
KNIAJEVO
KOPITOTO

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KNIAJEVO // KOPITOTO GONDOLA LIFT

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Betreuer
Univ. –Prof. Dipl. –Ing. Architekt Roger Riewe
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CONTENT

INTRO DUCTION

↖ *The City of Sofia seen from Kopitoto*

MAIN GOAL AND OBJECTIVES

The following objectives are derived from the main goal:

• To provide a multi-level and multi-aspect analysis of the need of a better, more ecological connection between the mountain and the city;

• To research and analyze in detail the issues around the existing cable car buildings;

• To uncover and demonstrate the opportunities for development of alternative sports and tourism in such close proximity to the city;

• To draw on the experience of international sample projects already implemented, which have proven to be successful in this part of the world.

• To develop a new conceptual design for two cableway stations, which could be the foundation for the reconstruction of the traditional ropeway transport between Kniajevo and Kopitoto.

MOTIVES OF SELECTING THE TOPIC

Personal Motive

Looking for a suitable topic for my thesis, to finish my studies in a becoming way, I came to the conclusion that it must be something very personal.

I have always felt greatly attracted to all things mechanical – cars, motorcycles, trains, aircrafts, machines. I have always found the beauty and design in these things. I directly link this interest to architecture as well, using mechanics as my main inspiration.

Many years ago, my grandfather, whose name I carry, and with whom I had a very special relationship, used to be the construction manager of the old Kopitoto Restaurant. He was familiar with the topic and I have heard him talk about this special place on more than one occasion. I have personally spent a lot of time riding the cable cars, since I am an active mountain biker in the summer and a skier in the winter. I feel mountains, especially the Vitosha Mountain, to be my home.

The topic of facilitating the connection between the city and the mountain is a sort of way for me to find the quickest and easiest way to get home.

General Motive

The political changes in Bulgaria in 1989 inflicted severe damage on Vitosha mountain, as well as on many other regions in the country, which the generation of the political transition has been struggling to rectify to this day. The mountain needs:

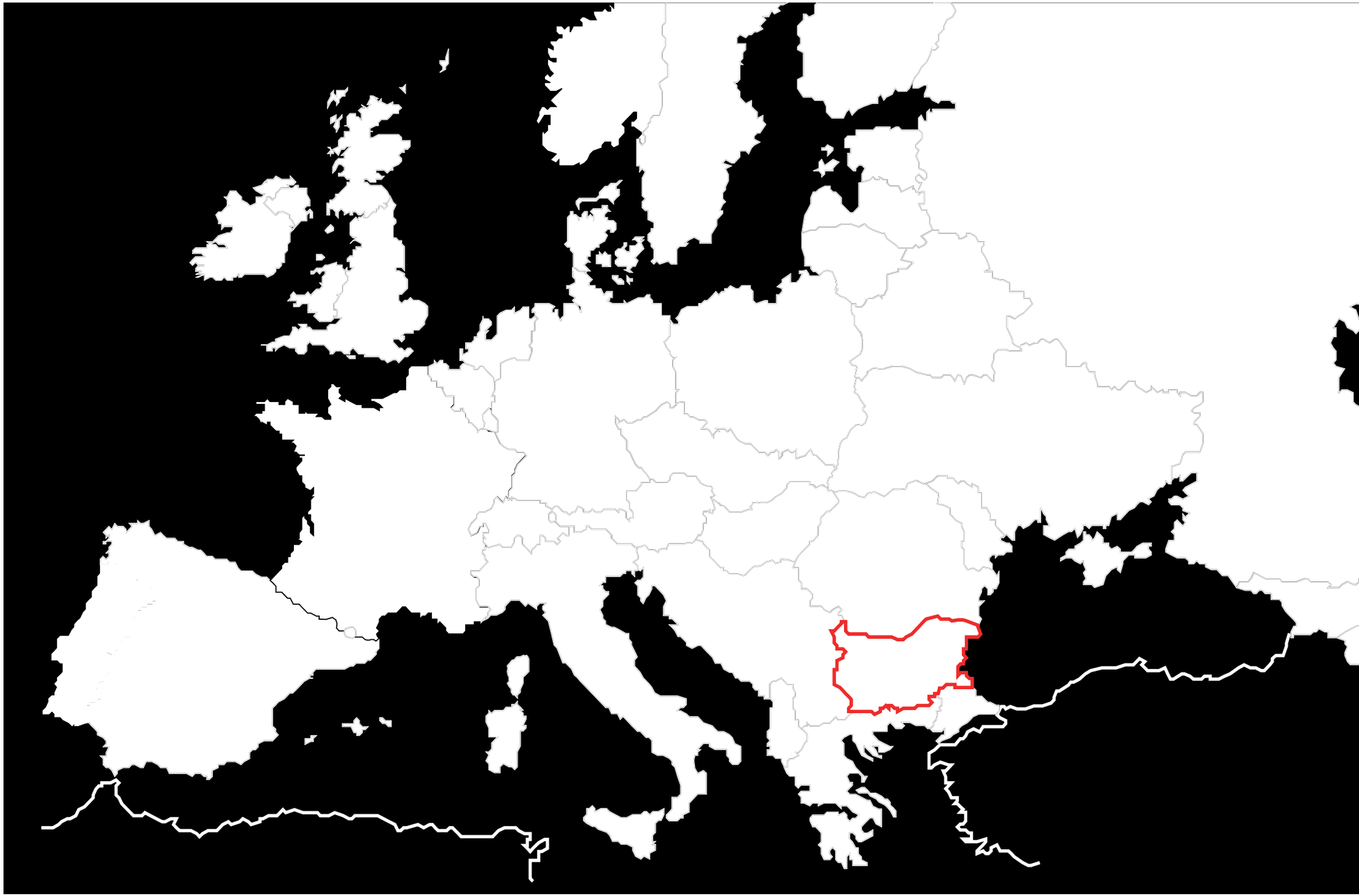
- **An intelligently planned, environmentally friendly connection to the city;**
- **A way for people to reach the heart of Vitosha without their cars, which could be provided by the former Knyazhevo Cable Car;**
- **A cable car, which would be able to serve citizens every season, 7 days a week with a multi-functional base constructed to support sports and the healthy lifestyle close to nature;**
- **A place with an architecture, functionality and incredible view to turn into one of the landmarks of both Vitosha and Sofia.**

METHODOLOGY

The methodology used in developing this Master's Thesis includes:

- **Visits to the site and its vicinity;**
- **Taking pictures of the existing cable car stations and the sites with a camera and a UAV (drone);**
- **Literature and Internet surveys;**
- **Data collection and a historical survey;**
- **Research on the available documents and plans;**
- **Meeting with the new owner – Vitosha SKI Ltd.;**
- **Meeting with the authors of the new Plan for Management of the Vitosha National Park – Proles-Engineering Ltd.;**
- **Taking part in the open discussions about the new Plan for Development of the Vitosha National Park on 30 September 2015;**
- **Case studies and a survey of different functional typologies;**
- **Drawing 2D and 3D Plans of the existing cable car stations;**
- **Developing multiple different diagrams and illustrations of the city of Sofia and the Vitosha Mountain.**
- **Developing a new conceptual design for two cableway stations.**

LOCATION

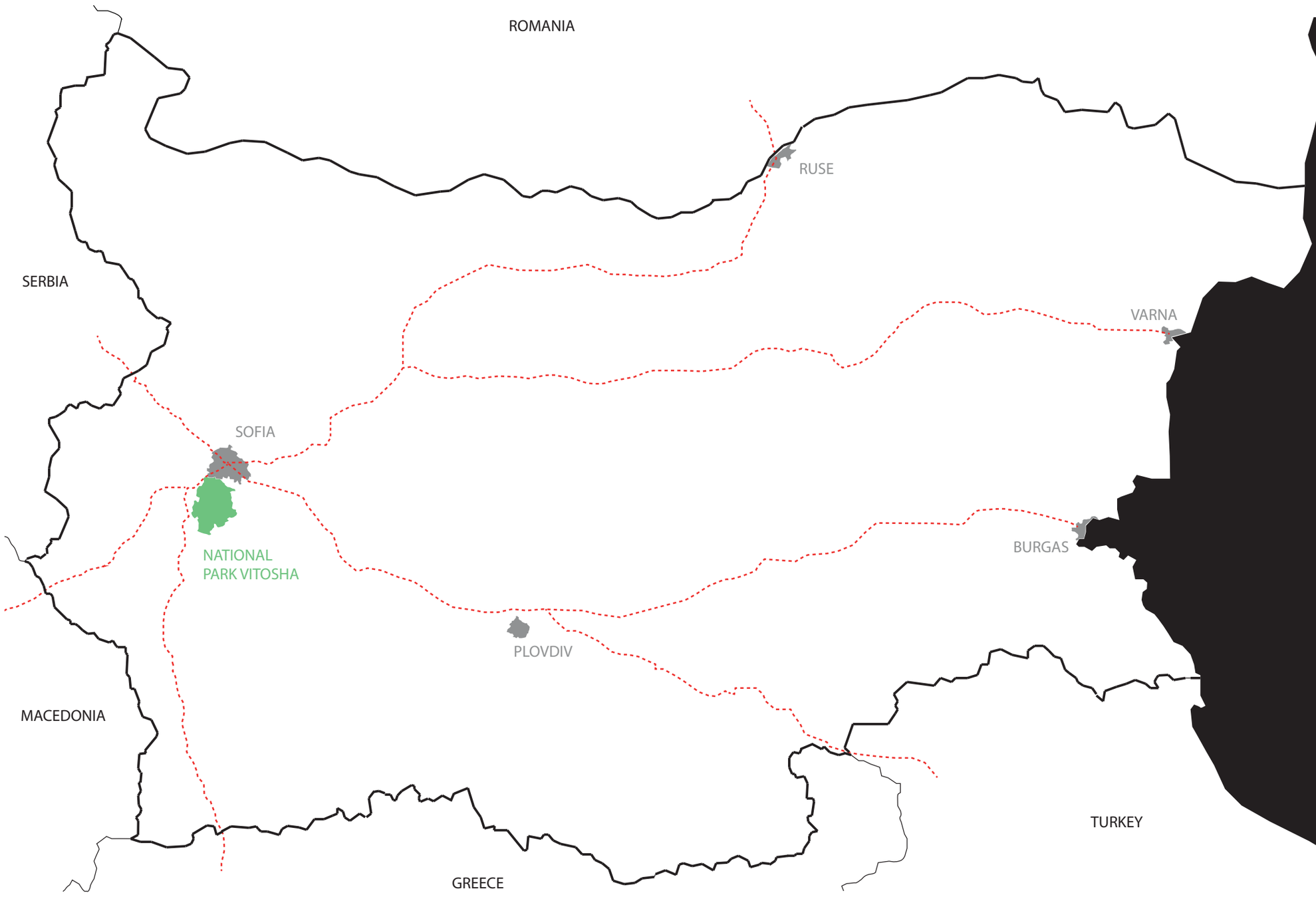


CAPITAL:
SOFIA

AREA
110,994 KM²

POPULATION
(2011)
7,364,570

DENSITY
66.2/KM²
171/SQ MI



CHAPTER

/ The City of Sofia

↖ The City of Sofia seen from Kamen Del Peak Photo taken from: http://gigasofia.com/

