



# **community center for the blind and visually impaired in Frankfurt**

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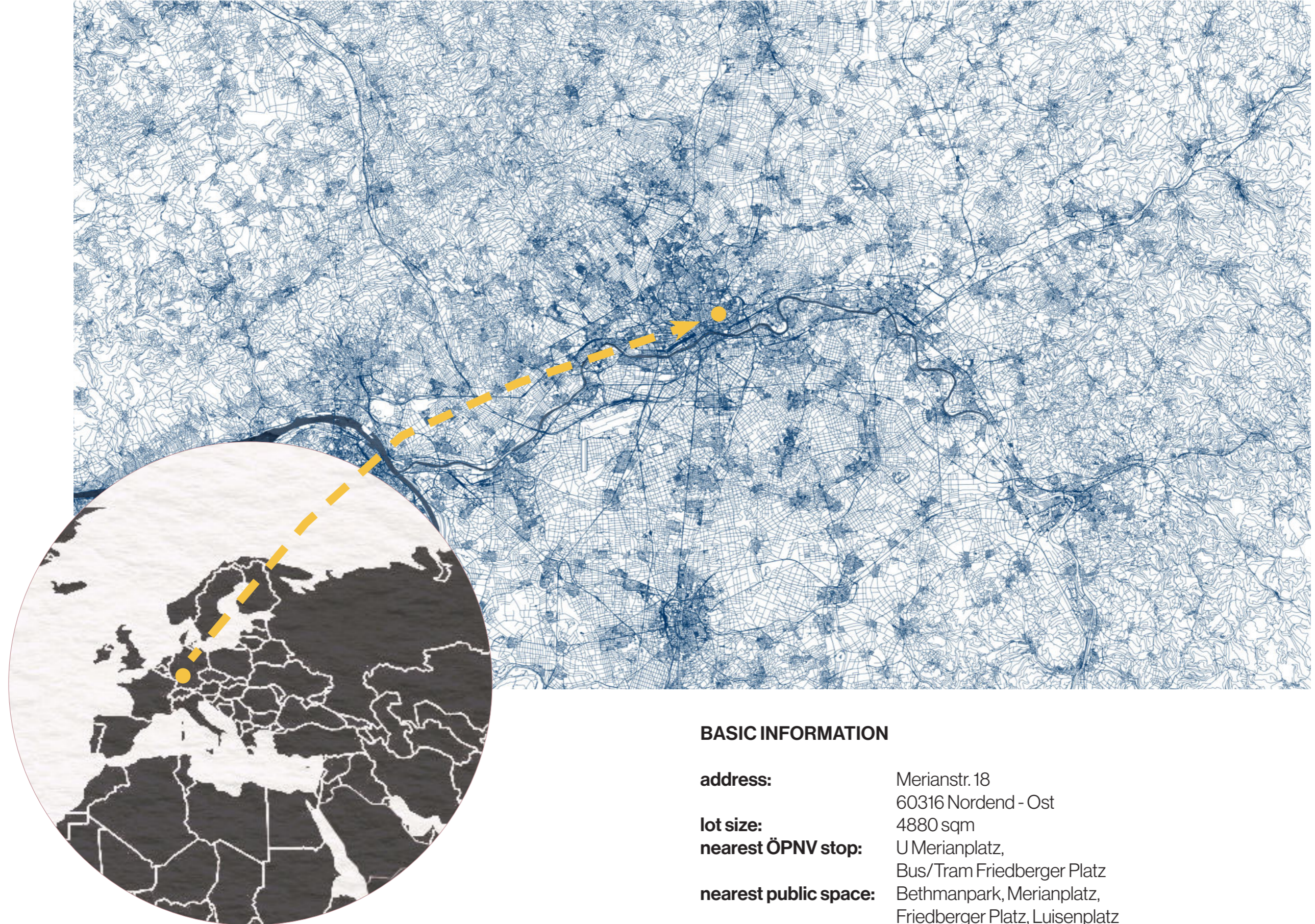
Prof. Dr.-Ing. Florian Mähl

academic year:

2021/2022

## 01.1

### Project Site Location



#### BASIC INFORMATION

**address:** Merianstr. 18  
60316 Nordend - Ost

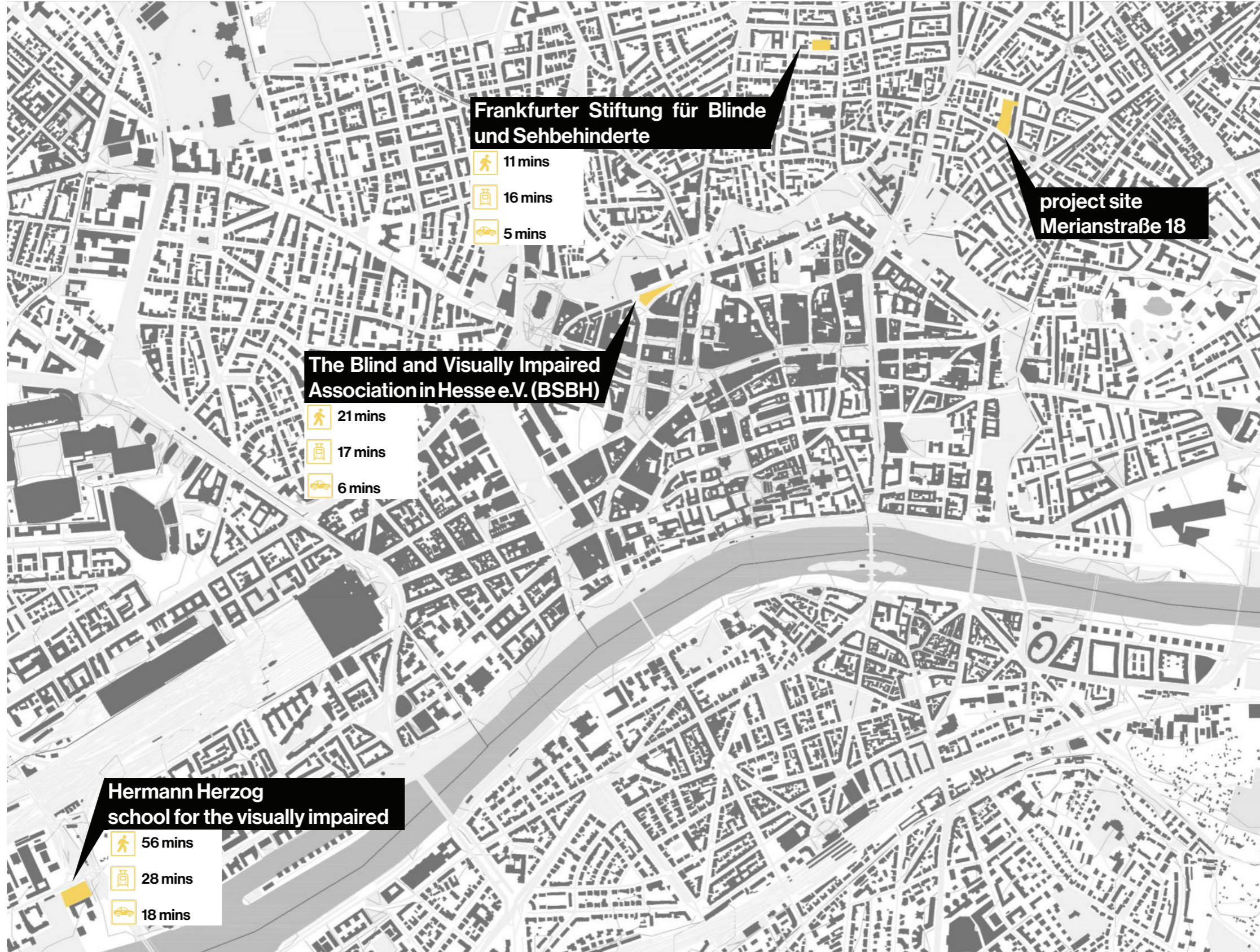
**lot size:** 4880 sqm

**nearest ÖPNV stop:** U Merianplatz,  
Bus/Tram Friedberger Platz

**nearest public space:** Bethmanpark, Merianplatz,  
Friedberger Platz, Luisenplatz

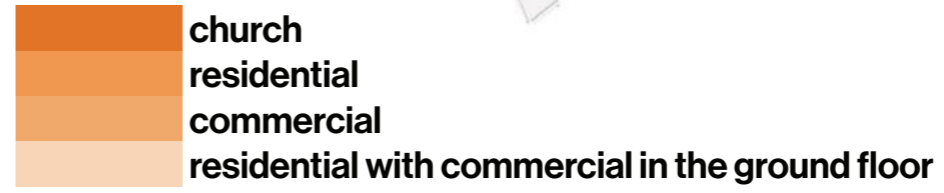
## 01.1

### Project Site Location



# 01 Project Site

## 01.2 Project Site Surroundings

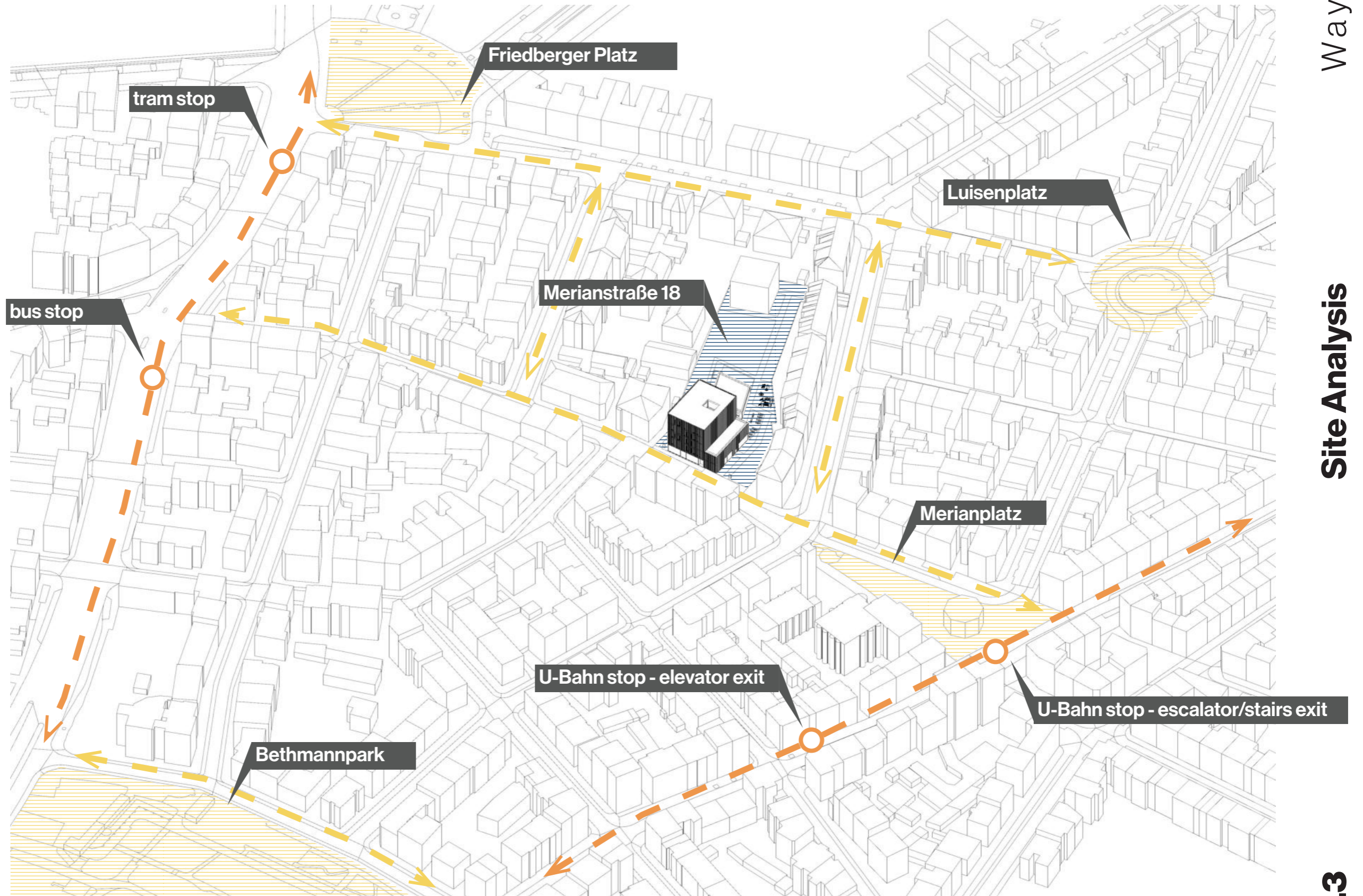


Surroundings

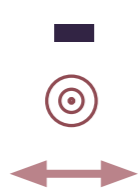
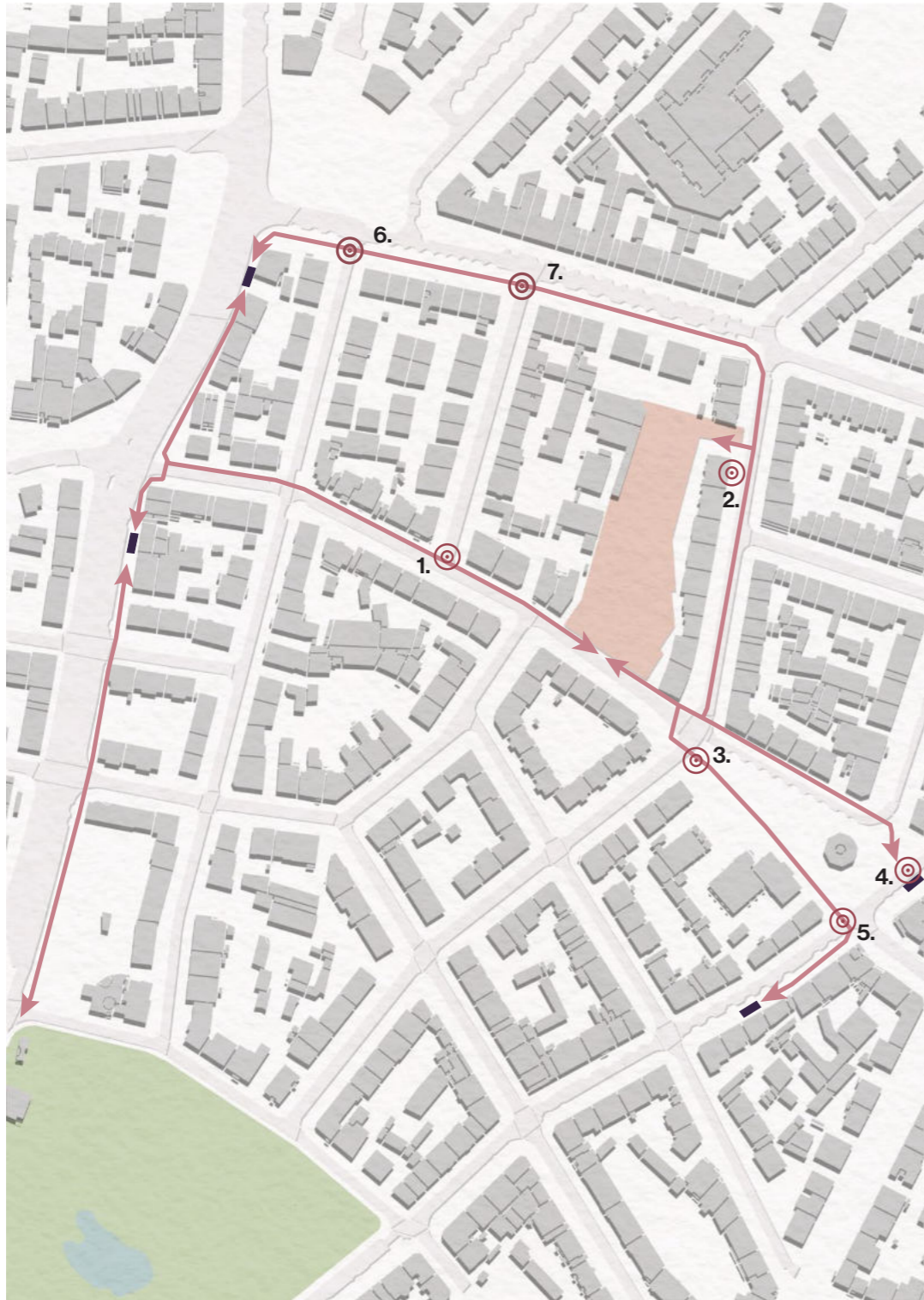
Site Analysis

01.2

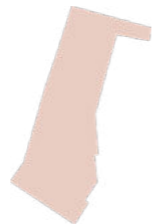
## 01.3 Project Site Wayfinding



## 01.3 Project Site Wayfinding



ÖPNV station  
risk area  
wayfinding

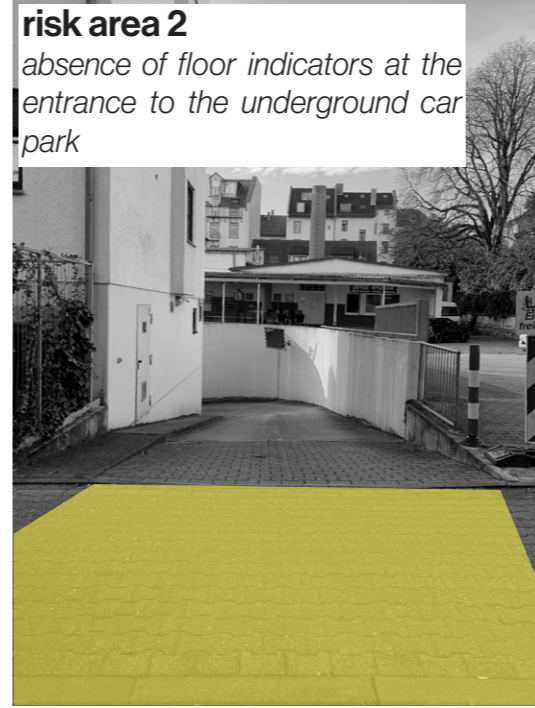


project site

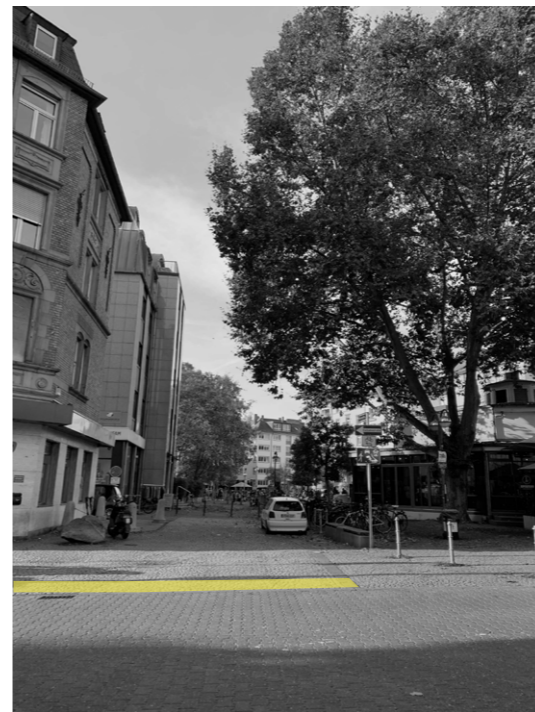
**risk area 1,7**  
*absence of floor indicators before the pedestrian crossing*



