MASTER-/DIPLOMARBEIT

Ein Museum für Halikarnassos
A Museum for Halicarnassus

Schaffung einer kulturellen Brücke zwischen Geschichte und Gegenwart
Creation of a cultural bridge between history and today

ausgeführt zum Zwecke der Erlangung des akademischen Grades
eines Diplom-Ingenieurs / Diplom-Ingenieurin
unter der Leitung von

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E253 - Institut für Architektur und Entwerfen

eingereicht an der Technischen Universität Wien
Fakultät für Architektur und Raumplanung

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B.Sc.

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Wien, am _____
Datum

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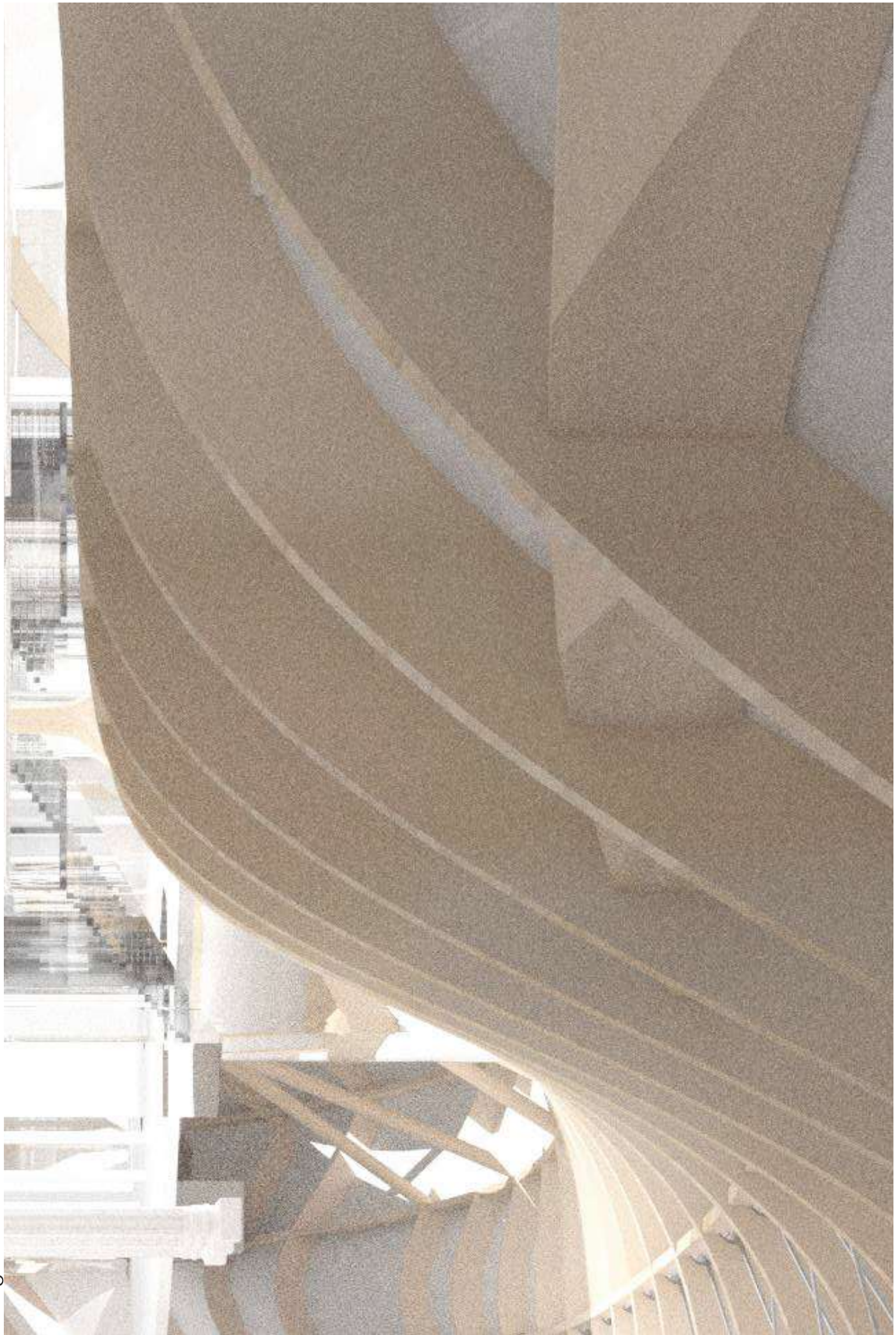


ABSTRACT

The thesis aims to propose a design for a museum in Bodrum, Turkey to preserve the remaining ruins of the ancient city Halicarnassus and to provide regulated climate for the ruins and the visitors. To realise this, the current museum on the site of the Mausoleum of Halicarnassus was ‚revived' with a new design on a peninsula near the city centre.

As part of this work, the history of the ancient city Halicarnassus was researched and the current museum at the Mausoleum was visited. The new museum represents a cultural bridge between the history and today, where the ancient remaining of history and contemporary architecture coexists in harmony.

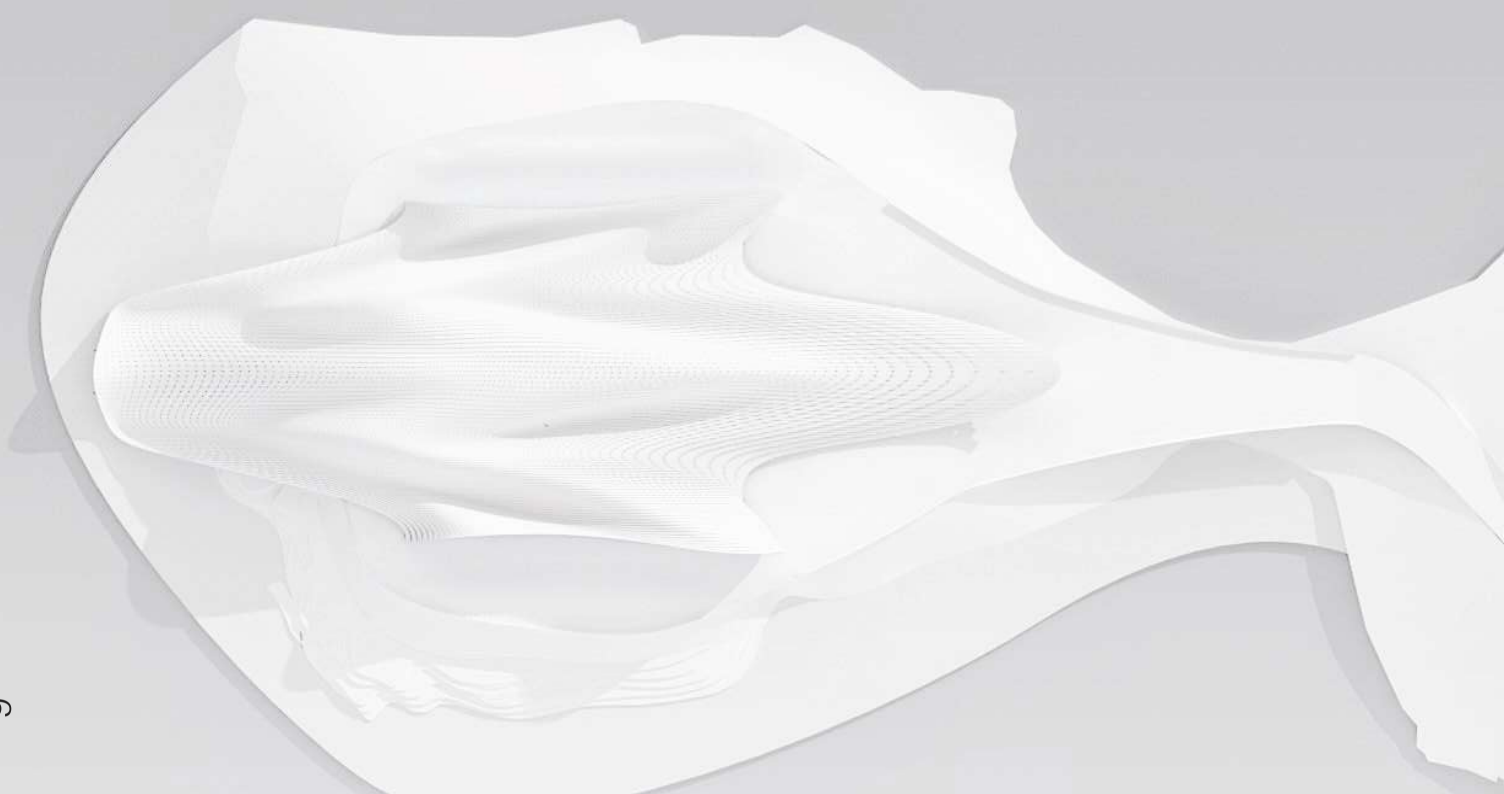
The main criteria of this work to design an eye-catching structure with an open concept of exhibition hall for artefacts. While creating the new contemporary design for the museum, the climate conditions, topography and the ensemble of Bodrum was taken into consideration. The design creates a safe place for the artefacts and to reclaim sculptures that was once embellished the Mausoleum of Halicarnassus from the British Museum in London.

ABSTRAKT

Ziel dieser Arbeit ist es, einen Entwurf für ein Museum in Bodrum, Türkei, vorzuschlagen, um die verbliebenen Ruinen der antiken Stadt Halicarnassos zu erhalten und ein geregeltes Klima für die Ruinen und die Besucher zu schaffen. Um dies zu verwirklichen, wurde das derzeitige Museum auf dem Gelände des Mausoleums von Halikarnassos mit einem neuen Entwurf auf einer Halbinsel in der Nähe des Stadtzentrums „wiederbelebt".

Im Rahmen dieser Arbeit wurde die Geschichte der antiken Stadt Halikarnassos erforscht und das derzeitige Museum im Maussoleumn besucht. Das neue Museum stellt eine kulturelle Brücke zwischen der Geschichte und der Gegenwart dar, in der die antiken Überreste der Geschichte und die zeitgenössische Architektur in Harmonie nebeneinander bestehen.

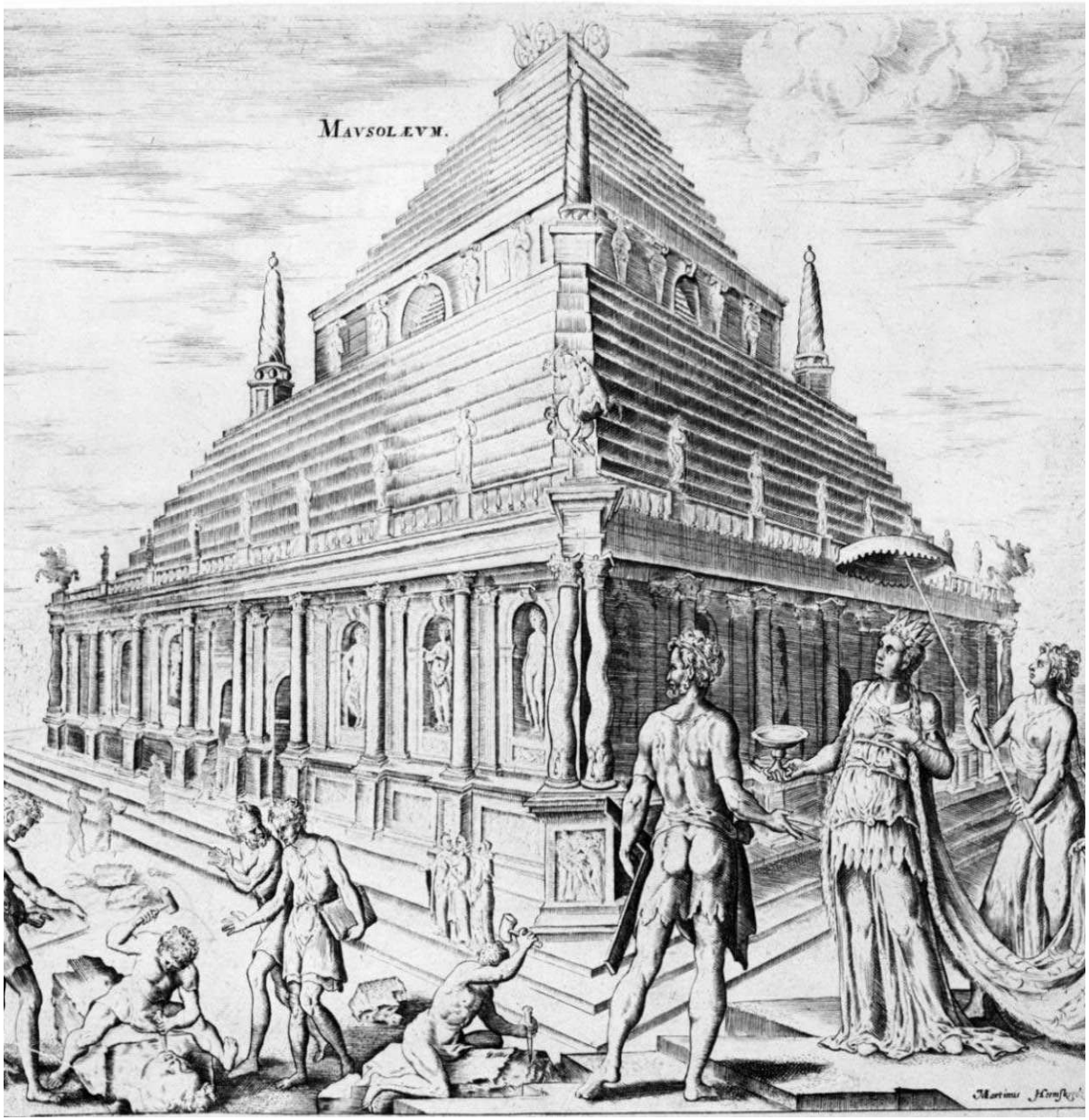
00_01 The tomb of Mausolus at Halicarnassus. engraving, ca. 1804-1811



ACKNOWLEDGEMENT

First of all, I would like to thank my mother and father for supporting me all these years in all my life goals, not only financially but also morally. For making me believe that there's nothing in life I can't overcome.
Sincerely, I would like to thank to my supervisor Prof. Dr. Manfred Berthold, who supported me throughout my entire process of my thesis and also for being always available. His creative advice and constructive inputs guided me very well.
In addition, I would like to thank the mayor of Bodrum, Ahmet Aras, for his interest.
Lastly a huge thank you to my dearest husband Kenan for being always by my side and for being so lovingly and sincerely supportive of me in this process.

TABLE OF CONTENTS



01_01 1572 Philips Galle (Flemish, 1537-1612) The Mausoleum at Halicarnassusssus"

Bodrum is my home. From the age of four, I have spent all my summer with my family in Bodrum. Growing up, it has always fascinated me to live in a place where the ancient history and its remainings can survive as evidence of the past.

From the ancient times to medieval era, the city fell under various rulers and witnessed many empires. Each of them left their traces that are partly existing today, including countless number of medieval windmills, that spread all over the entire peninsula and, the impressive Castle of St. Peter today known as Bodrum Castle at the heart of the port.

At the beginnig of my thesis, the Mausoleum was visited, which was built for Mausolus, King of Caria. Until the 1850s there were several attempts of reconstruction, but these weren`t depending on any archeological evidences to restrain. Even though the major excavations of the Mausoleum site, which was led by the famous British archaeologist Charles Newton in 1856-57 discovered the survived remains, the idea of reconstruction still seems unachievable because of the lack of standardized system of measurements as we implement today in the modern world. In point of fact other ancient units of measurements could differ from time to time and place to place[1].

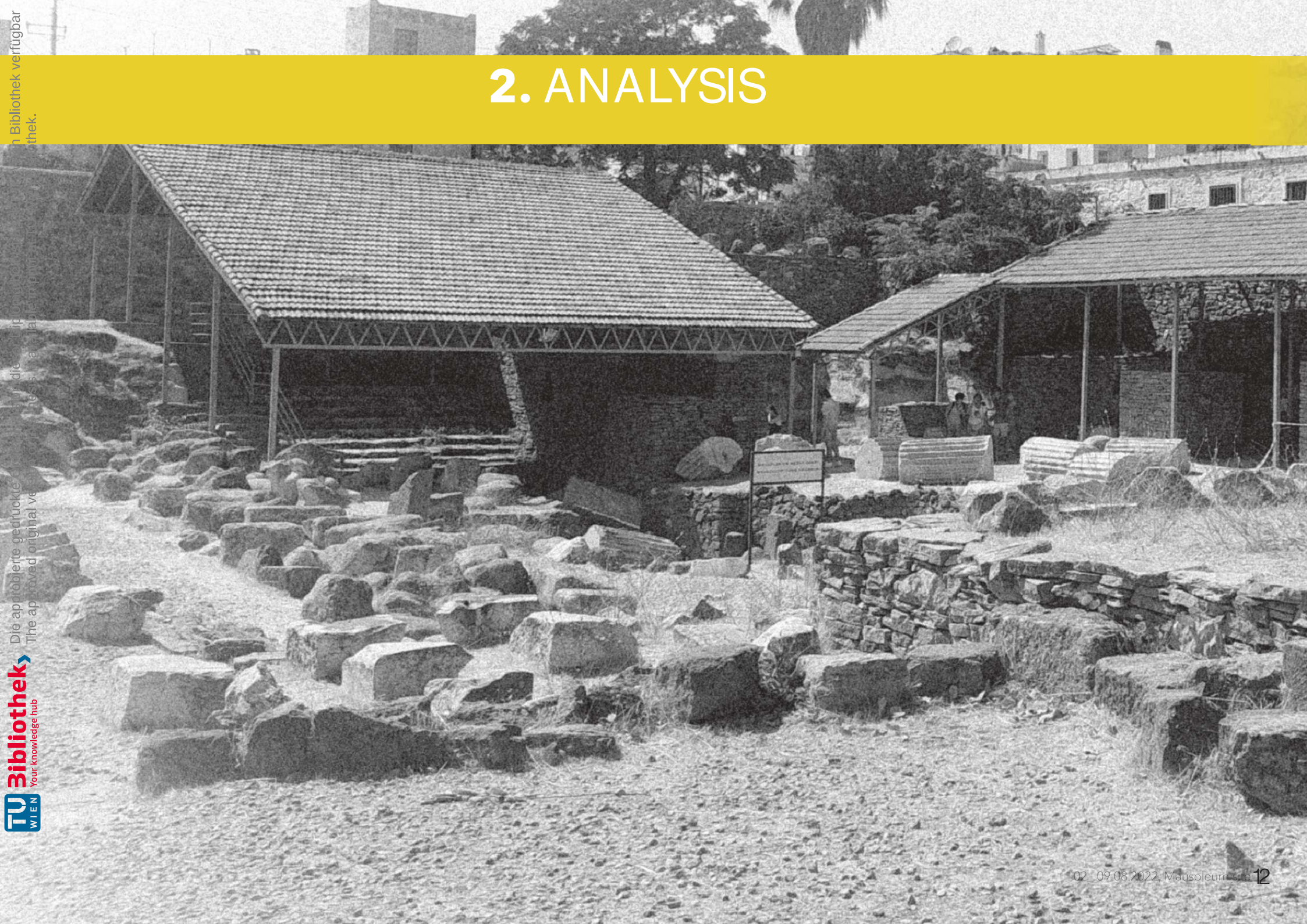
While choosing my master thesis, the aim is to research the ancient history of Bodrum and to propose a museum closed to the ancient city border on a vastly small island.

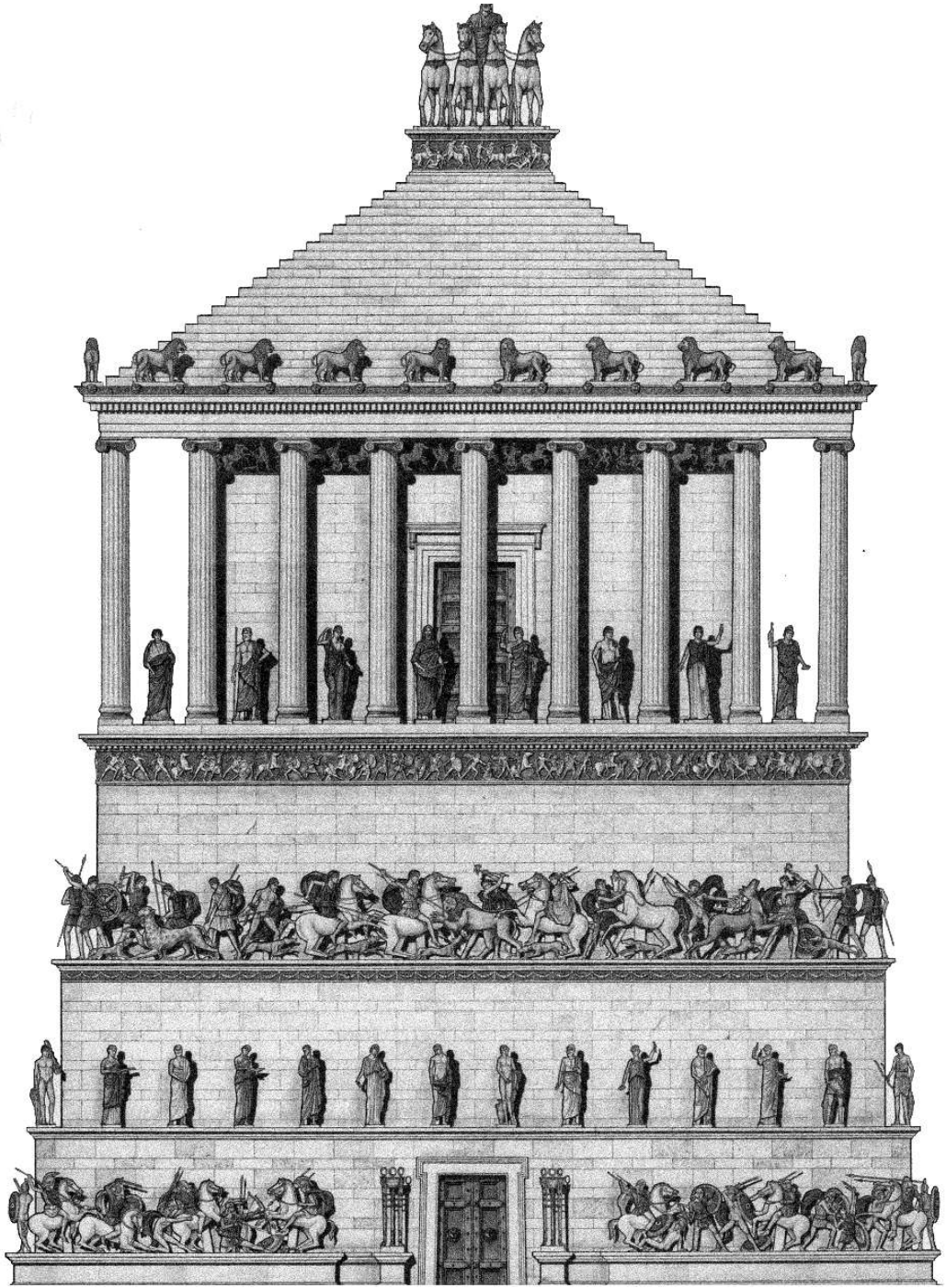
Another predominant aspect of the design is to create better space for the ruins on the original Mausoleum site and to reclaim sculptures and artefacts that once belongs to Mausoleum at Halicarnassus from the British Museum.

01_02 1970s "the Fisherman of Halicarnassus" from Ara Güler archive

from the stories written by Cretan Turkish writer Musa Cevat Sakir also known as "the Fisherman of Halicarnassus" who is the fist as well as far-most known person among local citizens when thinking of the formerly fishermen town Bodrum. Most of his works and short stories are on the seafaring Cretans. The main roads still carries his name and the notorious quotations from his stories are still on the billboards to be adorn as the visitors arrives to Bodrum.[2]

2. ANALYSIS





2.1.1. SEVEN WONDERS OF THE ANCIENT WORLD

The origin of the listing of seven World Wonders is controversial. The term world wonder didn't exist back in the ancient times. Instead of that, seven works of sculpture and architecture were selected which were executed through an ultimate architectural, technical engineering as well as artistic achievement. These stood out through their monumentality and uniqueness; werecreated by the human ingenuity. These works have been complied in various listings since the Hellenistic period.

The earliest identification of the World wonders are in Greek and declared as "Hepta theamata tēs oikumuenēs" which means seven showpieces of the inhabited world. The naming for the list in Greek gets translated in Latin as "Septem miracula mundi" which means "Seven World Wonders".[3] The pioneeer of the seven wonders of the world comes from the ancient city Sidon in todays Lebanon, written by the ancient philologist Antipatros.[4] The world wonders were listed according to his personal preference rather than in the chronological order.

In the ancient period of time, there was no jury who is responsible for curation of the list. Instead, these lists were ascribed subjectively, depending on the solely favorites of the erudites who created them.

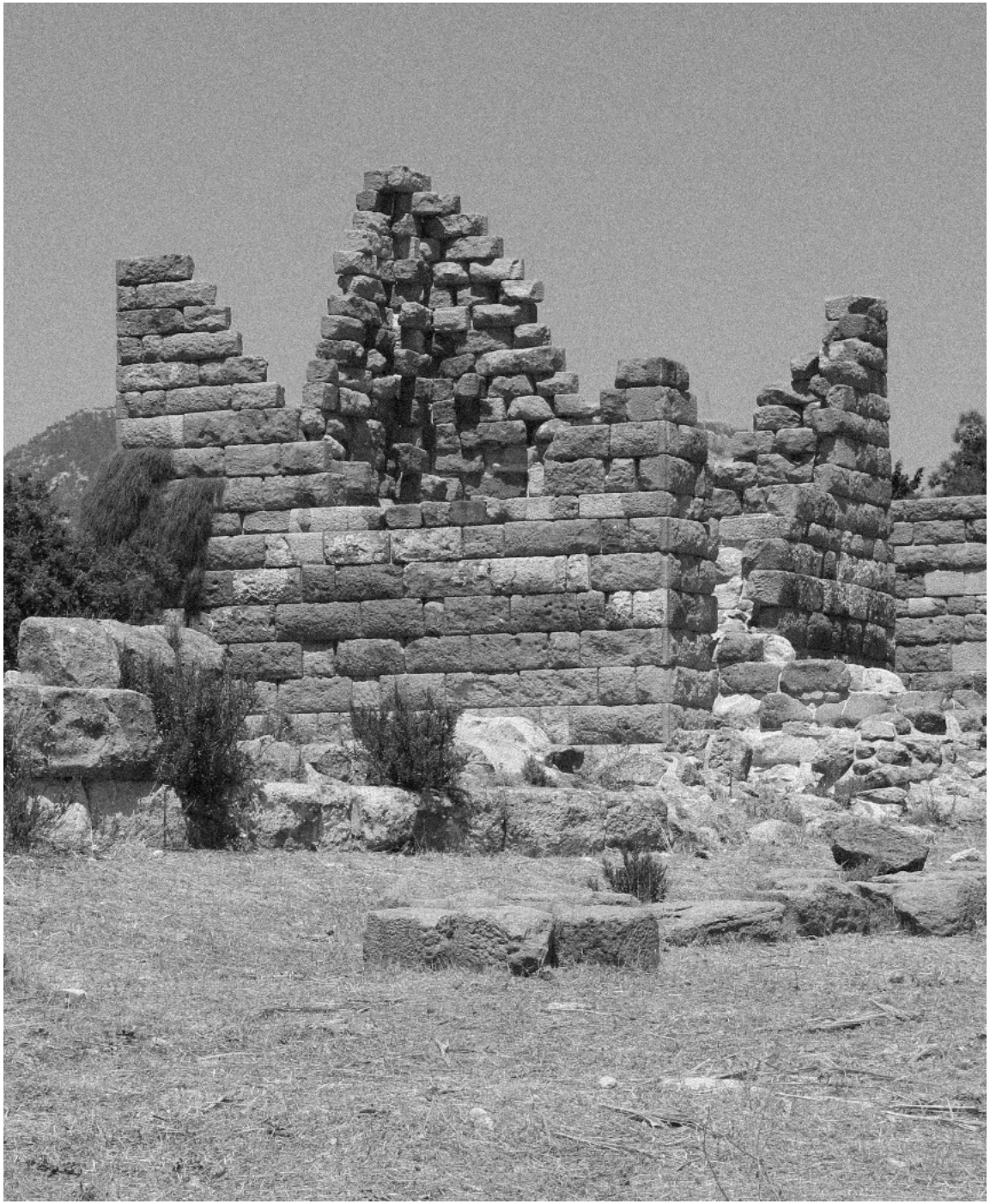
Although several enumerations for the world wonders of the ancient world had been found out until today, the commonly recognis-

The Mausoleum was built for Mausolus, King of Caria, who died in 353/2. After his death, his wife/sister II. Artemisia, Quenn of Caria comissioned to build the Mausoleum to commemorate his husband.[6]

The Kingdom of Caria spread on an area that today encompasses the coastal plains of south-western Anatolia and the steep mountains and forested areas behind them. The indented and protruding coasts of the region provided natural bays and harbors for ships. The Carians, whose ancestors were the immigrated Minoan colonies from Crete and surrounding islands in the Aegean Sea inhabited at first only along the coastal line on the Region, which indicates presumably that the first Carians were the sea-bound merchants. In order to meet the need for timber for shipbuilding, they spread later into forested areas.[7]

The earliest settlement of first Carians were naval units established for the commercial purposes around 2000 B.C. As a result of the Persian invasions during the 480-386 B.C., the existing cities were destroyed, and satrapies were established. The Kingdom of Caria experienced their most magnificent period in its history during the Hecatomnid rule. The Hecatomnids, who were neither Persian nor Greek, but rather an indigenous dynasty, emerged as a balancing force between Persia in the east and Greece in the west. As the Kingdom of Caria became an independent satrapy, the satrapal capital moved from Mylasa (today known as Milas) to Halicarnassus.[8]

The Hecatomnid period lasted 65 years during 395 B.C. -330 B.C under several rulers of Caria. The founder of the dy-

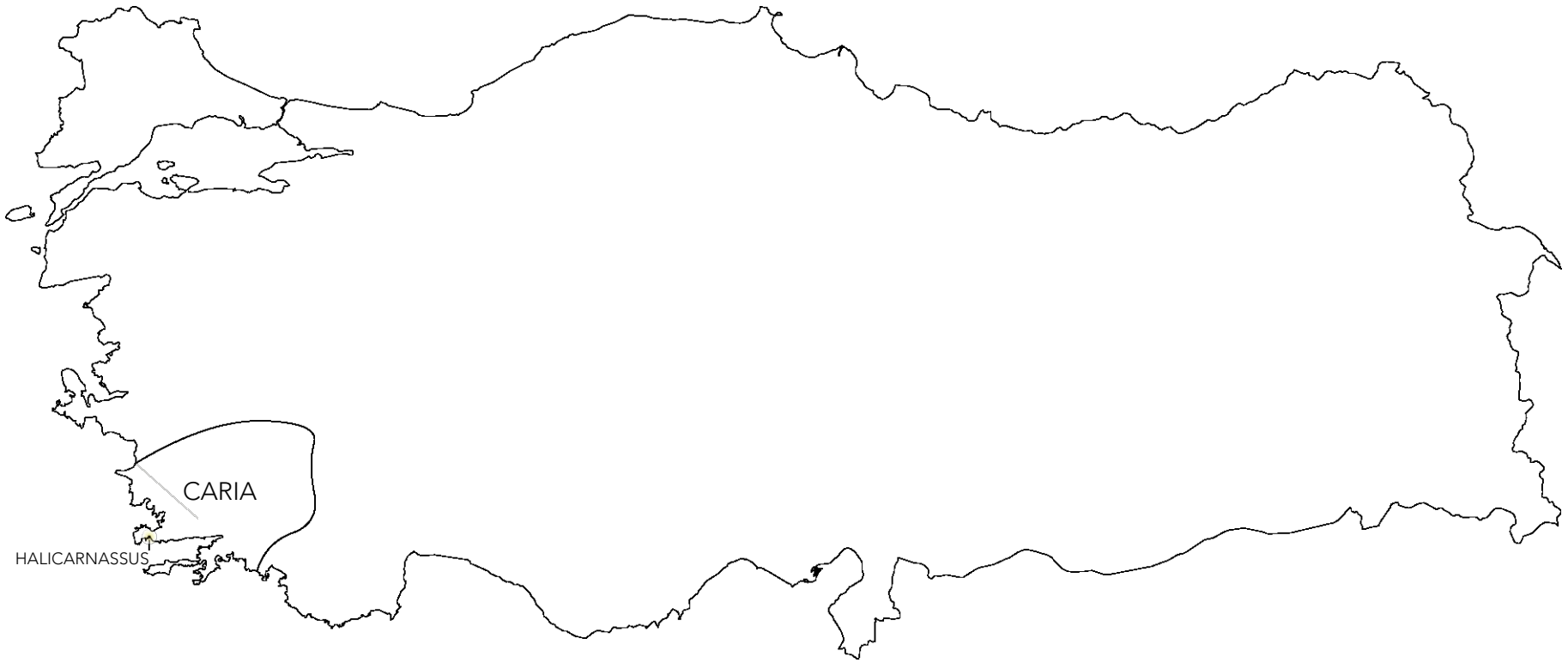


02_01_01_02 Myndos Gate. The remains of the city walls around the city; 4th c. BC;

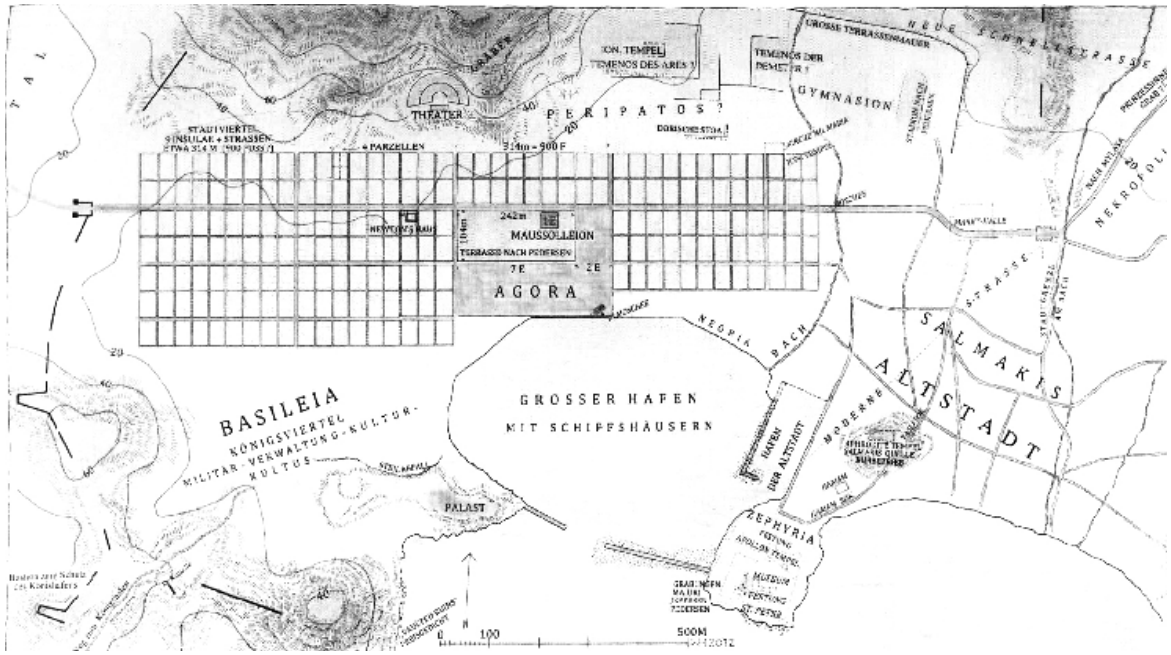
tions of the history of Greek art and architecture were laid and the most famous sculptors and architects came to Caria.

After Hekatomnos, the next ruler was his son Mausolus. Under his rule, the Halicarnassos experienced great development. The most significant factor was Maussollos`desire to hellenise the local area and provide Caria a metropolis in the Greek style, which was achieved by applying a common policy tool called “Synoikismos”. The local population from surrounding six rural settlements were transferred to the capital and was used in the construction of the new capital. The city plan was reorganized and Halicarnassus became the center of marinetime trade.[10]

Morever, because of his warrior character, Maussollos gave the most importance to fortifications in his life and erected walls with solid stonework. The most known part of city walls is-Myndos Gate,which is reputed to be built in 360 BC. It is the one of the entrance gates of the city, located in the west of Halicarnassus.[11]



02_01_03_01 Location of the Caria and the city Halicarnassos in Turkey



02_01_03_01 Grid system

2.1.3. HALICARNASSUS

The capital city Halicarnassus was more than a port city during the Hecatomnid period under Maussollos rule. The city was rebuilt and its population was increased through policy. The city symbolized the power of the dynasty and its fame overreached beyond the borders of Karia. Mausollos was introduced himself as an imperial ruler with Aegean ambitions[12]. Considering its geographical location of the Halicarnassus, several Aegean islands including Rhodes, Kos, Kalymnos could easily be reached.

