Sjoerd Marijnissen

Zutphen

P5 02-07-2018





Zutphen



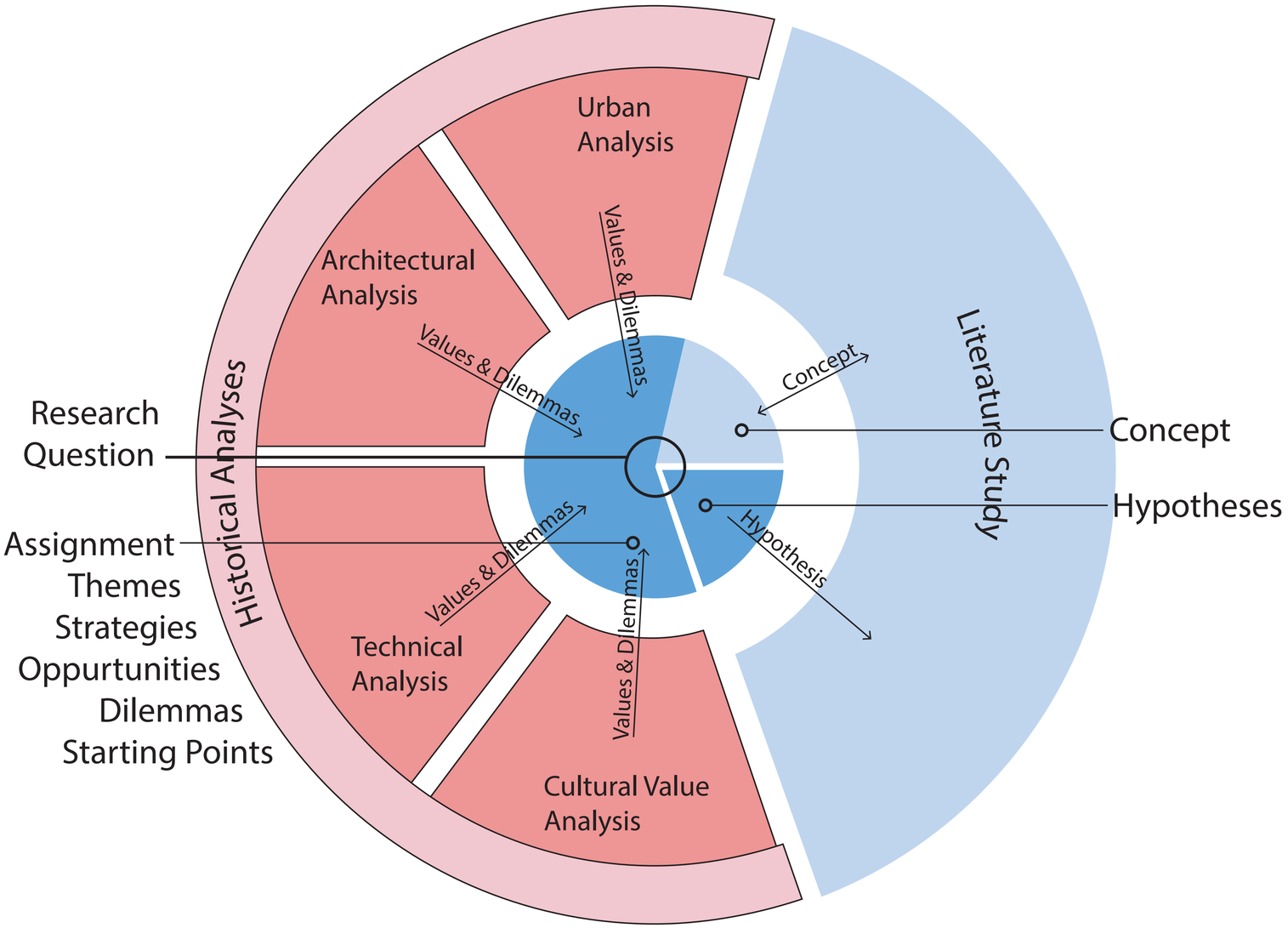
Content

Analysis

Concept

Design

Analysis


Urban Analysis
Architectural Analysis
Technical Analysis
Cultural Value Analysis
Historical Analyses
Literature Study
Values & Dilemmas
Values & Dilemmas
Values & Dilemmas
Values & Dilemmas
Concept
Hypothesis
Research Question
Assignment
Themes
Strategies
Oppurtunities
Dilemmas
Starting Points
Concept
Hypotheses