**risk area 2**  
*absence of floor indicators at the entrance to the underground car park*

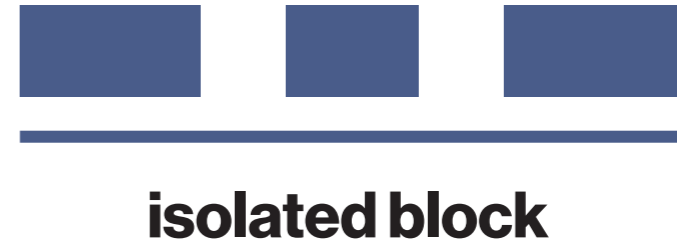


**risk area 3**  
*posts preventing free and safe passage*



**risk areas 4, 5, 6**  
*there are two different floorings indicating crossing but no previous "warning" indicators*

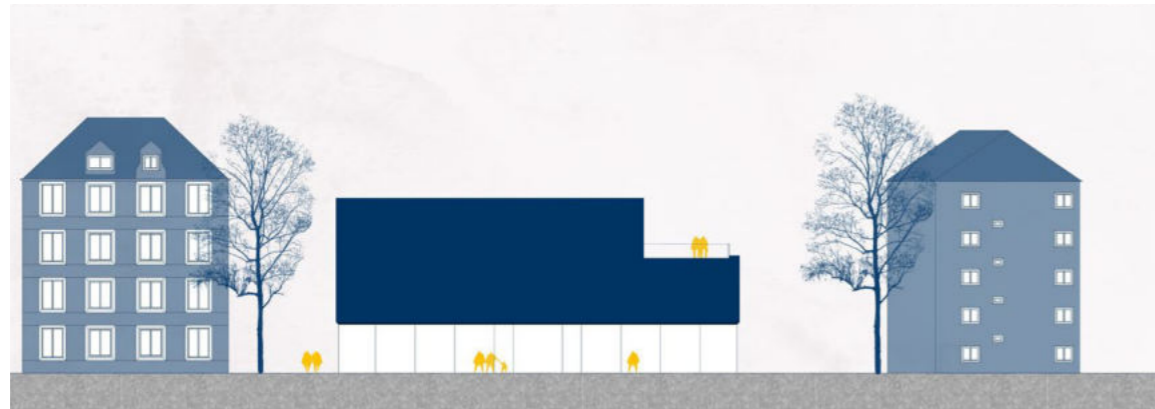
# 01.4 Project Site Typology



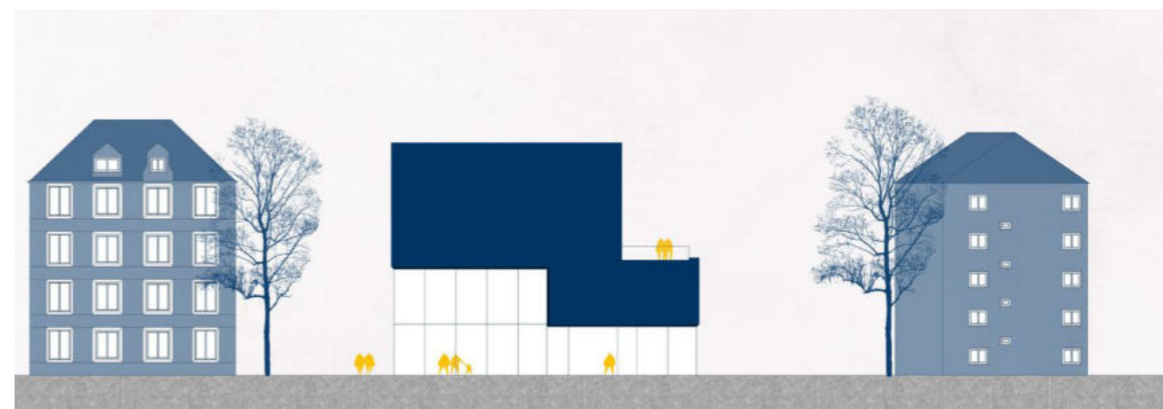
axonometry version 1



axonometry version 2



street elevation version 1



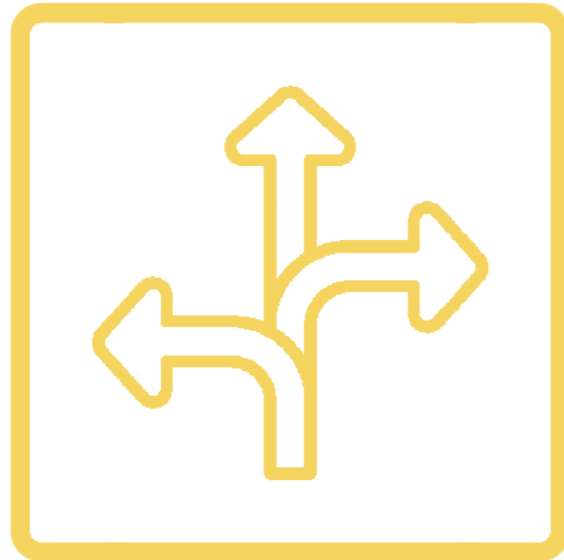
street elevation version 2

## 02.1 Design Principles

### Designing With The Blind In Mind

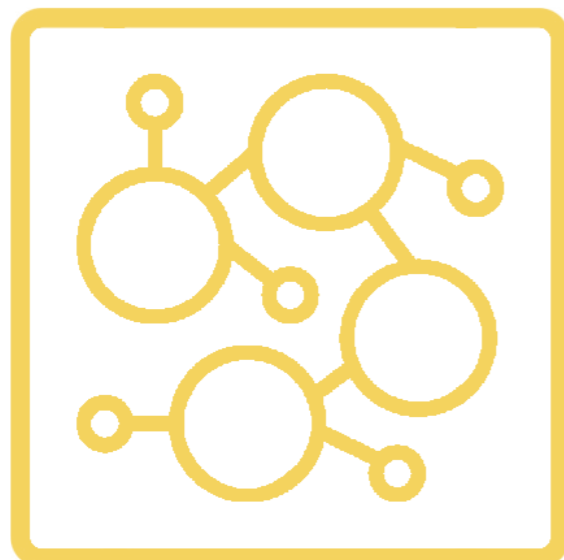
Barrier-free architecture means that the world we create ourselves must be designed that it is open to all people, irrespective of their physical condition or age, without the need for assistance and without restrictions.

The goal is to create a people-friendly building, which allows non-stigmatized freedom of access to all.



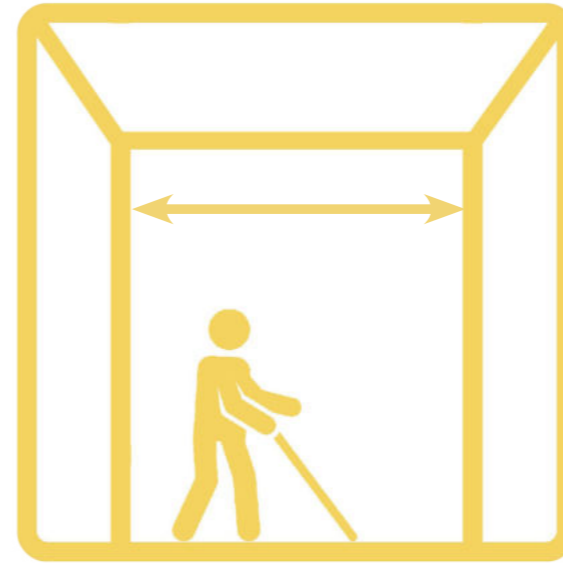
#### easily understandable layout

- constant directional changes or even minor deviations from straight lines may lead to the disorientation or distress of visually impaired person,
- doorways to essential services should be off a central circulation area or adjacent corridors,
- corridors and halls should be kept as short as possible



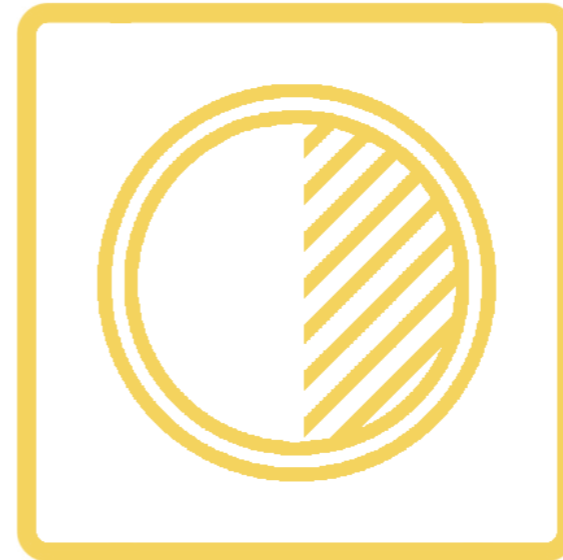
#### logically grouped functions

- large areas should be broken down into smaller units by varying elements such as light fittings, furniture or floor coverings,
- different colour scheme should be used for different areas,
- essential services, such as toilets, lifts, staircases, should be grouped together



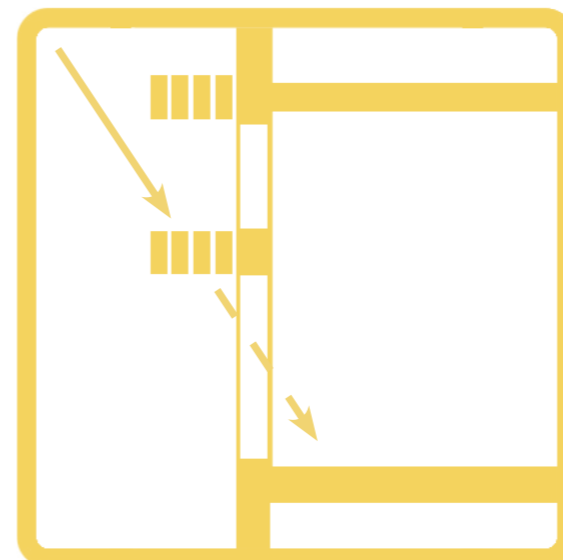
#### generous circulation spaces

- the most common aid used by people with poor sight to facilitate their mobility is another person's assistance. This form of guidance obviously has implications in terms of door widths, corridor widths and so on,



#### good colour and tone contrast

- floor covering should **contrasts** with the walls so that the boundary of the floor is clearly visible,
- in very large areas, "walkways" can be created by the use of a floor surfacing with different tactile and colour - **contrasting characteristics**,
- key features of the building have to be visually accentuated



#### evenly distributed light

- glare should be avoided at all costs,
- light should be **evenly distributed** with no dramatic changes when moving from one area to another,
- where appropriate, the lighting level should be controlled by dimming or switching,
- **avoid: glares, dazzles, optical illusions, heavy shadows**



# 03.1

## Site Plan Design

### Legend

- hard pavement
- wooden deck
- parking
- low/medium greenery
- park
- playground
- info points
- building entrances

03 Site plan

03



Design

Site Plan

03.1

## 03.1

### Site Plan Design



## Engaging all the senses

### playground



#### touch

- incorporating tactile elements for orientation and mobility,
- including interesting items to explore through touch,



#### sound

- incorporating sound, such as through windchimes, a musical sidewalk, large xylophone, bells, etc.



#### sight

- using tonal and colour contrasts for better visibility for visually impaired people

### sensory garden



#### touch

- using plants that offer interesting textures for encouraging the sense of touch
- example: lamb's ear for the baby-soft feel, moss for irresistible cool sensation
- note: avoid anything that may be dangerous: roses, agaves



#### smell

- using highly aromatic plants for creating smell memories
- example: sweet smelling gardenia, honeysuckle, herbs, and spices



#### sound

- choosing plant flora that make noise when the wind passes through them to stimulate hearing
- example: bamboo stems



#### sight

- grouping the plants by color for those with only diminished sight,
- incorporating plants with different bloom, leaf, bark, and stem colors provide visual appeal as well



#### taste

- allow visitors an opportunity to experience garden by using all senses
- example: edible fruit, herbs, and spices

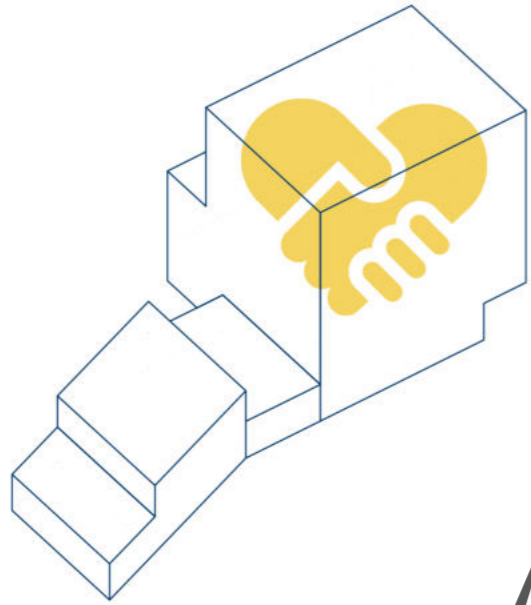
**03.2 Project Site Movement**



**03.3 Project Site atmosphere**

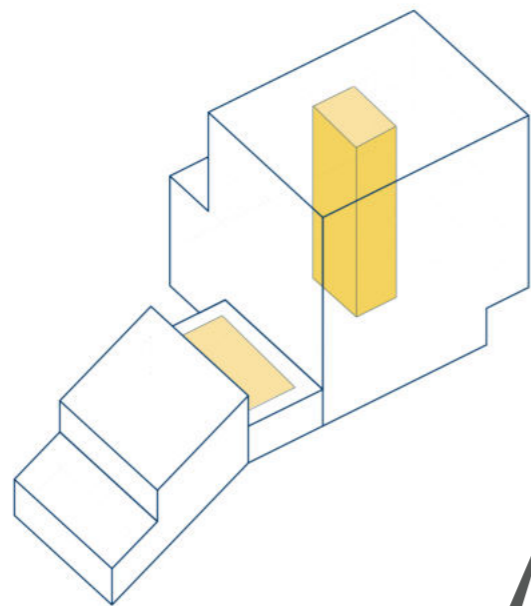


## 04.1 Concept the big idea



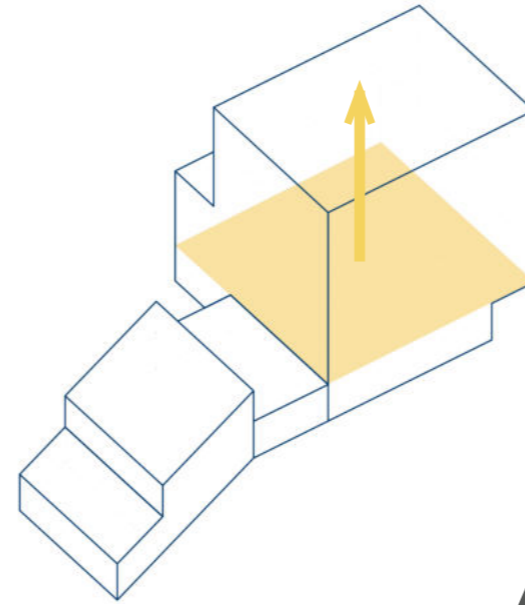
**inclusive design principles**

design open to all the people, irrespective of their physical condition, age, etc.



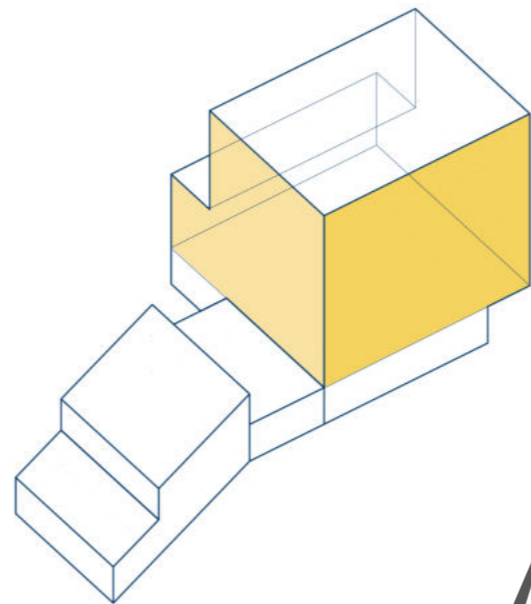
**daylight optimization**

central atrium and basement skylights for daylight performance optimization



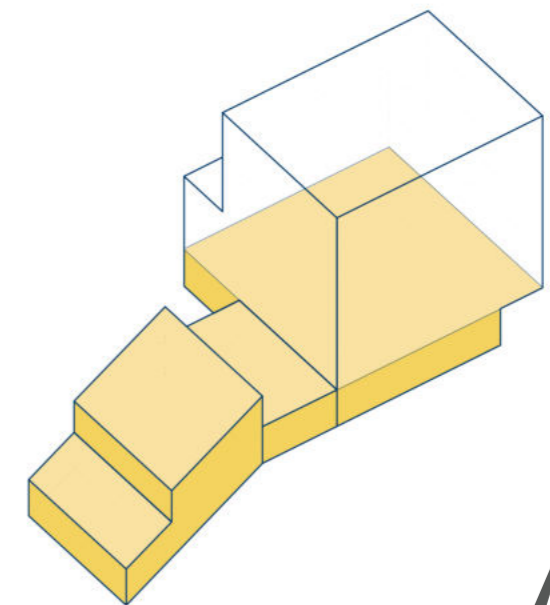
**five aboveground storeys**

height of the block taken with respect to the neighboring residential buildings



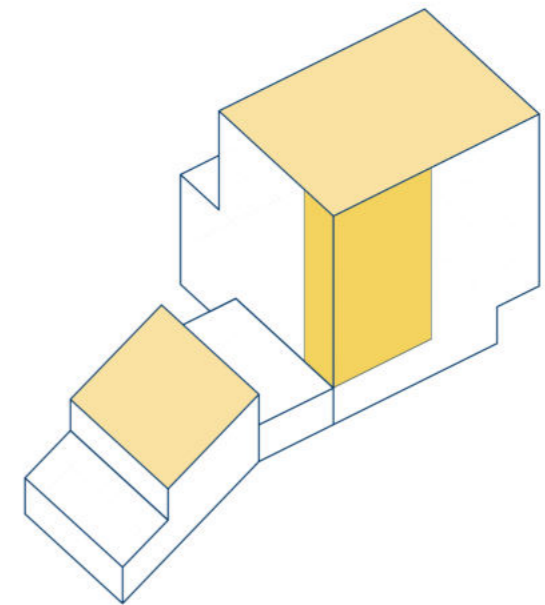
**vertical wooden facade panels**

vertical wooden facade panels installed on all the facades for privacy, aesthetics and blocking the sun into the building



