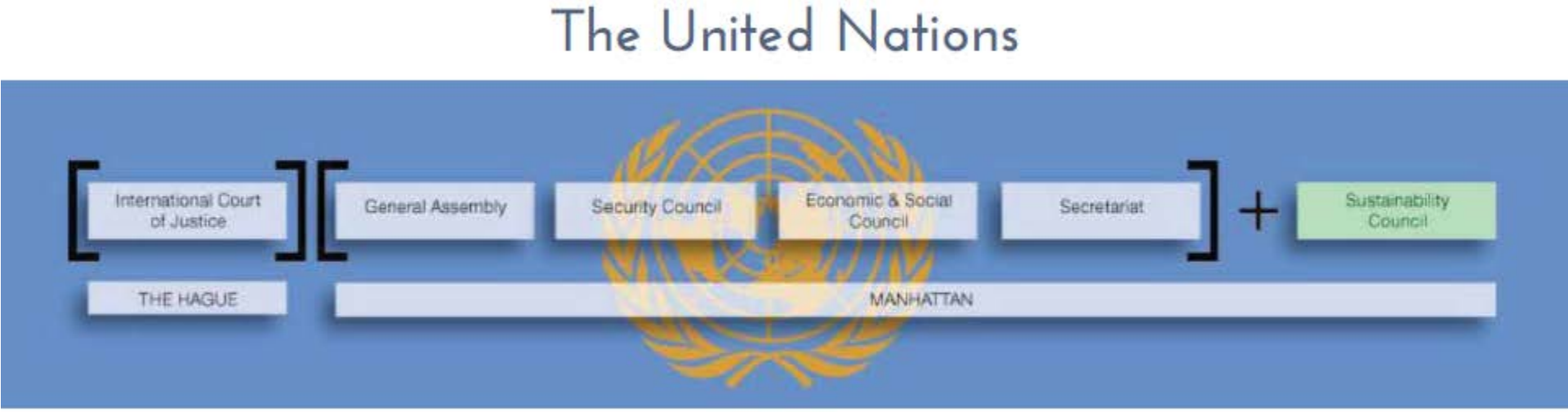
United Nations Environmental Council

SADD-----P4 presentation

4116542 Jiran Ma

Contents

Mission



A New Headquarters for the United Nations Environmental Council

City jungle of New York City

Looking for places for relax

Highline Park

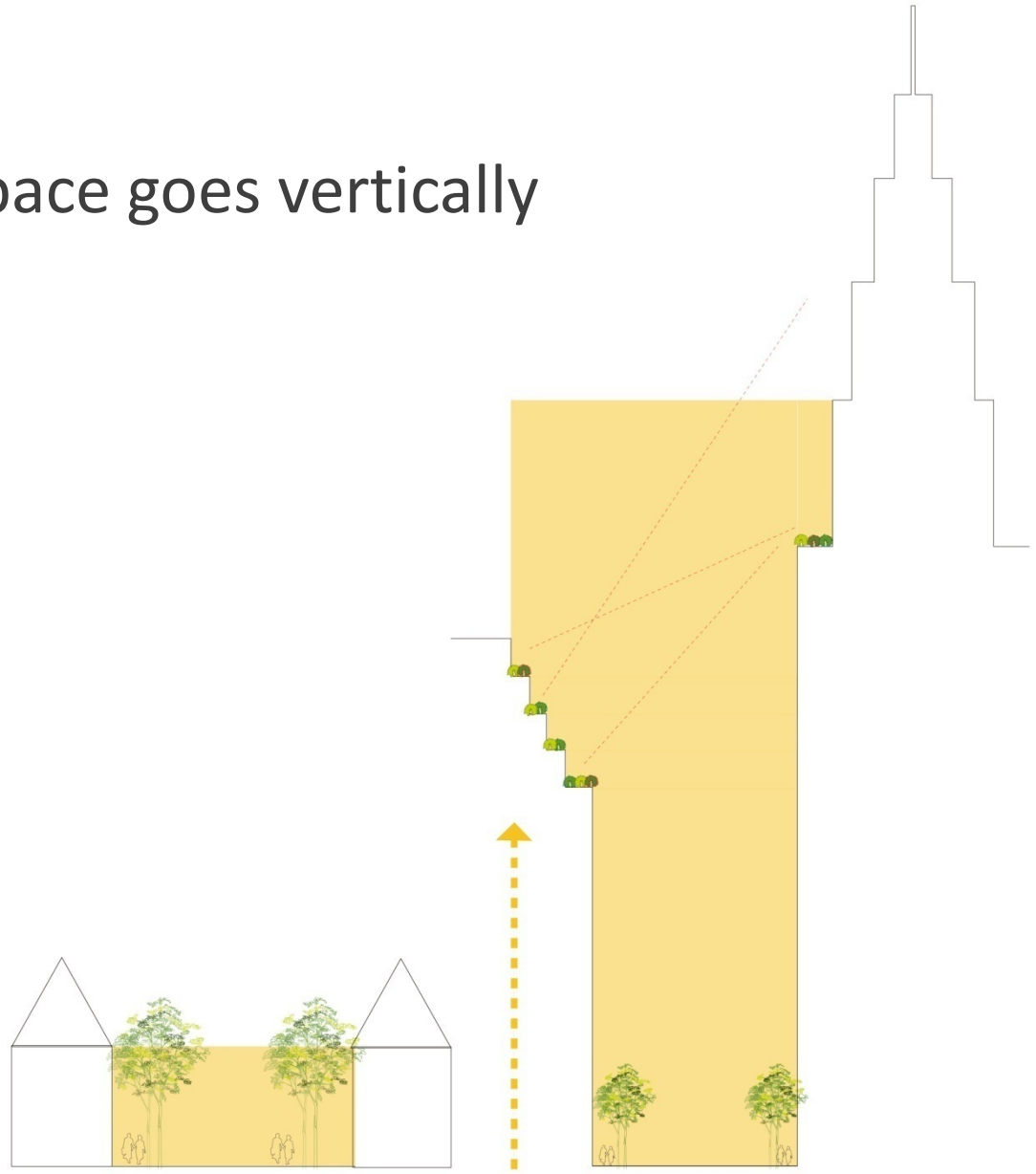
Central Park

Key Value: **Slowing Down**

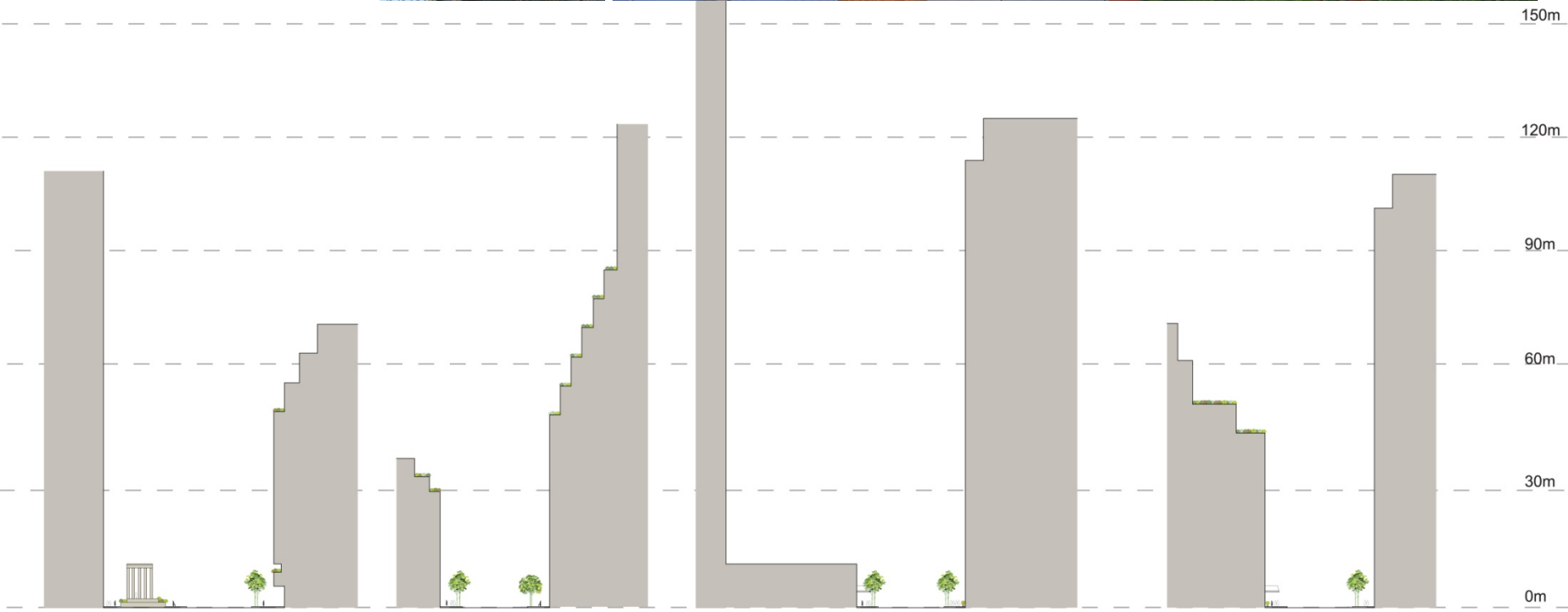
Chapter 1 **Research**

Research of the **Public space** and
Green area in Manhattan

Public space goes vertically

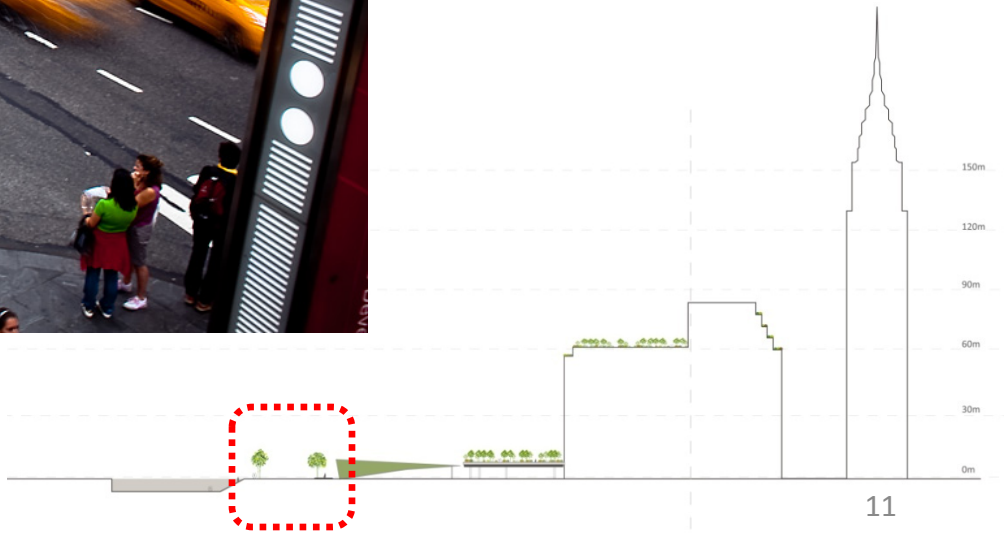


New York form of “PUBLIC”



Street Level

Traffic & Circulation



Spaces around the street level– Sunken Plaza

High quality outdoor public space

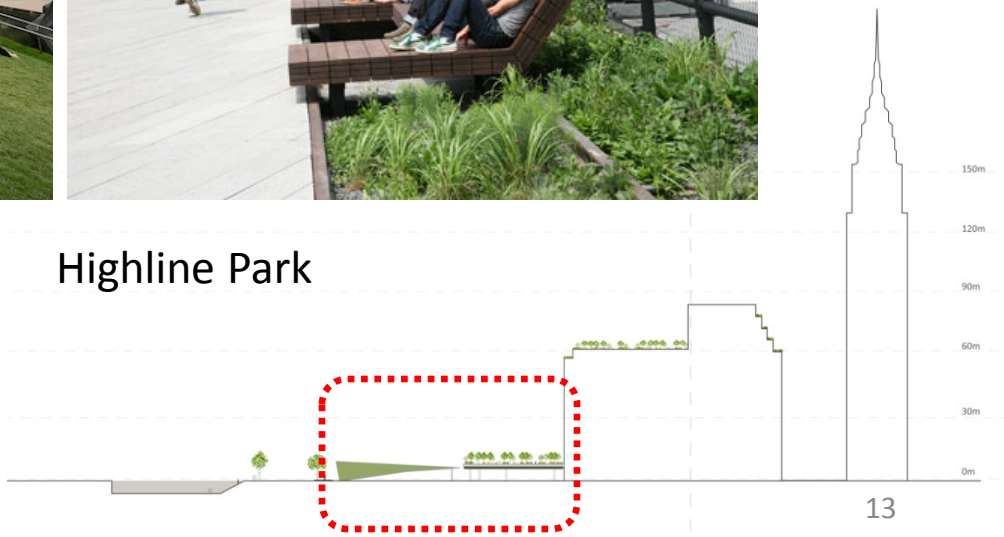
Rockefeller Plaza

Spaces around the street level—Elevated space

Leisure, far from the crowd

Lincoln Center rooftop lawn

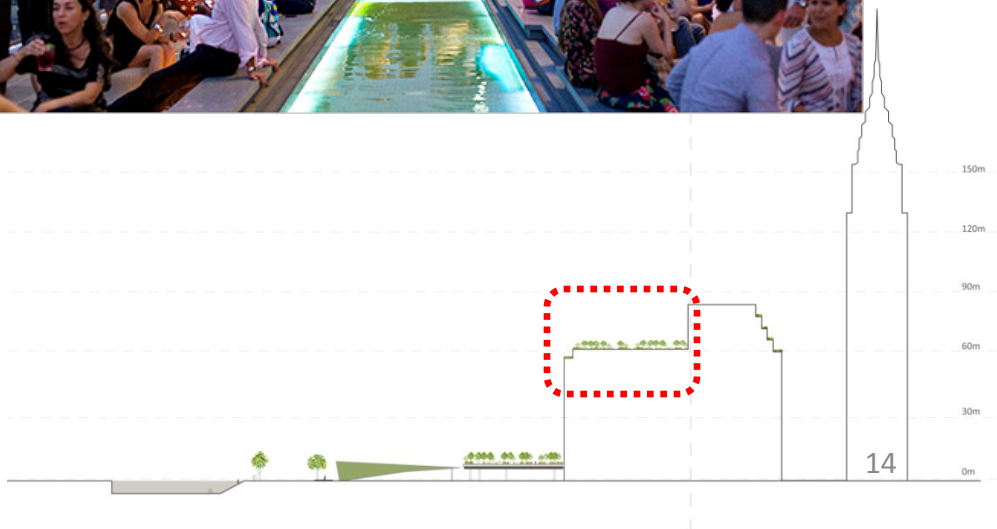
Highline Park



Spaces on higher level—Rooftops

Semi-Public, collective space

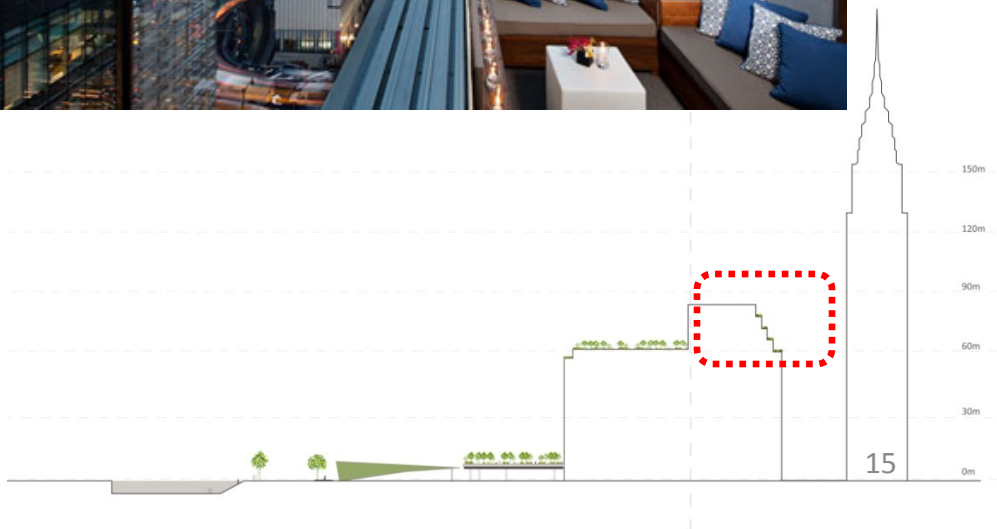
Rockefeller Center rooftop garden



Spaces on higher level—Setbacks

Enjoy the view of the city

INK48 Restaurant



Open the ground level—Privately Owned Public Spaces

Inside public spaces for the dense urban context

IBM Building

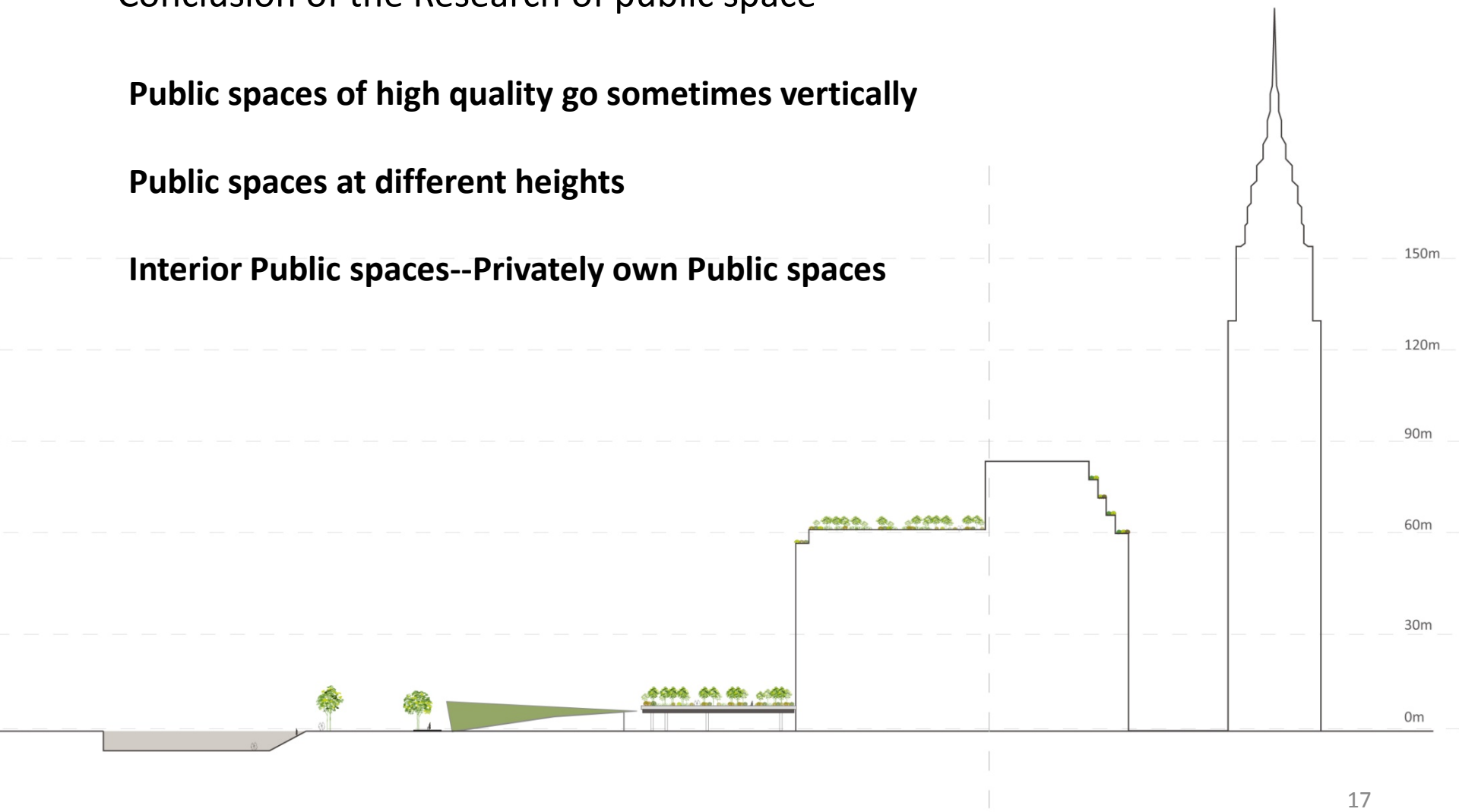
J.P Morgan

Conclusion of the Research of public space

Public spaces of high quality go sometimes vertically

Public spaces at different heights

Interior Public spaces--Privately own Public spaces



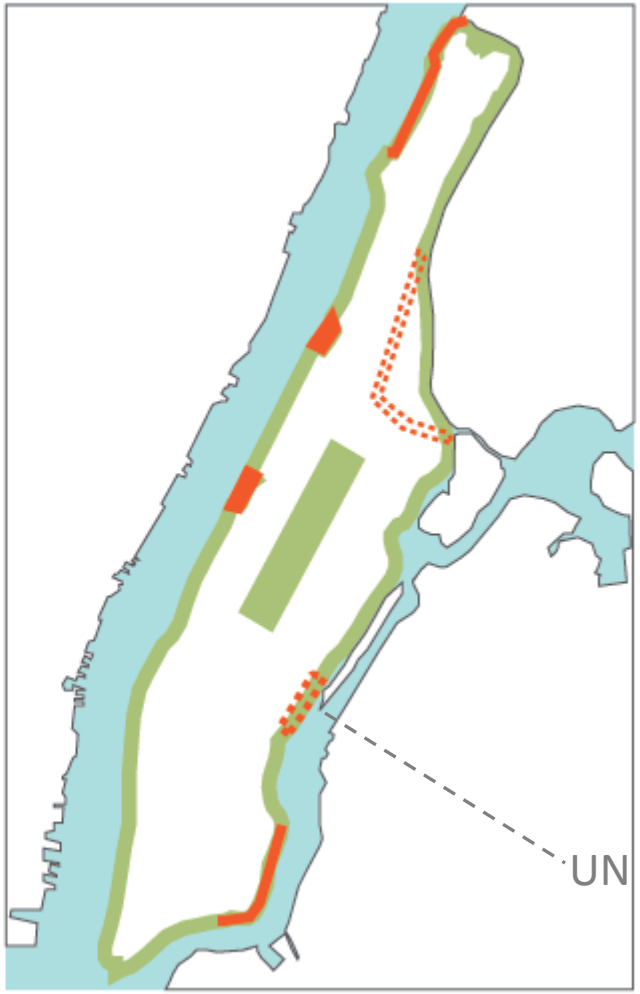
Chapter 2 **Urban Context**

Urban context of the **Current Situation**

UN Complex

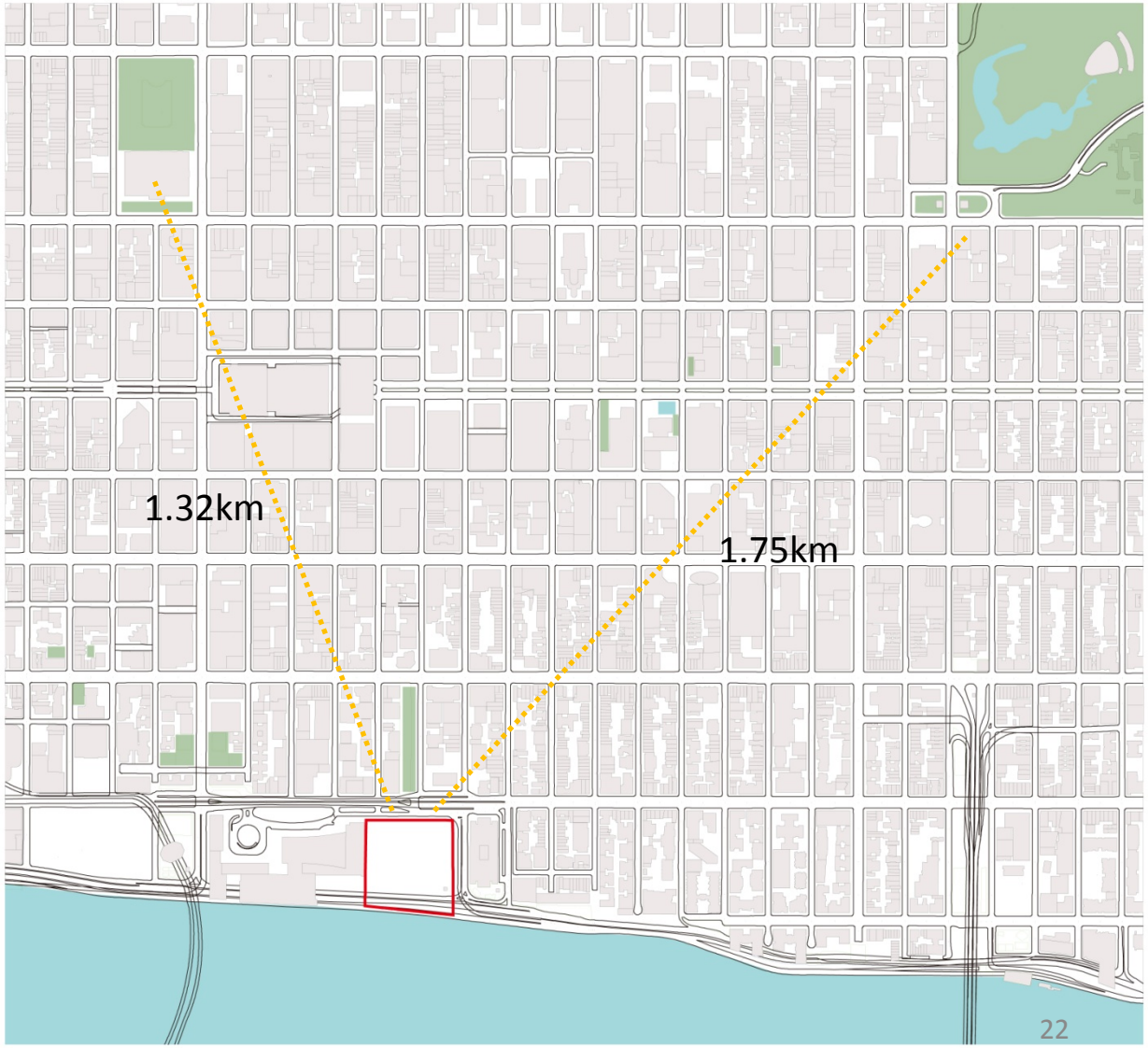
Manhattan

Missing link of the green belt

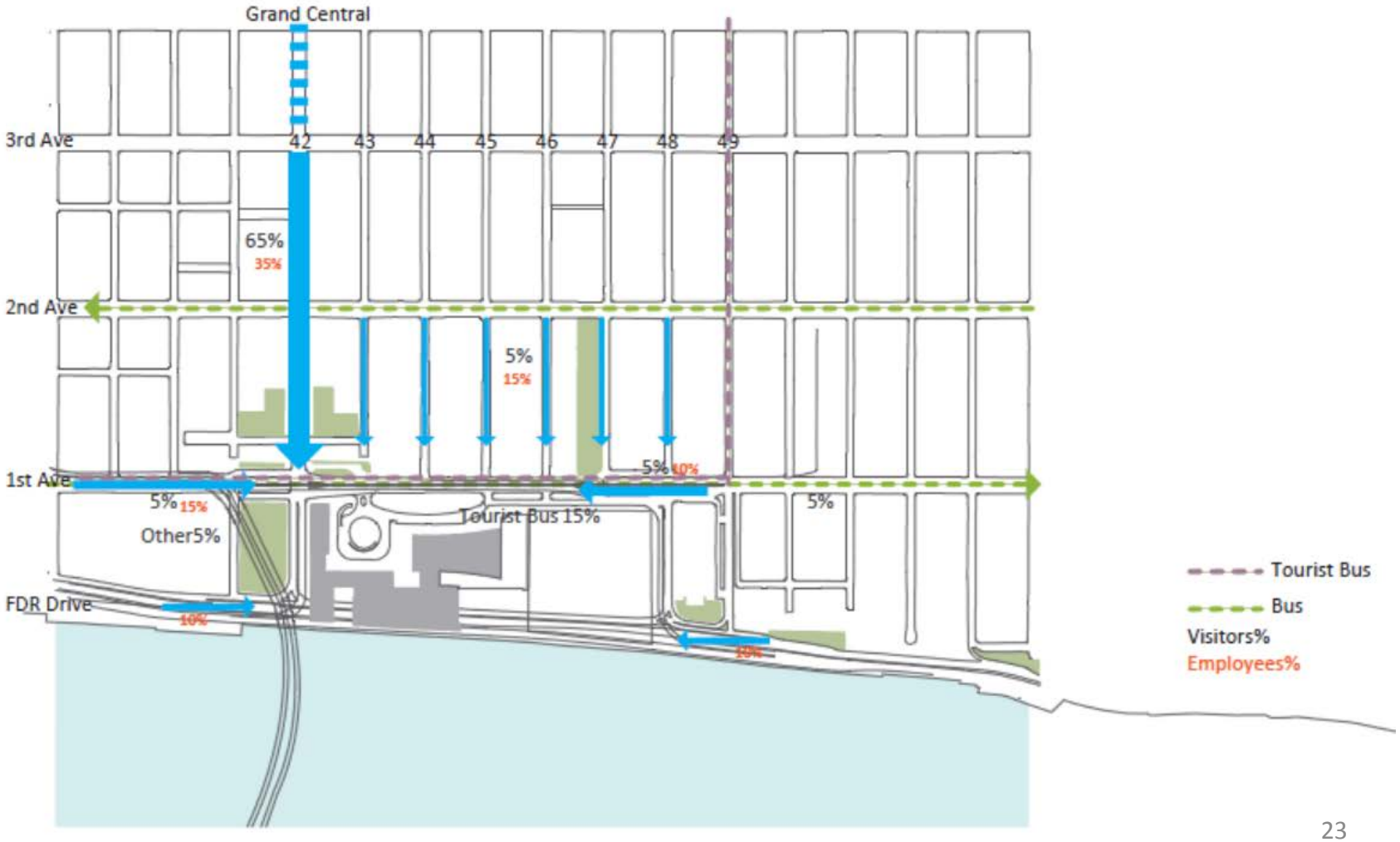


Current Situation--Greens

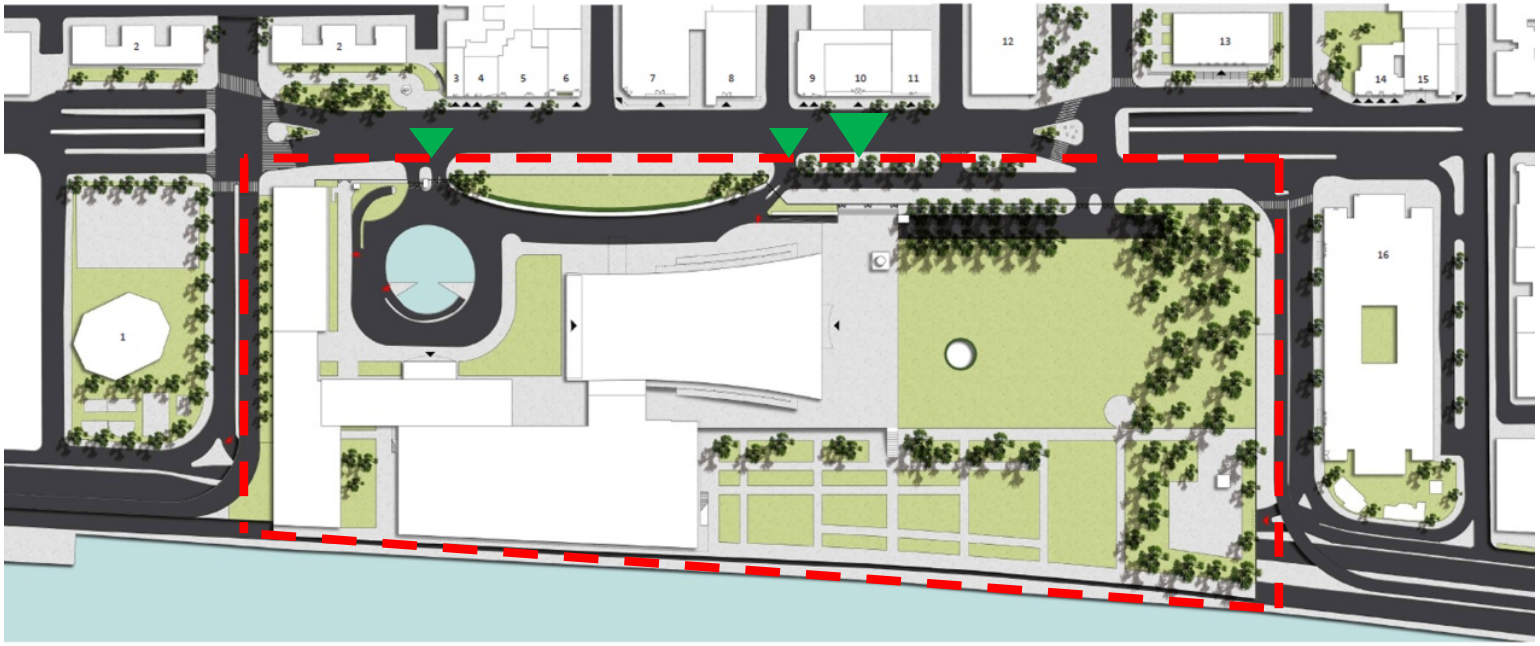
No large open area and greens



Current Situation-- Traffic



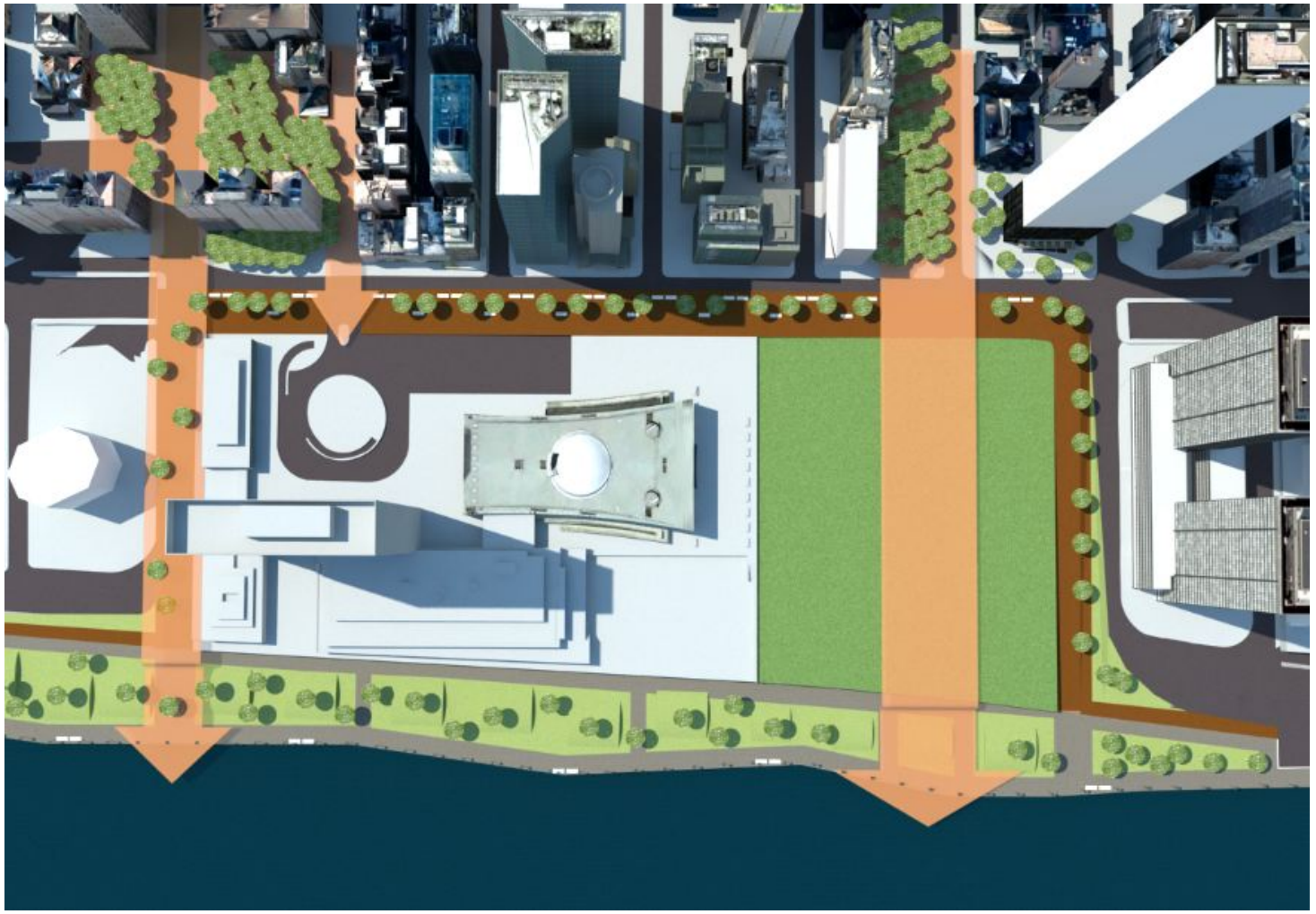
Current Situation-- Security



Urban context of the **Design Location**

Design Location

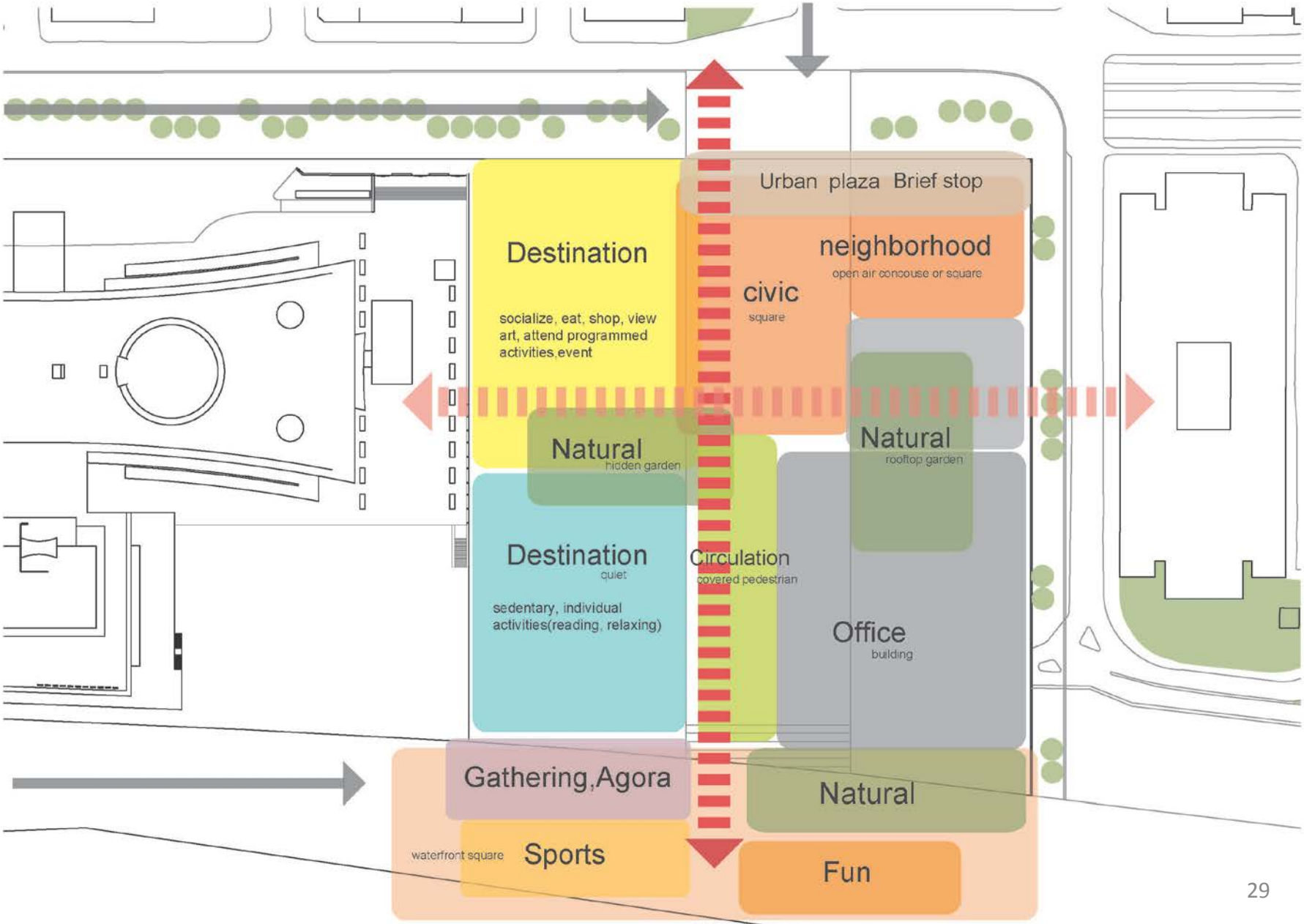
Conclusions of New Master plan



Users:

- *Delegates*
- *Employees*
- *Tourists*
- *People from neighborhoods*

Proposal Character of the Location



Chapter 3 **Concept** and **Form Investigation**

Concept

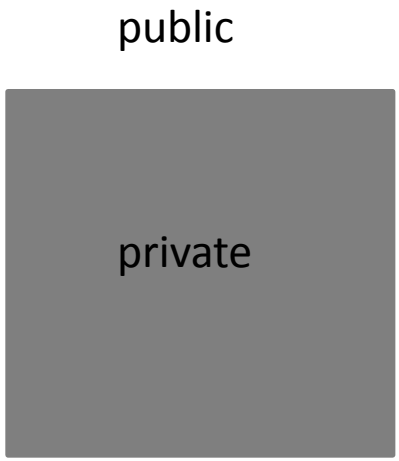
Life in New York City means slowing down

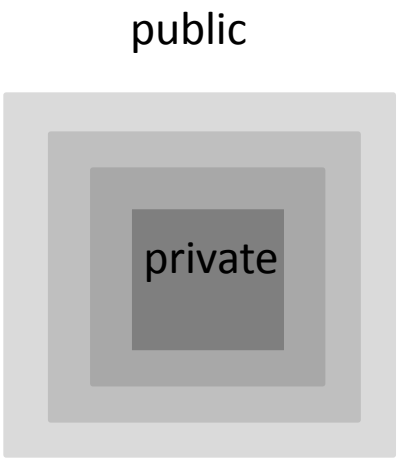
Public life at different heights

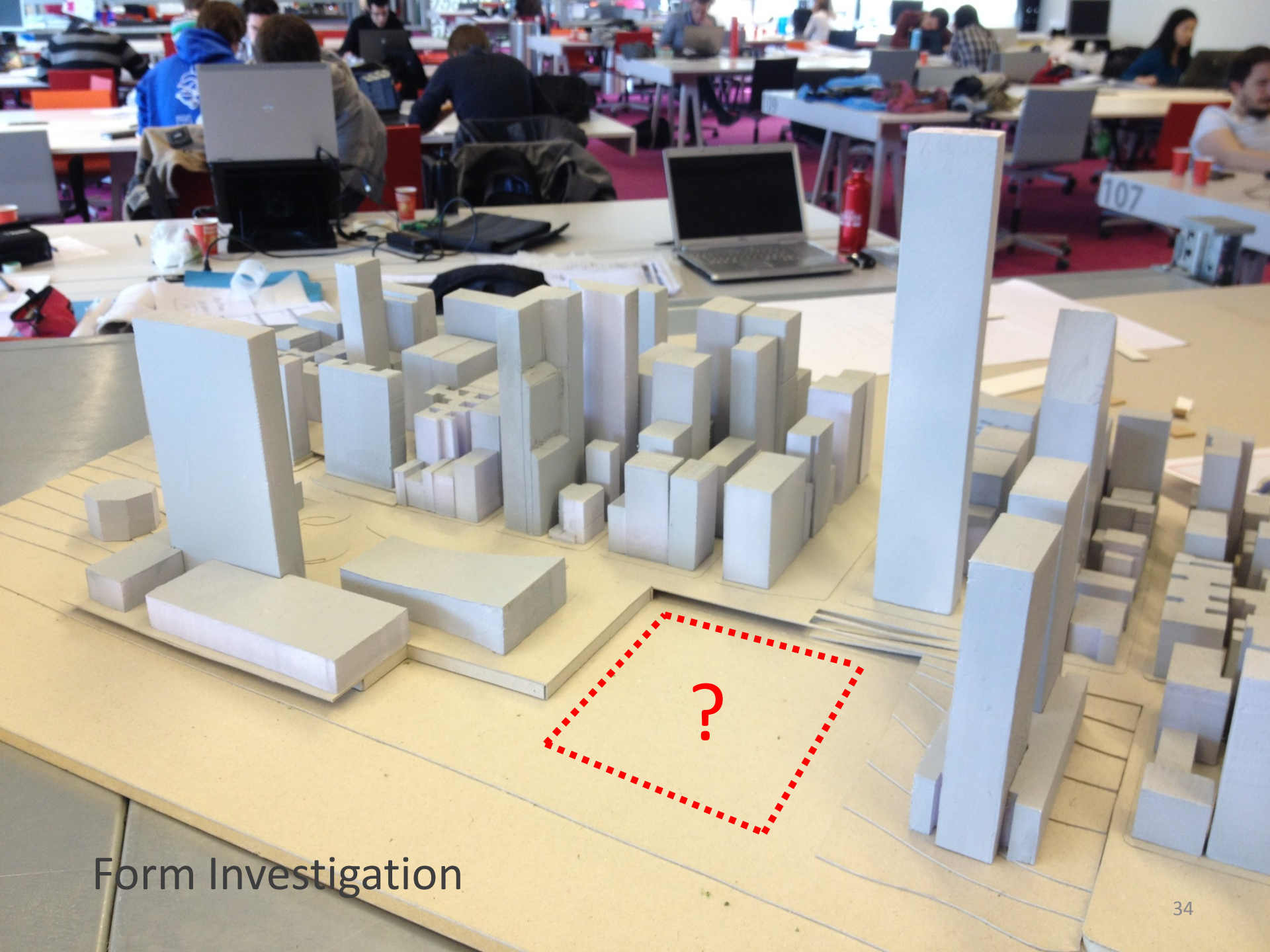
Strategy

Public – Security

Organize the public spaces





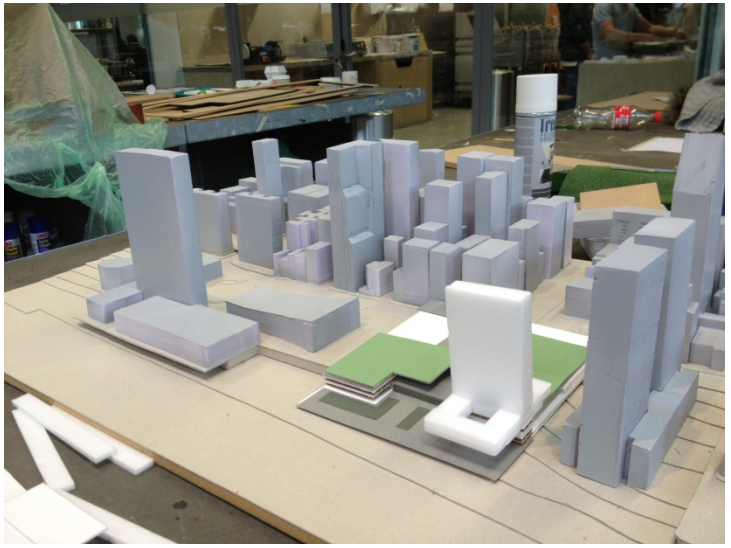


Form Investigation

Trials

Low approach

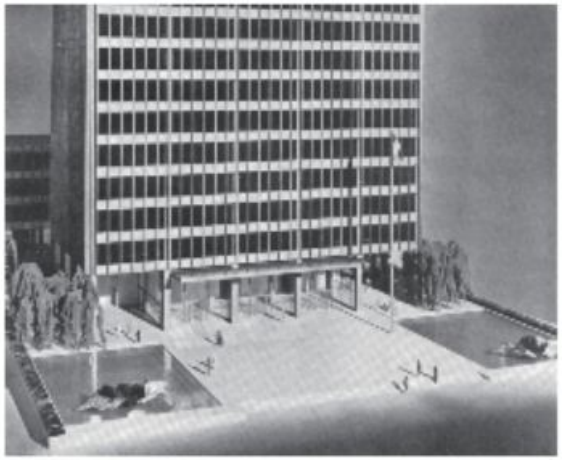
High approach



Why high approach?

New York Slabs

Essence of the Manhattan

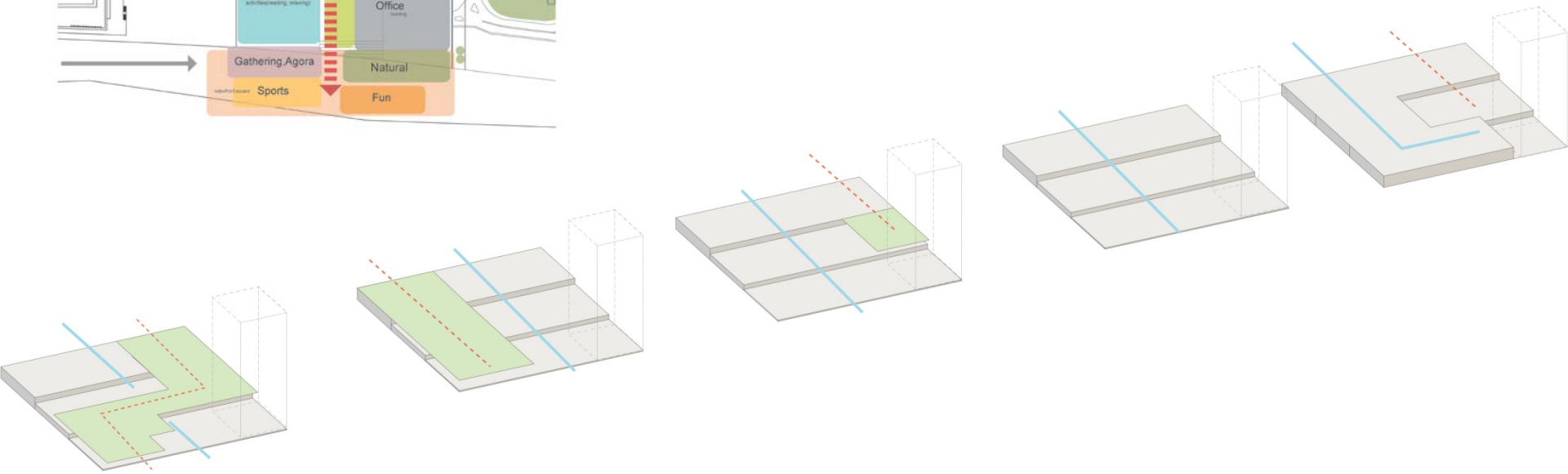


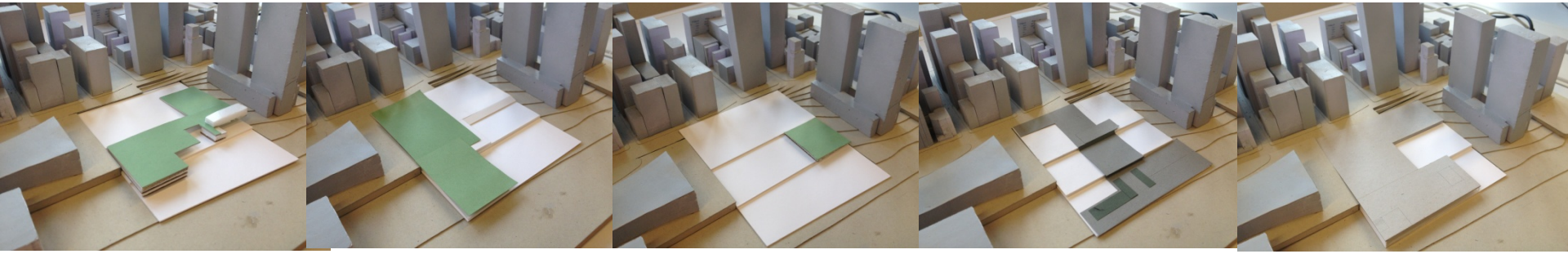
Seagram Building

Chase Manhattan plaza

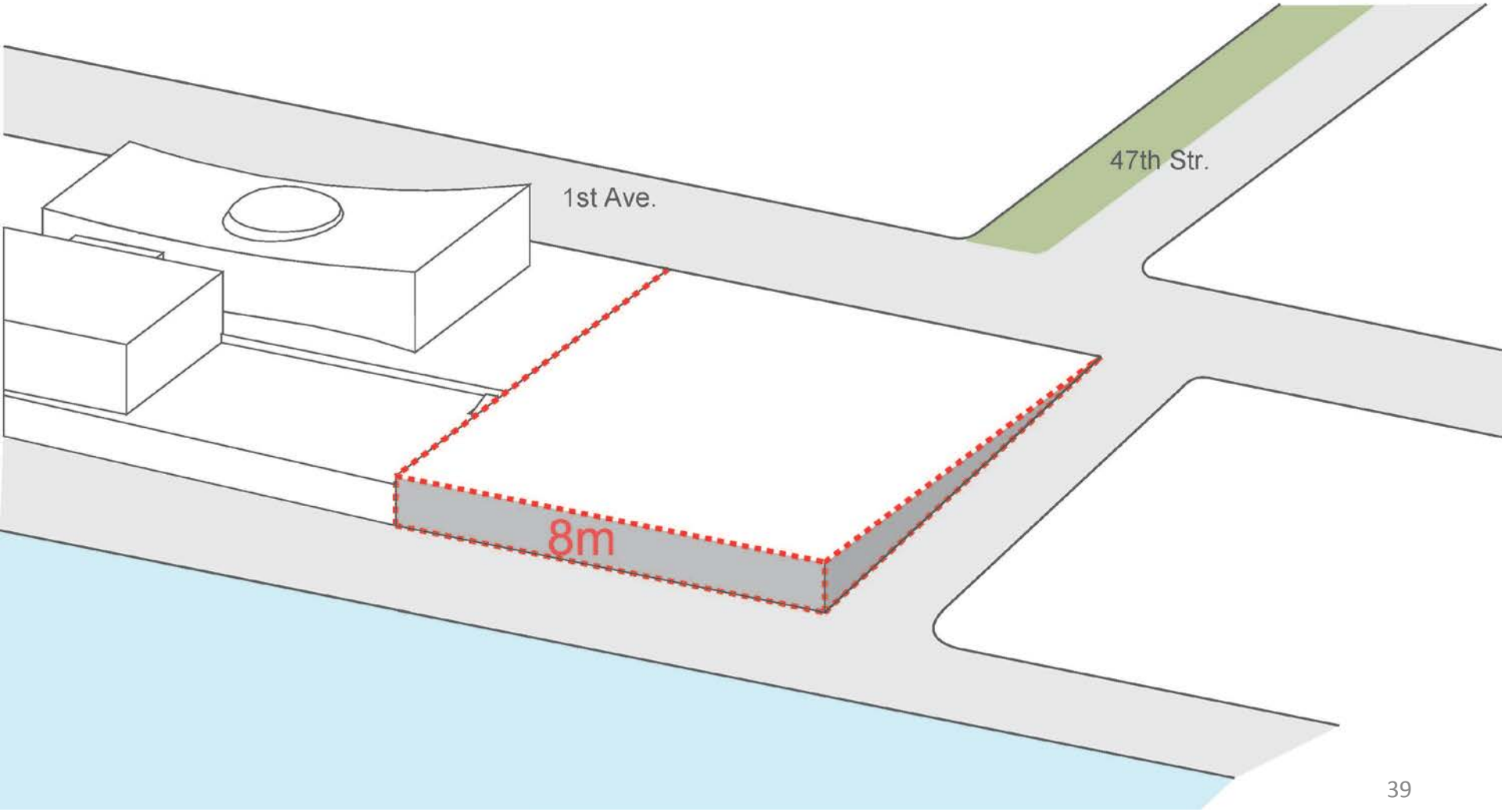
Rockefeller center plaza

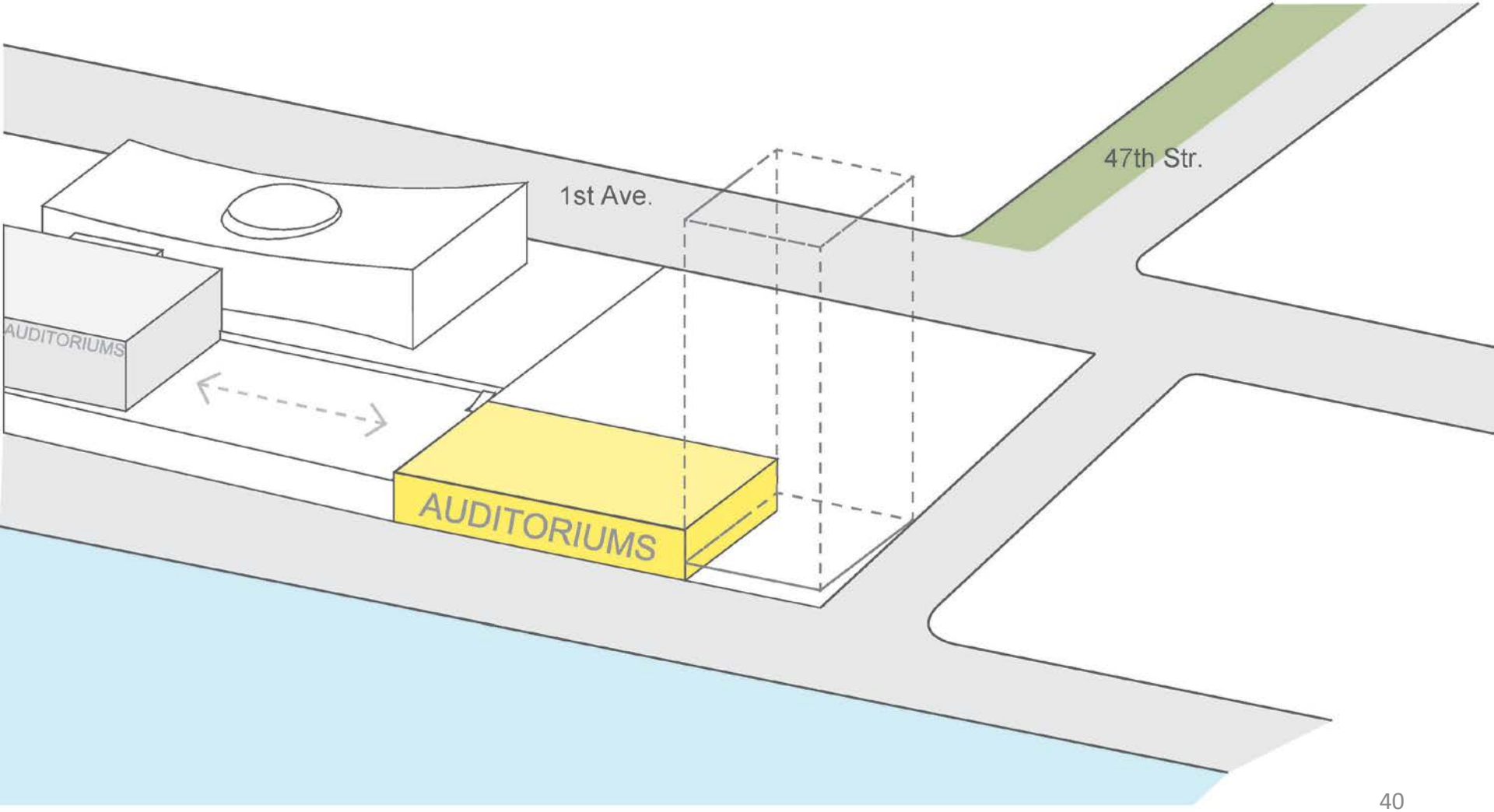
Exploration of site form





Site Development


1st Ave.
47th Str.
8m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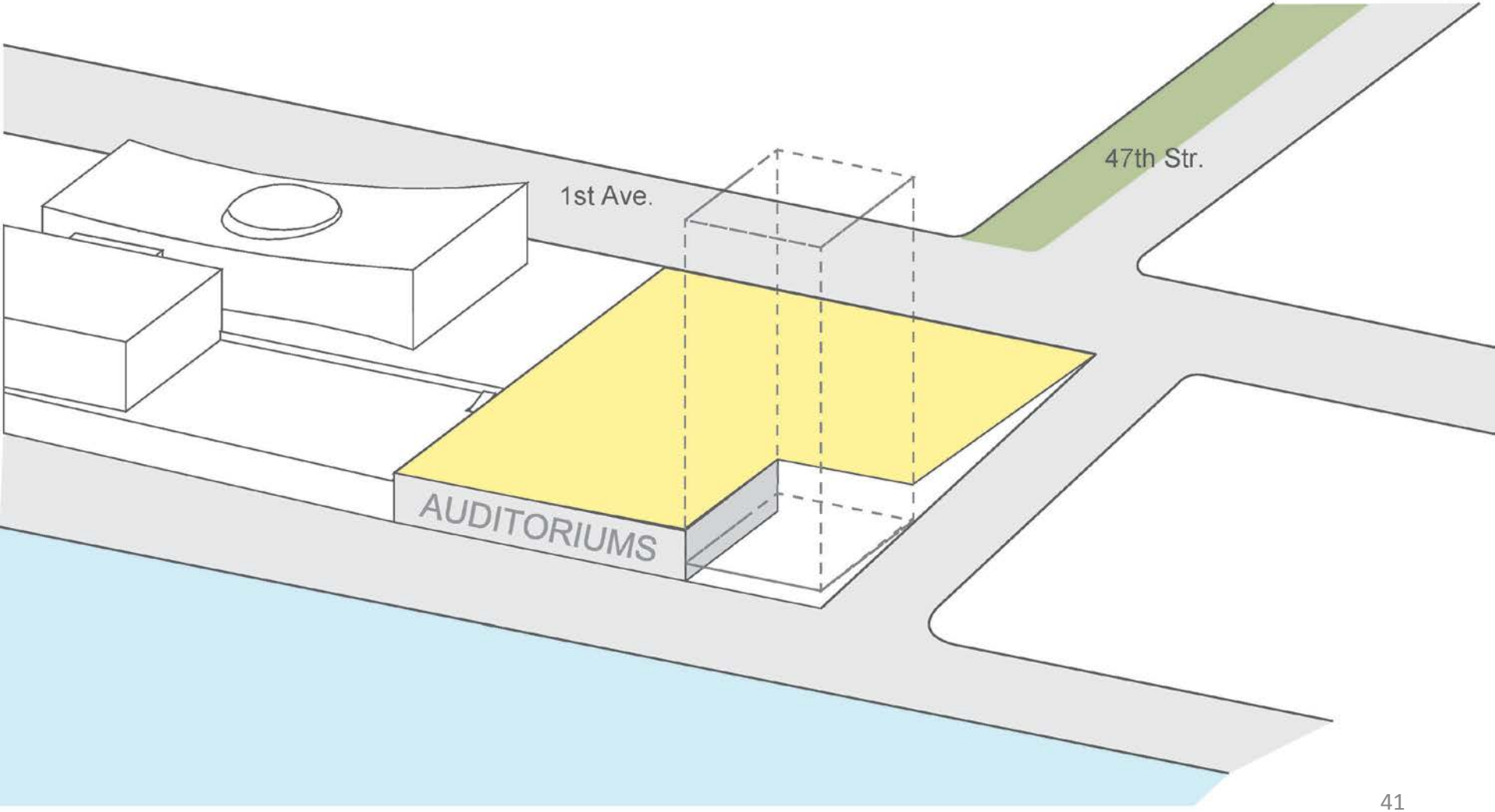
AUDITORIUMS
AUDITORIUMS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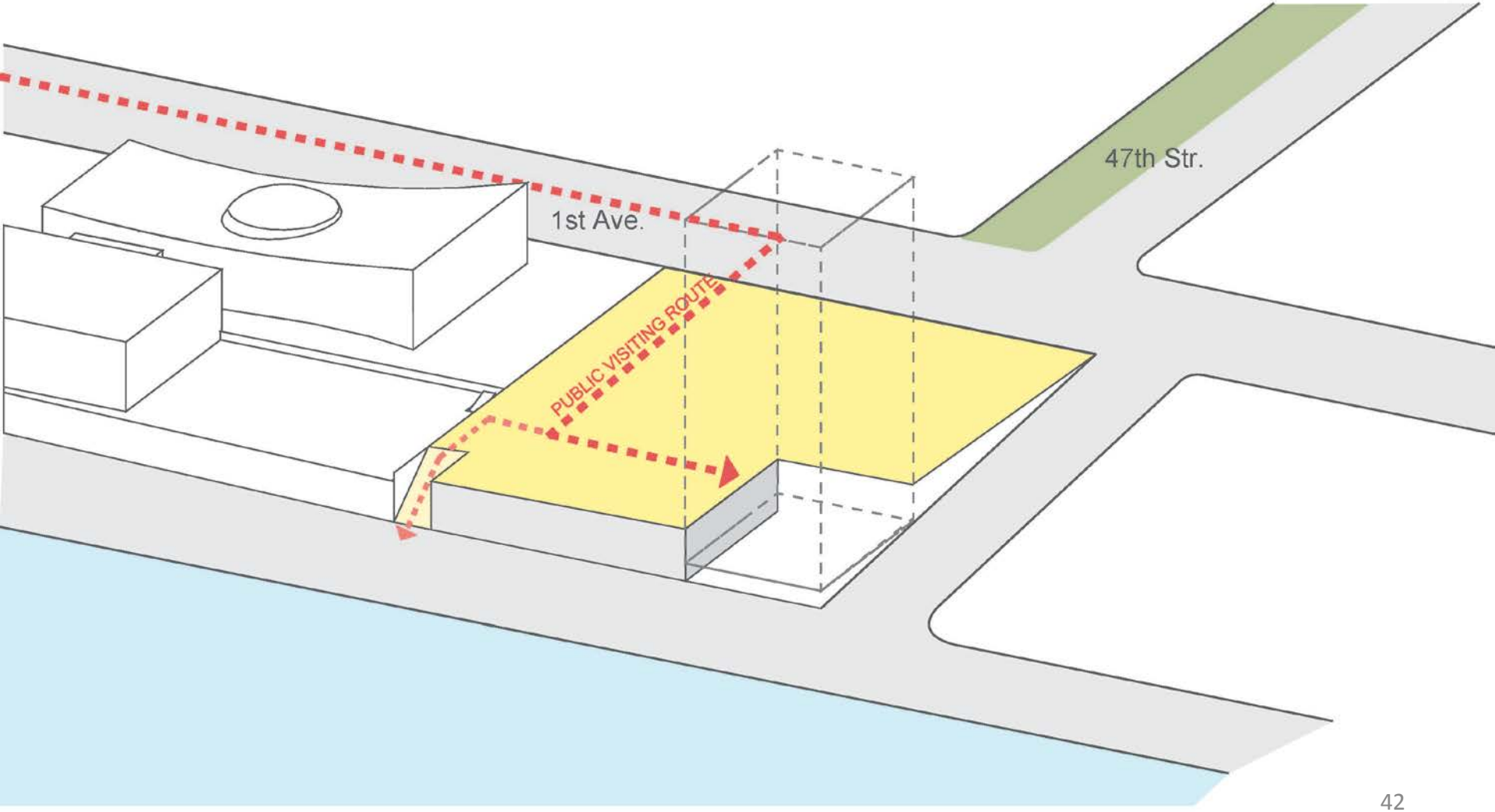
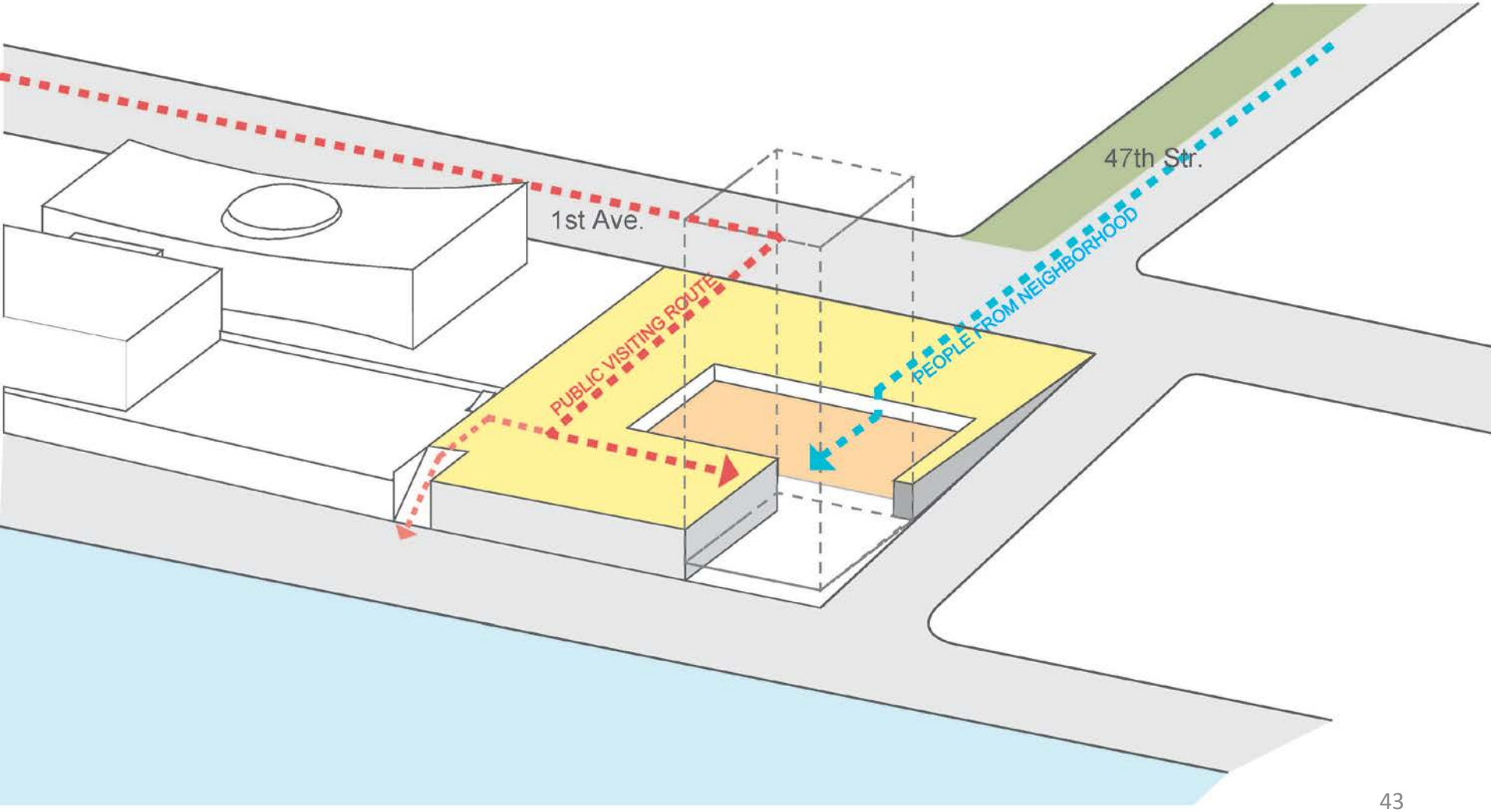
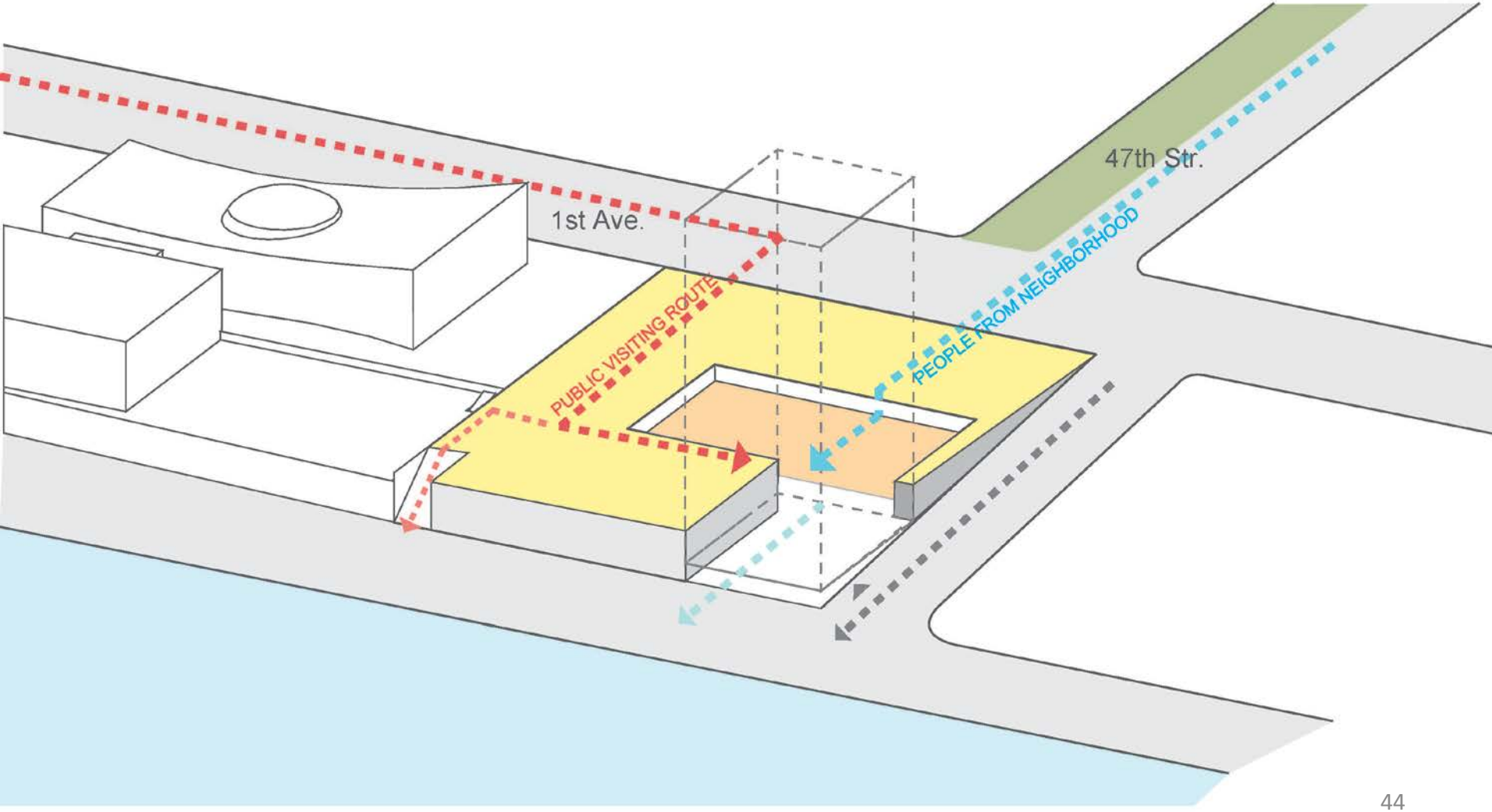
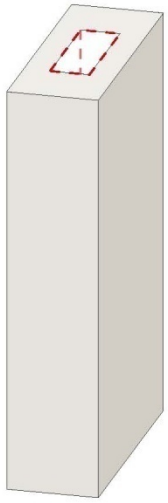

