

EVENT-BASED STRUCTURE

An Events Arena for the Regeneration of Gothenburg's Frihamnen

Jingyi Xie

Chalmers University of Technology
Department of Architecture and Civil Engineering

Supervisor: Björn Gross
Examiner: Mikael Ekegren



CHALMERS
UNIVERSITY OF TECHNOLOGY

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Master's Thesis in Architecture and Urban Design

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Chalmers University of Technology
Department of Architecture and Civil Engineering
Gothenburg, Sweden

Jingyi Xie
xiejingyi7@outlook.com
+46 790398451

Chalmers University of Technology
M.Sc Architecture and Urban Design

Previous Studios:
Matter, Space, Structure
Housing Invention
Nordic Architecture
Architectural Competition
Matter, Space, Structure

Tianjin University, China
B.Arch

Internships:
RSAA, Beijing, China
China Architecture Design & Research Group, Beijing, China

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Abstract

In Gothenburg, Frihamnen has suffered from the partial segregation in the past few years. As an important transition area of Gothenburg, reuse and revitalization of this old industrial area are already been part of the city future plan. According to Älvstaden, the largest urban development in the whole of Scandinavia, Gothenburg aims to develop a strong relationship with Göte river. Frihamnen has always been a vital role when it comes to cement the bond between Gothenburg and Göte river. In the future, Frihamnen will be transformed into a living, attractive inner city. Housing, offices, commerce, hospitals and schools will be built in several stages and a clear structure of the various parts of the area has been developed.

For the regeneration of this area, culture is one of the driving forces. It is important for regional development, growth, job opportunities and new products. It can bring new blood into an undeveloped area and stimulate the development.

Frihamnen consists of three parts: Bananpiren, Frihamnspiren, and Kvillepiren. Bananpiren now is an event arena for large events. However, in vision Älvstaden, the existing building (Kajskjul 105 and two temporary pavilions) at Bananpiren will be torn down and Bananpiren will be replaced by housing projects and other facilities. At the same time, part of Kvillepiren will become a public park due to the future city plan. This thesis aims at designing a multi-function public building at Kvillepiren for the purpose of keeping the “events arena” at Frihamnen. It can also be a continuation of Jubileumsparken as well. How to design a building that can adapt to different public events and can bring people together are questions to be answered in this thesis. This regeneration can be demonstrated by combining different cultural activities and architectural experience together. People can get involved in those activities which adapt to the new lifestyle in Gothenburg.

I.

INTRODUCTION

Purpose

This thesis aims at keeping the "events arena" and the strong industrial atmosphere of harbor culture. This regeneration can be demonstrated by combining different cultural activities and architectural experience. People can get involve in those activities which adapted to new lifestyle in Gothenburg.

Main Question

How to bring cultural activities which adapt to the future lifestyle of people in Gothenburg into Frihamnen to stimulate the development. How can "events arena" be realized by using expressive wood structure?

Methods

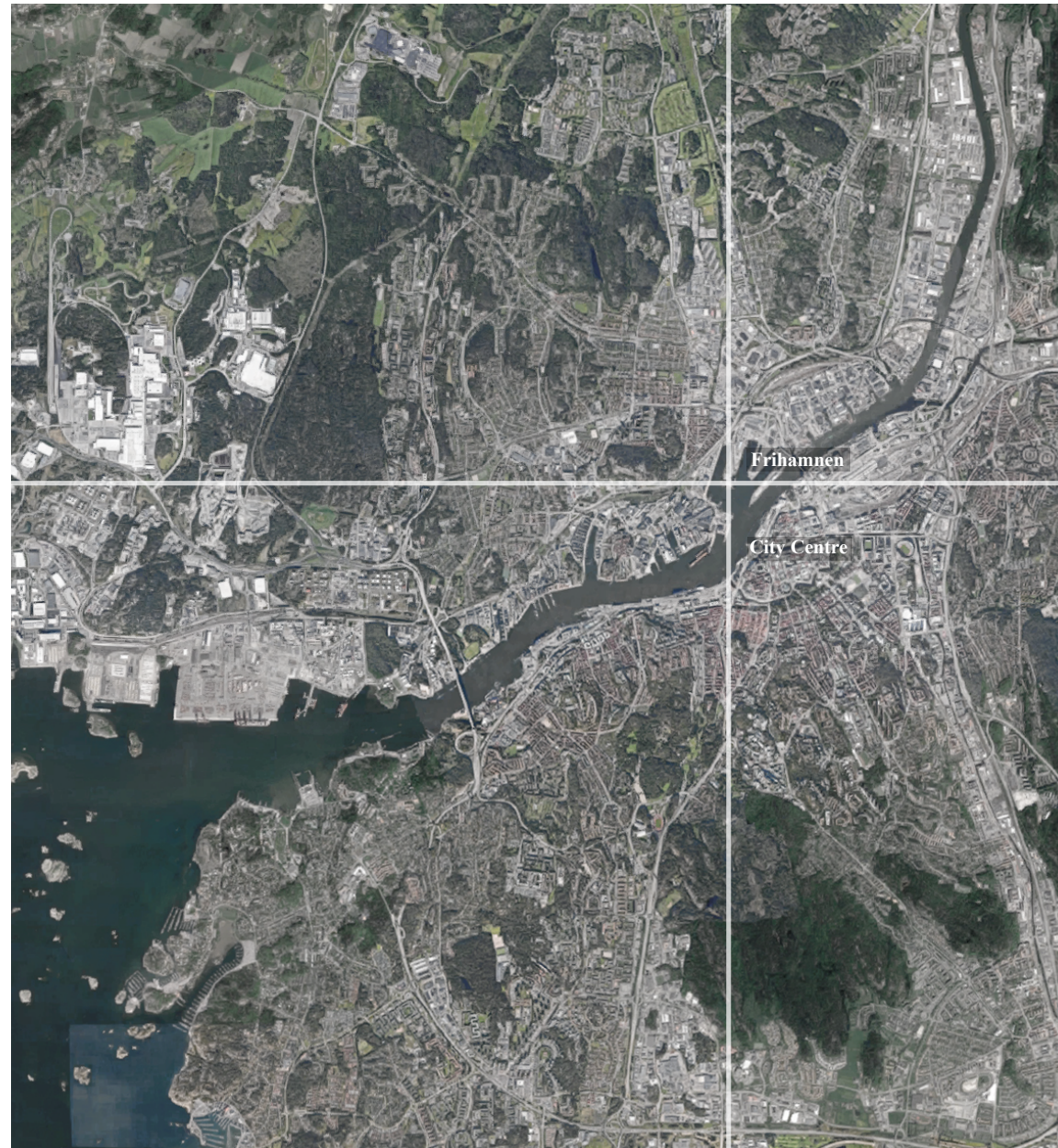
The initial research will be based on the main question of the thesis. By researching literature and reference projects to find conceptual ideas, typology and functions of the design. Through physical model making to develop design.

Delimitation

The choice of site is based on the future city plan of Gothenburg, and the design proposal is focus particularly on the expressive structure and the flexibility of how to use a large space. This thesis does not aim at coming up with a general framework for development of an undeveloped industrial area.

II.

SITE BACKGROUND



Background of Älvstaden

Älvstaden, the largest urban development in the whole of Scandinavia, aims to contribute to sustainable development in Gothenburg and West Sweden. The vision is to create an attractive, sustainable city from a social, environmental and economic point of view.

There are three strategies: connect the city, embrace the water and reinforce the center. And the vision also mentioned that using culture as a driving force for the development.

According to the vision, Frihamnen will become part of new inner city in the future. The new bridge over the river will be inaugurated in 2020, which will become the vital connection between Frihamnen and city center. Frihamnen consists of three parts: Bananpiren, Frihamnspiren, and Kvillepiren. North Frihamnspiren receives most of the homes and offices in the first phase. Jubileumsparken, which already contains a sauna, bath, city cultivation and other activities, will be ready in 2021. Kvillpiren and Lundby Harbor will receive housing and apartment for both students and refugees. It is a solution that will be available for 15 years, which will be partially floating in the harbor basin. Bananpiren will be replaced by new housing and other contents.

Frihamnen in the future will become a meeting point for old and new, the known and unknown. This area will be vibrant and inviting as well as unique and individual.



Future Plan of Frihamnen



Bananpiren

From the mid 1920s and a few decades ahead, Bananpiren is the activity and life center in Frihamnen. Here came ships from all over the world with bananas, cereals and other goods that would be reloaded and shipped to other parts of Sweden or to other parts of the world. Then the area was the largest free port and duty free zone of Sweden.

But something happened. The vessels began to load in large containers and most of the goods that had previously gone to Frihamnen went to Skandia harbor and other new ports. By the middle of 1970s almost all goods went to Gothenburg's outer harbors and Frihamnen became a desolate place.

The last banana boat unloaded their goods on the pier in 2000. To bring new blood into this area, the city hosted some major and popular events like Volvo Ocean Race, the Stay Out West and STCC that attracted thousands to this area.

Existing Building at Bananpiren

Kajskul 105

Focus on concert activities. With a capacity of 4500 people (standing audience at concert). With its raw industrial appearance and permanent stage setting, the venue offers a unique concert experience. When the ceiling is relatively low (6.2m to the beam), a tight club feeling creates a sense of intimacy that other venues of this size are difficult to create. In the quayside there is a permanently established stage which simplifies the establishment of concerts in the arena. Concerts indoors can be done with both standing and sitting audiences and combined with an outdoor scene or stage.

Pavilions

The pavilions are used mainly for corporate events, banquets, mini shows, dinners, etc. And it also can be used as a complementary indoor scene for larger events. The pavilions with the terrace can also be used as great bar areas. In the pavilions there are no permanent establishments.

