Inhabited Walls

Clarisse Leung

Mentors: Willemijn Wilms Floet, Niels Tilanus, Willie Vogel
Studio: Methods of Analysis and Imagination
Site: Tallinn, Estonia

Research

Design

Construction

Conclusions

Research

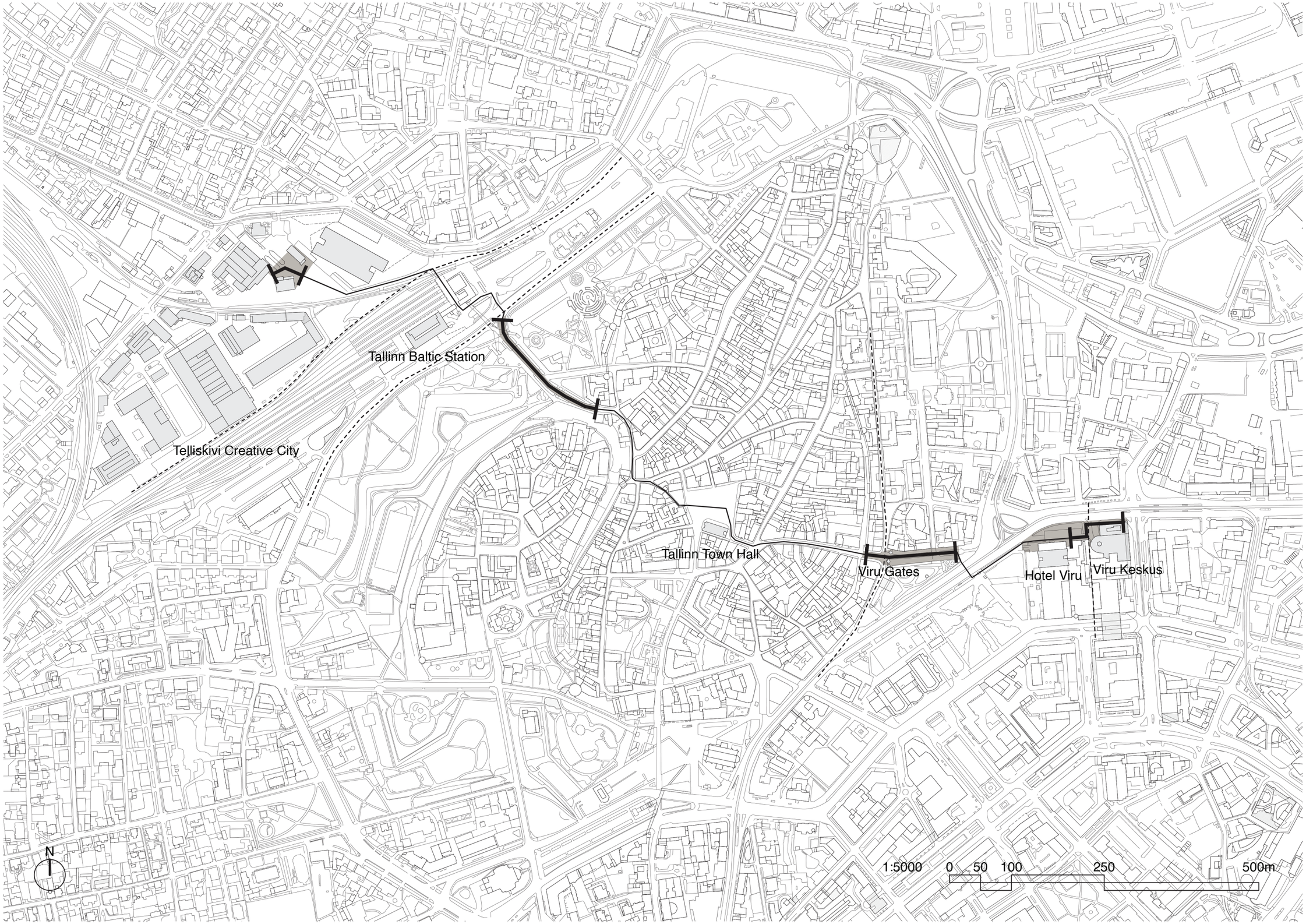
Design

Construction

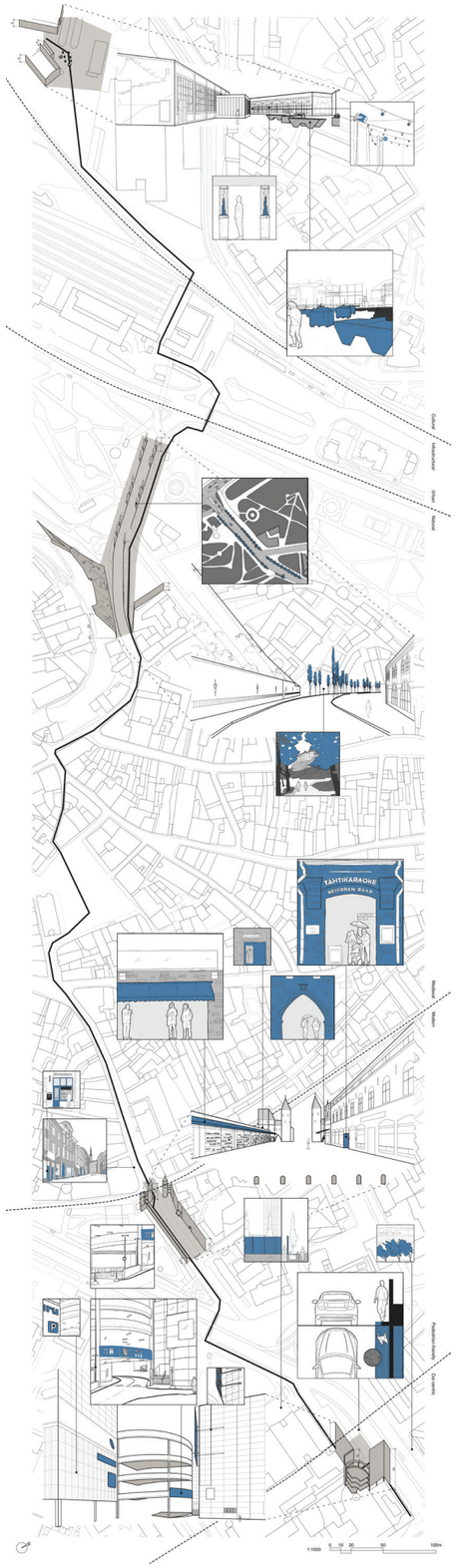
Conclusions

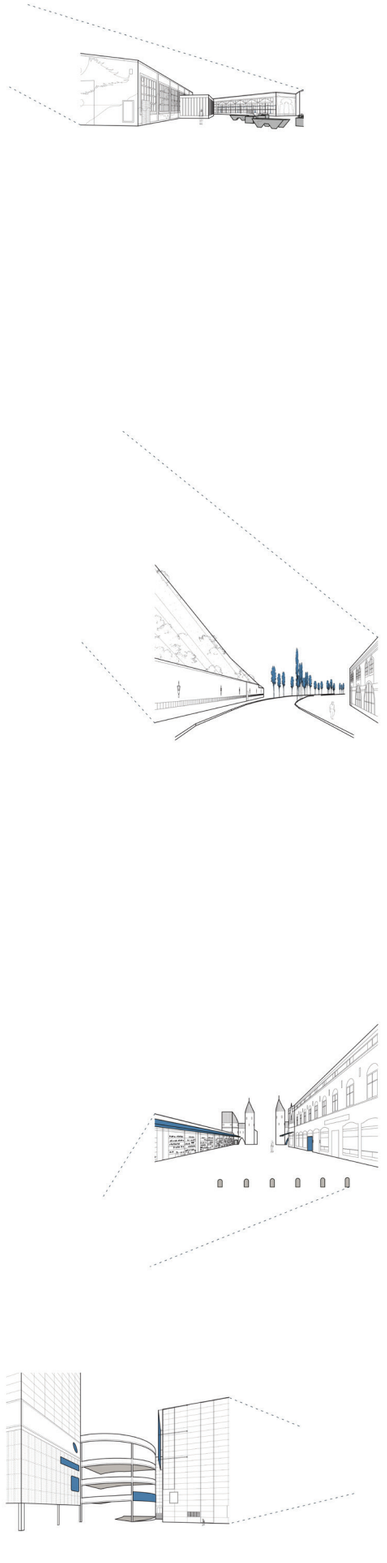
Contextual analysis: thresholds

Pair work with Dharvish Aubeeluck

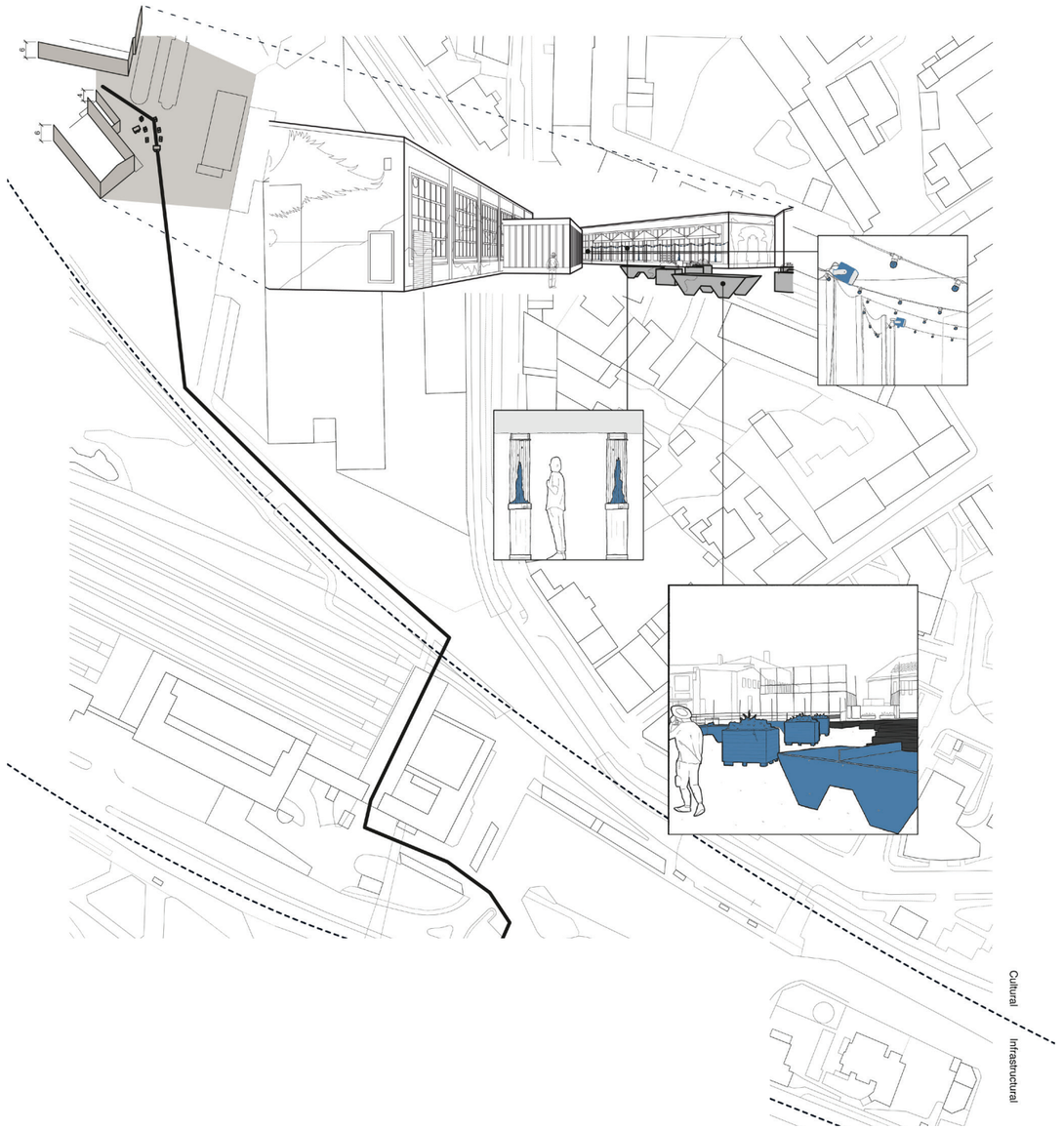


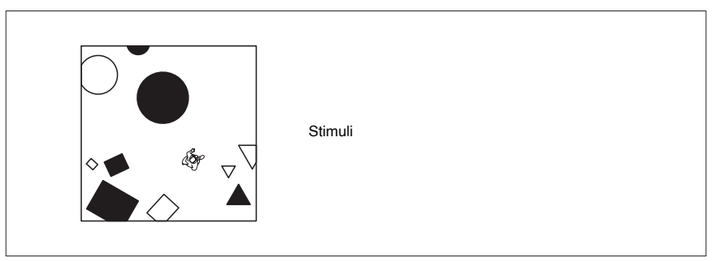
Plan showing the four thresholds along the route



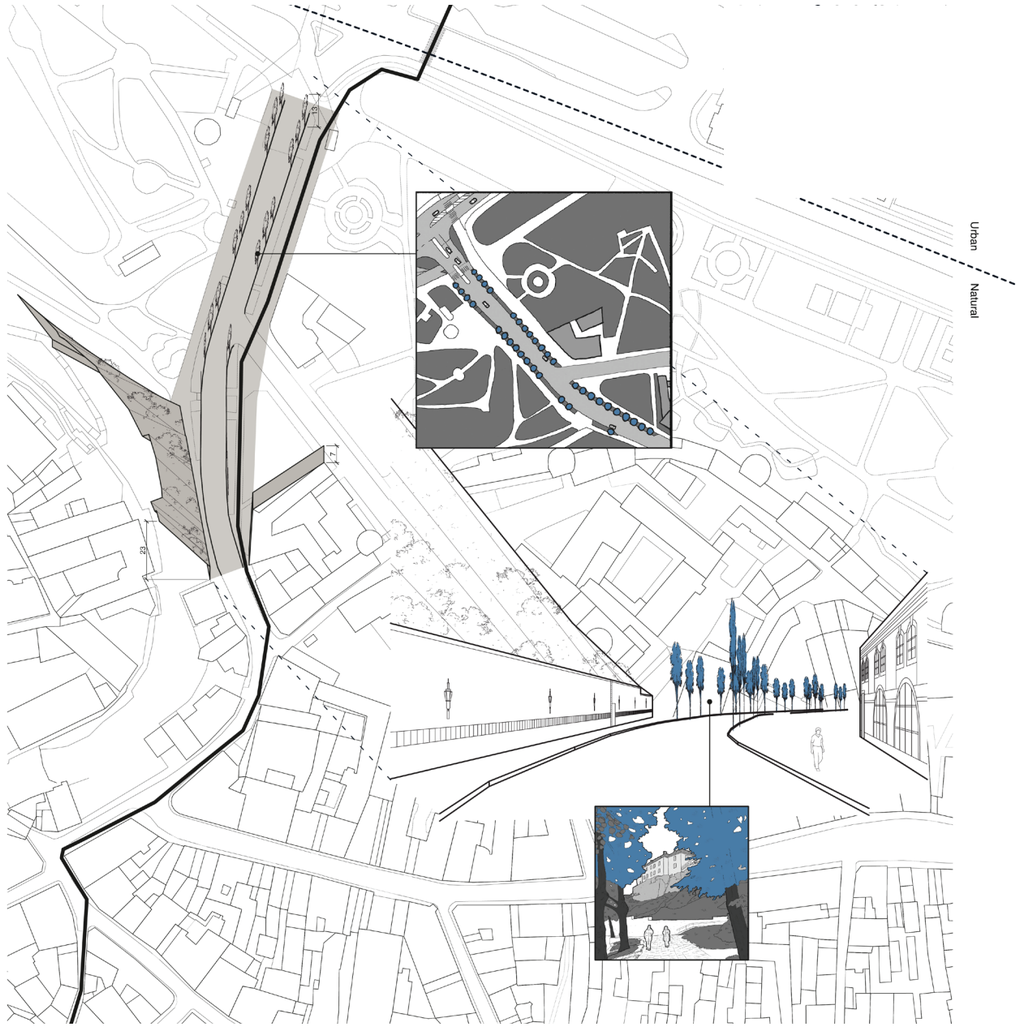


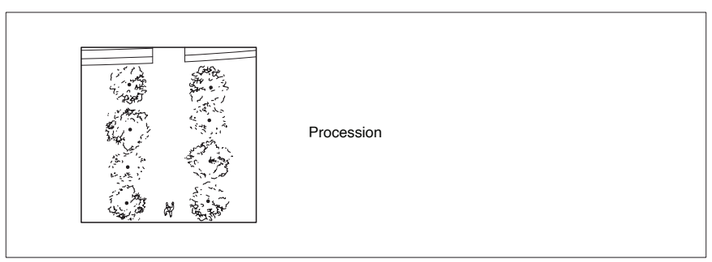
Full layered drawings of four thresholds on a route from Viru shopping mall to Telliskivi Creative City



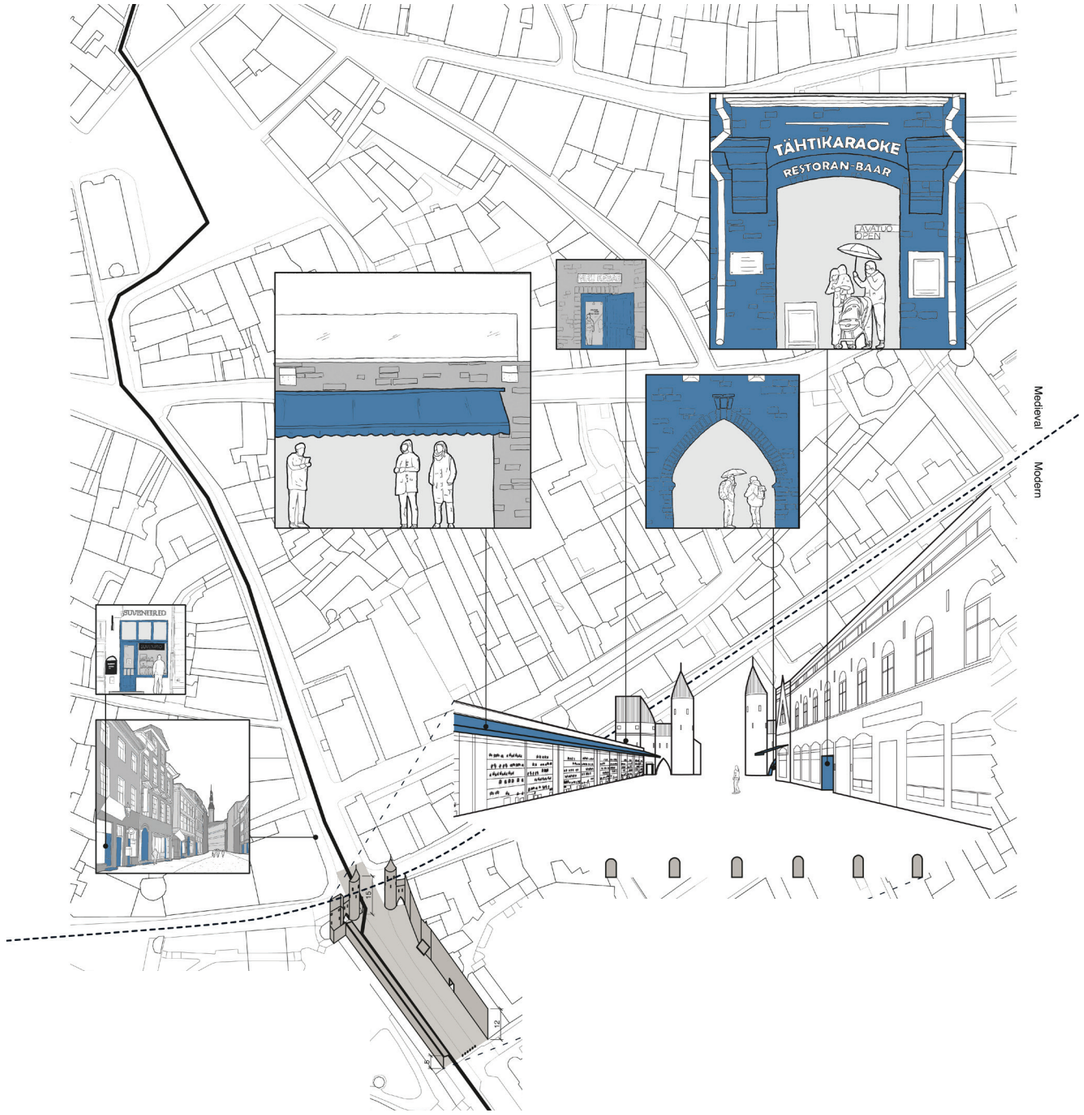


Threshold between cultural and infrastructural zones

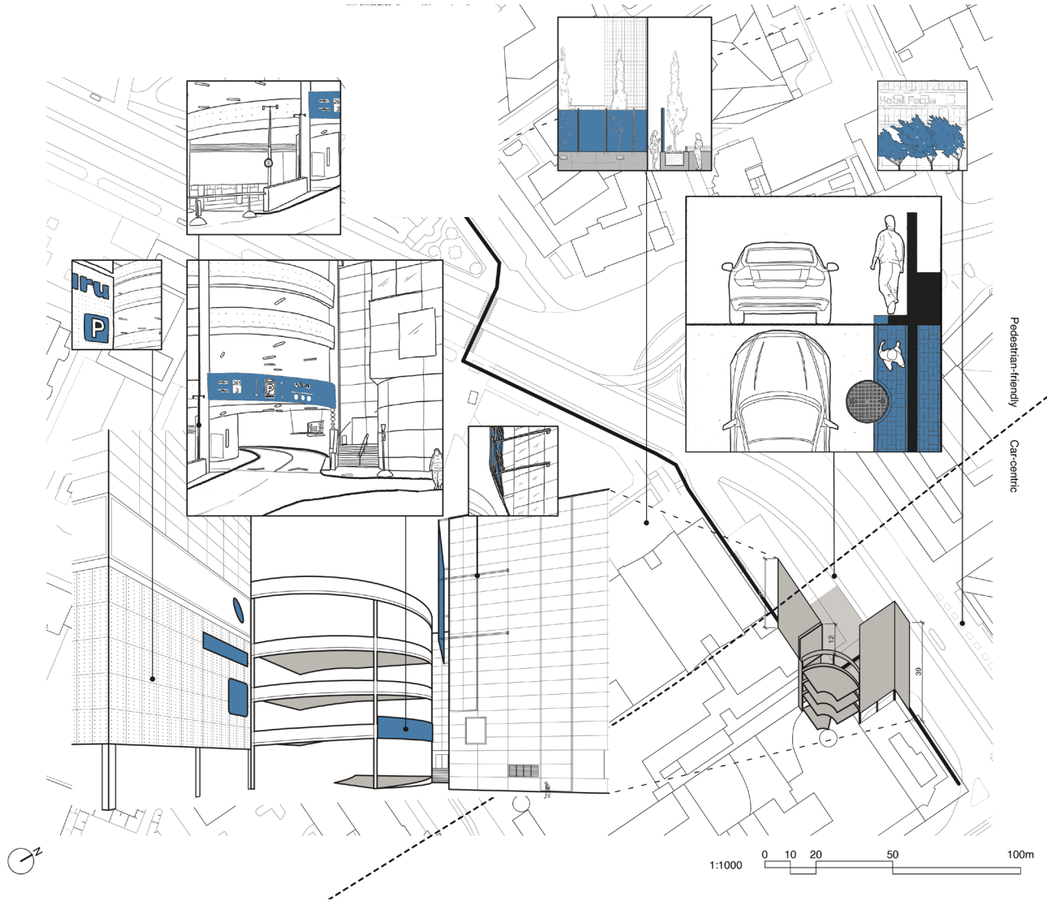




Threshold between urban and natural zones

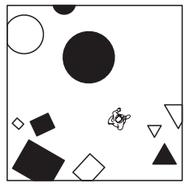


Threshold between medieval and modern zones

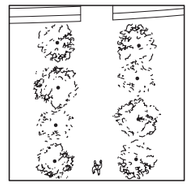


Threshold between pedestrian-friendly and car-centric zones

Pocket Spaces



Stimuli



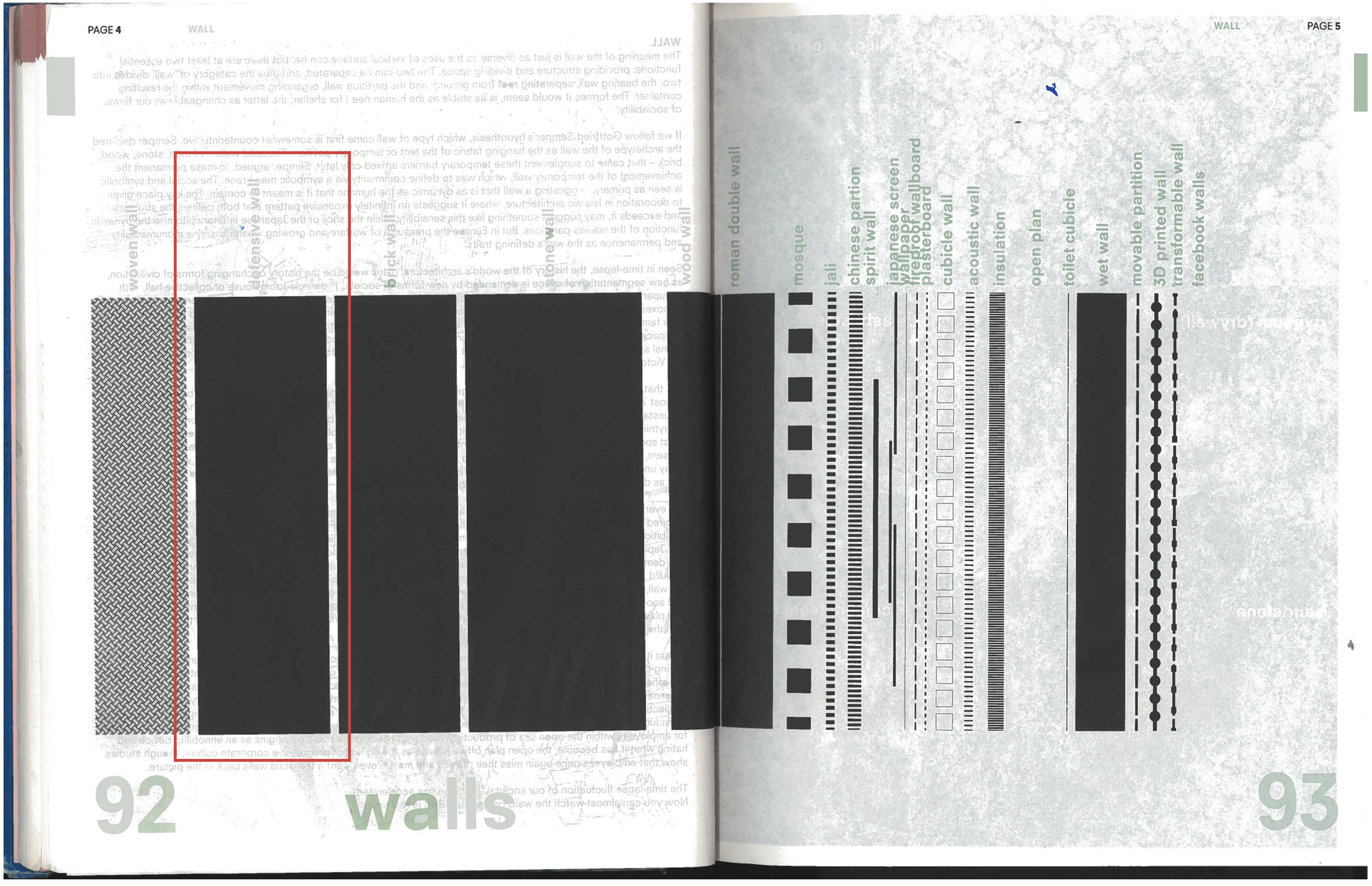
Procession

Pocket Spaces

Disciplinary analysis: city wall

City wall:

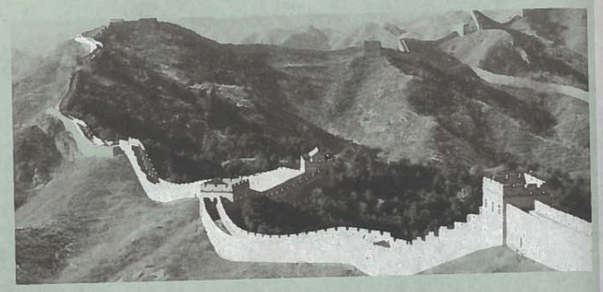
A fortification usually used to protect a city, town or other settlement



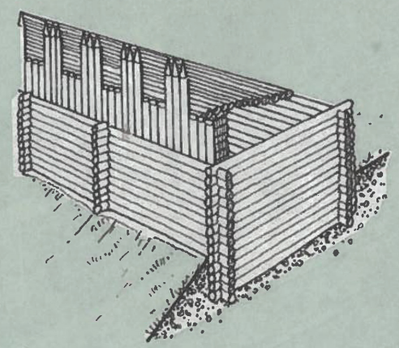
Page 92-93 of Elements of Architecture by Rem Koolhaas

DEFENSIVE WALL

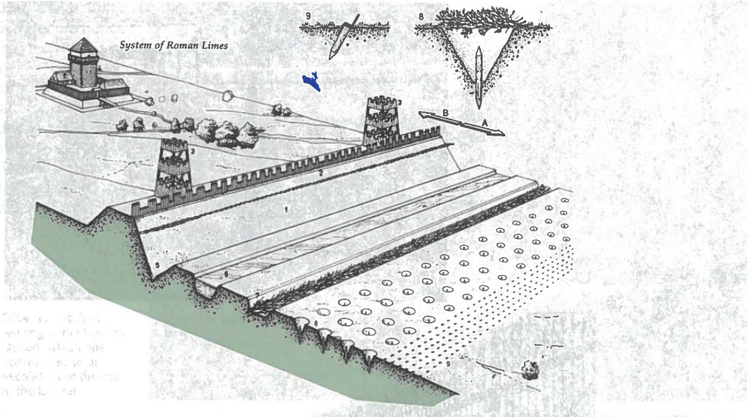
Of all the shifting manifestations of the wall – bearing wall, partition wall, party wall, feature wall – the defensive wall best captures the element's essential political character as a way of setting a limit between self and other. Defensive walls physically manifest national myth-making and existential anxieties. Far from being a primitive, outmoded expression of nation- and tribe-building, 6,000 miles of new walls are built between 2003 and 2013, the fastest rate in history.



