

THE GREEN FLOW

A NEW DESIGN FOR THE UNITED NATIONS ENVIRONMENTAL COUNCIL

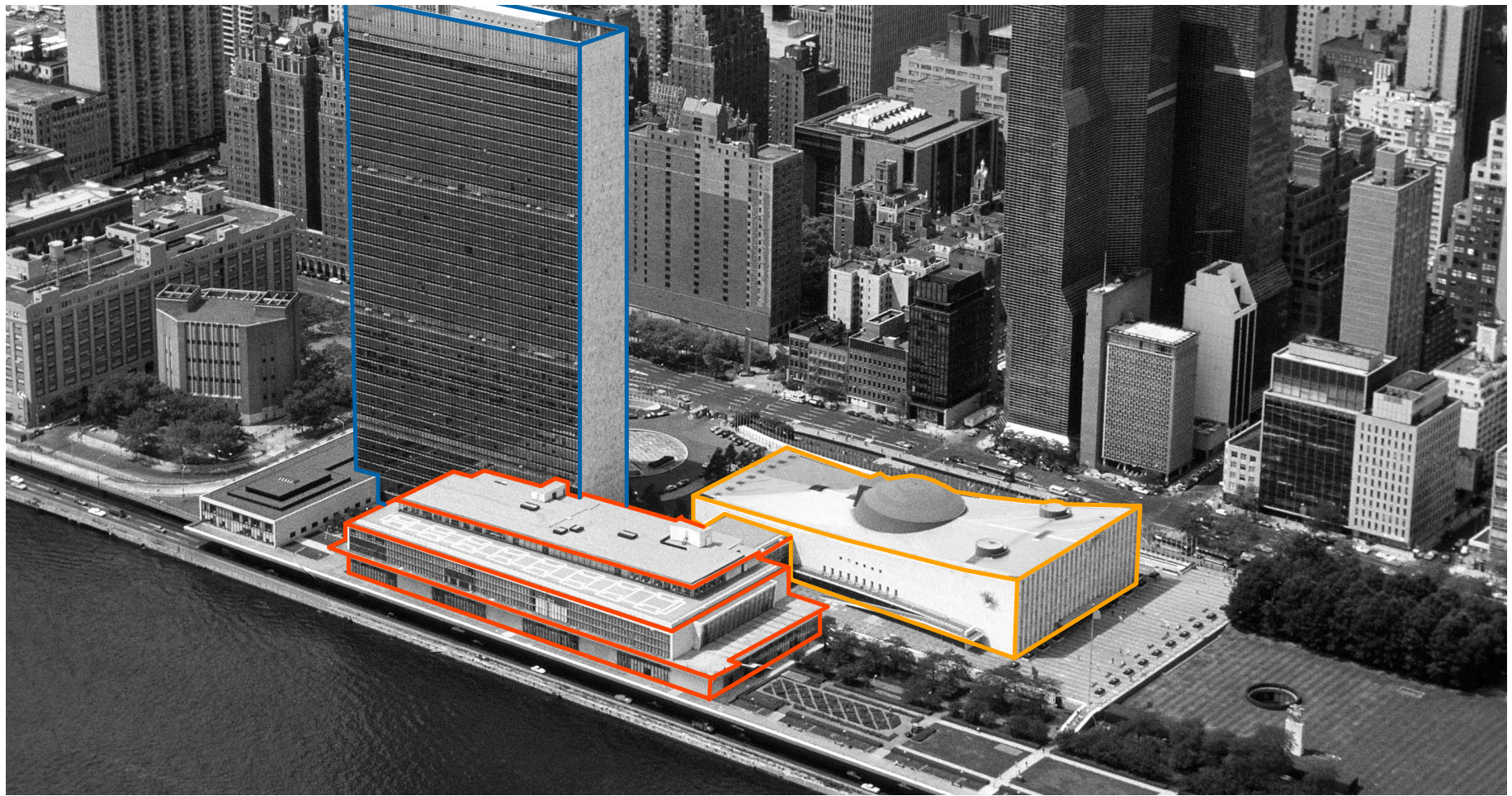


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H1 THE UNITED NATIONS

The United Nations



1.1 GOAL



**“The triple bottom line”
People - Planet - Profit**

1.2 LOCATION

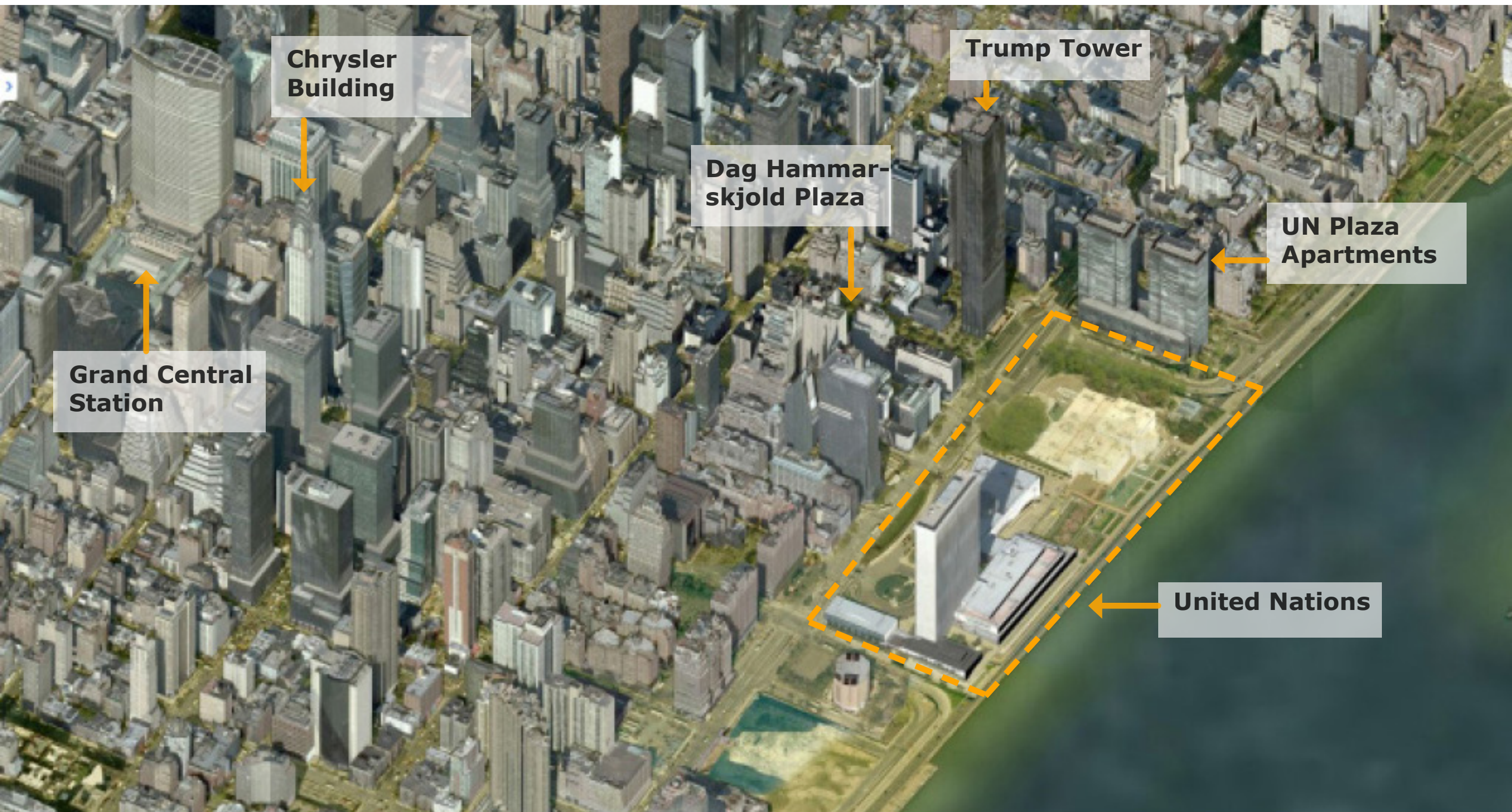


Scale New York



Scale Midtown east

LOCATION 



Scale Midtown east

LOCATION 

42nd str.

47th str. 48th str.



1st av.

FDR

LOCATION



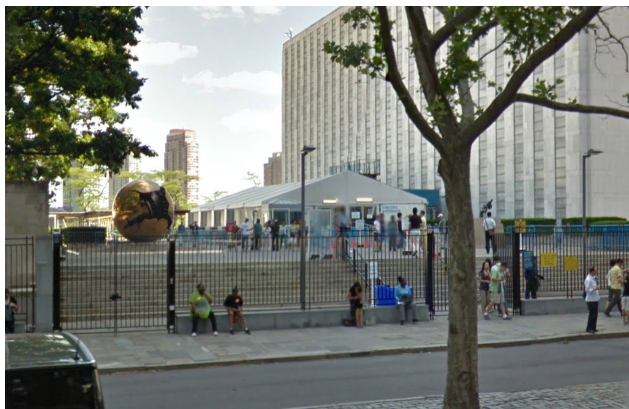
scale United Nations

1.3 PROBLEMS

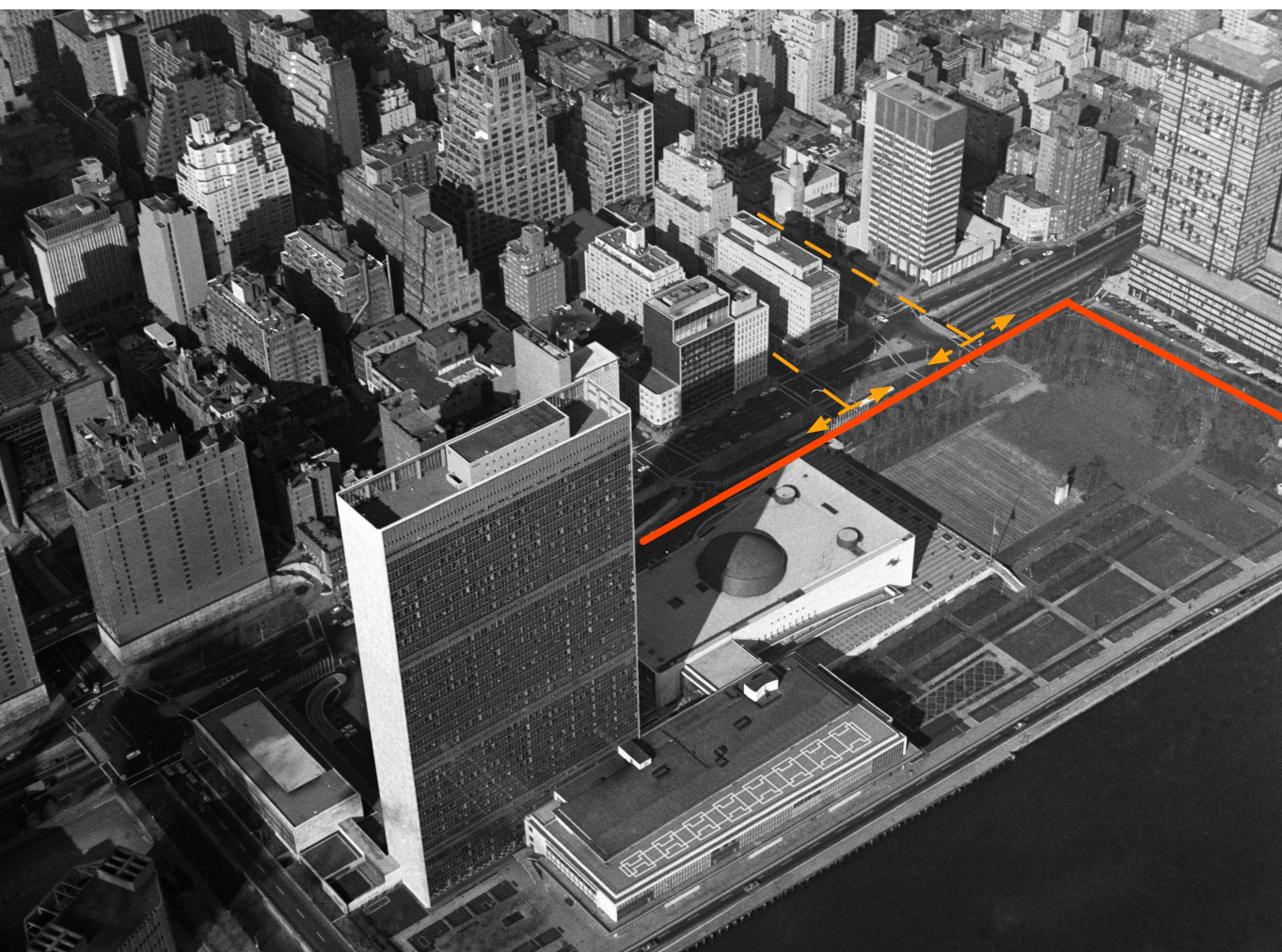
Explosion risk



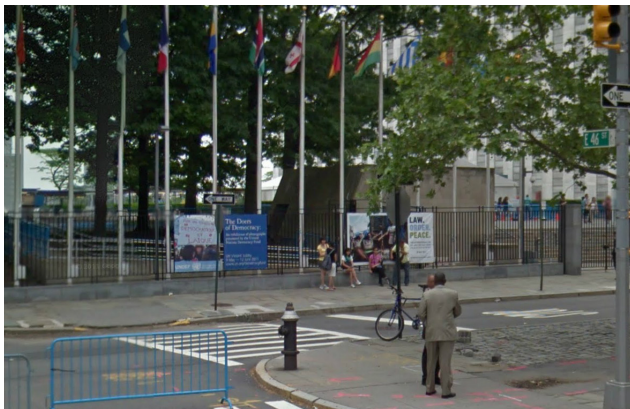
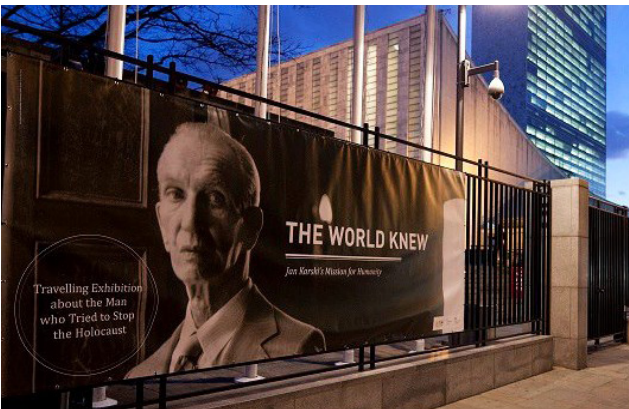
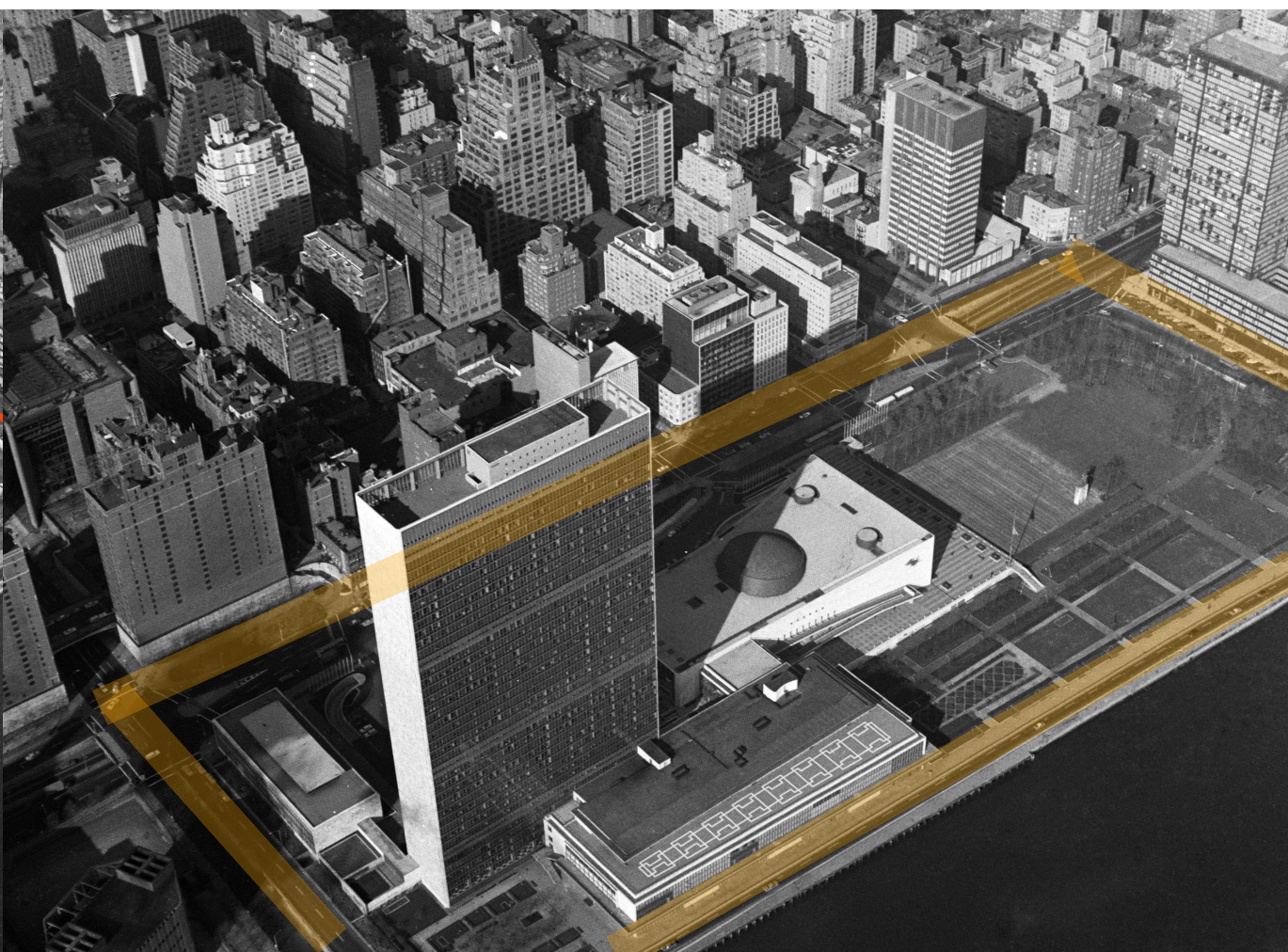
Security check



Connection New York / waterfront



Heavy traffic arround site



Lack of public green space

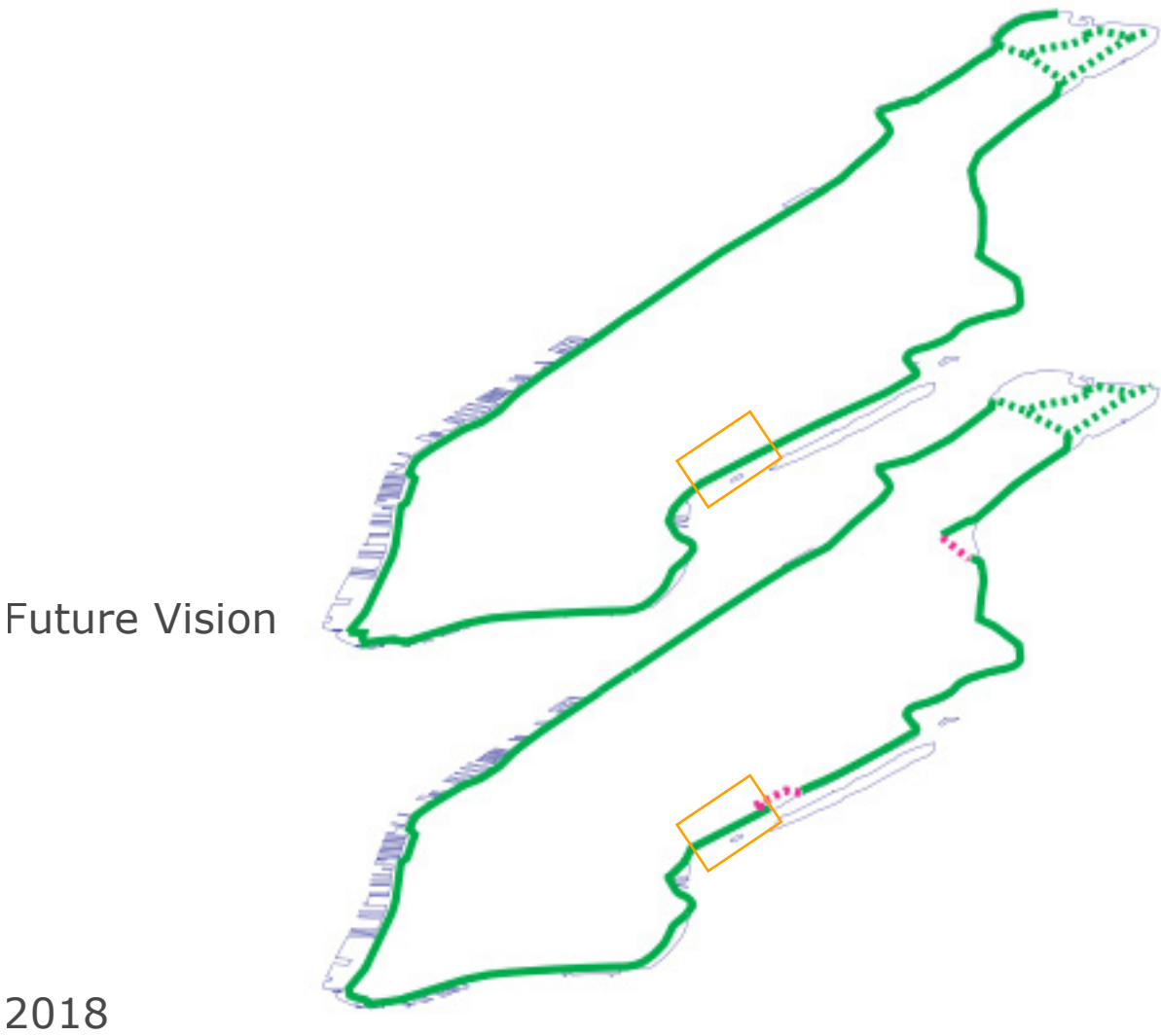
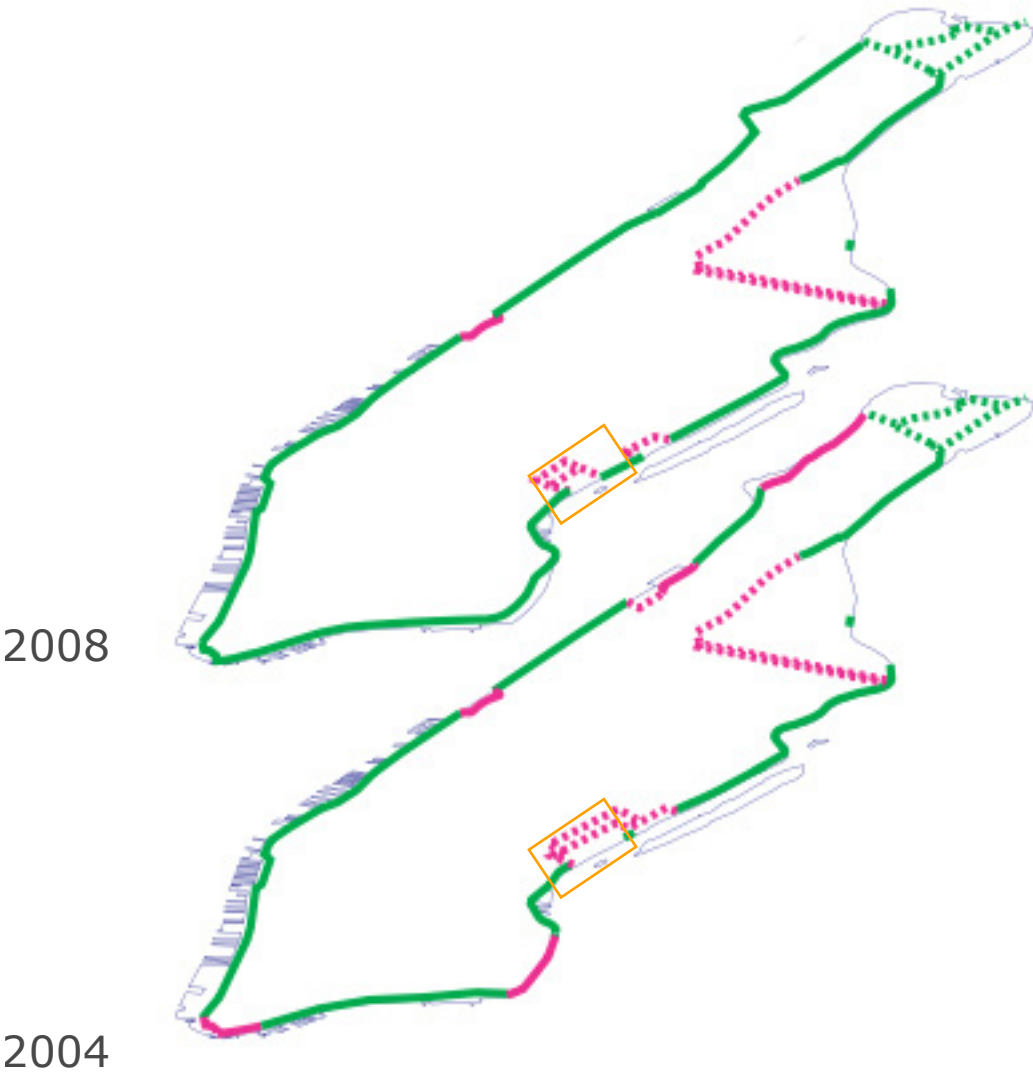


One of the goals of the PlaNYC 2011 plan is to ensure all New Yorkers live within a ten-minute walk of a park.

(source: PlaNYC update april 2011)

1.4 SOLUTIONS

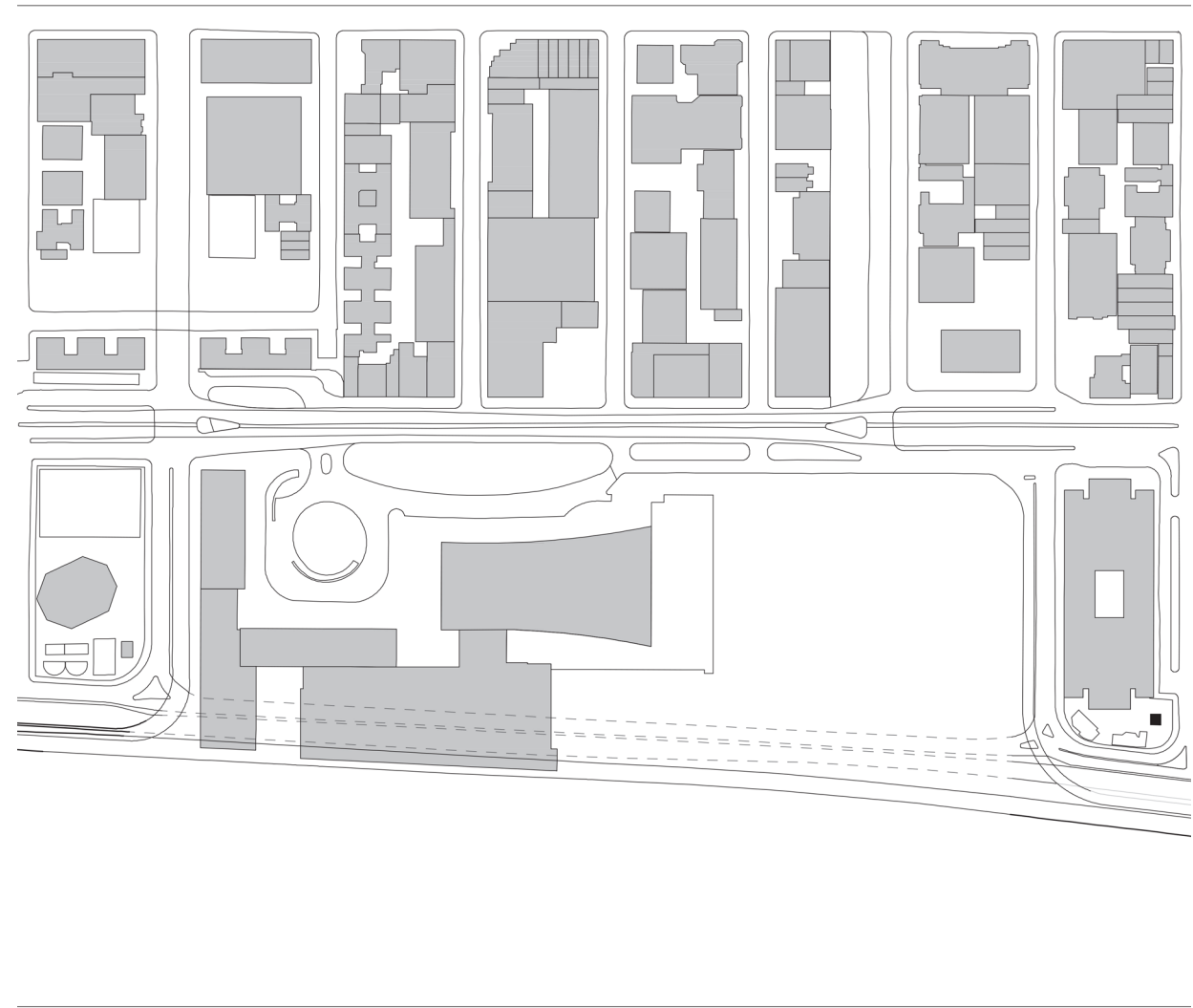
MANHATTAN GREENWAY



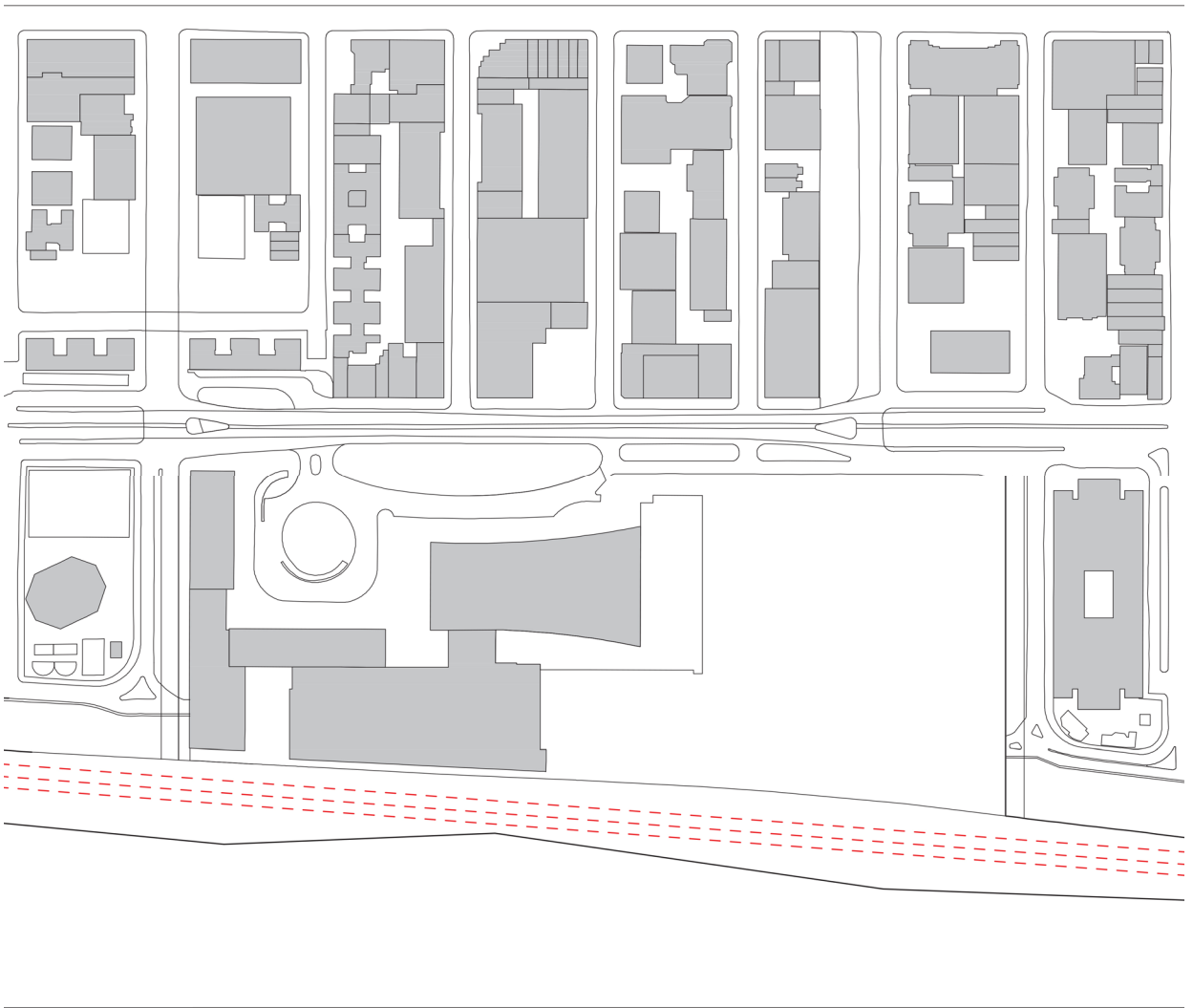
- Permanent off-street path
- Temporary off-street path
- Permanent on-street path
- Temporary on-street path

