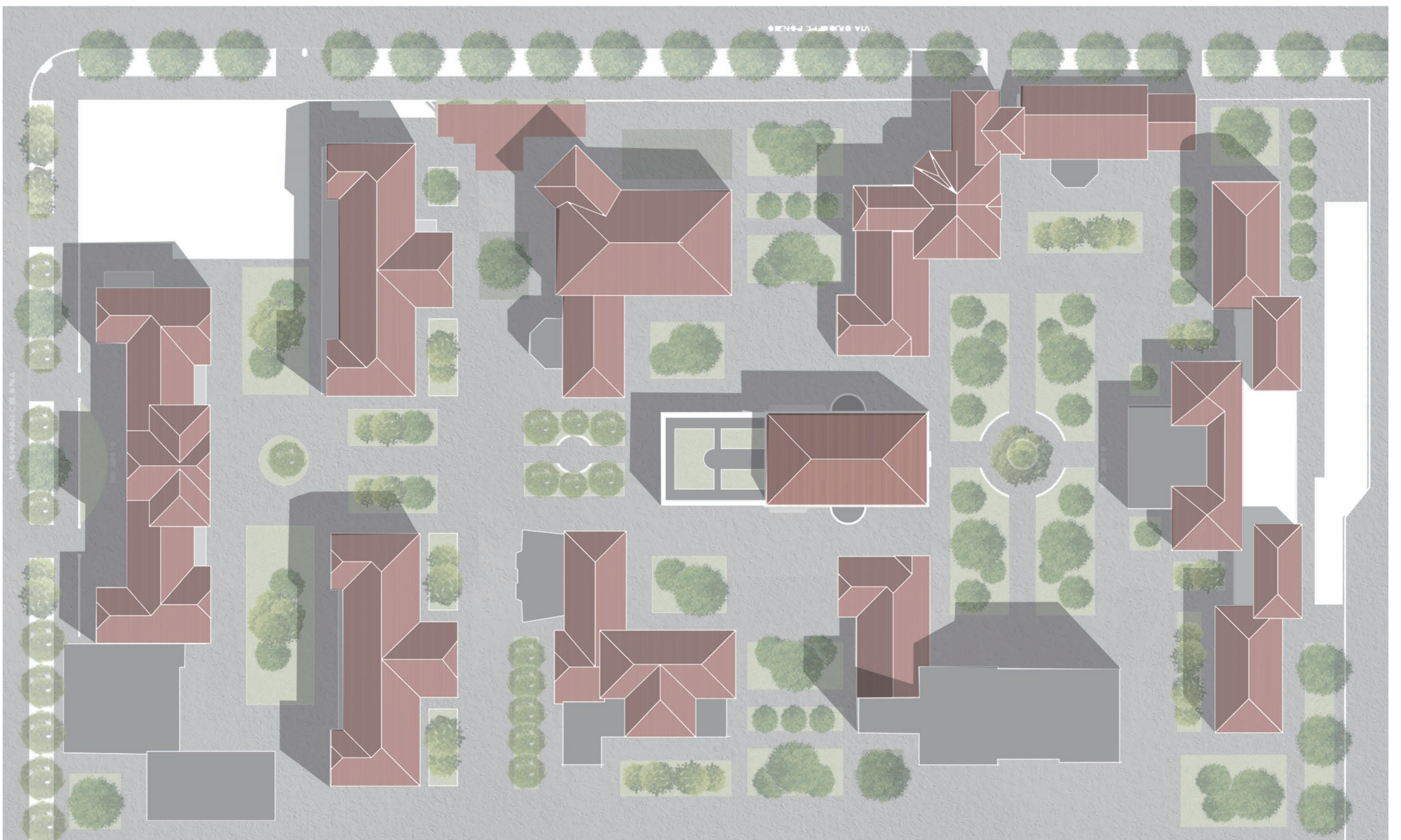




View from North Facade



Site Plan 1:500



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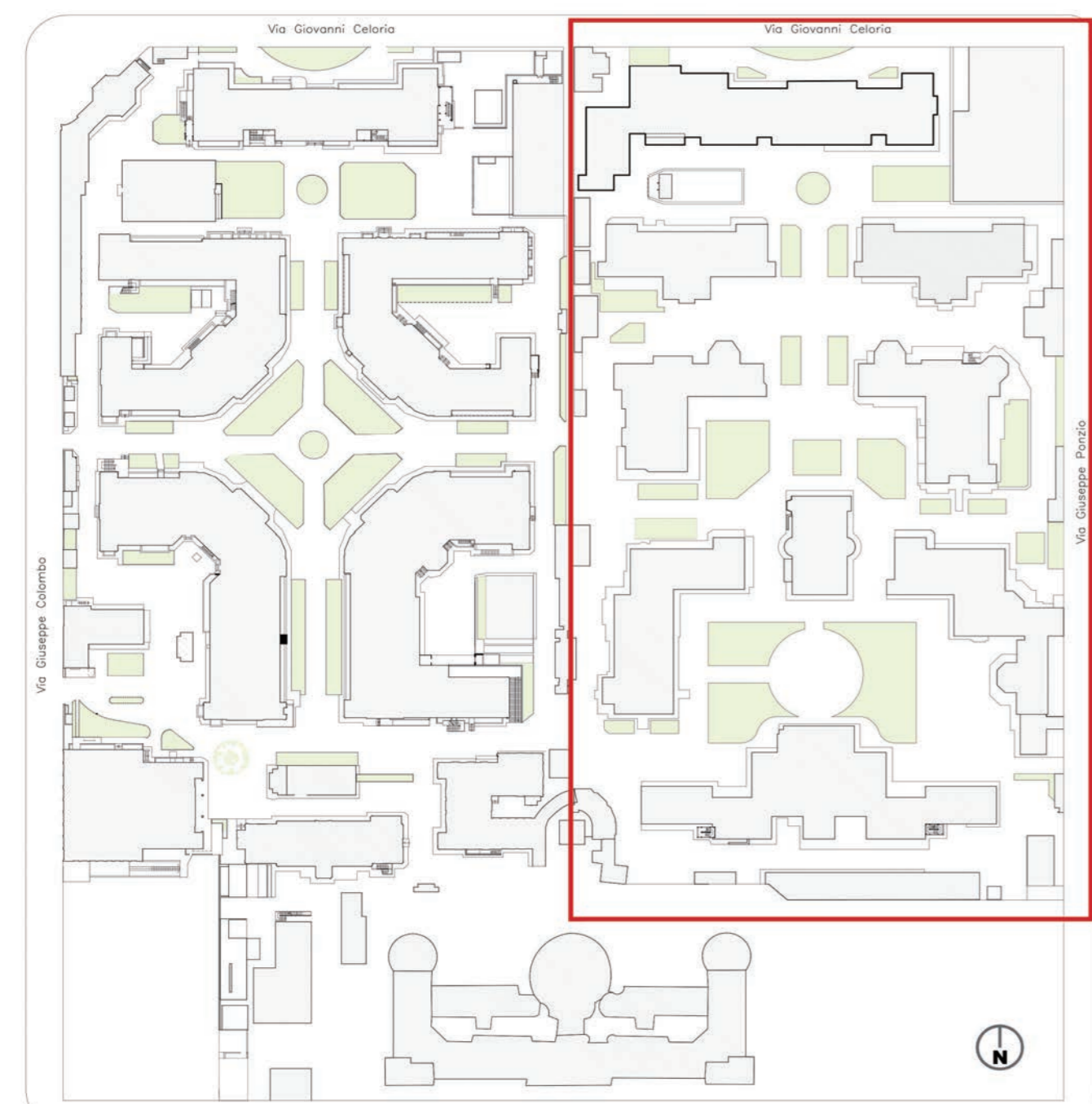
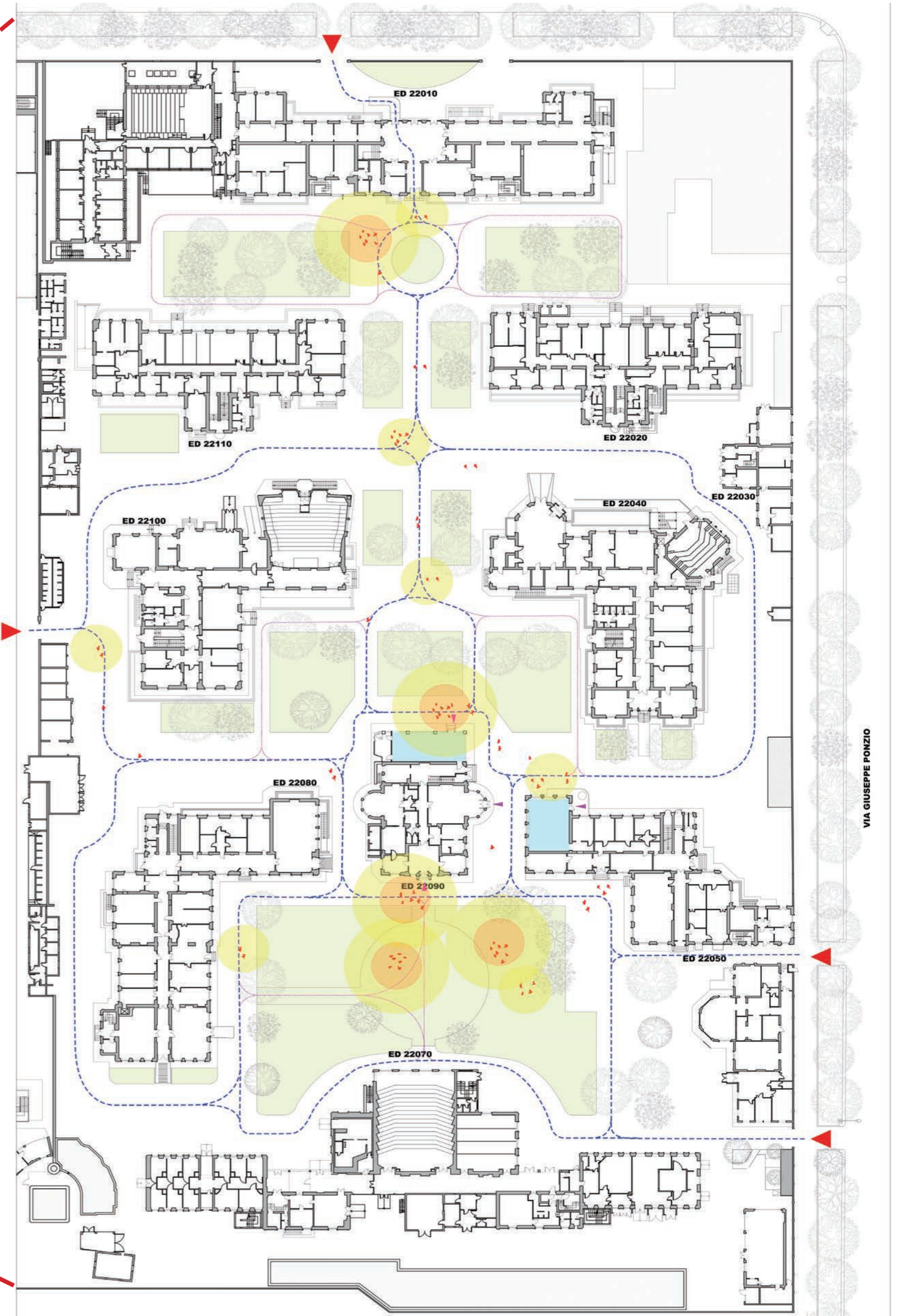
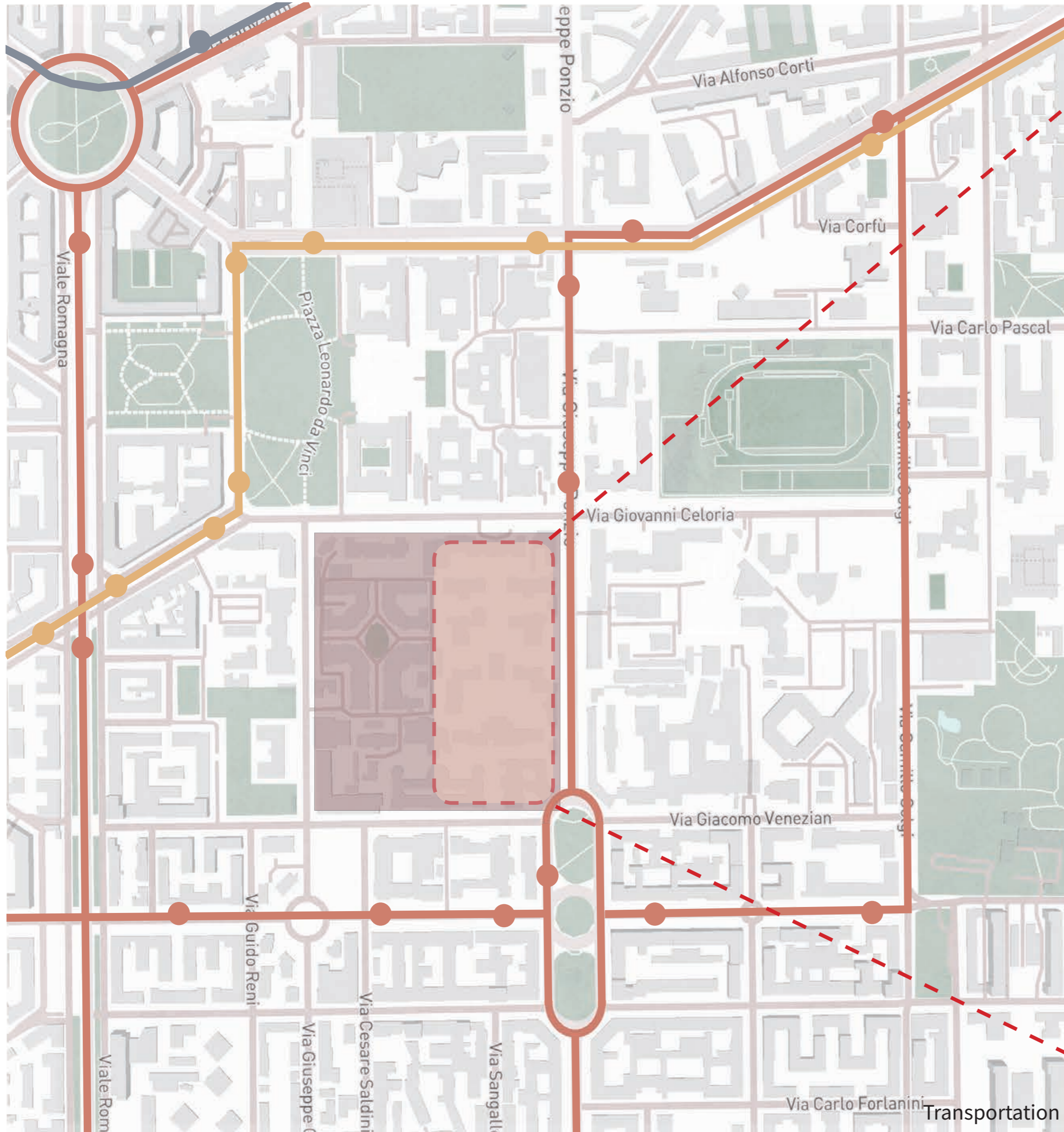
Collaborators:
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 Simoncelli Marco

Students:
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 Jian Deng

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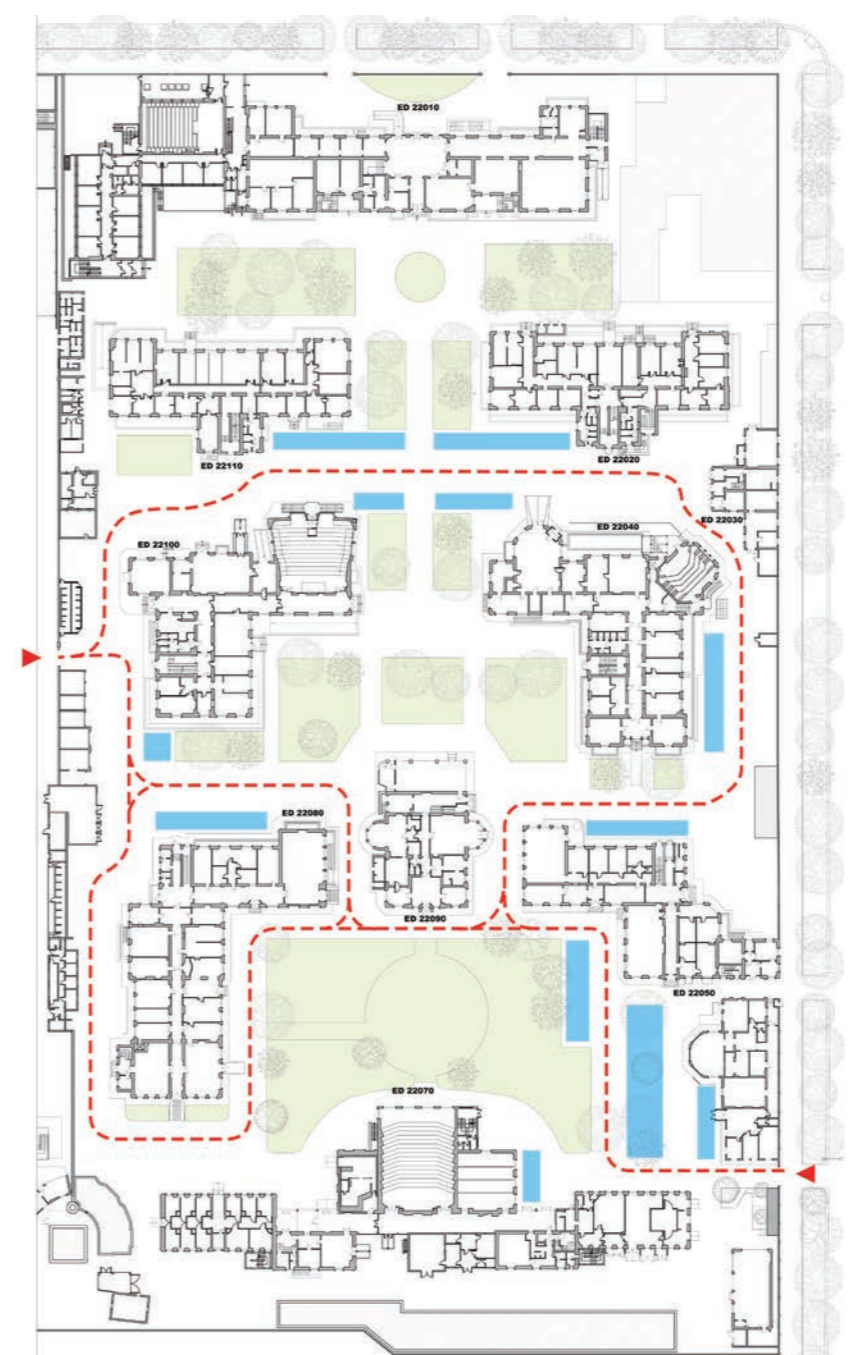
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Site Analysis