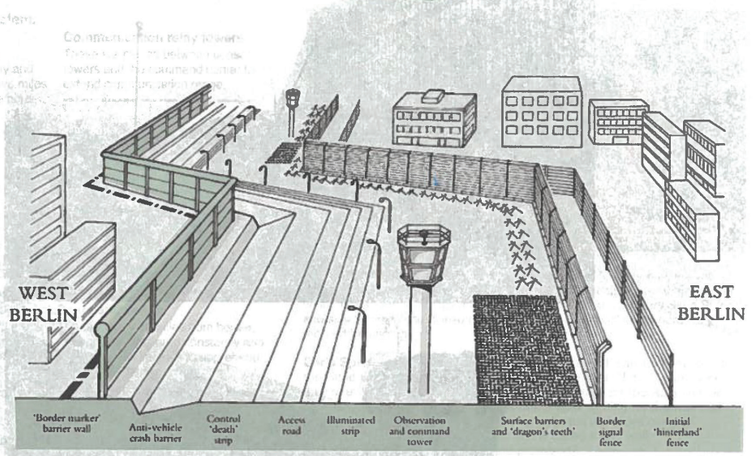
ca. 1691 Qing Dynasty handscroll illustrates garrison movements, troop positions, enemy encampments and natural resources along the Great Wall of China.



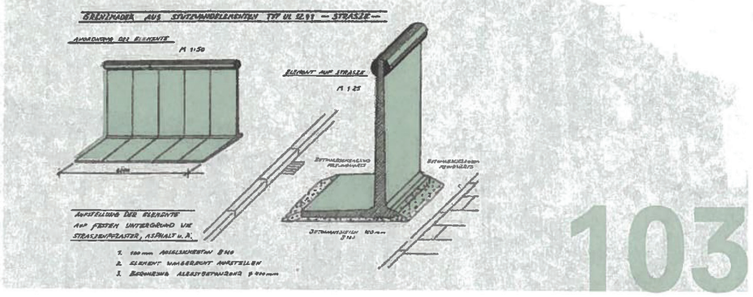
6th – 8th century Slavic fortress, or "grod," a tightly constructued wooden machanism of separation.



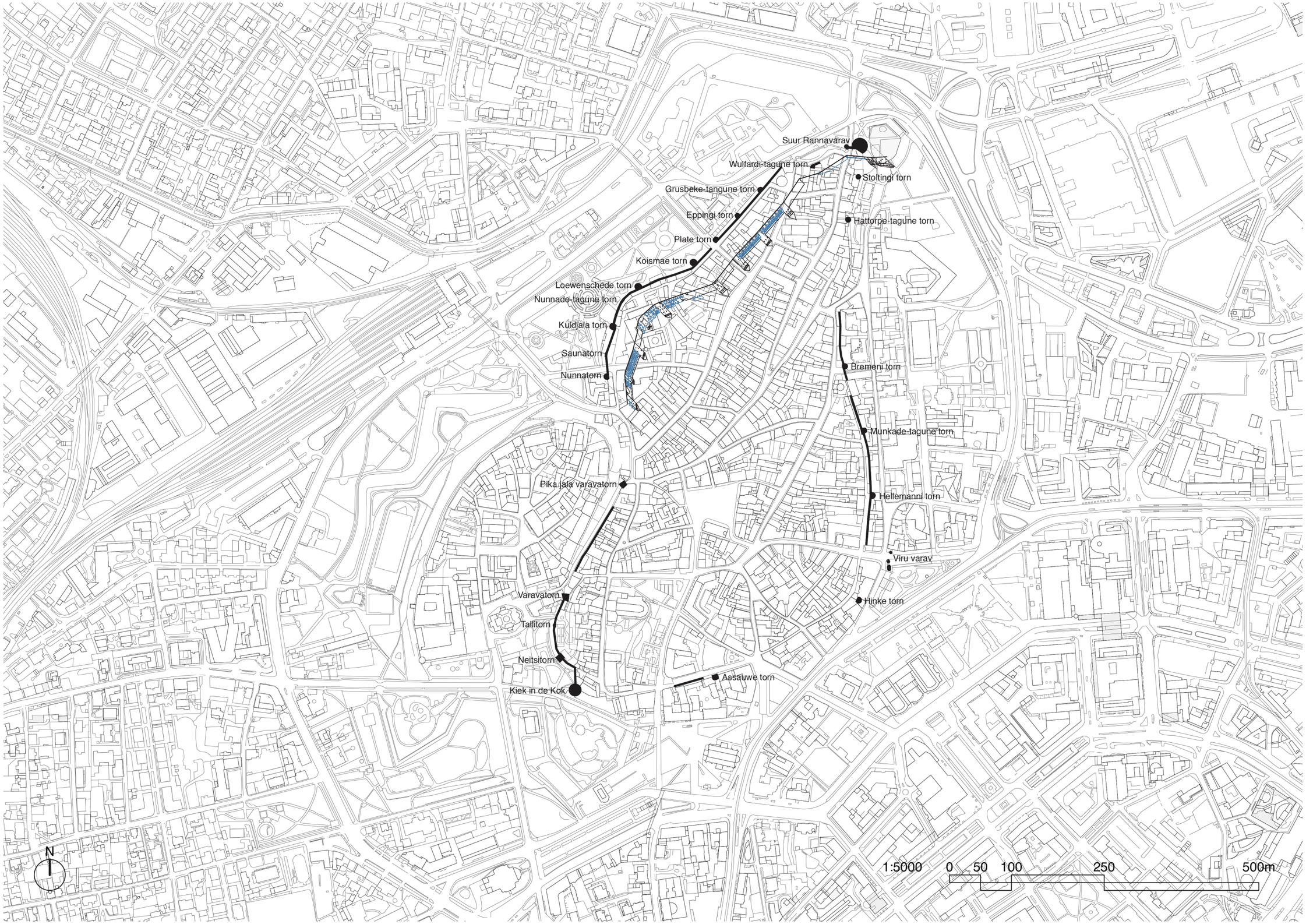
1st–4th centuries AD The Roman Limes, a concept for turning space beyond the walls of the city into a lethal obstacle course – an extended wall...



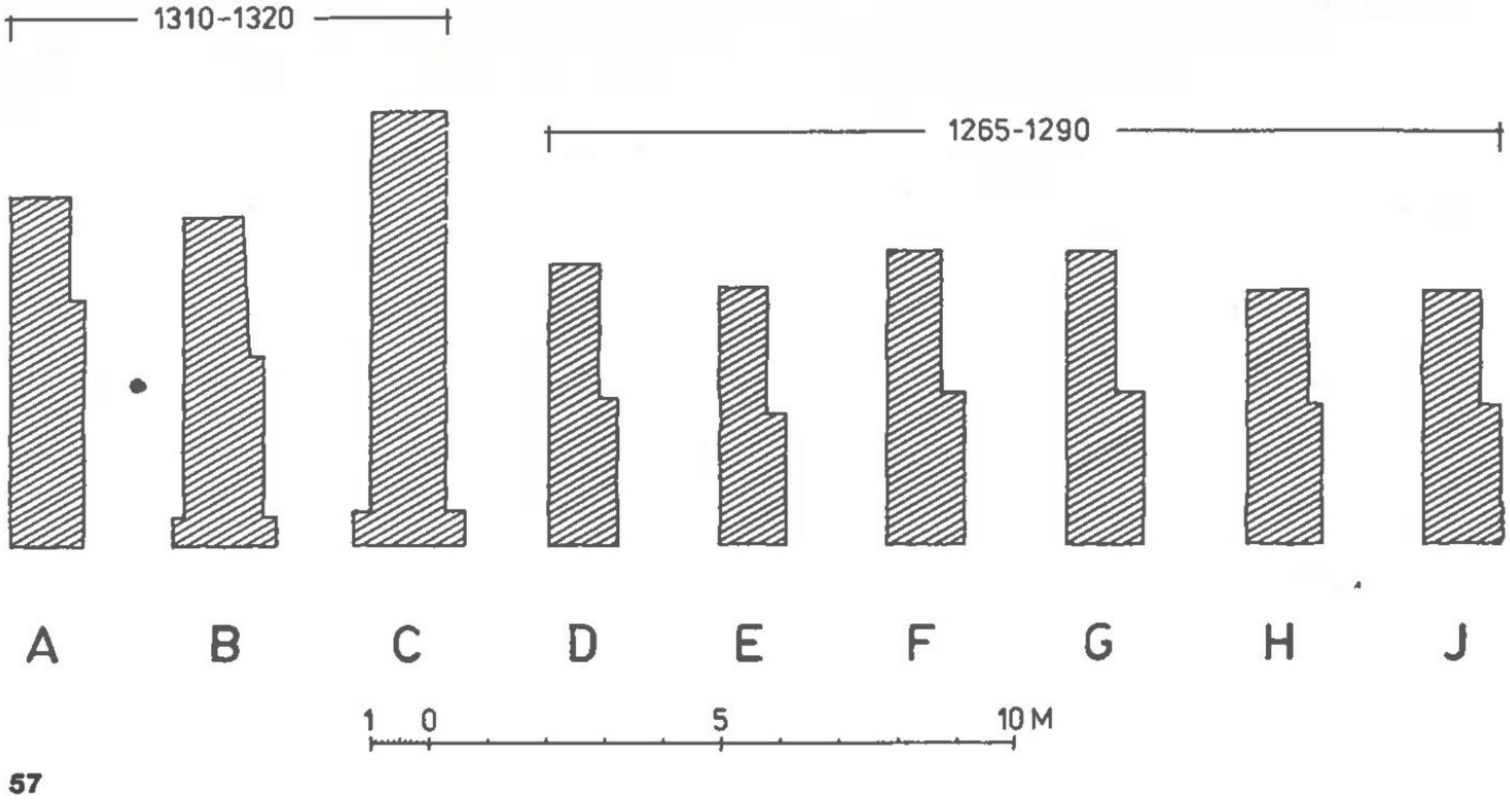
1961–1989 After decades of development, in its final form the Berlin Wall spans 155 kilometers, resembling a defensive wall from antiquity while introducing a properly modern innovation: monolithic readymade concrete panels allow for instant deployment.



Page 102-103 of Elements of Architecture by Rem Koolhaas

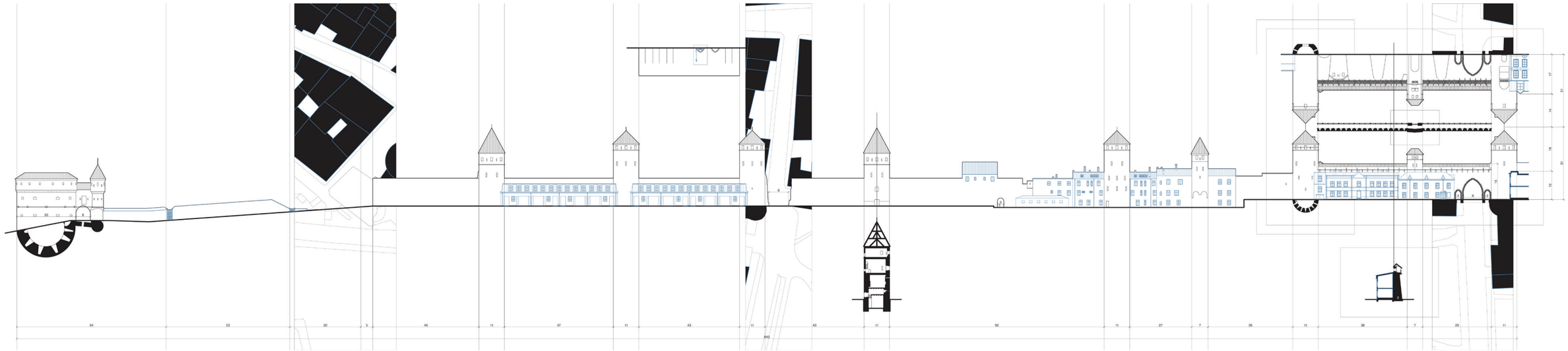


Plan of the parts of city wall and towers that are preserved



The evolution of Tallinn's town walls by Rein Zobel. Source: Rein Zobel

New structure attached to the city wall between Plate torn and Eppingi torn

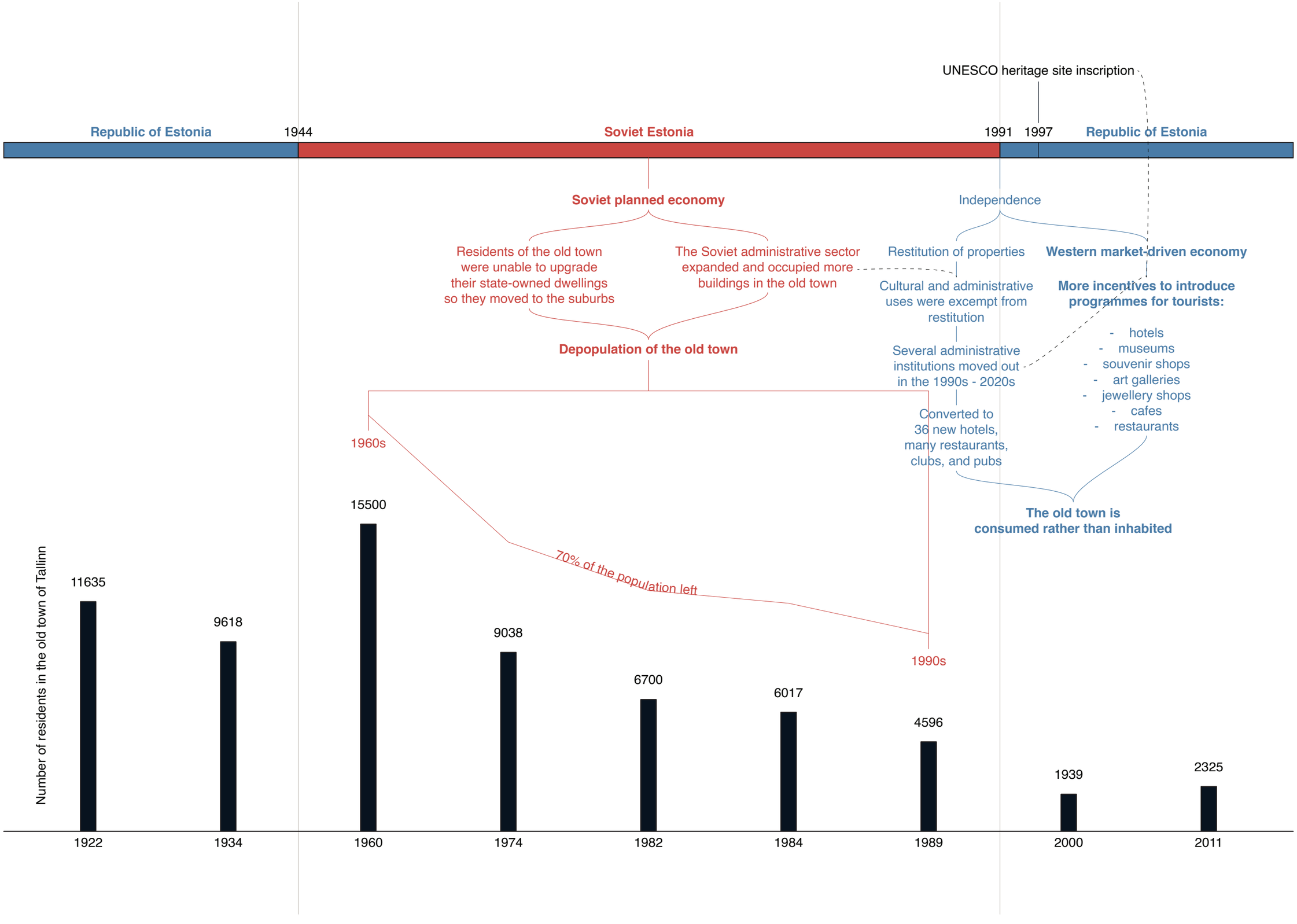


Unfolded elevation of Tallinn's city wall from Suur Rannavarav to Nunnatorn

Tallinn's city wall from Nunnatorn to Kuldjala torn

Problem statement 1:

Some parts of the city wall are underutilized.



Timeline showing the drop of local population in the old town

Tallinn's medieval old town

Problem statement 2:

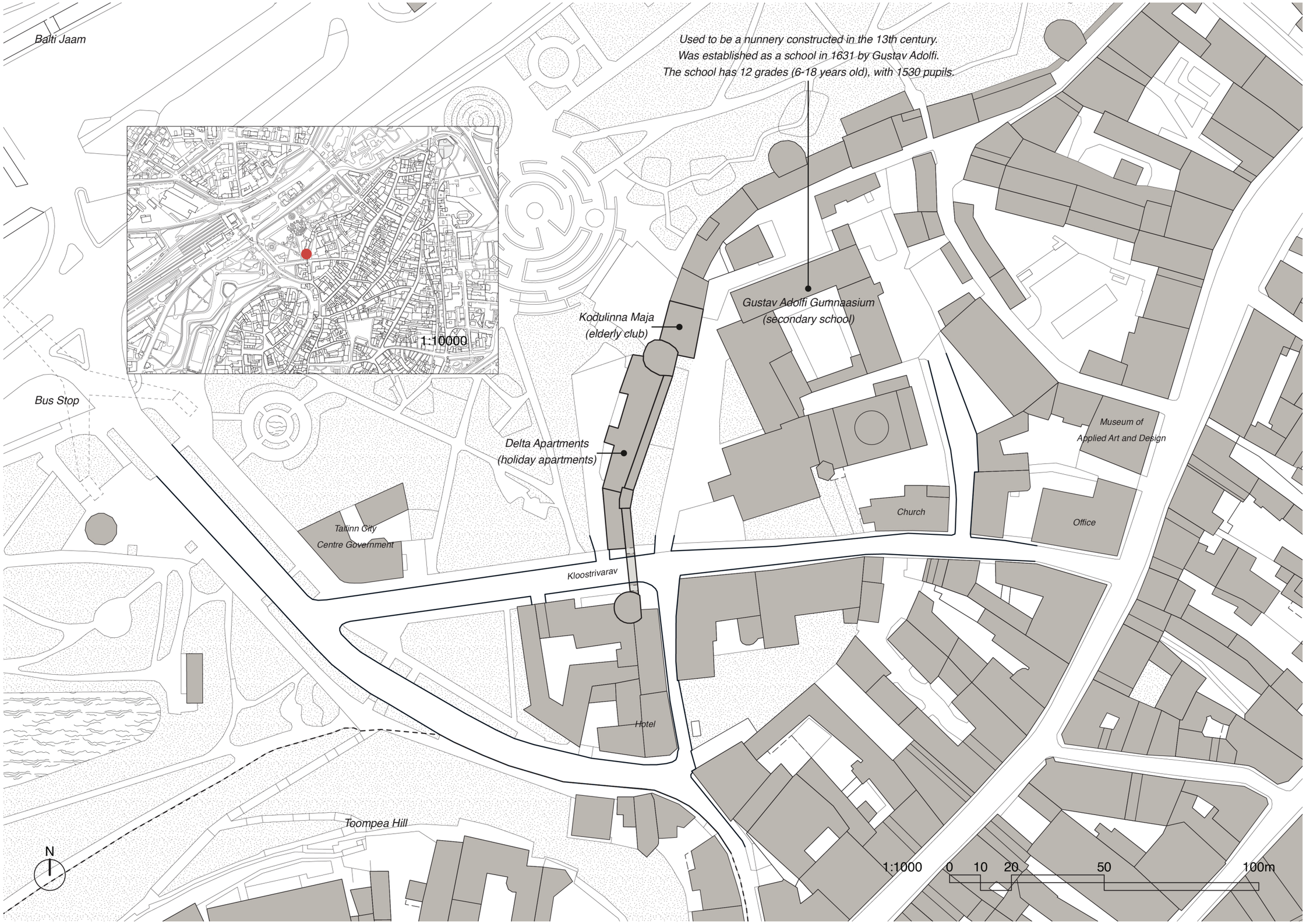
The old town is consumed rather than inhabited.

Main research question:

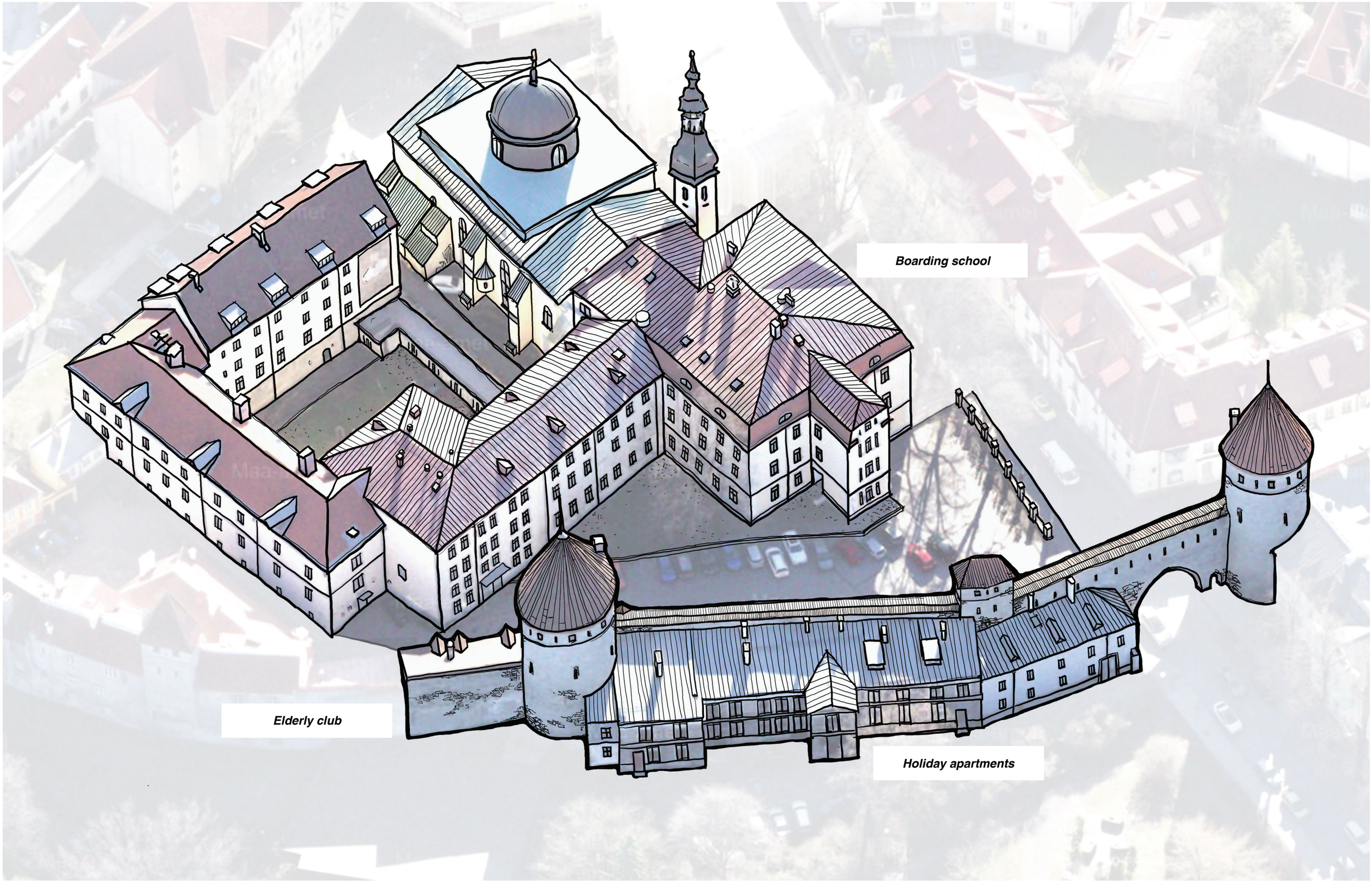
How can Tallinn’s wall be reactivated as a living monument for the city and its residents?

Living monument:

A place of historical and collective value whose essence is preserved, but which is reactivated through thoughtful interventions that make it meaningful and useful for contemporary life.



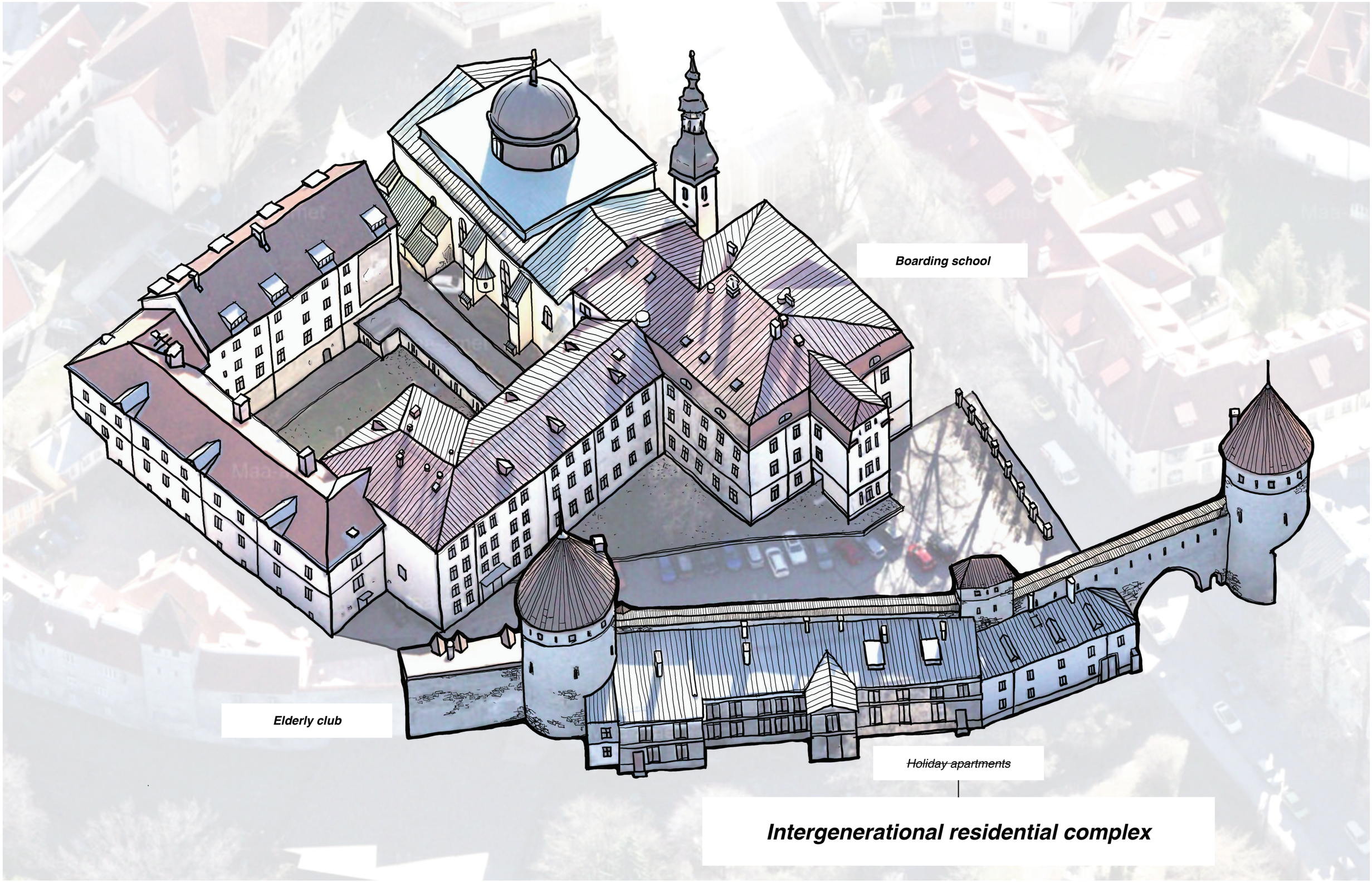
Site location



Bird's-eye view of Tallinn's city wall from Nunnatorn to Kuldjala torn

The interior space of Kuldjala torn that is connected to an elderly club

The walkway between Nunnatorn and Saunatorn



Bird's-eye view of Tallinn's city wall from Nunnatorn to Kuldjala torn

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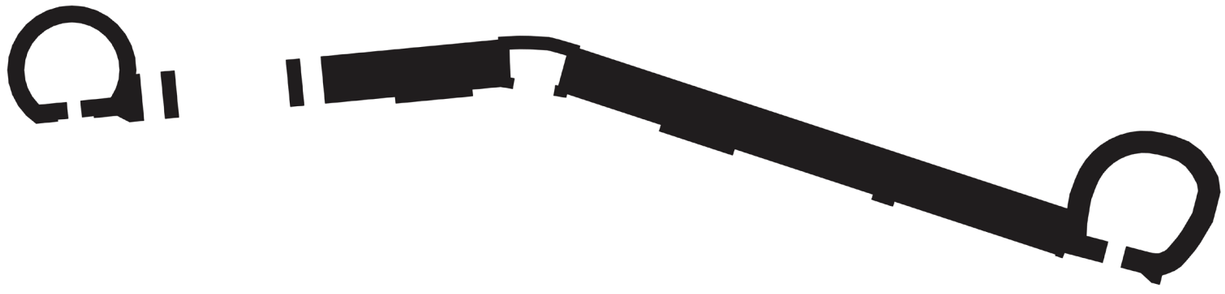
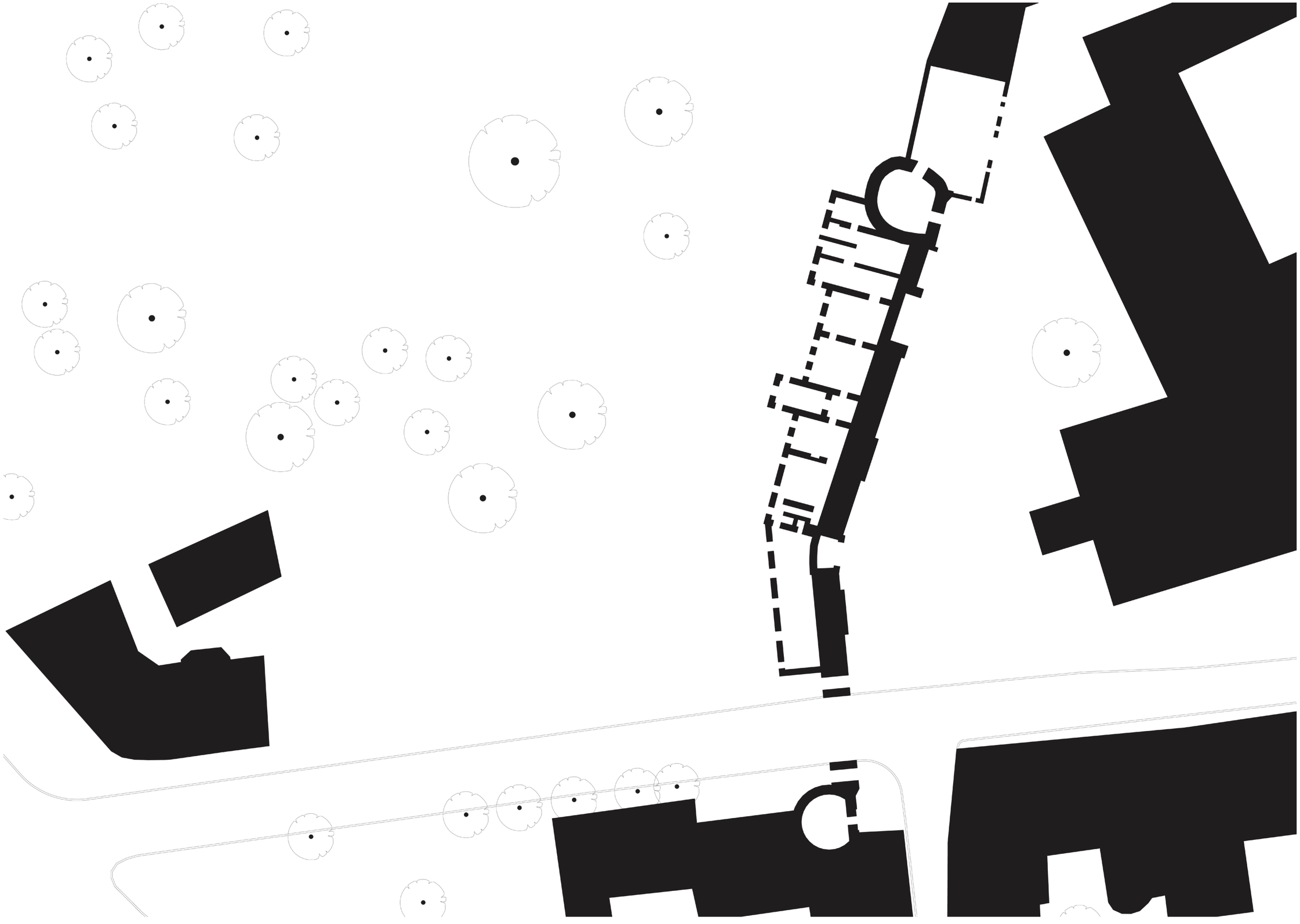
Aerial photo of the site in the 1920s. Source: Gustav Adolfi Gumnaasiumi Ajaloomuuseum

