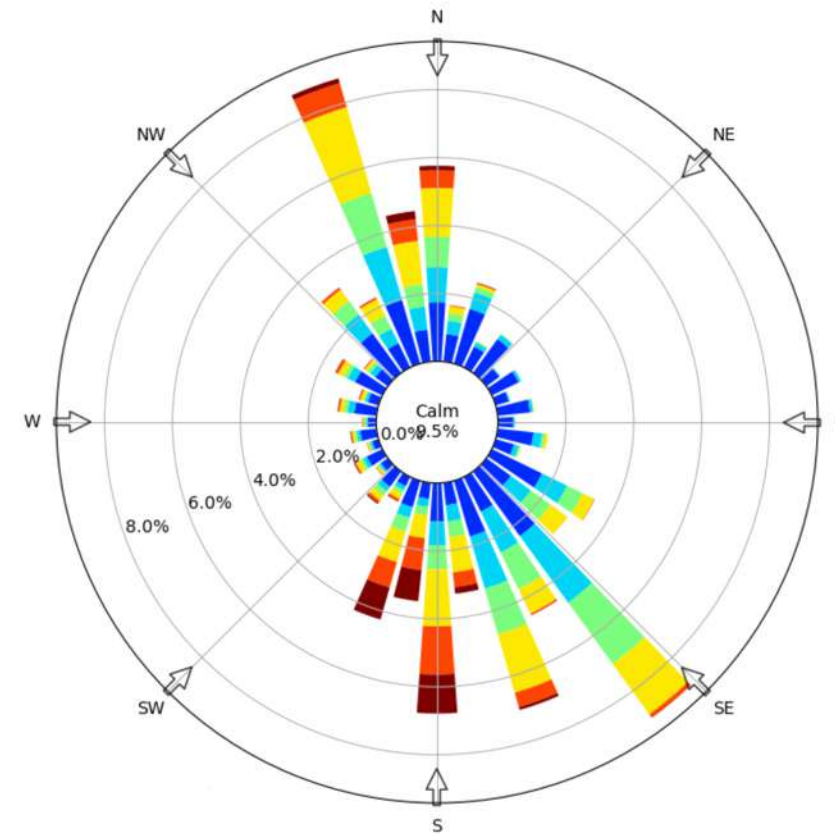
SUN EXPOSURE

## SUMMER SOLSTICE – JUNE 21

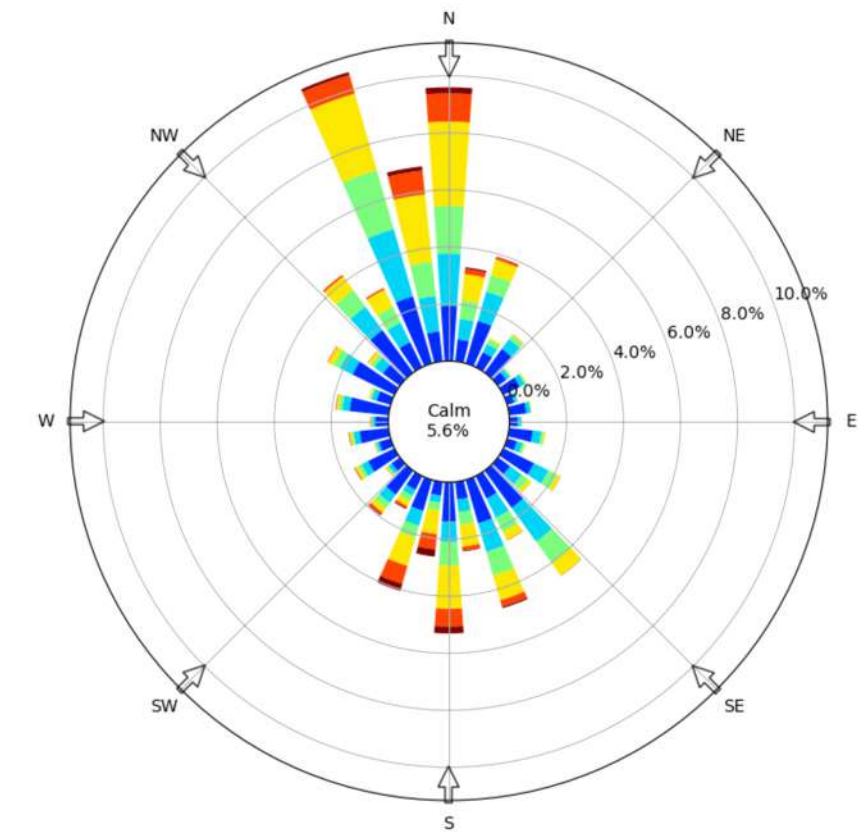
- SUNLIGHT ANGLE – 67.20°
- SUNRISE – 05:49:48
- SUNSET – 21:32:48
- DURATION OF SUNLIGHT – 15H 43M 00SEC

## WINTER SOLSTICE – DECEMBER 21

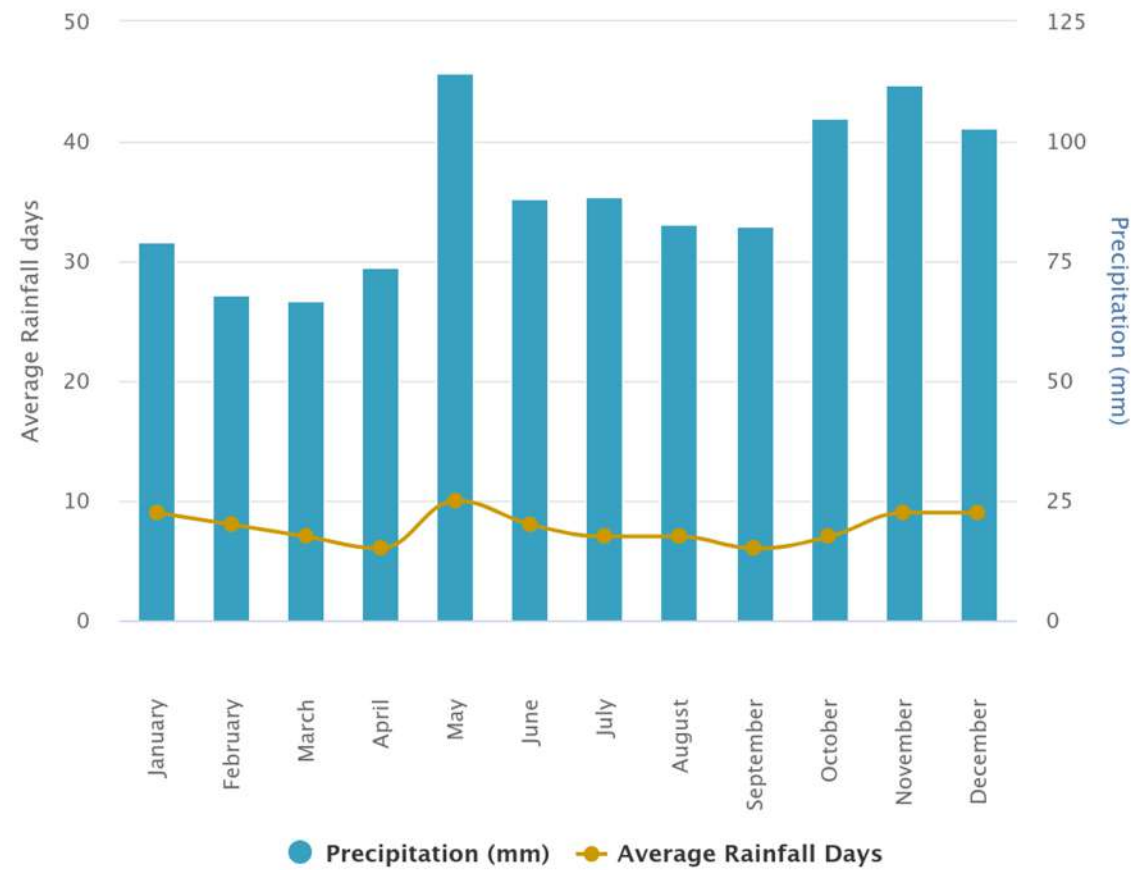
- SOLAR ANGLE – 21.47°
- SUNRISE – 08:16:36
- SUNSET – 16:58:46
- DURATION OF SUNLIGHT – 8H 42M 10SEC



WIND ROSE – DECEMBER



WIND ROSE – JUNE



## AVERAGE PRECIPITATION

MAXIMUM PRECIPITATION – 114.2 mm/m<sup>2</sup> (MAY)  
 MINIMUM PRECIPITATION – 66.7 mm/m<sup>2</sup> (MARCH)

AVERAGE NUMBER OF RAINY DAYS PER MONTH – 8 DAYS

# SITE ANALYSIS



## LEGEND № 1:

- BOUNDARY OF THE ASSIGNMENT  
AUTOROUTE A43
- LYON – FREJUS TUNNEL
- RAILWAY LINE  
LYON – GRENOBLE
- DEPARTMENTAL ROAD D313
- DEPARTMENTAL ROAD D318

## LEGEND №2:

- BOUNDARY OF THE ASSIGNMENT
- ↪ MAIN ACCESS  
ROADS TO THE PROPERTY
- DEPARTMENTAL ROAD D318
- DEPARTMENTAL ROAD D313
- SERVICE STREET
- CYCLE LANES



SCHEME №1 – URBAN TRANSPORT NETWORK



SCHEME №2 – LOCAL TRANSPORT NETWORK



**ZONE - A -**  
NEW CONSTRUCTION

# MASTER PLAN

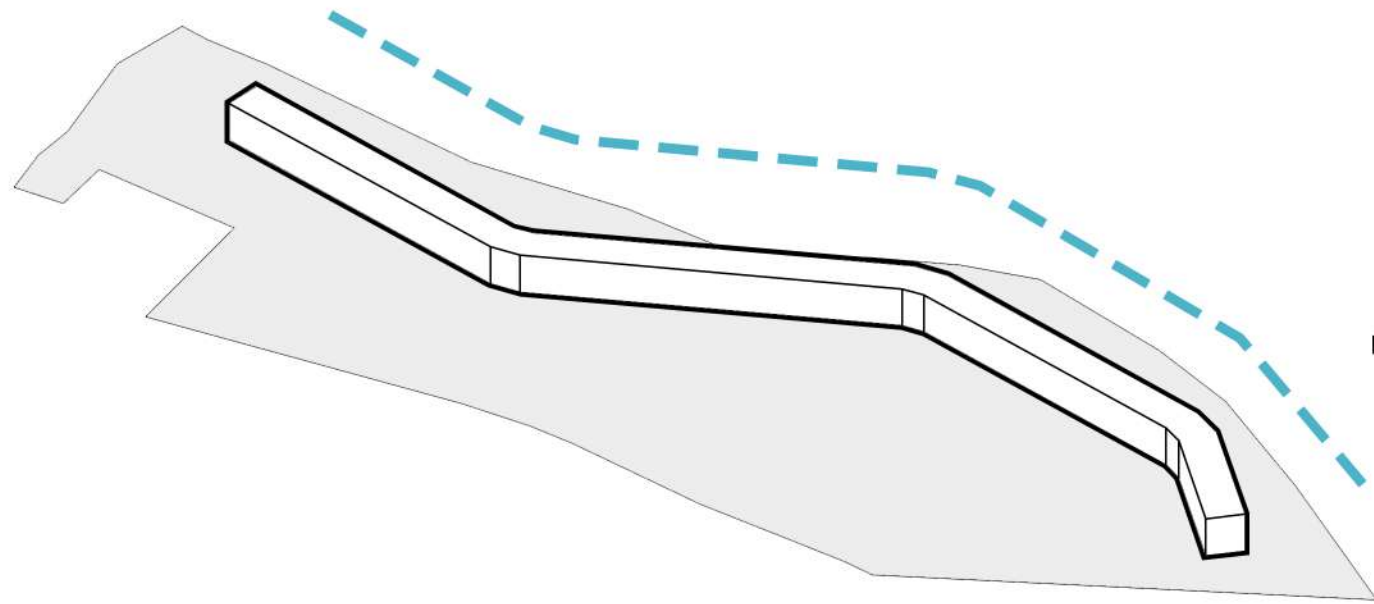


## LEGEND:

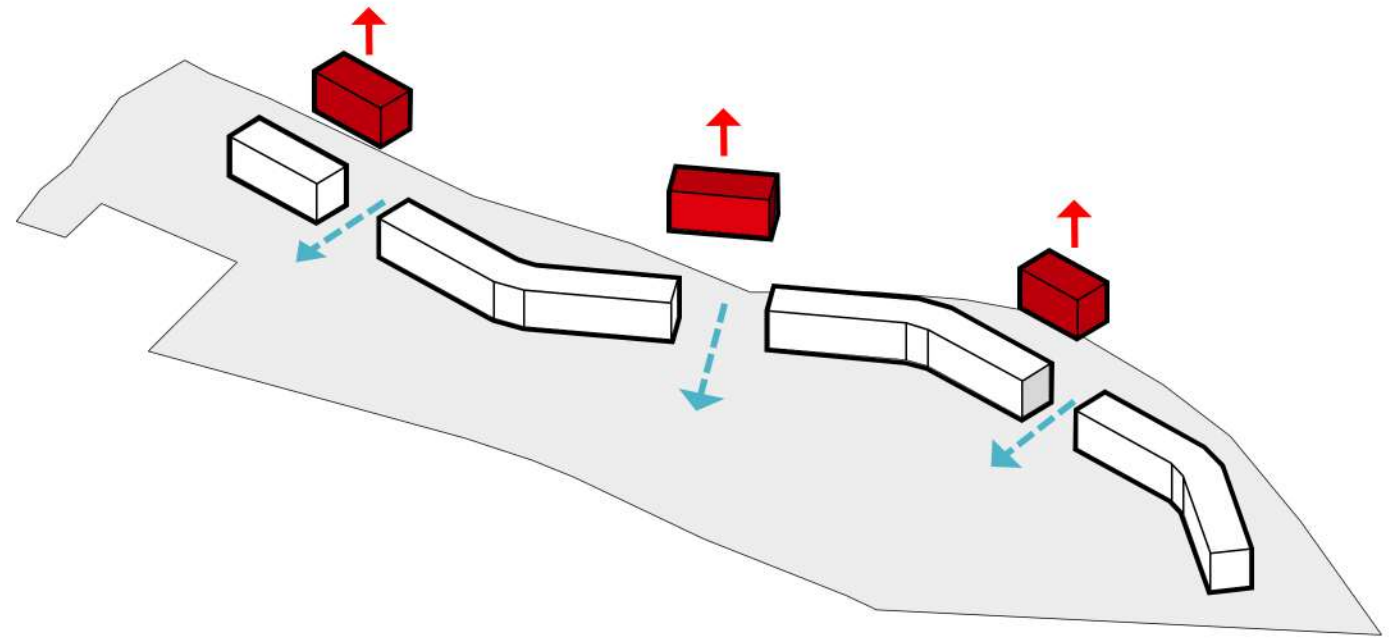
-  BOUNDARY OF THE ASSIGNMENT
-  NEWLY DESIGNED BUILDINGS
-  BUILDINGS FOR FUTURE DEVELOPMENT
-  EXISTING BUILDINGS
  
- 1. DORMITORIES
- 2. LABORATORY
- 3. RESTAURANT/CAFETERIA
- 4. EXHIBITION SPACE
- 5. CAMPING SITE
- 6. WOOD MATERIAL RECYCLING
- 7. ASTOS
- 8. LES GRANDS ATELIERS

0 10 50 100

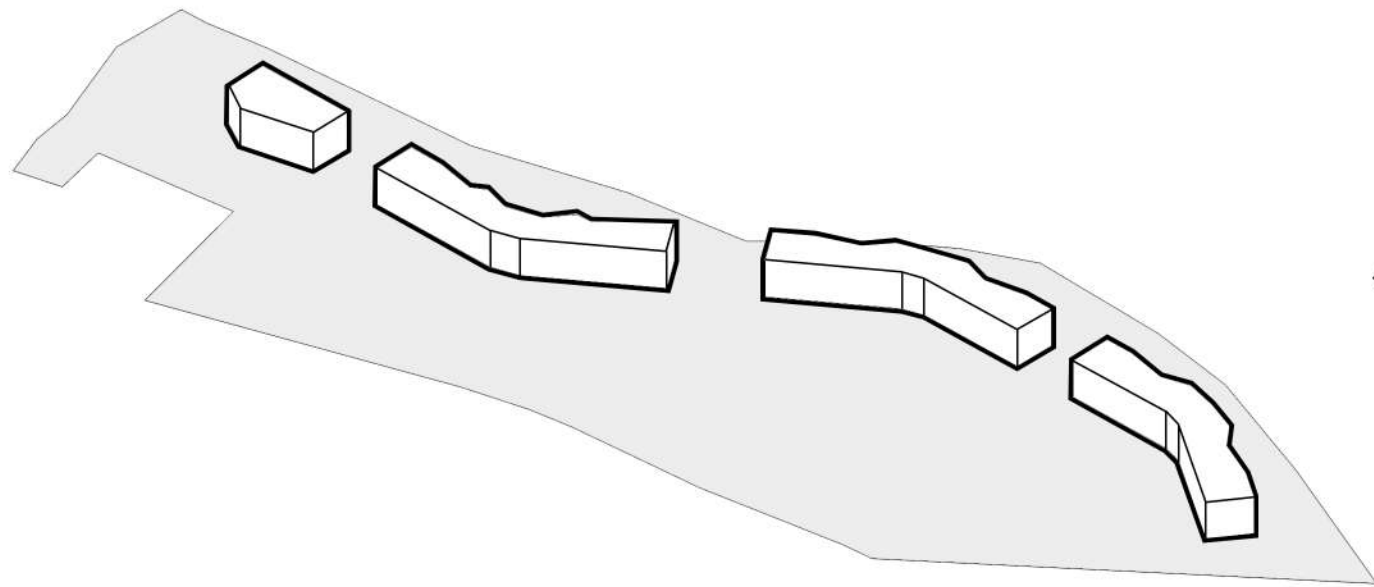
# SHAPE PROCESSING



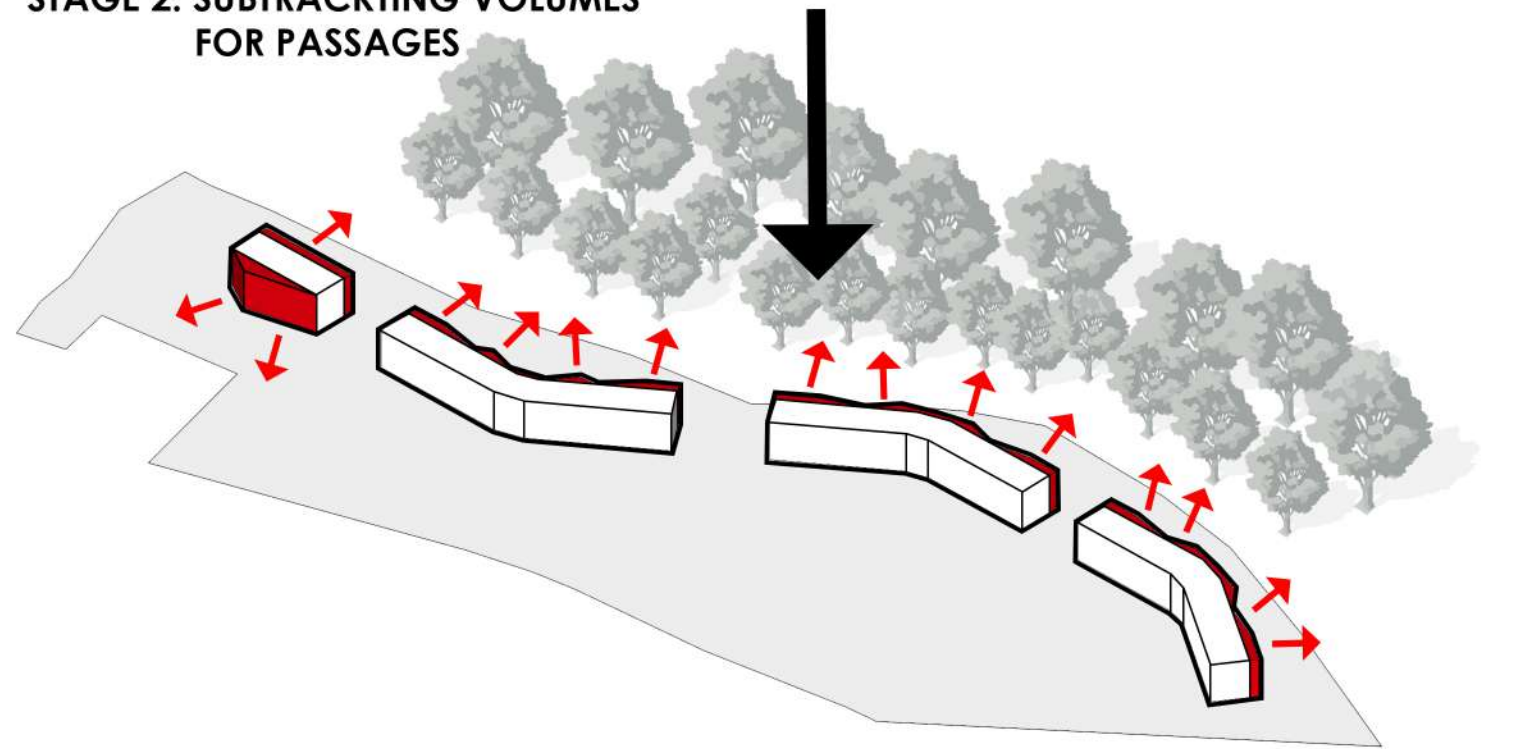
STAGE 1: FOLLOWING OF THE PROPERTY BORDER