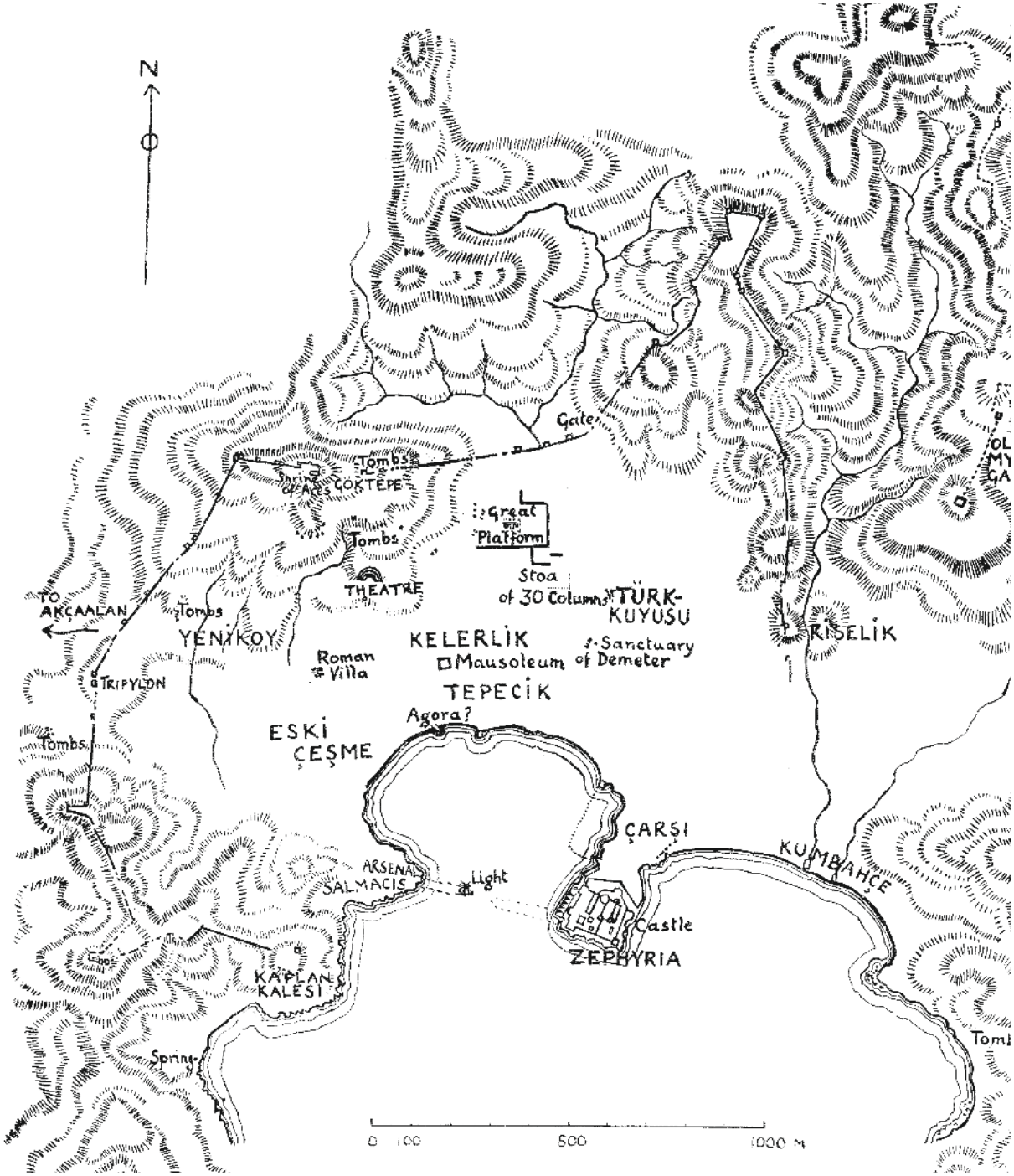
Under Maussollos rule, the city was fully transformed to be hellenised. The Hellenistic form of planning, features a regular grid system street structure. While planning them, the cities gets divided into different zones including public, private and sacred. The city Halicarnassus designed to be on an orthogonally placed grid plan with streets and alleys intersecting at right angles. This type of planning led to the emergence of long, rigid rectangular housing blocks rather than a spontaneously grown city. The other aspects such as wind and sun direction which are commonly familiar today were also introduced while planning Halicarnassus.[13]

The Roman architect Vitruvius described as he approached Halicarnassus from the sea:

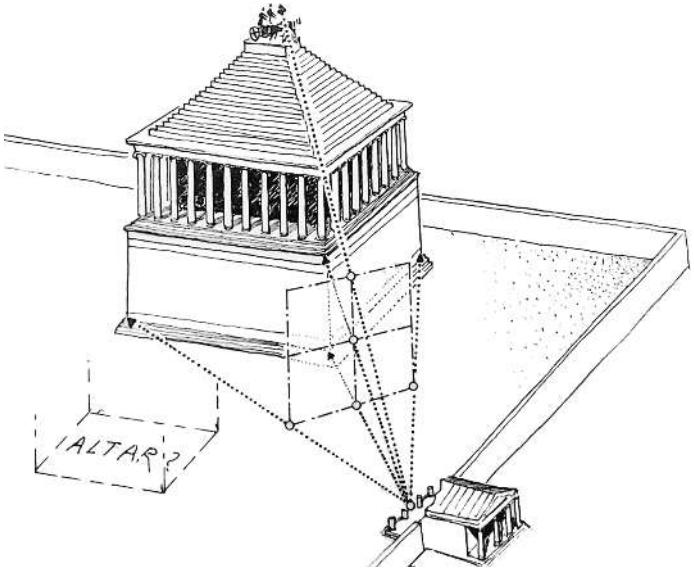
"The place had a curvature like that of the seats in a theatre. On the lowest tier, along the harbor was built the forum. About halfway up the curving slope at the point where the curved cross-aisle is in theatre, a broad wide street was laid out, in the middle of which was built the Mausoleum, a work so remarkable that is

Maossoleion and the imperial place was highly notiable due to its exterior decoration where the walls were covered using the marble slaps. The imperial place was erected on an island called Zephyria where today Castle St. Peter locates. The island is connected by an isthmus. The imperial place was a semi-public place and served for the king as well as for the guest . Moreover, several public terraces and enclosed spaces were implemented. The position of the Maossolleion was found by Charles Newton , which stood on a raised platform and only about 150-200 meters far from the harbour. [15]The city was surrouded by the walls and fortufied. The wall circuit points outwards at the SW and NE in order to benefit from the natural ridges. In between two high points, a valley buttom crosses the land[16]

The Maossolleion was postioned onto a terrace with more than 200 meter long side on the main street of the Halicarnassus. Agora was the part of the terrace and the access was plannned through a propylon in the of middle of the agora. The Maossolleion was built on the terrace and looking through the propylan, the visitors could see the monument diagonally.[17]



02_01_03_02 Plan of Halicarnassus, drawn by G. E. Bean and J. M. Cook



02_01_03_03 Drawing by Arvanitis

02_01_04_01 09.08.2022 Plan by Charles Newton on the site of Mausoleum

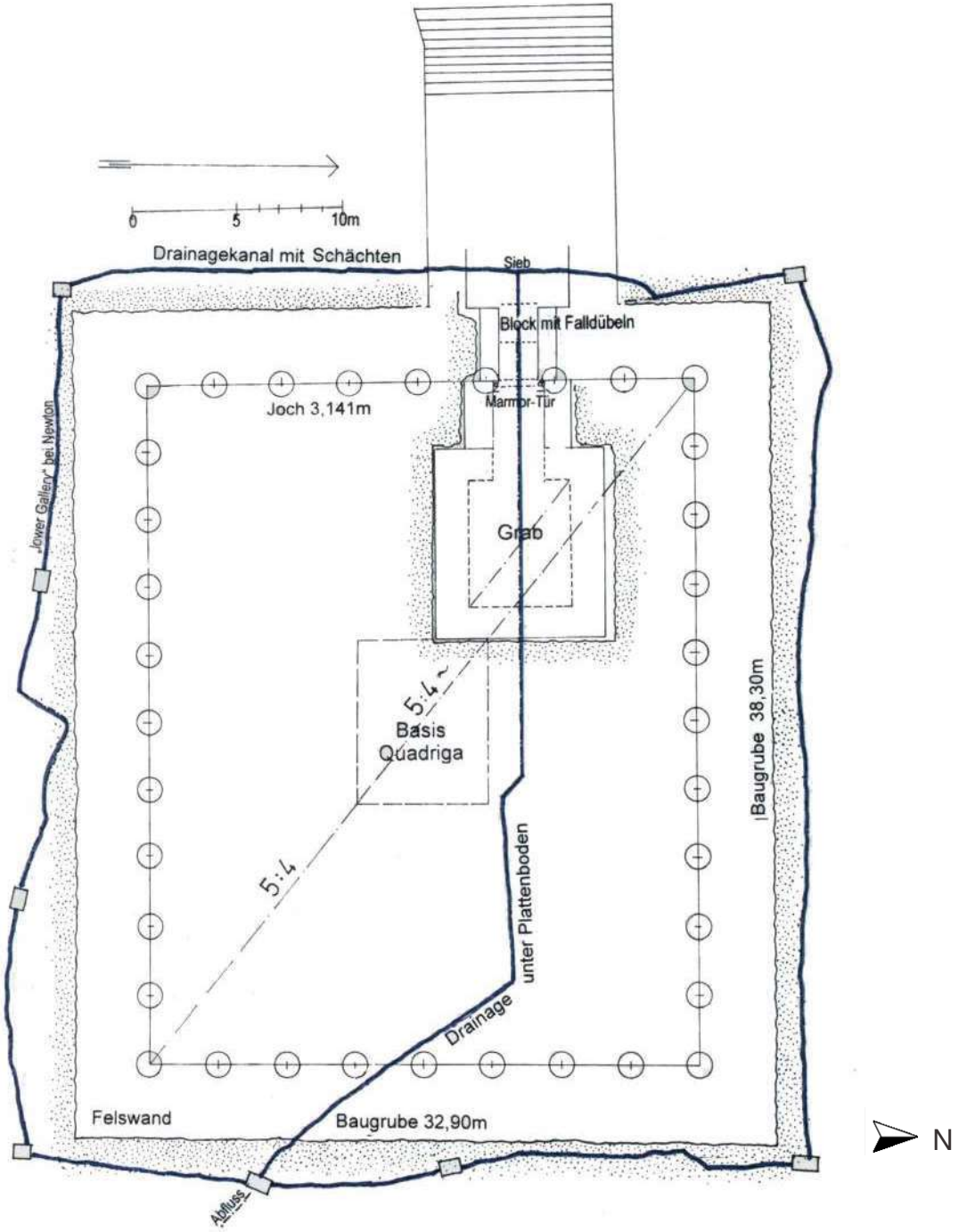
02_01_04_02 09.08.2022 Plan on the site of Mausoleum

2.1.4. THE MAUSOLEUM

Described by the Roman writers Pliny and Vitruvius, the Maossolleion was seen as the grandest tomb of the ancient World. The ancient Carian sculptor and architects, who jointly carved the sculptures of the Mausoleum, created a masterwork and made one of the Seven Wonders of the Ancient World.[18]

According to the researchers, the Mausoleum have collapsed due to a prominent medieval earthquake. Some parts of its sculptures were used by Rhodes crusaders to build Bodrum Castle. In 1846 British ambassador of Constantinople under the Ottoman rule obtained some artefacts from the Bodrum Castle and presented to the British Museum. In Addition to that, followed by excavations of the Mausoleum site during 1856-57, the British Museum acquired several noteworthy sculptures including the colossal horse from chariot group that was on the top of the roof pyramid. In 2012, a group of Turkish lawyer, filed at the European court on behalf the town of Bodrum and Turkish ministry of culture along with collection of 118.000 signatures and requested the historical assets to be returned to their place of origin. The lawsuit covered a sensitive subject and the case felt unresolved. [19]

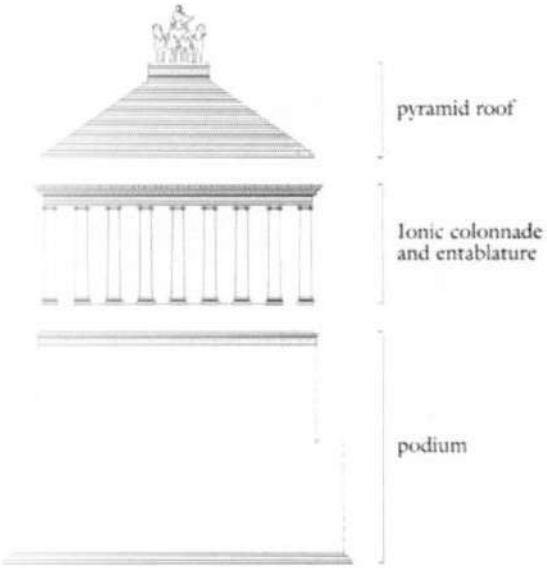
On the exploration of the monument, the first scientific reconstruction was proposed by the Charles Newton´s Team[20]. Based on surviving blocks and historical texts, he proposes higher stepped pyramid roof, topped with crowing quadriga. To reach



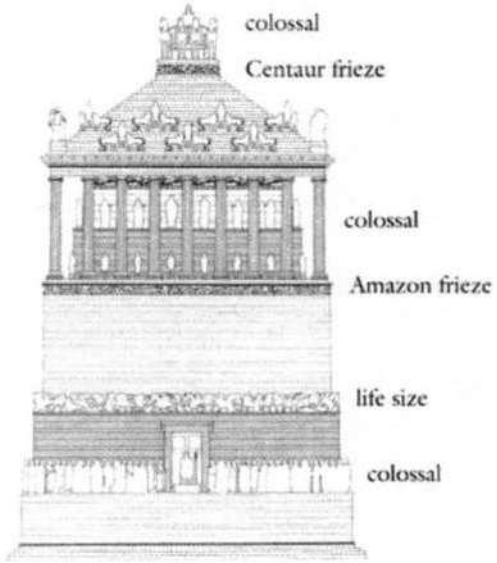
02_01_04_02 09.08.2022 Plan on the site of Maossoleion

were piled up to protect the offerings.[22]

The tomb chamber is still notiable today as deeping into the rock. From the tomb chamber of the Museum the drains positioned towards the west and the east. It is presumably believed that drains were digged to protect tomb from the ground water. The spacious underground galleries called lower und upper galleries surrounds connected to the drainage system around the site.[23]

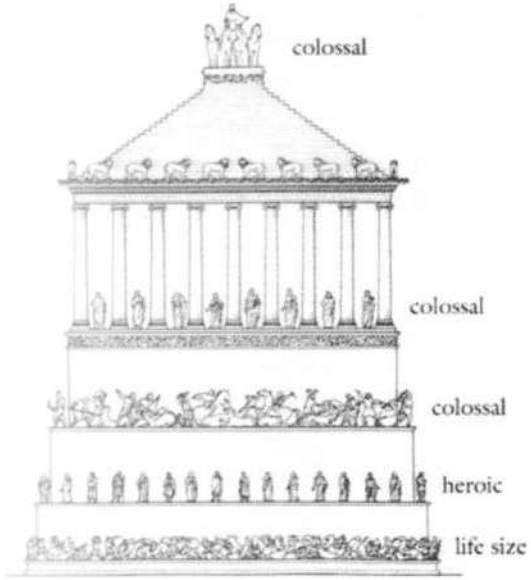


Sketch of the Mausoleum showing the basic known elements

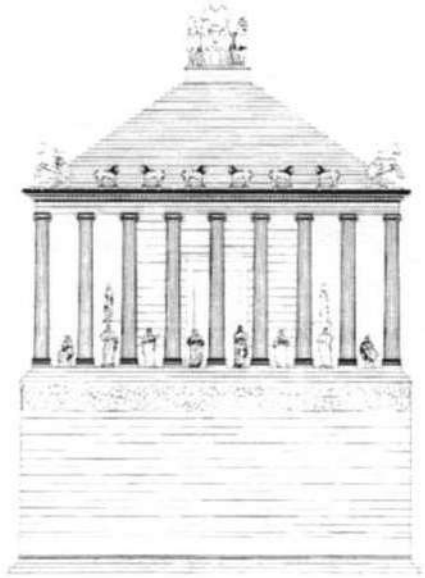


The Mausoleum according to K. Jeppesen

There are currently accepted basic knowledges refering to the Maossoleion. The lastest three proposal belongs to Kristian Jeppesen Wolfram Hoepfner and Professor Geoffrey Waywell considered to be the closest to the true scale. [24]
The base foundation has 6 Steps upwards. At eye level the viewer could observe the Amazon frieze panels, featuring battle scenes. The main floor features a portico of a Greek temple. Columns and entablature provides canonical form, so they could belong to a temple. The main floor plan of the hall floor shows 36 ionic columns and the center is still unknown. Ionic columns are positioned on top of individual square bases. The scuplture of prominent people of the time are carved between each columns, which they didnt have any friezes over the architrav. The stepped roof was topped with a quadriga, featuring Mausolos and his wife/sister Artemis.[25]

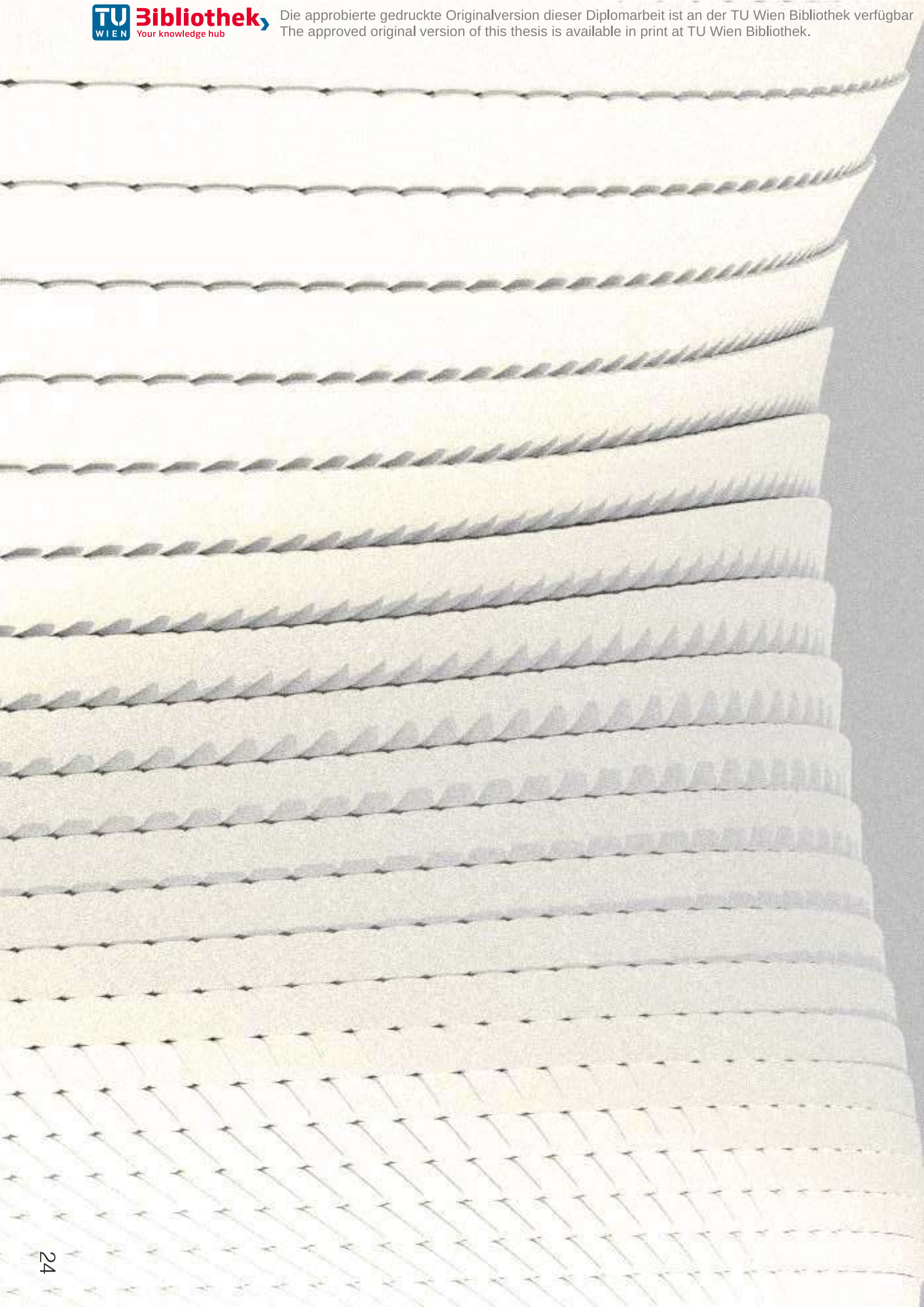


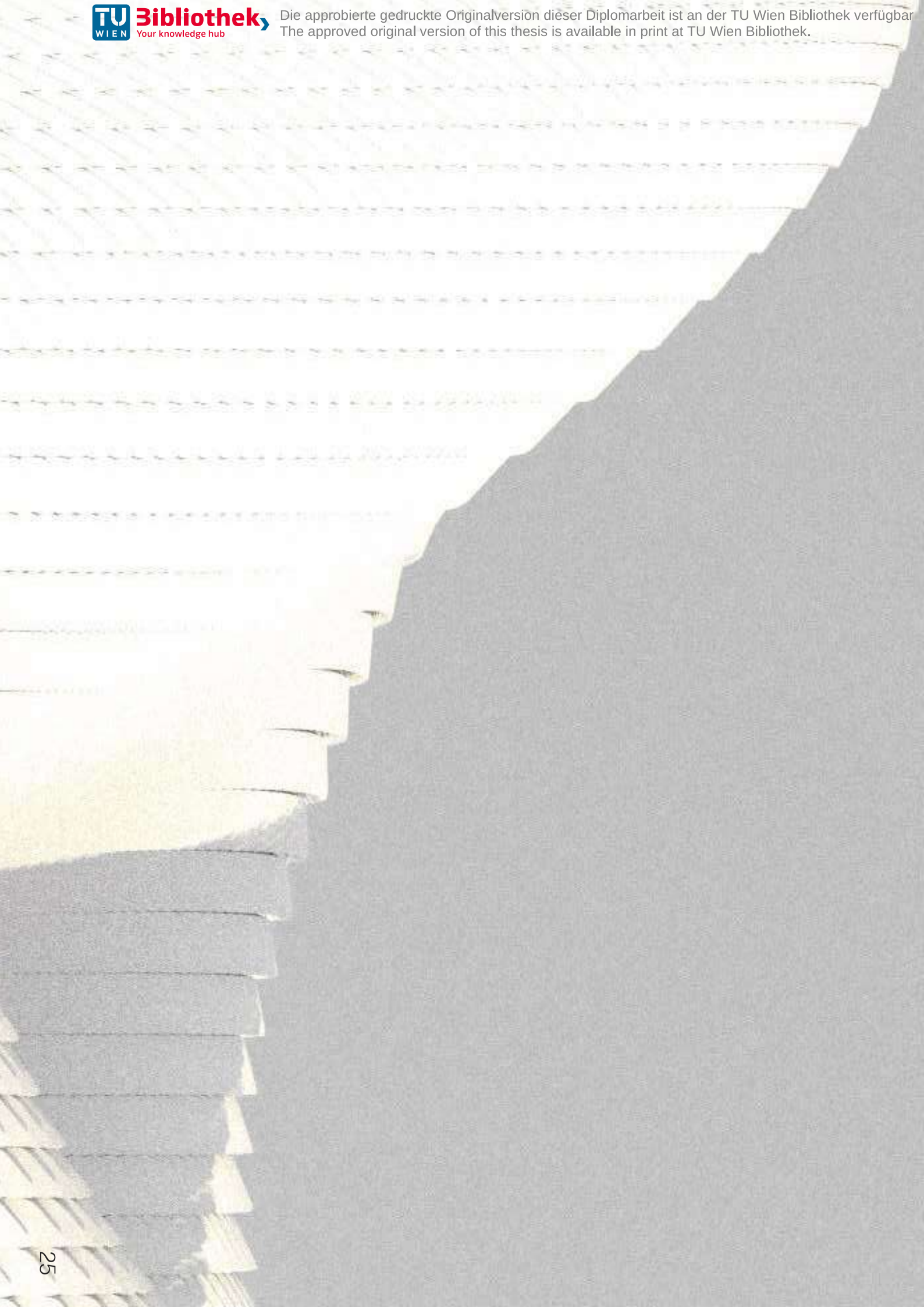
The Mausoleum according to Geoffrey Waywell



The Mausoleum according to W. Hoepfner

02_01_04_03 Several Reconstruction ideas of the Mausoleum assisgned by different archealogist





2.1.5. EXPEDITION

02_01_05_01 09.08.2022, The entrance of the Museum at the Mausoleum in Bodrum. My mother accompanied me.

On 9th of August 2022, me and my mother visited the Museum at the Mausoleum together. The following photos showcase our visit on the same day.

02_01_05_02 09.08.2022, The exhibition hall of the Mausoleum in Bodrum

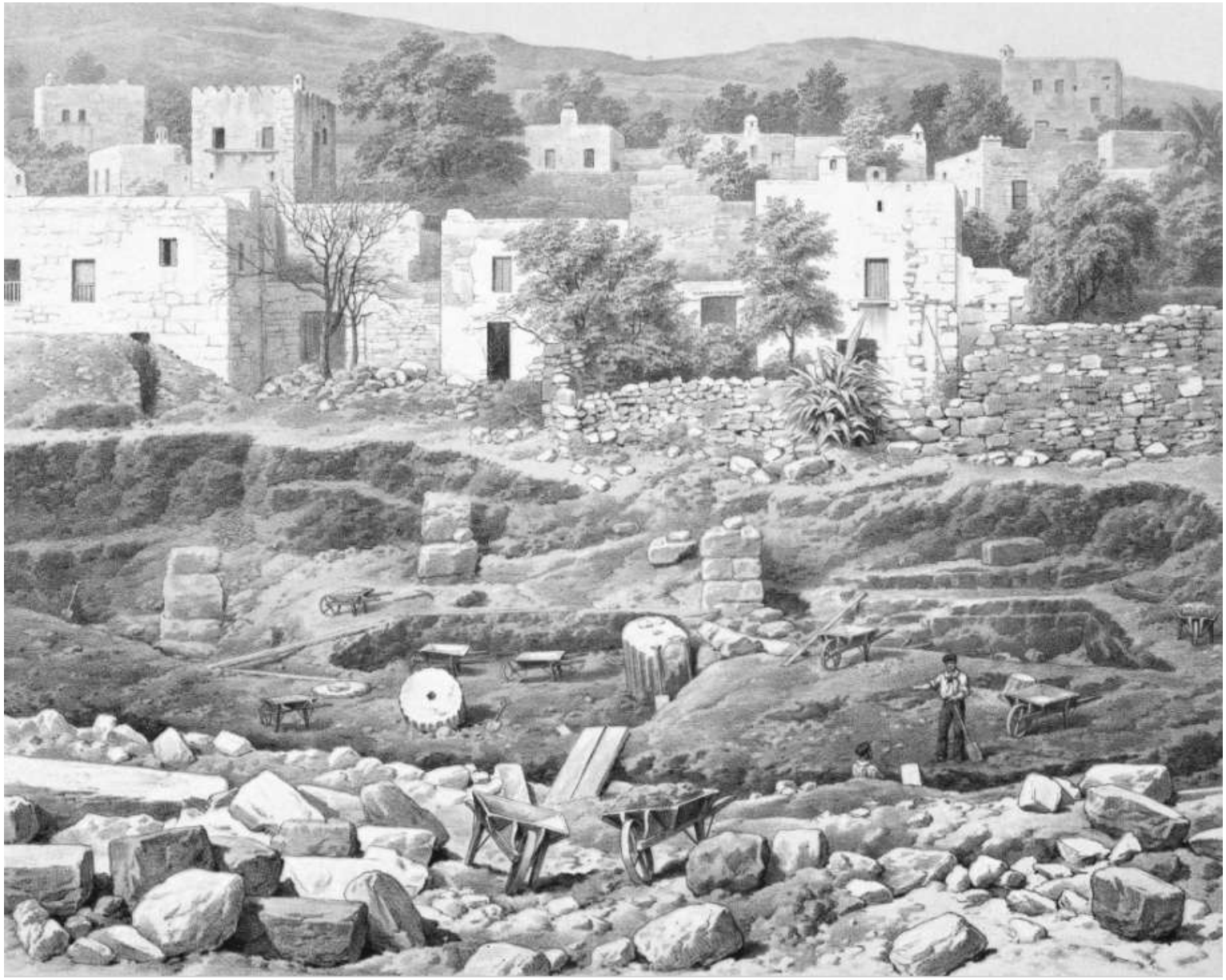
02_01_05_04 09.08.2022, Tomb Chamber at the Mausoleum

02_01_05_05 09.08.2022, View from the Southern staircase at the Mausoleum

02_01_05_07 09.08.2022, View from the Nouthern side wall, surviving blocks at the Mausoleum

02_01_05_08 09.08.2022, Marble slab of the Amazon frieze of the Mausoleum

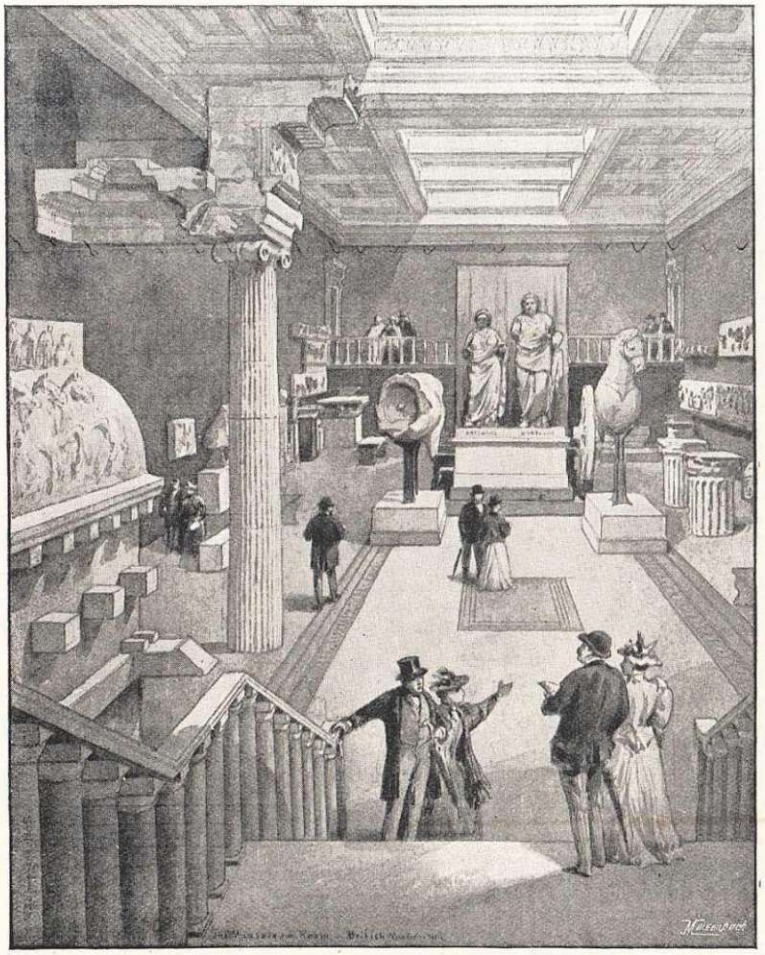
02_01_05_09 09.08.2022, Backyard of the Museum filled with many pieces of marbles which once belonged to the Maossoleion.



02_01_05_10 1862, PICKEN Thomas, Mausoleum of Halicarnassus: excavation of north side of quadrangle,

THE MAUSOLEUM-ROOM, BRITISH MUSEUM.

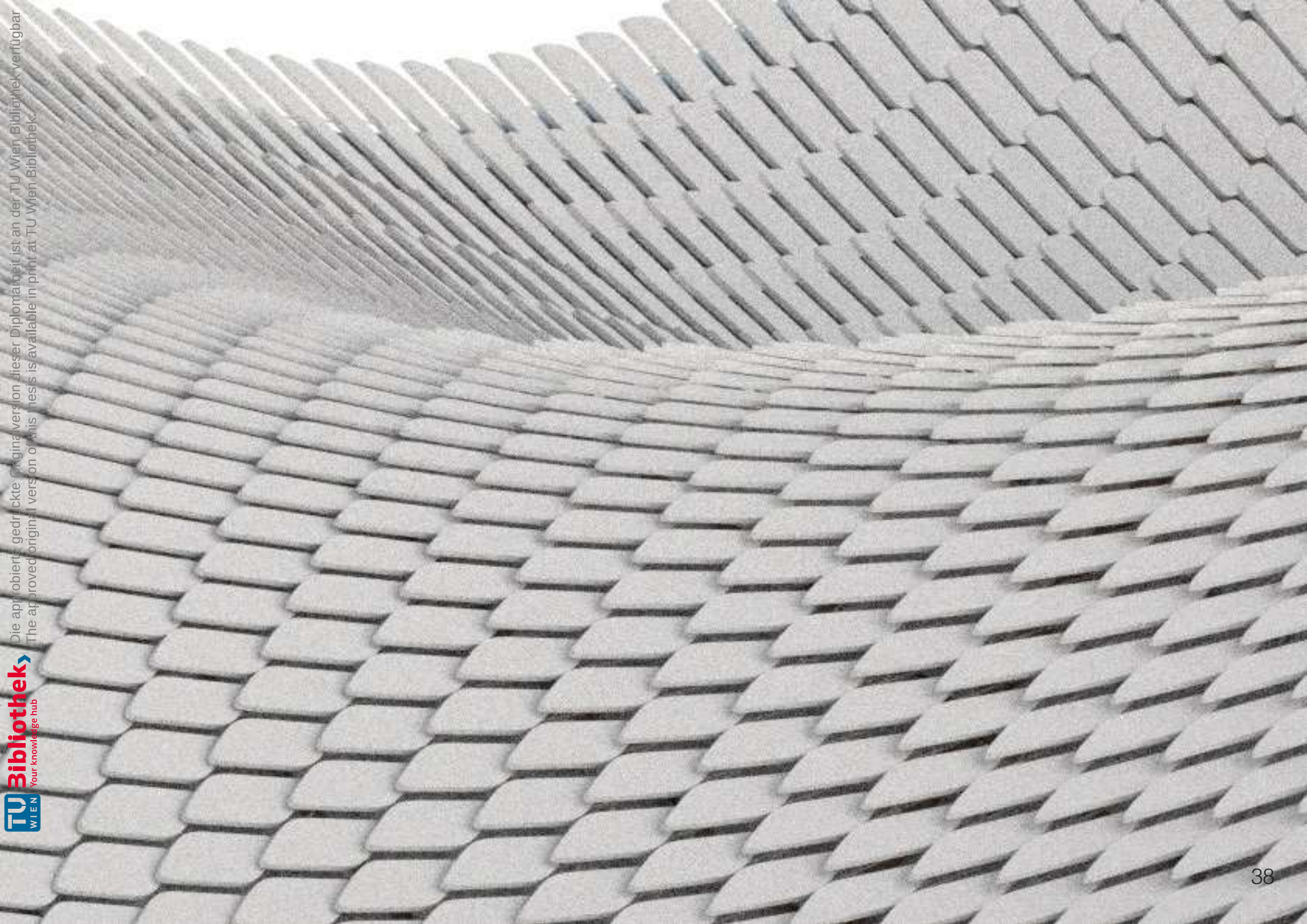
The Mausoleum of Mausolos was one of the Seven Wonders of the ancient world; but when the late Sir Charles Newton, in 1856-57, carried on his explorations on the site at Halicarnassos, now known as Budrum, scarcely one stone stood upon another. Still, he was lucky enough to find some fragments of the marble of which it had been constructed, including the figures of Mausolos and his queen Artemesia, which, according to Pliny, formed a group in a chariot on the summit of the monument. One wheel of the chariot and portions of the horses were also discovered. The marbles were all sent home to the British Museum at the time, where they have remained on view. They are now placed by themselves in one room, and Dr. A. S. Murray, the Keeper of Greek and Roman antiquities, has devoted great care, combined with his intimate knowledge of Greek art and architecture, to their arrangement. The figures of the king and queen have been placed on a pedestal in the centre of the room; the solitary wheel stands at one side and the two fragments of horses occupy a position in front, the intention being to give a faint suggestion, so far as the remains will permit, of the principal group of sculpture that surmounted the monument. This was the work of the sculptor Pythios, who was also one of the architects. Four other sculptors are mentioned by Pliny as having been employed: these were Scopas, Bryaxis, Timotheos, and Leochares. Each of these had a side of the monument on which to devote his art, and Pliny tells the side that they worked upon. Scopas had the east side, Bryaxis the north, Timotheos the south, and Leochares the west. Unfortunately, as the marbles, now in the Museum, were not found *in situ*, their original position cannot be determined, and the work of each artist can only be guessed at by its style. From long and minute inspection of the marbles Dr. Murray has been able to piece together one of the columns of the Mausoleum, with its entablatures, and part of the ceiling of the colonnade. This has been arranged so perfectly, it looks like a gigantic fragment that had been brought complete from Halicarnassos and placed where it now stands. It so chances that the height of the room is not sufficient to permit the whole of the column being erected, and a portion of the base had to be omitted. As it stands, it presents a section of the entablature and the ceiling behind it; from this the structural methods of the architecture of the period become visible, and may be studied by those interested in such details. A rather difficult problem yet remains to work out the design of the monument from Pliny's description. This was attempted long ago by Sir Christopher Wren, and at a later date Professor Cockerell realised his conception of it in a very fine water-colour drawing, which now hangs in the Mausoleum Room, and beside it is Wren's design. These, it must be remembered, were both produced before the marbles were discovered, and Pliny's description was the only guide. The difficulty is that Pliny states the height to have been 140 feet, while it is now assumed that the structure could not have been much over 70 feet. Dr. Murray's suggestion is that Pliny's figures have been somehow doubled; and he confirms the idea by quoting Hyginus, the other ancient writer who mentions the height, and he records that it was 80 feet. As Lycia bordered on Caria, the two Lycian tombs have found a fitting place beside the marbles from Halicarnassos. The interest attached to these tombs is that they are copies in marble from what had evidently been originally wooden structures; and they imply a mode of burial, at some early period, not in the earth, but above ground—perhaps on a raised platform, as we know is still the custom among some primitive races.



THE MAUSOLEUM-ROOM, BRITISH MUSEUM.

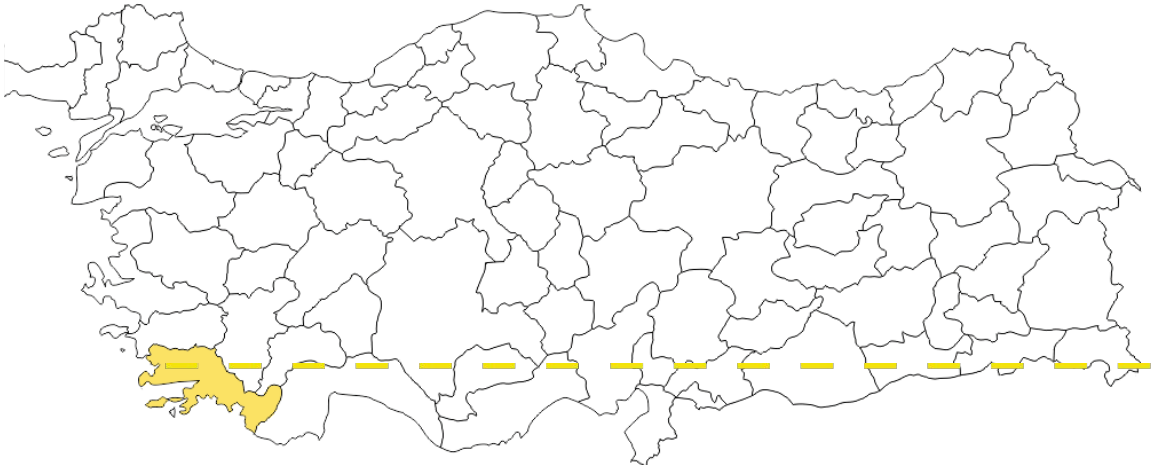
In the Queen's Bench Division of the High Court of Justice on July 12, it was decided that the Royal Holloway College at Egham, which receives young lady students paying each £90 per annum, and which has an income of £15,000 a year, half from fees, half from endowments, cannot claim exemption from taxes as a charity school.

A strong memorial in support of the maintenance of the gold standard has been forwarded to the Chancellor of the Exchequer (Sir. M. H. Beach). It is signed by almost all the influential members of the London Stock Exchange who support the views recently laid before his predecessor in office, by merchants and bankers in the City of London, and also by members of the Stock Exchanges of Birmingham, Manchester, Liverpool, Leeds, Edinburgh, Glasgow, and Dublin. The memorialists deprecate the adoption of the policy known as bimetallism, which, they say, aims in effect at the depreciation and debasement of the gold standard of this country. They believe that such a policy would inflict injury on all classes, and are satisfied that whoever might gain by it, such gain would be at the expense of all who invest, of all who save, and of all who earn wages. They further regard the entire proposal as made in the interests of debtors who seek to be relieved from their engagements, and as a direct attack upon the commercial prosperity of the United Kingdom.



