RELINK: LEIDEN UNIVERSITY
RISING ABOVE THE EXISTENT

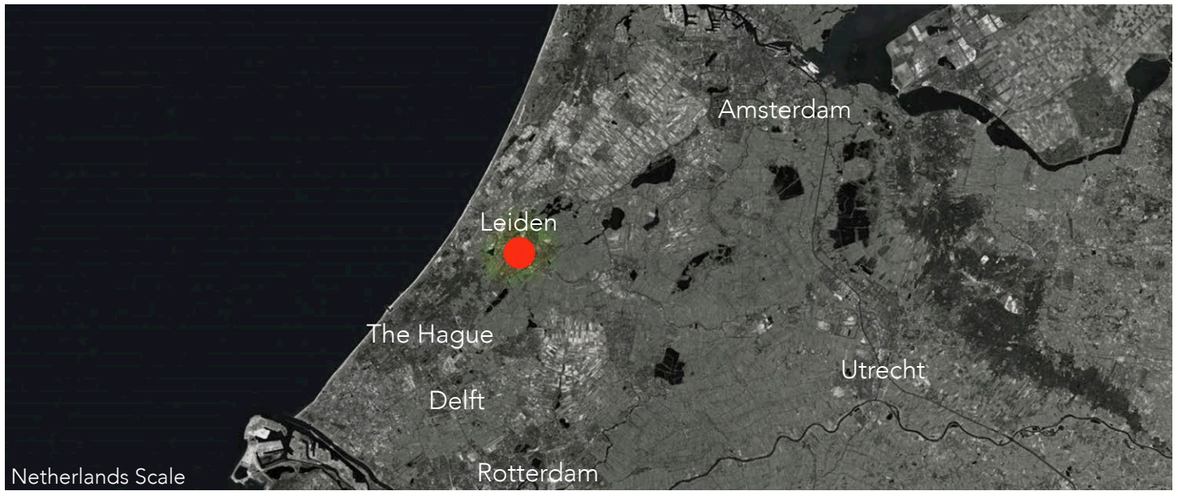
Leiden University, Faculty of Humanities

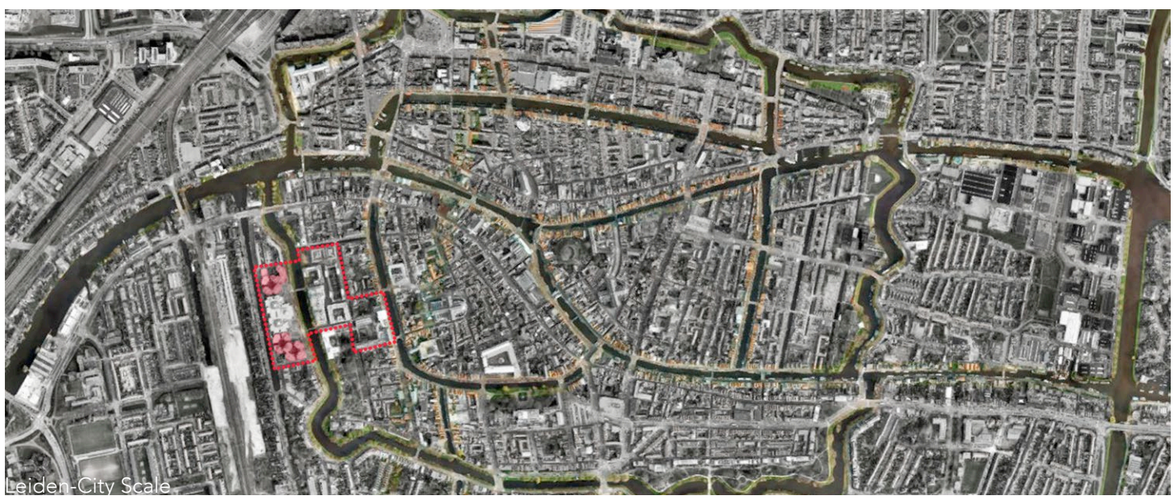
YIANNOS MEXIS

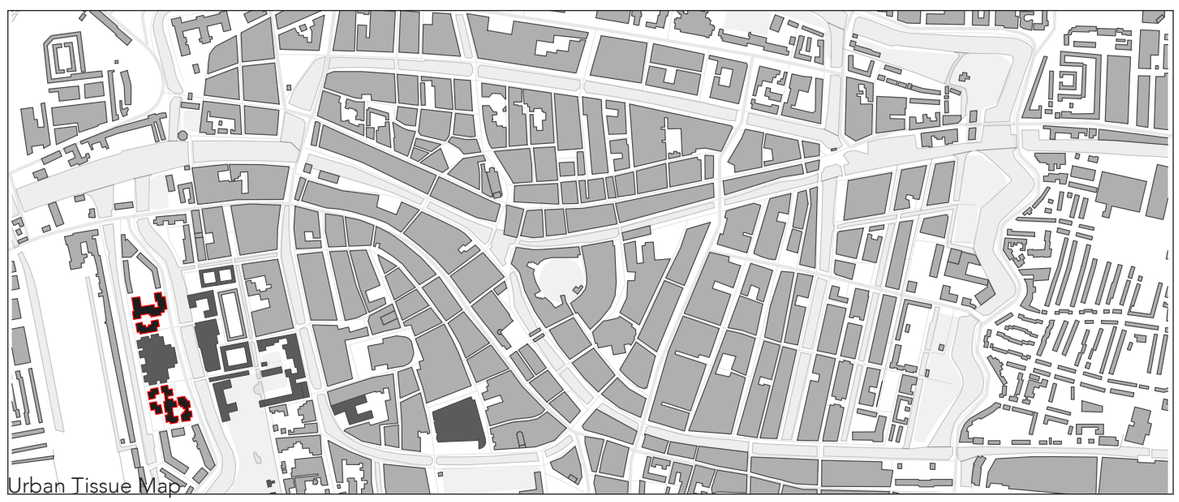
CHAIR OF HERITAGE & ARCHITECTURE
STUDIO: FUTURE OF STRUCTURALISM
MSc 3, Faculty of Architecture and the Built Environment
Delft University of Technology

Introduction to the Project

Site Location

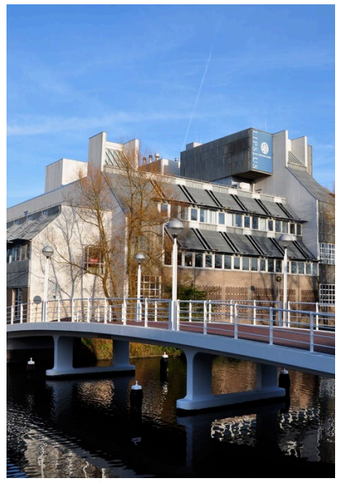






The Campus

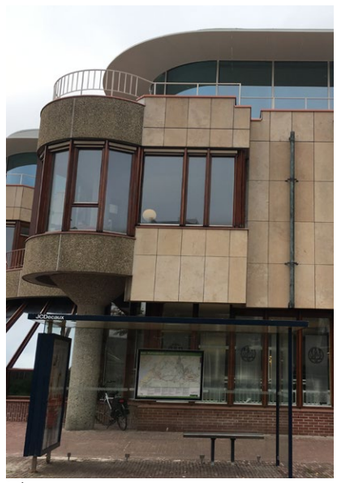

Arsenaal Building


Lipsius Building


Johan Huizinga Building


Reuvens Building

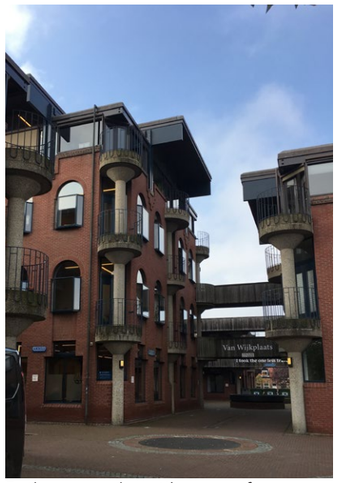

P.J. Veth Building


Library

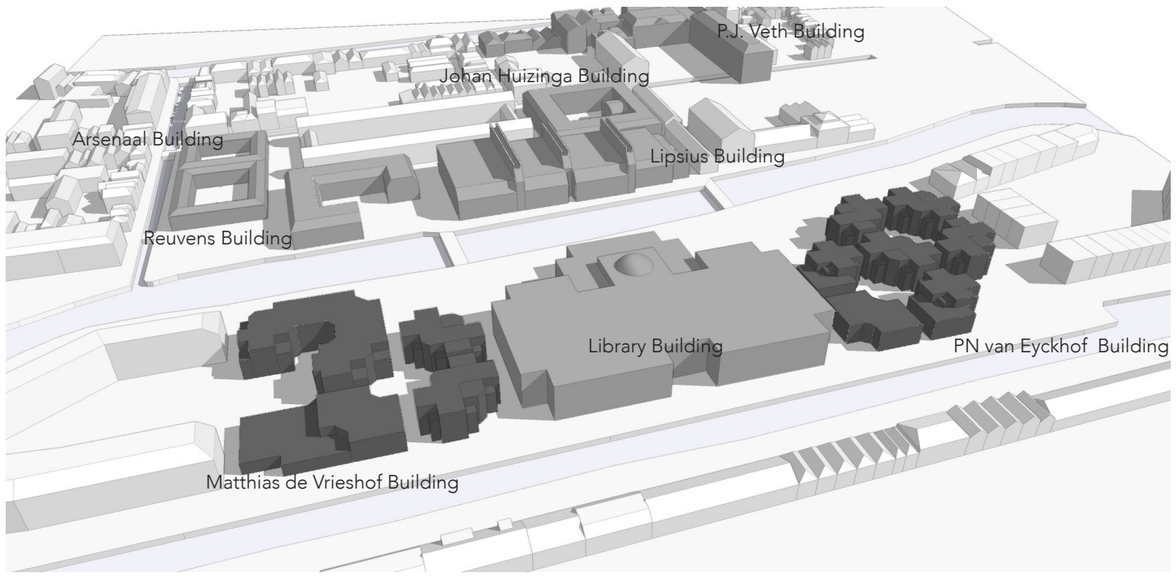
The Site - PN van Eyckhof & Matthias de Vrieshof Buildings

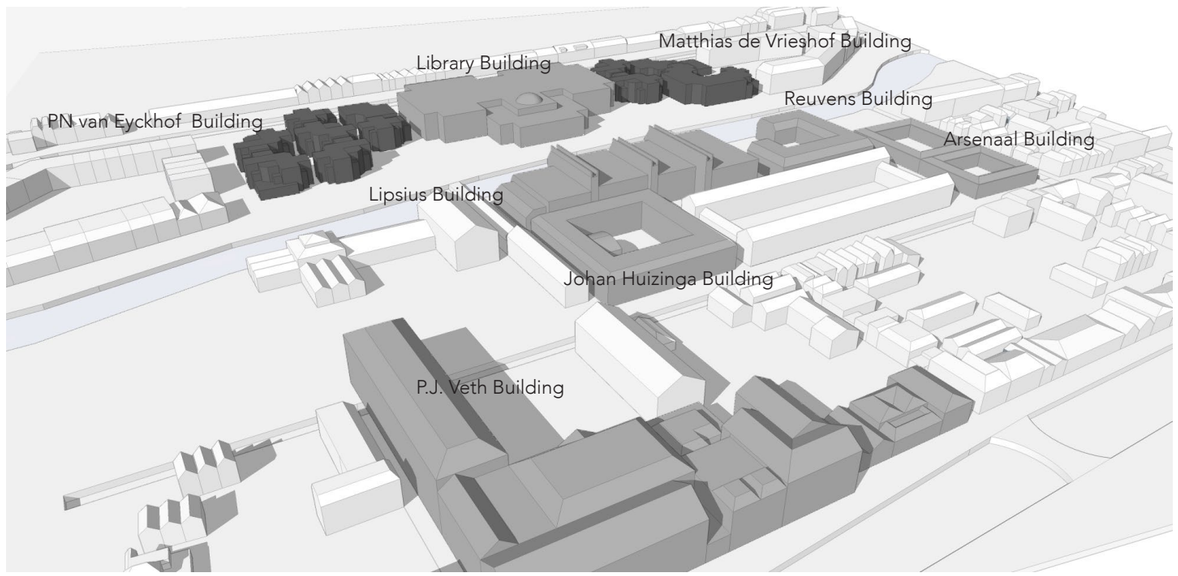

PN van Eyckhof Building


Narrow pathways and the distinguishing columns

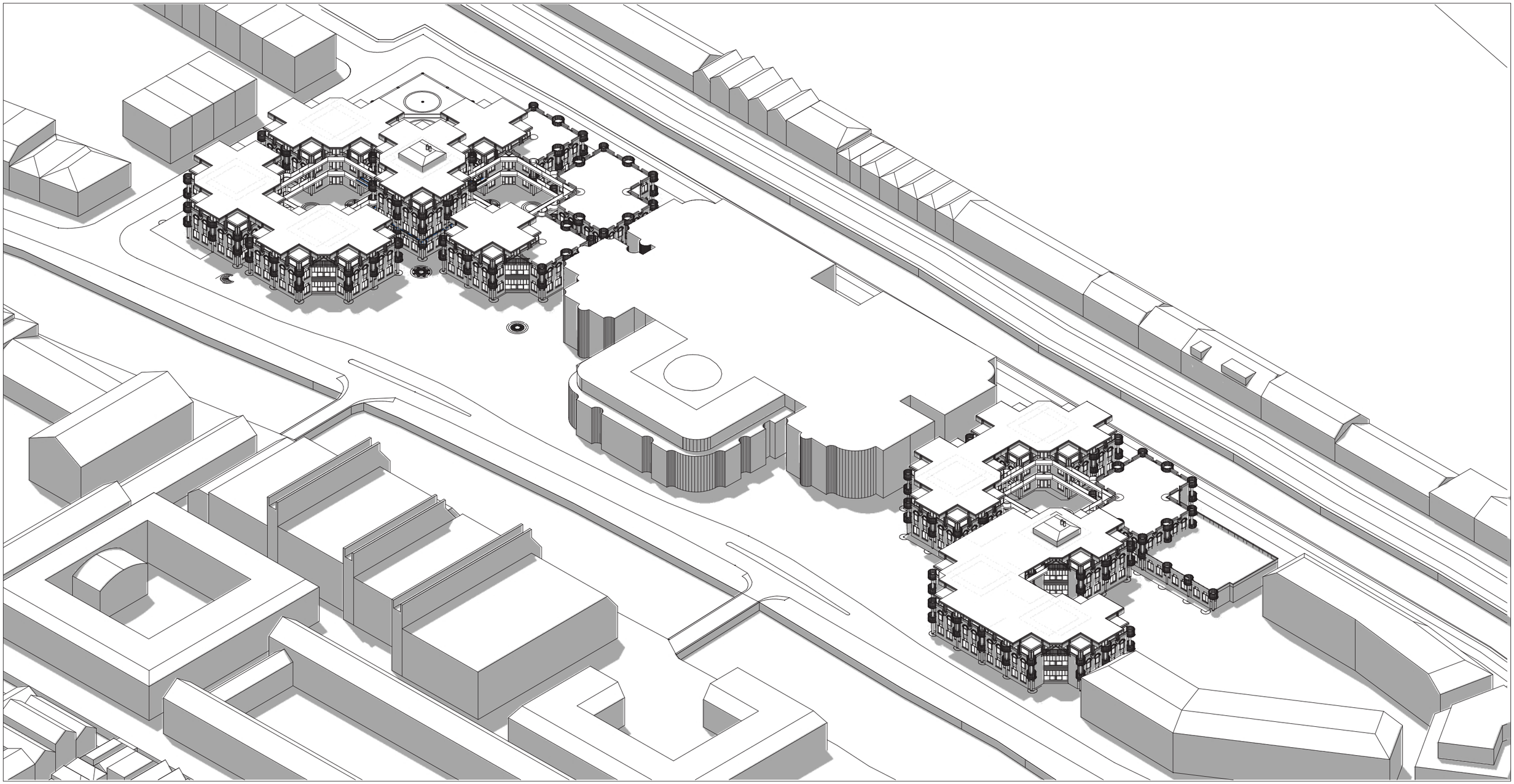

Pathways and cantilever roofs

Courtyards

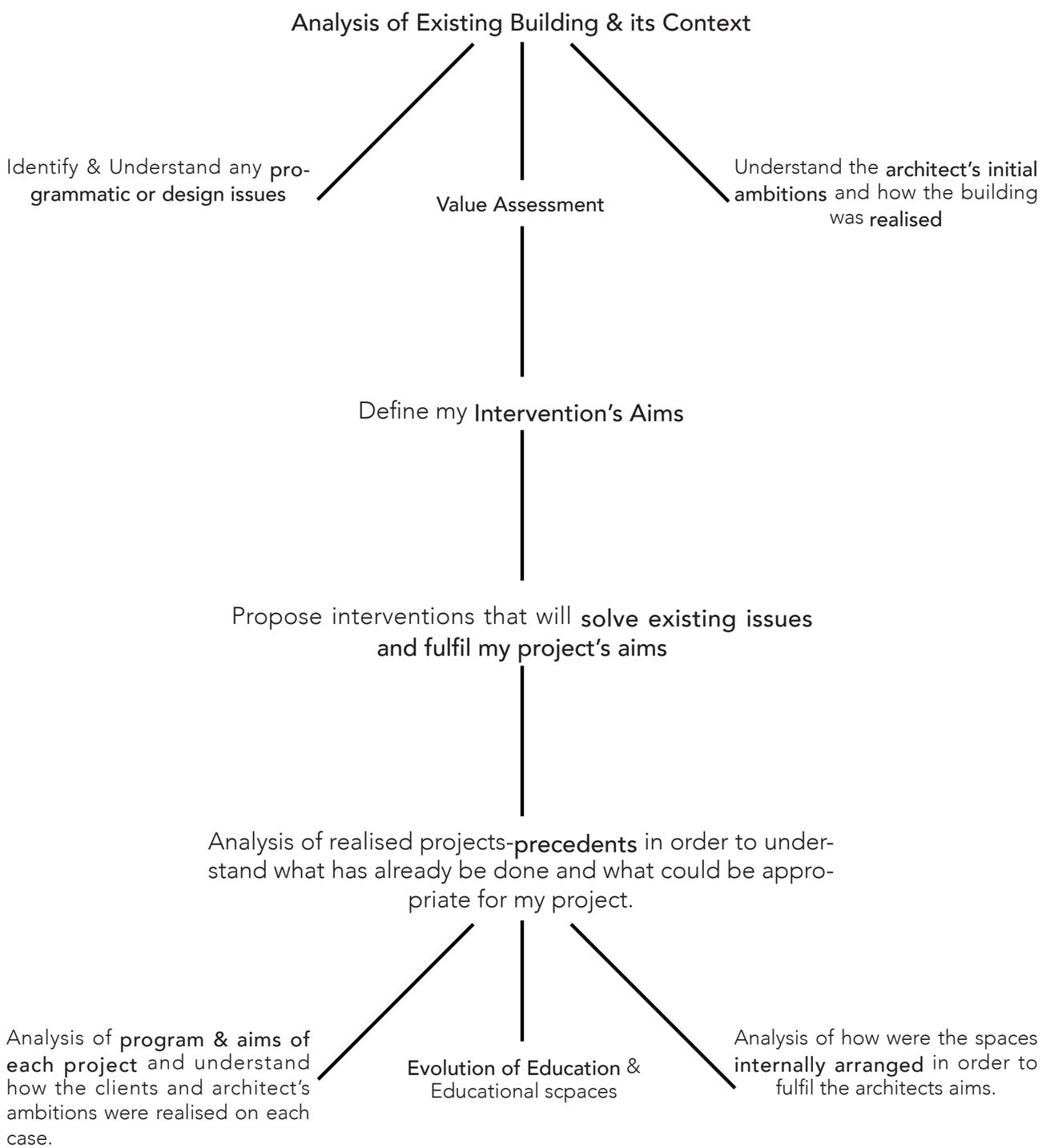




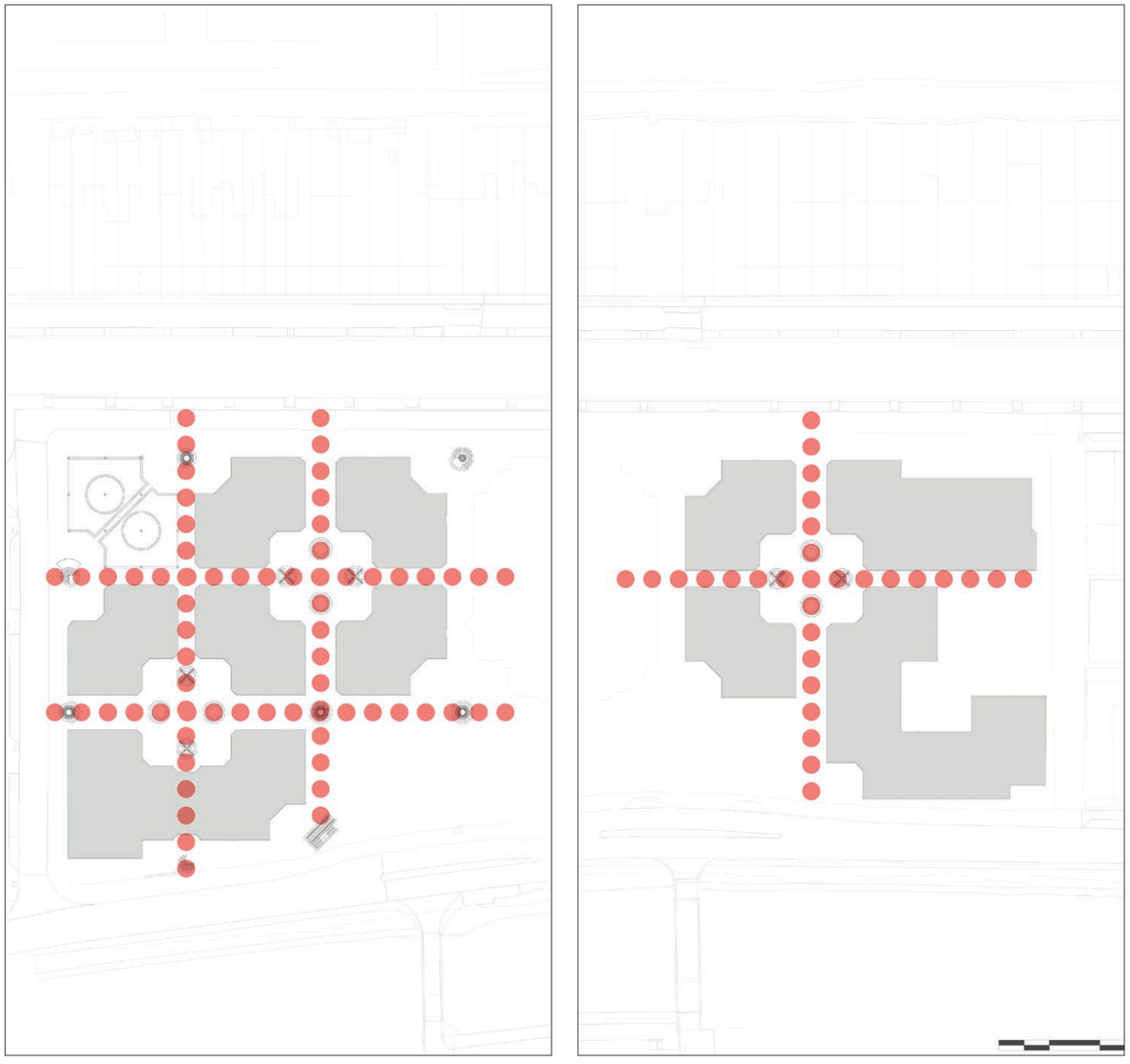
WSD Complex - The Site



Project Aims


Analysis of Existing Building & its Context
Identify & Understand any pro-grammatic or design issues
Value Assessment
Understand the architect's initial ambitions and how the building was realised
Define my Intervention's Aims
Propose interventions that will solve existing issues and fulfil my project's aims
Analysis of realised projects-precedents in order to under-stand what has already be done and what could be appro-priate for my project.
Analysis of program & aims of each project and understand how the clients and architect's ambitions were realised on each case.
Evolution of Education & Educational scpaces
Analysis of how were the spaces internally arranged in order to fulfil the architects aims.

Initial Concept - Ambitions

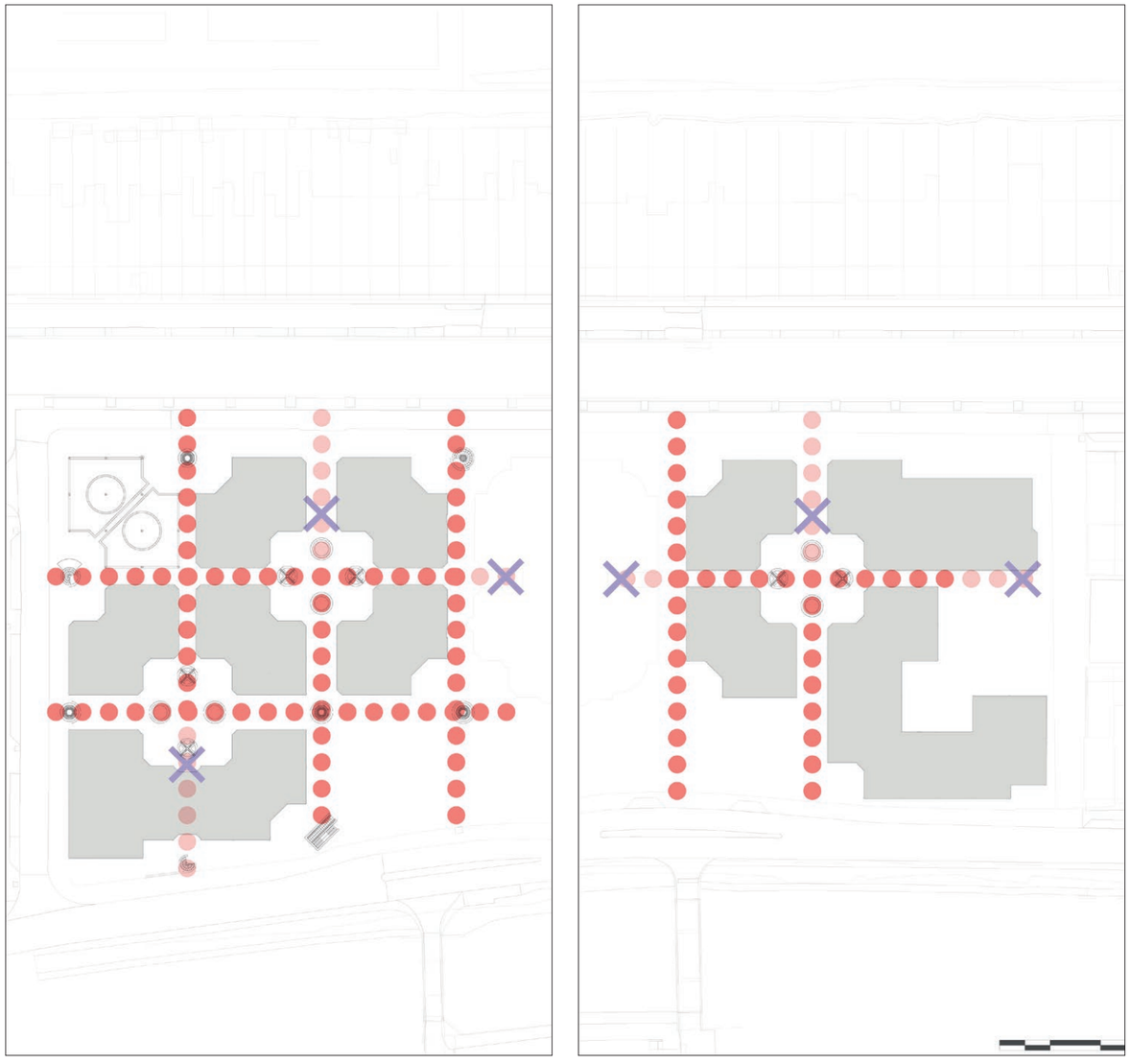


Axes

Following the Structuralism movement, Joop van Stigt, the building's architect, his ambition was to create a building open to its context initiating public interaction.

The perpendicular axes open up and connect the cluster to its context, highlighting the social character of the building.

Realised Proposal



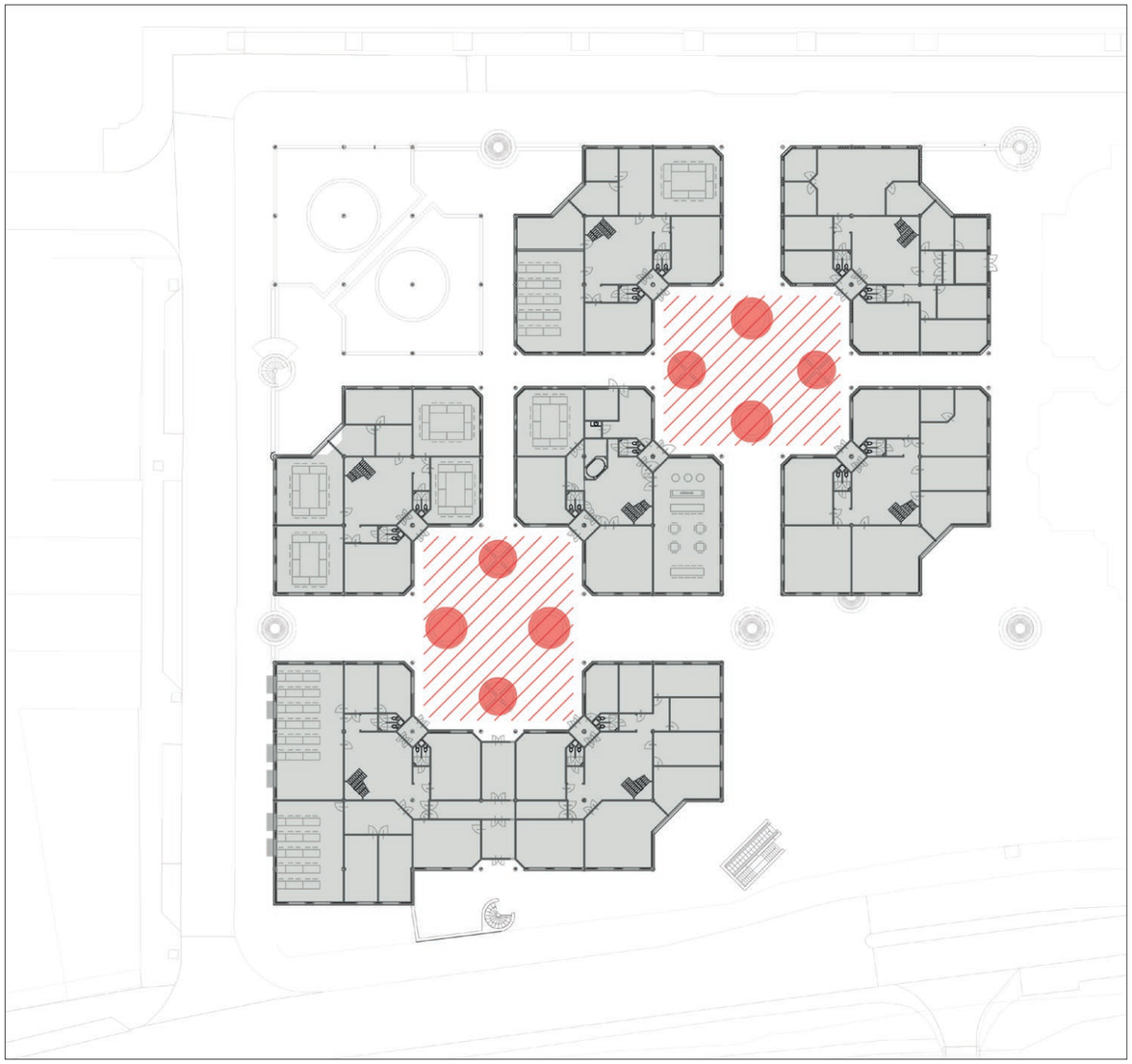
Axes

Despite the architect's original ambitions, to open up the building to its context, highlighting the social aspect of Structuralism, the axes do not function as they were originally intended.

On the diagram above one can see the points where the axes lead to a dead end or do not even exist. In both right and left clusters, the vertical axes are blocked, either by the underground parking or by buildings. On the other hand the horizontal axes guide the public to the library, which side entrances are not in function, leading to dead ends.

That being said, one can understand that the axes do not serve any purpose for the general public, making them functional only for the building's users.

Initial Concept - Ambitions

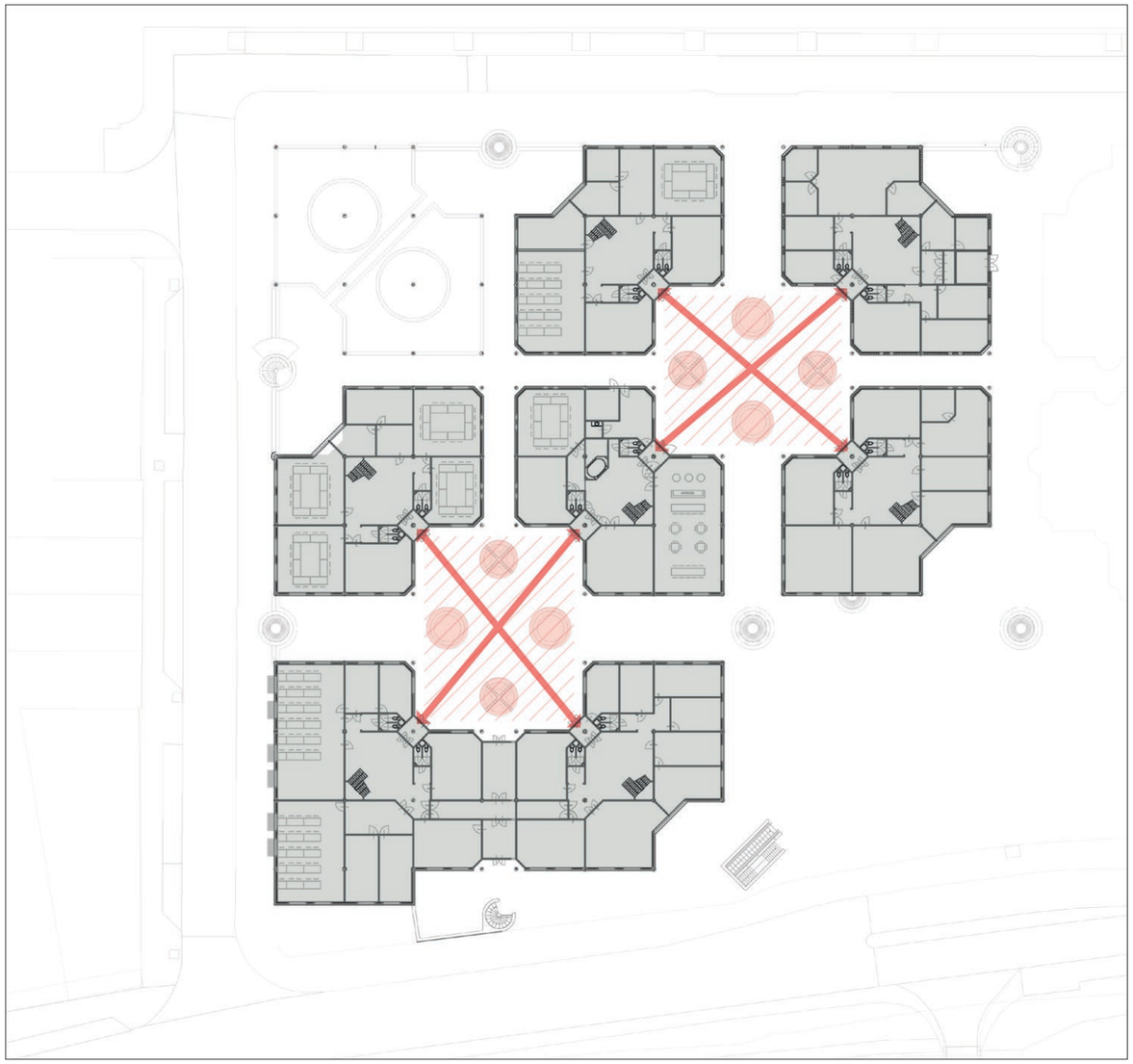


Courtyards

Additionally to the axes, the courtyards in the centre of both clusters, enhance the Structuralism idea of socialization and human interaction.

In order to stimulate human interaction and create a more pleasant environment for the users, round sitting elements and vegetation was added in the courtyards.

Realised Proposal



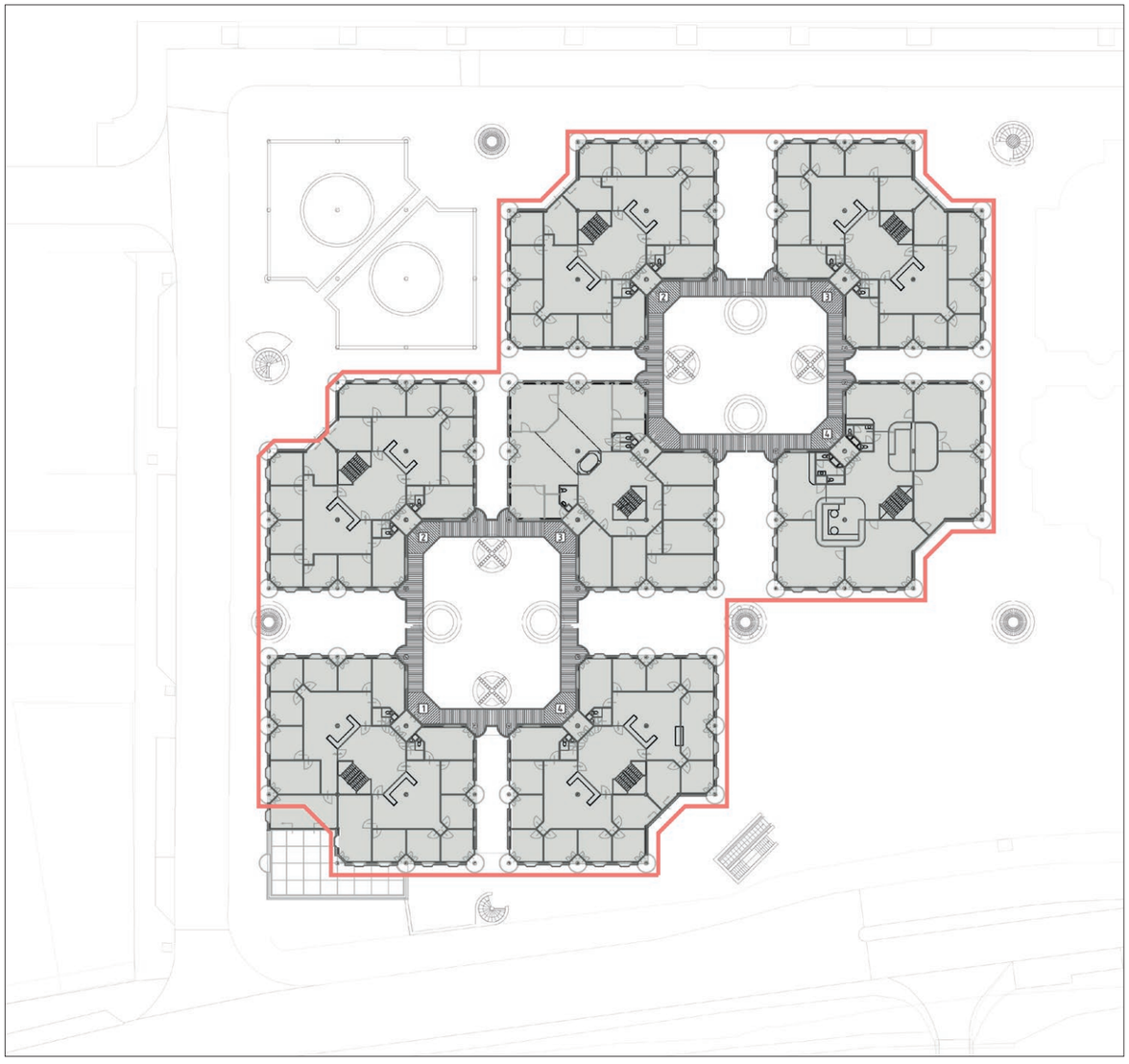
Courtyards

Despite the architect's intention to make the courtyards an interaction space that people would use as a meeting place, the spaces do not function as they architect had planned.

