WERKSTATT ZENTRUM
IN ALTES GAMLA STAN IN STOCKHOLM

MILICA
NESTOROVIC

TECHNISCHE UNIVERSITÄT WIEN
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DIPLOMARBEIT

Werkstatt Zentrum in altes Gamla Stan in Stockholm

ausgeführt zum Zwecke der Erlangung
des akademischen Grades
einer Diplom-Ingenieurin
unter der Leitung

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Kurzfassung

Wenn es über die Stadt Stockholm handelt, es ist schwer den Malaren See mit seinem vierzehn Inseln nicht zu erwähnen. Das Projektareal befindet sich im Herzen Stockholms auf der Insel Gamla Stan, die von ihrem mittelalterlicher Straßen-Labyrinth und seinem siebenhundert Jahren lange Kulturerbe, charakterisiert wird. Gotische Kirchen, der Königspalast und für diese Epoche charakteristische Architektur repräsentieren diesen Quartier des Stockholms.

Unter Beibehaltung des kulturellen Wesens des gesamten Stadtteils wird das Stockholmer Werkstattzentrum an der südlichen Grenze geplant, um das bestehende Besuchererlebnis in dem Stadtkern Stockholms zu bereichern und zu erweitern.

Die Holzwerkstatt wird eine Ode an das alte Bauweise sein aber mit ihrer markanten Holzfassade und ihrer architektonischen Form wird sie einen frischen Wind an das Malaren Seeufer bringen. Die Funktionen des Gebäudes werden in zwei Bereiche unterteilt; einen für die private Werkstatt und einen für die Öffentlichkeit, wo ein Einblick in die dänische Holzbaumethoden und Holzbauprodukte und auch ein Lern- und Konferenzzentrum angeboten wird.

Mit dieser Art des Projektes präsentiert sich die Gelegenheit, das Ambiente des innerstädtischen Kerns mit der Nähe von Wasseroberflächen zu kombinieren – ideale Umstände für die Entstehung einer Wahrzeichenarchitektur.

Abstract

When we speak about the city of Stockholm, it is inevitable, not to mention the lake Malaren and its fourteen islands. The project is located at the heart of Stockholm on an island Gamla Stan, which is characterized by its maze of medieval streets that preserve seven hundred years of history, represented by Gothic churches, Royal Palace and other Architecture characteristic for that era.

While preserving the fabrics of the cultural ferment of entire district, the Stockholm Workshop Center is being planned on the southern border line with the goal of enriching and expanding the existing visitor experience in the very core of Stockholm. The wood workshop will act as an ode to old means of building but will bring a fresh breeze to the riverside of the building site with its distinct wooden façade and architectural form. The functionality of the building will be branched off into two sections, one for private workshop use and the second one for public where it will offer an insight into Danish wooden building methods and products as well as learning and conferential center.

With this type of project, the opportunity is being presented where one can combine the ambient of the most inner city core with the proximity of water surfaces. A combination that is ideal for landmark architecture.

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1. Introduction

Ill. 1. City of Stockholm with location
Personal illustration by the autor

“ When I first encountered the name of the city of Stockholm, I little thought that I would ever visit it, never mind end up being welcomed to it as a guest of the Swedish Academy and the Nobel Foundation. “ [1]

Seamus Heaney, Nobel Lecture, December 7, 1995

1.1 History

Gamla Stan, in literal translation “The Old Town”, is the oldest part of the Swedish capital Stockholm. It is located on a central island called Stadsholmen in Lake Malaren. The name Stockholm used to refer for centuries to Gamla Stan only. Over the time as city expanded, the name referred to several areas that were established in its vicinity as well as the metro region. Stockholm means “Log Island” in Swedish and got its name in a very peculiar way, at least according to a folktale. The former capital of Sweden was located in Sigtuna but due to its bad localization it was very vulnerable towards attacks of armed gangs. After being pillaged for too long, the old leaders of the town decided to relocate the capital and the method they used included a hollowed out log and bags of gold. They filled the log with gold and set it down the water. The island the log hit was the island of Stadsholmen and there the Gamla Stan started to be built. Being an island it offered much greater protection than the old capital was able to provide and furthermore, it was an island in an inlet of Lake Malaren which had direct connection to the Baltic sea which was ideal for better trading opportunities which were proven to be very valuable in the upcoming centuries.

Ill. 2. Gamla Stan island with location
Personal illustration by the autor

Up to the middle of the 19th century the town on island Stadsholmen was called “the city itself” simply because the lands around it were mostly rural. Their own name was “the ridges”. After the mid-19th century, todays Gamla Stan got a new name: staden mellan broarna or “the city between the bridges”. This name was official until 1980s and from 1930s it included also the isles of Helgeandsholmen and Strömsborg. The name Gamla Stan first appeared during the early 20th century and a station of Stockholm metro which opened in 1957 also carries the name of the city core. But even though the official name of Gamla Stan has been established in the 1980, the modern Stockholm is still sometimes referred to as “the city between bridges”.

The architecture of Stockholm dates back to 13th century. This is mainly thanks to city’s escape from the destruction by war which many other continental European cities didn’t manage to do. The design of most representative buildings dates back to 17th and 18th century and it found major influencers in foreign architecture. This is to be expected because foreign architects were commissioned to restructure and redesign the citys fabric so that Stockholm can escape the “unsightly” middle age and slum-like appearance of the inner core which was not presentable or deemed worthy of a monarchy. During the 20th century the majority of foreign influence came from United States while the former neoclassicism evolved into Swedish Gustavian style, and the classicism of the 1920s became separate style called Swedish Grace.

Ill. 3. Gunnebo House,
18th Century - The golden age of gustavian style

Ill. 4. traditional Shtockholm architecture

" Still another aspect of architecture and cities in our informational/communication society is inter- architectural relations. In the industrial society, strong emphasis on costs and intense demand for functional sufficiency of individual buildings meant that less thought was given to large functional units, including the building's neighboring structures and surroundings.

I think it is difficult to determine which of the two is more important, but in a society that places great stress on communications, relationships with the surroundings probably deserve as much consideration as the functional sufficiency of the individual building. " [2]

Kenzo Tange, 1987 Laureate

The best preserved part of Stockholm and therefore the oldest is Gamla Stan. The oldest buildings are churches and palaces and some of them date all the way to 1250s. The oldest surviving building in Stockholm is located here and it is the Riddarholmen Church that dates back to late 13th century. The first mentioning of Stockholm as the capital of the country dates back to 1430s even though the town existed as a port for over 200 years already. Over the course of this period German carpenters and builders were often contracted to build in Stockholm which left a significant influence of German style and craftsmanship on Swedish architecture, especially in the district of the old town. During the 14th century disputes rose between Sweden and Denmark which cause a series of attacks on the city. This resulted in construction of a fortress in Gamla Stan. During this period the city also started to move to the neighboring islands over the now constructed bridges which made the advancements and damages caused by attackers much lesser. Most city building were relying on wood as building material apart from the Cathedral of Storkyrkan and tower titled "three Crowns" which were monumental and representative.

During the 15th century, after a dispute that rose in Old Town, King Gustav Vasa was coroneted and declared the city an independent Monarchy. After this the development of Stockholm gained new wind under its wings and let this city join other European capitals when it comes to matters concerning development. During the following centuries Stockholm developed far beyond the Gamla Stan increasing its infrastructure and economy, which resulted in construction of some of the most prominent buildings in Stockholm, the Royal Palace.

Ill. 5. map of monumental buildings on the island of Gamla Stan
Personal illustration by the autor

1 Ill. 6. Riddarholmen Church

2 Ill. 7. Bank Hotel / The Royal Castle

3 Ill. 8. Storkyrkan, “The Great Church”

4 Ill. 9. The Stock Exchange Building

5 Ill. 10. Tyska kyrkan

6 Ill. 11. Parliament house

1.2 Wood

Throughout the History wood has been our most important building material but over the course of the 20th century it has given way to alternative building materials due to their technological advancements and building regulations, and thus, the wood has been confined mostly to smaller buildings. But now, at the dawn of the third decade of the 21st century, wood as a building material is experiencing its own renaissance thanks to the ever growing eco-awareness and our strive towards creation of a long-term sustainable society, and wood being the best natural, sustainable and recyclable material with a whole array of possible applications in architecture, regardless if its inside or outside.

In order to aesthetically and technically appropriate wood to different situation a variety of treatments are possible to change certain properties. There are methods to affect the woods durability, hardness, dimensional stability and moisture absorption. For better understanding the treatments can be divided into following methods:

- Treatment against fungal and insect attack
- Fire protection treatment
- Dimensional Stabilisation
- Hardening

Ill. 12. Tree trunks

Wooden protection often refers to different methods through which wooden and wood-based materials are treated against attacks by wood decaying fungi, blue stain, mold, insects and marine pests. Therefore, when building with wood some form of protection must be applied in order to provide structural protection. Structural integrity of wood is retained when wood doesn't have too high moisture content for a prolonged period of time so any damp or moisture should be able to quickly evaporate and return to normal levels.

In some cases desired rate of drying out can't be achieved and moisture in wood remains high for extended period of time or even permanently. If this is the case a choice of higher quality wood that has better durability might be optimal. Wood with better durability doesn't necessarily have to be of different species, it can also be a plank extracted from different portion of a tree trunk.

Adding different chemicals to the wood can prevent the loss of structural integrity, weather it is because of biological attack (fungi, insects) or prolonged moisture retention. The type and quantity of added chemicals both influence the resulting effect on wood. In addition to that application methods provide additional factor in the type of structural protection you want wood to have. The chemicals can be added manually by coating or dipping or they can be industrially added using pressure treatment.

Coating and dipping wood only give a surface effect so if we want the effect to be stronger, a method that penetrates deeper into the wood is to be considered. These manual methods are therefore used only as complementary treatments. They are usually used as surface treatment of decking and outdoor furniture.

Pressure treatment is primarily applied on pine wood because the sapwood has the ability to absorb the impregnation agent deeper into the structure. Heartwood allows only superficial penetration so it is a standard to impregnate the sapwood up to the point where it begins. But the pressure treatment does not provide as good results in different wood species. Spruce for example doesn't allow deep penetration of agent.

The technical properties between treated and untreated wood don't differ by a lot, at least when it comes to appearance and strength grading. It is important to know that metals corrode more quickly than treated wood so metal fixings such as nails and screws should be coated themselves and rustproof. If not coated, then stainless steel or hot dip galvanized steel should be used.