STAGE 2: SUBTRACTING VOLUMES FOR PASSAGES

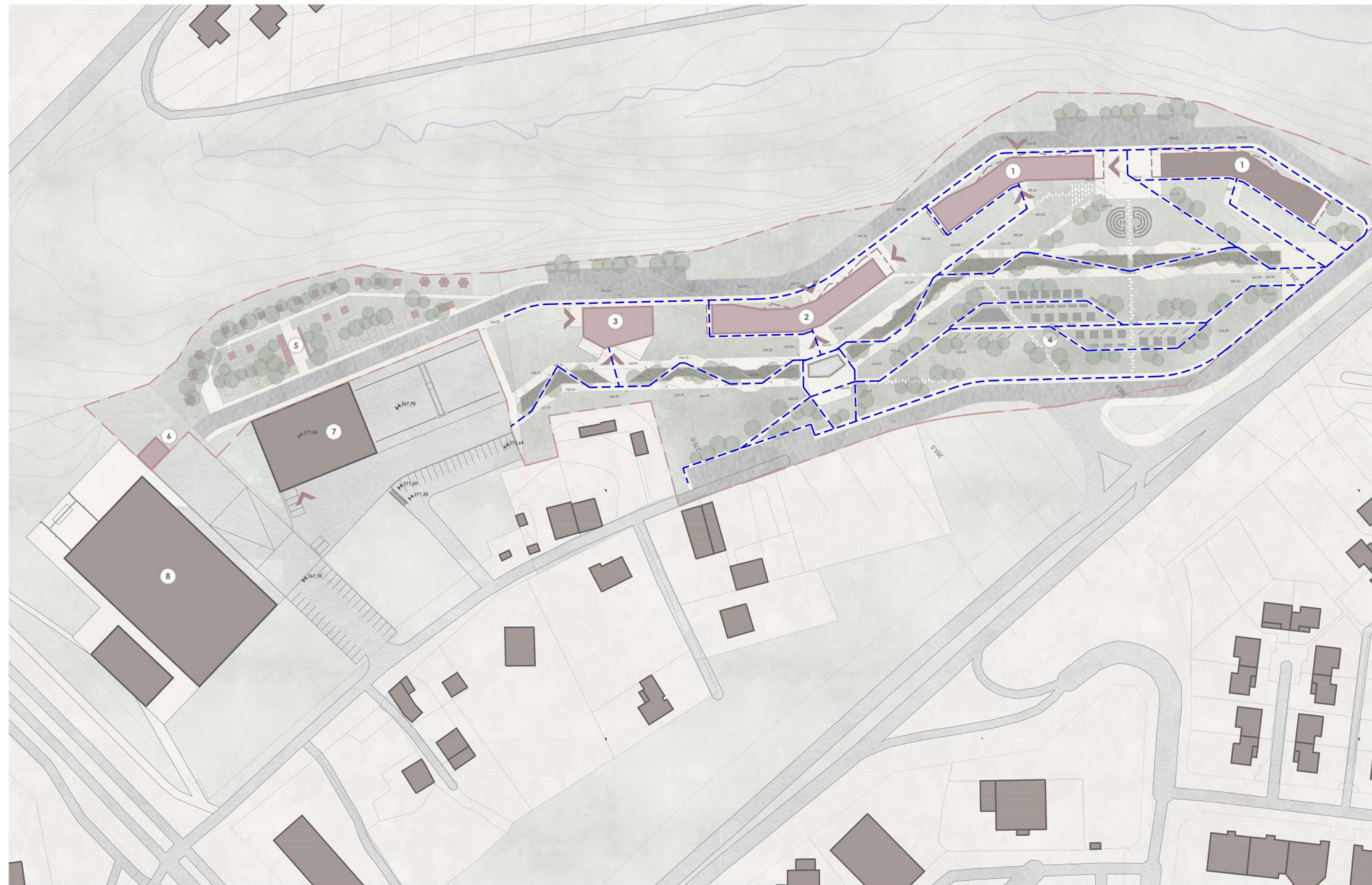


STAGE 4: FINALIZING THE VOLUME-SPACE SOLUTION



STAGE 3: EXTRUSION AND CRUSHING OF THE VOLUMES, FOLLOWING THE RHYTHM OF THE TREES

# ACCESSIBLE ENVIRONMENT



- LEGEND:
- BOUNDARY OF THE ASSIGNMENT
  - ACCESSIBLE ROUTES

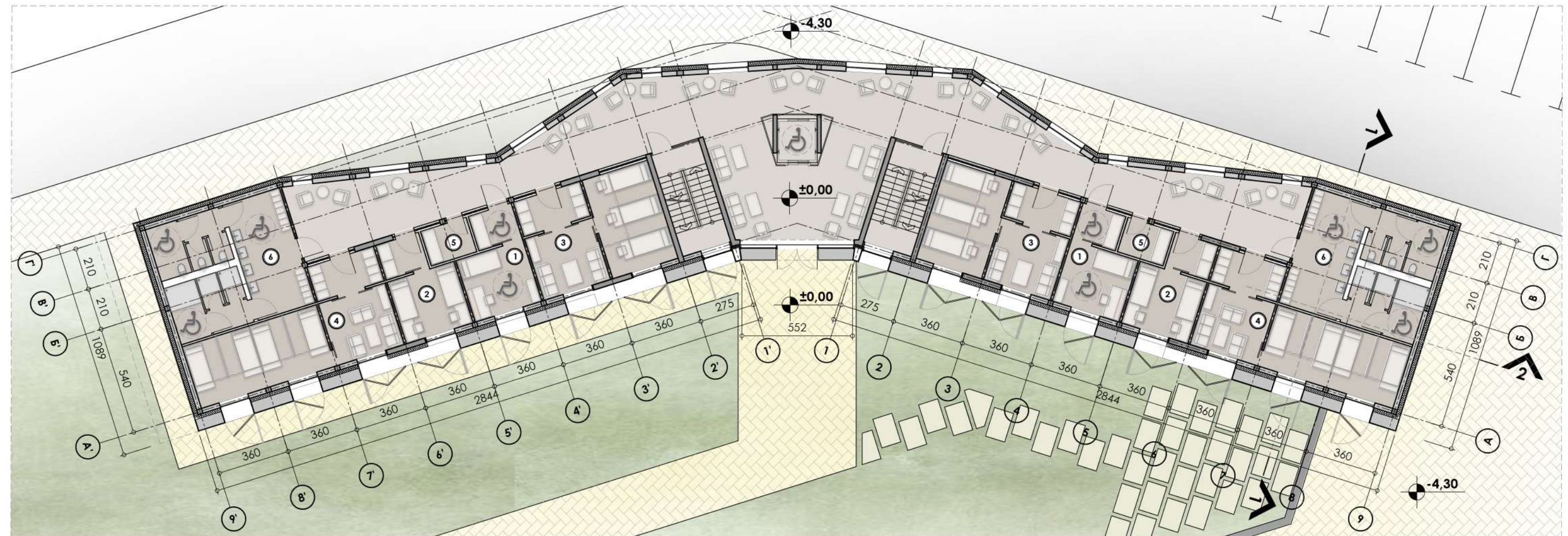
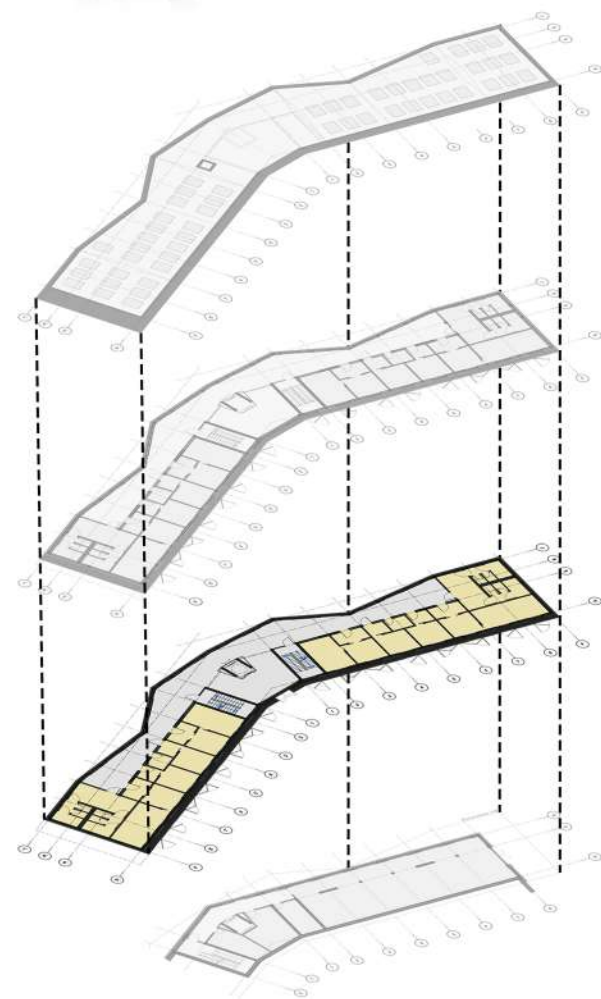
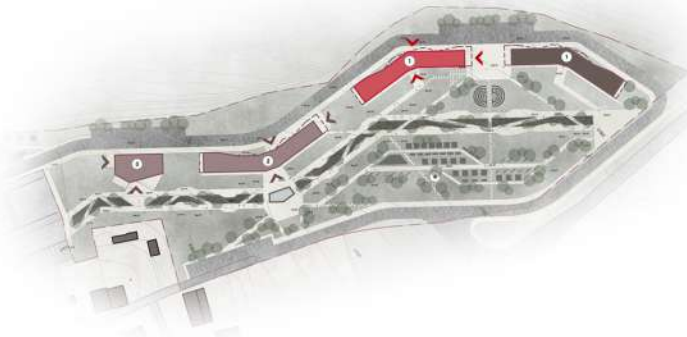
- LEGEND:
- 1. DORMITORIES
  - 2. LABORATORY
  - 3. RESTAURANT/CAFETERIA
  - 4. EXHIBITION SPACE
  - 5. CAMPING SITE
  - 6. WOOD MATERIAL RECYCLING
  - 7. ASTOS
  - 8. LES GRANDS ATELIERS

0 10 50 100



DORMITORY

# DORMITORY



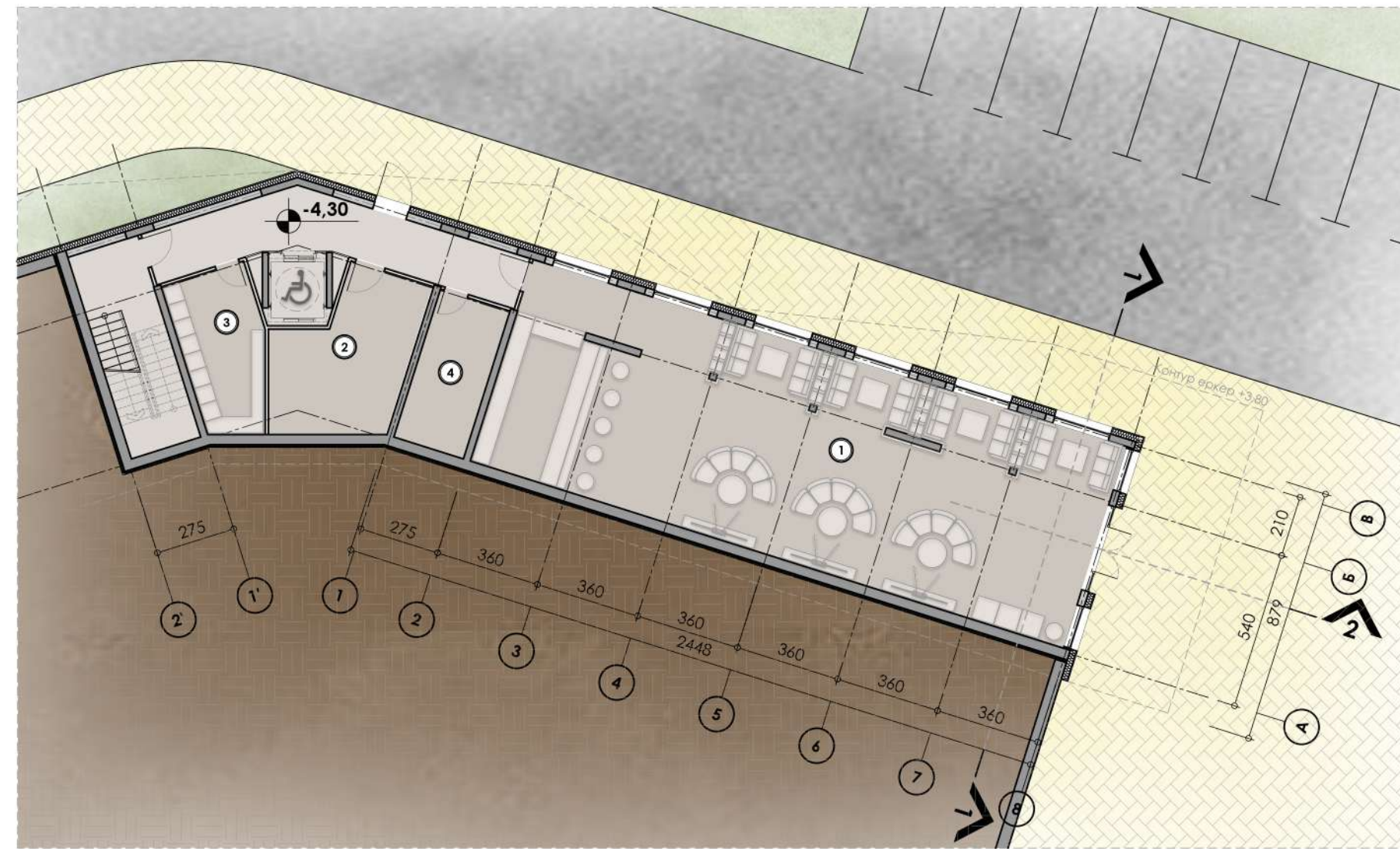
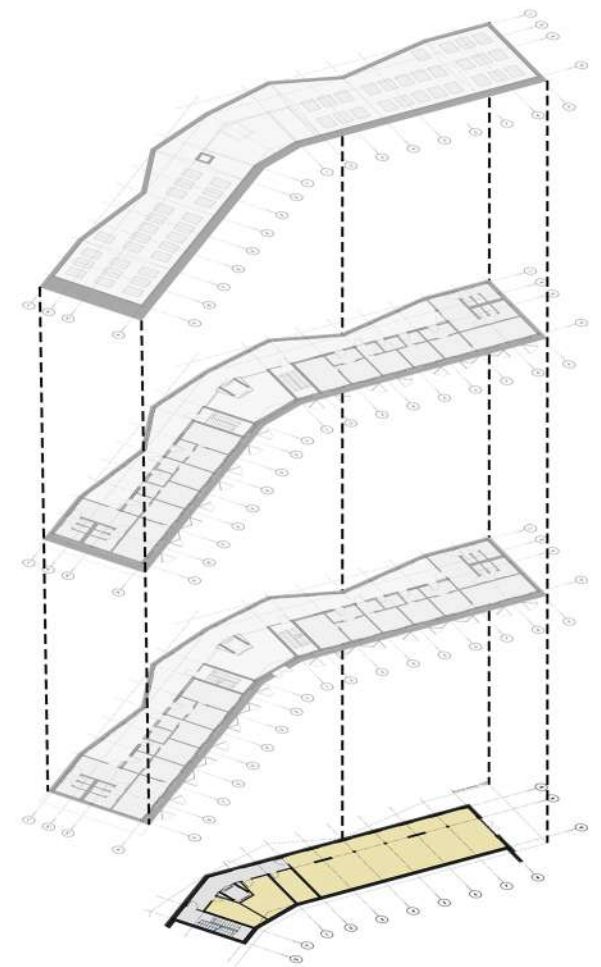
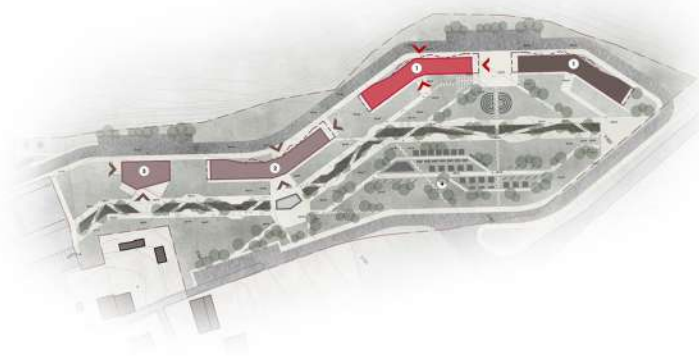
## LEGEND:

- 1. SINGLE ROOM
- 2. DOUBLE ROOM
- 3. ROOM FOR SIX PEOPLE
- 4. ROOM FOR EIGHT PEOPLE
- 5. SERVICE ROOM
- 6. SANITARY FACILITIES

