TORRE ANDRADE [NOT] ANOTHER TOWER

EDUARDO PLASCENCIA

MASTER THESIS
M.Sc. Advanced Architecture

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Prof. Joris Fach

Frankfurt UAS
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ABSTRACT

Torre Andrade is a research and design project focused on the typology of hybrid buildings. It investigates the potential of this typology as a means of production of identity and rehabilitation in architecture.

The research part exposes the potentials of hybrid typologies and the differences between hybrid and mixed-use projects. Furthermore, it establishes the reasons to encourage hybridism in the 21st century.

The design project is located in the city of Leon, Mexico, where an abandoned building –called after the neighborhood where it is located– was concieved as the apotheosis of an early development. However, it never materialised completely. The questions that arise are: How can we enhance the identity of this development while adapting it to the needs of such a volatile society? Could hybridism help bringing back to life a building left in the public oblivion?

The project is divided in three different scales: the urban, where the analysis of the site is carried out and sets the basis for the mixture of programs that have a relevant role as activators; the architecture, where a dialogue between the nostalgia of the existing structure and the current technological innovations is proposed; and the detail, where the thoughtful facade provides a unique caharacter to which its context gives rise.

The proposal should be regarded as an intimate interpretation of the context and my current interests. The result is a provisional product of the research and not an ultimate design. What I consider to be hybridism today might not be the case in a thousand years. To sum it up, this study aims to arose the curiosity of those who share the same interests and deepen their opinions on these.

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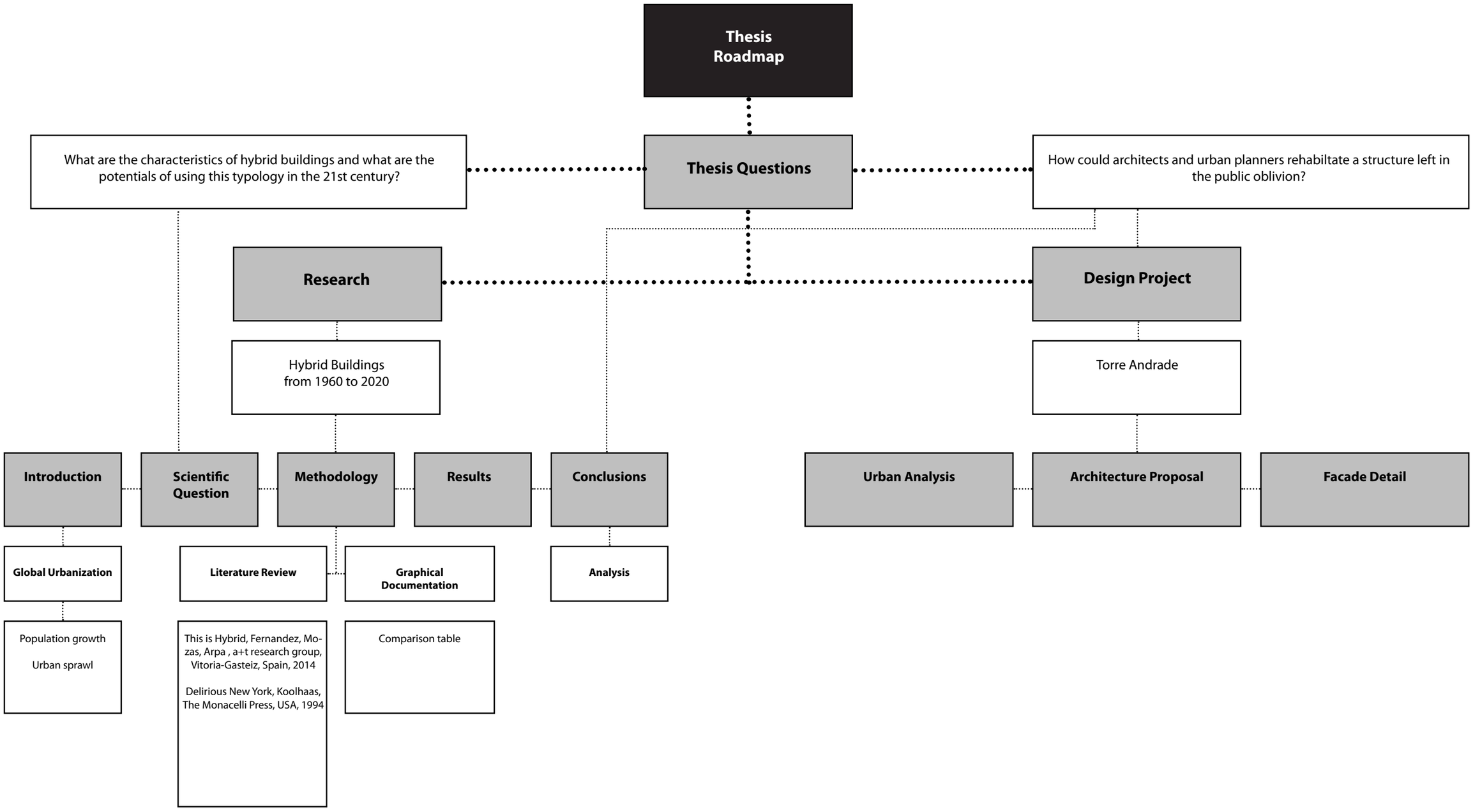
Thesis Roadmap
Thesis Questions
What are the characteristics of hybrid buildings and what are the potentials of using this typology in the 21st century?
How could architects and urban planners rehabiltate a structure left in the public oblivion?
Research
Design Project
Hybrid Buildings from 1960 to 2020
Torre Andrade
Introduction
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Urban Analysis
Architecture Proposal
Facade Detail
Global Urbanization
Literature Review
Graphical Documentation
Analysis
Population growth
Urban sprawl
This is Hybrid, Fernandez, Mozas, Arpa , a+t research group, Vitoria-Gasteiz, Spain, 2014
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RESEARCH
HYBRID BUILDINGS FROM 1970 TO 2020

Scientific Question

What are the characteristics of hybrid buildings?
What are the potentials of using this typology in the 21st century?

This is Hybrid

The concept of hybridization originates from genetics and refers to the cross breeding of different species. While in the past, uses have often been combined into a single structure, for example the Rialto bridge in Venice, where market, bridge, tourism, and public space are merged, the hybrid building at a large scale did not appear until the nineteenth century.

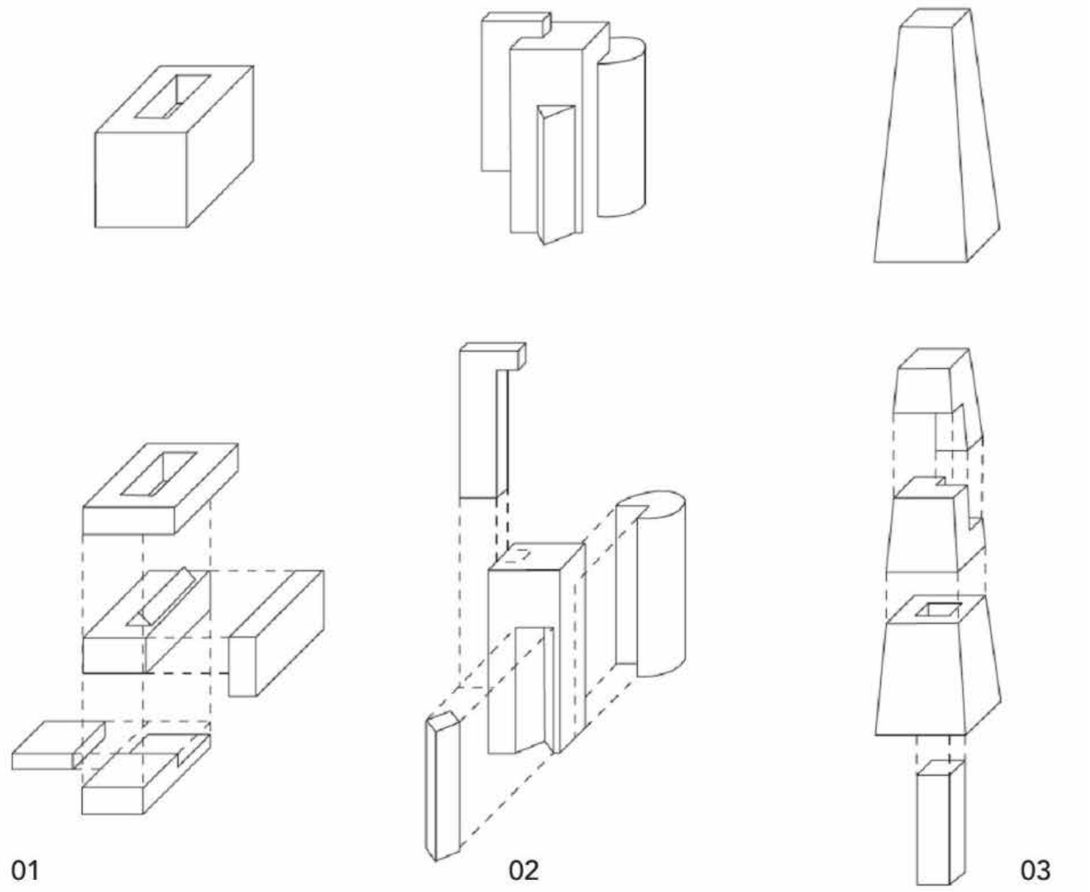
Escalating land values in city centres at that time required new forms of development. Structural steel and the invention of the elevator in the middle of that century revolutionised construction and enabled vertical structures and signalled the rise of the skyscraper. With these tools, developers shifted their approach from building for need to speculation and built for maximum volume and floor area to make the most of valuable real estate. Their inability to fill the new towers with a single use led to the combination of programs and through this the emergence of hybrid buildings.

According to the book "This is hybrid" by Aurora Fernandez, Javier Mozas and Javier Arpa, hybrid buildings had been ignored as a unique building type usually grouped under "mixed-use" until Joseph Frenton's catalogue in 1985. Fenton argued that there was a distinct difference between the hybrid building and mixed-use, in that the individual programs relate to one another and begin to share intensities.

Fenton's catalogue presented a selection of American examples (and he argues that they have evolved out of the conditions of the American metropolis) grouping them into: Fabric Hybrids -volumetric infill of the city's gridded fabric; Graft Hybrids- which express each programme in the resultant form of the hybrid building; and Monolith Hybrids -programmatic elements being subsumed into a continuous envelope.

The distinctions of a hybrid from other mixed use megastructures are defined by the fact that these buildings retain the underlying city grid and are contained within a single form or building.

The evolution of hybrid buildings has been slowed down by strict planning codes such as residential destricts or gated communities. Thus, limiting the mixing of "functionally incompatible uses" in buildings and in certain parts of the city.