Development

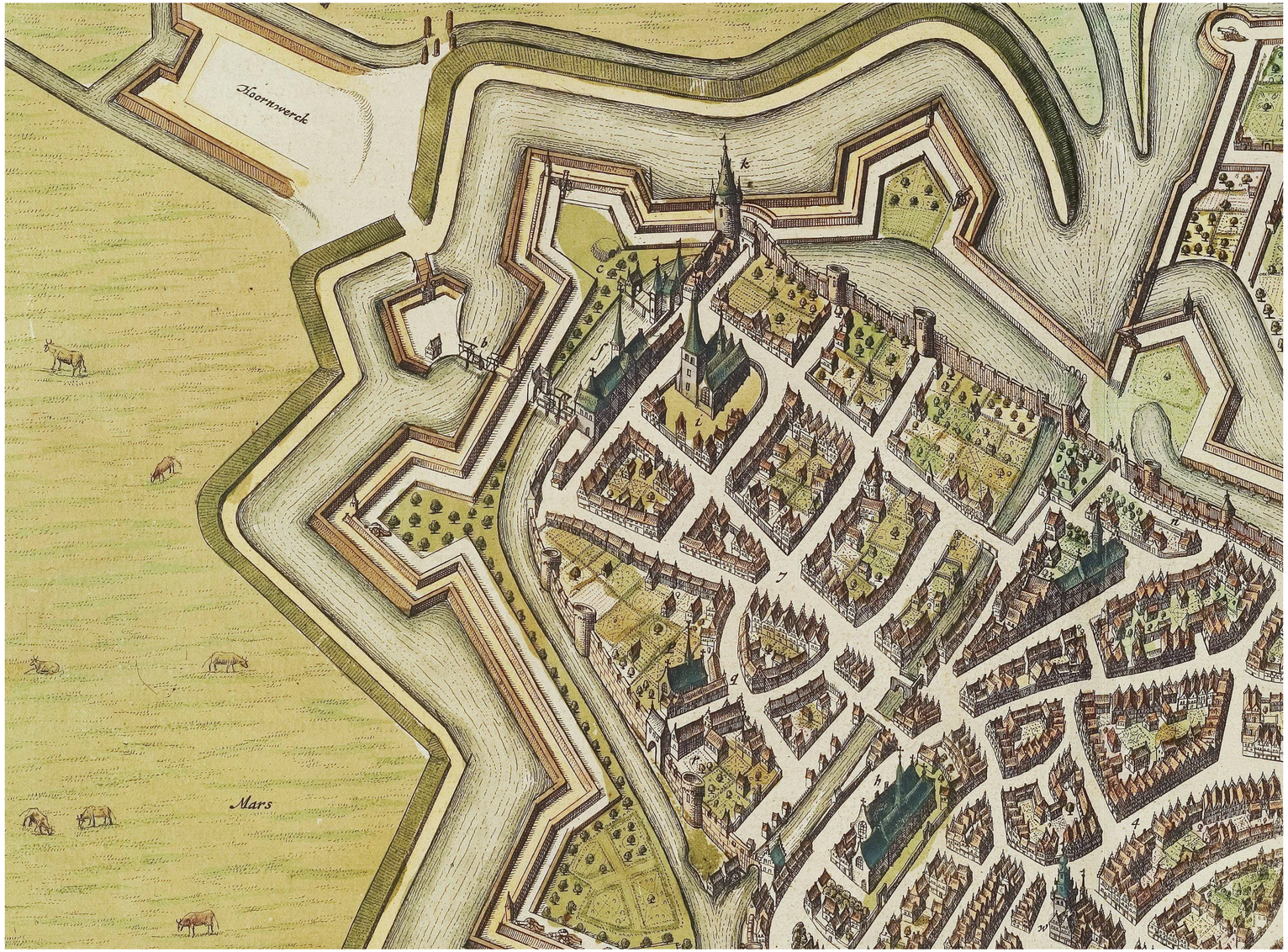

Source: Zutphen Archive


Source: Zutphen Archive

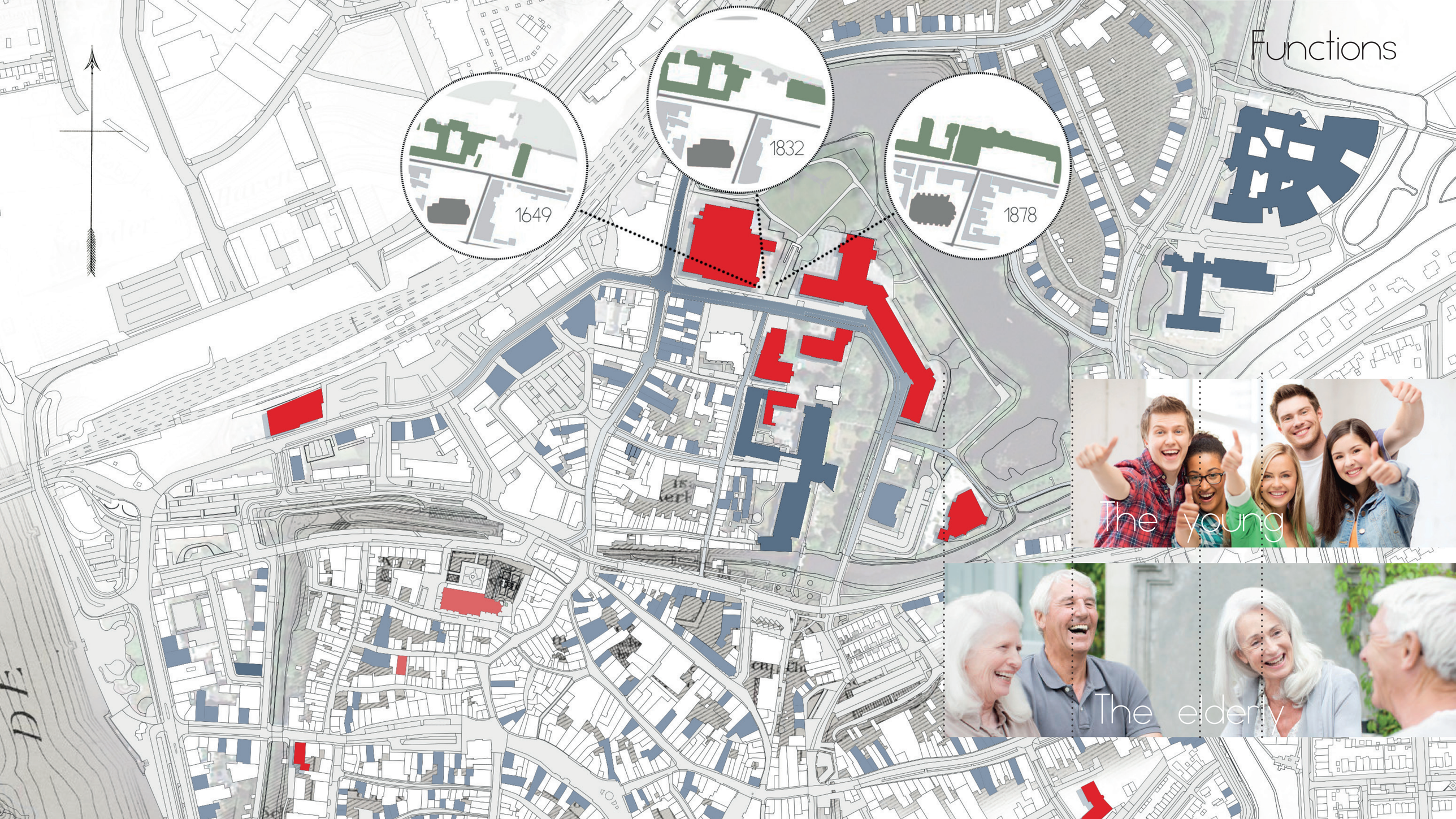

Source: Zutphen Archive


IVTPHEN
De nieuwe stat poort




Hoornwerck
Mars

Functions



Isendoornstraat

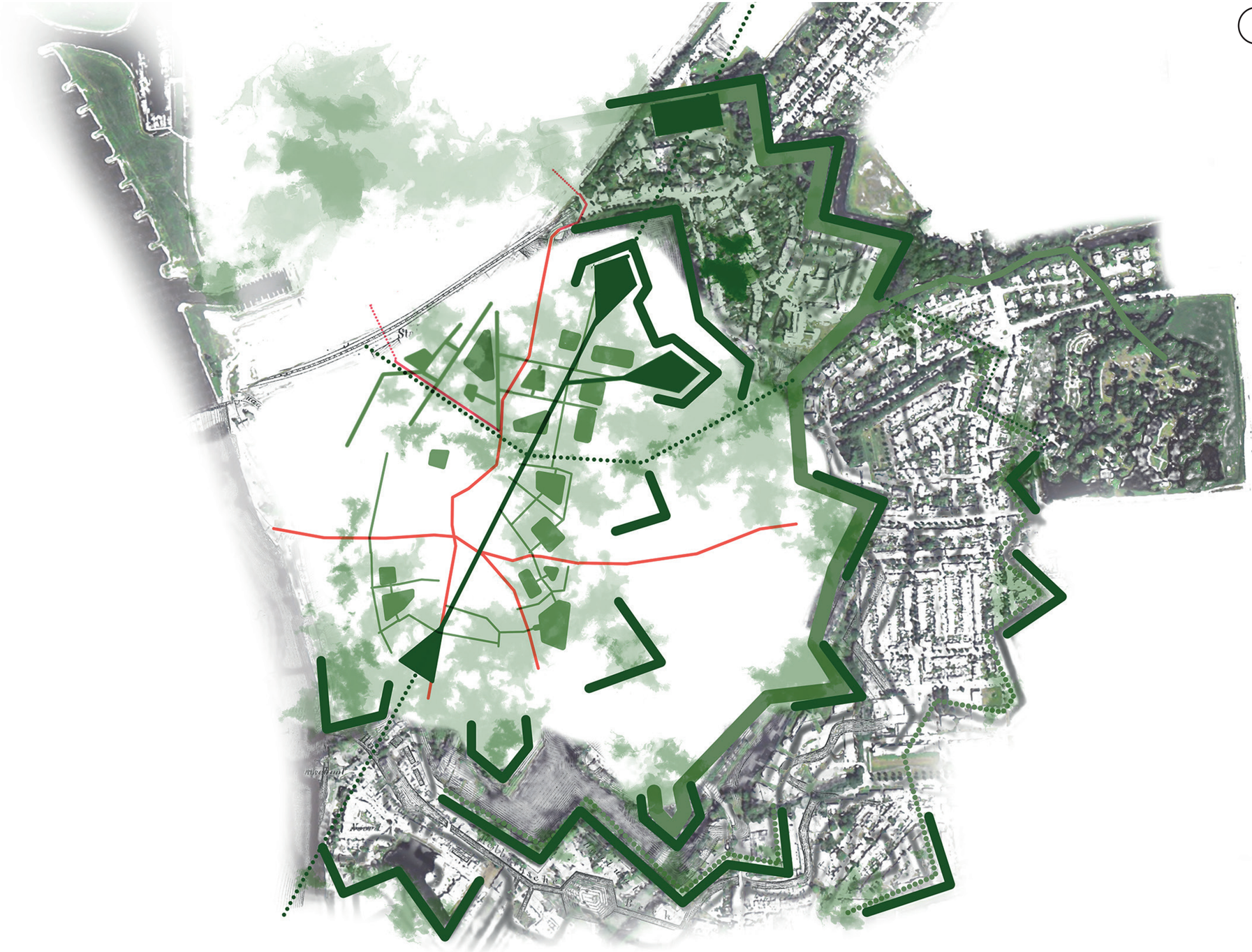


Source: Analysis of Klein Vaticaan

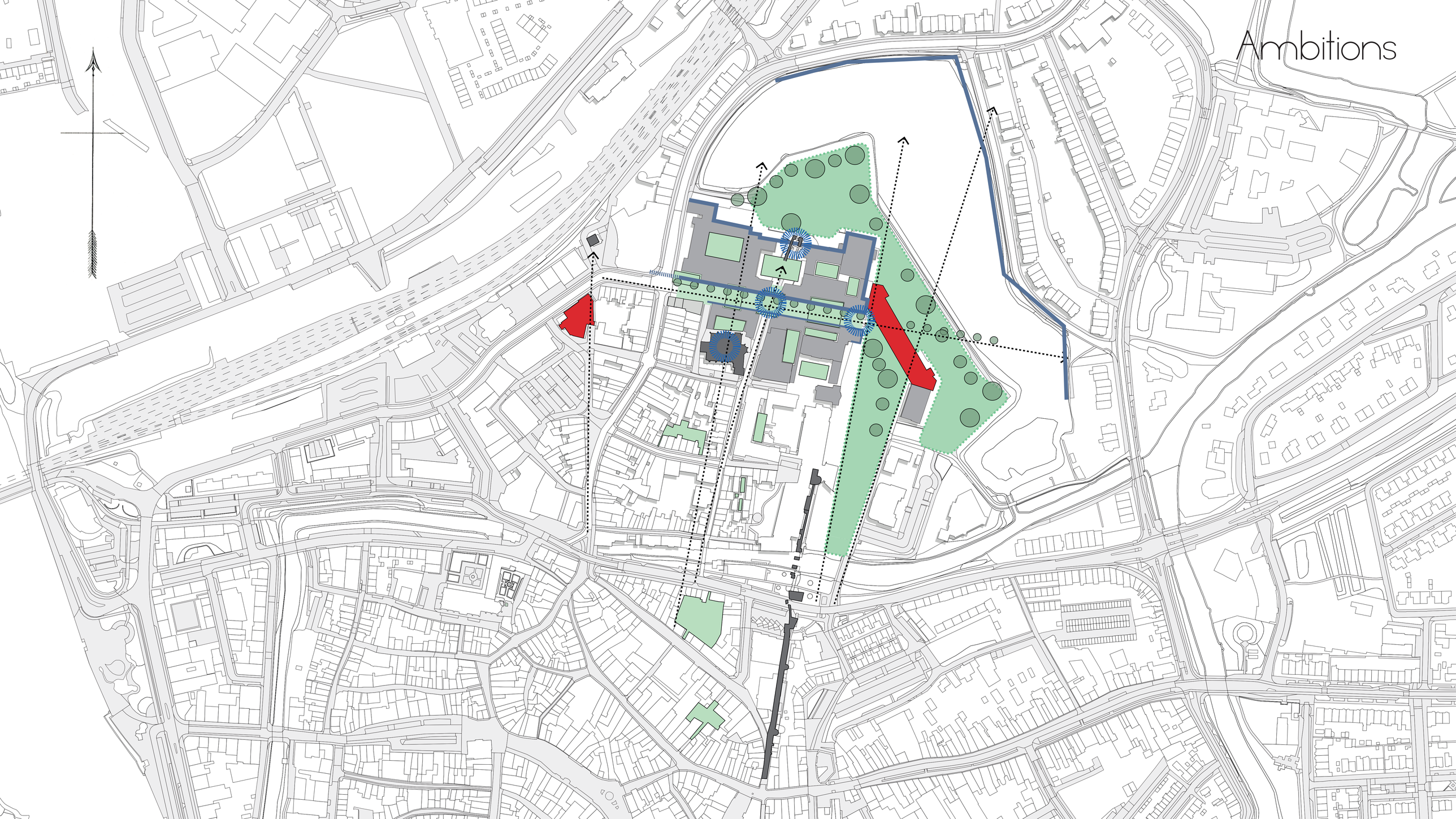




Courtyards



Ambitions





Concept

Concept

Talented Individual



The Student

The Domain



The Existing

The Field



The Community

Knowledge Functions

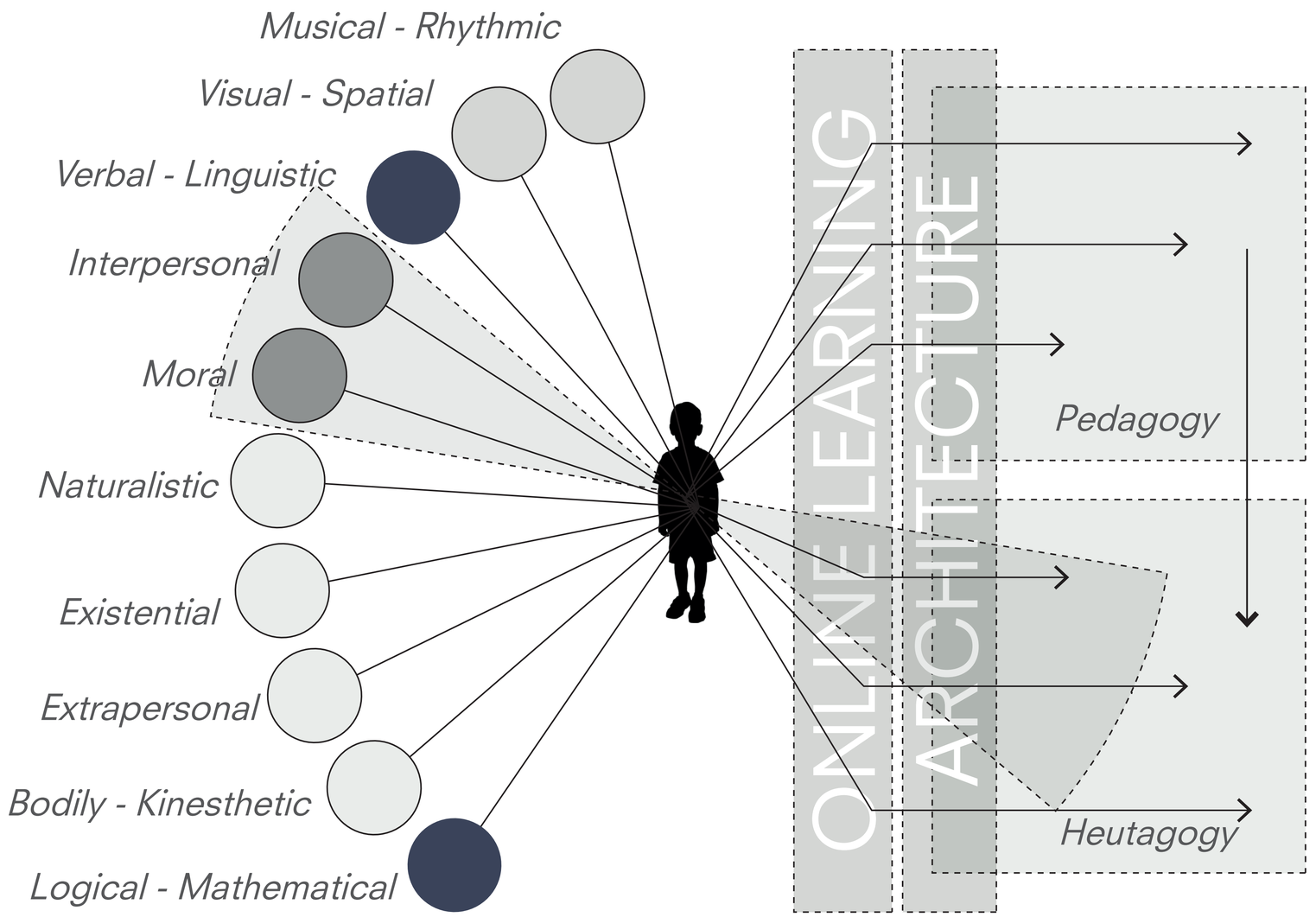
The School

The Depot

The Museum

The Learners Institute

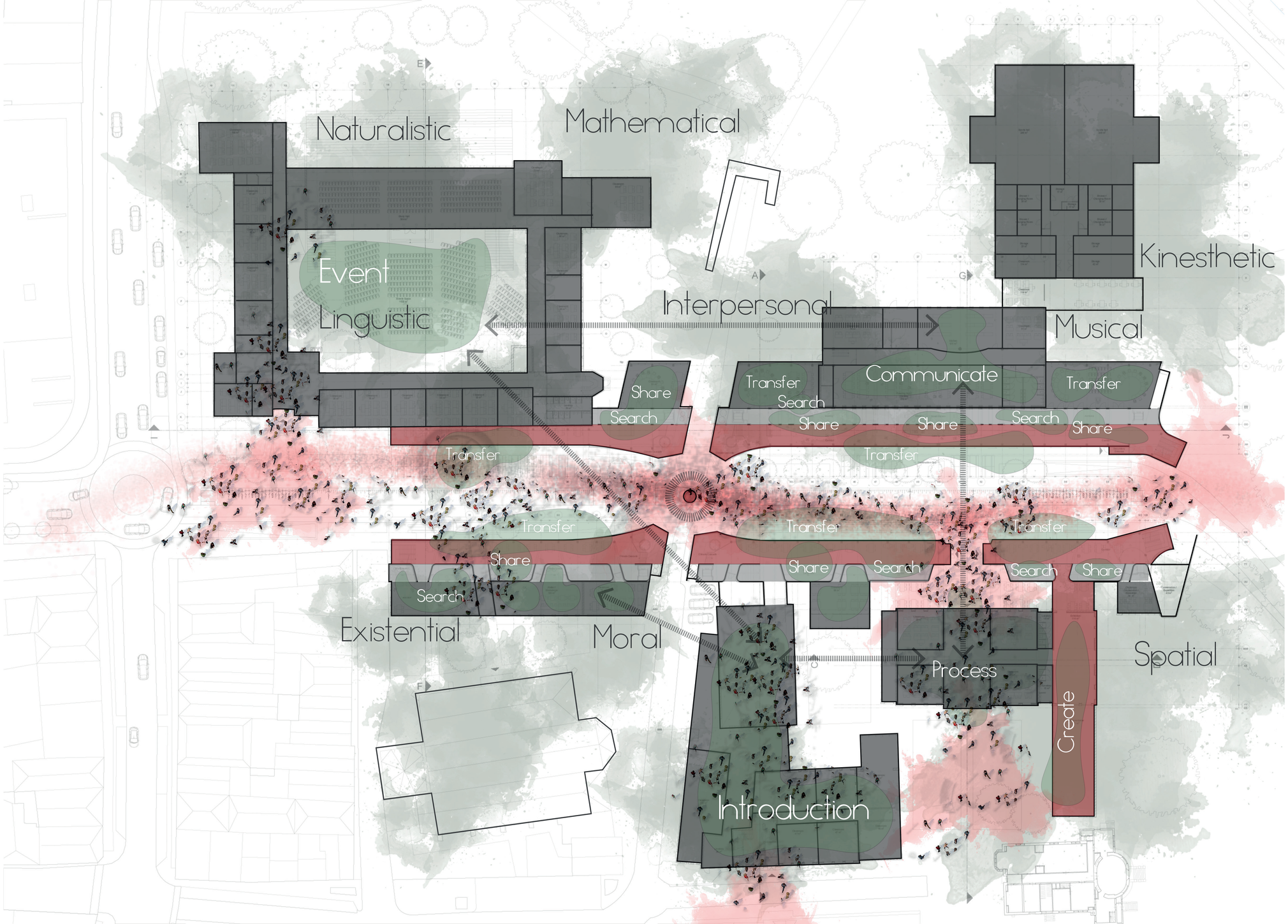
Educational System based on Multiple Intelligence Theory



Robinson, K. (2007)
Gardner, H. (1990)
Gros, B. (2016)
Neary, M. (2009)
Brandenburg, (2013)
...

Gardner, H., (1999). Intelligence Reframed: Multiple Intelligences for the 21 st century. New York: Basic Books

The Field


Naturalistic
Mathematical
Kinesthetic
Event
Linguistic
Interpersonal
Musical
Communicate
Transfer
Search
Share
Transfer
Search
Share
Share
Search
Share
Transfer
Transfer
Transfer
Transfer
Transfer
Share
Search
Share
Search
Search
Share
Existential
Moral
Spatial
Process
Create
Introduction







Elementary school

Introduction





Share information

Exhibition





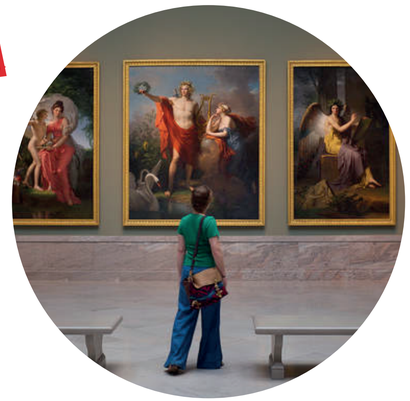
Library

Servers

Find information

Use





Process information

Future and flexibility







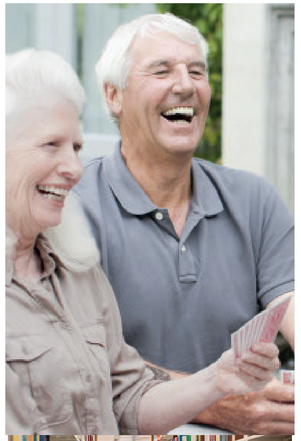








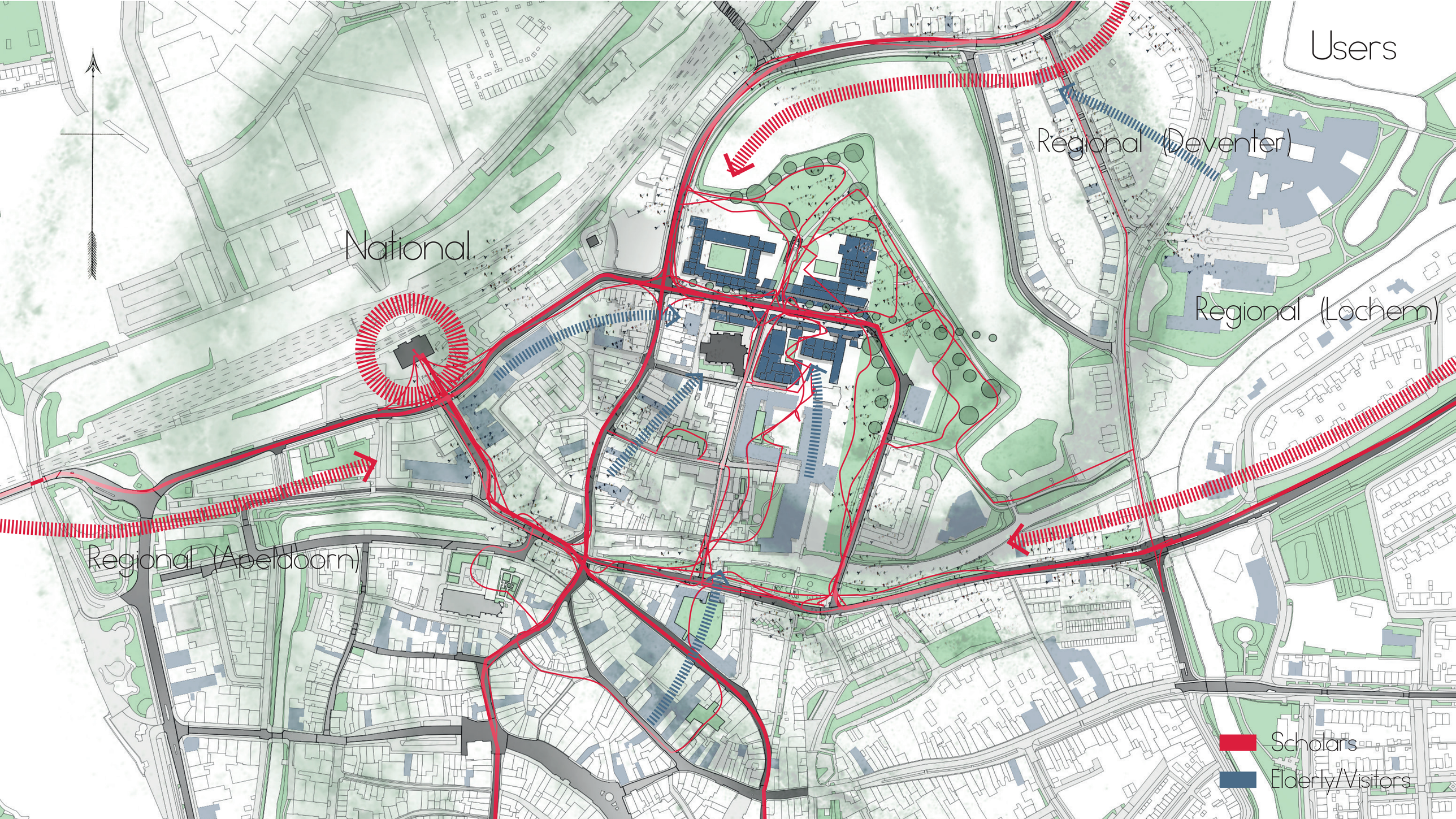






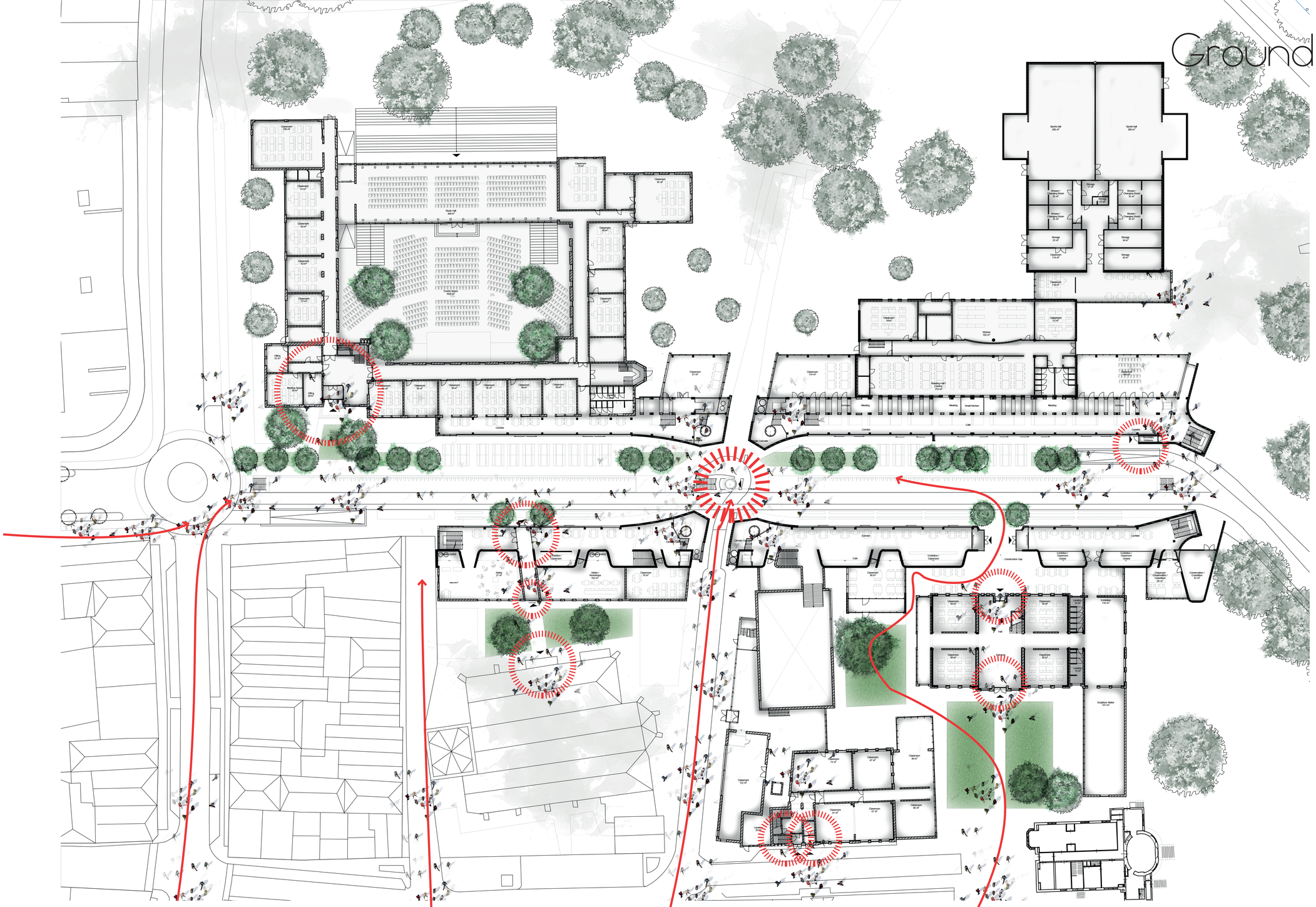





Users
National
Regional (Deventer)
Regional (Lochem)
Regional (Apeldoorn)
Scholars
Elderly/Visitors