Heat treated wood can be both softwood and hardwood which has undergone exposure to temperatures of 160-220°C in an oxygen-free environment. This treatment causes changes in the woods chemical and physical composition as well as appearance changes where its color turns to brown and furthermore, upon exposure to outdoor elements it can lose its color and turn gray. The structural changes in wood are represented in lower absorption and limited movement compared to untreated wood which makes heat treated wood more brittle and weak. This means that wood treated in this way should not be used for load bearing structures, but in general it can be used in indoor cases for floorboards and Interior cladding, and in outdoor cases for exterior cladding, fencing, windows, garden furniture and decking.

To achieve fireproof wood structure, the wood has to be either impregnated or coated with a fire retardant. In case of impregnation chemicals that stop combustion are used and bound into the wood. This connection is not completely firm, so additional pain coating has to be applied. On the other hand, surface treatment with fire retardant provides a coating that swells under fire and prolongs structural integrity of the wood.

Dimensionally stabilized wood has been treated with goal of limiting the shrinkage or swelling in wood. These treatments are highly specialized for specific usages (such as wooden sculptures) and often include filling of the wood structure with thermoset plastics which limit the absorption of moisture.

Hardened wood is achieved through compression. This includes increasing the density of wood which is specific to different wood species (pine and spruce have lower density compared to oak), so when the density is increased artificially, it needs to be stabilized with plastics that lock the compressed structure. This type of wood is used for flooring.

1.3 Location and Formulation of Tasks

The Task of this Thesis is to design a Workshop Center in the ancient district of Gamla Stan, Stockholm, Sweden. The site one of the very few open areas of this city part and is located on an existing Kornhamnstorg square in the old town on the southern edge of the central Stockholm island called Stadsholmen.

“The fourteen islands on Lake Malaren that make up the city of Stockholm preserve a seven hundred year of history that recounts the story of the Swedish capital. The buildings of the late nineteenth century, the Gothic churches and parks characterize a European capital in which architecture and nature coexist in perfect balance. The metro line is a place of art: among these is the subway line where the stops become a moment to discovery the works of local artists exhibited in them. Craftsmen and designers contribute to maintain the local tradition, especially Gamla Stan, a maze of medieval streets that make up the old center. Stockholm Wood Factory will be built on the islet of Stadsholem to keep the cultural ferment of the entire district alive. Woodworking laboratories and exhibition areas will offer visitors a new space of interaction and architecture that, by placing itself on a border line, becomes a connection between the town and the coast. ” [3]

Ill. 13. Silhouette of an island Gamla Stan

2. Examples

Ill. 14. The exterior of Nouvel's design

National Museum of Qatar

Architects: Atelier Jean Nouvel
Location: Doha, Qatar
Area: 52000 m2
Year: 2019.

" The National Museum is dedicated to the history of Qatar. Symbolically, its architecture evokes the desert, its silent and eternal dimension, but also the spirit of modernity and daring that have come along and shaken up what seemed unshakeable. So, it's the contradictions in that history that I've sought to evoke here. " [4]

Jean Nouvel

Ill. 15. The exterior of METLA Forest research center

METLA Forest Research Centre

Architects: SARC Architects
Location: Joensuu, Finland
Area: 7650 m2
Year: 2004.

“ The primary goal of the construction project was to use Finnish wood in innovative ways. Hence, wood is the main material used throughout the building, from the post-beam-slab -system in the structural frame to the exterior cladding. The building fits in the cityscape in respect to its size, which is closely related to the adjoining buildings. However, the clear form and the uniform materiality achieved through the extensive use of wood make it a distinct entity. ” [5]

Text description provided by the architects.

Löyly sauna

Architects: Avanto Architects
Location: Helsinki, Finland
Area: 1071m2
Year: 2016.

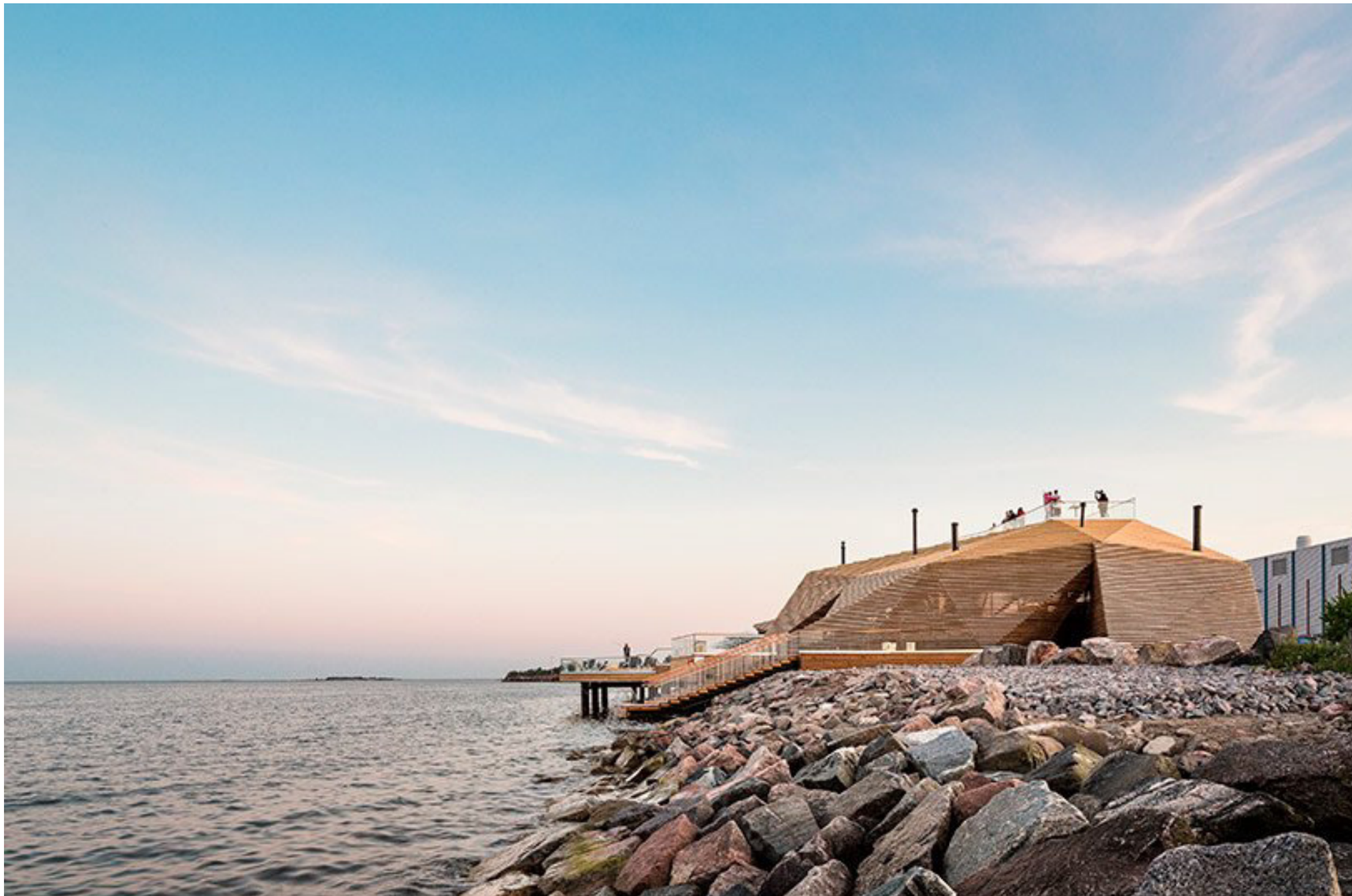
“ The objective was never to produce a grandiose building, rather a genuine, easily approachable community space with solutions that stand the test of time and wear. “ [6]