Currently there is no vegetation in the decorative round elements and the sitting areas are even barely used. Observing how people use the space, it only served circulation purposes, providing access to the buildings surrounding the courtyards.

The hard wall materials of the space together with the dark and cold atmosphere do not create a pleasant area, in order to stimulate human interaction.

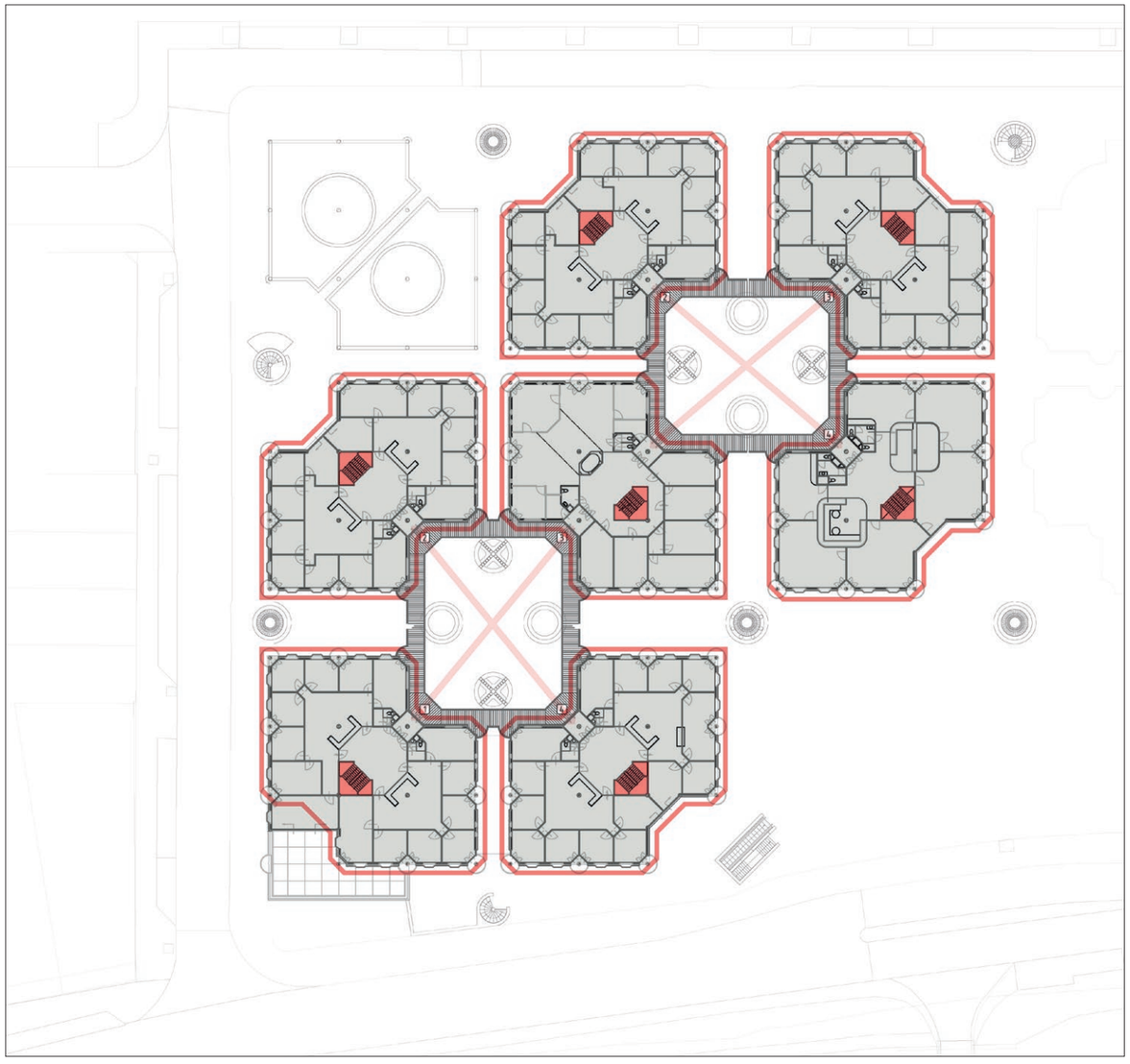
Initial Concept - Ambitions



Cluster

Looking at cluster's footprint, one can understand that this shape has been created by the overlapping of two squares. The overlapping (link) between the two squares the interactive (linking) idea of Structuralism, together with the axes which theoretically open up the building to its context and the courtyards are all elements which prove the architects original intention to create a cluster whose individual buildings (components) function all together as one unit.

Realised Design



Cluster

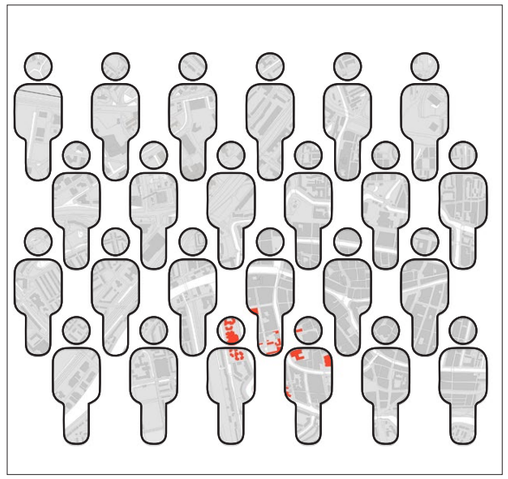
Once again, the architect's original ambition were never realised. In reality, each volume functions individually. Because of the main circulation areas (staircases) being in each building's core and the courtyards are not a pleasant environment for the users, to spend time, the idea of all building functioning as one, is lost.

Being on site, and observing the way people experience and use the space, one can see that the way the functions are arranged in the buildings there is no real need for students to move from one building to another. This, together with the lack of an enjoyable exterior space that could stimulate student to use it, has isolated each of the buildings. This has resulted in loosing the theoretical links between the volumes, that would make them function all together as a composition.

Realised Proposal

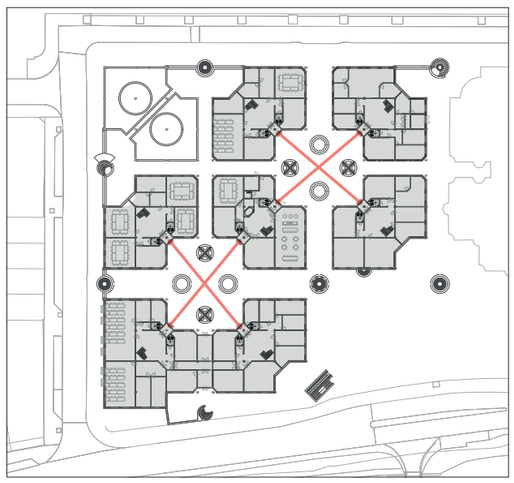
Reconnect the University with Leiden

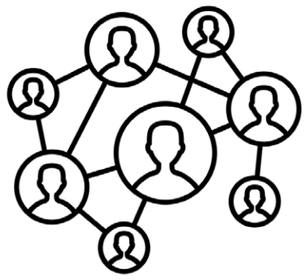
One of my project's aims is to connect the University to Leiden. This would require alterations in the building's form as well as program.



Lively & Functional Courtyards

One of my project's aims it to make the courtyards function according to the architect's initials ambitions.

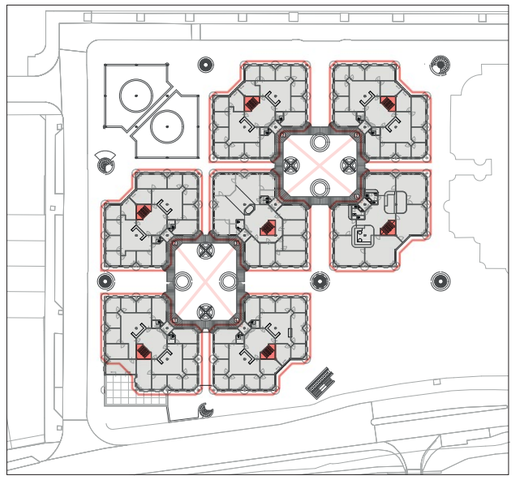


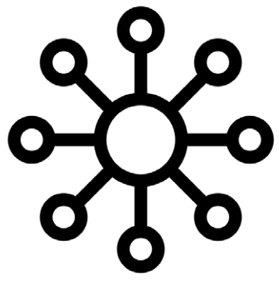


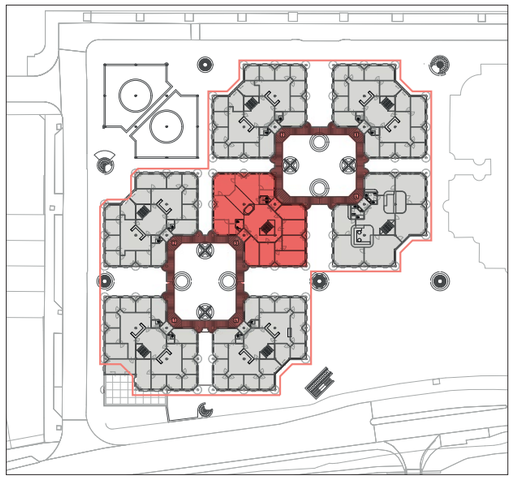
In order to achieve this, interventions on the courtyard need to take place, making the courtyards a more pleasant and functional space.

One Building

Making the buildings function as one unit is one of the most significant aspects that I am aiming to achieve with my intervention

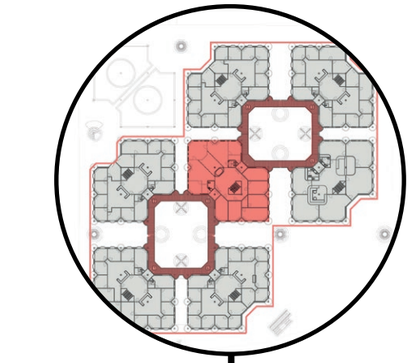






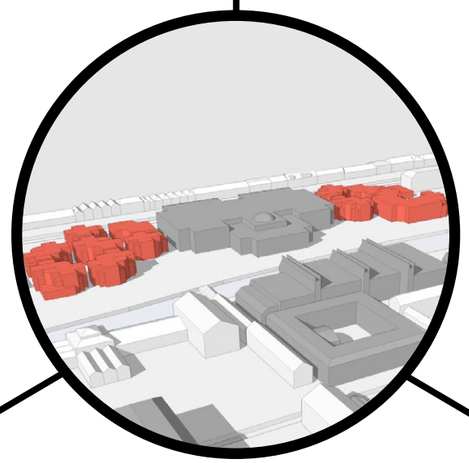
Using the middle volume and the bridges as a linking element between the cluster's two squares, my aim is to unite the building's isolated components.

Design Aims



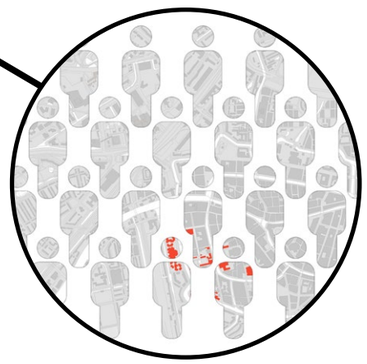
Small Scale

Connect the individual volumes of each cluster with each other and make them function as one unit.



Medium Scale

Connect the PN van Eyckhof & Matthias de Vrieshof Buildings with the rest of Leiden's University's buildings.



Large Scale

Connect the University with the society. Make it an integral part of Leiden.

These Aims can be achieved by....

Understanding the Architect's original design ambitions & bring them into realisation

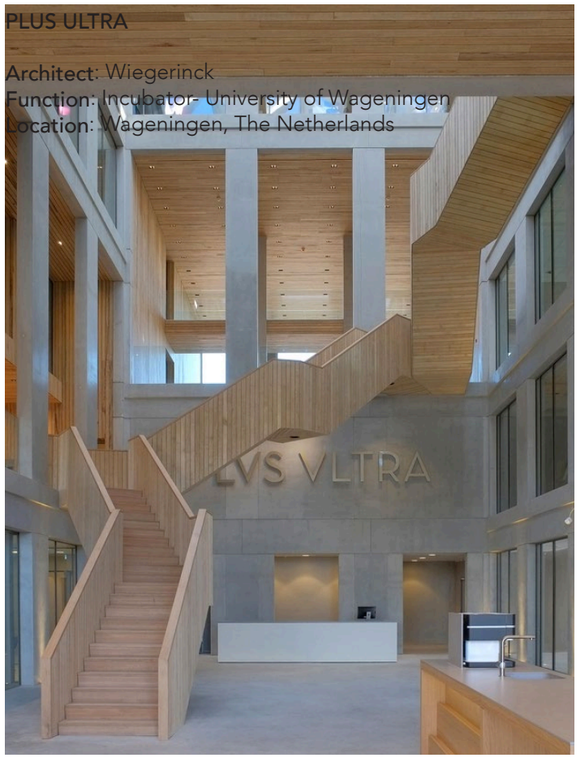
Programmatic Interventions

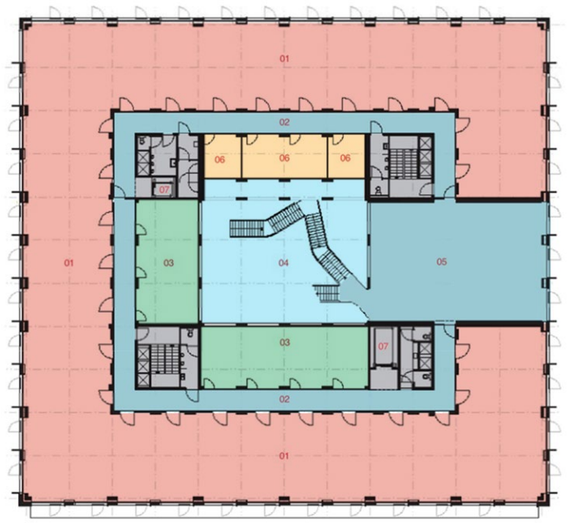
Architectural Interventions

Programmatic Interventions

Precedent Analysis

Precedent Analysis

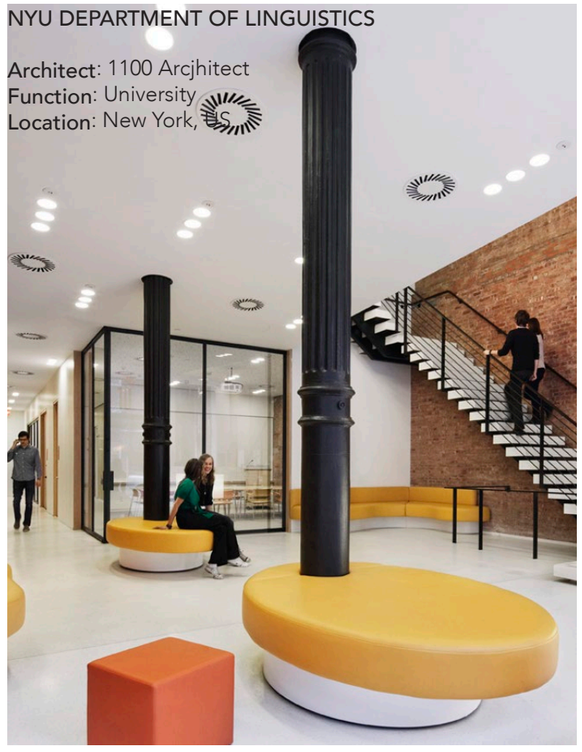




Floor Plan

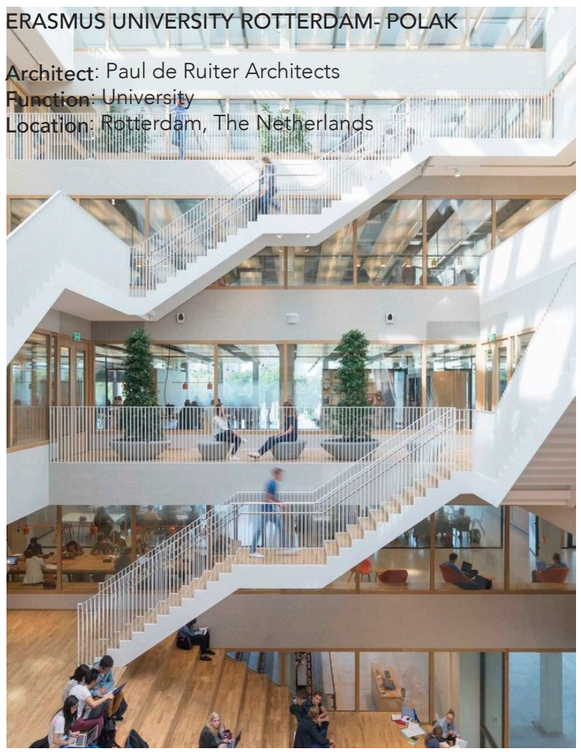
KEY

- Circulation Space
- Office Spaces
- Lecture Theatres
- Teaching Spaces
- Individual Study Spaces
- Meeting Rooms
- Public Spaces- eg. Cafe
- Utility Spaces
- Other

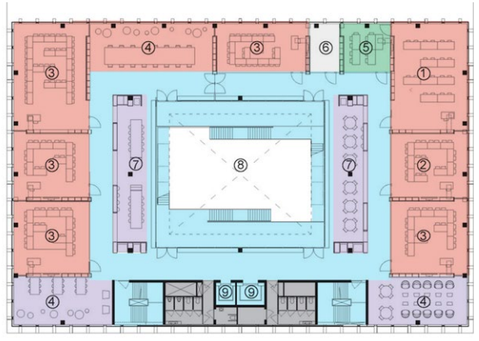


First Floor Plan

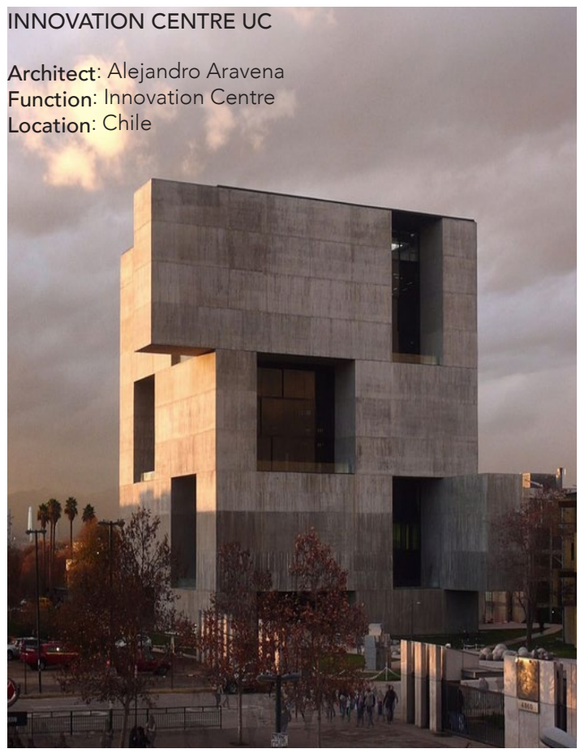
Second Floor Plan



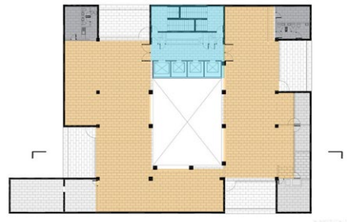
Ground Floor Plan



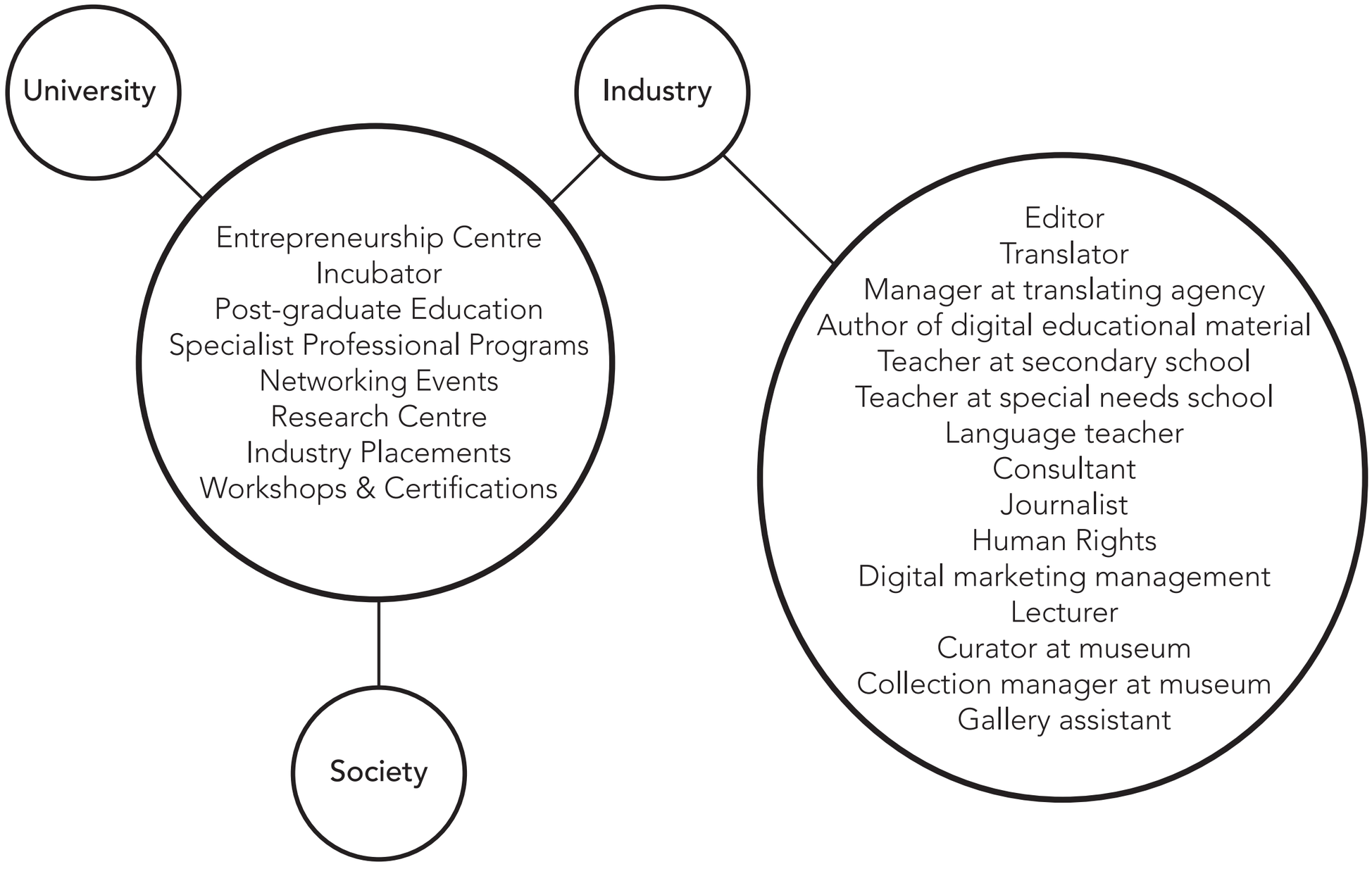
Third Floor Plan



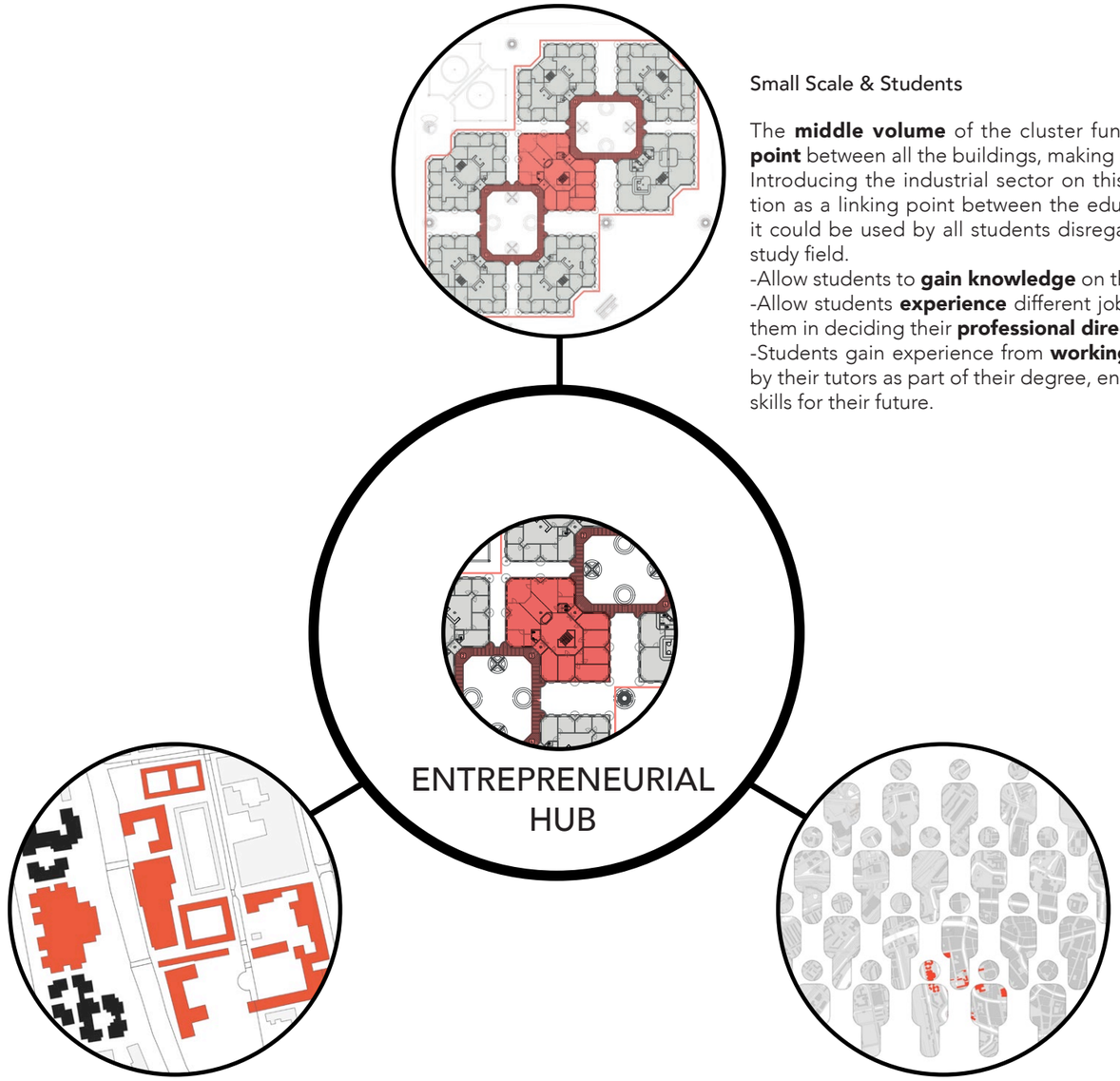
Third Floor Plan



Fifth Floor Plan


University
Industry
Entrepreneurship Centre
Incubator
Post-graduate Education
Specialist Professional Programs
Networking Events
Research Centre
Industry Placements
Workshops & Certifications
Editor
Translator
Manager at translating agency
Author of digital educational material
Teacher at secondary school
Teacher at special needs school
Language teacher
Consultant
Journalist
Human Rights
Digital marketing management
Lecturer
Curator at museum
Collection manager at museum
Gallery assistant
Society

Introducing the Industry Sector to the University



Small Scale & Students

The **middle volume** of the cluster functions as the **linking point** between all the buildings, making it "unique".
Introducing the industrial sector on this volume would function as a linking point between the educational buildings, as it could be used by all students disregarding their particular study field.
-Allow students to **gain knowledge** on the **professional field**.
-Allow students **experience** different job positions, and assist them in deciding their **professional direction**.
-Students gain experience from **working in practice**, guided by their tutors as part of their degree, enriching them with vital skills for their future.

Medium Scale

The addition of an incubator & entrepreneurship centre, were students can **interact with professionals** can draw the attention of students from different departments.
-This addition could become the university's new **"front image"**, showing its **innovative character** and **strengthening** its position in the educational market.
-**Students placement** as part of their degree would also allow the university to make a profit allowing it to invest more on the development of the university.

Large Scale

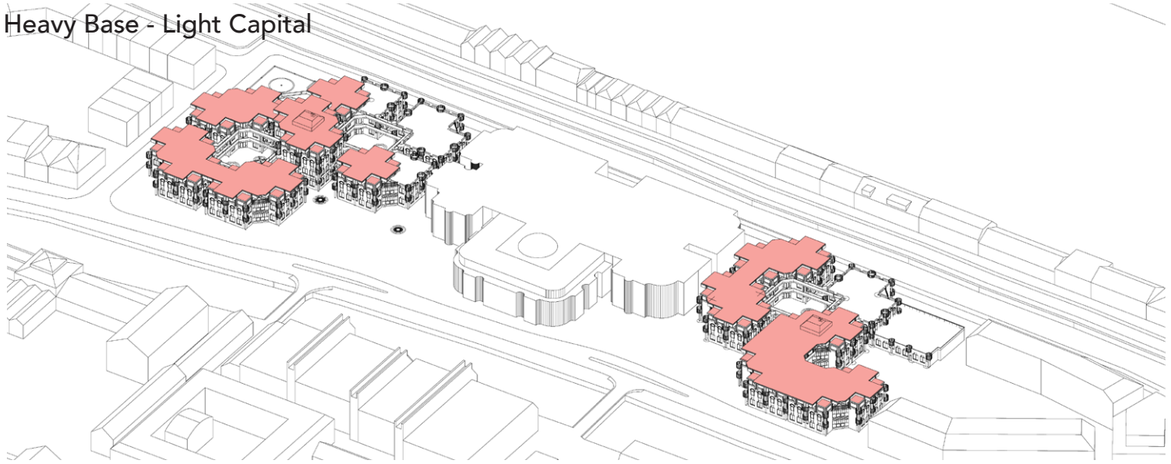
The addition of a new function in the university that would be open for **interaction-partnerships with off-campus companies** and the people of Leiden, would make the university open to the city and to external-non-related parties in general, **linking** the university with **Leiden** and the **educational & industrial world.**
-Students will also **provide services** to the **general public** on specific professional positions that will be held in the university.