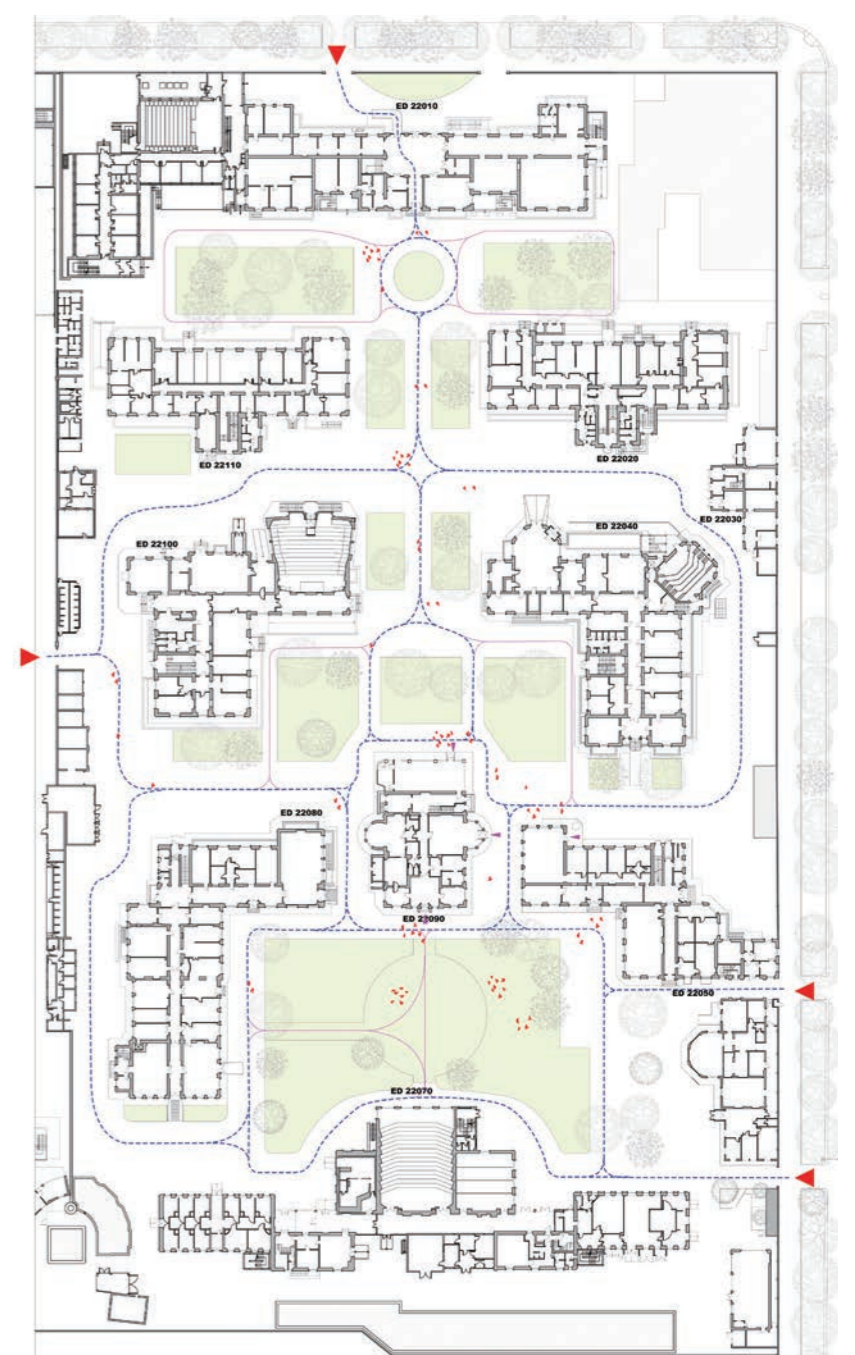


- PROJECT AREA
- GREEN AREA
- MAIN ROADS
- BUS LINE
- BUS STOP
- TRAM LINE
- TRAM STOP
- SUBWAY LINE
- SUBWAY STOP
- Primary Pathway
- Secondary Pathway
- Site Entrance
- Building Entrance
- People
- High Density Crowd
- Medium Density Crowd
- Classroom In Use
- Roadway
- Site Entrance
- Parking space

Site Plan



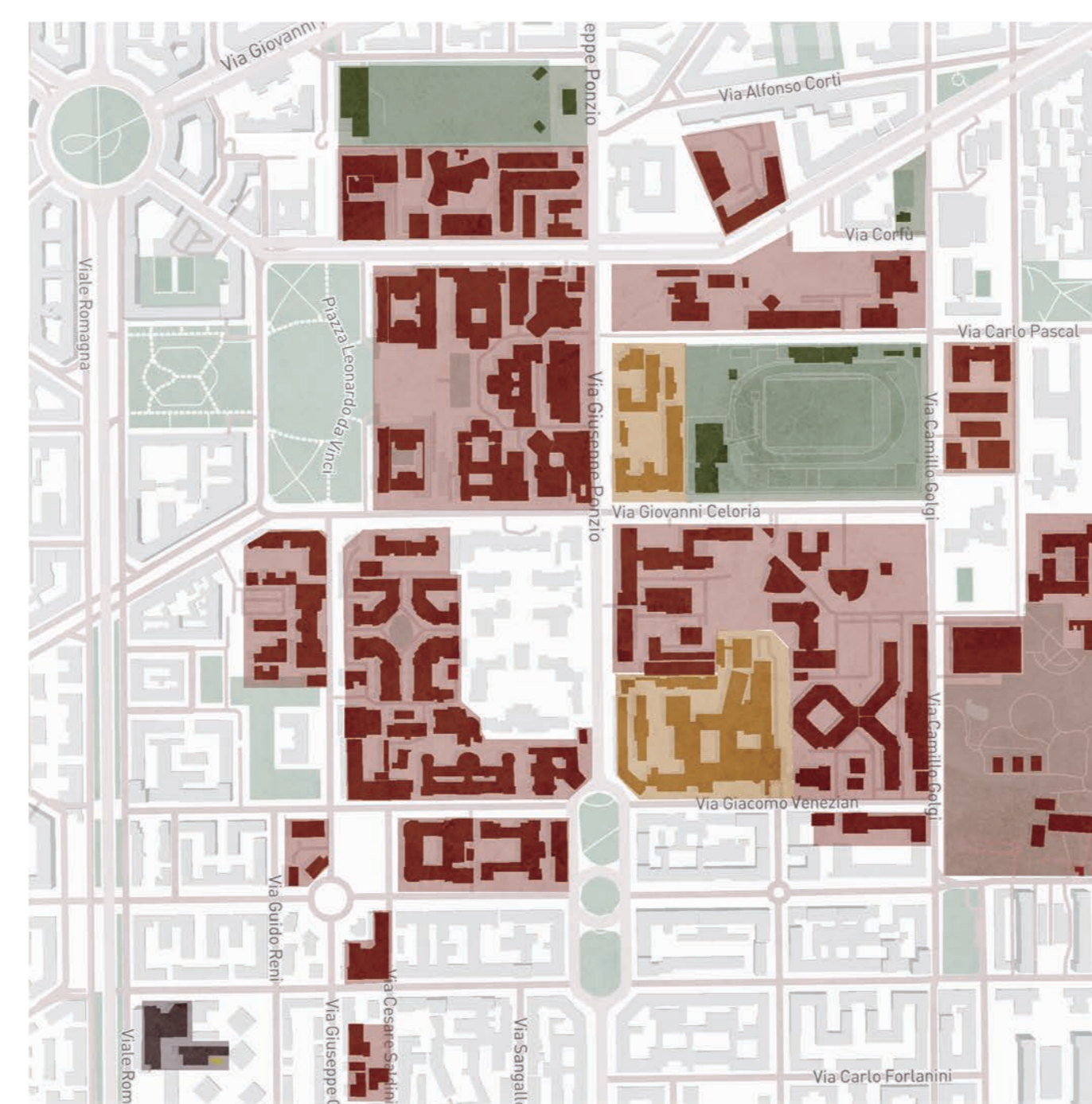
Vehicle Circulation



Pedestrian Circulation



Building Ages



Function

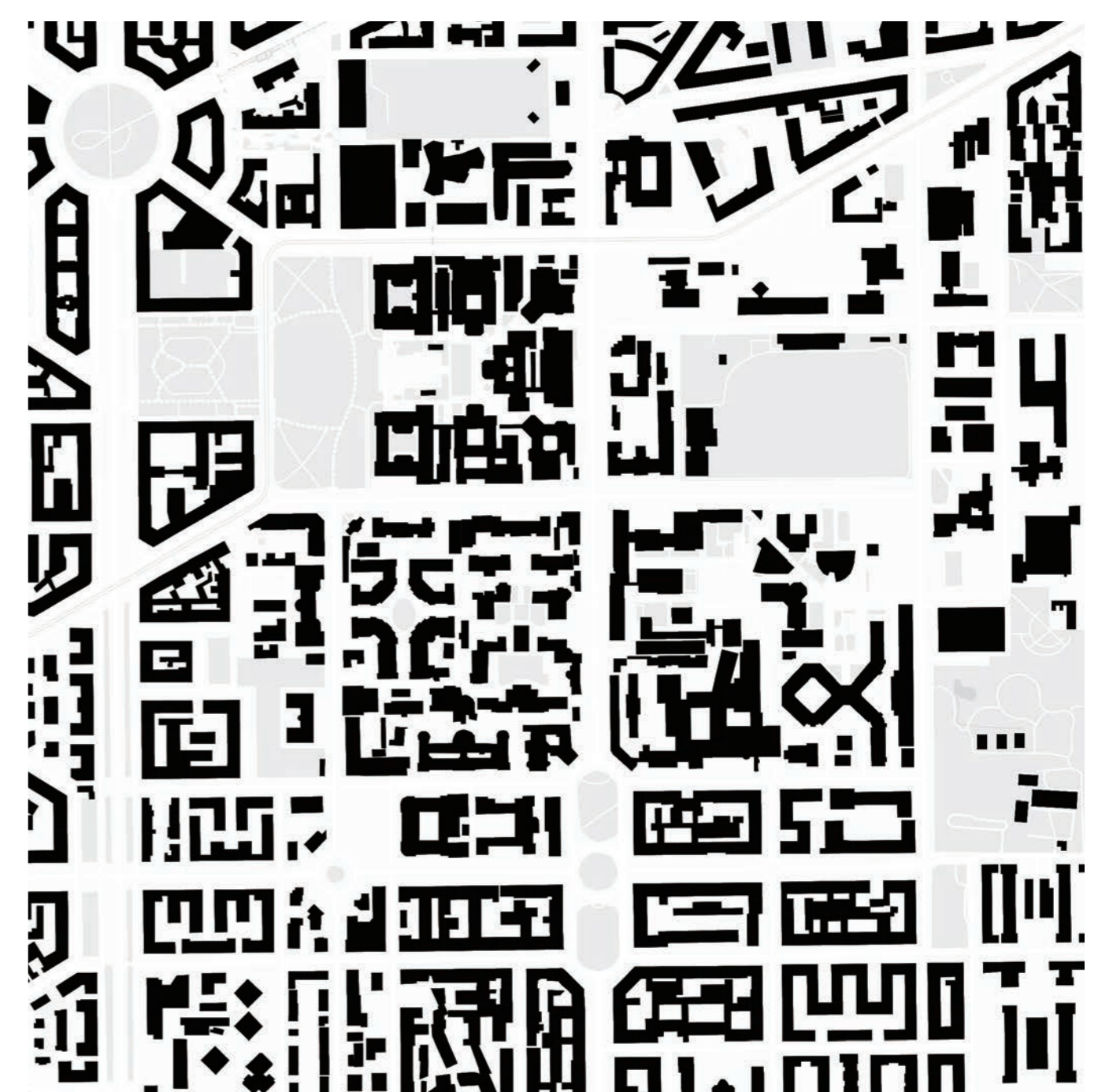


Figure - Ground



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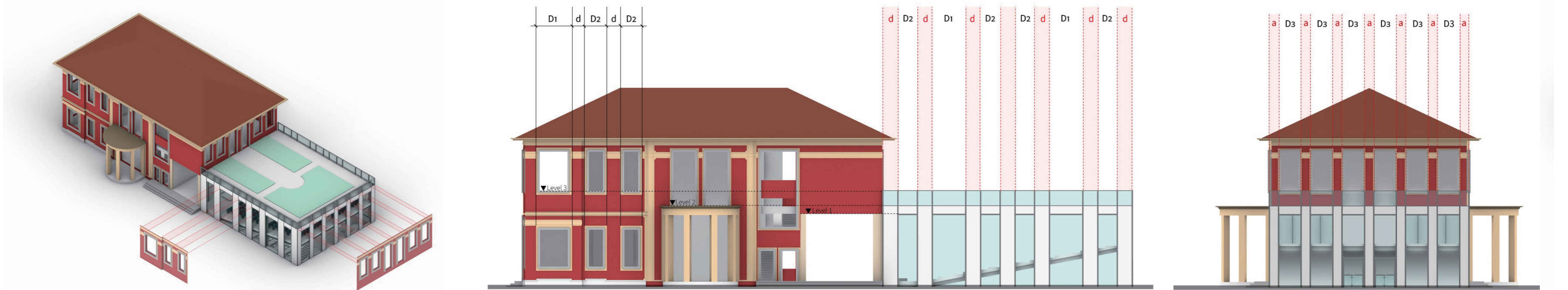
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Jian Deng

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Panel:



Ground Floor Plan 1:500



MATERIAL MAPPING

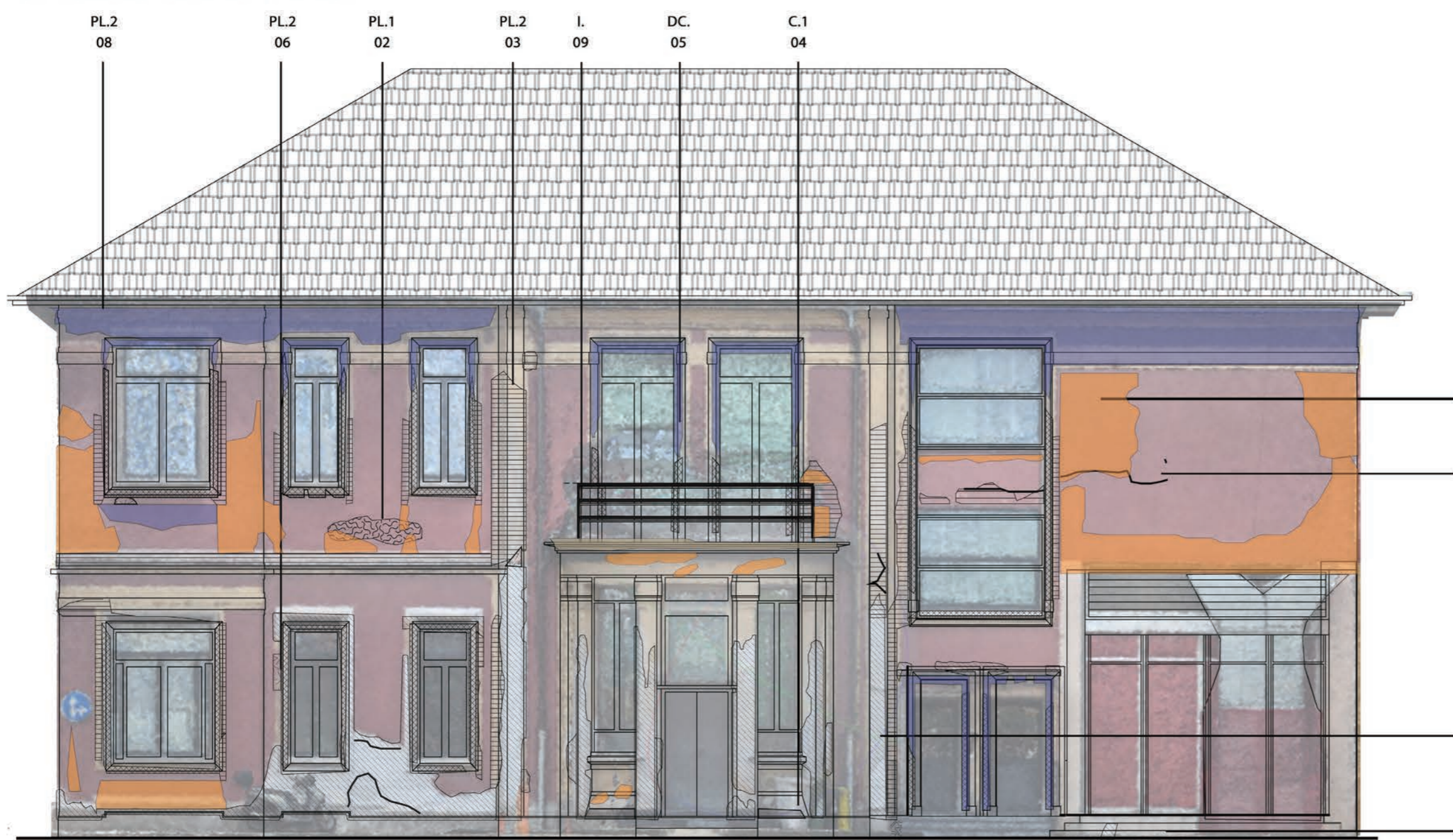


MATERIAL

RF. Marseille Tile Roof	PL.1 Plaster 01 (Bordeaux)	PL.2 Plaster Decorative	GL. Glass	DC. Decorative Cement	A. Aluminum	P. PVC Panel
C.1 Concrete 01	C.2 Concrete 02	M. Metal (Iron, Steel, Cooper, etc.)	W. Wood	R. Rubber Floor	OE. Other Elements	



DECAY MAPPING



01. Cracks	02. Bursting	03. Peeling	04. Disintegration	05. Erosion	06. Missing Part	07. Discoloration	08. Black Compact Deposit	09. Staining	10. Alga/Moss/ Mold	11. Uncompatible Interventions
------------	--------------	-------------	--------------------	-------------	------------------	-------------------	---------------------------	--------------	---------------------	--------------------------------

<p>Cracks 01 Individual fissure, clearly visible by the naked eye, resulting from separation of one part from another.</p>	<p>Discoloration 07 Change of the stone colour in one to three of the colour parameters : hue, value and chroma.</p>
<p>Bursting 02 Local loss of the stone surface from internal pressure usually manifesting in the form of an irregularly-sided crater.</p>	<p>Black Compact Deposit 08 Accumulation of exogenic material of variable thickness. Some examples of deposits : splashes of paint or mortar, sea salt aerosols, atmospheric particles such as soot or dust, remains of conservation materials such as cellulose poultices, blast materials etc.</p>
<p>Peeling 03 Shedding, coming off, or partial detachment of a superficial layer (thickness : submillimetric to millimetric) having the aspect of a film or coating which has been applied on the stone surface.</p>	<p>Staining 09 Localized chromatic variation of the surface, correlated both to the presence of certain natural components of the material and to the presence of foreign materials (water, oxidation products of metallic materials, organic substances, paints, microorganisms).</p>
<p>Erosion 05 Loss of portions of the primary surface, leading to smoothed shapes. It is common to find on the facade, where most of the detailing elements have degraded their edges.</p>	<p>Bio Colonization 10 Presence of a small herbaceous organism with root system anchored to the discontinuity present between rubber steps.</p>
<p>Missing Parts 06 Loss of three-dimensional elements obviously located in the place of some formerly existing parts (Corner of a window frame, basement relief, piece of a relief decoration, etc.).</p>	<p>Uncompatible Interventions 11 Interfaces between the original and restoration materials, regarding the discontinuities stresses or at the surface.</p>

CONSERVATION PROJECT MAPPING



R. 01 Demolition of structure	PL. 01 Dry Cleaning with Manual Tools	Ag. 01 Lime plaster patch	Co. 01 Consolidation with Ethyl Silicate	Pr. 01 Painting with Lime Plaster
PL. 02 Wet Cleaning with Atomised and Nebulized Water	PL. 03 Cleaning with Chemicals	Ag. 02 Integration of stucco & molding	Pr. 02 Apply Water Repellent	
PL. 04 Cleaning with Micro-sandblasting				
PL. 05 Cleaning with Bloxide Products				

DIAGNOSTIC APPROACH

- THERMOGRAPHY**
A non-destructive method of assessing thermal performance, thermography can be especially valuable when improving energy performance while protecting a building's historic fabric. Thermography is a visual method of illustrating invisible heat energy.
- FACADE SAMPLE**
To identify types of deterioration present and have the samples studied to have a better understanding of the materials and how they will react with different materials.
- GEODAR**
It is necessary to investigate the foundation and the state it is in.
- STRATIGRAPHY**
To be able to investigate different layer of plaster
- ENDOSCOPY**
This type of diagnostic approach is helpful for having a better understanding for masonry walls (as well as other elements) and having a better understanding about the construction techniques.



