

# PERMANENT SPACE // CHANGEABLE USE

Adaptability without future architectural interventions

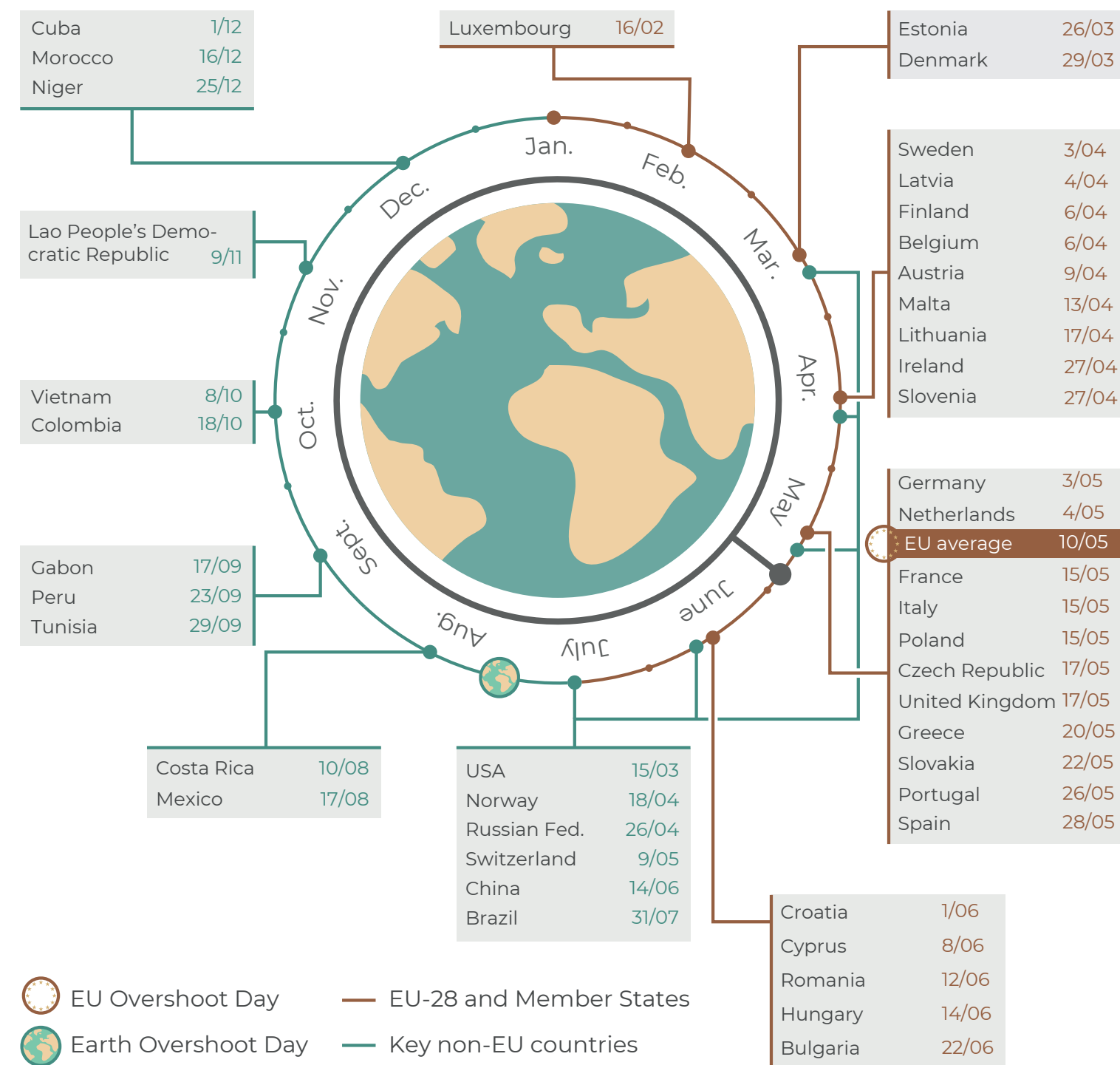
AR3AH105 | Vacant Heritage

Annemiek Braunius | 4597613





# PERSONAL FASCINATION



We live in an environment where it is normality to buy or make something new once it is broken and we forgot how to give a new purpose to things.

While at the same time, climate change has become more present every year and we have been using more materials than are available on this planet (Global Footprint Network, 2021).

# VACANT POLICE ESTATE IN THE NETHERLANDS



Havenpolitie Rotterdam



Rotterdam



Den Haag



Eindhoven



Groningen



Middelburg



Warnsveld

Formation of the National Dutch Police in 2013 and the digitalisation of their work -> a lot of the police buildings become obsolete or do not fit within the requirements needed.

700.000 m<sup>2</sup> of real estate will be divested (Politie Bouwmeester, 2021)



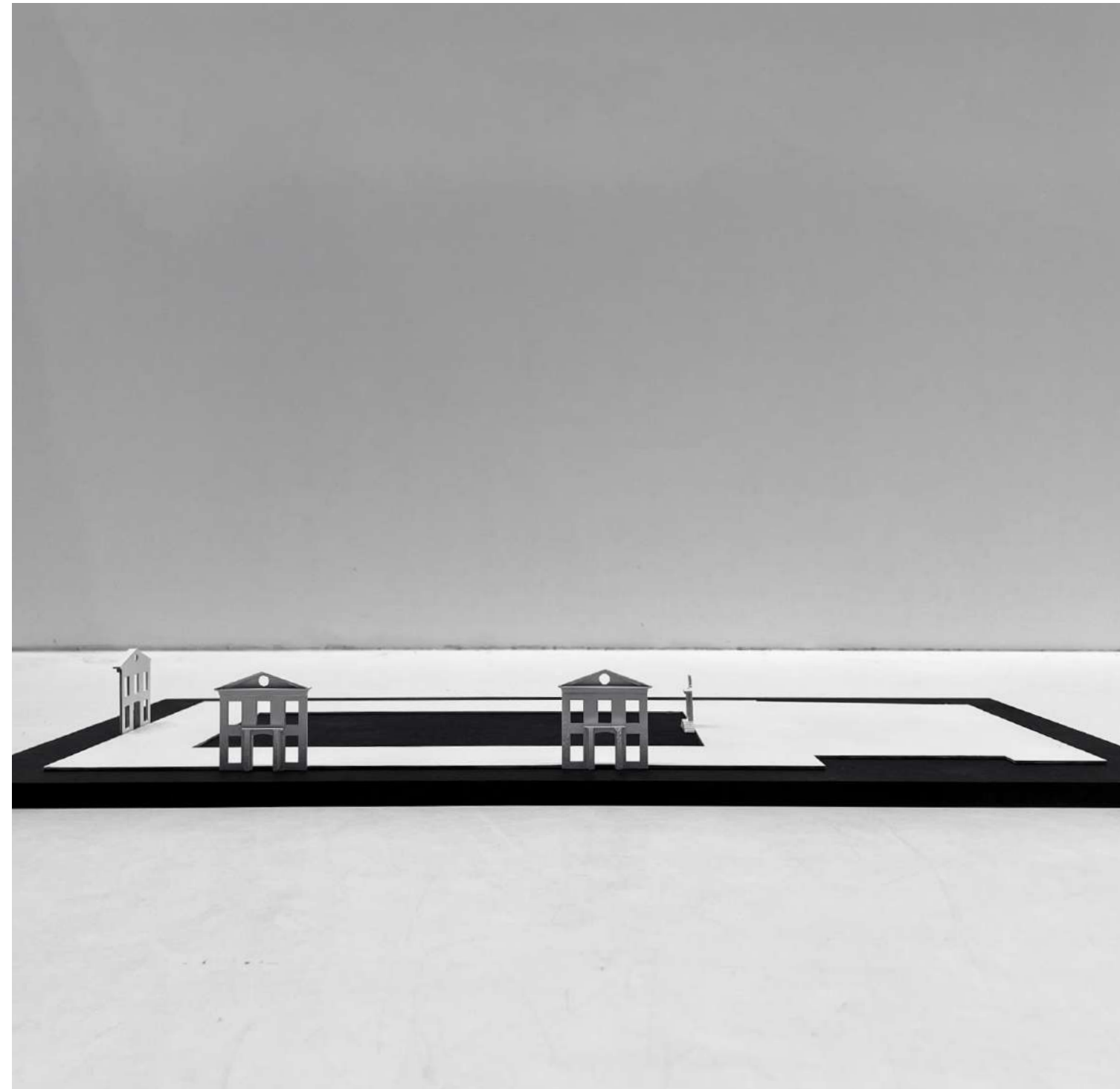
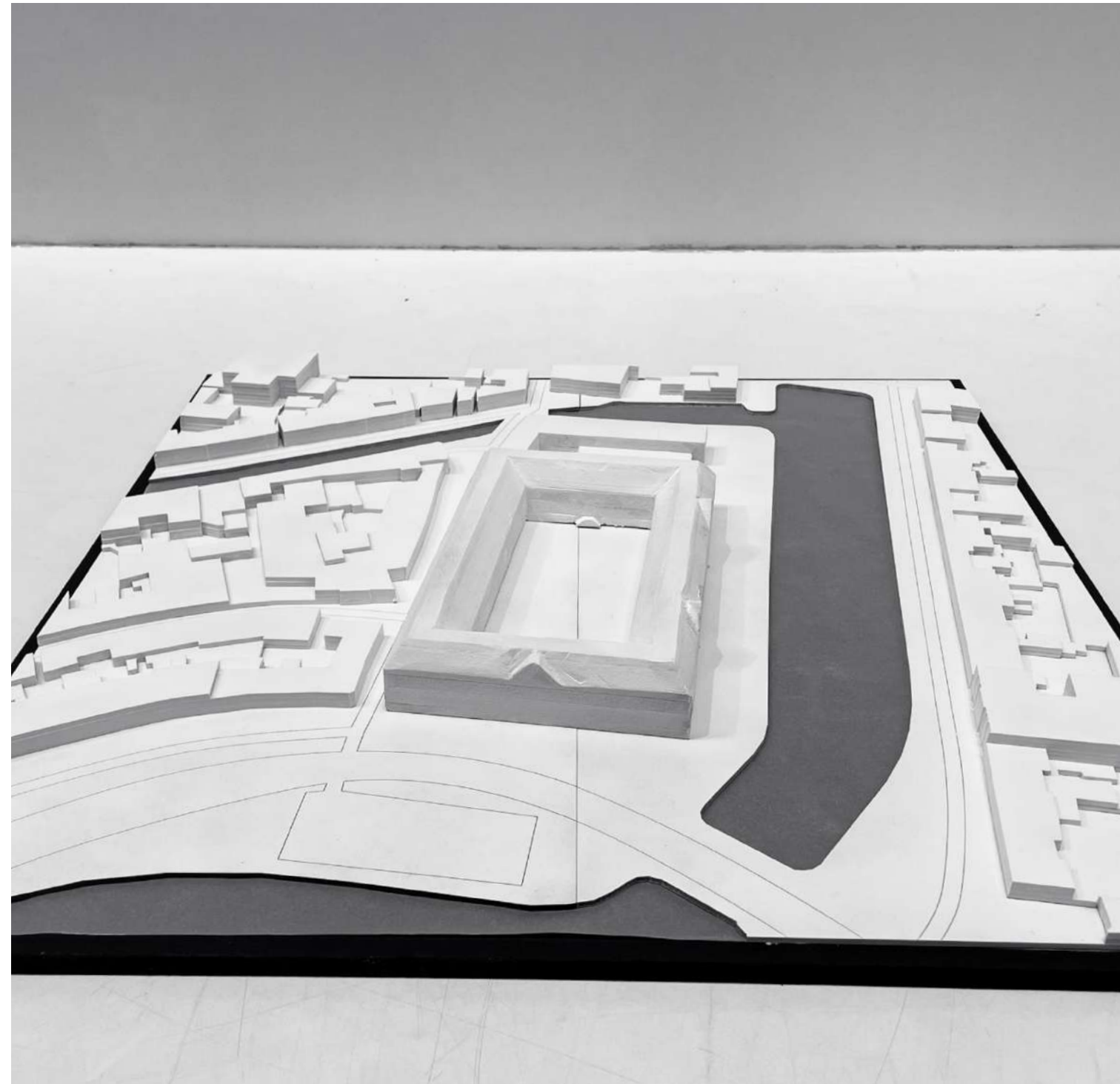
Haarlem

# KOUDENHORN HAARLEM



Koudenhorn Haarlem (own pictures).

# KOUDENHORN HAARLEM - ESSENCE MODELS



## PROBLEM STATEMENT

When designing a building, it is the task of the architect to give a definite form to something that is constantly subject to change for an unpredictable amount of time.

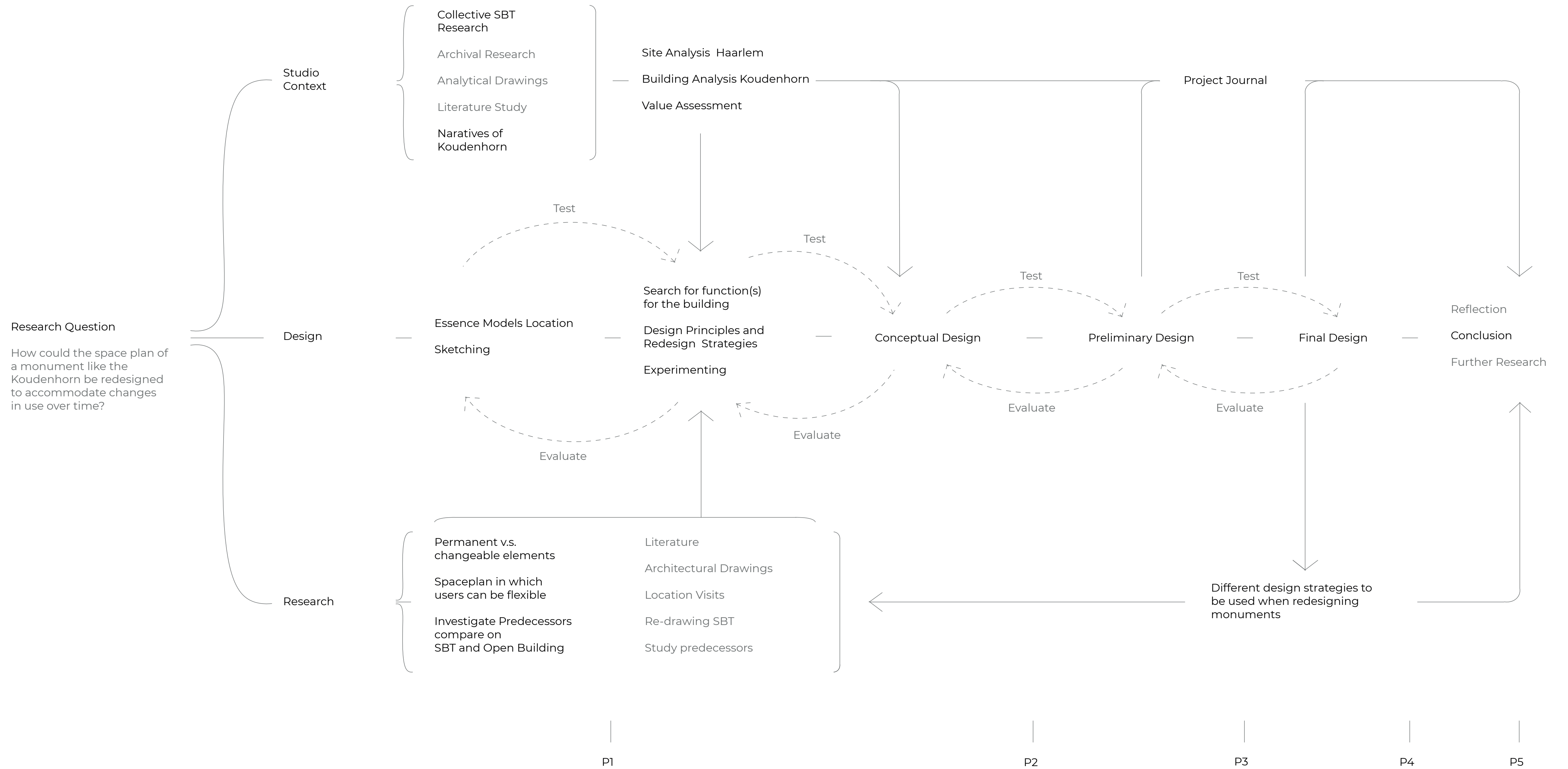
adaptability - redesign within permanent - prevent future architectural interventions

## RESEARCH AND DESIGN QUESTION

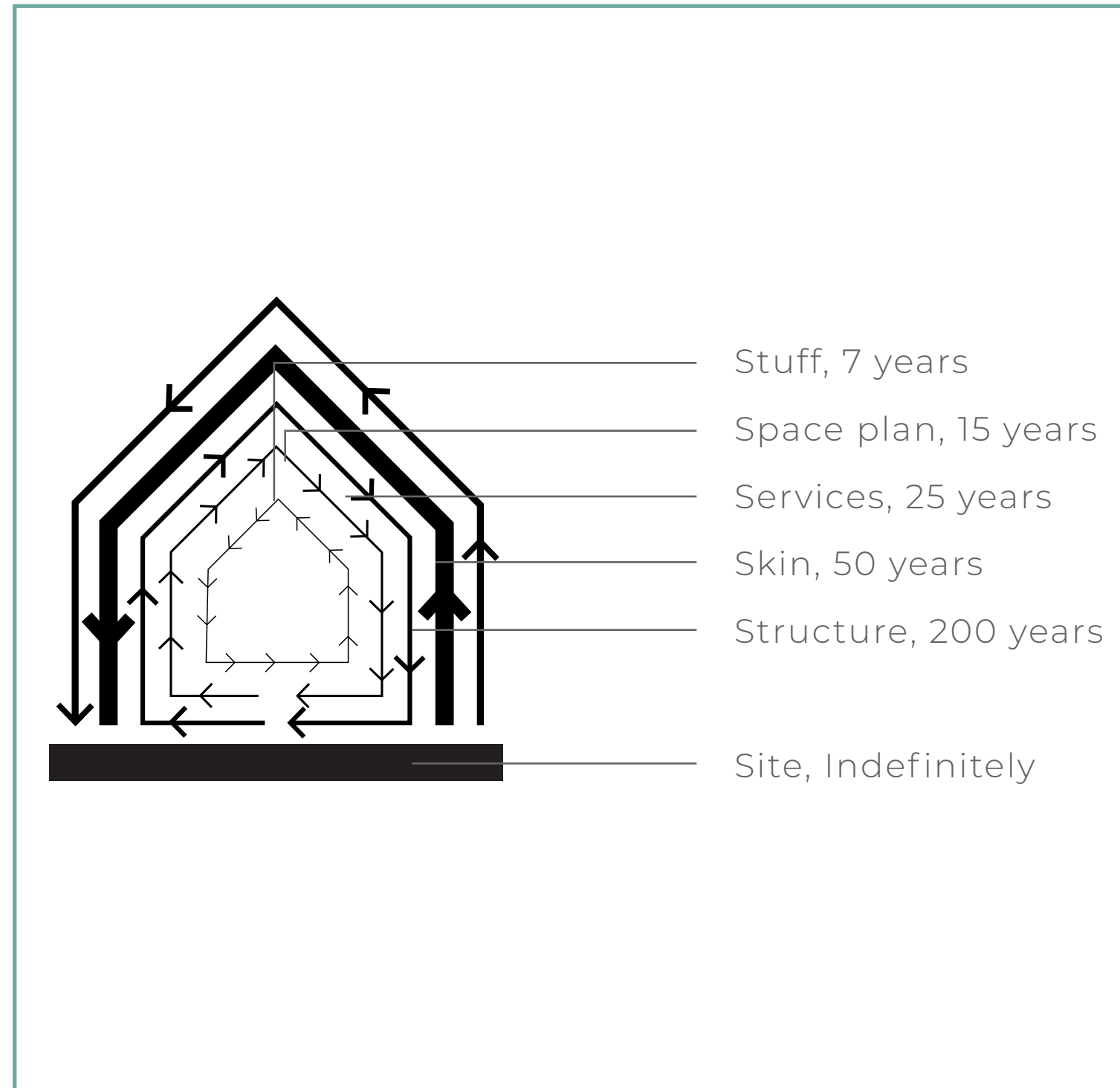
How could the space plan of a monument like the Koudenhorn be redesigned to accommodate changes in use over time?



# RESEARCH AND DESIGN DIAGRAM

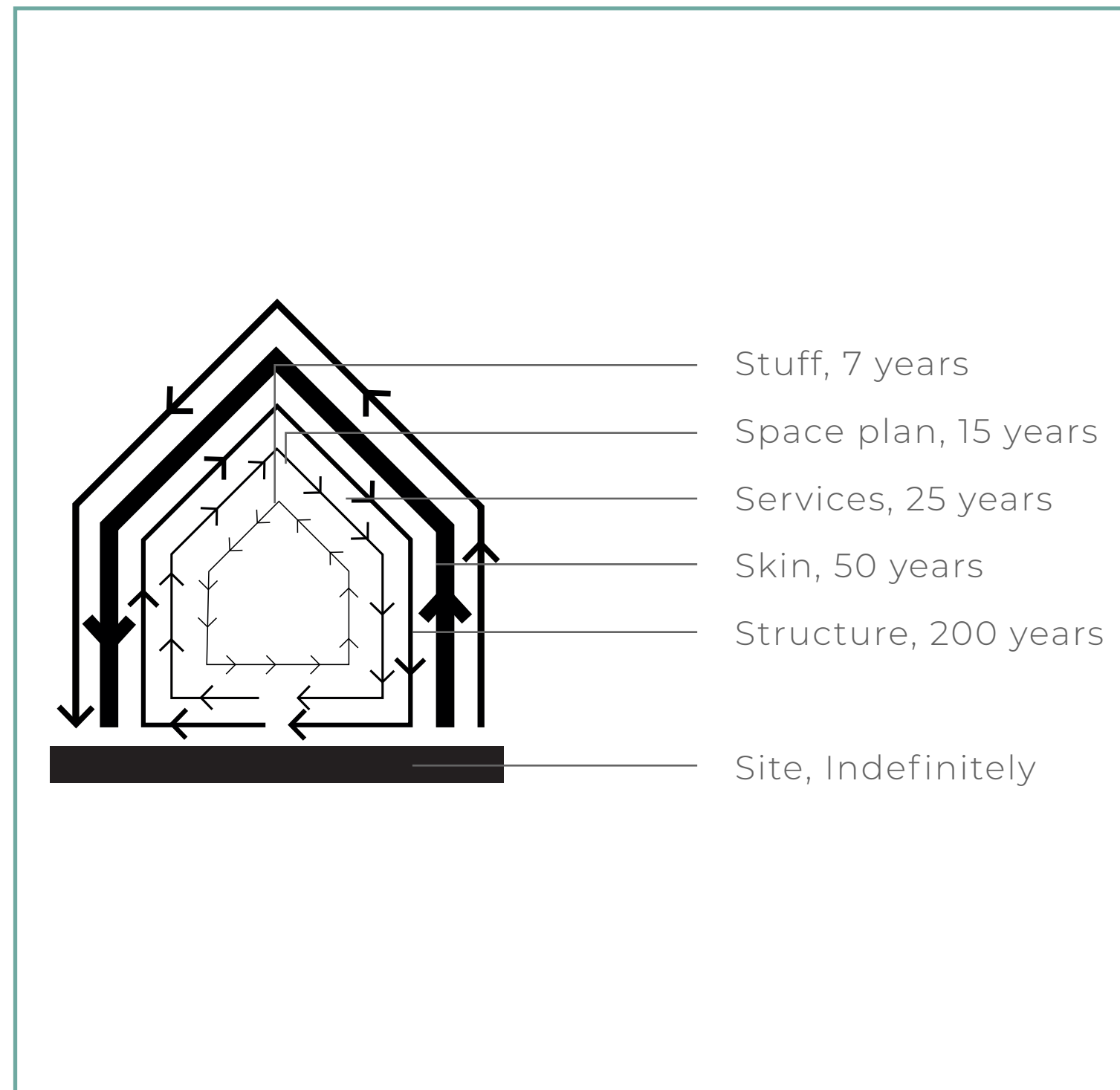


# INDIVIDUAL RESEARCH - LITERATURE

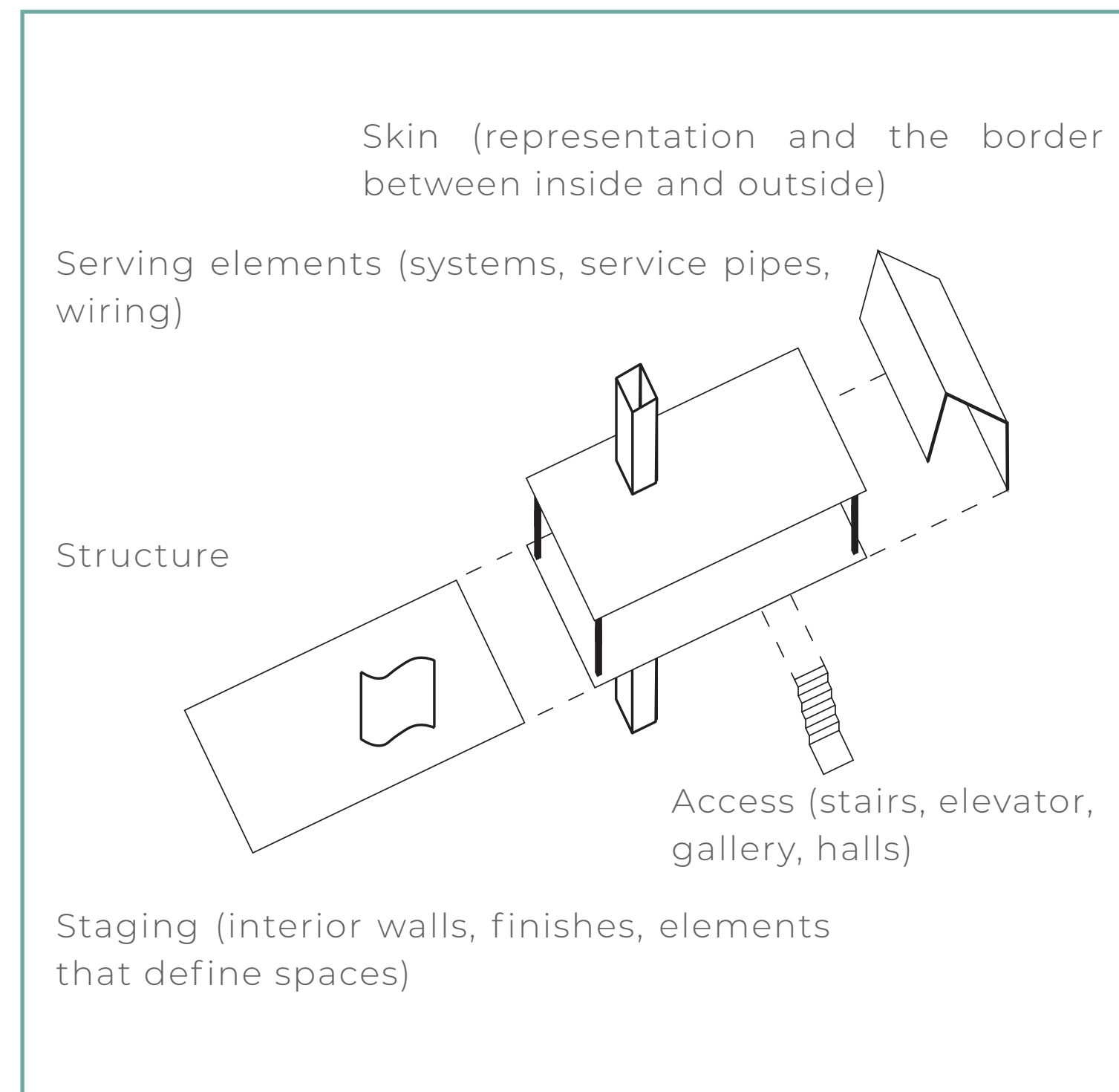


Layers of Brand (1994.)

# INDIVIDUAL RESEARCH - LITERATURE

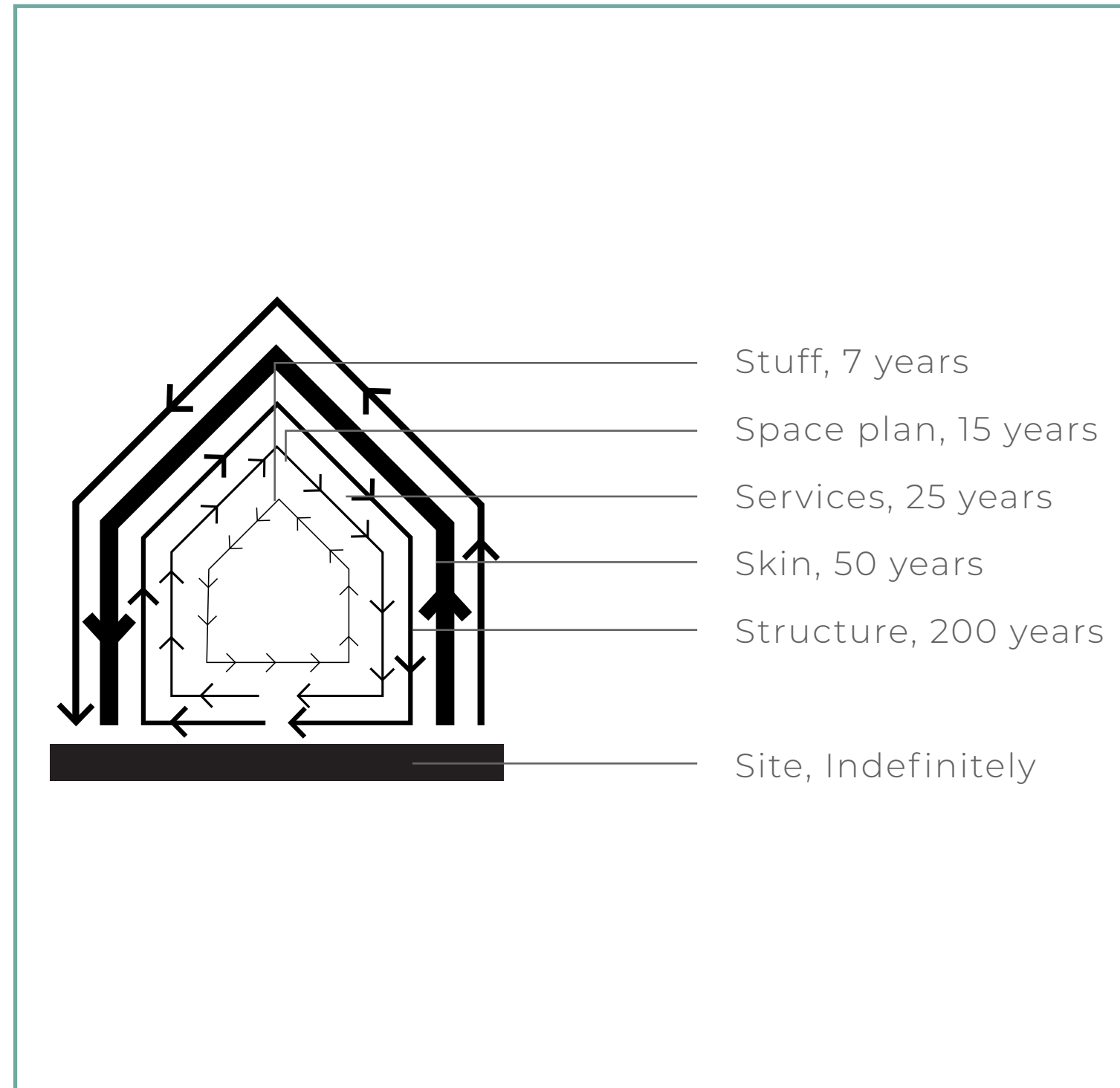


Layers of Brand (1994.)

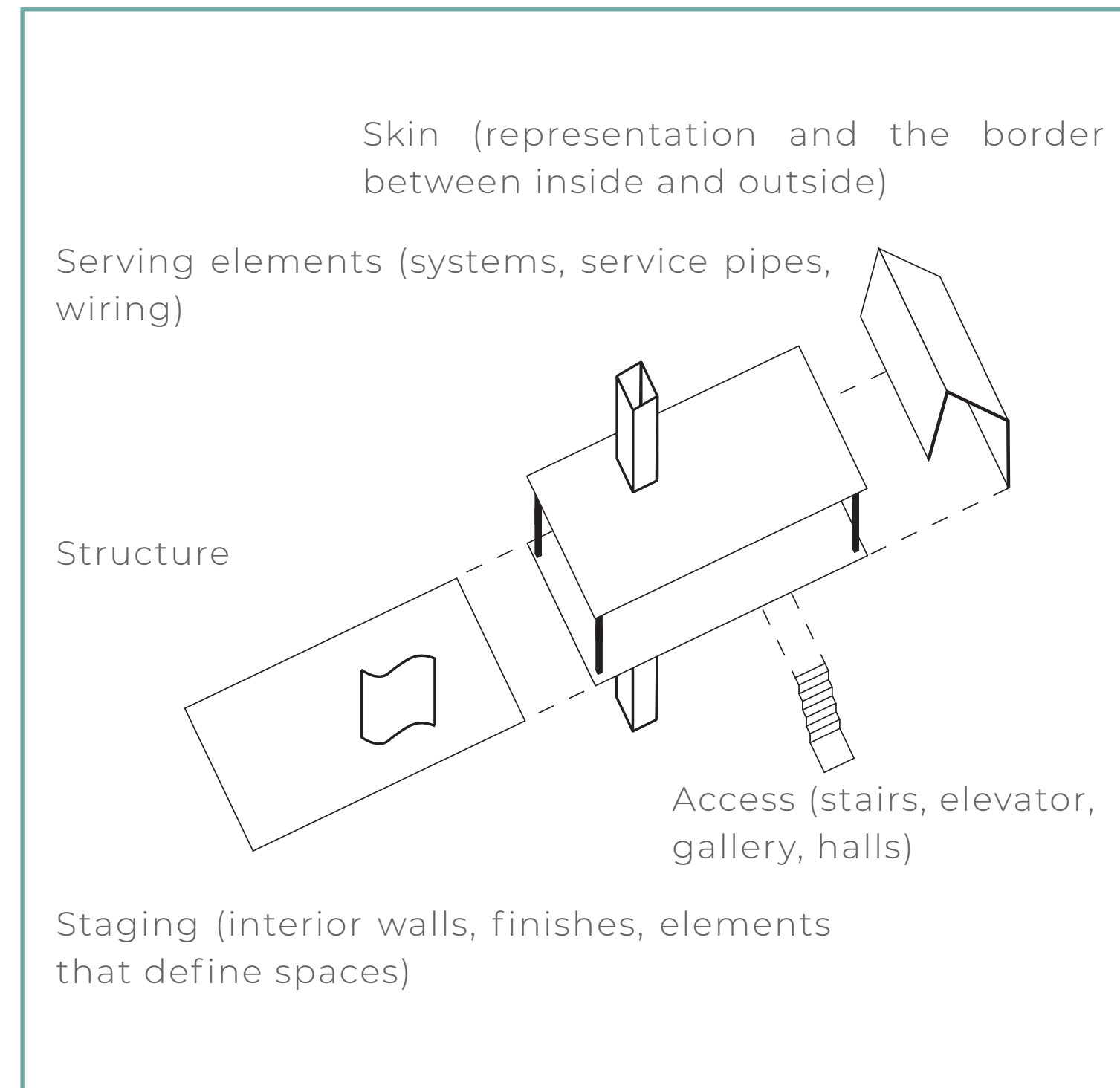


Frame and generic space (Leupen, 2006).

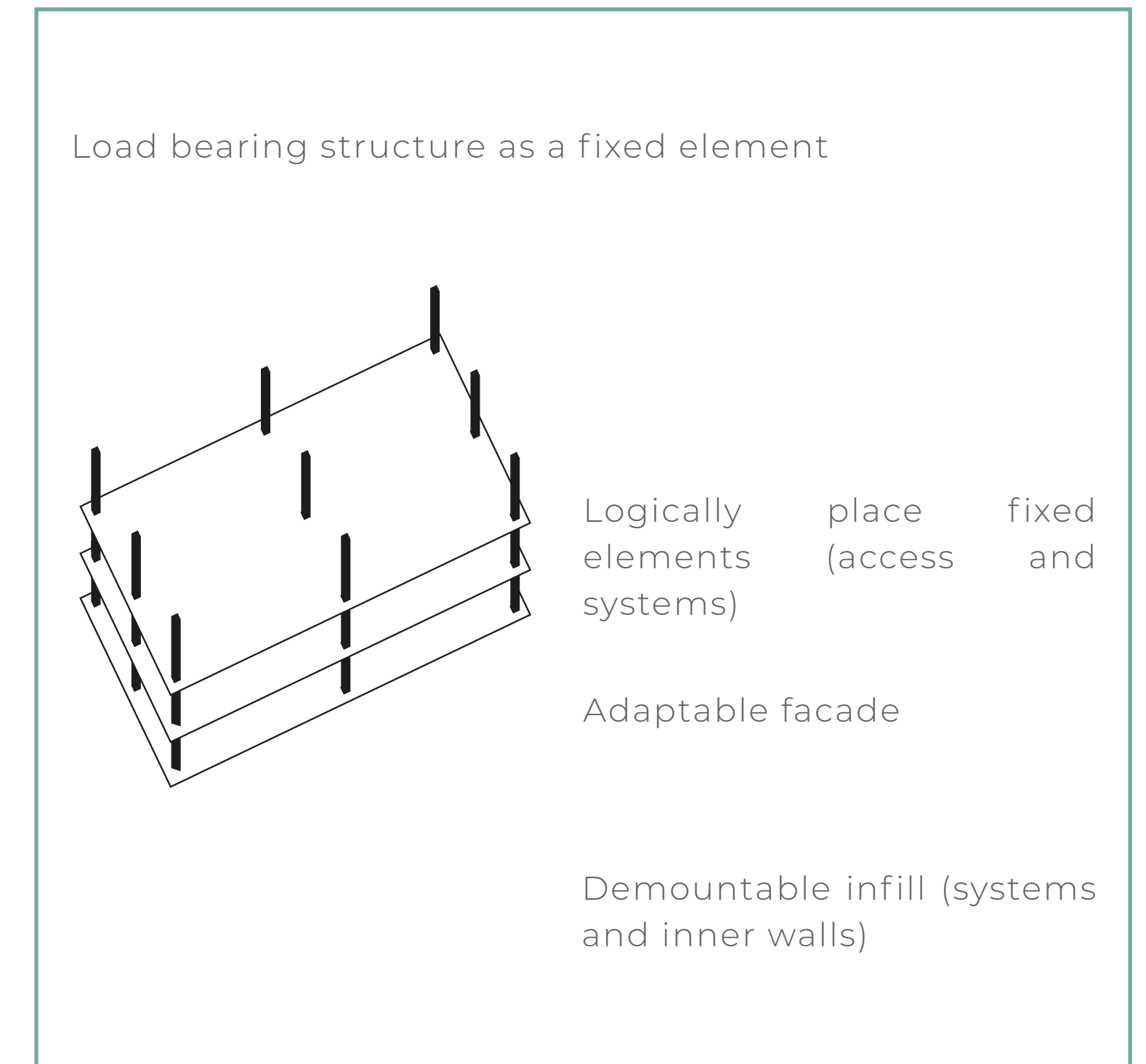
# INDIVIDUAL RESEARCH - LITERATURE



Layers of Brand (1994.)



Frame and generic space (Leupen, 2006).

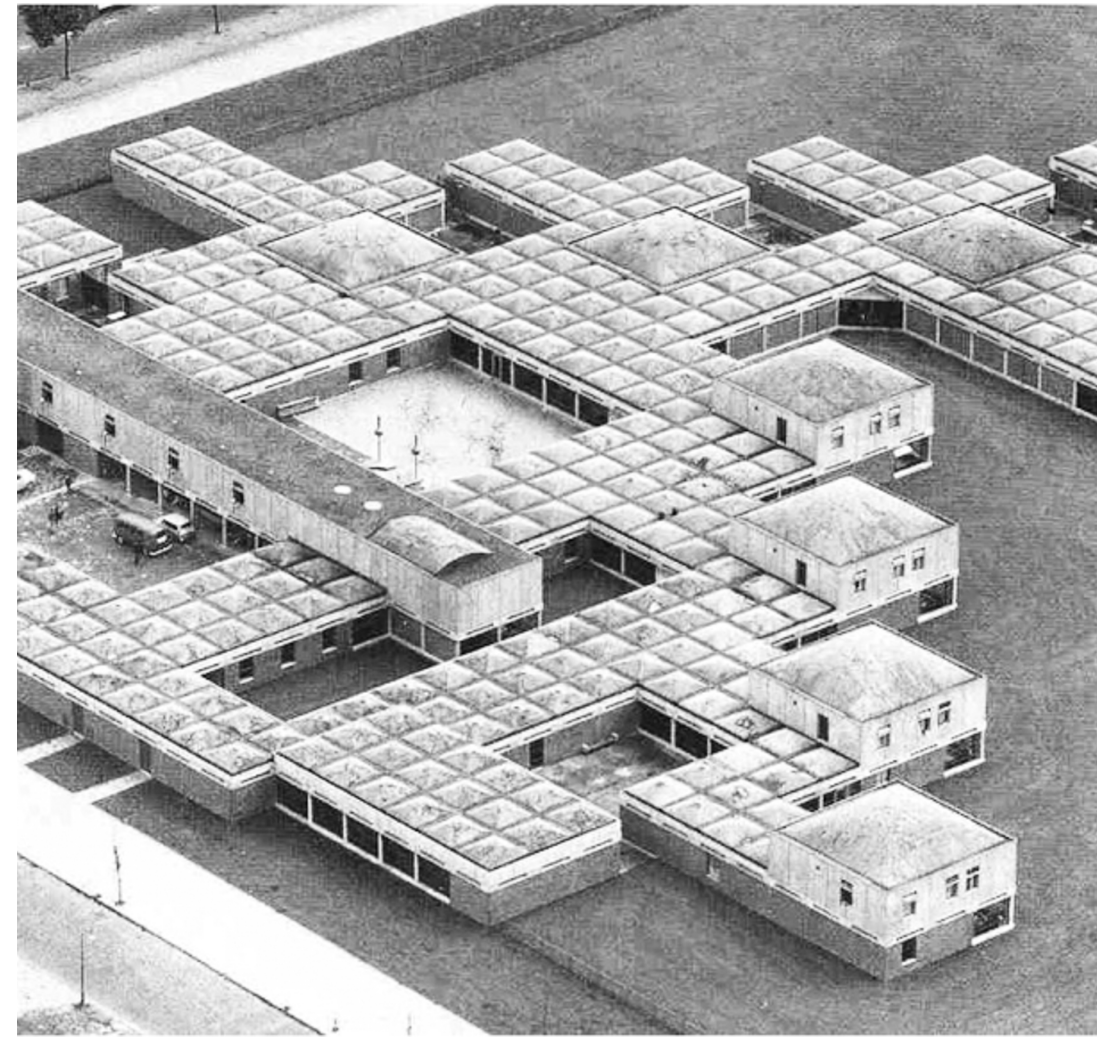


Open Building Principles (Habraken, 2003).

# INDIVIDUAL RESEARCH - CASE STUDIES



KB Building by HofmanDujardin + Schipper Bosch (Van Roon, 2020).



Burgerweeshuis by WDJ Architecten (KLM Aerocarto Schiphol 1960).



LocHal Library by Braaksma & Roos (Bollaert, 2019).



Sublieme Schoonheid, Sublieme Duurzaamheid (CRa & Rijksdienst voor Cultureel Erfgoed, 2021)



Superlofts by Marc Koehler (Hannema, 2017).



St. Jobsveem by WDJ Architecten (Musch, n.d.).

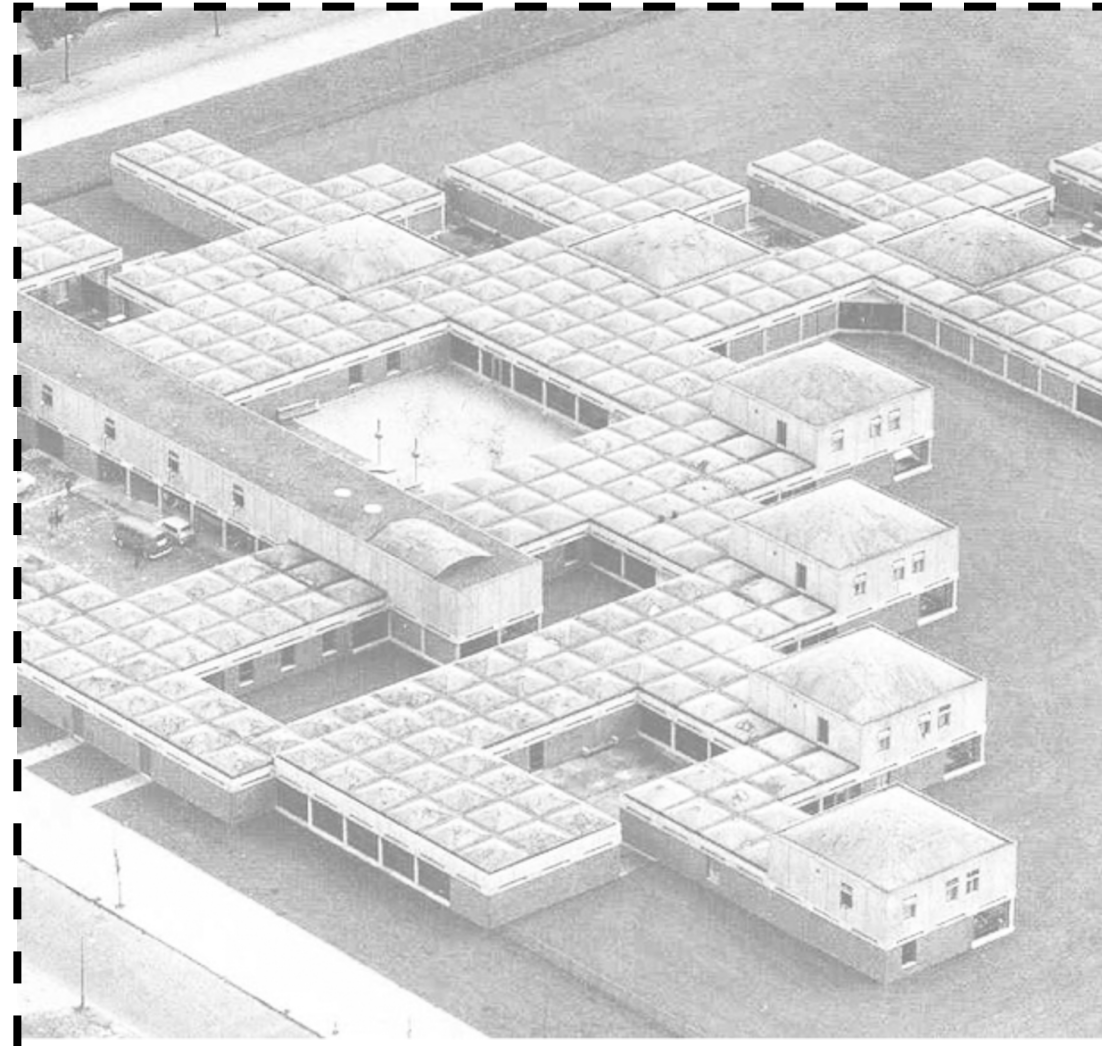


't Karregat by van Klingereren (Versnel, 2003).

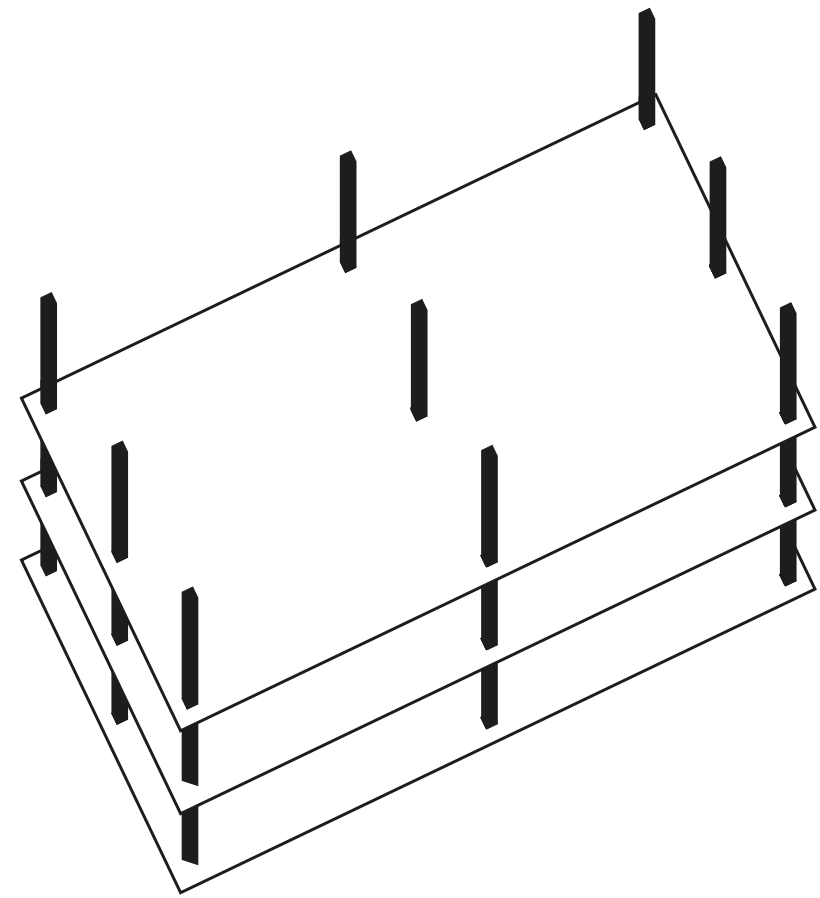


SESC Pompéia Factory by Bo Bardi (Finotti, n.d.)