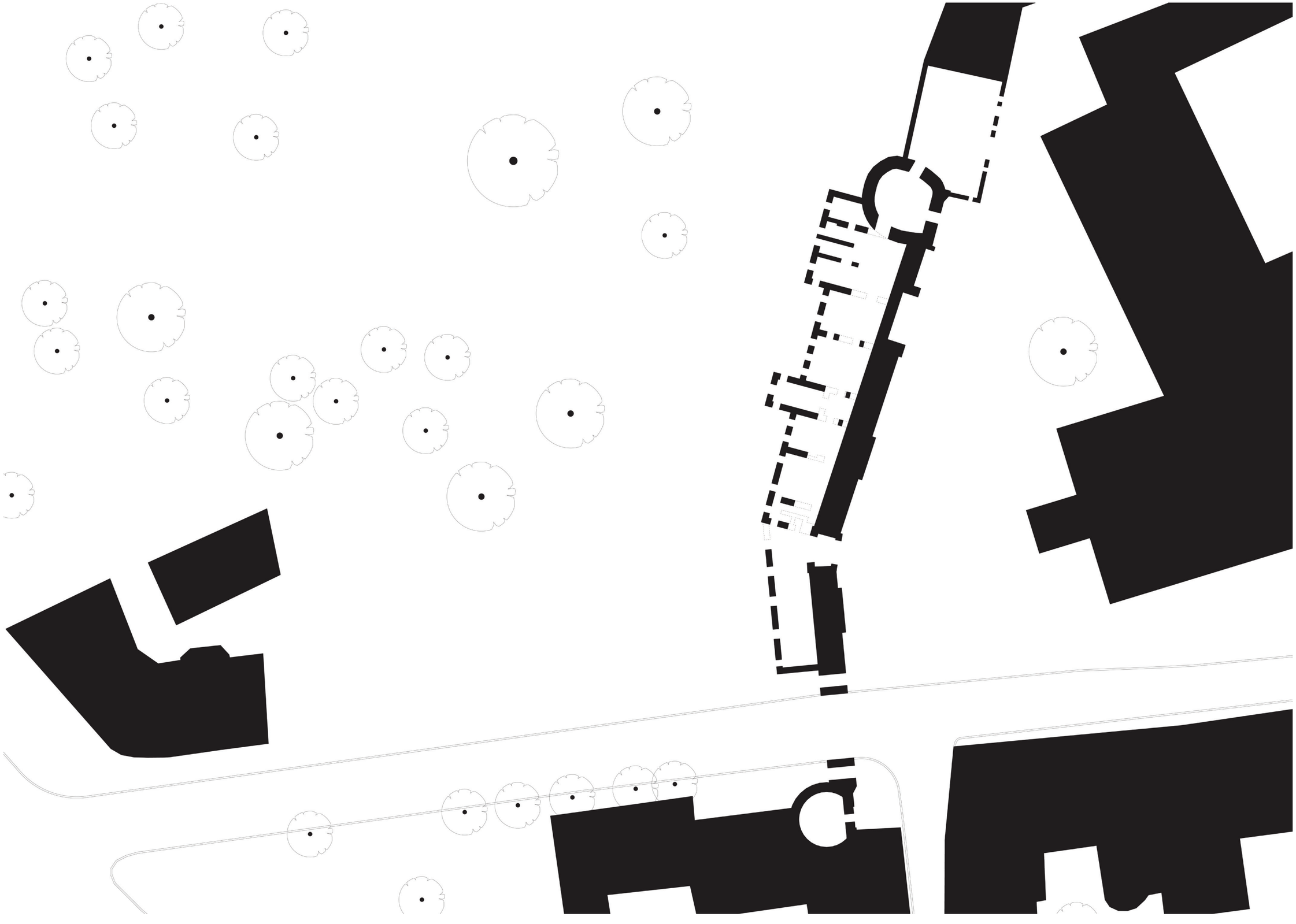
Revealing the hidden wall



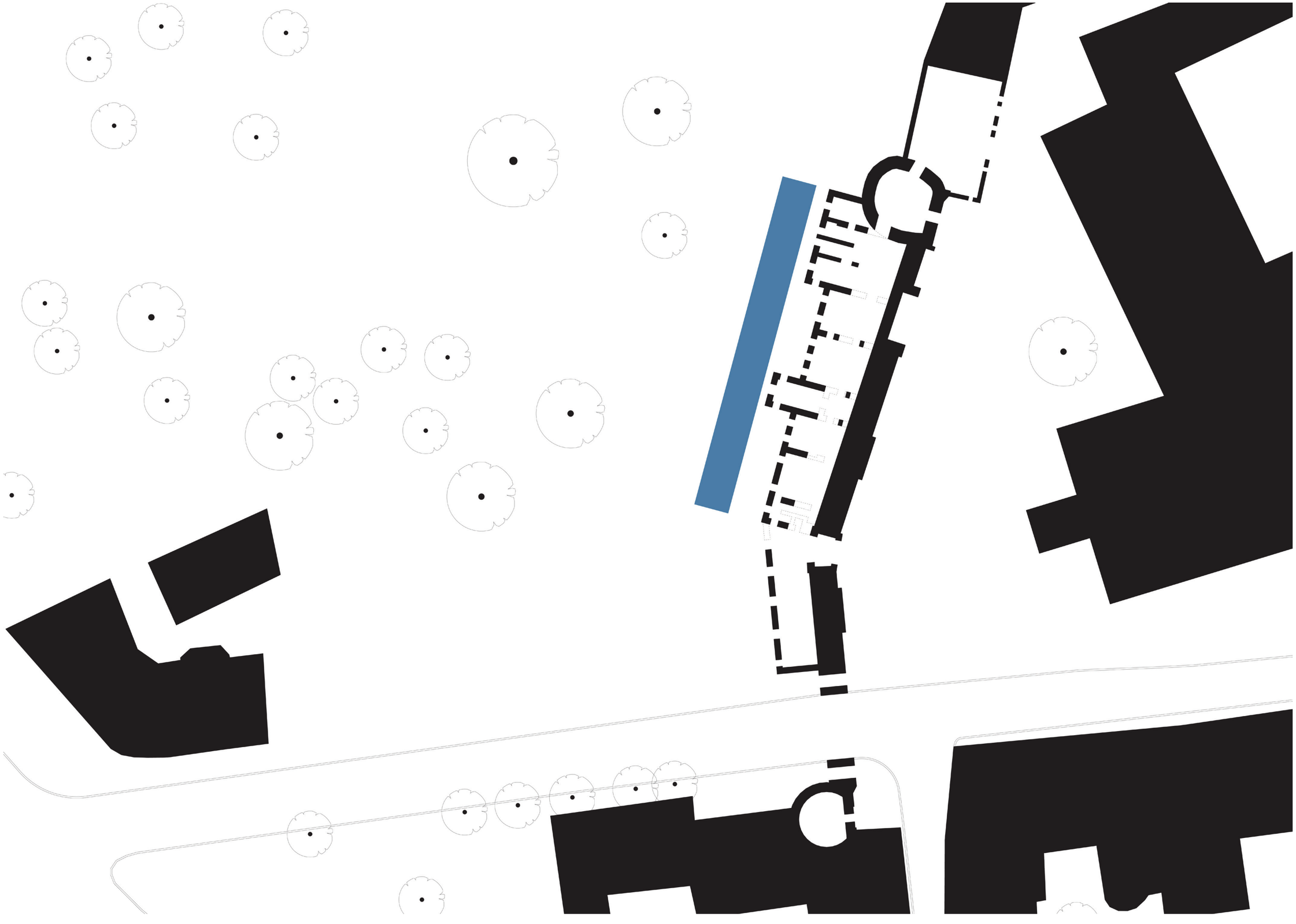
Noli map of the city wall in defensive use



Noli map of the existing condition

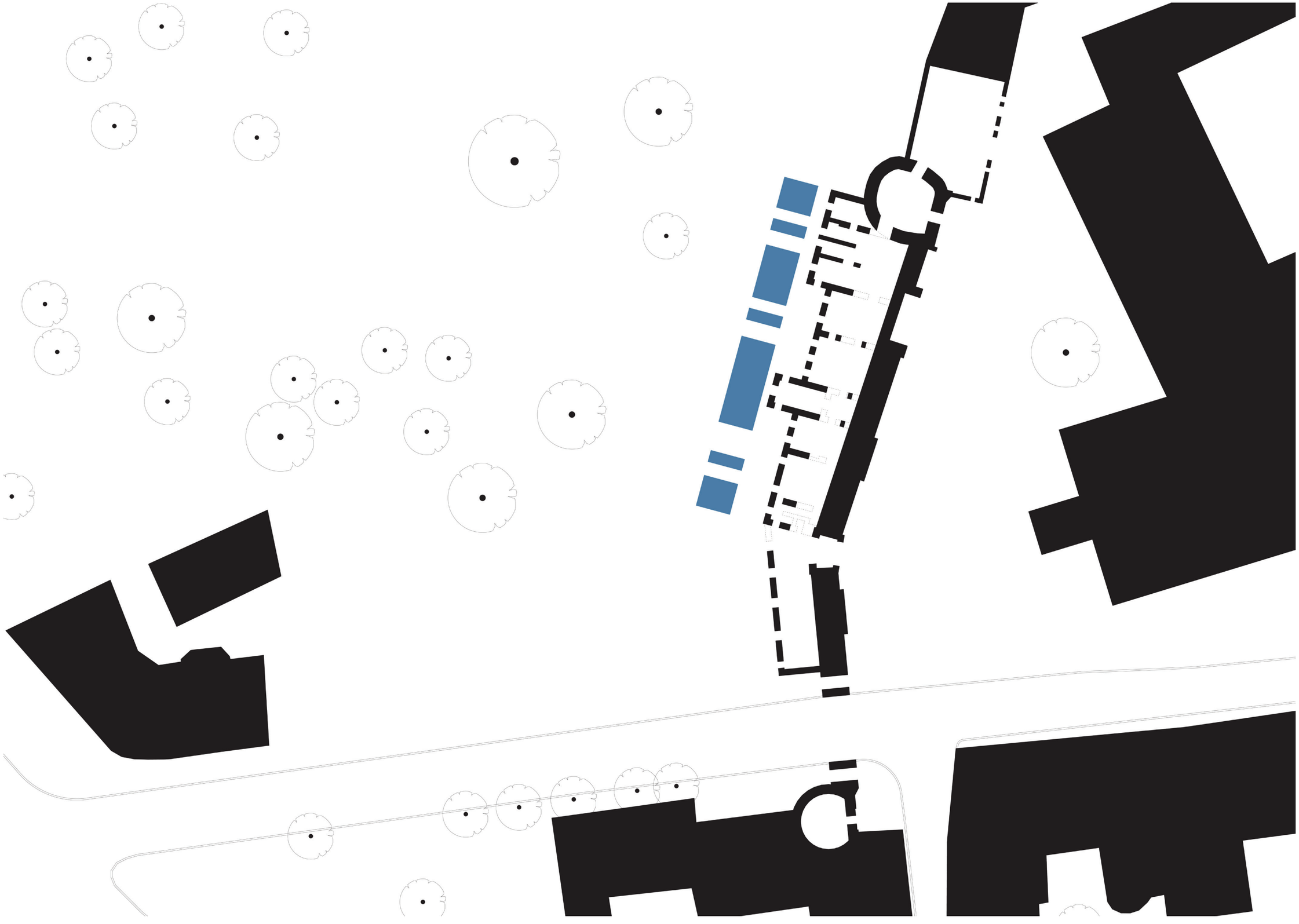


Noli map of the opening up an internal street next to the city wall

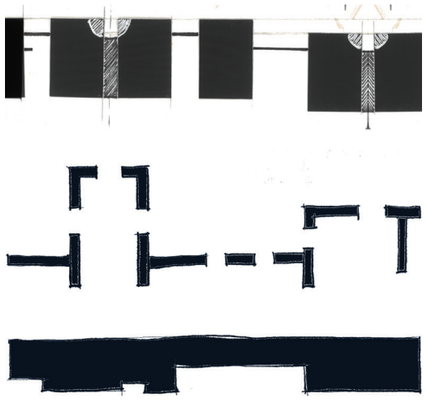


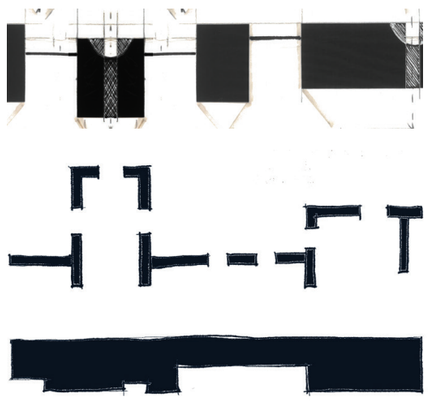
Noli map showing a new wall in front of the holiday apartments

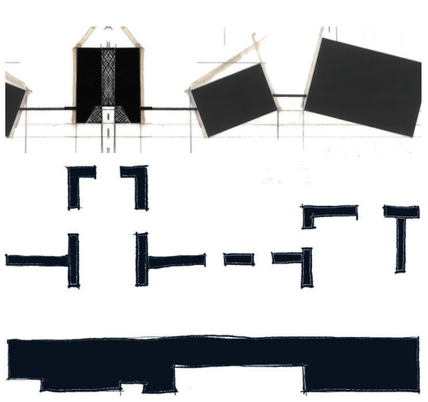
Reinterpreting the old walls through a new one

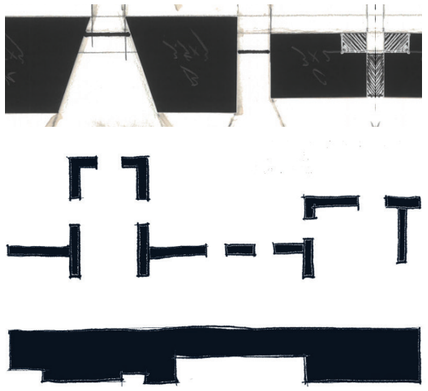


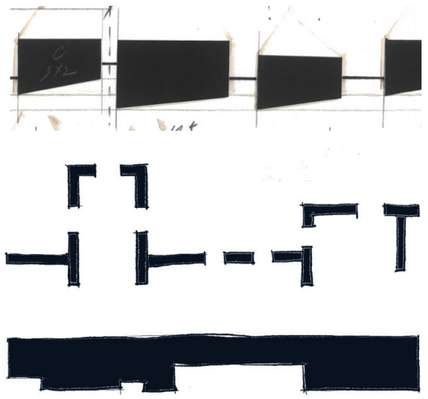
Noli map showing a new wall in front of the holiday apartments

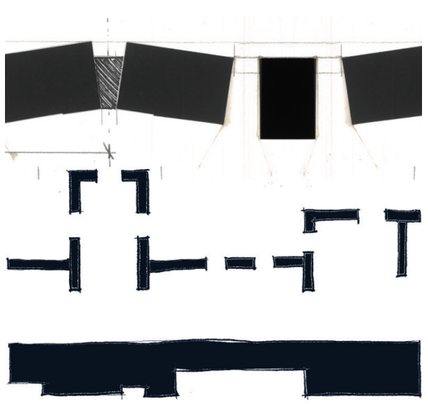




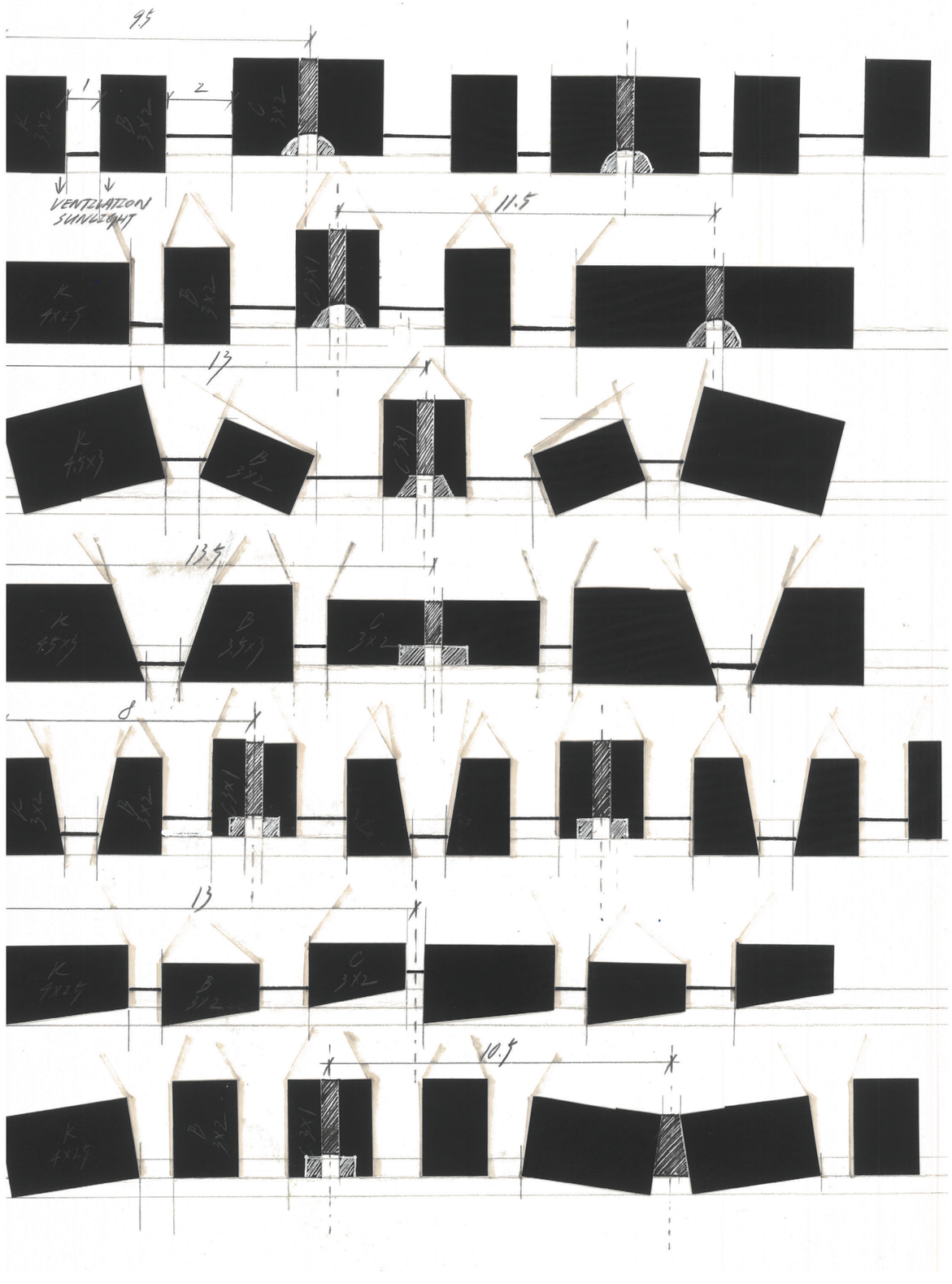






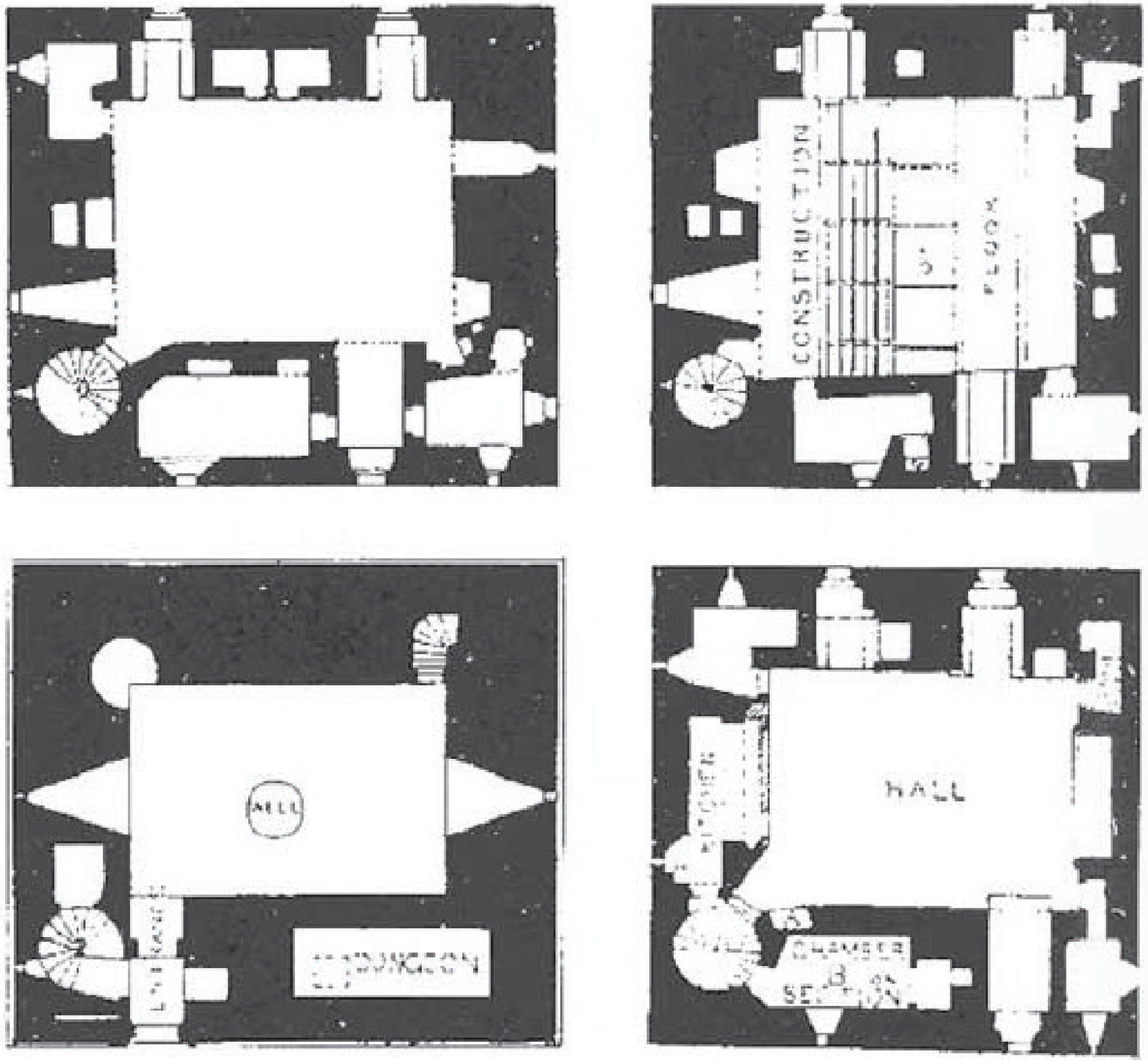


Study of wall configurations in relation to the existing walls

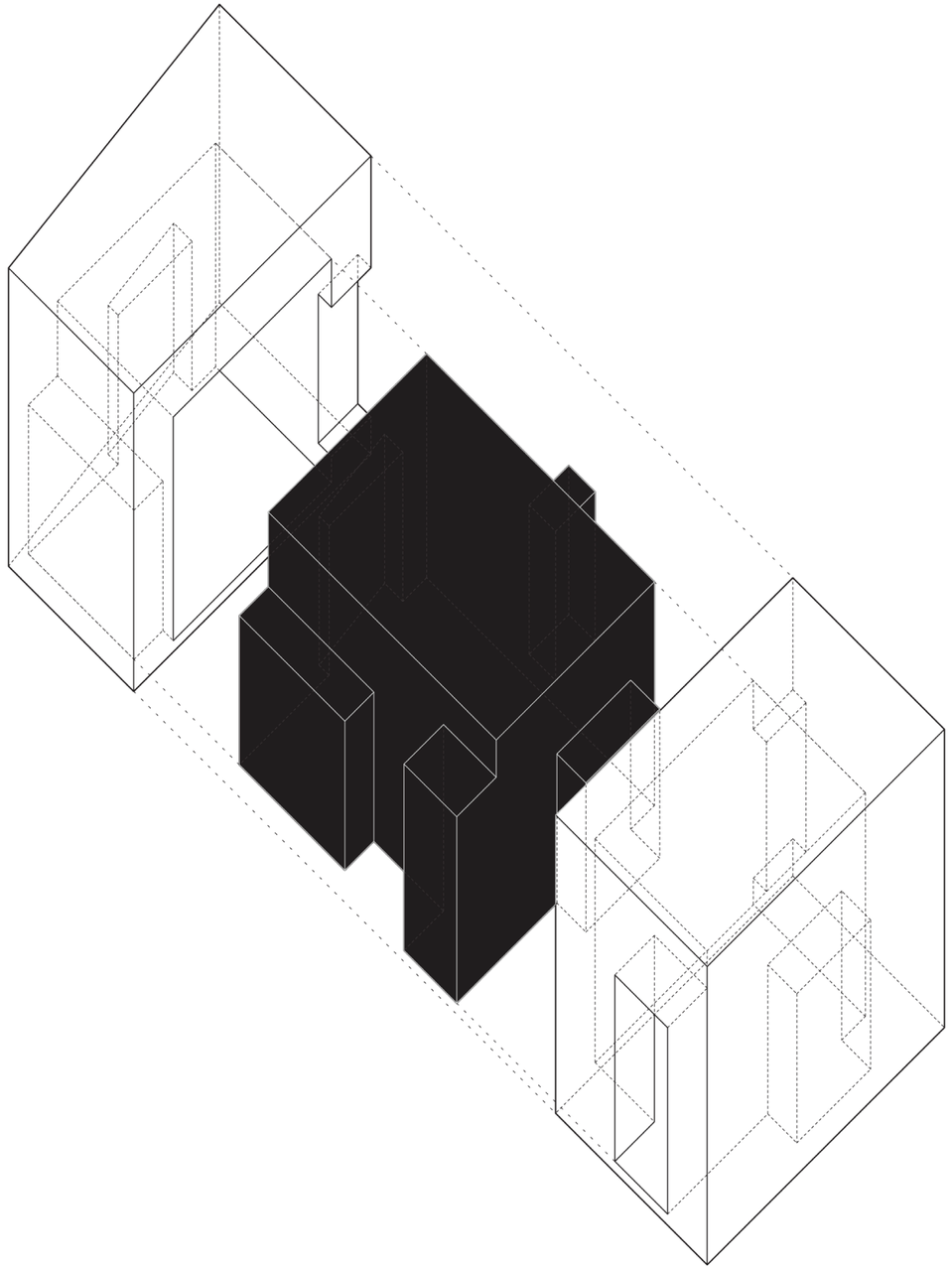


Study of wall configurations

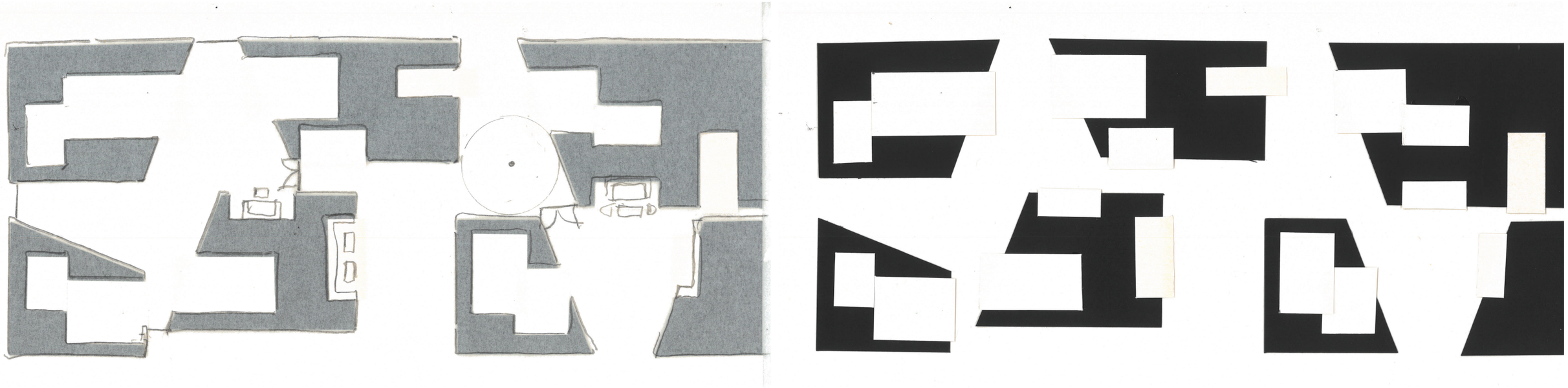
Making use of thickness



British castle floor plans sketches by Louis Kahn. Source: In the Realm of Architecture