source: Department of City Planning NYC

DIVERTING EXPLOSION RISK

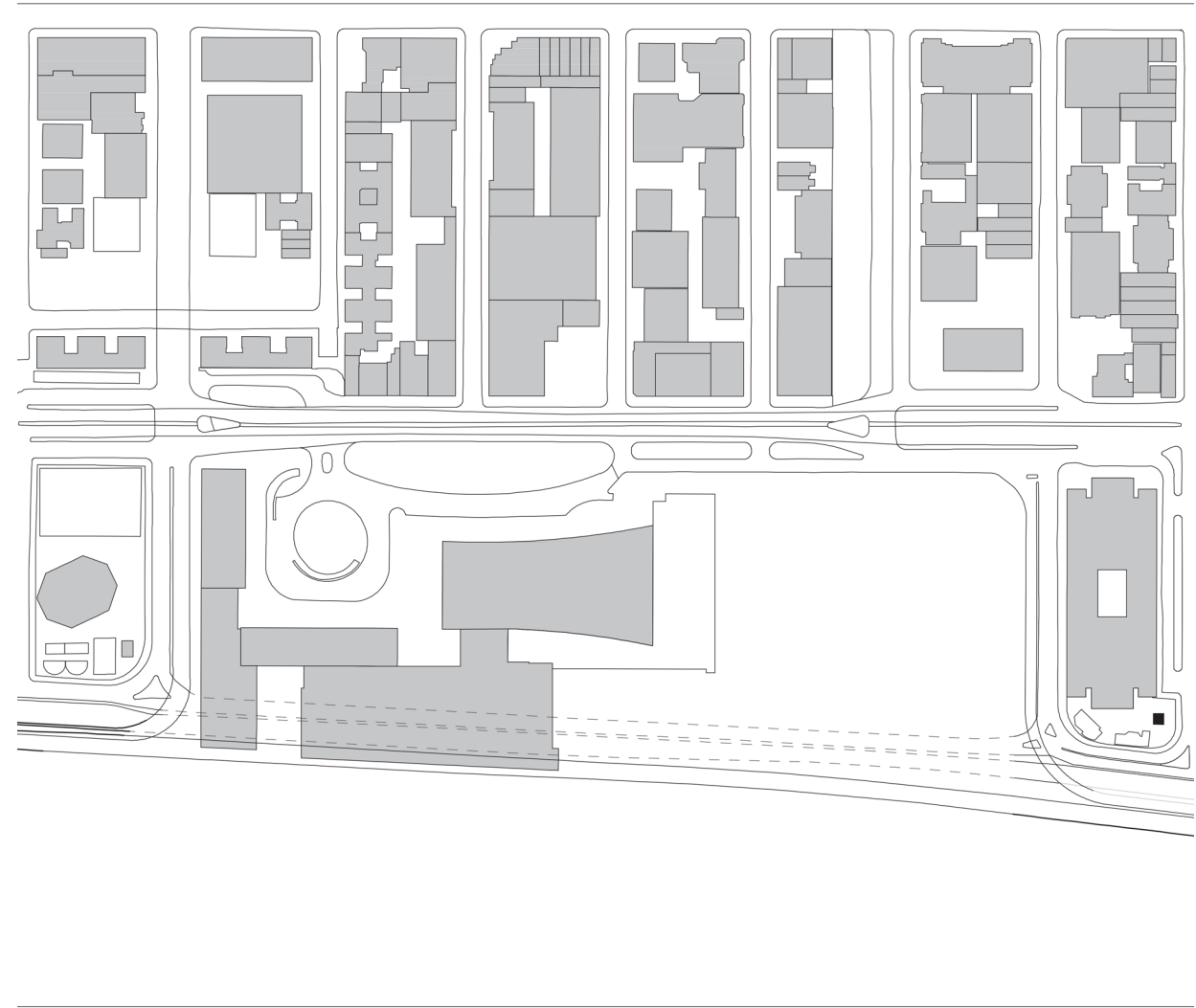


Old situation

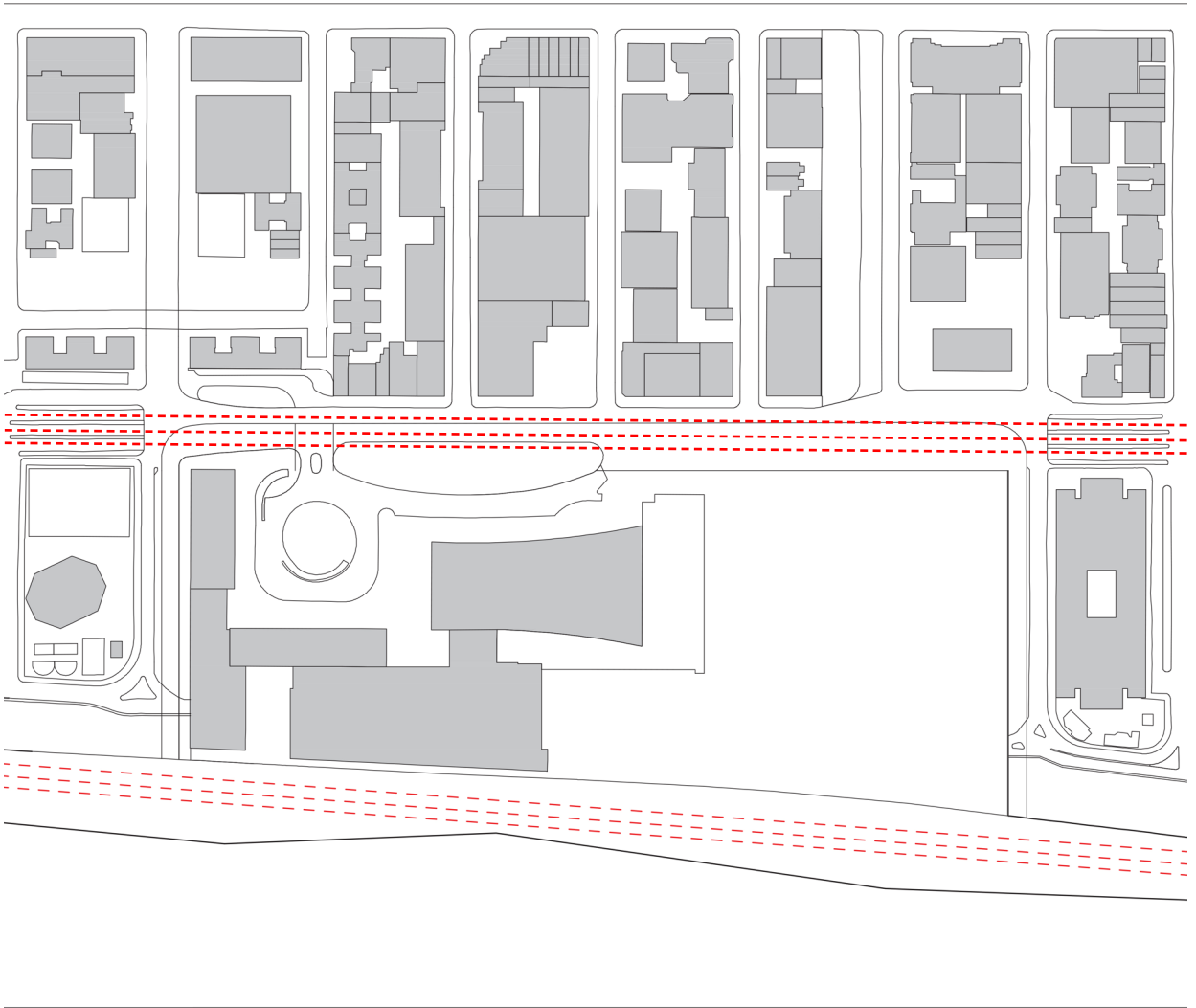


New situation
- Extend waterfront
- Create FDR tunnel

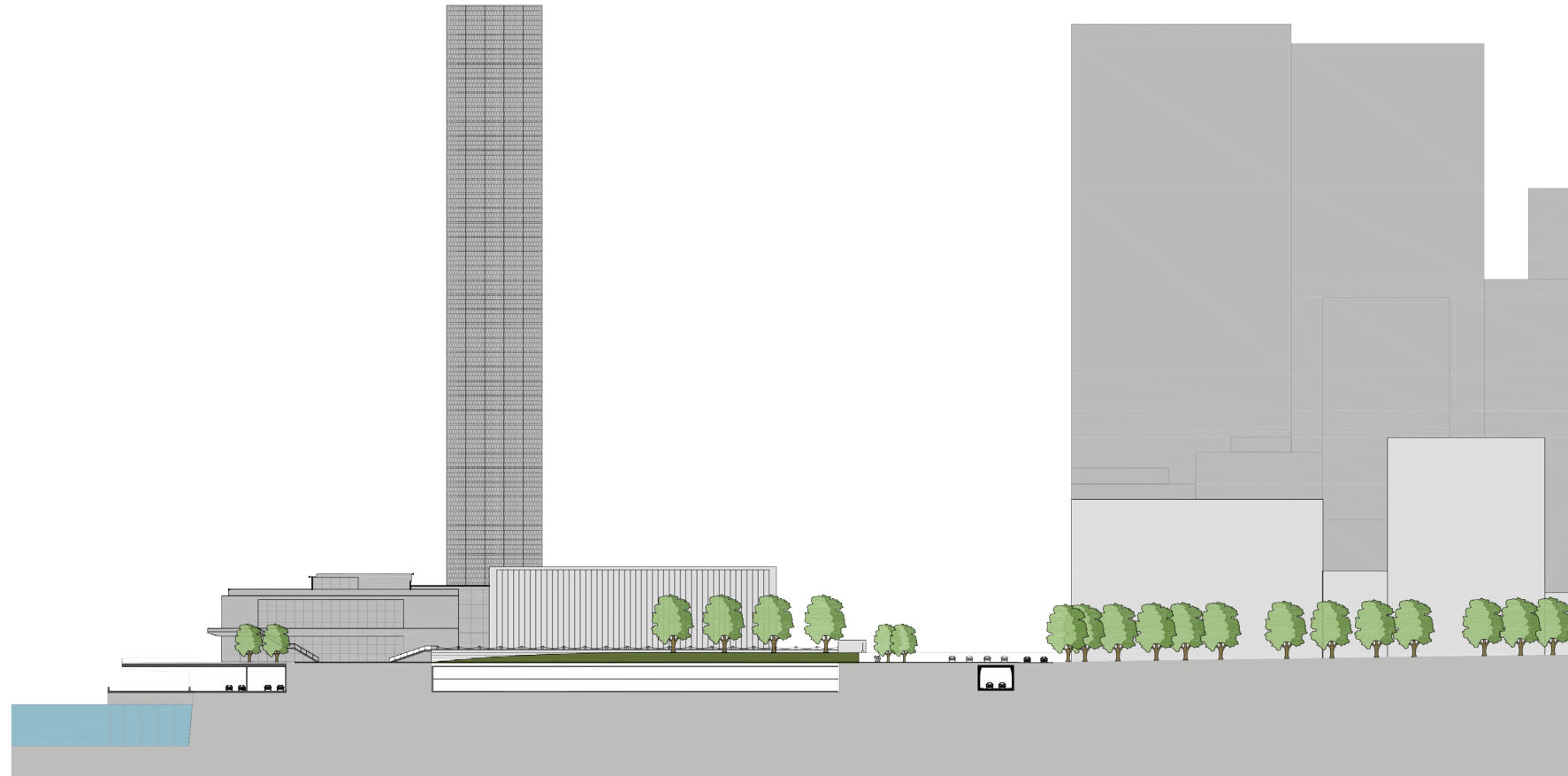
REDUCE TRAFFIC



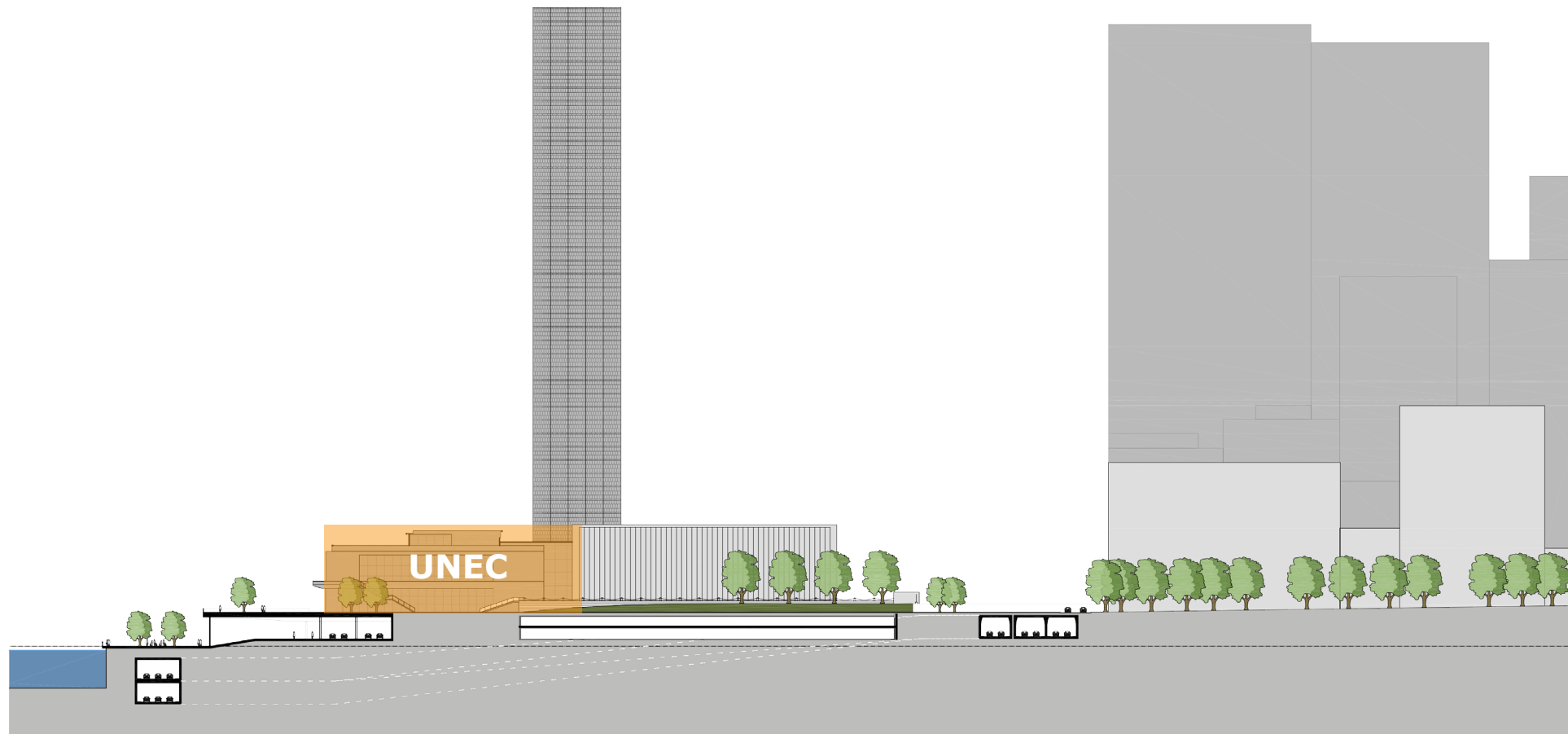
Old situation



New situation
- Reduce traffic
Create new 1ste av. tunnel



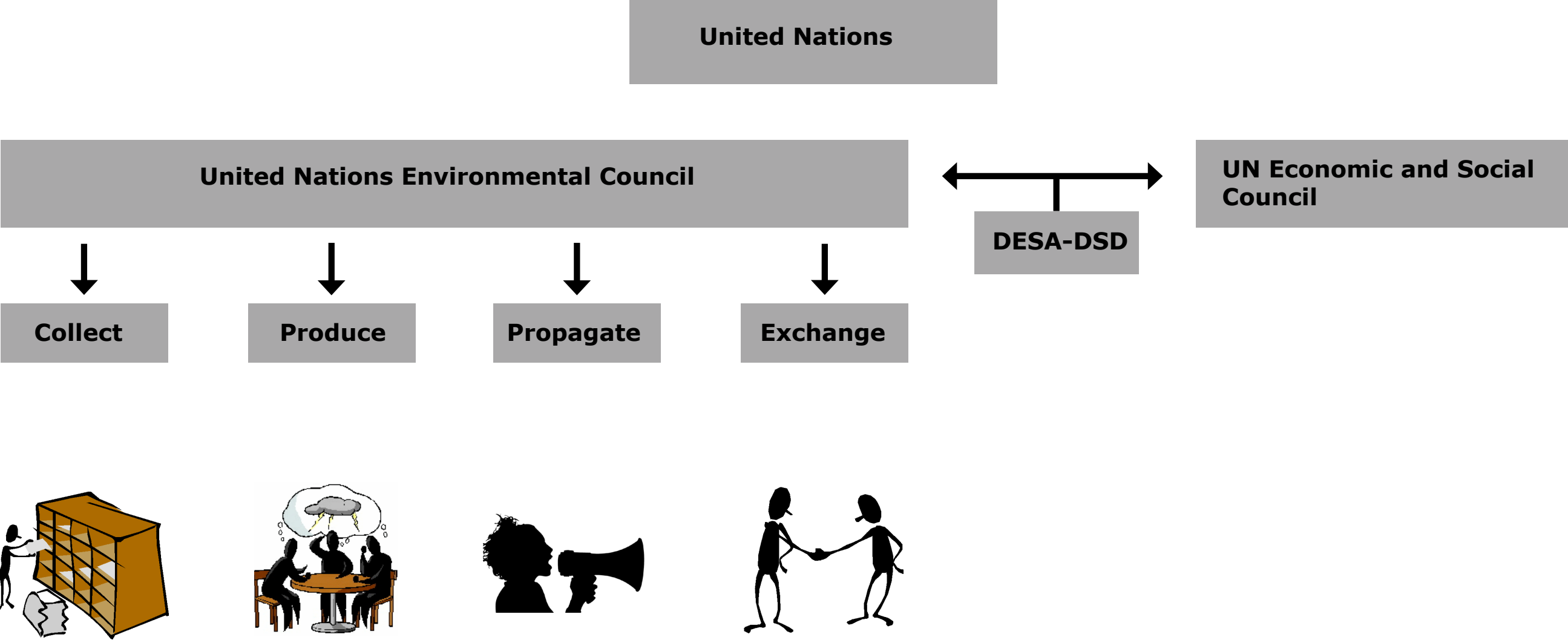
Section old situation



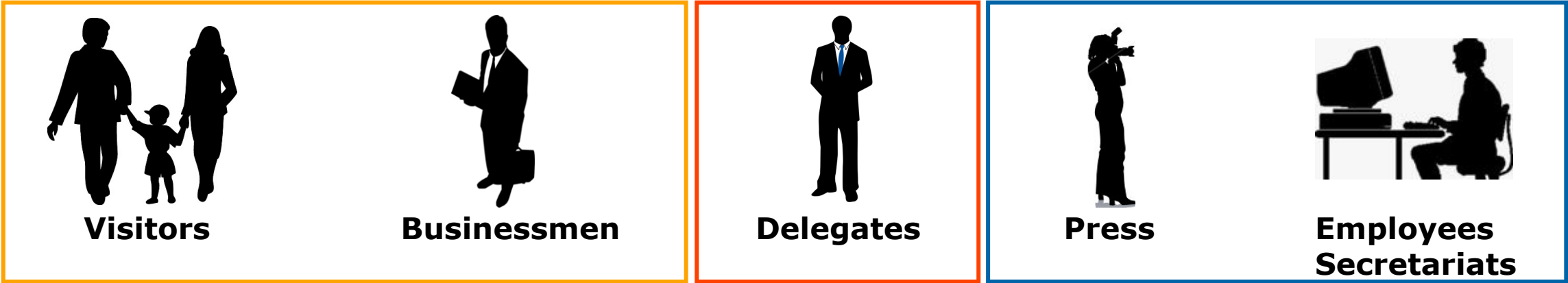
Section new situation

H2 PROGRAM

Functions Environmental Council



Seperating specific users



Collect



Produce



Propagate



Exchange



Program



COLLECT
1.835 m2

12,3%



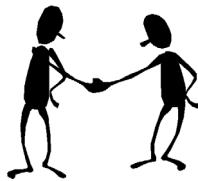
PRODUCE
1.224 m2

8,2%



PROPAGATE
3.136 m2

21,0%



EXCHANGE
3.337 m2

22,4%

GENERAL OFFICE
SPACE
2.662 m2

17,8%

ENTRANCE AREA /
FACILITIES
2.725 m2

18,3%

HIGHLIGHTS:

LIBRARY
965 m2

OFFICES
870 m2

HIGHLIGHTS:

BRAINSTORM ROOMS
240 m2

OFFICES
1.224 m2

HIGHLIGHTS:

PRESS ROOMS
390 m2

AUDITORIA
2020 m2

EXPOSITION SPACE
400 m2

PRODUCT SPACE
150 m2

OFFICES
461 m2

HIGHLIGHTS:

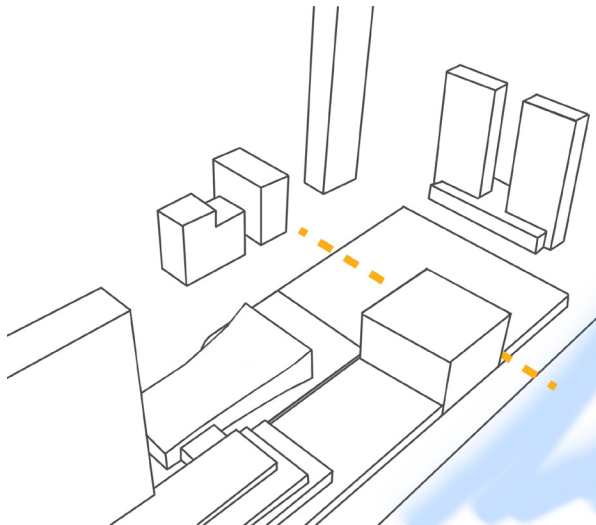
LOBBY
1.200 m2

COUNCIL CHAMBER
1.400 m2

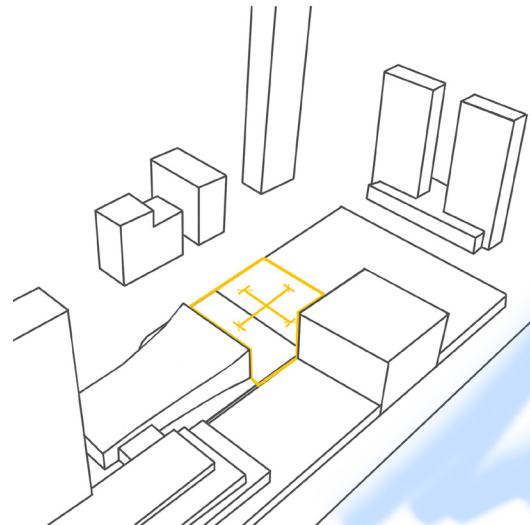
OFFICES
407 m2

H3 RESEARCH

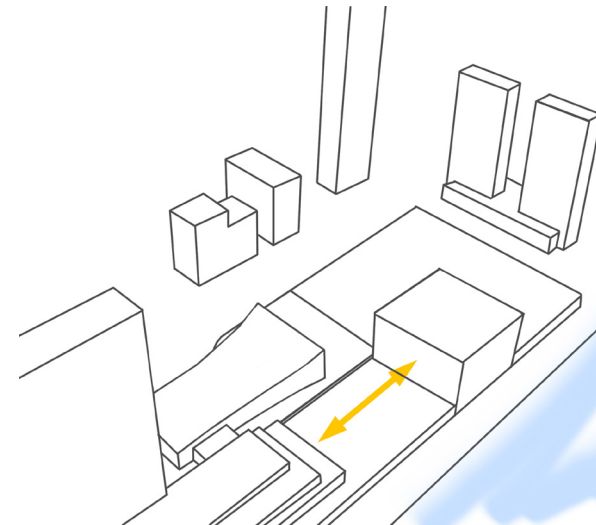
FORM INVESTIGATION IN 4 STEPS



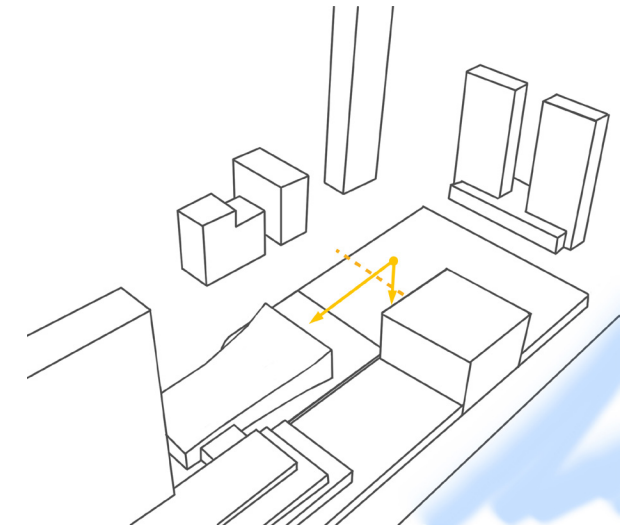
**1. MODELING THE
SECURITY LINE**



**2. DETERMINE THE
SIZE OF THE SQUARE**



**3. CREATING A
WALKWAY FOR THE
DELEGATES**



**4. SEARCH FOR AN
ENTRANCE**

47th street / Dag Hammarskjold Plaza

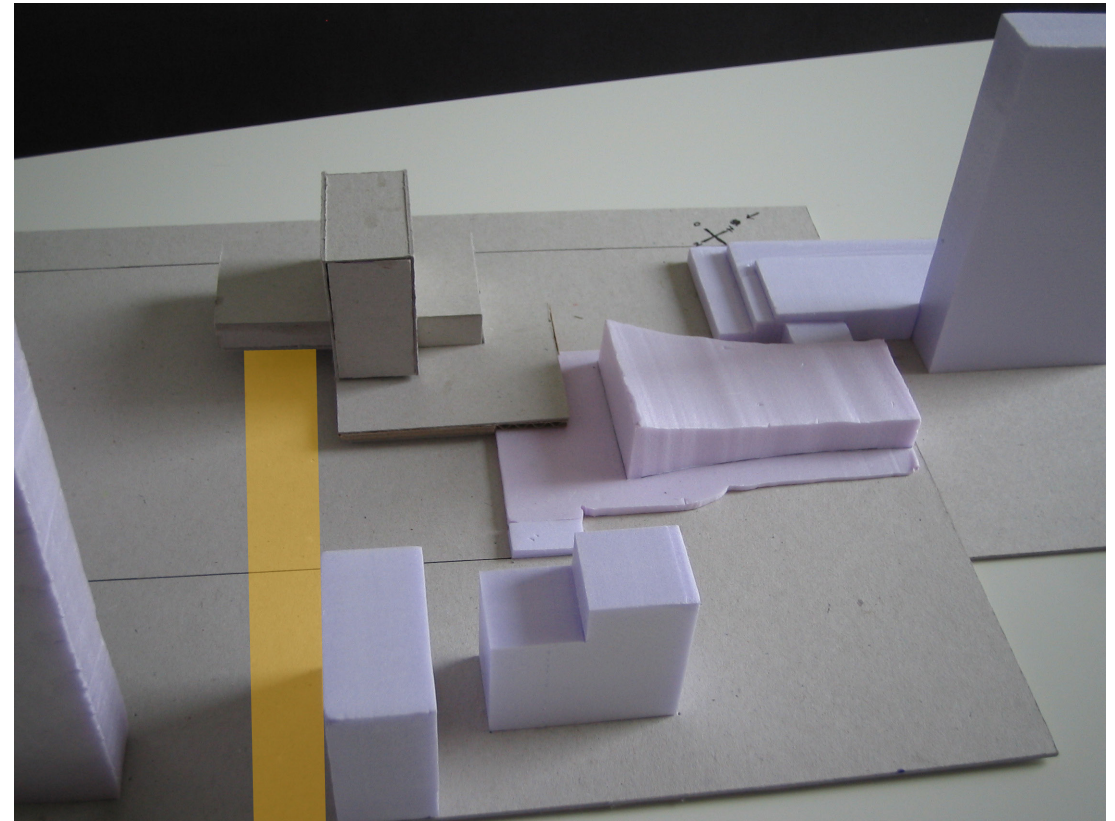


- Connecting New York with the waterfront via 47th street / Dag Hammarskjold Plaza
- Making a clear separation between public and secure
- Creating a public park and a secure formal square

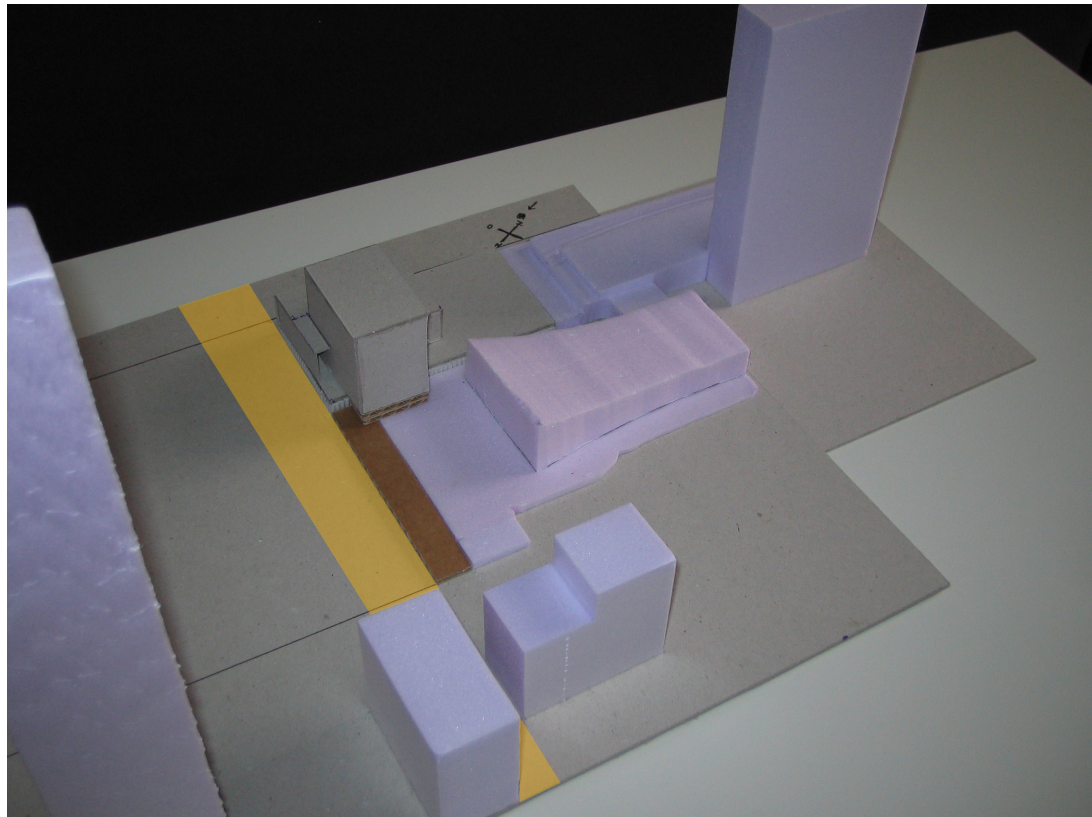
MODELLING THE SECURITY LINE



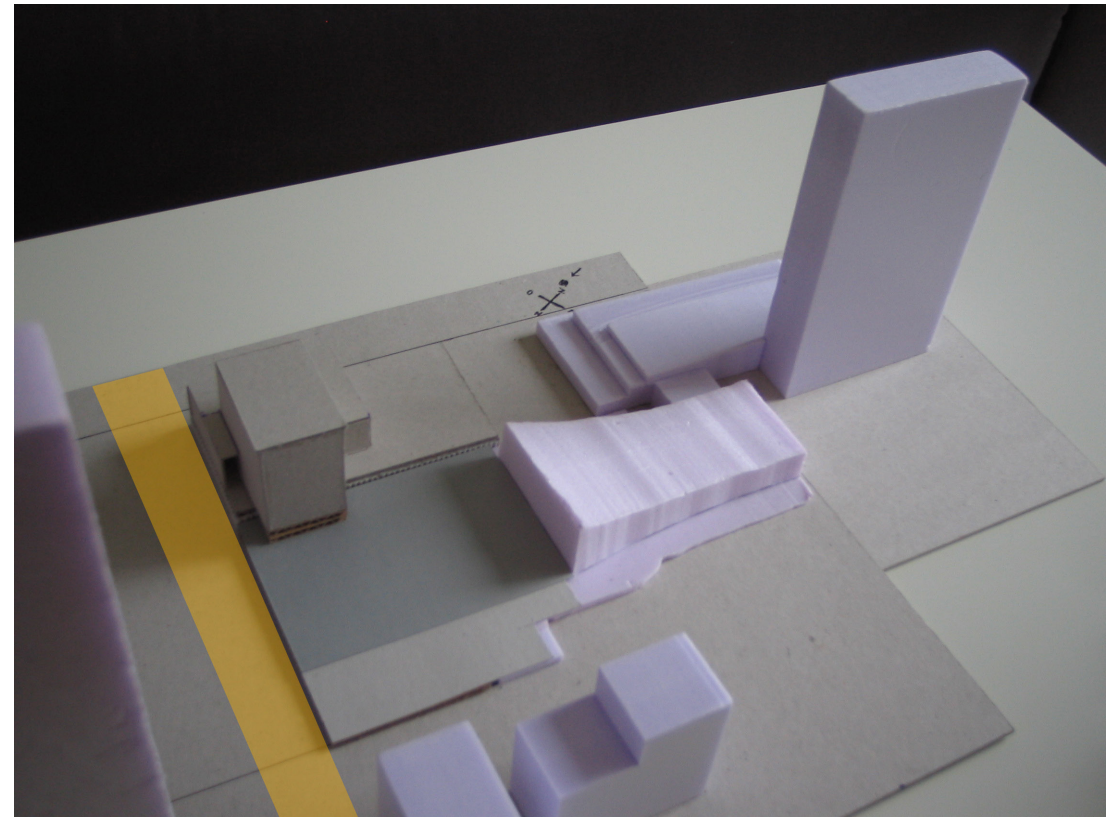
On the axis of 47th street



On the axis of 47th street



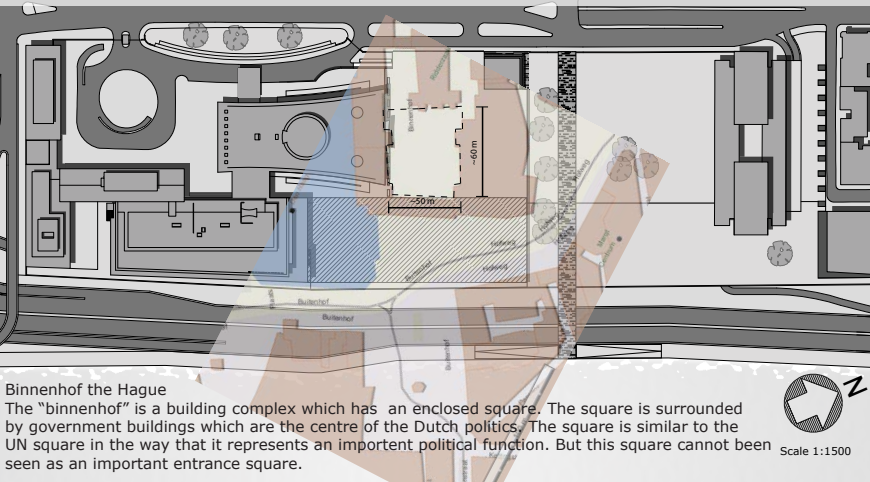
Along 46th street



Along 47th street

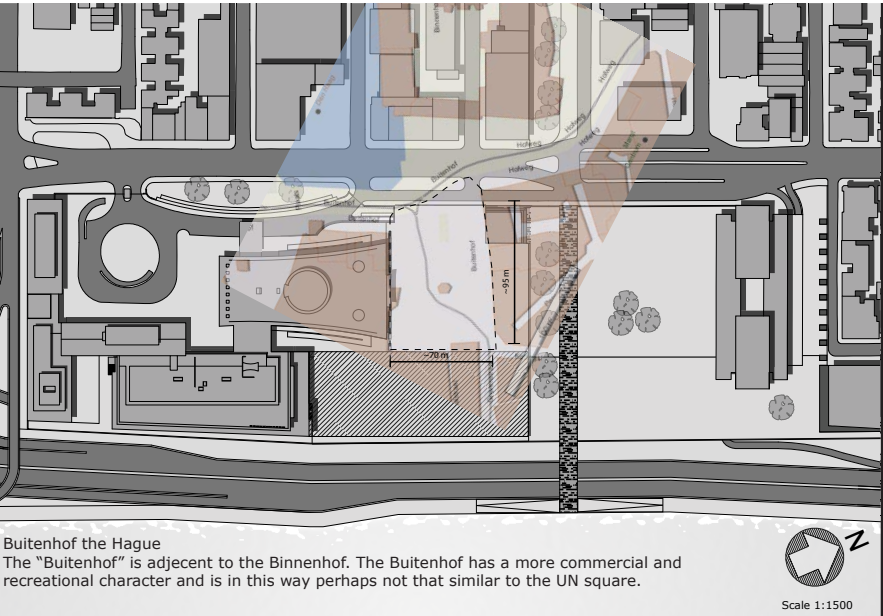
DETERMINE THE SIZE OF THE SQUARE

Connecting to the New York grid
An argumentation for 46th or 47th street. How big can the square be?
47th street, with the Dag Hammarskjold Plaza is an important axes in New York, which will guide a lot of public to the UN compound. Connecting the security line to the building grid of 47th street and extending 47th street to the Greenbelt would be ideal. But does this stand in relation with the size of the entrance square. To justify such a connecting several squares with a similar function will be analysed and compared with the UN square.



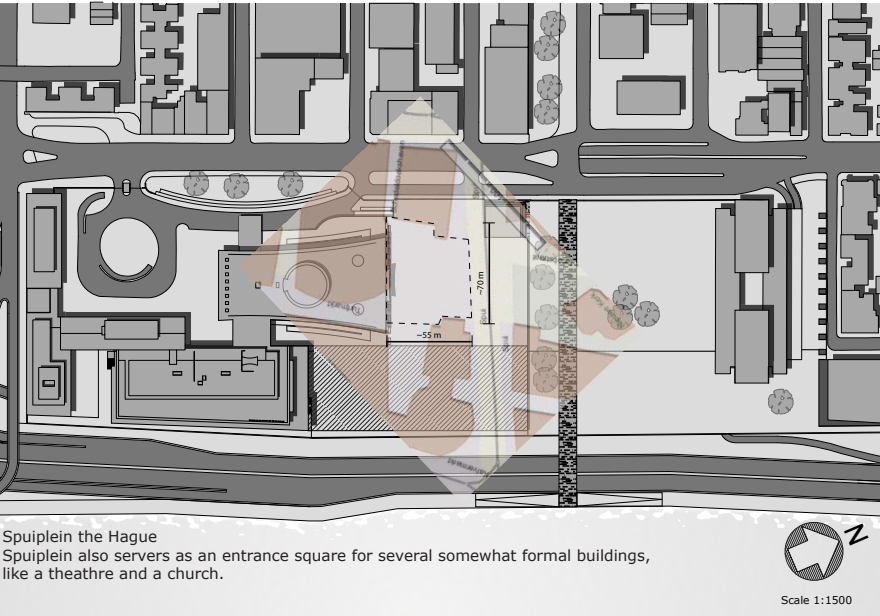
UN / Binnenhof The Hague

Buitenhof the Hague
The "Buitenhof" is adjacent to the Binnenhof. The Buitenhof has a more commercial and recreational character and is in this way perhaps not that similar to the UN square.



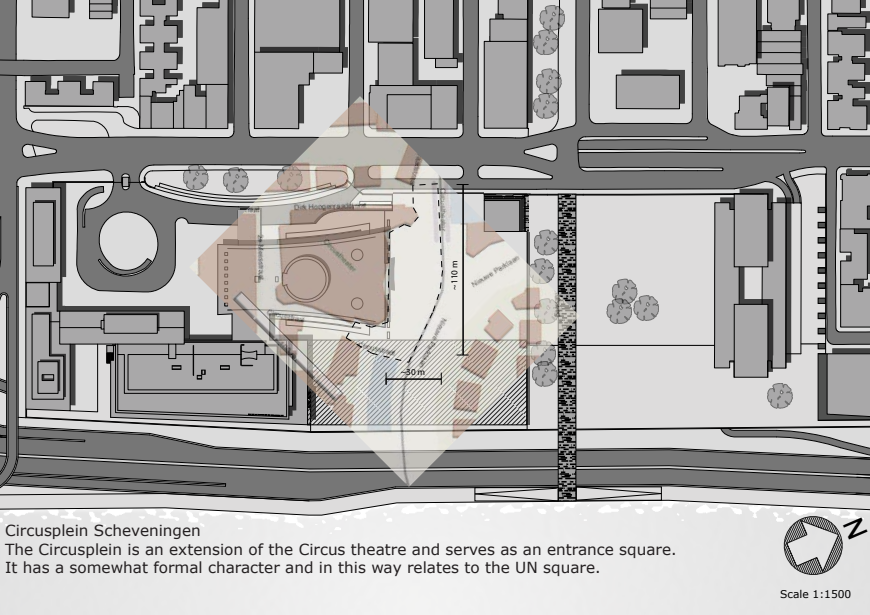
UN / Buitenhof The Hague

Spuiplein the Hague
Spuiplein also serves as an entrance square for several somewhat formal buildings, like a theatre and a church.



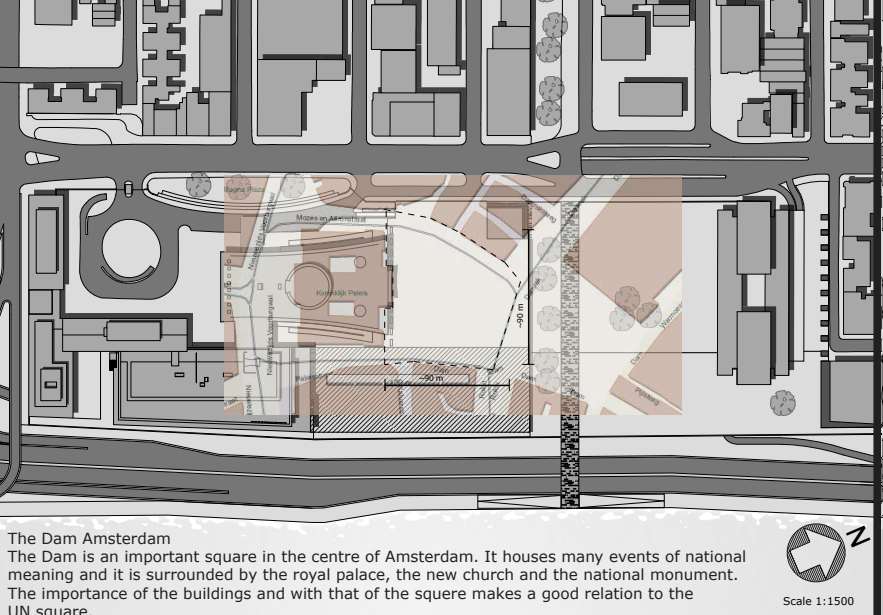
UN / Spuiplein The Hague

Circusplein Scheveningen
The Circusplein is an extension of the Circus theatre and serves as an entrance square. It has a somewhat formal character and in this way relates to the UN square.



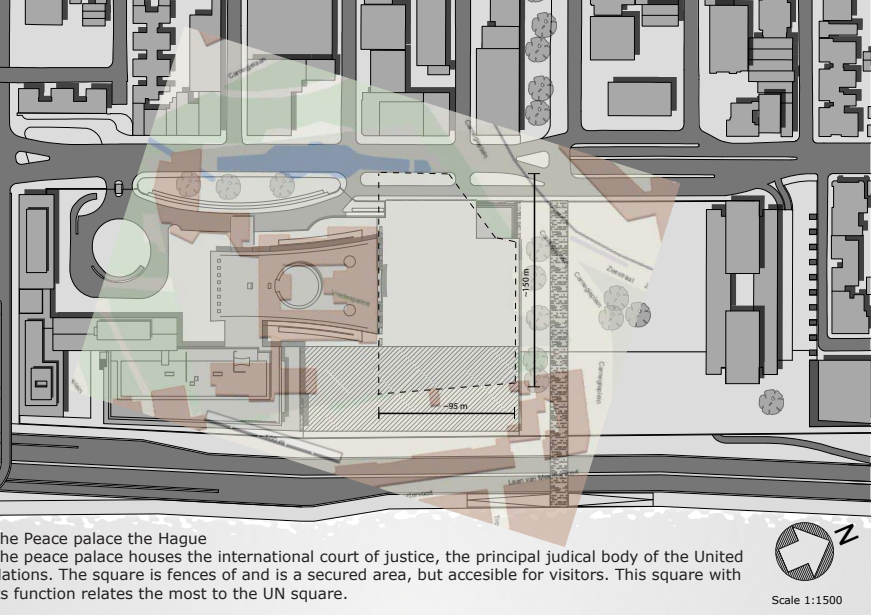
UN / Circusplein Scheveningen

The Dam Amsterdam
The Dam is an important square in the centre of Amsterdam. It houses many events of national meaning and it is surrounded by the royal palace, the new church and the national monument. The importance of the buildings and with that of the square makes a good relation to the UN square.