Outdoor Area

The large open area can be used for outdoor concerts or entertainment events with additional establishment as desired. With the capacity of up to 10000 people, the area can be used for different types of establishment. The only limitation being that there can not be festival where audience jumps because of the strength of the pier.



Kajskul 105



Pavilions

Jubileumsparken

The plan for the whole area to become an inclusive, green and dynamic part of the inner city. Through Jubileumsparken, the vision and dreams can take place by testing different things and activities before the permanent park begins to build in 2019.

When Gothenburg celebrate 400 years in 2021, the first stage will be completed. After that, the park will continue to develop step by step. Jubileumsparken will became into a meeting place for everyone where the city meets water.

There is already a sauna, a small saltwater bath, sailing school, swimming pool, a water artwork, a roller coaster rink, cultivation and more.



Public Sauna



Water Artwork

Kvillepiren

My site is on the end of Kvillepiren. Now this place is desolated. And it is covered with trees and grass. The existing structures on the shore is the main feature of the site.



Kvillepiren

Magasin 113

Magasin 113 is an old warehouse located at the middle part of Frihamnen. As one of the old warehouses that will be reserved, it will be transformed into an art museum in the future. And this area will become into the culture center of Frihamnen.



Magasin 113

Magasin D

In the future, the old warehouse and two pavilions will be torn down and replace by housing and other contents. Bananpiren will lose its identity as an event arena. For the purpose to keep the identity of “event arena” in Frihamnen, I decided to build a new event arena at Kvillepiren. It can also become the continuation of Jubileumsparken.



Magasin D

III.

EVENT-BASED STRUCTURE

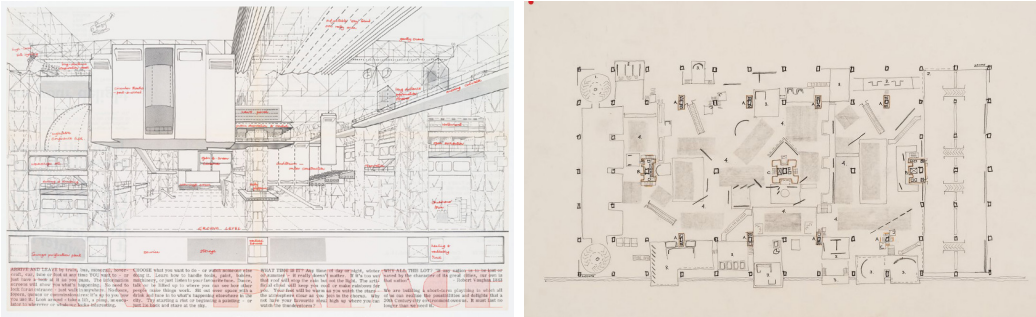
The Fun Palace
Event-based structure

CEDRIC PRICE (1934-2003) was one of the most visionary architects of the late 20th century. Although he built very little, his lateral approach to architecture and to time-based urban interventions, has ensured that his work has an enduring influence on contemporary architects and artists, from Richard Rogers and Rem Koolhaas, to Rachel Whiteread.

The Fun Palace Project was an interactive and adaptable, educational and cultural complex to be located in London, England. The project was commissioned by Joan Littlewood, to be erected on disused public land slated for redevelopment and intended to be dismantled after 10 years. Conceptual and design development drawings were created for a typical Fun Palace that could be erected on any suitable site, and several sites were considered, some belonging to the Civic Trust. Presentation drawings were elaborated for a Fun Palace in the Lea Valley at Mill Meads and for a later modified Pilot Project in Camden Town. Publication drawings were also created for an article (Cedric Price, “Fun Palace Project,” Architectural Review [January 1965]: 74–75). The Fun Palace Trust was created to oversee the project and the file contains material from related activities of the Trust which was active until the 1970s.

The Fun Palaces Manifesto: We believe in the genius in everyone, in everyone an artist and everyone a scientist, and that creativity in community can change the world for the better. We believe we can do this together, locally, with radical fun – and that anyone, anywhere, can make a Fun Palace.

“Choose what you want to do – or watch someone else doing it. Learn how to handle tools, paint, babies, machinery, or just listen to your favourite tune. Dance, talk or be lifted up to where you can see how other people make things work. Sit out over space with a drink and tune in to what’s happening elsewhere in the city. Try starting a riot or beginning a painting – or just lie back and stare at the sky.”



Cedric Price, Fun Palace, 1964, Drawing (interior perspective view with text, used for a promotional brochure), Cedric Price Fonds, Canadian Centre for Architecture, Montréal. Cedric Price, Fun Palace, 1964, Drawing (diagrammatic plan), Cedric Price Fonds, Canadian Centre for Architecture, Montréal.

Price’s unbuilt Fun Palace facilitated movement within a defined structural grid to provide freedom for the building’s occupants to use it in any, and every, way possible.

The layout of Fun Palace was similar to a basilica, with a central nave and two aisles, replacing the transept was a moving gantry crane spanning over a system of 5 steel columns... The central nave would host the mass activities (movies, theatre and rallies) while the side aisles would hold the human serving activities such as restaurants, bars, children areas and workshops.

The Structure



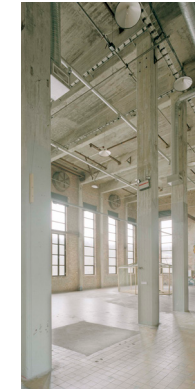
Industrial Steel Structure



Expressive Timber Structure

The harbor area has its very strong industrial atmosphere, steel structure warehouses are most common building in the harbor area. Instead of using steel, I would like to use timber structure to create large scale space. The repetition of wood structure could create unique atmosphere for different events.

What kind of events?



Exhibition



Education



Dinning



Market

A lot of events could happen in the "structure". In Röda Sten Knosthall, the high quality space could hold small scale to large scale events, like exhibition, education events, dinning and markets etc...

IV.

EXPRESSIVE WOOD STRUCTURE

Freemen's School Swimming Pool
Hawkins\Brown



Interior of Freeman's School Swimming Pool

Freemen's School Swimming Pool is a 25m, six lane competition pool, with changing facilities and a multi-purpose teaching and events space. This new pool uses timber construction and offsite fabrication methods to create a sustainable building that sits gently within its context.

The construction of the pool includes glue-laminated timber (glulam) portal frame, braced with cross-laminated timber (CLT) panels.

The natural internal surface of the structural timber roof and walls is left exposed and stained white. This material acts as a complementary feature to the external setting and helps to create a special environment to swim in.

Micasa vol.C
Studio MK27



Wood structure

For the construction of a light pavilion, the studio adopted a wood structural system. A succession of glued laminated timber frames overcomes almost 15m spans. Every two modules, in the upper plane, steel rods are used for bracing the structure. A substructure supports the skin of the building and creates a gap between the plane of the façade and the pillars. This distance reinforces the reading of the rhythm and of the simple fittings of the wooden elements.

The building's envelope is made of folded sheets of two different materials: translucent polycarbonate in the upper half and a white metal plate in the lower one.

Östermalm's Temporary Market Hall
Tengbom



Interior of Freeman's School Swimming Pool

The building is a temporary solution at the initiative of the property owner, the City of Stockholm. This temporary hall in combination with a lively and illuminated façade, gives the square and the surrounding area new life.

The emphasis has been on simple and economical materials. A timber frame is mostly clad with untreated pine battens of varying sizes, which is combined with an upper part in polycarbonate sheeting which is illuminated.

Nest We Grow

Kengo Kuma & Associates + College of Environmental Design
UC Berkeley



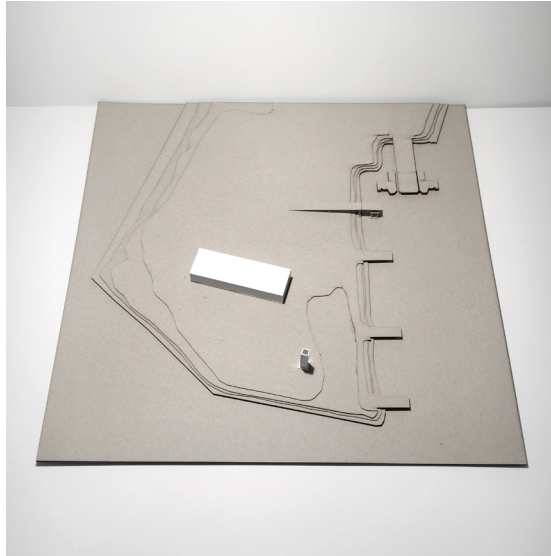
Wood structure

This project focused on a heavy timber construction technique coming from the US, which uses large sections of wood. In Japan this translated to the composite column, which uses smaller pieces of wood to generate a larger column. It took considerable effort to identify a way to join materials, which was influenced by both local carpentry practices and the Japanese material market.

V. RESEARCH

Placement of Buildings on the Site

Model Study

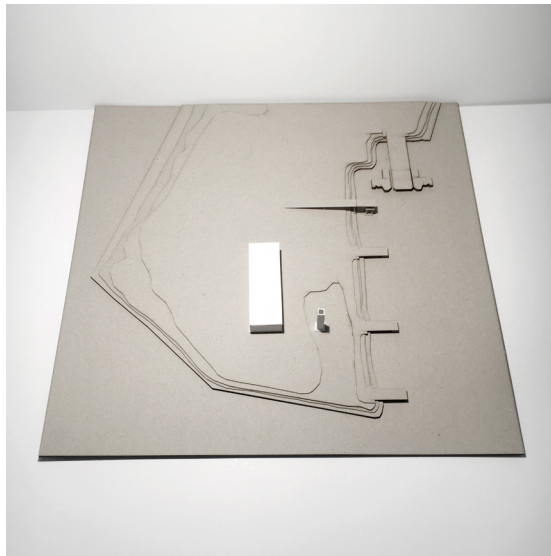


Situation A (mid-term)

In this situation, the main building is placed in the middle of the site, and the tower is placed in the south end of the site.