AREA
CITY: 492 KM²
PROVINCE: 1349 KM²

ELEVATION
500-800M

POPULATION
(31 DECEMBER 2014)

CITY: 1,228,282

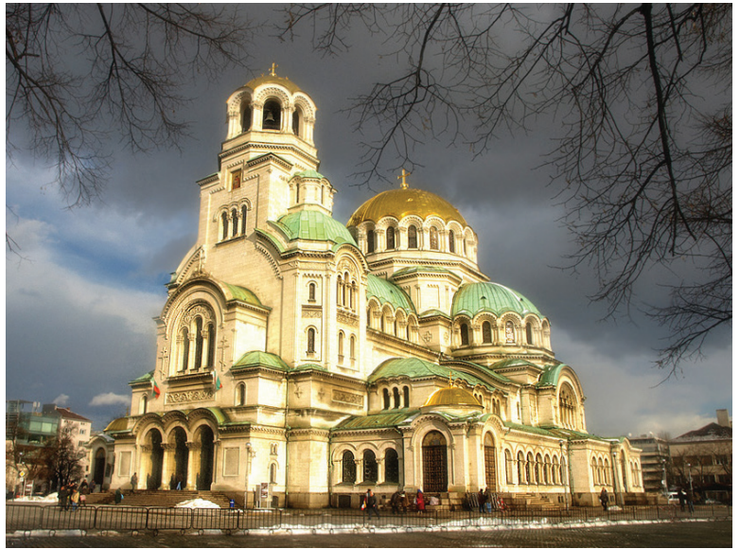
RANK: 17% OF NATIONAL

DENSITY
2,496/KM²

THE PRESENT-DAY CITY OF SOFIA

→ *Alexander Nevsky Cathedral Photo take from https://en.wikipedia.org/wiki/Sofia*

↓ *The Largo Photo taken from: https://en.wikipedia.org/wiki/Largo,_Sofia*



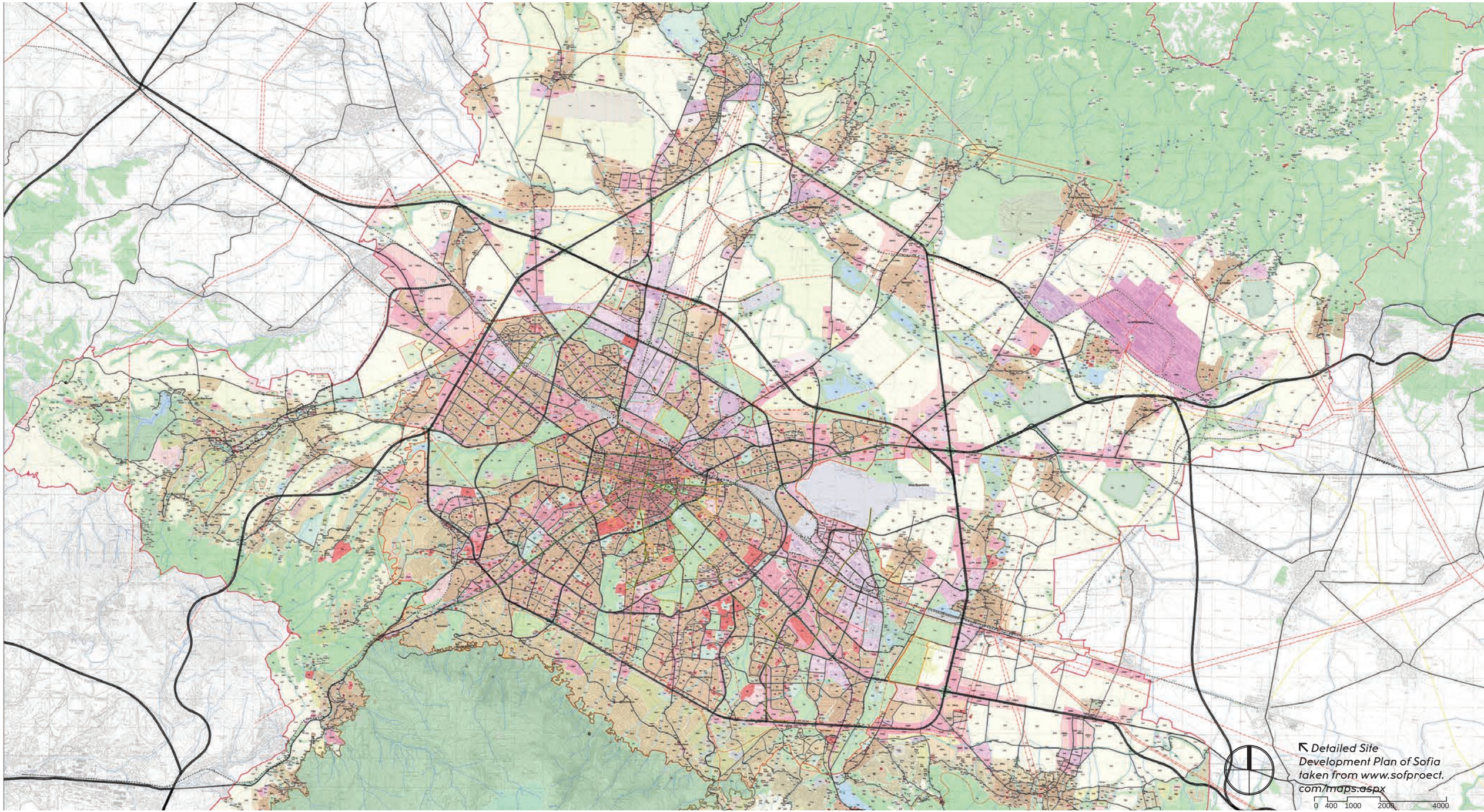
Sofia is the largest city and the capital of Bulgaria. It is the 15th largest city in the European Union, with an official population of 1,286,383 (but actually exceeding 2 million), representing 16.4% of the population of Bulgaria. Sofia is located in the Sofia Field surrounded by mountains (Stara Planina Mountain, Vitosha Mountain, Lyulin Mountain, Lozen Mountain), in the immediate vicinity of the northern slope of the Vitosha Mountain. Five mountain passes lead to the city – the Iskar Pass, the Vladaya Pass, the Dragoman Pass, the Petrohan Pass and the Vitinya Pass. Important routes connecting the Adriatic Sea and Central Europe to the Black Sea, the Aegean Sea, and the Middle East have passed though even in antiquity. Thanks to its strategic location on the Balkan Peninsula, Sofia has long been a big, bustling city, as well as a commercial, tourist and cultural centre. Its total area is 492 km², and its altitude is between 500 and 699 m. This makes it the fourth highest capital city in Europe. It was built on the four ledges of the Iskar River and its tributaries: Perlovska River and Vladayska River. There are mineral springs in the central part of the city, and in Ovcha Kupel, Knyazhevo, Gorna Banya and Pancharevo Quarters. The climate is temperate.

Sofia is one of the oldest European settlements. Its history can be traced back to the Neolithic Era. Traces of several Neolithic settlements have been found on its territory, dating back to 5,000 BC.

In the VII century BC, the Thracian town, which became known as Serdonpolis or Serdica arose north of the warm mineral spring near today's Vladayska River. For a short period of time in the IV century BC the city was ruled by Philip II of Macedon and then by his son Alexander the Great.
In the early IX century, Khan Krum adjoined Serdica and the city became a part of the Bulgarian state for the first time.

Sofia was declared capital on 3 April 1879 by the Constituent Assembly at the proposal of Prof. Marin Drinov, as an old Bulgarian city, away from the Turkish border and centrally located in the Bulgarian lands, according to the understanding of that time.

Sofia is named after the "Hagia Sophia" Cathedral of late antiquity. Since Sophia the Martyr is the purported mother of Faith, Hope and Charity, the feast of the holy saint, 17 September, was taken to be the Day of Sofia.



↖ *Detailed Site Development Plan of Sofia taken from www.sofproect.com/maps.aspx*