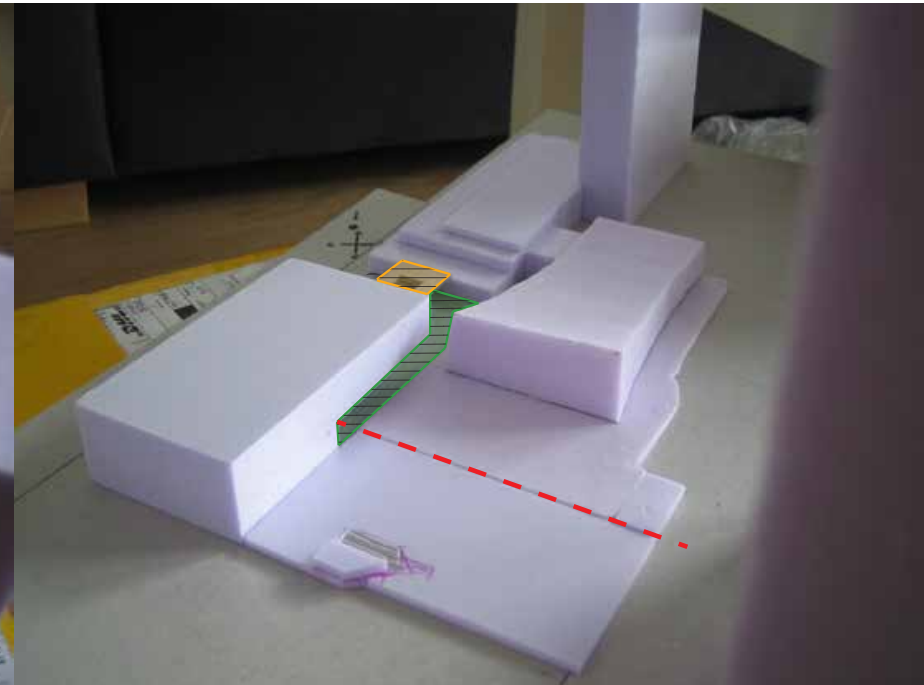
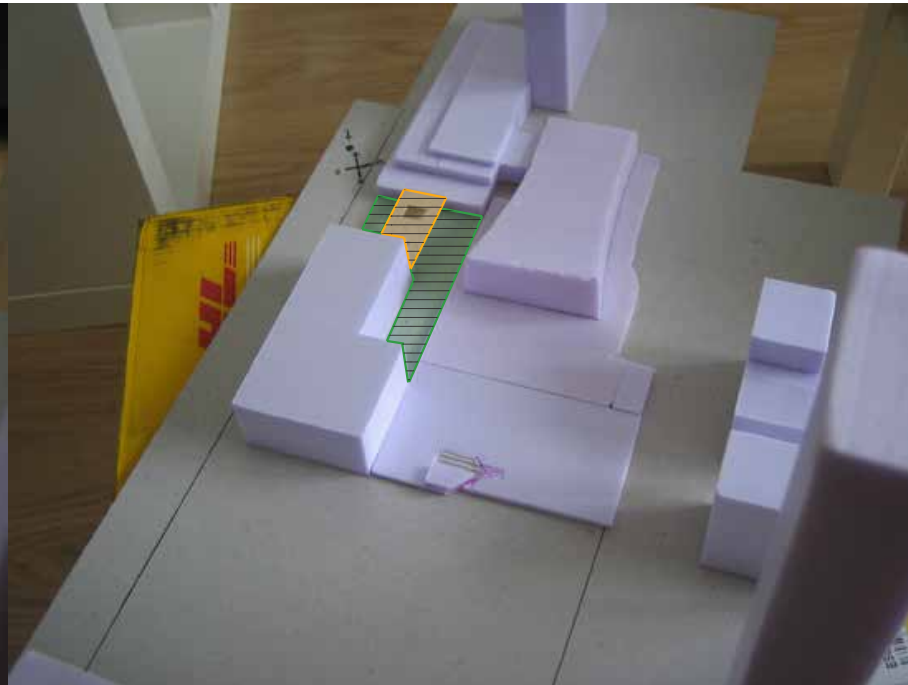
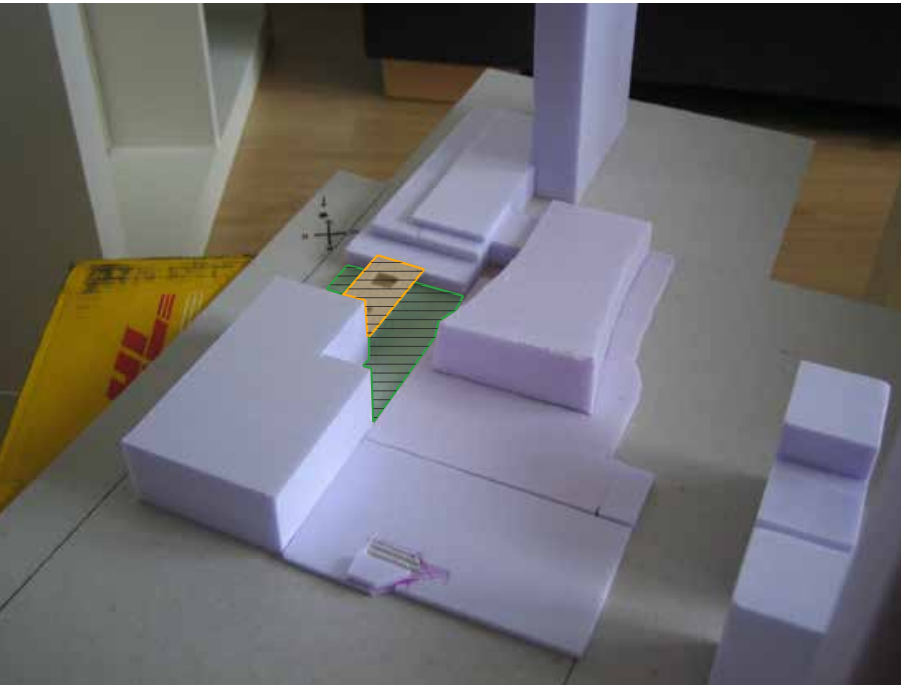
UN / The Dam Amsterdam

The Peace palace the Hague
The peace palace houses the international court of justice, the principal judicial body of the United Nations. The square is fenced off and is a secured area, but accessible for visitors. This square with its function relates the most to the UN square.

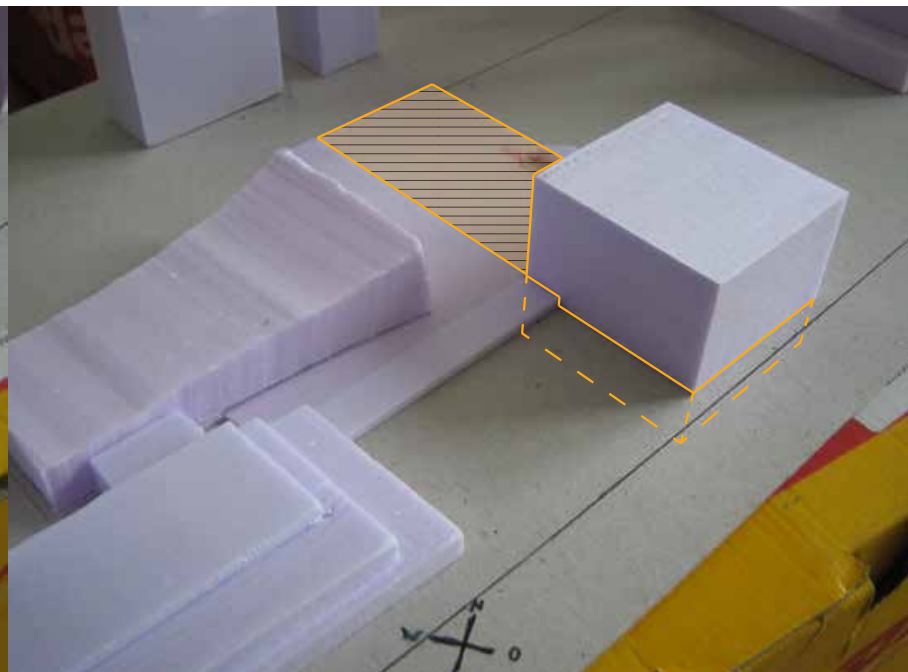
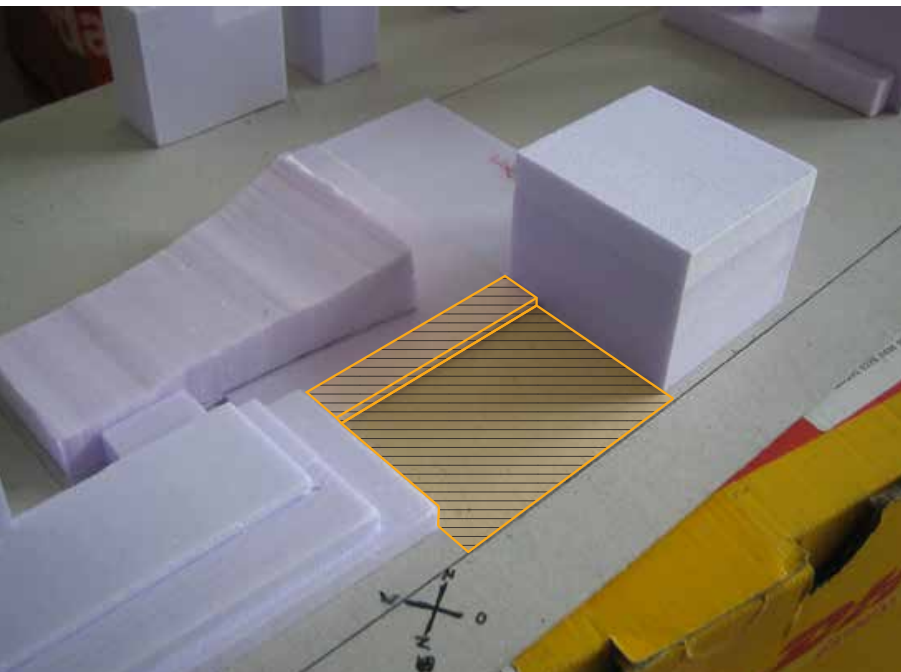


UN / The Peace Palace The Hague

DEVELOPING THE BUILDING



Creating a walkway for the delegates a connection by bridge

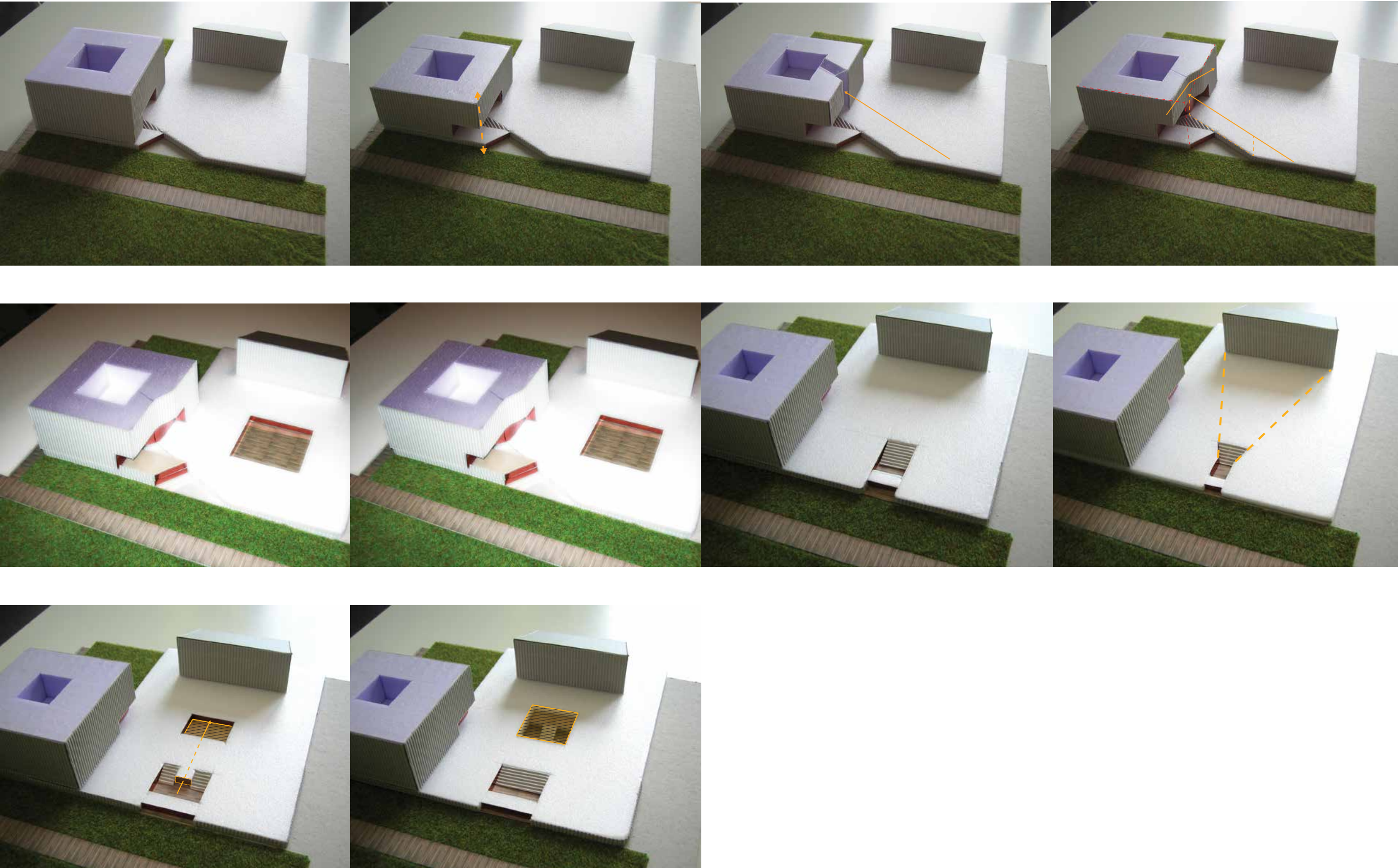


Connection by tunnel

Using the space underneath the square

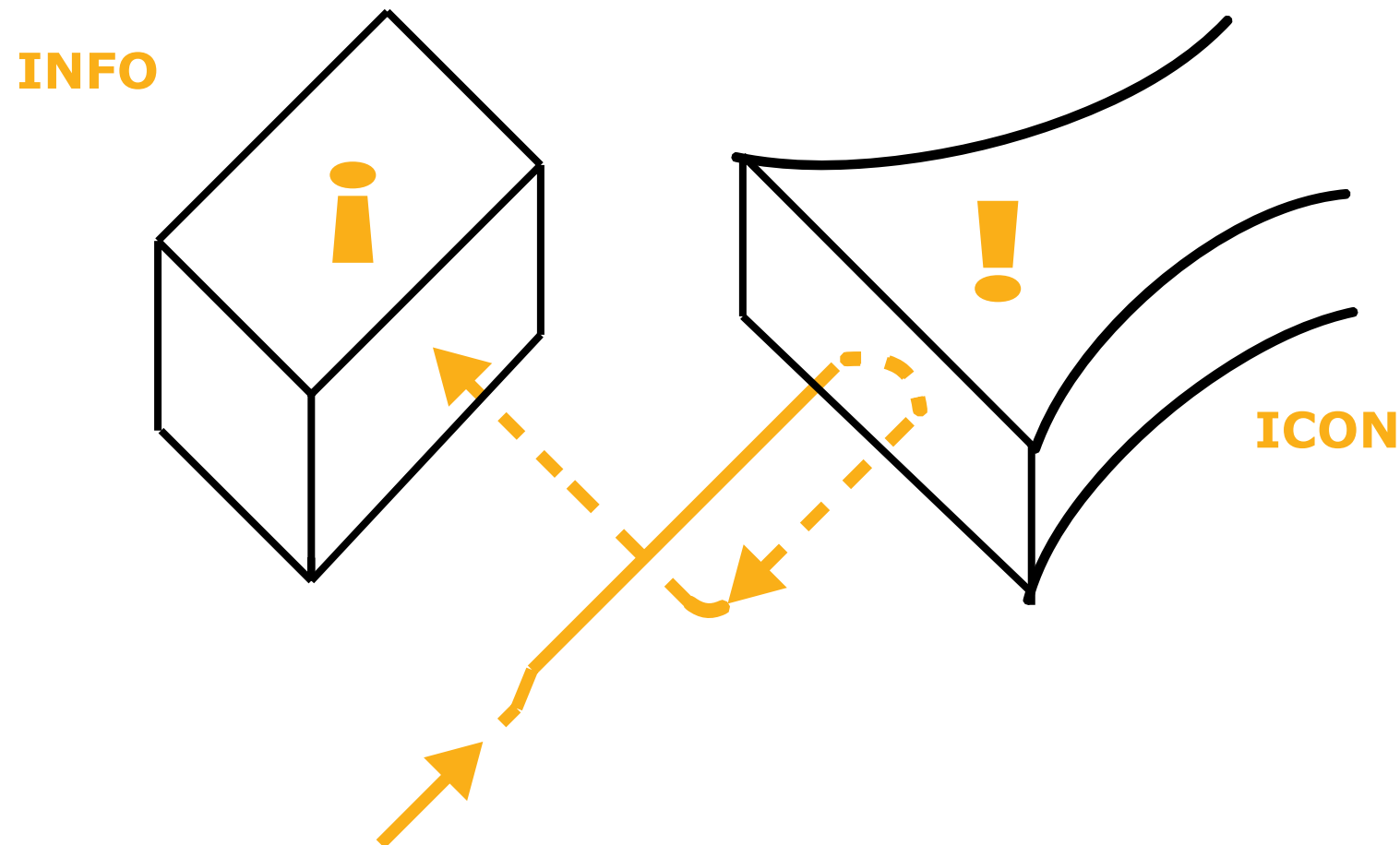
Providing daylight

SEARCH FOR AN ENTRANCE



H4 BUILDING CONCEPT

4.1 CONCEPT



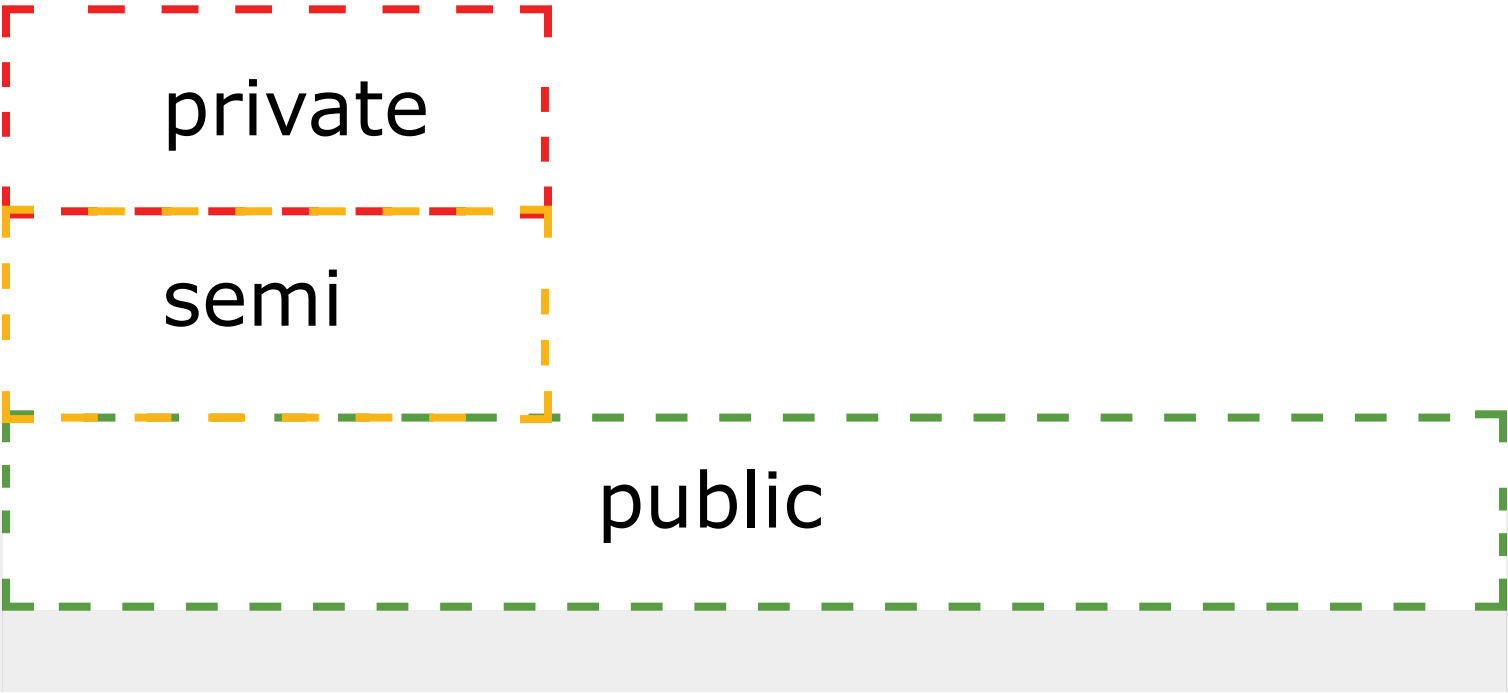
THE GREEN FLOW

The United Nations in New York is an **icon** on the World map. Thousands of people visit the compound each year. The United Nations Environmental Council has not yet earned this status and has an **subordinate function** on the compound. The majority of the visitors do not know of the existence of UNEC and **focus** their visit mainly on the **assembly hall**.

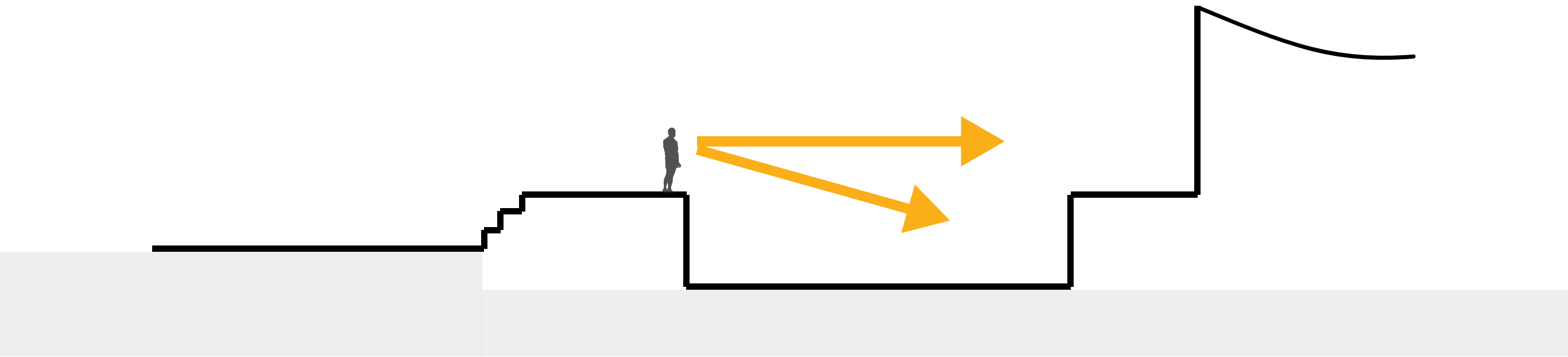
In order to inform the visitors about sustainability, **UNEC** should **attract** the **visitors**, without outshining the assembly hall.

A **connection** between UNEC and the assembly hall should be made to guide visitors towards the environmental council, so that a visit to the UN HQ does not end in the visitors lounge but it ends in UNEC.

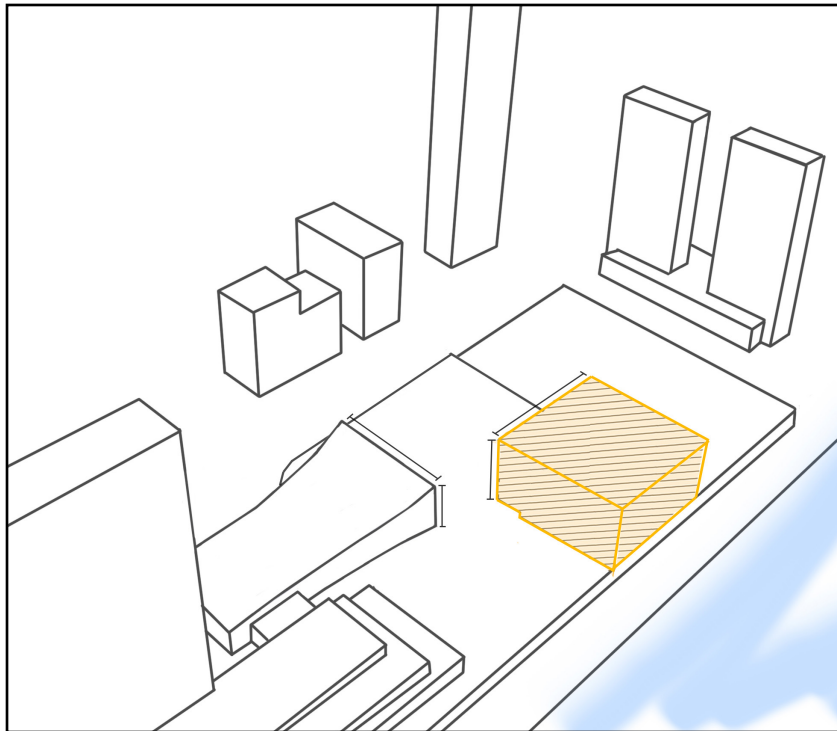
SEPARATING USERS



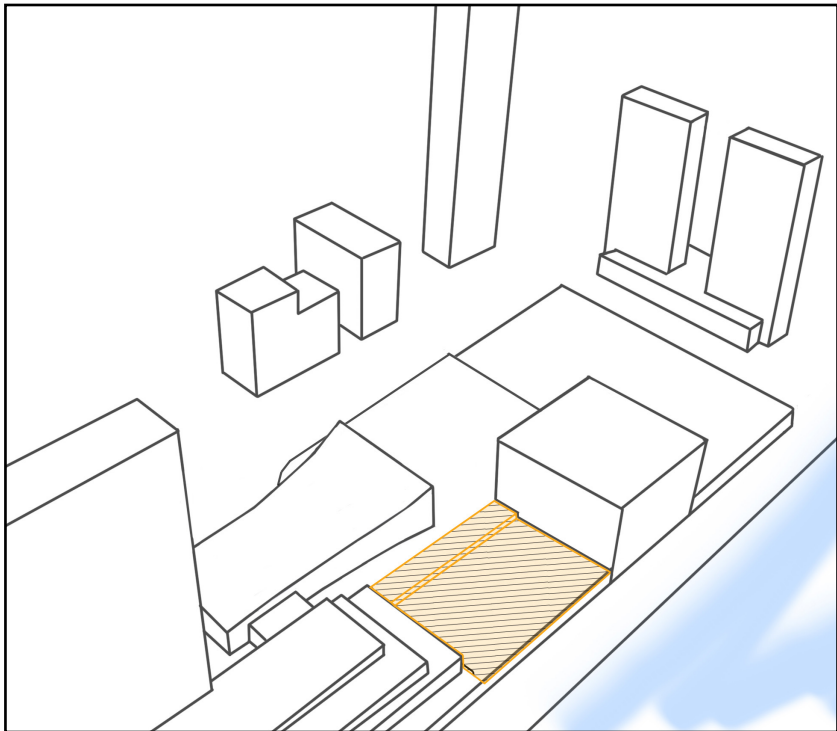
VISIBLE RELATION



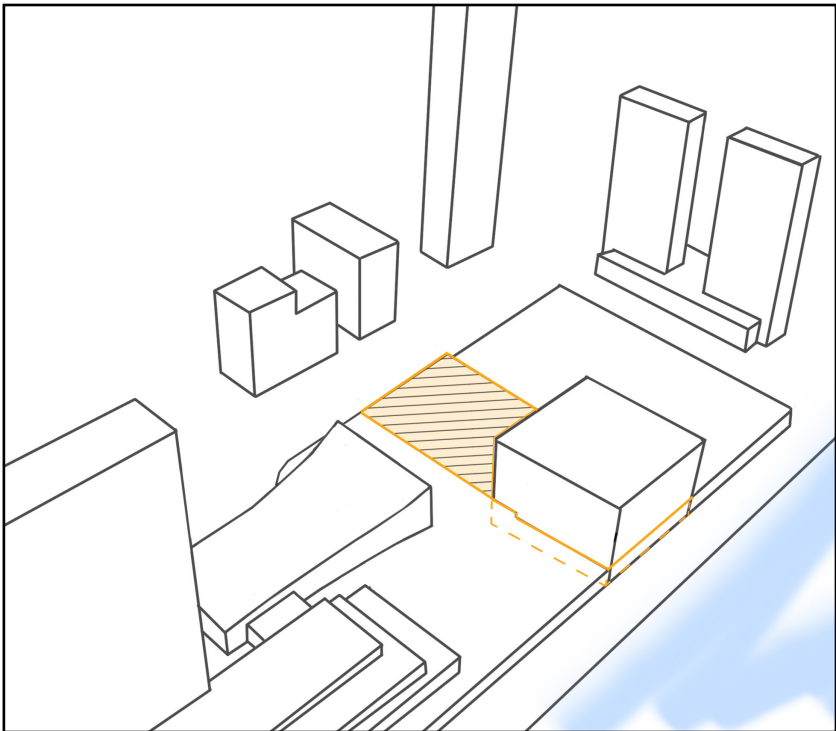
4.2 DESIGN STEPS



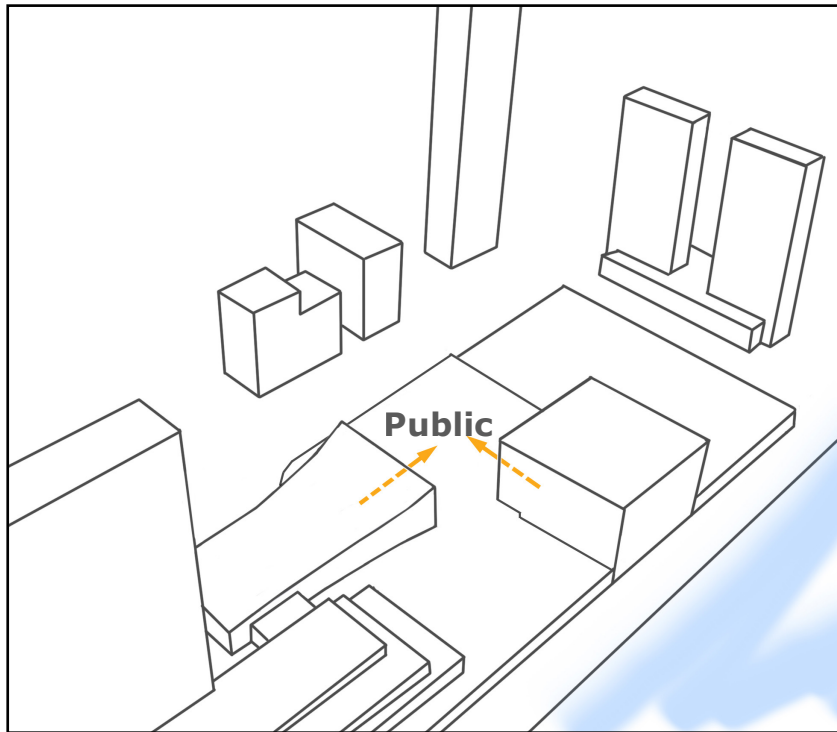
- Compact building
- Relate to the Assembly Hall by using the same dimensions



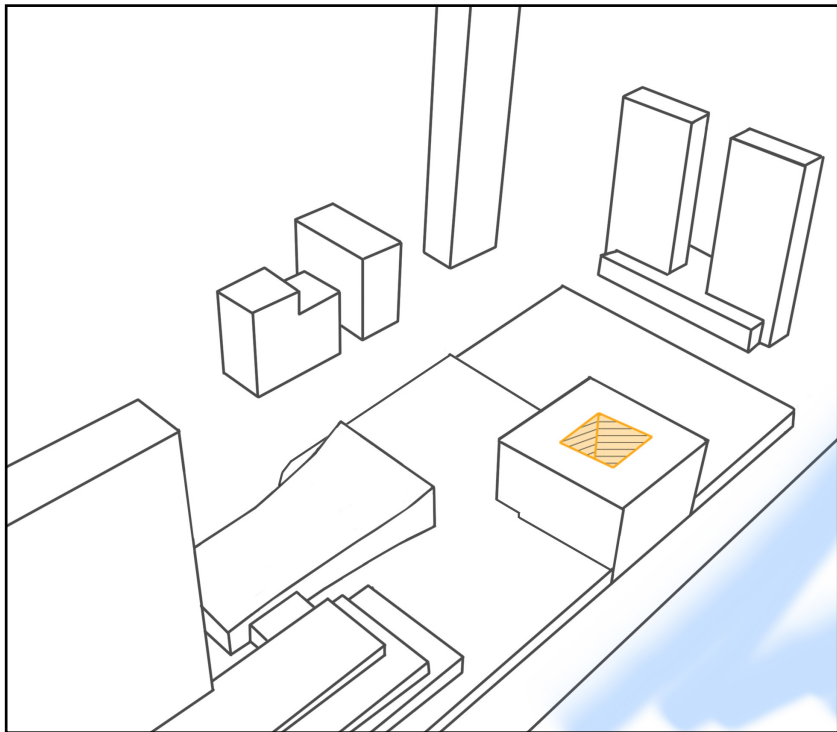
- Create a walkway for the delegates
- Create garden for delegates



- Contain building height, re-use old FDR and use space underneath square



- Merge public space of both buildings



- Providing natural light in the core of the building

PROGRAM

Floor 5

P = +29200

Highlights:

- Atrium
- Office Space

Floor 3

P = +21800

Highlights:

- Atrium
- Office Space
- Canteen

Floor 1

P = +12900

Highlights:

- Public Entrance
- Council Chamber

Floor -1

P = +4500 and +6400

Highlights:

- Council Chamber
- Delegate Lounge
- Library
- Auditorium

Floor -3

P = 0 / Greenbelt Level

Highlights:

- Grand café
- Shops
- Exposition Space
- Product Space
- Installation Space

Floor 4

P = +25500

Highlights:

- Atrium
- Office Space

Floor 2

P = +16300

Highlights:

- Auditoria
- Workshops

Floor 0

P = +9900

Highlights:

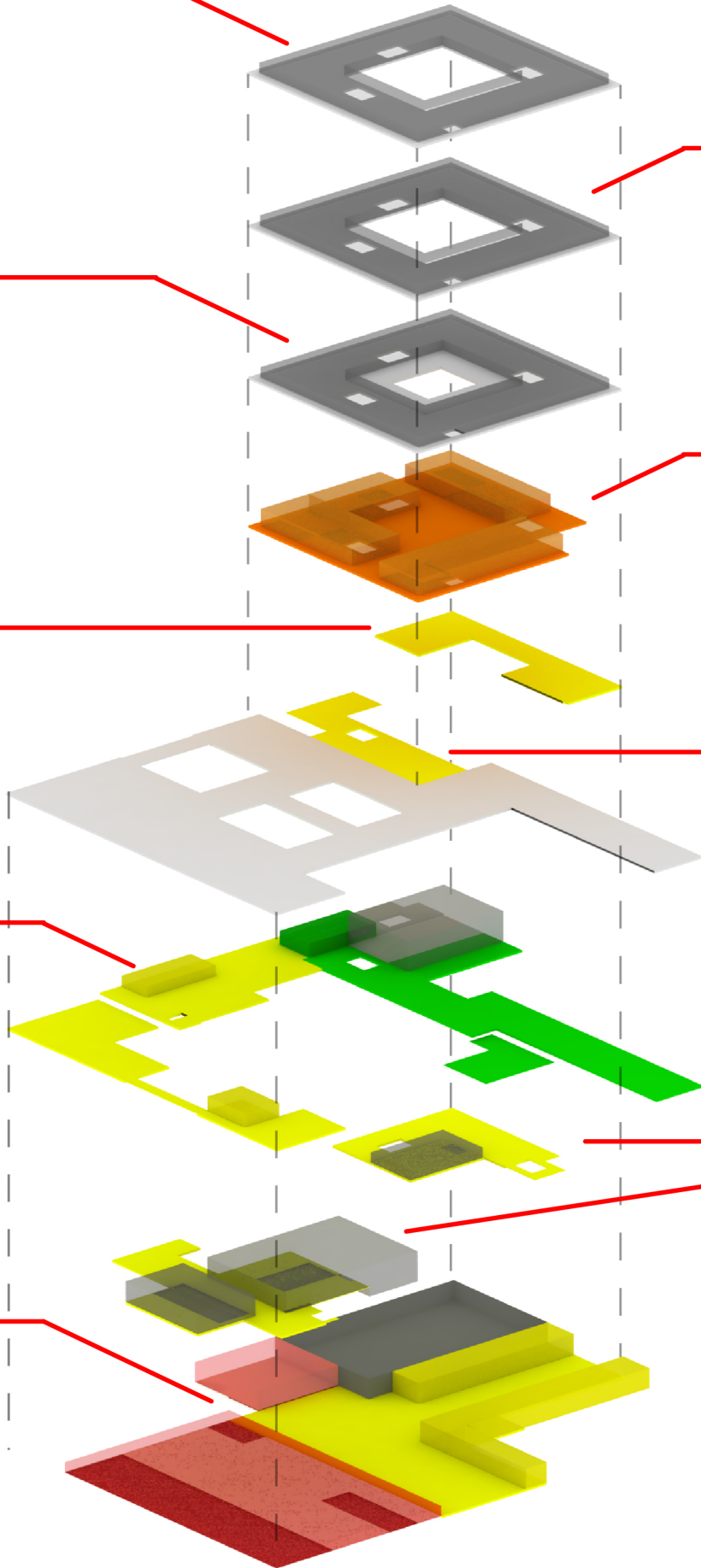
- Entrance area

Floor -2

P = +3000 and +3300

Highlights:

- Restaurant
- Library
- Courtyard
- Auditorium



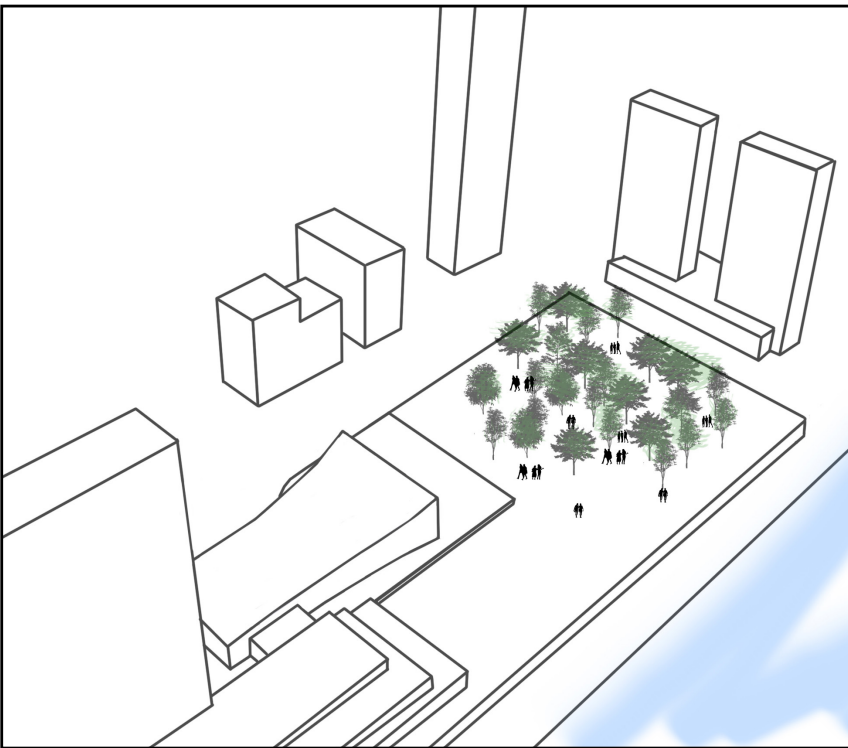
H5 MASTERPLAN

5.1 KEYVALUES

- PUBLIC PARK

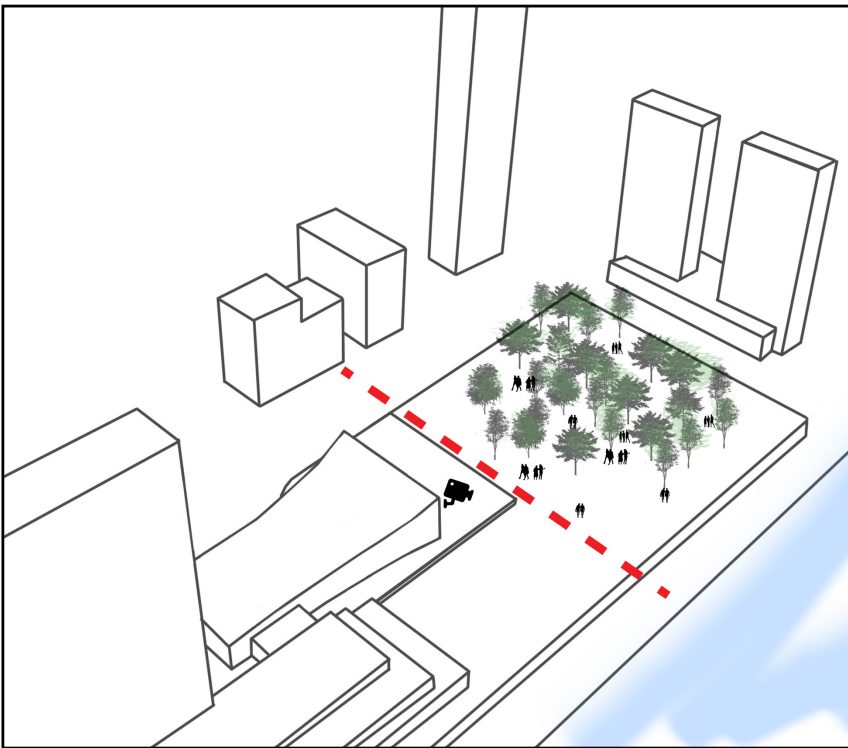
There are no large scale public parks in the direct surroundings of the UN compound.
One of the goals of the PlaNYC 2011 plan is to ensure all New Yorkers live within a ten-minute walk of a park.
(source: PlaNYC update april 2011)

The UN area gives a unique possibility to achieve this goal. Furthermore a large scale green area in front of the UN compound can strengthen the sustainability feature of the UNEC building.