Study of 3-dimensional niches in a wall

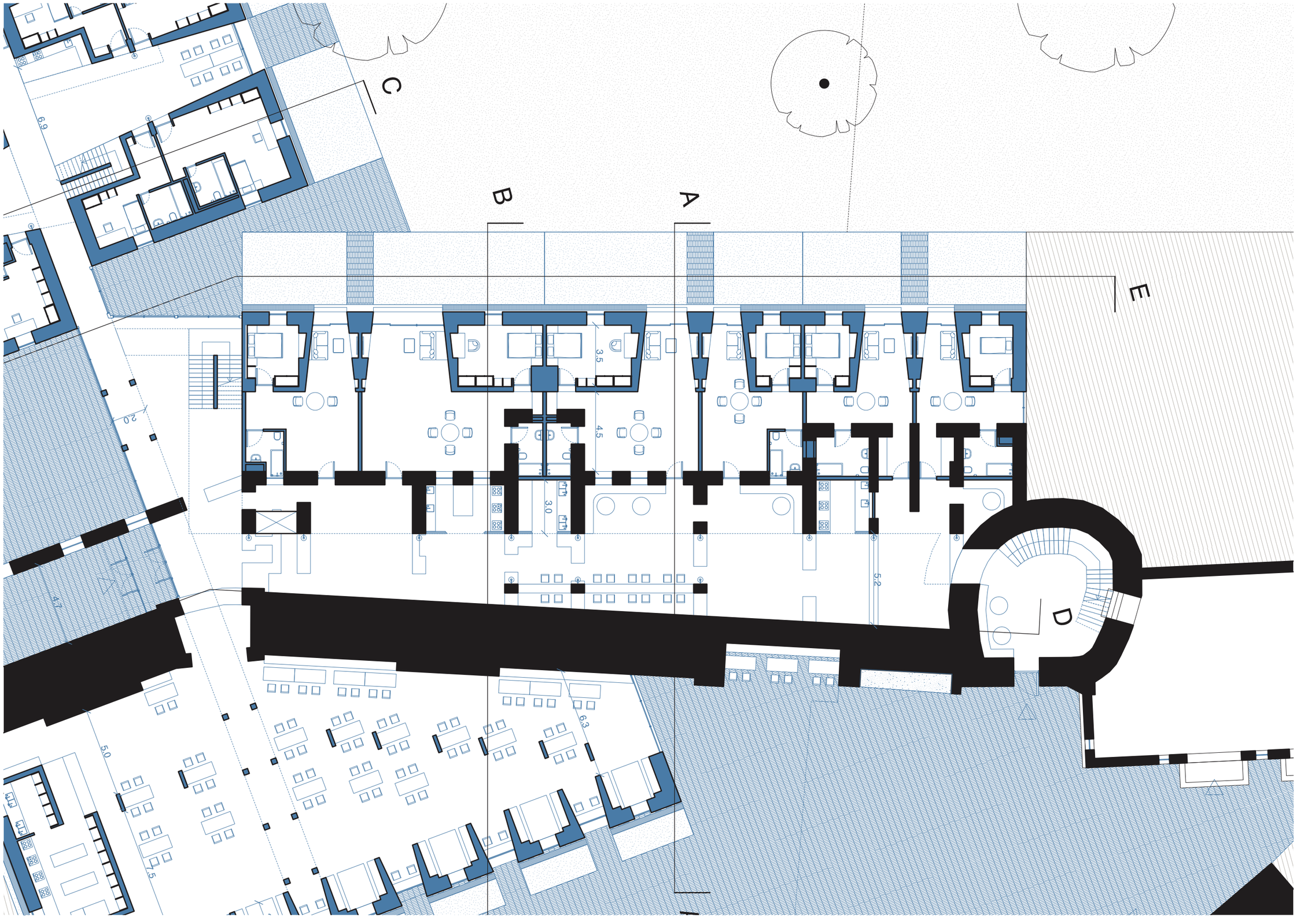


Niches that create both private and shared spaces

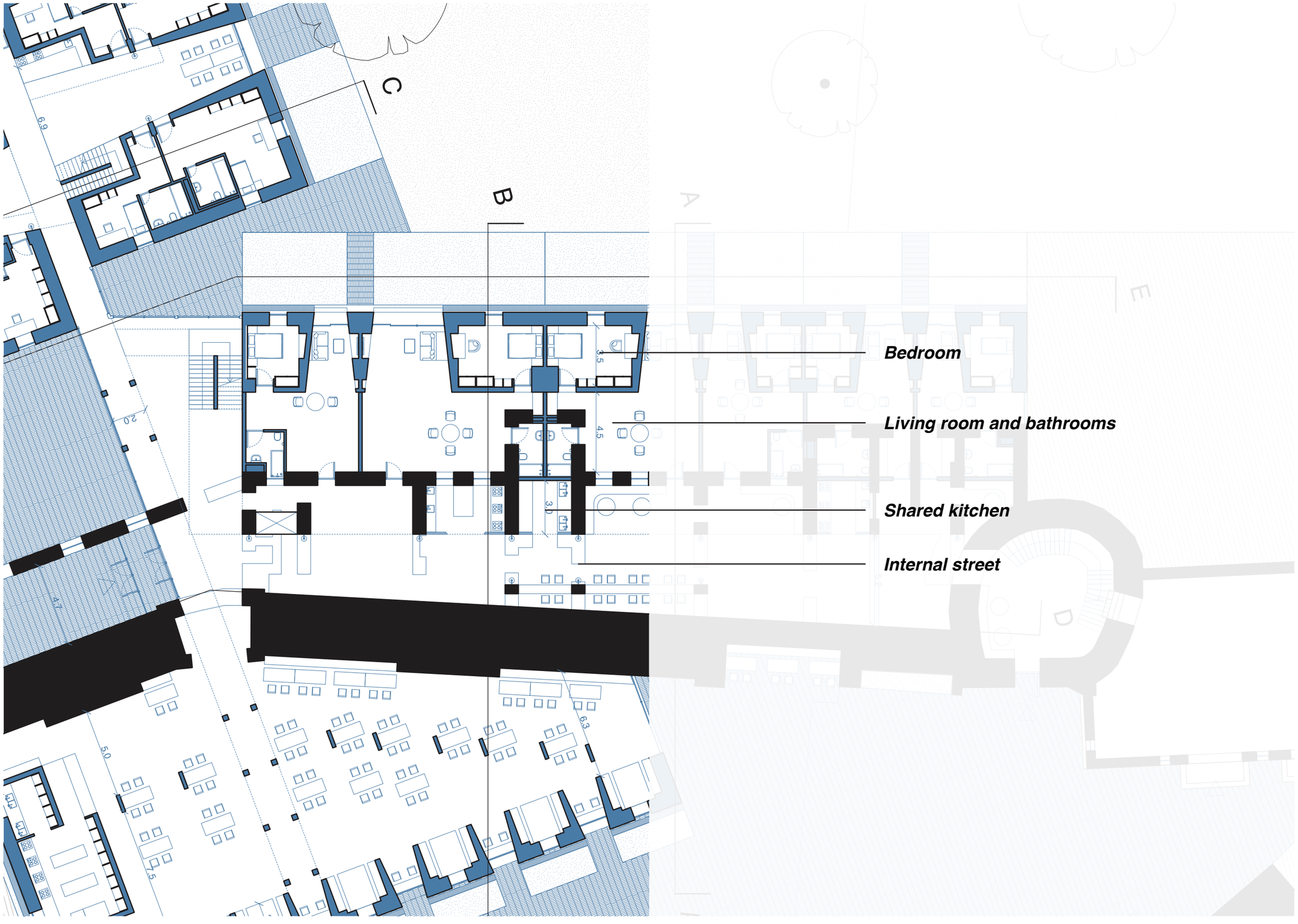
Stimuli

Procession

Pocket Spaces



0/F plan of the apartments for seniors



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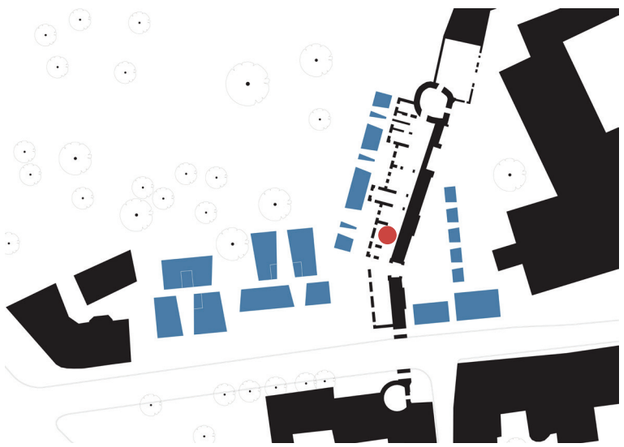
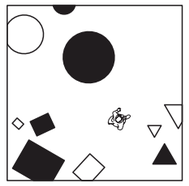


Perspective rendering of the internal street



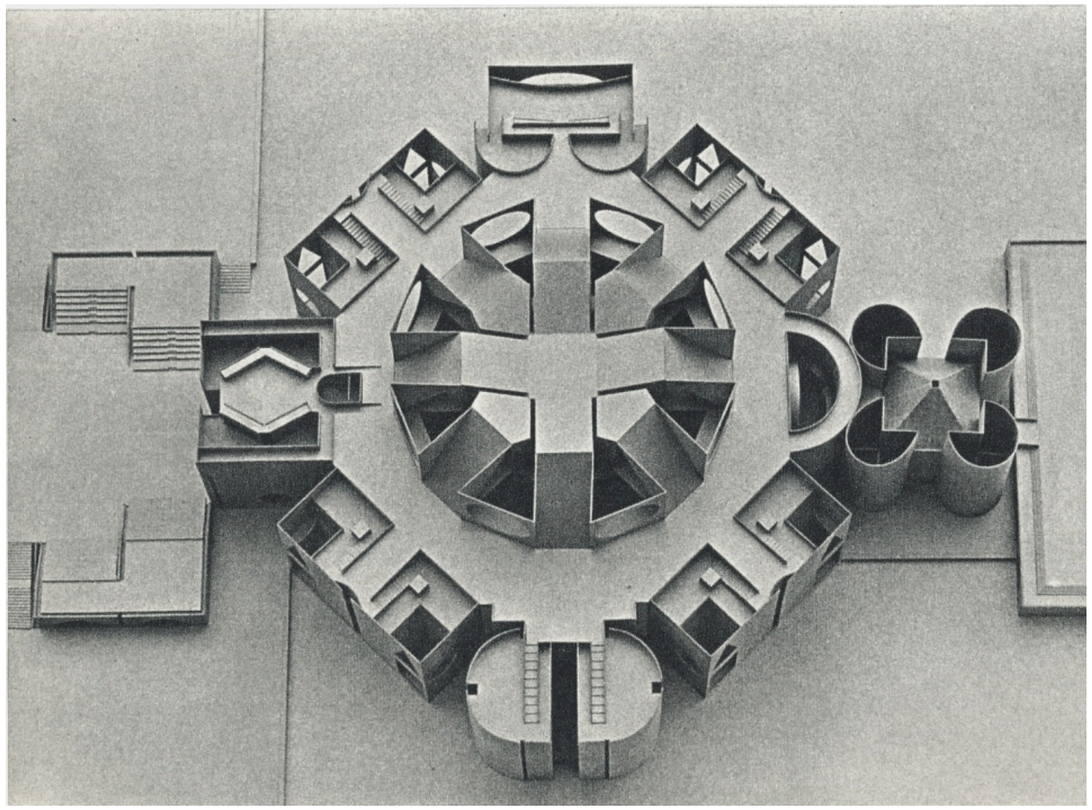
Stimuli

Procession

Pocket Spaces

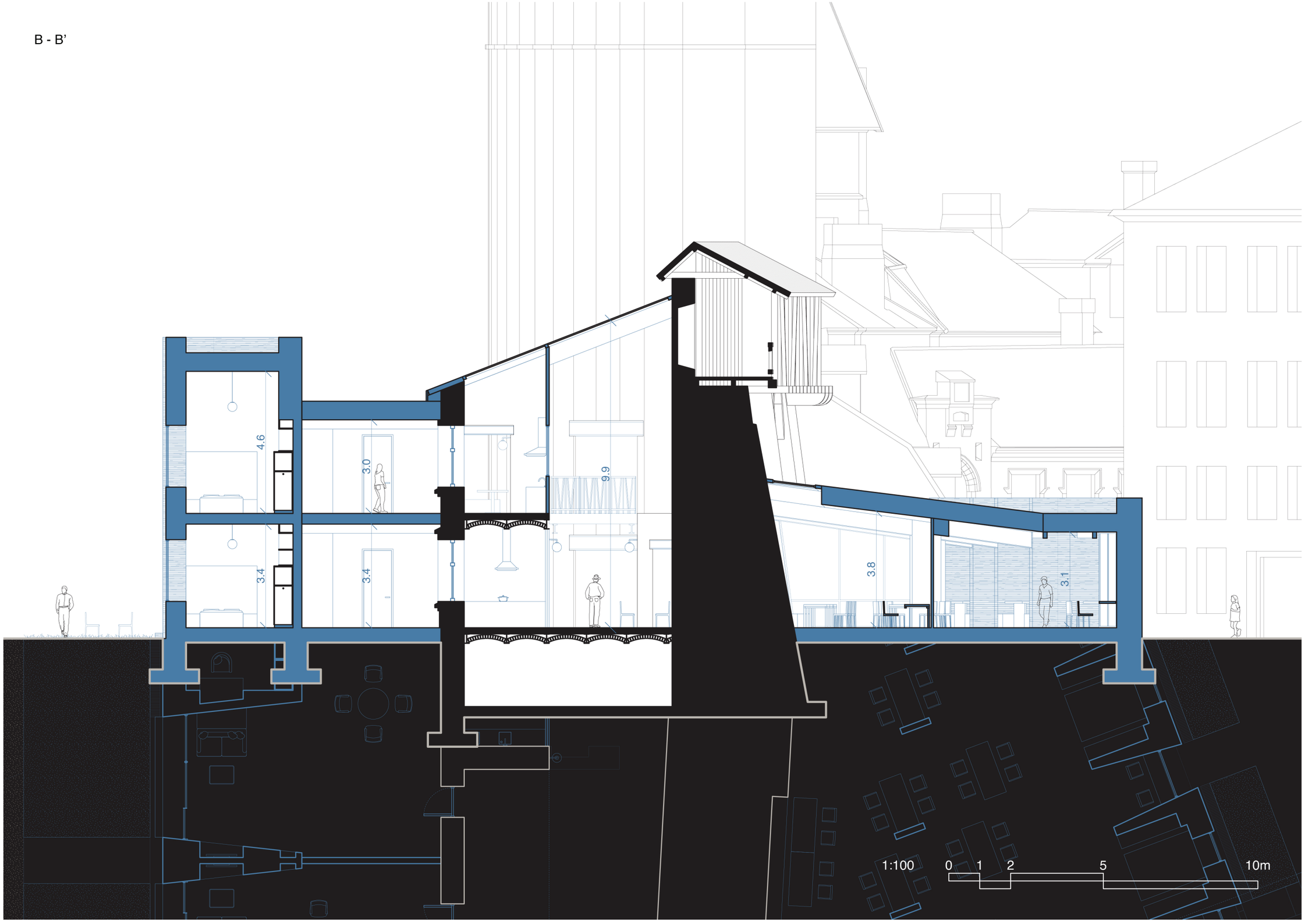
A Bird's-eye view of the Bank of England by Joseph Michael Gandy ARA. Source: Sir John Soane's Museum

Aerial view of National Assembly Building of Bangladesh by Louis Kahn. Source: University of Pennsylvania

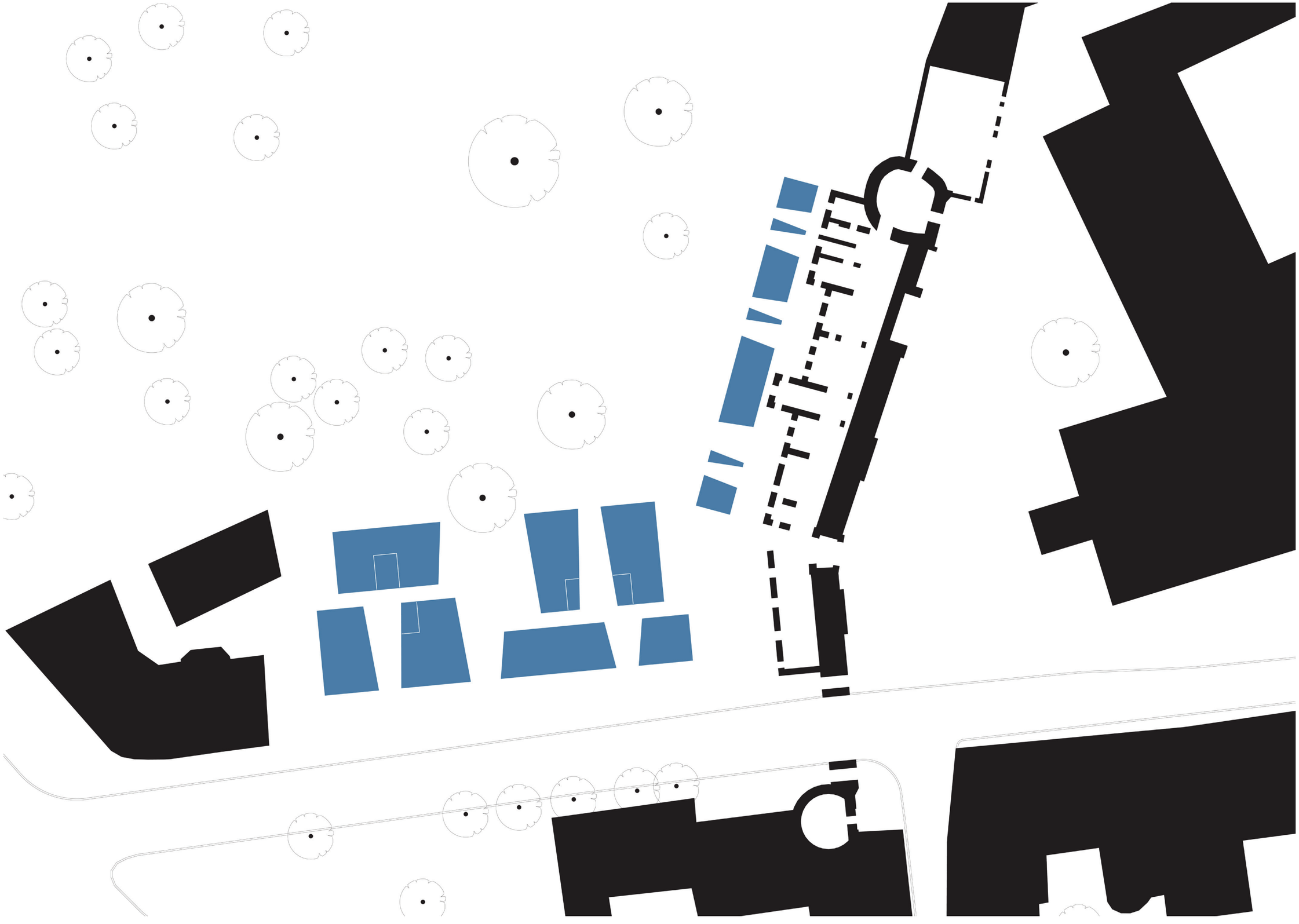


Cardboard study model by of National Assembly Building of Bangladesh by Louis Kahn. Source: Louis Kahn

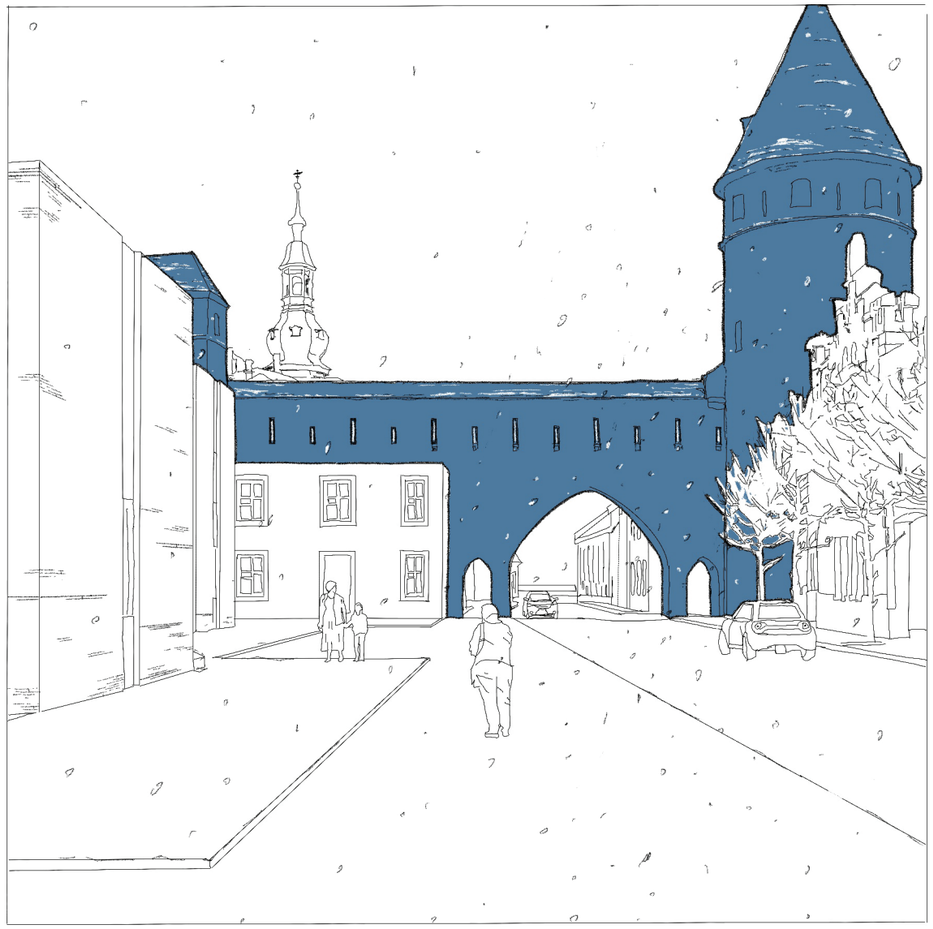
B - B’