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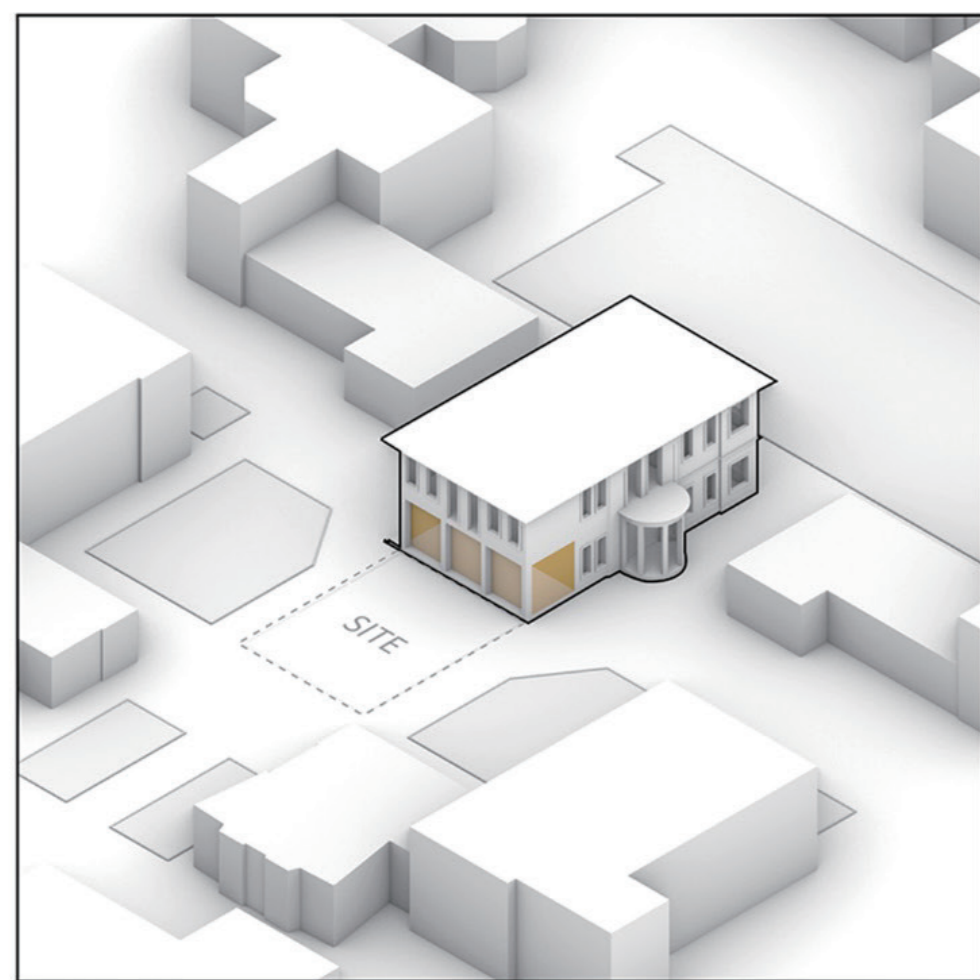
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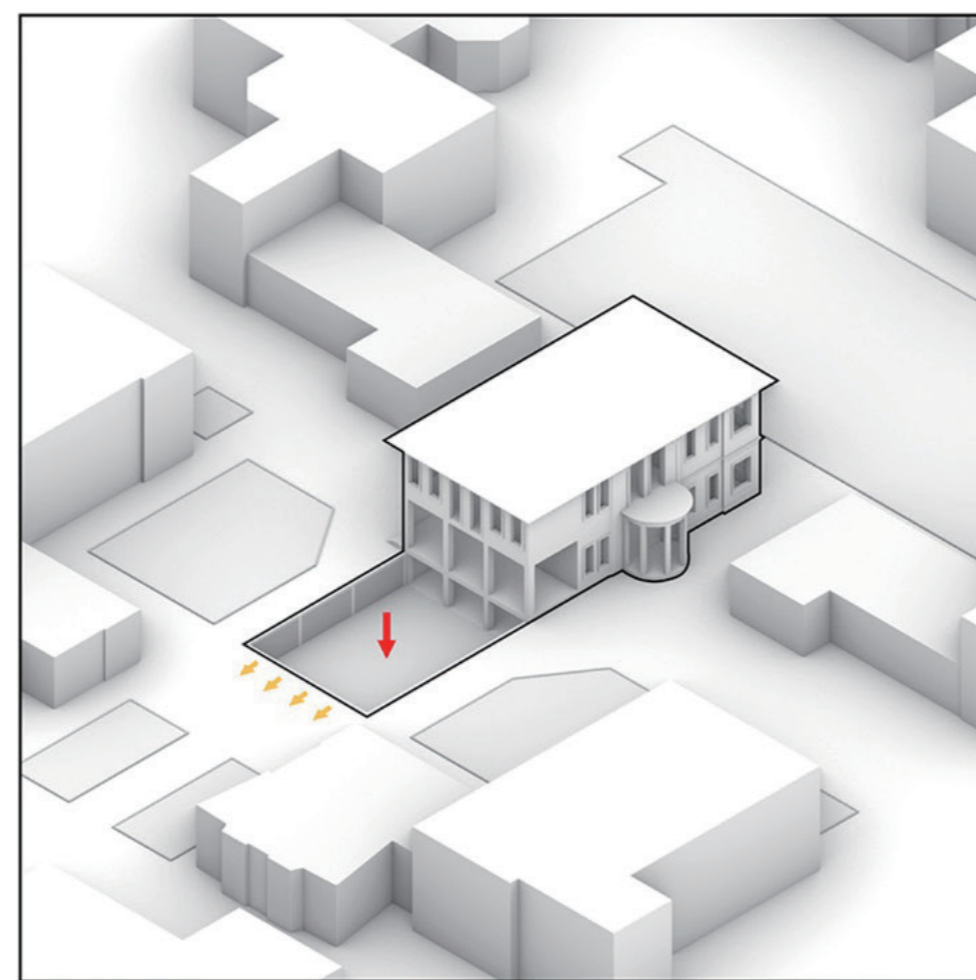
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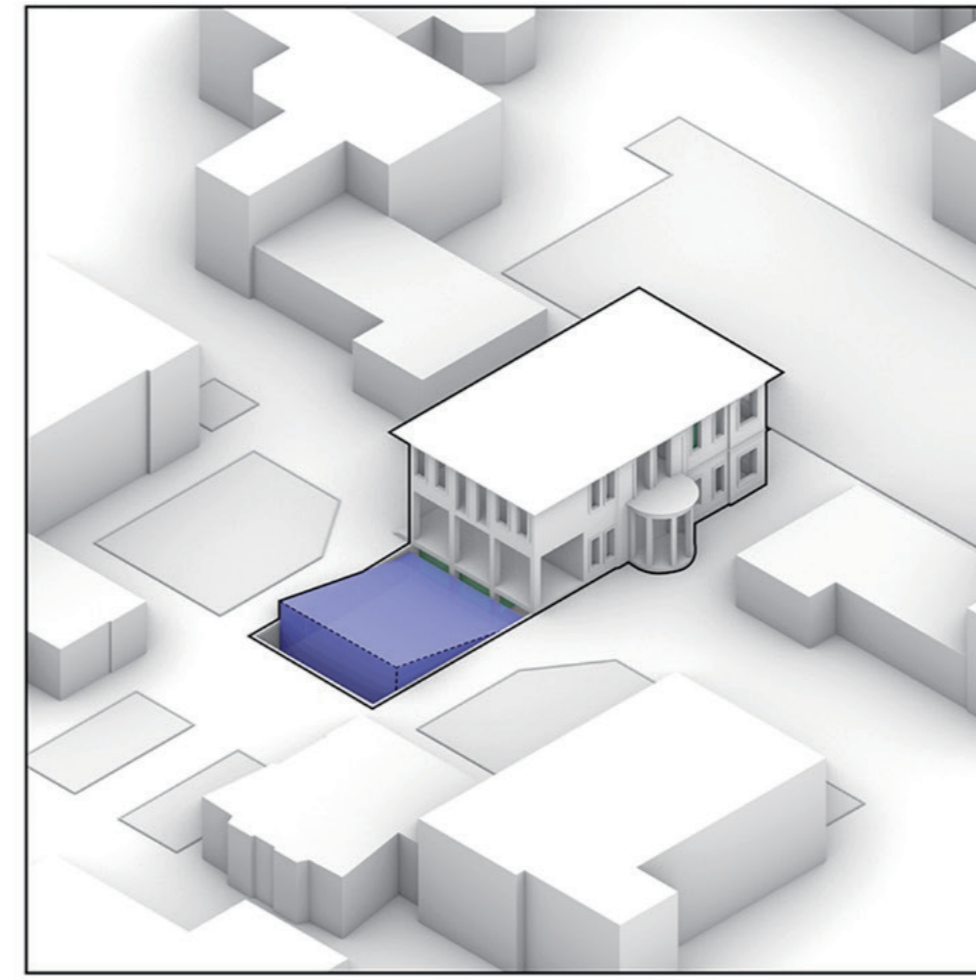
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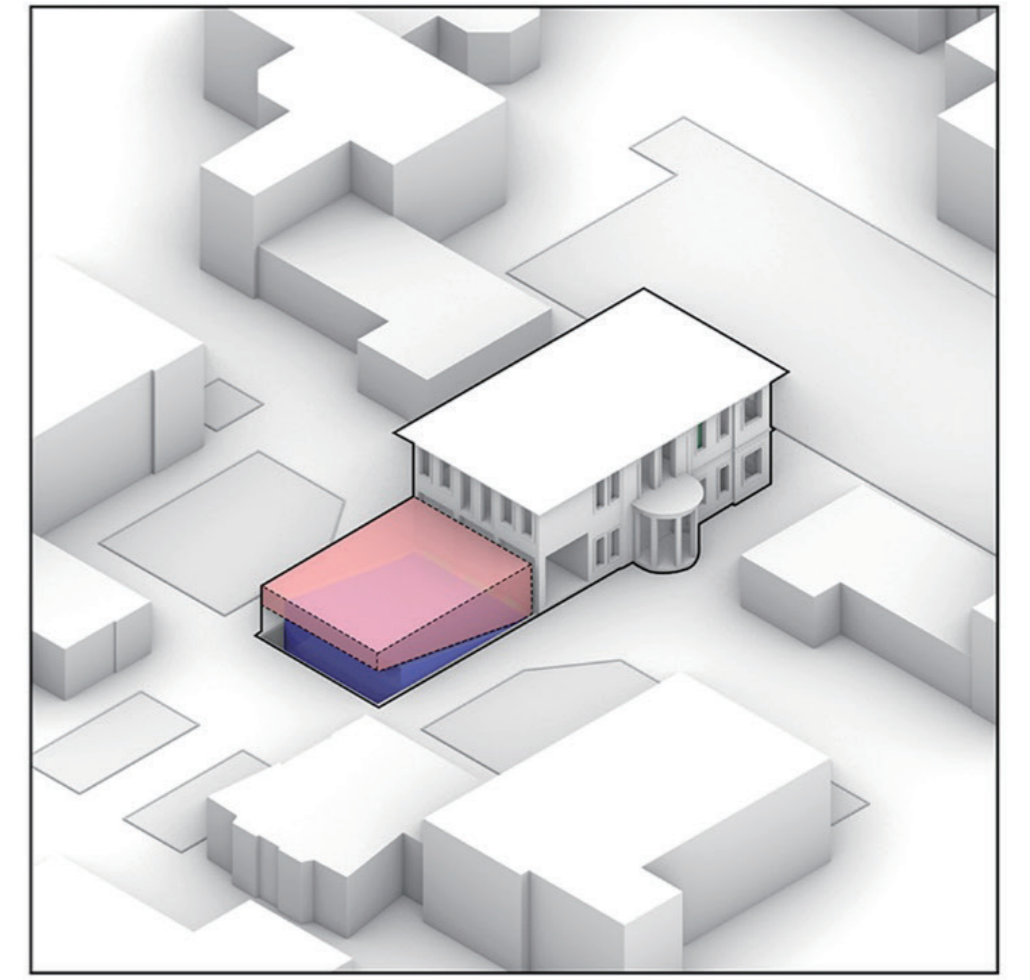
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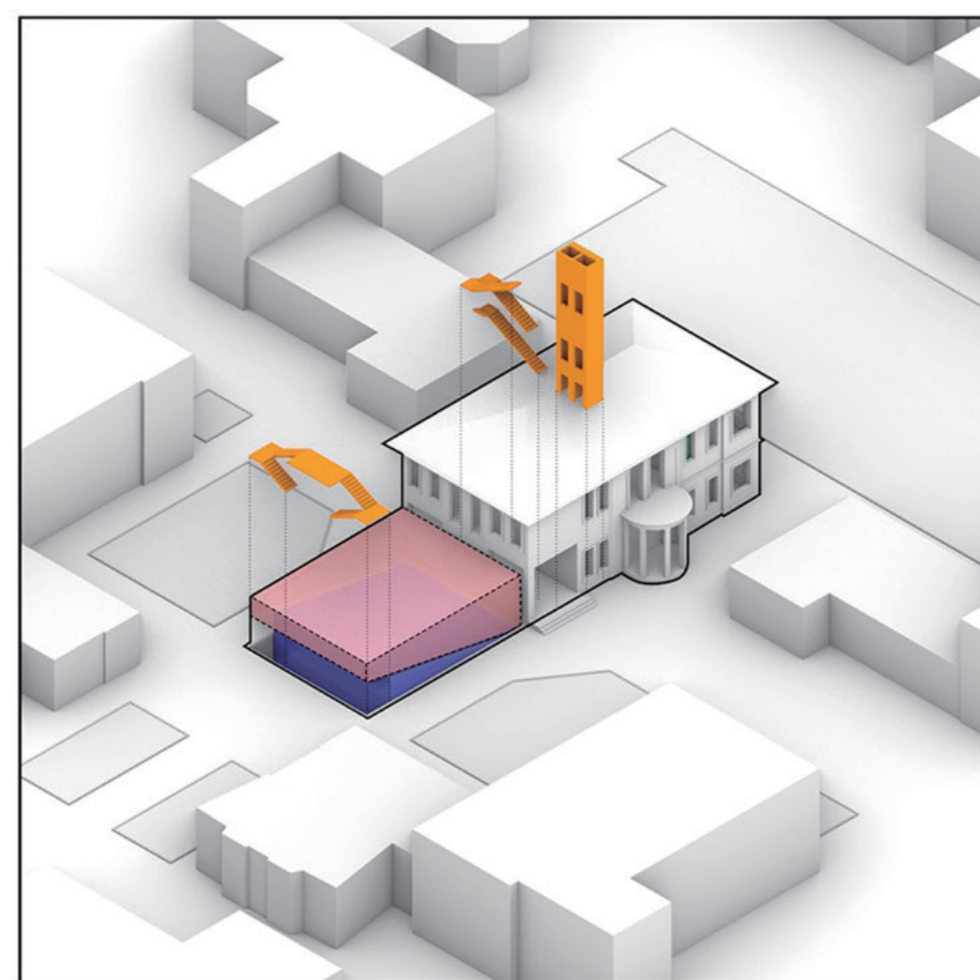
EXCAVATION