2.2. BODRUM

2.2.1. SITE ANALYSIS

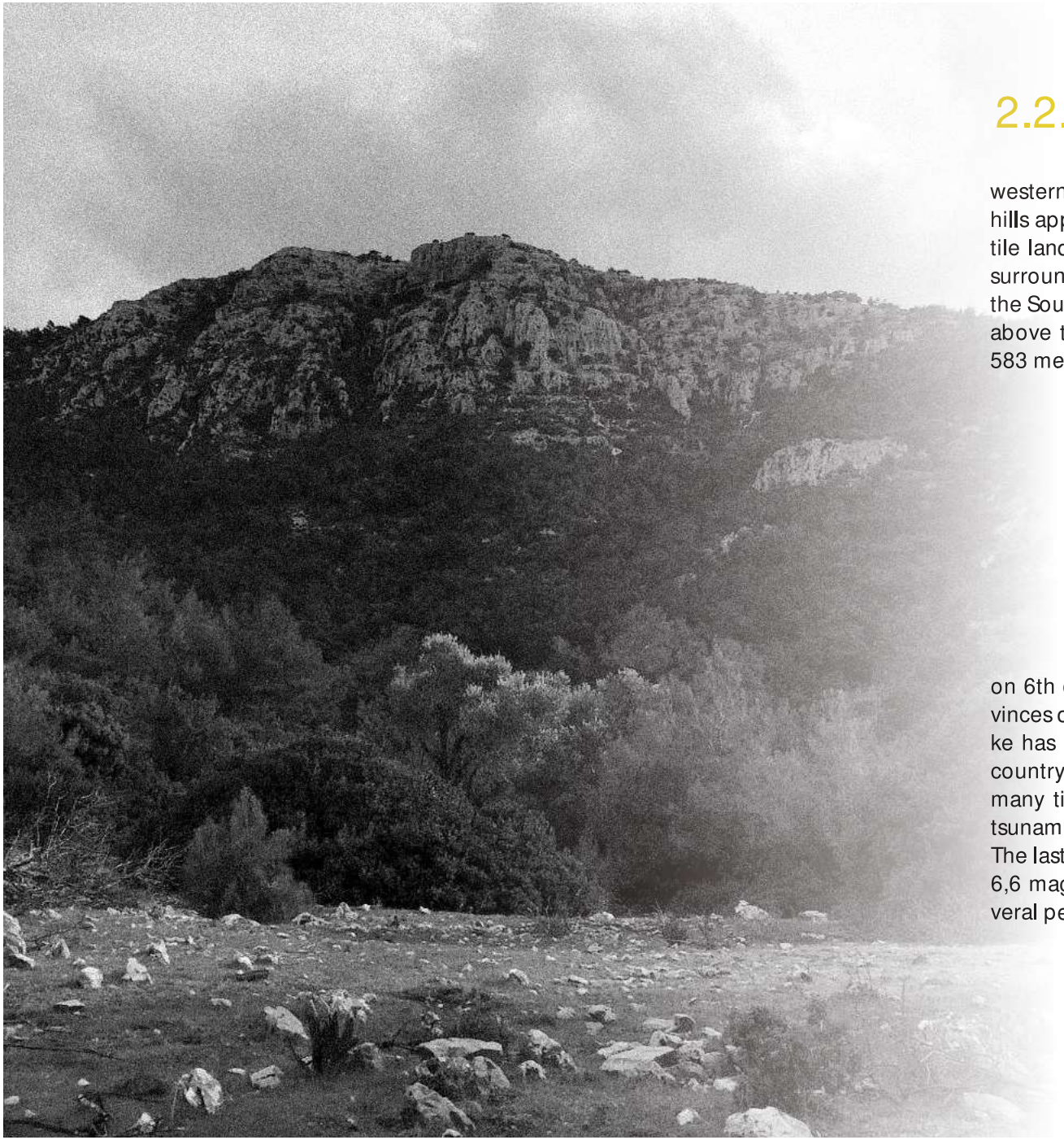


Muğla	Metropolitan
Status:	
Area:	12.654 km²
Population density:	81,56 km²
Population (estimated in 2022):	1.048.185
Annual population change (2017-2022):	2,2%

Bodrum	Region
Status:	
Area:	664,7 km²
Population density:	290,31 km²
Population (estimated in 2022):	192.964
Annual population change (2017-2022):	3,3%[26]

Age groups	
0-9	116.206
10-19	124.921
20-29	138.359
30-39	154.024
40-49	168.198
50-59	144.991
60-69	111.789
70-79	60.731
80-89	24.829
≥90	4.140

02_02_01_04 Map of Bodrum with main road connections

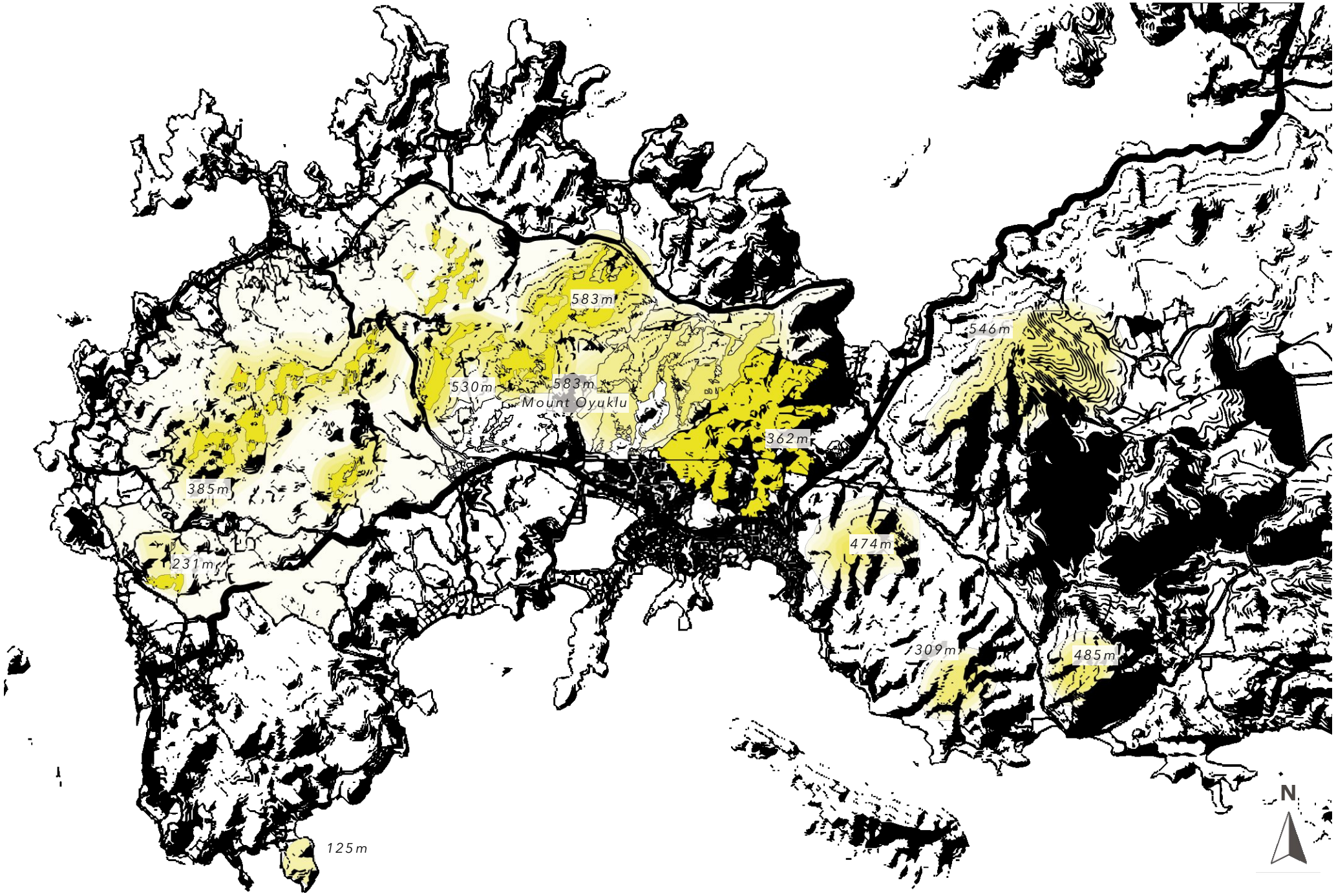


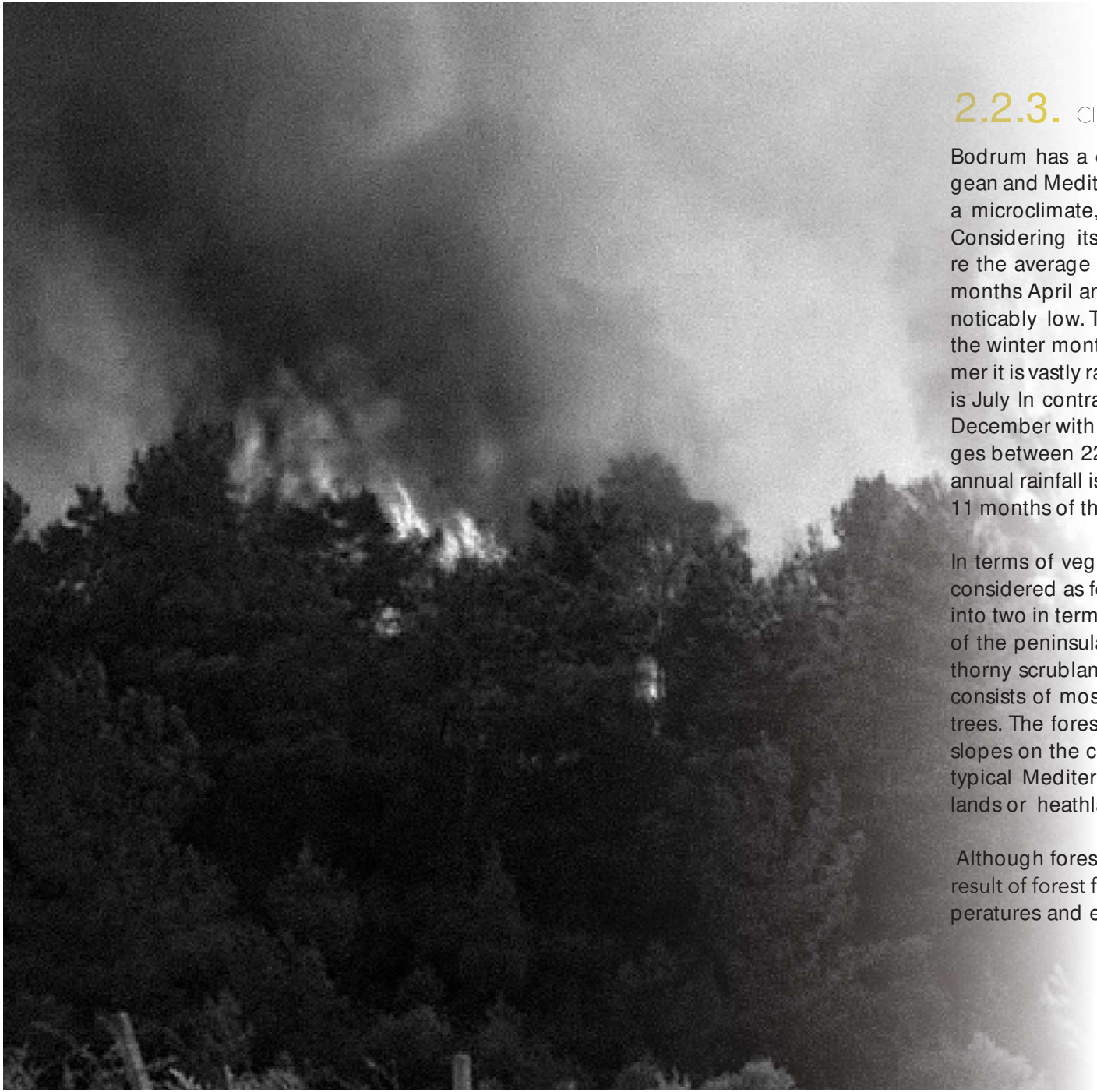
02_02_02_01 Mount Oyuklu in Bodrum

2.2.2. TOPOGRAPHY & SEISMIC HAZARDS

The entire Peninsula has a rugged landscape. The western portion was formed due to volcanic formation. The hills appear gnarled and rocky. There are still pockets of fertile lands to cultivate. The northern part of the peninsula is surrounded with steep slopes along the valleys opening to the South. The hills rise the height almost six hundred meters above the sea level. The highest is the Mount Oyuklu with 583 meters[27].

Due to the recent 7,7 and 7,6 magnitude earthquake on 6th of February 2023 in Kahramanmaras and Hatay provinces of the southeastern Turkey, the sensitivity to earthquake has reached the highest level in the country. The whole country sits on top of major seismic lines and has been hit many times by major quakes in the last centuries. Though tsunamis are very uncommon.
The last Aegean Sea Earthquake was on 21th July 2017 with 6,6 magnitude and caused damages to Bodrum, where several people inqured and also to the Greek island of Kos.[28]





2.2.3. CLIMATE & VEGETATION

Bodrum has a climate which consists of a synthesis of Aegean and Mediterranean climates. The entire peninsula owns a microclimate, which is warm and temperate in general. Considering its location being in the northern hemisphere the average temperature begins to rise up in the Spring months April and May. In the winter months, the humidity is noticably low. The summer months are hot and dry, whereas the winter months are quite mild and rainy. During the summer it is vastly rare to see any rain, therefore the driest month is July In contrary, the most precipitation happens to be in December with an average of 224 mm. The precipitation ranges between 224mm to 0 mm throughout the year and the annual rainfall is in total 980 mm. Bodrum is sunny for about 11 months of the year. The average temperature is 18.4 °C.[29]

In terms of vegetation, 61.3% of the district land is in areas considered as forest. The peninsula is very distinctly divided into two in terms of vegetation. The part on the western side of the peninsula. The vegetation is covered with bushy and thorny scrublands. The part towards the eastern the forests consists of mostly red pine (Pinus brutia) and sandalwood trees. The forests grows mostly on the mountains while the slopes on the coasts are covered with maquis, which is very typical Mediterranean vegetation type also called srucblands or heathlands.[30]

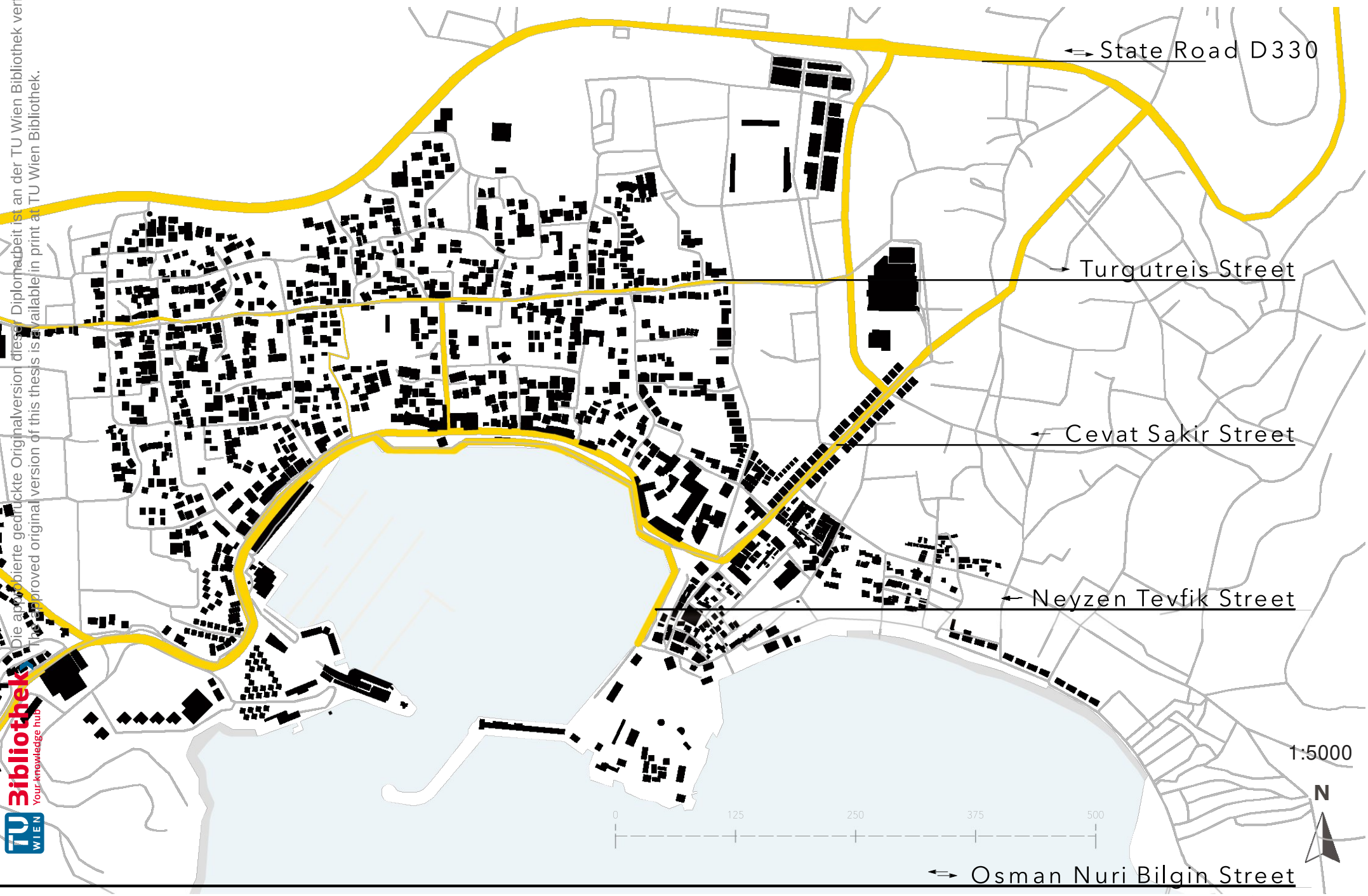
Although forests in the region are lush and productive, as a result of forest fires in recent years, caused by the rising temperatures and extreme dryness during the summer months,

2.2.4. URBAN ANALSIS

The main transport in Bodrum consists by Roads across the entire Peninsula. Giving from its mountainous areas the main roads follow the valleys. The State Road d330 the one main Road that connects the entire Peninsula to the mainland, leading to neighbour city district Milas and the Milas Airport which is the only Airport close to Bodrum. The State Road cuts the Peninsula from east to west, connecting the neighbouring beaches and settlements.

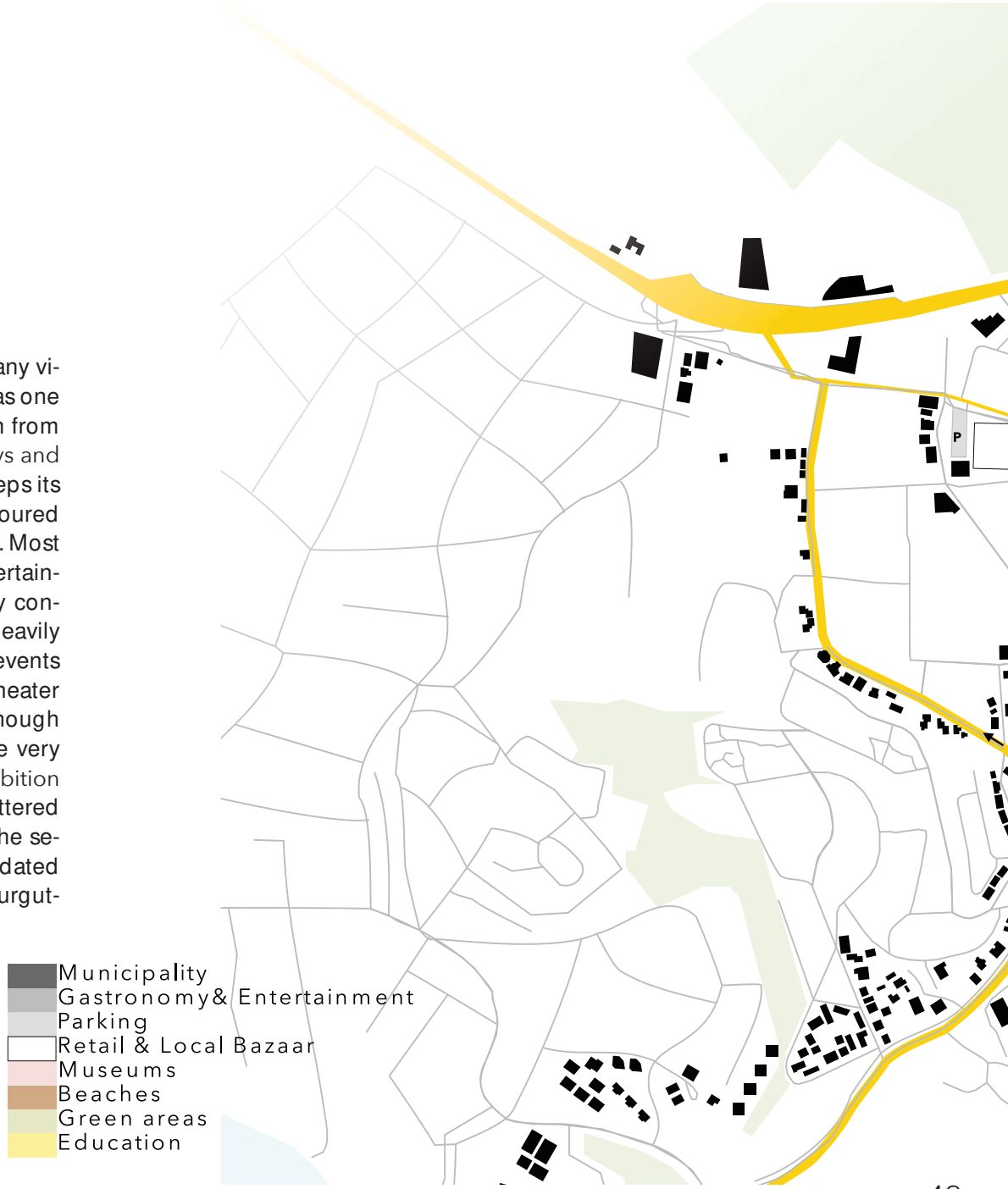
There are many options of bus connections for the visitors and residents. The main bus terminal only for the internal connections of the Peninsula locates where the Turgutreis Street and Cevat Sakir Street crosses. It's very typical in Bodrum to encountering irregular small alleys or one-way old narrow streets, such the Cevat Sakir street that leads from the main Road to seaside and faces heavy traffic particularly during the summer time. The connection at the port follows up with another street that runs along the sea and eventually connects with neighbouring settlement on the western bay.

The public sea transportation provides only travels to Greek islands including Kos and Rhodes and to the other seaside districts of the city Mugla such as Didim.



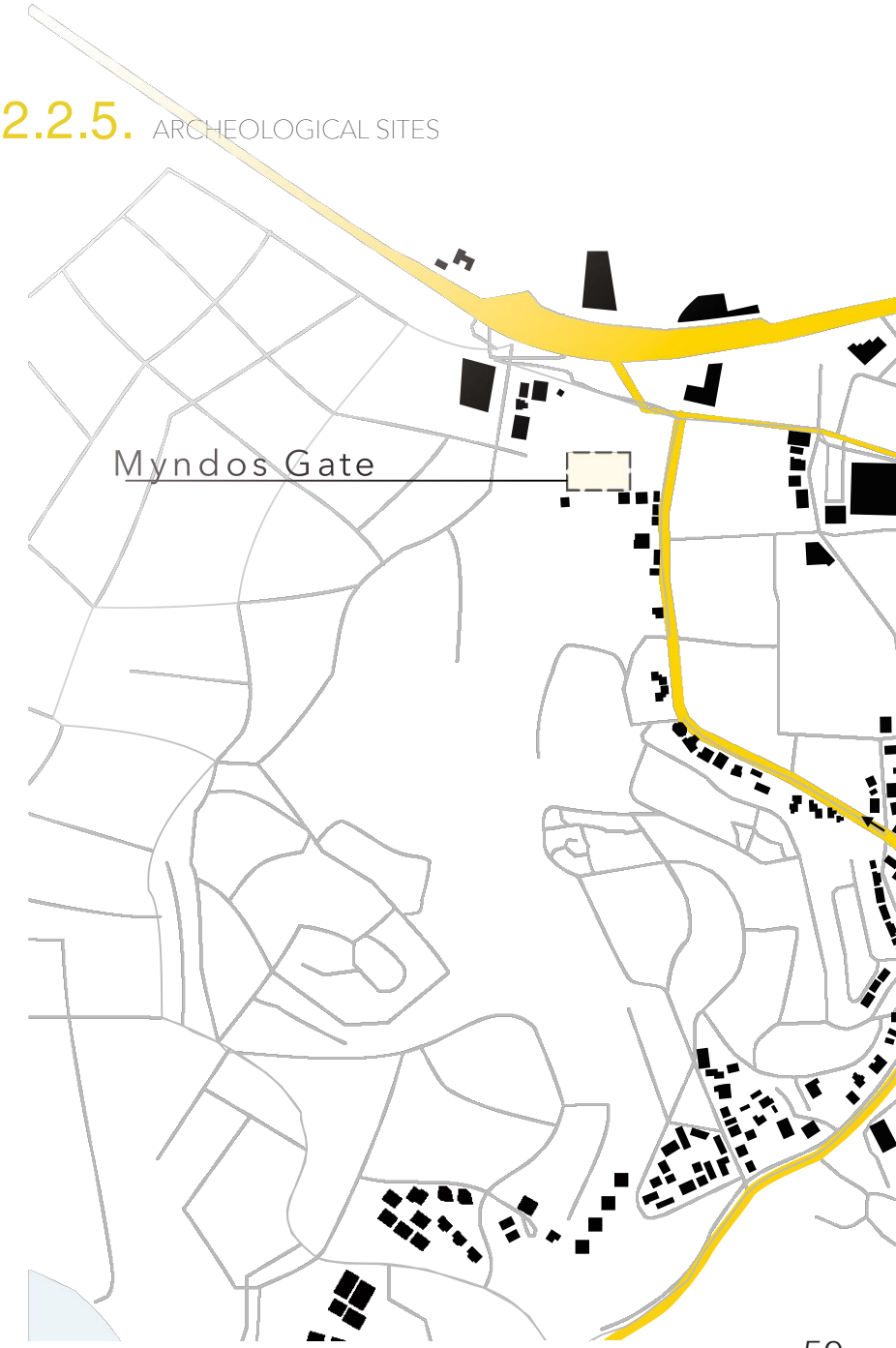
02_02_04_01 City Plan with road connection

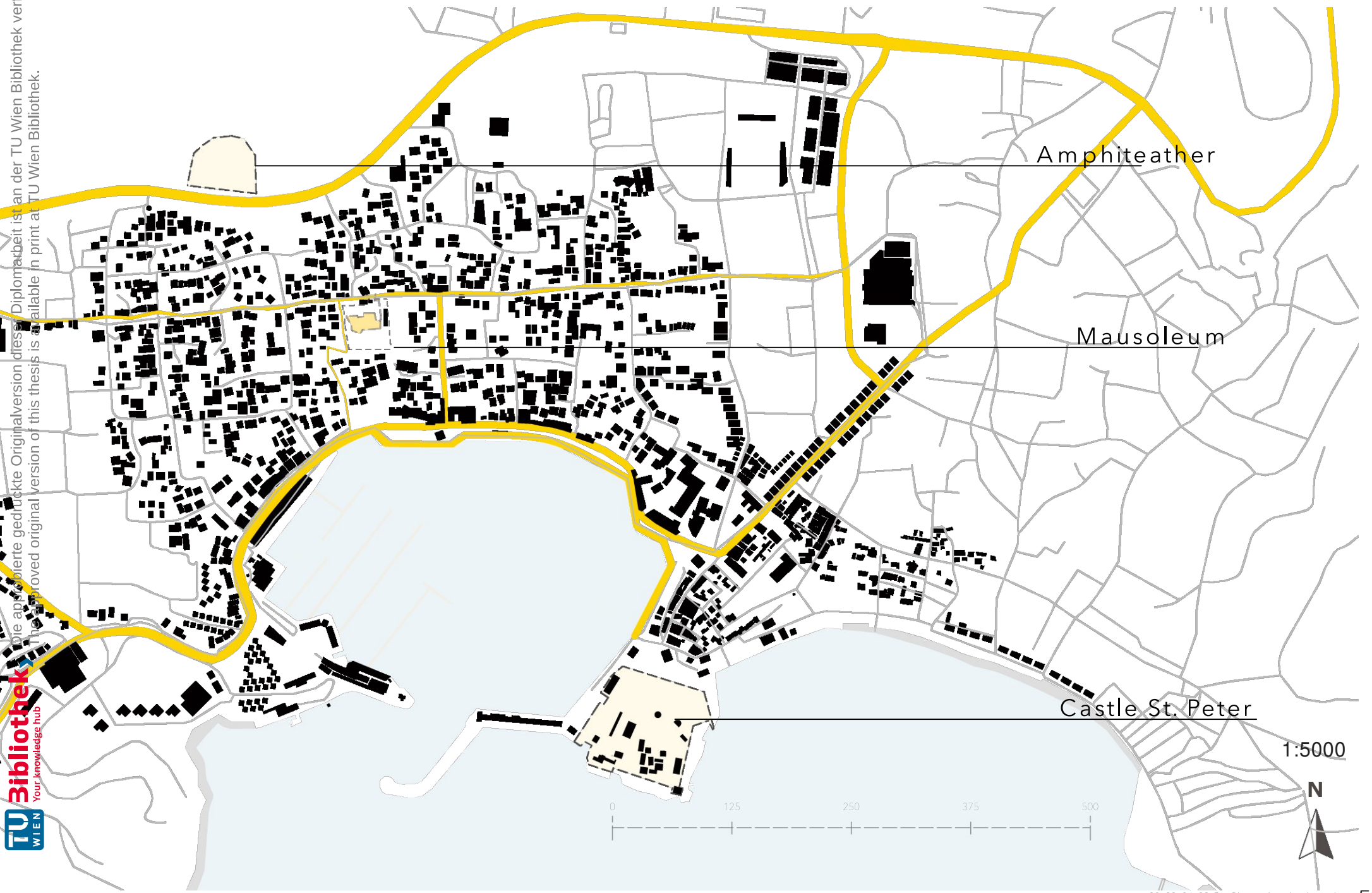
Bodrum has grown a lot, though to the eyes of the many visitors it still retains its old charm. It has been depicted as one of the Turkish brands in terms of Tourism. It has grown from a quaint fisherman village to a large district for holidays and reached even to the population of a big city, which keeps its population during the winter. It had become the favoured address for the art lovers as well as the artists to retreat. Most of the population is young, so the demand for the entertainment cannot be overlooked. The seaside area mostly consists of places to eat, to drink, to hang out, which gets heavily crowded during the night time in particular. Several events or concerts take place in the ancient open-air Amphitheater or in the medieval Amphitheater of Castle St. Peter. Though the temporary exhibition areas for the modern art are very limited and hard to find. The Castle St. Peter has an exhibition space for the Museum of Underwater Archaeology, scattered throughout the castle ground. The museum displays the several old shipwrecks, including the oldest ever found, dated to the late Roman period, was found off the shore of Turgutreis, which locates in the west of peninsula.



02_02_04_02 City Plan with Urban analysis

2.2.5. ARCHEOLOGICAL SITES





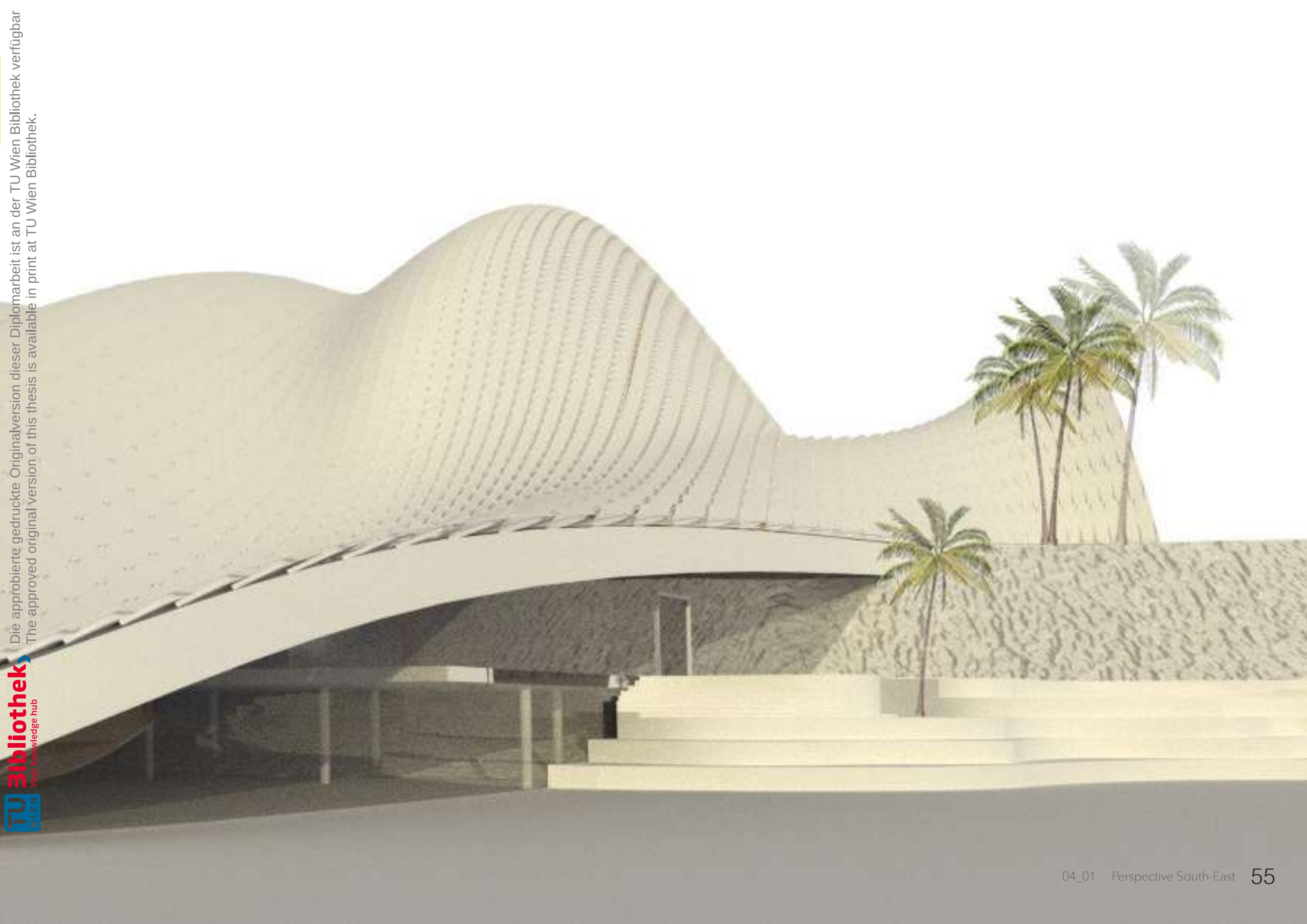
02_02_04_03 City Plan with archeological sites

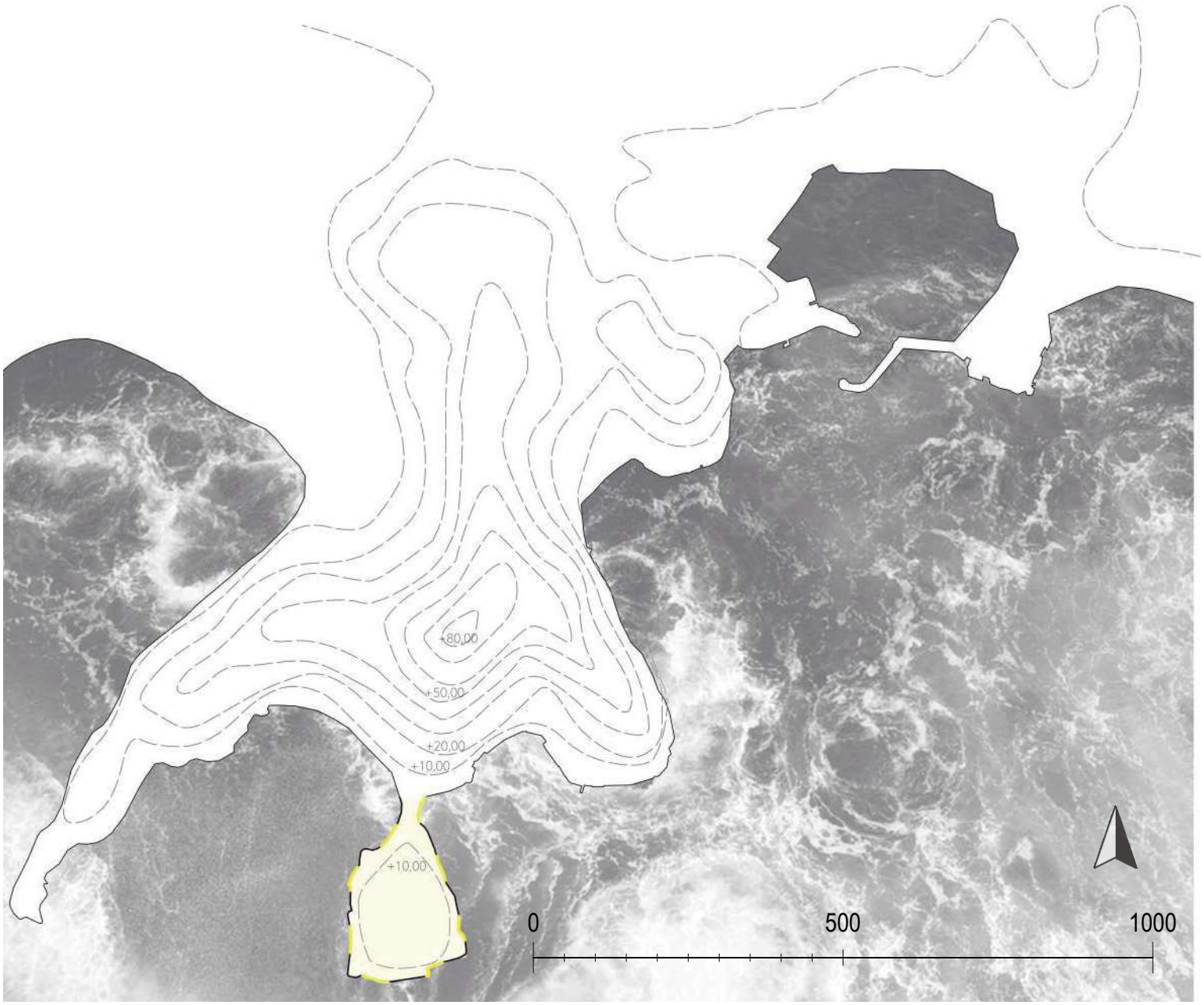
3. PROJECT GOAL

The thesis aims to propose a design for a museum in Bodrum, Turkey to preserve the remaining ruins of the ancient city Halicarnassus and to provide a shelter for the ruins and the visitors. To realise this, I want to ‚revive' the current museum on the site of the Mausoleum of Halicarnassus with a new design on a small island near the city centre.

The most important goal is to create a space to impress the visitors and let them experience the architecture and the space of museum along with the historic remainings of the city. The design provides a big space for exhibitons and also multifunctional spaces for workshops and events. The timber roof structure is left uncovered to be seen and to be looked at. The ceramic tiles that covers the exterior of the design accentuate the shape and features a sinuous geometrical pattern. The exterior design is clad in more than 14,000 white glazed porcelain stoneware tiles , which gives a rhythmic pattern. The facade has cladding support system which evocates fish-like skin.

4. METHODOLOGY



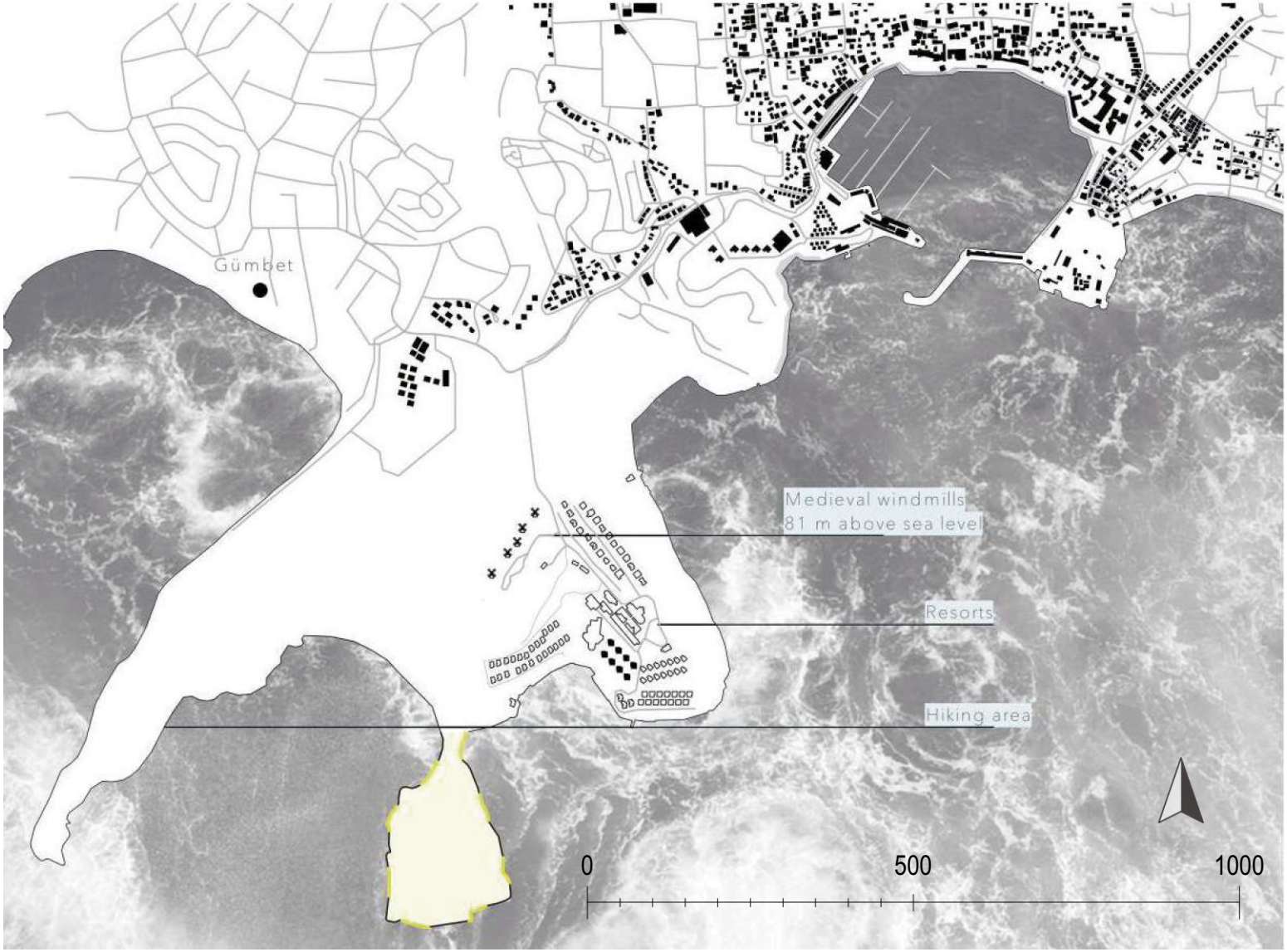


04_01_01_01 Isometric map of the envirounment, Height above sea level

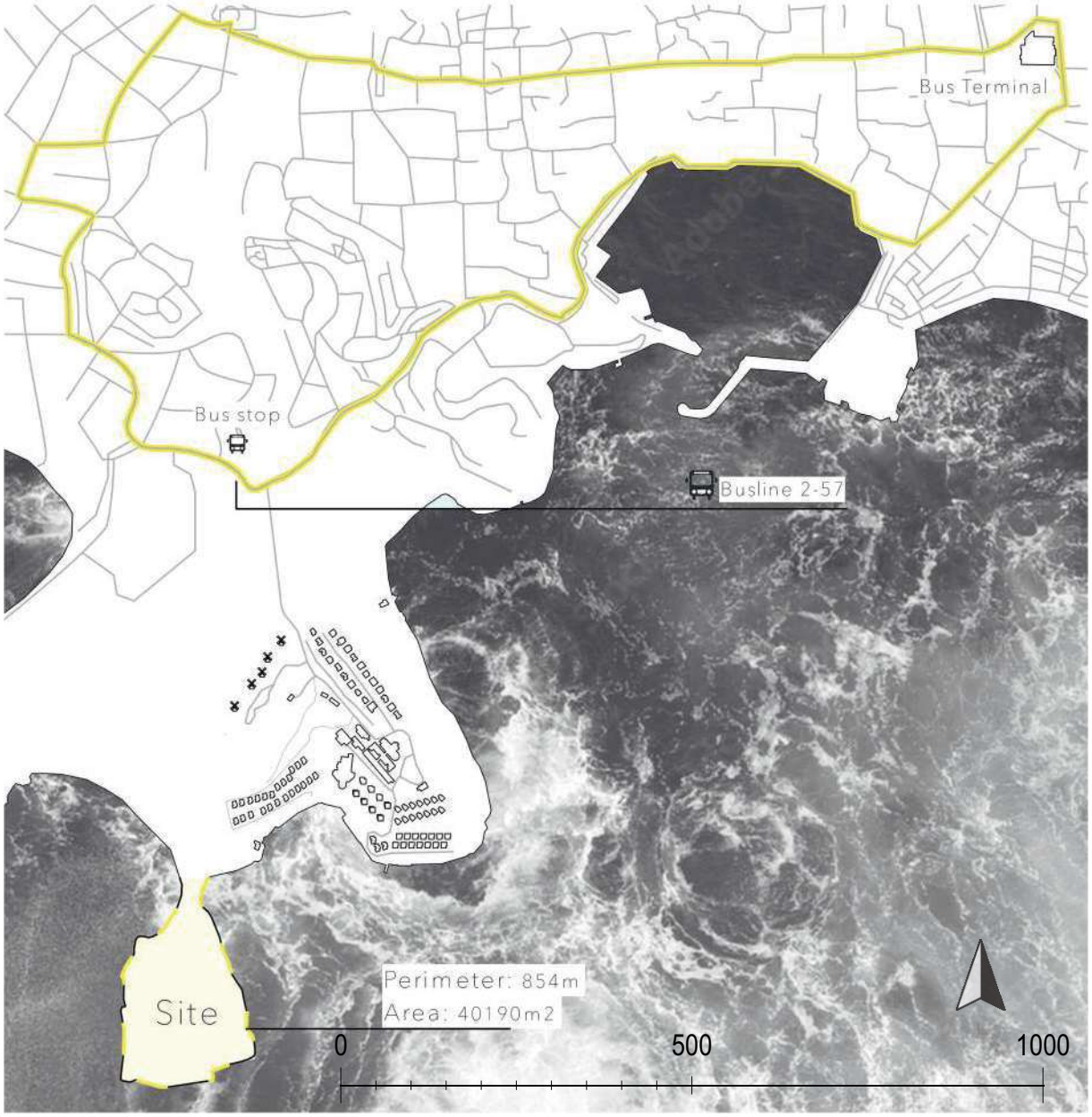
The chosen site is an island and connected to the main land through isthmus.
The height above the sea level is +10 meter high on the site.
The highest peak around the site is above +80 meter high.