# FLOOR PLAN ± 0.00

0 1 5 10

# DORMITORY



### LEGEND:

- 1.SOCIAL SPACES
- 2.BICYCLE PARKING
- 3.LAUNDRY ROOM
- 4.STORAGE ROOM

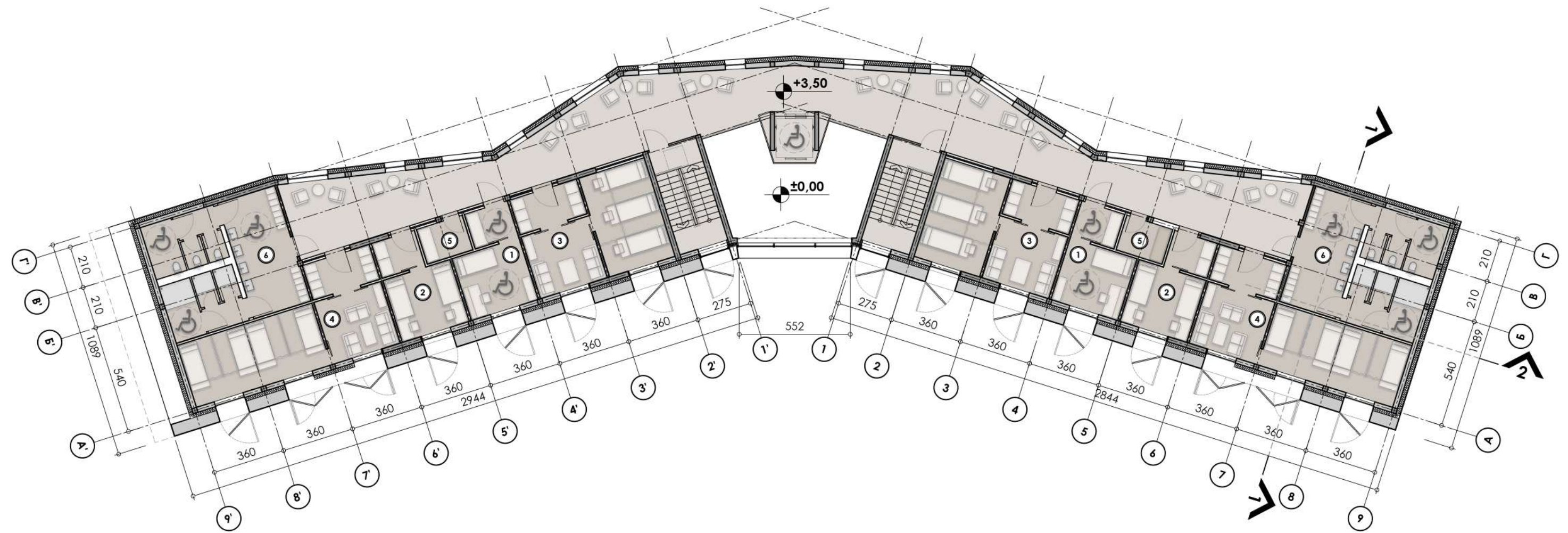
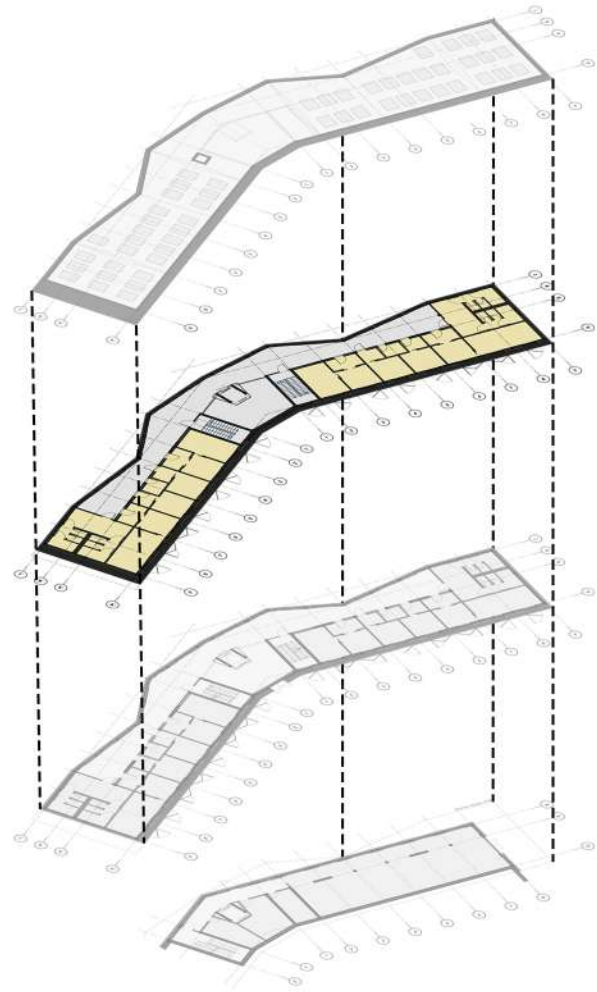
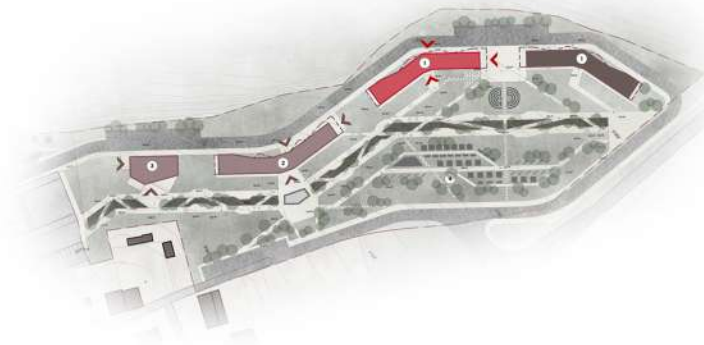
# FLOOR PLAN - 4.30







# DORMITORY



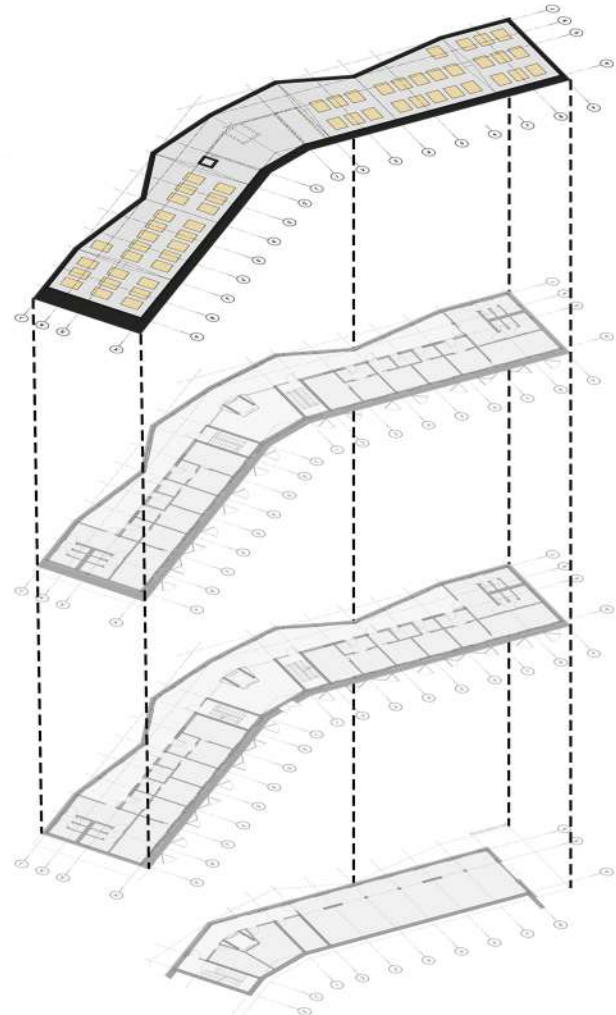
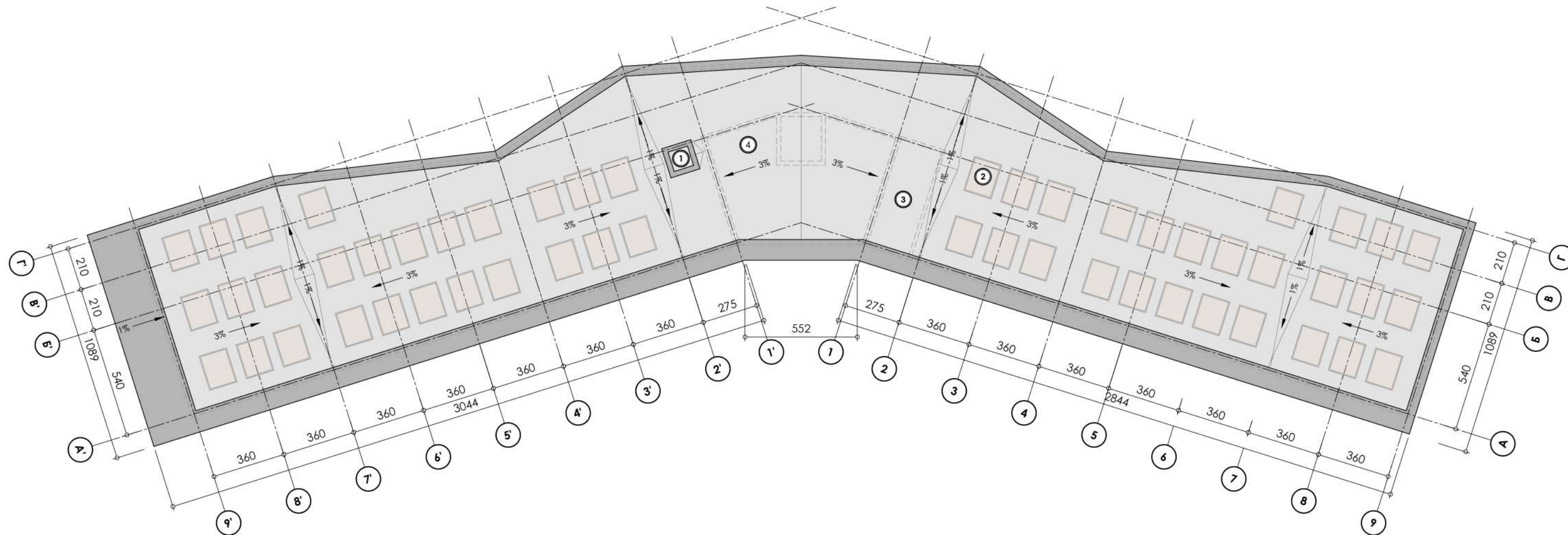
## LEGEND:

- 1. SINGLE ROOM
- 2. DOUBLE ROOM
- 3. ROOM FOR SIX PEOPLE
- 4. ROOM FOR EIGHT PEOPLE
- 5. SERVICE ROOM
- 6. SANITARY FACILITIES

# FLOOR PLAN +3.50

0 1 5 10

DORMITORY



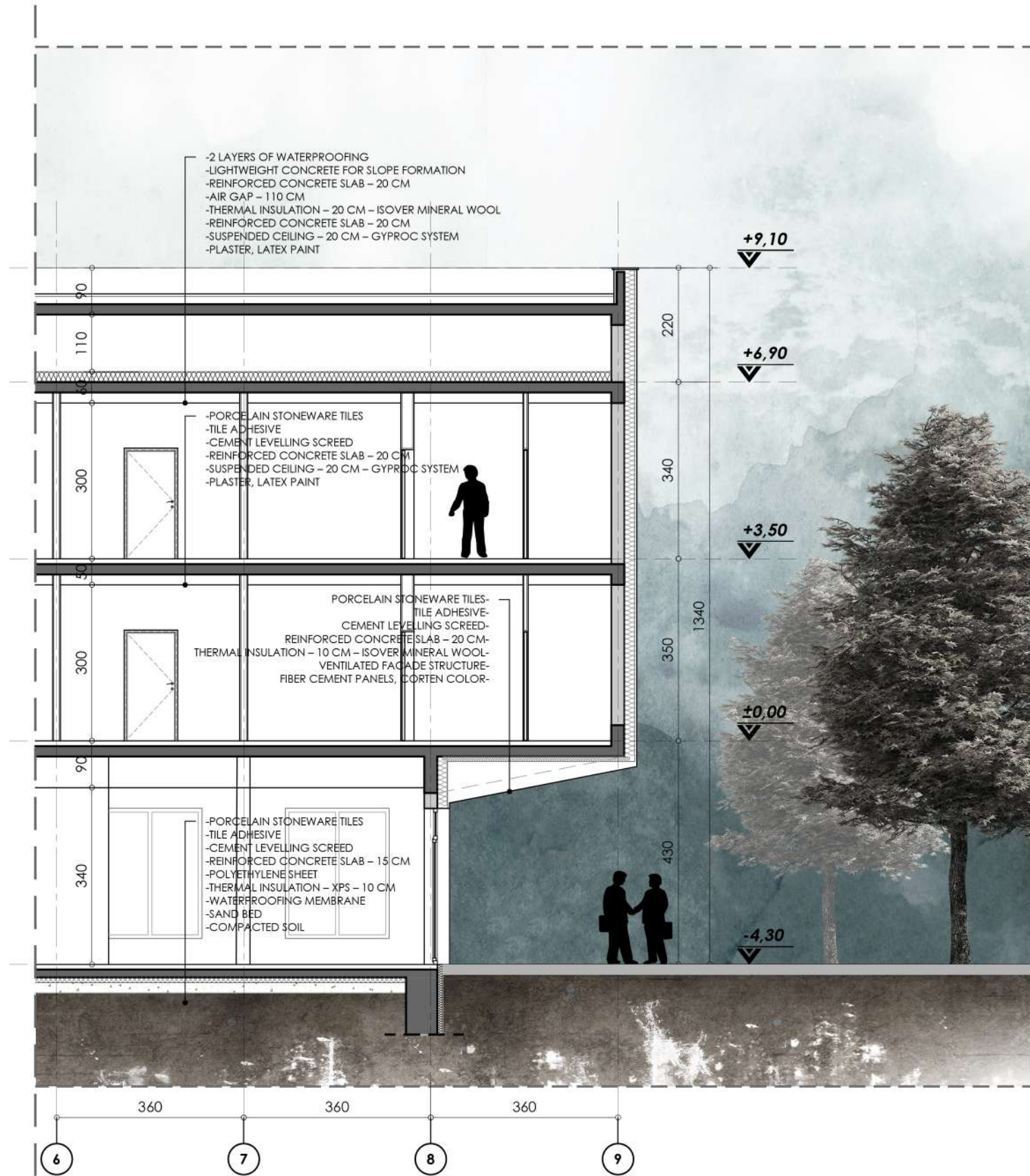
LEGEND:

- 1. INSPECTION HATCH
- 2. SOLAR PANELS
- 3. TECHNICAL ROOM
- 4. RAINWATER TANK

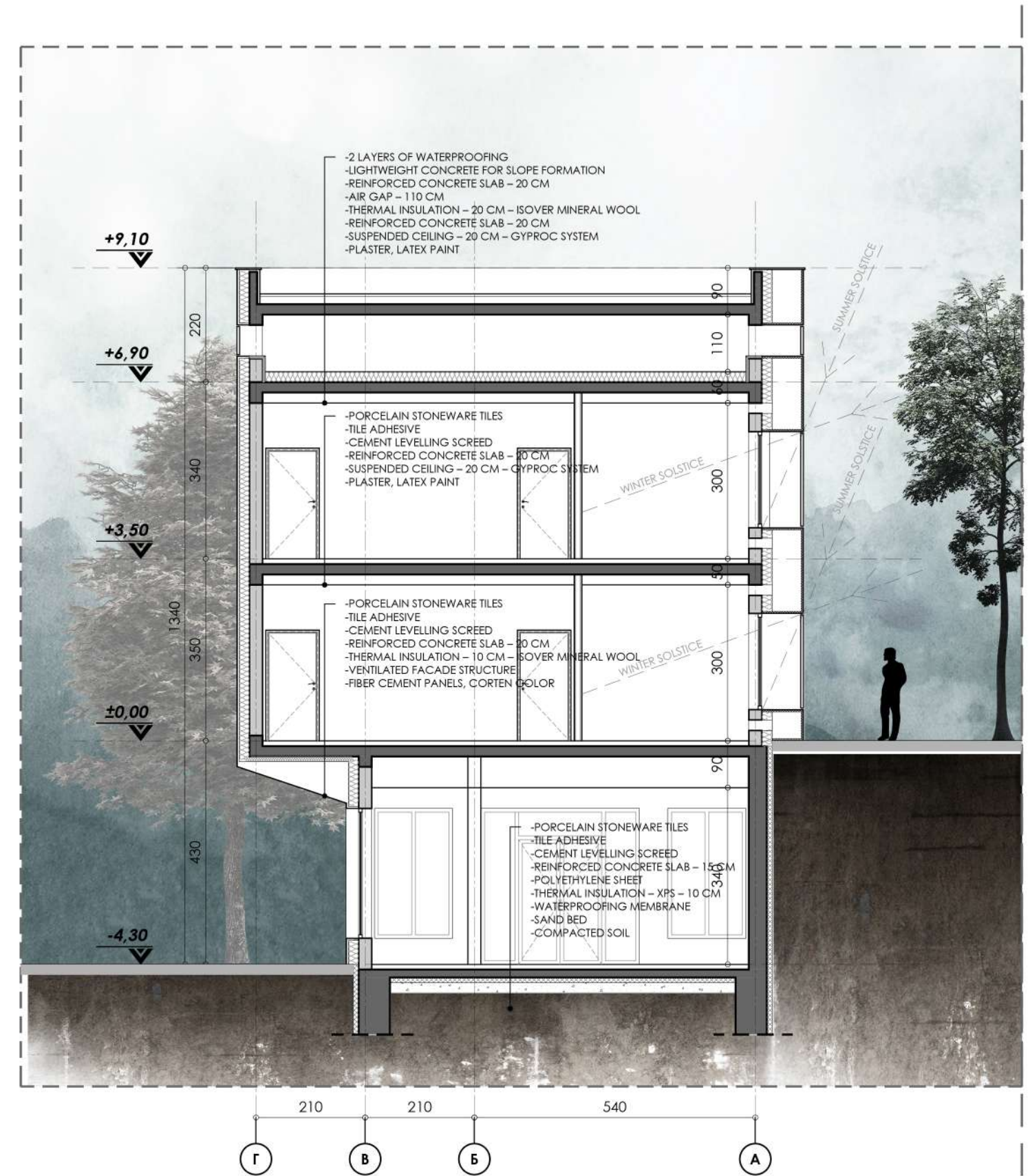
ROOF PLAN



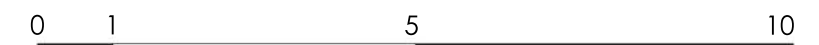
# DORMITORY



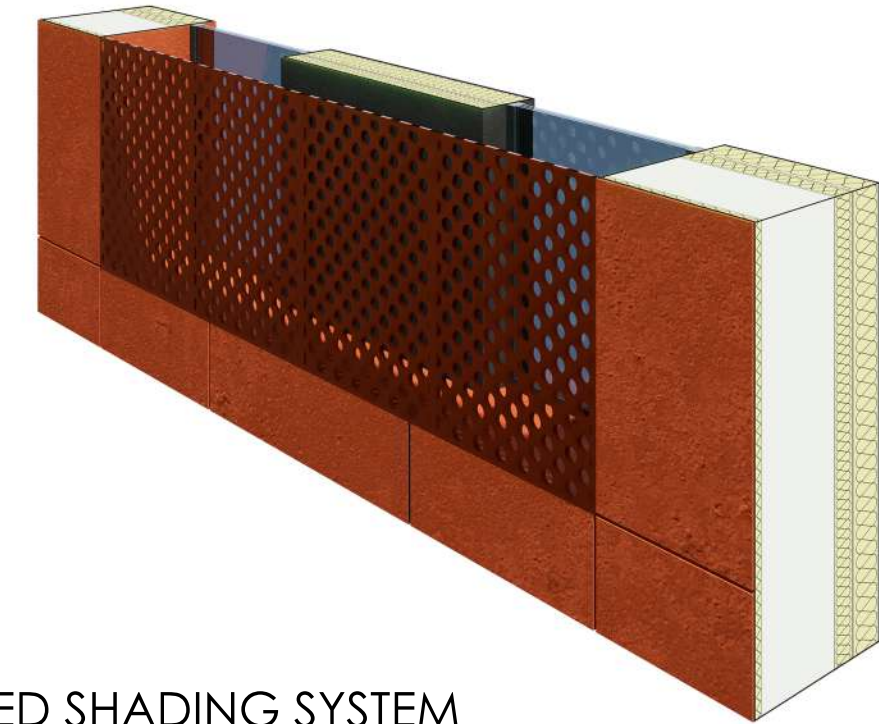
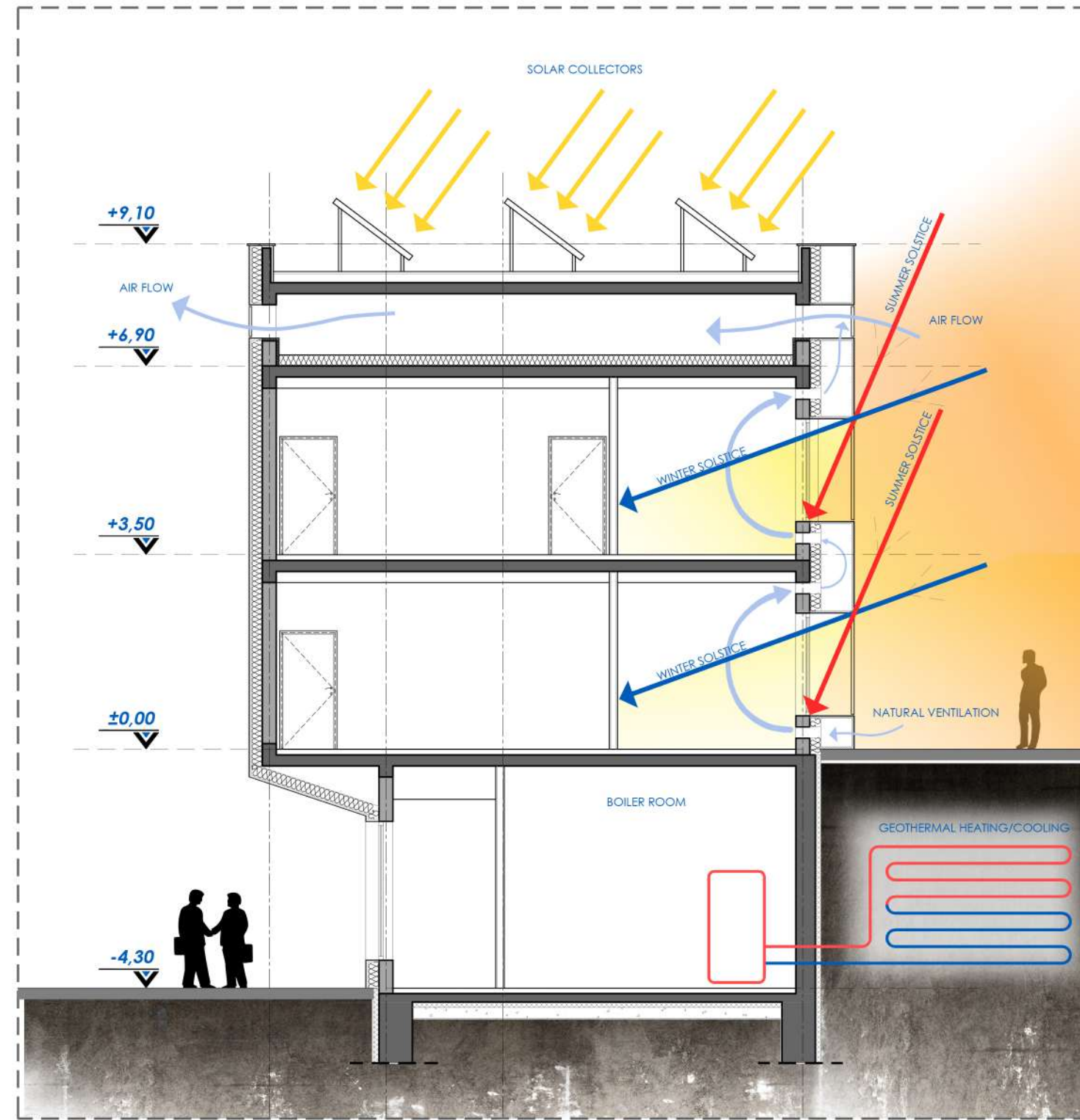
SECTION 2-2



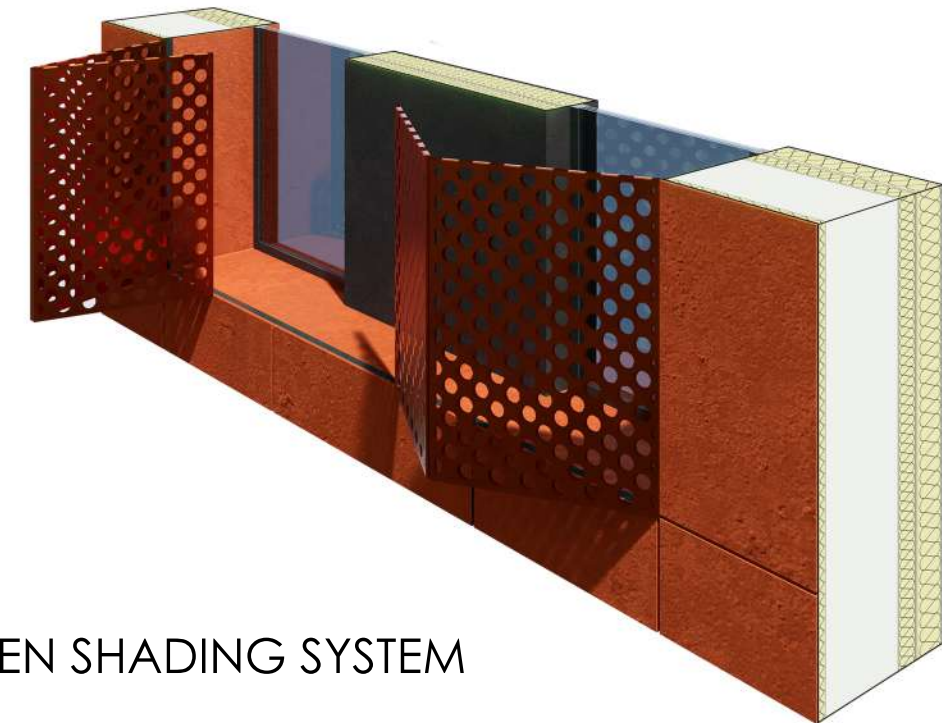
SECTION 1-1



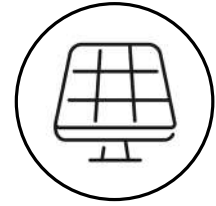
# DORMITORY



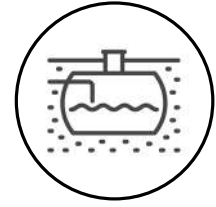
CLOSED SHADING SYSTEM



OPEN SHADING SYSTEM



SOLAR COLLECTORS



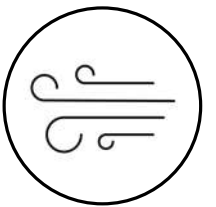
RAINWATER COLLECTION



IMPROVING THE MICROCLIMATE



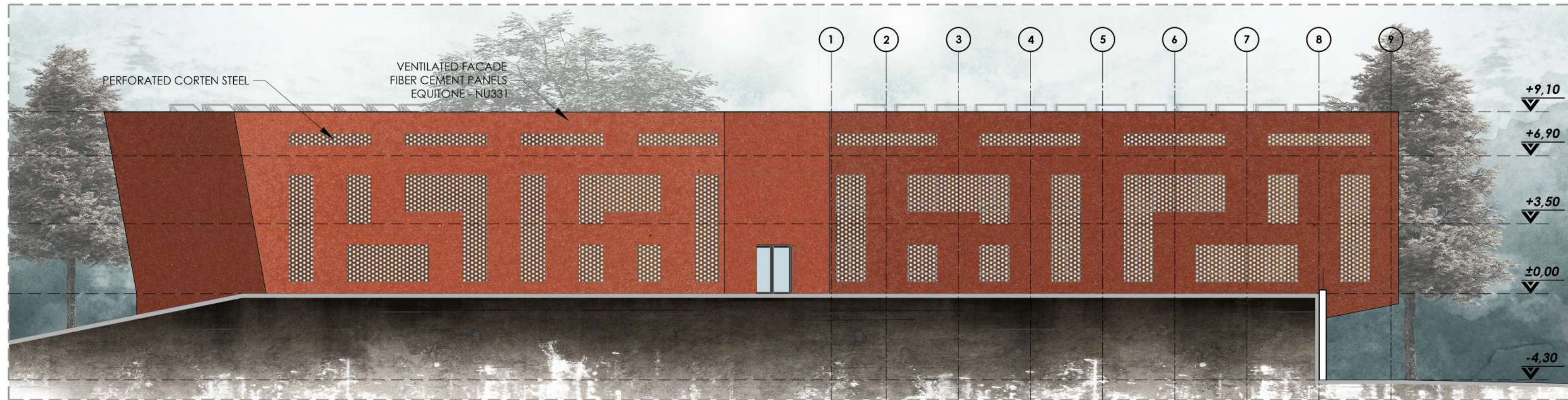
GEOHERMAL ENERGY



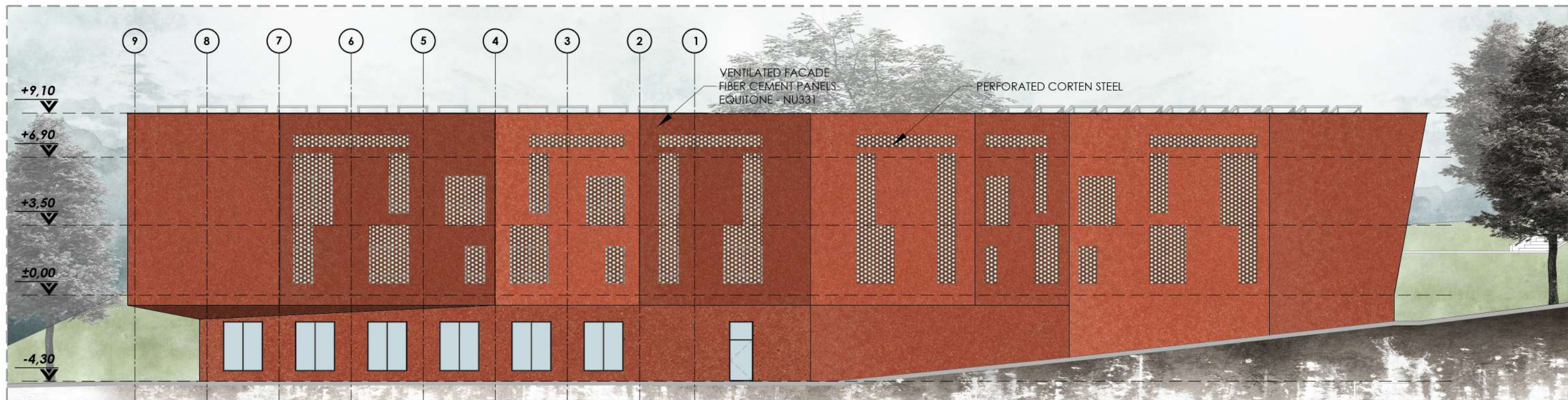
NATURAL VENTILATION

# SECTION

# DORMITORY



# SOUTH ELEVATION



# NORTH ELEVATION



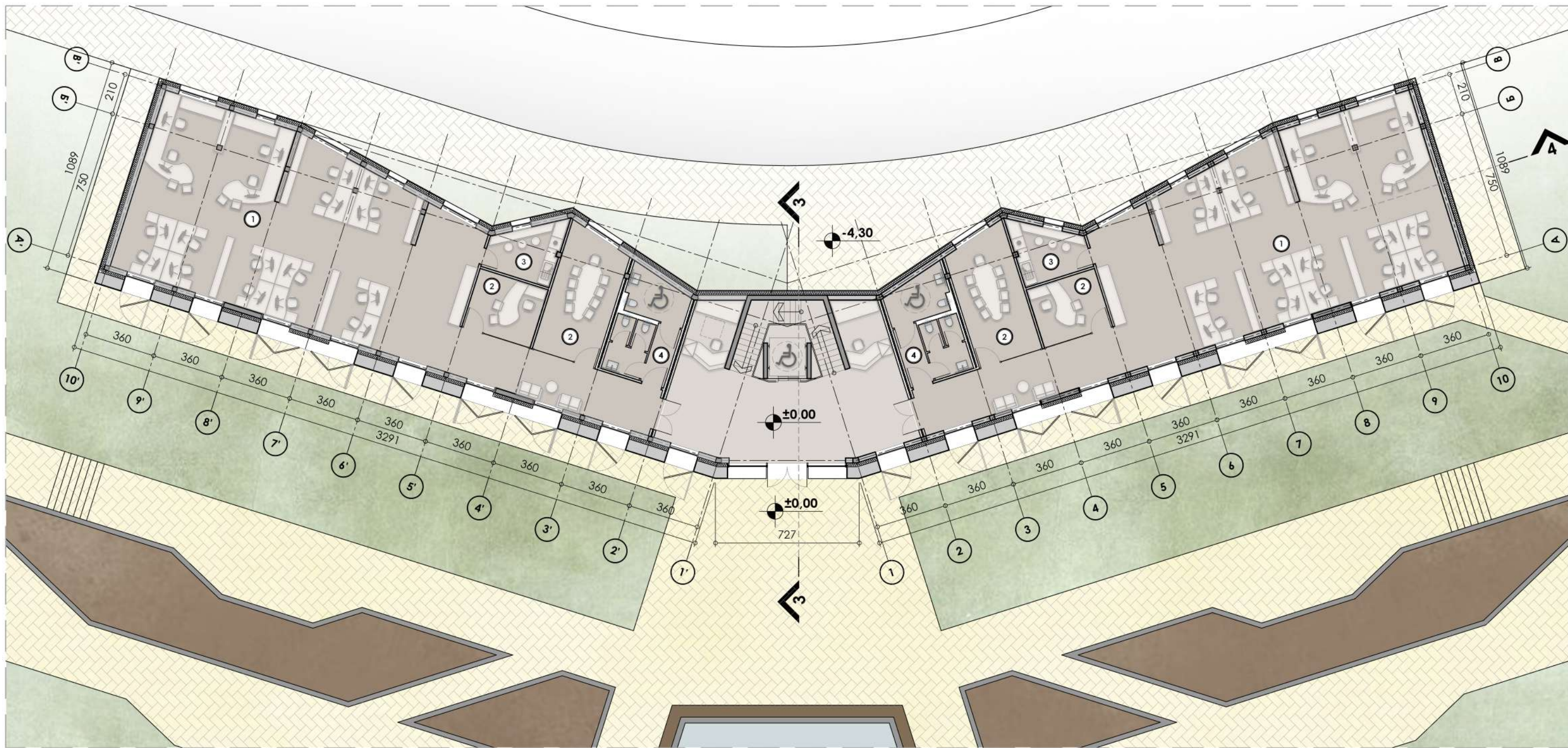
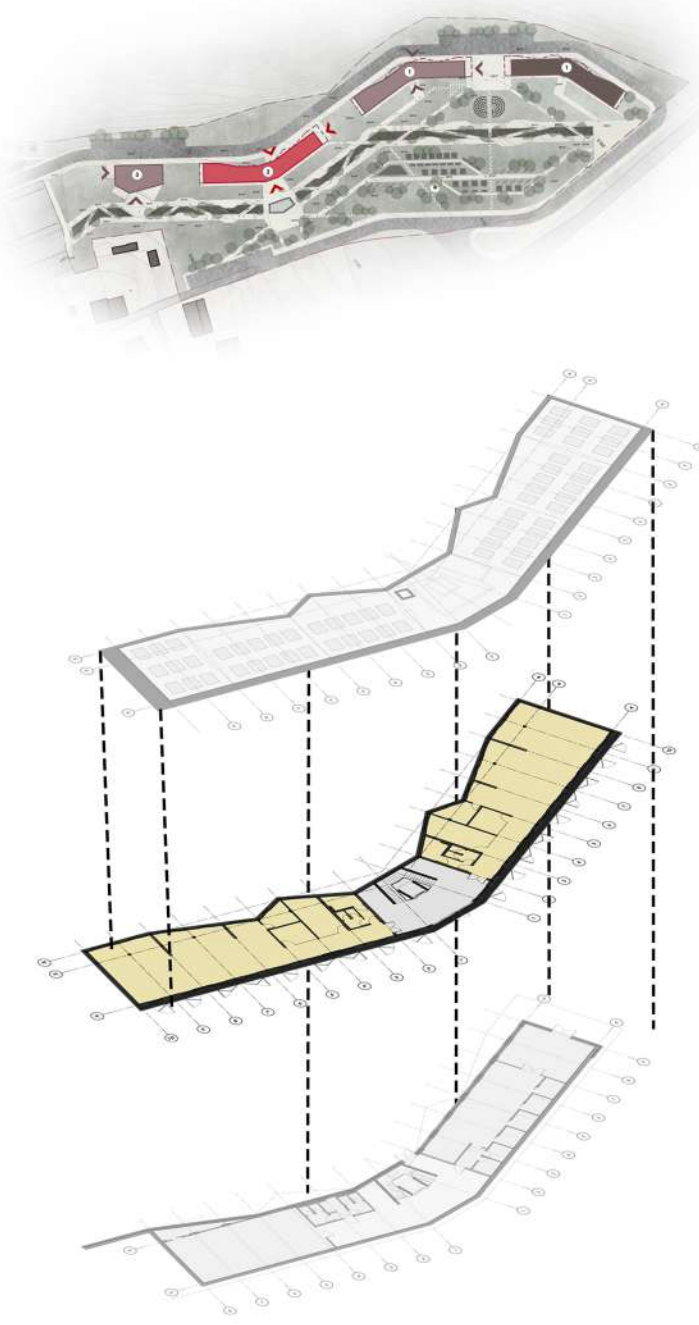