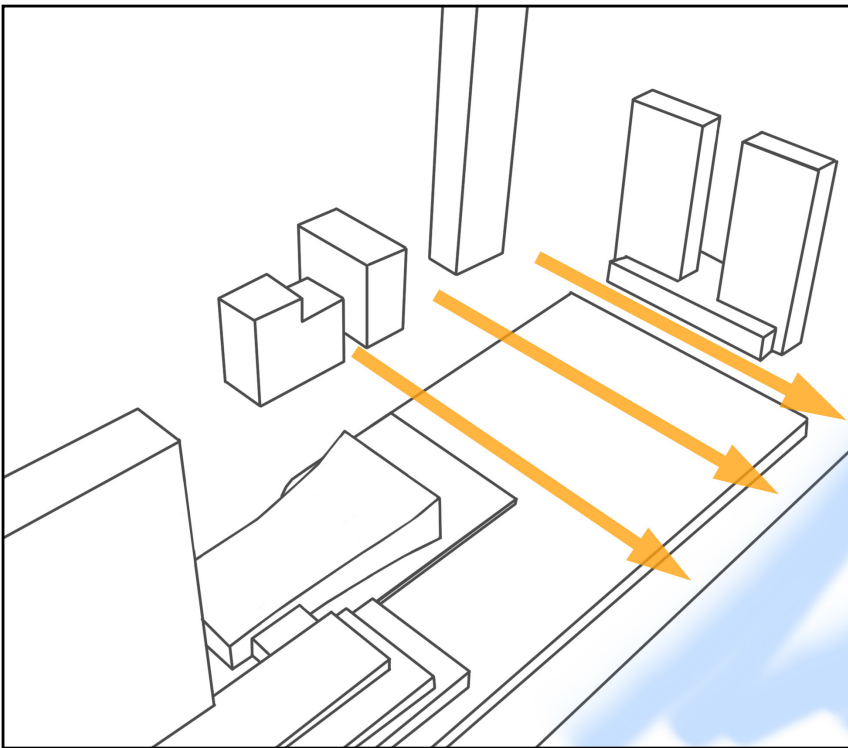
- OPEN VS SECURE

The United Nations are vulnerable for terrorist attacks. Security is an important topic with the design of the UNEC building. Furthermore, creating a public park as mentioned before may increase the security risk. So there should be a clear separation between open and secure.
Both UNEC and the UN should work as one compound. The compound itself should have a clear security check.



- CONNECTING TO THE WATERFRONT

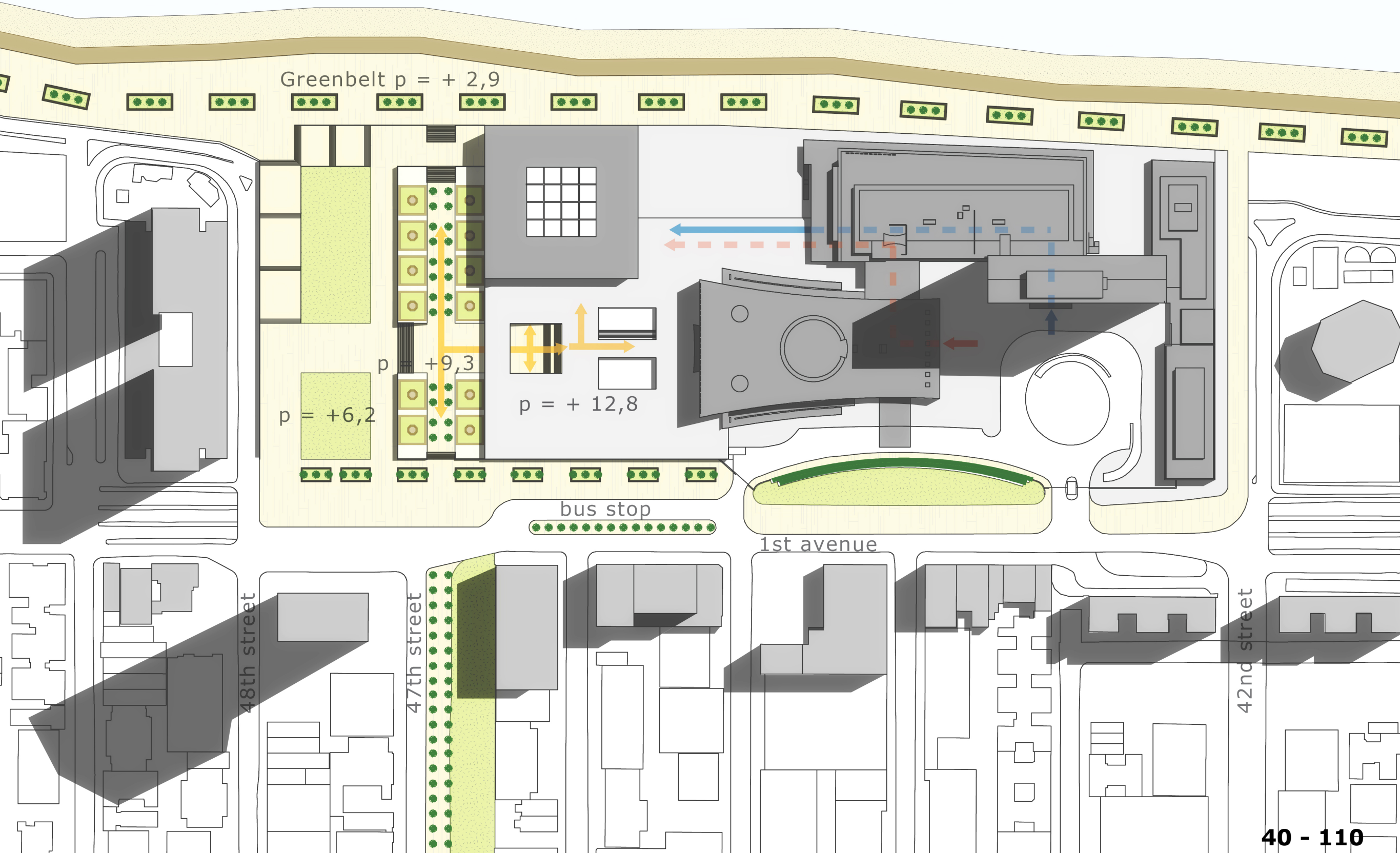
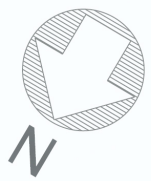
New York lacks a connection with the waterside, which is a missed opportunity. The new to develop "Greenbelt" plan, which will create a public walkway along the shores, will cooperate with this disability.
This greenbelt also runs along the UN compound. Connecting to the Greenbelt will not only create a connection with the waterside, but will also provide an extra public access to the park and the UN compound.



5.3 MASTERPLAN

Eastriver high tide $p = +1,2$
Eastriver dead tide $p = 0$
Eastriver low tide $p = -0,6$

- Delegates / VIP
- Employees / Press
- Visitors















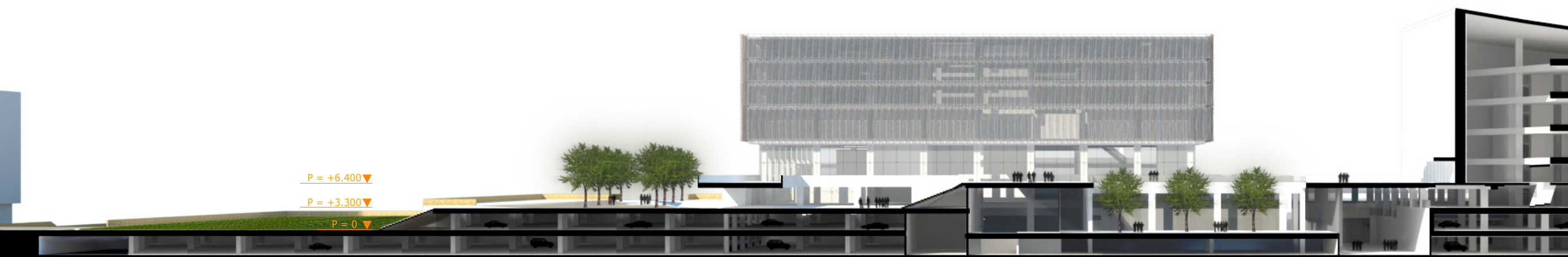


47th reference





H6 BUILDING DESIGN





P = +29.200▼

P = +25.500▼

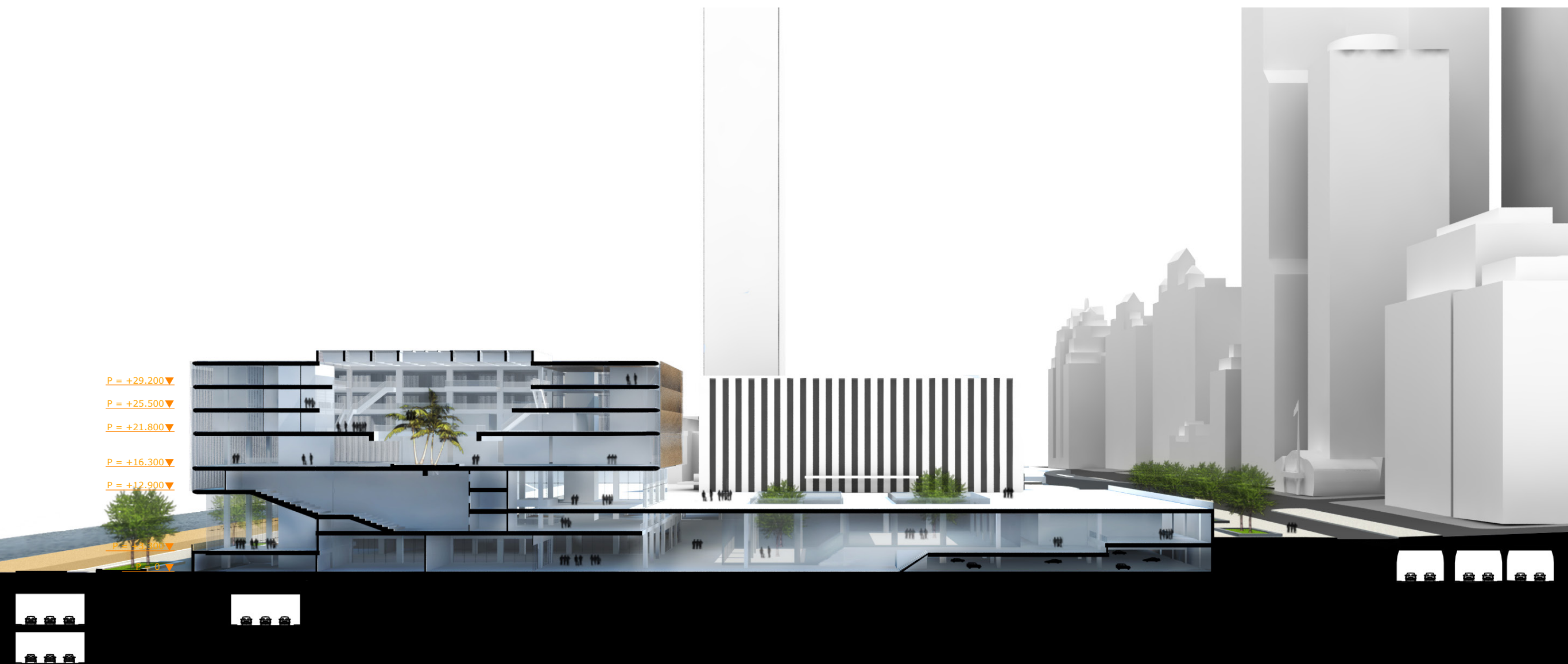
P = +21.800▼

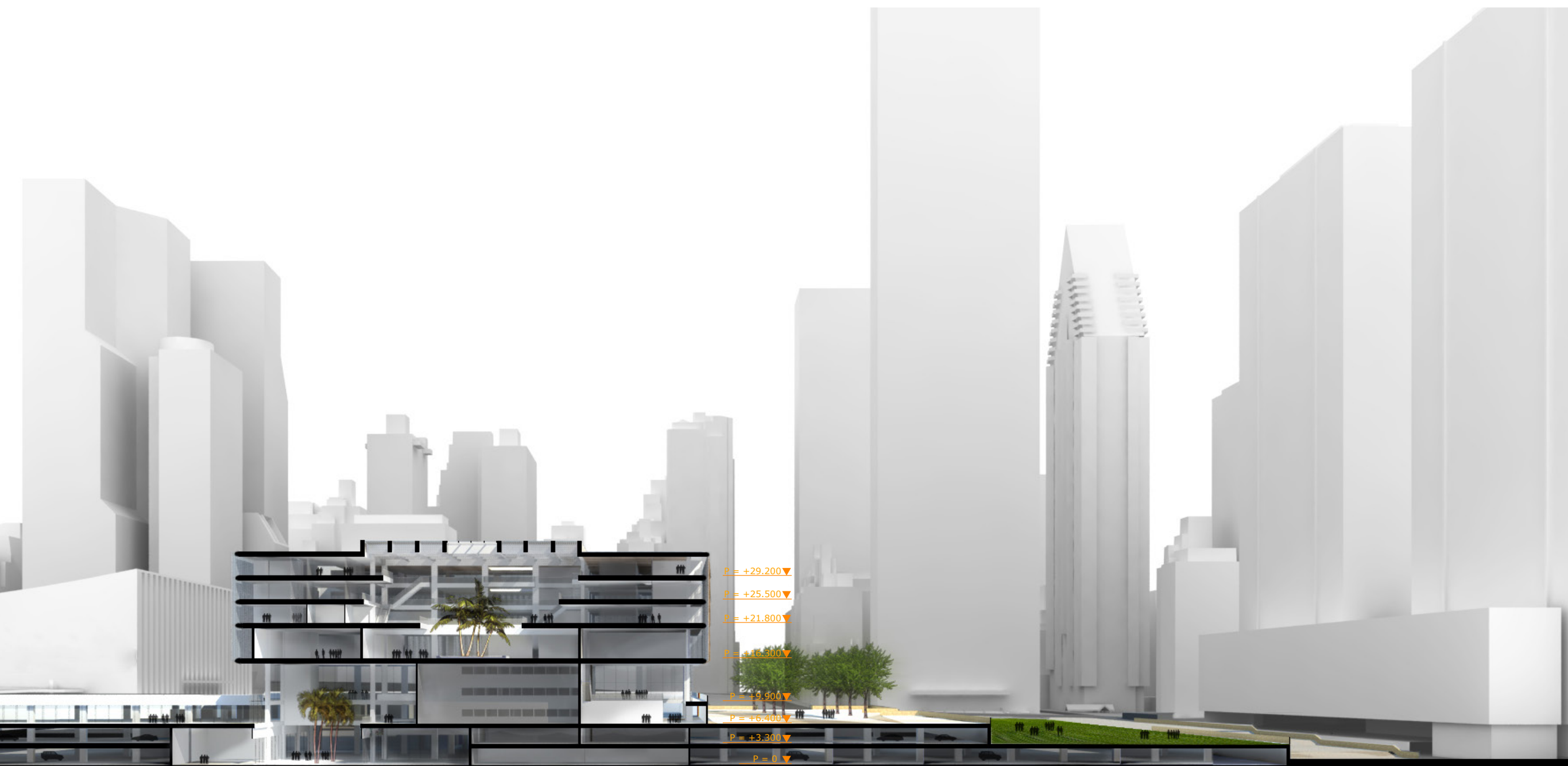
P = +16.300▼

P = +12.900▼

P = +3.300▼

P = 0▼

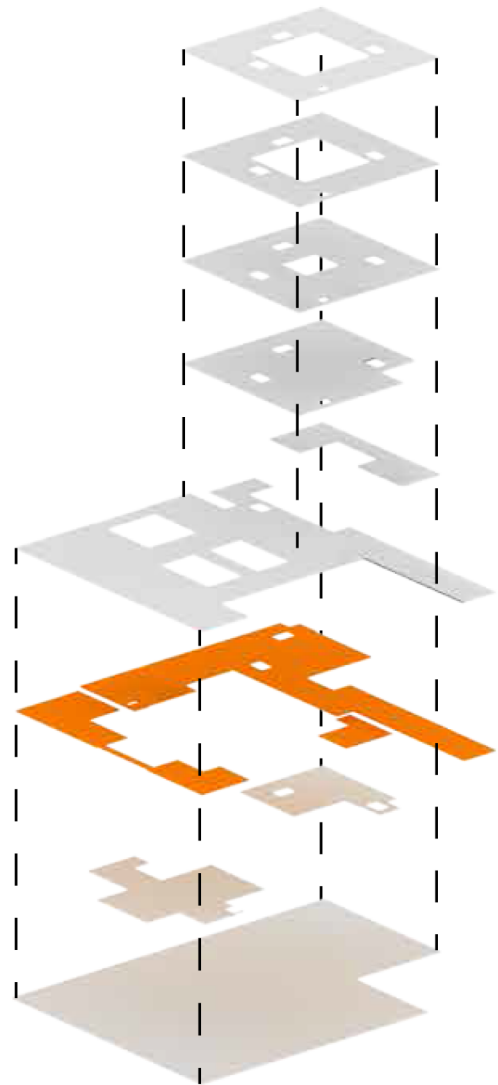




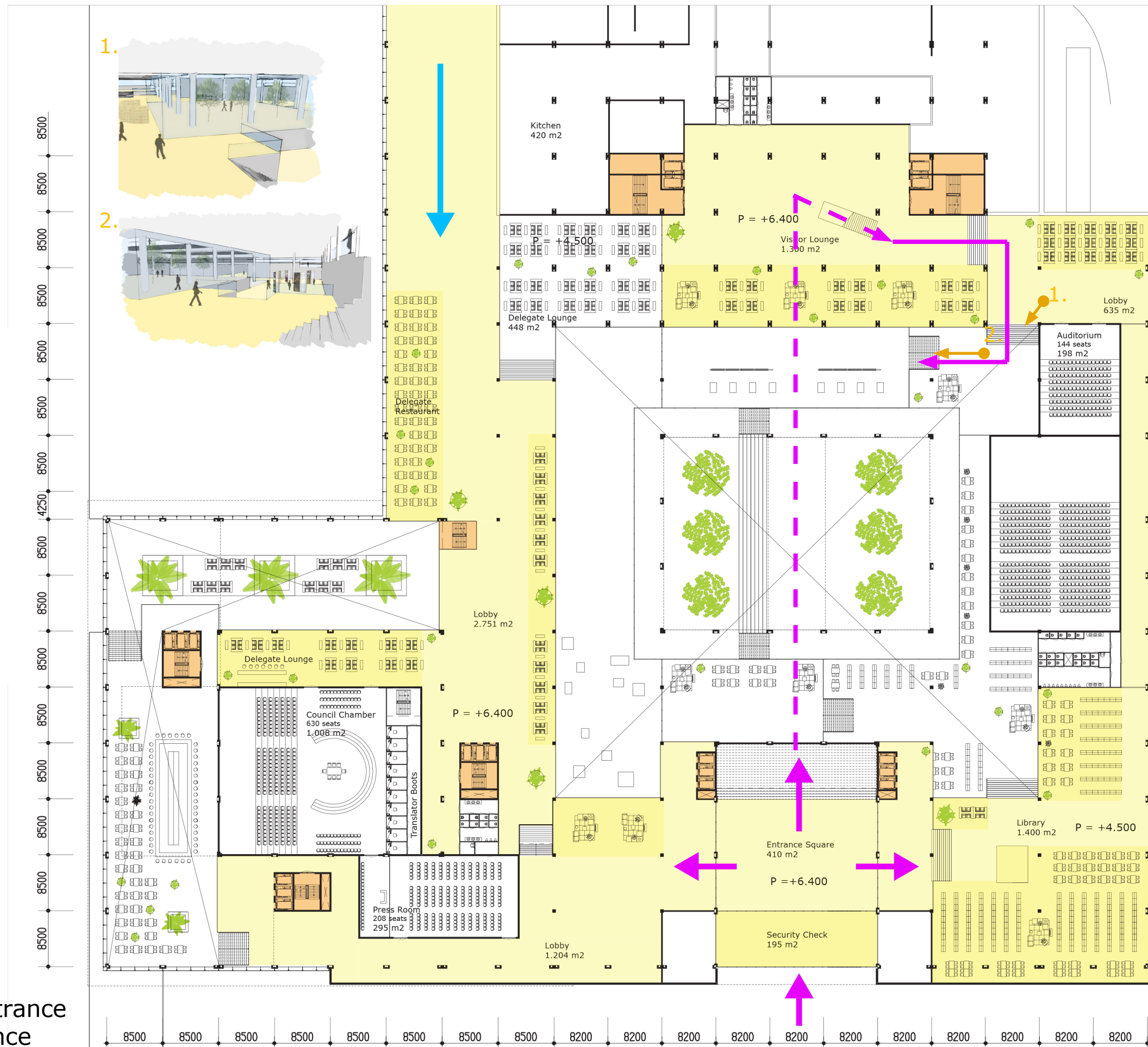
P = +4500 and +6400

Highlights:

- Council Chamber
- Delegate Lounge
- Library
- Auditorium



 Delegate Entrance
 Public Entrance

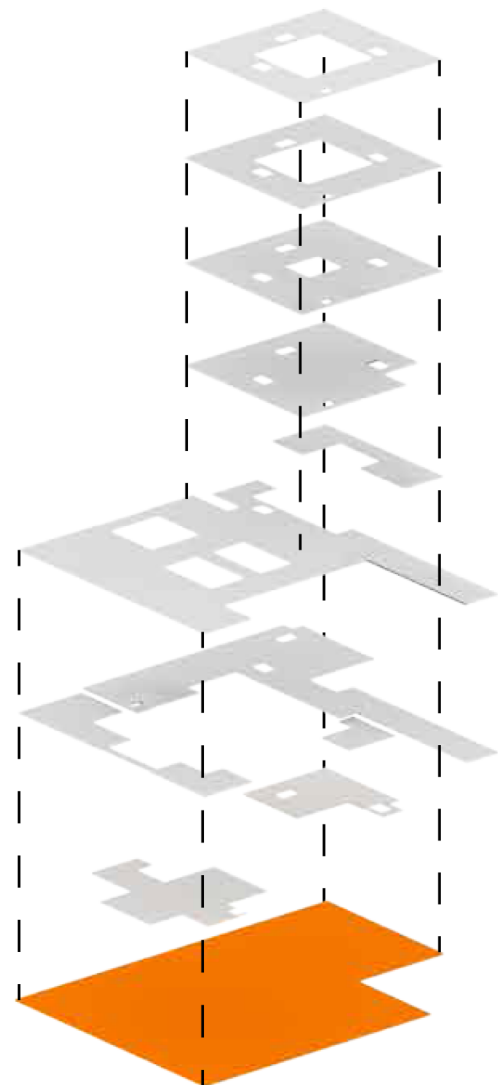


Floor -3

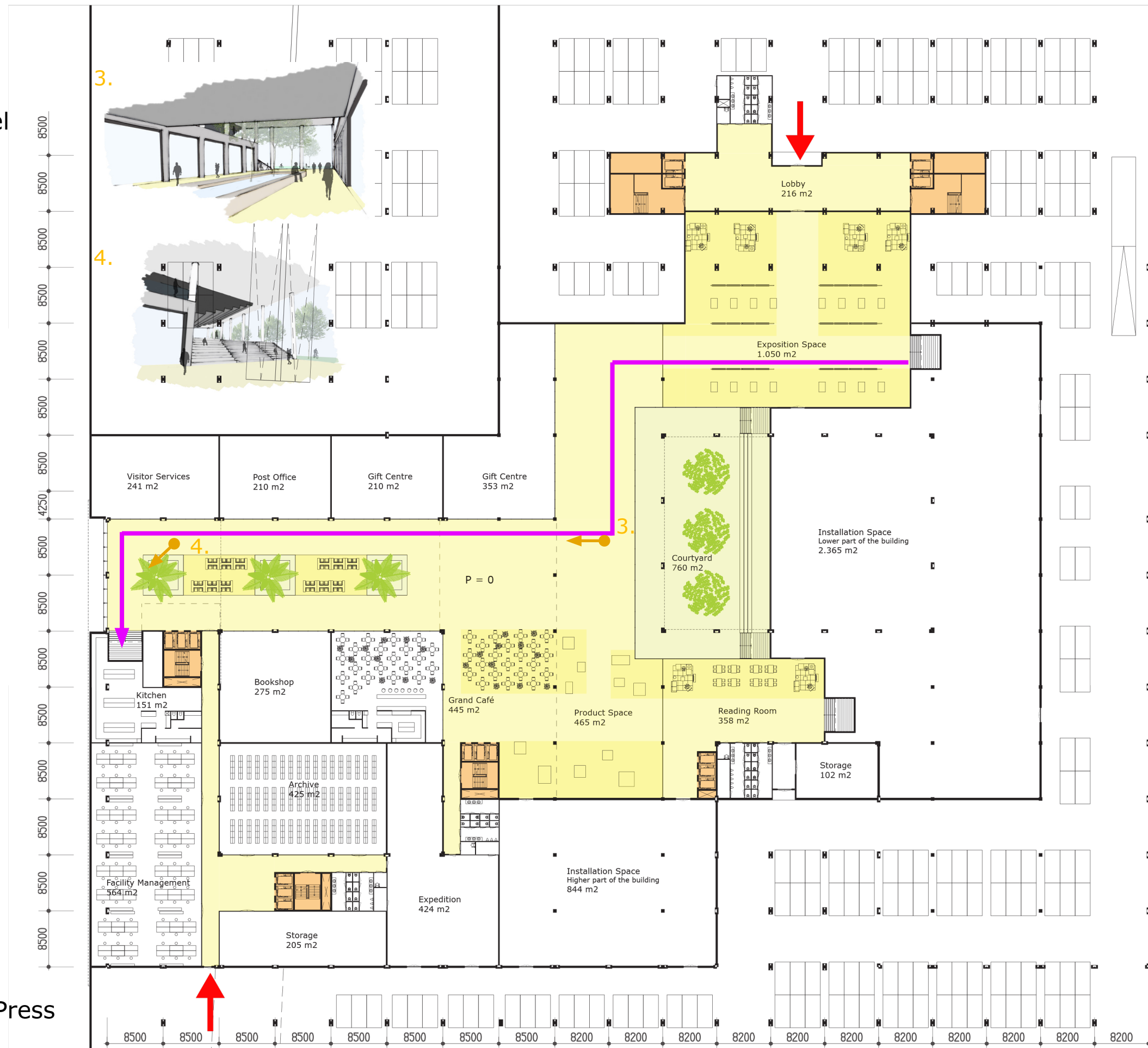
P = 0 / Greenbelt Level

Highlights:

- Exposition Space
- Product Space
- Grand café
- Shops

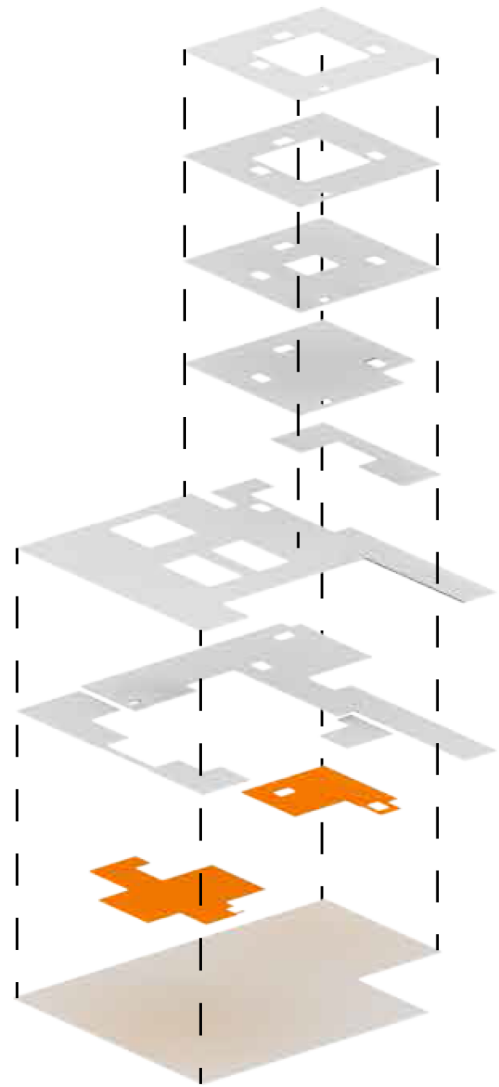


Employee / Press Entrance



P = +3000 and +3300

- Restaurant
- Library
- Courtyard
- Auditorium

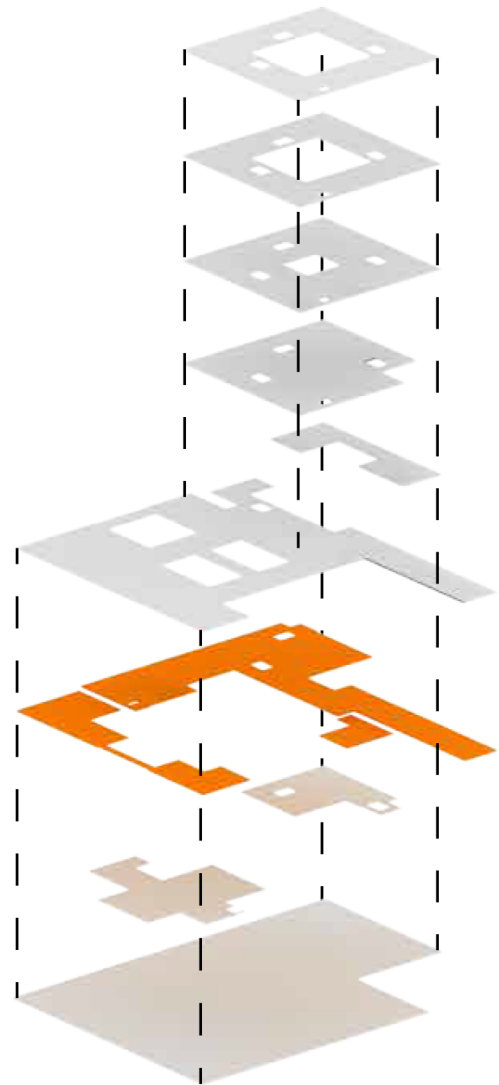


Floor -1

P = +4500 and +6400

Highlights:

- Council Chamber
- Delegate Lounge
- Library
- Auditorium



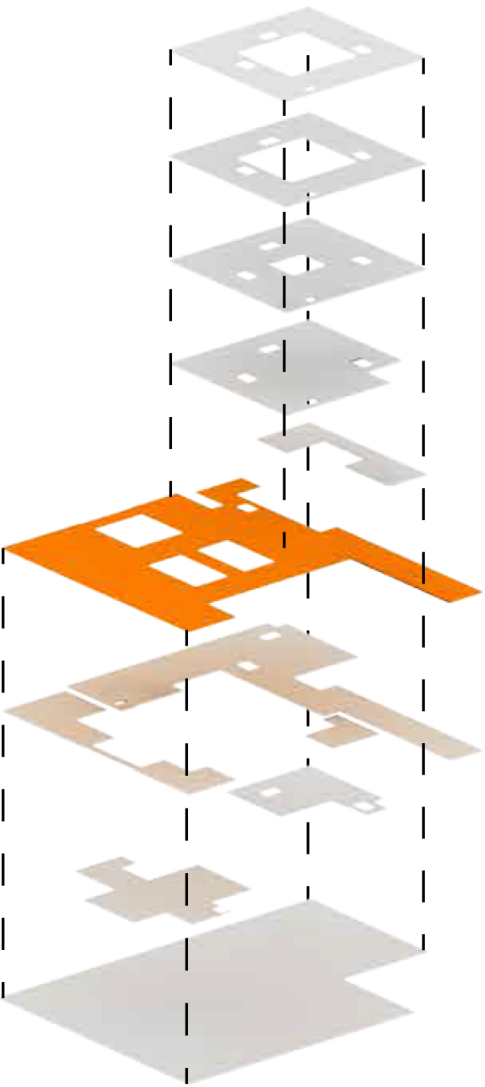
Delegate Entrance
Public Entrance



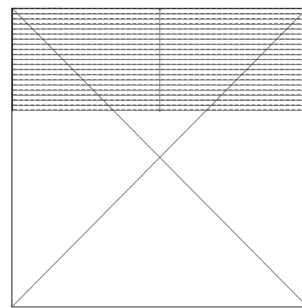
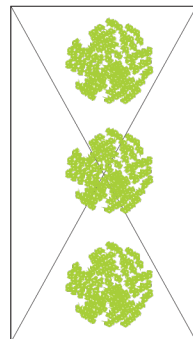
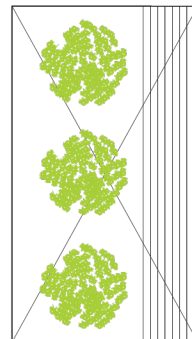
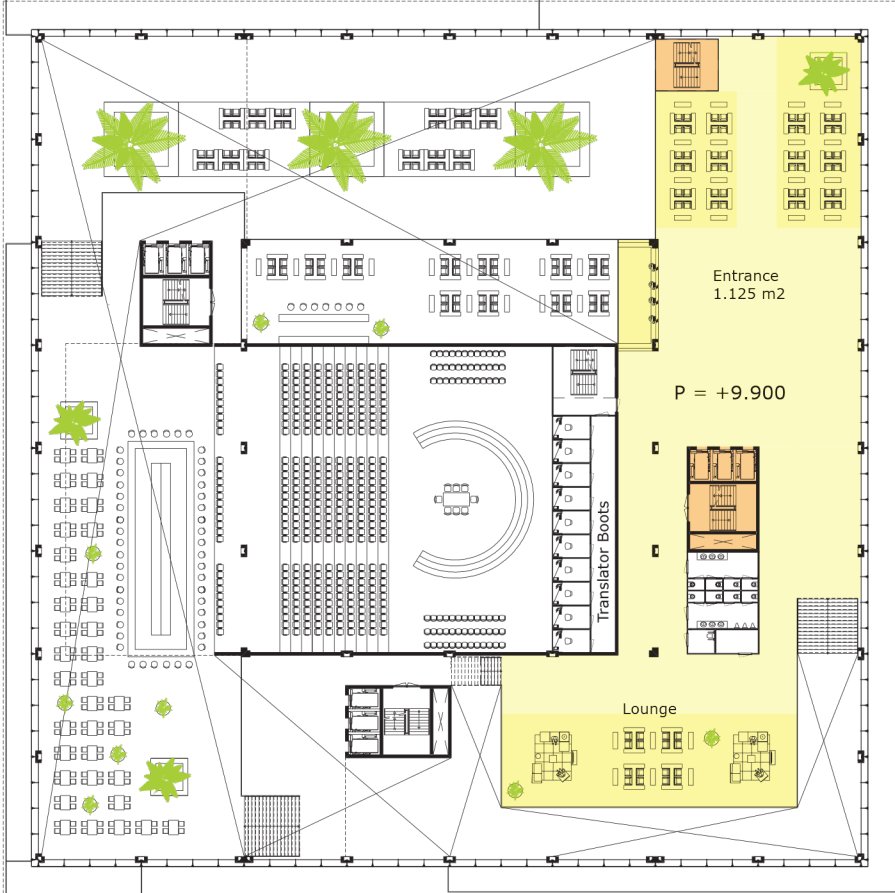
Floor 0
P = +9900

Highlights:

- Entrance area



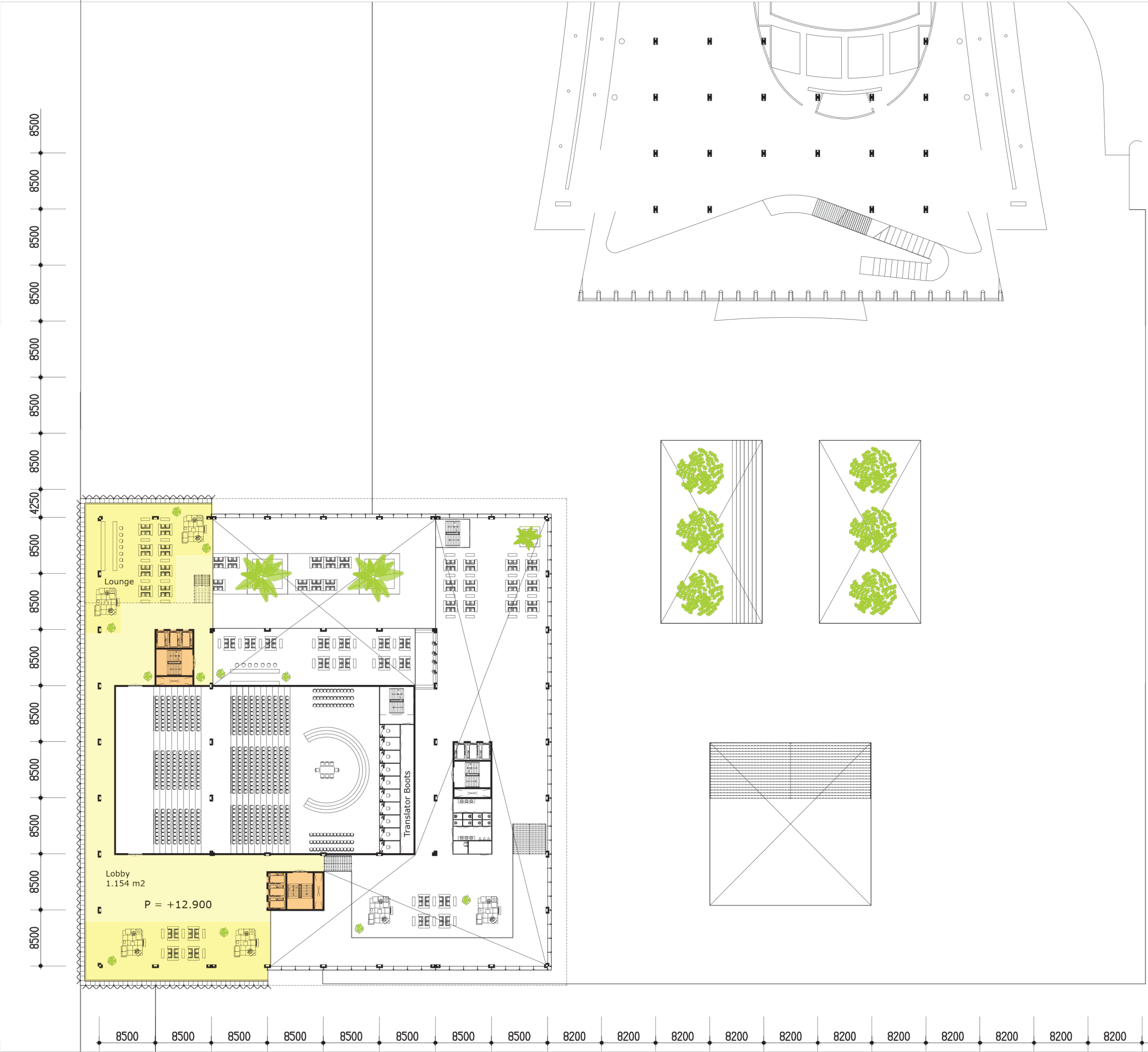
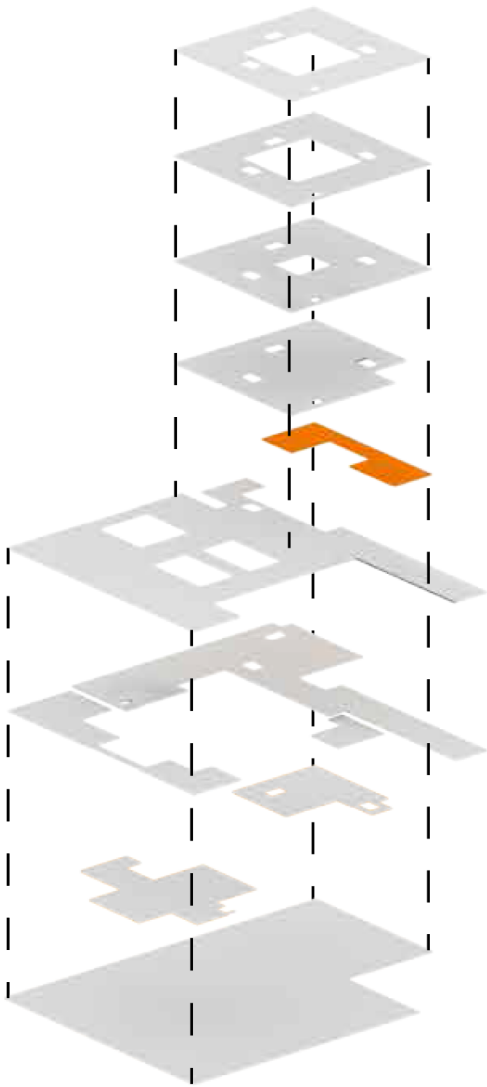
-  Employee / Press Entrance
-  Public Entrance