47th Str.
1st Ave.
PUBLIC VISITING ROUTE


47th Str.
1st Ave.
PUBLIC VISITING ROUTE
PEOPLE FROM NEIGHBORHOOD

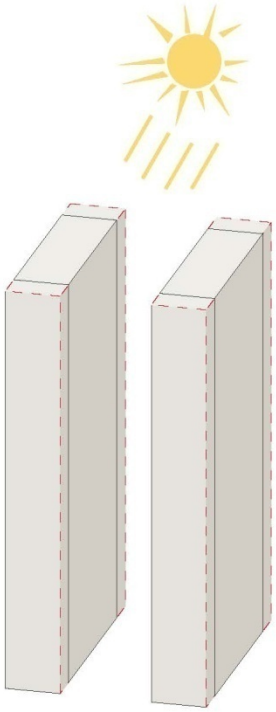

1st Ave.
47th Str.
PUBLIC VISITING ROUTE
PEOPLE FROM NEIGHBORHOOD

Building Development

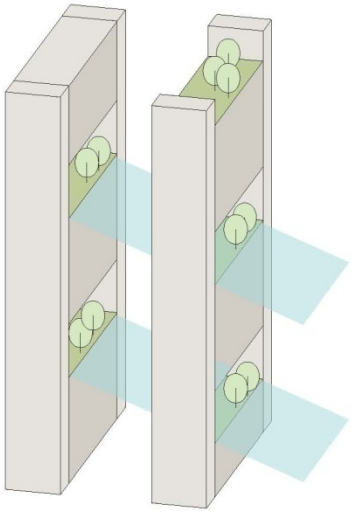
Building Development



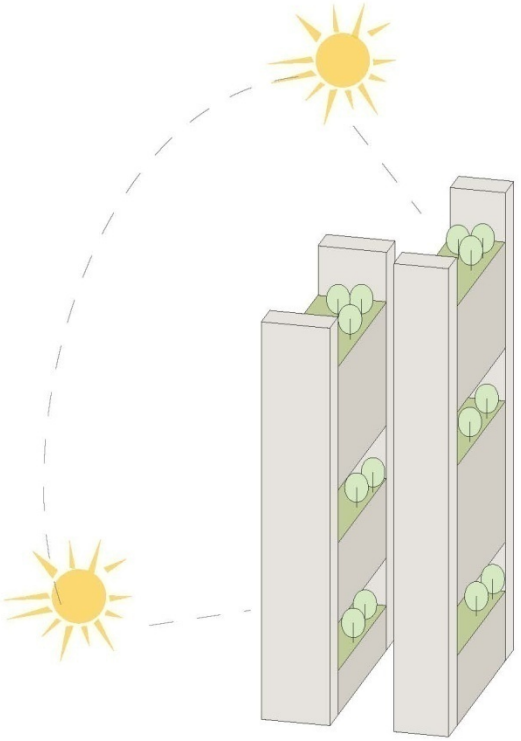
Conventional Slab
central stiff core



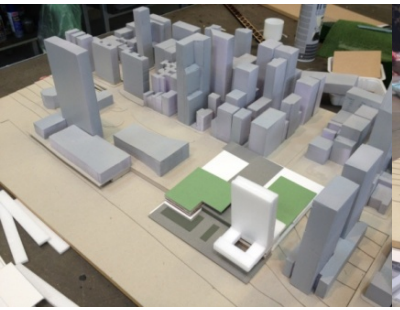
Two Slabs with light atrium
side stiff cores

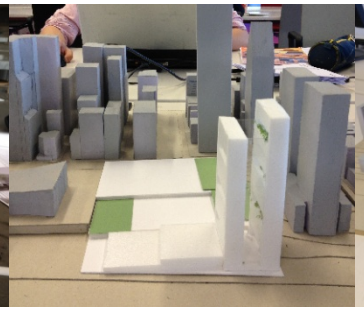


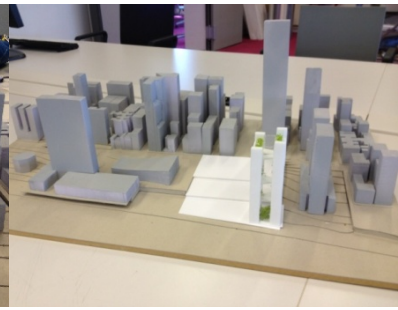
Verical greens for views,
light and ventilation



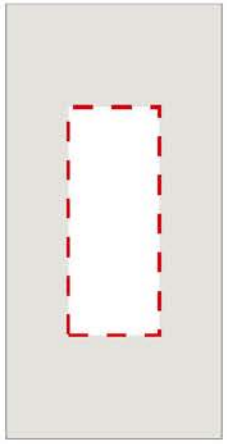
Adapt the system to orientations



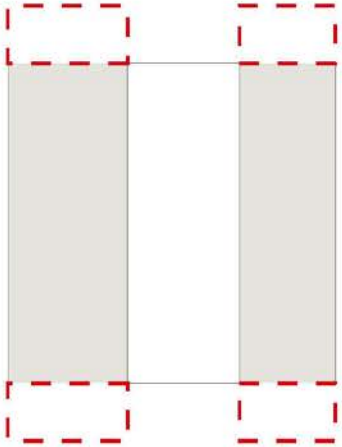




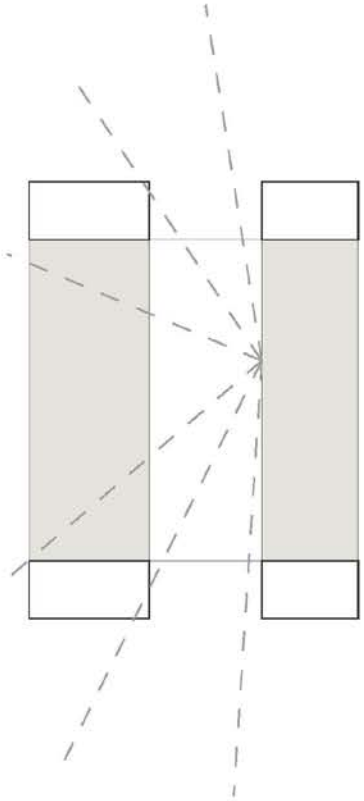
Flexibility & Views

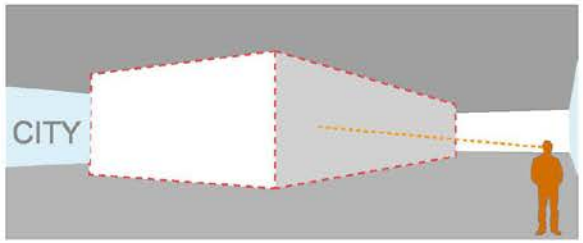


Conventional Slab
central stiff core

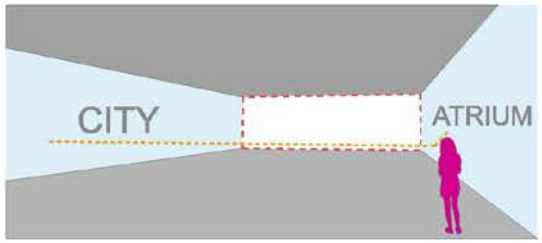


Two Slabs with light atrium
side stiff cores

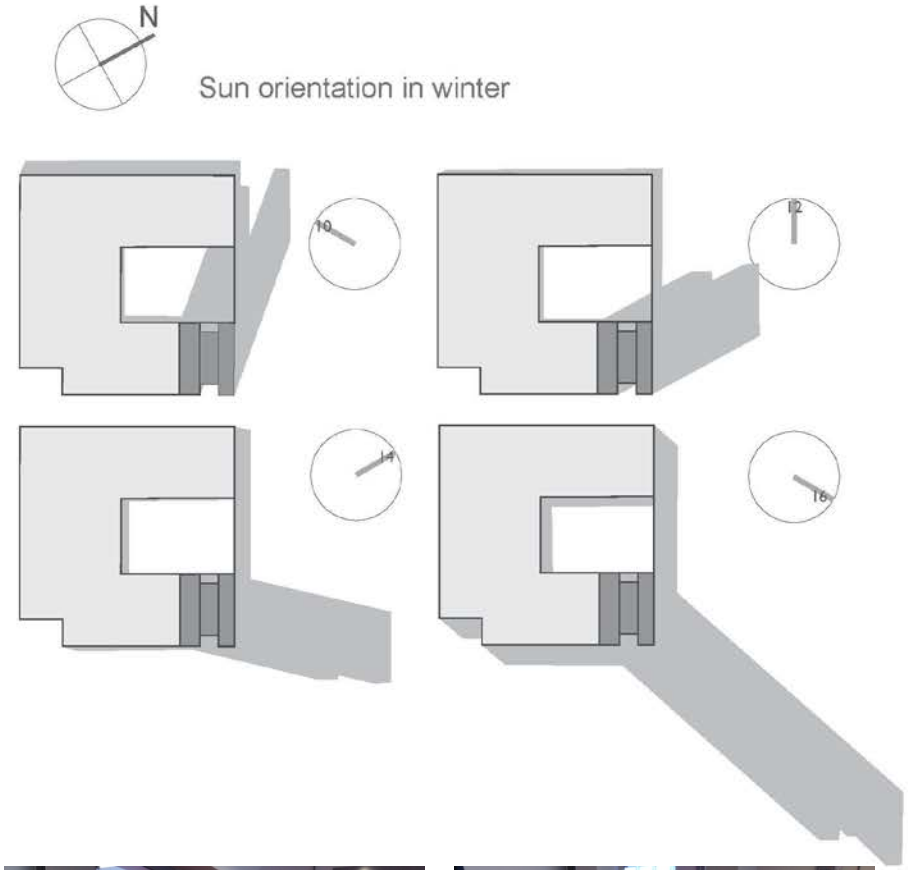


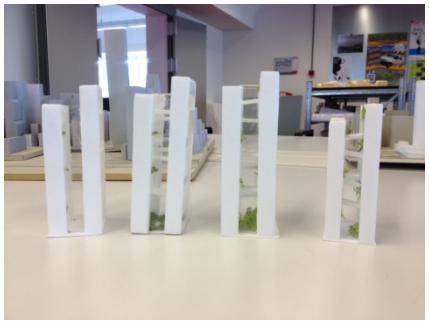


View is blocked by cores

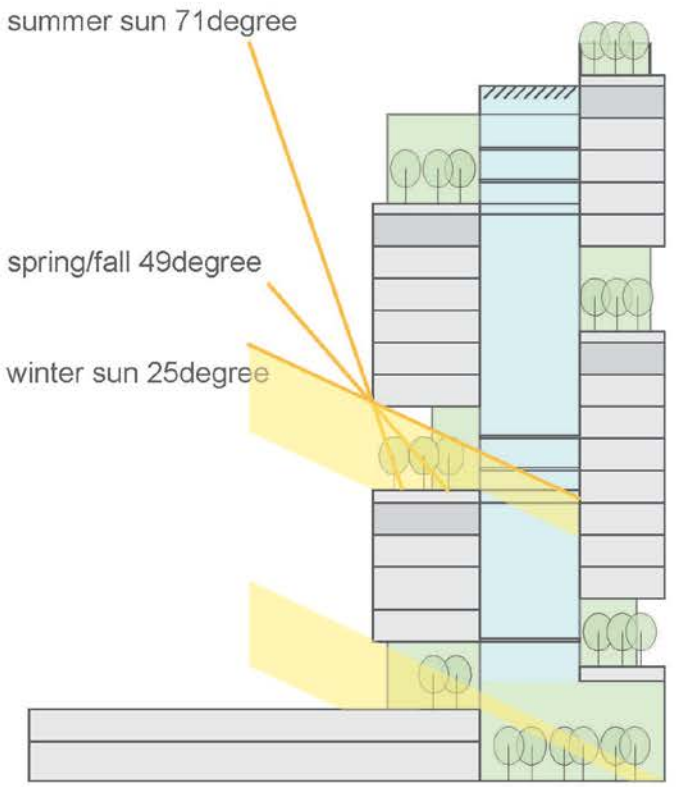


Clear diagonal view through out the entire office space

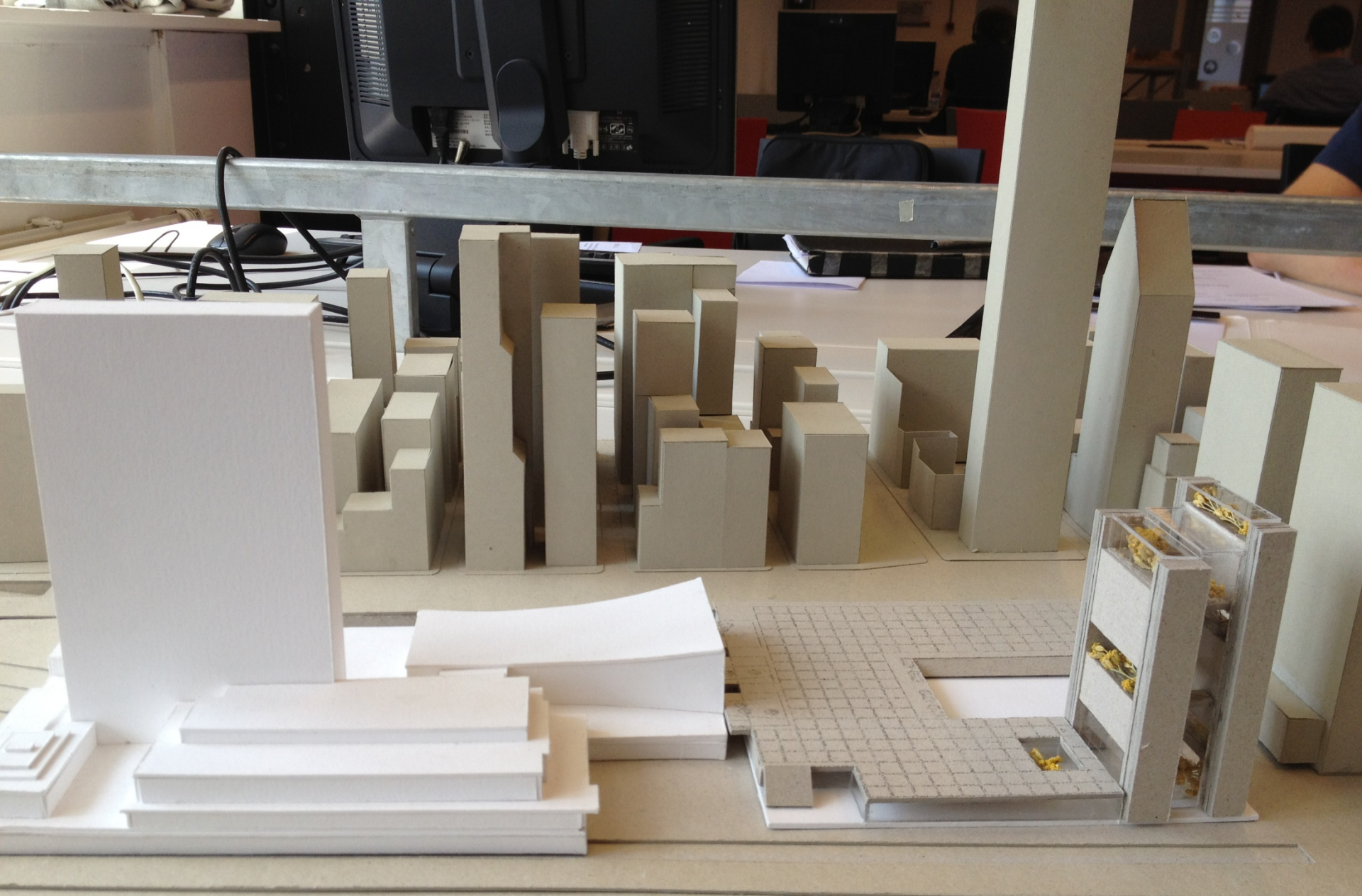




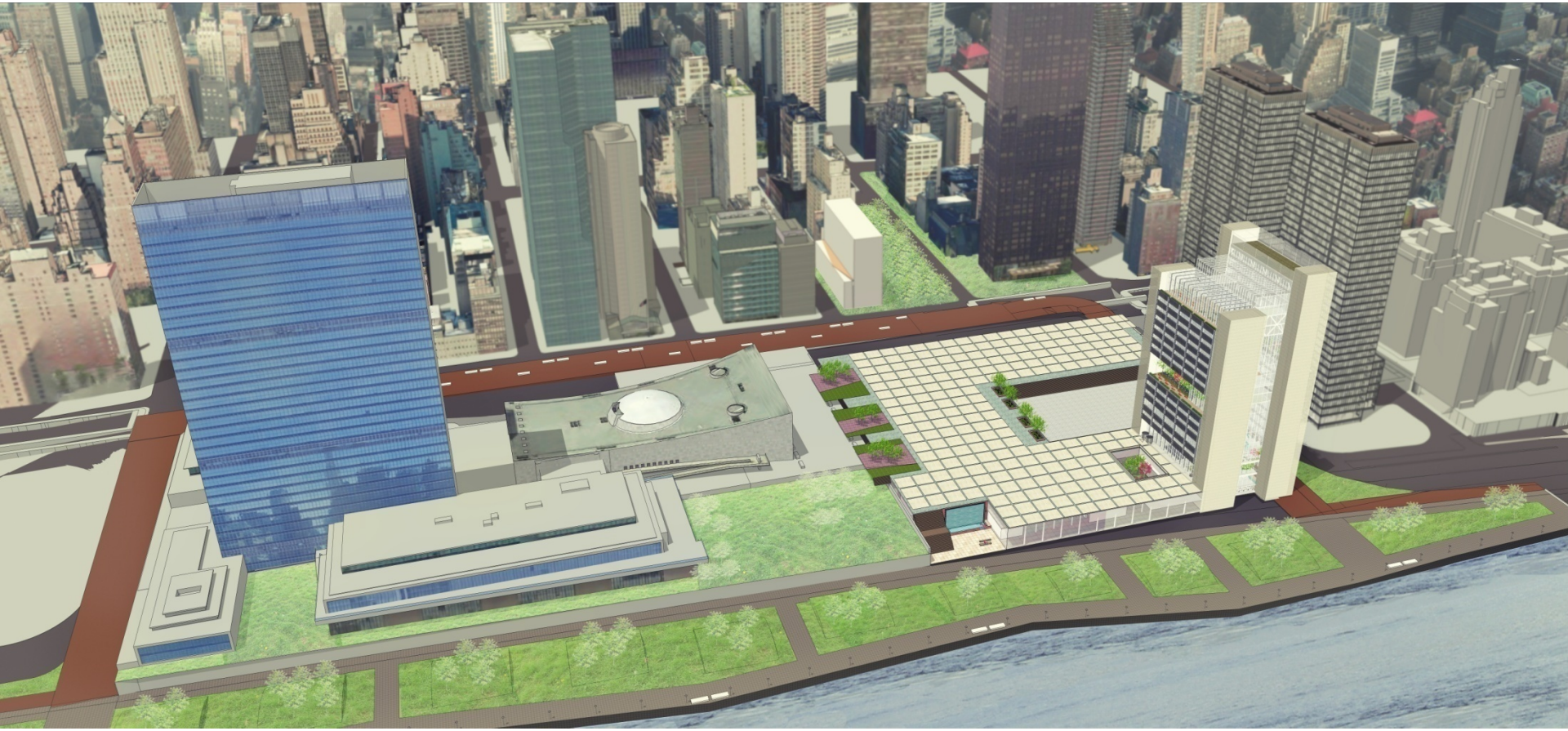
Sun orientation in Manhattan

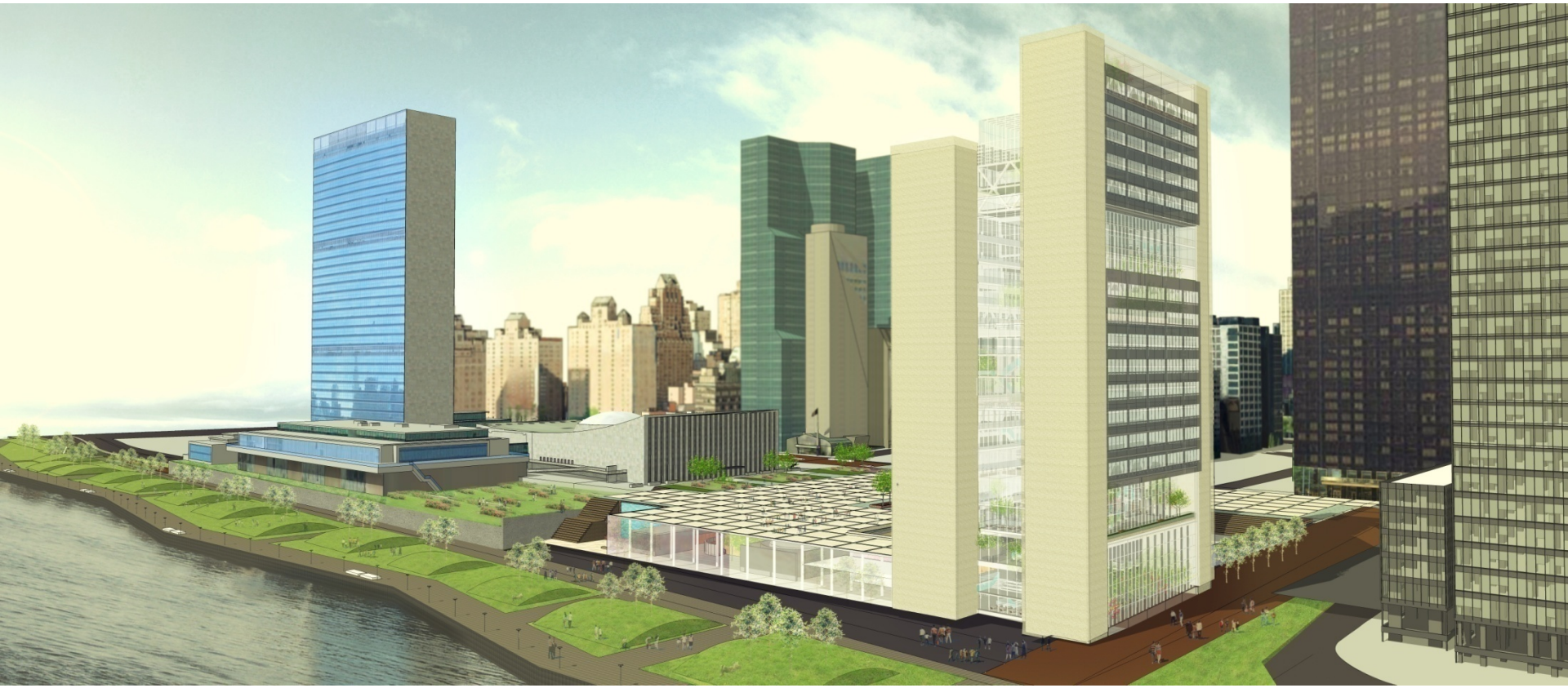


The solar gain is being blocked in the atrium in spring/summer



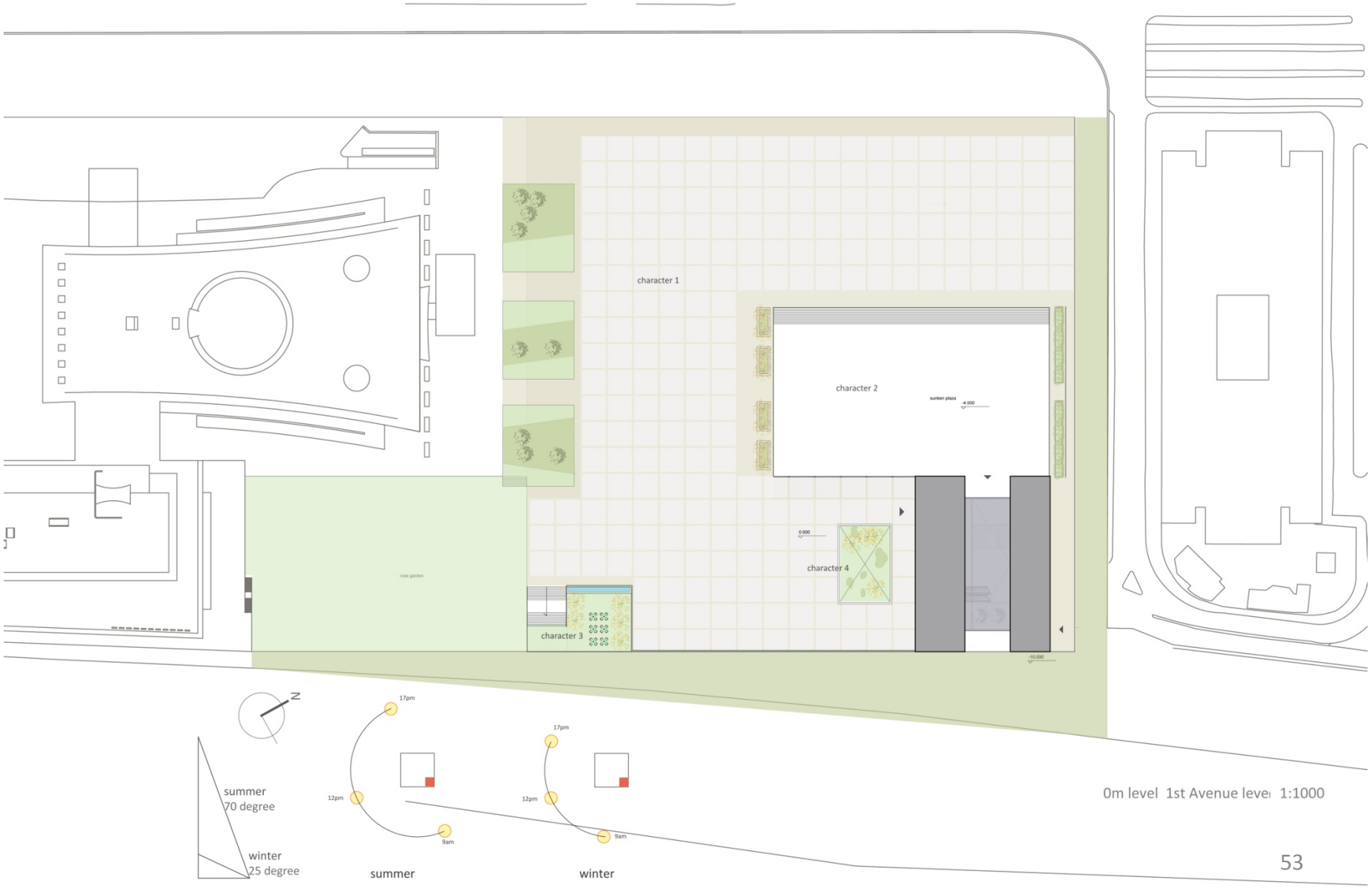
Conclusion of building in the urban situation



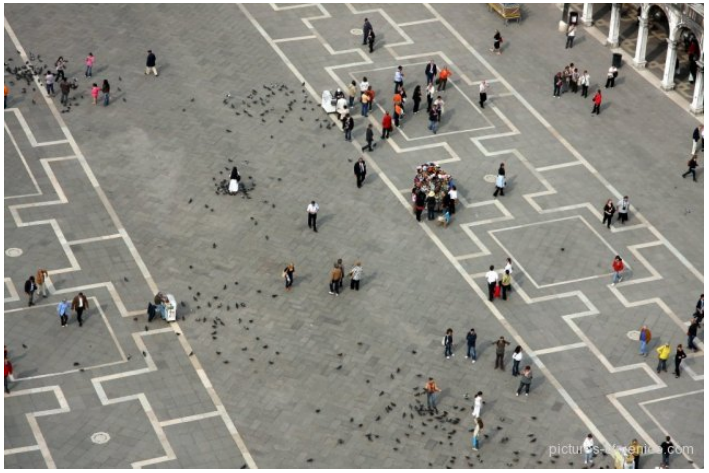


Chapter 4 **Location** & **Approach the building**

Site plan

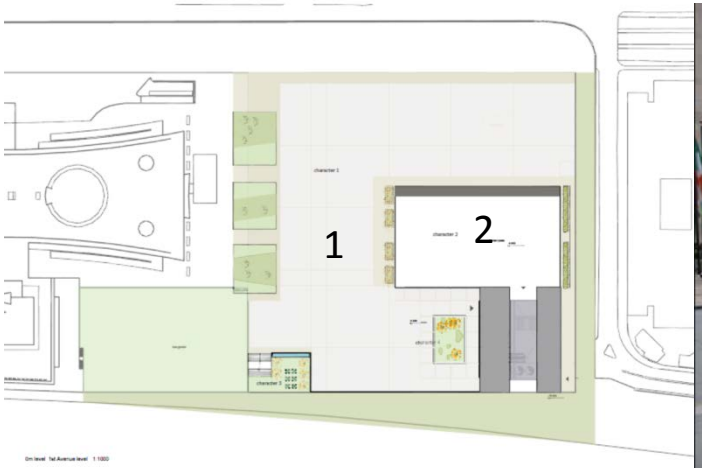

character 1
character 2
sunken plaza
character 3
character 4
rose garden
N
summer
70 degree
winter
25 degree
17pm
12pm
9am
summer
17pm
12pm
9am
winter
0m level 1st Avenue level 1:1000