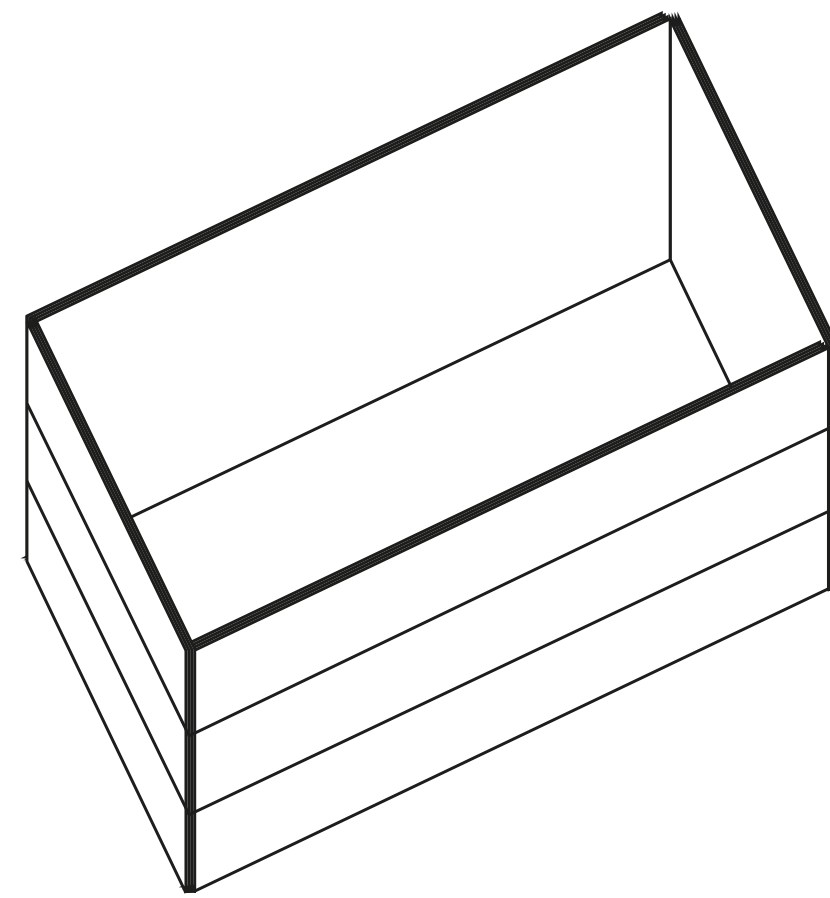
# INDIVIDUAL RESEARCH - CASE STUDIES



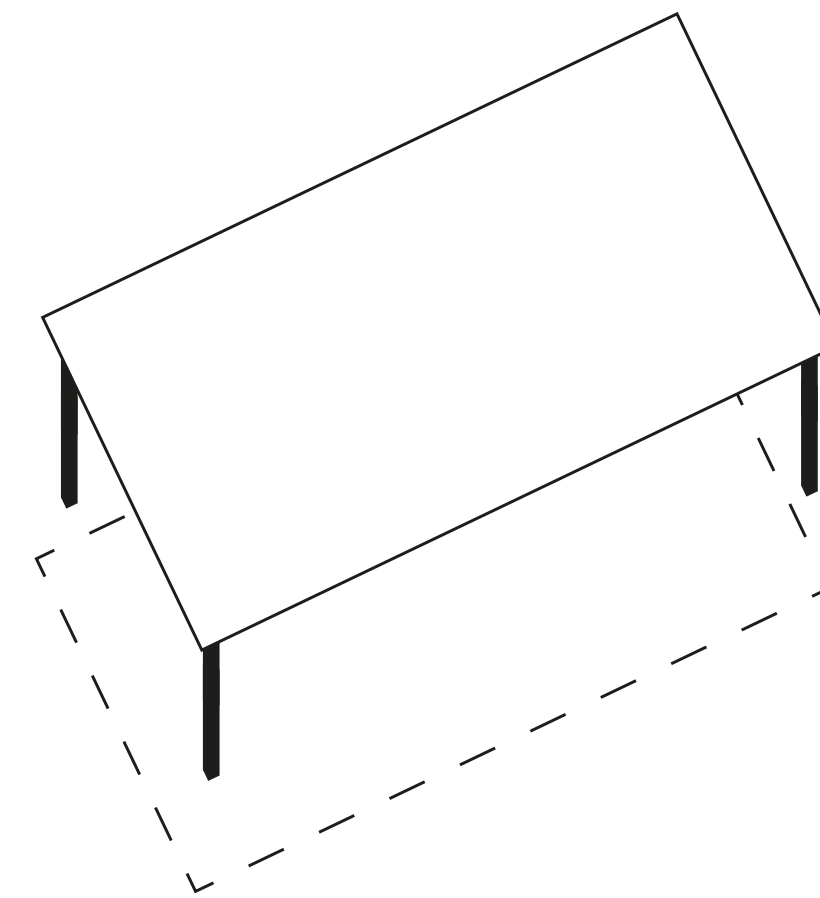
# INDIVIDUAL RESEARCH - FRAMES IN WHICH CHANGE CAN TAKE PLACE



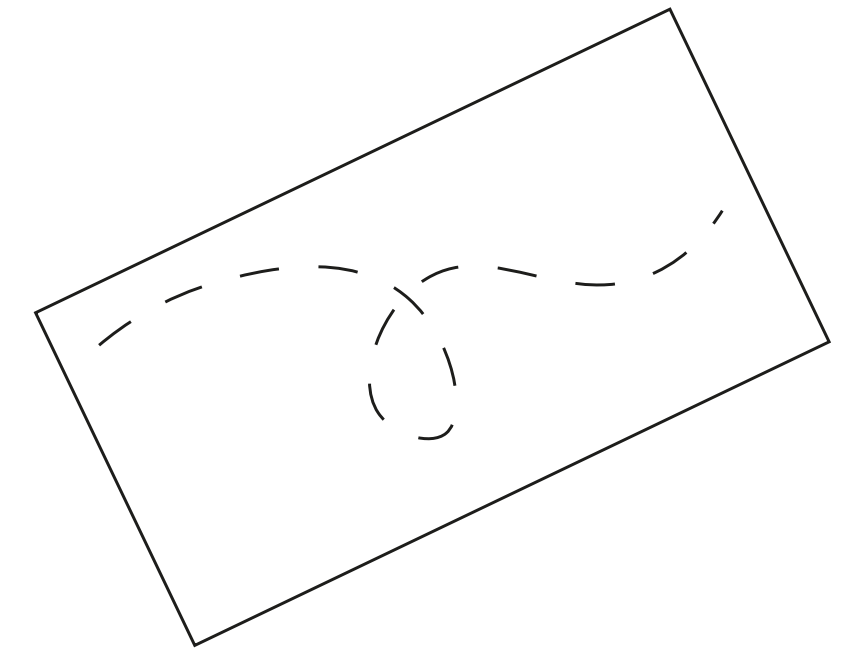
Strucrure



Skin

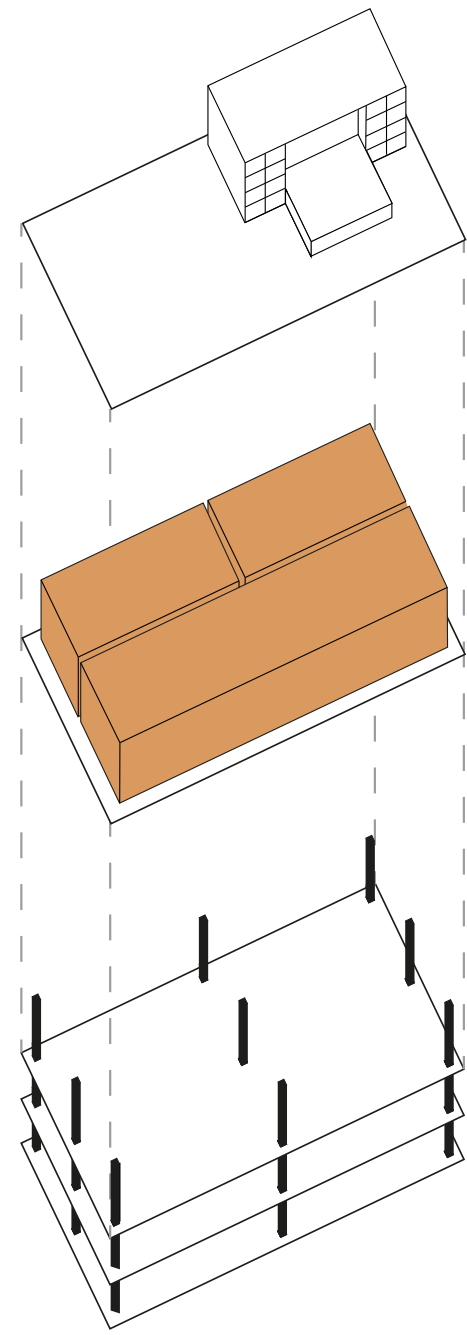


Roof / Hall

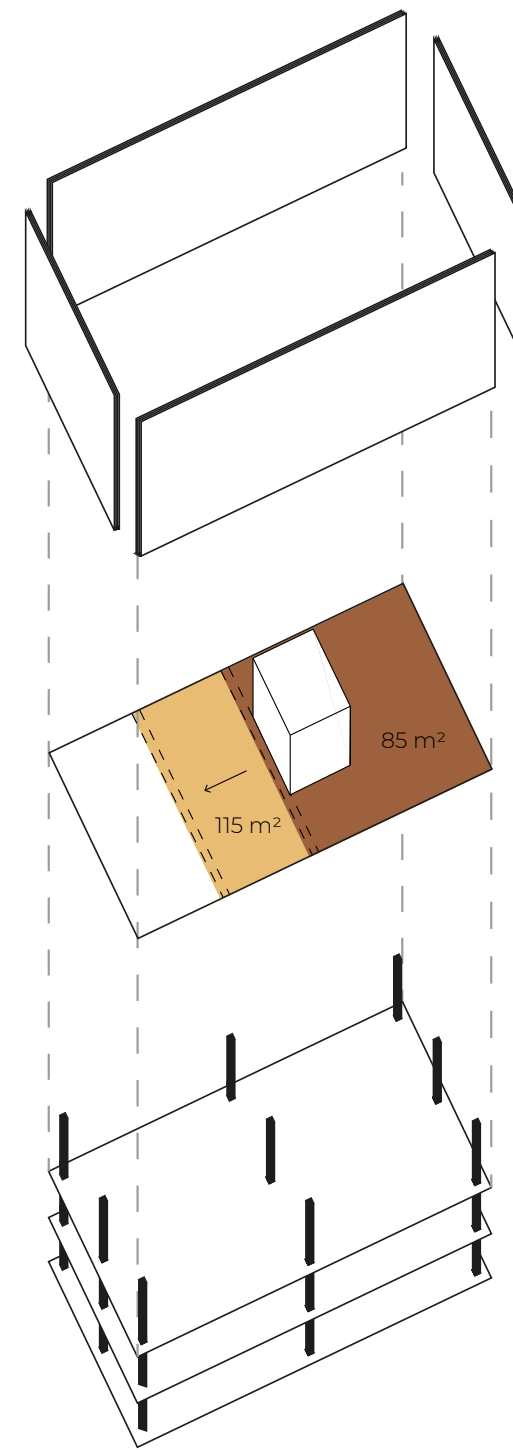


User / Placemaking

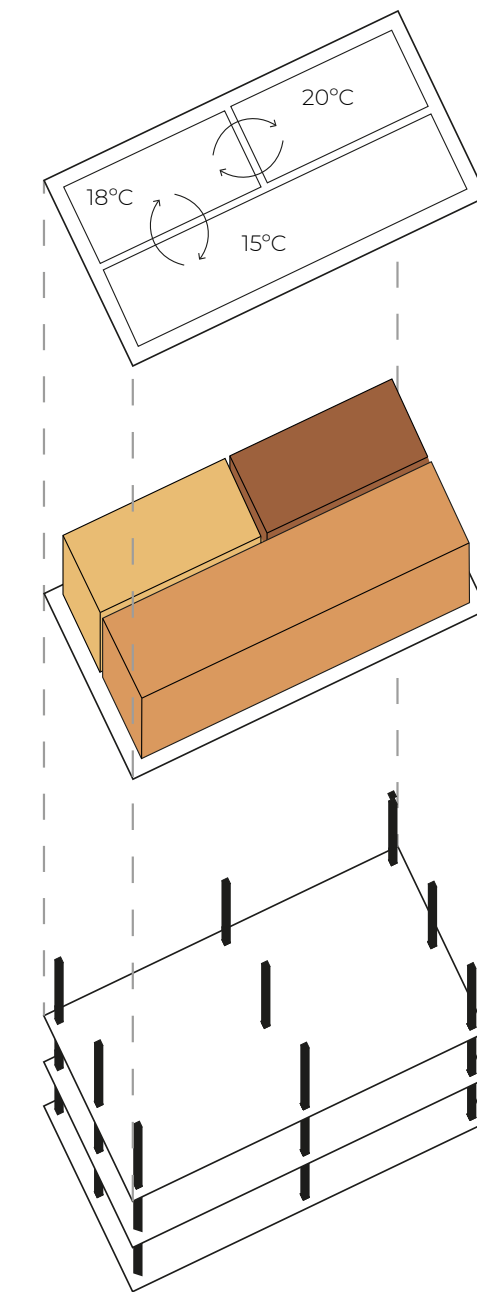
# INDIVIDUAL RESEARCH - INITIAL CONCLUSIONS



1. Redesign with an adaptable infill.



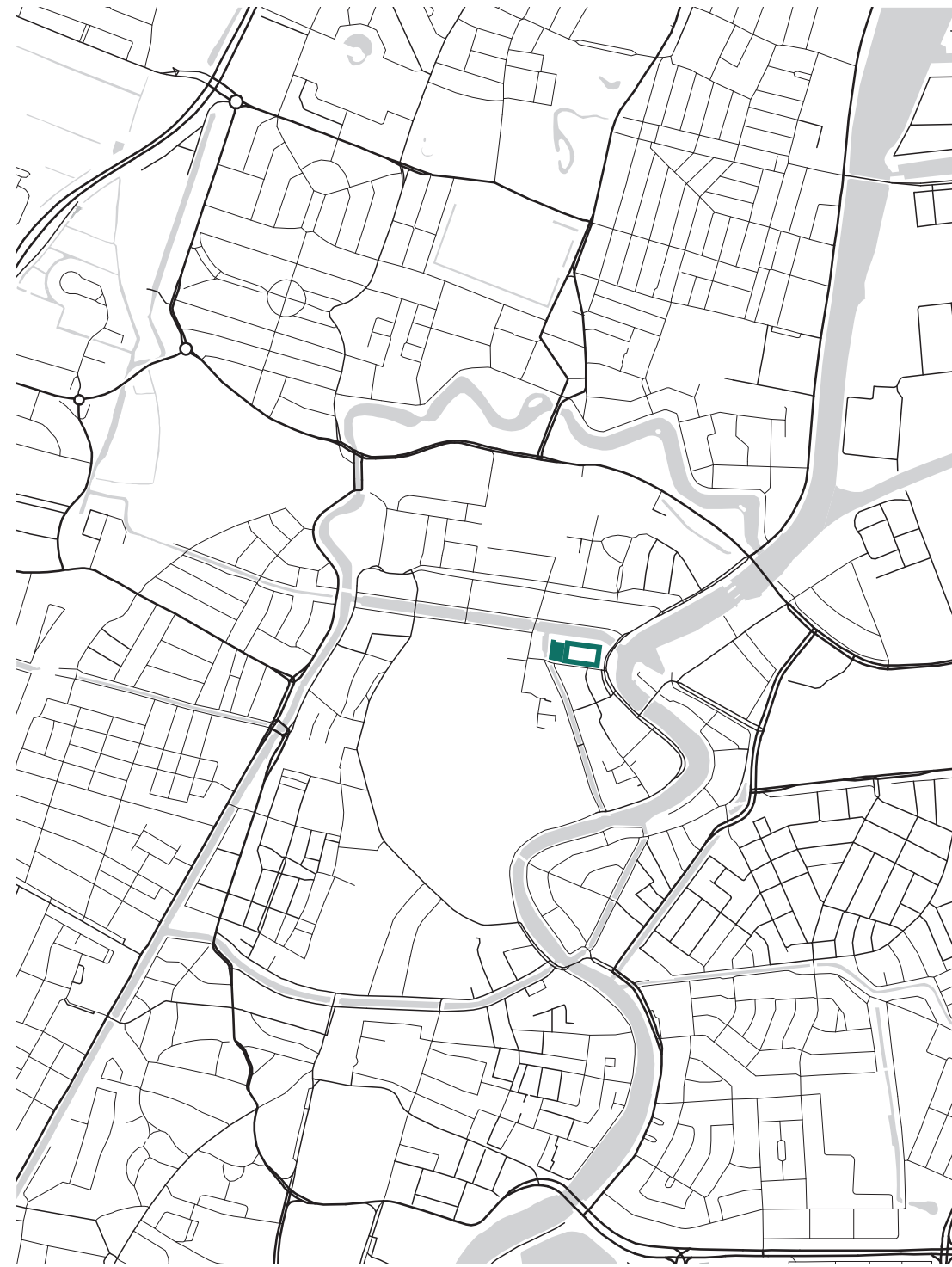
2. Redesign the spaceplan by creating a generic space.



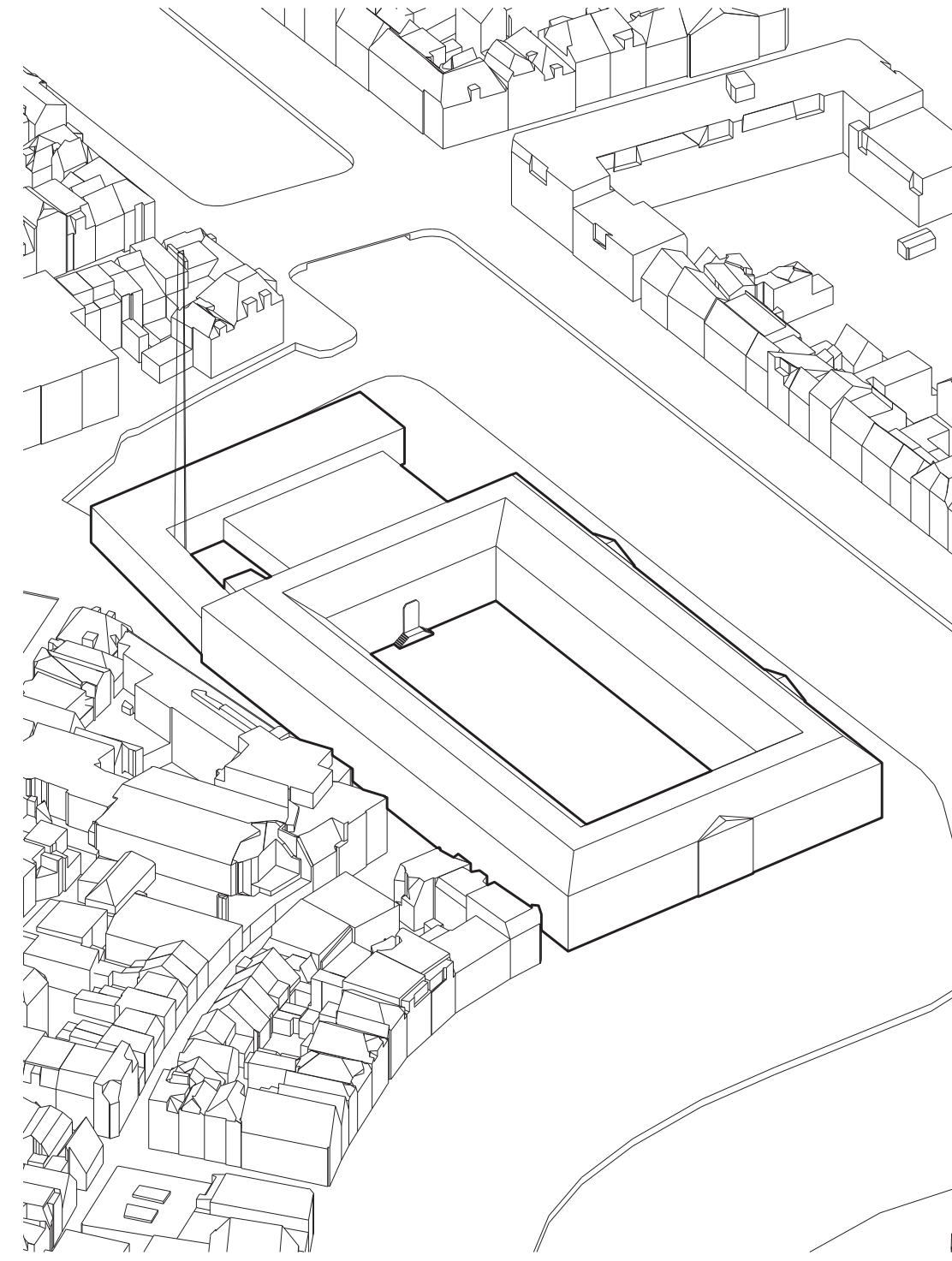
3. Redesign with a focus on energy demands.



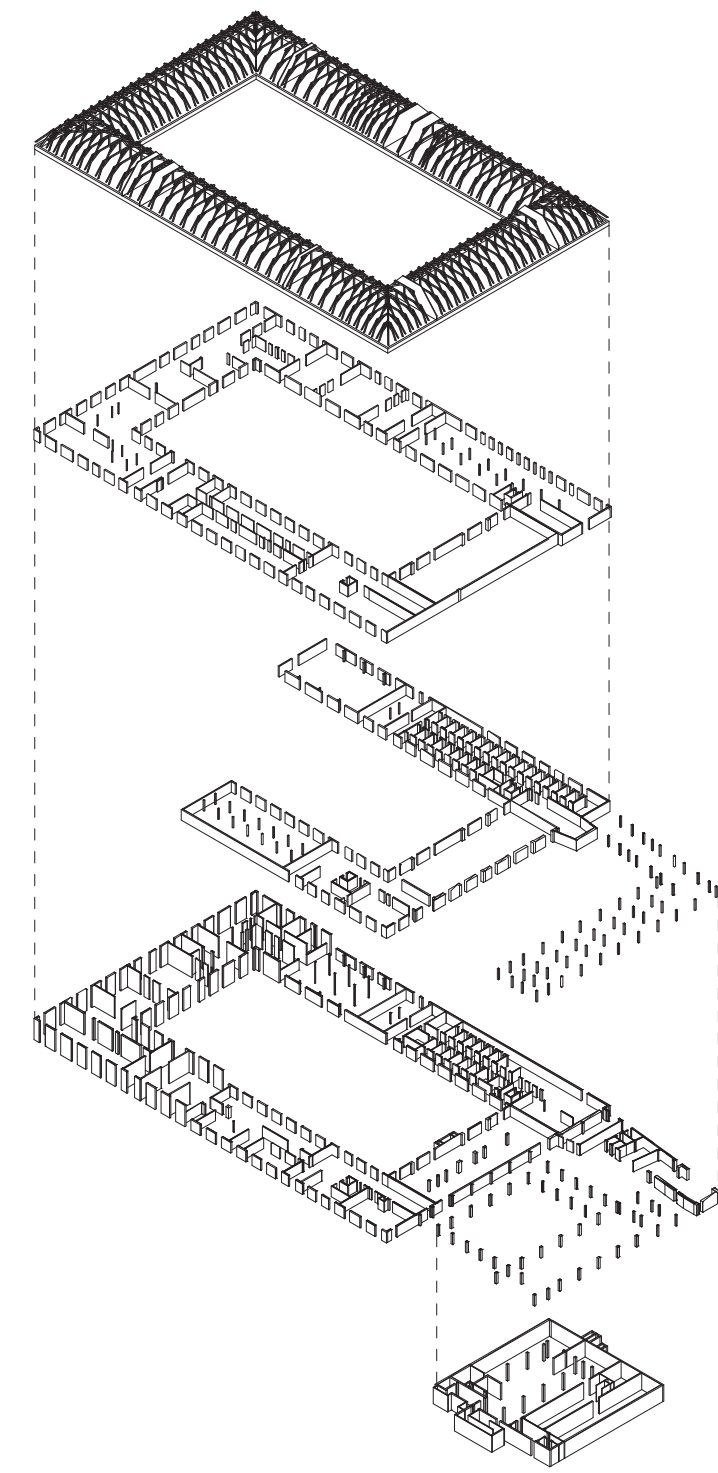
# SPATIAL BUILDING TYPOLOGY



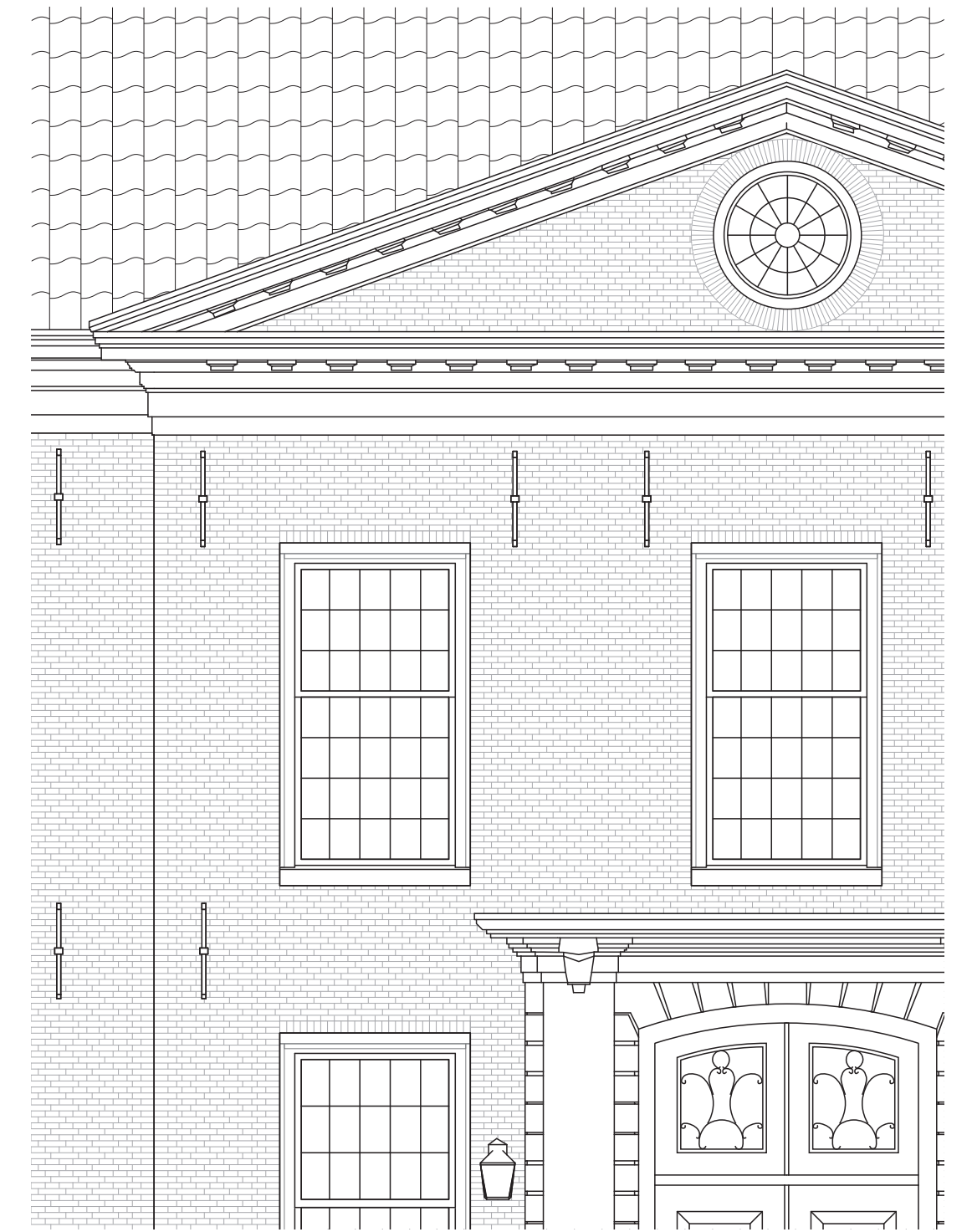
Inner City



Urban Block



Building Object



Building Envelope



# HISTORICAL DEVELOPMENT OF HAARLEM

Permanent space // changeable use

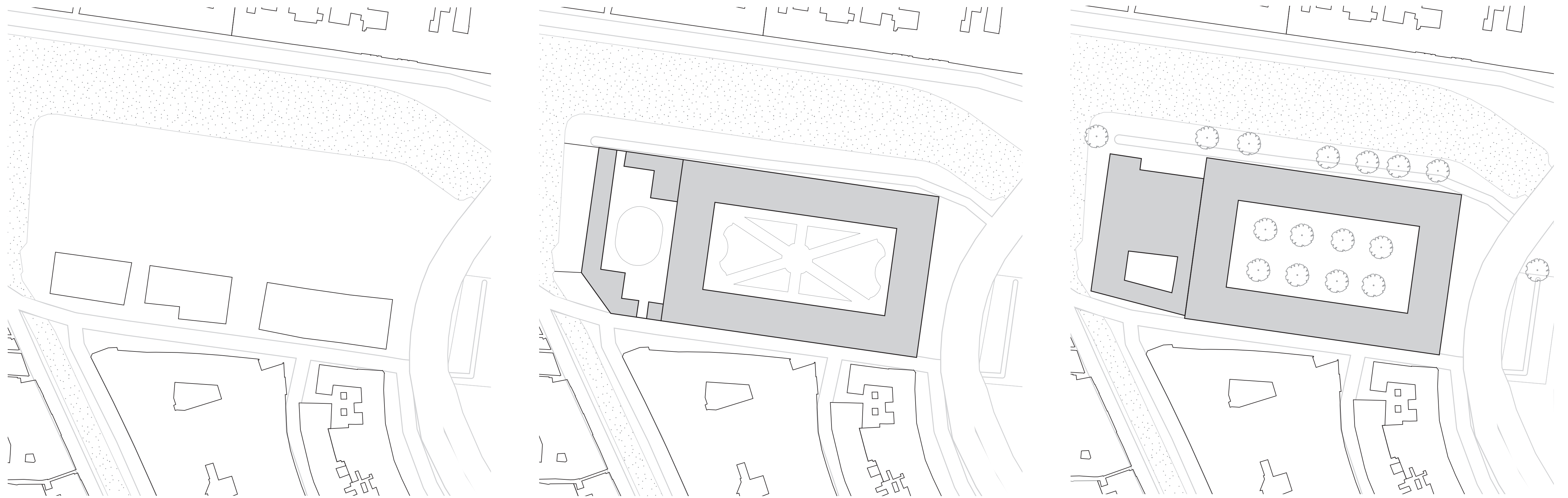


Drawings from SBT analysis, fromW left to right: 1300 - 1500 - 1800 - 1900 - 2000.

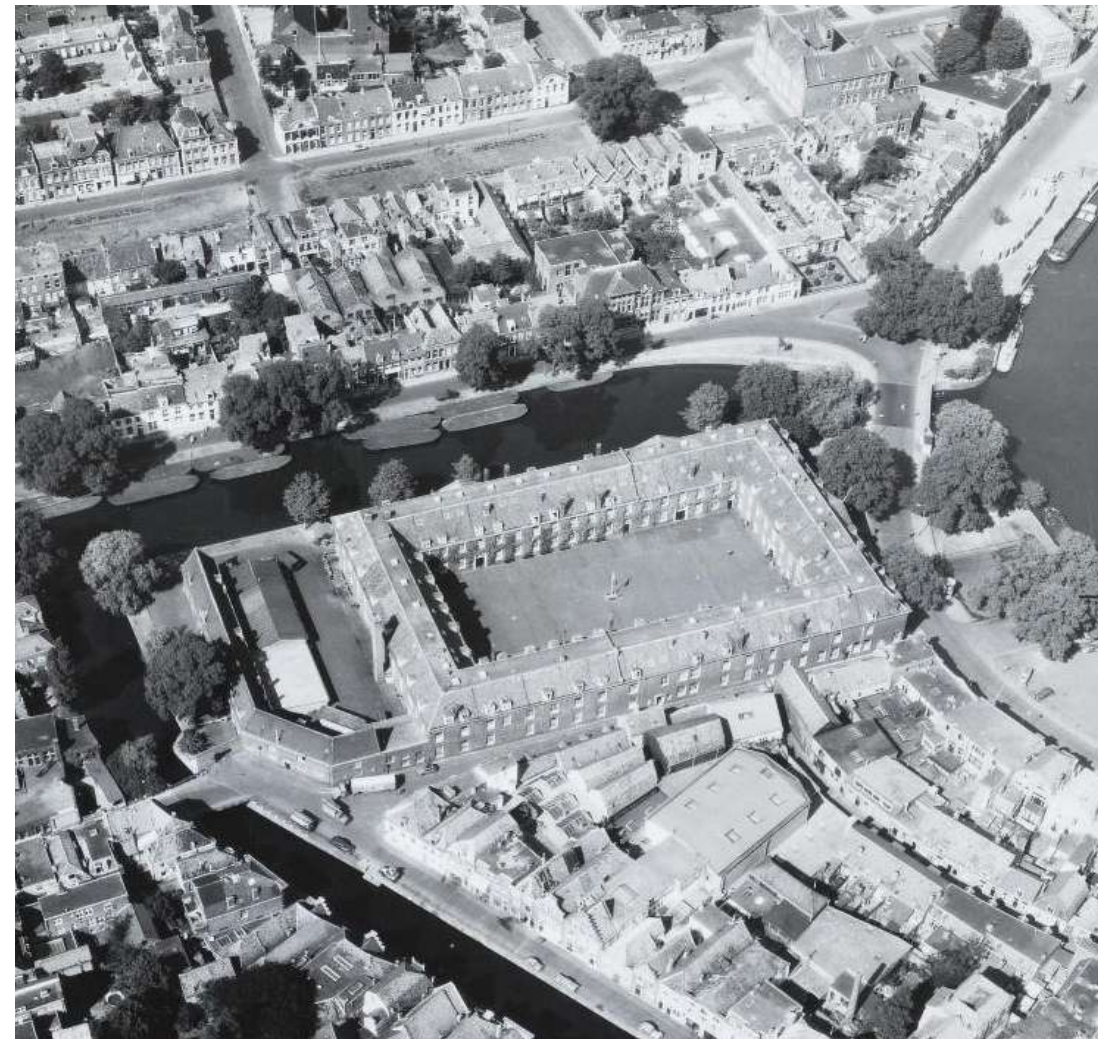
# HISTORY OF THE KOUDENHORN - URBAN DEVELOPMENT

Permanent space // changeable use

0 25m ⌚



# HISTORY OF THE KOUDENHORN - CHANGE IN FLOORPLAN

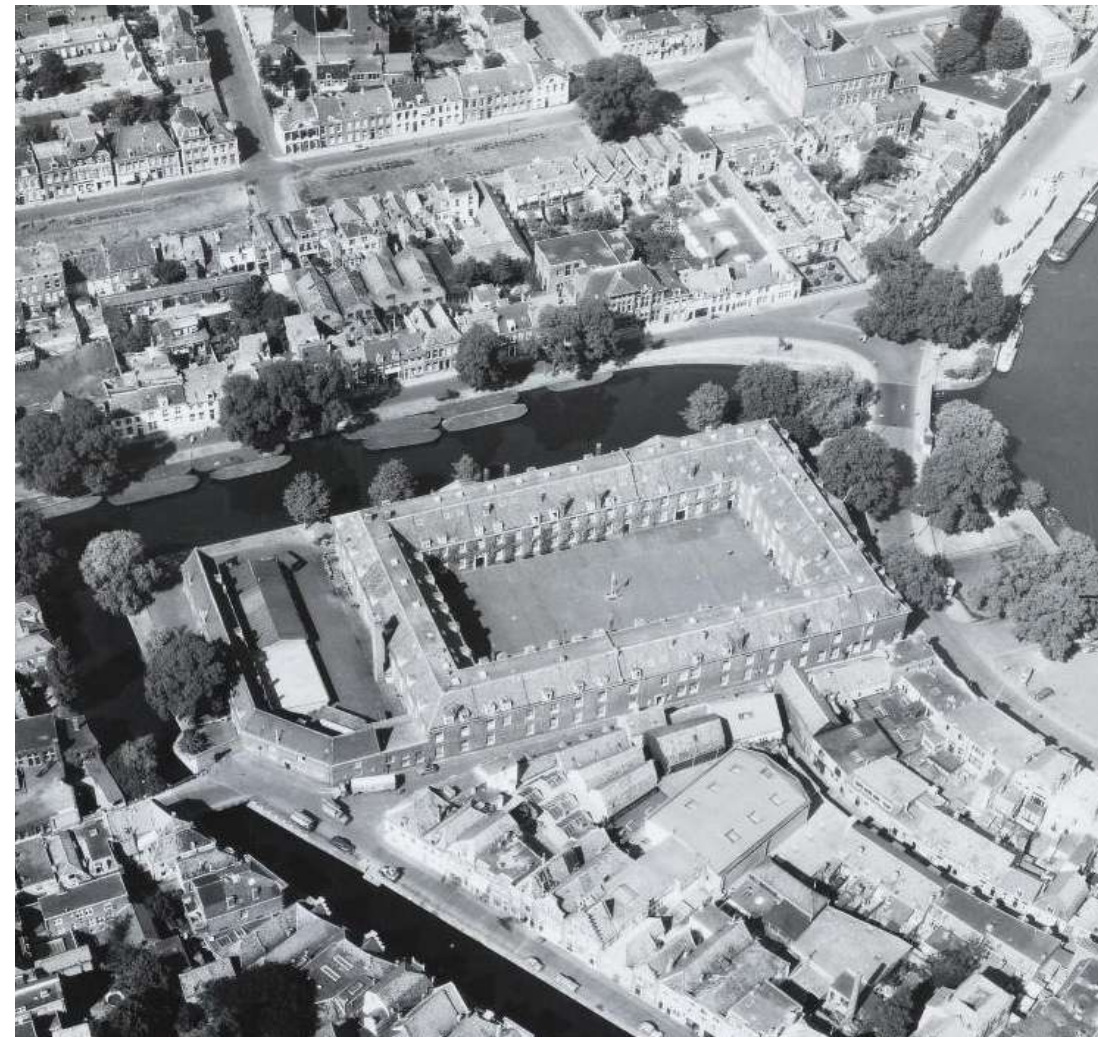


Aerial view Haarlem (Koninklijke Luchtmacht, 1959).



Haarlem (Noord-Hollands archief, 1979).

# HISTORY OF THE KOUDENHORN - CHANGE IN FLOORPLAN



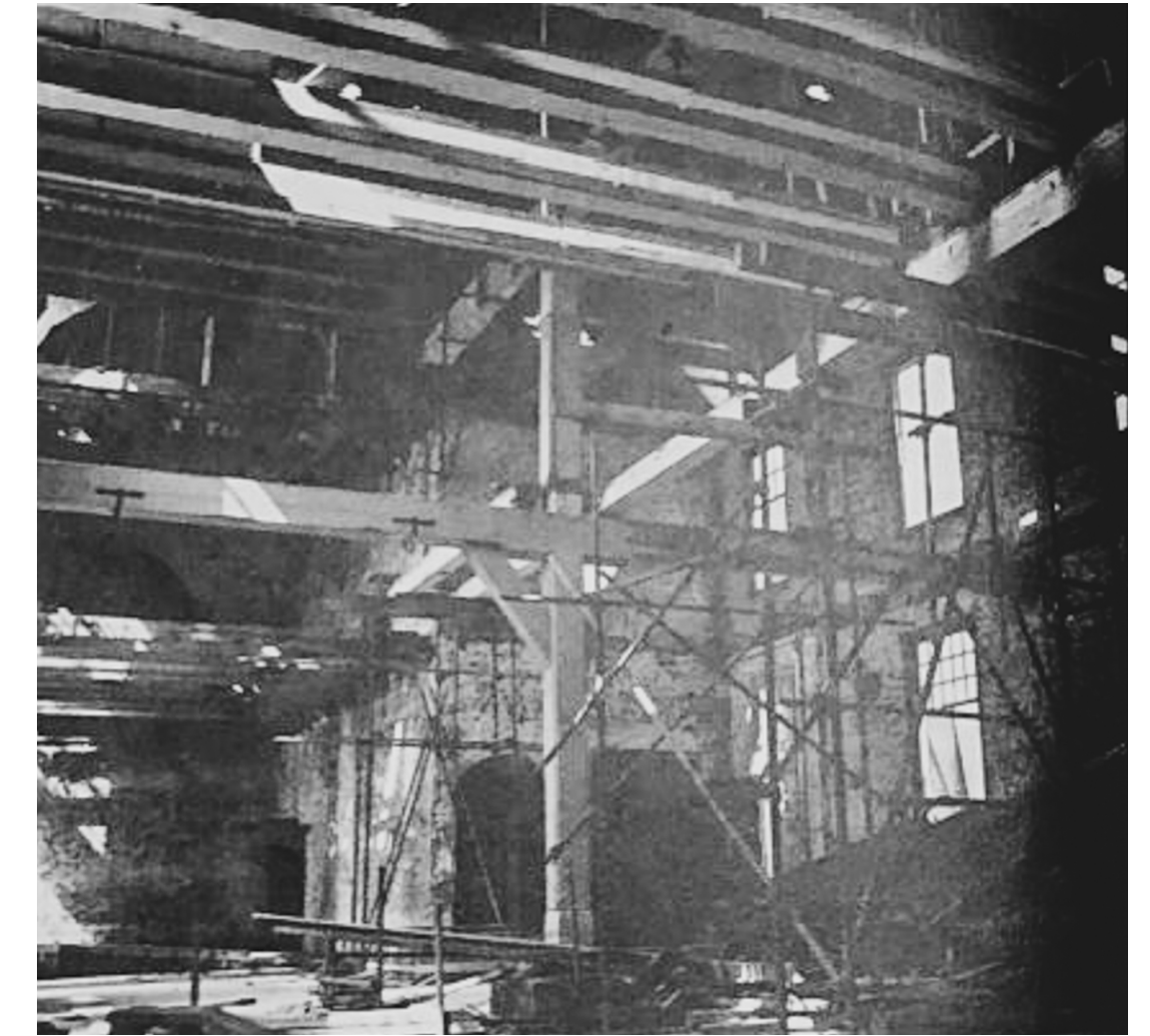
Aerial view Haarlem (Koninklijke Luchtmacht, 1959).



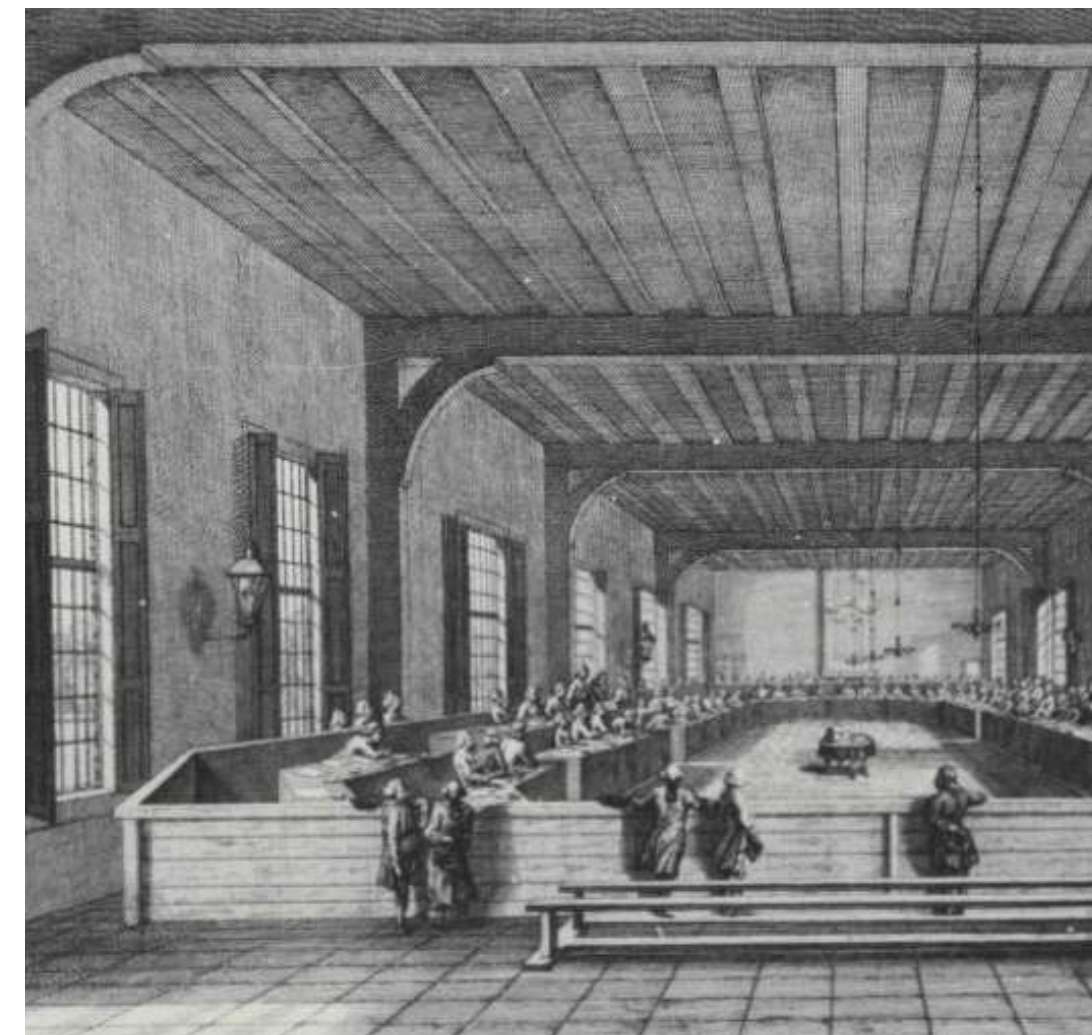
Haarlem (Noord-Hollands archief, 1979).



Redesign Koudenhorn 1970 (Van Den Hurk, Jansen & Post, 1971)



Redesign Koudenhorn 1970 (Van Den Hurk, Jansen & Post, 1971)



Diningroom Koudenhorn (Van der Vinne, 1778).

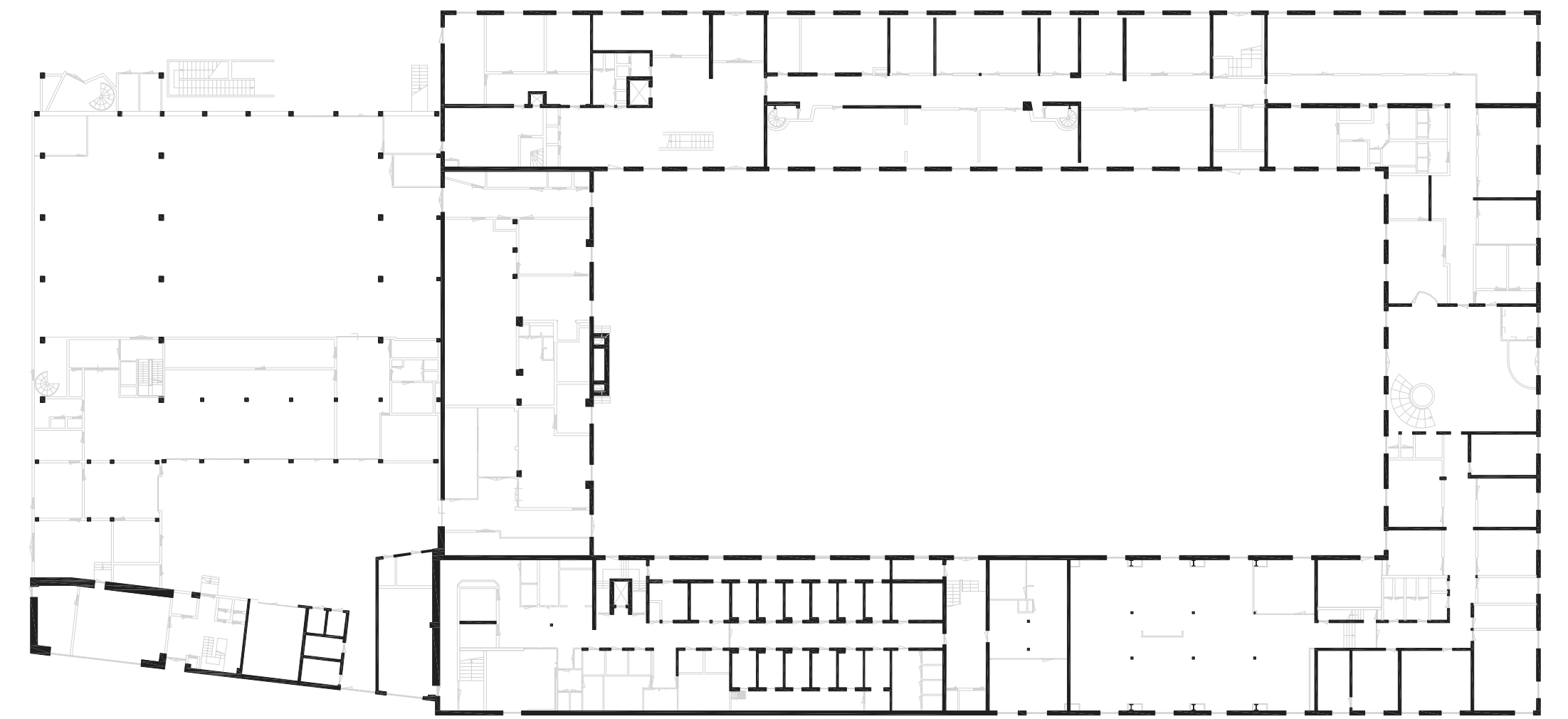
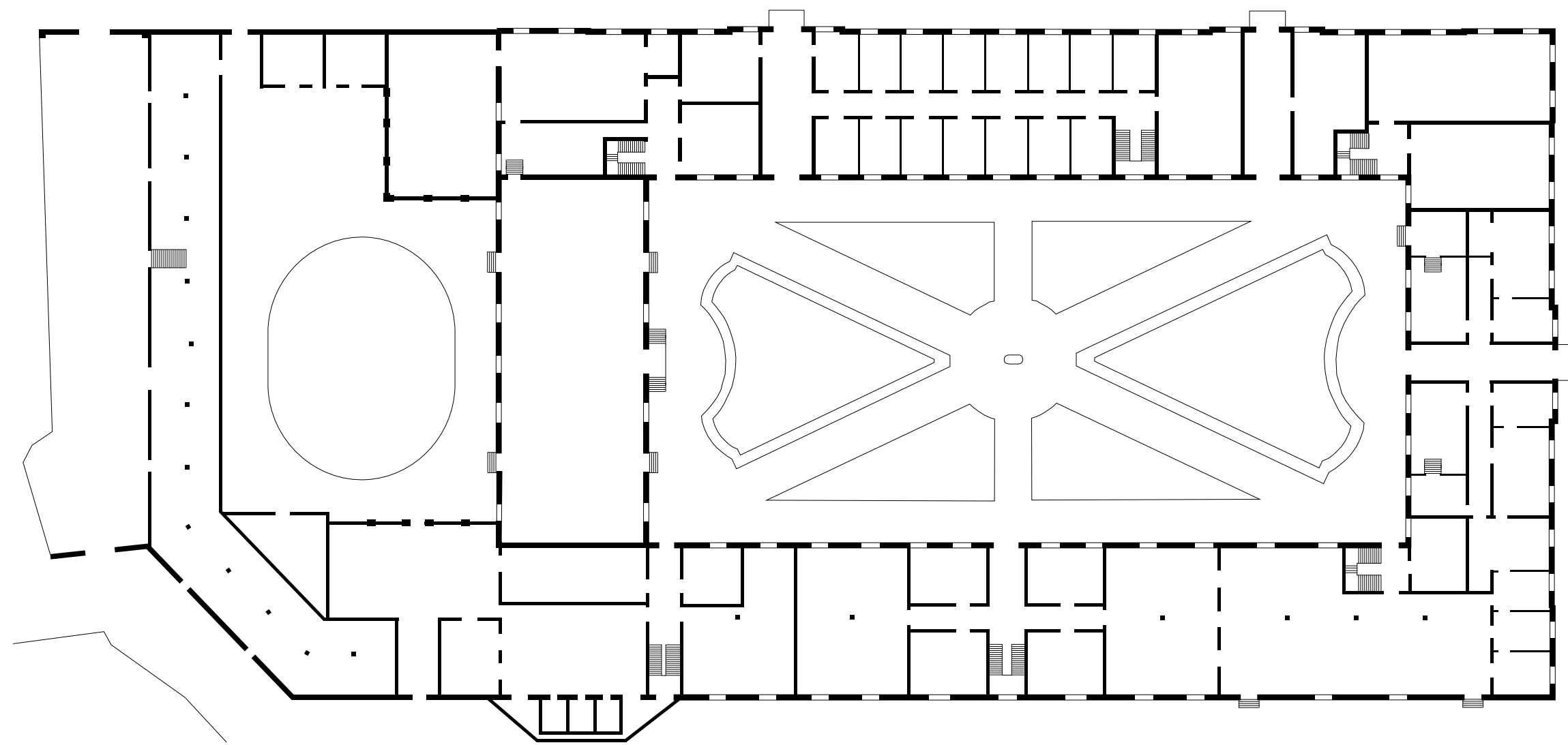


New interior canteen (Pop-Jansen, 1997).