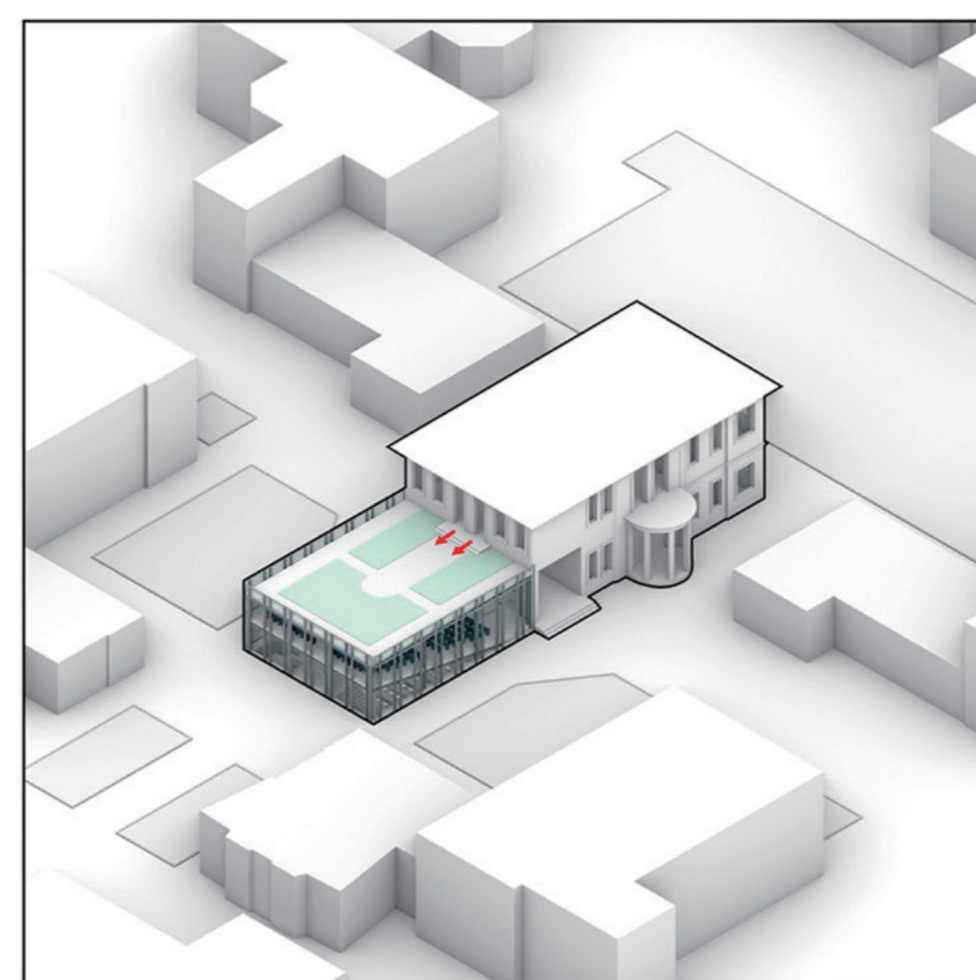
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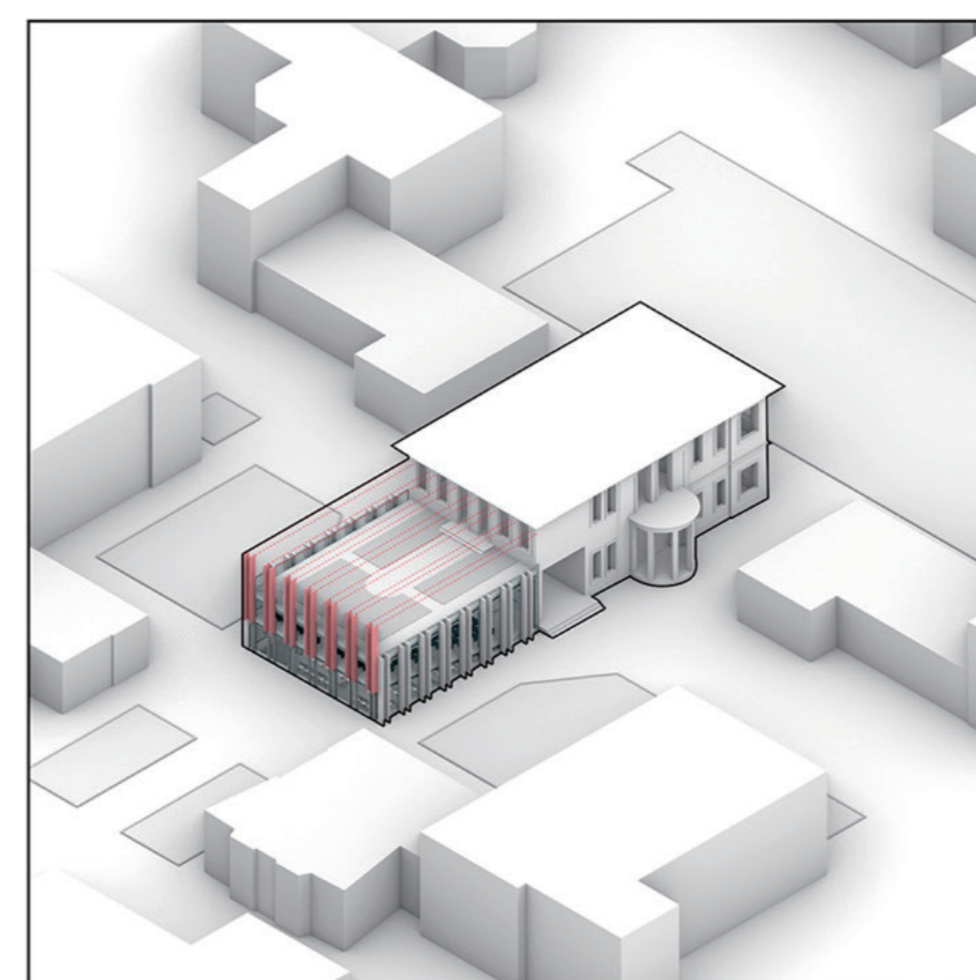
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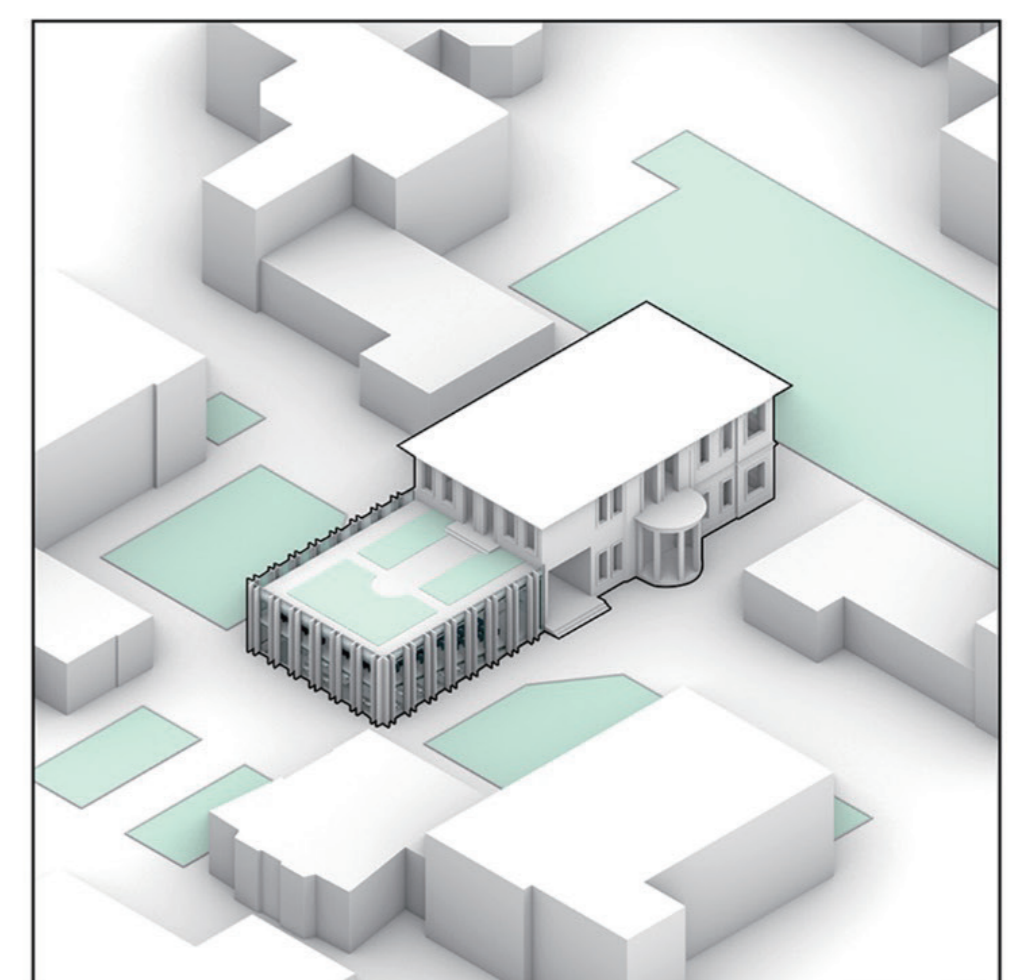
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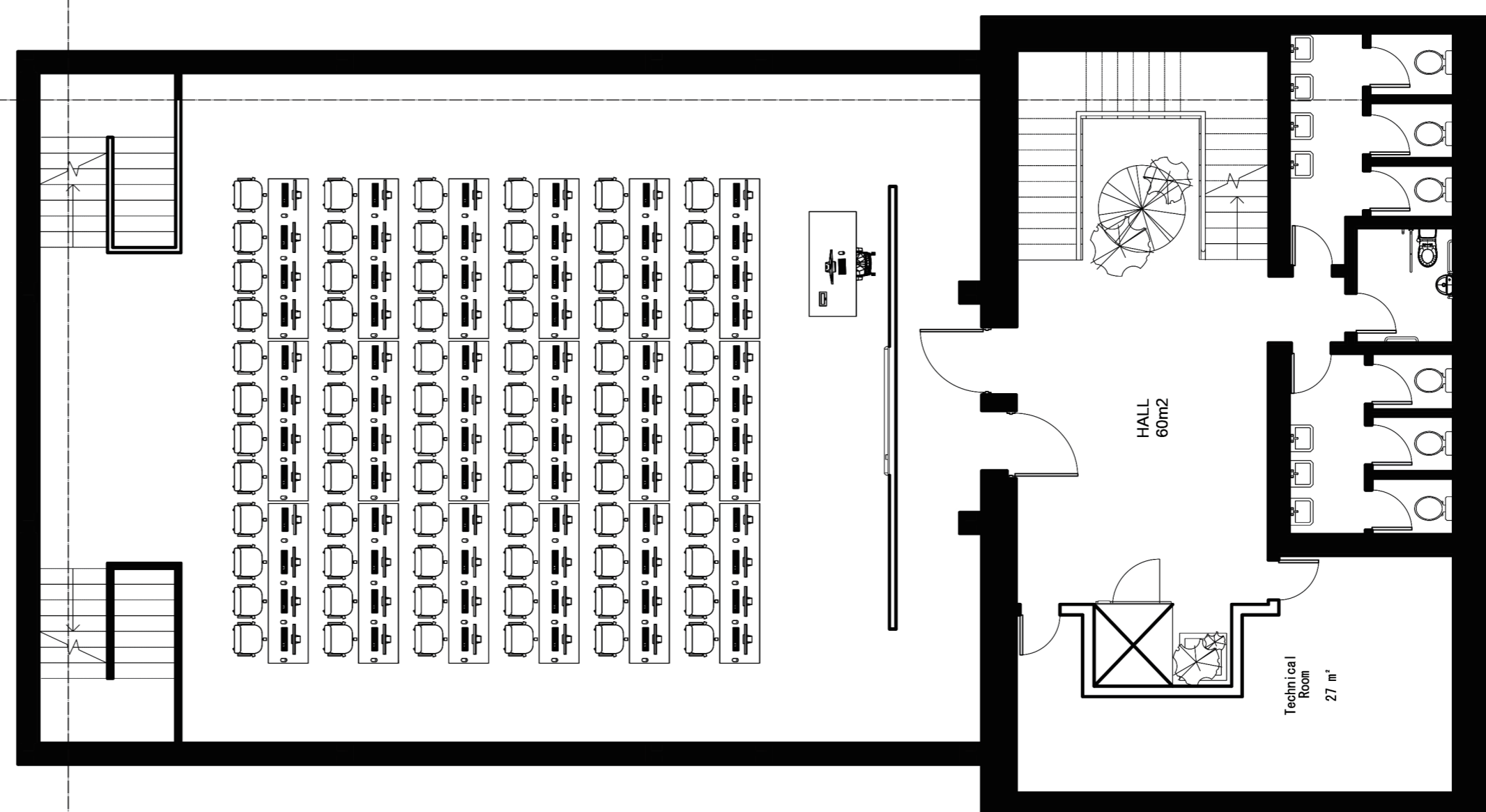
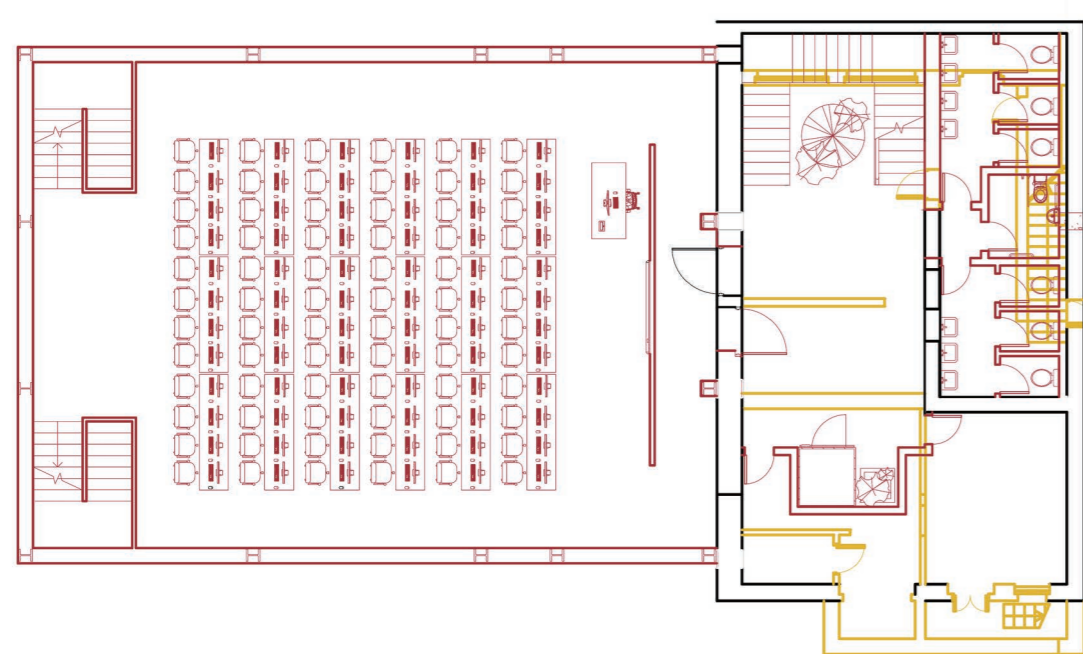
GREEN ROOF