In this case, the building is more accessible and more independent. Since the building is surrounded by tress, it creates more closer for the building.

However, the building does not have enough connection with the existing structures and it is far away from the river side. And the tower is also detached from the main buiding which makes it not accessible.



Situation B (final proposal)

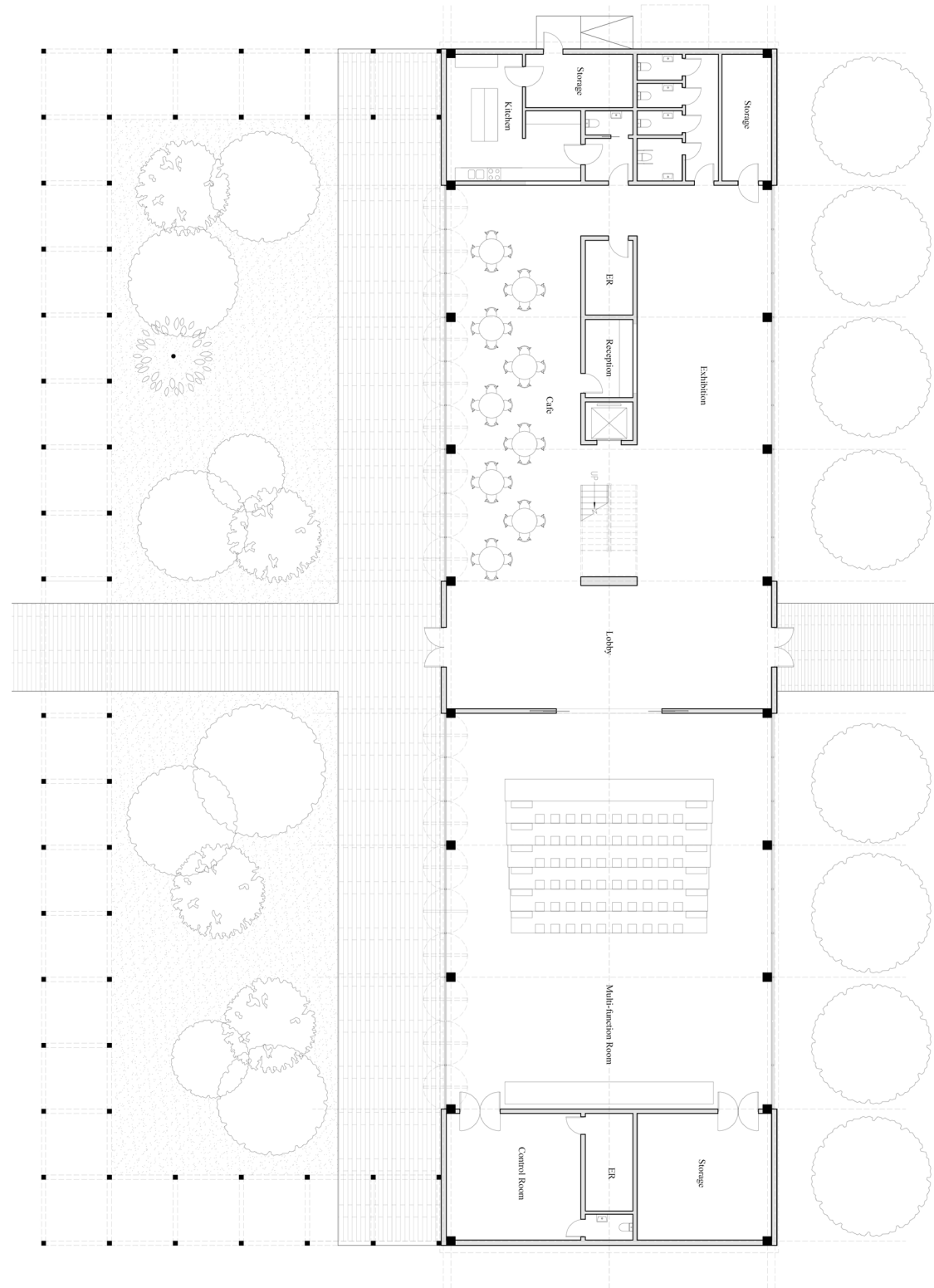
In this situation, the main building is placed along the river side. And the tower is placed near main building.

In this case, the building is less independent. This situation increase the connection with the existing structure and also make the structure part of the design. It close to the water makes it more easier to let people interact with water. The long facadeis facing the direction to city center across the river. And the tower is more accessible and it also can be part of the visiting journey.

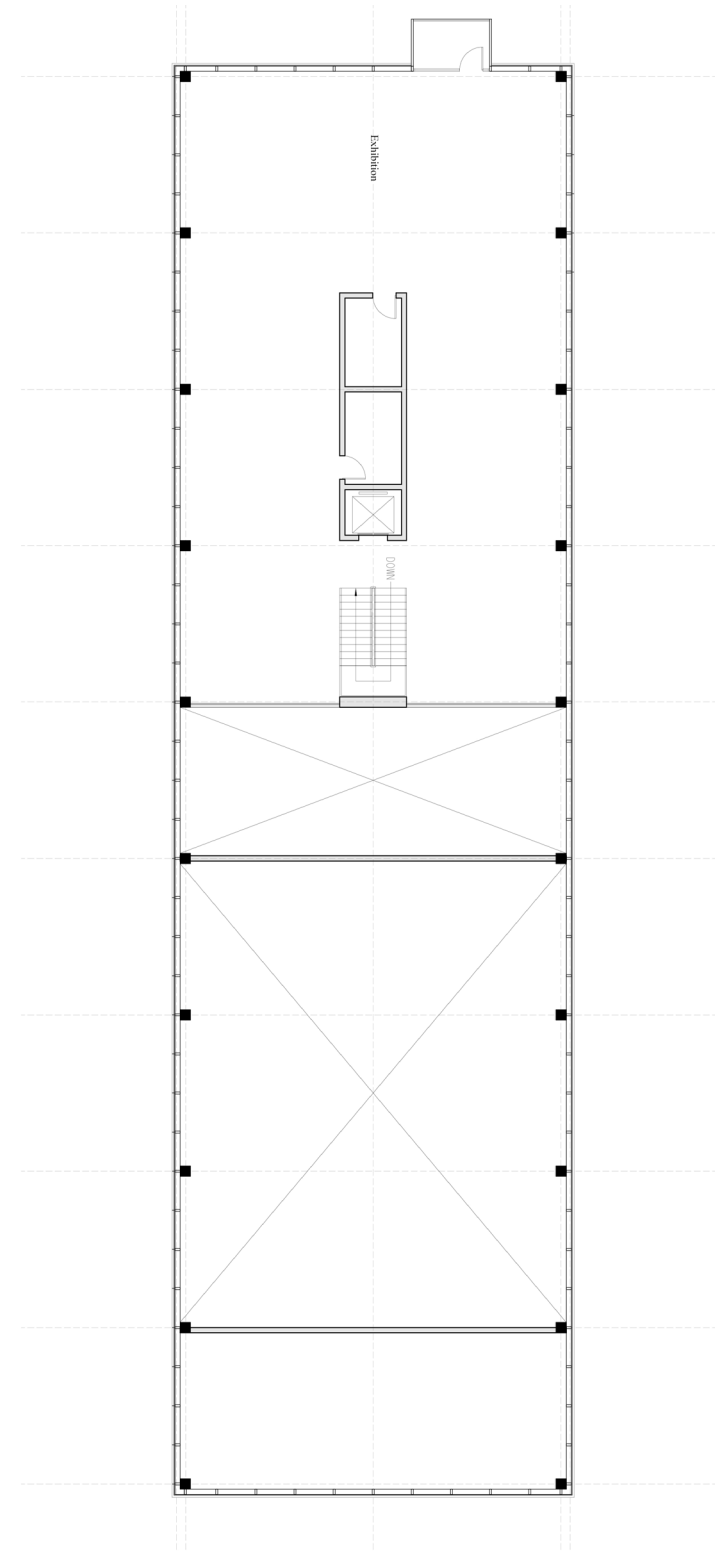
Mid-term Proposal



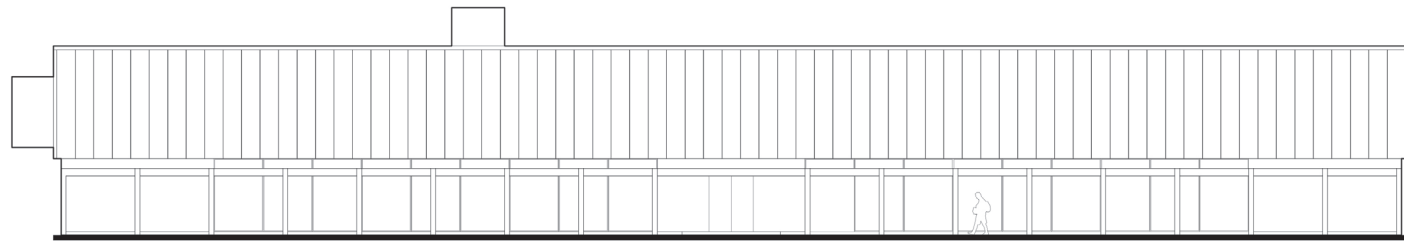
Site Plan (Mid-term)