# HISTORY OF THE KOUDENHORN - CHANGE IN FLOORPLAN

Permanent space // changeable use

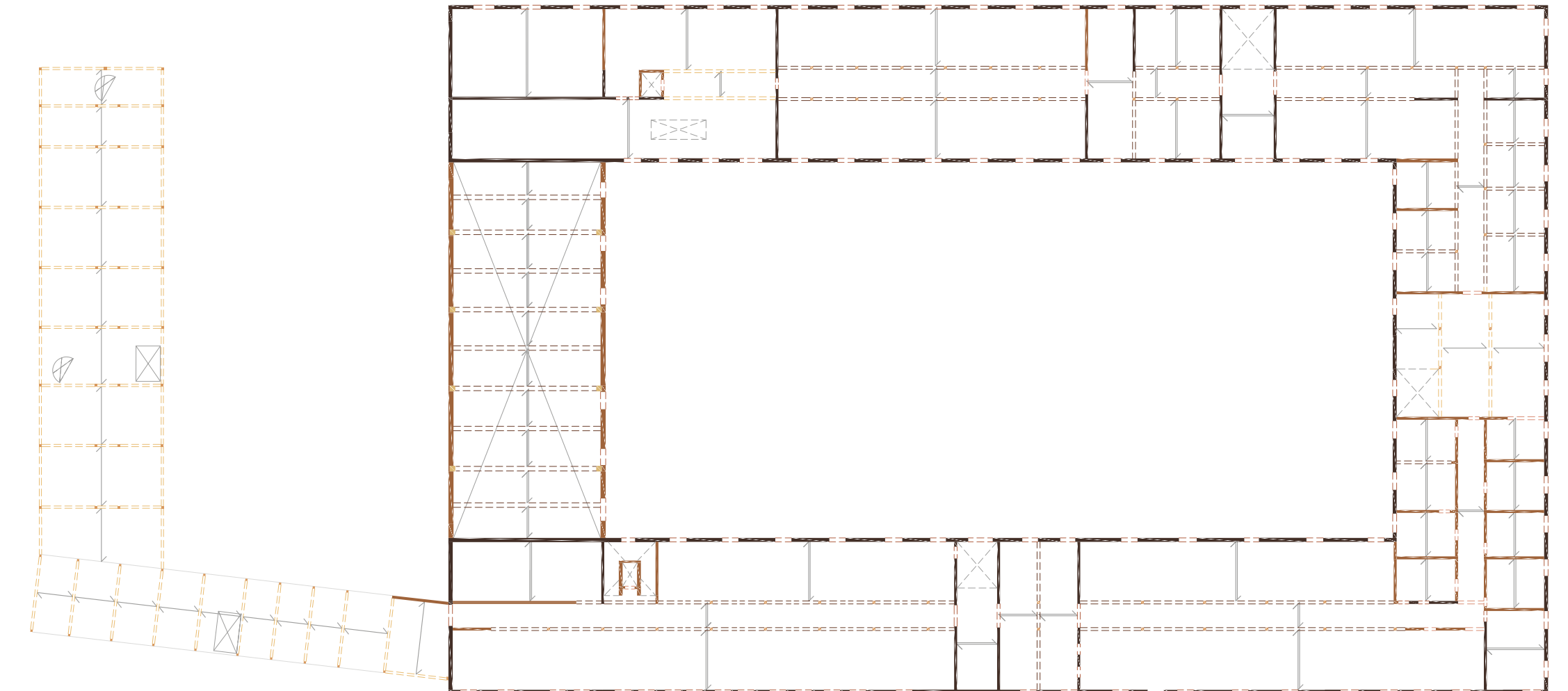
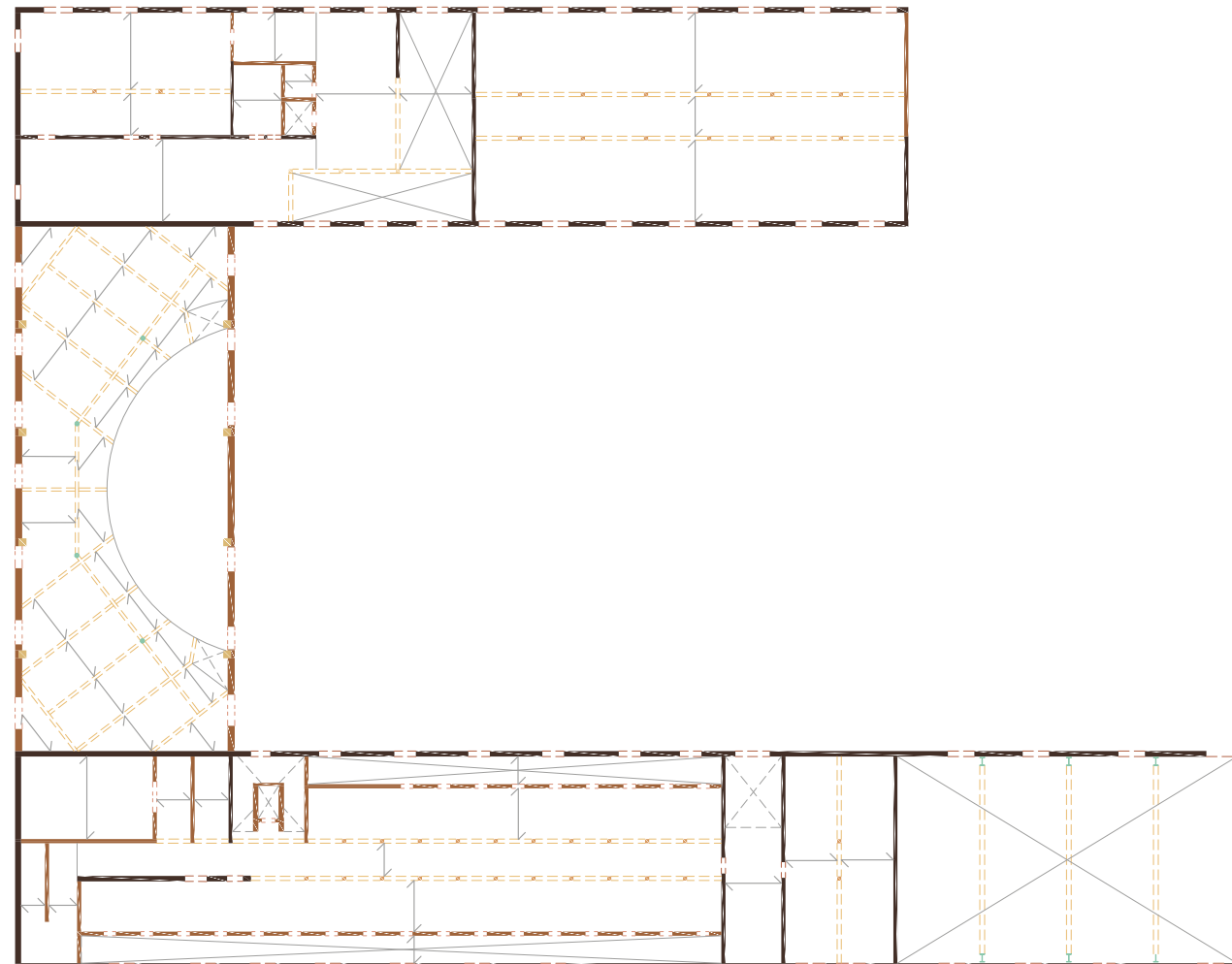
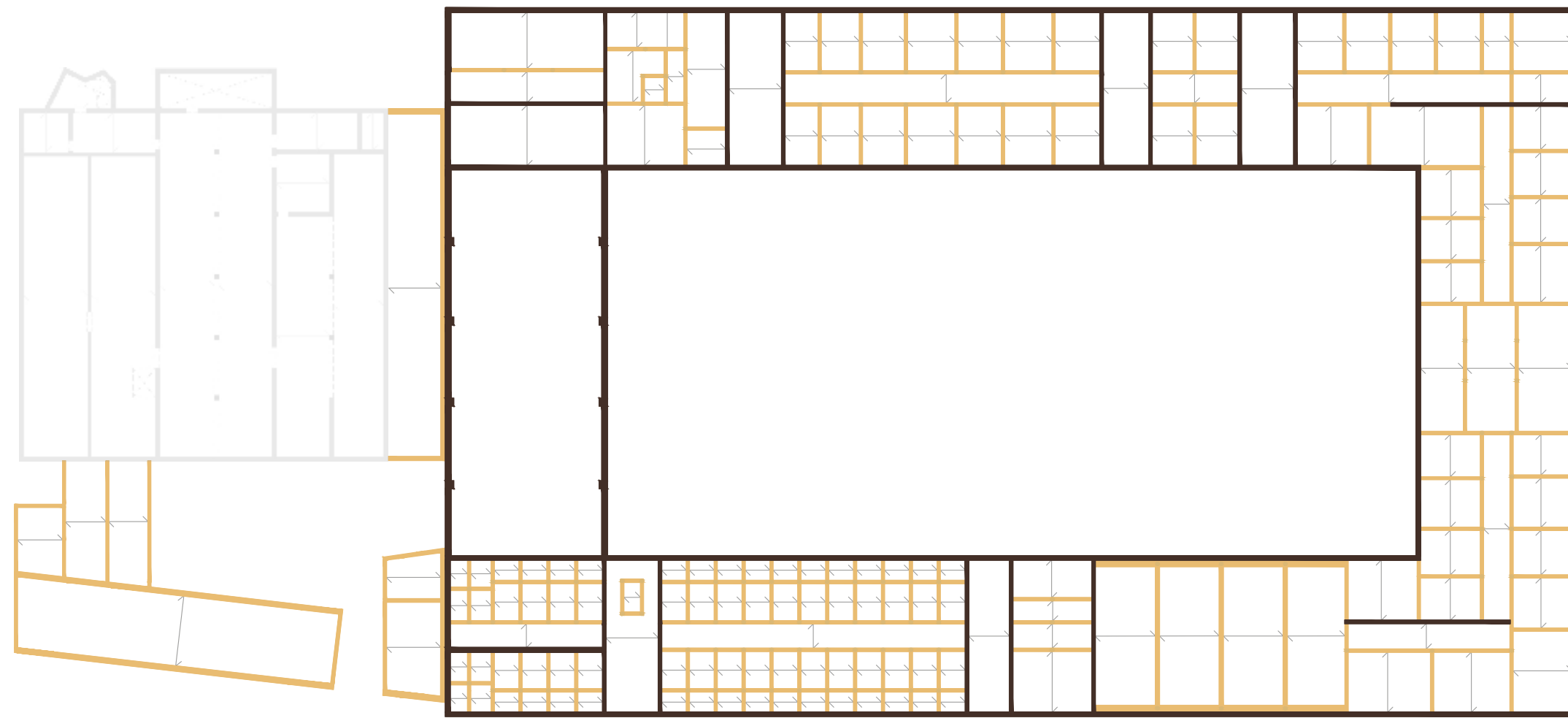
0 15m ⌚



# BUILDING ANALYSIS

Permanent space // changeable use

0 15m



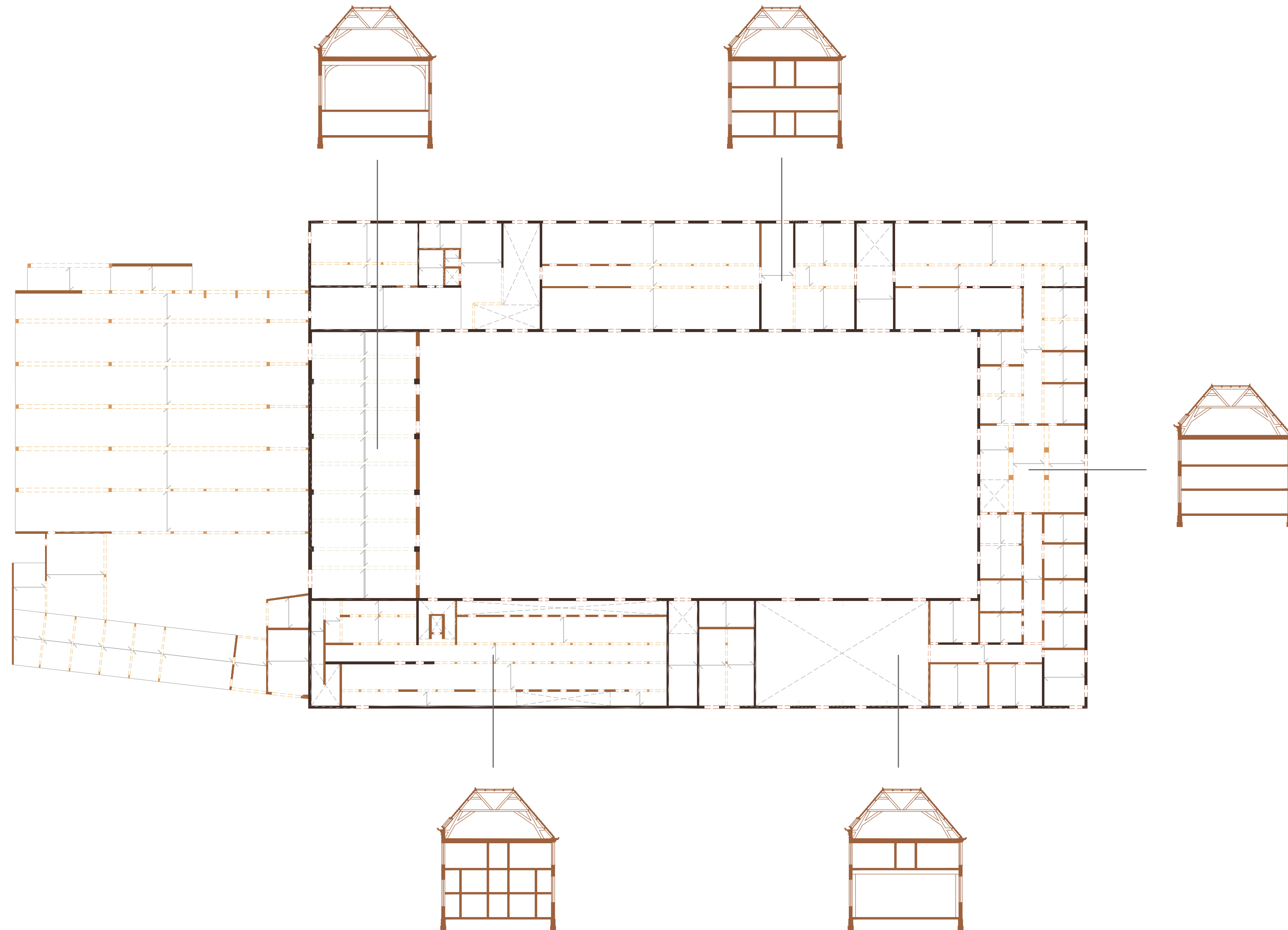
Drawings from the building analysis, from left to right: foundation, ground floor, entresol, first floor.



# BUILDING ANALYSIS

Permanent space // changeable use

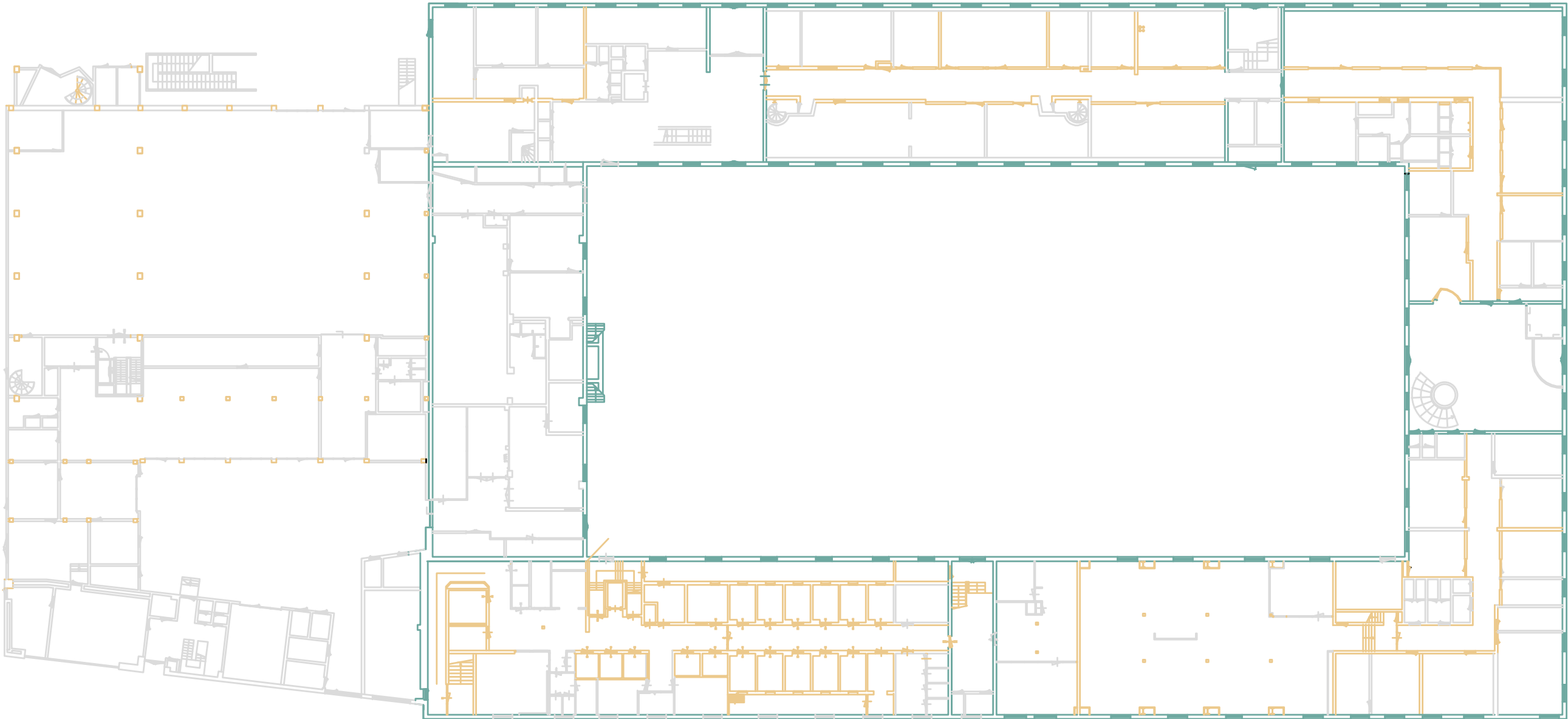
0 15m



# TRANSFORMATION FRAMEWORK

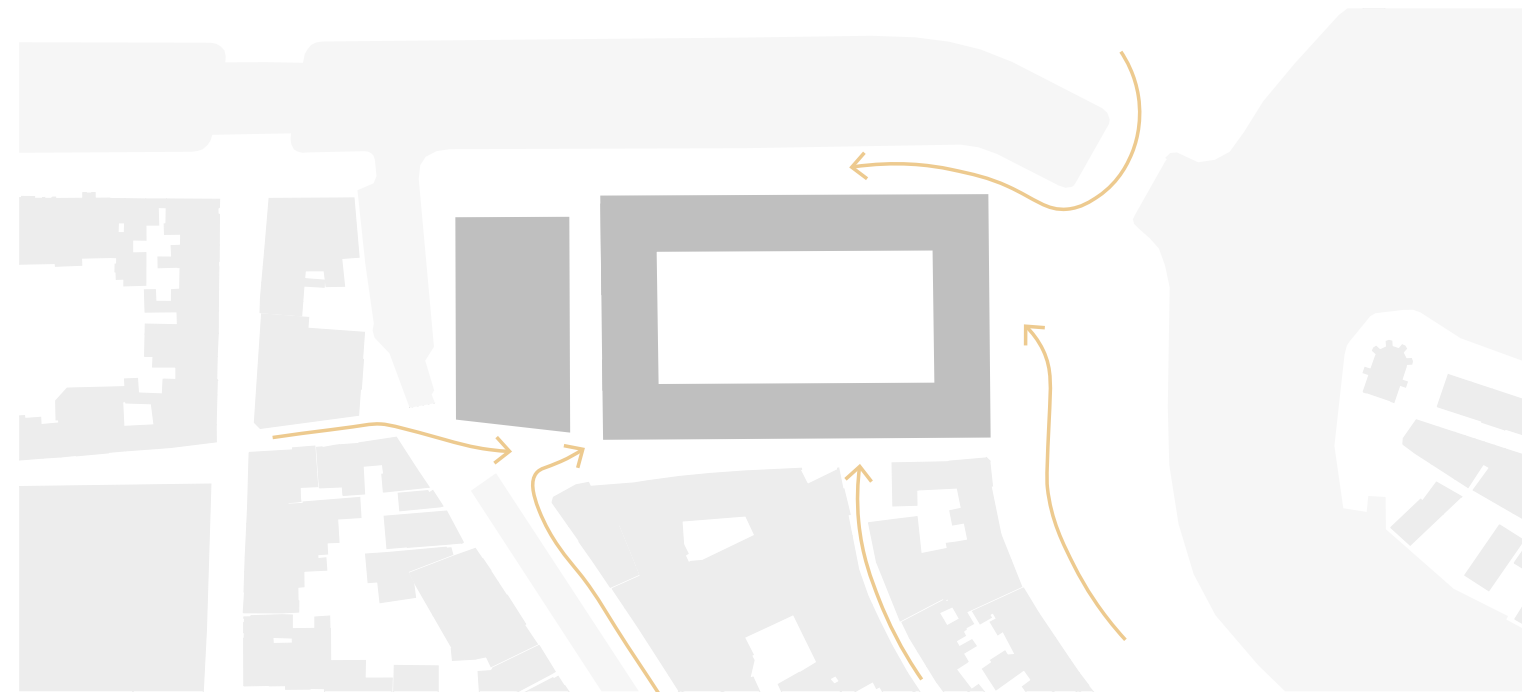
Permanent space // changeable use

0 15m

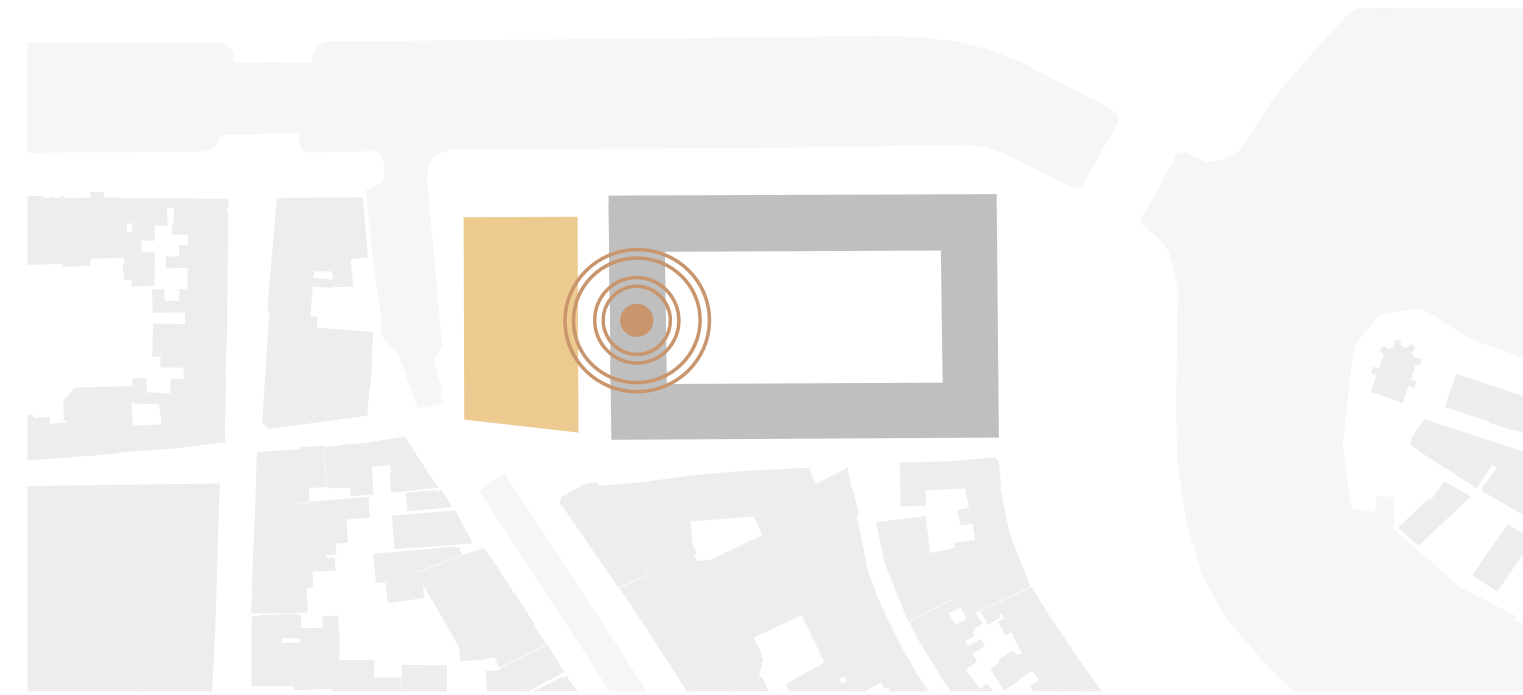


- High Value
- Average Value
- Low Value

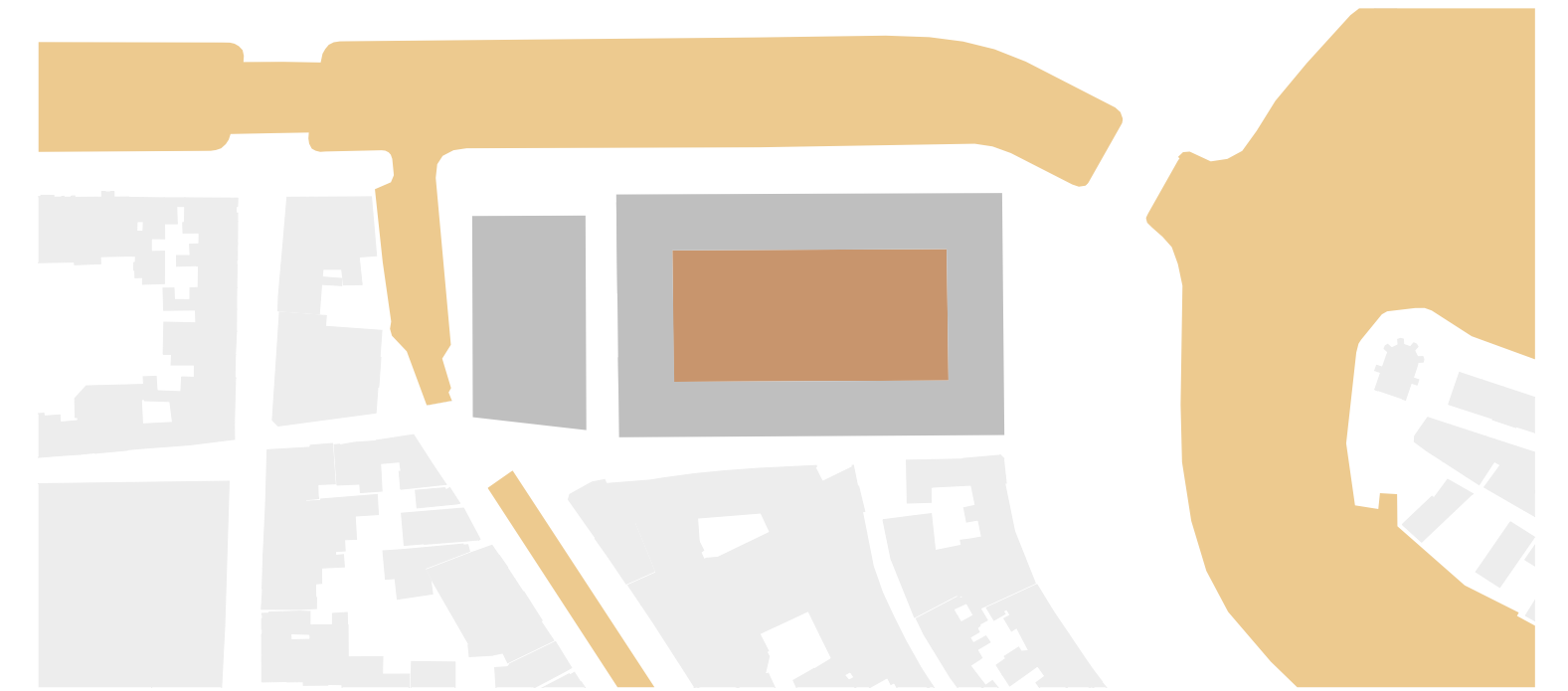
# DESIGN STARTING POINTS - URBAN BLOCK



Enhance 10-minute network within the neighborhood.



Cluster for the social connection in the neighborhood.



Create relation with water, enhance identity courtyard.

# DESIGN STARTING POINTS - BUILDING ENVELOPE



Adding volume on the volume of the Verkeerspolitie.

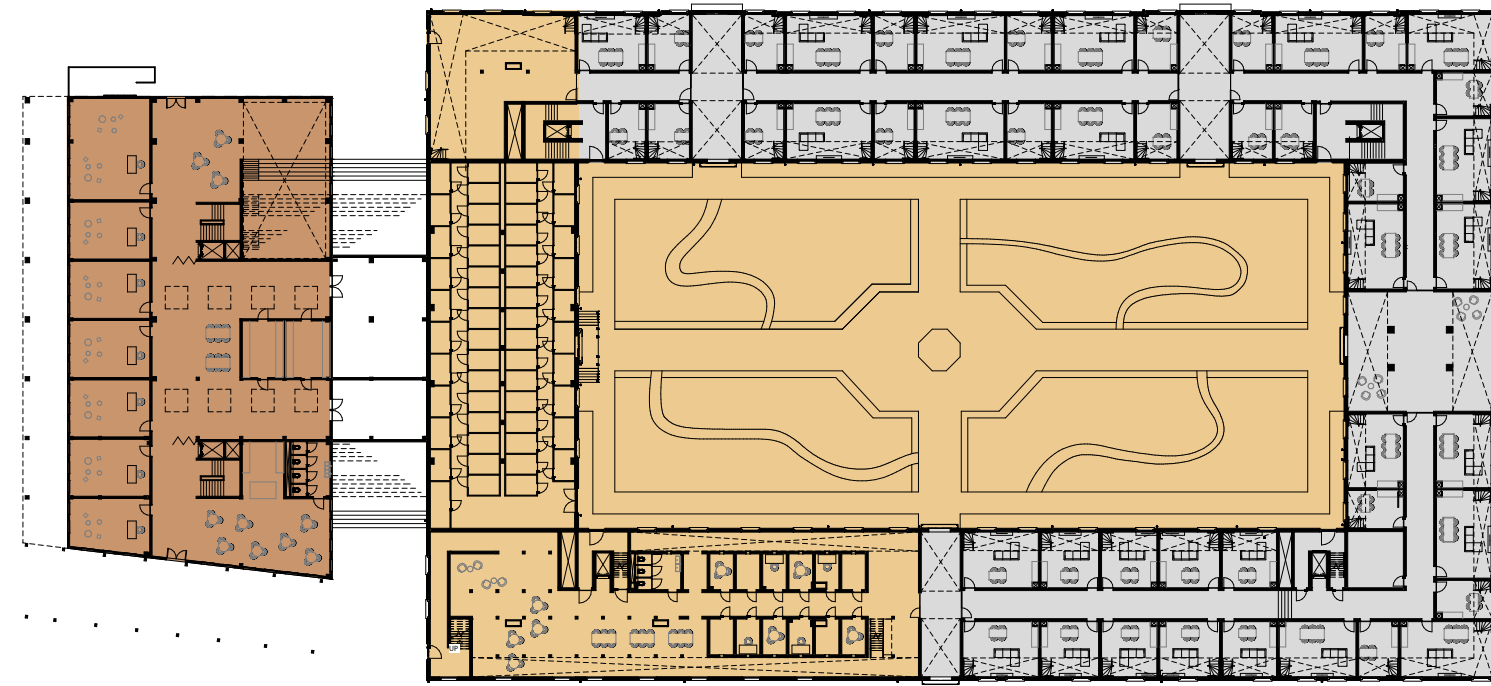


Renewed relationship between old and new.

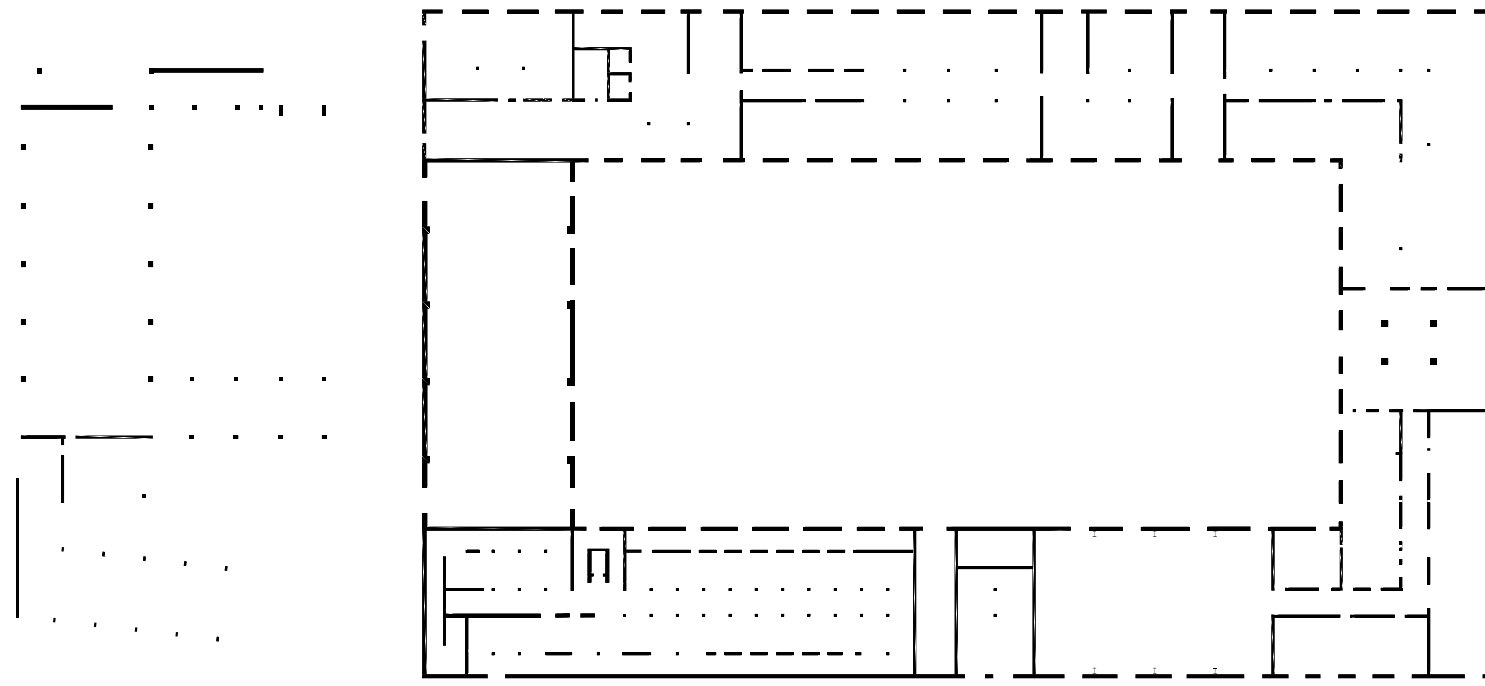


Balance in materiality and facade openings.

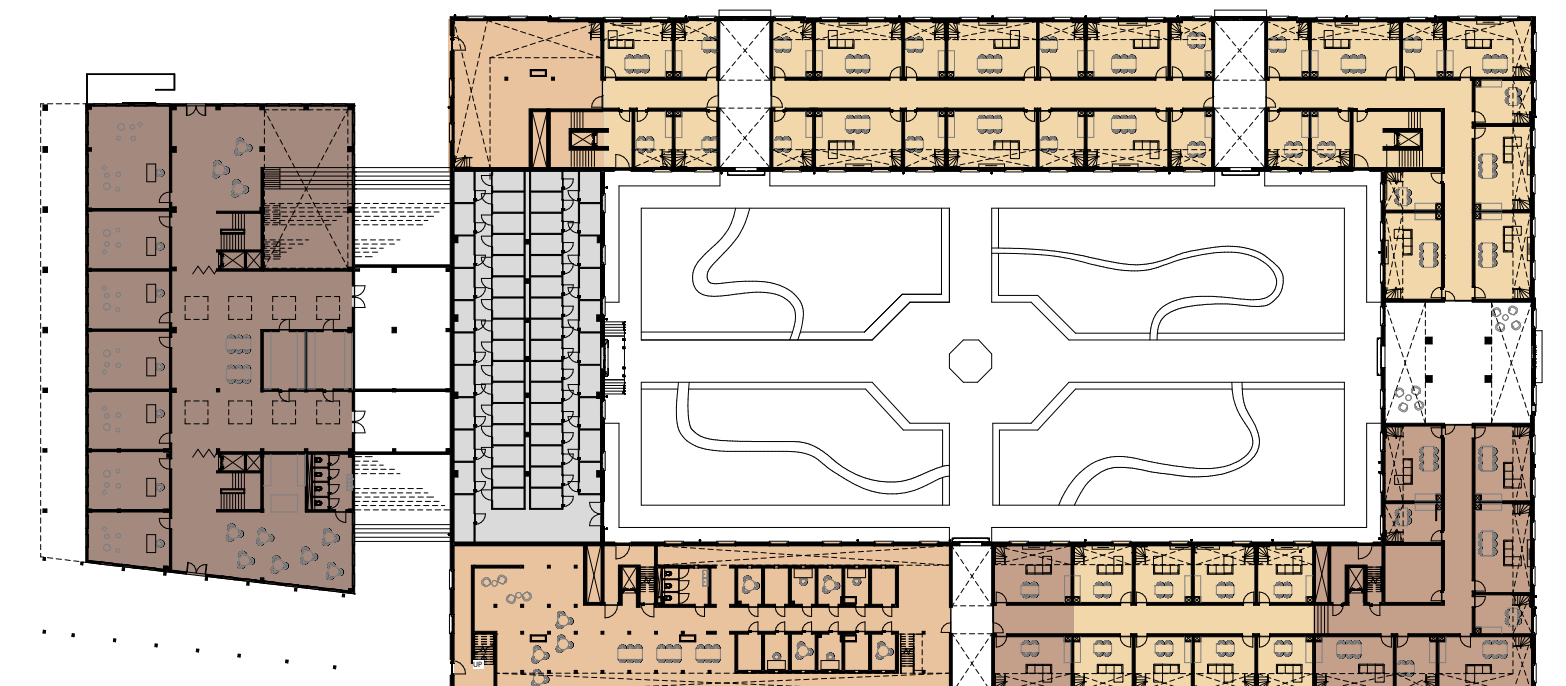
# DESIGN STARTING POINTS - BUILDING OBJECT



Public, semi-public and private areas.



Keep existing structure from both volumes.



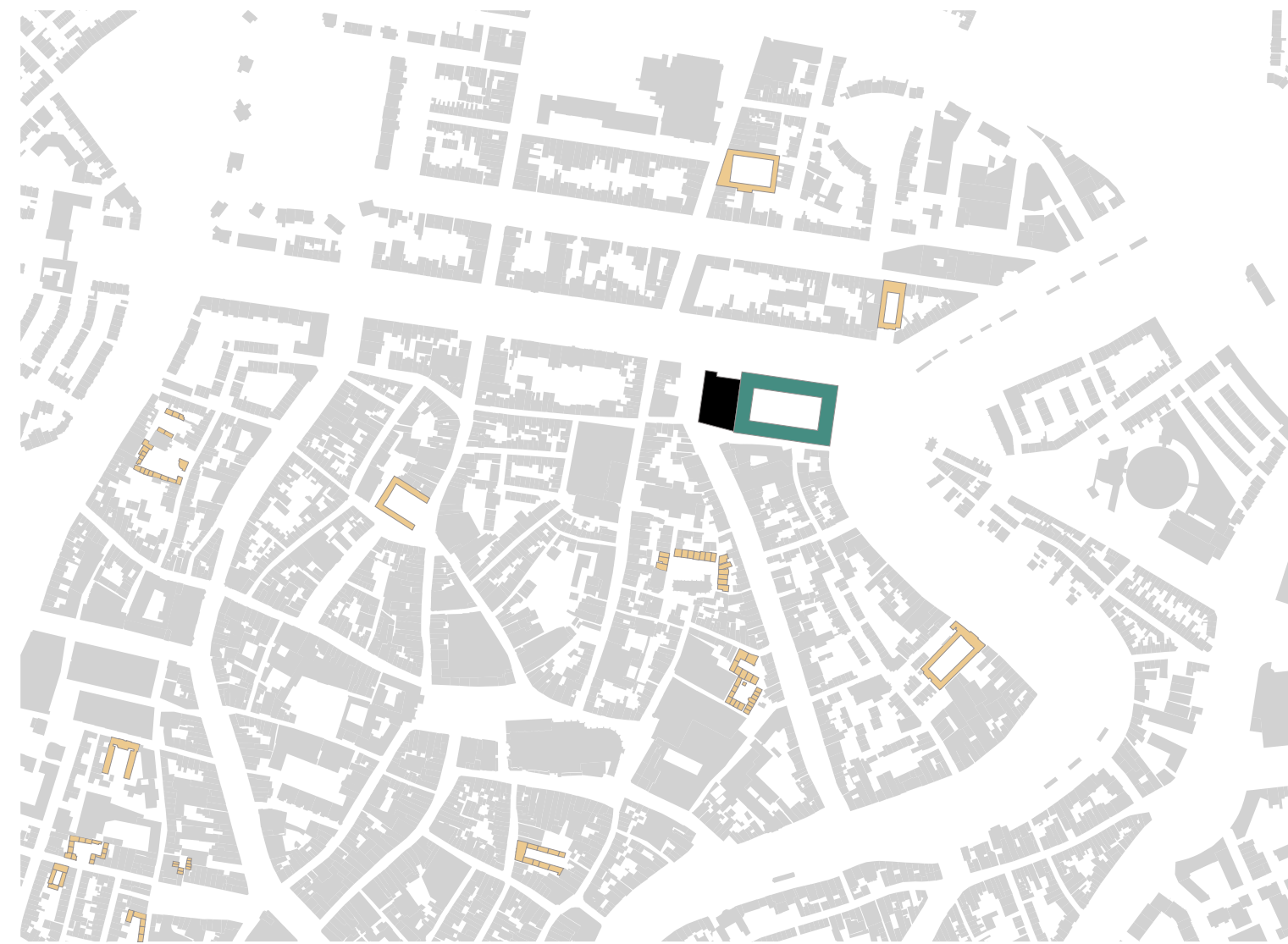
Different approaches for future change in redesign.

## RESEARCH AND DESIGN QUESTION

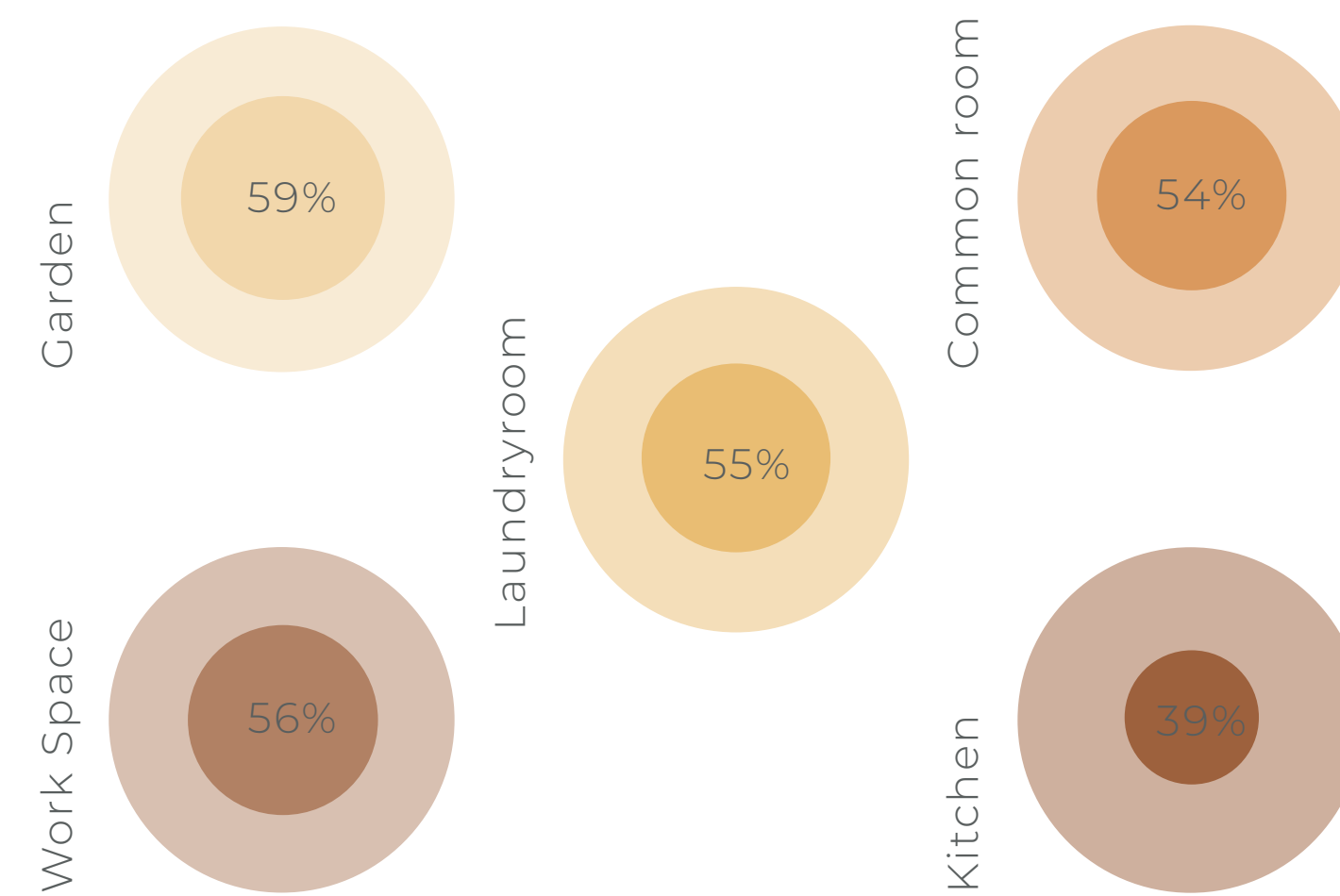
How could the space plan of a monument like the Koudenhorn be redesigned to accommodate changes in use over time?



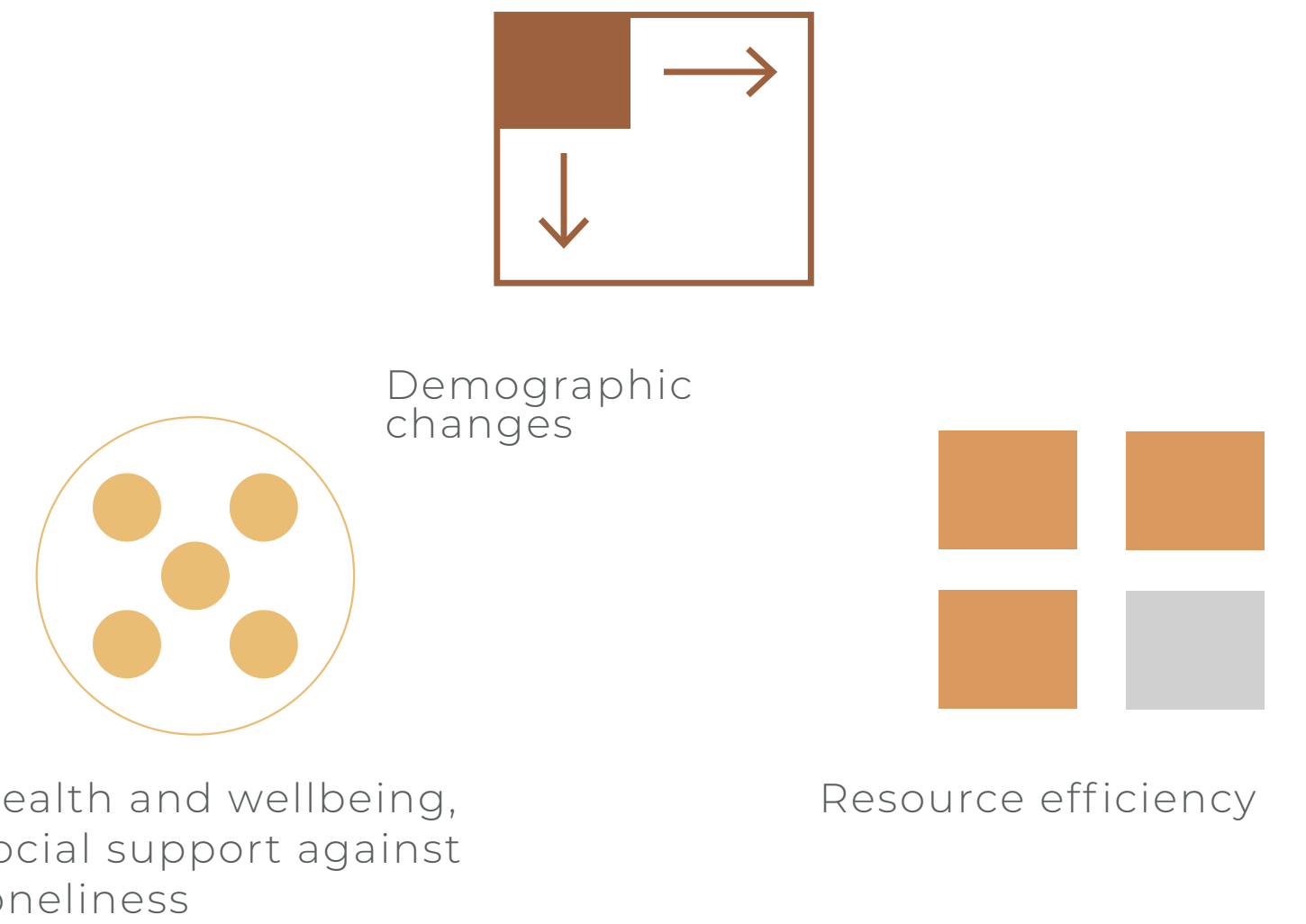
# PROGRAM OF REQUIREMENTS - CO-LIVING IN THE KOUDENHORN



Enhance social support of a community.



Co-living shared spaces (One Shared House, z.d.)



Societal challenges.



# PROGRAM OF REQUIREMENTS - USER PROFILES



## Starter

5 - 10 years

Apartment size of 40 m<sup>2</sup>

Transportation by public transport

High engagement

Needs: work spaces



## Young couple

5 - 10 years

Apartment size of 40 - 80 m<sup>2</sup>

Transportation by bike

Medium engagement

Needs: work spaces, close facilities



## Family

20 - 30 years

Apartment size of 80 - 120 m<sup>2</sup>

Transportation by bike

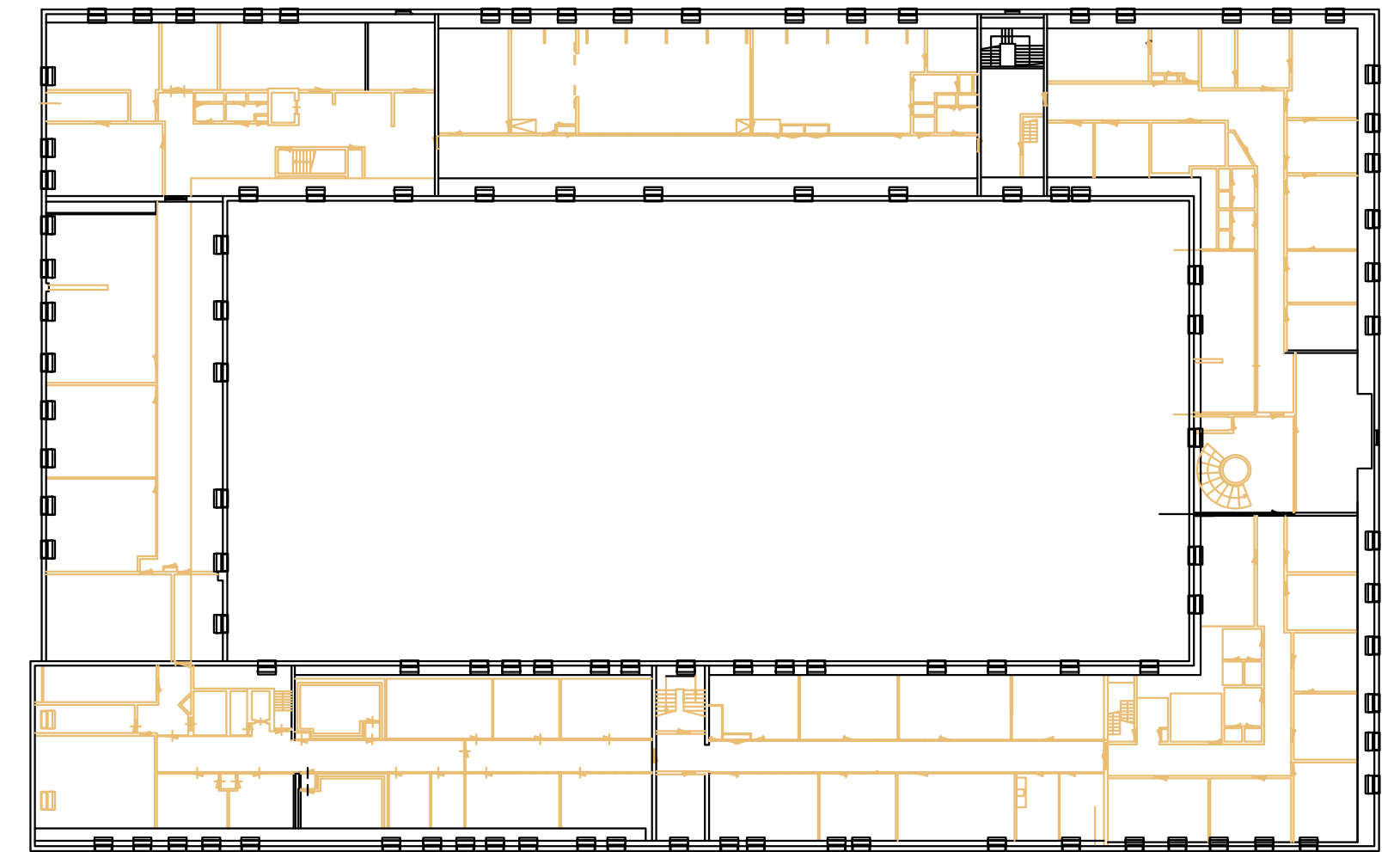
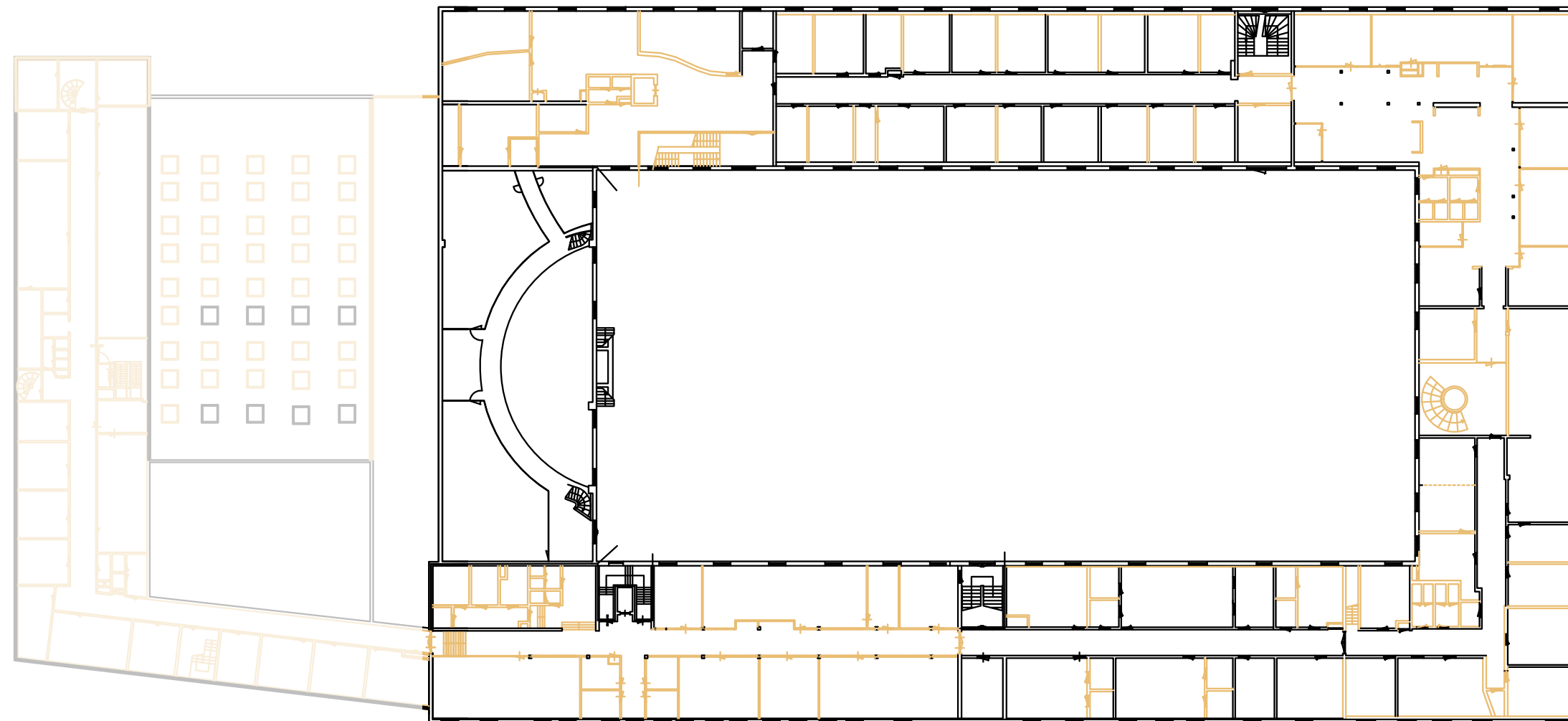
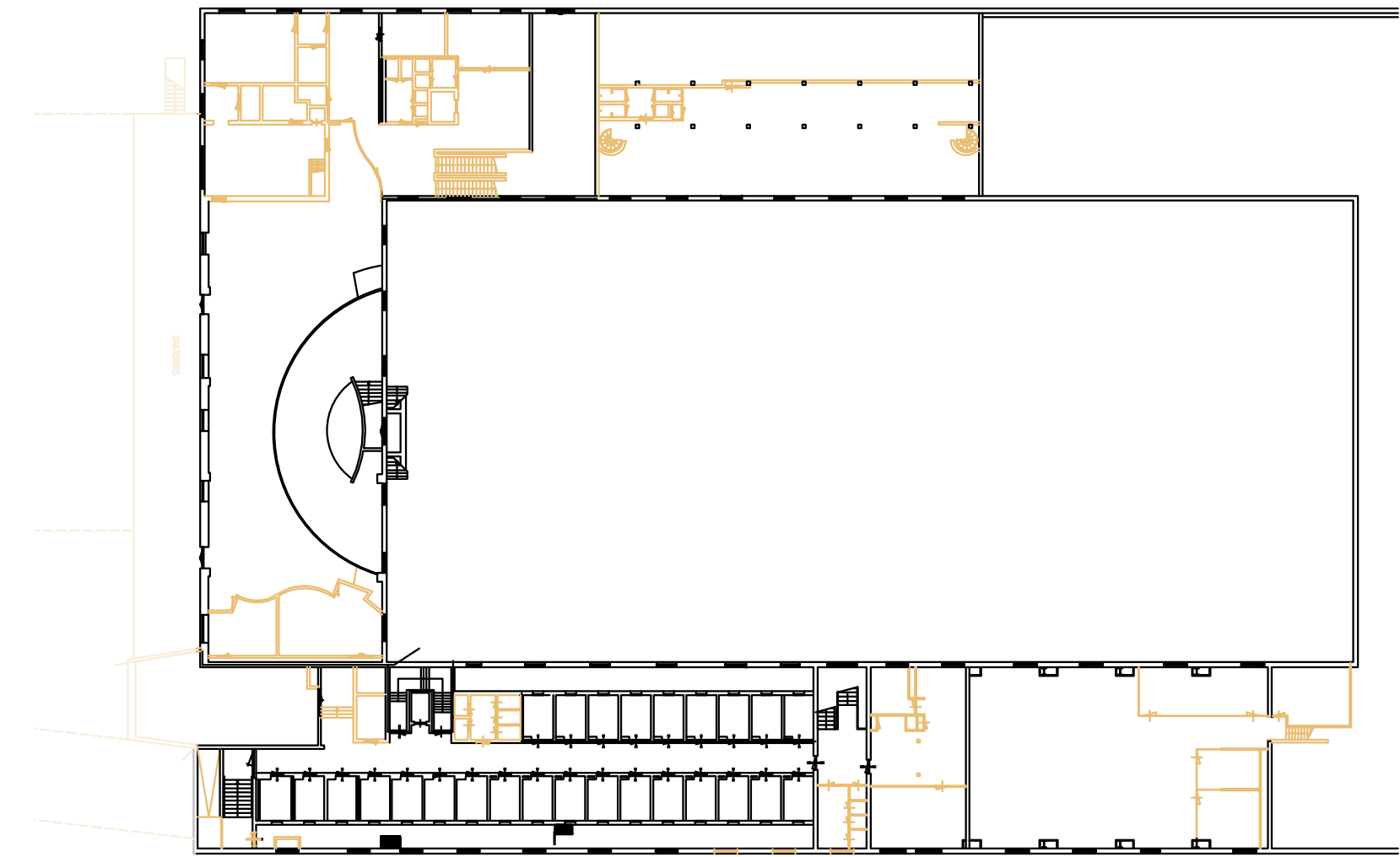
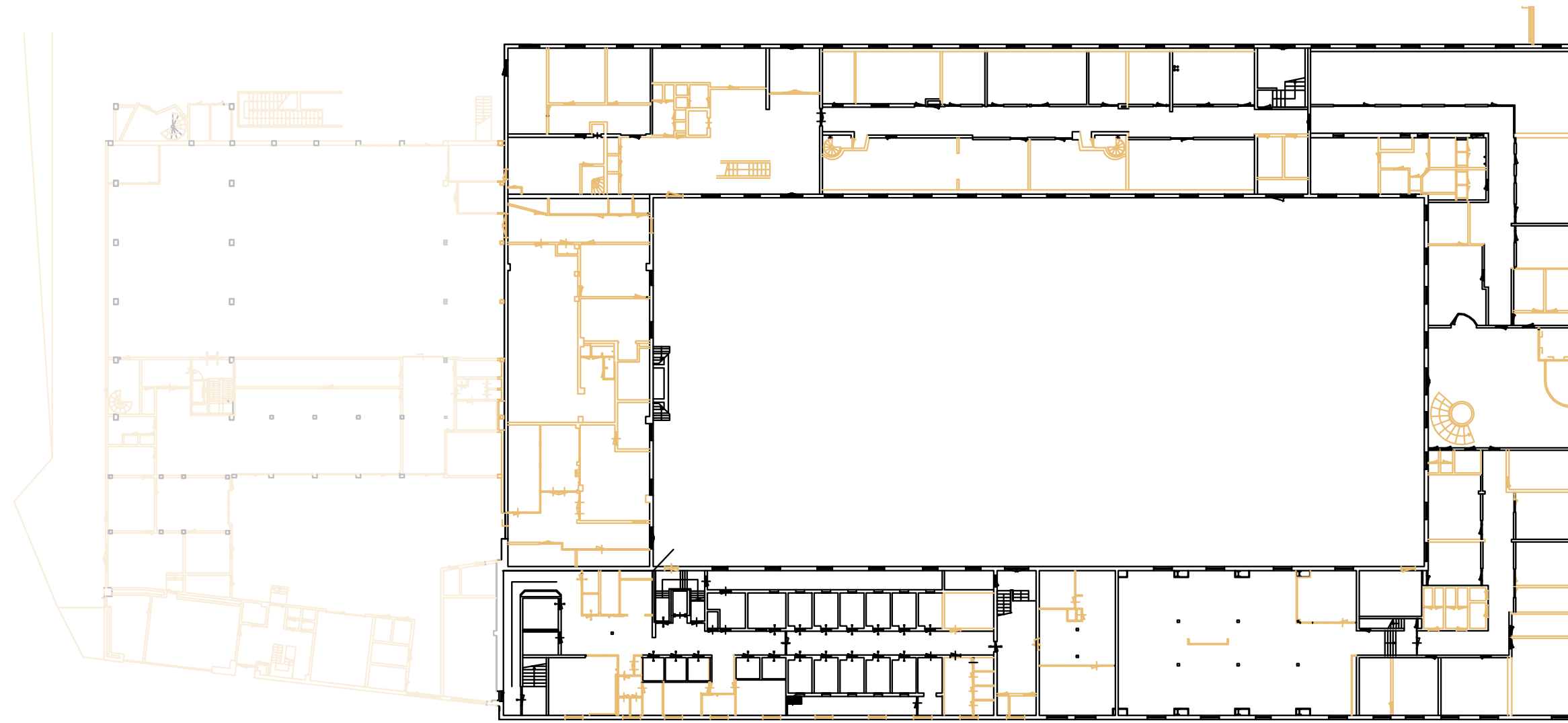
Involved engagement

Needs: space and play area

# FLOORPLANS - DEMOLITION PLANS

Permanent space // changeable use

0 15m ⌚

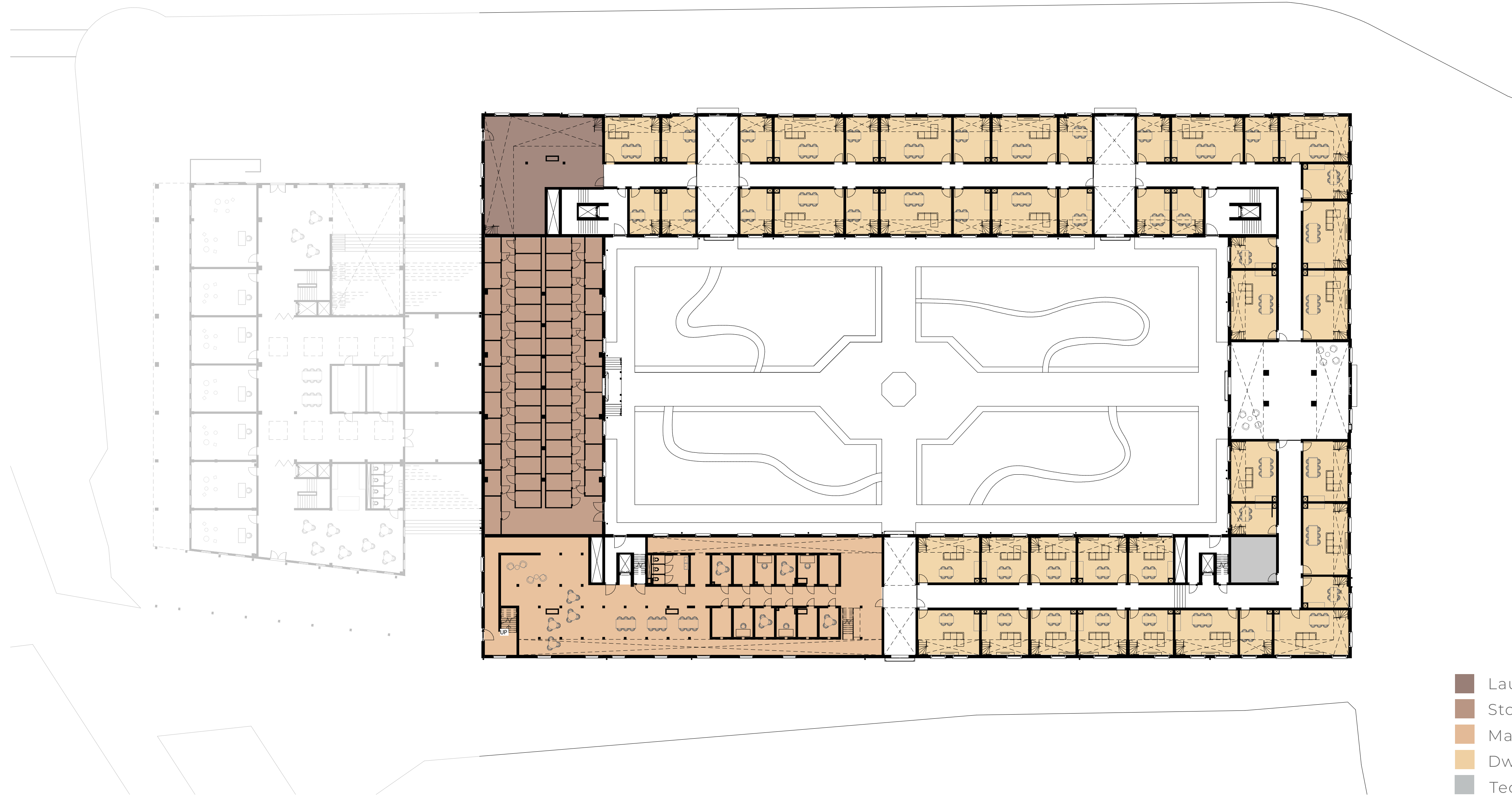


From left to right: ground floor, entresol, first floor, attic.