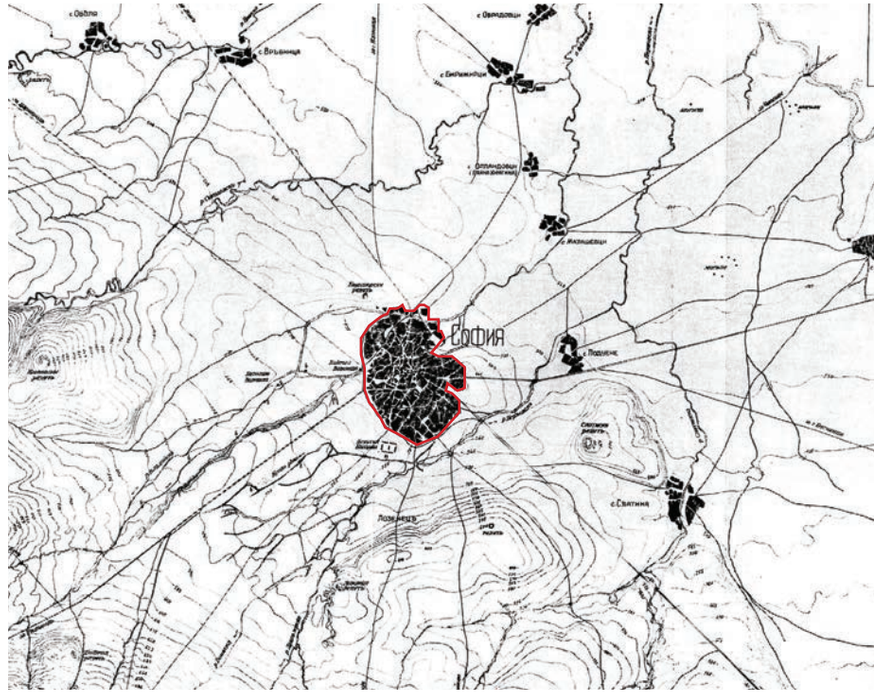
THE CITY OF SOFIA DURING THE AGES

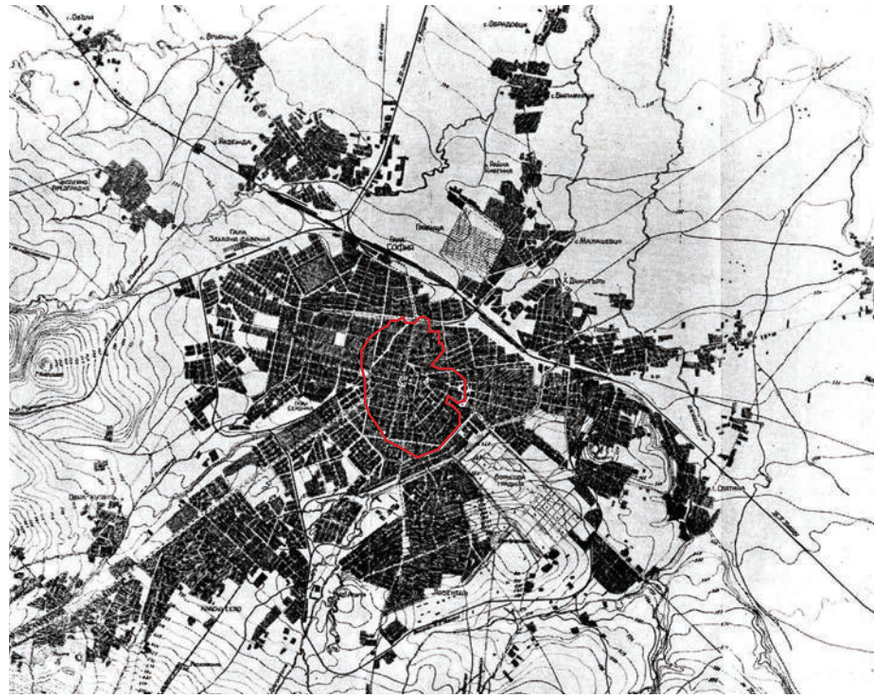
After the liberation of Bulgaria from Ottoman rule in 1878 and the announcement of Sofia as the capital, European and Russian specialists developed a plan to transform the city into a proper capital. What followed was the construction of the first major buildings: the Parliament, the Military Club, the Palace.

By the 1920s, the structure of the city was completely changed, modelled on the west European capitals of that time. Public transport and tram lines have been built throughout the city.

The 1930s are associated with rapid economic growth of the country and a very rapid expansion of the city. For a short period of time Bulgaria became the sixth strongest economy in Europe and also the most developed country on the Balkan Peninsula.

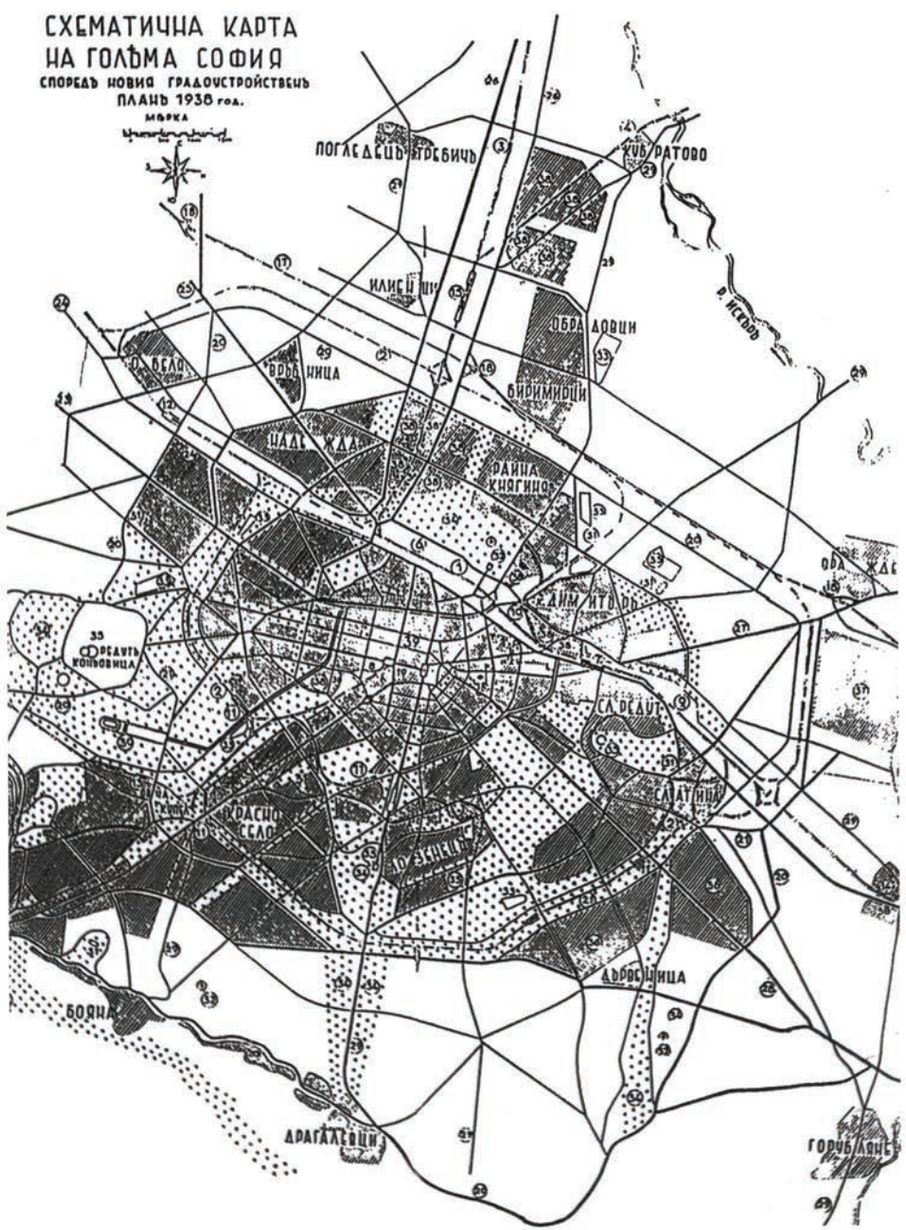
The communist regime established in Bulgaria reflected heavily on the capital, focusing mainly on industrialization. The Soviet influence was very strong, and Sofia followed the model of the big cities of the Soviet Union. Ideological belief in the greatness of the working class was expressed by the desire to transform society and nature. The centre of Sofia changed radically in the 1950s following the Stalinist architecture model.