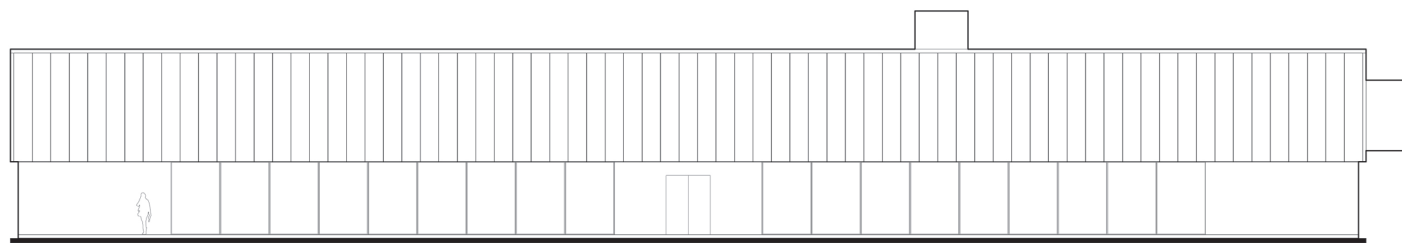
Ground Floor Plan (Mid-term)



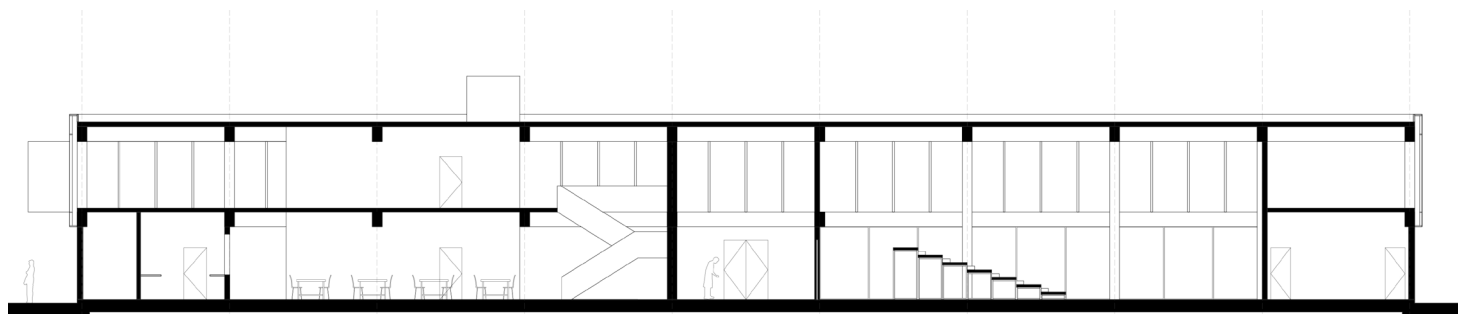
Second Floor Plan (Mid-term)



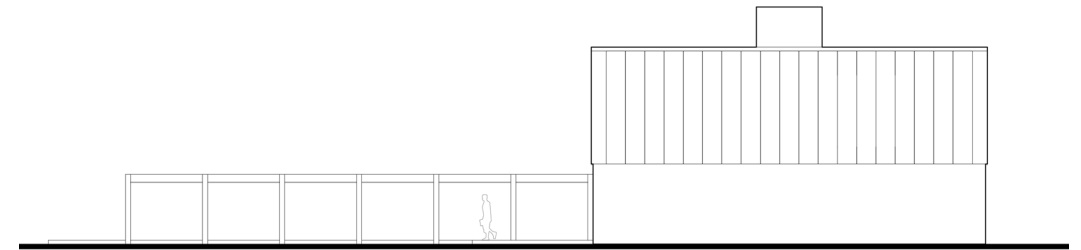
South Elevation (Mid-term)



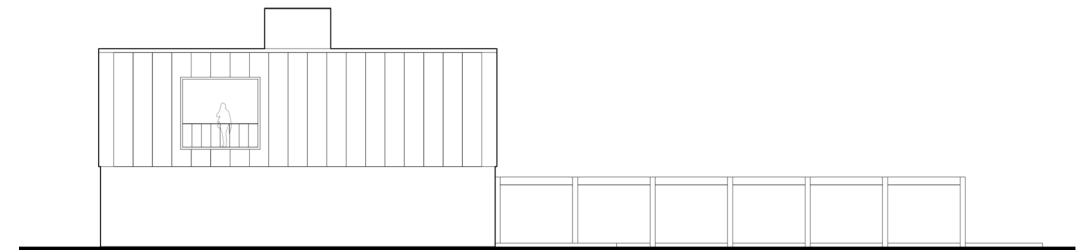
North Elevation (Mid-term)



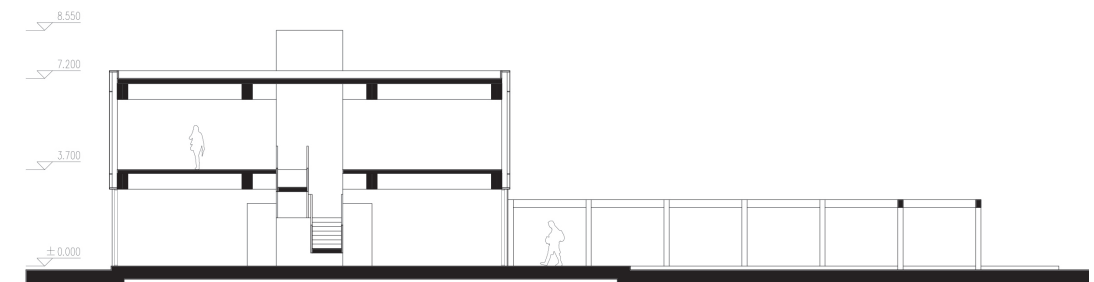
Longitudinal Section (Mid-term)



East Elevation (Mid-term)



West Elevation (Mid-term)



Transversal Section (Mid-term)



Perspective from the 'Frame'