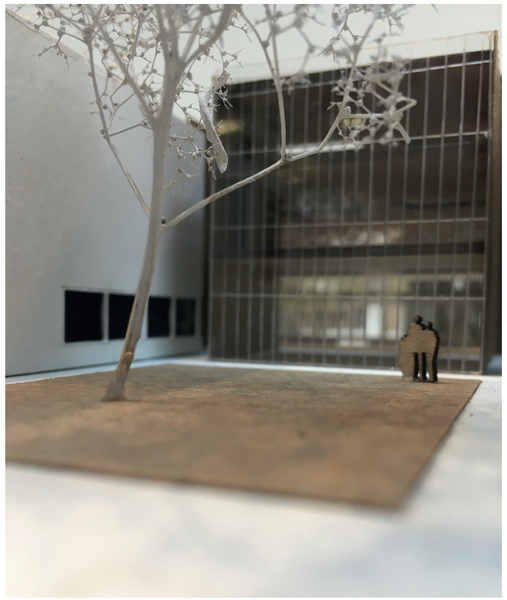
Design

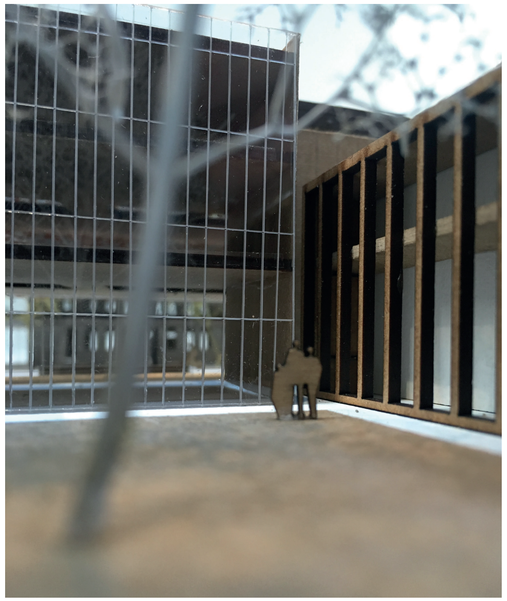
Ground Floor



Sequence of space / New courtyards







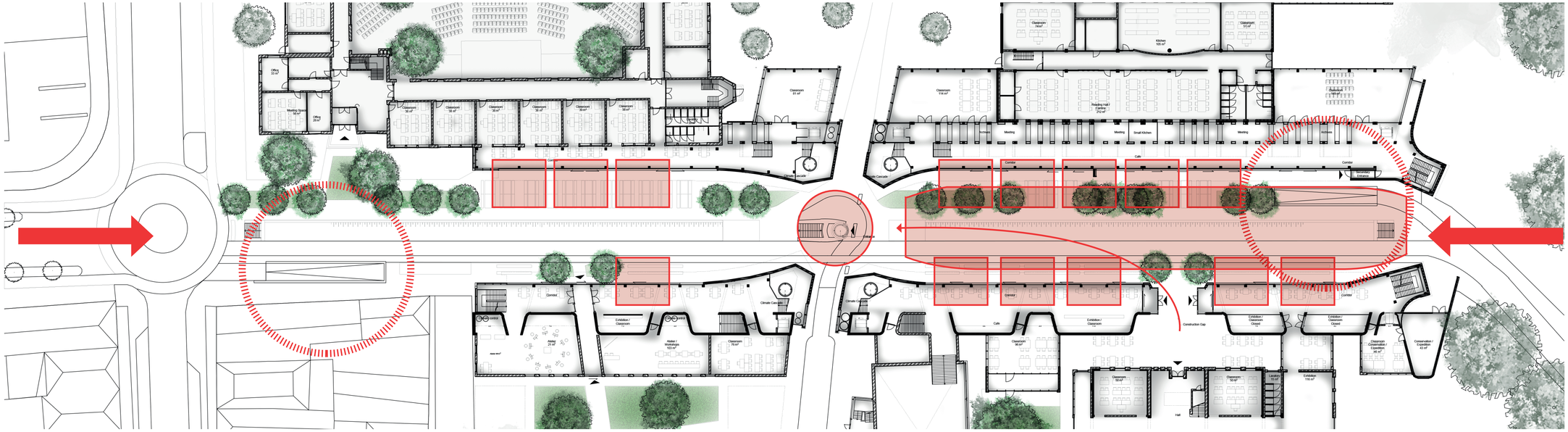




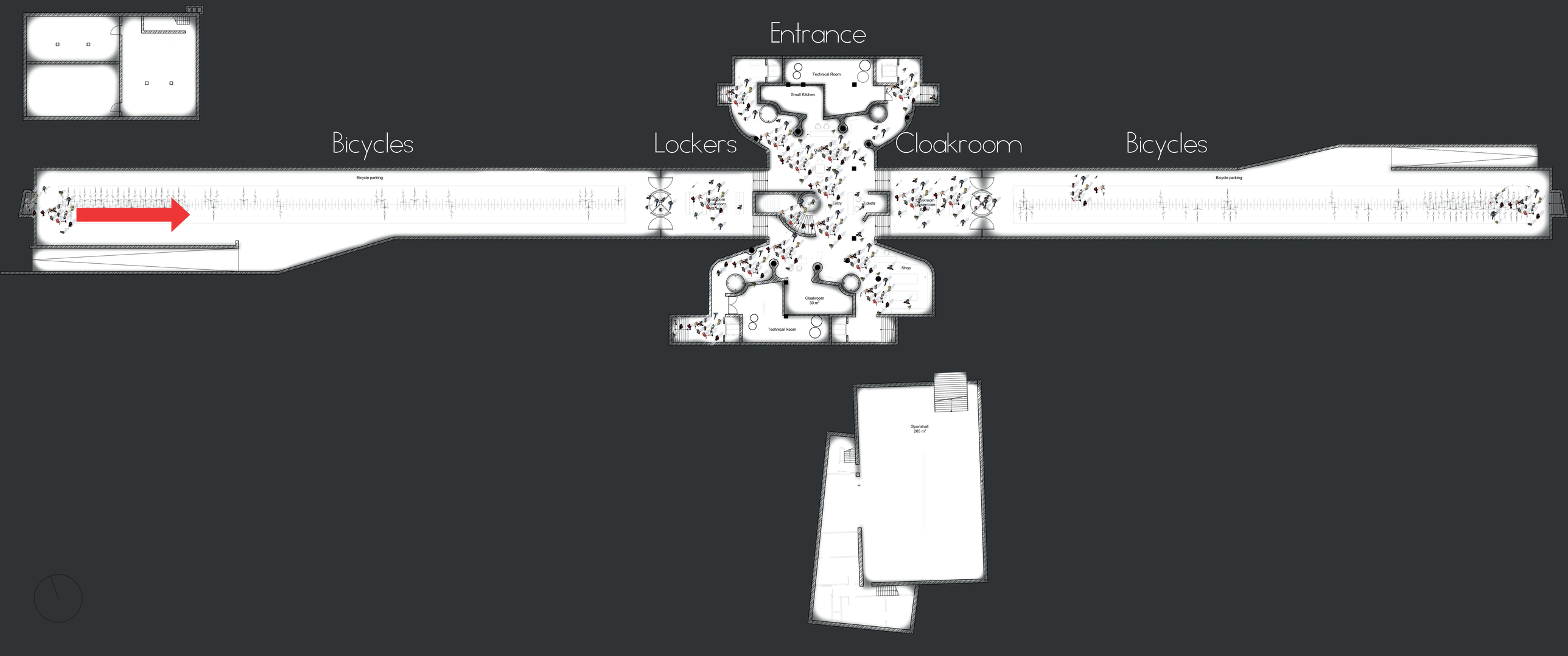
Public space







Souterrain

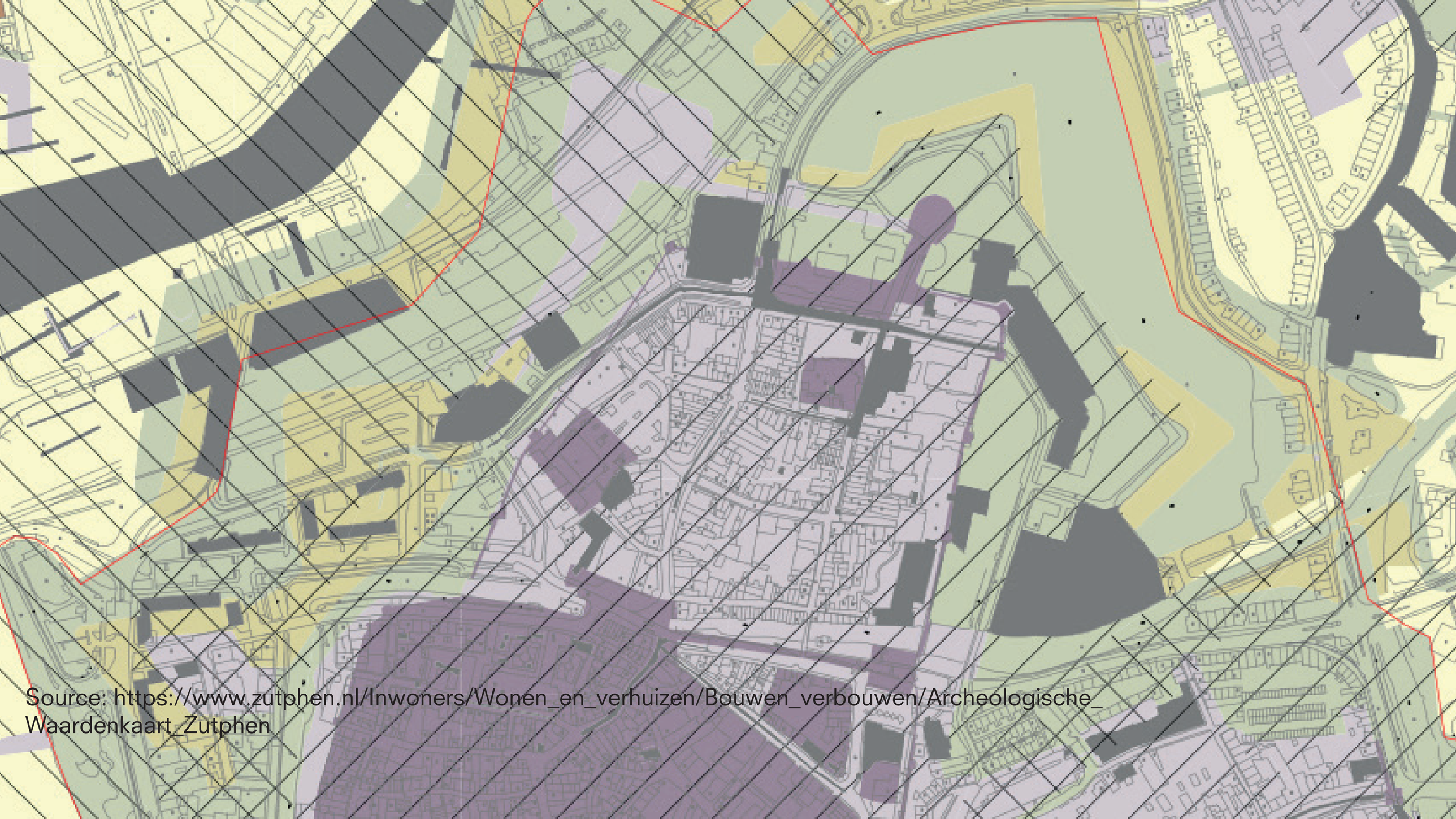

Entrance
Technical Room
Small Kitchen
Bicycles
Lockers
Cloakroom
Bicycles
Bicycle parking
Bicycle parking
Lift
Entry
Tickets
Shop
Cloakroom
30 m²
Technical Room
Sportshall
265 m²


adidas

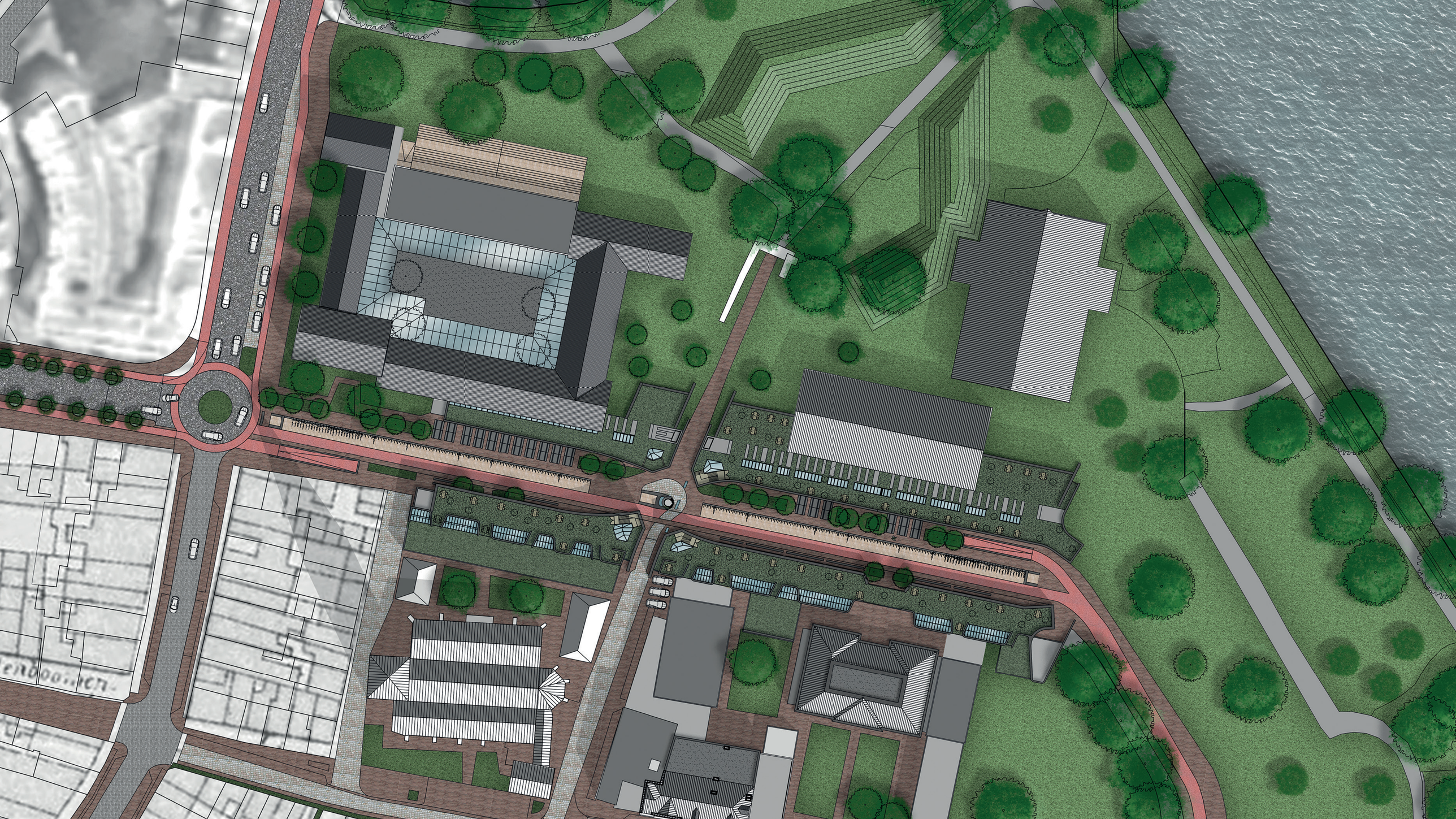
Material



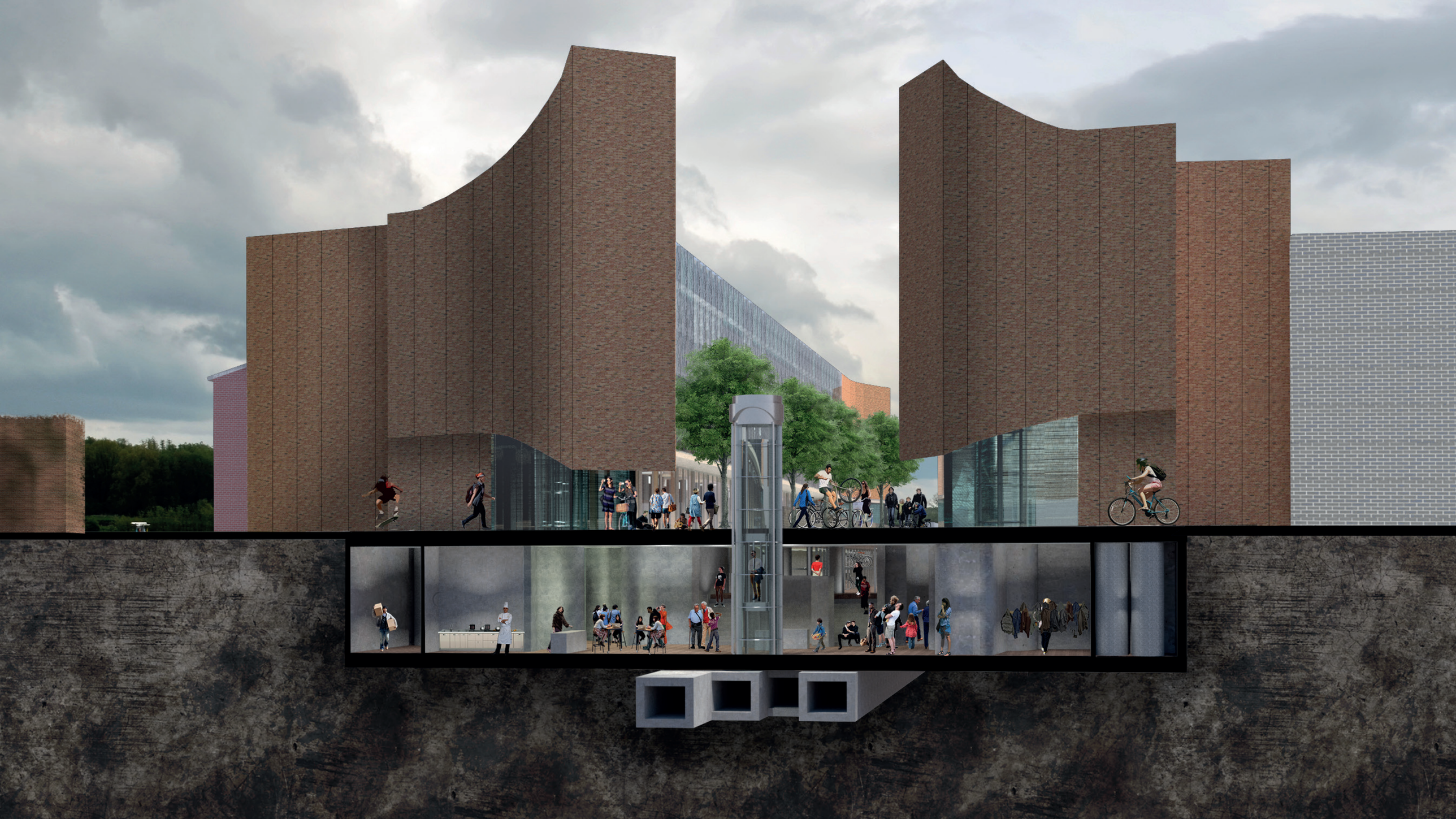


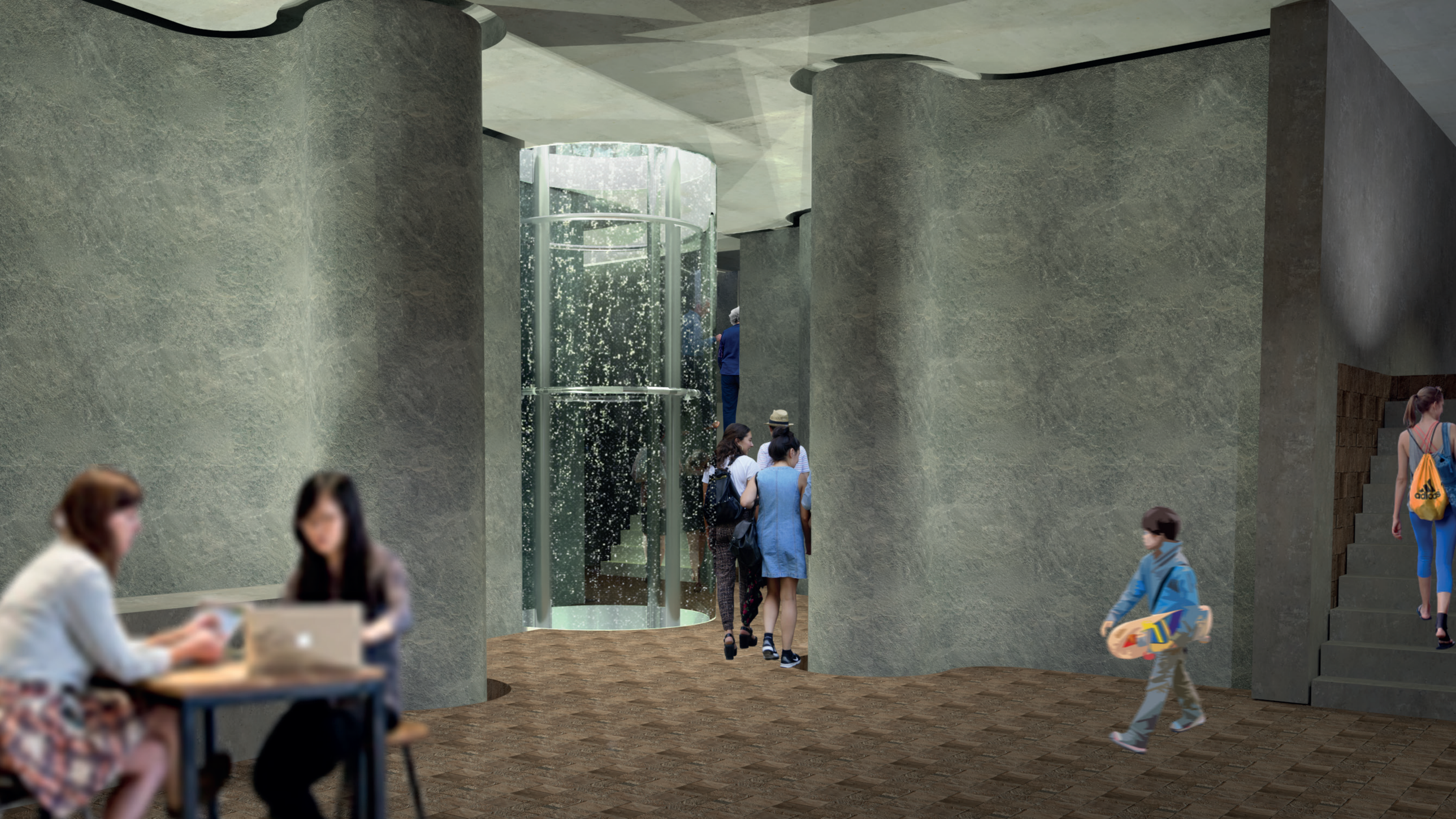


Source: https://www.zutphen.nl/Inwoners/Wonen_en_verhuizen/Bouwen_verbouwen/Archeologische_Waardenkaart_Zutphen




adidas





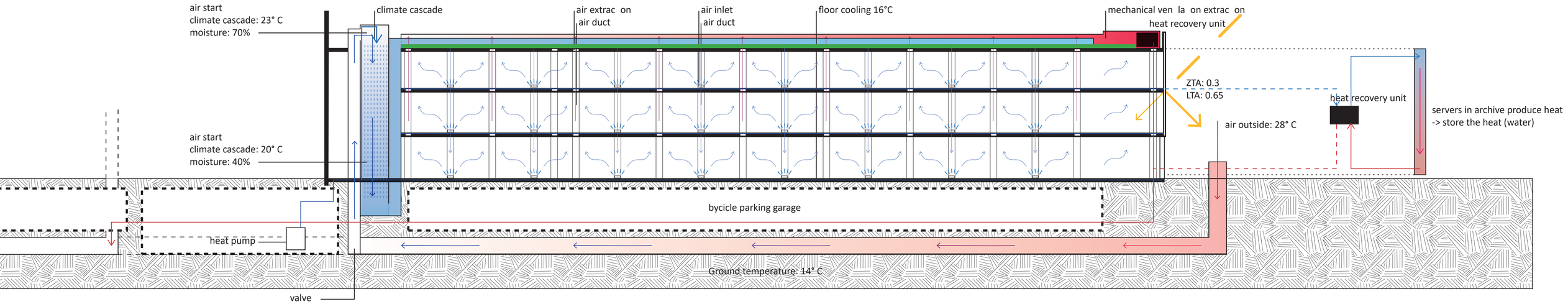
Climate Summertime

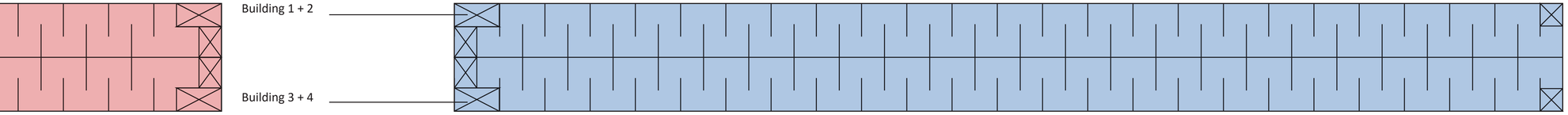
Sub ventilation shaft diameter:
Q= V * S (m3/h)
V = air speed (m/sec).
S = area shaft (m2)