Architectural Interventions

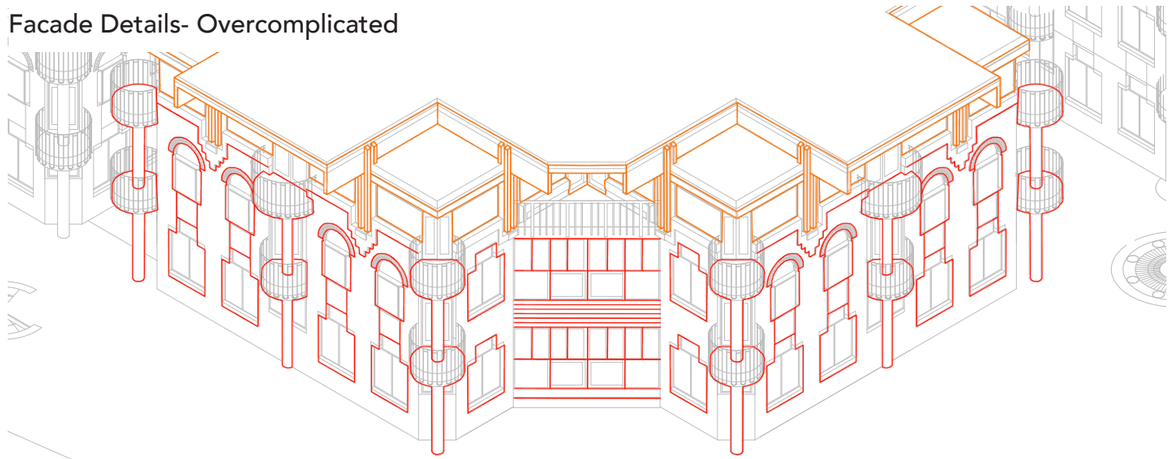
Existing Building & Precedent Analysis

WSD Complex - Volume Analysis

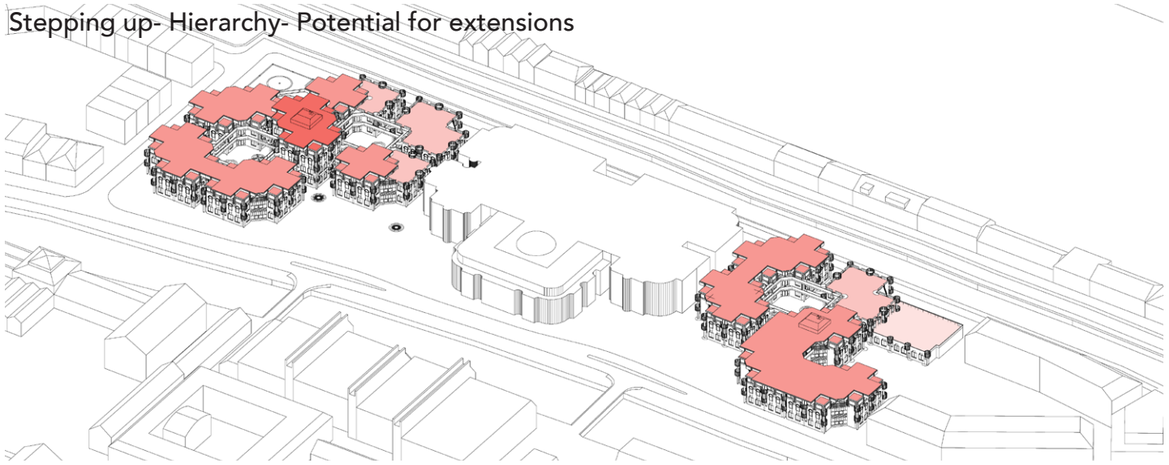
Heavy Base - Light Capital

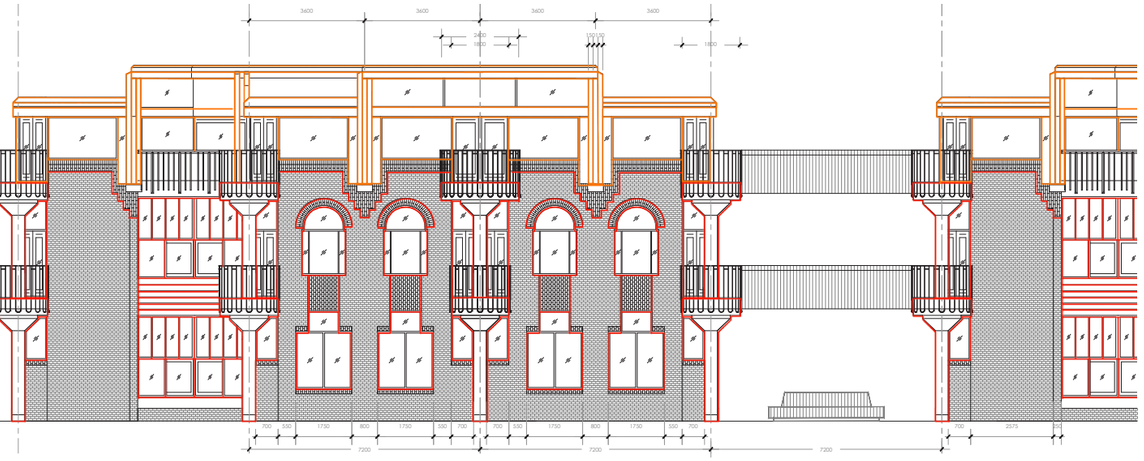


Facade Details- Overcomplicated

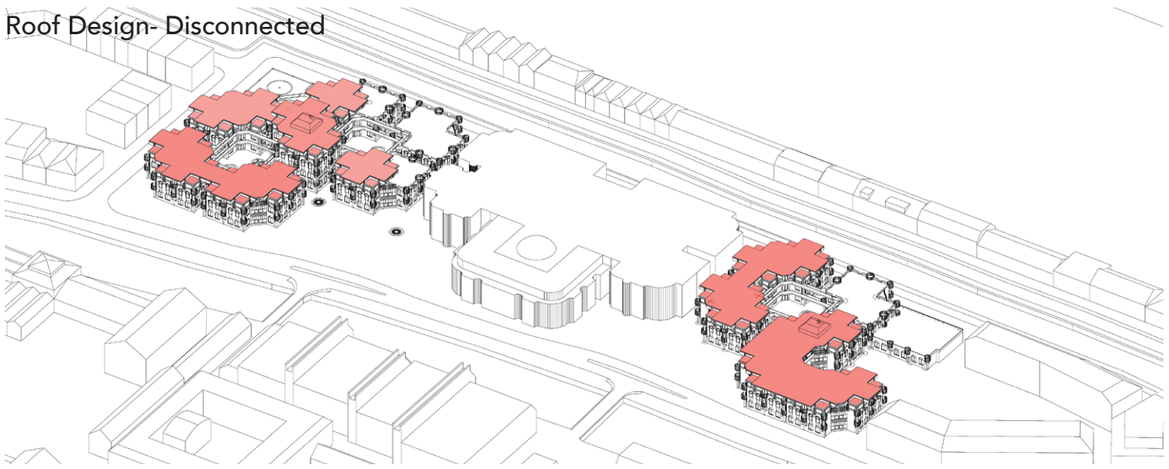


Stepping up- Hierarchy- Potential for extensions

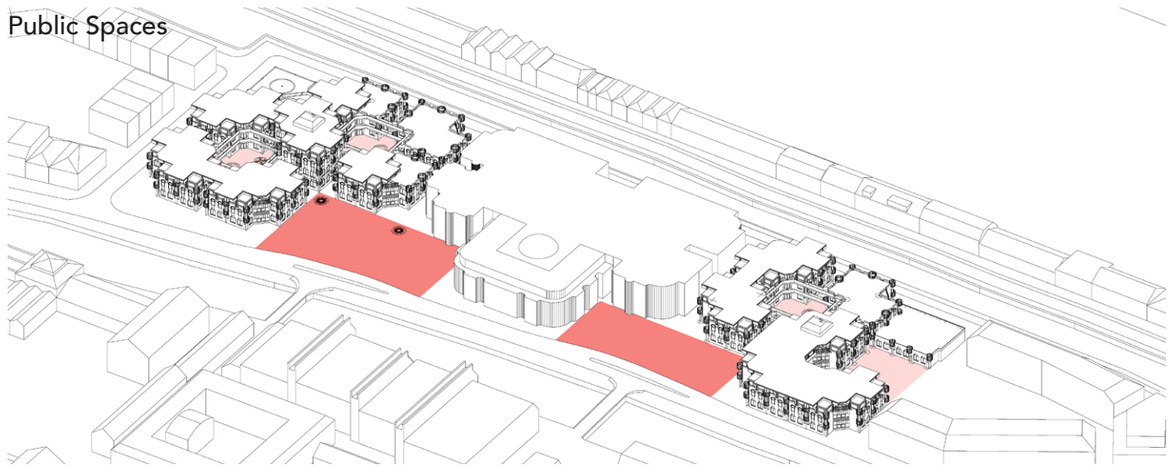




Roof Design- Disconnected

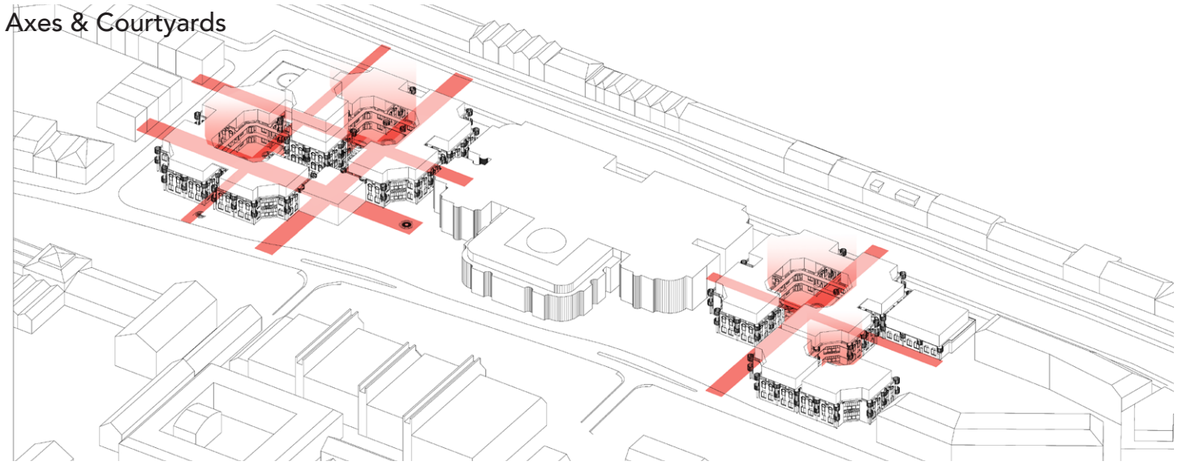


Public Spaces

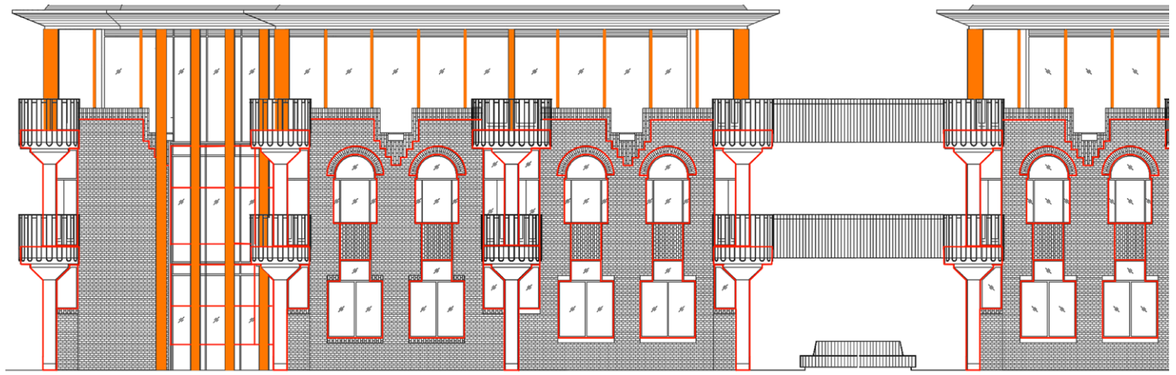


Proposal Concept

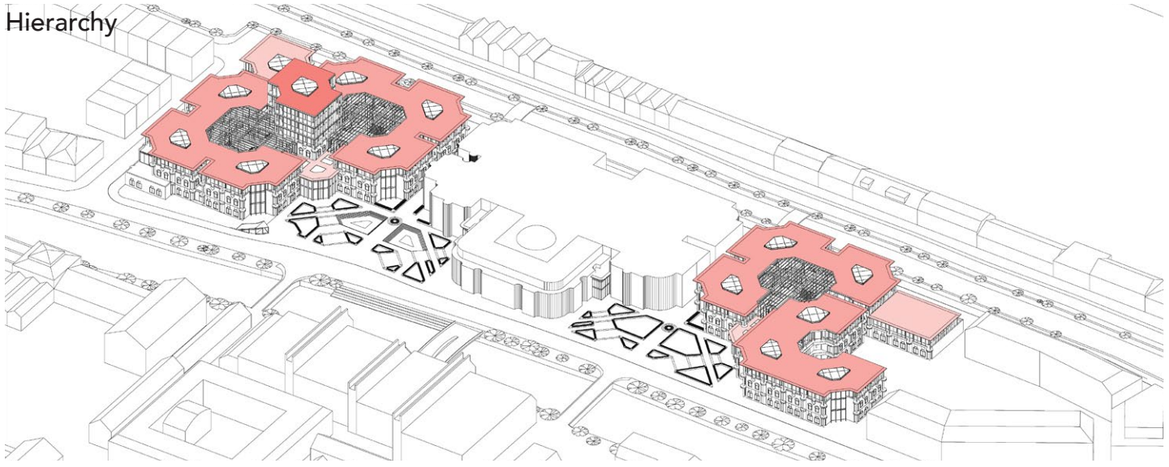
Axes & Courtyards



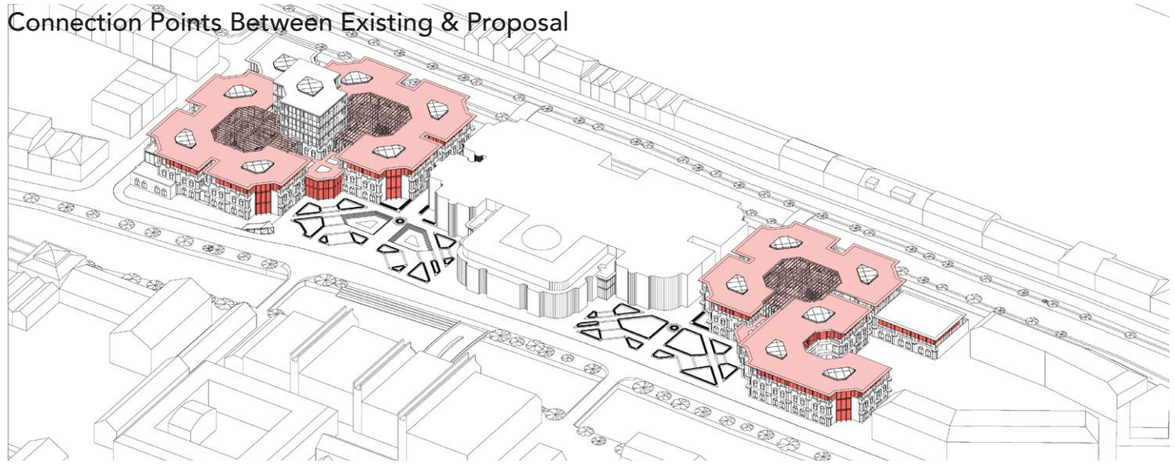
Detailed Base- Simple Top



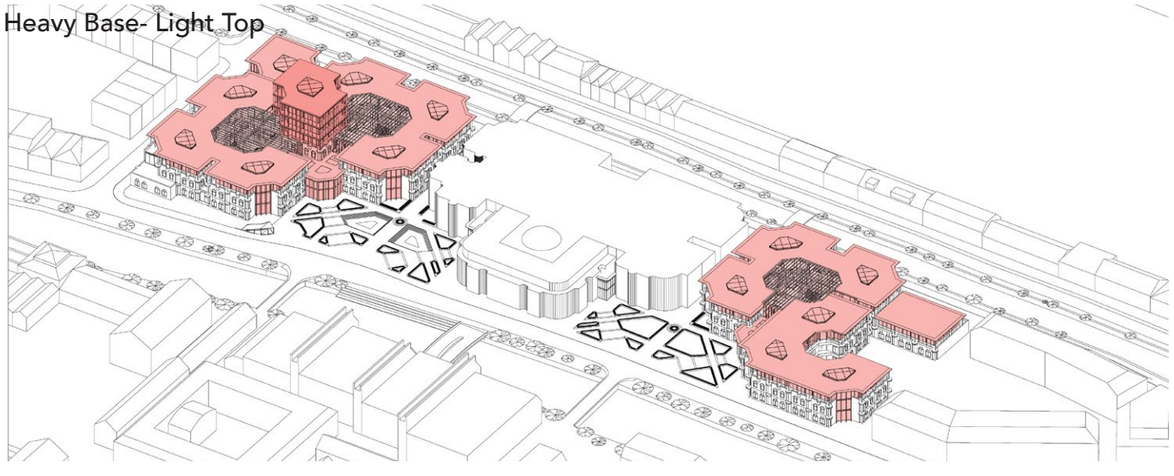
Hierarchy



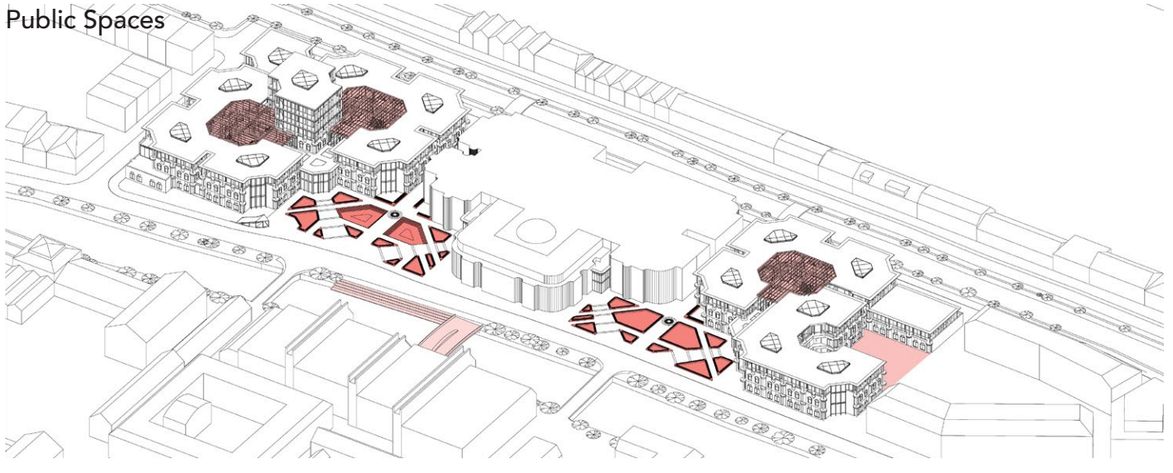
Connection Points Between Existing & Proposal



Heavy Base- Light Top

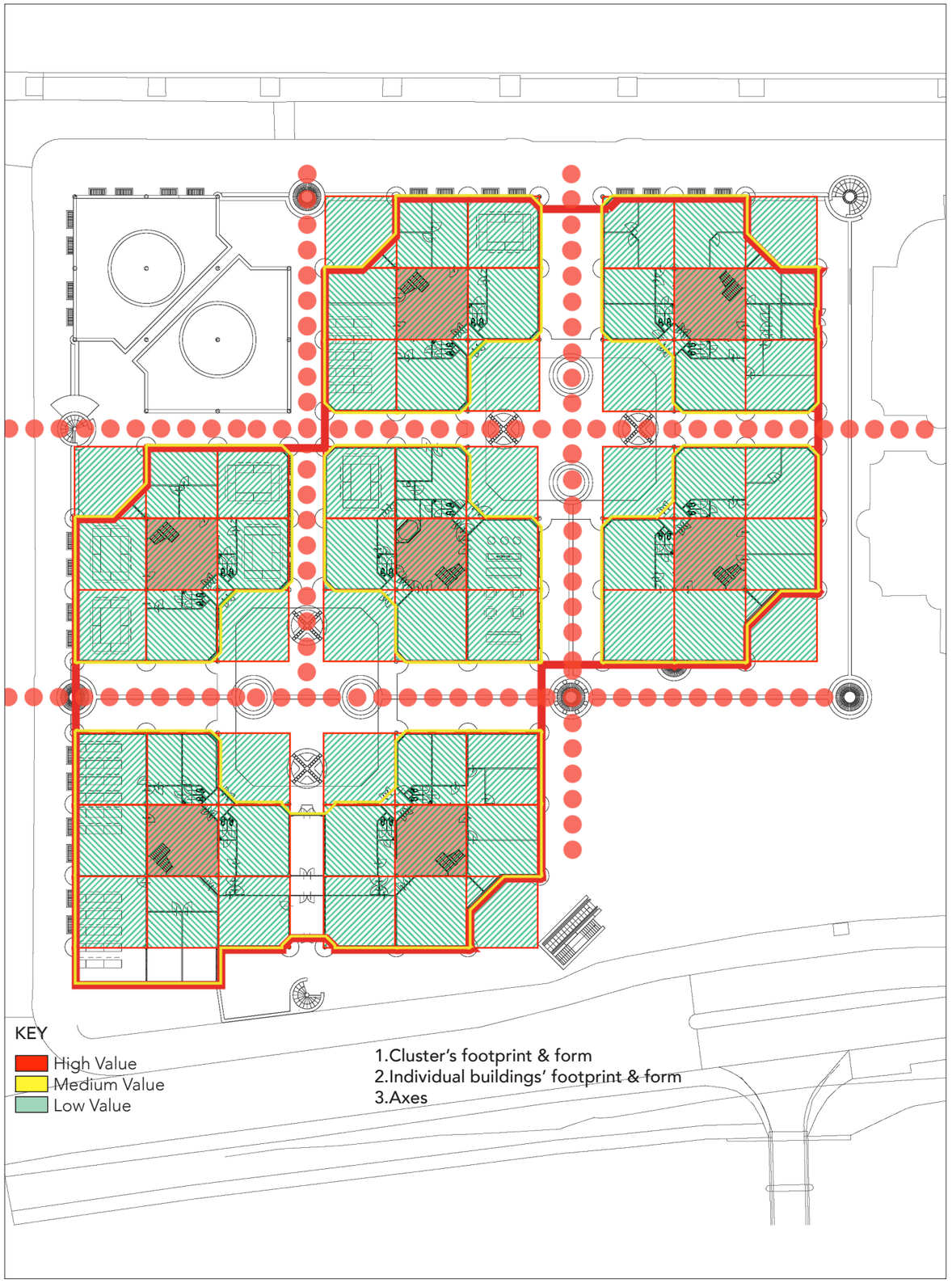


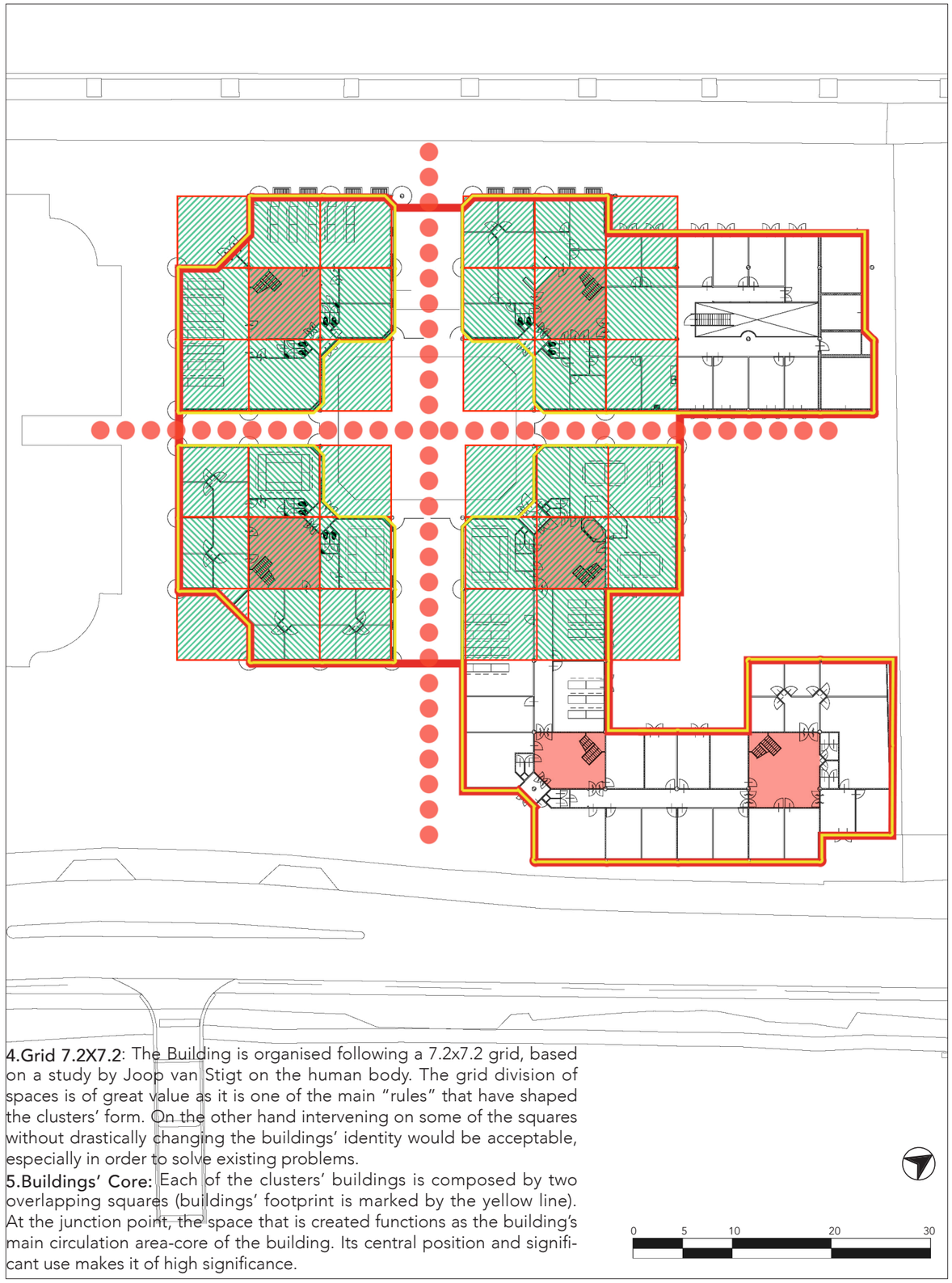
Public Spaces



Value Assessment

WSD Complex - Value Assessment





4.Grid 7.2X7.2: The Building is organised following a 7.2x7.2 grid, based on a study by Joop van Stigt on the human body. The grid division of spaces is of great value as it is one of the main "rules" that have shaped the clusters' form. On the other hand intervening on some of the squares without drastically changing the buildings' identity would be acceptable, especially in order to solve existing problems.

5.Buildings' Core: Each of the clusters' buildings is composed by two overlapping squares (buildings' footprint is marked by the yellow line). At the junction point, the space that is created functions as the building's main circulation area-core of the building. Its central position and significant use makes it of high significance.

WSD Complex - Value Assessment Façades

Reinforced concrete structure

Use value : (+) Very durable structural materials /
In a good condition
(-) Cold bridge issues

Material significance : (+) Washed texture
(-) Common building material

Composition : (+) The form of these columns dominates the overall appearance of the buildings / Correspond with Library Bld.

Brick ornaments

Use value : (+) Load bearing
(-)

Material significance : (+) Extrude brick was a common building materials after 1850
(-)

Composition : (+) Expression of the craftsmanship and identity of Joop van Stigt

Steel railings

Use value : (+)
(-) The balconies are seldom used

Material significance : (+)
(-) Rusted material

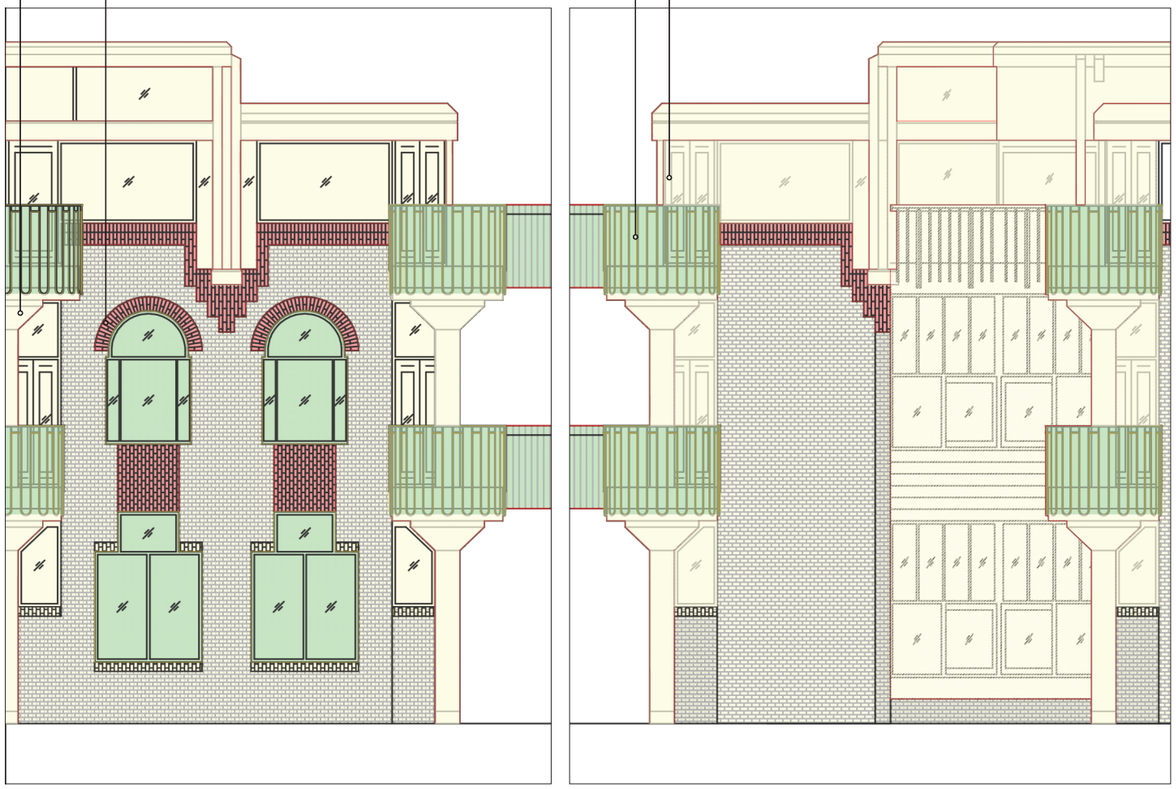
Composition : (+) gives a lighter appearance for the massive block

Timber framed openings

Use value : (+) Daylight /
No cold bridge issue
(-) The balconies are seldom used

Material significance : (+) In a good condition / Very durable wood species
(-)

Composition : (+) Light top frame / minimalist



Timber framework

Use value : (+) Very durable structural materials /
No cold bridge issue

Material significance : (+) In a good condition
(-)

Composition : (+) Cantilever timber beams represent Van Stigt's design identity

Brick masonry

Use value : (+) Load bearing
(-)

Material significance : (+) Extrude brick was a common building materials after 1850
(-)

Composition : (+) Colour and texture of brick masonry walls dominates the overall appearance of the buildings

Timber railings

Use value : (+) Very durable structural materials /
No cold bridge issue
(-) The link-bridges are seldom used

Material significance : (+)
(-) Weathering material

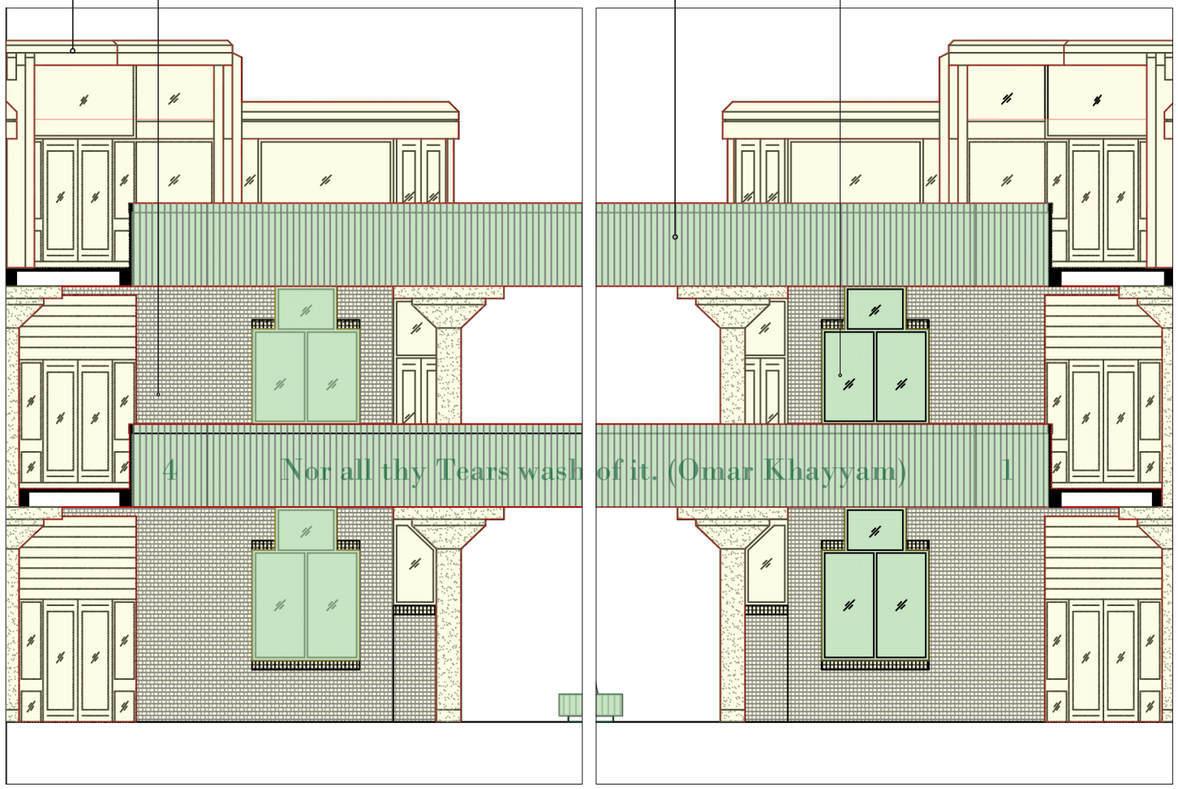
Composition : (+) Colour and texture of timber railings dominates the overall appearance of the internal courtyards

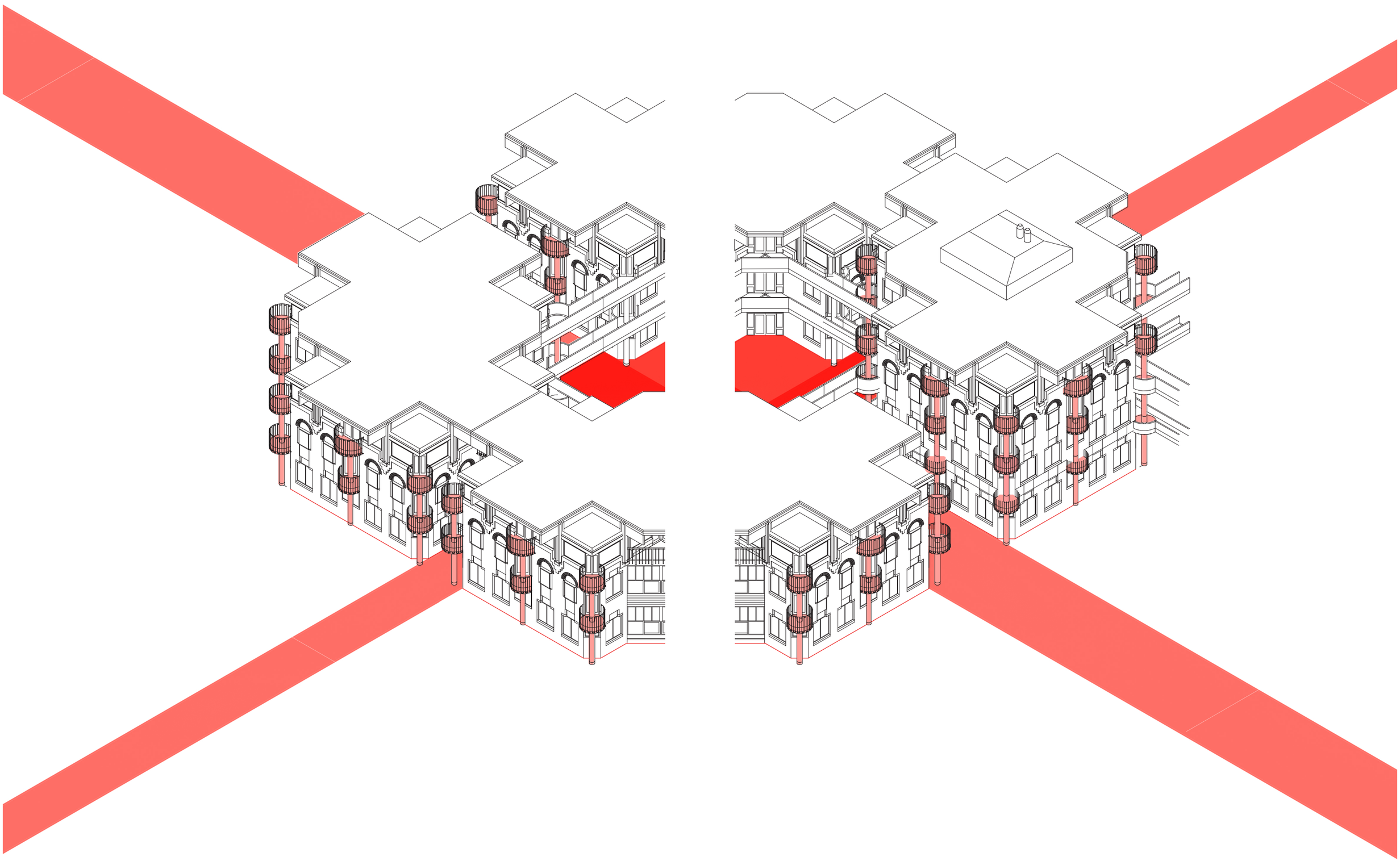
Steel framed openings

Use value : (+) Daylight
(-) Cold bridge issues

Material significance : (+) In a good condition
(-) Cold bridge issues

Composition : (+) Light frame / minimalist

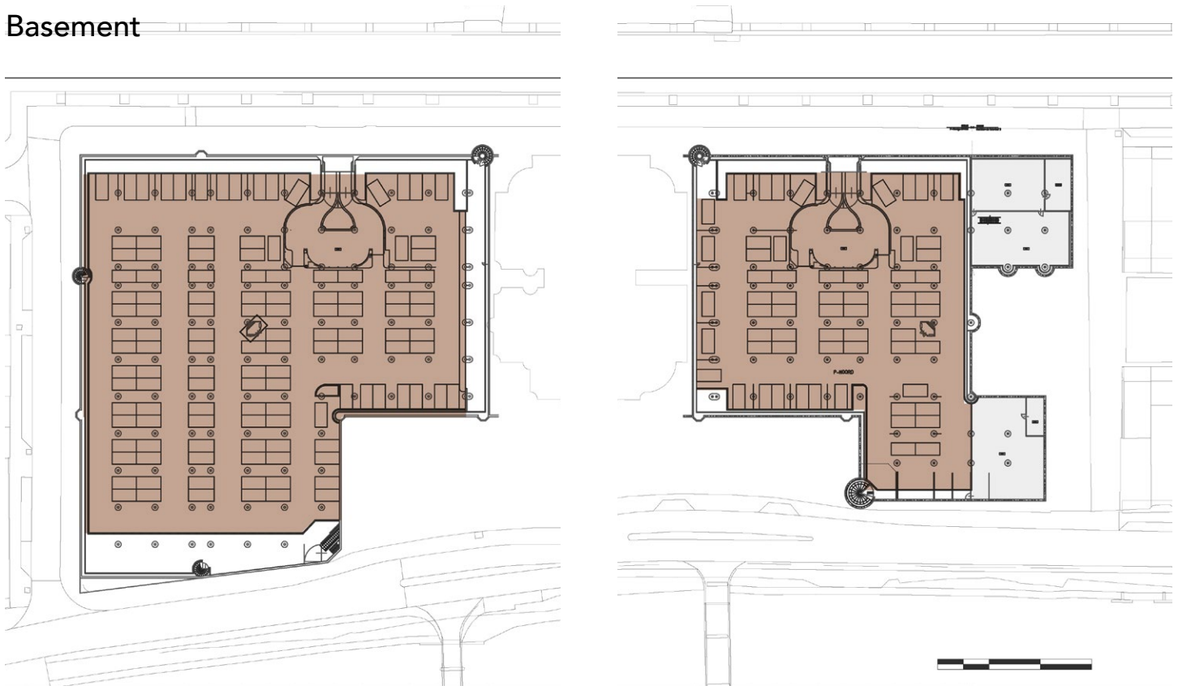




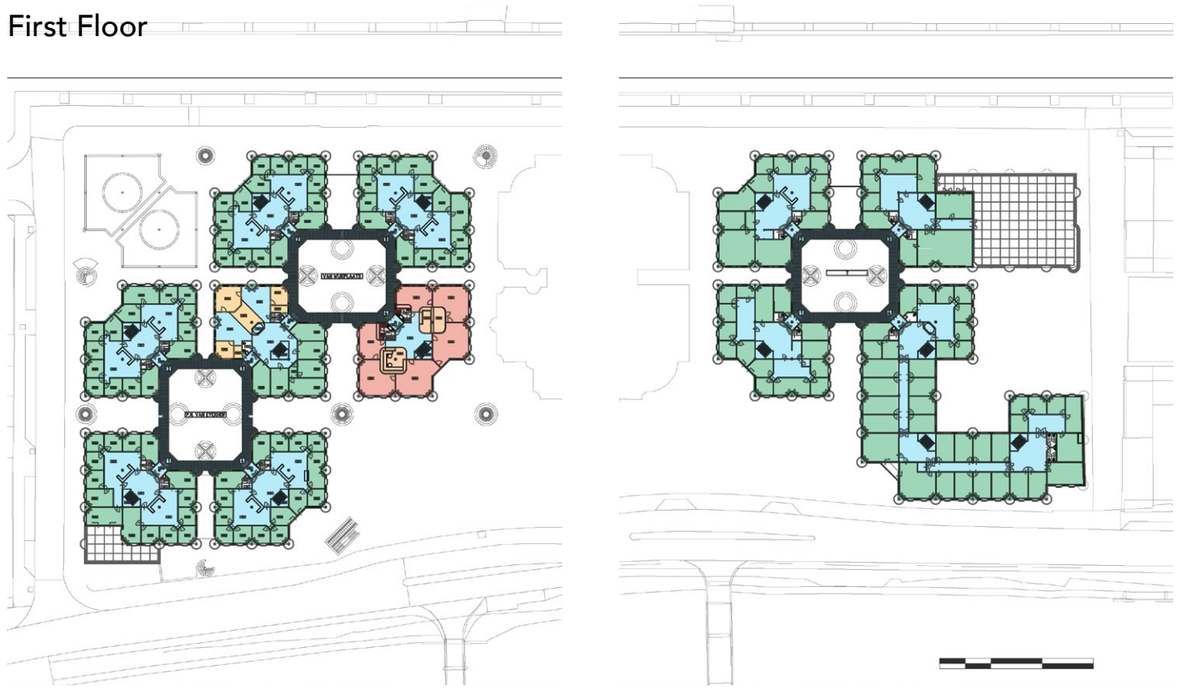
Plan Analysis & Transformation Framework