4.1. FORMFINDING

4.1.1. SITE ANALYSIS

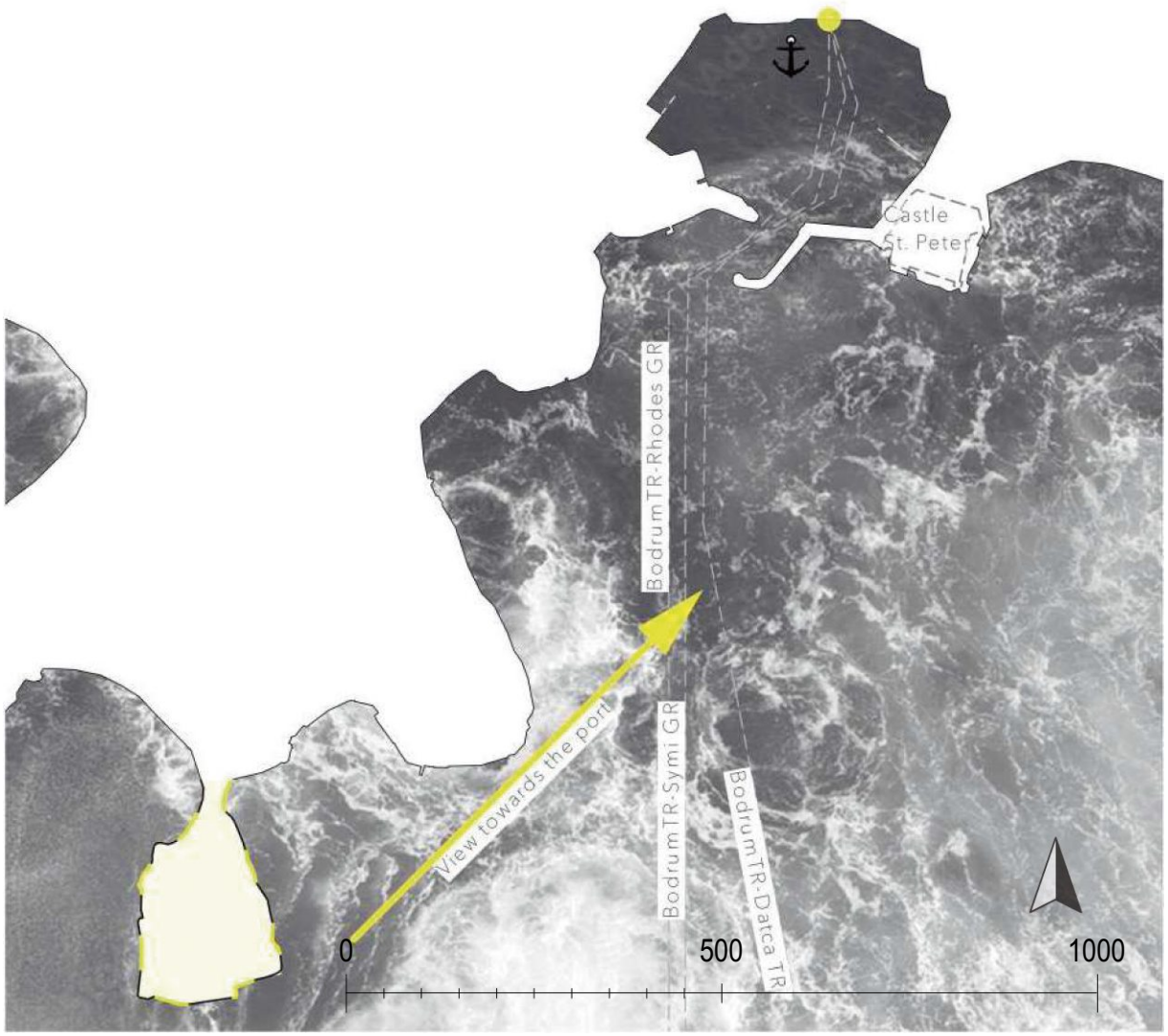


04_01_01_02 Enviroumental Analysis



04_01_01_03 Site Evaluation and Current transport lines

The Site is situated between the central marine port and the Gümbet which is the next settlement on the western side of the site. The current Busline follows only the road on the seaside .There were will be additional bus stop for the new proposal needed.

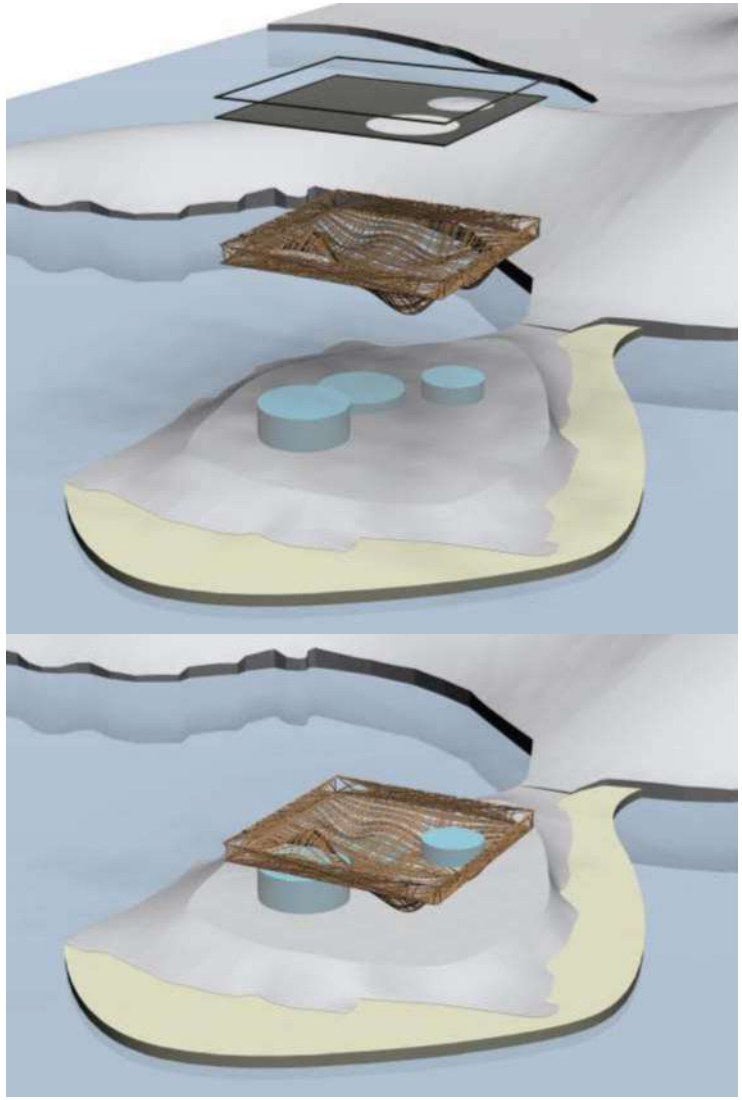


04_01_01_04 Sea transport and View towards the Castle

From the central port there are hourly boats and roundtrips possible to the neighboring greek islands.
The desired public space for the proposal was shaped to focus on the view towards the Castle St. Peter.

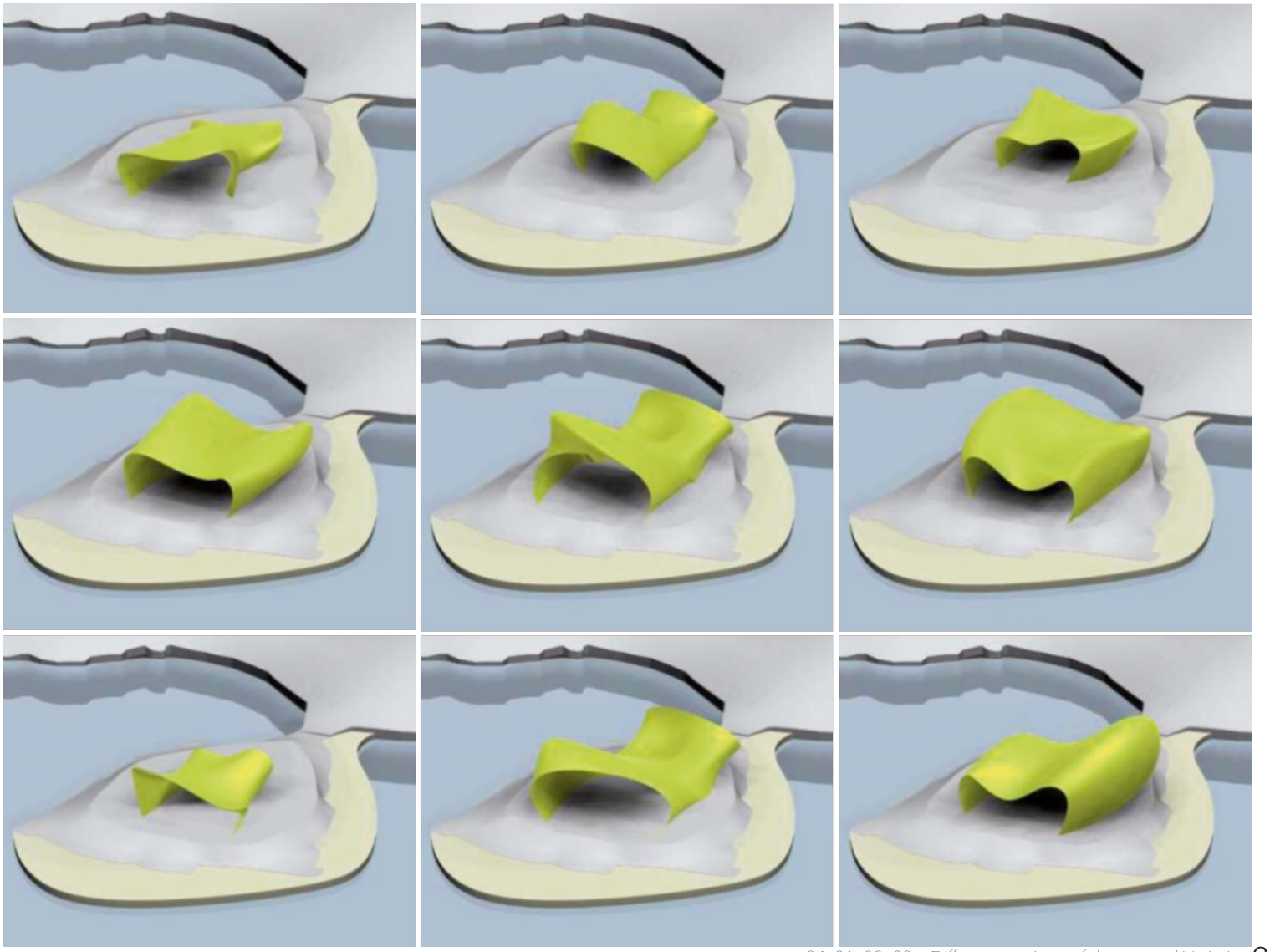
4.1.2. VARIATONS

1. VARIATION



04_01_02_01 First Variation

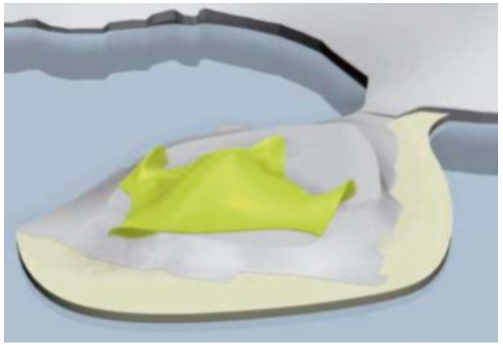
2. VARIATION



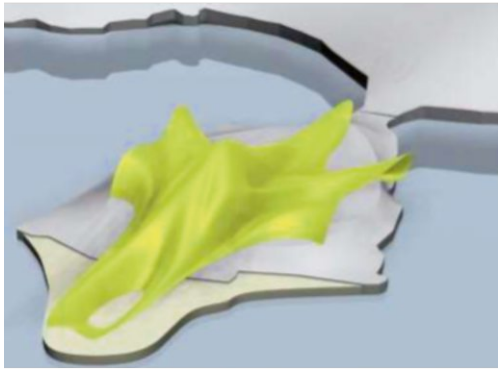
04_01_02_02 Different versions of the second Variation

3. VARIATION

1.Initial form aims to mimic the shape of an ray and provides open spaces on the each sides



2. Adjusting the shape by lowering frontal portion of the roof down on the broadwalk in order to achieve a spacial connection between the water and structure.

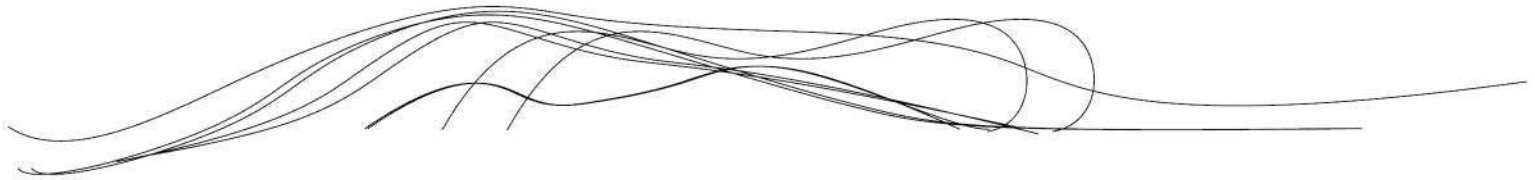


3. Rebuilding curvatures, so the desired proportions and the volume allignes better with the site and the frontal opening gets more prominent

4. All curvatures that create the outer shell get resized and harmonized according to the common grid

04_01_02_03 Third Variation and its evolution

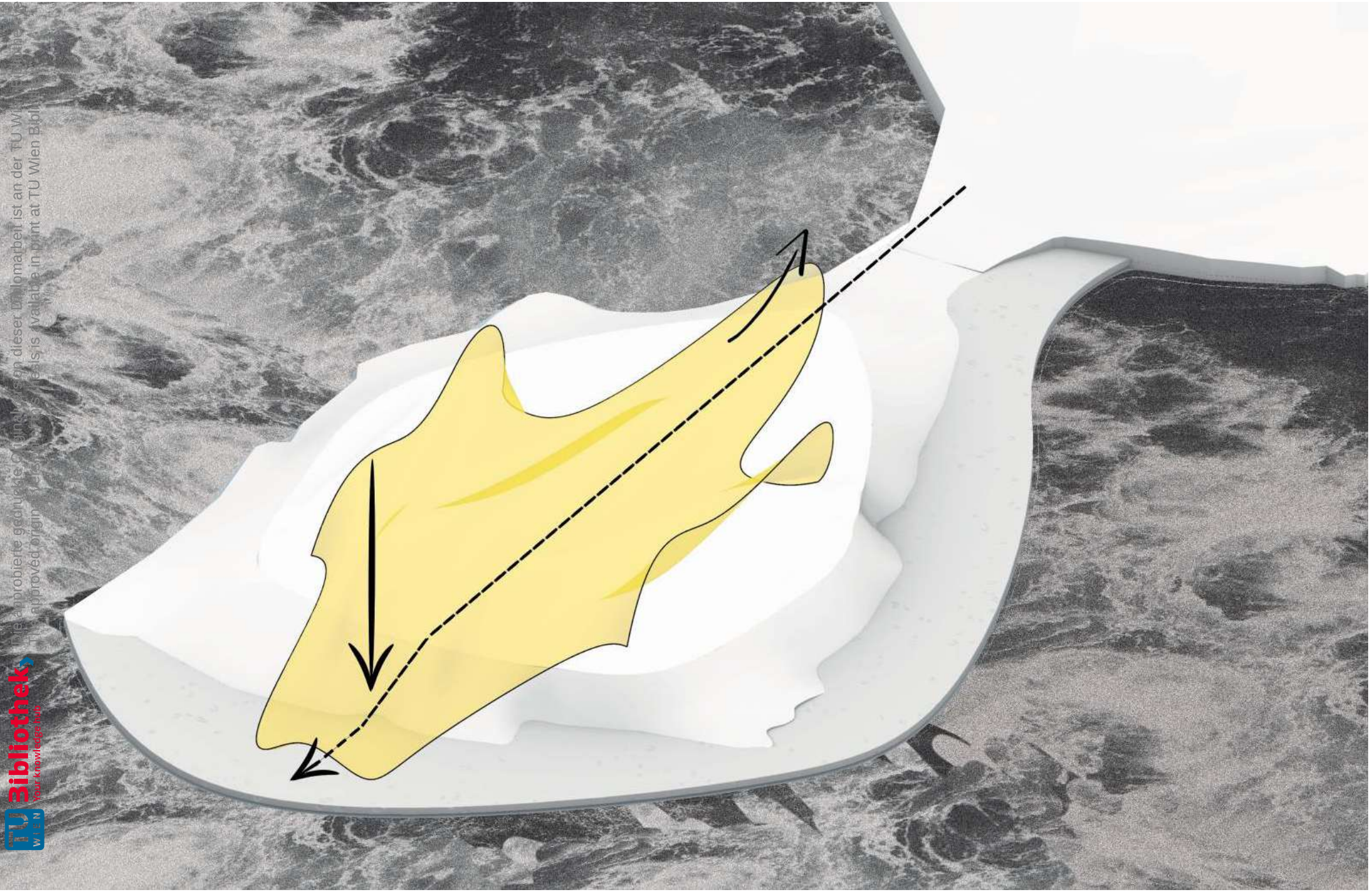
04_01_02_05 Side view of the curve allignments that initially created the outer shell



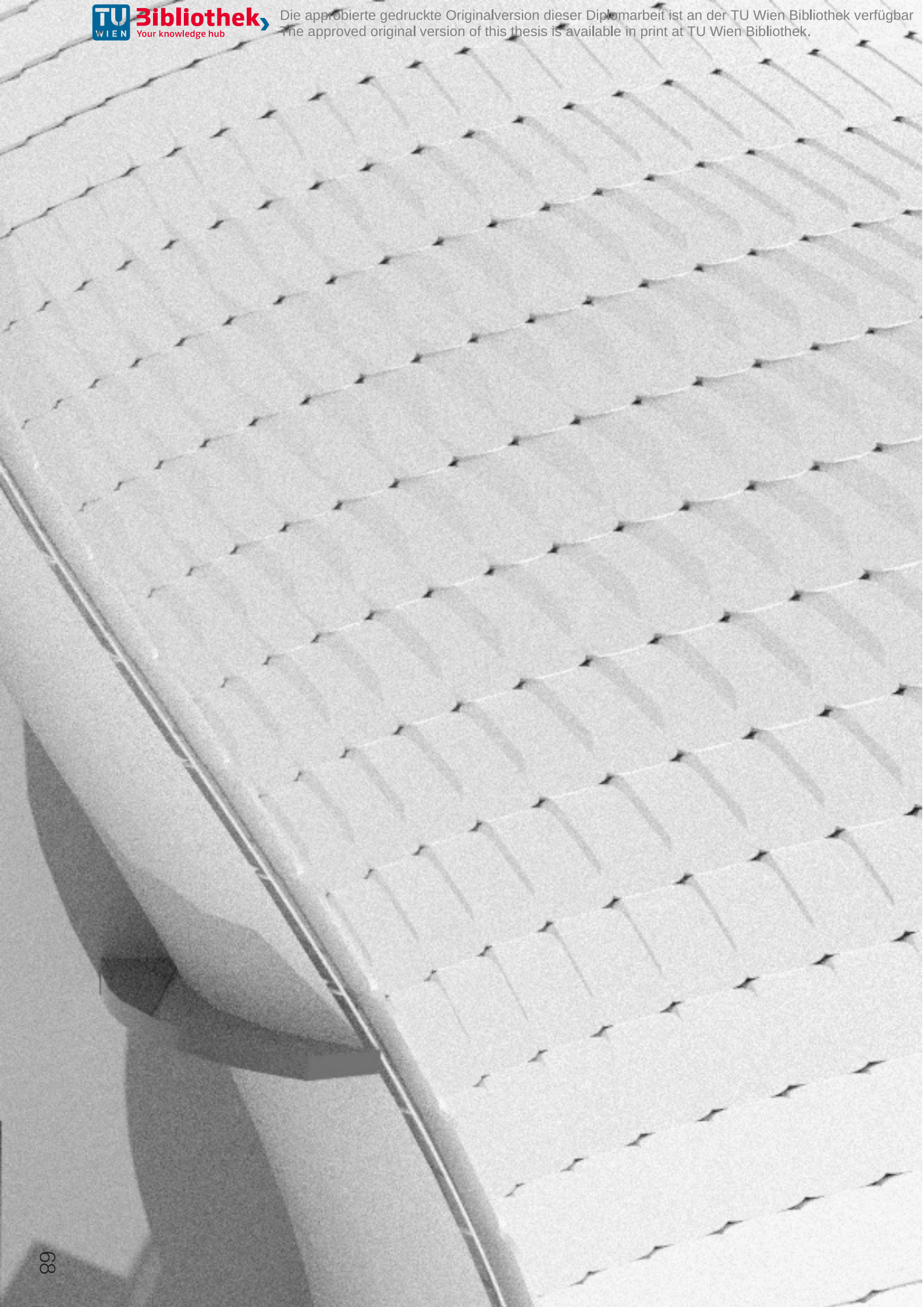
04_01_02_06 Side view of the final curve allignment that finalized the outer shell

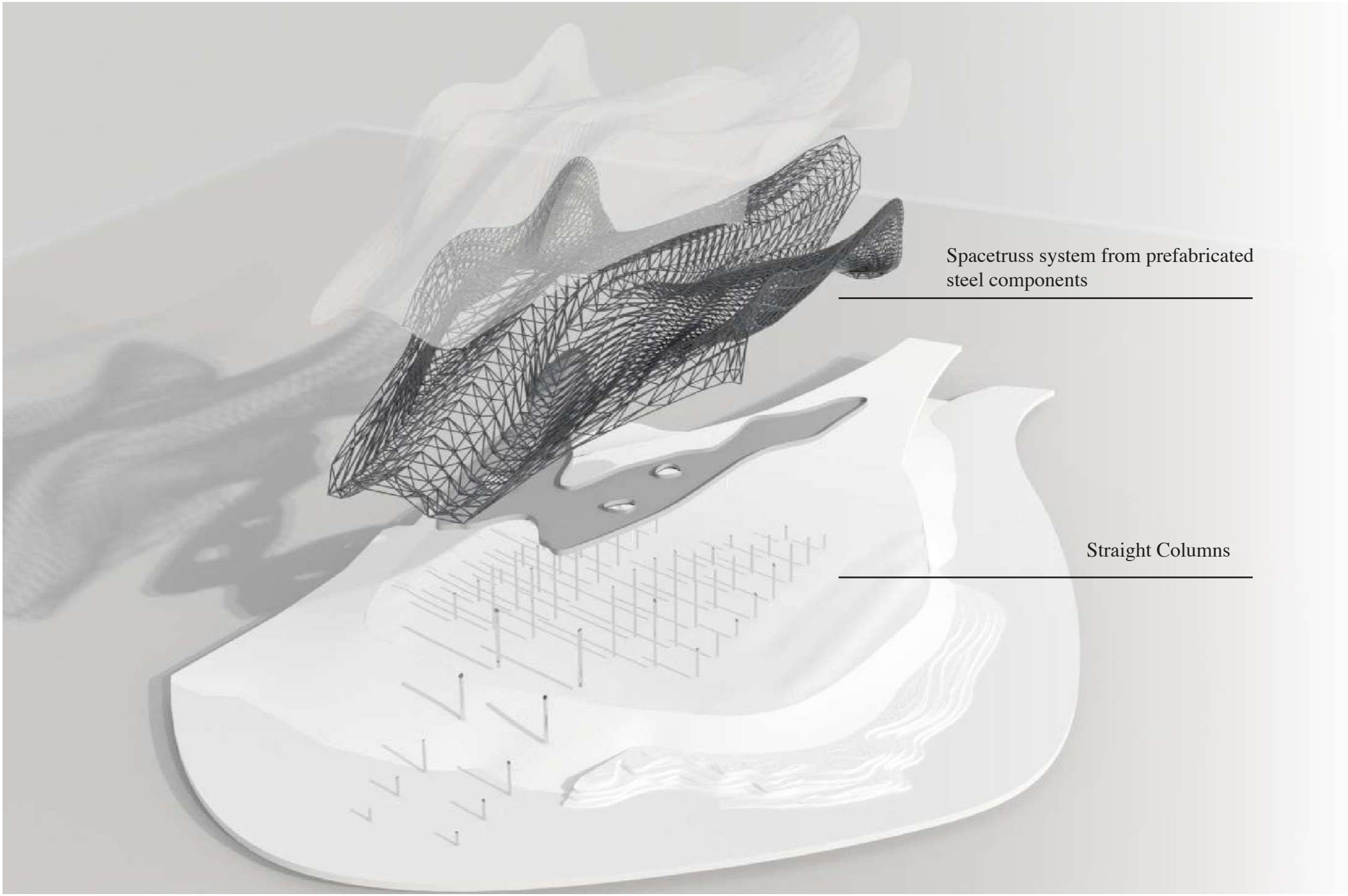
04_01_02_07 Rays in motion,Inspiration of the initial idea

The designs aims to create a path between the land and the sea. It reaches sea level by descending. The roof design is lifted at the ends to provide openings , serving for the circulation and access to the interior of the design. The canopy like structure gives the feeling of being sheltered.



