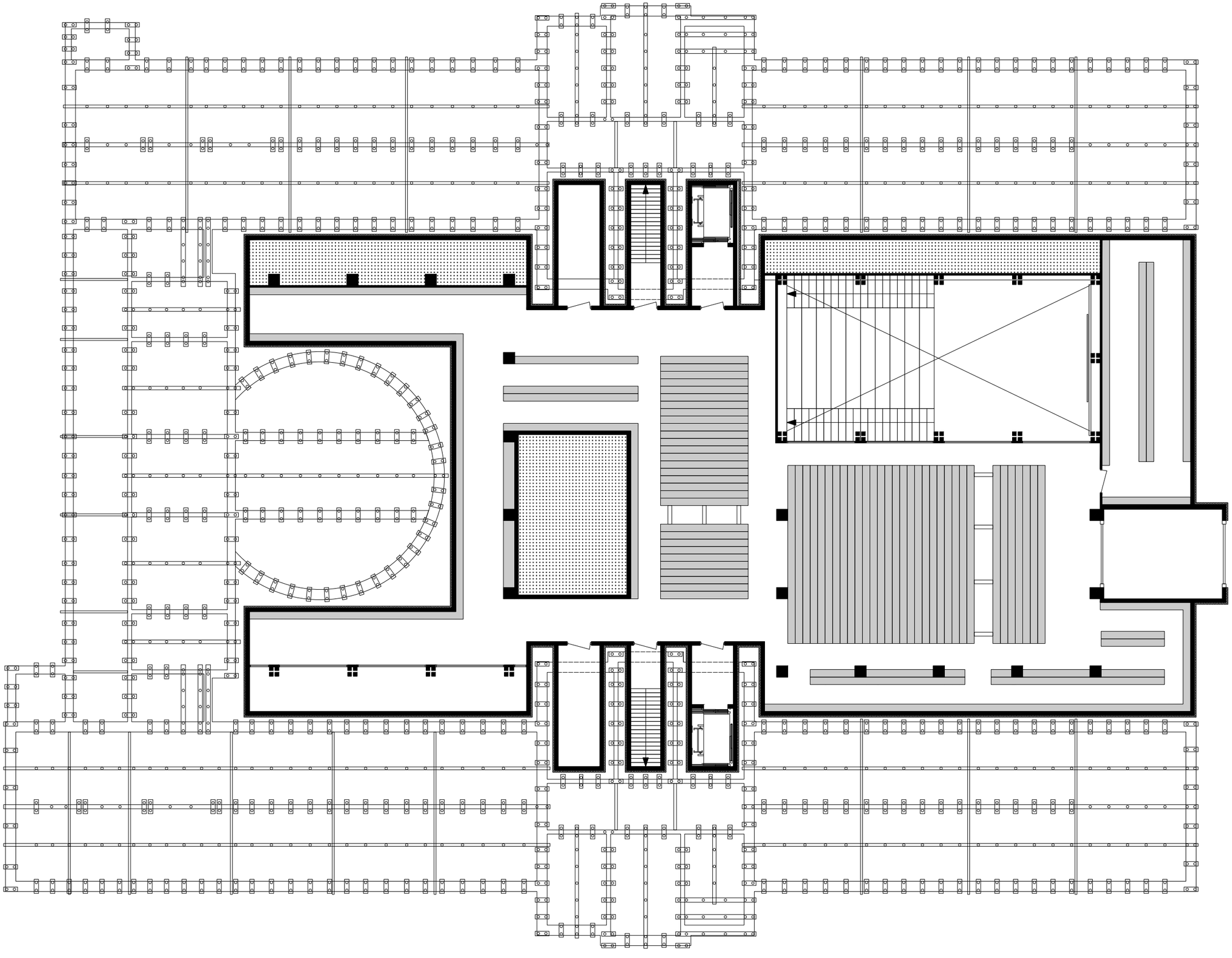
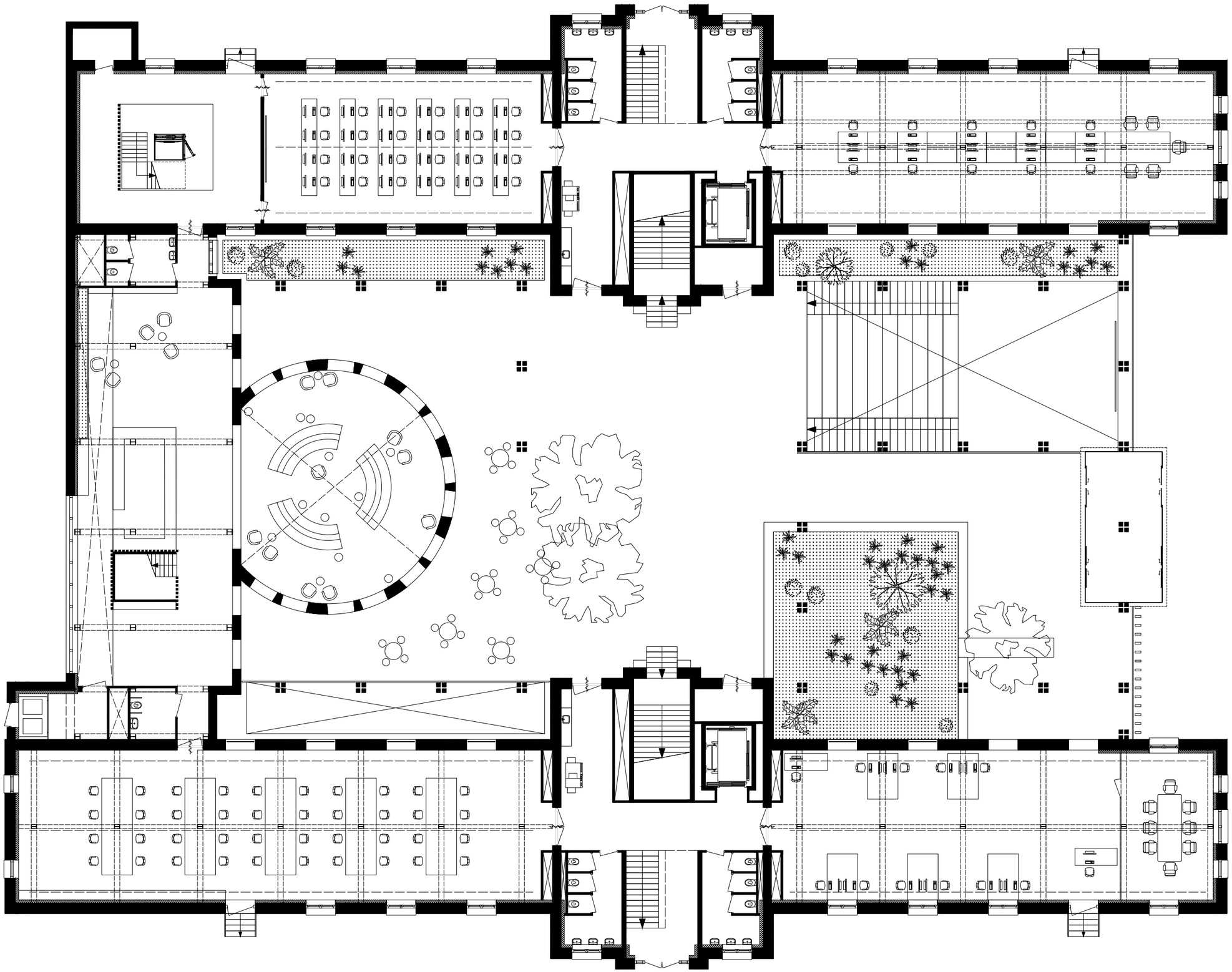
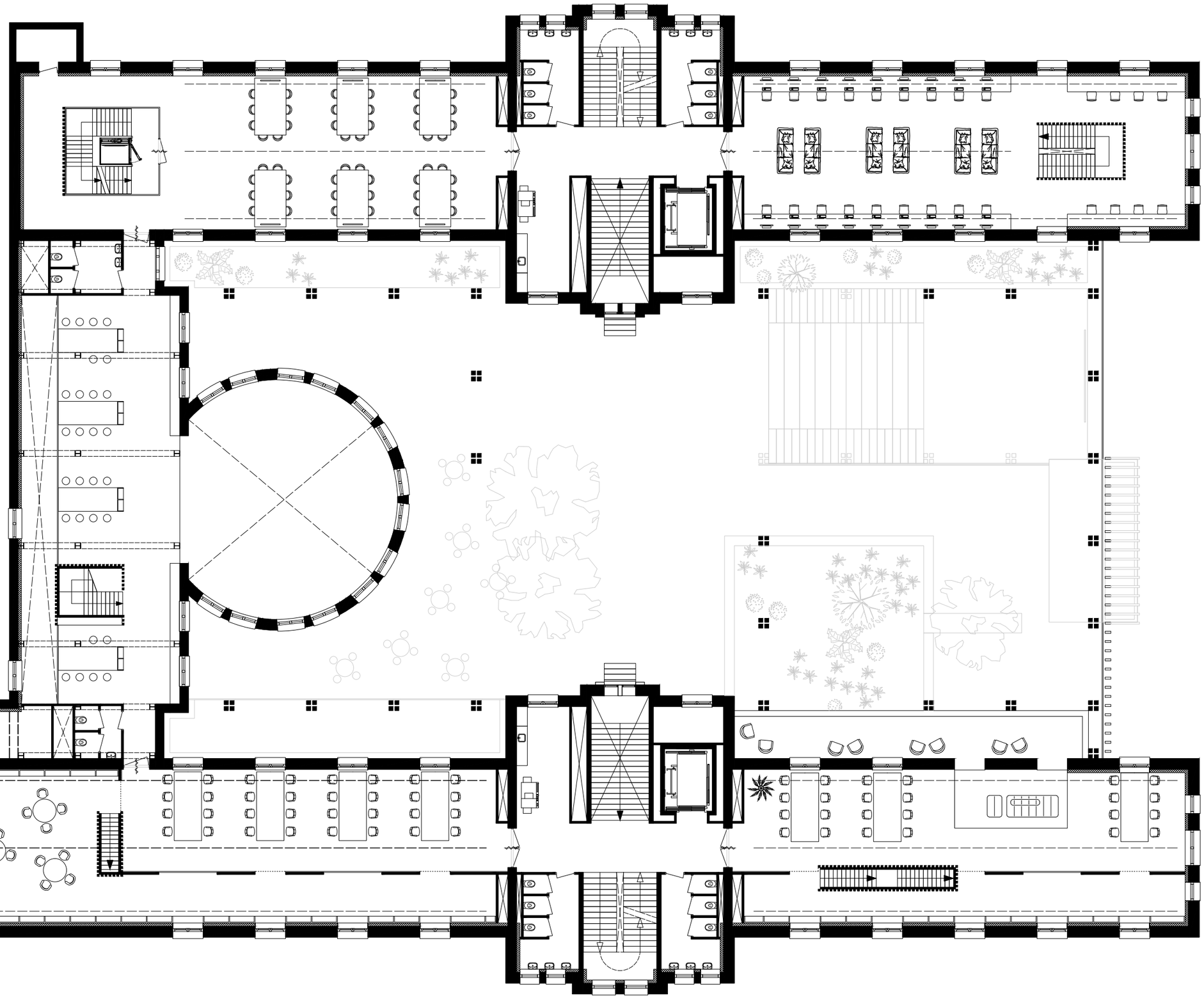
THE LIBRARY NETWORK BINNENGASTHUIS TERRA INAM STERDAM DOCUMENTATION