Existing Plan Analysis - Basement

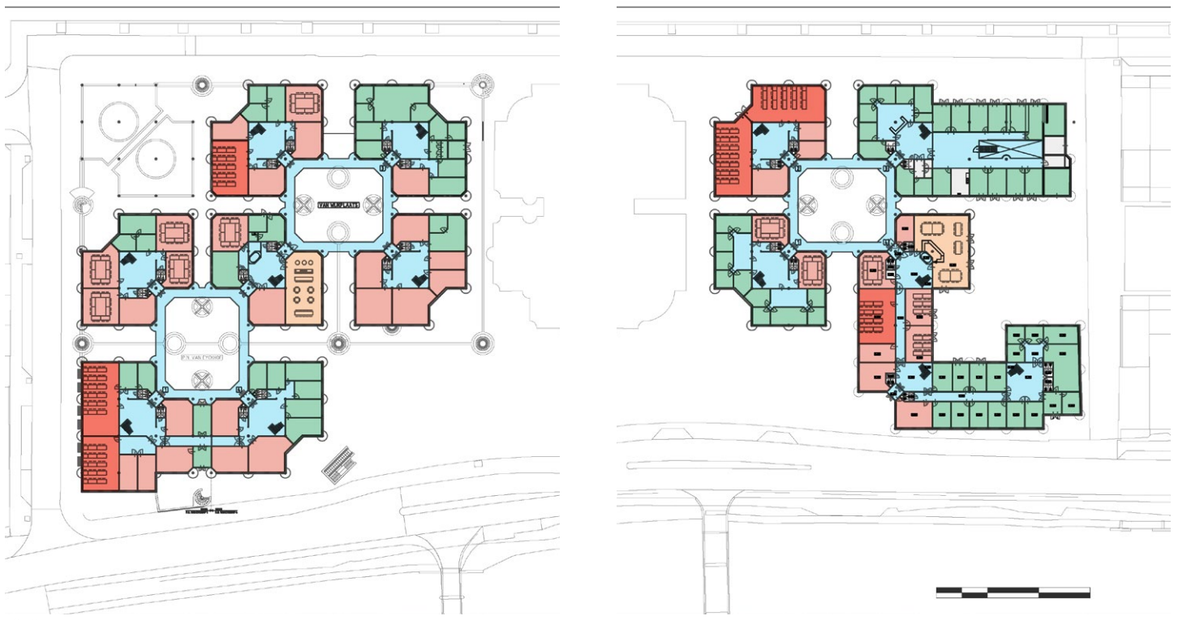
Basement



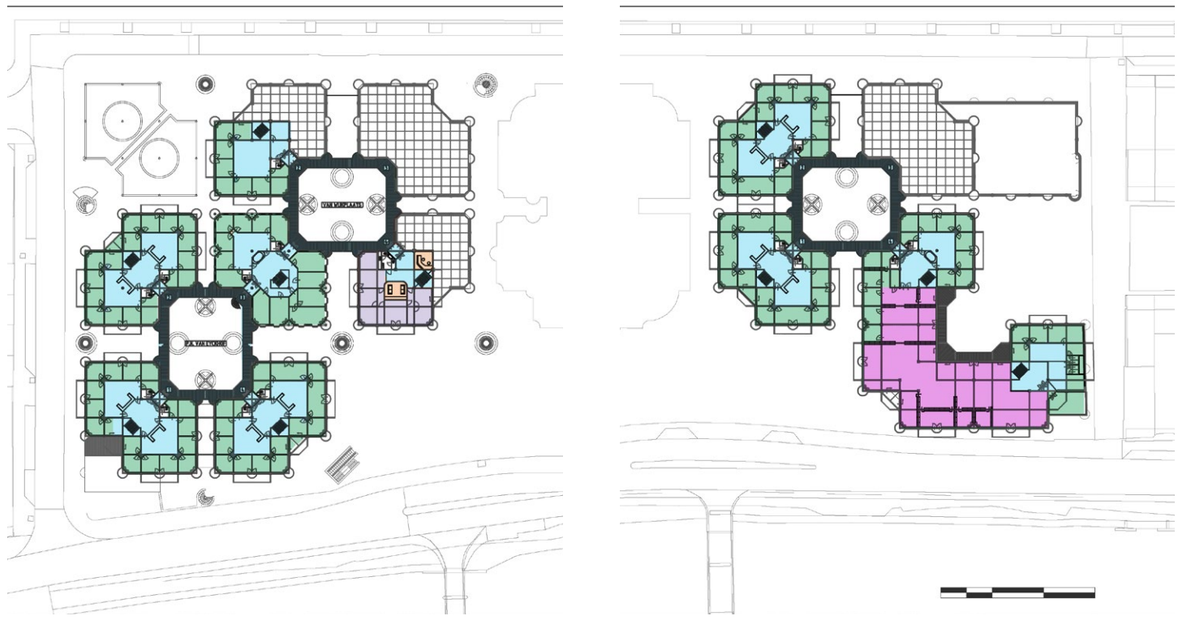
First Floor



Ground Floor



Second Floor

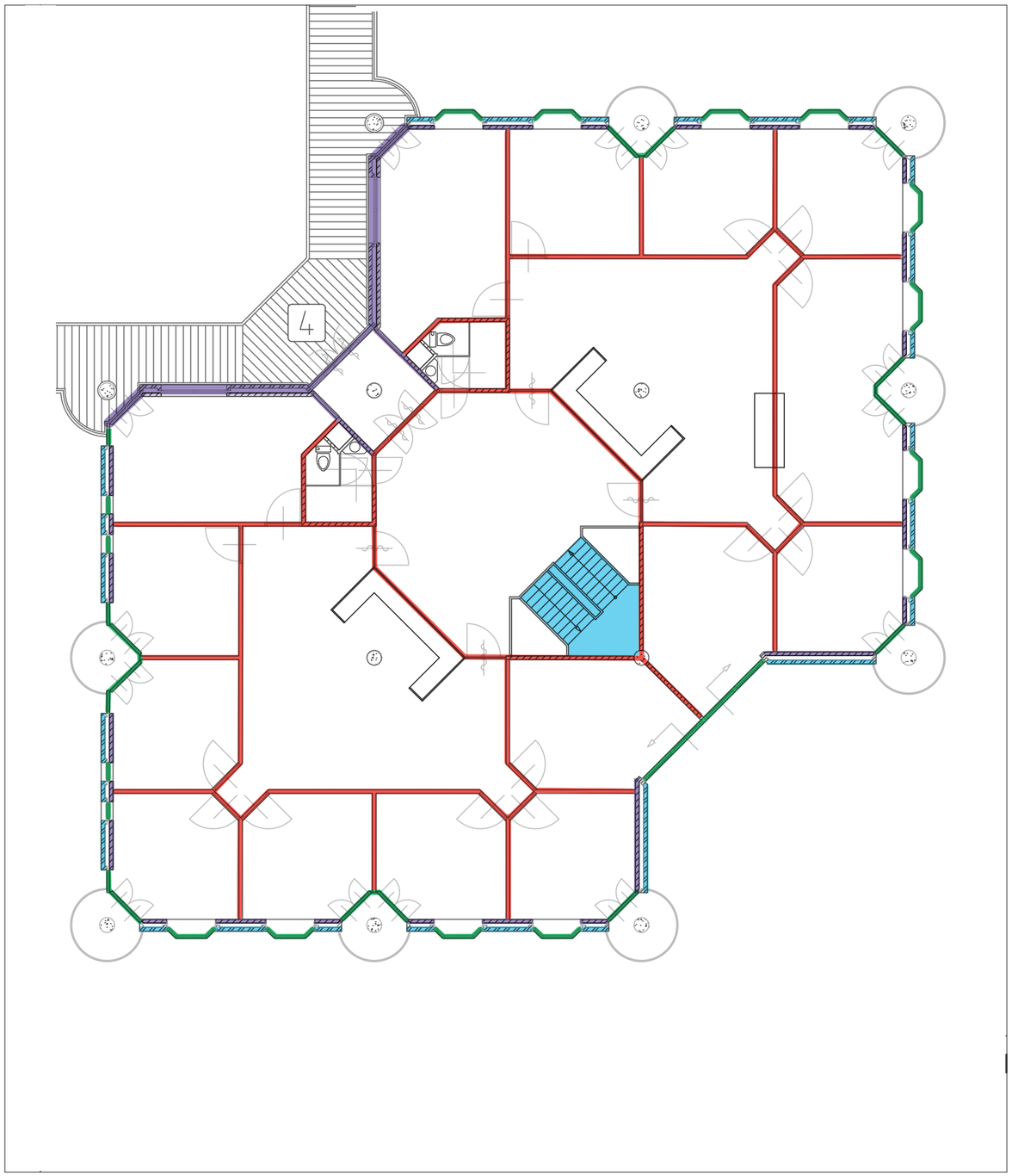


KEY

- Circulation Space
- Office Spaces
- Lecture Theatres
- Teaching Spaces
- Individual Study Spaces
- Meeting Rooms
- Public Spaces- eg. Cafe
- Parking Space
- Other

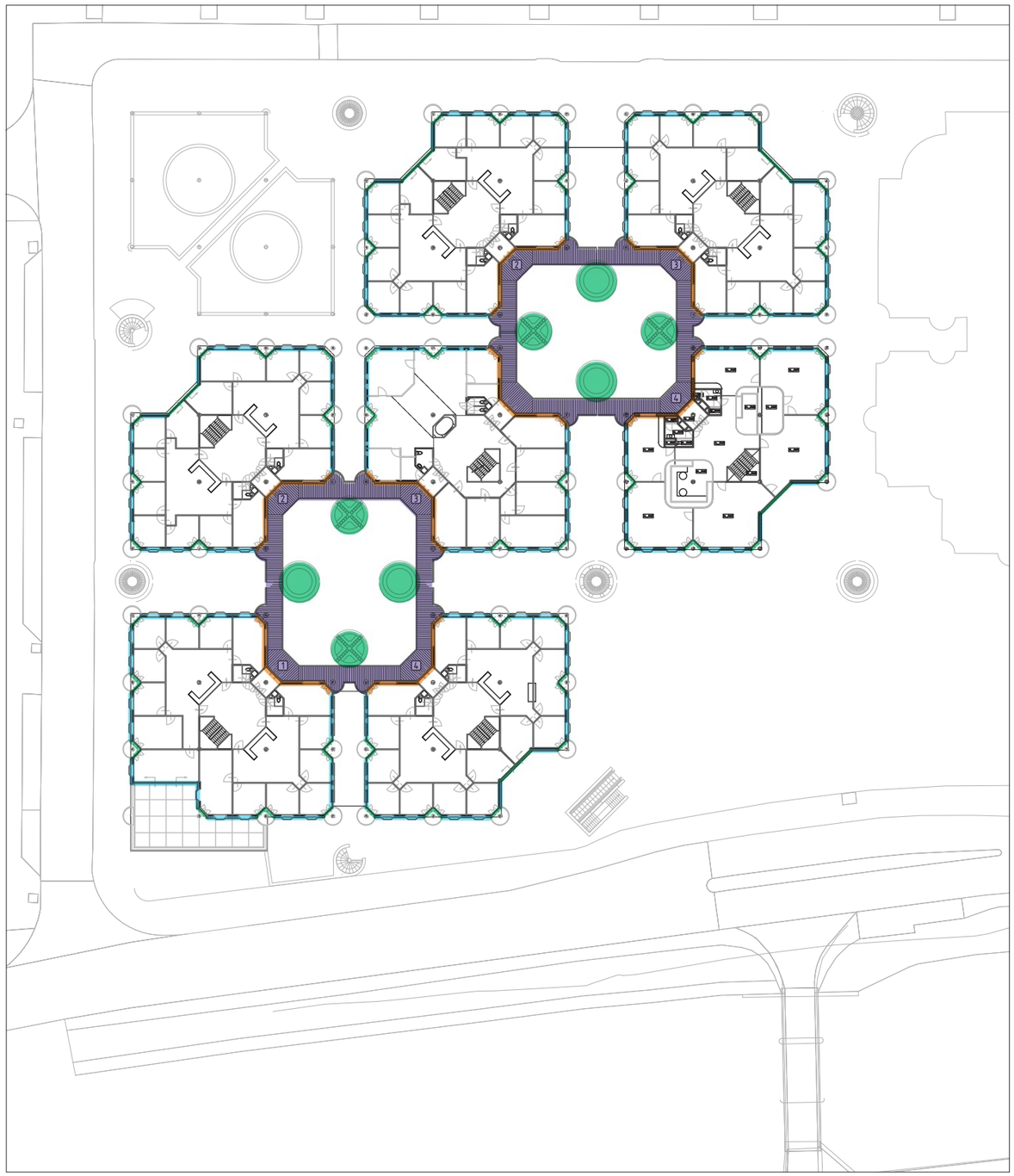
Total Sq. meters (15.500 sq.m.)

Lecture Theatres & Teaching Spaces: 1100 sq.m.	**6.8%**
Office Spaces: 9.700 sq.m.	**58%**
Library: 870 sq.m.	**5.6%**
Meeting Room: 400 sq.m.	**2.5%**
Public Spaces: 600 sq.m.	**4%**
Circulation Space: 3.200 sq.m.	**19.6%**
Utility Spaces: 450 sq.m.	**2.9%**
Other: 400 sq.m.	**2.6%**



KEY

- Preserve
- Replace Materials
- Demolish
- Renovate- Change materials-finishes
- Possibility for removal and alternation



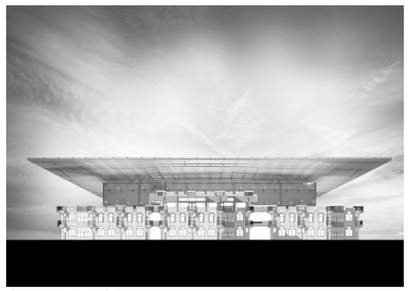
KEY

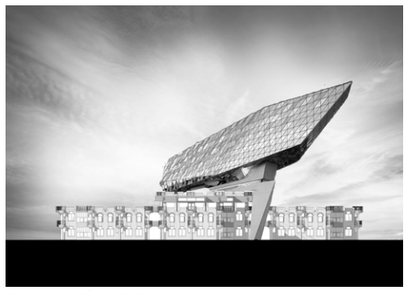
- Preserve
- Replace Materials
- Demolish
- Renovate- Change materials-finishes
- Possibility for removal and alternation