Characters of the places



Characters 1 Plazza San Marco

Characters 1 La Defense



Characters 2 Rockefeller Plaza

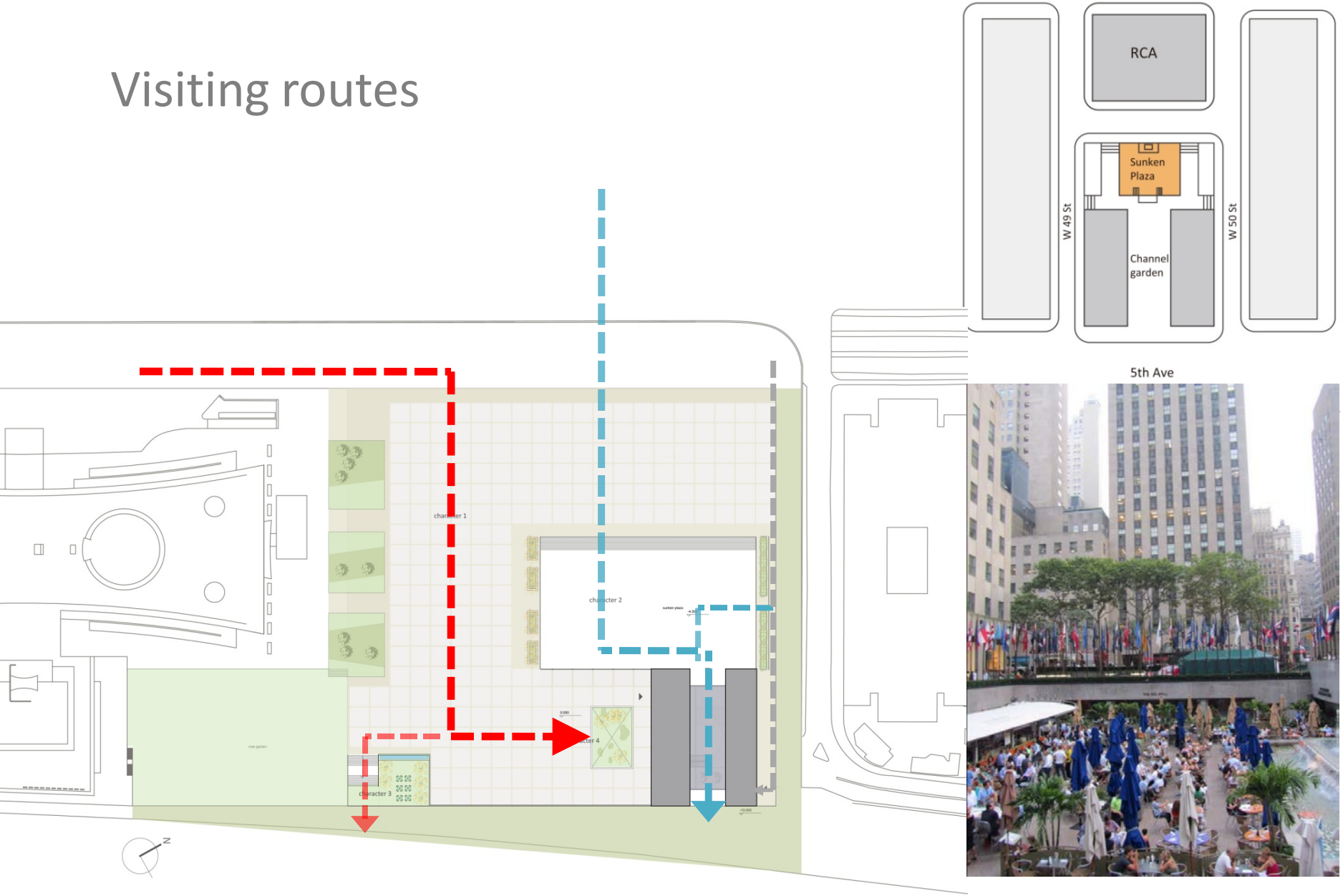
Characters of the places

Characters 3 Paley Park

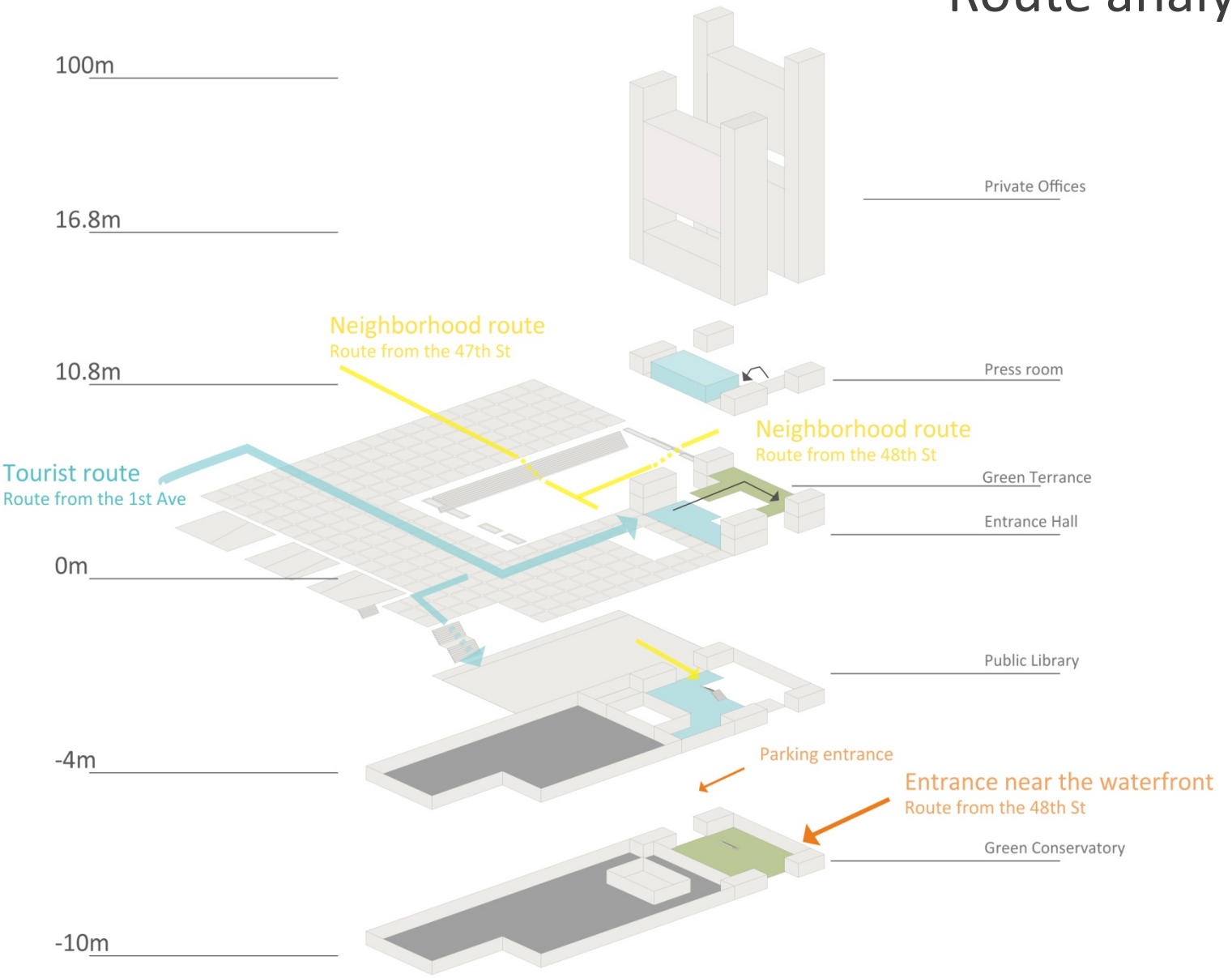
Characters 4 Times Building atrium

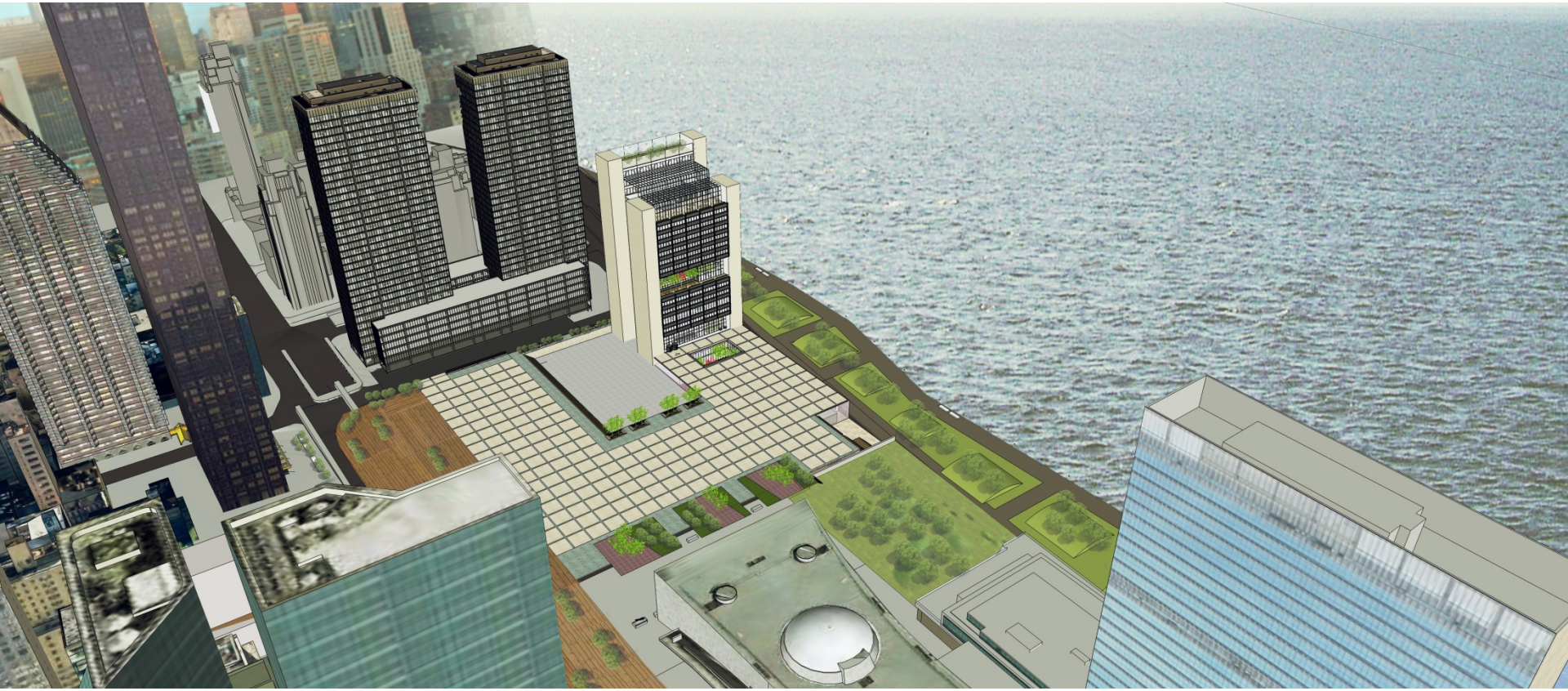
Characters 4 Ryuan Temple

Visiting routes



Route analysis





Approach the building from 1st Ave.

View from the 1st Ave.

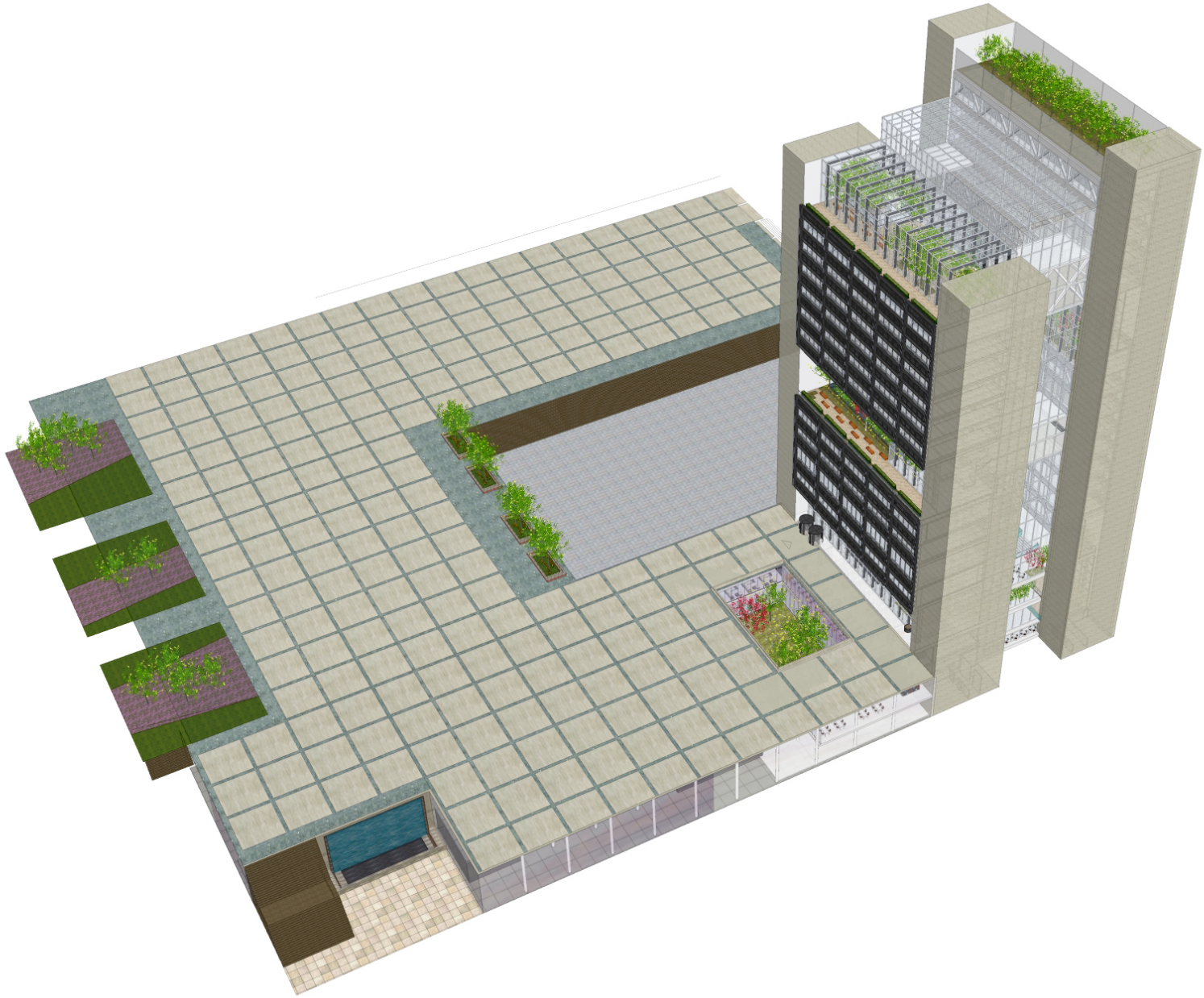
View from the side of the location

View from the square

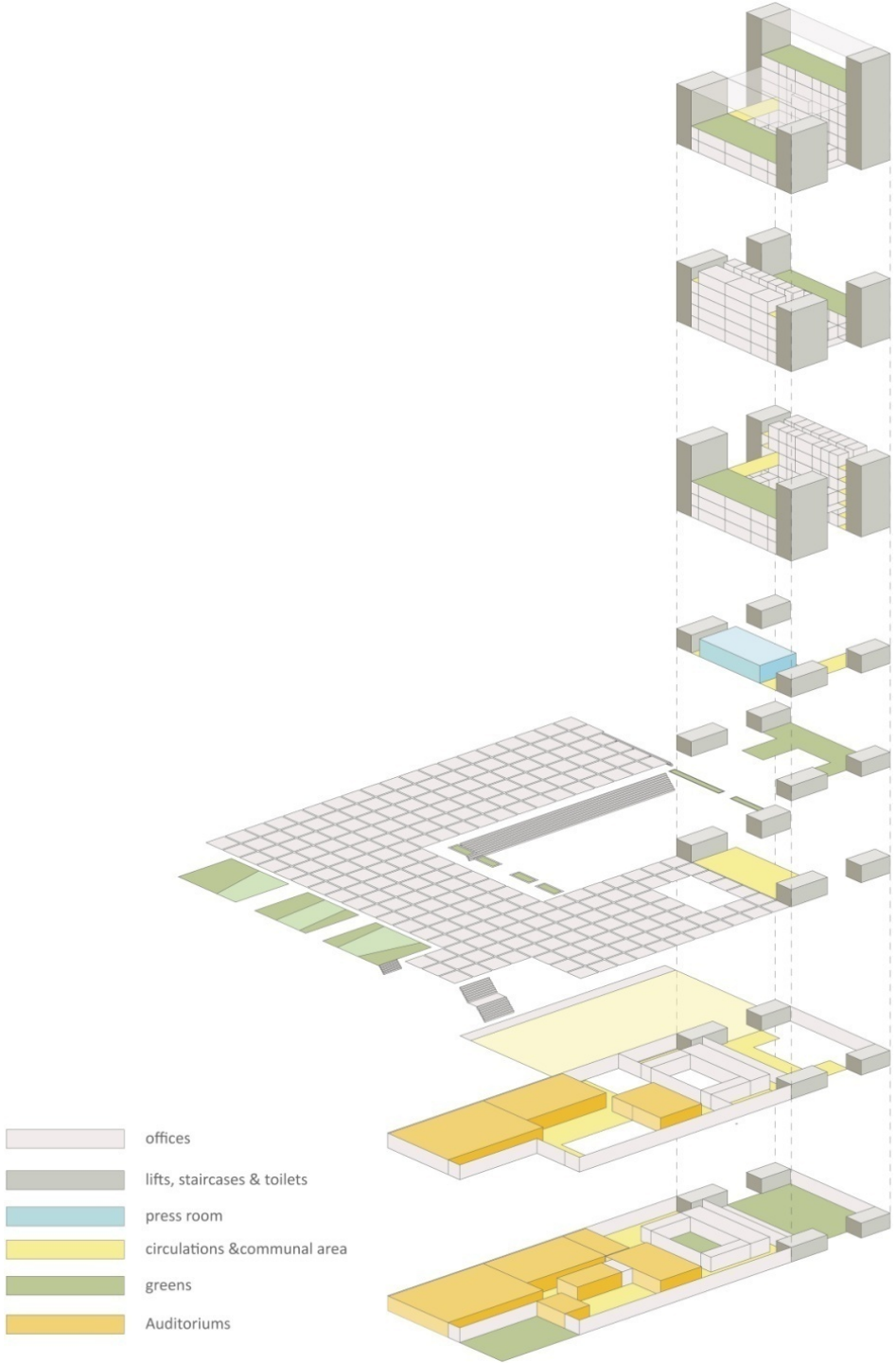
View from the square

View the city at the entrance

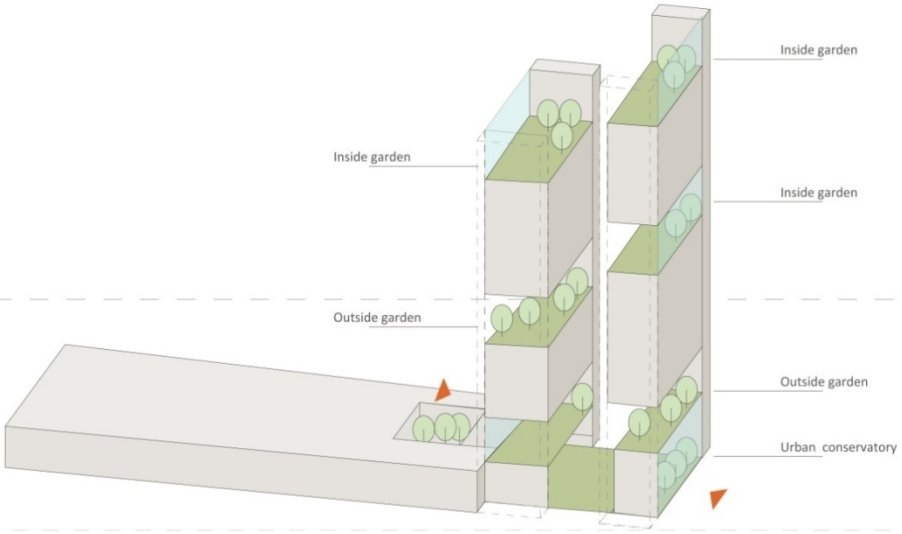
Chapter 5 **Building Design**

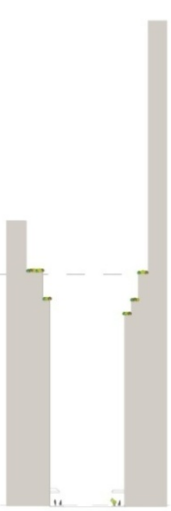


Program analysis

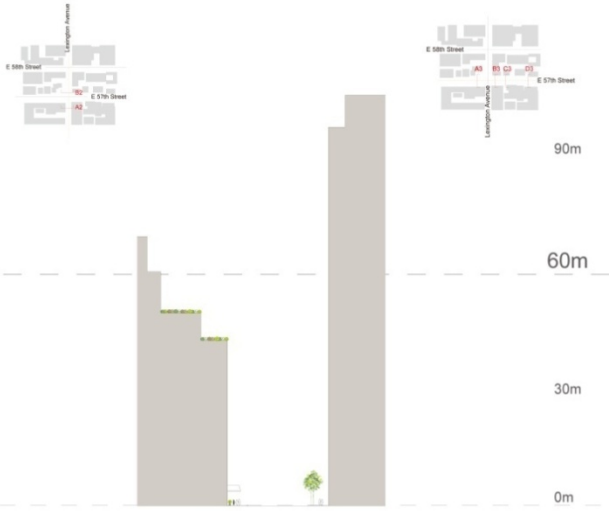


Arrange gardens in the building



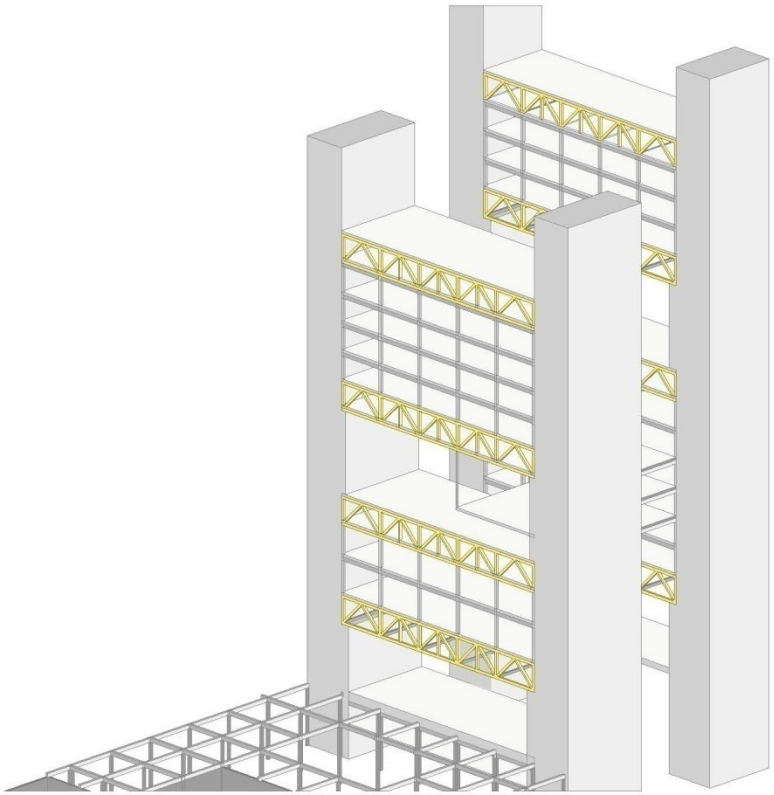


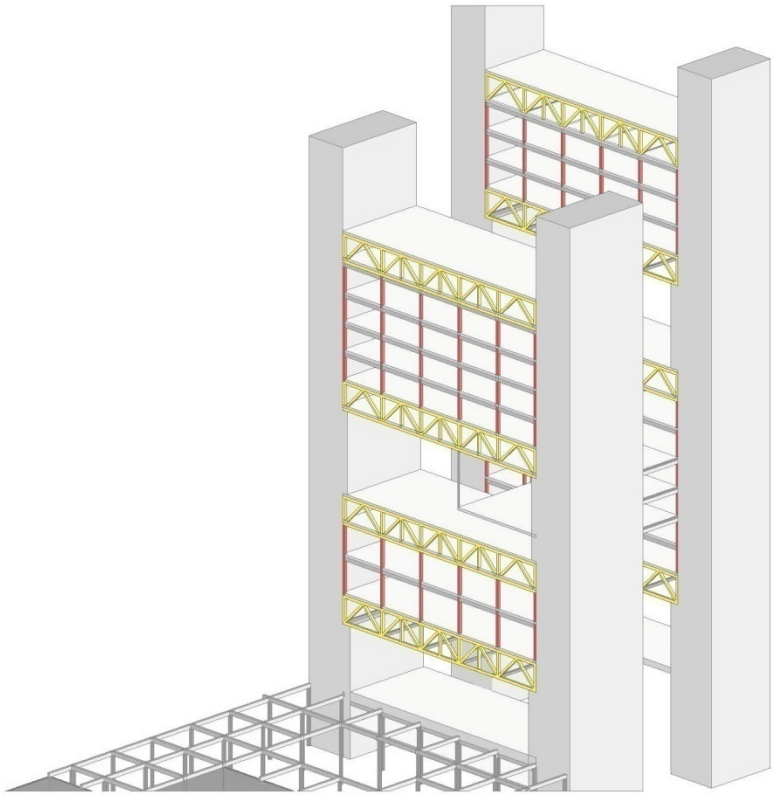
Section A2



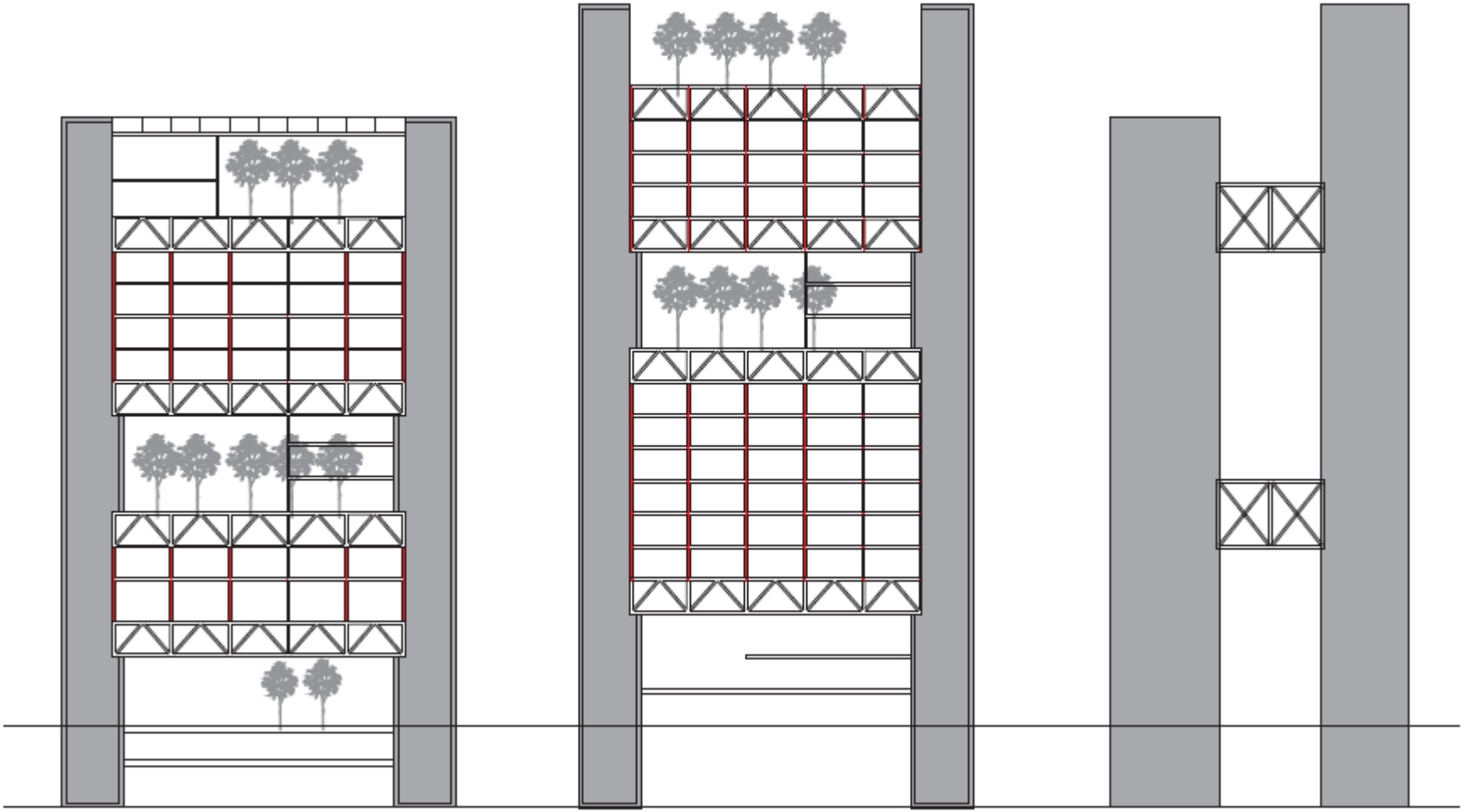
Section D3

Structure of the Building

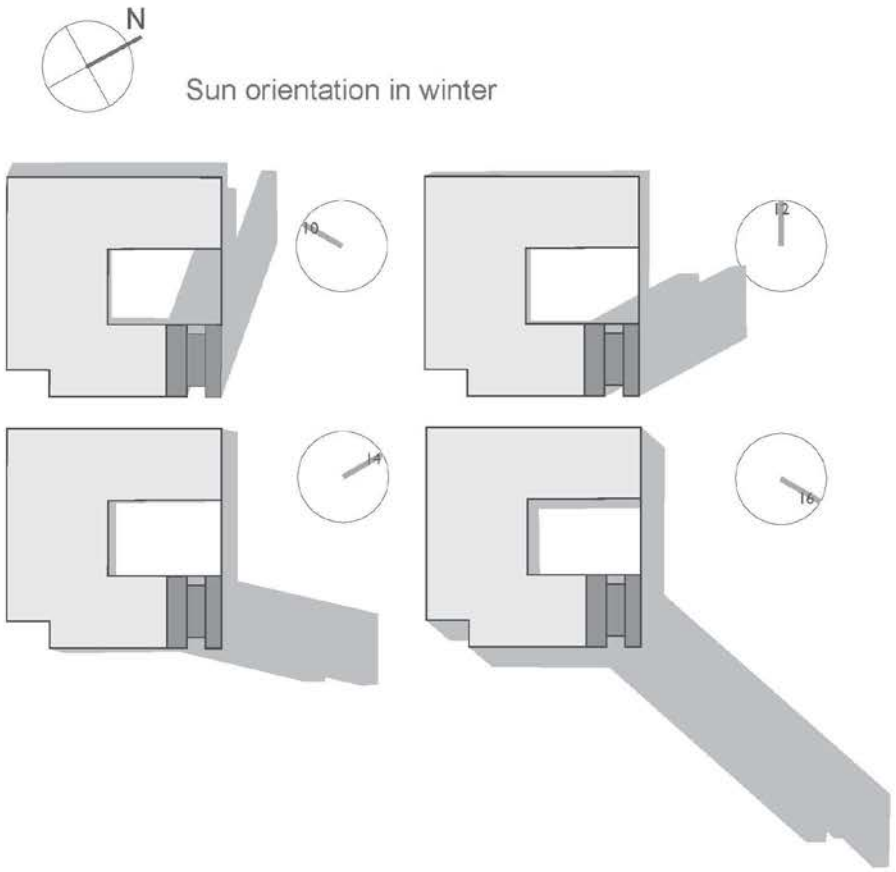




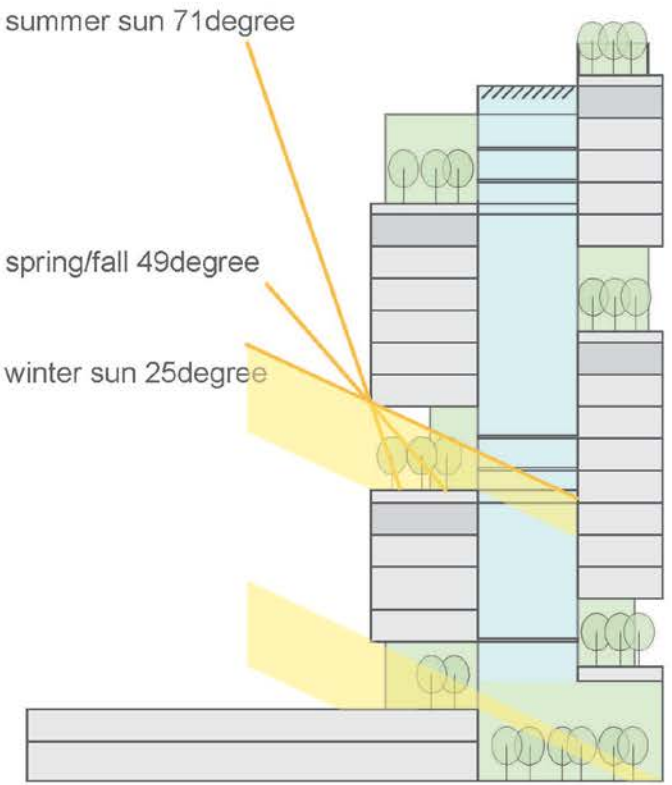
structure



Principle of Climate Design

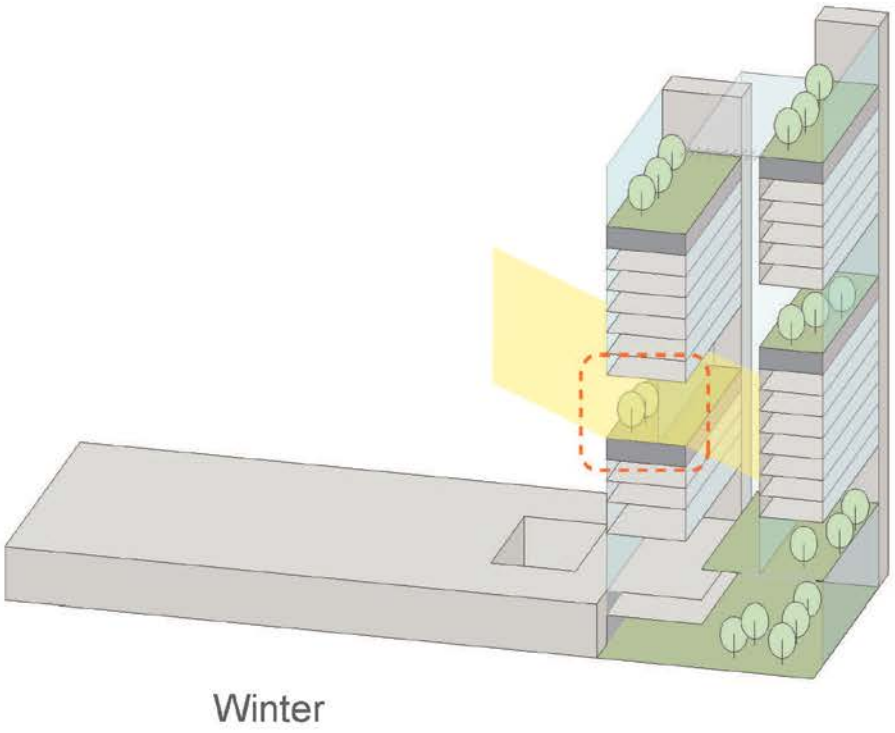


Sun orientation in Manhattan



The solar gain is being blocked in the atrium in spring/summer

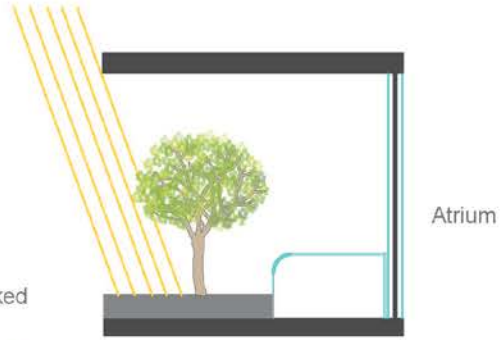
Direct solar radiation through out the sky garden



Winter

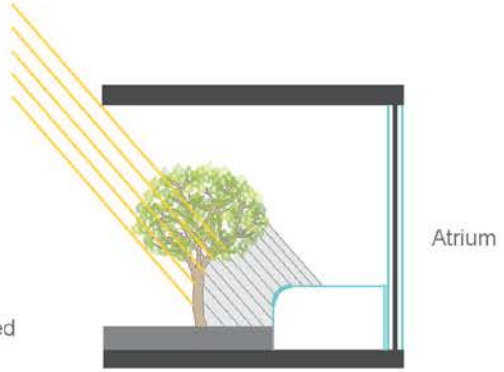
SUMMER:

The solar gain is being blocked in the atrium in summer



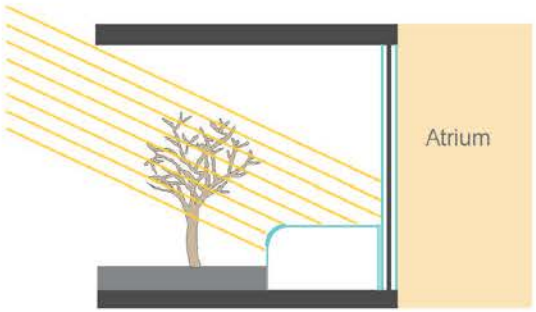
SPRING / FALL

The solar gain is being blocked in the atrium in spring / fall



WINTER

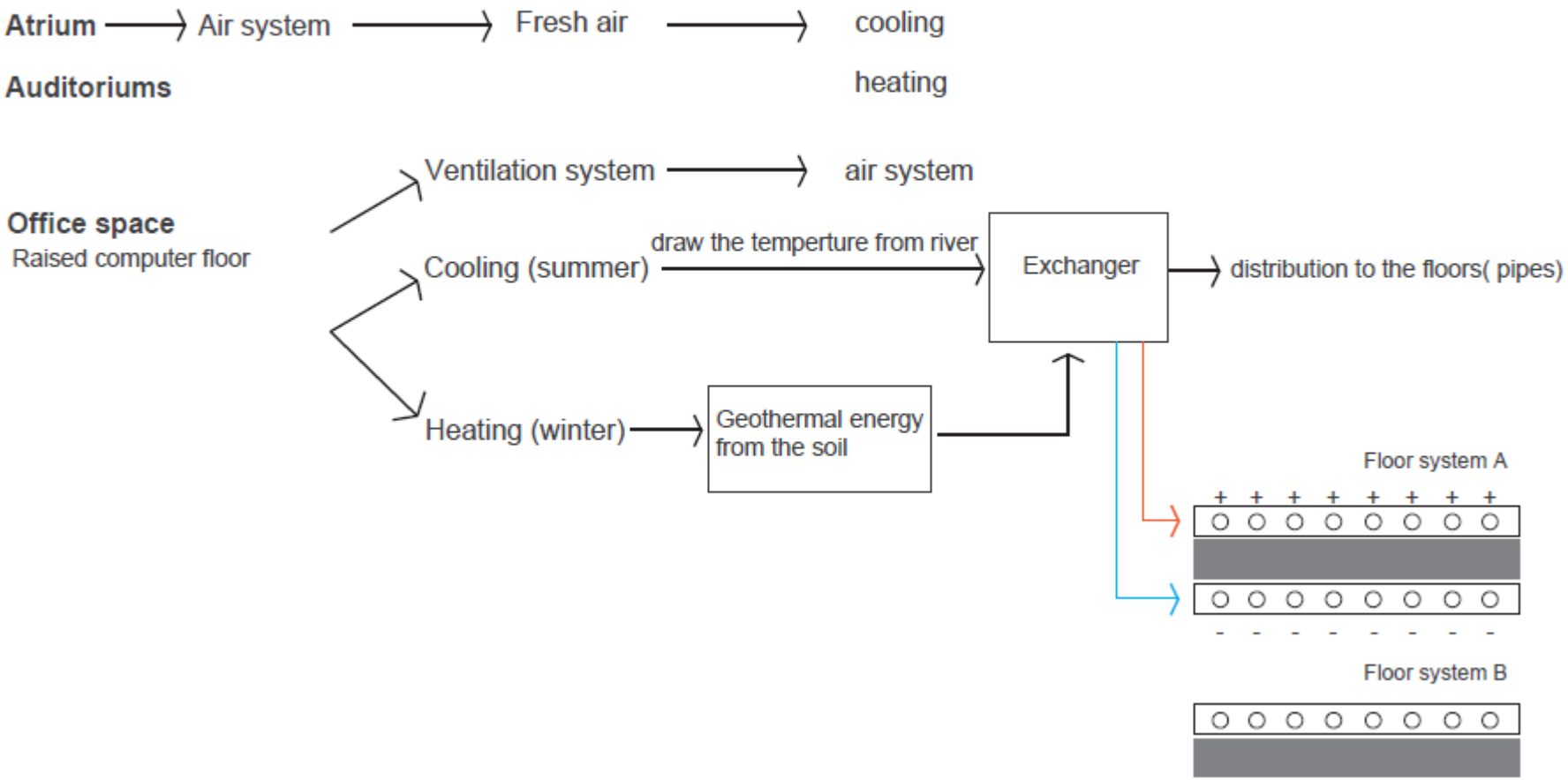
More direct solar radiation gain in the atrium



Principles of installations

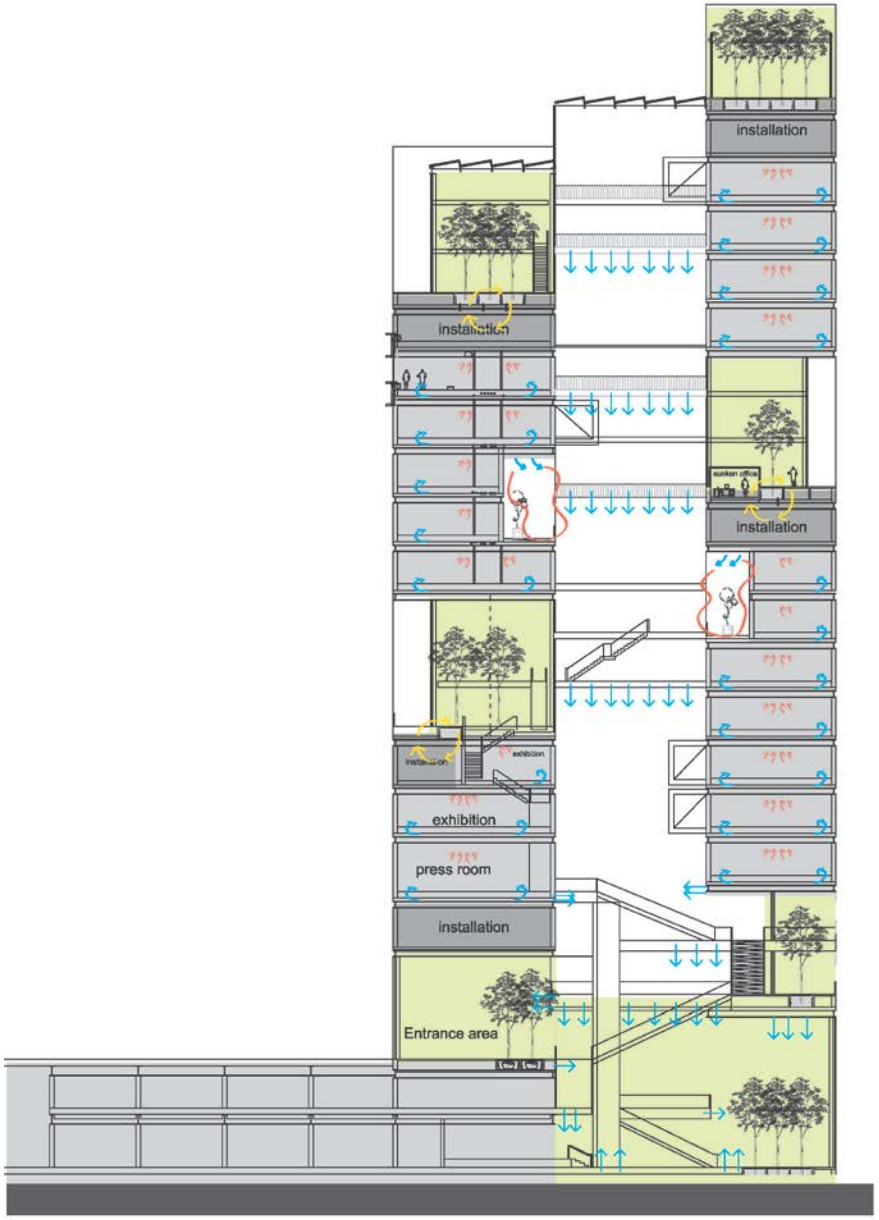
Need for Installations in UN Building

Double system: Atrium is a seperate unit in the building



Installation of whole building

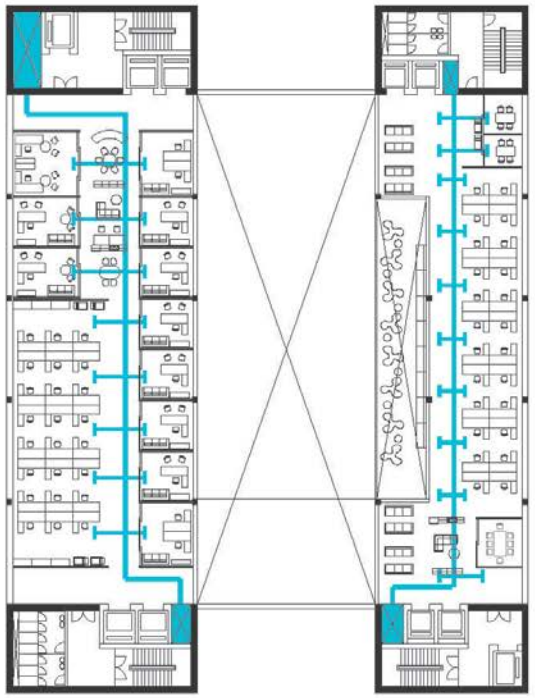
Air system of the atrium

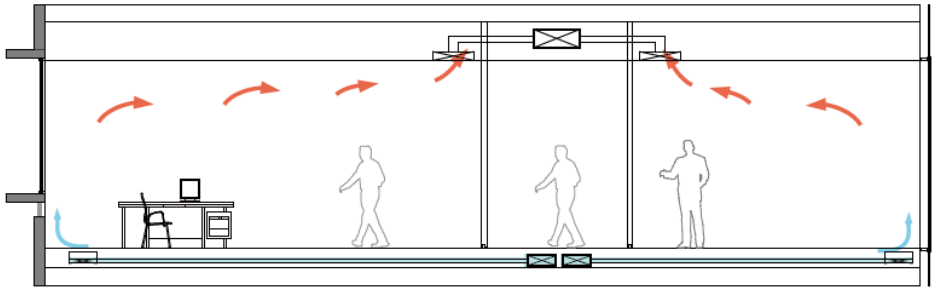


Air system of the office

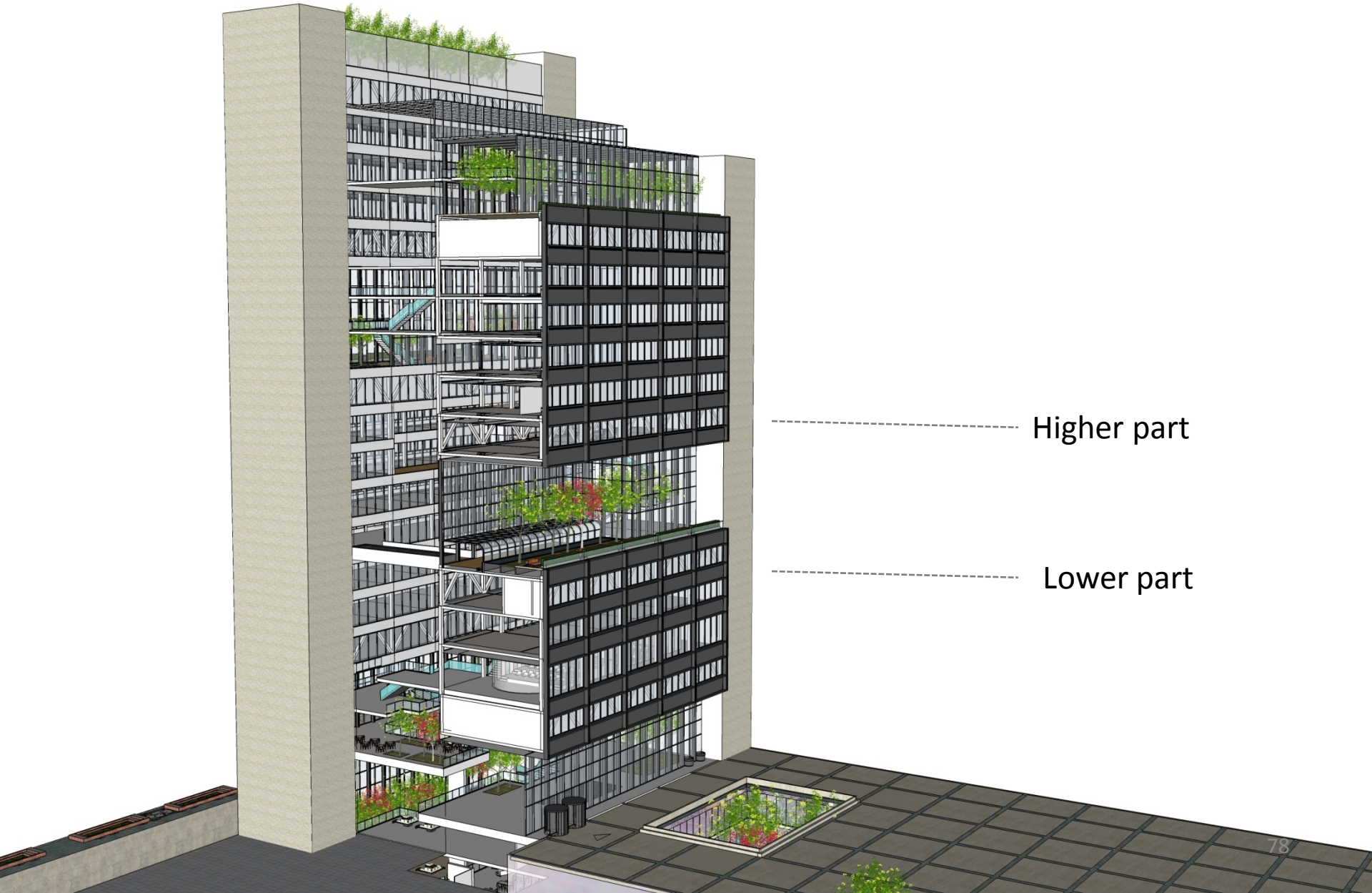
Air supply

Air return





Overview of the building



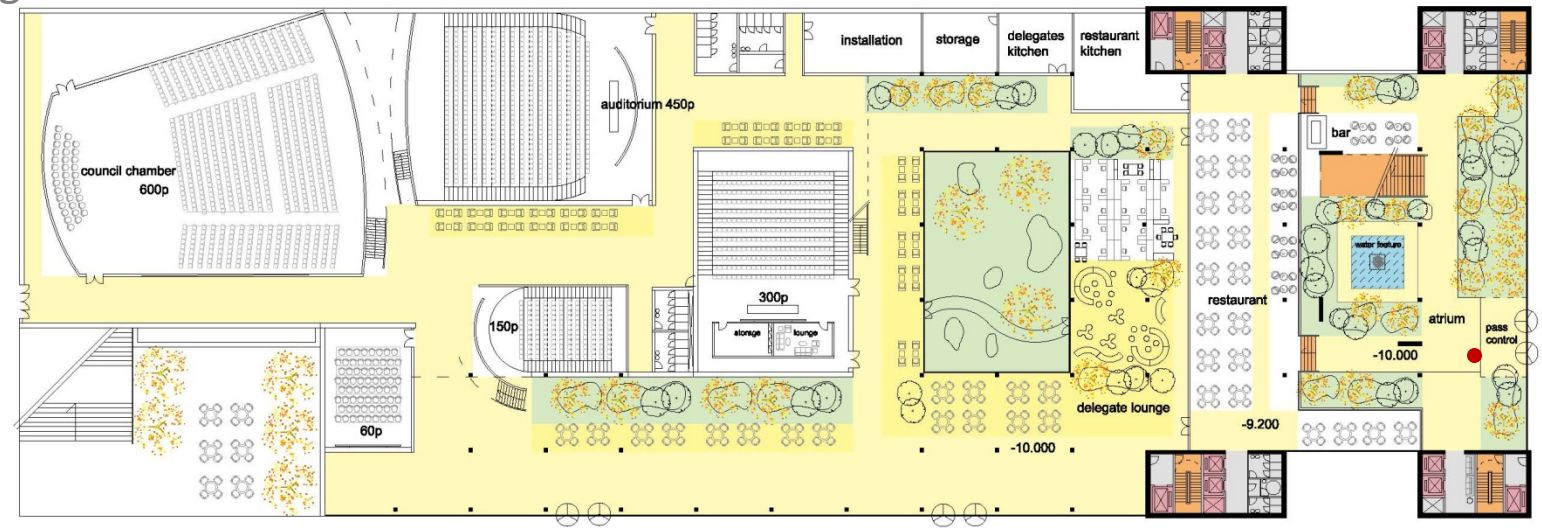
Chapter 6 Lower part of the building

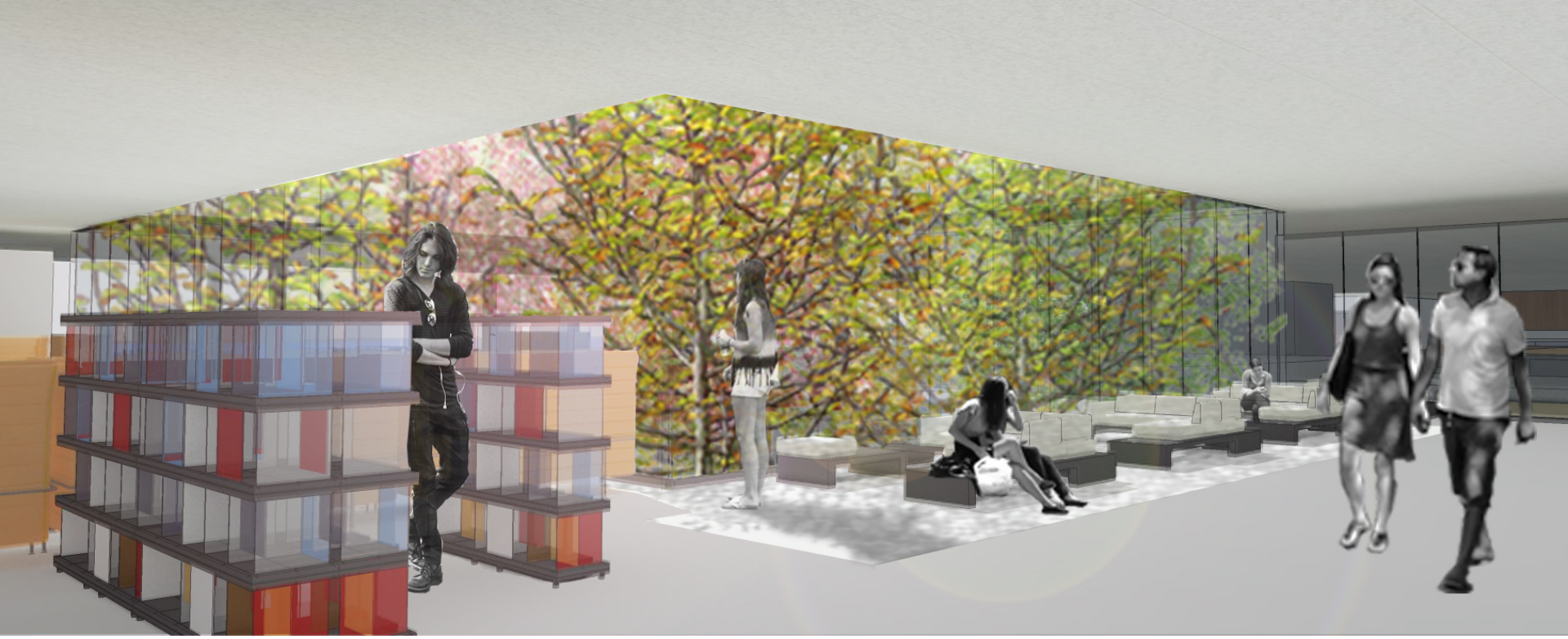
View from sea

View from city

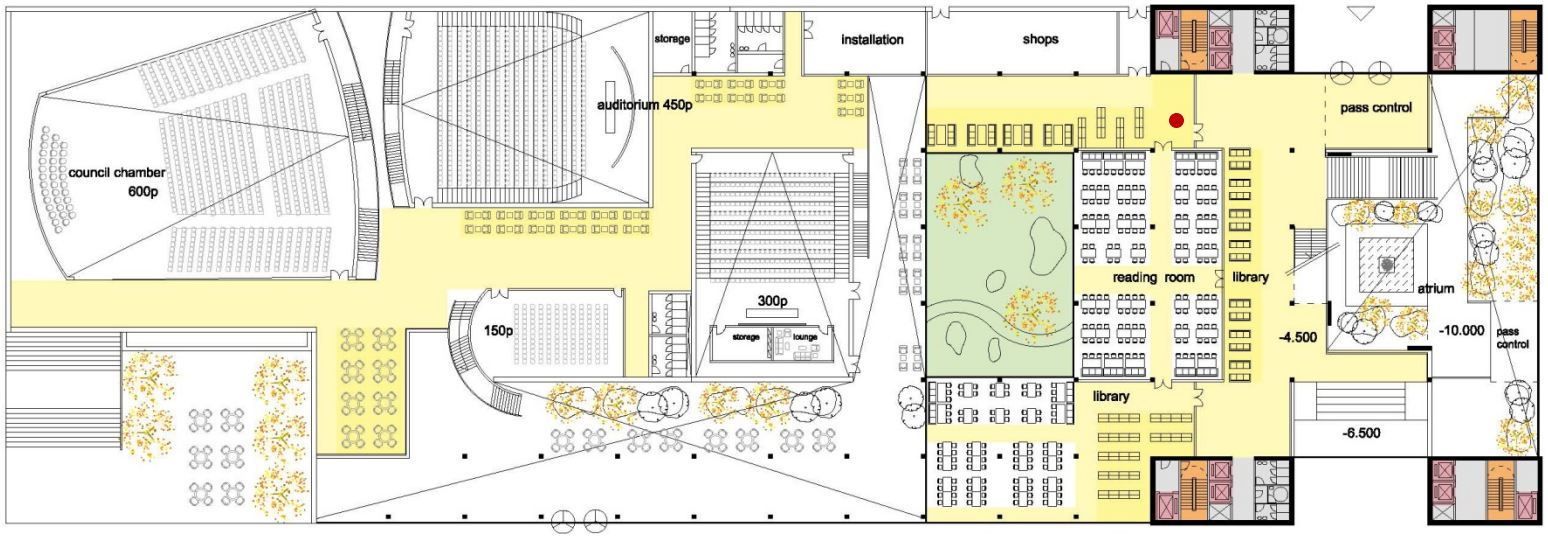
Entrance Hall

Public living room

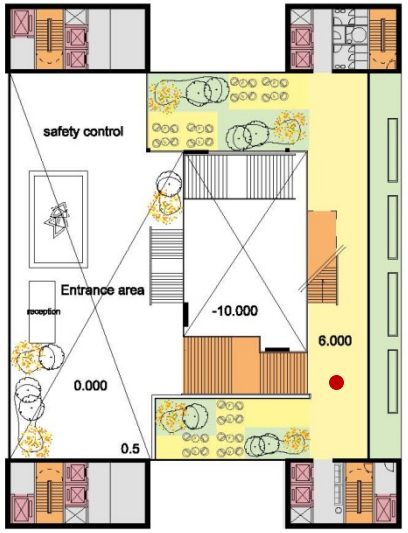




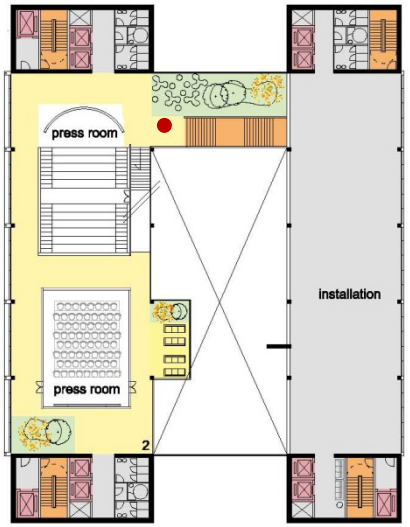
View from Library



Lower part of Atrium



View to the press room



Chapter 7 Higher part of the building

Atrium

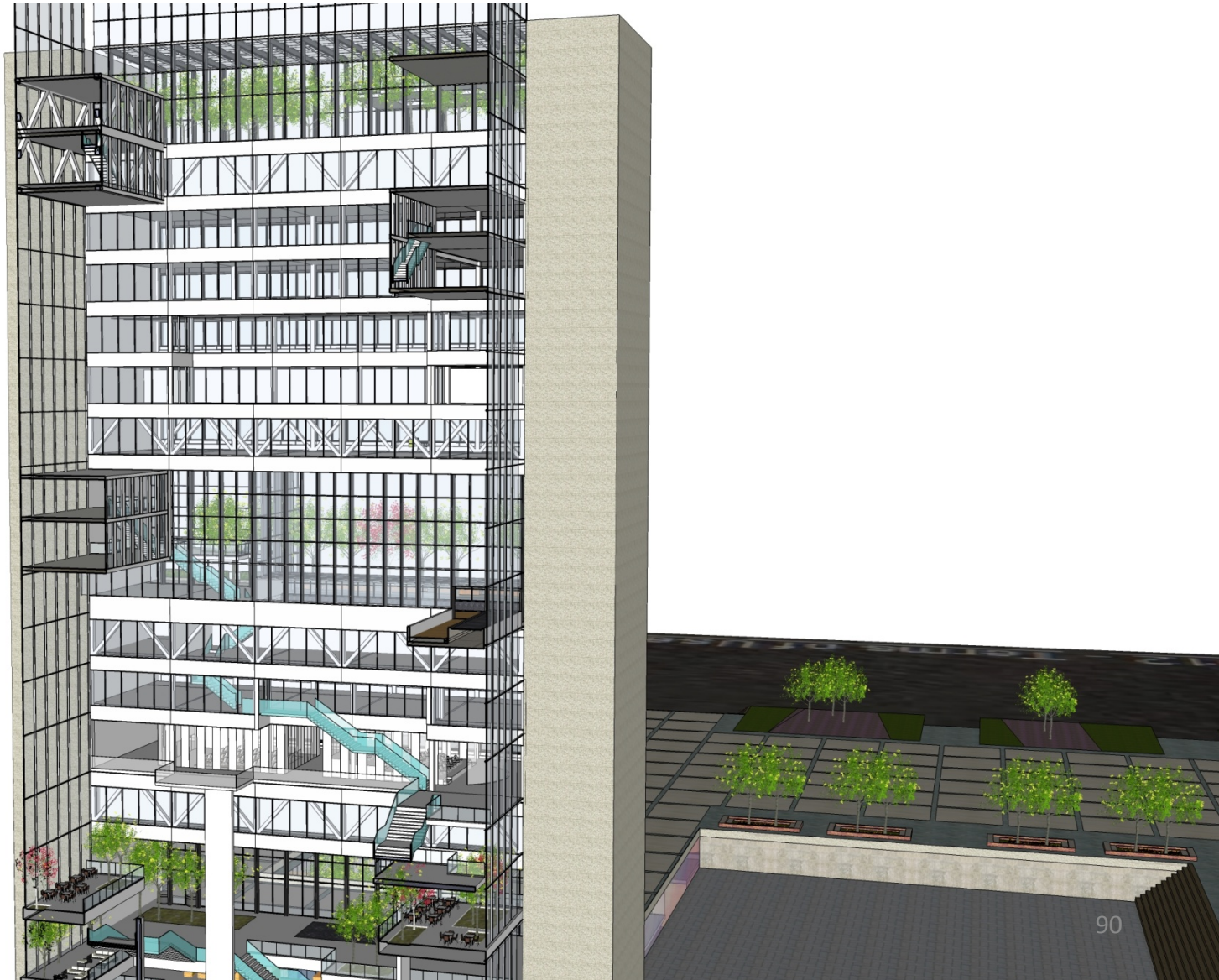
Standard Office

Sky garden

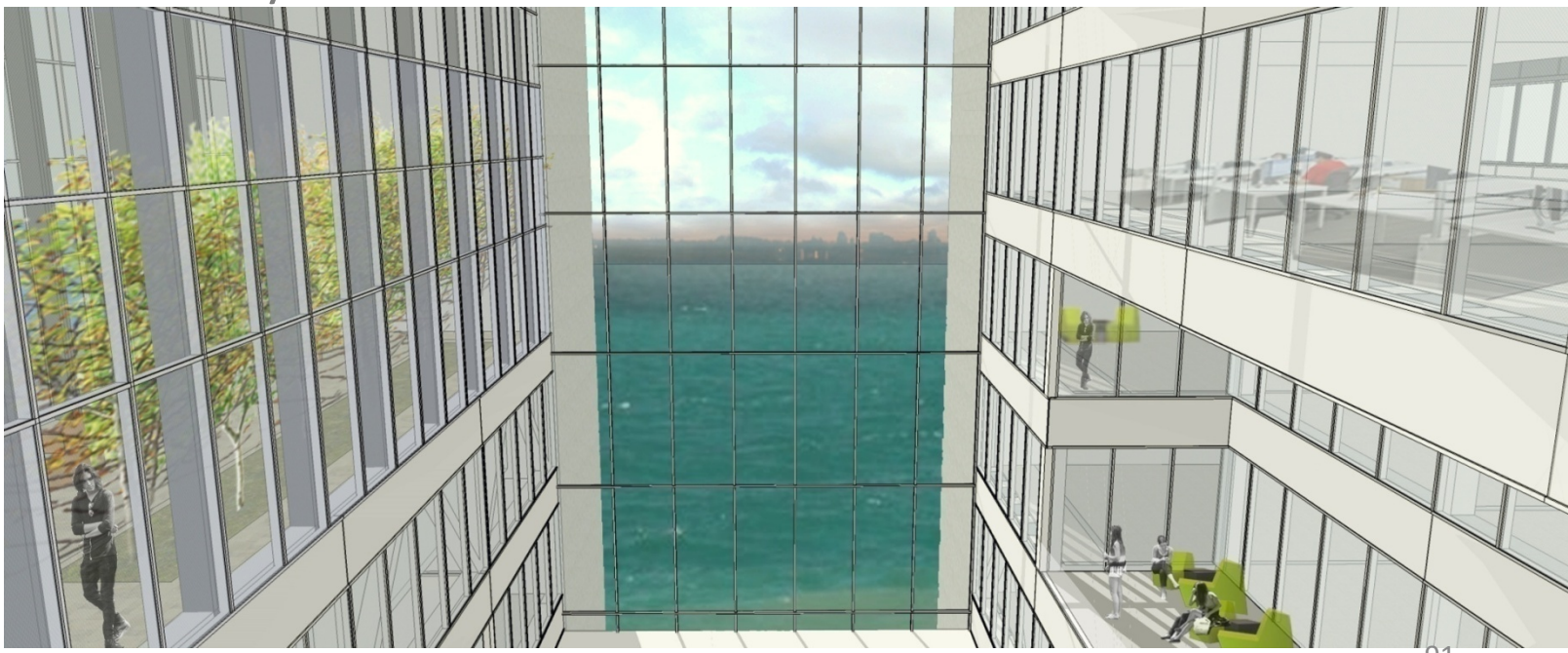
Overview of the to higher part

Atrium Design

Atrium facade

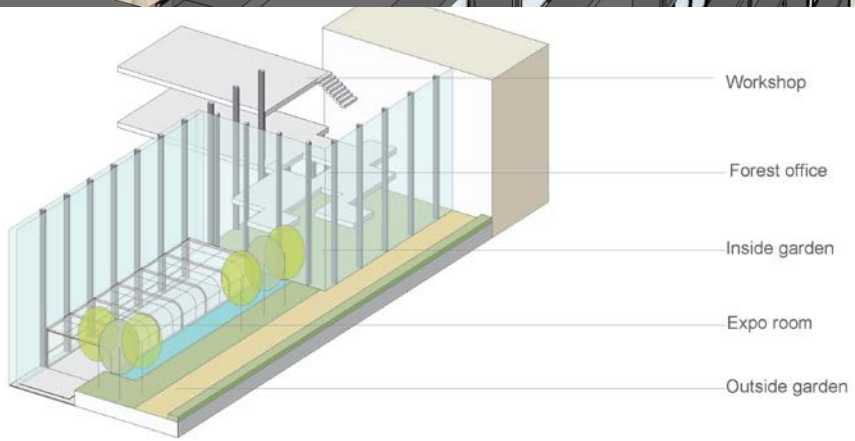


Atrium—view to the city

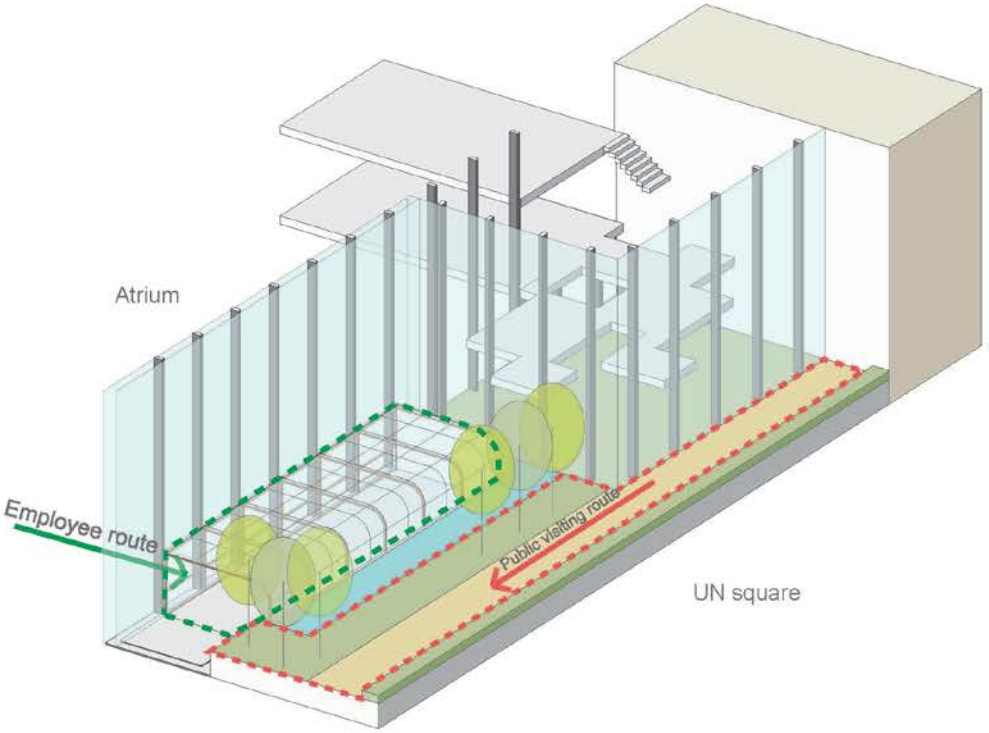


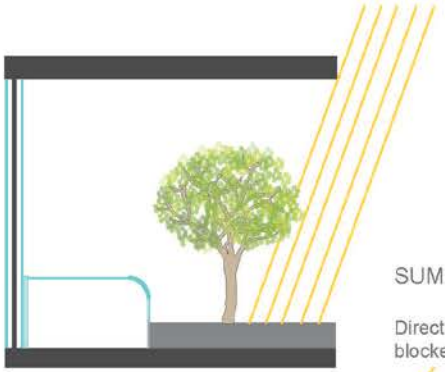
Atrium—view to the sea

Overview of the sky garden



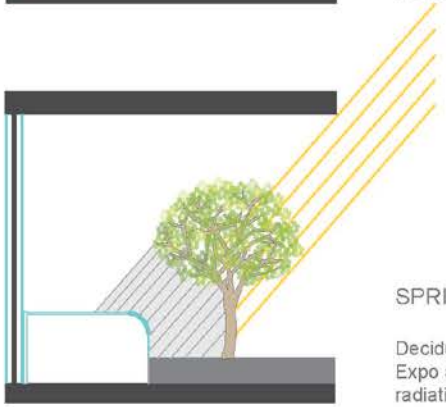
Sky Garden Analysis





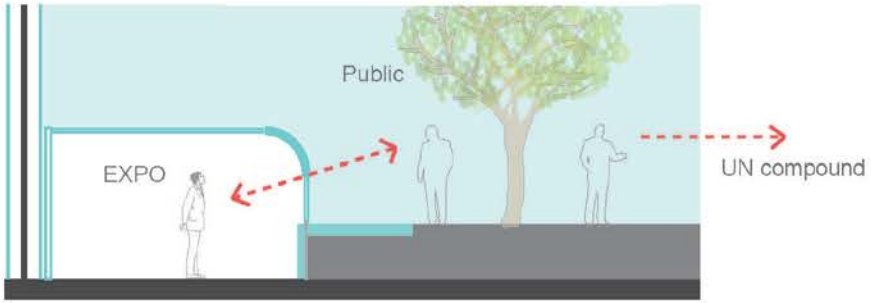
SUMMER:

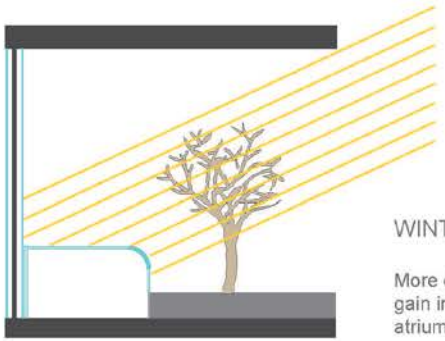
Direct solar radiation is blocked by cantilever atop



SPRING / FALL

Deciduous trees protect Expo area from direct solar radiation

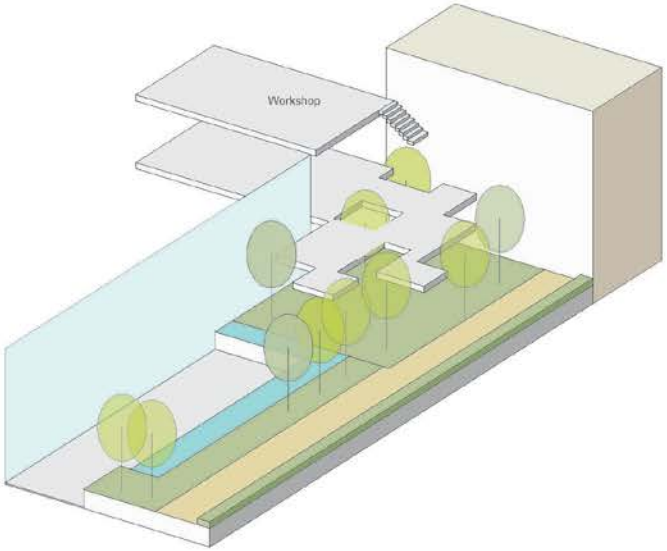


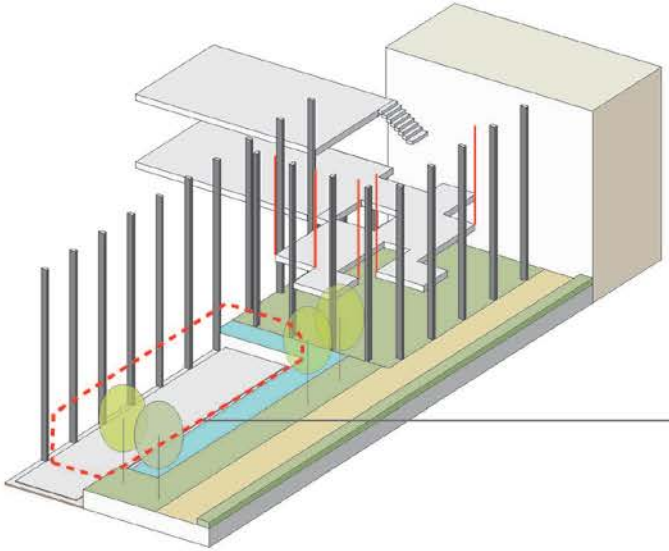


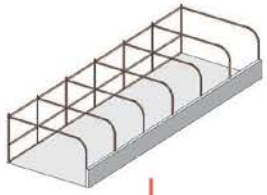
WINTER

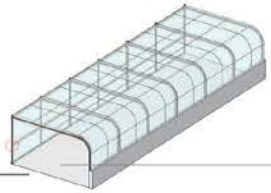
More direct solar radiation gain in the Expo area and atrium

Construction of Sky Garden

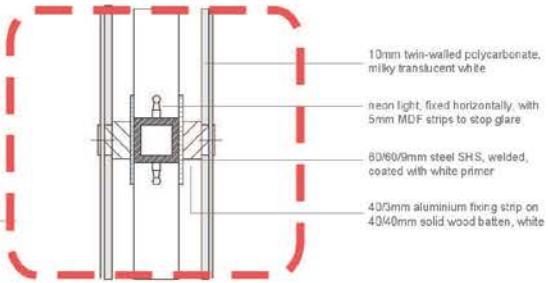






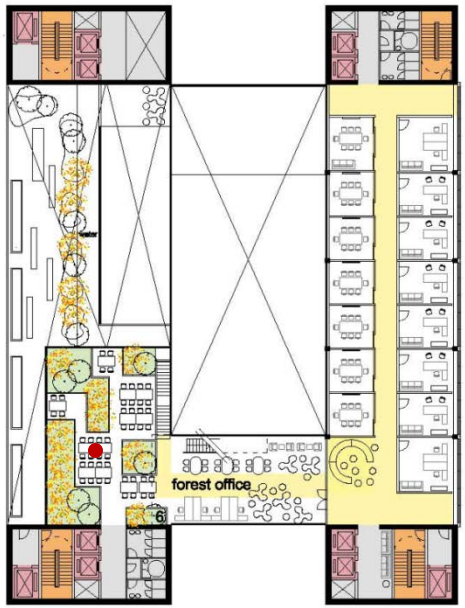


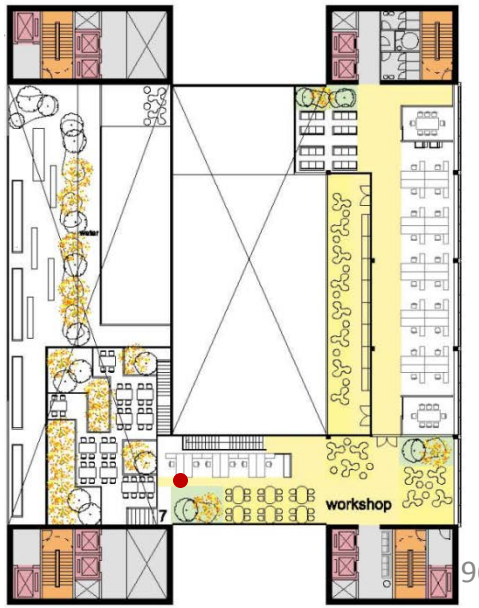
Structure of the Expo room



Exposition room in the sky garden (sunken)

Forest office in the sky garden



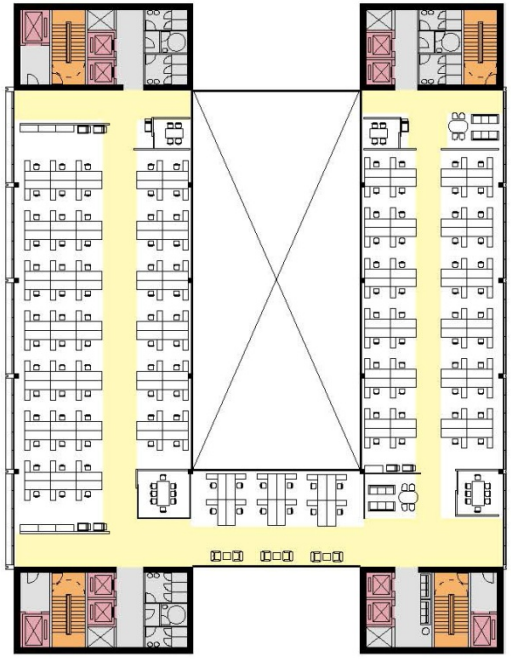


Standard office design

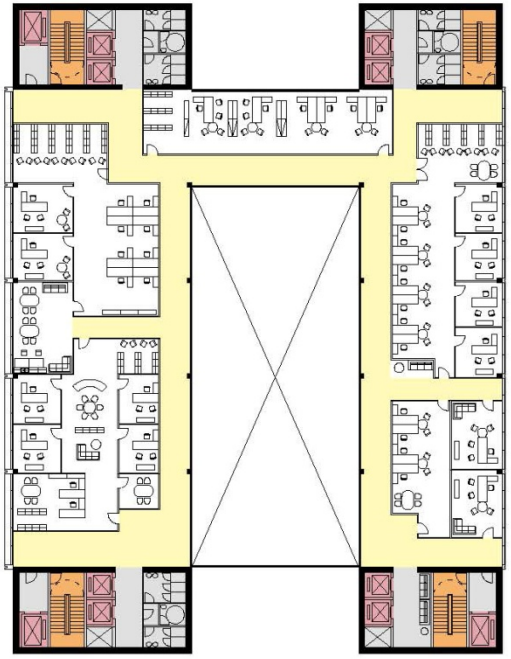
Overview of the office

Flexibility: Options of the layout of standard office area

100% cell offices



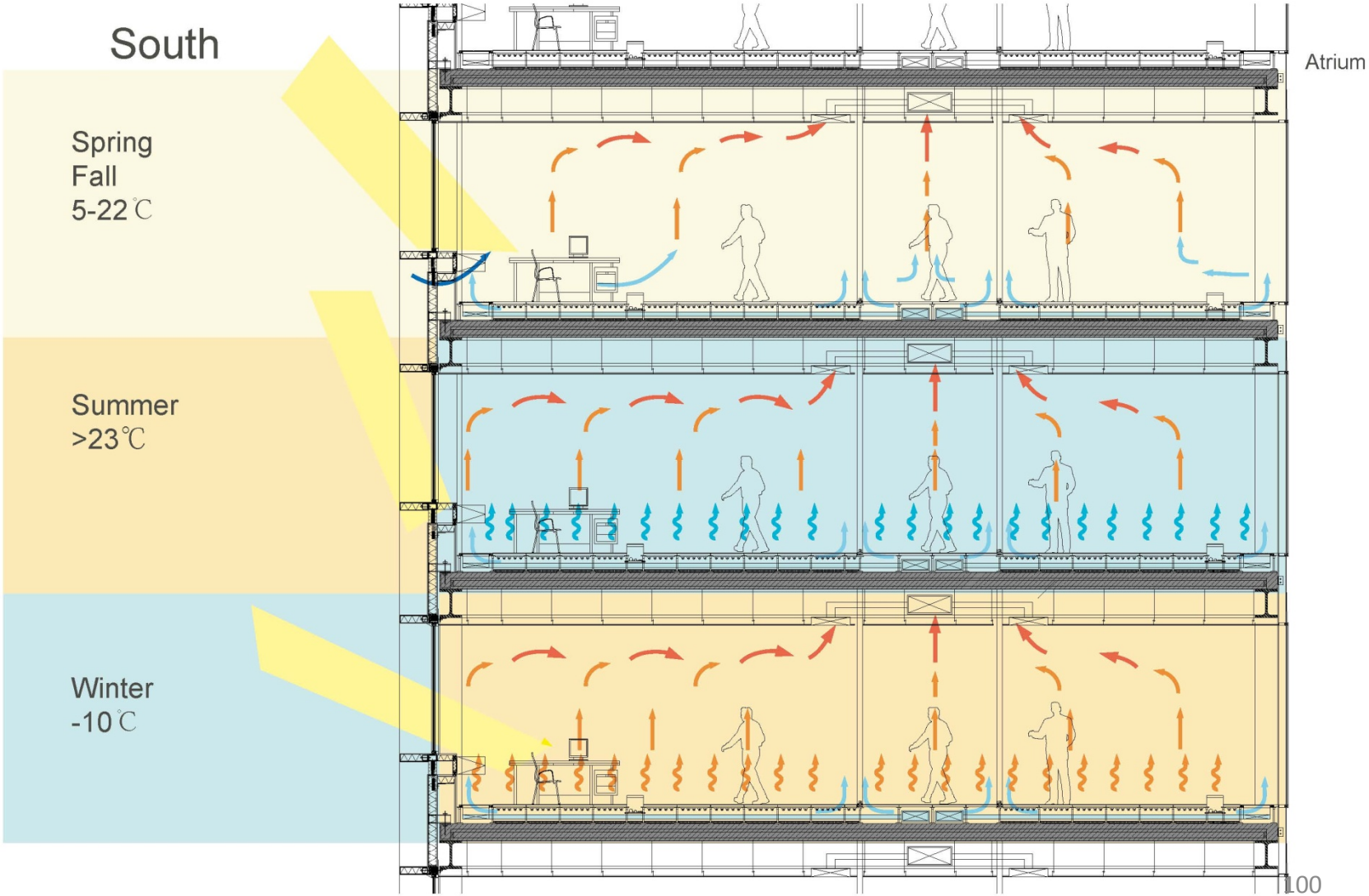
100% open plan offices



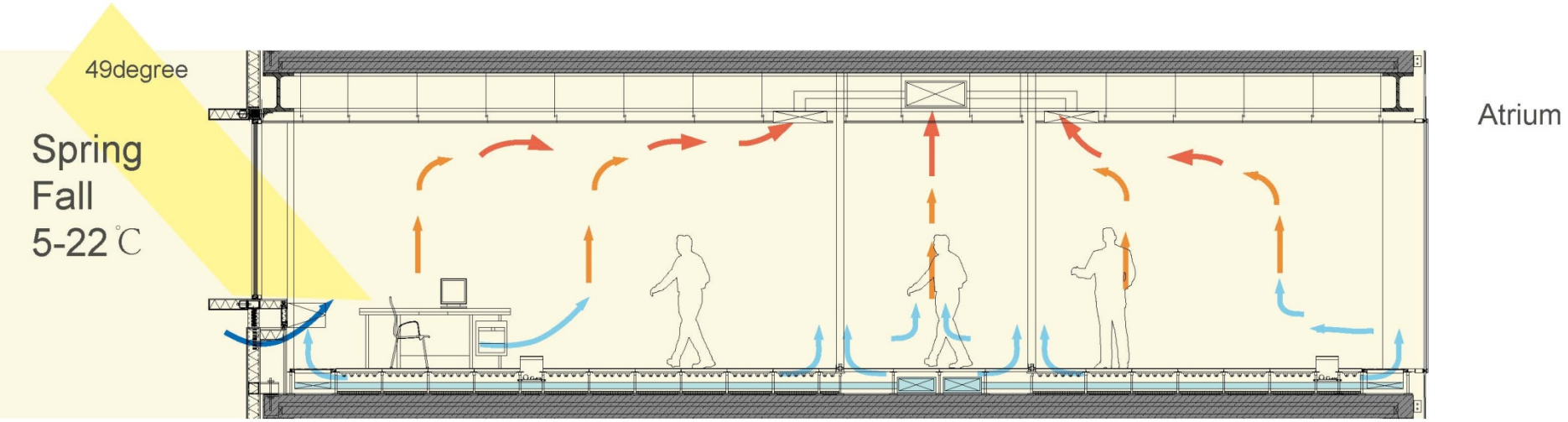
Mixed offices

Climate in Office

Double system---------Floor heating/cooling & Air ventilation system

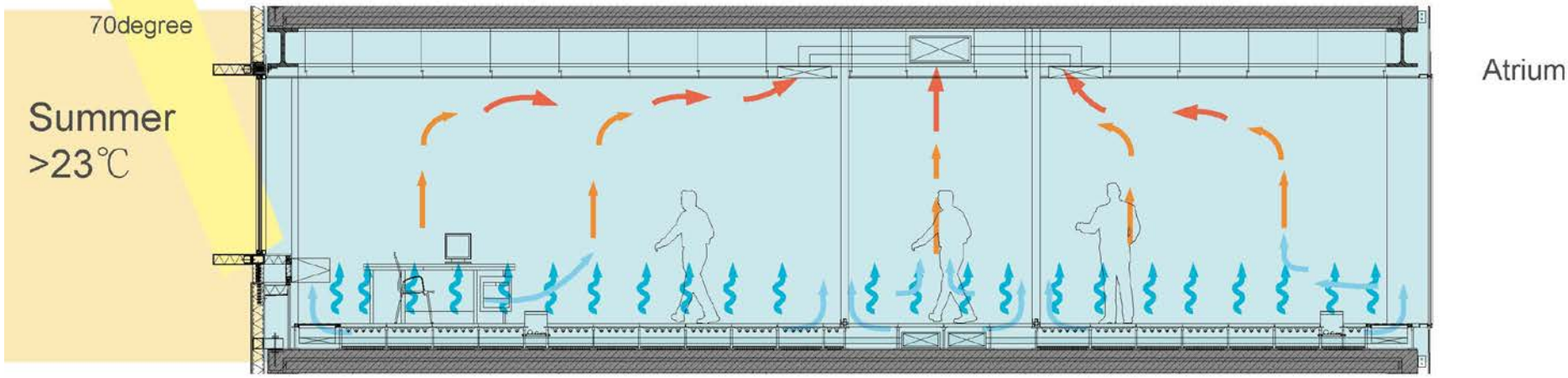


Spring / Fall



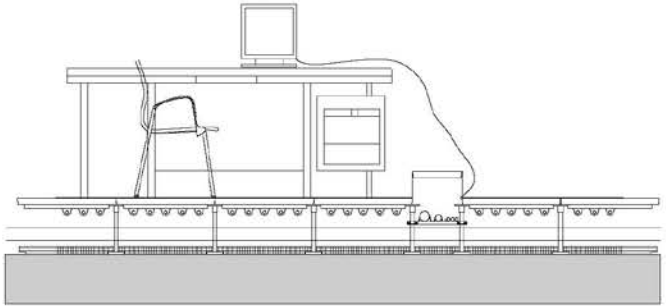
- Main: Natural ventilation
- Air supply in need

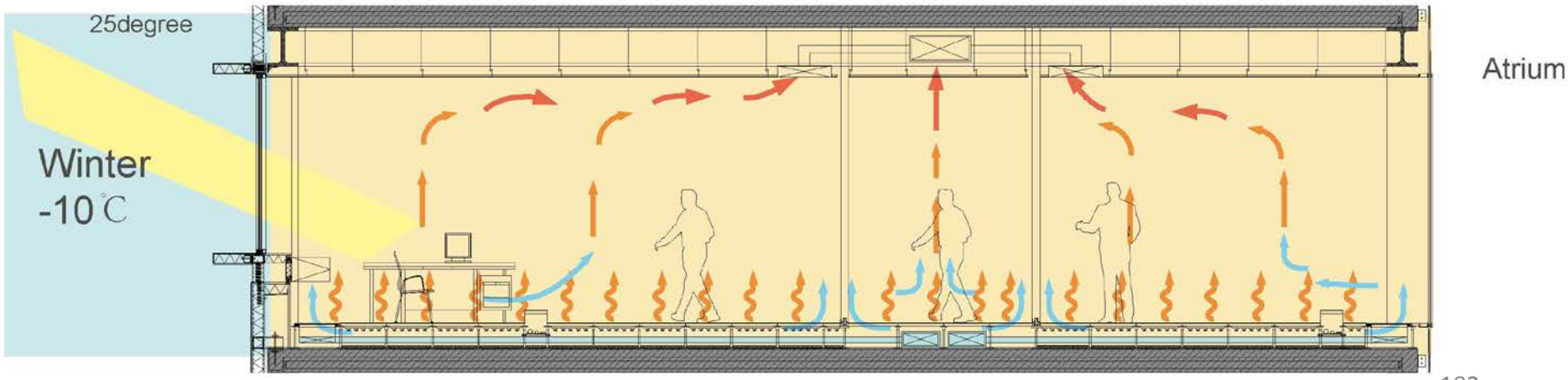
Summer/ Winter



Water radiator Cooling/ Heating

Cool/ Warm air in extreme need

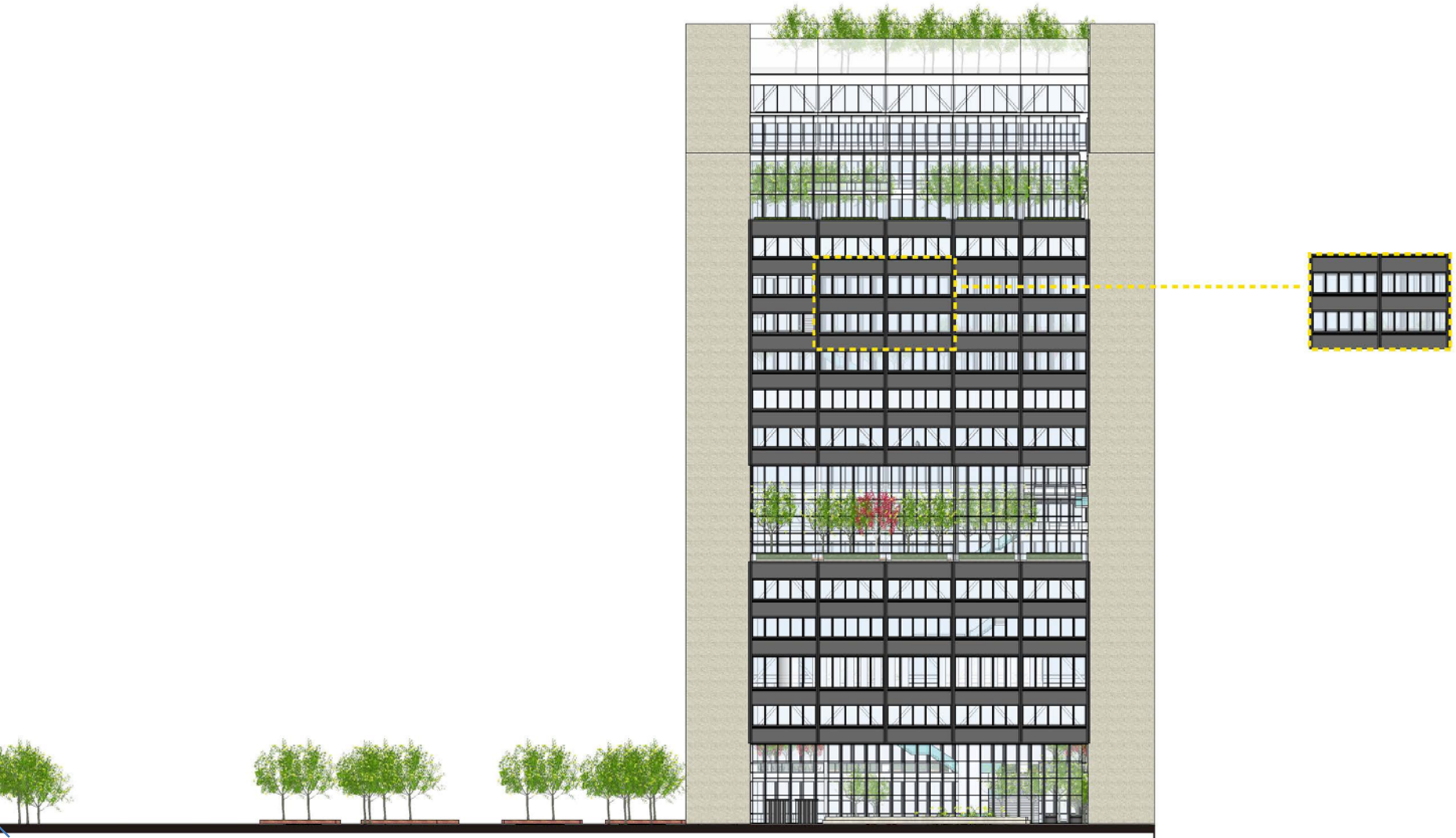




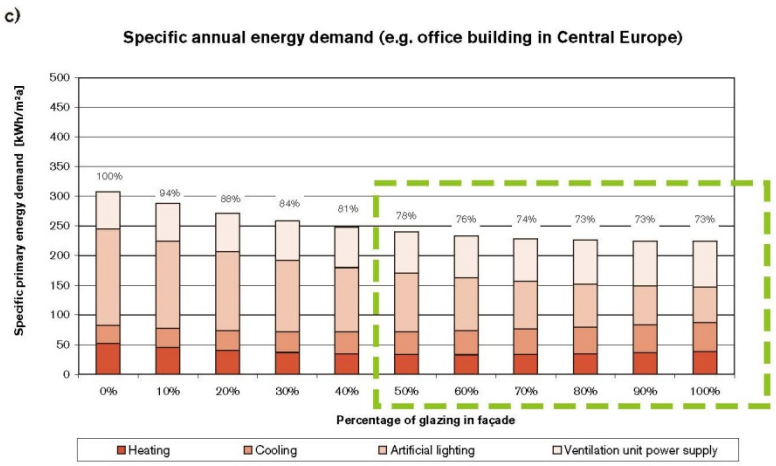
Office facade

- Reduce energy consumption
- Natural light—sun shading
- Natural ventilation– adapt the individual differences
- view to the outside

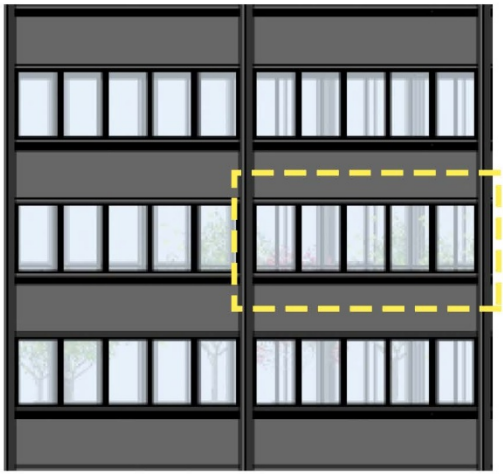
Overview of south facade

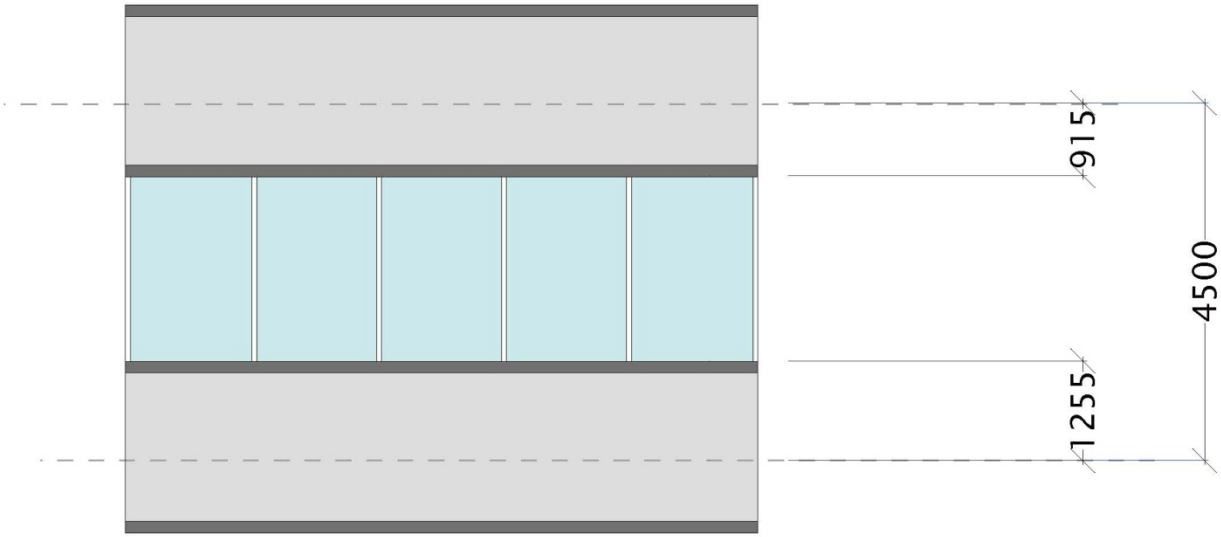


Ratio of close and open relate to the energy consumption

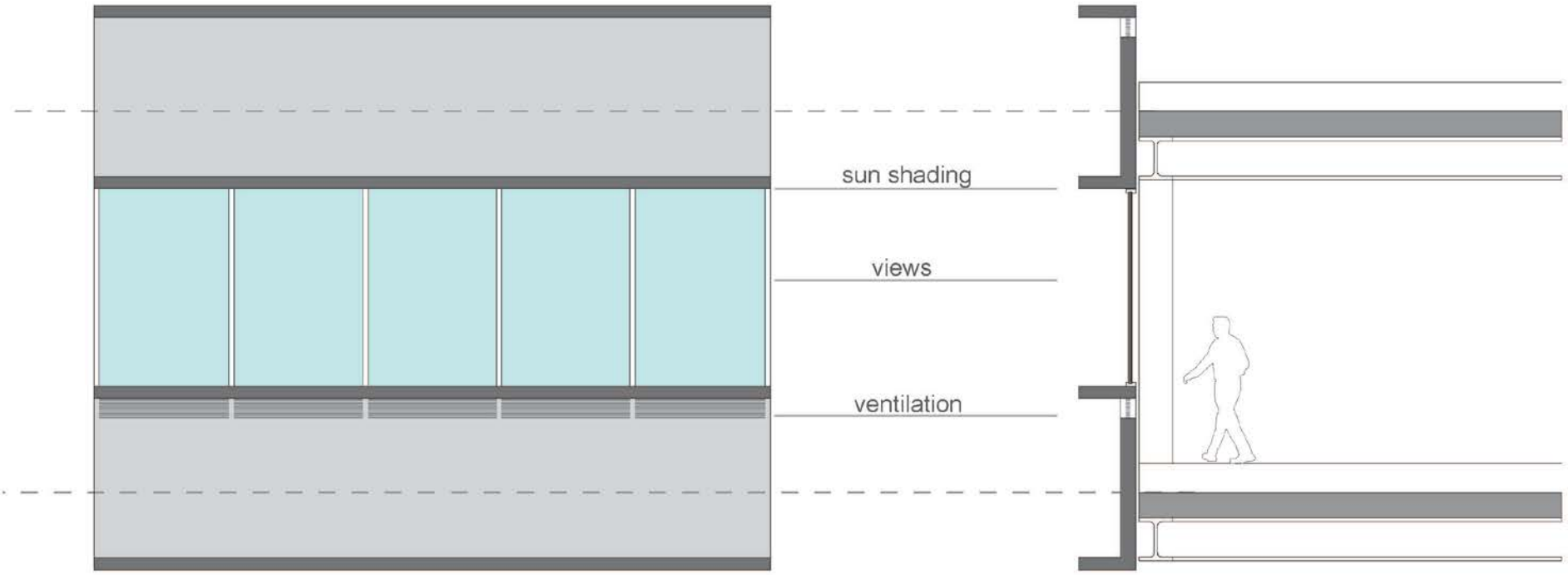


50% Closed area VS 50% Glass area

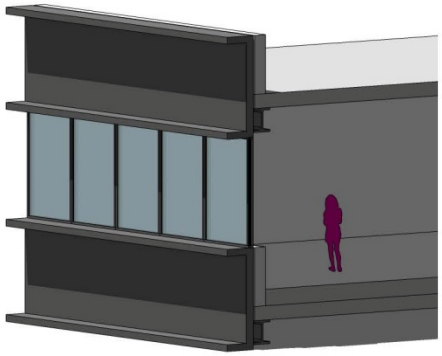


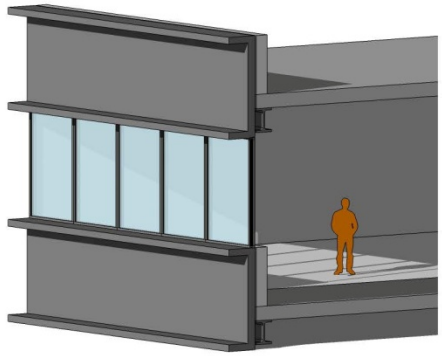


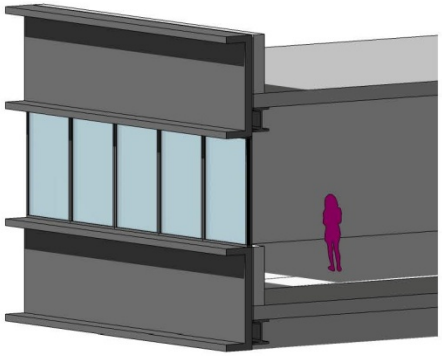
Division of functions of the façade panel

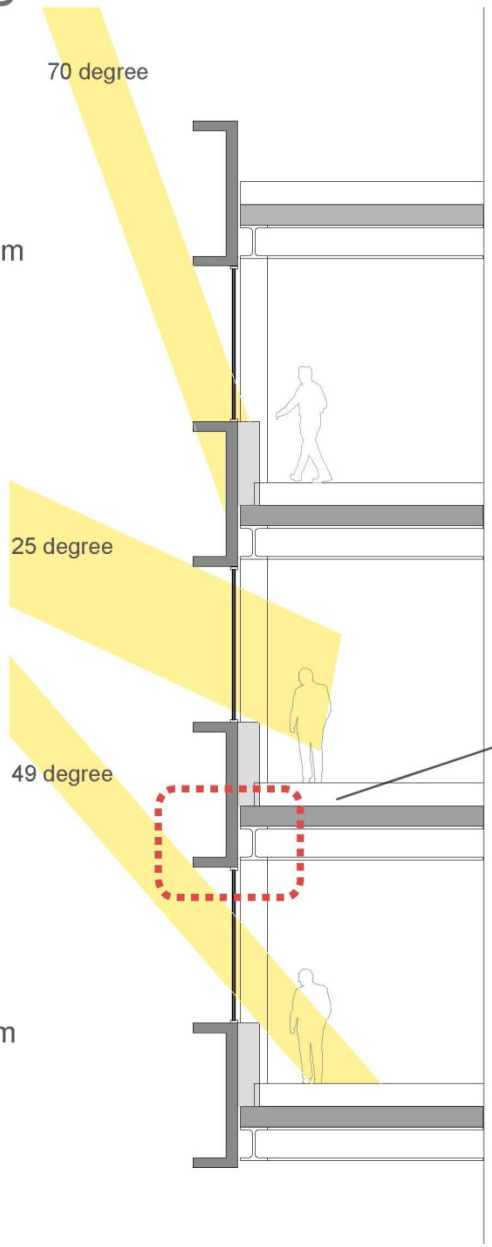


Specific facade design in relation to the sun orientation

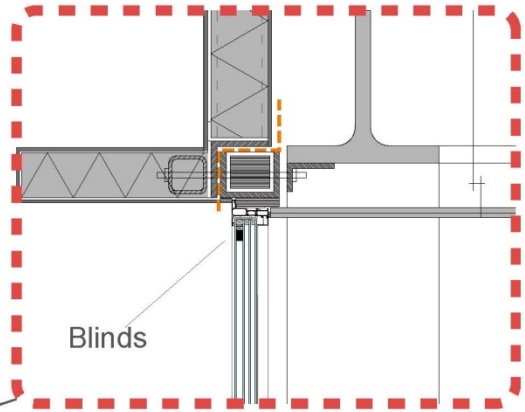






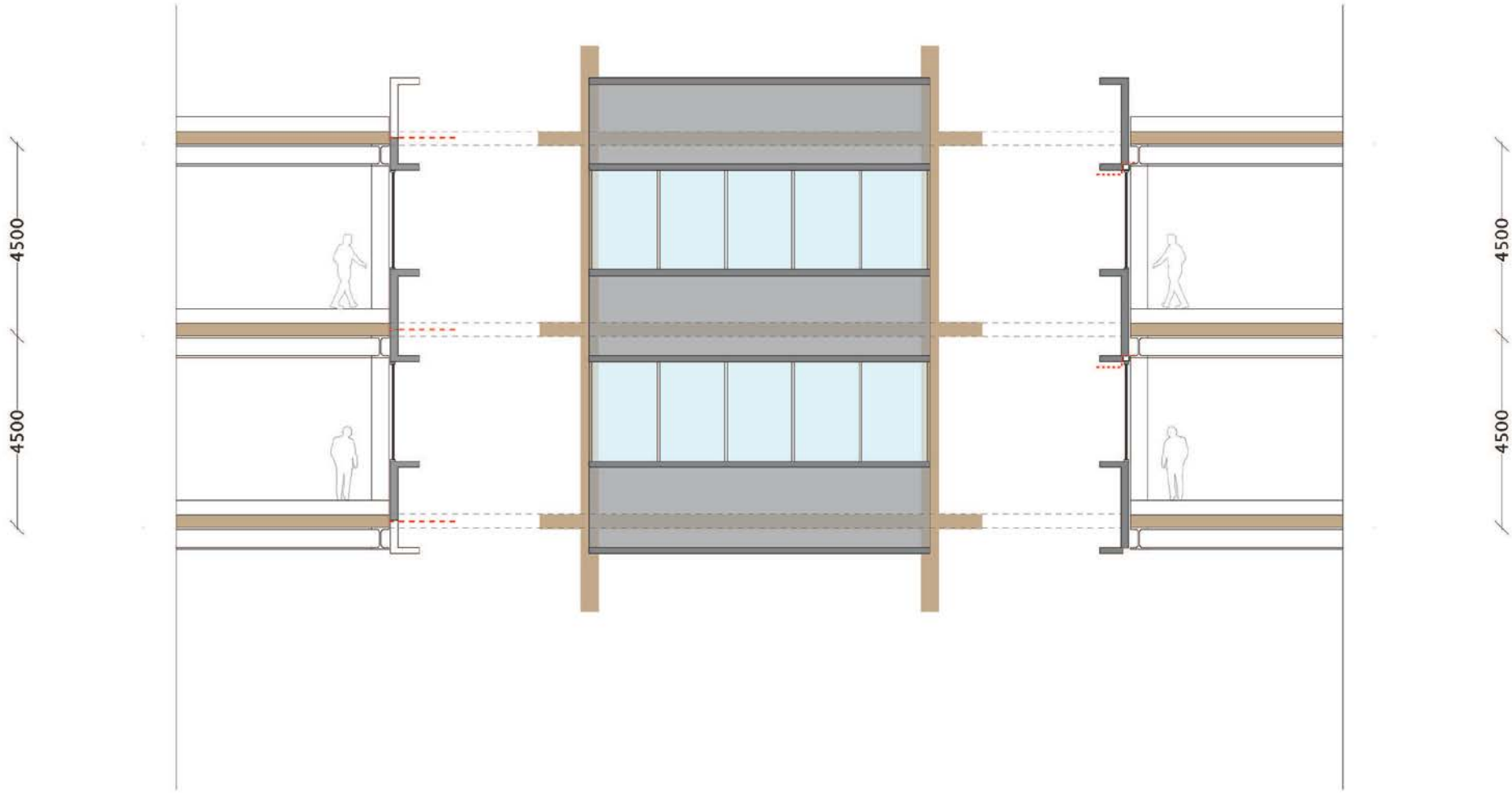


Front shading system



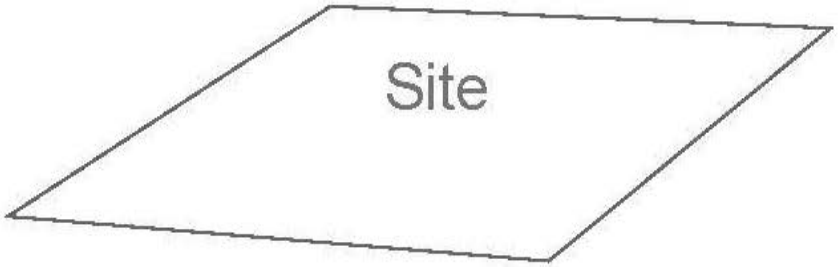
Blinds between the glass planels

Divide into Prefabricated panels

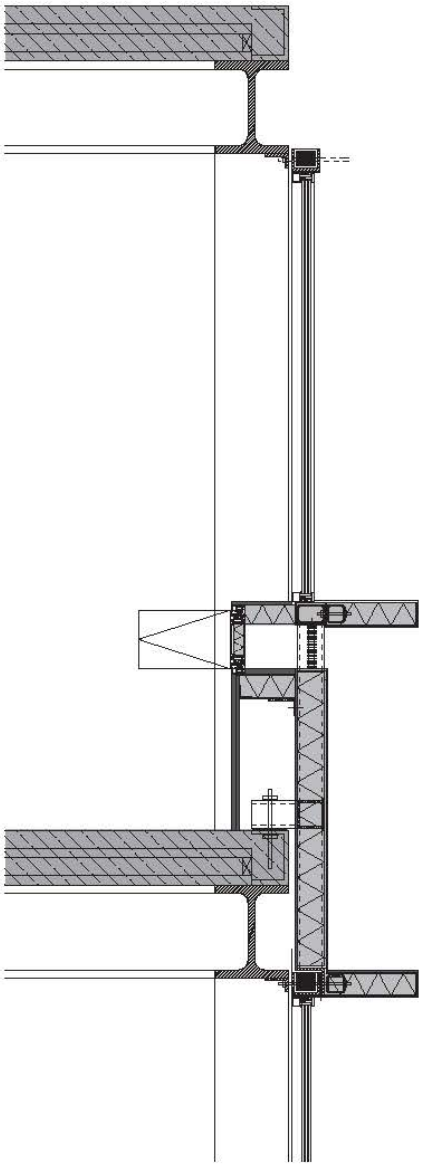


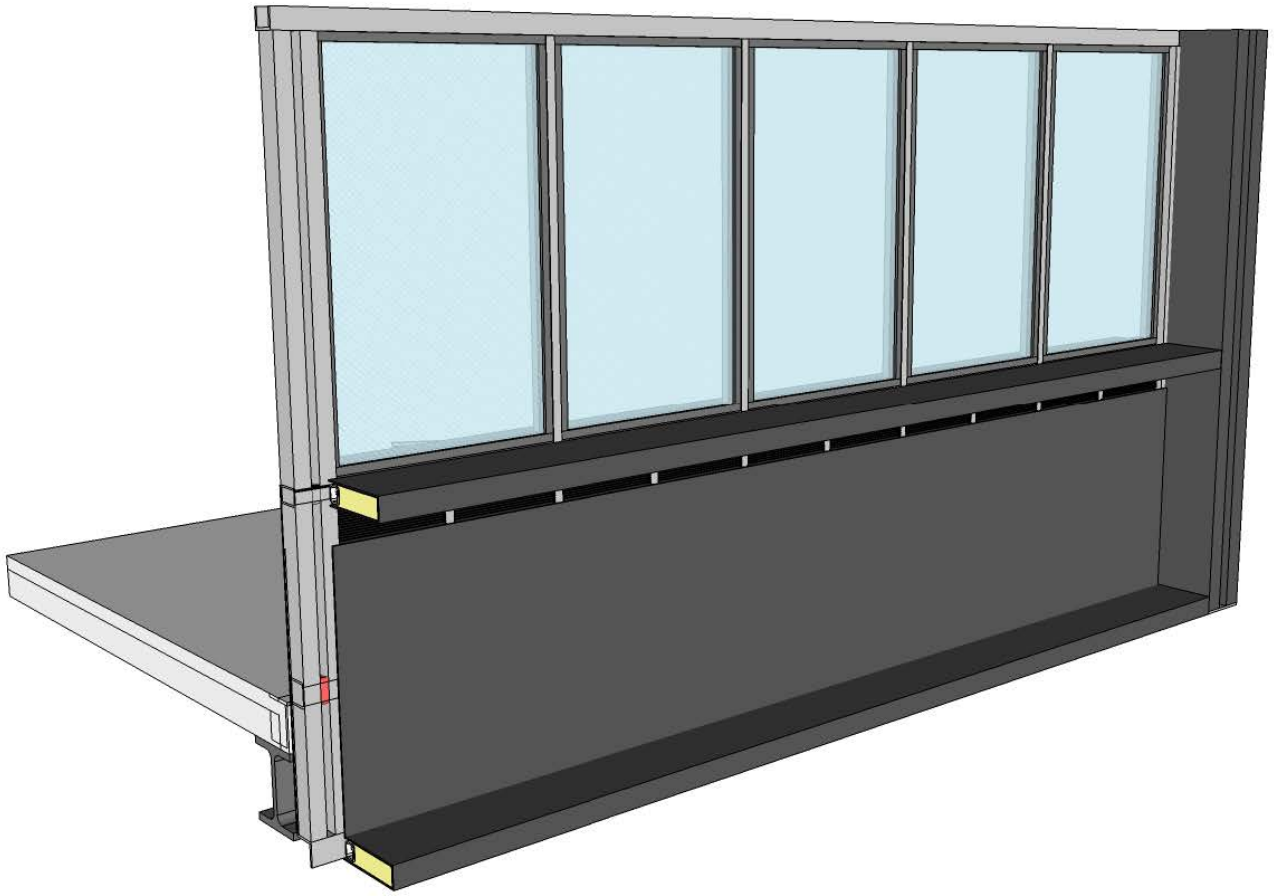
Prefabricated elements

Transport the façade elements to the site and assembled in site

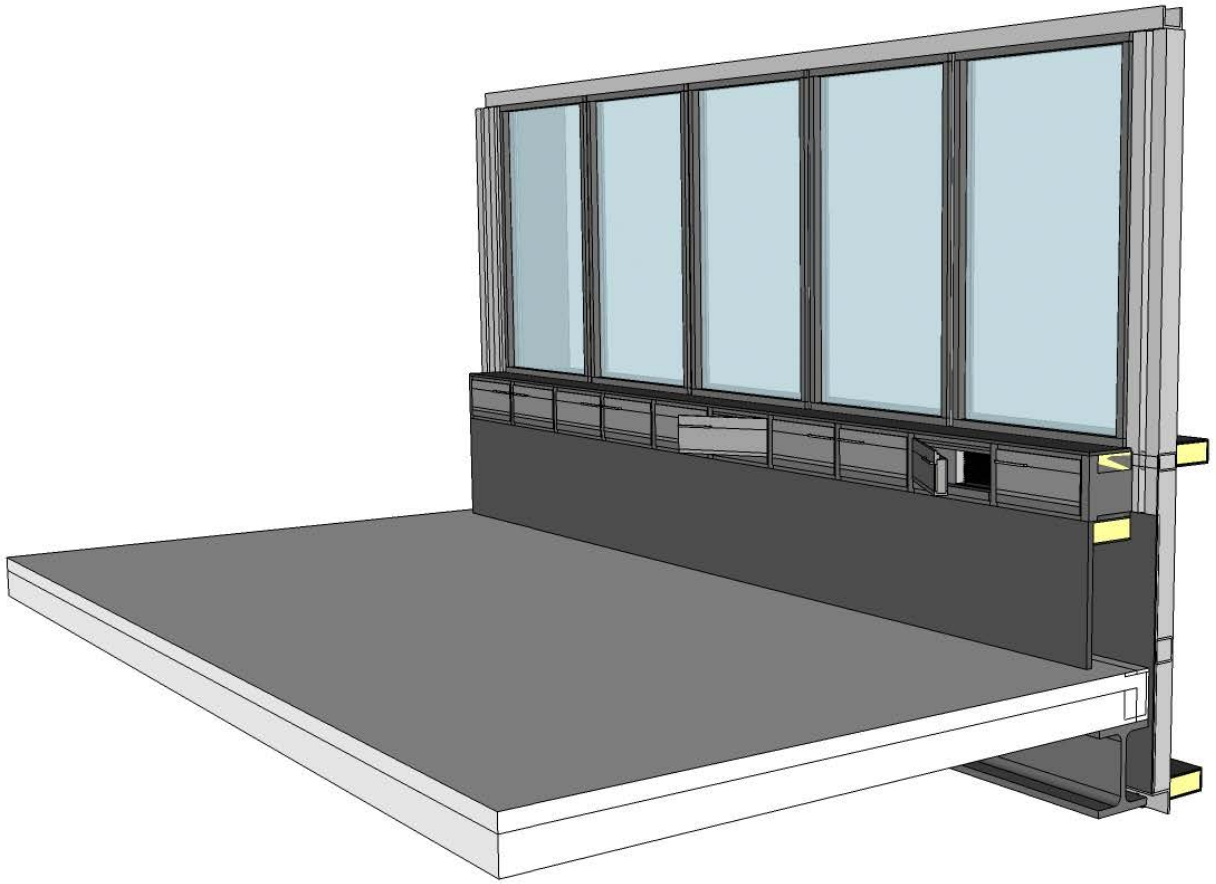


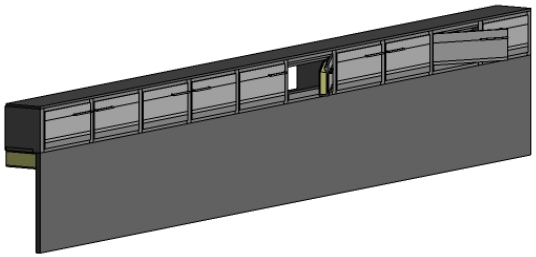
Overview of one panel



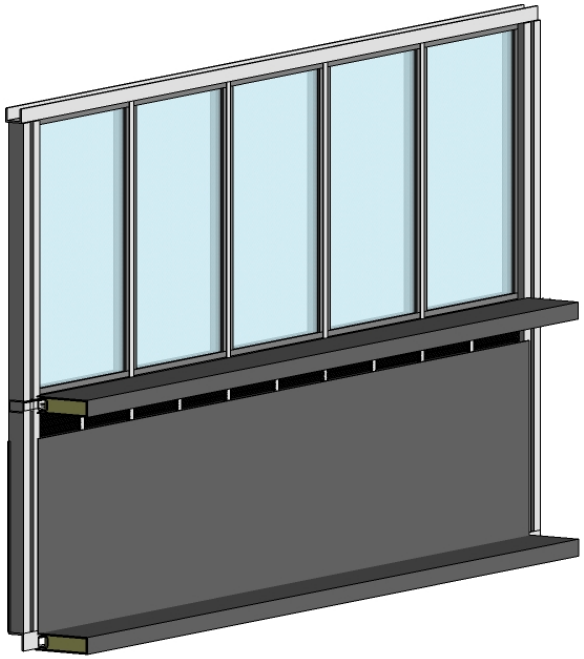


Internal part





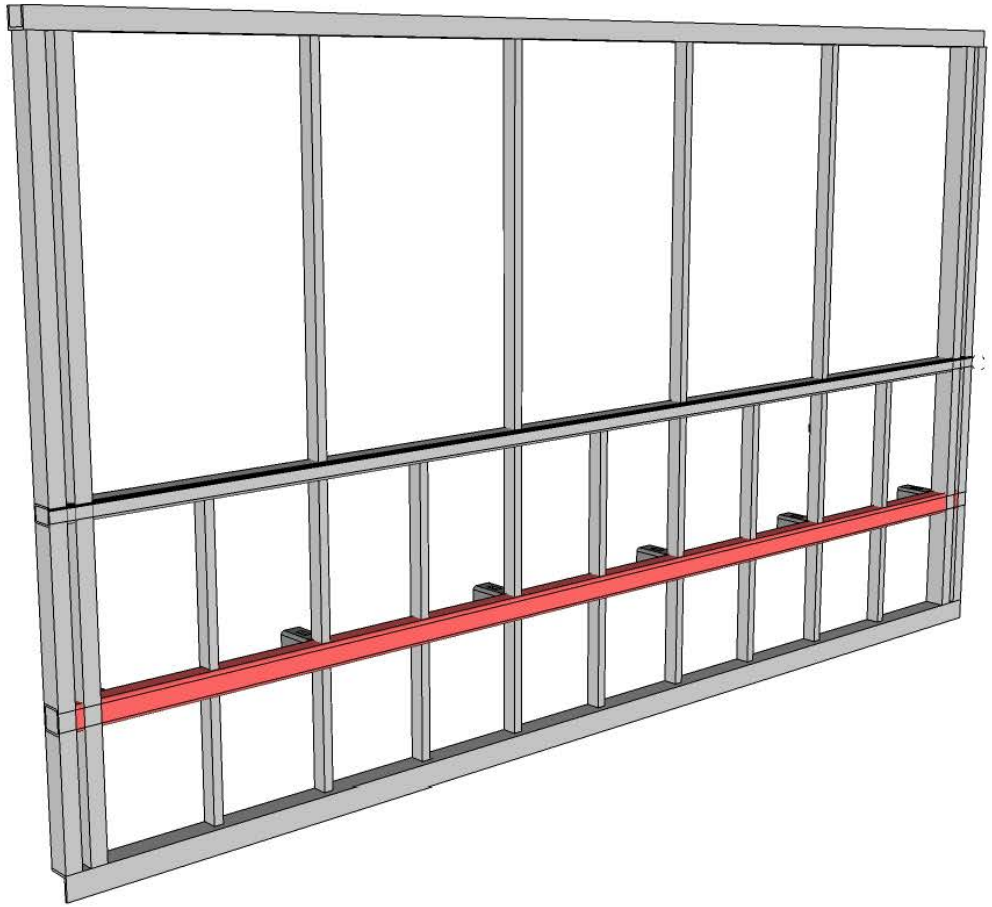
Internal part which installed from inside



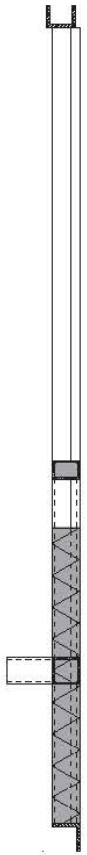
prefabricated panel come from outside

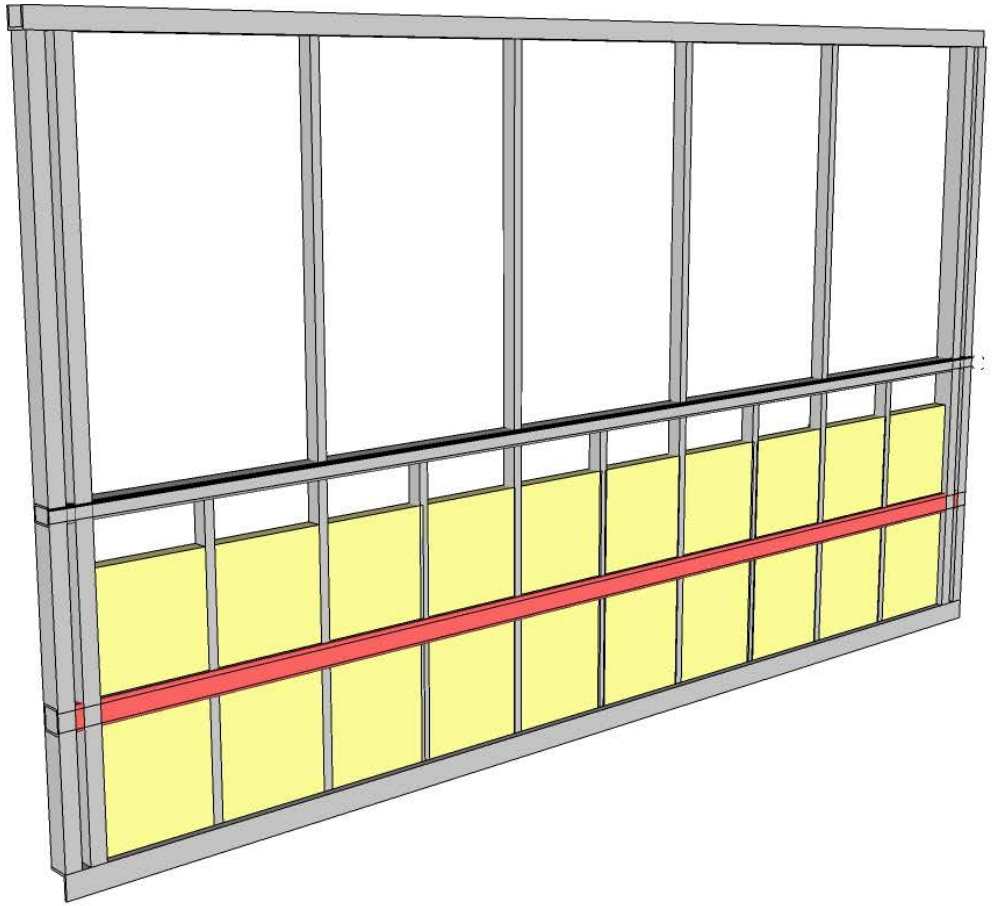
vertical line

prefabricated panel construction sequence

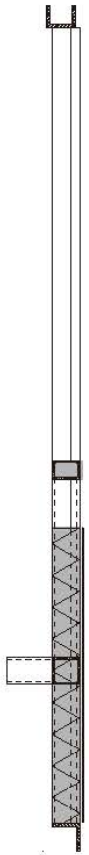


cold-formed steel back up structure

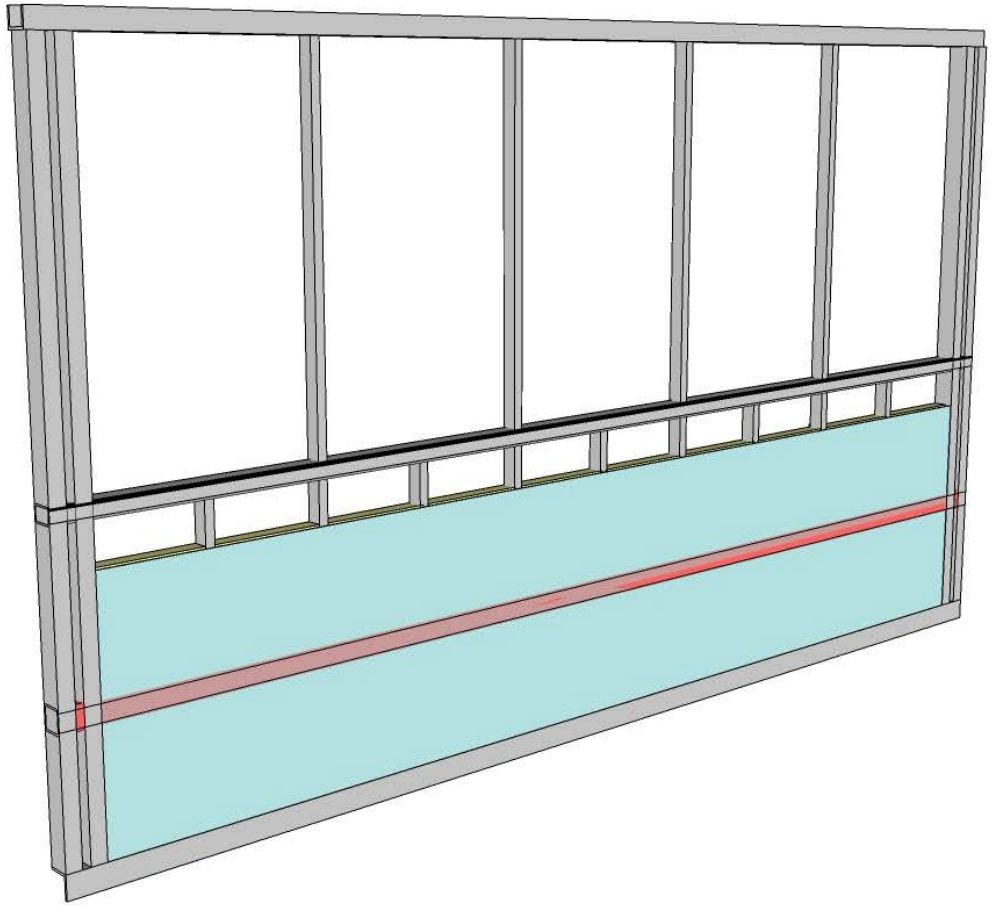


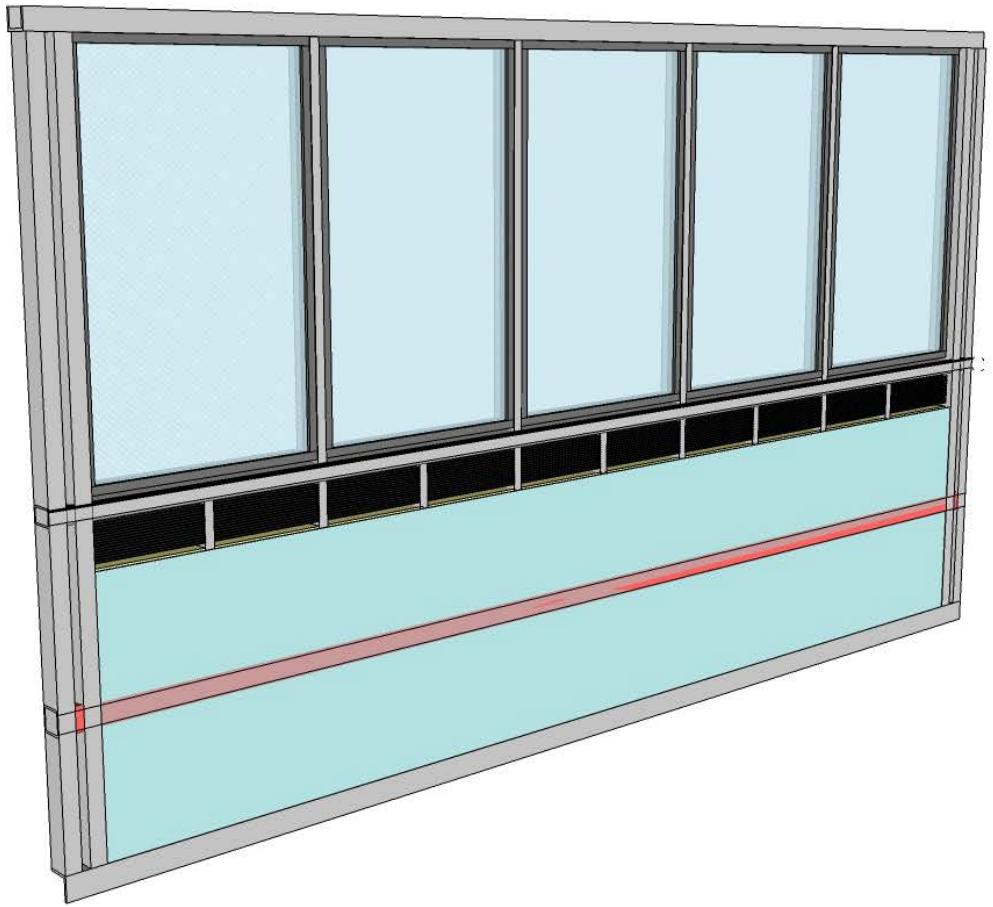


batt insulation in structure



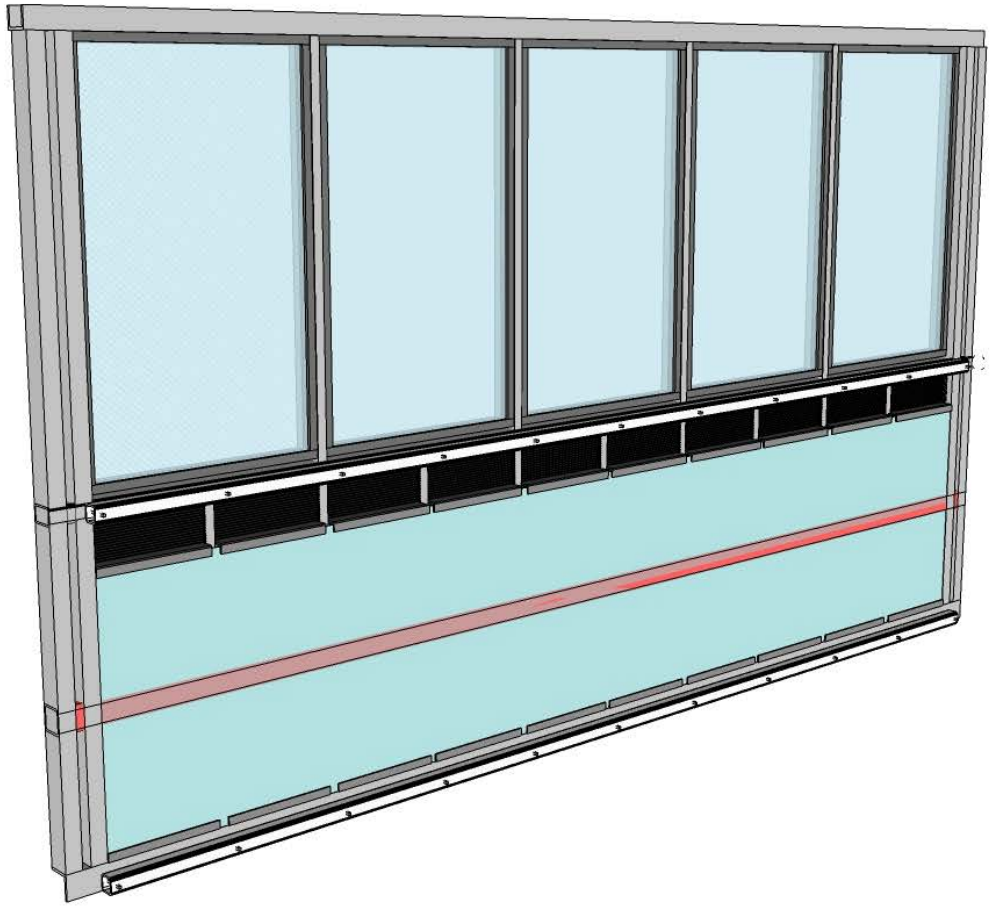
moisture barrier

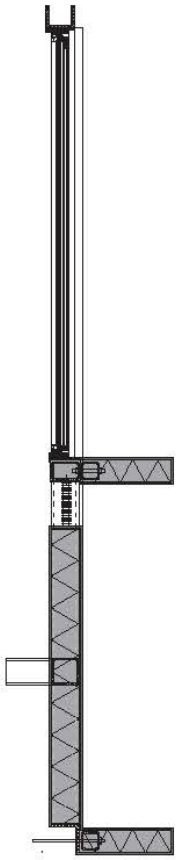


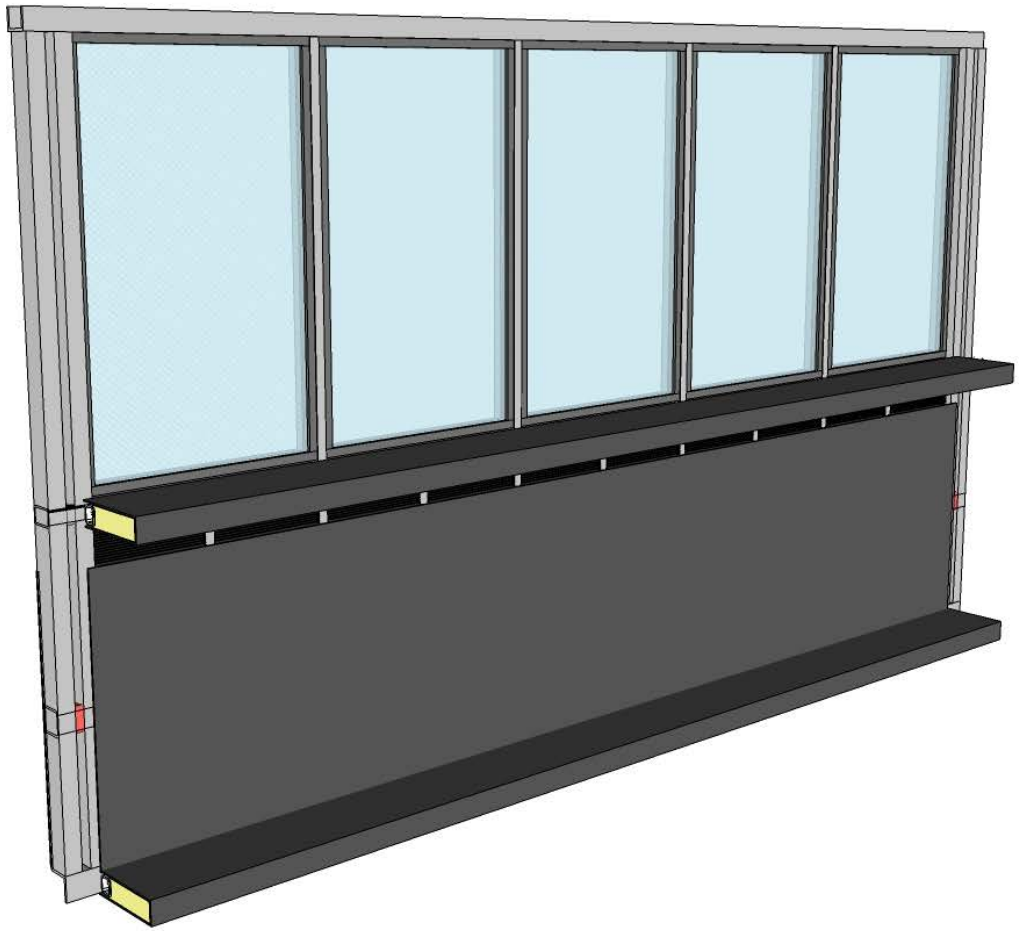


3-layer thermal glasses
blinds between the glass panels
ventilation vents in structure

profile to support outer layer

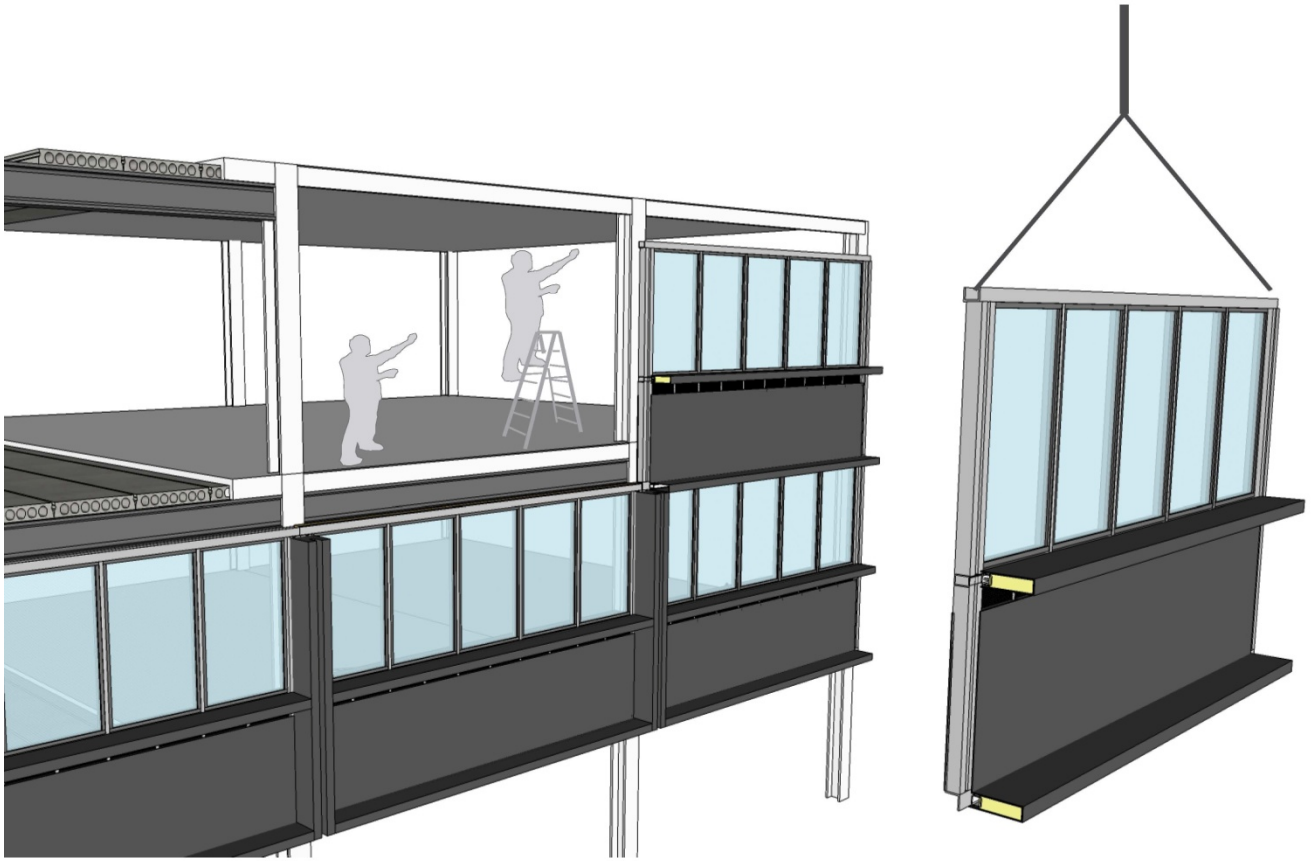




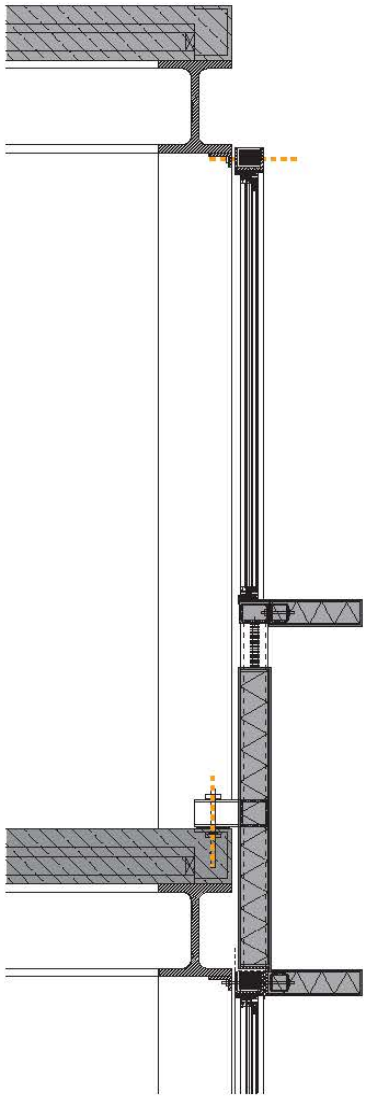


high alloy steel outer layer

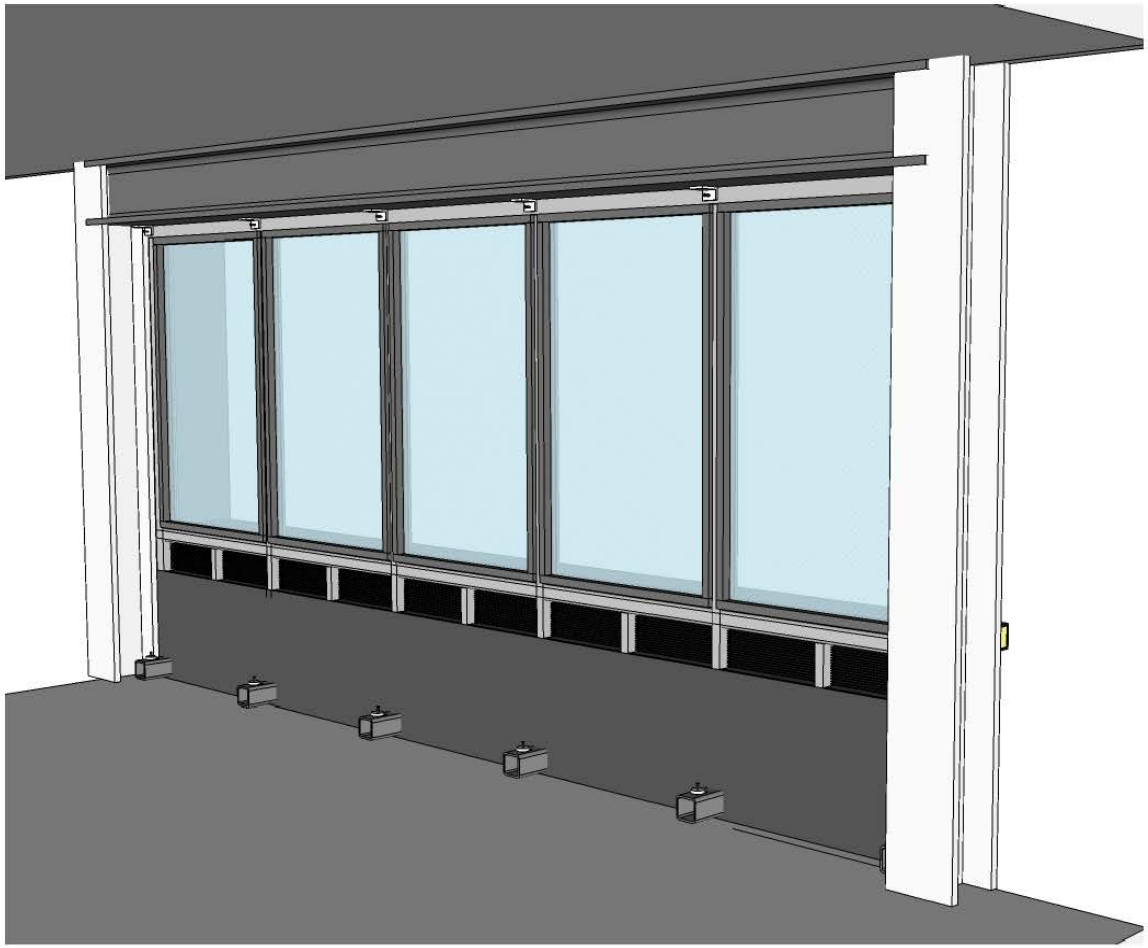
Lift to the certain height



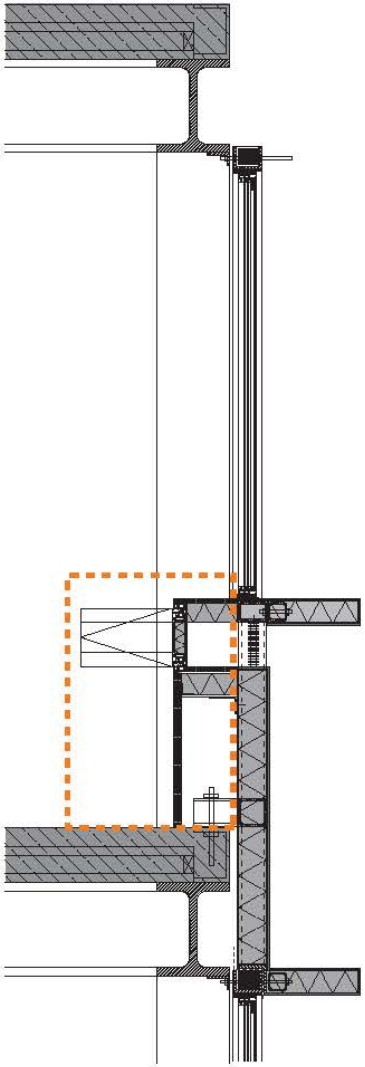
Connect to the primary structure



connect the prefabricated panel to the primary structure

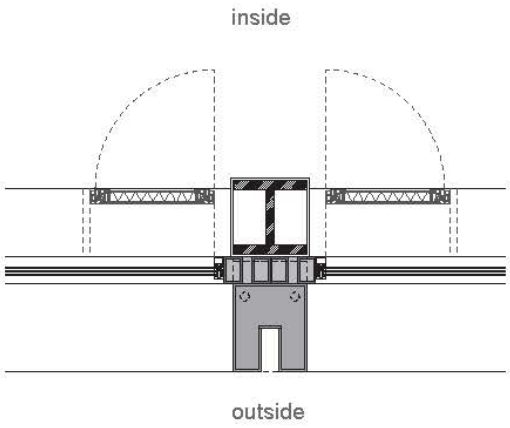


Install the internal part

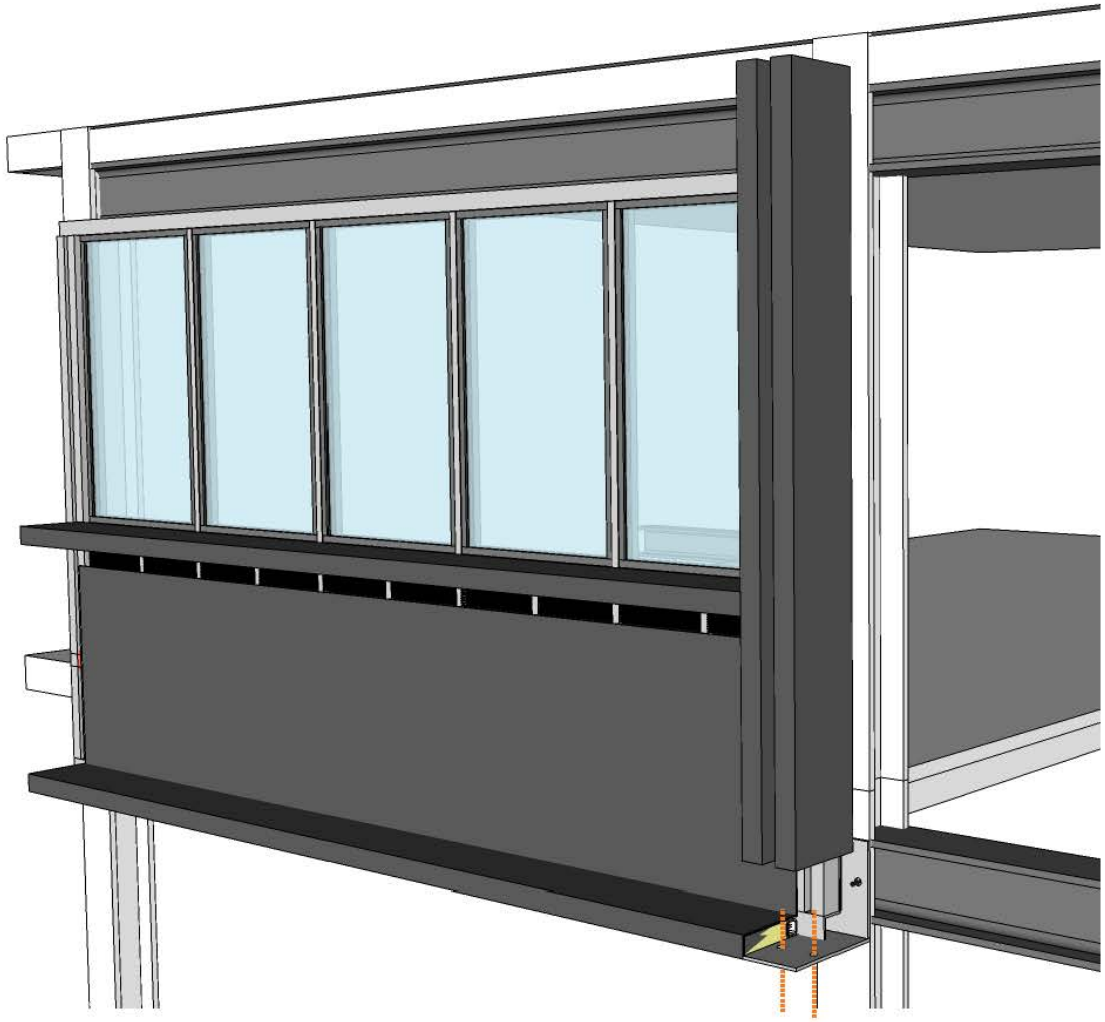


install the internal part with openable ventilation panel

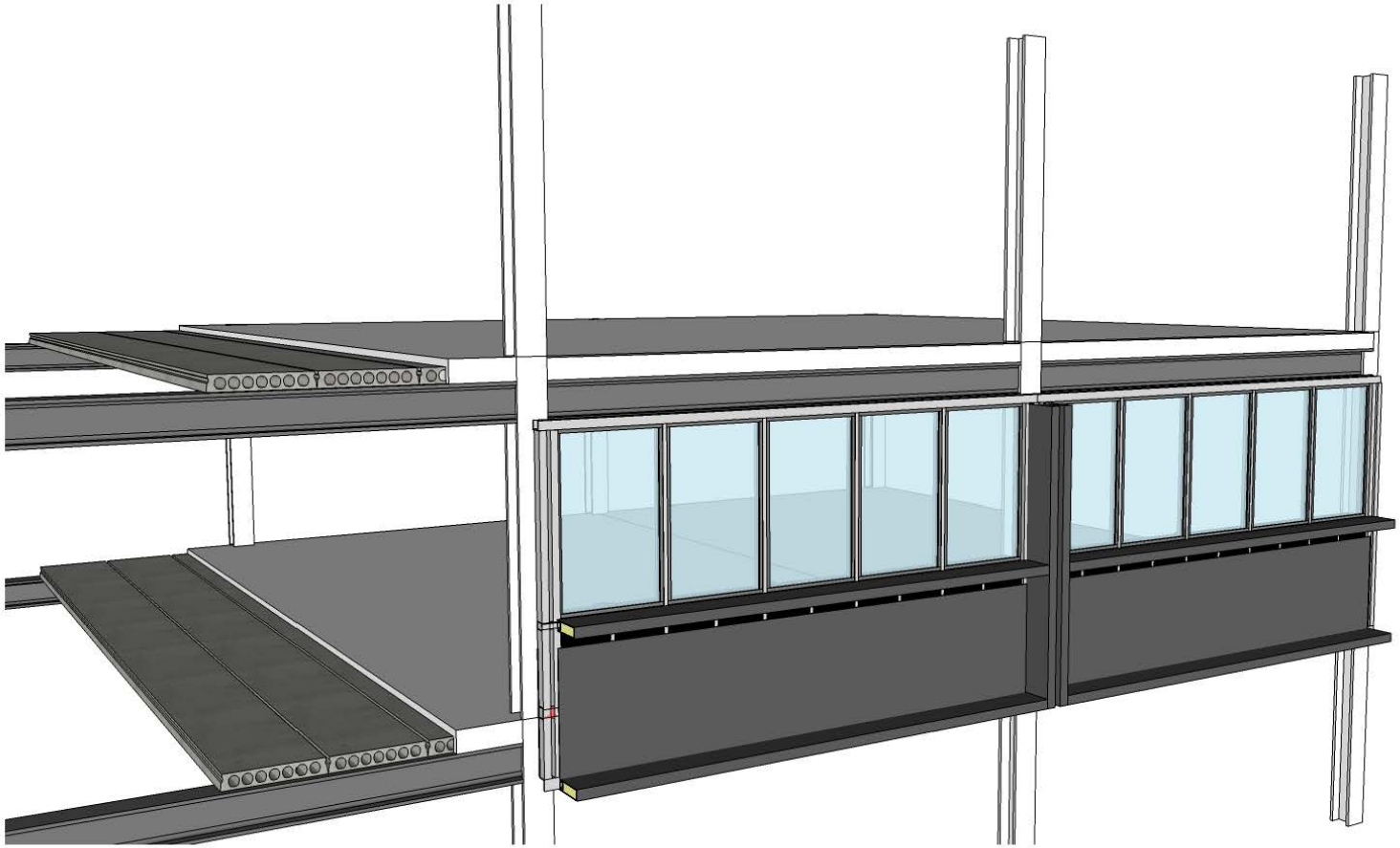
Install the vertical post



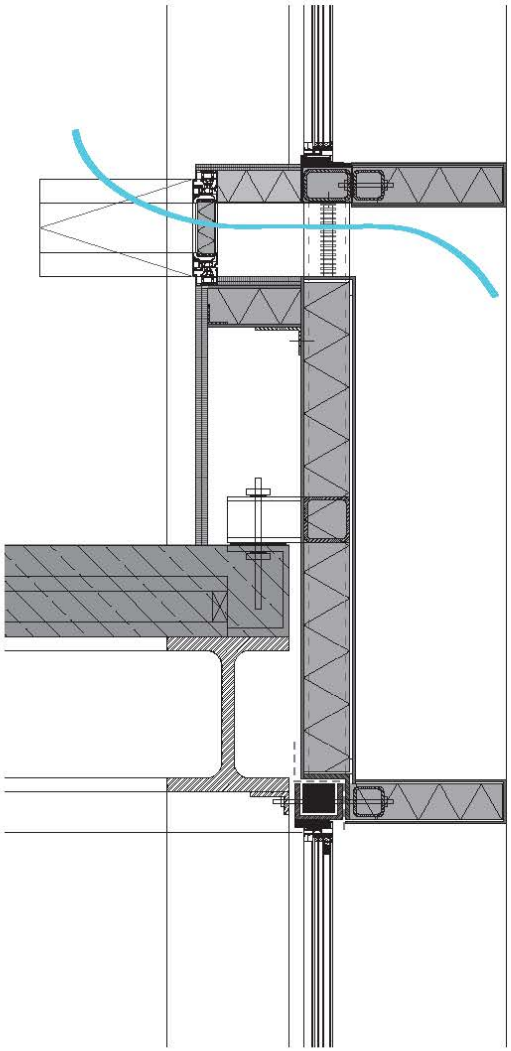
install the vertical post

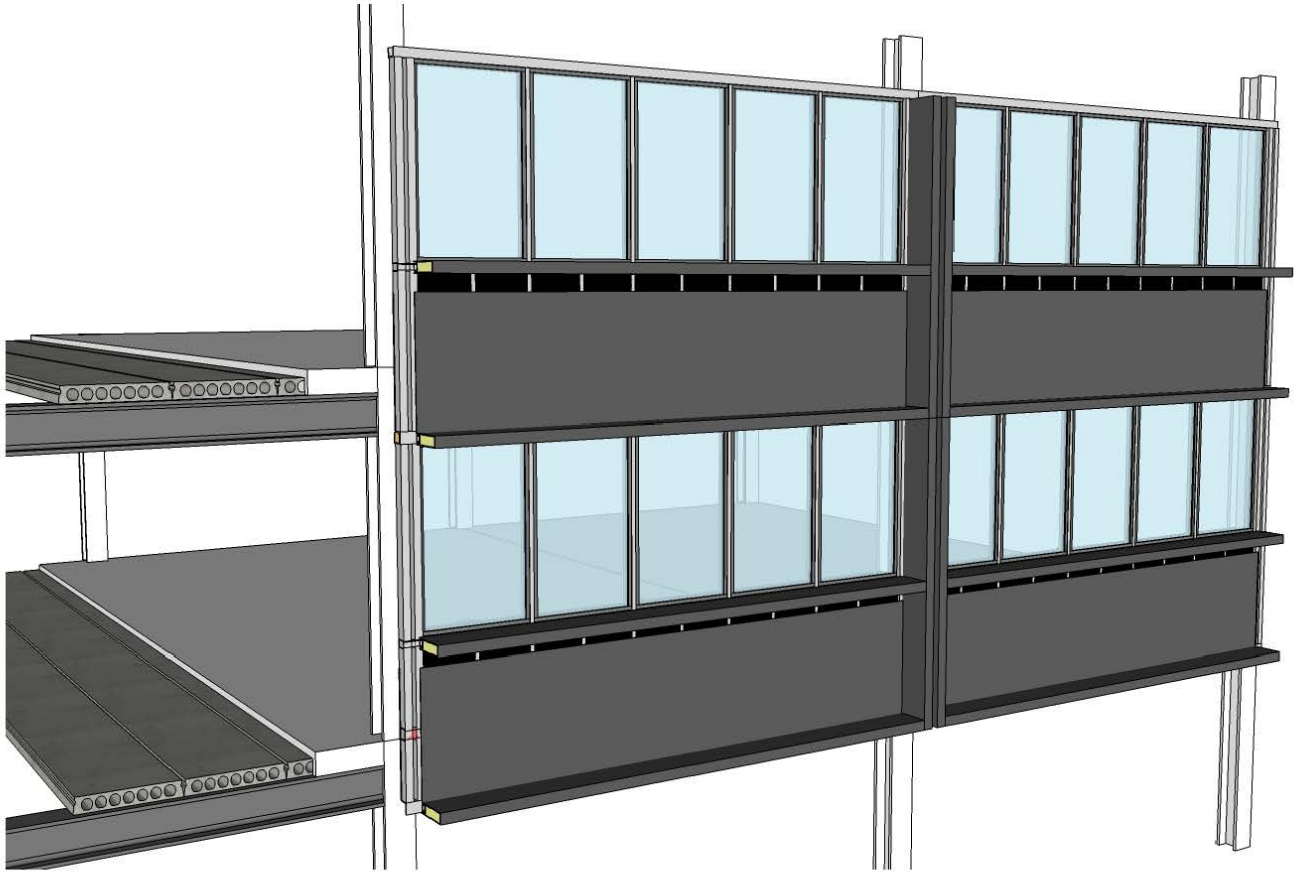


Façade construction sequence



Façade construction sequence

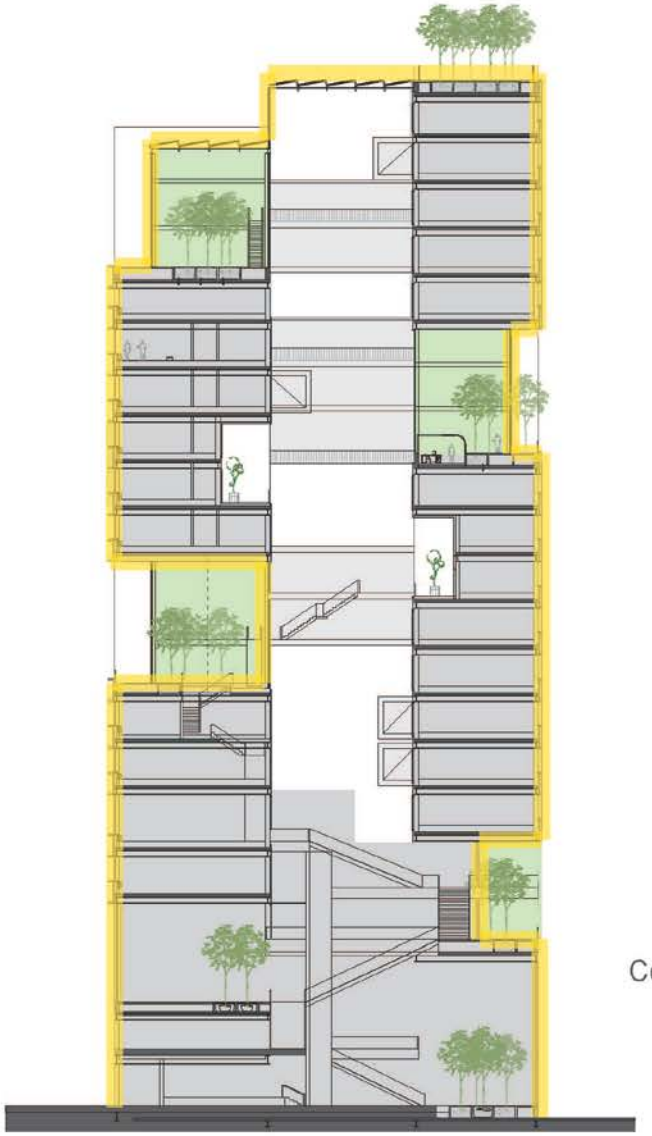




View from the office to the city

Conclusion about the principles of Sustainability

- Strategy of Compact Building
- Strategy of Flexibility within the building
- Strategy of Specific Building Design in relation with sun orientation
- Strategy of Specific Façade Design
- Strategy of Natural air ventilation in the building
- Strategy of Heating and Cooling System

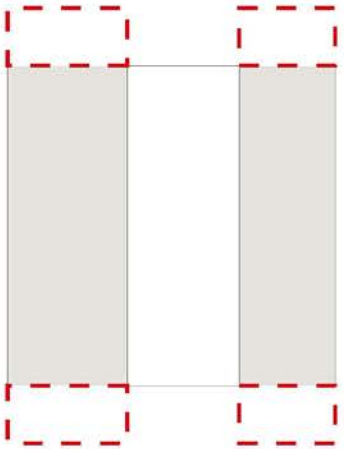


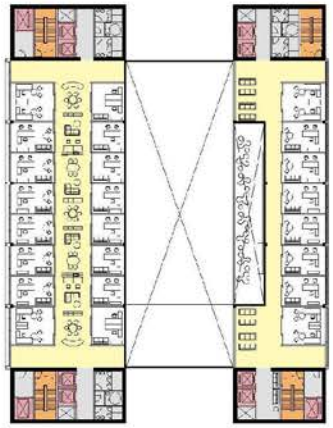
Strategy of Compact Building

$$\text{Compactness of the building} = \frac{\text{Envelop of the building}}{\text{square meters floor plan}} = 75\%$$

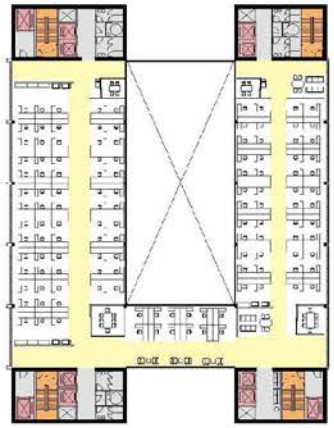
75% relatively good

Strategy of Flexibility within the building

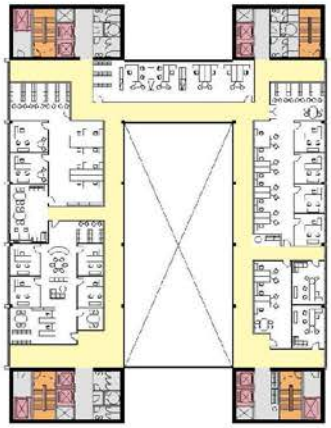




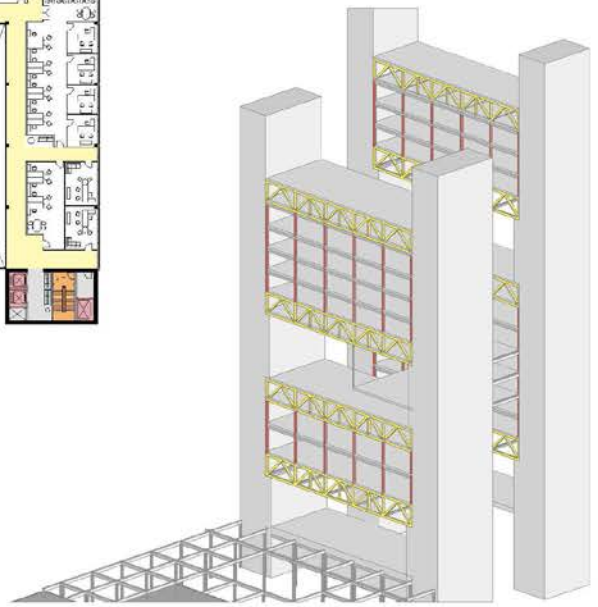
100% cell offices



100% open plan offices



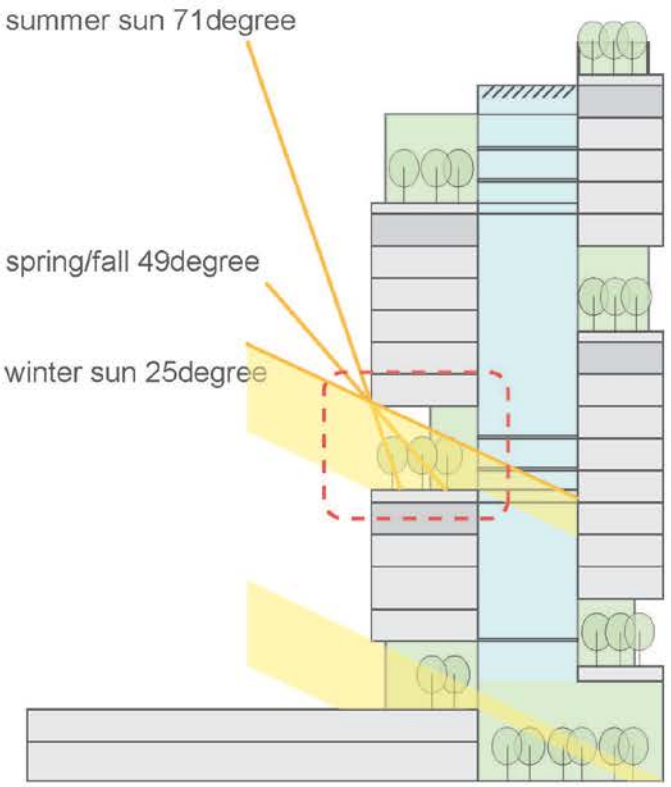
Mixed



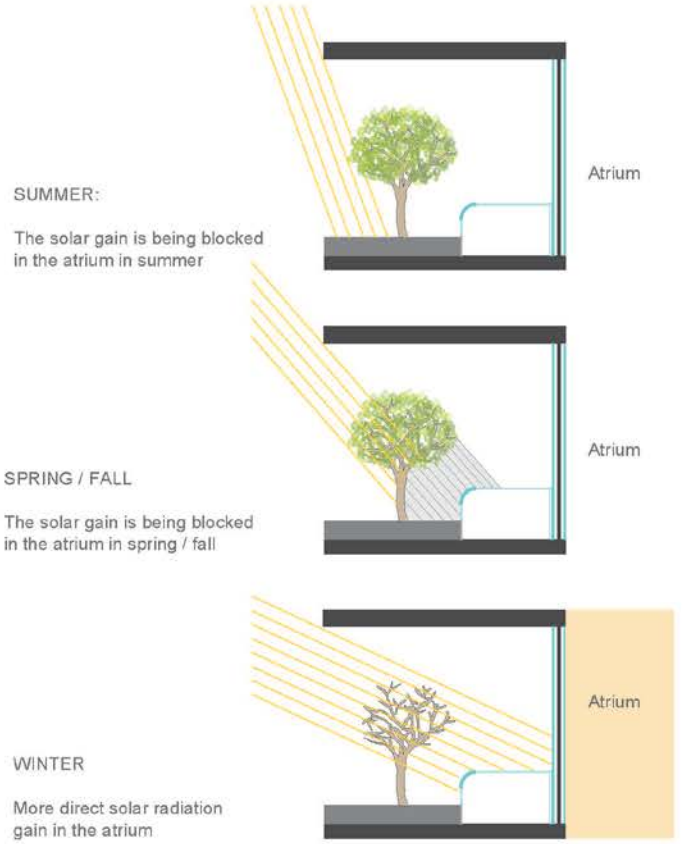
Structure

Strategy of Specific Building Design in relation with sun orientation

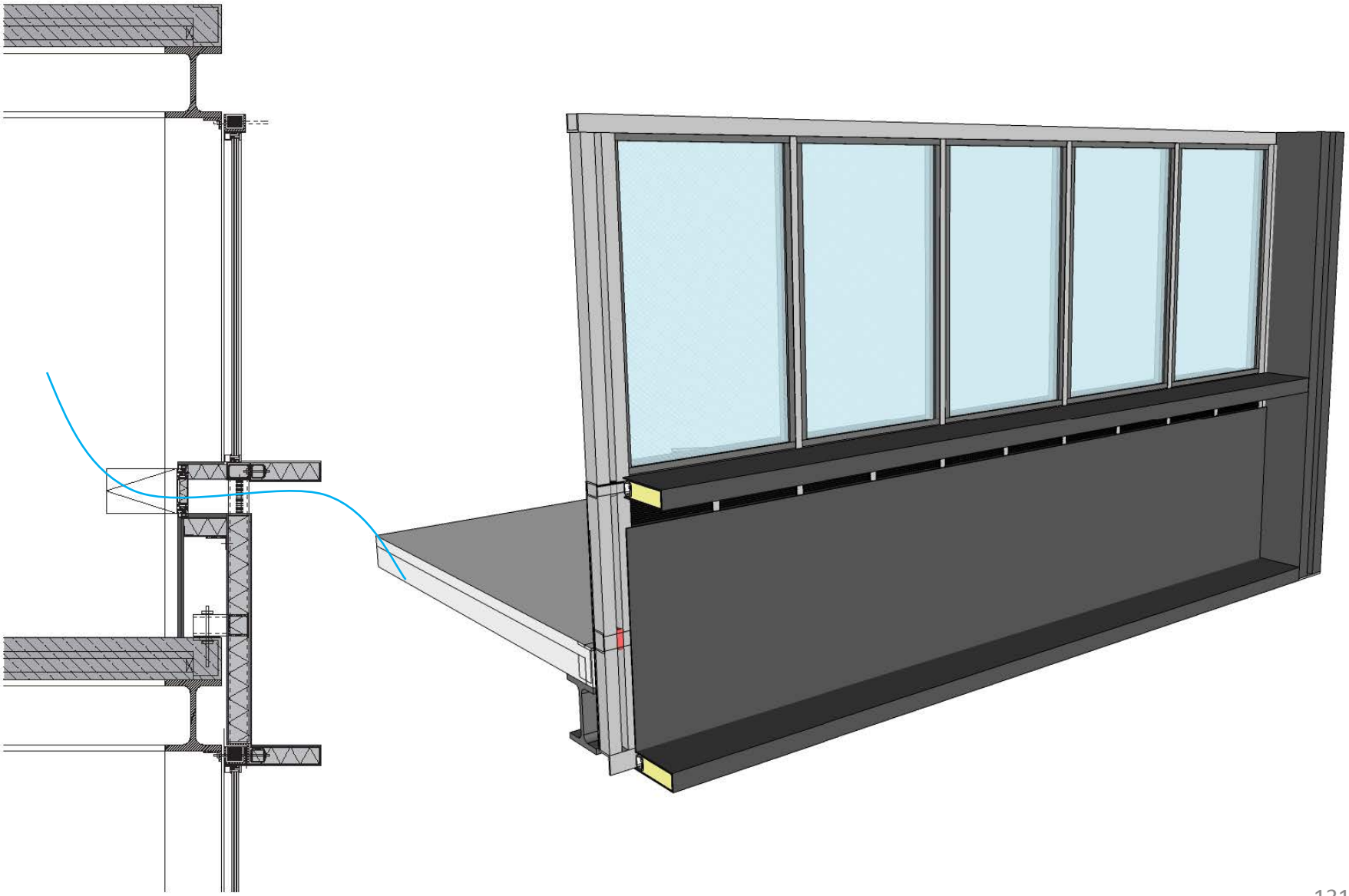
Sun orientation in Manhattan



The solar gain is being blocked in the atrium in spring/summer



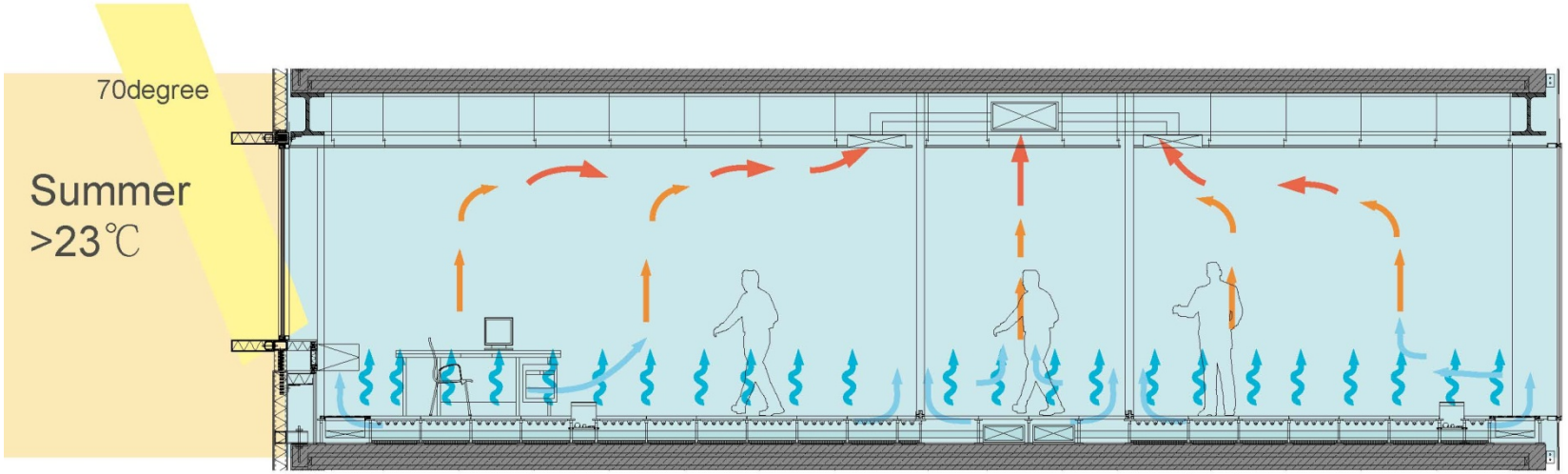
Strategy of Specific Façade Design



Strategy of Natural air ventilation in the building (Atrium)

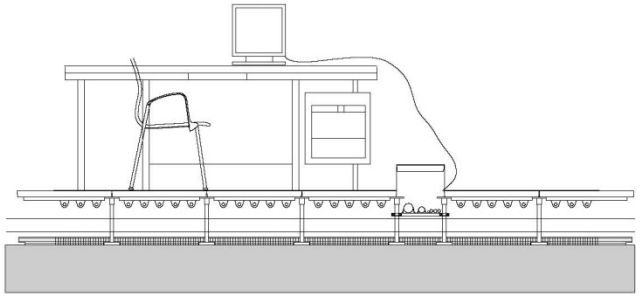
Summer/ Winter

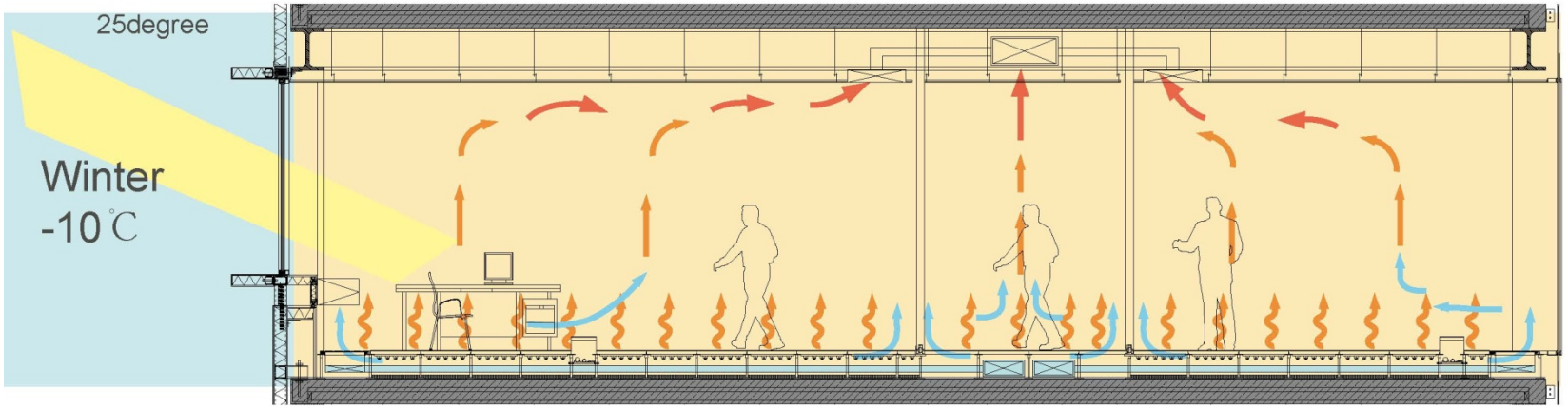
Strategy of Heating and Cooling System



Water radiator Cooling/ Heating

Cool/ Warm air in extreme need





THANKS