# LABORATORY

# LABORATORY



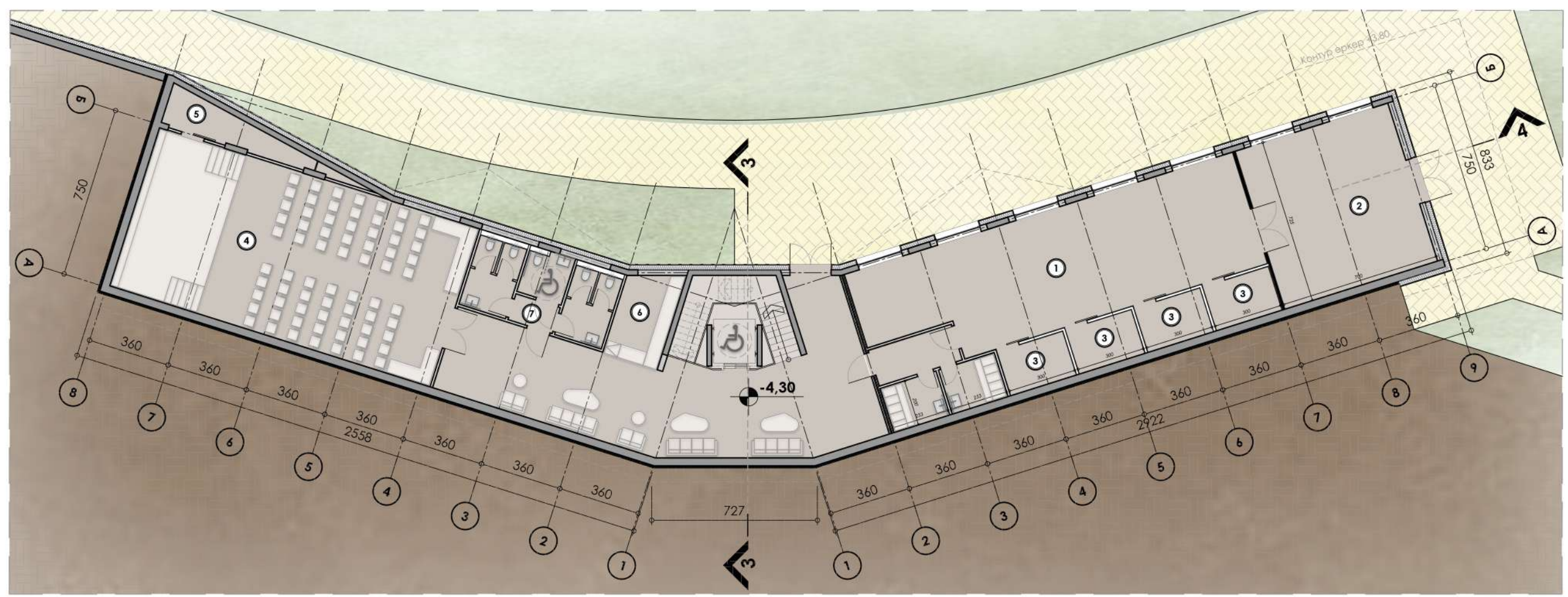
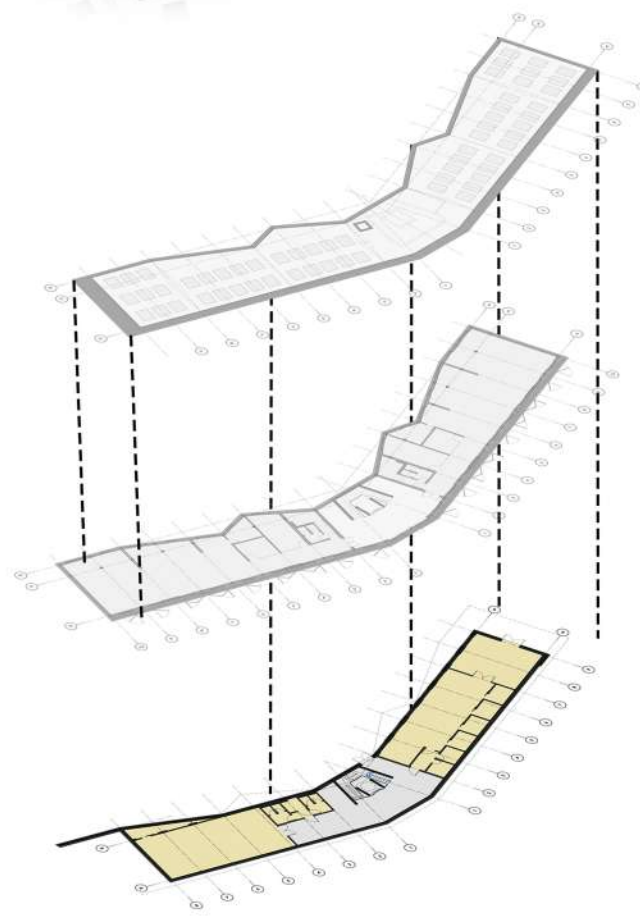
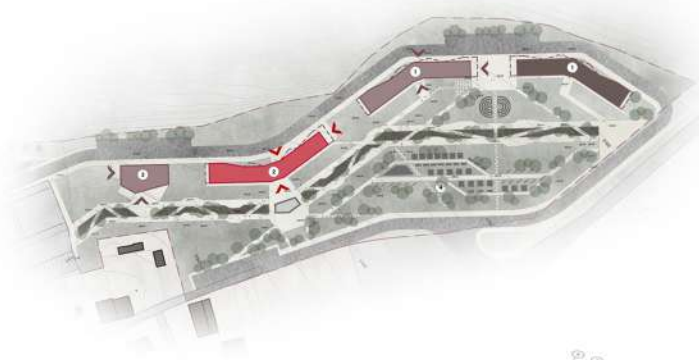
### LEGEND:

- 1. OFFICE SPACE
- 2. CONFERENCE HALL
- 3. KITCHEN
- 4. RESTROOMS

## FLOOR PLAN ± 0.00



# LABORATORY



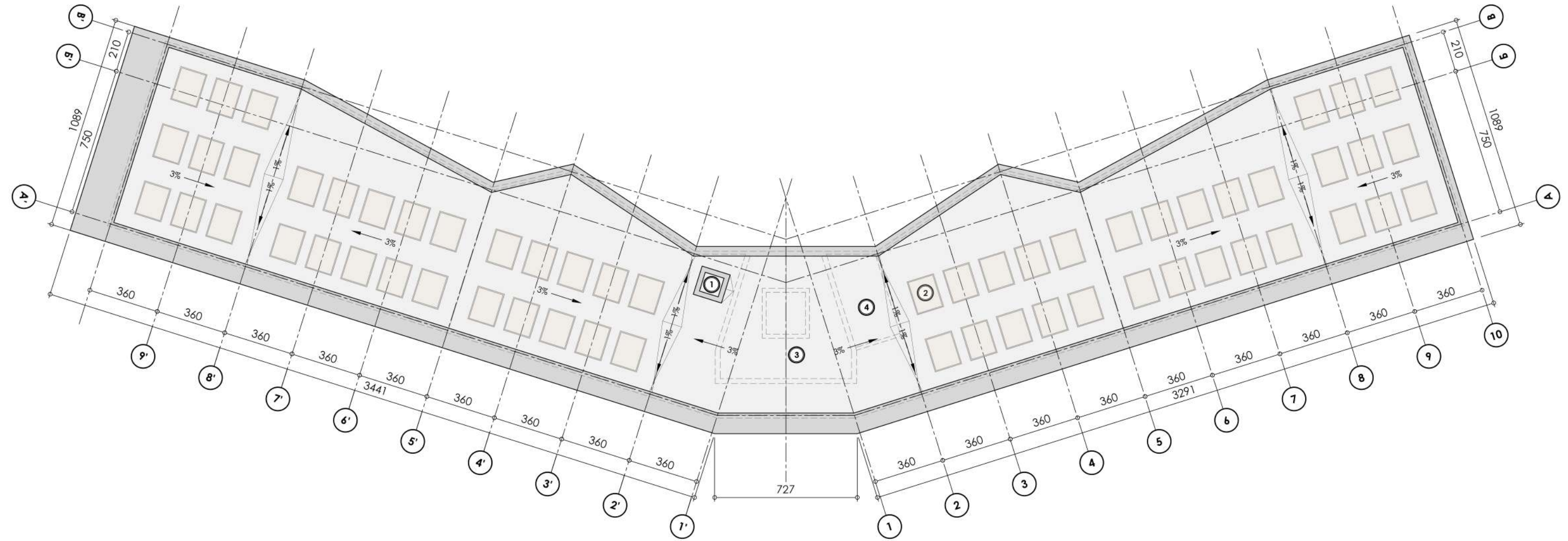
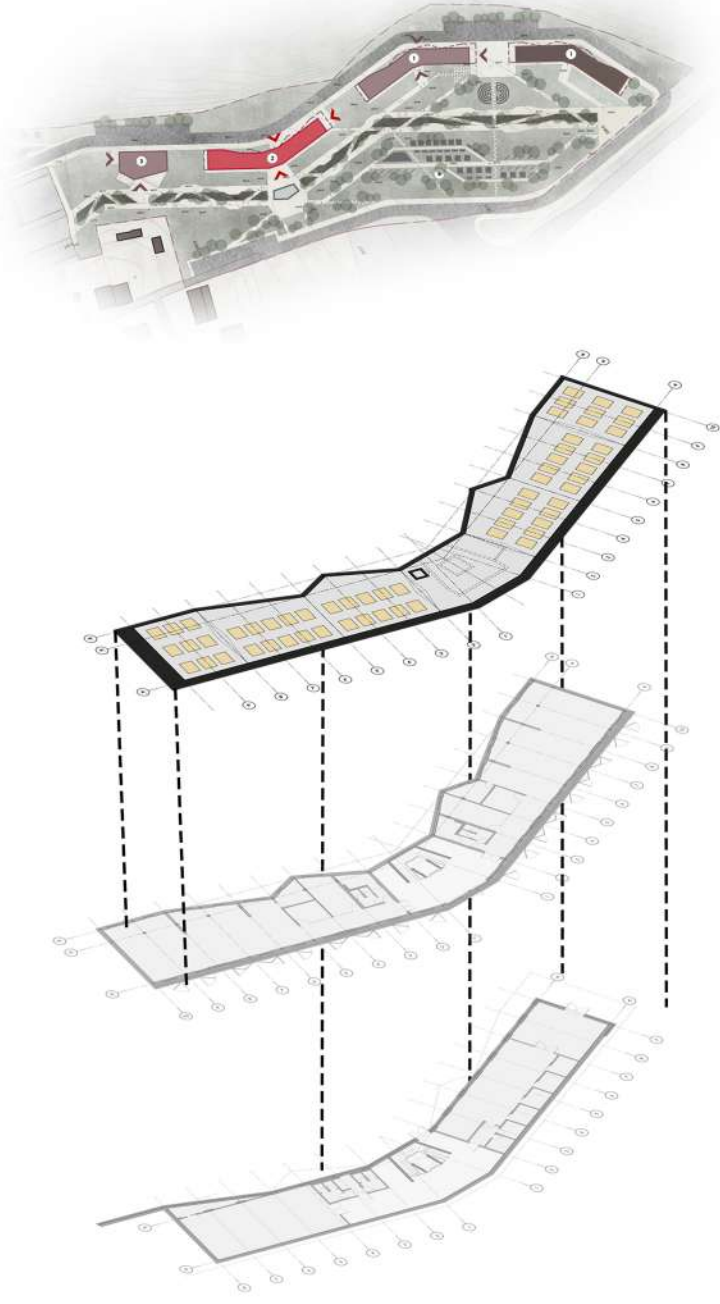
### LEGEND:

- 1.LABARATORY
- 2.PROTOTYPING AREA
- 3.MACHINE ROOMS
- 4.MULTI-PURPUSE ROOM
- 5.TECHNICAL ROOM
- 6.CLOAKROOM

# FLOOR PLAN -4.30



# LABORATORY



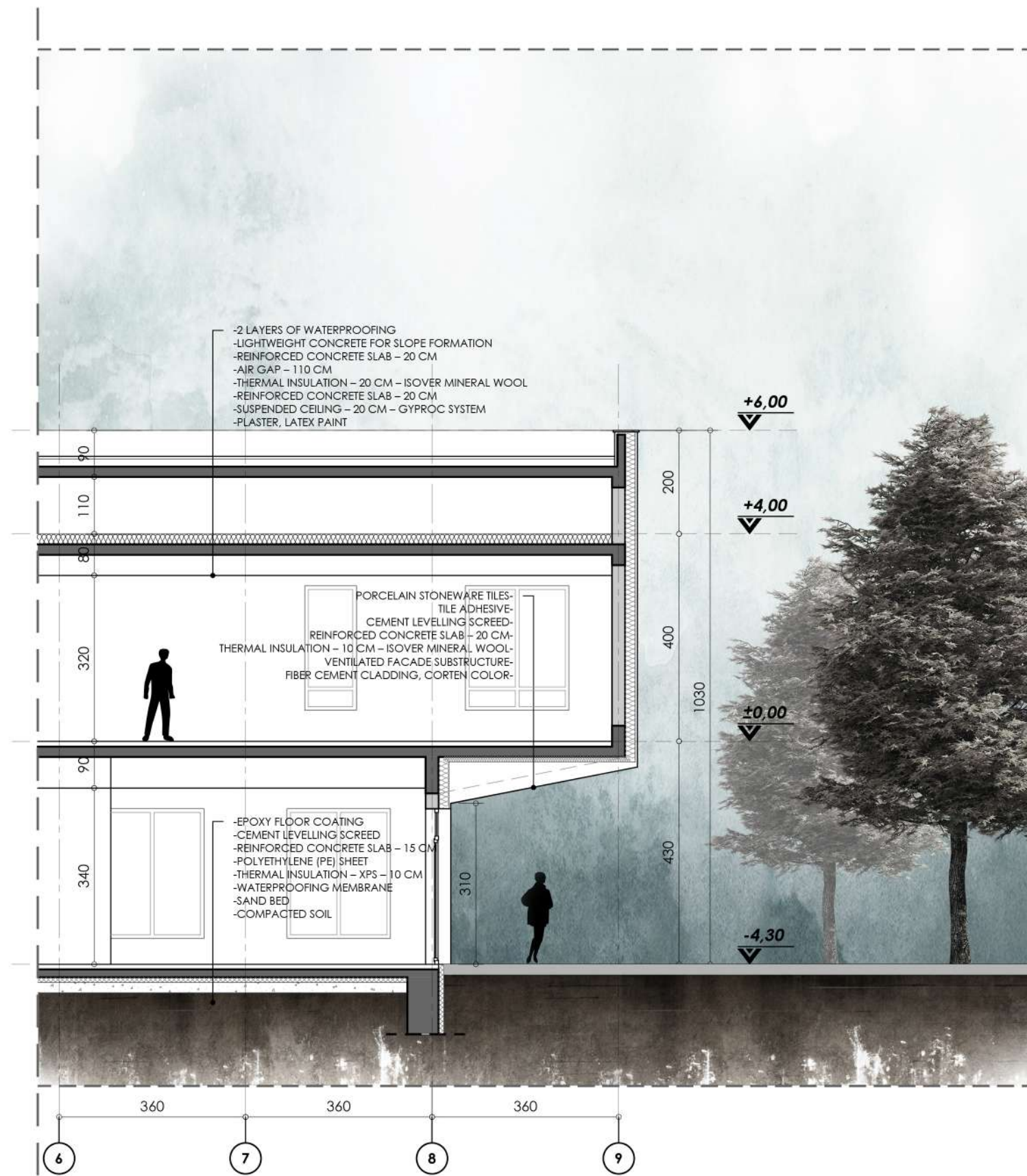
### LEGEND:

- 1. INSPECTION HATCH
- 2. SOLAR PANELS
- 3. RAINWATER TANK
- 4. TECHNICAL ROOM

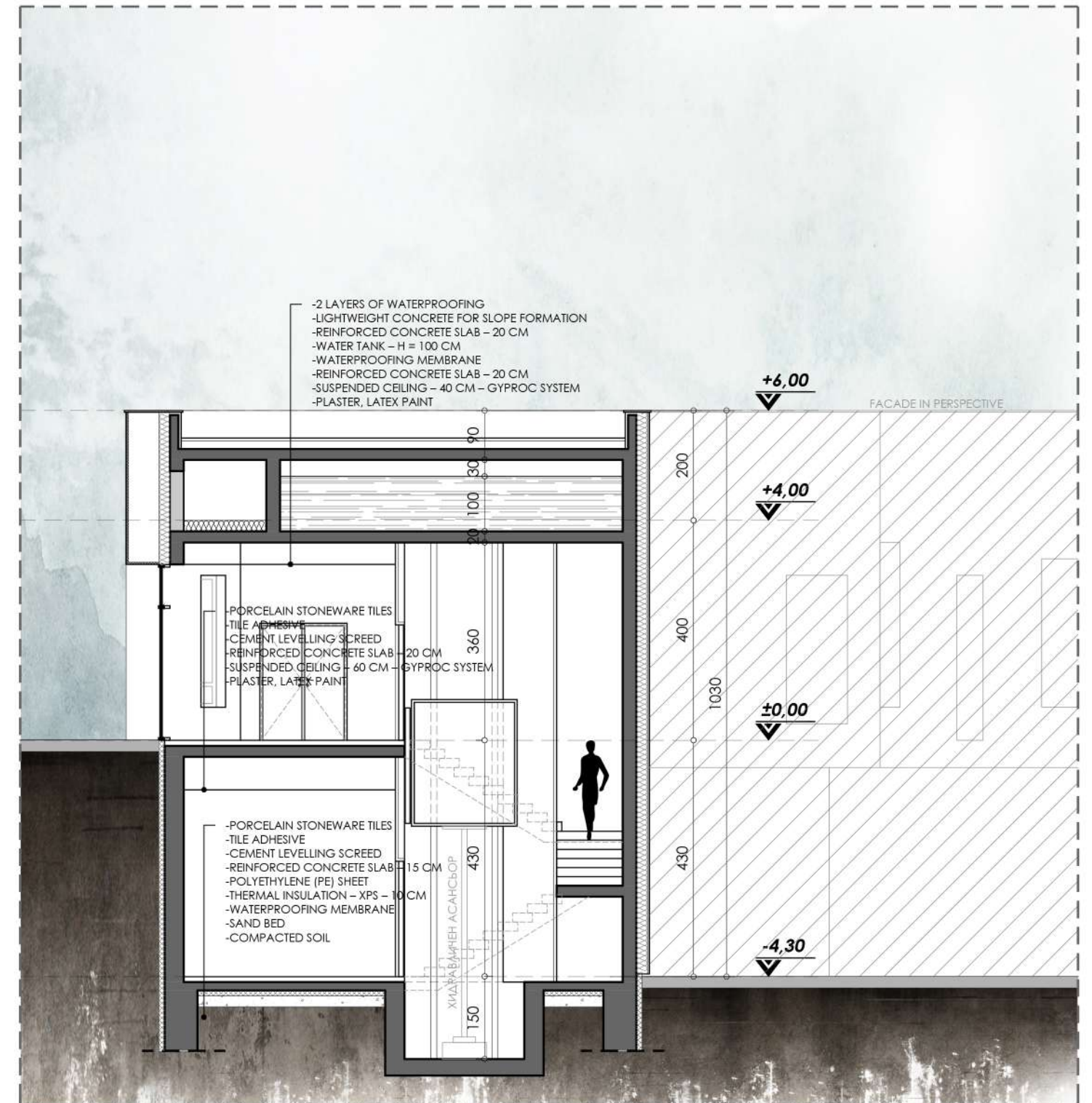
# ROOF PLAN



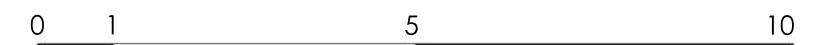
# LABORATORY



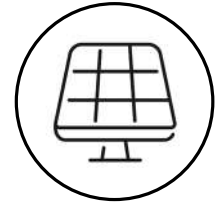
SECTION 4-4



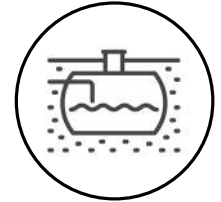
SECTION 3-3



LABORATORY



SOLAR COLLECTORS



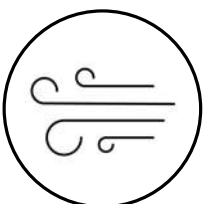
RAINWATER COLLECTION



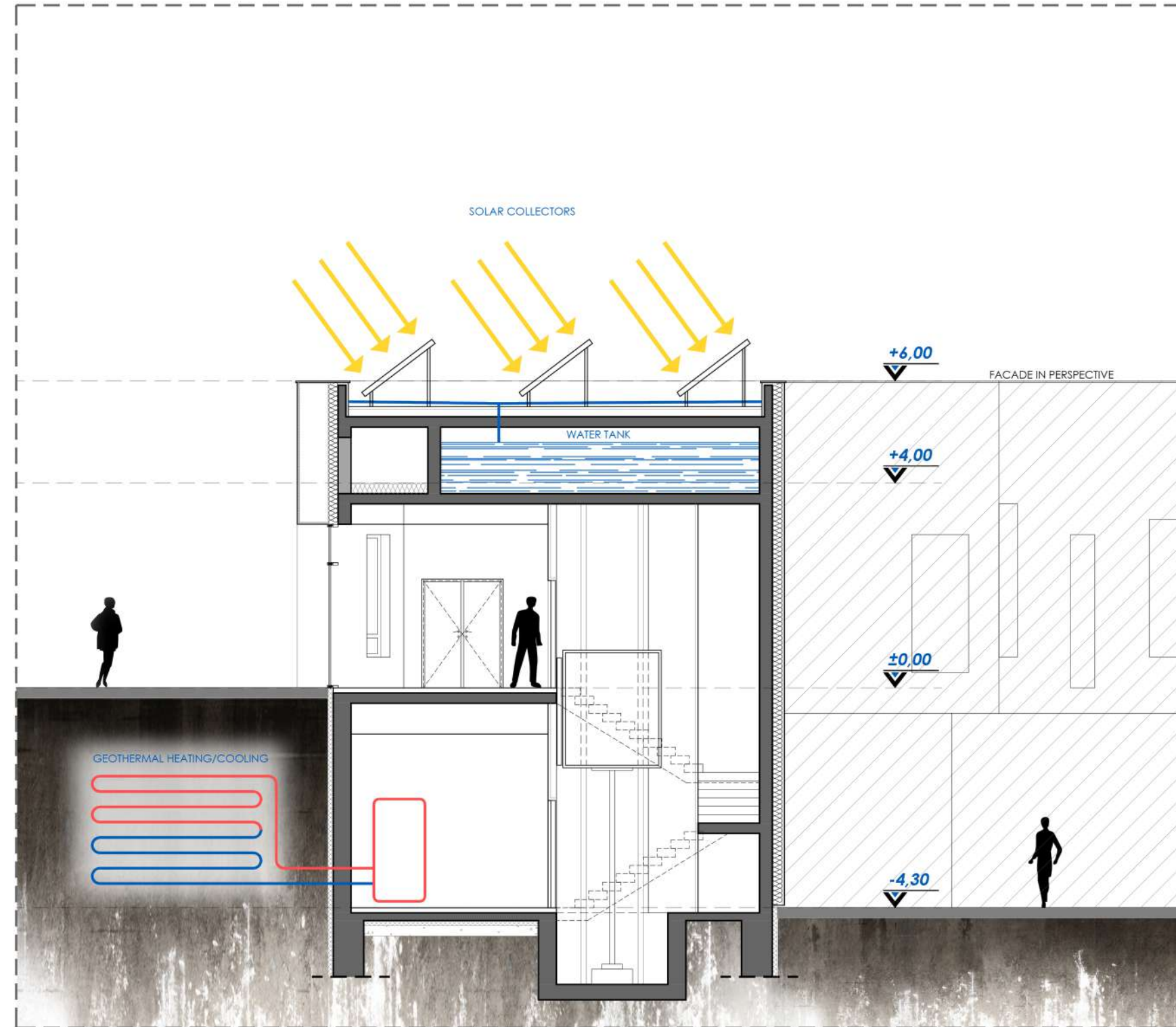
IMPROVING THE MICROCLIMATE



GEOHERMAL ENERGY

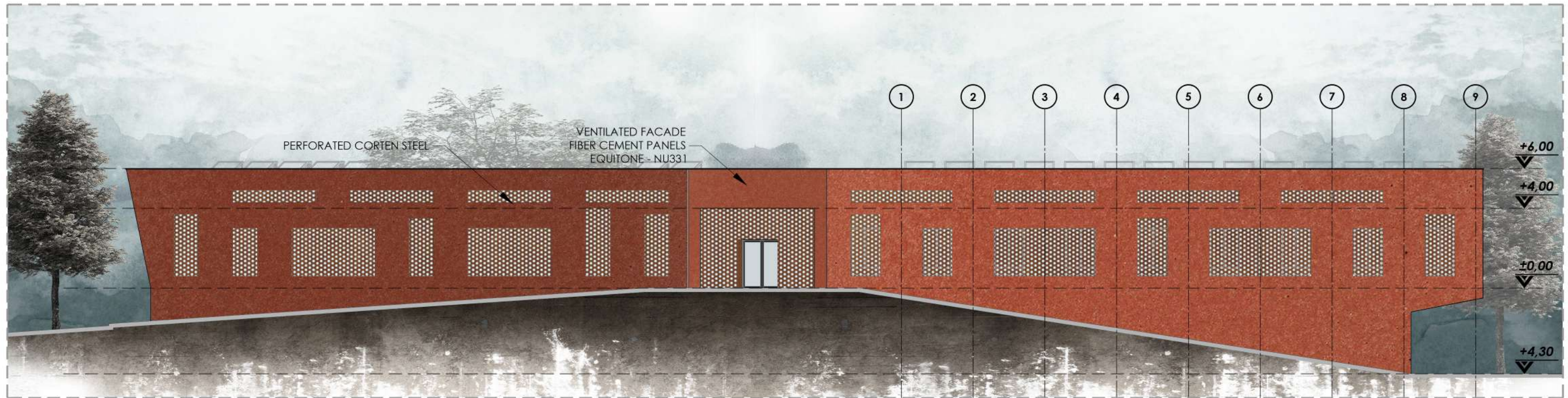


NATURAL VENTILATION

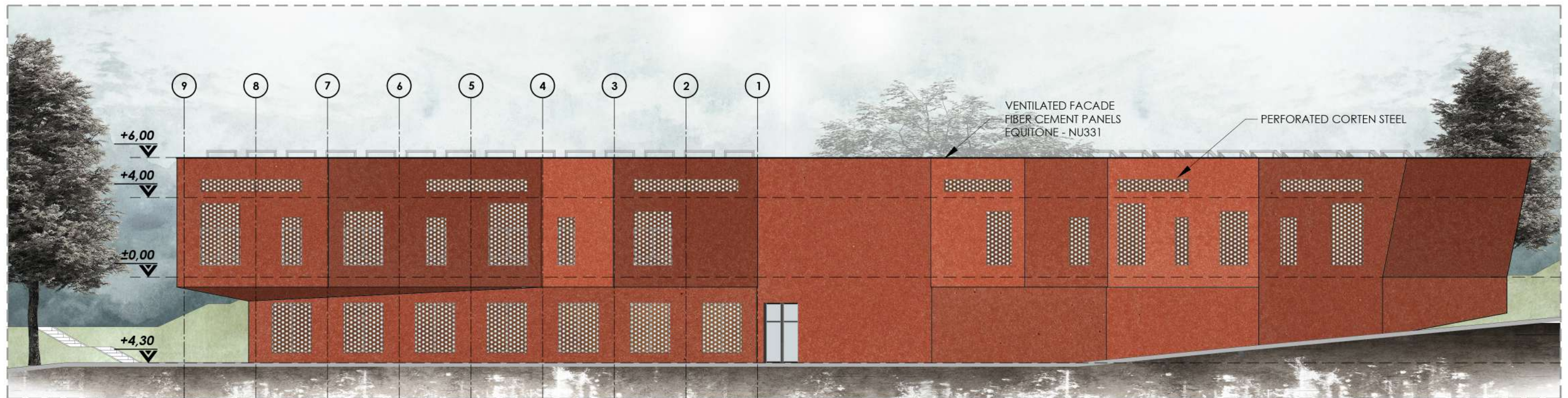


SECTION

# LABORATORY

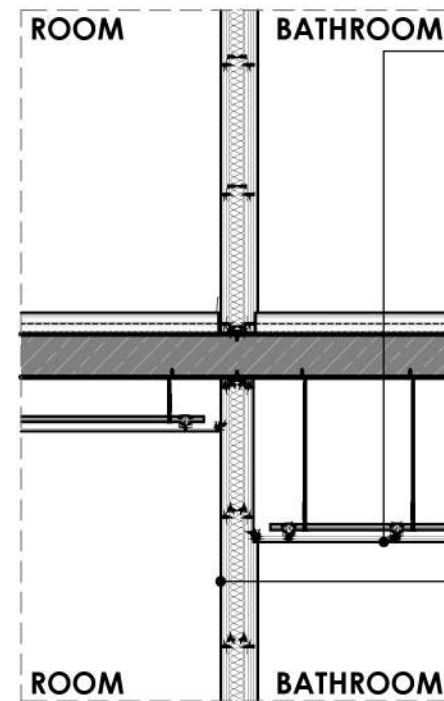


## SOUTH ELEVATION

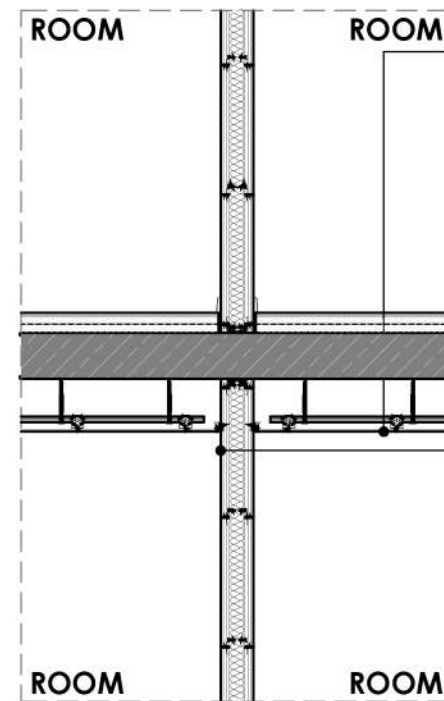


## NORTH ELEVATION

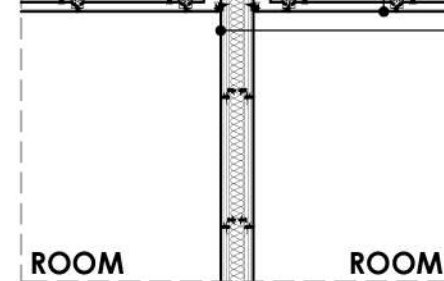
# DETAILS



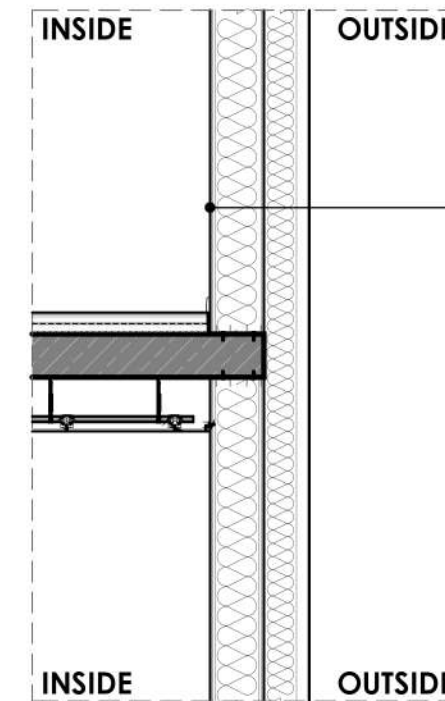
- BATHROOM FLOOR LAYERS**  
 Thickness 1062mm
- Granite tiles 10mm
  - Weber® Weberfix WR 10mm
  - Weber® Weberfloor fibre 4310 30mm
  - Isover® Flo 50mm
  - Low Carbon Concrete slab 200mm
  - Air space for instalations 750mm
  - Gyproc® Gypframe
  - Gyproc® RhinoBoard® MoistureResistant™ 2x12.5mm



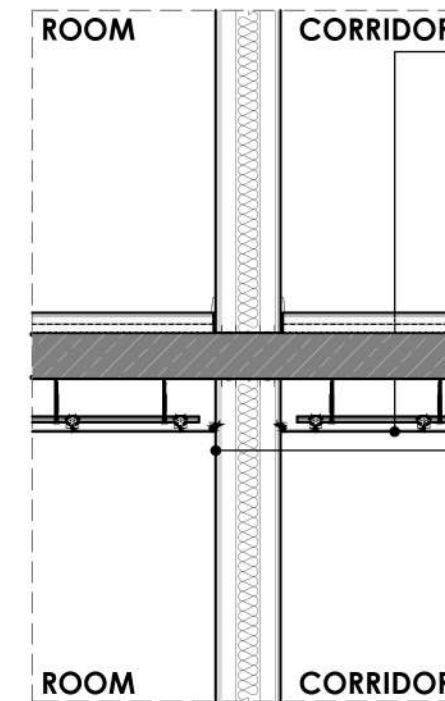
- ROOM FLOOR LAYERS**  
 Thickness 550mm
- Parquet and underlay 20mm
  - Weber® Weberfloor fibre 4310 30mm
  - Isover® Flo 50mm
  - Low Carbon Concrete slab 200mm
  - Air space for instalations 250mm
  - Gyproc® Gypframe
  - Gyproc® RhinoBoard® SoundBloc® 12.5mm



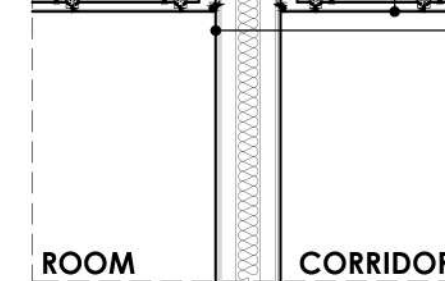
- INDOOR WALL TYPE 1**  
 Thickness 152mm **RW=63dB**
- Gyproc® RhinoBoard® SoundBloc® 2x12.5mm
  - Gyproc® Gypframe® Resilient Bar 16mm
  - Gyproc® Gypframe® UltraSTEEL® Tracks 70mm with Isover Cavitybatt™/Cavitylite® 63mm
  - Gyproc® Gypframe® Resilient Bar 16mm
  - Gyproc® RhinoBoard® SoundBloc® 2x12.5mm



- OUTDOOR WALL**  
 Thickness 460mm **U=0,09[W/m².K]**
- Gyproc® RhinoBoard® SoundBloc® 2x12.5mm
  - Gyproc® Gypframe® UltraSTEEL® Tracks 2x70mm with Isover Opti Vent 200mm
  - Gyproc® Glasroc® X 12.5mm
  - Isover PLE MAX ALU 150mm
  - Air space 50mm
  - Equitone [natura] PRO, Fibre cement board 10mm



- CORRIDOR FLOOR LAYERS**  
 Thickness 550mm
- Granite tiles 10mm
  - Weber® Weberfix WR 10mm
  - Weber® Weberfloor fibre 4310 30mm
  - Isover® Flo 50mm
  - Low Carbon Concrete slab 200mm
  - Air space for instalations 250mm
  - Gyproc® Gypframe
  - Gyproc® RhinoBoard® SoundBloc® 12.5mm



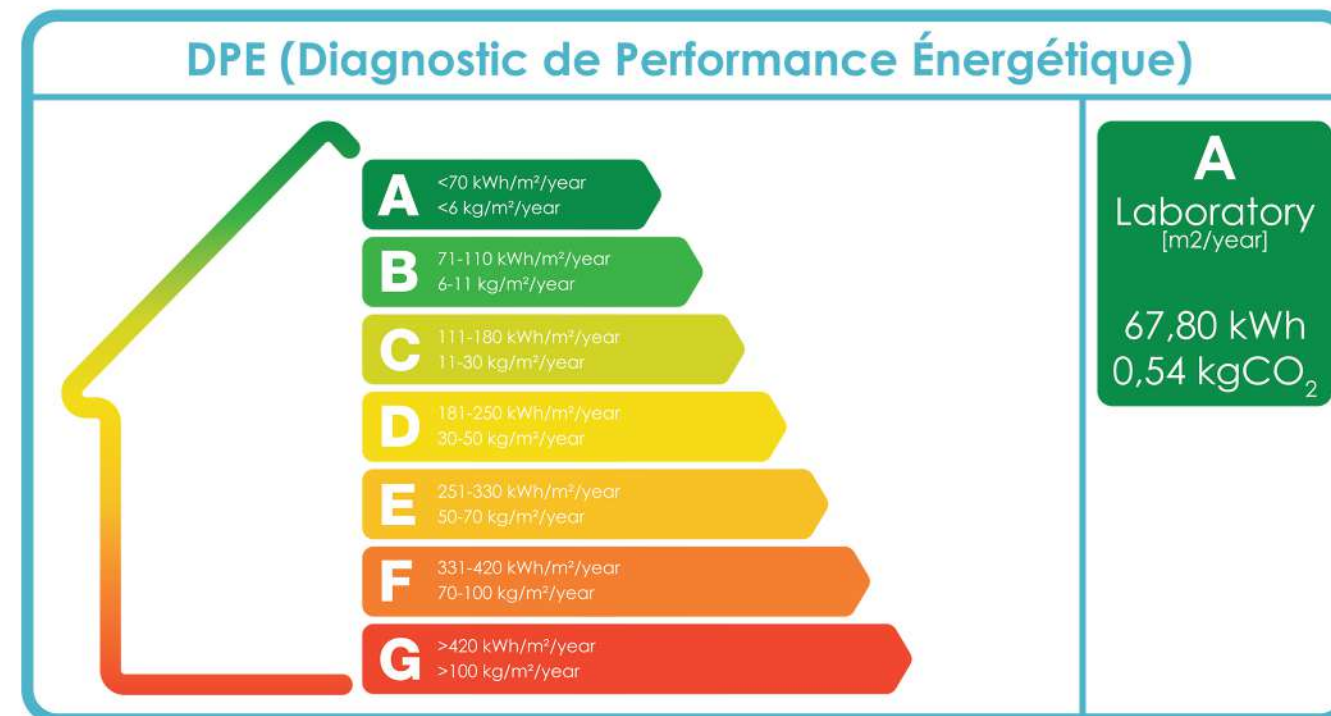
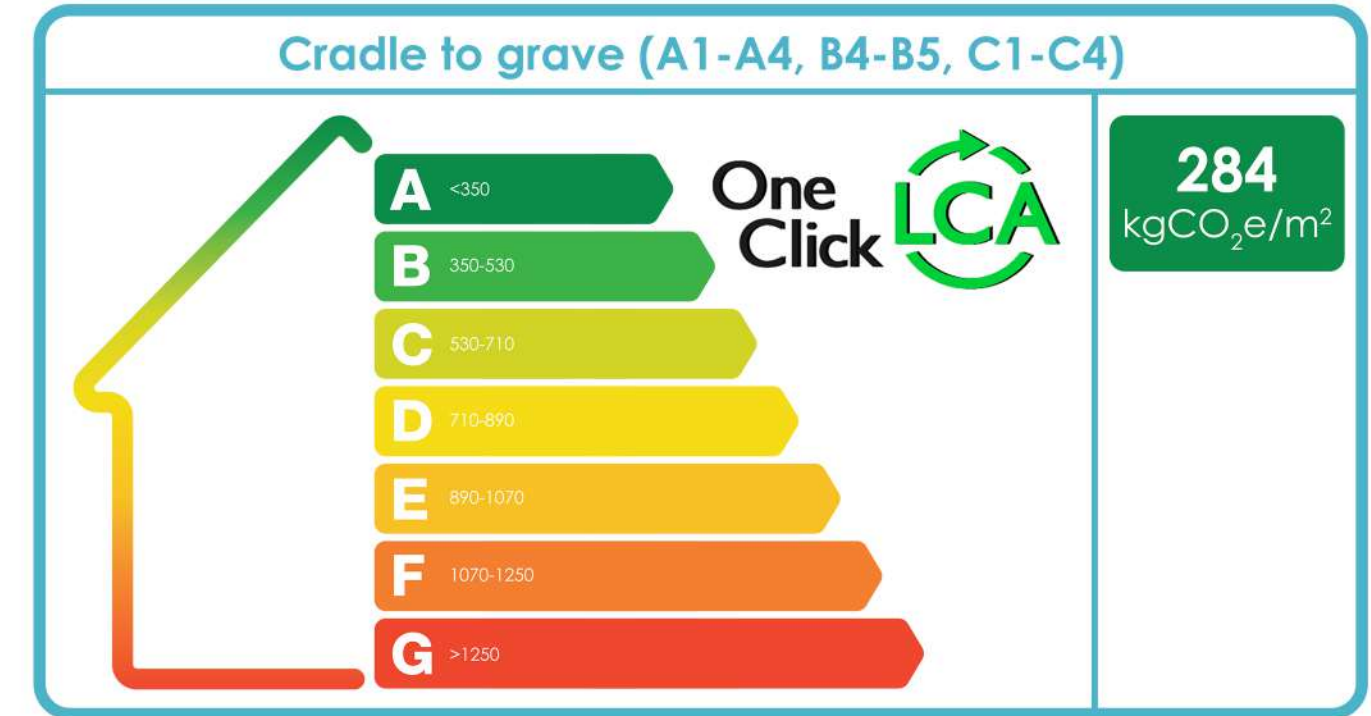
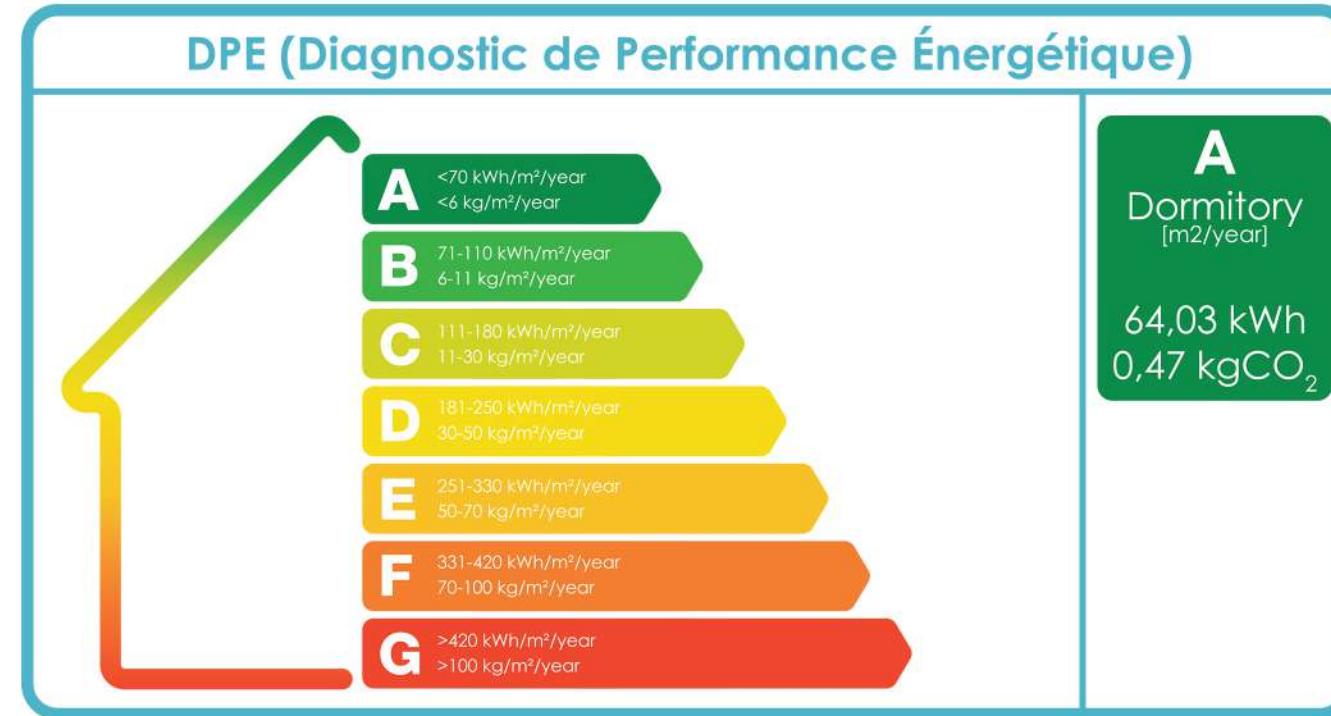
- INDOOR WALL TYPE 2**  
 Thickness 300mm **RW=70dB**
- Gyproc® RhinoBoard® SoundBloc® 2x12.5mm
  - Gyproc® Gypframe® UltraSTEEL® Tracks 70mm
  - Isover Cavitybatt™/Cavitylite® 110mm
  - Gyproc® Gypframe® UltraSTEEL® Tracks 70mm
  - Gyproc® RhinoBoard® SoundBloc® 2x12.5mm

# ENERGY EFFICIENCY & LIFE CYCLE ASSESMENT



GLAZING:  
 Light transmittance (TL): 63%  
 Solar factor (g): 0,29  
 $U_{\text{glass}}: 0,6 [W/m^2.K]$   
 $R_w: 44dB$

COLLECTED RAINWATER:  
 The total amount of rainwater collected during annual rainfall of 750ml per  $m^2$  is 853,8  $m^3$



### Renewable Building System Summary

Building System	Annual Energy Generated
Photovoltaic System	3 384 kWh
Heat Pump Heating (Geothermal)	28 295 kWh
<b>Total for Dormitory:</b>	<b>31 679 kWh</b>
Photovoltaic System	3 148 kWh
Heat Pump Heating (Geothermal)	22 602 kWh
<b>Total for Laboratory:</b>	<b>25 750 kWh</b>
<b>Total:</b>	<b>57 429 kWh</b>

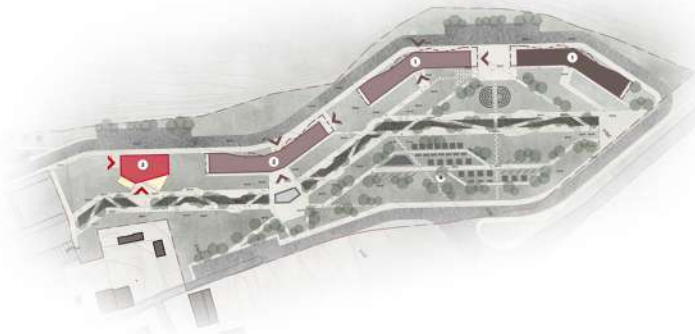






**RESTAURANT**  
FUTURE DEVELOPMENT

# RESTAURANT



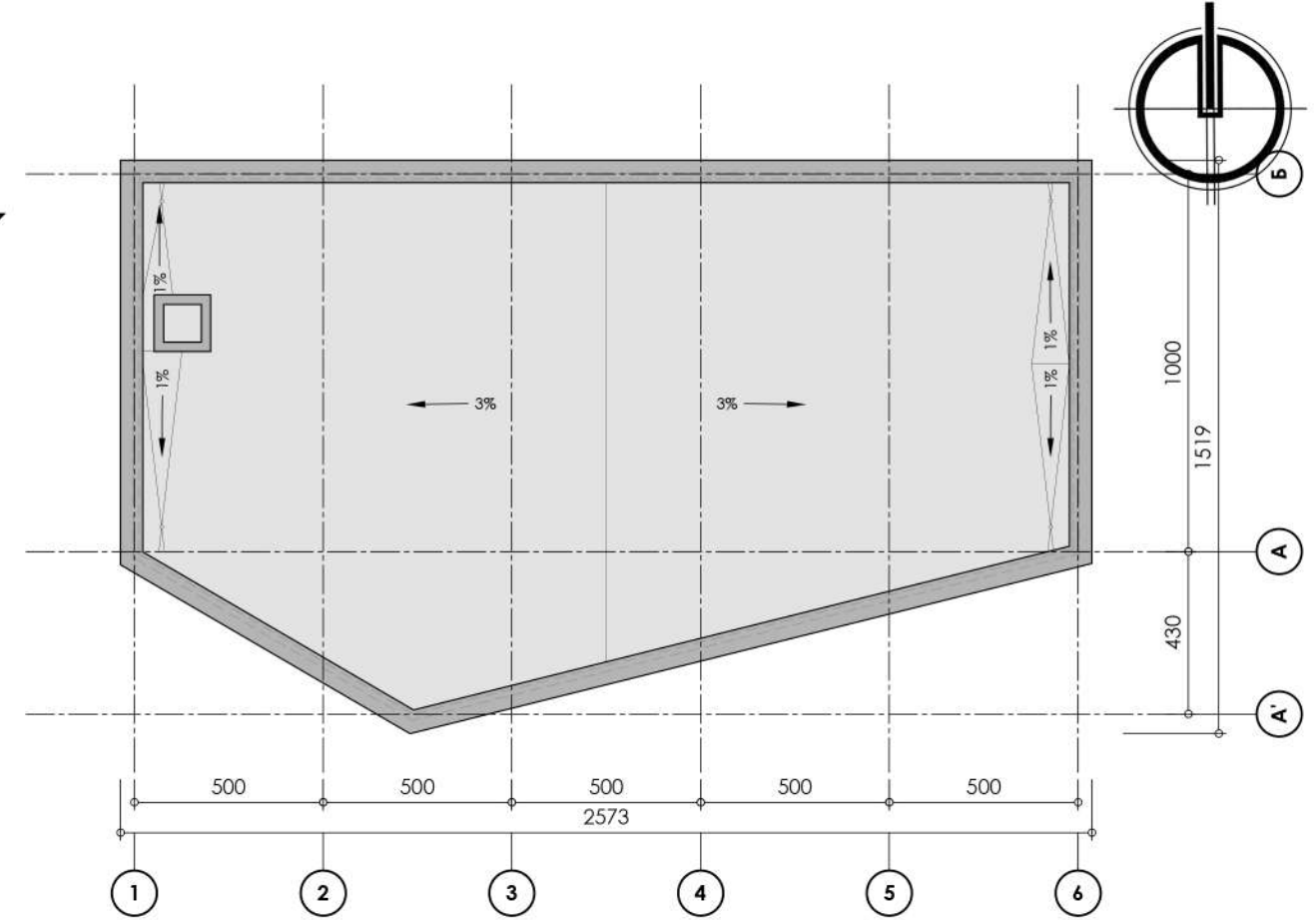
## LEGEND FLOOR PLAN ±0.00:

- 1. DINING HALL
- 2. VERANDA
- 3. WIND LOBBY
- 4. STORAGE ROOM
- 5. RESROOM



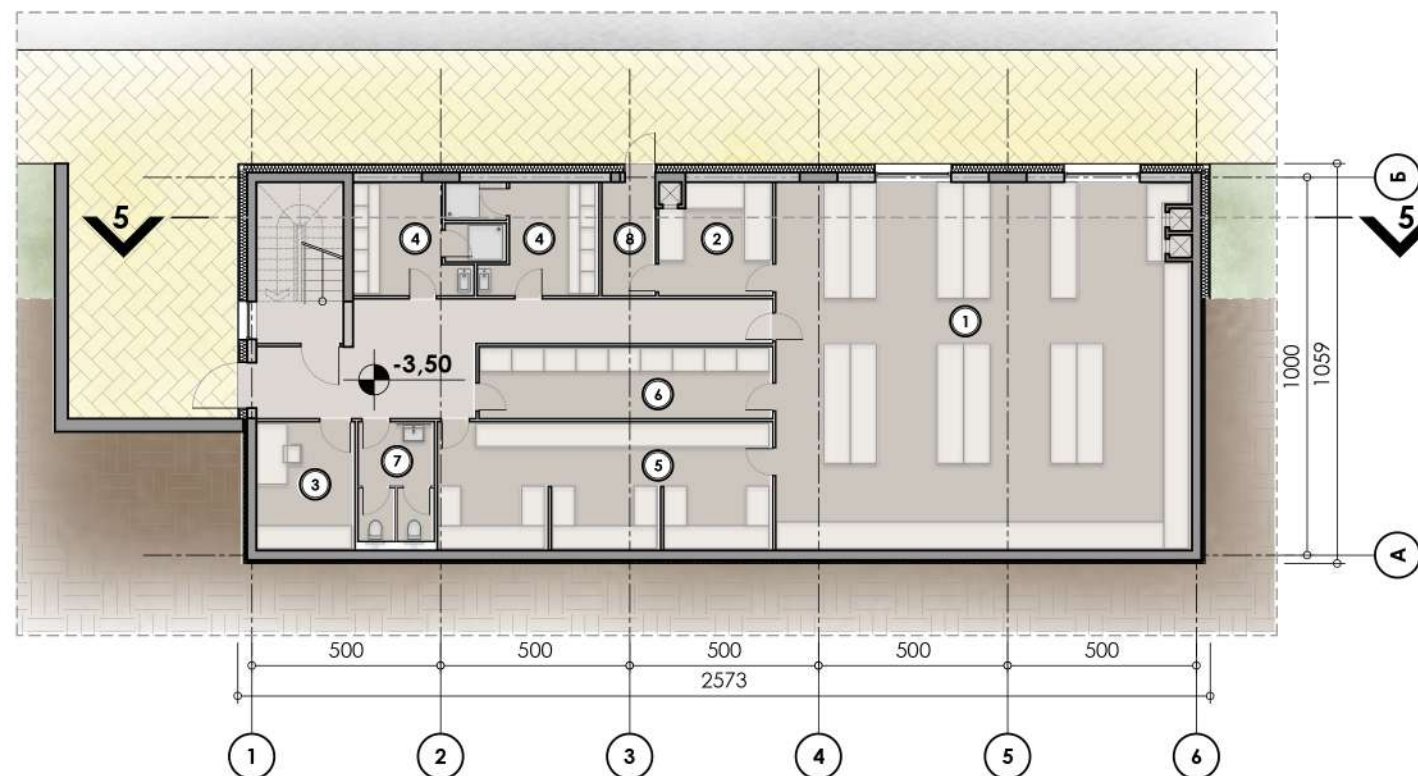
FLOOR PLAN ±0.00

ROOF PLAN



## LEGEND FLOOR PLAN -3.50:

- 1. KITCHEN
- 2. DISHWASHING ROOM
- 3. OFFICE
- 4. CHANGING ROOM
- 5. STORAGE ROOMS
- 6. COLD STORAGE
- 7. RESTROOM
- 8. WASTE AREA