Short section of the internal street and the student canteen

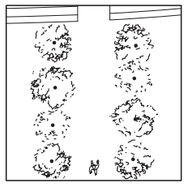


Noli map showing extensions of the design intot the parks



Perspective drawing of the framing of the gate with buildings on the two sides

Stimuli



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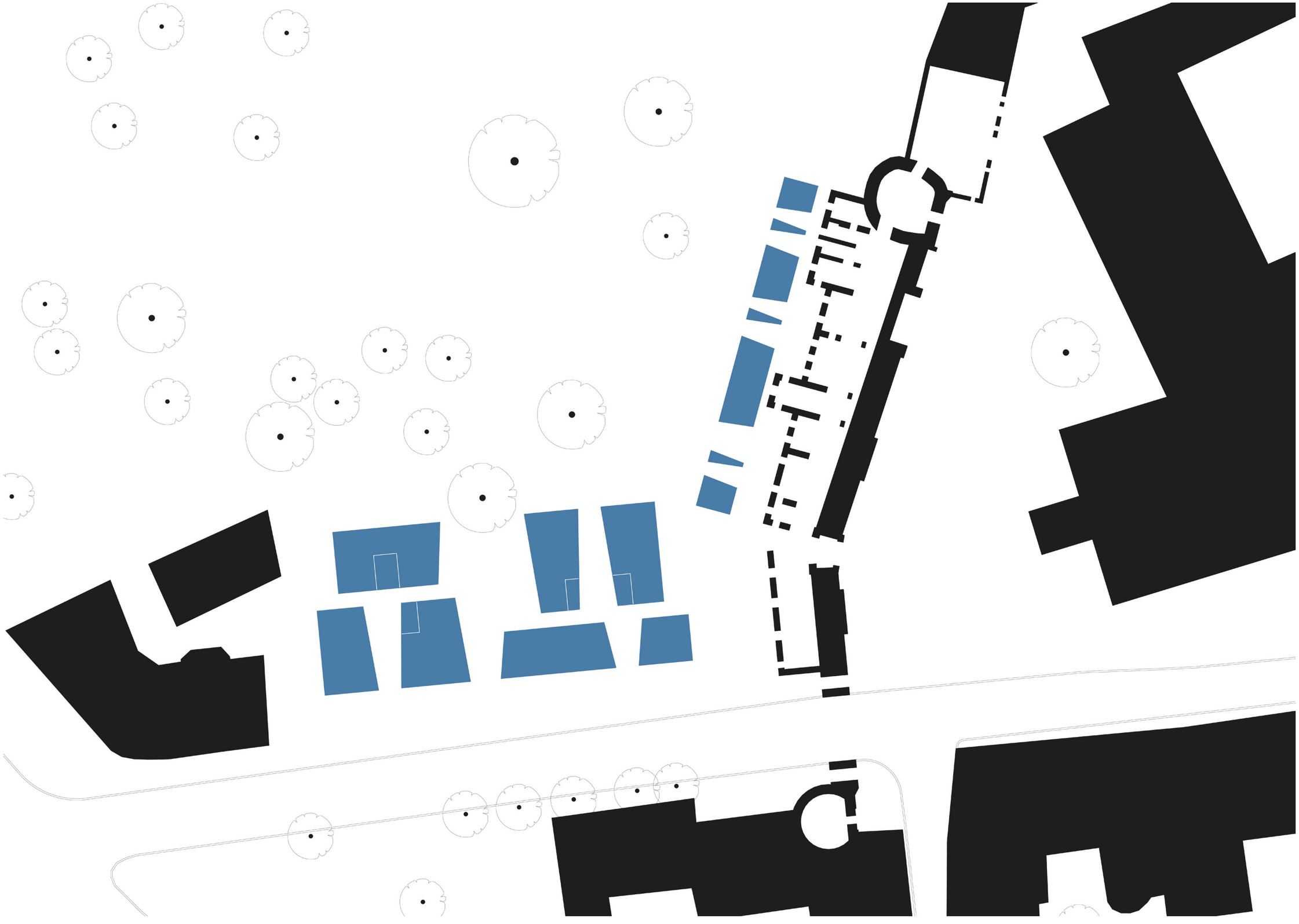
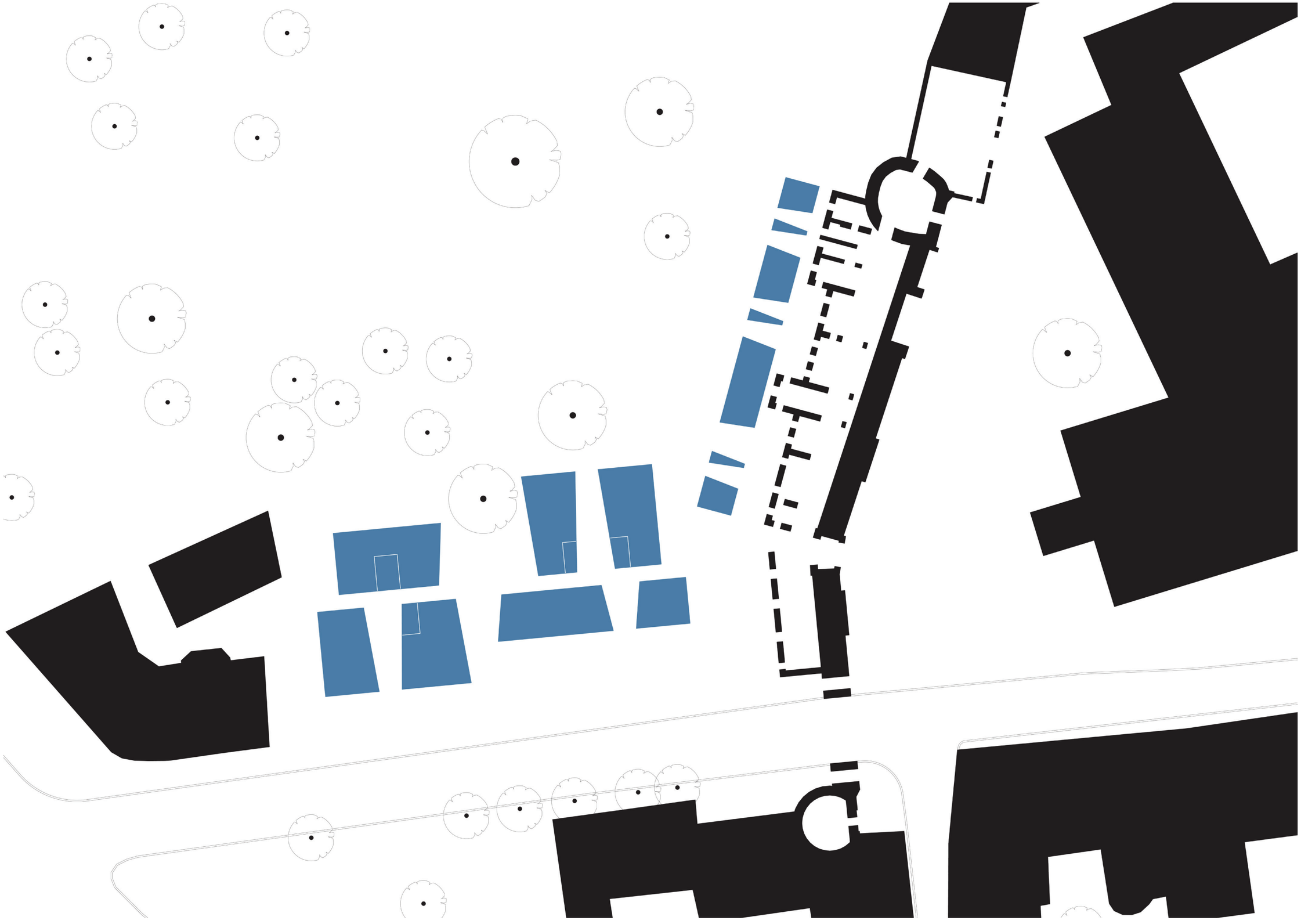
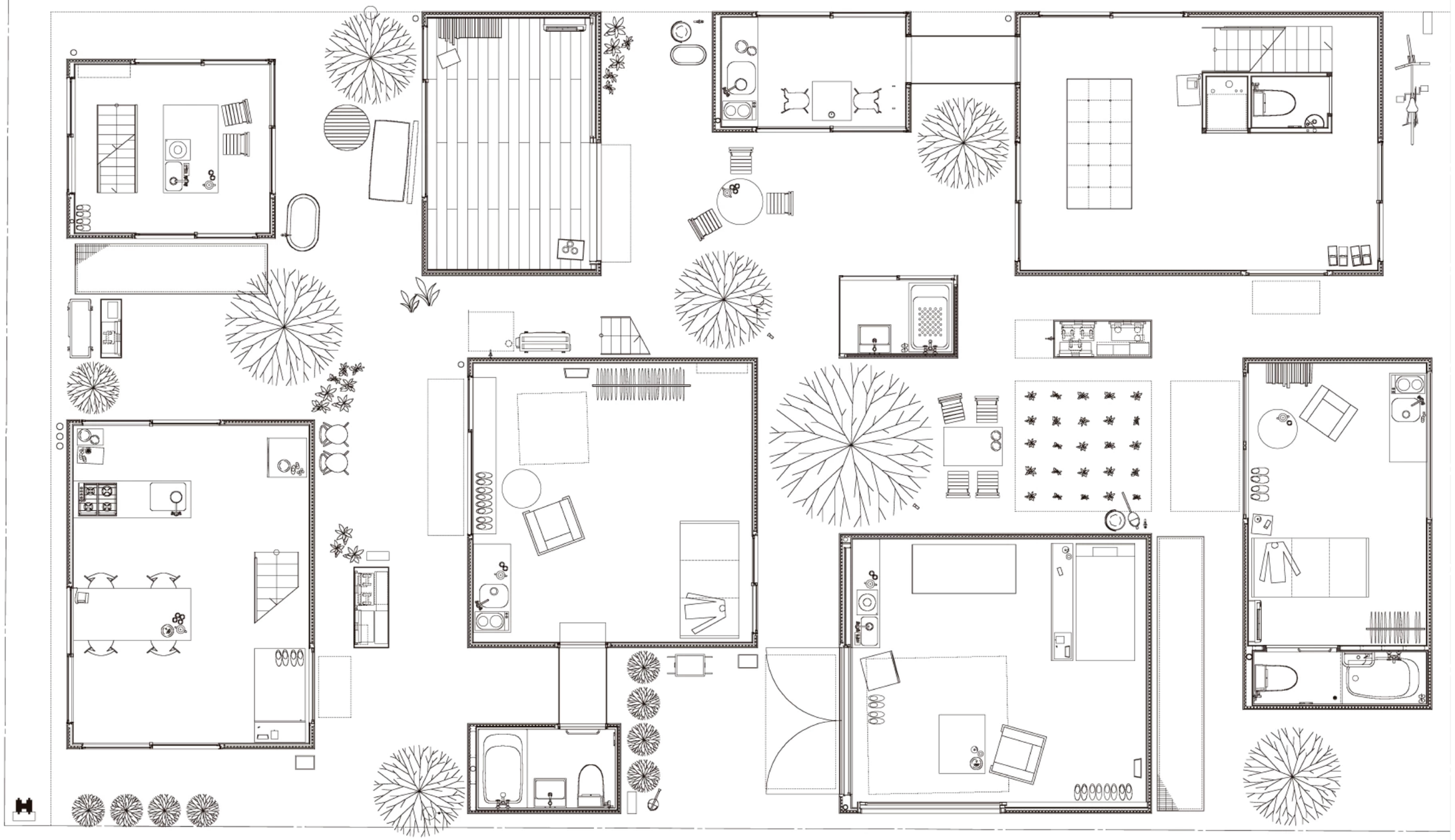


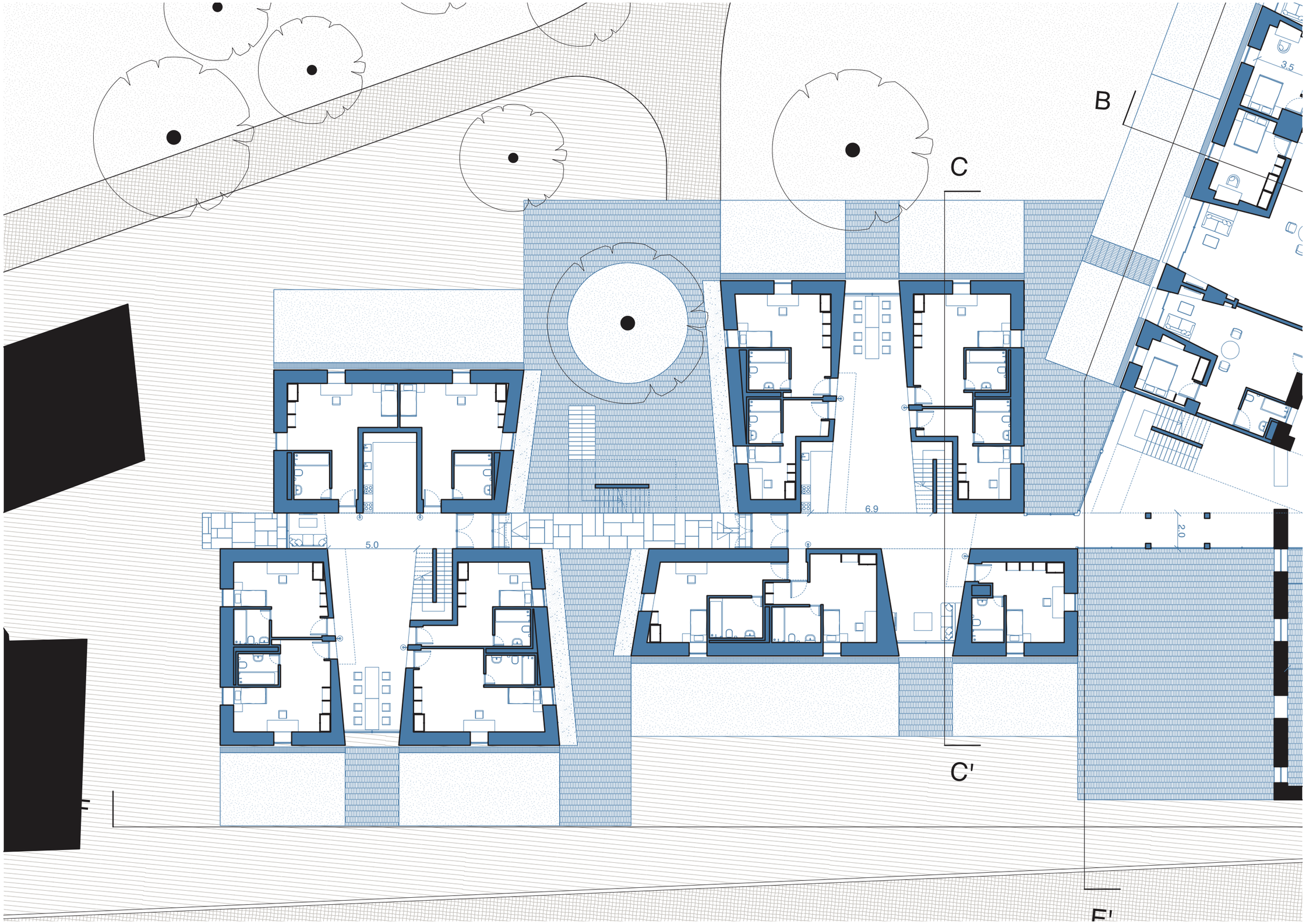
Noli map showing extensions of the design intot the parks



Noli map showing the shifting of the blocks in the student clusters



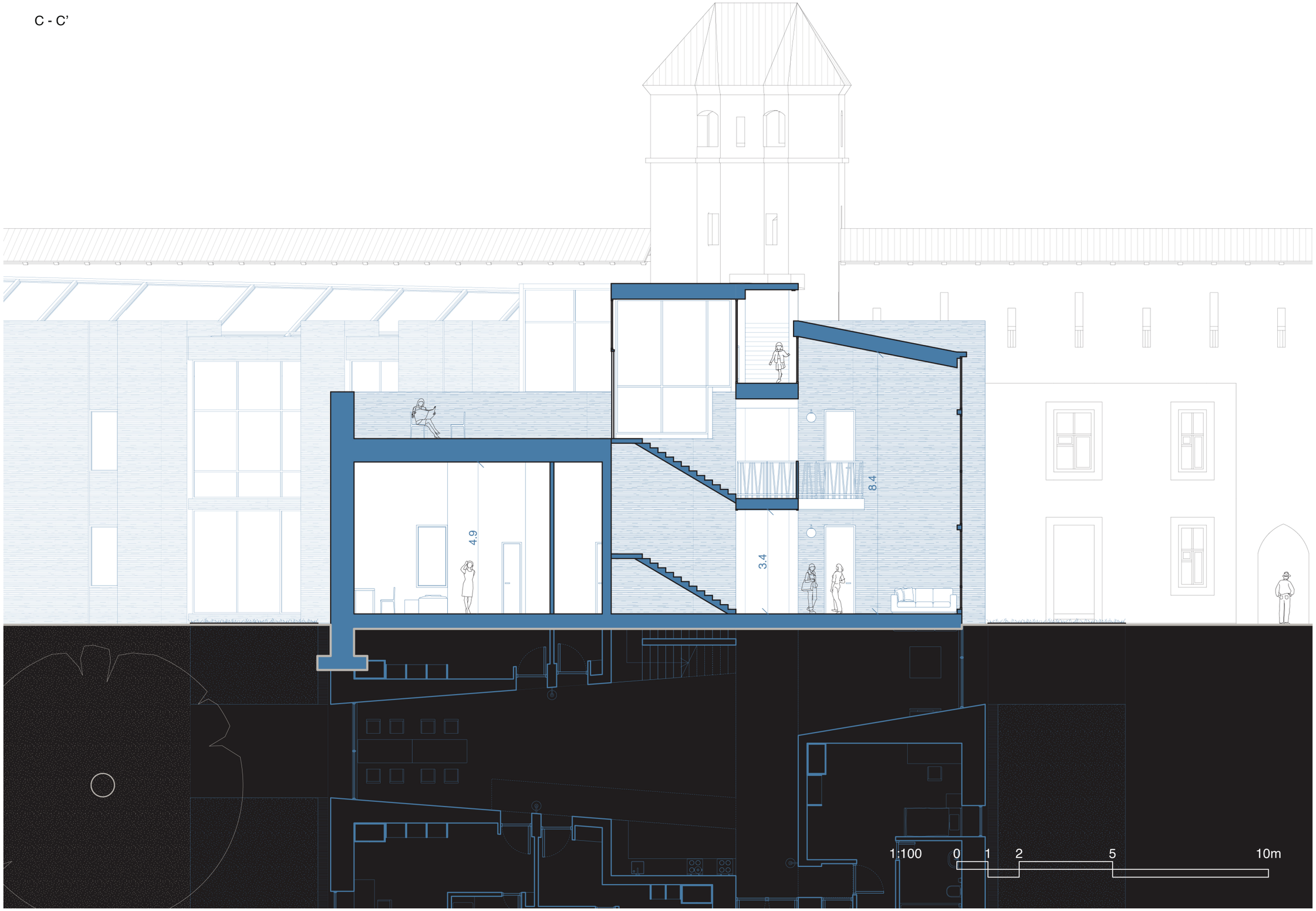
Floor plan of Moriyama House by Office of Ryue Nishizawa. Source: Arquitectura Viva



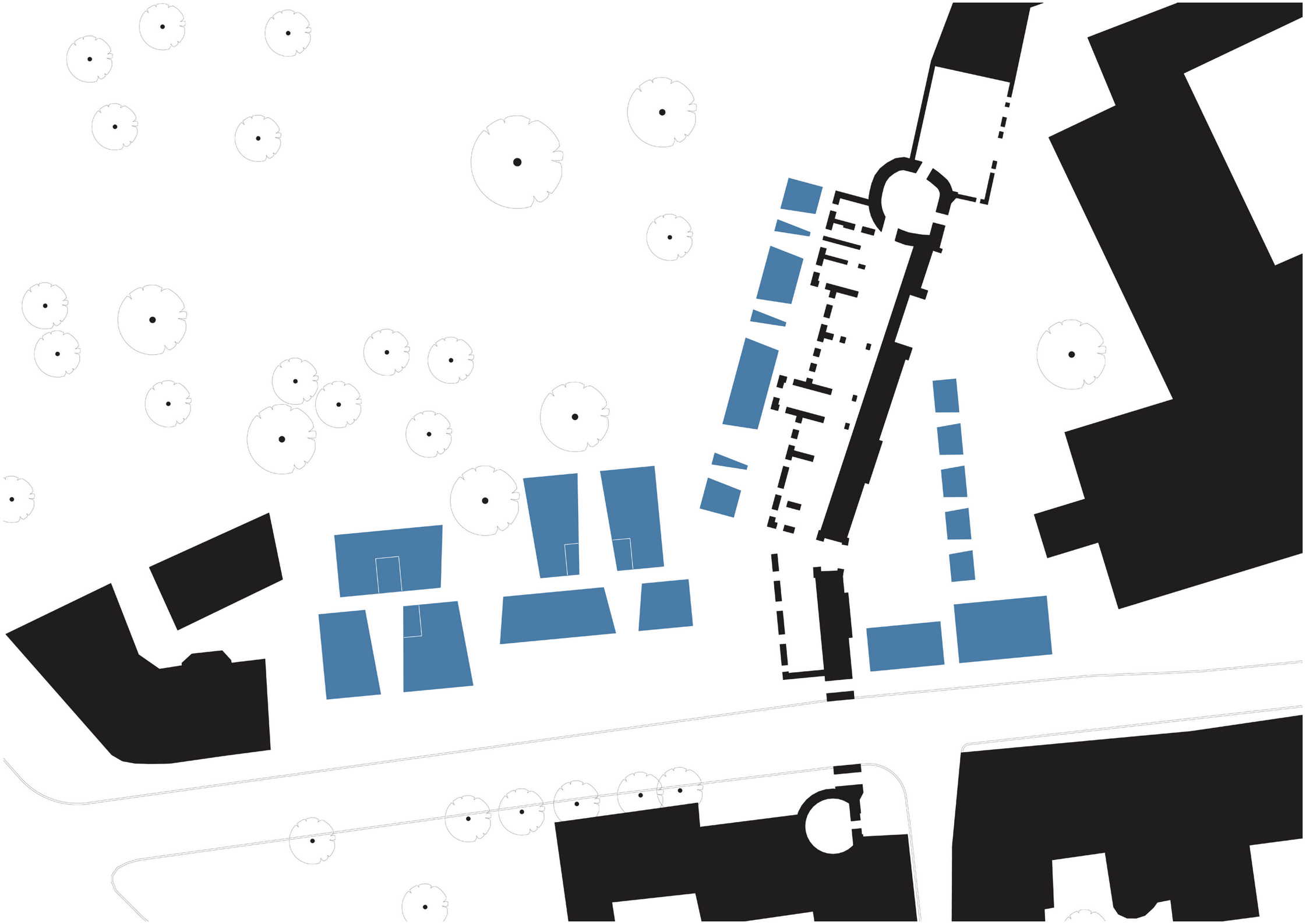
0/F plan of the student clusters

Photo of the model of the student clusters

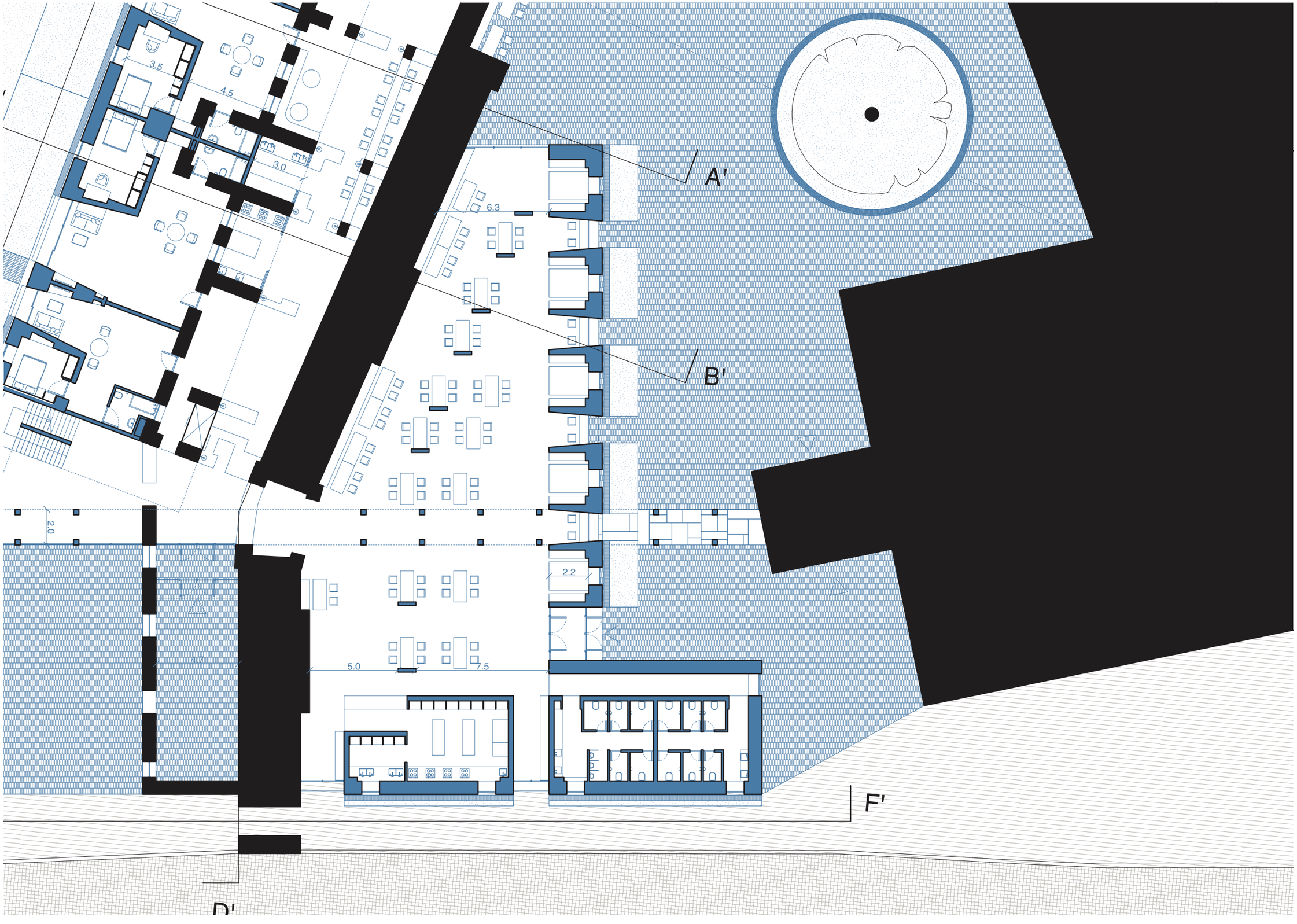
C - C’



Short section of a student cluster



Noli map showing the canteen as an element slightly closing off the courtyard



0/F plan of the student canteen

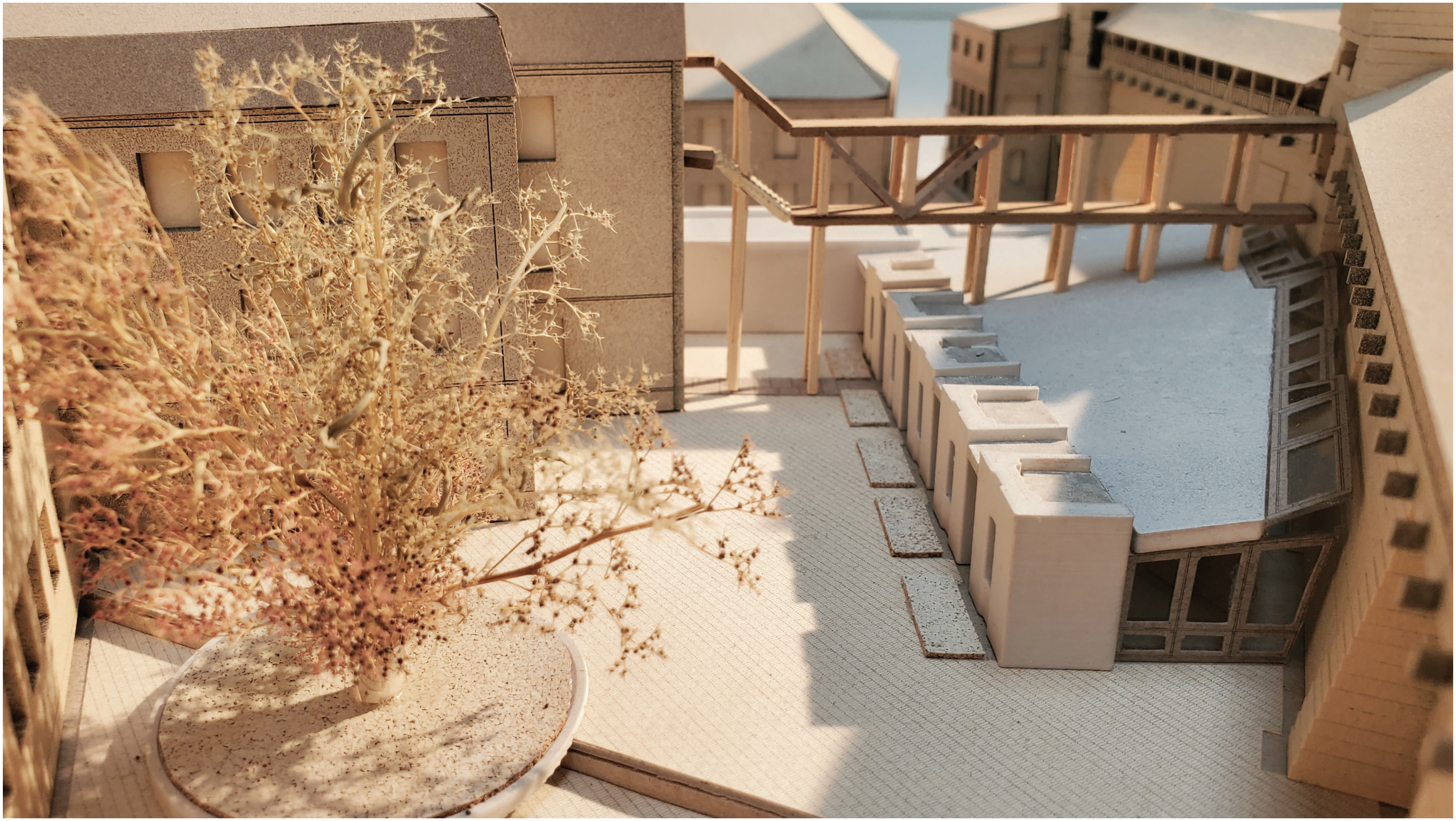
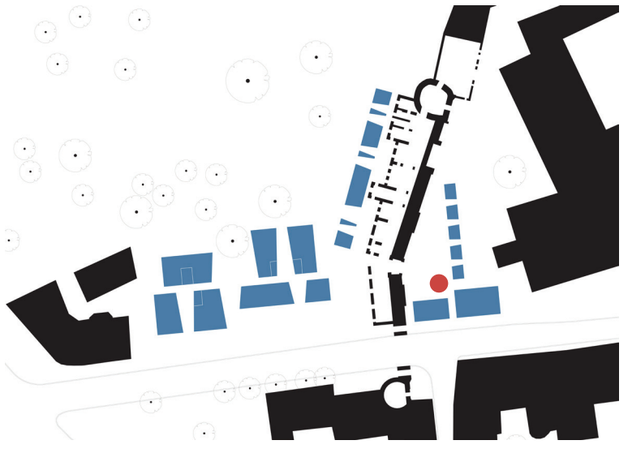
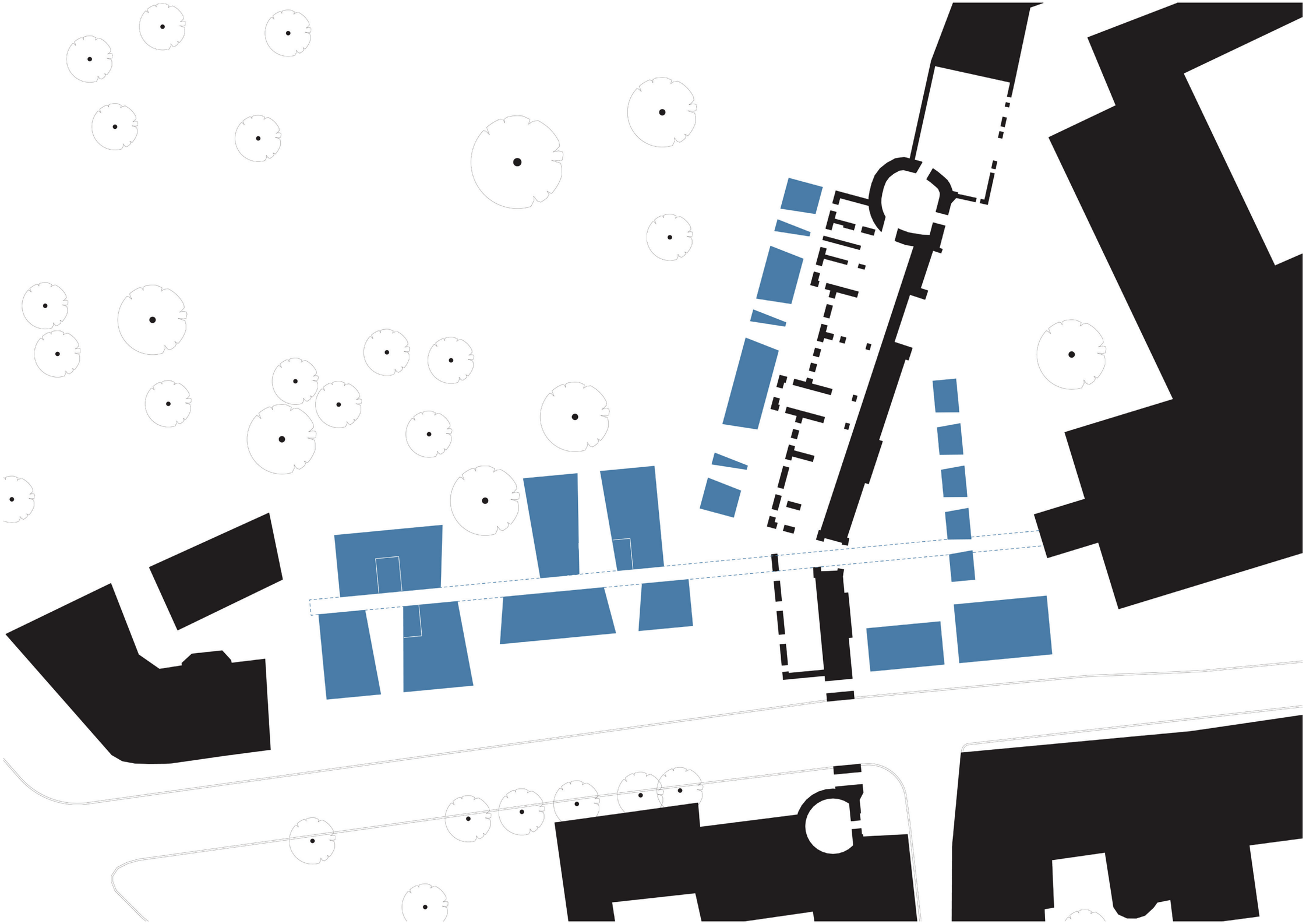