Perspective from Multifunctional space



Main structure study model



Facade study model



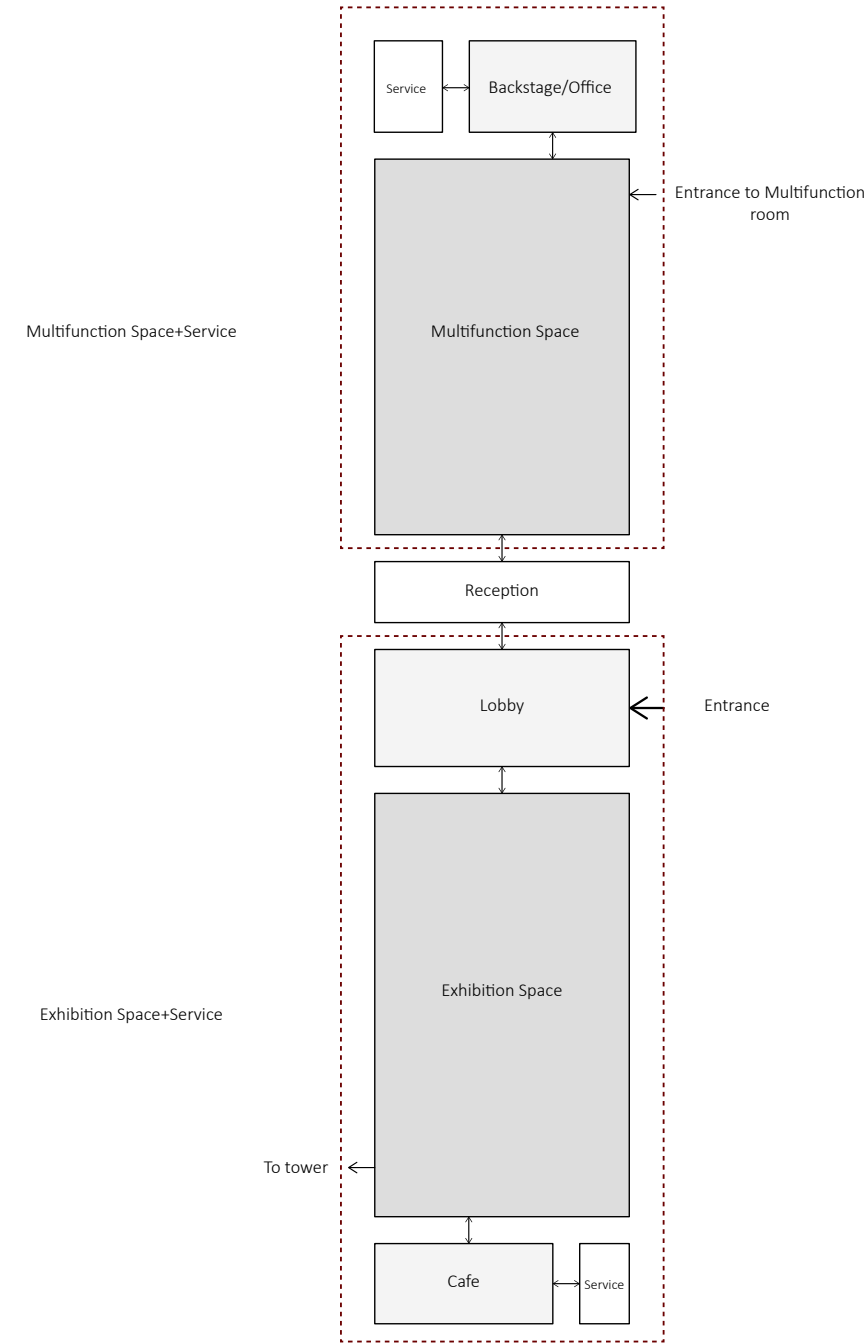
Tower study model

VI. PROPOSAL

Program Breakdown

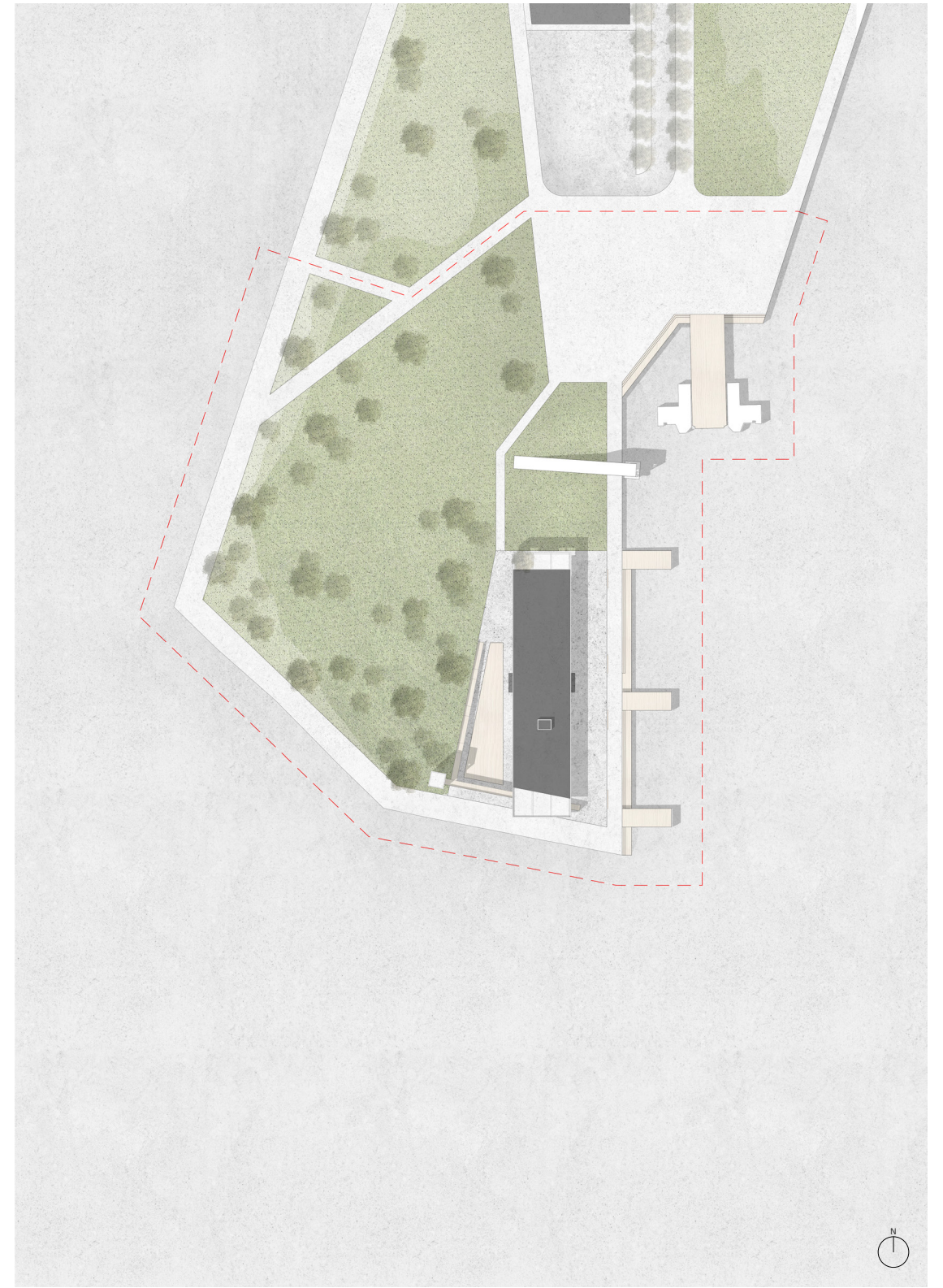
Fuction	Area (m²)
Lobby	138
Reception/Locker room	35
Multi-function Space (concert, large dinning...)	480
Storage room	38
Technical Space	38
Backstage	38
Office	25
Kitchen	8
Changing Room	4
Toilet	20
Cafe	100
Kitchen	28
Garbage room	7
Toilets	5
Exhibition space	300
Workshop	40
Technical Space	100
Storage	7
Toilets	20
Circulations	32
Total	1463