Floor 1
P = +12900

Highlights:

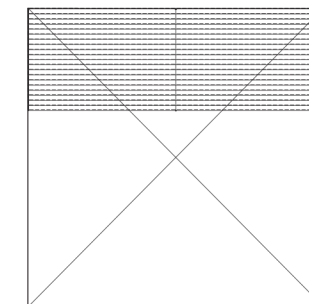
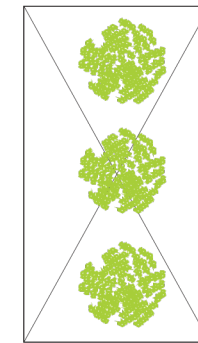
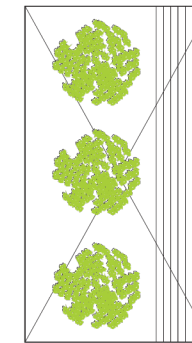
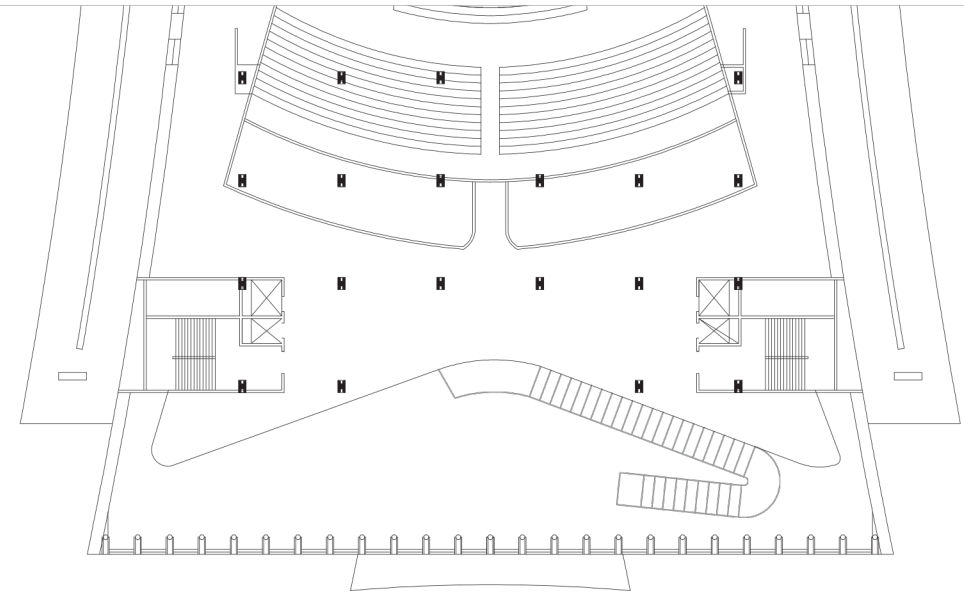
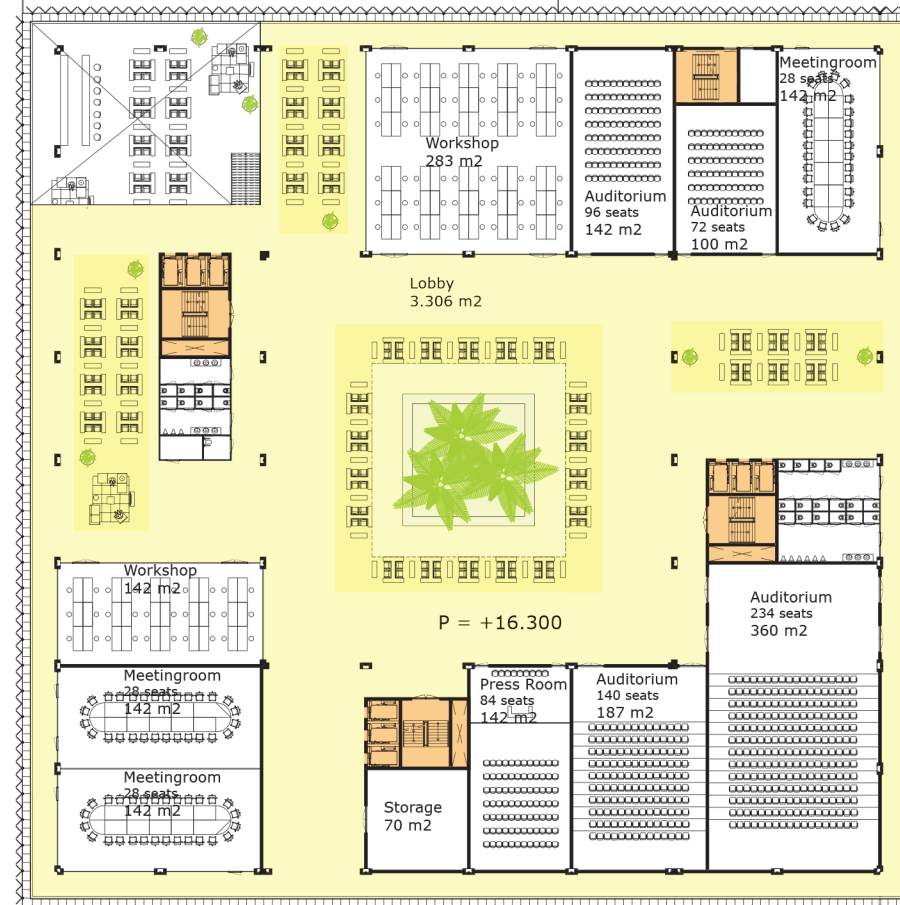
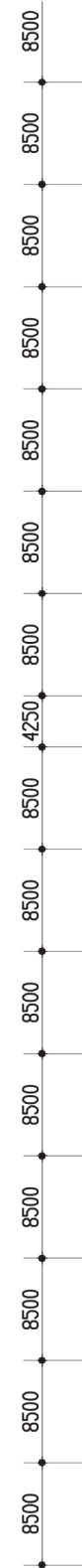
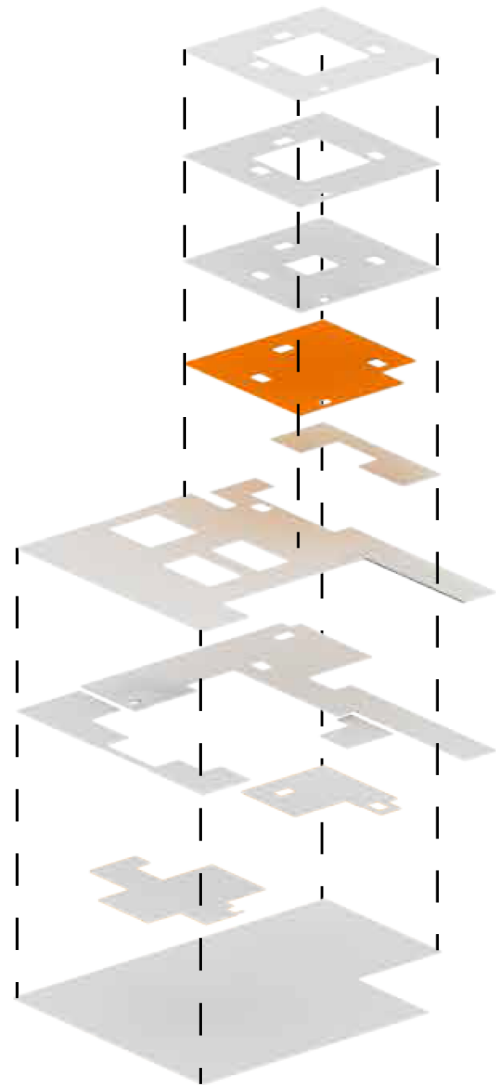
- Public Entrance
- Council Chamber



P = +16300

Highlights:

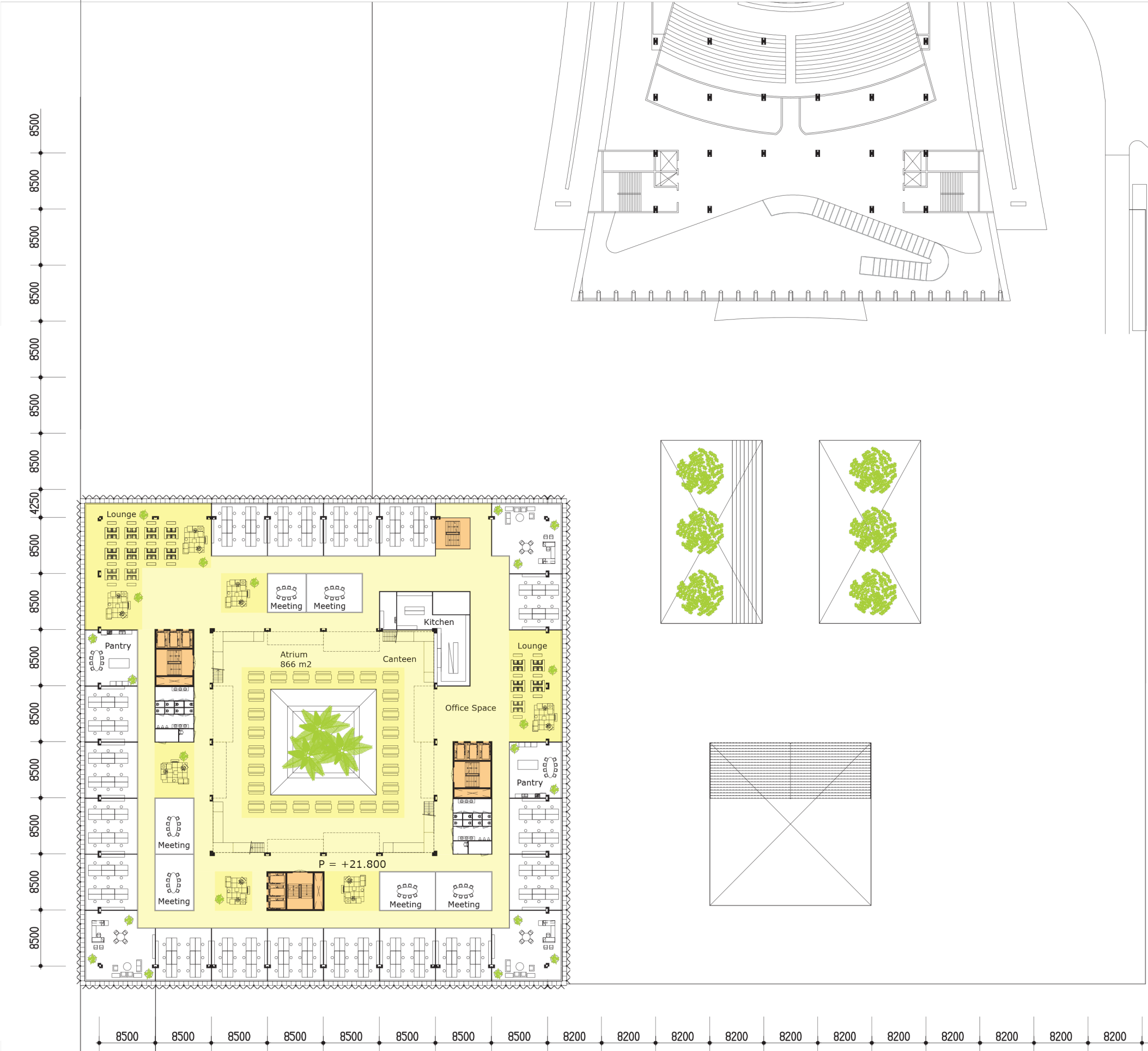
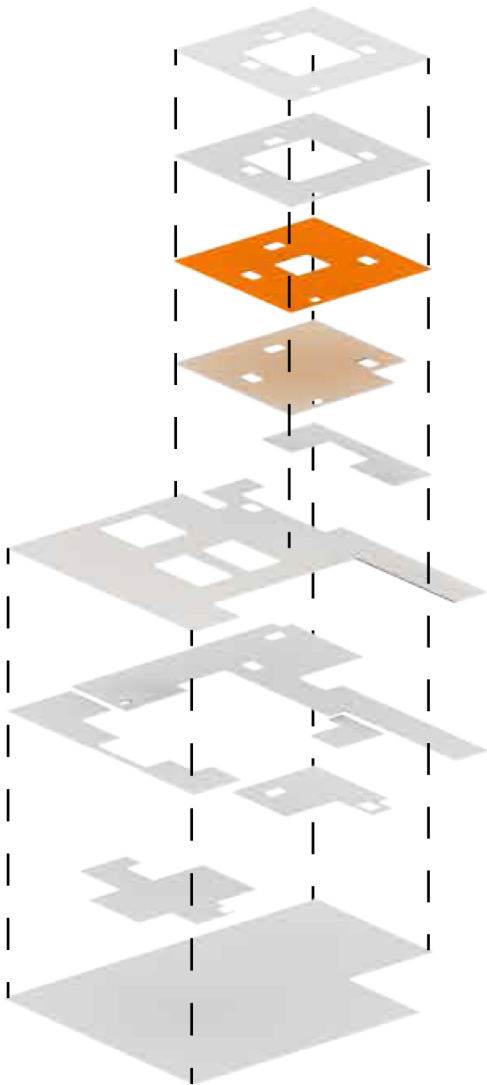
- Auditoria
- Workshops



Floor 3
P = +21800

Highlights:

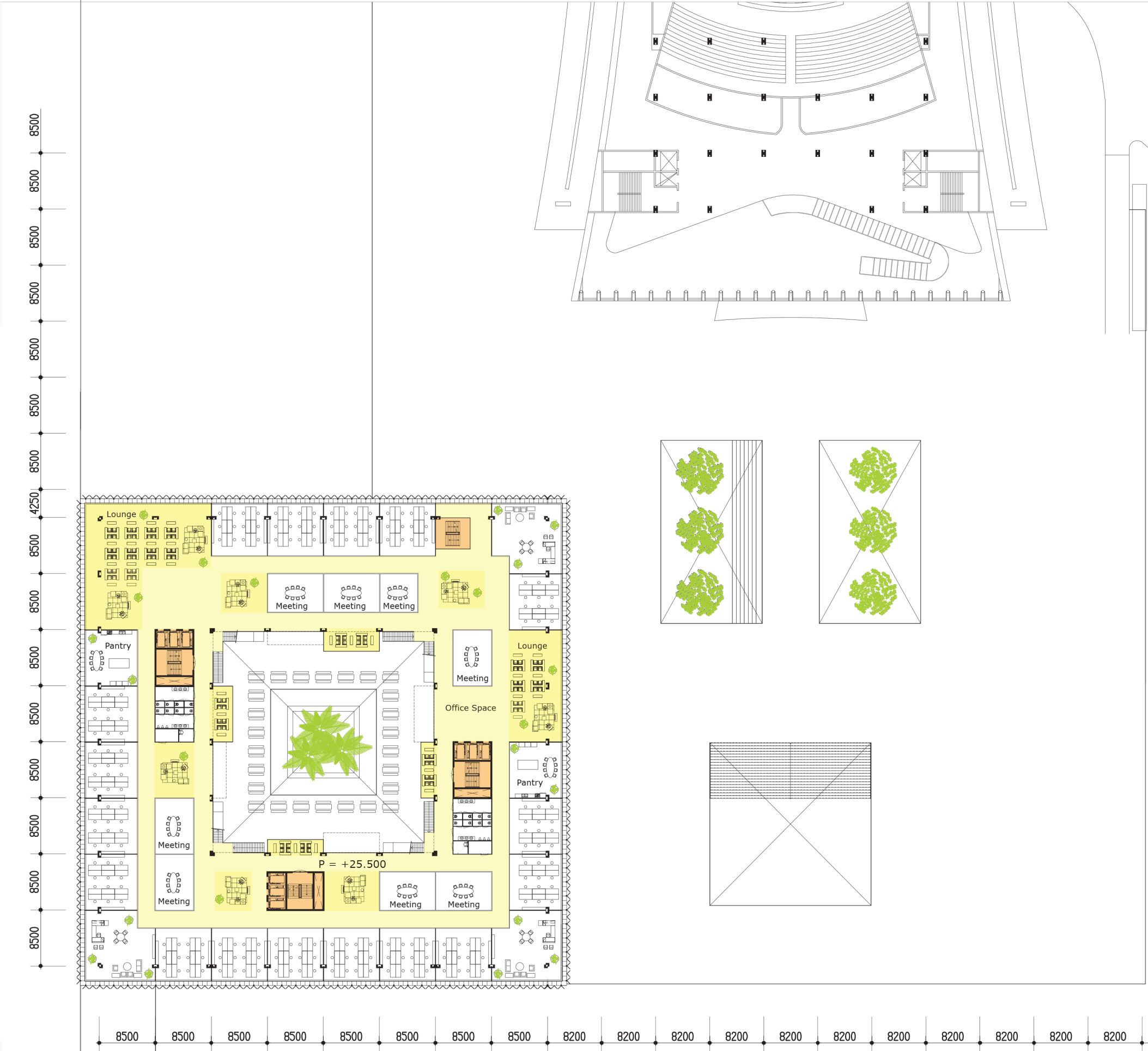
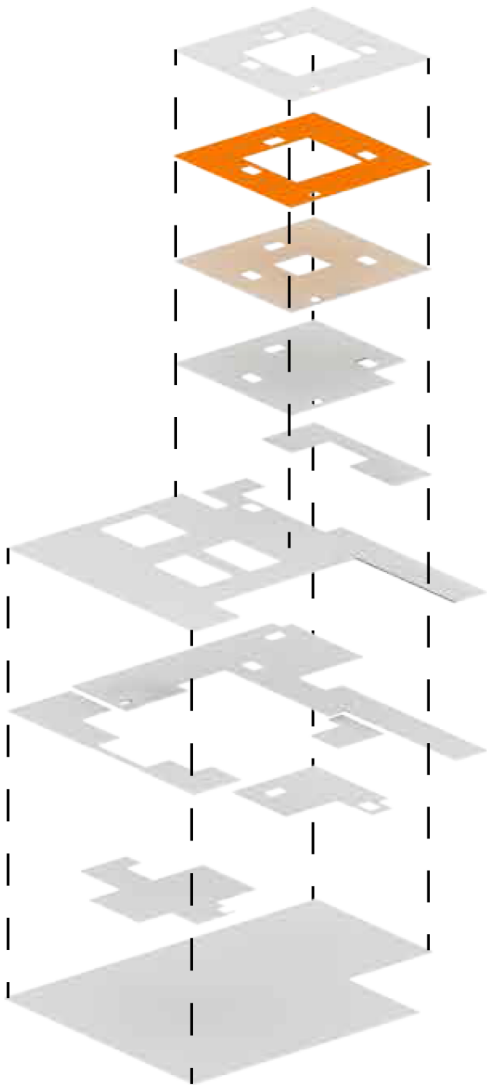
- Atrium
- Office Space
- Canteen



Floor 4
P = +25500

Highlights:

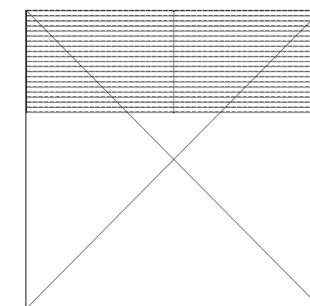
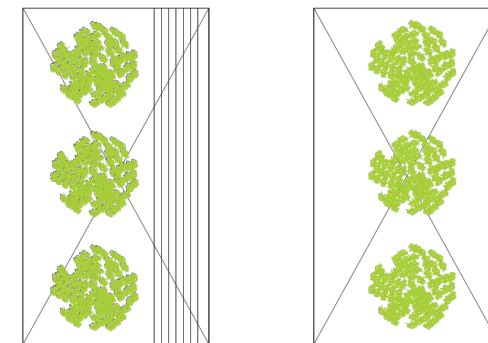
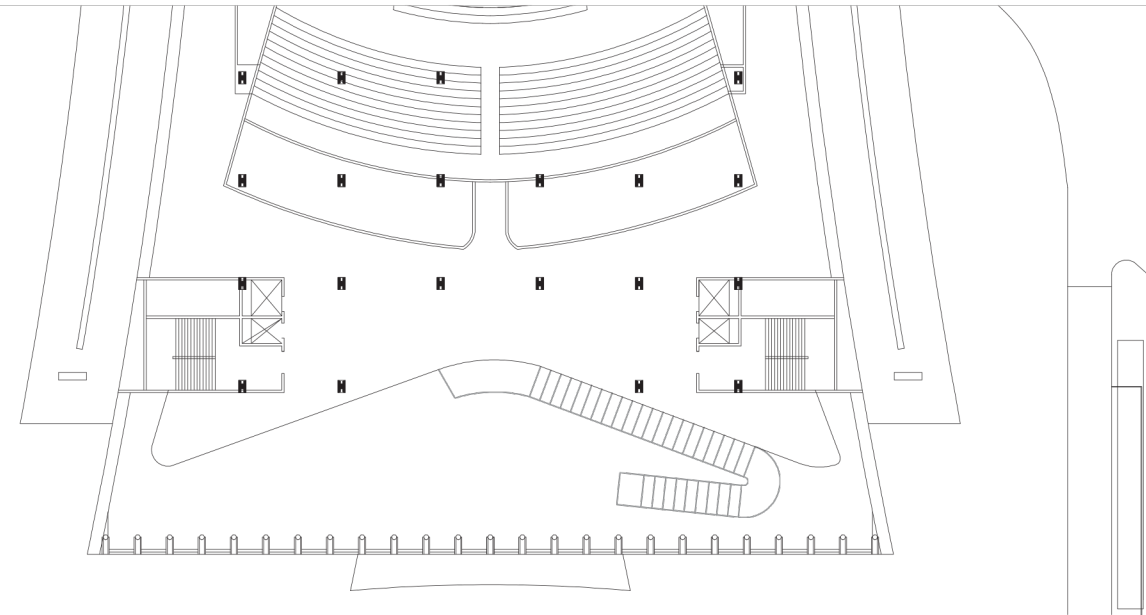
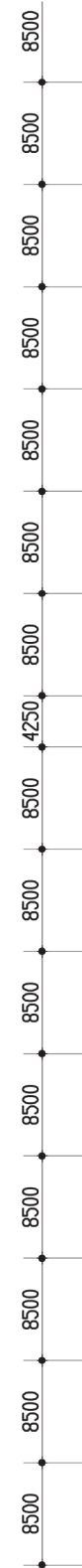
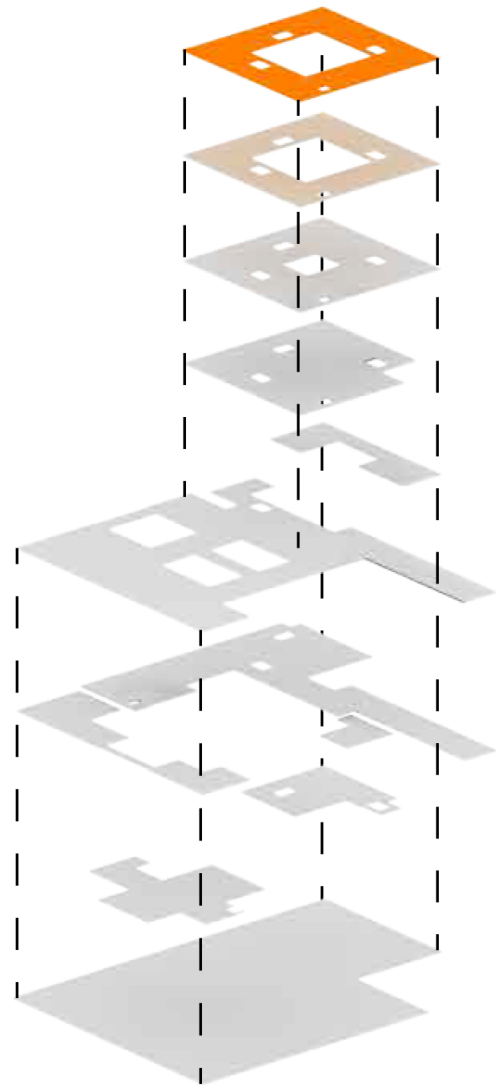
- Atrium
- Office Space



P = +29200

Highlights:

- Atrium
- Office Space



6.2 STRUCTURE

HOLCON PREFAB CONCRETE CONSTRUCTION

CONSTRUCTION SPEED

- All elements are prefab made, which provides for a high building speed.

HIGH LOAD

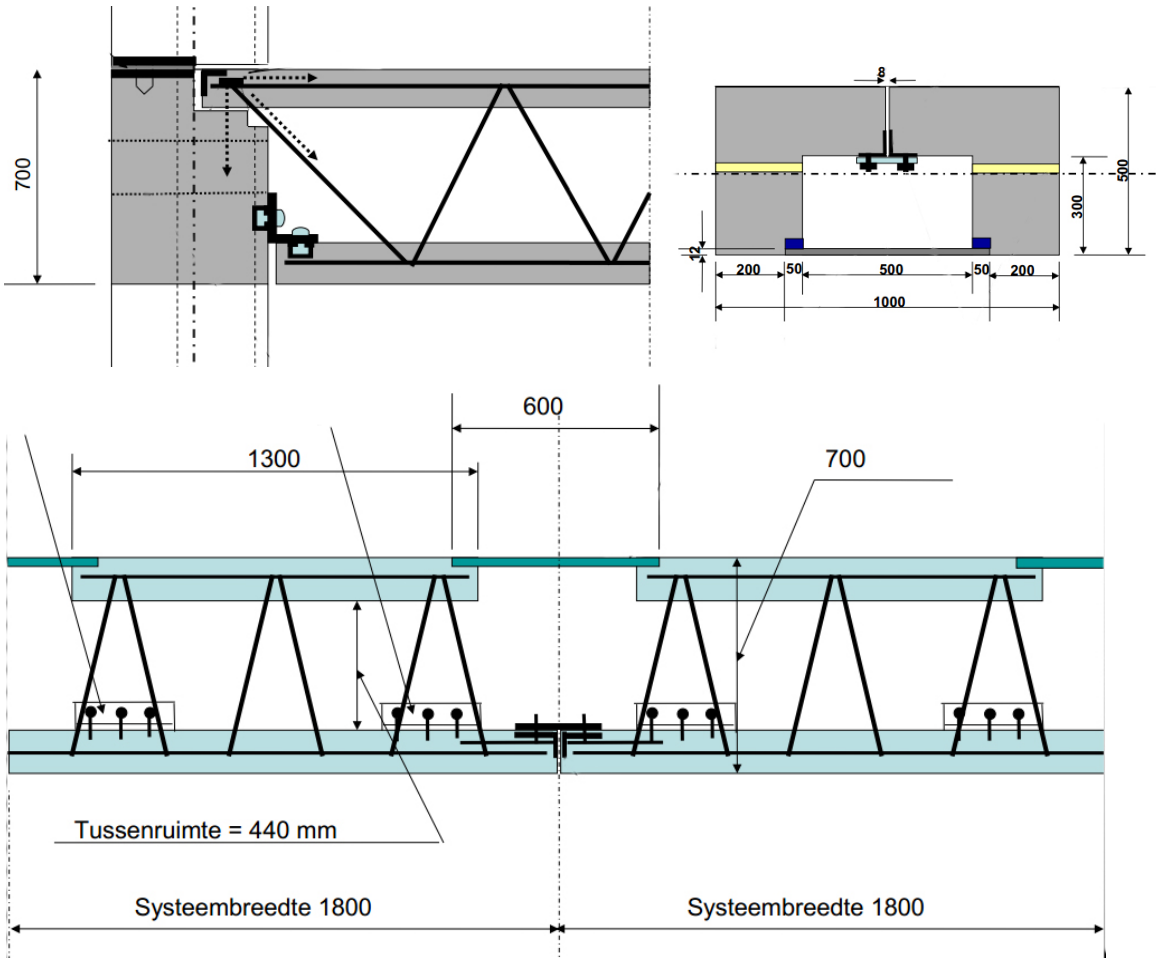
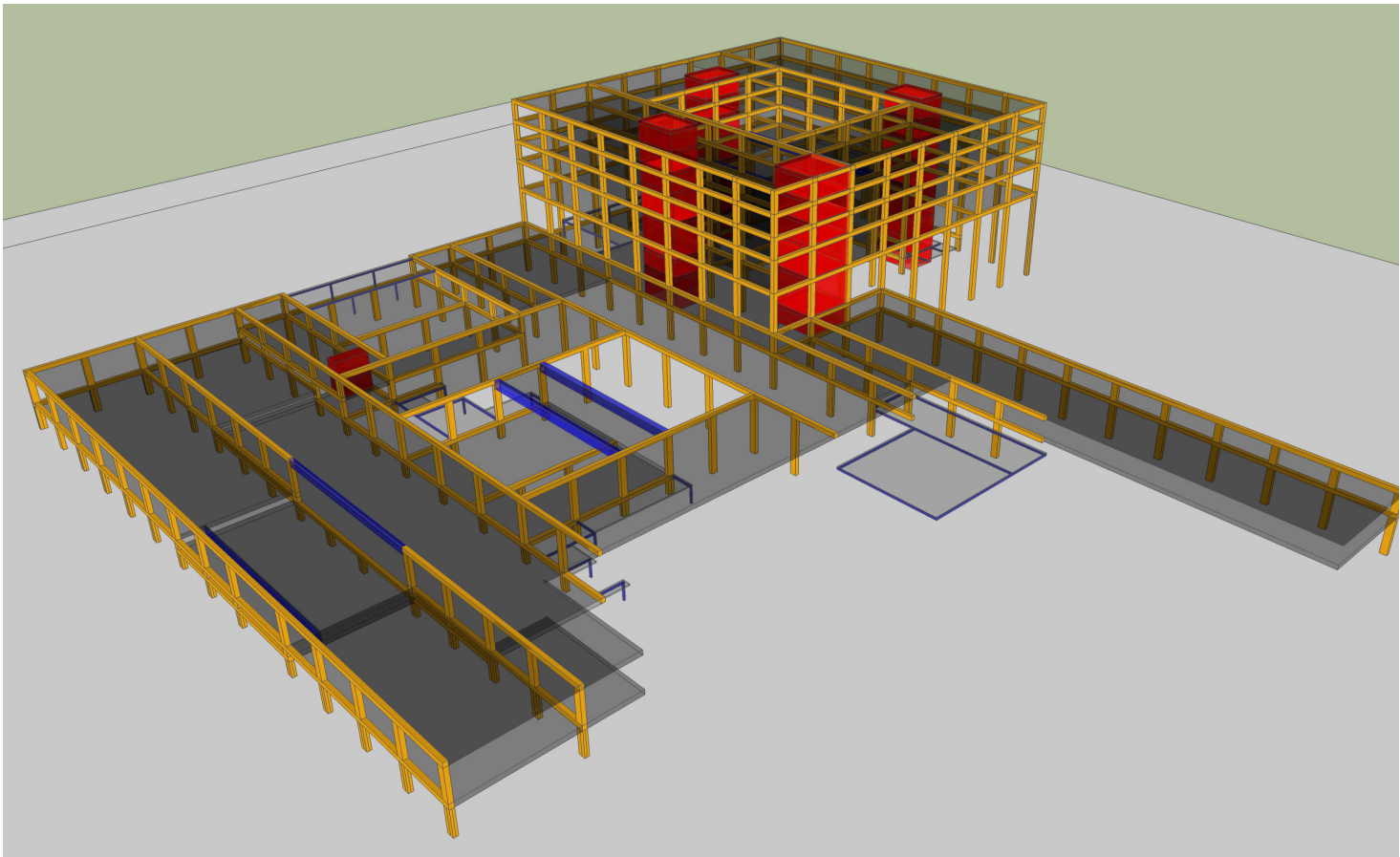
- Integrated steel lattice girders in the floor provide large spans.

CRADLE TO CRADLE

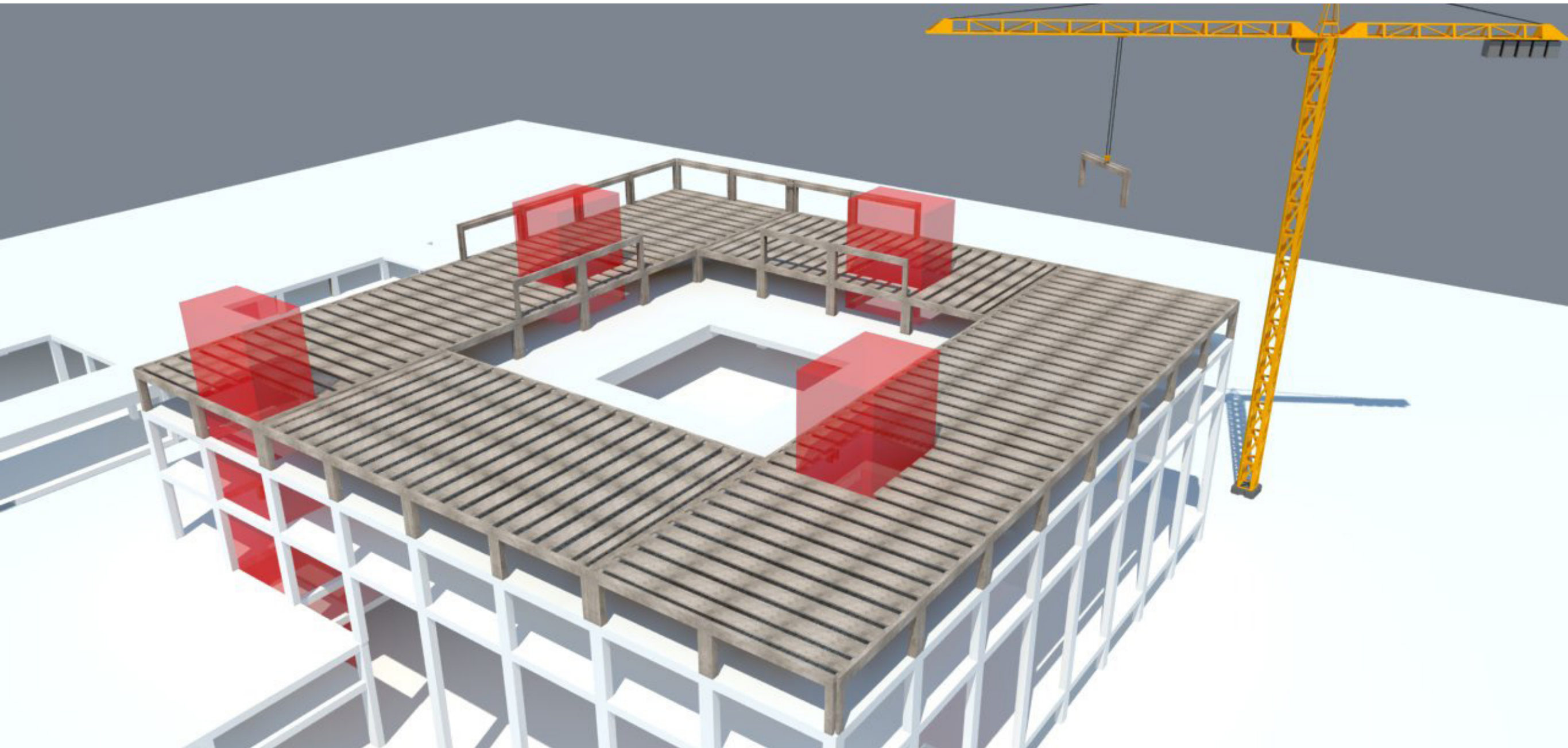
- Complete re-use of the standard elements is possible due to the use of mechanical dry clutches and the absence of a screed.

FLEXIBILITY

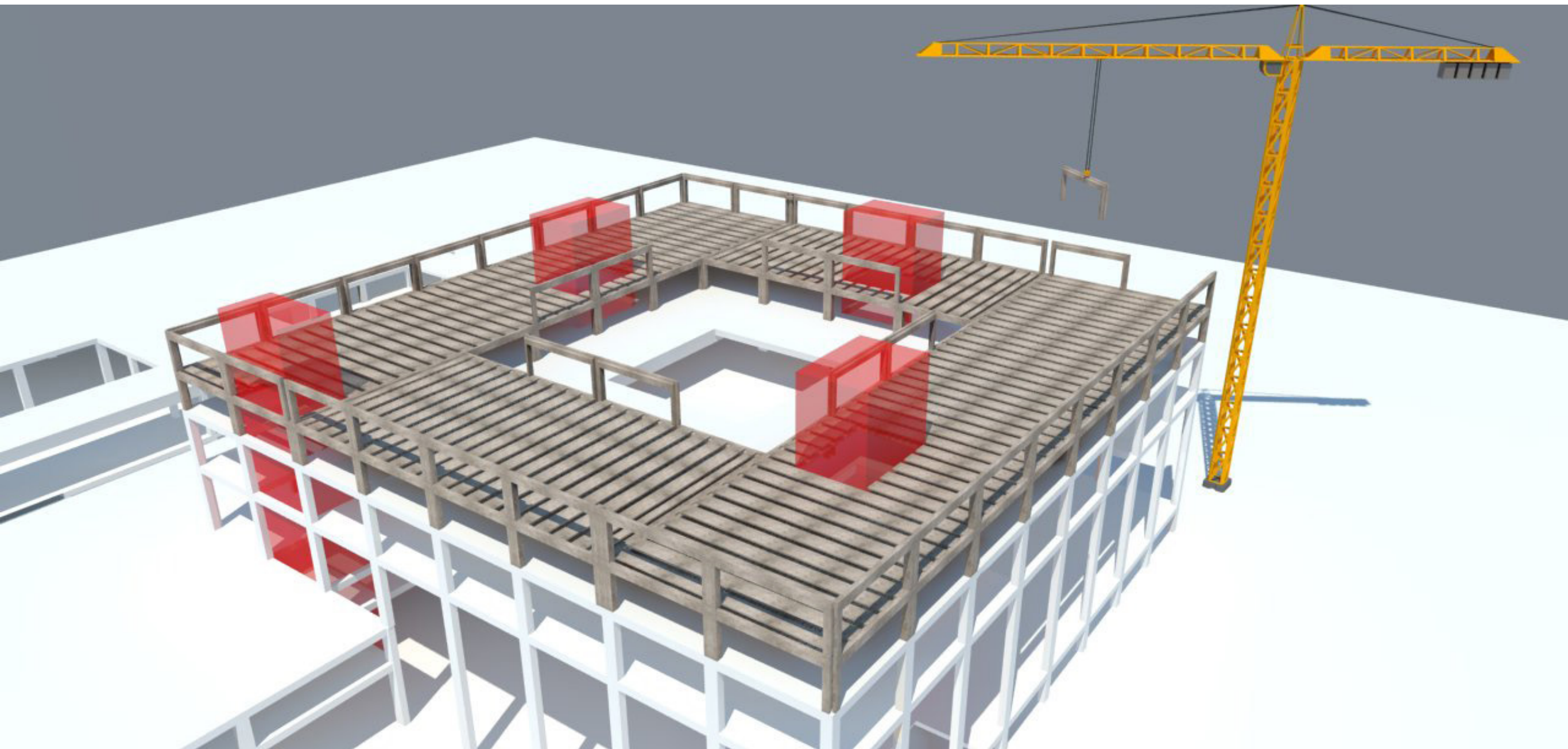
- Due to the large span a completely open floorplan can be made.
- Air ducts, service pipes and electric wiring can be placed in the space between the floor and the columns.