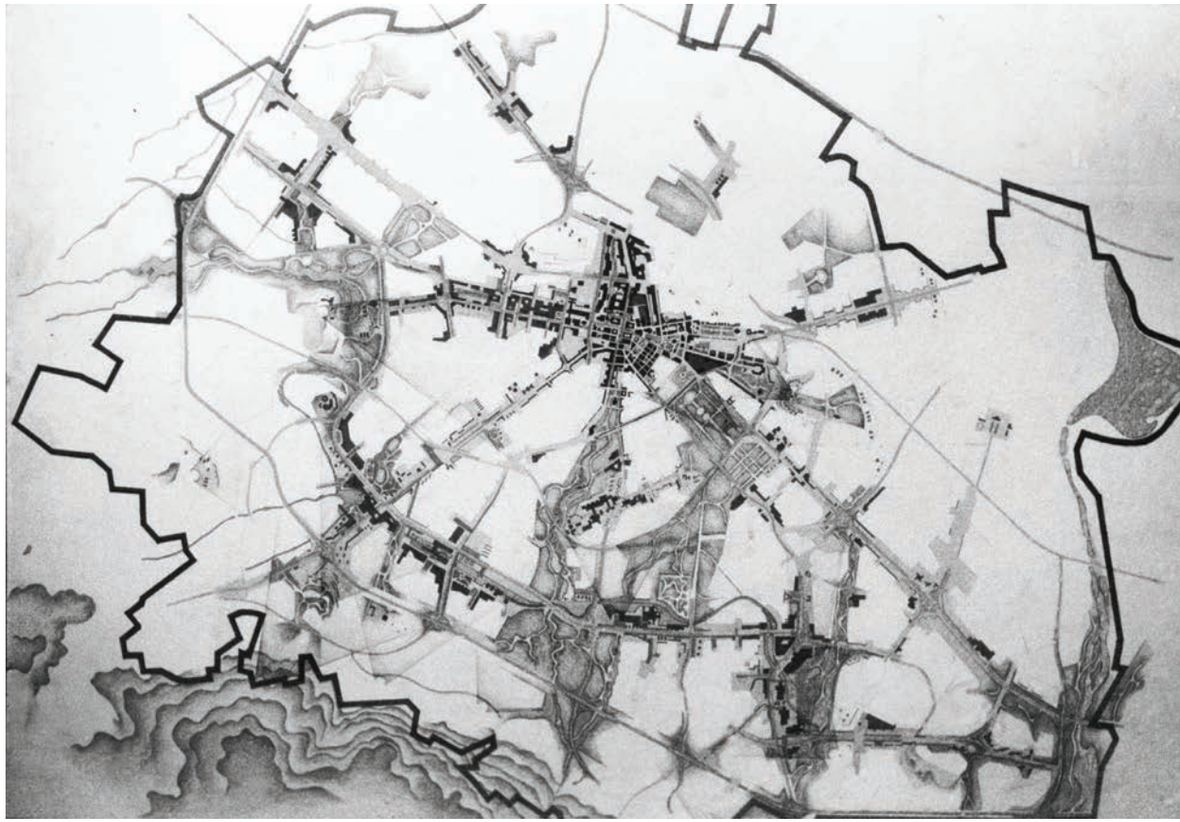




↗ *Sofia map from 1878*
Photo taken from: http://stara-sofia.com/karti.html

→ *Sofia map from 1937*
Photo taken from: http://stara-sofia.com/karti.html

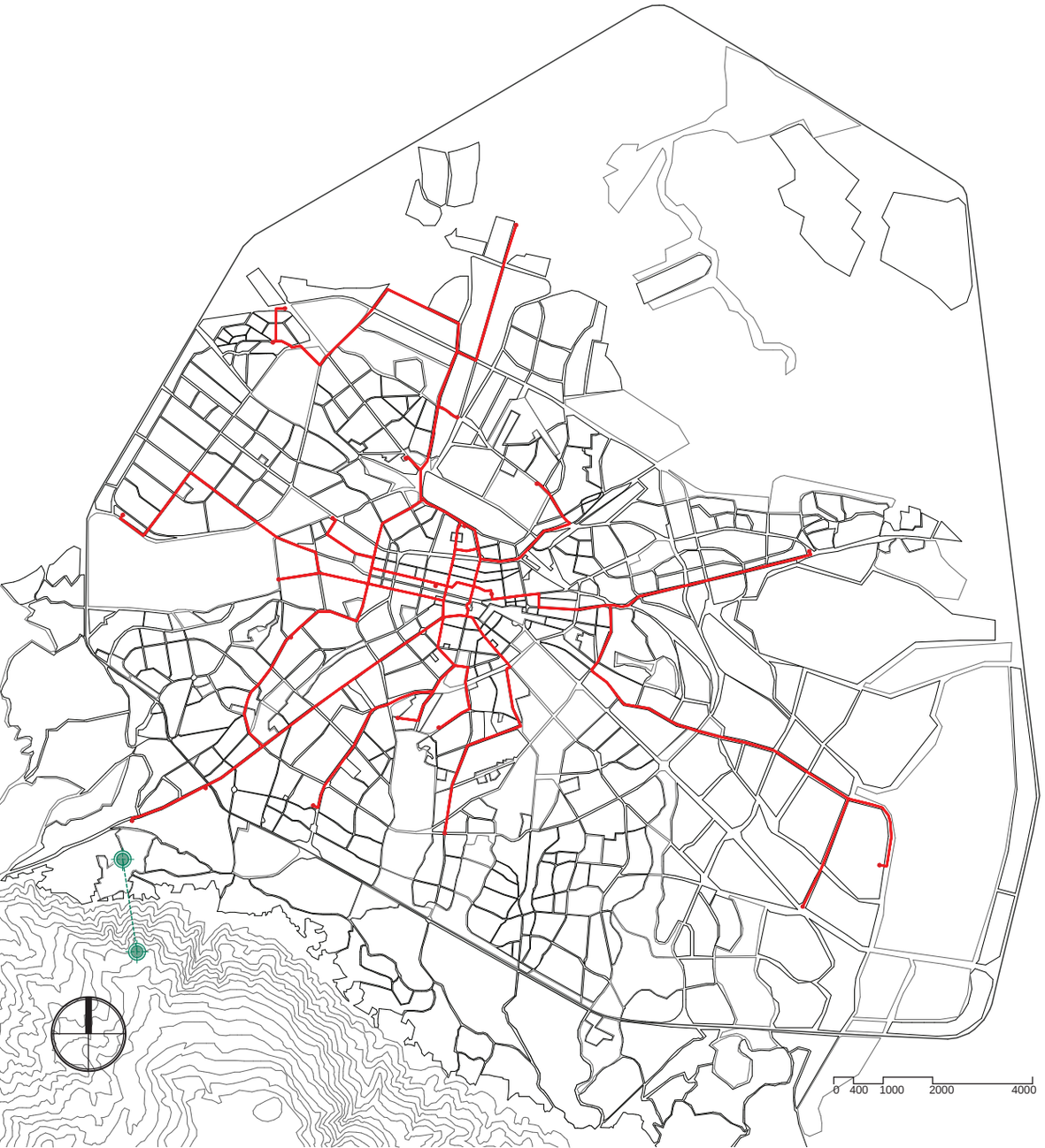




↑ *The concept for the urban image from the 1970s: The meaning of the mountain Vitosha for the urban core development to the south and to reborn the pre-war idea of the Soutern Park.*

↖ *Sofia 1938*

CONNECTION WITH THE TRAMLINE NETWORK

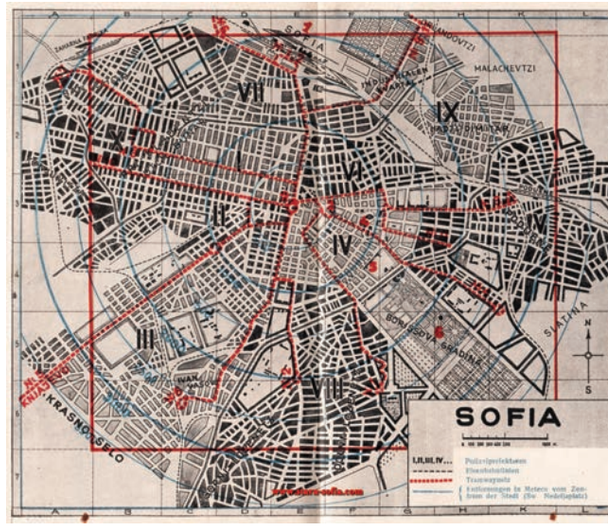


The idea for a tram line network to be built in Sofia started being implemented on 1 December 1898, when Sofia Municipality awarded concession contracts for the construction of the tram lines to French and Belgian companies. Construction works continued for about a year and on 14 January (1 January old style) 1901 the first tram in Sofia officially started running. Initially, passengers had six lines to use with a total length of 23 kilometres.

As of the beginning of 2009, trams in Sofia ran along routes with a total length of over 300 km. The last stop of Tram Line No. 5 is located a few hundred metres from the lower station of the gondola lift in Knyazhevo. This provides a very easy connection to the transport network in the city.

THE KNYAZHEVO GONDOLA LIFT CAN BE SEEN AS AN EXTENSION OF THE PUBLIC TRANSPORT UP IN THE MOUNTAIN.

Previously, when the lift still worked, it was possible to reach the Kopitoto Peak from the centre of Sofia in less than an hour. With today's modern equipment, such a connection would be possible to implement in an even shorter period of time.



↑ *Map of the tramine network of Sofia from 1930es*
Photo taken from http://stara-sofia.com/karti.html

↓ *View of the tram line at Tsar Boris III Boulevard wich connects in straight line the city center with Kniajevo neighbourhood*

KNIAJEVO NEIGHBOURHOOD

"Kniajevo" is a Sofia suburb.

It is located at the southwest exit of the city, between the boulevards "Tsar Boris III", "Nikola Petkov" and "Gorna Banya" Quarter. Kniajevo is located on both sides of "Tsar Boris III" Blvd., alongside the Vladayska River separating the Vitosha Mountain from the Lyulin Mountain. To the east, streets and houses reach the foot of the Vitosha Mountain and the western part of Kniajevo lies on the skirts of the Lyulin Mountain.

History

The former name of the village was Klisura, as stated in the Boyana screed, preserved in a copy dated between 1562 and 1612. This also used to be the name of the river currently known as Vladayska or Kniajevska River. Evliya Çelebi mentioned the village in his travel books in the 17th century as "Bali Efendi", as Turks called it, naming the village after the Yürük dervish buried there, born in Strumica and lived in Sofia, who is believed to have died in 1551. There is a türbe (Turkish word for "tomb") behind today's church "St. Elias" dedicated to Bali Efendi, which according to the legend was built by Sultan Selim II. Framed prayers, written in Turkish and Arabic hang on the walls of this small rickety building.

There were three neighbourhoods in Kniajevo during the Ottoman rule:

- **"Klisurska,"** situated in the foot of the Vitosha Mountain, near the gorge and Klisurska River, and inhabited by the oldest inhabitants of Kniajevo (native inhabitants) who were engaged in stockbreeding and woodcutting;
- **"Bali Efendi"**, around the tomb of the dervish. This neighbourhood passed for the central one, with many buildings around the bath, with shops, cafes and inns;
- **"Circassian"**, situated at the opposite end, over the river. The Turkish authorities settled Circassians there – equipped with horses and arms, exempt from taxes. They were obliged to protect Sofia from malefactors.

The village of Bali Efendi was renamed to Kniajevo (literally "the village of the kniaz") in 1881 in honour of Prince (kniaz) Alexander of Battenberg. Kniajevo was a part of Boyana until 1914. It separated and existed as a distinct municipality until 1938, but administratively belonging to the capital.

The municipality was closed down in 1948, and Knyazhevo entered the District People's Council VI. In 1958 Knyazhevo comprised the following quarters: "Petko Napetov", "Lozishte-Korenyatsi", "Gramada", "Borova Gora", "Radin Dol", "10th Kilometer". Kniajevo became a suburb of Sofia on 26 April 1958.

In 1881 the Frenchman Hypocrite Bergier built the first distillery in the country. In 1882 Lazar Trifkovic, and later, in 1883, the brothers Bogdan and Georgi Proshekovi built the first breweries.

↗ Kniajevo neighbourhood is located in south-western part of Sofia and it borders with Vitosha mountain

→ Kniajevo street view with Kopitoto TV tower in background

In 1891, the Czech engineer Joseph Horvet built the first paper and cardboard factory in Bulgaria. The annual production at that time reached 1,341,000 kg of paper.

The first state mercury mine was in inaugurated by Order of the District Governor No. 204 of 12 October 1893.

Kniajevo was one of the starting points for the first mass climbing of Cherni Vrah organized by the famous Bulgarian writer Aleko Konstantinov on 27 August 1895.

The first tourist association "Aleko Konstantinov" was established on 2 August 1899 in Kniajevo (today's address: 284, Tsar Boris III Blvd.). Its founding members were Prof. Dr. Chervenivanov and Dr. Tochkov.

The first Sofia – Kniajevo – Sofia tram was put into operation in 1917.

The first ski jumping hill in Bulgaria was built in Kniajevo.

The first gondola lift in Bulgaria was built in Kniajevo in 1962, by the Austrian company "Brothers Girak." Its length was 1920 m with an altitude difference of 600 m. The bottom station was at 760 meters above sea level, and the top one – at 1,340 m asl. It had 53 four-seater gondolas and carried 600 people per hour in one direction at a speed of 3 m/s. The travel time was 20 minutes. After several incidents it was decommissioned. It has been plundered since then.

↑ *View from the last tram station in Kniajevo neighbourhood*

→ *The 10 min walking road between the last tram station and the lift station*

I.U.D.P. OF THE CITY OF SOFIA 2007-2013

The 2007 – 2013 **Integrated Urban Regeneration and Development Plan of the City of Sofia** (IUDP) has been developed within the framework of the National Development Programme: Bulgaria 2020 and the National Reform Programme (2011 – 2015), both part of the Europe 2020 Common Strategic Framework 2014-2020.

The IUDP is a combination of projects connected in time and space, which are performed in certain urban impact areas. It integrates policies and unites heterogeneous participants for their joint execution, contributing to the realization of the city's development vision and strategy until 2020.

The "integrated approach" in urban planning in Europe has been used since the early 1990s. Its essence lies in combining investments in upgrading the physical environment with measures to stimulate economic development and social integration. The aim is to have comprehensive and complex regeneration of the territory, taking into account the interrelations between physical, economic and social aspects of urban development.

The idea of the Three Pillars of Sustainability – economic, social and environmental – is widely used in the definition of the European policy. It is the Ministry of Regional Development and Public Works (MRDPW) which manages the preparation of this comprehensive plan in Bulgaria.

The specificities of capital, stemming from the size of the city, the population dynamics during the past 15 years, and the state of certain parts of the city, occupying a significant place in the spatial structure, the connections and correspondence to the surrounding attractions have all been taken account of.

The approach for Sofia has been based on the following characteristics:

Sofia is a unique European city by location, natural and cultural values and authenticity.
The city has a huge untapped potential, which is expected to be discovered and used, without transferring foreign practices.

Sofia needs to overcome its fragmentation and restore the integrity of the city, through a system of socially significant interrelated spaces, sites and connections integrated into a dynamically functioning organism resulting from the synergy of properly coordinated projects and actions.

Sofia in the XXI century needs to preserve not only the green system and connections to the mountains, but to further develop those ideas and initiatives for "green planning and construction" and "green economy" that will enrich the principles of Green Cities of Europe – Green and Clean, Green and Attractive, Green and Accessible.