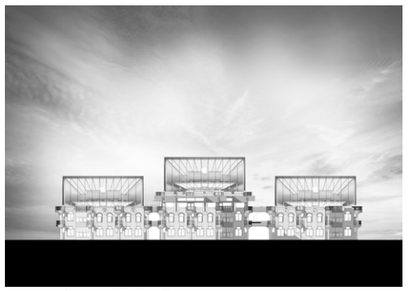
Form Study & Precedent Experimentation

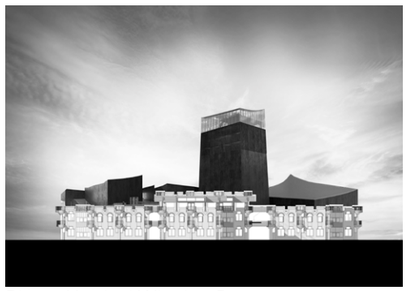
Precedent Study - Form Finding


Administration Building in N. Shanghai


Angelli Art Museum

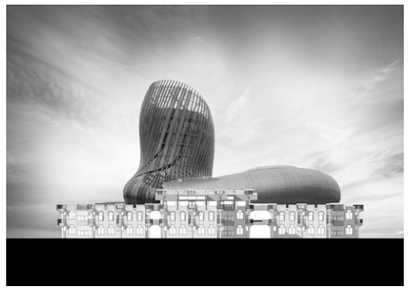

Antwerp Port House

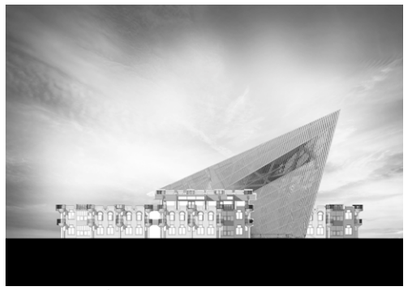

Apple Store Asia, Foster


Bilbao Helsinki Winning Proposal

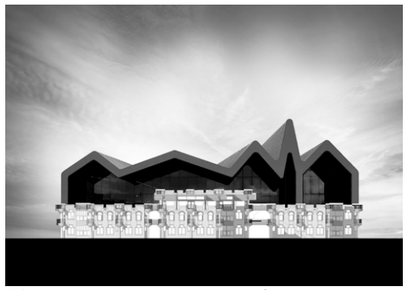

Canadian War Museum

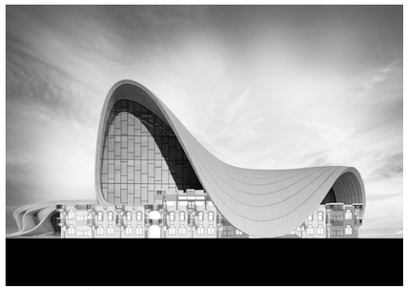

Chonnabot Community School Canteen

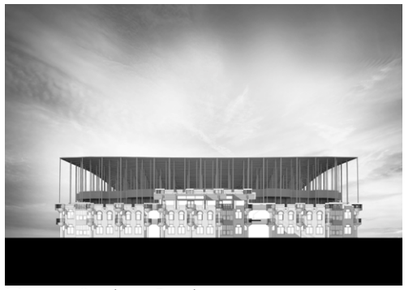

Cite du Vin

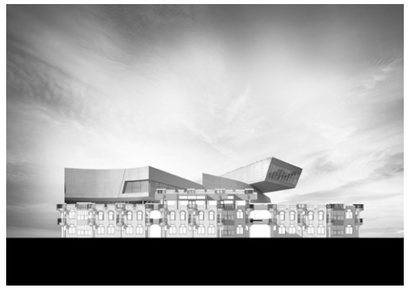

Dresden Military Museum

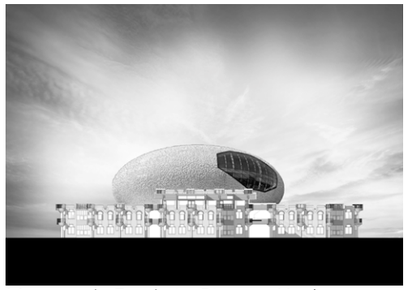

El Philarmonie


Glasgow Riverside Museum of Transport

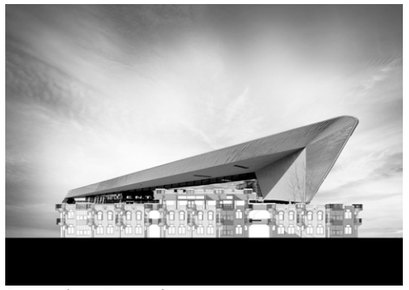

Heydar Aliyev Centre

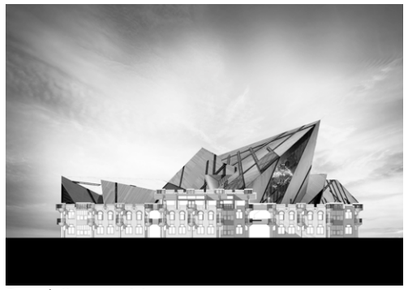

Matmut Stadium Bordeaux


Maxxi Museum


Museum de Fundatie, Bierman Henket

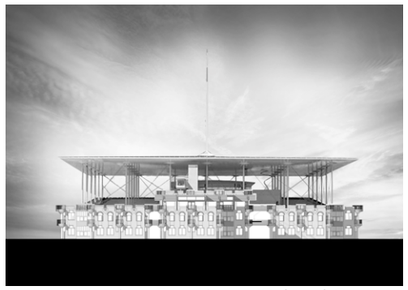

Open University Amsterdam


Rotterdam Central Station


Royal Ontario Museum

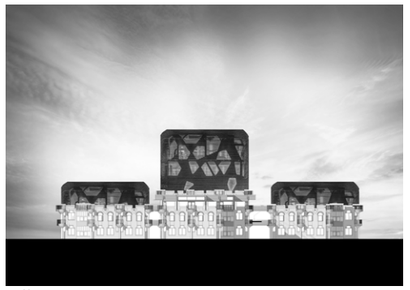

Seona Reid, Steven Holl


The Shard


Stavros Niarchos Foundation Cultural Centre


Stedelijk Museum

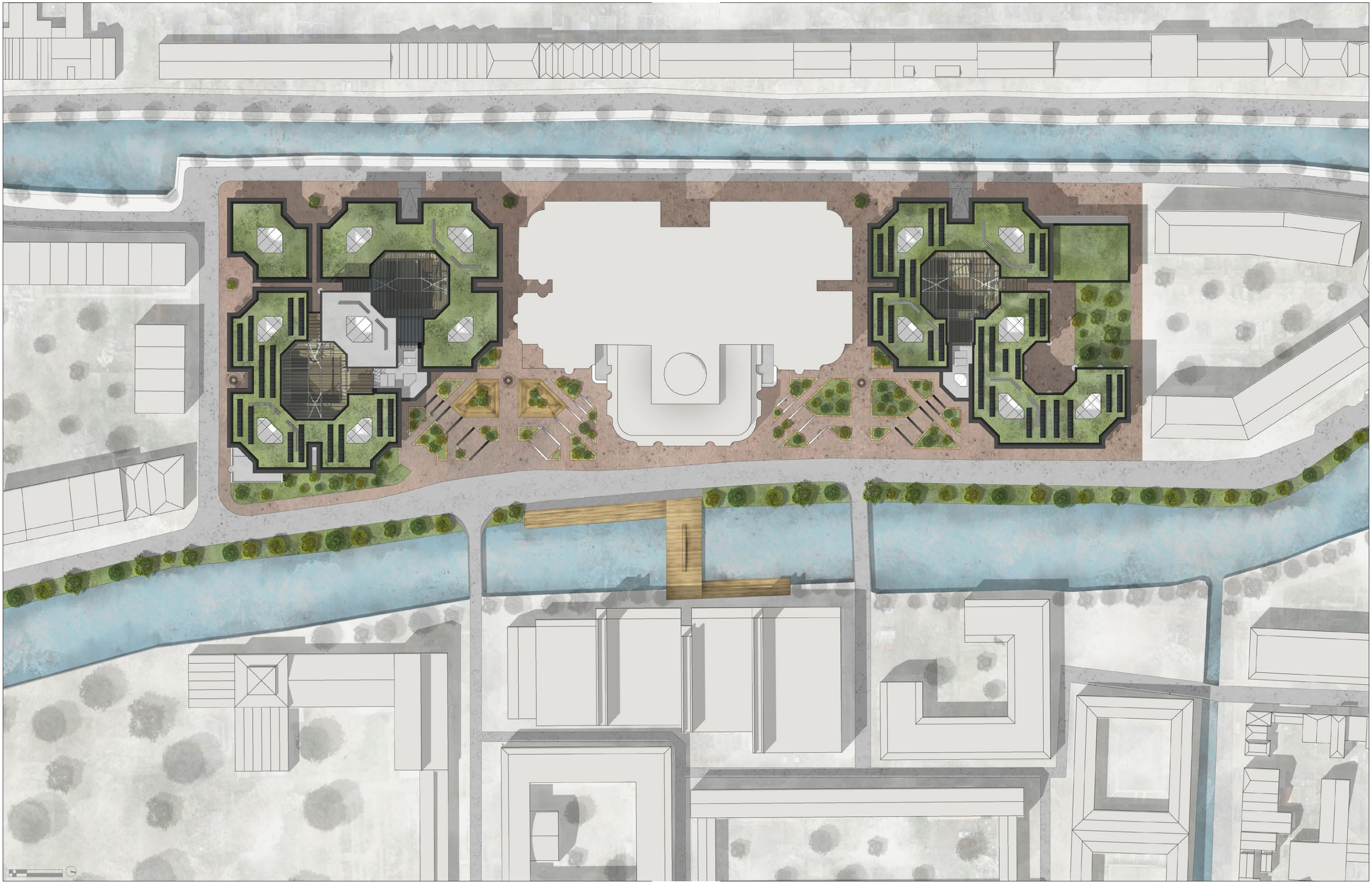

Tate Modern


Villanueva Congress Centre

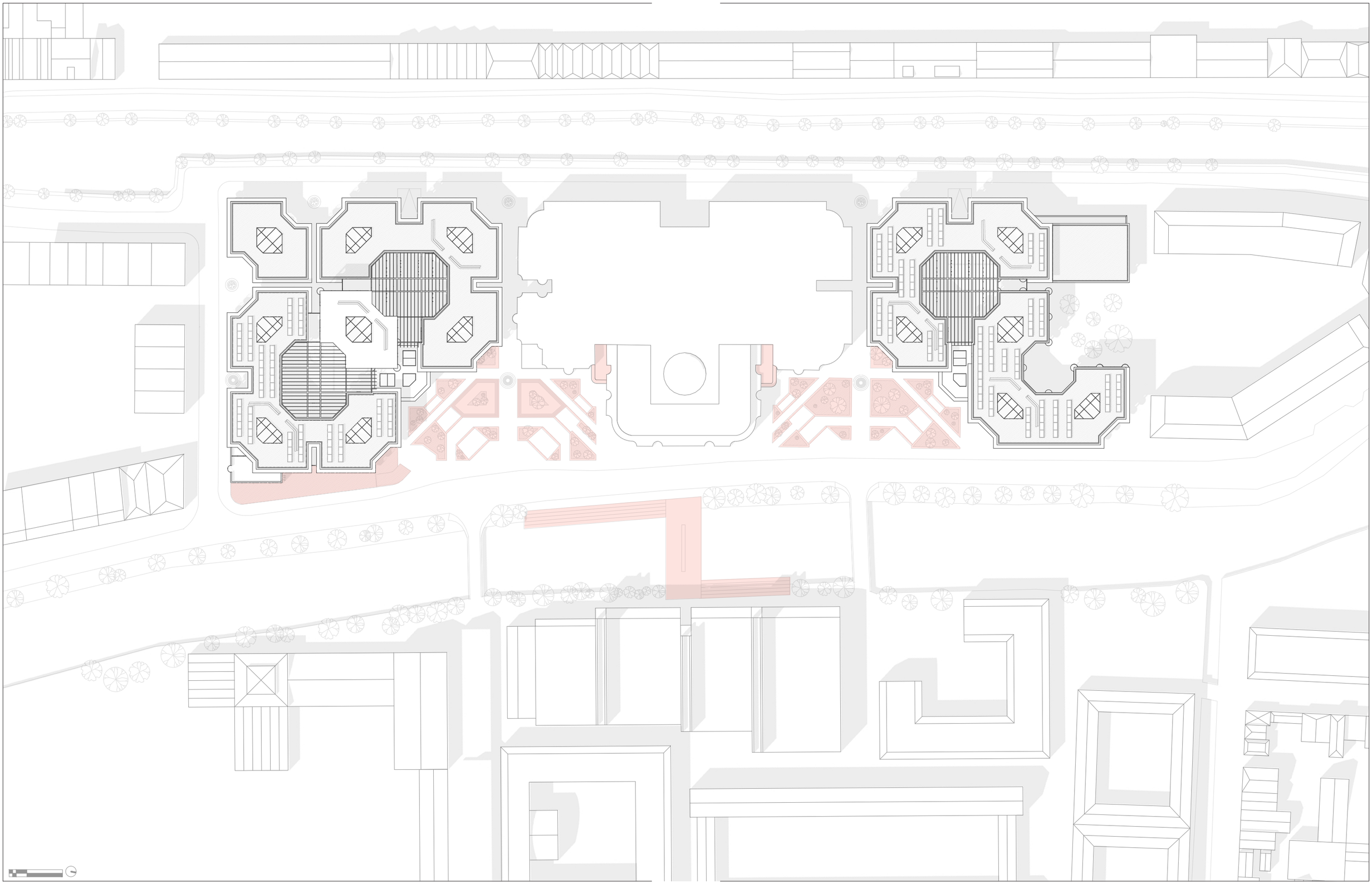
Intervention

Axonometric View

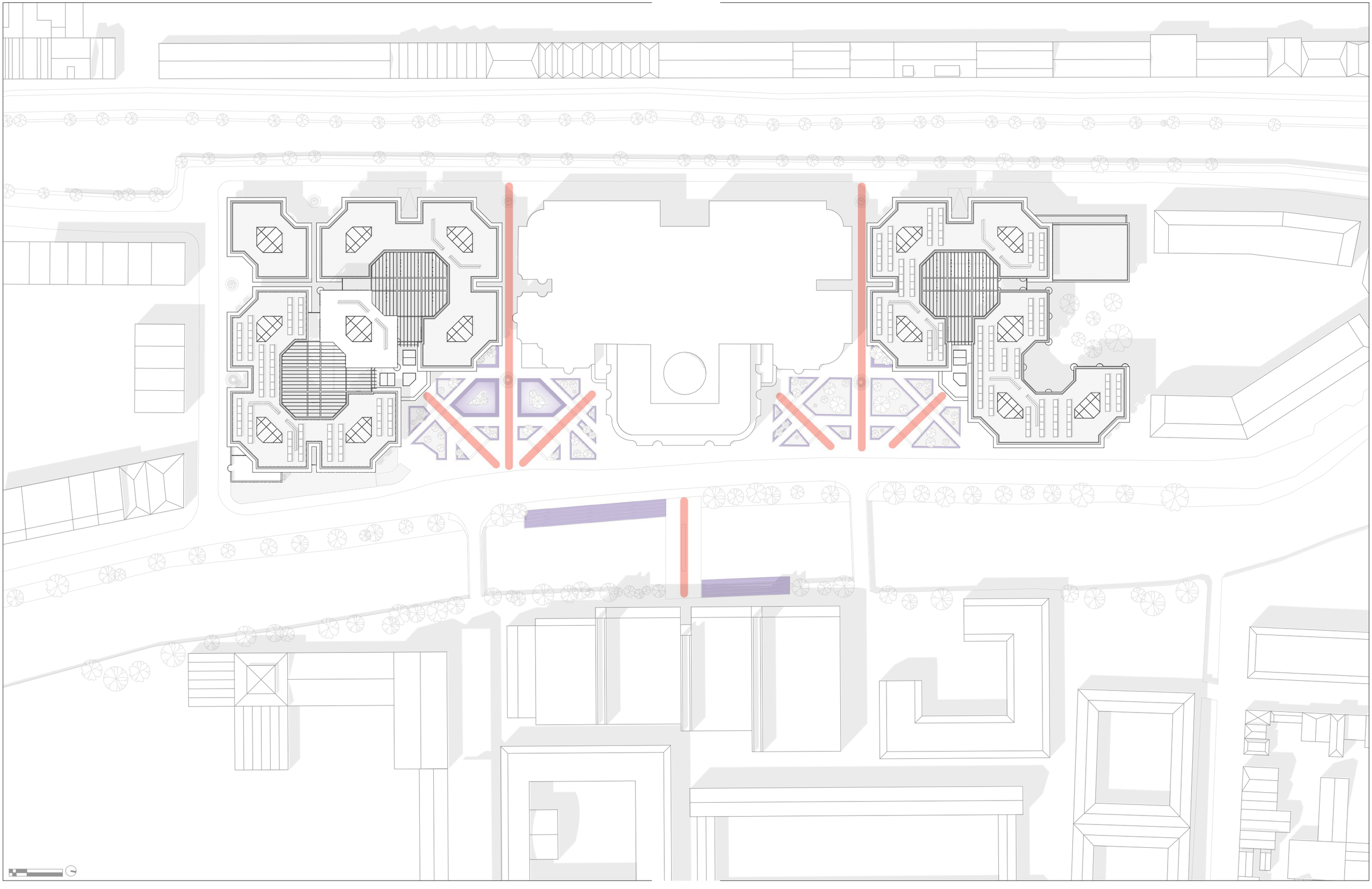
Masterplan



Masterplan

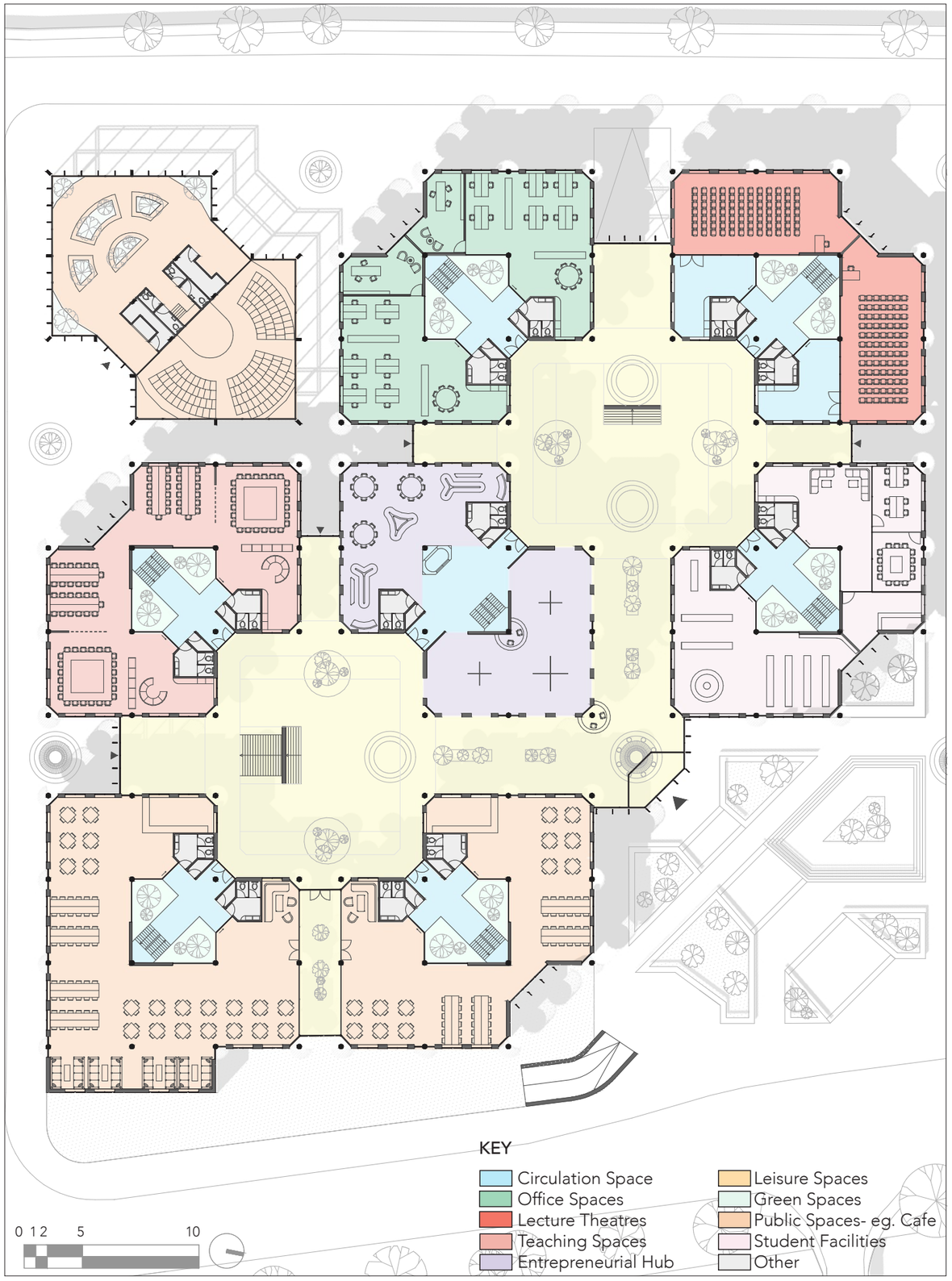


Masterplan

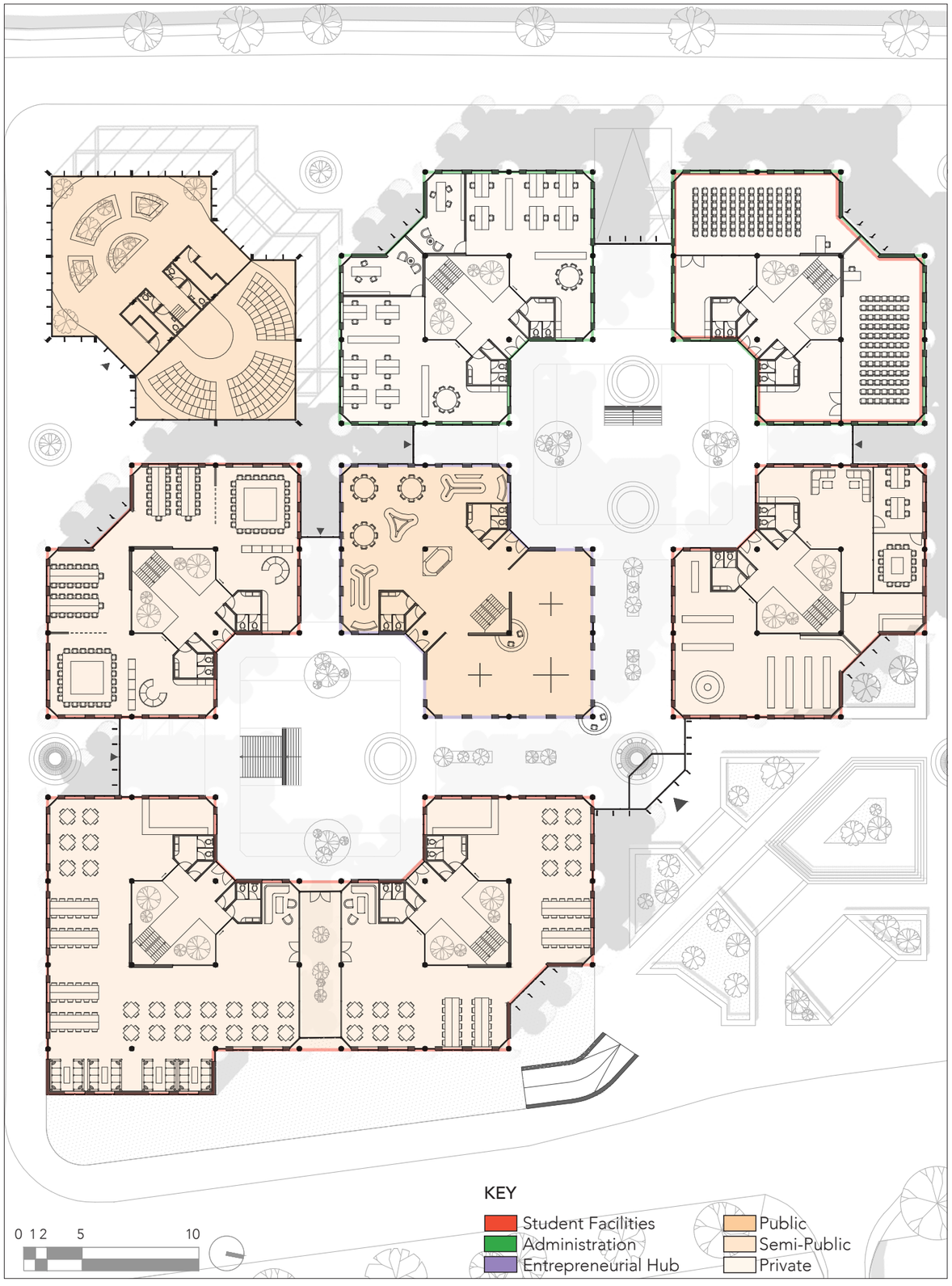


Ground Floor Plan

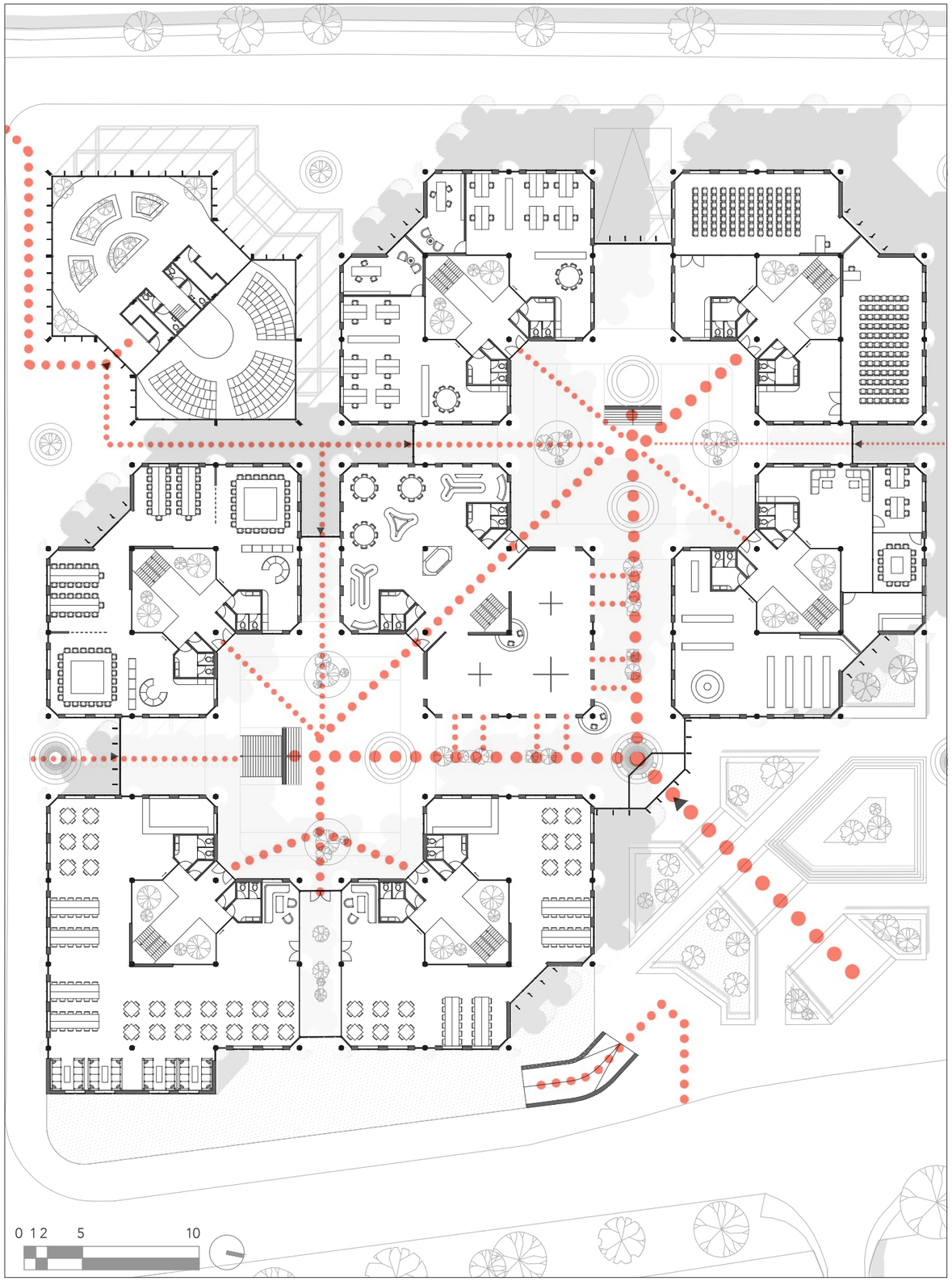
Ground Floor Plan - Analysis



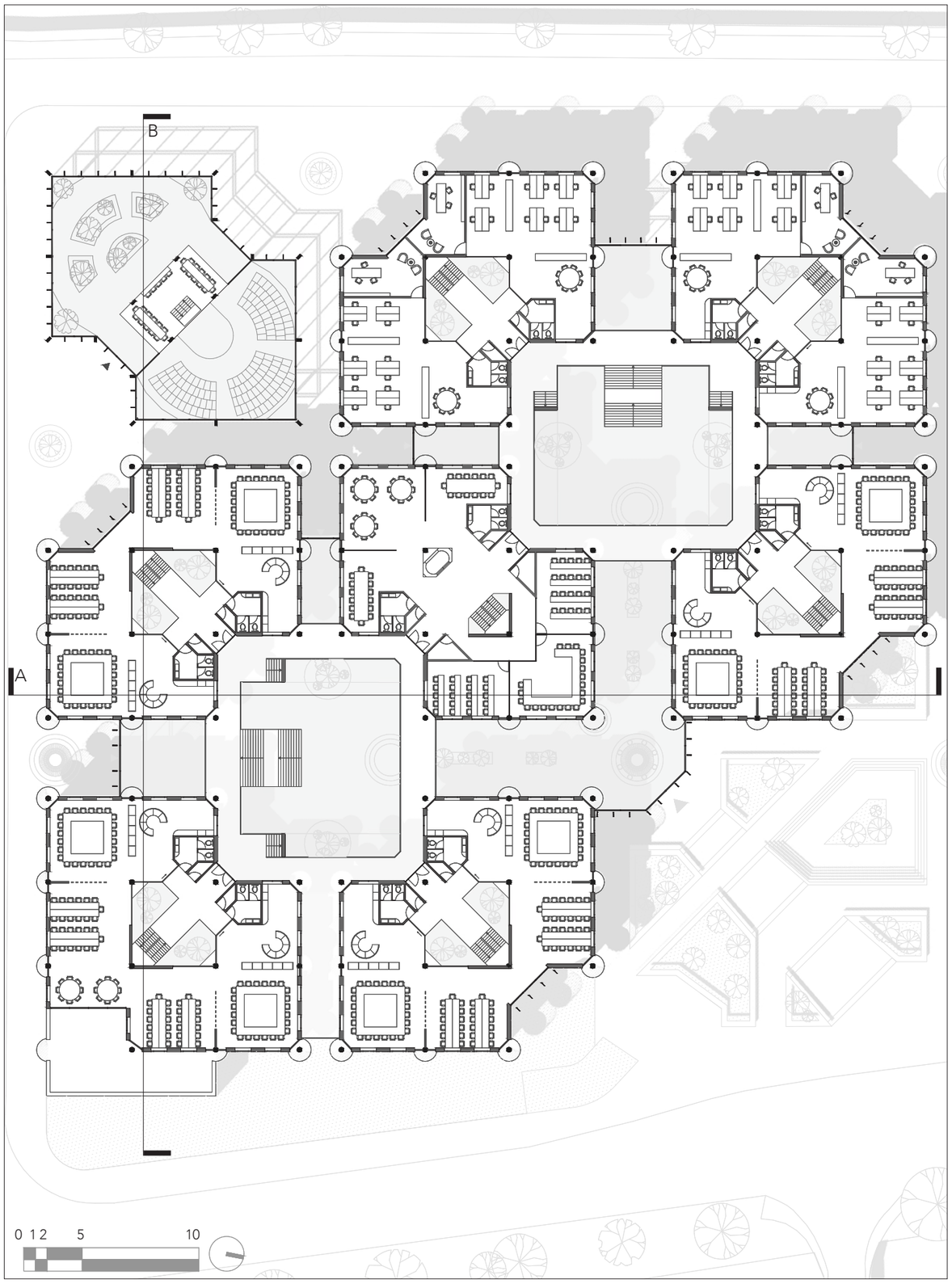
Ground Floor Plan - Zoning



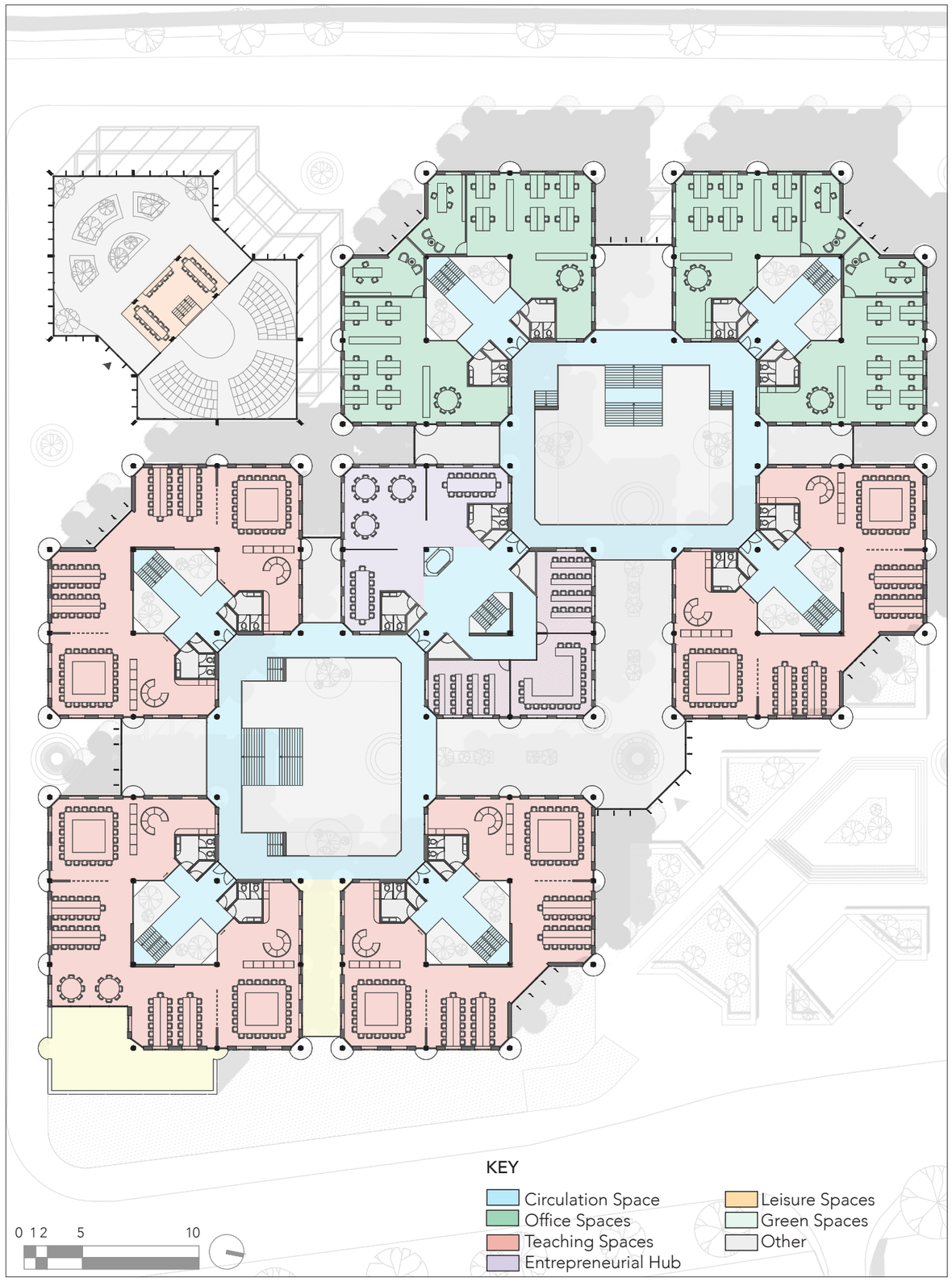
Ground Floor Plan - Circulation Diagram



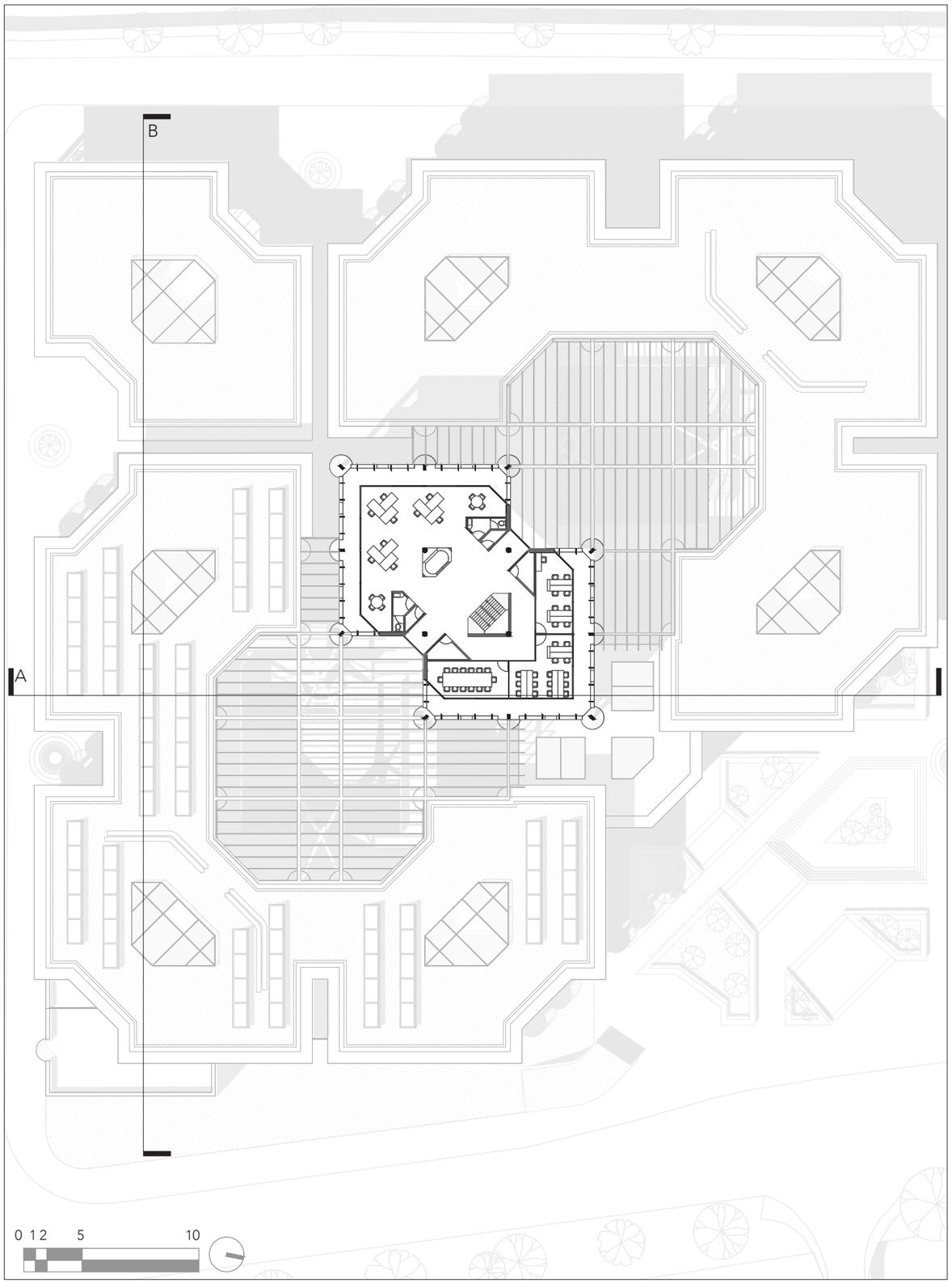
First Floor Plan



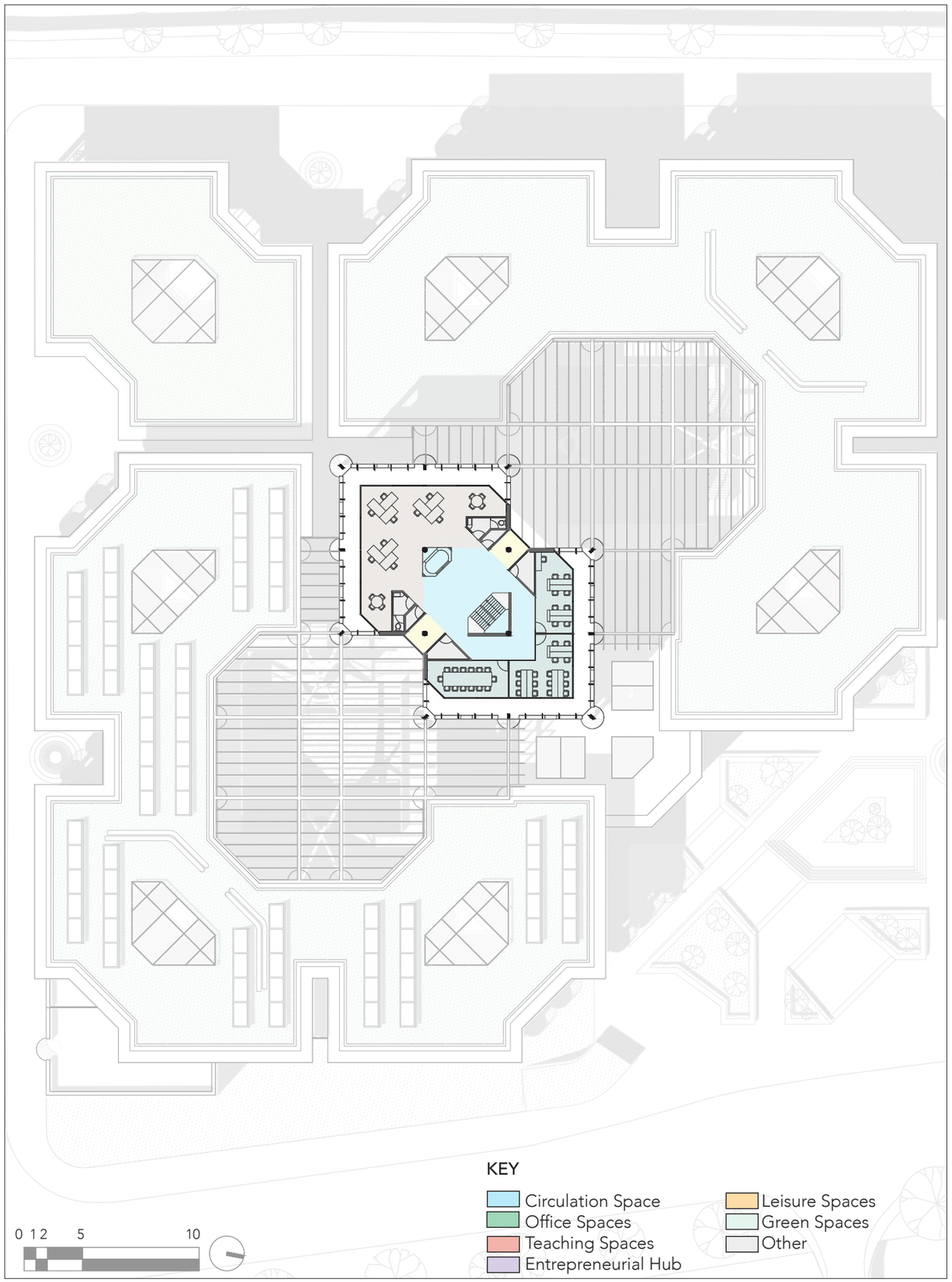
First Floor Plan - Analysis



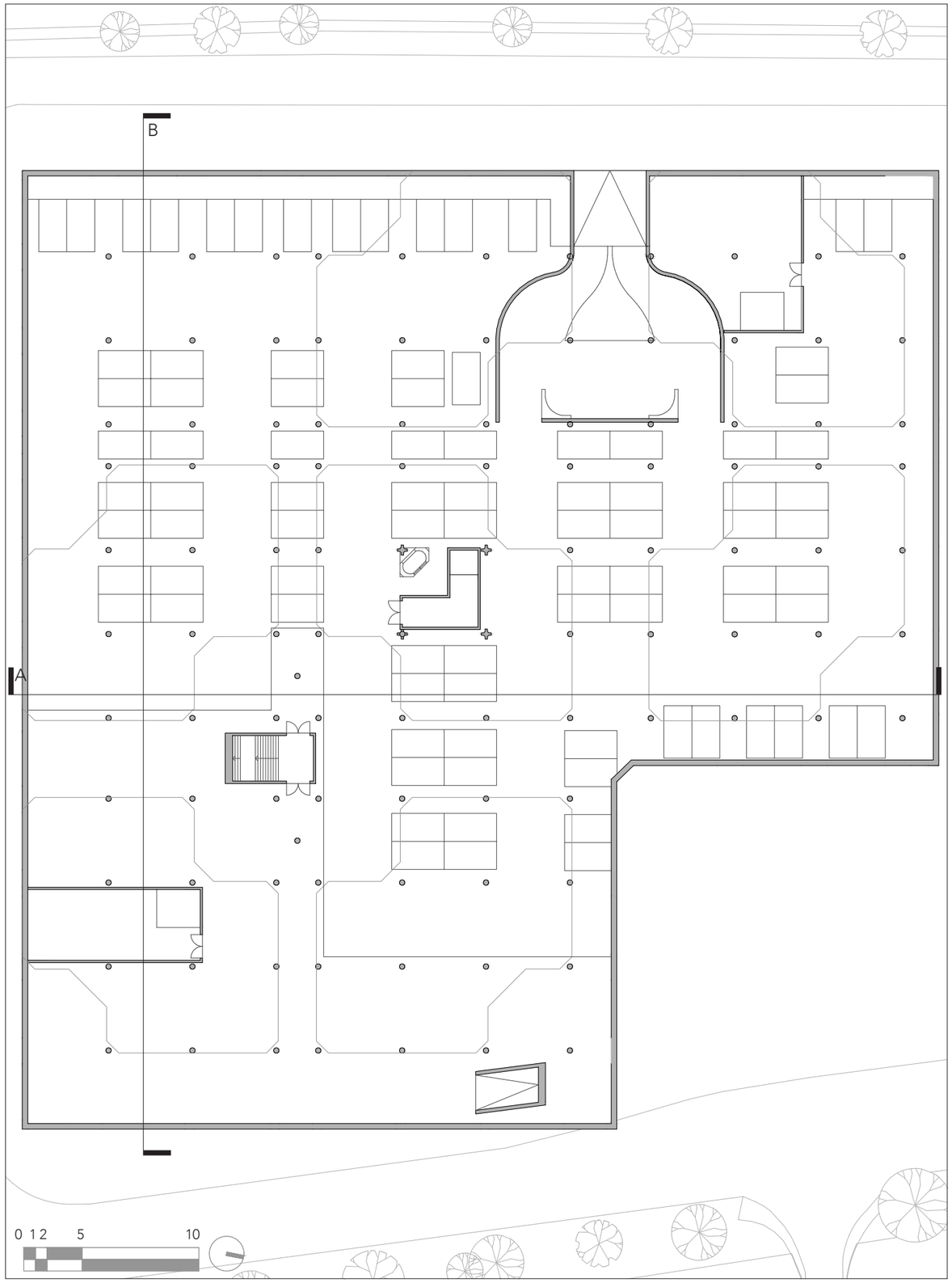
Fourth Floor Plan



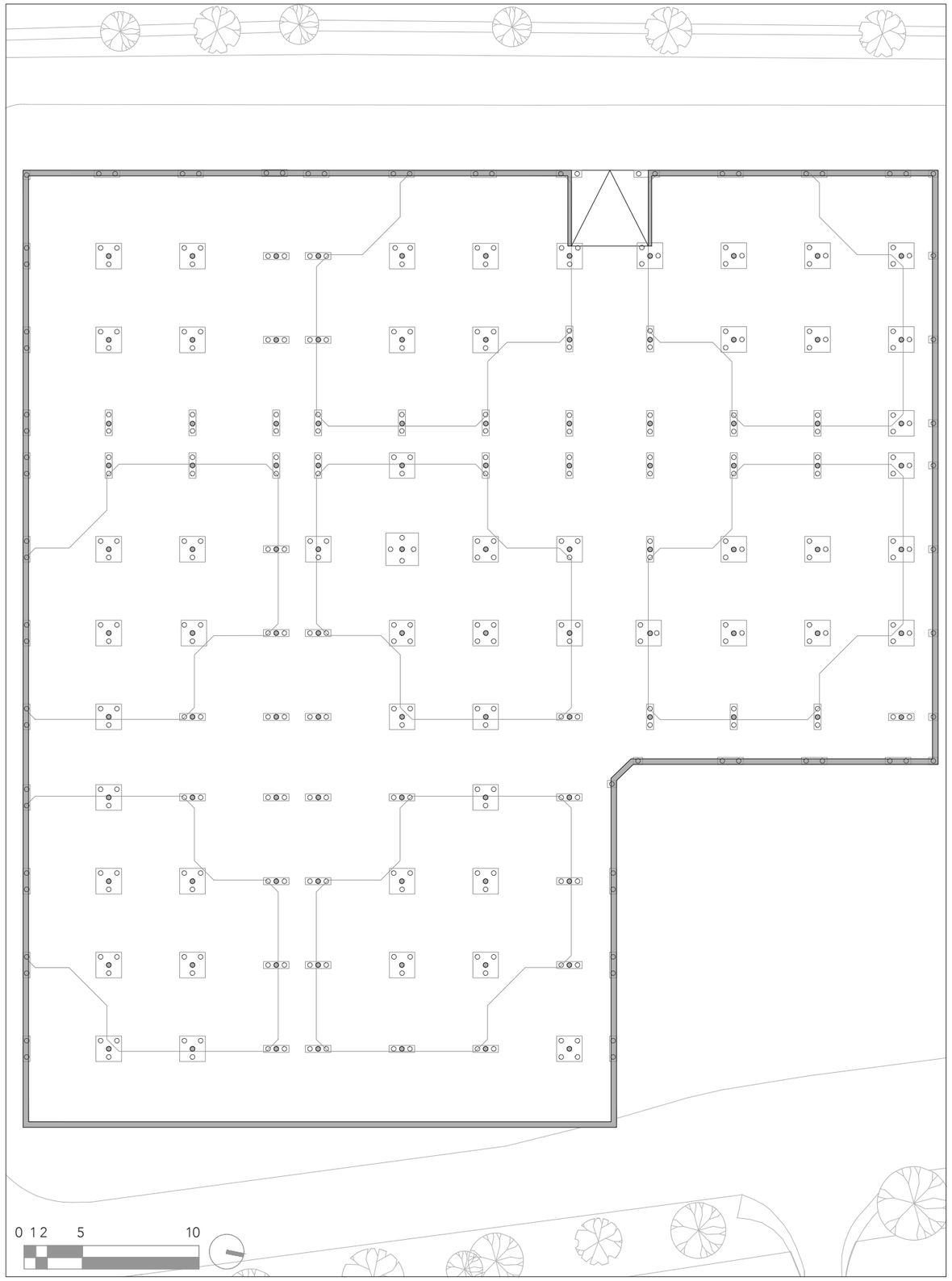
Fourth Floor Plan - Analysis



Basement Plan



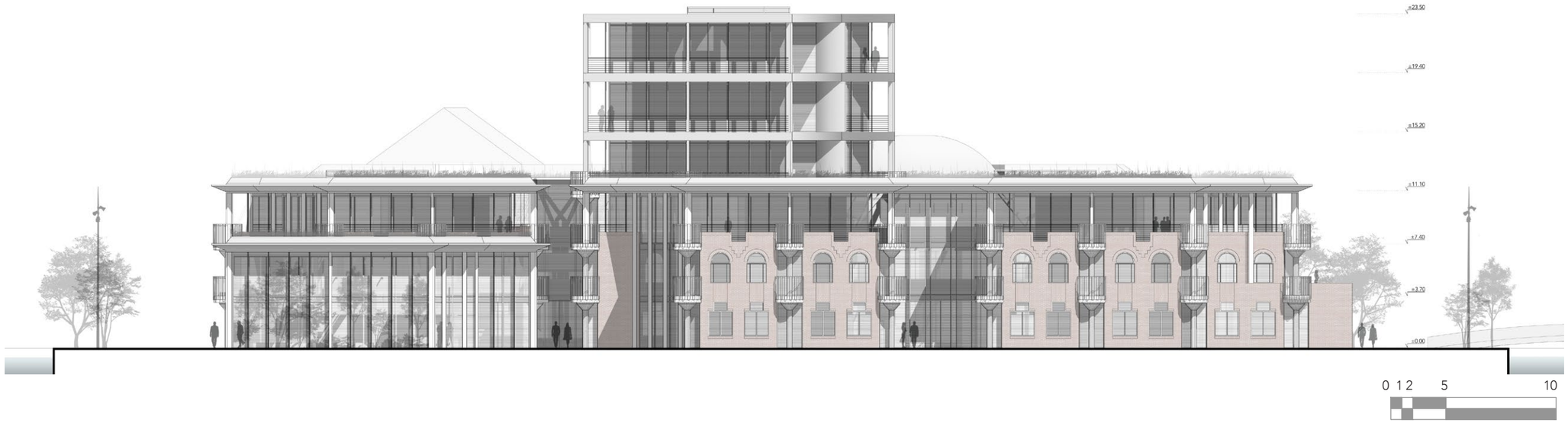
Foundation Plan



East Elevation

Section A

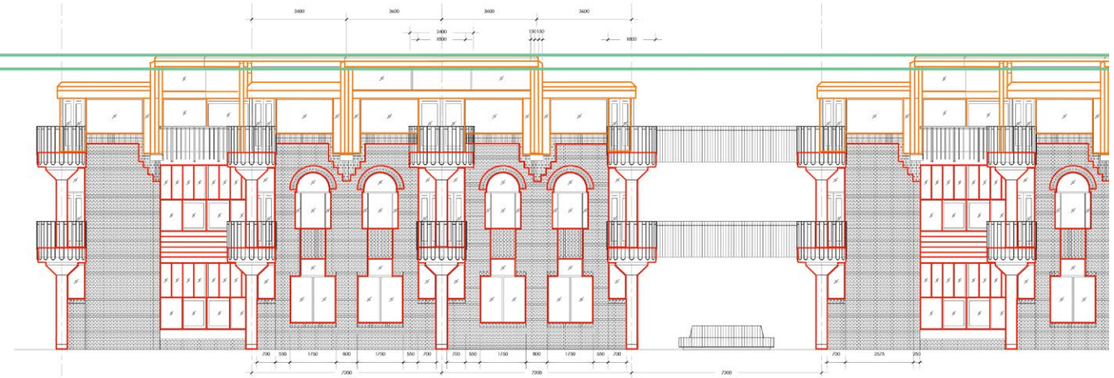
South Elevation



Section B

Sectional Perspective

Volume Relation Between Existing & Proposal- Process



Volume Relation Between Existing & Proposal- Process

Existing View

Exterior Perspective

Existing View

Exterior Perspective

Existing View

Exterior Perspective

Existing View

Exterior Perspective

Existing View

Exterior Perspective

Existing View

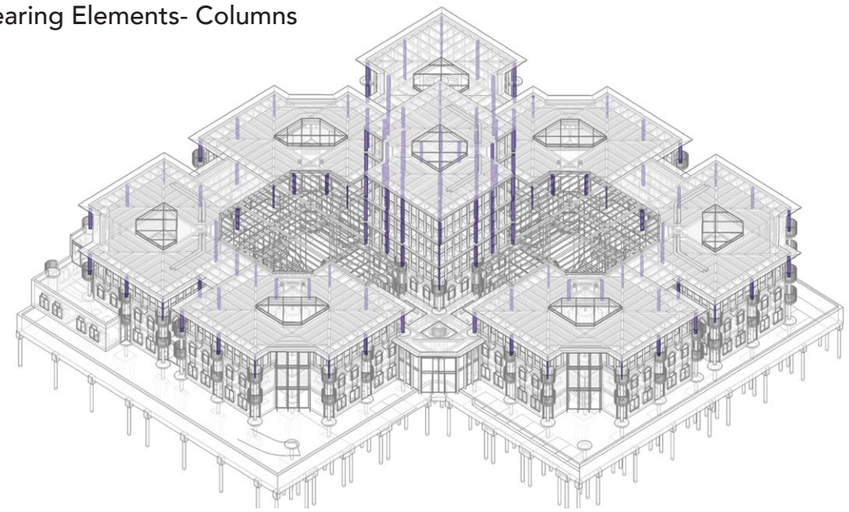
Exterior Perspective

Existing View

Perspective View

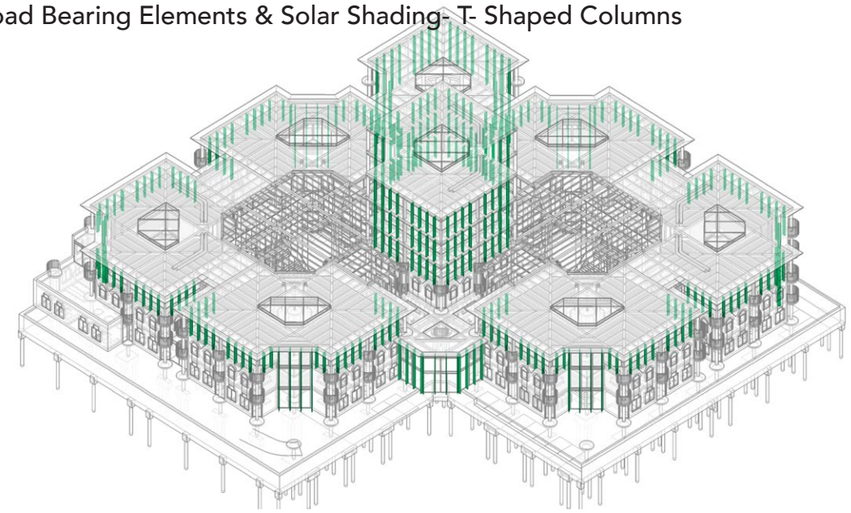
Structural Axonometric

Main Load Bearing Elements- Columns

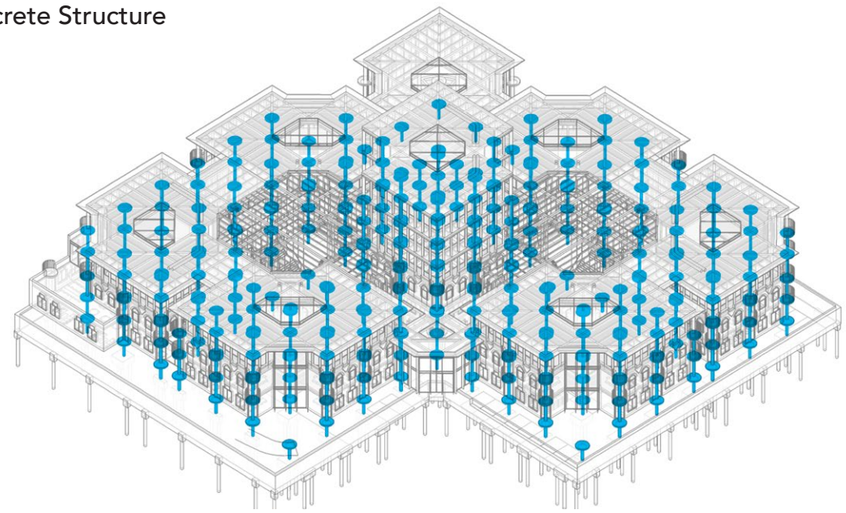


Secondary Timber Structure- Timber Joists

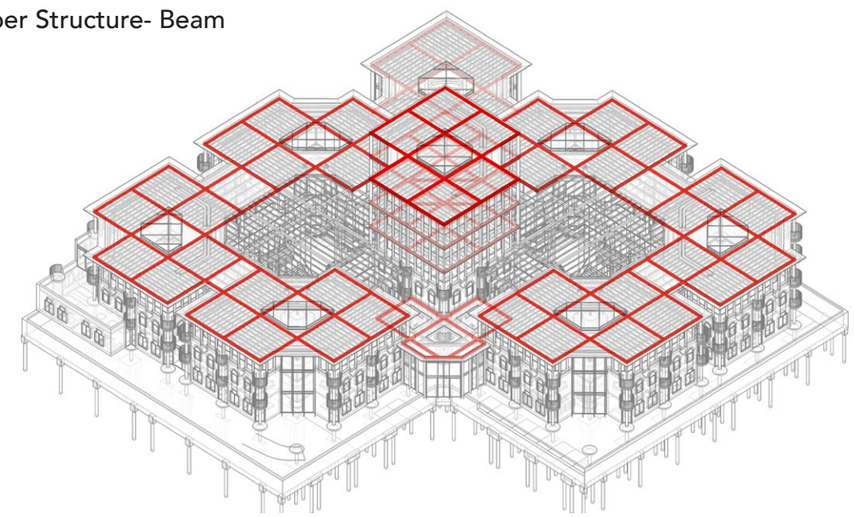
Secondary Load Bearing Elements & Solar Shading- T- Shaped Columns



