

Project Journal



MSc 3/4
Interiors, Buildings, Cities

Yuqing ZHANG

Why choose interiors buildings cities?

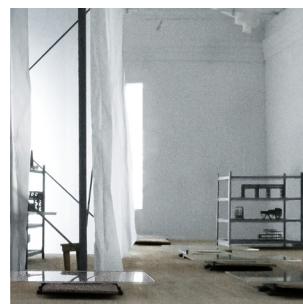
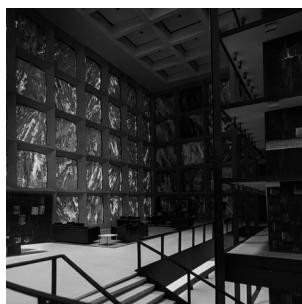
Interiors buildings cities is the most distinctive studio in TUD in my mind. Its working mode and research methods are something I have never come across in China, especially its perspective on architecture from different scales, as well as the design and display methods of large-scale models.

In the past, I also chose interiors buildings cities in MSc1 and MSc2: in the first semester, I designed a street corner building from the scale of urban streets and facades; in the second semester, I designed a salon space for teenagers from the pure interior scale; in the third semester, I will renovate a comprehensive service building (palace) from the scale of the city and design an archive. Insisting on choosing interiors buildings cities three times will allow me to learn, feel, and experience a complete workflow in all aspects. At the same time, I hope that the final work can become the last work in my systematic "architectural trilogy" at TUD.

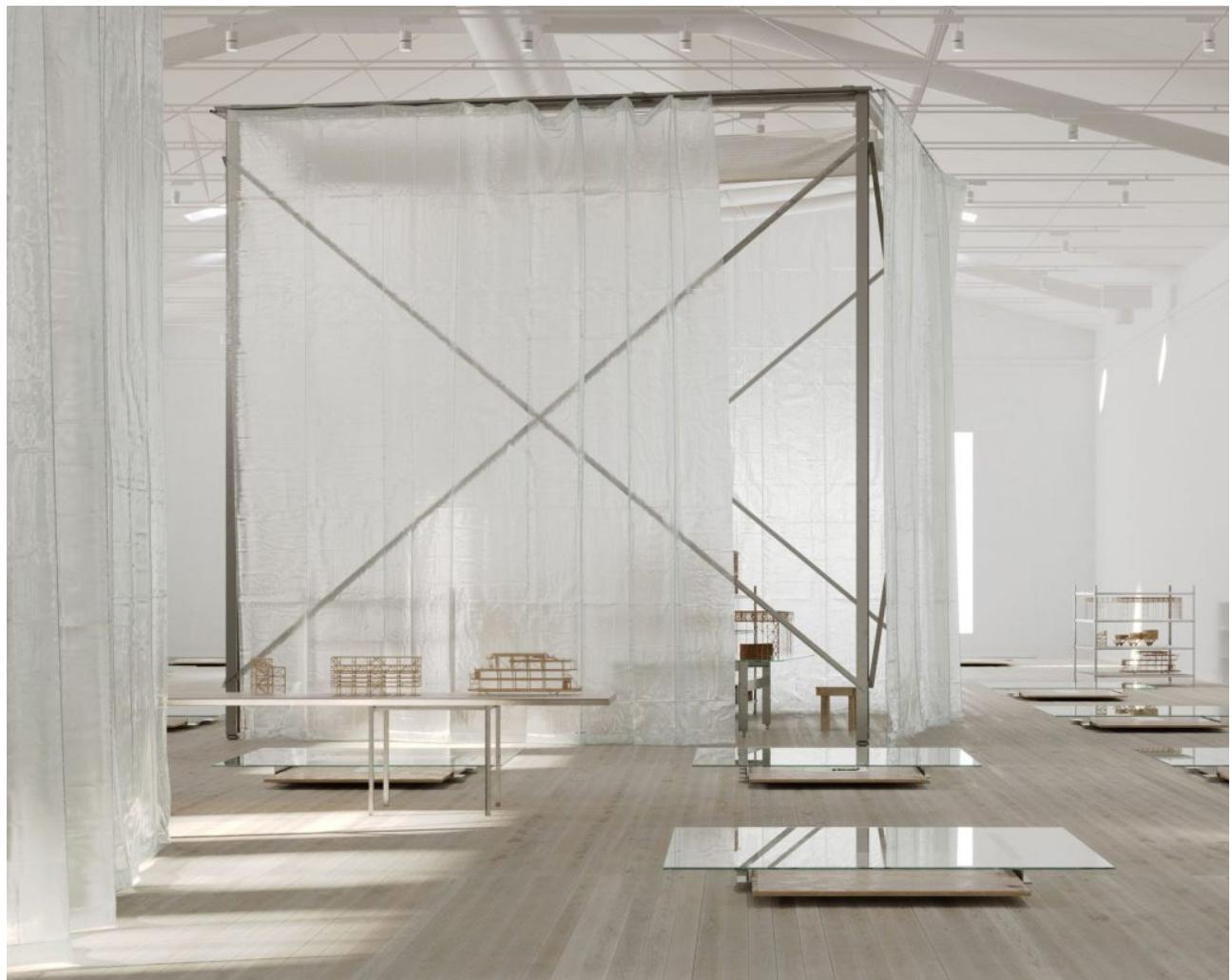
week 1.1



In the first week, I met new classmates and was assigned to several different archive interior photos as research materials. Maks, Bruno and I became teammates and we will study ArkDes, the Swedish Centre for Architecture and Design. Our task was to reproduce a photo of the ArkDes exhibition hall with a model and learn and study everything about the building in the process.

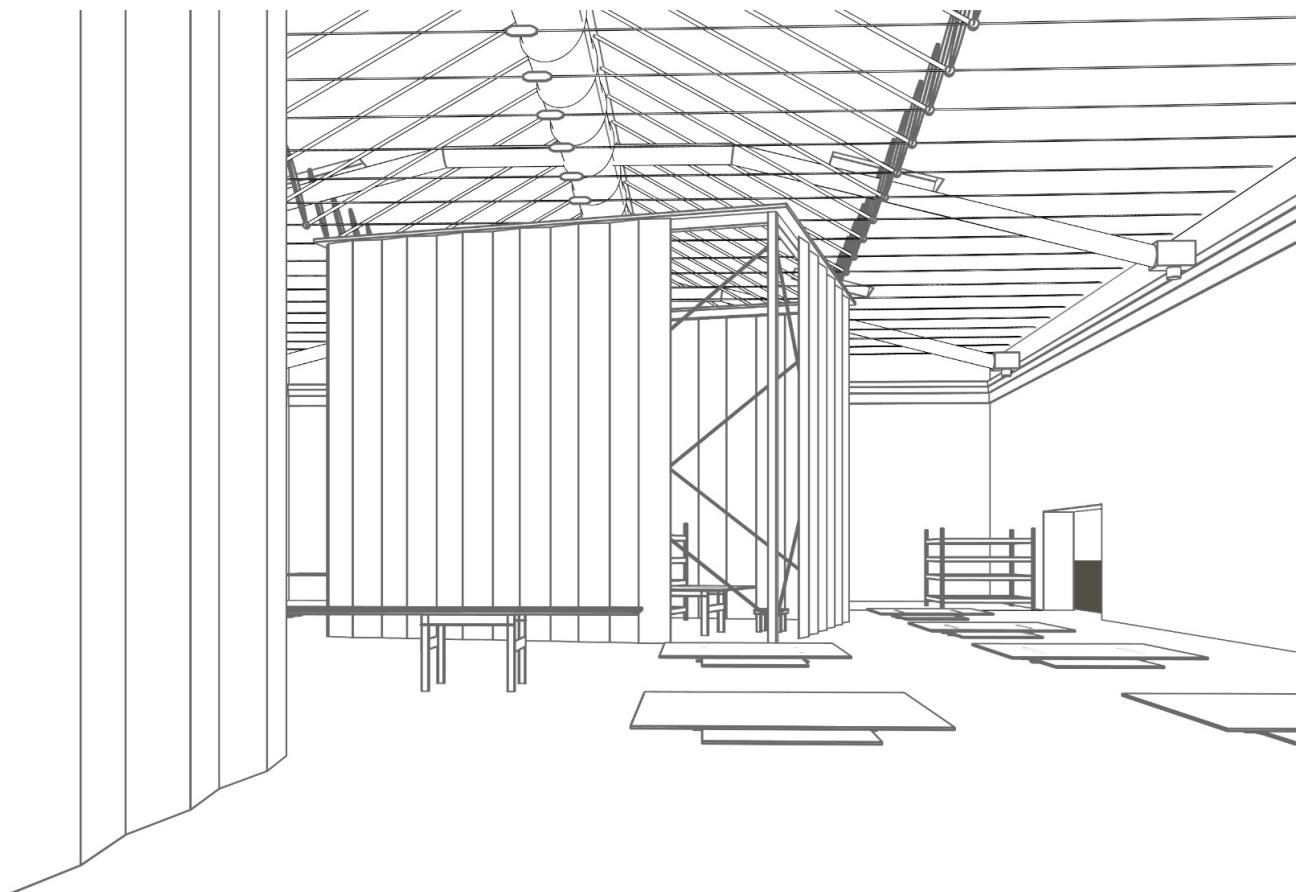


week 1.1

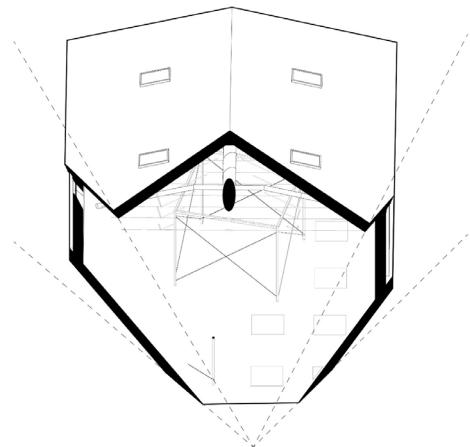
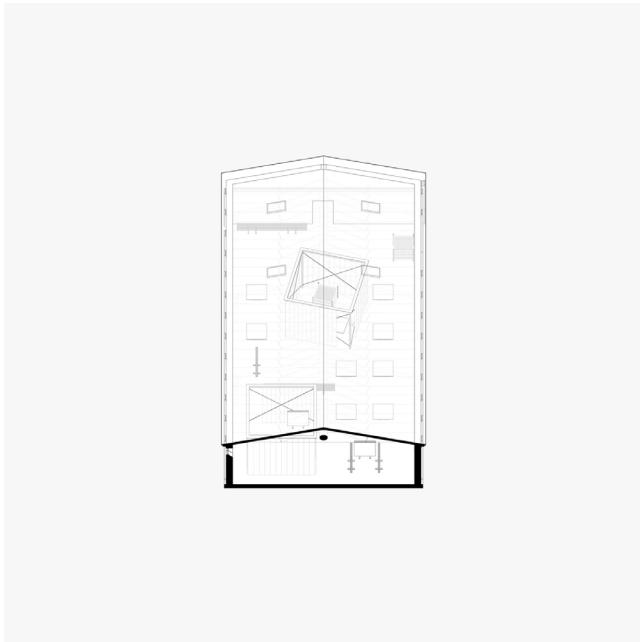


ArkDes, the Swedish Centre for Architecture and Design, is a museum and a government agency, that exists to foster and develop the role of architecture and design in society. Situated on Skeppsholmen in Stockholm, ArkDes offers exhibitions, installations, lectures, creative workshops, and discussions dedicated to architecture and design.

week 1.1



week 1.2

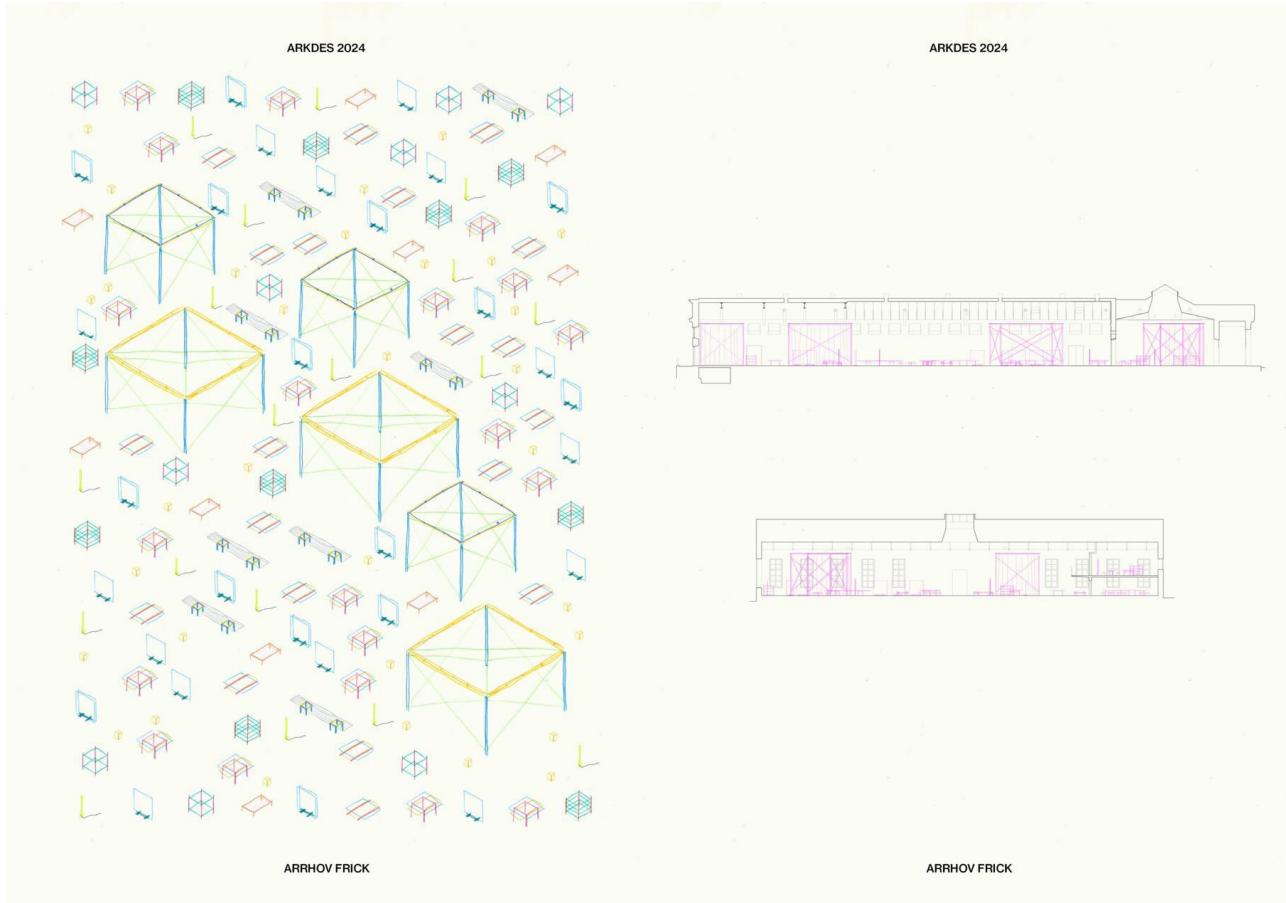


In the second week, we collected a lot of information about ArkDes and found that the "photo" we got in the first week was actually a super-realistic rendering. We found another rendering of the same angle on the website of studio Arrhov Frick Arkitektkontor.

In order to more accurately replicate the image from the model to the photograph, we first used a computer to model this unique angle.

Using computers, we completely modeled the Navy Hall section of ArkDes, including the building structure, trusses, equipment, devices, furniture, building models, and soft decorations such as window screens. Through multiple precise simulations, we concluded that the lens angle of this photo is about 35mm. We decided to reproduce it at a scale of 1:30.

week 1.2

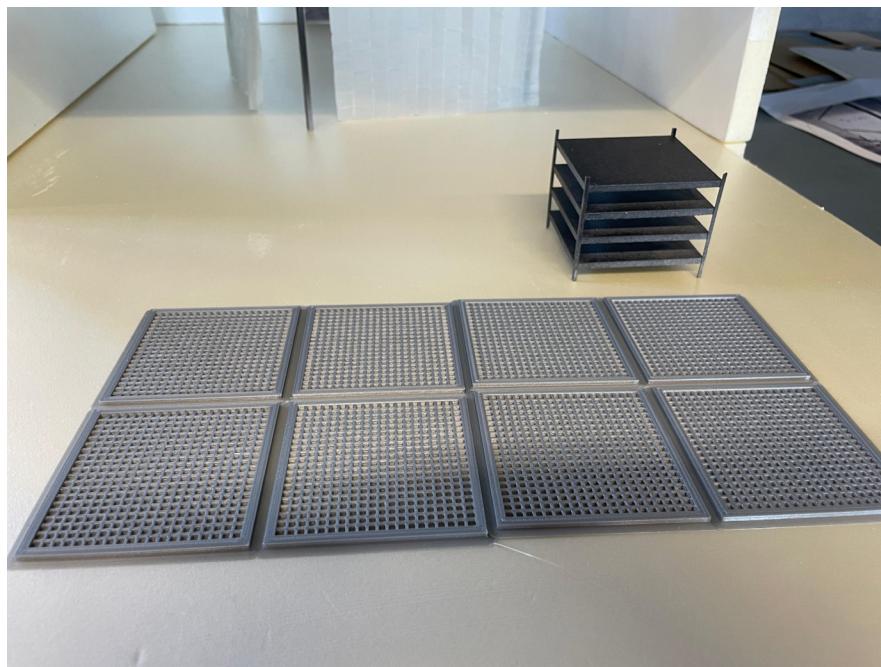


We found many illustrations of Arrhov Frick's furniture and installations. The architect tried to use a lightweight method to complete the transformation of the interior space: using a light steel frame structure to define a square indoor exhibition space, house in house, and using slender stainless steel bars, wood boards, glass and other materials to design the exhibition furniture. At the same time, we found that the architectural model in the rendering came from other projects of Arrhov Frick, which was the architect's hidden Easter egg in his own rendering.

After a year of closure for a complete renovation, ArkDes will reopen to the public on 27th September. Situated on one of the many islands in the capital archipelago, the museum, founded in 1962 on the initiative of the National Association of Swedish Architects, has undergone a significant transformation thanks to a project by studio Arrhov Frick Arkitektkontor.

The renovation, which involved the entire museum complex, brings back to life the spaces of a historic Swedish navy barracks, once home to the department of nautical cartography, making the museum even more accessible and inclusive.

week 1.3



week 1.4



We completed a physical model of the "soft" elements of the interior, which allowed us to discover the scale relationship between different furniture and different exhibits.

We have completed the architectural part of the Navy Hall of ArkDes. In fact, the roof windows and high windows of this space cannot be found in the relevant drawings found. Therefore, we combined the light and shadow of the renderings to infer the location of some doors and windows.

It can be seen that the White Hall has a pure minimalist presentation. However, in the process of making the model, I found that minimalism does not mean simplicity. It is not easy to achieve this simplicity, because all materials and structures must be very precise and very straight. The difficulty of model accuracy made me discover problems that would arise in the actual construction process: For example, the truss structure is easy to bend, so I used ropes to apply prestress to the truss to make the model appear straight.

week 1.5



week 1.6



We spent the whole afternoon photographing the model, with me as the main photographer and Maks and Bruno adjusting the lighting and reflections. Working in the studio was exhausting but exciting, because the translucent plastic curtains added a hazy feeling to the rendering. At the same time, the reflections of the glass were equally important, and it was these details that made the final photos rich in content and information.

week 1.7



In the seventh week, the entire interiors buildings cities graduation design team arrived at the destination of the project, Antwerp. This was my first time to this beautiful Belgian city. We visited several local architectural firms in Antwerp.

What impressed me most was the way these firms preserved architectural documents, which reflected the importance of document preservation in Europe, which is also a cultural attitude that Chinese firms lack.

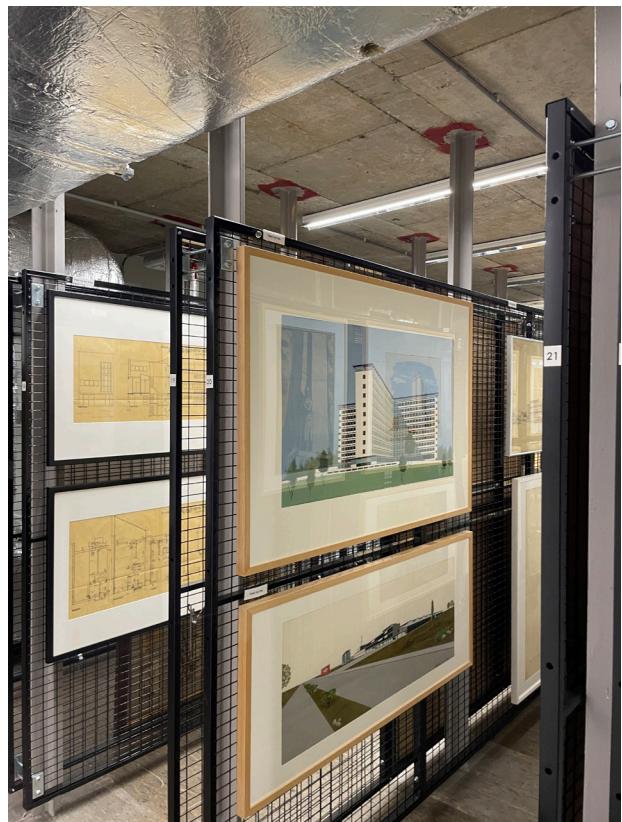
These firms edited, sorted, and published project books, and systematically organized paper materials about architecture and cities. It is worth mentioning that the models of one firm filled several rooms. This messy studio atmosphere left a great impression on me.

week 1.7



On the second day, we systematically visited the VAI Archives, a professional archive on architecture in Antwerp and also the owner of the MSc 3/4. During this process, I personally experienced the preservation methods of different archives, including documentary materials, large drawings, and architectural models.

week 1.7



week 1.7



On the third day, we conducted a field trip to the site of our graduation project, which is a public cultural complex consisting of an art school, theater, exhibition hall, restaurant, office and other functions. It is not difficult to see that the construction of De Singel has gone through several different stages. The initial art school part and the subsequent theater part are typical modernist styles, and the huge landmark also presents a brutalist style. The final built BEEL part is a group of buildings composed of wooden facades. A huge wooden box is supported by giant columns above the original two-story building.

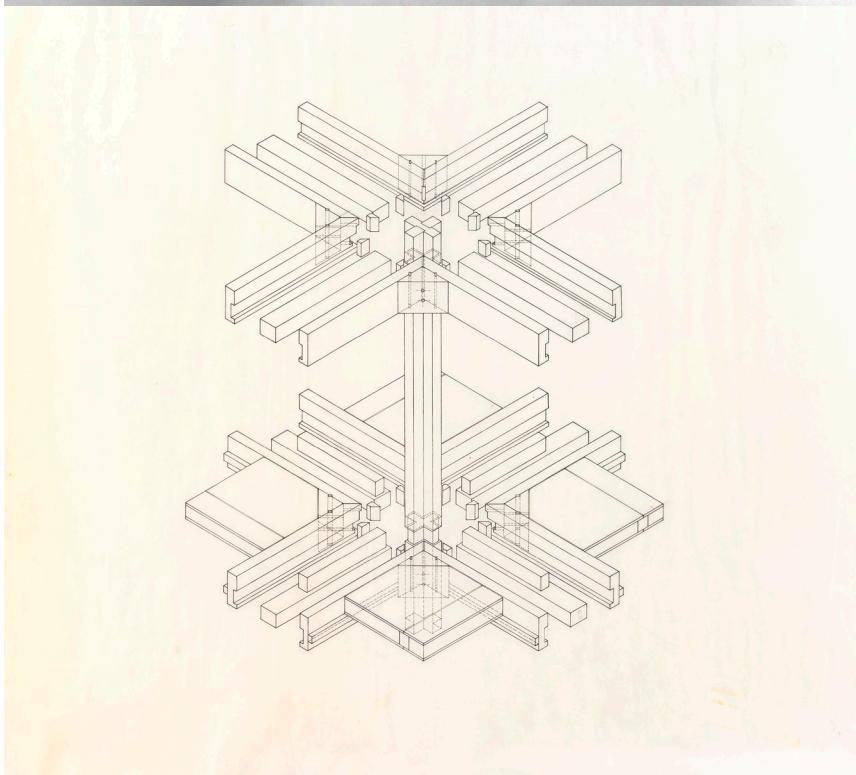
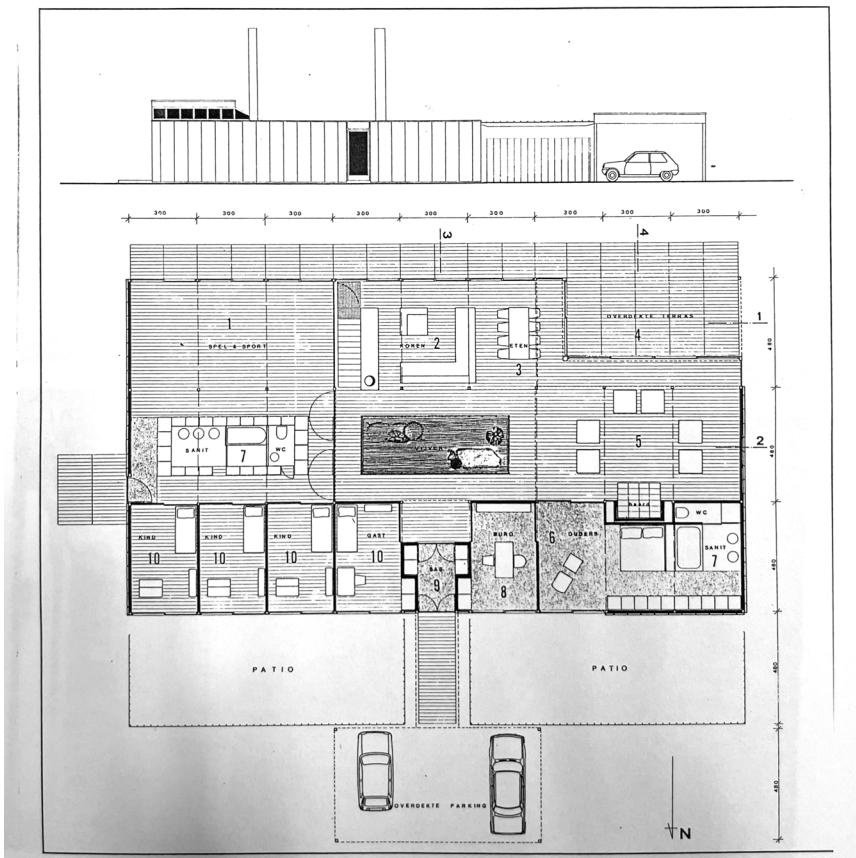
The first visit to De Singel gave me a maze-like chaotic experience. It was difficult to figure out the function of each room and how the public spaces and corridors connected these functional rooms. I began to think about one of the goals of this design practice: how to create order in chaos and integrate complex functions. This visit made me realize that "chaos" would be the ultimate challenge of my graduation project.

week 1.7



The fourth day happened to be the opening ceremony of the Dogma exhibition. I rushed to watch the architect's academic lecture on villas before leaving Antwerp in the evening. I was deeply impressed by the enthusiasm of Antwerp people for architecture.

week 1.9



Claire Bataille & Paul Ibens

Interior designers Claire Bataille (1940) and Paul ibens (1939-2020) worked together in the field of interior architecture for almost five decades. Through their joint design practice, established in 1968, they designed and realised countless homes, shops, businesses, furniture and objects. The Flanders Architecture Institute acquired the entire Bataille & ibens archive in 2012. A selection of documents provides an initial glimpse of this fascinating and diverse collection.

week 1.9

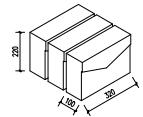


The next task is to study the works of Claire Bataille & Paul Ibens and design a room for them to serve as an archive and exhibition.

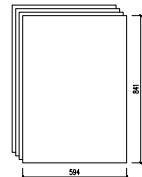
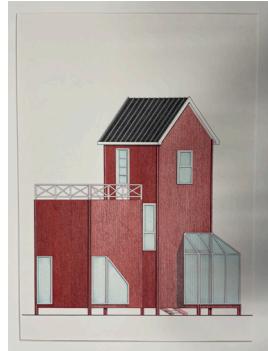
Previously, I also recorded a large part of the literature on the works of Claire Bataille & Paul Ibens in the VAI Archives. During this period, I sorted out these archives and gained some thoughts and inspiration from them.

week 1.9

Volume



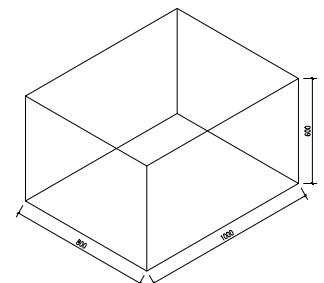
File box × 3
 $V=0.01m^3$



Poster × 3
sketche × 25
 $S=13.5m^2$



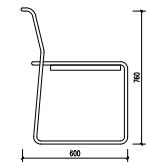
Magazine paper × 180
Newspaper × 15
 $S=12.19m^2$



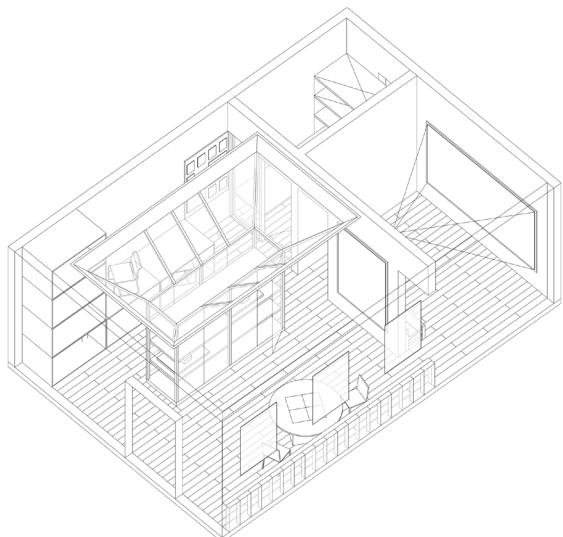
Models × less than 10
 $V<5m^3$



Photograph × 200
Films × 350
 $S=2.23m^2$



Furnitures × less than 10
(included in more than 50 works)
 $V<2.5m^3$

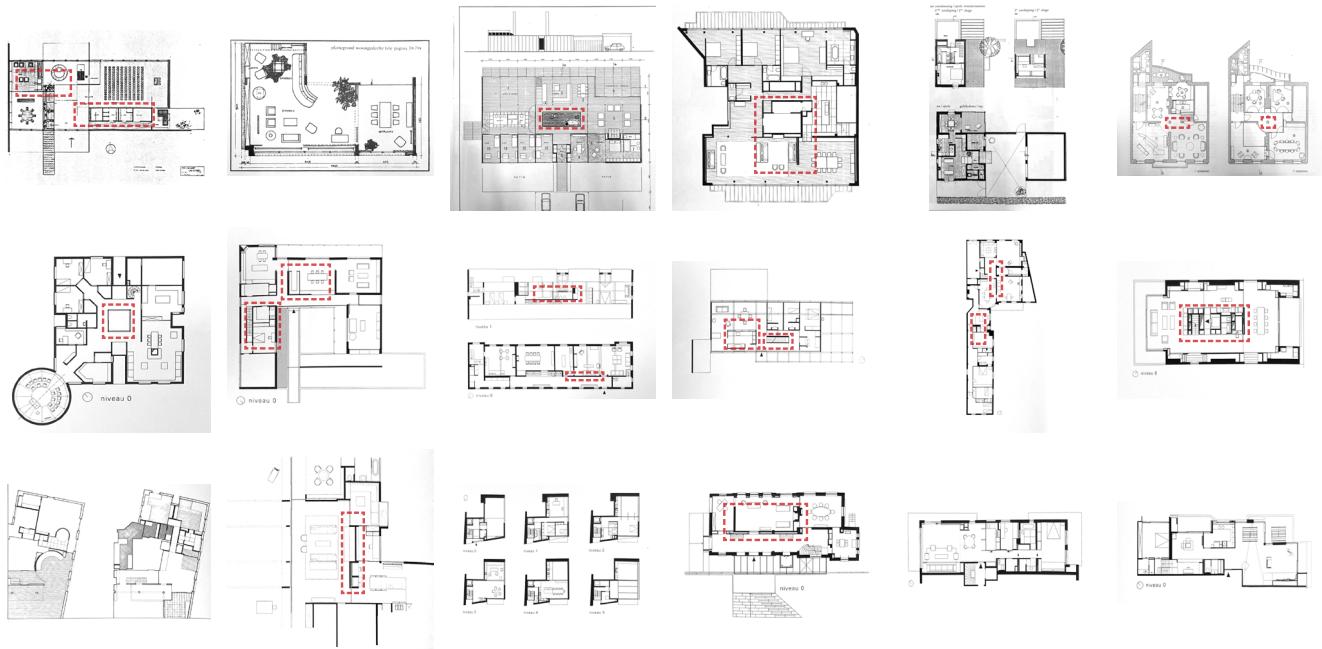


According to the research in the VAI Archives, the archives of the architectural archives were first classified and the area and volume were calculated, which will become an important basis for the design. I found that a very large space is not required to complete the task, a 6*9 meter room is enough.

week 1.9

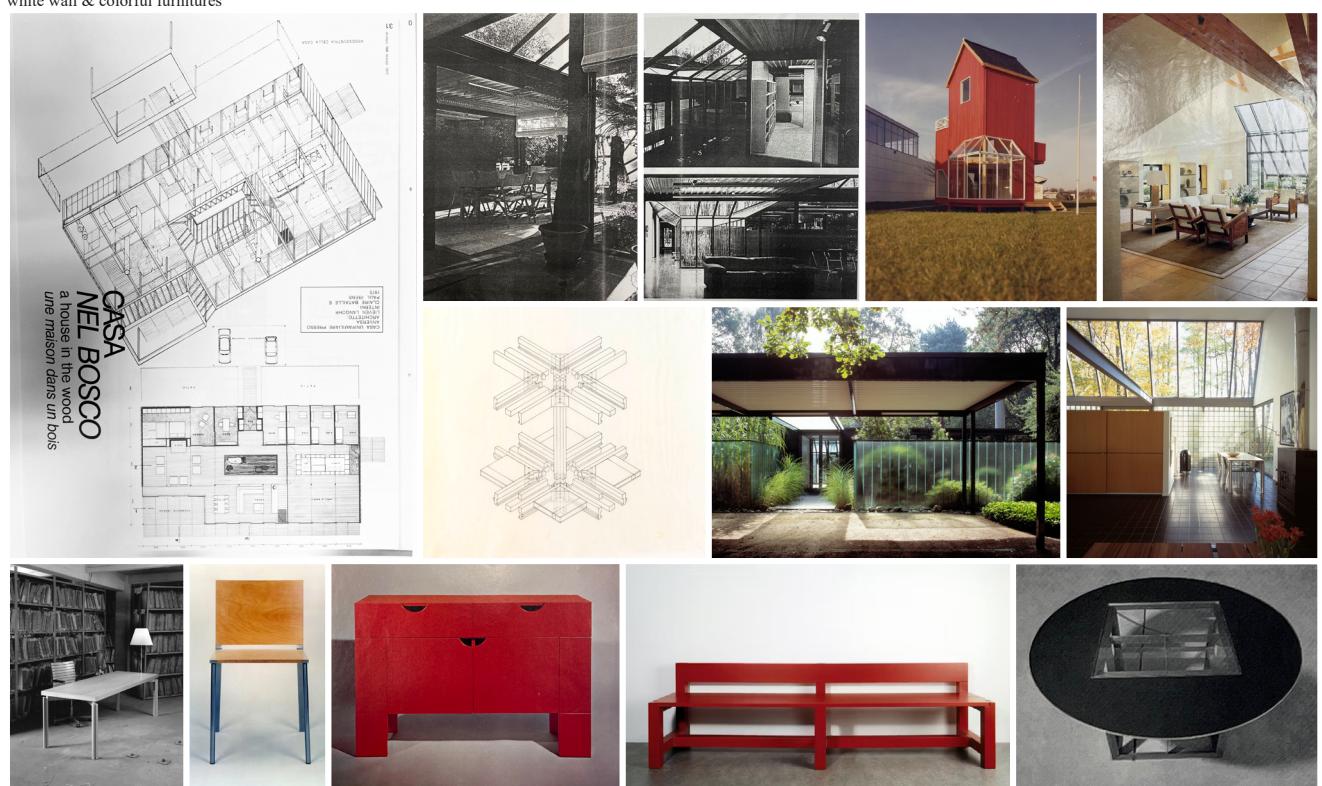
Plans

keywords:
circular flow line
function island
perpendicular walls



Symbols & Materials

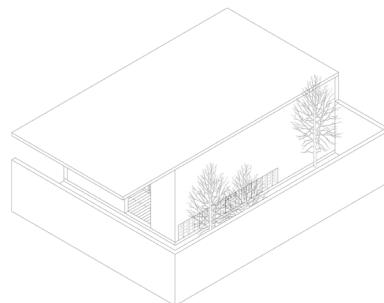
keywords:
"sunlight room"
U glass
metal & wood
white wall & colorful furnitures



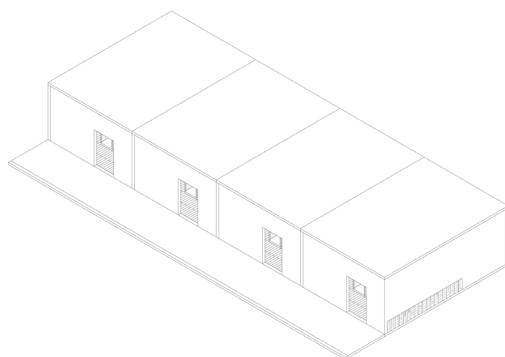
At the same time, I found that the architects like to use a design language of "sun greenhouse" with inclined glass, which will be the form basis of my "room design".

week 1.9

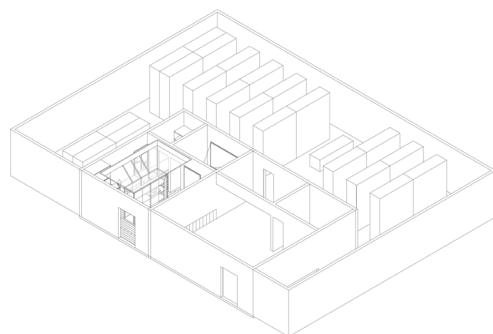
Adaptability



single house

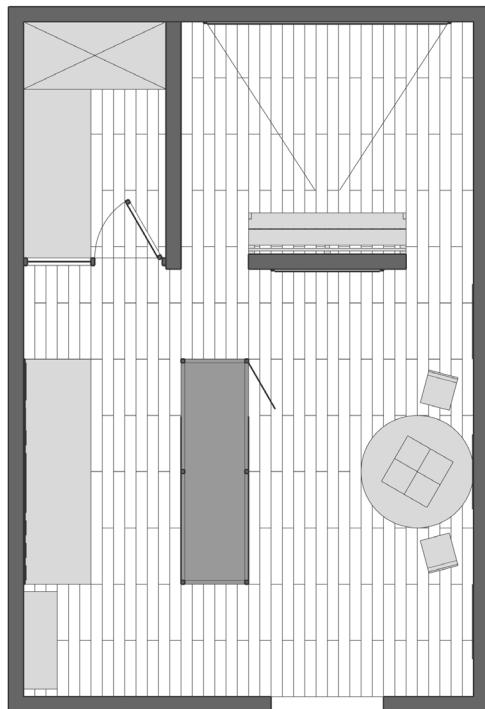
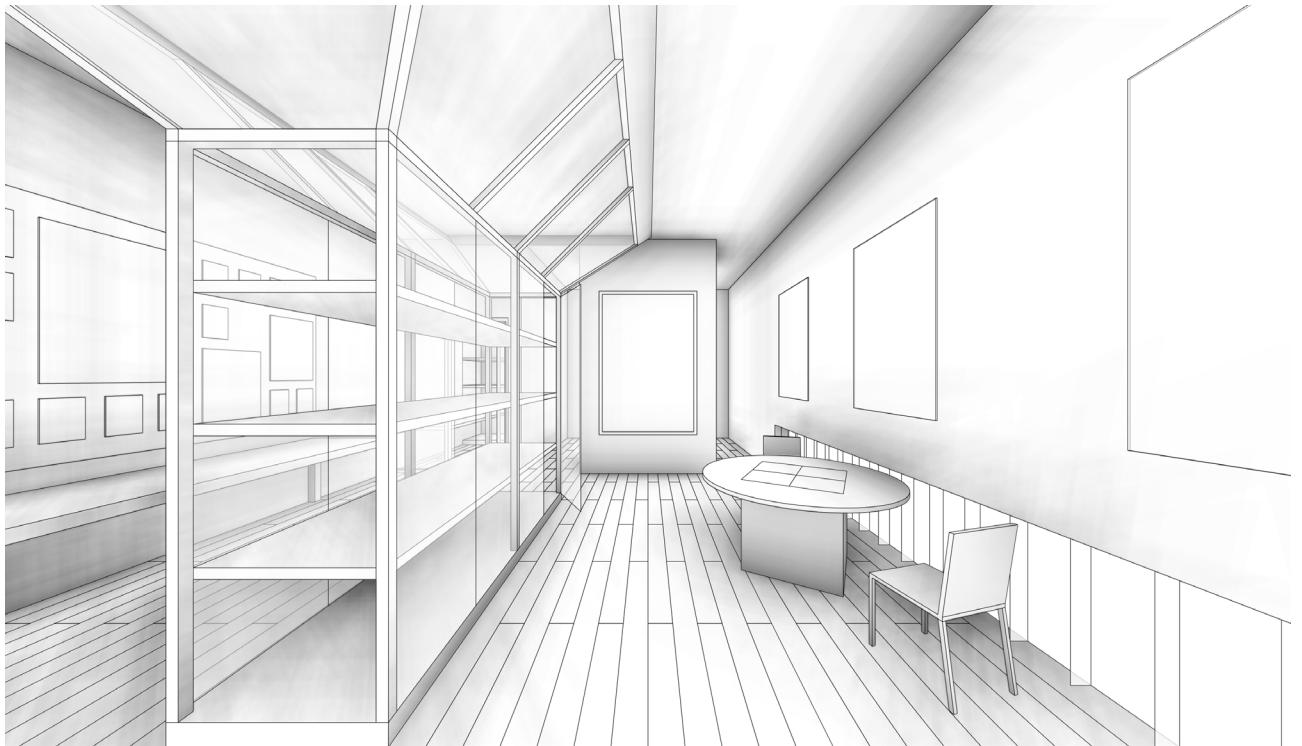


in group



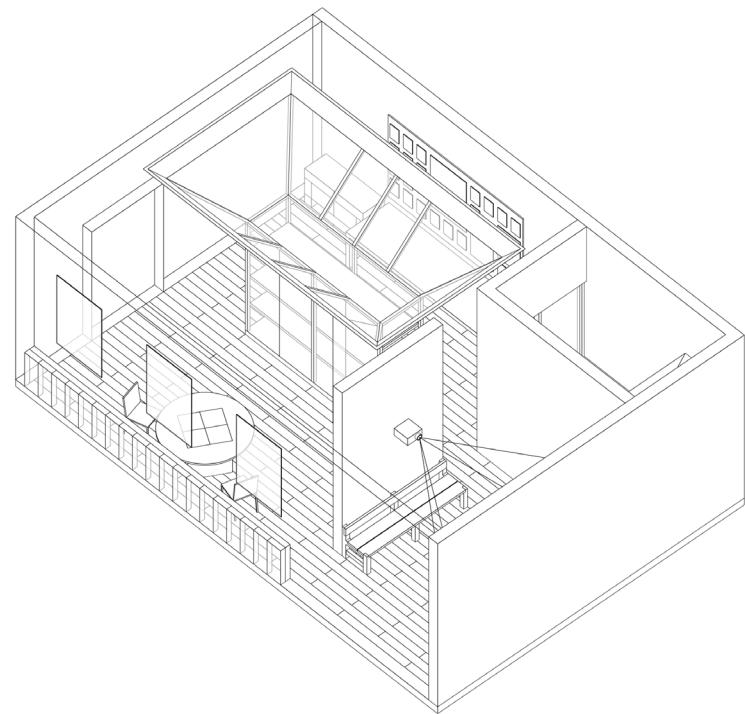
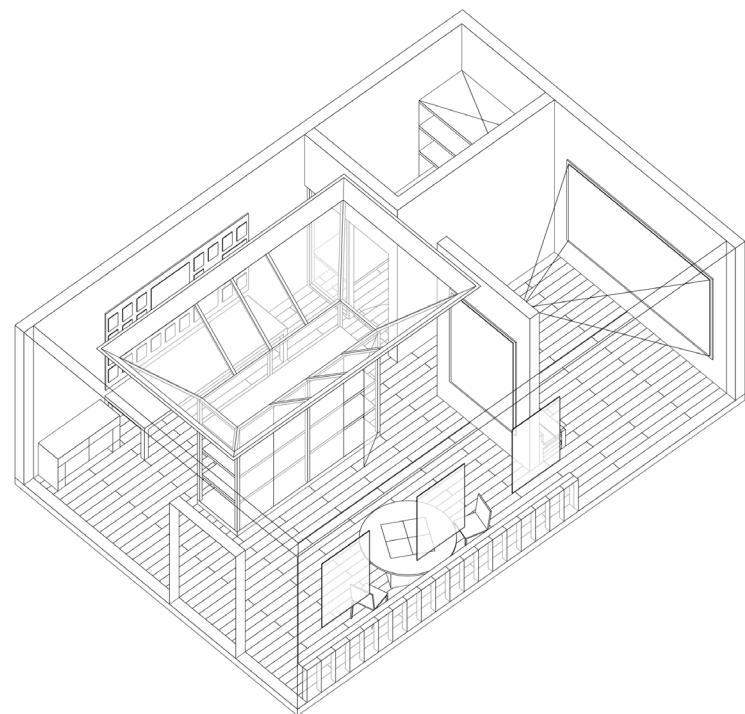
in large space

week 1.9



At the same time, I found that the architects like to use a design language of "sun greenhouse" with inclined glass, which will be the form basis of my "room design".

week 1.9



week 1.9



week 1.9



In the process of making the model, I used laser cutting MDF board and used mortise and tenon structure to complete the entire model. Because according to the architect's material preference, the light steel frame structure requires extremely high accuracy and rigidity to get a better presentation.

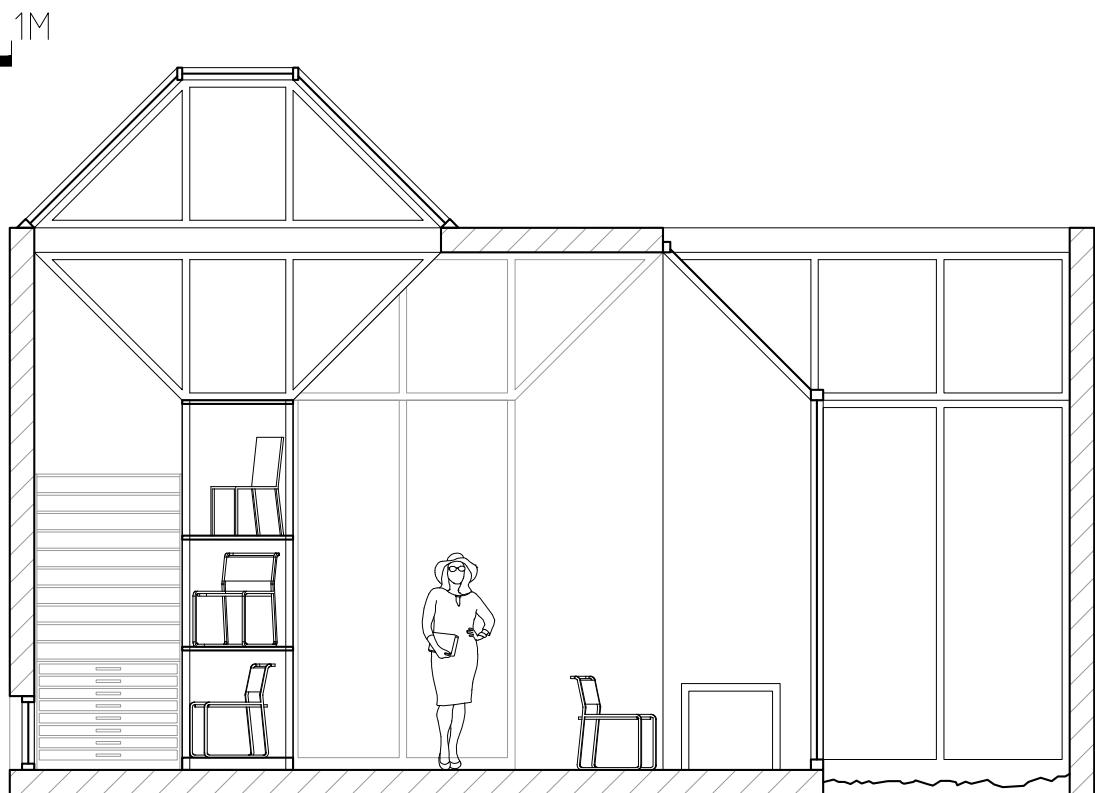
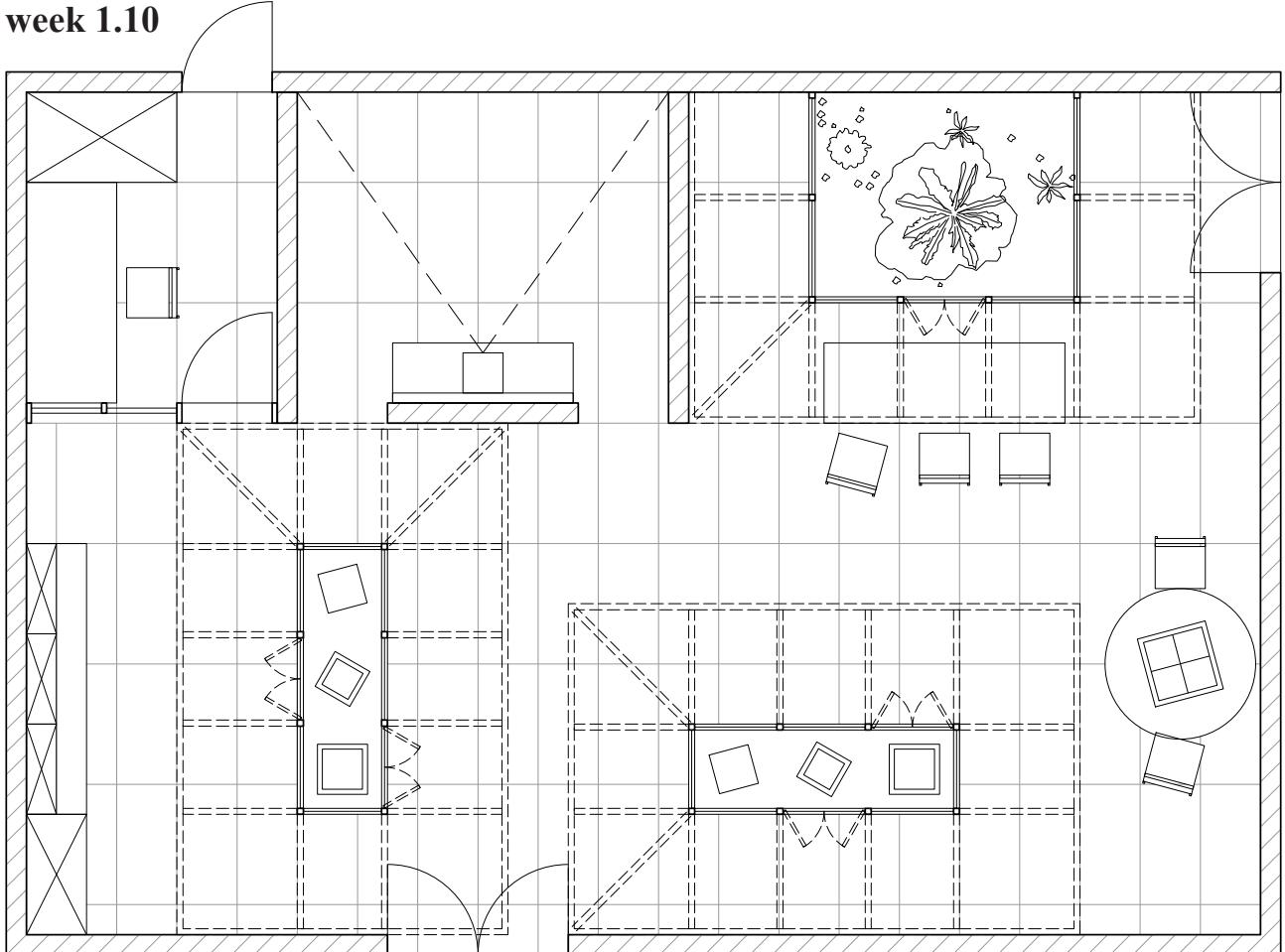
week 1.10



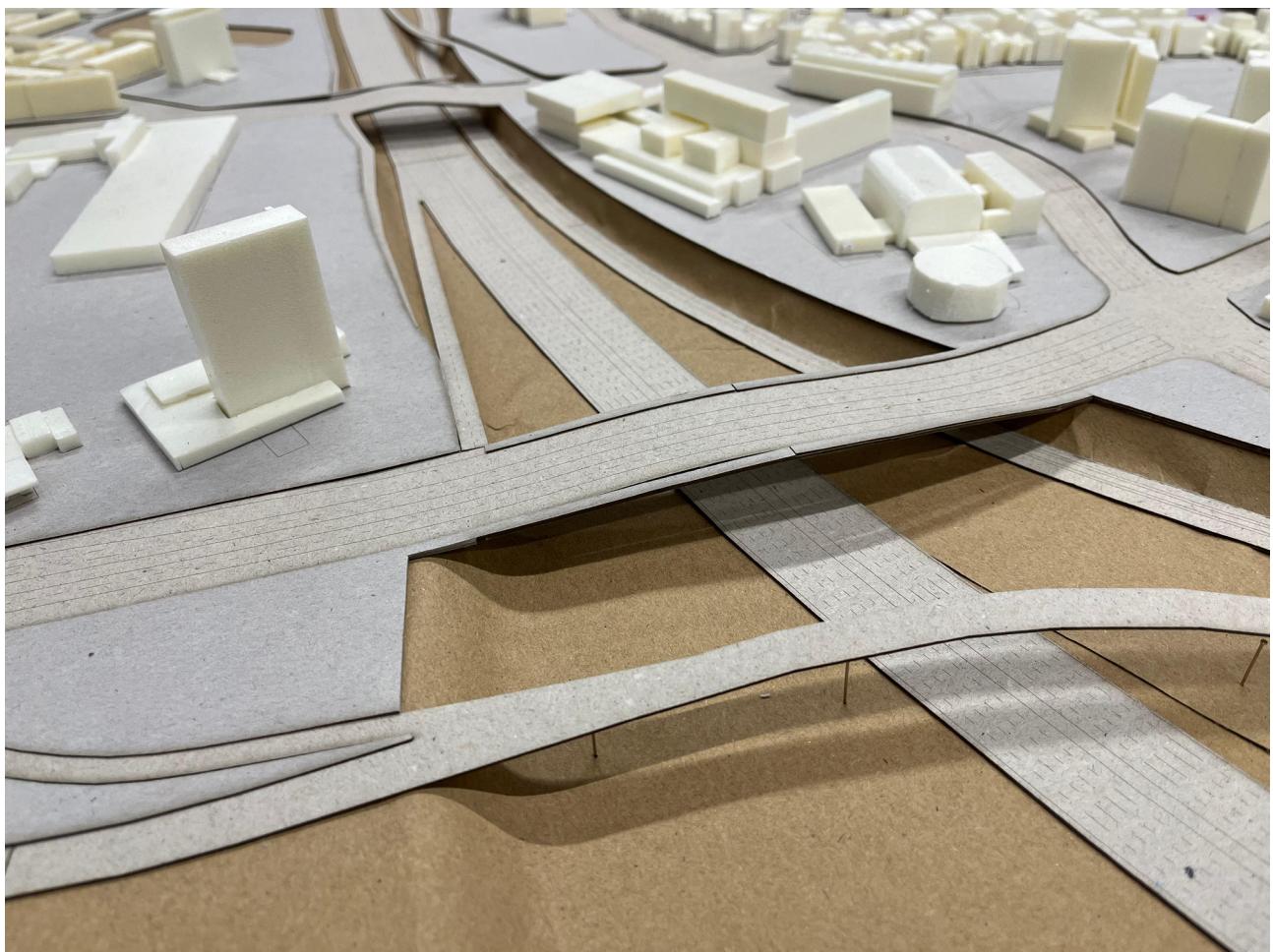
week 1.10



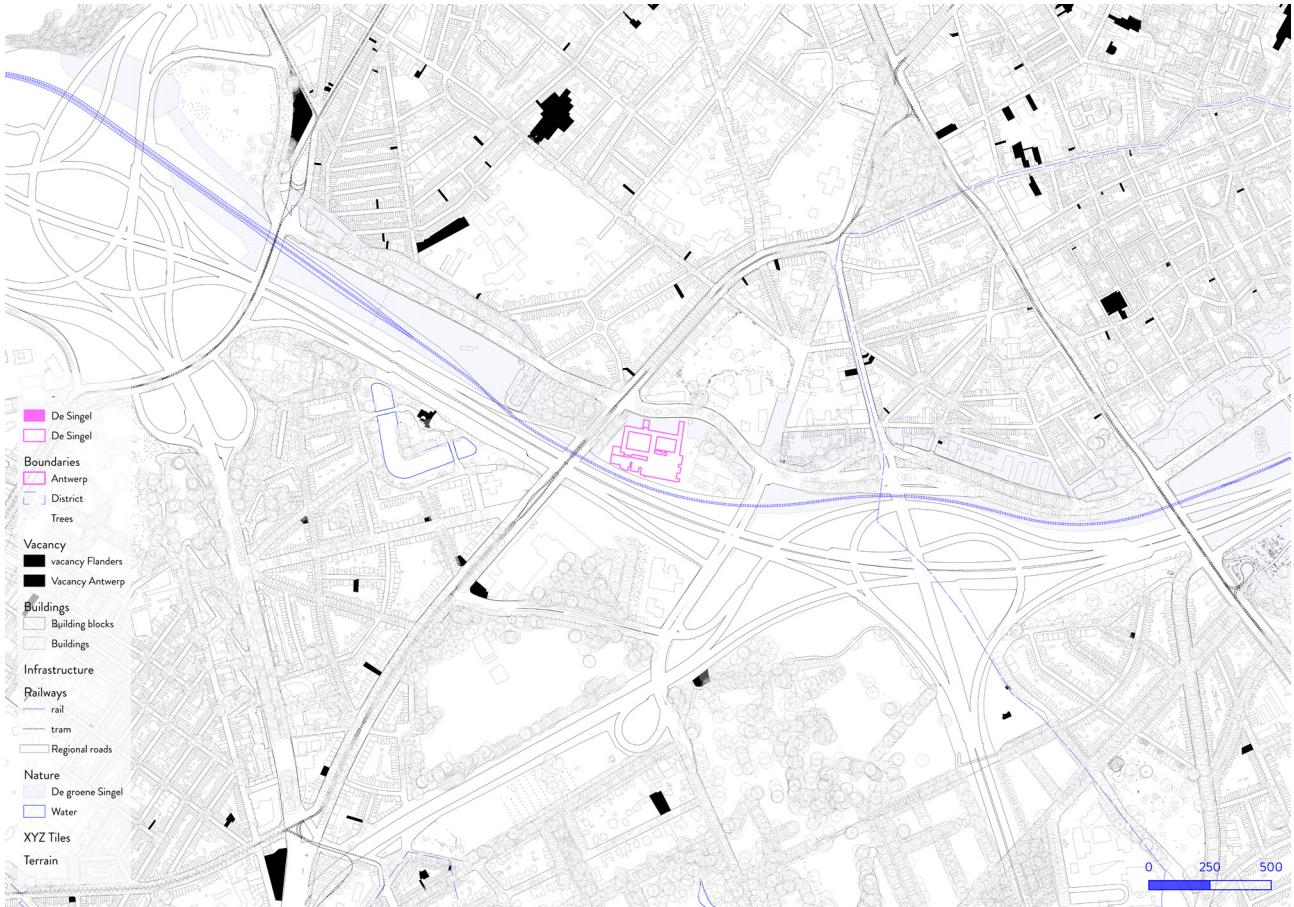
week 1.10



week 2.1



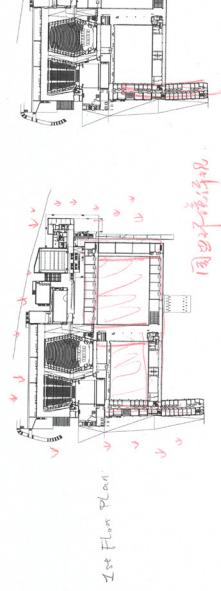
week 2.1



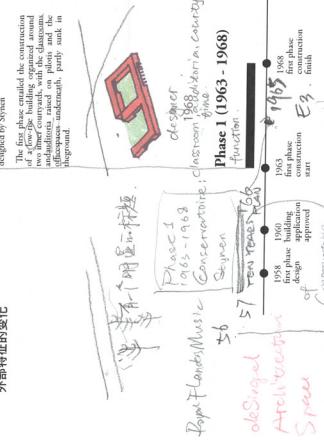
Then came the real main course of the graduation design. I first completed the production of the site model with my teammates. This is a 1:1250 model, which is exactly one-fifth of the 1:250 model of another team. The difficulty of the site model is how to deal with the height difference: a "river" containing railways and highways is adjacent to the project site, and there are several bridges connecting the "two banks". On the other side is the block of the old city of Antwerp. This makes the project site an "enclave" in the city ring green belt, and urban traffic makes one side of the site extremely divided.

week 2.2

Timeline de Singel Overview. Archiving on Paper



外部特征的変化



Phase 1 (1960-1963) designed by Sytem
The first phase entailed the construction of two floor compounds with the Dutch Room, the Auditorium, and the Blue Hall and Red Hall. The Auditorium, raised on pillars, and the Dutch Room, a sunken party room, stand throughout.

Phase 2 (1963-1968) designed by Sytem

The second phase completed the construction of a high-rise building, connecting the two floor compounds with the Dutch Room, the Auditorium, and the Blue Hall and Red Hall.

Phase 3 (1985-1987) designed by Sytem

In a second phase, the complex was completed with the addition of a high-rise building, the Blue Hall and Red Hall, and a third floor.

Phase 4 (1996-2000) designed by De Meyer

The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 4.1 (1996-2000) designed by De Meyer

The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 4.2 (2004-2010) designed by De Meyer

The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 4.3 (2016-2021) designed by De Meyer

The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 5 (2021-Present) designed by De Meyer

The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 6 (2021-Present) designed by De Meyer

The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 7 (2021-Present) designed by De Meyer

The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 8 (2021-Present) designed by De Meyer

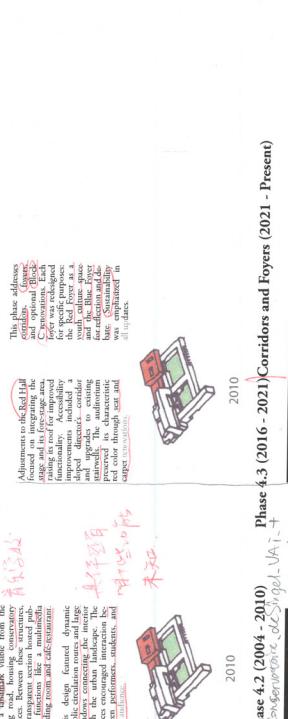
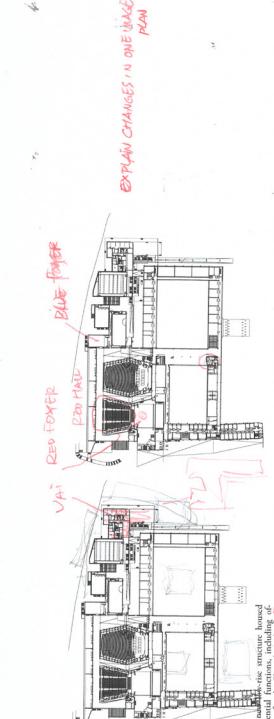
The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 9 (2021-Present) designed by De Meyer

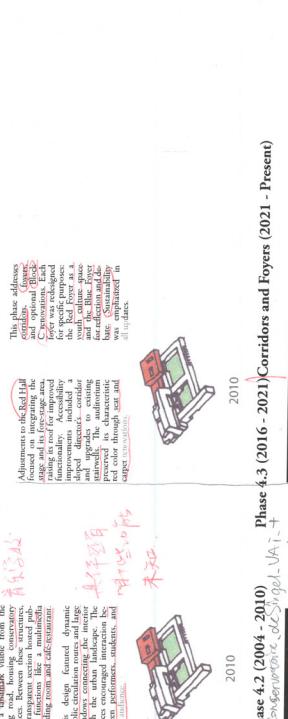
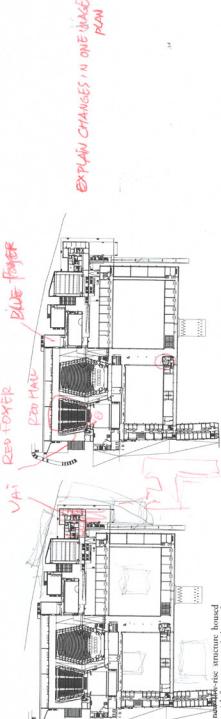
The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.

Phase 10 (2021-Present) designed by De Meyer

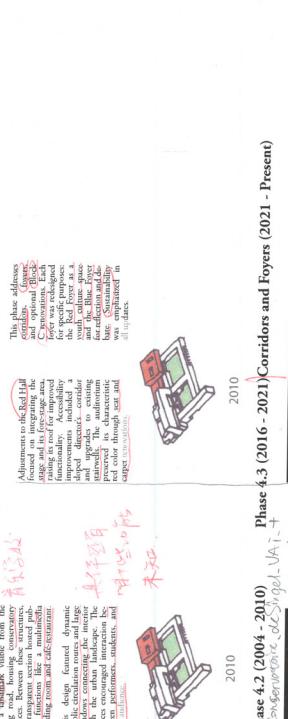
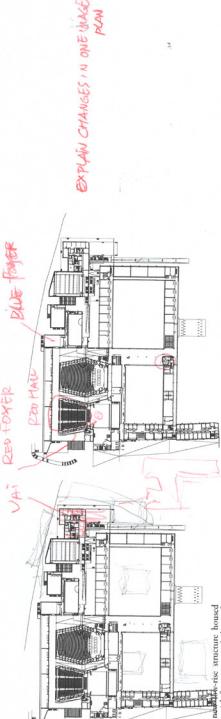
The complex was further expanded with a third floor, including a sunken study, a vestibule, and a staircase.



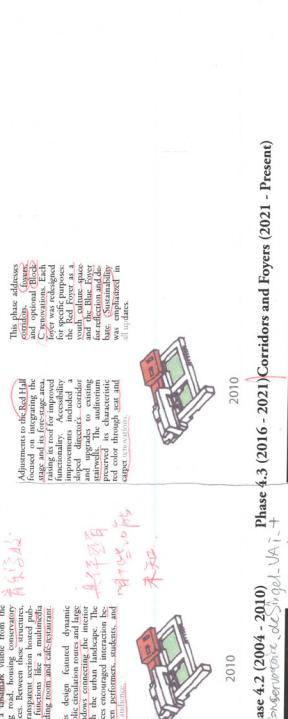
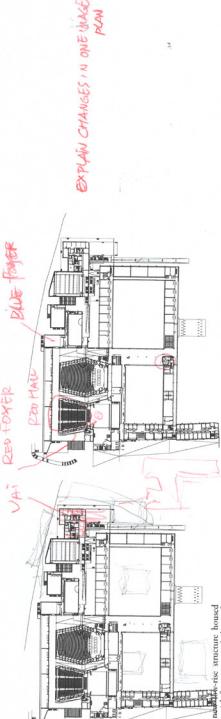
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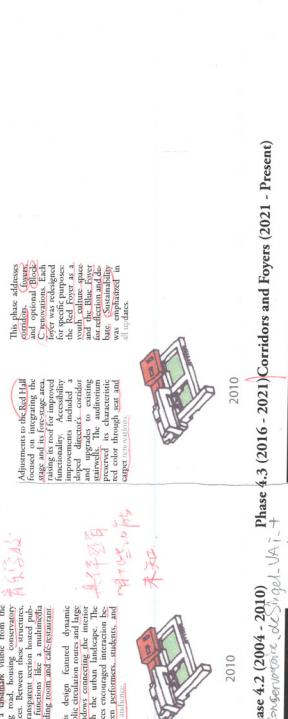
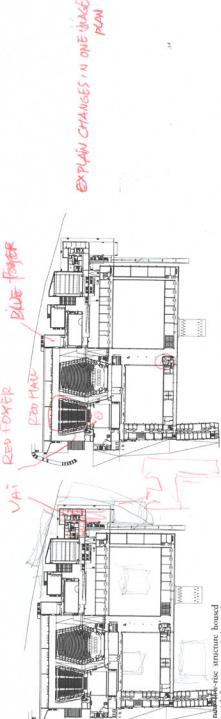
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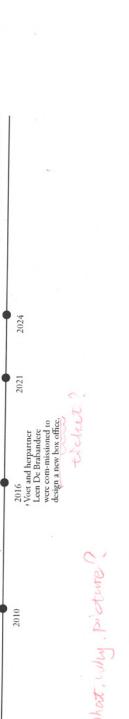
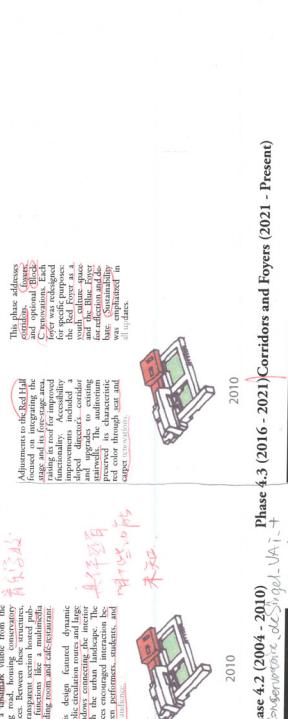
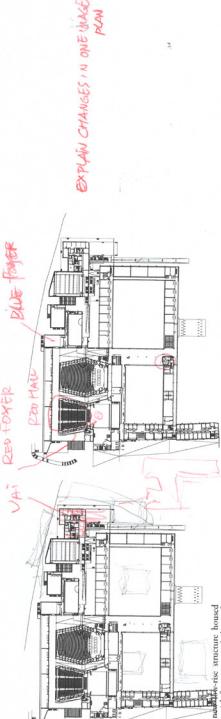
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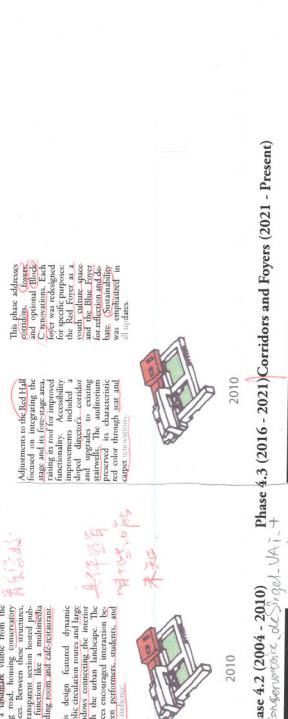
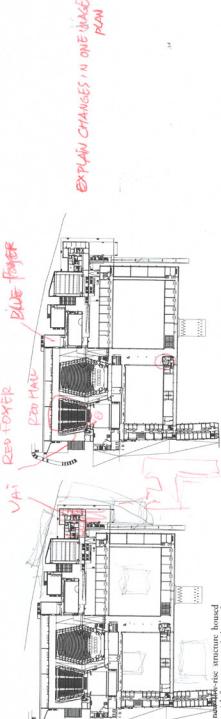
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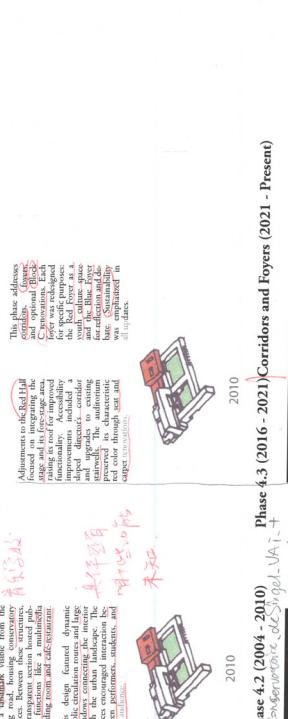
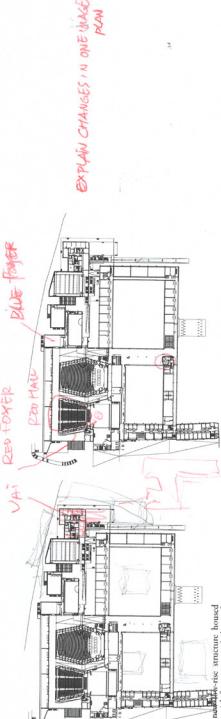
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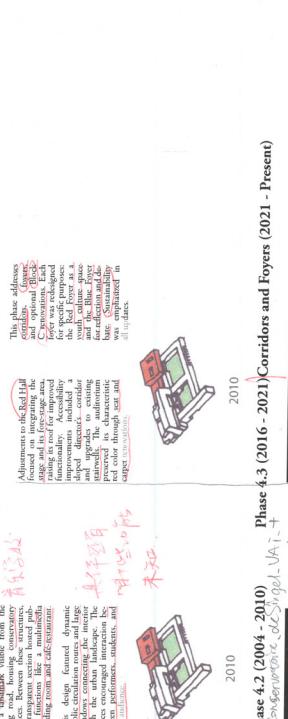
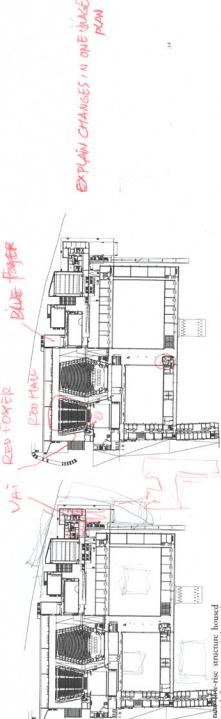
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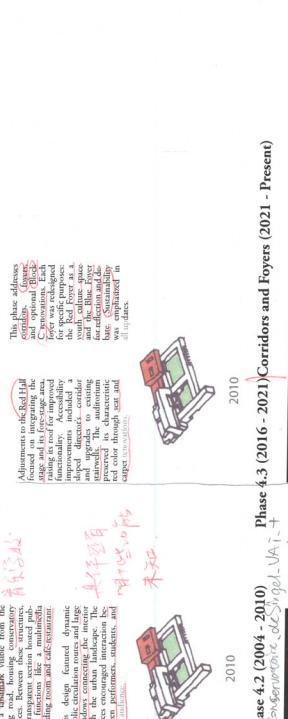
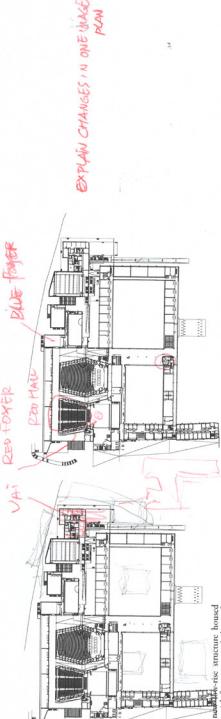
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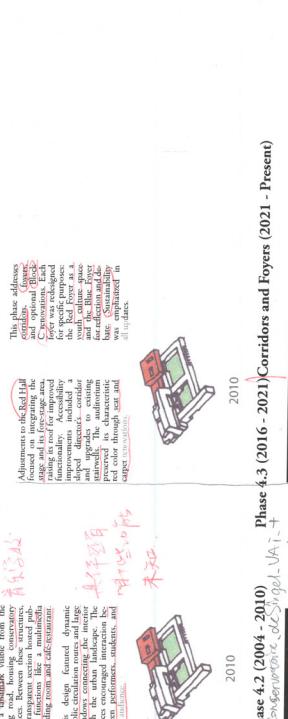
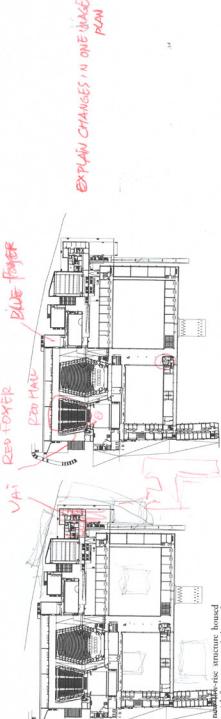
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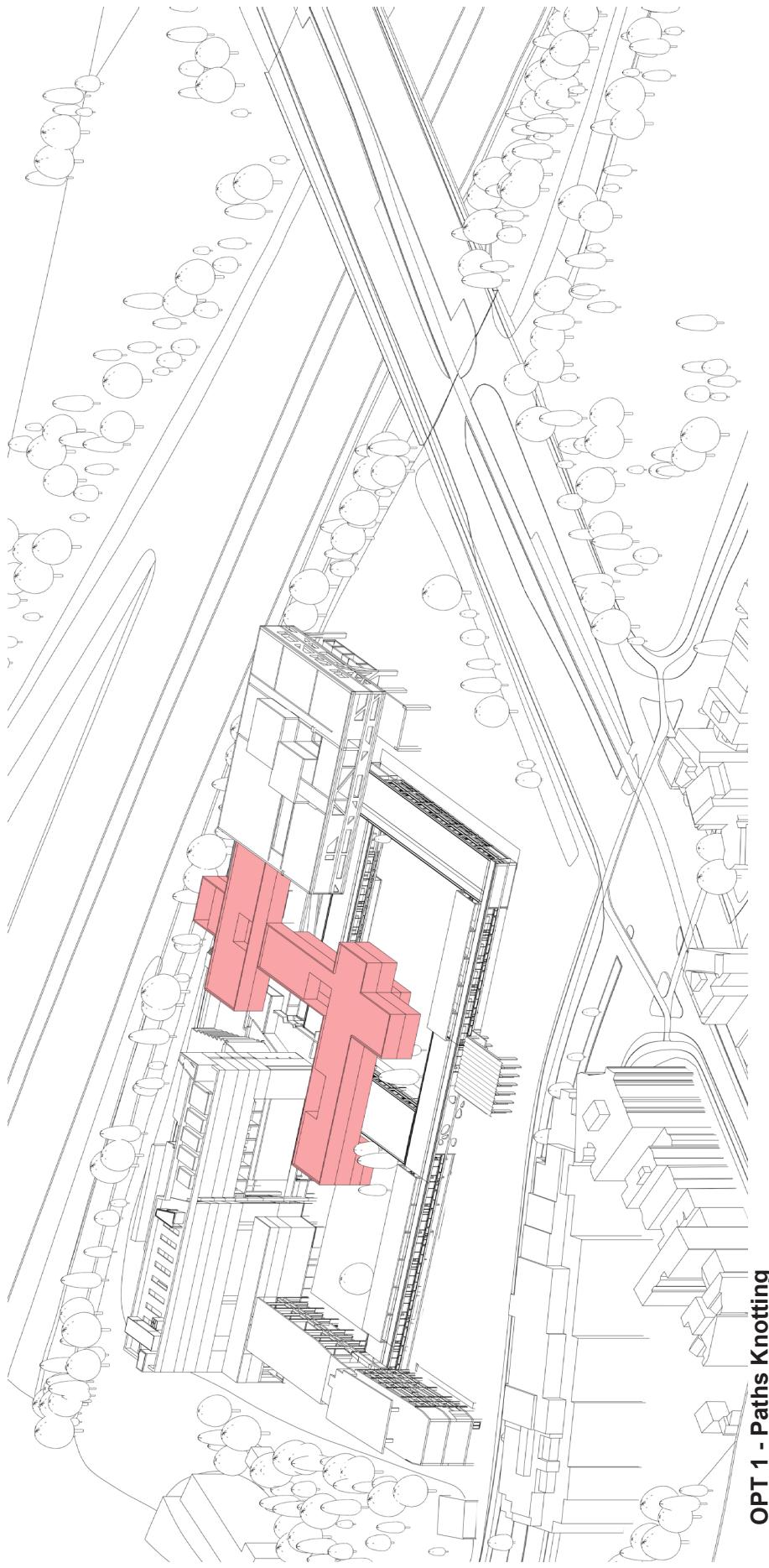
Timeline de Singel Overview. Archiving on Paper



Timeline de Singel Overview. Archiving on Paper



week 2.3



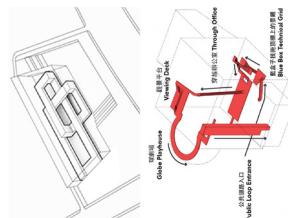
OPT 1 - Paths Knotting

Strategy:

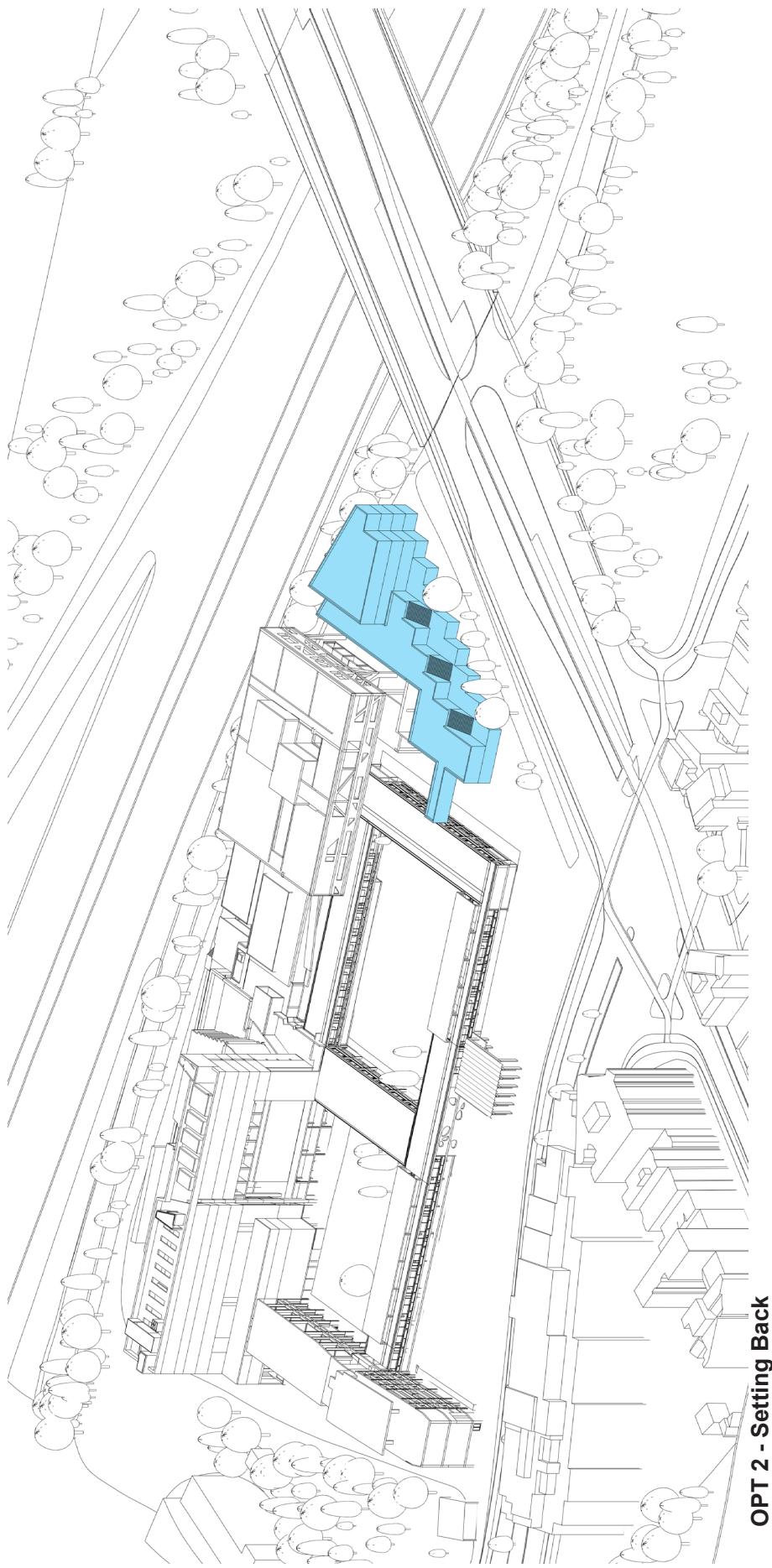
Use the original urban texture, scale, and ground floor overhead.

Knot new and old flow lines to make them independent and relatively connected.

Will not destroy the original skyline.



week 2.3



OPT 2 - Setting Back

Strategy:

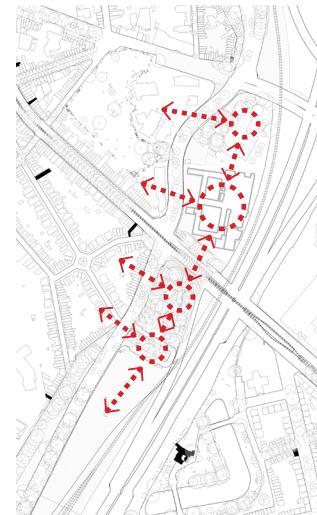
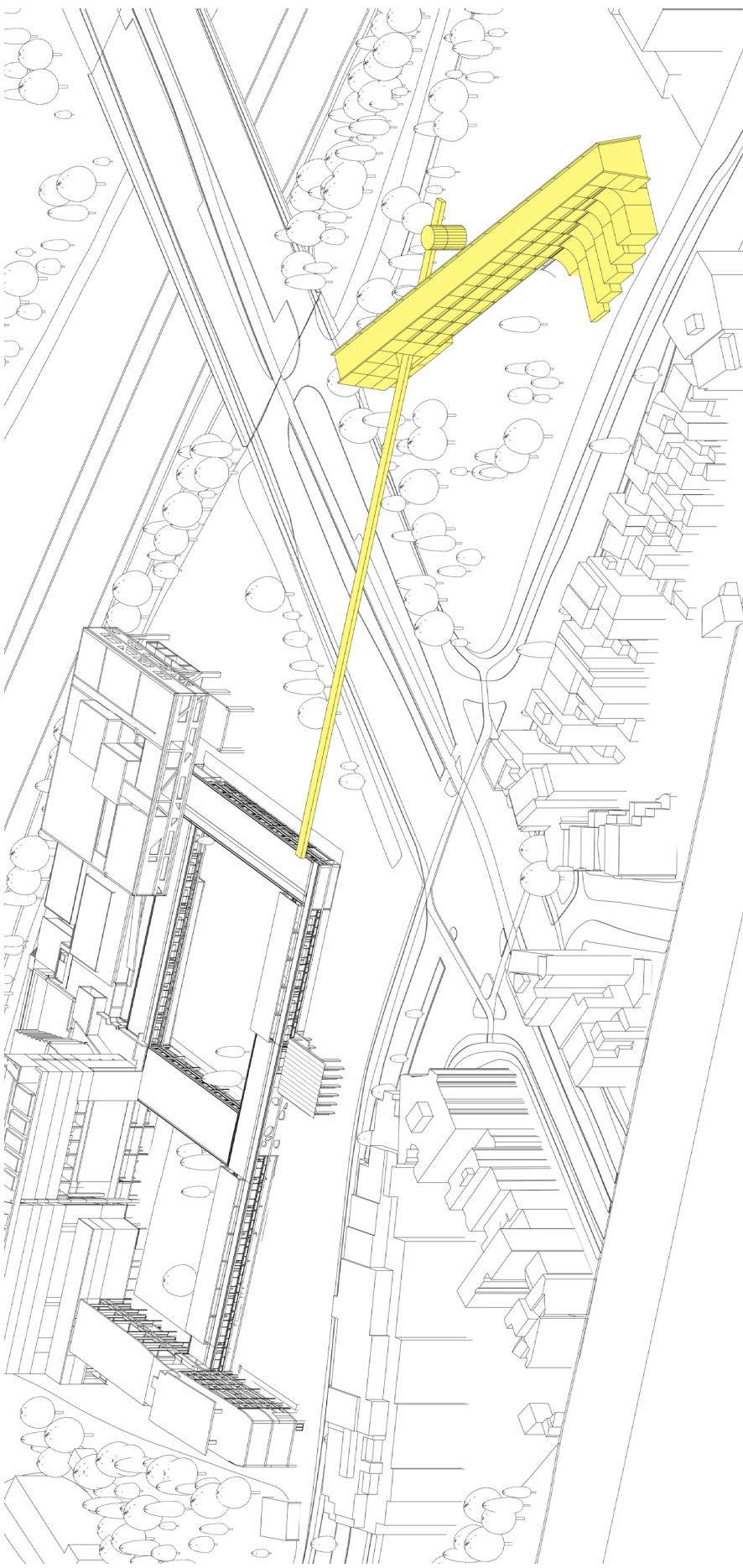
Activate the gray space between the wooden box and the concrete bar to enhance its public.

Underground garage making the corner space more open.

The terrace and stairs continue the original trend.



week 2.3



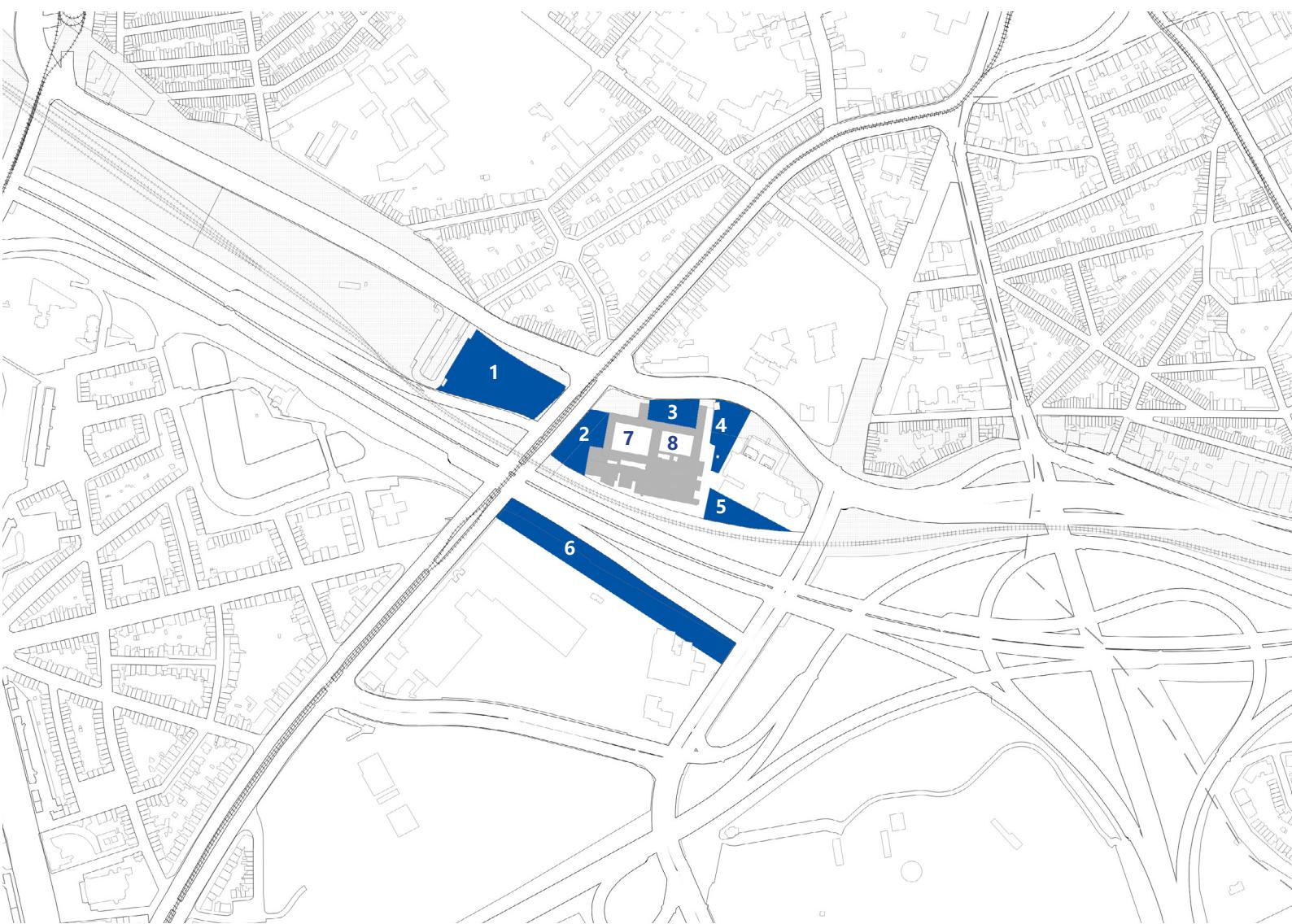
OPT 3 - Shelf

Strategy:

Connect urban enclaves.

Form a long block of greenery and urban infrastructure.

Hide the building in a small forest.



some thought about the site:

Site1: would have less relation and less positive effect on DeSingel.

Site2: at least 3 floors, would hide Beel and the restaurant behind.

Site3: at least 4 floors, would hide modernism opera house behind.

Site4: relatively independent, but on a castle-like hill.

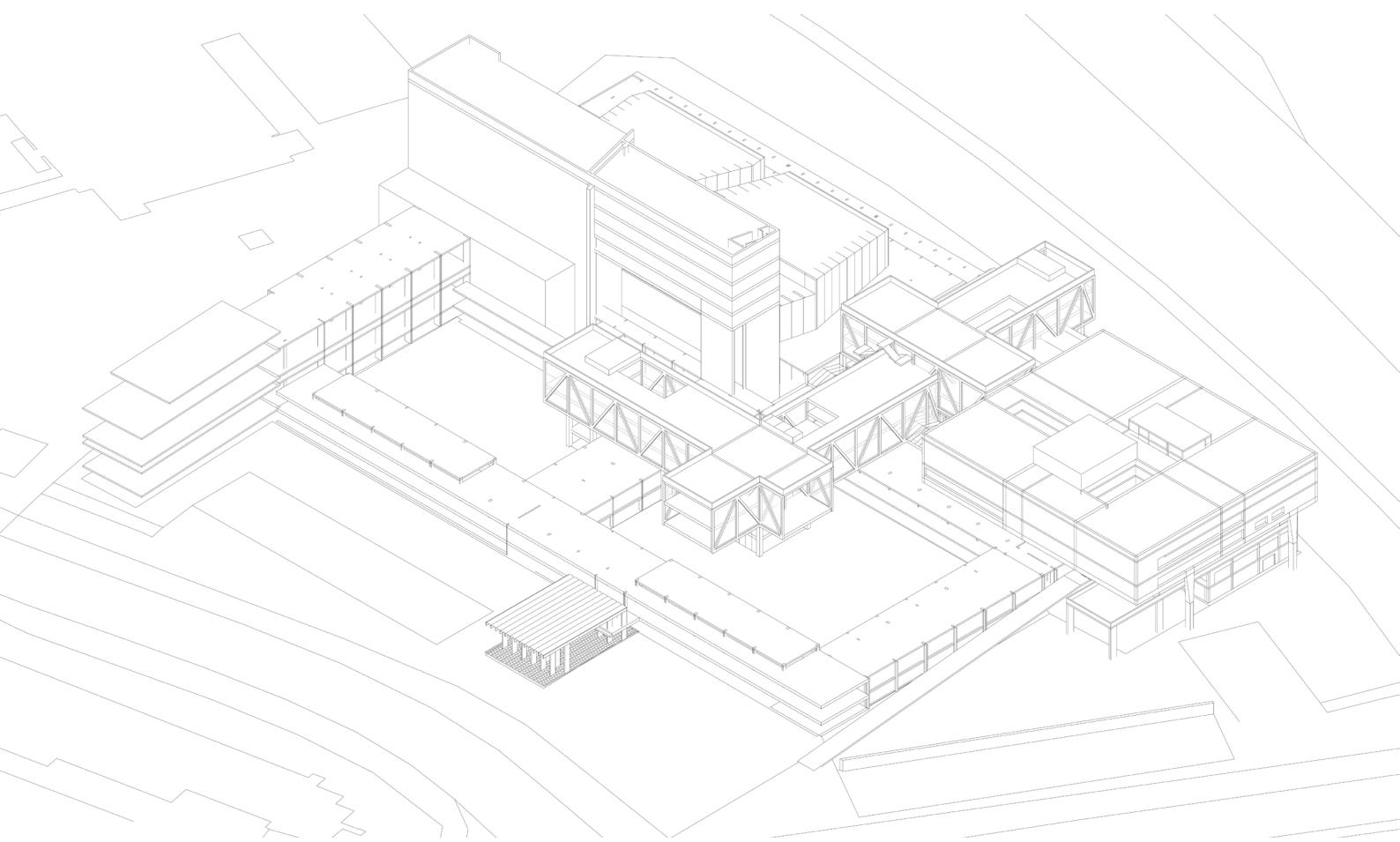
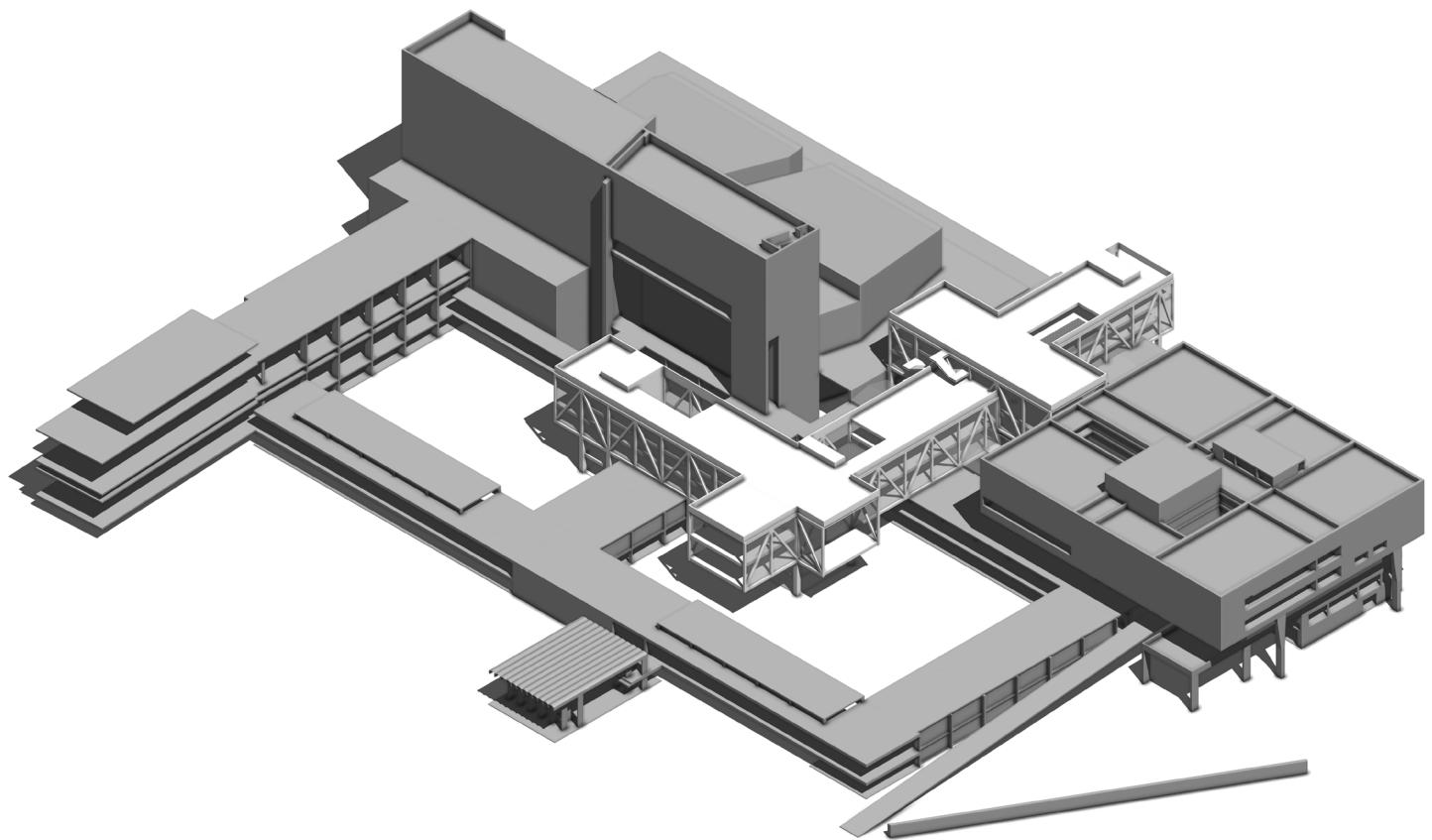
Site5: on a castle-like hill. lack of physical stability because of shaking.

Site6: shaking environment, less relation and less positive effect on DeSingel.

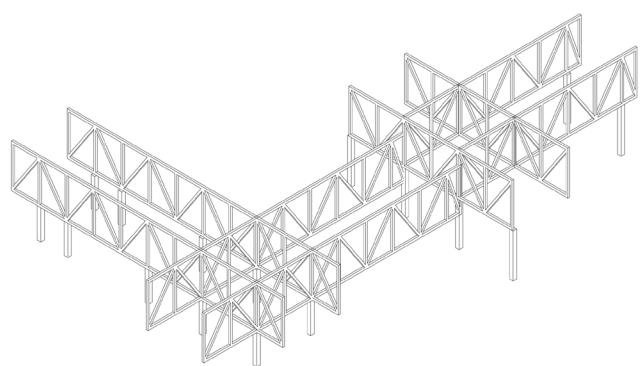
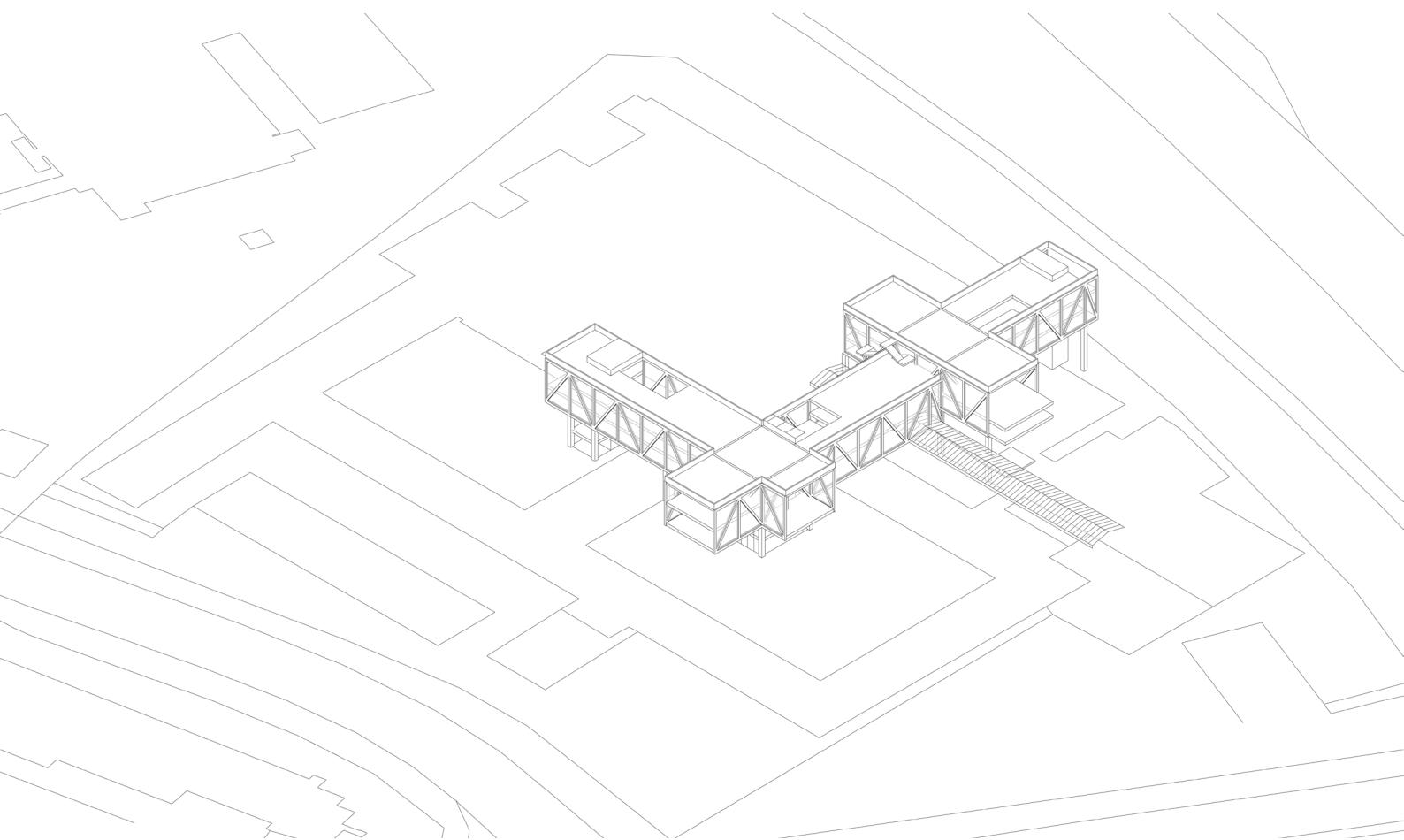
Site7: bigger yard, can be site for concert.

Site8: smaller yard, more introvert, at least 4 floors, would hide landmark behind.

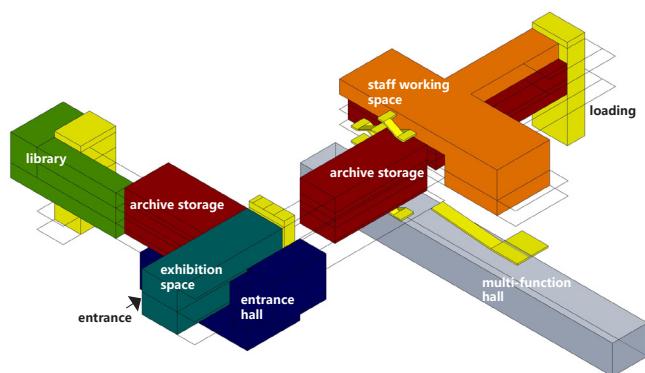
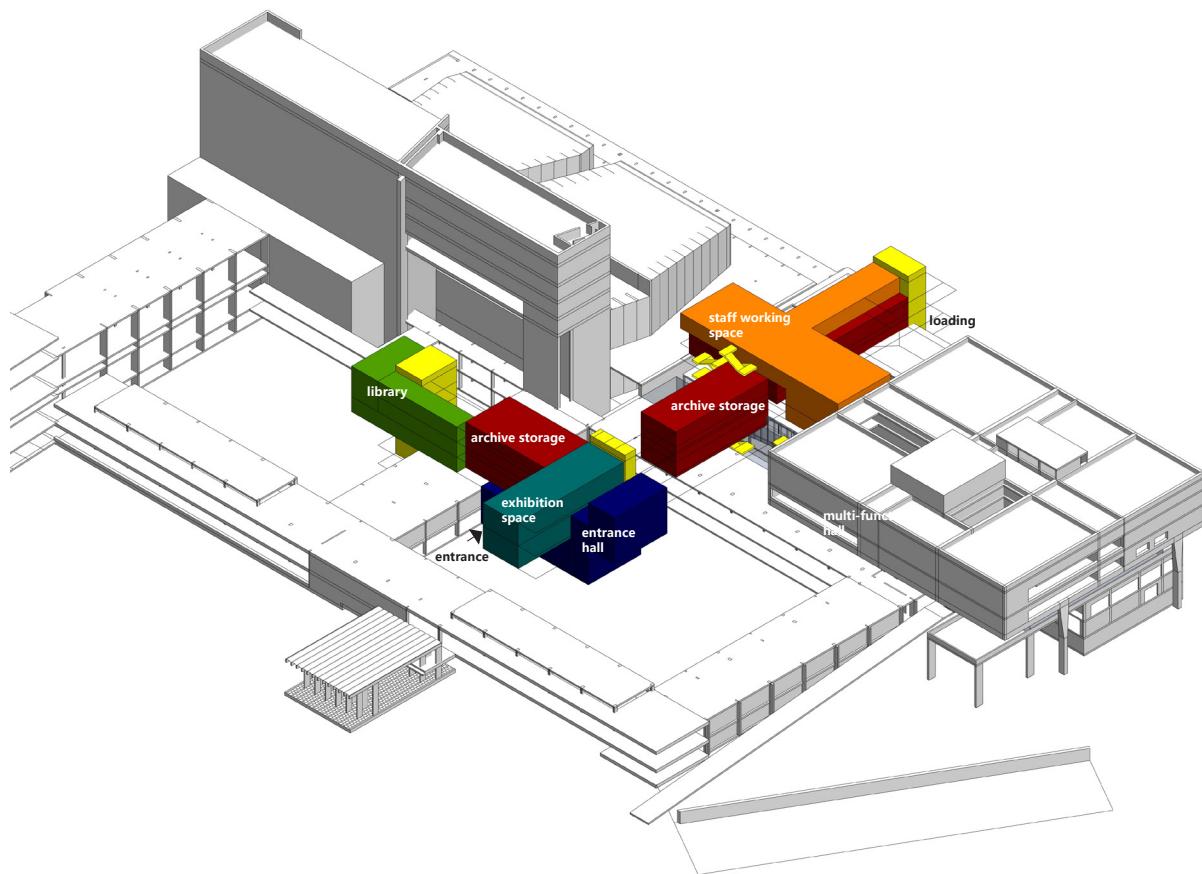
week 2.4



week 2.4



week 2.4



Occupancy, shared spaces

Main users



Artesis Plantijn University College educating 600 students



Management of the building - autonomous organisation responsible for the cultural programme



Antwerp is the regional division of Radio 2 and is part of the Flemish Radio and Television Broadcasting Organisation



Figure I.3.61: Public axis (flickr.com, 2015).



Figure I.3.62: Artistic foyer (MH, 23/05/2014).



Figure I.3.63: Students' refectory (MH, 23/05/2014).

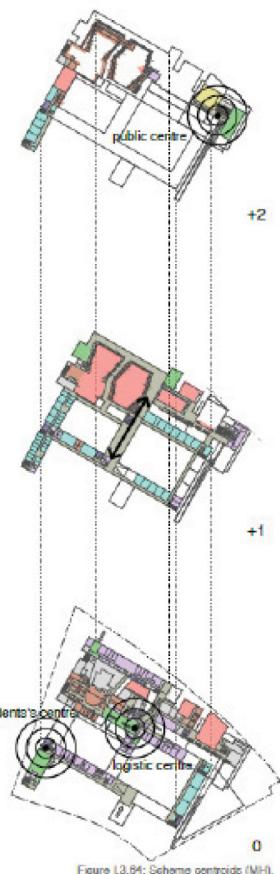
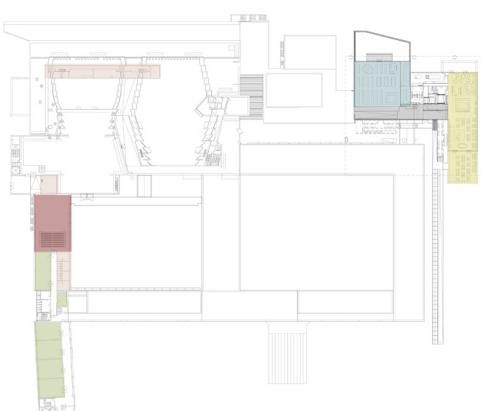
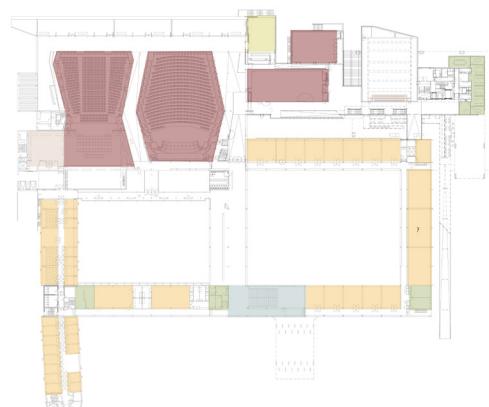
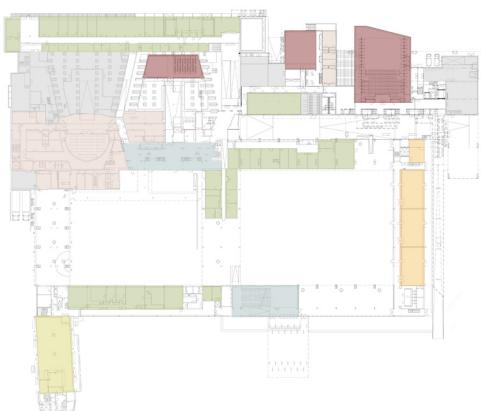


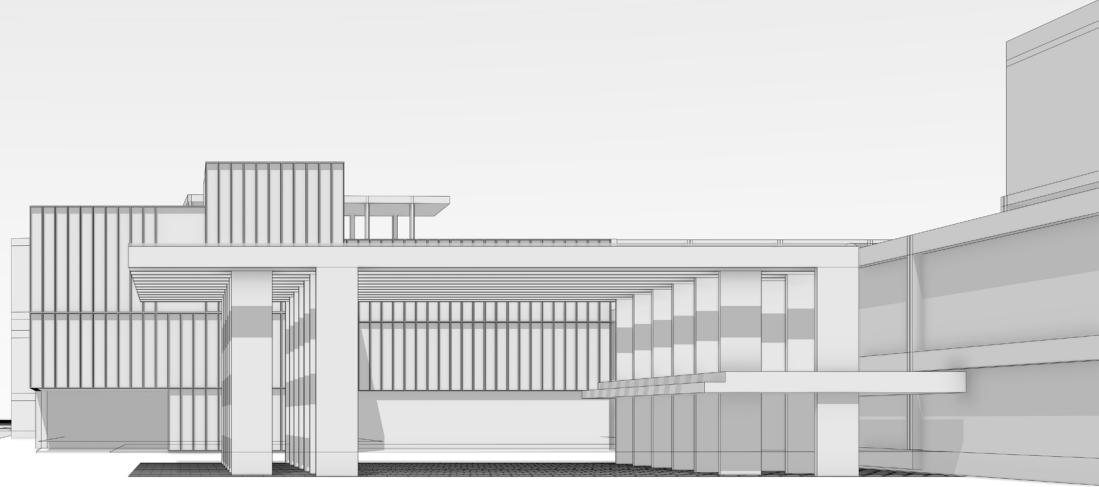
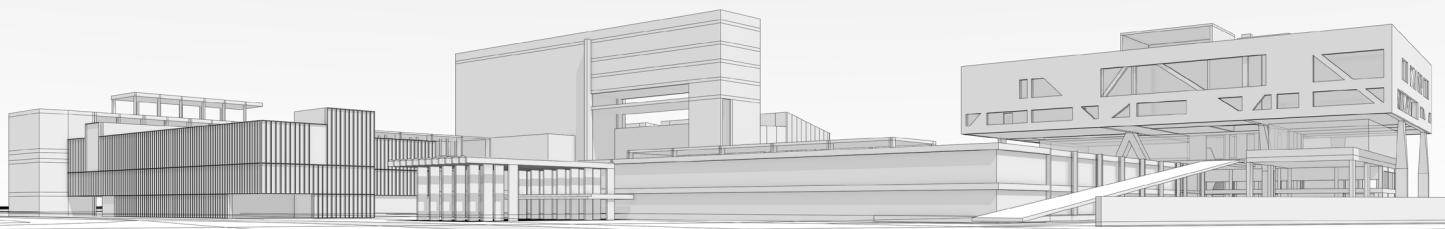
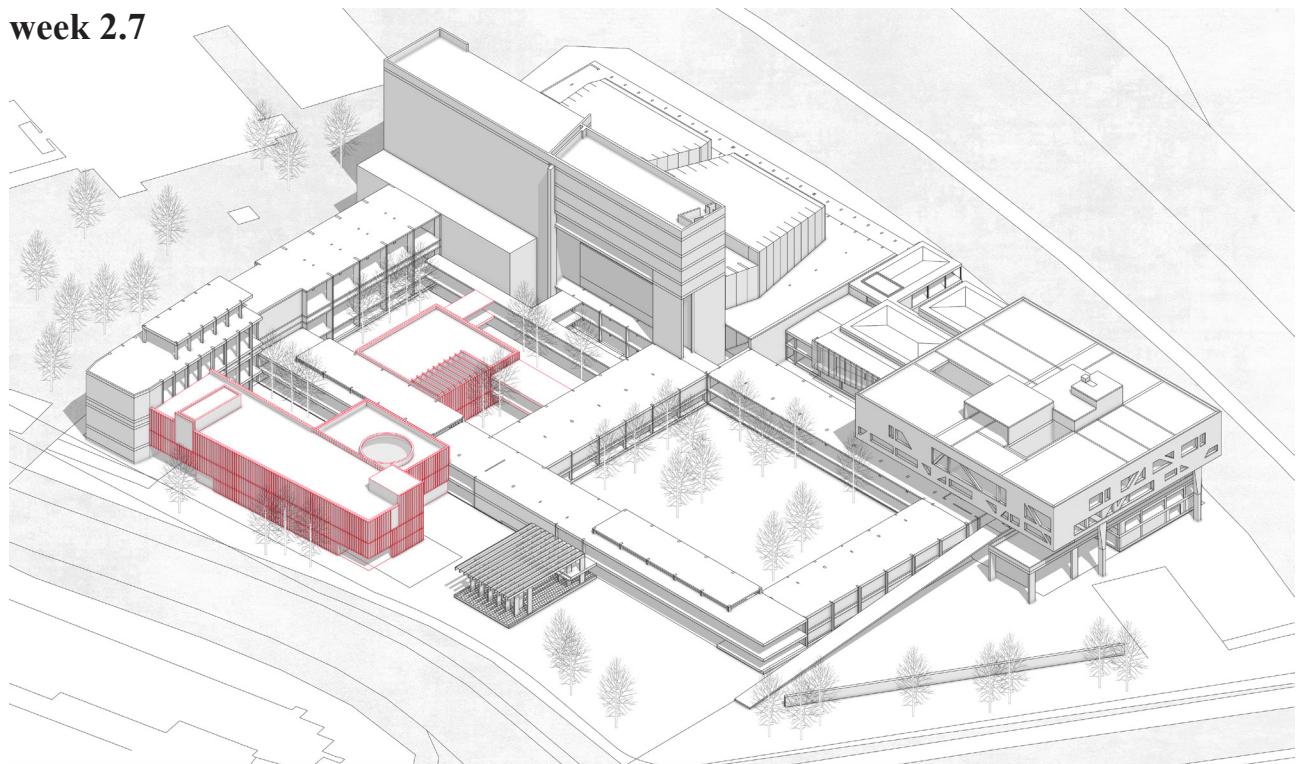
Figure I.3.64: Schema centroids (MH).



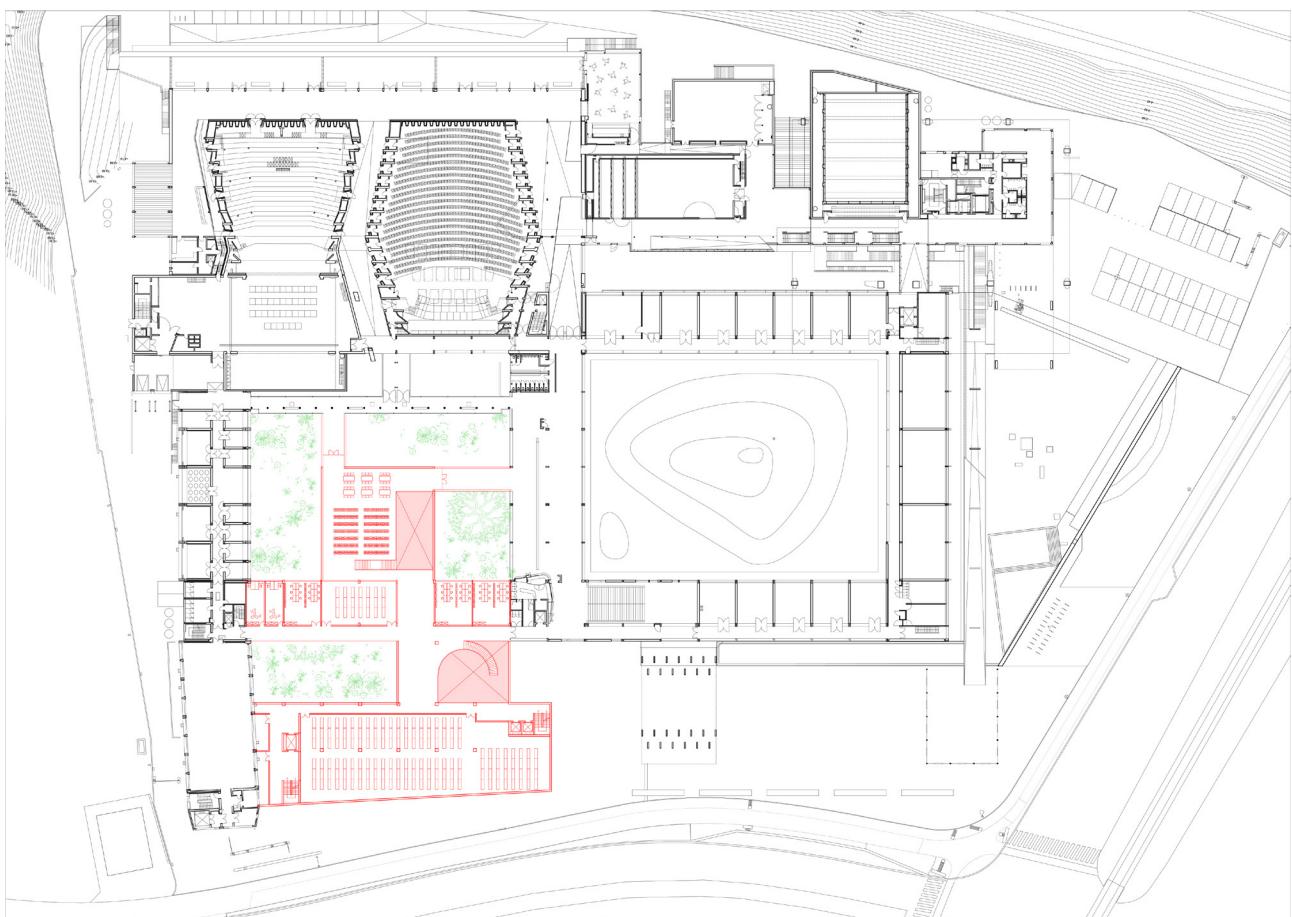
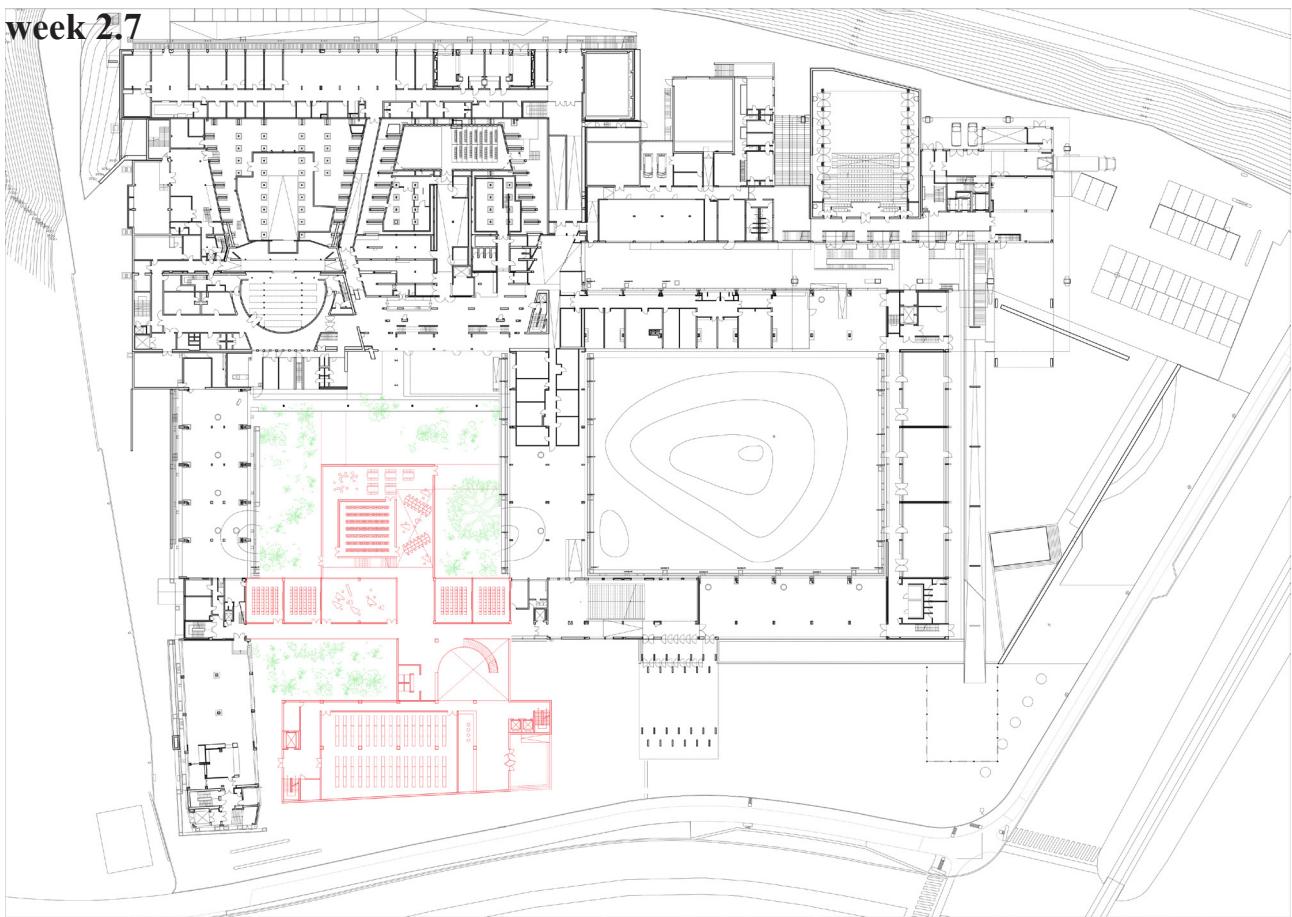
● Entrance hall
 ● Library
 ● Office
 ● Hall
 ● Backstage
 ● Classroom
 ● Restaurant
 ● Logistic



week 2.7

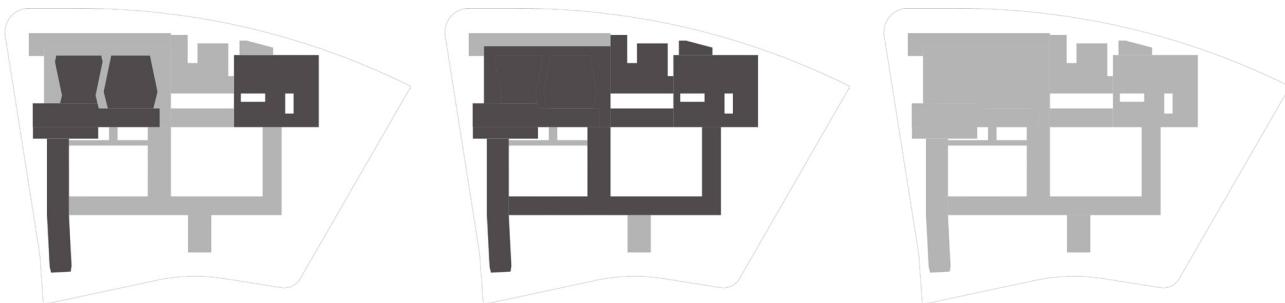


week 2.7

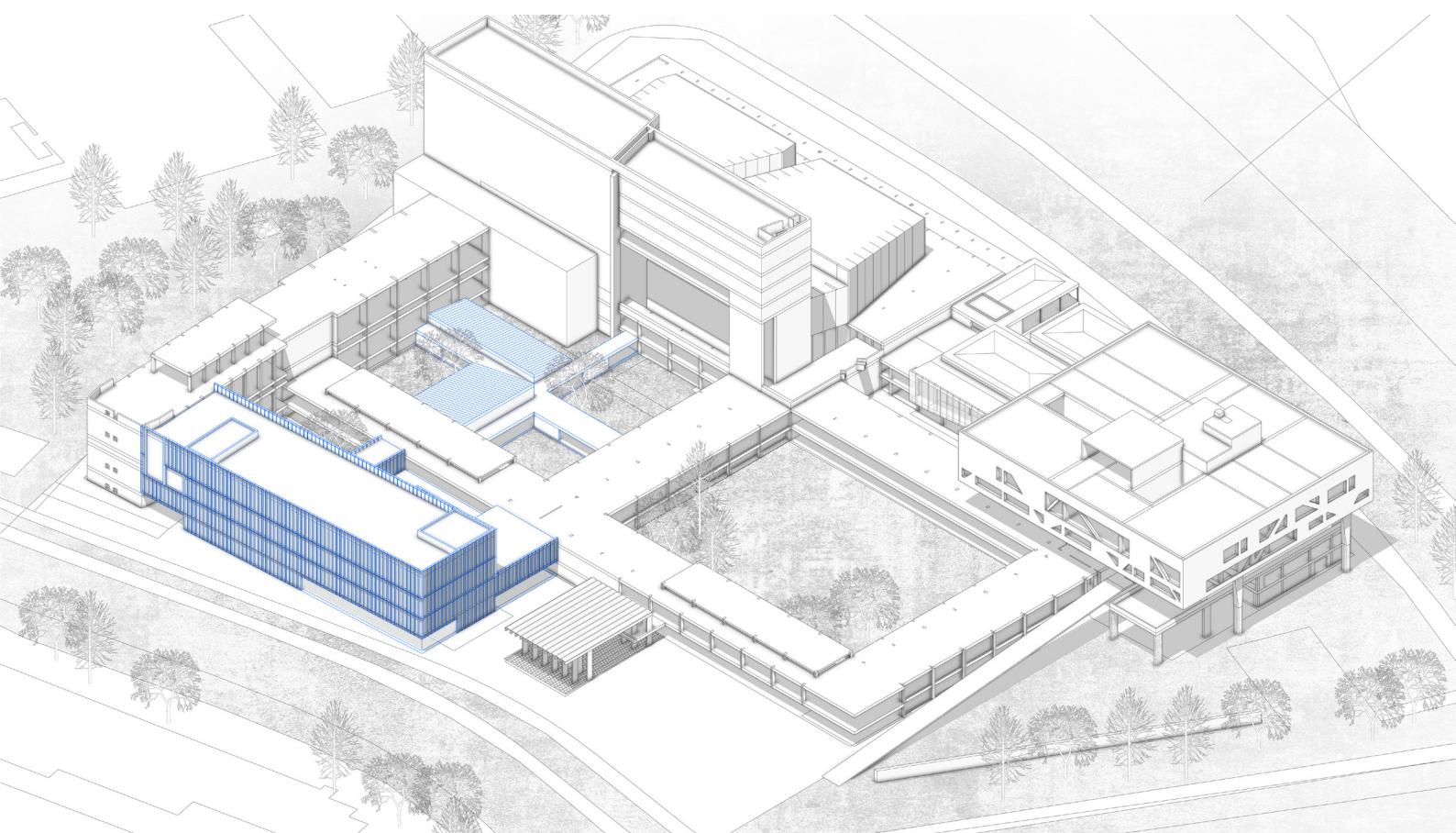
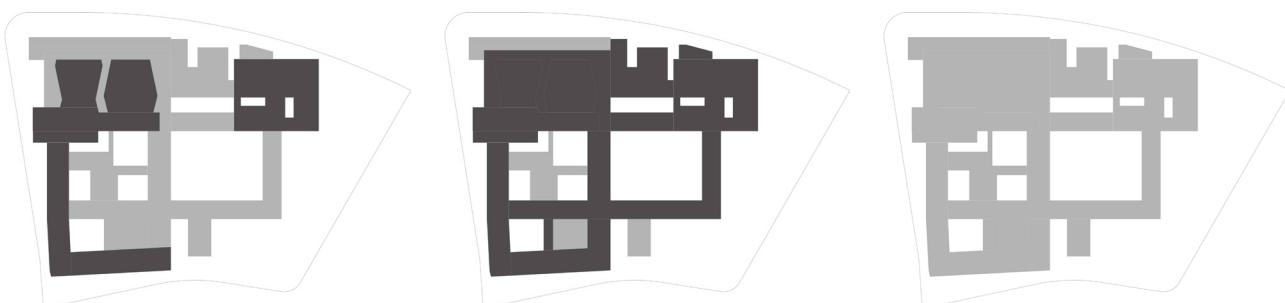


week 2.8

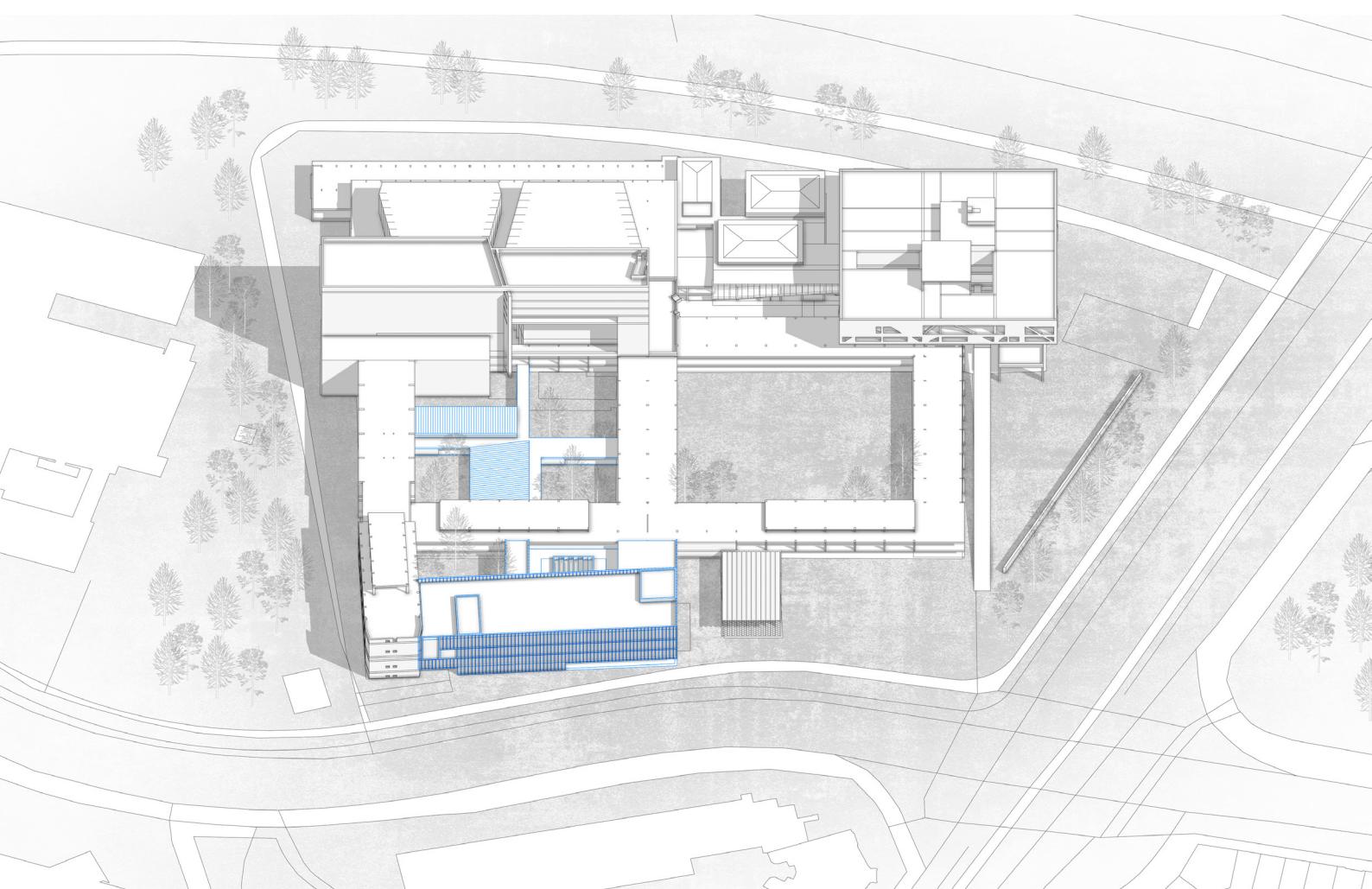
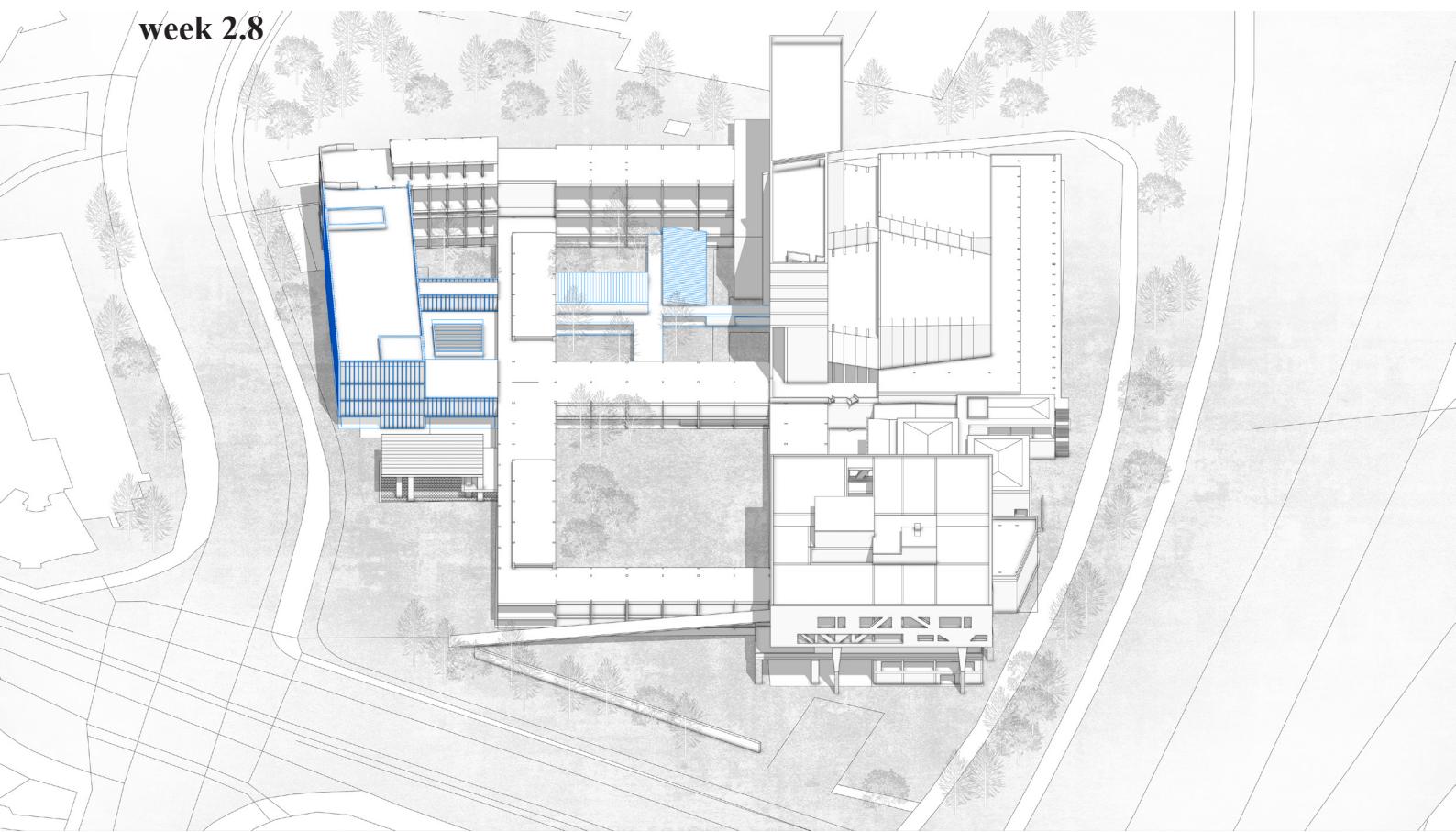
Before

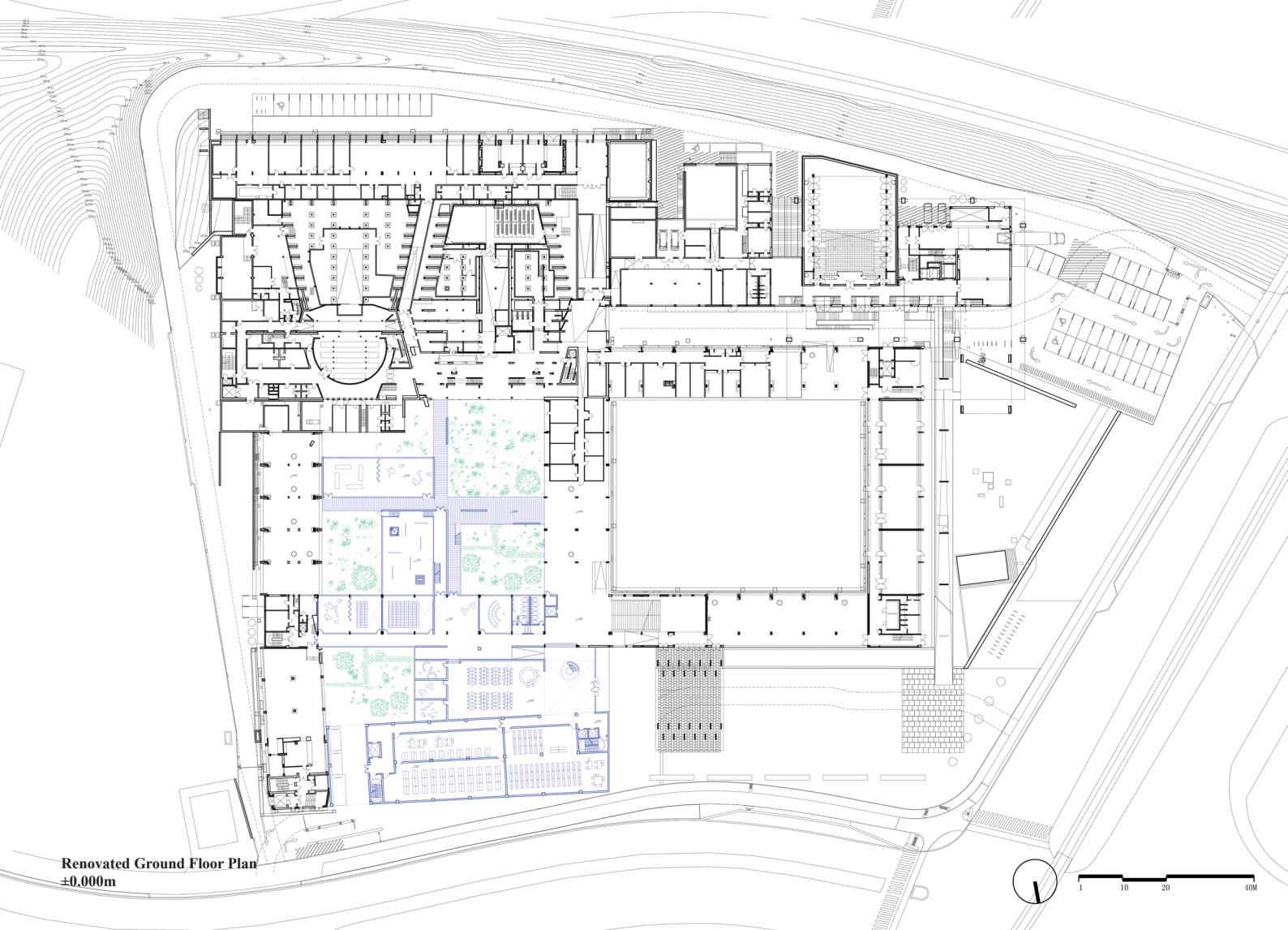
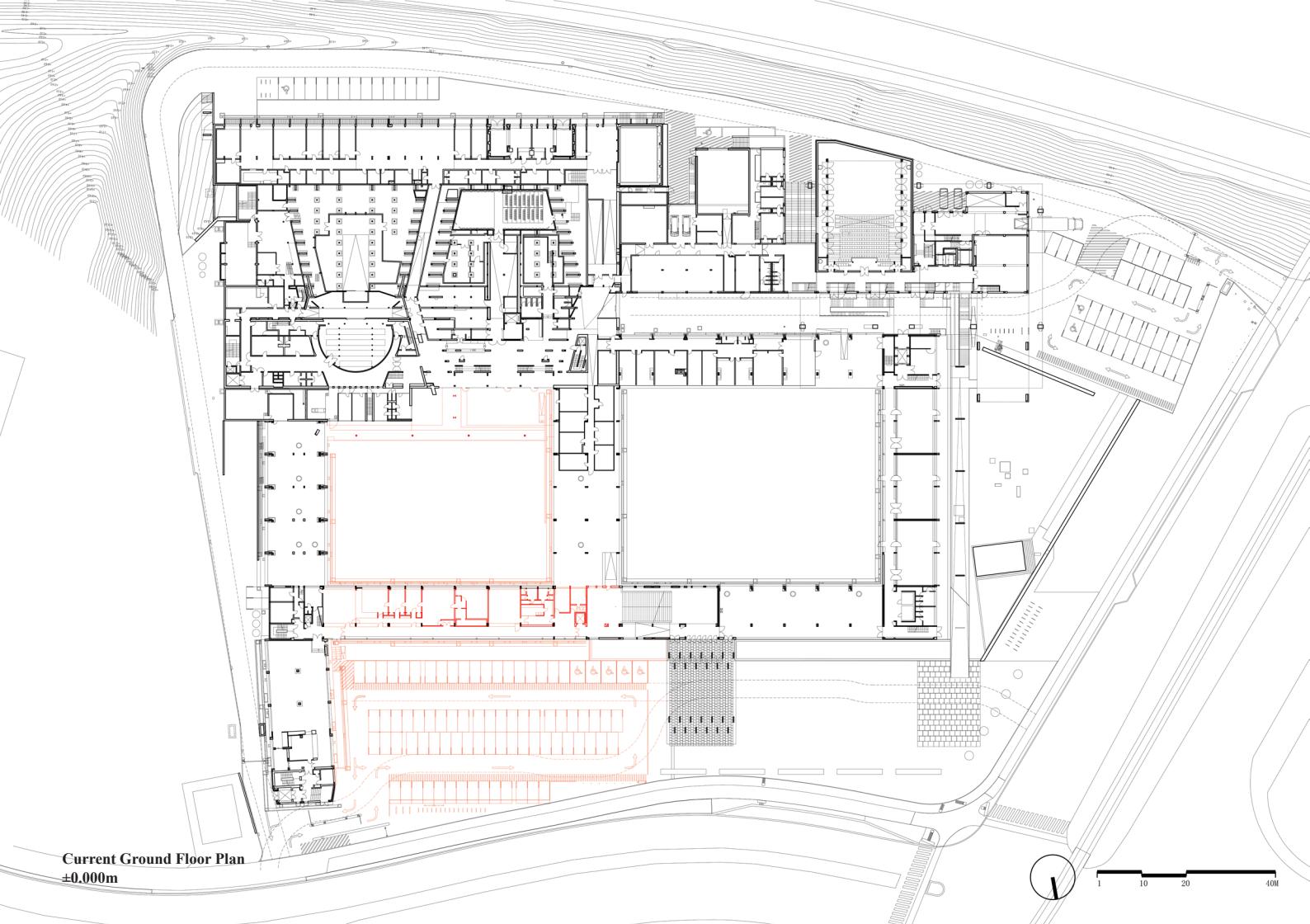


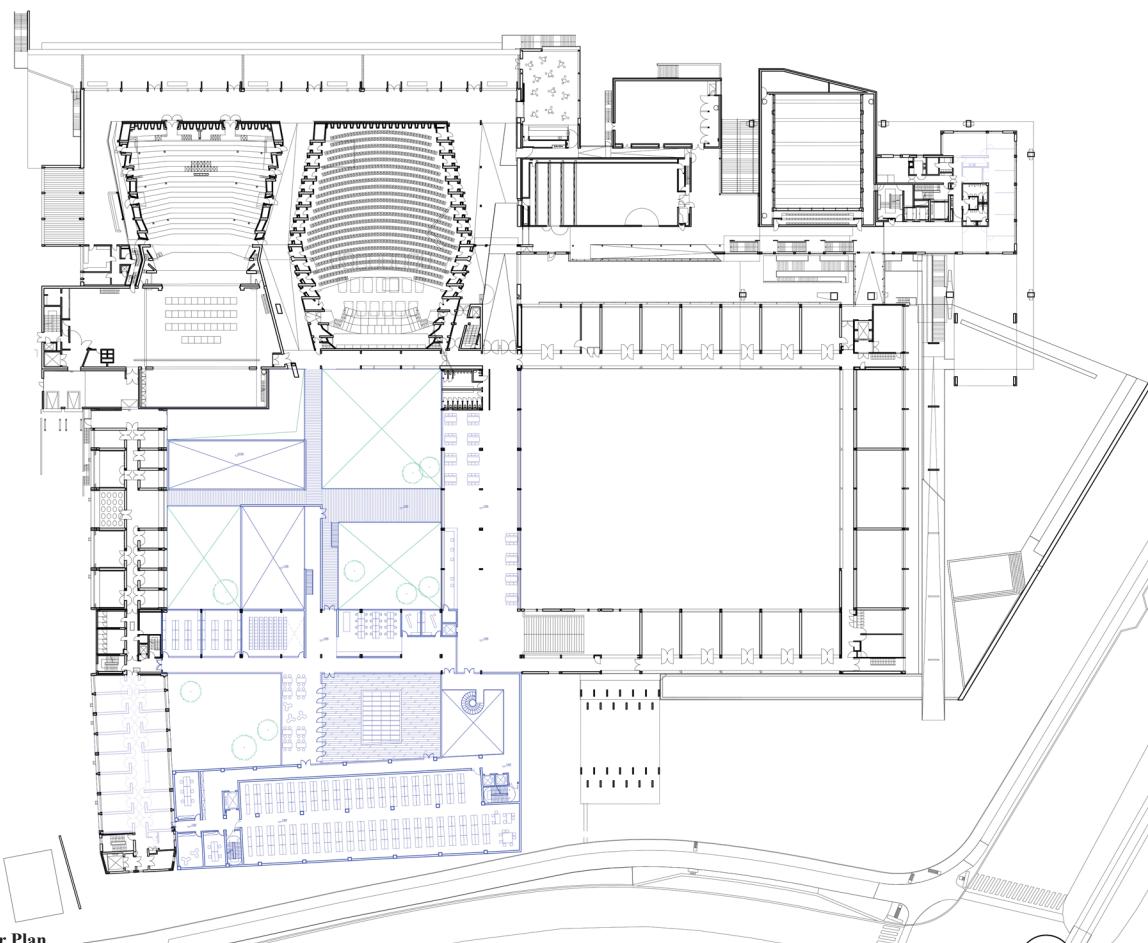
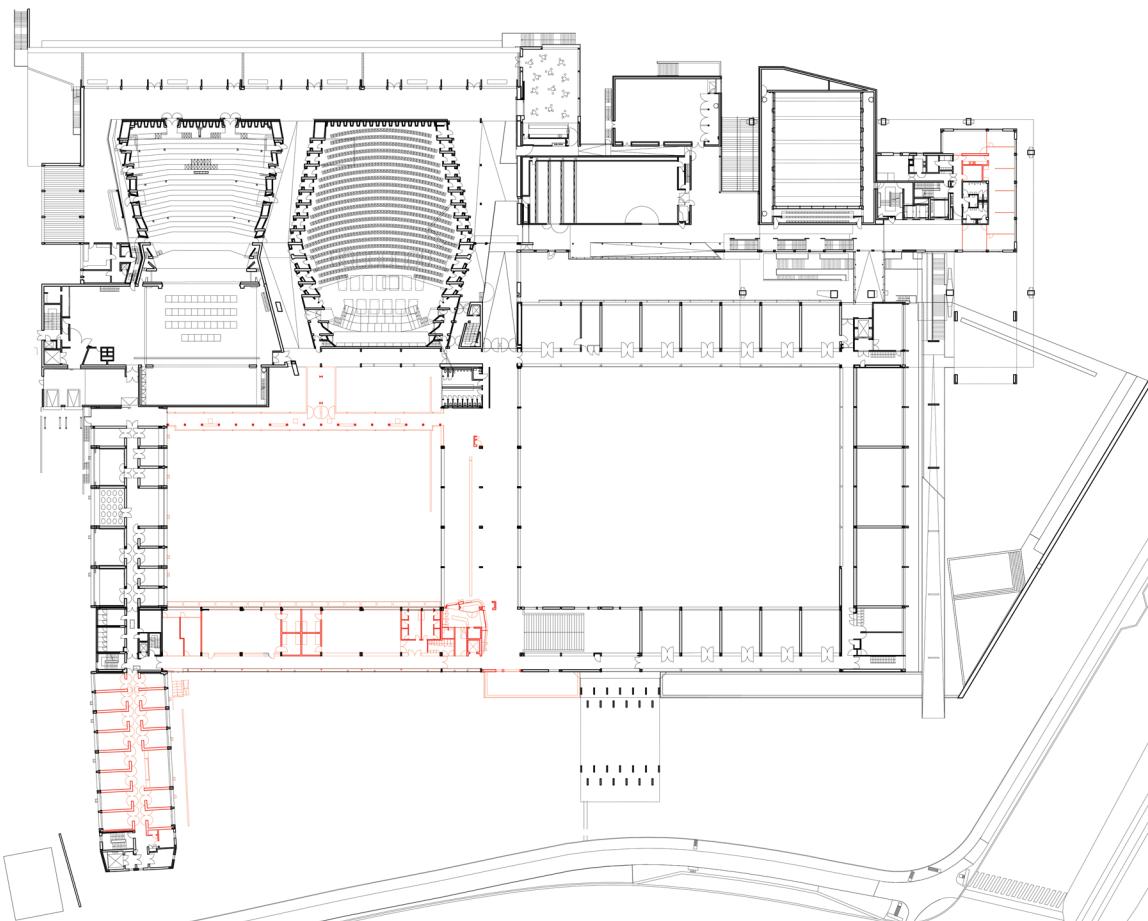
After

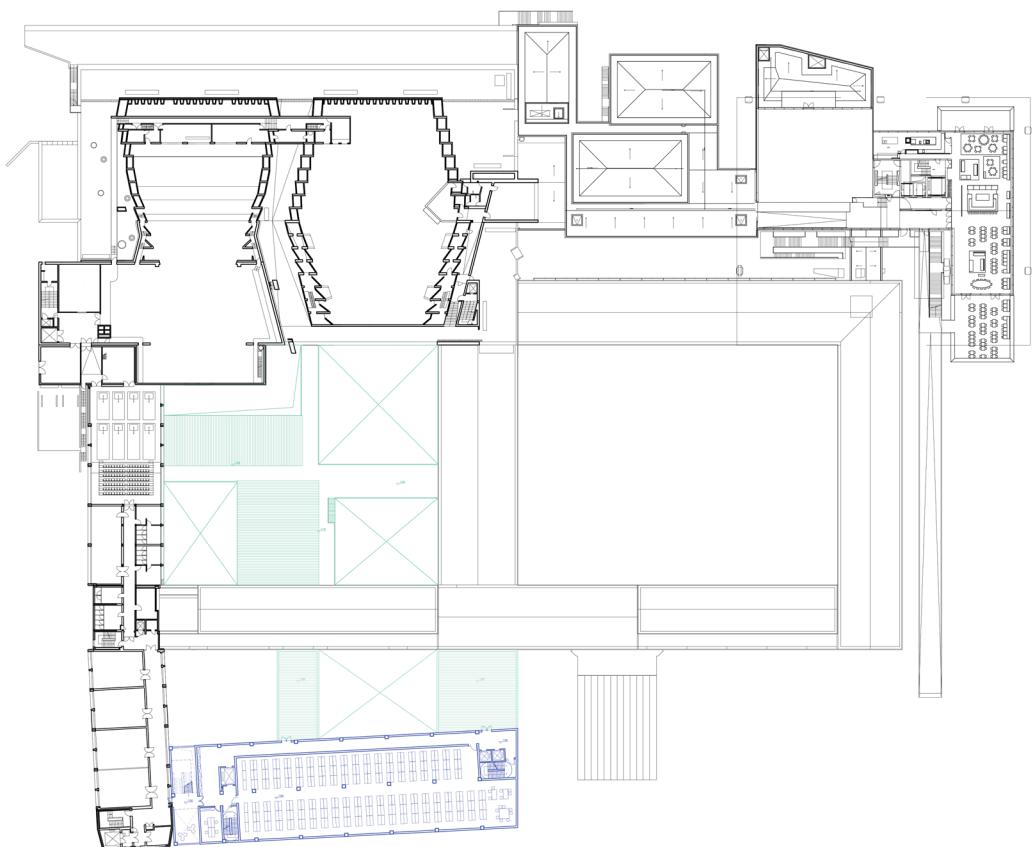
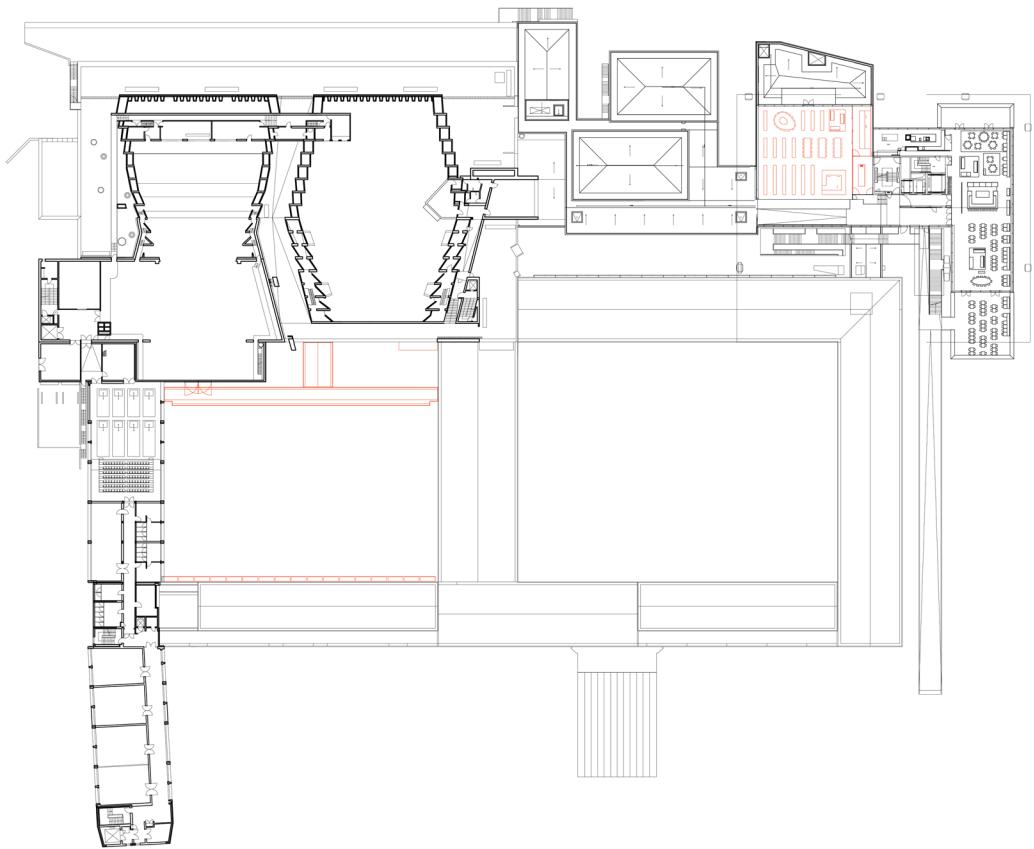


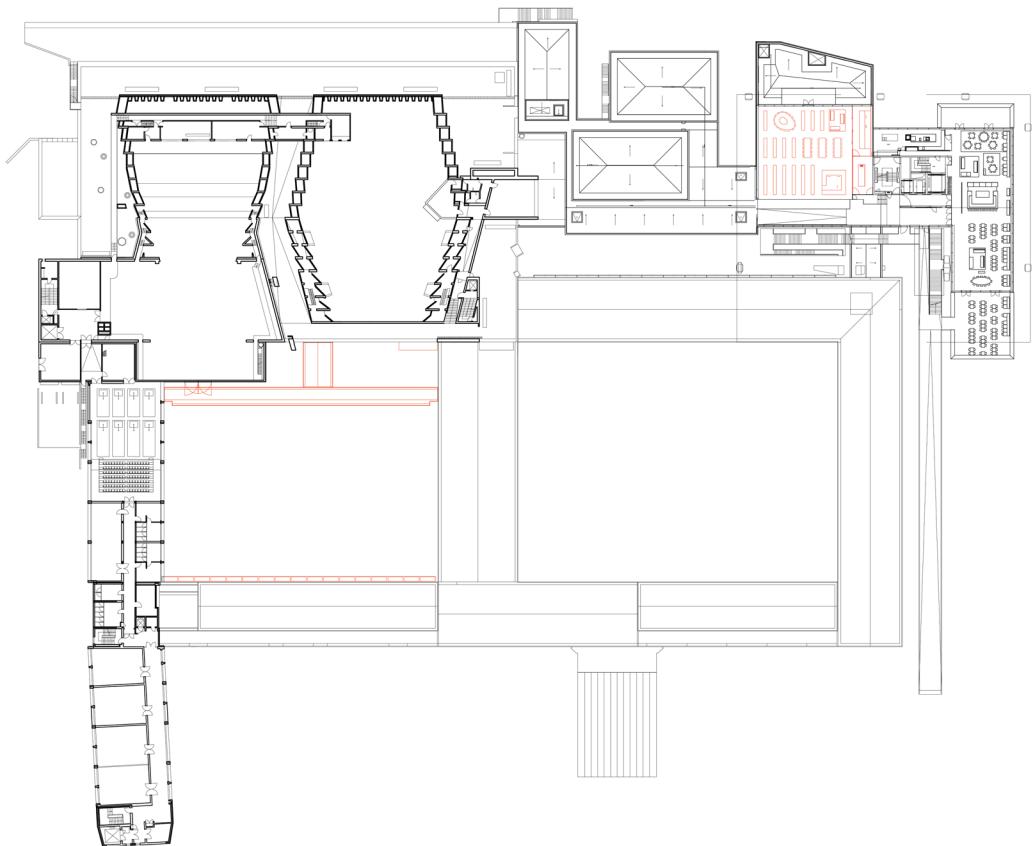
week 2.8



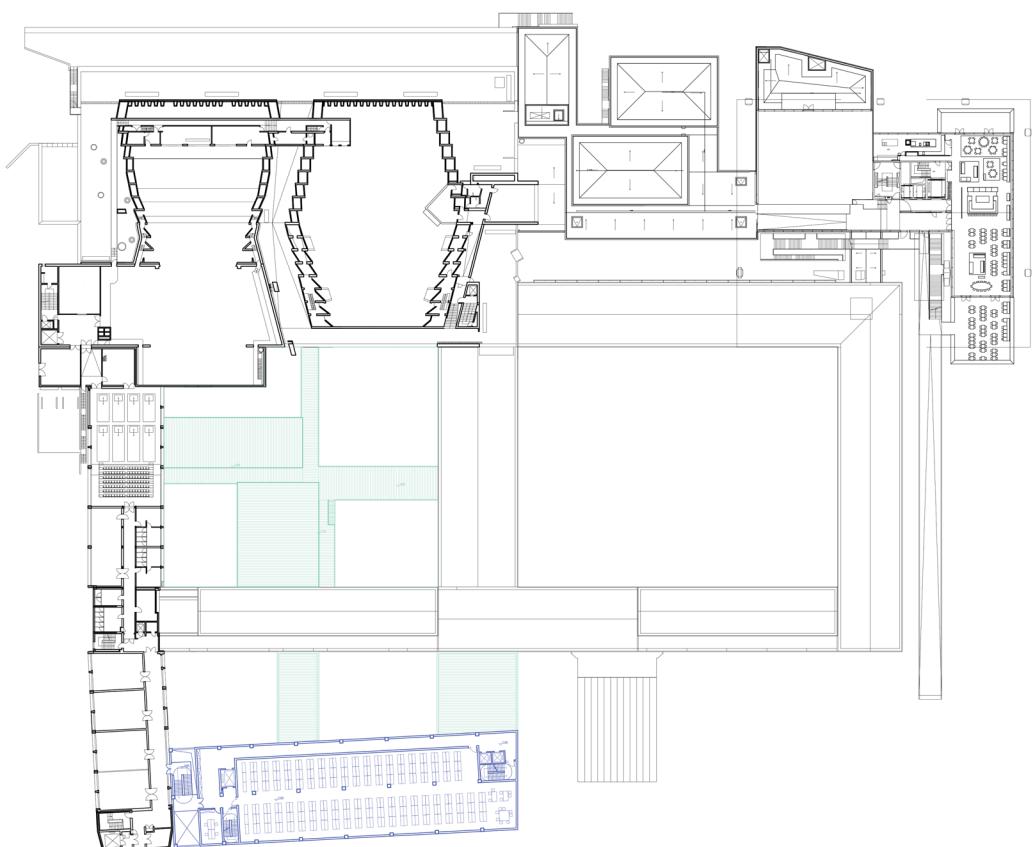
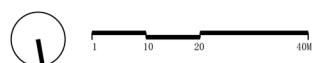




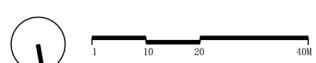




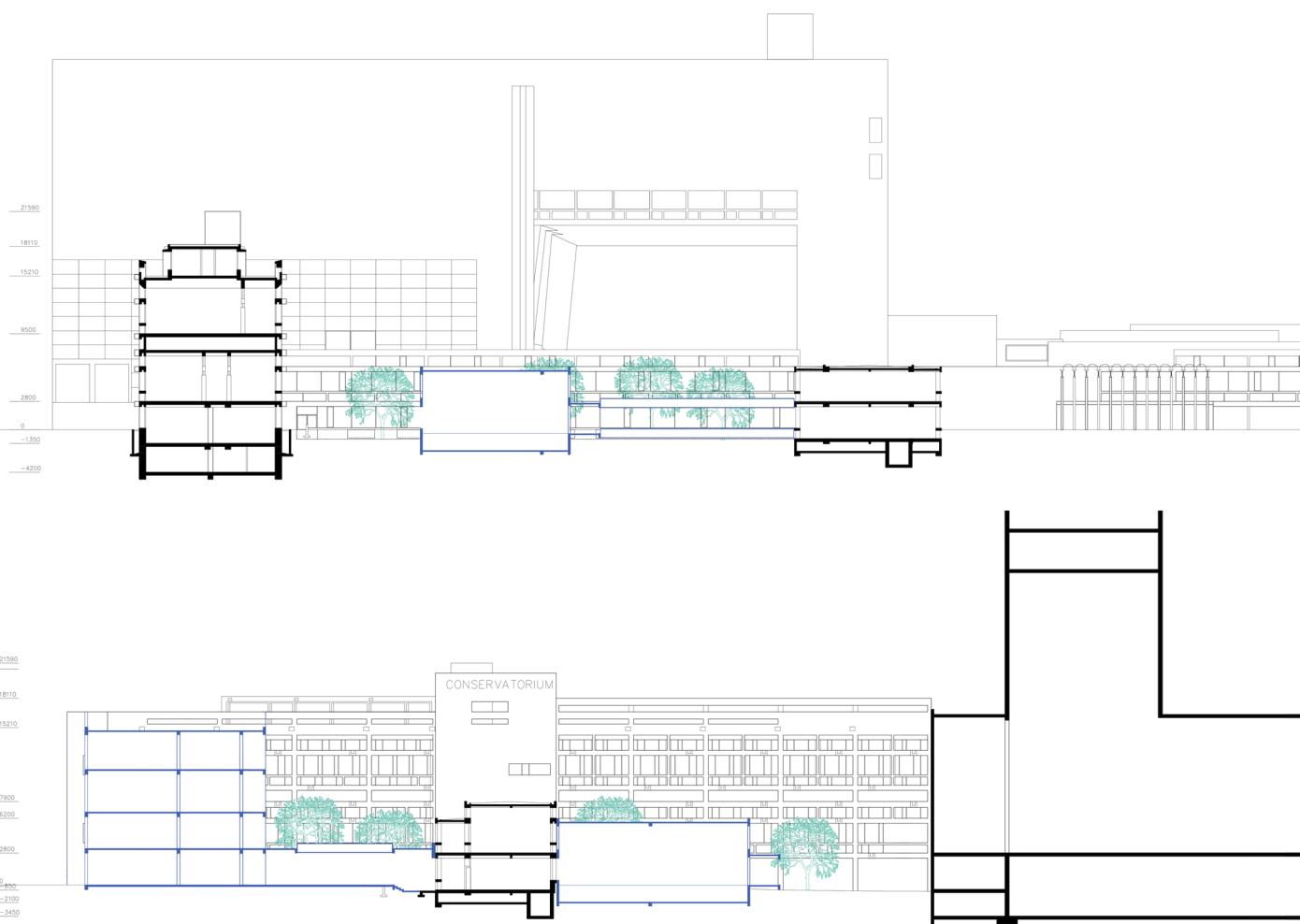
Current 3rd Floor Plan
+11.400m

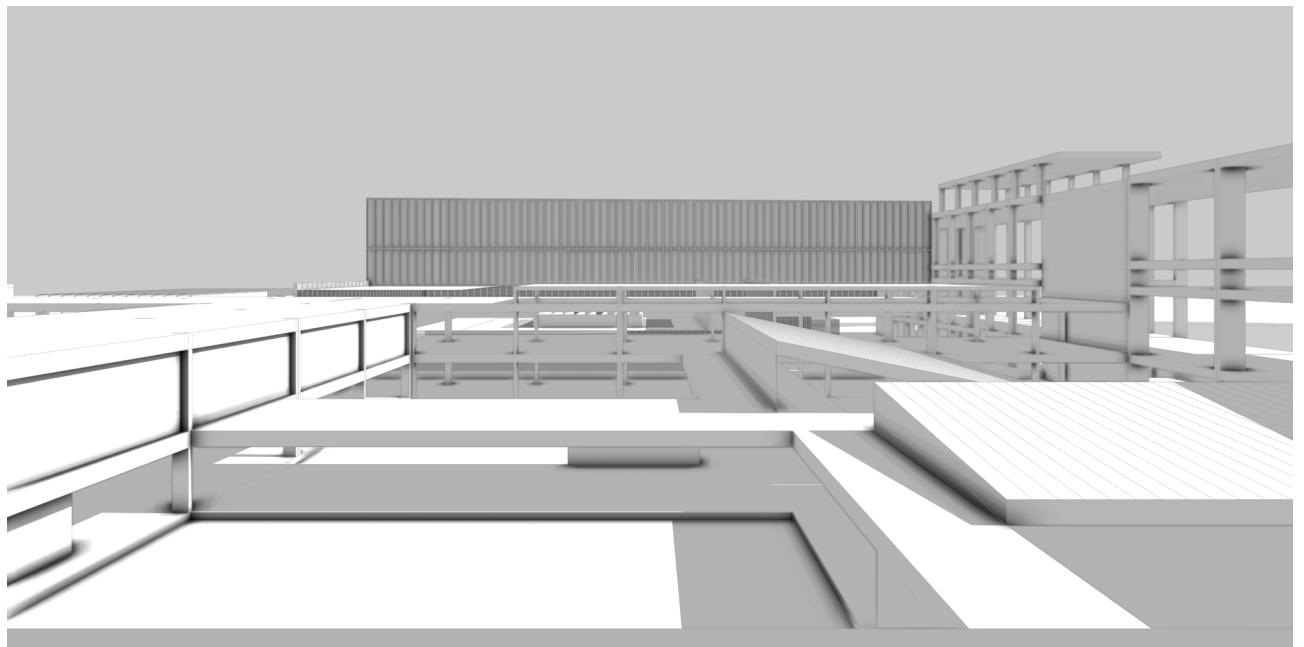


Renovated 3rd Floor Plan
+11.400m



Sections

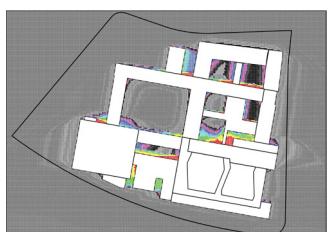




Sunlight Analysis



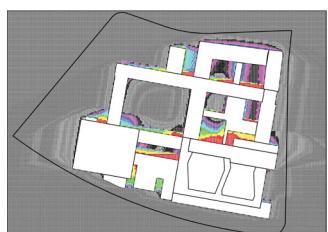
22nd June



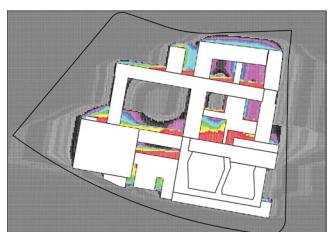
10th July



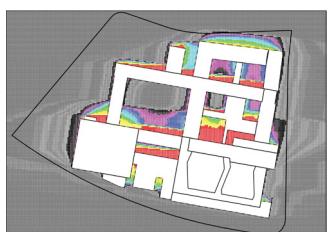
26th July



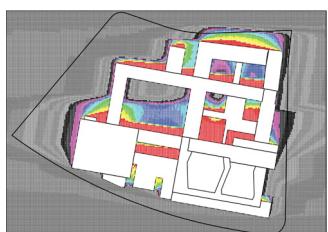
14th August



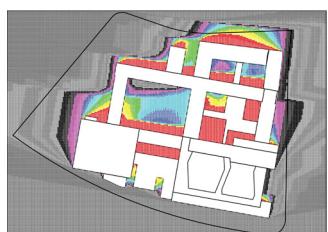
2nd September



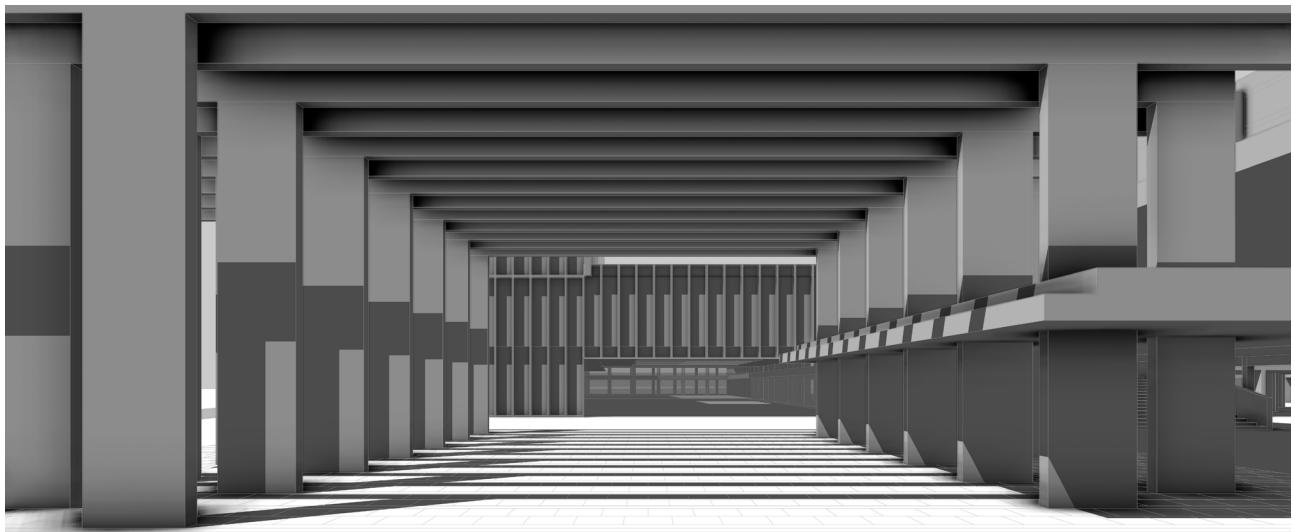
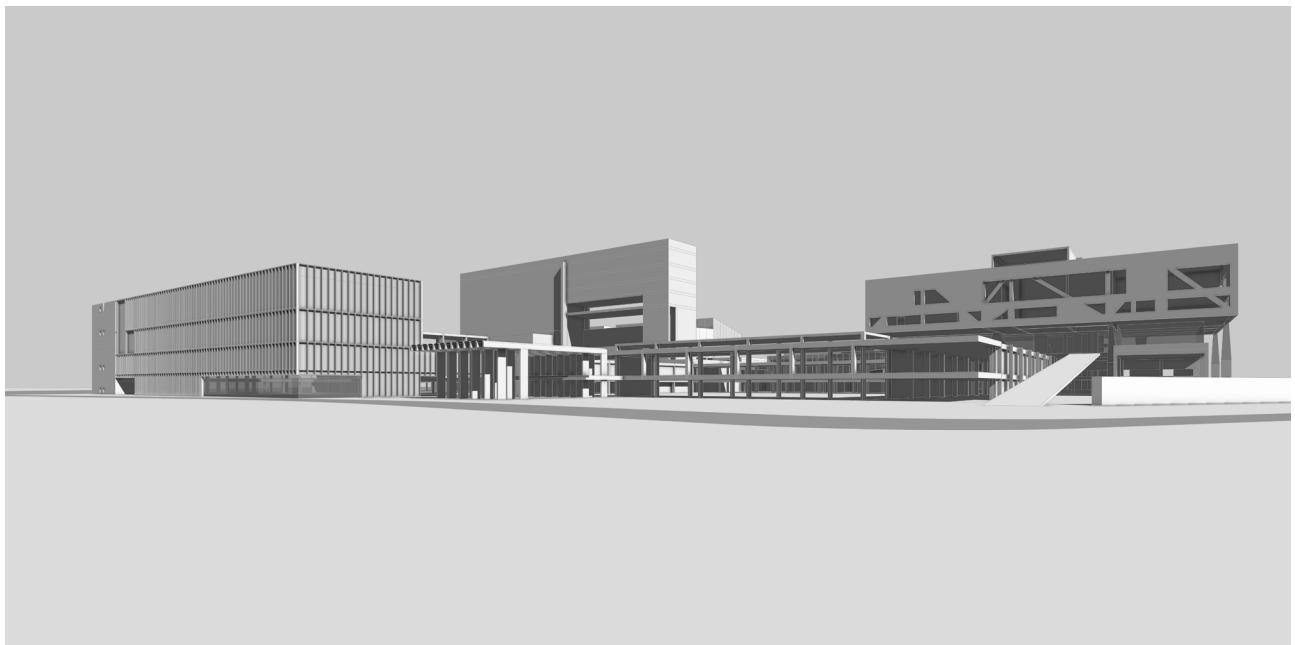
20th September

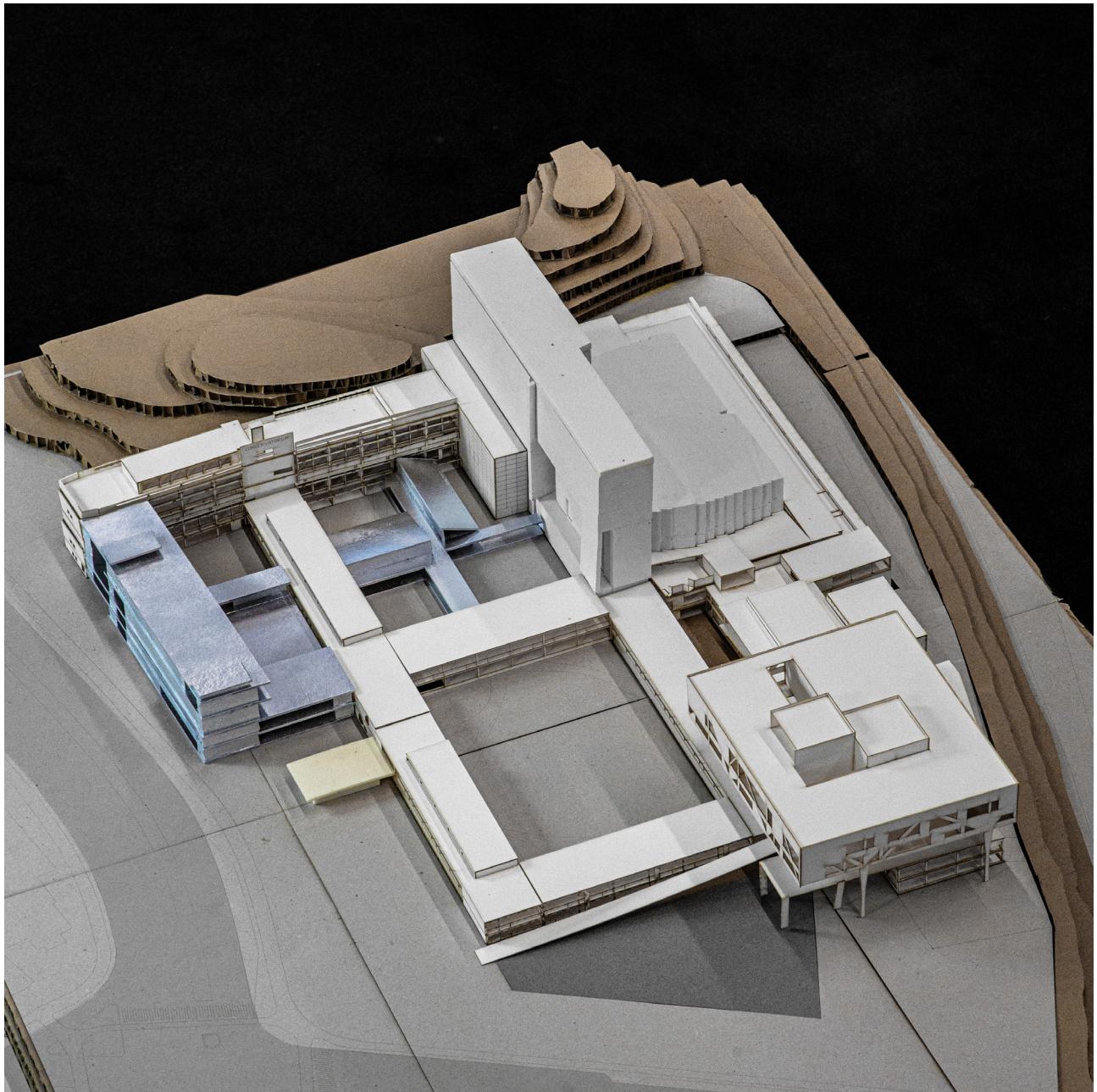


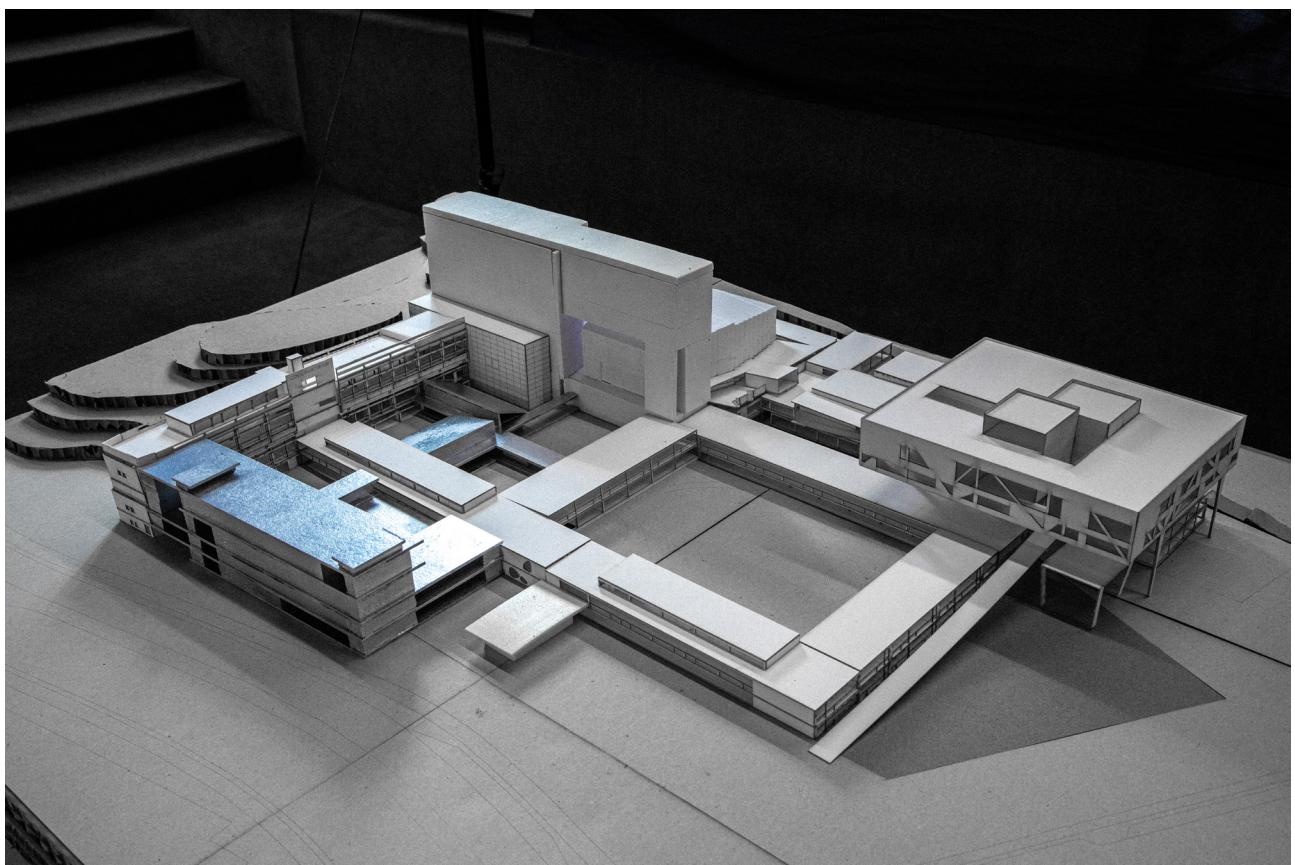
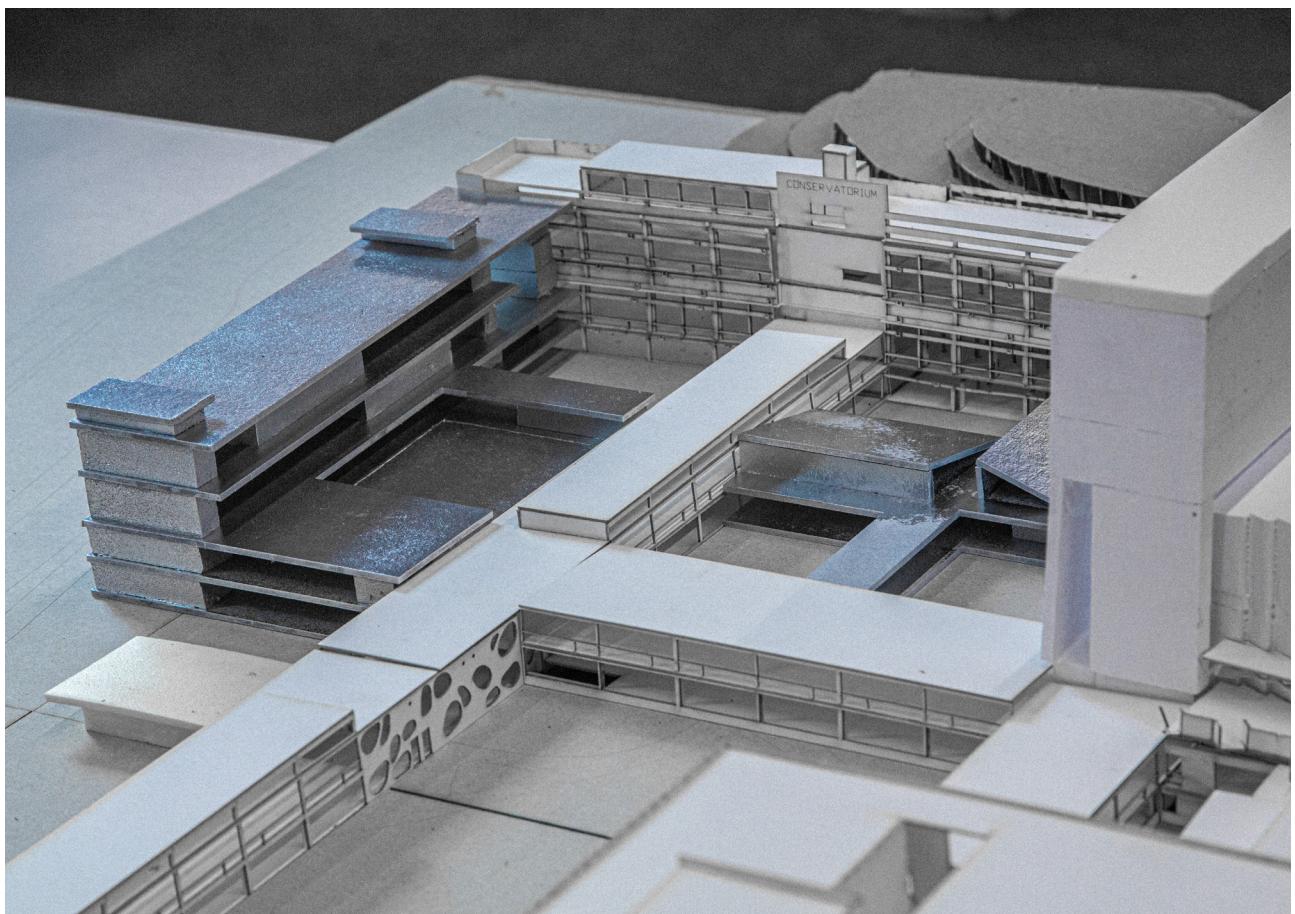
8th October



26th October







Project Journal



MSc4 P3
Interiors, Buildings, Cities

Yuqing ZHANG

week 3.1

P2 NOTES:

Your extension contains two parts:

a higher volume perpendicular to and connecting with the 1980's De Meyer / Stynen wing; and a lower 'mat-building'-like part that fills the eastern courtyard.

The proposal looks clear and convincing, although there is still a lot to be elaborated, such as the connection between the existing 1980's wing and your new archive, the representation of this new volume towards the street; the quality of the spaces you create in the eastern courtyard.

What kind of materials do you want to use for both the building structure and the cladding?

Considering the topic of circularity: do you intend to reuse materials from the demolished parts of deSingel? Considering the archive: what kind of archive do you intend to make and who do you consider will use it?

Presentation:

Do not forget to introduce the basics of the assignment.

What do you design, where is it and why is there a need for a new archive building.

What is the VAI and what is deSingel?

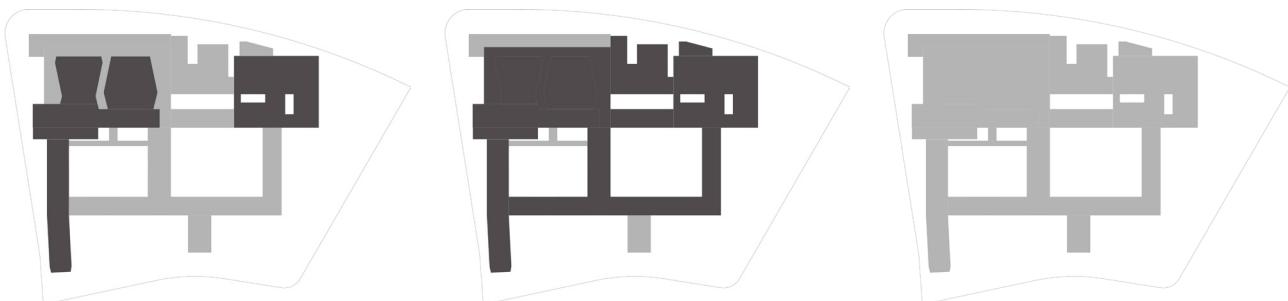
How has deSingel developed (do not forget to mention the 1980's wing by Stynen's office (De Meyer), since your proposal connects to it.

If you use the 'yellowred' method, see if you can show the two drawings (demolition and new) on 1 slide, so that the audience better understands the transformation.

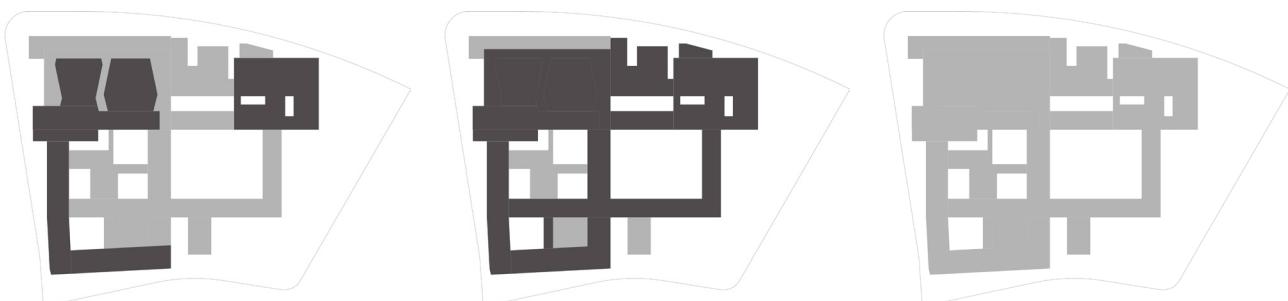
Main mentor: Jurjen Zeinstra
Second mentor: Elina Karanastasi
Third mentor: Sereh Mandias
Delegate of the Board of Examiners: Herman Vande Putte

week 3.1

Before



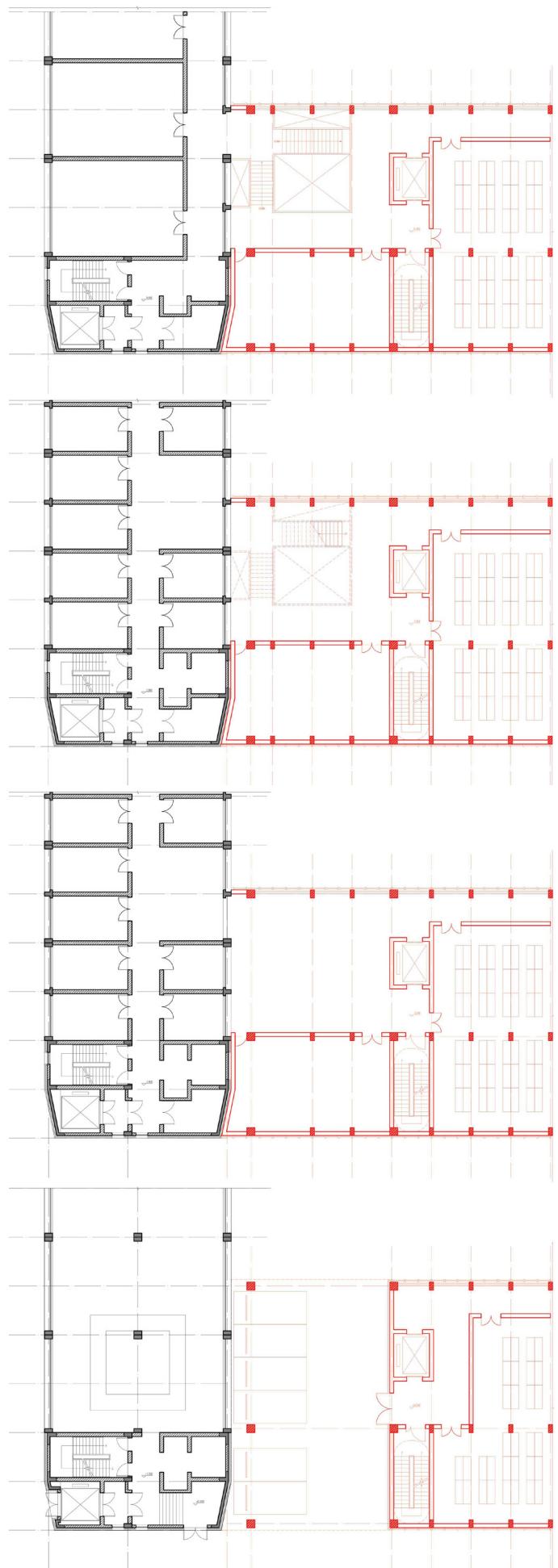
After



Next, the new archive proposal will continue the direction of P2: divided into two parts: the new north wing and the carpet-like courtyard system.

However, how to connect the new and the old in terms of function and structure is the next urgent problem to be solved.

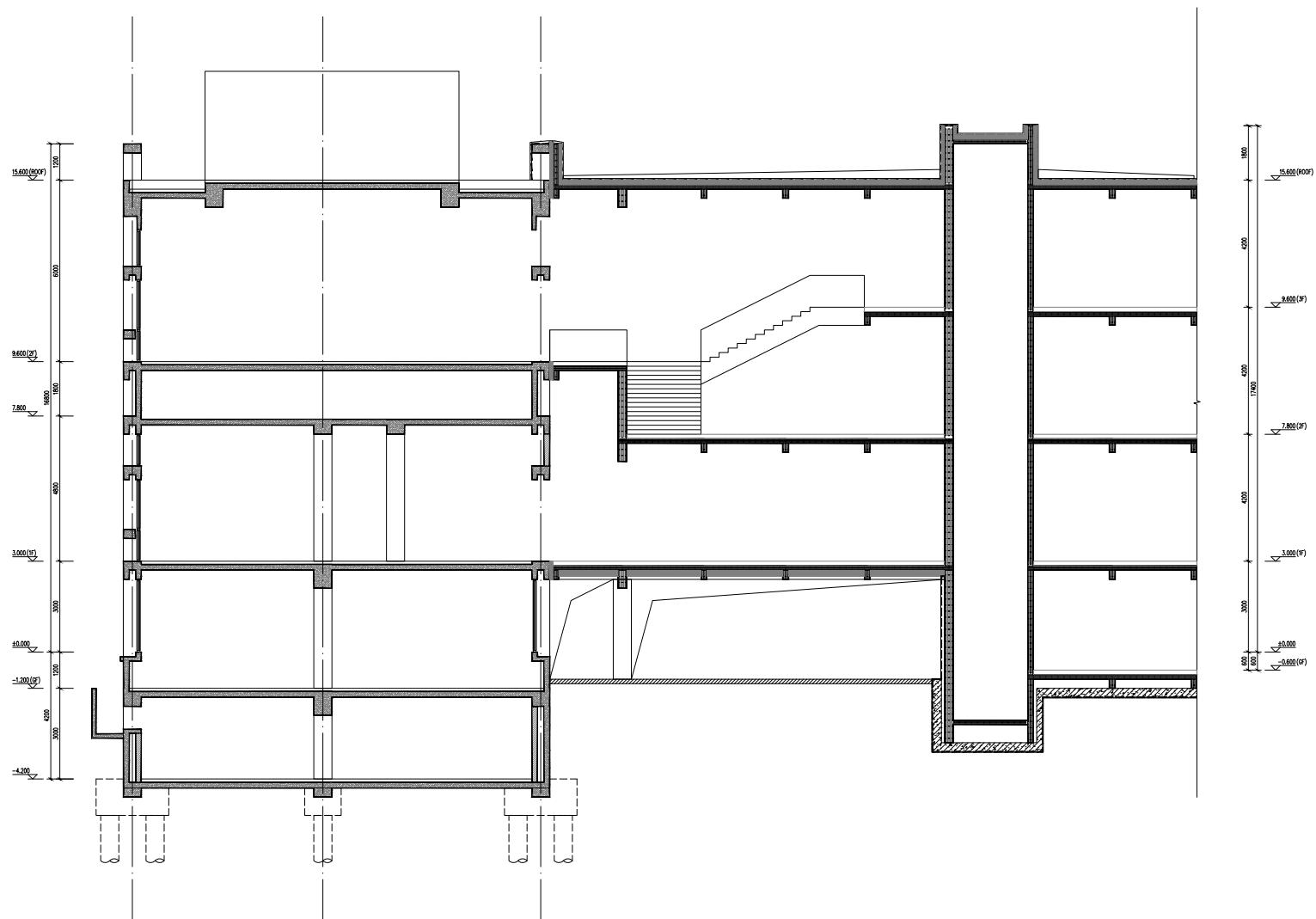
week 3.2



The 1980's De Meyer / Stynen wing and the new north wing of the archive need to be functionally connected.

However, the structure of the new building needs to be separated from the old building and cannot affect the structure of the old building.

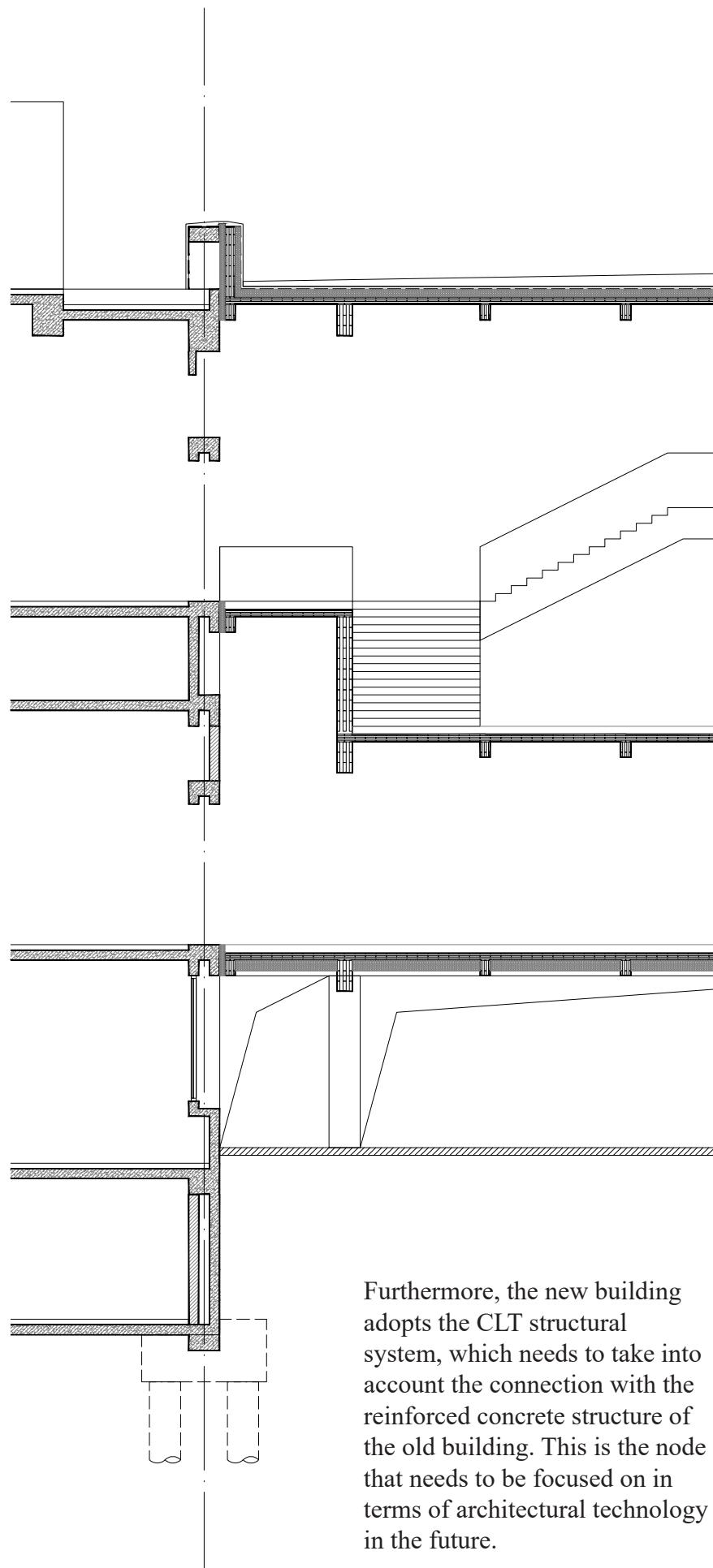
week 3.2



From this partial section, it can be seen that the floor height of each floor of the 1980's De Meyer / Styngen wing is not consistent, while the archive storage space of the archive requires a relatively standard and consistent floor height.

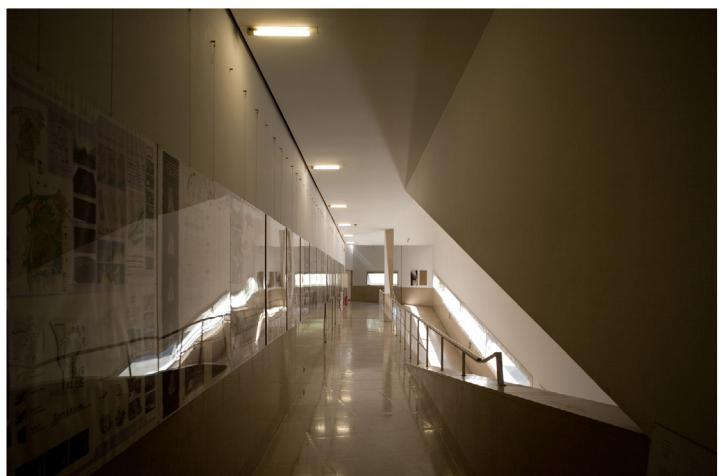
Therefore, the new proposal is placed in a staircase system to connect the functions of the new and old spaces. The ground floor is an outdoor parking and unloading site; the first floor is a relatively complete conference room or multi-functional hall; the second and third floors are an interesting high-rise shared space shaped by stairs.

week 3.2



Furthermore, the new building adopts the CLT structural system, which needs to take into account the connection with the reinforced concrete structure of the old building. This is the node that needs to be focused on in terms of architectural technology in the future.

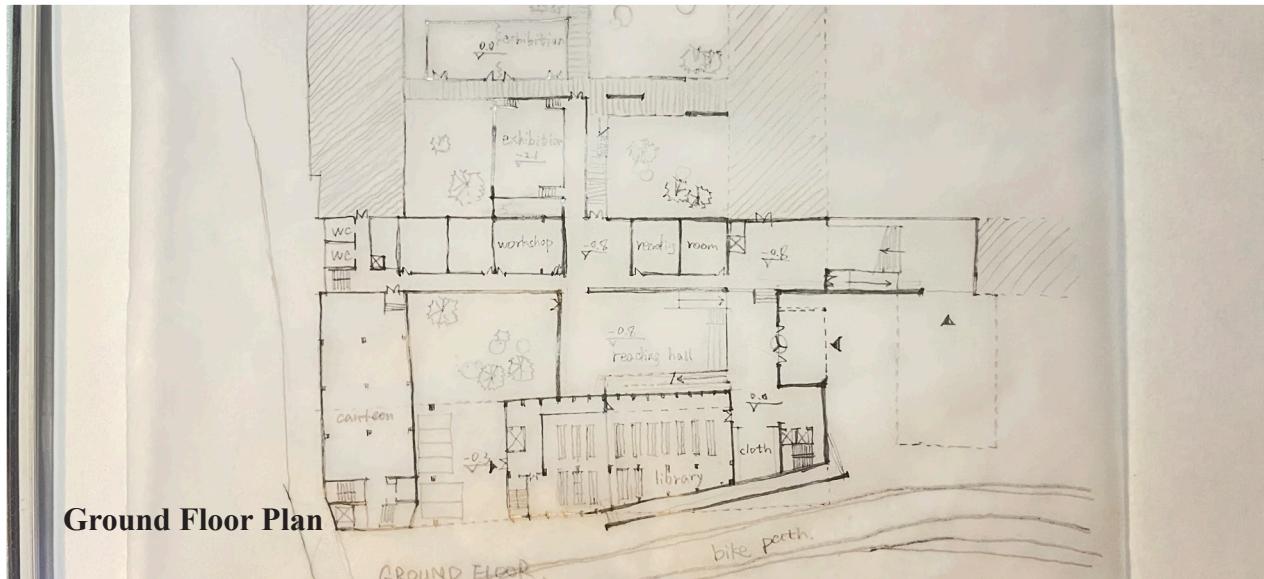
week 3.2



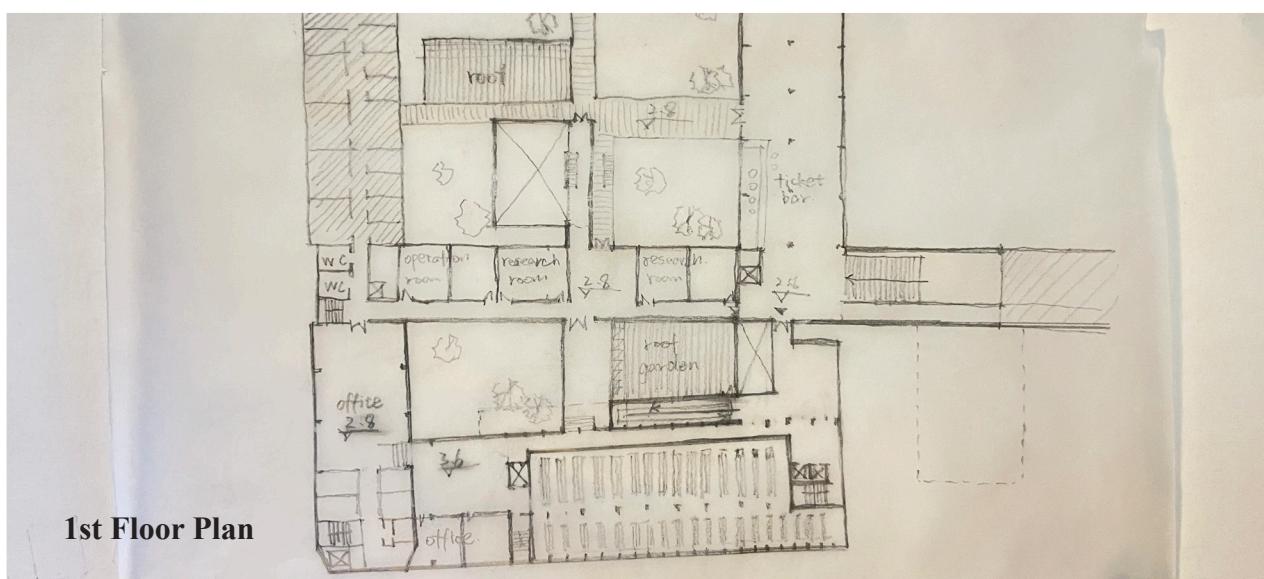
However, a new question needs to be raised. Is using stairs to deal with the height difference between the new building and the old building the only and correct solution?

The architectural archive has the need to transport heavy objects with a wheelbarrow, so a cart-barrier-free transportation method needs to be considered while dealing with different floor heights. In this regard, a ramp may be a better choice.

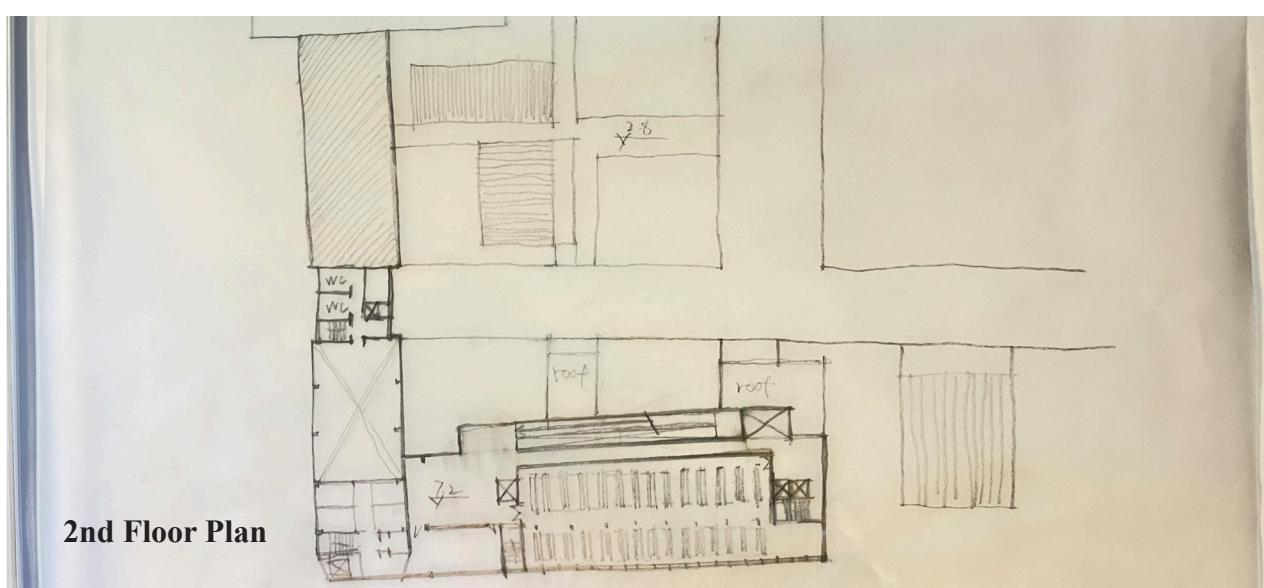
week 3.3



Ground Floor Plan

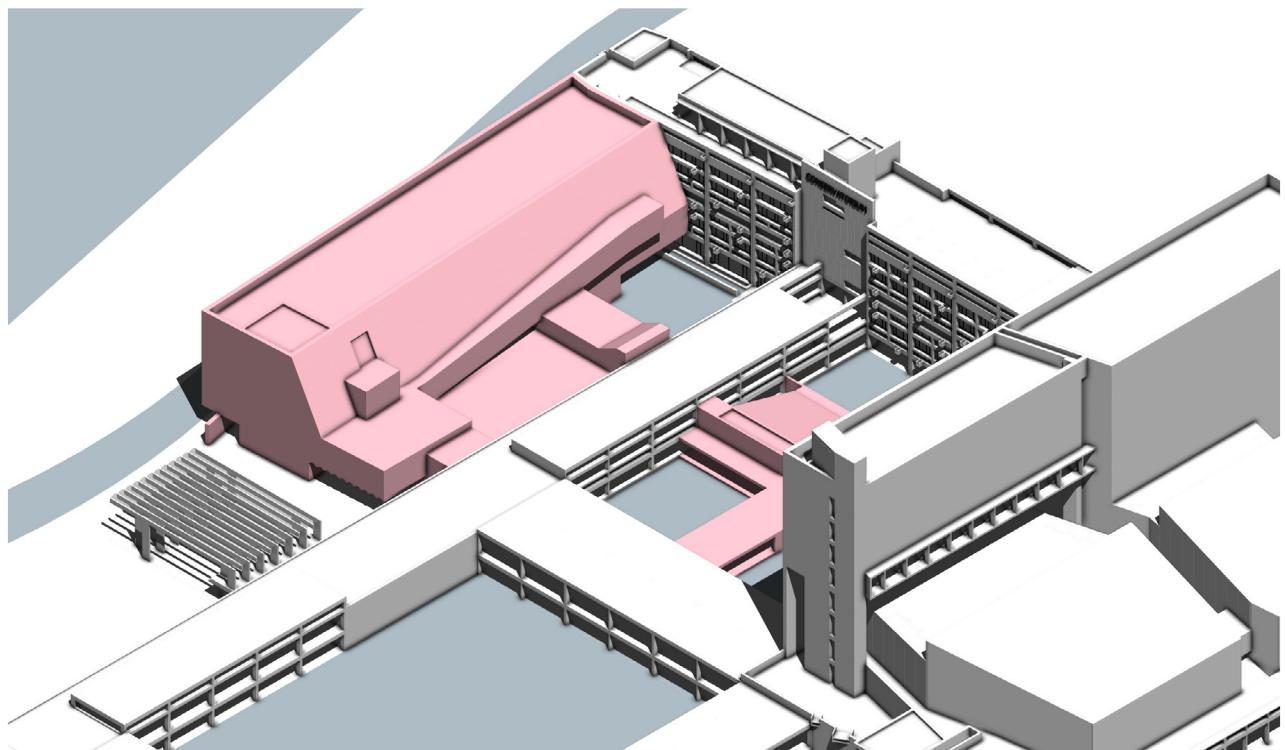


1st Floor Plan

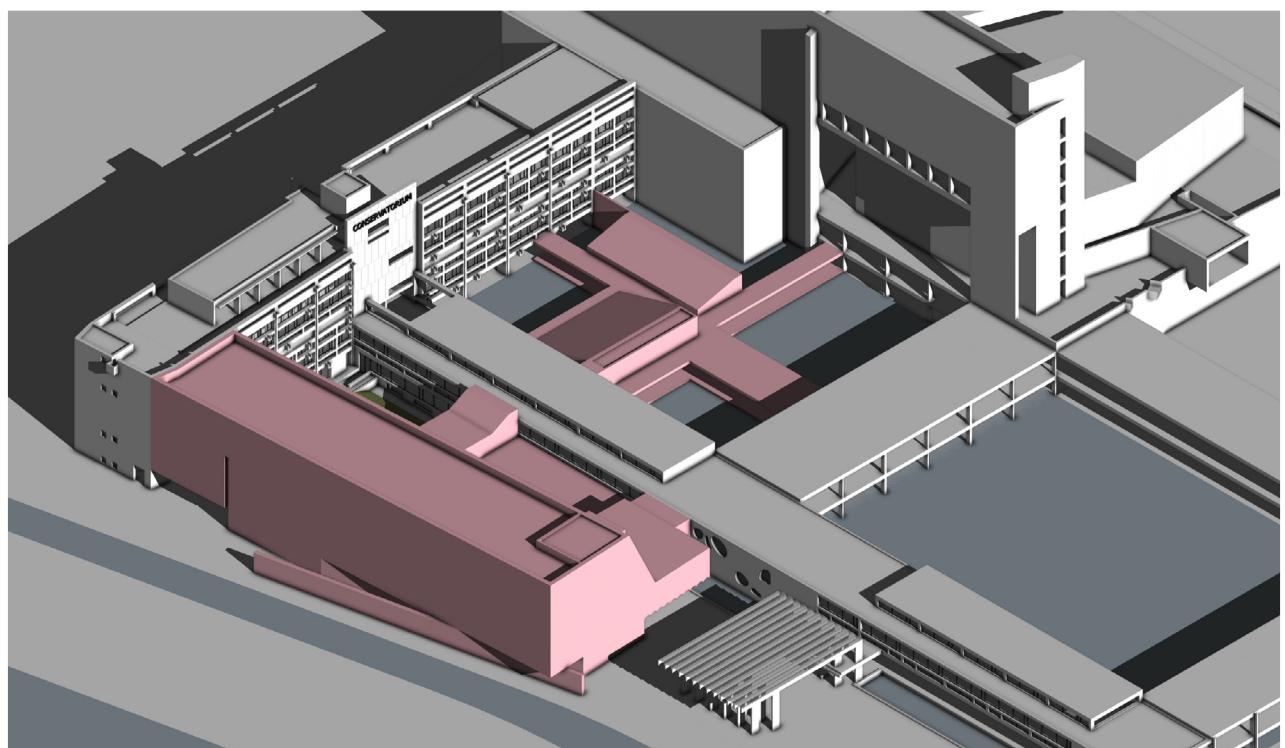


2nd Floor Plan

week 3.4

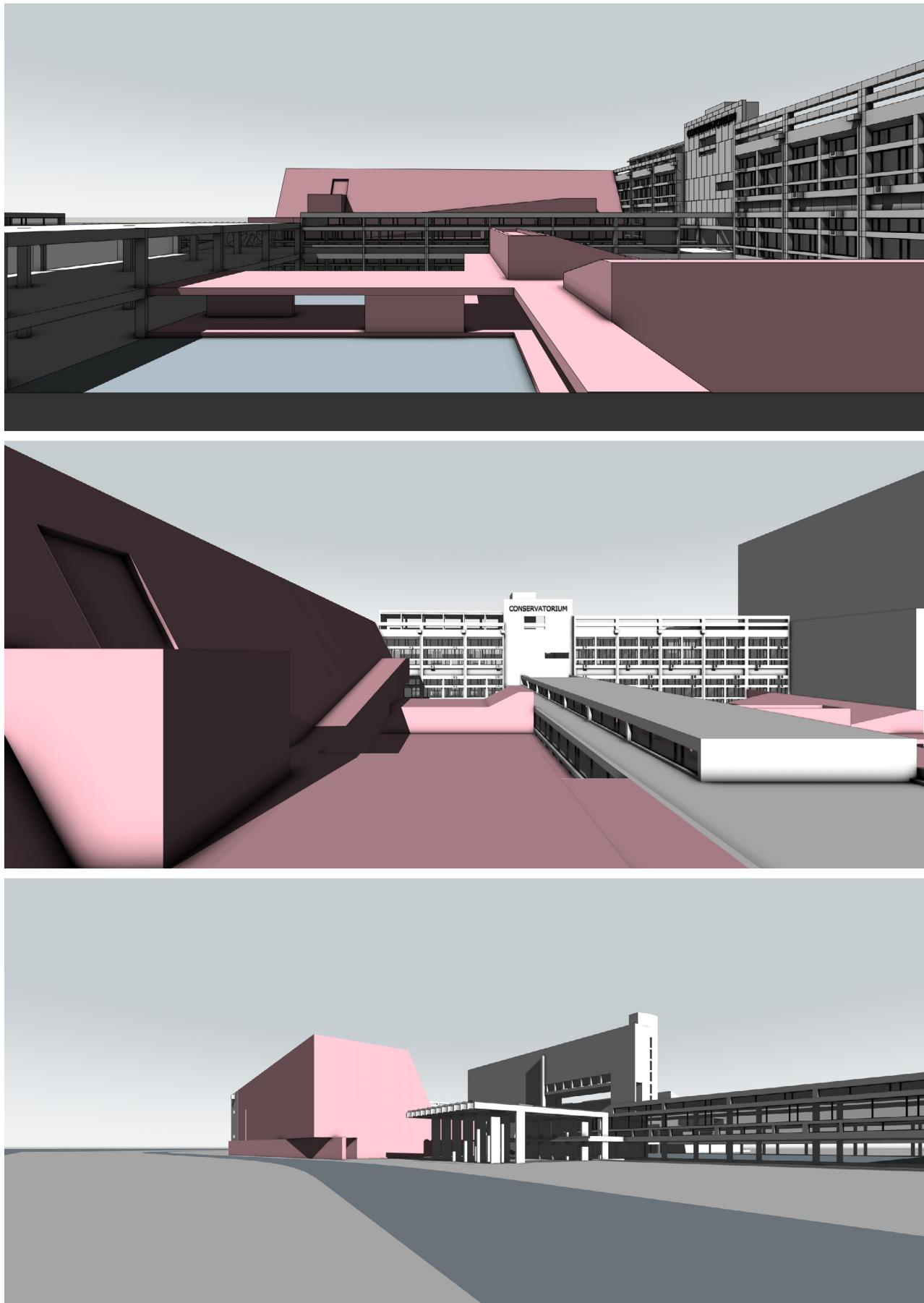


The indoor ramp space shapes a new outdoor architectural shape.



The ground floor of the north wing uses the method of cutting corners to echo the road.

week 3.4

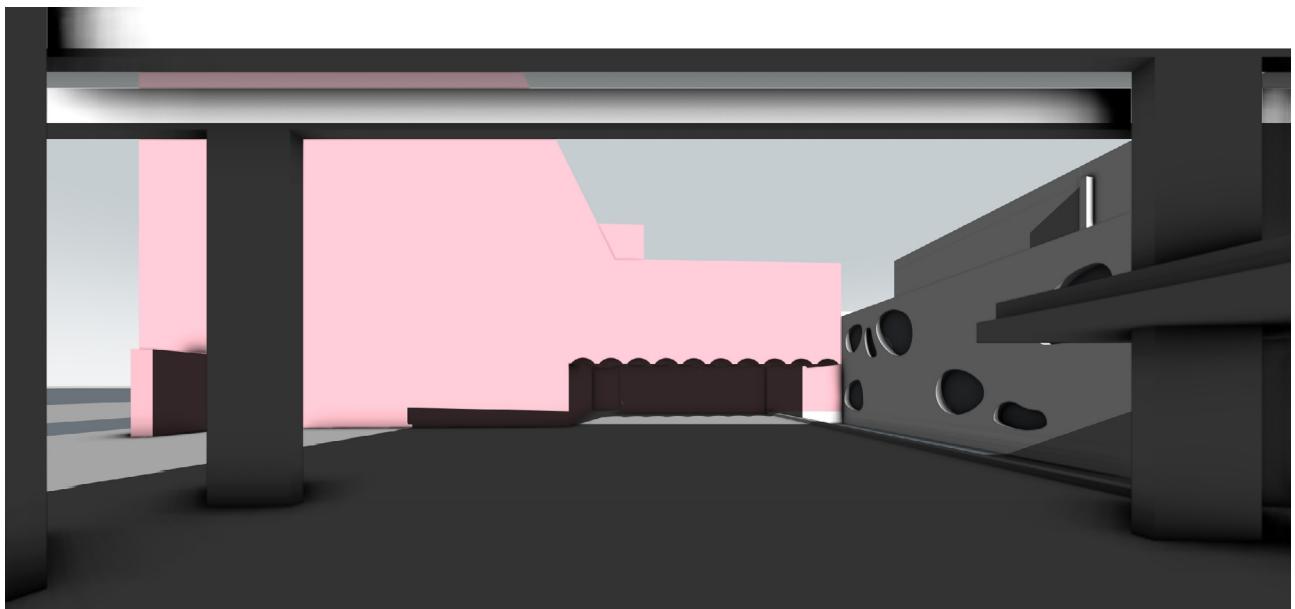


The new building has a block shape from different viewpoints.

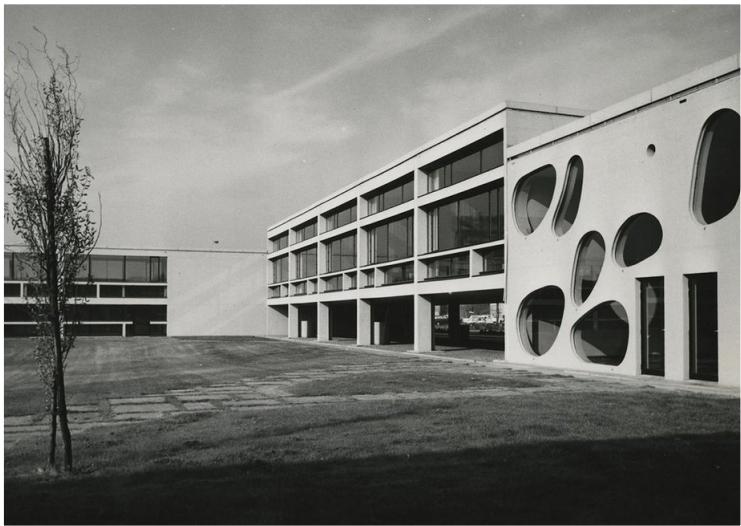
week 3.5



The main entrance of the archive is a concave gray space. The shape refers to the entrance of some of De Meyer's past architectural works, forming a kind of contextual inheritance.



week 3.5



Reference cases

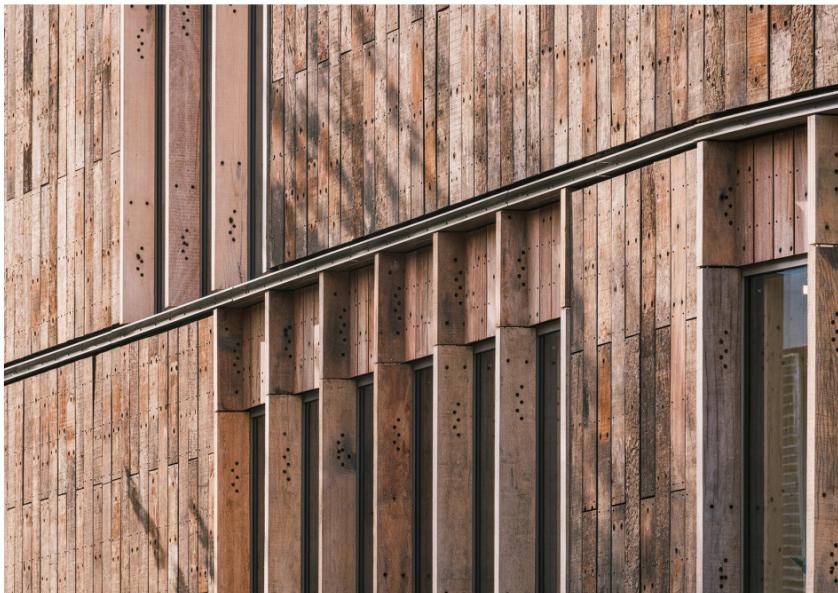
the courtyard &
the exhibition hall



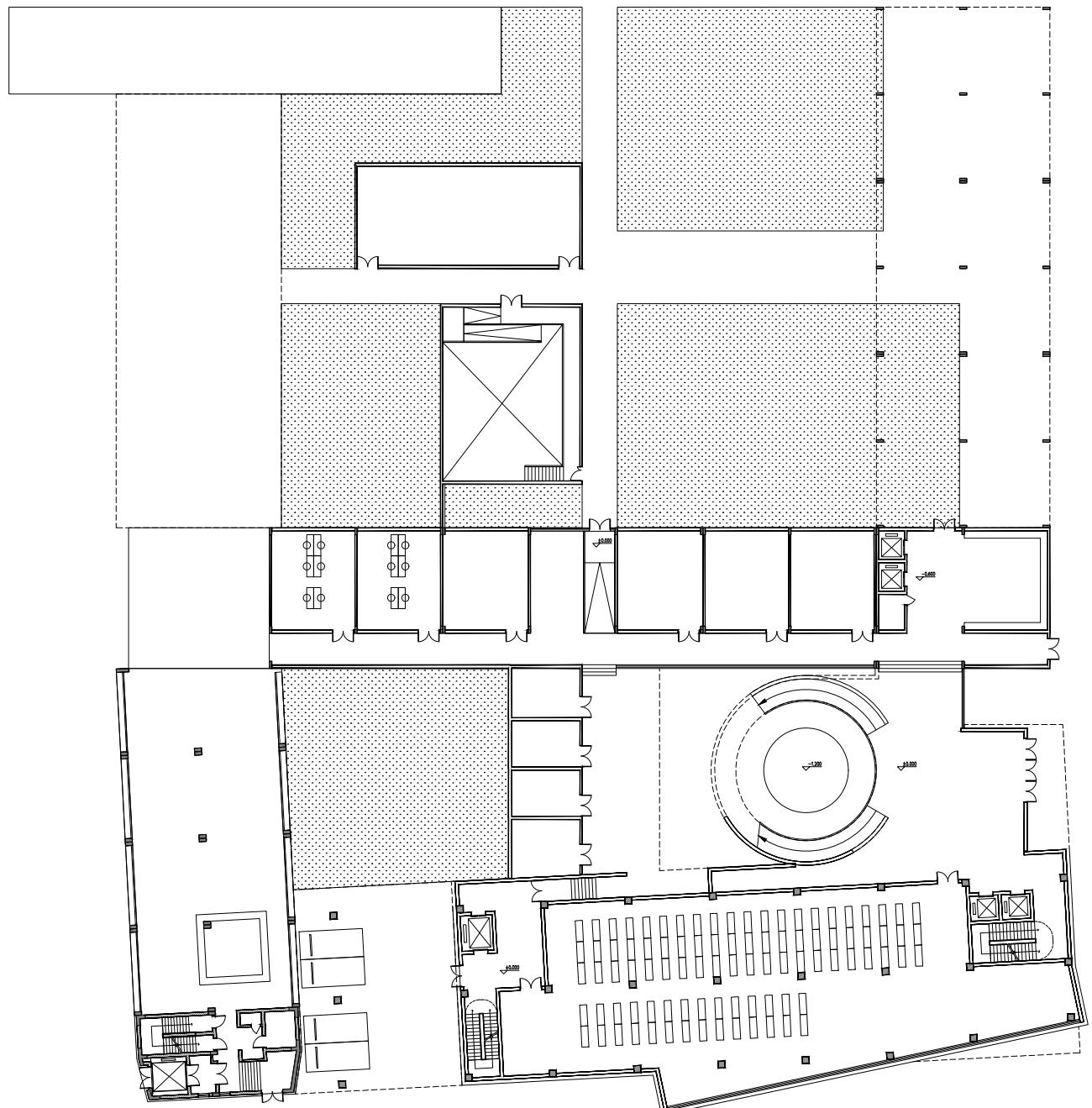
week 3.5

Reference cases

the facade system &
CLT or wood structure system



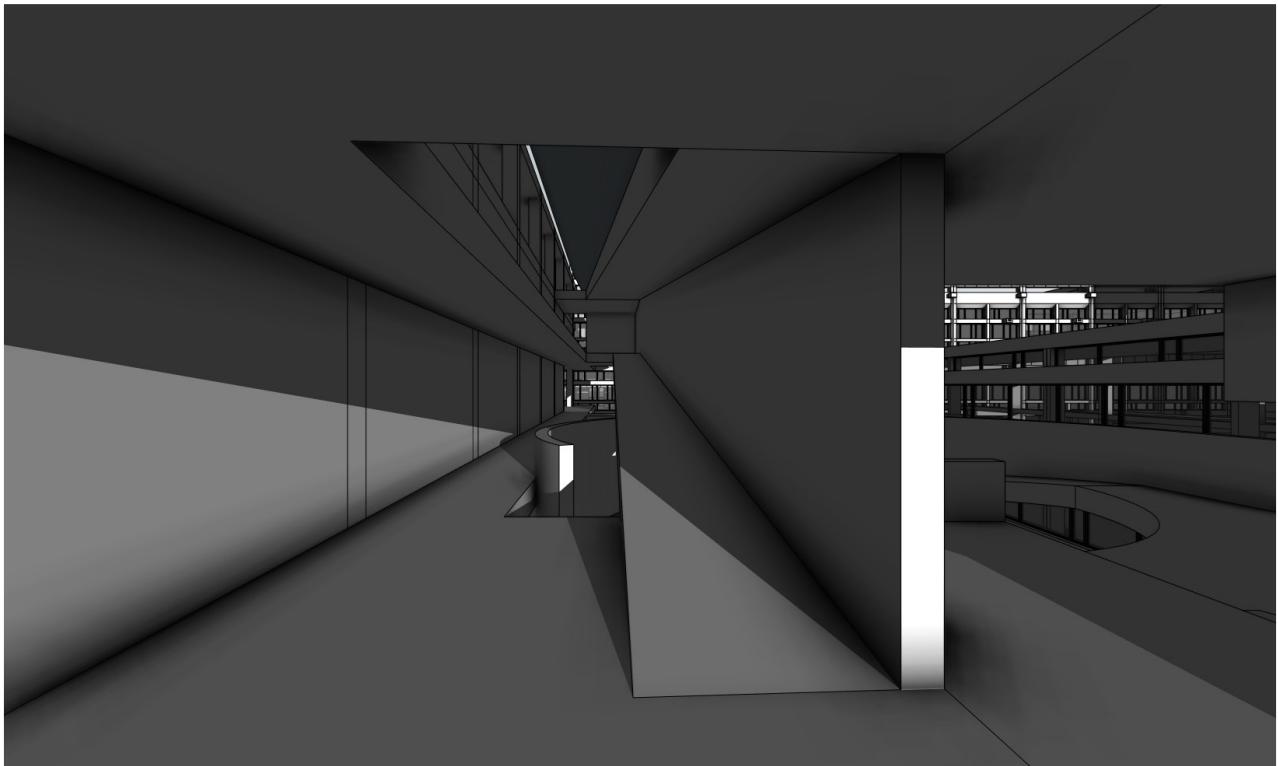
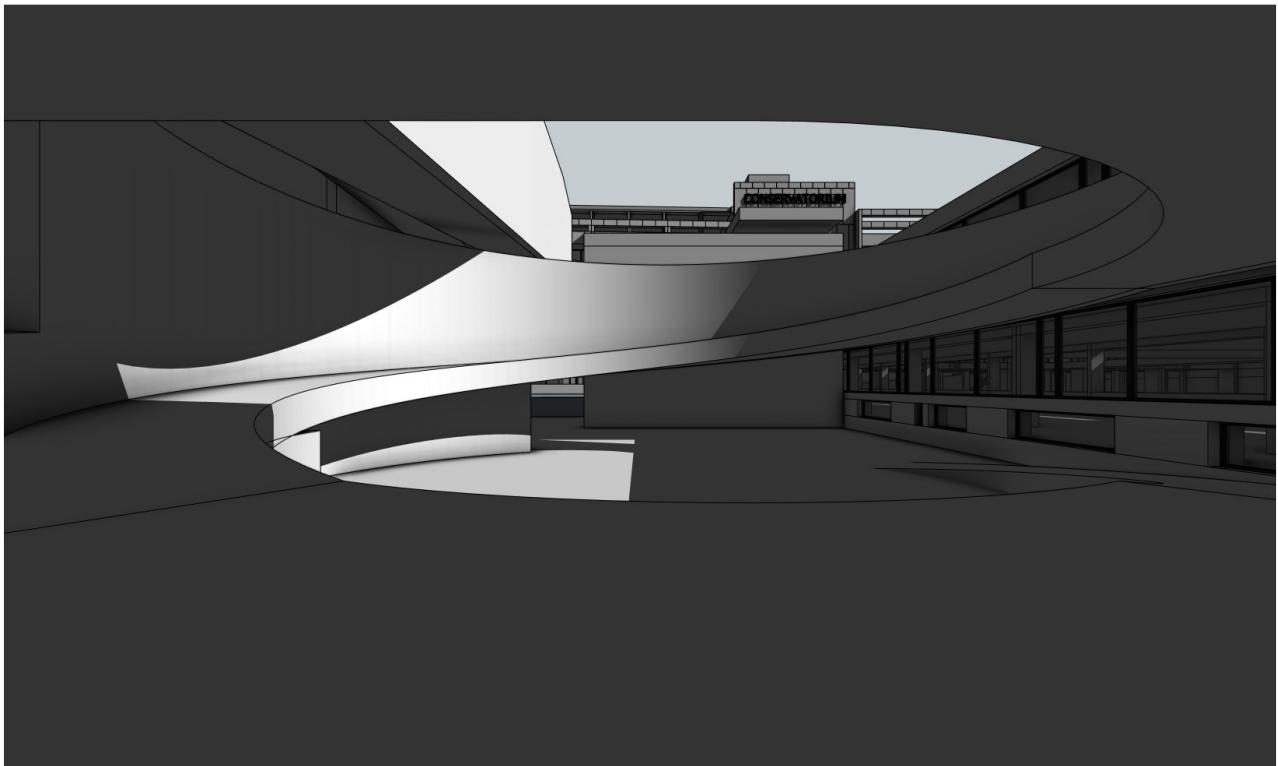
week 3.6



Ground Floor Plan

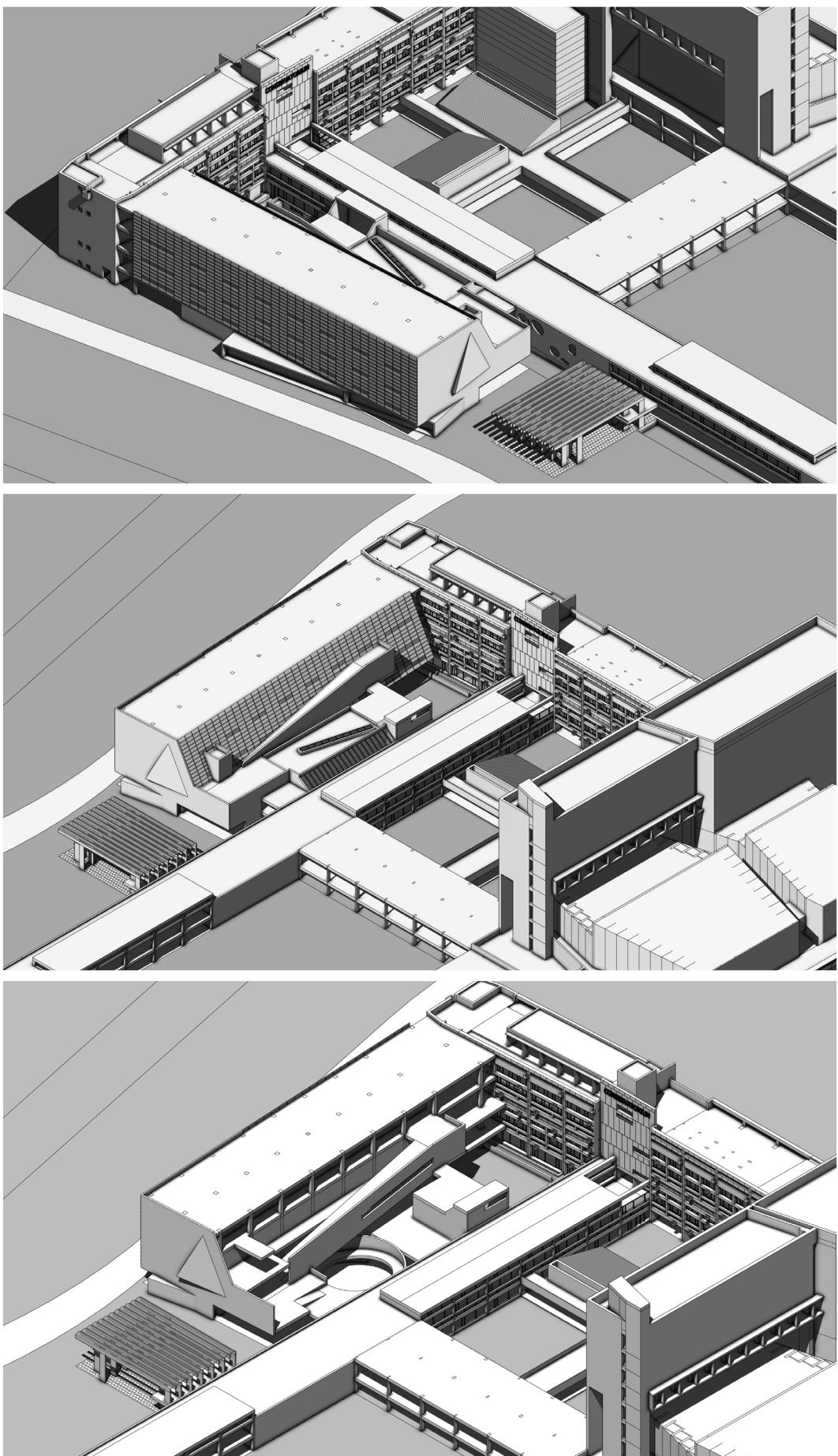
The lobby space next to the entrance is reshaped by a circular ramp, and the potato wall is better displayed.

week 3.6

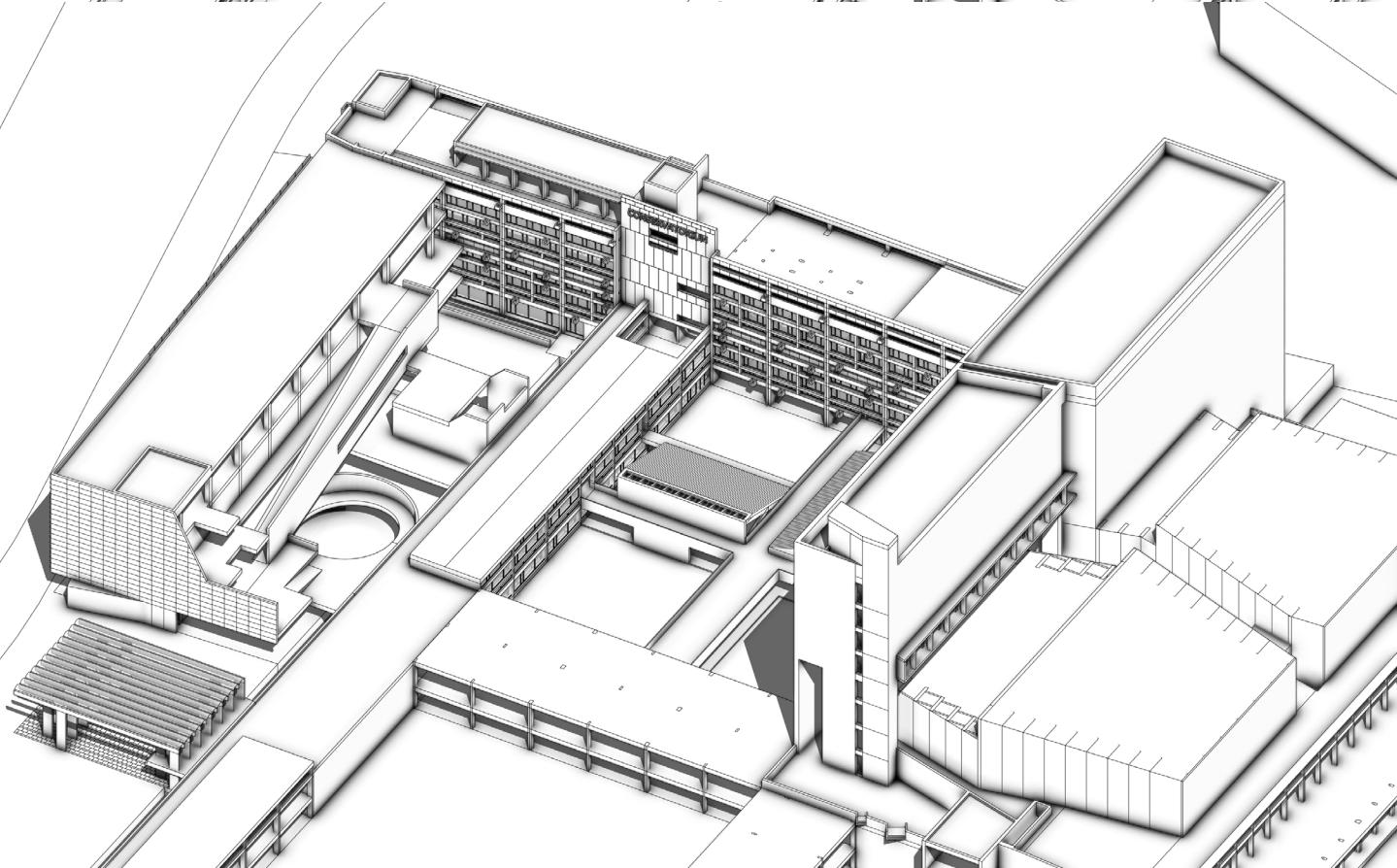
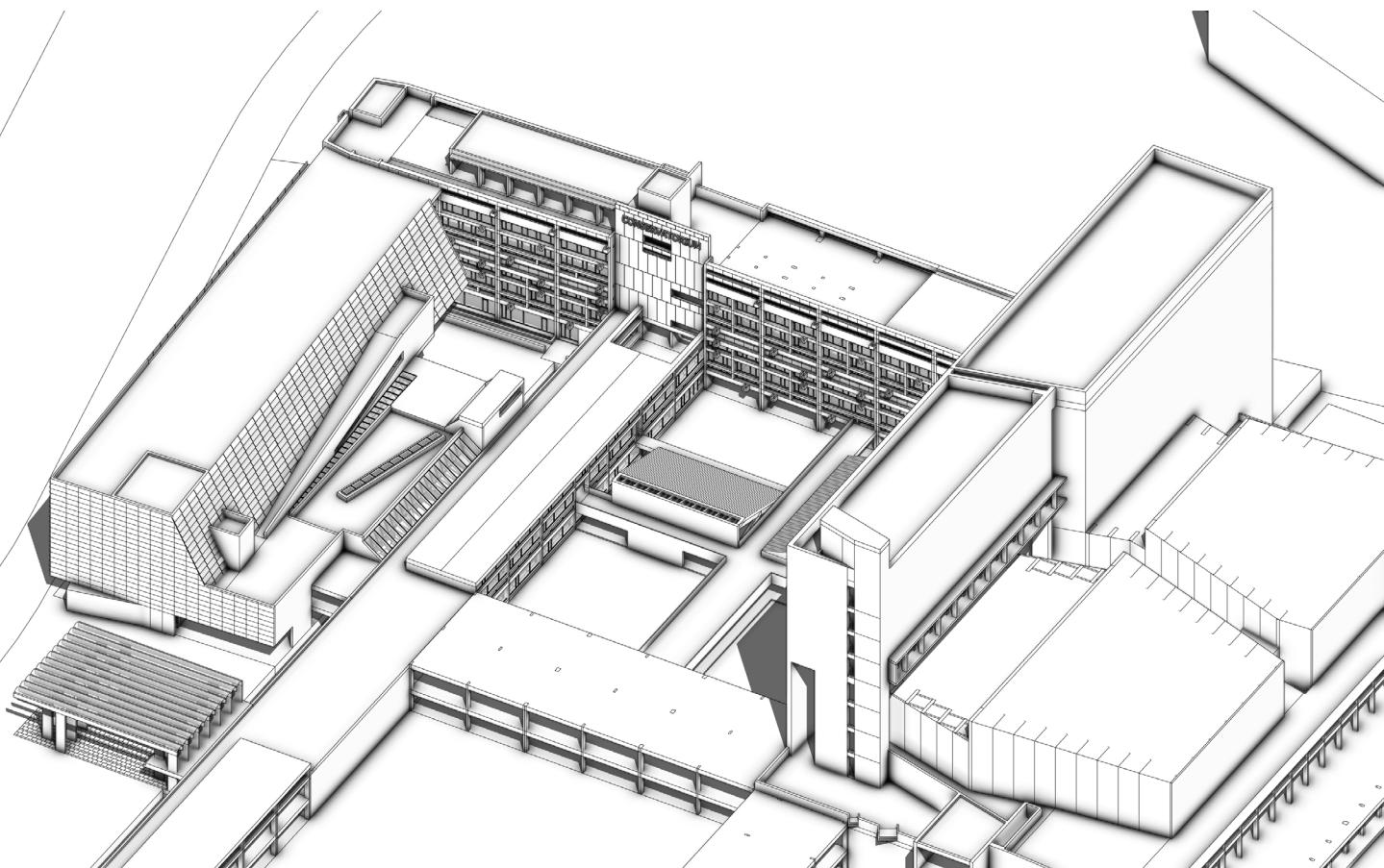


The functions of each floor are connected by ramps. Such an indoor ramp system not only balances the height difference well, but also provides a hint of decreasing publicness from bottom to top. The ramp can form a visitor's circulation route to understand how the archive works, and it can form a new angle to view the courtyard.

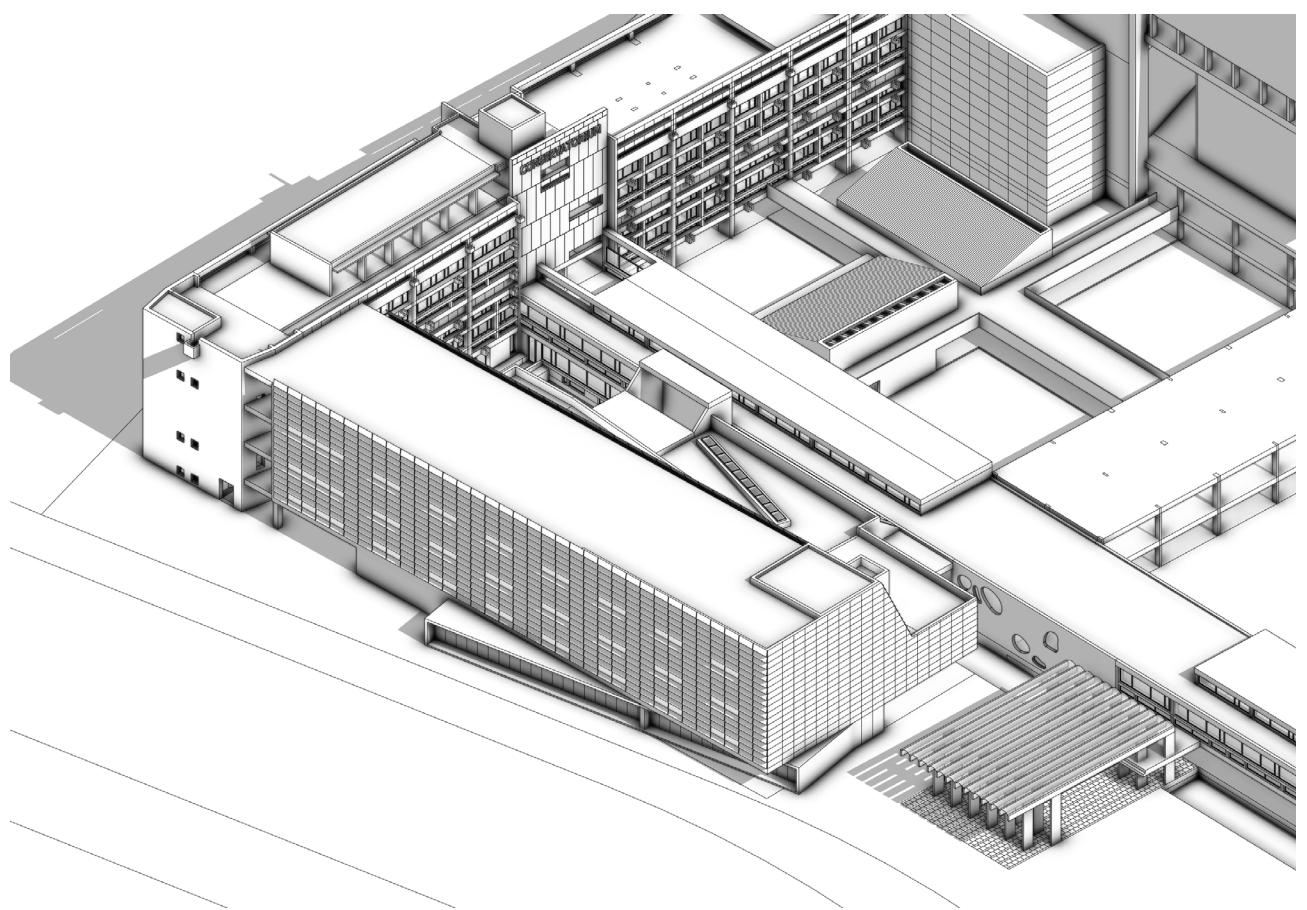
week 3.6



week 3.6

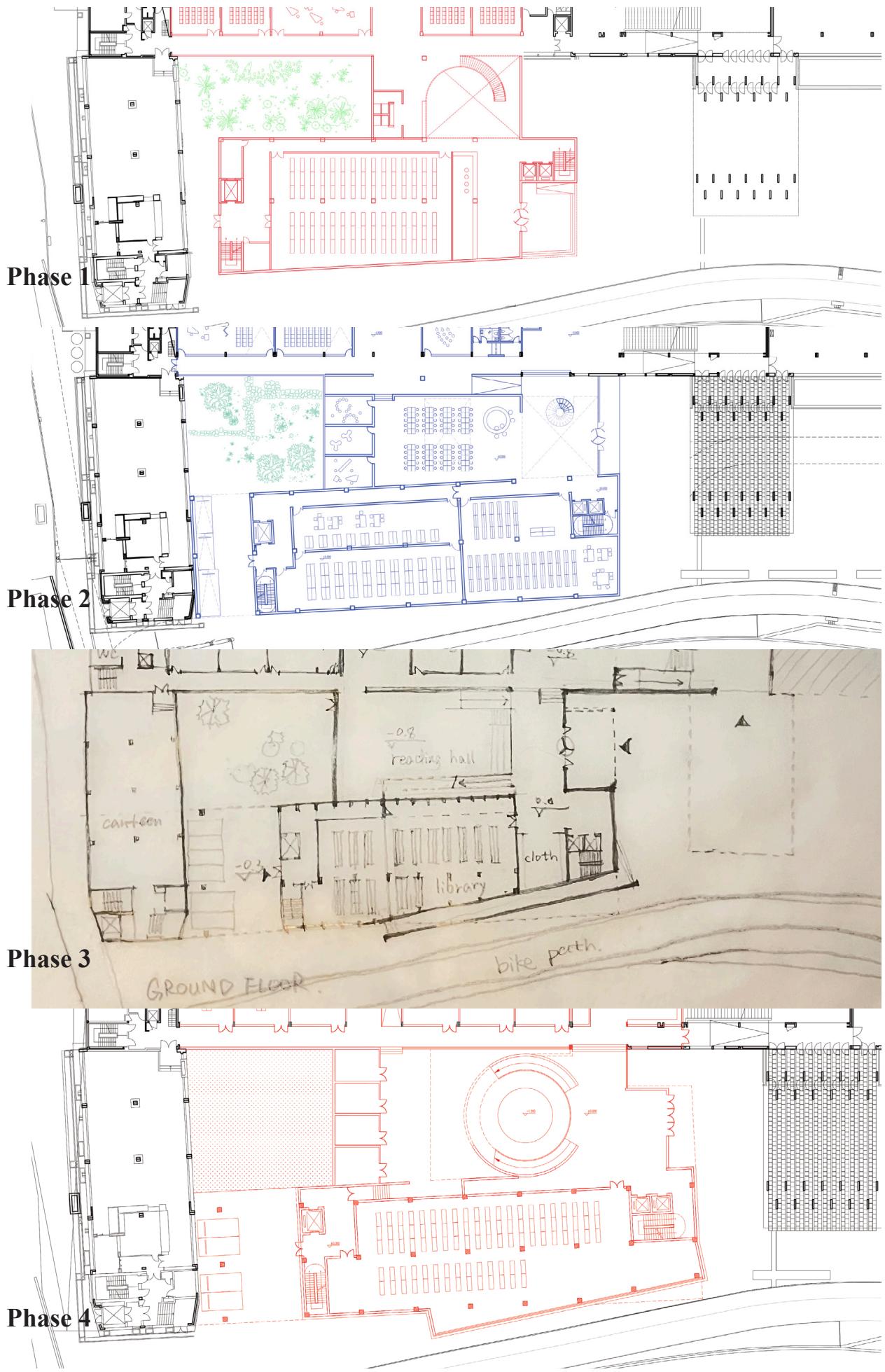


week 3.6

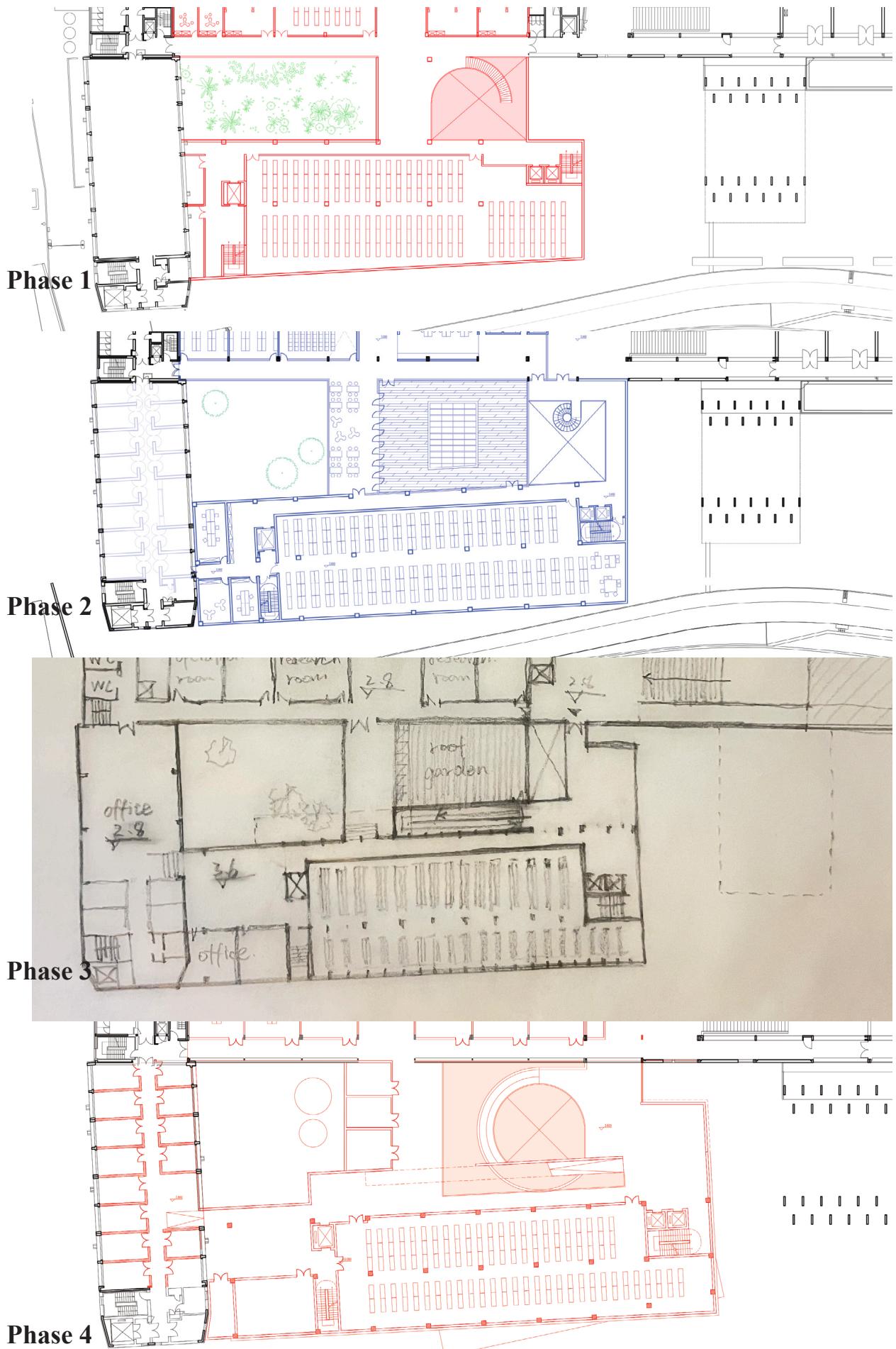


The street facade of the new north wing building adopts a modular curtain wall system, so that limited lighting and windows can be set according to the indoor functions, thereby protecting the precious archives from being weathered by the sun.

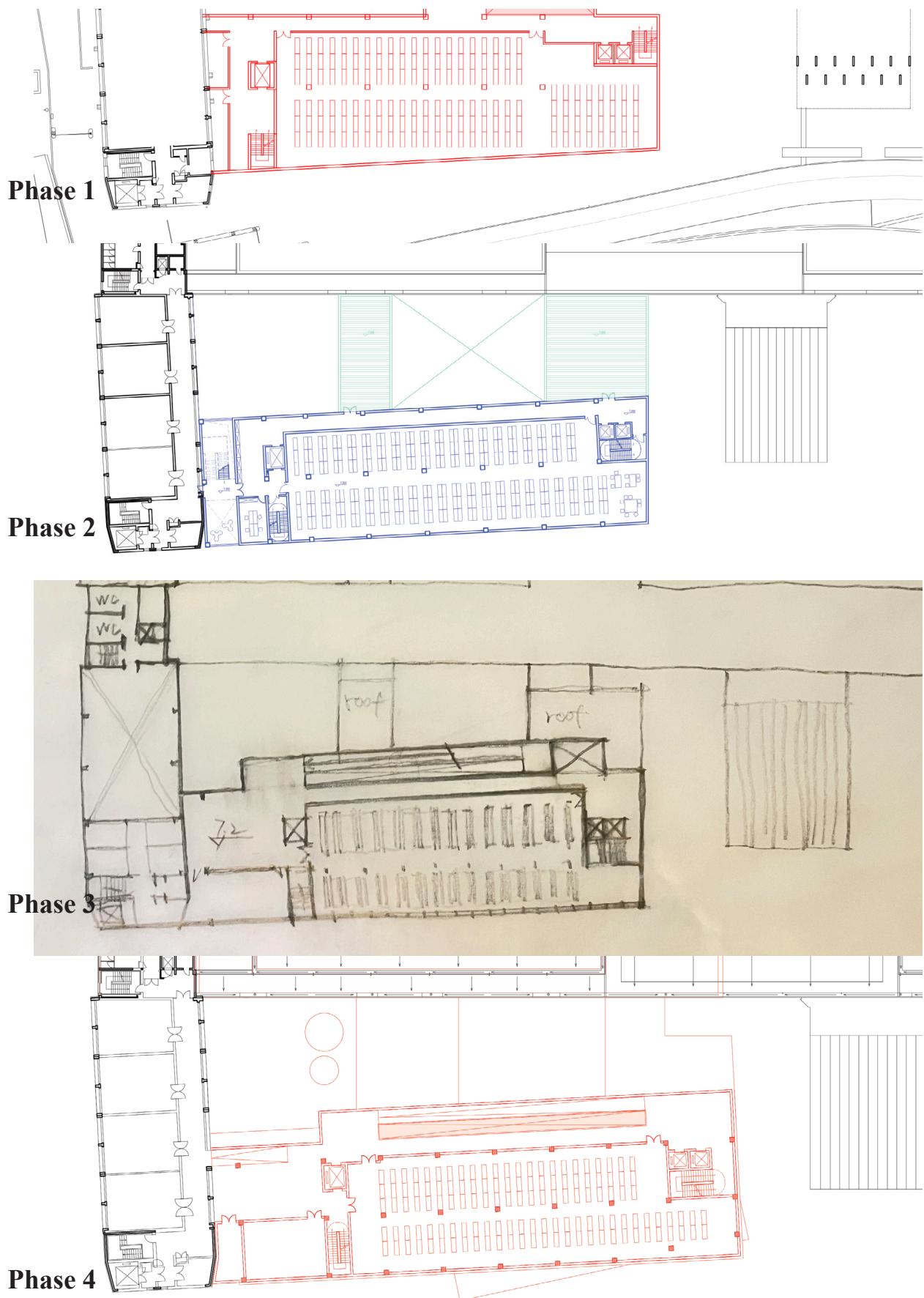
week 3.6 Ground Floor Plans



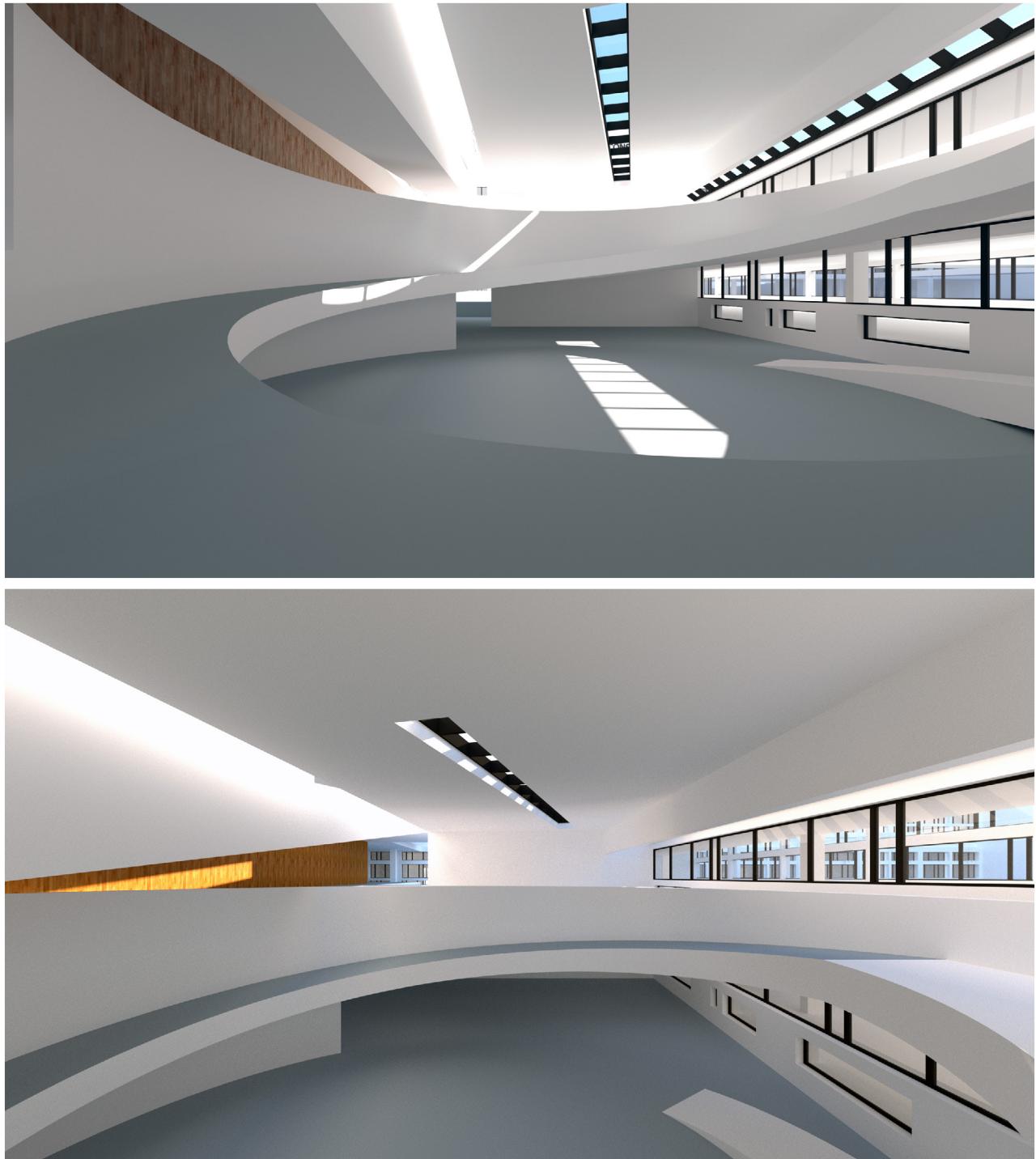
week 3.6 1st Floor Plans



week 3.6 1st Floor Plans

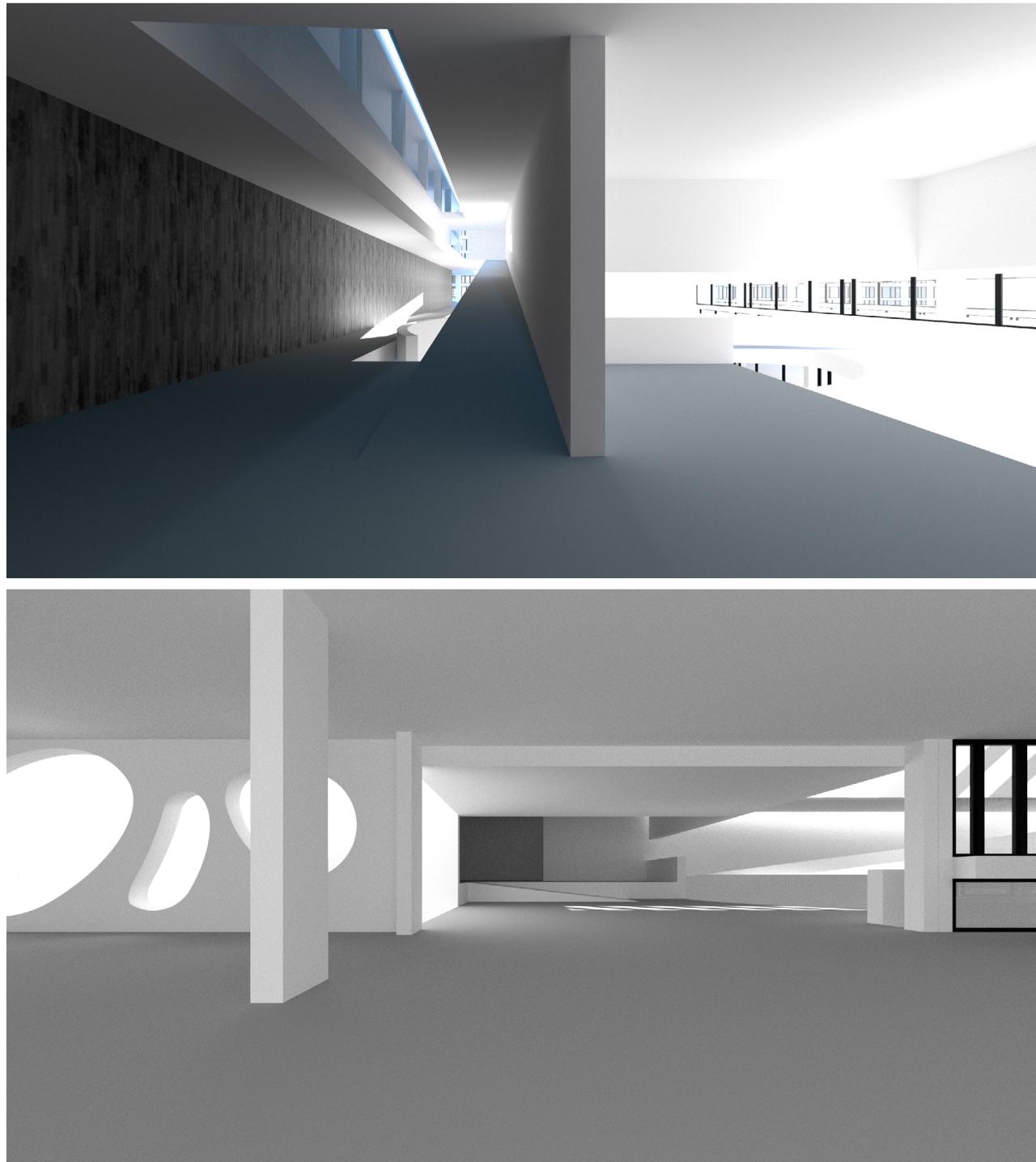


week 3.7

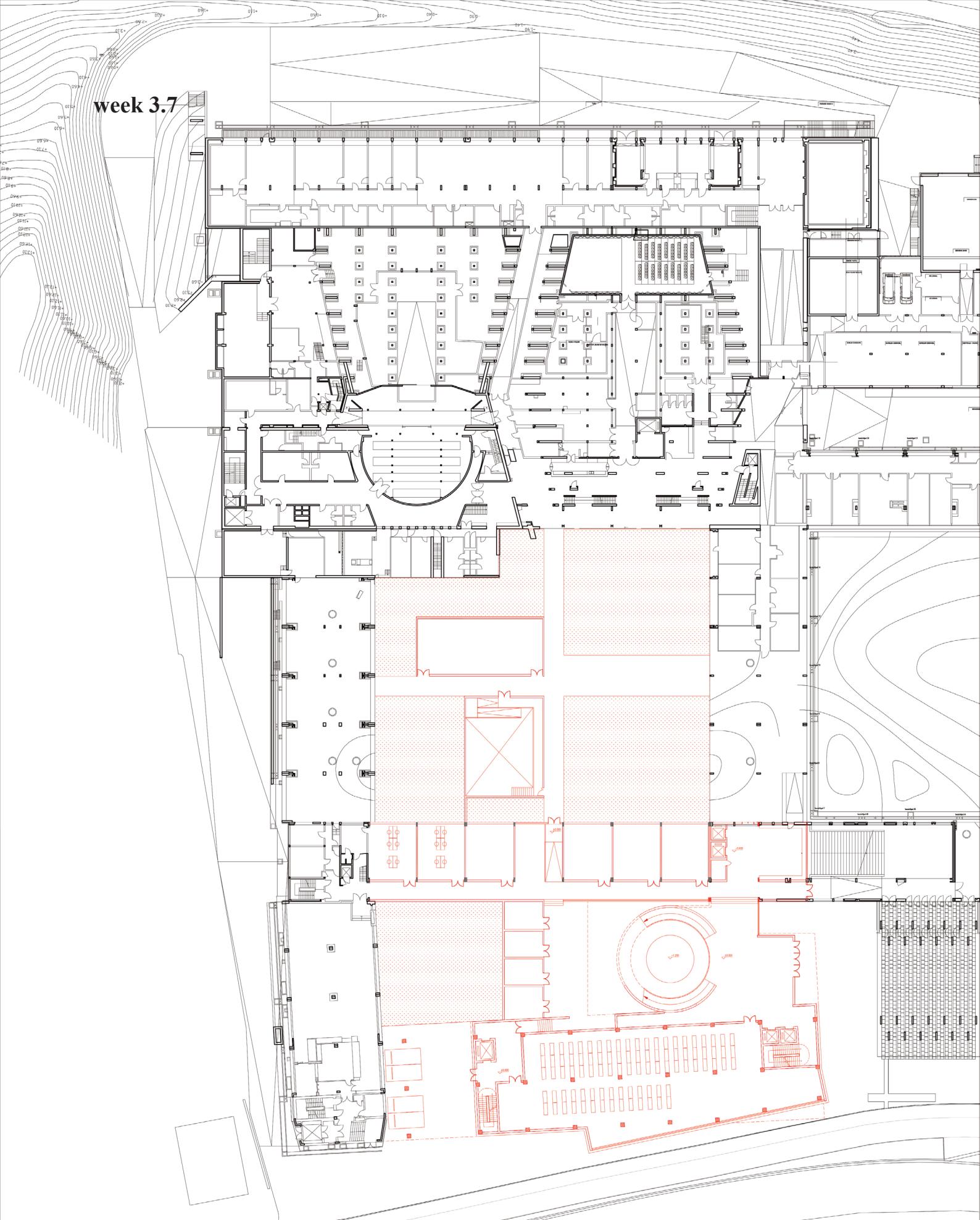


A sand table model of Antwerp can be placed in the center of the circular ramp as the opening part of the archive.

week 3.7

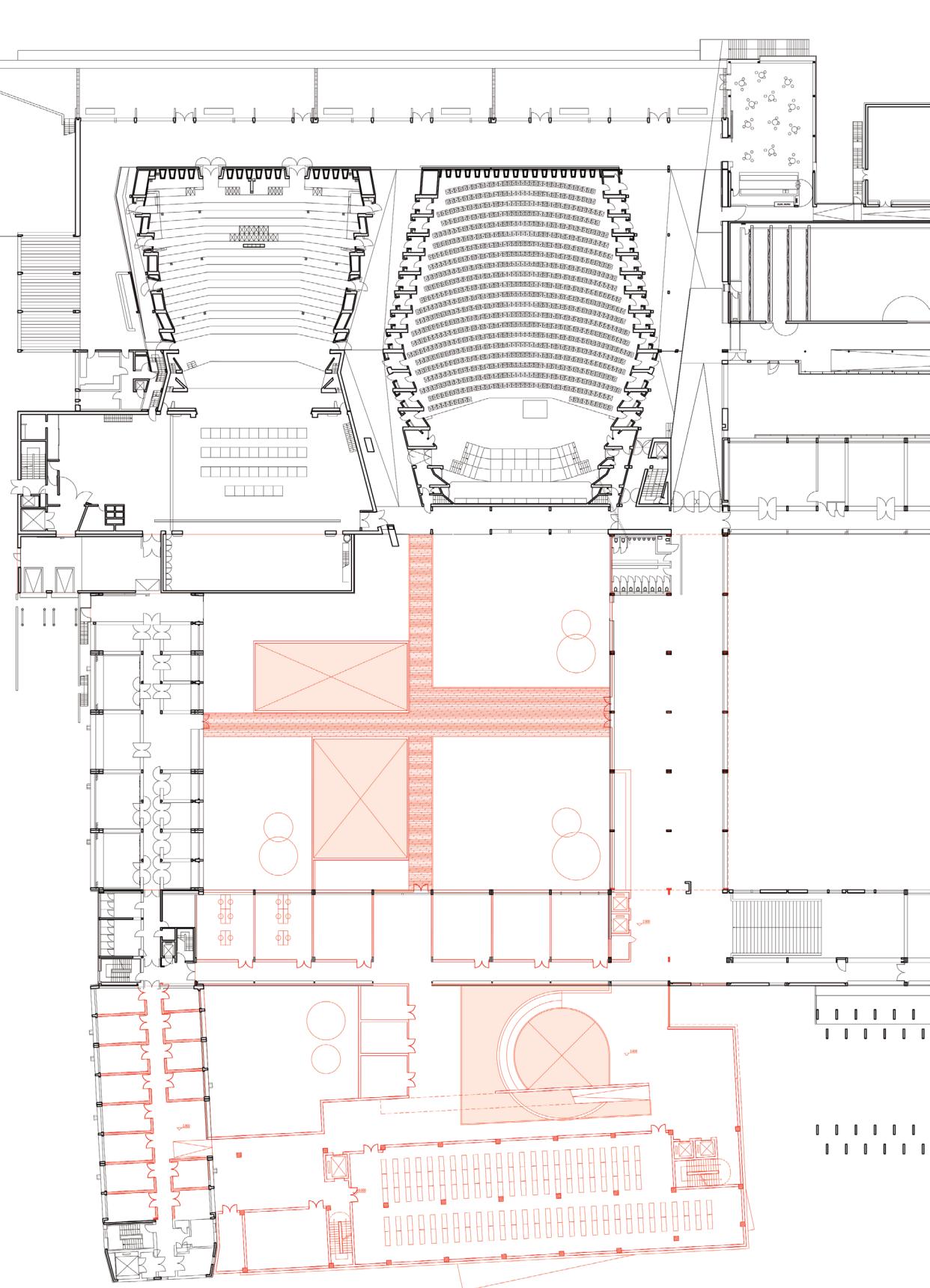


week 3.7



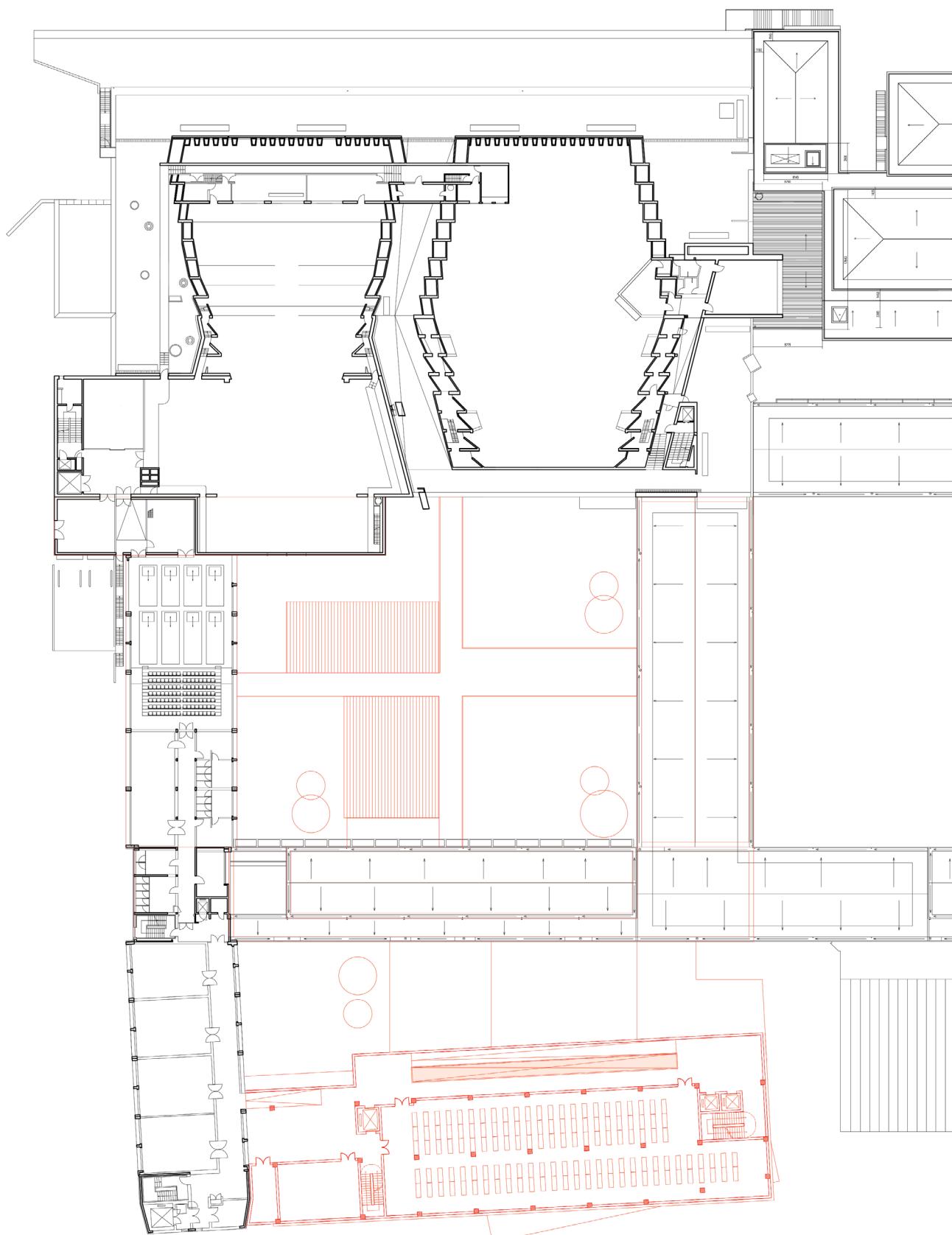
Ground Floor Plan

week 3.7



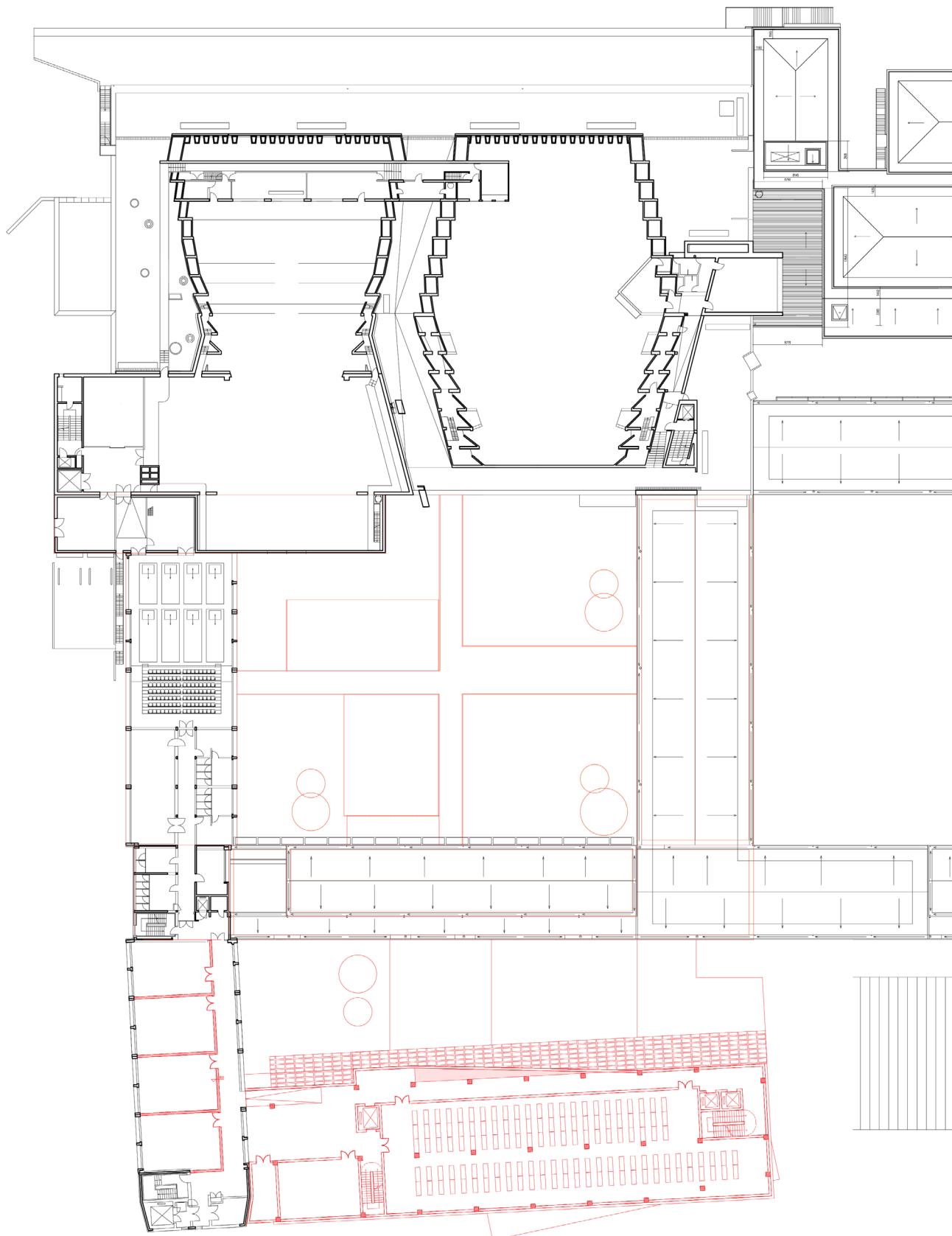
1st Floor Plan

week 3.7



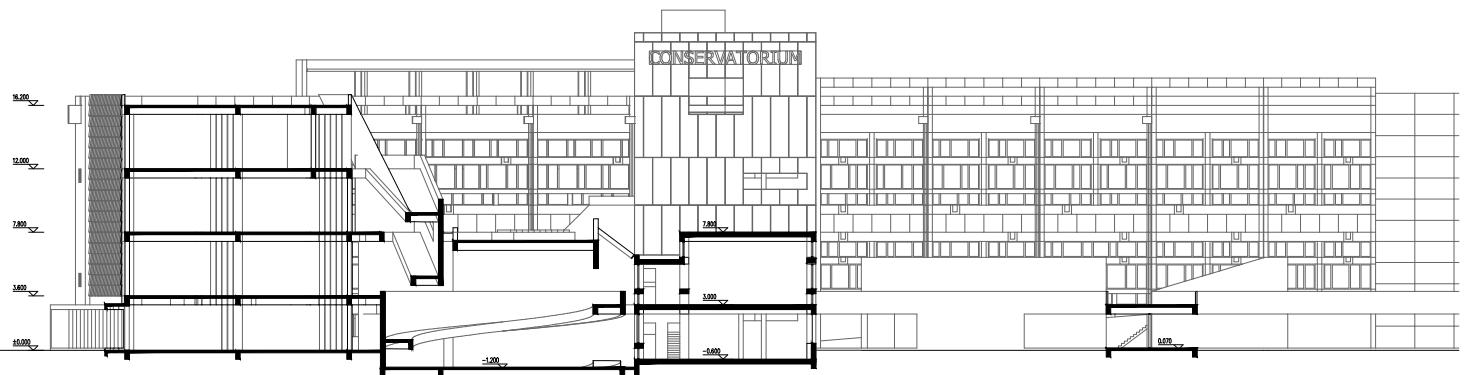
2nd Floor Plan

week 3.7

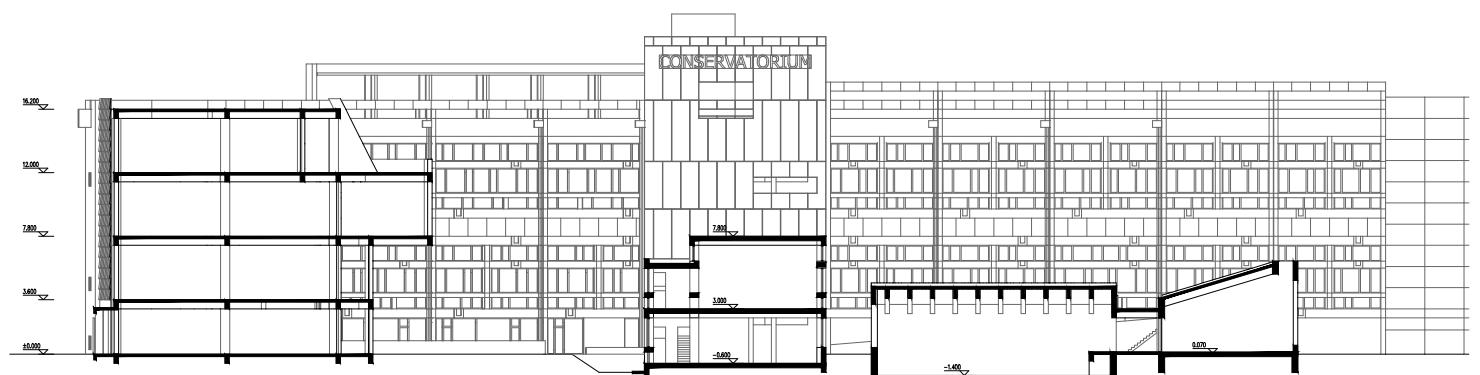


3rd Floor Plan

week 3.7



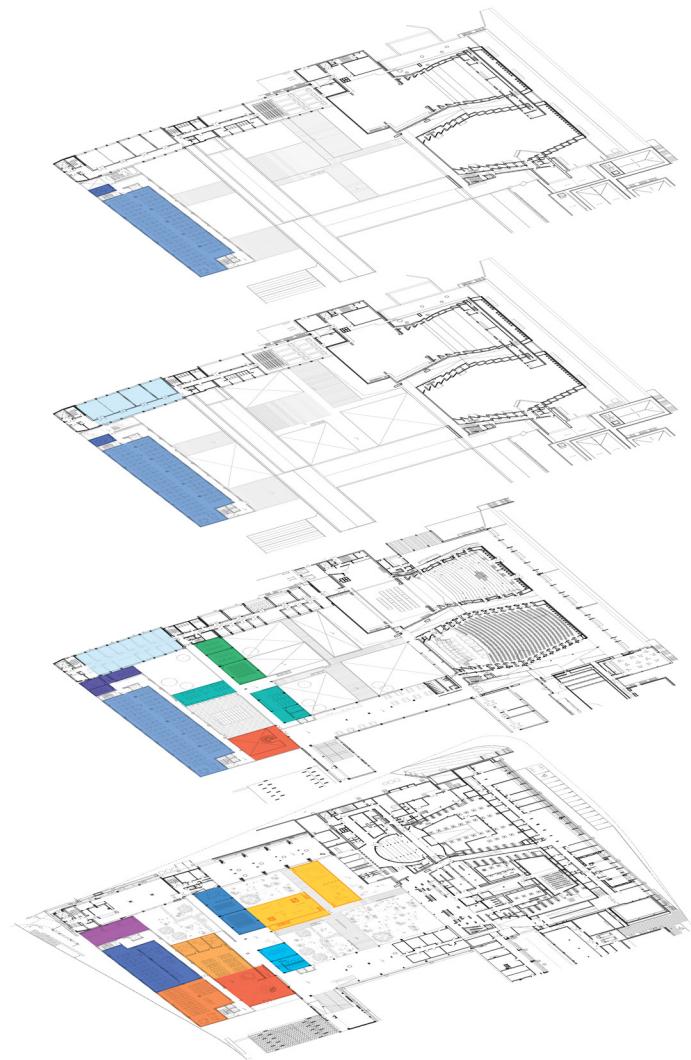
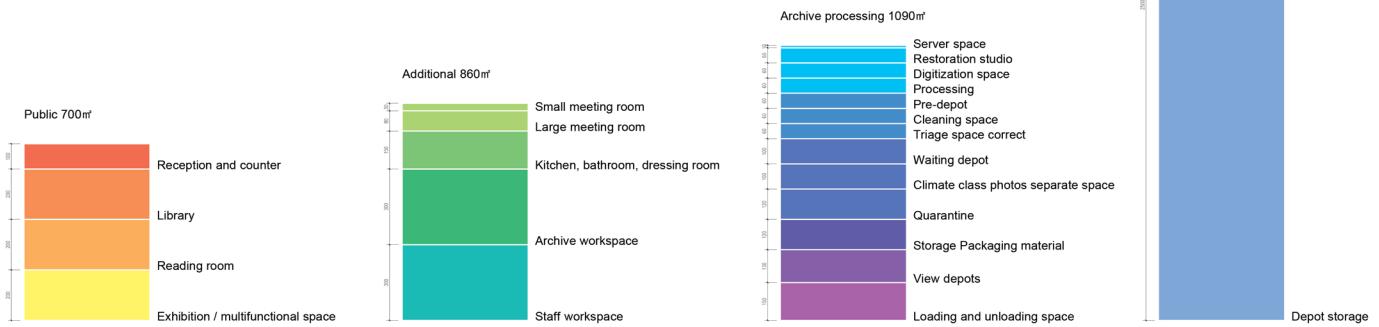
1-1 Section



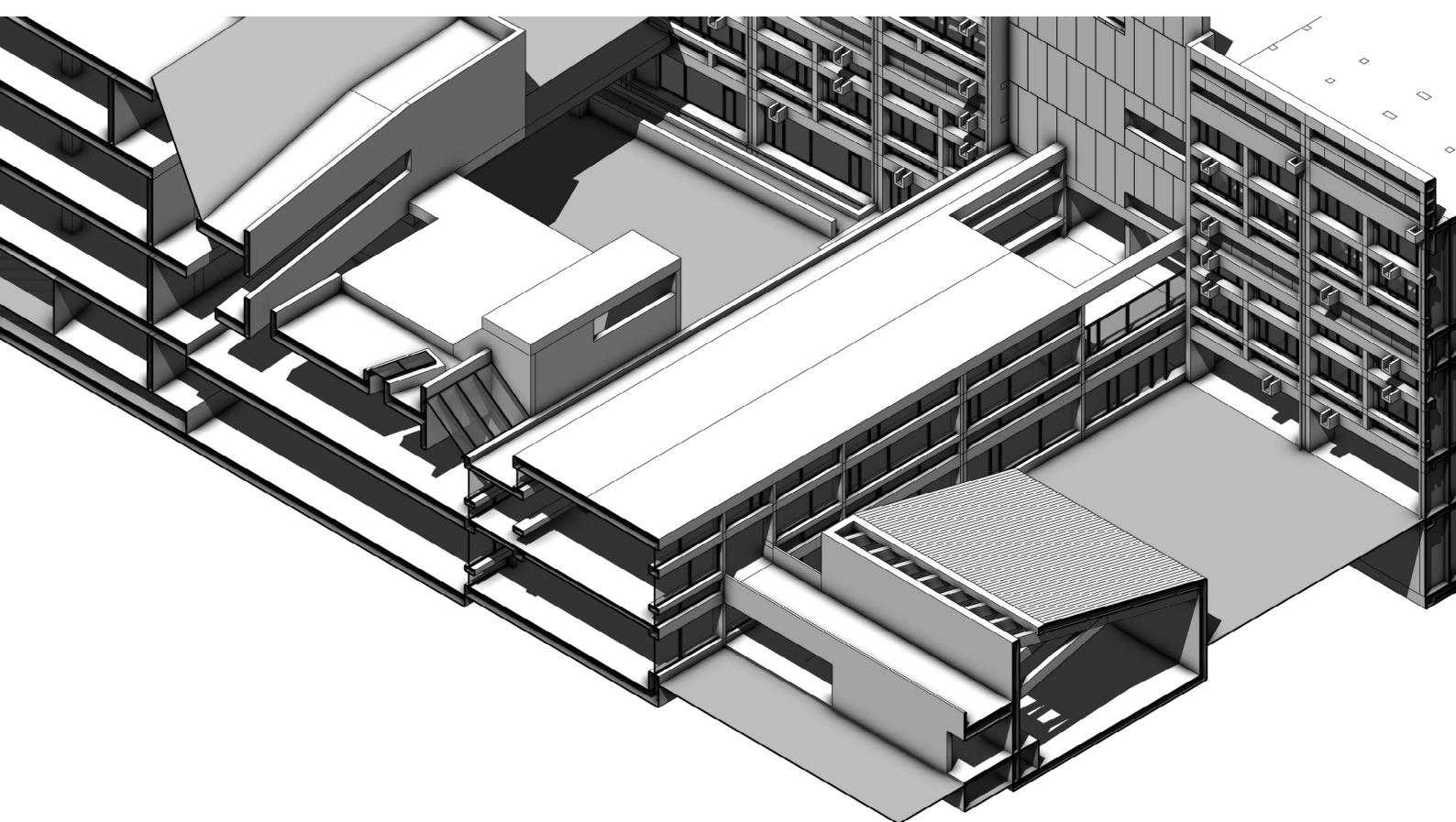
2-2 Section

week 3.7

Function Analysis

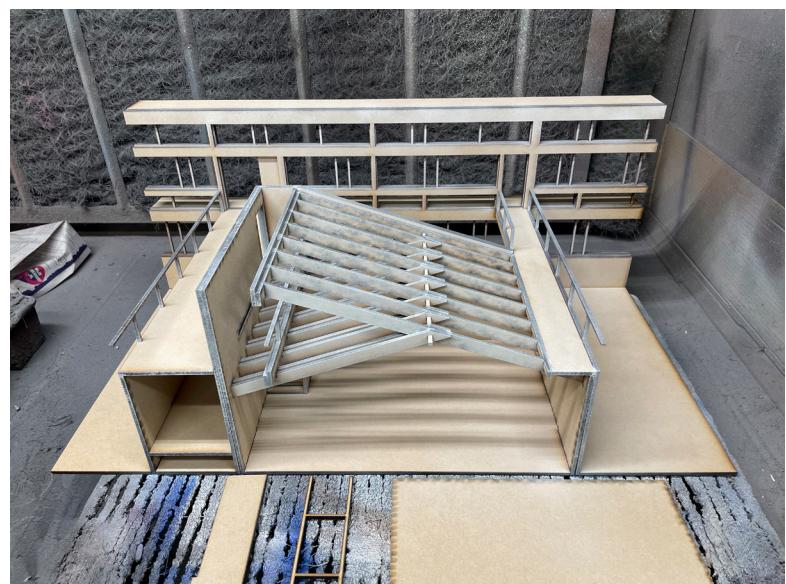


week 3.7



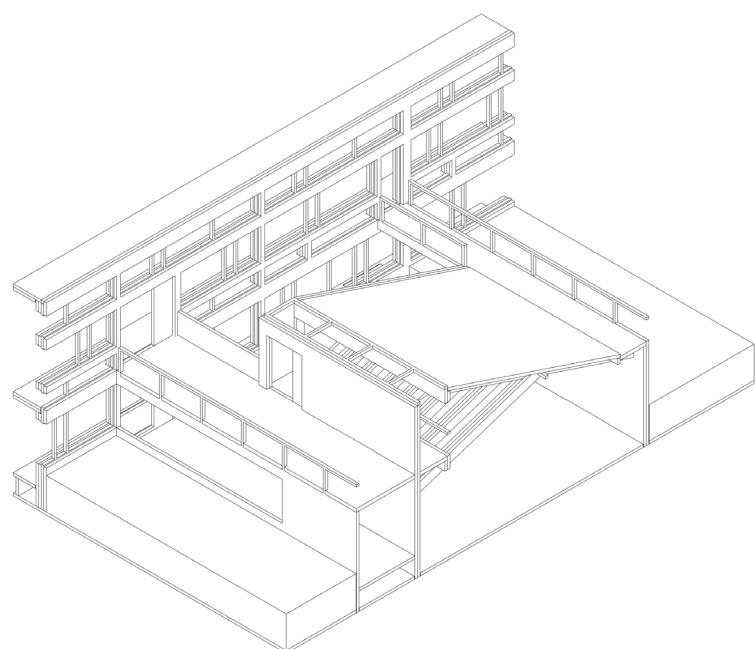
In the selection of P3 fragment, I chose the exhibition hall part, which is relatively stable in the design process. The new north wing needs more time to be deliberated and designed.

week 3.7



Fragment model
making process

week 3.8



week 3.8



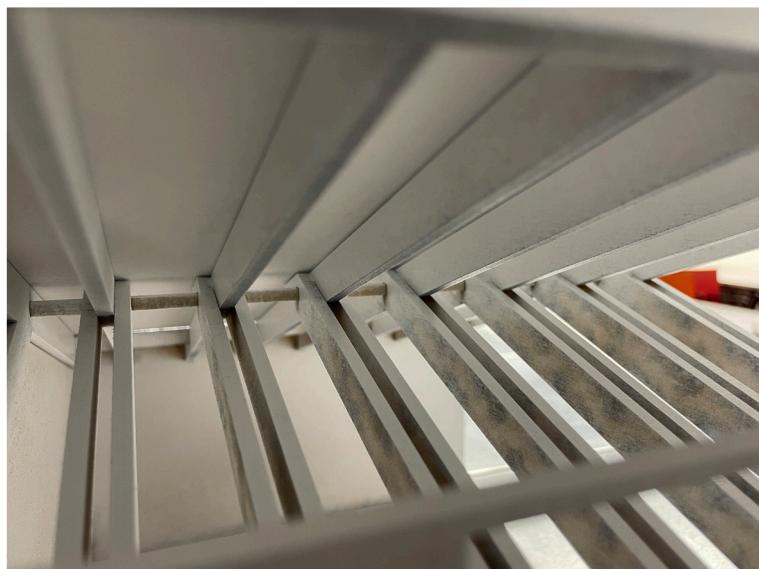
week 3.8



week 3.8



week 3.8



week 3.9



P3 NOTES:

Your project consists of two buildings with corridors filling one of the courtyards and a larger and higher volume facing the street that creates a new courtyard with the 'old' Stynen building. A circular ramp in this courtyard is connected to the entrance and contributes to connecting the elevated public route in DeSingel to the ground. Watch out not to get lost in too much complicated formal elements and find a way to formally connect the various building parts.

Daniel's notes:

Great models. The fragment has really helped in clarifying the relation to the existing façade. How do you make the lowered exhibition halls accessible? Does it need to be sunk? Does this language of pitched roofs play a role in the volumetric character of the larger volume on the former courtyard

Sam's notes:

Walls in the garden infills are missing in the ground floor plan.
Have a look at drawing conventions: first floor plan: sloping roofs are not represented with a cross but just like a ramp: a triangular shape pointing towards the highest point of the roof.

Laura's notes:

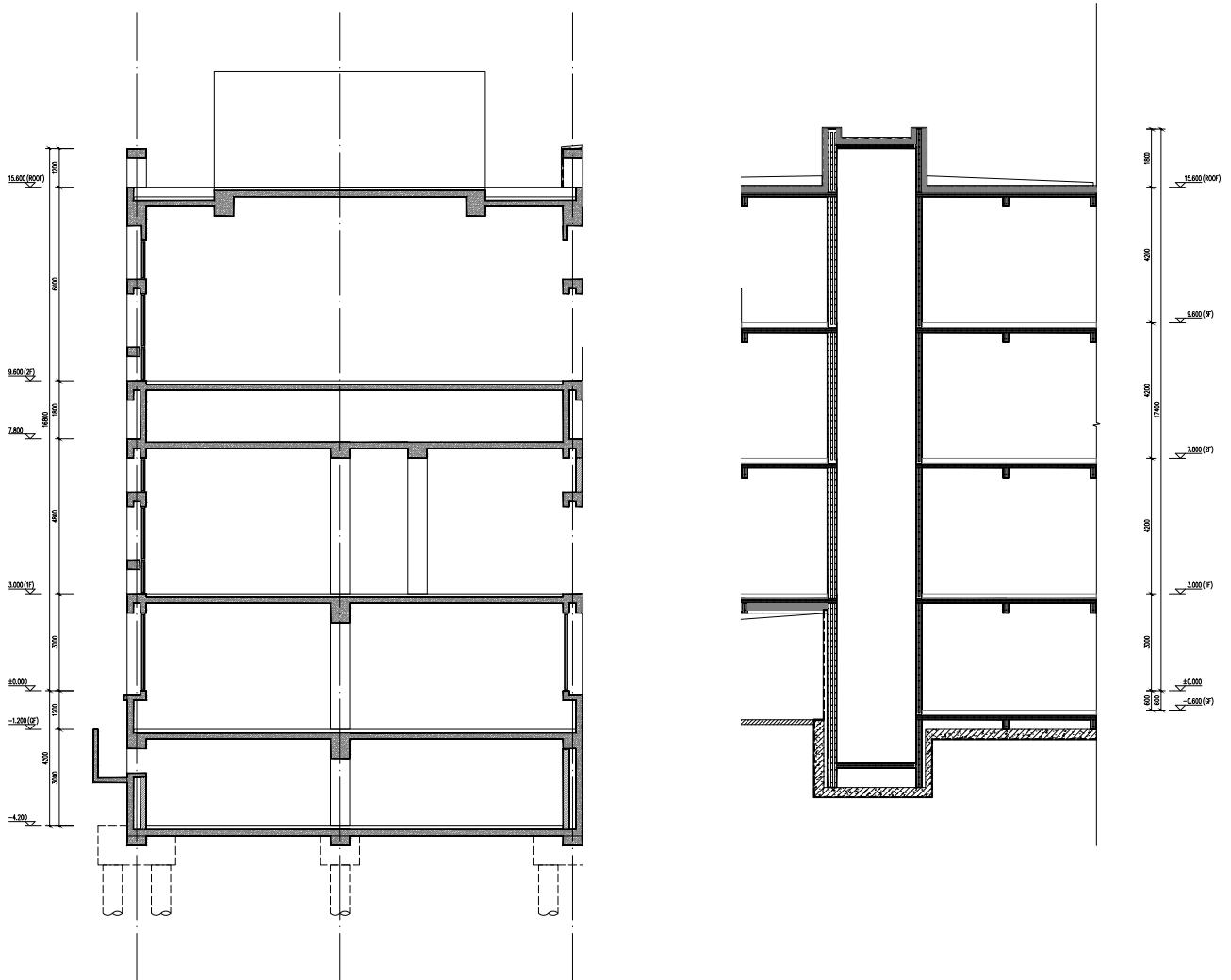
Circular ramp takes up a lot of space

Daniel's notes:

Guggenheim - FLWright
How to deal with the idea of representative entrances in the era when you need to provide accessible entrances.
Did making the 1:20 model inform the making of the 1:200 model?
Do the sloped roofs on the interior side be more malleable than the rigid roofs at the border?
You should keep going, you've worked very well.

Main mentor: Jurjen Zeinstra
Second mentor: Elina Karanastasi
Third mentor: Sereh Mandias
Delegate of the Board of Examiners: Herman Vande Putte

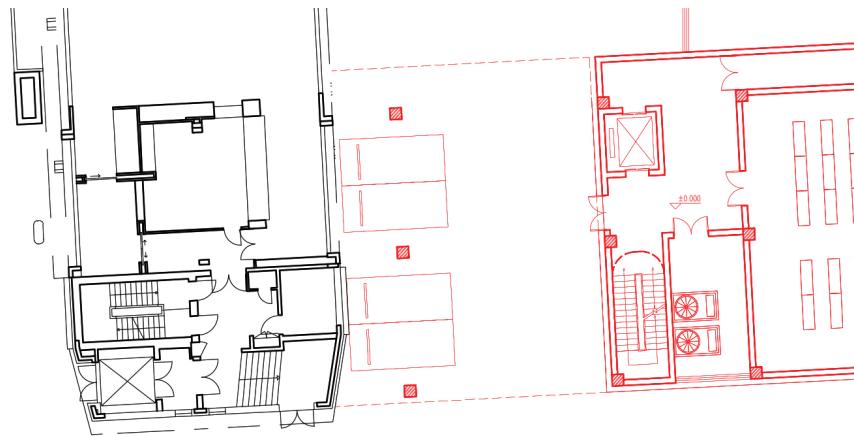
week 4.1



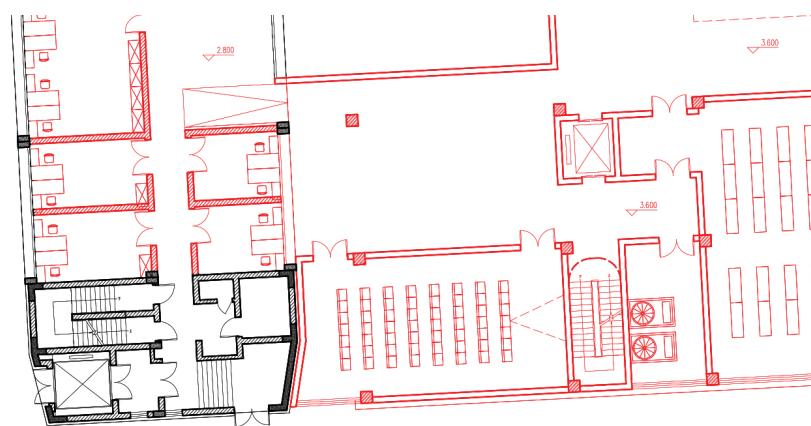
From this partial section, it can be seen that the floor height of each floor of the 1980's De Meyer / Styngen wing is not consistent, while the archive storage space of the archive requires a relatively standard and consistent floor height.

Therefore, the new proposal is placed in a staircase system to connect the functions of the new and old spaces. The ground floor is an outdoor parking and unloading site; the first floor is a relatively complete conference room or multi-functional hall; the second and third floors are an interesting high-rise shared space shaped by stairs.

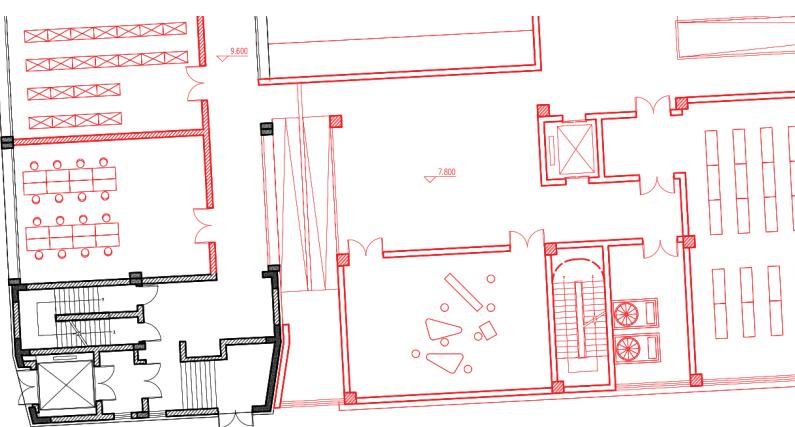
week 4.1



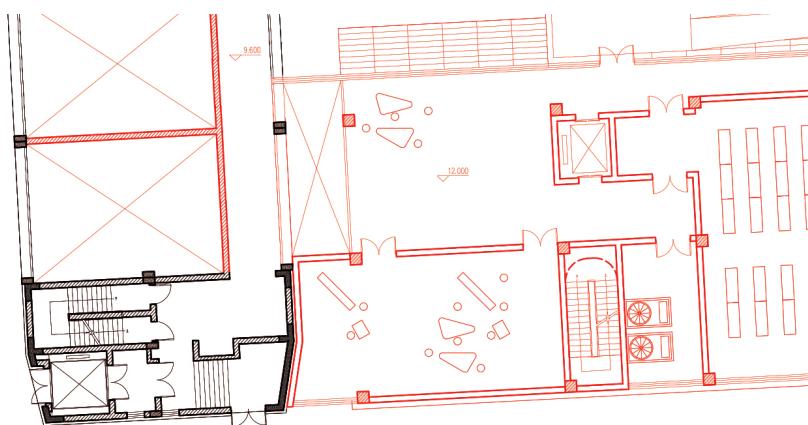
GF



1F



2F



3F

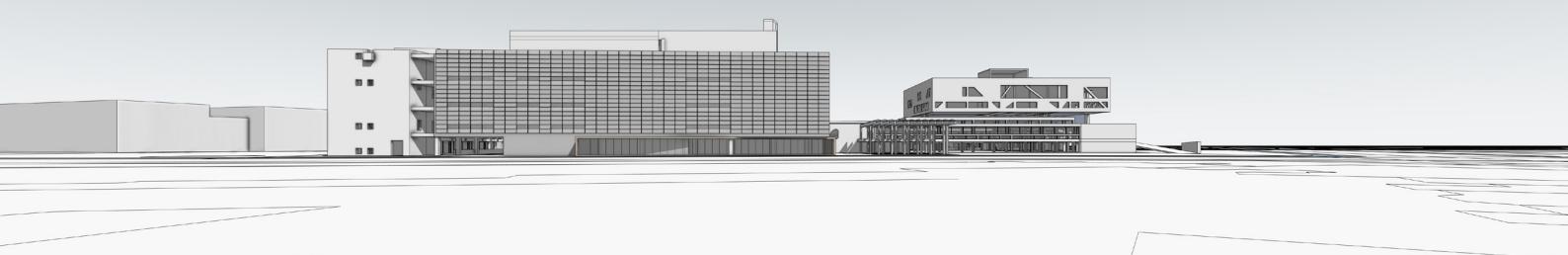
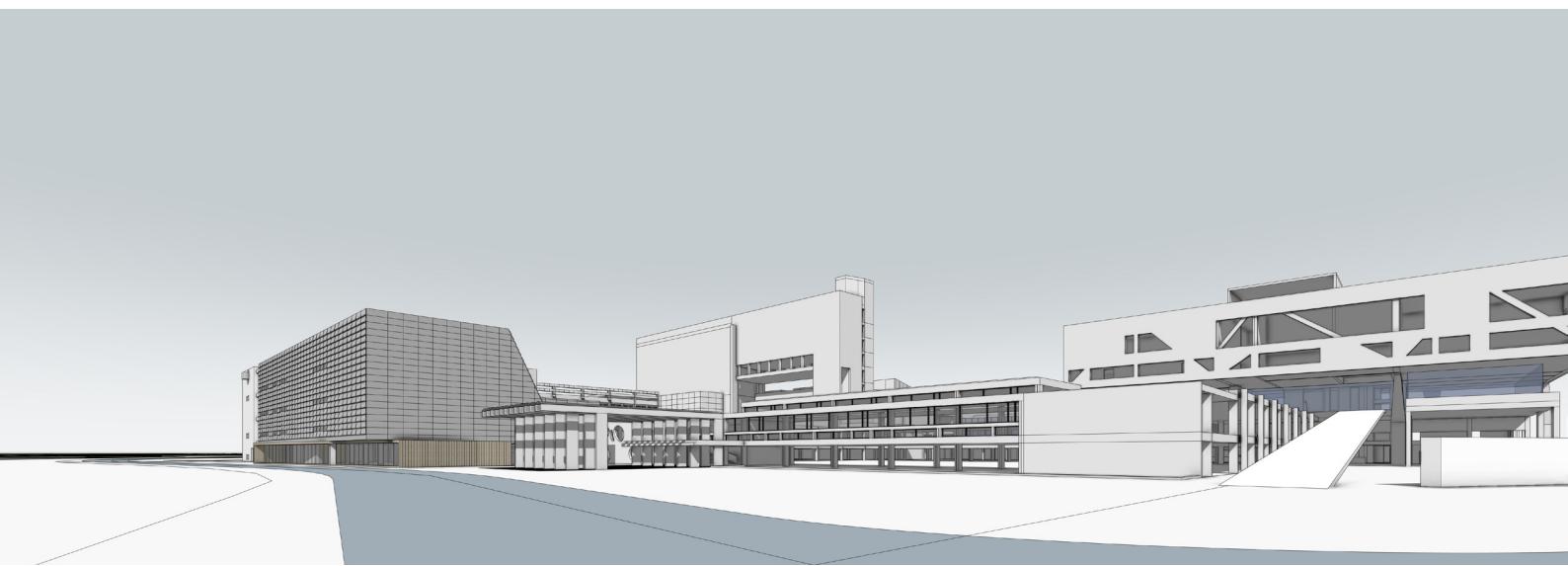
week 4.2



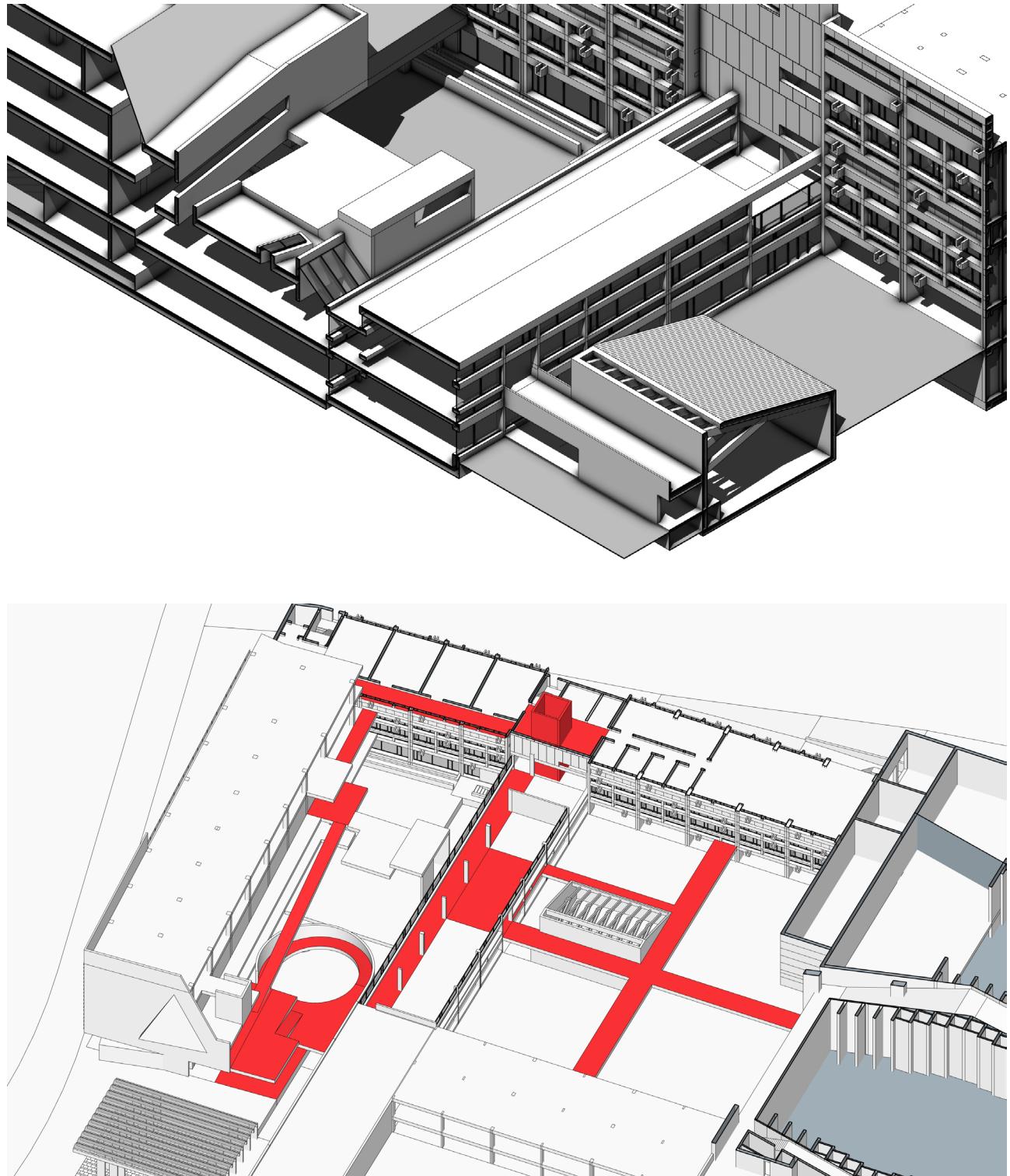
The main entrance of the archive is a concave gray space. The shape refers to the entrance of some of De Meyer's past architectural works, forming a kind of contextual inheritance.



week 4.3



week 4.4



In the selection of P3 fragment, I chose the exhibition hall part, which is relatively stable in the design process. The new north wing needs more time to be deliberated and designed.

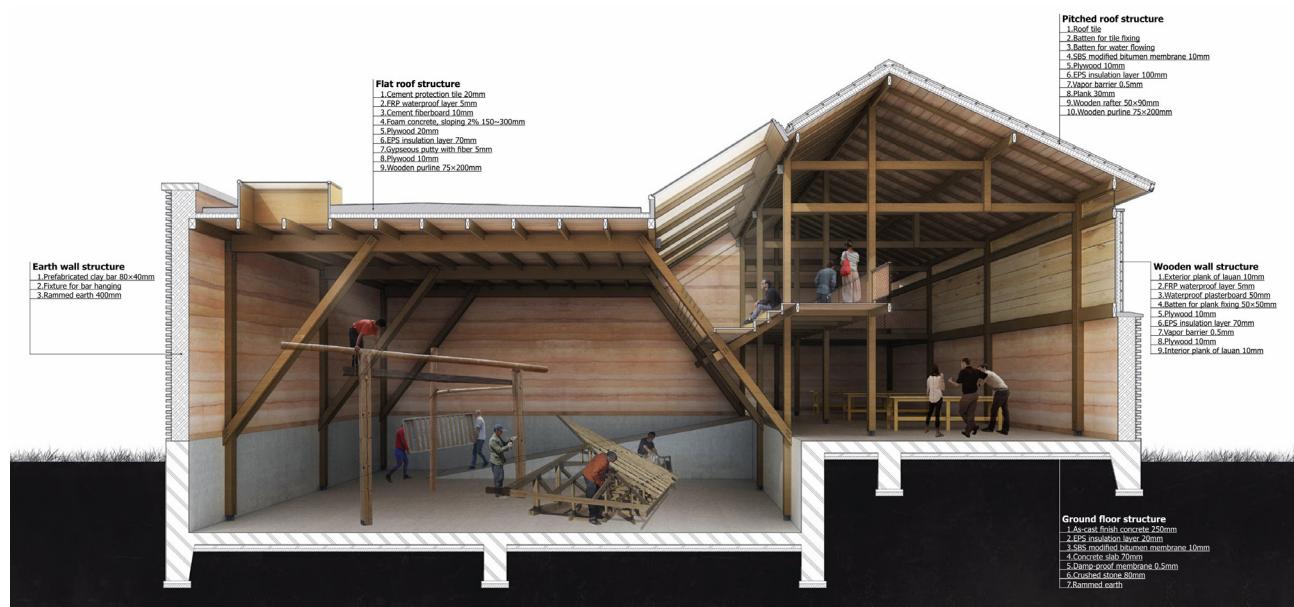
week 4.4

fragment reference cases

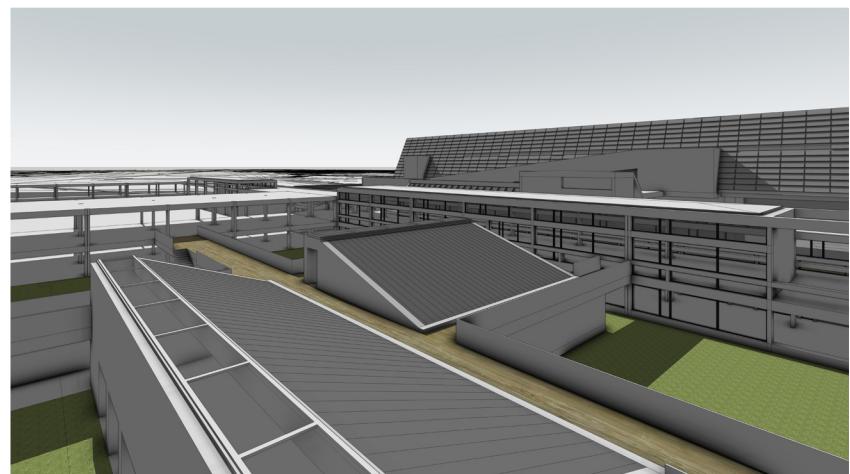
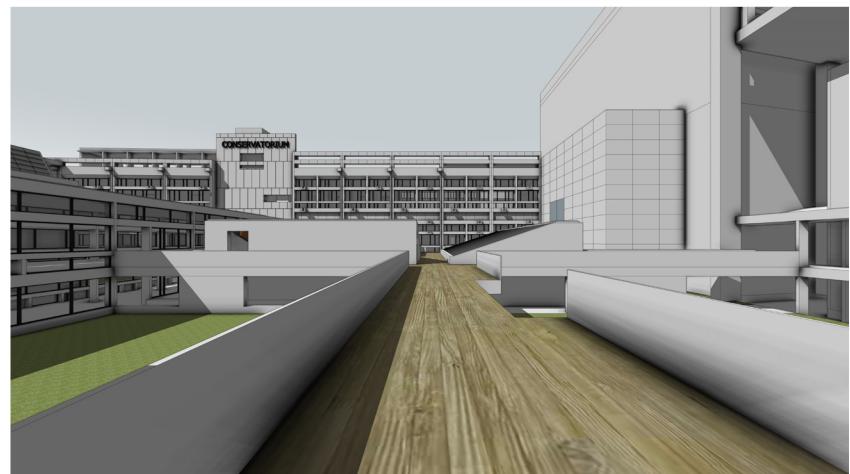
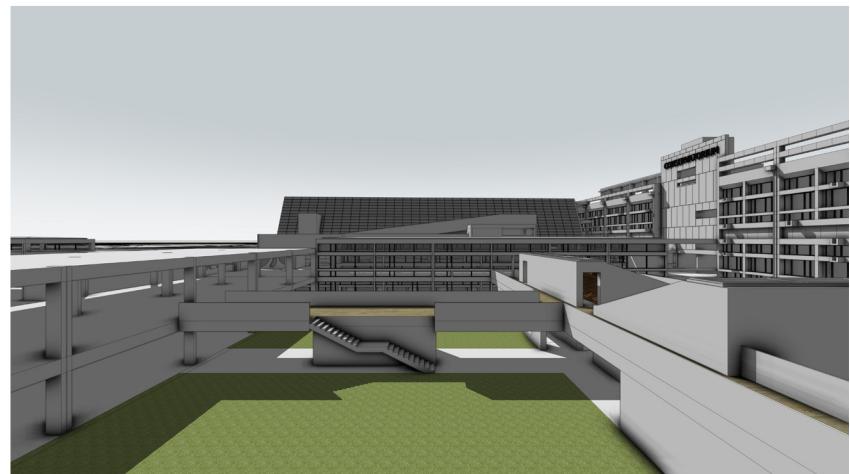
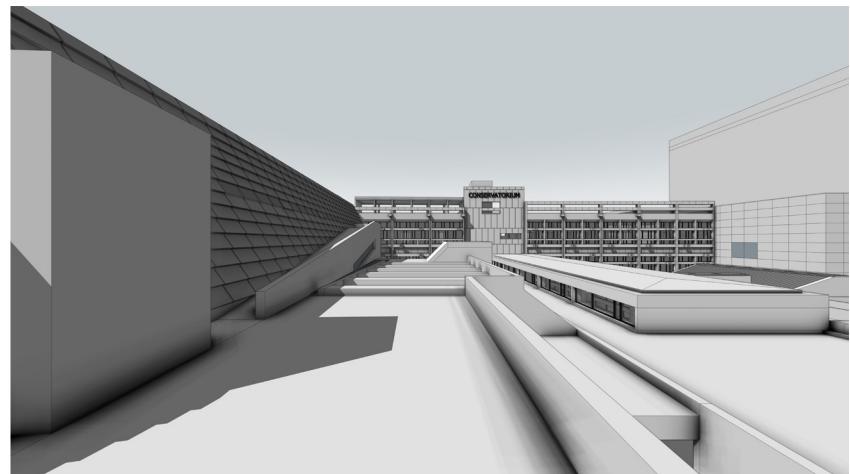
courtyard & exhibition hall



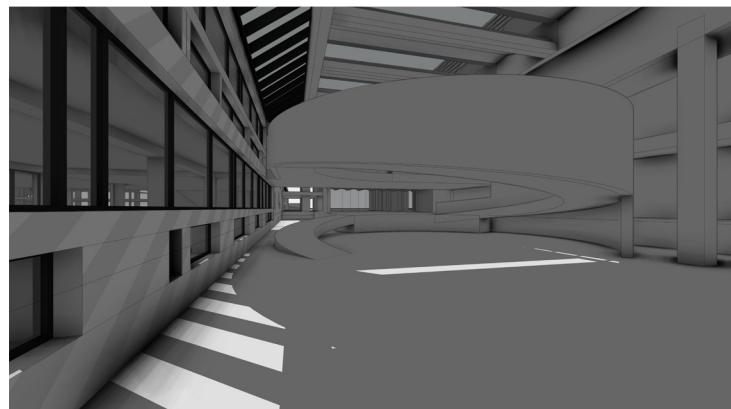
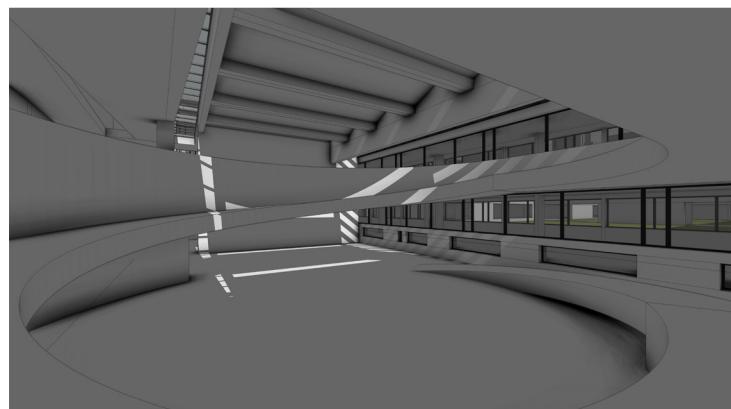
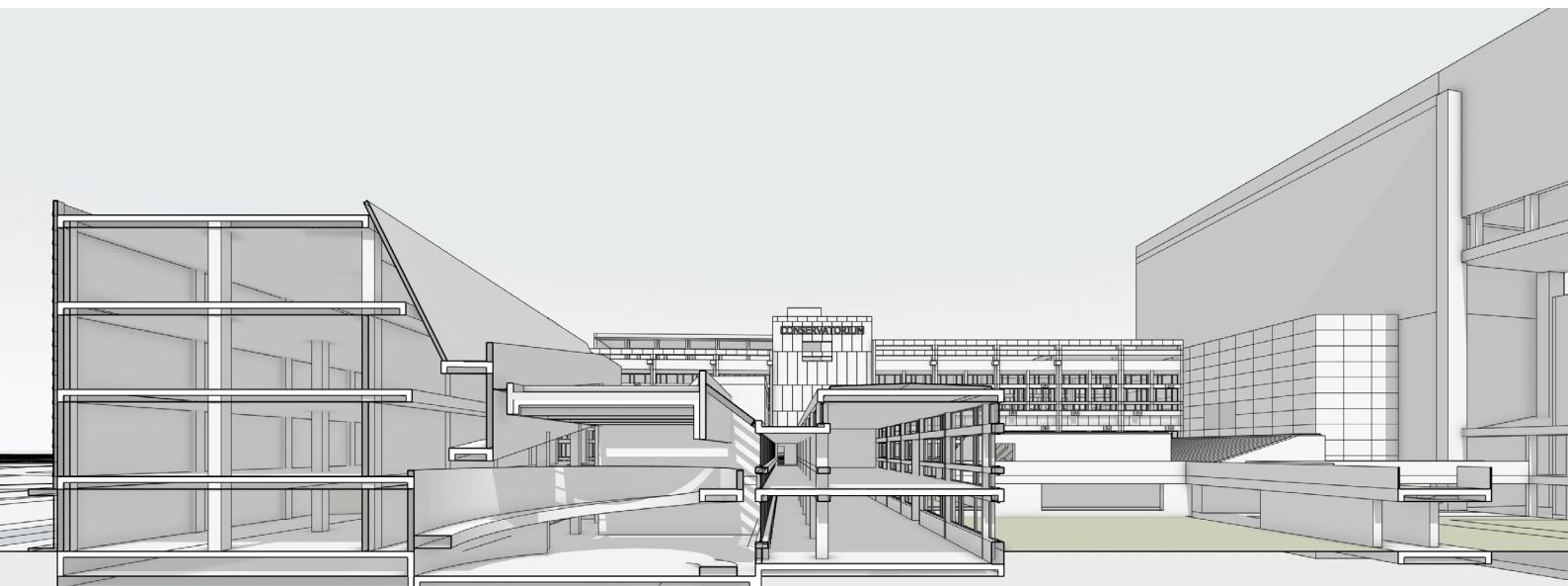
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week 4.4

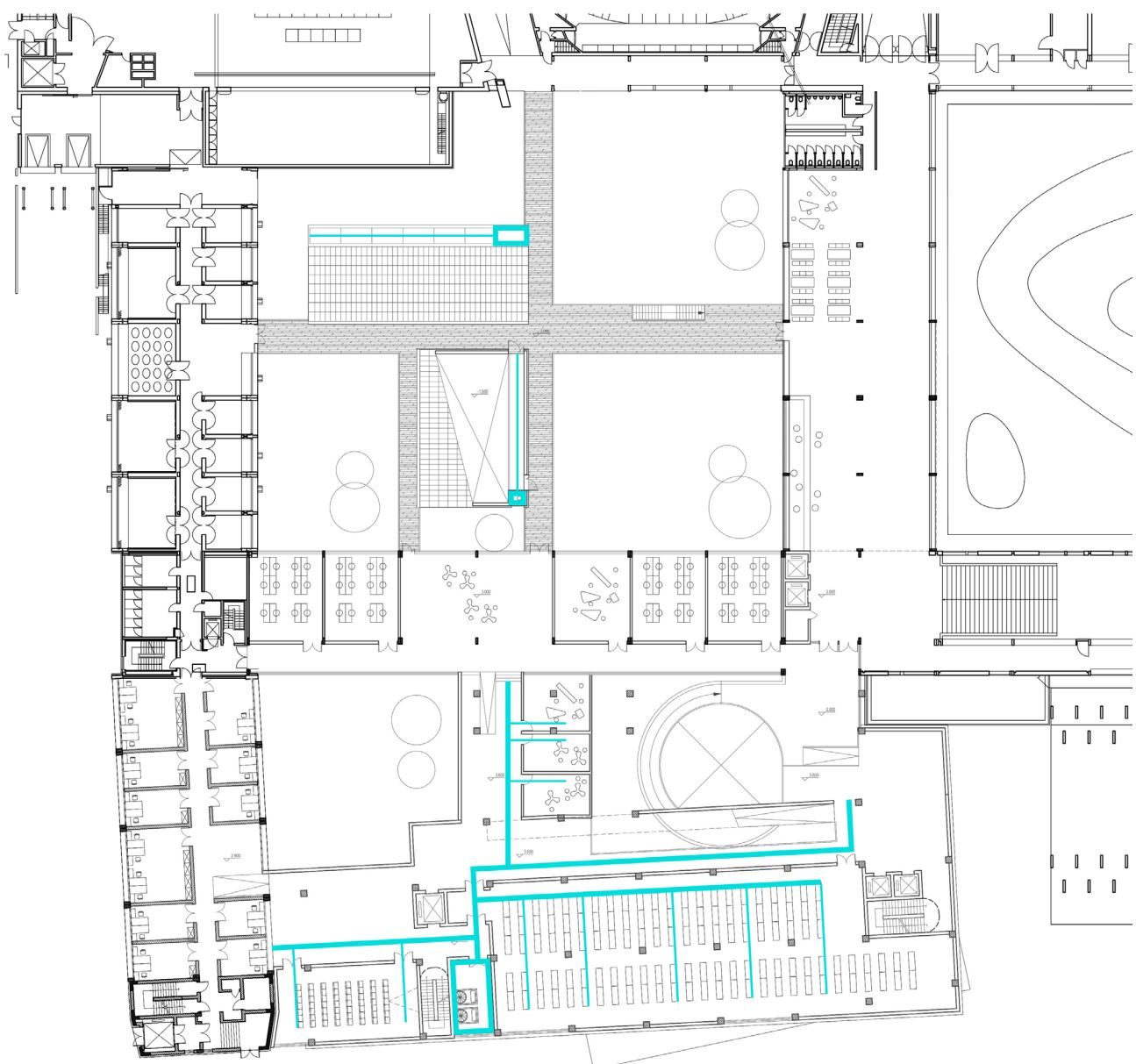


week 4.4



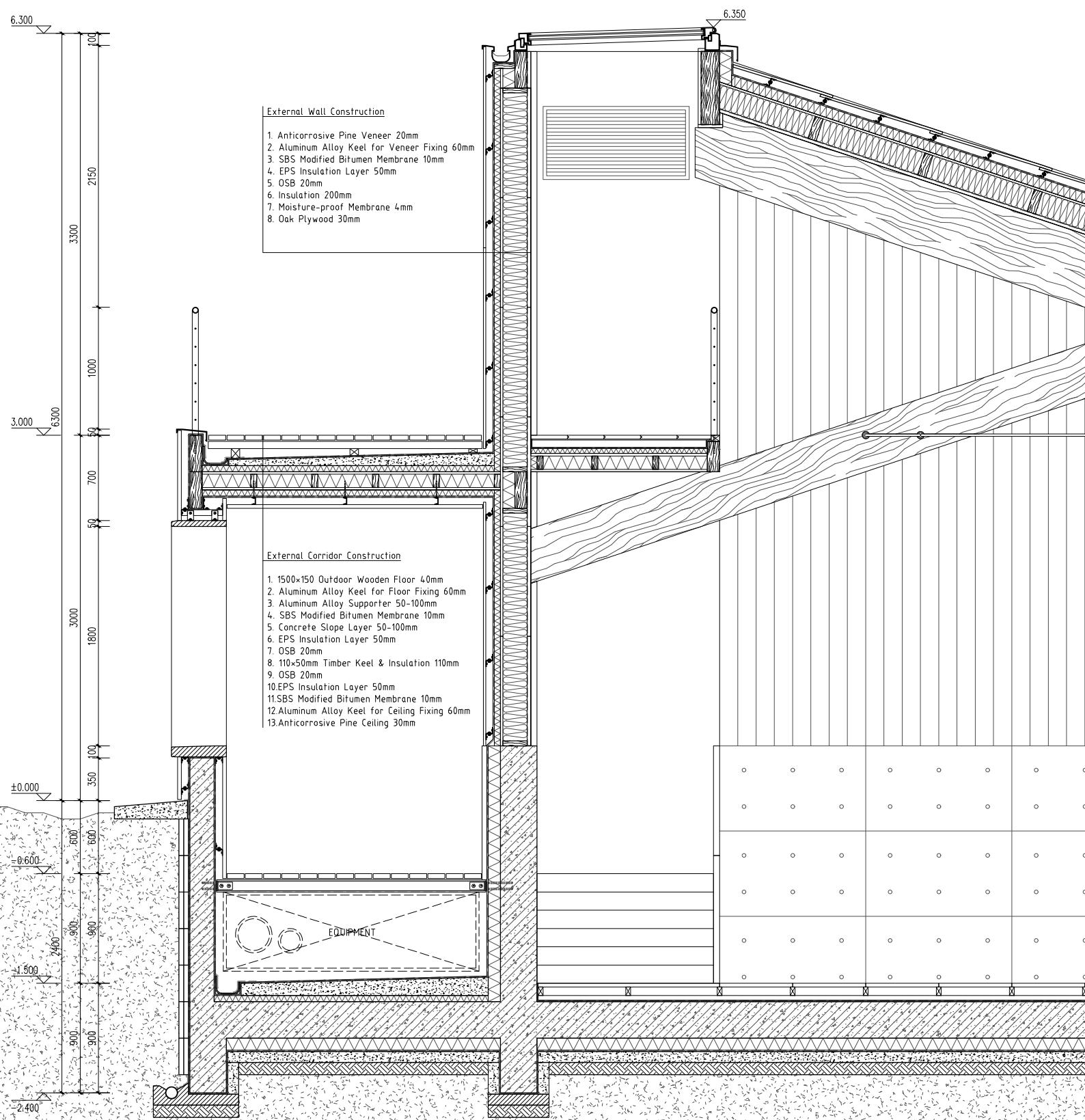
week 4.5

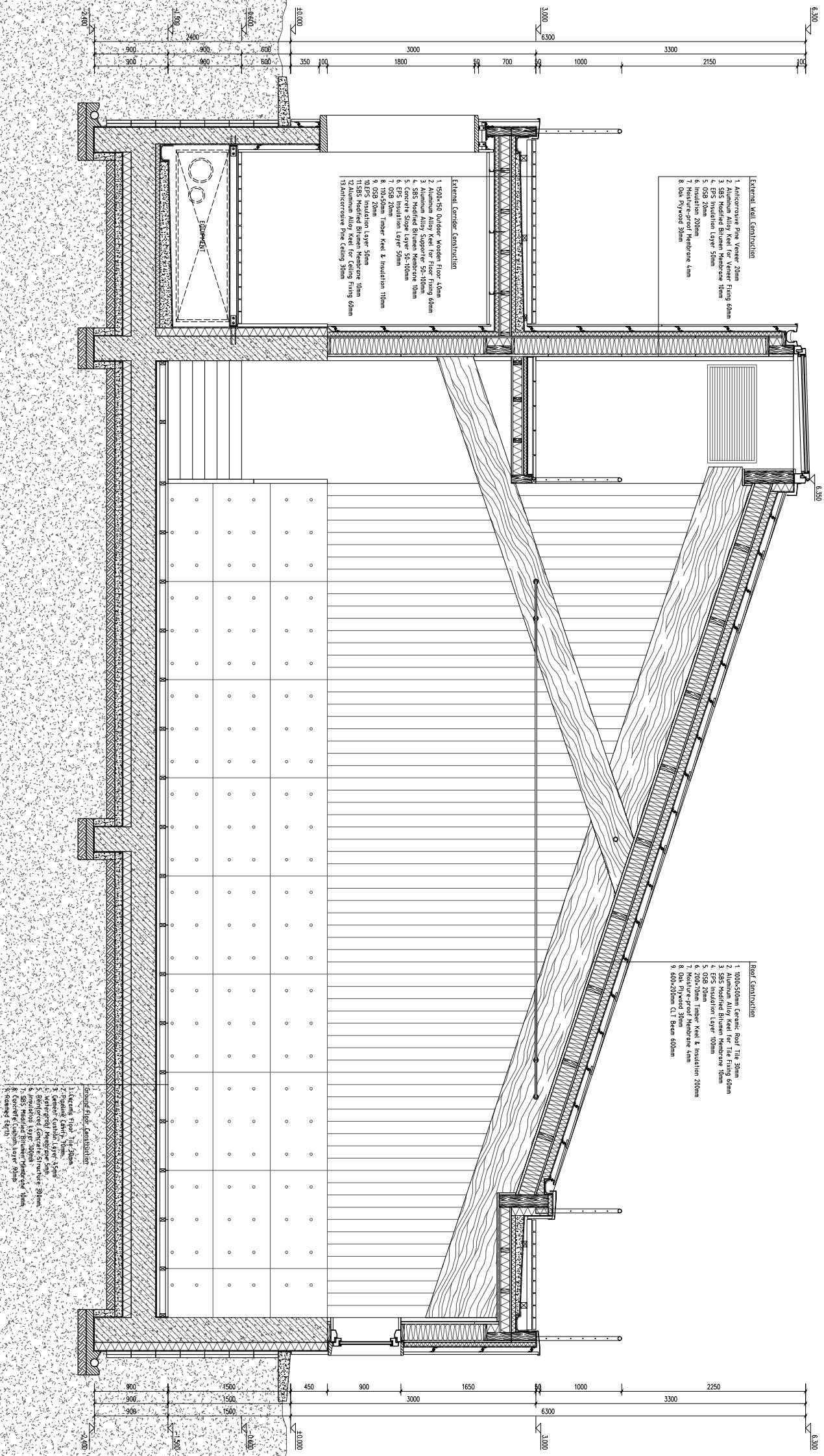
Climate Design

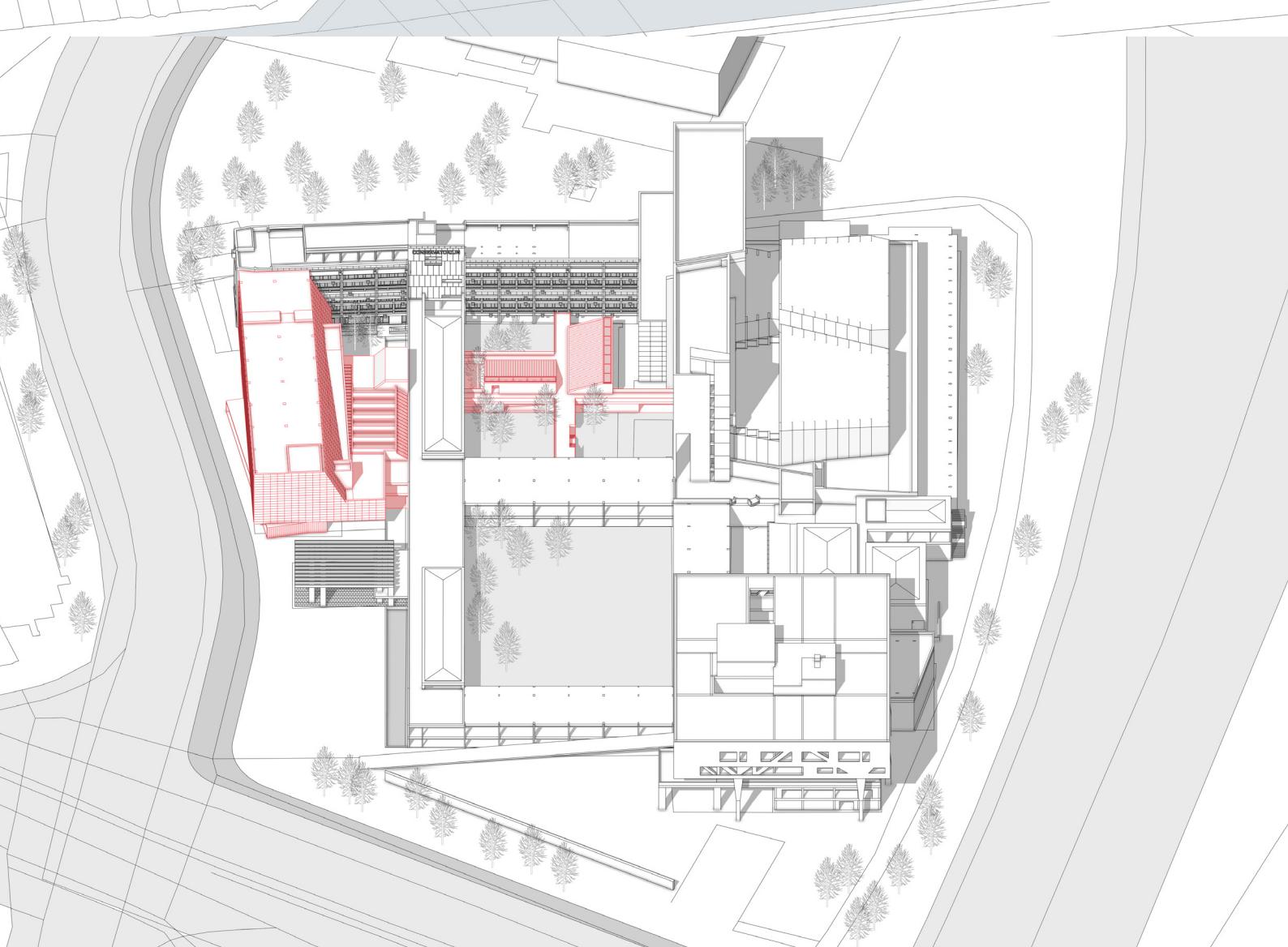
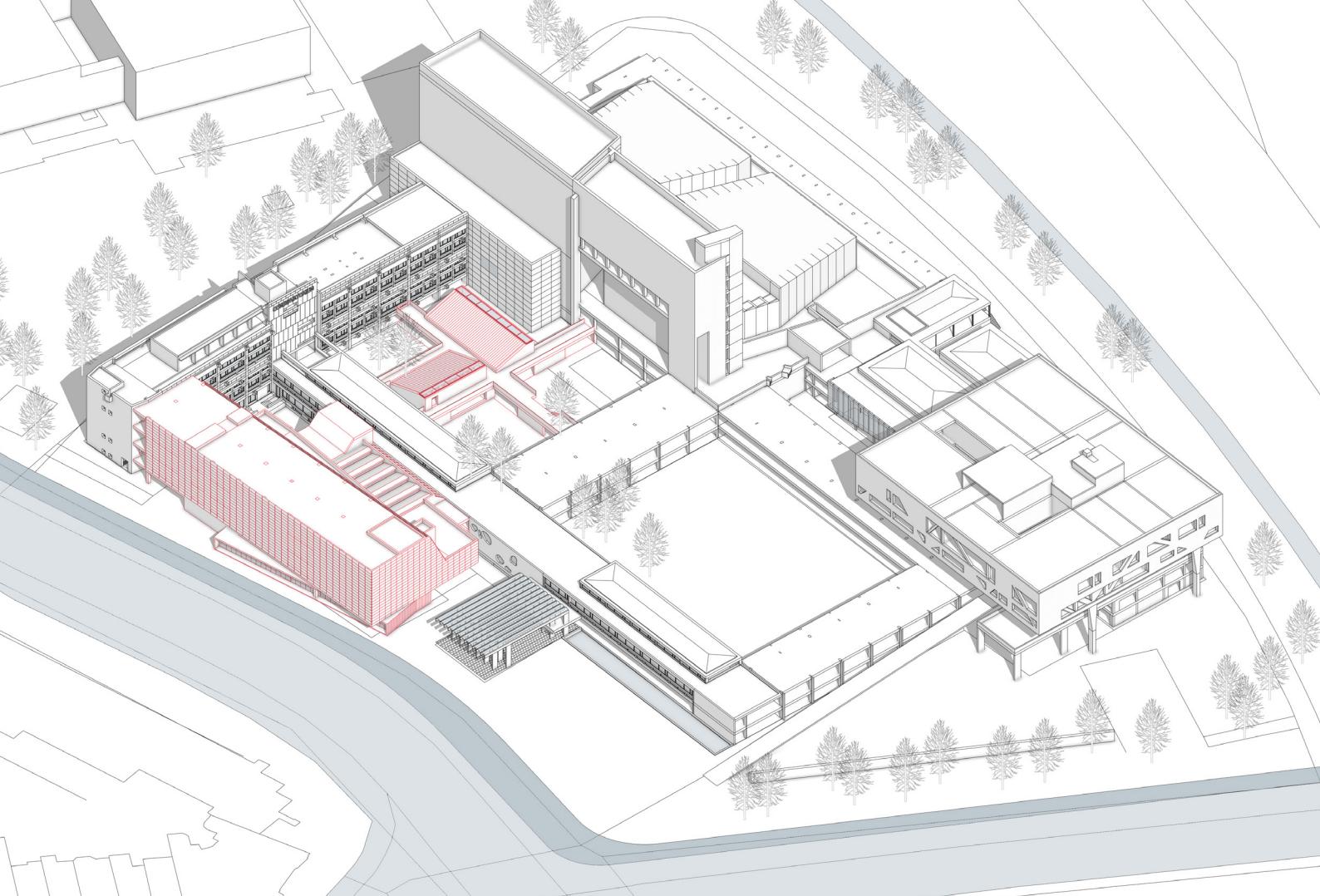


week 4.5

Climate Design





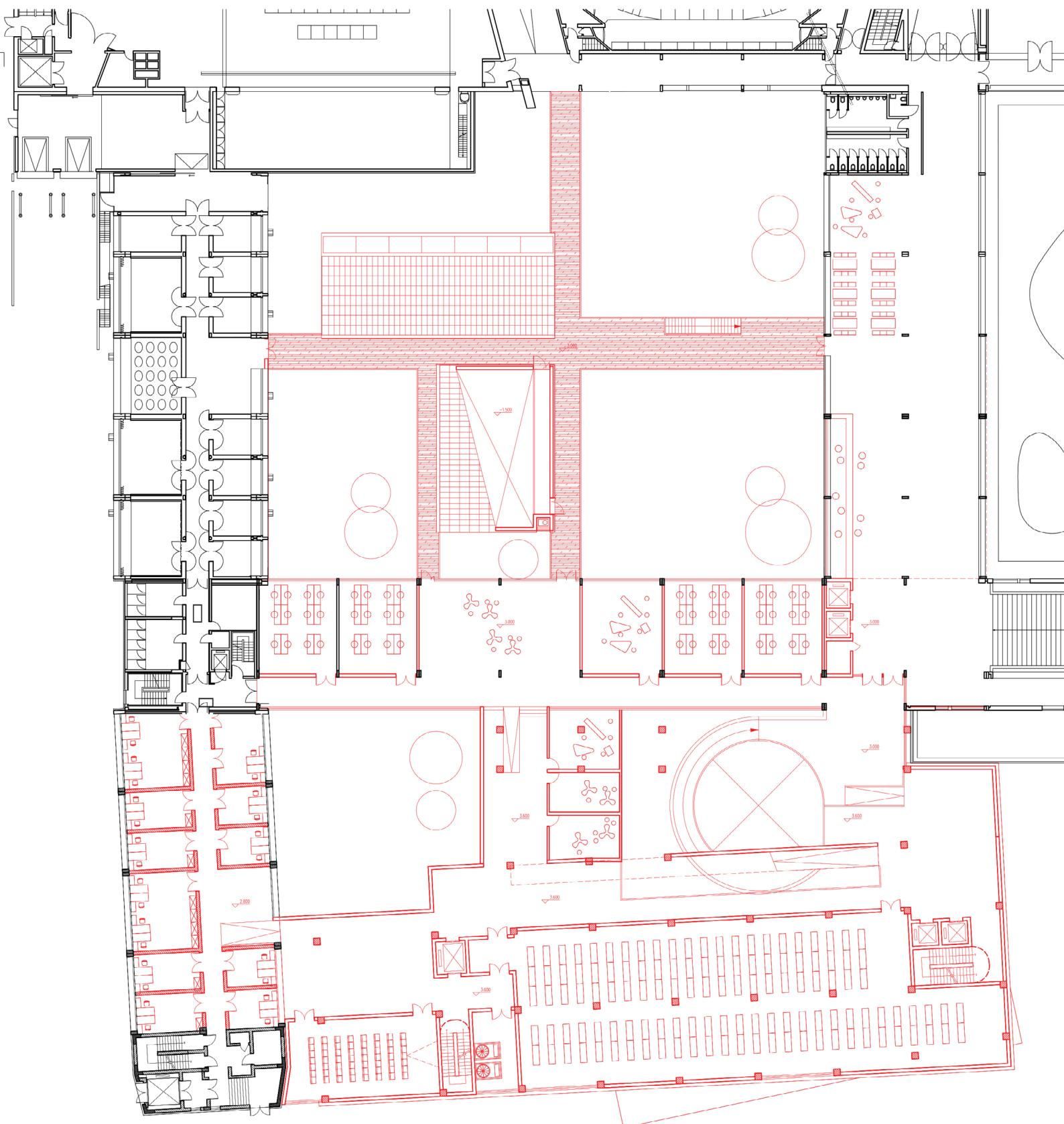




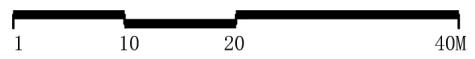
Ground Floor Plan

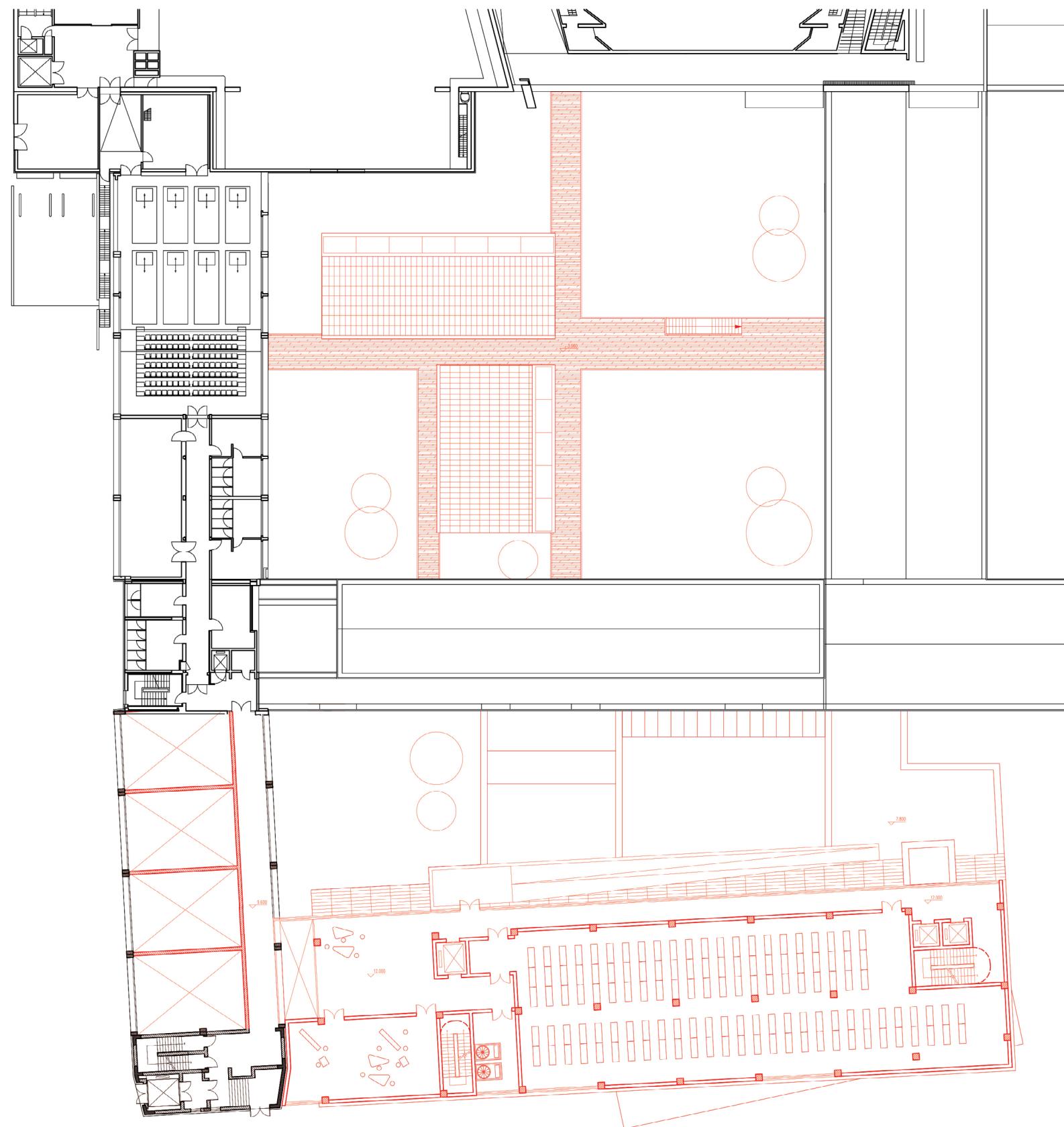


1 10 20 40M



1st Floor Plan

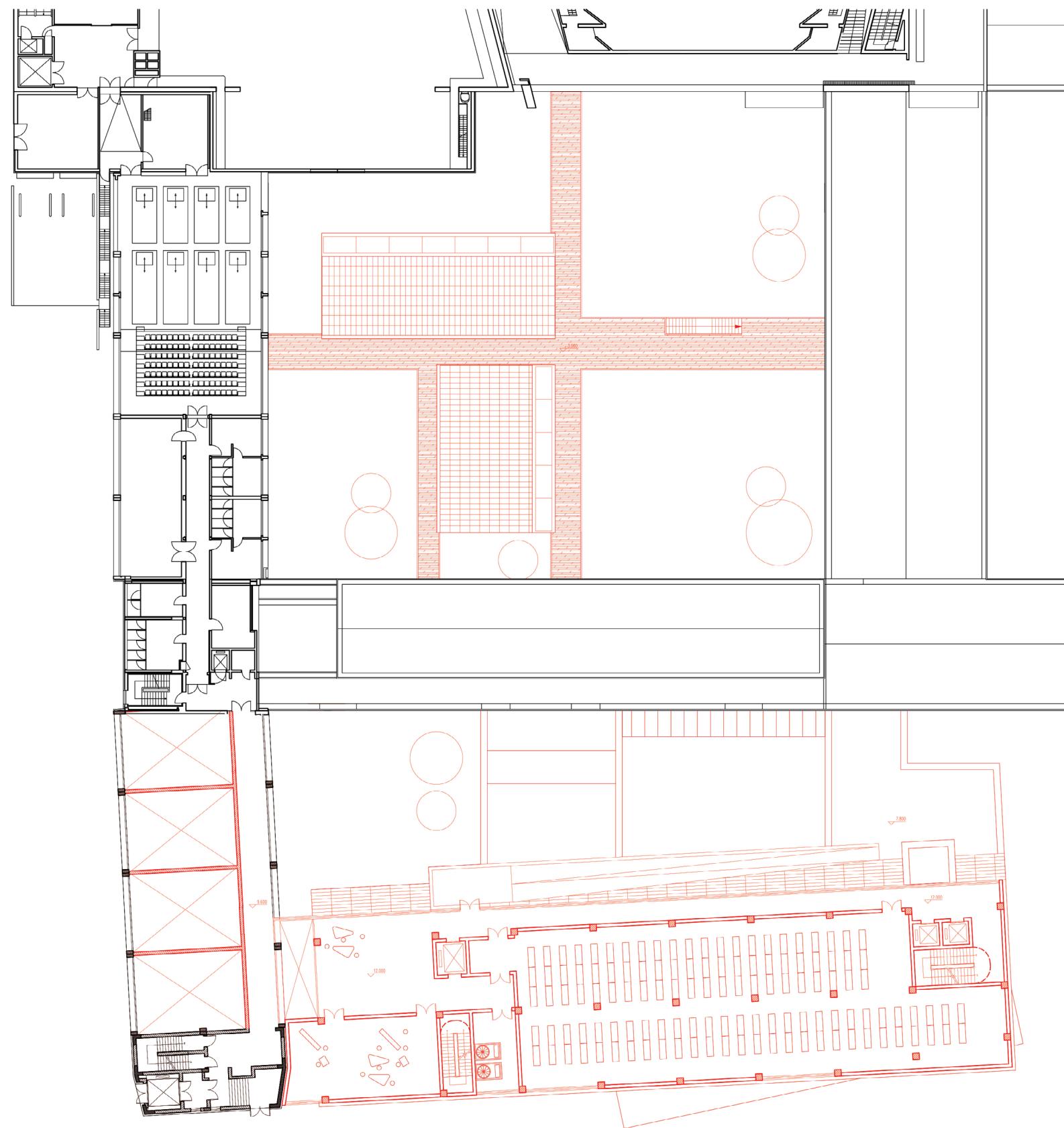




2nd Floor Plan



1 10 20 40M



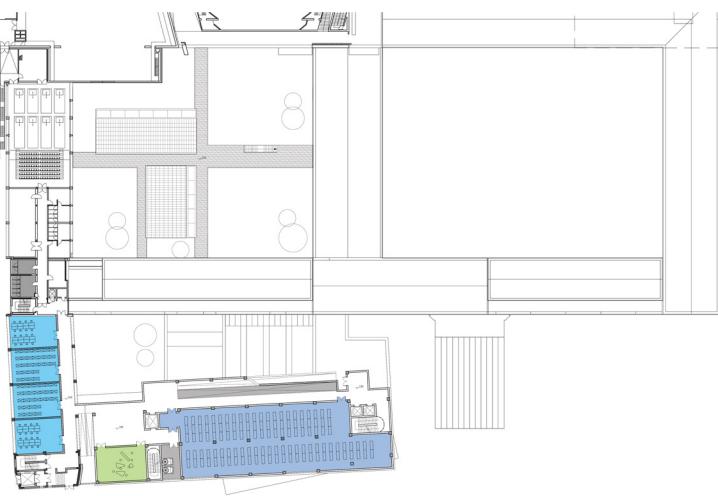
3rd Floor Plan



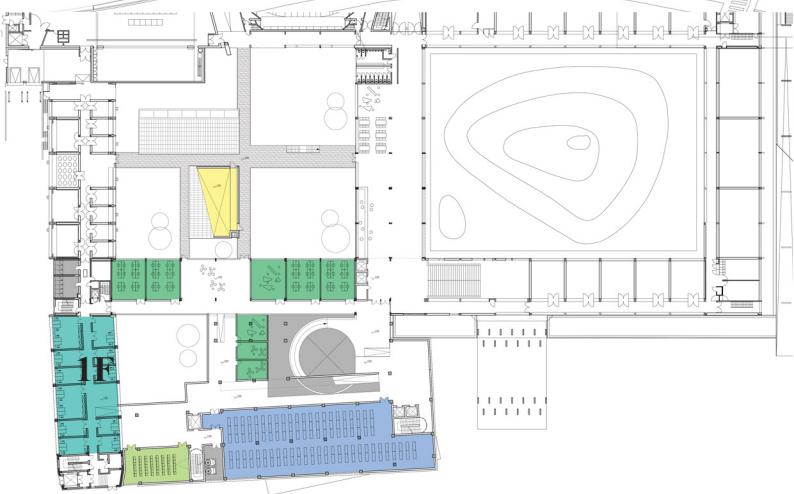
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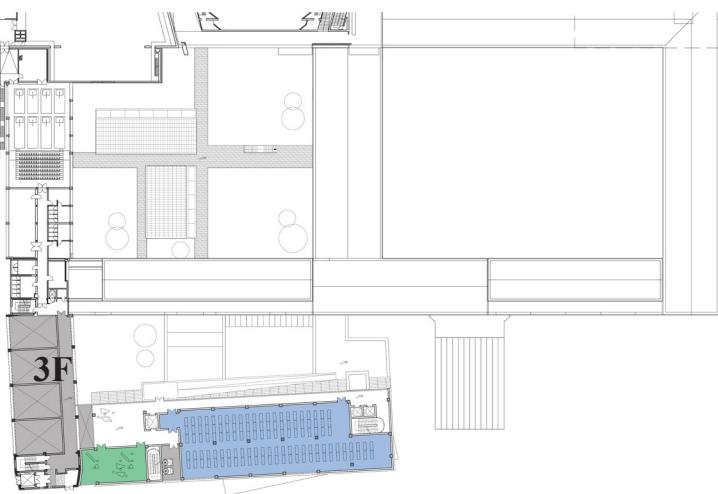
GF



2F

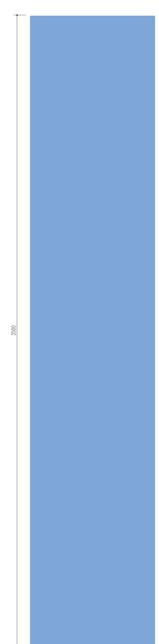


1F

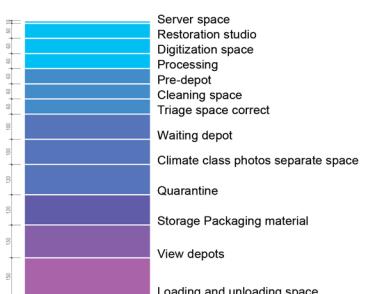


3F

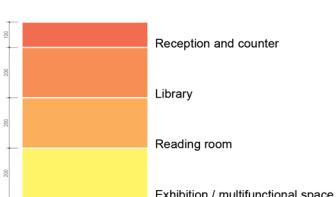
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Archive processing 1090m²



Public 700m²



Additional 860m²