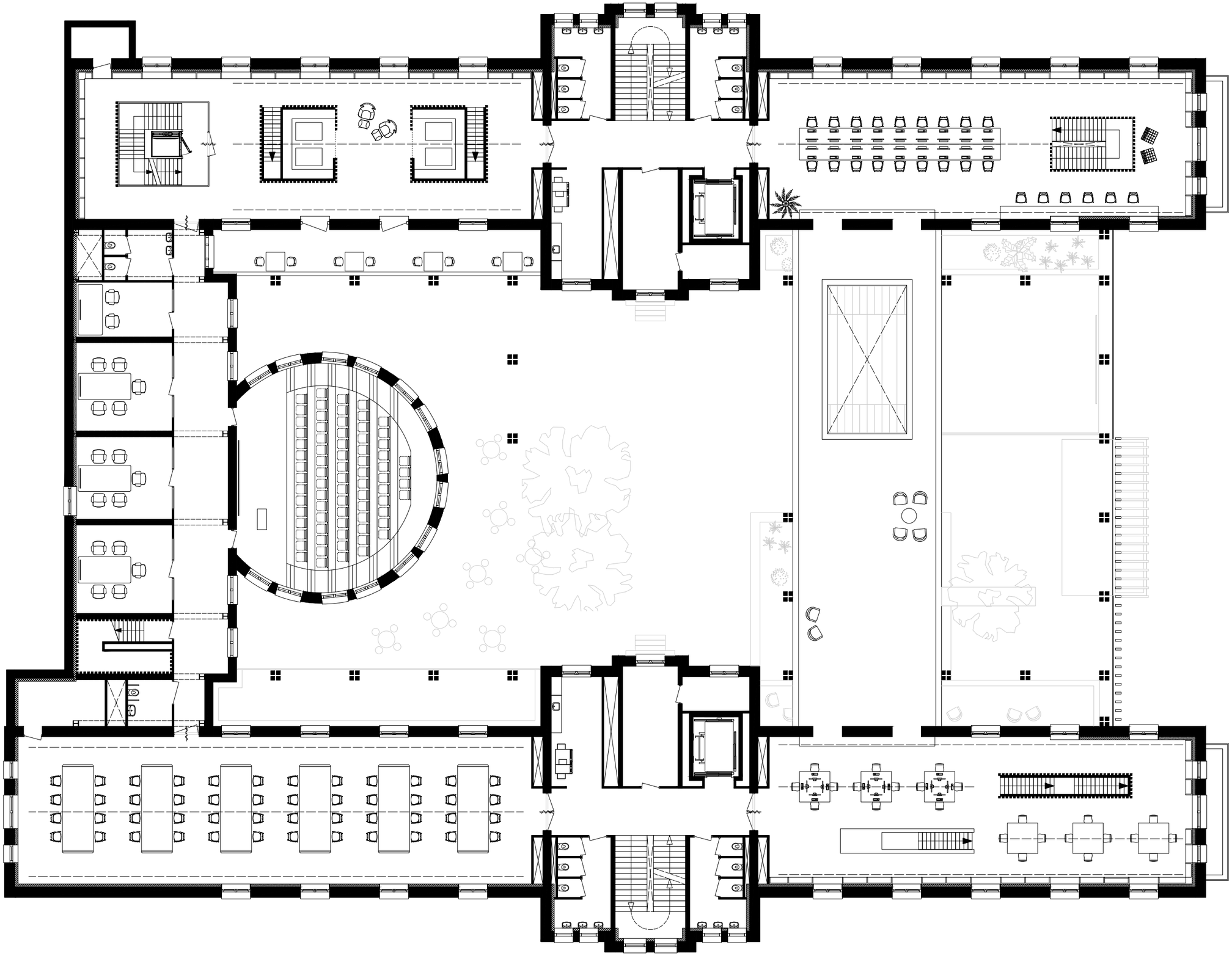
the transformation of the 'binnengasthuis' terrain in Amsterdam

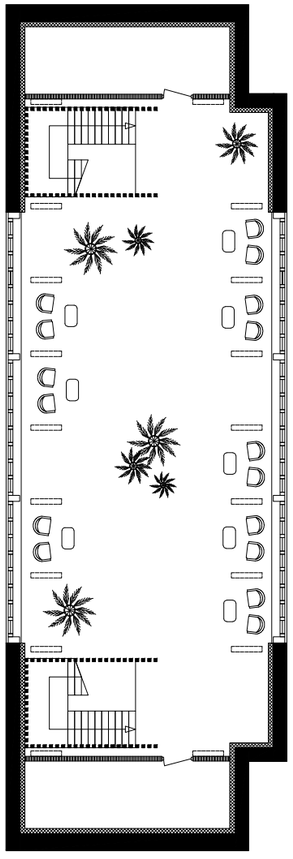
Noralie Kortbeek | 4256557 | heritage & architecture | juni 2015