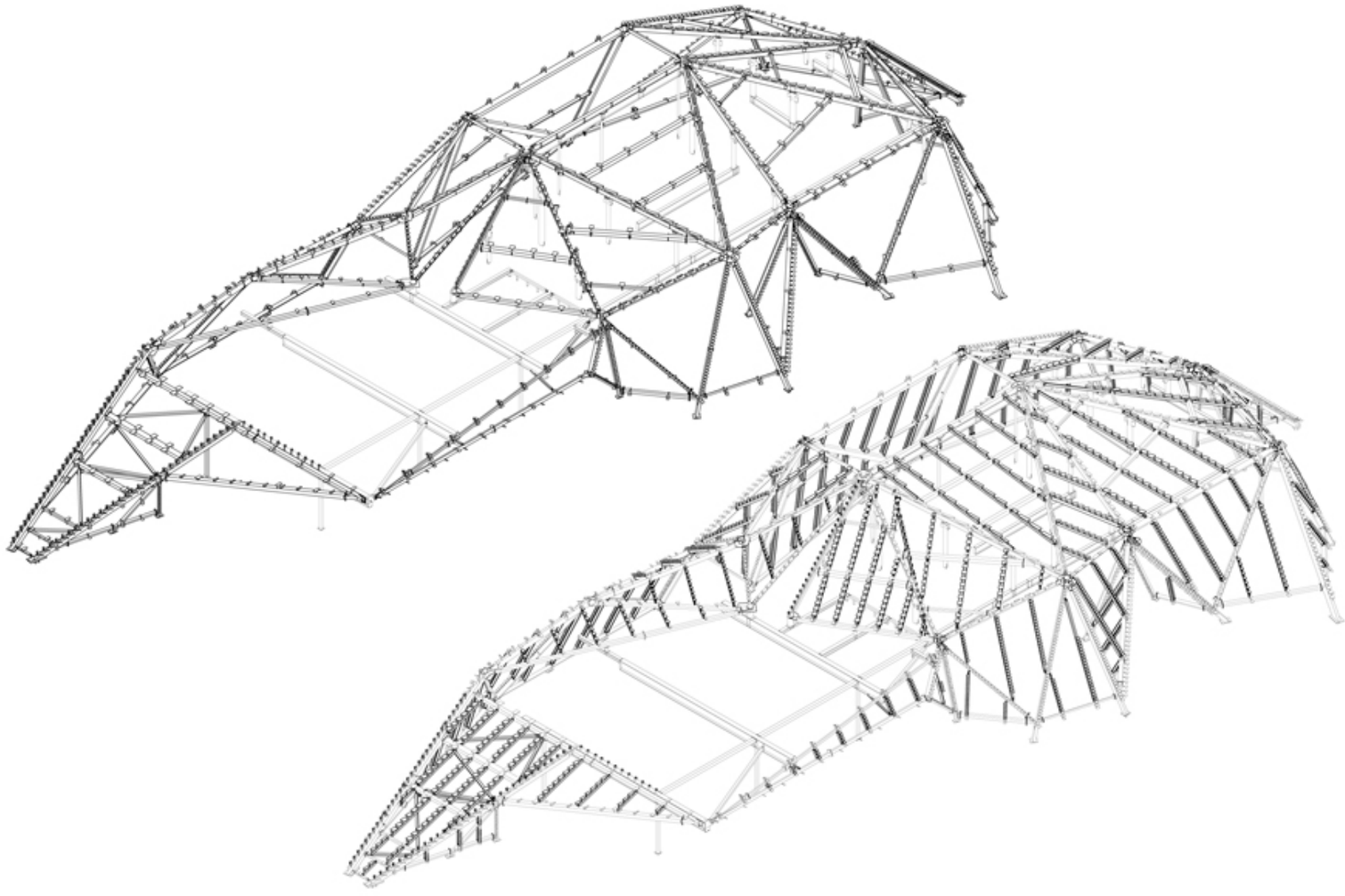
Anu Puustinen

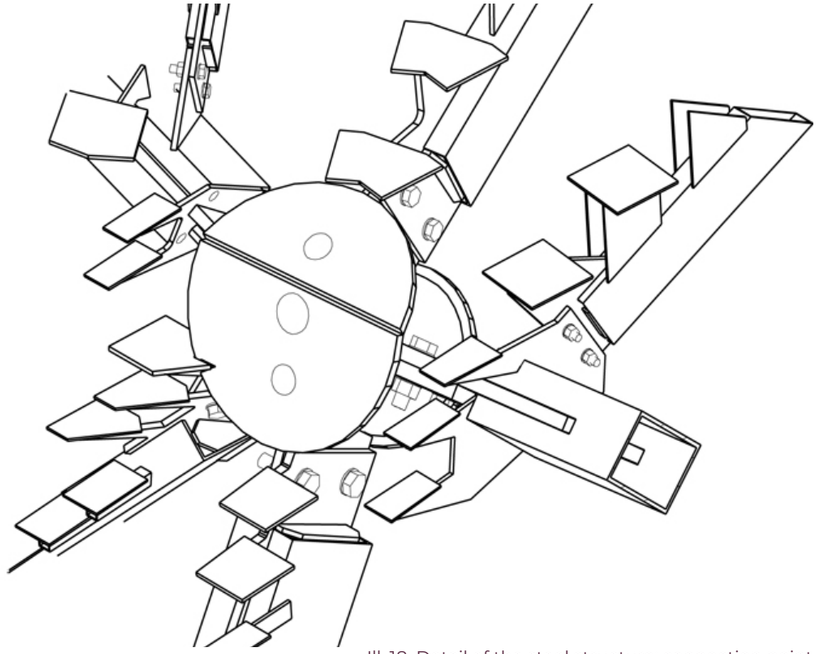
” We wanted to make the building as low as possible, so as not to disturb the view from the apartment blocks behind it. It was also important for us not to cut into the park area round the seashore because the shores belong to everybody. It would feel bad to produce a building that would make people take a long detour when walking along the shore. “ [7]

Ville Hara

Ill. 16. Waterfront sauna







Ill. 18. Detail of the steel structure: connection point

Ill. 17. Axonometric view of the steel structure

3.

Concept

“ For me, part of the significance of an awareness of architectural history is that we again value permanence, continuity and, therefore quality. I am deeply concerned with the making of a building and prefer to think of myself more as a master builder than as an artist, for the art of architecture ultimately demands this. “ 8

Richard Meier, 1984 Laureate

The Idea for this building and the approach towards its design has been divided into three main elements: The aspect of material, the aspect of volume and the aspect of atmosphere. All of these approaches have been carefully extracted as the focal points and applied in a way that they resonate with the whole site surrounding. This not only includes the physical world and dimensions of the surrounding structures and buildings but also the atmospheric and resulting emotional aspect of the whole site. The history and background of this absolute core part of Stockholm have their own story to tell but the approach of this project, although still respectful to the historical surrounding, takes a slightly different turn.

The building is planned to serve as a transitional space between the dense historical Gamla Stan Streets of multi-story buildings and the open and even surface of the Lake Malaren. The Wood Workshop will react to both sides of the border it is placed on and try to bring impressions and atmospheres of both worlds together in a single piece of architecture.

and even lower moisture absorption. Finally the top coat comes in form of two layered Alkyd transparent tone with a very slight carotenoid pigment which brings out and enhances the warm tone of the wood that doesn’t fade over time. And this being the translucent method of coating, the paint lets the natural texture be visible.

2.1 The Aspect of Material

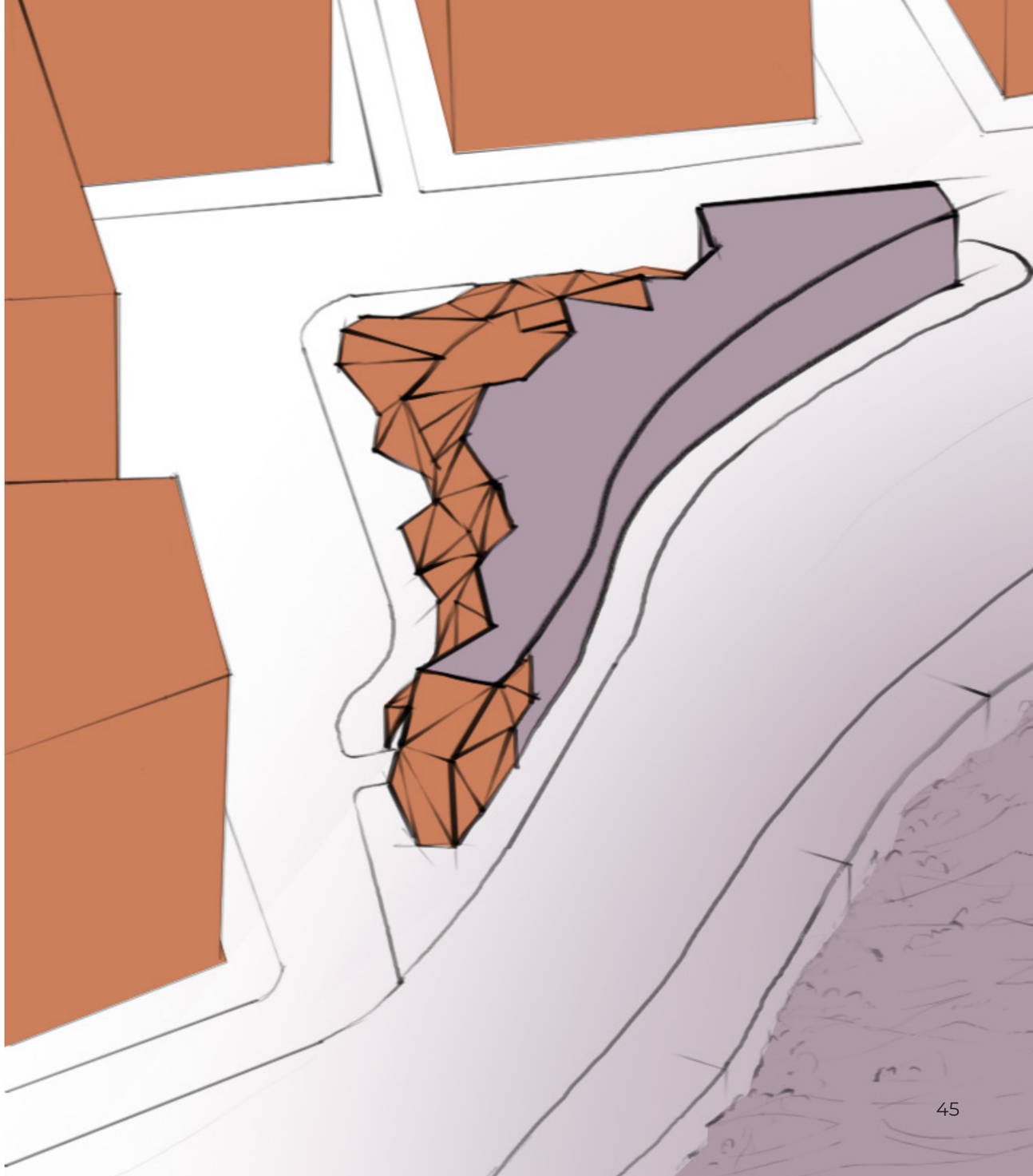
The main material used for the surfaces of this building is wood. As explained before, wood has remarkable properties when it comes to its application in architecture, not only because of the structural and technical aspects but also because of a whole plethora of option when it comes to surface finishing. For this building however, two main surface tempering have been used. Both of which will resonate with the side of the Site they are facing. Material has been applied in a way that it lets the building resonate with the side of the world it is facing. The southern façade, which is facing the Lake Malaren, is a single simple curved dark slate that in a way reflects the cold and even surface of water. It acts as a barrier that encapsulates the core of the site and separates it from a traffic-dense Munkbroleden Street that lays between the Building and the Lake. The material used for this is Pine Wood treated in a black wood tar method. This method will give very dark and lasting surface while retaining the visible structure of wood. It is based on pine tar which is also created during production of charcoal or burning stumps. Resin rich pine tree is heated up to a point when it becomes a very fine powder that can evenly enter the substrate but still allows the base wood to breathe. This coating protects the wood from rot, mildew and drying out while providing a very water repellent surface. Often times it is reinforced with pigment for better coverage and protection against sun's UV radiation.