S = 0.84 m x 0.84 m x 3.14 = 2.26 m²
Q = 57000 m³/h = 15,83 m³/s
V = **7 m/s** (sub shaft)

Sub ventilation shaft diameter 2:
Q= V * S (m3/h)
V = air speed (m/sec).
S = area shaft (m2) * 16

S = 1.2 m x 1.2 m x 3.14 = 5.28 m² / 16 = 0,08 m² = 0,5m * 0,16m
Q = 57000 m³/h = 15,83 m³/s
V = **3 m/s** (sub shaft)





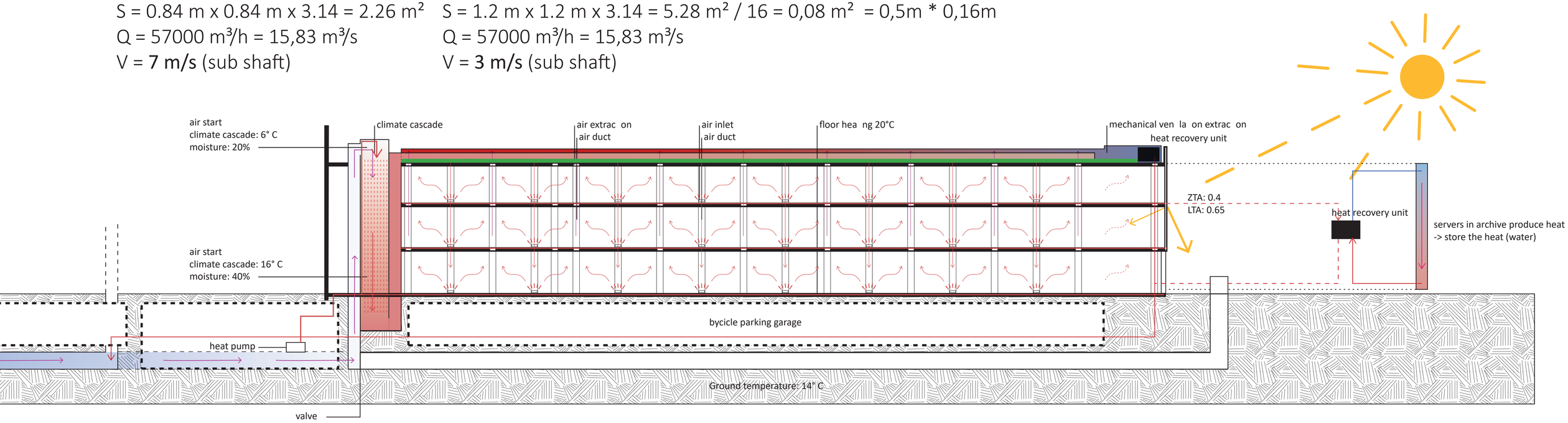
Climate Wintertime

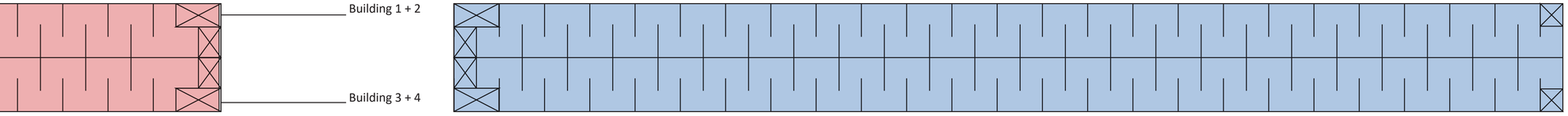
Sub ventilation shaft diameter:
Q= V * S (m3/h)
V = air speed (m/sec).
S = area shaft (m2)

S = 0.84 m x 0.84 m x 3.14 = 2.26 m²
Q = 57000 m³/h = 15,83 m³/s
V = **7 m/s** (sub shaft)

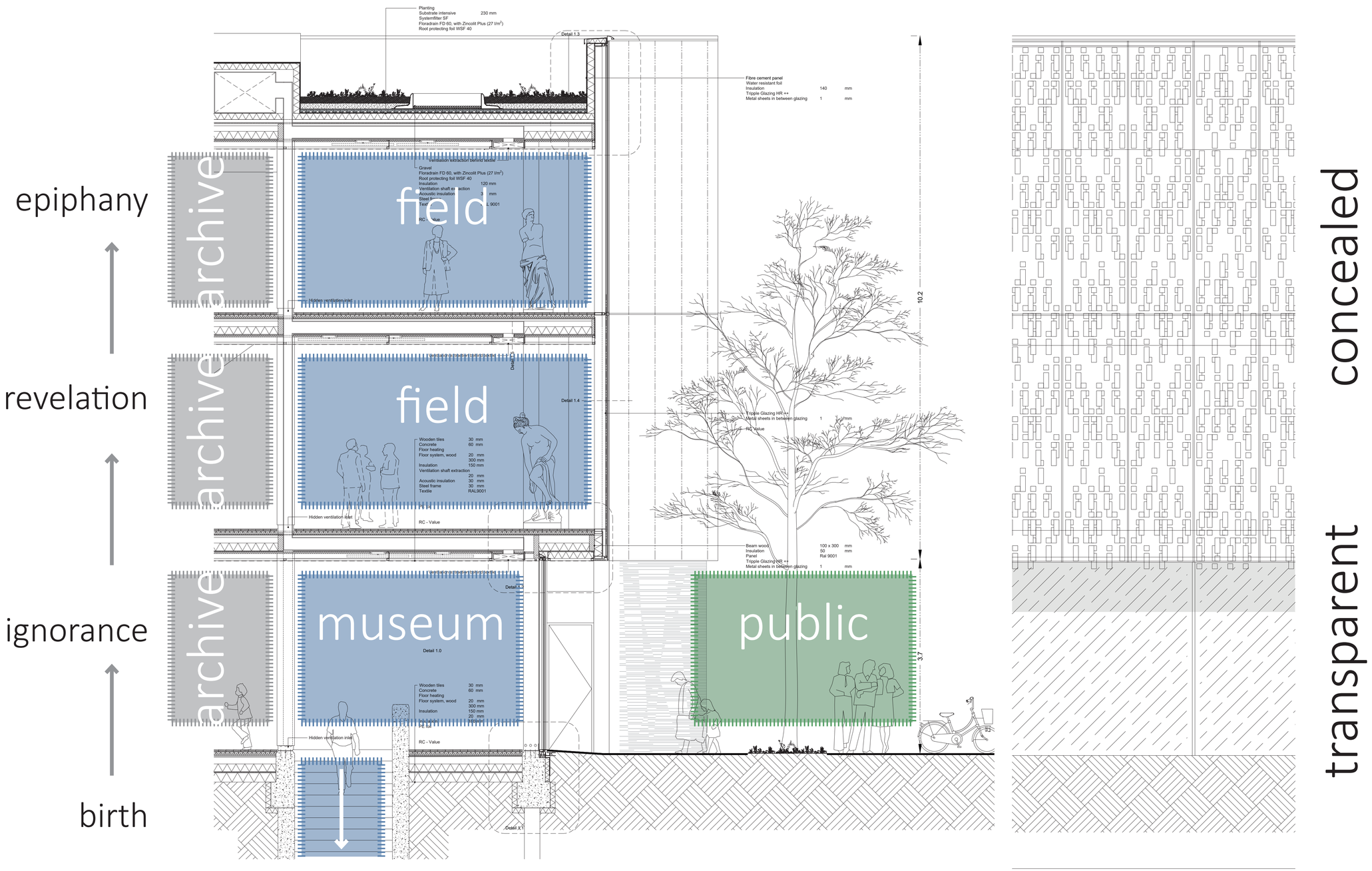
Sub ventilation shaft diameter 2:
Q= V * S (m3/h)
V = air speed (m/sec).
S = area shaft (m2) * 16

S = 1.2 m x 1.2 m x 3.14 = 5.28 m² / 16 = 0,08 m² = 0,5m * 0,16m
Q = 57000 m³/h = 15,83 m³/s
V = **3 m/s** (sub shaft)





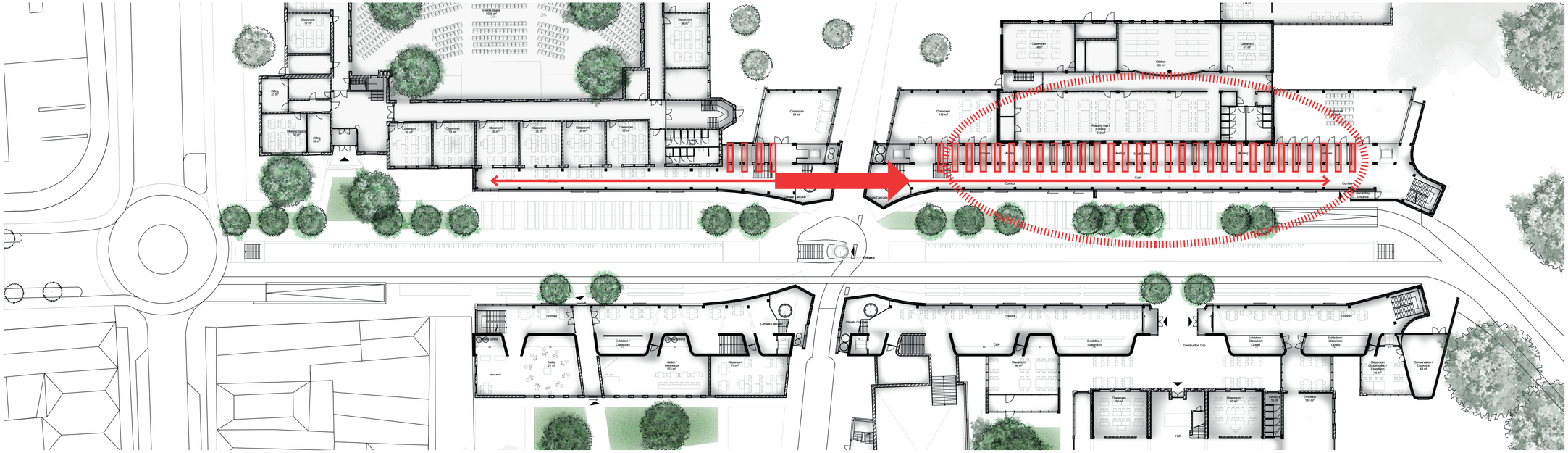
Section


epiphany
revelation
ignorance
birth
archive
archive
archive
field
field
museum
public
concealed
transparent

Corridor







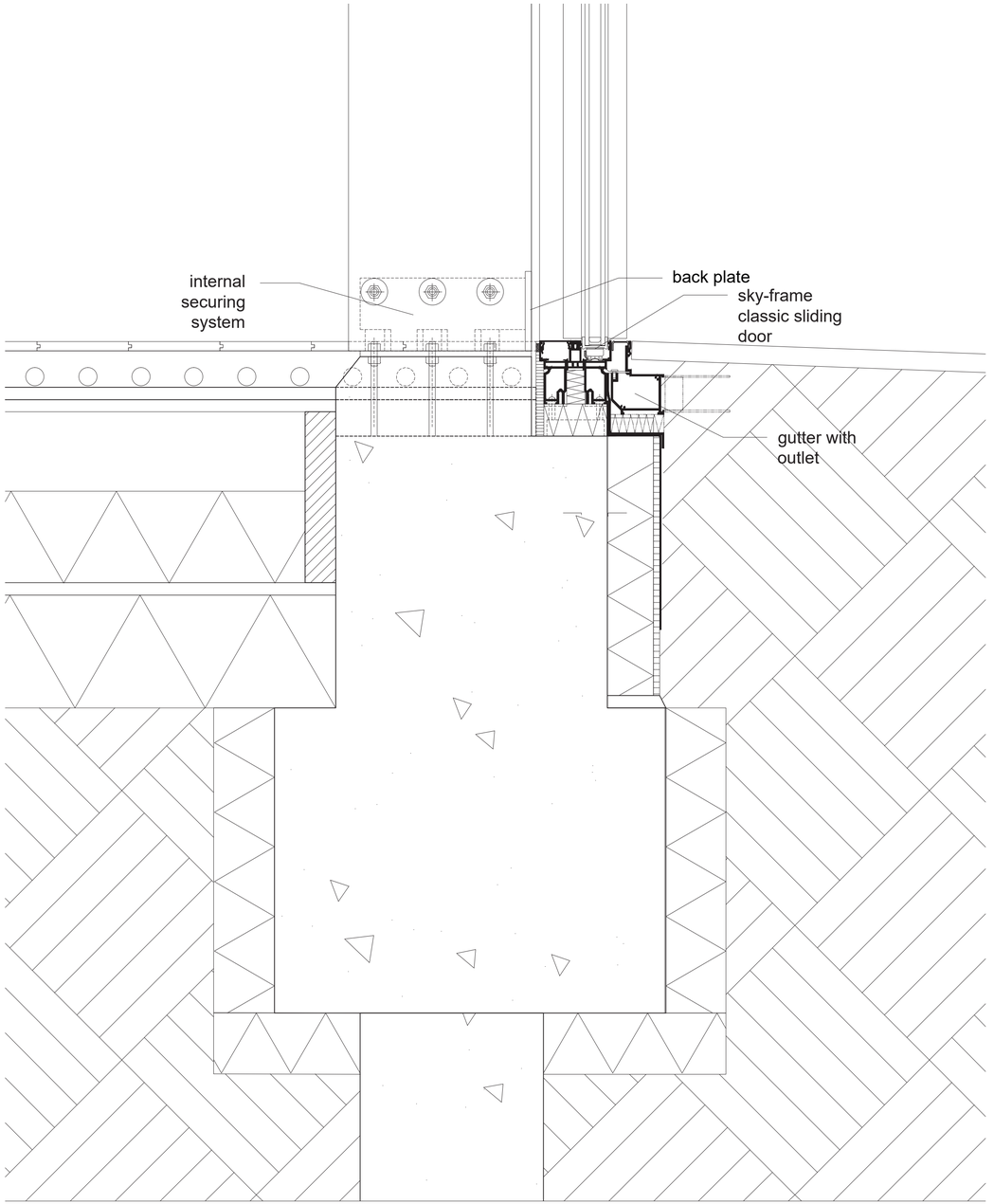


Sky Frame Door





Detail

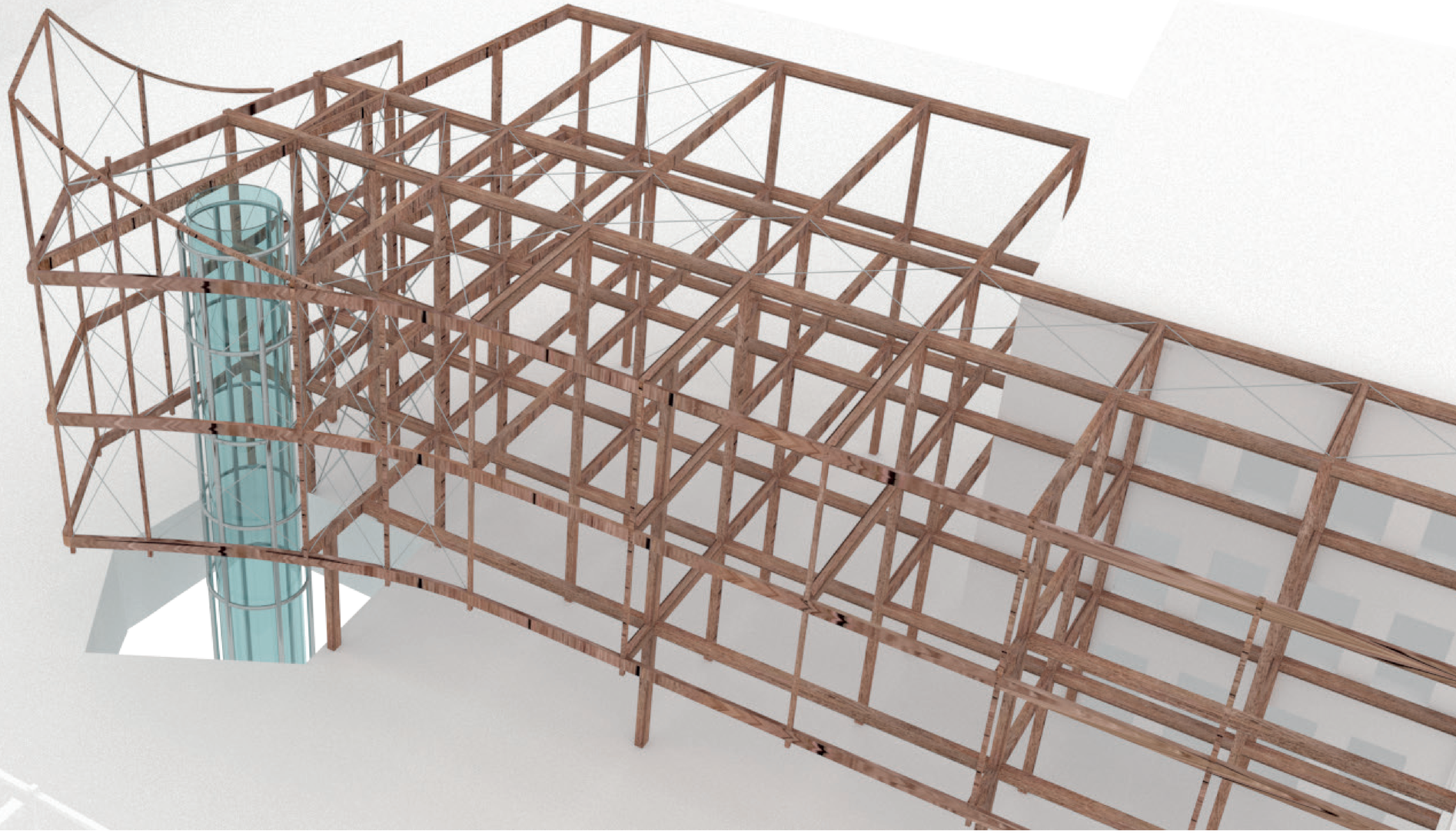

internal
securing
system
back plate
sky-frame
classic sliding
door
gutter with
outlet