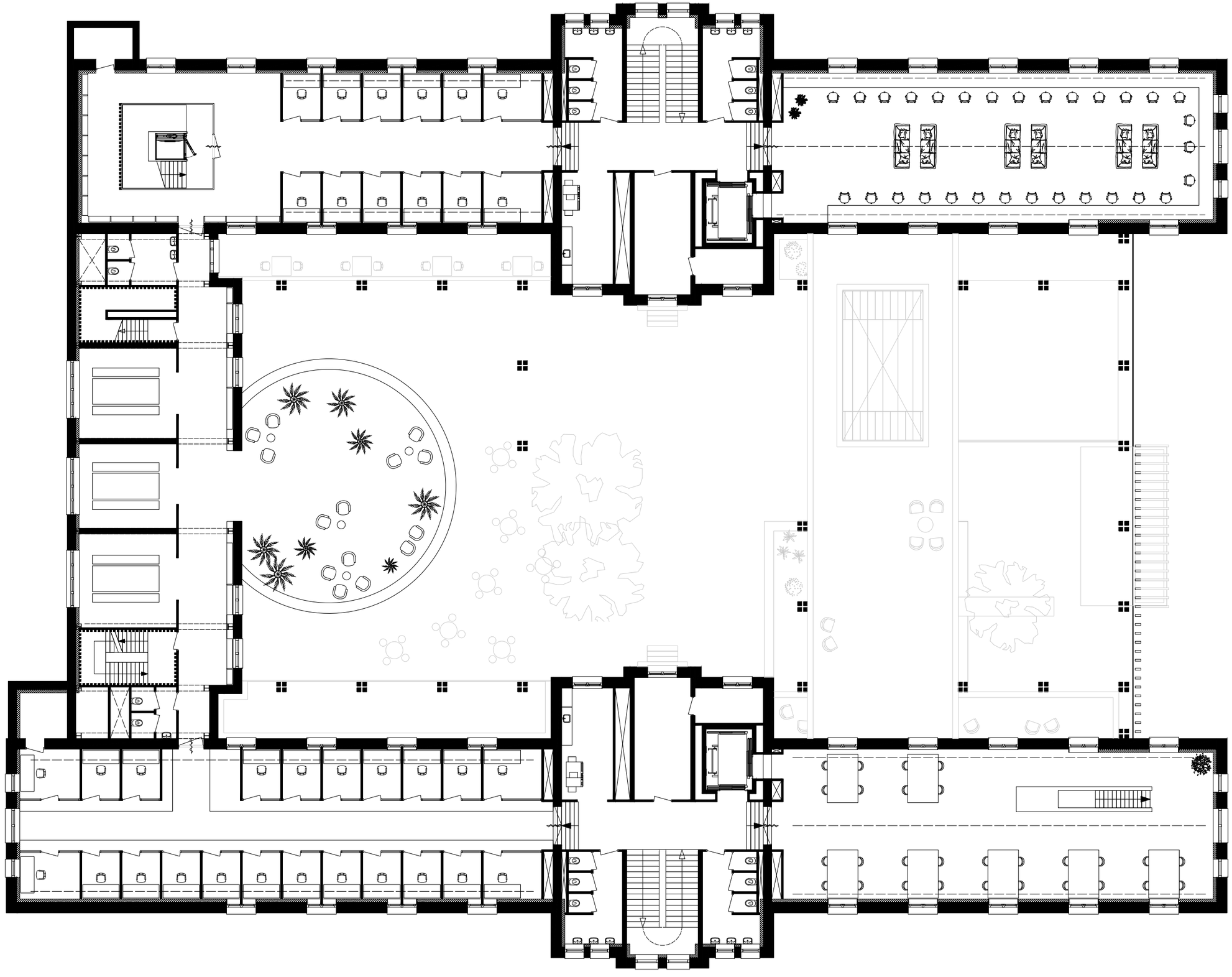


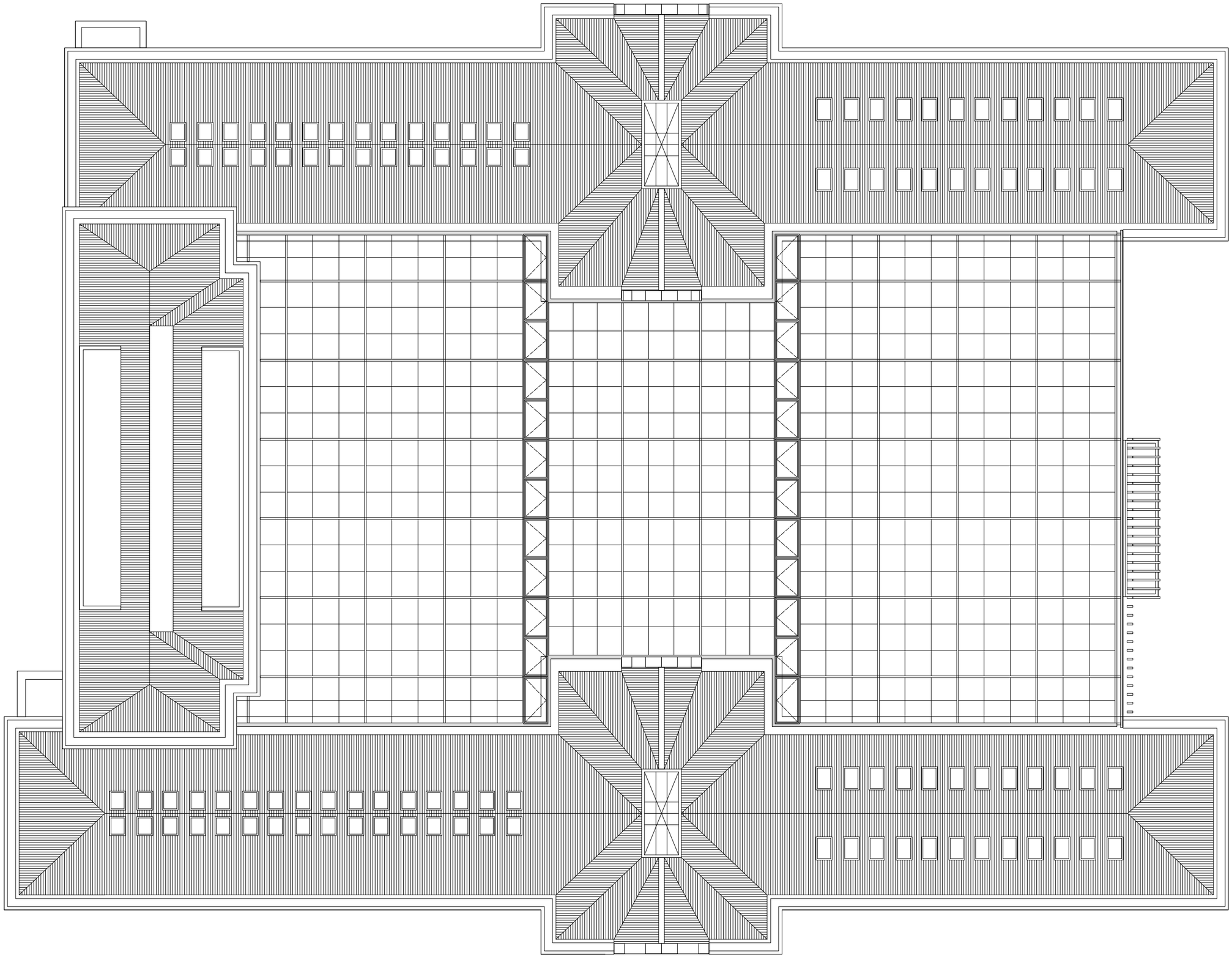




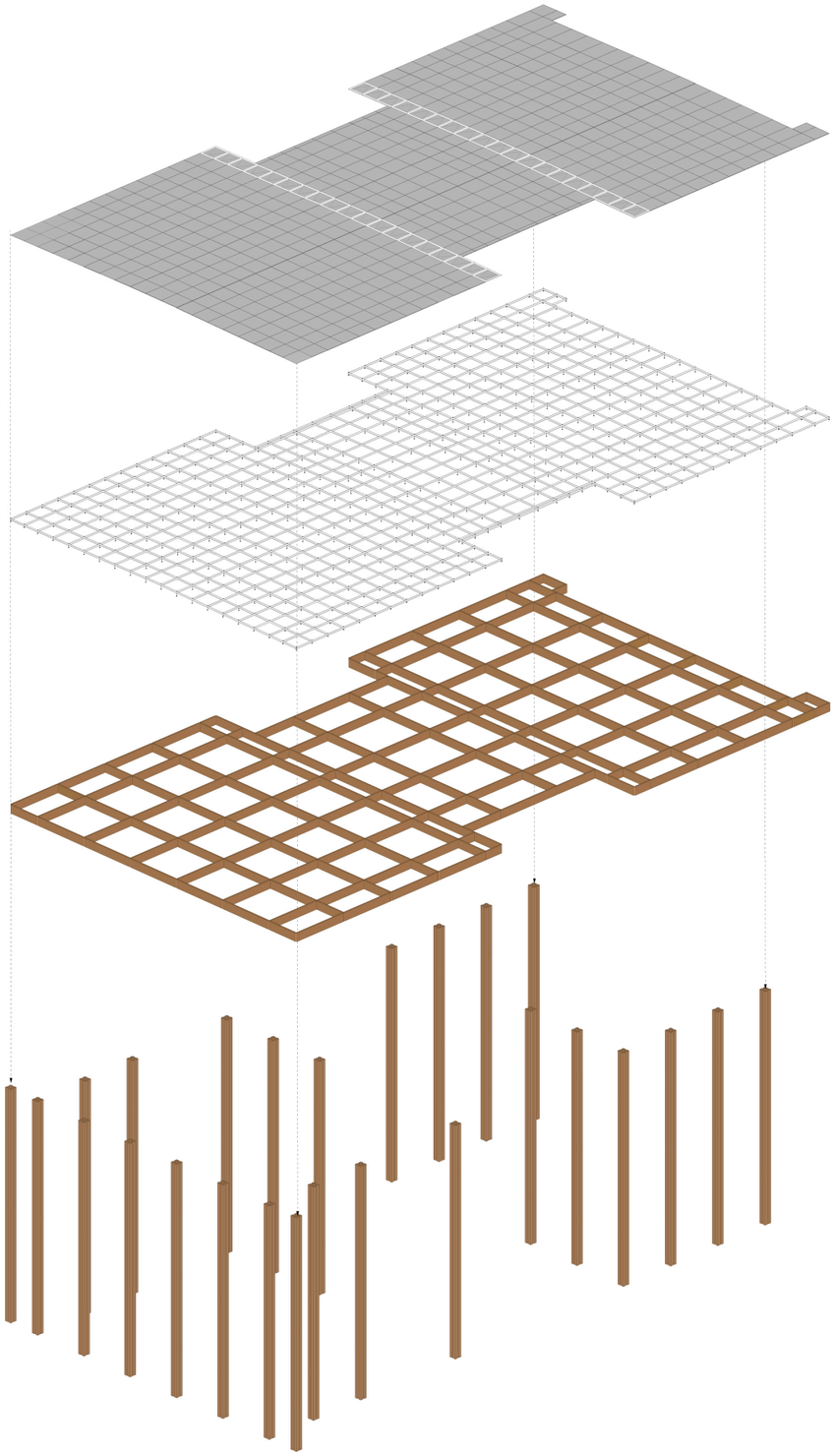








Construction



Construction of the covered garden

Double and layered glass with integraded translucent photovoltaic cells

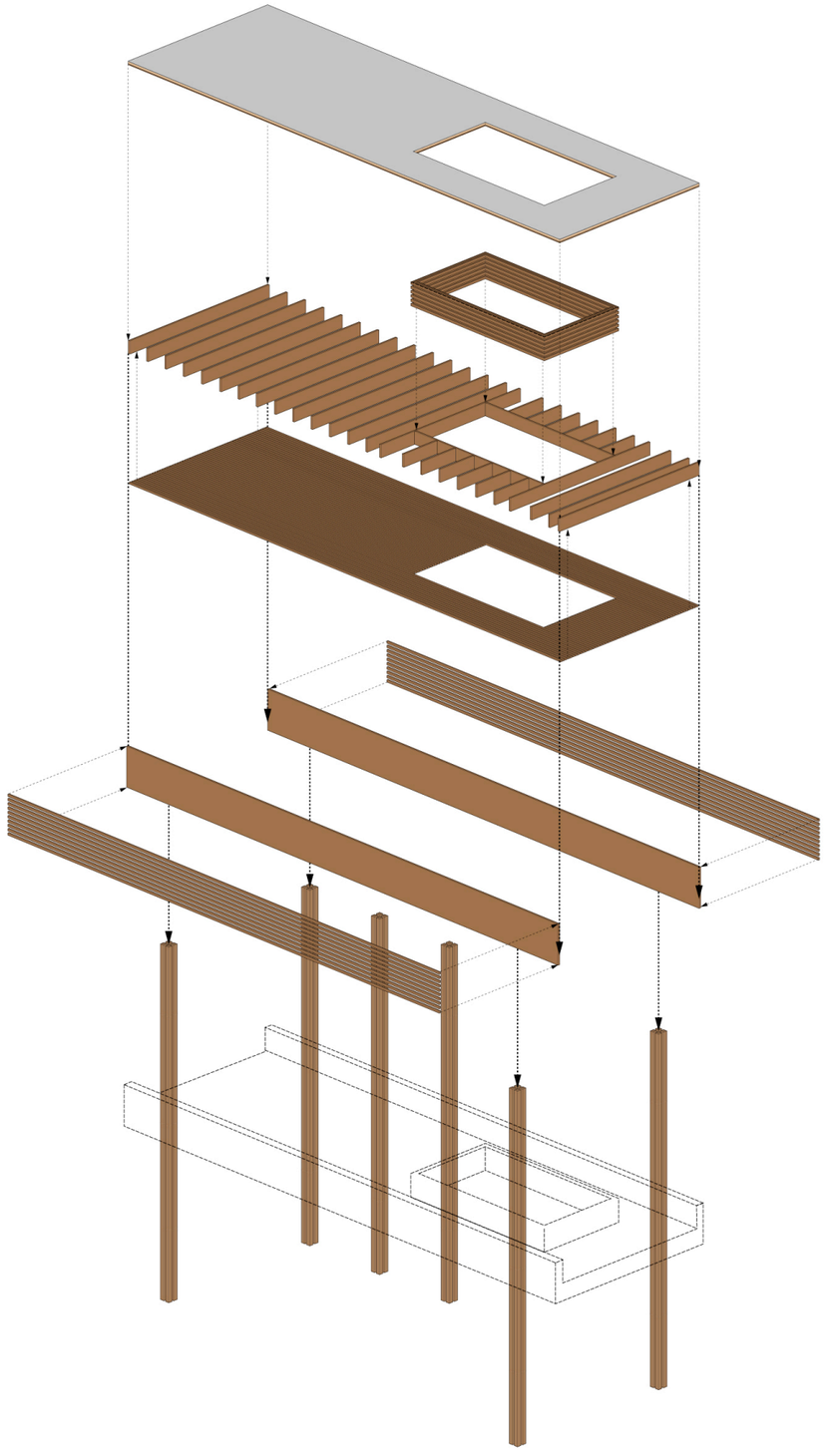
Sloped steel construction

Laminated wooden beams

Wooden columns

Each column is a composition of four smaller columns that are connected with steel profiles.

Construction of the suspension bridge



Wooden floorboards with insulation and a white cast floor

Parapet of the void
Exists of horizontal wooden slats that also contribute to the acoustics of the indoor garden.

Wooden laminated beams that span between the main sleepers

Finishing of the underside of the suspension bridge
Exists of horizontal wooden slats that also contribute to the acoustics of the indoor garden.

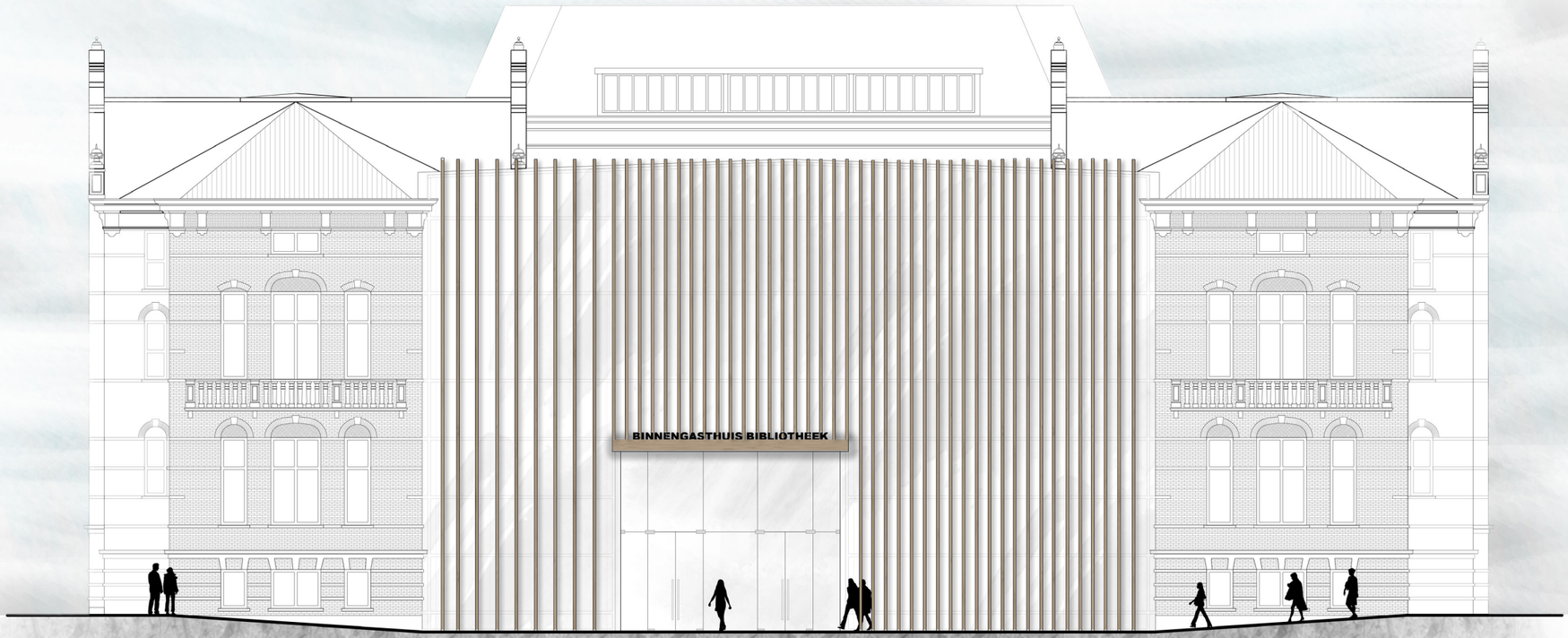
Parapet of the suspension bridge
Exists of horizontal wooden slats that also contribute to the acoustics of the indoor garden.

Main sleepers
Made of laminated wooden beams that are positioned between the smaller columns of the main column

Wooden columns
Each column is a composition of four smaller columns that are connected with steel profiles.