FLOOR PLAN - 3.50

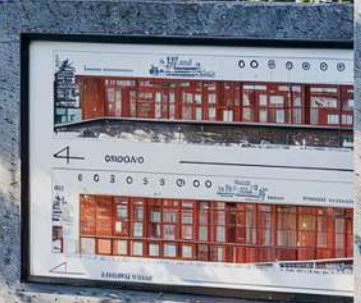










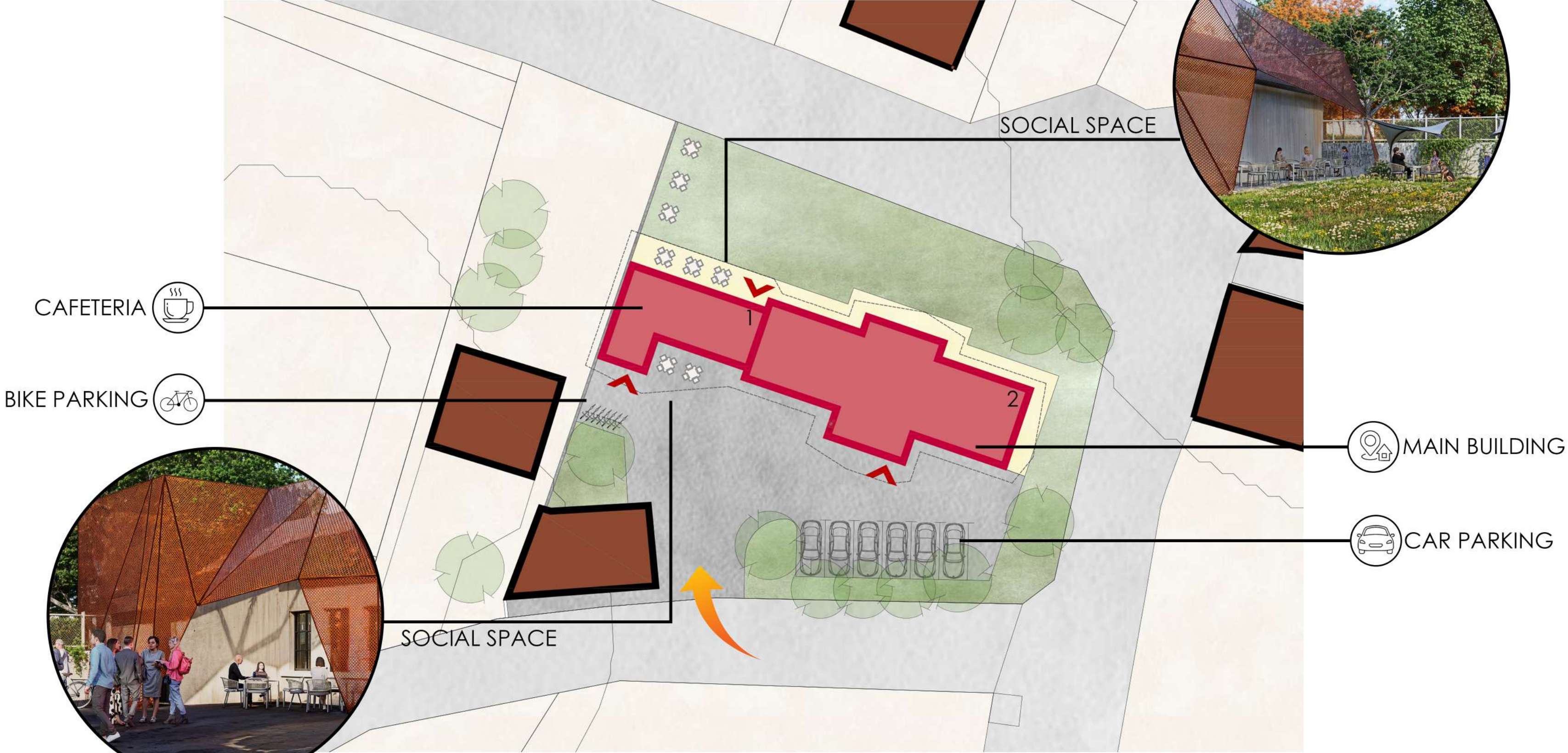






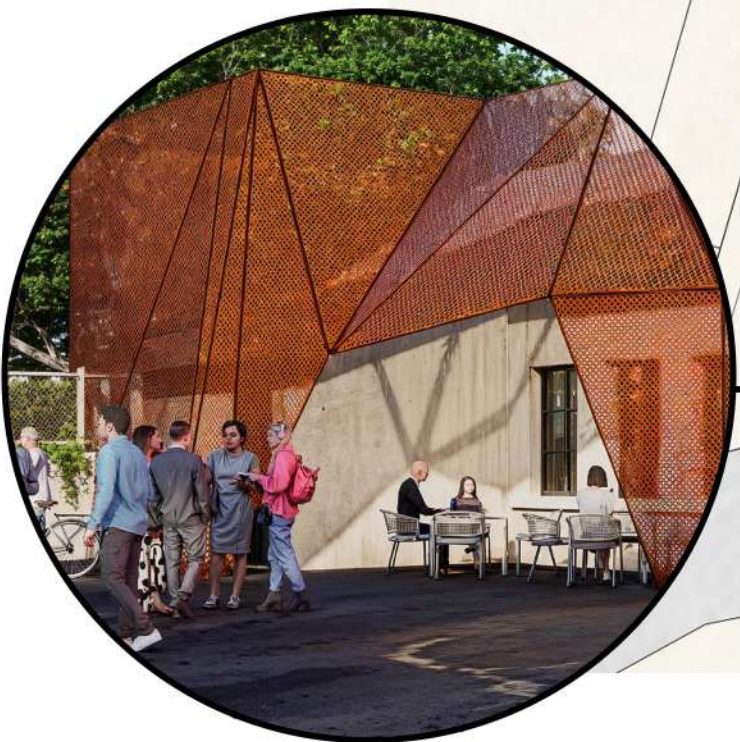
**ZONE - B -**  
RENOVATION

# RENOVATION MASTER PLAN



CAFETERIA 

BIKE PARKING 



SOCIAL SPACE

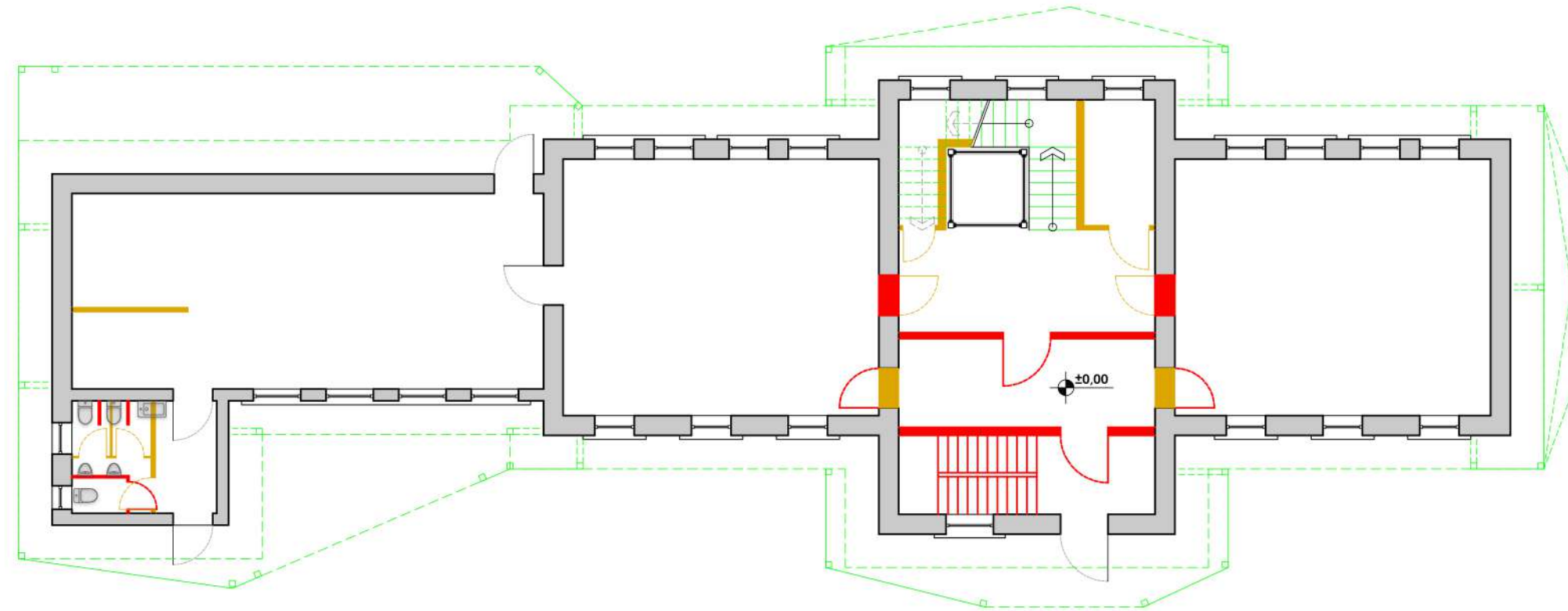
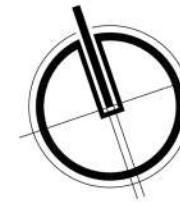
SOCIAL SPACE

 MAIN BUILDING

 CAR PARKING

0 5 20 50

# RENOVATION



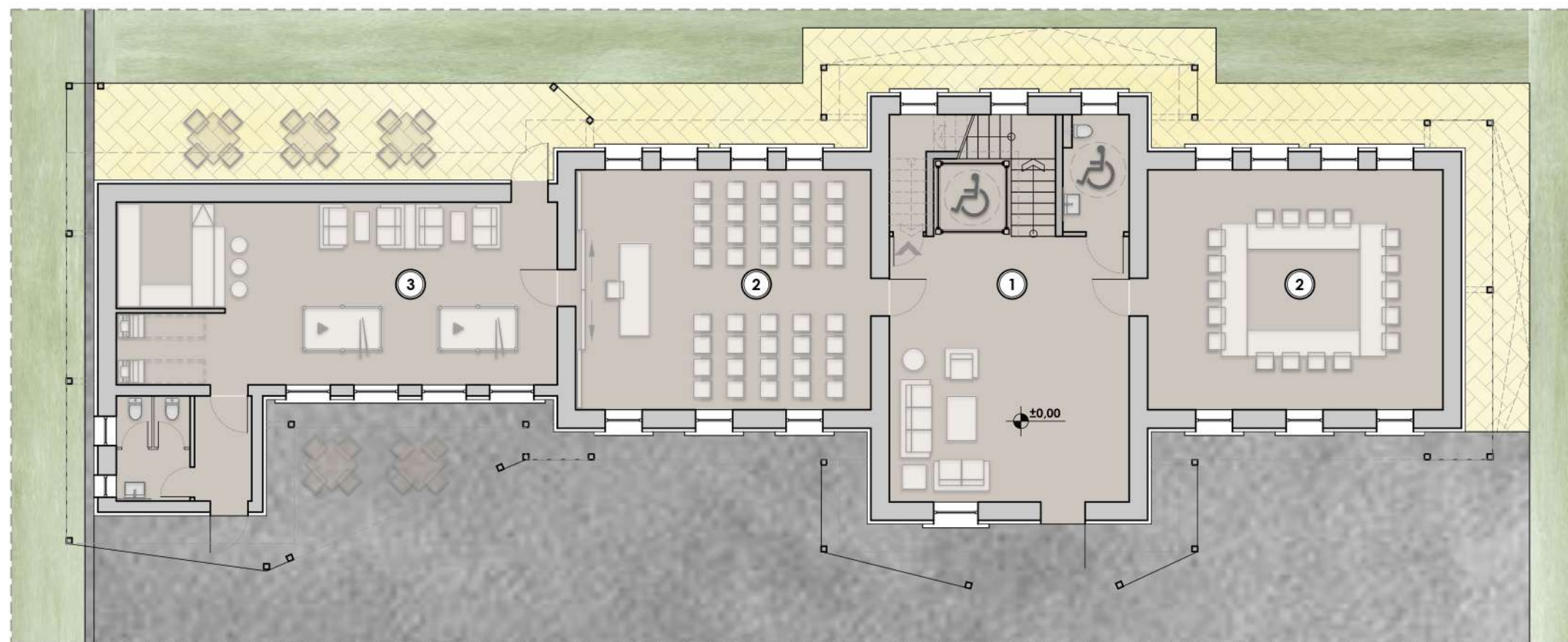
WALLS PLAN

## COLOR LEGEND:

-  NEW STRUCTURAL ELEMENTS
-  NEW LIGHT PARTITION WALLS
-  SEALED OPENINGS
-  DEMOLITION OF EXISTING LIGHT PARTITION WALLS
-  NEW OPENINGS

## LEGEND:

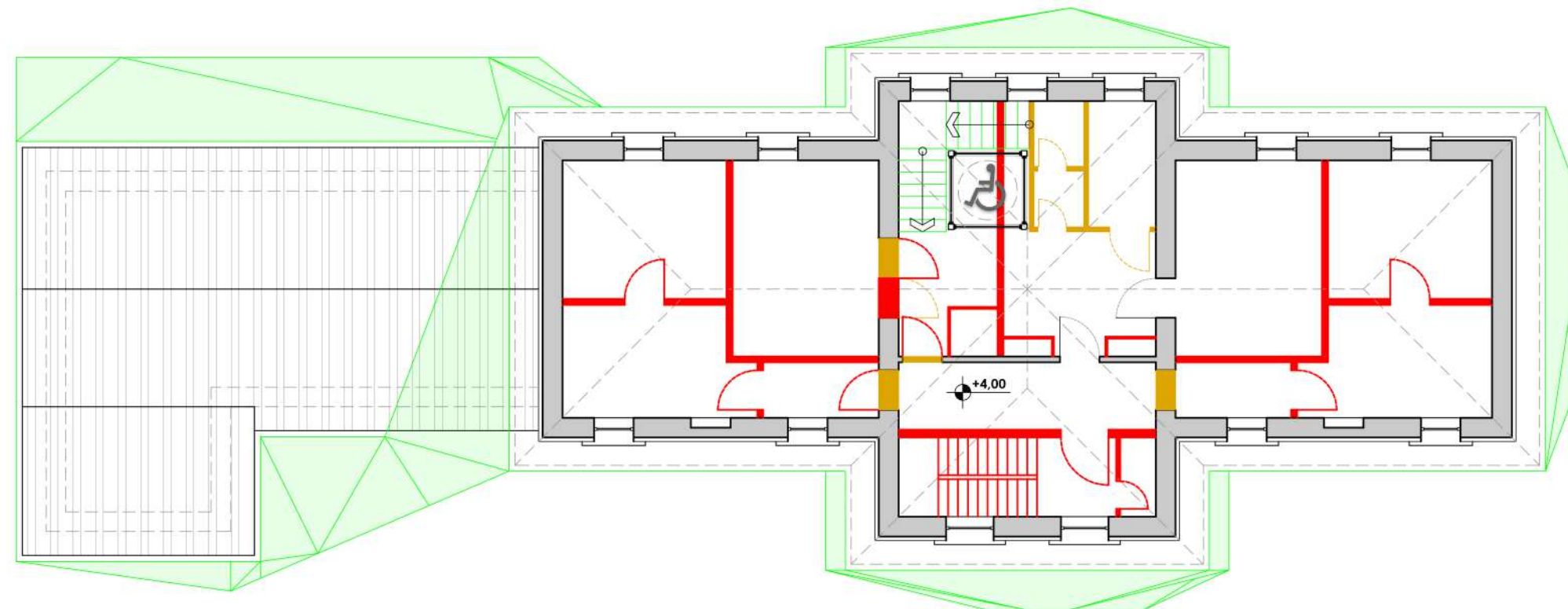
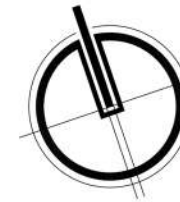
- 1. ENTRANCE AREA
- 2. MULTI-PURPOSE ROOMS
- 3. CAFETERIA



PROJECT PROPOSAL

FLOOR PLAN 1

RENOVATION



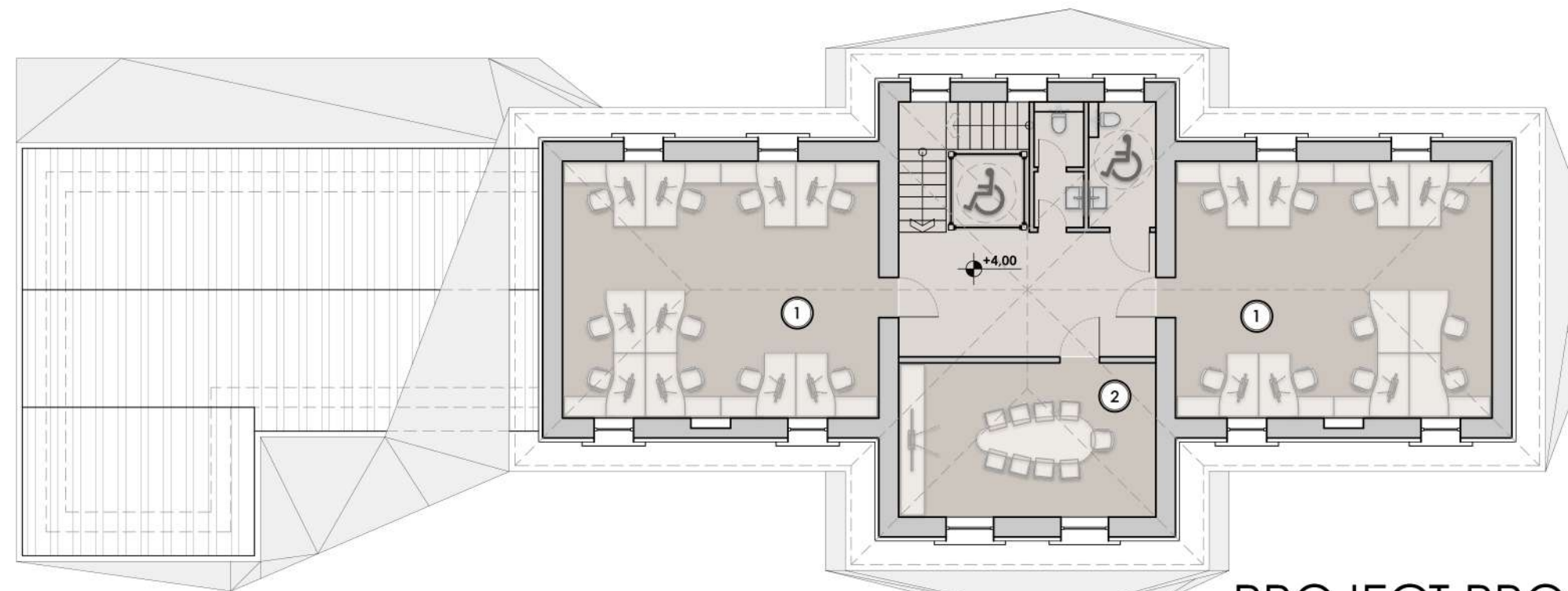
WALLS PLAN

COLOR LEGEND:

-  NEW STRUCTURAL ELEMENTS
-  NEW LIGHT PARTITION WALLS
-  SEALED OPENINGS
-  DEMOLITION OF EXISTING LIGHT PARTITION WALLS
-  NEW OPENINGS

LEGEND:

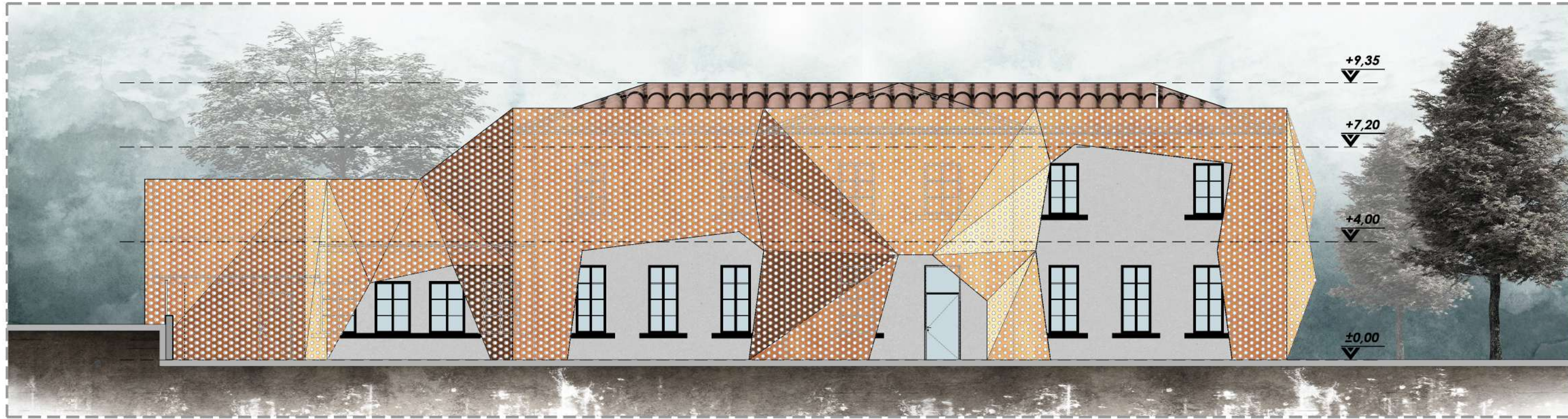
- 1. OFFICE SPACES
- 2. CONFERENCE ROOM



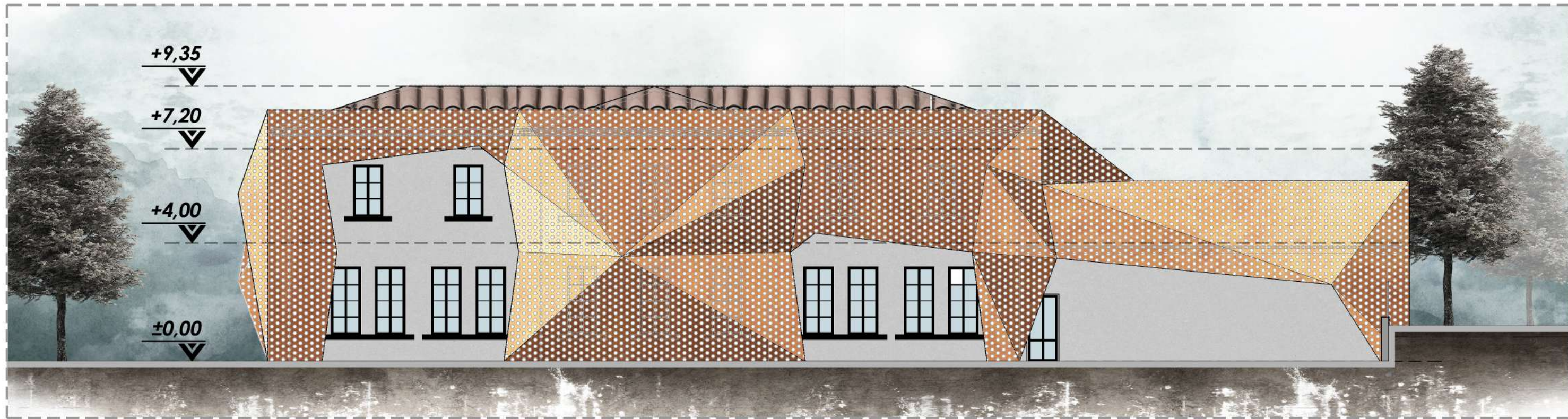
PROJECT PROPOSAL

FLOOR PLAN 2

# RENOVATION



## NORTHEAST ELEVATION



## SOUTHWEST ELEVATION