The funding sources of the events under the IUDP are:

- **Operational Programme "Environment";**
- **Municipal and/or state funding and co-financing;**
- **Public-private partnerships – JESSICA, JEREMIE and other programmes.**

SOFIA VISION 2020

SOFIA – A CITY OF THE PEOPLE AND FOR THE PEOPLE
Inspiring, engaging and inclusive

SOFIA – AUTHENTIC AND ALIVE
Retaining its past and open to the future

SOFIA – A GREEN AND ATTRACTIVE CITY
Environmentally friendly and efficiently using its resources

SOFIA – AN INTELLIGENT AND CREATIVE CITY
Stimulating knowledge, innovation and creativity

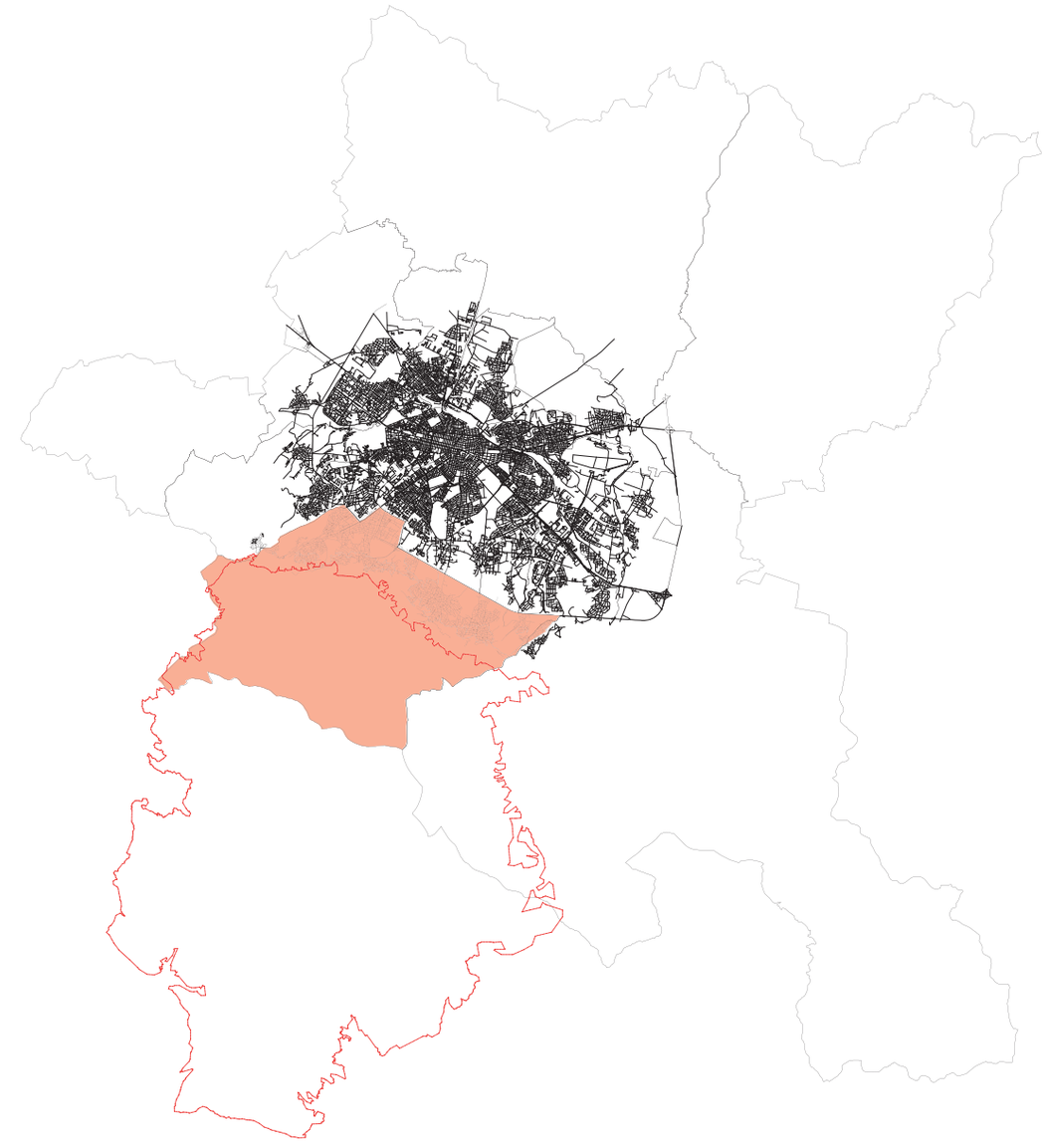
CHAPTER
// The Vitosha Mountain

AREA
22 725,8 HECTARES

ELEVATION
2,290M

TOPOGRAPHIC PROMINENCE
1,275M

SOFIA CAPITAL MUNICIPALITY



NATURAL PARK VITOSHA

NATIONAL PARK VITOSHA

For hundreds of years, especially with the rise of industrialization and scientific progress in the nineteenth century, humanity has been striving to protect the places providing it with some of the basic necessities such as food, water, natural resources and shelter. Since the establishment of the first national park in the world – "Yellowstone" – in 1872 to date, over 100,000 areas of land and water have been declared protected, occupying about 12.5% of the Earth's surface. In recent decades, due to the demographic growth, the changing nature of the use of resources, and globalization, the need for human intervention for the preservation of these areas is increasing.

The aim of this study is to highlight the significance of protected areas, the specificities of their management according to their conservation status and the current institutional and legal frameworks, to analyse the weaknesses and threats associated with improper planning and utilization of resources and to outline mechanisms for sustainable tourism development. The object of this study is the "Vitosha" Nature Park – the oldest park in the Balkans, and at the same the most vulnerable protected area in Bulgaria due to its proximity to Sofia and Pernik and investment interests ever increasing in scale.

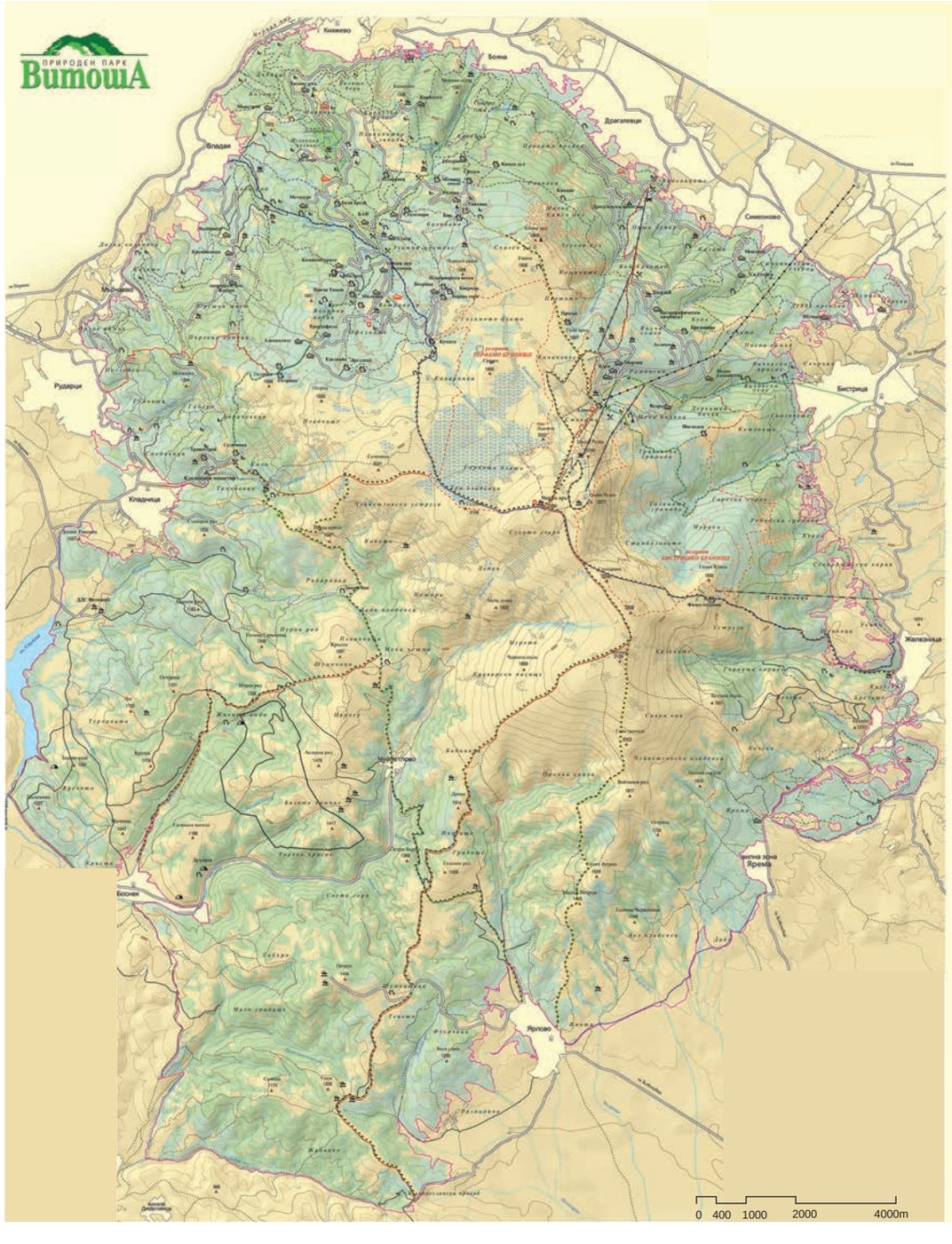
Location

The "Vitosha" Nature Park is located in southwestern Bulgaria. Its geographic centre coordinates are: latitude: 42° 32′ 39″; longitude: 23° 15′ 43″. Its average height is 1,317.40 metres. It encompasses almost the entire mountain, limited by the highest fields in Bulgaria – the Sofia Plain (550 m asl), the Pernik Plain (750 m asl), and the Samokov Plain (950 m asl). Vitosha descends steeply to the north towards the Sofia Plain. The difference in altitude between the highest peak – Cherni Vrah, and the plain is 1,740 metres, which is why Vitosha looks so imposing, as seen from the capital. The mountain is bounded by the Pernik Plain to the west, and by the Samokov Plain to the south.

Vitosha connects with the lower mountains through saddles. The Pancharevo Saddle and the Tzarkva Ridge connect it to the Lozen Mountain to the east. The Egul-Palakari Saddle connects it to the Plana Mountain, and the Buk-Prespan Saddle connects it to Verila, the valley of the Struma River connects it to Golo Bardo, and the Vladaya Saddle connects Vitosha to Lyulin.