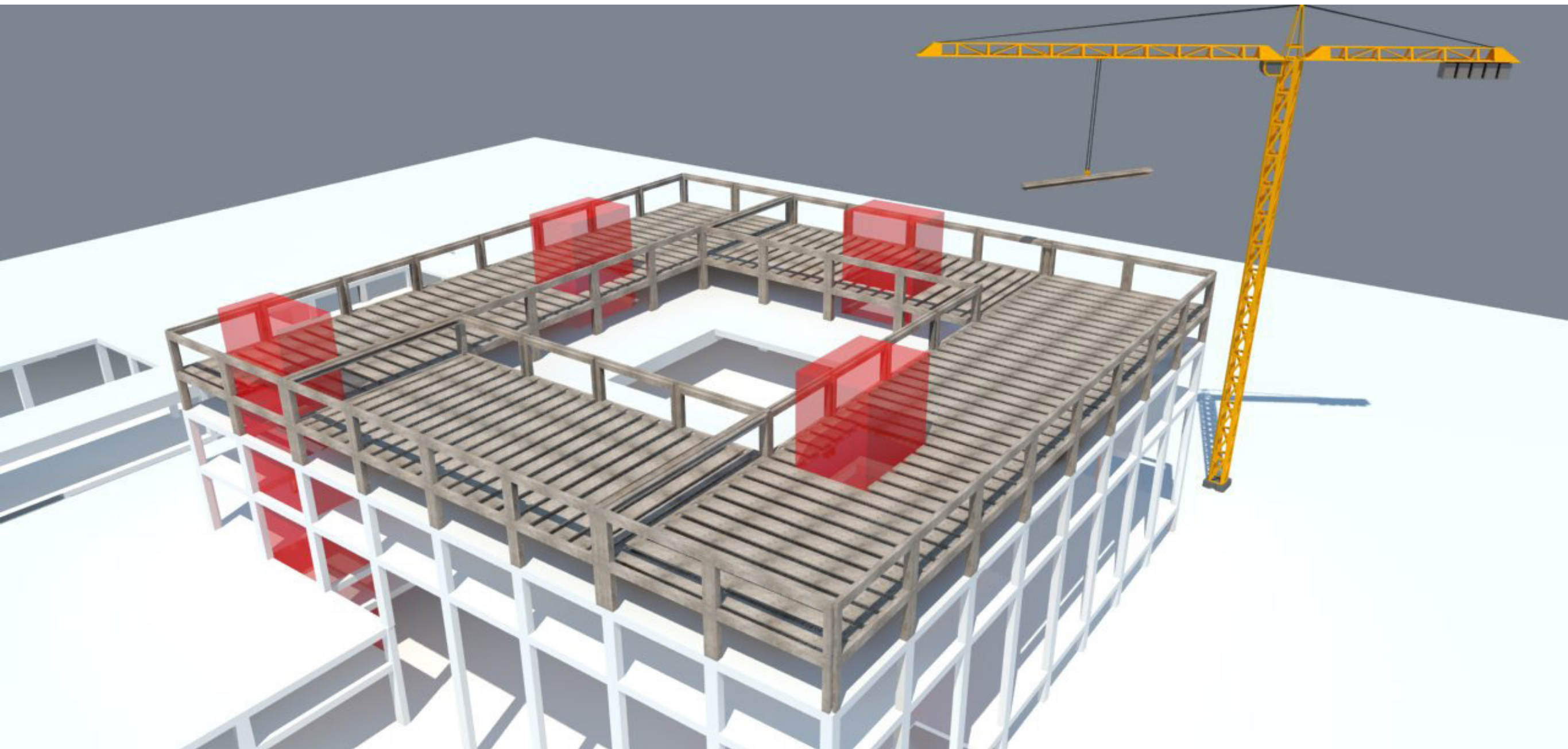
STEP 1 - PLACING PORTALS / MAIN LOAD BEARING STRUCTURE



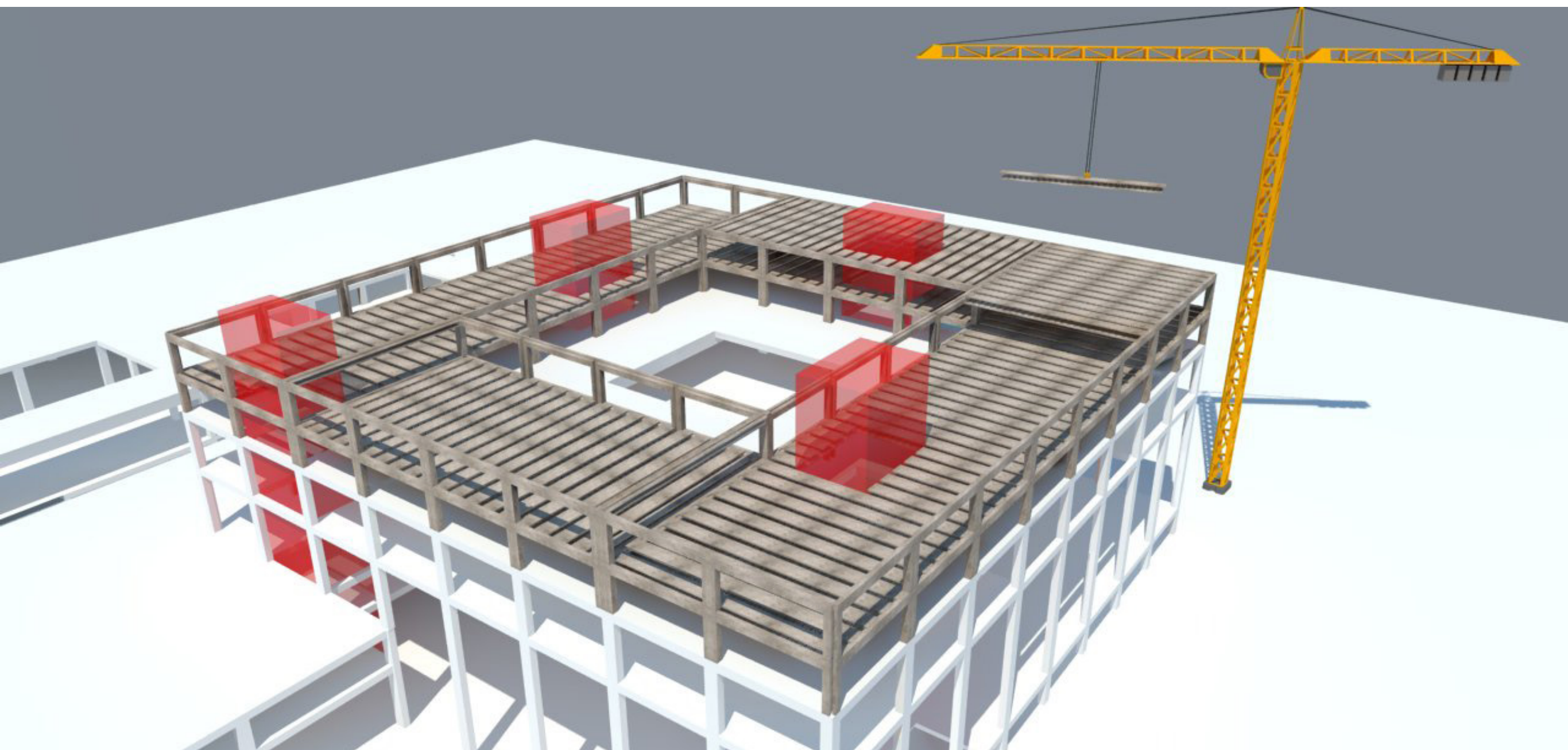
STEP 2 - THE BUILDING CONSISTS OUT OF AN INNER AND OUTER SQUARE OF PORTALS



STEP 3 - PLACING ADDITIONAL CONSTRUCTION BEAM IN THE CORNERS



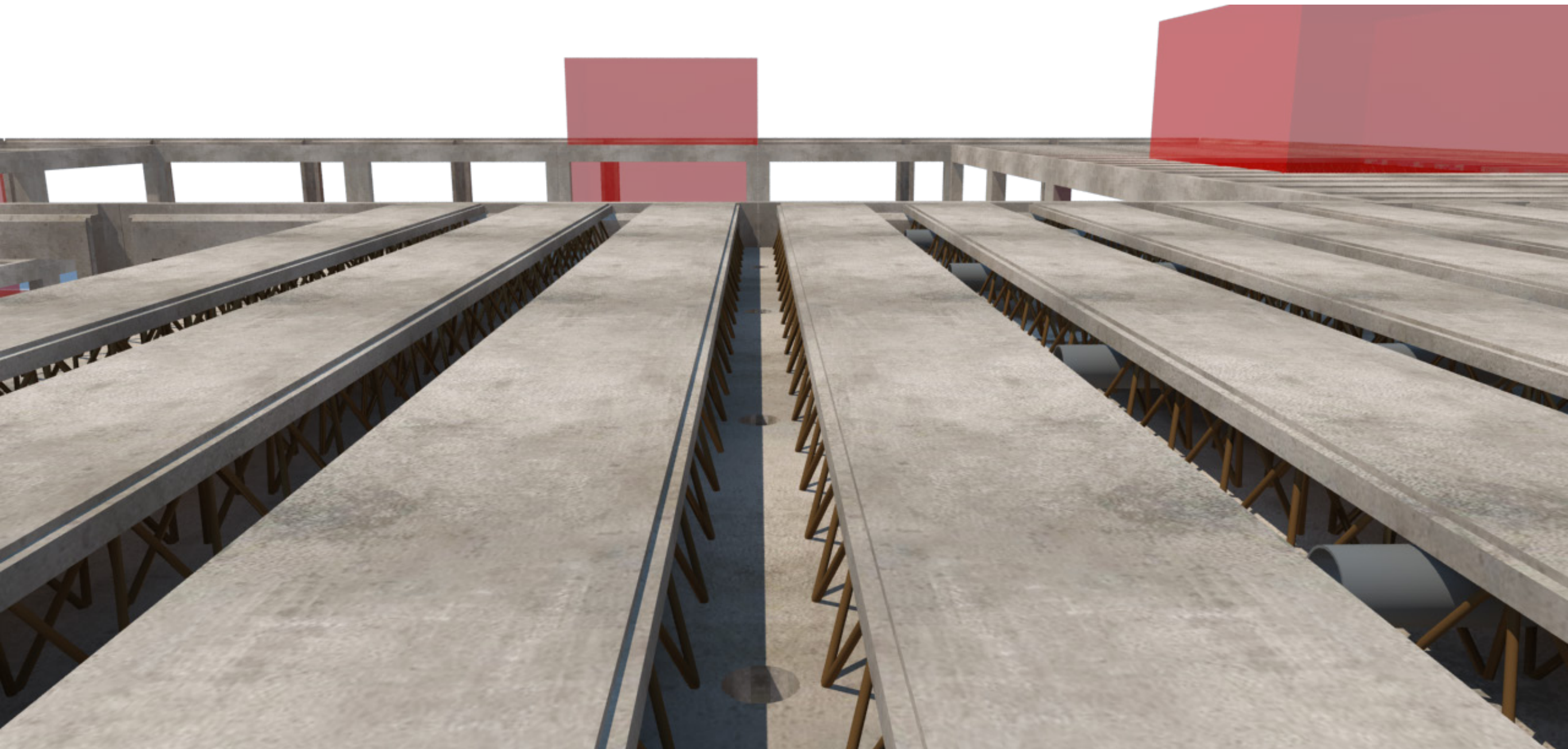
STEP 4 - PLACING THE FLOORS ON THE PORTALS



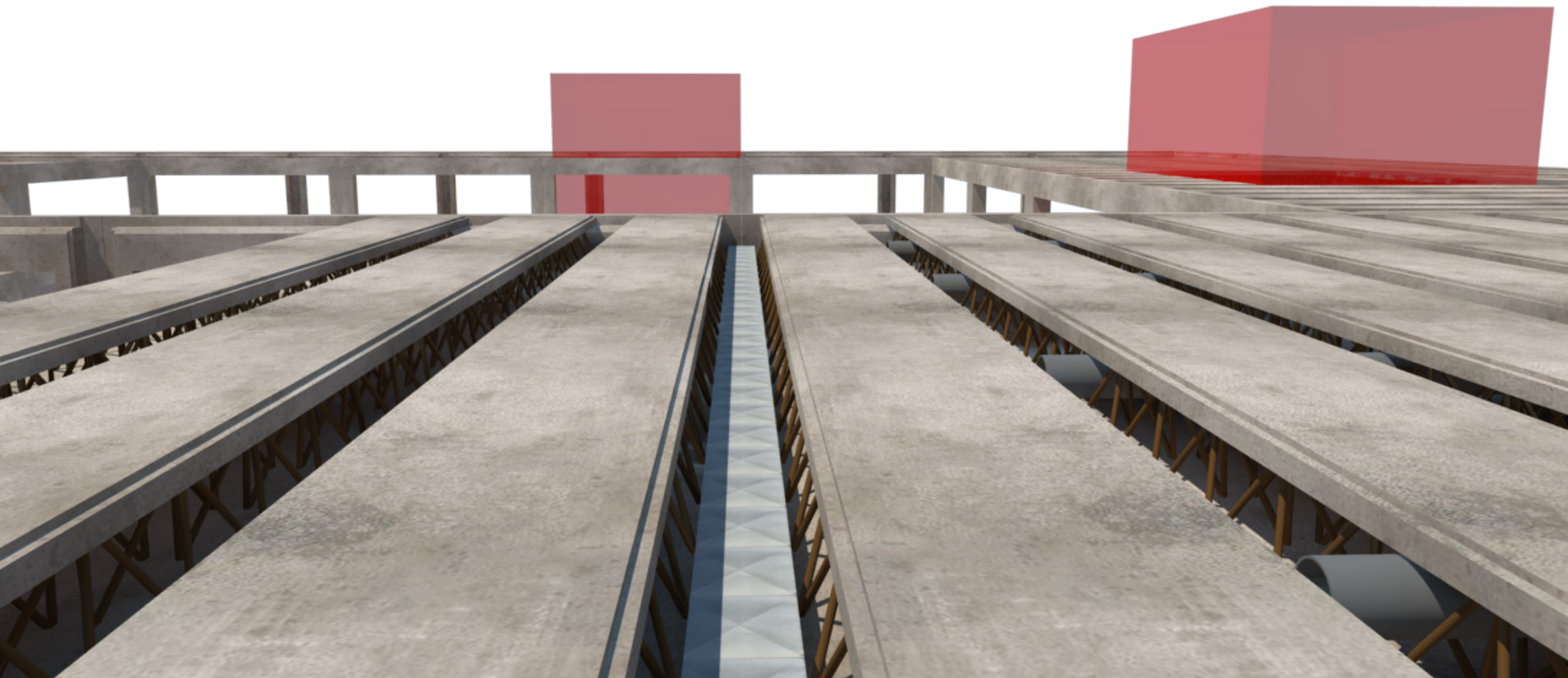
STEP 5 - SLIDE AIR DUCTS BETWEEN FLOOR, WHILE PLACING THE FLOORS



STEP 6 - DRILL HOLES FOR VENTILATION GRID



STEP 7 - PLACE AIR DUCTS FOR NATURAL VENTILATION ON EVERY GRID



6.3 FACADE

KEY-VALUES

- USER CONTROL

Individual user control at the office space layers (open-able windows / controllable sunshading) building.

- SUBTLE FACADE

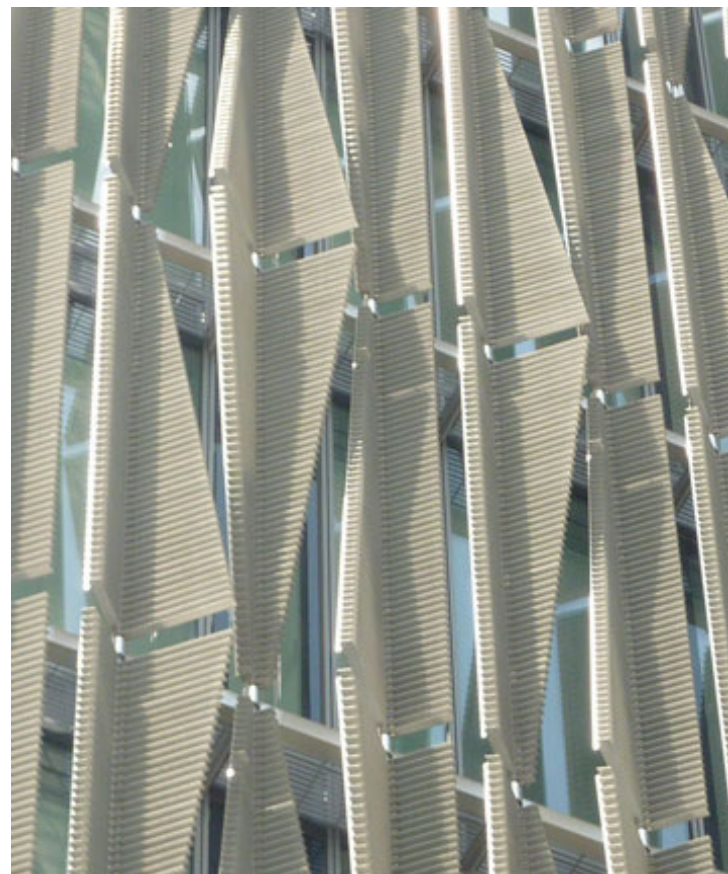
In its appearance the facade should not outshine the General Assembly. The General Assembly should be the main focus on the compound.

- OPEN VS CLOSED

The facade should show a clear separation between open vs closed. Where the open part can represent the public route in the building.

- OVERHANG AT OPEN FACADES

Transparent facade elements should be protected against solar heat gain. The open facades should have an overhang, which gives some sun protection.



REFERENCE PROJECT CLOSING THE FACADE MAKING IT A SOLID VOID

Brooks + Scarpa's mixed-use Cherokee lofts

source: <http://www.archdaily.com/41775/lofts-cherokee-studios-pugh-scarpa/>



REFERENCE PROJECT CLOSING THE FACADE MAKING IT AN INSULATING SKIN

Ernst Giselbrecht + Partner Dynamic Facade

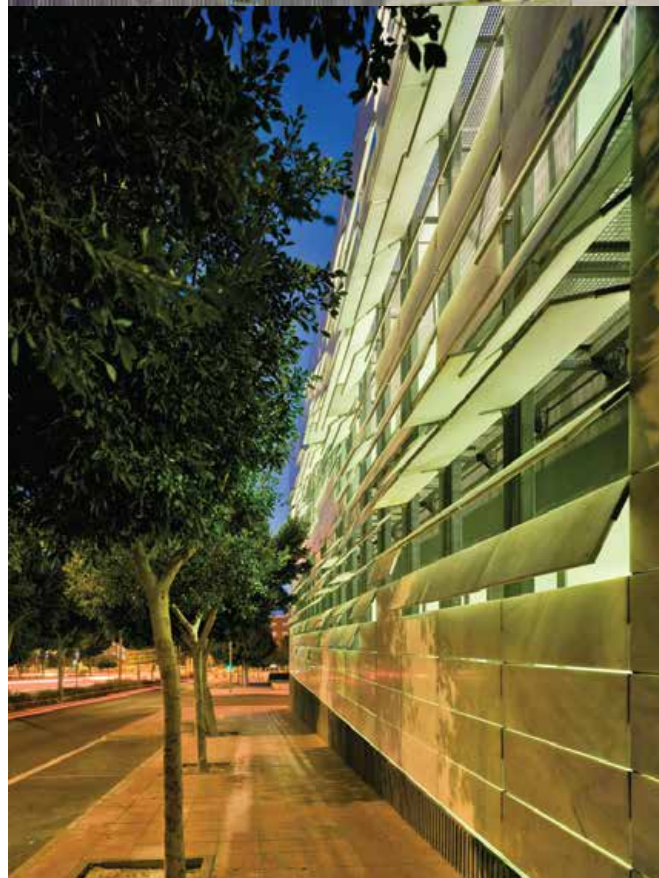
source: <http://cubeme.com/blog/2010/11/22/%E2%80%9Cdynamic-facade-at-kiefer-technic-showroom-by-ernst-giselbrecht-partner-zt-gmbh/>



REFERENCE PROJECT CLOSING THE FACADE MAKING IT AN INSULATING SKIN

North Mediterranean Health Center - Ferrer Arquitectos

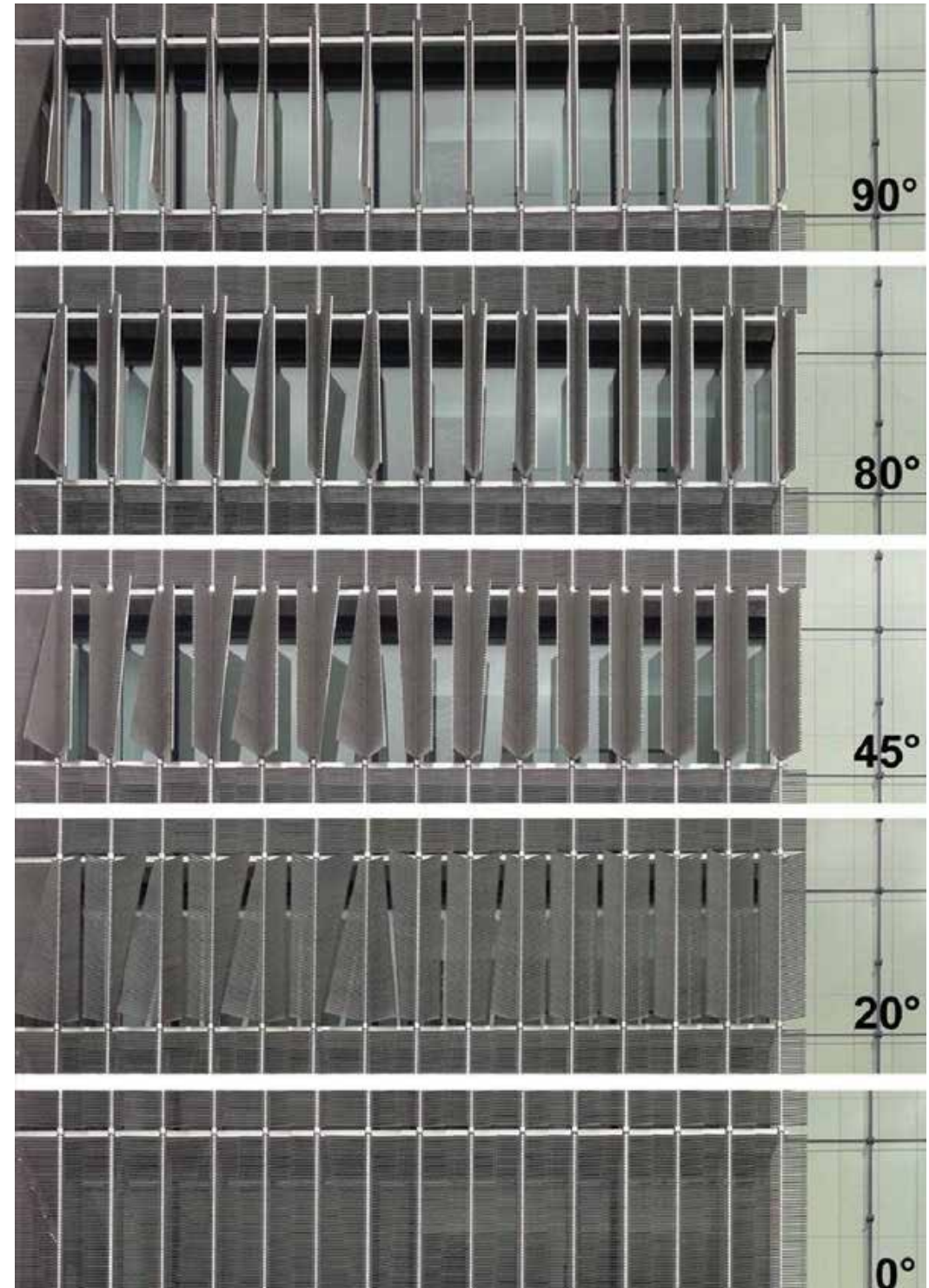
source: <http://www.archdaily.com/257810/north-mediterranean-health-center-ferrer-arquitectos/>

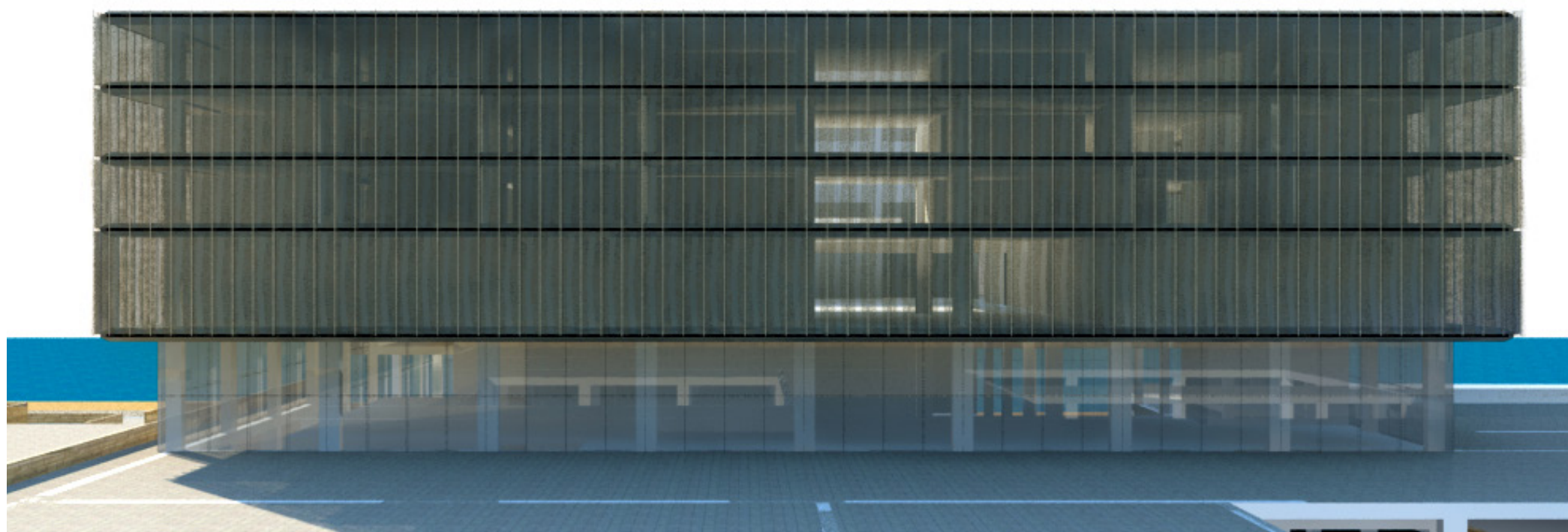
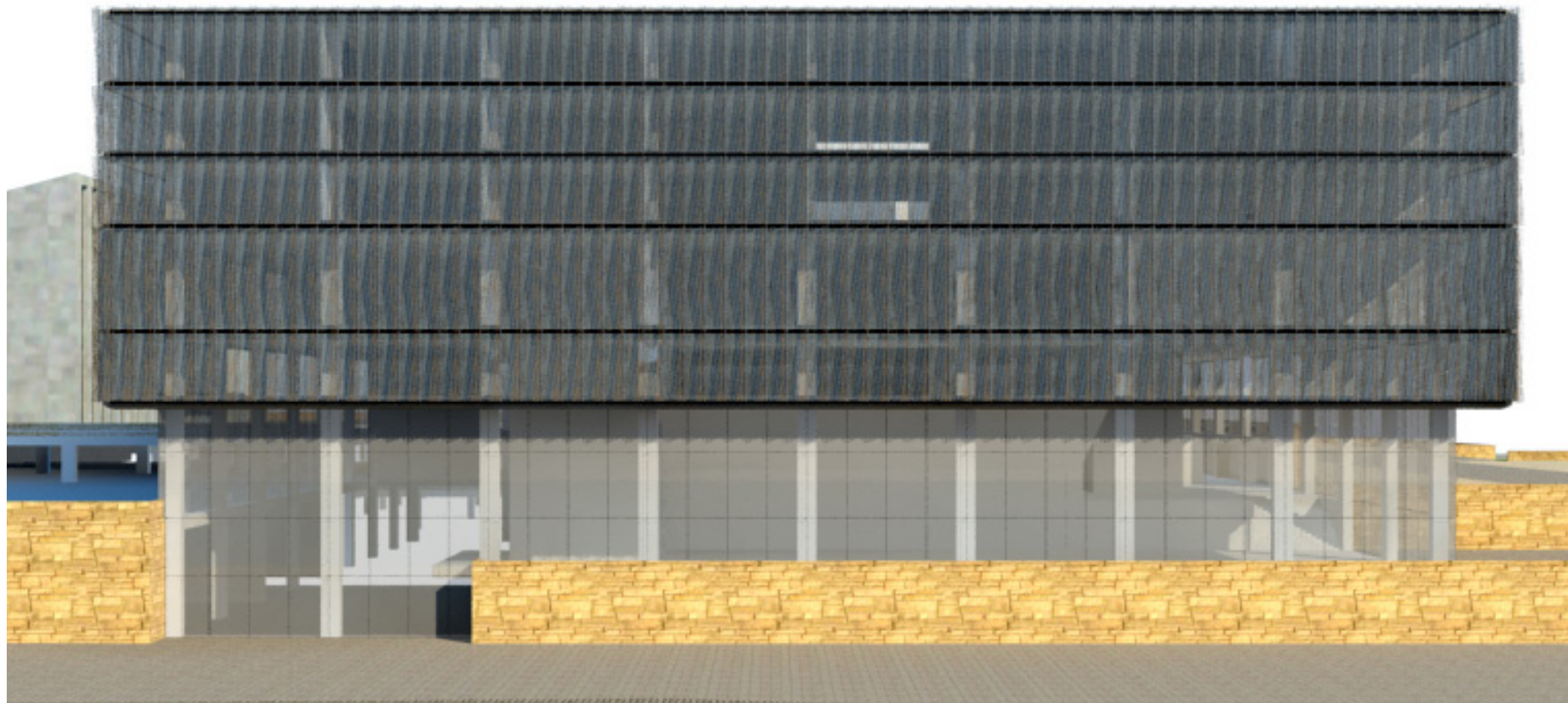


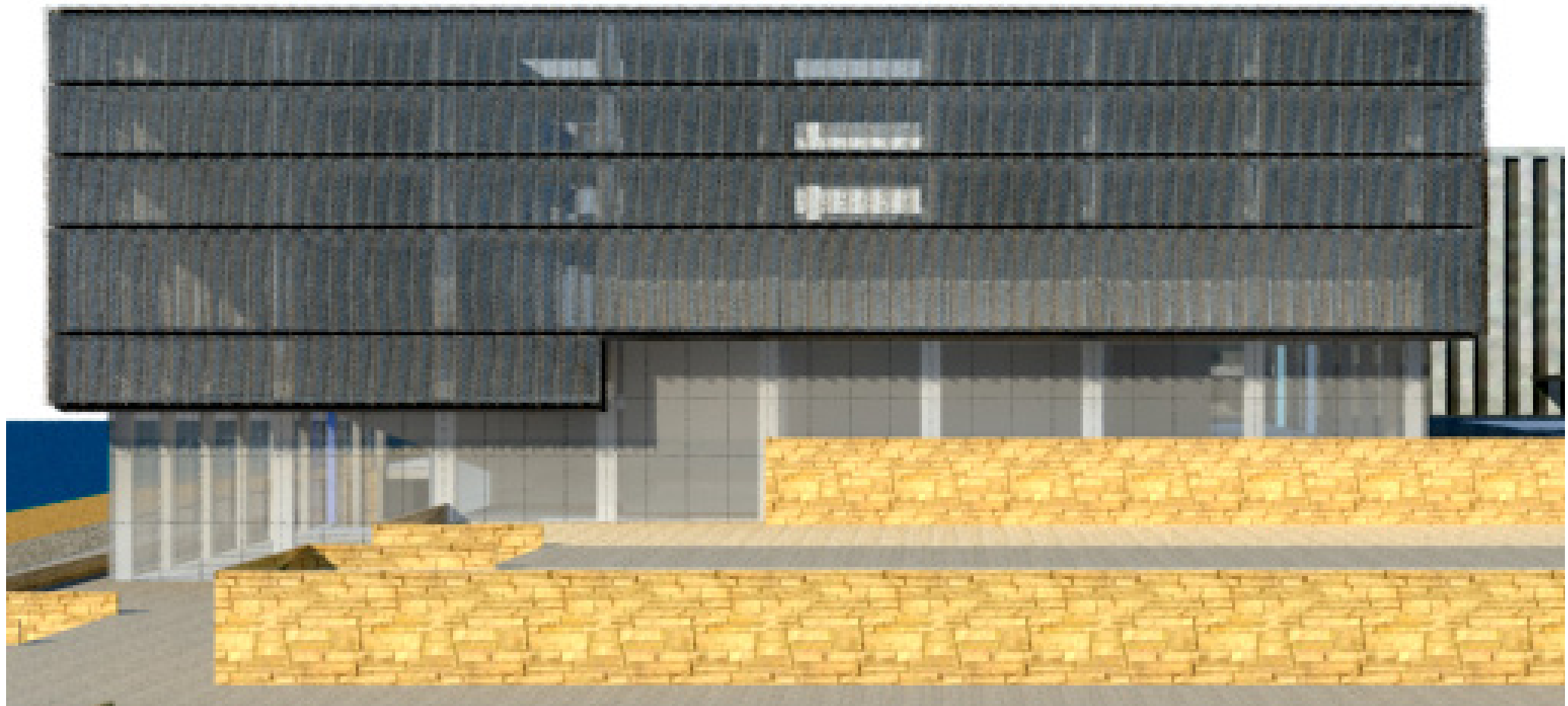
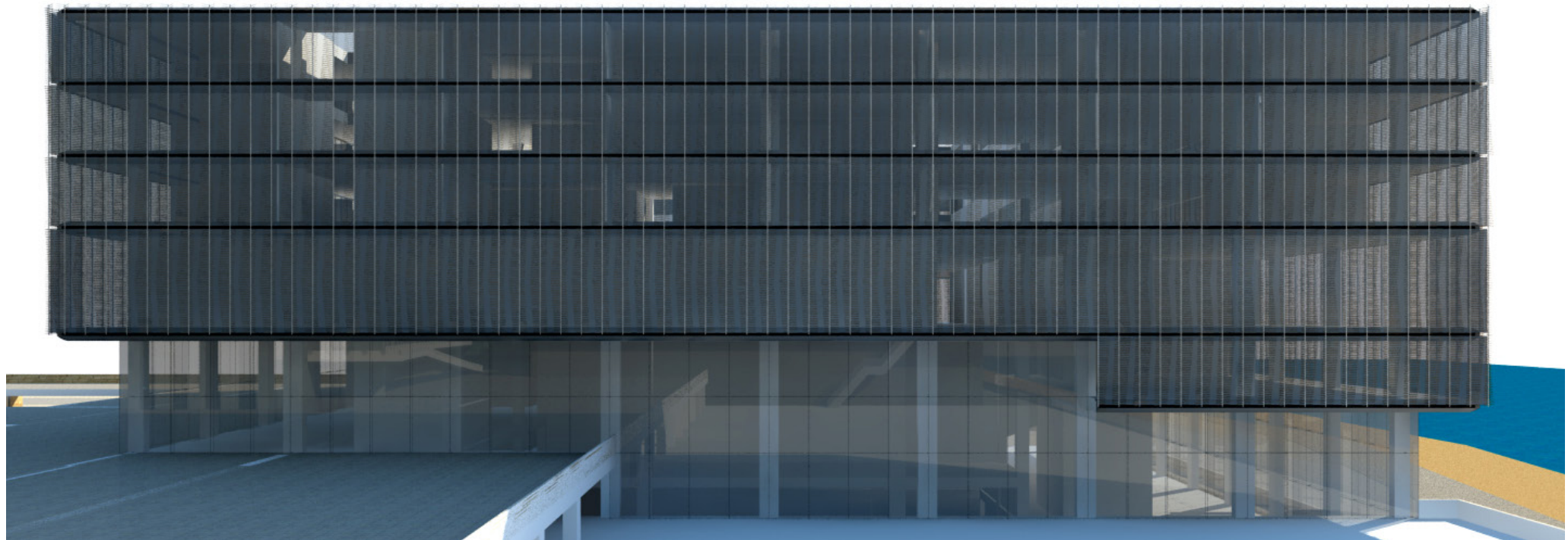
REFERENCE PROJECT DYNAMIC SUNSHADING

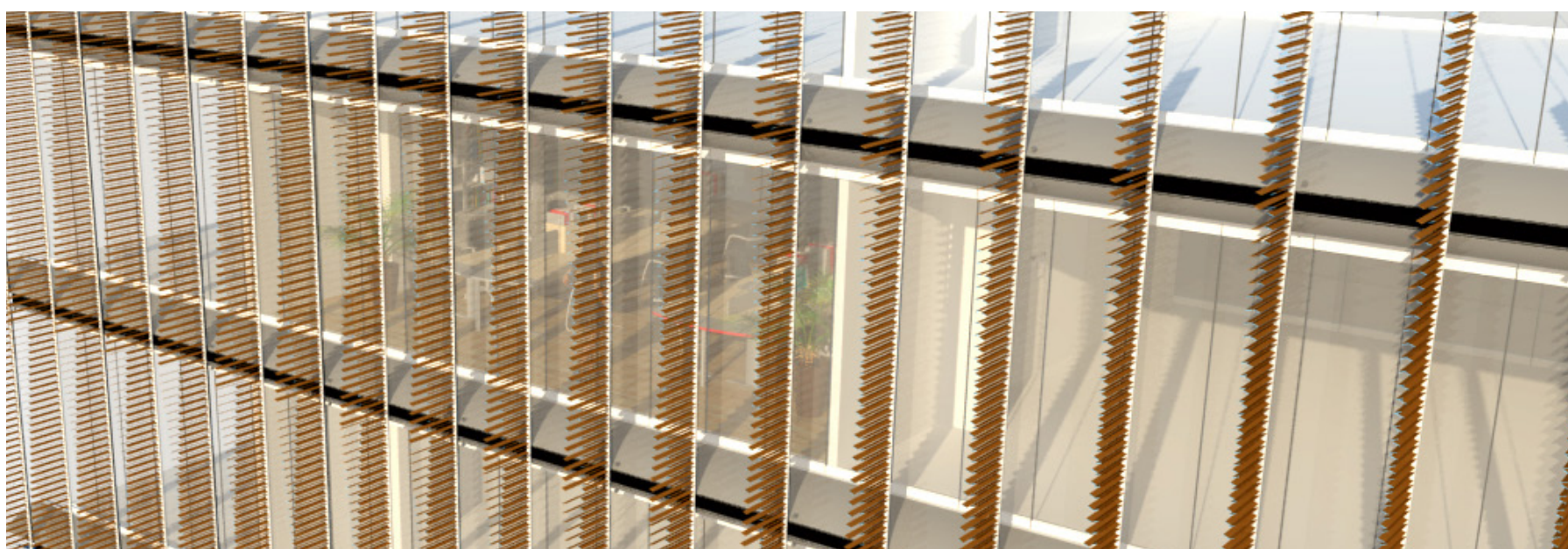
Q1 Headquarters building in Essen Germany