PROPORTION



LANDSCAPE



Underground Plan 1:100



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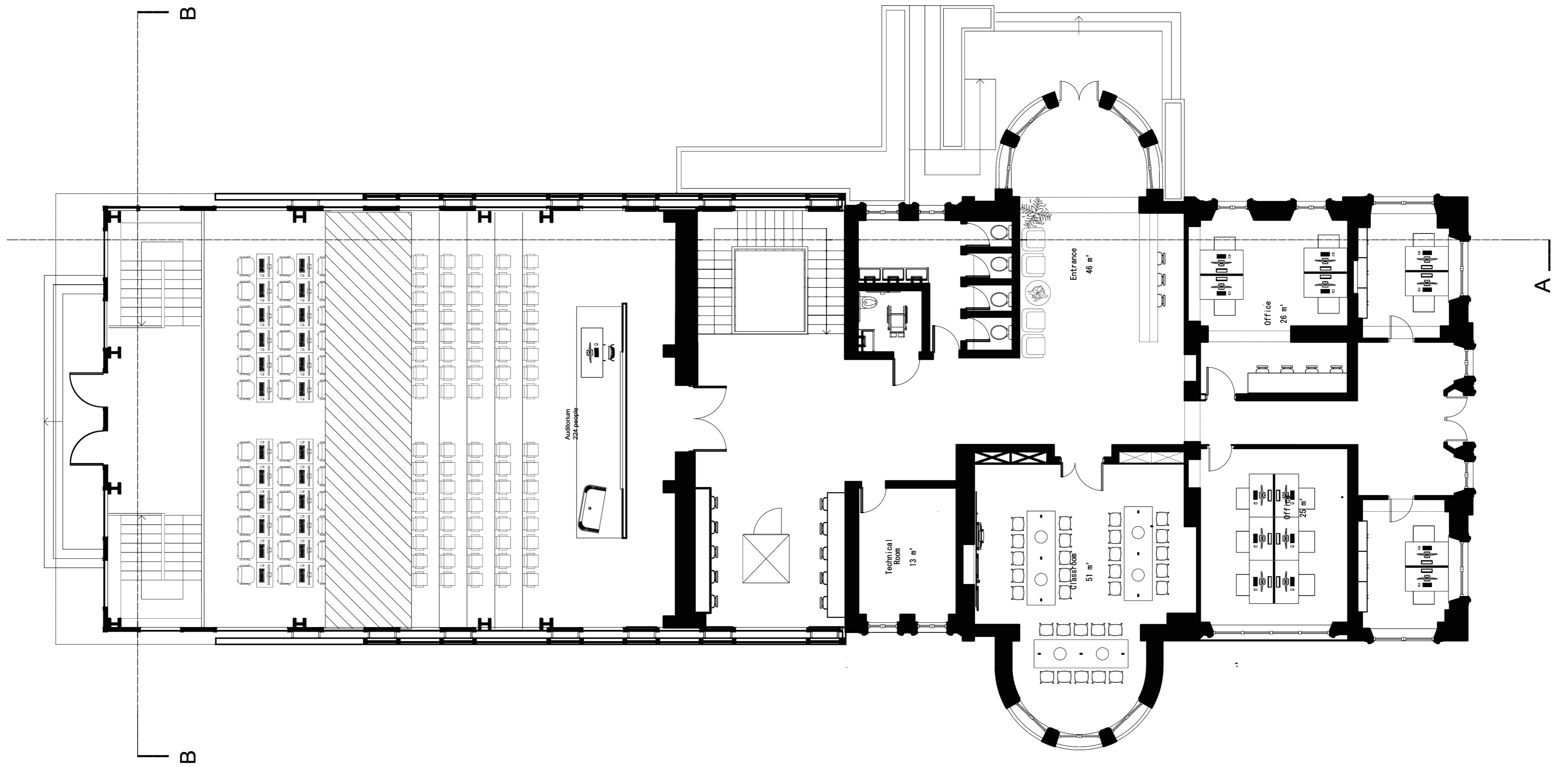
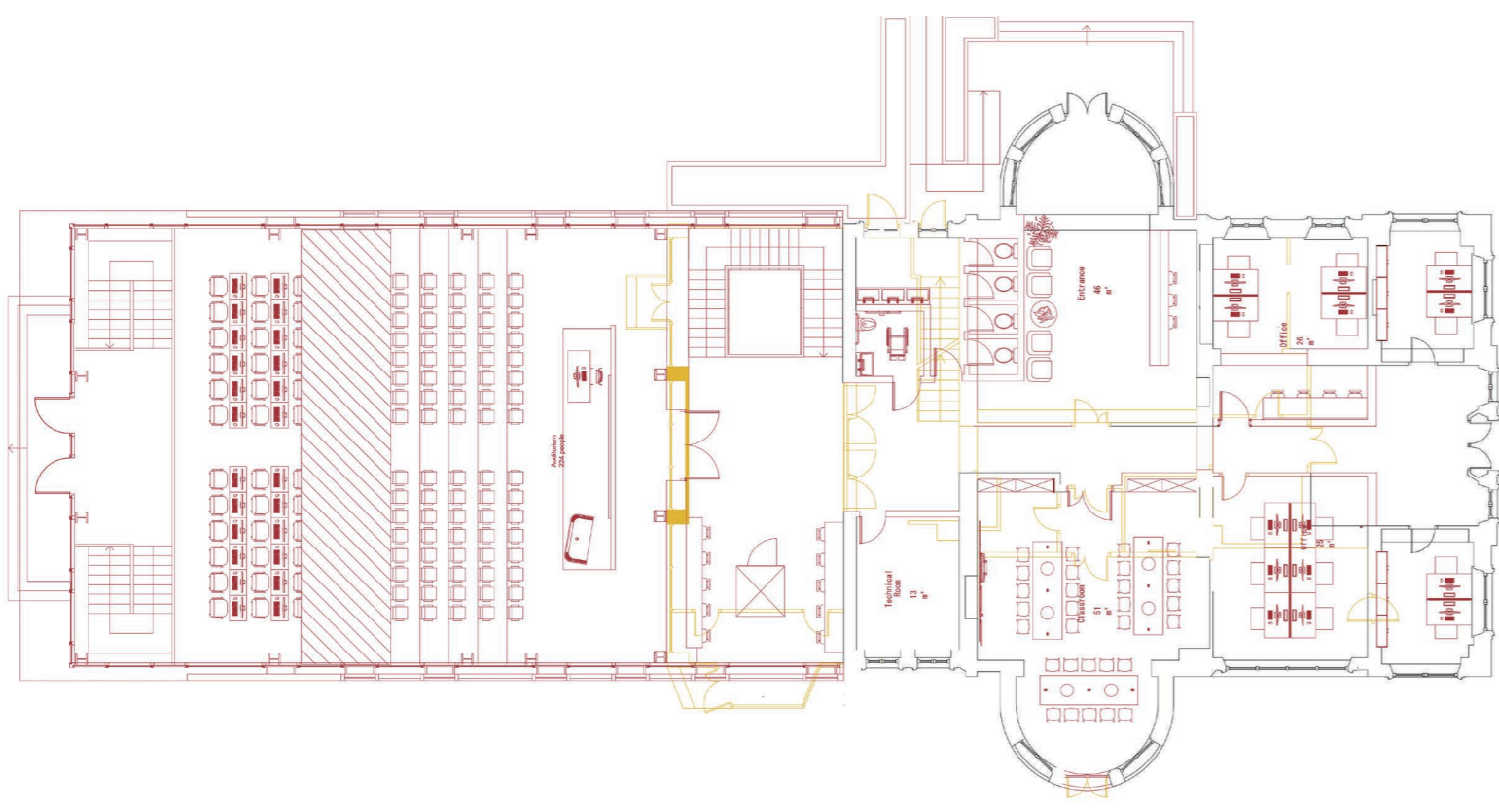
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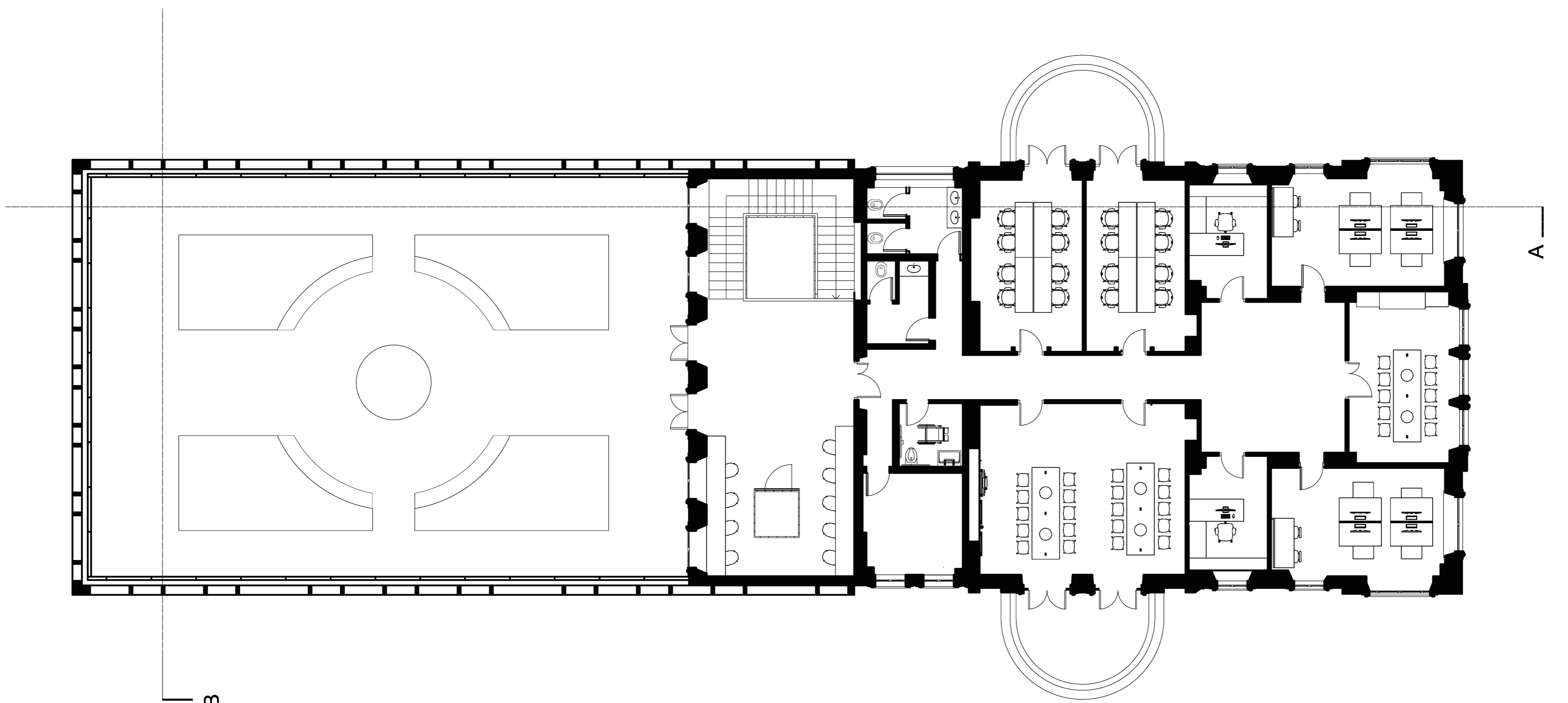
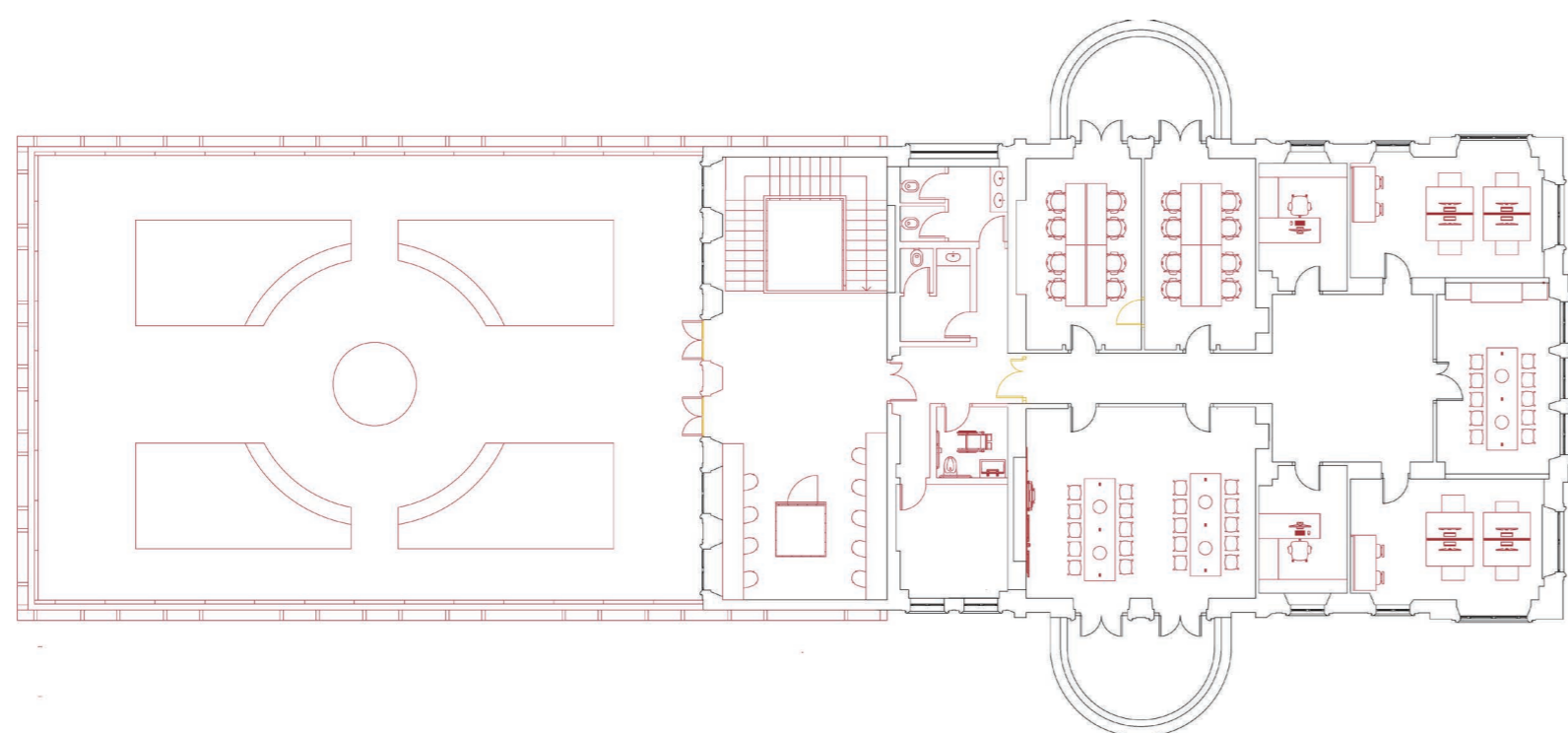
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Panel:



Ground Floor Plan 1:100



First Floor Plan 1:100



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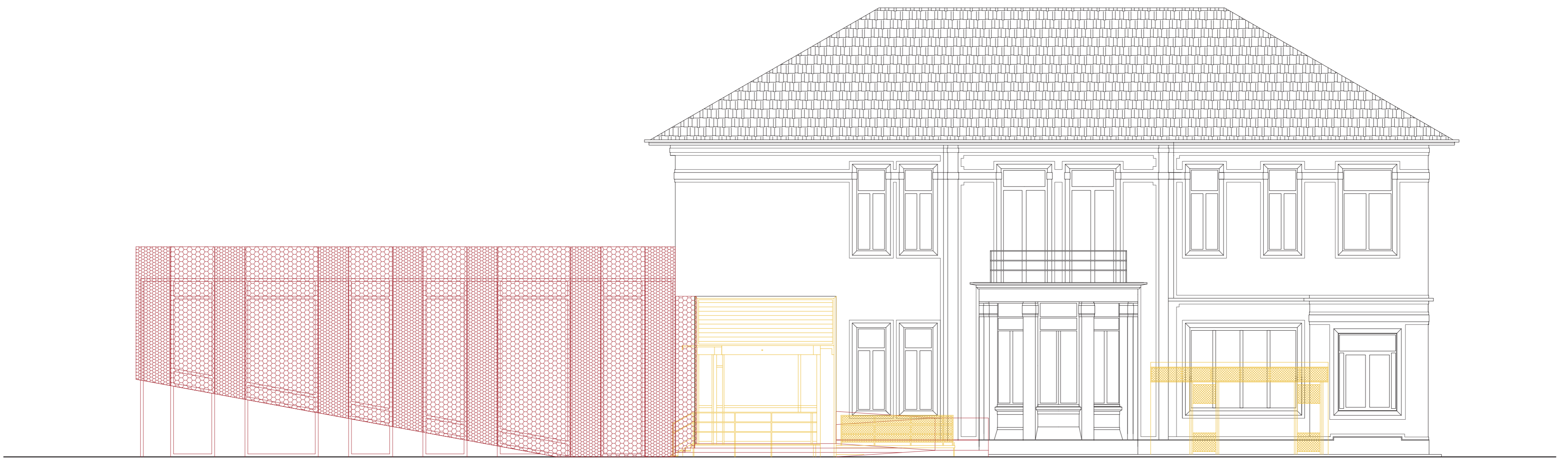
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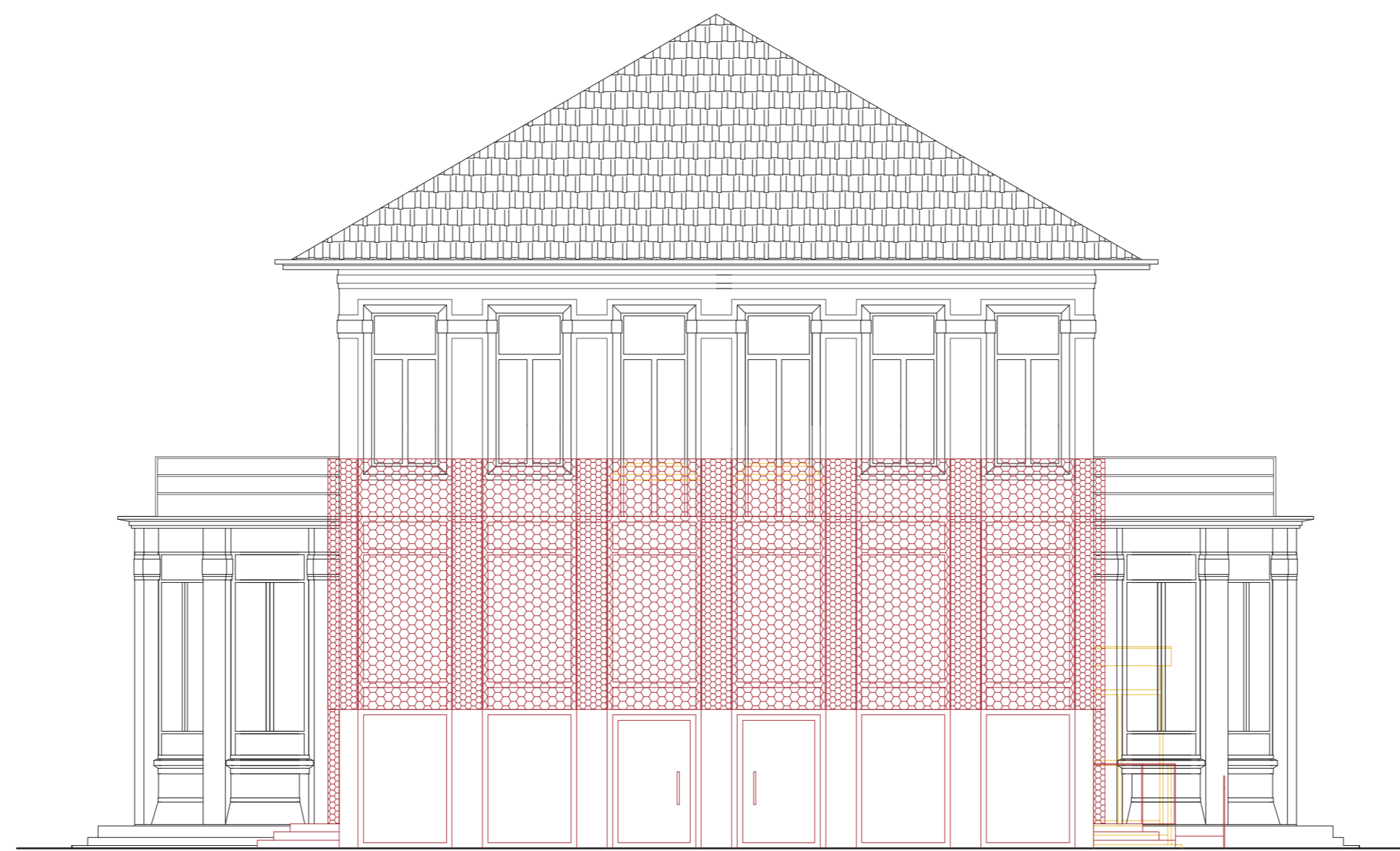
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West Elevation 1:100