The inner side speaks a different story. As much as the outer black façade acts as a dividing representative piece, the inner façade offers a welcoming hand to any visitor and observer. This has been designed as such in order to bring opposites together: authoritative separation and intrigue on one side, and comfort and openness on other side. This warmer color will be a pleasant sight when viewed and contrasted against the coldness of the concrete and water in the surrounding, allowing the Café and exhibition halls as well as the workshop itself to attract lingering visitors. With this said, the inner side of the building is made out of light warm pine wood that has been pre-treated with oils to reduce moisture absorption. Further on the wood is primed with a transparent alkyd undercoat which ensures good adhesion of the top coat

Ill. 19. A sketch showing the aspect of material
Personal illustration by the autor

2.2 The Aspect of Volume

As vision is for most people the 1st way of sensing architecture, volume and approach to arranging the physical building body on the site, has an important role in this project. Even though the Building itself is mainly serving the purpose of Wood Workshop, the location of the site should signify the importance of the building and what it should look like as well as what should be achieved with this architecture. Being in the located in the heart of the Stockholm the building should present a new fresh form of attraction to already Landmark rich Gamla Stan. With this in mind a building that stands out from the existing town structure has been chosen as a way of shaking up and livening up the city line. Since the position of this triangular site is on a border between two very different environments, it presented an opportunity to create a building that has two faces. One for each side of the world it's facing. The outside, also the southern side of the site is facing an empty and cold asphalt street with wide body of water behind it. Towards the North, the inside is facing a very texture, color and volume rich old town of Stockholm. These two worlds will mirror themselves in the newly projected building for Wood Workshop. To the south, a clear tall façade will smoothly flow along the slight curve of the Munkbroleden Street and be an image of flat surfaces it mirrors. To the north the building will cascade from the upper level set by the southern wall all the way down to the inner city life in a an array of surfaces, forming a rich landscape which attract and opens up the building to any visitor and pass-byer.

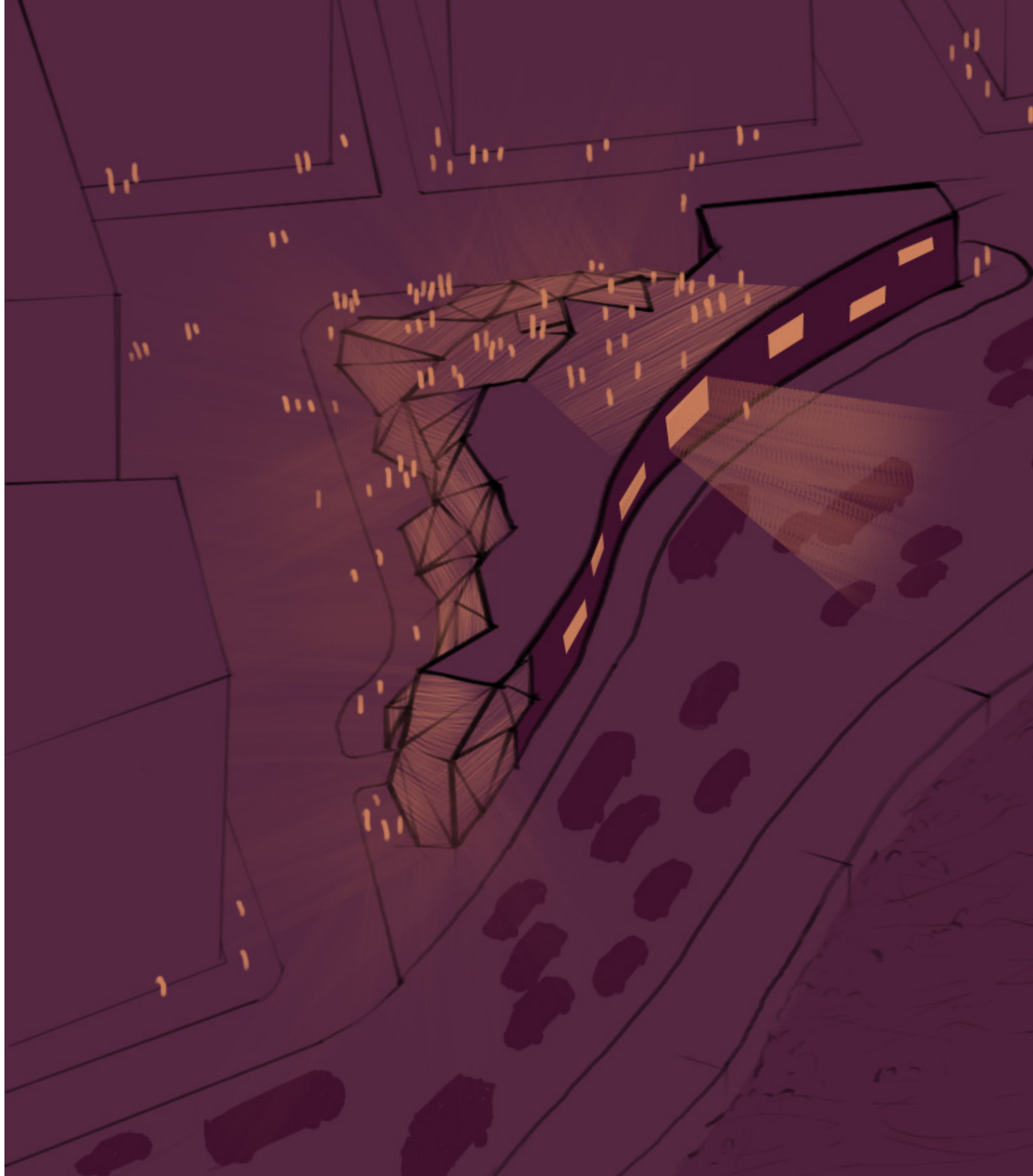


Ill. 20. A sketch showing the aspect of volume
Personal illustration by the autor

2.3 The Aspect of Atmosphere

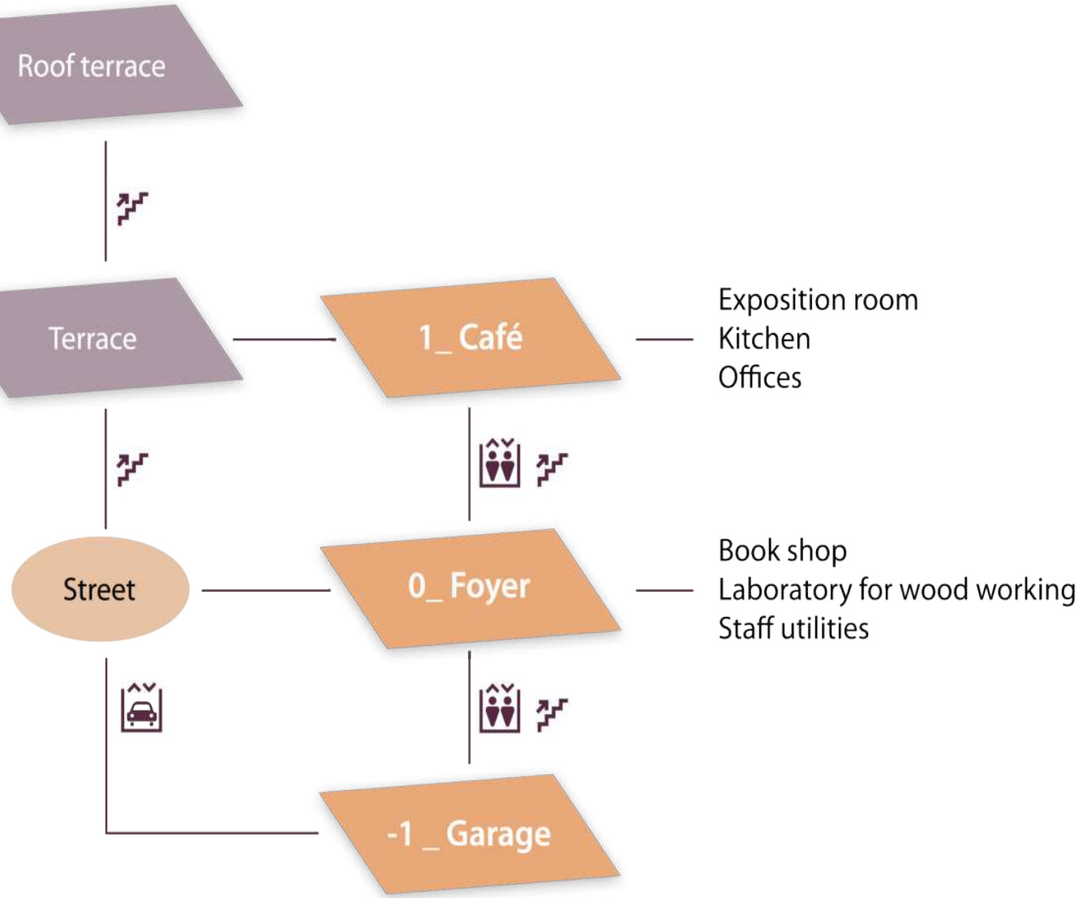
As it's already mentioned in two other aspects of the building, the atmosphere that results from the building plays a crucial role. To begin with, there is the fact that a very simplistic and, in comparison to its environment, oddly proportioned structure is being introduced to a very conservative and heavily regulated old town structure. This however has been done with insight, as mentioned to break the overwhelming reoccurring building philosophy of Gamla Stan. Simply by being different from its surrounding, it will offer an attraction point for people since things that stand out and refuse to conform with environment usually intrigues as throughout the history. This can be used in our own advantage and invite as much visitors and observers as possible, adding to already rich offer on things to see in Stockholm.

The other atmospheric aspect has more to do with simple ways of how we perceive different shapes and forms. Plain versus a complex Terrain: In a similar philosophy, the building will react to the outer ring of Gamla Stan – the Lake Malaren- by offering it a clean simple black slate that will stand out and protect the site from noise and cold during the day and blend in during the night, letting the building body disappear and only the warm light of the inside activities be visible. And then there is the inner side, facing the rich and colorful inner life of the town and reacting to it accordingly by inviting the life to spread further into its own grounds. On the street level the center of the building opens up to visitors not only in form but also in color. The entry wall has been accented with a darker hue of wood that connects and passes onto the floor of the café on the 1st floor. This provides a contrast to otherwise light and warm façade on this side and unmistakably directs the visitors to the main entry. The second big entrance is presented in from of wide but blended in stars that don't differ too much from the façade. They lead to the upper level, the café and the exhibition halls. And from this level a panoramic view over the lake Malaren is presented. It acts as a window from one lively world into another. Additional set of outside stairs can lead visitors to the last roof floor which then offers a view all around the site. And it enables the visitors to see 360° around the site, offering a wonderful view around the site sitting on the border as well as the view towards the neighboring island of Sodermalm.