<http://www.archdaily.com/326747/q1-thyssenkrupp-quarter-essen-jswd-architekten-chaix-morel-et-associes/>

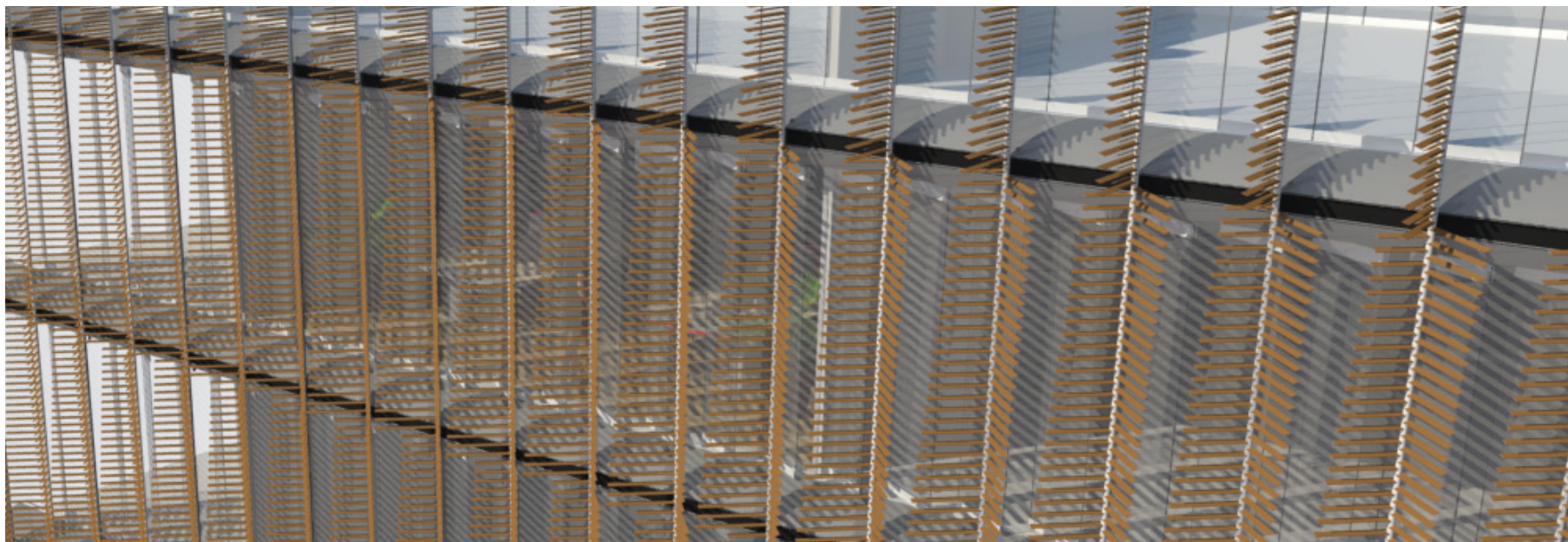








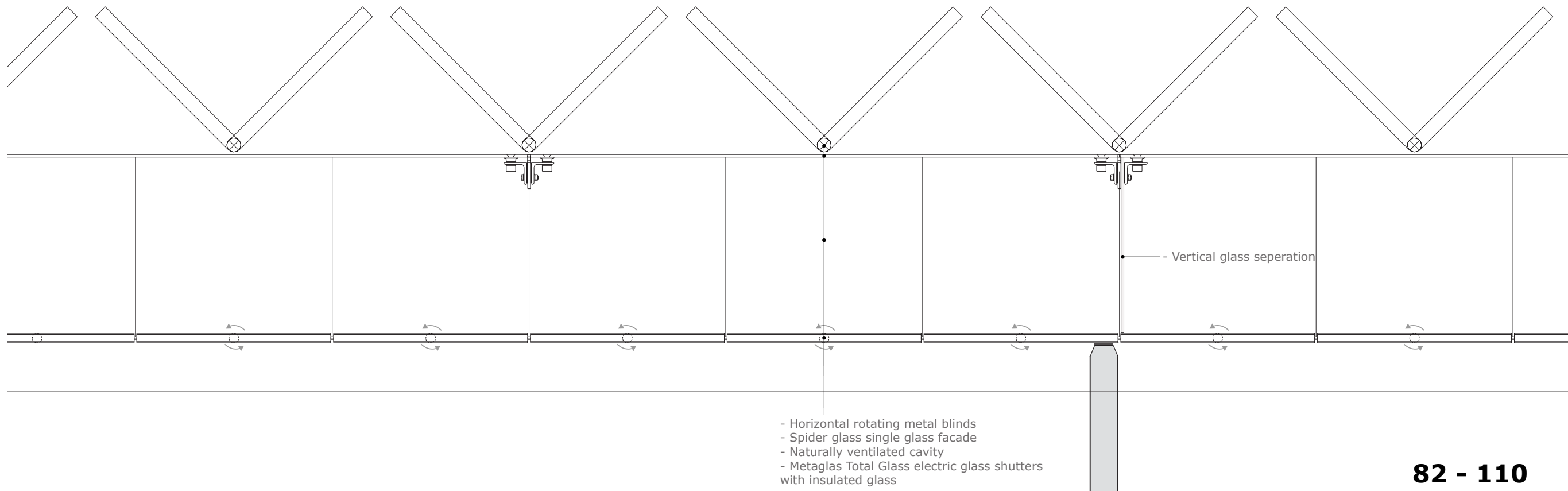
Facade blinds at 0°

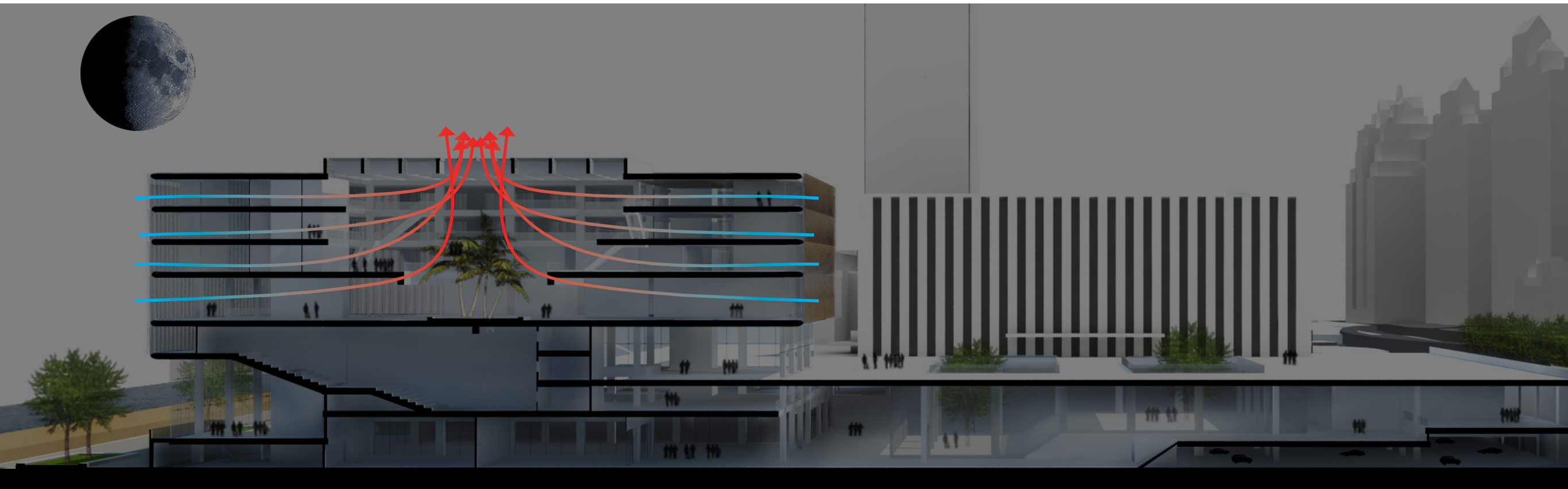
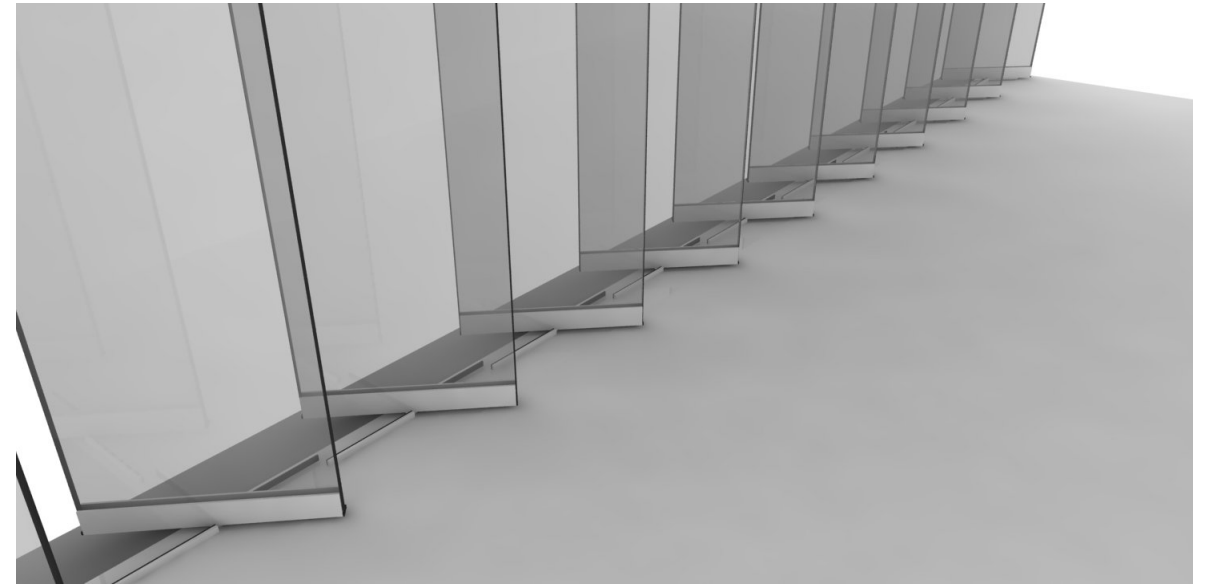


Facade blinds at 45°



Facade blinds at 90°

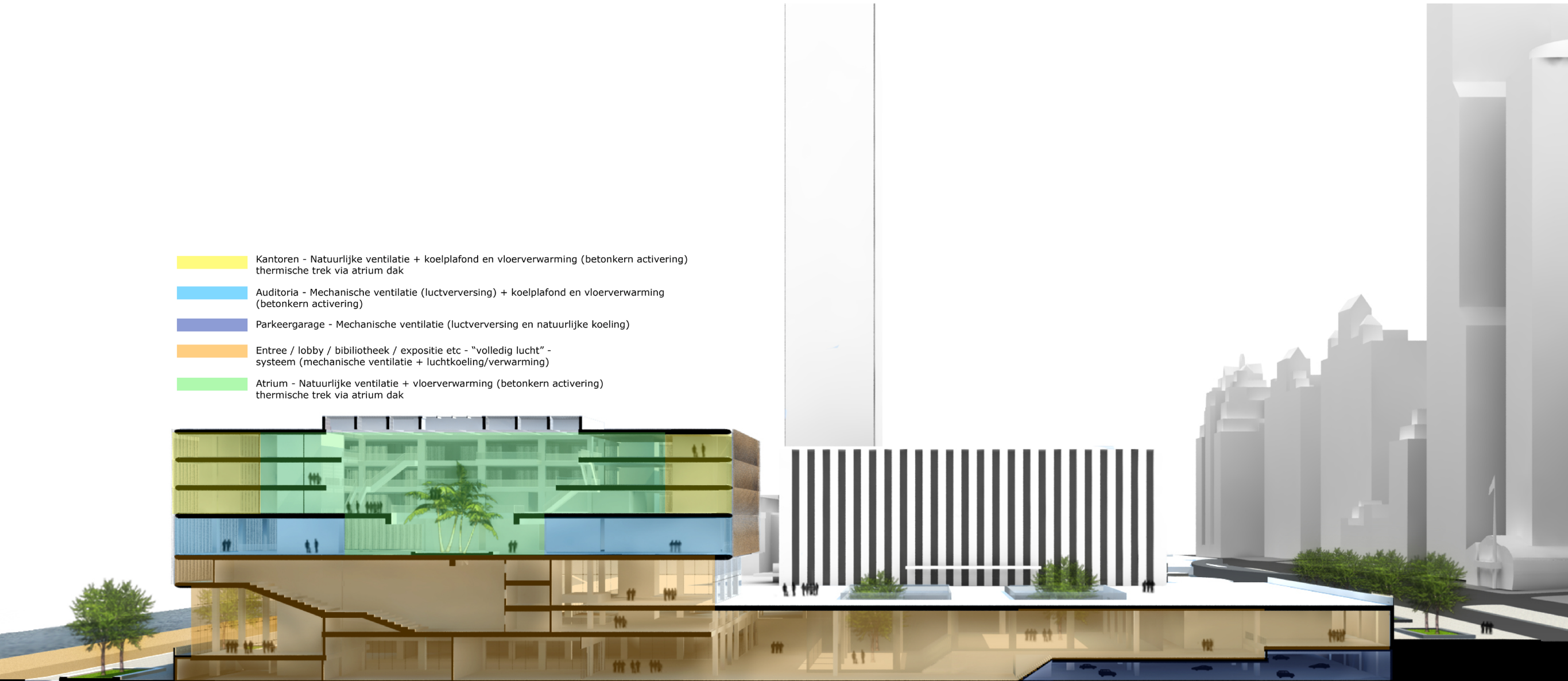




NIGHT VENTILATION

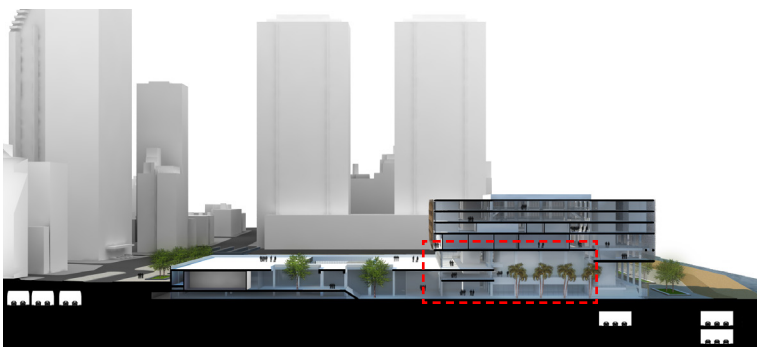
6.4 CLIMATE CONTROL

- Kantoren - Natuurlijke ventilatie + koelplafond en vloerverwarming (betonkern activering)
thermische trek via atrium dak
- Auditoria - Mechanische ventilatie (luchtverversing) + koelplafond en vloerverwarming
(betonkern activering)
- Parkeergarage - Mechanische ventilatie (luchtverversing en natuurlijke koeling)
- Entree / lobby / bibliotheek / expositie etc - "volledig lucht" -
systeem (mechanische ventilatie + luchtcooling/verwarming)
- Atrium - Natuurlijke ventilatie + vloerverwarming (betonkern activering)
thermische trek via atrium dak

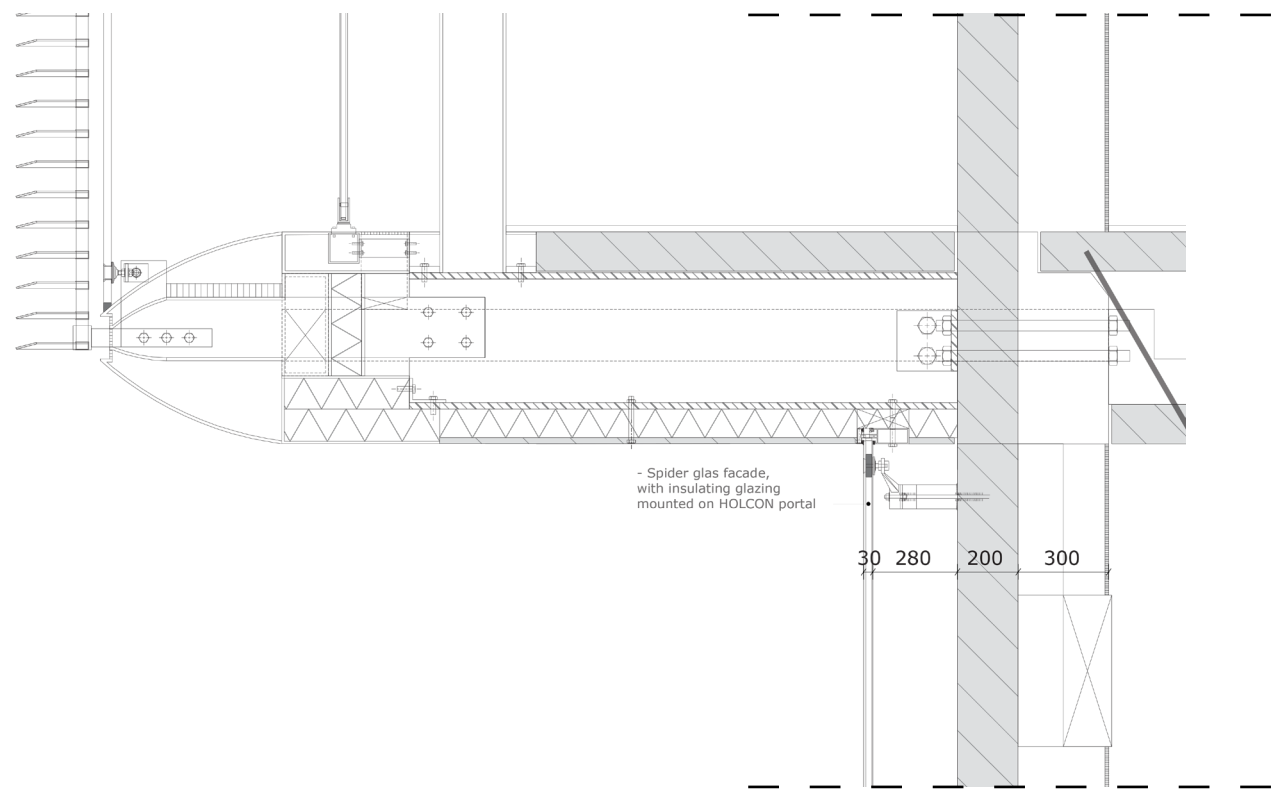
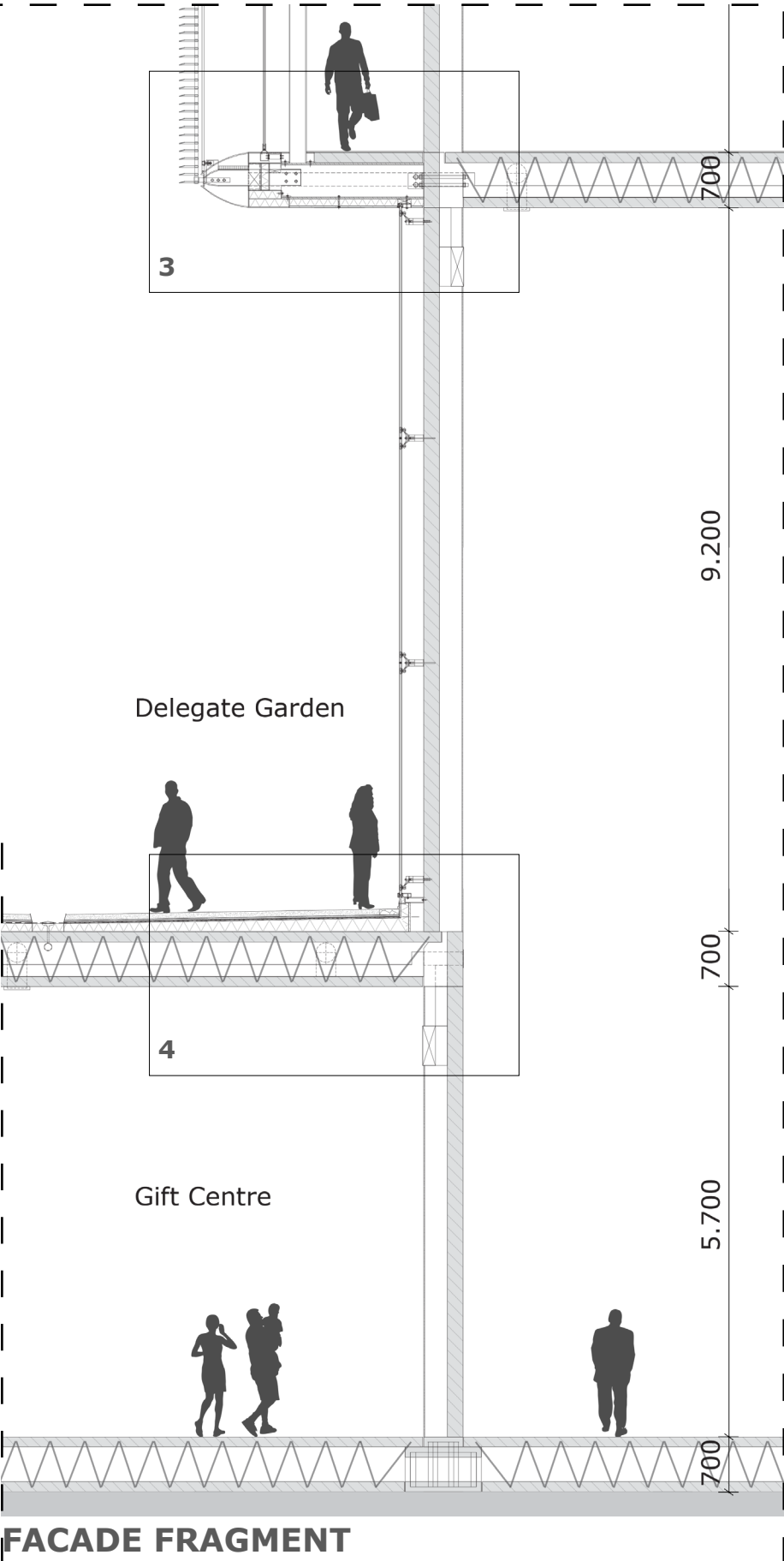


H7 ENTRANCE DESIGN

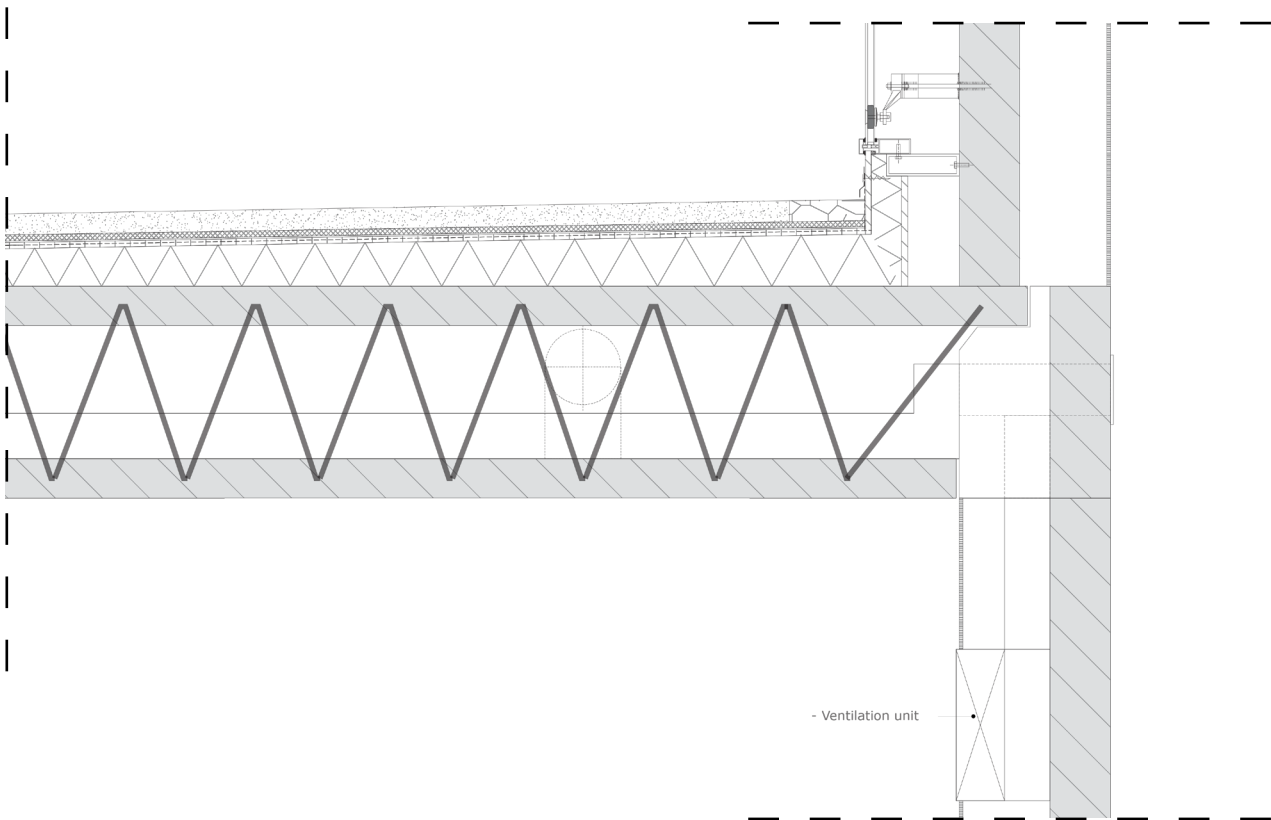
7.1 ARCHITECTURAL EXPRESSION



7.2 BUILDING TECHNOLOGY



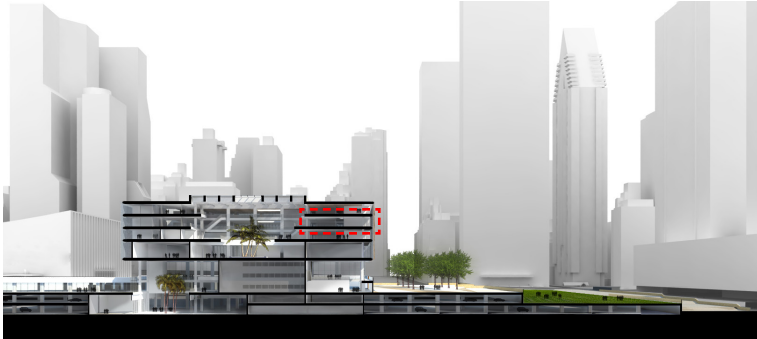
DETAIL 3



DETAIL 4

H8 OFFICE DESIGN

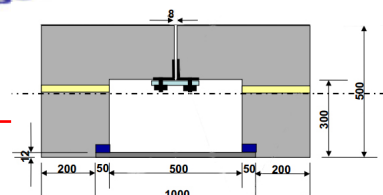
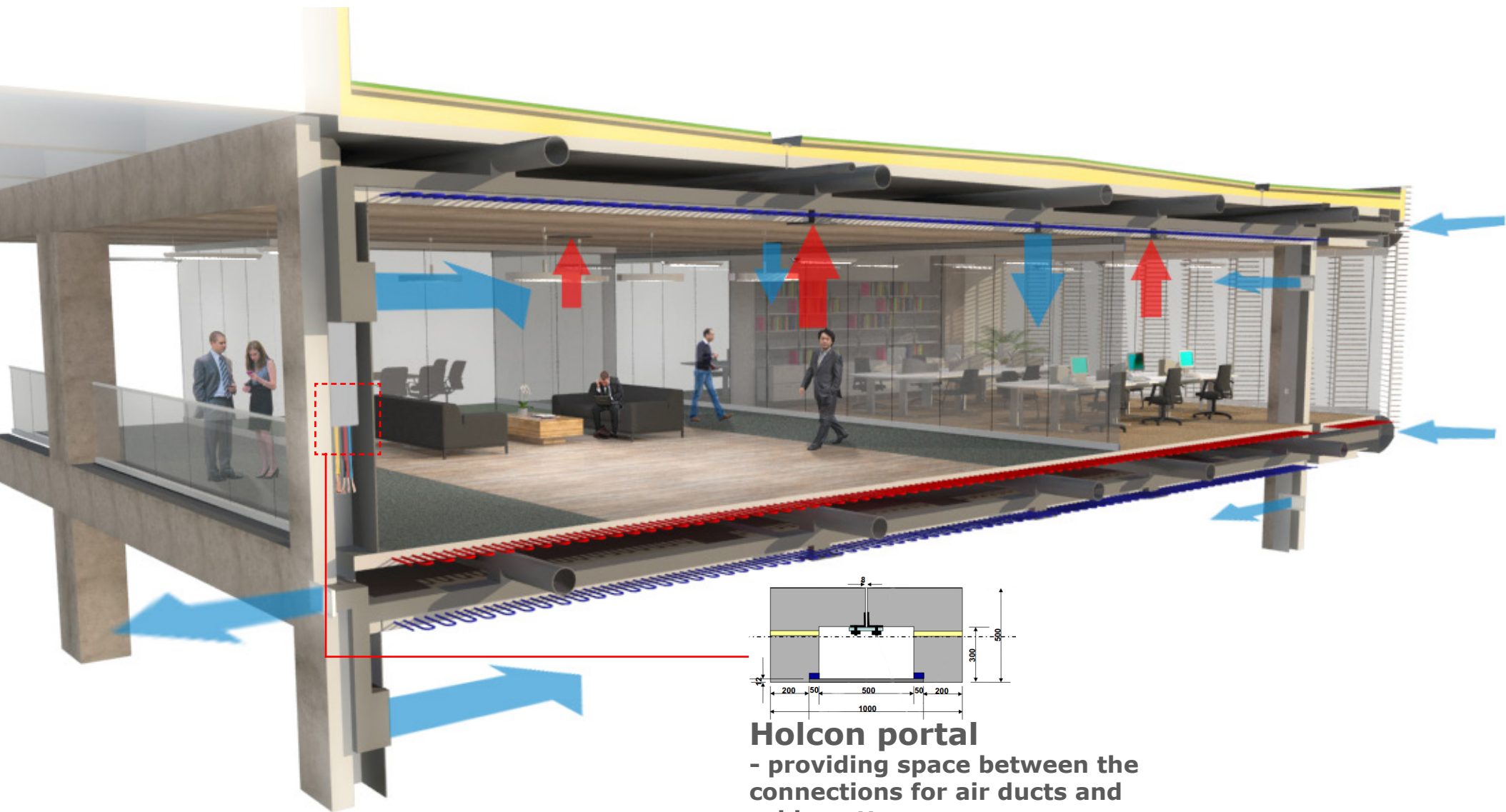
8.1 ARCHITECTURAL EXPRESSION



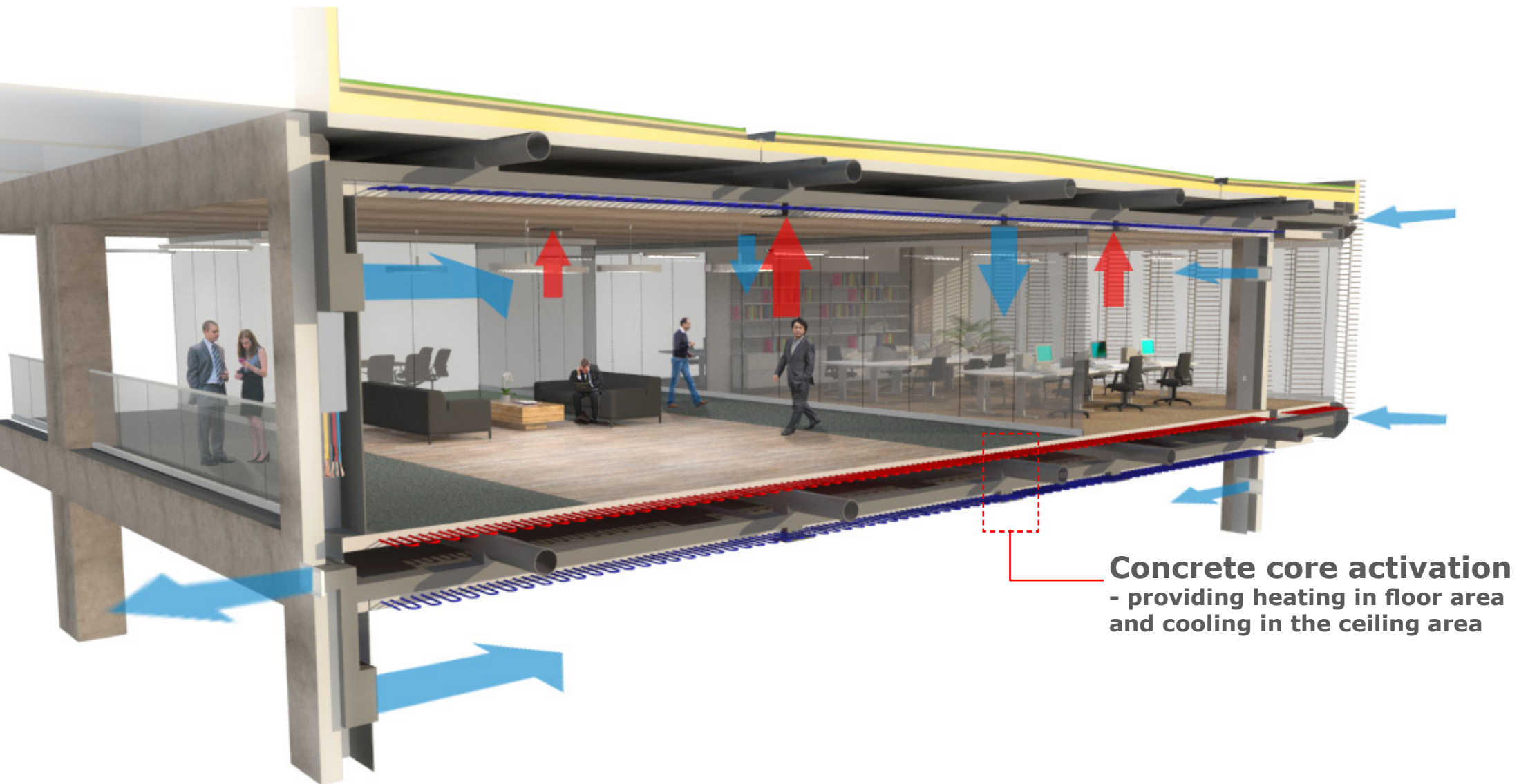




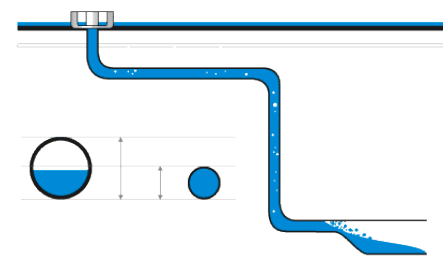
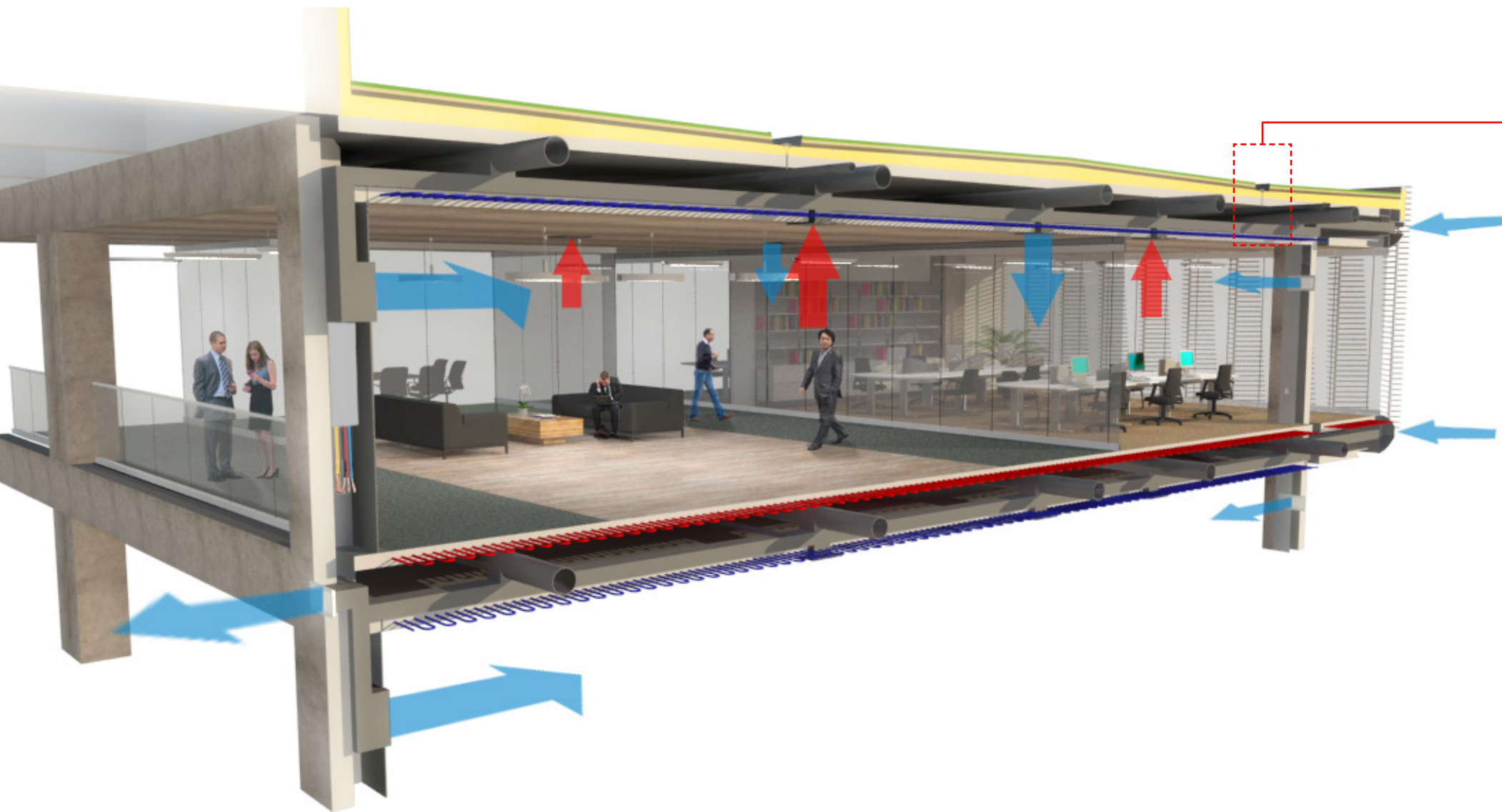
8.2 BUILDING TECHNOLOGY



Holcon portal
- providing space between the connections for air ducts and cable gutters