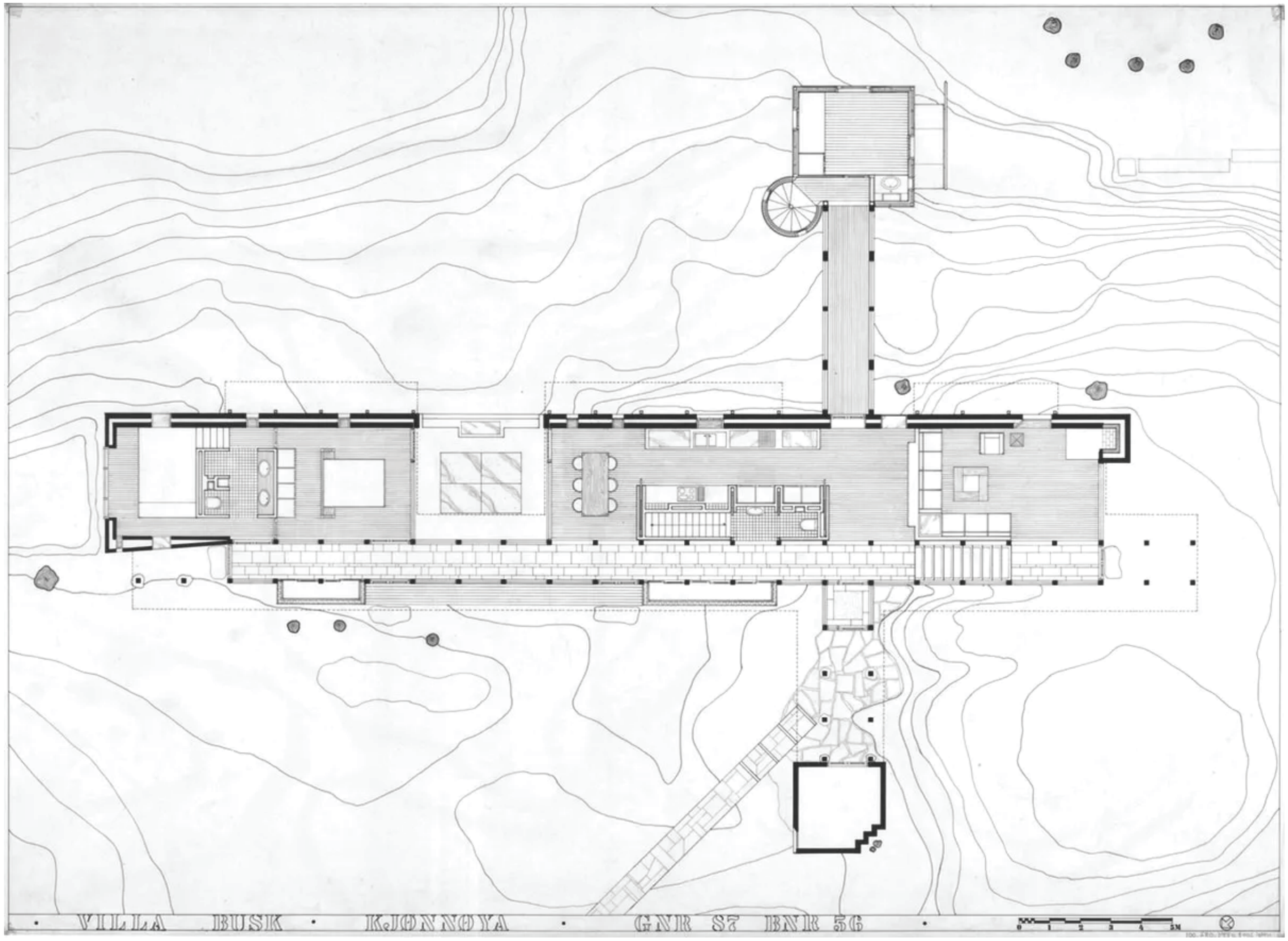
Photo of the model of the courtyard



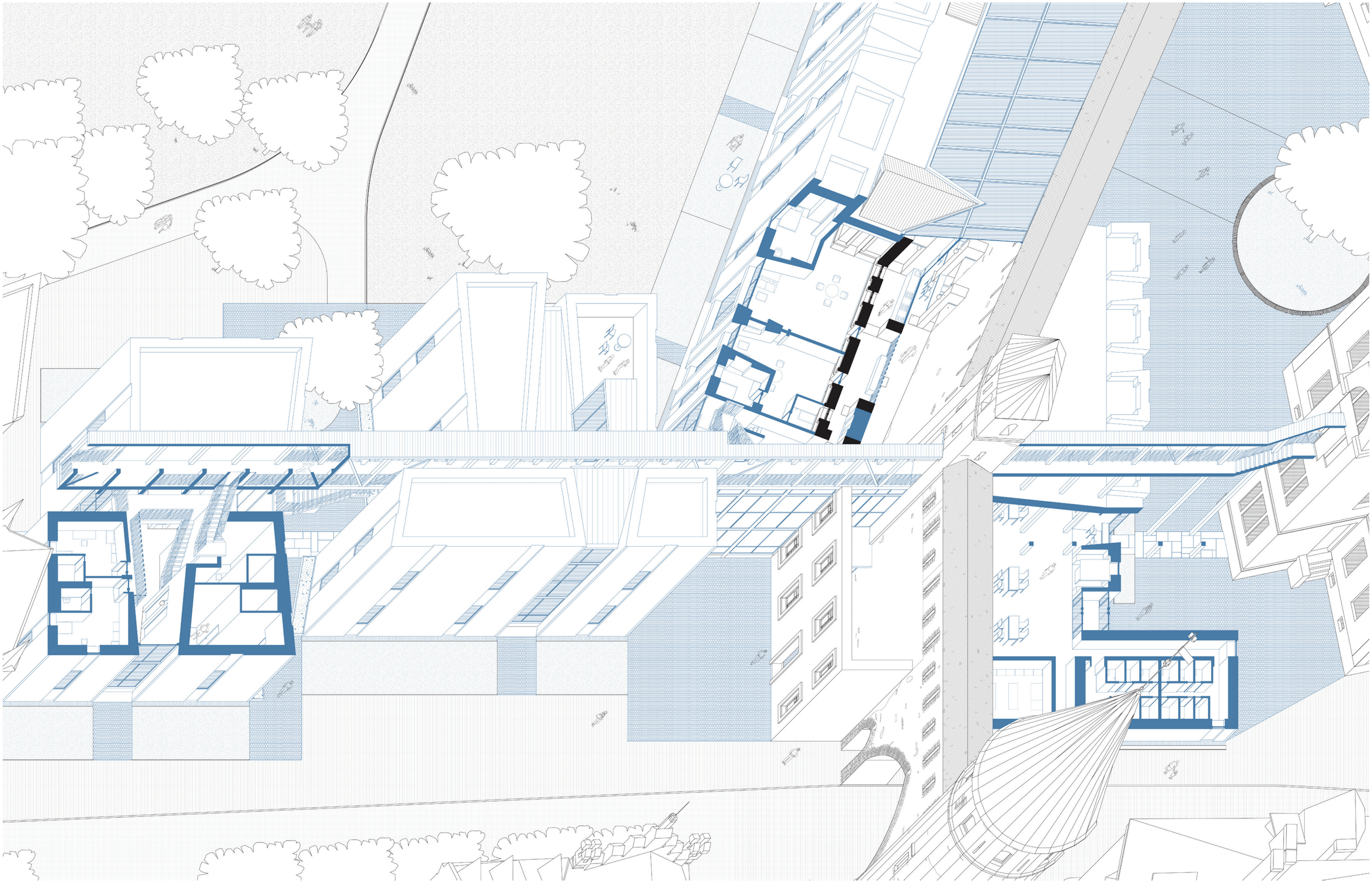
Perspective rendering of the student canteen



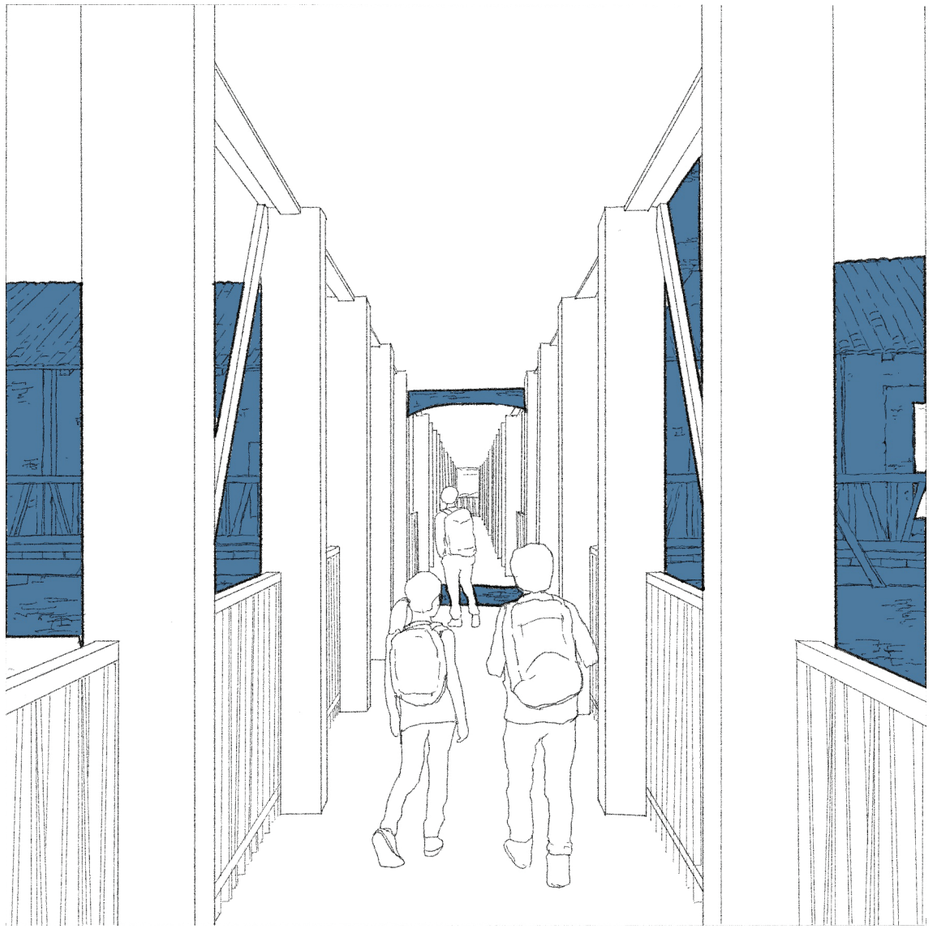
Noli map showing the walkway as a connector



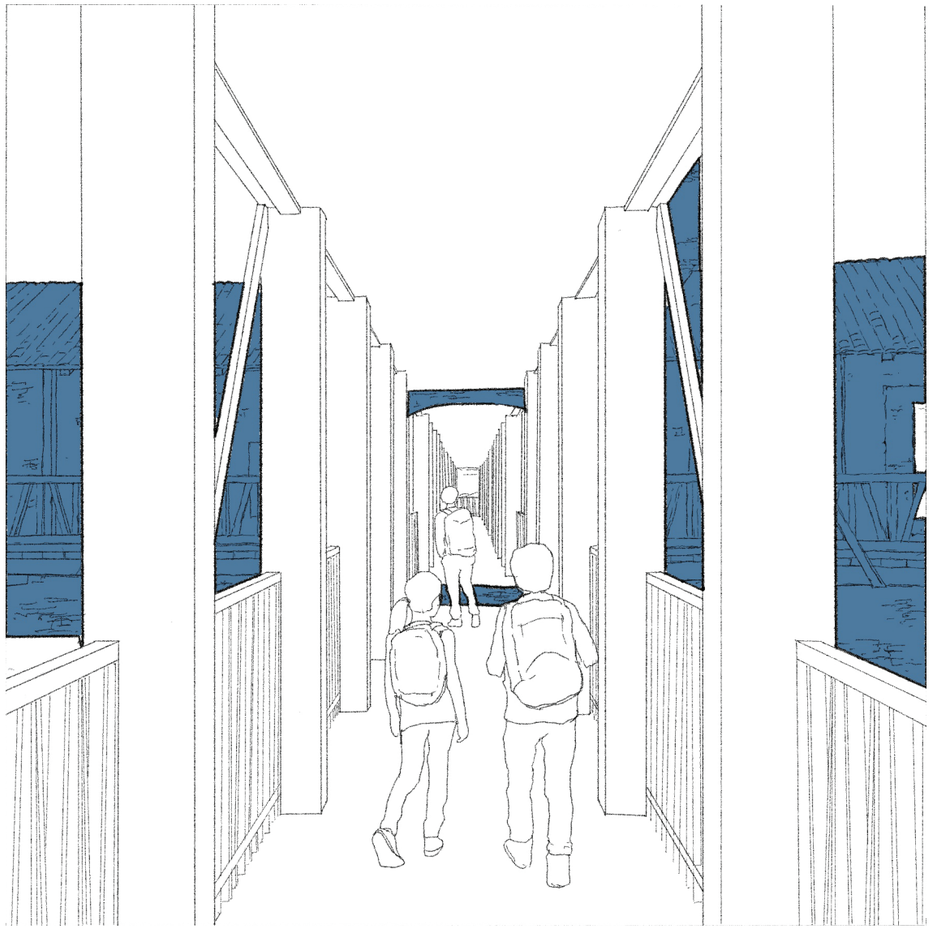
Villa Busk by Sverre Fehn. Source: Sverre Fehn Architects

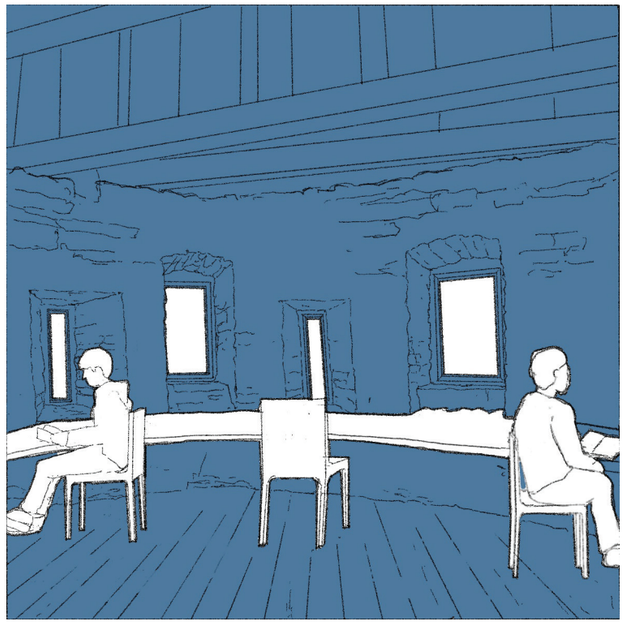


Axonometric drawing of the walkway 69

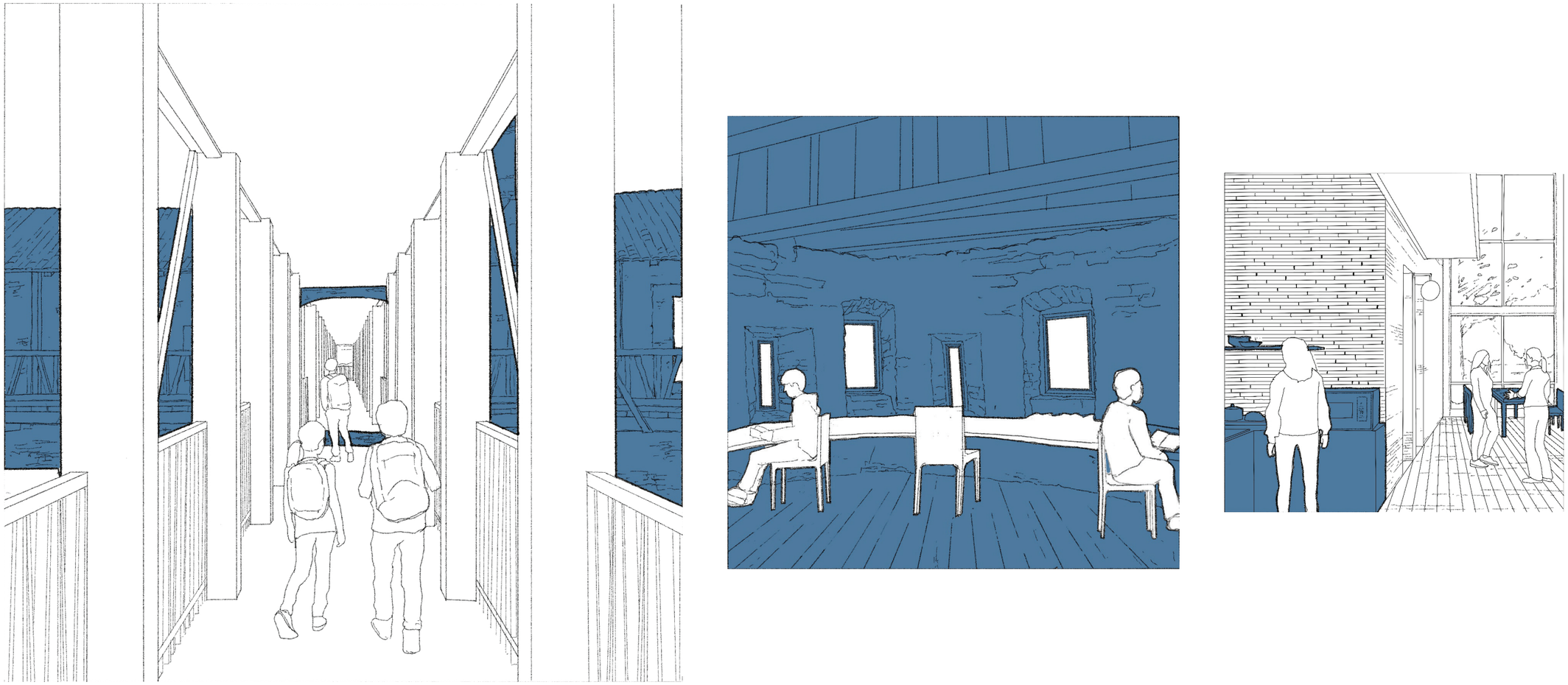


Sequential perspective drawings of the students leaving school





Sequential perspective drawings of the students leaving school



Sequential perspective drawings of the students leaving school

Research

Design

Construction

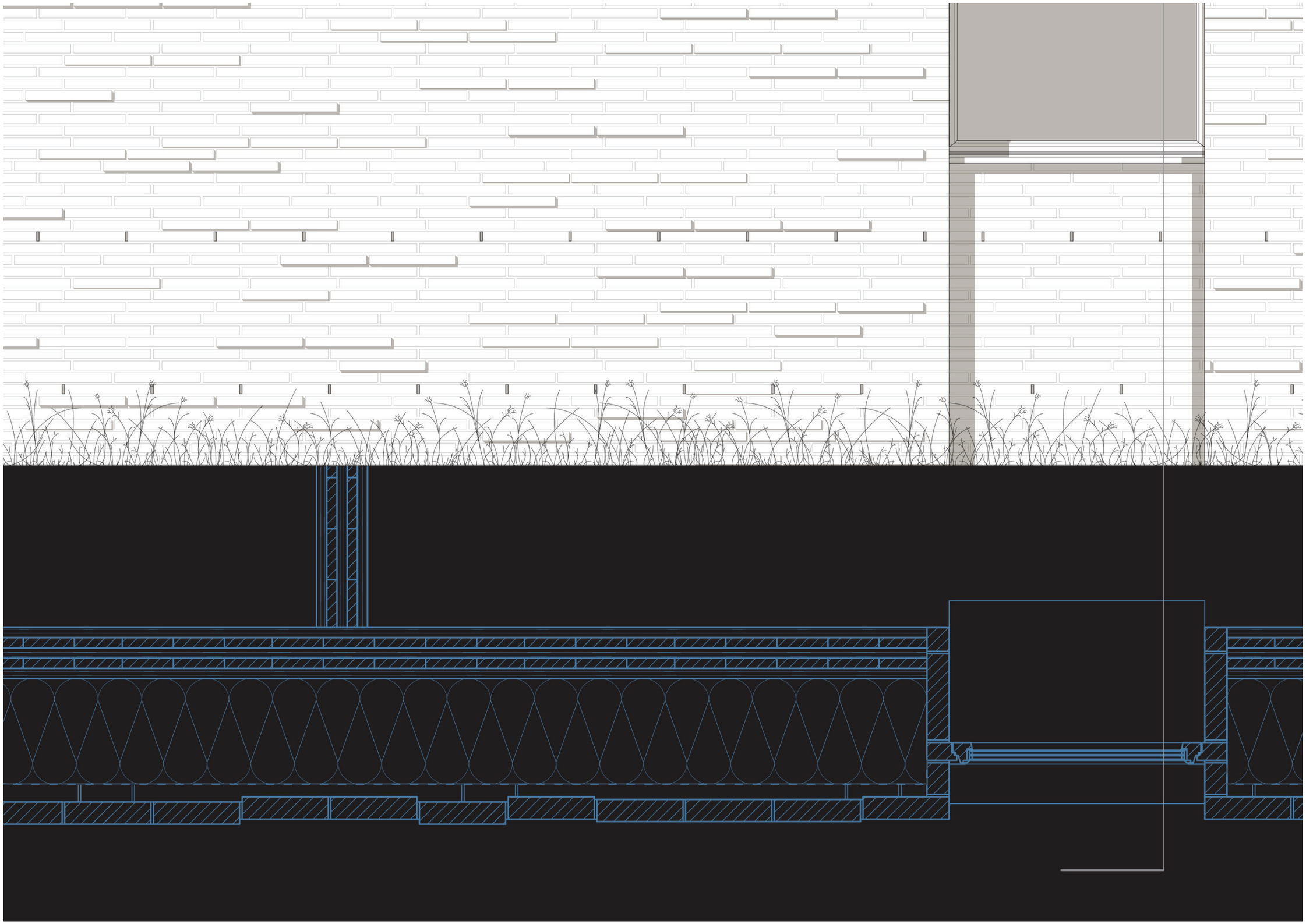
Conclusions

Constructing the thick wall

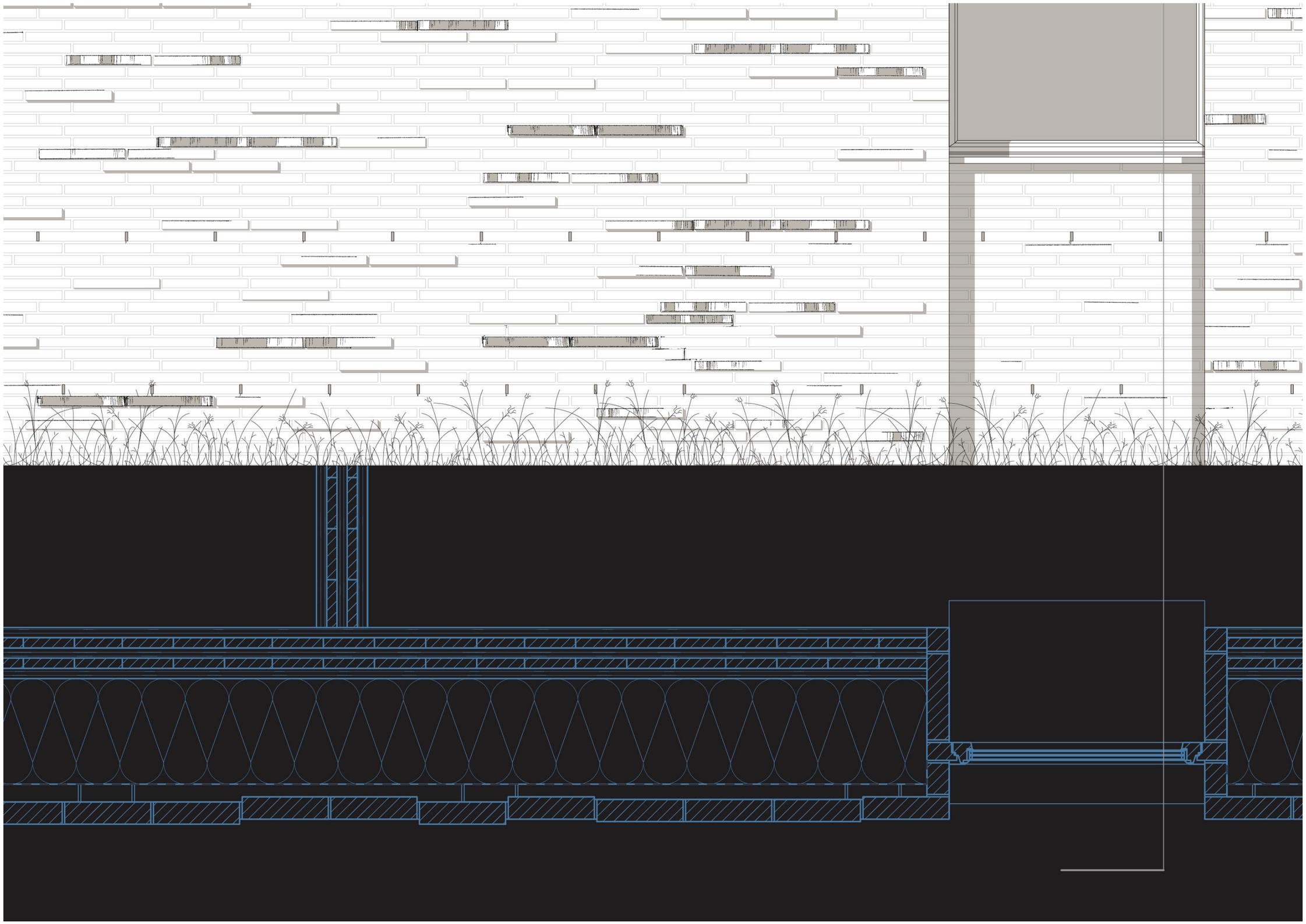
Texture of the city wall

Texture of the brick facade of Kolumba Museum by Peter Zumthor. Source: Luis Rodriguez

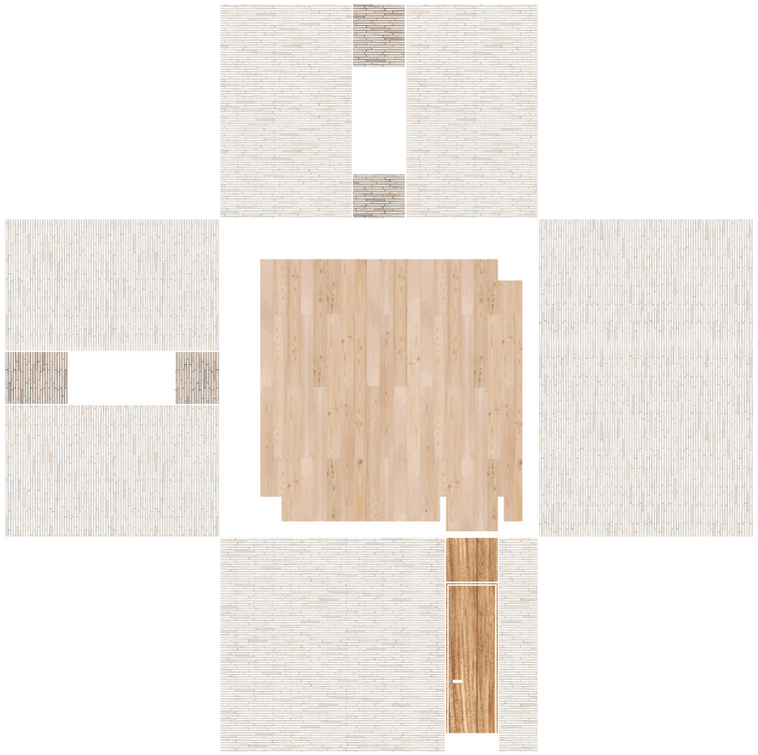
1:1 0 10 20 50 100mm



1:20 elevation and horizontal section



1:20 elevation and horizontal section showing the weathering effect



1:100 0 1 2 5 10m

Thick reed roof in the Estonian Open Air Museum. Source: Vivien Steindler

Multi-layer board: 30 mm
Wooden wedges: 40 mm at 50 cm intervals
Mineral wool thermal insulation: 50 mm

2
Bituminous roof sealant
Mineral wool thermal insulation: 80 mm
PO foil moisture barrier
Reed thermal insulation to falls: max. 500mm
PO foil moisture barrier
Cross laminated timber (5 ply): 120 mm

U-value: 0.114 W/(m²K)

3
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
30 mm ventilation gap
5 mm stainless steel bracket
PO foil moisture barrier
330 mm reed thermal insulation
Cross laminated timber (5 ply): 200 mm

U-value: 0.147 W/(m²K)

4
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
50 mm ventilation gap
5 mm stainless steel bracket
PO foil moisture barrier
400 mm reed thermal insulation
Cross laminated timber (5 ply): 200 mm