Ill. 21. A sketch showing the aspect of atmosphere
Personal illustration by the autor

4. Functionality



Ill. 22. Function and room diagram
Personal illustration by the autor

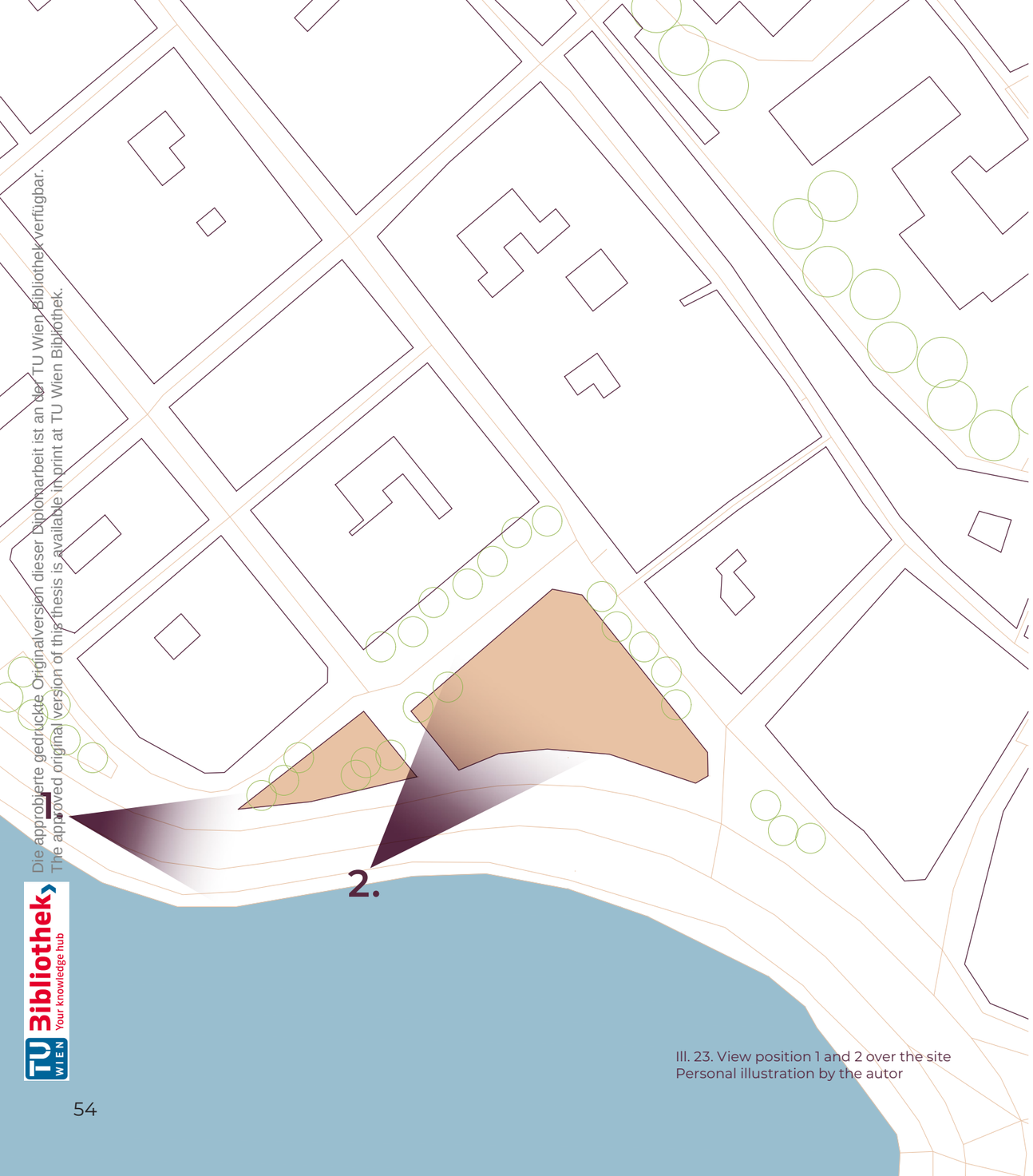
In ascending order, starting from lowest to the highest level, the functions are outlaid as follow. The underground level accommodates a garage which has 20 parking spaces including three easy accessible parking spots. The garage has been outlaid in a way that all the streets allow only one way traffic which keeps the dimensions of the garage compact and available surface well used. The entries to the garage are executed as car lifts, entrance being on the western side, and exit on the eastern side. The ramps have been avoided because of limited available surface and better connection with the street traffic while retaining the central location for the focal building functions on the upper levels. Fireproof stairs in the western part of the garage lead towards the ground floor and enable a fire escape route from all points of a length not greater than 40m. In addition to the garage function, the underground floor houses a central technical room which houses heating, electrical and aerating facilities. This has been designed as such to enable a clear and usable roof floor.

On the ground level the central position is taken by the main entry to the building. The central Foyer leads the visitors to the Workshops positioned in the eastern part; the northern side is occupied by a public book shop that has good exposure to pedestrians, while the eastern narrow part of the building and site houses a variety of utilities: Storage rooms for the workshop, maintenance rooms, employees changing rooms and lavatories. The very eastern side of the building is mostly open and accommodates car lift for the garage and bicycle parking slots.

There are two ways that connect the street level with the upper functions of the building: the stairs in the Foyer and outside staircase that leads to the terrace. The central point of the building that has the best exposure, the inner as well as the outer side of the district are taken by an attractive café, which can serve as a meeting point for visitors as well as employees in the workshop and other functions present on the site such as the exhibition hall. The exhibition takes up the space available above the workshops and is well approachable from the café and vertical connection. Separated from central point by an utility cluster which entails of bar, kitchen and restrooms; an office has been appointed for the administration purposes of the building. This slight separation dampens the noise from the lively public spaces and allows a creation of a quiet working environment.

A portion of a wide outside staircase that brings people the 1st floor continues to lead up to the rooftop. The roof floor serves as a viewing plateau and offers amazing view over the Site Locality including the Lake Malaren and the neighboring islands. The plateau can also serve as additional surface for the café during the warmer months and in this way encourage longer time spent in the outdoors. This was possible thanks to a very flat and open surface of the roof.