# FLOORPLANS - GROUND FLOOR PLAN

Permanent space // changeable use

0 10m

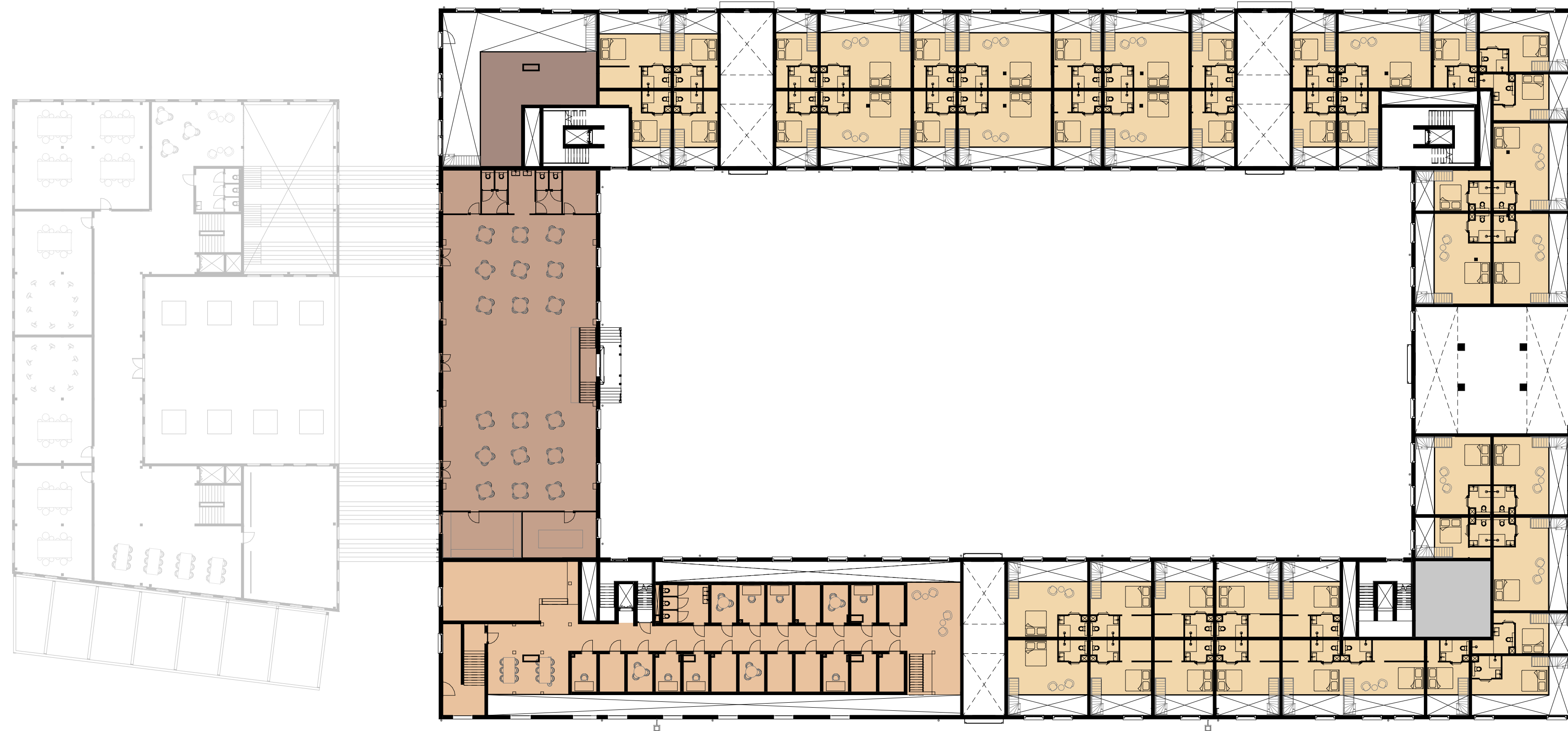


- Laundry Room
- Storage
- Makerspace
- Dwellings
- Technical Space

# FLOORPLANS - FIRST FLOOR PLAN (ENTRESOL)

Permanent space // changeable use

0 10m



- Laundry Room
- Food and Beverage
- Makerspace
- Dwellings
- Technical Space

# FLOORPLANS - SECOND FLOOR PLAN

Permanent space // changeable use

0 10m

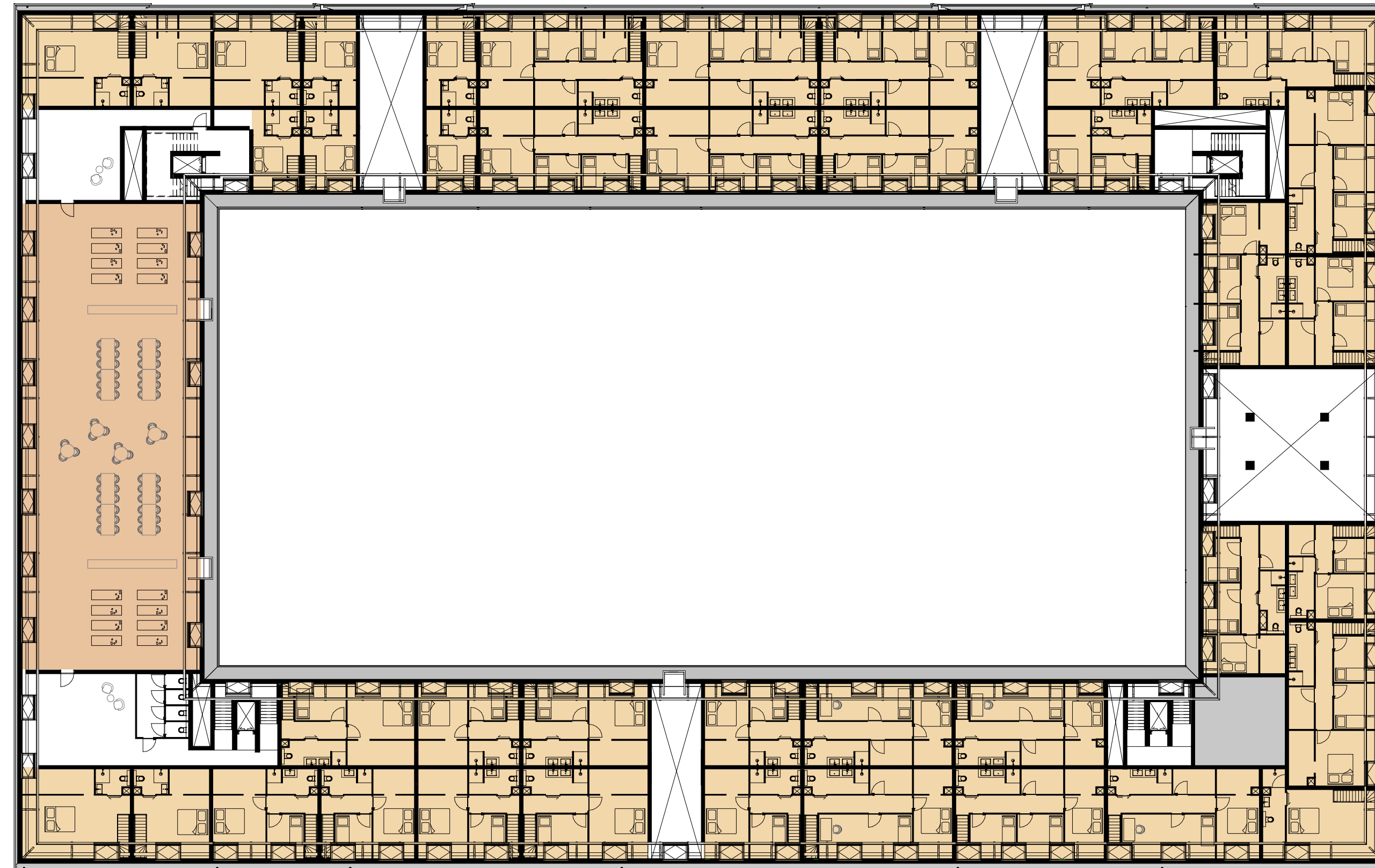
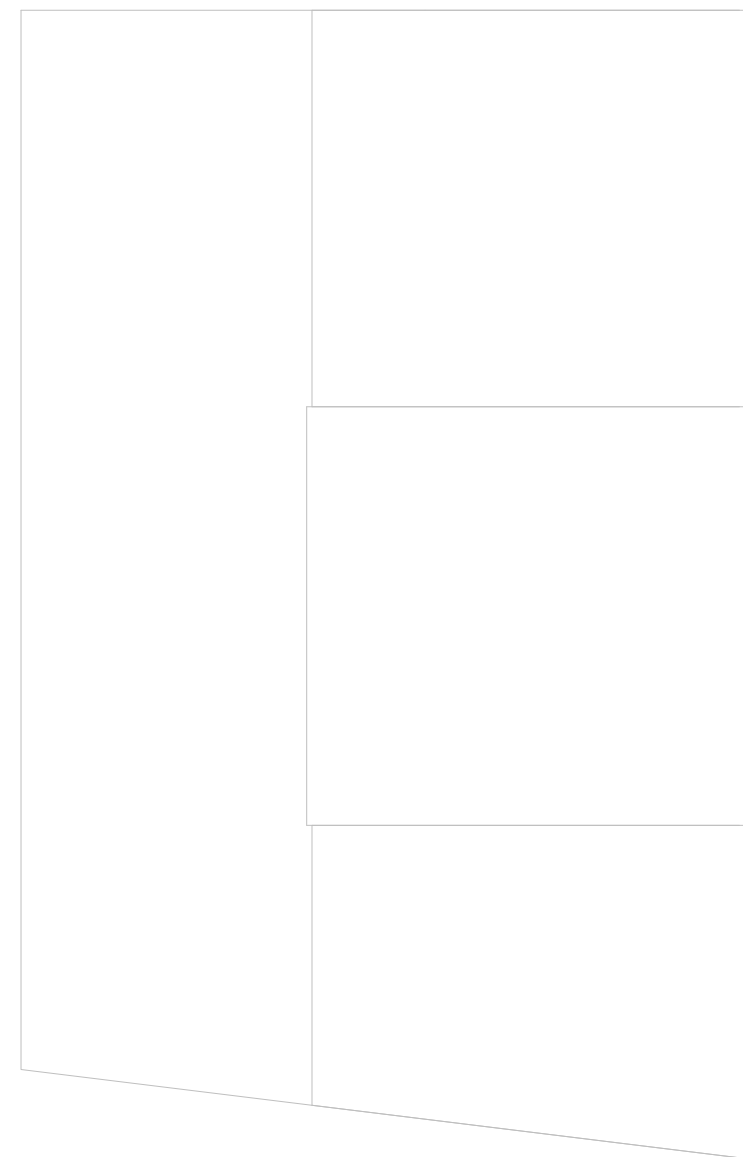


- Dwellings
- Technical Space

# FLOORPLANS - ATTIC

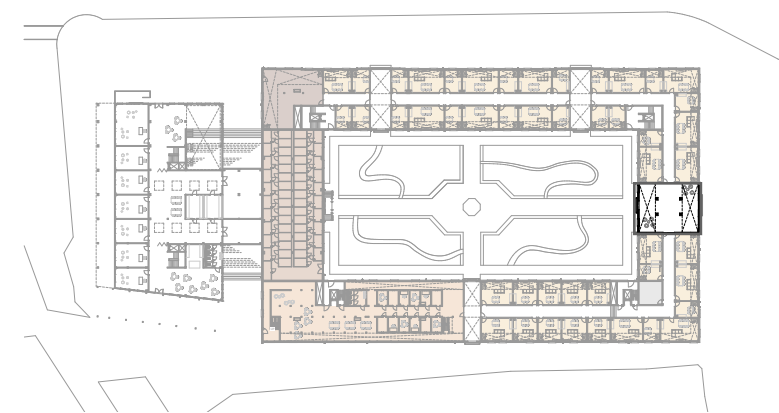
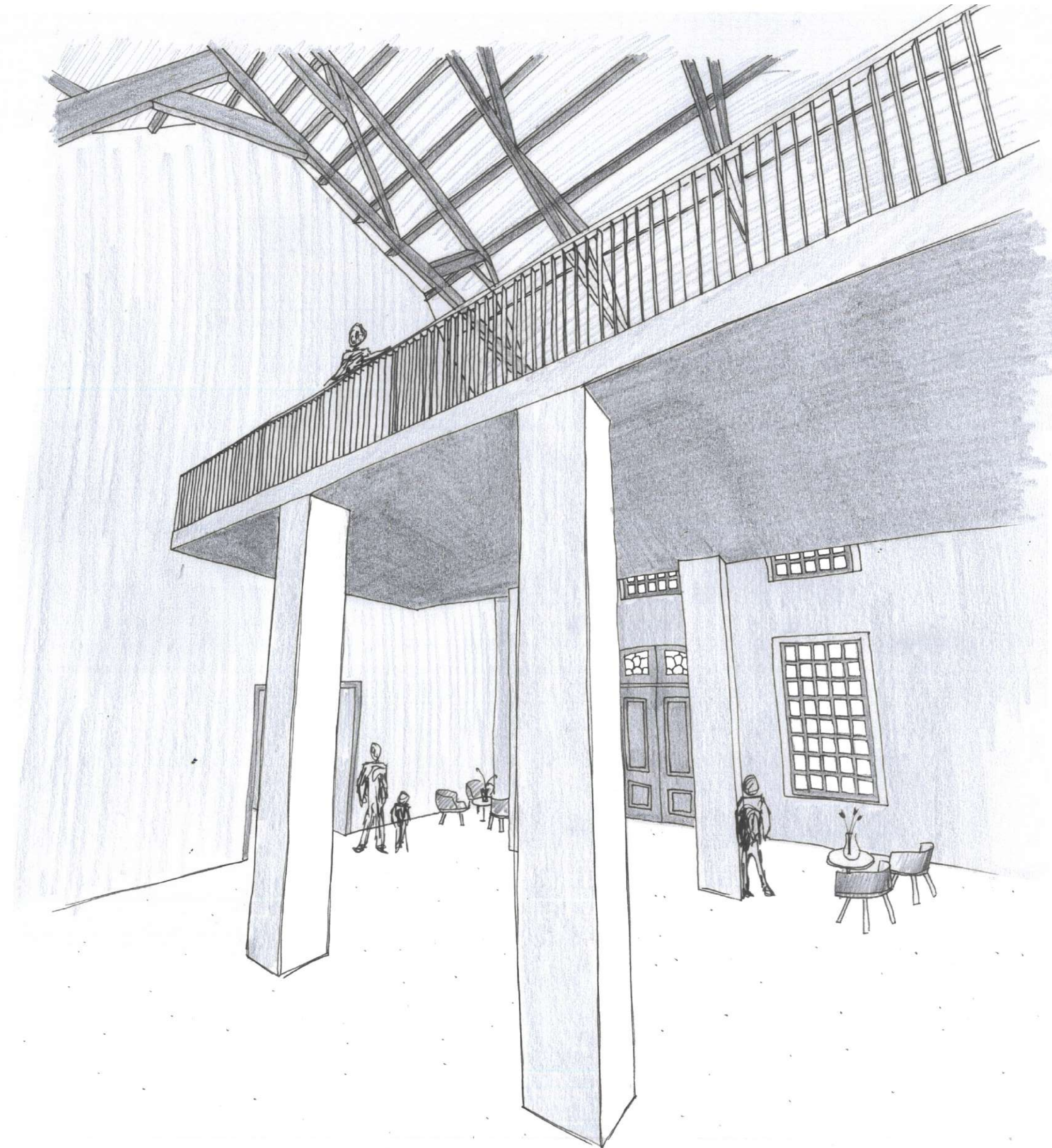
Permanent space // changeable use

0 10m

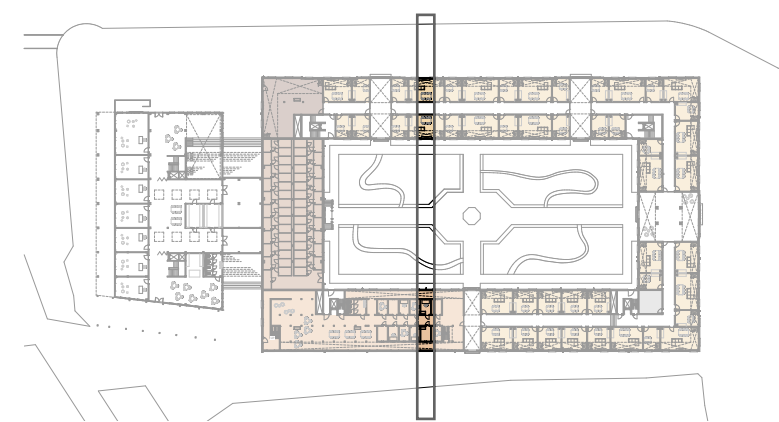


- Communal Spaces
- Dwellings
- Technical Space

# IMPRESSION - ENTRANCE



# SECTION - DWELLINGS



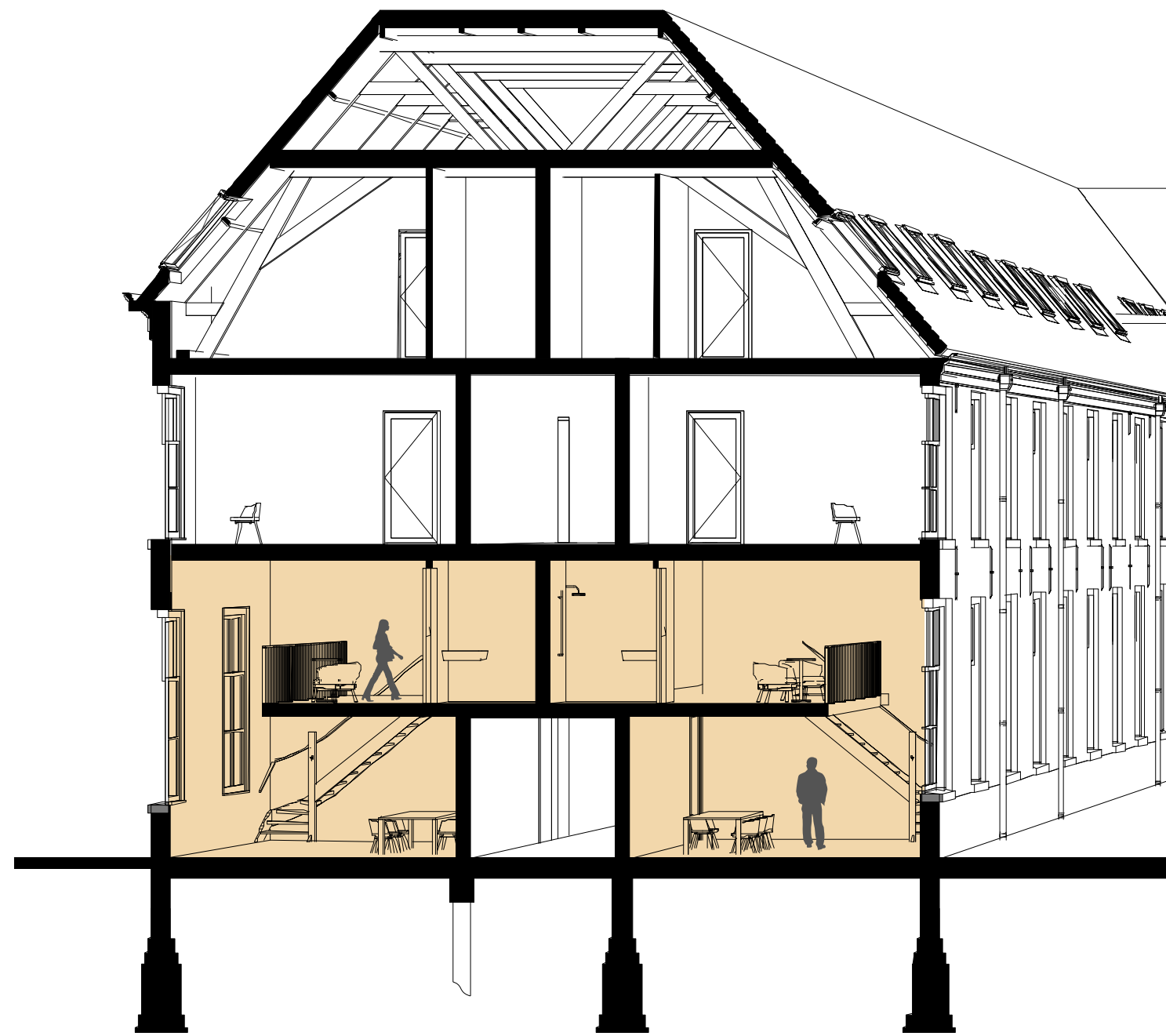
- Makerspace
- Dwellings



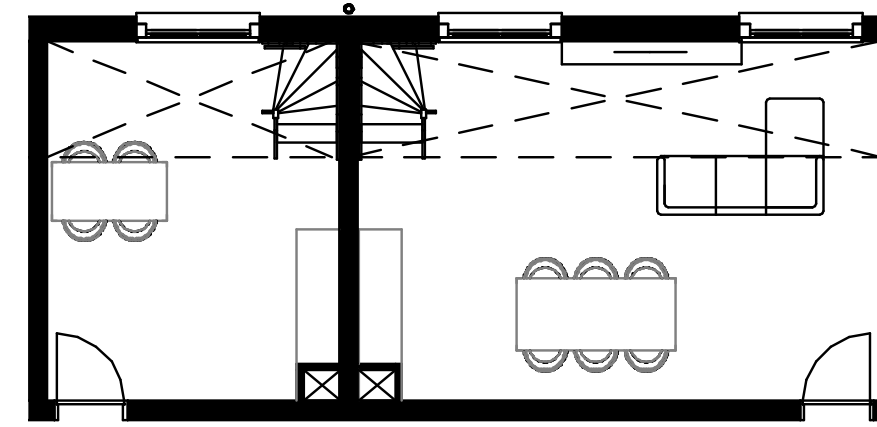
# FLOORPLANS - DWELLING TYPOLOGIES GROUND FLOOR AND ENTRESOL

Permanent space // changeable use

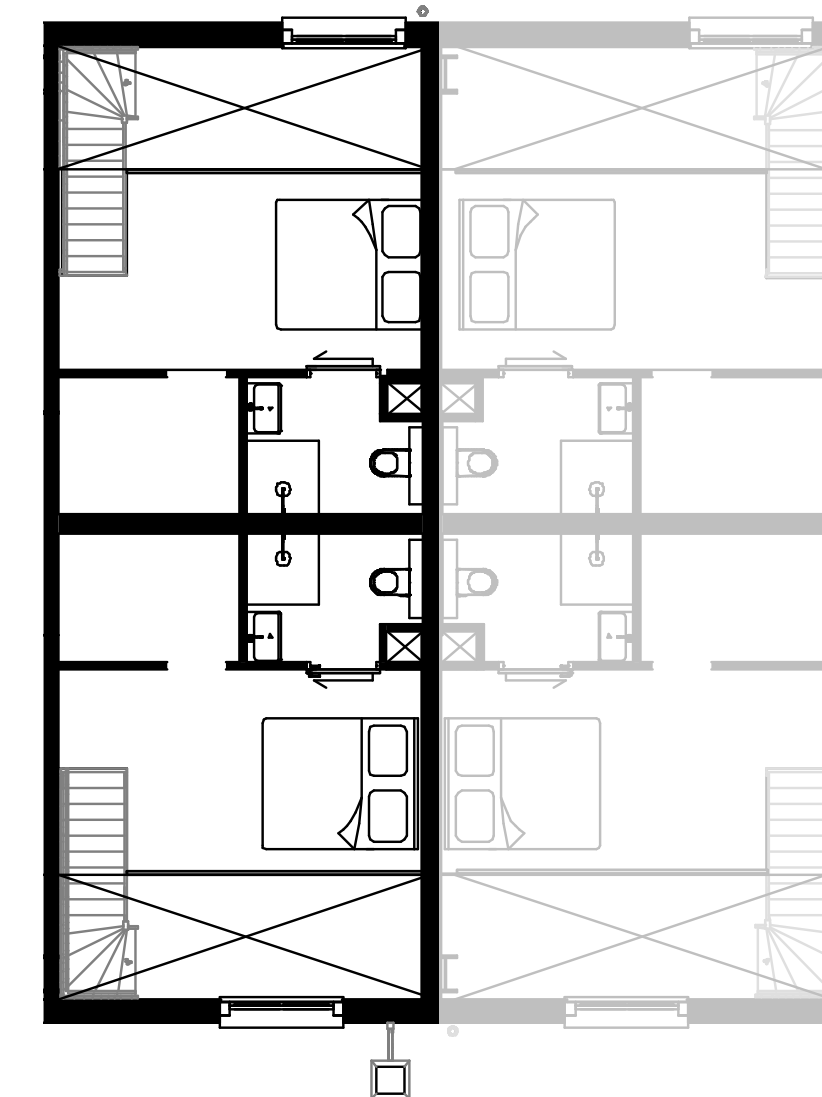
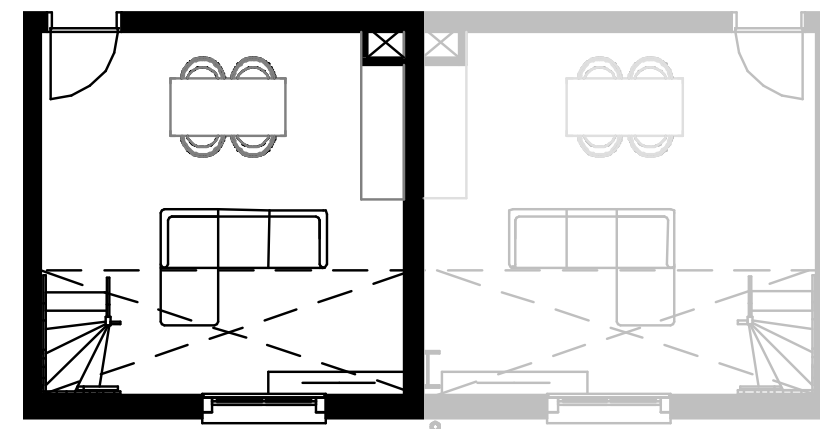
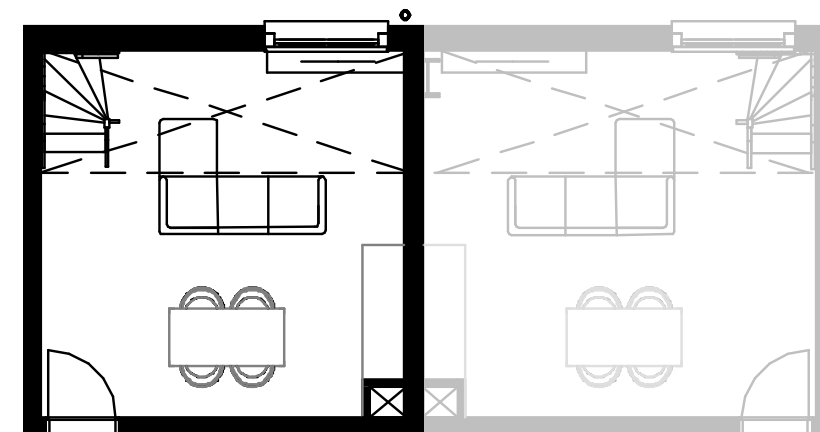
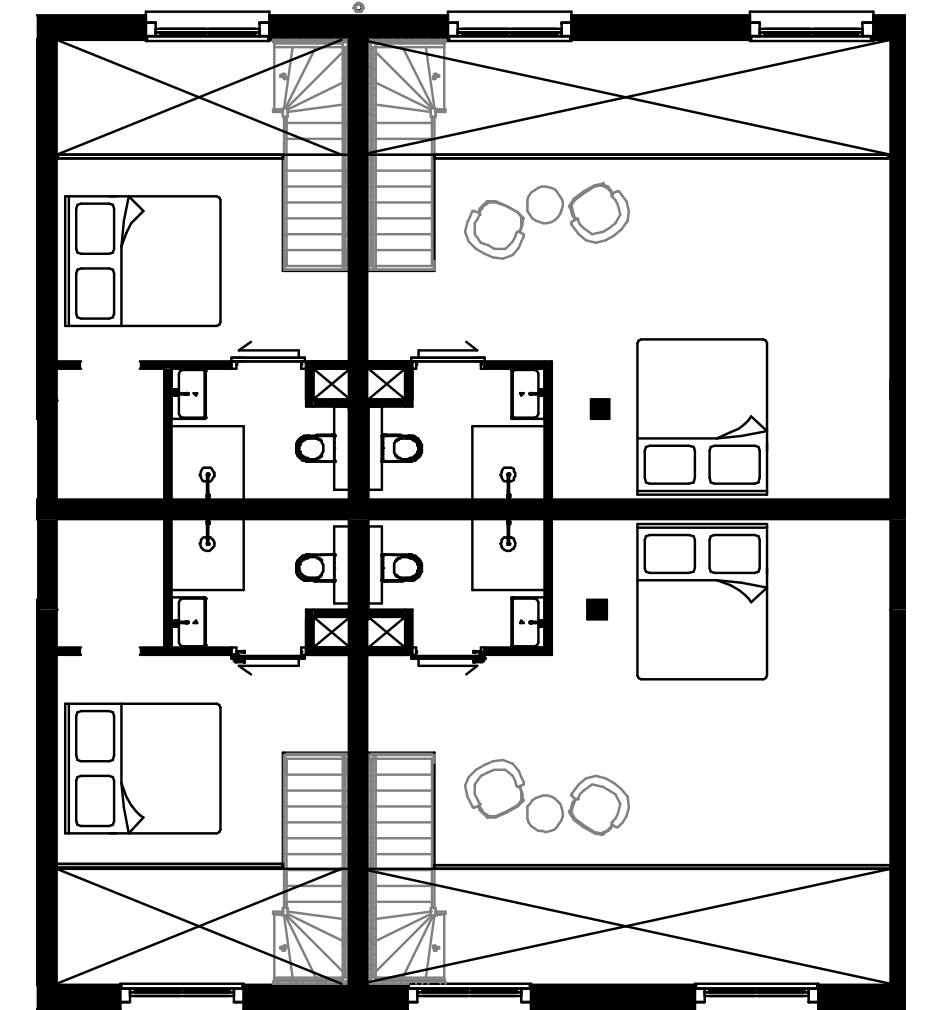
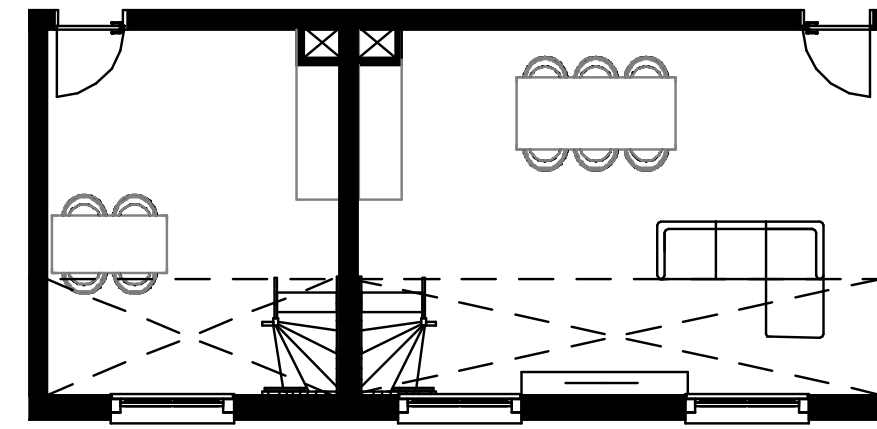
0 5m



20 dwellings of 35 m<sup>2</sup>  
BG (3.6 x 5) + Entresol (3.6 x 4.8)  
(3.6 is the average between 3.4 and 3.8)



18 dwellings of 70 m<sup>2</sup>  
BG (7.1 x 5) + Entresol (7.1 x 4.8)  
(7.1 is the average between 6.0 and 8.2)

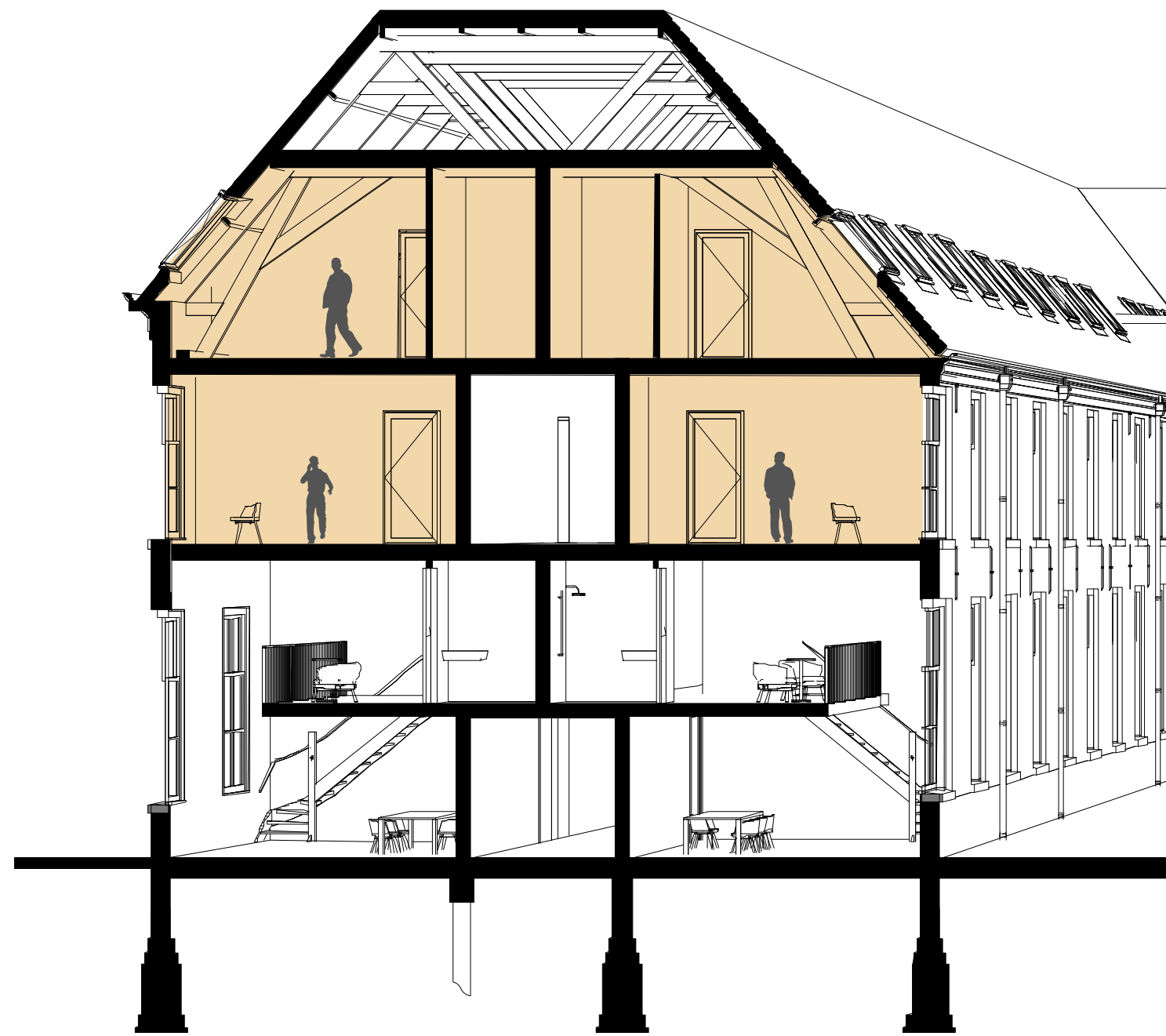


8 dwellings of 52 m<sup>2</sup>  
BG (5.2 x 5) + Entresol (5.2 x 4.8)

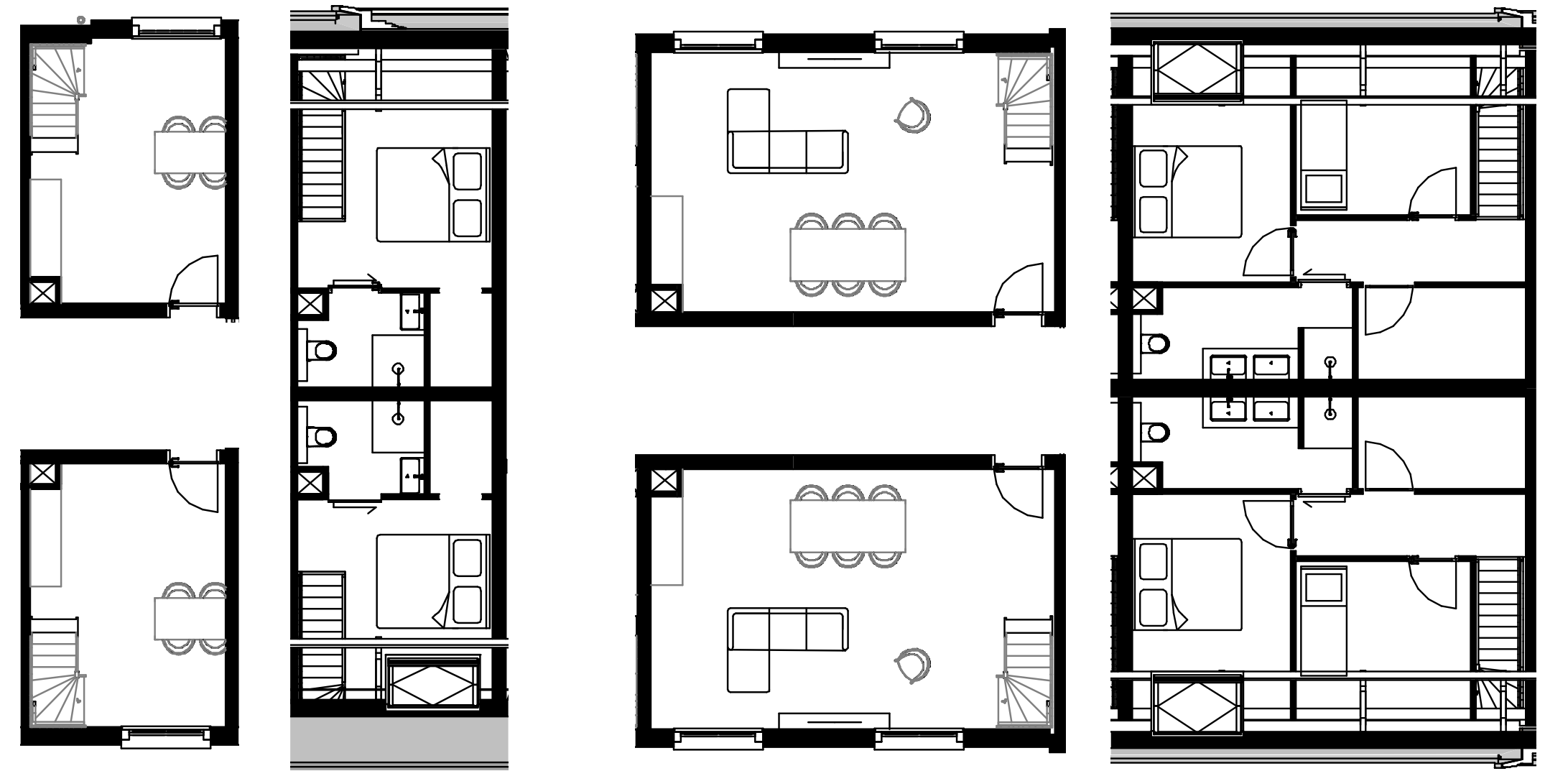
# FLOORPLANS - DWELLING TYPOLOGIES 1ST AND 2ND FLOOR

Permanent space // changeable use

0 5m



5 dwellings of 40 m<sup>2</sup>  
1st Floor (3.6 x 6) + 2nd Floor (3.6 x 6)  
(3.6 is the average between 3.4 and 3.8)

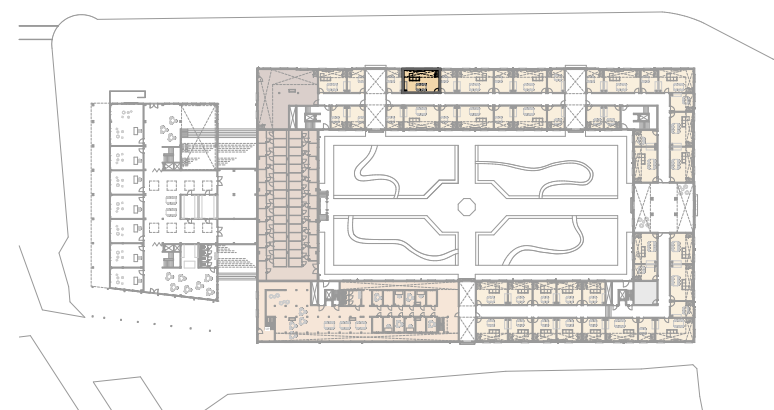
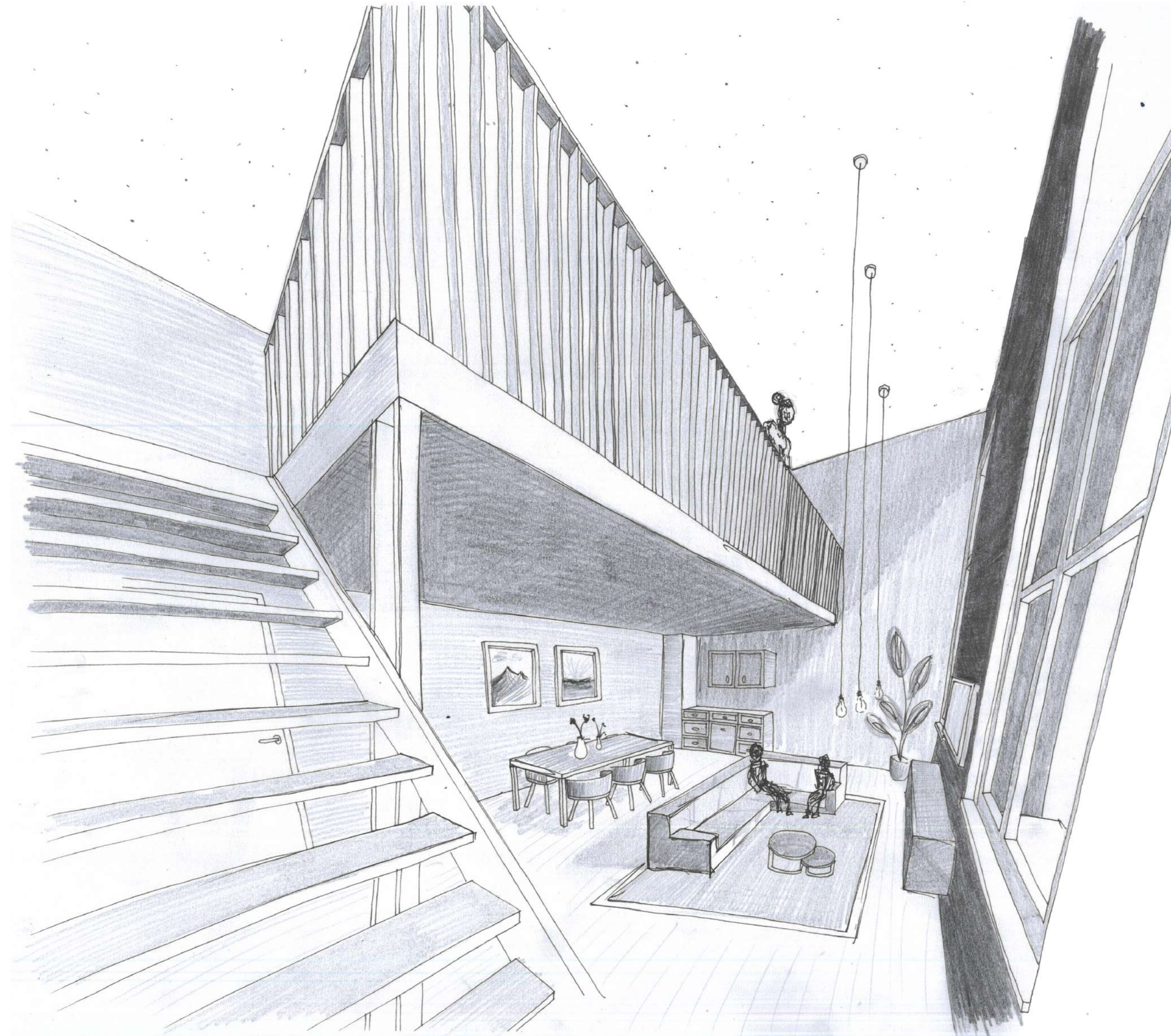


18 dwellings of 80 m<sup>2</sup>  
1st Floor (7.2 x 6) + 2nd Floor (7.2 x 6)  
(7.2 is the average between 6.0 and 8.4)



17 dwellings of 125 m<sup>2</sup>  
1st Floor (11.6 x 6) + 2nd Floor (11.6 x 6)

# IMPRESSION - DWELLINGS



# BUILDING TECHNOLOGY - SECTION KOUDENHORN

1. Solar panels on flat part of the roof

2. Air handling unit + Heat Recovery System (WTW)

3. Thermal insulated roof on the outside

4. Dormer and roofwindows for daylight

5. North: Secondary openable HR++ windows on the inside

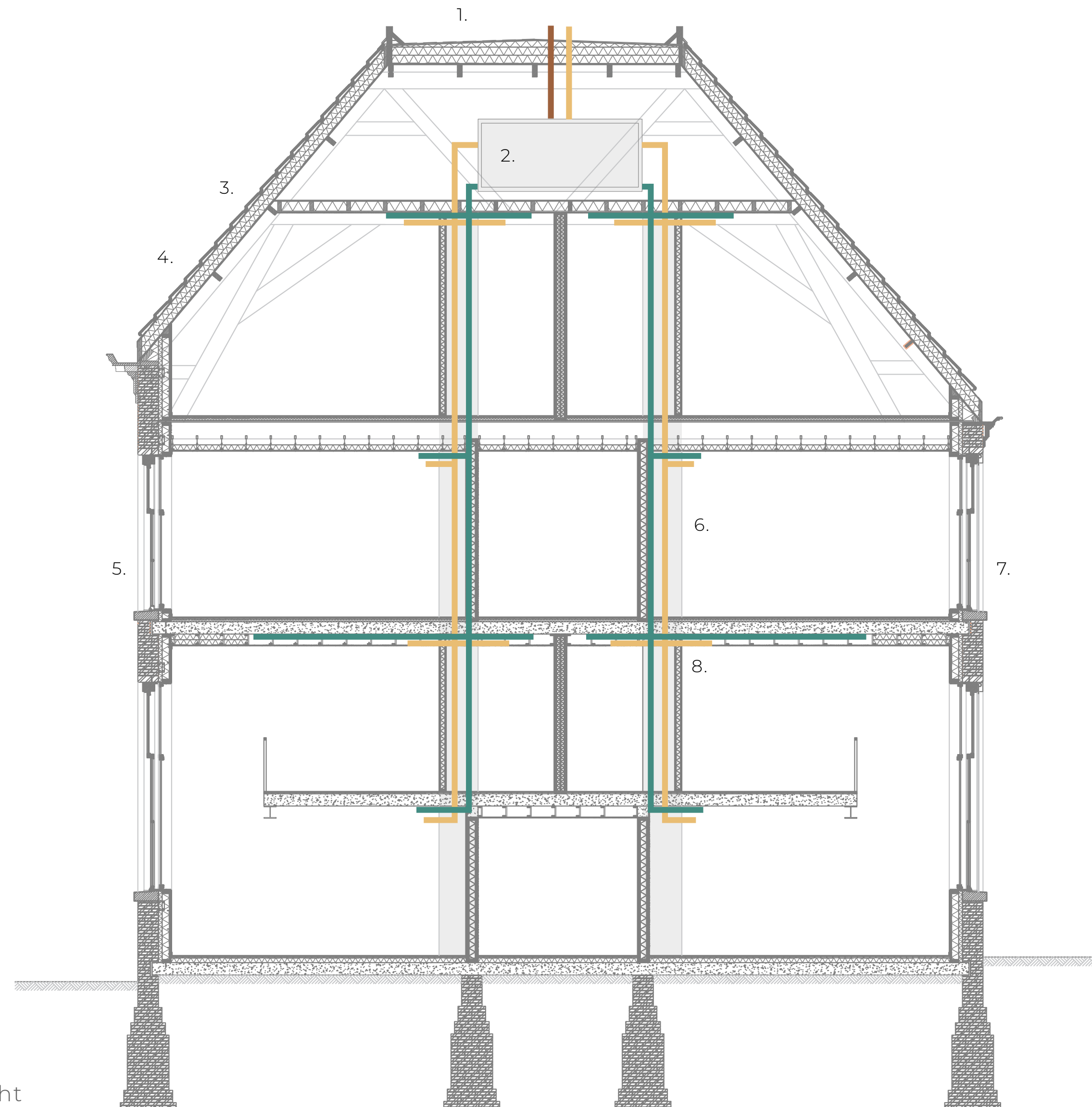
6. Shaft for systems (water, plumbing, ventilation)