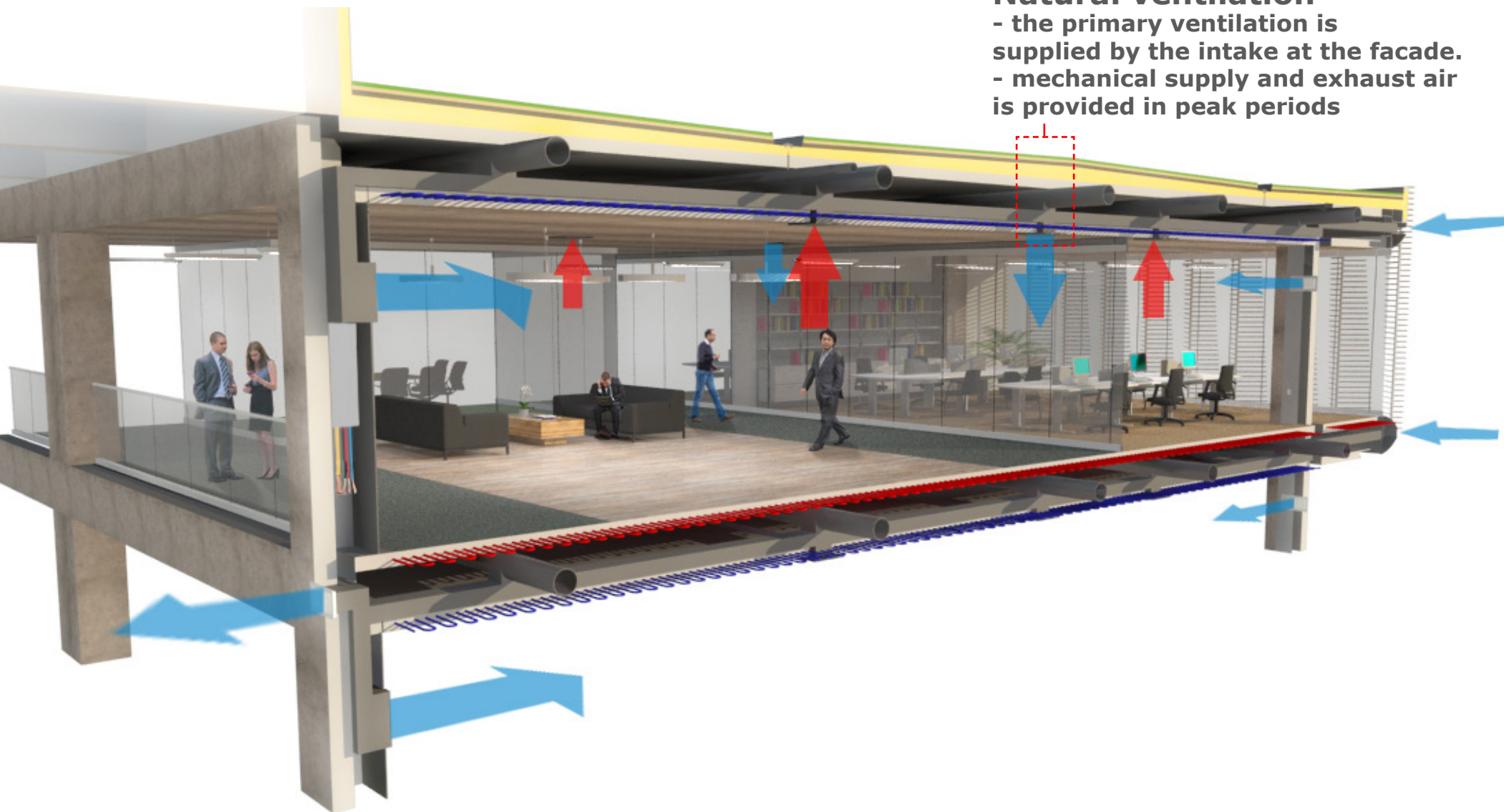


Concrete core activation
- providing heating in floor area
and cooling in the ceiling area



Pluvia rainwater drainage

- high capacity drainage with small diameter drains.
- collected water will be transported towards cores, and stored underground for gray water use

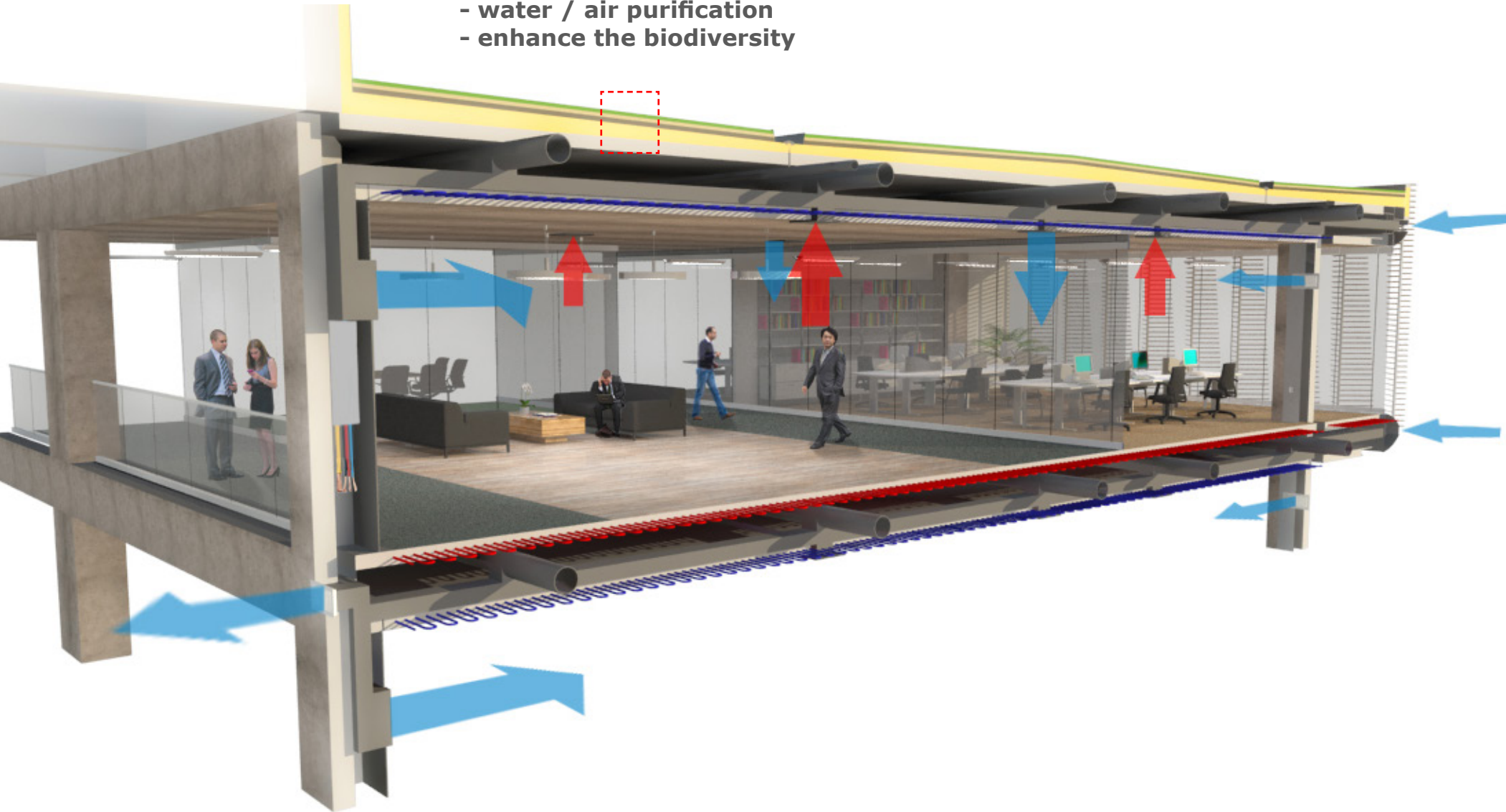


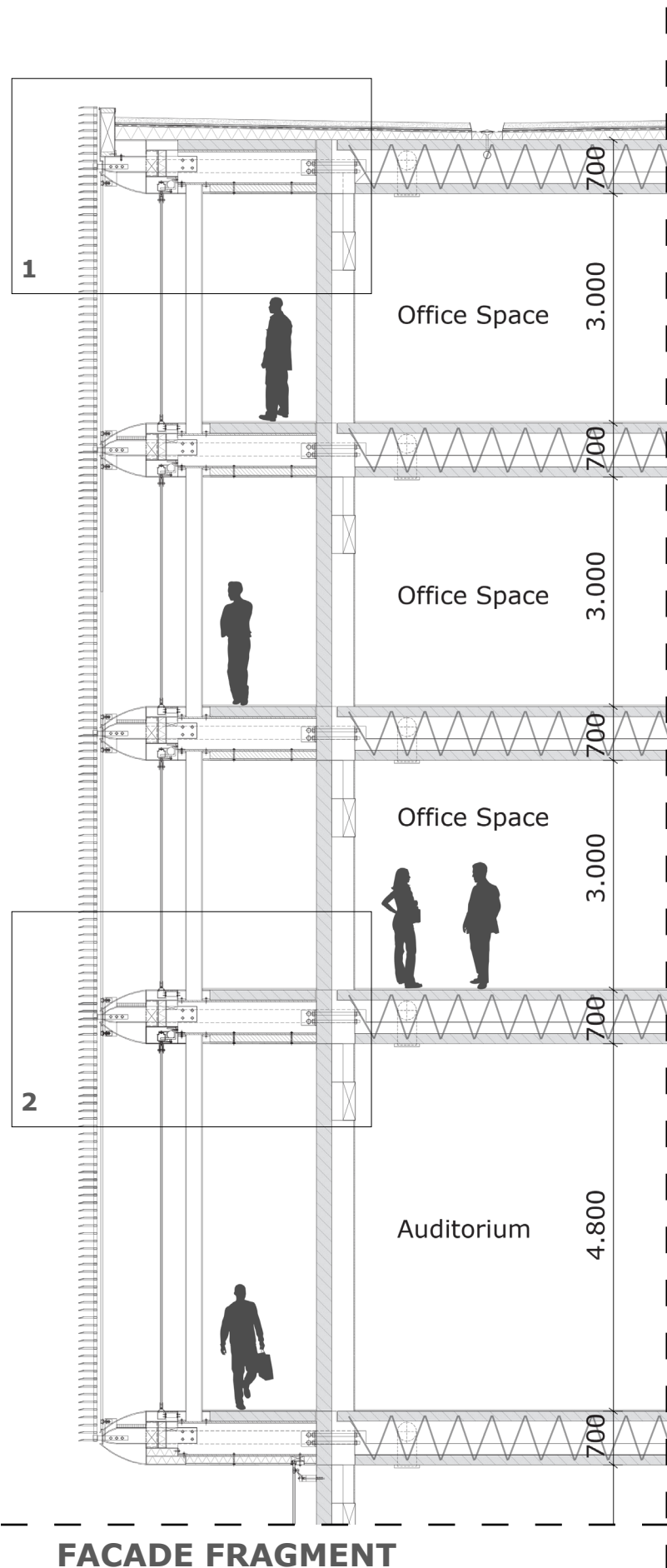
Natural ventilation

- the primary ventilation is supplied by the intake at the facade.
- mechanical supply and exhaust air is provided in peak periods

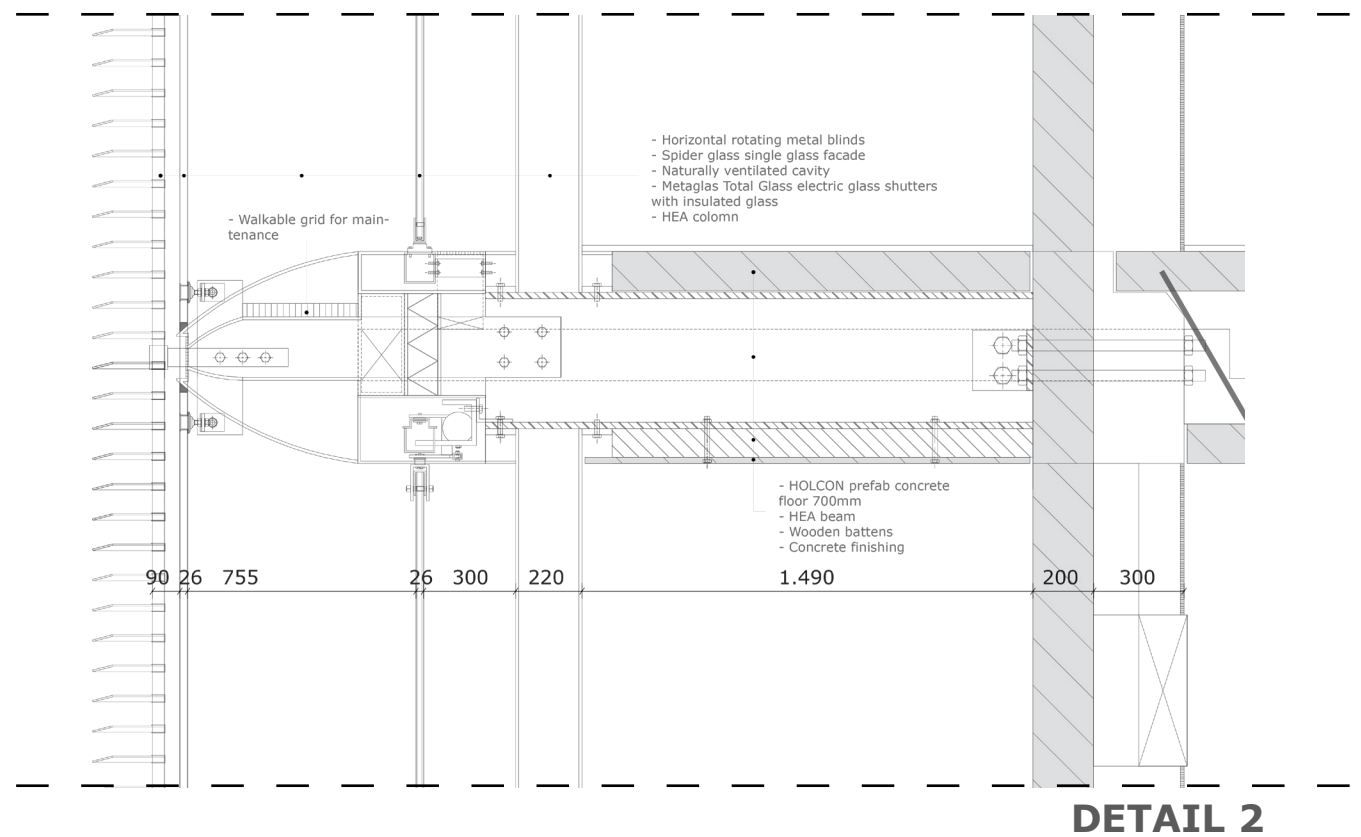
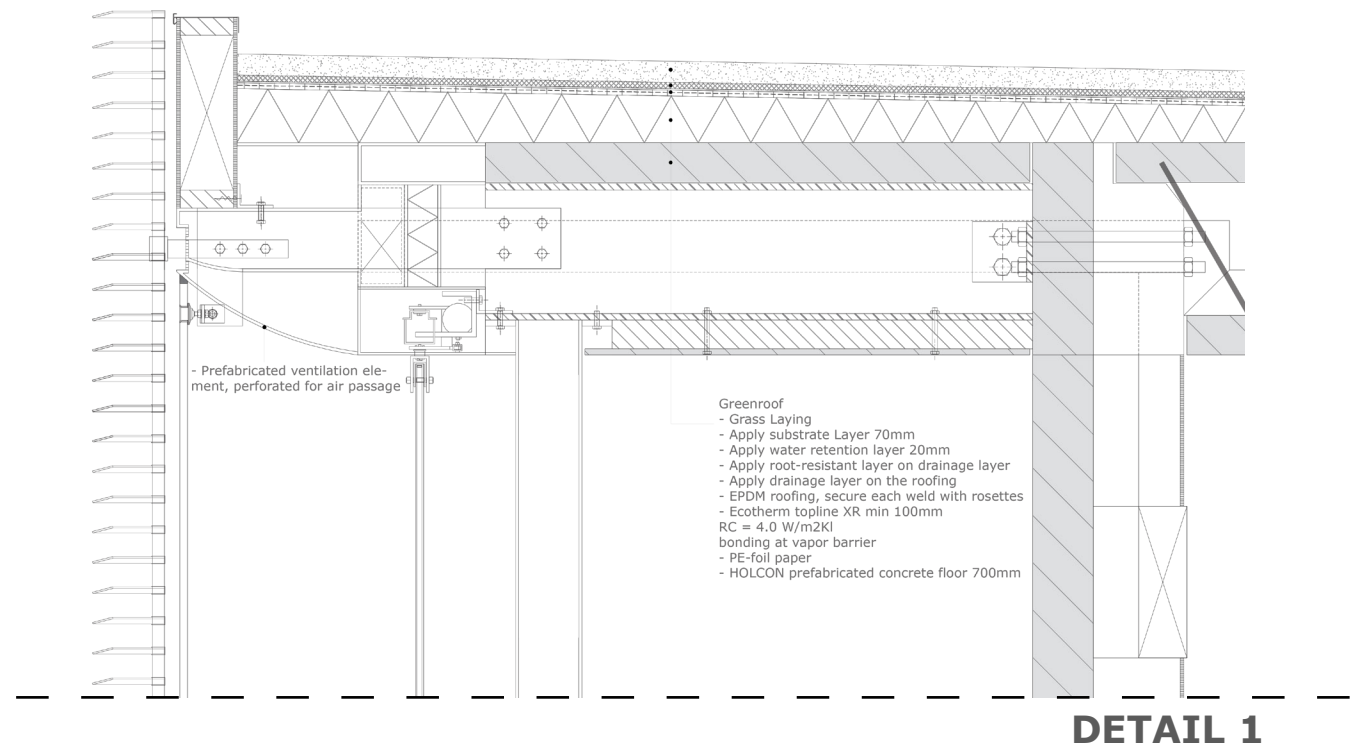
Green roof

- improve the esthetic quality of the roof.
- water / air purification
- enhance the biodiversity



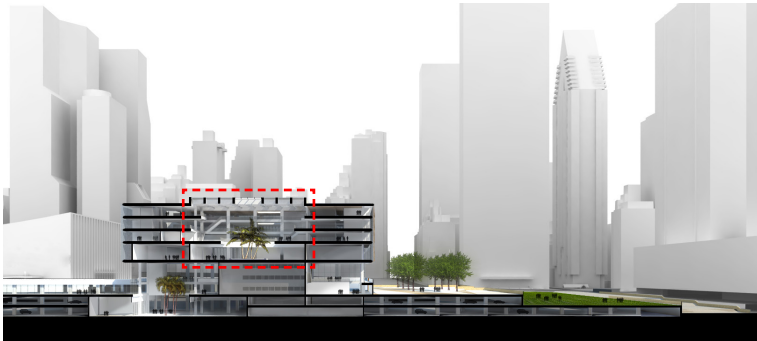
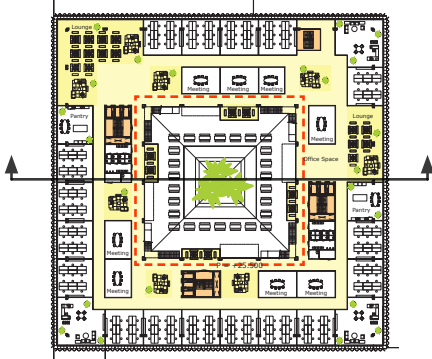


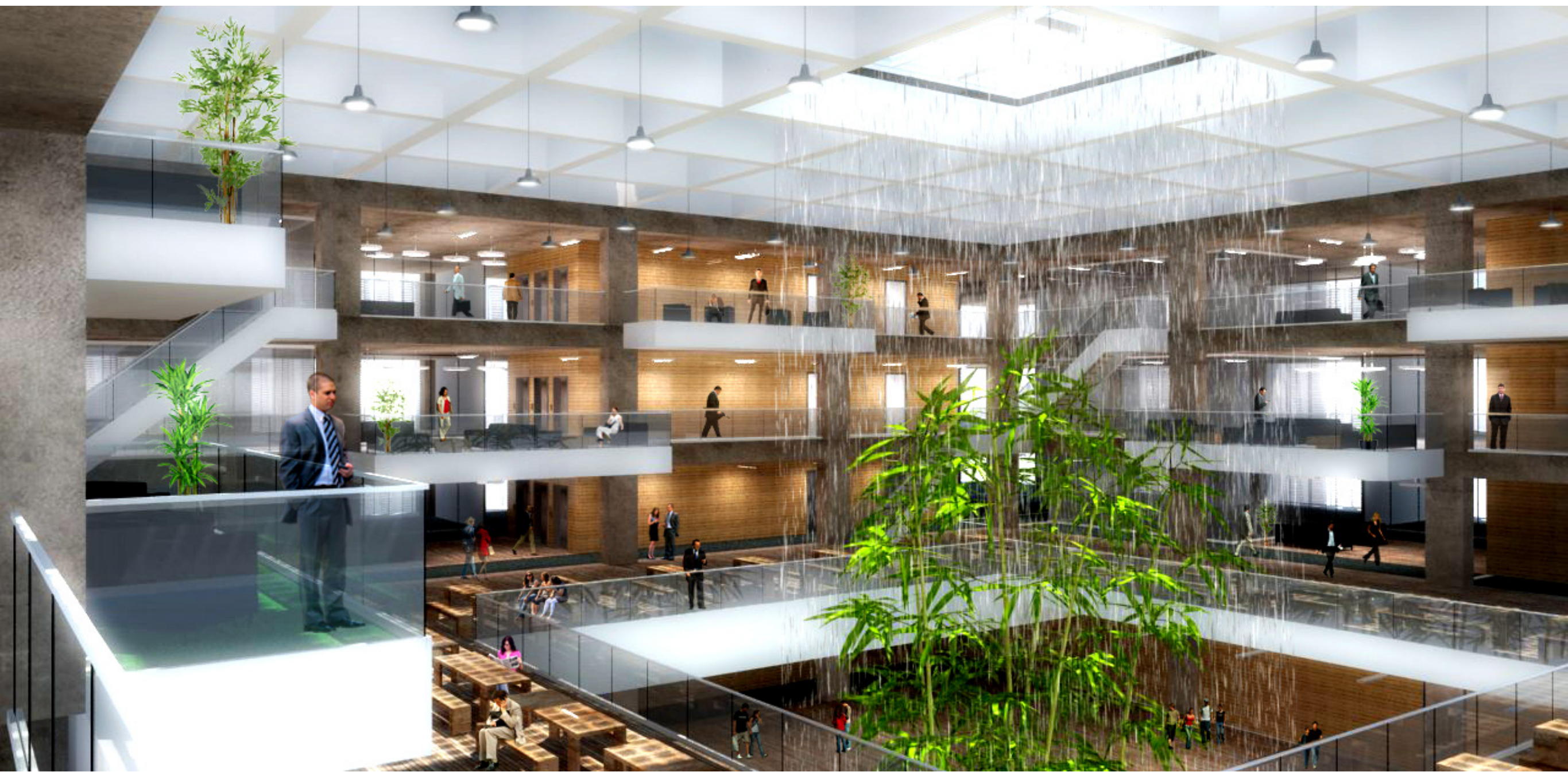
FACADE FRAGMENT



H9 **ATRIUM DESIGN**

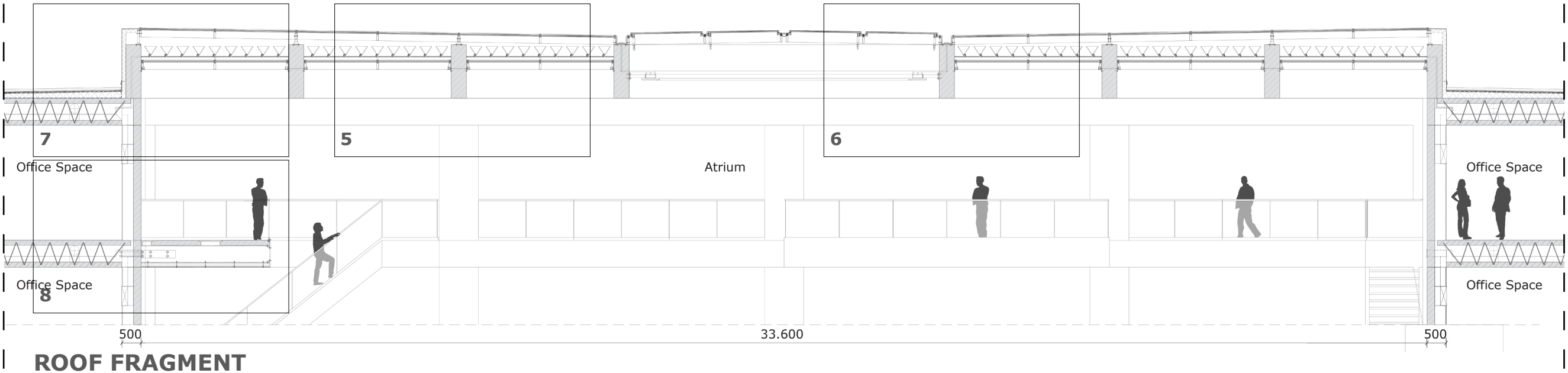
9.1 ARCHITECTURAL EXPRESSION



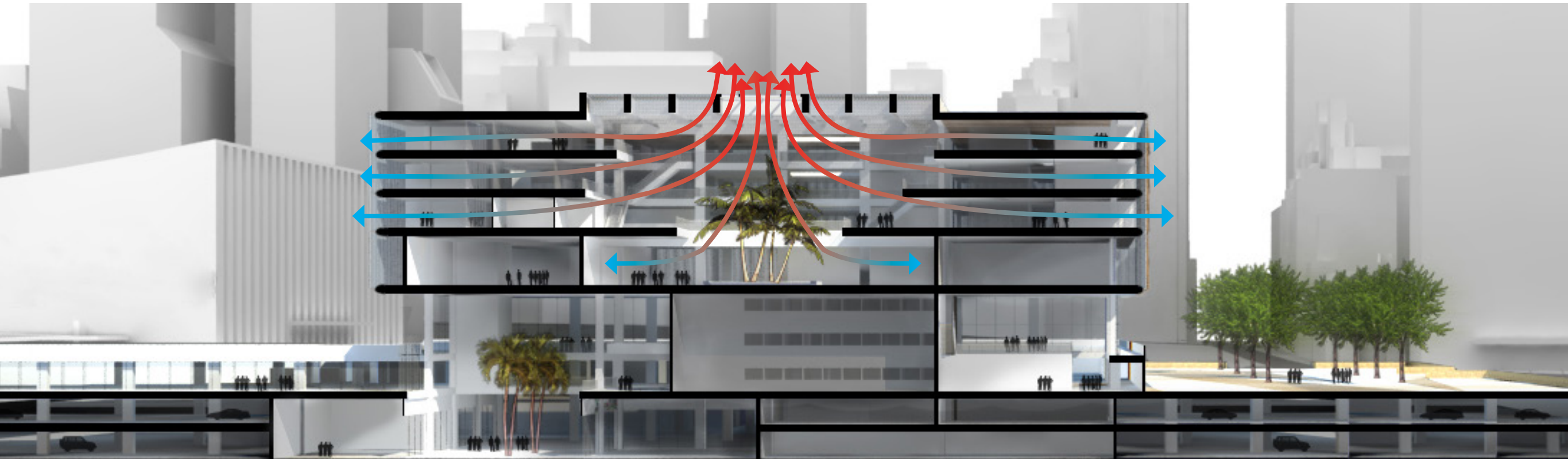




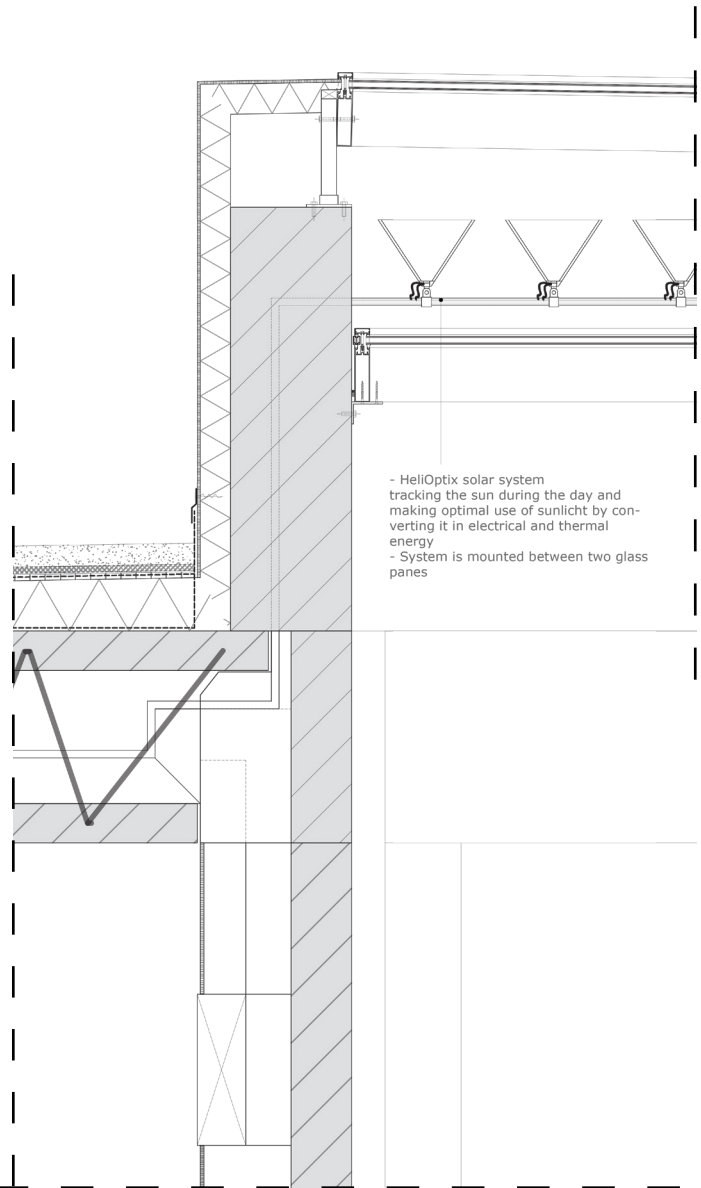
9.2 BUILDING TECHNOLOGY



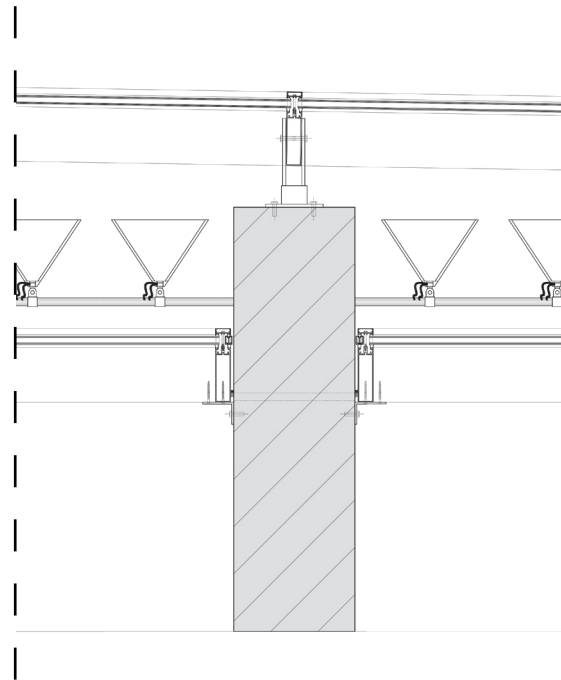
ROOF FRAGMENT



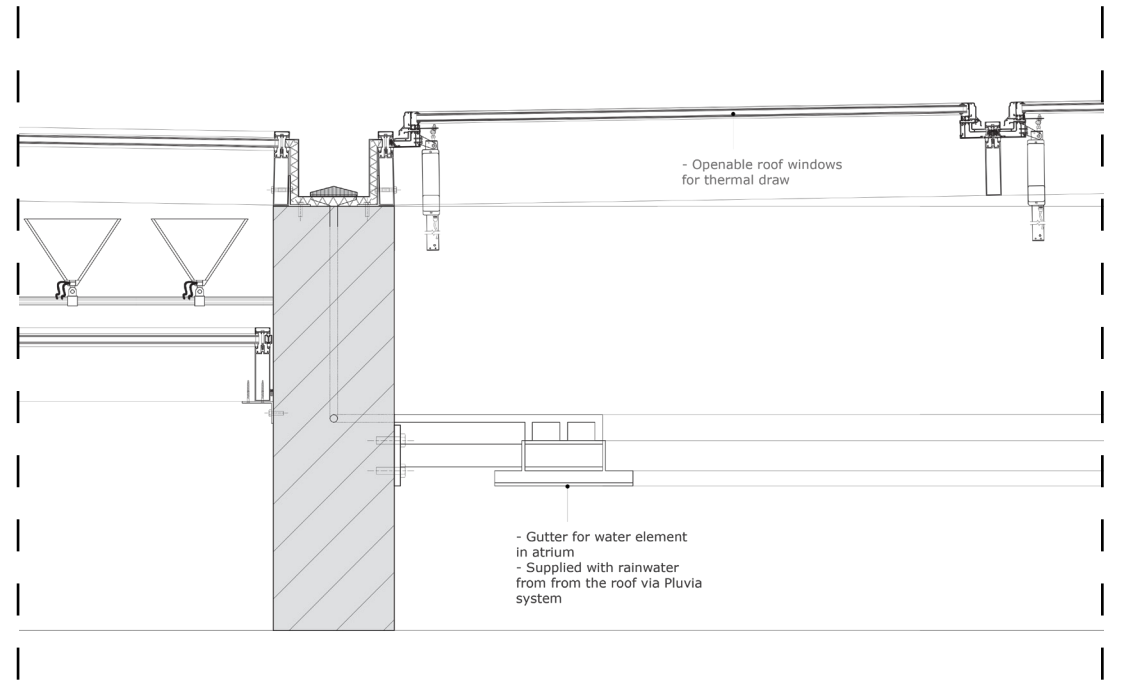
THERMAL DRAFT VIA ATRIUM ROOF



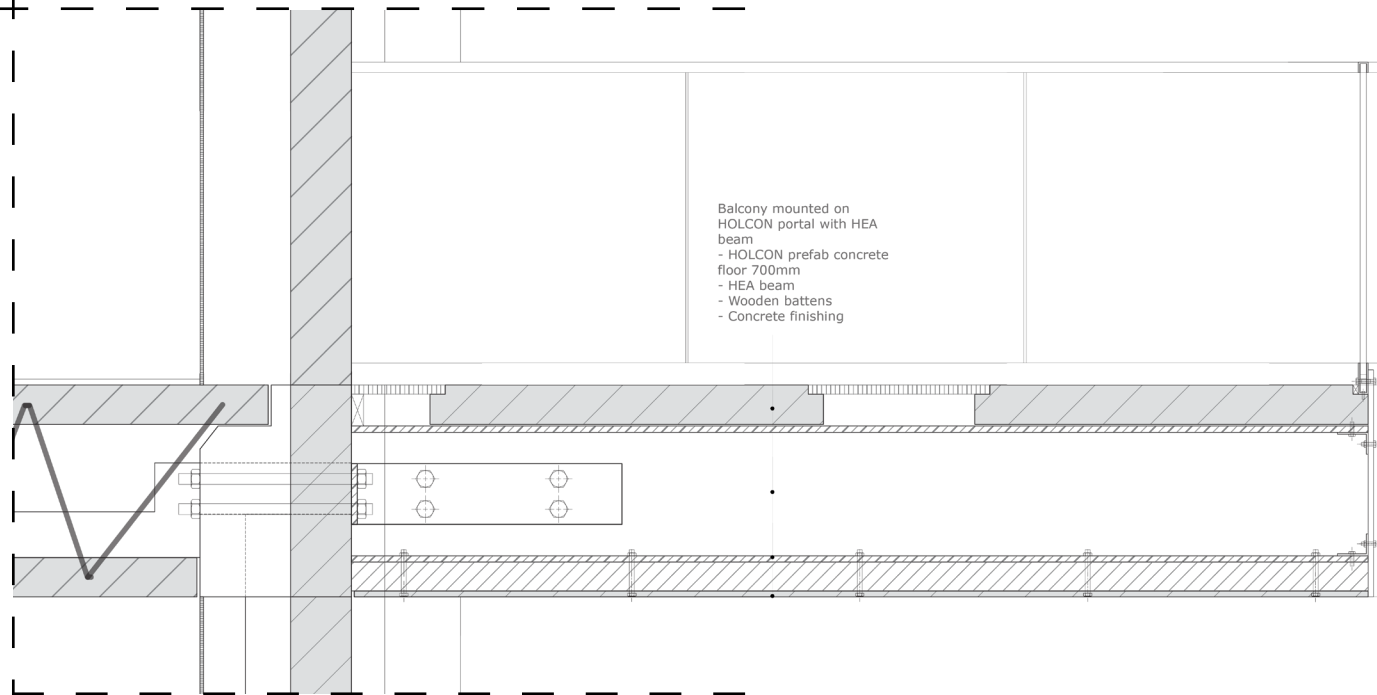
Detail 5



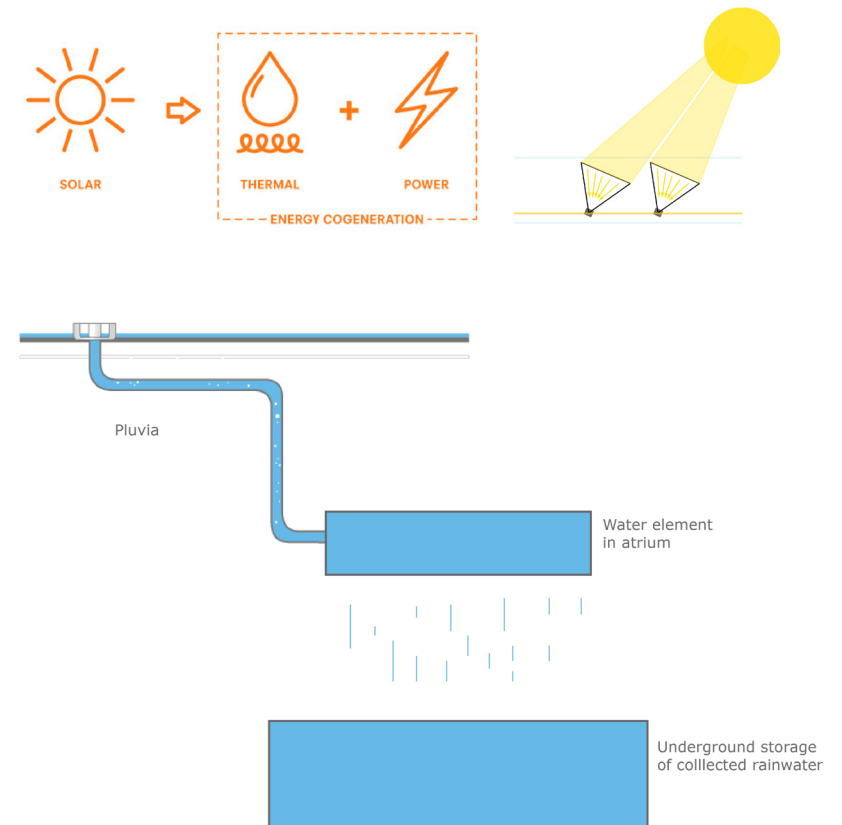
Detail 6



Detail 7



Detail 8



H10 CONCLUSION

The design in the larger social context

- Generating a new public park serves the people of New York which didn't live in a walking distance of 10 min of a green space.
- Extending 47th street to the east river gives New York a new, much wanted, connection with the water side.
- Linking the Manhattan Greenway helps finalizing this ambitious project. And generates a better public connection with the United Nations compound and New York.

The United Nations

- The design makes one compound which both serve UNEC and the United Nations. There is only one security check needed to room freely between the buildings and this is well incorporated in the square.
- The design of UNEC has the same dimensions as the assembly hall and with its modest facade is a good fit on the compound. The building will get the attention it needs without outshining the assembly hall.

Sustainability

- The compact design of the building makes optimal use of the given floorspace and program, with limited facades it also has limited energy loss at this parts and a minimal amount of material needed for the construction of the building.
- Load bearing construction of the building is a unique construction. The pre-fabricated concrete parts can all be taken apart after the lifespan of the building and all standard elements can be re-used. Due to the large spans and the fact that all ventilation ducts and electrical wiring can be put between the floor slabs makes it a highly flexible building.
- The building has a second skin facade with external sunshading. The second skin facade provides better insulating properties and has the ability to use natural ventilation. It gives a combination between an energy efficient facade with the ability to manually control the indoor environment.
- The interior glass layer of the second skin facade can be opened completely, this gives the ability to use the facade for night ventilation on hot summer days. The Outerskin provides for security.
- With the natural ventilation in the second skin facade and the open-able roof windows in the atrium, the building gets a thermal draft which can ventilate both offices and atrium with natural ventilation.
- The HeliOptix solar panels in the atrium roof makes use of the available sunlight and with that also act as a sunscreen, only letting diffuse daylight in the atrium.
- The Pluvia systems on the roof catch the rainwater and store it underground for gray water use.
- The building has a greenroof giving it better insulating properties, it makes use of water / air purification and enhances the biodiversity.

THANK YOU