04_01_02_08 Diagram for the basic formation



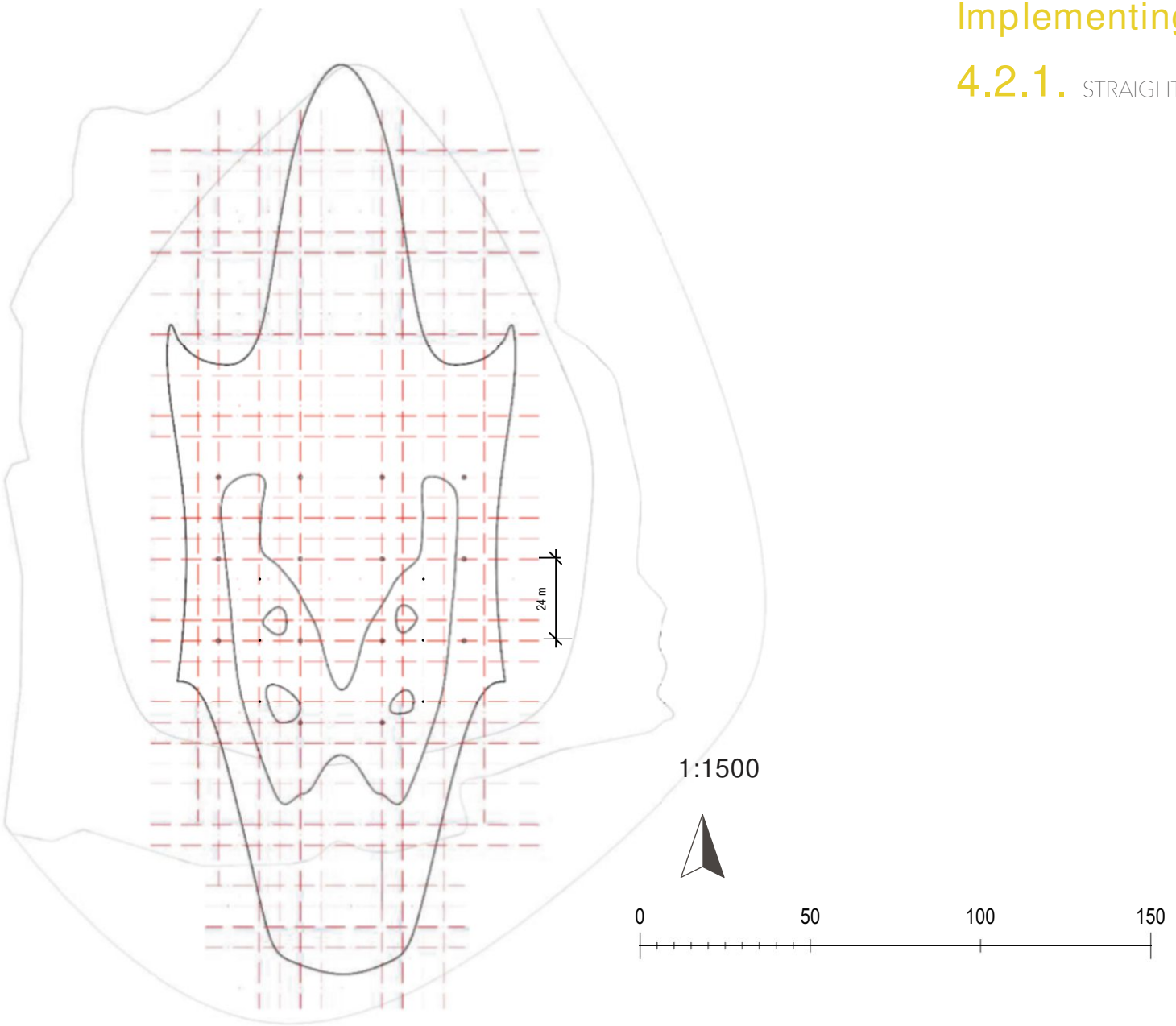


04_02_01_01 Axonometry of the straight columns

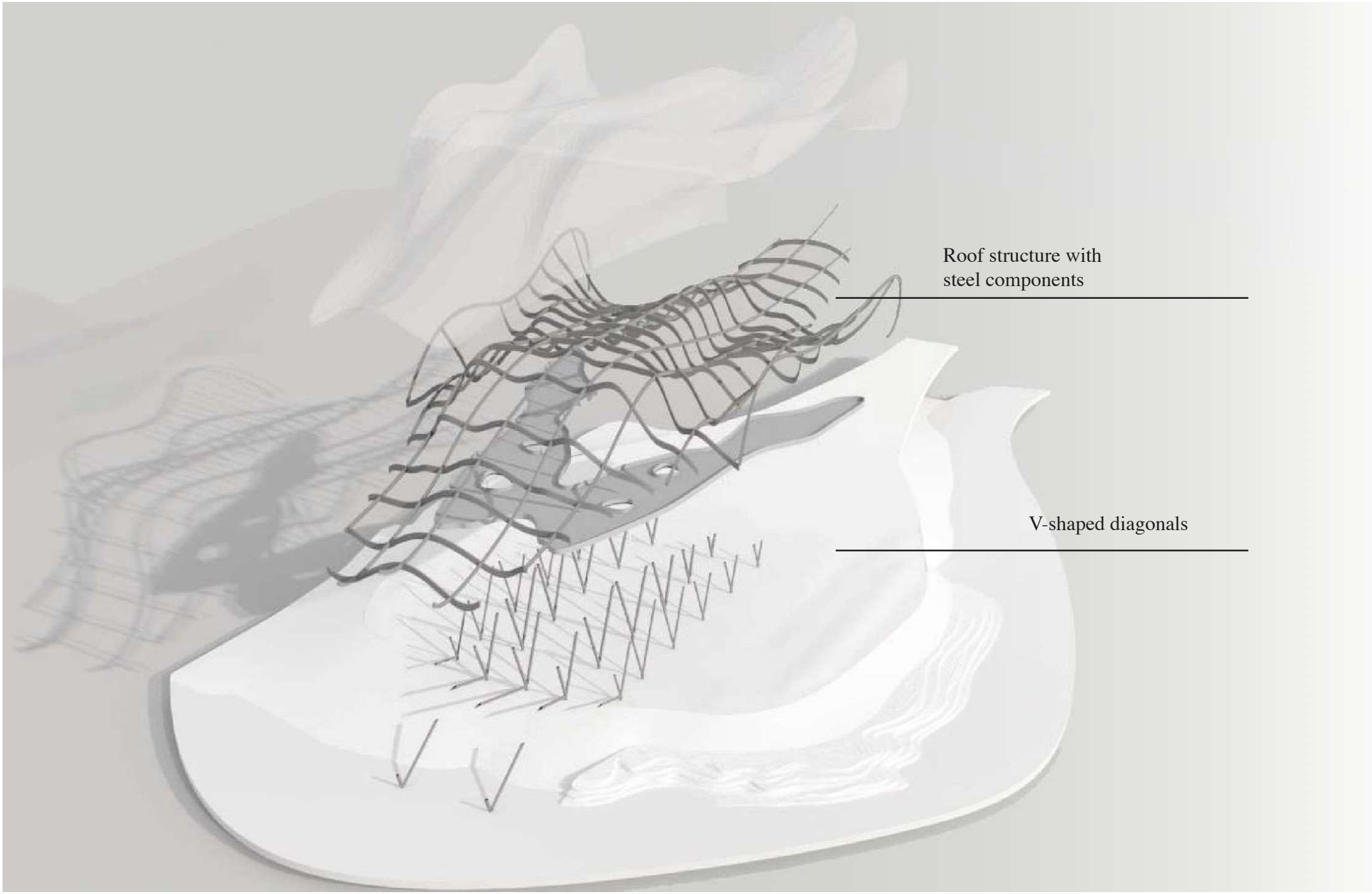
4.2. STRUCTURE

Implementing several approaches

4.2.1. STRAIGHT COLUMNS

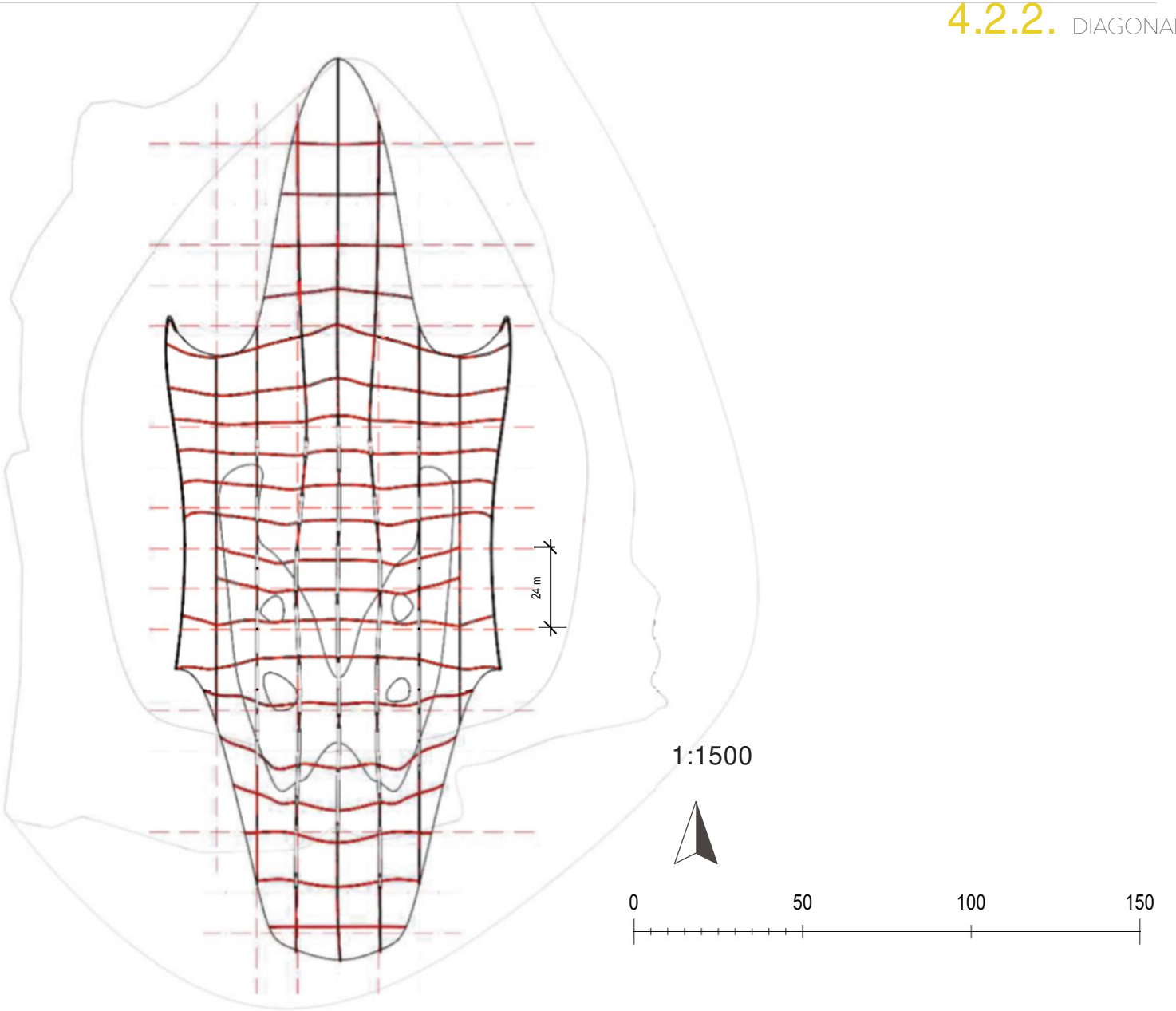


04_02_01_02 Layout of the straight columns

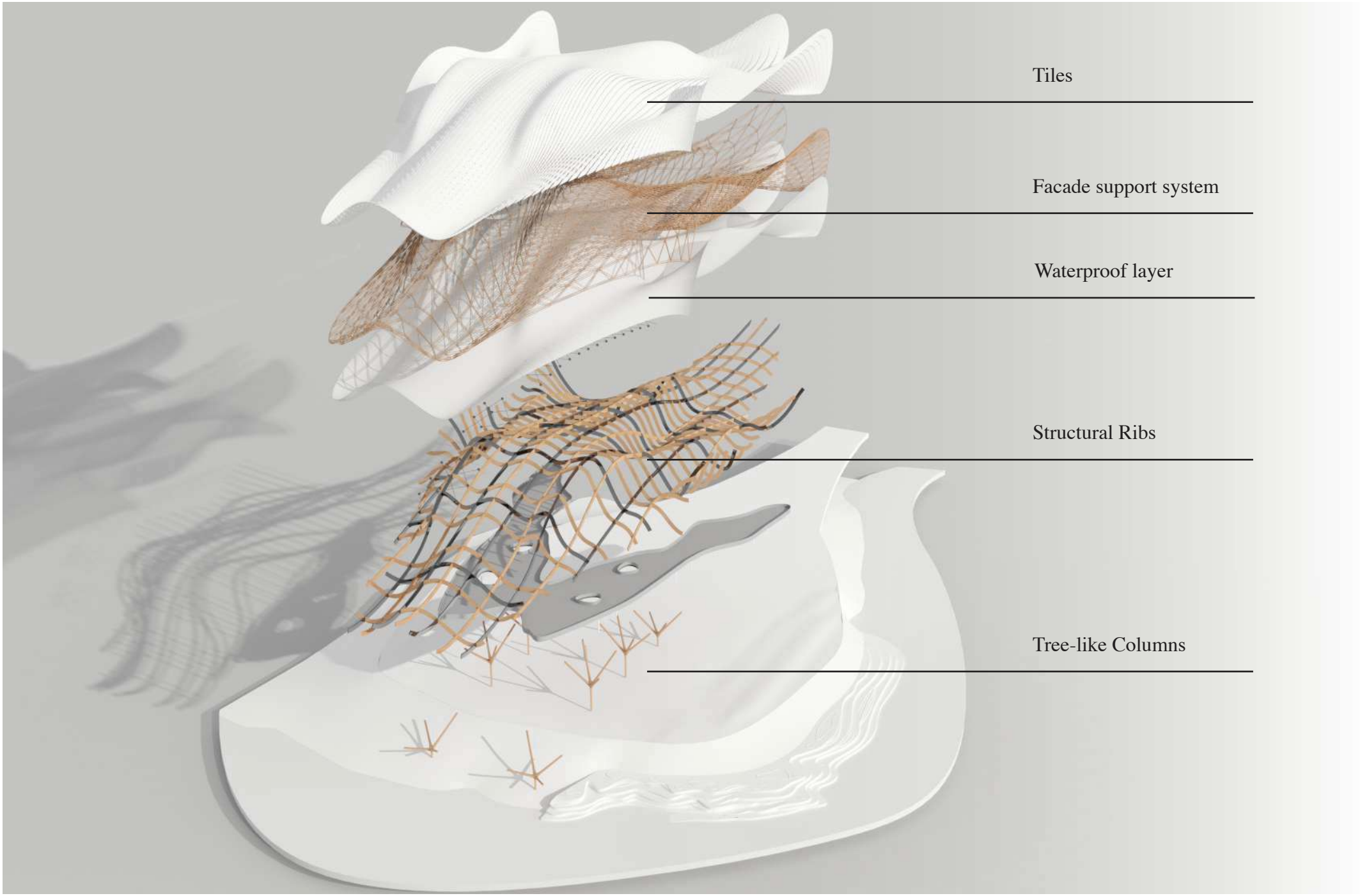


04_02_02_01 Axonometry of the diagonal columns

4.2.2. DIAGONAL COLUMNS

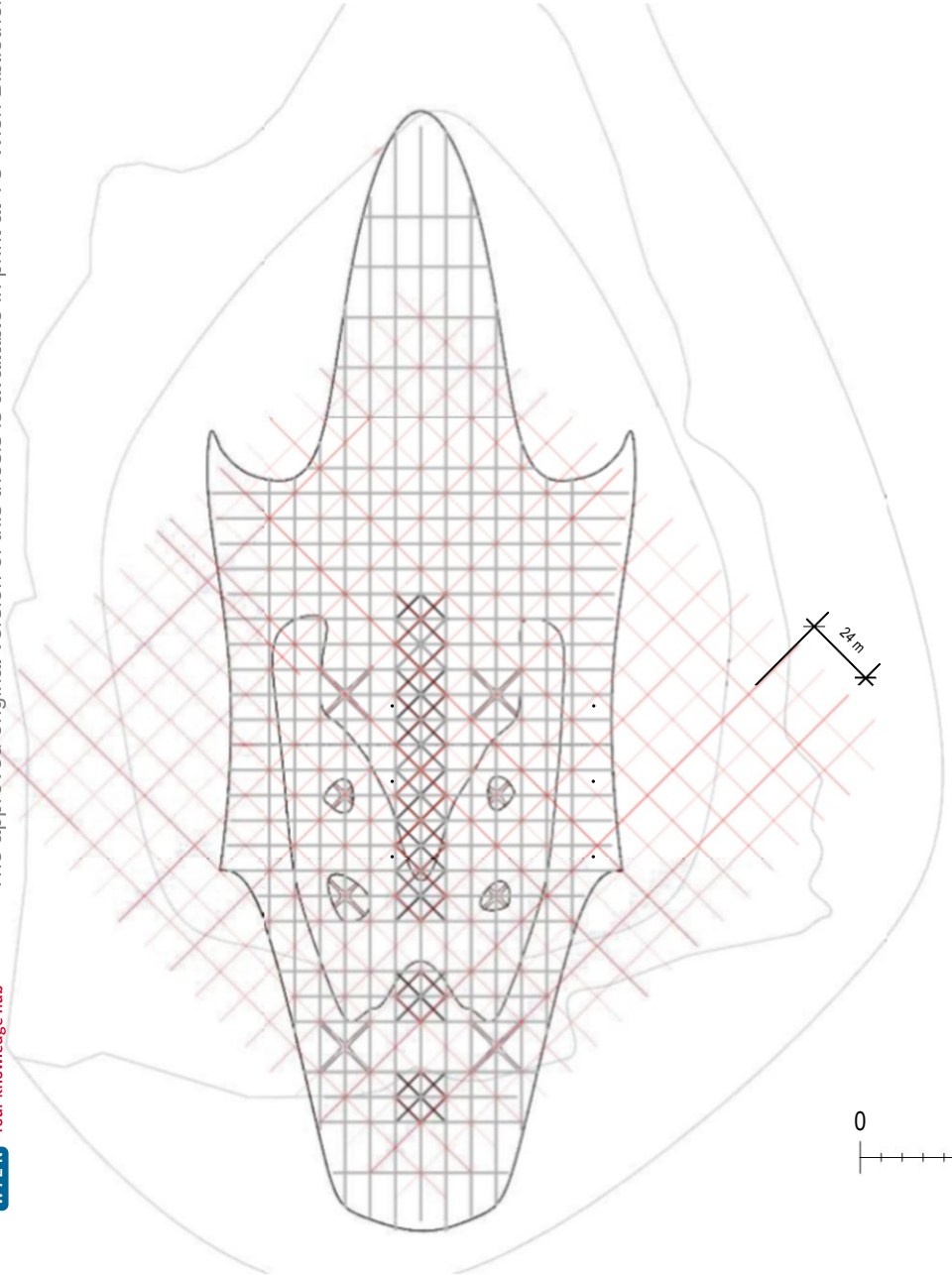


04_02_02_02 Layout of the diagonal columns

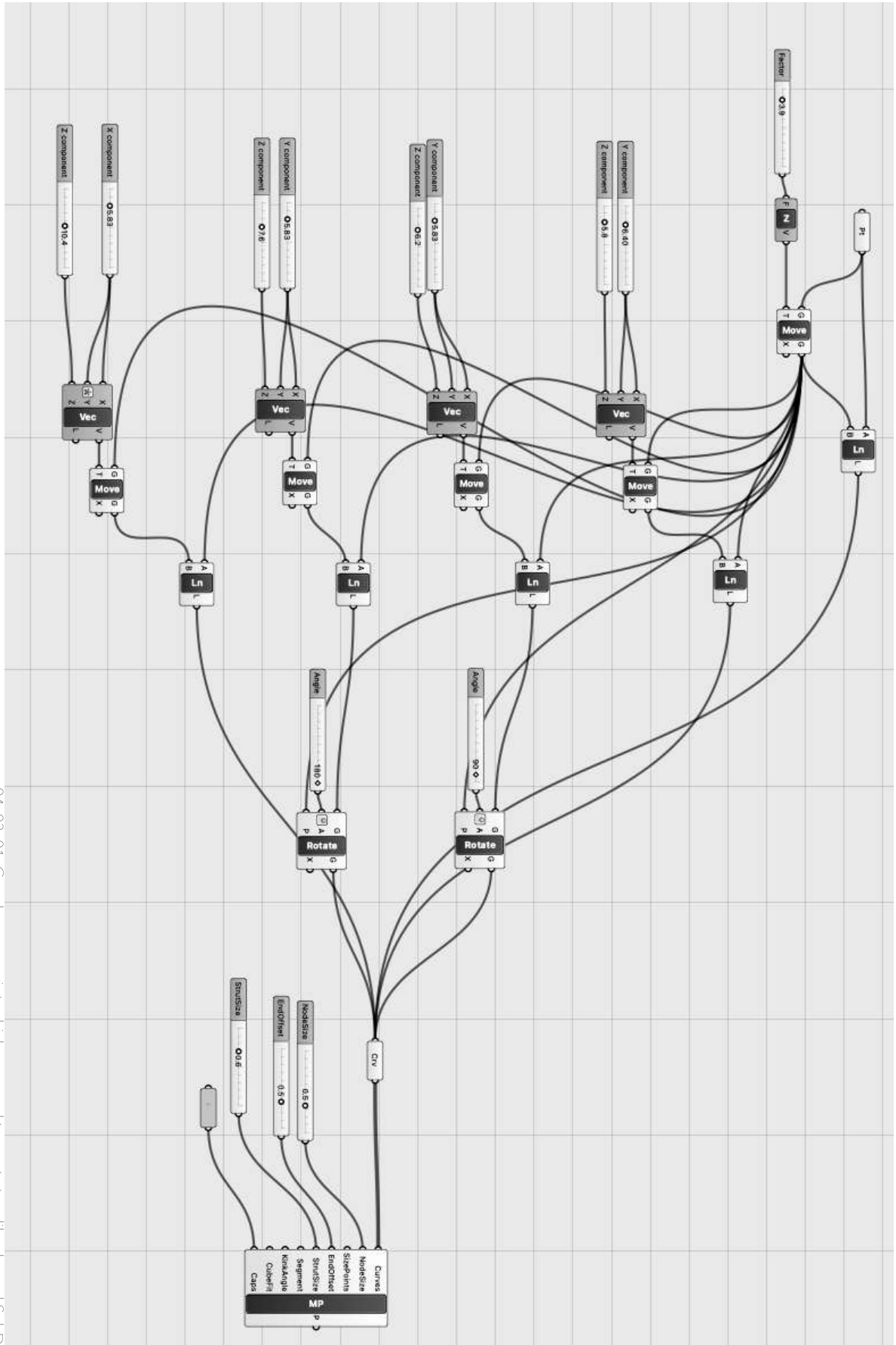


04_02_03_01 Axonometry of the tree-like shaped columns

4.2.3. TREE LIKE COLUMNS

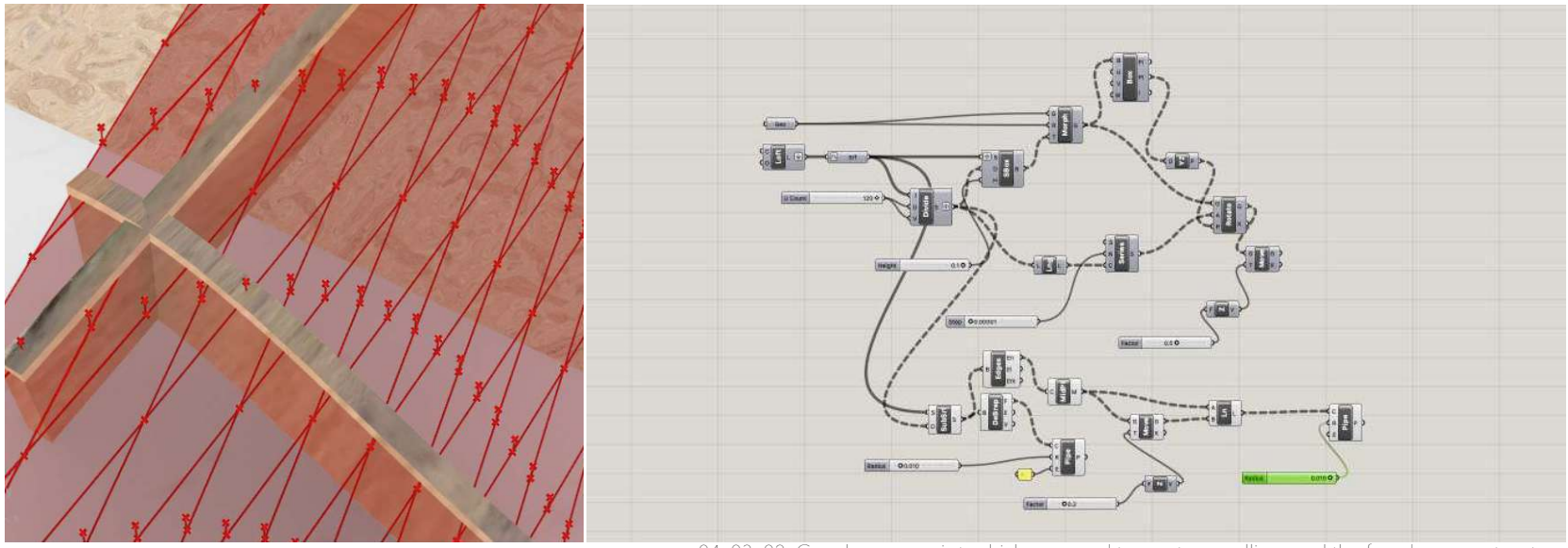


04_02_03_02 Layout of the tree-like shaped columns

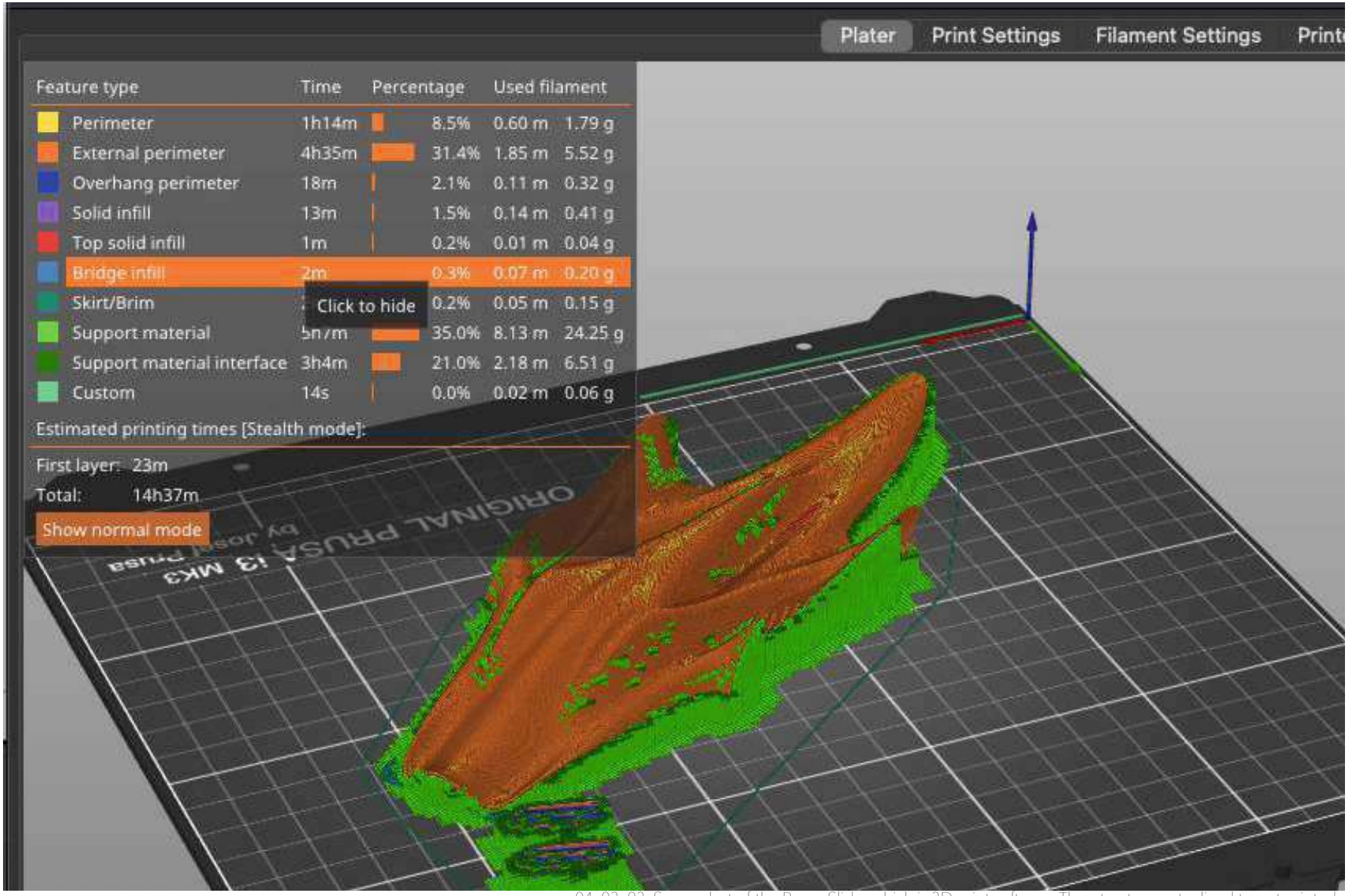


04_03_01_Grasshopper script which was used to create tree like shaped SubD

4.3. GRASSHOPPER SCRIPTS & 3D PRINTING



04_03_02_Grasshopper script which was used to create panelling and the facade support system



04_03_03_Screenshot of the PruscaSlider which is 3D print software .The structure gets sliced to get printed.
Additional supporting print materials were applied during prinitng process

04_03_04_First trial of 3d Printing Scale 1:1500

07.00 am

07.30 am

08.00 am

09.00 am

11.30 am

12.00 am

00.30 pm

01.00 pm

4.4. ENVIROUMENTAL ANALYSIS

4.4.1. SHADOW ANALYSIS


09.30 am

10.00 am

10.30 am

11.00 am


02.00 pm

02.30 pm


03.00 pm

03.30 pm

04.00 pm

04.30 pm

05.00 pm

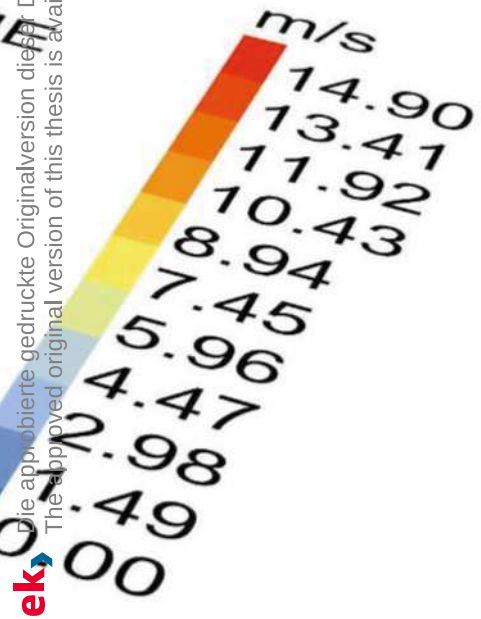
The roof blocks the sun and creates shade for the interior space, which is very crucial for the climate in Bodrum.

05.30 pm

06.00 pm

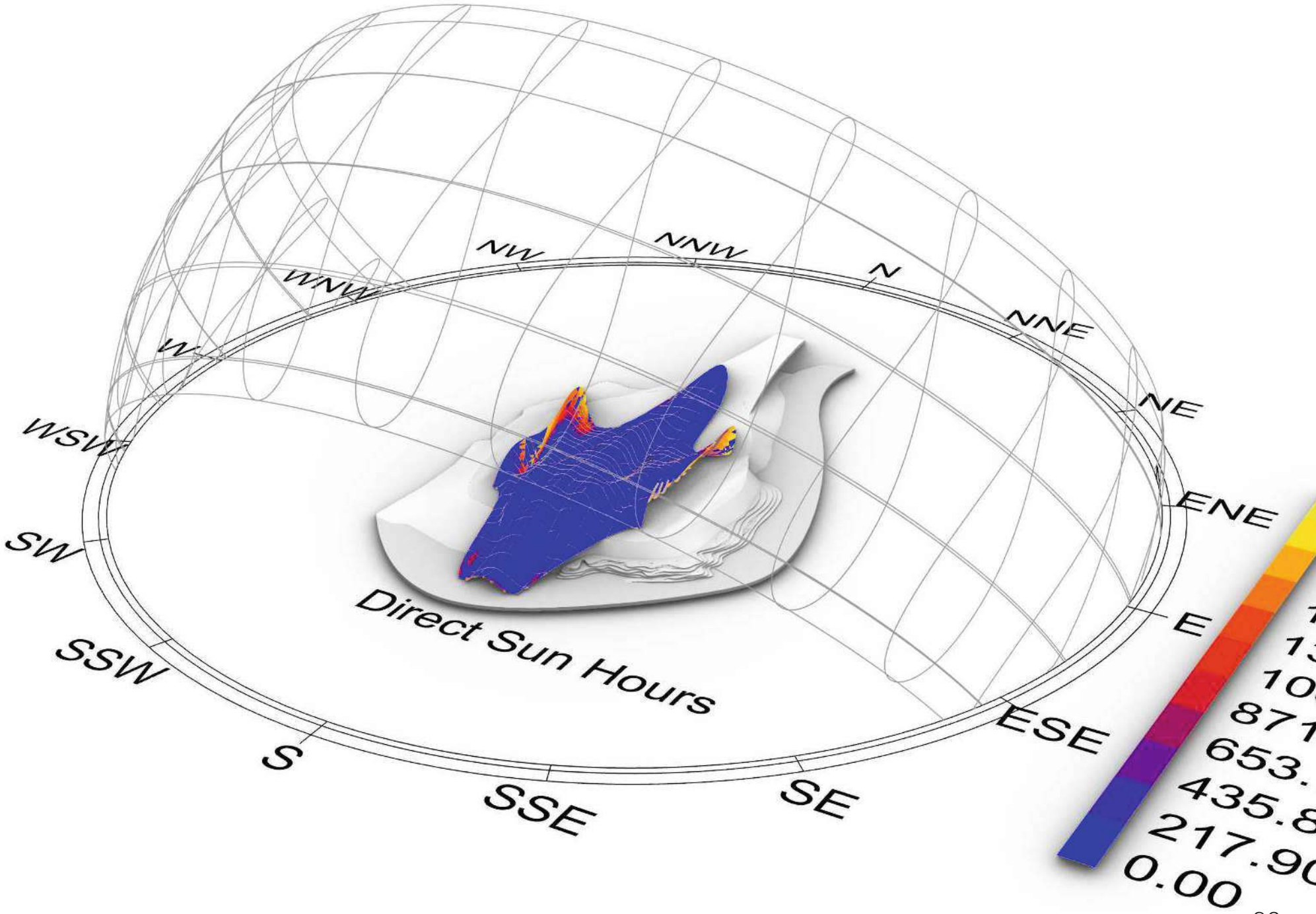
06.30 pm

4.4.2. WIND ANALYSIS



Three major openings were placed according to the wind direction to maximize air circulation.

04_04_02 Diagram /Wind analysis based on the site



4.4.3. SUN ANALYSIS

On the roof, the photovoltaic tiles are integrated into the areas with the highest number of direct sun hours.
Although the roof may have south facing facade, the aim is to utilize solar tiles on the most optimized angled areas.
Facade components that are on the left and right wings of the design have the most optimal direct sun hours.
The number of minimum direct sun hours is 4 hours per day which equals to 1460 hours per year.

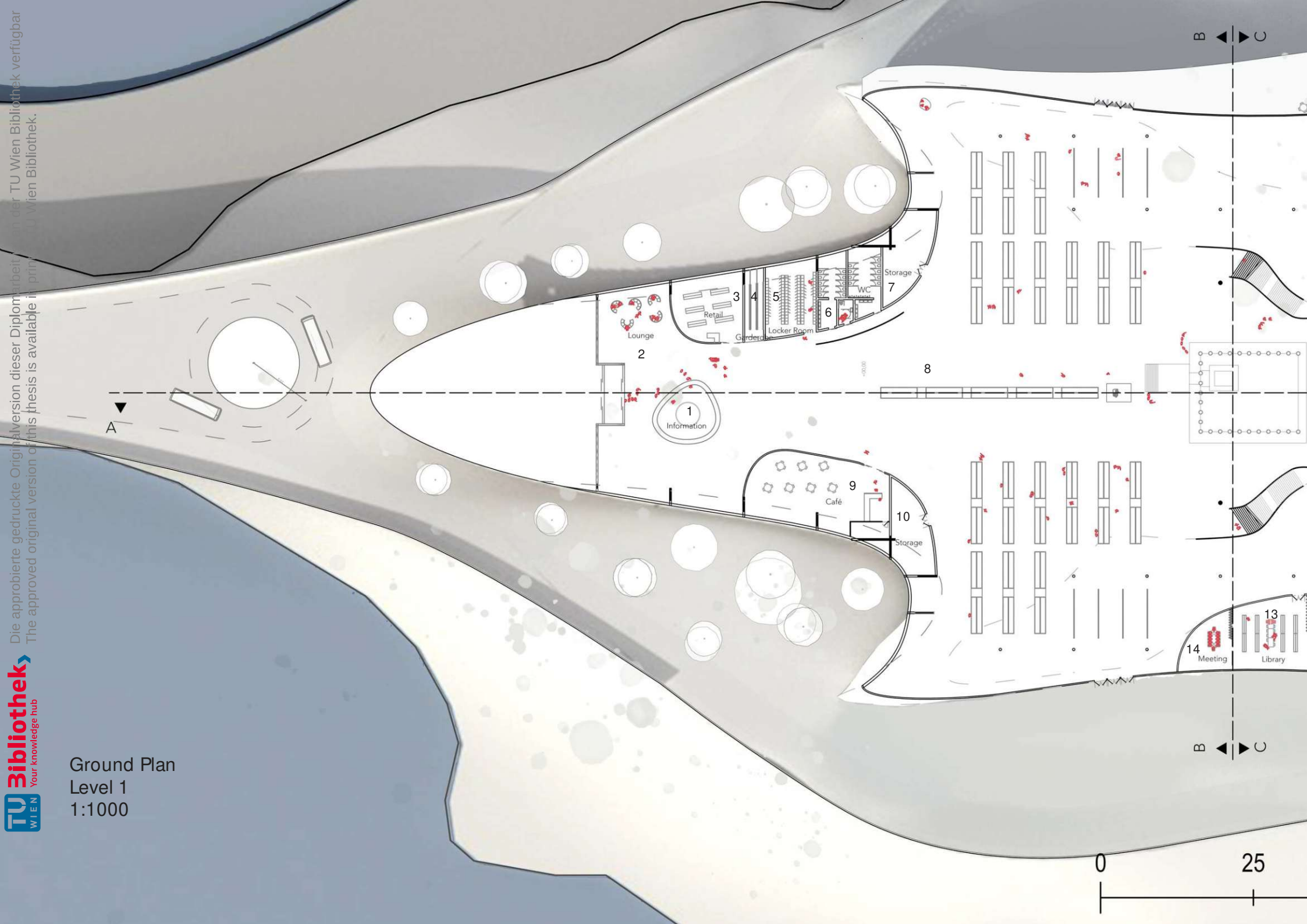
04_04_03 Diagram /Direct sun hours analysis based on the site

5. RESULT

Site Plan
1:5000

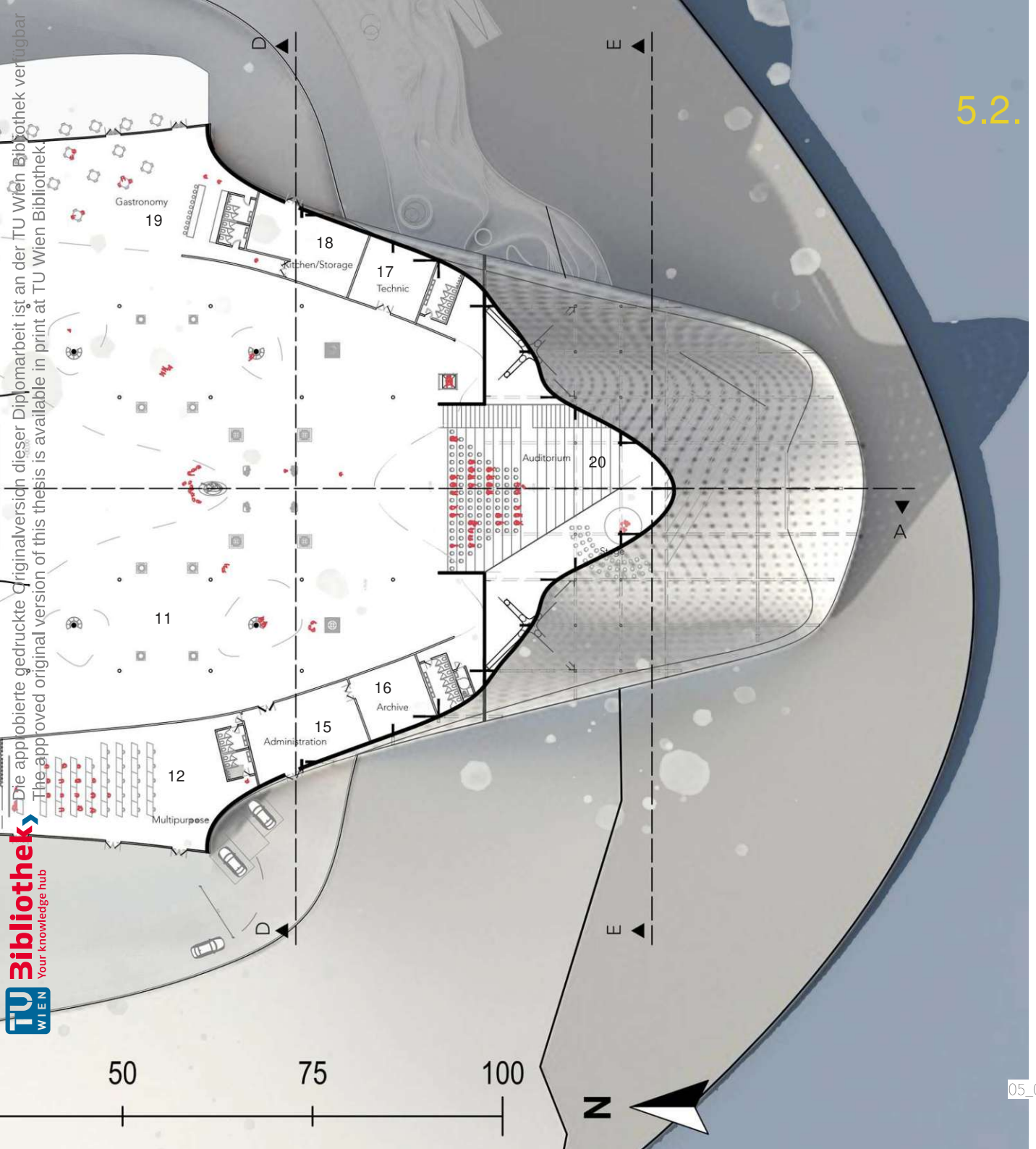
5.1. SITE PLAN

05_01_Site Plan 1:5000



Ground Plan
Level 1
1:1000

5.2. PLANS

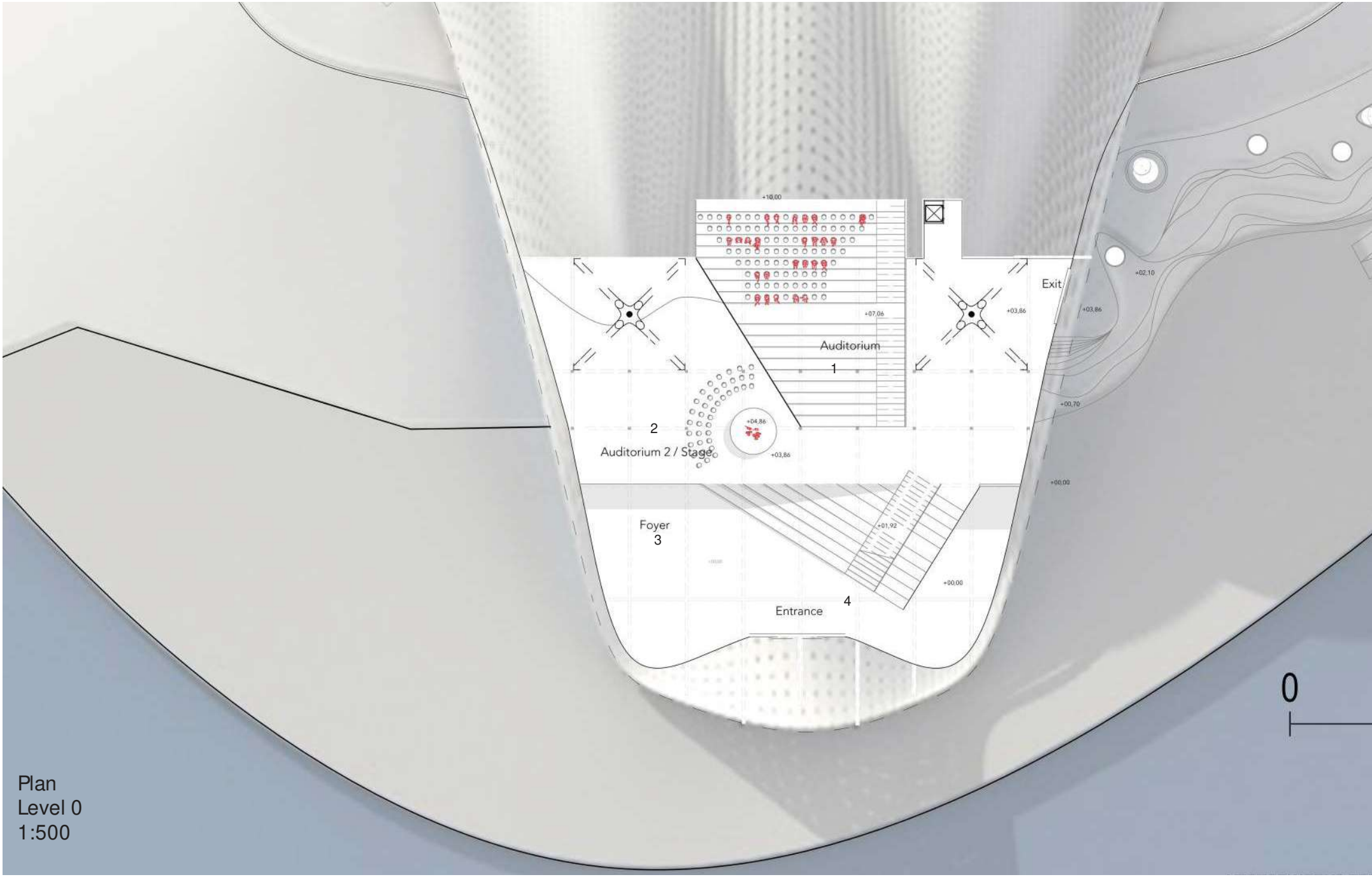


1 Information: 86m²
2 Lounge & Main entrance hall: 552 m²
3 Retail shop: 115 m²
4 Wardrobe: 37 m²
5 Locker room: 98m²
6 Sanitary rooms: 112m²
7 Storage 1: 83 m²
8 Exhibiton main hall 1: 4695 m²
9 Cafe: 261 m²
10 Storage 2: 91m²
11 Exhibition hall 2: 2923 m²
12 Multipurpose workshop area: 464m²
13 Library: 144m²
14 Meeting room: 65 m²
15 Administration: 136 m²
16 Archive: 80m²
17 Technic:81m²
18 Kitchen & Coldroom/Storage: 123m²
19 Gastronomy: 543m²
20 Auditorium 1: 413 m²

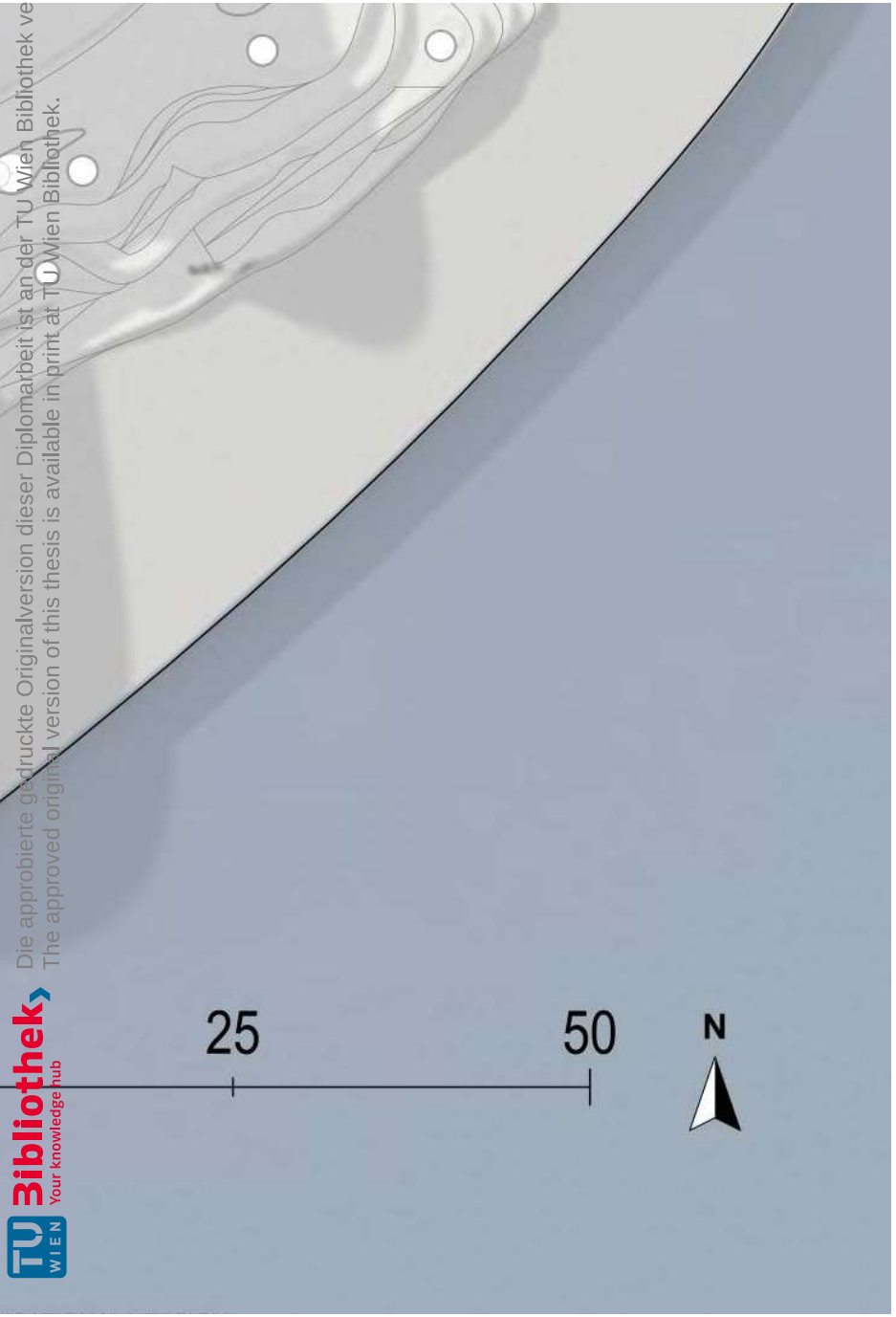
05_02_01_Ground Plan Level 1

Plan
Level 2
1:1000

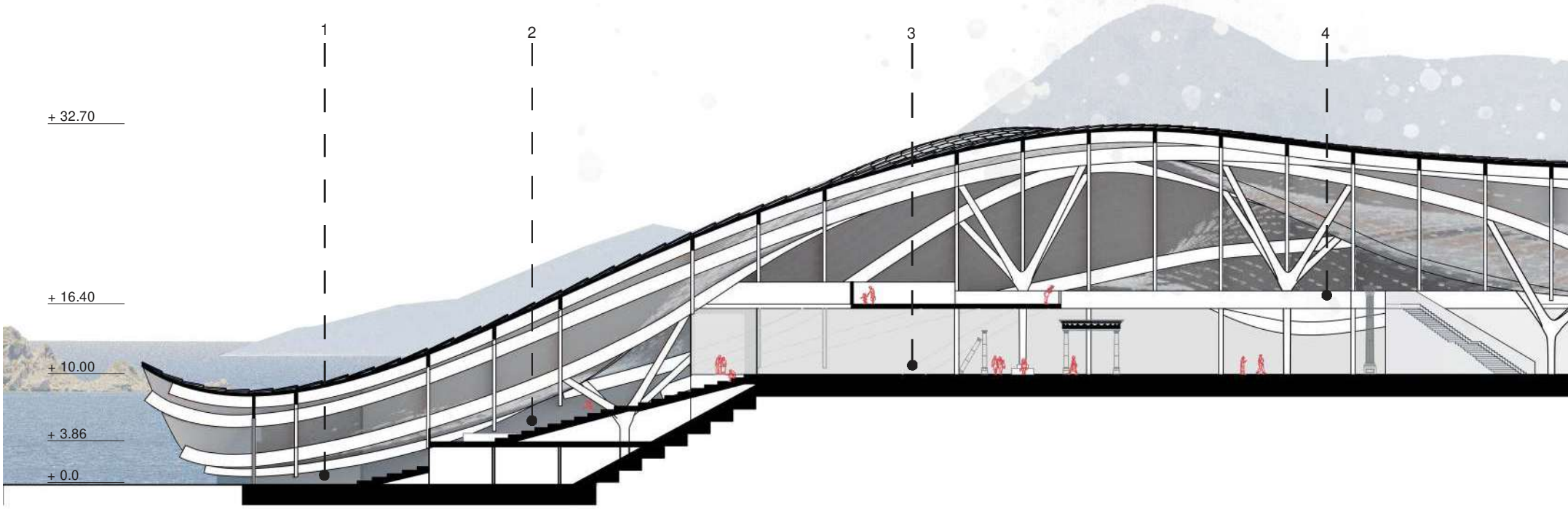
1 Temporary exhibition hall: 2109 m²
2 Temporary exhibition hall: 164 m²
3 Temporary exhibition hall: 140 m²
4 Sanitary rooms: 23 m²



Plan
Level 0
1:500

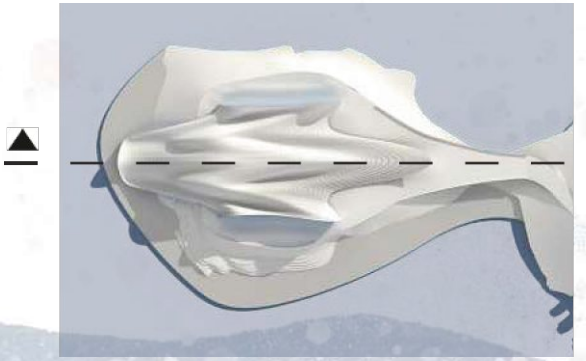


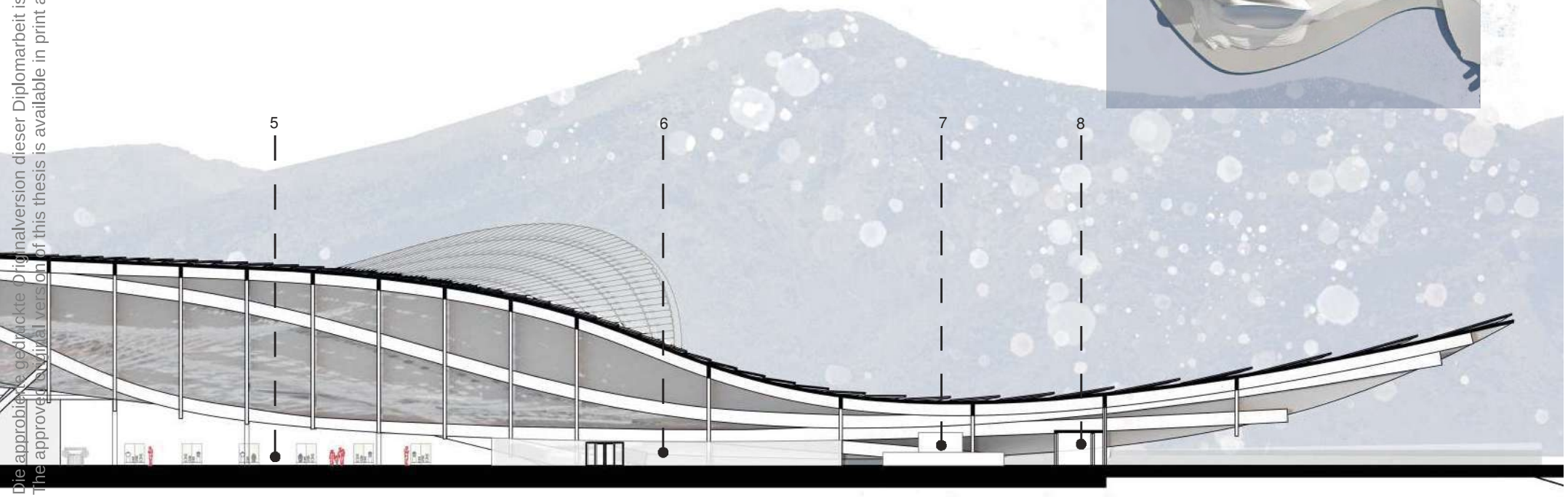
1 Auditorium 1: 380 m²
2 Auditorium 2 / Stage : 424 m²
3 Foyer: 280 m²
4 Entrance: 310 m²