Space Configuration

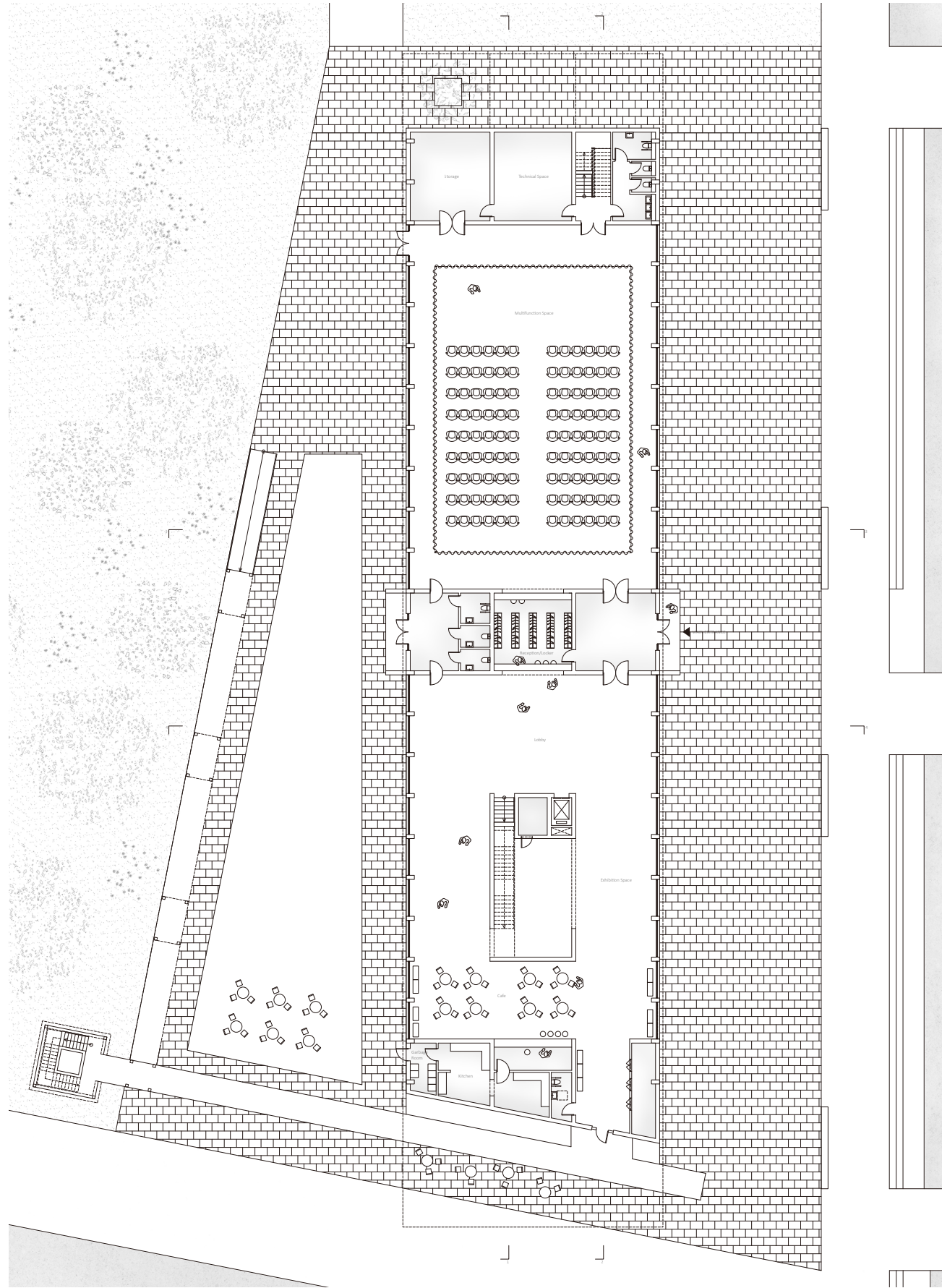




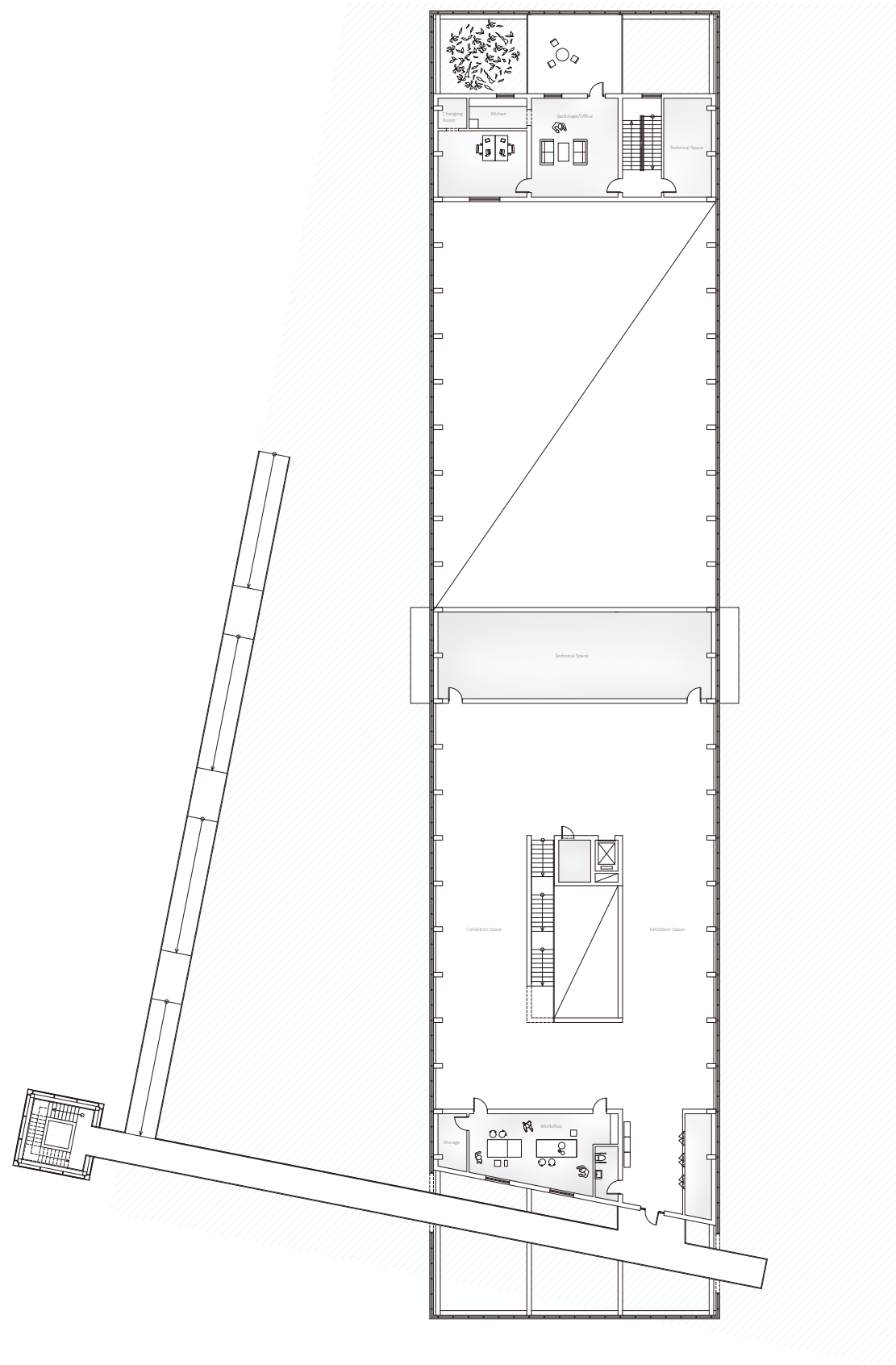
Site Plan 1/5500



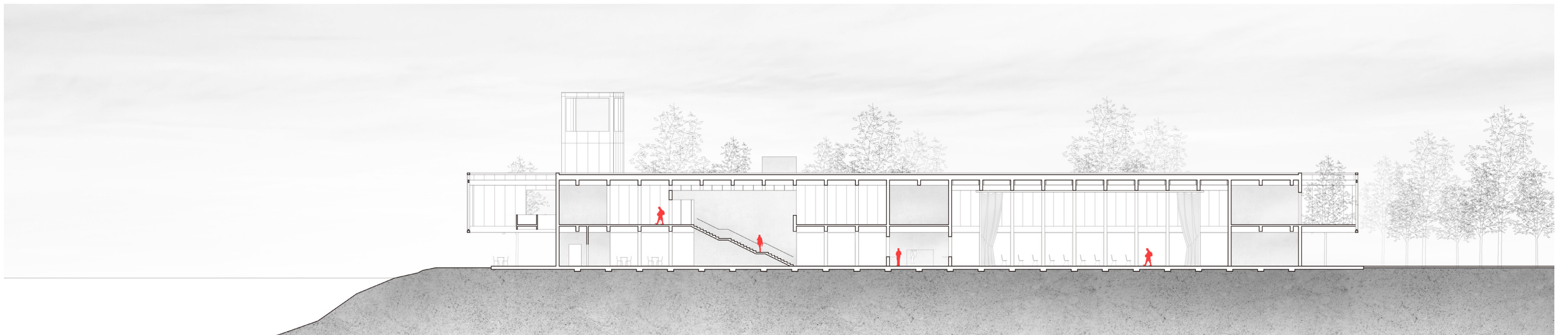
Site Plan 1/2000



Ground Floor Plan 1/400

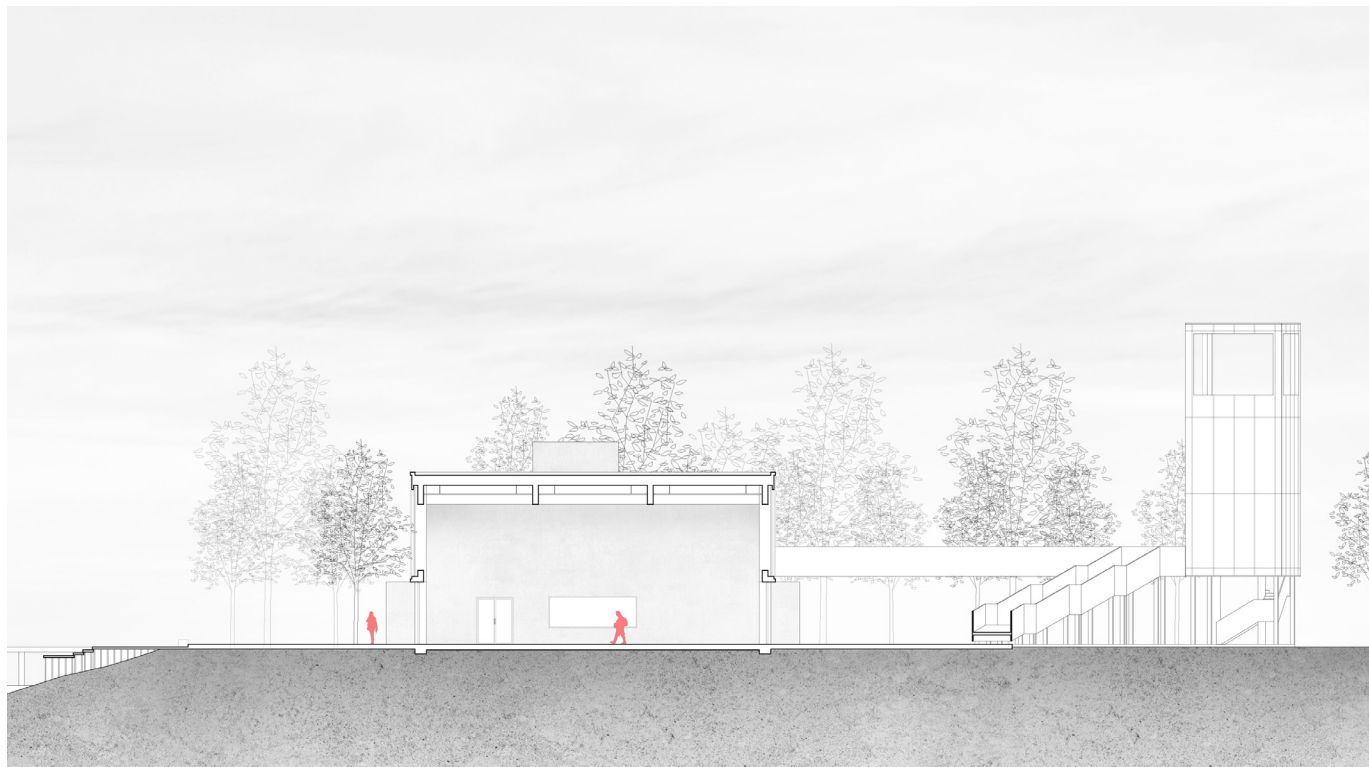


Second Floor Plan 1/400

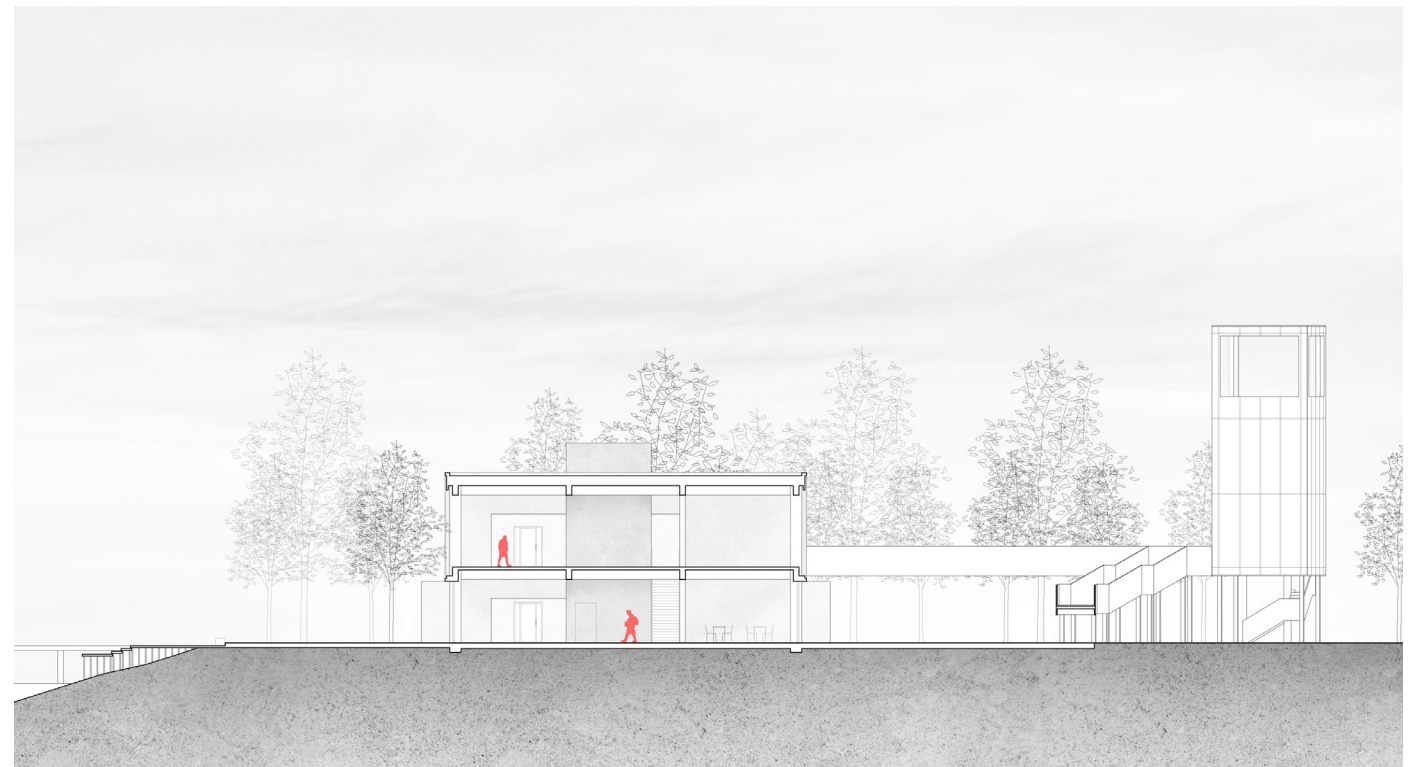


Section 1-1 1/400



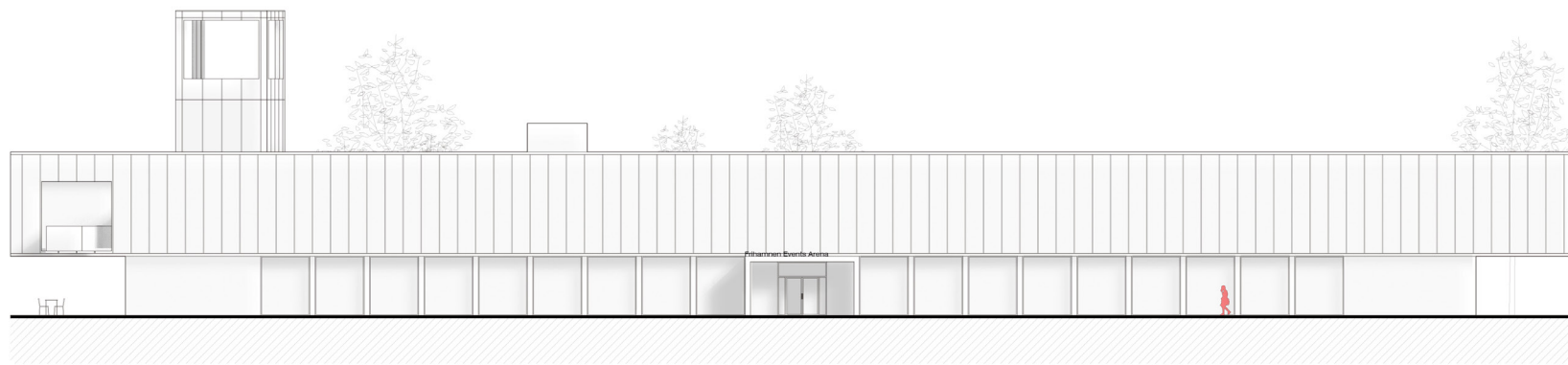


Section 3-3 1/400

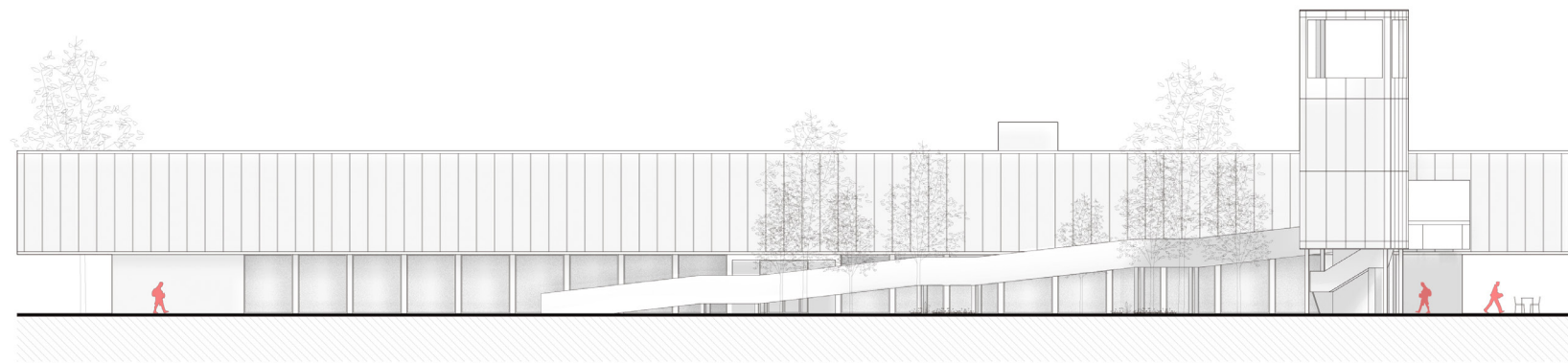


Section 4-4 1/400

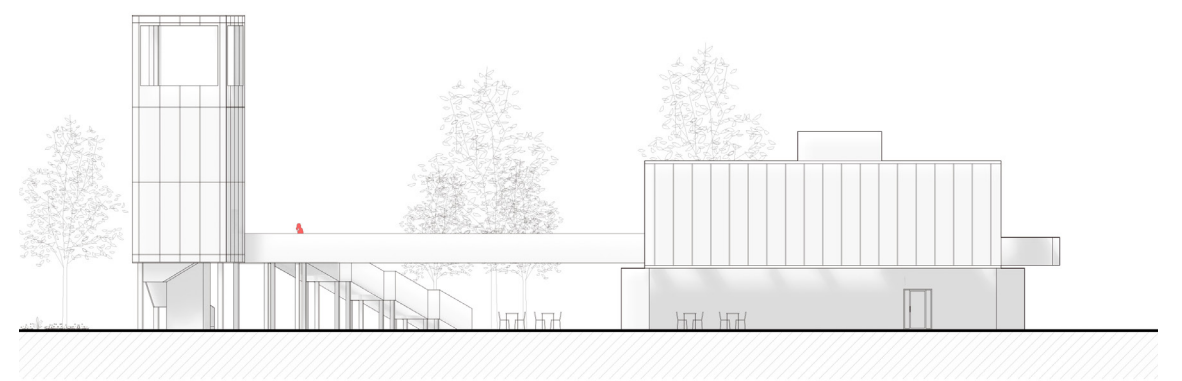




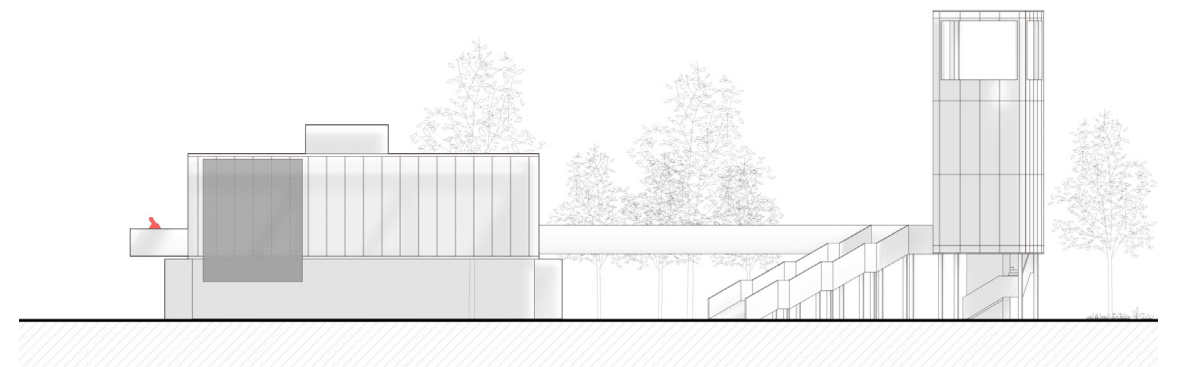
East Elevation 1/400



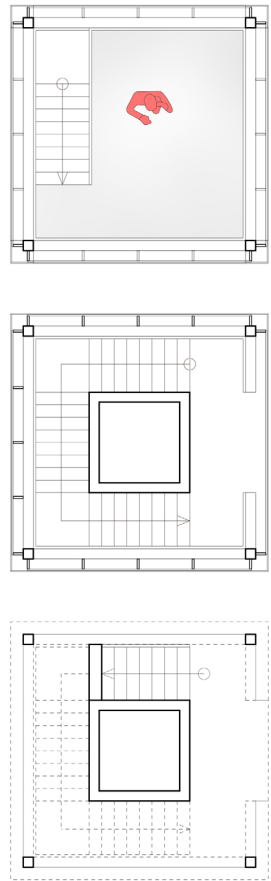
West Elevation 1/400



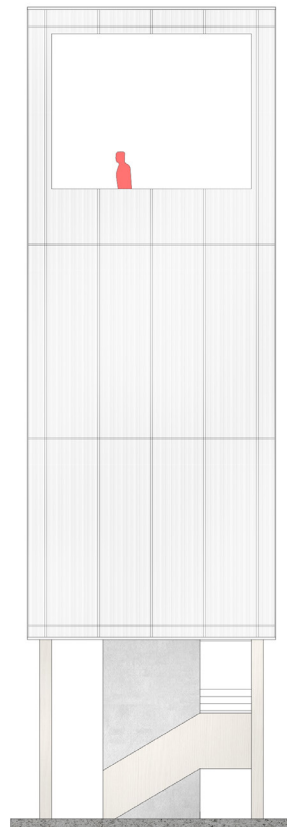
South Elevation 1/400



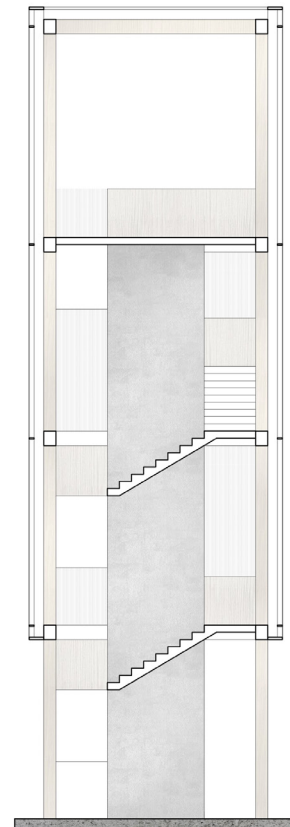
North Elevation 1/400



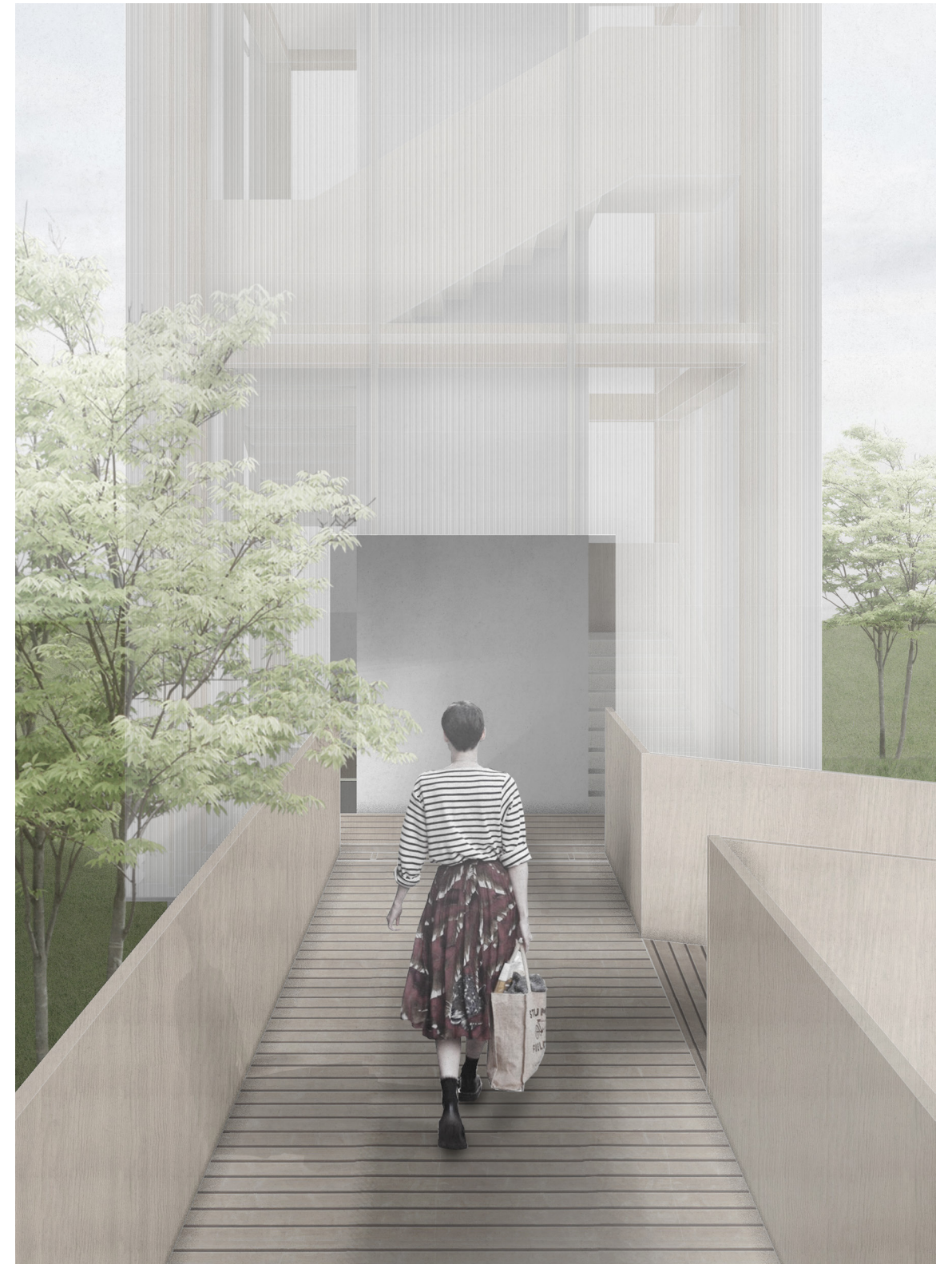
Tower Plan 1/150

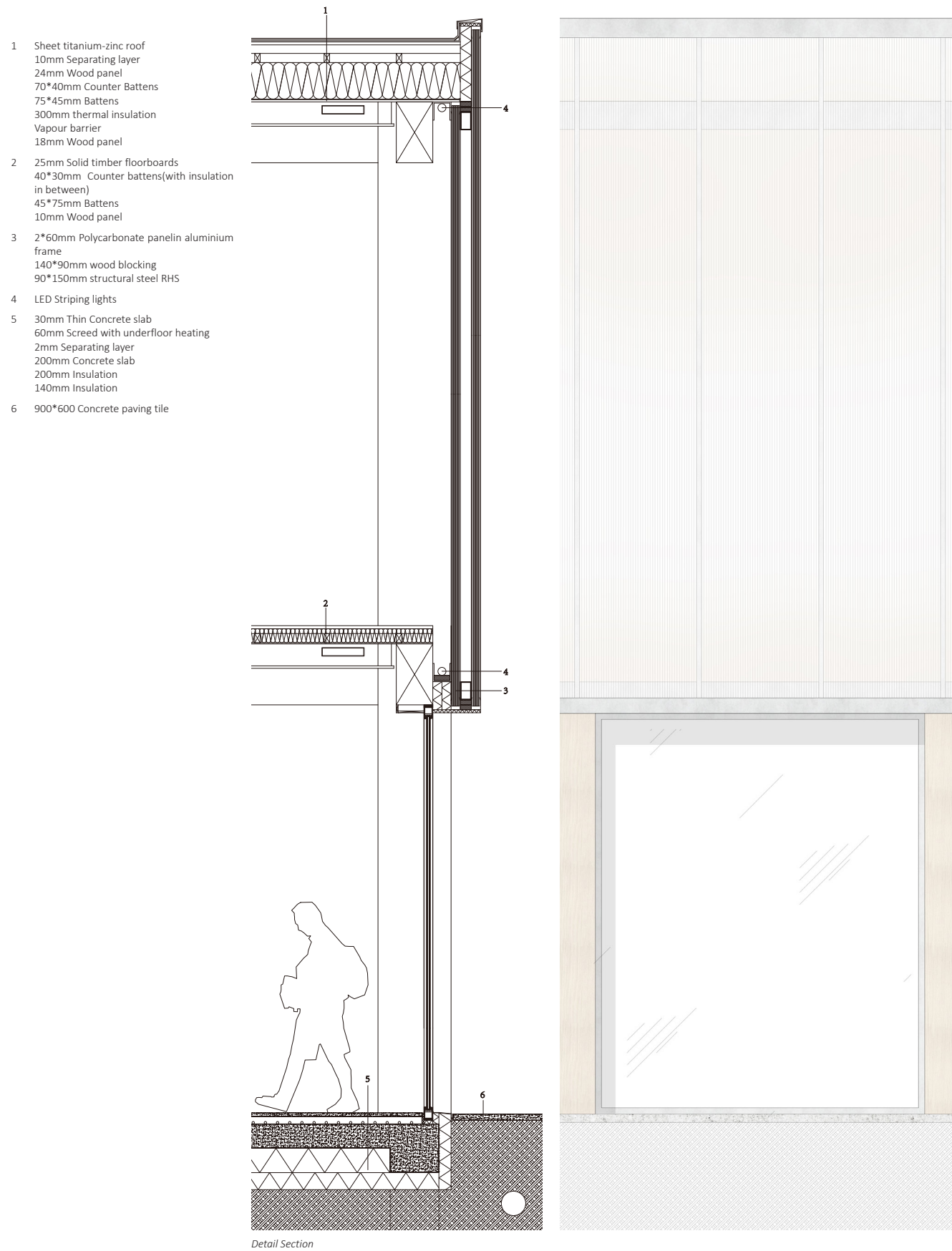