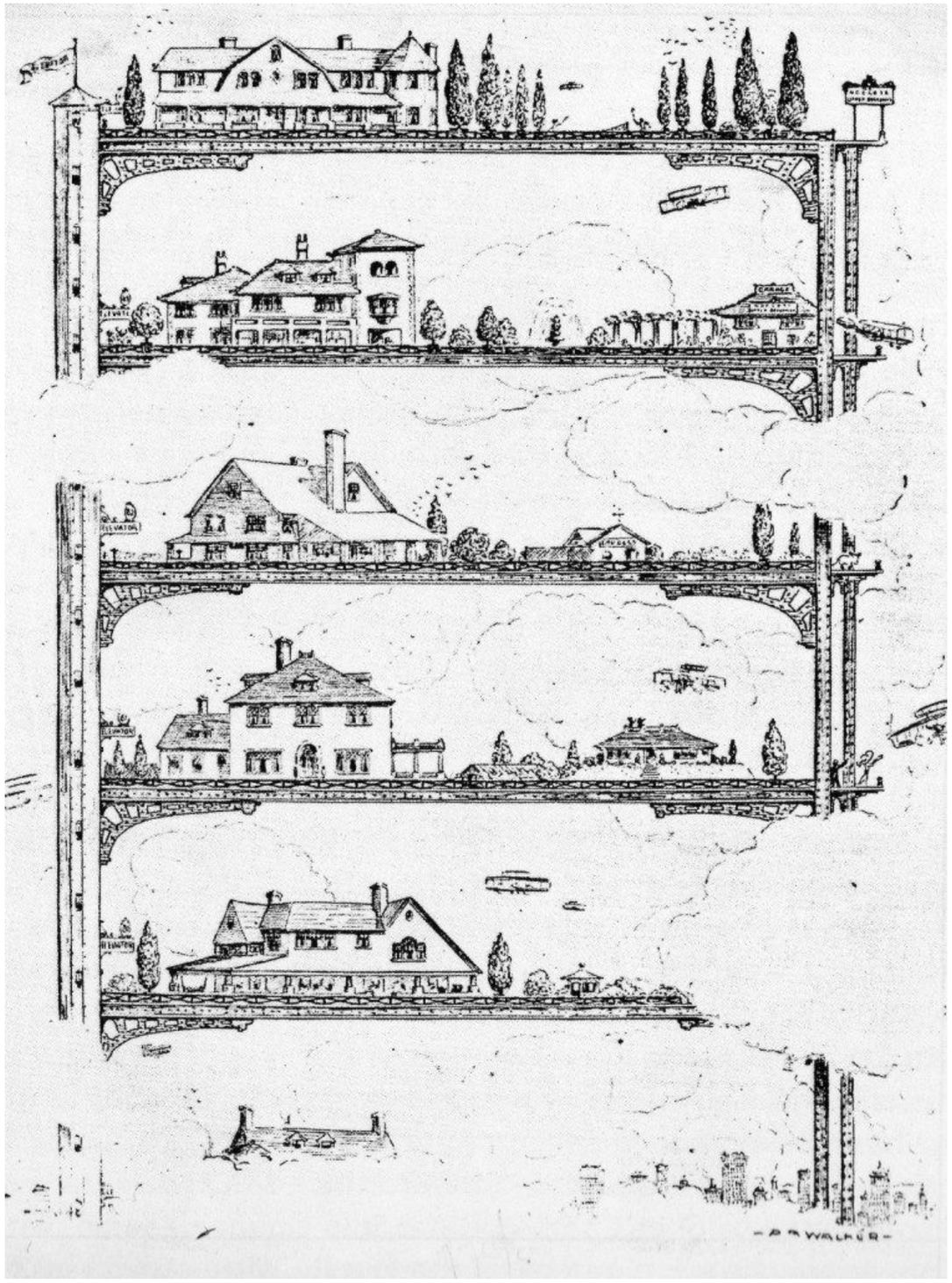


Fabric Hybrids **Grapht Hybrids** **Monolith Hybrids**

Source: Fernandez, A; Mozas, J; Arpa, J. (2014) This is Hybrid. Vitoria-gasteiz, Spain: a+t architecture publishers

Delirious New York

Rem Koolhaas identified some unique conditions of the Manhattan skyscrapers in his book 'Delirious New York' (1978). Unlike Fenton's zoological history of hybrids, Koolhaas identified a generic quality to the skyscraper which allows an almost endless combination of programs to co-exist on separate floors. The Downtown Athletic Club, which also appears in Fenton's catalogue of hybrid buildings, fascinated Koolhaas in that its 'serene and monolithic exterior hides the ultimate in "urban congestion" and is a ".. constructivist social condenser: a machine to generate and intensify desirable forms of human intercourse?."



Source: Koolhhaas, R. (1978) Delirious New York: A Retroactive Manifesto for Manhanttan. The Monacelli Press

Conclusions

After analyzing the case studies and literature I have come up with the following characteristics and potentials of hybrid buildings:

- Public space formation: Entries of hybrid buildings tend to be welcoming and play a relevant role in the urban fabric. They are plugged into the urban fabric and have the potential to be used for temporary and unpredictable public events. For example, a staircase that is used as seating, as a space to decorate as part of the community culture, or even as a plaza where people manifest an opinion.

- Programmatic juxtapositions: Hybrid uses are the result of shared space characteristics such as high ceilings, open space, use of north light, or even the use of a multipurpose table.

- Living/ working/ recreating /cultural social condensers: Due to the multipurpose of its spaces, hybrid buildings act as magnets and attract people with common interests.

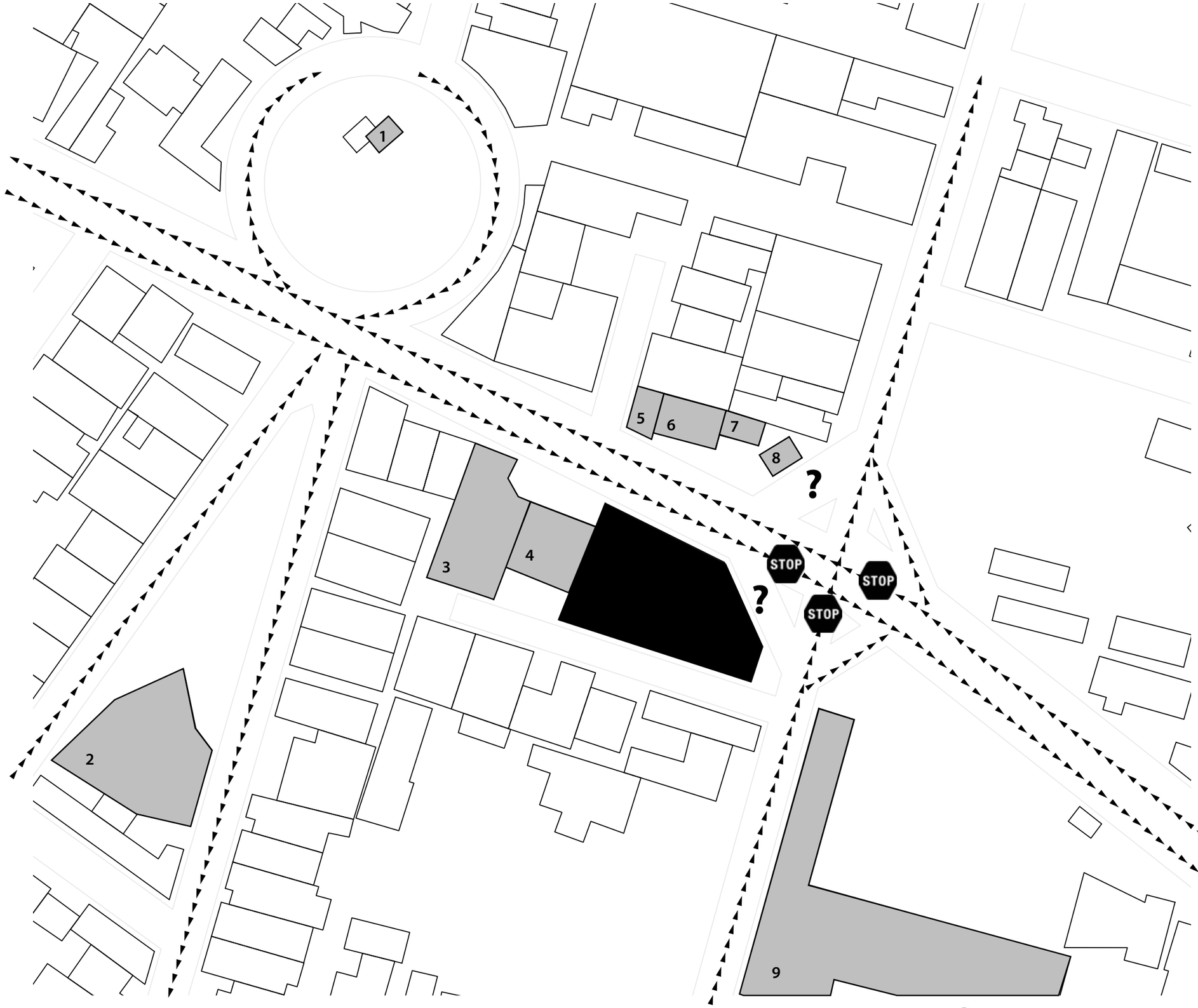
- Dynamics of sections: The outside of the building does not necessarily follow the inside. Therefore, "accidental spaces" in the form of terraces, high ceilings, or common areas enrich the building.

- Super green architecture: Hybrid buildings adapt the new technologies as required in a sense that the outcome is not pristine. For instance, the construction of a hybrid building has not the constraints of only one material or equipment. It can change, evolve and adapt depending on the politics and economy of the time and place.

DESIGN
TORRE ANDRADE

Site Plan

1 Police booth
2 Church
3 Bakery
4 Yoga studio, spa, and office
5 Furniture store
6 Beauty salon, grocery store
7 Restaurant
8 Picture frame store
9 School



Site Plan
scale 1:1000

SWOT

Strenghts

Solid structure
Location
A lot of cars and people pass by
Block corner right at traffic lights

Opportunities

Artists on site
Scale
Despite its history, it is not a monument, thus there are no restrictions set by local authorities
Schools nearby

Weaknesses

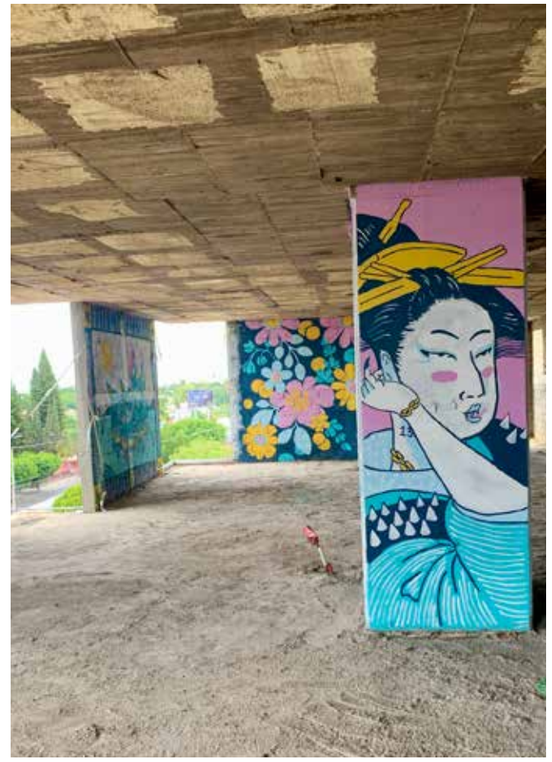
Abandoned building
Poor conditions
Unfinished
Lack of public space

Threaths

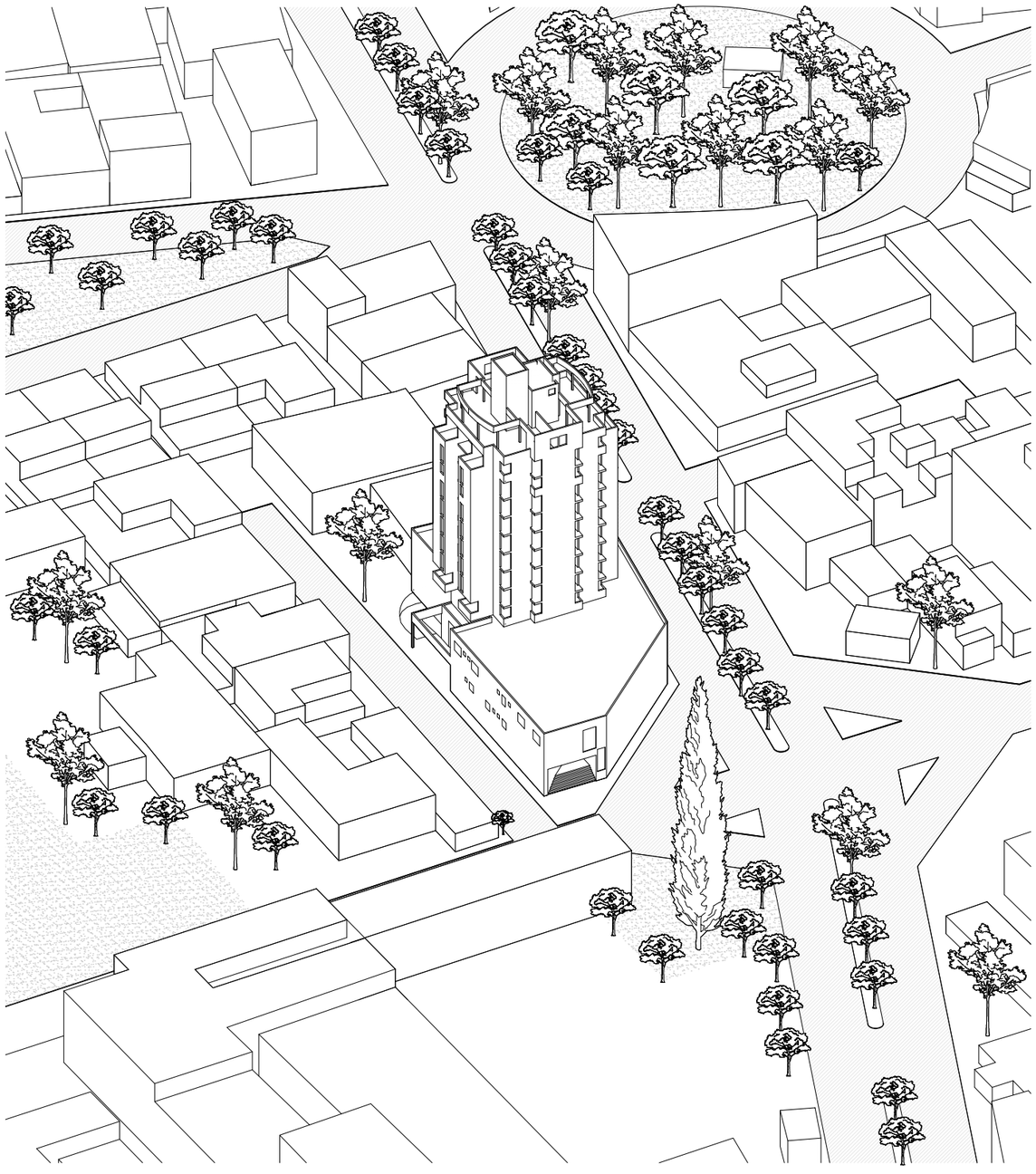
Unattractive
Old look

CRITERIA

- Use hybridization as a strategy to mix uses and rehabilitate the existing structure
- Avoid demolishion unless it enhances the project
- Make it welcoming
- Take advantage of the scale and turn it into a landmark
- Sustainable



Existing Situation



Carbon Footprint of Existing Structure

The carbon emission of 1 m3 cast-in-situ concrete is 692 kg CO2.

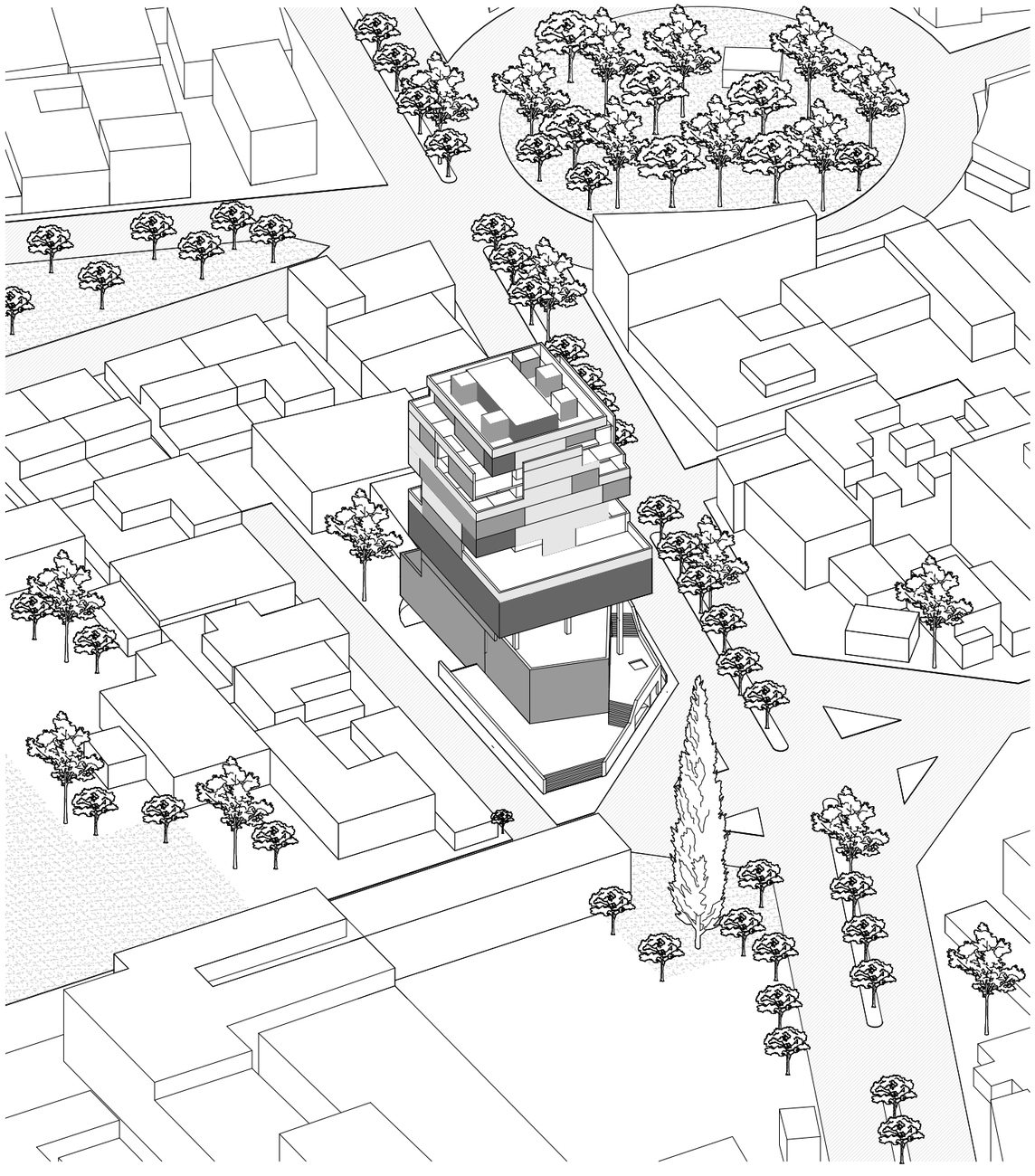
Estimated volume of concrete used for structure: 1,829.64 m3.

Estimated CO2 emission of existing structure: **126.61 Tonnes CO2**

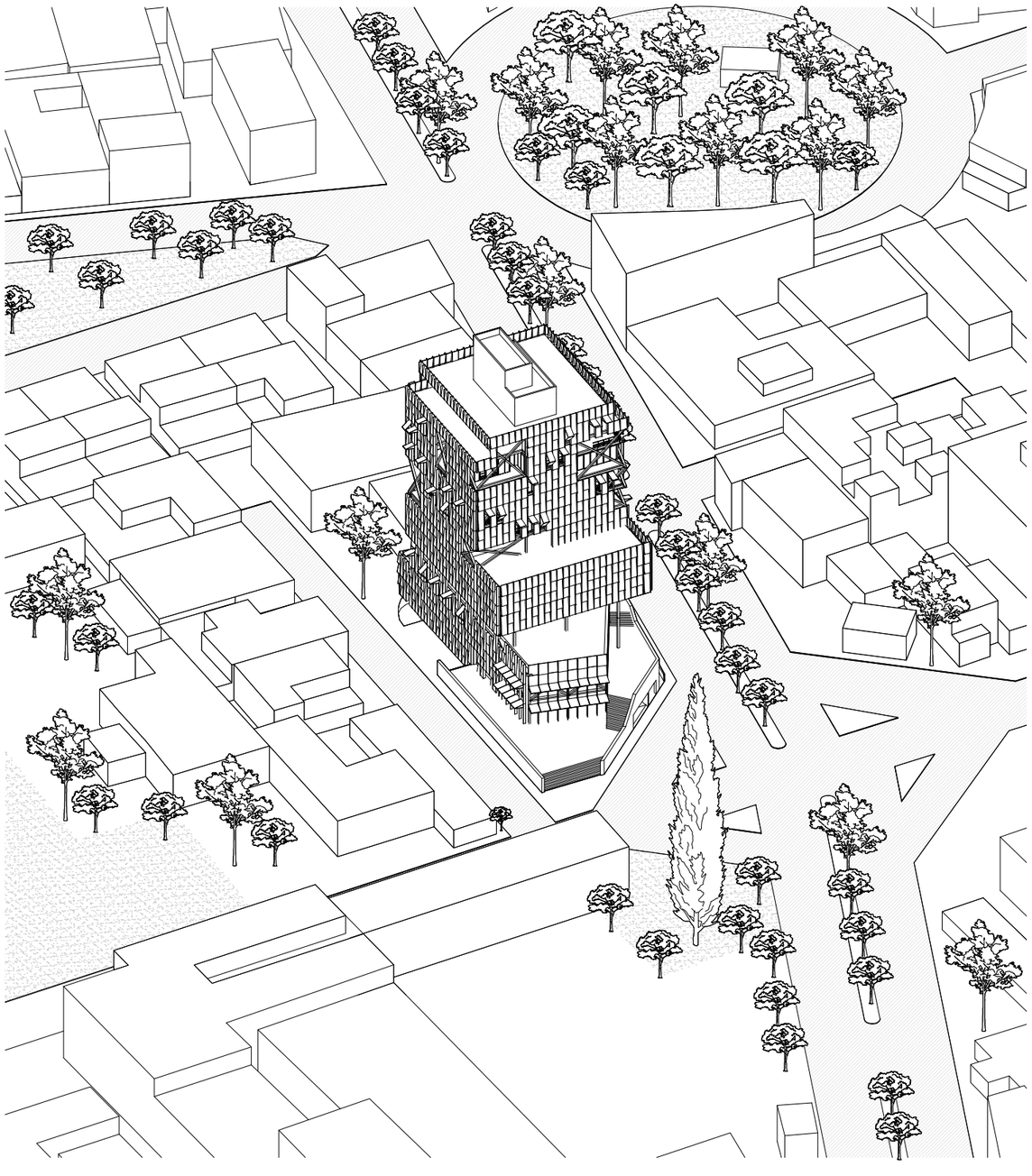
Source:
Dong, Ya, laillon, Lara (2015), Comparing carbon emissions of precast and cast-in-situ construction methods – A case study of high-rise private building. Link: https://doi.org/10.1016/j.conbuildmat.2015.08.145

https://www.destatis.de/EN/Themes/Countries-Regions/International-Statistics/Data-Topic/Tables/BasicData_CO2.html

Enclosure

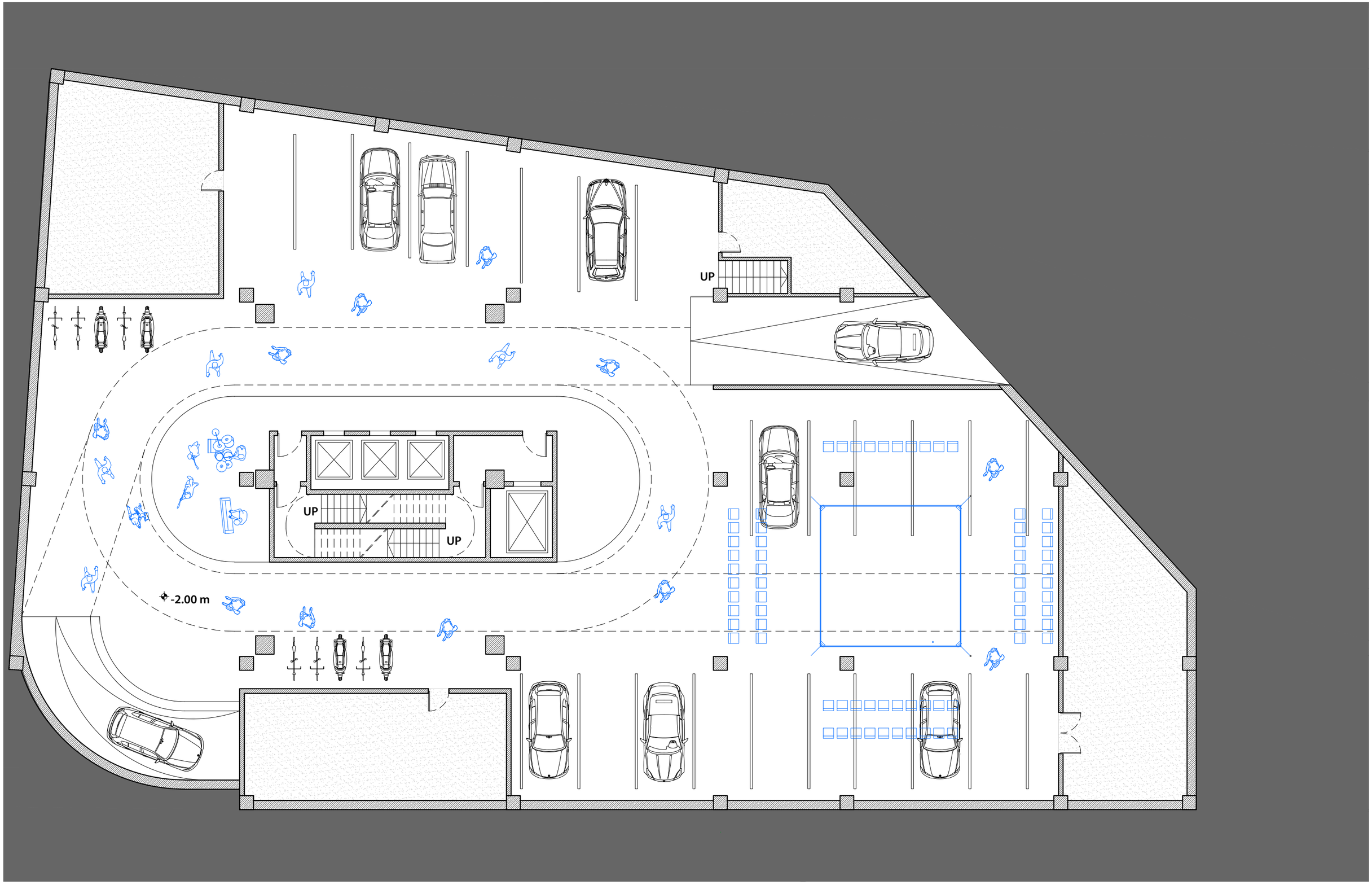


Final



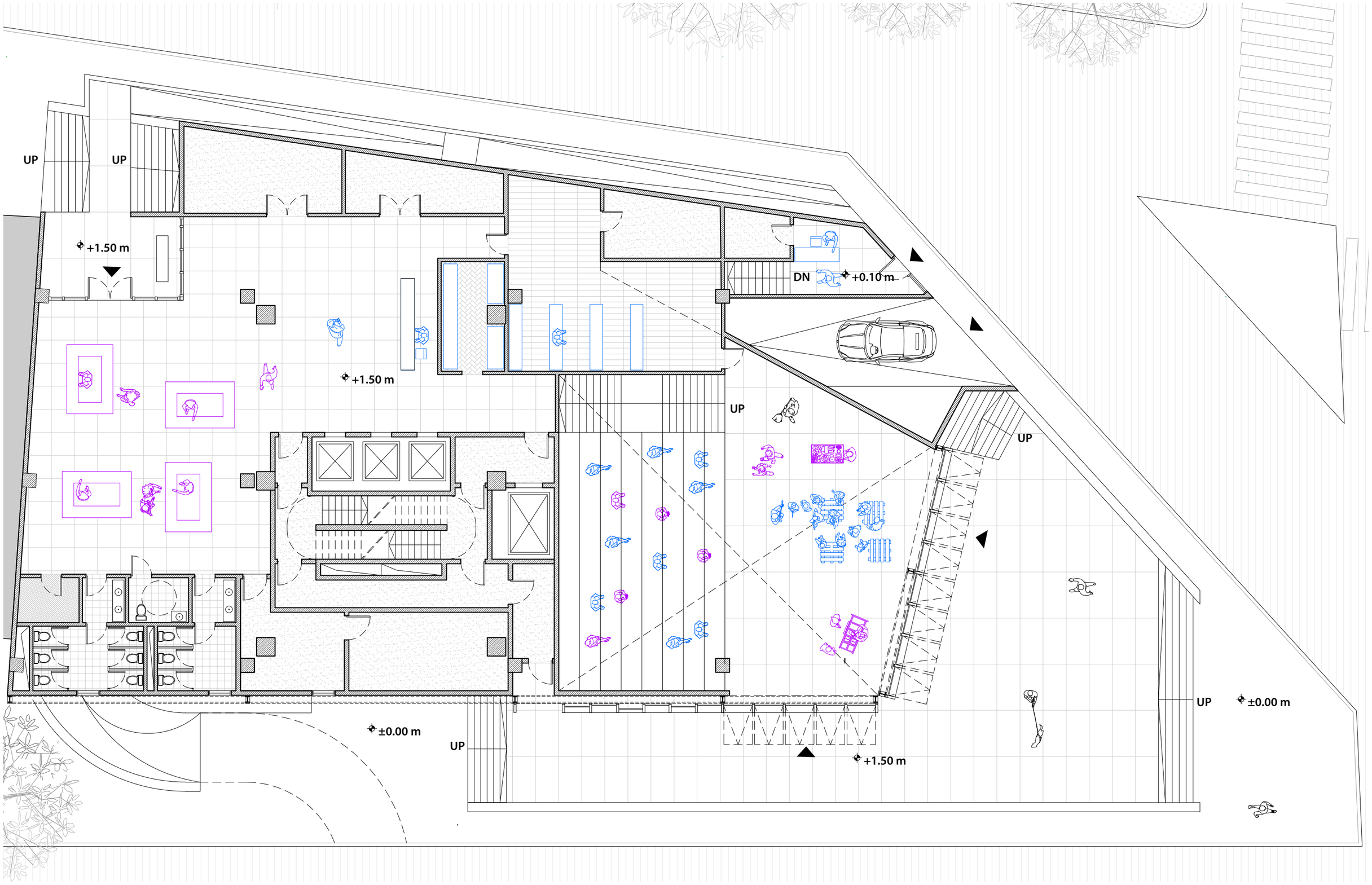
Site Plan
scale 1:500

0 | | | | 50 m



Basement Plan
scale 1:150

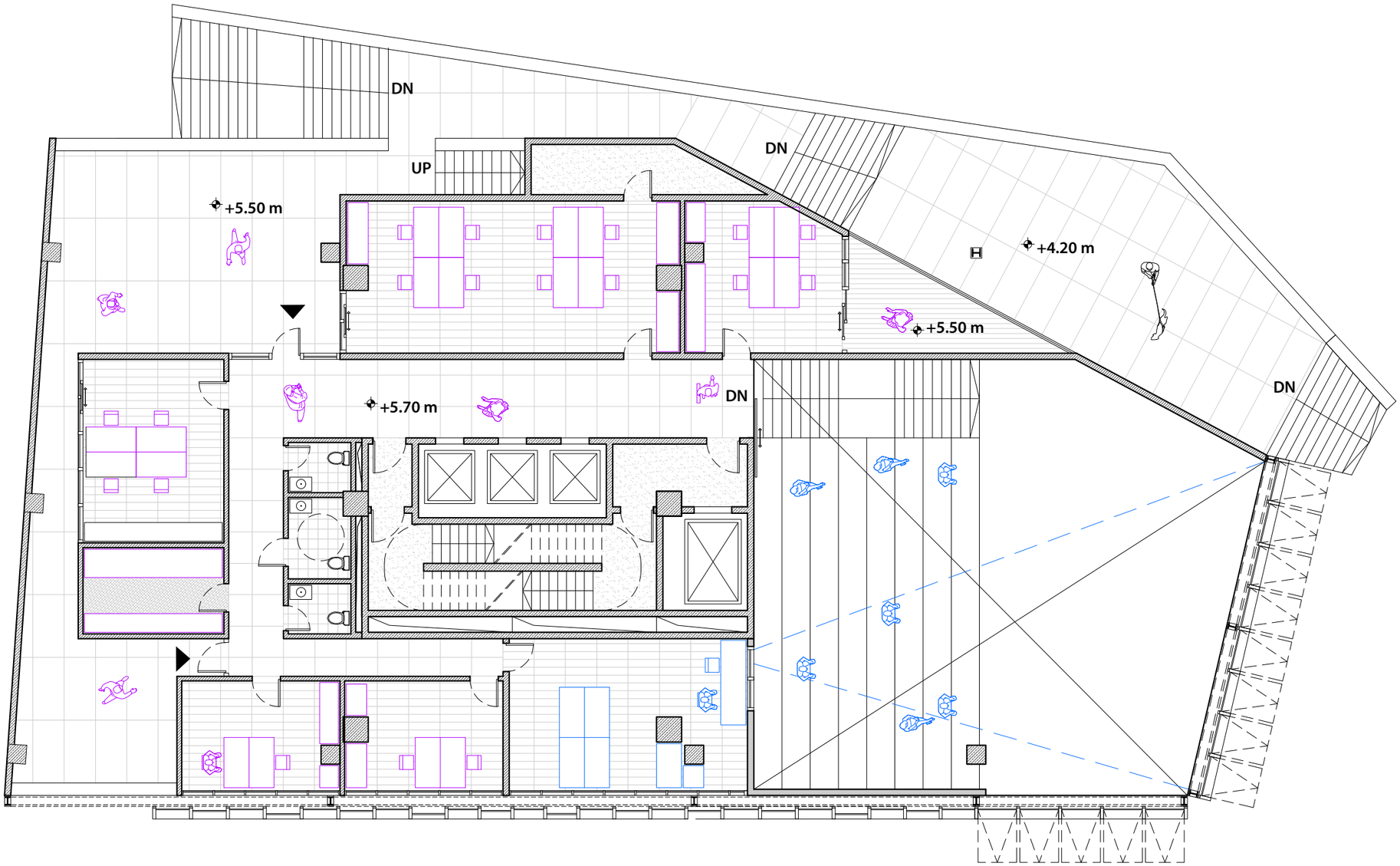
0 | | | | 10 m



Ground Floor Plan

scale 1:150

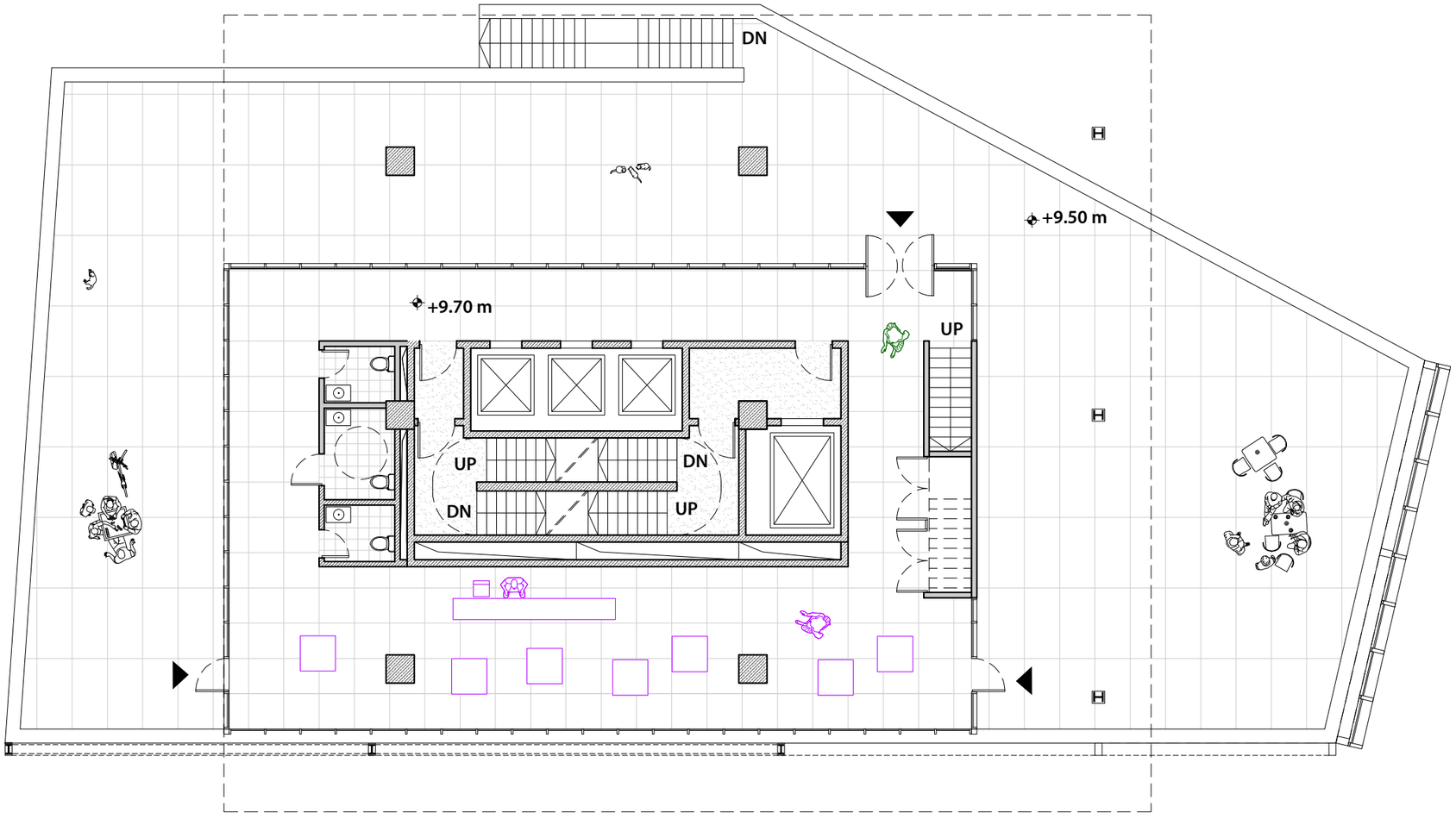
0 10 m



1st Floor Plan

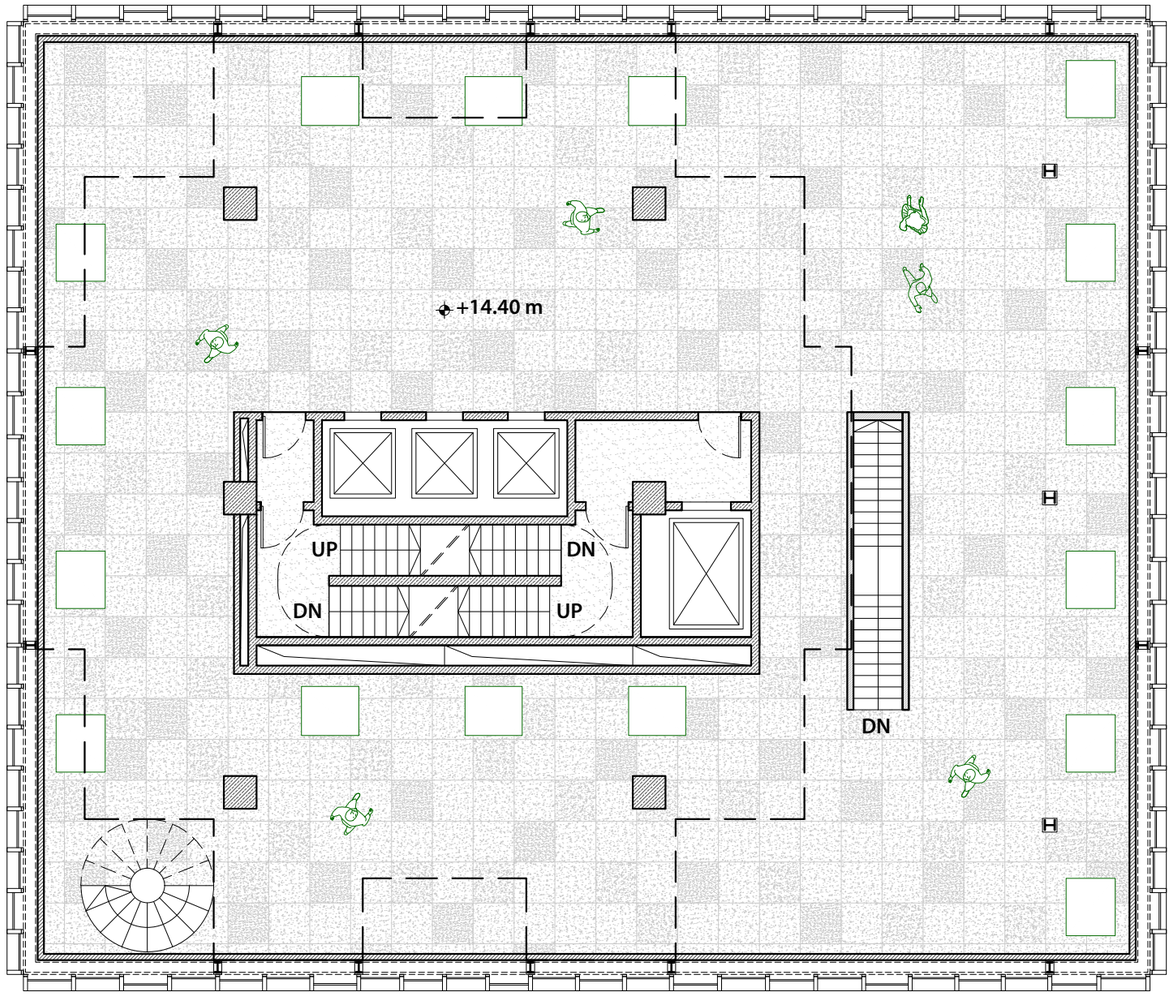
scale 1:150

0 | | | | 10 m



2nd Floor Plan
scale 1:150

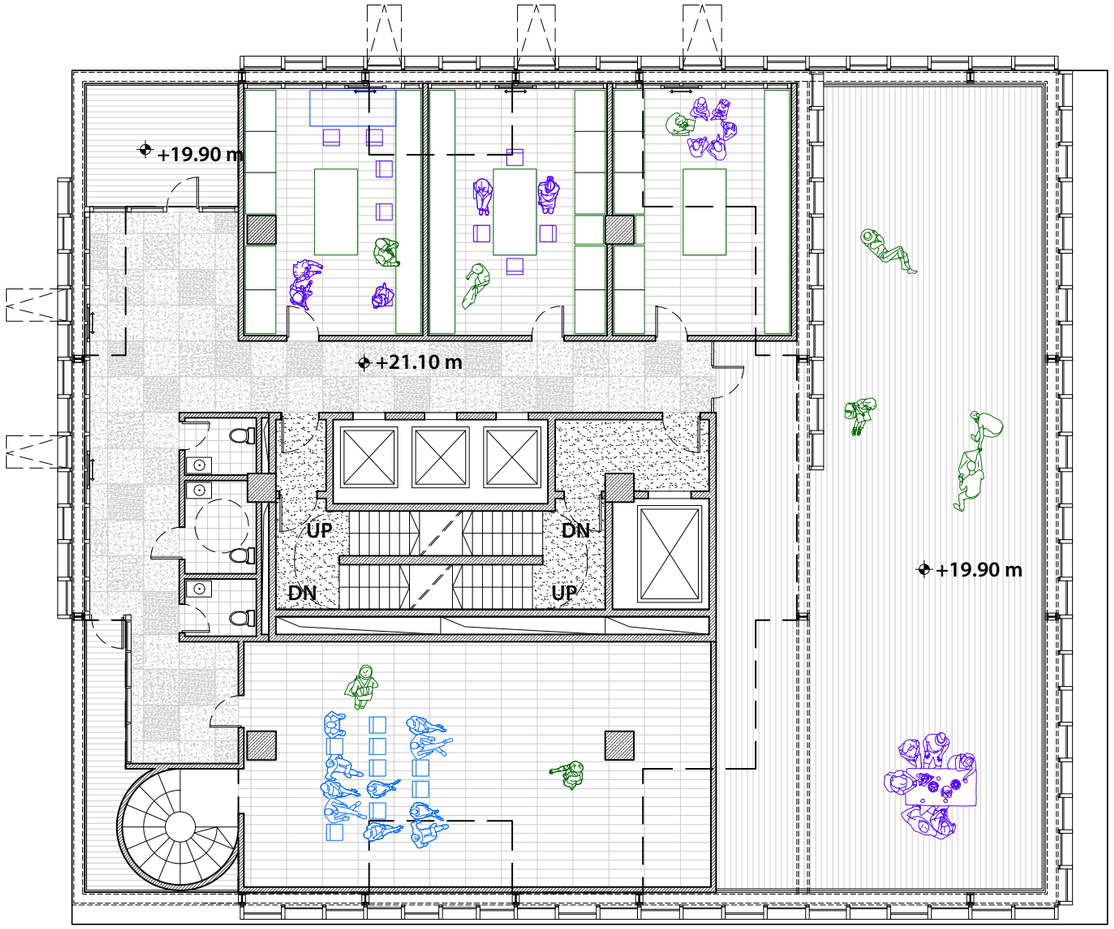
0 | | | | 10 m



3rd Floor Plan

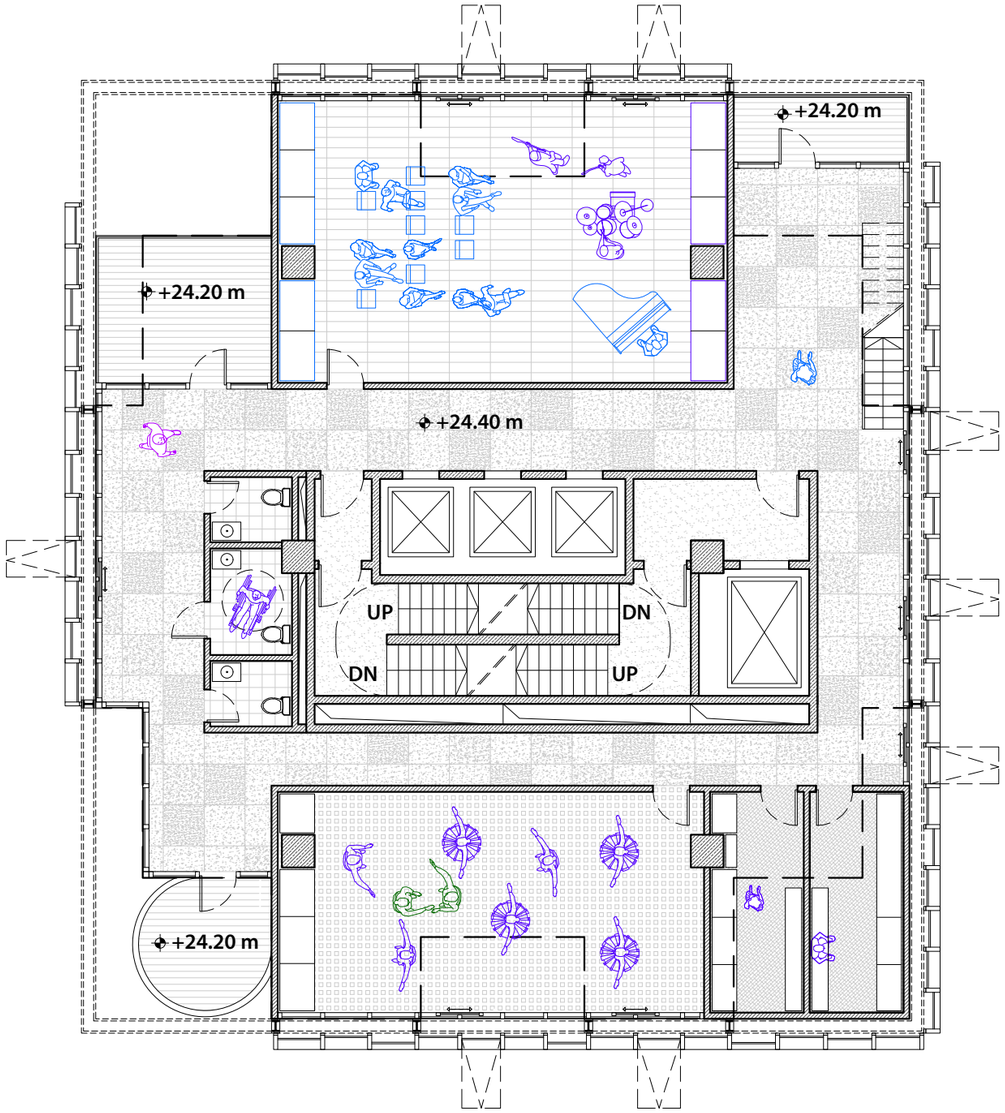
scale 1:150

0 10 m

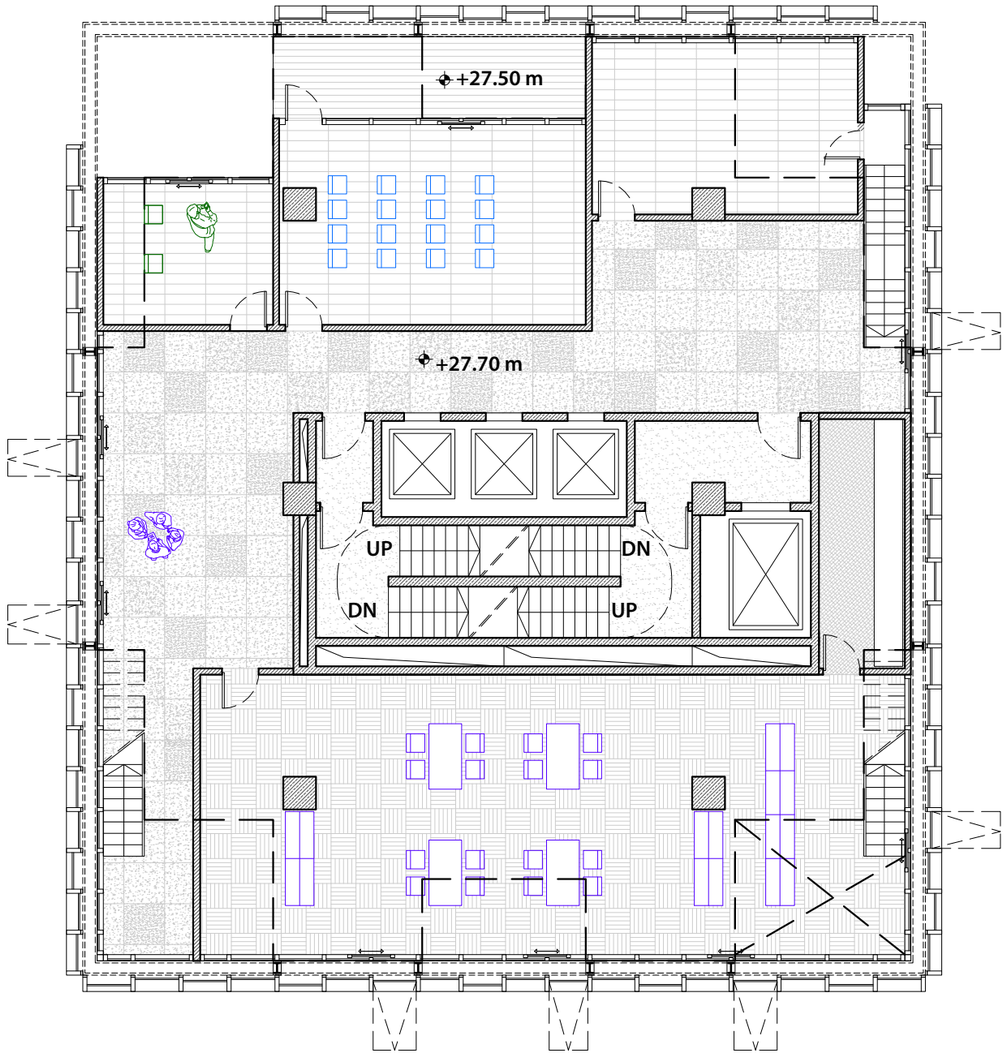


4th Floor Plan
scale 1:150

0 10 m

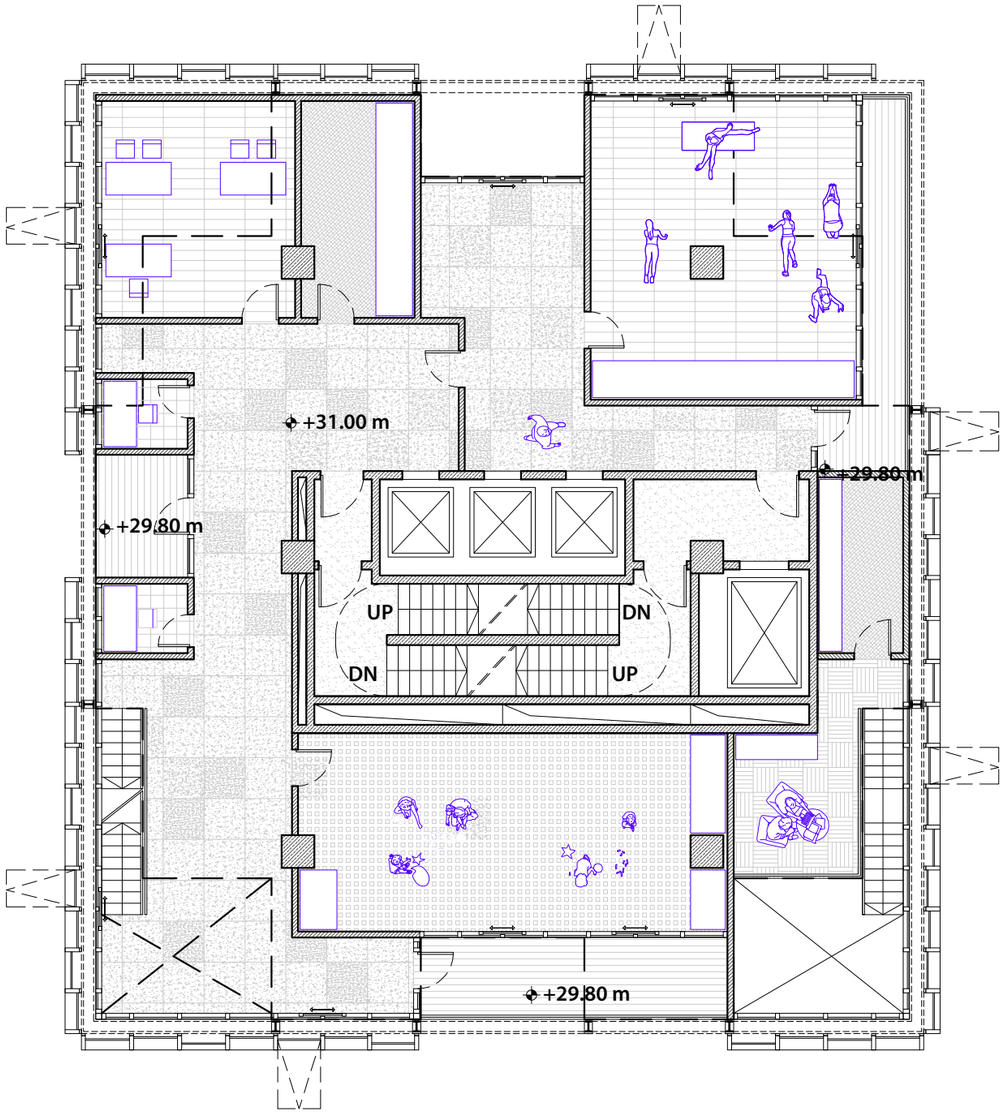


5th Floor Plan
scale 1:100

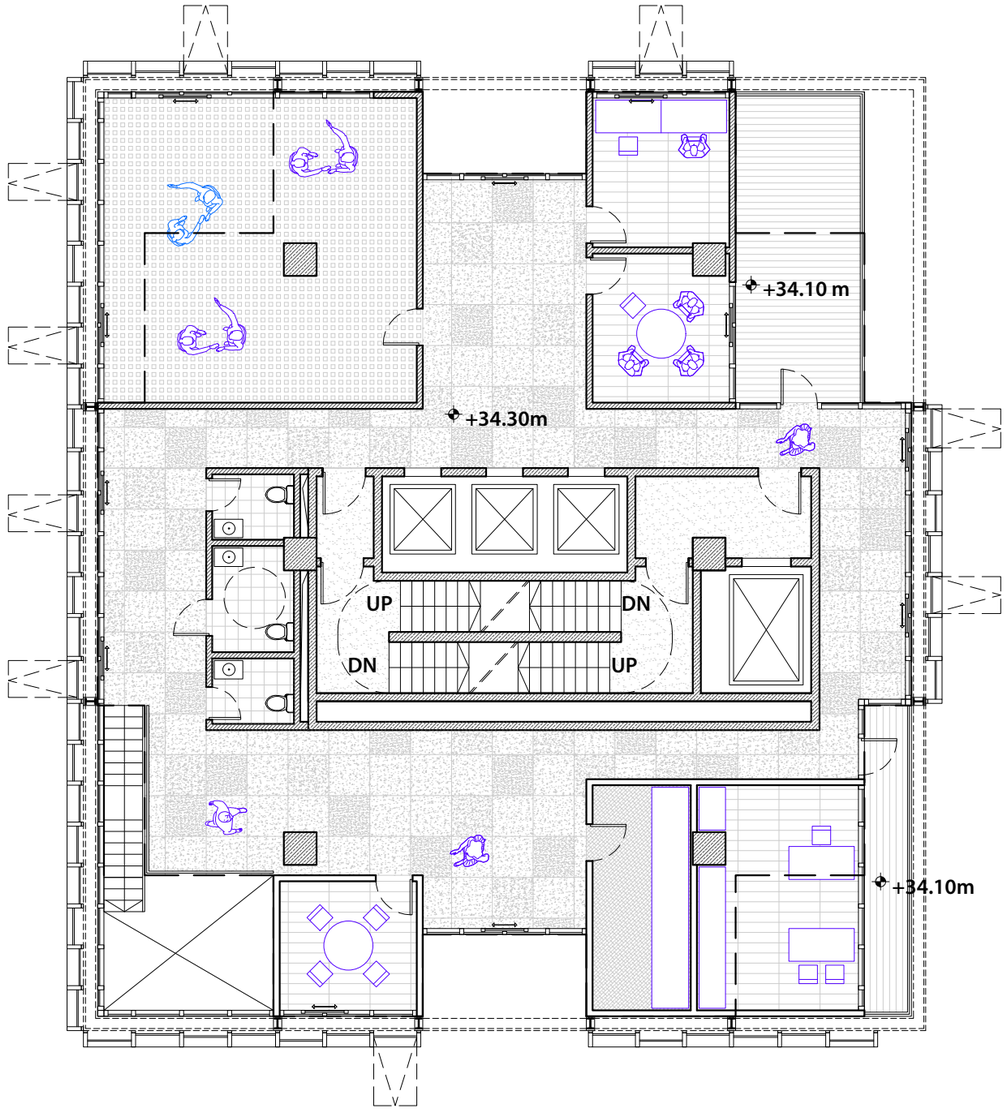


6th Floor Plan
scale 1:150

0 10 m

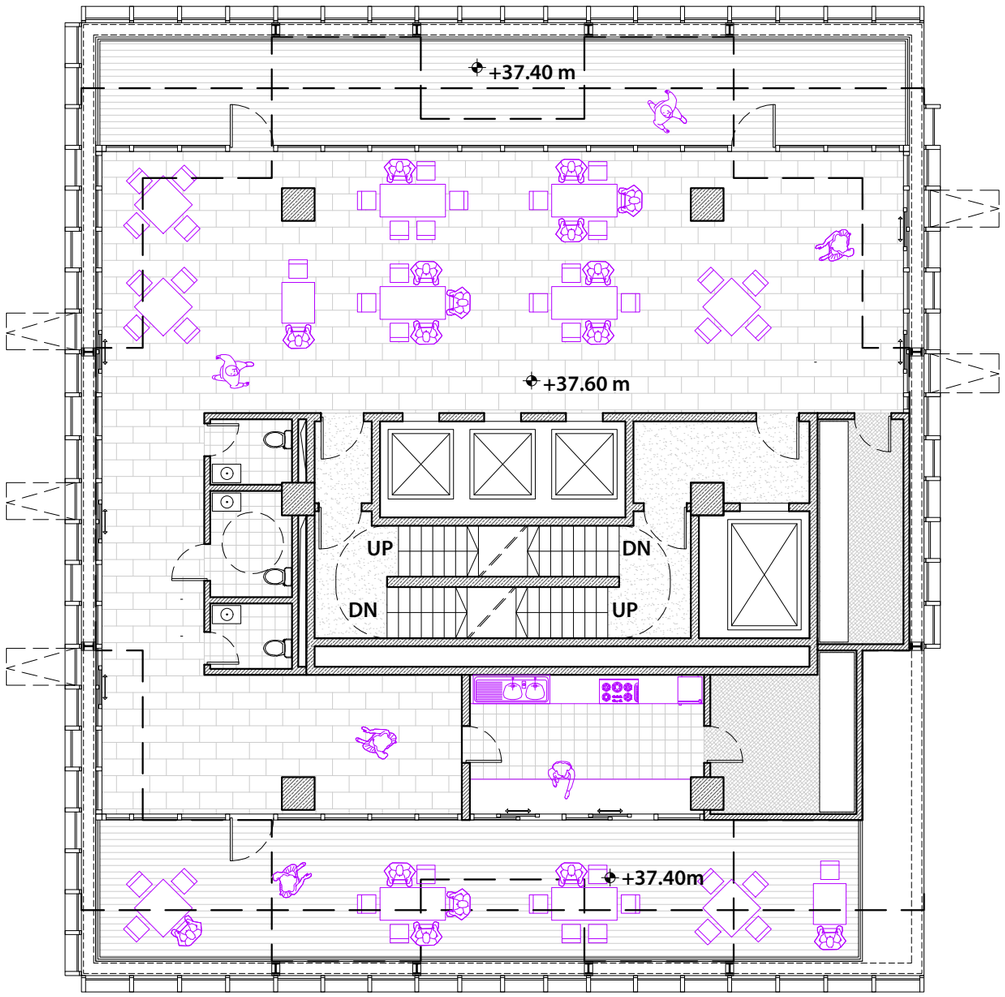


7th Floor Plan
scale 1:150

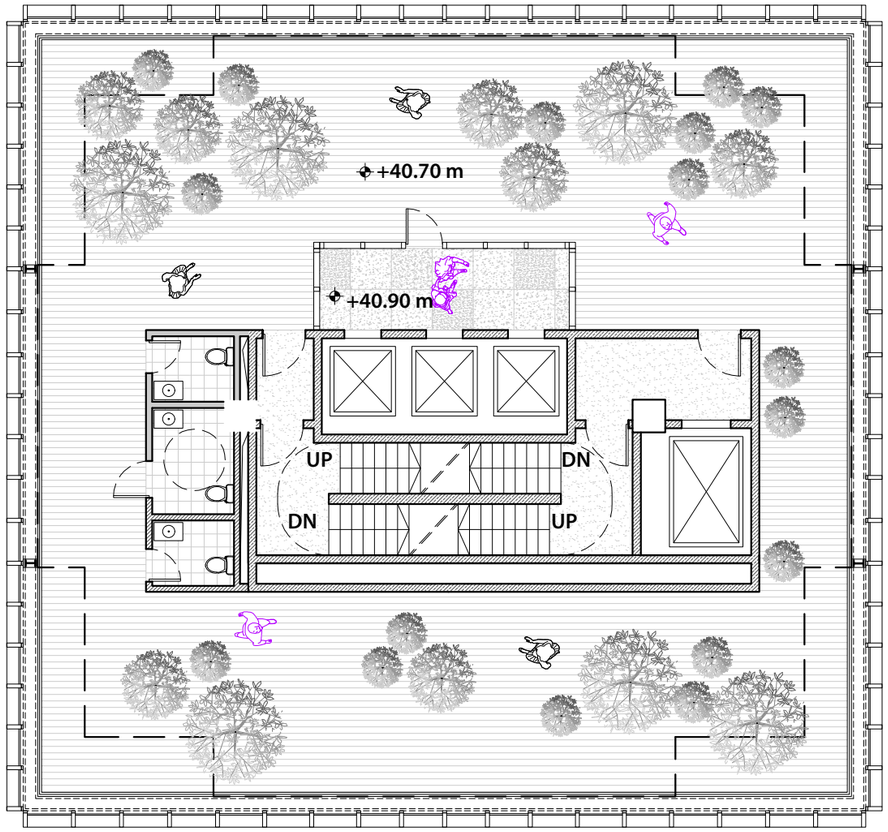


8th Floor Plan
scale 1:150

0 10 m



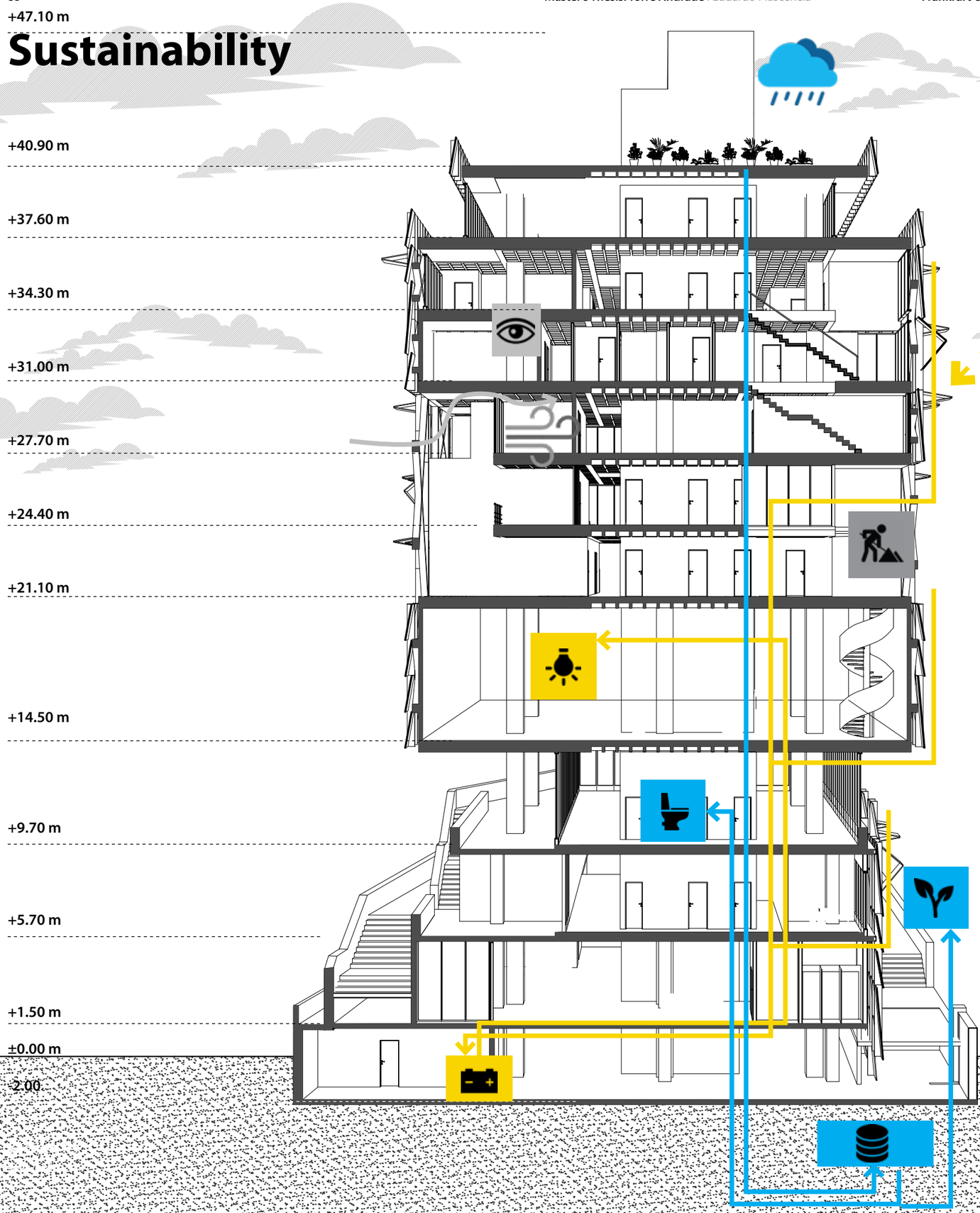
9th Floor Plan
scale 1:150



10th Floor Plan
scale 1:150

0 10 m

Sustainability



SOUTH FACADE

Building Integrated Photovoltaics

Solar Shading Screen to Control Heat Gain

Breathable Facade that allows Natural Ventilation

NORTH FACADE

Frosted and clear tempered glass to control privacy and allow Natural Daylight

STRUCTURE

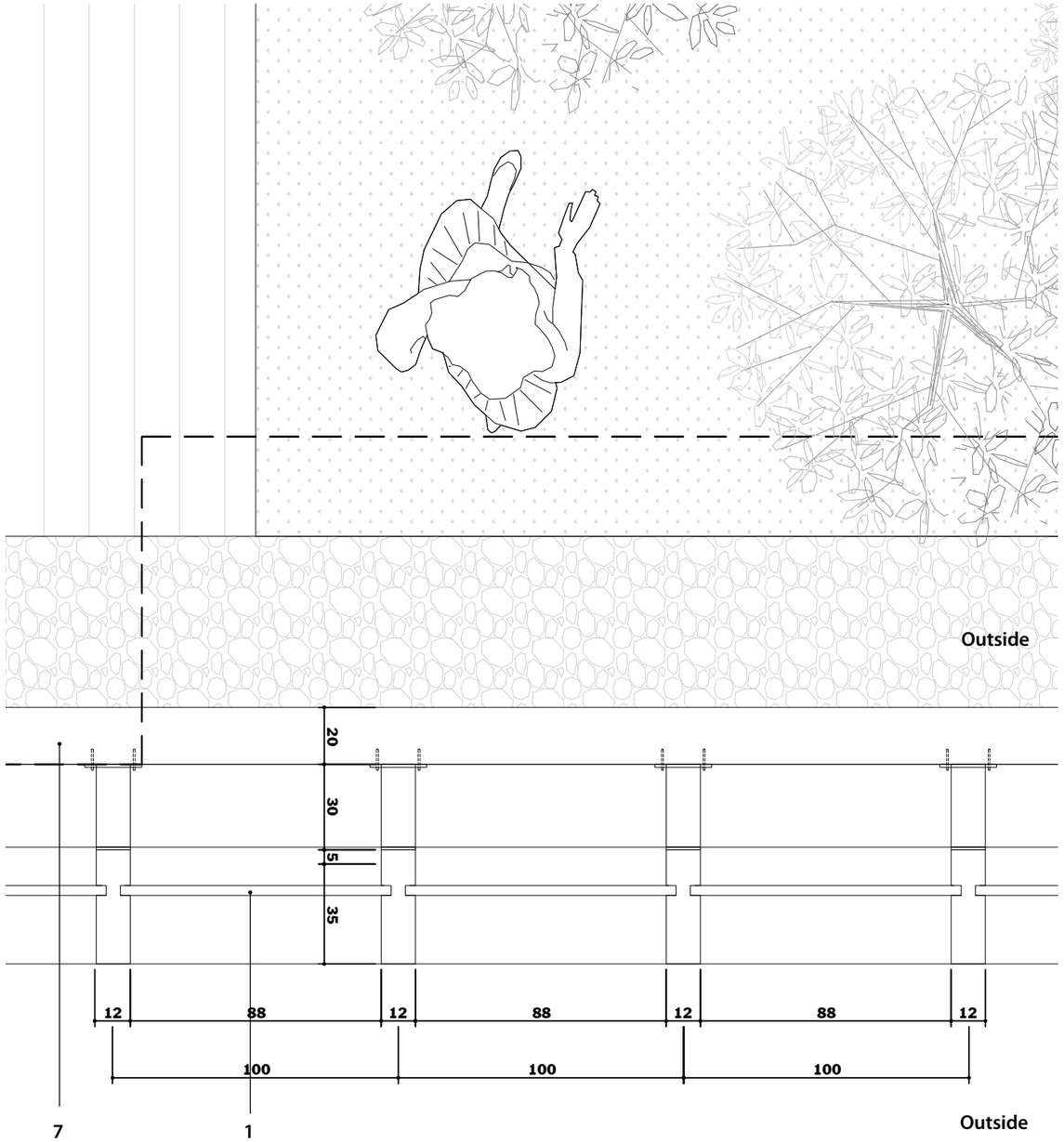
Use of existing Structure to reduce CO2 emmisions

Reuse of product resulted from de-molishion for concrete on site

INSTALLATIONS

Energy storage from photovoltaics used for electricity

Recycled Rain Water used for irrigation and WC flushing system



Facade Floor Plan
scale 1:20

Materials

1 **Fixed glass shingles according to facade design:**
40 mm toughened glass with or without textured surface
40 mm photovoltaic panel

2 **Folding aluminium shutters:**
top panel 40 mm photovoltaic panel
bottom panel 40 mm toughened glass with textured surface

3 **Steel exosqueleton construction:**
200/150 mm steel IPE steel structure
bolted to steel-concrete deck system
18 mm fire protection claddding
1 mm fixed galvanized steel sheet

4 **Sliding window:**
2x 5 mm lam. safety glass + 16 mm cavity + 8 mm toughened glass
aluminium handrail

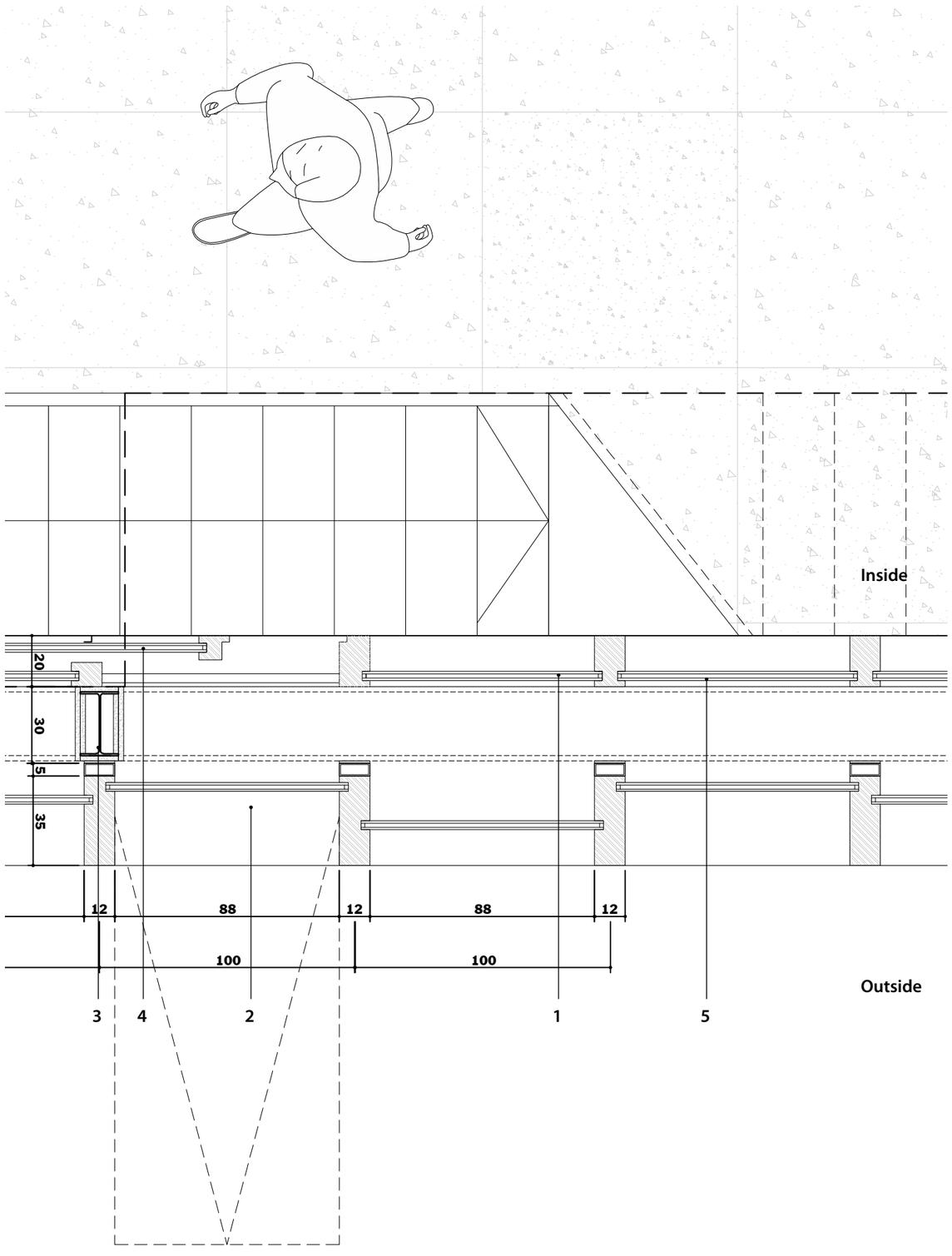
5 **Fixed glazing:**
2x 5 mm lam. safety glass + 16 mm cavity + 8 mm toughened glass

6 **Floor construction:**
10 mm terrazo flooring
vapor barrier
40 mm floor panel
adjustable height pedestal
20 mm sound insulation
8 mm steel-concrete deck system
200/150 mm Steel IPE Beam
200 mm insulation in cavities
12.5 mm plaster board
1mm fixed galvanized steel sheet
operable roller blinds for glare protection

7 **Wall construction:**
Water-based silver paint
10 mm plaster
14 mm hollow concrete block
10 mm plaster
Water-based white paint

8 **Existing concrete cassette slab**
Removal of existing waffle pods
Cleaned and exposed concrete ceilings

0 1 m



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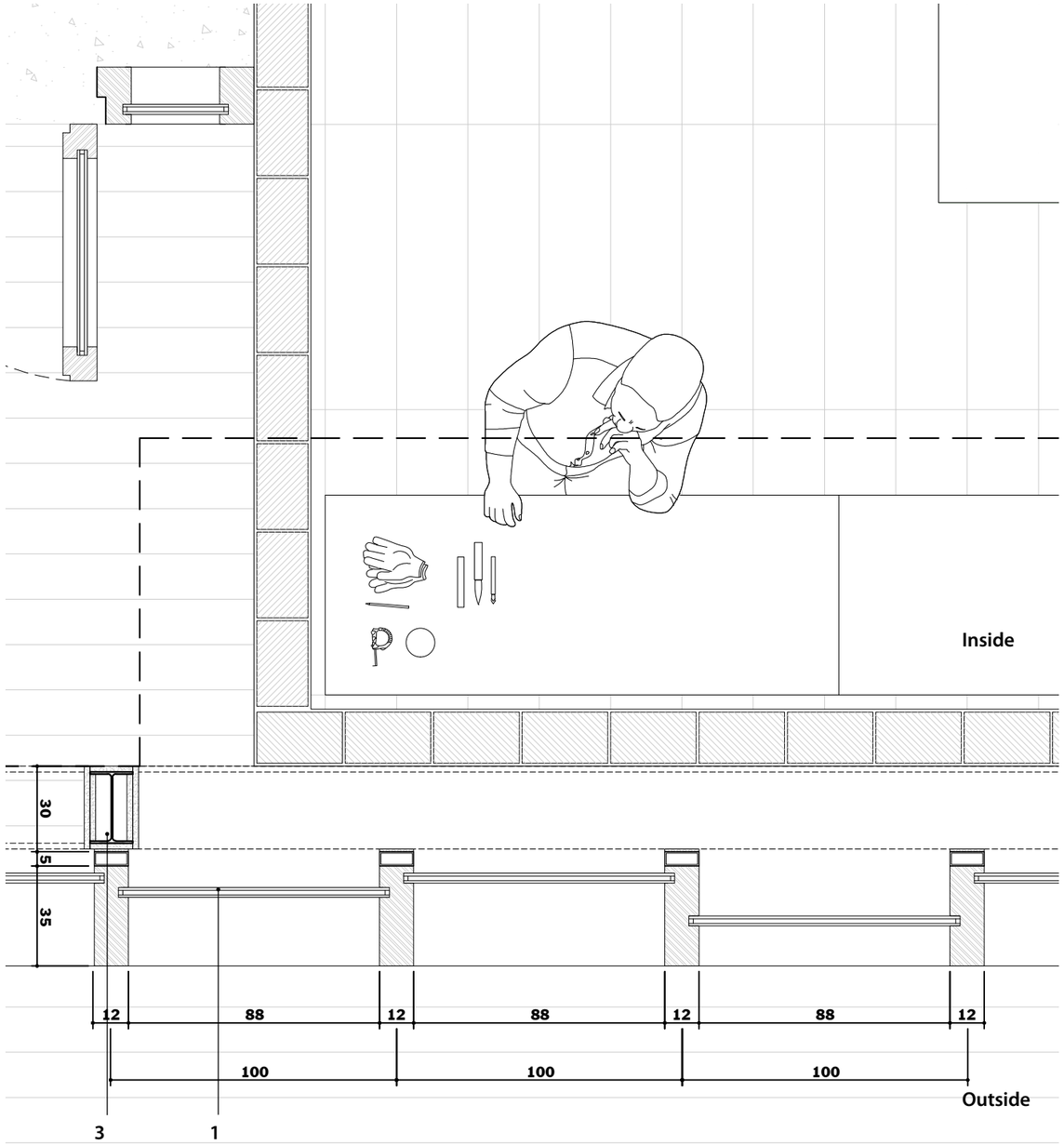

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Acknowledgments

I would like to express my special gratitude to my two supervisors Prof. Claudia Lüling and Prof. Joris Fach who were always supportive and helpful since the beginning. They provided me the golden opportunity to do this wonderful project "Not Another Tower" of the abandoned building named "Torre Andrade", which also helped me in doing a lot of research on hybrid buildings and I came to know about so many new things.

This Master's Thesis is the result of the knowledge acquired during my studies at the Frankfurt University of Applied Sciences. Therefore, I would like to thank all the professors that not only pushed me to go further but their feedback and critics gave me another point of view that made each project better. To name a few, again my two supervisors Prof. Fach and Prof. Lüling, as well as Prof. Jung. Furthermore, the support given by the staff of the Frankfurt University of Applied Sciences supported me in getting the DAAD Preis 2022 and the Deutschlandstipendium.

Thanks to the colleagues and friends I made throughout my studies. Especially Daniel, with whom I held long conversations about architecture and life. I hope our friendship extends beyond the boundaries of the academic realm.

Finally, I would like to thank Ariadna, Tita, and Julia, who were always supportive and made this study in Germany possible. In addition, they were always there when I had midnight questions and needed to clear up my mind.