South Elevation

original scale 1:100 | original paper size A1



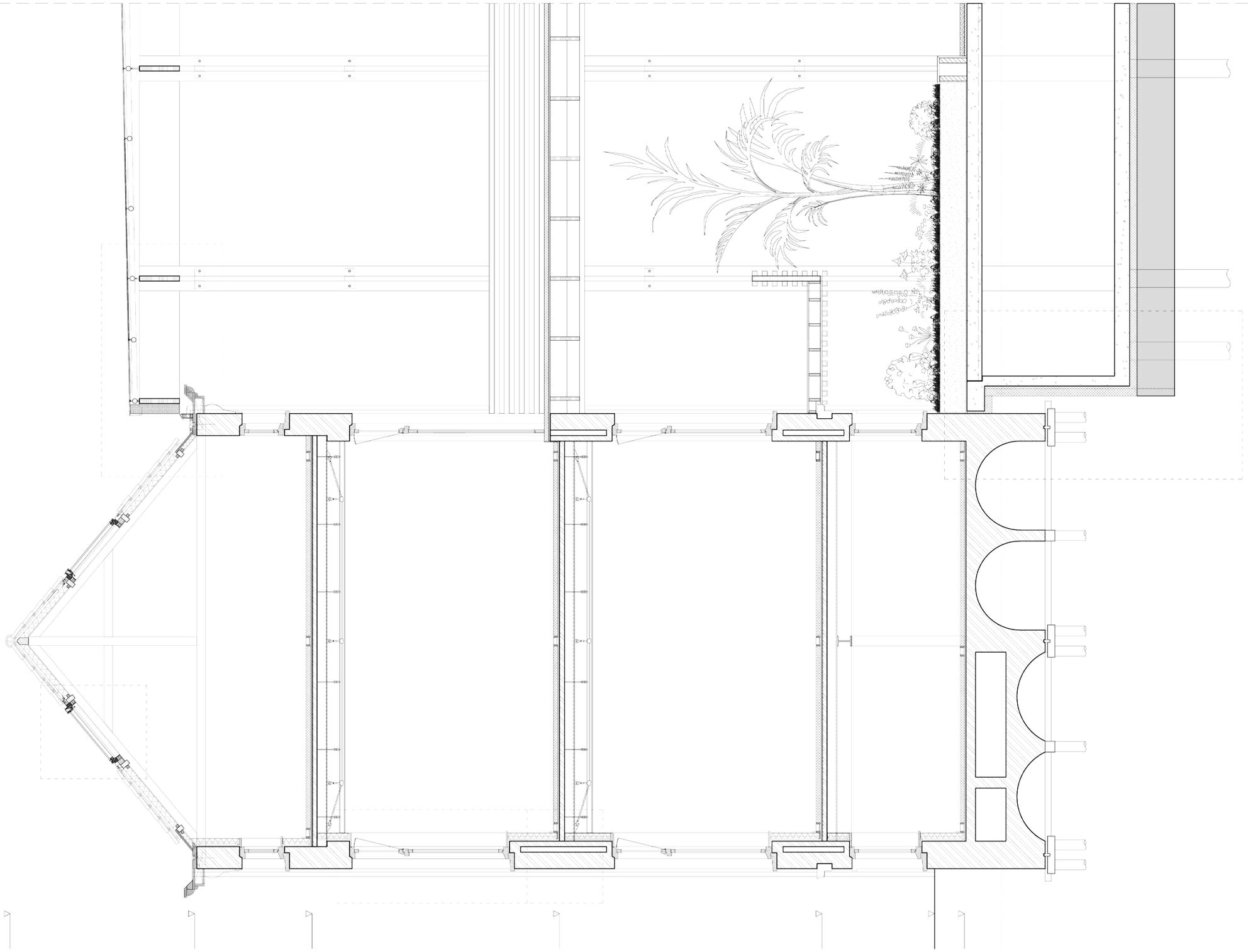
Longitudinal Section

original scale 1:100 | original paper size A1



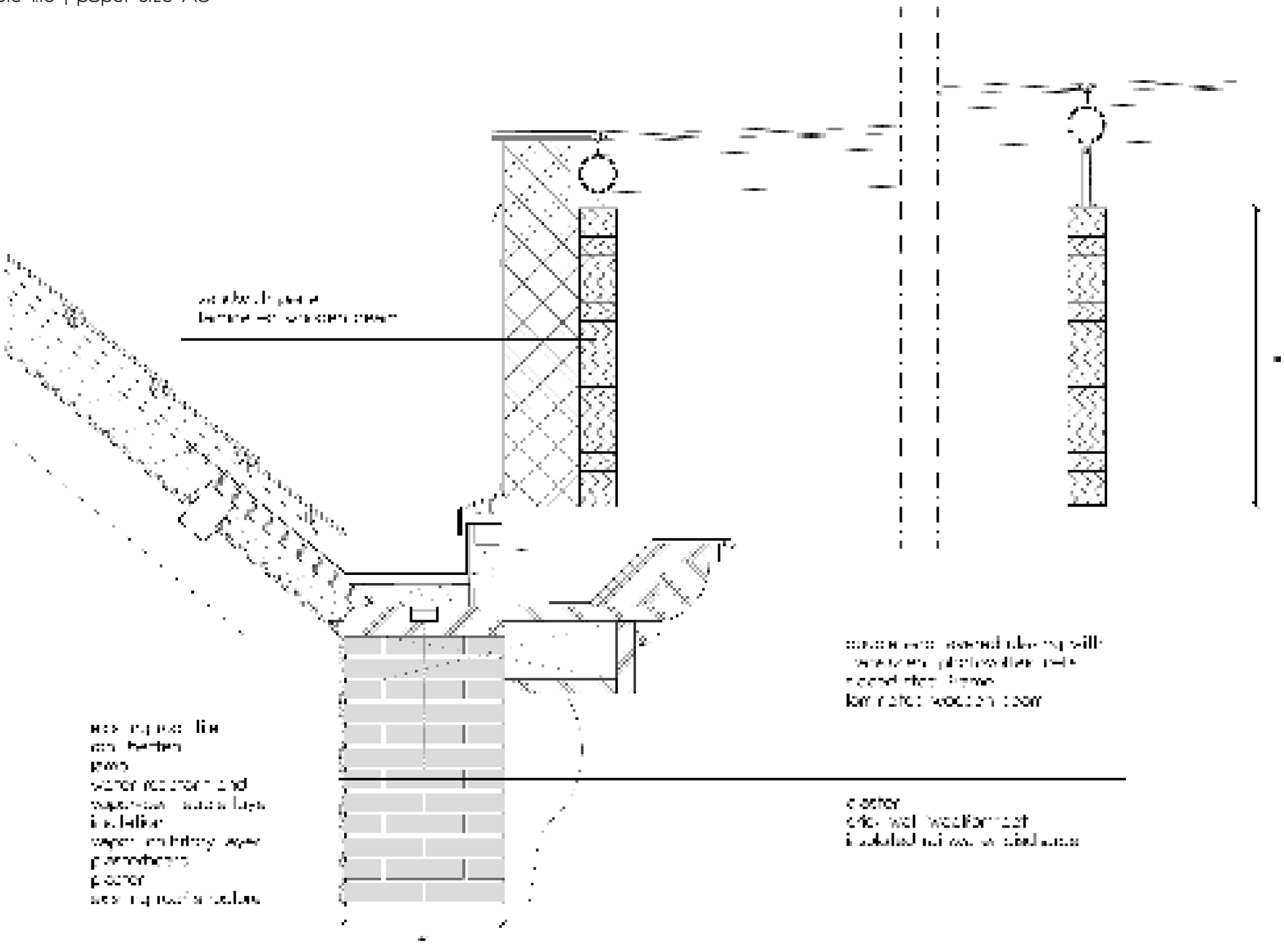
Cross section

original scale 1:50 | original paper size A2



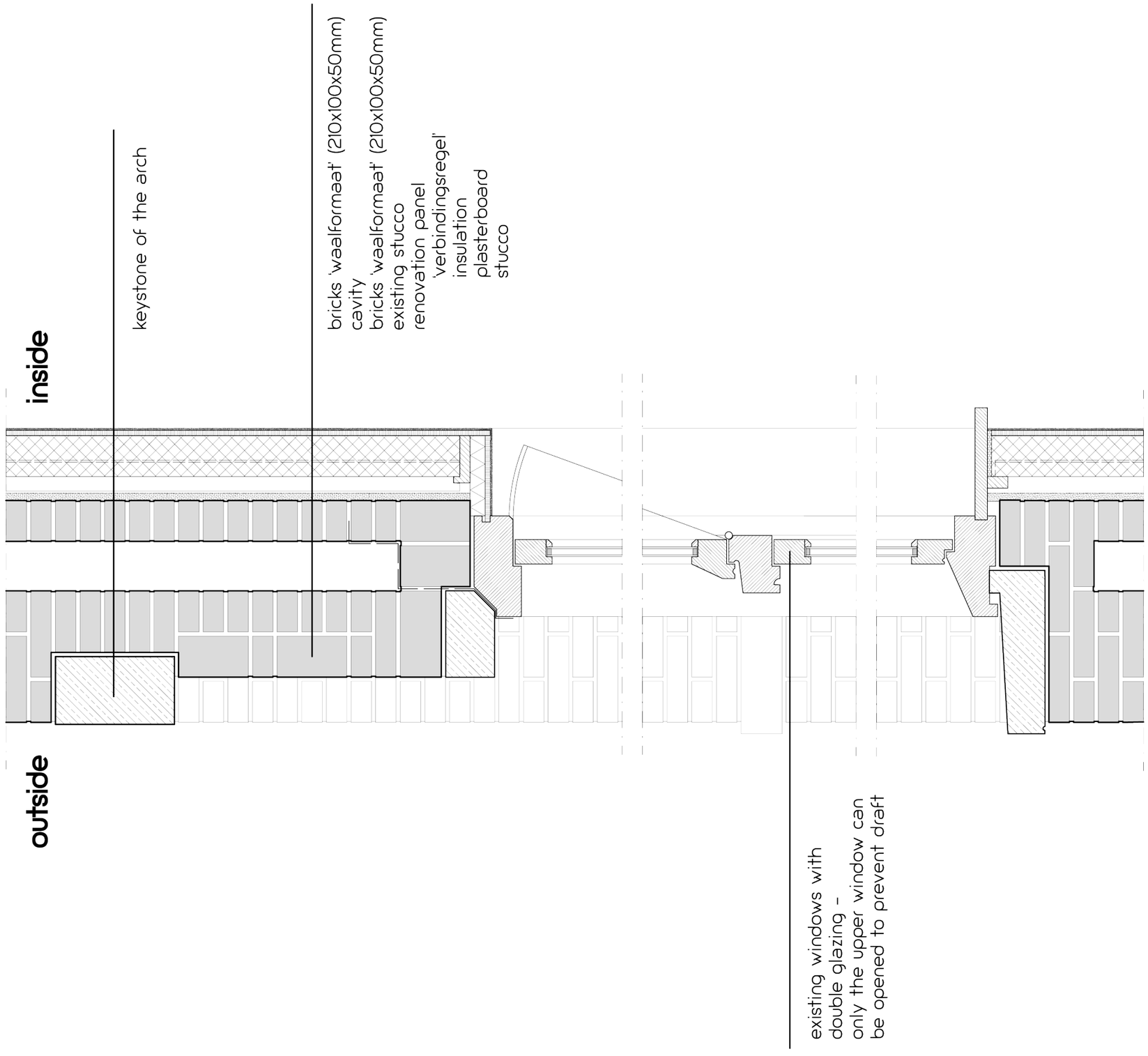
Detail 1

scale 1:10 | paper size A3



Detail 2

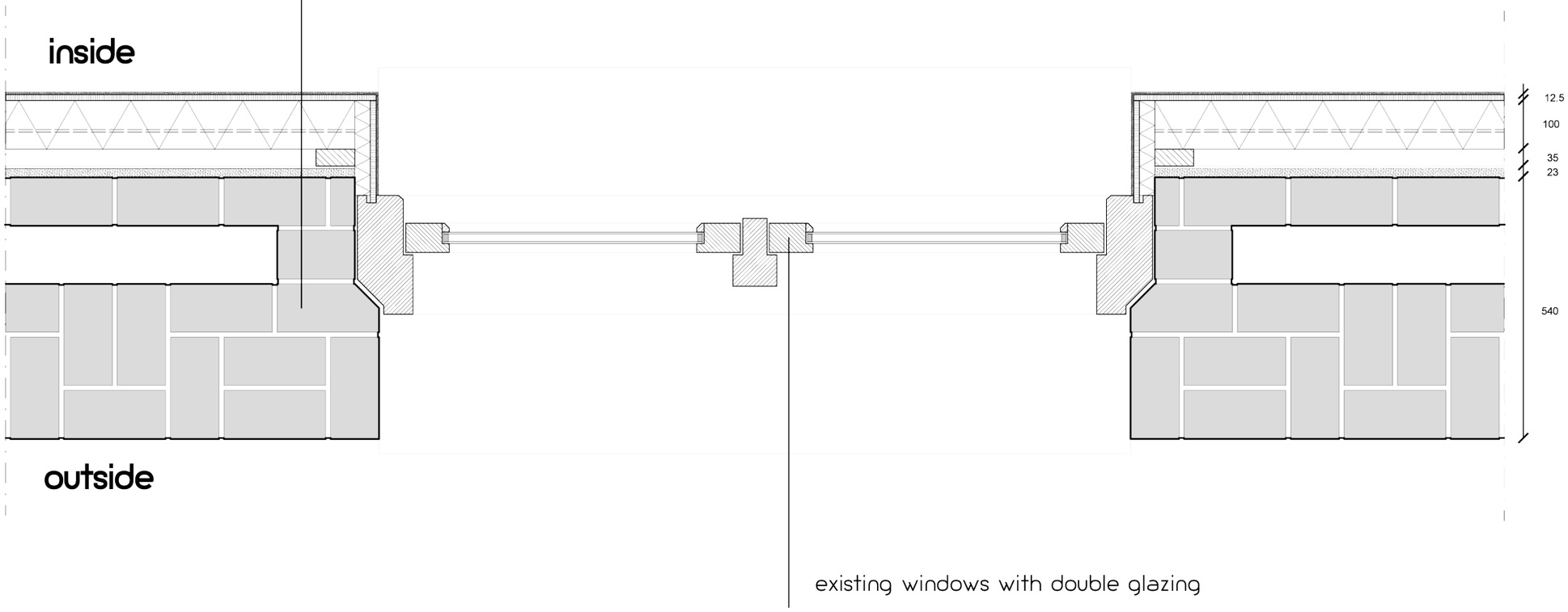
scale 1:10 | paper size A3



Detail 3

scale 1:10 | paper size A3

existing wall - two-and-a-half brick bond
existing stucco
renovation panel
'verbindingsregel'
insulation
plasterboard
stucco