Structure

Columns:
l/20 = width
4.0/20 = 0.2 m-> chosen: 0.3m

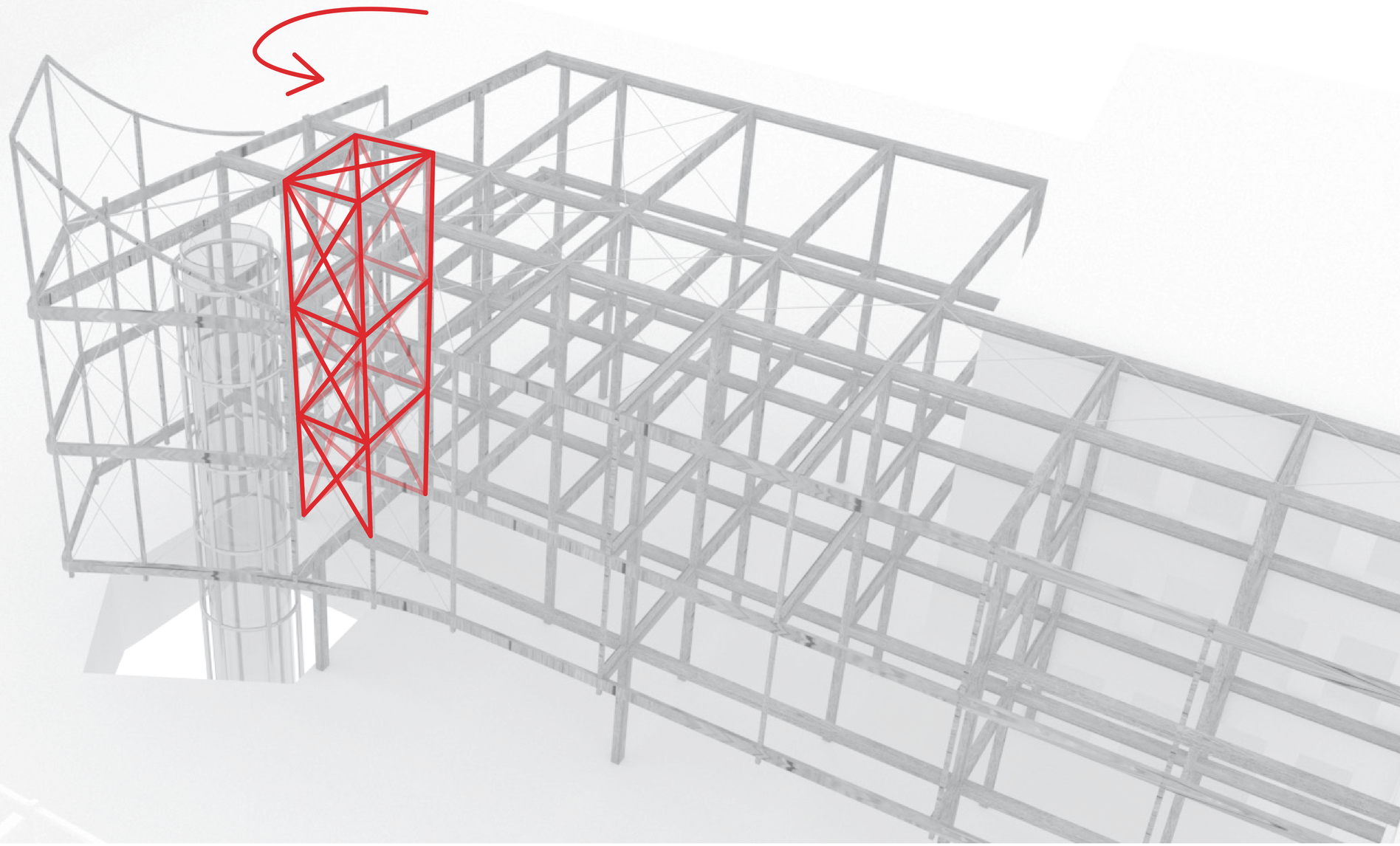
Beams:
l/20 = height
3.8/20 = 0.19 m -> chosen: 0.3
7.6/20 = 0.38 m -> chosen: 0.4



Stability Rotation

Columns:
l/20 = width
4.0/20 = 0.2 m-> chosen: 0.3m

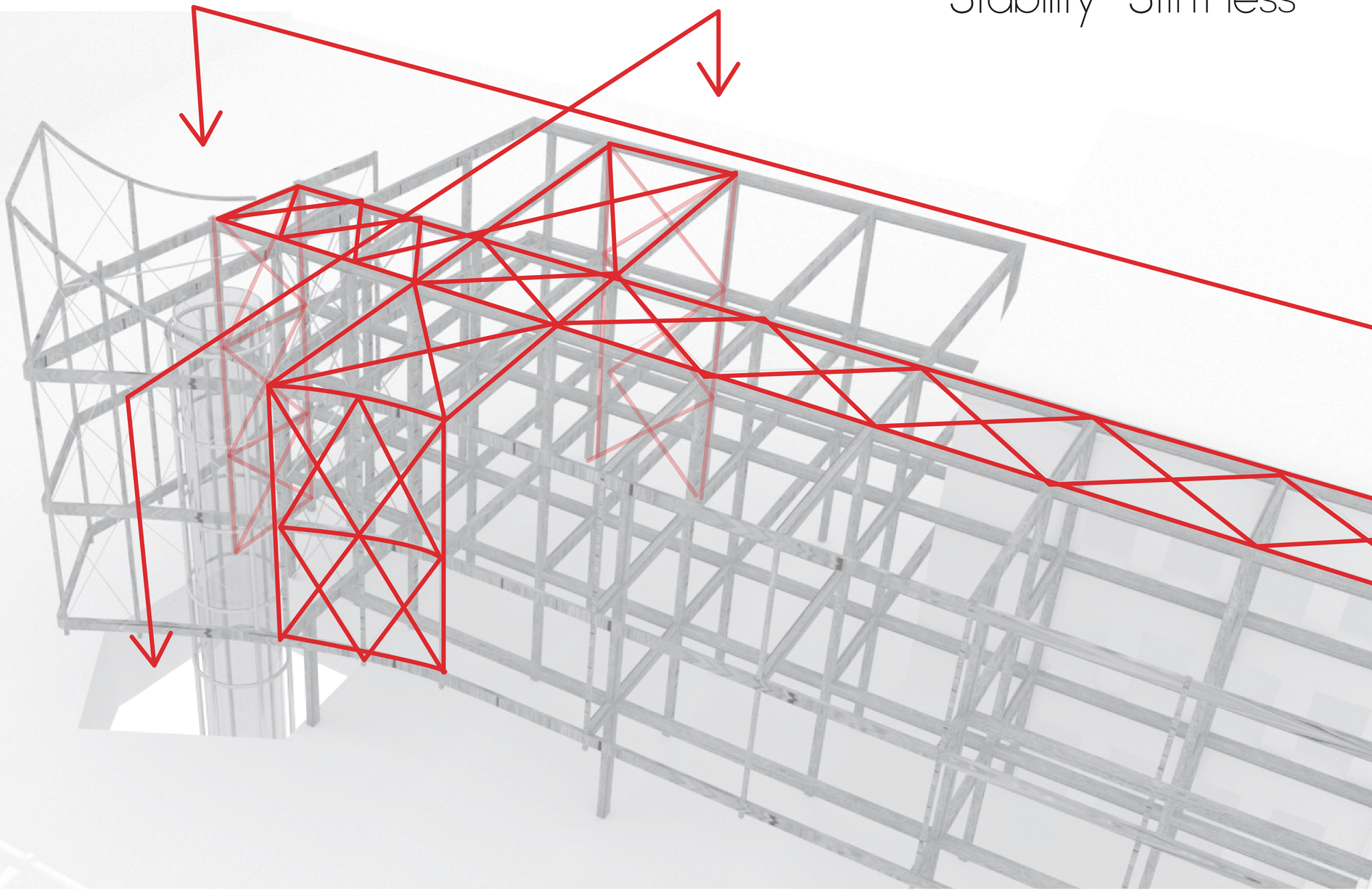
Beams:
l/20 = height
3.8/20 = 0.19 m -> chosen: 0.3
7.6/20 = 0.38 m -> chosen: 0.4



Stability Stiffness

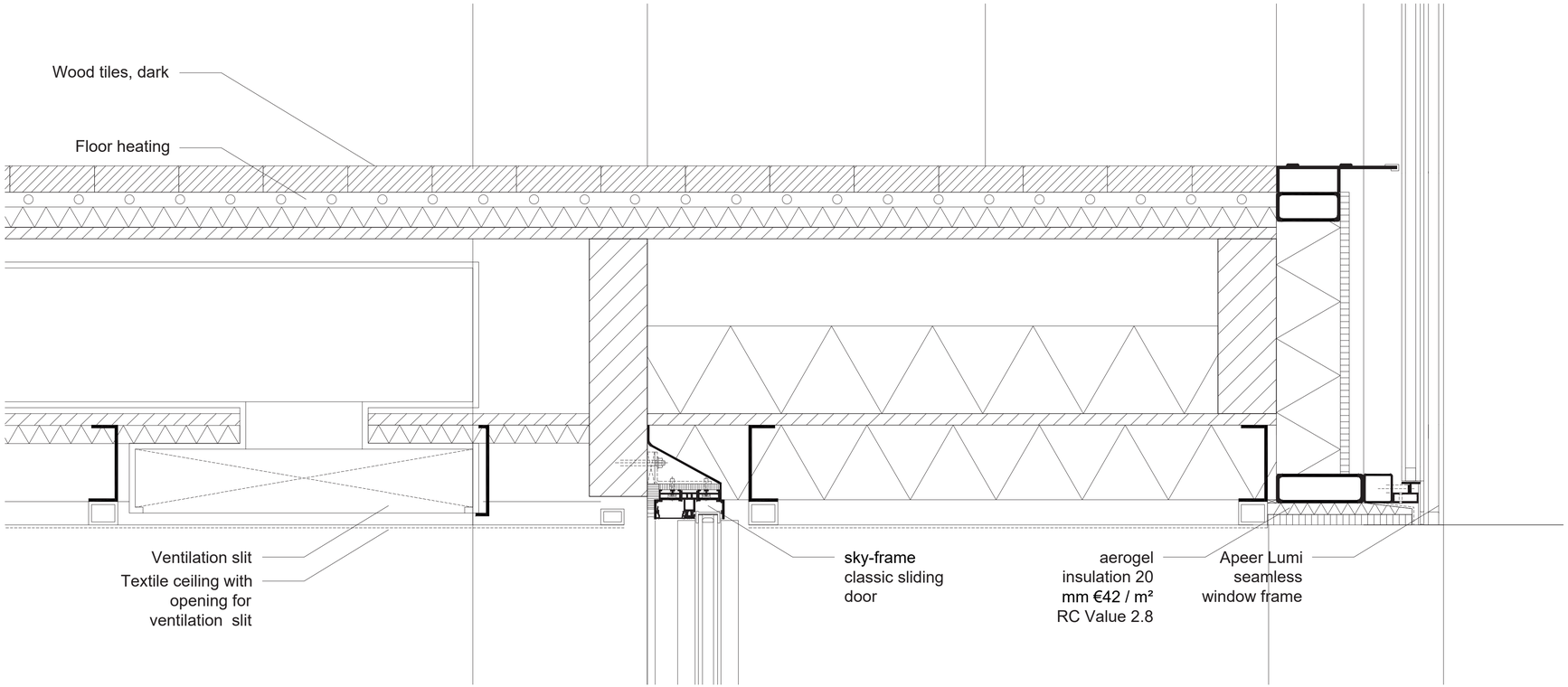
Columns:
l/20 = width
4.0/20 = 0.2 m-> chosen: 0.3m

Beams:
l/20 = height
3.8/20 = 0.19 m -> chosen: 0.3
7.6/20 = 0.38 m -> chosen: 0.4

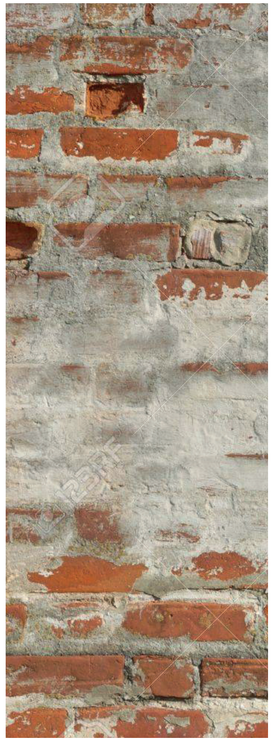


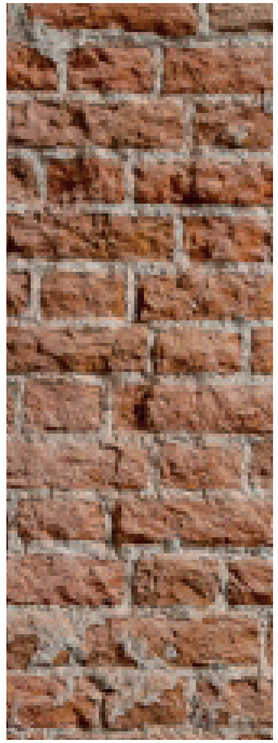


Floor


Wood tiles, dark
Floor heating
Ventilation slit
Textile ceiling with opening for ventilation slit
sky-frame classic sliding door
aerogel insulation 20 mm €42 / m² RC Value 2.8
Apeer Lumi seamless window frame

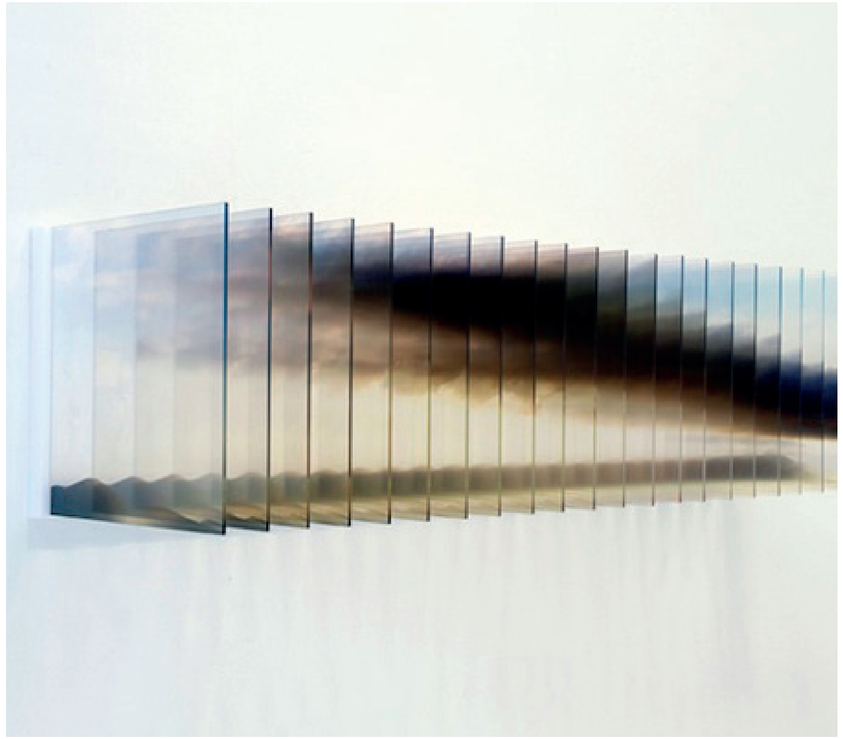
Facade Material





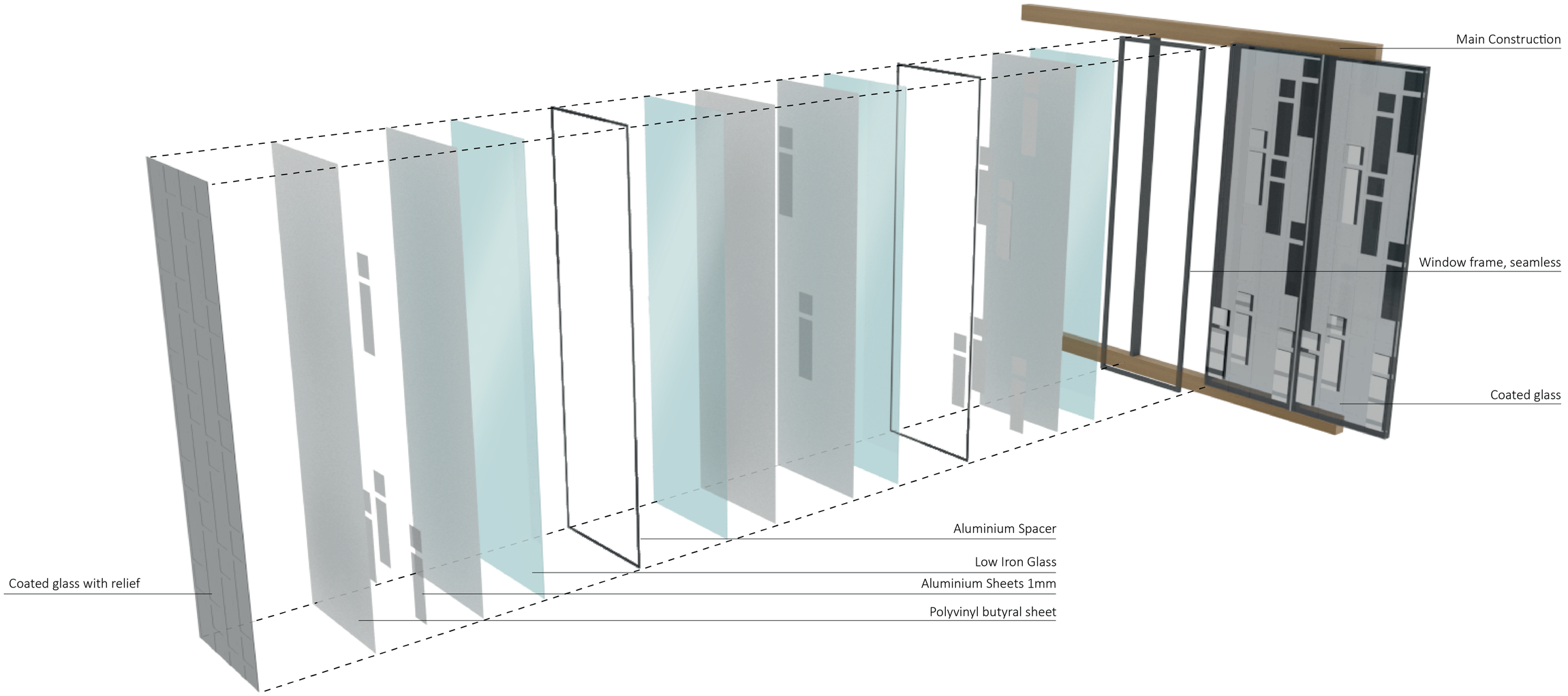


Dustin Yellin



Nobuhiro Nakanishi.