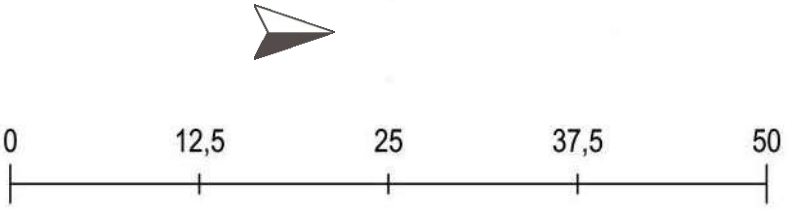
Section A-A
1:500

5.3. SECTIONS

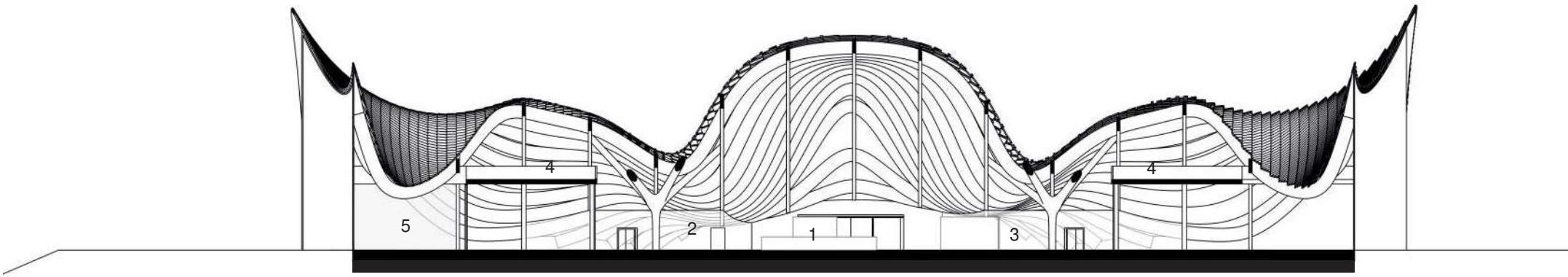




1 Foyer
2 Auditorium
3 Exhibition
4 Mezzanine
5 Exhibition Hall 2
6 Caffee
7 Info
8 Entrance



05_03_01_Section A



Section B-B
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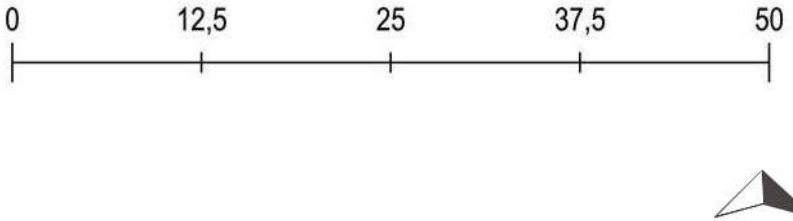
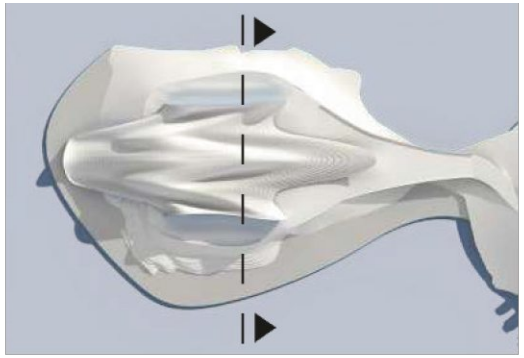
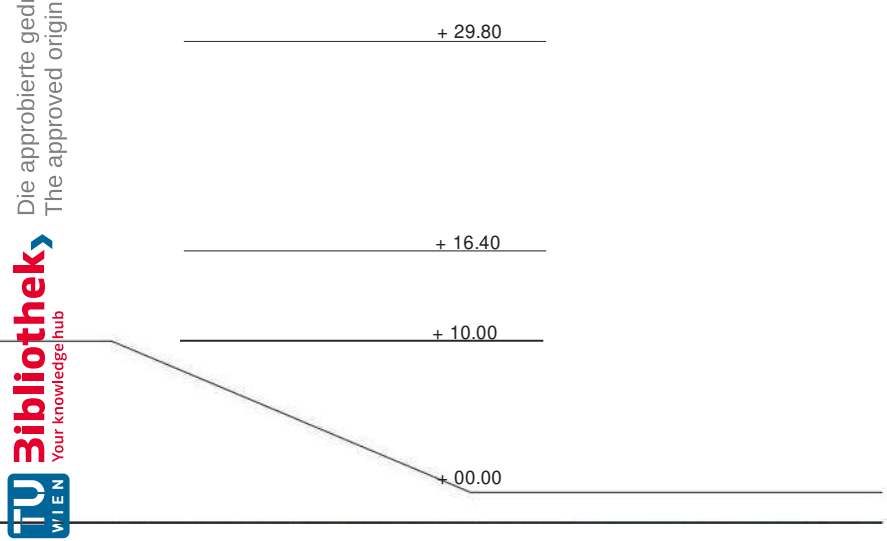
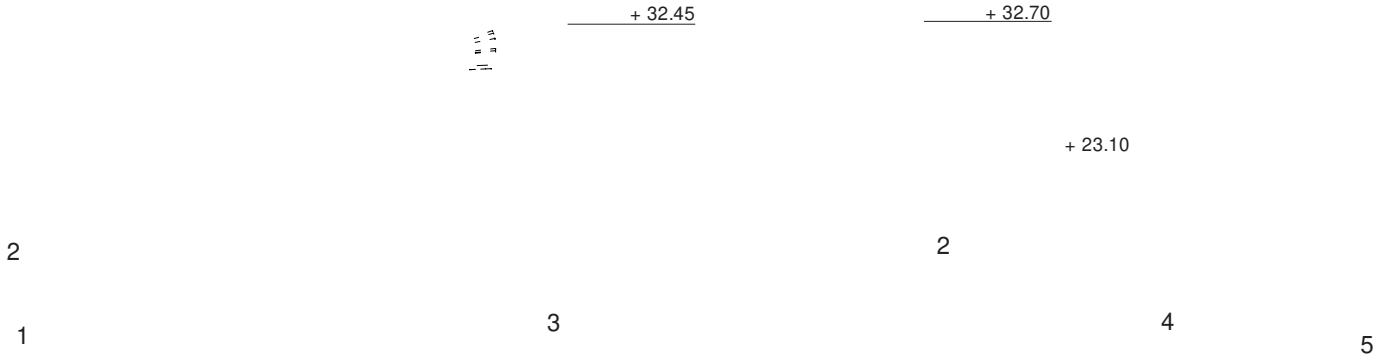






1 Information
2 Cafe
3 Sanitary rooms
4 Temporary exhibition
5 Meeting

05_03_02_Section B-B



Section C-C
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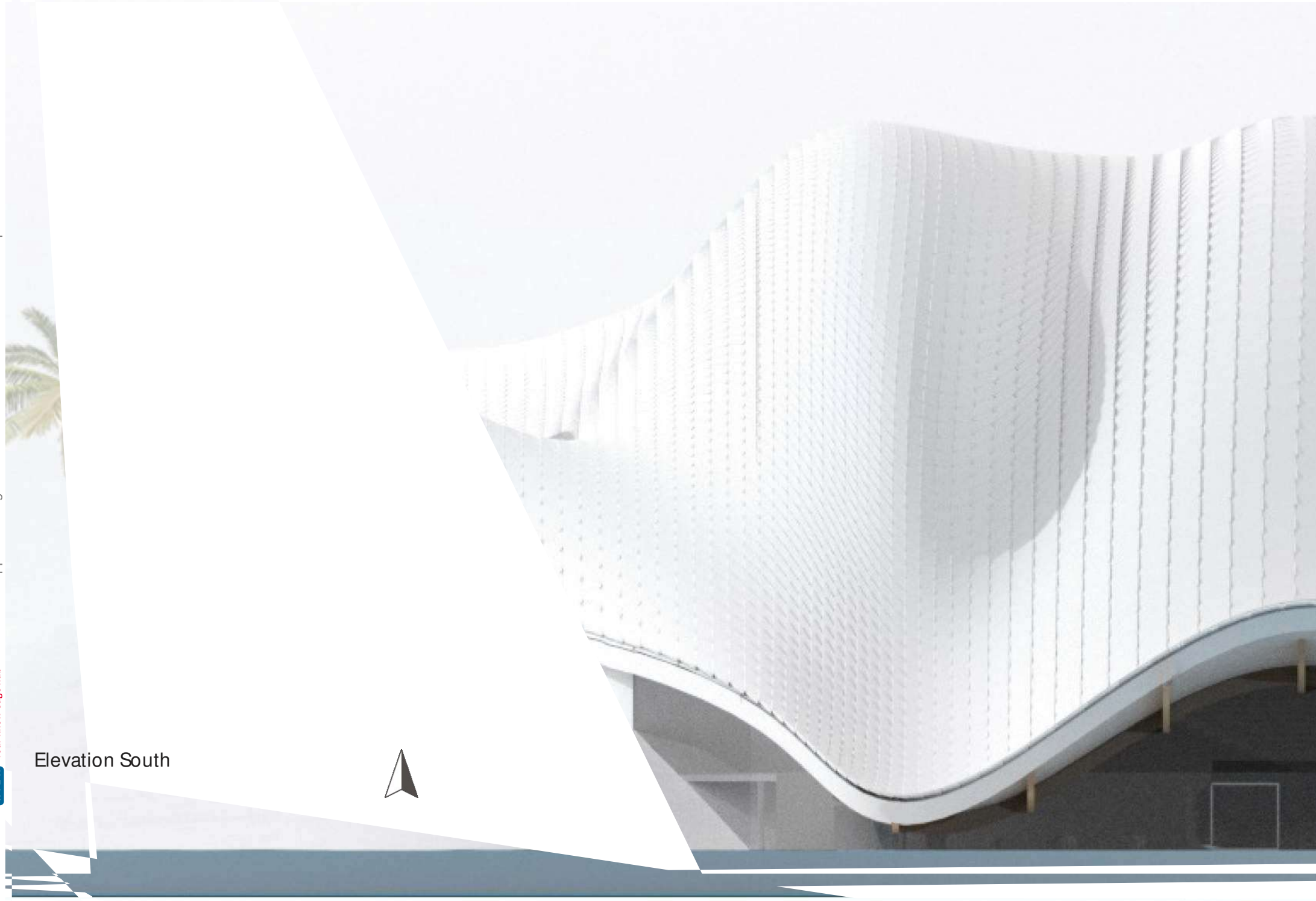
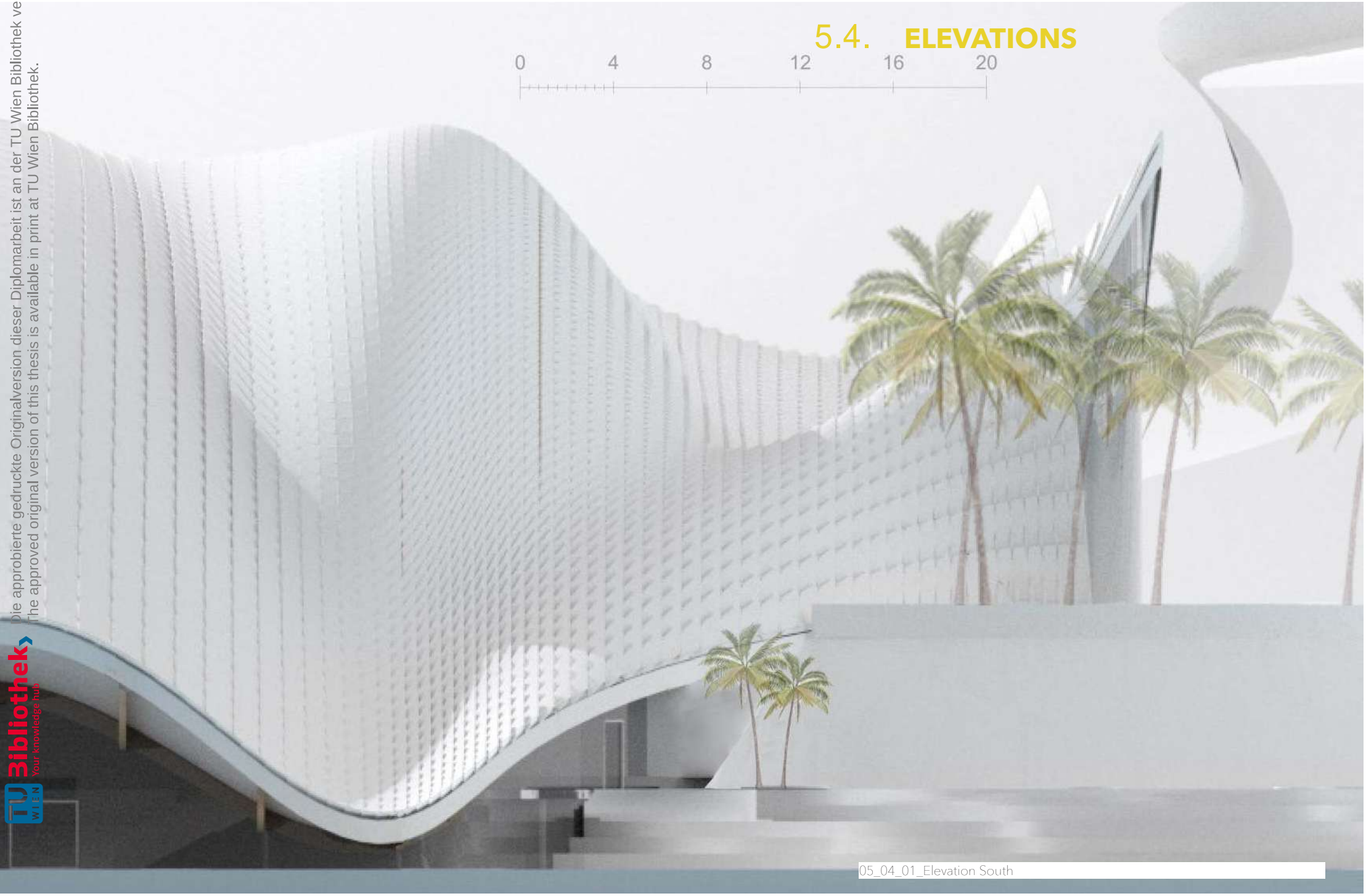
+ 29.80

1 Meeting
2 Temporary exhibition
3 Exhibition hall
4 Gastronomy
5 Terrace



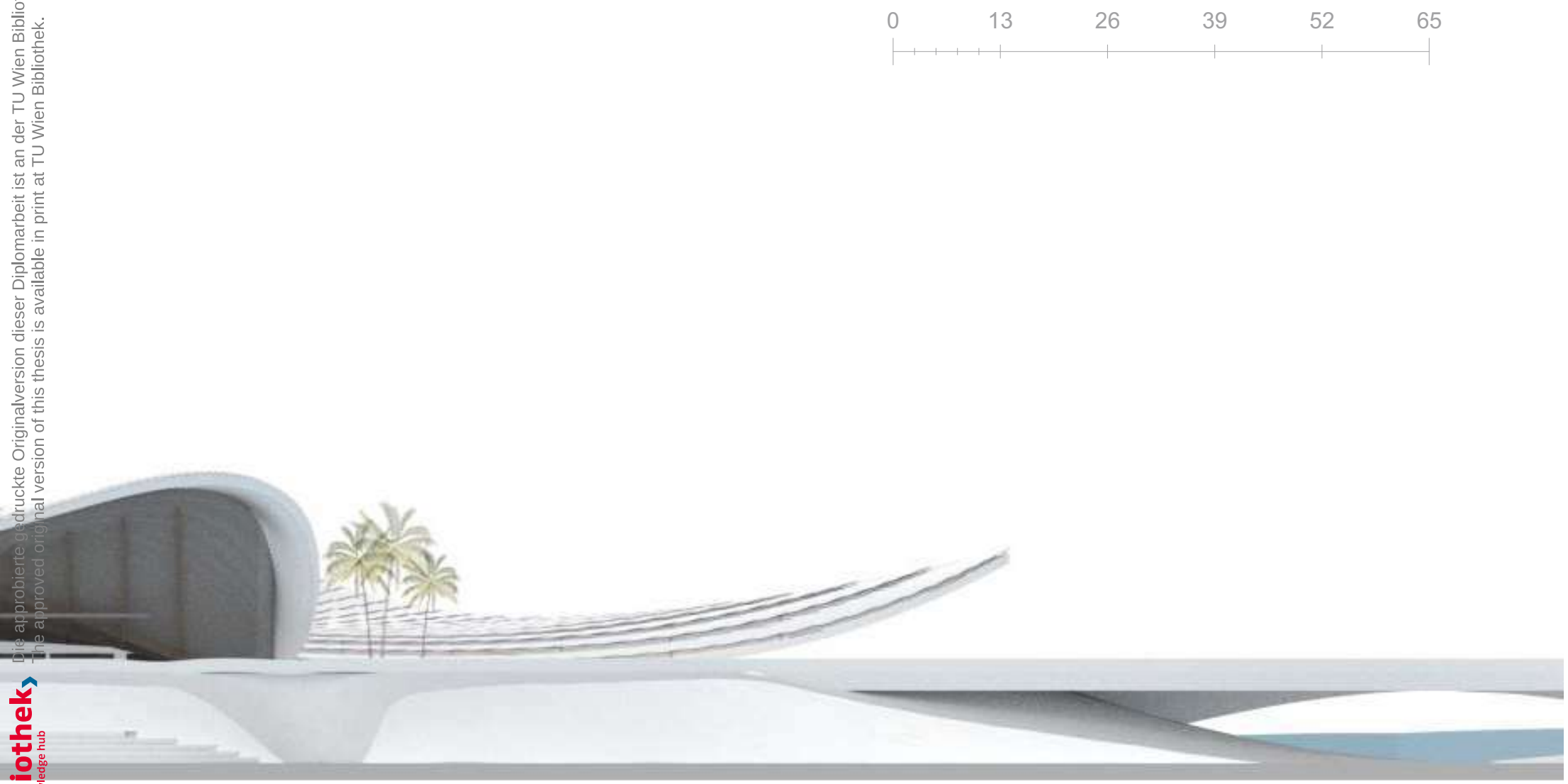
Elevation South

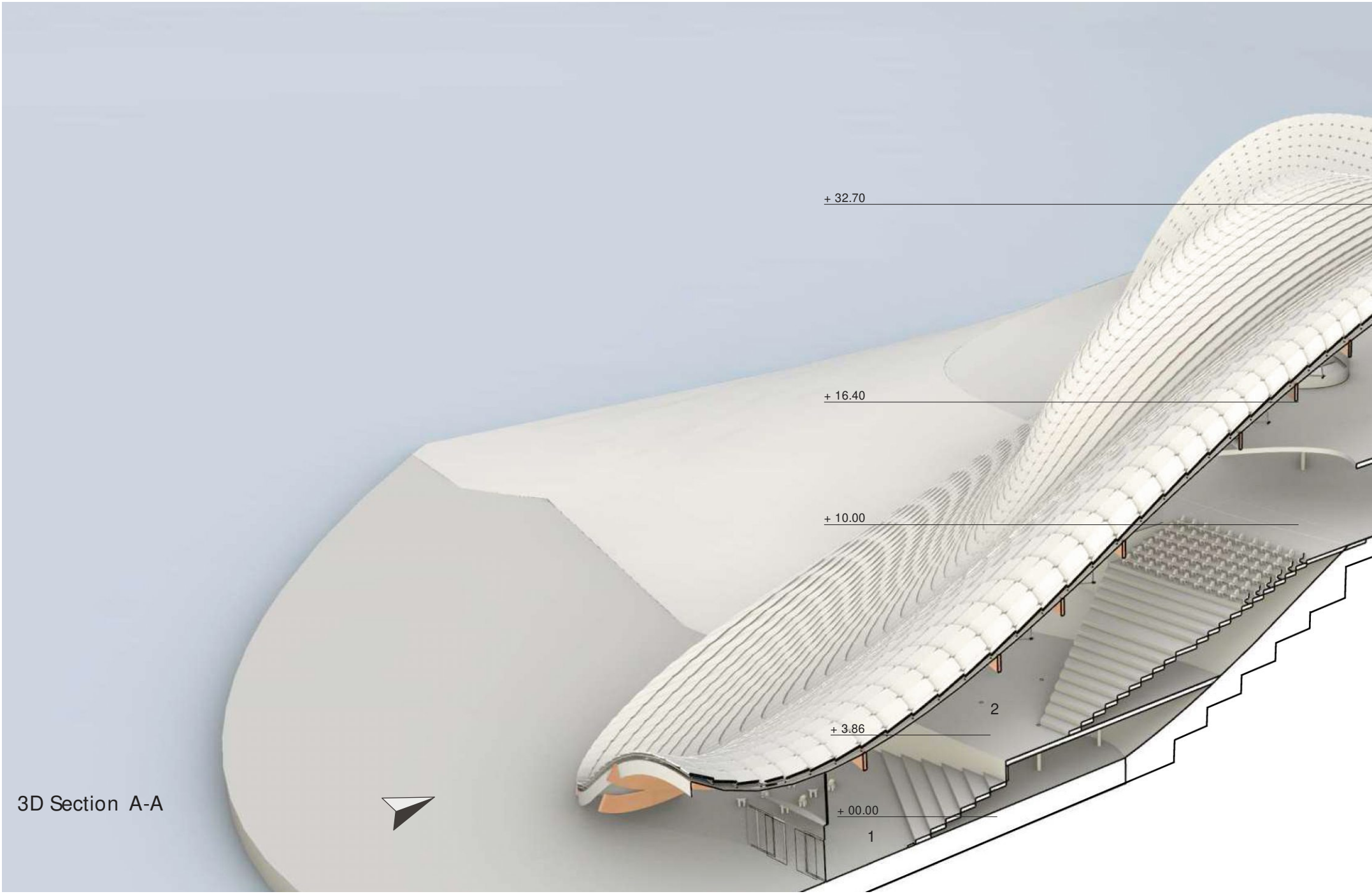
5.4. ELEVATIONS



05_04_01_Elevation South

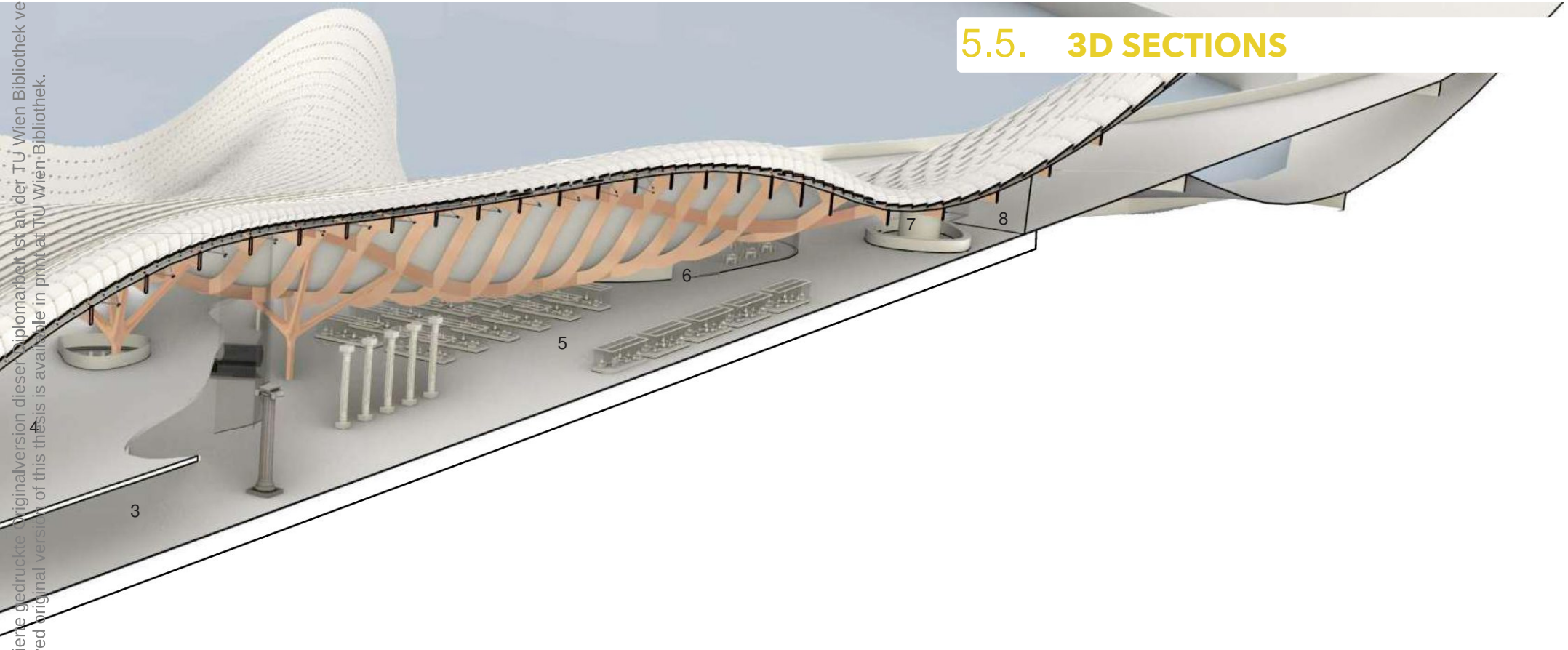
Elevation West





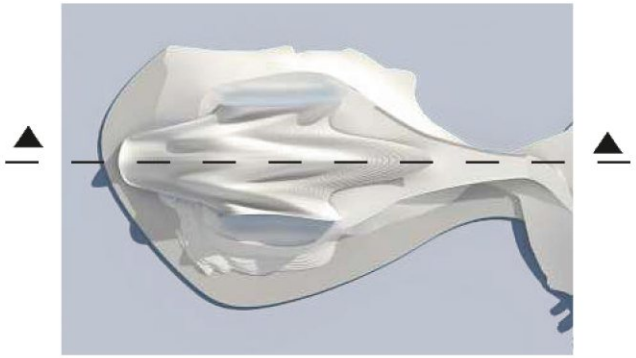
3D Section A-A

5.5. 3D SECTIONS

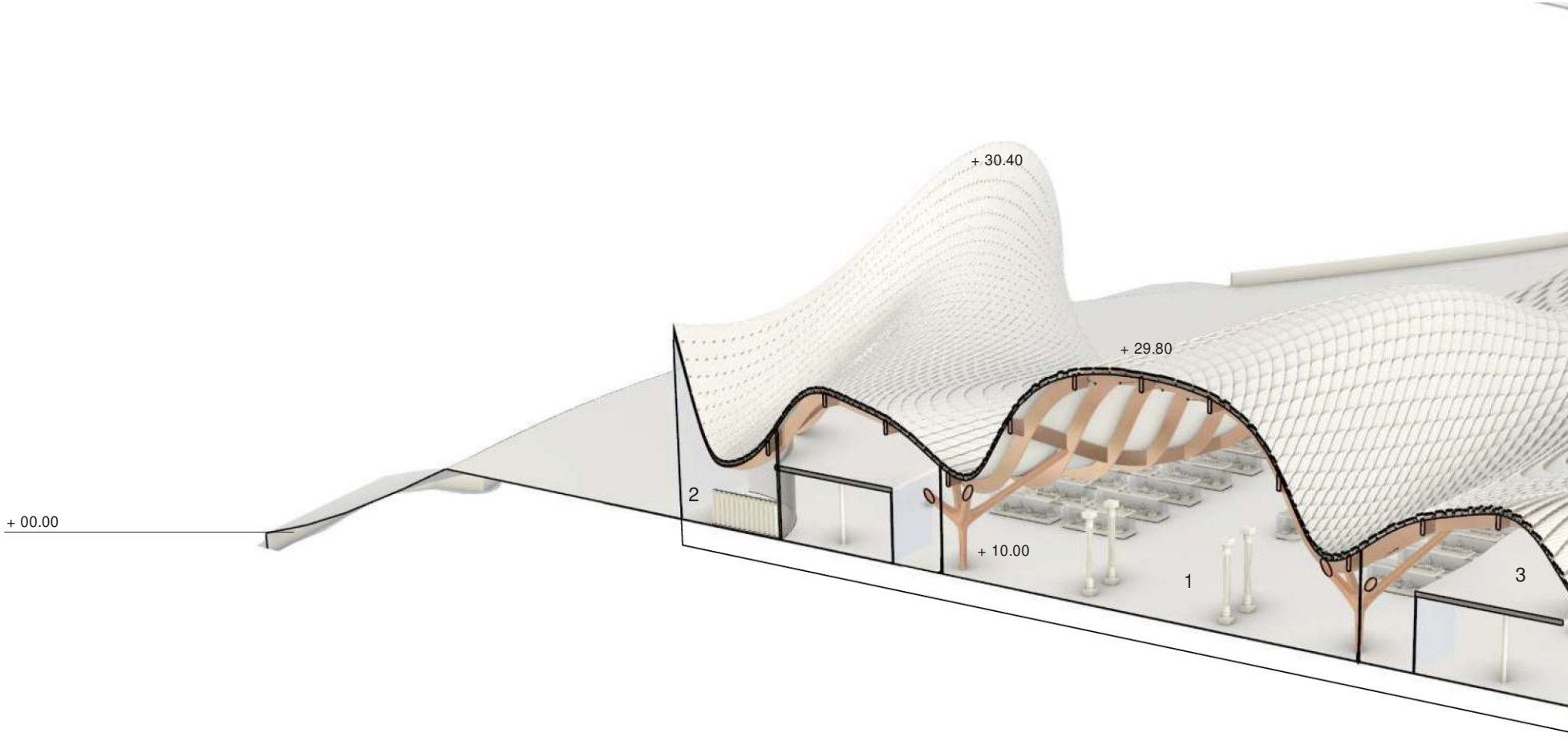


1 Foyer
2 Auditorium
3 Exhibition
4 Mezzanine
5 Exhibition Hall 2
6 Caffee
7 Info
8 Entrance

0 12,5 25 37,5 50



05_05_01_3D Section A-A

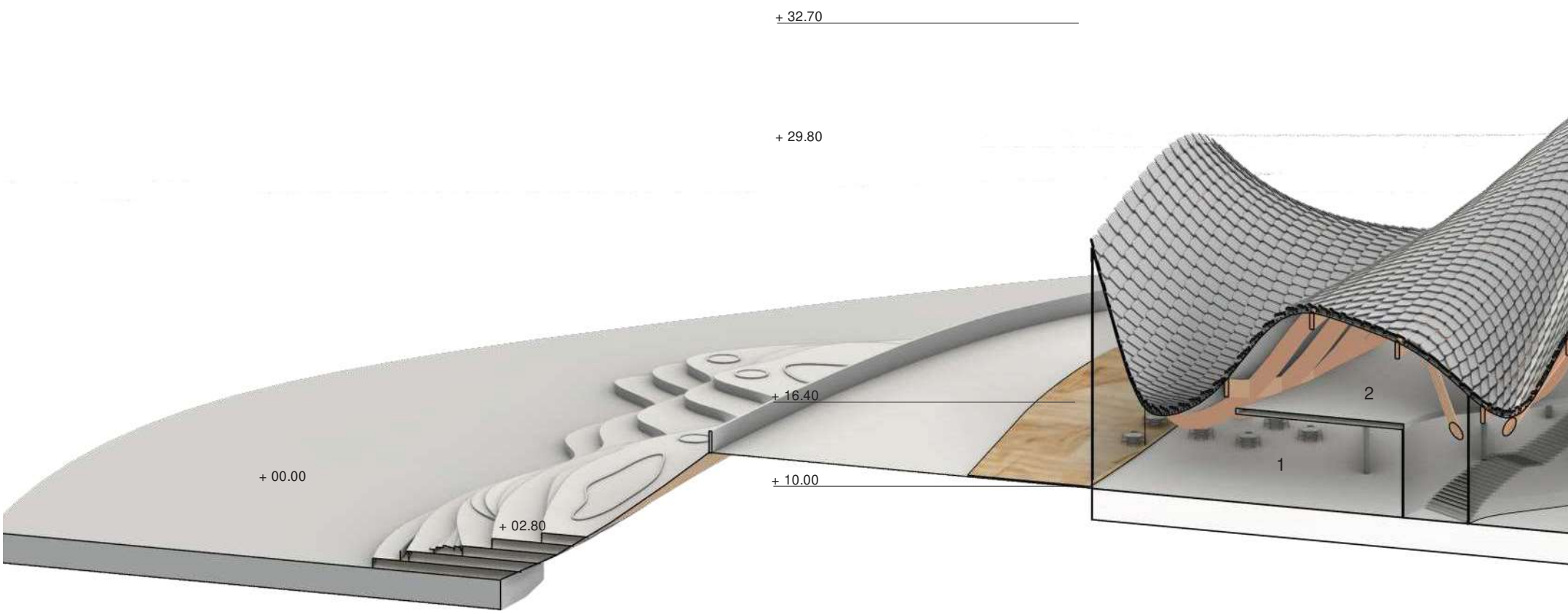


3D Section B-B

0 12,5 25 37,5 50

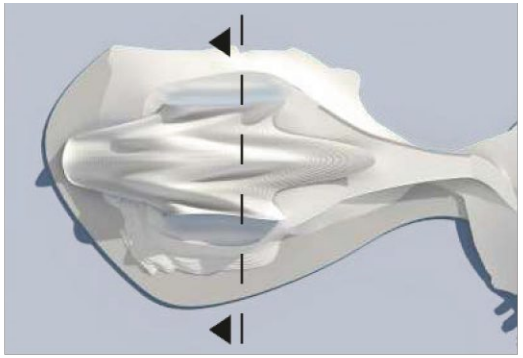
1 Exhibtion Hall
2 Metting room
3 Temporary Exhibition
4 Terrace
5 Public outdoor stairs
6 Broadwalk

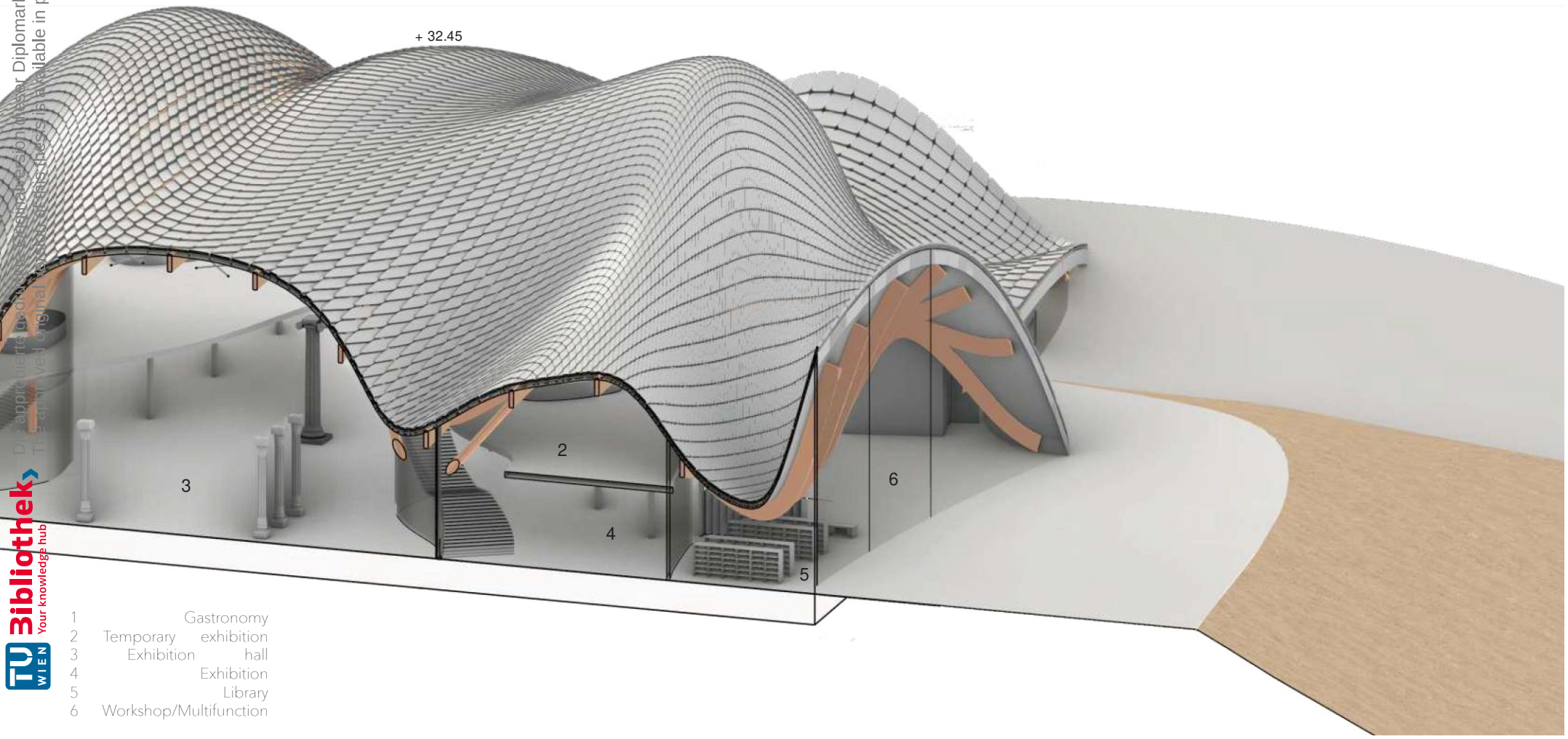
05_05_02_3D Section B-B



3D- Section C-C

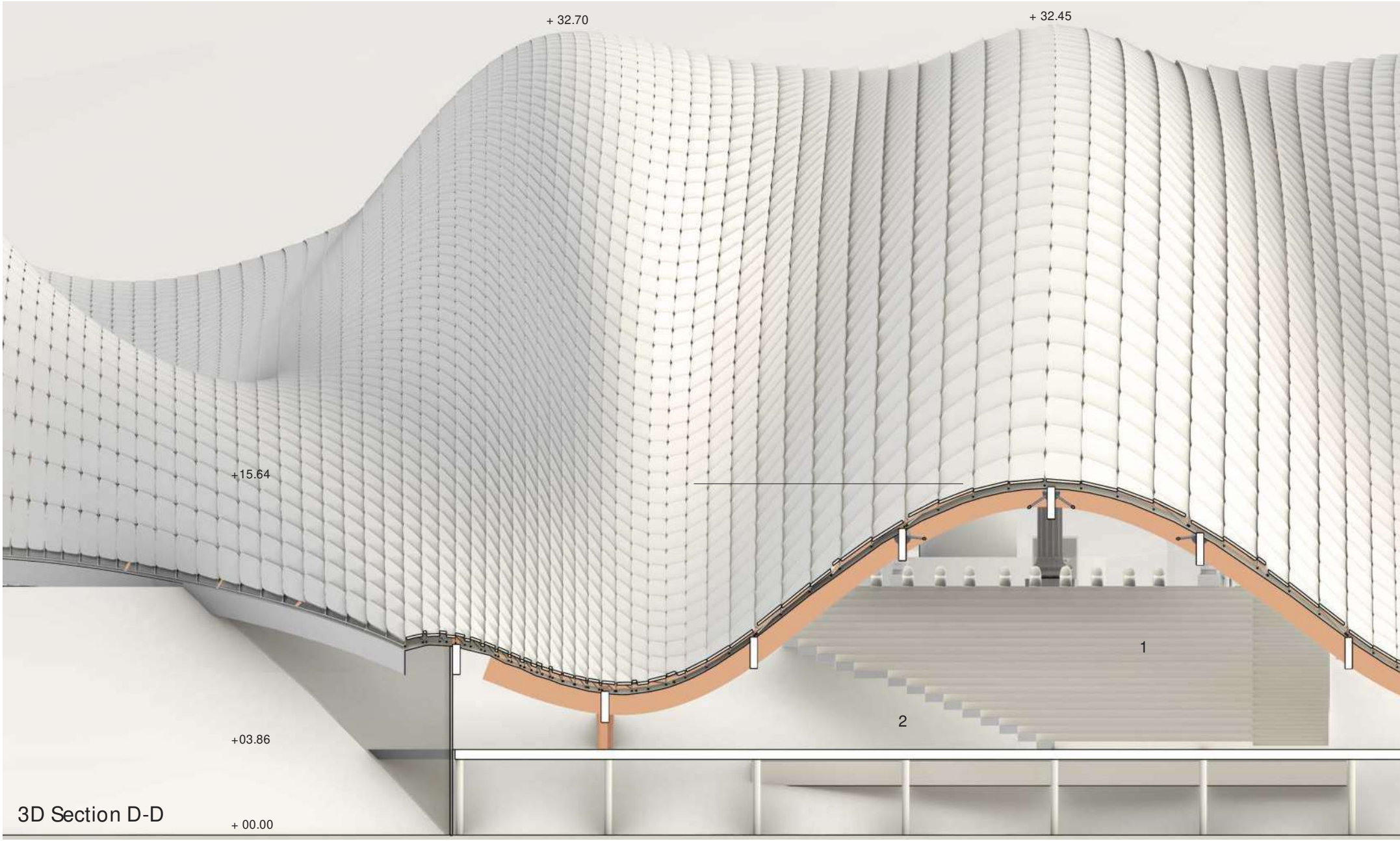
0 12,5 25 37,5 50





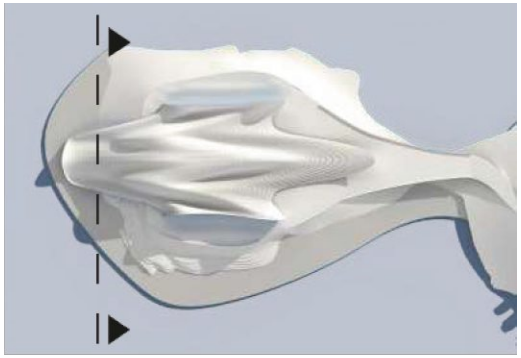
1 Gastronomy
2 Temporary exhibition
3 Exhibition hall
4 Exhibition
5 Library
6 Workshop/Multifunction