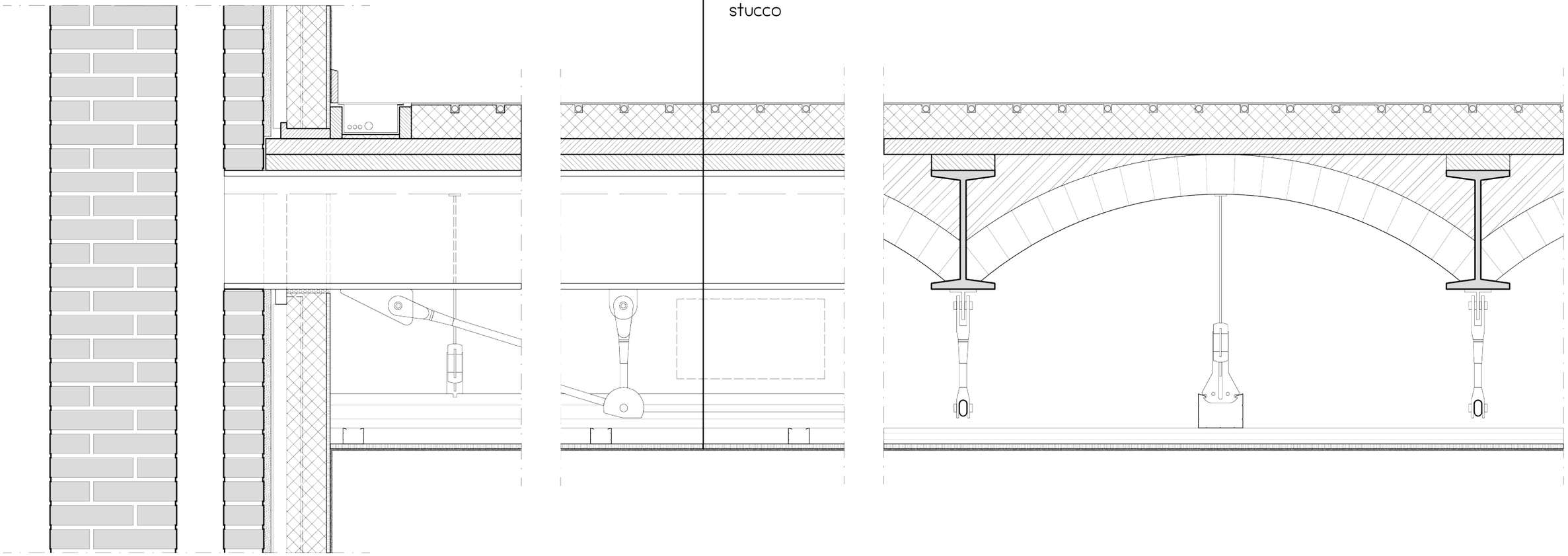


existing windows with double glazing

Detail 4

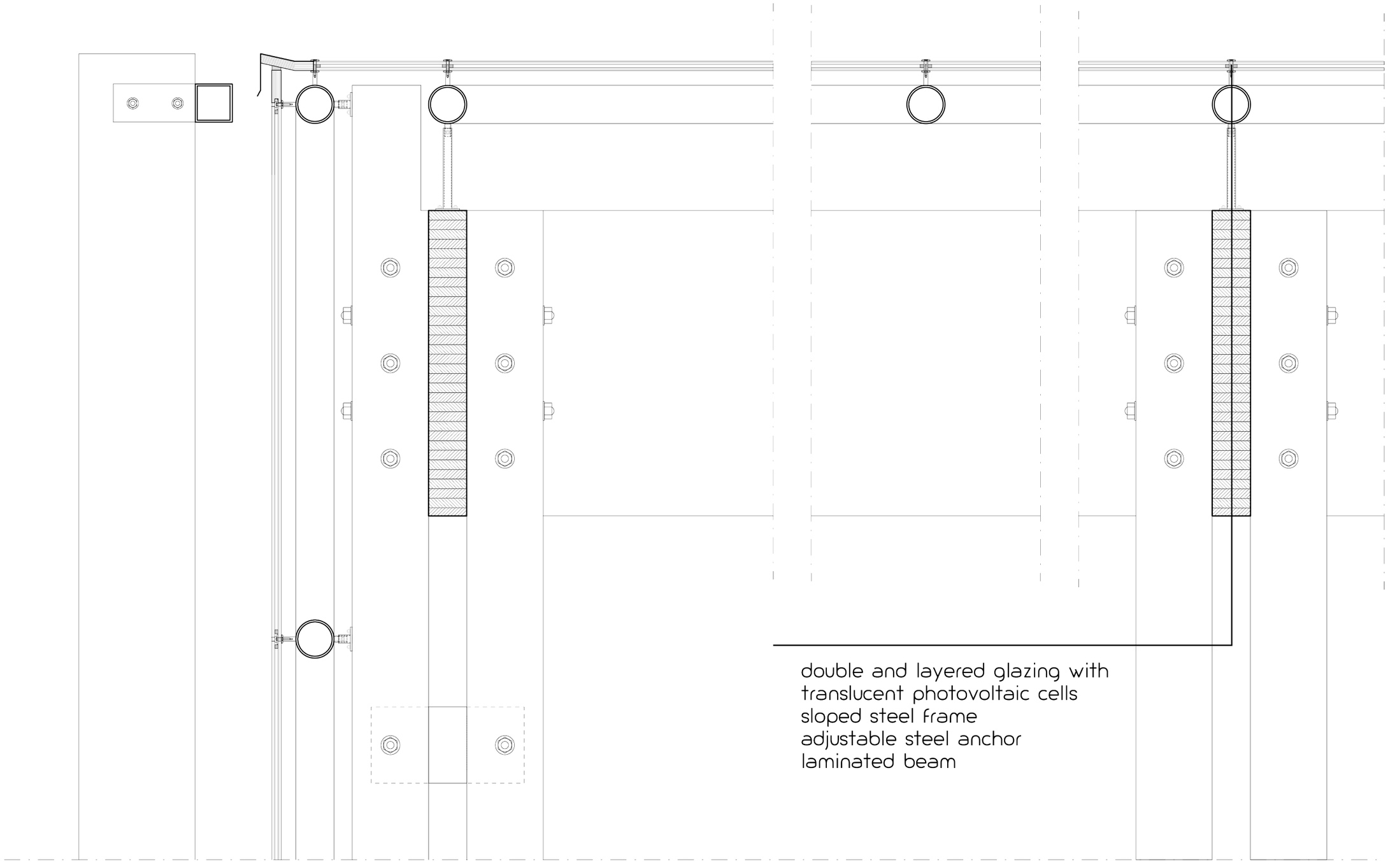
scale 1:10 | paper size A3

'gietvloer'
floor heating / cooling
insulation
wooden floor boards
wooden slat
wrought iron beam
'onderspanning' floor
space for ventilation ducts
lowered ceiling
stucco



Detail 5

scale 1:10 | paper size A3



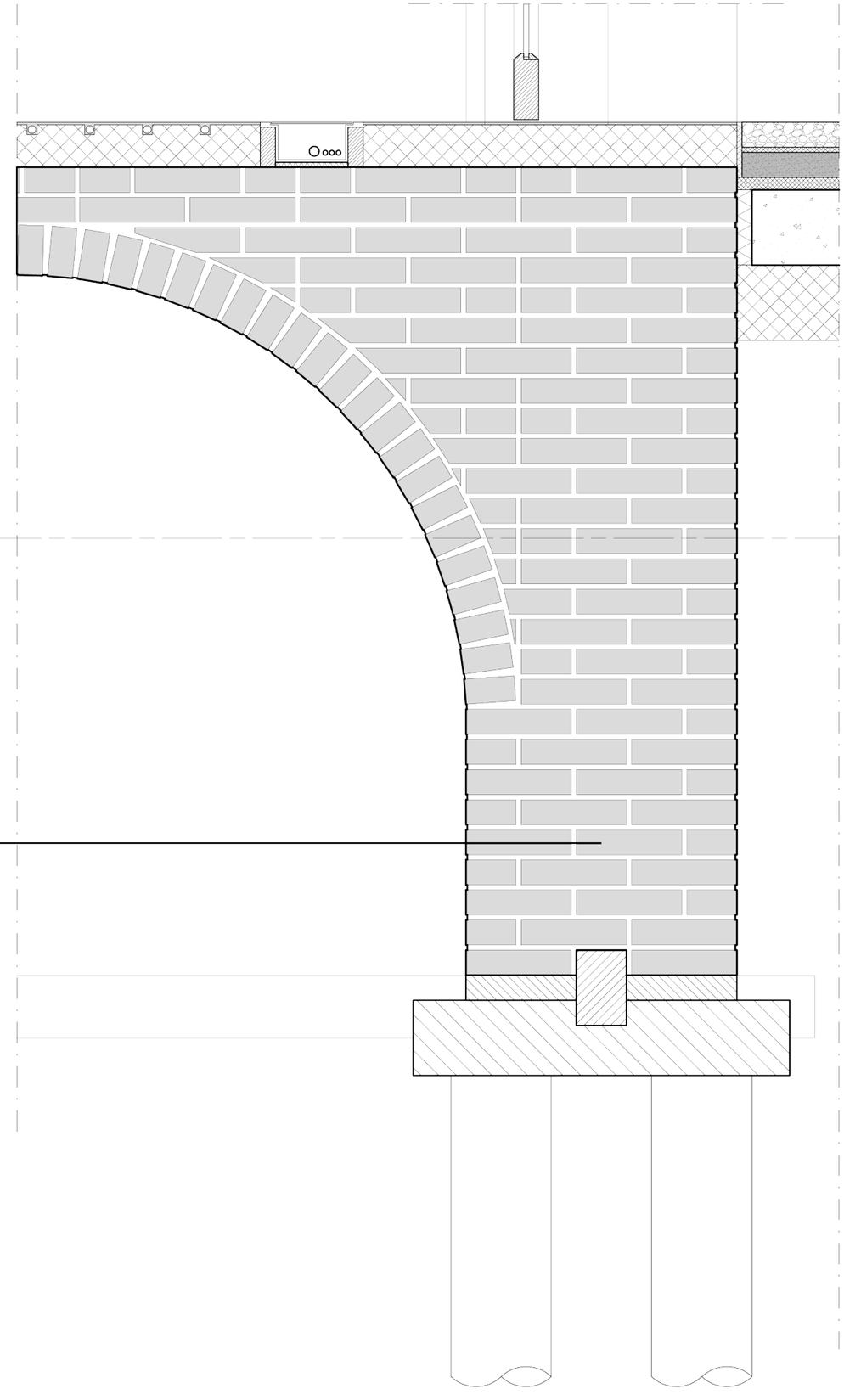
double and layered glazing with
translucent photovoltaic cells
sloped steel frame
adjustable steel anchor
laminated beam