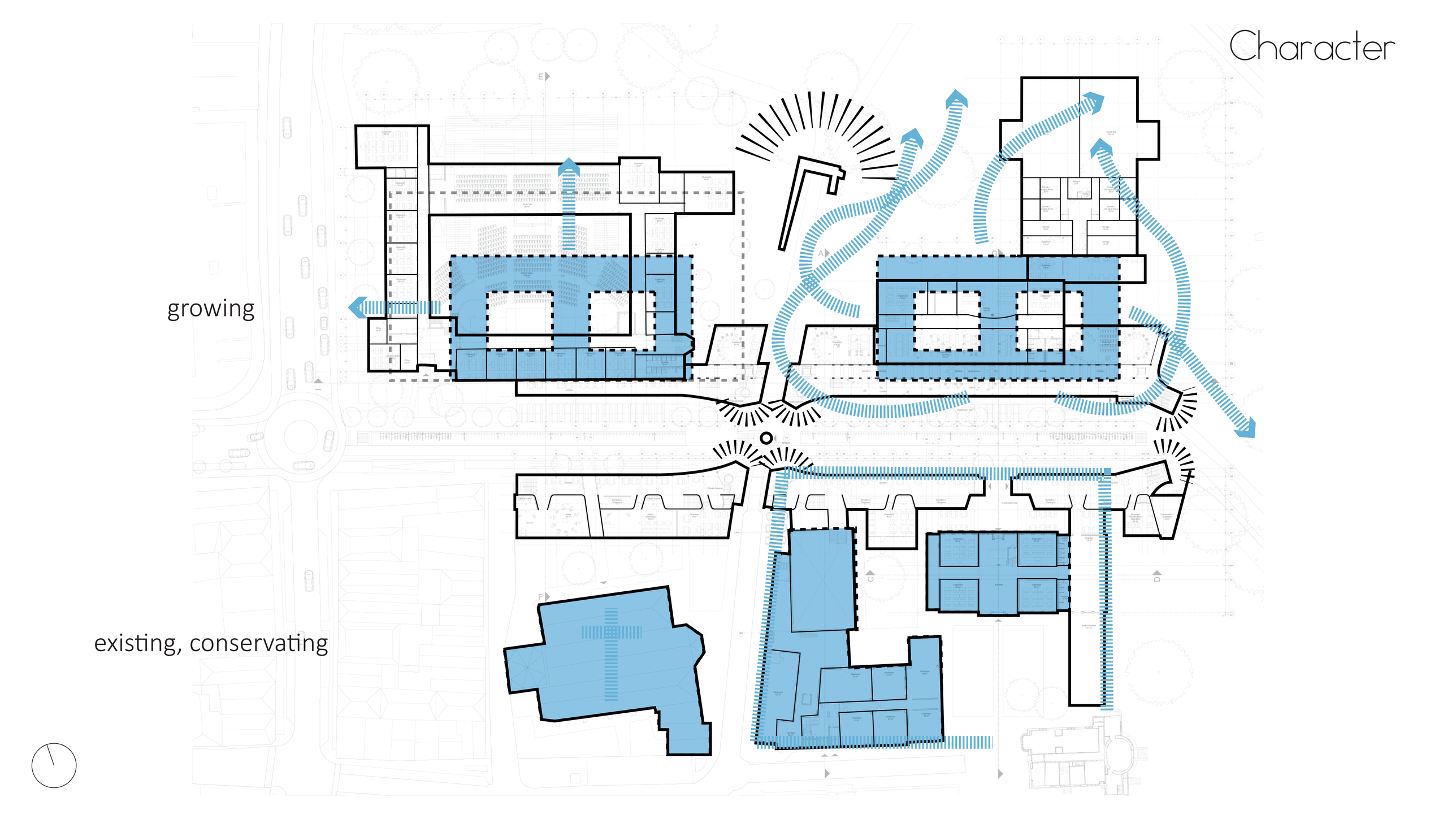
Curtain wall system



Character

growing

existing, conservating

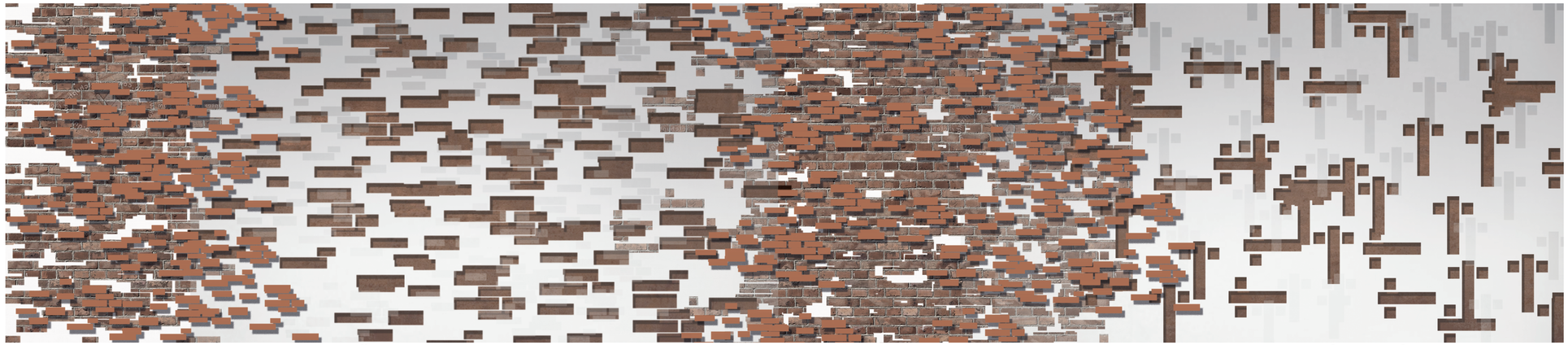


Facade Design



Baudartius

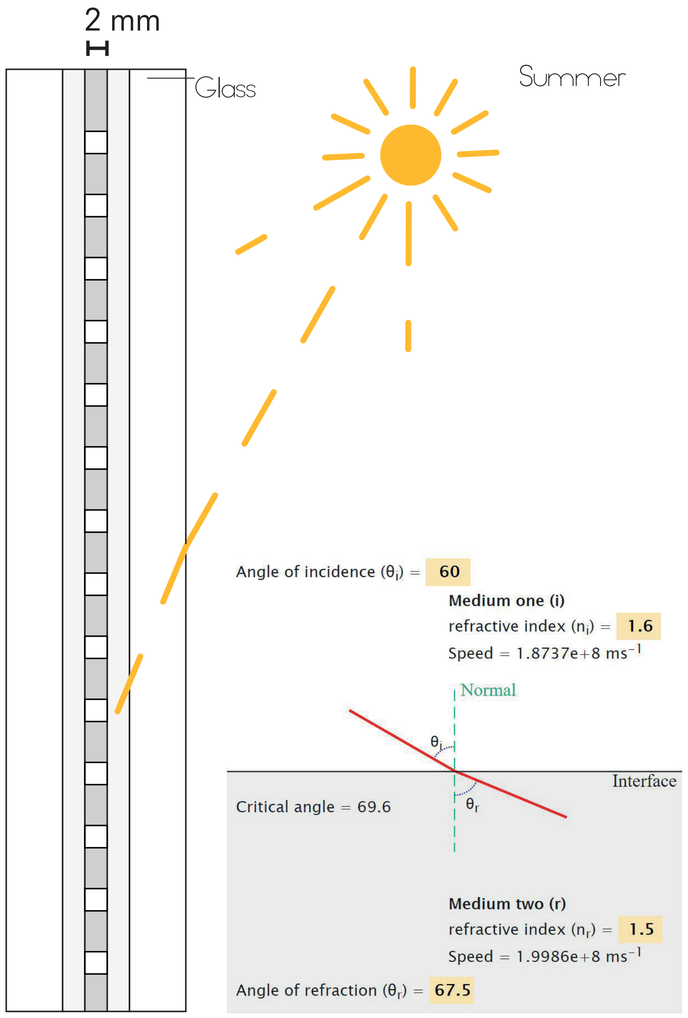
Stedelijk



St. Jozef

Church

Aluminium elements in glass



Summer

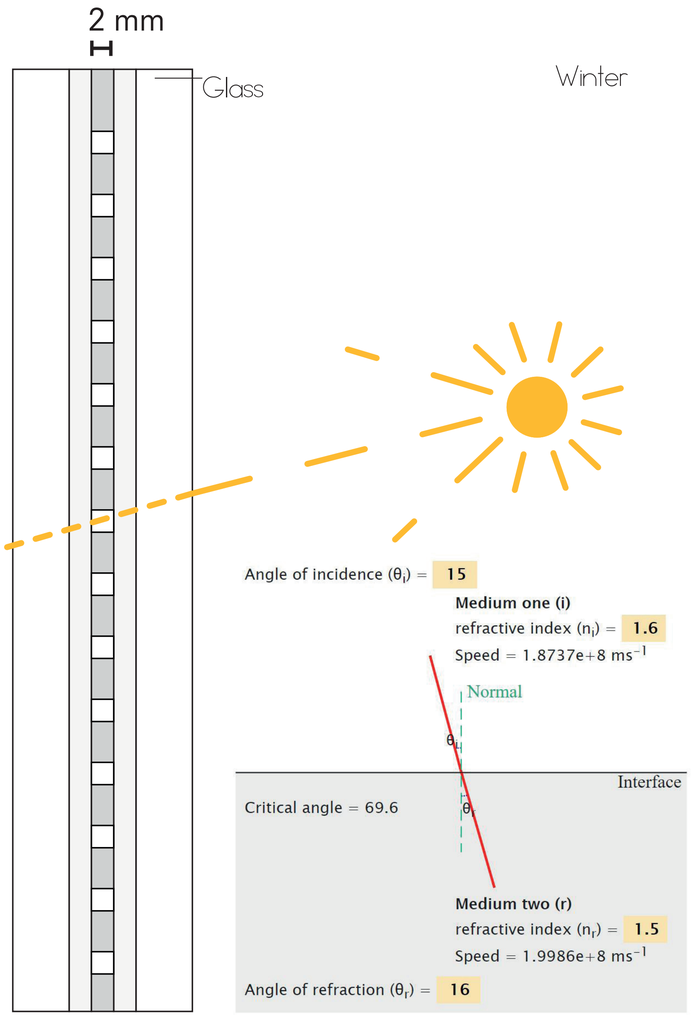
Angle of incidence (θ_i) = 60

Medium one (i)
refractive index (n_i) = 1.6
Speed = 1.8737e+8 ms^{-1}

Critical angle = 69.6

Medium two (r)
refractive index (n_r) = 1.5
Speed = 1.9986e+8 ms^{-1}

Angle of refraction (θ_r) = 67.5



Winter

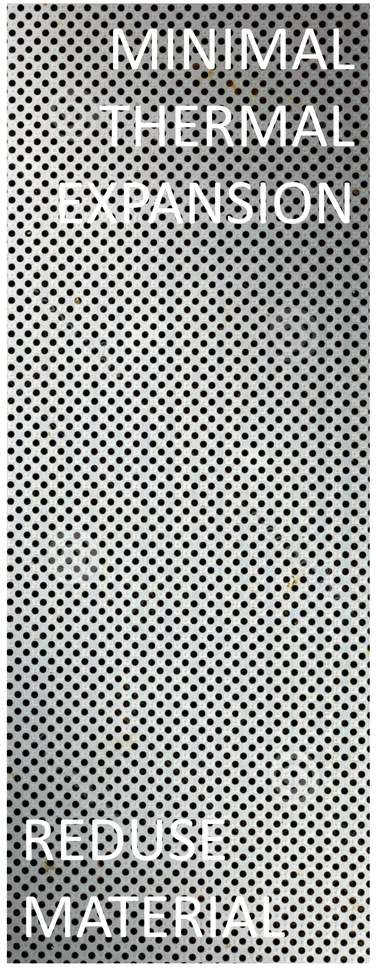
Angle of incidence (θ_i) = 15

Medium one (i)
refractive index (n_i) = 1.6
Speed = 1.8737e+8 ms^{-1}

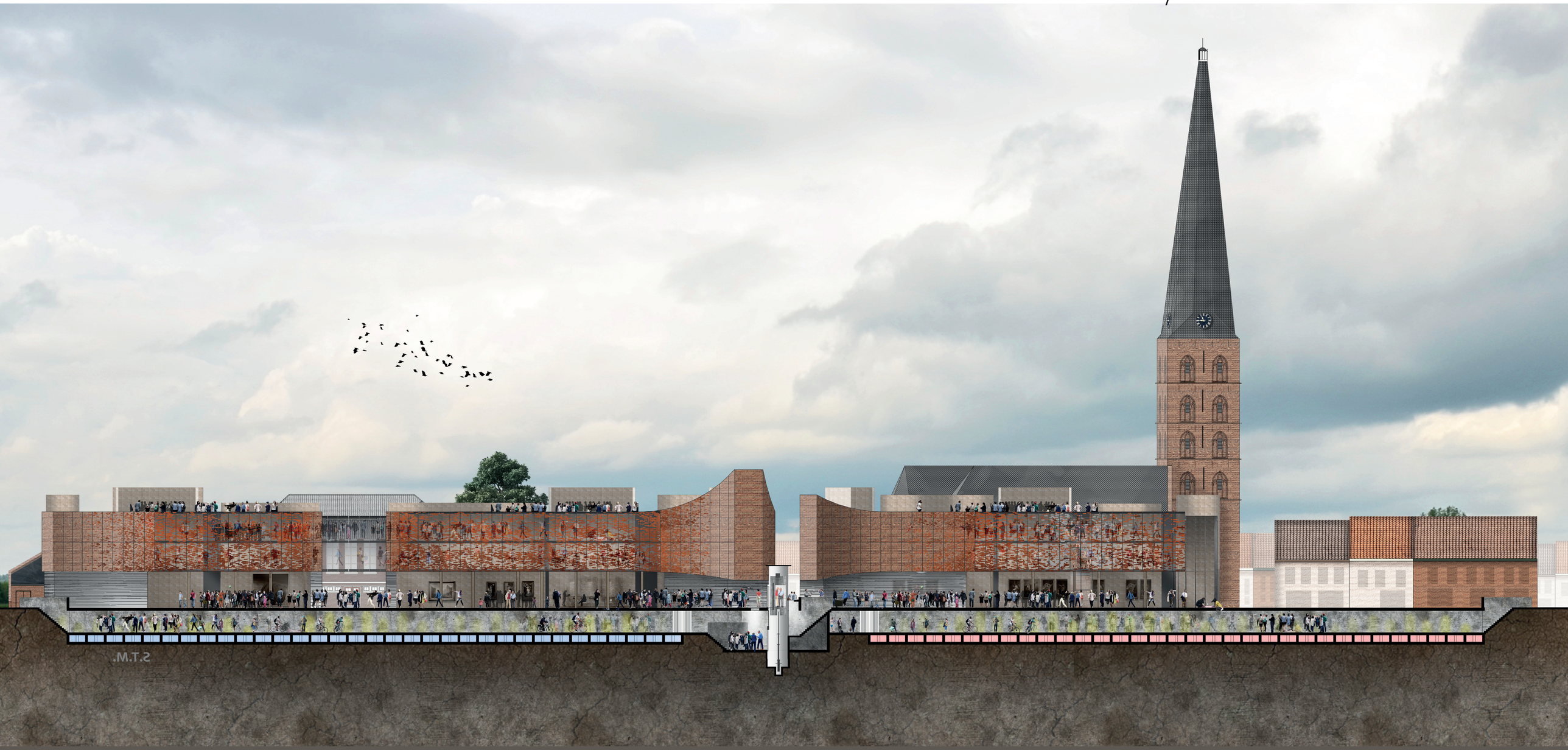
Critical angle = 69.6

Medium two (r)
refractive index (n_r) = 1.5
Speed = 1.9986e+8 ms^{-1}

Angle of refraction (θ_r) = 16



Day time South side



Night Time



Day time North side



Night time



Corridor

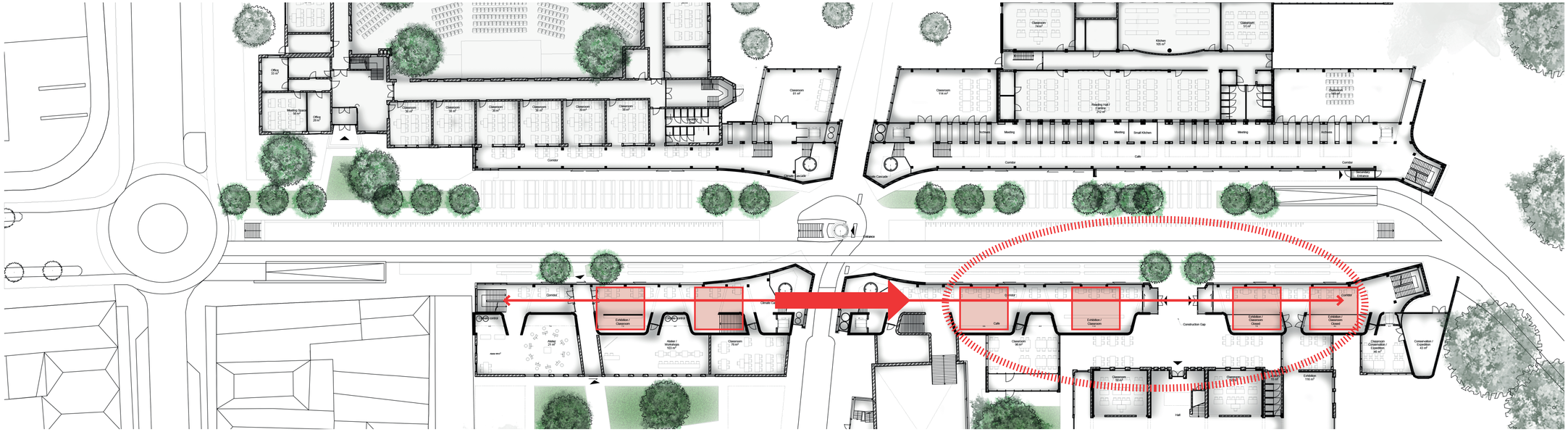


Source: Klein Vaticaan Analysis

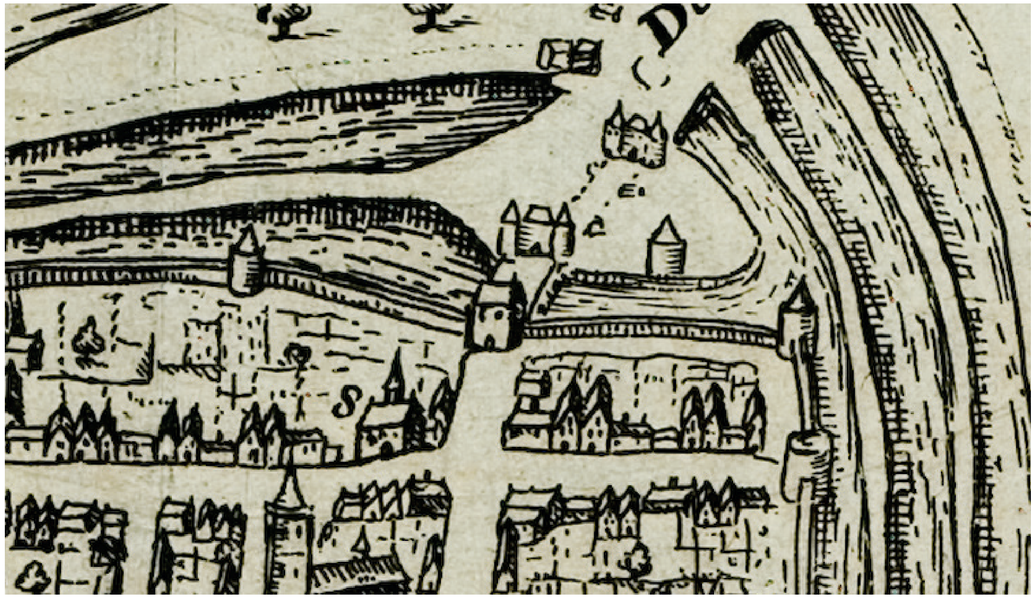


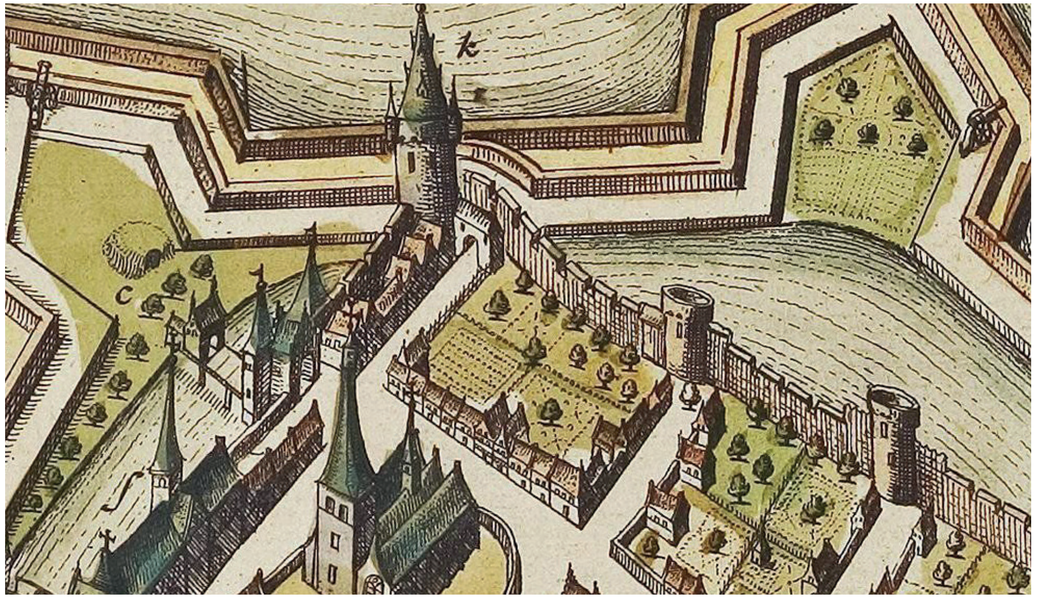
Aesthetical Value
Relative Art Value:
Neo - Gothicism -> reference to blooming age of catholism
Spiritual Value:
Catholic character