05_05_03_3D Section C-C



3D Section D-D

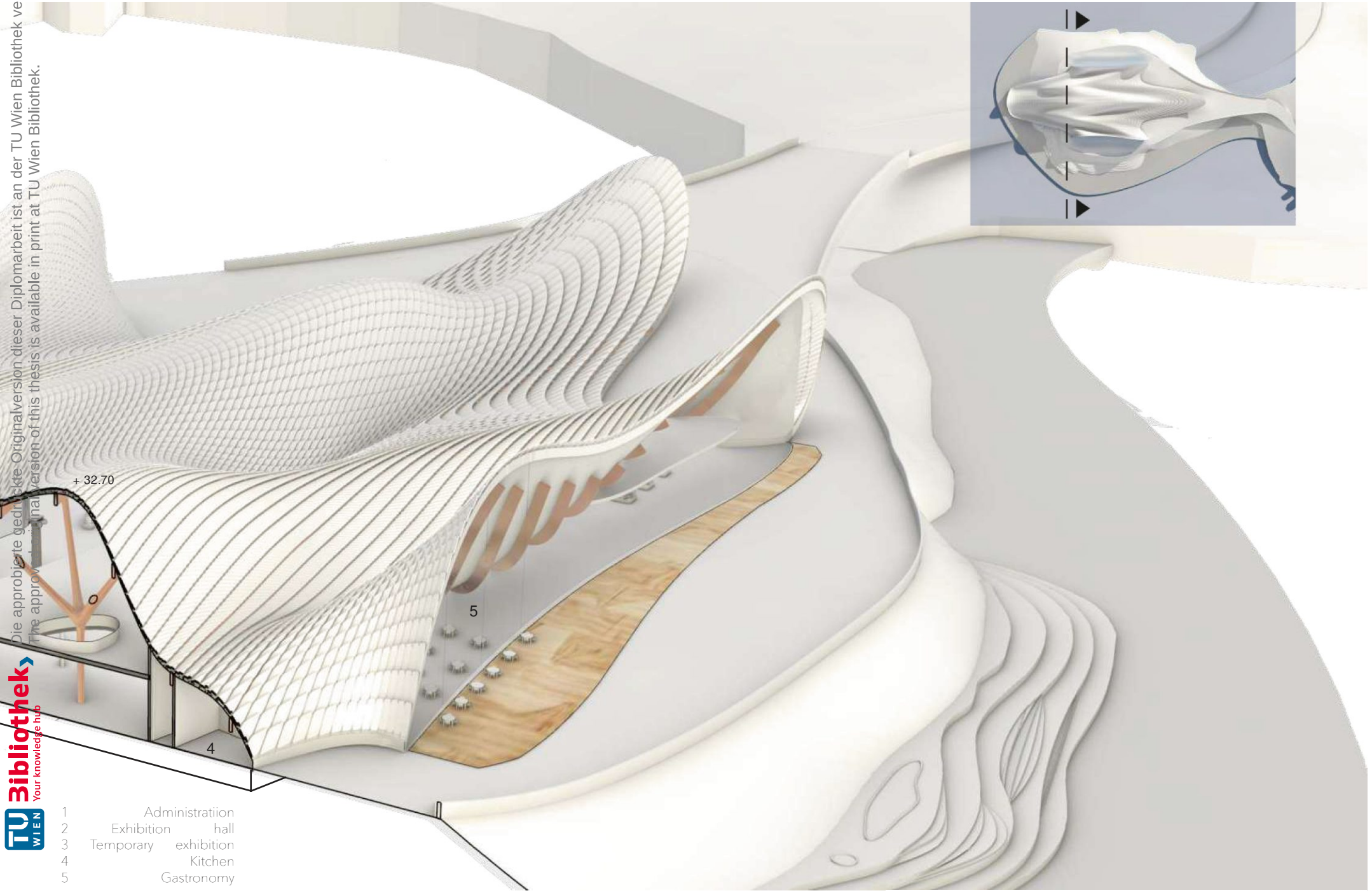
1 Auditorium
2 Stage
3 Outdoor public stairs



05_05_04_3D Section D-D

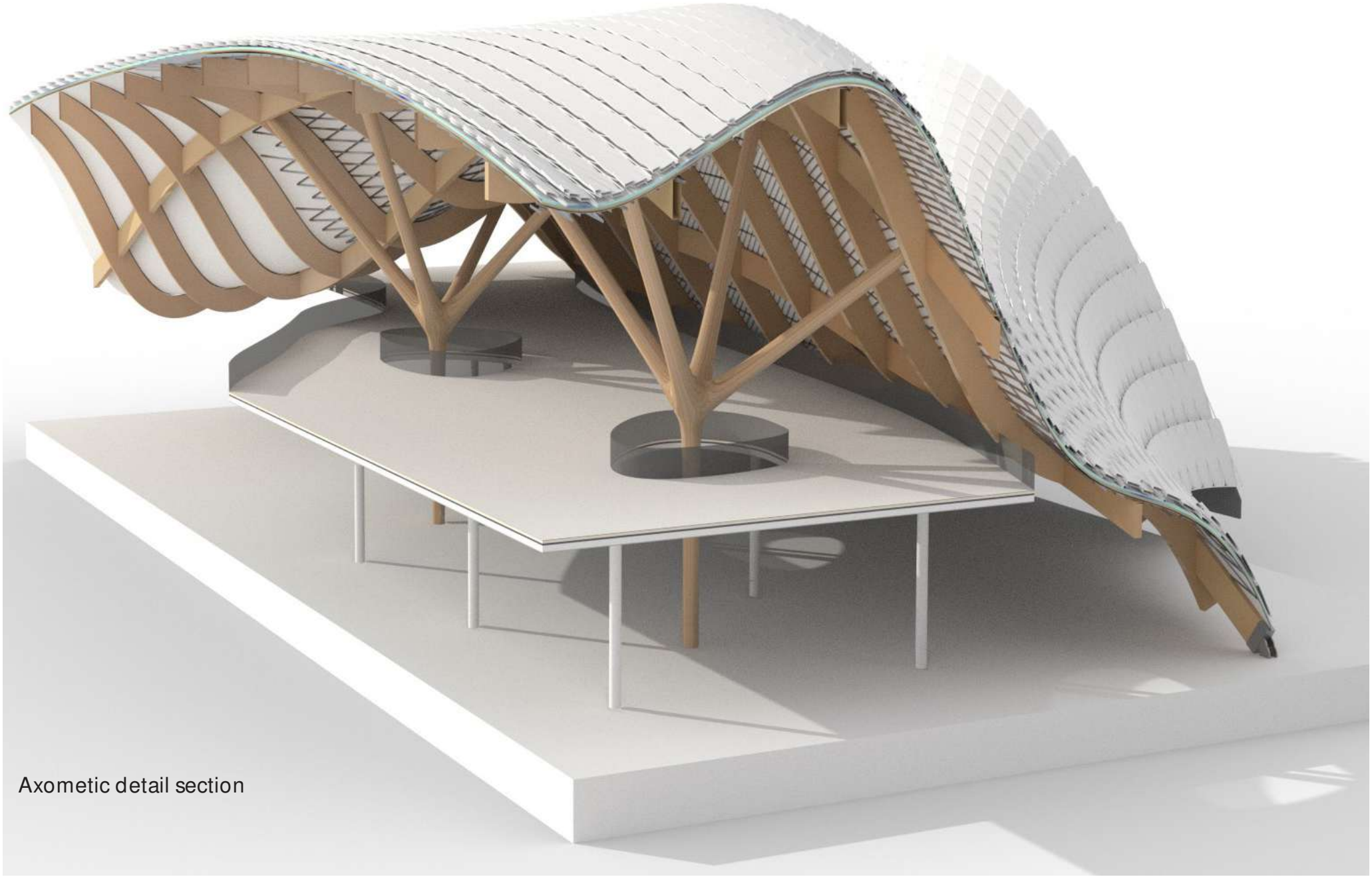
3D Section E-E

0 12,5 25 37,5 50



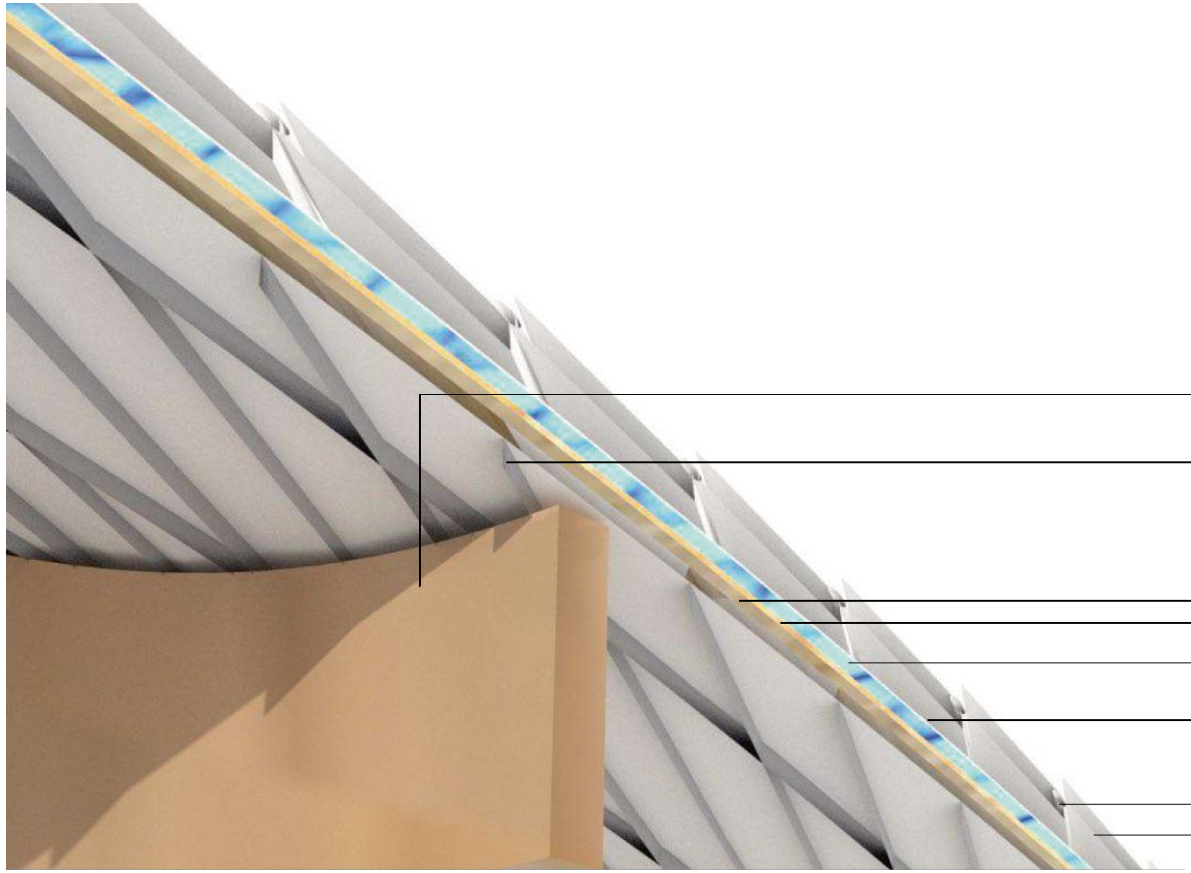
1 Administratiion
2 Exhibition hall
3 Temporary exhibition
4 Kitchen
5 Gastronomy

05_05_05_3D Section E-E



Axometic detail section

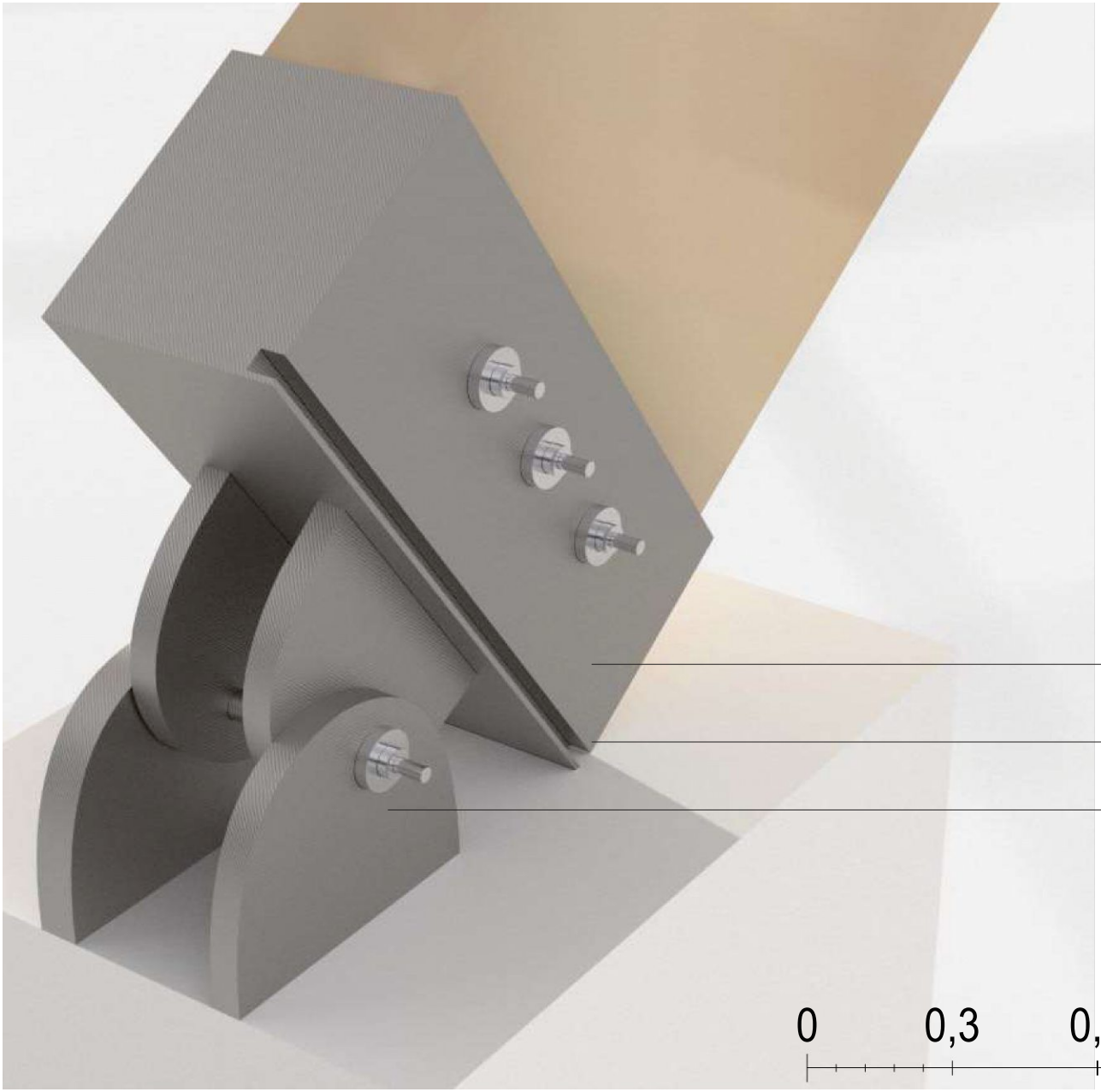
5.6. DETAILS



30*120 Structural Glulam Ribs
6 Steel framing for facade support
5 Thermal/acoustic isolation
2 Recylcled wood panels
10 Rigid insulation
1 Waterproof latex
10 Aluminium bars for archoring tiles
Self-cleaning glazed ceramic tiles

Detail A
1:20

0 0,5 1 1,5 2



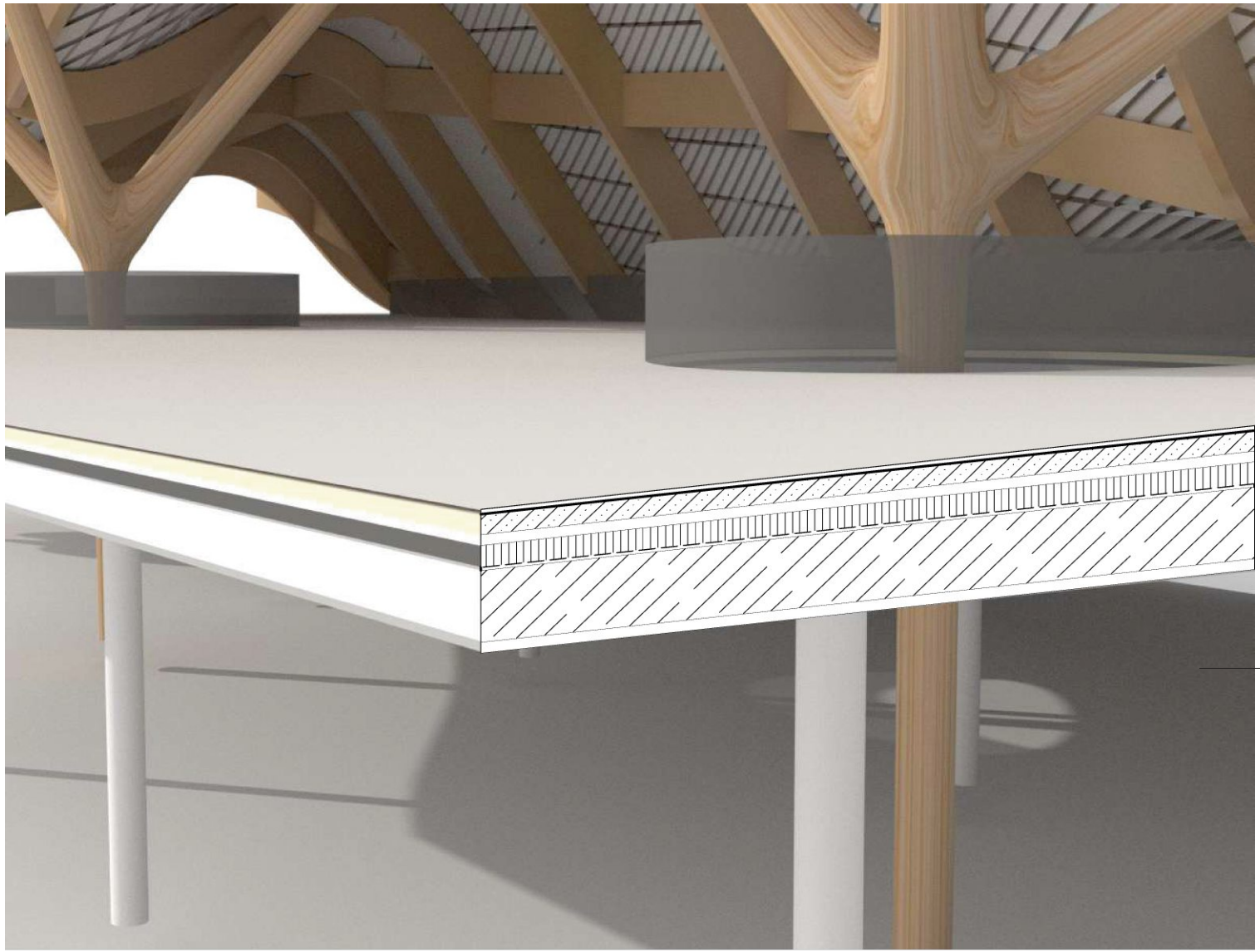
Steel shoe for anchoring arched glulam structural ribs.

Drainslot full width of shoe

Steel M24 bolts tension tie

0 0,3 0,5 0,8 1

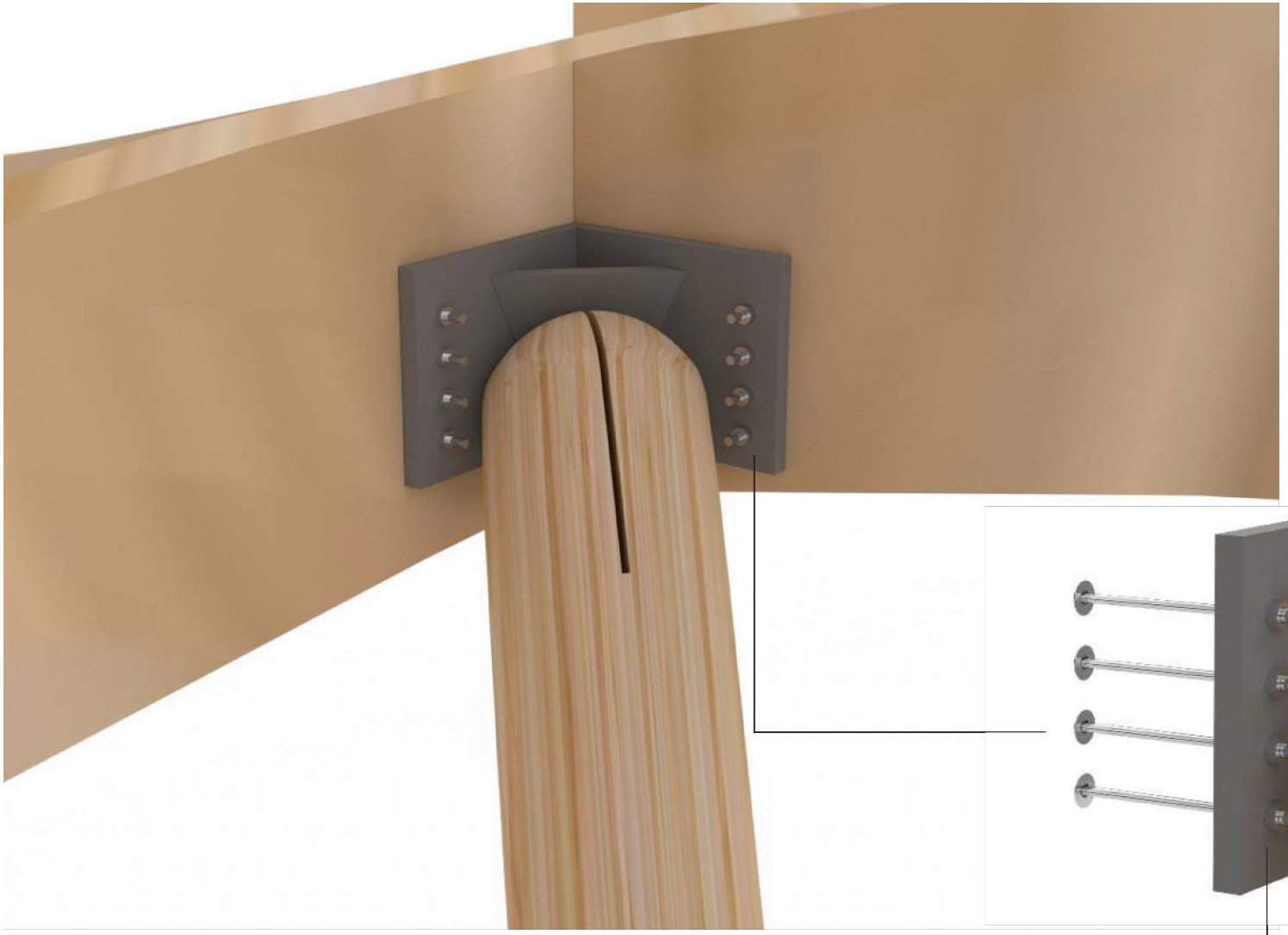
Detail B
1:20



1 Floor covering
Adhesive
7 Lightweight screed
Waterproofmembrane
6 Sound insulation layer
3 Vapour control layer
20 Reinforced concrete slab
3 Bottom finishing