Tourism development on the territory of the Vitosha Nature Park
Park Infrastructure Building

Organized tourism in Vitosha dates back to 27 August 1895, when the writer Aleko Konstantinov led a hiking party to climb Cherni Vrah. The excursion comprised 300 tourists, and a year later 27 of them founded the first tourist club in Bulgaria and marked the beginning of the organized tourist movement. The first chalet in Vitosha – "Aleko" – was opened in 1924 and in the next 20 years a dozen more chalets were built: "Edelweiss", "Kumata", "Selimitsa", "Kamen Del", "Tintyava", "Fonfon", "Planinets", "Bor", "Sredets", "Momina Skala" and several forest huts. After World War II hotels, restaurants, ski lifts, ski facilities, refreshment stands, holiday homes were built. The first trail blazing in Bulgaria was done in 1901 near the Dragalevtsi Monastery. The building of the Vitosha Arboretum began in 1962. There is an alley network, outbuildings, two ponds and a nursery-garden. A total of 145 both typical Bulgarian wood, shrub and herbaceous flora samples and such imported from other countries can be seen on an area of 1,400 decares (...ha). The European walking route E-41 was introduced in Bulgaria in July 1992, starting (in our section) from Cherni Vrah, through Verila, Rila Mountain, Pirin Mountain and ending in Petrovo Village at the border with Greece.



→ *Tourist Map of National Park Vitosha Photo taken from: http://park-vitosha.org/*

The main approaches to the nature park are through the following villages: Kladnitsa, Vladaya, Knyazhevo, Boyana, Dragalevtsi, Simeonovo, Bistritsa and Zheleznitsa.

There are two road arteries visitors use to penetrate into the mountain. The first connects Boyana to the "Zlatnite Mostove" Area, where the road forks in two: right – to the "Boeritsa" and "Kumata" Chalets; and left – to the "Tintyava" and "Bor" Chalets.

The second principal thoroughfare connects Dragalevtsi Suburb with the "Aleko" Chalet. Passenger aerial lifts have been constructed at three entry and exit points at the foot of the mountain:

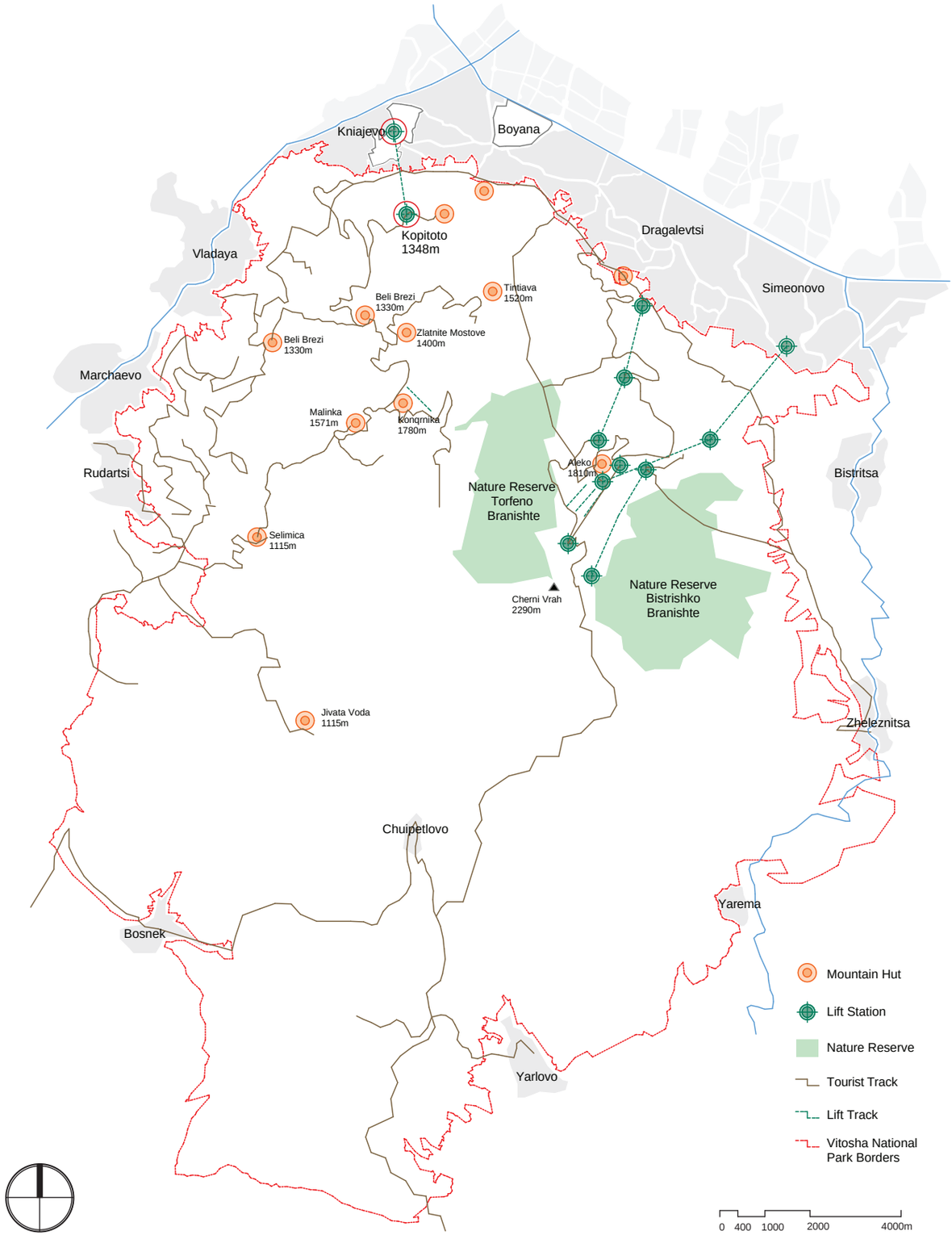
- **The "Knyazhevo-Kopitoto" Gondola, which currently does not serve visitors due to a technical malfunction;**
- **The "Dragalevtsi-Bay Krastyu-Goli Vrah" Two-Seat Chairlift; and**
- **The "Simeonovo-Aleko" Gondola.**

There are two separate ski centres in Vitosha:

- **"Aleko" Ski Centre – the oldest in Bulgaria and the most visited ski centre in the Vitosha Mountain, at an altitude of 1,800 m asl. The ski tracks are oriented to the north. The ski facilities include one gondola, two chairlifts, six stationary and some portable surface lifts.**
- **"Konyarnika-Vetrovala" is the second ski centre, at an altitude of 1,507 m asl. The stationary surface lift is 600 m long with a displacement of 128 m. There are two portable surface lifts in addition to these. The facilities at Konyarnika are not operational at the moment, and two surface ski lifts function at Vetrovala.**

Many tourist routes have been created for serving and concentrating the flow of tourists, marked with signboards and direction signs, colour painted marking, maps boards, 10-12 rescue shelters, places to rest with benches and fireplaces.

Marking by metal posts has been built in the tree-bare part of the mountain. Infrastructure has been built and maintained both to ensure the safety of visitors (bridges, grills across moraines and wetlands, handrails) and to provide access for people with disabilities. The country's first "Path for Completely Blind People" has been built in the area of the Arboretum, modelled on similar paths in France and Germany. This trail is at an altitude of 1,600 meters and has a length of 622 meters, with two ponds. Railings have been placed to enable the blind to navigate. Before various natural sites, the surface of the path changes to allow the blind to navigate and feel whatever is there. Some issues are the erosion of curbs and the fact that some railings have been broken. Signs in Braille have been placed at all natural sites. Mixed group tours of sighted and blind are being organized. This is helped by the hiking trail for people with locomotor system disabilities built in the "Iglikini Polyani" Area.



→Scheme of the most important tourist and ski locations in National Park Vitosha

NATURAL LANDMARKS

Zlatnite Mostove (the Golden Bridges) are a geological phenomenon representing a stone river in the area bearing the same name on the northwest slopes of Vitosha. It is located at an altitude of 1,350-1,500 m and is one of the most often visited tourist areas in the mountain. The stone river was formed during the last 5 million years in the Neogene and Quaternary. The name comes from the golden colour of the lichen covering the rocks.

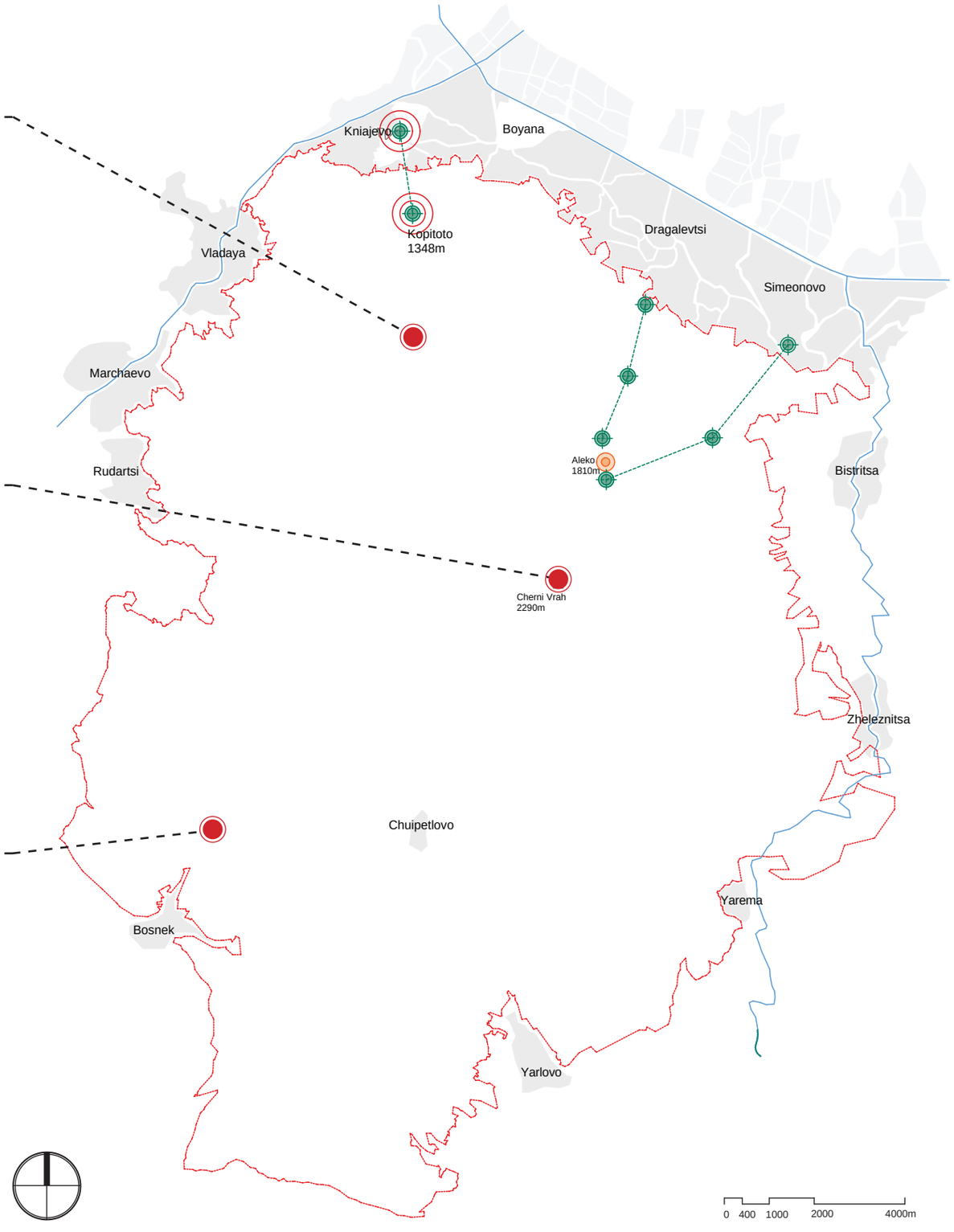
→ View of Zlatnite Mostove Photo taken from : http://balkanvagabondz.com/adventures-all/

Cherni Vrah (Black Peak) (2,290 m) is the highest point of the Vitosha Mountin, making it the fourth highest Bulgarian mountain. With an average wind speed of 9.3 m/s it is the second most windy peak in Bulgaria. There is a meteorological station built on the top in 1935, shortly after Vitosha was declared a national park.