7. South: Secondary openable HR++ windows on the inside and sunshading on the outside

8. Hybrid Mechanical Ventilation

9. Heat Pump located in Verkeerspolitie

10. Extracting heat from water canal for heating (WKO)



North Facade  
- Nieuwe Gracht

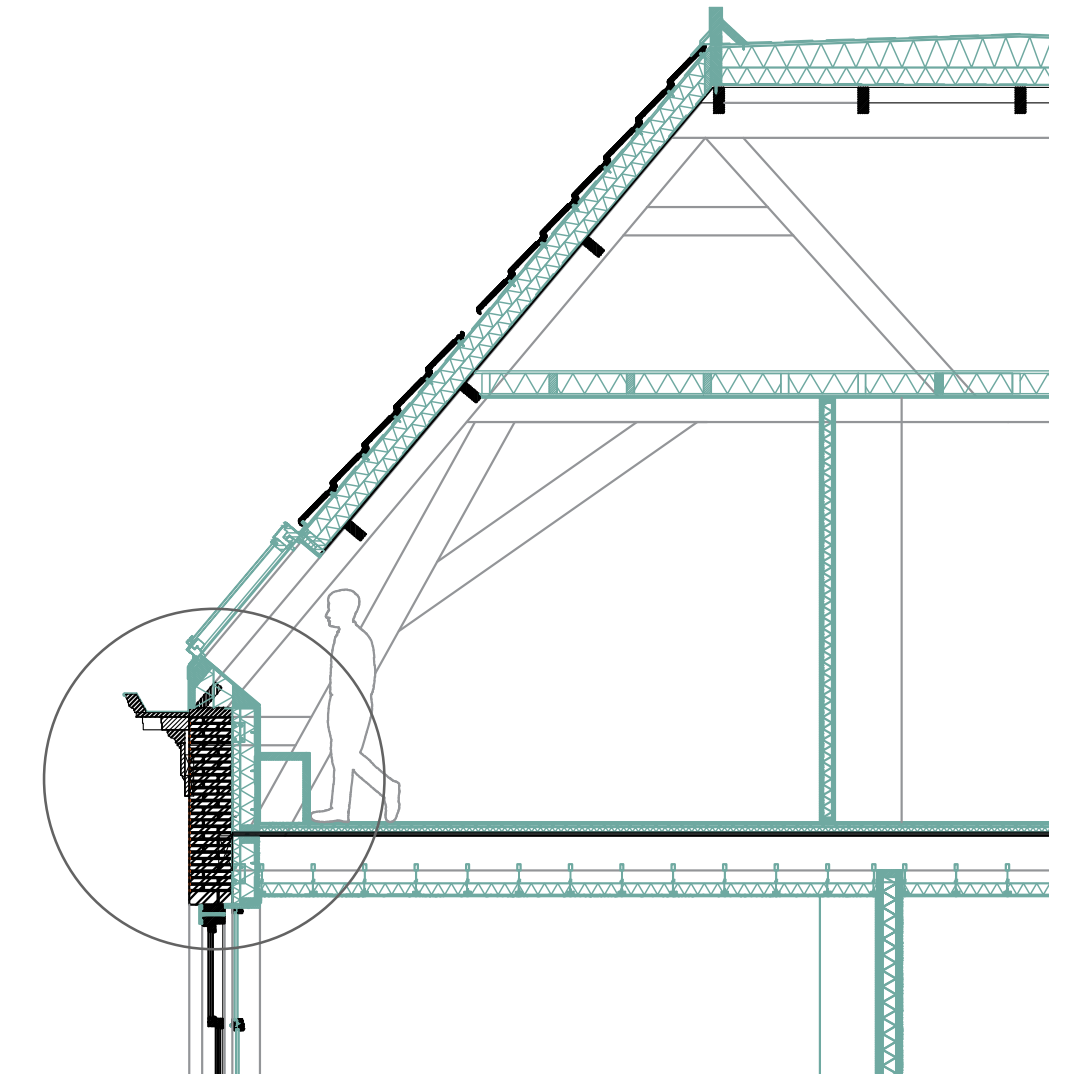
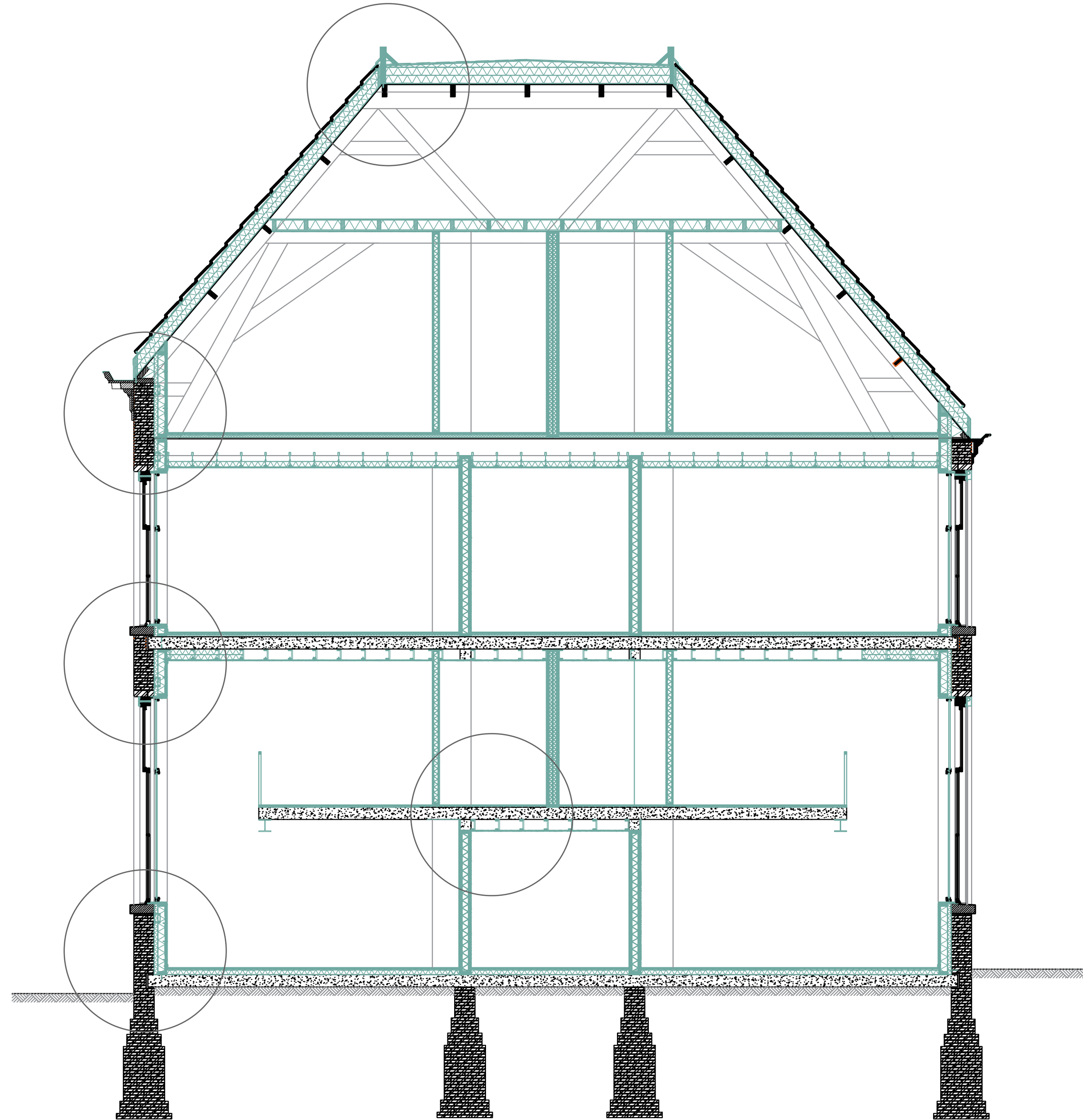
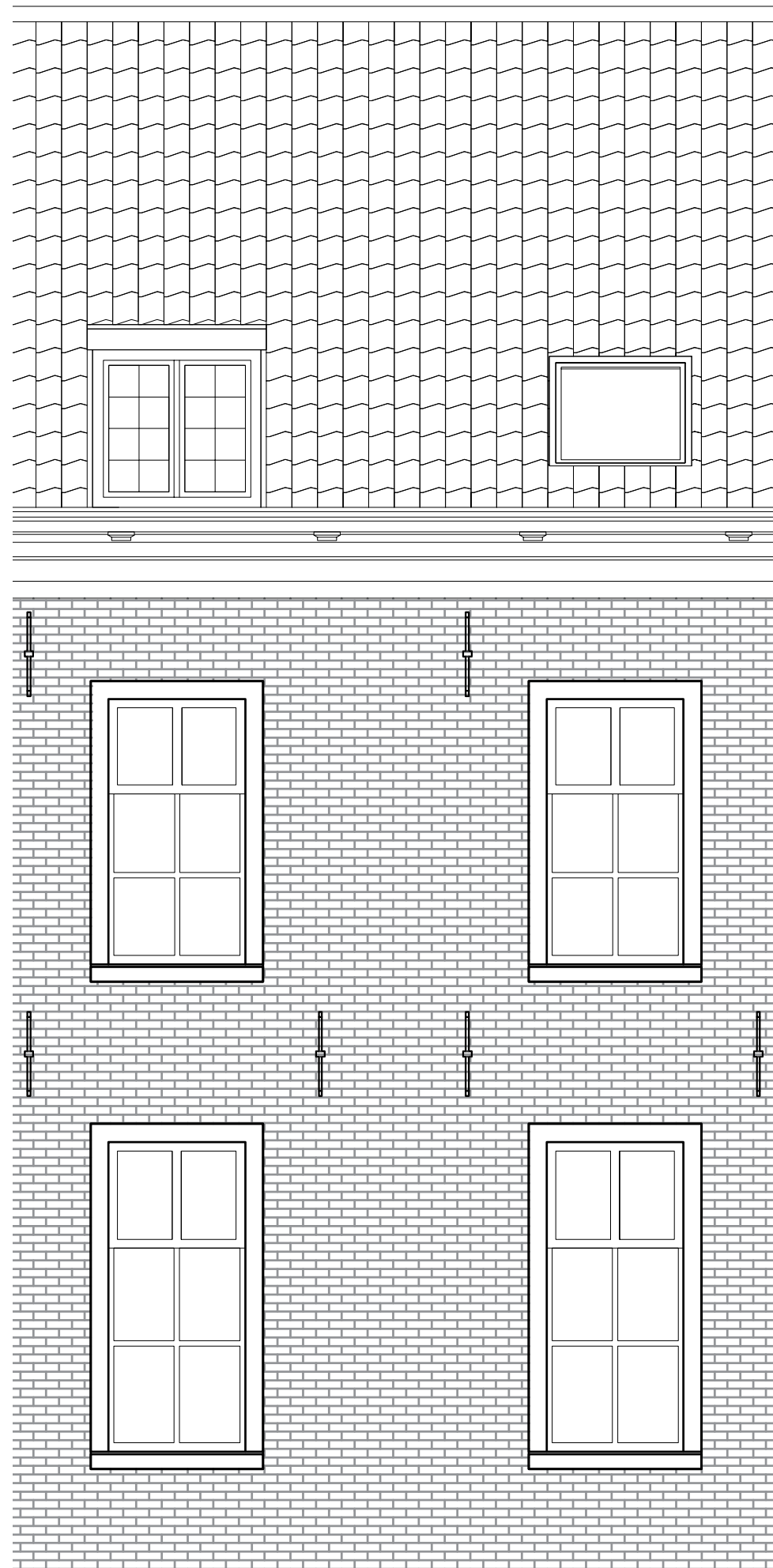
South Facade  
- Courtyard

- Ventilation inlet
- Fresh air in WTW
- Ventilation outlet
- Shaft

# BUILDING TECHNOLOGY - FACADE FRAGMENT

Permanent space // changeable use

0 2m

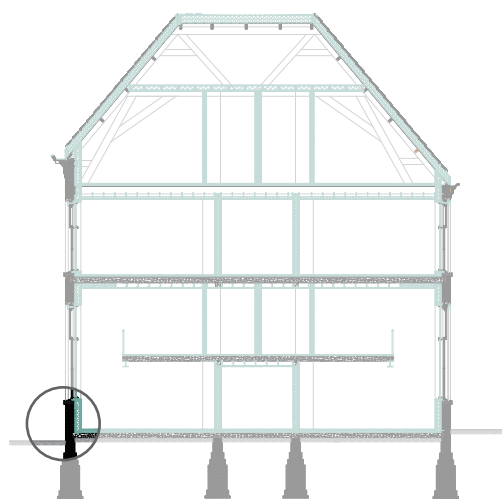
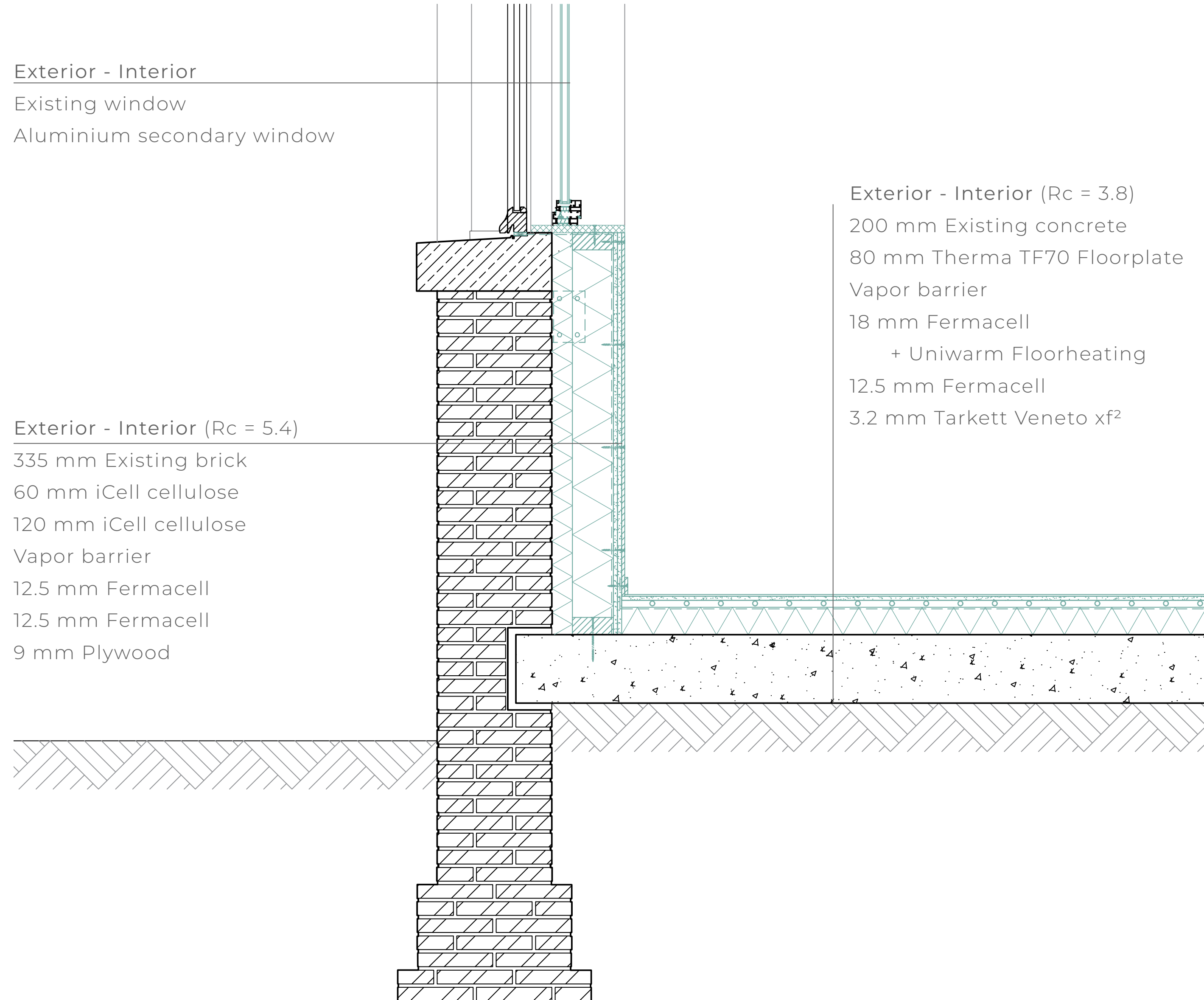


- Existing building
- Newly added

# BUILDING TECHNOLOGY - DETAIL GROUND FLOOR

Permanent space // changeable use

0 500mm



Existing building  
Newly added

# BUILDING TECHNOLOGY - DETAIL FLOOR

Permanent space // changeable use

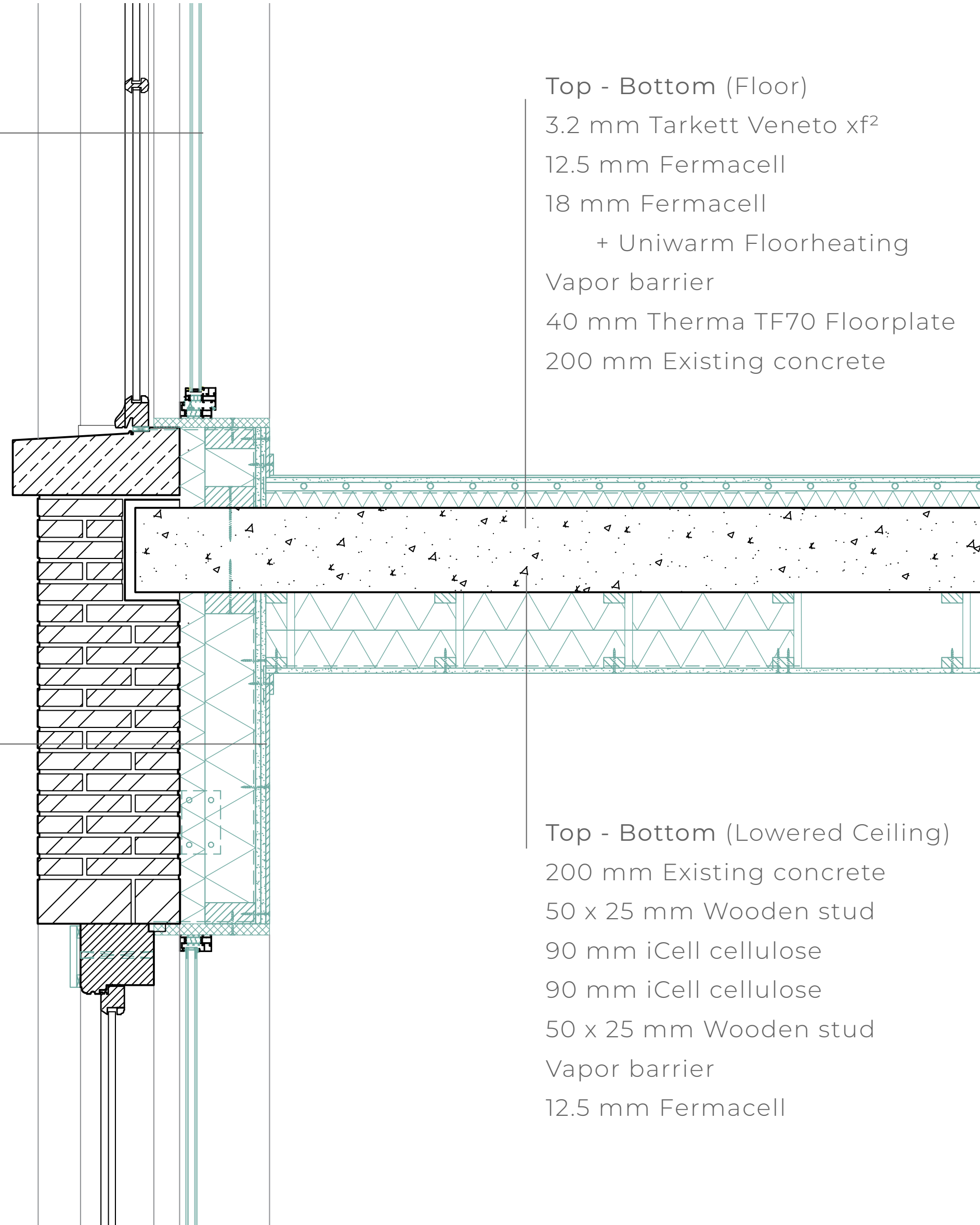
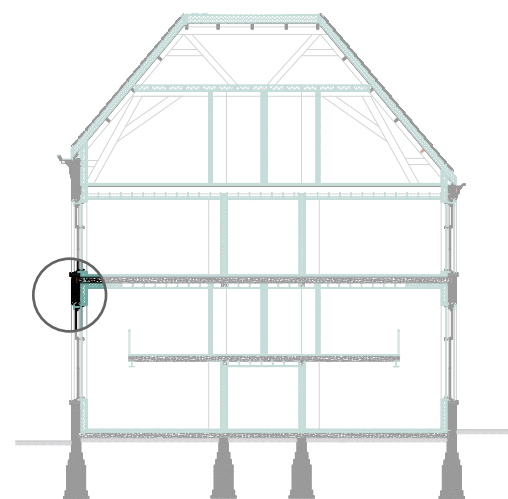
0 500mm

Exterior - Interior  
Existing window  
Aluminium secondary window

Exterior - Interior (Rc = 5.4)  
335 mm Existing brick  
60 mm iCell cellulose  
120 mm iCell cellulose  
Vapor barrier  
12.5 mm Fermacell  
12.5 mm Fermacell  
9 mm Plywood

Top - Bottom (Floor)  
3.2 mm Tarkett Veneto xf<sup>2</sup>  
12.5 mm Fermacell  
18 mm Fermacell  
+ Uniwarm Floorheating  
Vapor barrier  
40 mm Therma TF70 Floorplate  
200 mm Existing concrete

Top - Bottom (Lowered Ceiling)  
200 mm Existing concrete  
50 x 25 mm Wooden stud  
90 mm iCell cellulose  
90 mm iCell cellulose  
50 x 25 mm Wooden stud  
Vapor barrier  
12.5 mm Fermacell



■ Existing building  
■ Newly added

# BUILDING TECHNOLOGY - DETAIL GUTTER

Permanent space // changeable use

0 500mm

Exterior - Interior (Rc = 5.4)

Existing rooftiles (dubbelemuldenpan)

Waterproof layer

100 mm iCell cellulose

100 mm iCell cellulose

Vapor barrier

30 mm Existing roof decking

Existing roofstructure

Exterior - Interior (Rc = 5.4)

335 mm Existing brick

60 mm iCell cellulose

120 mm iCell cellulose

Vapor barrier

12.5 mm Fermacell

12.5 mm Fermacell

9 mm Plywood

Top - Bottom (Floor)

3.2 mm Tarkett Veneto xf<sup>2</sup>

12.5 mm Fermacell

18 mm Fermacell

+ Uniwarm Floorheating

Vapor barrier

40 mm Therma TF70 Floorplate

30 mm Existing floor boarding

270 mm Existing wooden beam

Top - Bottom (Lowered Ceiling)

270 mm Existing wooden beam

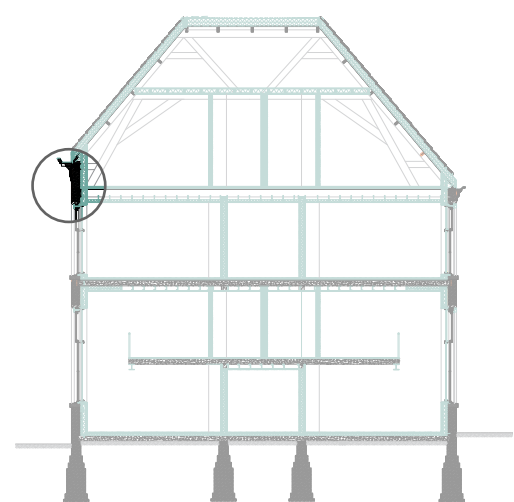
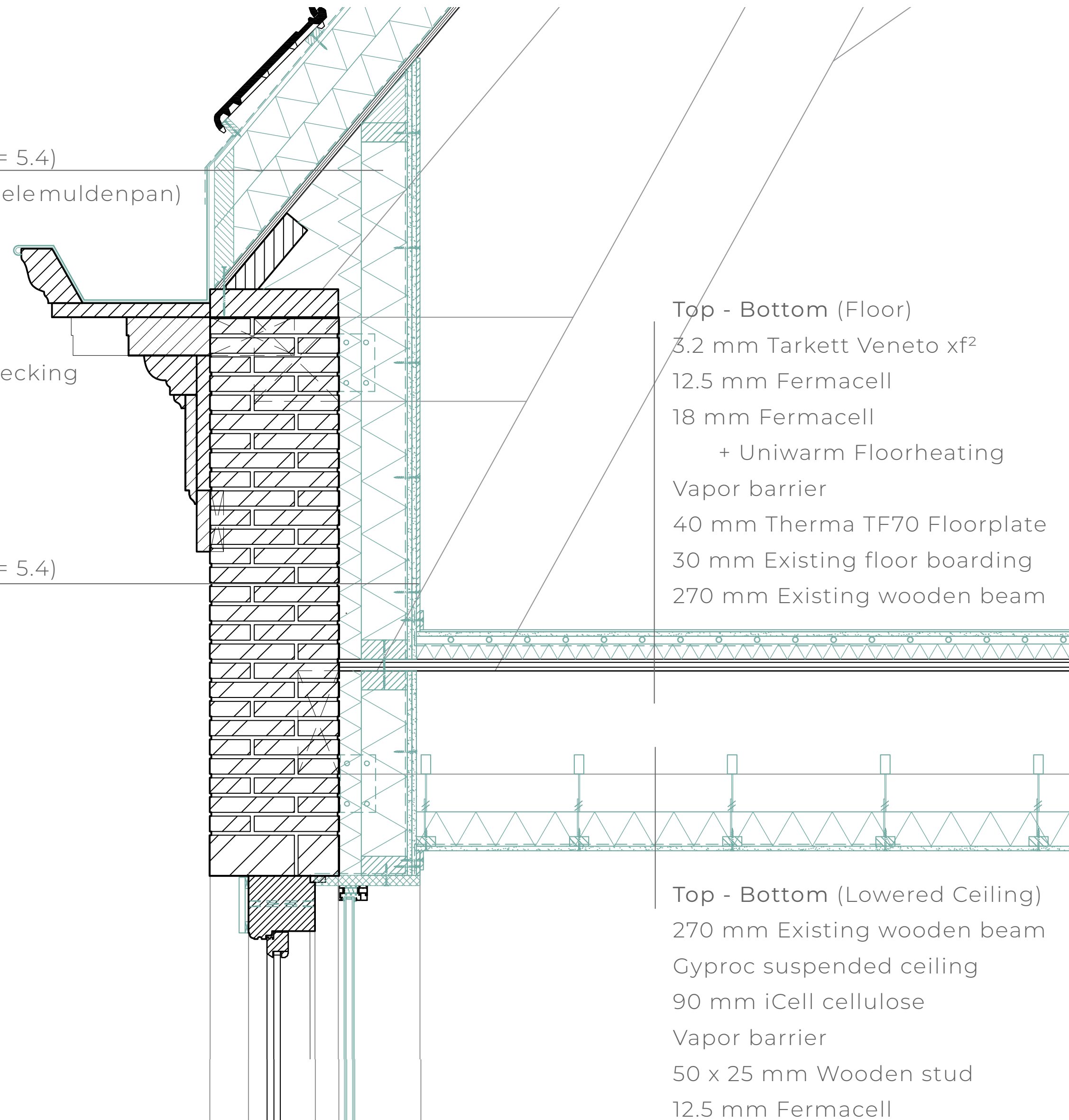
Gyproc suspended ceiling

90 mm iCell cellulose

Vapor barrier

50 x 25 mm Wooden stud

12.5 mm Fermacell



Existing building  
Newly added



# BUILDING TECHNOLOGY - DETAIL ROOFWINDOW

Permanent space // changeable use

0 500mm

Exterior - Interior (Rc = 5.4)

Existing rooftiles (dubbelemuldenpan)

Waterproof layer

100 mm iCell cellulose

100 mm iCell cellulose

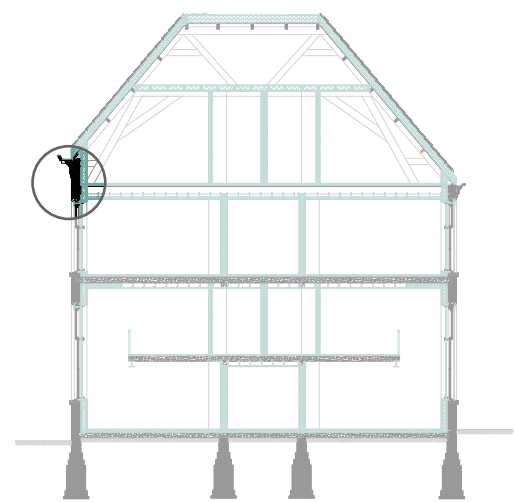
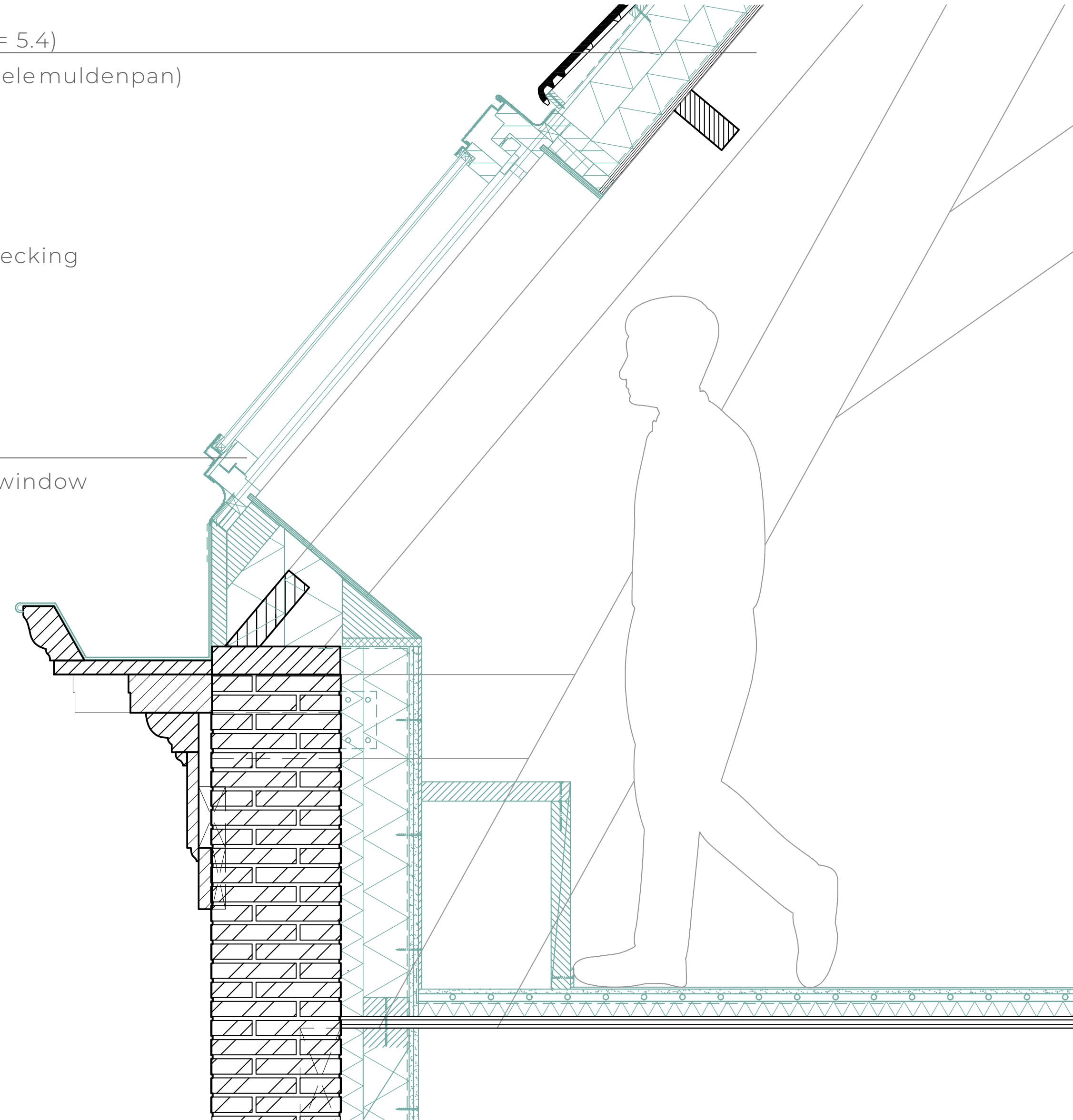
Vapor barrier

30 mm Existing roof decking

Existing roofstructure

Exterior - Interior

Aluminium openable window

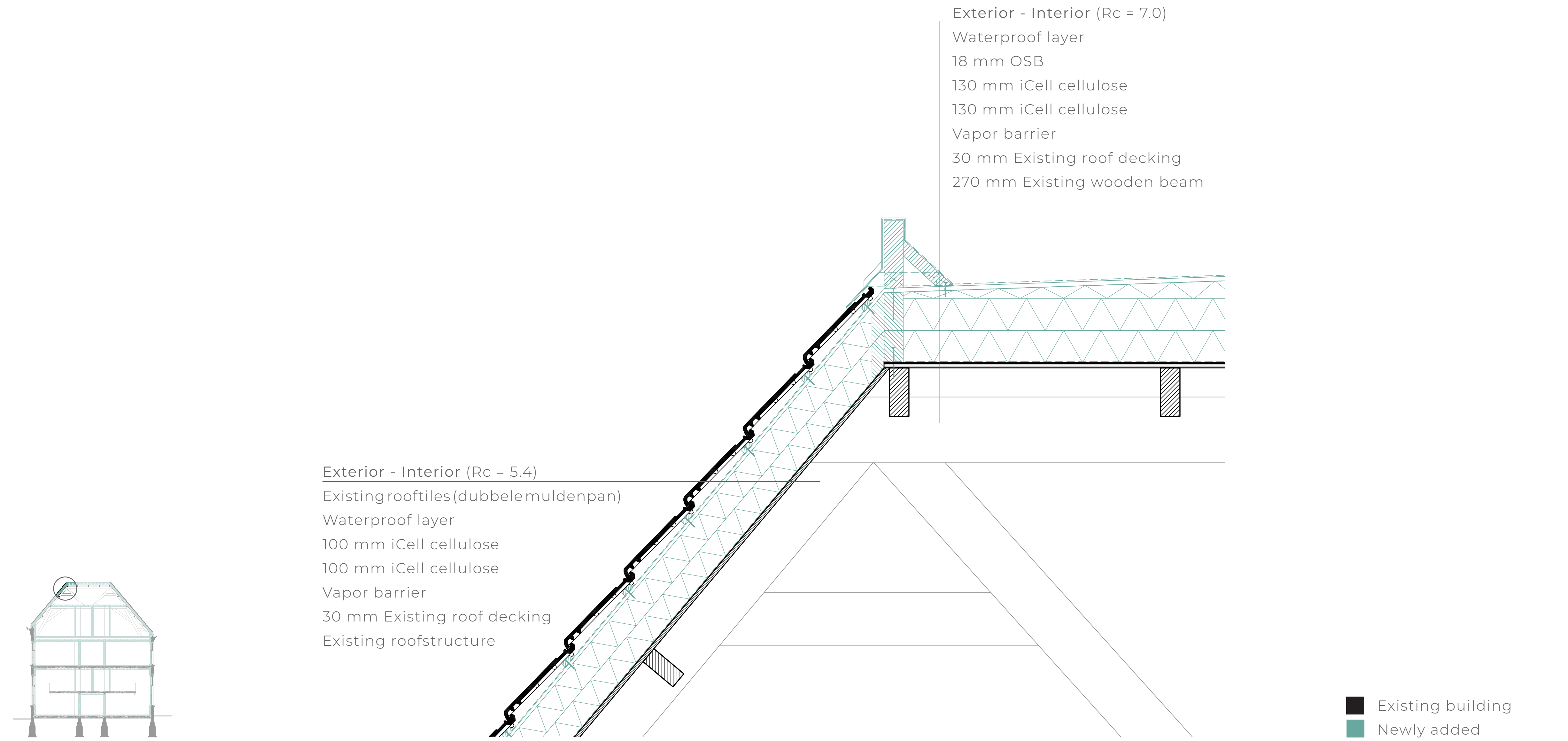


■ Existing building  
■ Newly added

# BUILDING TECHNOLOGY - DETAIL ROOFEDGE

Permanent space // changeable use

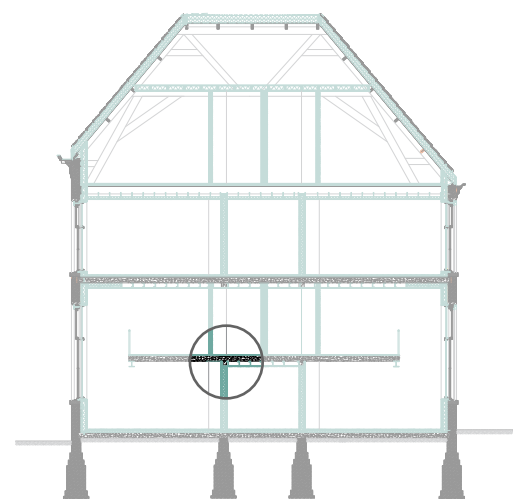
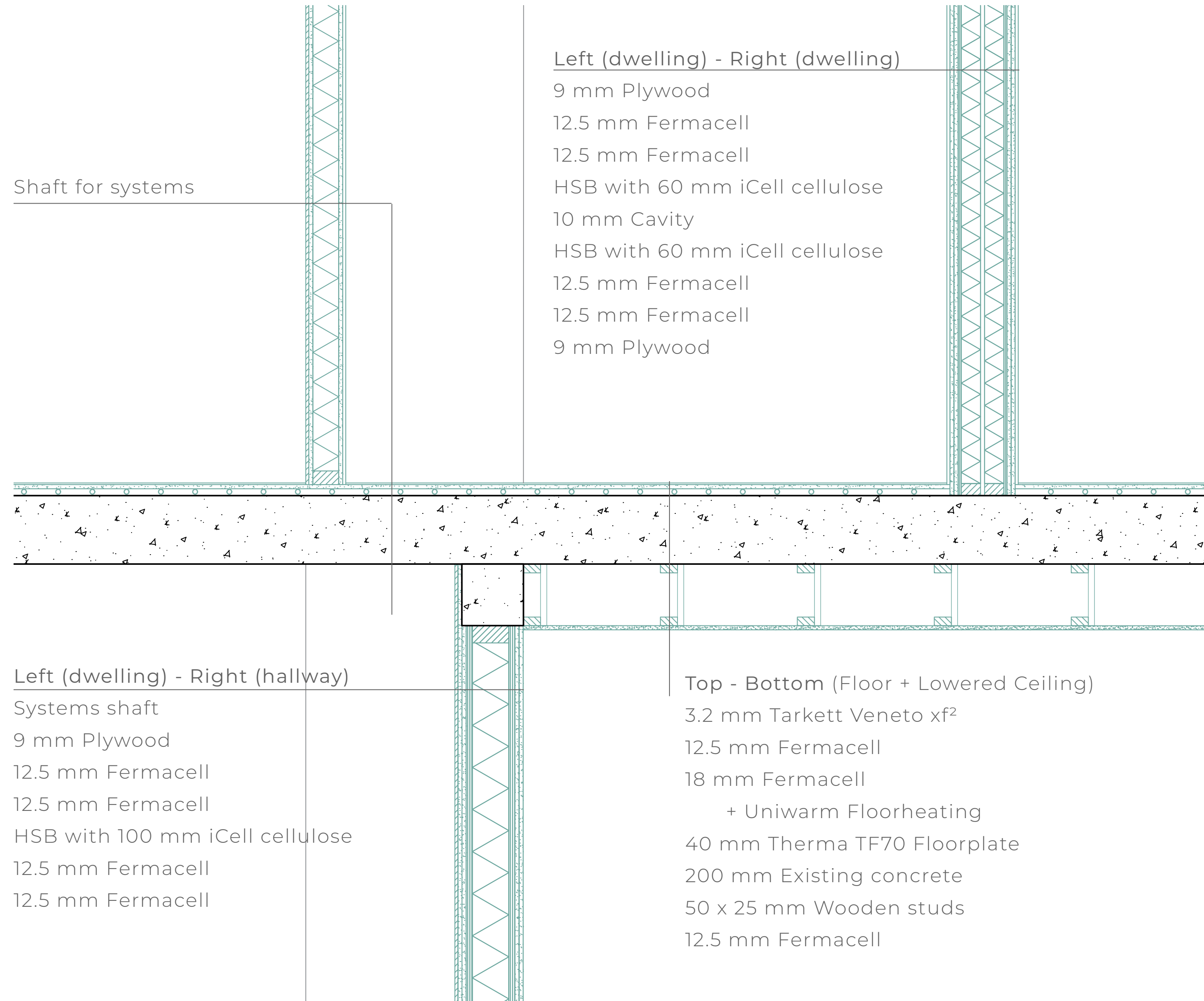
0 500mm



# BUILDING TECHNOLOGY - DETAIL DWELLINGS

Permanent space // changeable use

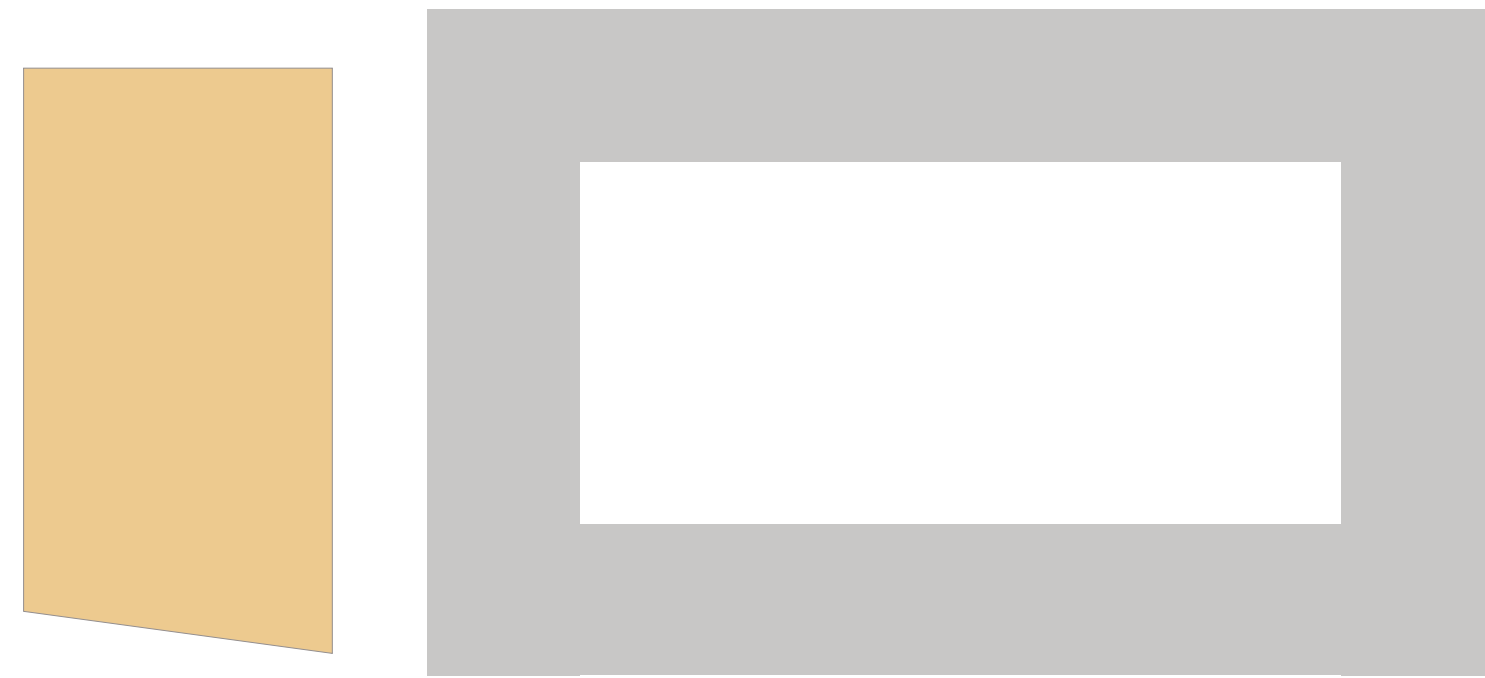
0 500mm



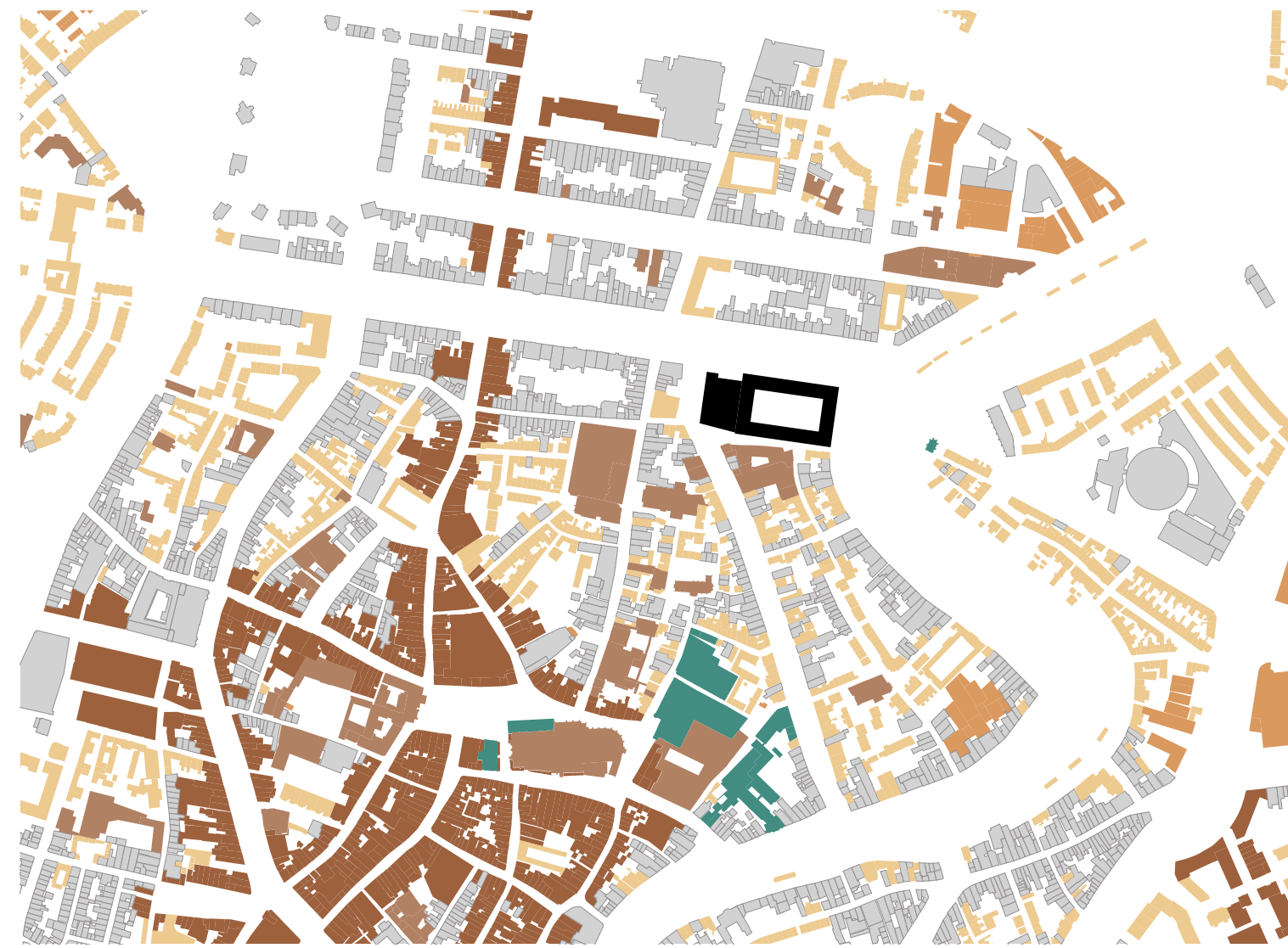
■ Existing building  
■ Newly added



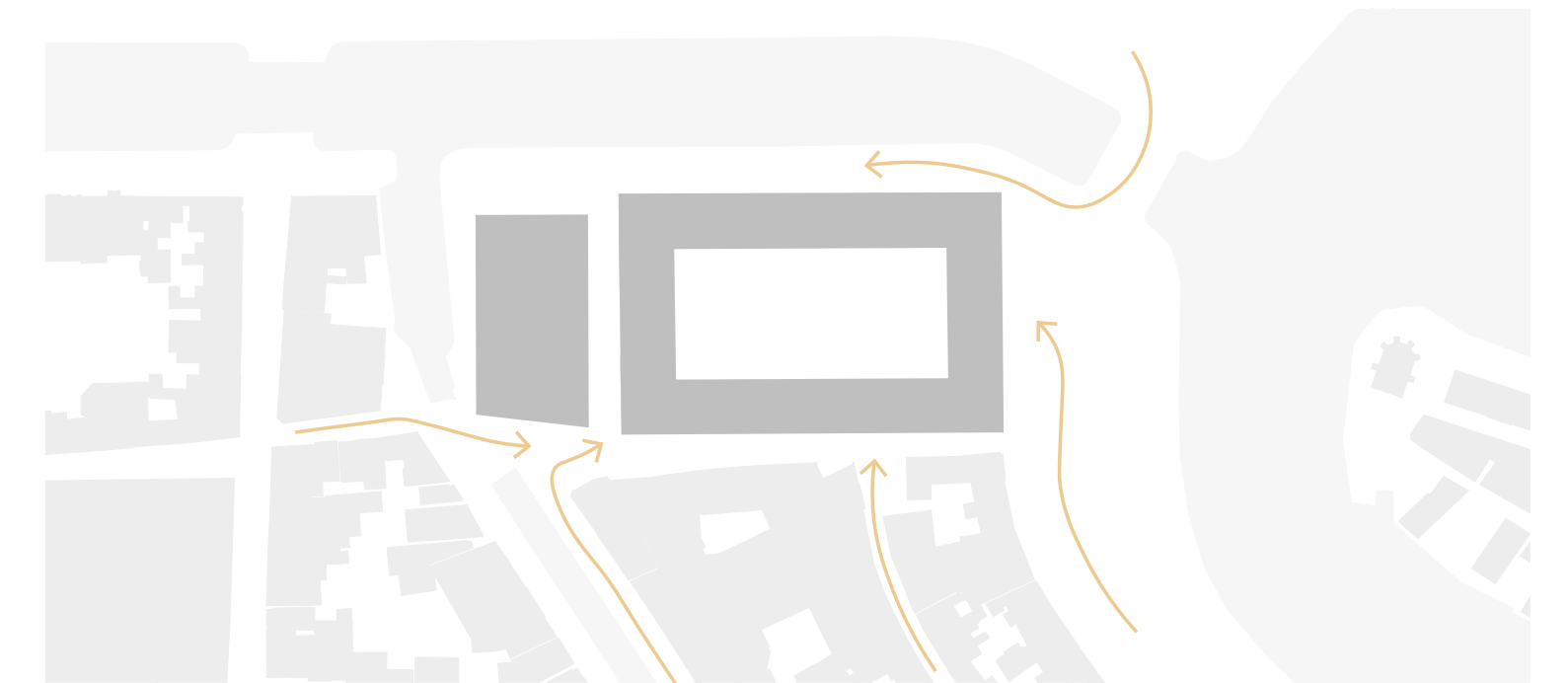
# PROGRAM OF REQUIREMENTS - CULTURE IN THE VERKEERSPOLITIE



Renewed relationship between old and new.



Space for the cultural sector will be created.