North Elevation 1:100



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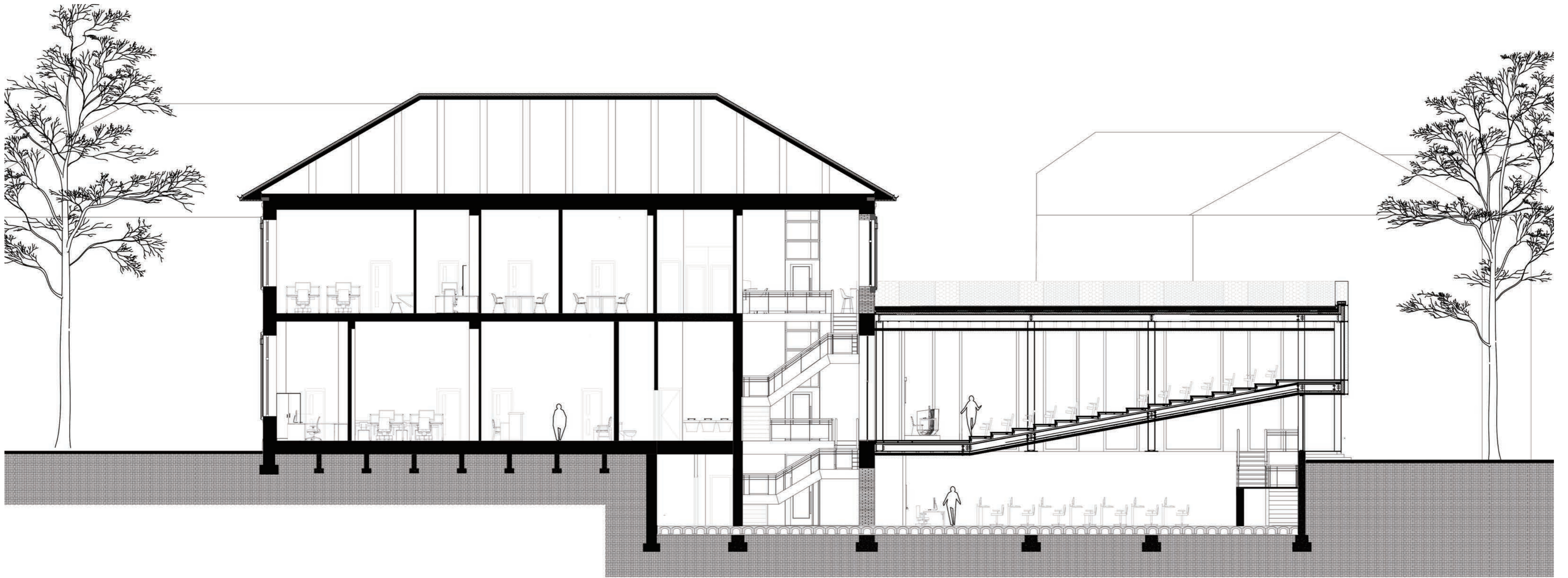
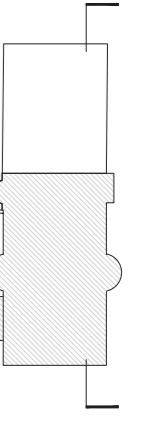
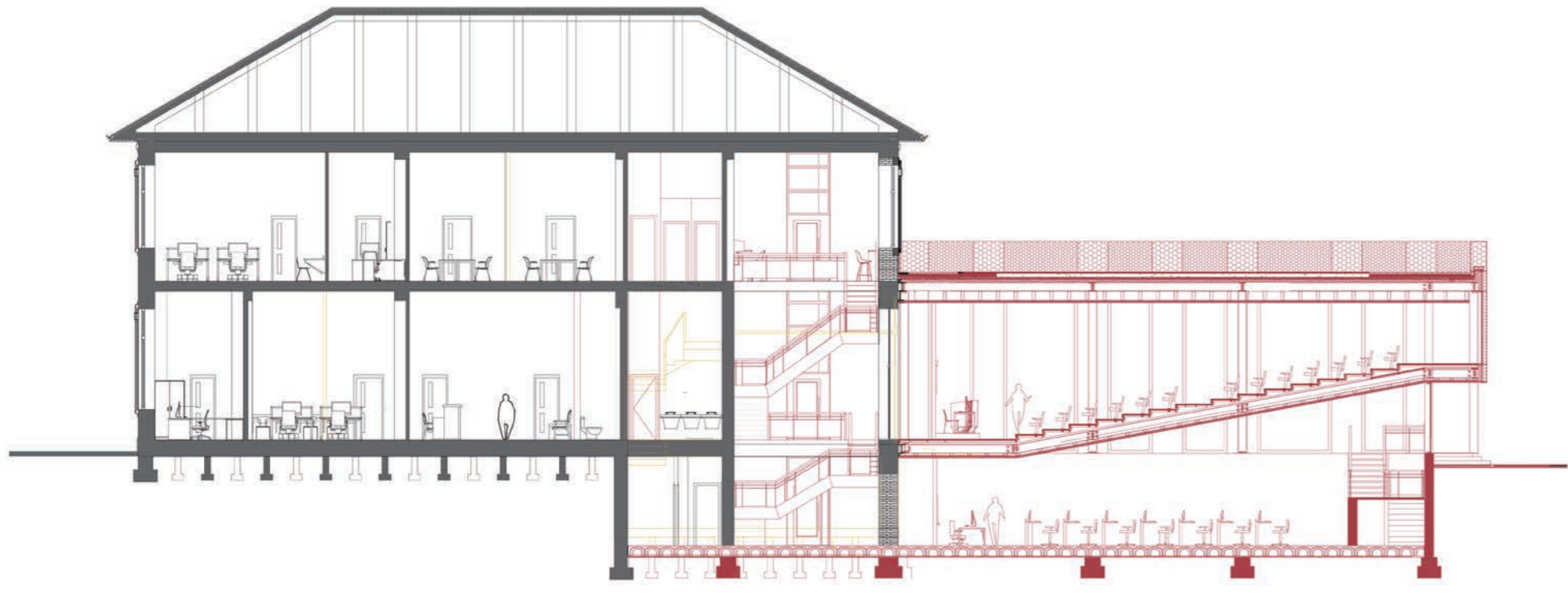
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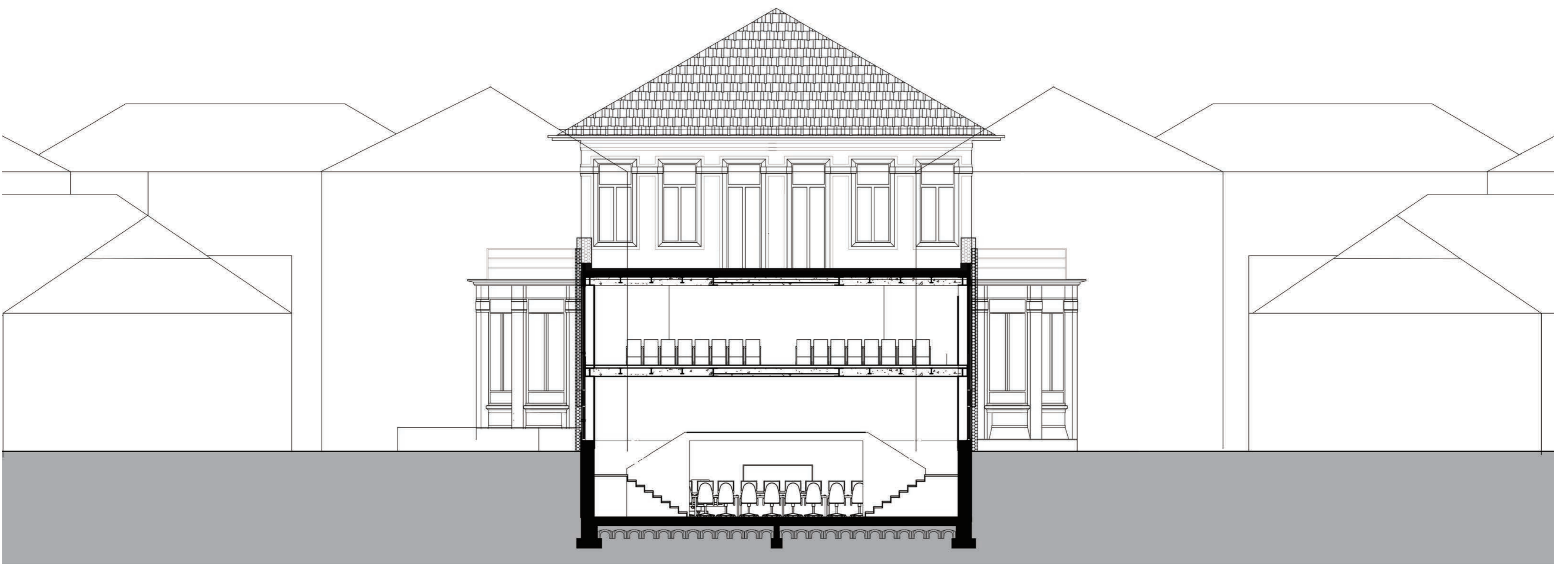
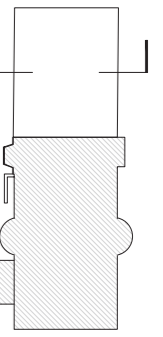
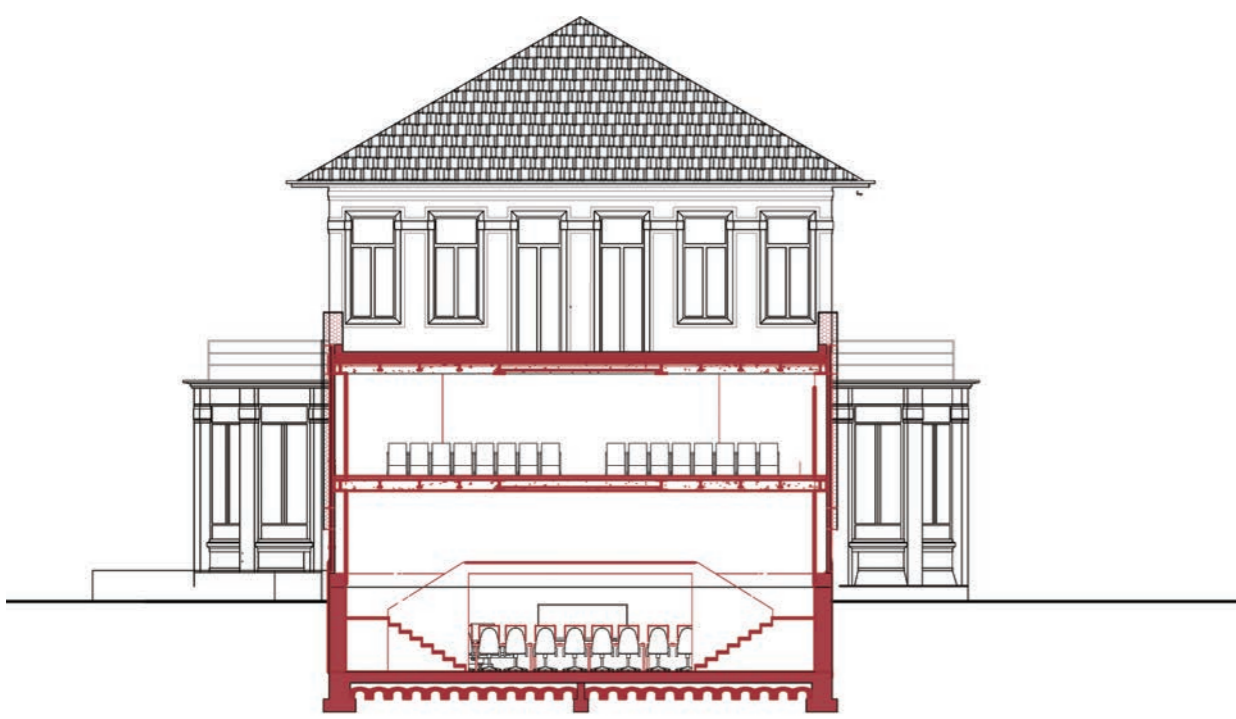
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Panel:



Longitudinal Section A-A' 1:100



Cross Section B-B' 1:100



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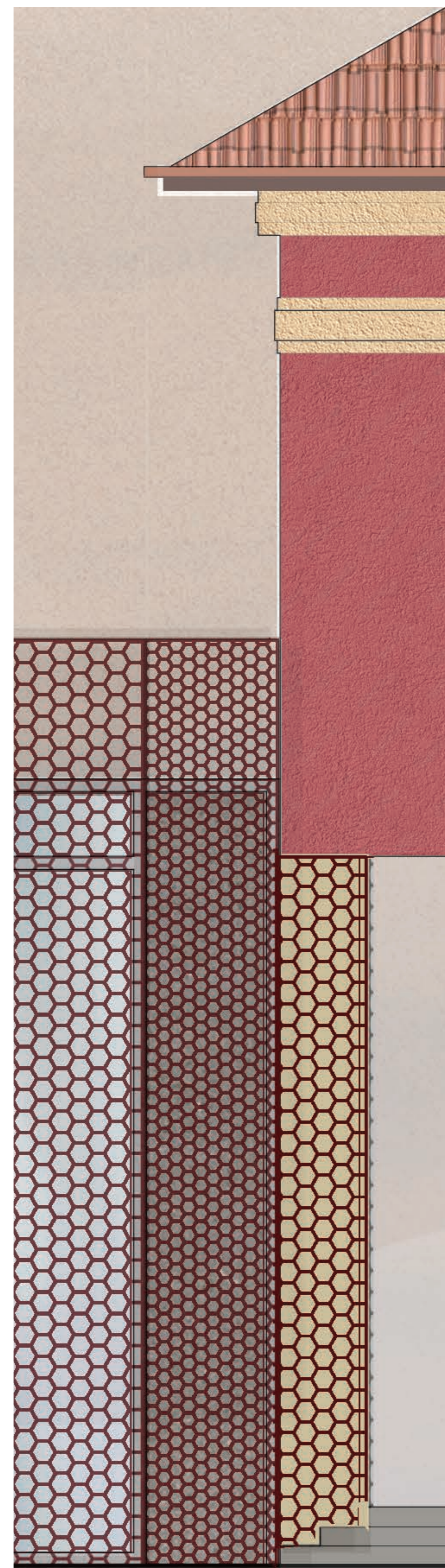
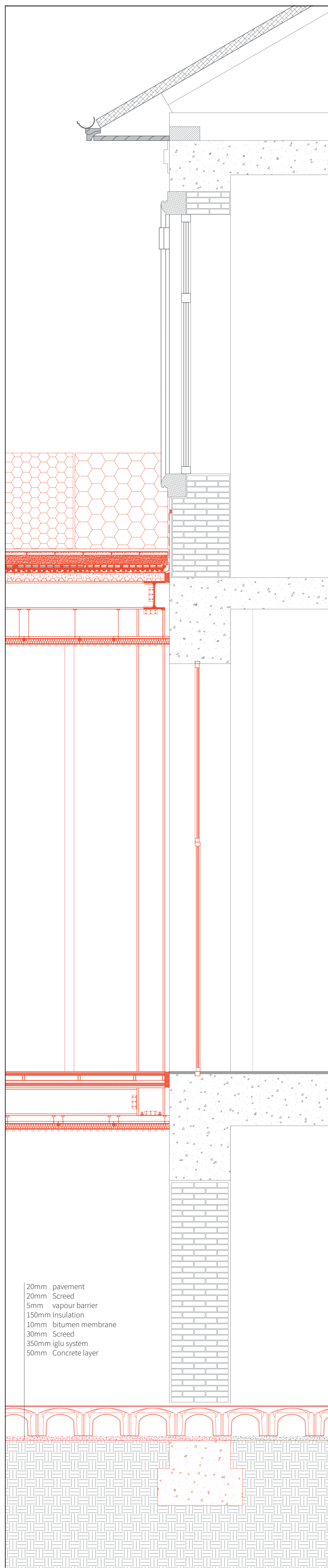
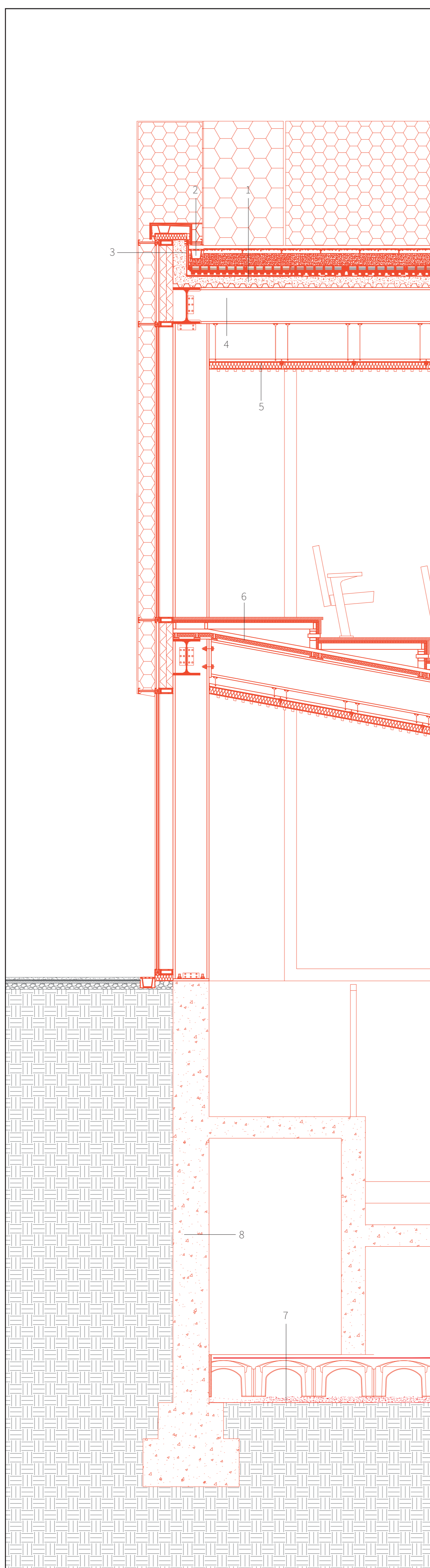
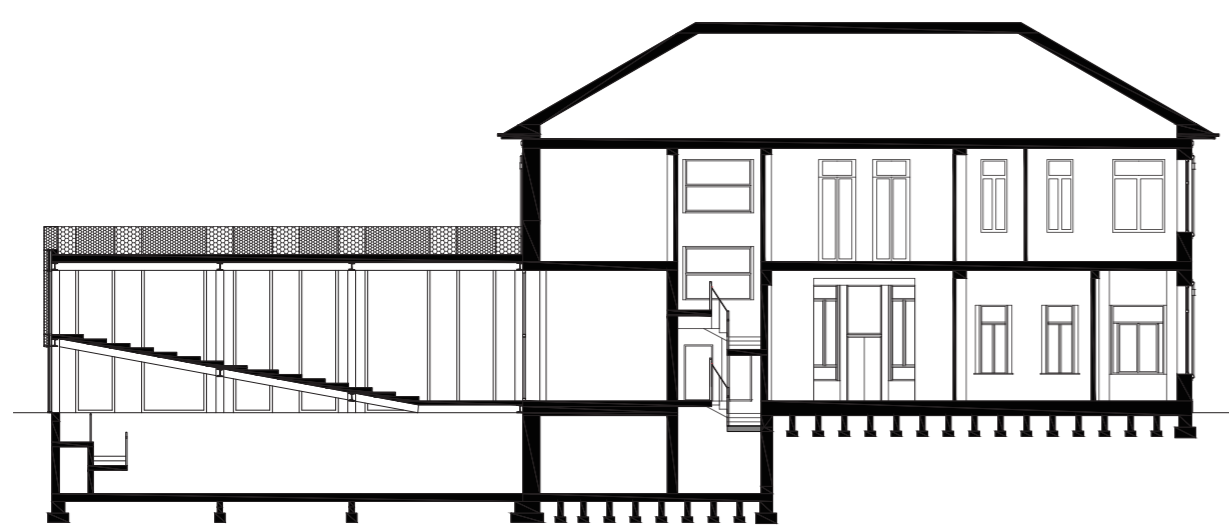
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Panel:

Details



- 1. Sloped floor
Steam barrier
Component for thermal insulation
Waterproof anti-root covering
FSD 20 [82 mm]
Stabilfilter SFI [1,47 mm]
Roof soil 1 [130 mm]
Roof semina [20 mm]
Lawn
Sprinkler system
- 2. Drainage
- 3. 30mm plywood
25mm oak boarded
8mm waterproof layer
200mm thermal insulation
(wooden supporting inside)
5mm vapour barrier
25mm oak boarded cladding
200mm aluminum alloy mesh
- 4. 260*260mm secondary beam
- 5. Acoustic Ceiling
- 6. 20mm wooden pavement
10mm Acoustic layer
80mm Concrete layer
- 7. 20mm pavement
20mm Screed
5mm vapour barrier
150mm Insulation
10mm bitumen membrane
30mm Screed
350mm iglu system
50mm Concrete layer
- 8. 450mm Retaining Wall