Tower Elevation 1/150



Tower Section 1/150











Material



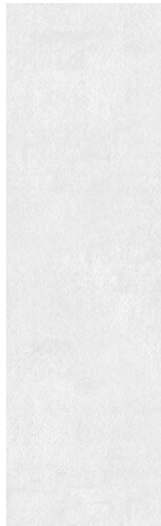
Facade:
Polycarbonate
sheeting



Structure:
CLT



Floor:
Concrete



Walls:
Concrete

VII.
CONCLUSION

The thesis has resulted in one design proposal at Kvillepiren with large multifunctional space for different events. The context of this thesis is based on the future plan of Gothenburg, so it has its own uncertainty and ambiguity. As I mentioned in this thesis before, this area will be transformed into a very lively inner city of Gothenburg and Kvillepiren will be transformed into a city park. A lot of events could happen at Frihamnen, and the space for events is needed. My proposal has potential to fulfill the future needs of this area.

The site is an old pier which has existing structures. The characteristic of the site is very strong, and it is a challenge to bring up a proposal that can integrate with the harbor characteristics. Through the design research, the proposal ended in using existing structures as part of the project which is the better way not to lose its harbor identity.

The proposal does not have very specific functions to define each space. The flexibility is the key to the project. In order to add more characteristic into the building, I decide to use affordable polycarbonate sheeting as façade. During the day, it will allow soft nature daylight into the building, and during the night it will become a laminated “lantern”.

Through the whole design process, I am so happy that I came up with the result. However, I still find out many potentials and interesting aspects after finishing the project. And also there is more to explore on the site.

VIII.
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