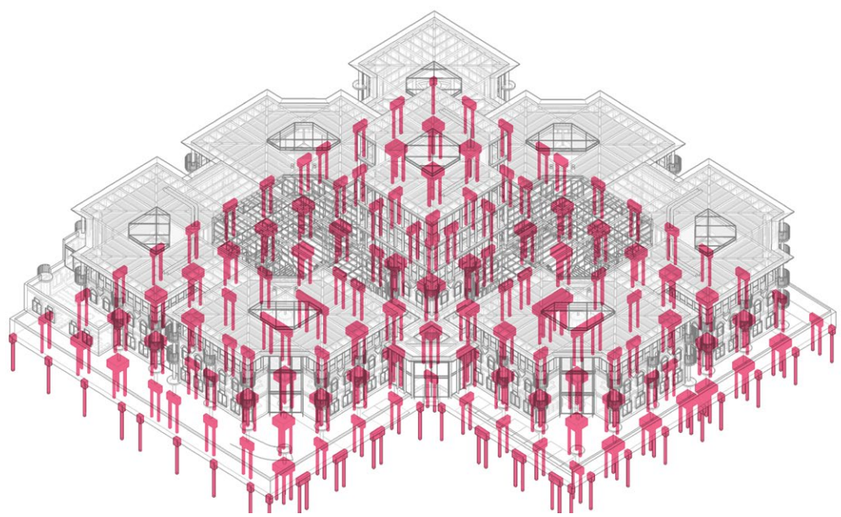
Existing Concrete Structure



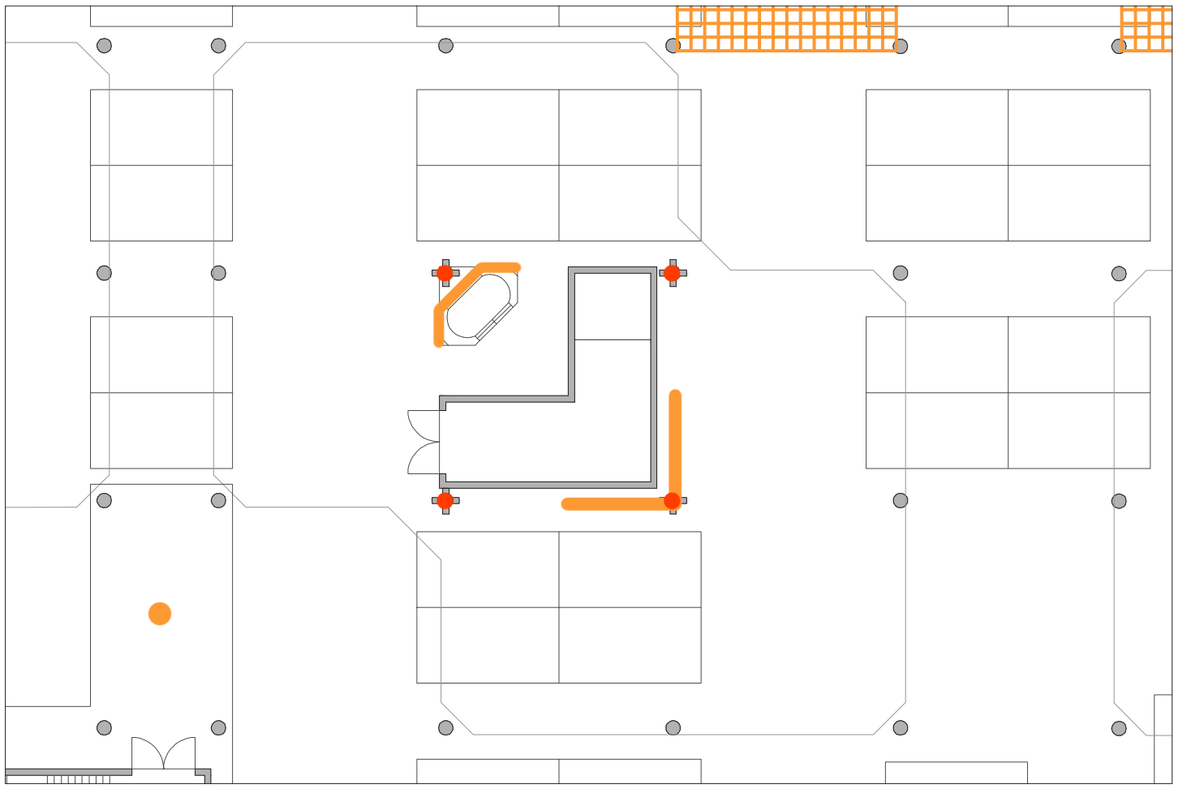
Primary Timber Structure- Beam

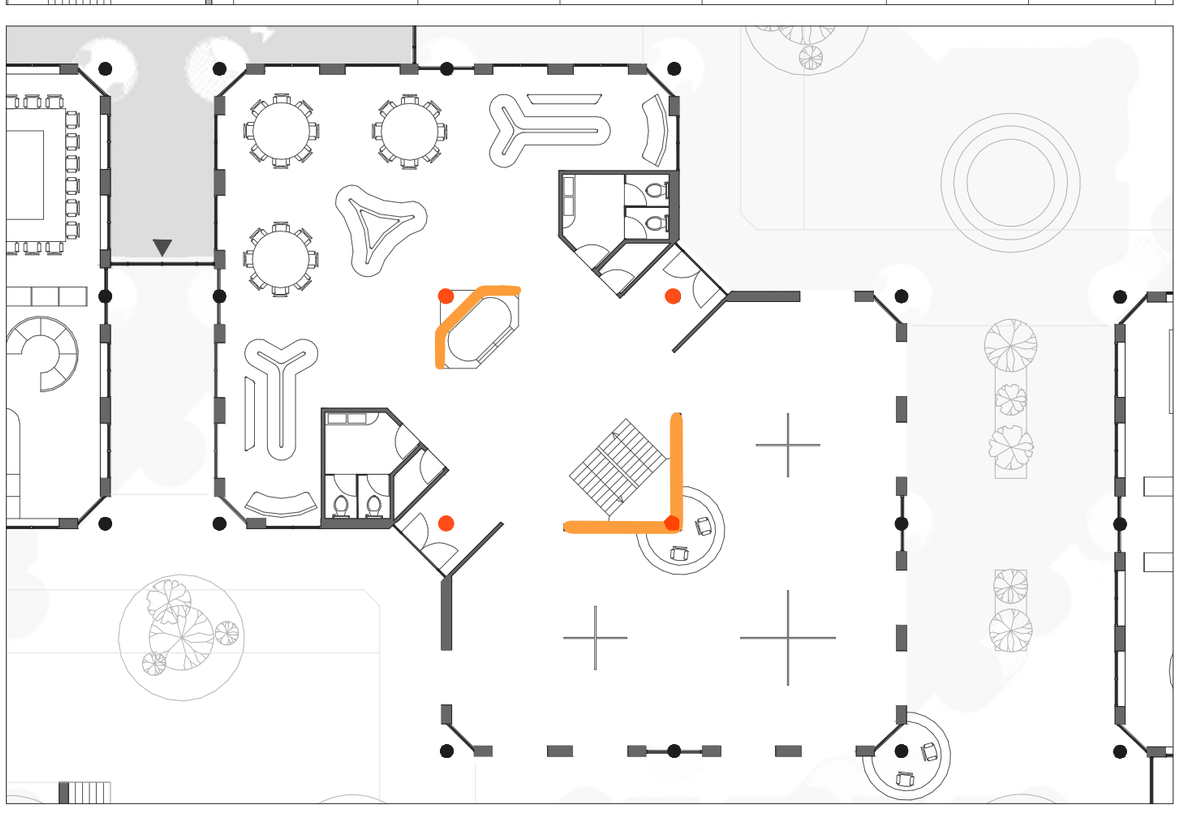


Foundations

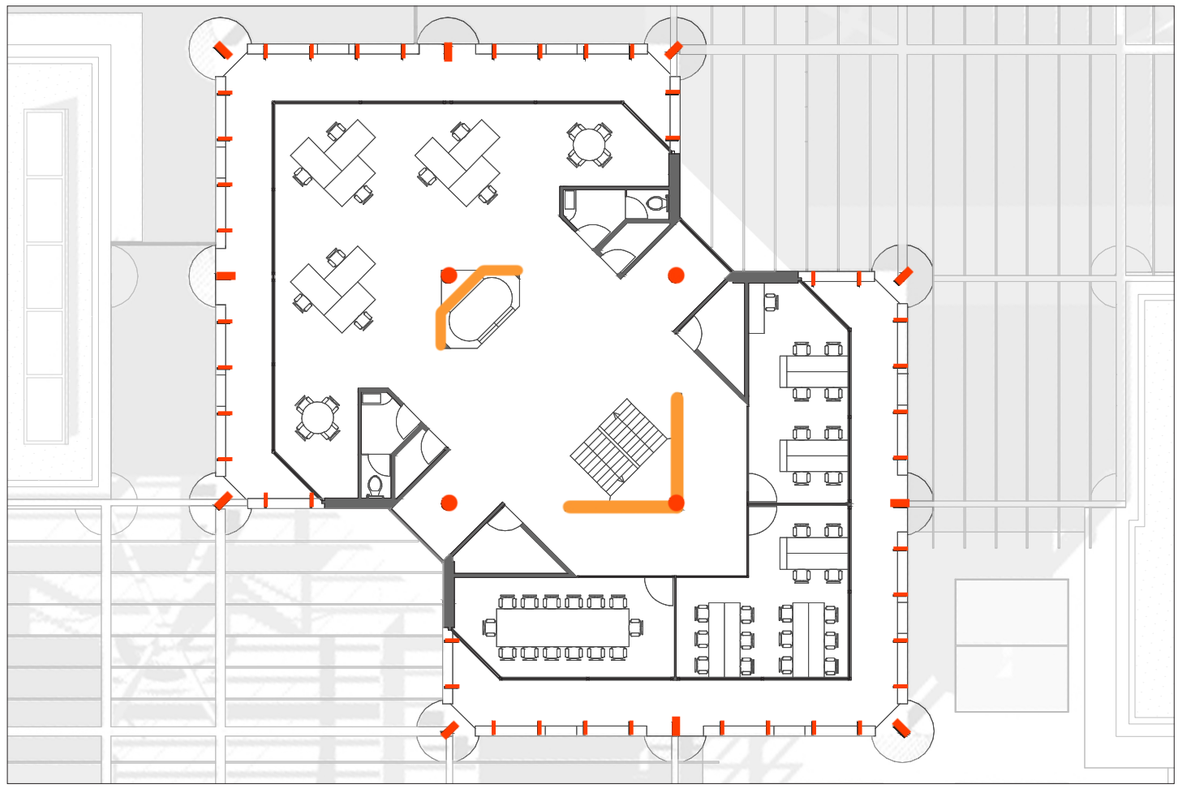


Existing Structure - Reinforcement

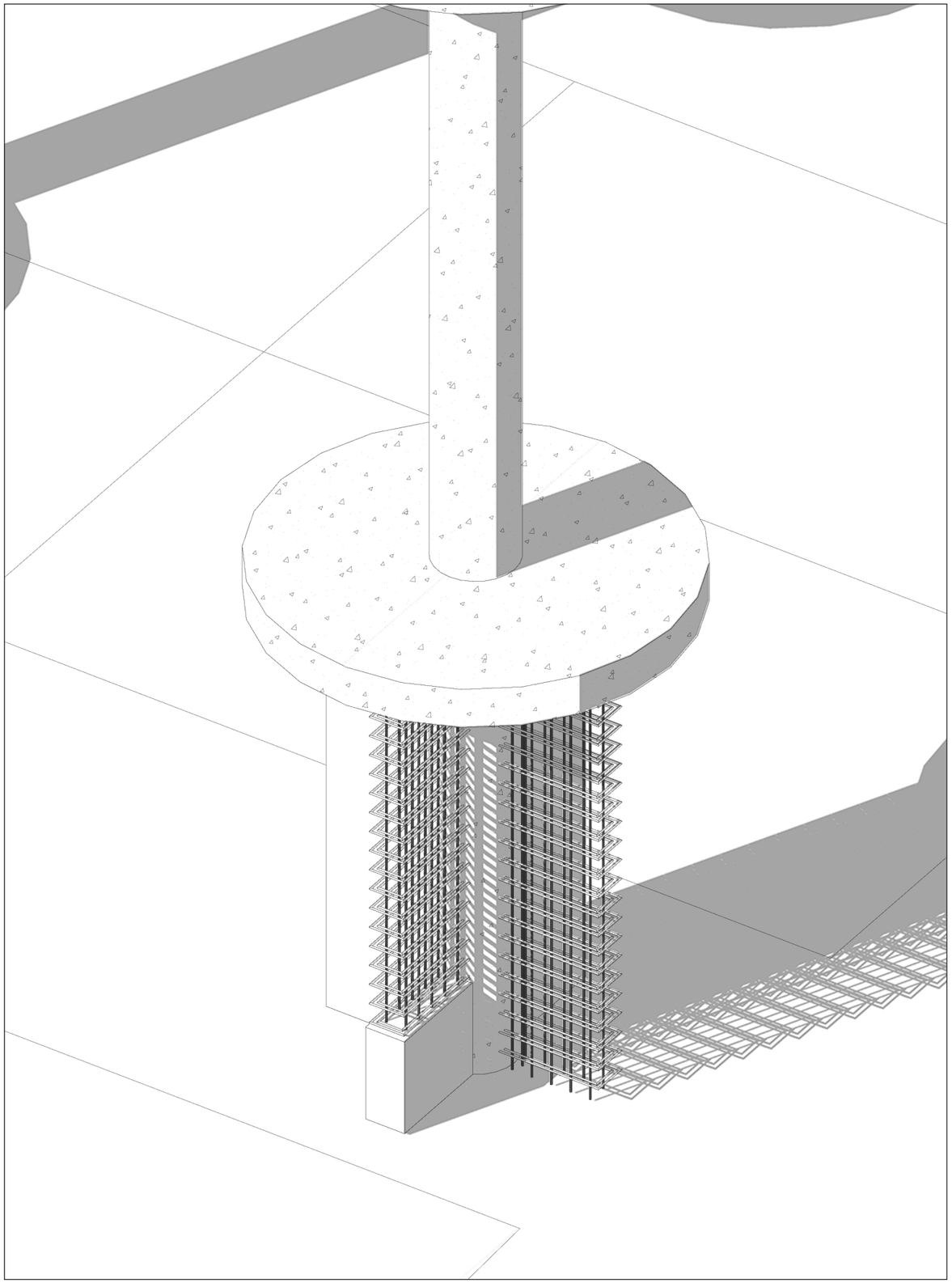




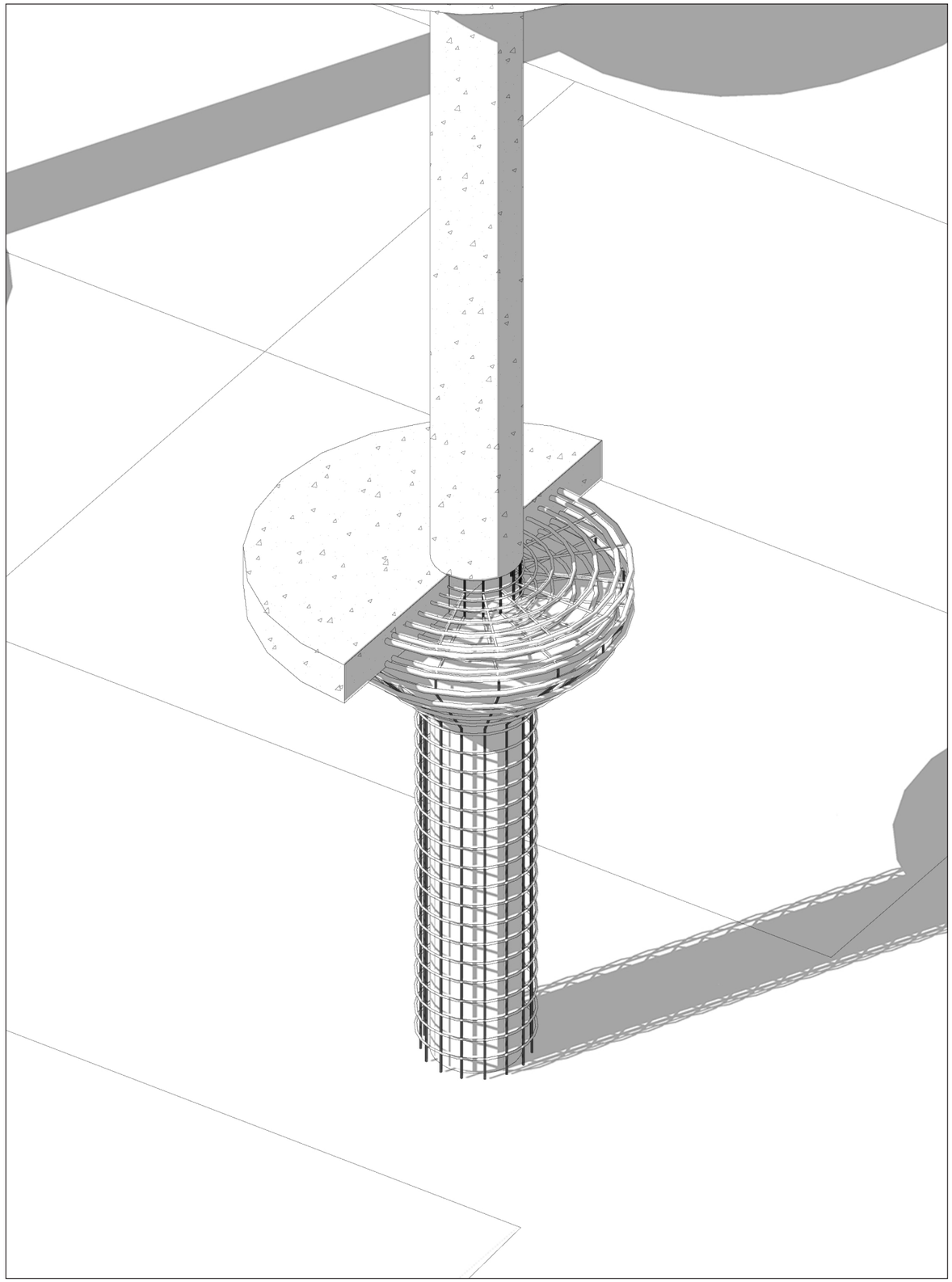
Proposal Structure - Columns & Beams



Column Reinforcement on Basement



Column Reinforcement on Overground Levels

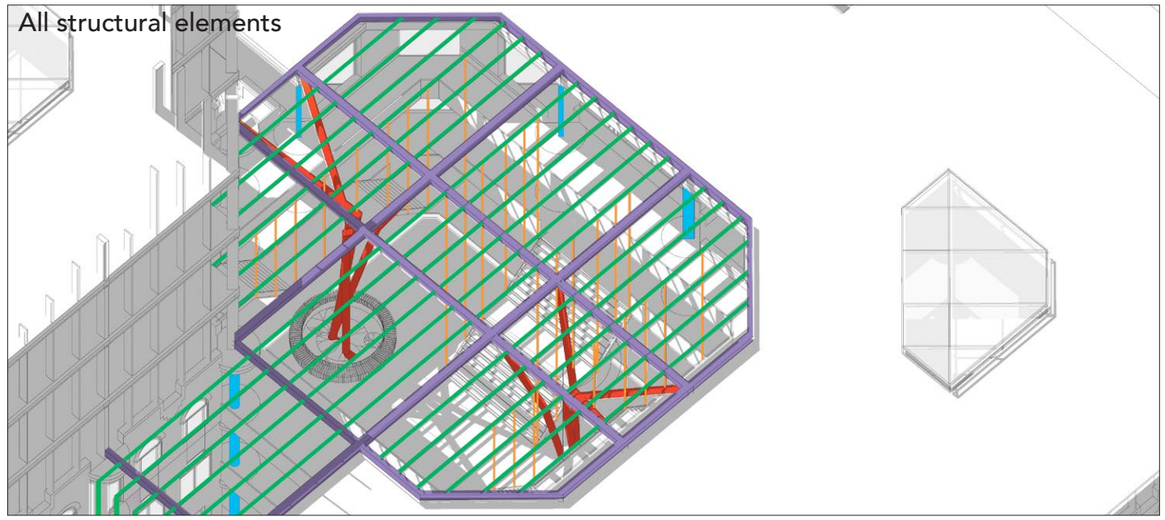


Existing View

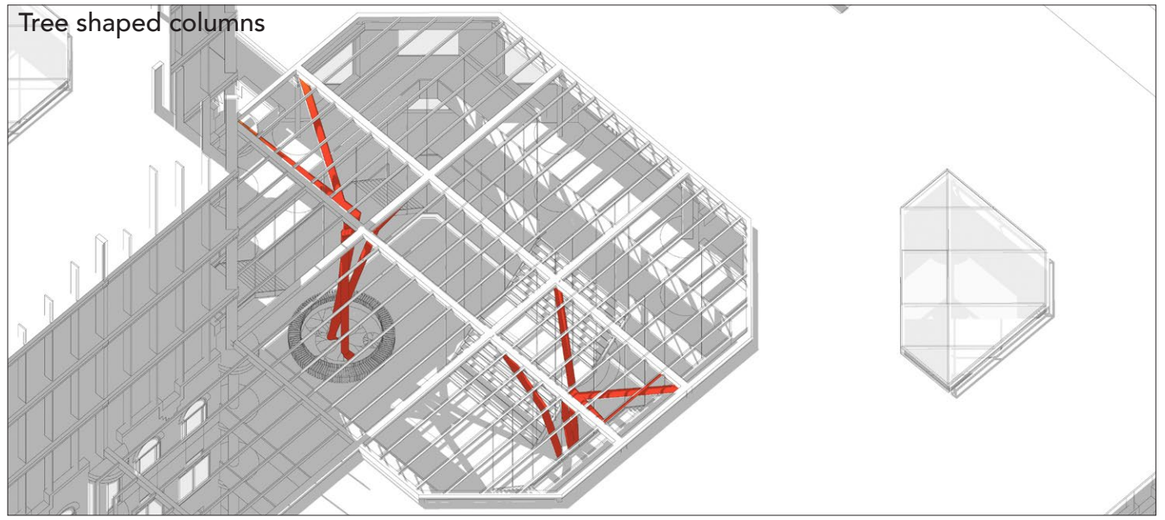
Perspective View

Structural Axonometric- Courtyard

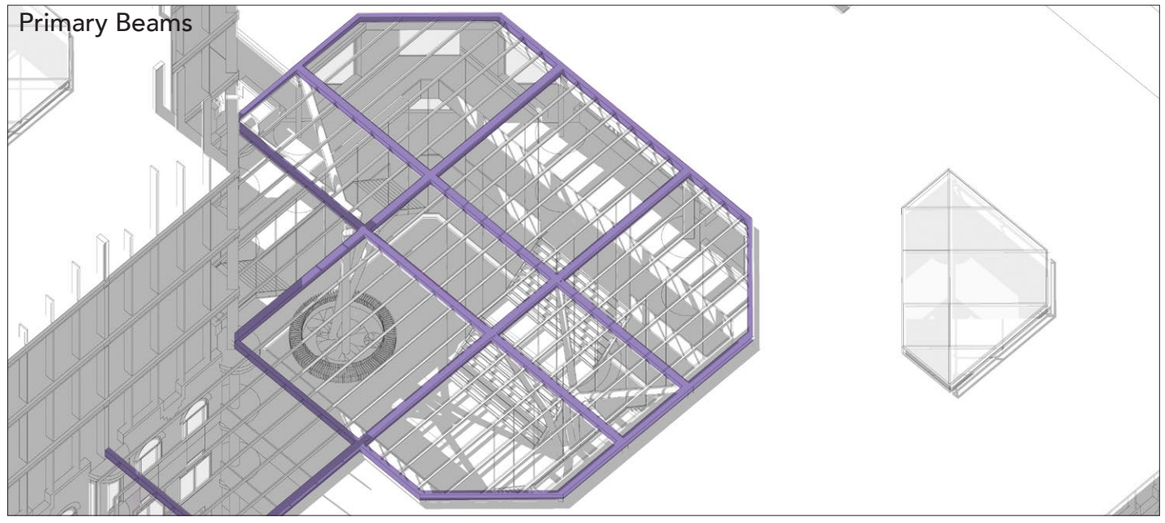
All structural elements



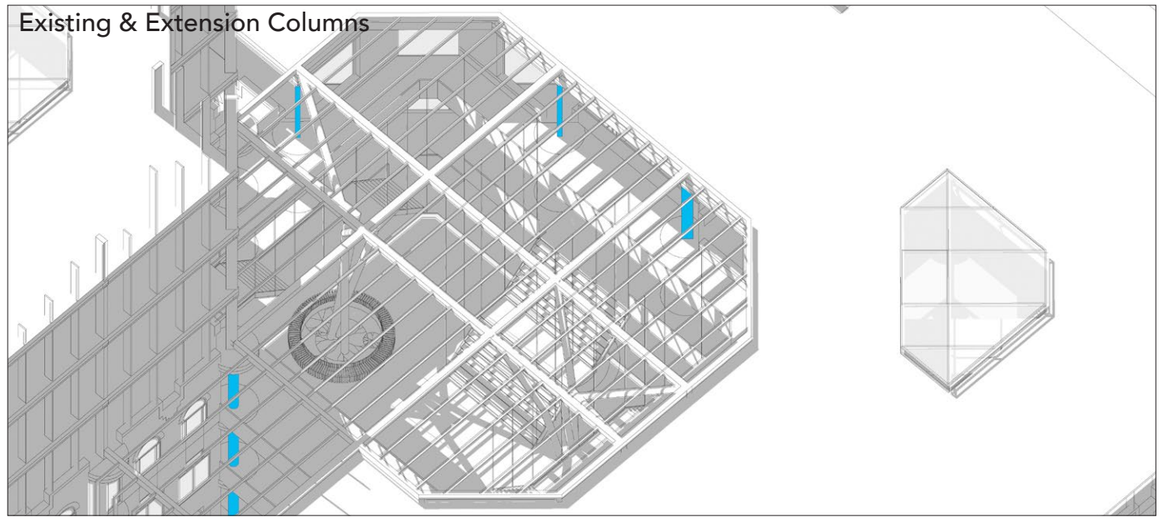
Tree shaped columns



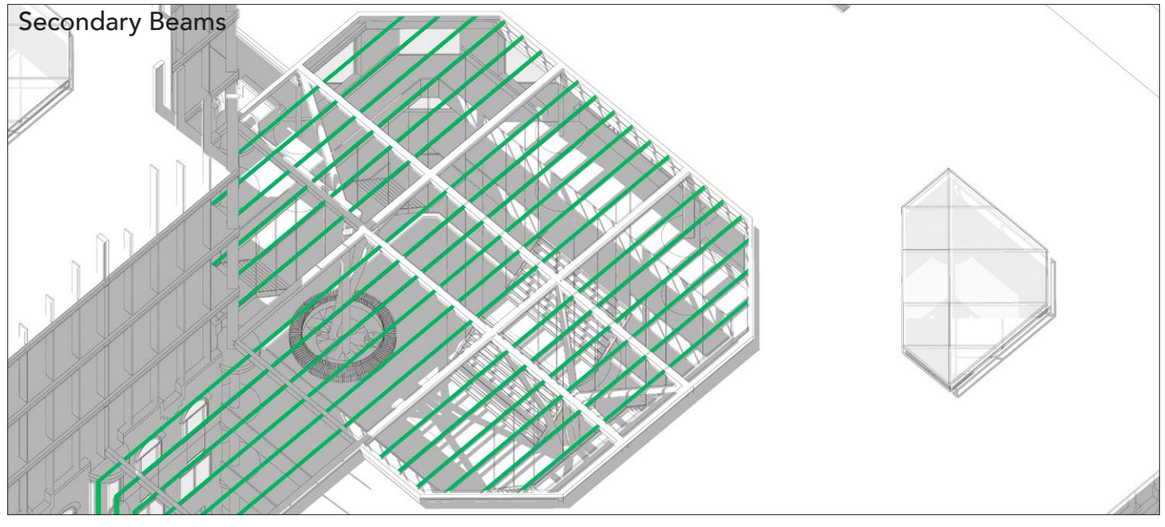
Primary Beams



Existing & Extension Columns

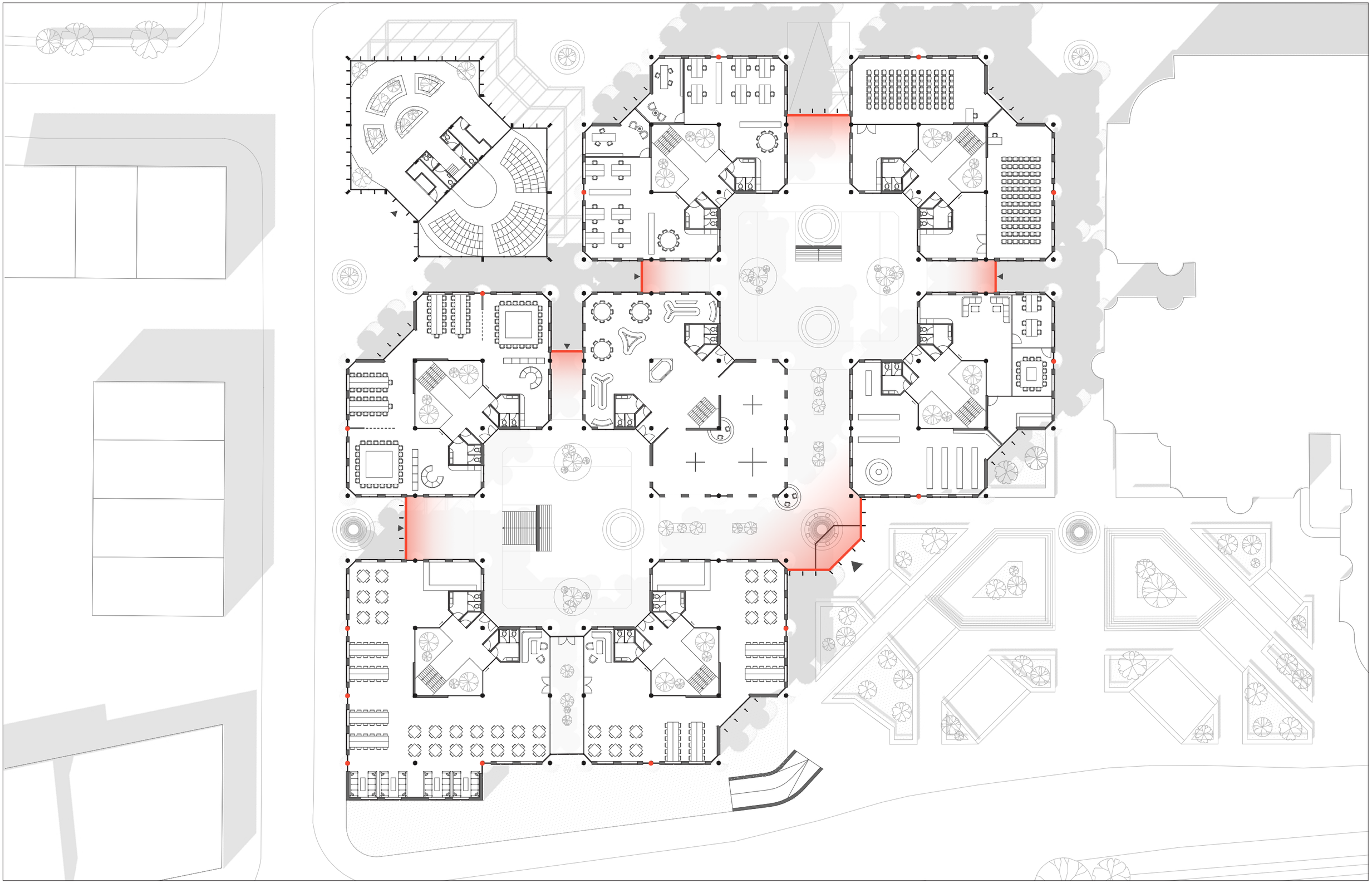


Secondary Beams



Staircase Supporting Cables

Thermal Bridge - Plan

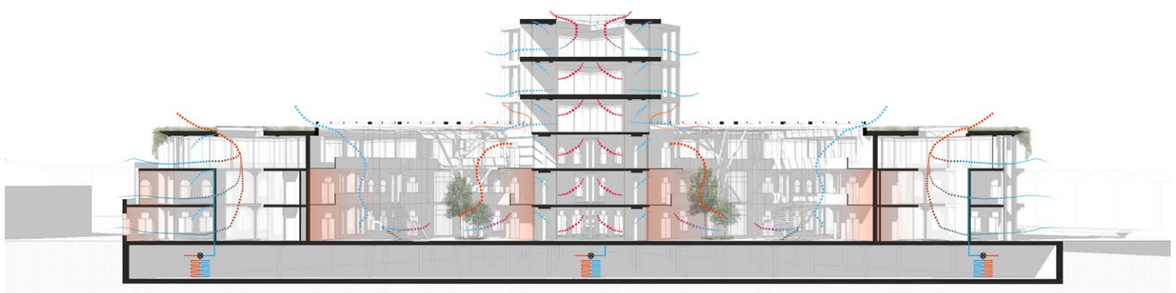


Environmental Strategies Diagram

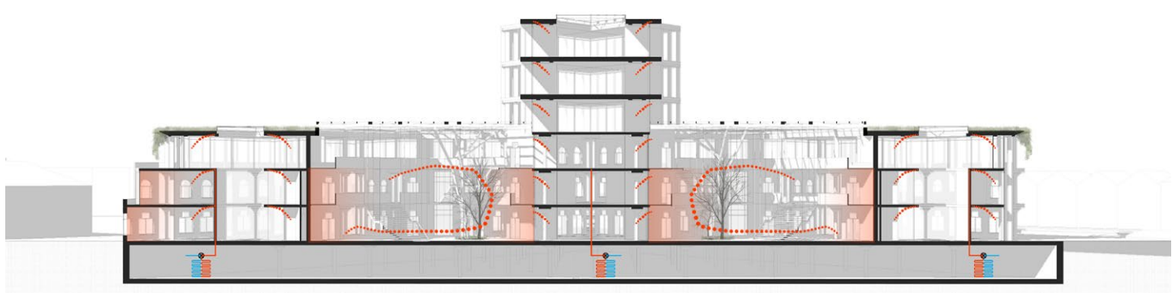
Summer Day

Winter Day

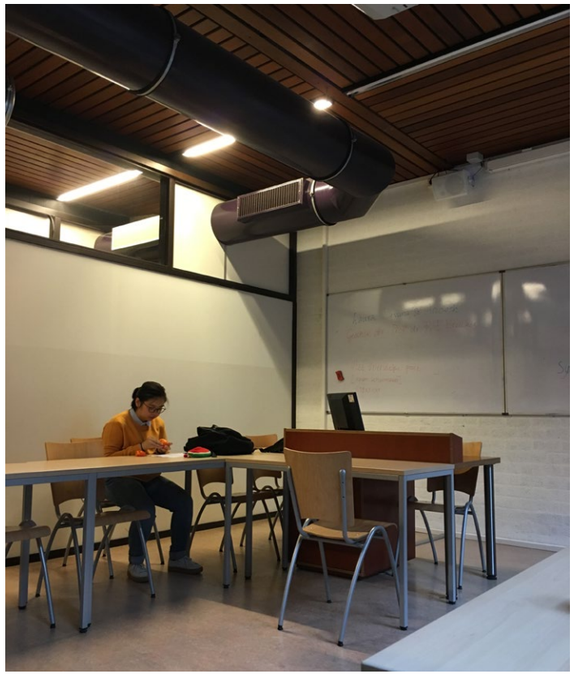
Summer Night



Winter Night



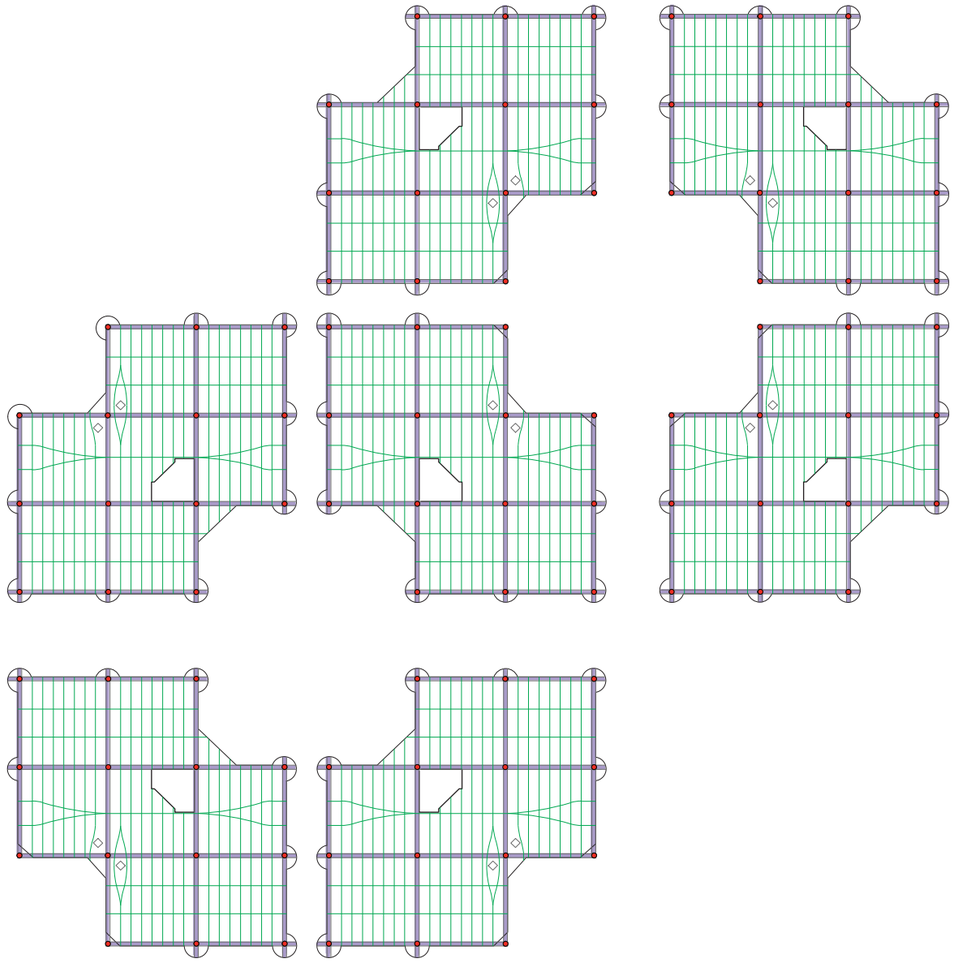
Existing View



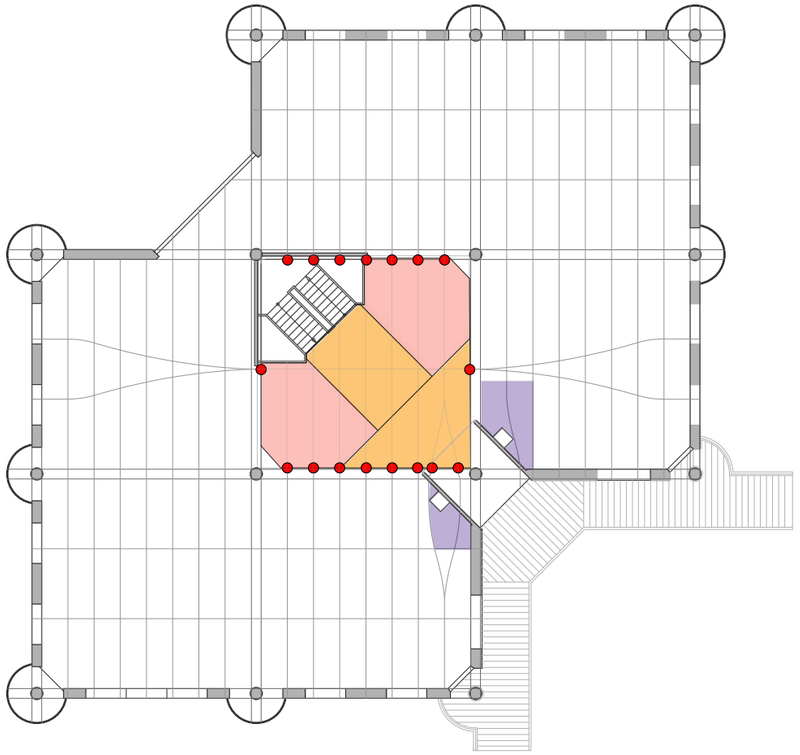
Perspective View

Perspective View

Void Study - Structural Analysis

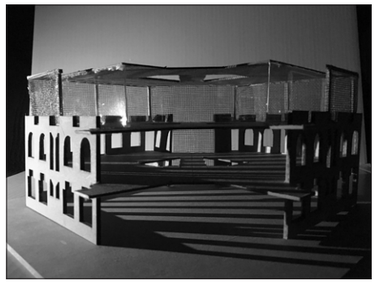
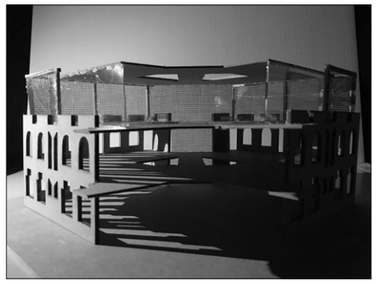
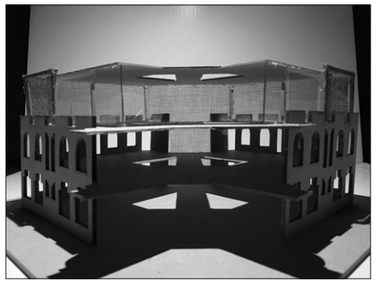
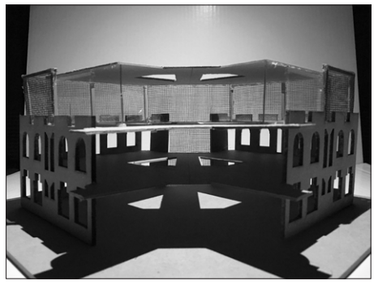
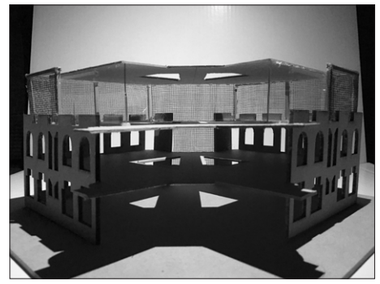
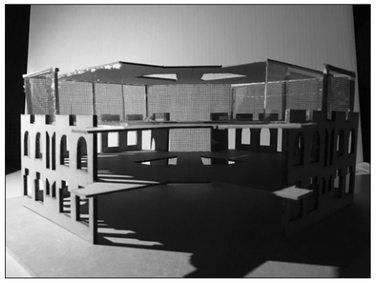
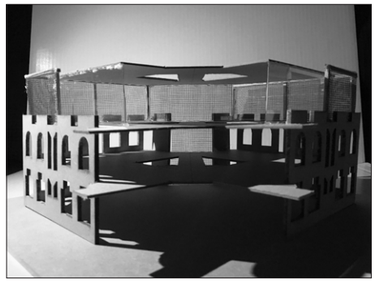
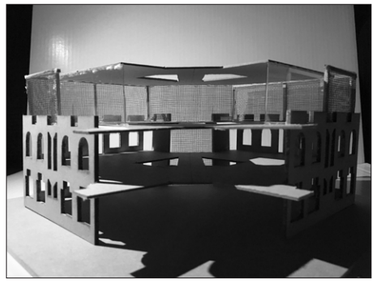
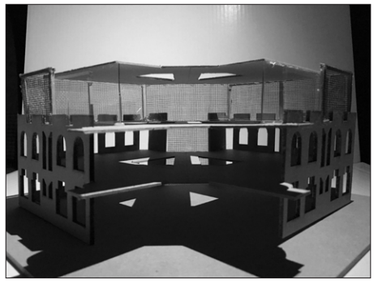
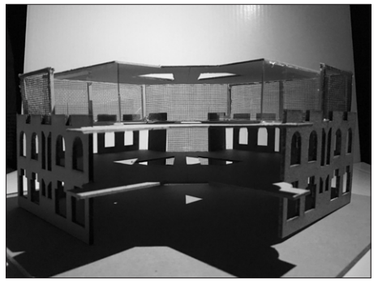
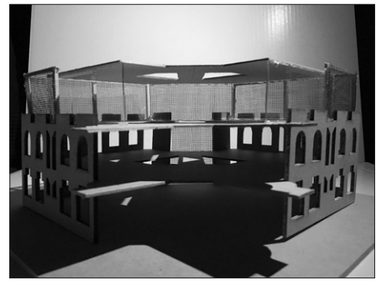
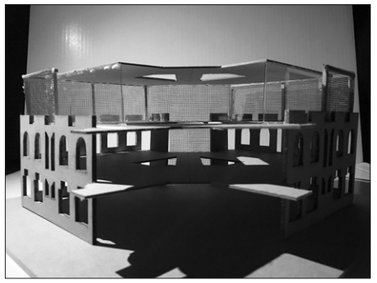
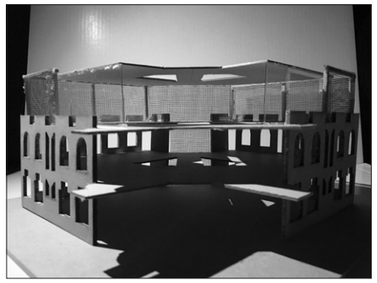
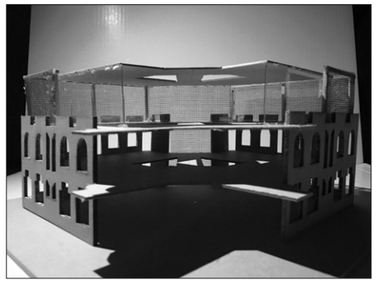
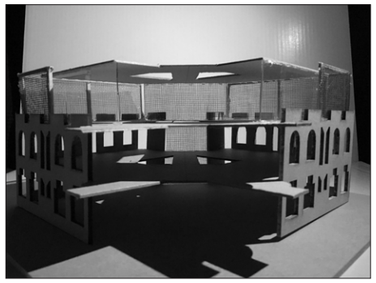
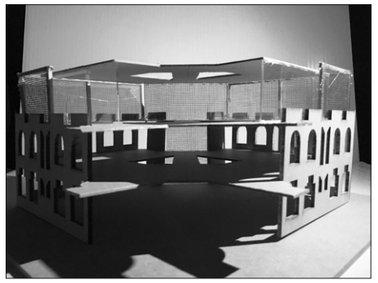
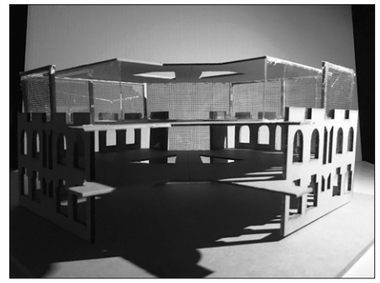
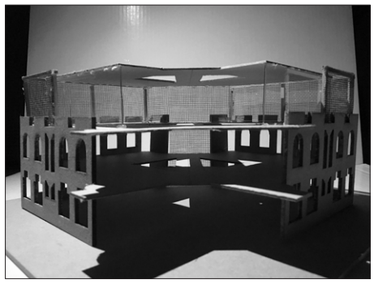
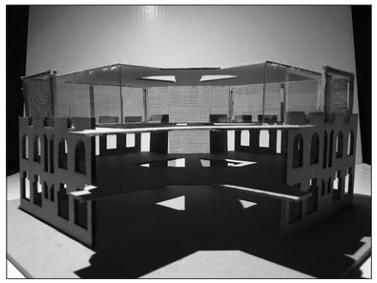
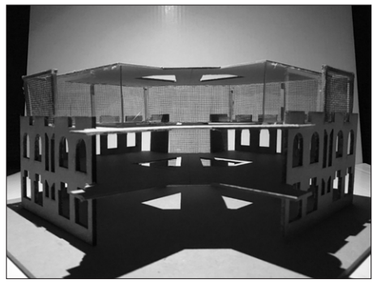