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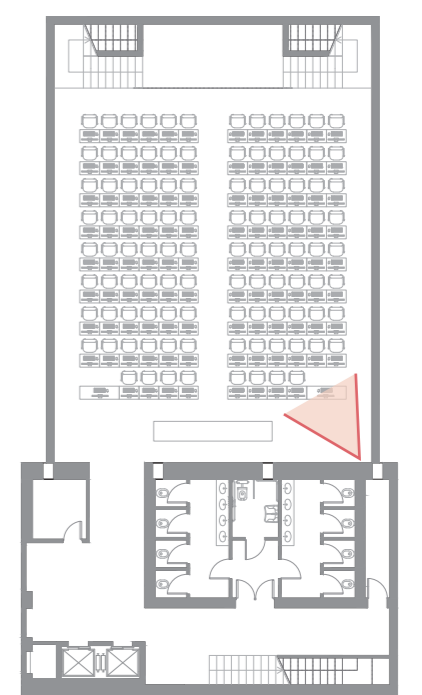
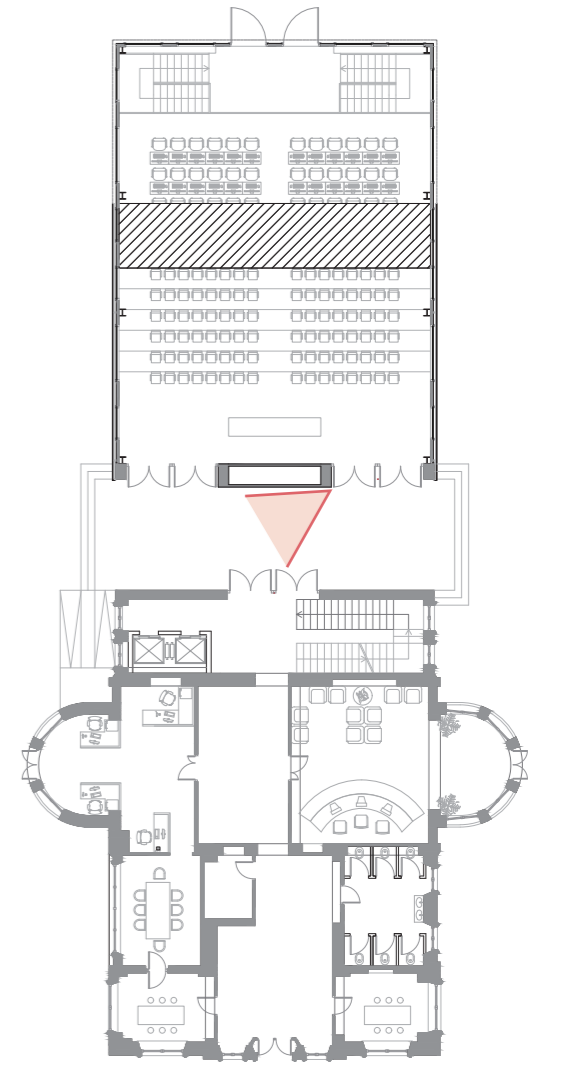
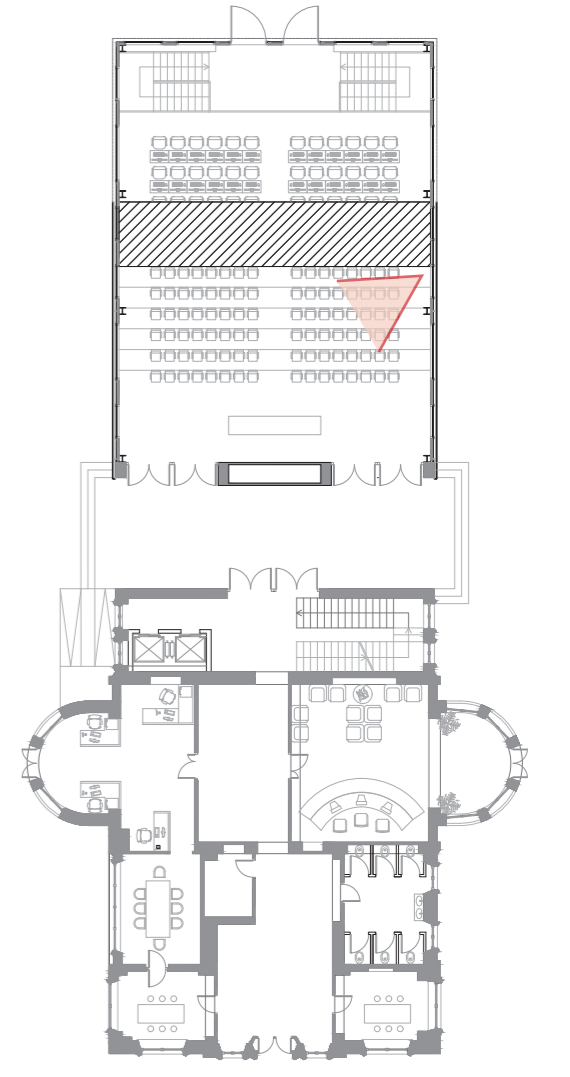
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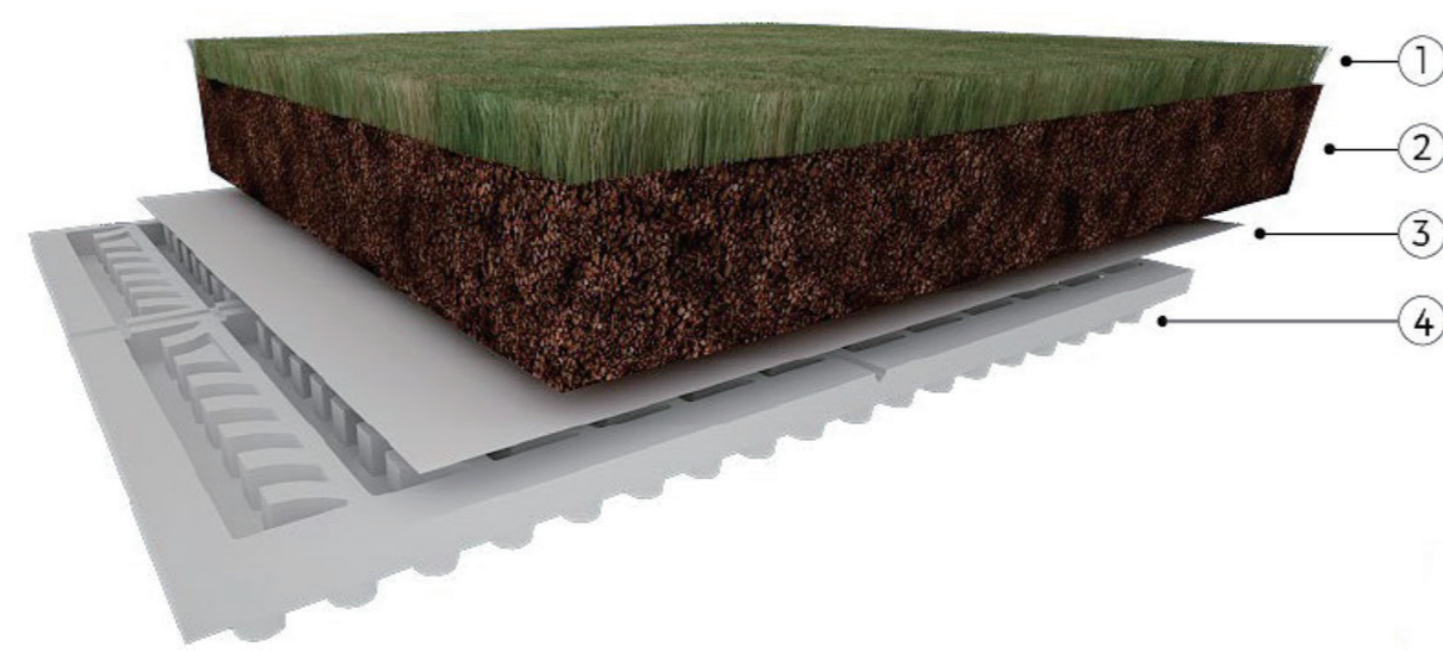
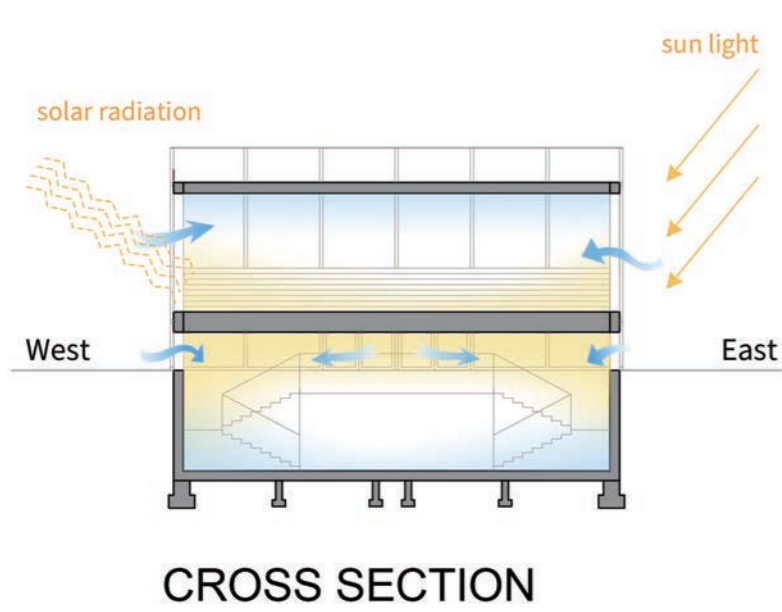
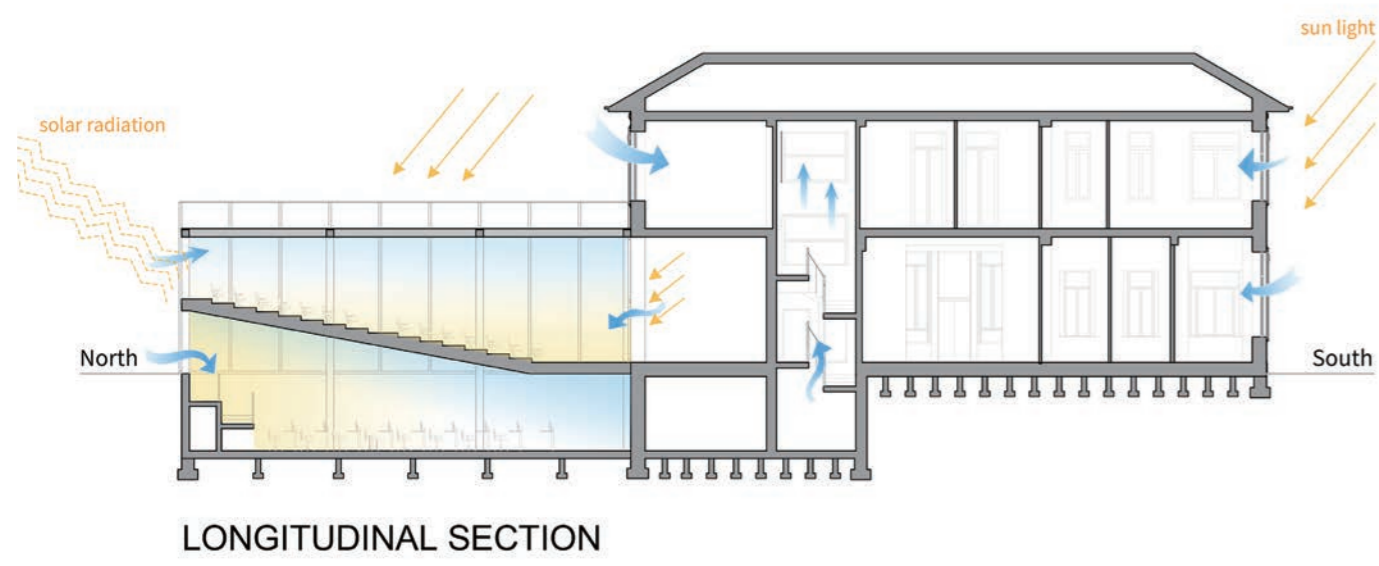
Sustainability Concept

Sustainable approach

The combination of green roof and sun shading system allows us to save energy.

We decided to use recycled materials as recycled steel and concrete for the new structure, to save CO₂. We also opted for an intervention that would limit the works on the existing building to the minimum, to reduce the quantity of carbon dioxide produced in the process of demolition.

After calculations we plan to design green areas with trees to balance what we consumed.



TECHNICAL DATA

Thickness of the system (without vegetation)	cm ca.	23,00
Weight when saturated (without vegetation)	kg/mq	192,00
Total amount of water for the vegetation	l/mq	69,00
Air volume at pFI	l/mq	64,50

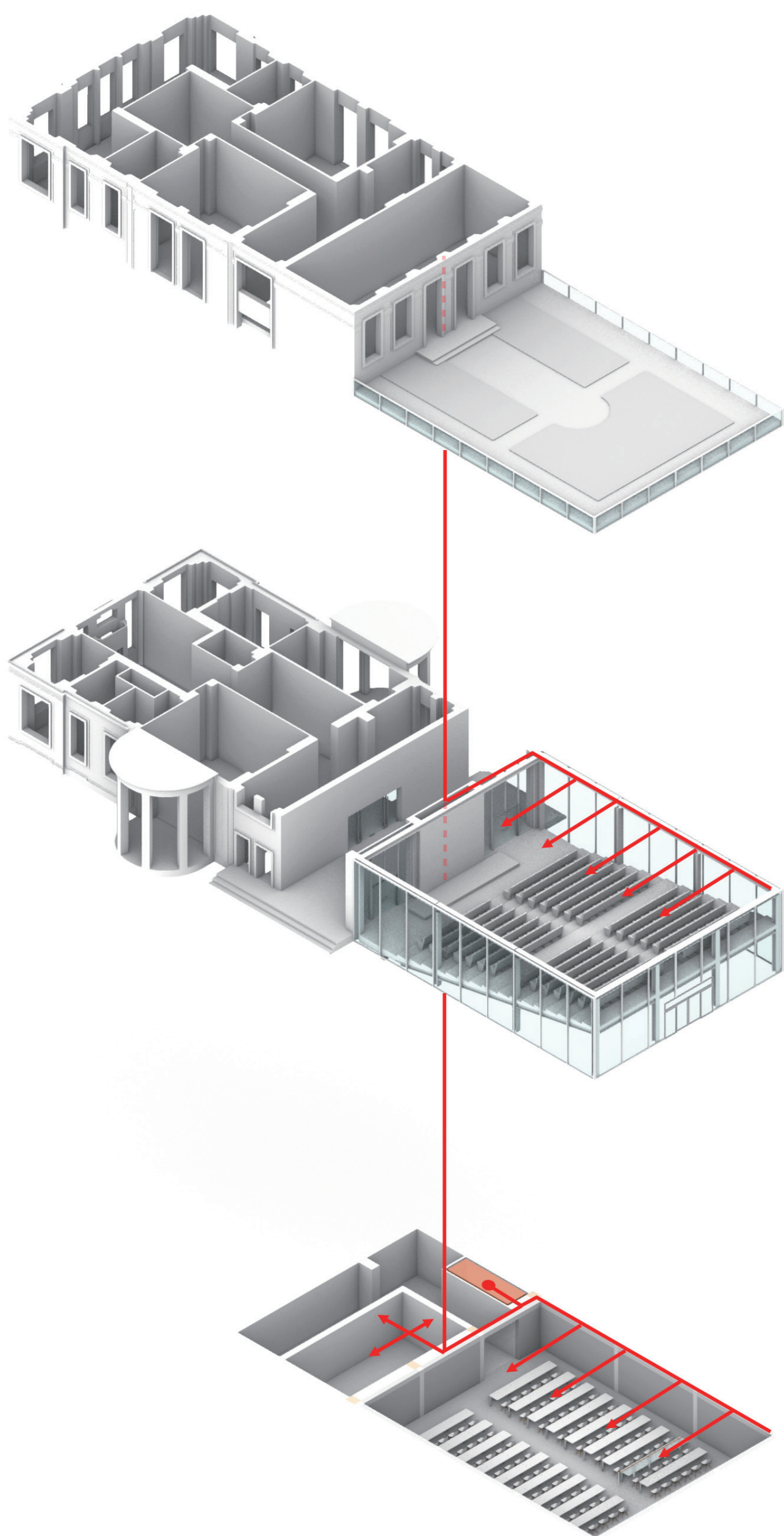
All technical data in this document are indicative values, used to describe the product. DAKU might modify the data when improving to product: clients should verify to have the latest versions of the documents.

SYSTEM COMPONENTS

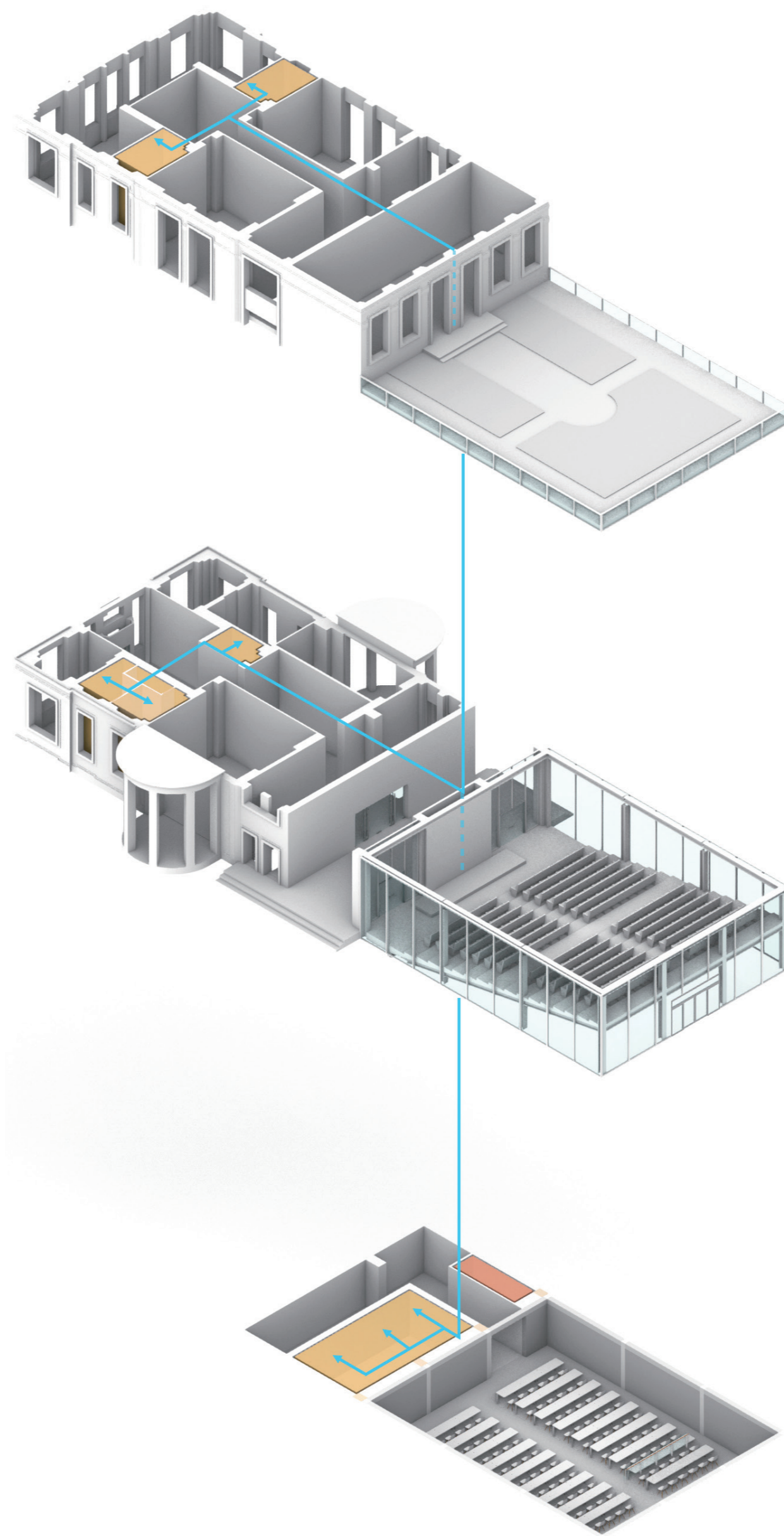
1. Grass
2. DAKU ROOF SOIL 1 (substrate, 15 cm thick)
3. DAKU STABILFILTER SFI (Filter)
4. DAKU FSD 20 (component for drainage and water storage)