U-value: 0.127 W/(m²K)

5
Bituminous roof sealant
Mineral wool thermal insulation: 80 mm
PO foil moisture barrier
Reed thermal insulation to falls: max. 500mm
PO foil moisture barrier
Cross laminated timber (5 ply): 120 mm

U-value: 0.114 W/(m²K)

6
Suspension with stainless steel brackets

7
Oak panels: 20 mm

8
Glued lam. fir beam: 300/120 mm

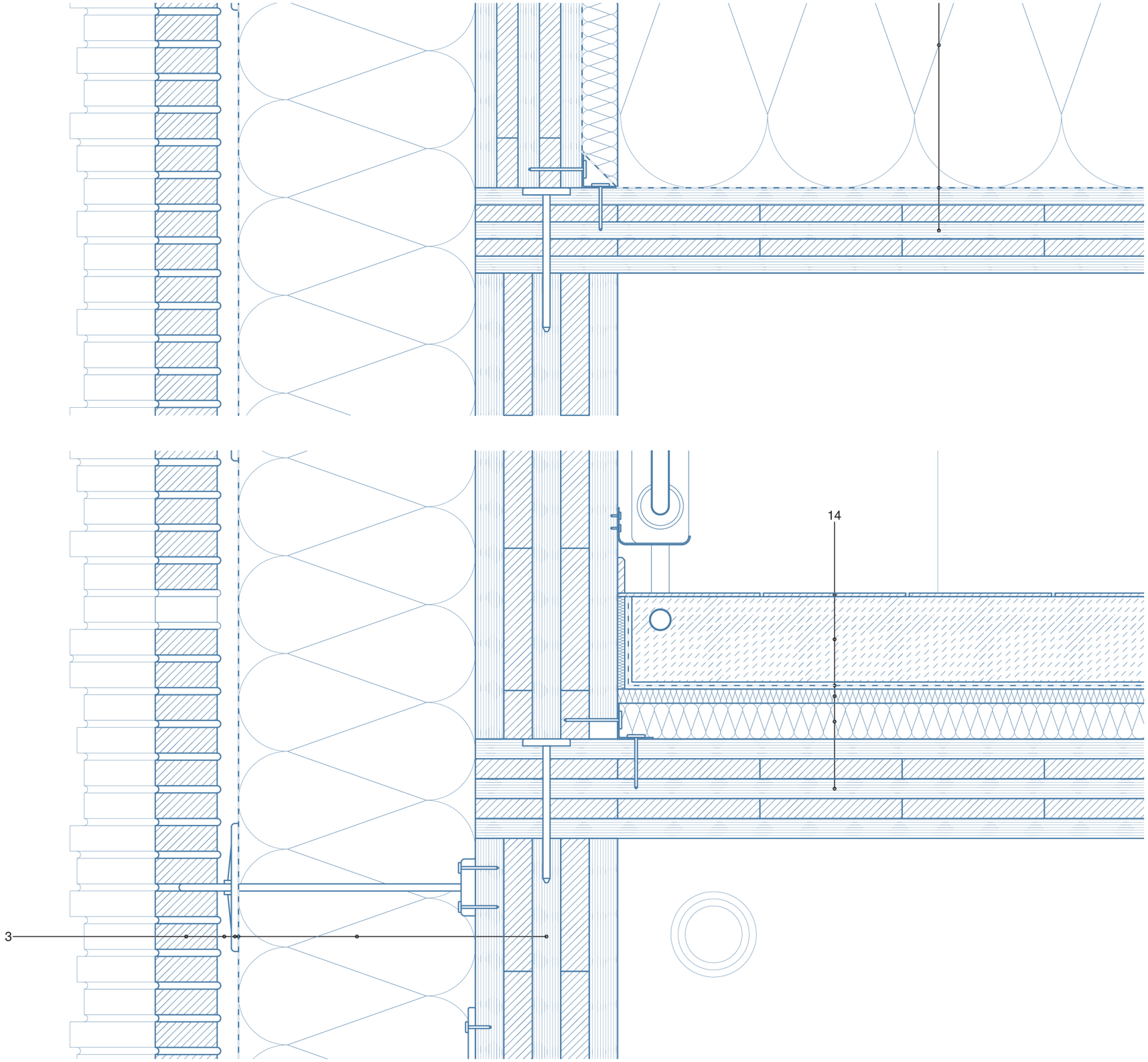
9
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
Cross laminated timber (5 ply): 200 mm

10
Triple-glazed in pine frame

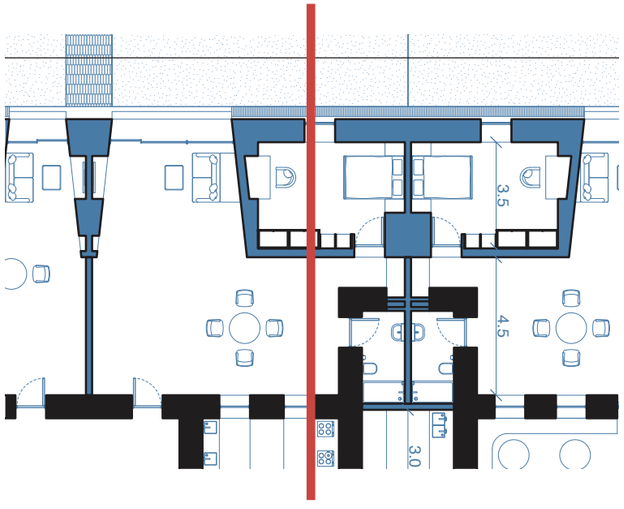
11
Aluminum sheet: 2mm
Wooden wedges: 20 mm at 50 cm intervals

12
Existing structure

13
Radiator



1:5 vertical detail



B - B'

1
Aluminium sheet covering: 2 mm
PO foil moisture barrier
Multi-layer board: 30 mm
Wooden wedges: 40 mm at 50 cm intervals
Mineral wool thermal insulation: 50 mm

2
Bituminous roof sealant
Mineral wool thermal insulation: 80 mm
PO foil moisture barrier
Reed thermal insulation to falls: max. 500mm
PO foil moisture barrier
Cross laminated timber (5 ply): 120 mm

U-value: 0.114 W/(m²K)

3
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
30 mm ventilation gap
5 mm stainless steel bracket
PO foil moisture barrier
330 mm reed thermal insulation
Cross laminated timber (5 ply): 200 mm

U-value: 0.147 W/(m²K)

4
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
50 mm ventilation gap
5 mm stainless steel bracket
PO foil moisture barrier
400 mm reed thermal insulation
Cross laminated timber (5 ply): 200 mm

U-value: 0.127 W/(m²K)

5
Bituminous roof sealant
Mineral wool thermal insulation: 80 mm
PO foil moisture barrier
Reed thermal insulation to falls: max. 500mm
PO foil moisture barrier
Cross laminated timber (5 ply): 120 mm

U-value: 0.114 W/(m²K)

6
Suspension with stainless steel brackets

7
Oak panels: 20 mm

8
Glued lam. fir beam: 300/120 mm

9
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
Cross laminated timber (5 ply): 200 mm

10
Triple-glazed in pine frame

11
Aluminum sheet: 2mm
Wooden wedges: 20 mm at 50 cm intervals

12
Existing structure

13
Radiator

14
Oak floorboards: 200/25 mm
Screed: 120 mm
PO foil moisture barrier
Insulation: Polystyrene boards: 20 mm
Insulation: Polystyrene boards: 50 mm
Cross laminated timber (5 ply): 140 mm

15
Oak floorboards: 200/25 mm
Screed: 120 mm
PO foil moisture barrier
Reinforced concrete: 200 mm
Mineral wool thermal insulation: 100 mm
Bituminous membrane
Sand blinding
Hardcore over ground: 100 mm

16
Damp-proof course

17
Triple-glazed in stainless steel frame

18
Glued lam. fir beam: 370/120 mm

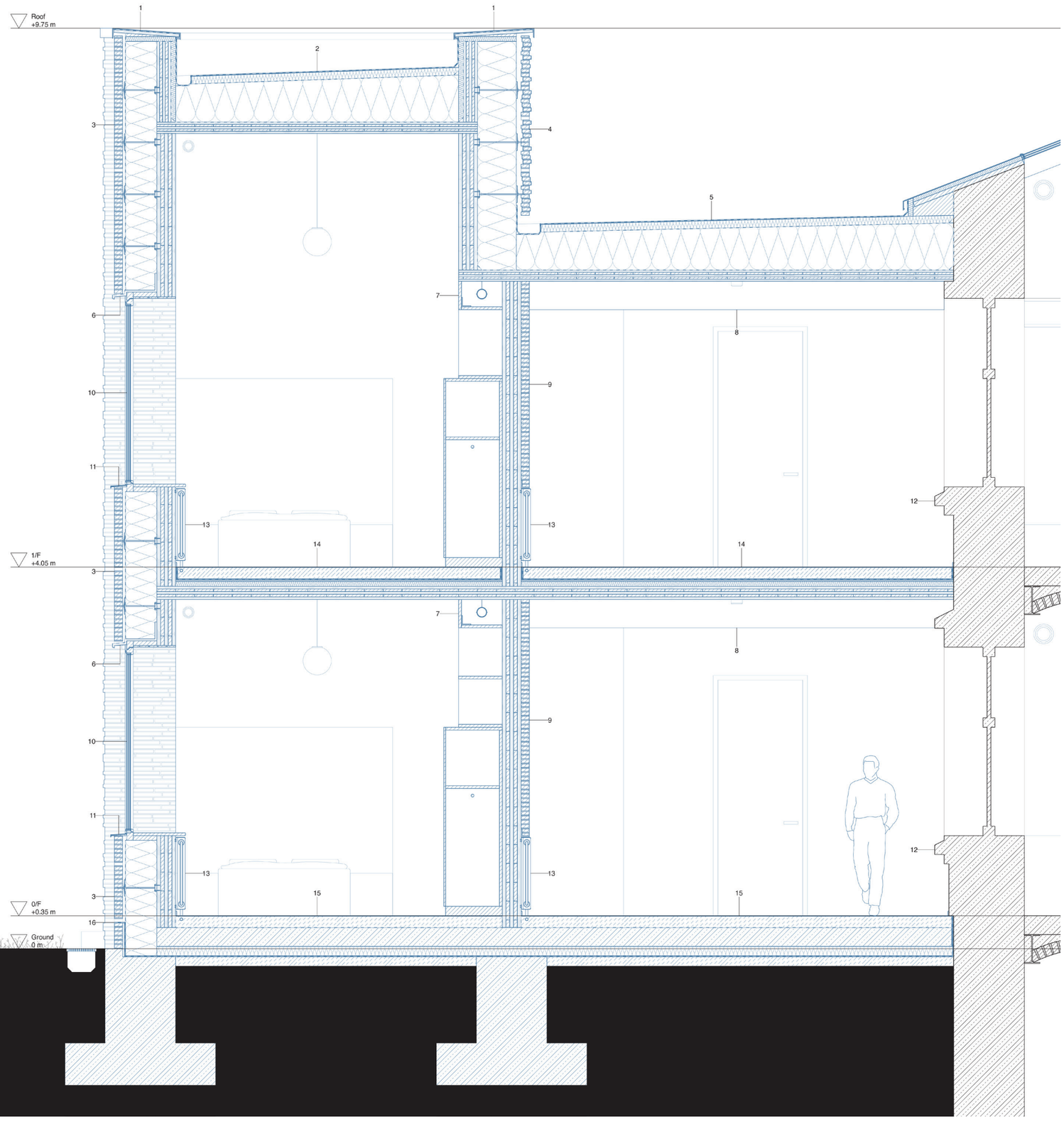
19
Cross laminated timber (3 ply): 100 mm

20
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
30 mm ventilation gap
5 mm stainless steel bracket
PO foil moisture barrier
330 mm reed thermal insulation

U-value: 0.191 W/(m²K)

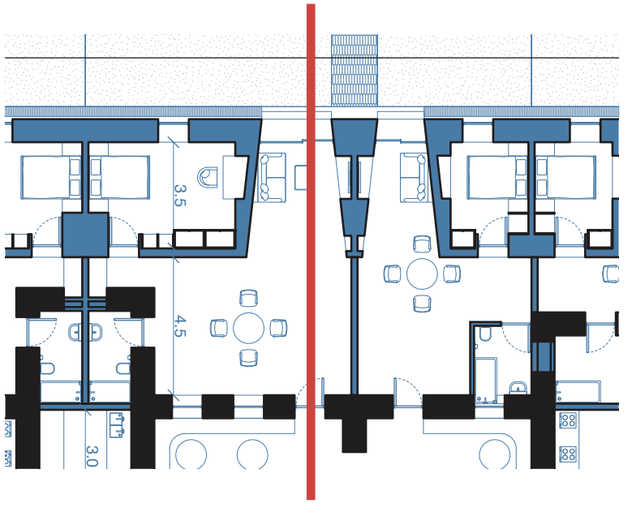
21
Triple-glazed sliding casement doors with oak frames

22
Limestone slab



Fragment of the bedroom

A - A'



1
Aluminium sheet covering: 2 mm
PO foil moisture barrier
Multi-layer board: 30 mm
Wooden wedges: 40 mm at 50 cm intervals
Mineral wool thermal insulation: 50 mm

2
Bituminous roof sealant
Mineral wool thermal insulation: 80 mm
PO foil moisture barrier
Reed thermal insulation to falls: max. 500mm
PO foil moisture barrier
Cross laminated timber (5 ply): 120 mm

U-value: 0.114 W/(m²K)

3
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
30 mm ventilation gap
5 mm stainless steel bracket
PO foil moisture barrier
330 mm reed thermal insulation
Cross laminated timber (5 ply): 200 mm

U-value: 0.147 W/(m²K)

4
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
50 mm ventilation gap
5 mm stainless steel bracket
PO foil moisture barrier
400 mm reed thermal insulation
Cross laminated timber (5 ply): 200 mm

U-value: 0.127 W/(m²K)

5
Bituminous roof sealant
Mineral wool thermal insulation: 80 mm
PO foil moisture barrier
Reed thermal insulation to falls: max. 500mm
PO foil moisture barrier
Cross laminated timber (5 ply): 120 mm

U-value: 0.114 W/(m²K)

6
Suspension with stainless steel brackets

7
Oak panels: 20 mm

8
Glued lam. fir beam: 300/120 mm

9
Linear grey bricks: 337/87/36 mm
in random bond with grey mortar
Cross laminated timber (5 ply): 200 mm

10
Triple-glazed in pine frame

11
Aluminum sheet: 2mm
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12
Existing structure

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Radiator

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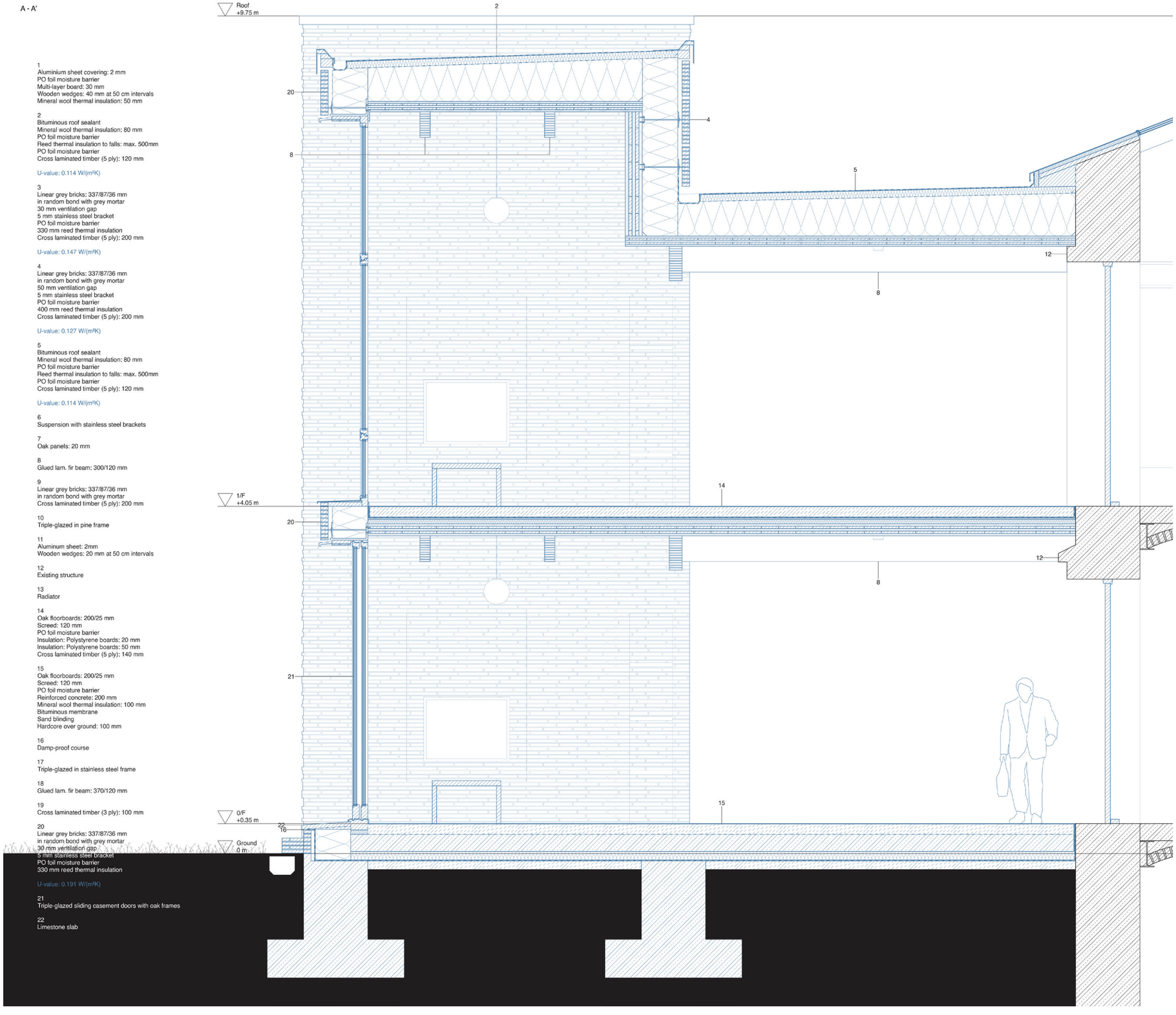
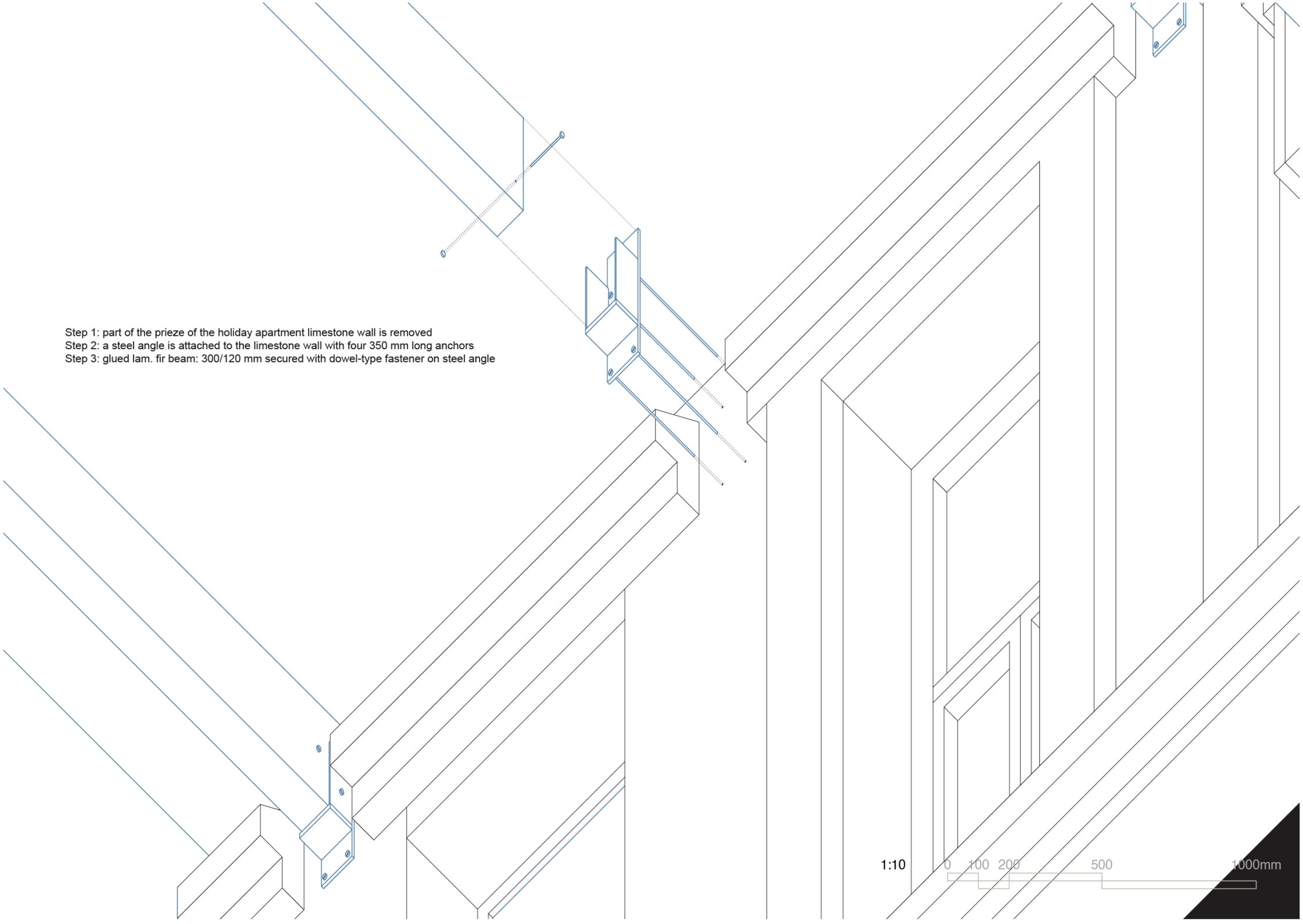
21
Triple-glazed sliding casement doors with oak frames

22
Limestone slab

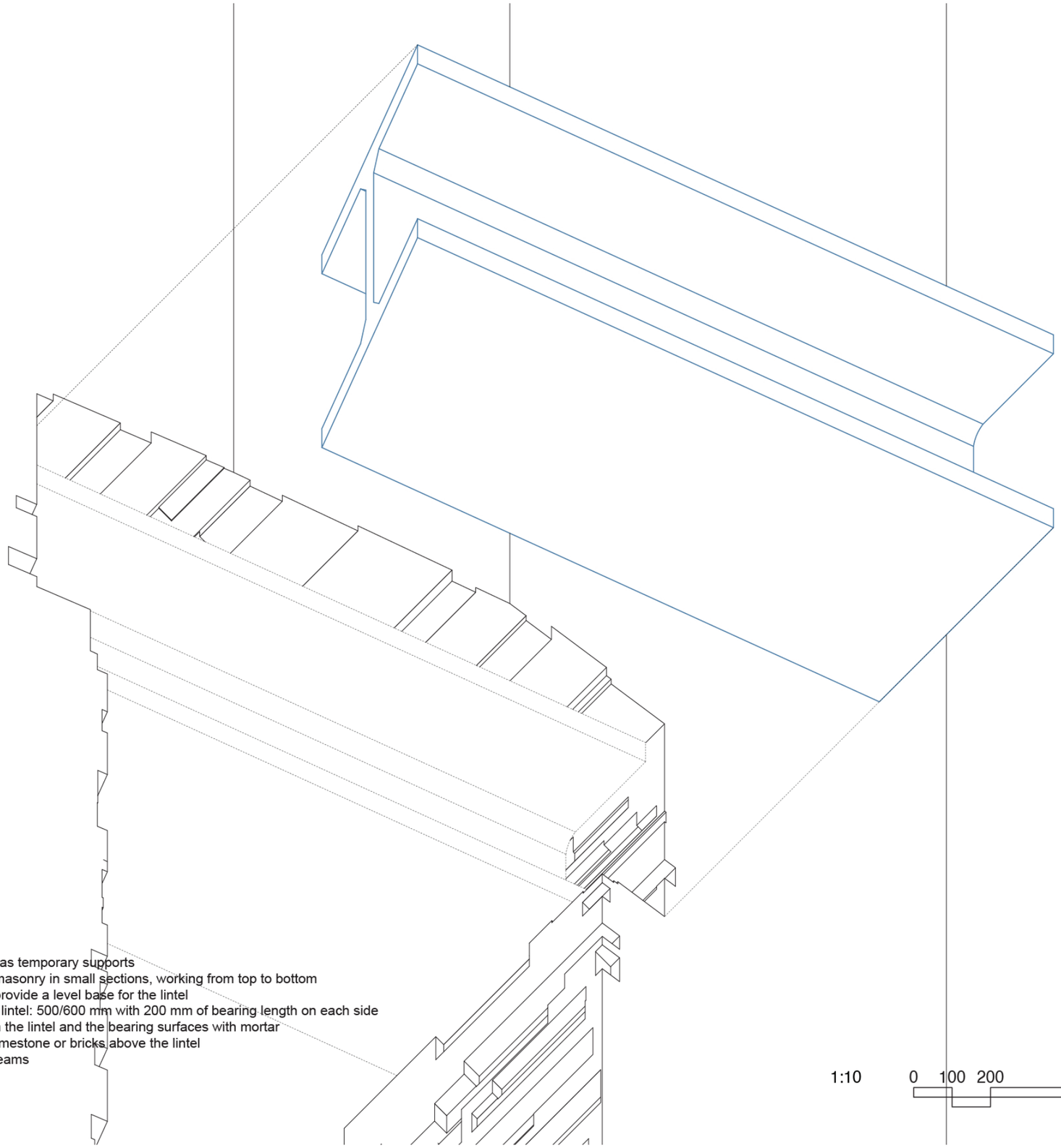


Fragment of the living room

Step 1: part of the prieze of the holiday apartment limestone wall is removed
Step 2: a steel angle is attached to the limestone wall with four 350 mm long anchors
Step 3: glued lam. fir beam: 300/120 mm secured with dowel-type fastener on steel angle



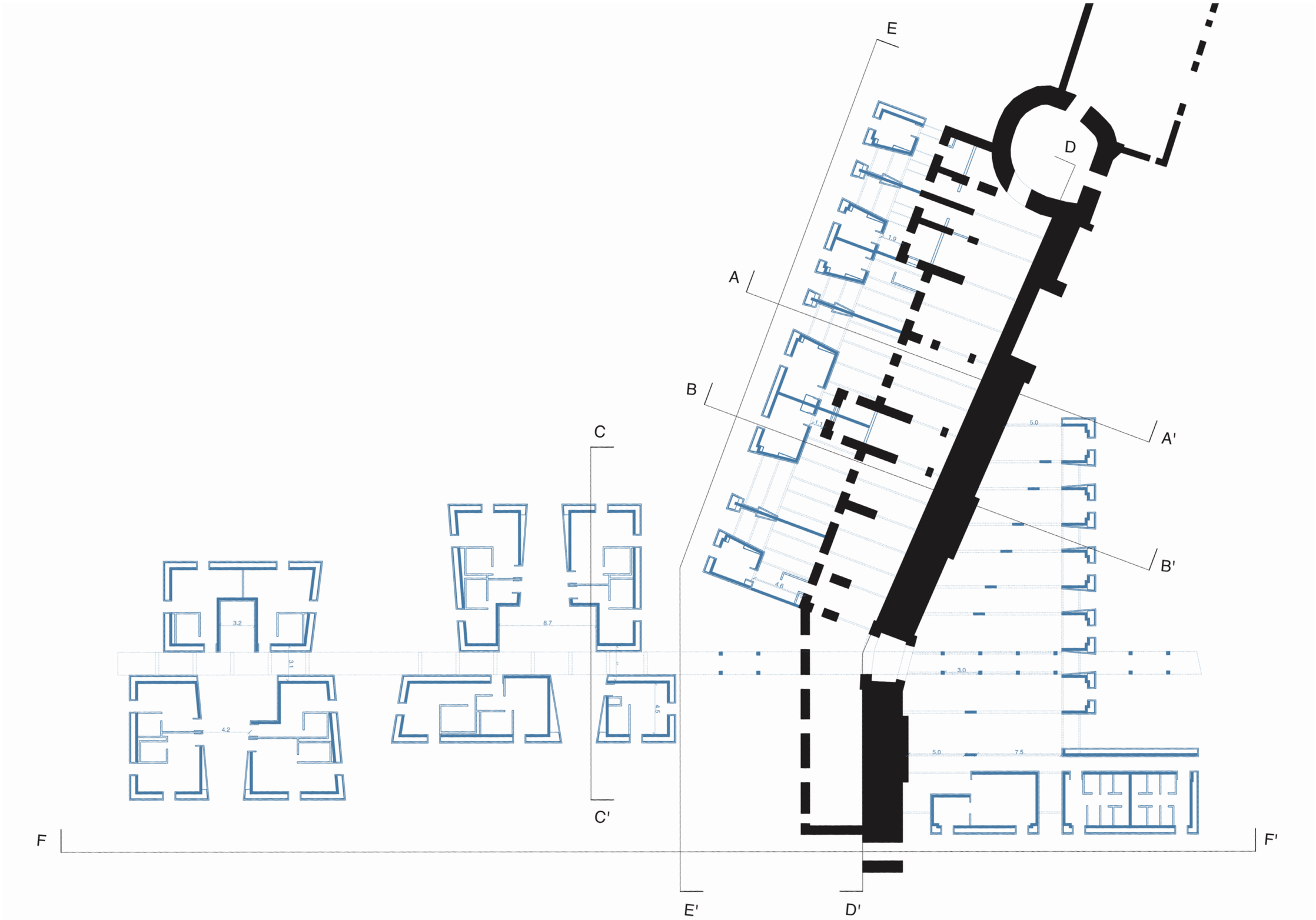
Connections of the glulam beams to the holiday apartment limestone walls