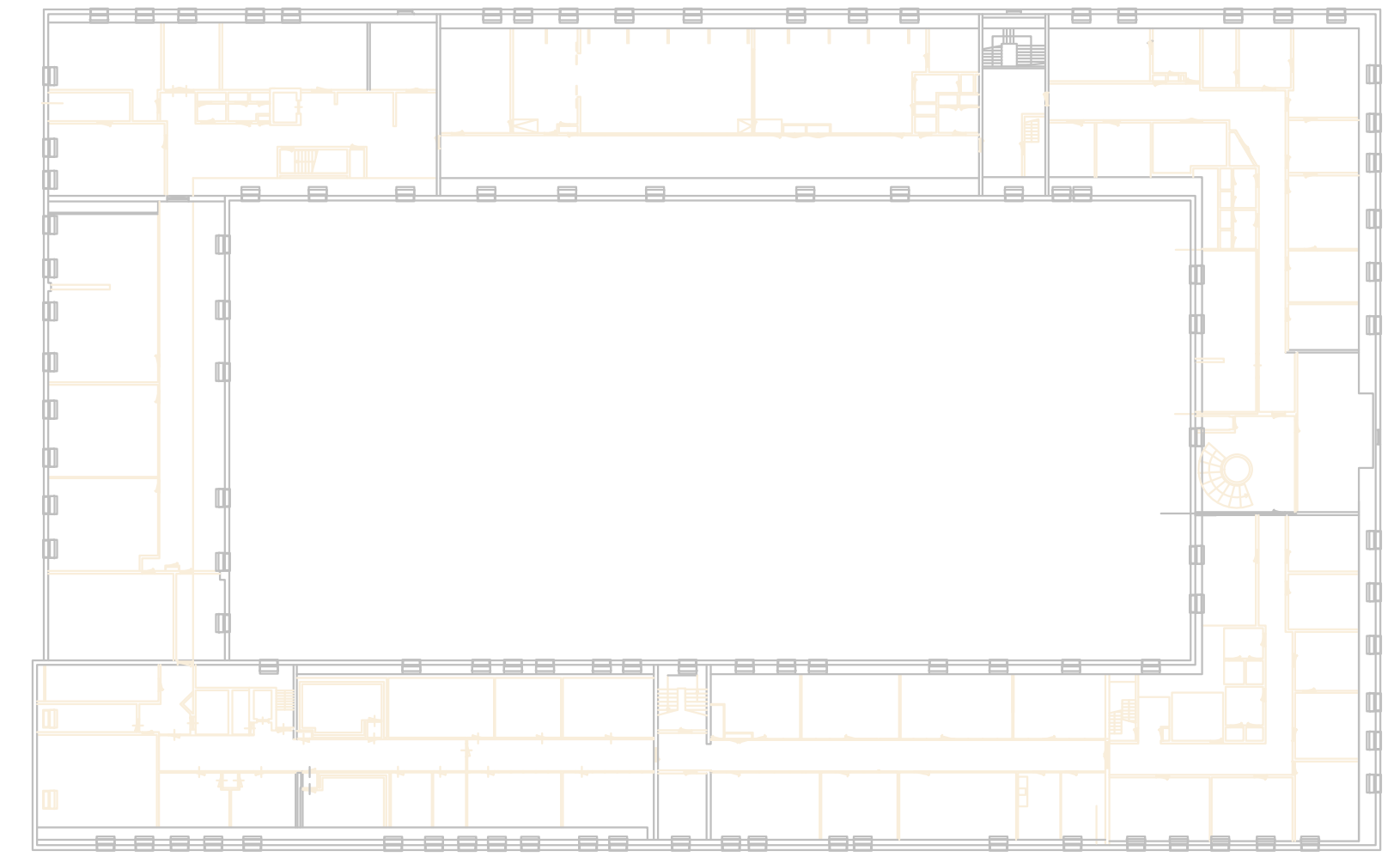
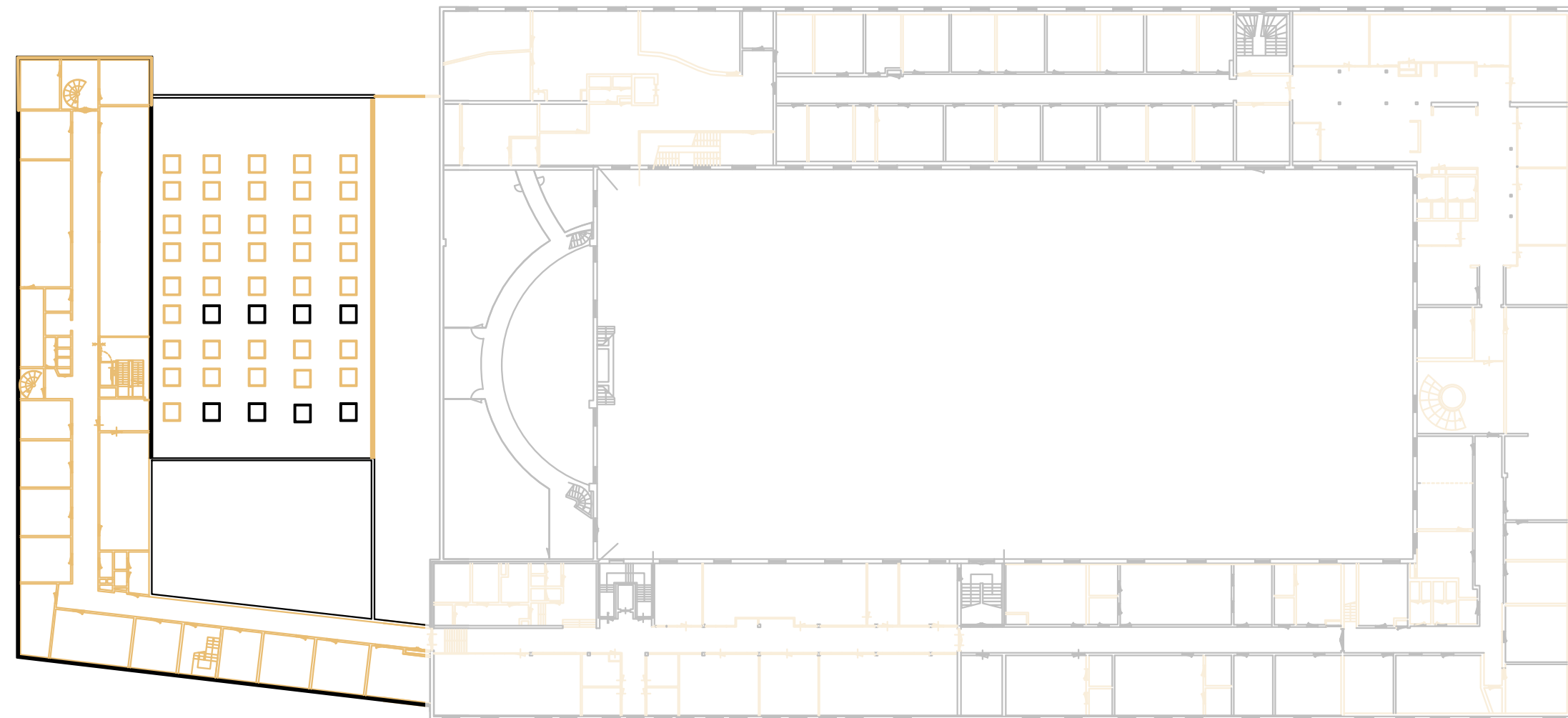
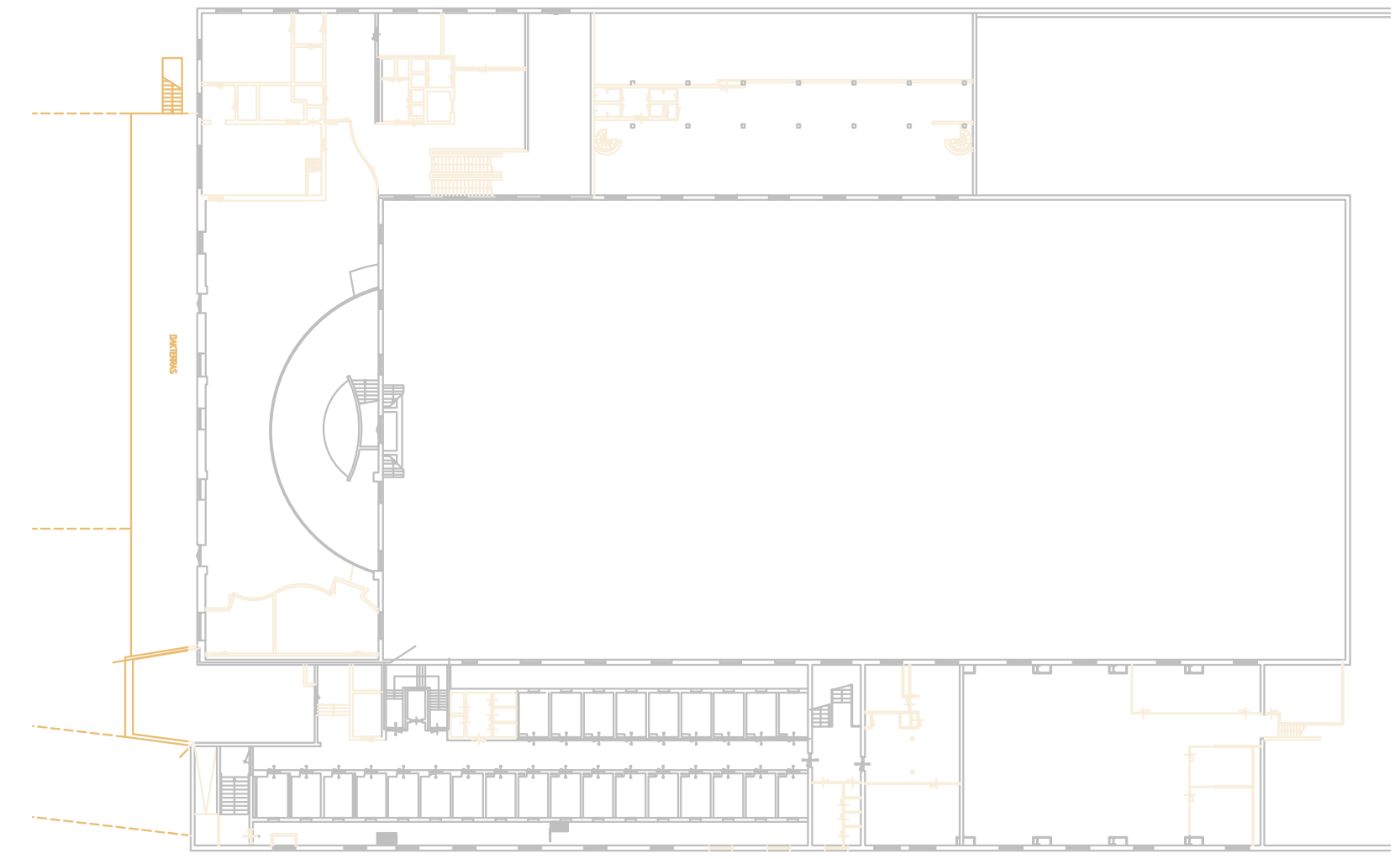


Enhance 10-minute network within the neighborhood.

# FLOORPLANS - DEMOLITION PLANS

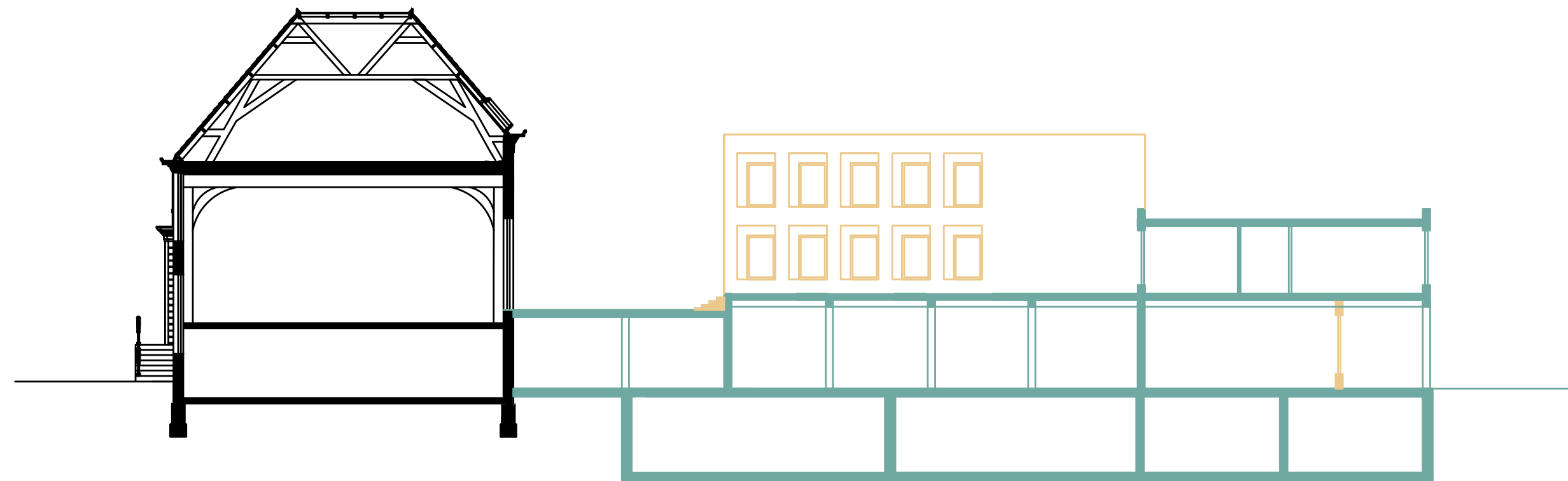
Permanent space // changeable use

0 15m



From left to right: ground floor, entresol, first floor, attic.

# VOLUME STUDIES CULTURAL CENTER



Building: Minimal change

Building: Change structure for adaptability

User: Adaptability of the user

User: Future proof for all users

## Context

Renewed relationship between old and new

Enhance 10-minute network within the neighborhood

Space for the cultural sector

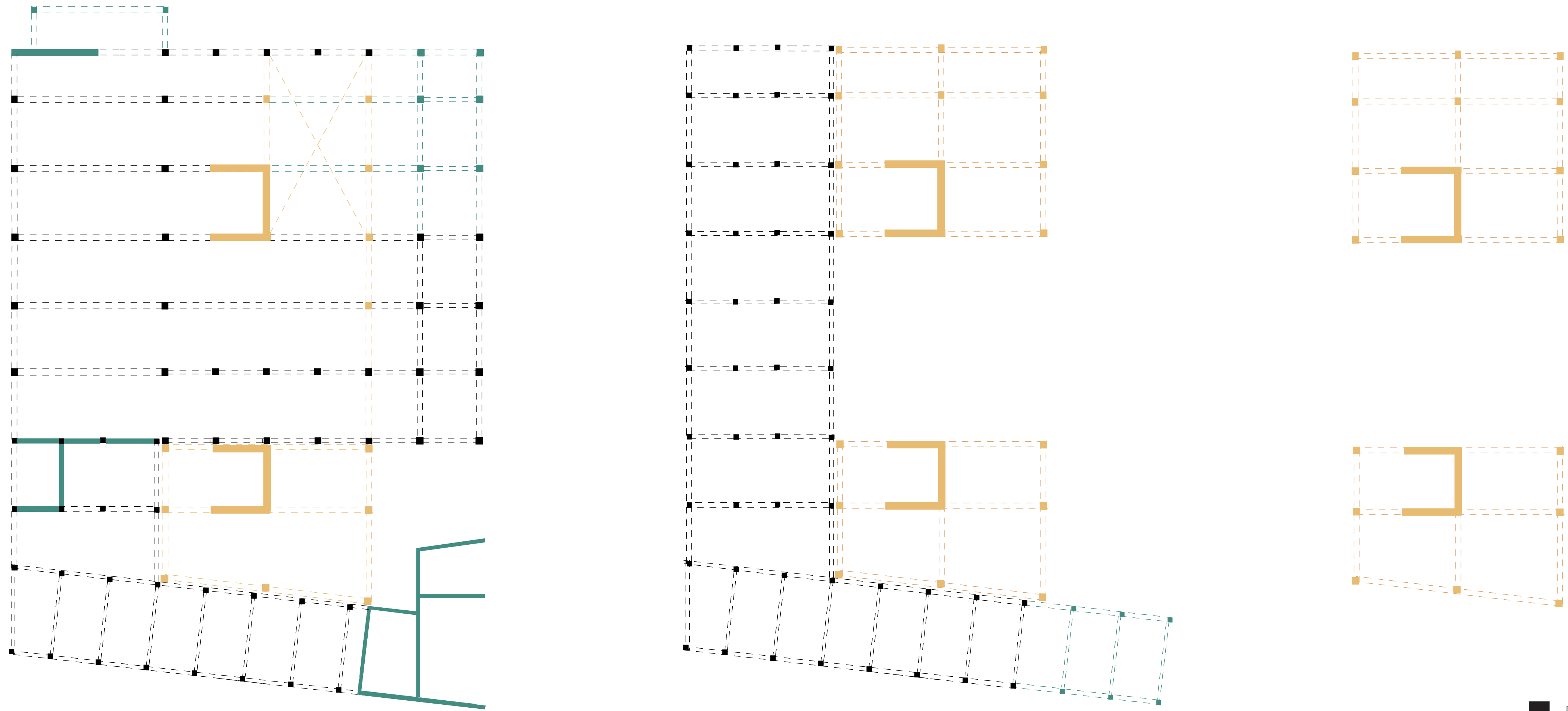
Keep as much as possible  
Existing structures and materials

- Koudenhorn
- Existing structure
- New structure

# BUILDING TECHNOLOGY - CONSTRUCTION VERKEERSPOLITIE

Permanent space // changeable use

0 10m 



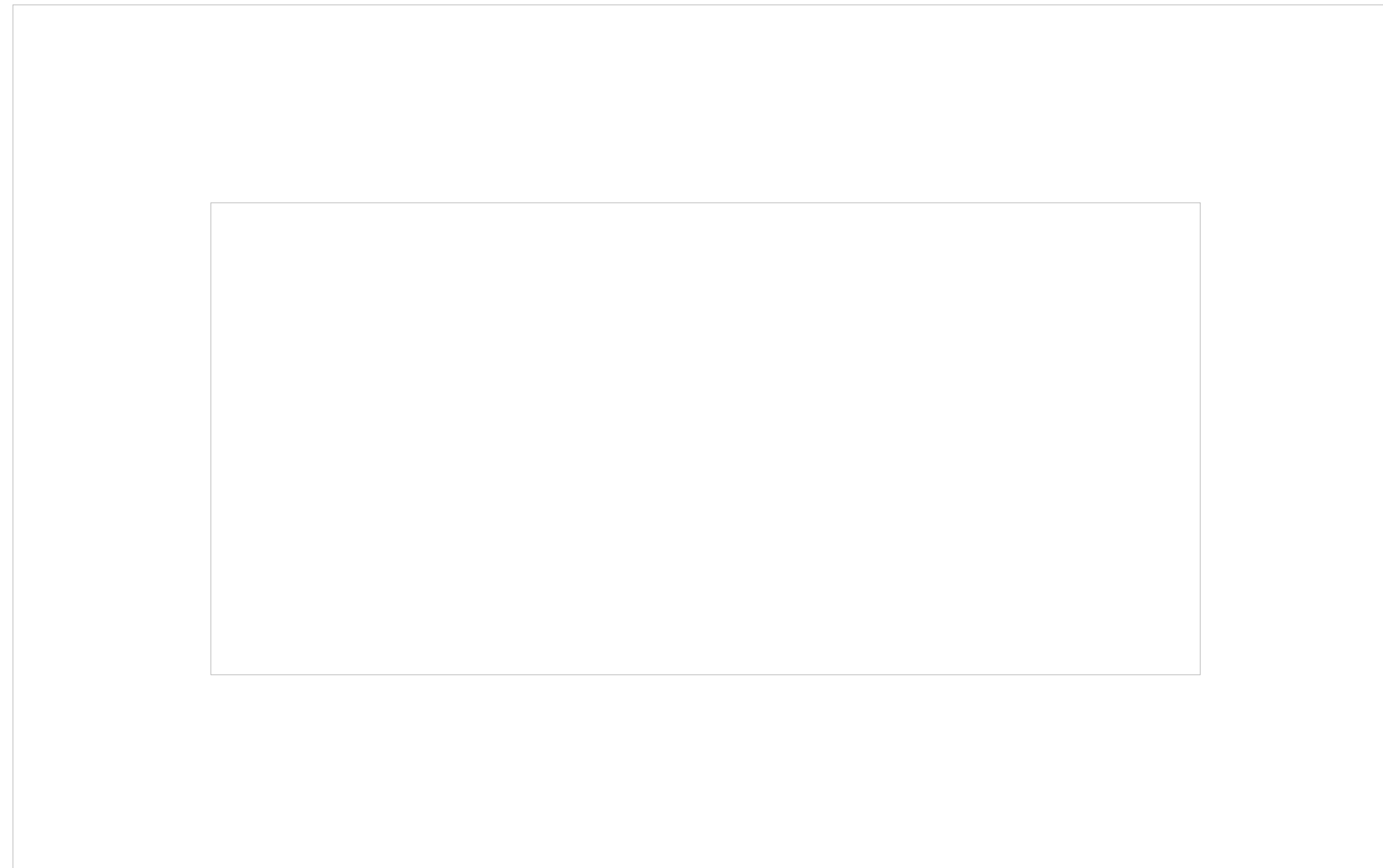
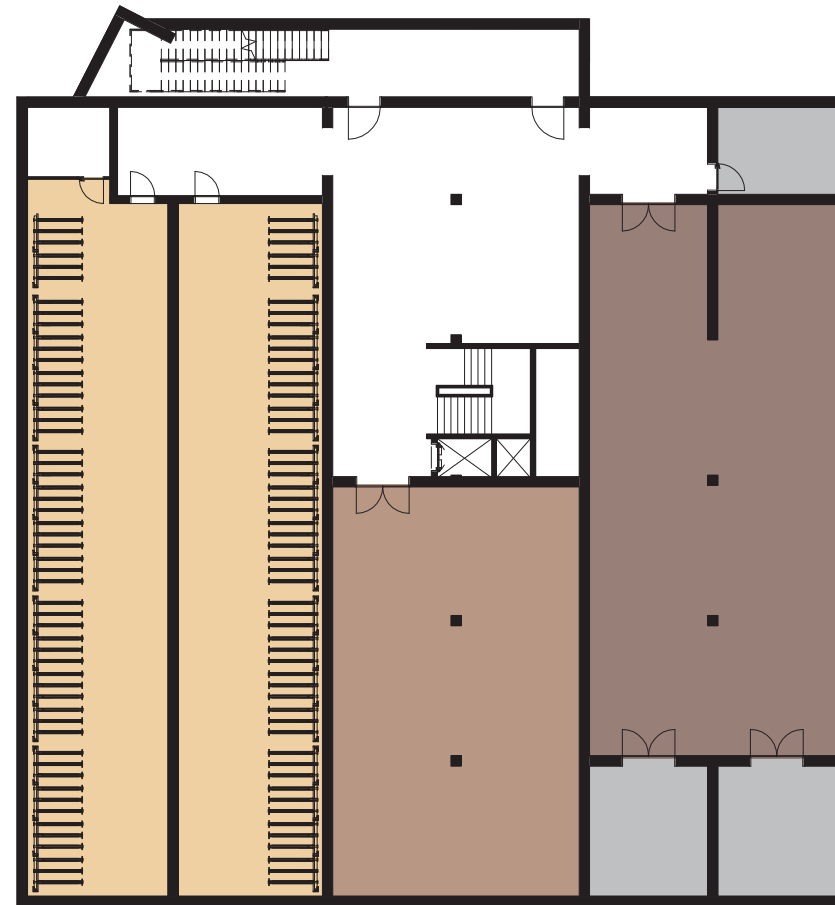
From left to right: ground floor, first floor and second floor.



# FLOORPLANS - BASEMENT

Permanent space // changeable use

0 10m 

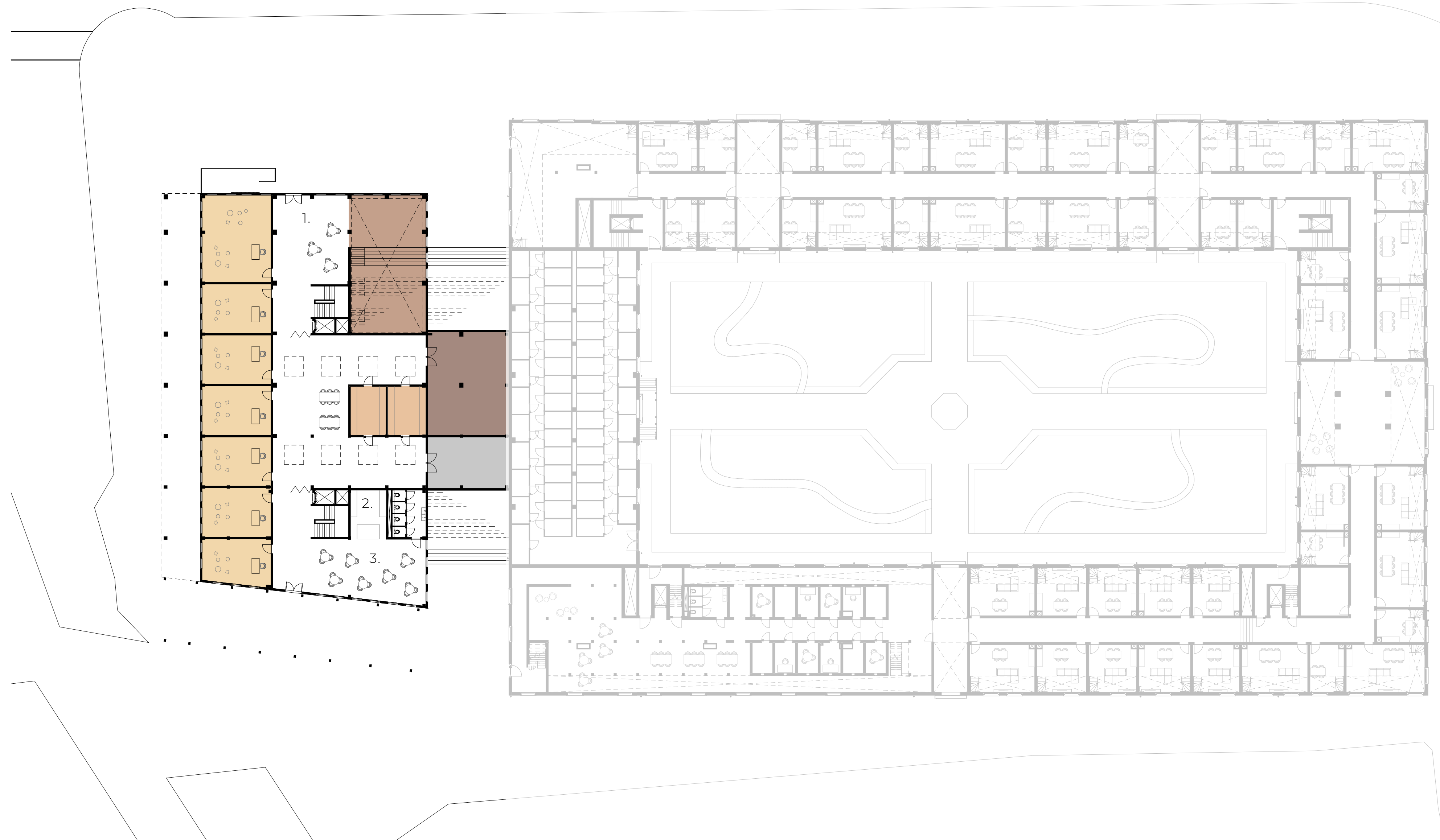


-  Storage
-  Cinema
-  Bicycle storage
-  Technical Space

# FLOORPLANS - GROUND FLOOR PLAN

Permanent space // changeable use

0 10m

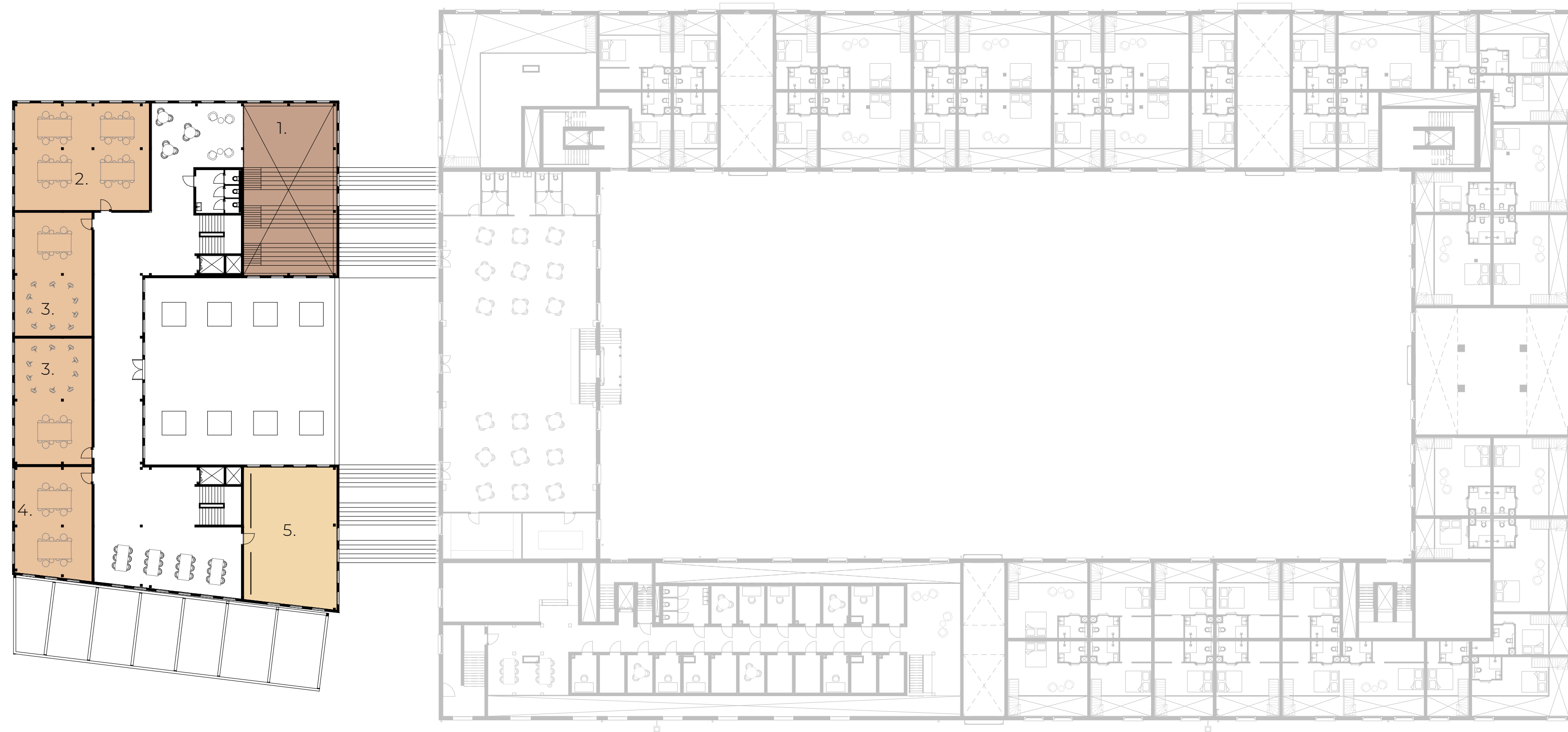


- 1. Theatre / Podium
- 2. Bar
- 3. Cafe
- Storage
- Theatre
- Dressing Rooms
- Music
- Technical Space

# FLOORPLANS - FIRST FLOOR PLAN (ENTRESOL)

Permanent space // changeable use

0 10m

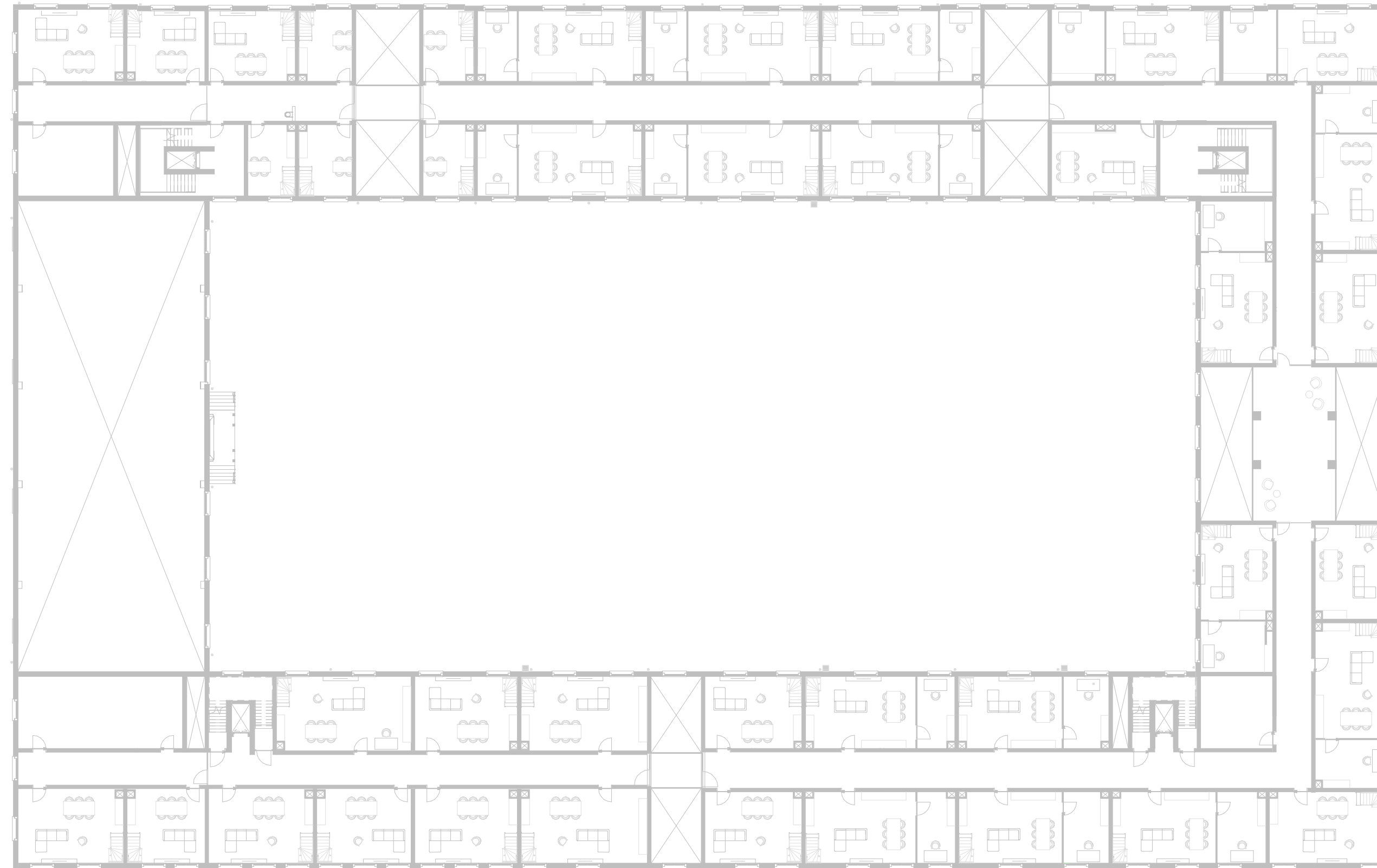
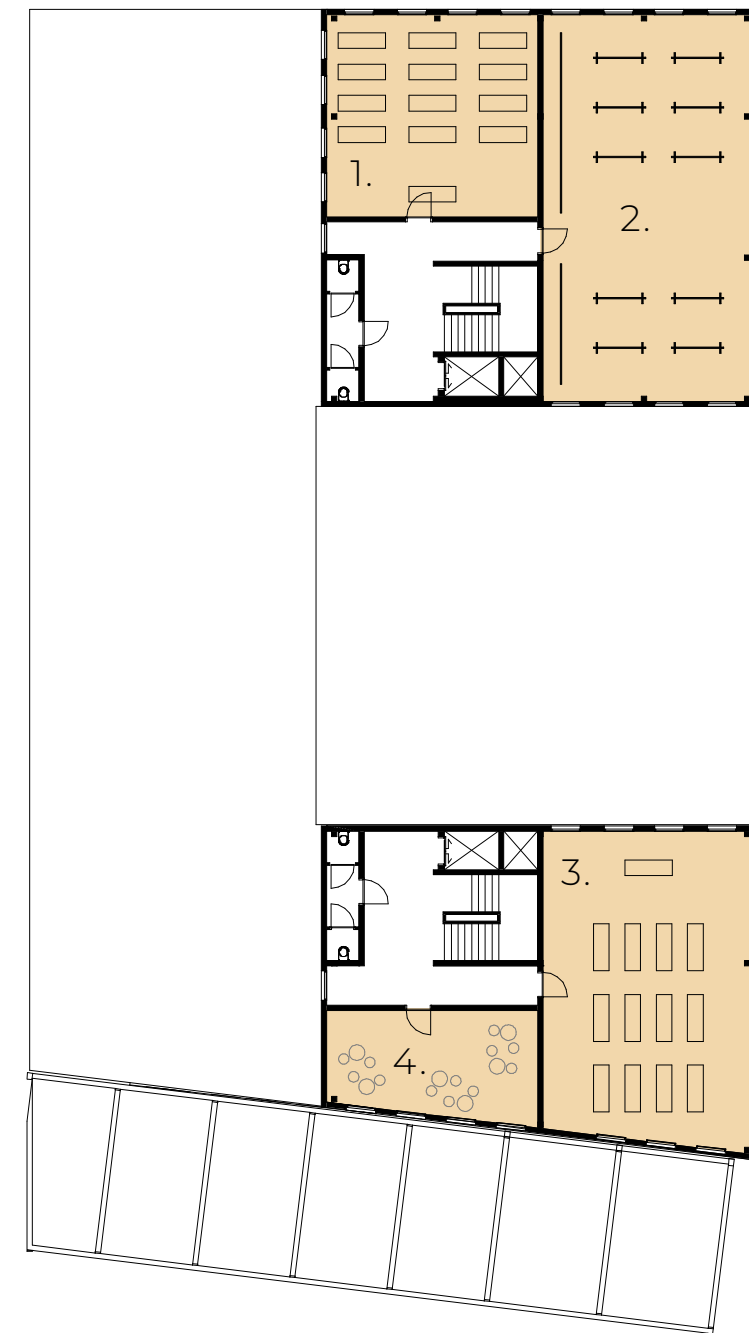


- 1. Theatre / Podium
- 2. Fashion Lab
- 3. Painting / Drawing
- 4. Jewelry
- 5. Theatre / Dance
- Theatre
- Creative Rooms
- Body and Mind

# FLOORPLANS - SECOND FLOOR PLAN

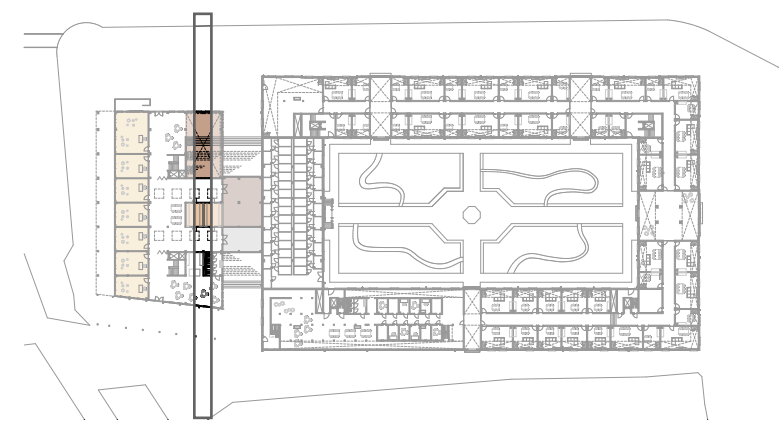
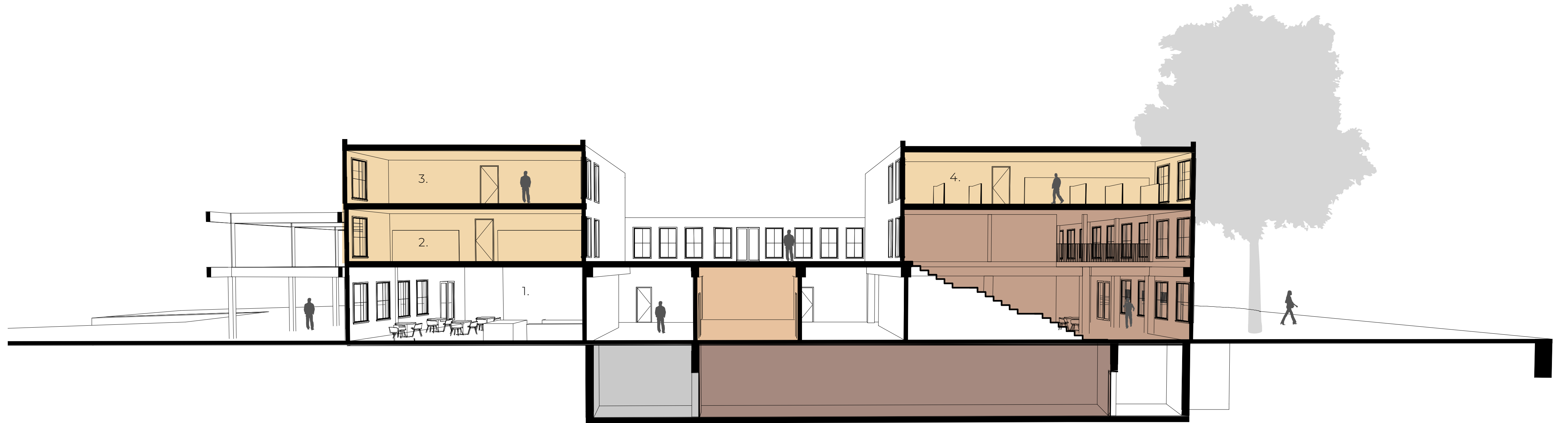
Permanent space // changeable use

0 10m



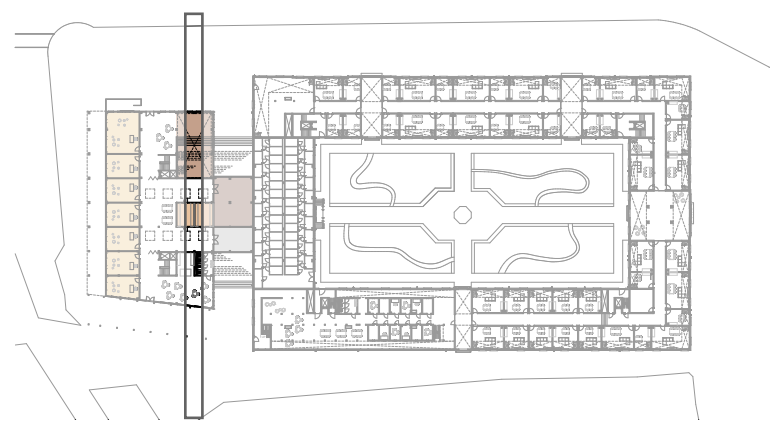
- 1. Yoga
- 2. Ballet
- 3. Pilates
- 4. Body and Mind
- Body and Mind

# SECTION - CULTURAL CENTER



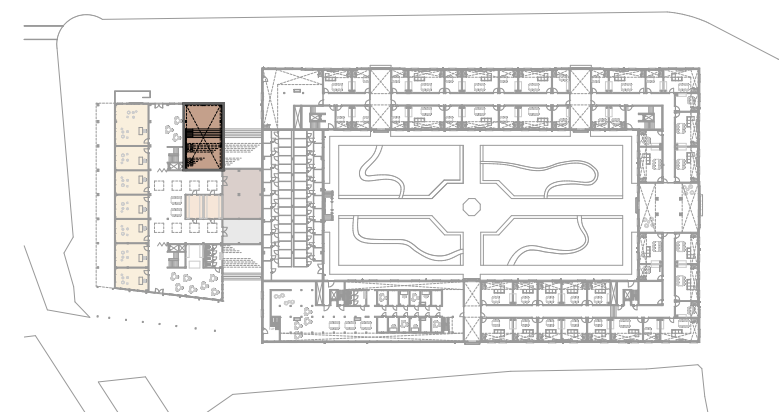
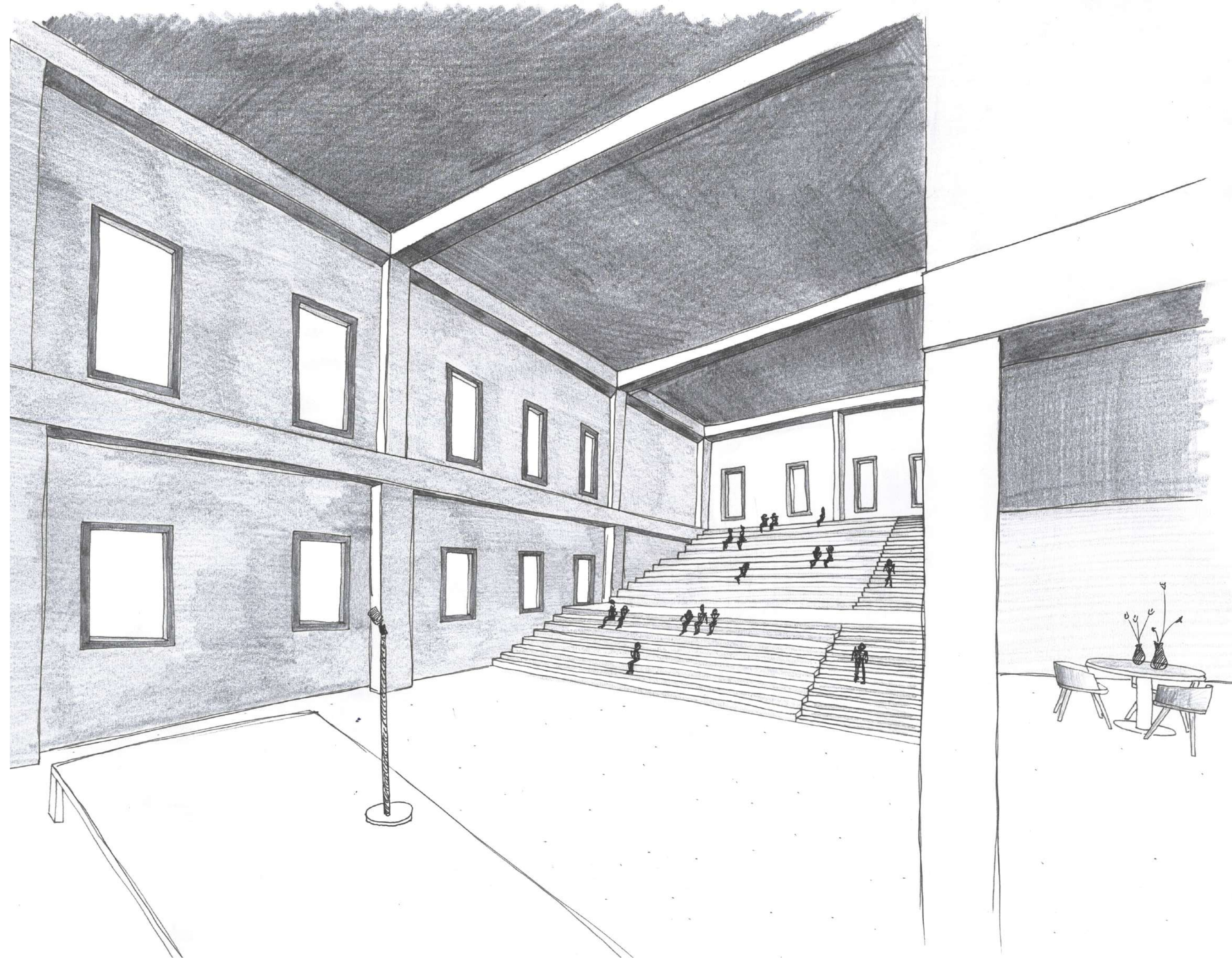
- 1. Bar / Cafe
- 2. Theatre / Dance
- 3. Pilates
- 4. Ballet
- Storage
- Theatre
- Dressing Rooms
- Cultural Spaces
- Technical Space

# SECTION - CULTURAL CENTER



- Storage
- Theatre
- Dressing Rooms
- Cultural Spaces
- Technical Space

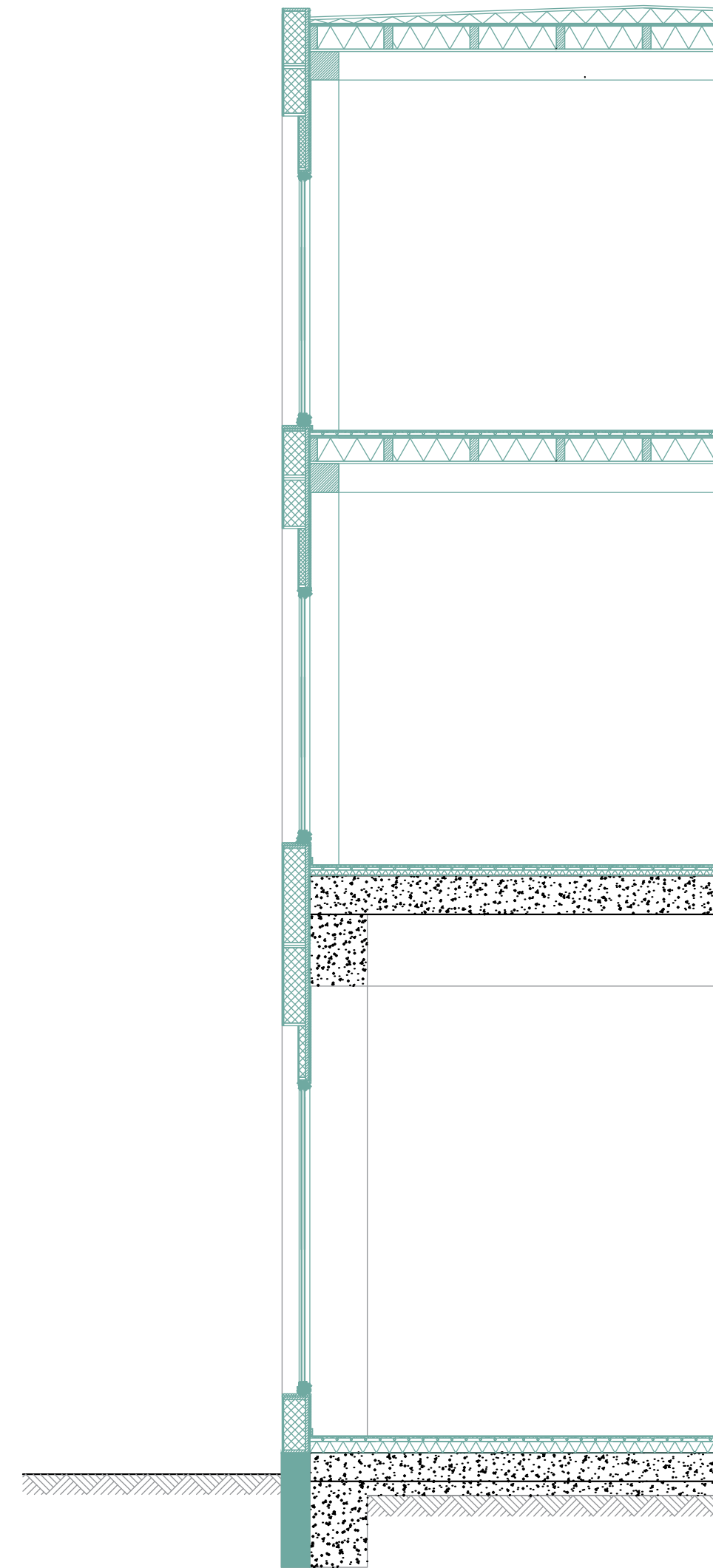
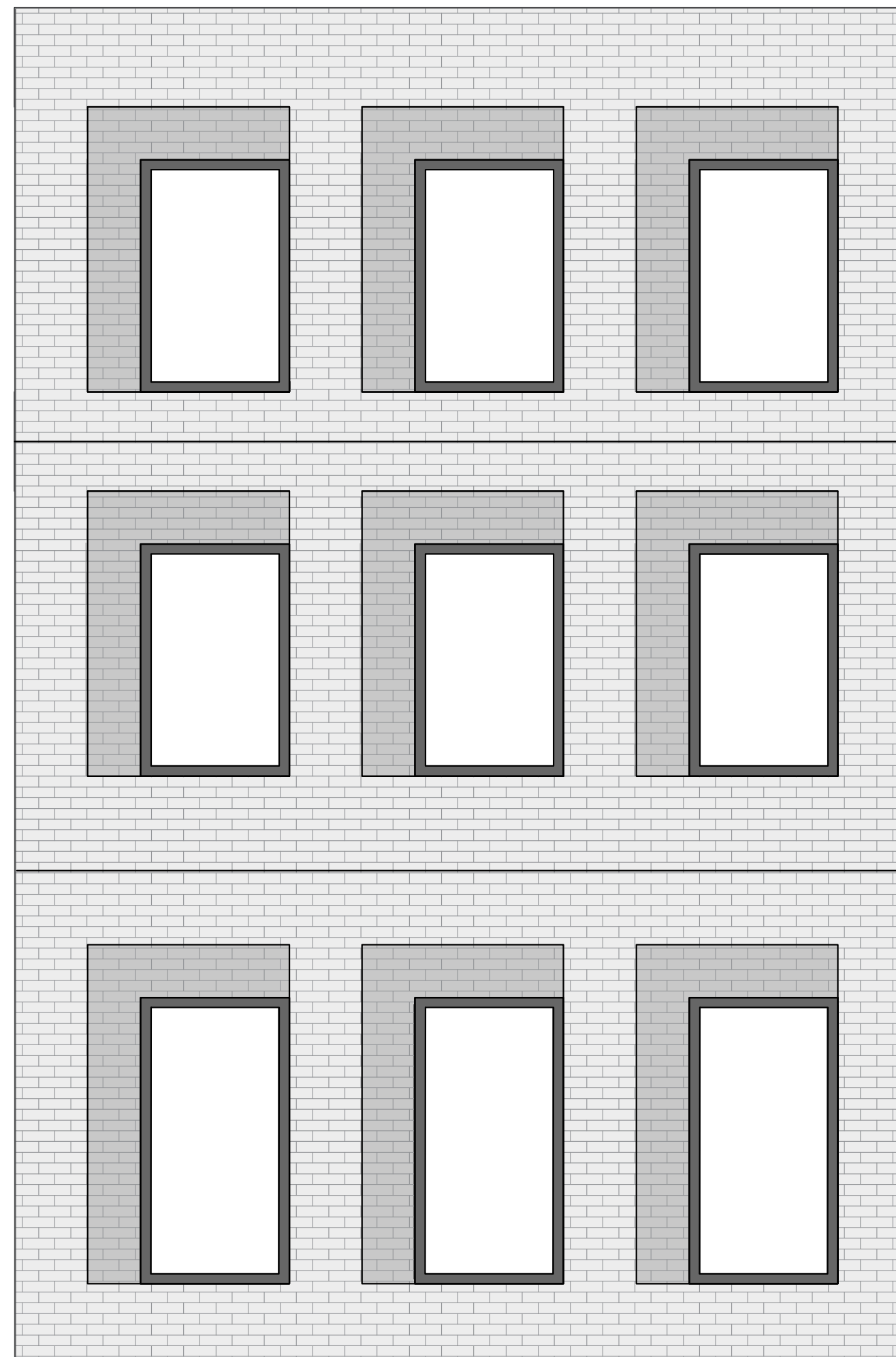
# IMPRESSION - CULTURAL CENTER