Services Concept

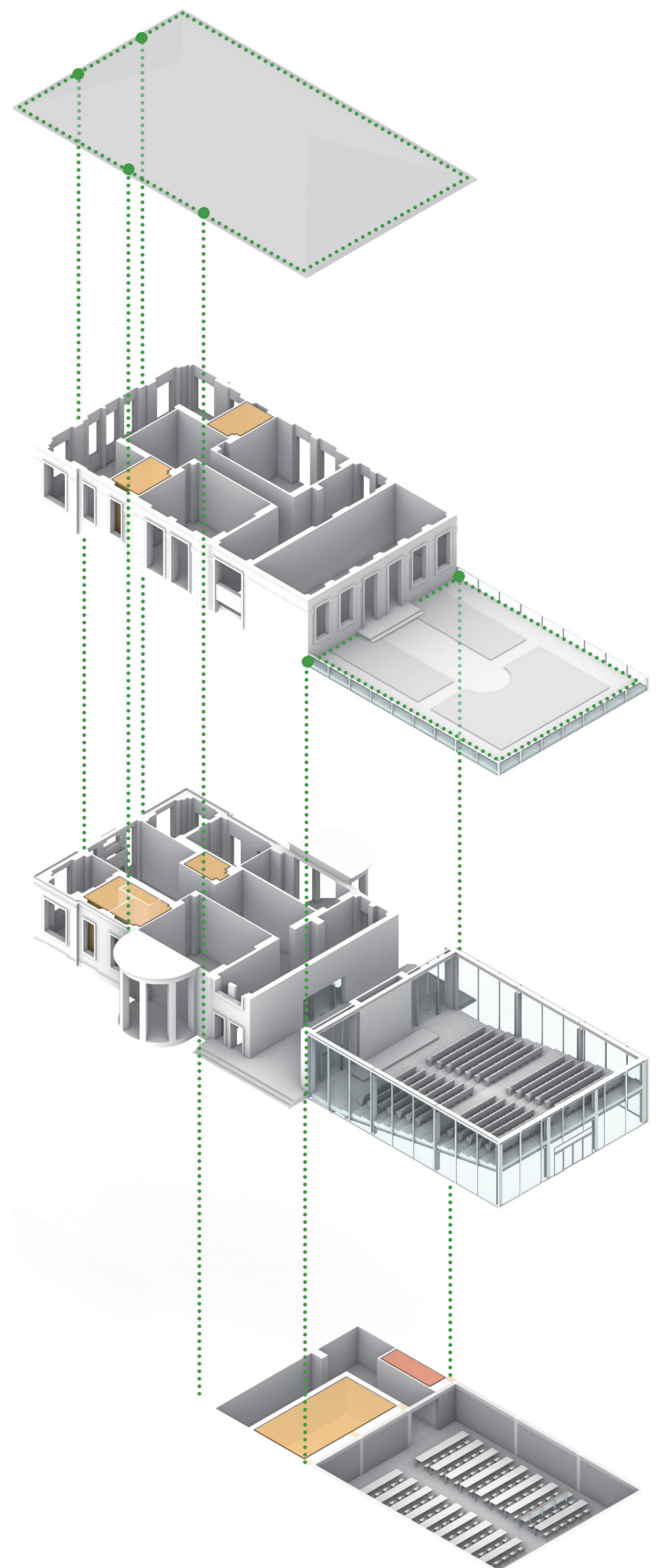
The service concept focuses on ventilation, water supply and drainage systems. Ventilation systems are mainly designed for lecture Hall and Computer Lab. Ventilation systems of different densities and thicknesses are arranged according to the different sizes and population requirements of the two rooms. The water supply system is connected to each floor through hollow walls. The drainage system uses pipes on the outside of the existing building to drain rainwater, while the sewage flows out of the interior through redesigned pipes.



Air distribution system



Water supply system



Drainage system



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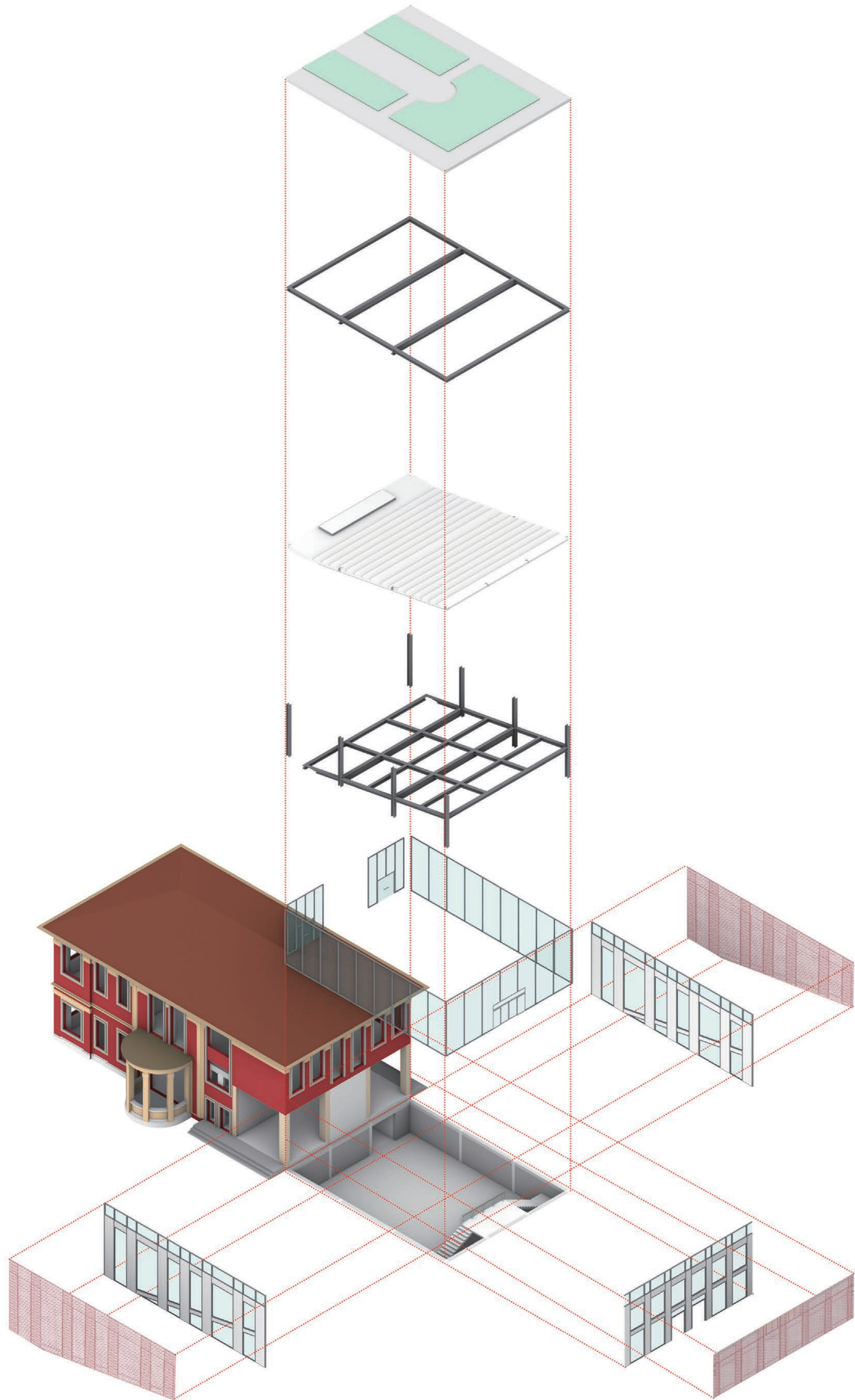
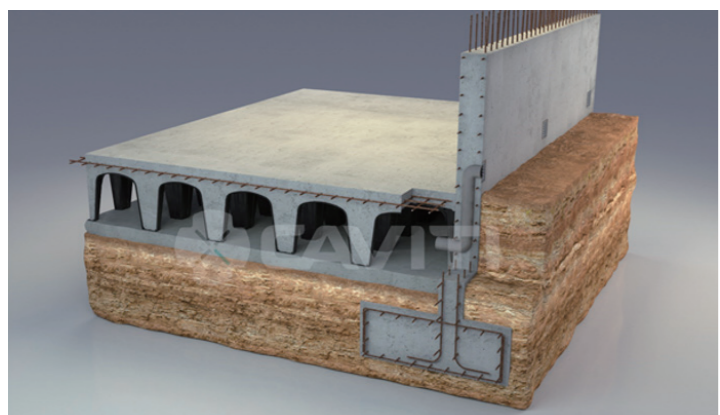
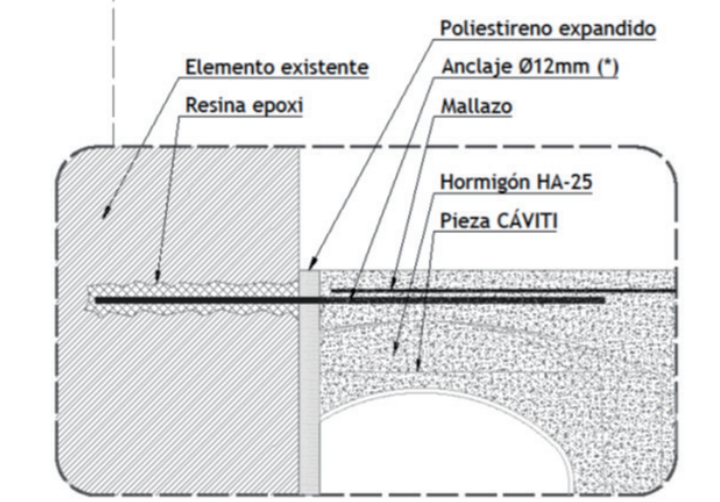
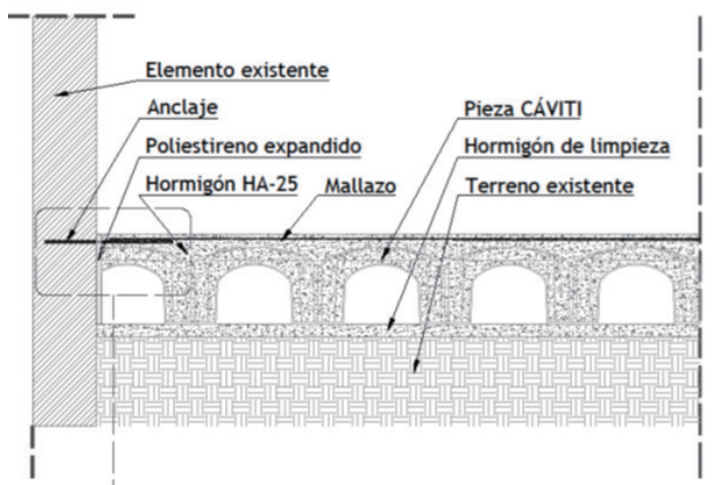
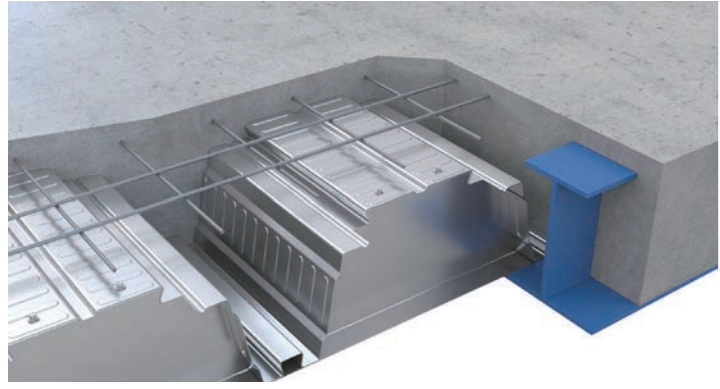
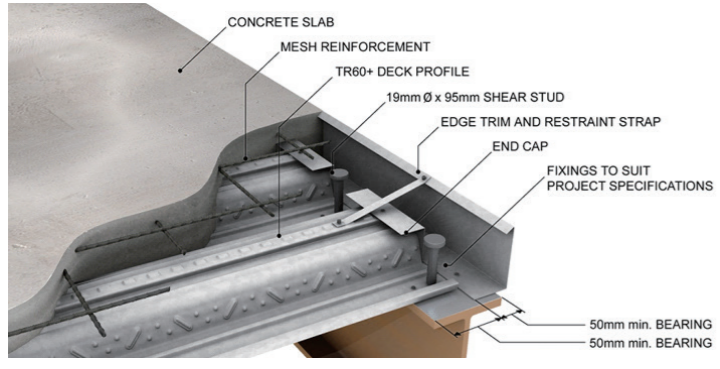
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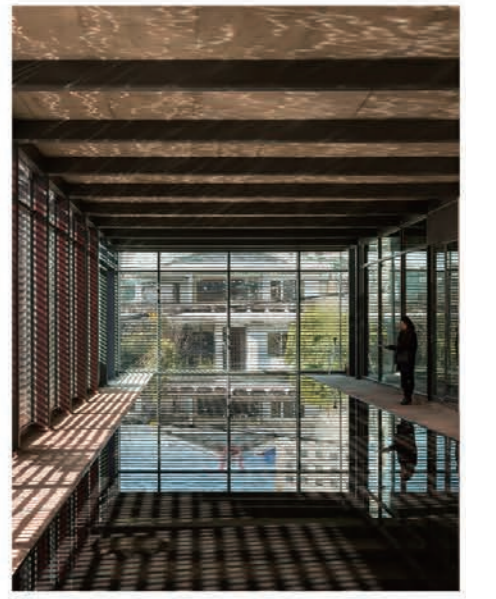
Isometric Assembling View of the Loadbearing Structure



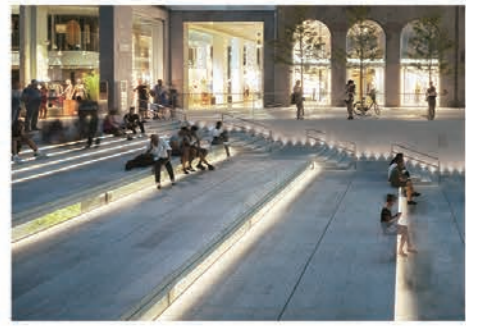
ROOF
Profiled Steel Sheet



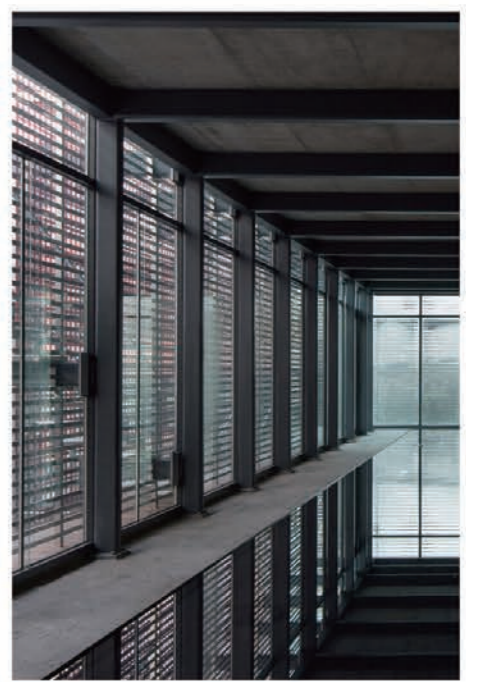
FRAME
H - Section Steel



STAIRS
Profiled Steel Sheet



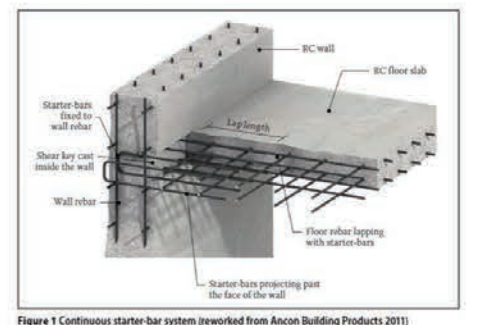
COLUMN
H - Section Steel



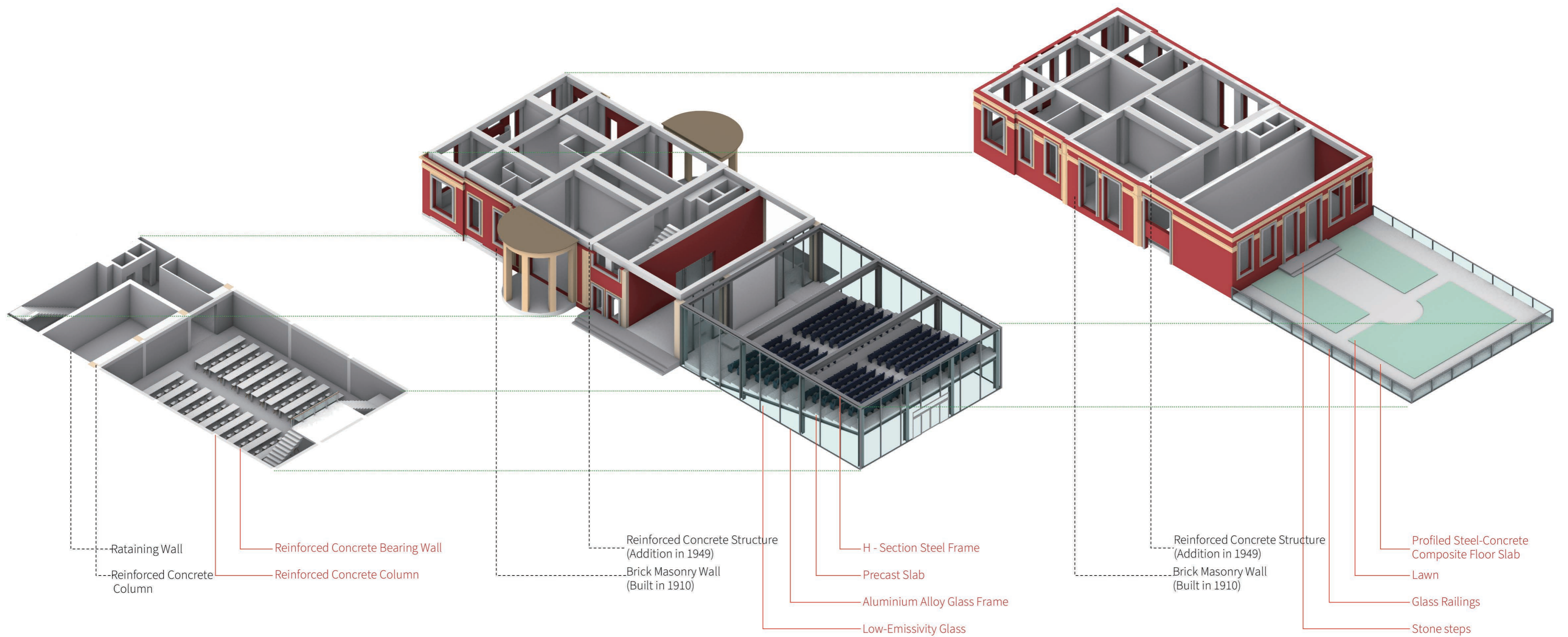
ENVELOPE
Aluminum alloy perforated plate



COLUMN
Reinforced Concrete Structure



BEARING WALL
Reinforced Concrete Structure



Rataining Wall
Reinforced Concrete Column

Reinforced Concrete Bearing Wall
Reinforced Concrete Column

Reinforced Concrete Structure
(Addition in 1949)
Brick Masonry Wall
(Built in 1910)

H - Section Steel Frame
Precast Slab
Aluminium Alloy Glass Frame
Low-Emissivity Glass

Reinforced Concrete Structure
(Addition in 1949)
Brick Masonry Wall
(Built in 1910)

Profiled Steel-Concrete
Composite Floor Slab
Lawn
Glass Railings
Stone steps



Architecture Design Studio

Politecnico di Milano
School of Architecture, Urban Planning and Construction Engineering
Architectural Design Studio for Restoration and Transformation of Complex Construction
2021 - 2022

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Date:
18.07.2023

Panel: