

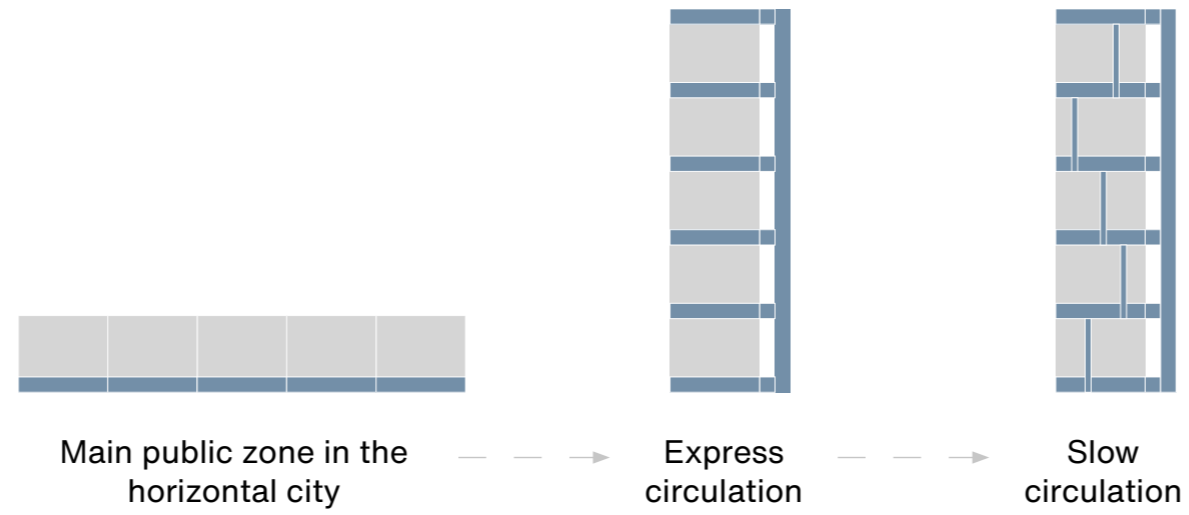
A Creative Journey through the Open Campus

Public Building Graduation Studio | 2023/24 | Elena Englmann



CONCEPT

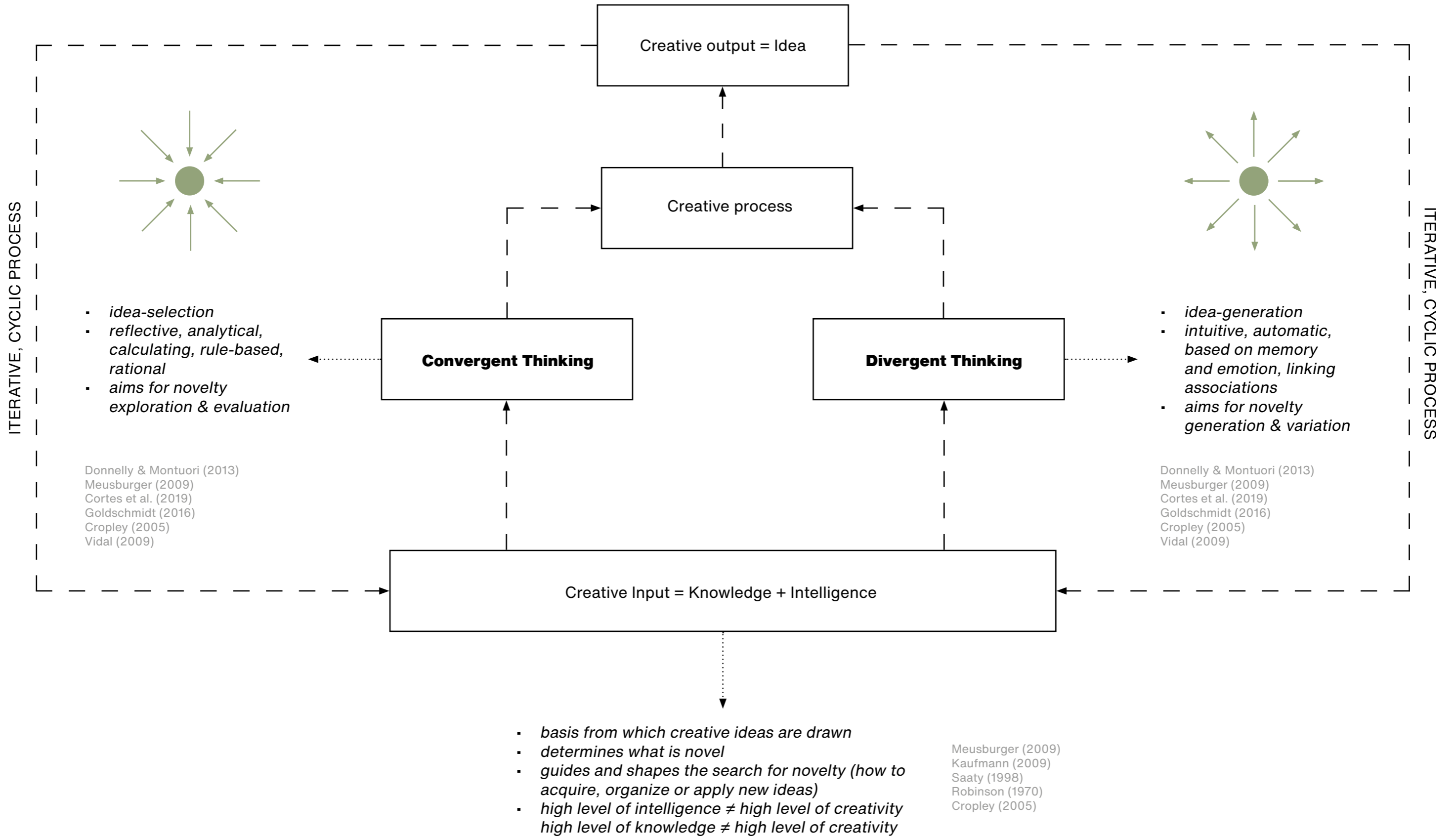
A public high-rise building



WHY AN OPEN CAMPUS? WHY CREATIVITY?

Theoretical framework on the creative thinking process

Donnelly & Montuori (2013)
 Meusbürger (2009)
 Goldschmidt (2016)
 Wierenga & Gerrit (1998)



WHY AN OPEN CAMPUS? WHY CREATIVITY?

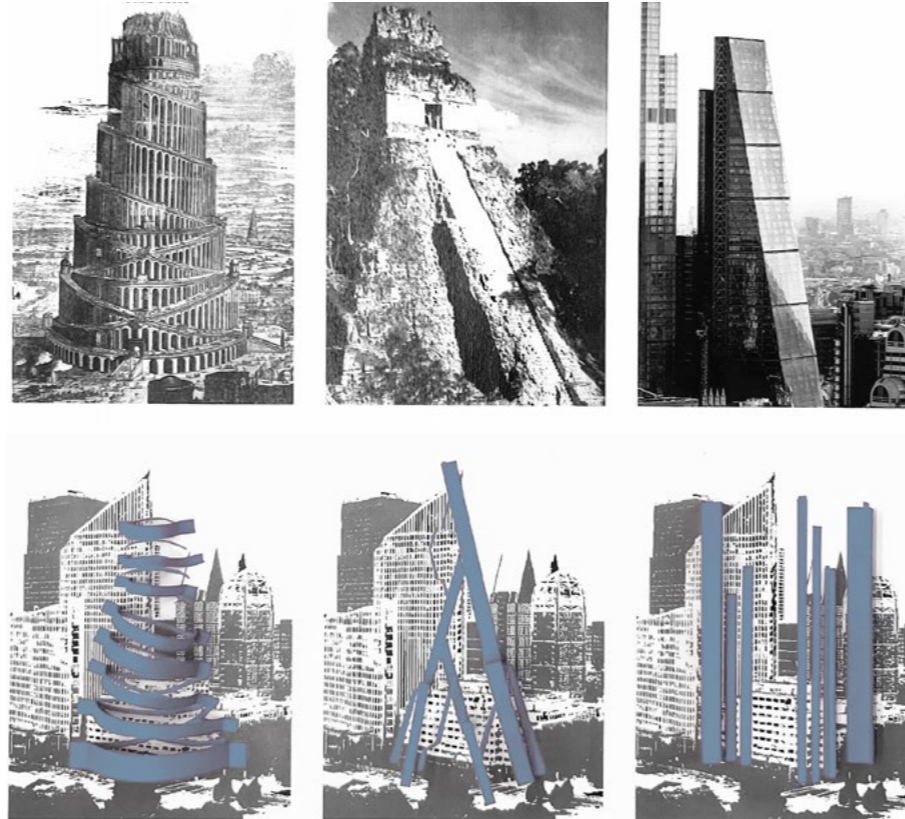
Main design principles & goals



URBAN SCALE

Open up existing power clusters

→ Share knowledge



BUILDING SCALE

Ensure vertical accessibility

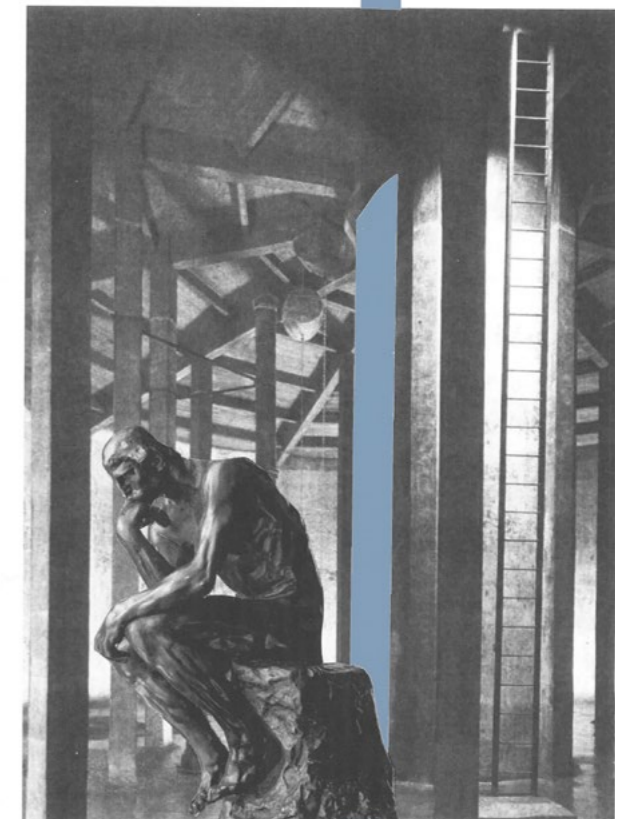
→ Access knowledge



USER SCALE

Offer a diversity of hybrid learning spaces

→ Generate & evaluate knowledge



*“The spread of knowledge and participation in knowledge - a **high-ranking public good** - are the central convergence-promoting mechanisms that enable a reduction of inequality.”*

(Piketty, 2014, p. 40)

*“Educating for the unknown future requires skills such as communication, collaboration, **creativity** and critical thinking.”*

(Ninnemann et al., 2020, p. 27)



URBAN SCALE

URBAN SCALE

Central Innovation District



URBAN SCALE

Closed-off power clusters within the Green Border



URBAN SCALE

Ambitions for the Vertical Campus

Problem: Isolation & lack of interaction

Students



Senior citizens



Employees



Ambitions (based on Gain Points of Stakeholder Analysis)

Relation to the city



CONNECTION TO CITY & NATURE

opening-up & connection to existing power clusters and surrounding nature in the city

(VERTICAL) ACCESSIBILITY

24/7 public accessibility to all age, gender, socio-economic, and religious groups

Learning environment



FLEXIBILITY

enhance soft skills like communication, creativity, critical thinking, and collaboration for constantly changing working environment

INTERDISCIPLINARITY

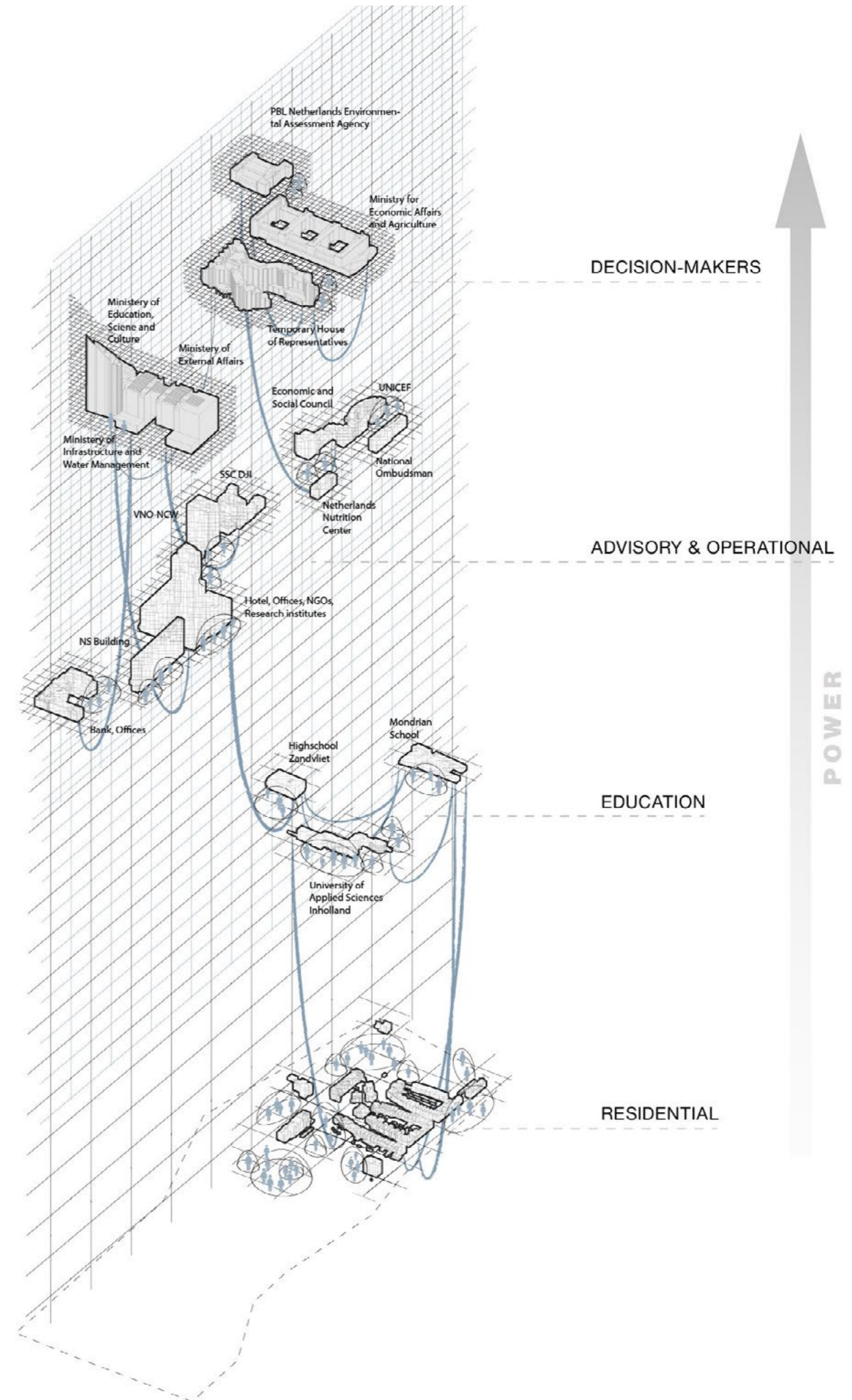
allow for individual and interdisciplinary studying and working approaches to generate and share knowledge

Programme



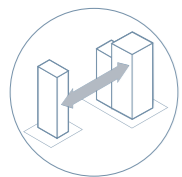
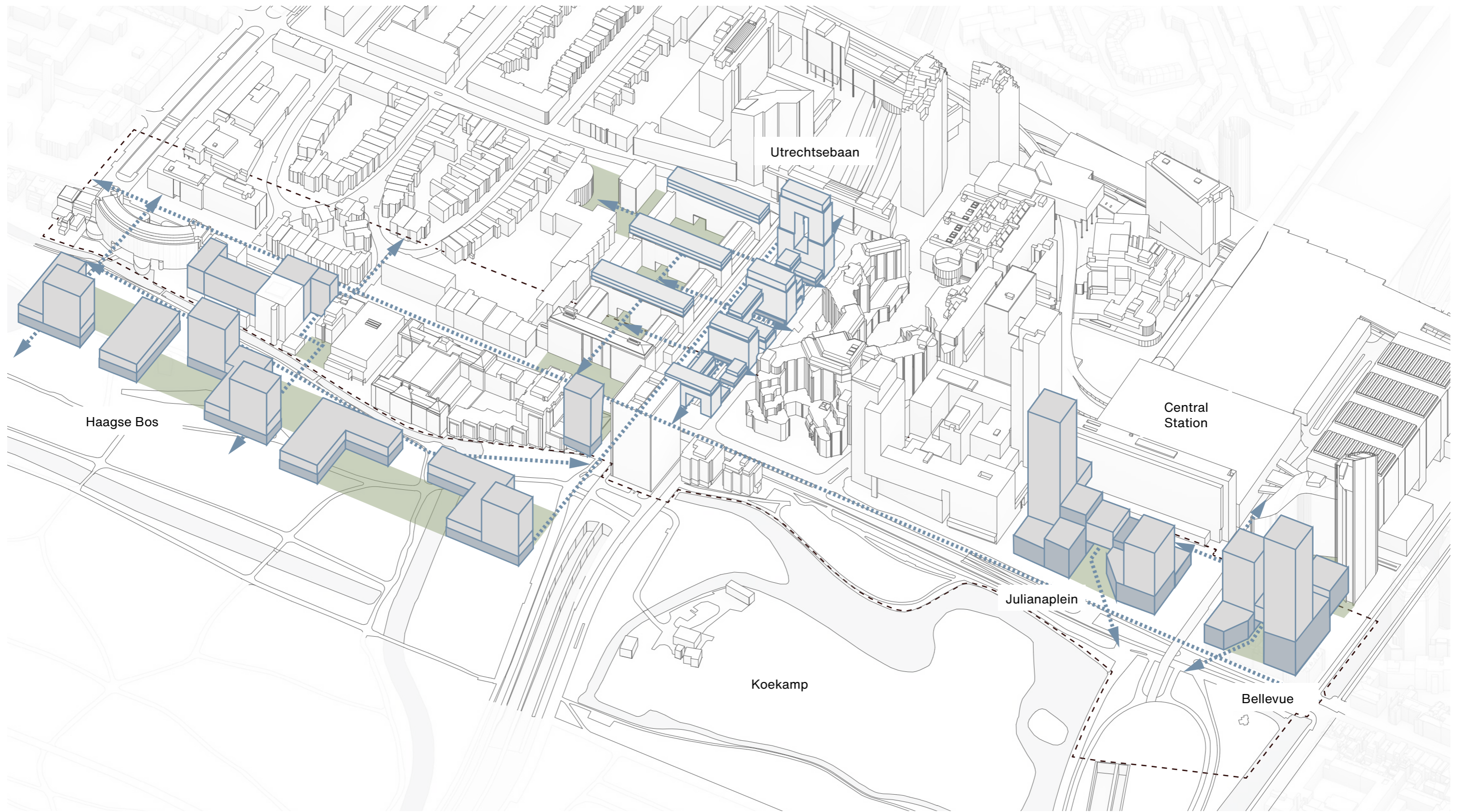
HEALTHY WORK-LIFE-BALANCE

physical & mental health supporting environment by implementing spaces for relaxation, retreat spaces, psychological counselors, etc. and combining learning spaces and free-time activities



URBAN SCALE

Urban Transformation Plan (P1)



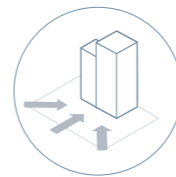
Opening up and connecting existing power clusters



Activating the ground floor for the public



Opening up existing and creating new courtyards



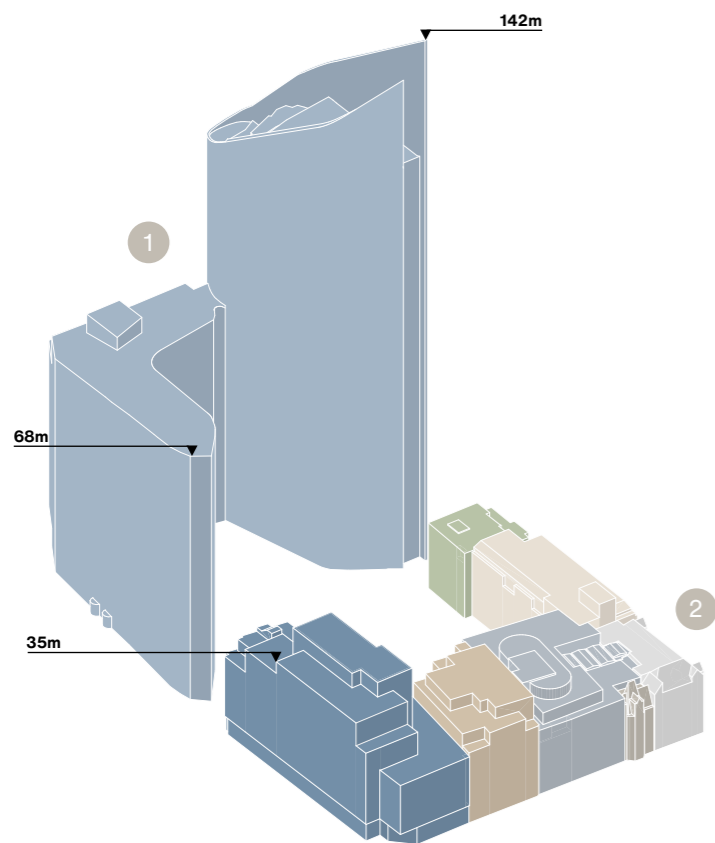
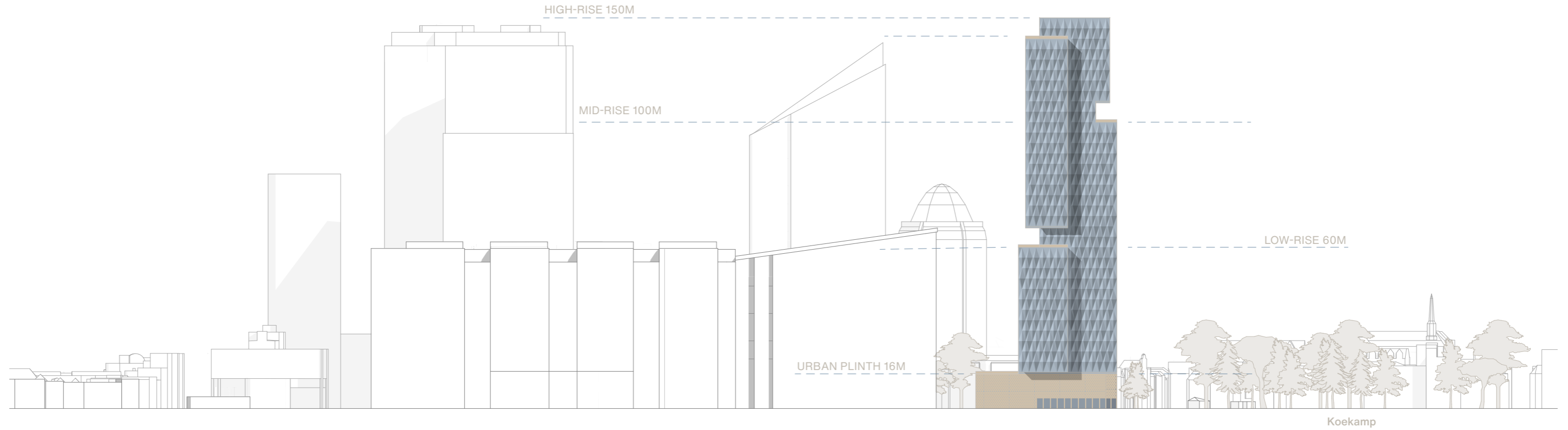
Enhancing accessibility and establishing of new pedestrian axes



Improving in-between spaces

URBAN SCALE

Context analysis



Volume & Height

1 floor space ratio: 11,3
site occupancy ratio: 0,6

2 floor space ratio: 4,4
site occupancy ratio: 0,6

Programme

- Office/Corporate
- Gouvernement
- Residential
- Public
- Public entrance
- Private entrance

Ministry of Education,
Culture and Science
+
Ministry of Health,
Welfare and Sports

Accessibility

- Ministry Courtyard
- Car parking
- Wall
- No access

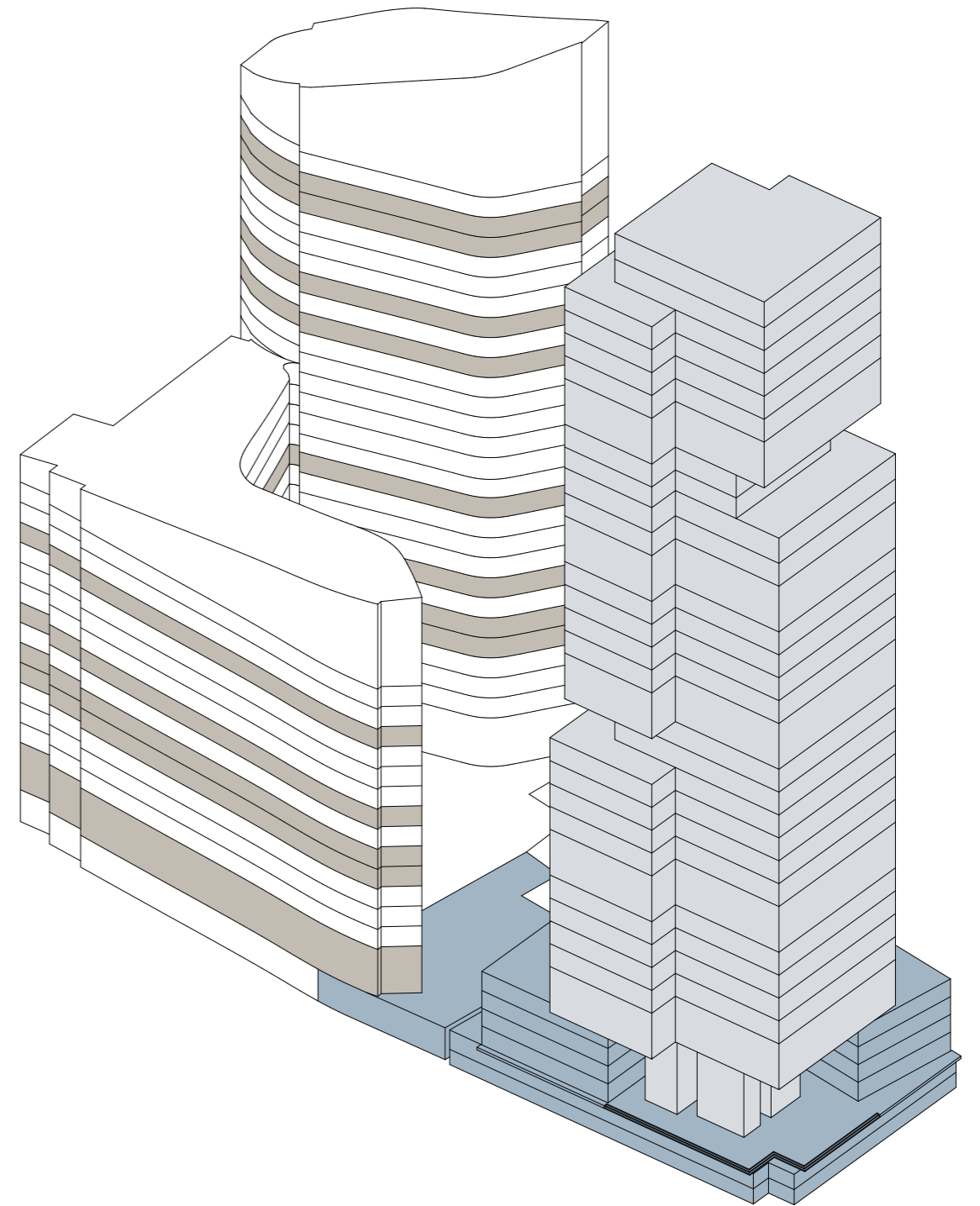
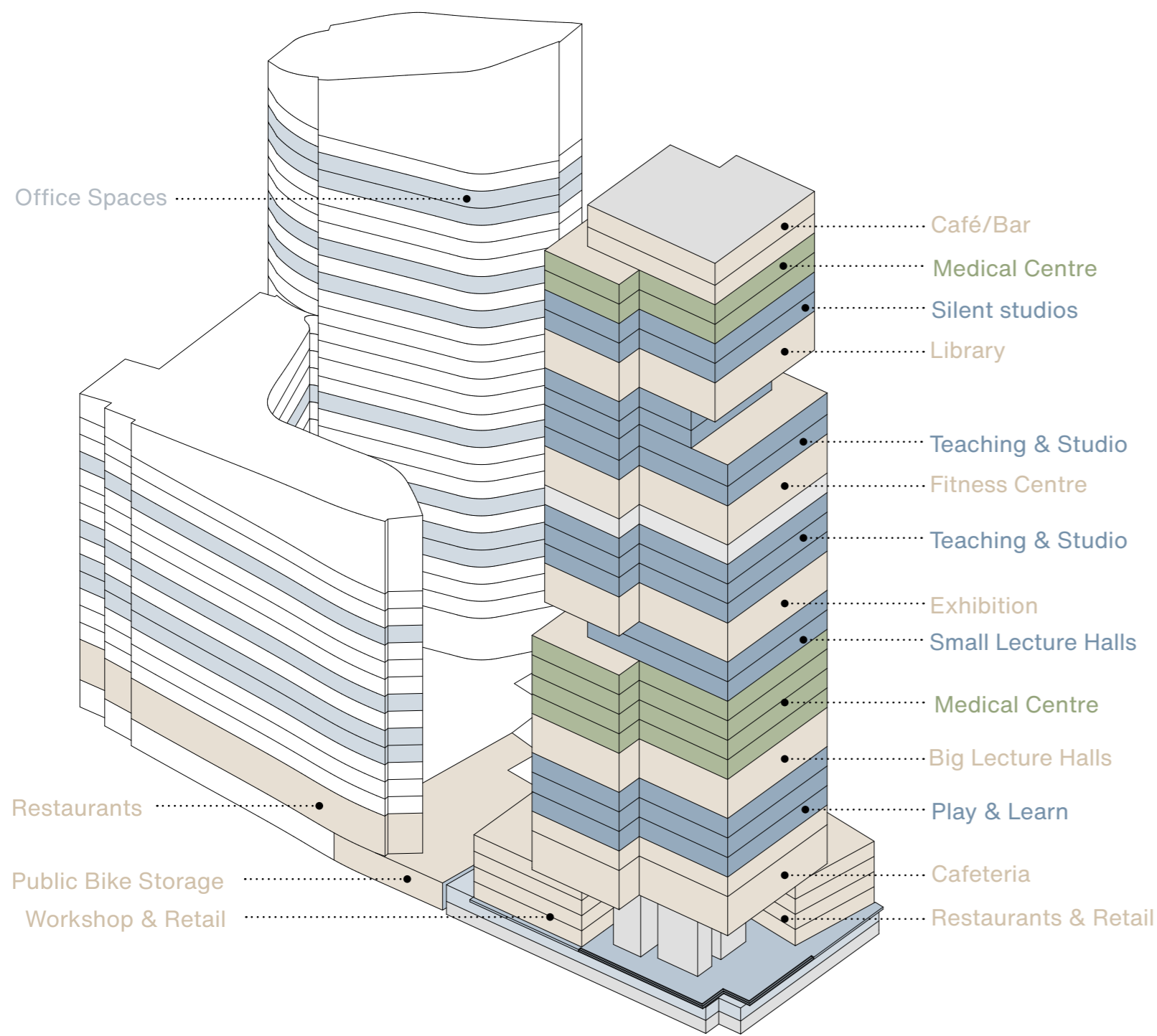
URBAN SCALE

Design proposal in the urban context



URBAN SCALE

Programme



PUBLIC
 HEALTH
 EDUCATION
 OFFICE
 SERVICES

NEW BUILT
23.000 m²
 REUSED
7.500 m²
 SHARED
15.000 m²

URBAN SCALE

Floor plans of De Hoftoren



Bike parking

Basement

Partly transformation of underground car parking into bike parking for university; accessible via outdoor stairs/ramp

-54 cars
+ 876 bikes



Retail & Restaurants

Ground Floor

Division of the ground floor level between entrance for Ministry building (west entrance) and public programme (east entrance)



Office spaces

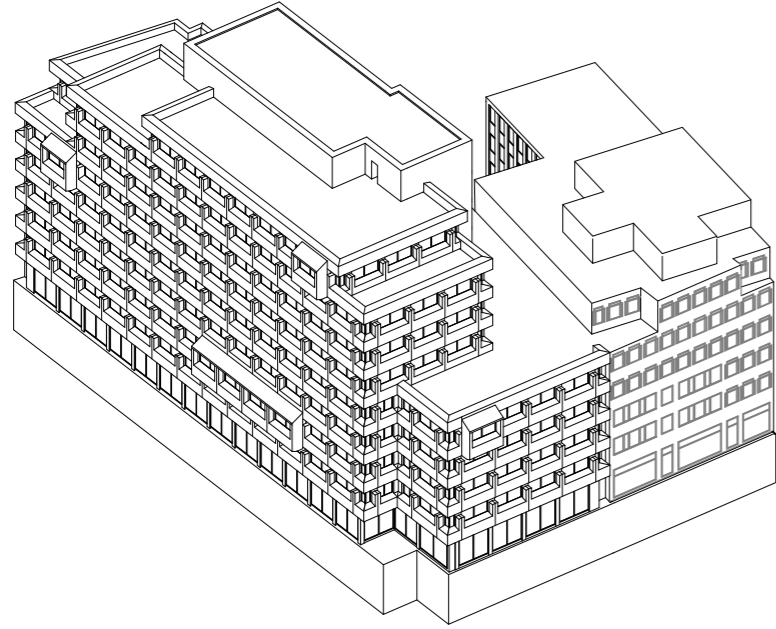
Upper floor levels

Shared office spaces between staff of the Ministry and staff of the Vertical Campus

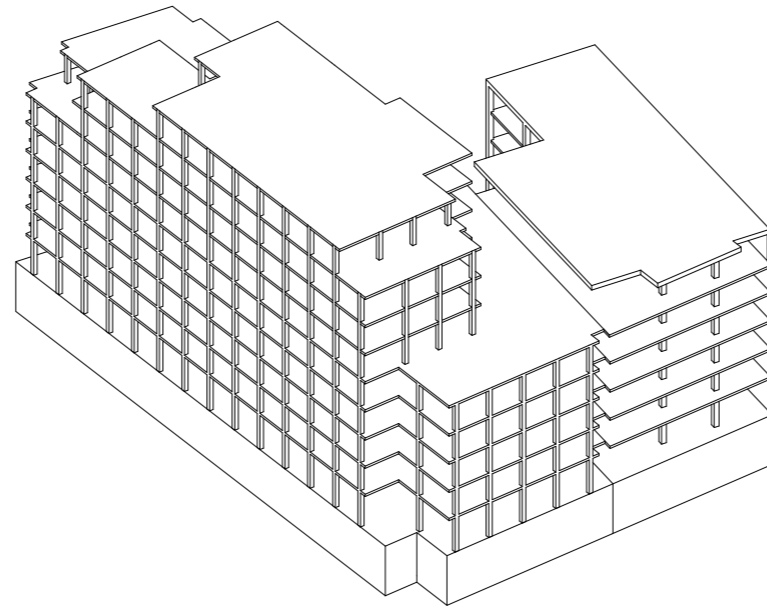


BUILDING SCALE

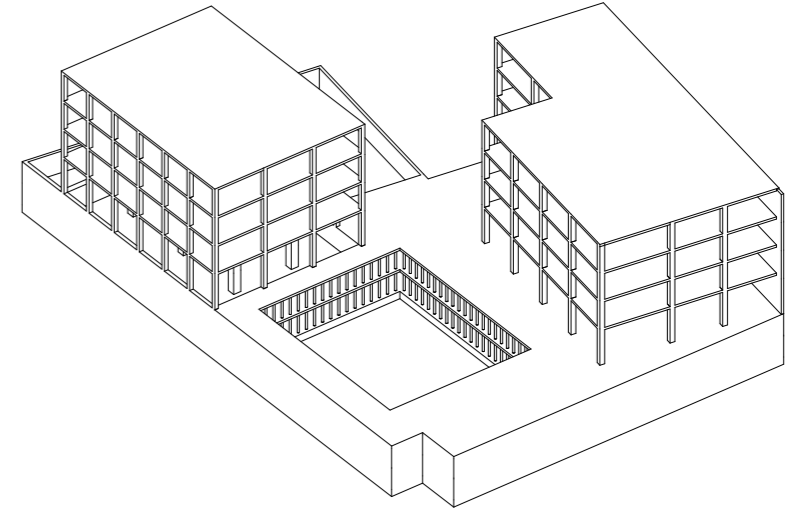
Reuse of the existing structure



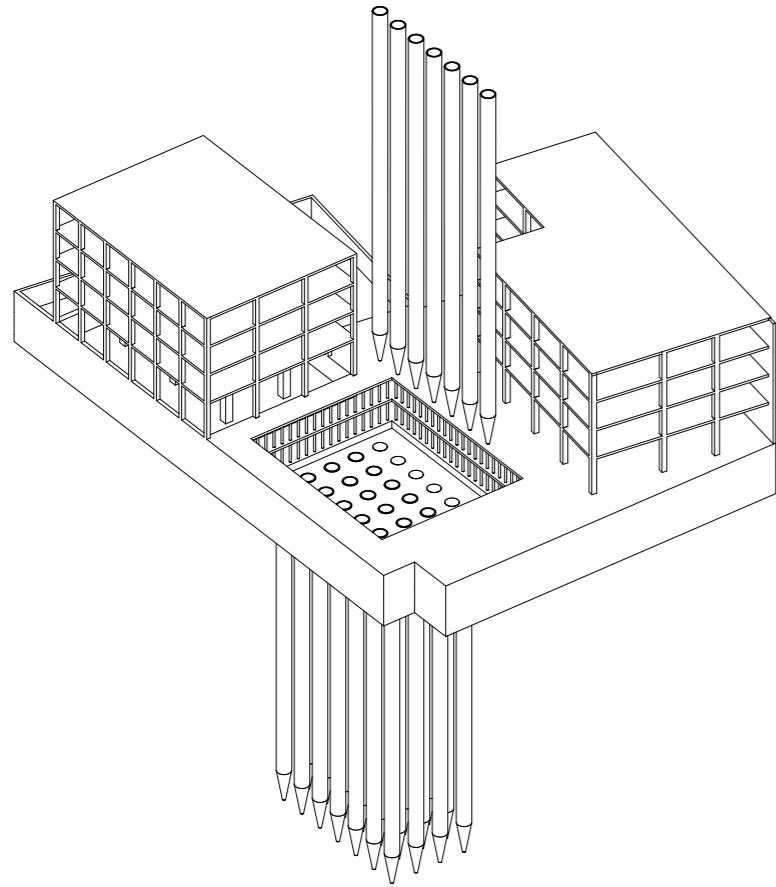
1) Existing buildings



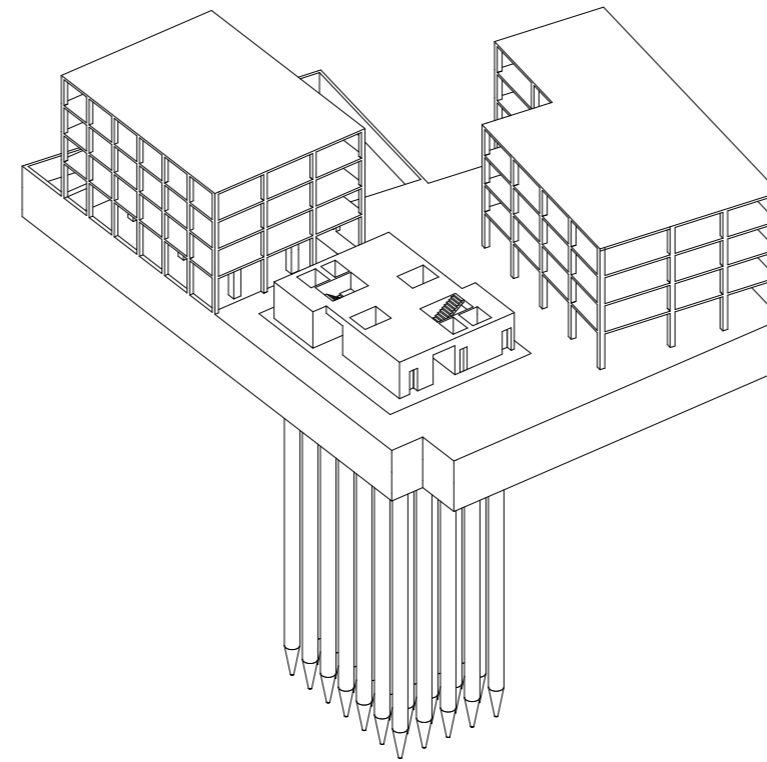
2) Existing structure



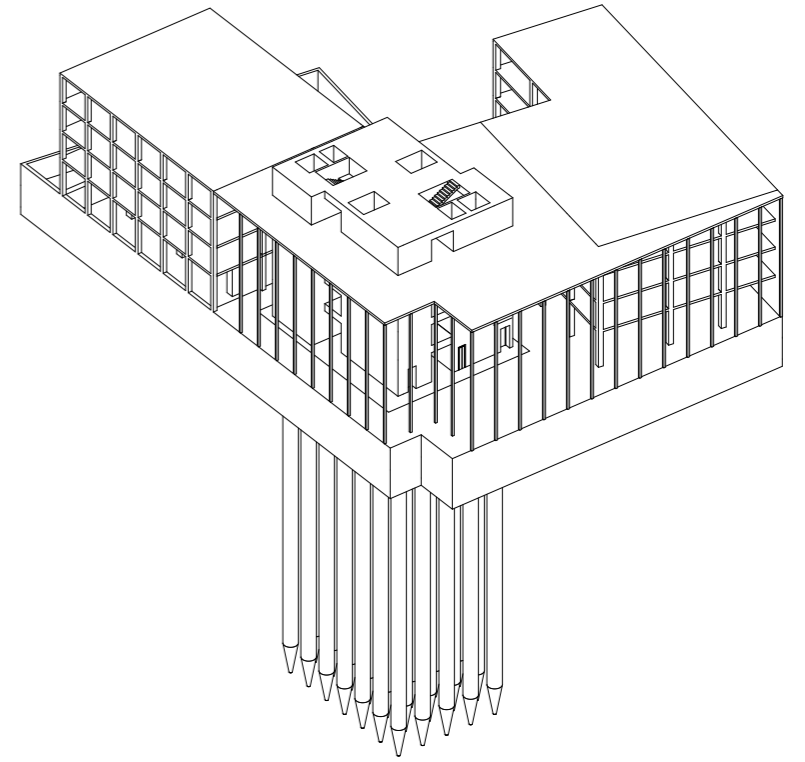
3) Partly demolition



4) Pillars & Raft



5) Core



6) Roof

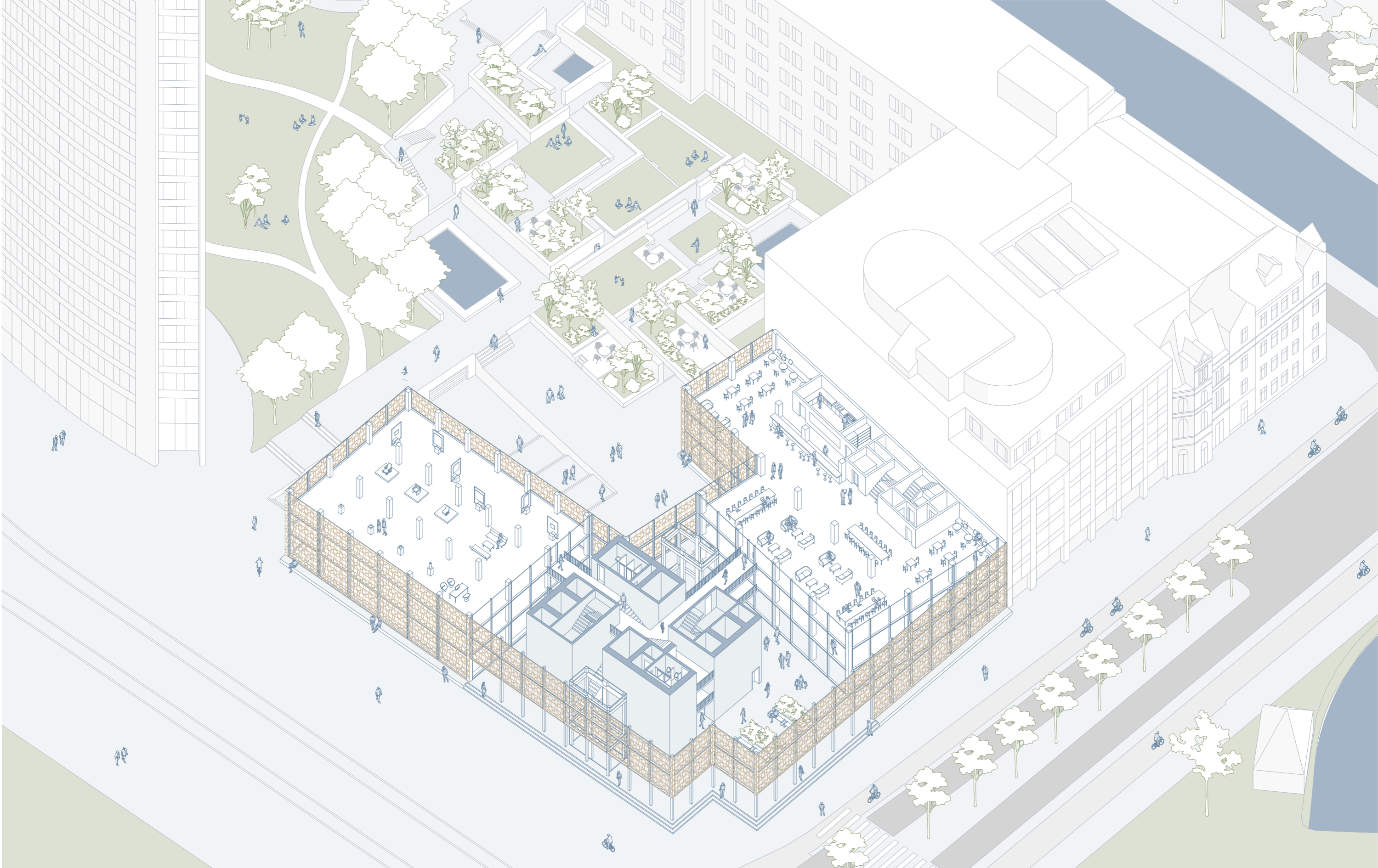
BUILDING SCALE

Ground floor plan zoom-in



URBAN SCALE

Public plinth & interior courtyard







Hoftoren Café



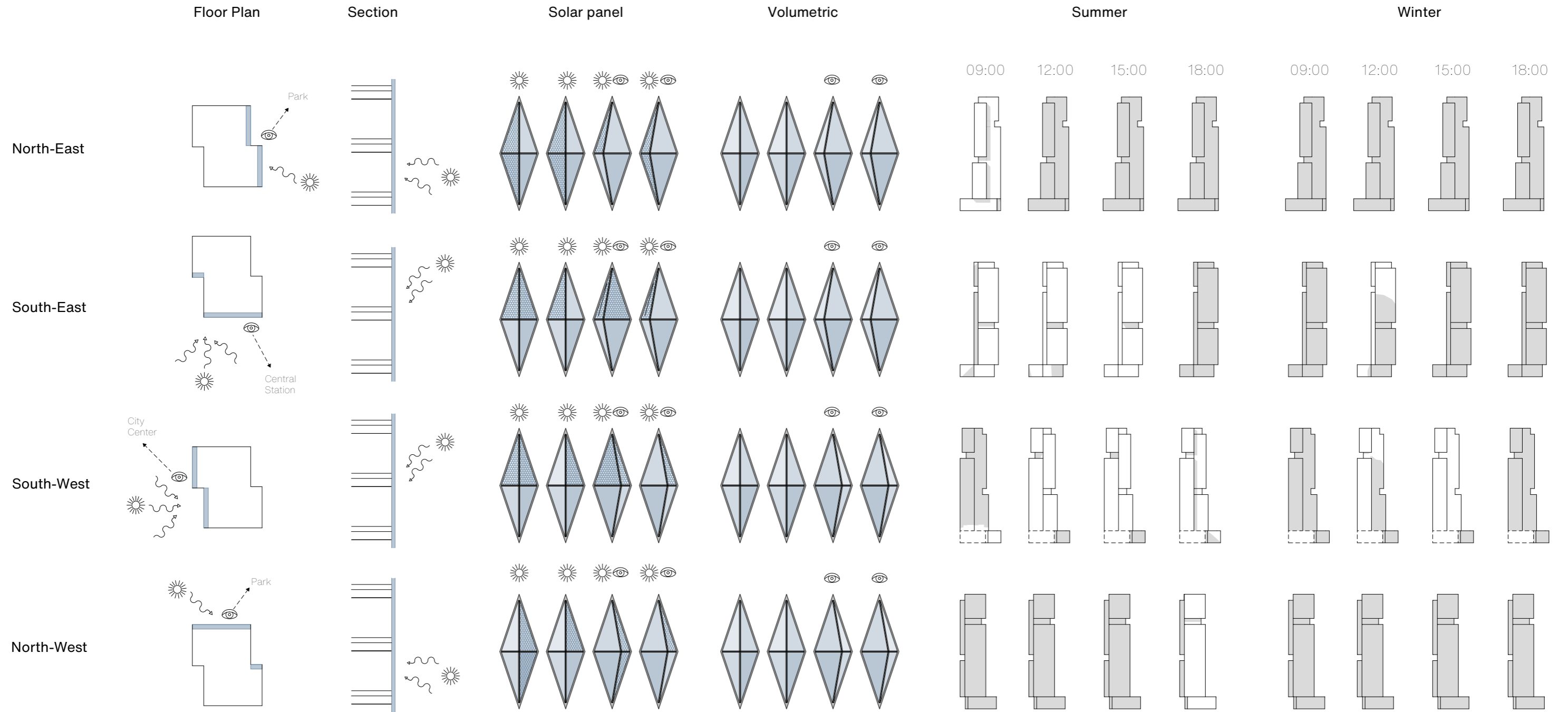


BUILDING SCALE



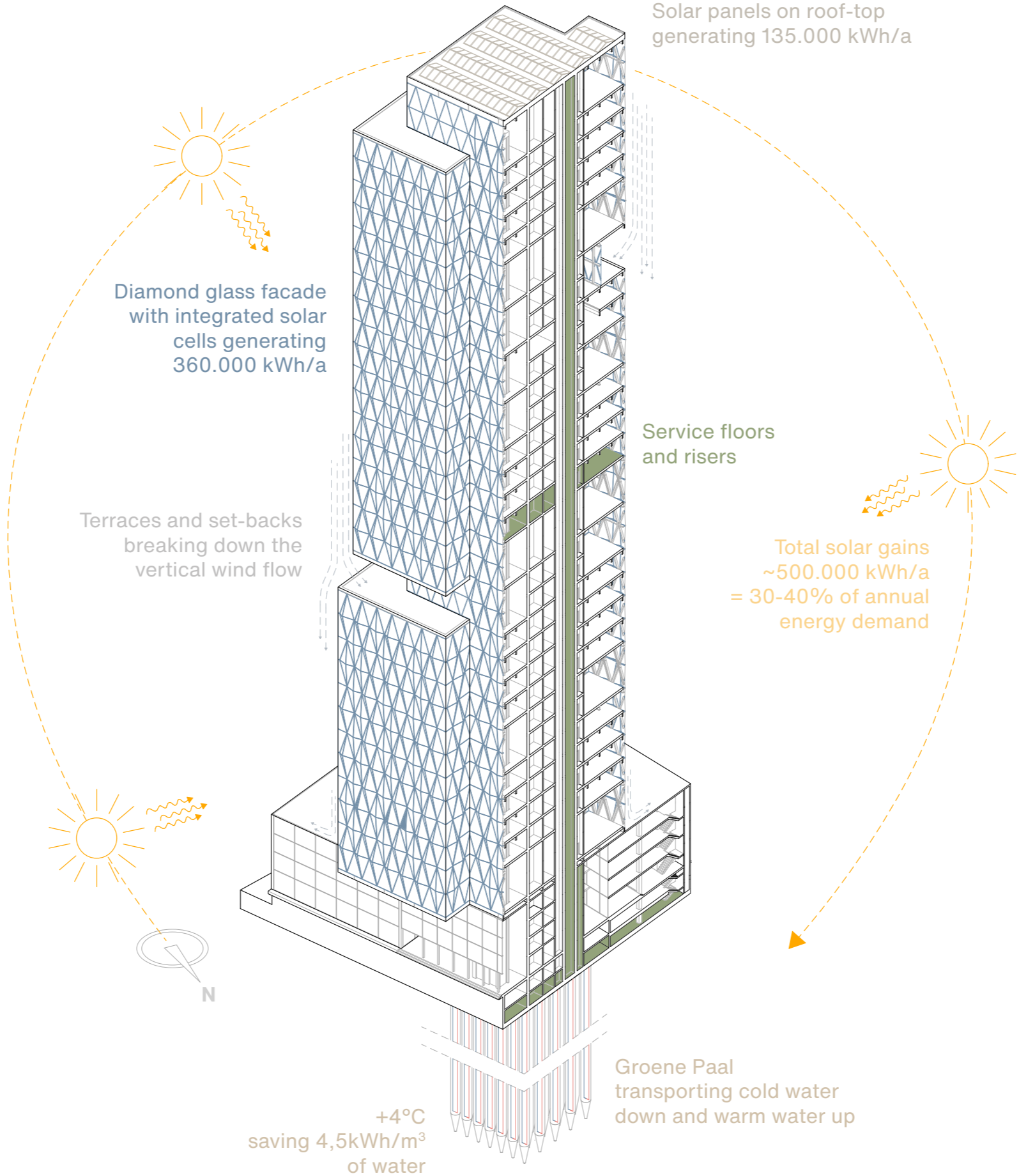
BUILDING SCALE

Facade pattern tower



BUILDING SCALE

Climate concept



BUILDING SCALE

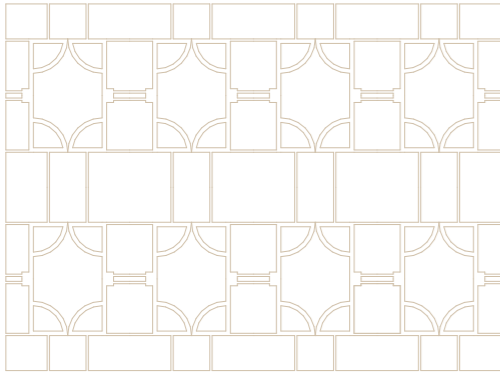
Facade pattern plinth & terraces



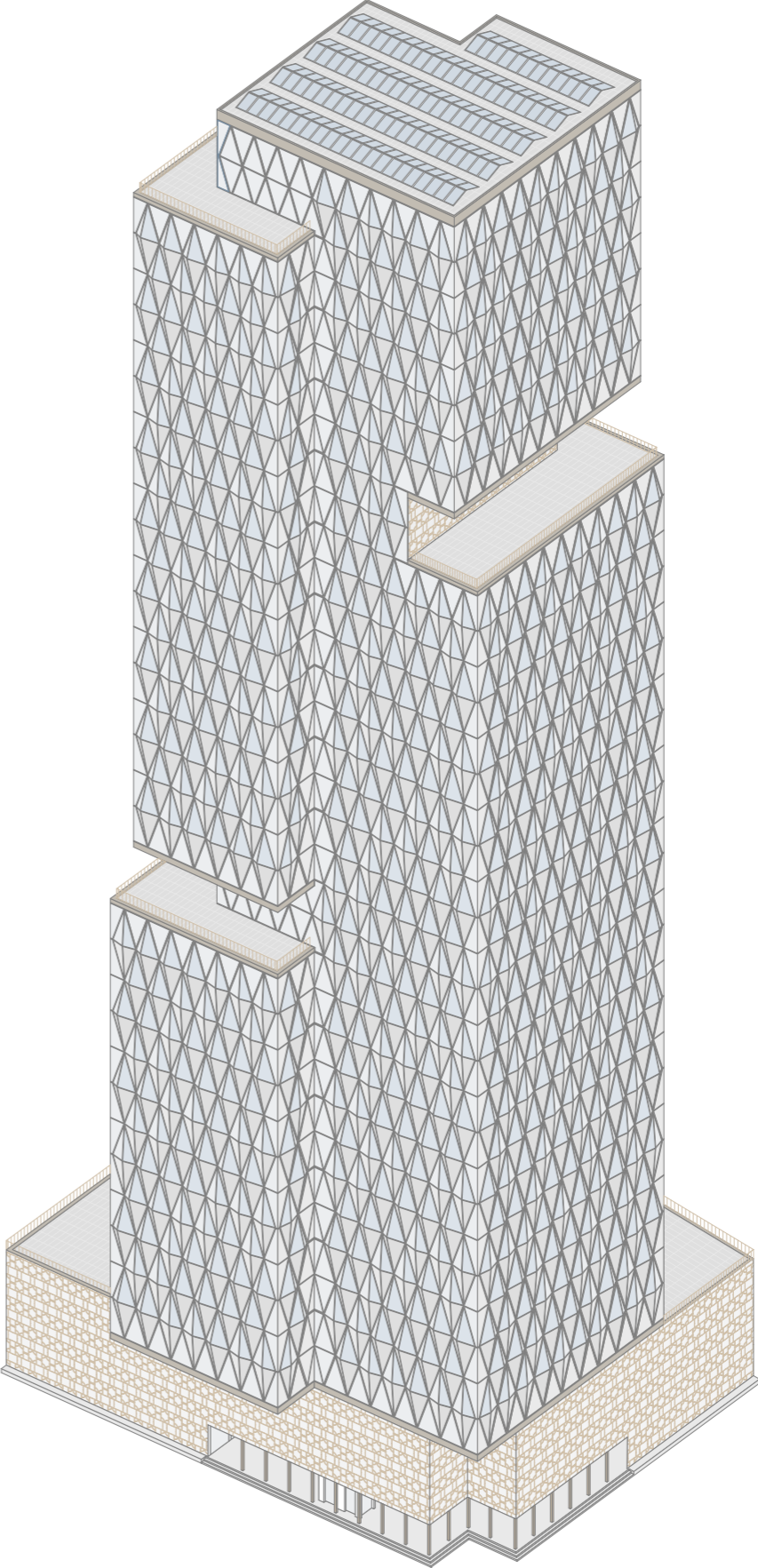
Coat of arms of The Hague



Abstracted stork symbol

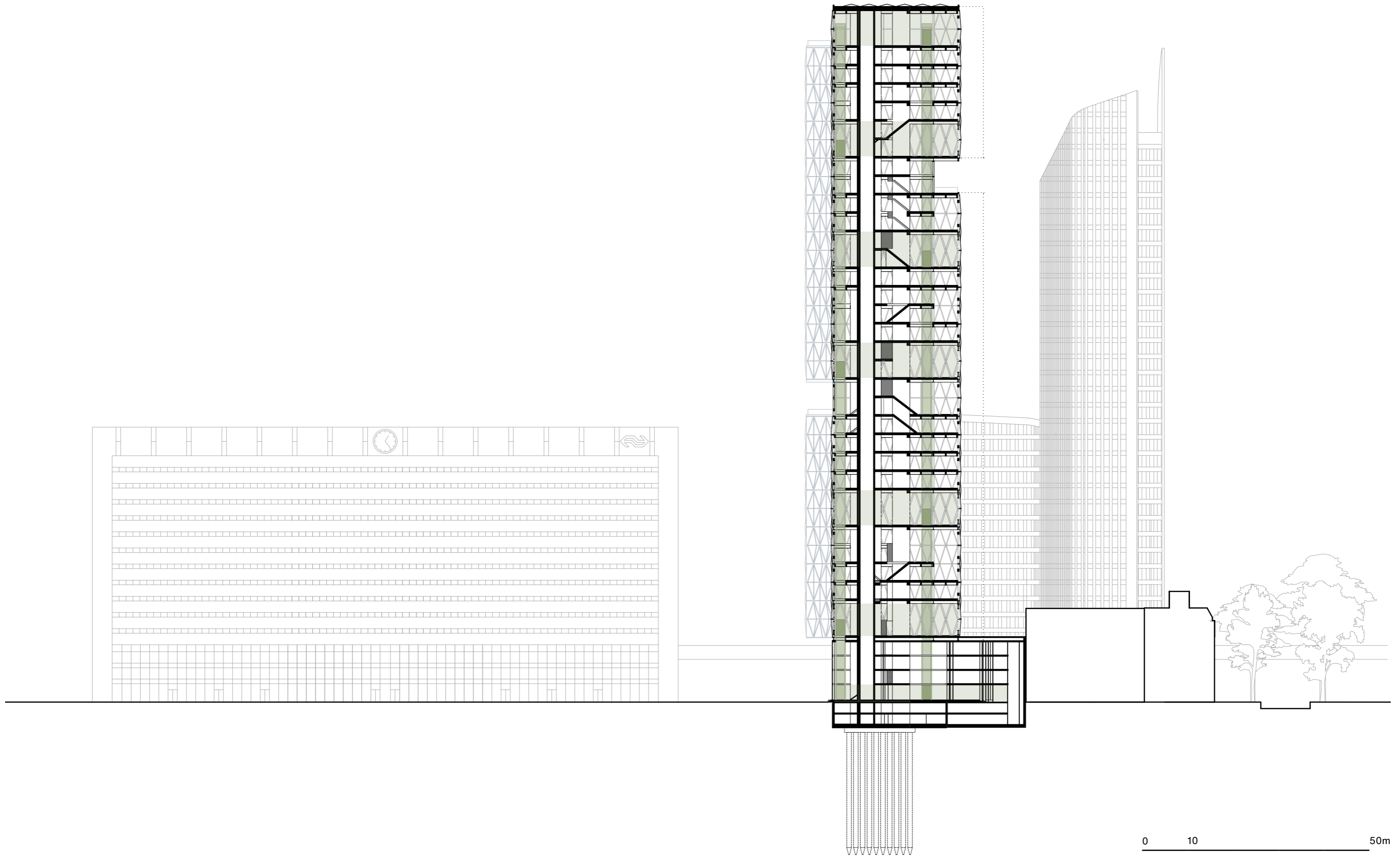


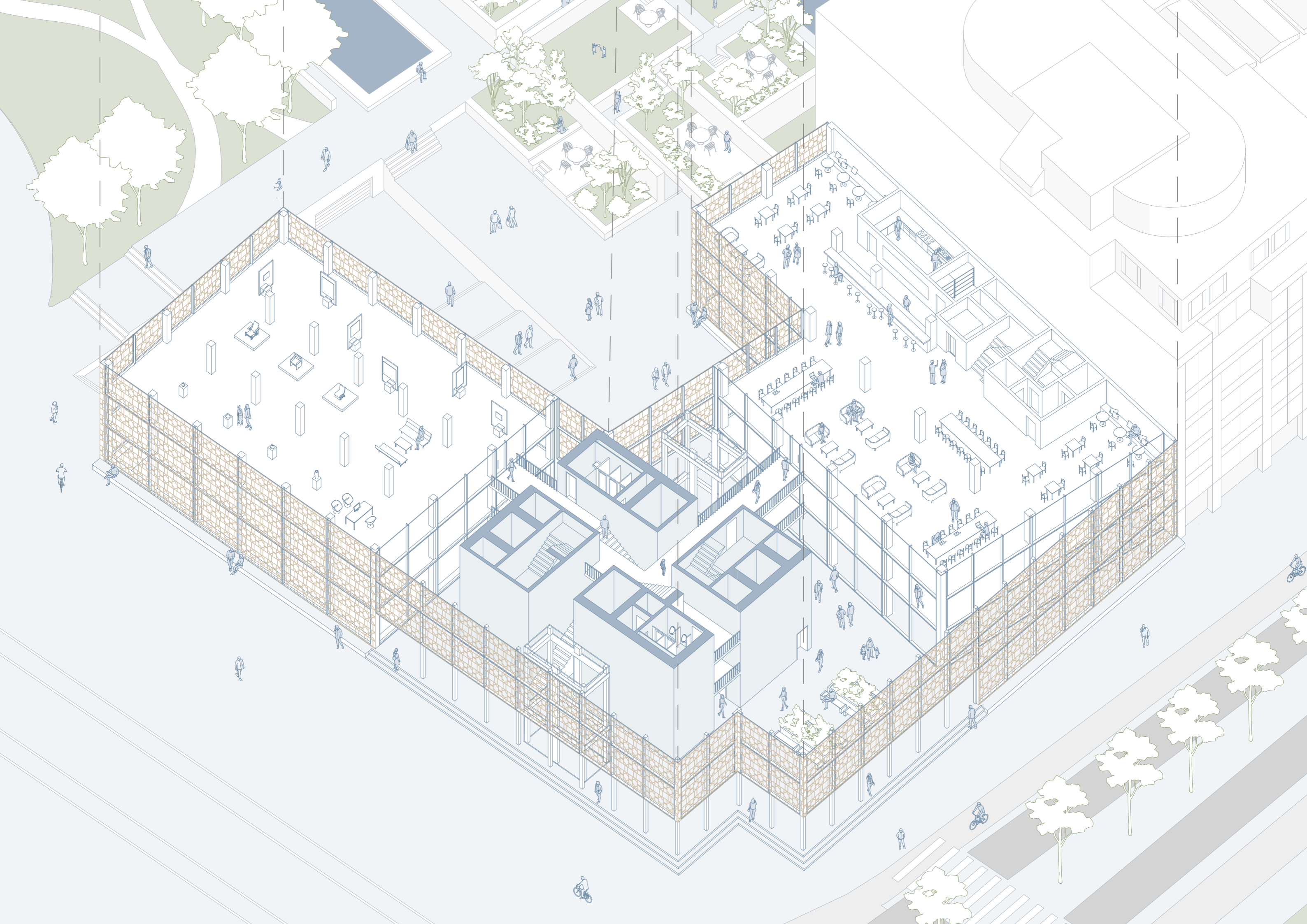
Facade pattern

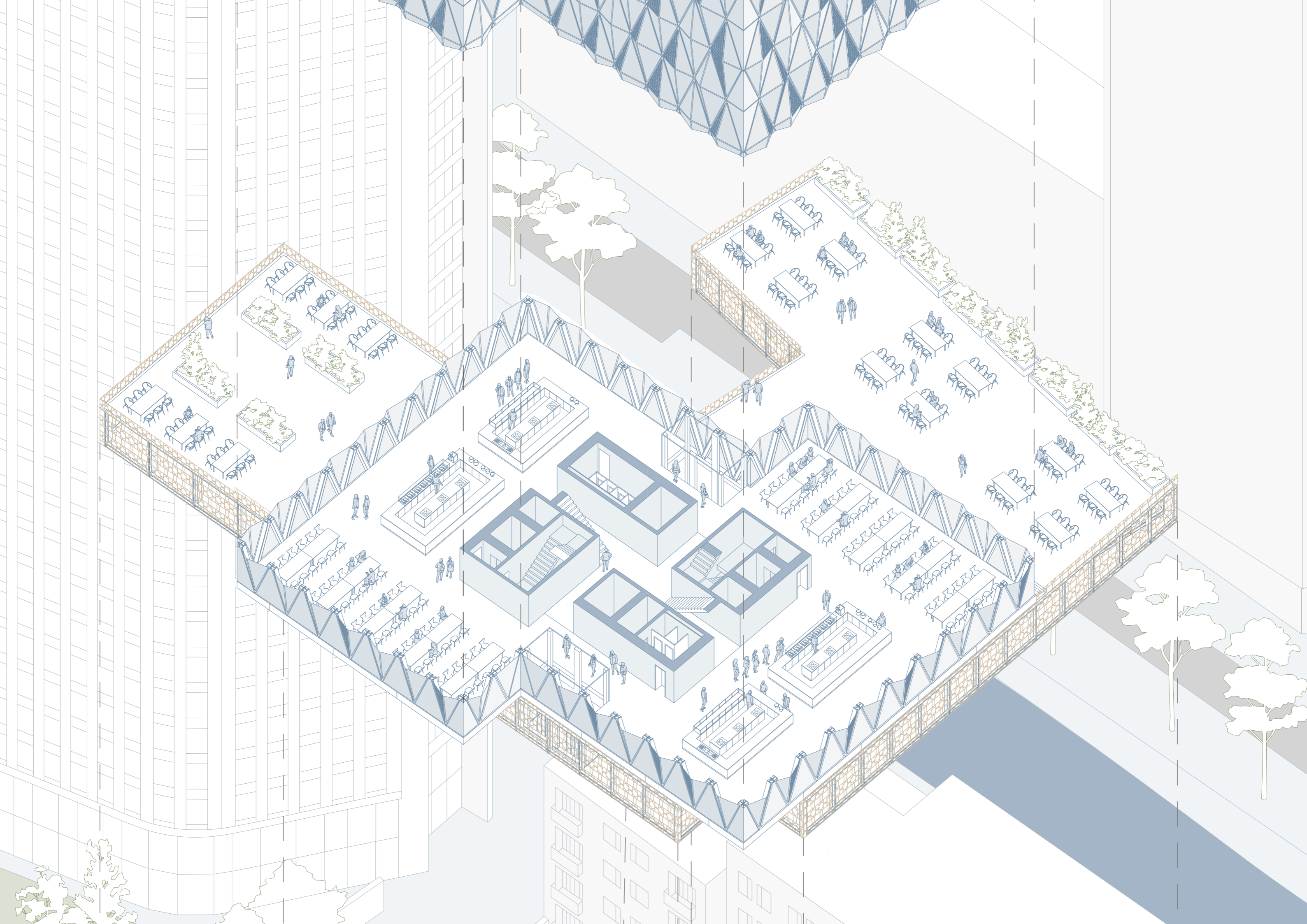


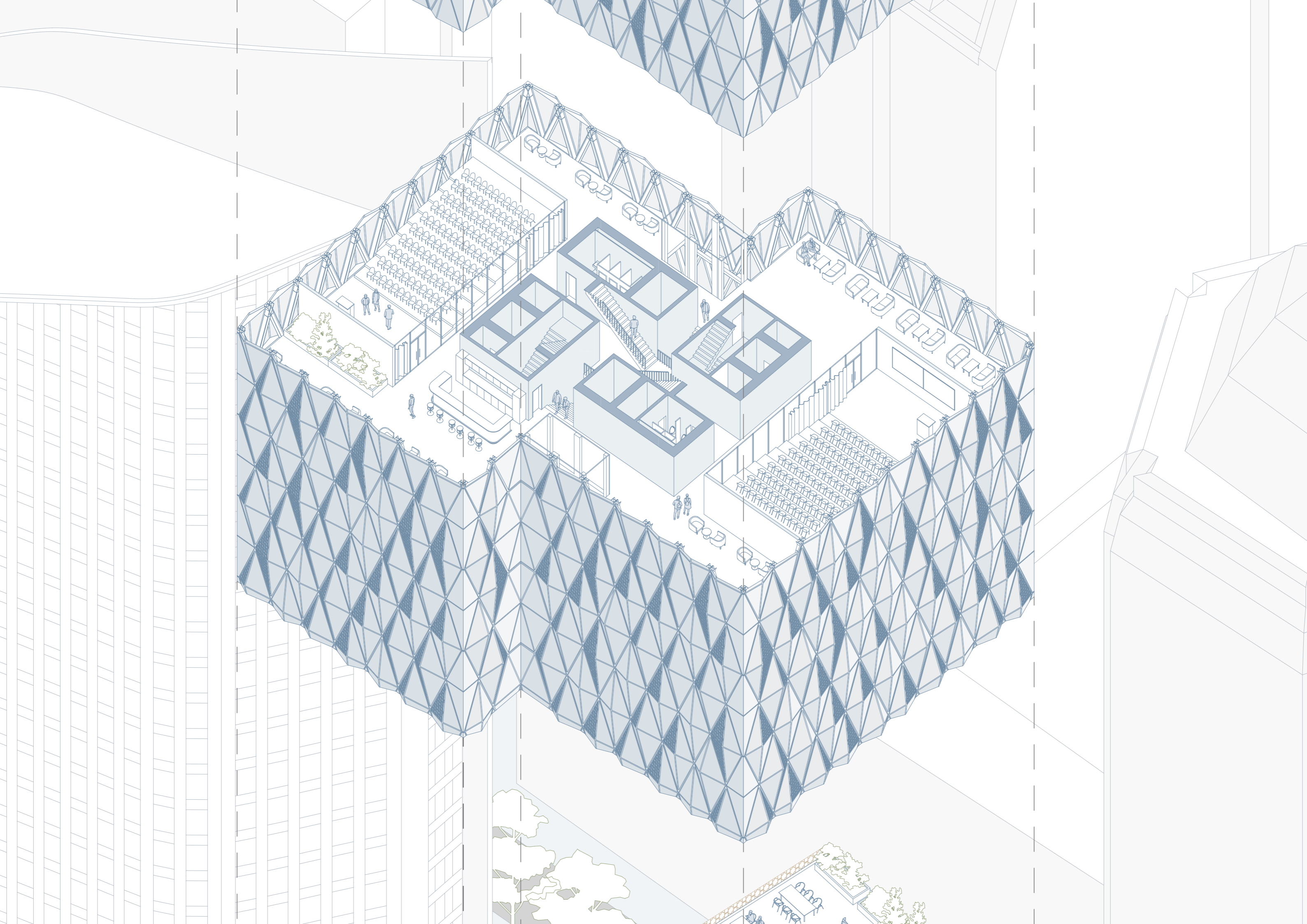
BUILDING SCALE

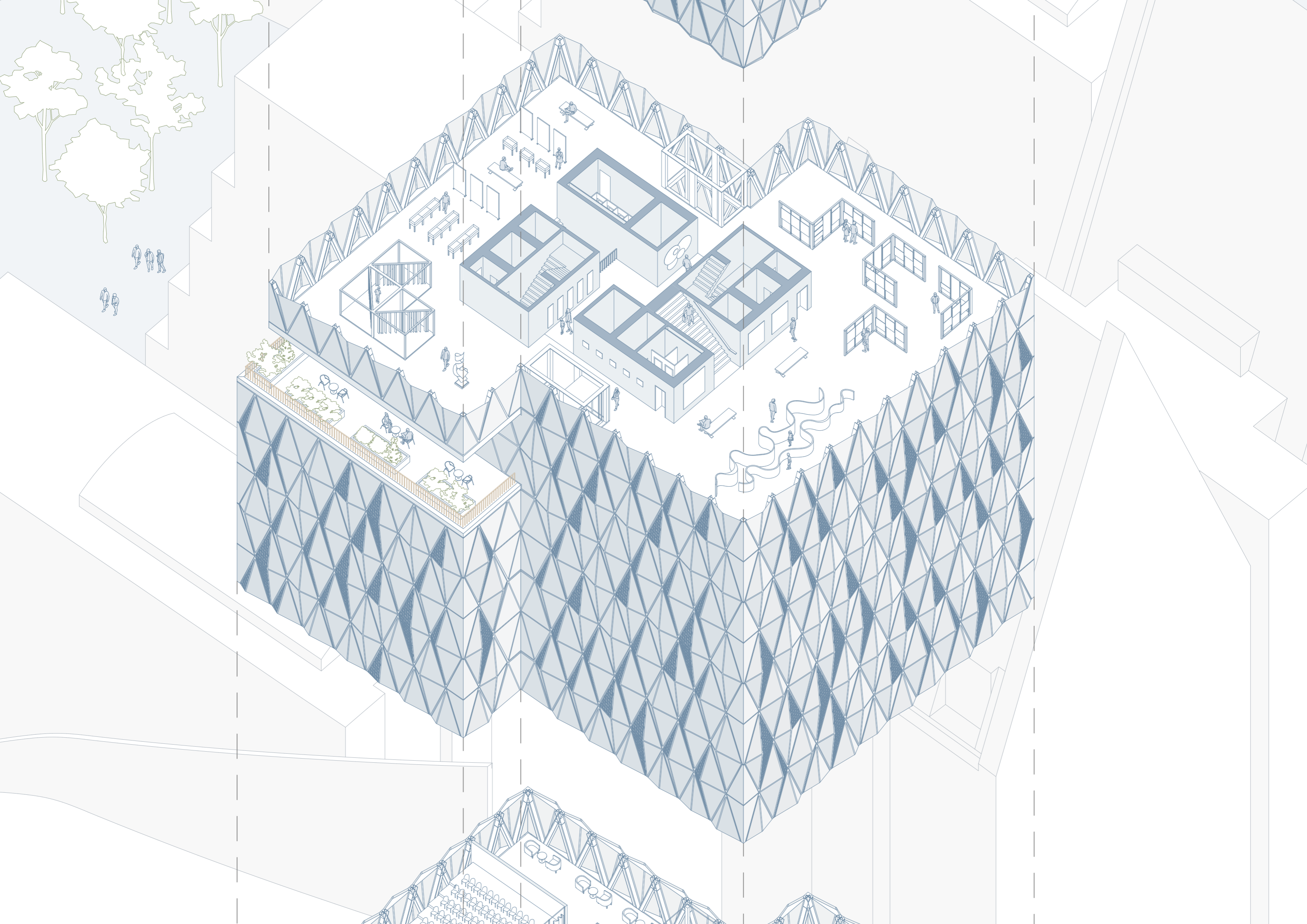
Circulation concept & section

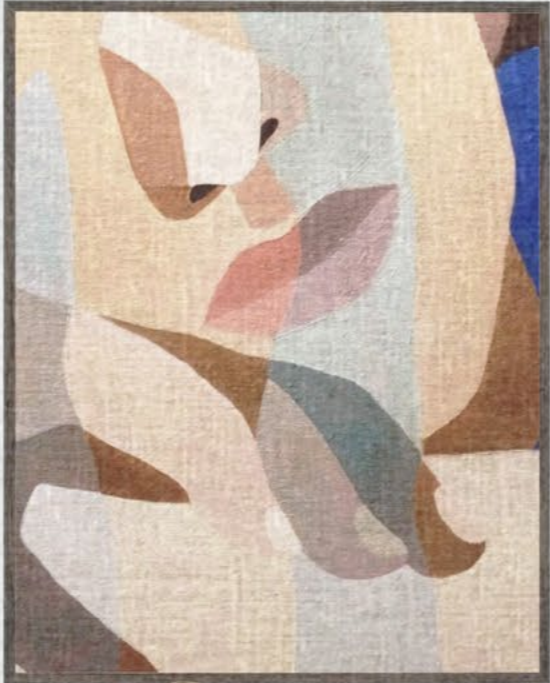








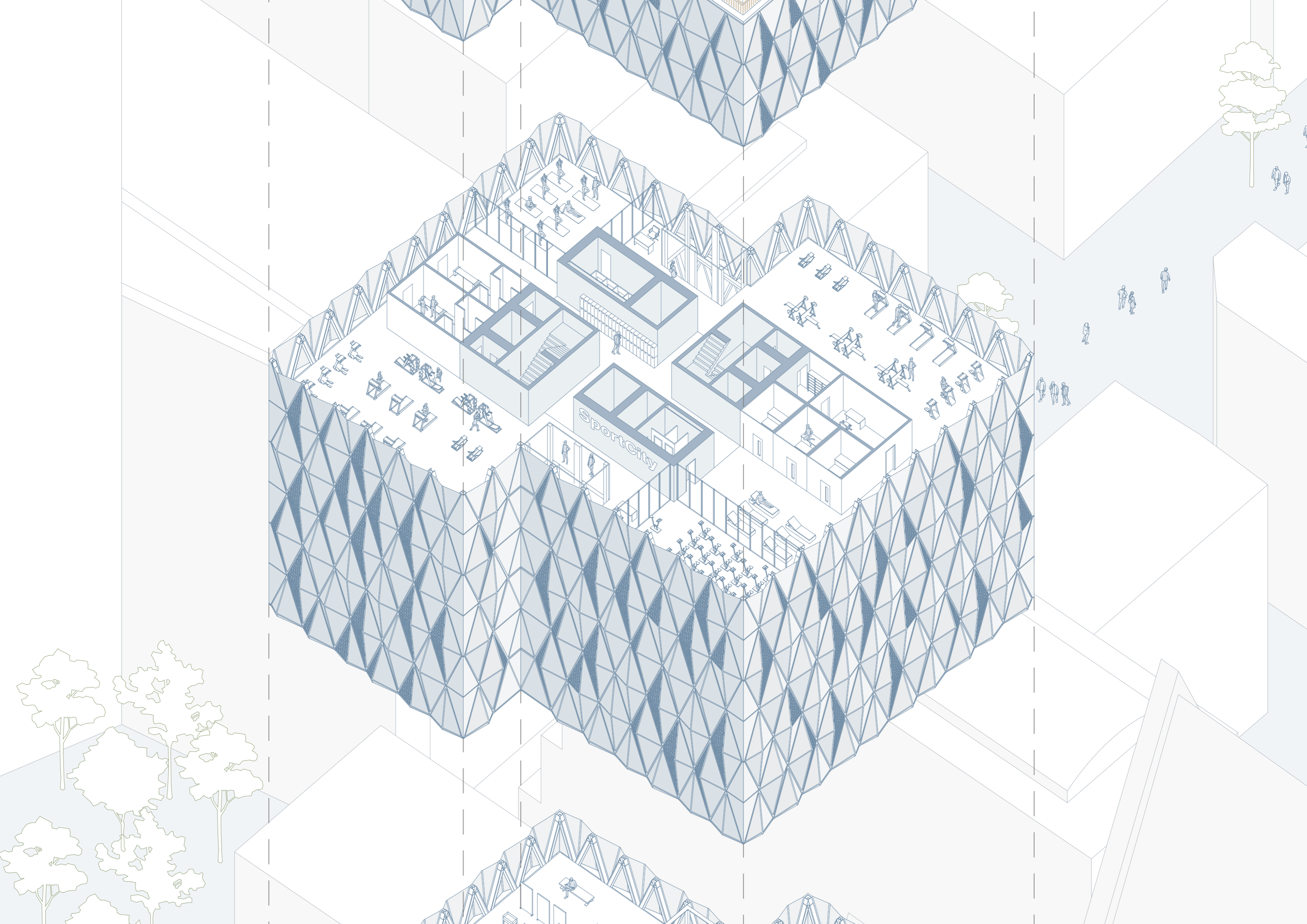


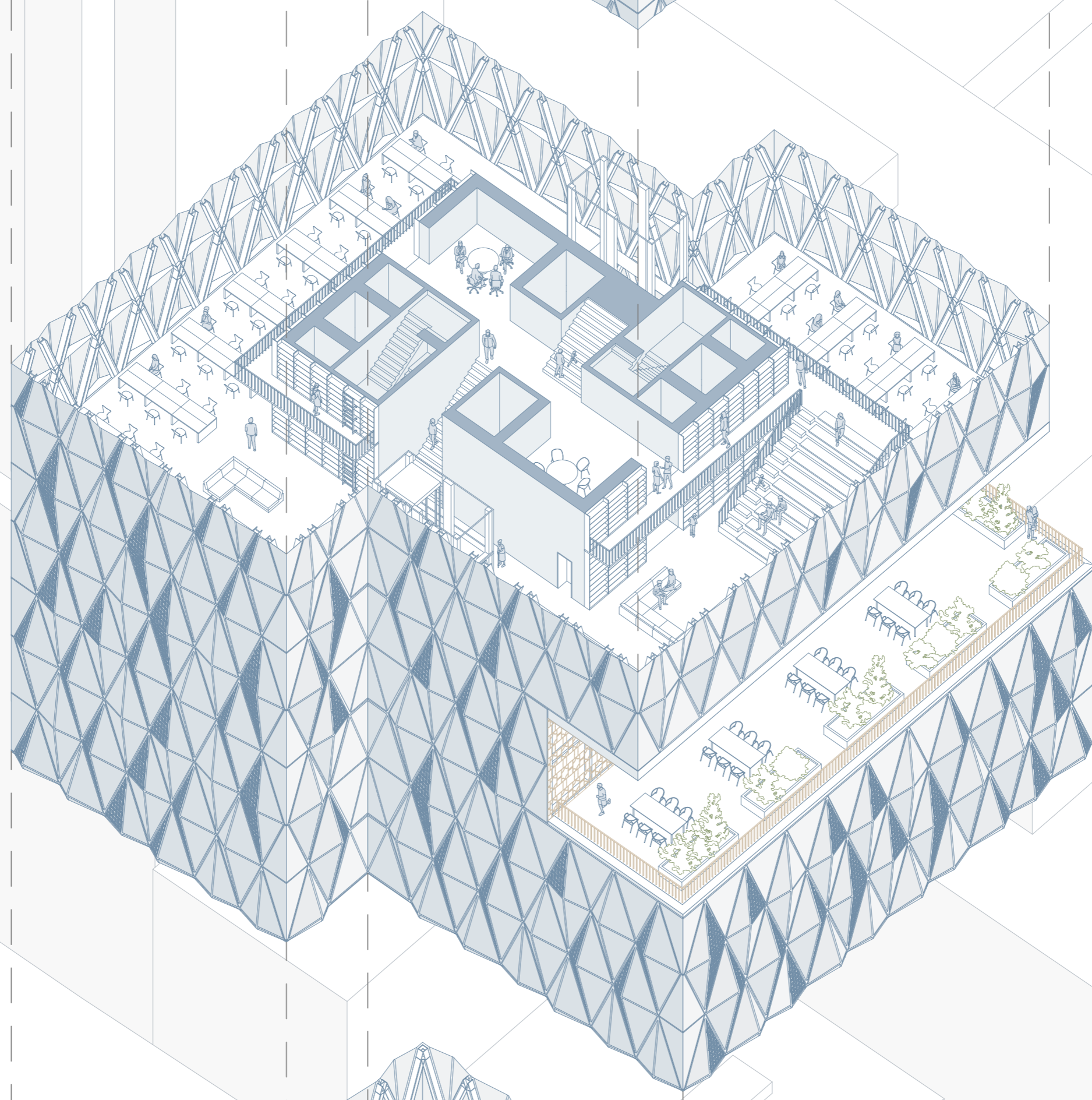


Eternity
Maria Menicilla

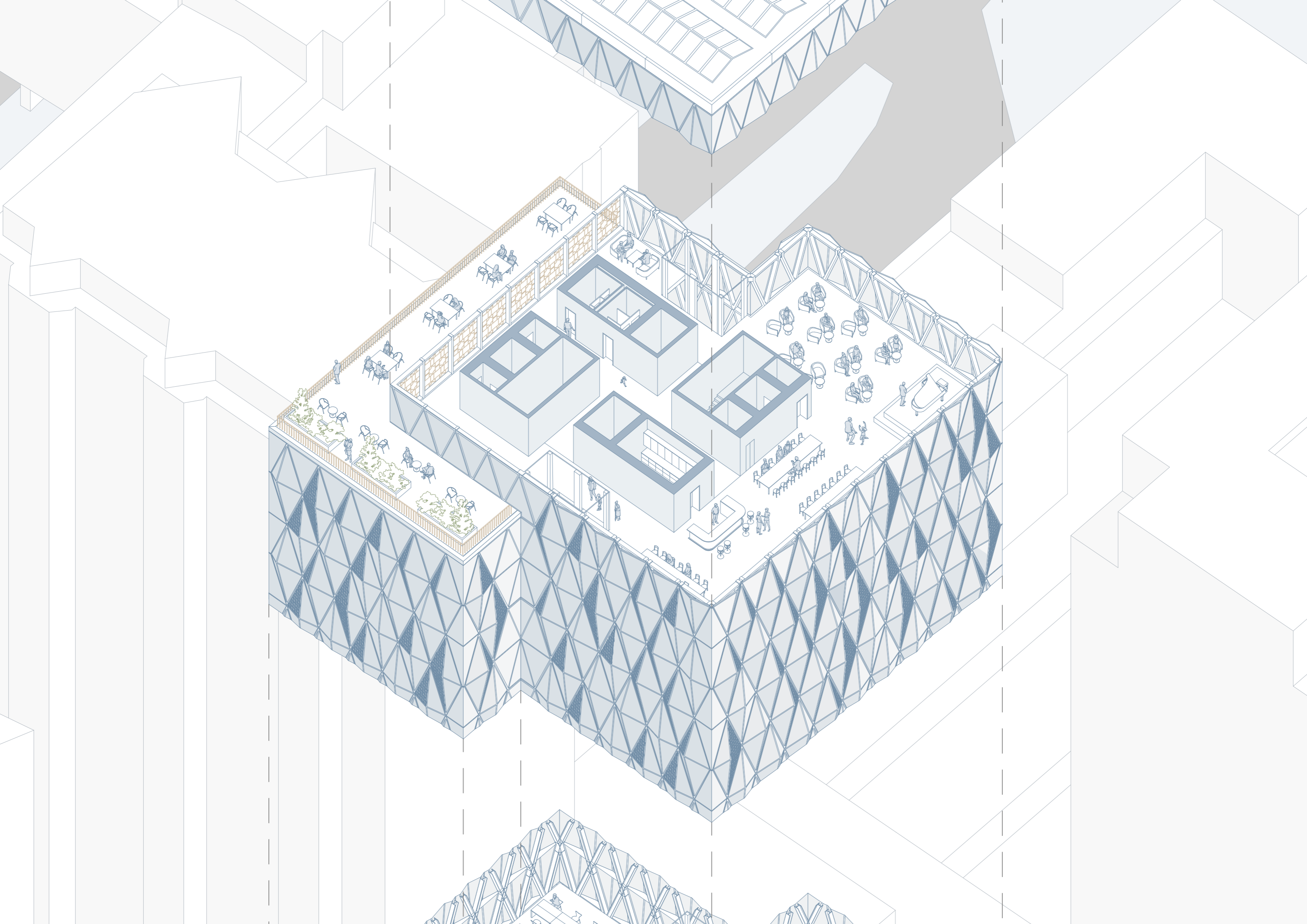


Whatever
Master Dude



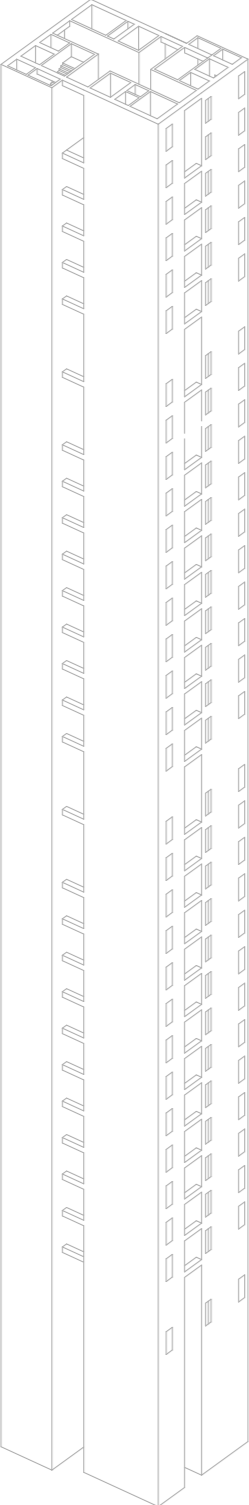




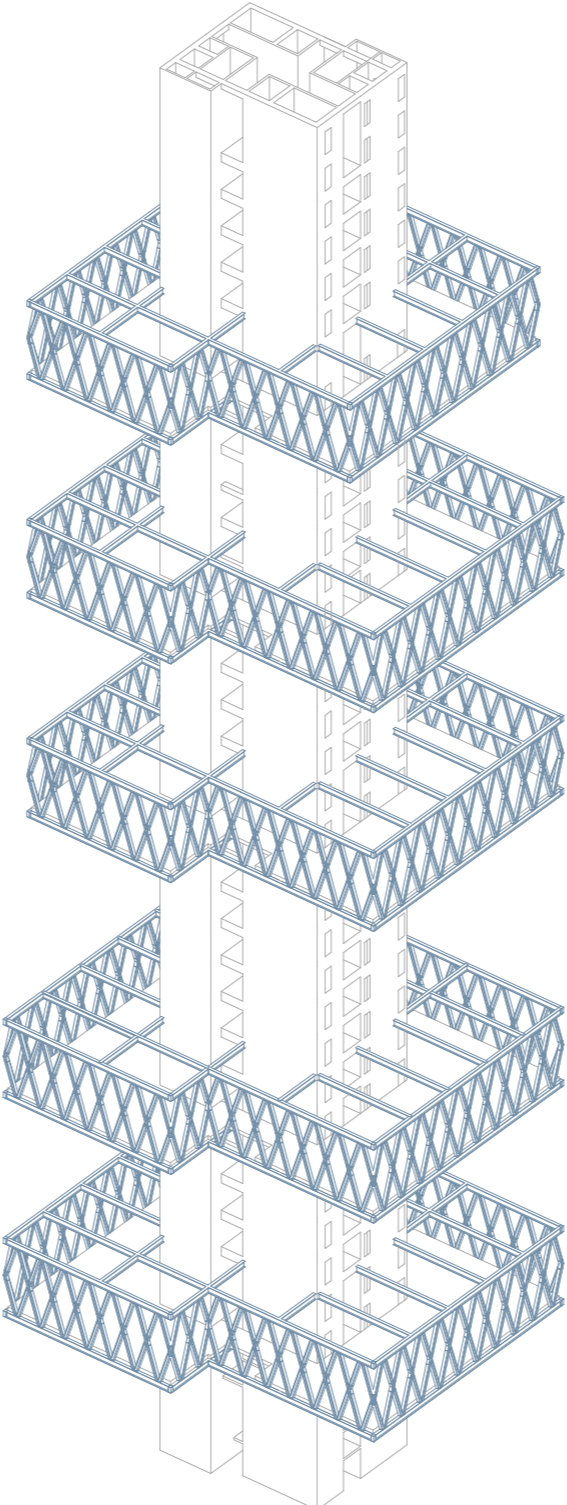


BUILDING SCALE

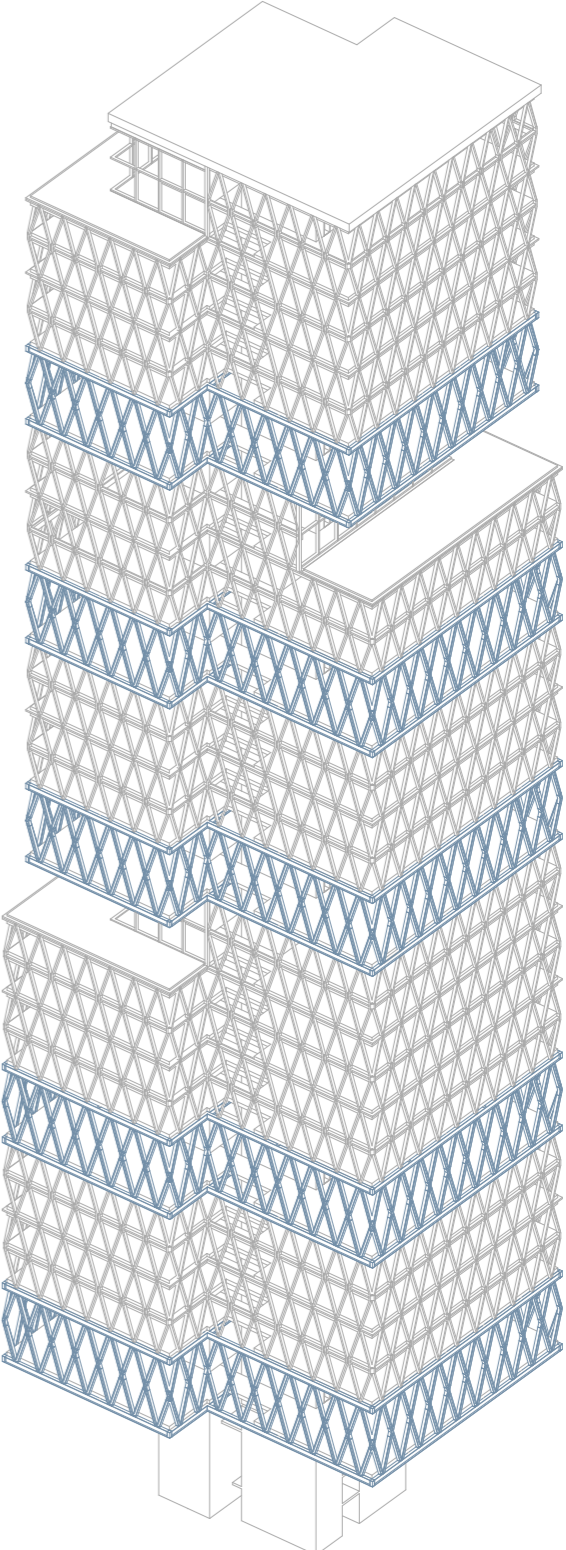
Structural layers



Resilient concrete cores



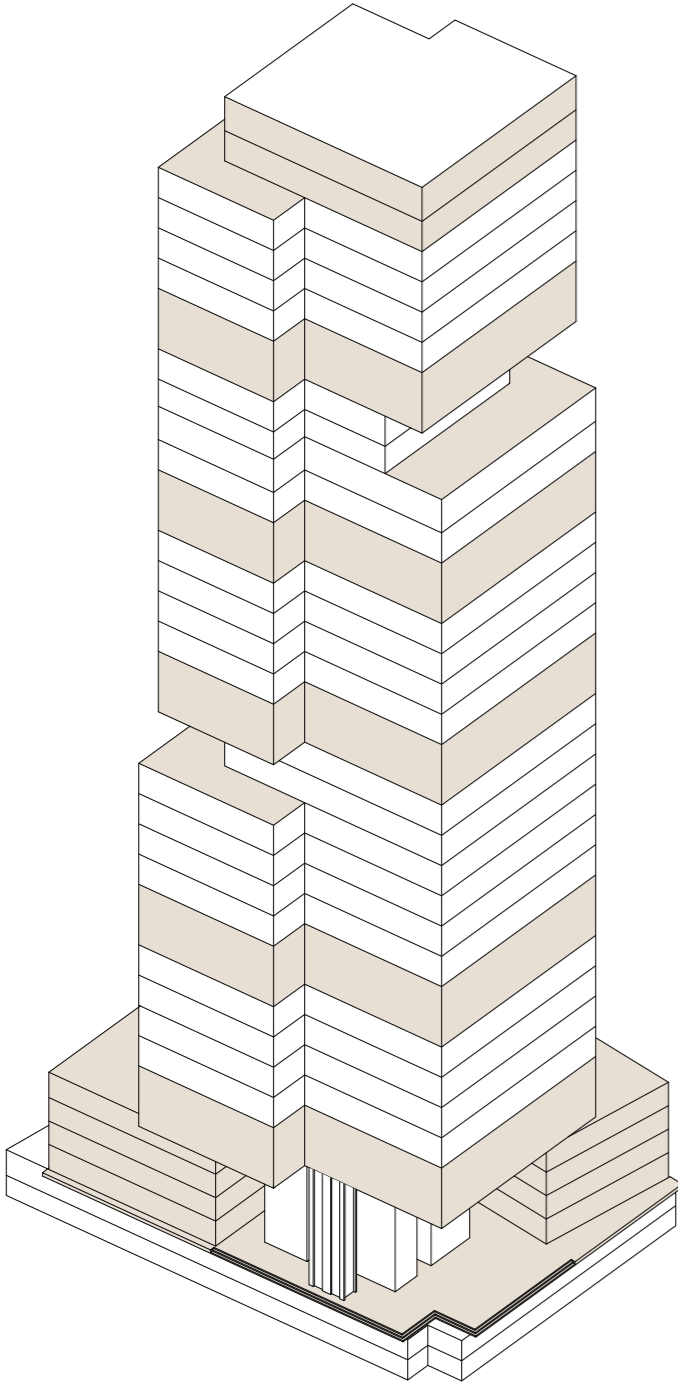
Load-bearing steel structure



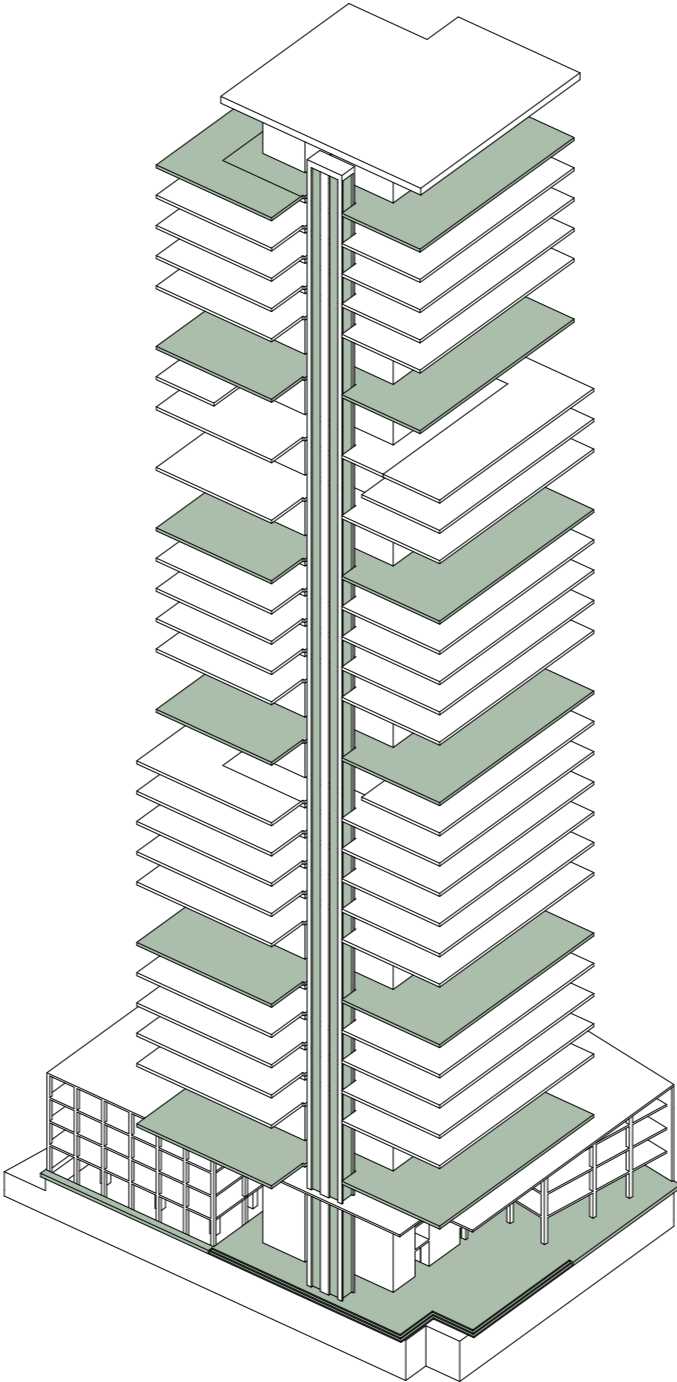
Flexible timber structure

BUILDING SCALE

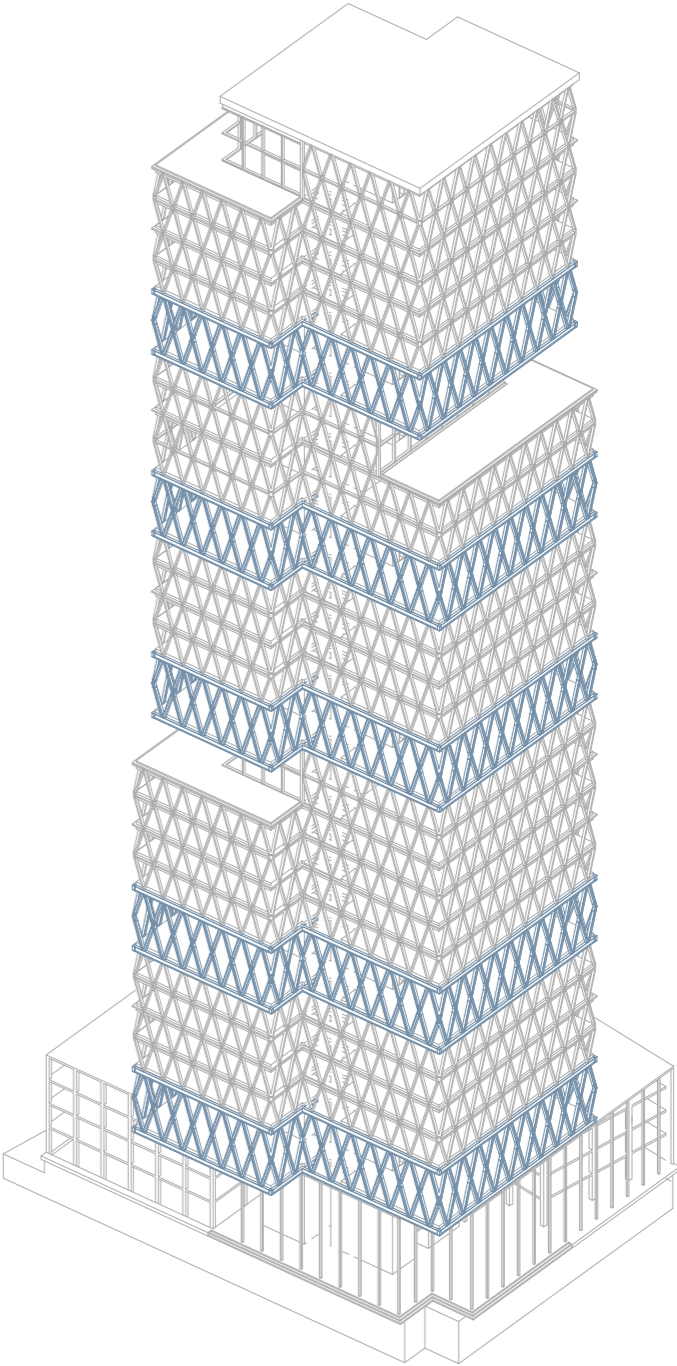
Different layers working together



Programme



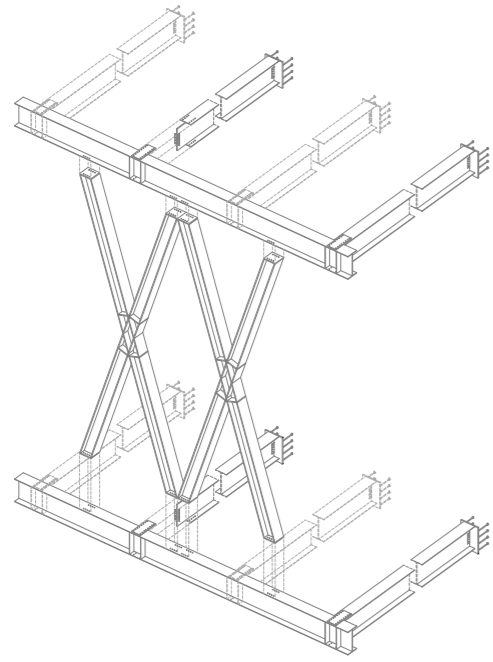
Circulation



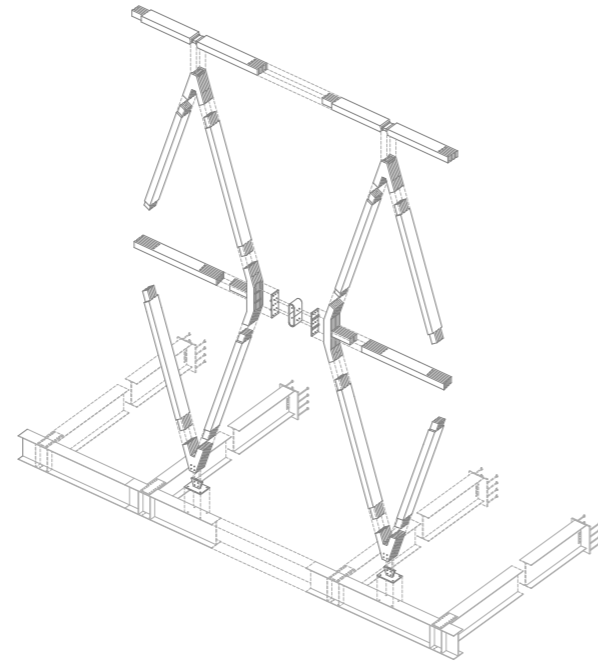
Structure

BUILDING SCALE

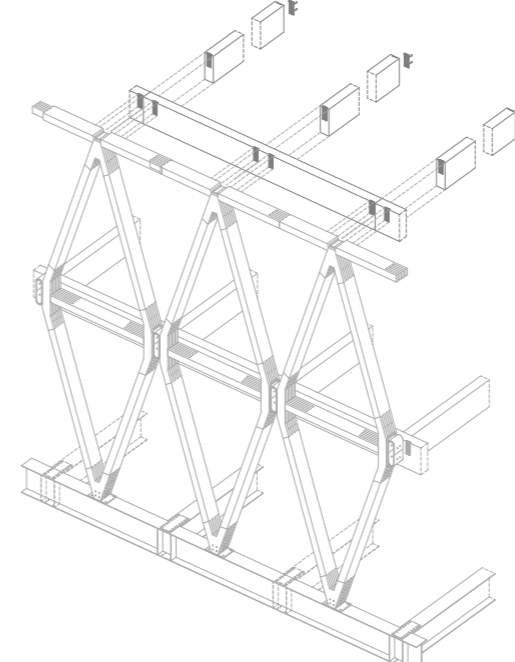
Assembly process



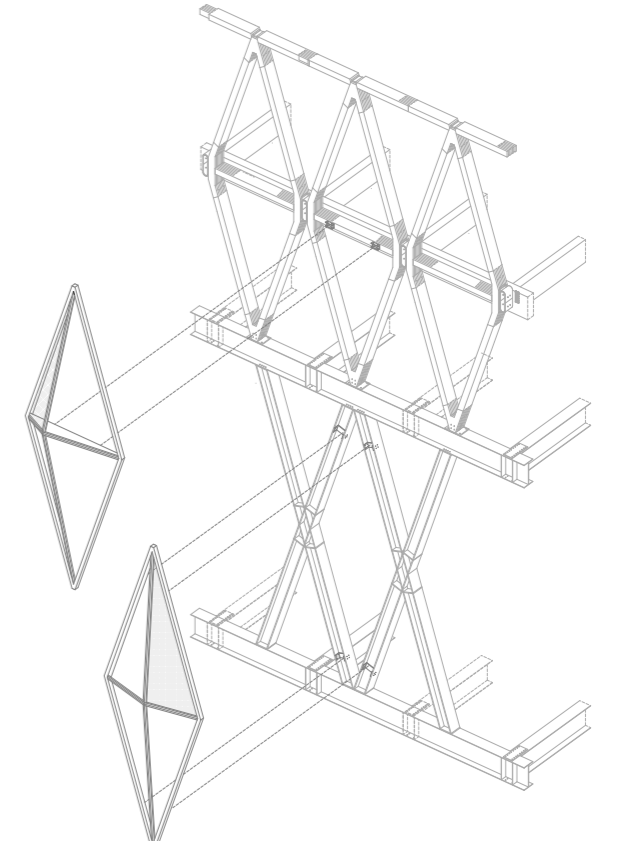
Joint 1 - Steel diagrid



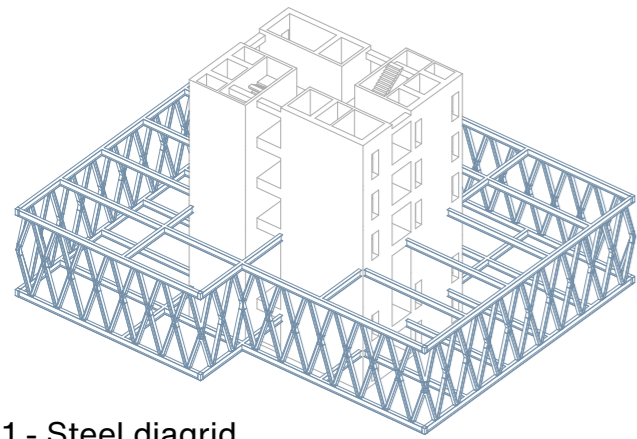
Joint 2 - Timber diagrid



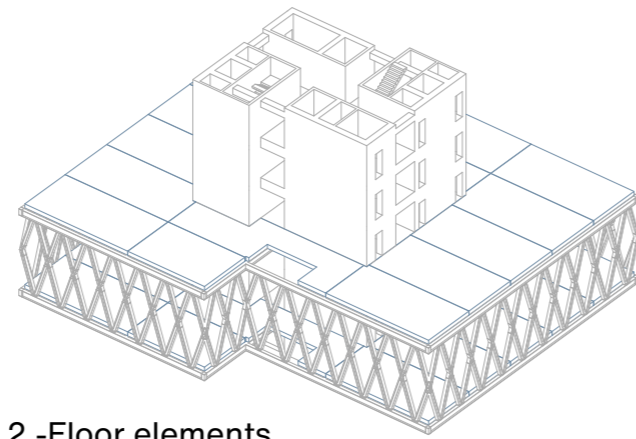
Joint 3 - Horizontal beams



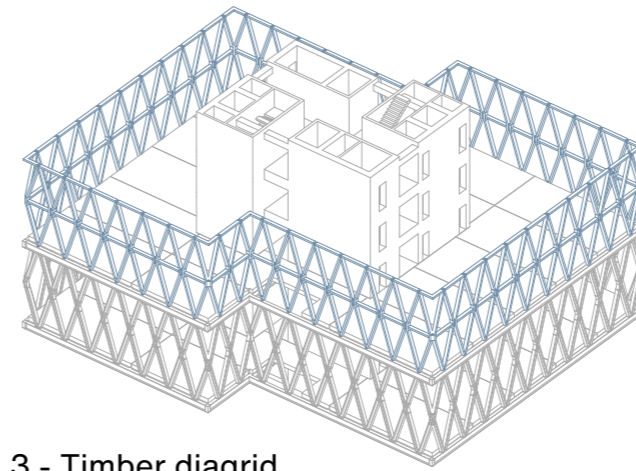
Joint 4 - Facade modules



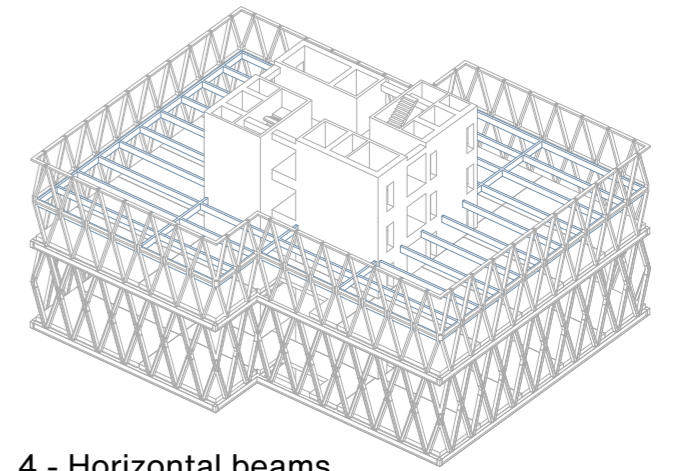
1 - Steel diagrid



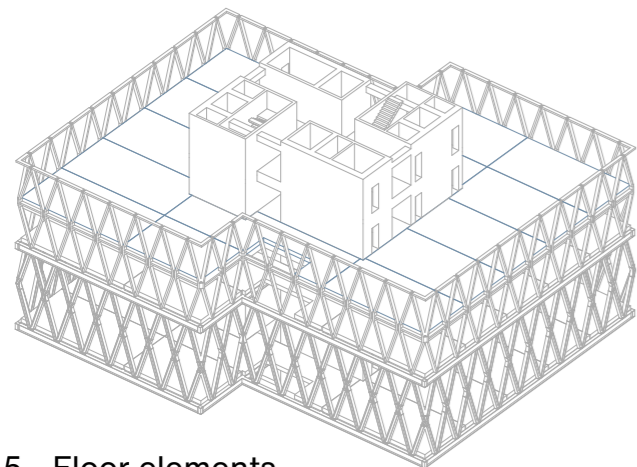
2 - Floor elements



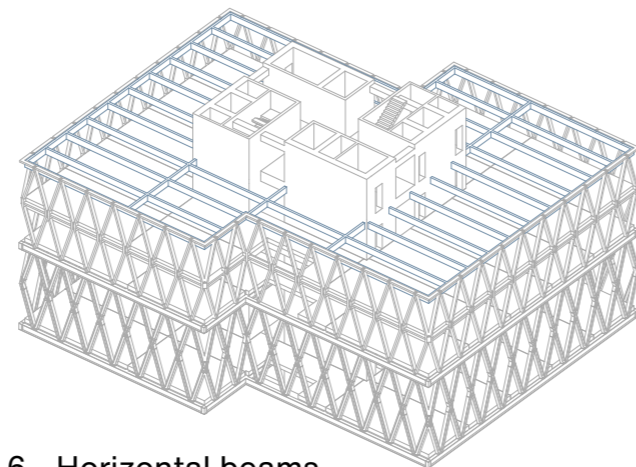
3 - Timber diagrid



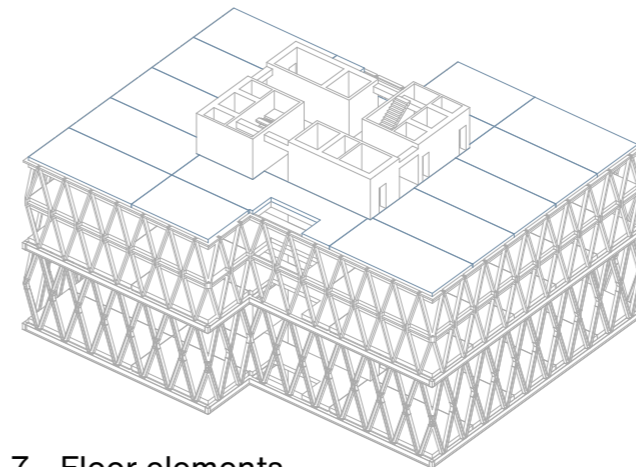
4 - Horizontal beams



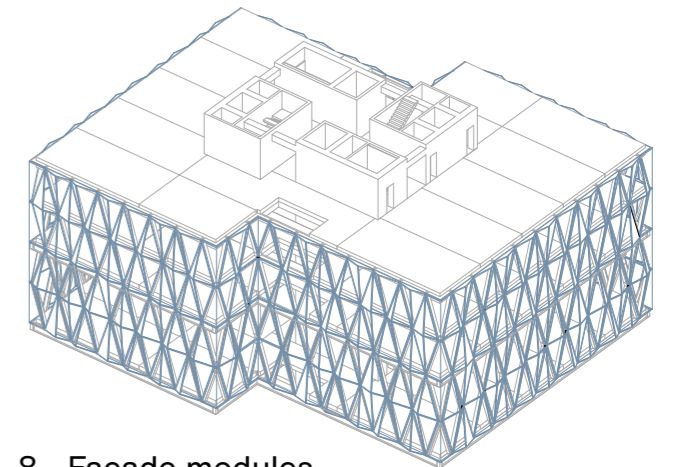
5 - Floor elements



6 - Horizontal beams



7 - Floor elements



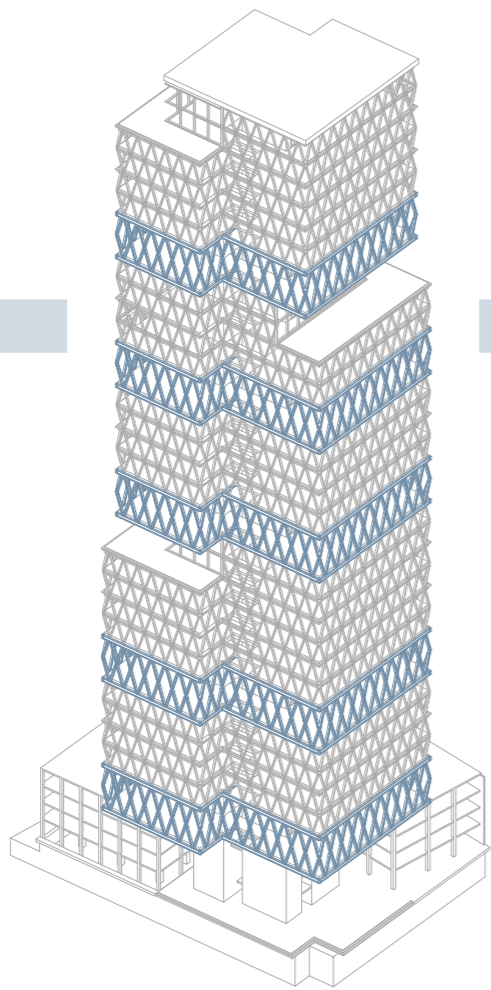
8 - Facade modules

BUILDING SCALE

Adaptive reuse

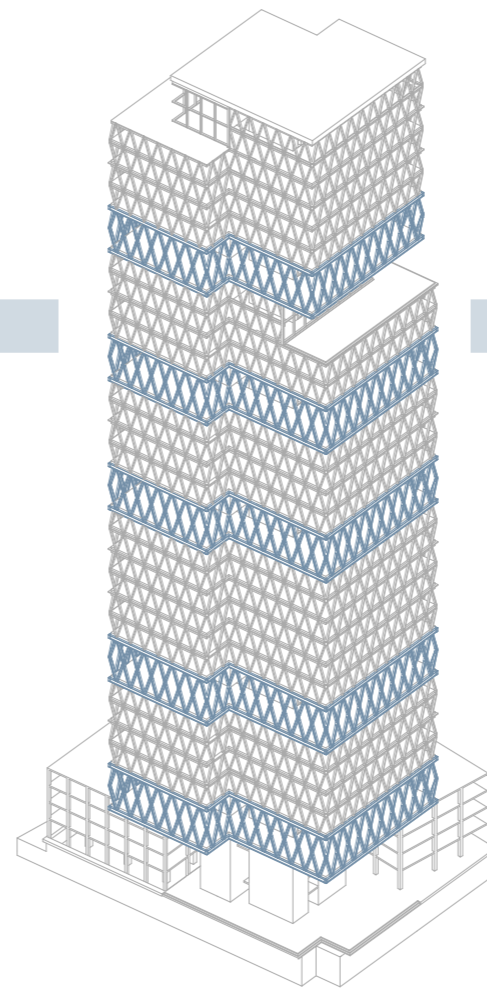
2024

With an ever-increasing number of national and international students, TU Delft, in cooperation with Leiden University, decides to build a new Vertical Campus in the Central Innovation District of The Hague.



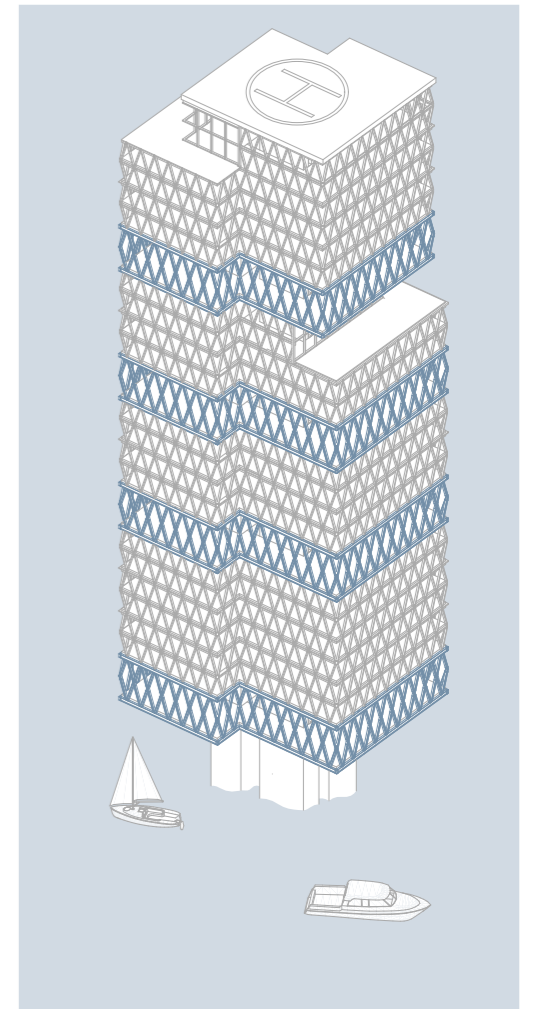
2054

The increased population of 650,000 in the urban agglomeration of The Hague requires the transformation of various buildings into residential buildings.

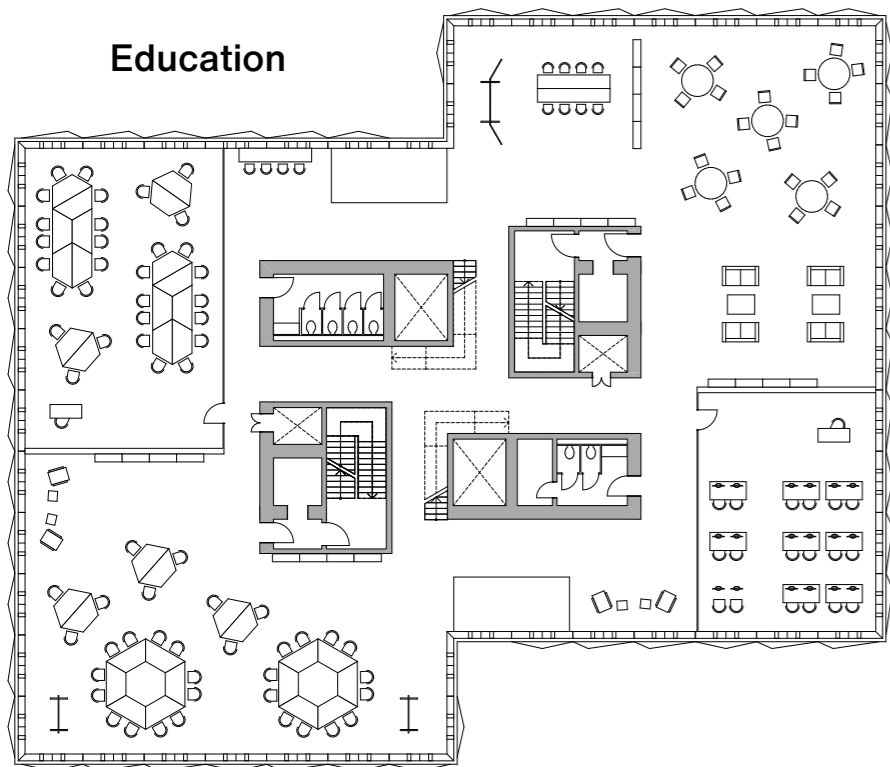


2074

The rise in sea levels caused by climate change requires numerous emergency rooms and aid facilities to provide medical care for the large number of refugees.



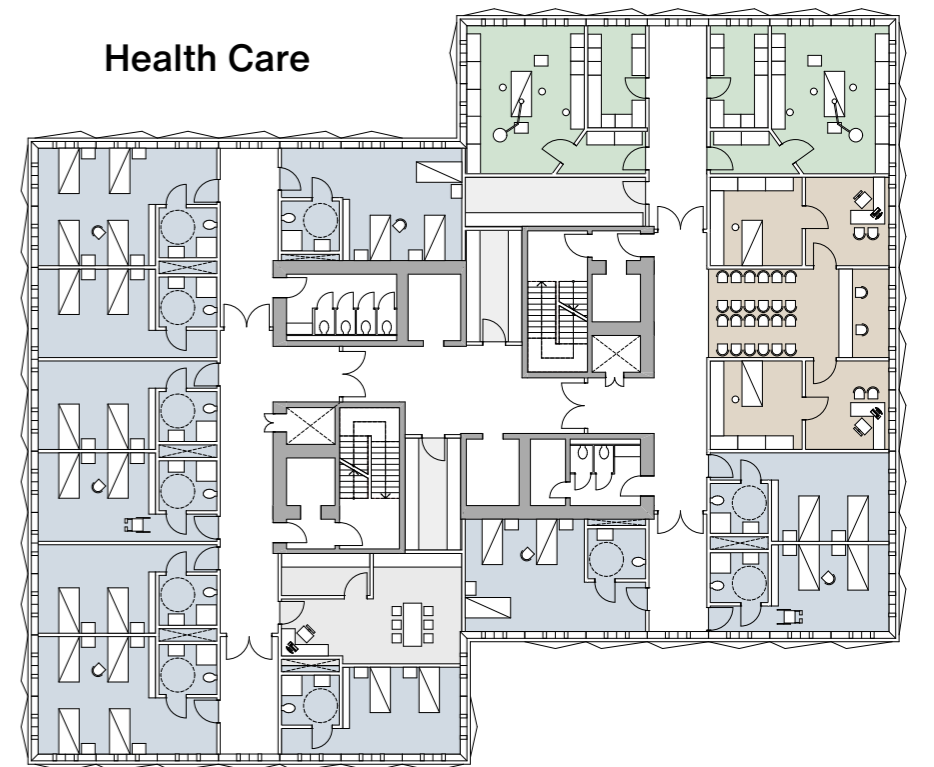
Education



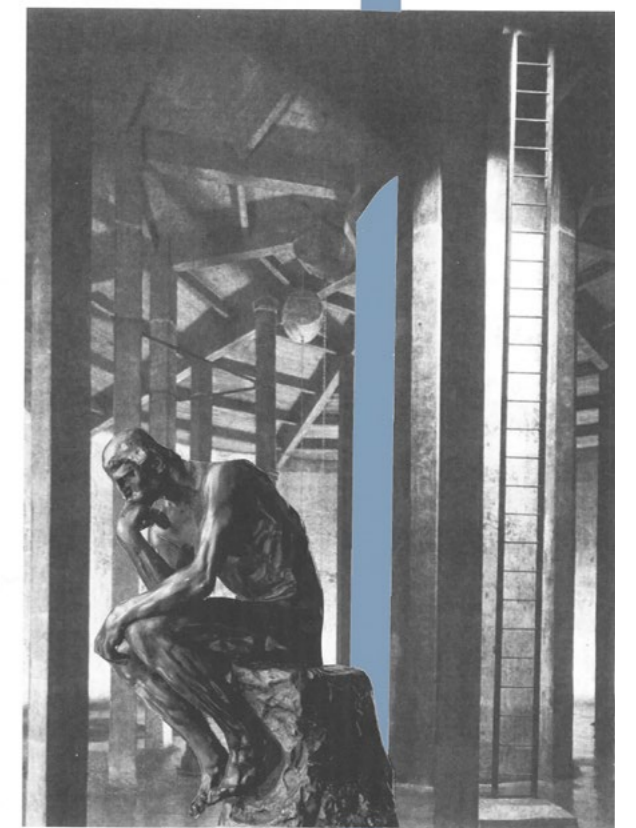
Residential



Health Care



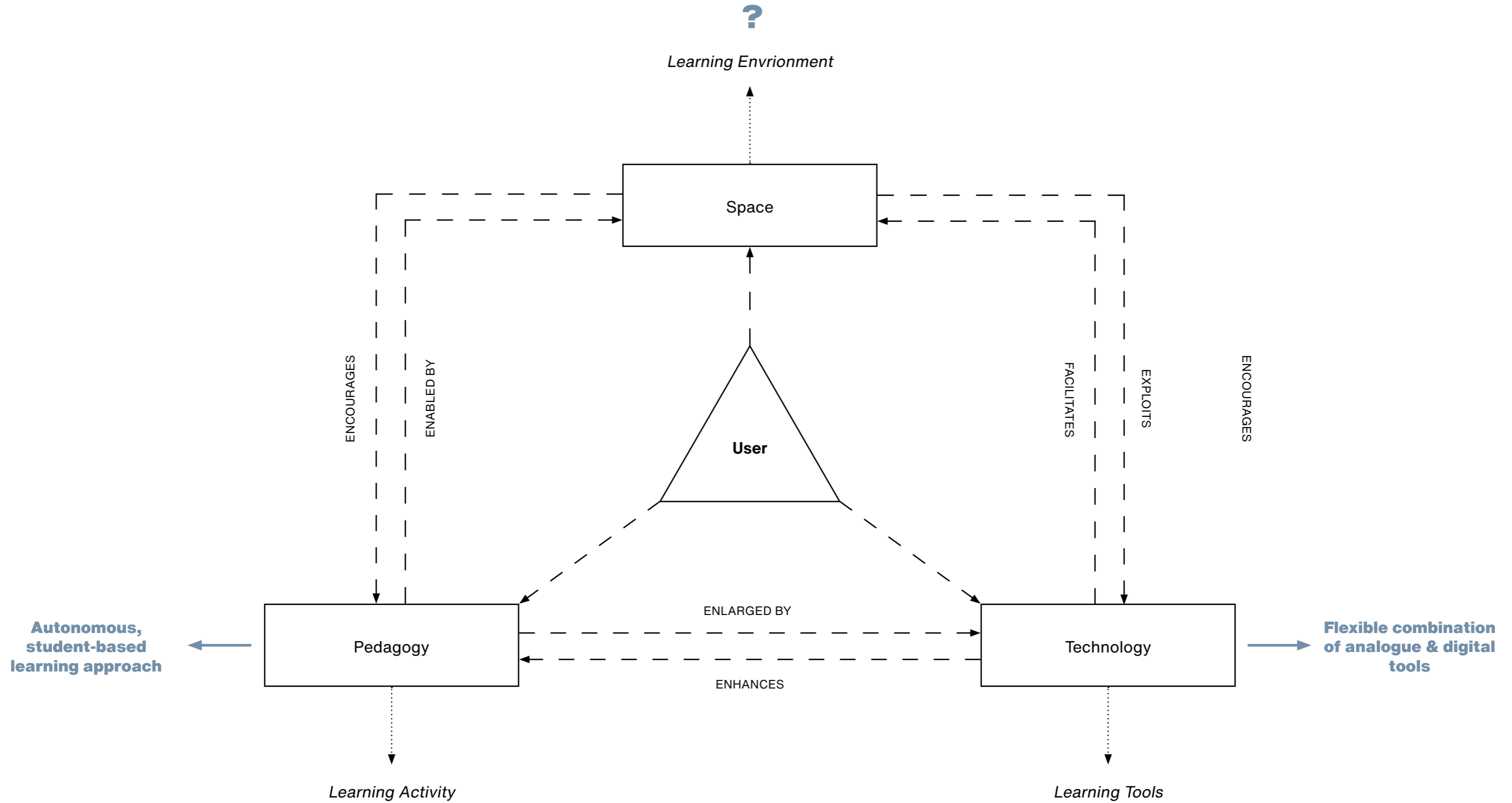




USER SCALE

USER SCALE

Theoretical framework on hybrid learning spaces



Gil & Eyal (2022)
Qiu (2014)
Manciaracina (2022)

USER SCALE

Spatial parameters challenging creativity



EXTERNAL STIMULATION

= space provides sensual stimulation like views, smell, sound, material haptics, etc.



furniture, view, materiality, sound, colour, smell, light



BEHAVIOURAL CULTURE

= space suggests specific behaviour through written or unwritten rules, common sense, spatial affordances, rituals, labels, signs, etc.



flexibility, appropriation, control



SOCIAL DIMENSION

= space facilitates social interaction, meetings, personal exchanges, etc.



accessibility, spatial and visual boundaries, audio and visual connections, transparency/opaqueness, openness/isolation



KNOWLEDGE PROCESSING

= space can store, display, or foster information and provide spatial/technical tools and infrastructure that might guide or hinder creative process



furniture, technical equipment



SPATIAL LAYOUT

= space possesses a certain complexity and spatial organization that can enhance or discourage creative process



size, accessibility, visibility, orientation, centralised/decentralised

based on and adapted from Thoring et al. (2018), Meinel et al. (2017), De Molli (2017)

USER SCALE

Selected case studies



Student Learning Centre Ryerson University, 2015



New Aarch Aarhus Campus, 2017



Roy and Diana Vangelos Education Center, 2016



LSE Centre, 2019



Kingston University London Town House, 2022



The New School University Center, 2014



The Square, University of St. Gallen, 2023



Marshall Building, LSE 2021



Visual Arts Buildings, University of Iowa, 2016



Teaching and Learning Building, University of Nottingham, 2018



Library and Learning Centre, University of Economics Vienna, 2013



Learning & Teaching Building, Monash University, 2018



The Milstein Center, Barnard College 2018



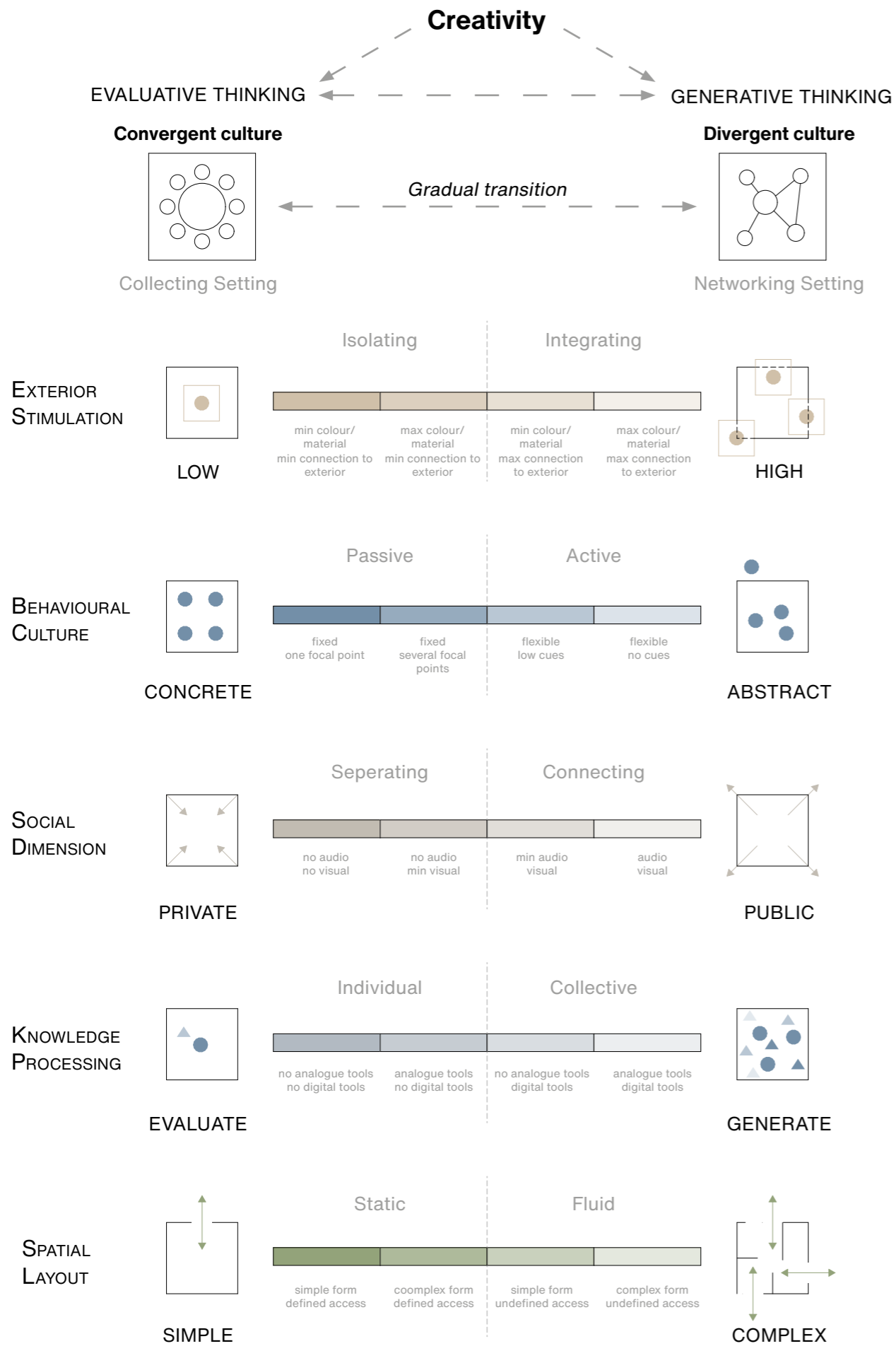
Maersk Tower, 2016



Ed Kaplan Family Institute, 2018

USER SCALE

Design principles





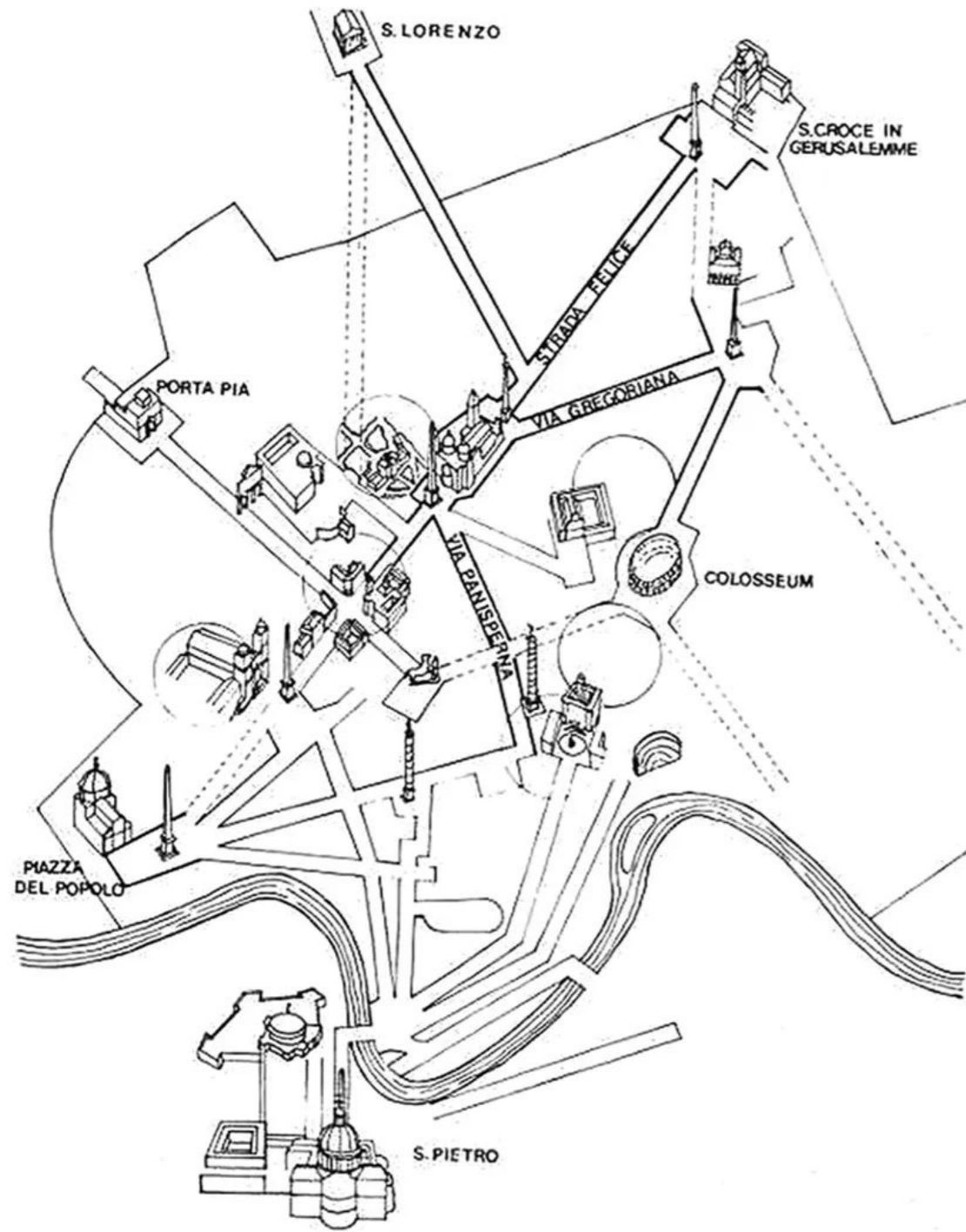
Let us go on a journey together ...



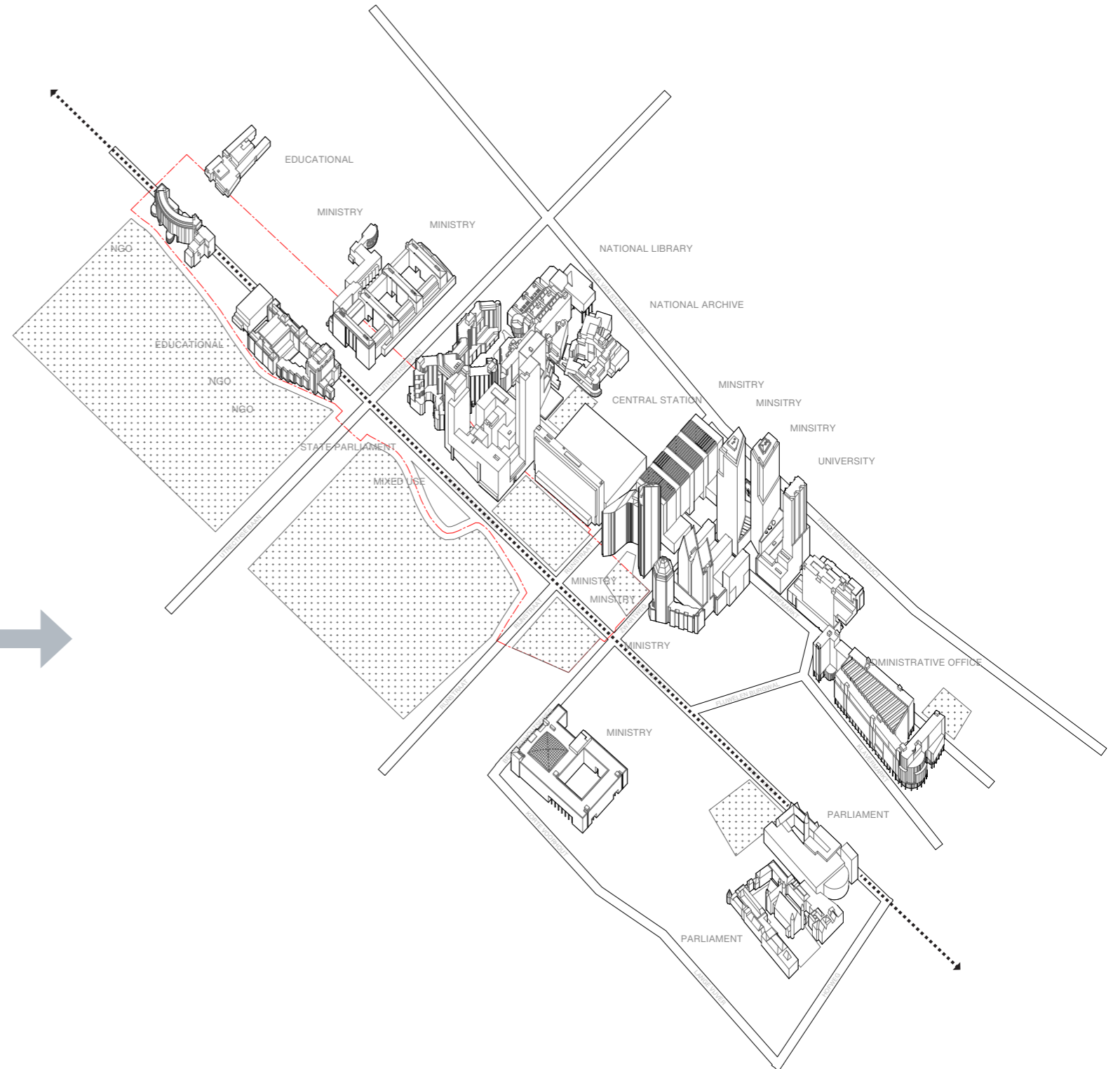
APPENDIX

URBAN SCALE

Accessible VS inaccessible city



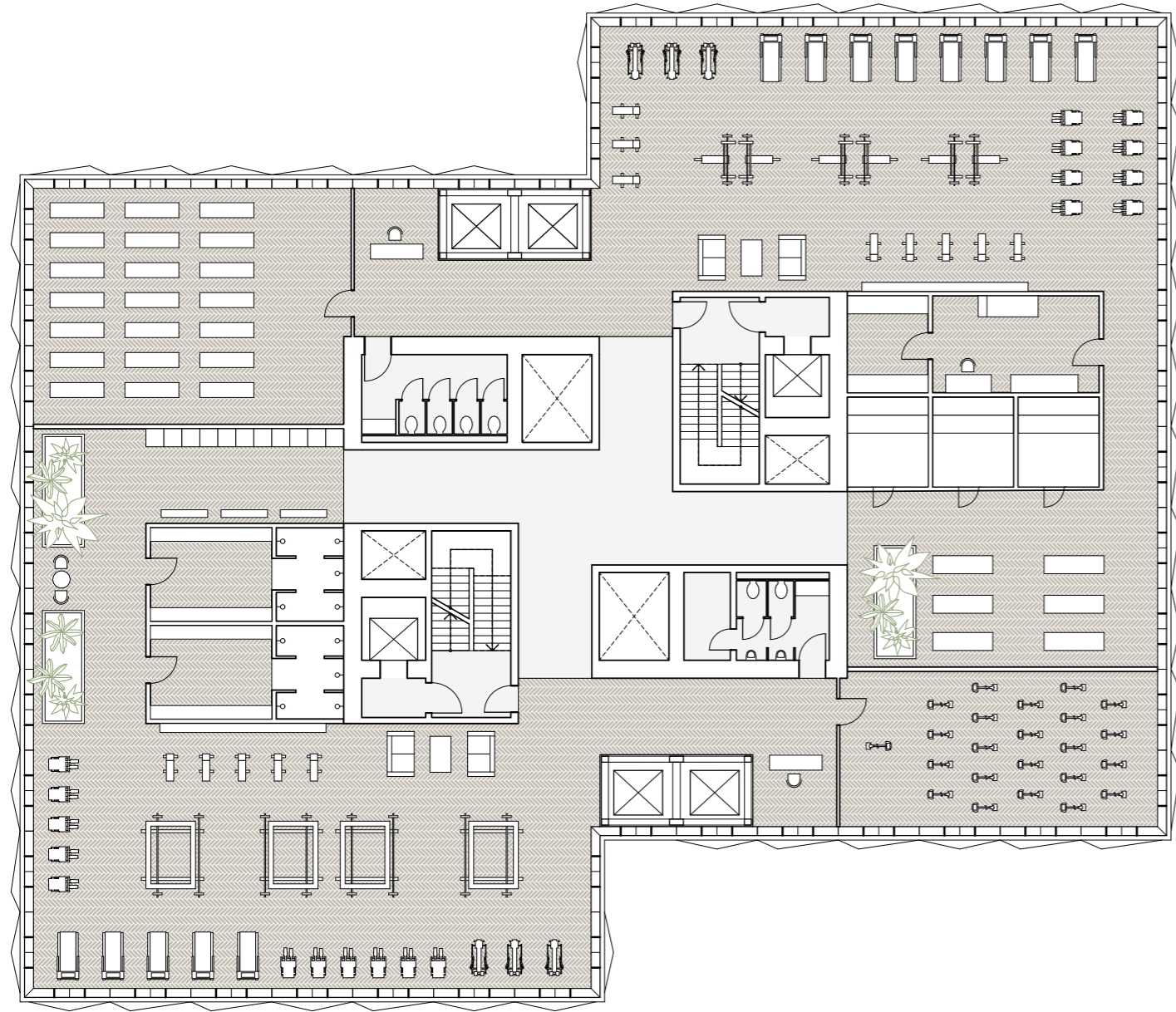
Roma di Sisto V., 1590



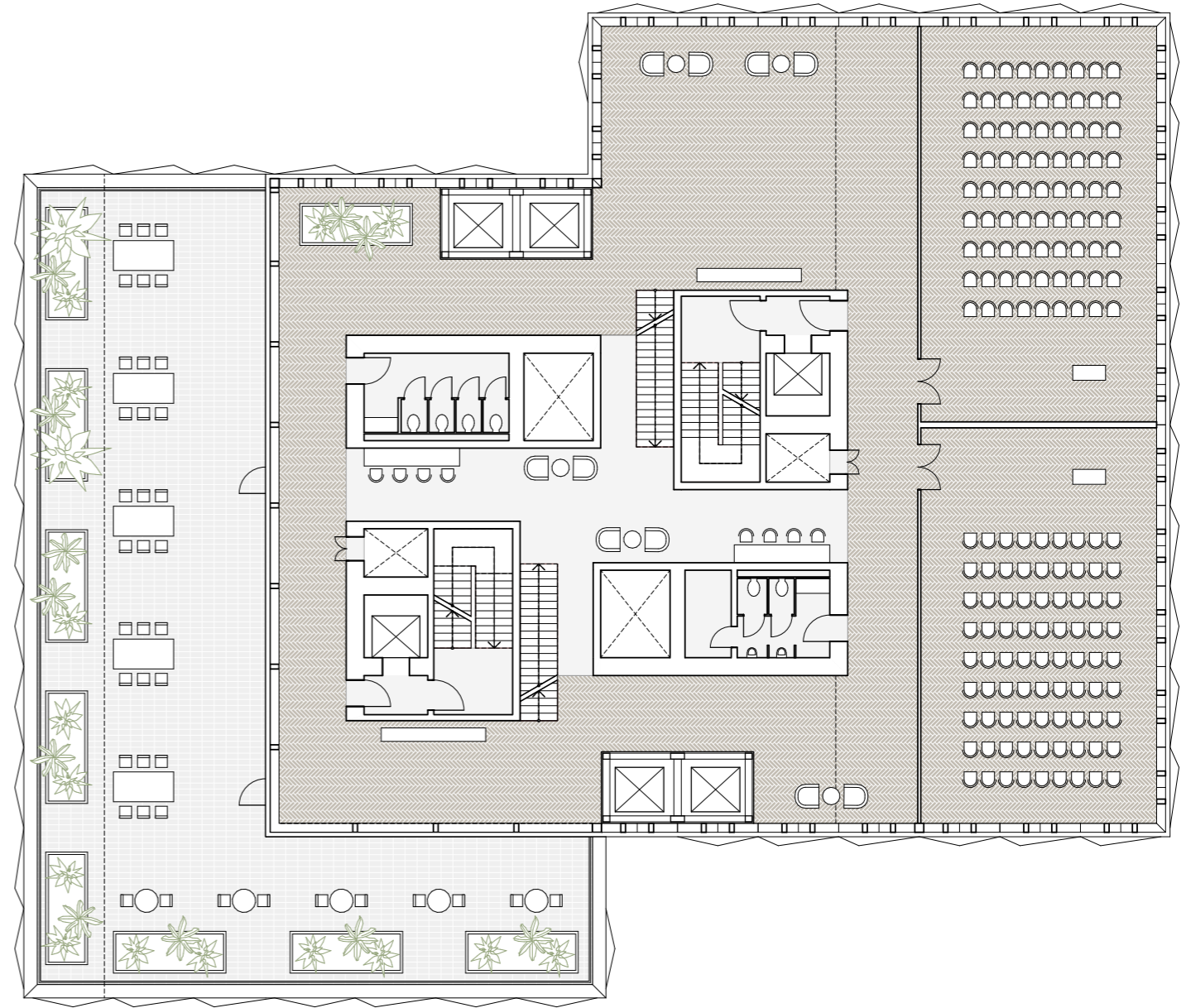
Central Innovation District, The Hague, 2024

BUILDING SCALE

Floor plans



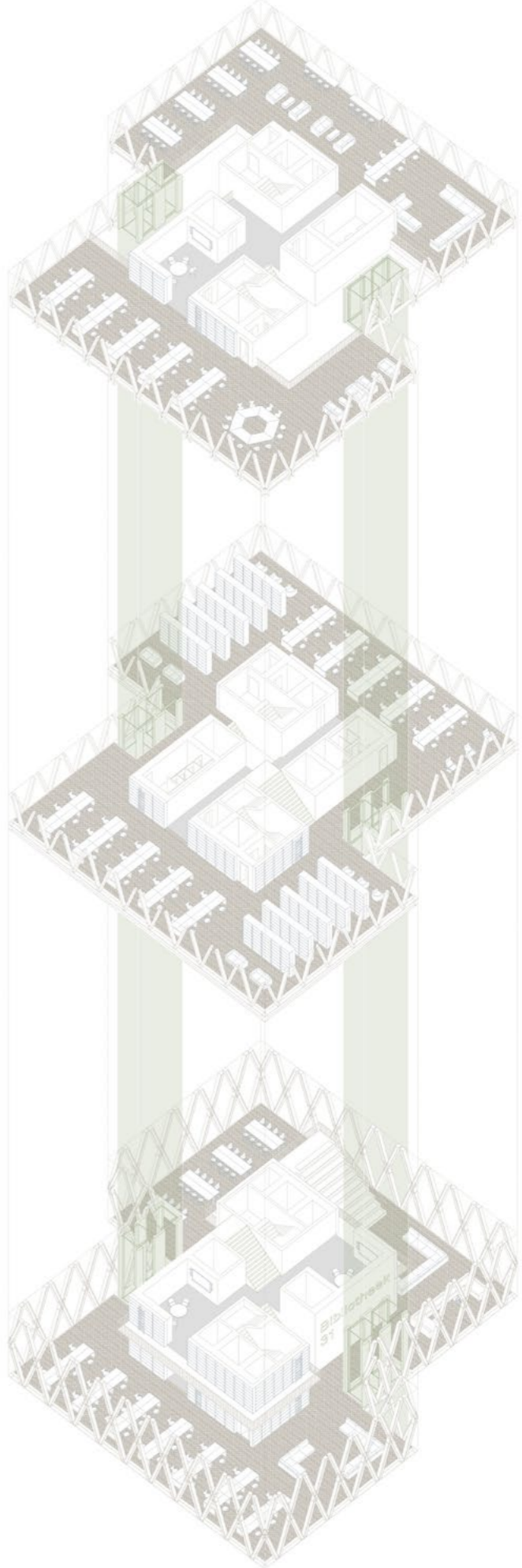
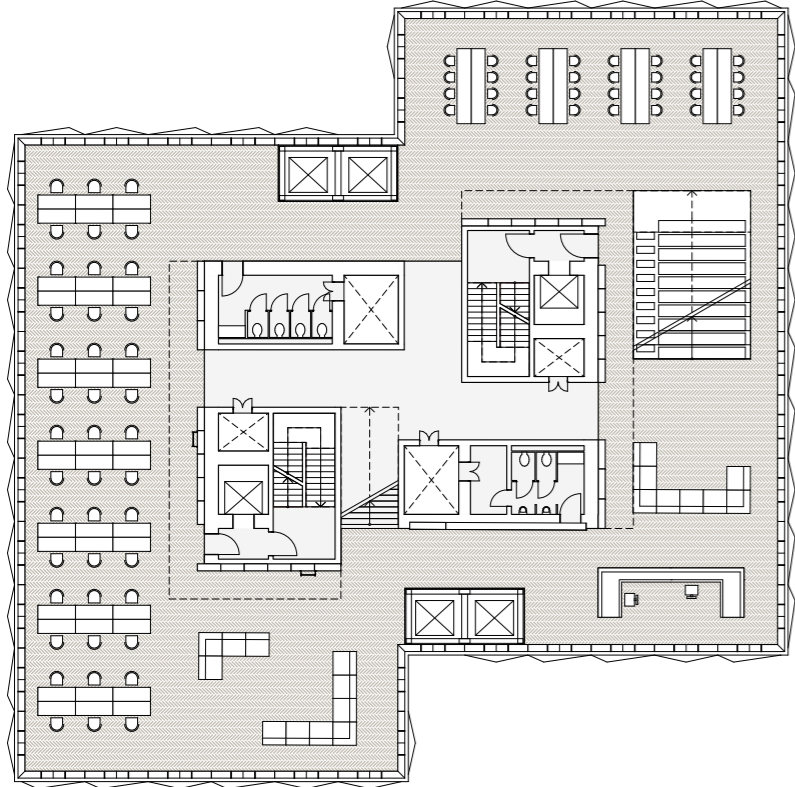
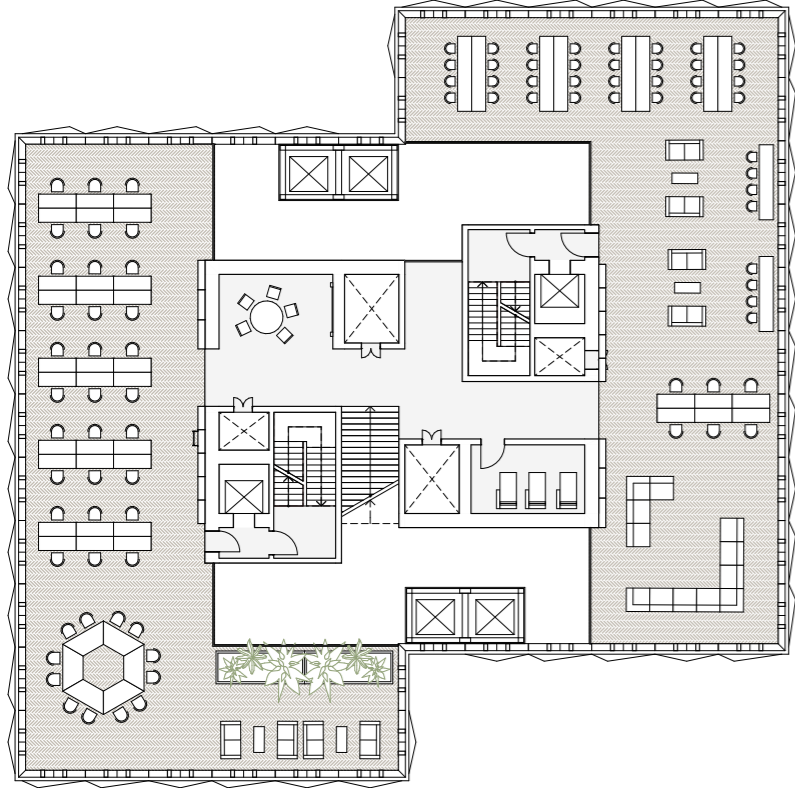
11th Floor, Fitness Center (Express level)



17th Floor, Small Lecture Halls & Terrace

BUILDING SCALE

Circulation concept



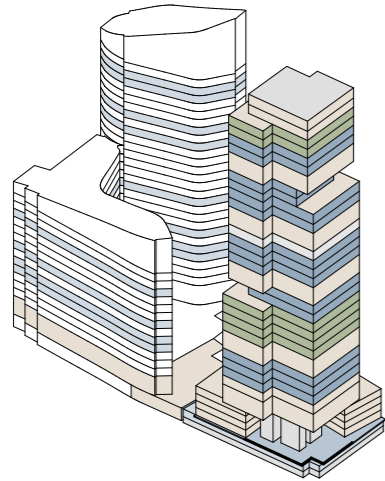
CIRCULAR DESIGN PRINCIPLES

Pursued R-Strategies

R0 | Refuse

Programme

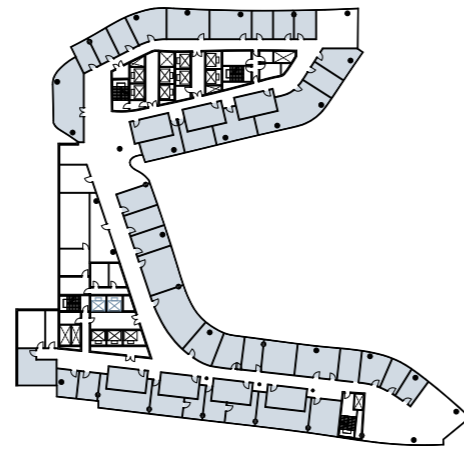
- Medical and fitness centre instead of new office spaces



R1 | Rethink

Optimization of space

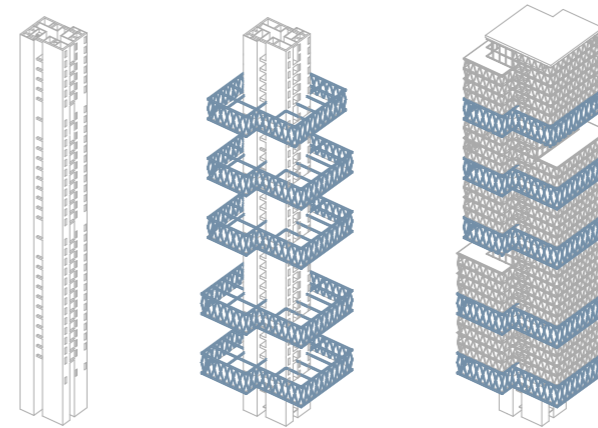
- Avoiding vacancy through shared public and office spaces De Hoftoren building and the new campus complex



R2 | Reduce

CO₂-Footprint

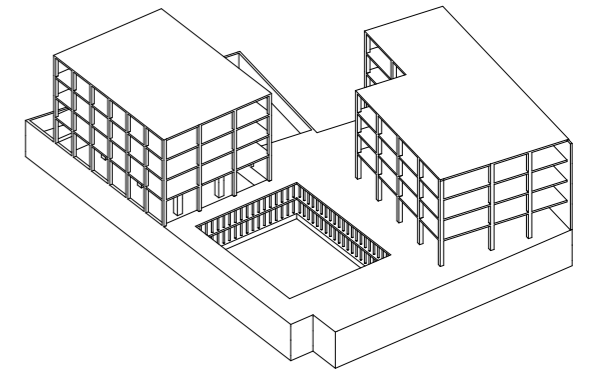
- Structural timber elements like GLT columns/beams and LIGNATUR ceiling elements to reduce the carbon footprint



R3 | Reuse

Existing Structures

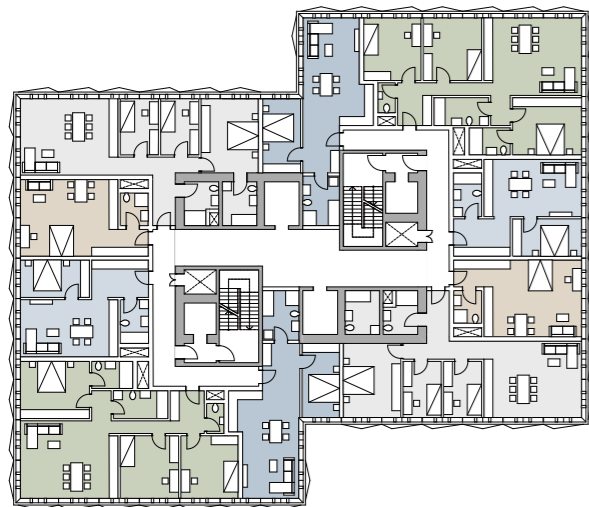
- Reuse of existing structures instead of complete demolition



R6 | Remanufacture

Future adaptability

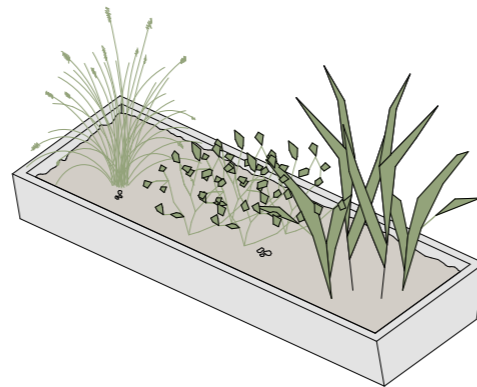
- Timber structure allowing for easy future adaption of space and floor plans



R7 | Repurpose

Existing Facade

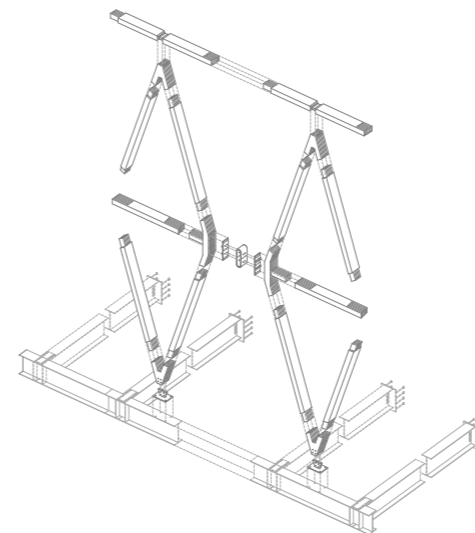
- Pre-fab concrete elements of old facade serving as planters for terraces of new building



R8 | Recycle

Design for Disassembly

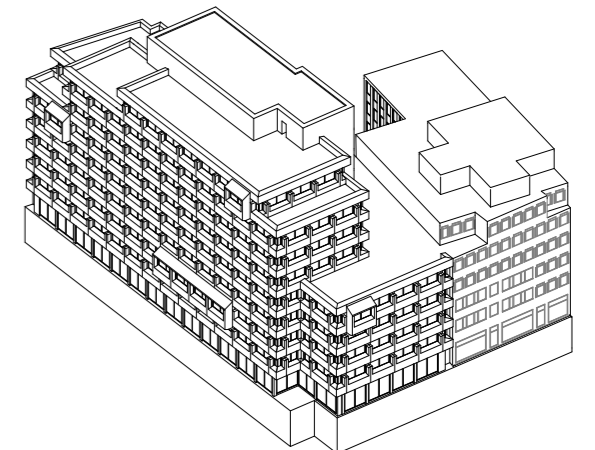
- Timber structure can easily be dismantled and reused for other projects



R9 | Recover

Concrete

- Demolished concrete structure of existing buildings will be recycled and recovered for use in other projects



BUILDING SCALE

Facade maintenance

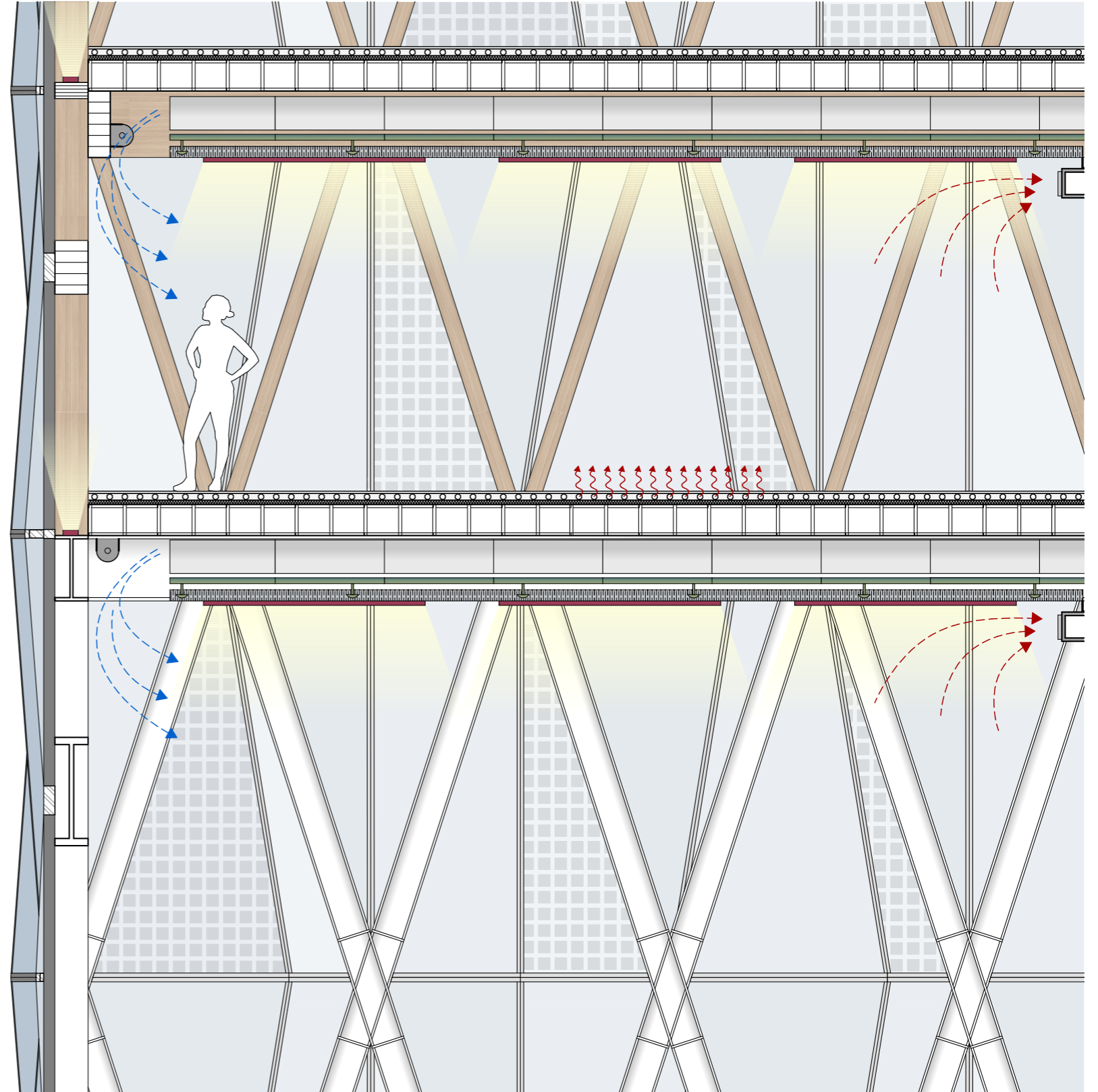
ABSEILING/ROPE CLADDING CLEANING

team of specialists which is trained for this technique; requires low level of planning measures



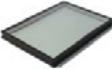
BMU, CRADLE AND HOIST ACCESS SOLUTIONS

pre-installed cleaning construction on the roof of the high-rise building; requires high level of planning measures



BUILDING SCALE

Carbon footprint

Shearing Layer	Material	Impact / m3	Volume [m3]	Carbon footprint [kg CO2eq]	
				HYBRID SYSTEM	CONCRETE STRUCTURE
 <p>SKIN</p>	 <p>Aluminium frame window</p>	2282,1 kg CO2eq/m3	53	120.951,3	120.951,3
	 <p>Glass panel, triple-glazed</p>	4761,7 kg CO2eq/m3	144	685.684,8	685.684,8
 <p>STRUCTURE</p>	 <p>GLT / CLT</p>	-664,0 kg CO2eq/m3	7.809	-5.185.176,0	/
	 <p>Construction timber</p>	-680,0 kg CO2eq/m3	1.166	-792.880,0	/
	 <p>Structural steel</p>	5.403,2 kg CO2eq/m3	108	583.545,6	/
	 <p>Concrete C20/25</p>	215,0 kg CO2eq/m3	6.201	1.333.215,0	3.031.715,0
 <p>FOUNDATION</p>	 <p>Concrete C30/37</p>	282,0 kg CO2eq/m3	2.164	610.248,0	610.248,0
				-2.644.411,3 kg CO2eq	4.448.599 kg CO2eq

2,6t of CO2 equal...

- ... flying 10.047.200 km by plane
- ... producing 211.520 kg of beef
- ... heating of 2.644 apartments (45m2)
- ... the annual carbon footprint of 375 Dutch citizens

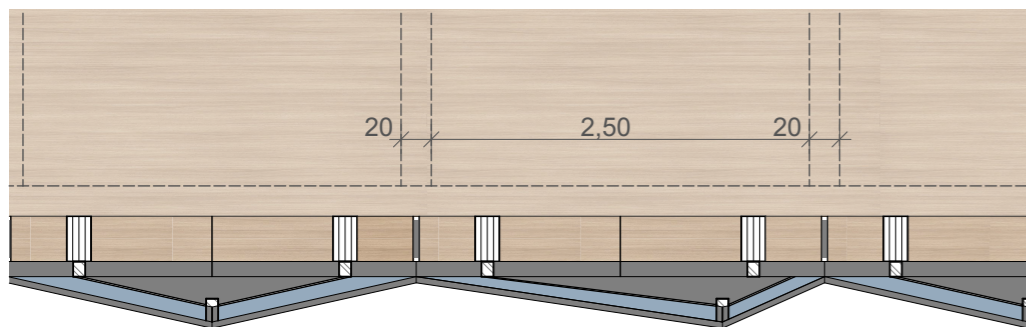
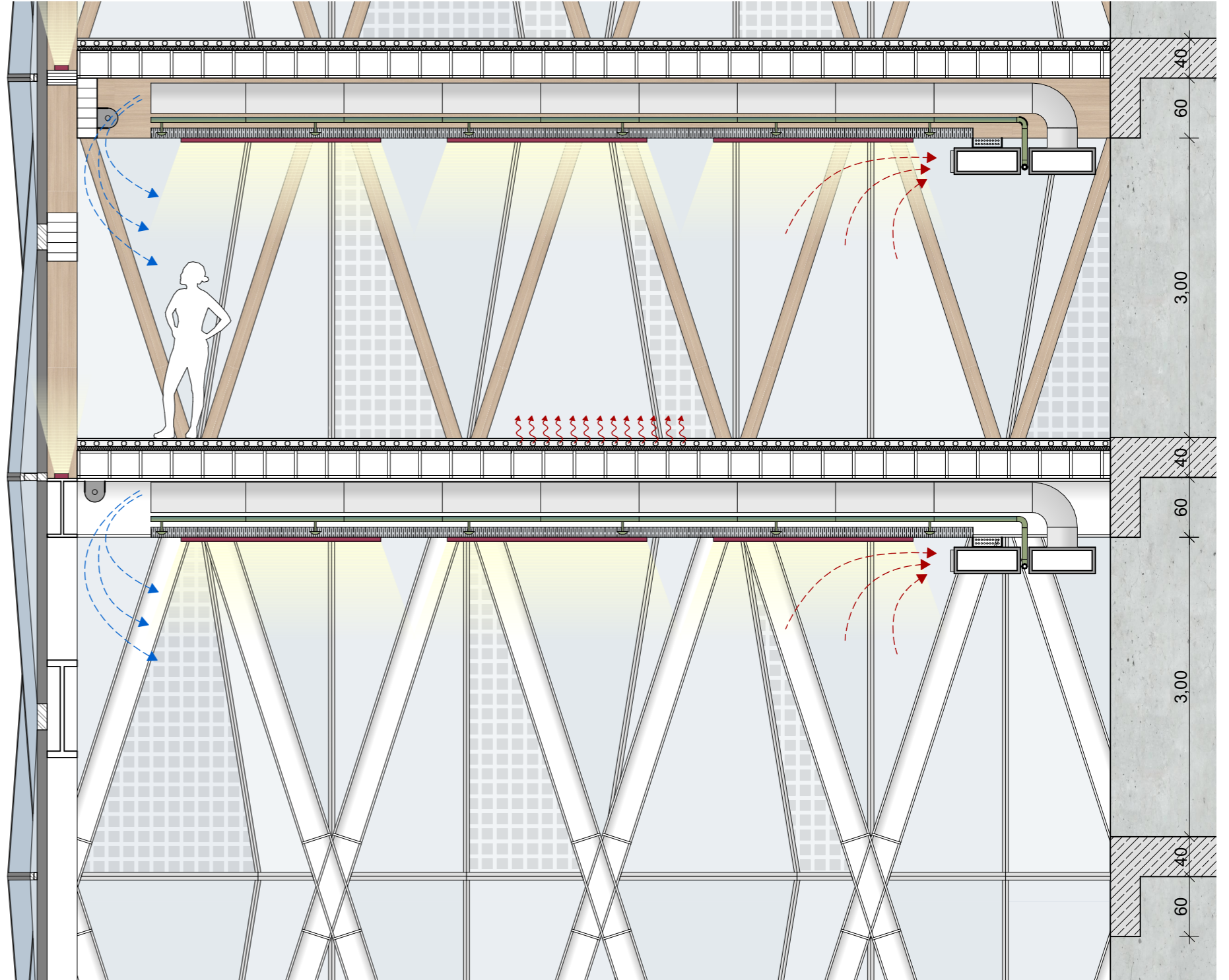
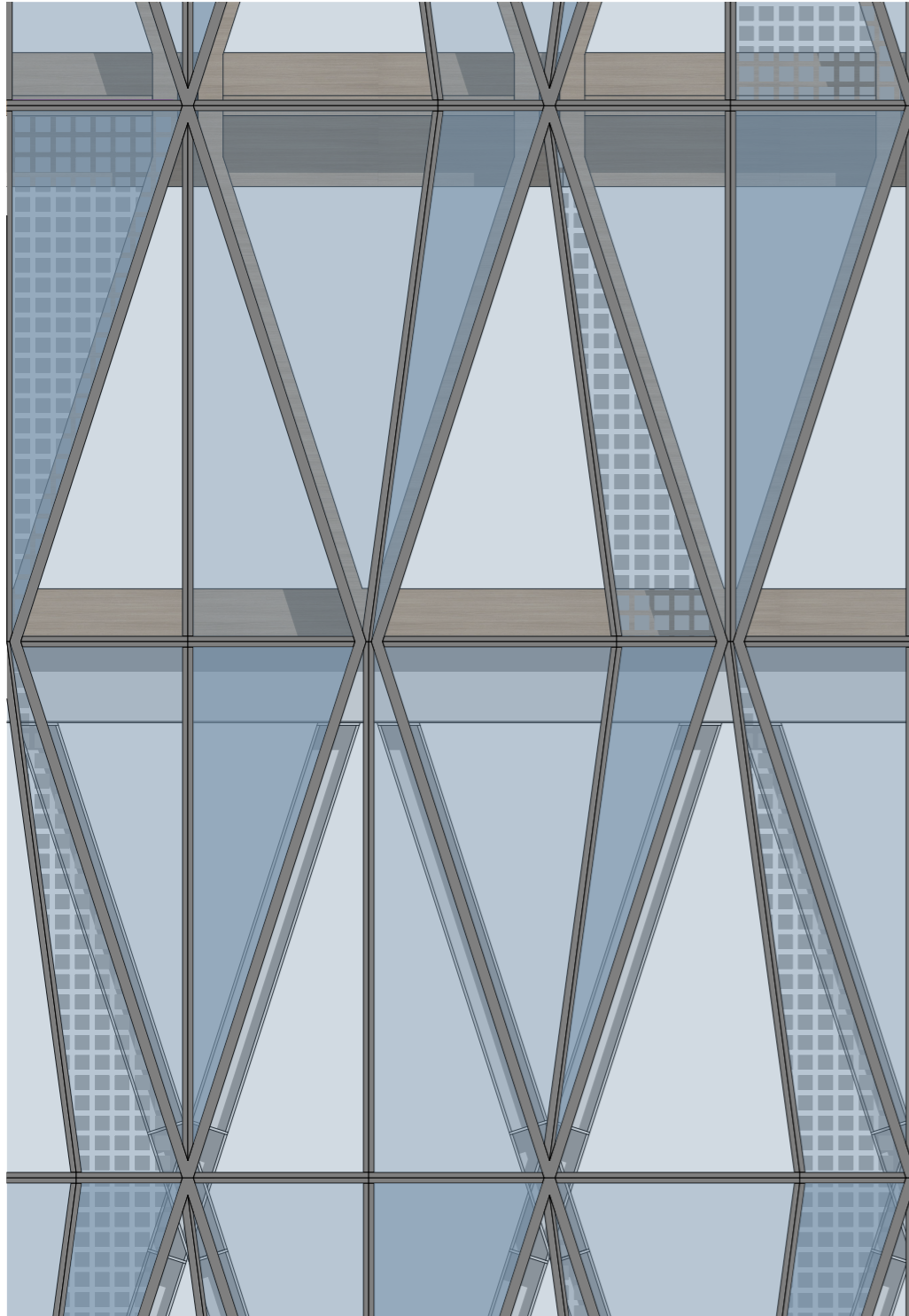
= -2.644 t CO2eq ← = 4.449 t kg CO2eq

160% CO2 Reduction!

Calculations based on Byggeriets Materialepyramide (<https://www.materialepyramiden.dk>)

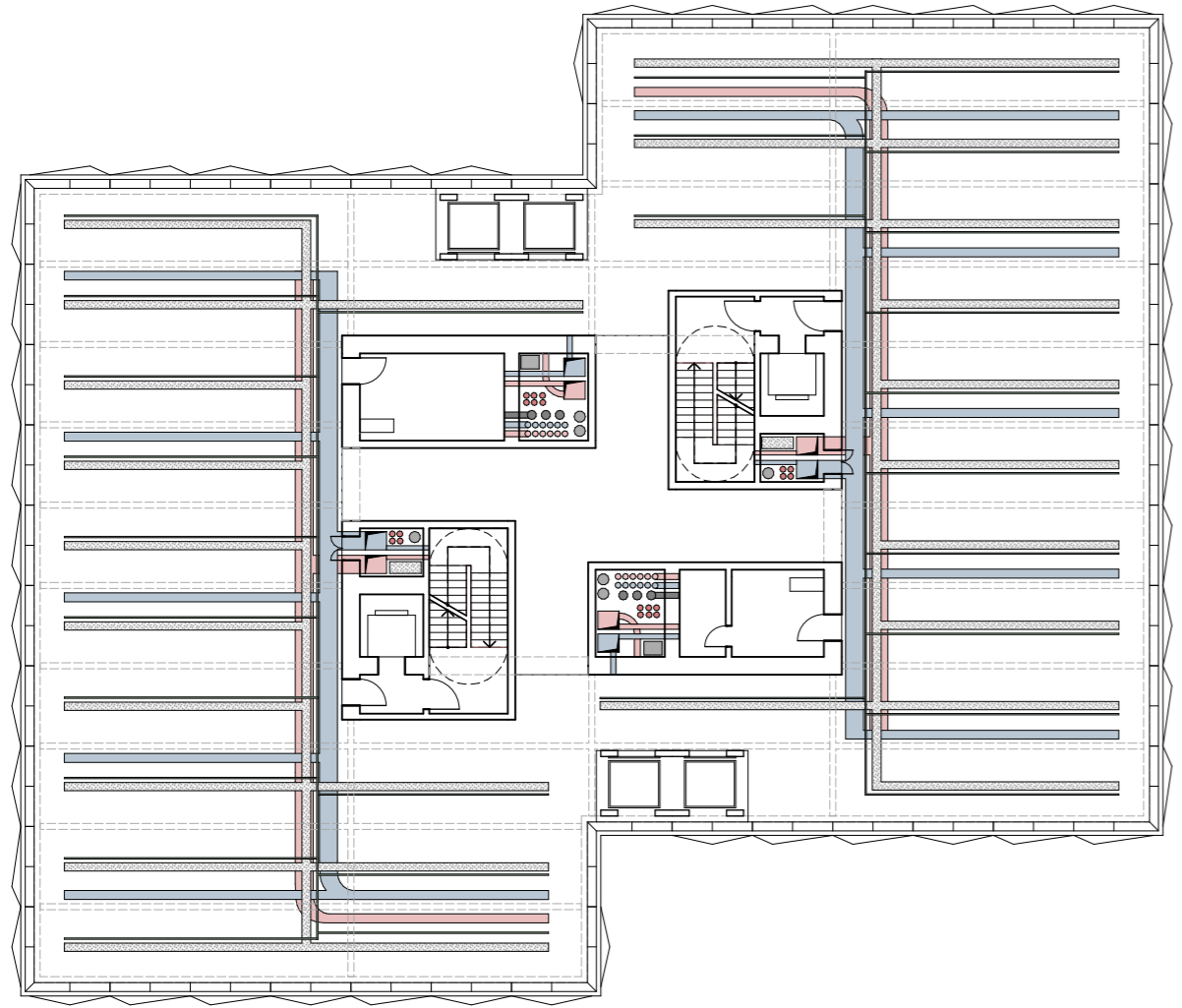
BUILDING SCALE

Three panel projection

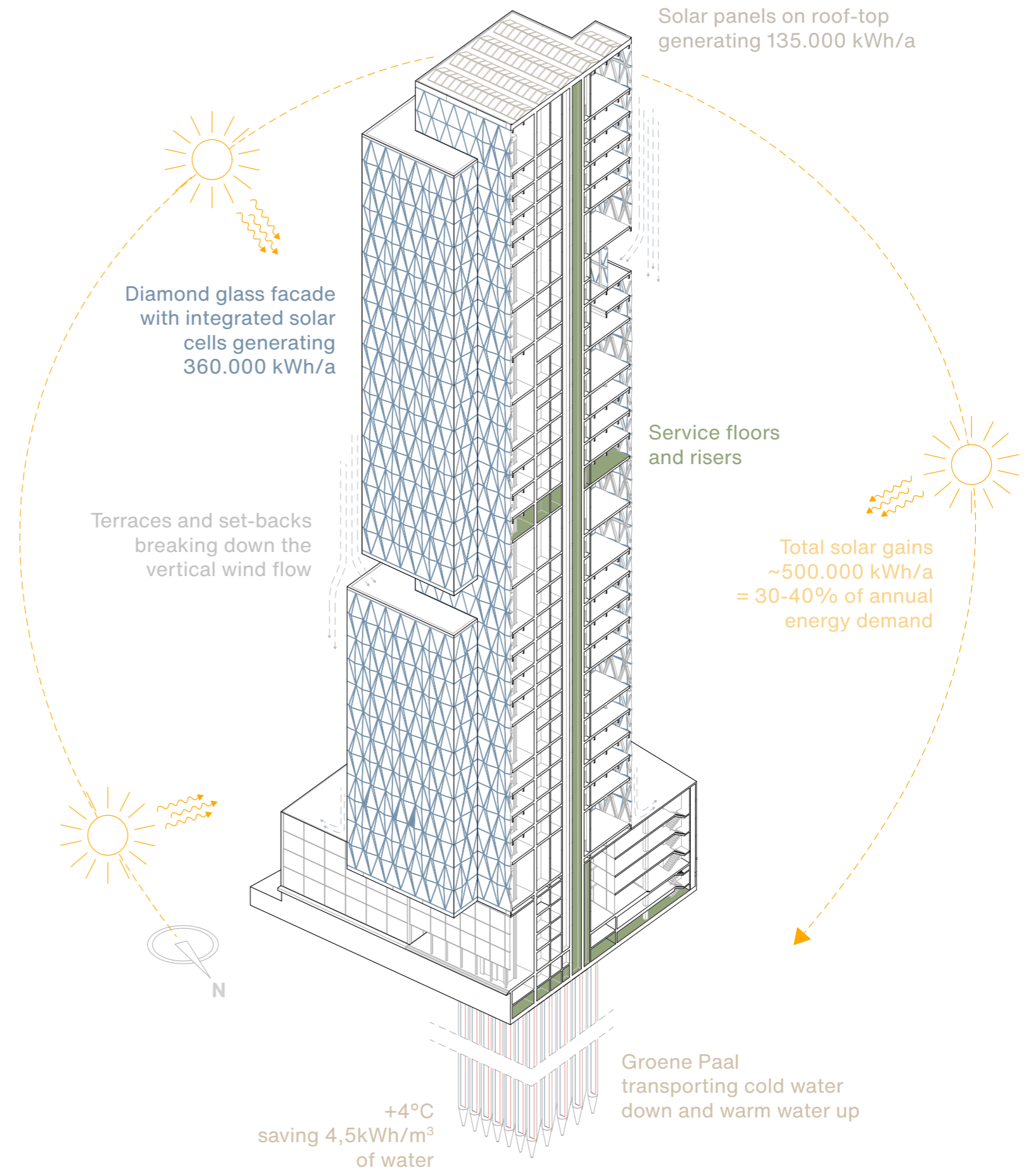


BUILDING SCALE

Climate concept

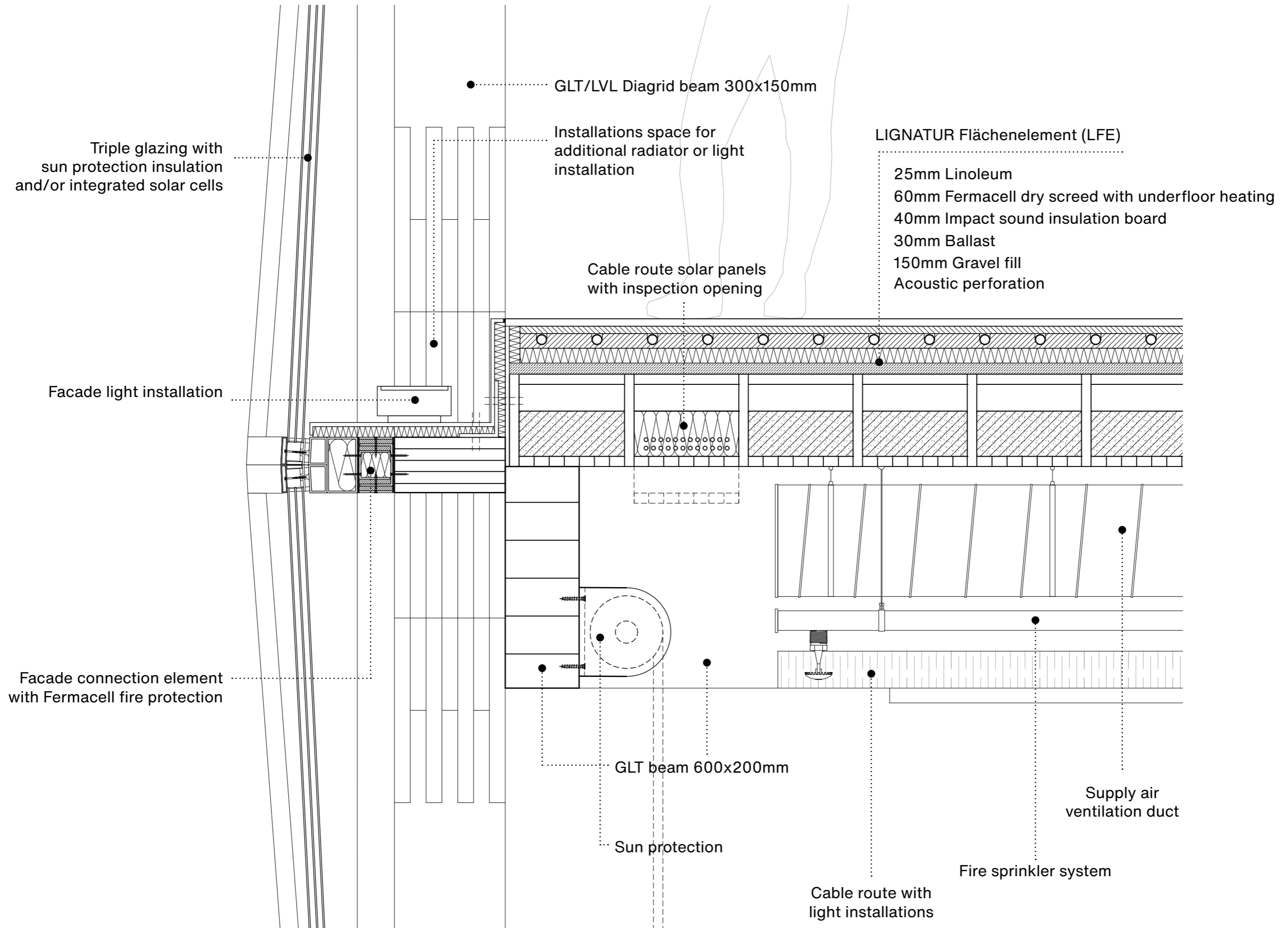


- Supply air
- Exhaust air
- Fire sprinkler
- Cable route
- Heating
- Dirty water
- Warm water
- Cold water



BUILDING SCALE

1:10 Facade Detail



USER SCALE

Analysis example

The Milstein Center
Barnard College

SOM

New York, USA

2018