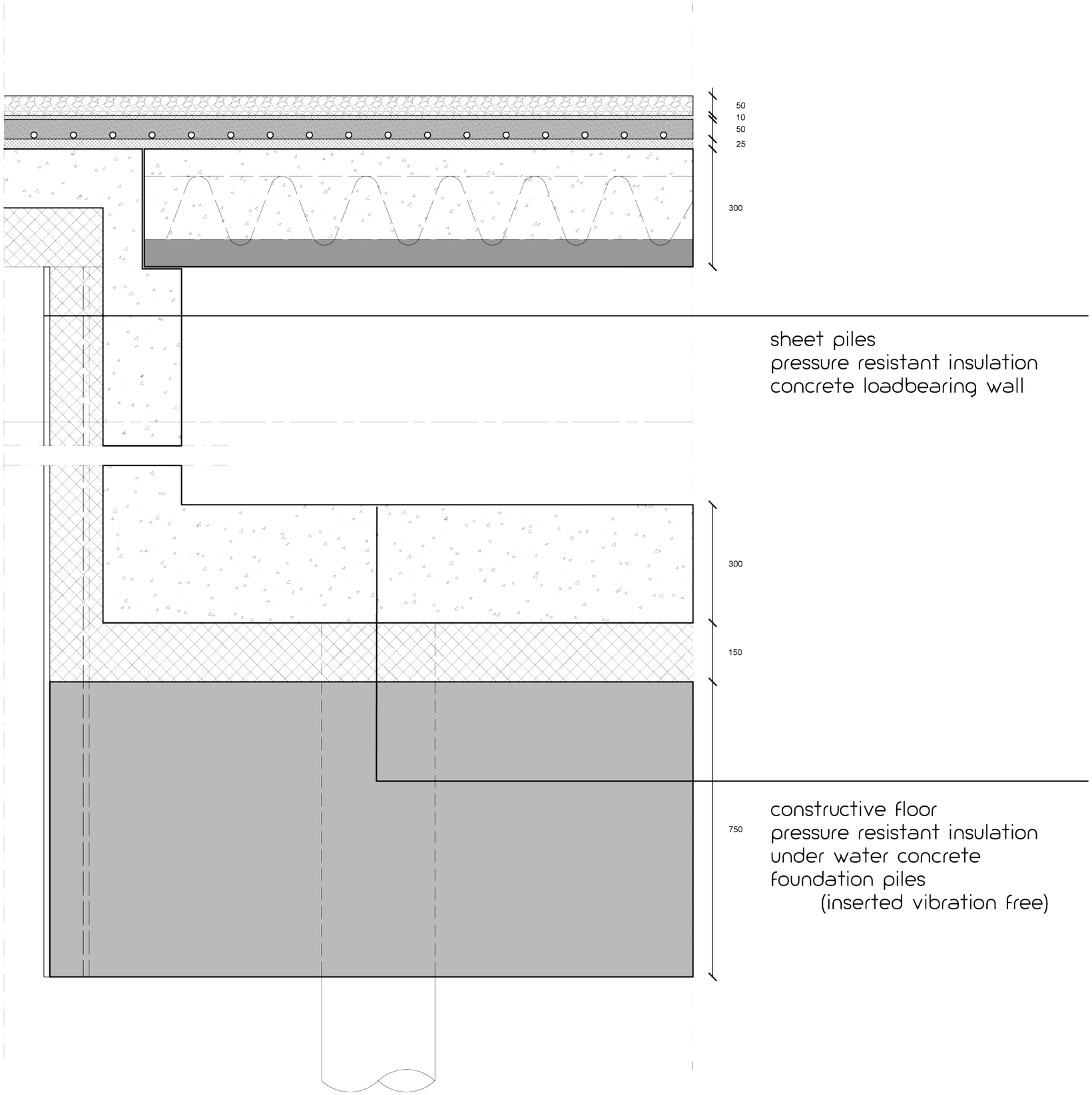
Detail 6

scale 1:10 | paper size A3

Amsterdams Peil

existing Amsterdam foundation
brick vault
(composition of bricks
can differ in the real
situation, the pictured detail
is an assumption)



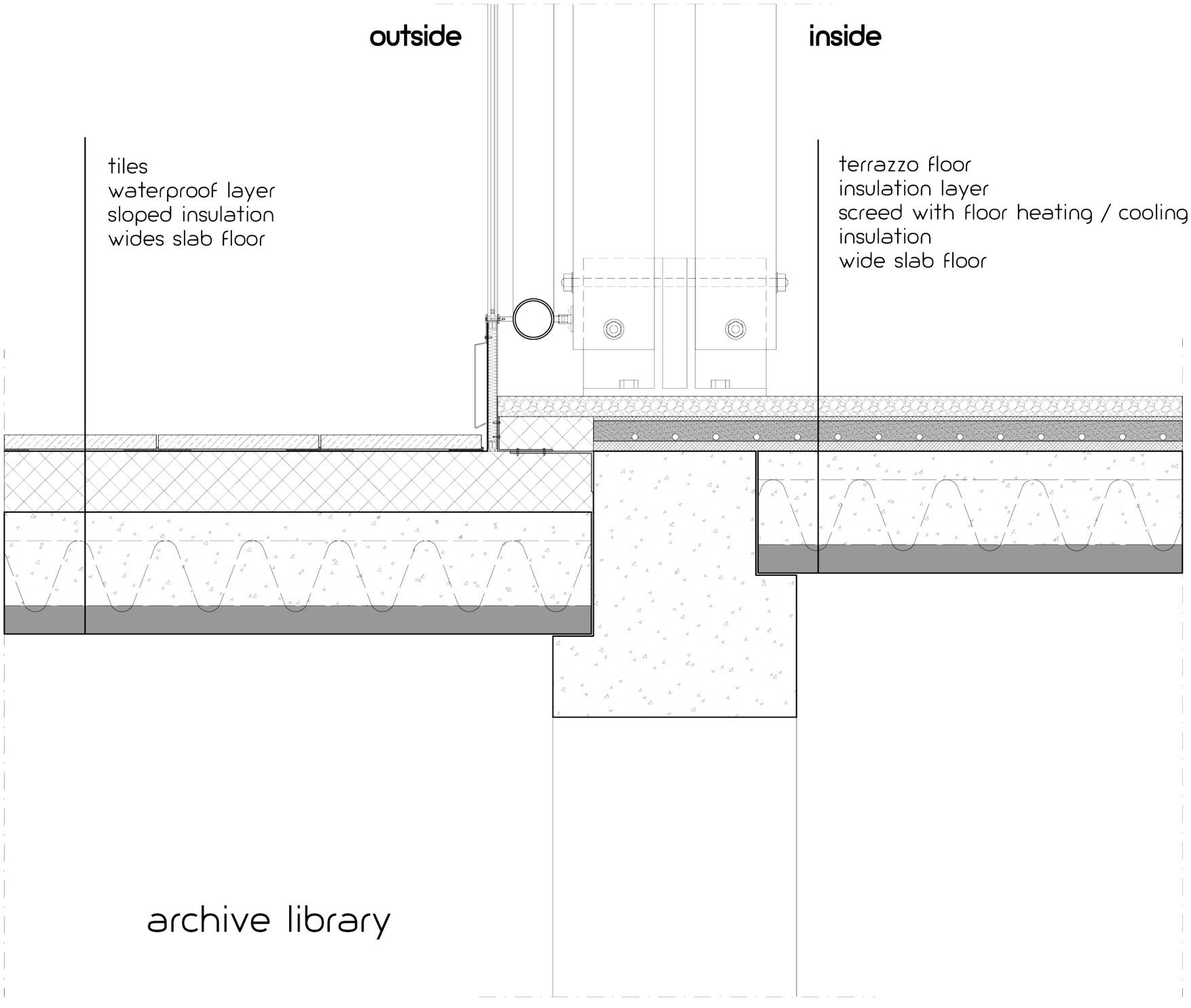


sheet piles
pressure resistant insulation
concrete loadbearing wall

constructive floor
pressure resistant insulation
under water concrete
foundation piles
(inserted vibration free)