**auditorium moved underground**

due to its size auditorium with the backstage, lounge, bar and guest cloakroom was moved to the underground storey



**green roofs and facades**

extensive green roofs and ivy planted along the western and southern facades for cooling down the building and capturing noise pollution

## 04.2 Concept functional program

### 4 educational

coworking space + study pods  
pc pool

### 3 library

multipurpose room/study room  
media library

### 2 artistic

music room instrumental  
music room vocal  
art workshop

### 1 advisory

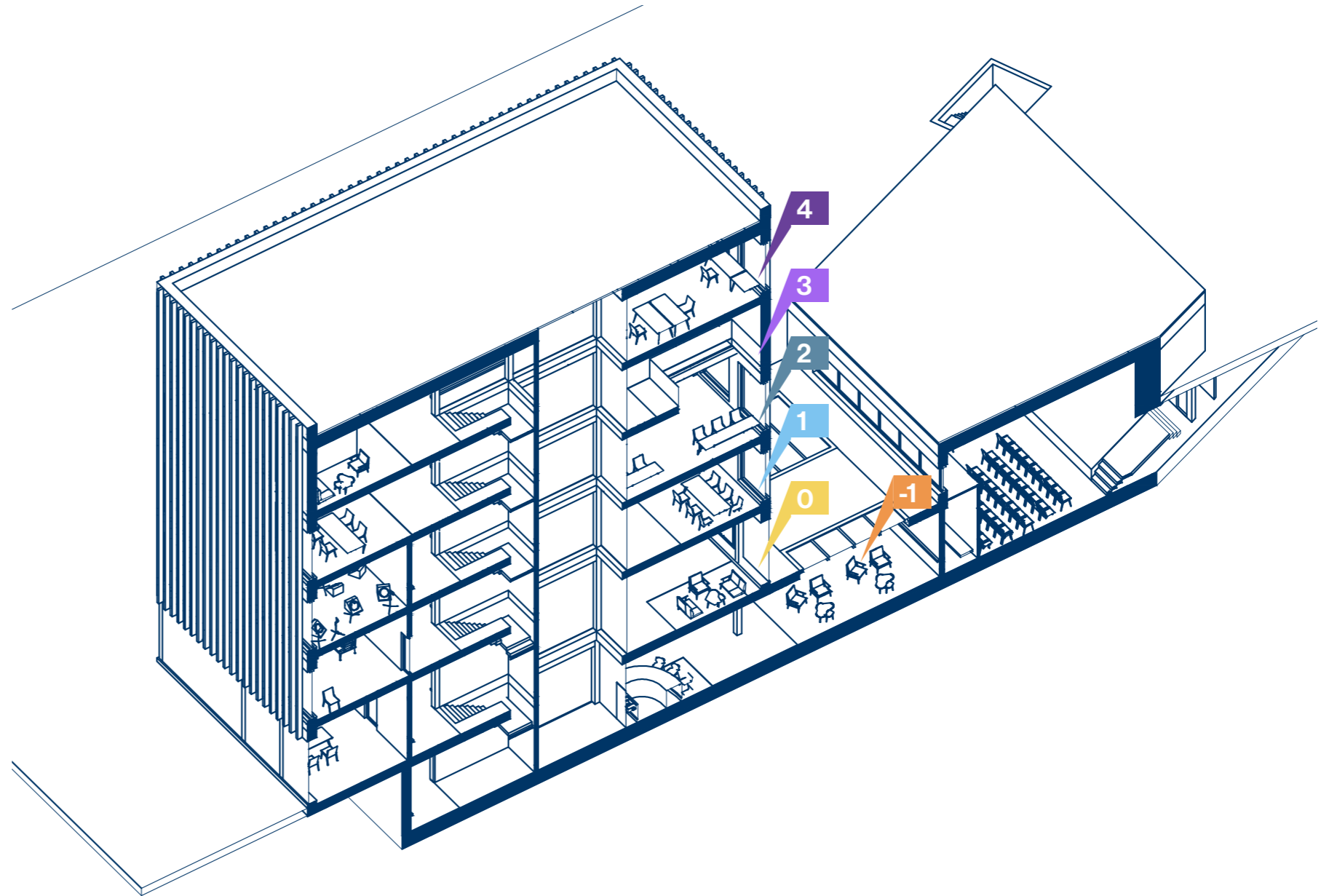
advisor office x5  
staff room  
newspaper editorial office  
multipurpose room/meeting room

### 0 administrative

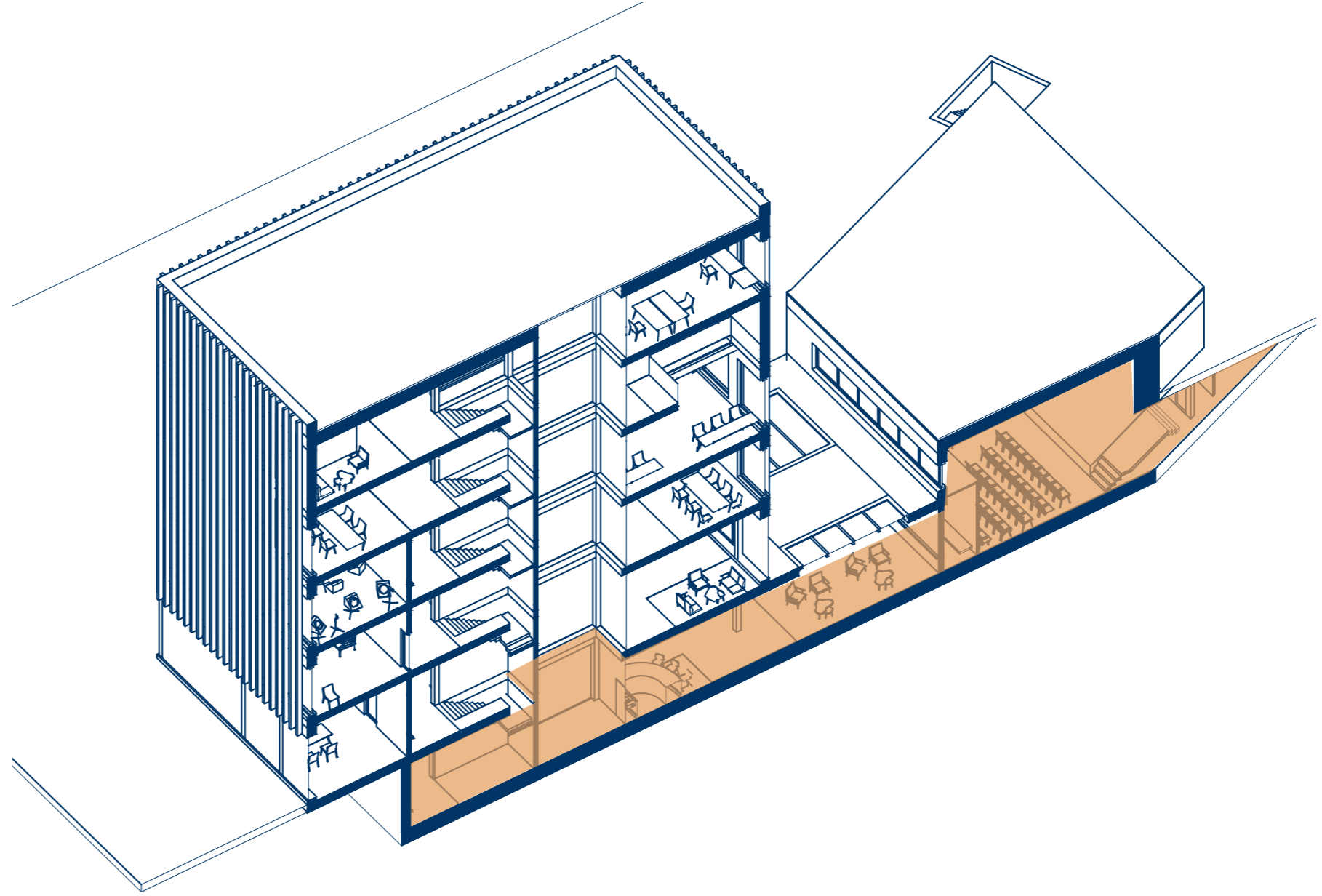
cloak room  
information station  
cafe + back room  
lounge  
administration office x2  
caretaker room

### -1 cultural

cloak room  
bar + storage  
lounge  
auditorium + back room  
technical room  
storage



## 04.2 Concept functional program



-1 cultural

- cloak room
- bar + storage
- lounge
- auditorium + back room
- technical room
- storage

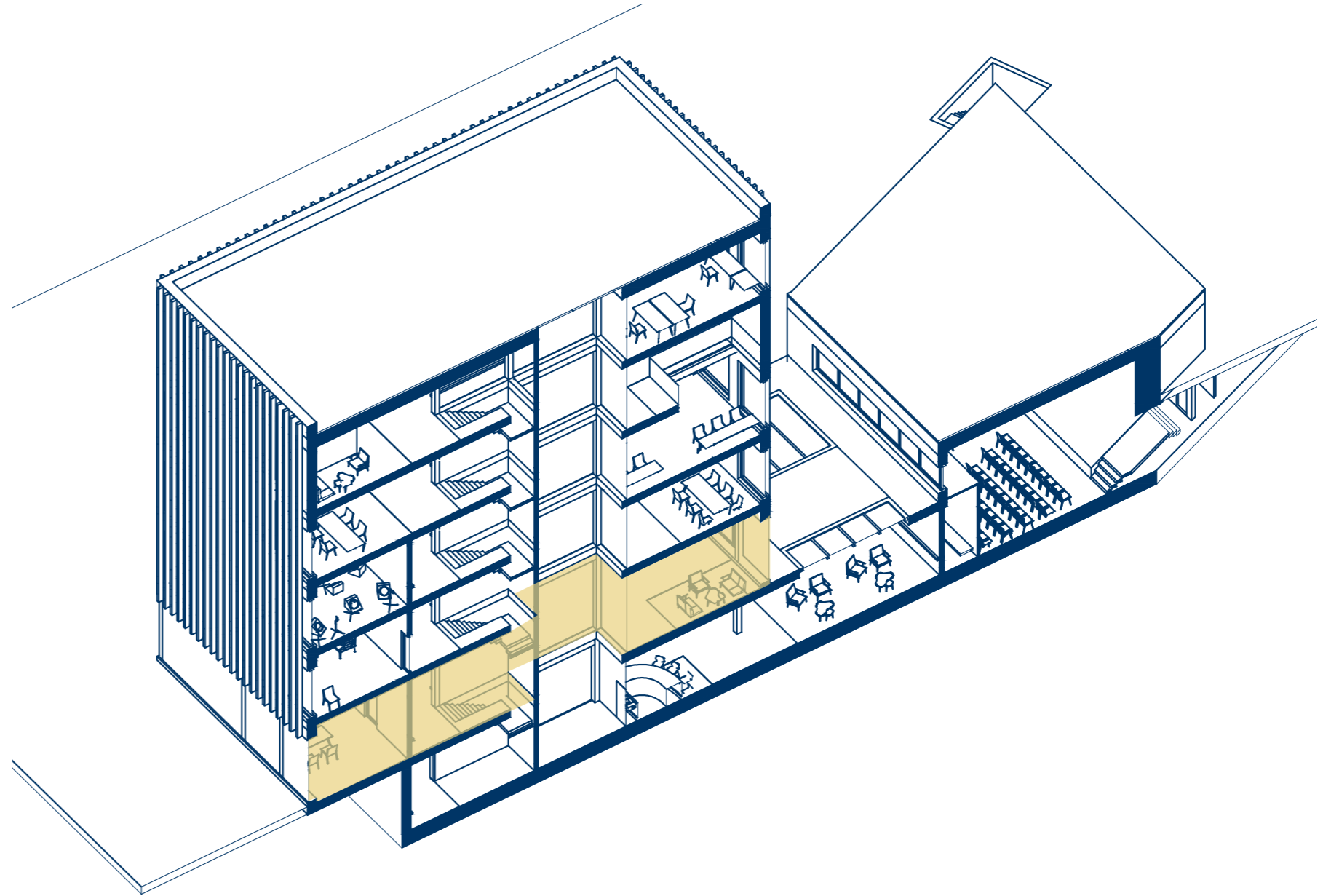
## 04.2 Concept functional program

### 0 administrative

cloak room  
information station  
cafe + back room  
lounge  
administration office x2  
caretaker room

### -1 cultural

cloak room  
bar + storage  
lounge  
auditorium + back room  
technical room  
storage





## 04.2 Concept functional program

### 1 advisory

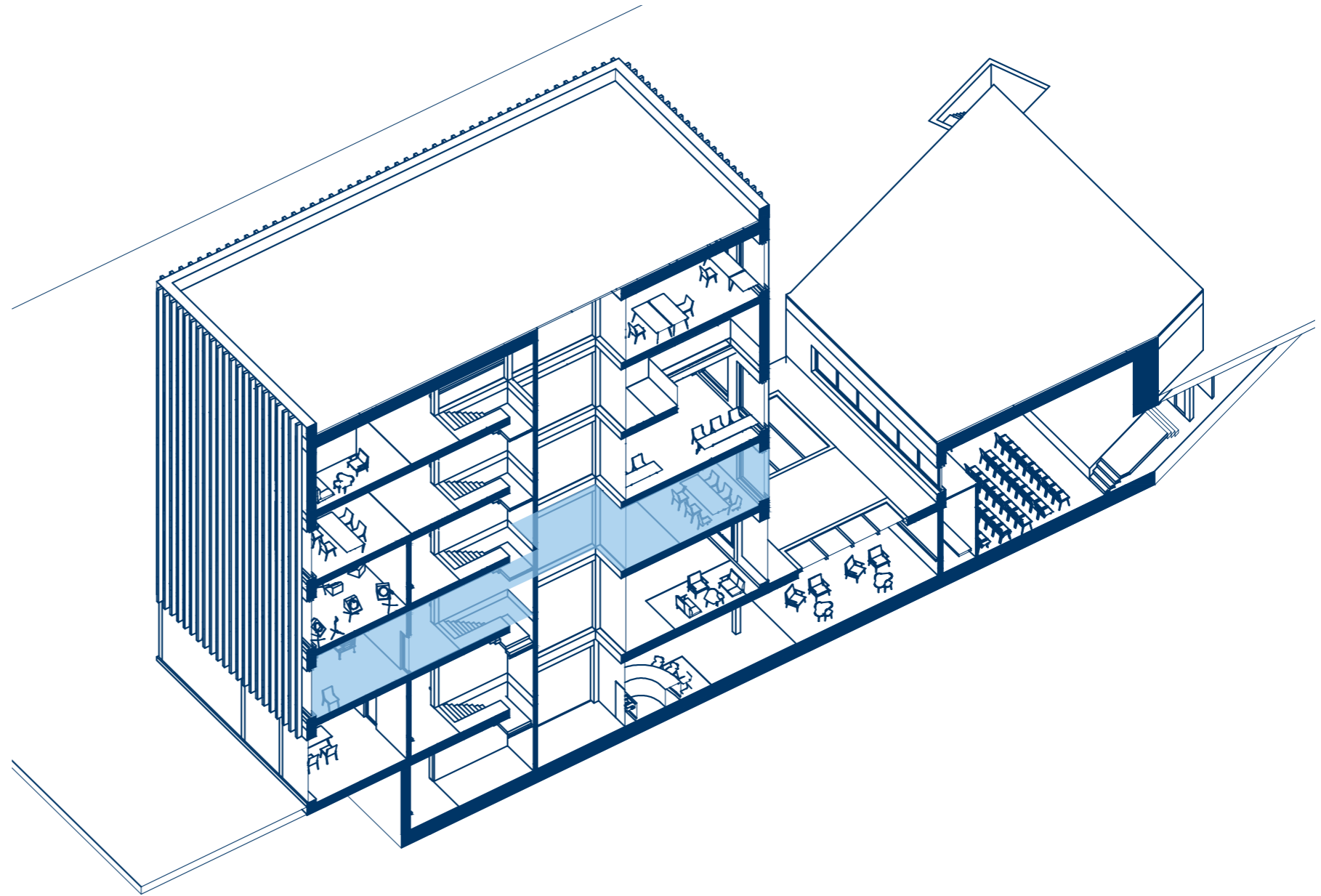
advisor office x5  
staff room  
newspaper editorial office  
multipurpose room/meeting room

### 0 administrative

cloak room  
information station  
cafe + back room  
lounge  
administration office x2  
caretaker room

### -1 cultural

cloak room  
bar + storage  
lounge  
auditorium + back room  
technical room  
storage



## 04.2 Concept functional program

### 2 artistic

music room instrumental  
music room vocal  
art workshop

### 1 advisory

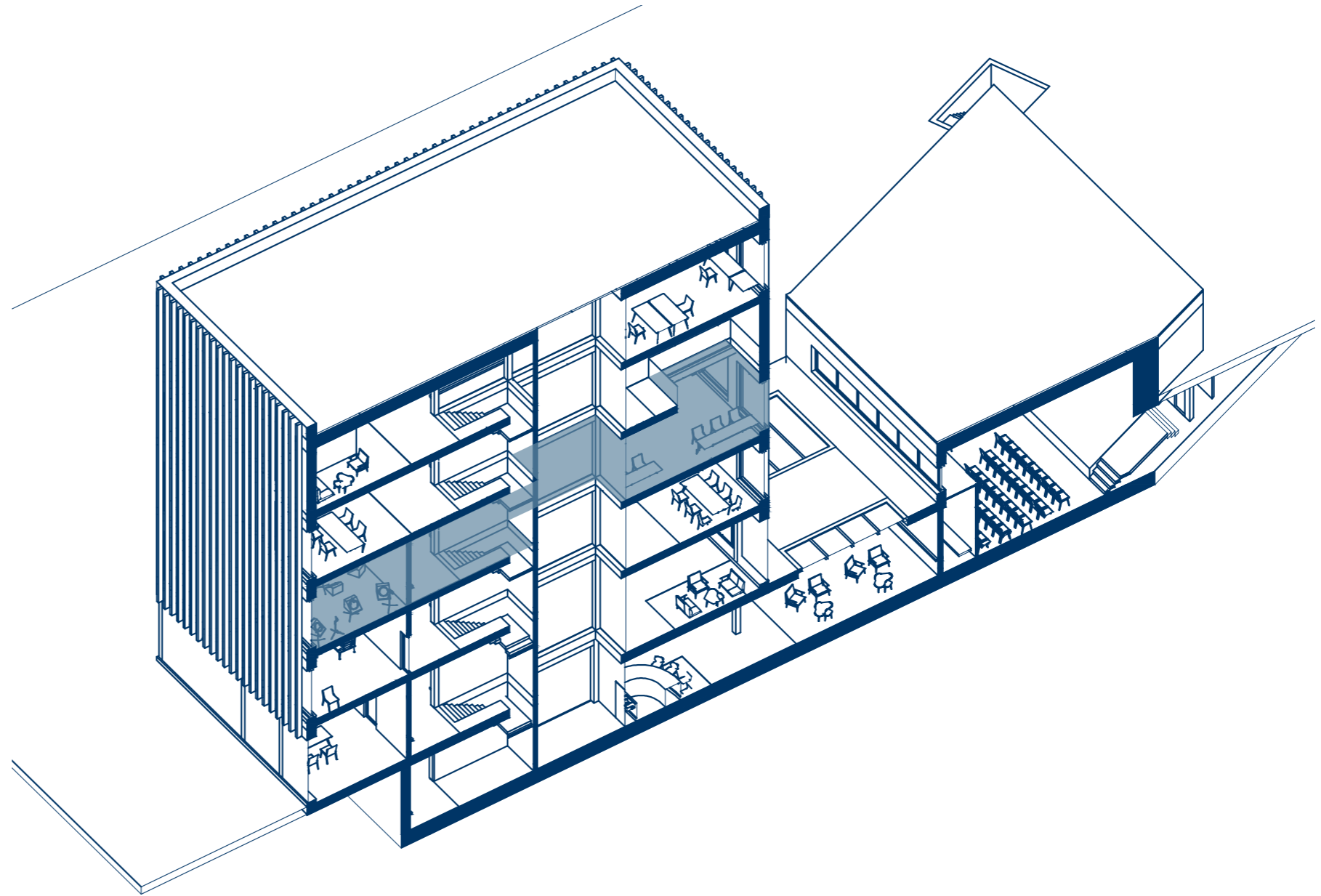
advisor office x5  
staff room  
newspaper editorial office  
multipurpose room/meeting room