5. Site photos



Ill. 23. View position 1 and 2 over the site
Personal illustration by the autor

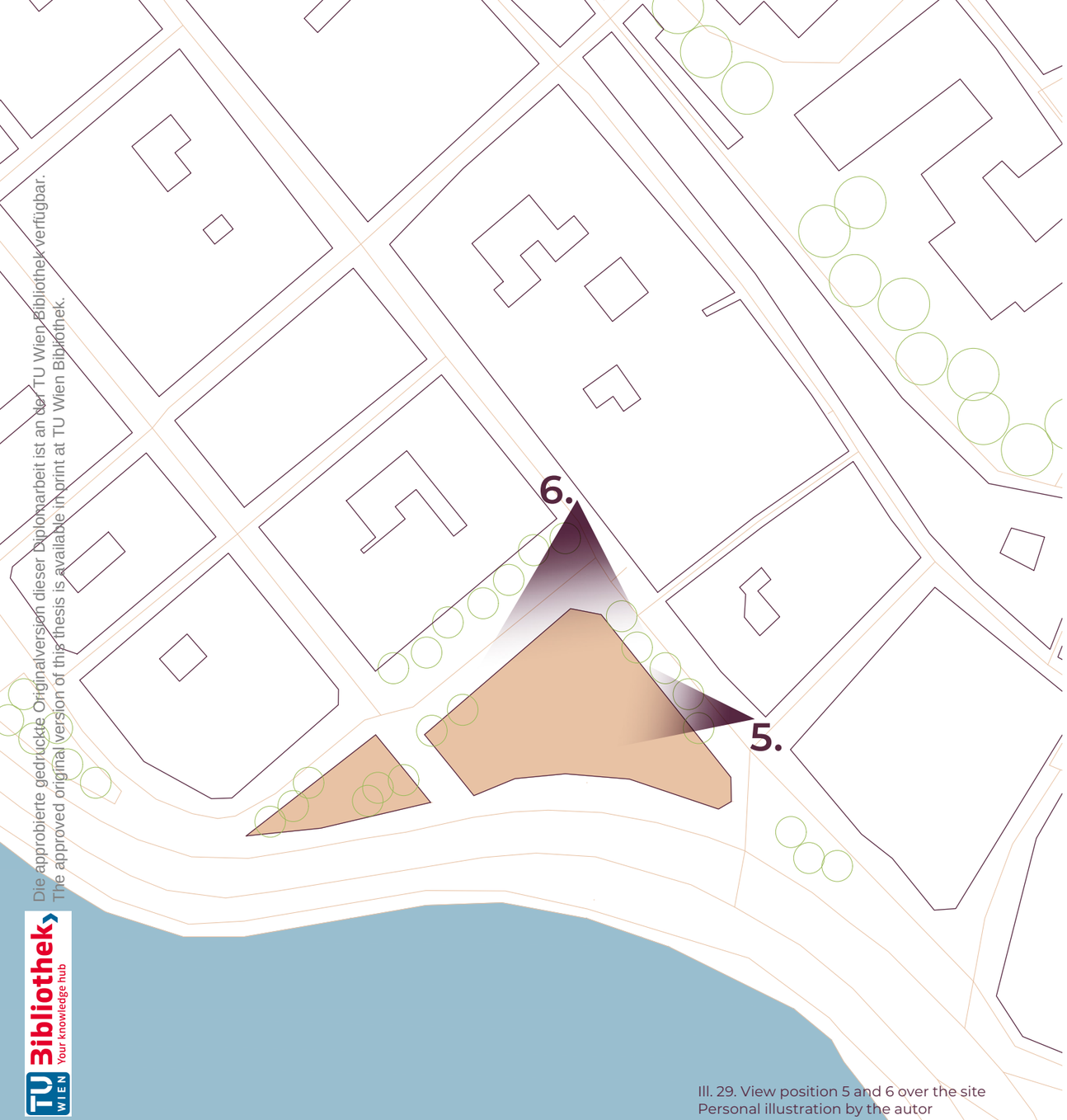
Ill. 24. West view

Ill. 25. South view

III. 26. View position 3 and 4 over the site
Personal illustration by the autor

III. 27. Southeast view

III. 28. East view



Ill. 29. View position 5 and 6 over the site
Personal illustration by the autor

Ill. 30. Northeast view

Ill. 31. North view

6. Project

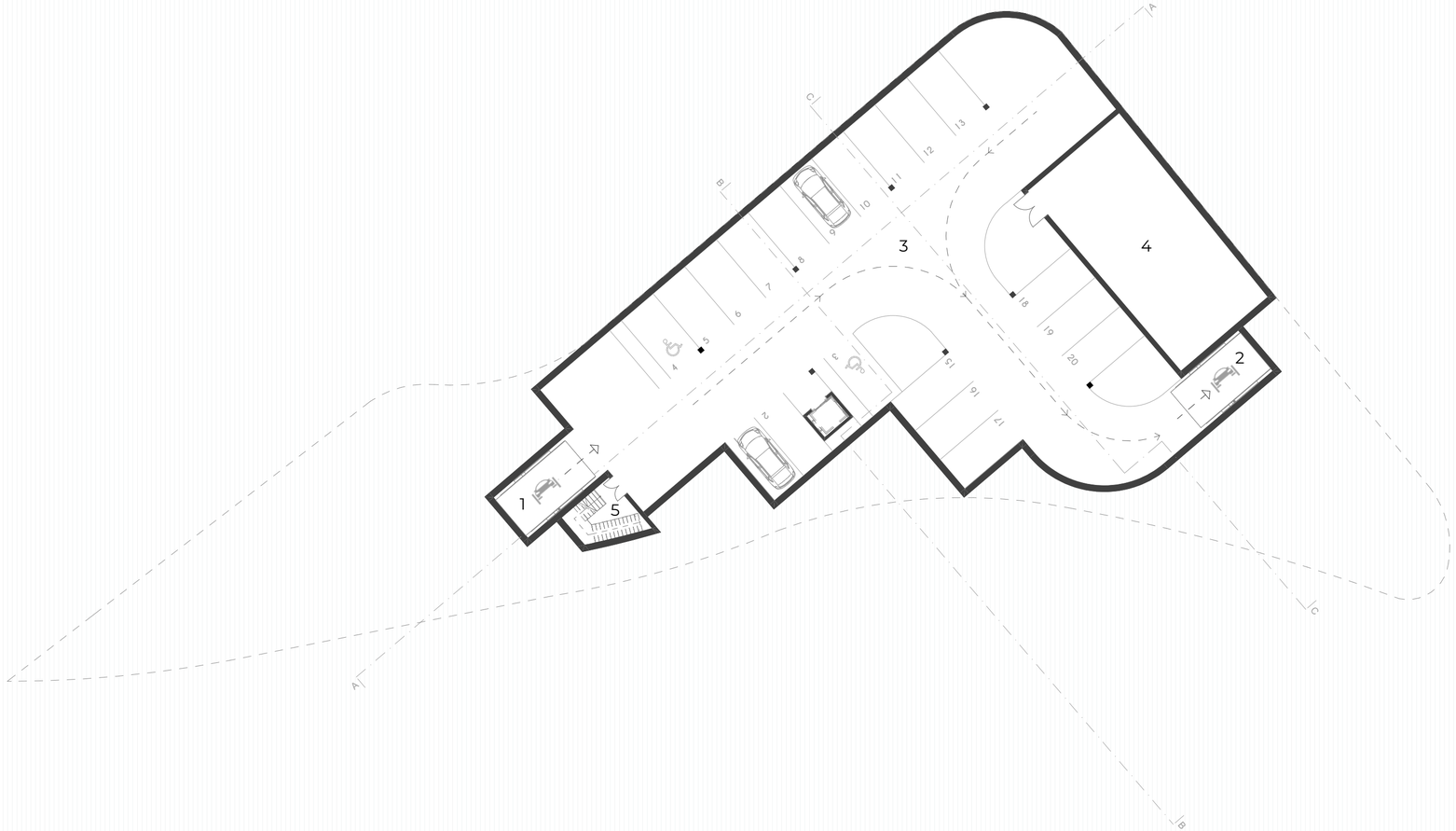
Level -1 _ Garage

1_ Garage entrance - car lift	20,9 m²
2_ Garage exit - car lift	20,9 m²
3_ Garage- parking places	735,1 m²
4_ Plant room - water / electricity	119,4 m²
5_ Stairs	15,9 m²

N

2 10

0m 5



Level 0

1_ Garage entrance - car lift	20,9 m²
2_ Garage exit - car lift	20,9 m²
5_ Stairs to garage	15,9 m²
6_ Building entrance	
7_ Foyer	91,9 m²
8_ Book shop	98,3 m²
9_ Laboratory for wood working	114,6 m²
10_ Laboratory for wood working	99,9 m²
11_ Storage equipment for maintenance	40,41 m²
12_Dressing room for staff	17,3 m²
13_ Storage	2,5 m²
14_ Accessible toilet	7,0 m²
15_ Corridor	30,0 m²
16_ Stairs to 1. floor	10,3 m²
17_ Free space	

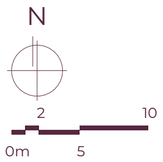
N

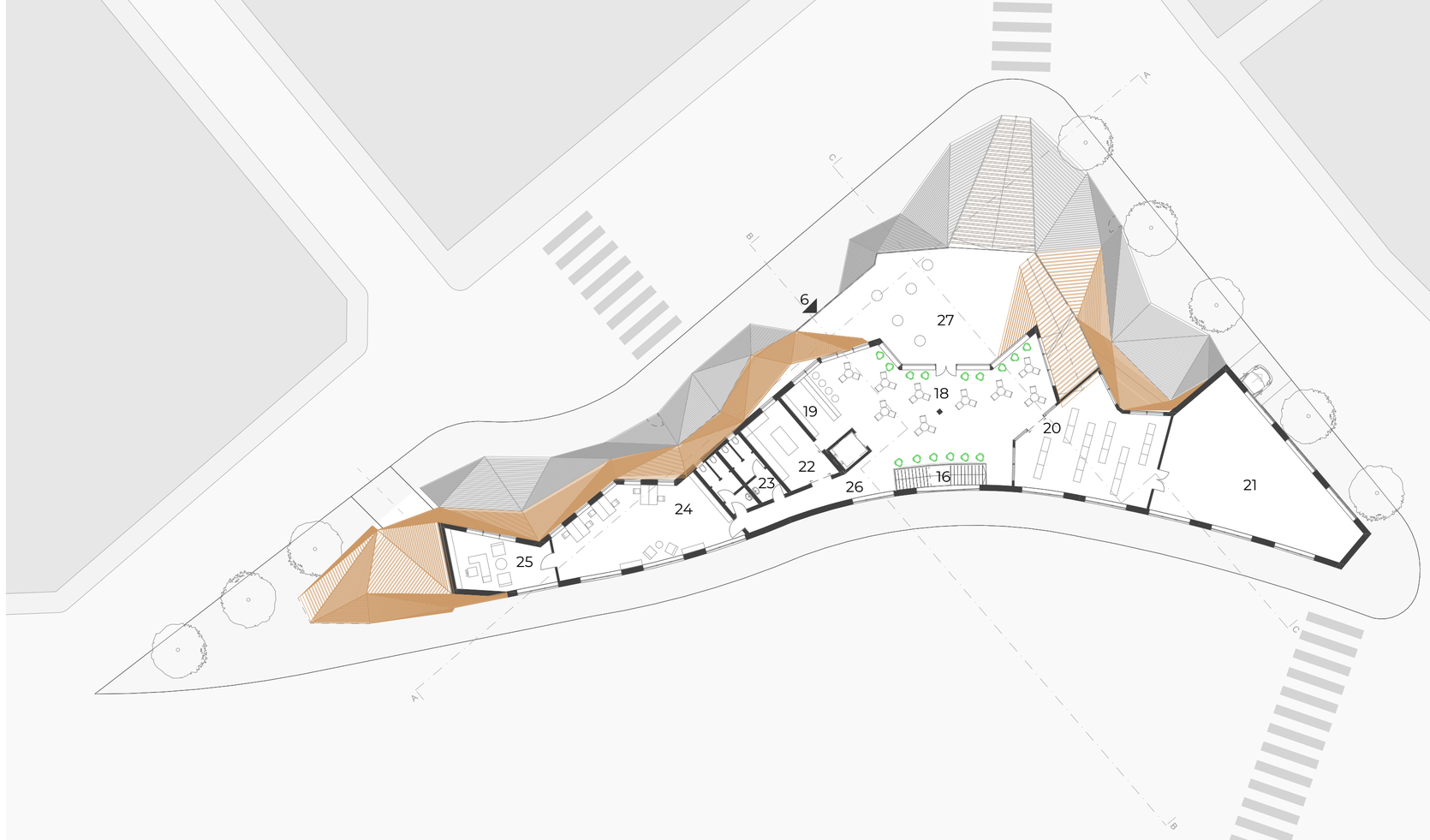
2 10

0m 5

Level +1

18_ Caffee lounge	107,1 m²
19_ Bar	12,4 m²
20_ Exposition room	65,8 m²
21_ Exposition room	105,7 m²
22_ Kitchen	21,8m²
23_ Toilets	5,5 m²
24_ Workers office	61,4 m²
25_ Director office	26,3 m²
26_ Coridor	33,2 m²
27_ Terrace	92,2 m²