Detail C
1:20

0 0,5 1 1,5 2

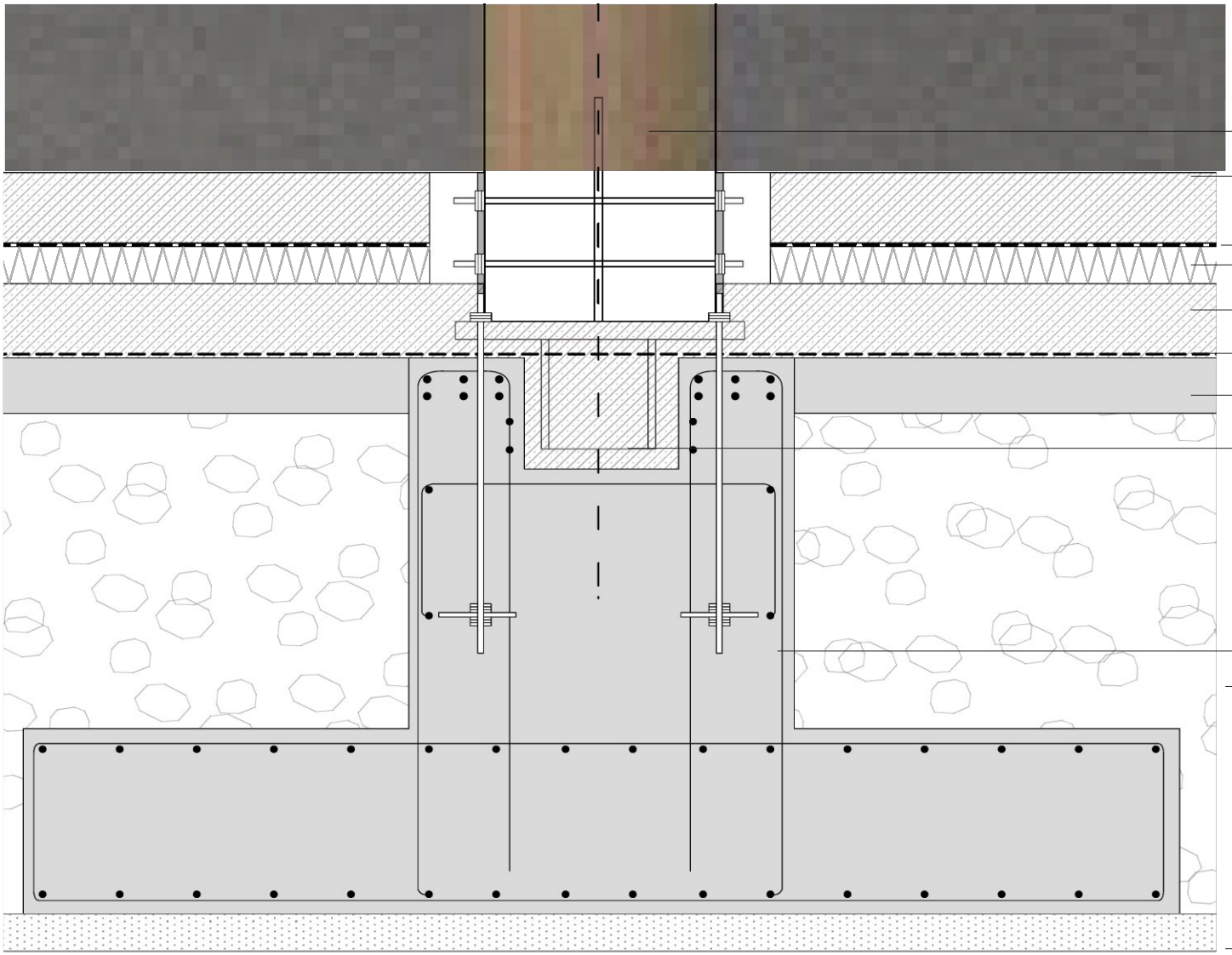


Joint element for anchoring ribs to arched tree column

8 Steel bolts M24
Steel plate through column (t=10)
Steel cap (t=10)

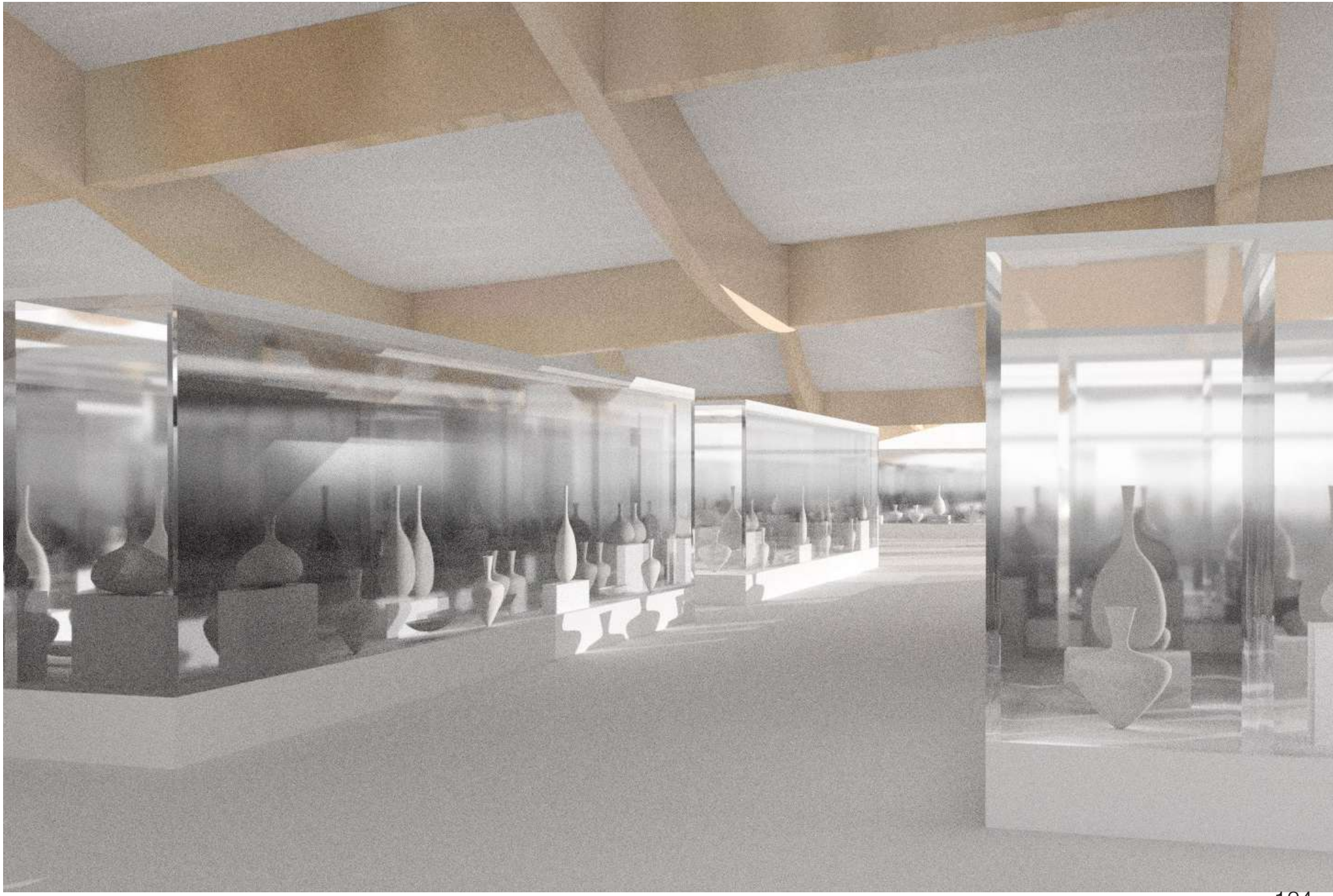
Detail D
1:20

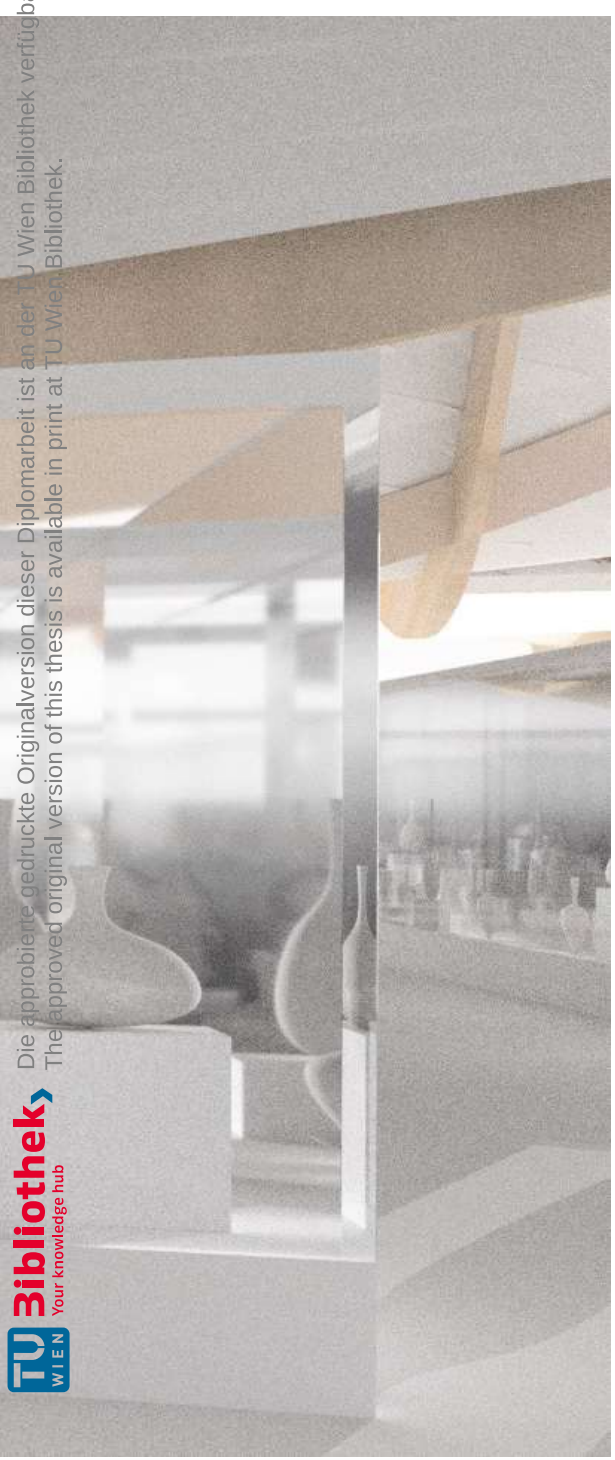
0 0,5 1 1,5 2



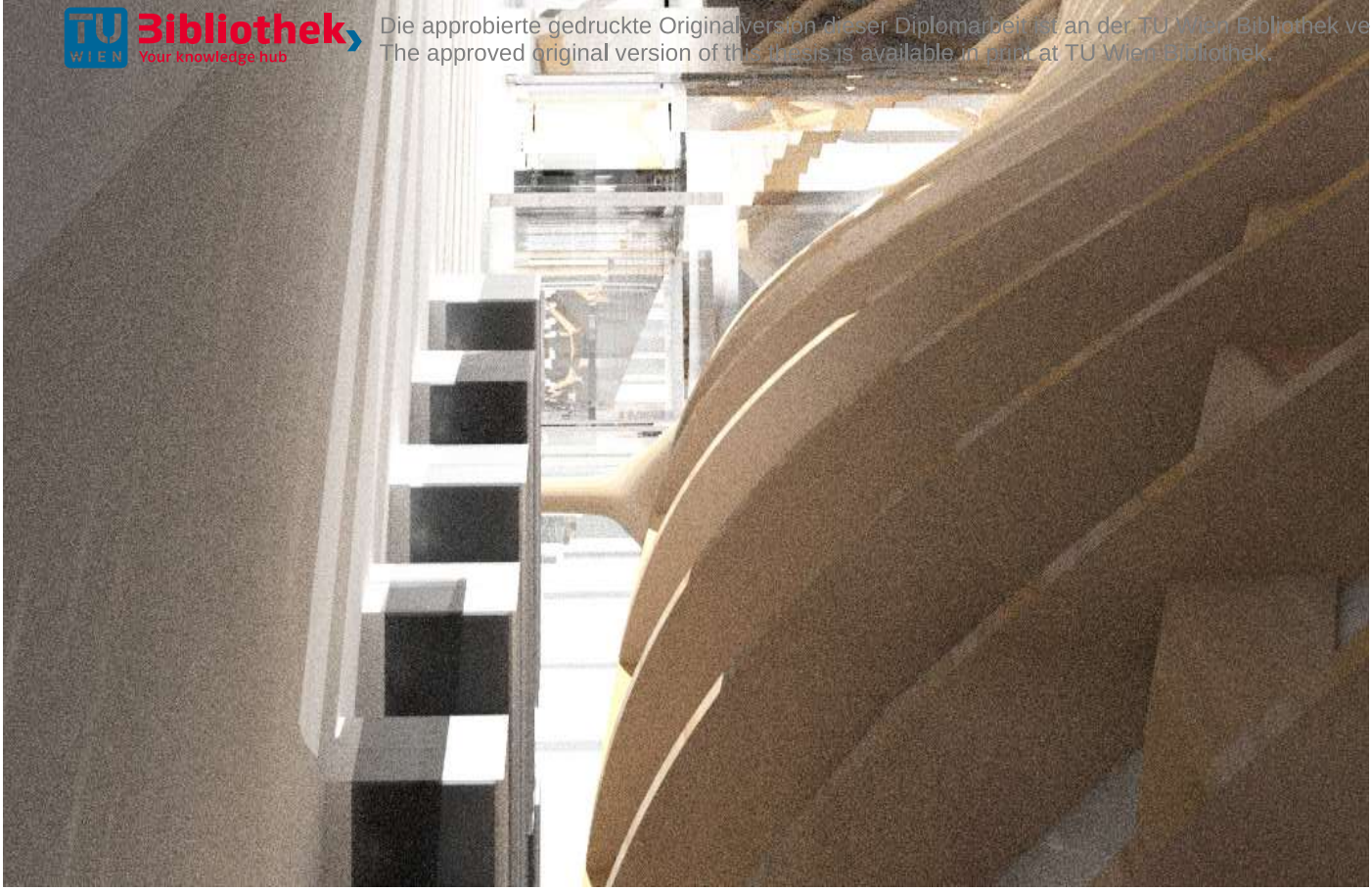
Detail E
1:20

0 0,5 1 1,5 2

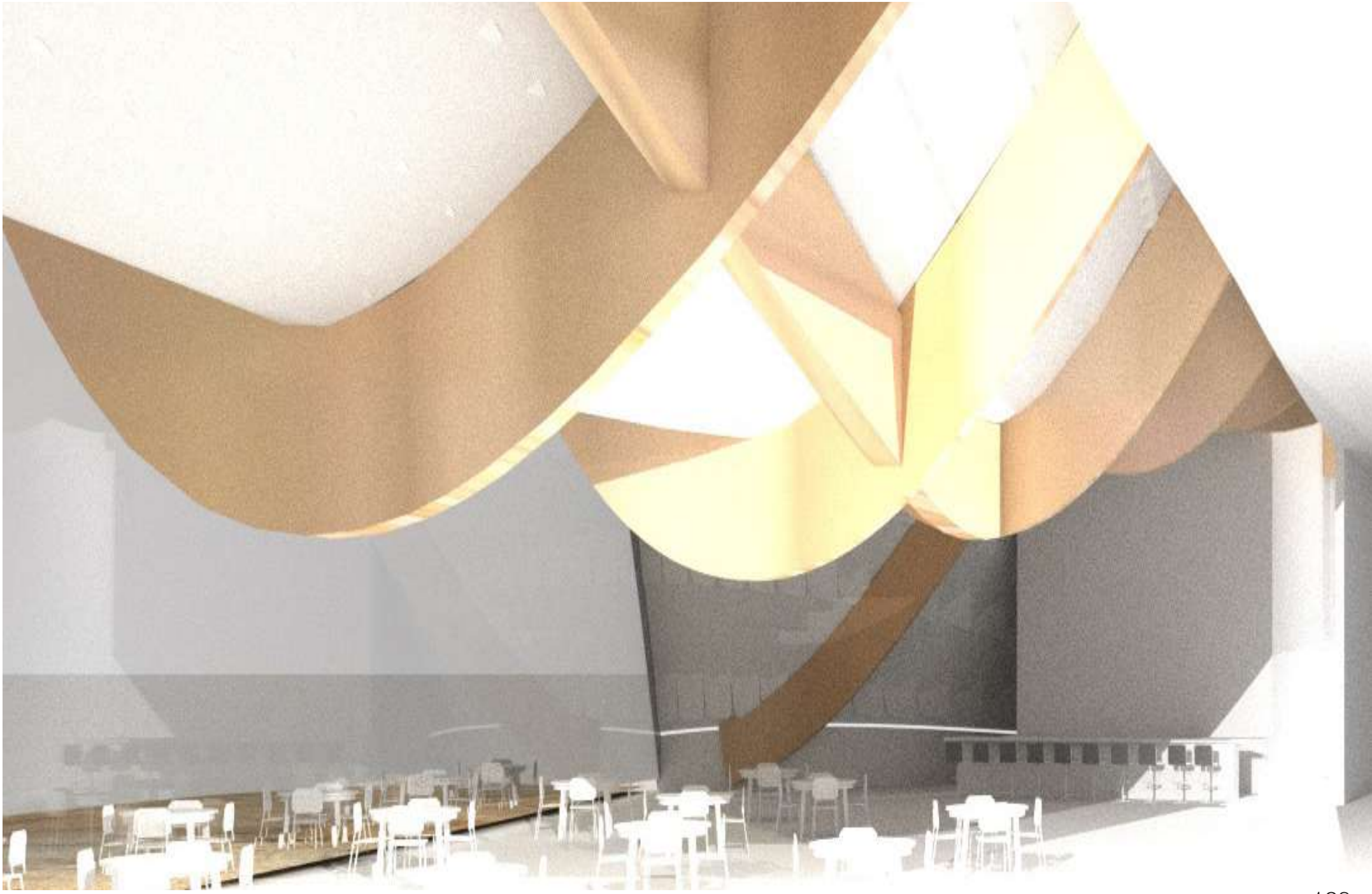


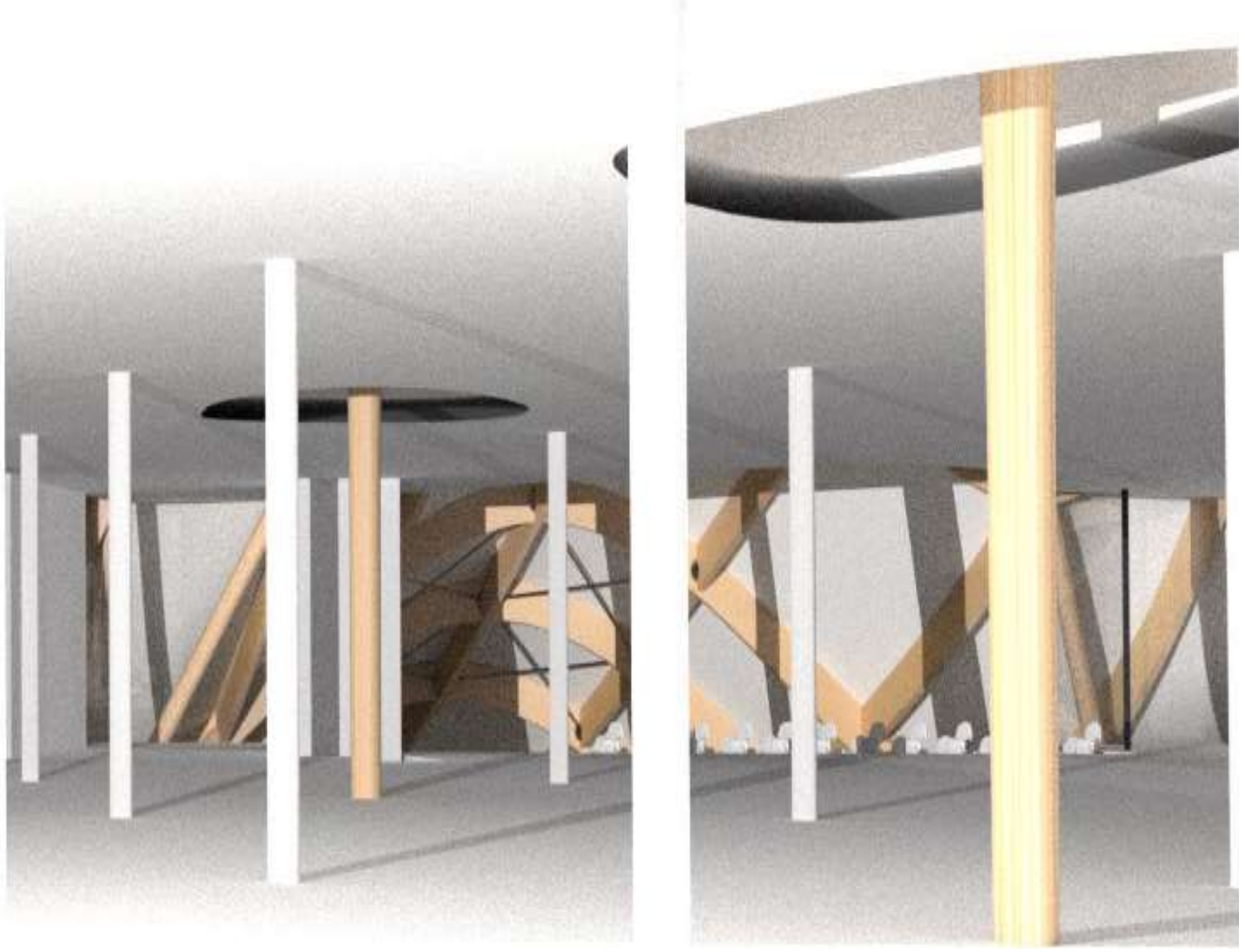


5.7. RENDERINGS

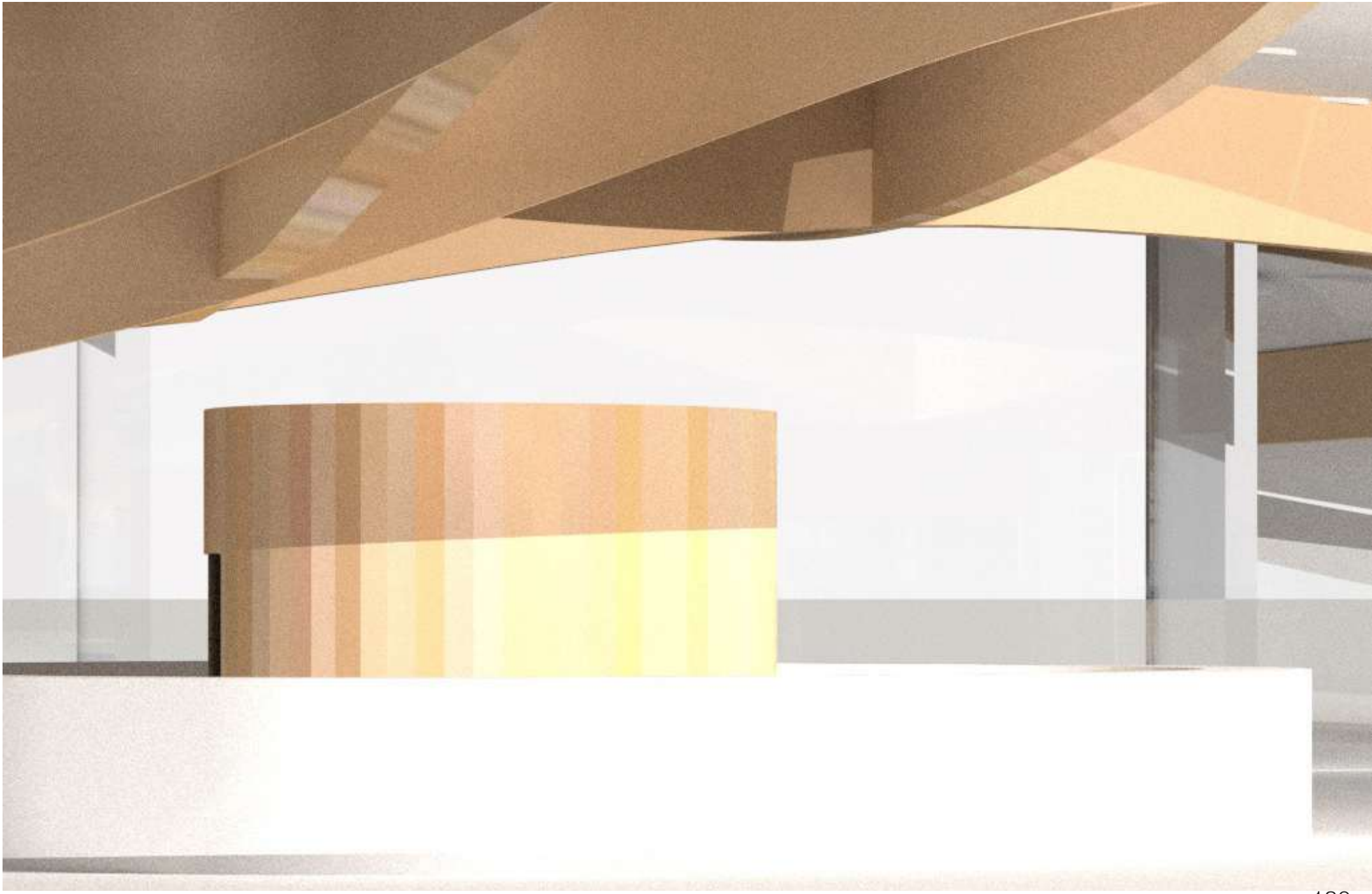


05_07_02_Entrance view of the exhibition main hall



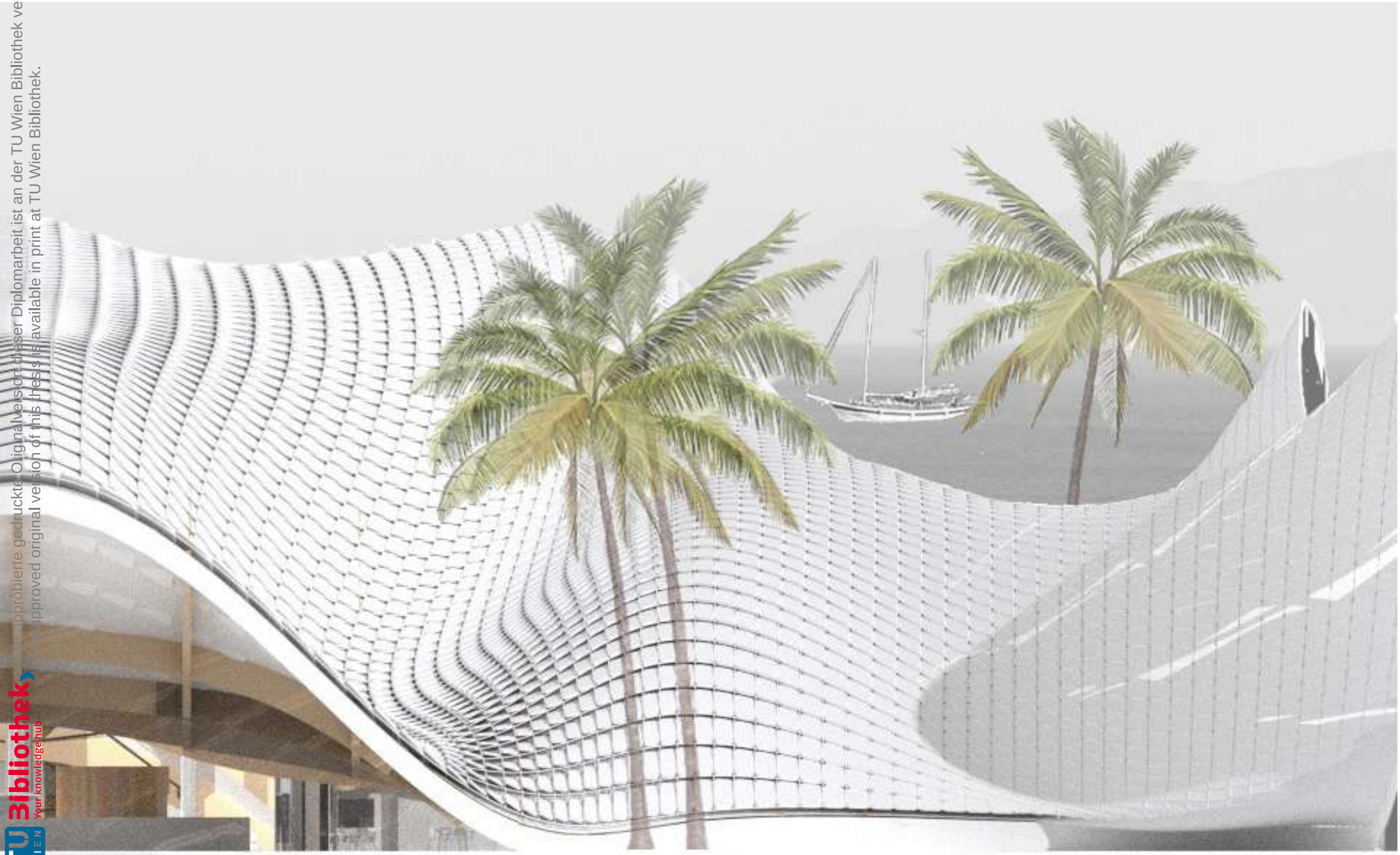


05_07_03_Gastronomy Section (left), Secondary exhibition hall (right)

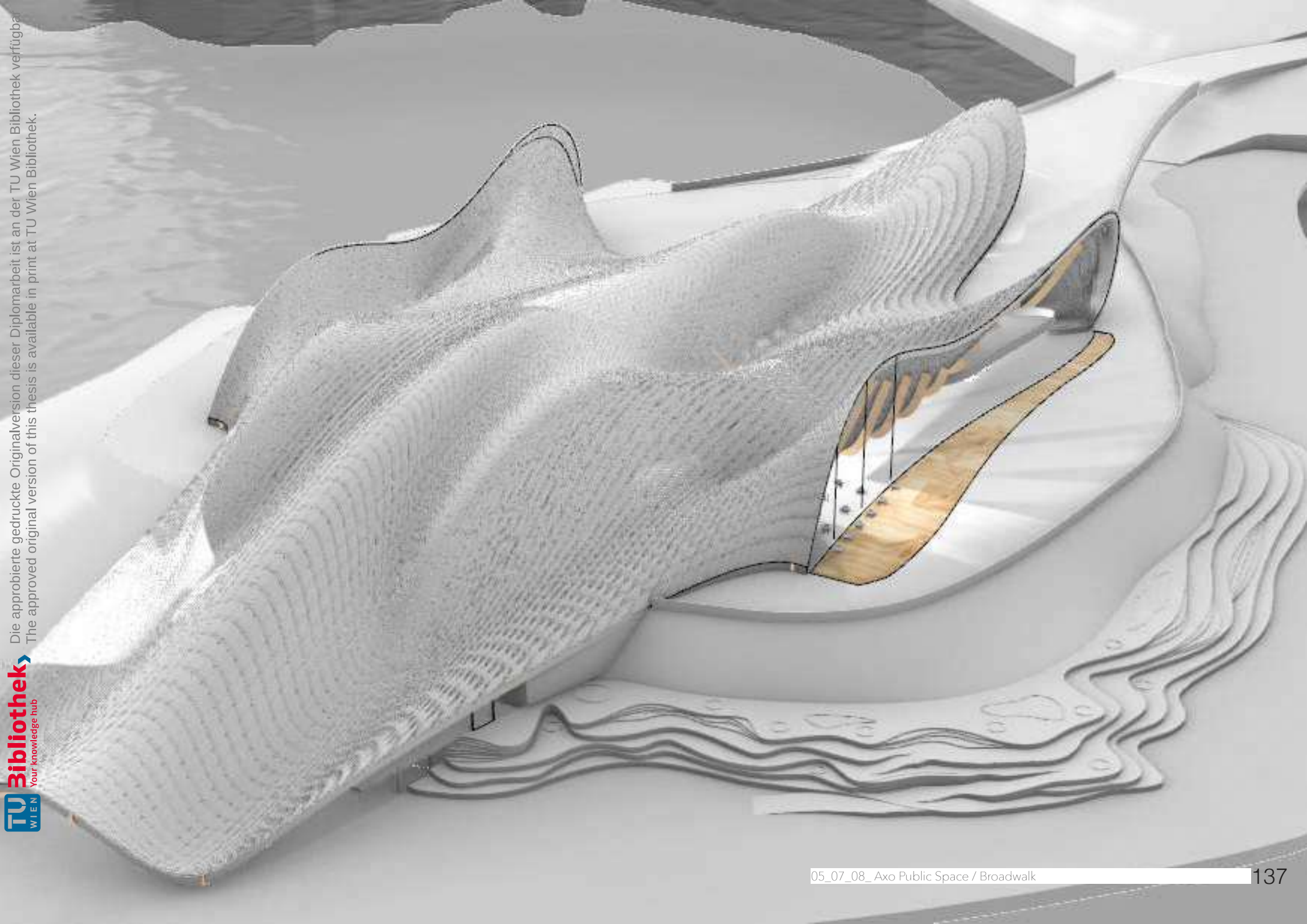


05_07_04_Information (left), Lounge and Retail shop (right)

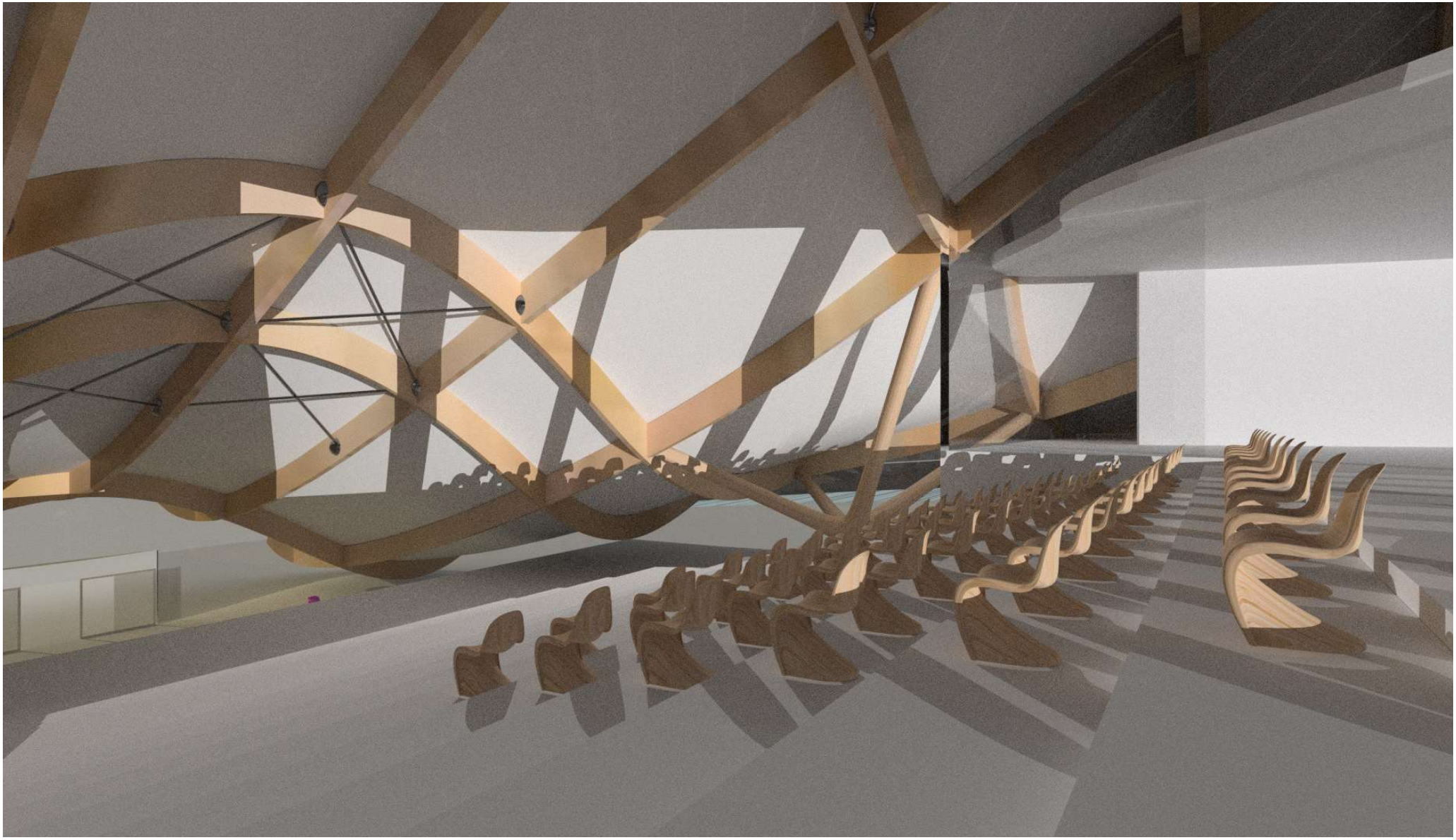
05_07_05_View from upper gallery

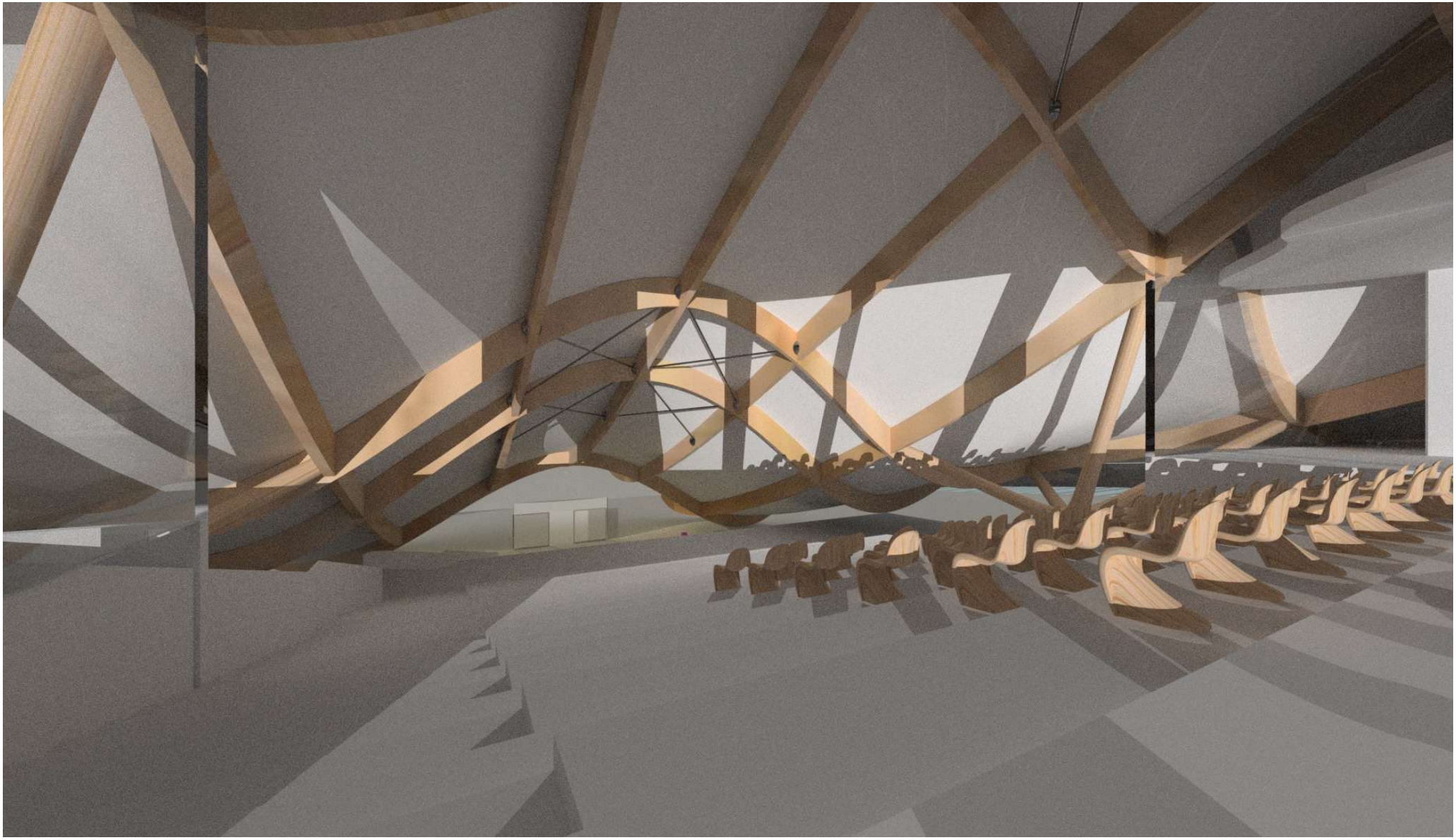


05_07_06_ Back View , approaching from the bridge

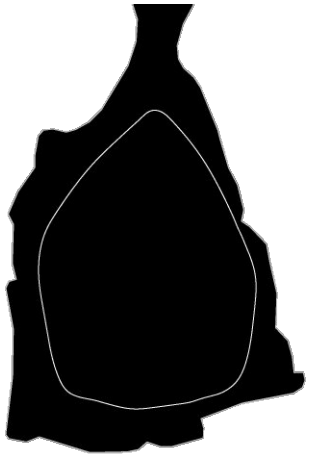


05_07_09_ View from the West

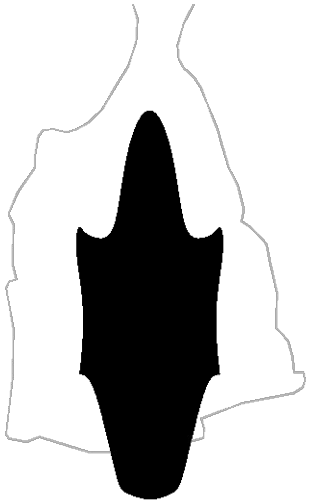




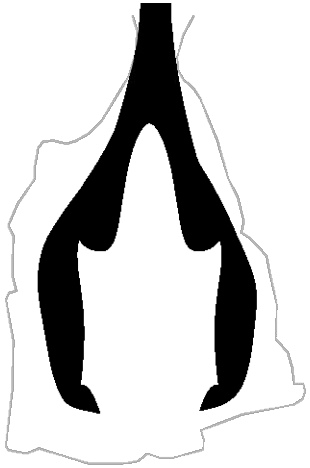
6. AREA CALCULATION



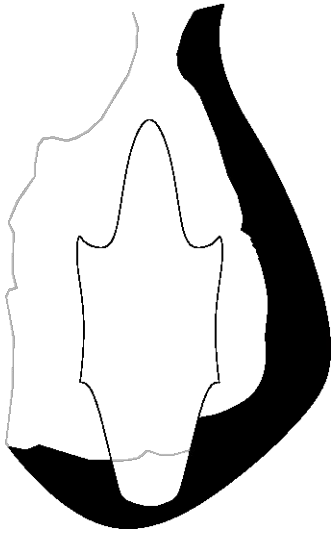
Plot
40.190 m²



Gross Floor Area
16.793 m²
%42

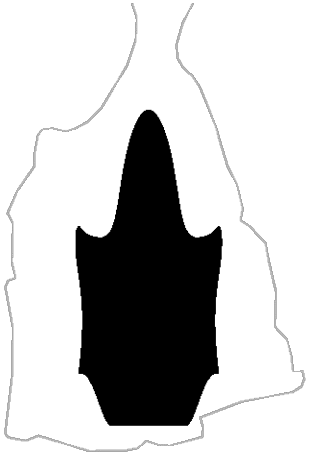


Open Space
12.496 m²
%31

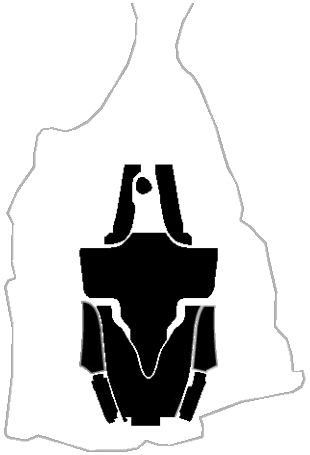


Open Space Sea Level
15.395 m²

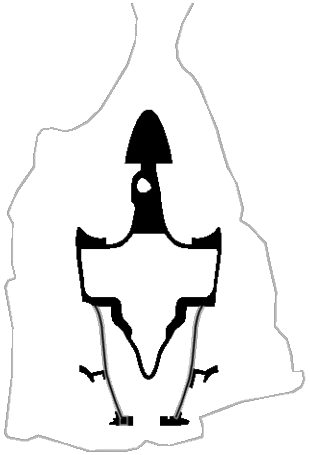
Level 1



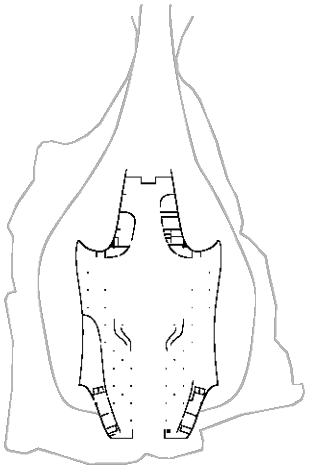
Gross Floor Area
14.372 m²



Usable Area
10.530 m²
% 73



Circculation Area
3.561 m²
%25



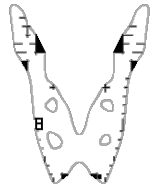
Construction Area
281 m²
%2

Level 2

Gross Floor Area
4.381 m²

Usable Area
2435 m²
%56

Circculation Area
1690 m²
%39



Construction Area
256 m²
%1

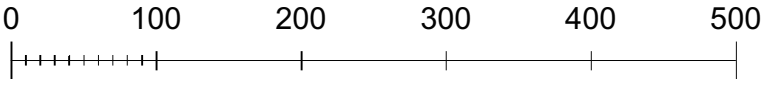
Level 0

Gross Floor Area
2360 m²

Usable Area
1127 m²
%49

Circculation Area
1061 m²
%45

Construction Area
172 m²
%1



06_01_Area Calculation

7. CONCLUSION

The main criteria of my work was to provide a shelter for the ruins of the ancient city of Halicarnassus. The new design provides needed protection for the ruins and offers large amount of exhibition halls for the artefacts.

Another aspect of my work was to create dynamic design, and a space to impress the visitors and let them experience the architecture and design. The museum will host remanings of the history as well as temporary exhibitions. It is going to be a place where today and past meets. So it intends to be a cultural bridge between them.

In addition to these aspects, my work focusses on to propose an eye-catching, organic appearance. The roof structure mimics rugged topography of Bodrum and complements the history of the town, which is used to be small fisherman village. Nowadays it had become one of the most visited tourist attraction in Turkey. The unique design will complement the town and will surely gets to be one of the most visited attraction for the town.

Furthermore, the new design provides Bodrum with multifunctional spaces in terms of urban planning and architecture. The museum includes workshop spaces and an event hall for the events. Additionally, the design provides open public spaces on the beach along with a broadwalk which meets the city's need. Also it provides functional areas for the social, cultural needs of the city.

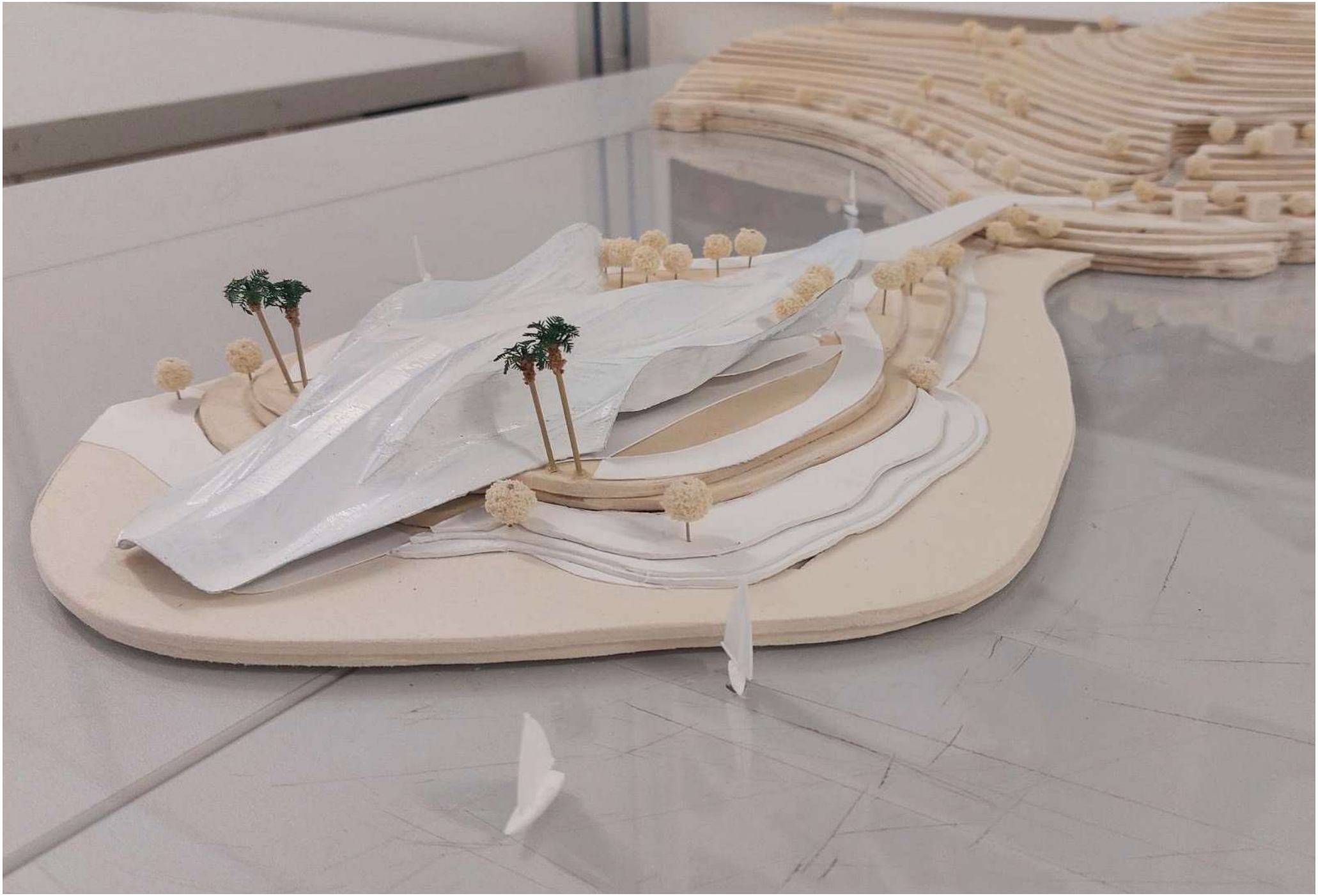
8. PHYSICAL MODEL

08_01_ Model photo South-West View

08_02_ Model photo Top View

08_03_ Model photo South-West Axonometry

08_04_ Model photo Front View



08_05_ Model photo South East

9. INDEX

9.1. LIST OF REFERENCES

1 JENKINS, IAN. “THE MAUSOLEA OF HALICARNASSUS.” Bulletin of the Institute of Classical Studies. Supplement, no. 104, 2010, pp. 121-122 . JSTOR, http://www.jstor.org/stable/44214902. Accessed 13 Mar. 2023.

2 https://themediterraneanmag.com/blogs/magazine/the-story-of-an-exile-in-the-mediterranean-a-punishment-or-a-reward

3 Müller. Architekten in Der Welt Der Antike. 1. Aufl. ed. Zürich [u.a.]: Verl. Für Architektur Artemis, 1989. Print Page:57

4 Jähnig, and Sonnabend. Die Sieben Weltwunder. Darmstadt: Primus Verl., 2010. Print. Wissen Im Quadrat.Page:9

5 Golvin. Metropolen Der Antike. 2. Aufl. ed. Stuttgart: Theiss, 2006. Print. Page:78

6 https://en.wikipedia.org/wiki/Mausolus Accessed 13 Mar. 2023

7 htthttps://www.researchgate.net/publication/362412985_Antik_Karya‘nin_Baskenti_Halikarnassos‘da_Kent_Planlama_Anlayisi_Town_Planning_Approach_in_the_Capital_City_Of_Ancient_Caria_Halikarnassos/citations
Page 43

8 ps://www.researchgate.net/publication/362412985_Antik_Karya‘nin_Baskenti_Halikarnassos‘da_Kent_Planlama_Anlayisi_Town_Planning_Approach_in_the_Capital_City_Of_Ancient_Caria_Halikarnassos/citations
Page 44

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10 https://www.researchgate.net/publication/364737879_%27Creating_a_royal_landscape_Hekatomnid_use_of_urban_and_rural_sacred_sites_in_fourth-century_Karia%27_in_S_Caneva_ed_The_Materiality_of_Hellenistic_Ruler_Cults_Kernos_Supplement_34_Liege_Presses_Univers

11 https://bodrum.bel.tr/en/page.php?id=24/myndos_kapisi Accessed 14 Mar. 2023

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02_ 09.08.2022, Mausoleum site (Credit by me, edited on PhotoshopCC)

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02_01_02_01 Close up of Mausollos, Marble Statue from Mausoleum at the British Museum
https://www.britishmuseum.org/collection/object/G_1857-1220-232 (edited on PhotoshopCC)

02_01_01_02 Myndos Gate. The remains of the city walls around the city; 4th c. BC; https://tr.wikipedia.org/wiki/Mindos_Kapısı#/media/Dosya:Myndos_Gate.jpg

02_01_01_03 Location of the Caria and the city Halicarnassos in Turkey (Vectorworks 2022)

02_01_03_01 Grid system of the ancient Halicarnassus, Hoepfner. Halikarnassos Und Das Maussolleion : Die Modernste Stadtanlage Und Der Als Weltwunder Gefeierte Grabtempel Des Karischen Königs Maussollos. Darmstadt [u.a.]: Von Zabern, 2013. Print Page:50

02_01_03_02 Plan of Halicarnassus, drawn by G. E. Bean and J. M. Cook http://www.jstor.org/stable/30104444. Accessed 13 Mar. 2023.

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02_01_04_01 09.08.2022, Plan by Charles Newton on the site of Maossoleion (Photographed by me, edited on Photoshop CC)

02_01_04_02 09.08.2022, Plan on the site of Mausoleum (Photographed, edited on Photoshop CC)

02_02_01_03 Map of the city Mugla https://d-maps.com/carte.php?num_car=274847&lang=en Accessed 15 March 2023 (Photoshop CC)
02_02_01_04 Map of Bodrum with main road connections (Vectorworks 2022)
02_02_02_01 Mount Oyuklu in Bodrum
https://tr.wikiloc.com/gezi-yuruyus-rotalari/oyuklu-pedesa-21672538 Accessed 18 March 2023
02_02_01_02 Topography of Bodrum (Adobe Illustrator, Vectorworks 2022)
02_02_03_02 Map of Vegetation (Vectorworks 2022)

04_01_02_01 First variation (Rhinoceros 7)
04_01_02_02 Different versions of the second variation(Rhinoceros 7)
04_01_02_03 Third Variation and its evolution (Rhinoceros 7)
04_01_02_04 Final Proposal for the formfinding (Rhinoceros 7, Photoshop CC)
04_01_02_05 Side view of the curve allignments that initially created the outer shell (Rhinoceros 7)
04_01_02_06 Side view of the final curve allignment that finalized the outer shell (Rhinoceros 7)
04_01_02_07 Rays in motion,Inspiration of the initial idea
http://www.pulauhantu.sg/eagle-rays-in-singapore-seas/
04_01_02_08 Diagram for the basic formation (Rhinoceros 7, Photoshop CC)

04_02_01_01 Axonometry of the straight columns (Rhinoceros 7)
04_02_02_01 Axonometry of the diagonal columns (Rhinoceros 7)
04_02_03_01 Axonometry of the tree-like shaped columns (Rhinoceros 7)

04_03_01 Grasshopper script which was used to create tree like shaped SubD (Rhinoceros 7, Grasshopper)
04_03_02 Grasshopper script which was used to create panelling and the facade support system (Rhinoceros 7,Grasshopper)
04_03_03 Screenshot of the PruscaSlider which is 3D print software .The structure gets sliced to get printed.Additional supporting print materials were applied during prinitng process (PruscaSlicer)
04_03_04 First trial of 3d Printing Scale 1:1500
04_04_01 Diagram /Shadow analysis based on the date 21.03.2023 (Rhinoceros 7, Grasshopper Ladybug)
04_04_02 Diagram /Wind analysis based on the site(Rhinoceros 7, Grasshopper Ladybug)
04_04_03 Diagram /Direct sun hours analysis based on the site(Rhinoceros 7, Grasshopper Ladybug)
06_01 Area Calculation (Vectorworks)

9.3. LIST OF PLANS

02_02_04_01 Site Plan with road connection
02_02_04_02 Site Plan with Urban analysis
02_02_04_03 Site Plan with archeological sites

04_01_01_01 Isometric map of the enviroument, Height above sea level (Vectorworks, Photoshop CC)
04_01_01_02 Enviroumental Analaysis (Vectorworks, Photoshop CC)
04_01_01_03 Site Evaluation and Current transport lines (Vectorworks, Photoshop CC)
04_01_01_04 Sea transport and View towards the Castle (Vectorworks, Photoshop CC)

04_02_01_02 Layout of the straight columns (Rhinoceros)
04_02_02_02 Layout of the diagonal columns (Rhinoceros)
04_02_03_02 Layout of the tree-like shaped columns (Rhinoceros)

05_01 Site Plan (Vectorworks, Rhinoceros, Photoshop CC)
05_02_01 Ground Plan Level 1 1:1000 (Vectorworks, Rhinoceros, Photoshop CC)
05_02_02 Ground Plan Level 2 1:1000 (Vectorworks, Rhinoceros, Photoshop CC)
05_02_03 Ground Plan Level 0 1:200 (Vectorworks, Rhinoceros, Photoshop CC)
05_03_01 Section A-A 1:500 (Vectorworks, Rhinoceros, Photoshop CC)
05_03_02 Section B-B 1:500 (Vectorworks, Rhinoceros)
05_03_03 Section C-C 1:500 (Vectorworks, Rhinoceros)
05_04_01 Elevation South (Rhinoceros)
05_04_02 Elevation West (Rhinoceros)
05_05_01 3D Section A-A (Rhinoceros)
05_05_02 3D Section B-B (Rhinoceros)
05_05_03 3D Section C-C (Rhinoceros)
05_05_04 3D Section D-D (Rhinoceros)
05_05_05 3D Section E-E(Rhinoceros)

05_06_01 Detailed Section (Rhinoceros)
05_06_02 Detail A 1:20 (Rhinoceros)
05_06_03 Detail B 1:20 (Rhinoceros)
05_06_04 Detail C 1:20 (Rhinoceros)
05_06_05 Detail D 1:20 (Rhinoceros)
05_06_06 Detail E 1:20 (Vectorworks,Rhinoceros)

9.4. LIST OF RENDERINGS & MODEL PHOTOS

10. RESUME

Fevziye Fulya Öztürk

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2007-2012 Highschool :Deutsche Schule Istanbul, Abitur
2013 Moved to Vienna
2020 Bachelor of Science, TU Vienna
2023 Master of Science, TU Vienna

2018 Internship, Emre Kunt Architecture in Bodrum, Turkiye
2021-2022 Junior Architect at livingpool architektur ZT GmbH in Vienna, Austria

Languages
Turkish (mother tongue)
German (Abiturdiplom)
English (fluent)
Spanish (A2)

Skills:

Rhinoceros 3D,
Grasshopper,
Graphisoft ArchiCAD,
Adobe Photoshop,
Adobe Indesign,
Adobe Illustrator,
Adobe After Effects,
Twinmotion,
Vectorworks