### 0 administrative

cloak room  
information station  
cafe + back room  
lounge  
administration office x2  
caretaker room

### -1 cultural

cloak room  
bar + storage  
lounge  
auditorium + back room  
technical room  
storage



## 04.2 Concept functional program

### 3 library

multipurpose room/study room  
media library

### 2 artistic

music room instrumental  
music room vocal  
art workshop

### 1 advisory

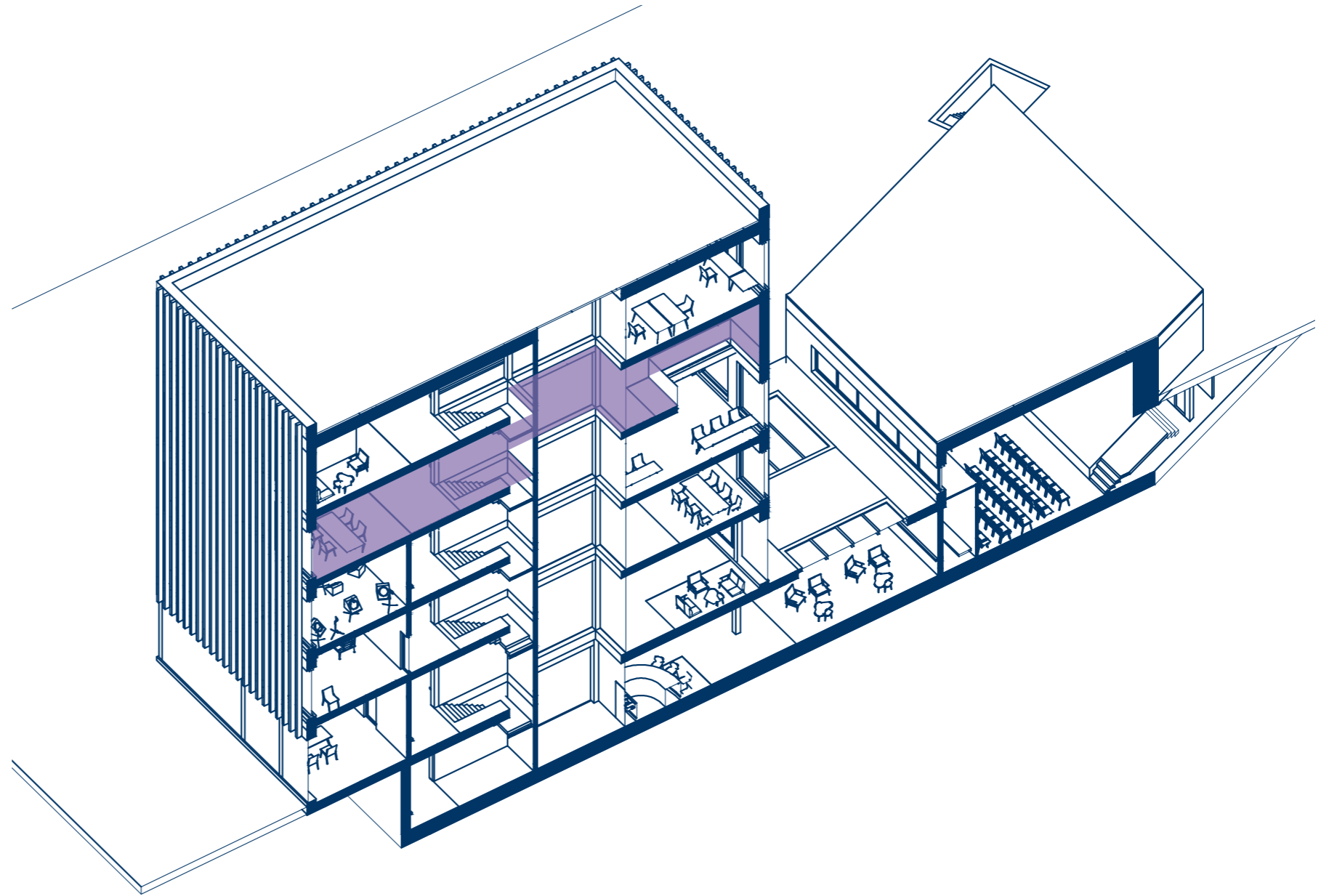
advisor office x5  
staff room  
newspaper editorial office  
multipurpose room/meeting room

### 0 administrative

cloak room  
information station  
cafe + back room  
lounge  
administration office x2  
caretaker room

### -1 cultural

cloak room  
bar + storage  
lounge  
auditorium + back room  
technical room  
storage



## 04.2 Concept functional program

### 4 educational

coworking space + study pods  
pc pool

### 3 library

multipurpose room/study room  
media library

### 2 artistic

music room instrumental  
music room vocal  
art workshop

### 1 advisory

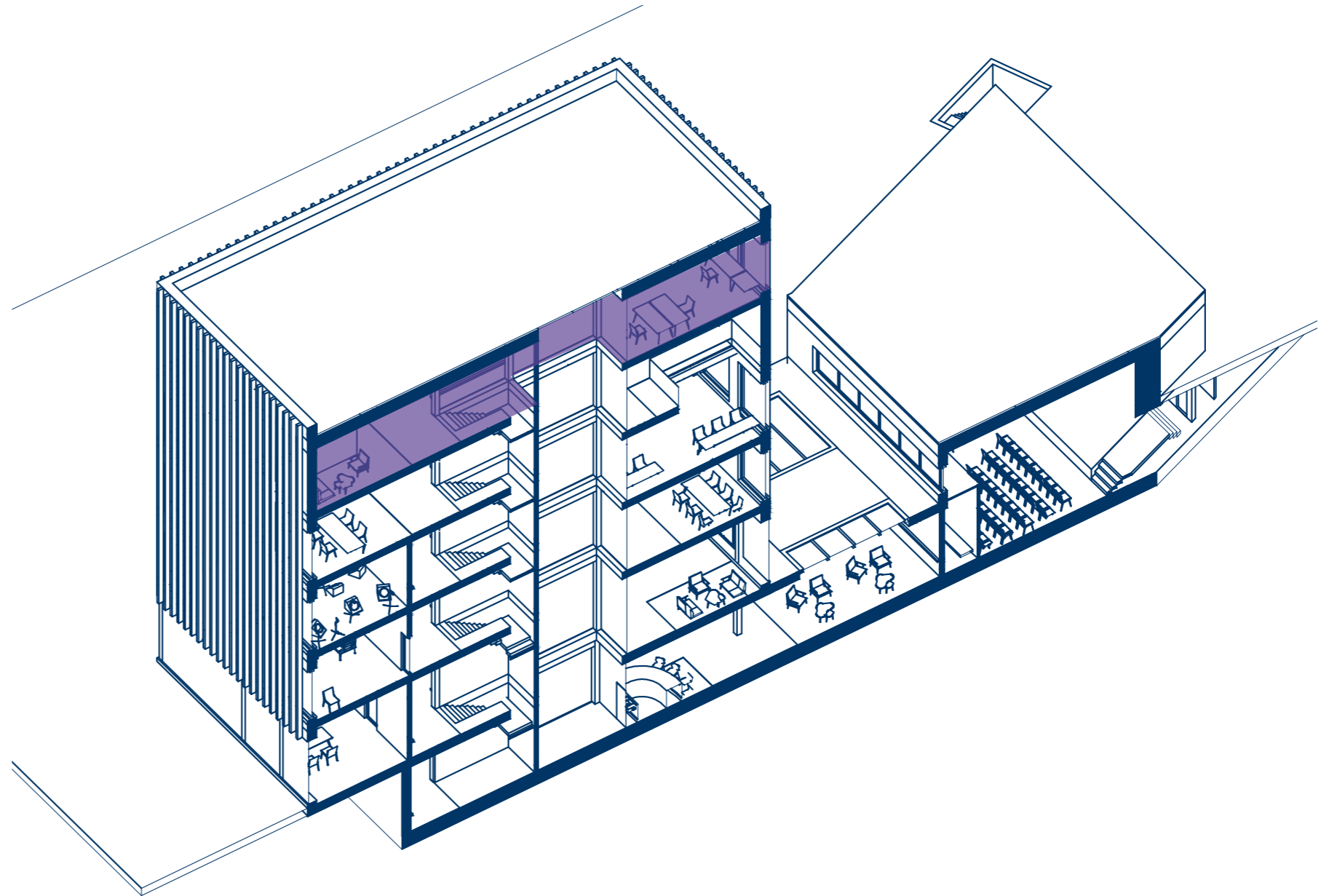
advisor office x5  
staff room  
newspaper editorial office  
multipurpose room/meeting room

### 0 administrative

cloak room  
information station  
cafe + back room  
lounge  
administration office x2  
caretaker room

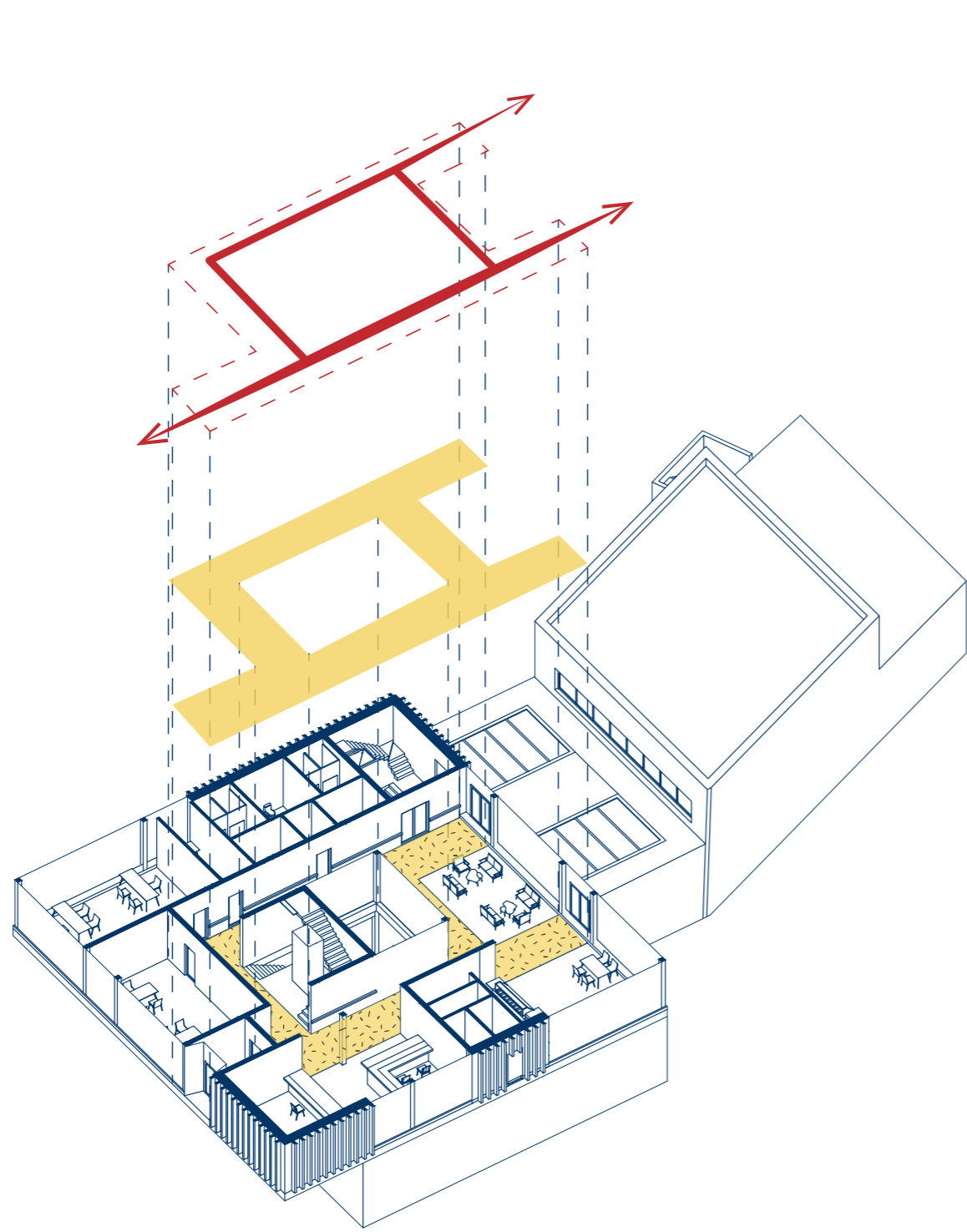
### -1 cultural

cloak room  
bar + storage  
lounge  
auditorium + back room  
technical room  
storage

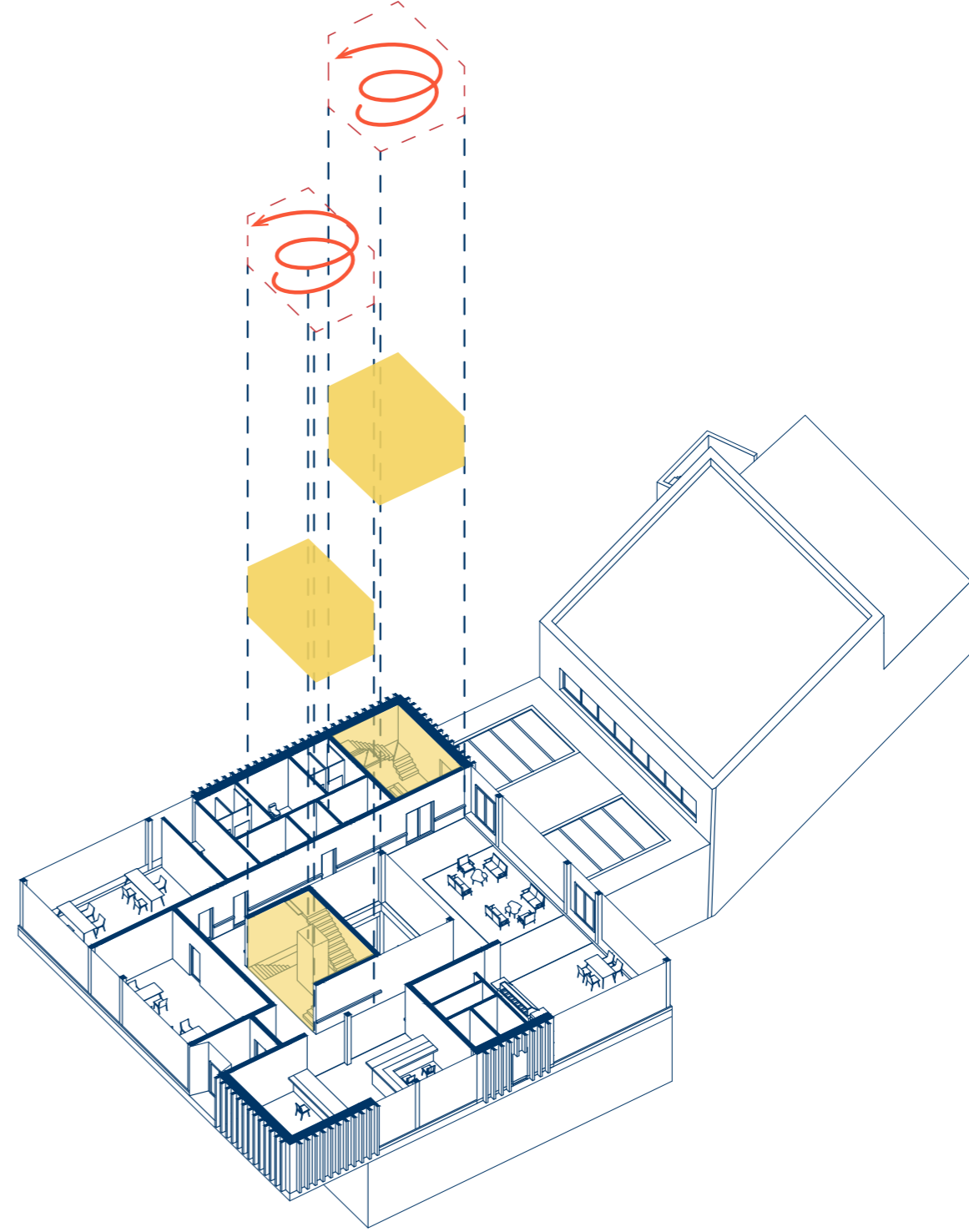


# 05 Floor plans

## 05.1 Concept Movement



horizontal movement



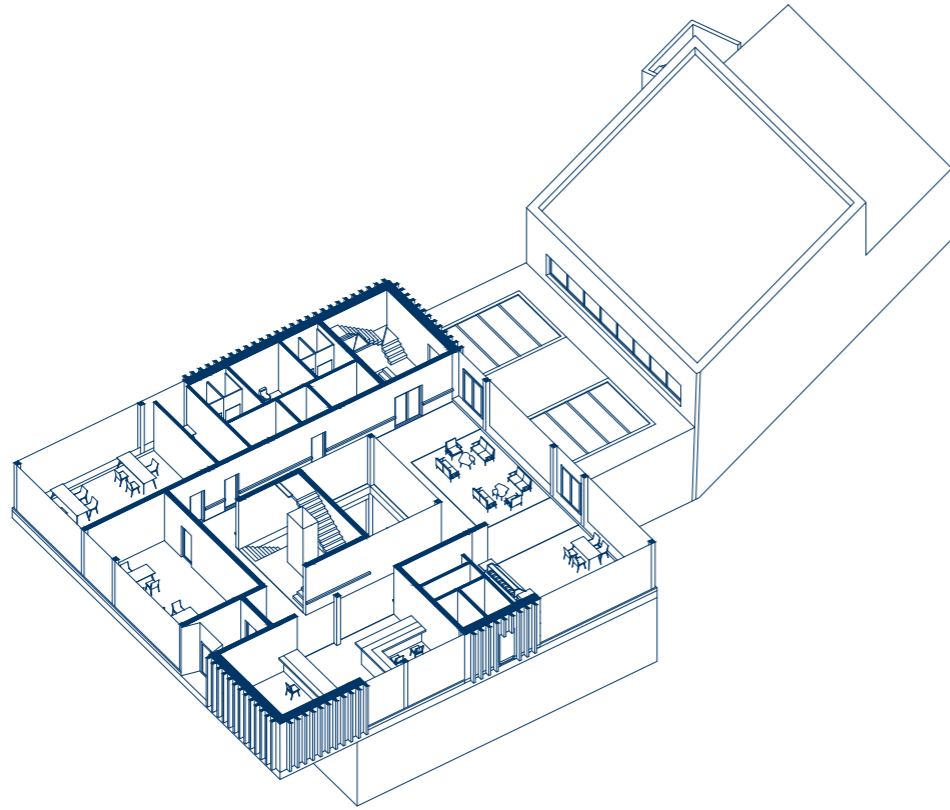
vertical movement

movement

Concept

05.1

## 05.2 Floor plans EG 1:200



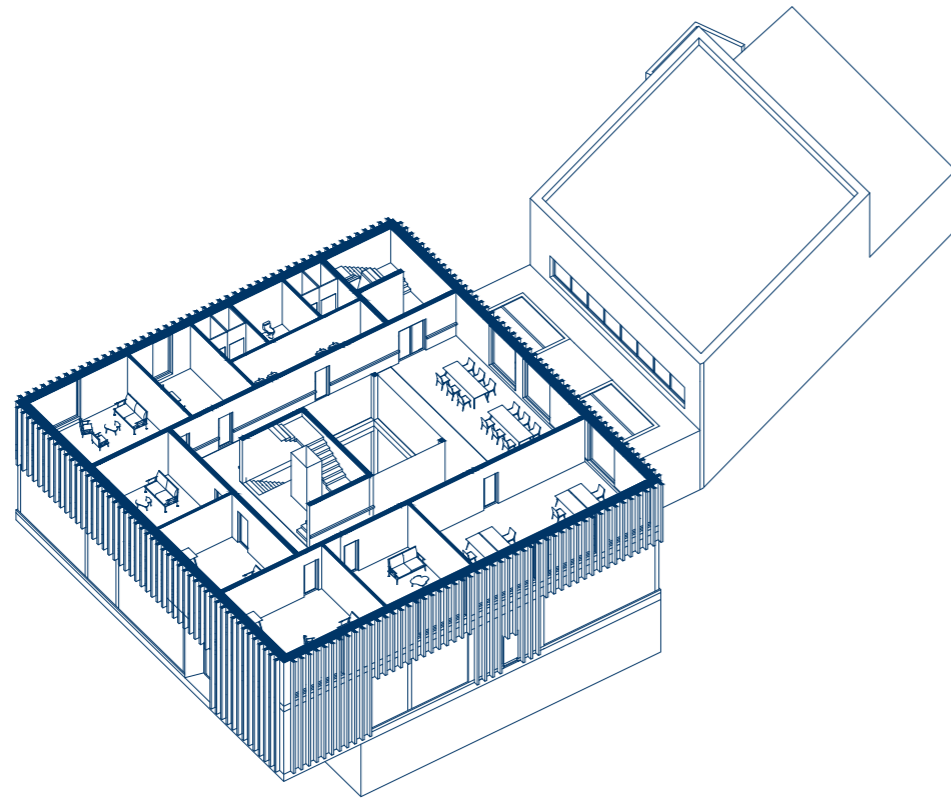
### EG functional-utility program

1.01	entrance zone	6,28	sqm
1.02	cloak room	27,14	sqm
1.03	information station	21,84	sqm
1.04	cafe - back room	28,57	sqm
1.05	cafe - sitting area	32,76	sqm
1.06	lounge	27,05	sqm
1.07	fire staircase	10,48	sqm
1.08	toilet - entrance	3,74	sqm
1.09	toilet - female	14,11	sqm
1.10	toilet - male	14,11	sqm
1.11	toilet - barrier free	10,49	sqm
1.12	caretaker room	10,70	sqm
1.13	administration office 01	44,96	sqm
1.14	administration office 02	39,32	sqm
1.15	atrium	27,18	sqm
1.16	circulation space	138,24	sqm
	total	456,97	sqm



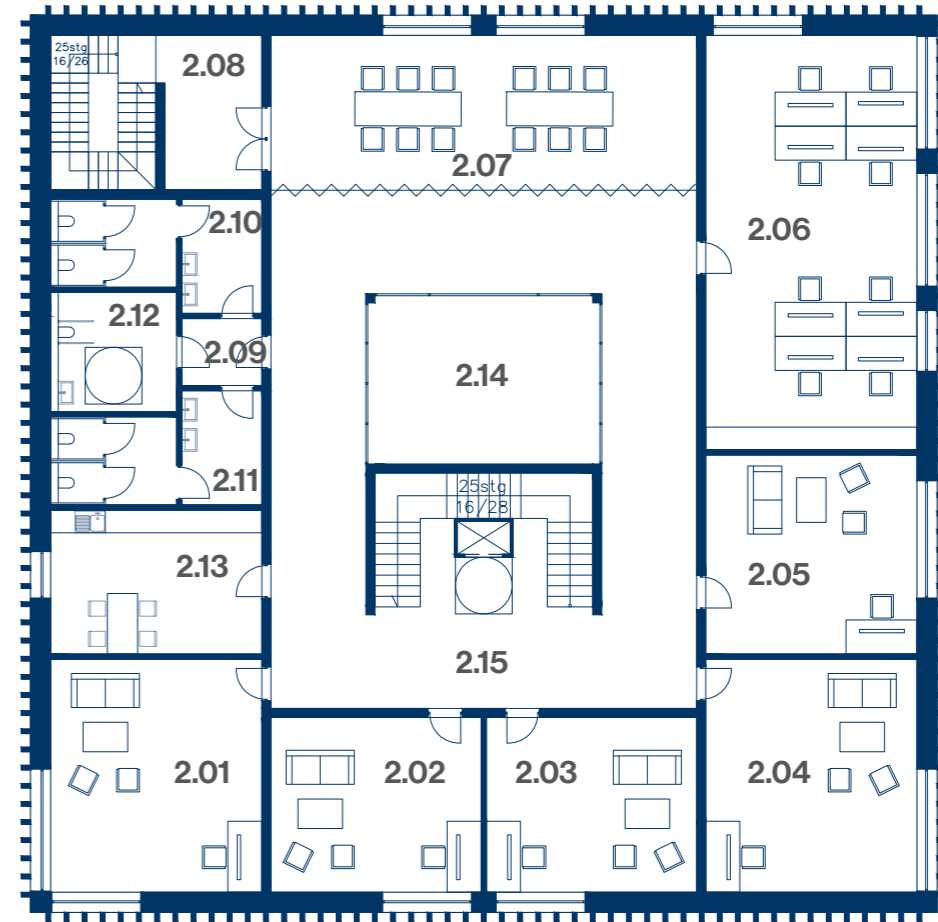


## 05.4 Floor plans OG 1:200



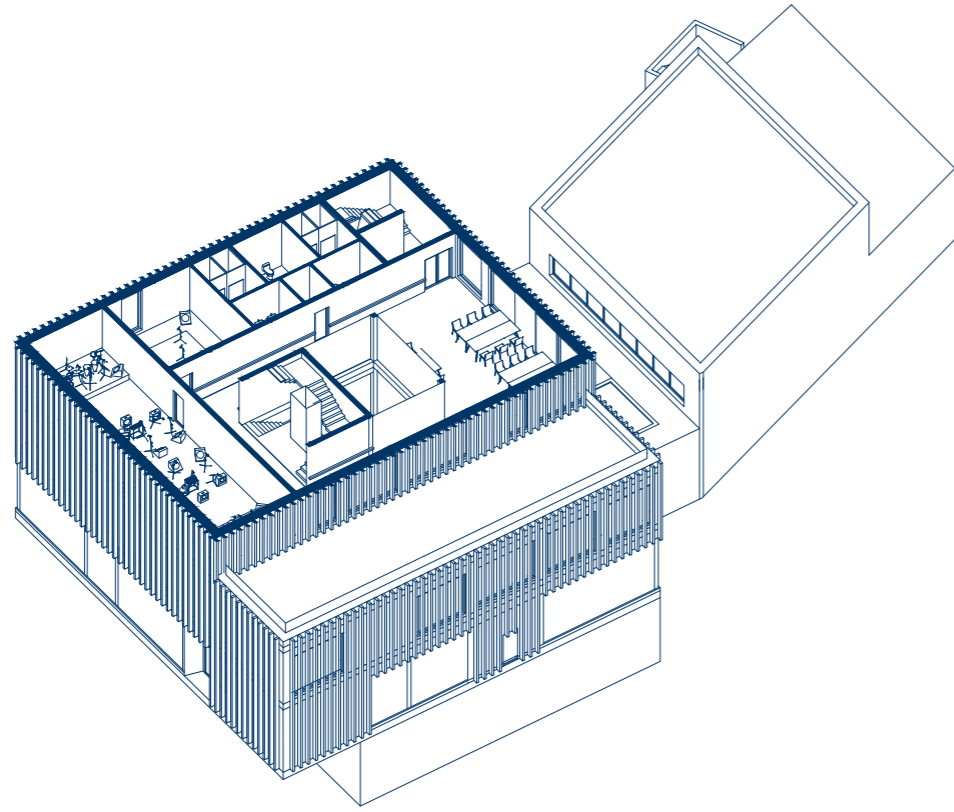
### OG 1 functional-utility program

2.01	advisor office 01	34,39 sqm
2.02	advisor office 02	25,69 sqm
2.03	advisor office 03	25,69 sqm
2.04	advisor office 04	34,39 sqm
2.05	advisor office 05	29,38 sqm
2.06	newspaper editorial room	61,21 sqm
2.07	multipurpose room/meeting room	57,10 sqm
2.08	fire staircase	10,48 sqm
2.09	toilet - entrance	3,74 sqm
2.10	toilet - female	14,11 sqm
2.11	toilet - male	14,11 sqm
2.12	toilet - barrier free	10,49 sqm
2.13	staff room	21,25 sqm
2.14	atrium	27,18 sqm
2.15	circulation space	101,33 sqm
	total	470,54 sqm



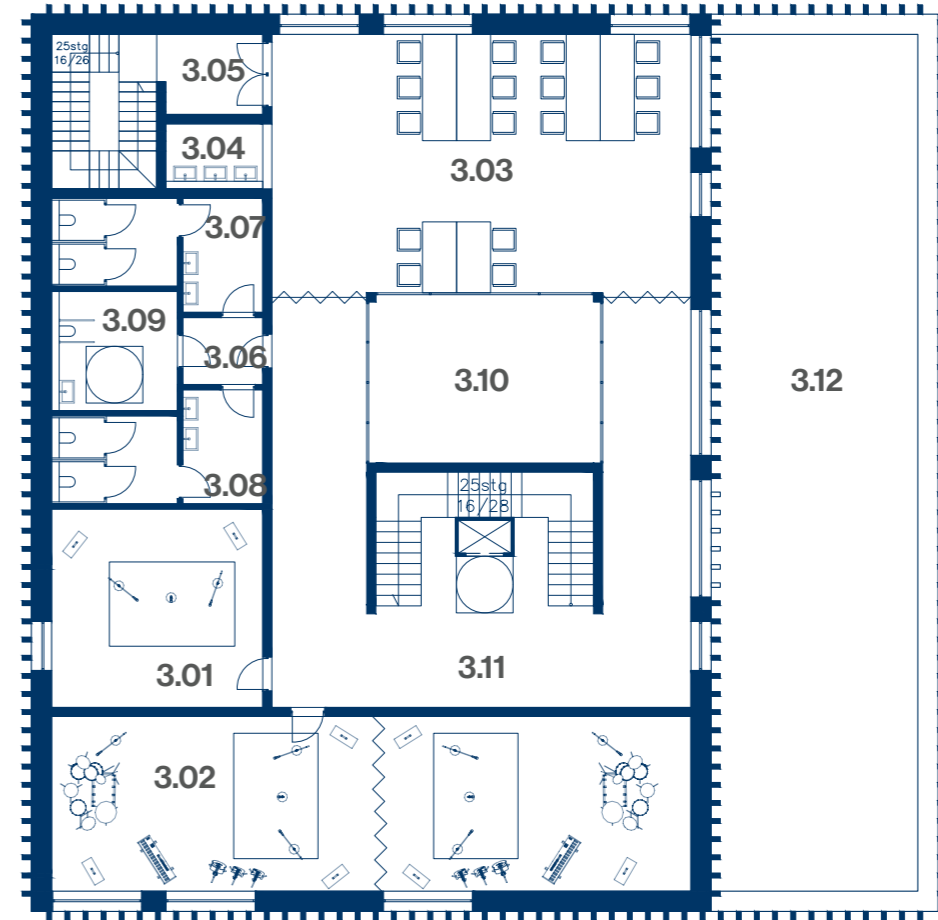


## 05.5 Floor plans OG 2 1:200

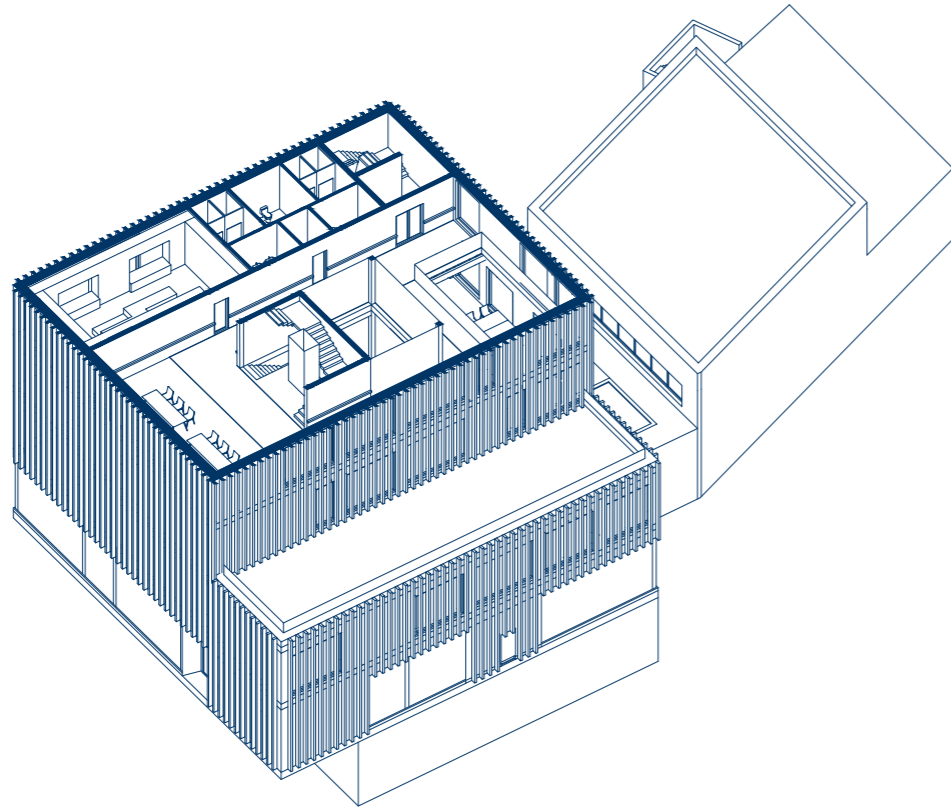


### OG 2 functional-utility program

3.01	music room - vocal	29,29 sqm
3.02	music room - instrumental	72,12 sqm
3.03	art workshop	87,03 sqm
3.04	art worksop - washbasins	4,82 sqm
3.05	fire staircase	5,43 sqm
3.06	toilet - entrance	3,74 sqm
3.07	toilet - female	14,11 sqm
3.08	toilet - male	14,11 sqm
3.09	toilet - barrier free	10,48 sqm
3.10	atrium	27,18 sqm
3.11	circulation space	67,99 sqm
3.12	terrace	124,97 sqm
	total	461,27 sqm

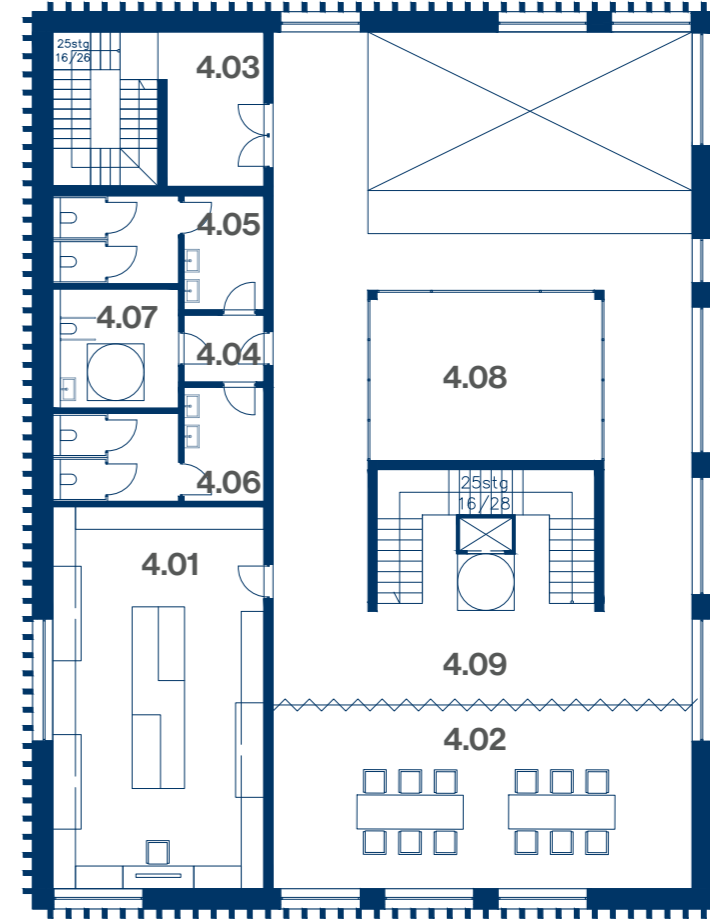


## 05.6 Floor plans OG 3 1:200

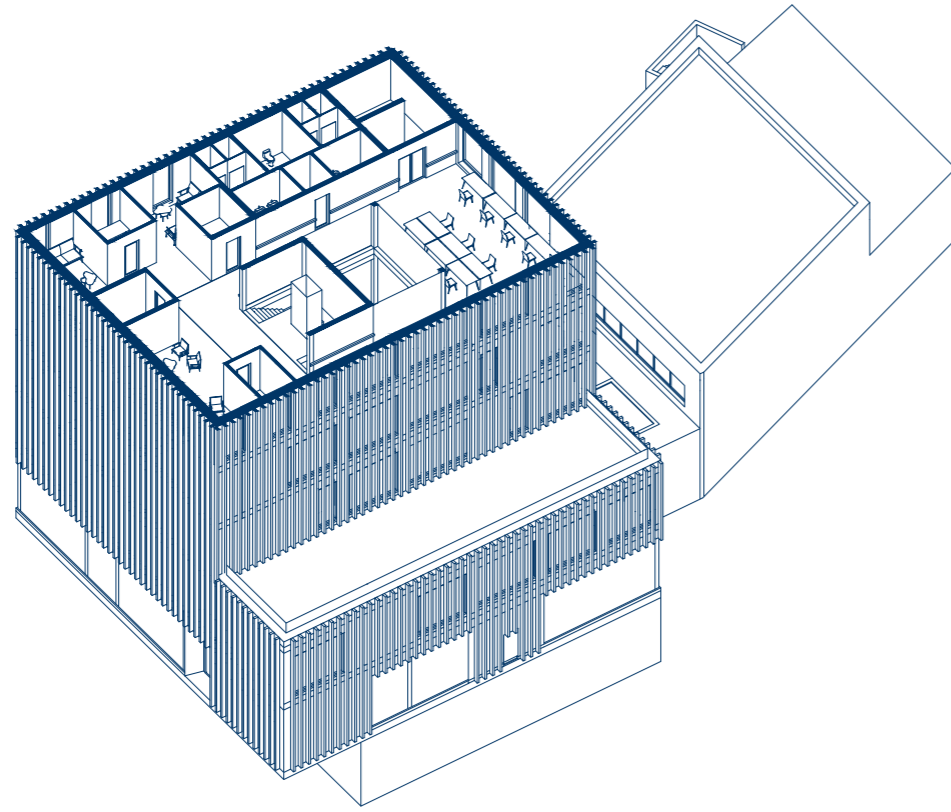


### OG 3 functional-utility program

4.01	media library	58,86 sqm
4.02	multipurpose room/study room	53,87 sqm
4.03	fire staircase	10,48 sqm
4.04	toilet - entrance	3,74 sqm
4.05	toilet - female	14,11 sqm
4.06	toilet - male	14,11 sqm
4.07	toilet - barrier free	10,49 sqm
4.08	atrium	27,18 sqm
4.09	circulation space	108,36 sqm
total		301,20 sqm



## 05.7 Floor plans OG 4 1:200



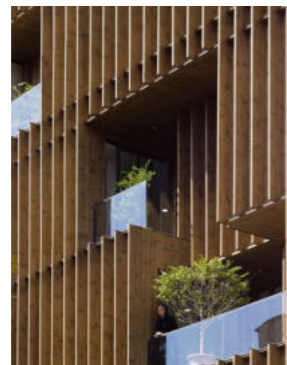
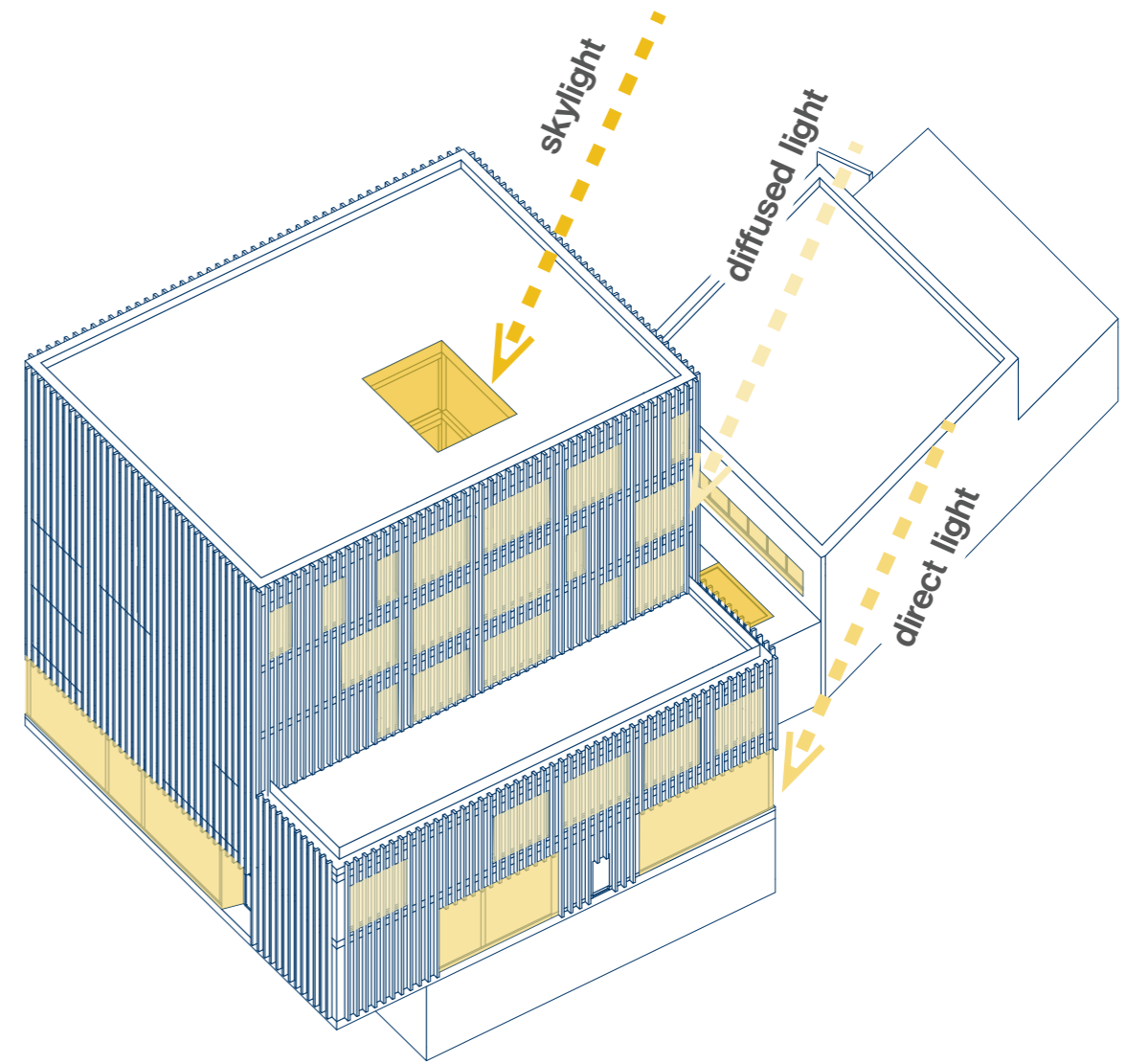
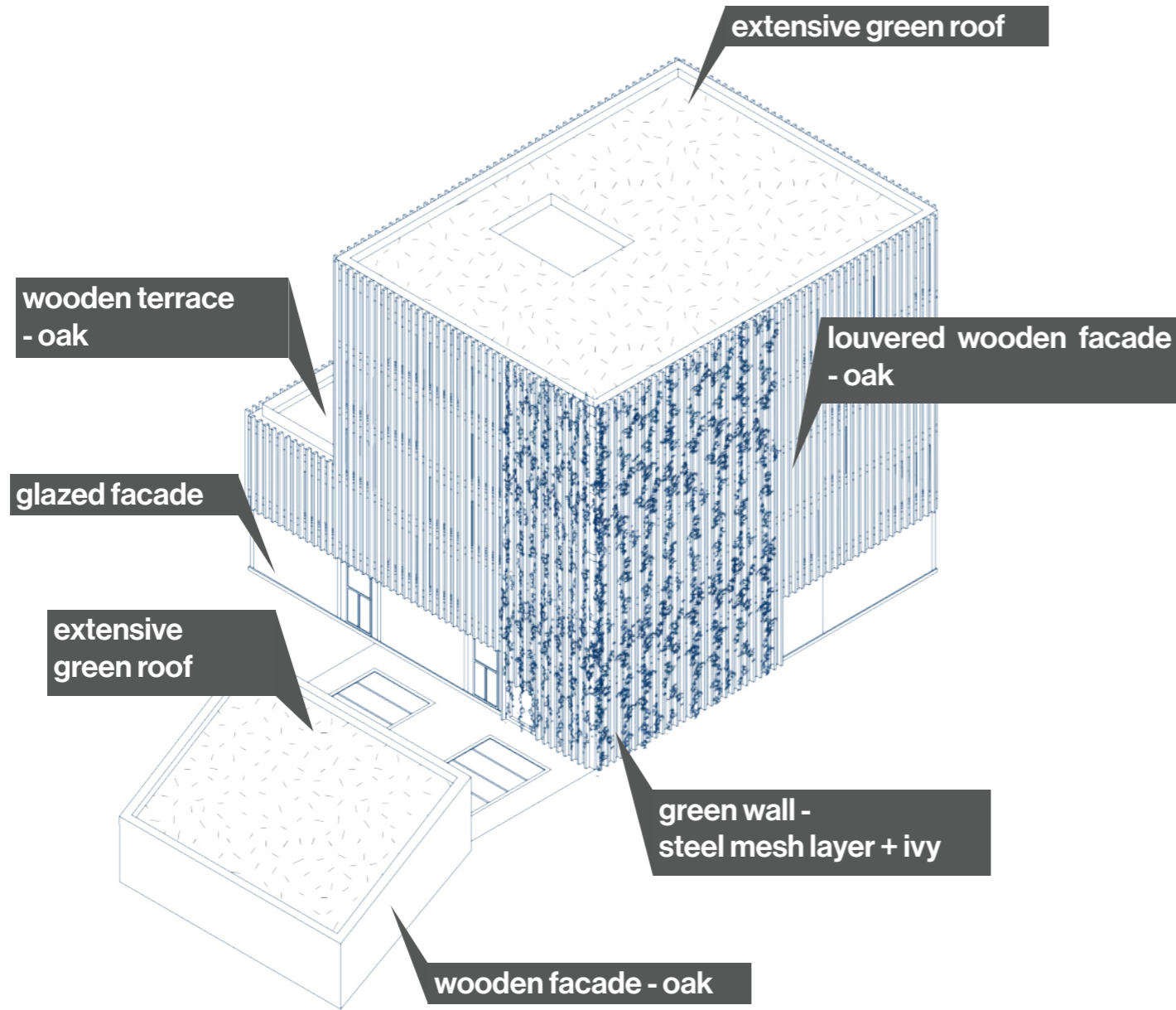
### OG 4 functional-utility program

5.01	coworking space + study pods	112,73	sqm
5.02	pc pool	87,03	sqm
5.03	fire staircase	10,48	sqm
5.04	toilet - entrance	3,74	sqm
5.05	toilet - female	14,11	sqm
5.06	toilet - male	14,11	sqm
5.07	toilet - barrier free	10,49	sqm
5.08	atrium	27,18	sqm
5.09	circulation space	108,36	sqm
	total	388,23	sqm



# 06.1

## Concept materials and natural lighting



**louvered wooden facades**

**example:**

architects: LP2 Architecture Studio  
 project: office block  
 location: Tehran, Iran



**green facade**

**example:**

architects: Michael Ong  
 project: garden studio  
 location: Melbourne, Australia



**diffused light**

**example:**

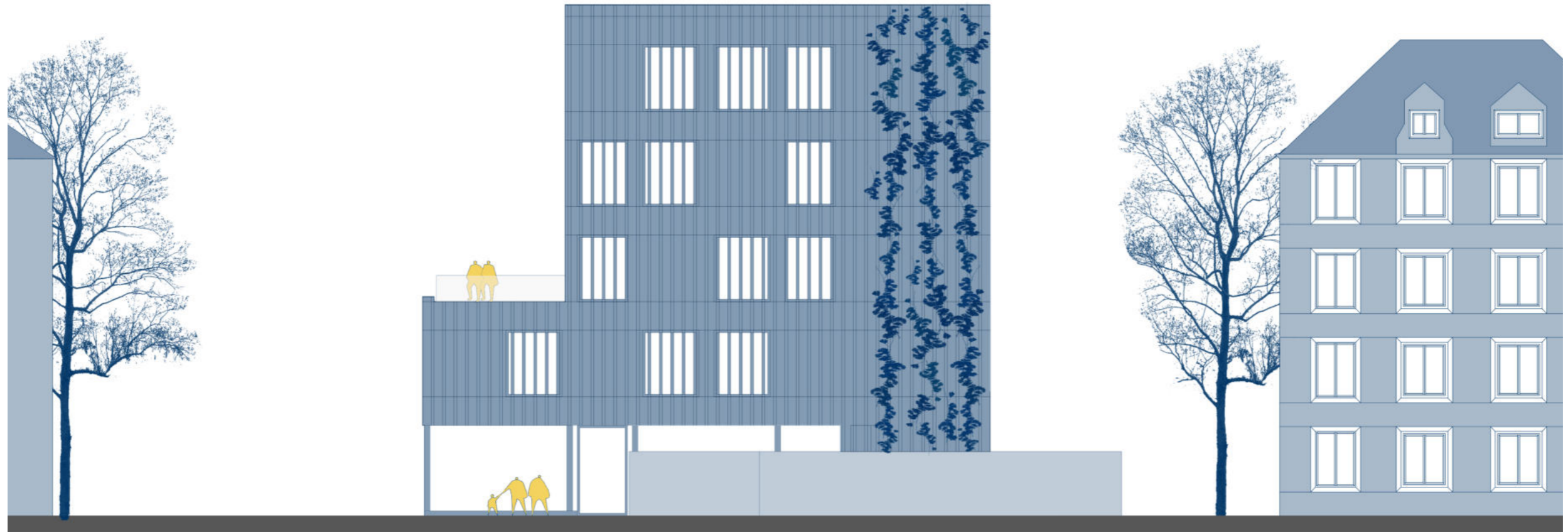
architects: architekti.si  
 project: kindergarten  
 location: Limbach, Slovakia

# 06 Elevations

## 06.2 Elevations South, North 1:200



south facade



north facade

S, N 1:200

Elevations

06.2

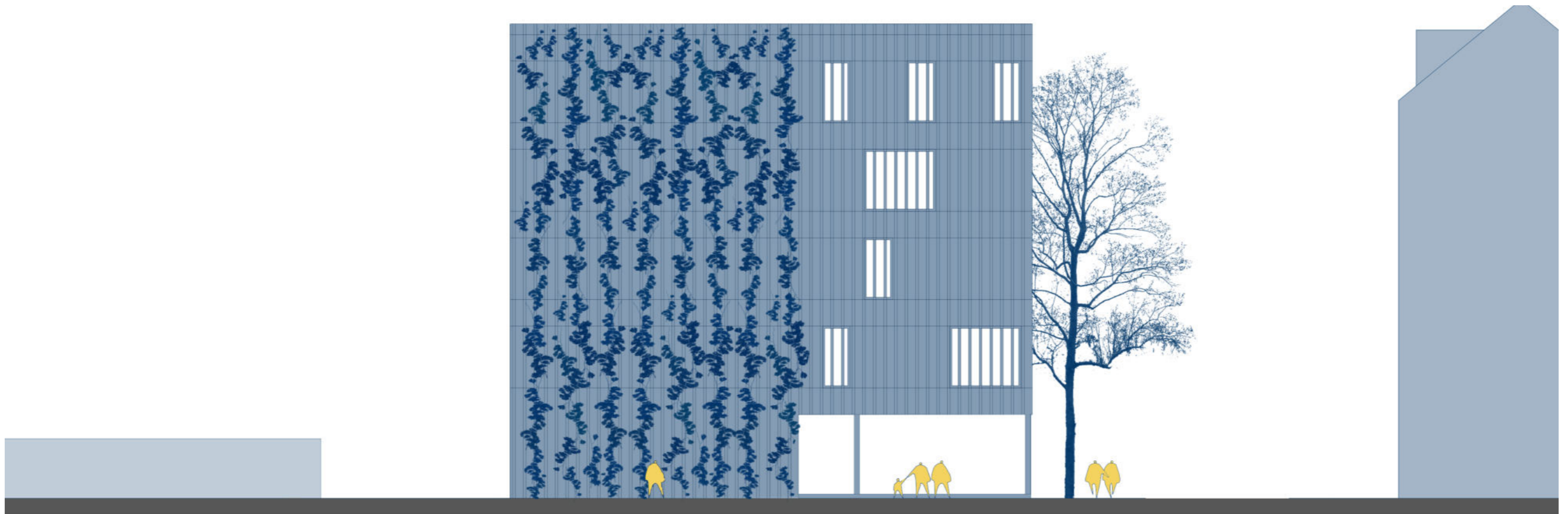
# 06.3 Elevations East, West 1:200

Elevations

06



east facade



west facade

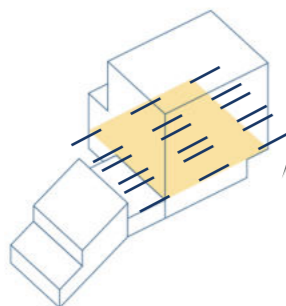
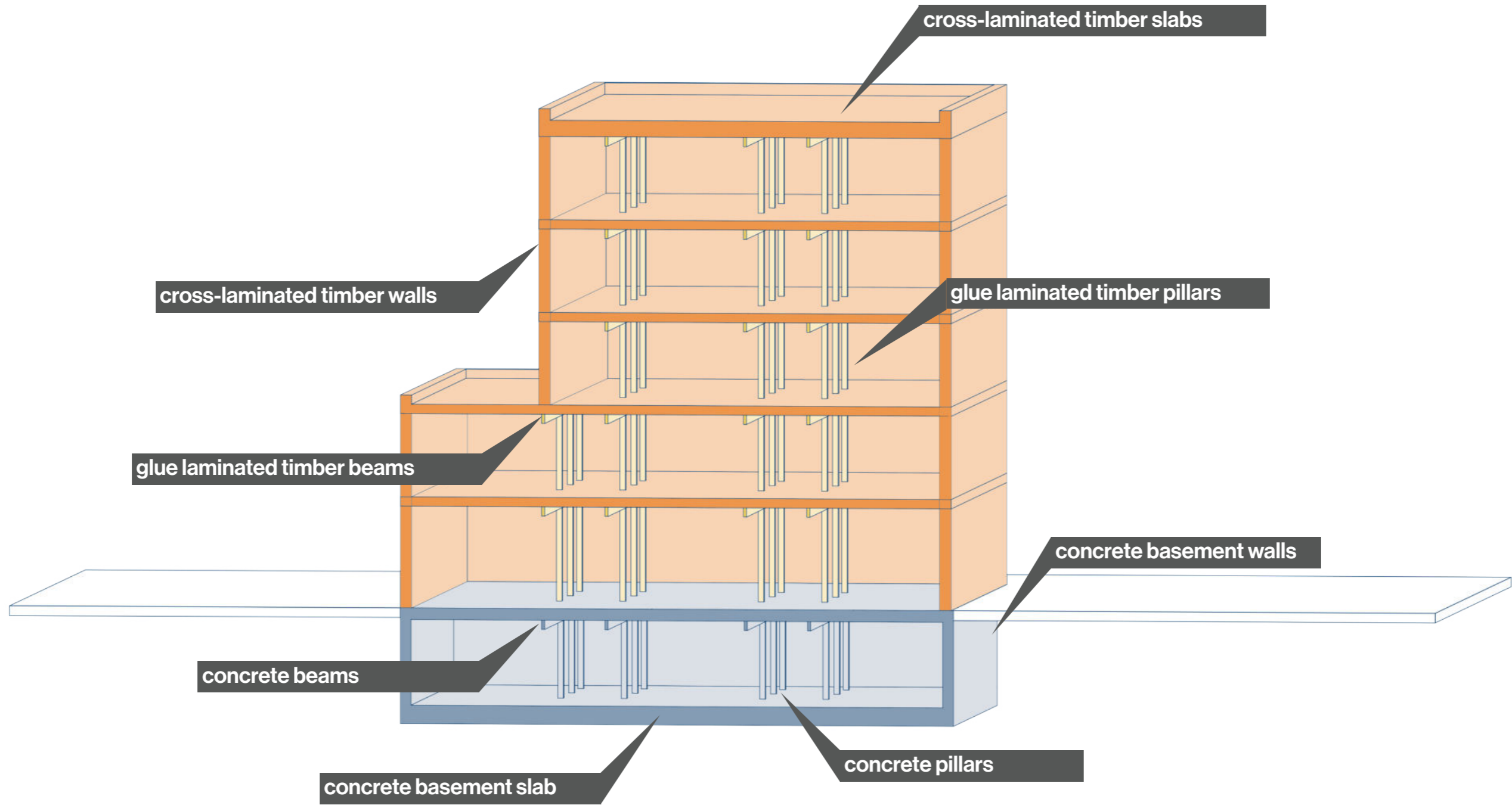
E, W 1:200

Elevations

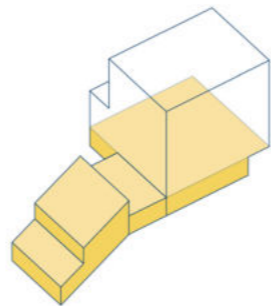
06.3

## 07.1

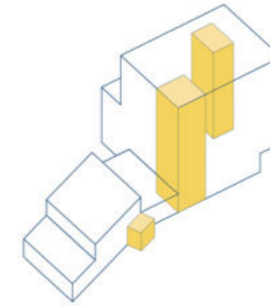
### Structure Concept



**optimized grid**  
grid taken for maximum layout and structural efficiency



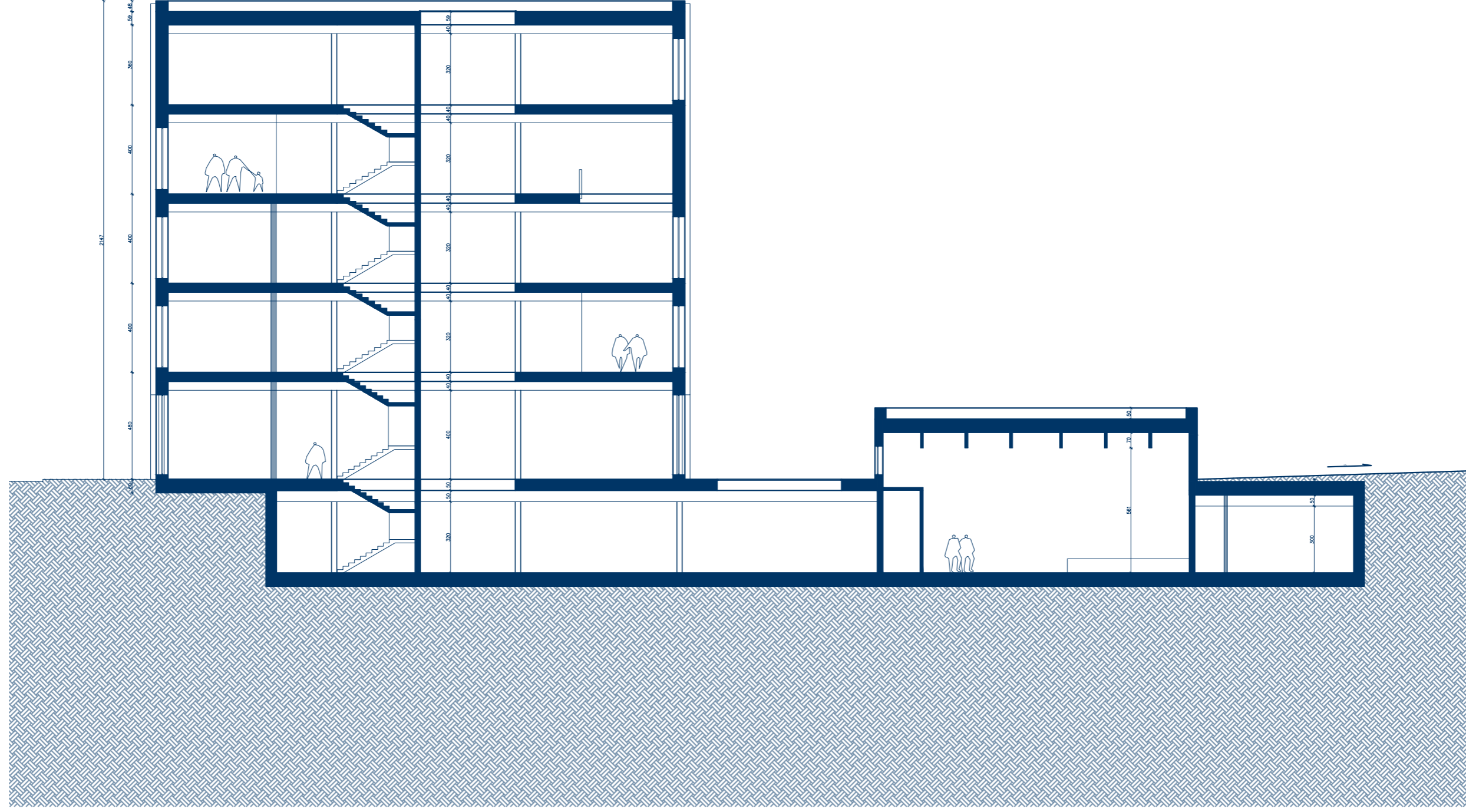
**auditorium's concrete structure**  
concrete structure in underground auditorium for structural efficiency and fire protection



**concrete staircases**  
main vertical communication block located near the main entrance zone, two additional fire staircases on the west side

# 07 Structure

## 07.2 Cross-sections A-A 1:200



07.2

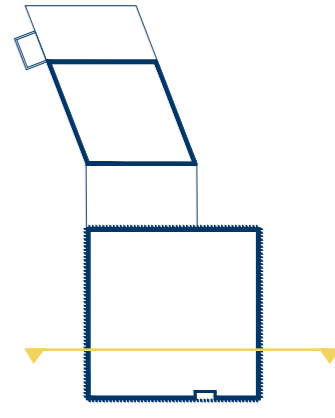
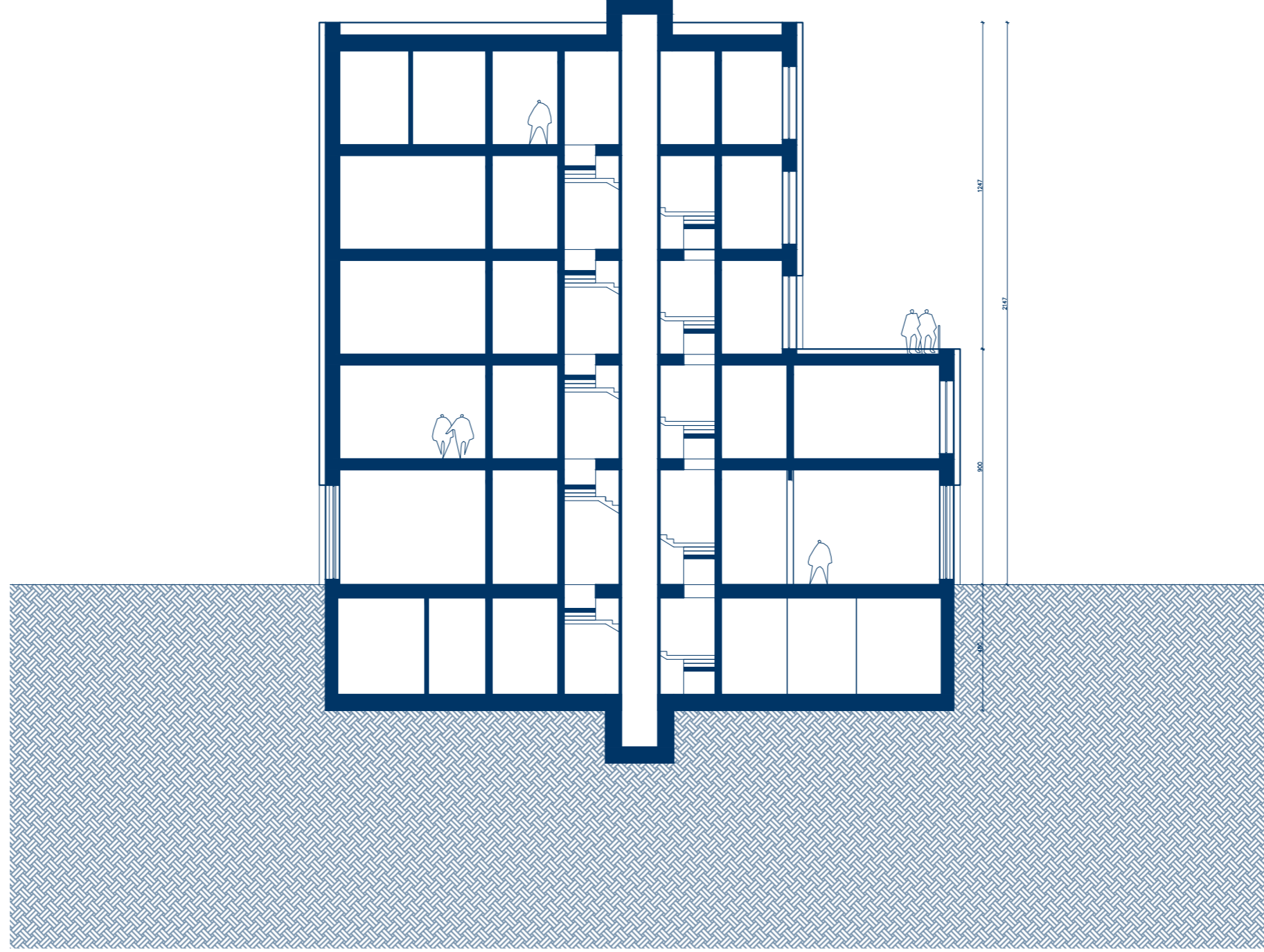
Cross-section

A-A 1:200

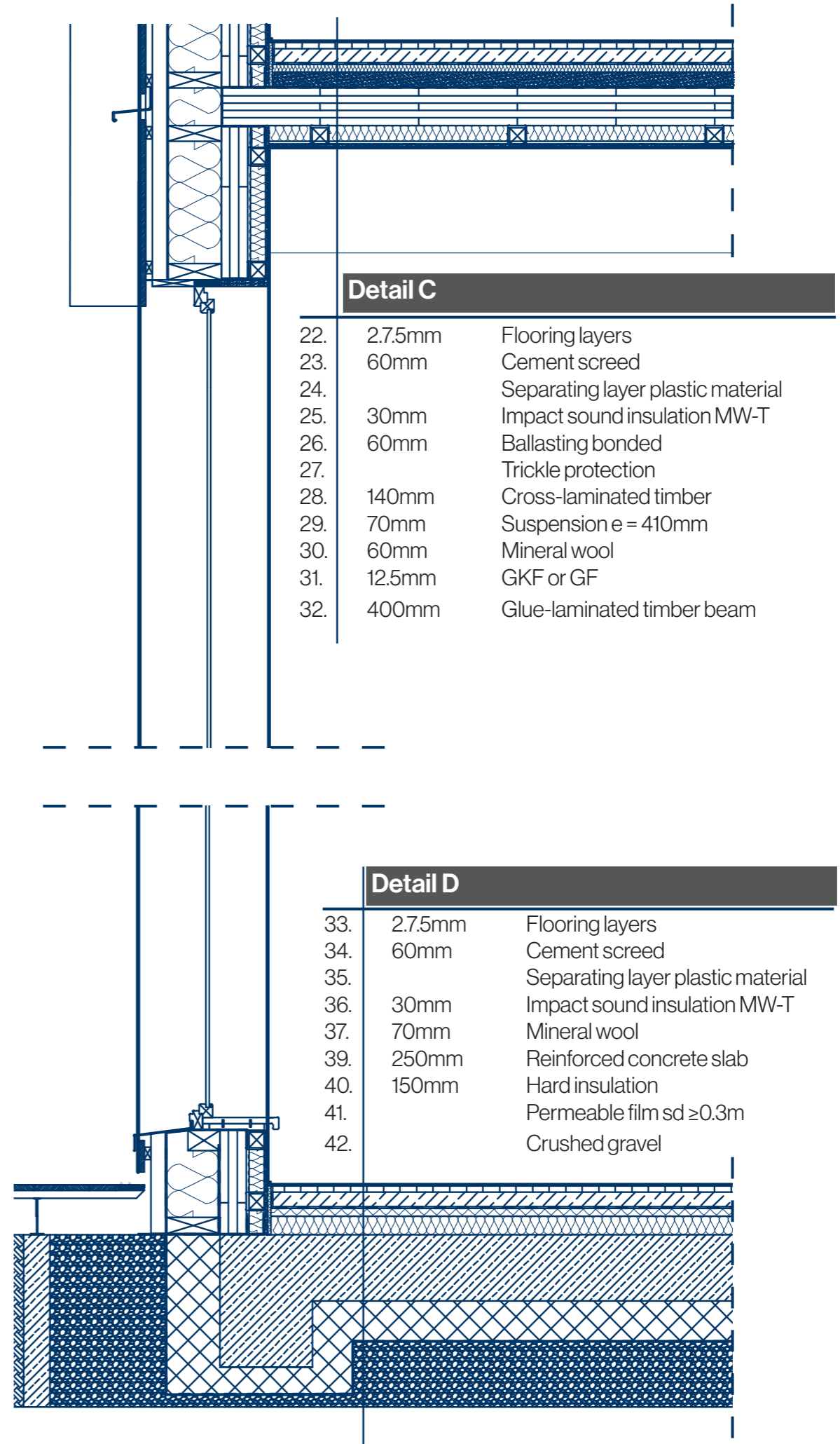
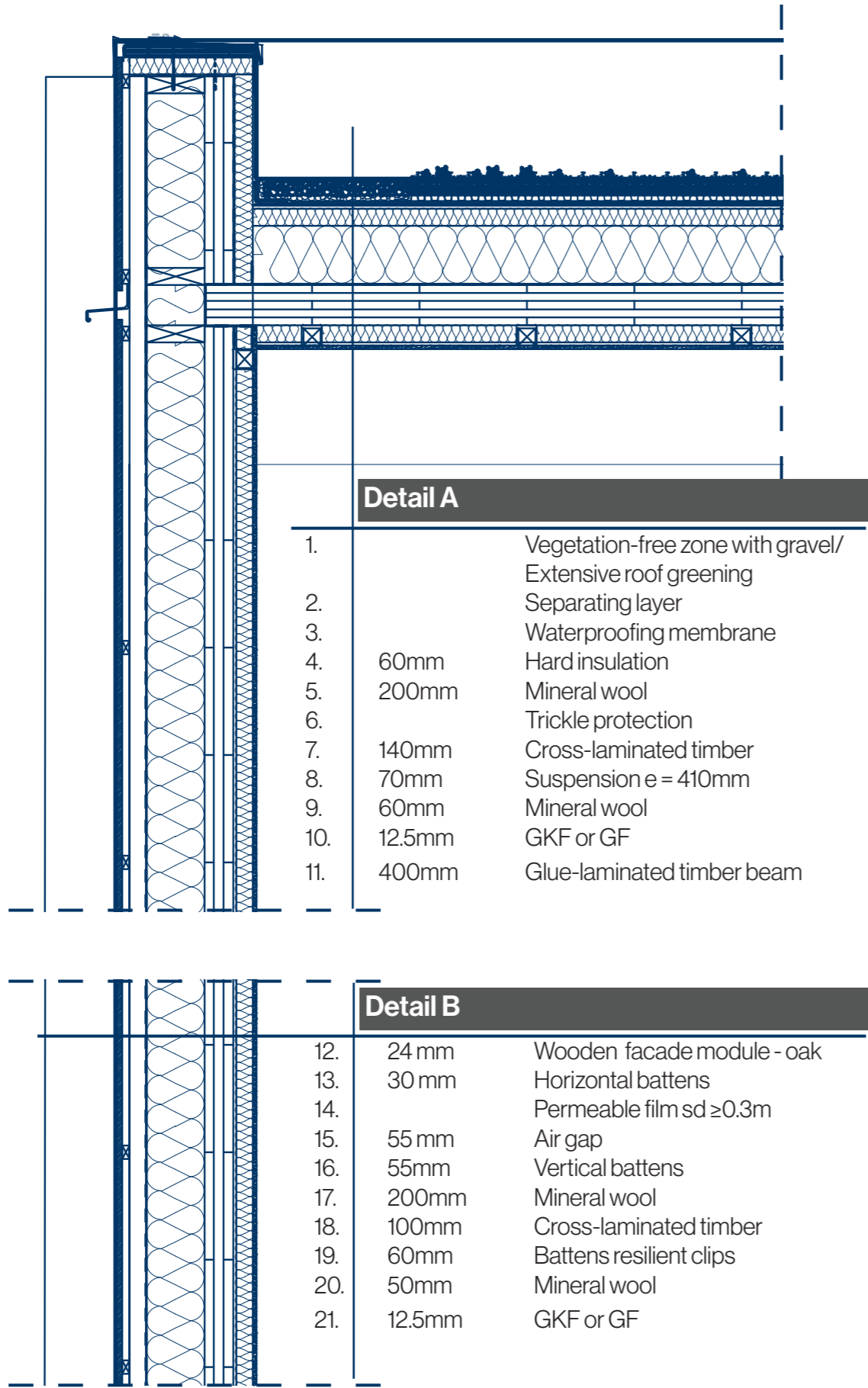