# BUILDING TECHNOLOGY - FACADE FRAGMENT

Permanent space // changeable use

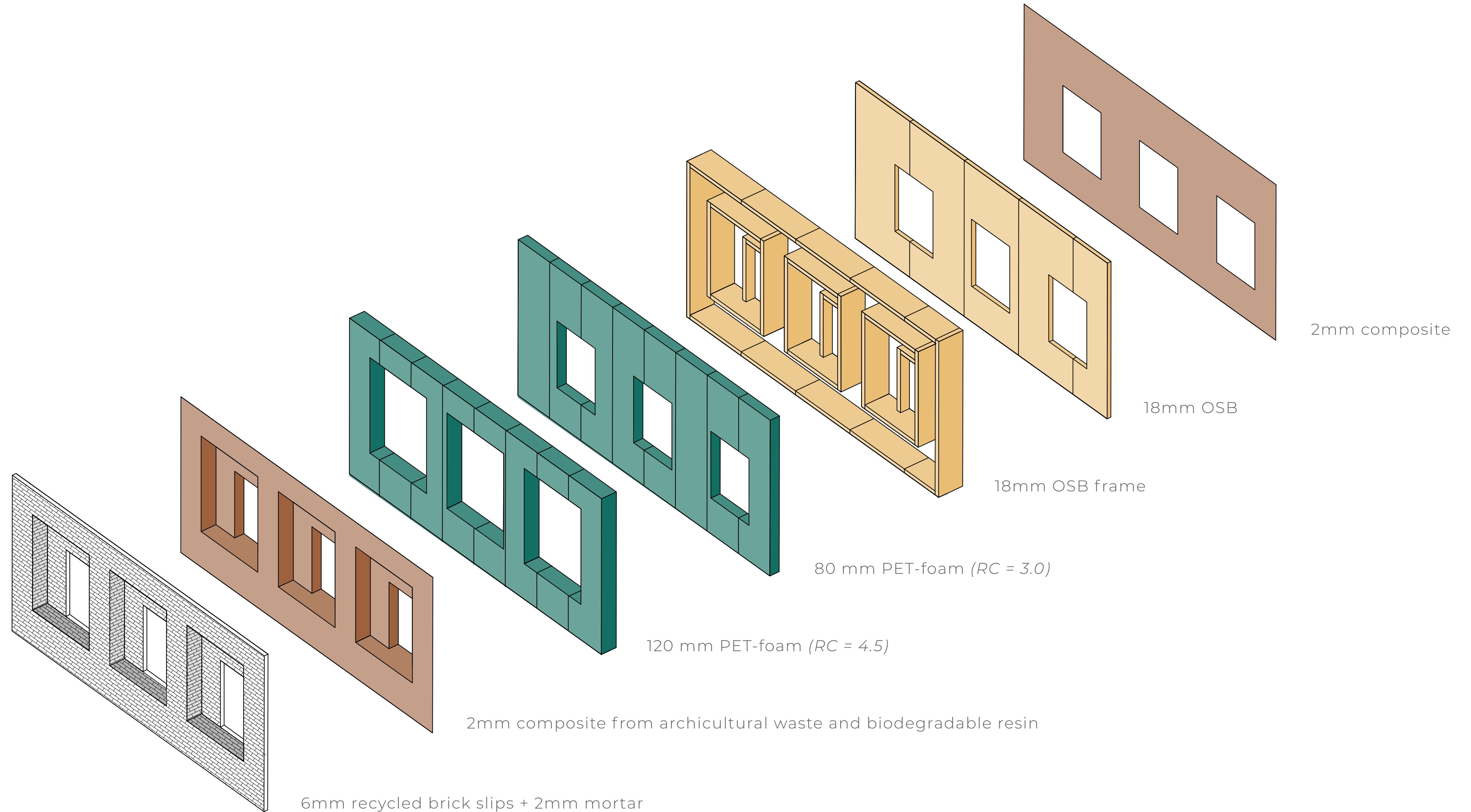
0 2m



- Existing building
- Newly added



# BUILDING TECHNOLOGY - DUPLICOR FACADE FRAGMENT

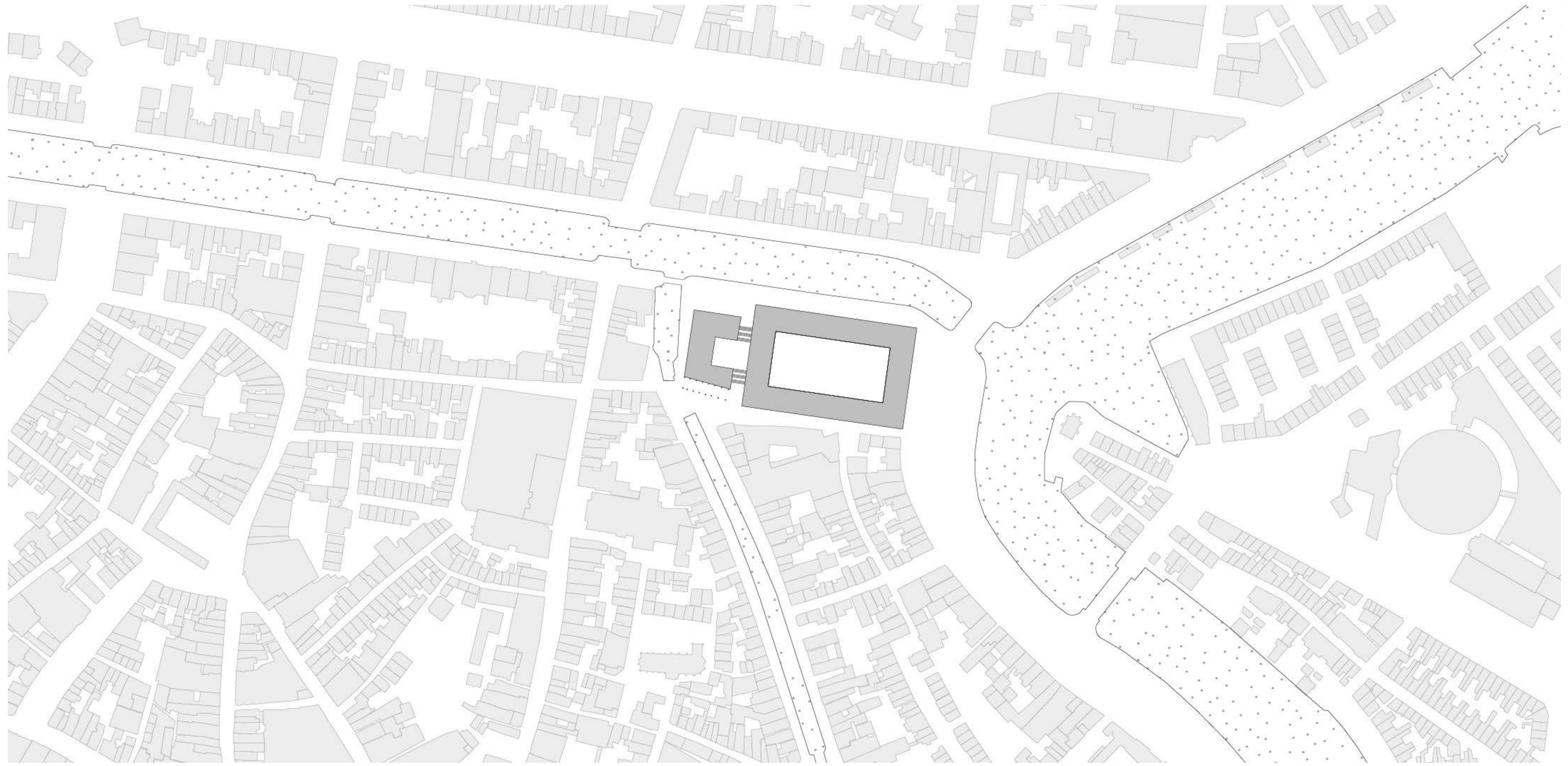




# URBAN SURROUNDINGS

Permanent space // changeable use

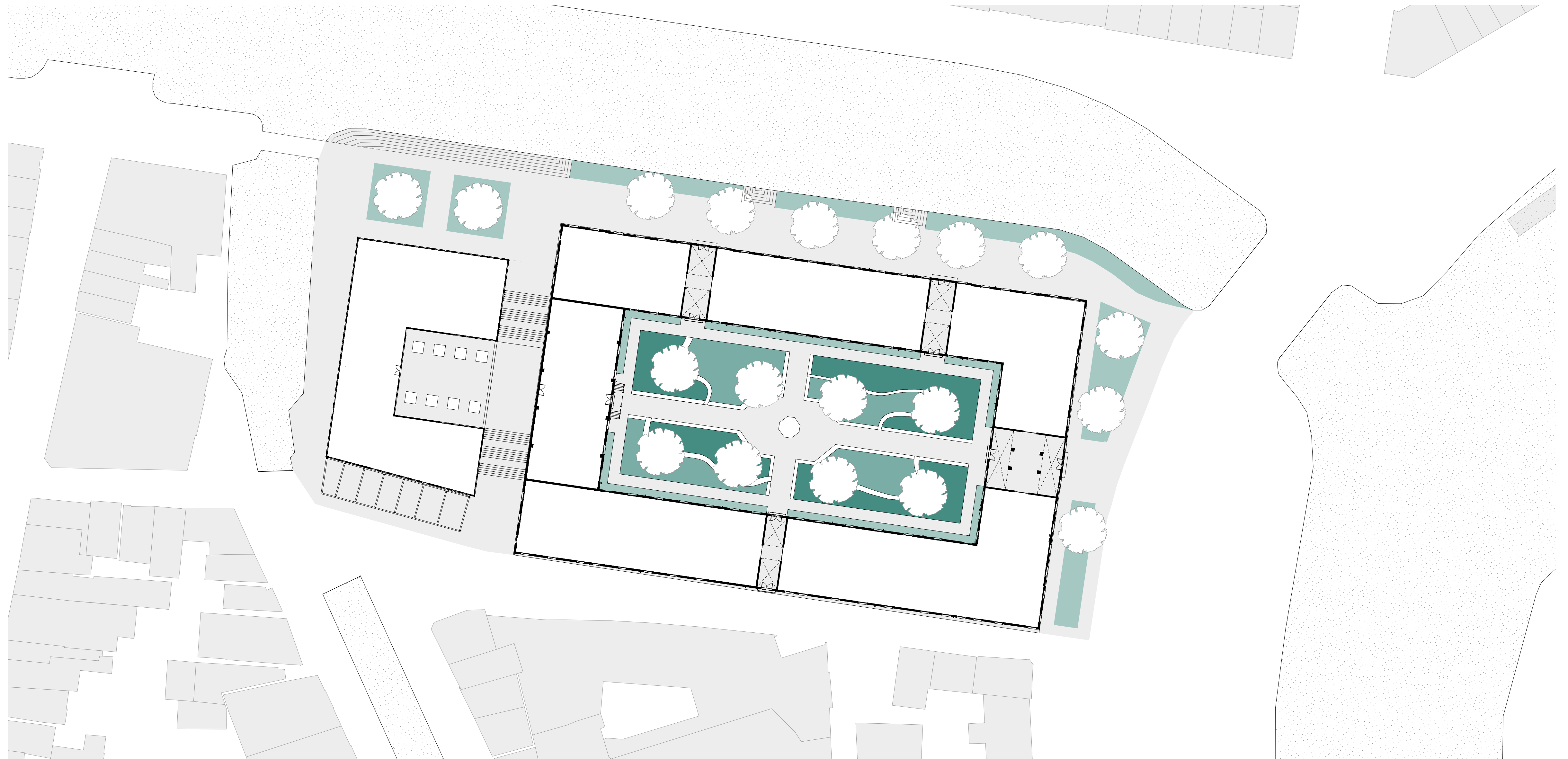
0 50m ⌚



# URBAN SURROUNDINGS

Permanent space // changeable use

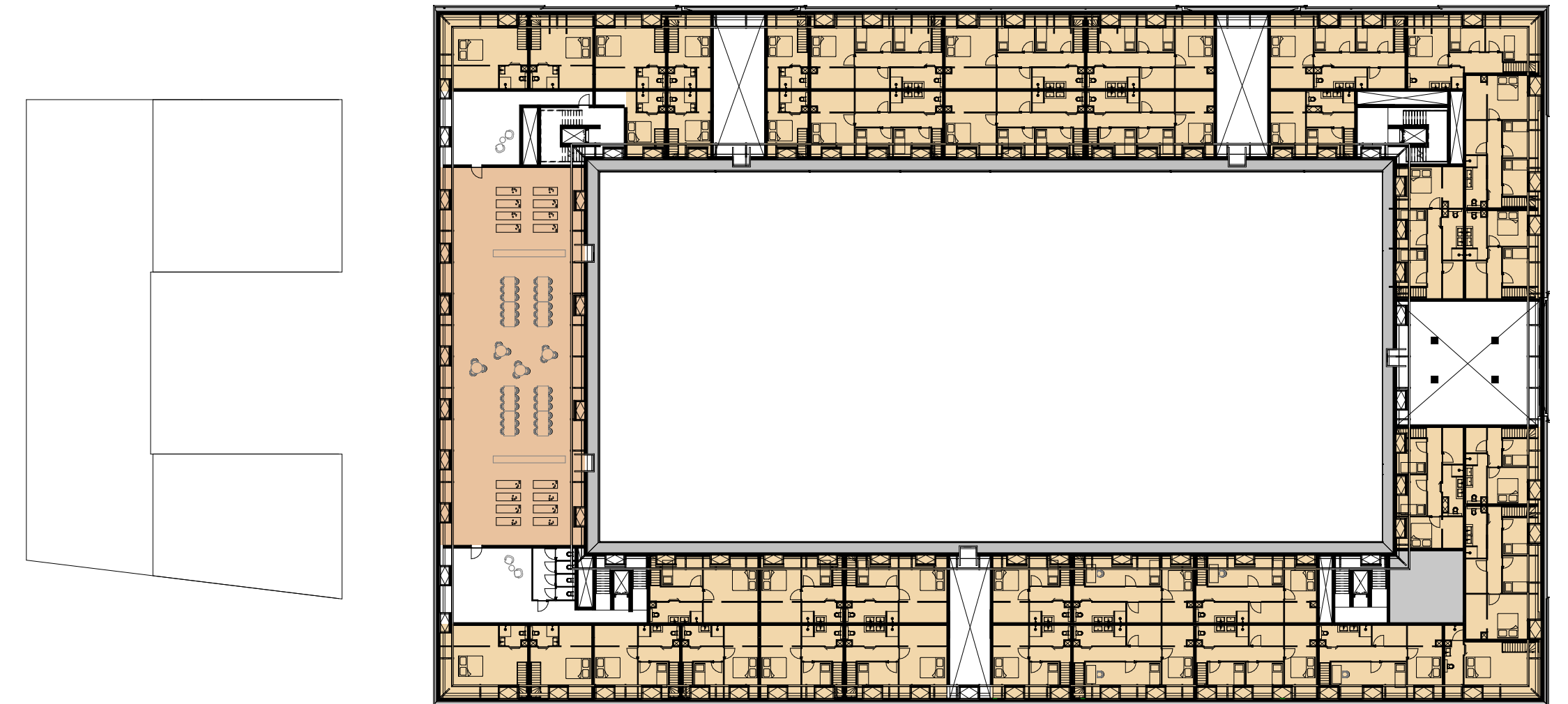
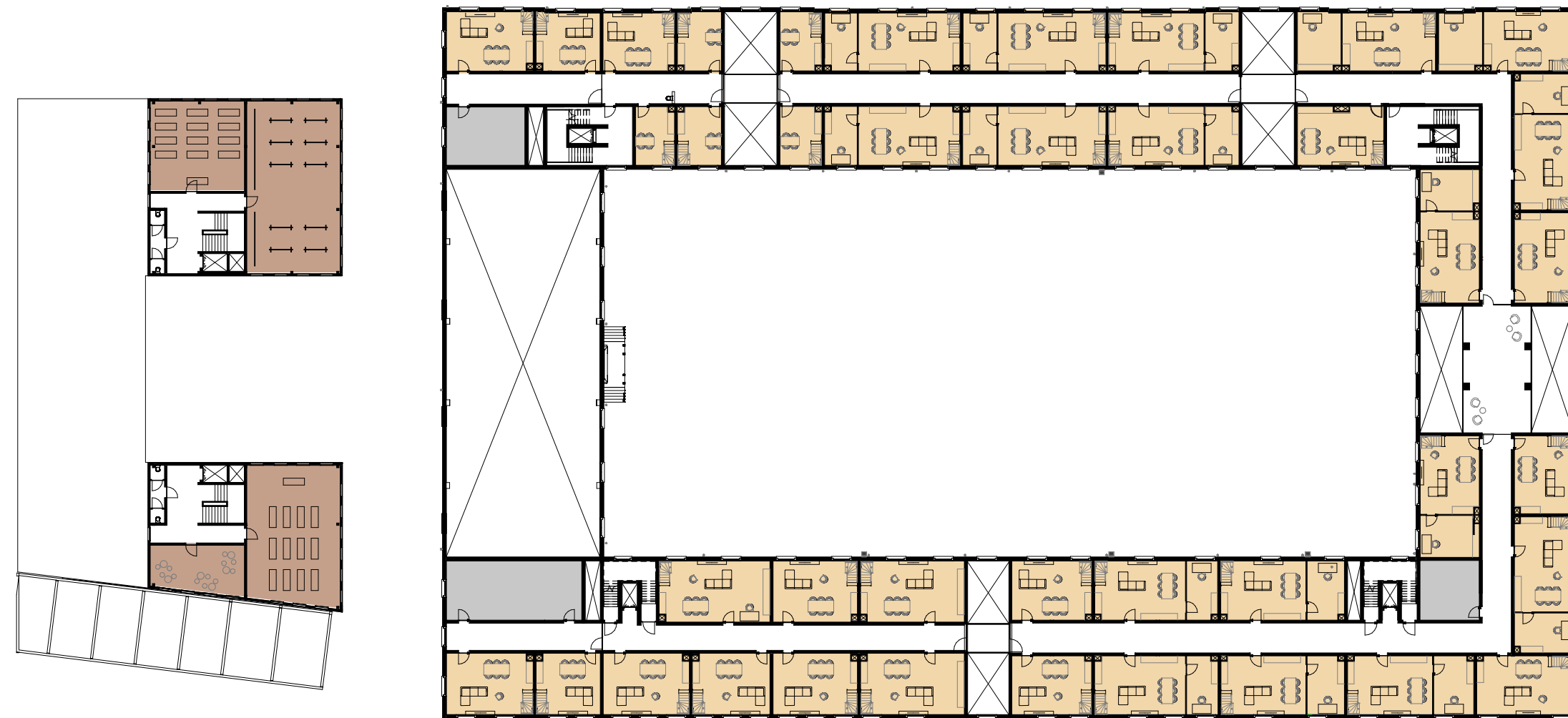
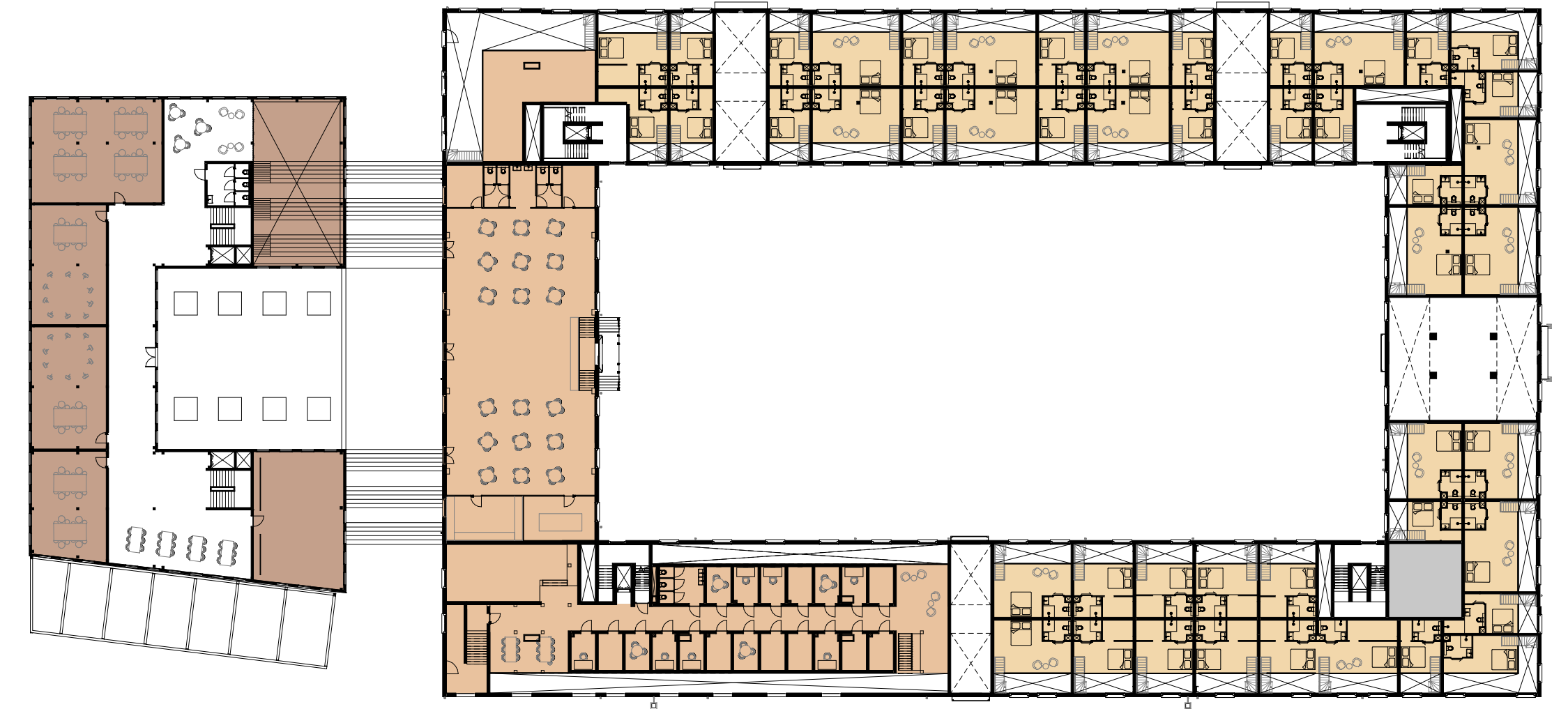
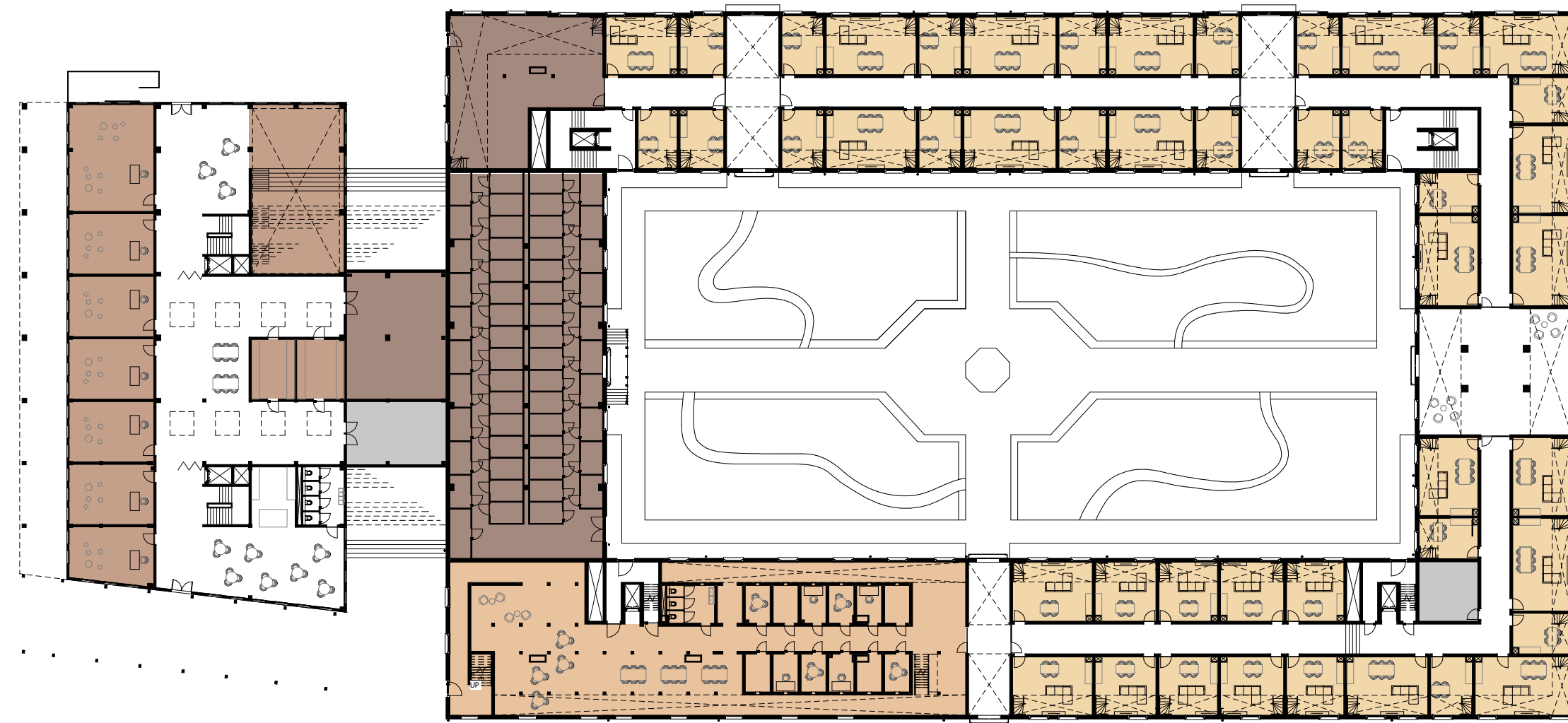
0 10m ⌚



# FLOORPLANS

Permanent space // changeable use

0 15m



From left to right: ground floor, entresol, first floor, attic.

# ELEVATIONS

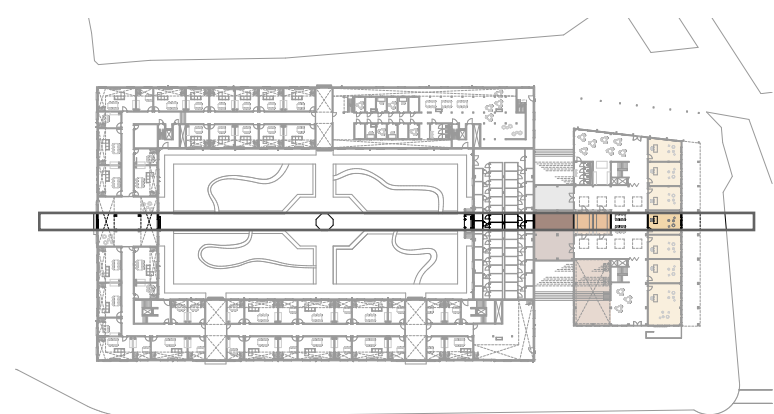
Permanent space // changeable use

0 10m



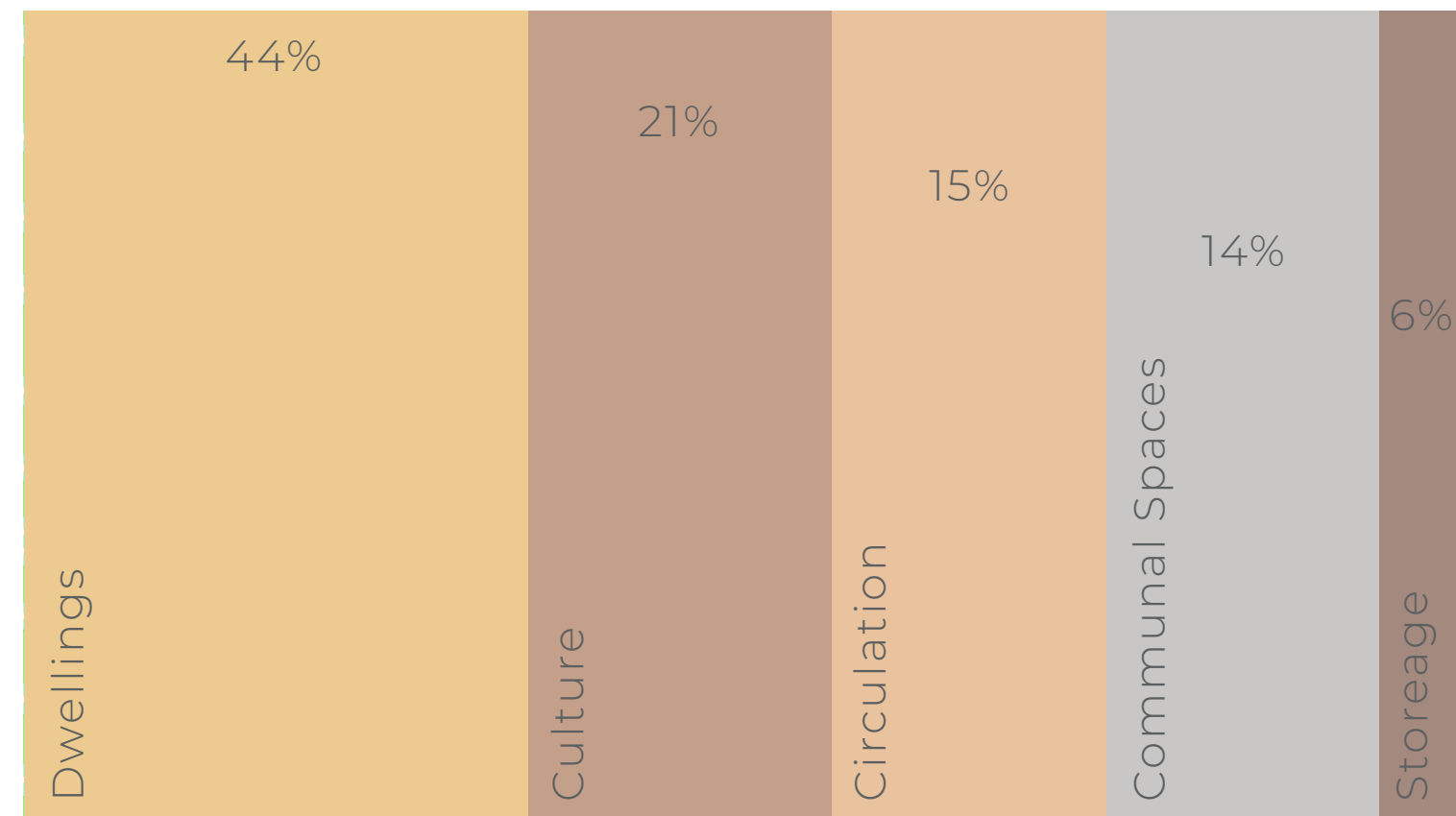
From top to bottom: north facade, south facade.

# SECTION - EAST TO WEST

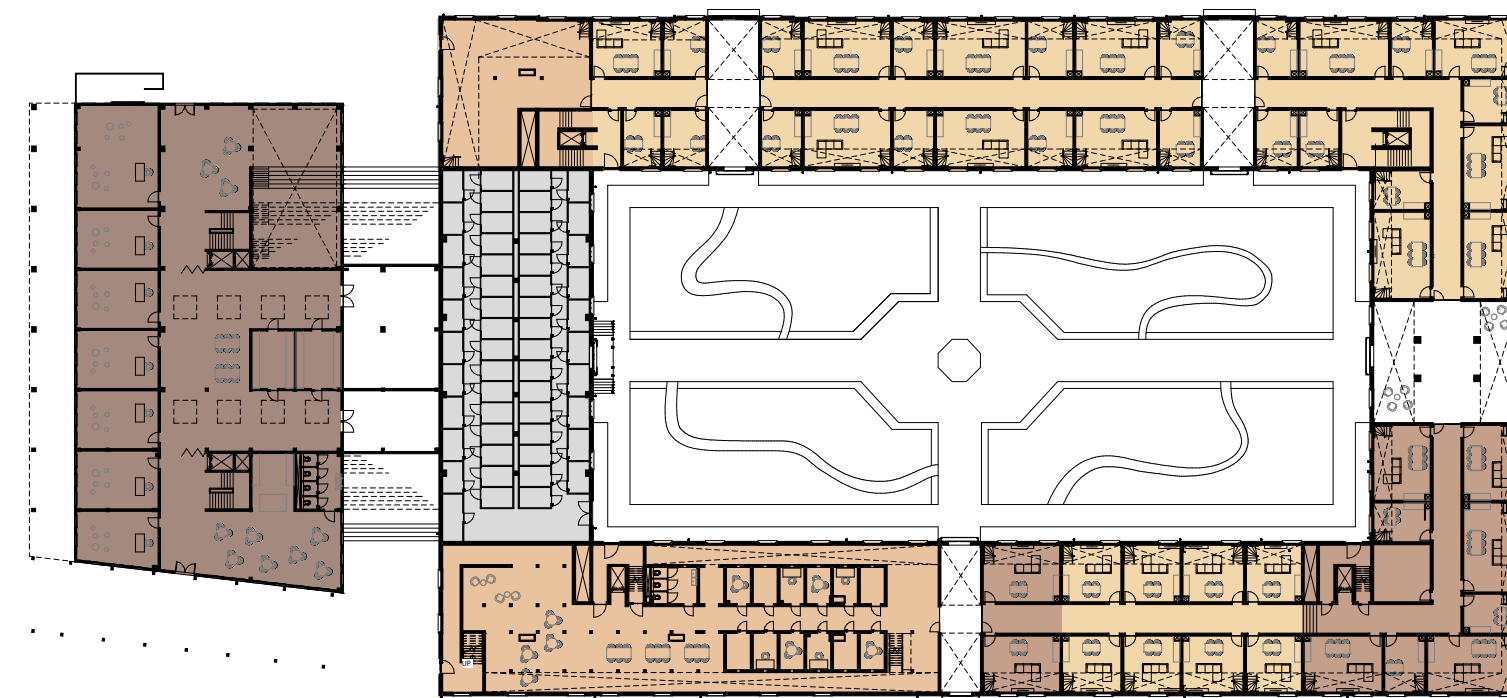


- Dressing Rooms
- Circulation Space
- Communal Spaces
- Cultural Center
- Storage

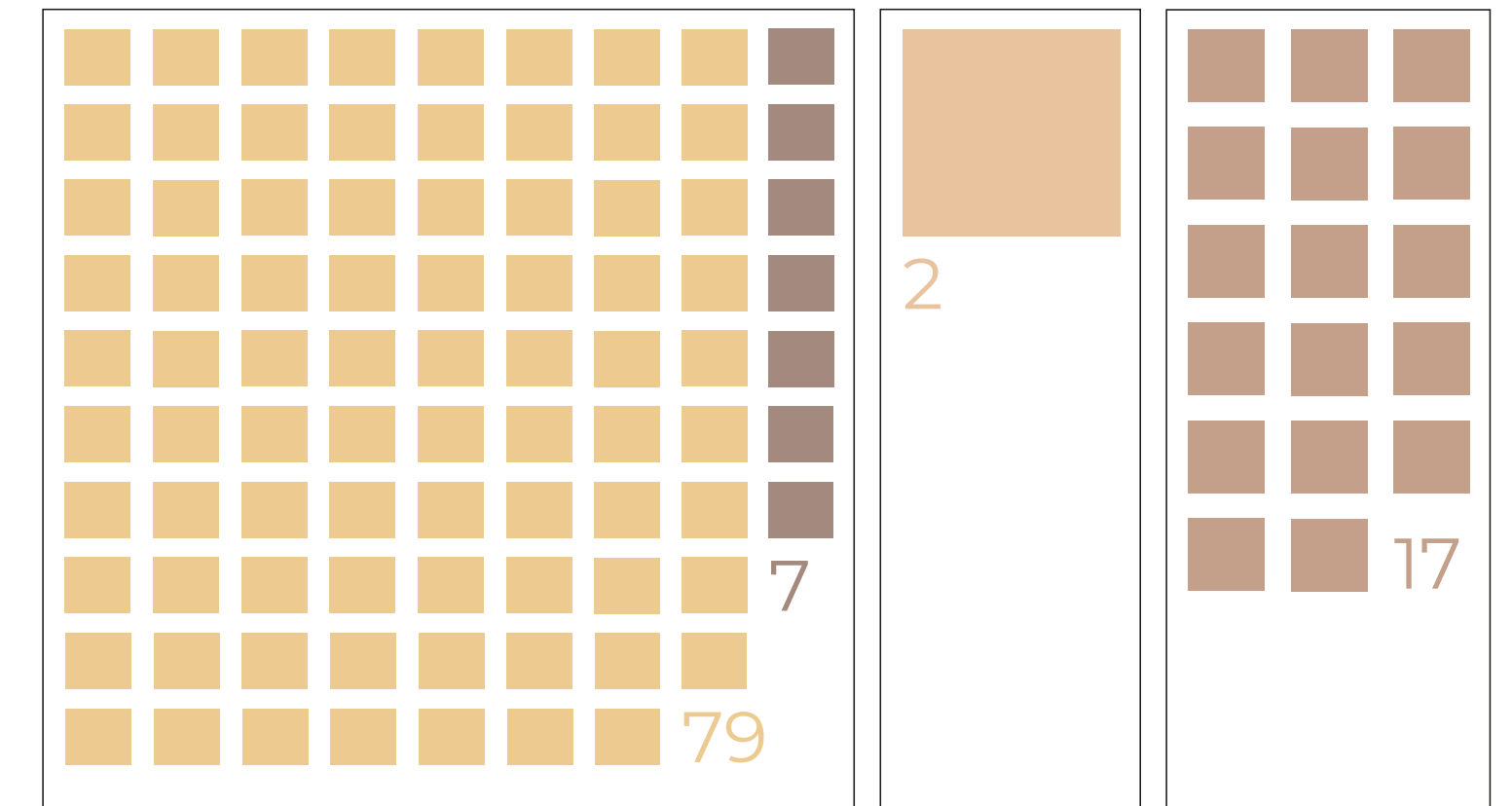
# CURRENT PROGRAM - CHANGEABLE AND PERMANENT ELEMENTS



Devison in program.



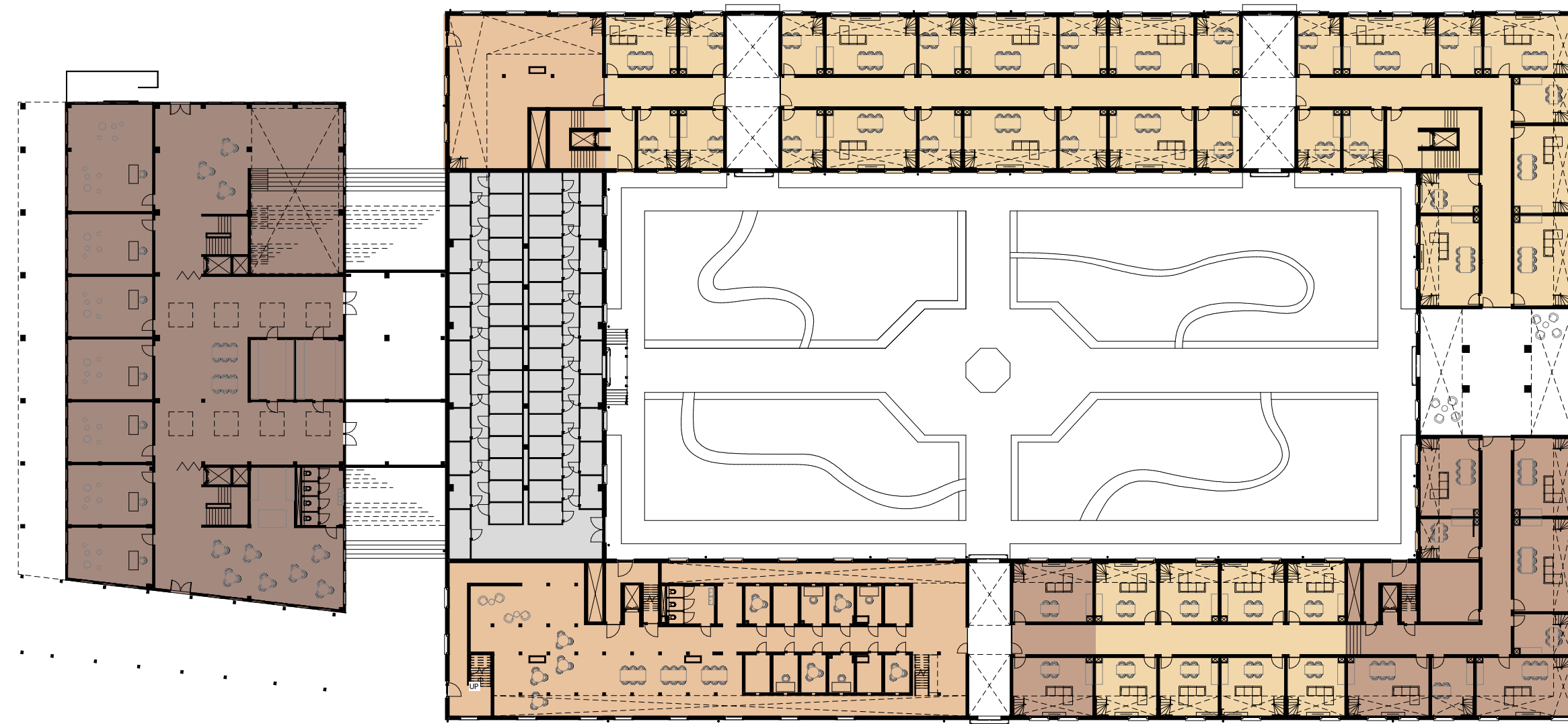
Different approaches for future change in redesign.



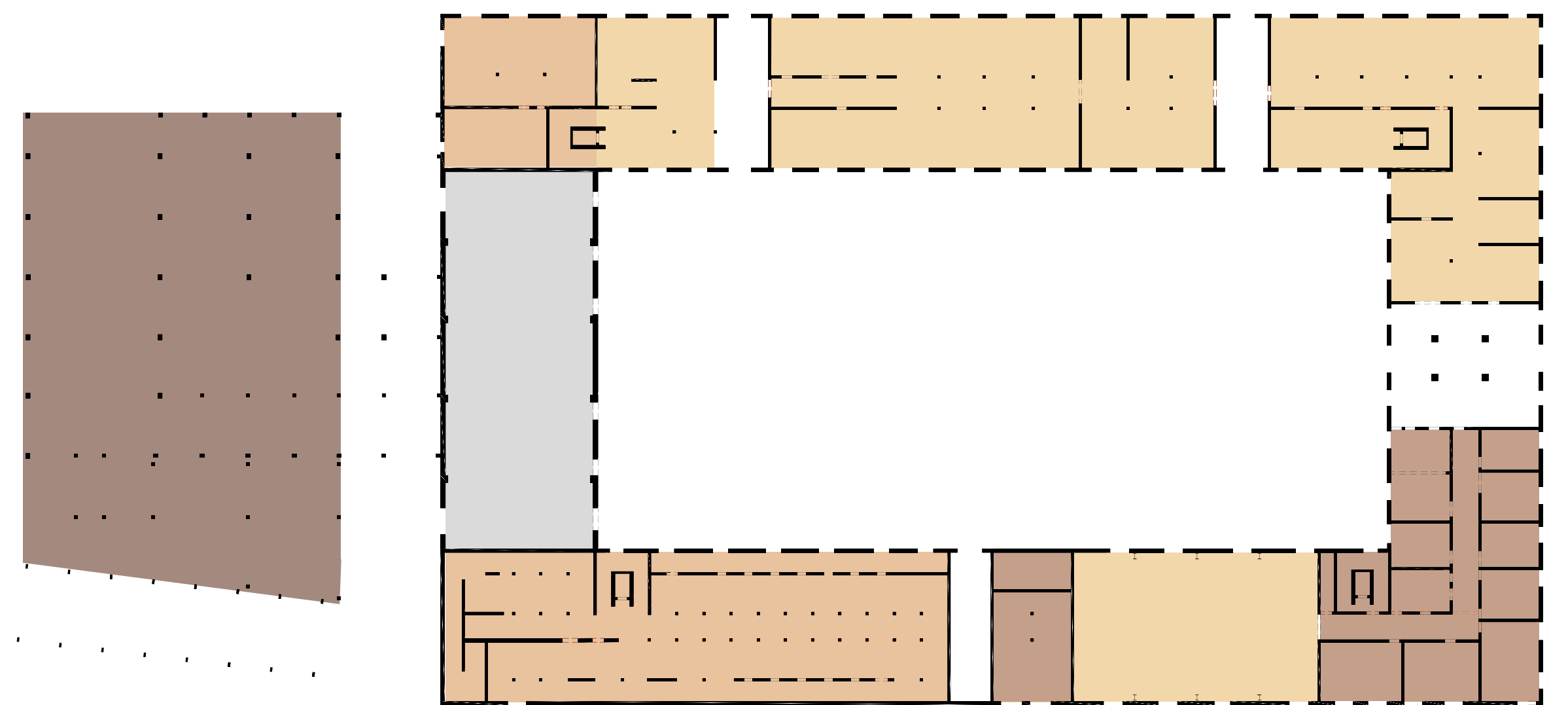
Changeable and permanent spaces.



# CURRENT PROGRAM - DIFFERENT APPROACHES FOR FUTURE CHANGE IN REDESIGN



Proposal floorplan ground floor

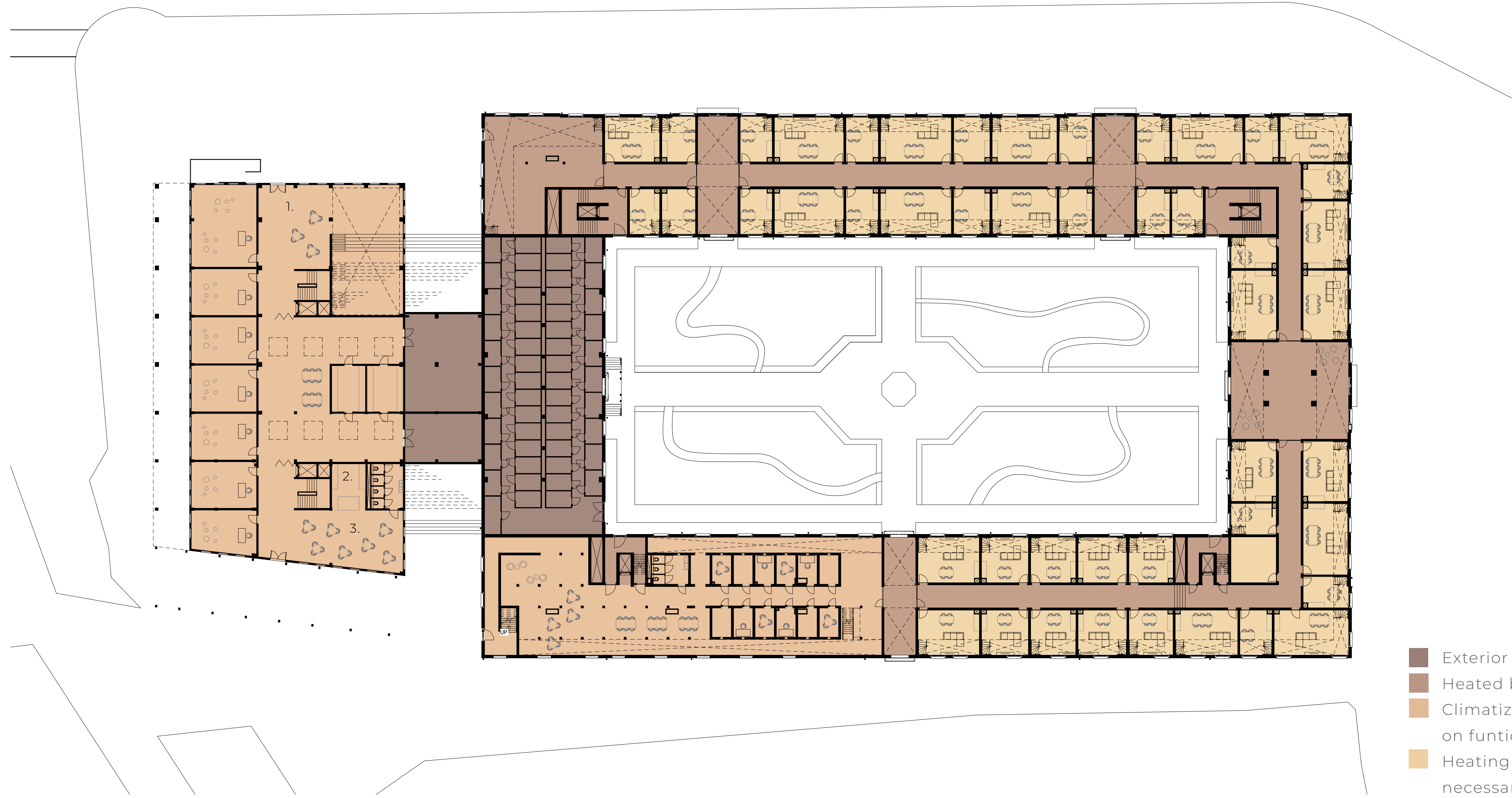






Existing and new construction

# BUILDING TECHNOLOGY - CLIMATE ZONES

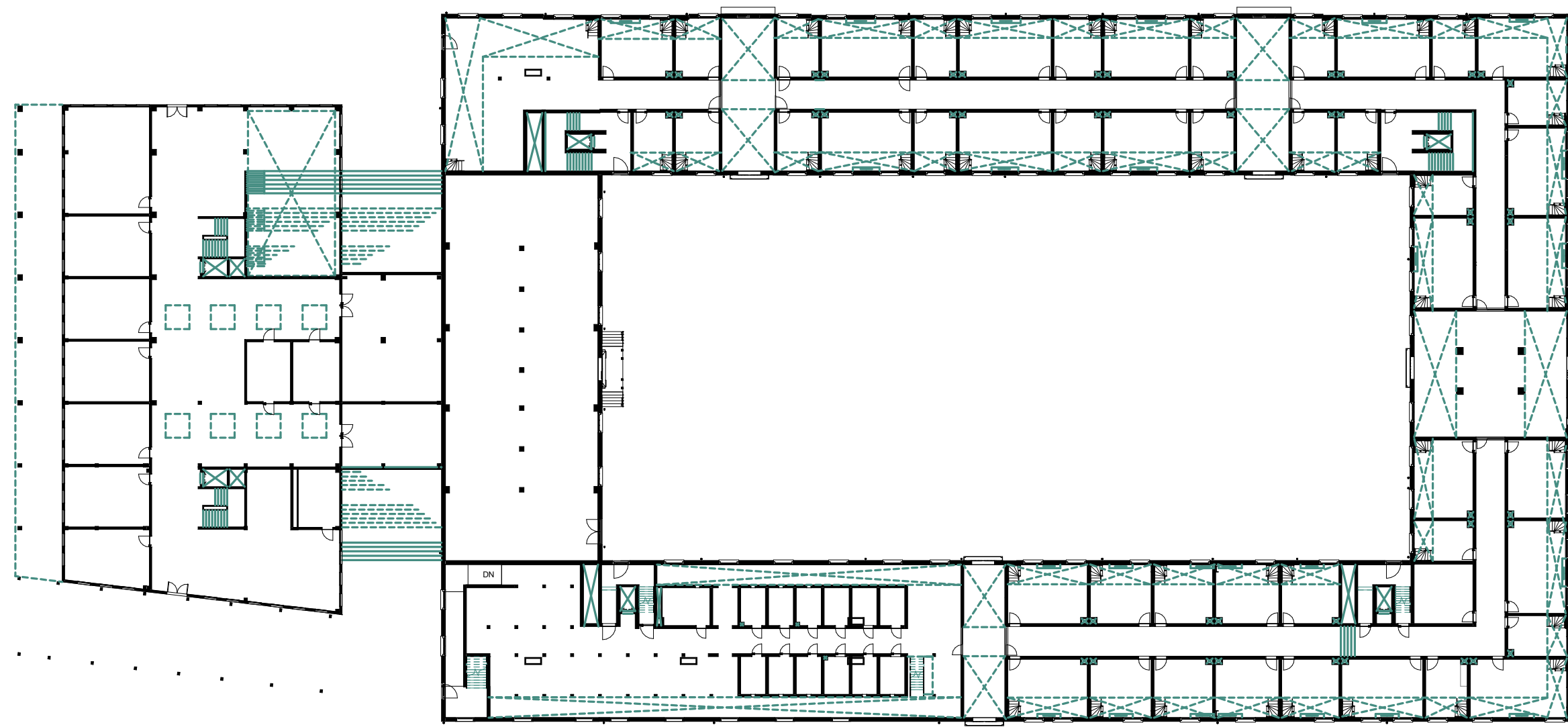
Permanent space // changeable use

0 10m 

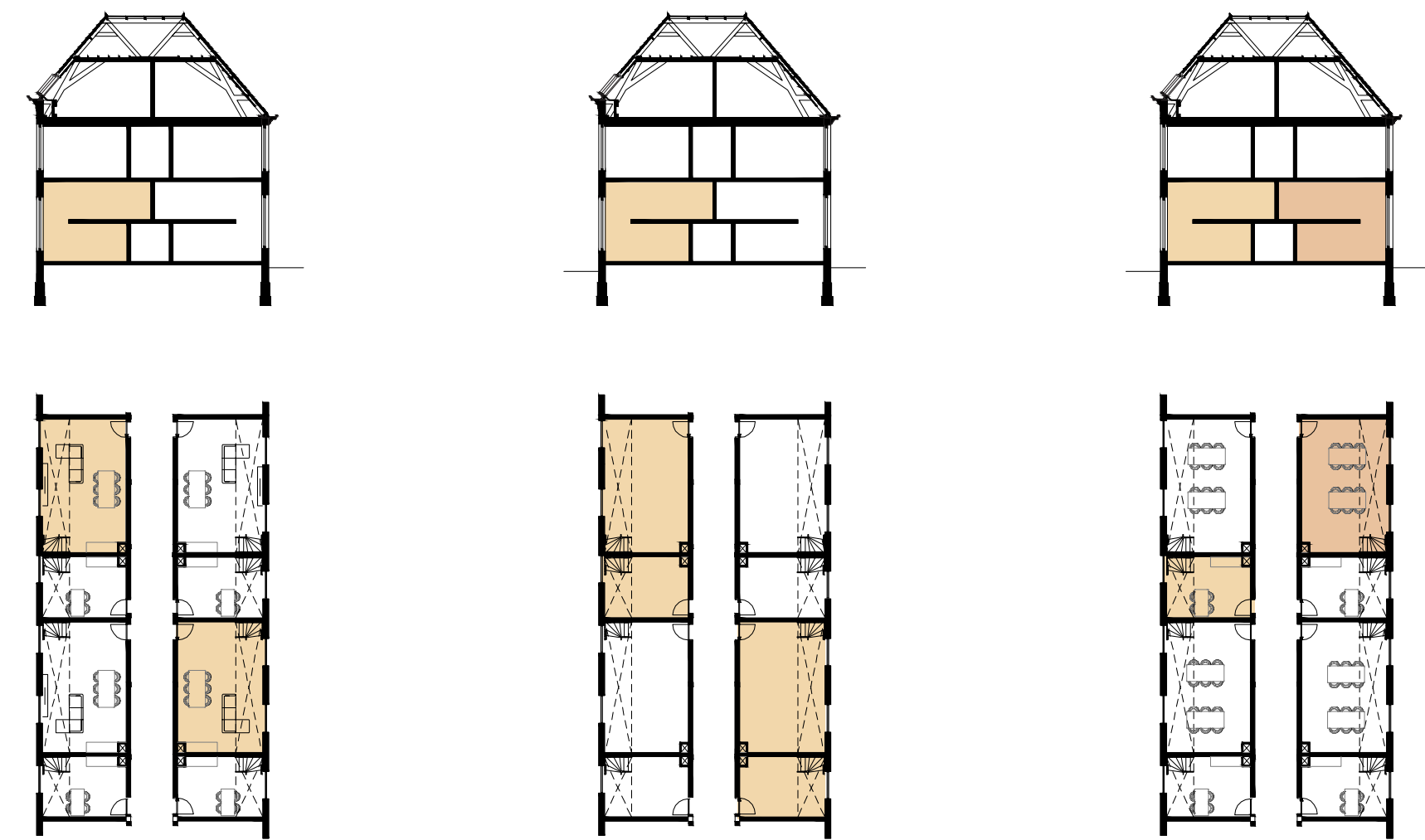


-  Exterior Climate
-  Heated by residual heat
-  Climatized depending on function
-  Heating / Cooling when necessary