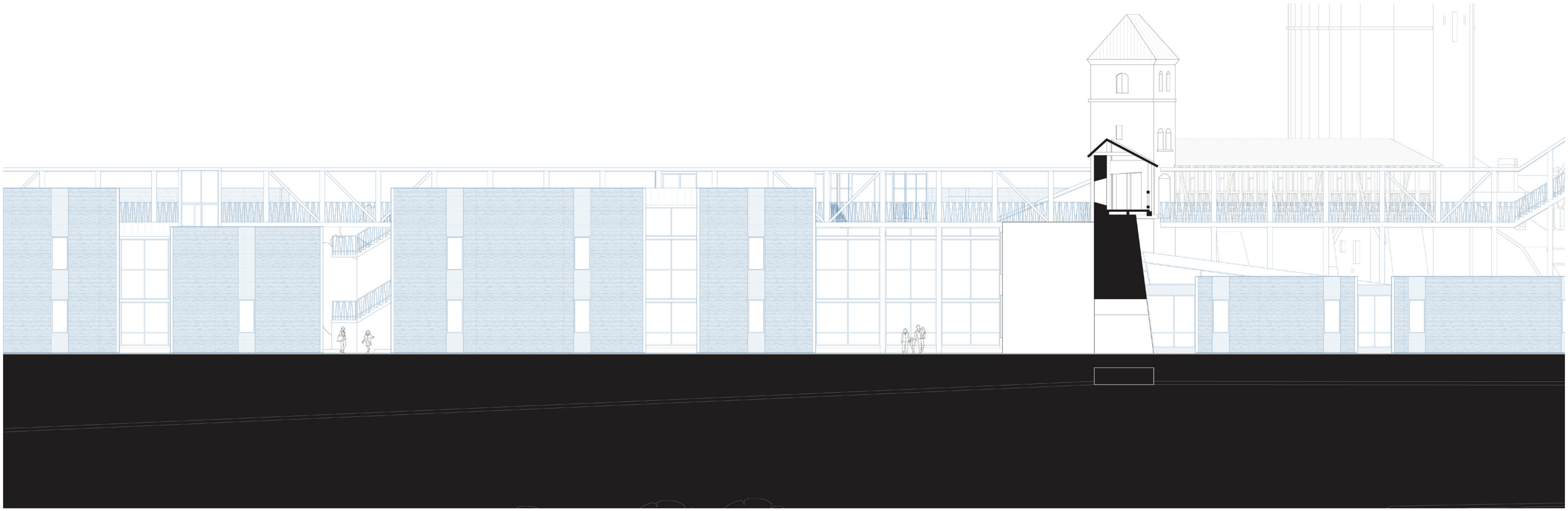


Step 1: install needling beams as temporary supports
Step 2: mark and remove the masonry in small sections, working from top to bottom
Step 3: apply a mortar bed to provide a level base for the lintel
Step 3: install the I-beam steel lintel: 500/600 mm with 200 mm of bearing length on each side
Step 4: pack the gaps between the lintel and the bearing surfaces with mortar
Step 5: replace any removed limestone or bricks above the lintel
Step 6: remove the needling beams

1:10 0 100 200 500 1000mm

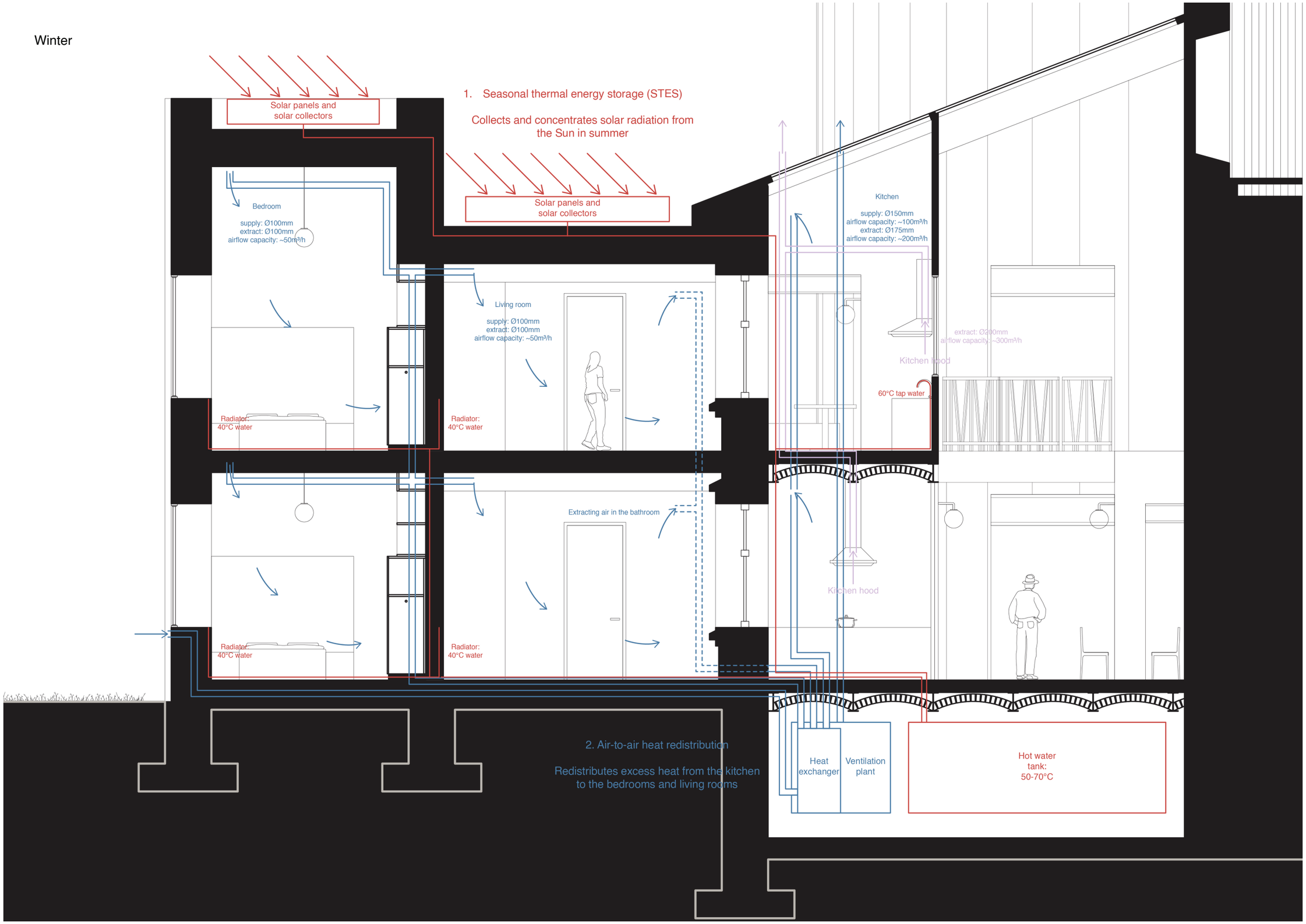
Constructing the walkway


E
D
A
B
A'
C
B'
C'
F
F'
E'
D'
1.9
1.1
5.0
4.6
3.2
8.7
3.1
3.0
4.2
4.5
5.0
7.5



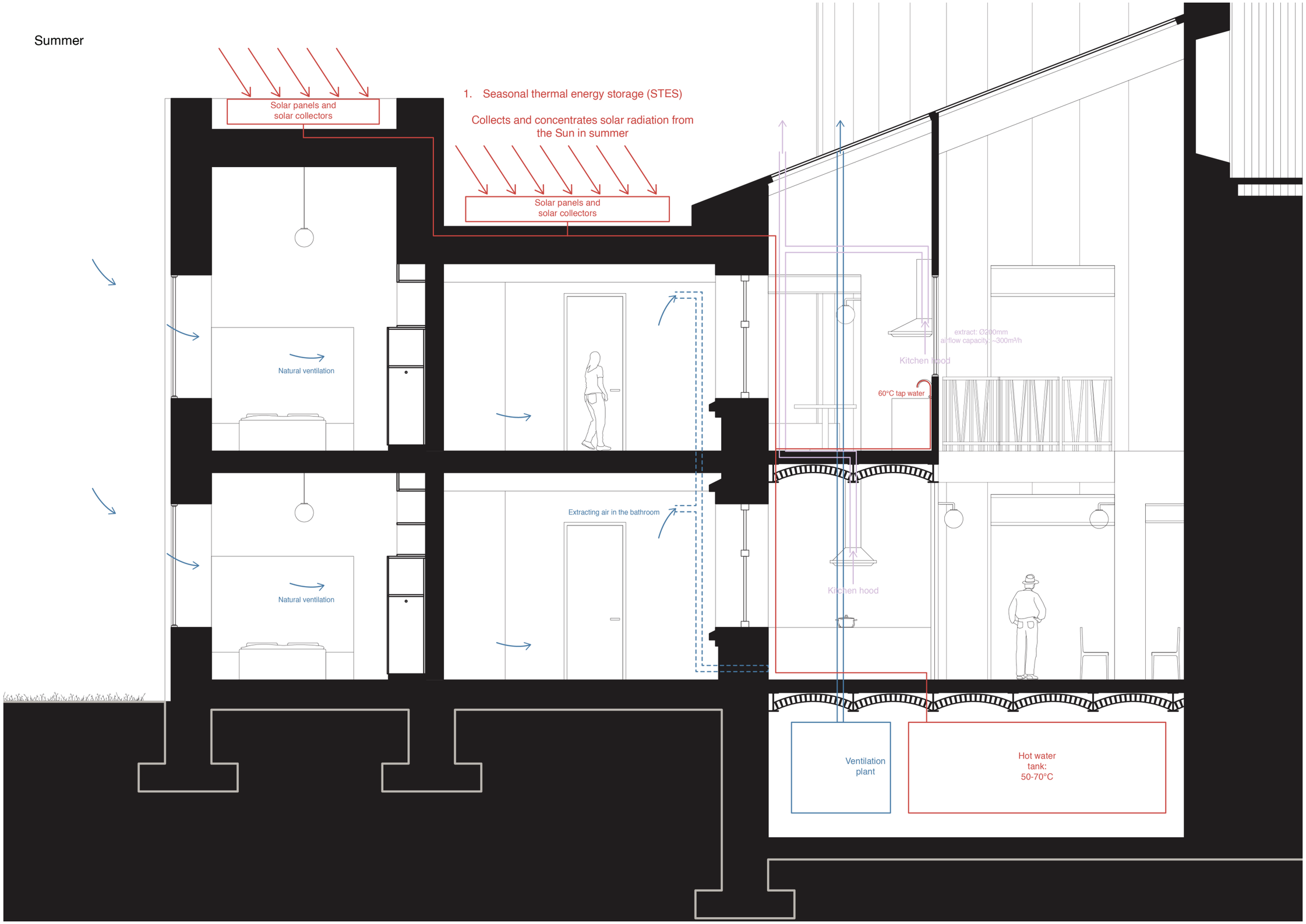
Elevation of the walkway

Winter

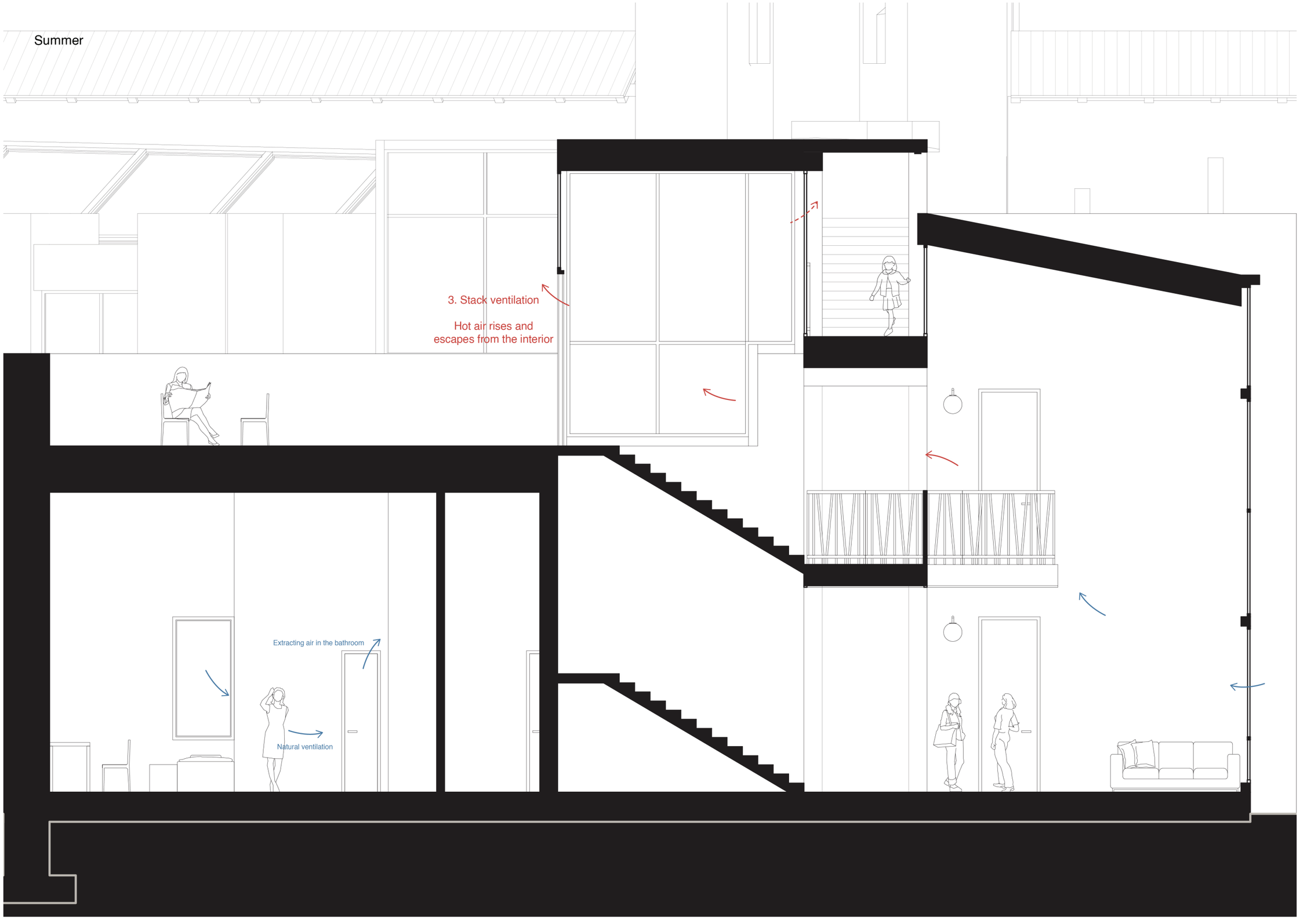


Climate diagram in winter

Summer



Climate diagram in summer

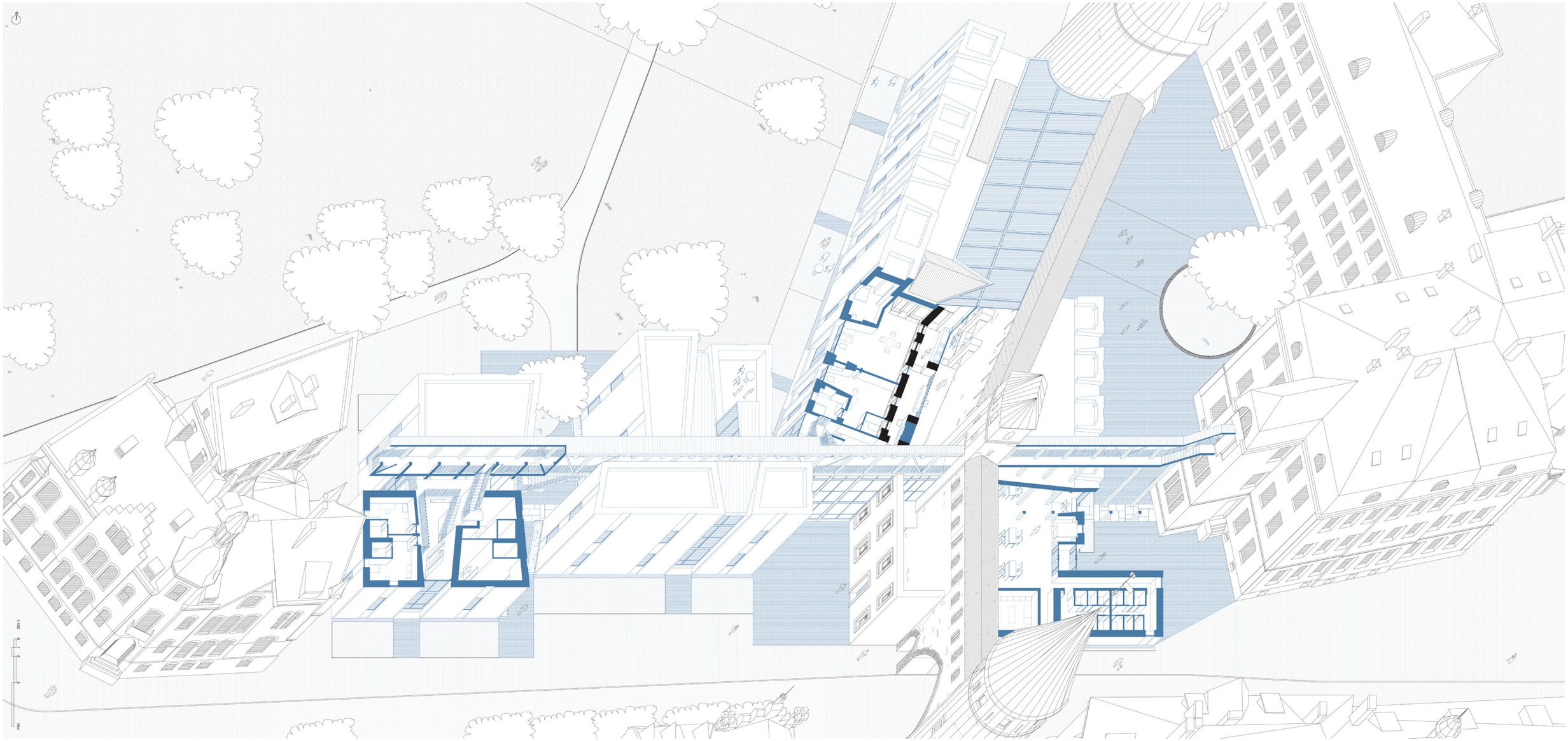


Climate diagram in summer

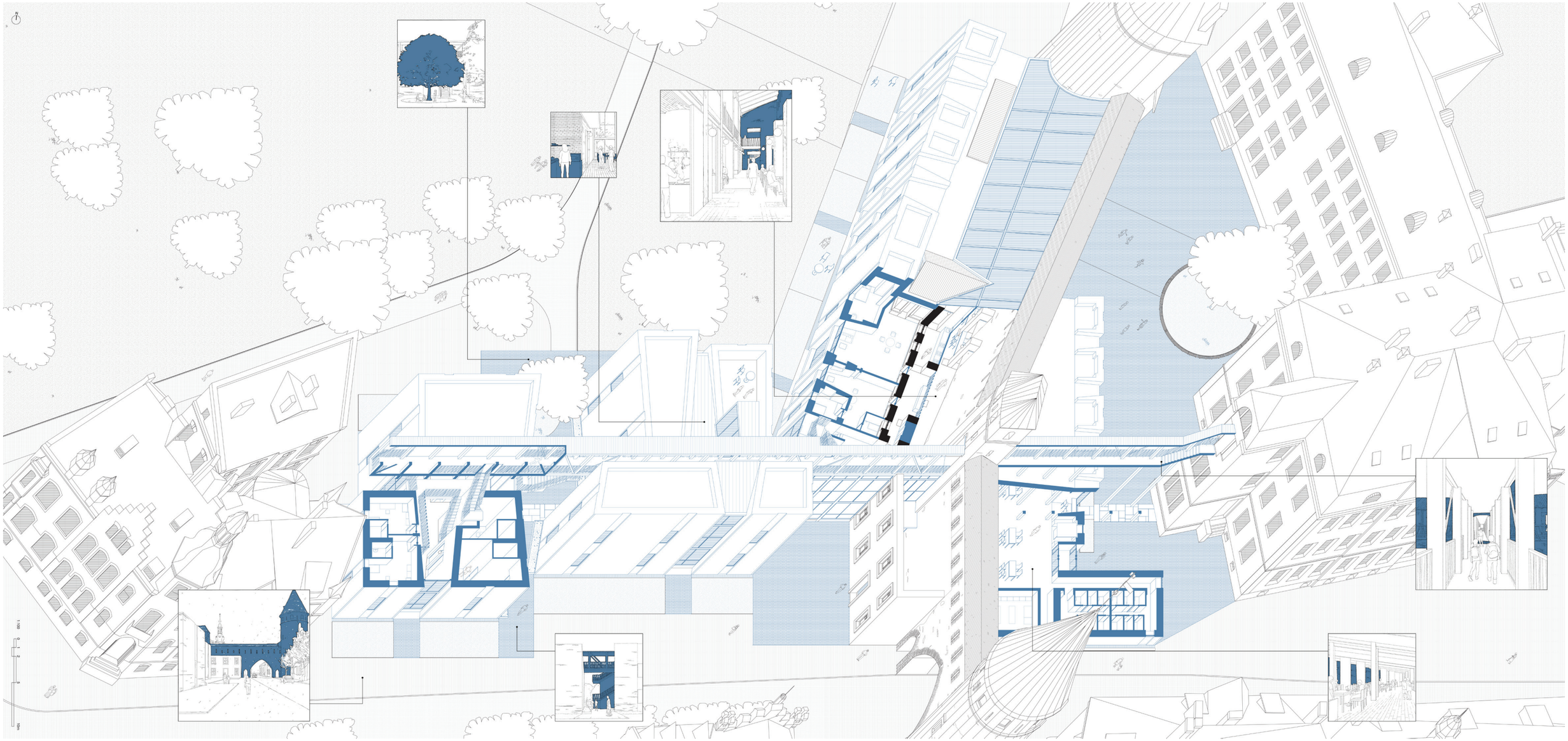
Developing a new relationship between the city and its wall

From dividing to connecting

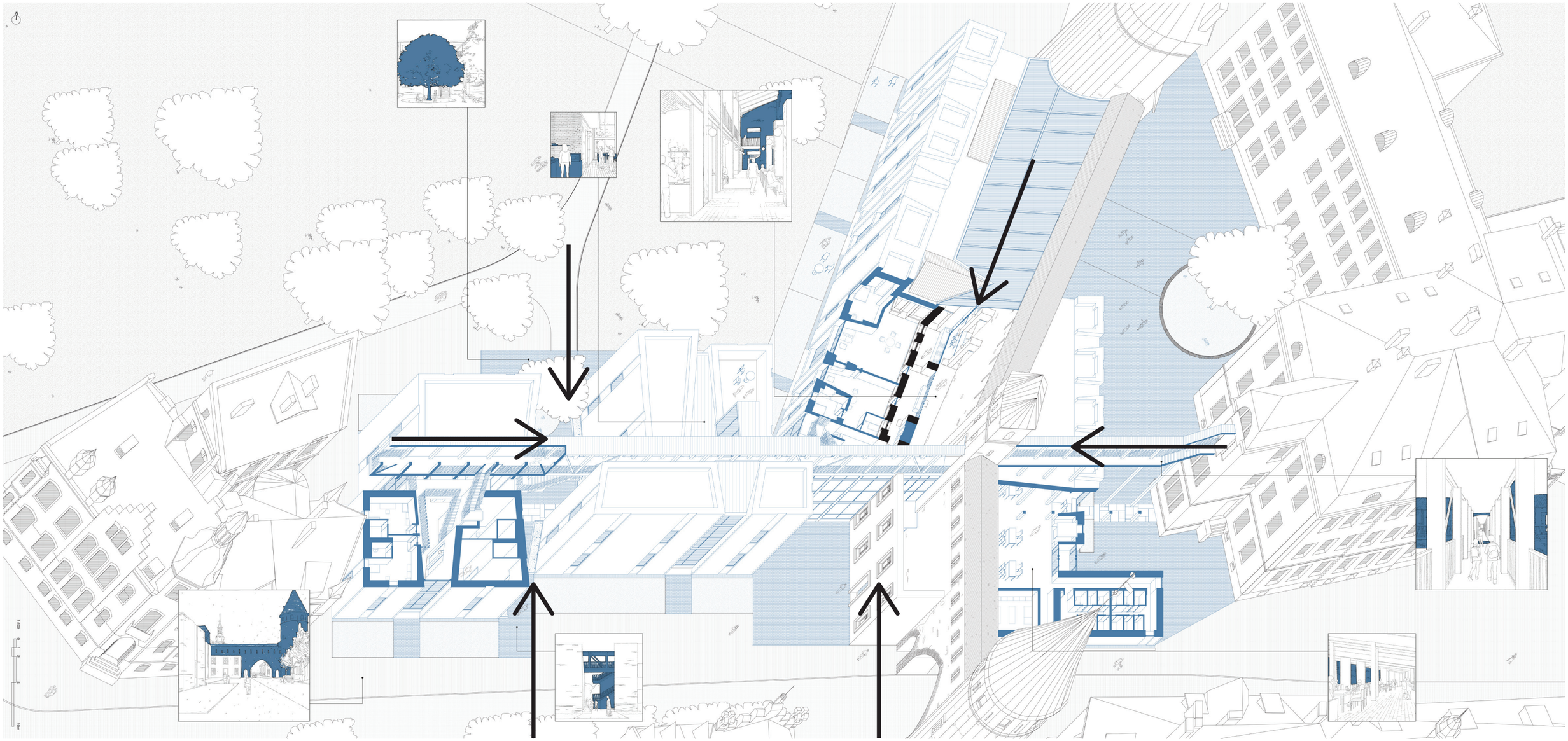
From repelling to inviting



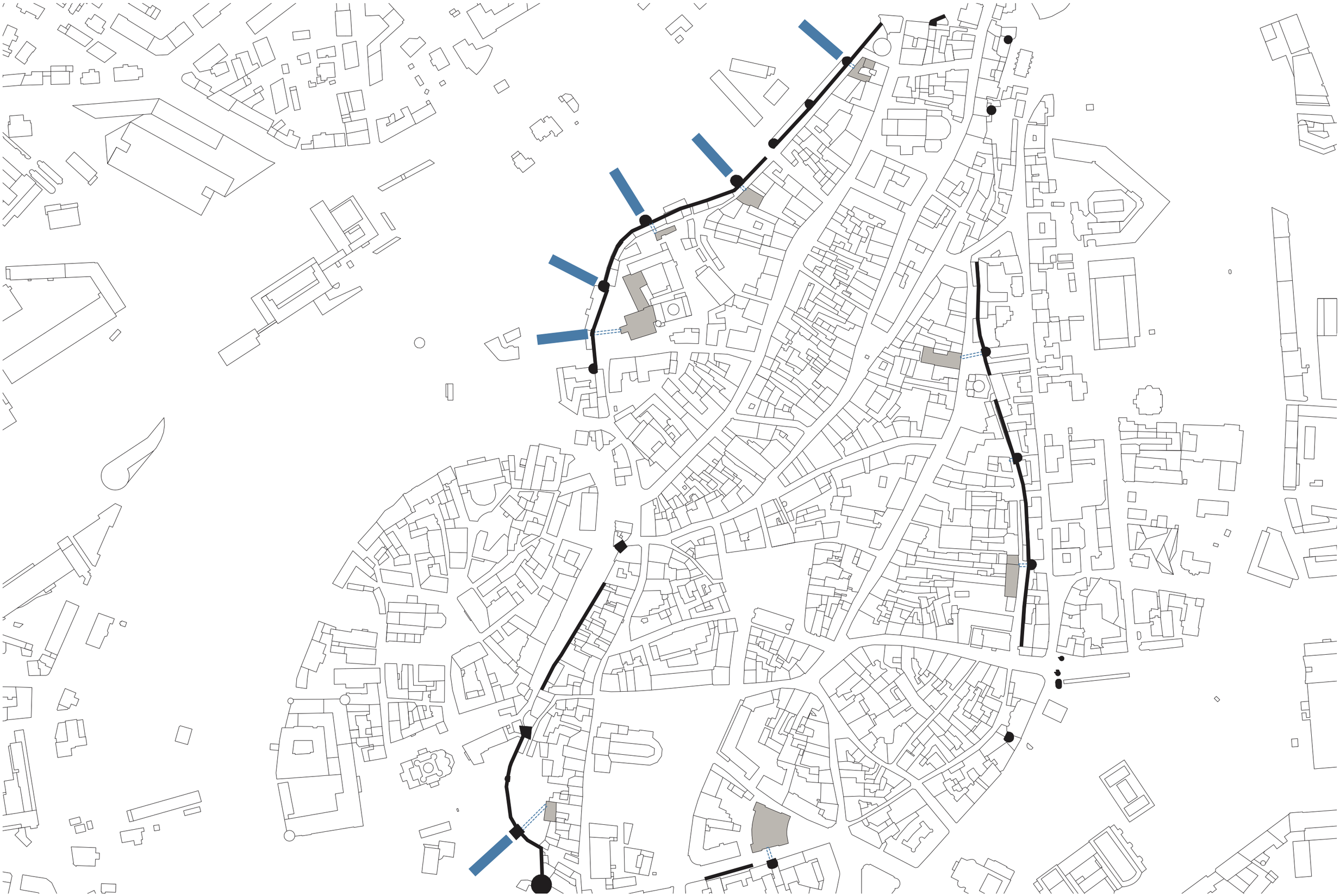
Cut-away axonometric drawing



Cut-away axonometric drawing with perspective details



Cut-away axonometric drawing with perspective details



Can a wall built to separate become a path that connects?

Thank you!