## 07.3

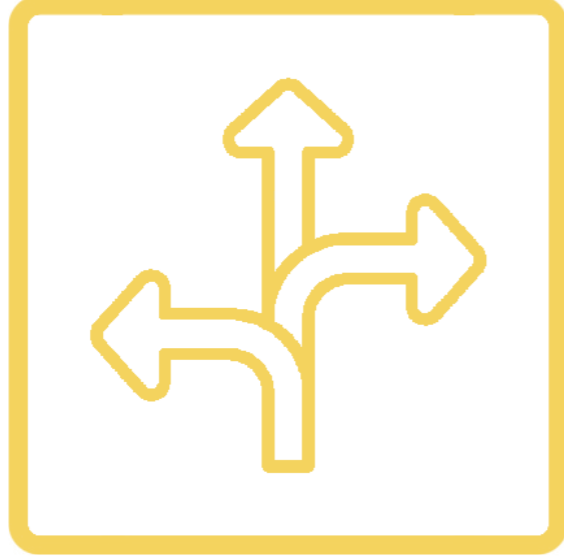
### Cross-sections B-B 1:200



## 07.4 Structure Details 1:20



## 08.0 Design Principles reminder



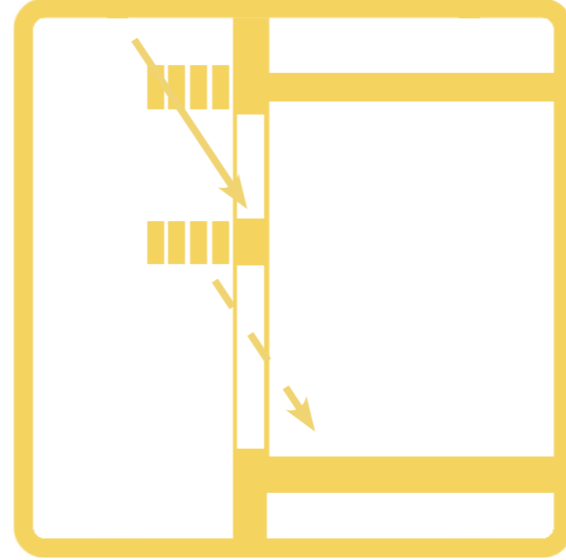
easily understandable layout



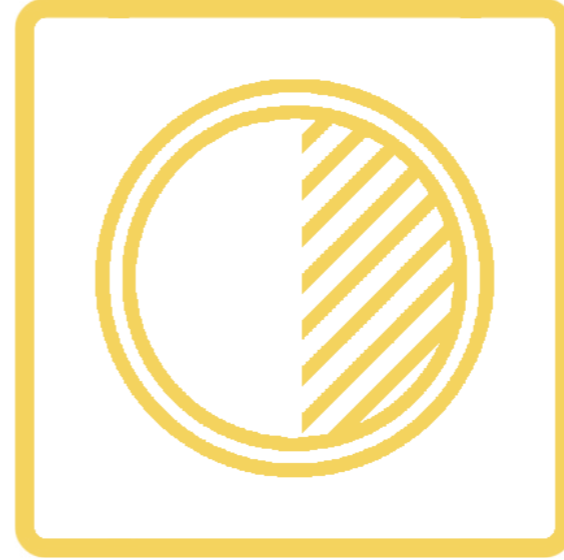
logically grouped functions



generous circulation spaces



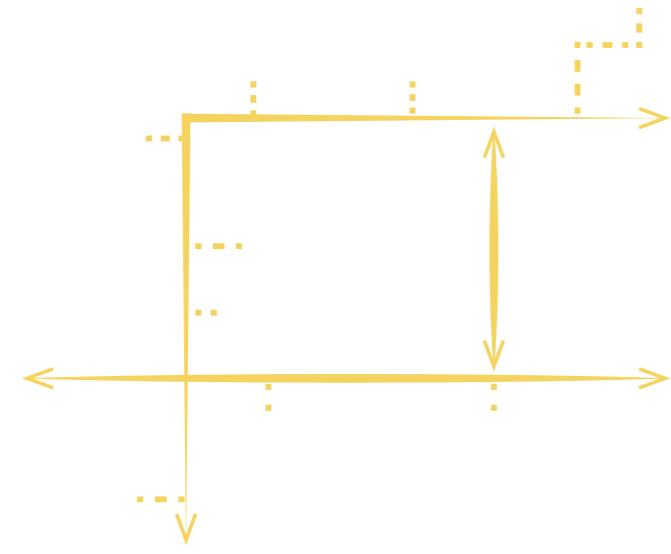
evenly distributed light



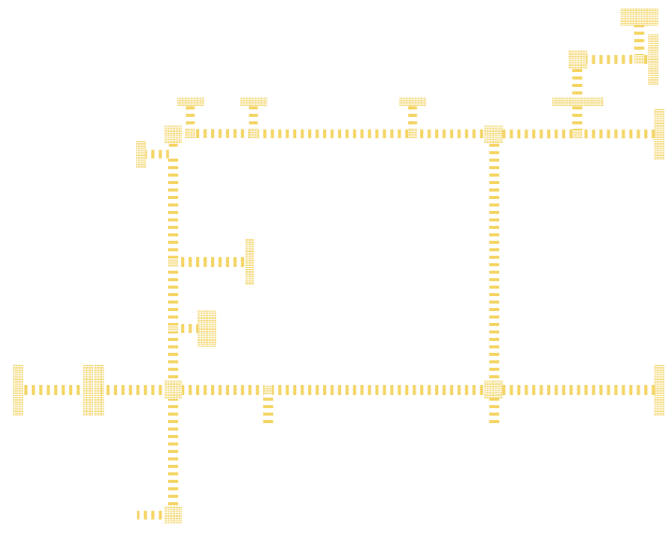
good color and tone contrast

## 08.1

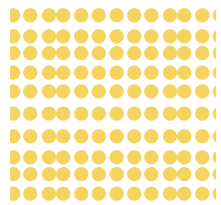
### Interior concept tactile guidance system (EG)



central spine



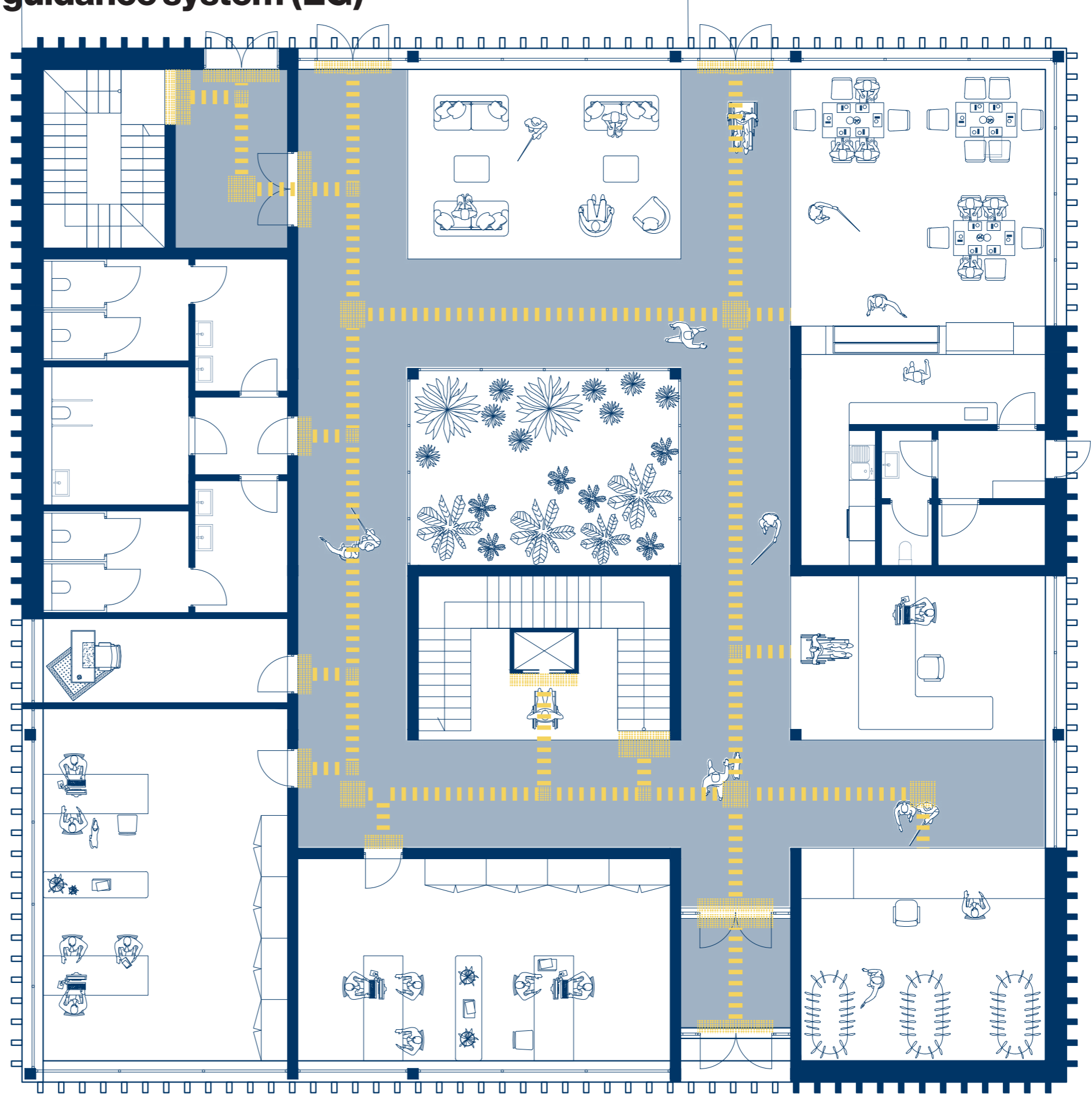
glyphic alphabet



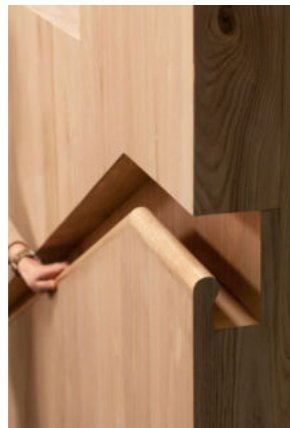
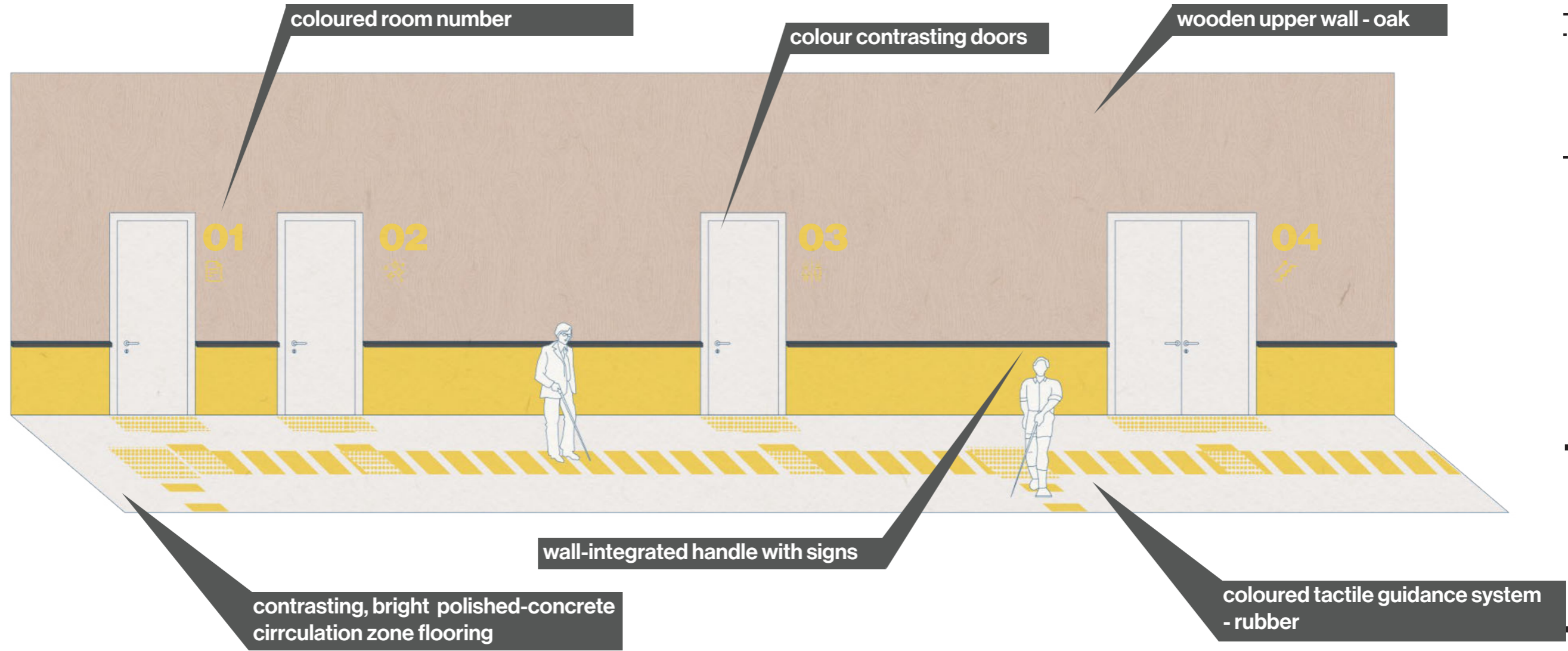
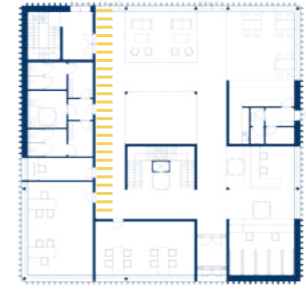
direction change



straight way



# 08.2 Interior concept colour guidance system (EG)



wall-integrated handle

**example:**  
 architects: Neri&Hu  
 project: Bloomberg's office  
 location: Hong Kong



colour coded functions

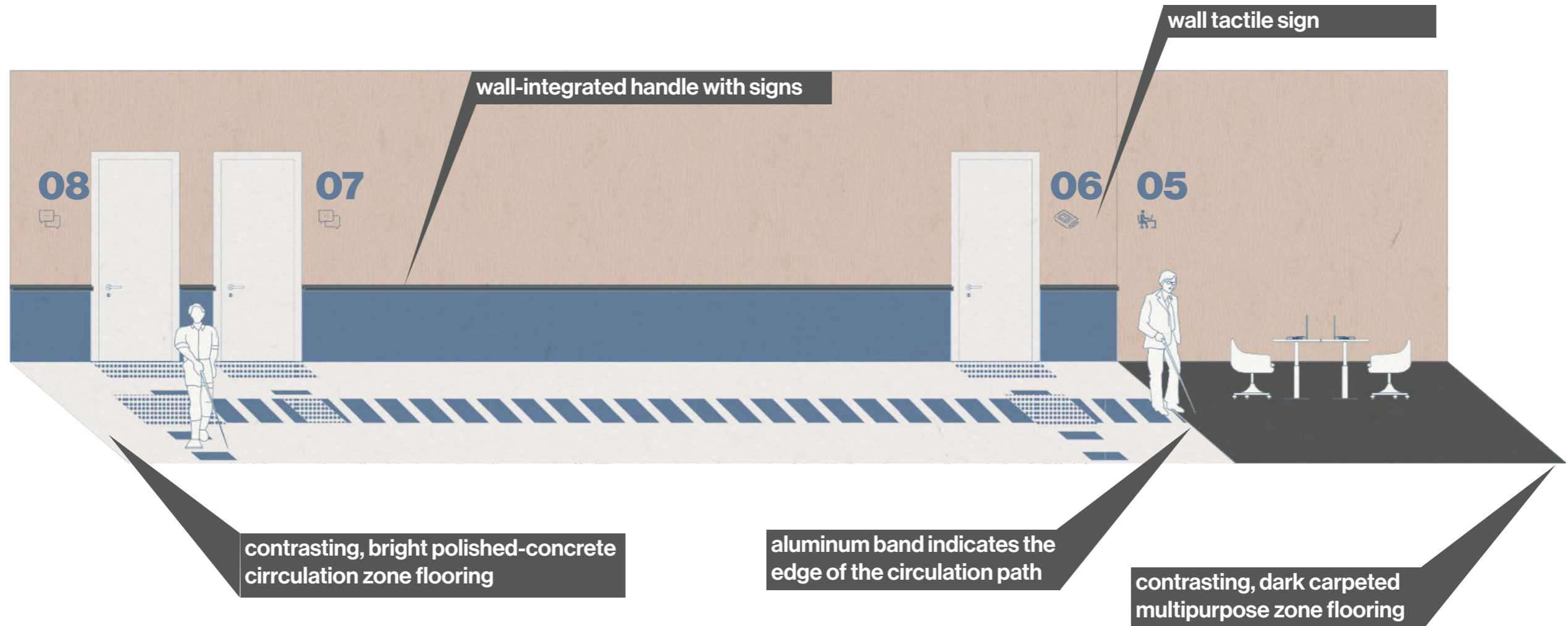
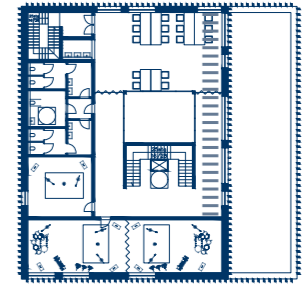
**example:**  
 architects: Nicholas Hare Architects  
 project: Birmingham Ormiston Academy  
 location: Birmingham, United Kingdom



coloured tactile guidance system

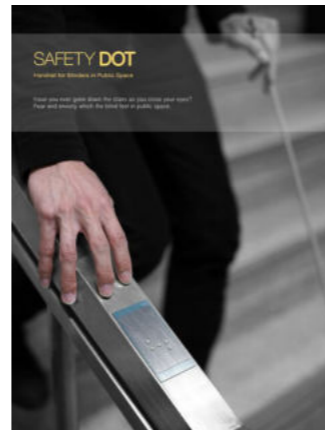
**example:**  
 Indoor PU knobs in red for indoor guidance system  
 from [www.nullbarriere.de/](http://www.nullbarriere.de/)

# 08.3 Interior concept surface guidance system (OG 1)



**floor coverings indicating function change**

**example:**  
 architects: Mark Cavagnero Associates  
 project: Lighthouse for the blind and visually impaired  
 location: San Francisco, USA



**handrail signs**

**example:**  
 designers: Monocomplex & Jungjoon Hwang  
 project: Safety Dot



**wall tactile signs**

**example:**  
 architects: Virgula  
 project: Hotel Minho renovation  
 location: Vila Nova de Cerveira, Portugal

**08.4** Interior concept perspective



09.1 used references