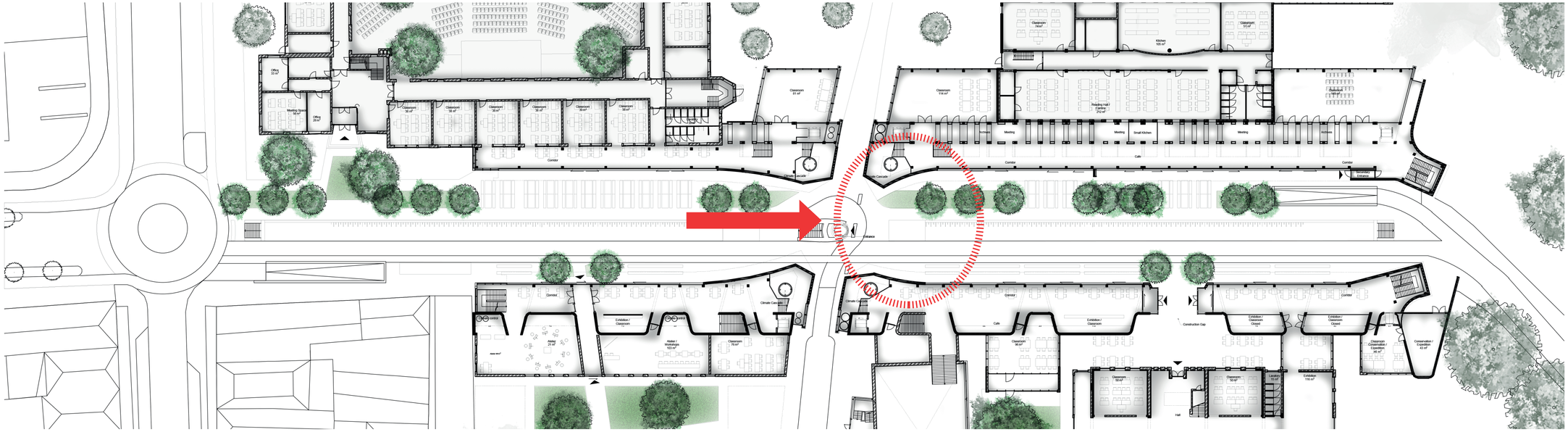
Source: Klein Vaticaan Analysis

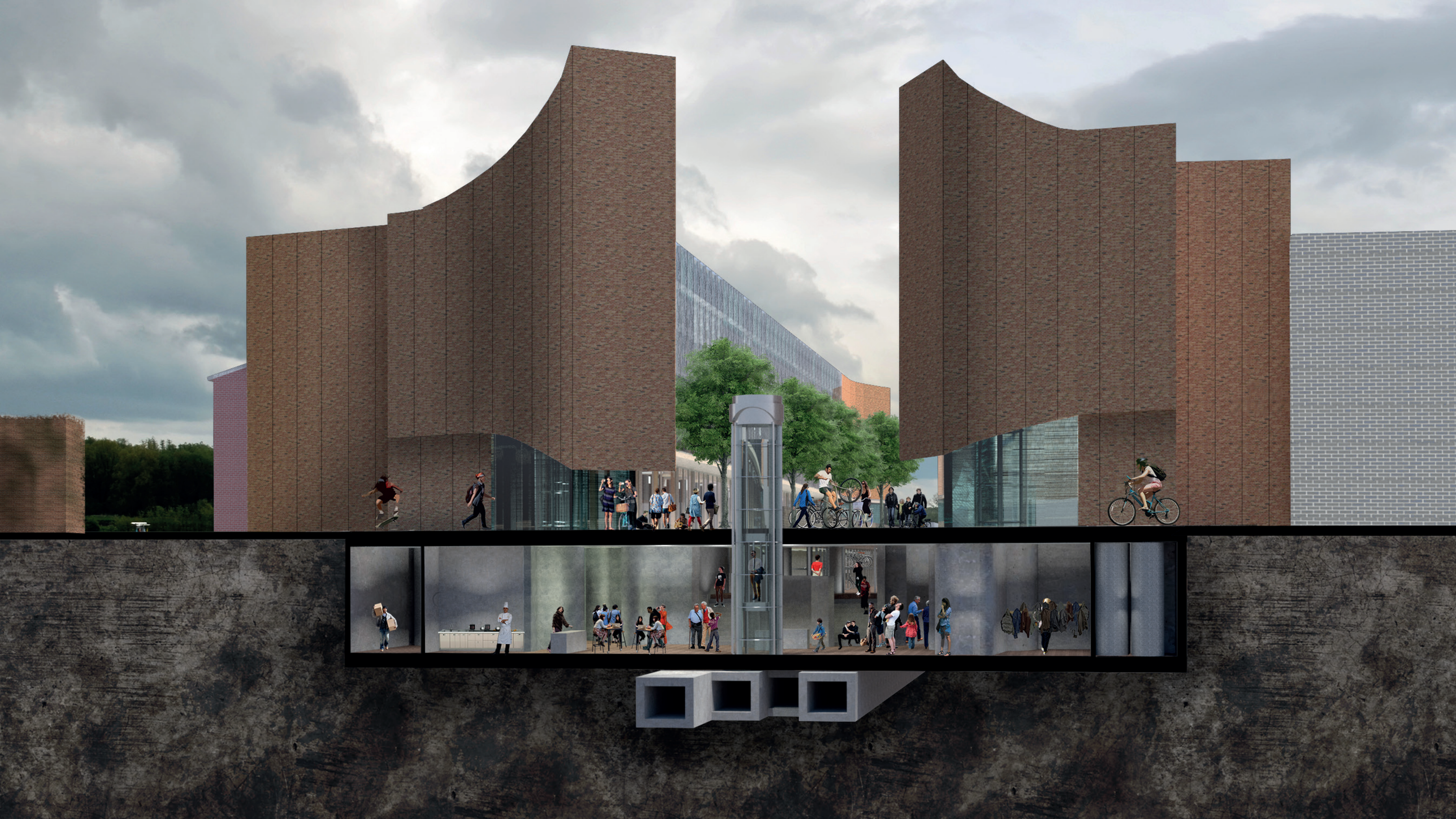


Main Entrance

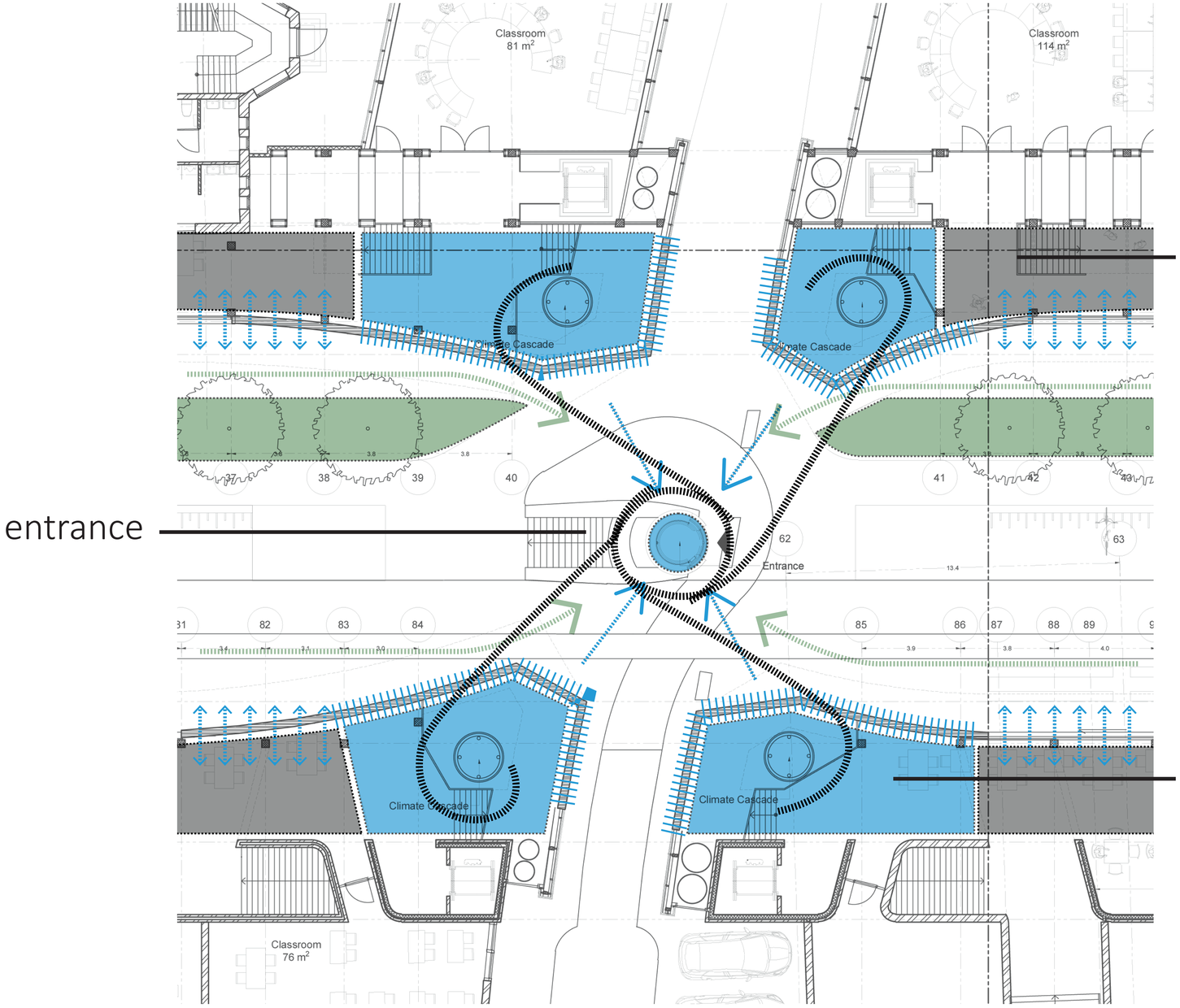


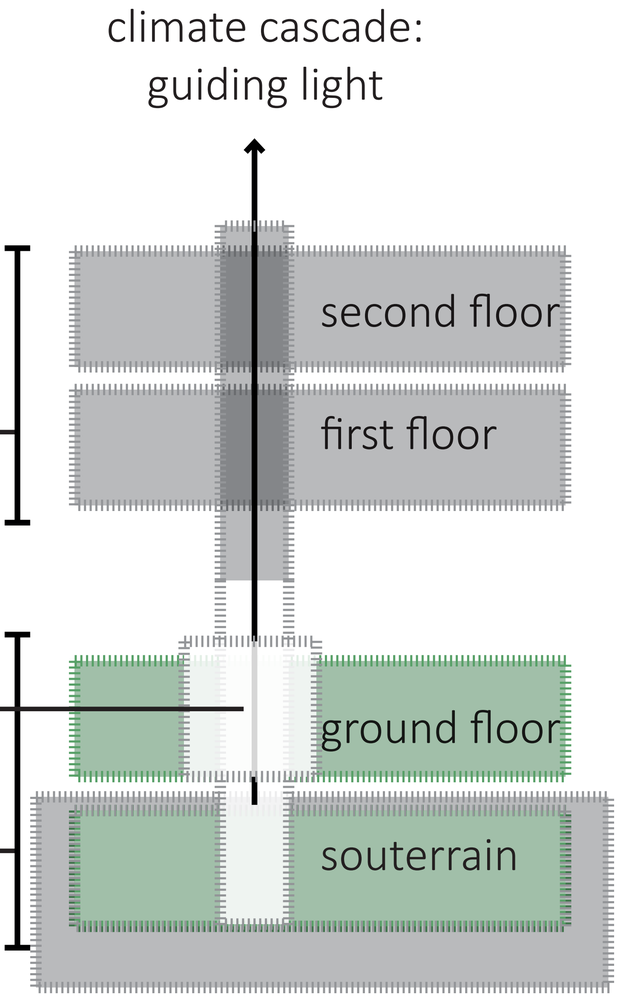




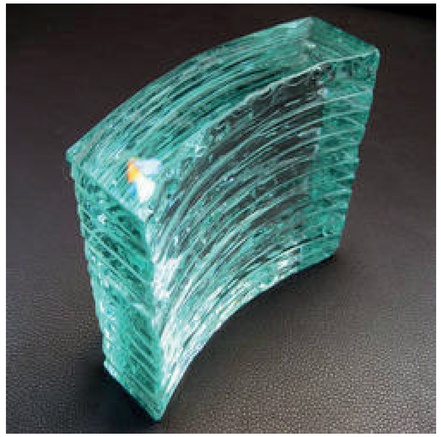


Entrance and building front relationship

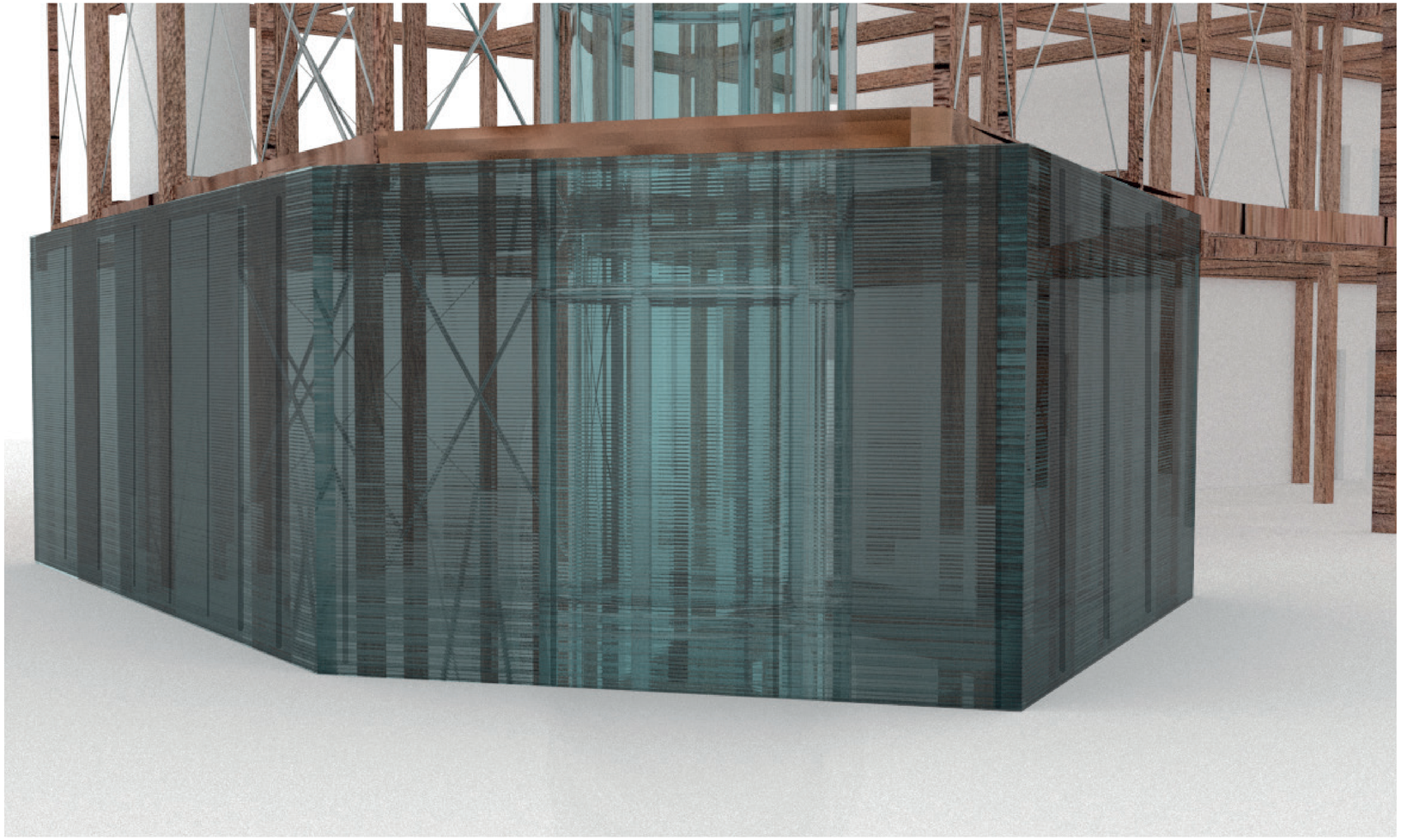




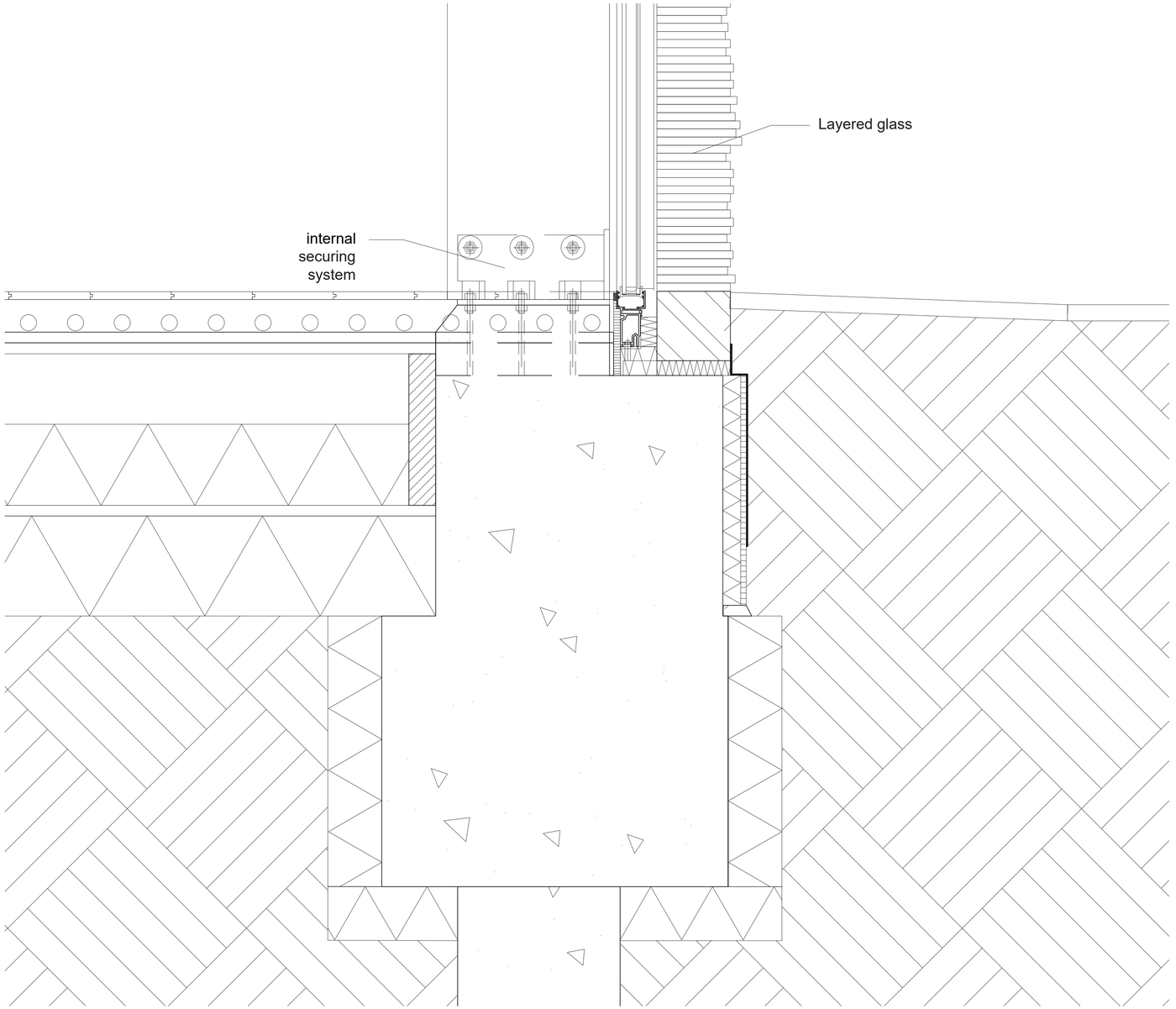
Layered Glass







Detail



Reflection

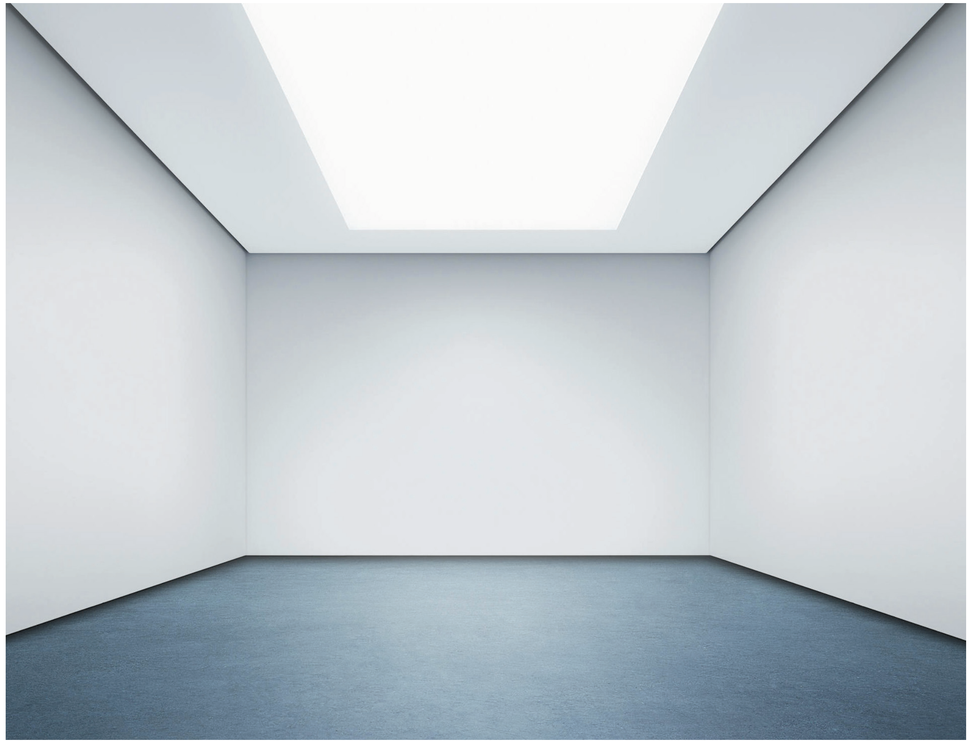

Classroom 158 m²
Classroom 42 m²
Classroom 42 m²
Classroom 42 m²
Classroom 42 m²
Classroom 57 m²
Office 22 m²
Meeting Space 58 m²
Office 22 m²
Studio Hall 304 m²
Events Space 1000 m²
Classroom 65 m²
Classroom 65 m²
Classroom 84 m²
Classroom 38 m²
Classroom 38 m²
Classroom 38 m²
Classroom 38 m²
Classroom 38 m²
Classroom 38 m²
Classroom 65 m²
Corridor
Sports hall 288 m²
Sports hall 368 m²
Shower / Changing Room 35 m²
Storage 12 m²
Shower / Changing Room 35 m²
Shower / Changing Room 35 m²
Shower / Changing Room 35 m²
Storage 24 m²
Classroom 114 m²
Storage 24 m²
Storage 42 m²
Classroom 114 m²
Classroom 114 m²
Classroom 65 m²
Kitchen 65 m²
Reading Hall / Gallery 214 m²
Meeting
Meeting
Small Kitchen
Meeting
Cafe
Corridor
Corridor
Cafe Concourse
Entrance
Entrance
Corridor
Corridor
Corridor