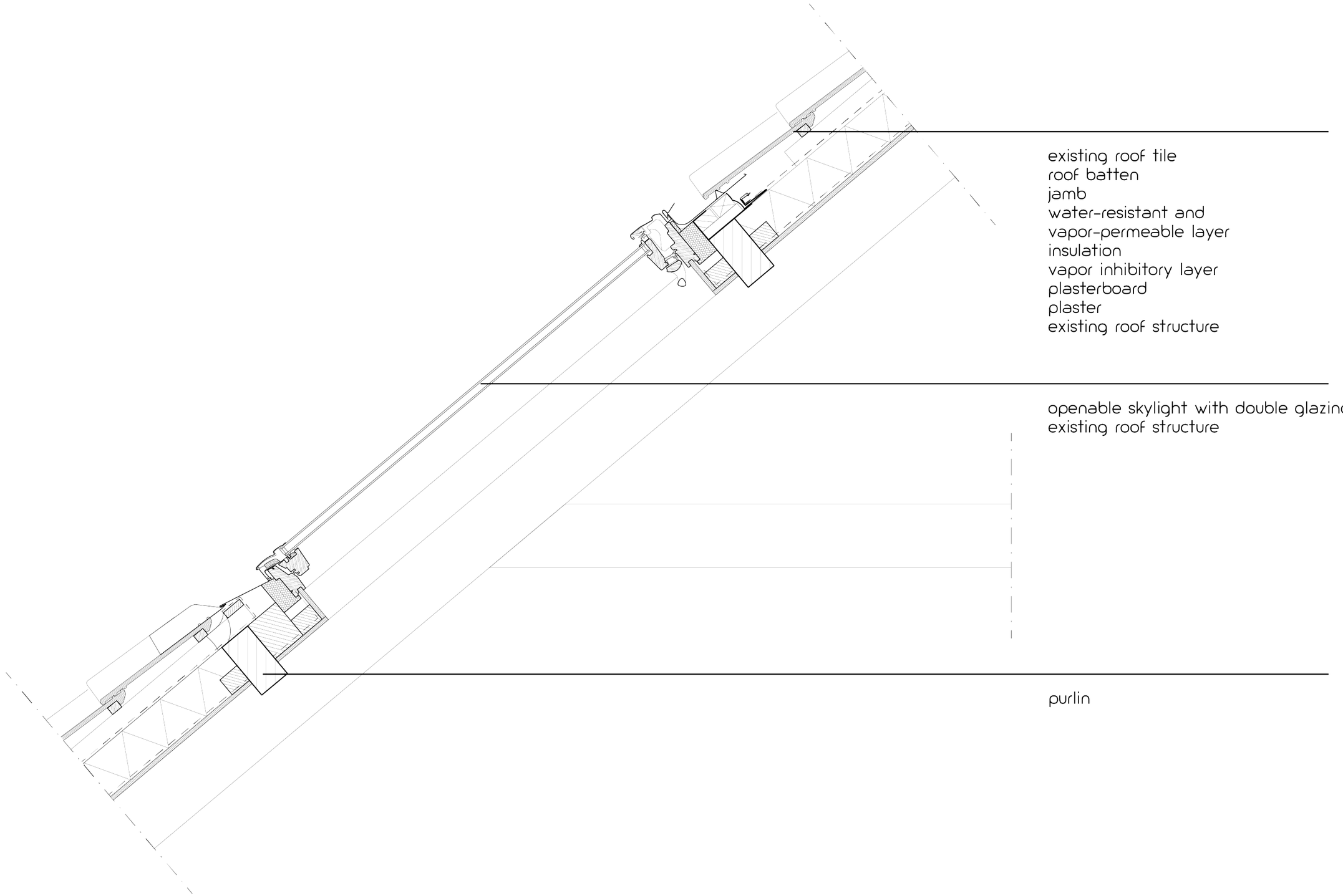
Detail 7

scale 1:10 | paper size A3



Detail 8

scale 1:10 | paper size A3

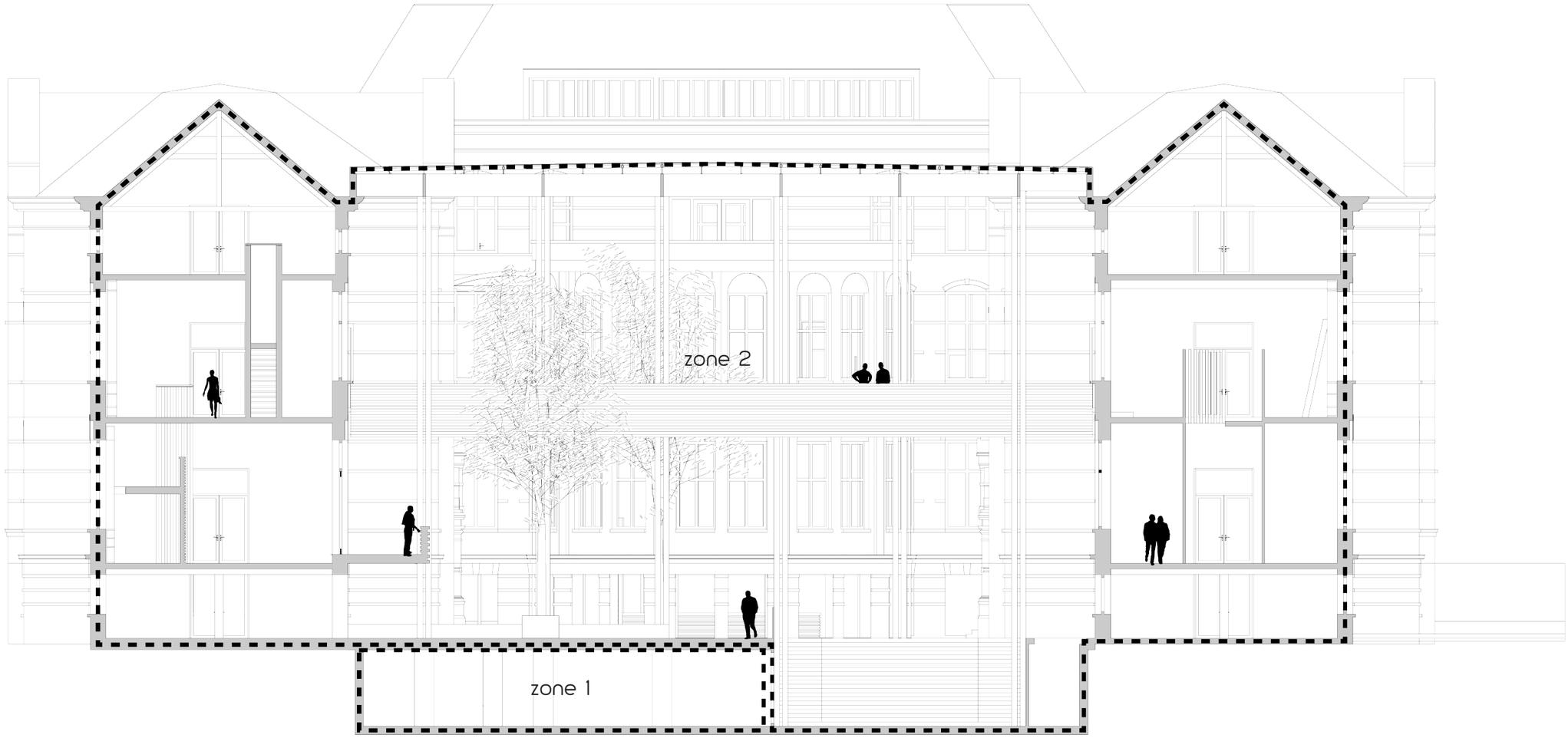


Climate system

The building is devided in two climate zones. One zone is the archive which is located in the basement. The rest of the building forms the other zone.

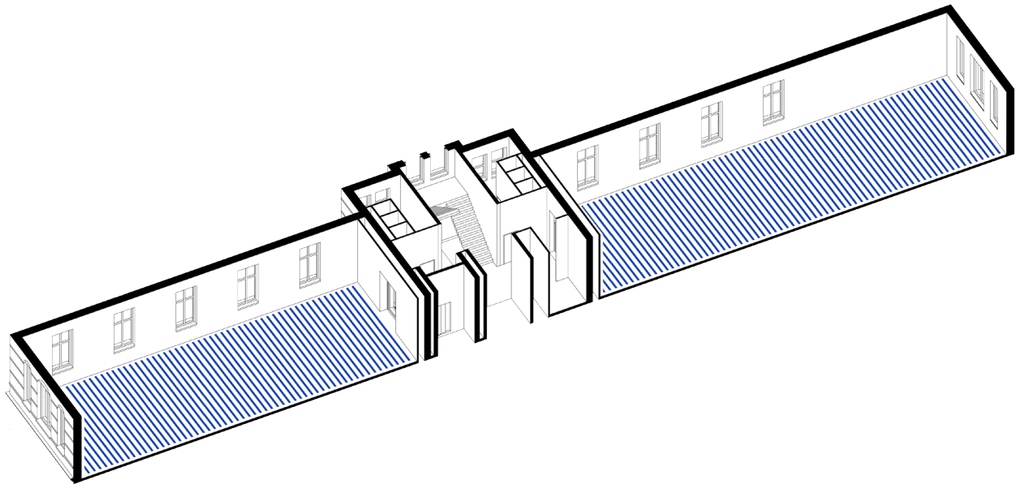
The archive has a controlled climate system with a relative humidity of approximately 50 per cent and a temperature between 16˚ and 20˚ degrees. In this archive books of the Faculty of Humanities are stored. The items that are very valuable are stored at the Special Collections located at 'Oude Turfmarkt' in Amsterdam. In this archive there is space for ... m^1 of books (Rijksoverheid, 2015).

The library and indoor garden have a different and less strict climate. The temperature in summer vary between 23˚ and 26˚ degrees and in winter between 20˚ and 24˚ degrees. The relative humidity can differ between 35 and 65 per cent.

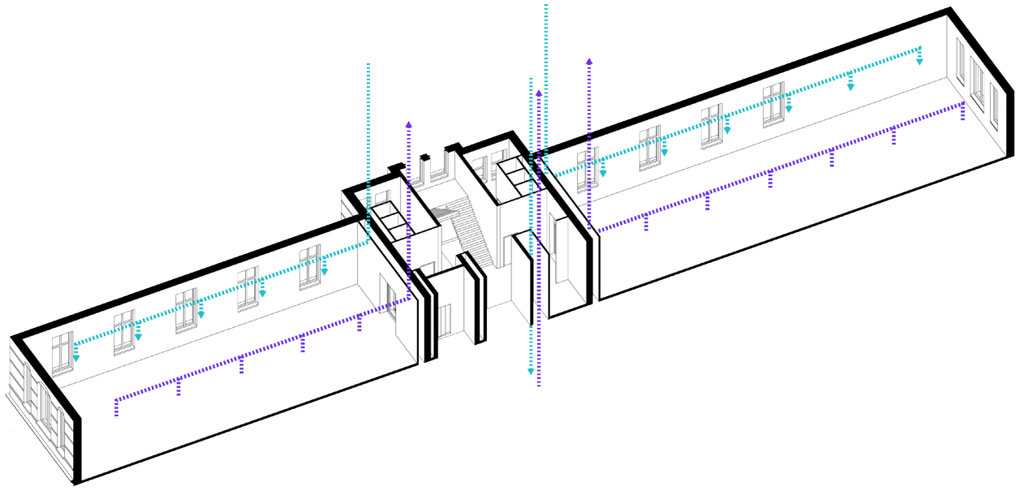


Climate system

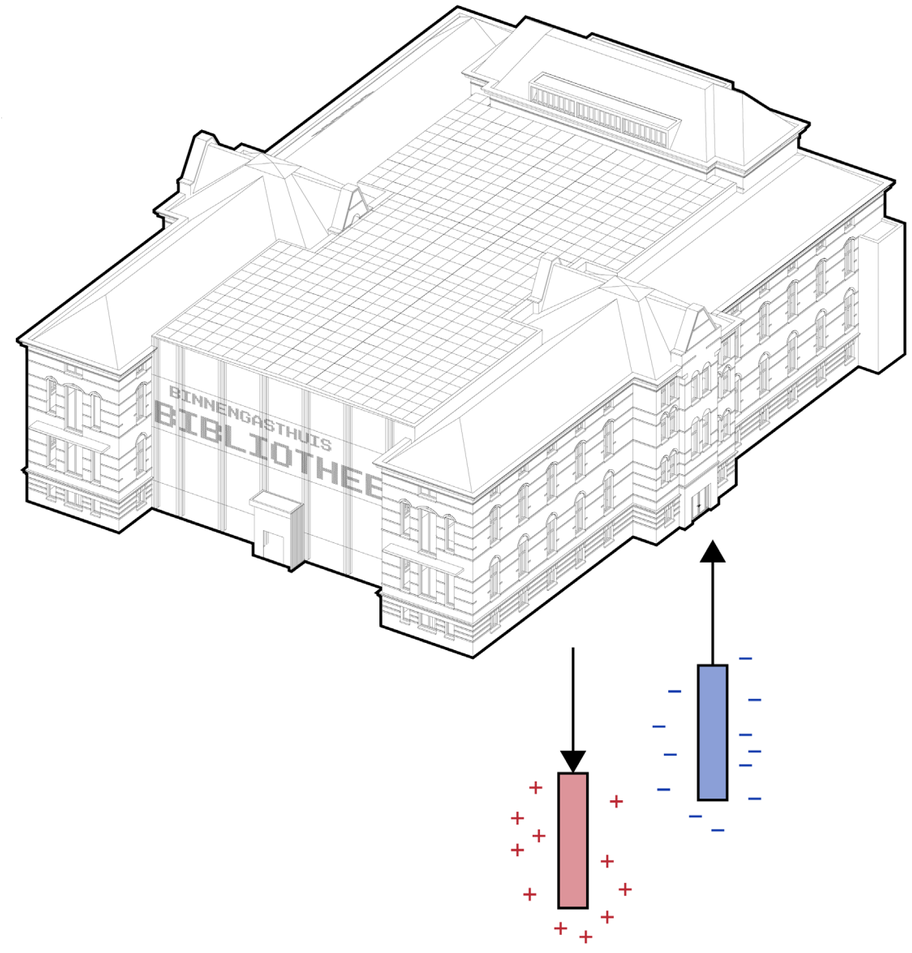
summer



Floor cooling
In summers the piping in the floor is used to cool the spaces in the library.



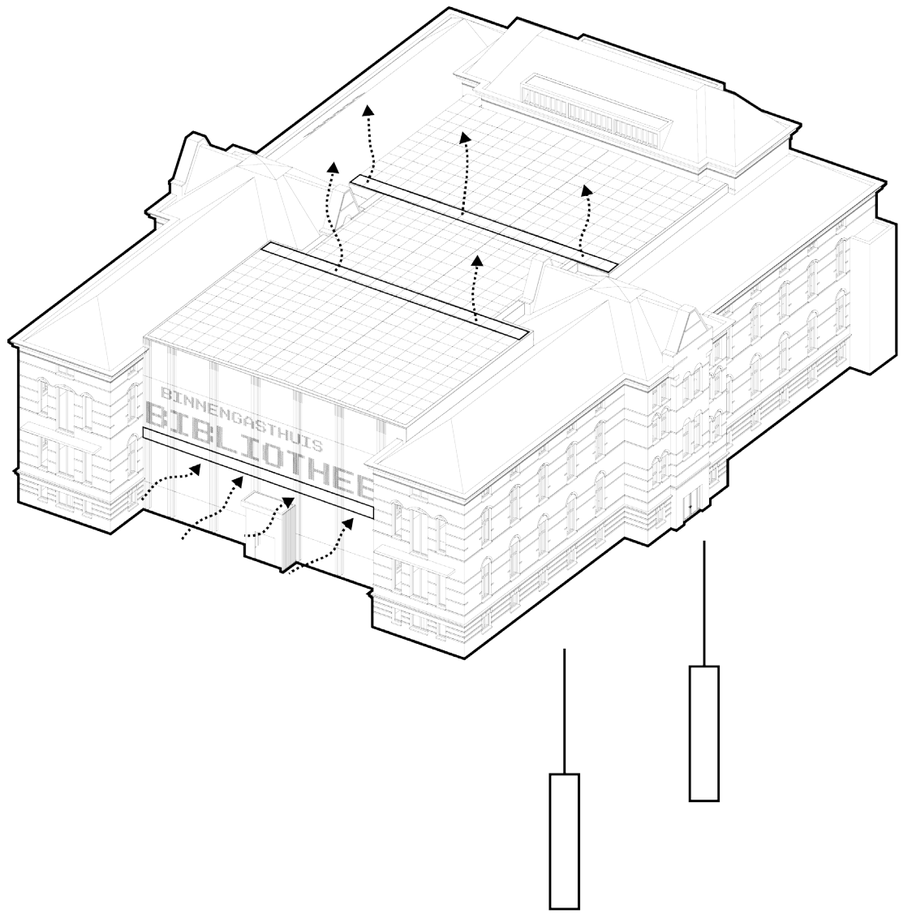
Balanced ventilation system
The air inlet and outlet are controlled mechanically. This system anticipates on the CO_2-level and relative humidity of the room. During summer nights, the ventilation system can be used to abduct warm air inside and to insufflate fresh colder outside air.



Ground heat exchanger
A ground heat exchanger exists of two sources. One for warmth and one for cold. In summer the cold source is used and the extracted warmth is saved in the warmth source. The cold is used in the floor cooling of the building.