KEY
- Primary Structure- Columns
- Primary Structure- Steel reinforcement
- Secondary Structure- Steel reinforcement



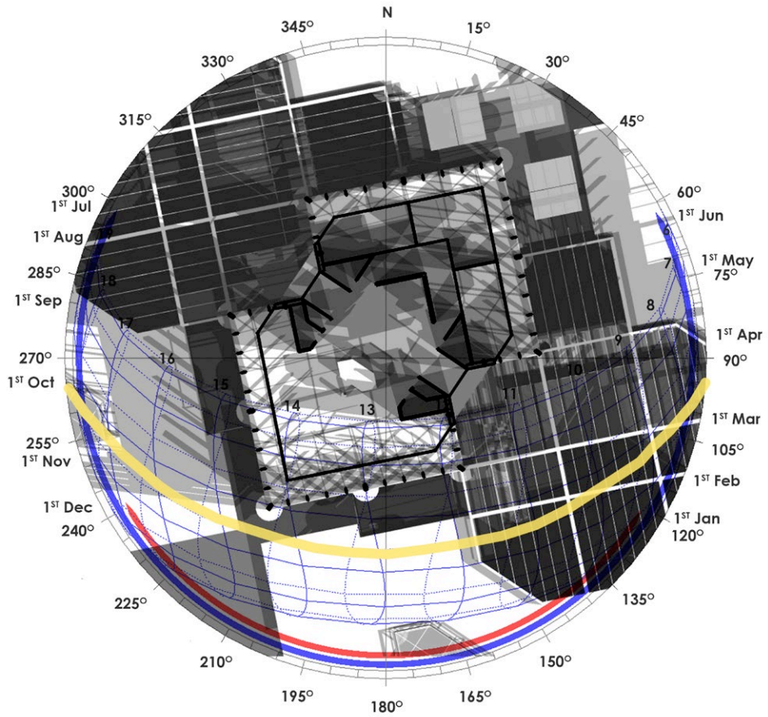
KEY
- Fix in place the pre-stressed cables
- Remove floor slab
- Replace floor
- Possible positions for new services voids. (Steel cables should remain intact)

Void Study - Shadow Analysis

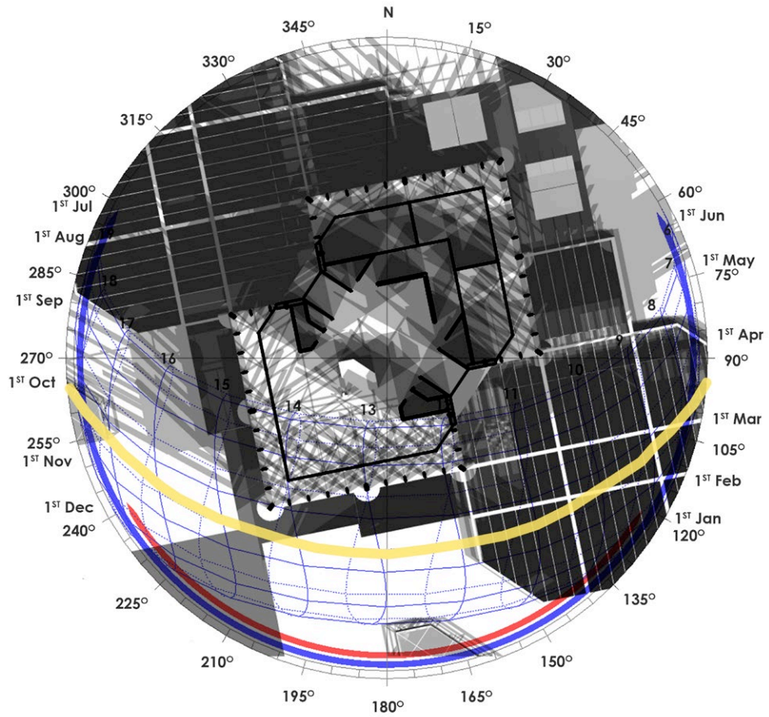























Shadow Study & Solar Analysis

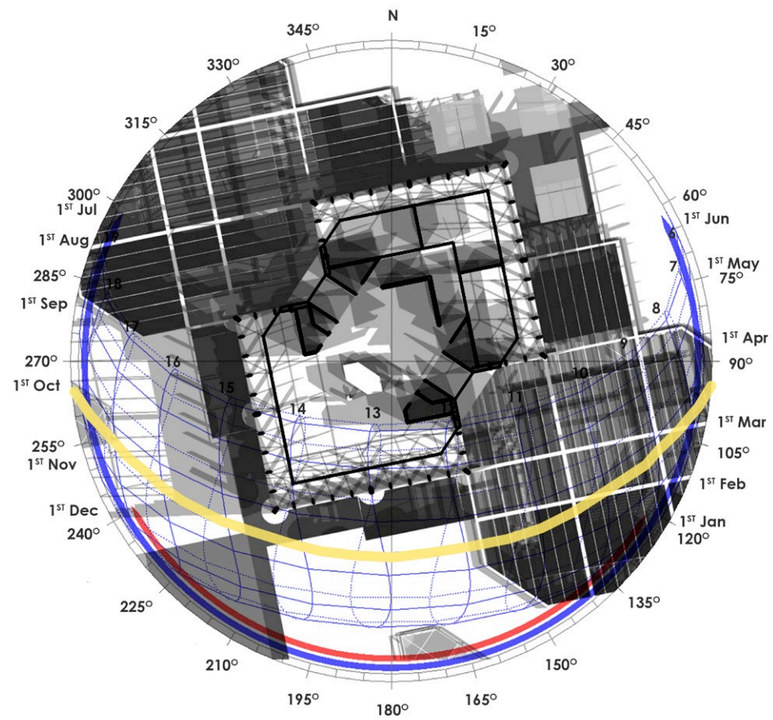
21 March



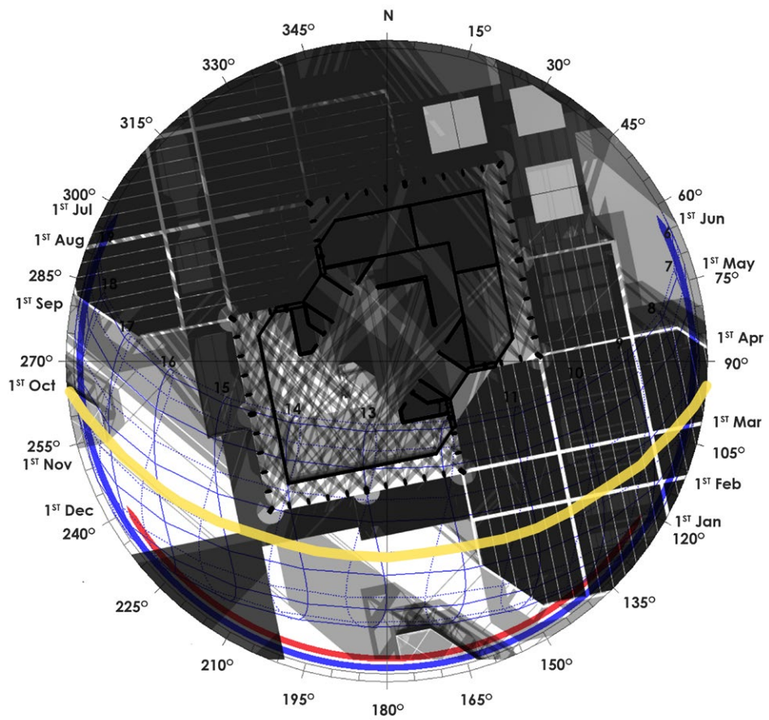
21 September



21 June

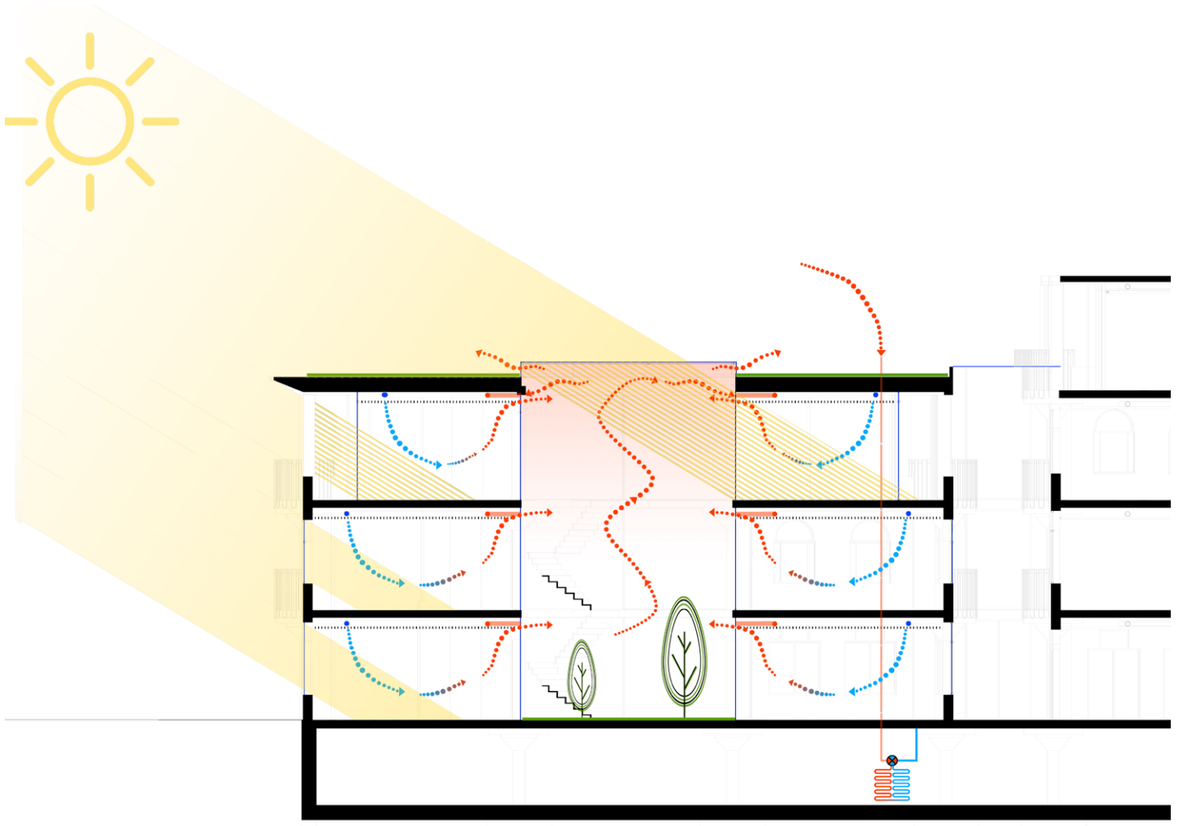


21 December

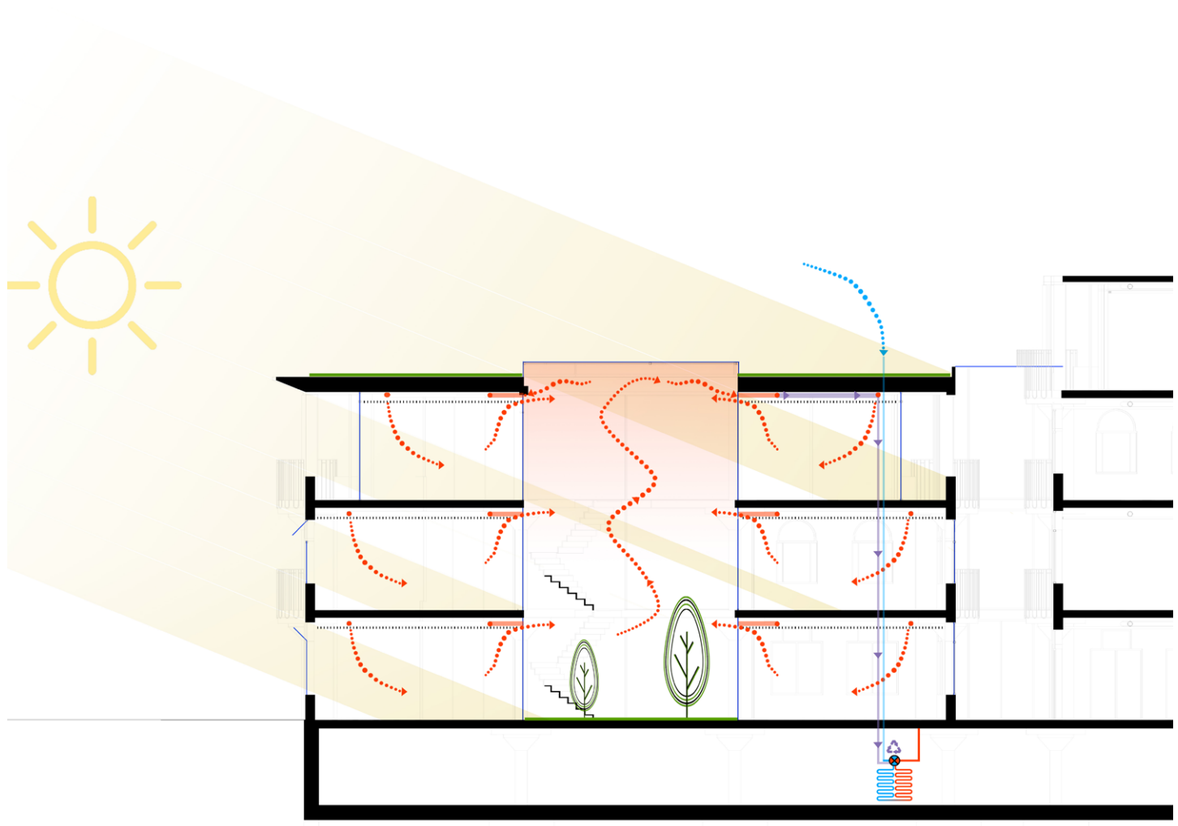


Environmental Strategies Diagram

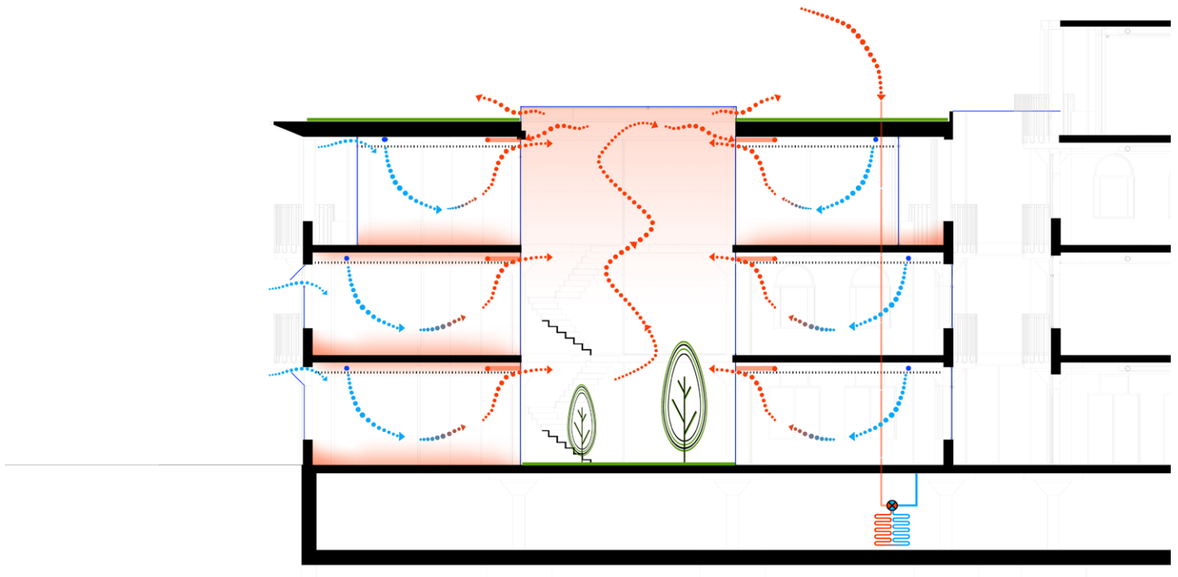
Summer Day



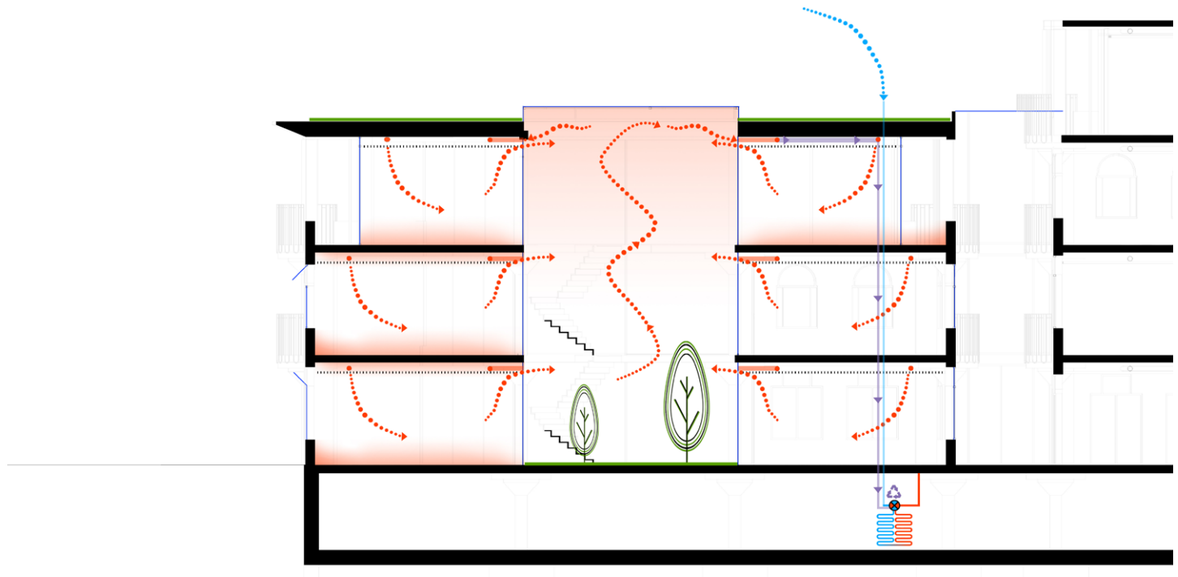
Winter Day



Summer Night

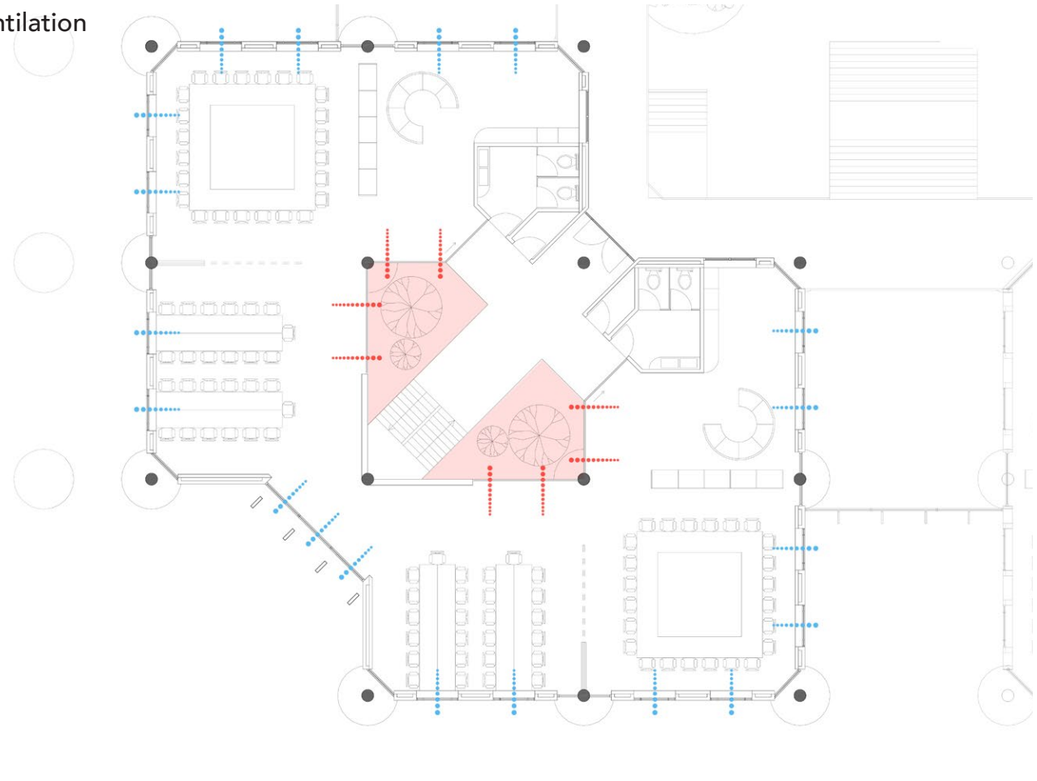


Winter Night

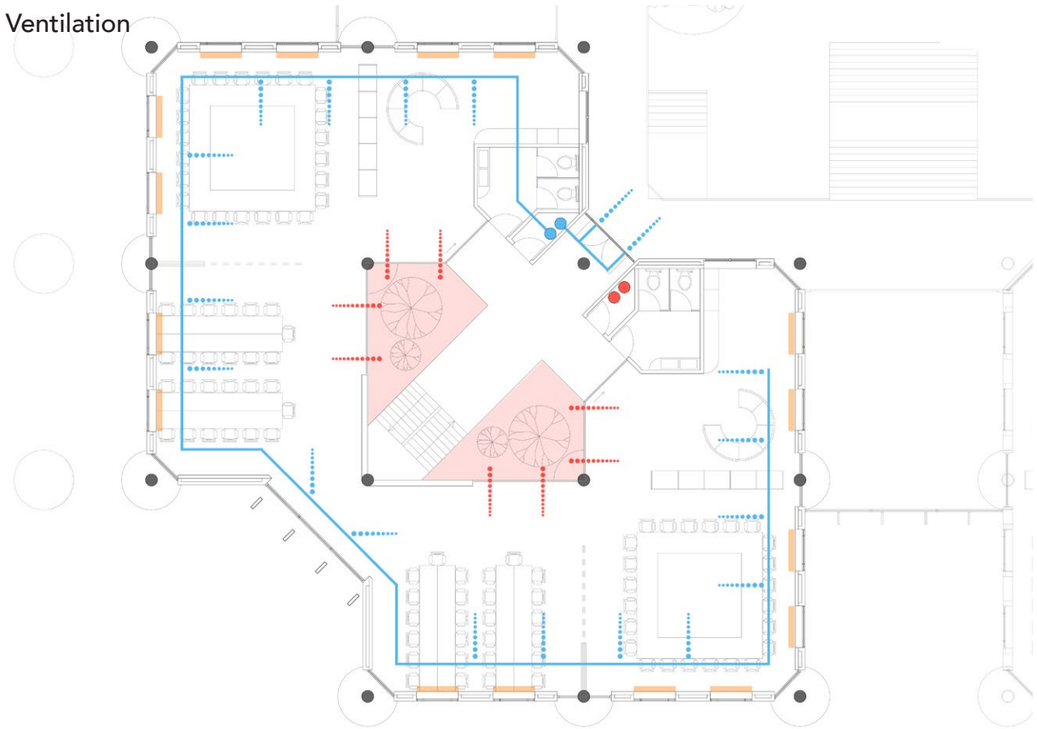


Ventilation Diagram - Existing Buildings' Plan

Natural Ventilation

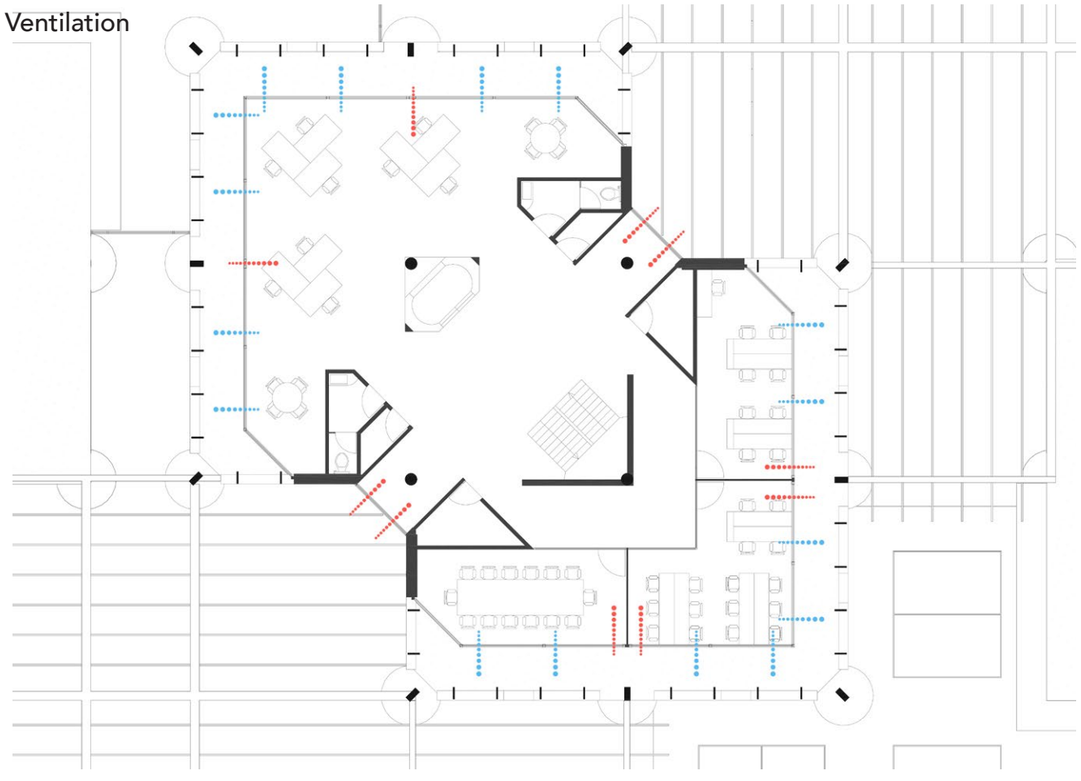


Mechanical Ventilation

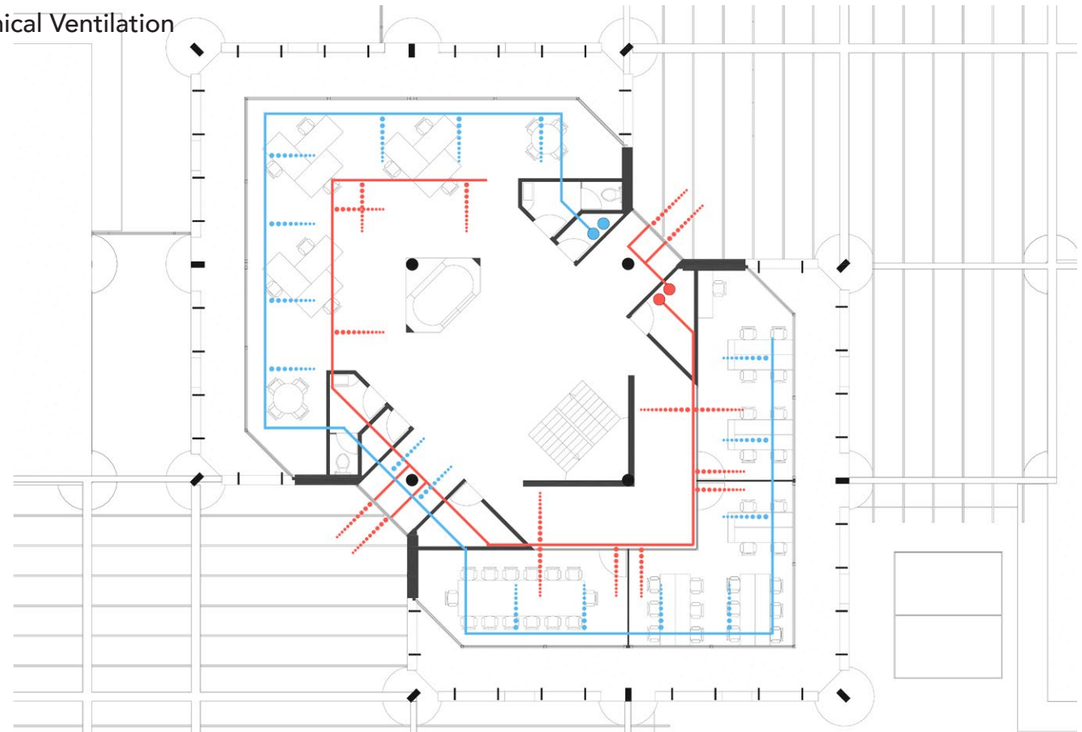


Ventilation Diagram - Extensions' Plan

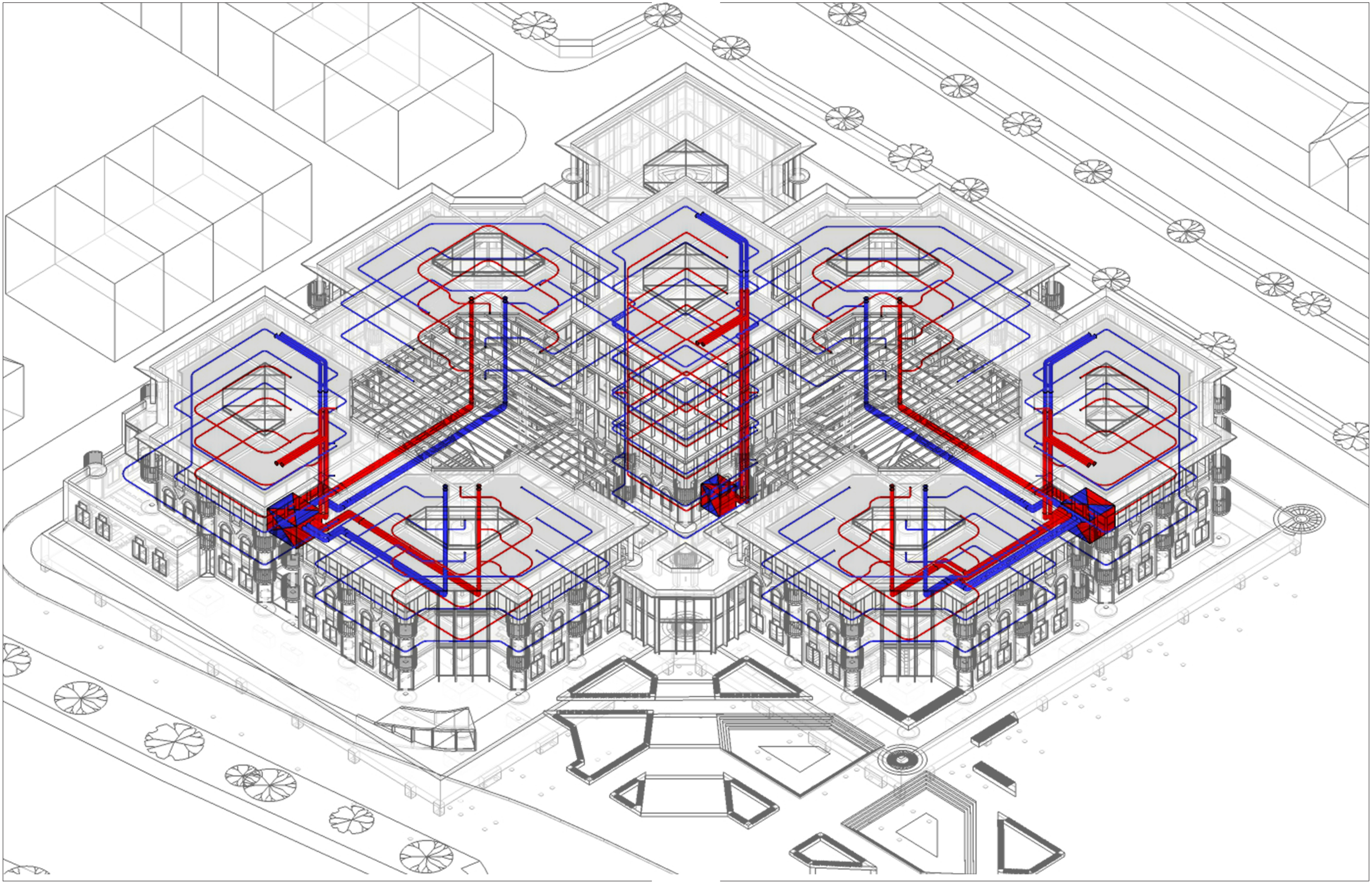
Natural Ventilation



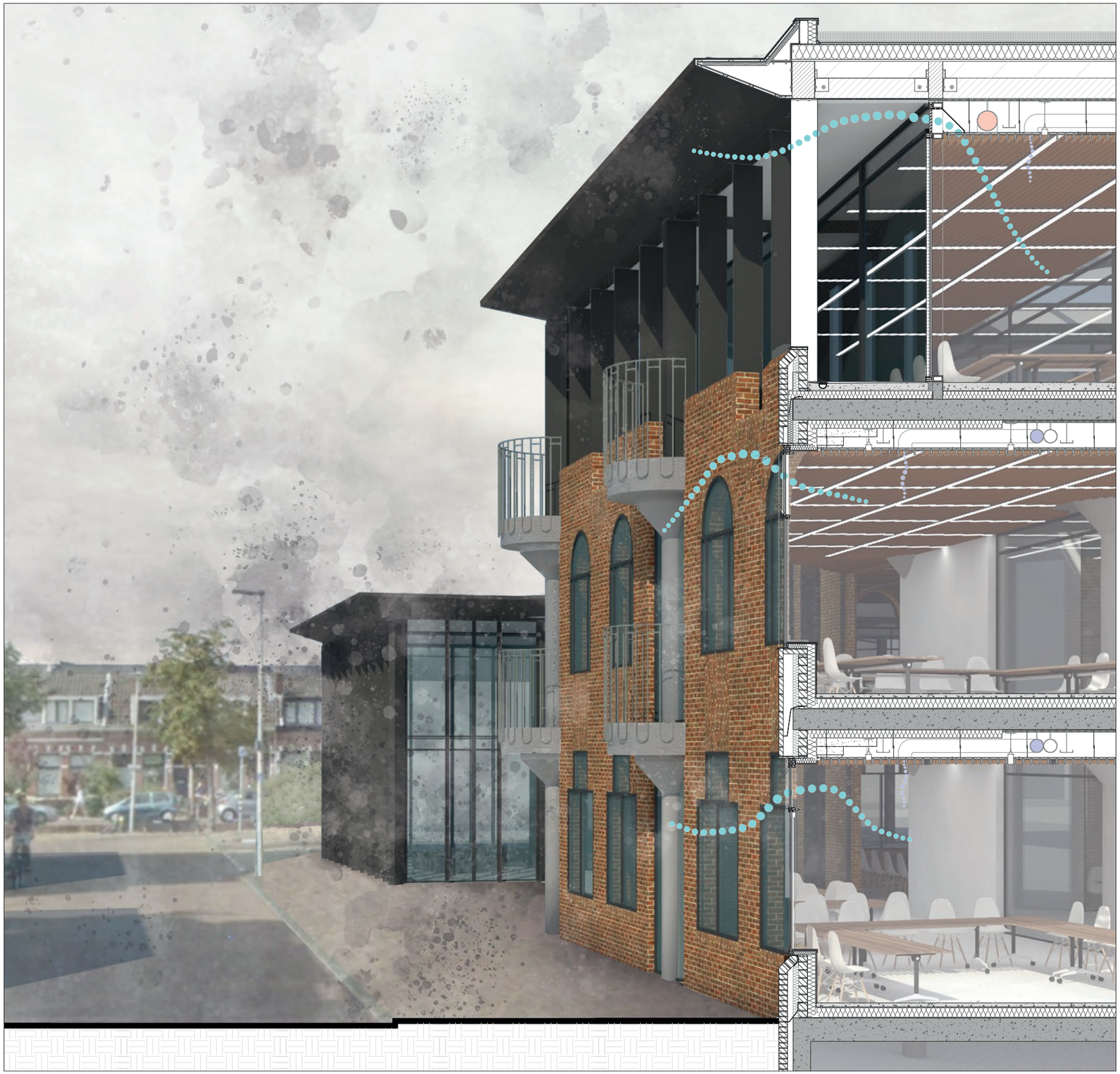
Mechanical Ventilation



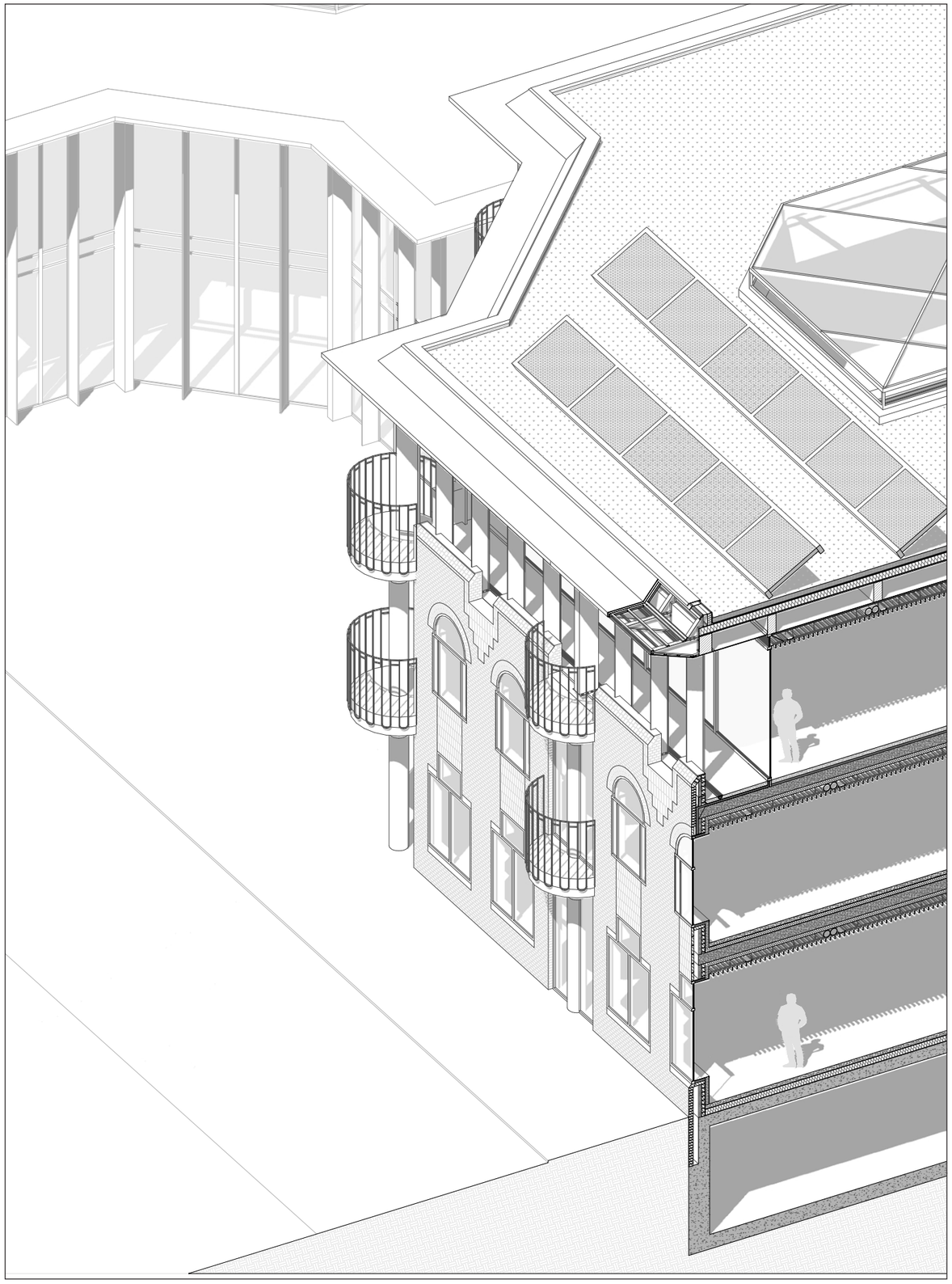
Axonometric Diagram- Mechanical Ventilation