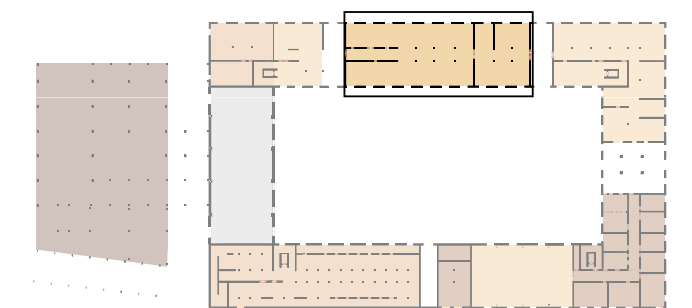
# RESEARCH BY DESIGN - PERMANENT SPACE AND CHANGEABLE USE



Proposal floorplan ground floor



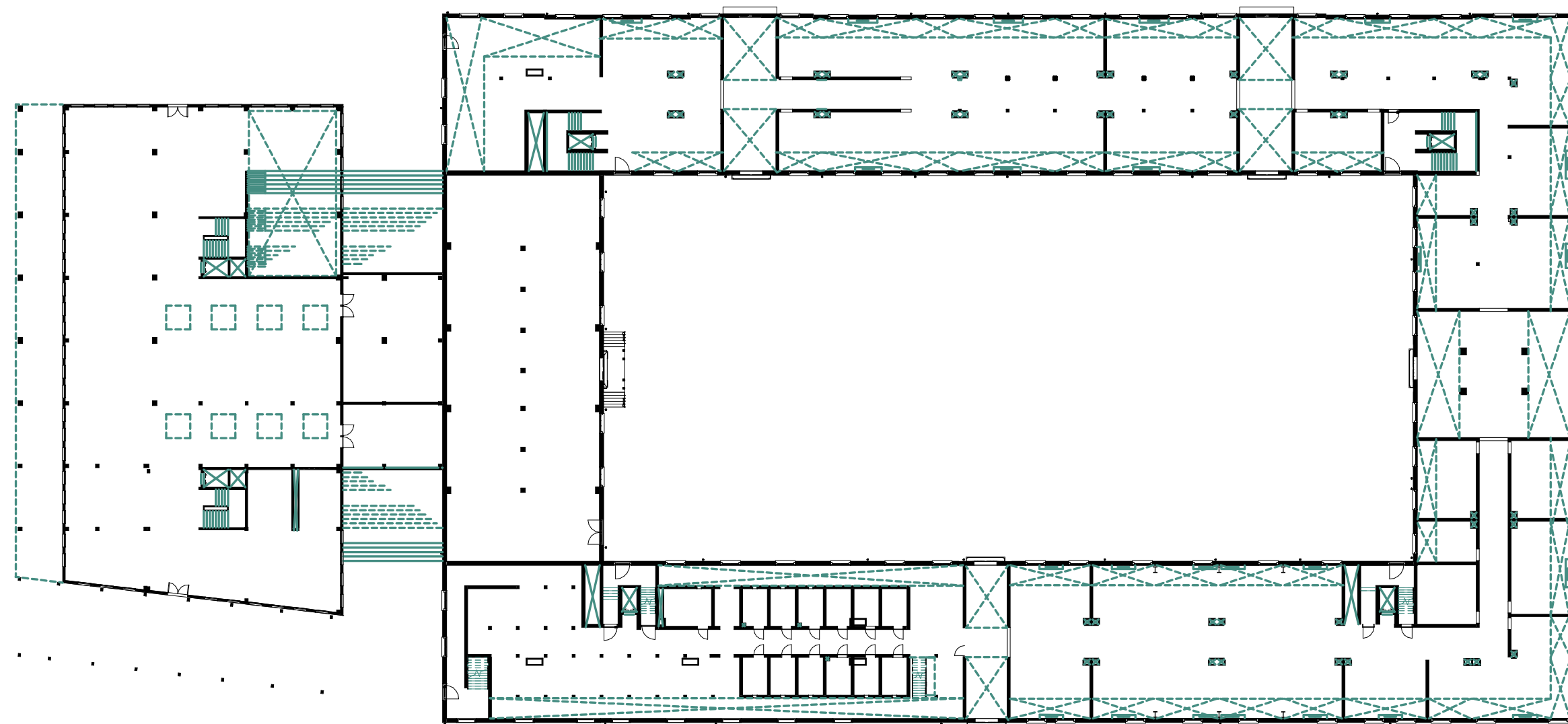
Changeable typologies in the Koudenhorn



# RESEARCH BY DESIGN - CHANGEABLE SPACE AND CHANGEABLE USE

Permanent space // changeable use

0 10m



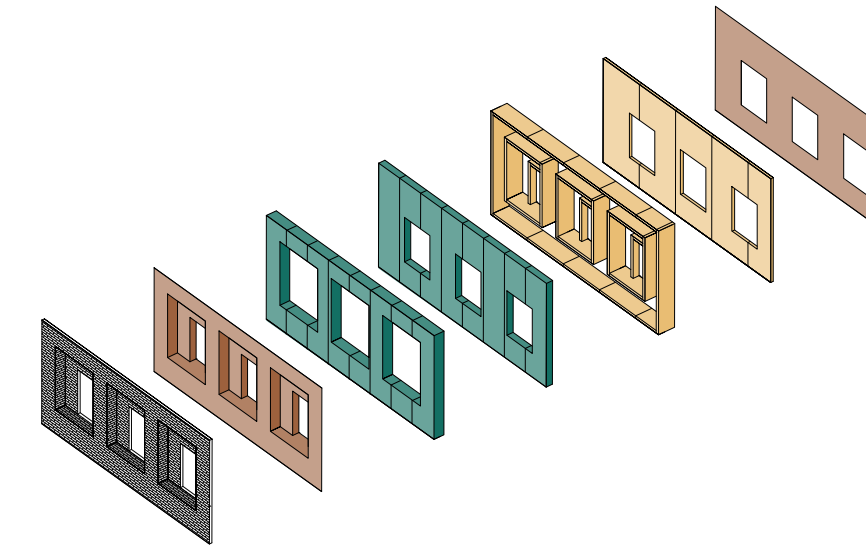
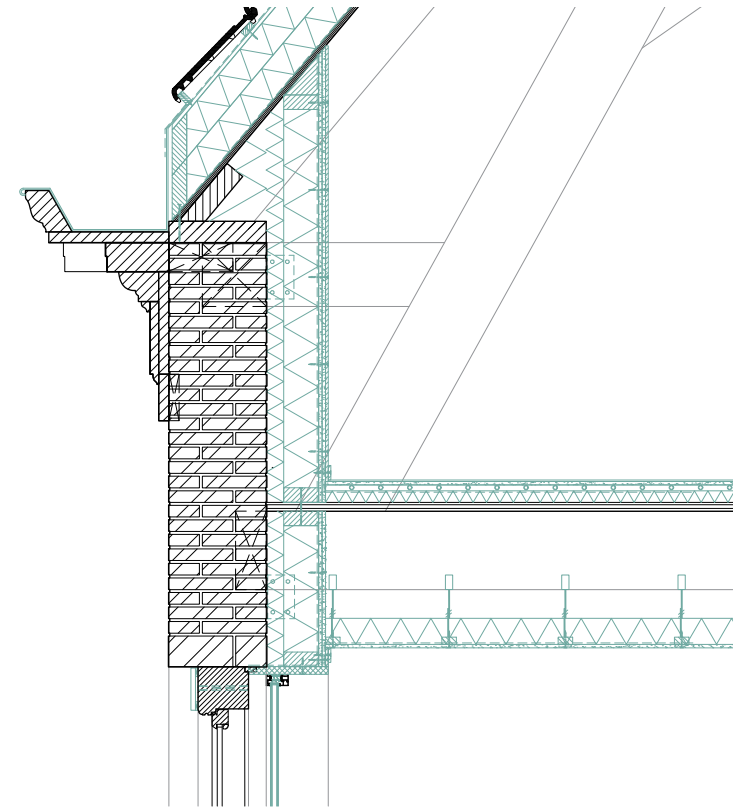
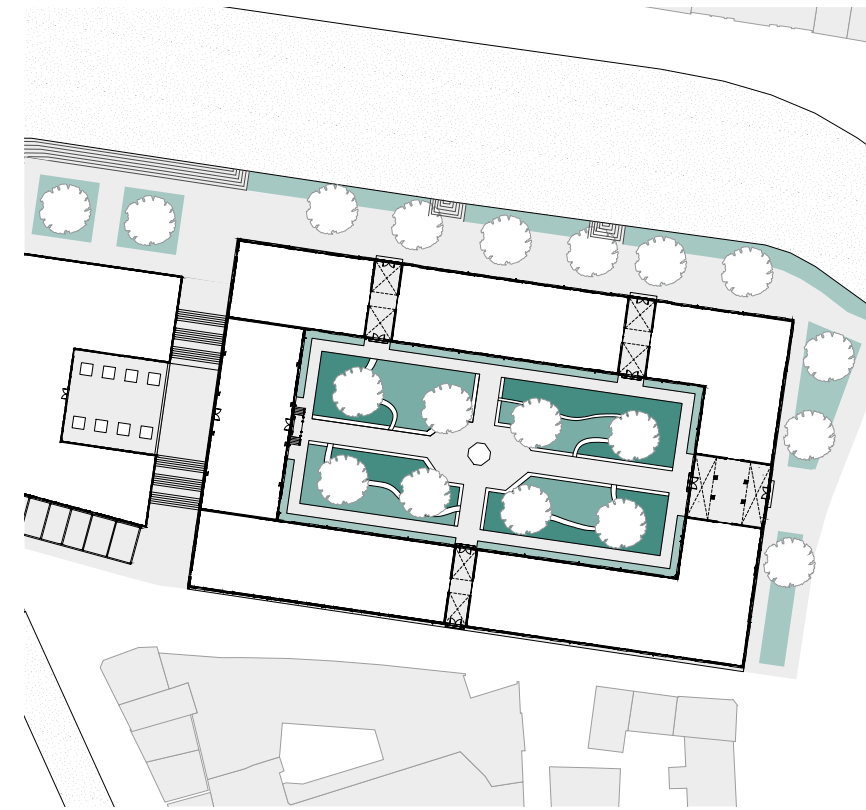
Permanent elements of the building



Changeable spaces in the Koudenhorn



# CONCLUSIONS AND REFLECTION - HERITAGE APPROACH



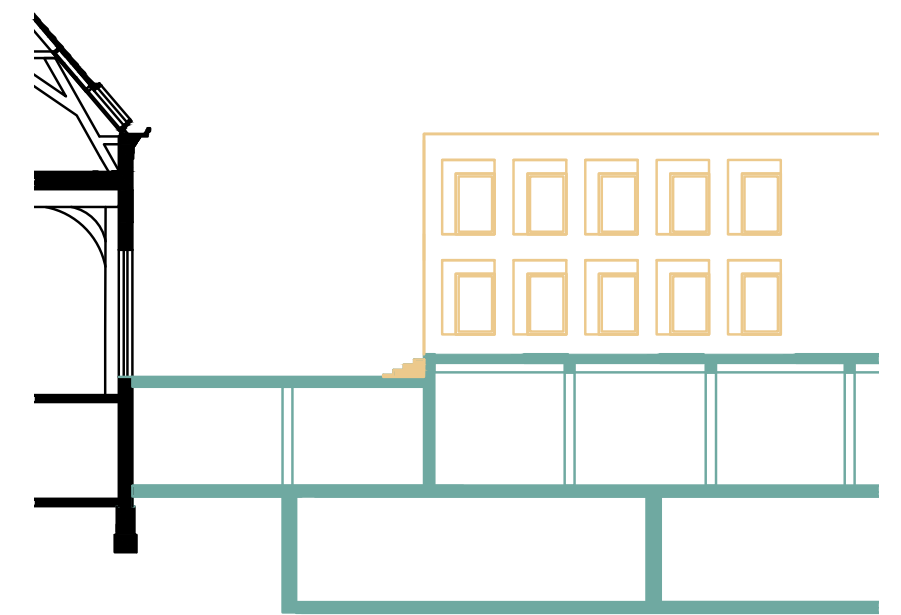
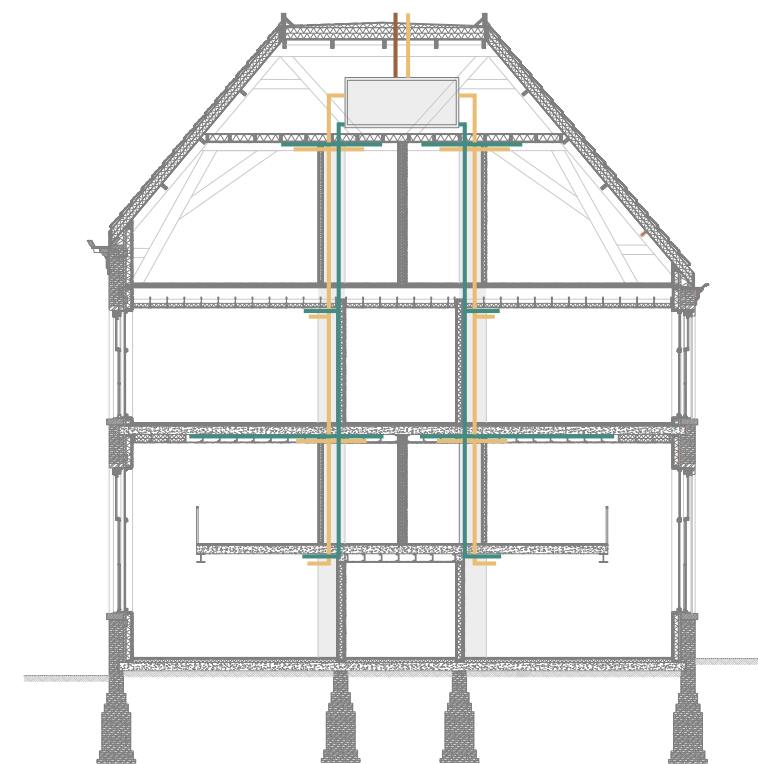
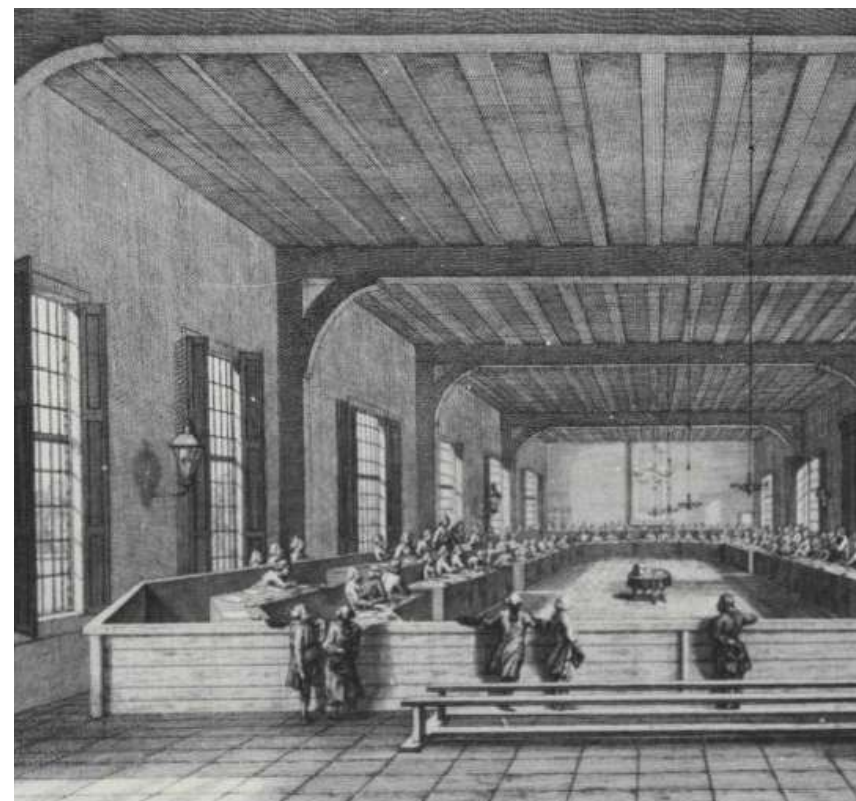
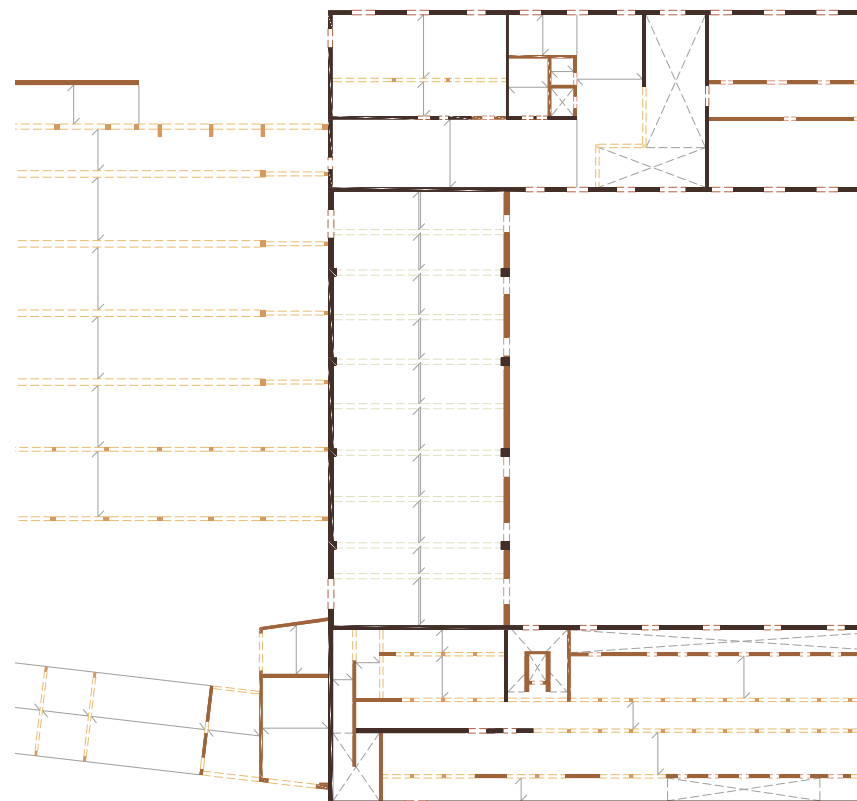
Preservation

Restoration

Renovation

Redesign

Intervention



# CONCLUSIONS AND REFLECTION - SPECTRUM FOR REDESIGN

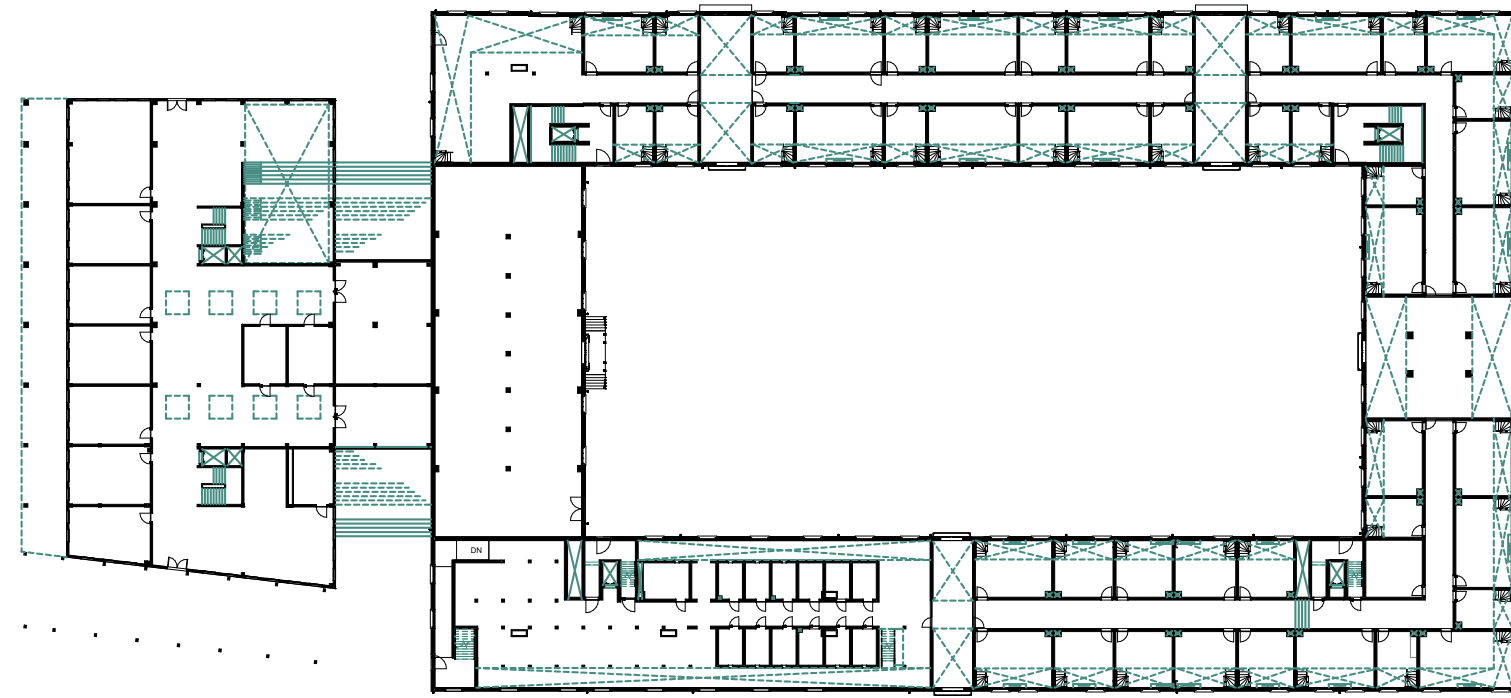
Building: Minimal change

Building: Change structure for adaptability

User: Adaptability of the user

User: Future proof for all users

# CONCLUSIONS AND REFLECTION - LIMITATION PRESERVATION

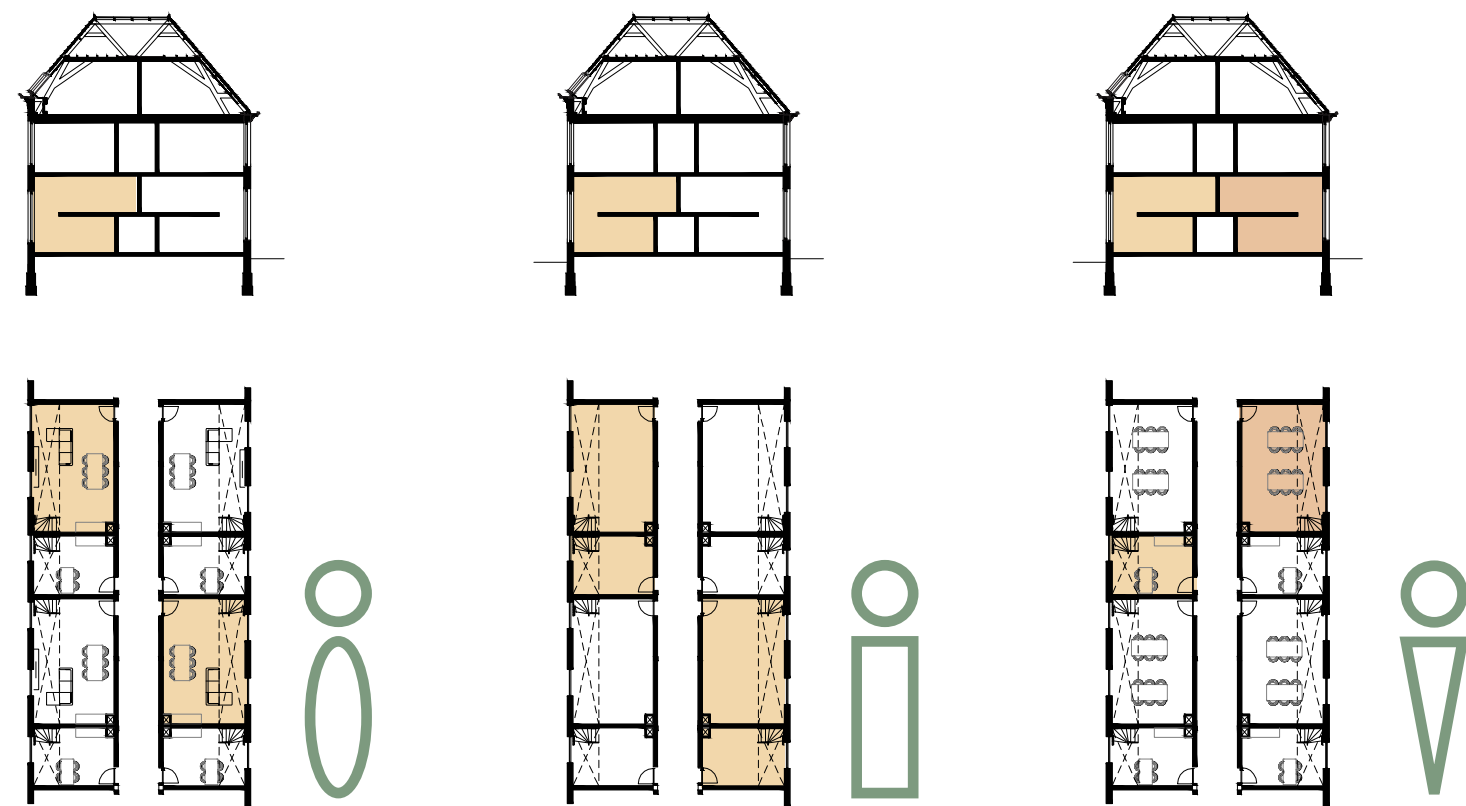


Building: Minimal change

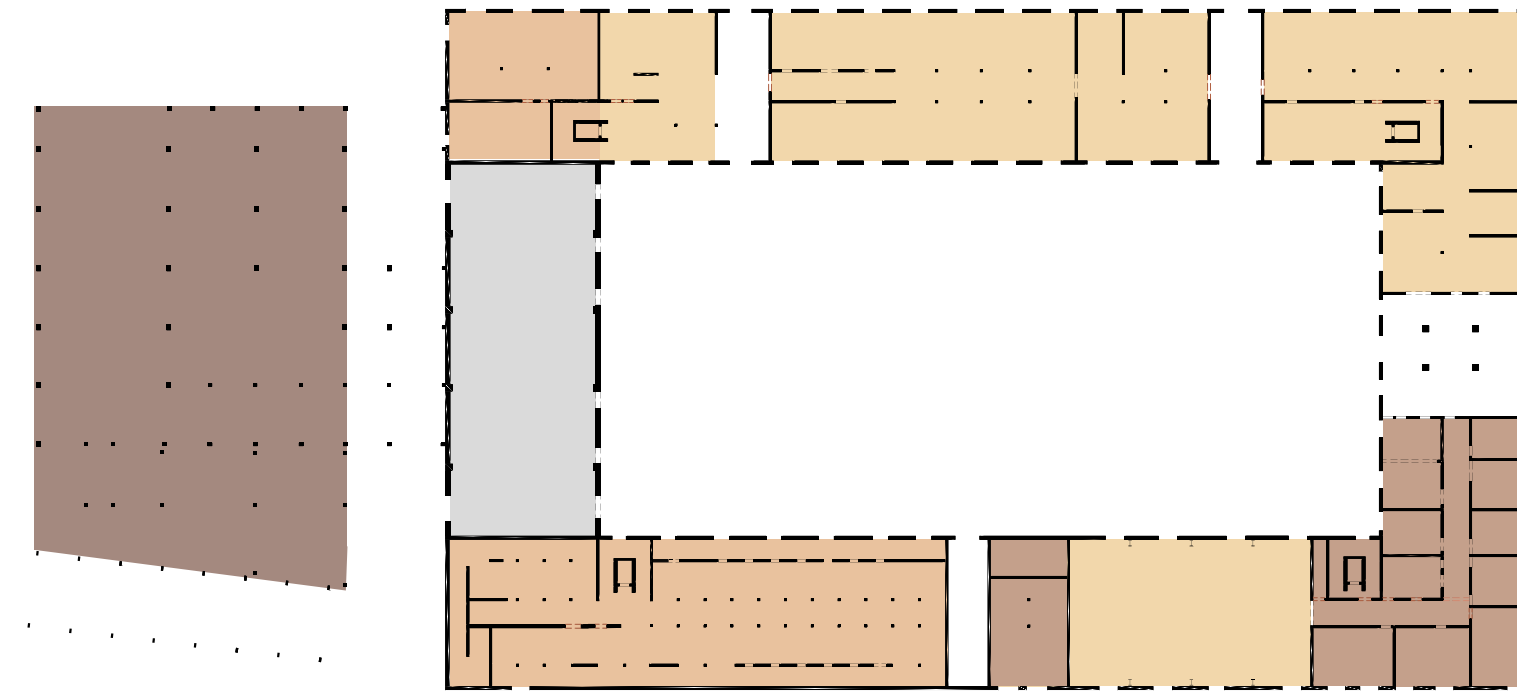
Building: Change structure for adaptability

User: Adaptability of the user

User: Future proof for all users



# CONCLUSIONS AND REFLECTION - LIMITATION FUNCTION

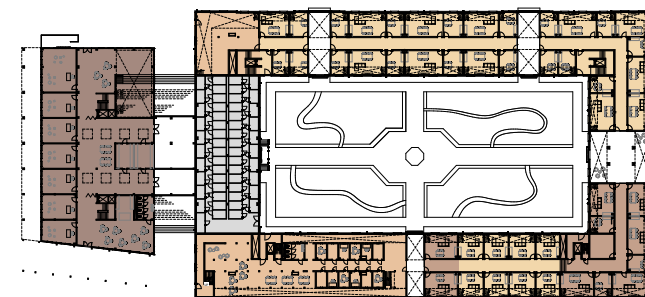


Building: Minimal change

Building: Change structure for adaptability

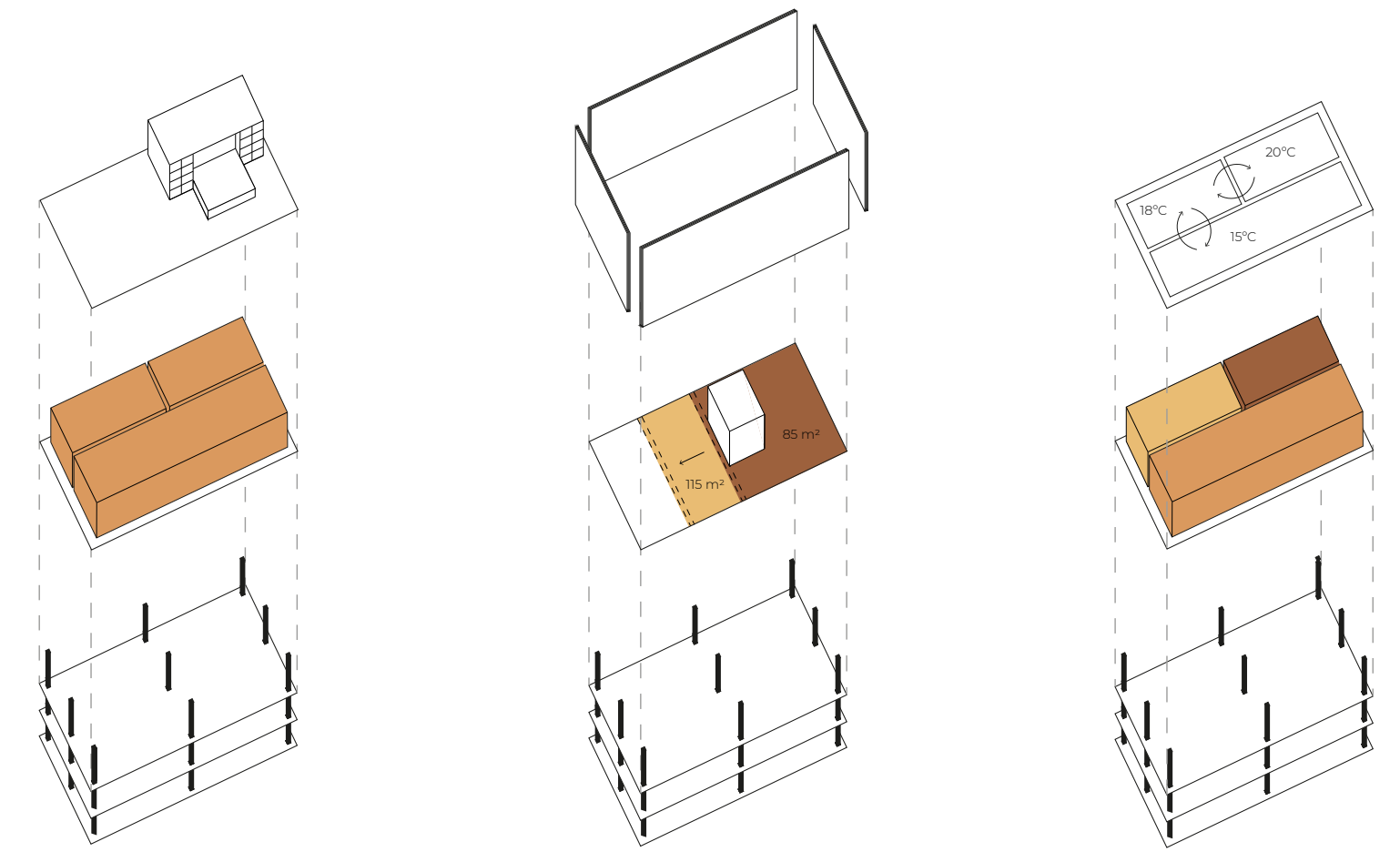
User: Adaptability of the user

User: Future proof for all users





# CONCLUSIONS AND REFLECTION - LIMITATION IDEOLOGY



Building: Minimal change

Building: Change structure for adaptability

User: Adaptability of the user

User: Future proof for all users



# PERMANENT SPACE // CHANGEABLE USE

Adaptability without future architectural interventions

How could the space plan of a monument like the Koudenhorn be redesigned to accommodate changes in use over time?

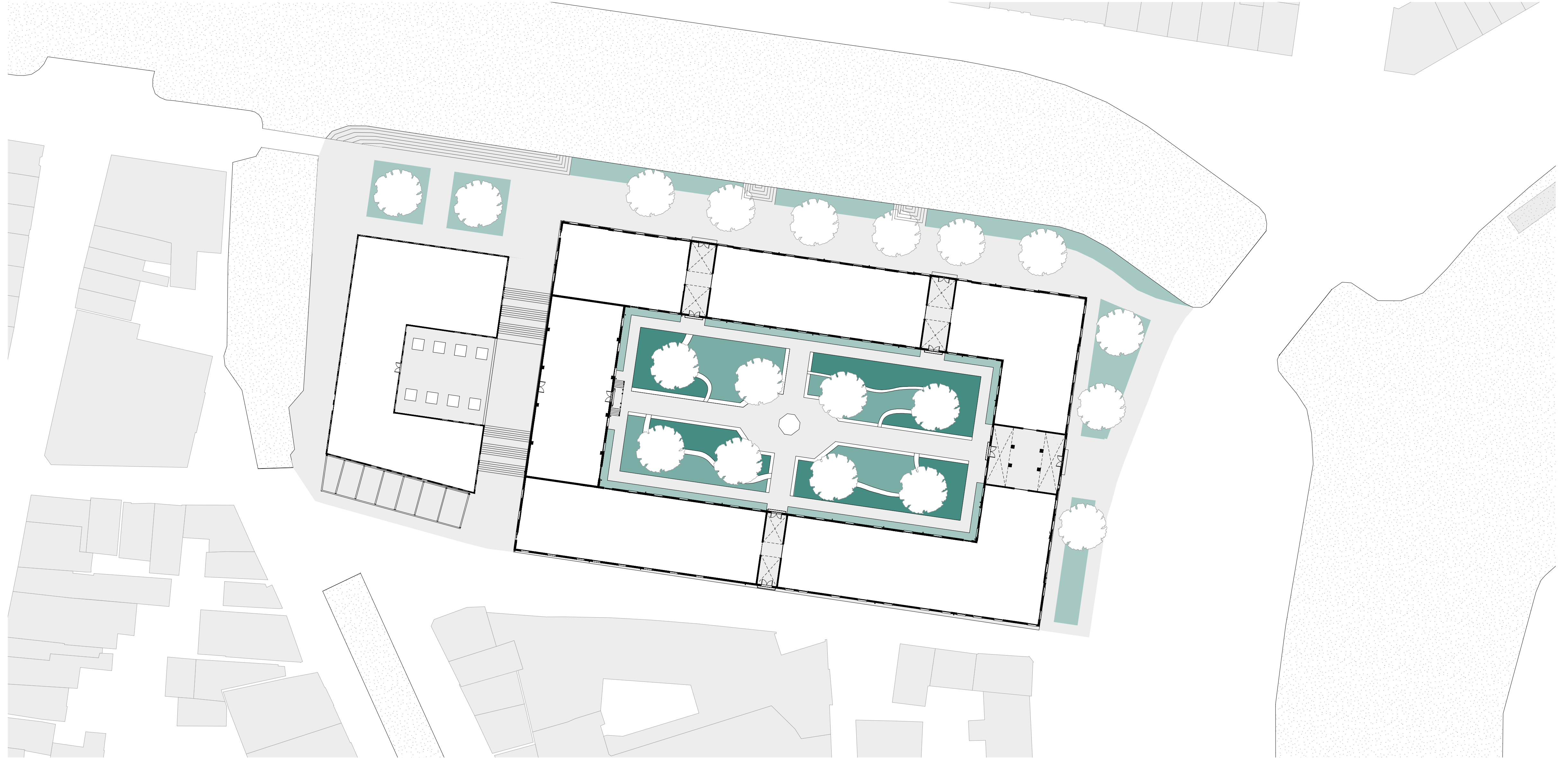
Focussing on designing an architecture that is resilient in accomodating change in use over time, redesigning a building in which the user needs to become more adaptable.



# URBAN SURROUNDINGS

Permanent space // changeable use

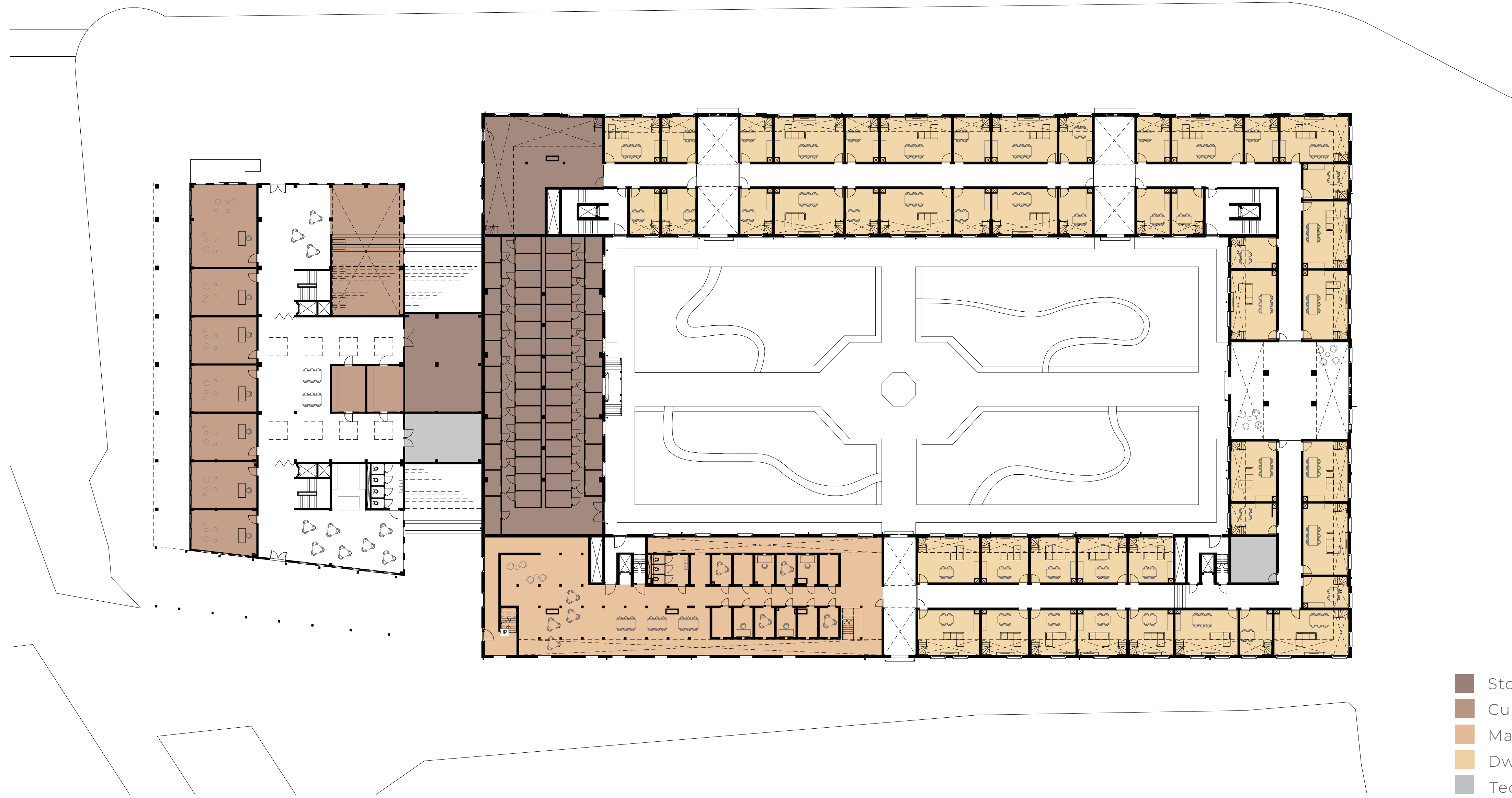
0 10m ⌚



# FLOORPLANS - GROUND FLOOR PLAN

Permanent space // changeable use

0 10m

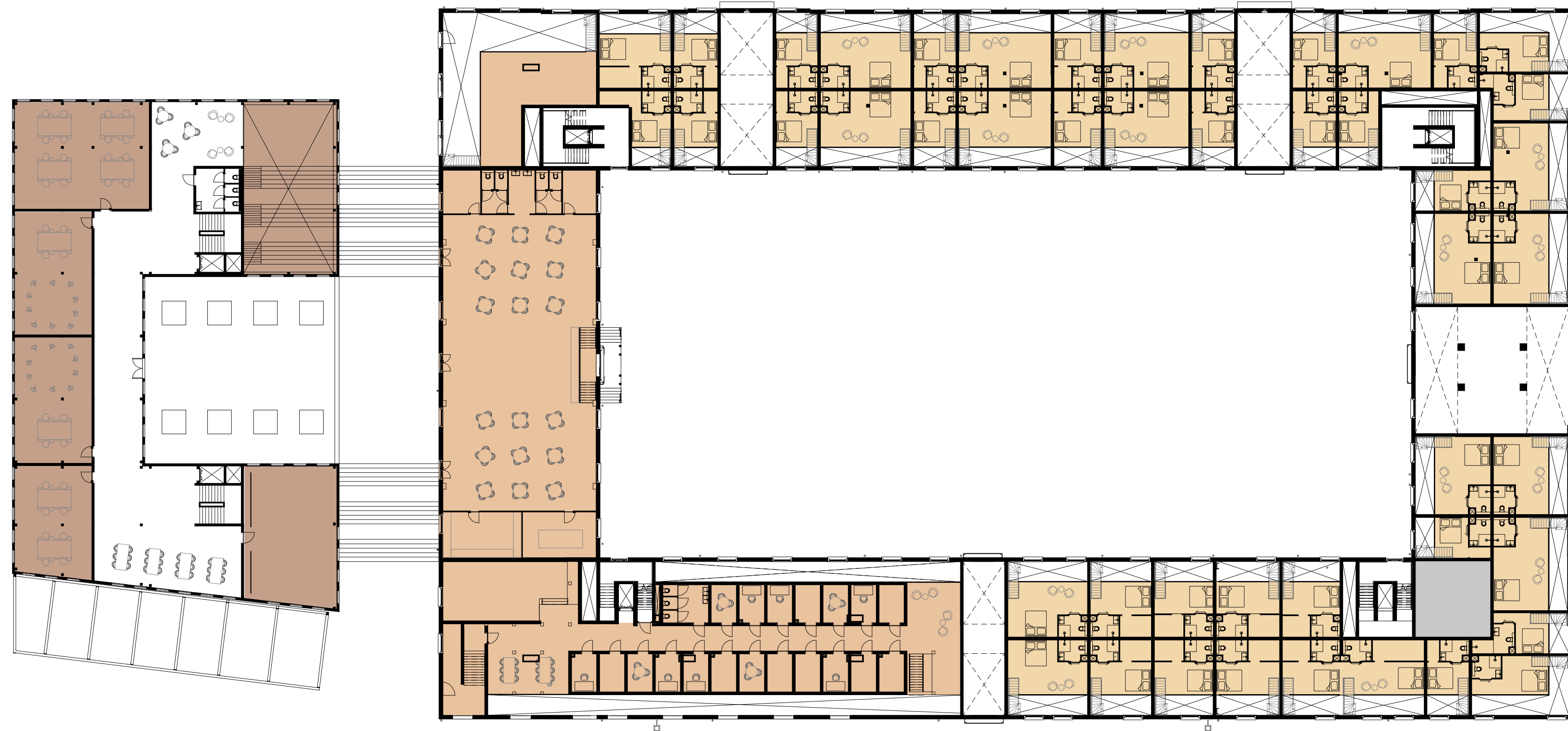


- Storage
- Cultural Centre
- Makerspace
- Dwellings
- Technical Space

# FLOORPLANS - FIRST FLOOR PLAN (ENTRESOL)

Permanent space // changeable use

0 10m

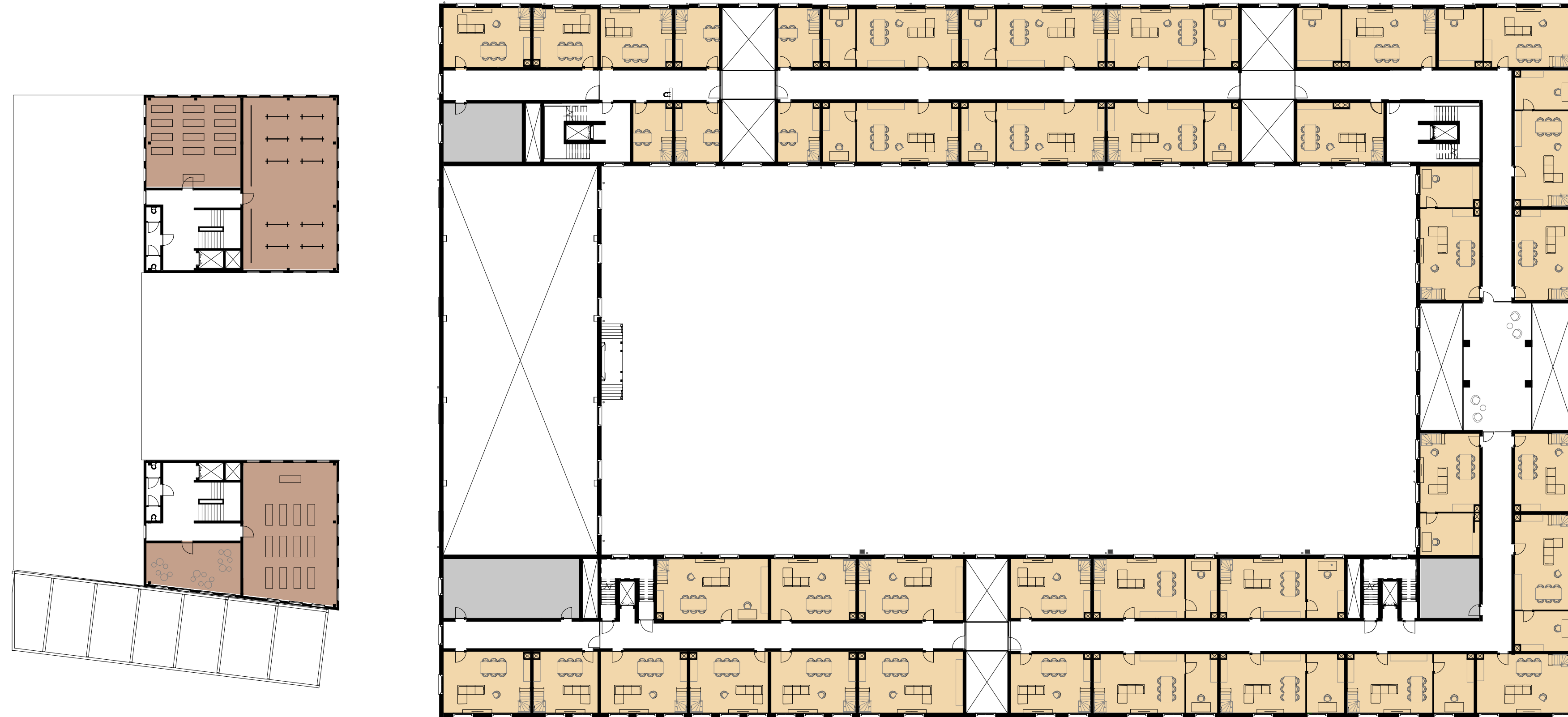


- Cultural Centre
- Communal Spaces
- Dwellings
- Technical Space

# FLOORPLANS - SECOND FLOOR PLAN

Permanent space // changeable use

0 10m 

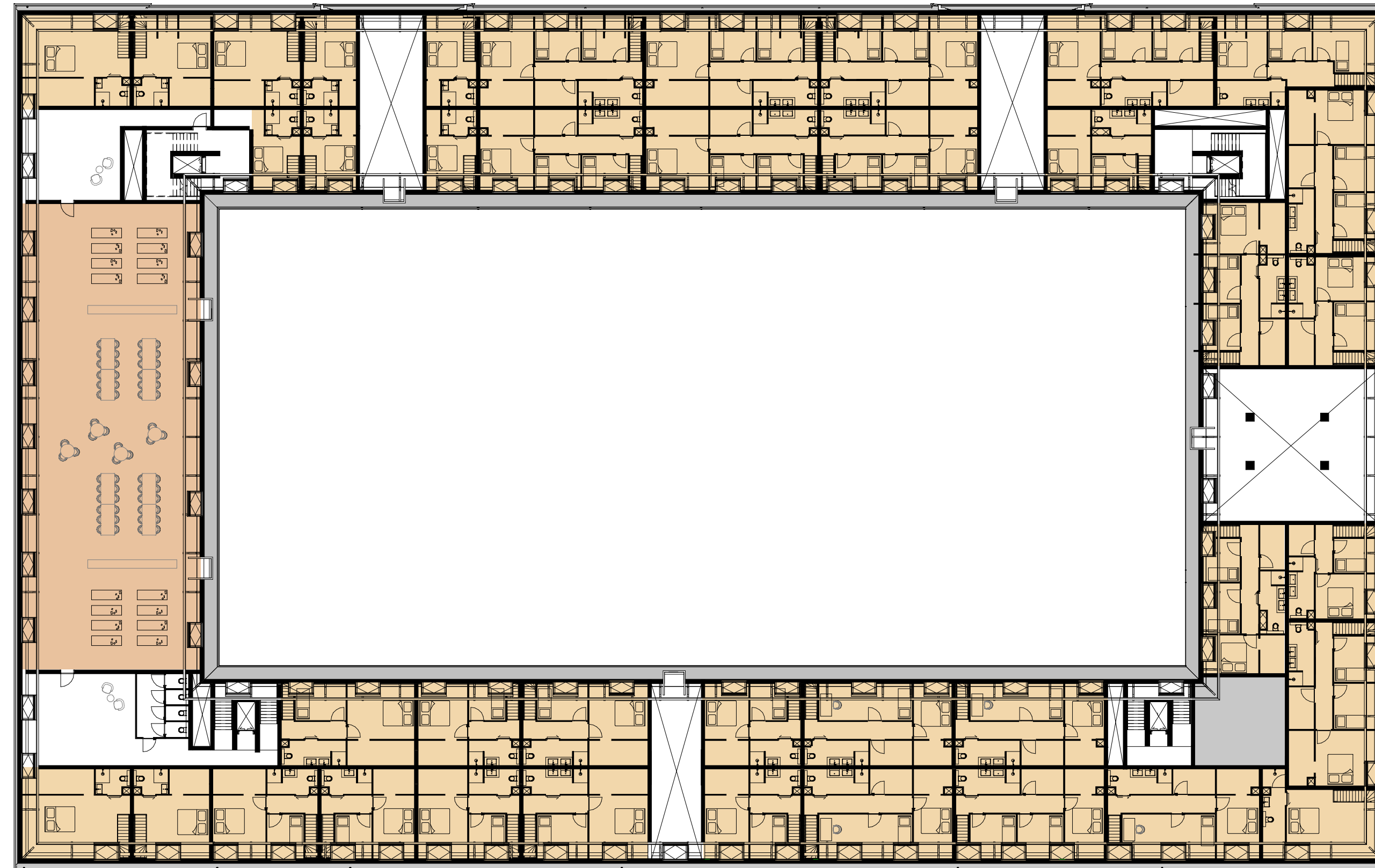
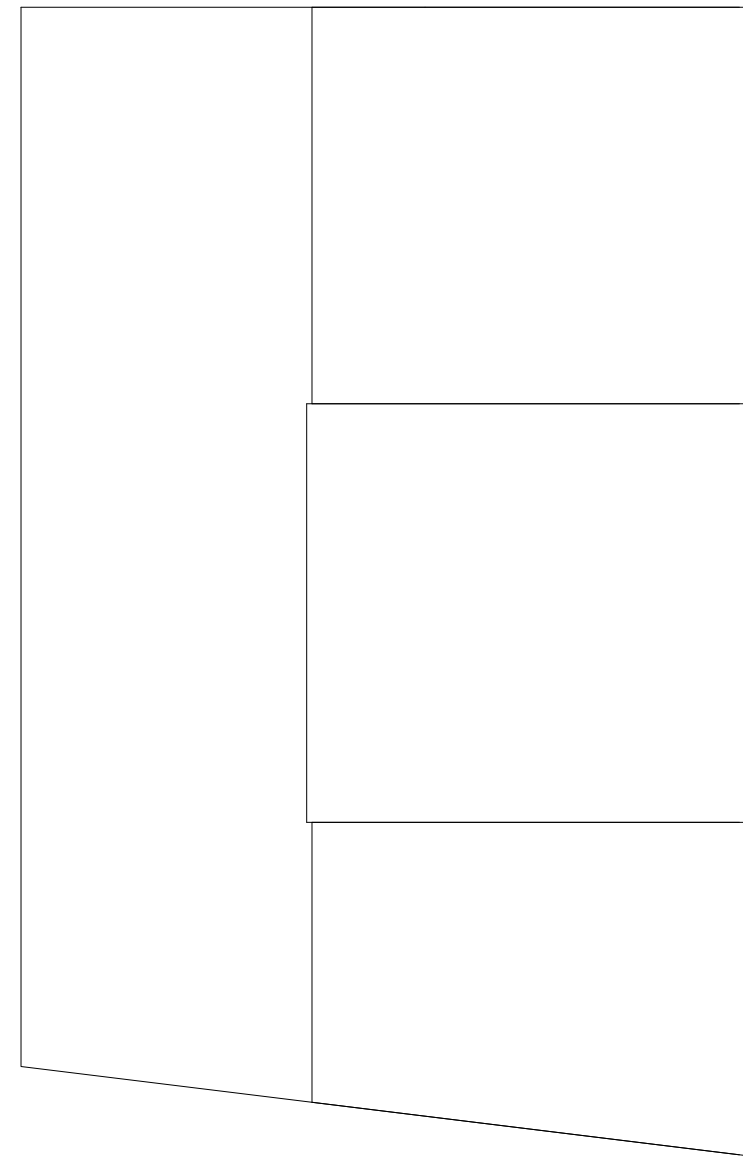


-  Cultural Centre
-  Dwellings
-  Technical Space

# FLOORPLANS - ATTIC

Permanent space // changeable use

0 10m



- Communal Spaces
- Dwellings
- Technical Space