Thank you





Floor and ceiling






Reflection

Values and Obligations

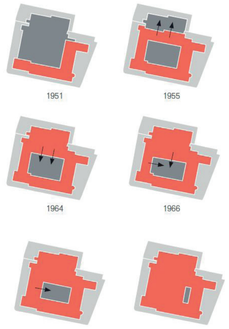
Source: Baudartius and Stedelijk Analysis by Jessica Admiraal and Malon Houben



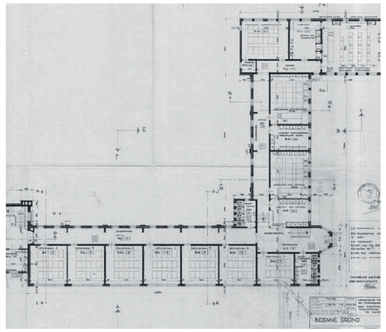
Spirit of Place:
Monofunctionality.
First: convent,
later barracks, now
schools.



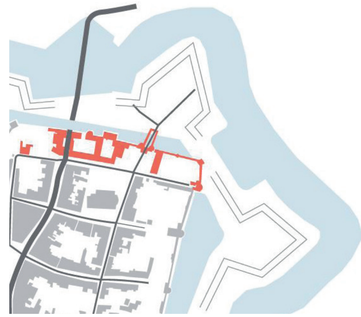
Social Value:
The high school
attracts many young
people.



Use Value:
The School has
always been a school
and interventions have
been done to a great
extent, both positively
and negatively.



Historical Value:
The Floor plan
developed from an
L-shaped corridor to a
H-shaped floor plan. It
is a conviction of the
school system from
the fifties.



Obligation: Spanish
Gate & Bastions must
be preserved

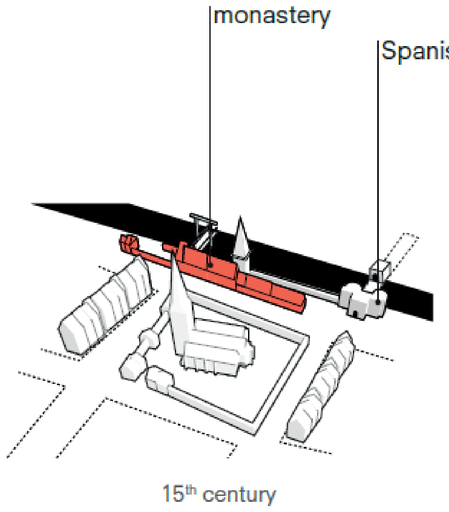


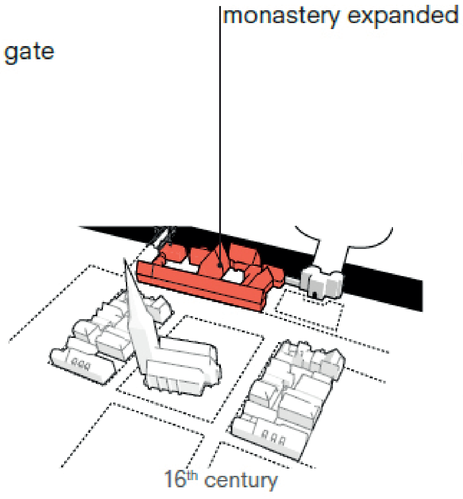
Obligation: Showing
the ornaments of the
oldest facades

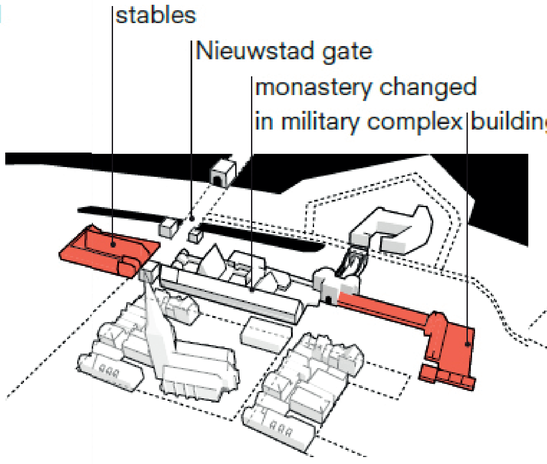
The values of the school lie in the development of the school plan, both a resemblance of the school systems of the fifties, but also of the previous buildings. There is an opportunity to create tremendous use value by elevating the current one.

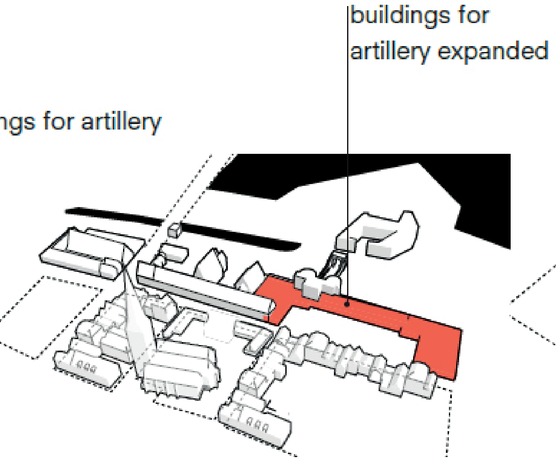
Development

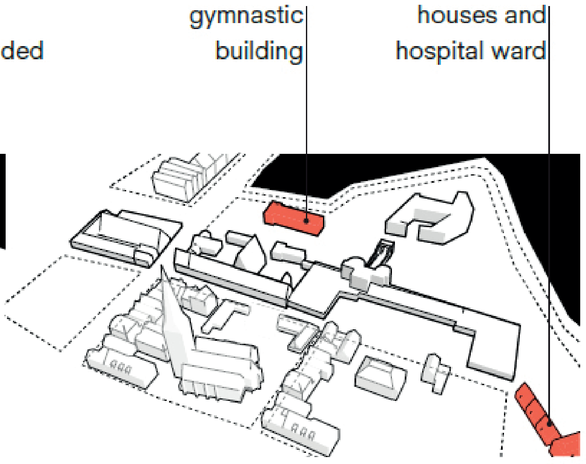
Source: Baudartius and Stedelijk Analysis by Jessica Admiraal and Malon Houben

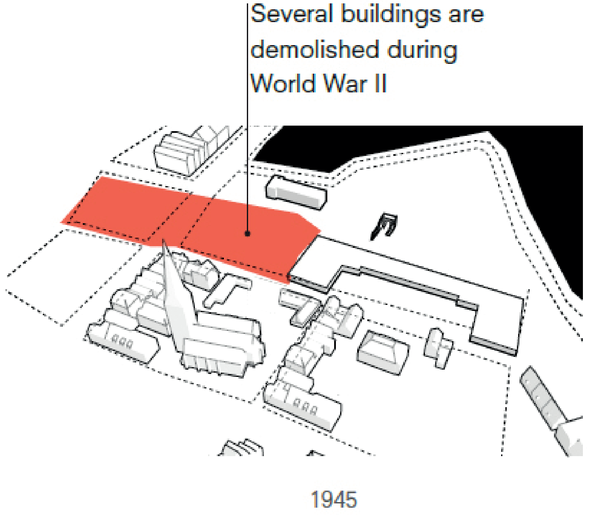


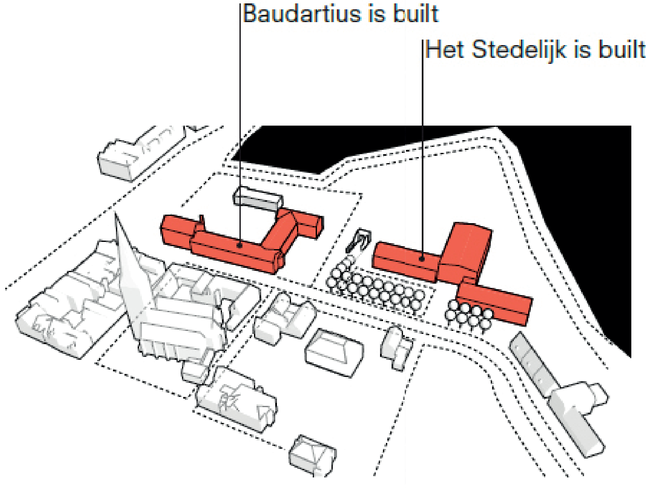


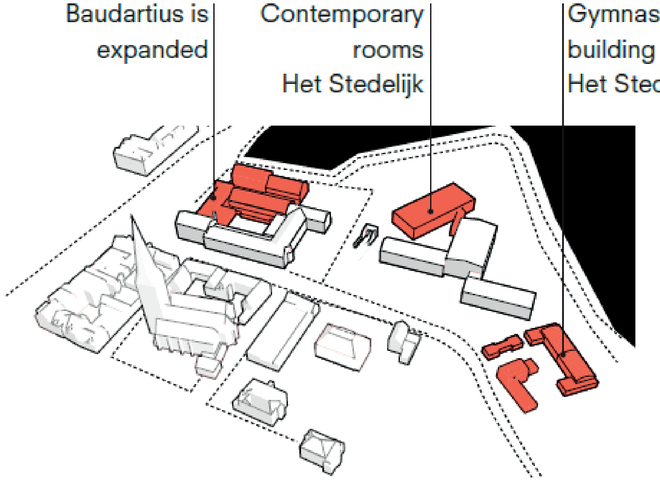


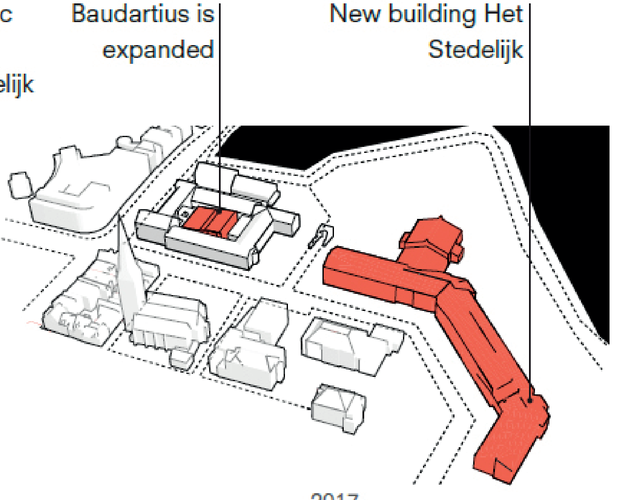






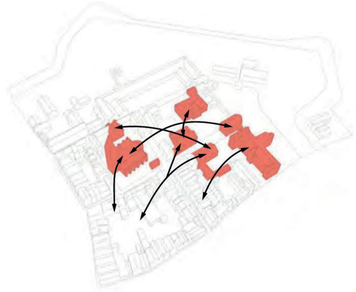






Values and Obligations

Source: Klein Vaticaan Analysis by Herco Bakker and Stavroula Birda



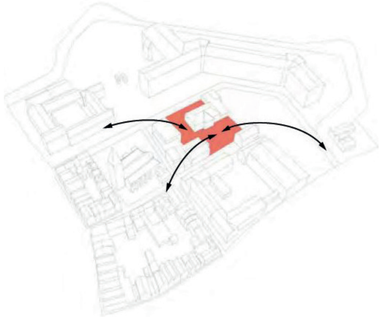
Social/Spiritual Value:
Being part of a larger catholic community.



Aesthetical Value:
St. Anna is a well preserved buiding in a “Postkantorengotiek” style.



Use Value:
The building is still a school and the skin is well maintained.

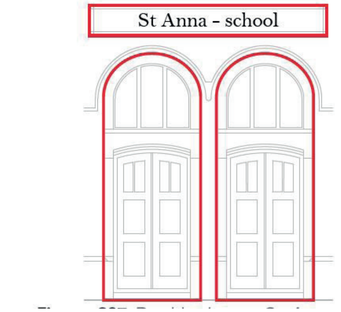


Social Value:
The site is a gathering place for pupils.



Opportunities: Less ornamented facade could be changed.

The values of the St. Jozef lie in the development of the school plan, it’s symmetrial plan is fighting for a comeback. There is an opportunity to create tremendous use value by elevating the current one.



Obligation: Double door entrance St. Anna reflects social context of the past.

Source: Klein Vaticaan Analysis by Herco Bakker and Stavroula Birda



Figure 73 *Klein Vaticaan - Schools - Space - 1649*

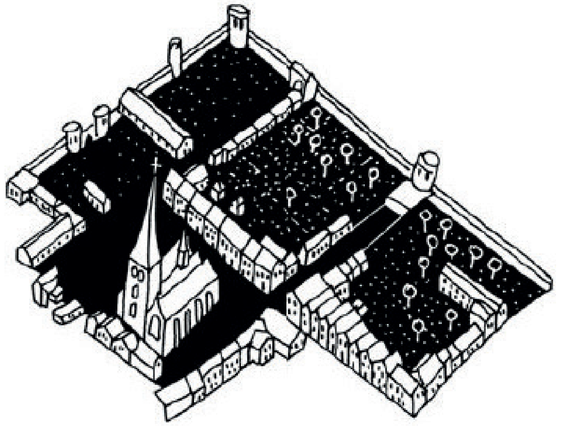


Figure 75 *Klein Vaticaan - Schools - Space - 1823*

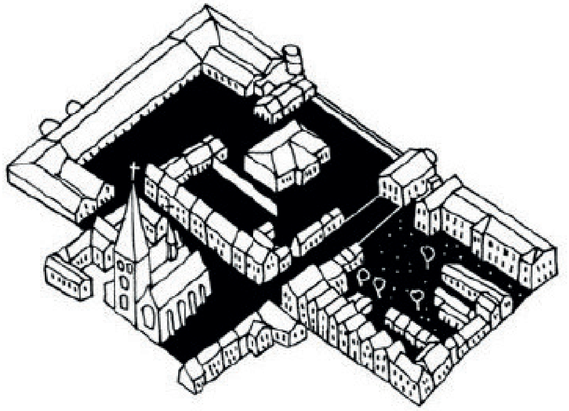


Figure 76 *Klein Vaticaan - Schools - Space - 1909*

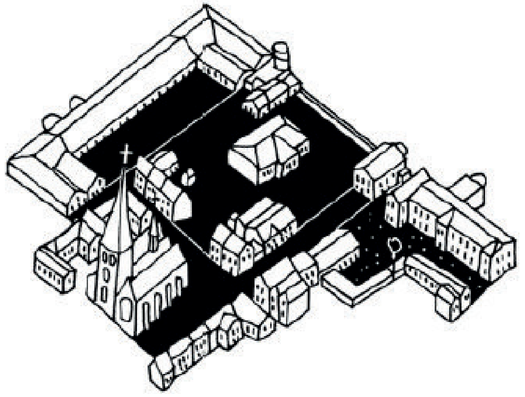


Figure 74 *Klein Vaticaan - Schools - Space - 1909*

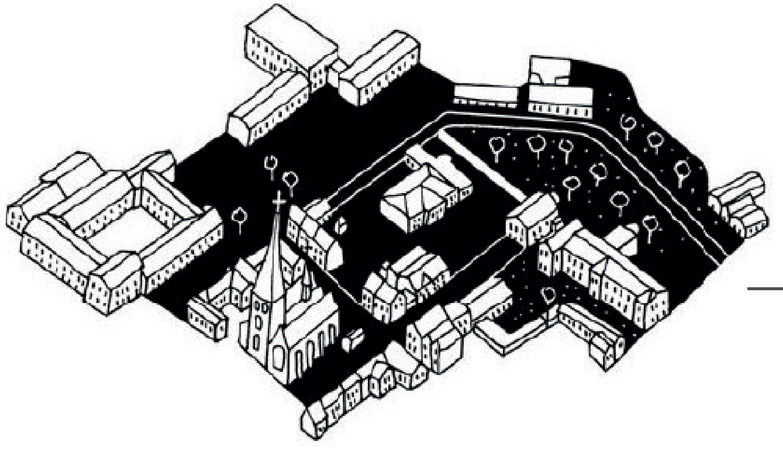


Figure 77 *Klein Vaticaan - Schools - Space - 1950*

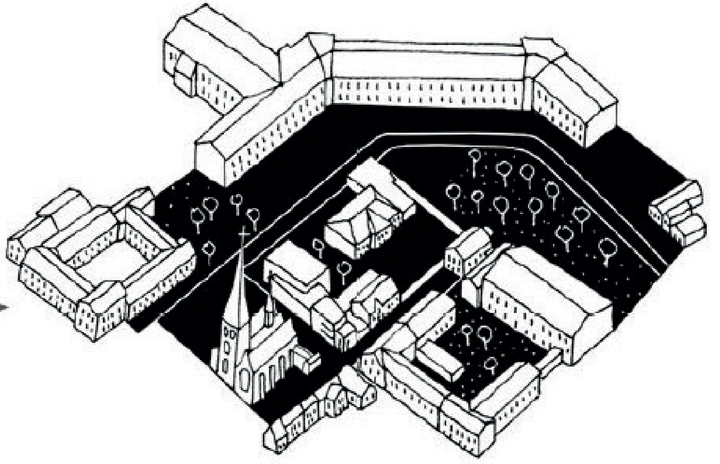


Figure 78 *Klein Vaticaan - Schools - Space - 2017*

Main ventilation shaft diameter:
Q= V * S (m3/h)
V = air speed (m/sec).
S = area shaft (m2)

S = 0.72 m x 0.72 m x 3.14 = 1.54 m²
Q = 57000 m³/h = 15,83 m³/s
V = **10 m/s** (main shaft)

Climate Cascade ventilation shaft diameter:
Q= V * S (m3/h)
V = air speed (m/sec).
S = area shaft (m2)

S = 1.2 m x 1.2 m x 3.14 = 4.52 m²
Q = 57000 m³/h = 15,83 m³/s
V = **3.5 m/s** (main shaft)