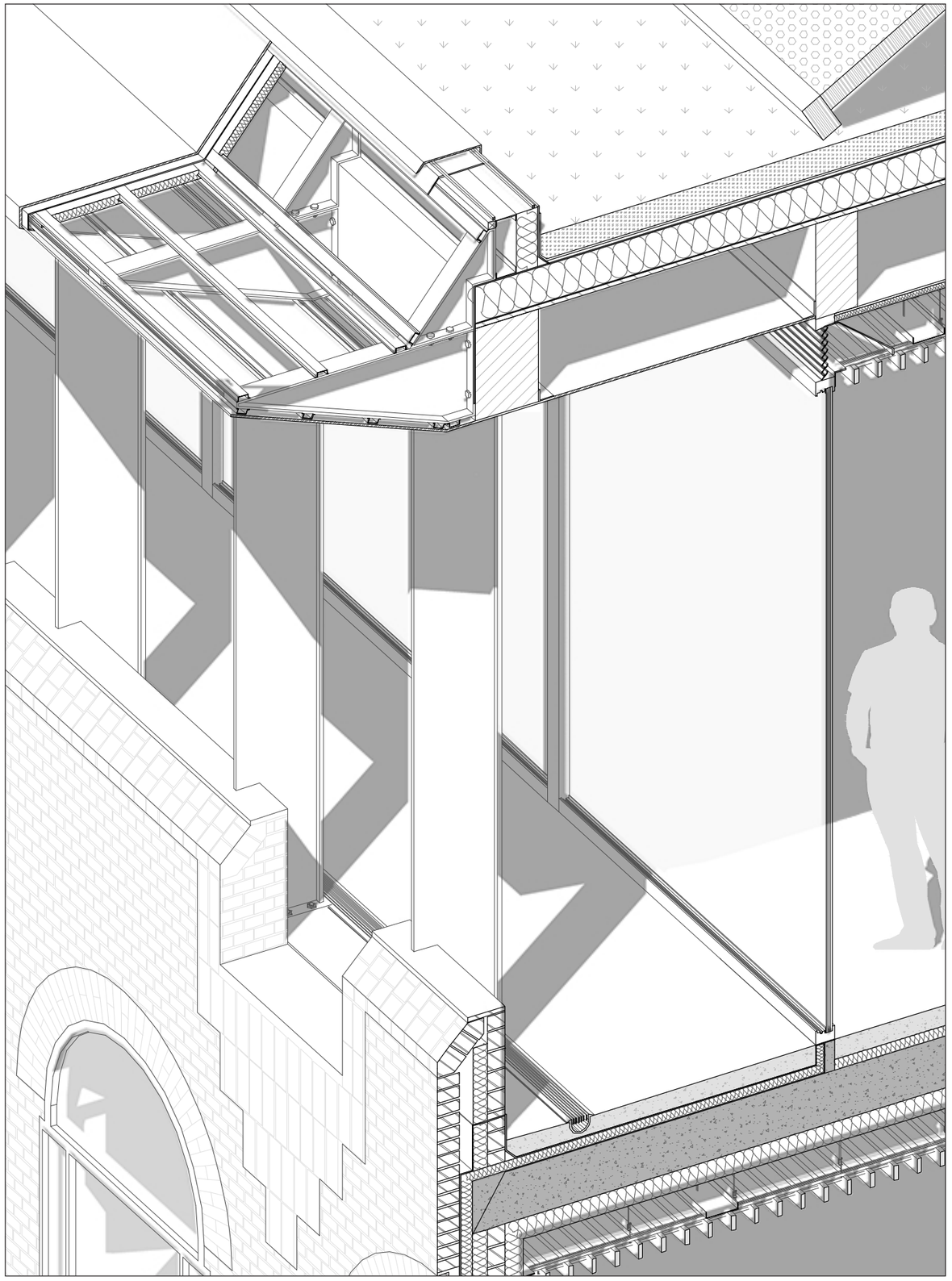


Details - Sectional Perspective, 1:50

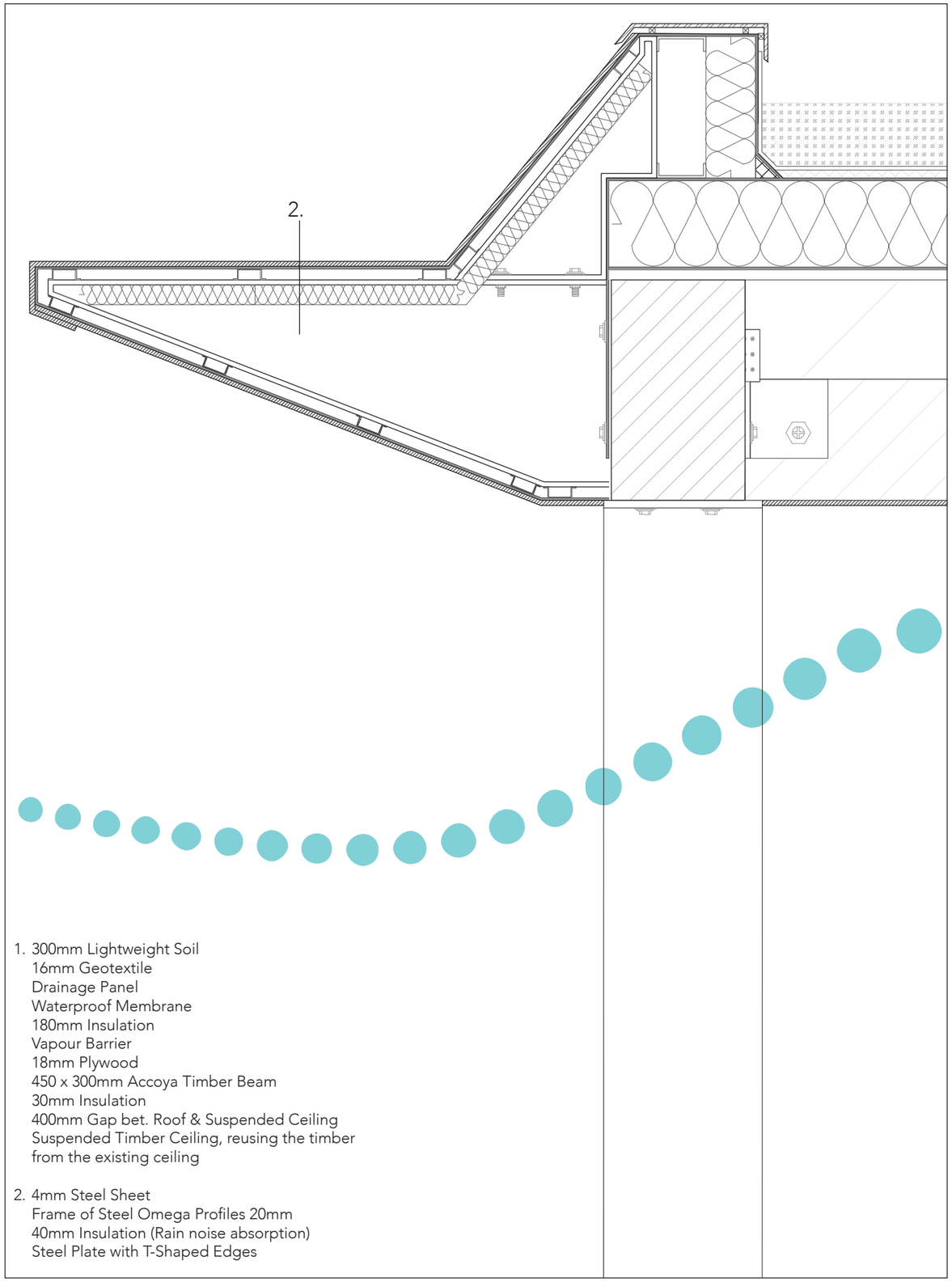


3D Axonometric Detail



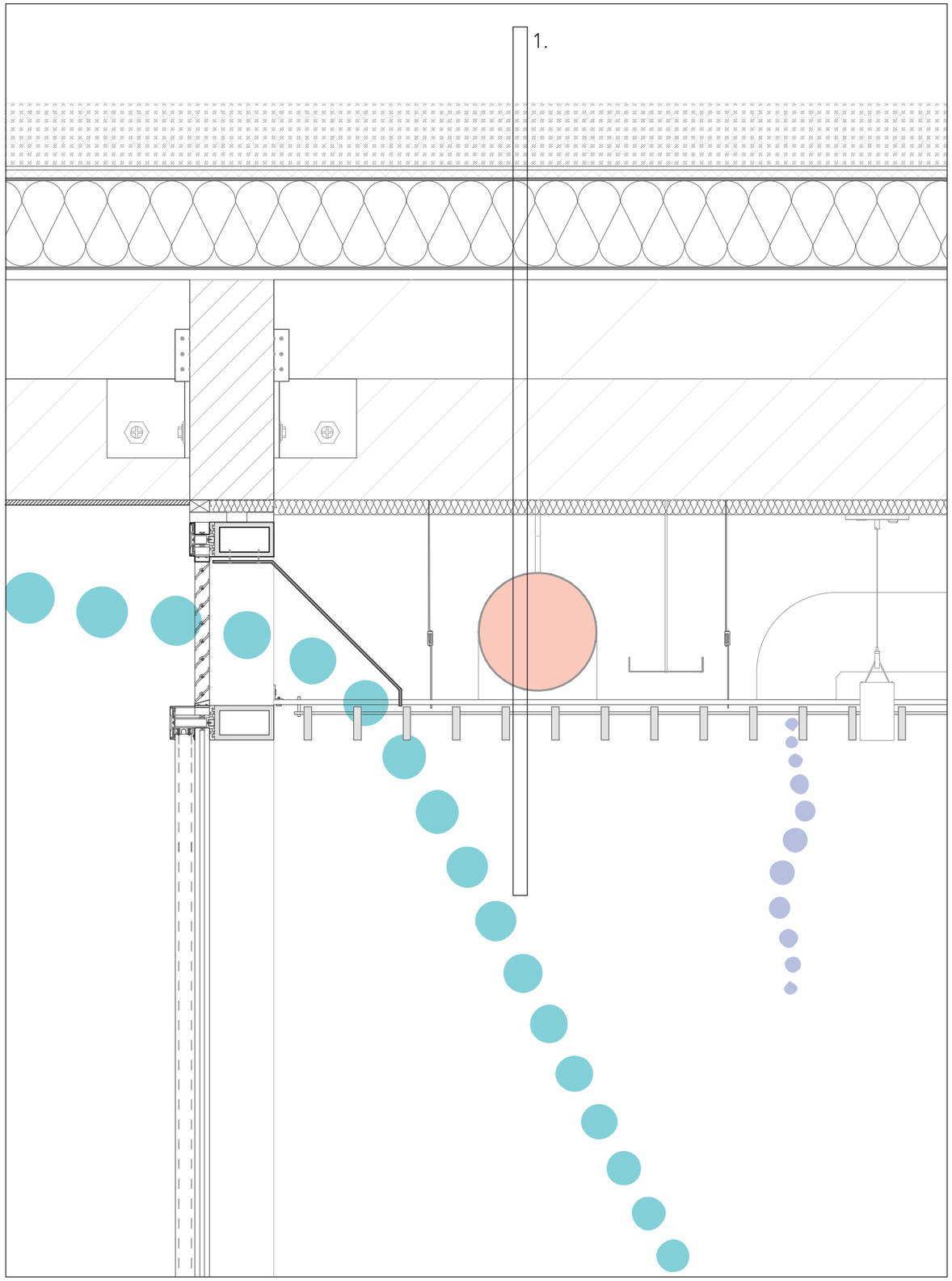


Details - Section, 1:10

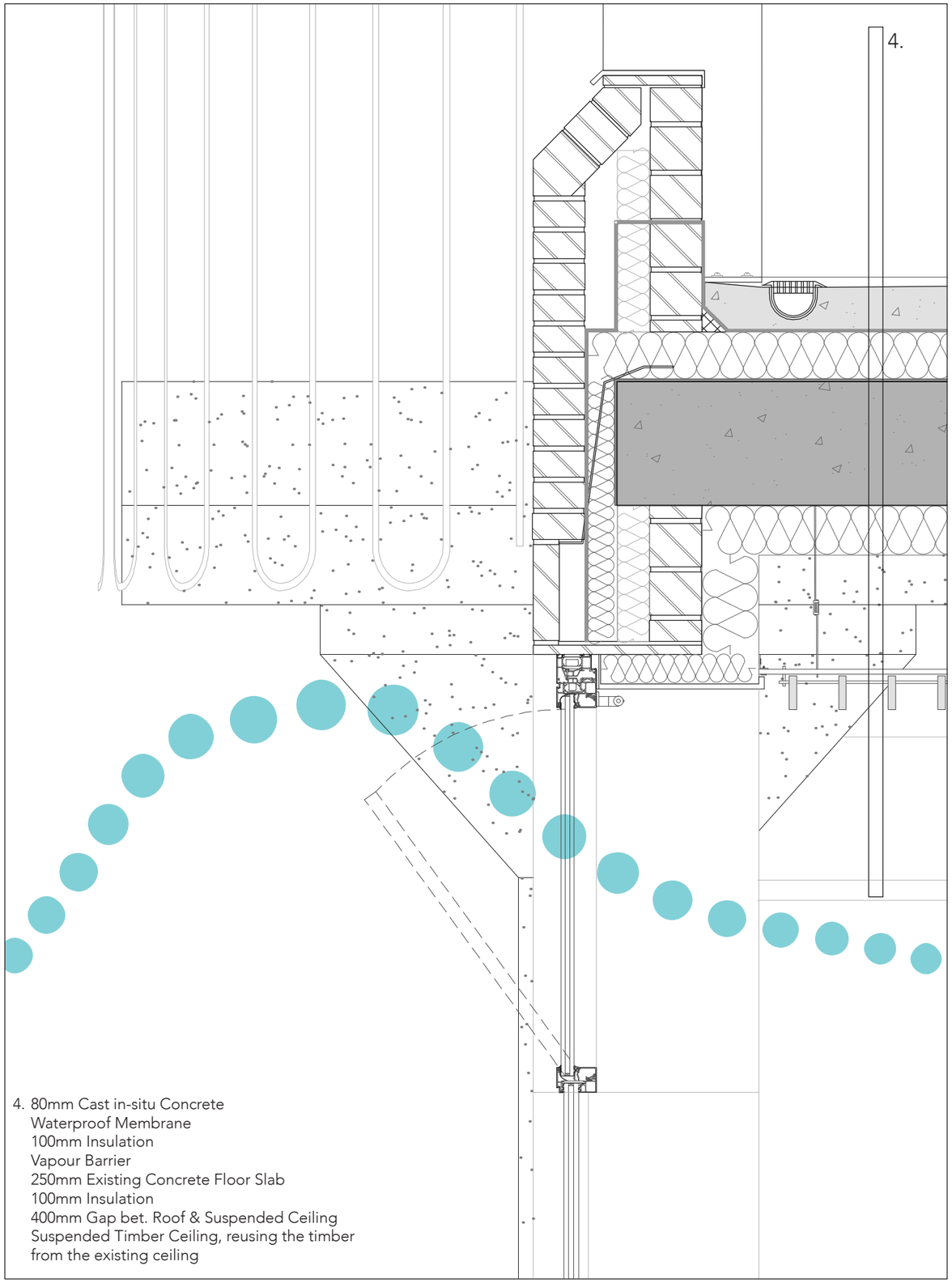


1. 300mm Lightweight Soil
   16mm Geotextile
   Drainage Panel
   Waterproof Membrane
   180mm Insulation
   Vapour Barrier
   18mm Plywood
   450 x 300mm Accoya Timber Beam
   30mm Insulation
   400mm Gap bet. Roof & Suspended Ceiling
   Suspended Timber Ceiling, reusing the timber
   from the existing ceiling

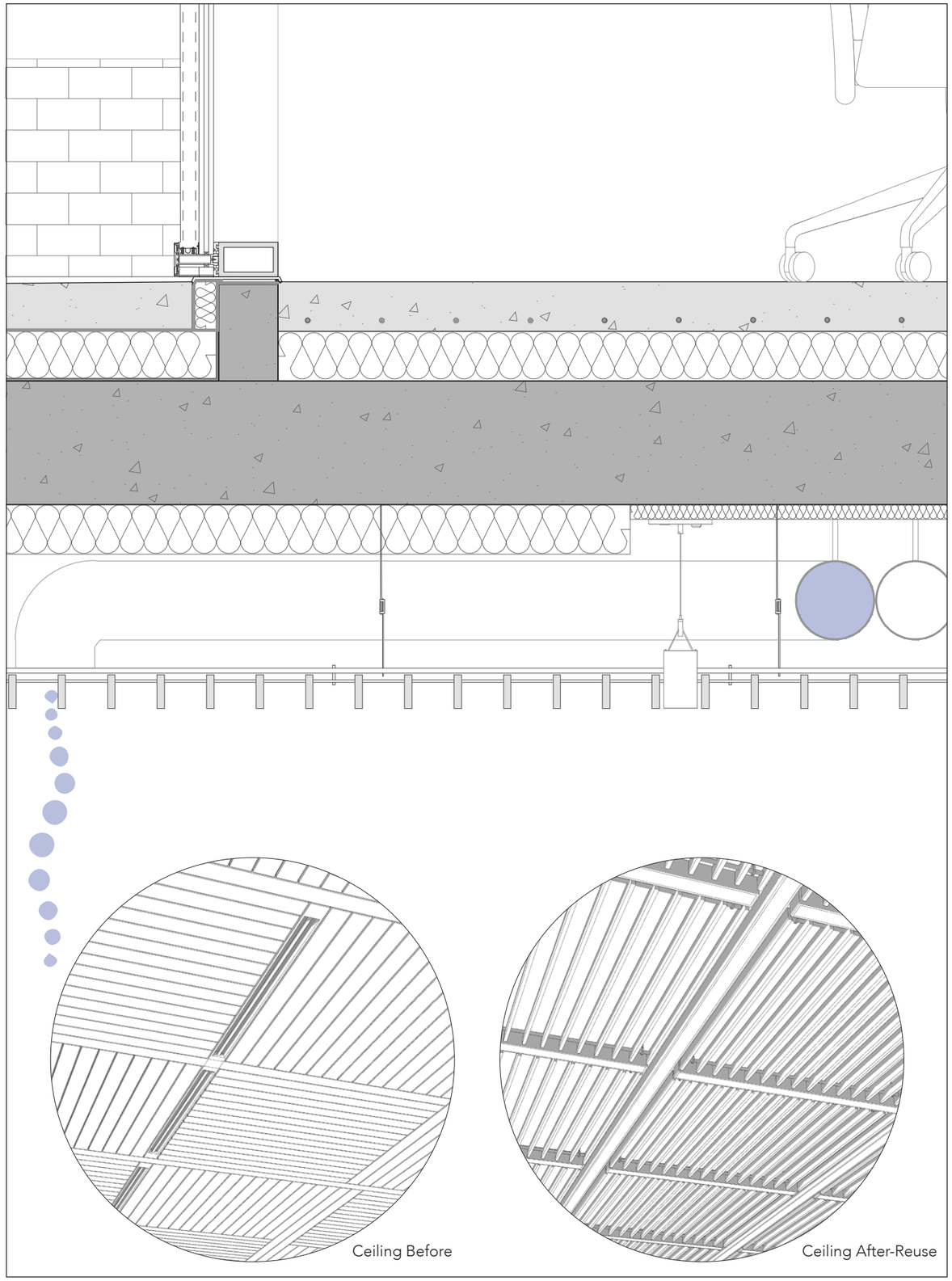
2. 4mm Steel Sheet
   Frame of Steel Omega Profiles 20mm
   40mm Insulation (Rain noise absorption)
   Steel Plate with T-Shaped Edges



Details - Section, 1:10



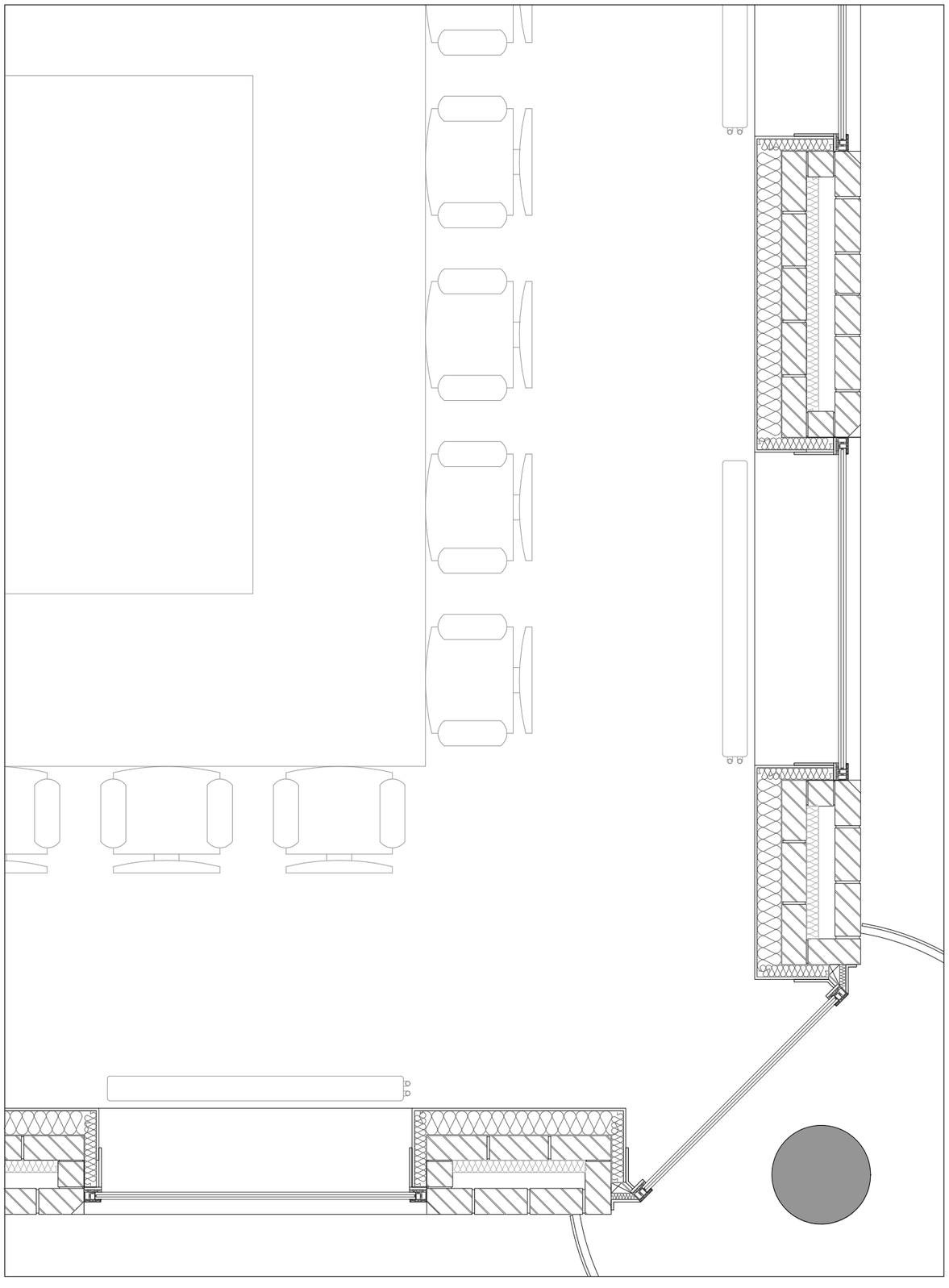
4. 80mm Cast in-situ Concrete
   Waterproof Membrane
   100mm Insulation
   Vapour Barrier
   250mm Existing Concrete Floor Slab
   100mm Insulation
   400mm Gap bet. Roof & Suspended Ceiling
   Suspended Timber Ceiling, reusing the timber
   from the existing ceiling



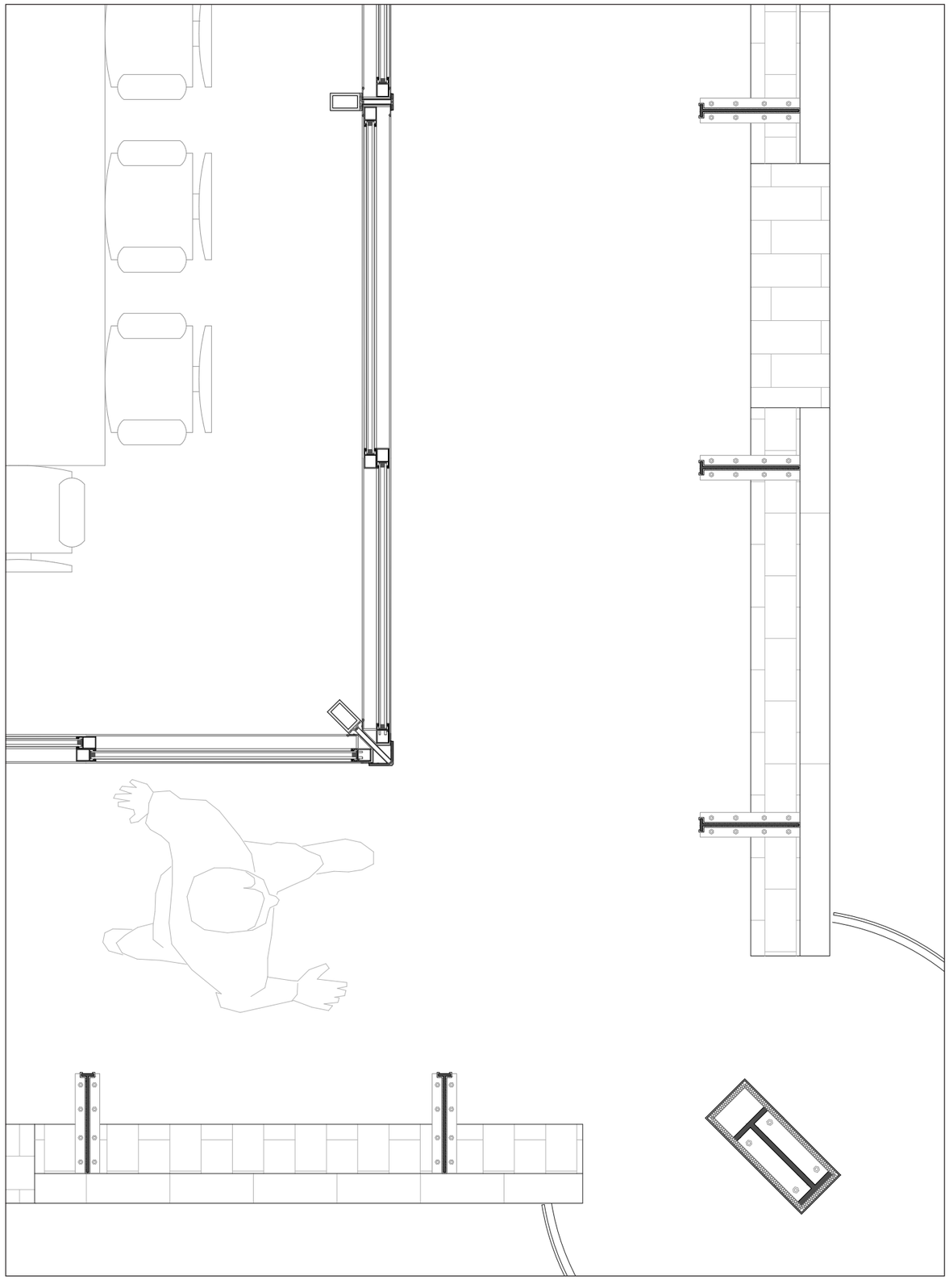
Ceiling Before

Ceiling After-Reuse

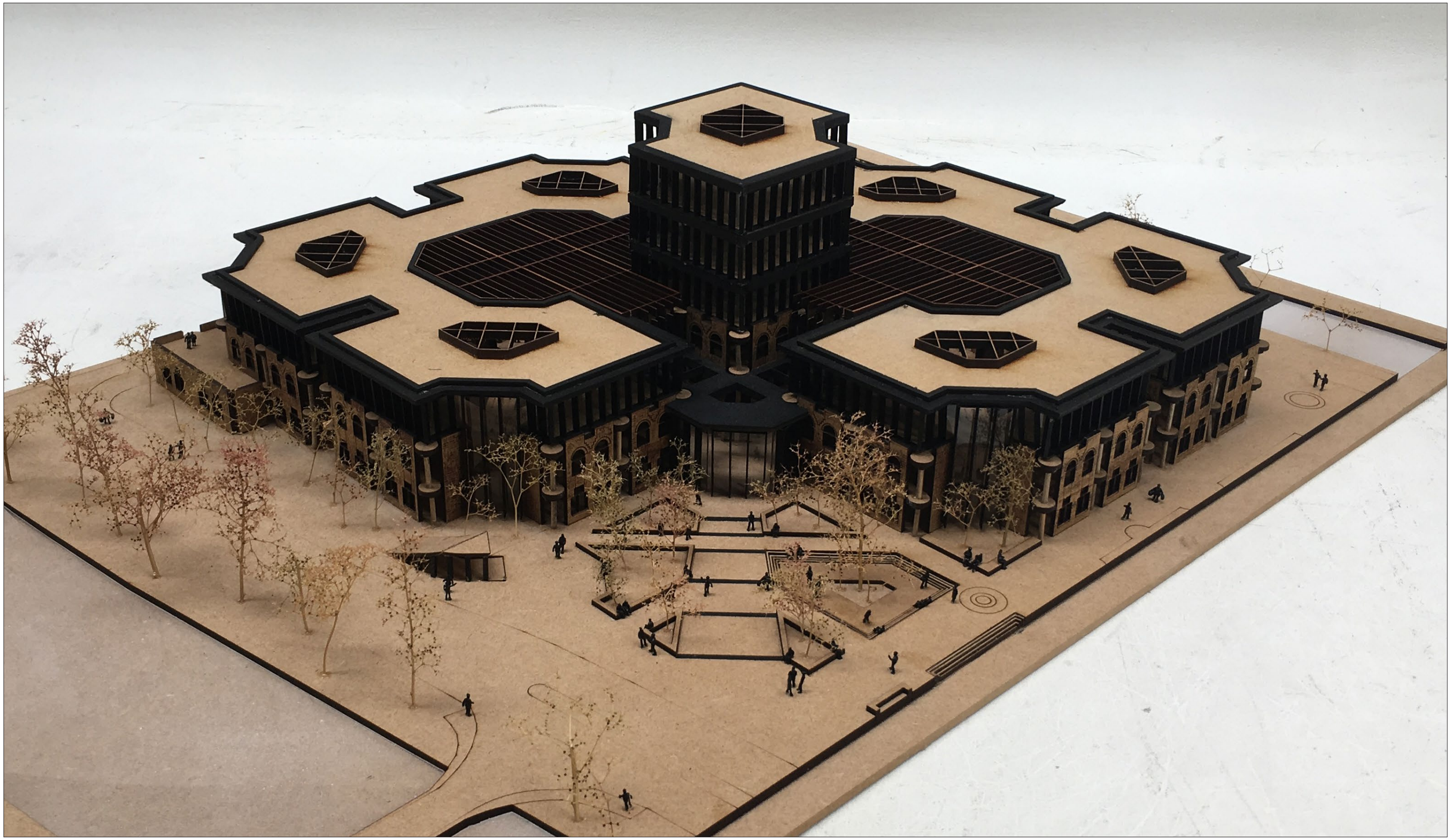
Details - Existing Plan, 1:20

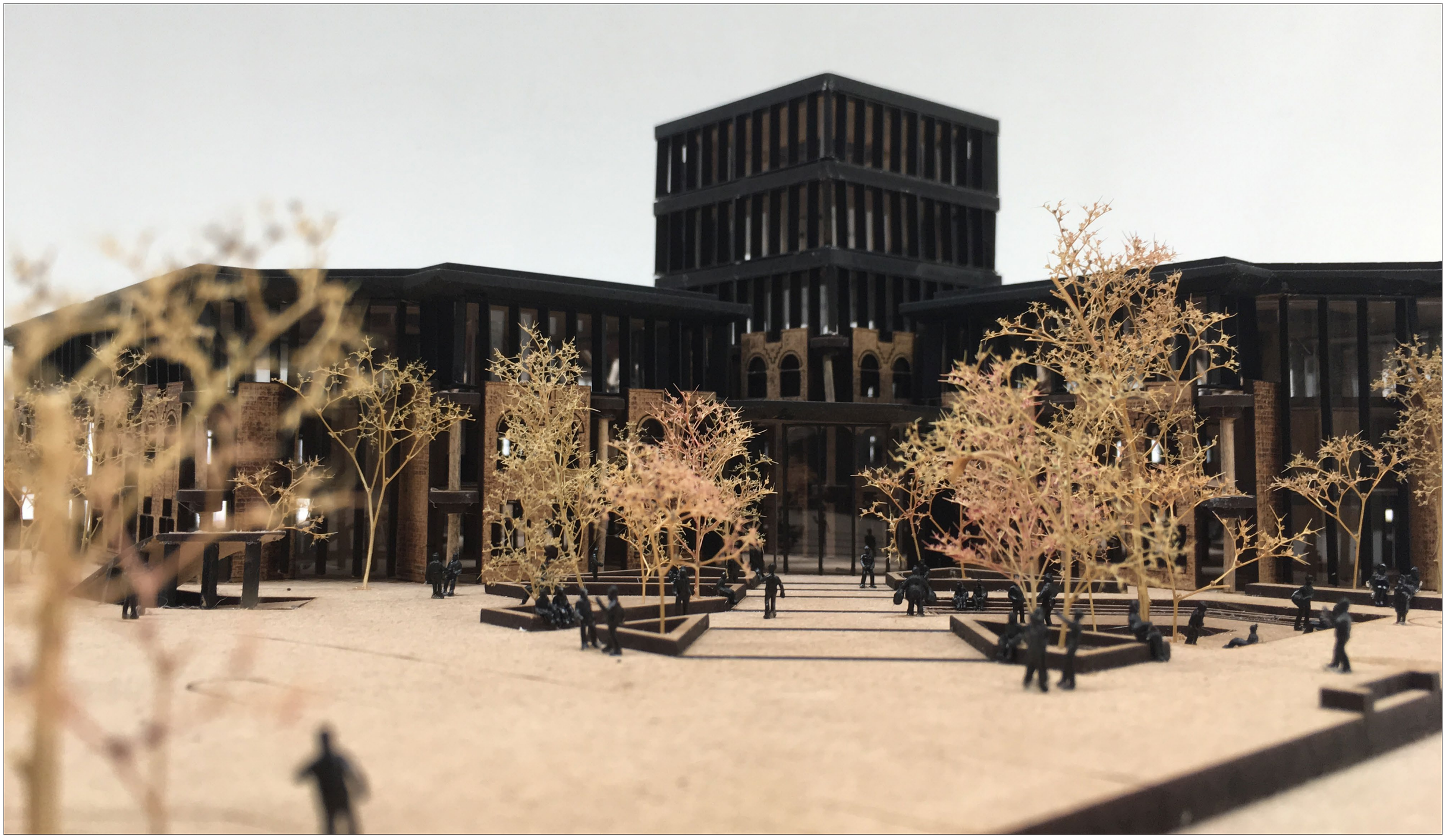


Details - Extension Plan, 1:20



Physical Model





Link

Revitalization

Image- Highlight the Existing

Hierarchy

Sustainability

THANK YOU !