Climate system

summer

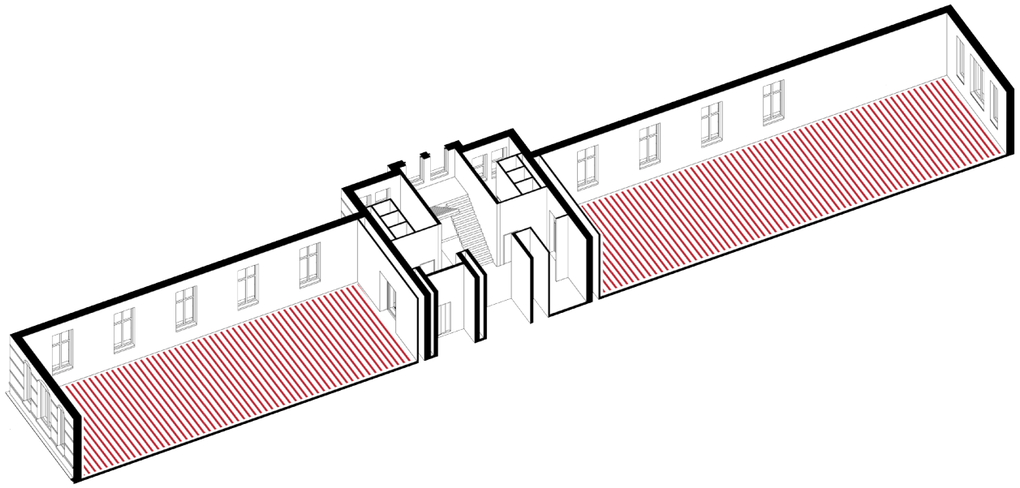


The indoor courtyard is in the same climate zone as the study and work spaces. Because the indoor garden is covered with a glass facade and roof it can become very warm inside during the summer. To prevent the indoor garden from overheating, there are windows in the facade and the roof. By opening these windows a chimney effect can be created and warm air will be extracted from the indoor garden. When this is not enough, the exhaust ventilation system can extract more air.

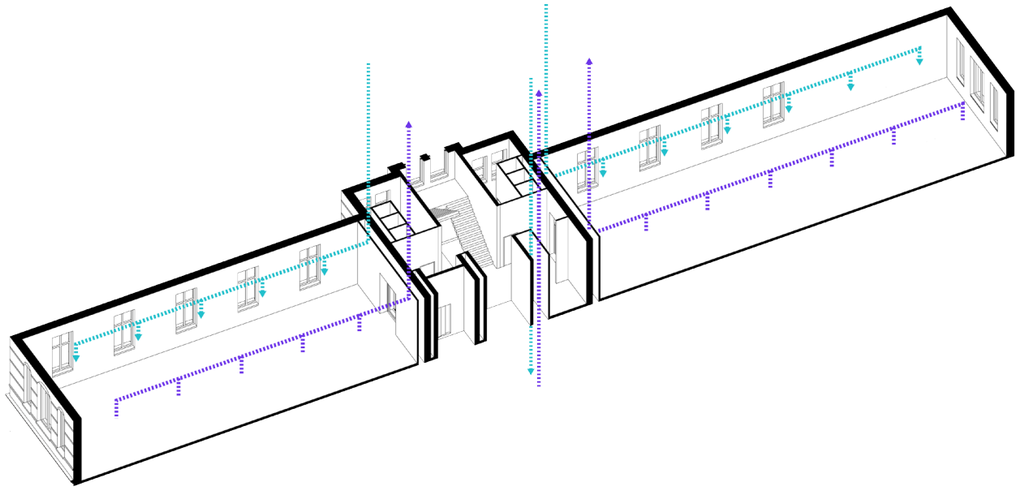
To provide personal adjustments in the study rooms and workplaces the top window in the facade can be opened. Because this window is located at ceiling height, draft will be prefented. The possibility to open windows and adjust the climate, users are more willing to cope with less good climatic conditions (Van den Dobbelsteen, 2013).

Climate system

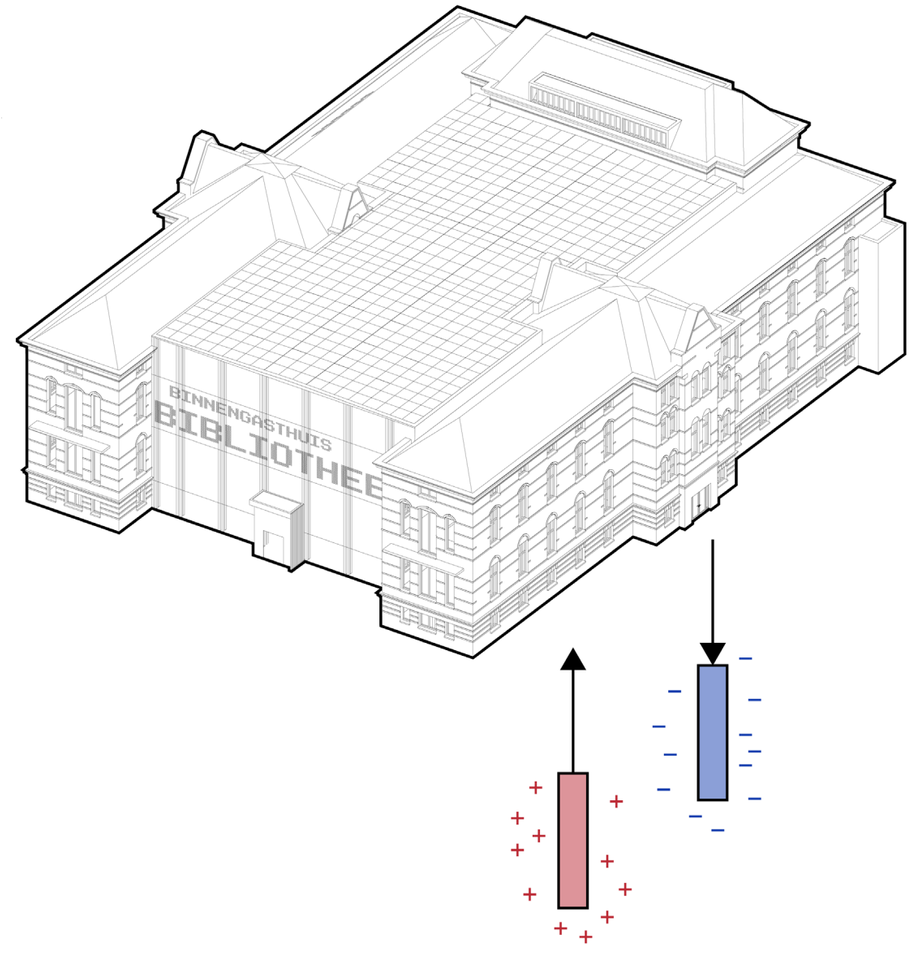
winter



Floor heating
In winters the piping in the floor is used to heat the spaces in the library. Floor heating gives a nice and comfortable due to the equal distribution and thermal radiation.



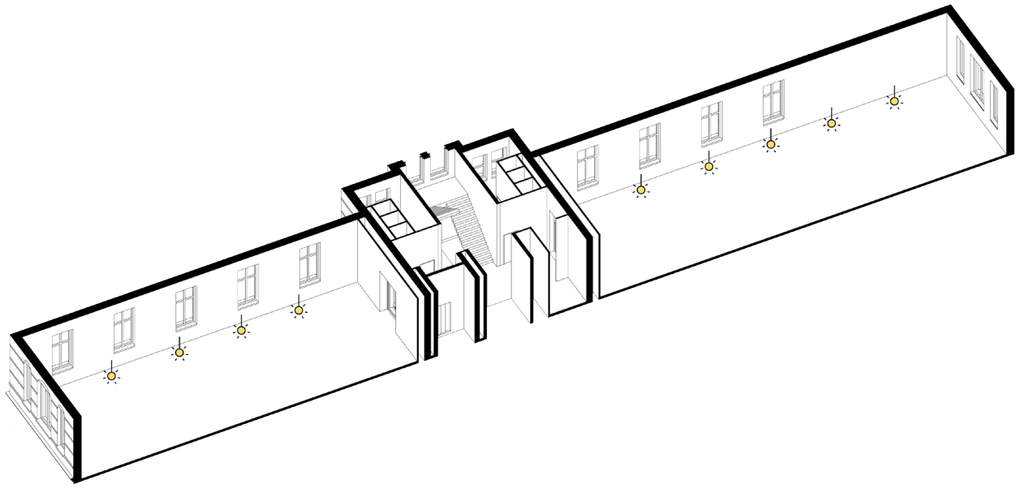
Balanced ventilation system
The air inlet and outlet are controlled mechanically. This system anticipates on the CO_2-level and relative humidity of the room. A heat recovery system heats the incoming fresh outside air with the extracted warm inside air.



Ground heat exchanger
In winter the warm source is used. Warmth is extracted from the ground and used for the floor heating. The extracted cold is saved in the cold source and can be used in summers.

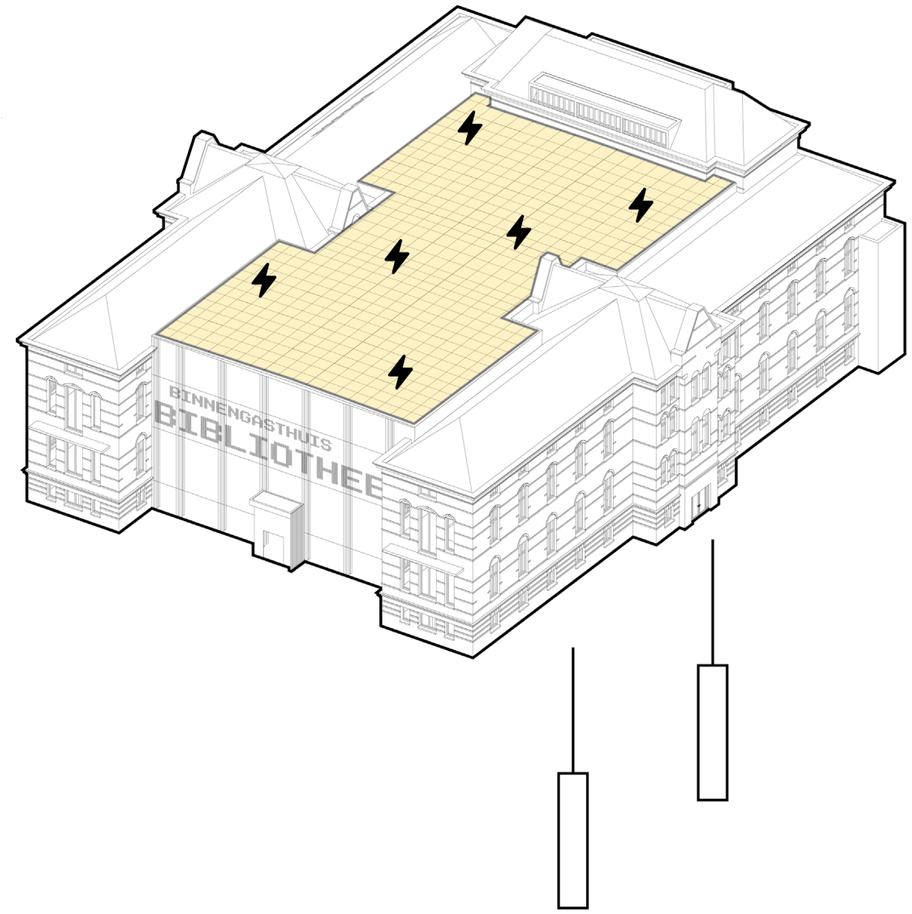
Climate system

electricity



General lightning
The lightning in the library is automatically controlled. The lightning anticipates on the changing outdoor light intensity. A motion sensor detects if someone is in the room, when there is no one, the lights go off or on the lowest intensity level. By using LED, a lot of energy and money is saved. These LEDs have a warm white light and provide a pleasant enlightment of the spaces in the library.

On several workspaces there are adjustable desk lights, these can be controlled by the user.



Photovoltaic cells
The glass roof of the indoor garden are covered with photovoltaic cells. These cells generate the electricity for the library. In case of excess energy, the energy can be sold to the electricity network.

These photovoltaic cells provide shading and avert sunlight.

Bibliography

Van den Dobbelsteen, A. (2013). *Het gebouw als klimaatmachine.* SUN Uitgeverij, Amsterdam

Rijksoverheid (2015). *Regeling van de Minister van Onderwijs, Cultuur en Wetenschap van 15 december 2009, nr. WJZ/178205 (8189), met betrekking tot de duurzaamheid en de geordende en toegankelijke staat van archiefbescheiden en de bouw en inrichting van archiefruimten en archiefbewaarplaatsen (Archiefregeling).* www.wetten.overheid.nl. Retrieved on 08-06-2015.