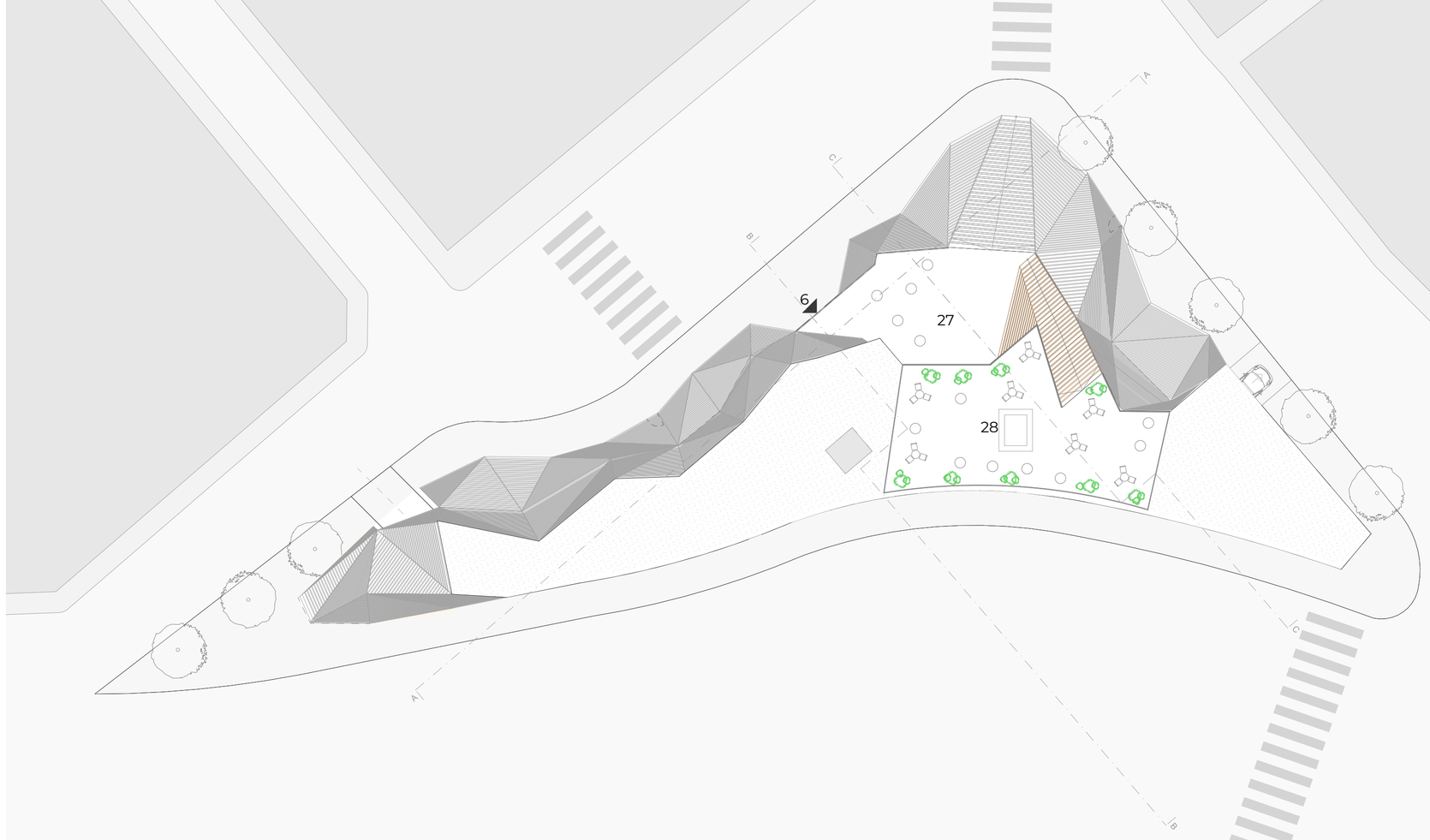
Level +2 _ Rooftop

28_ Rooftop 162,8 m

N

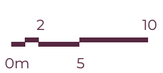
2 10

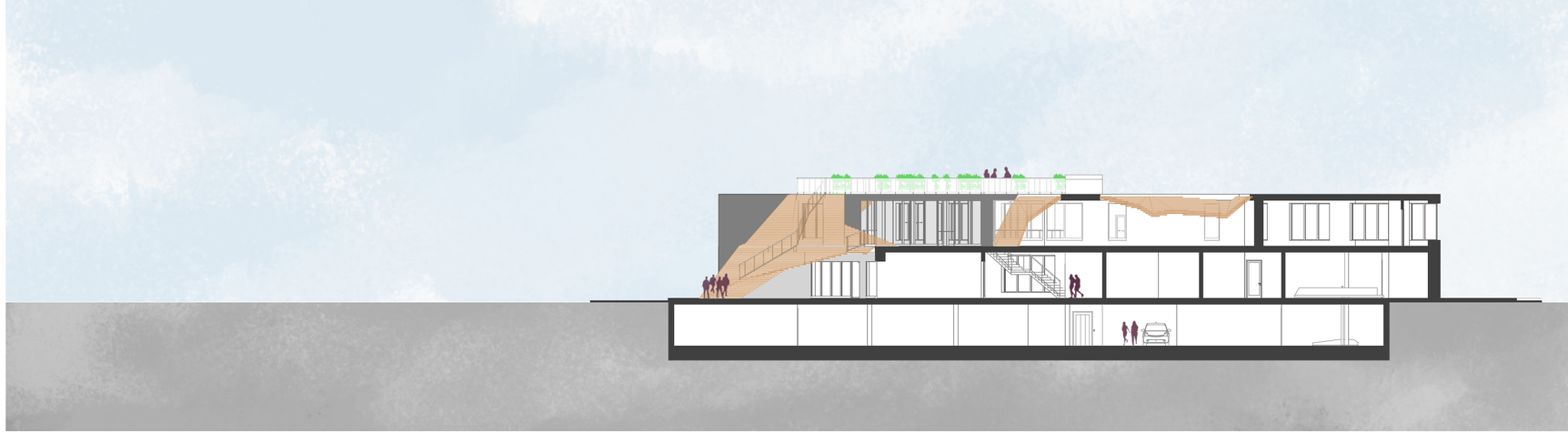
0m 5

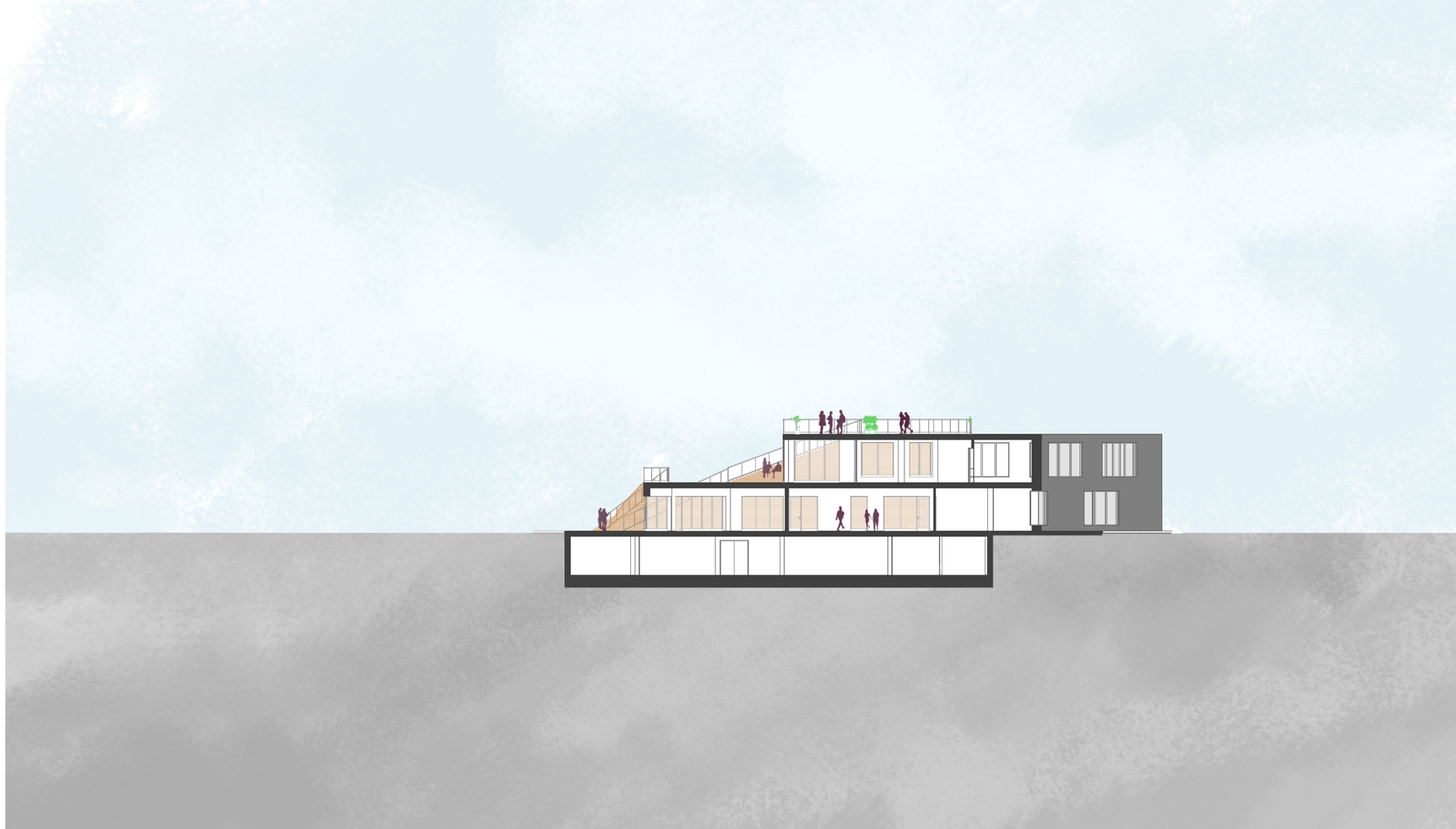


Section A - A

Section B - B







Section C - C

2 10

0m 5

East facade

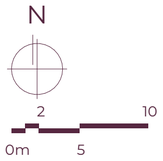
West facade

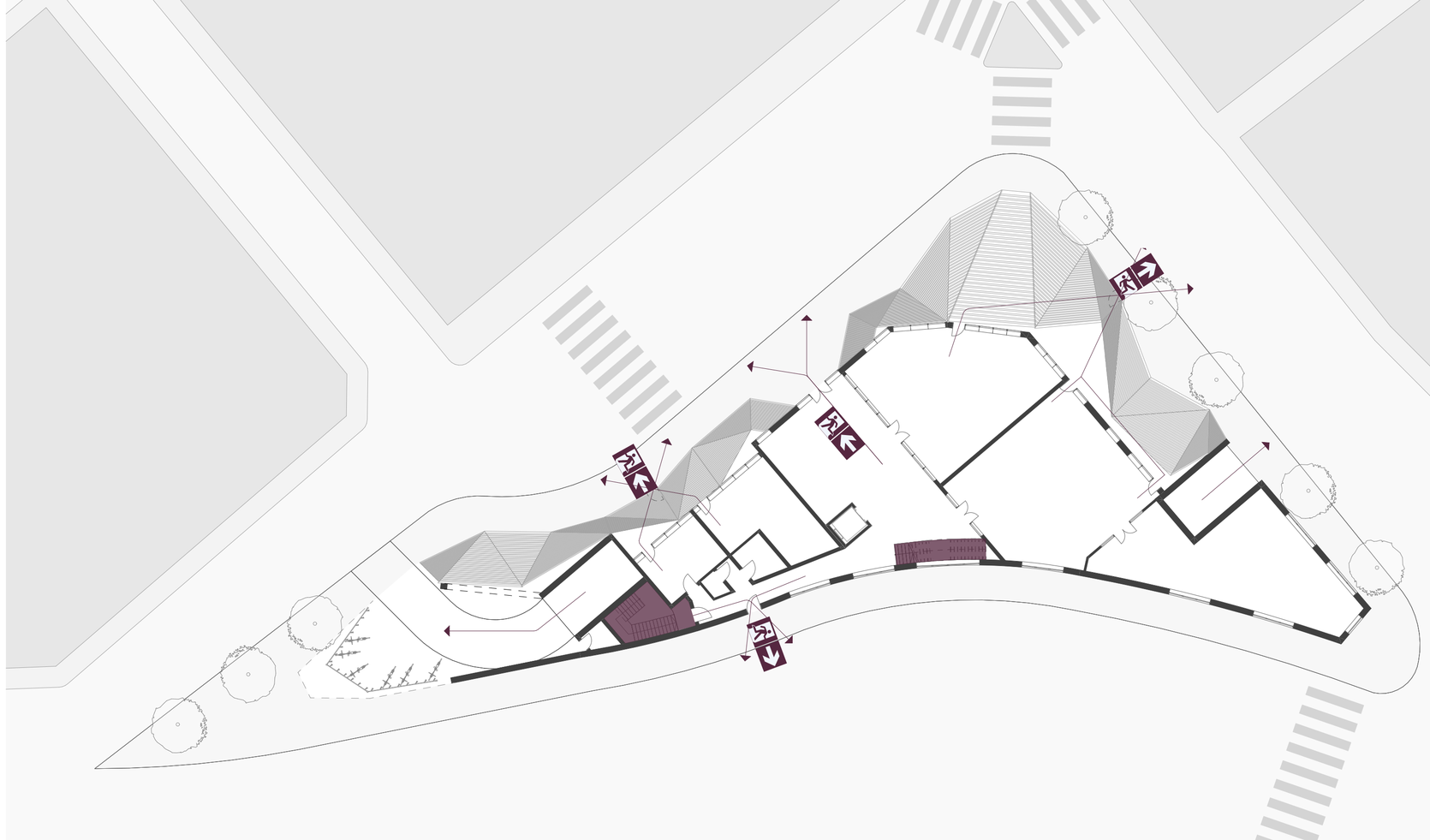
2 10
0m 5

North facade

South facade

Escape plan

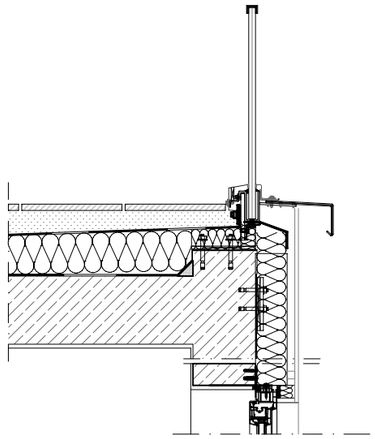




Detail 1:20

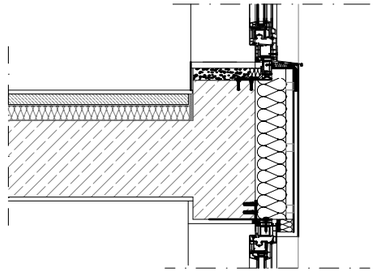
Level +2

Holzboden im Splittbett
Wurzelschutzschicht
Abdichtung 2lg Bitumen
Trittschalldämmung
Mineralfaserdämmung
Dampfsperre
Stahlbeton Decke
Innendeckenbekleidung



Level +1

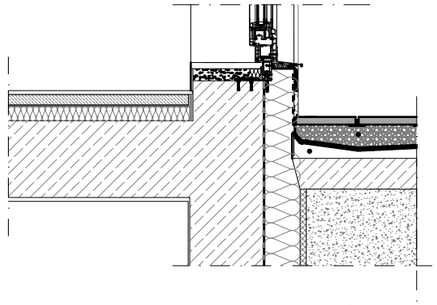
Bodenbelag
Zementestrich auf Trennlage
Trittschalldämmung
Stahlbeton Decke
Innendeckenbekleidung



Fassade Lärche Therm.
Kontralattung Luftschicht
Beplankung Holzfaserplatte
Wärmedämmung
Tragende Wand
Innenwandbekleidung

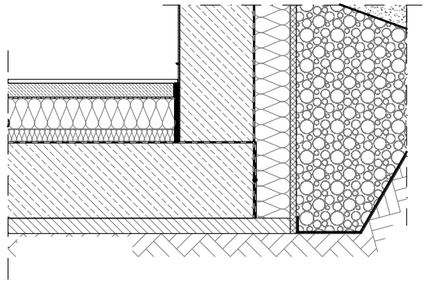
Level 0

Bodenbelag
Zementestrich auf Trennlage
Trittschalldämmung
Stahlbeton Decke
Innendeckenbekleidung



Level -1

Bodenbelag
Zementestrich auf Trennlage
Trittschalldämmung
Abdichtung
Stahlbeton Decke
Trennlage
Sauberkeitsschicht
Rollierung



Filterschicht, verikal aus Geovlies
Perimeterdämmung
Abdichtung
Stahlbetonwand
Innenwandputz

Construction scheme and materials

Load - Bearing wall

Inner wall

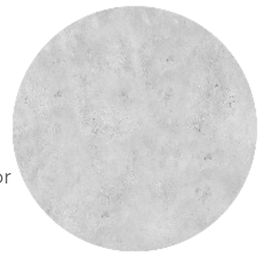
Column

Slab

HSS beam

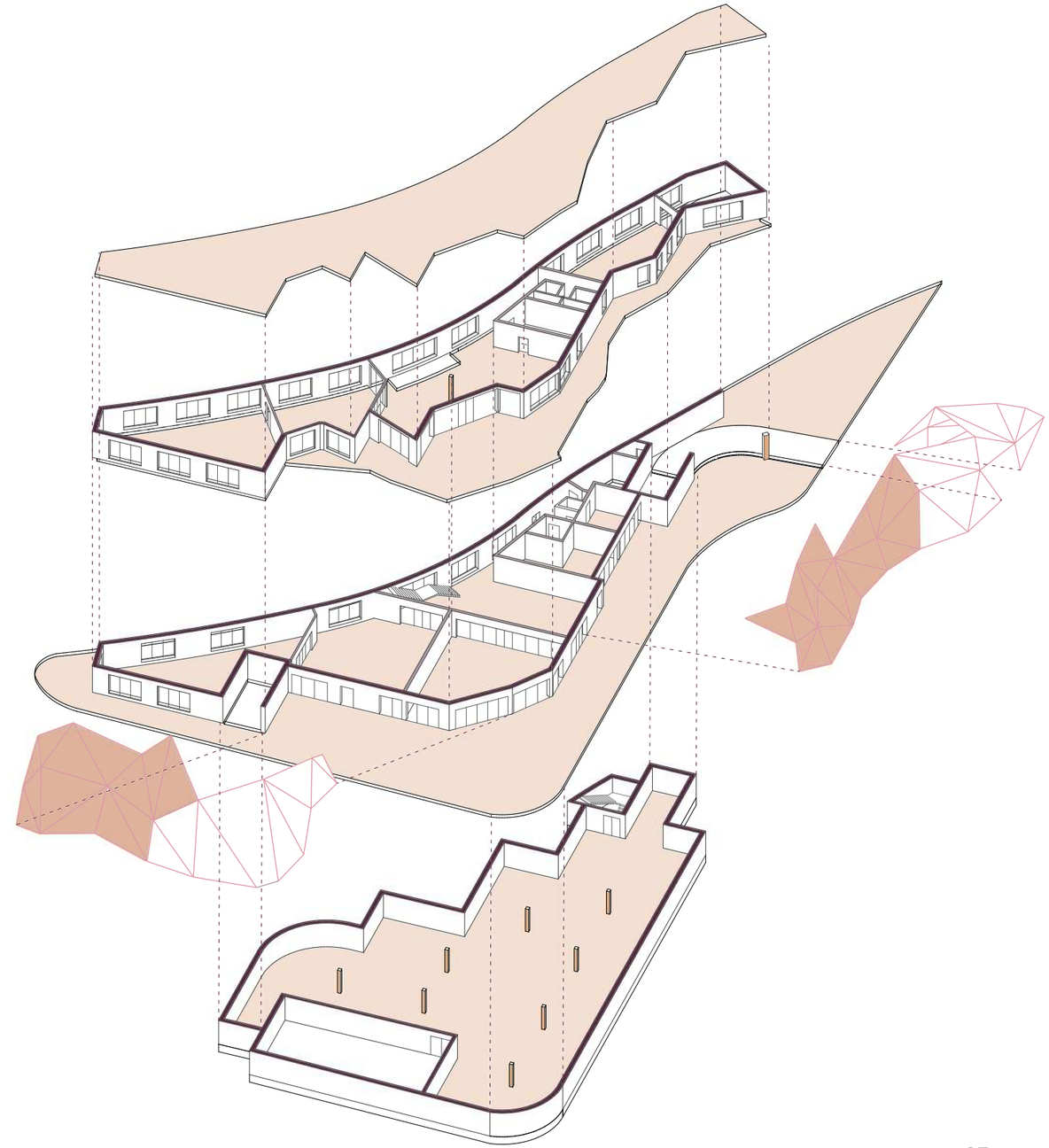
Wooden plank

Yakisugi “shou sugi ban”
exterior facade siding



Concrete floor

Timber plank exterior facade



7. Renders

8. Resorces

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Illustration 7

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Illustration 10

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Illustration 13

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Illustration 14

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Illustration 16

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Illustration 17

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Illustration 18

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Illustration 24

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Illustration 27

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Illustration 28

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Illustration 30

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Illustration 31

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- unreferenced pictures were made or taken by Milica Nestorović

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Proofread
Dipl. Philologist Marija Marić