→View at Cherni Vruh Photo taken from : http://www.skyscrapercity.com/showthread.php?t=1227419

Duhlata (Wind Blower) is the longest cave in Bulgaria – with a length of 17,600 m and a depth of 53 m. According to another source, it has a length of 18,200 m and a depth of 53 m. It is a complex multi-layer maze system, spread across 6 levels. Its name is associated with the sound produced by the wind when passing through the entrance of the cave. Duhlata is one of the most complex cave systems in Bulgaria, created by the underground currents of the river Struma. It is a maze of tunnels, galleries, underground lakes, waterfalls and sinter formations.

→ Inside chamber of Duhlata Cave Photo taken from http://visit.guide-bulgaria.com/a/539/duhlata_cave.htm



ARCHITECTURAL LANDMARKS

The Boyana Church "St. St. Nicholas and Pantaleon" is a medieval Bulgarian church (a court chapel, later a monastery) in the Sofia suburb of Boyana, located at the foot of Vitosha Mountain. It is one of the cultural symbols of Bulgaria. The temple has two floors. It belongs to the type of two-storey church-tombs with a basement, intended for a crypt (tomb) and an upper storey for a family chapel. The oldest construction period is from the end of the tenth and the beginning of the eleventh century. This is a small one-apse cross-vaulted building, with inbuilt cruciform supports.

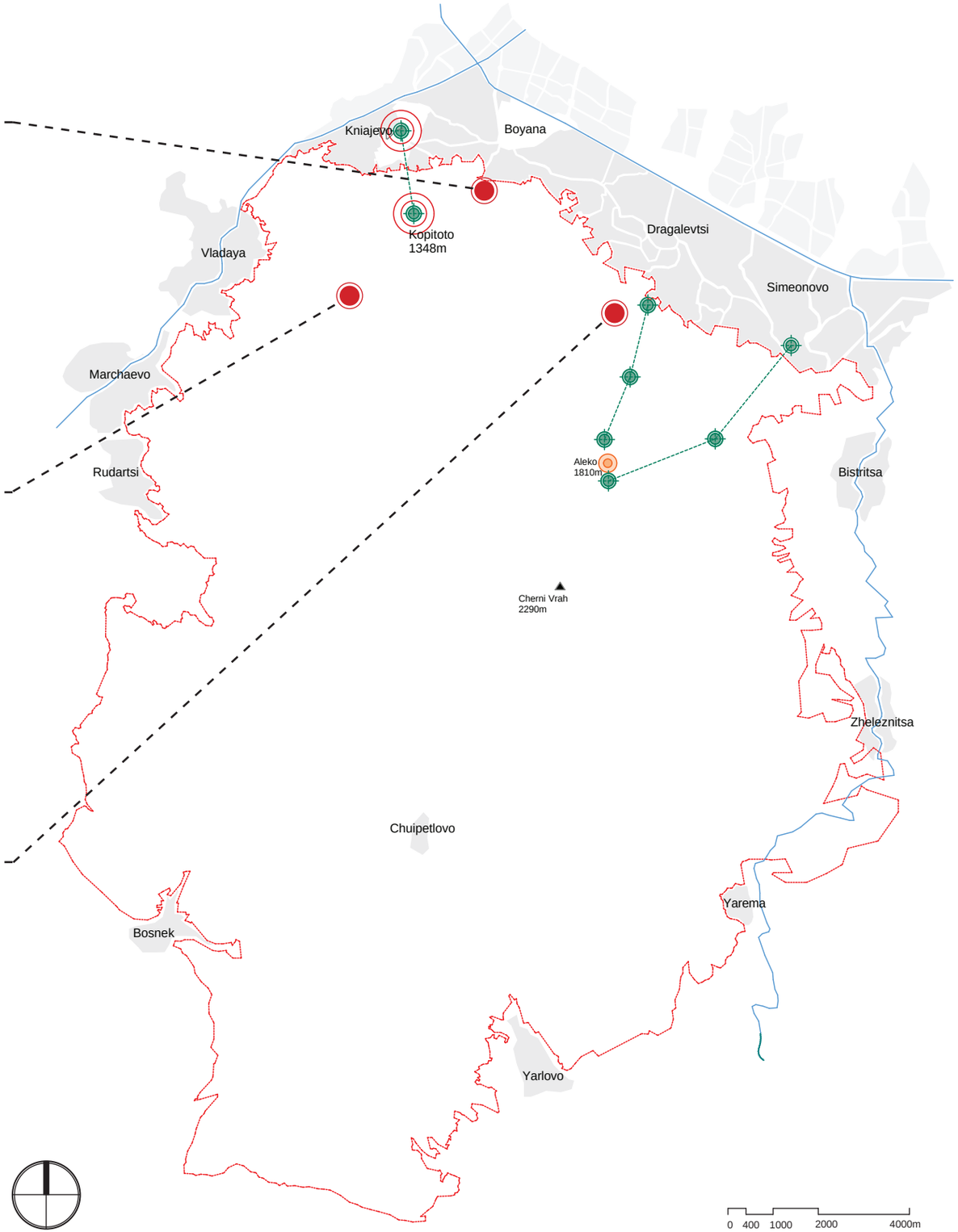
→ *Boiana Chirch Photo taken from : https://commons.wikimedia.org/wiki/File:Boyana_Church_15_TB.JPG*

Children's Ecostation "Beli Brezi" in the "Vitosha" Nature Park was built in 2013 according to project #BG0042 "Rebirth and Preservation of Traditional Building Technics and Skills Used in Bulgaria", accomplished by Department of "Vitosha" Nature Park in partnership with Norwegian Crafts Development. The building combined the functions of an information, education and exhibition centre, providing enclosed exhibition areas, with a possibility for children and student discourses to be prepared on the biodiversity in the area of the Nature Park, on ethnographic or other topics.

→ *Inside view of Children's Ecostation "Beli Brezi" Photo taken from : http://ultrajoro.blogspot.co.at/*

The Dragalevtsi Monastery "Assumption of Mary" is a Bulgarian Orthodox convent. The former names of the monastery have been "Vitosha Virgin Mary" and "Vitosha Immaculate Mother of God". Located a few kilometres from the Sofia suburb of Dragalevtsi, in the picturesque scenery by a river, among beech woods, the monastery is not far from the road to Cherni Vrah and the Aleko Chalet. It was built in 1345. The monastery is a complex consisting of a church, residential and farm buildings. Numerous Bulgarian books have been copied and created here.

→ *Dragalevtsi Monastery Photo taken from : https://en.wikipedia.org/wiki/Dragalevtsi_Monastery*



BOTTOM LIFT STATION KNIAJEVO

GPS COORDINATES:

42O 39‘ 09.6“N 023O 14‘ 21.9“E

METERS ABOVE SEA LEVEL:

744 M

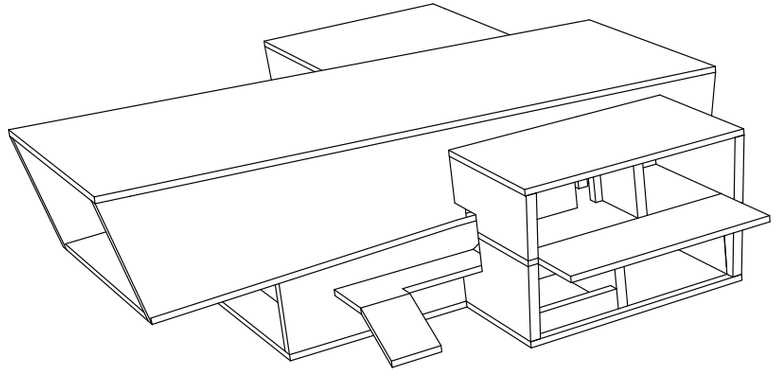
EXIT POINT TO THE BOTTOM LIFT STATION:

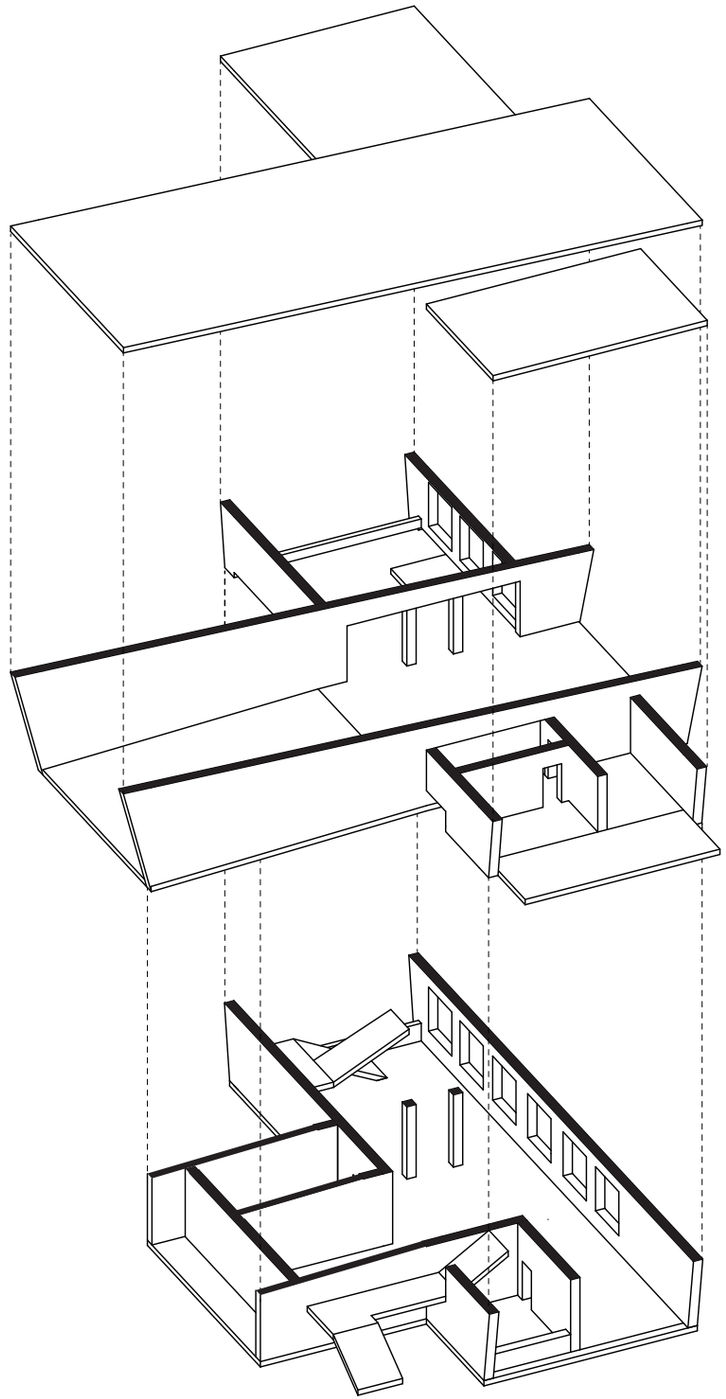
“KNIAJEVO” NEIGHBOUR-HOOD - 800M FROM THE LAST STOP OF TRAMLINE NUMBER 5 AND 19

→↓ *Kniajevo Cablecar Station Present Condition*

←*Master Plan*
Kniajevo Neighbourhood
M 1:5000

↙*Kniajevo Cableway station*
Axonometric projection

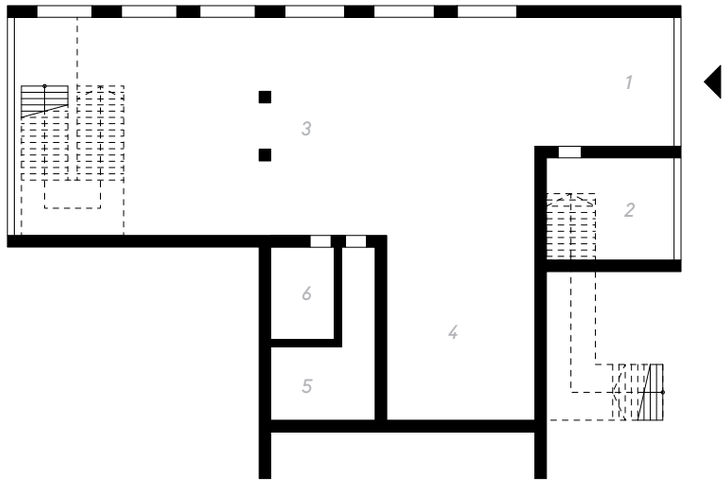


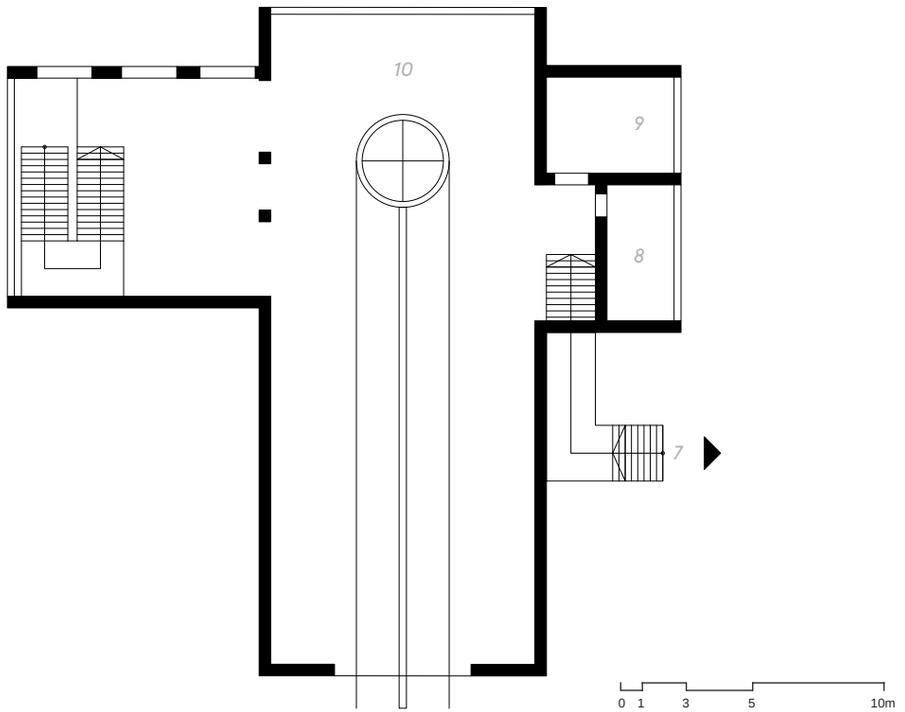


↗ *Kniajevo Cableway station*
explosion axonometric projection

← *Kniajevo Cableway station*
Staircase

↑ *Kniajevo Cableway station*
Cablecar hall





↗ *1 Main entrance*
2 Snack bar
3 Waiting room
4 Tickets sales
5 WC man
6 WC woman

→ *7 Lift users exit*
8 Terrace
9 Administration
10 Cablecar hall

UPPER LIFT STATION KOPITOTO

GPS COORDINATES:

42O 38‘ 13.5“N 023O 14‘ 35.8“E

METERS ABOVE SEA LEVEL:

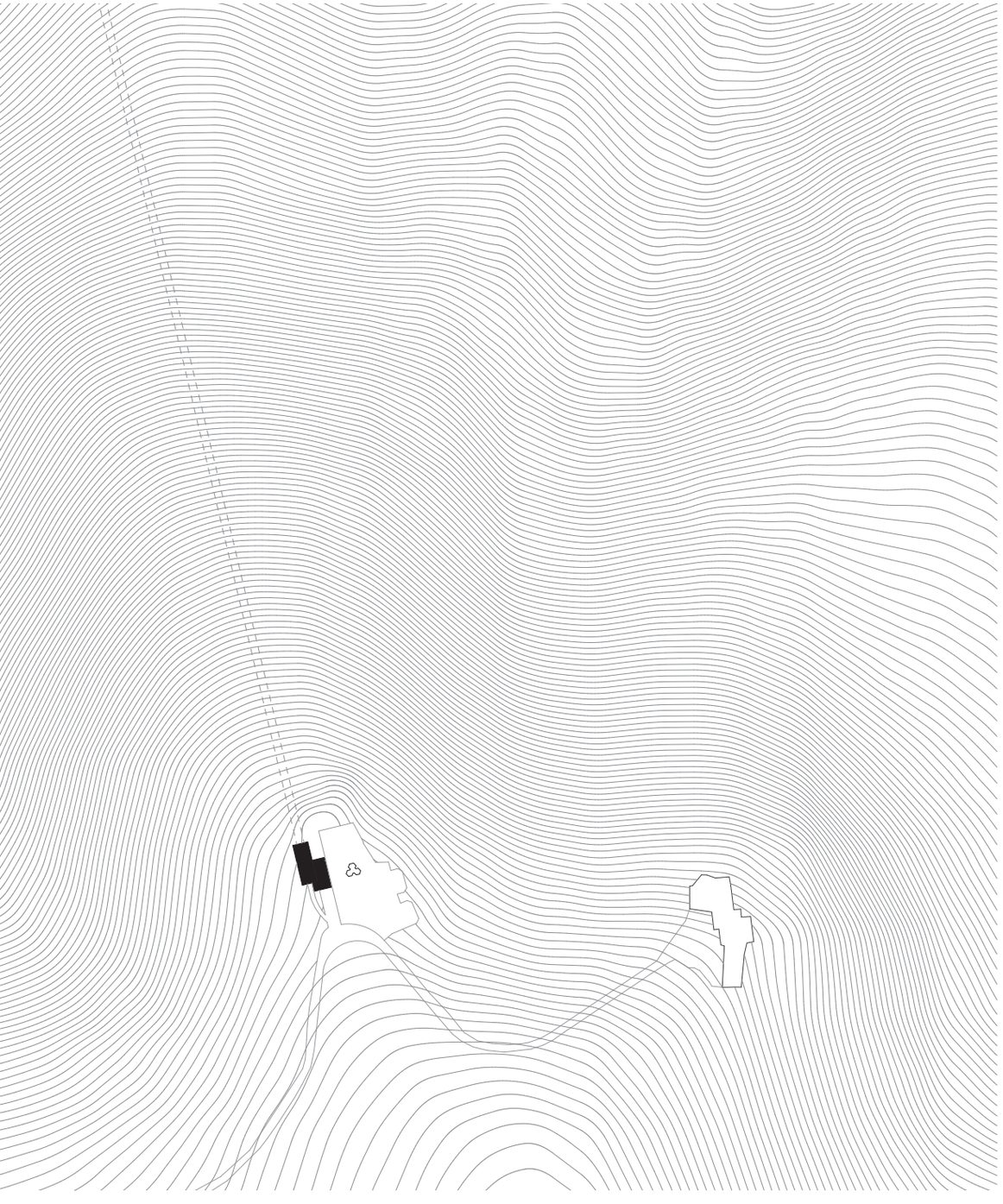
1348 M

EXIT POINT TO THE UPPER LIFT STATION:

MOUNTAIN HUT “MOMINA SKALA”
- 1,840 KM
TOURIST CENTER“ZLATNITE MOSTOVE”
- 3,330 KM

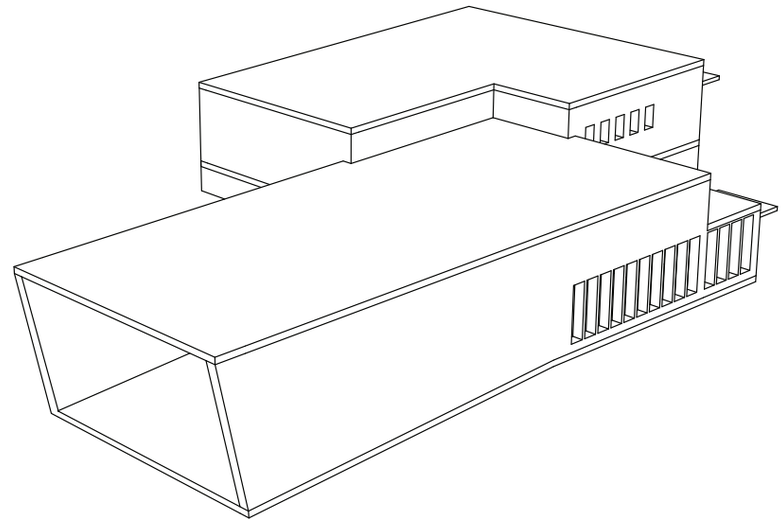
↑ *Kopitoto Cablecar Station*
Drone late Winter Shots
Present Condition

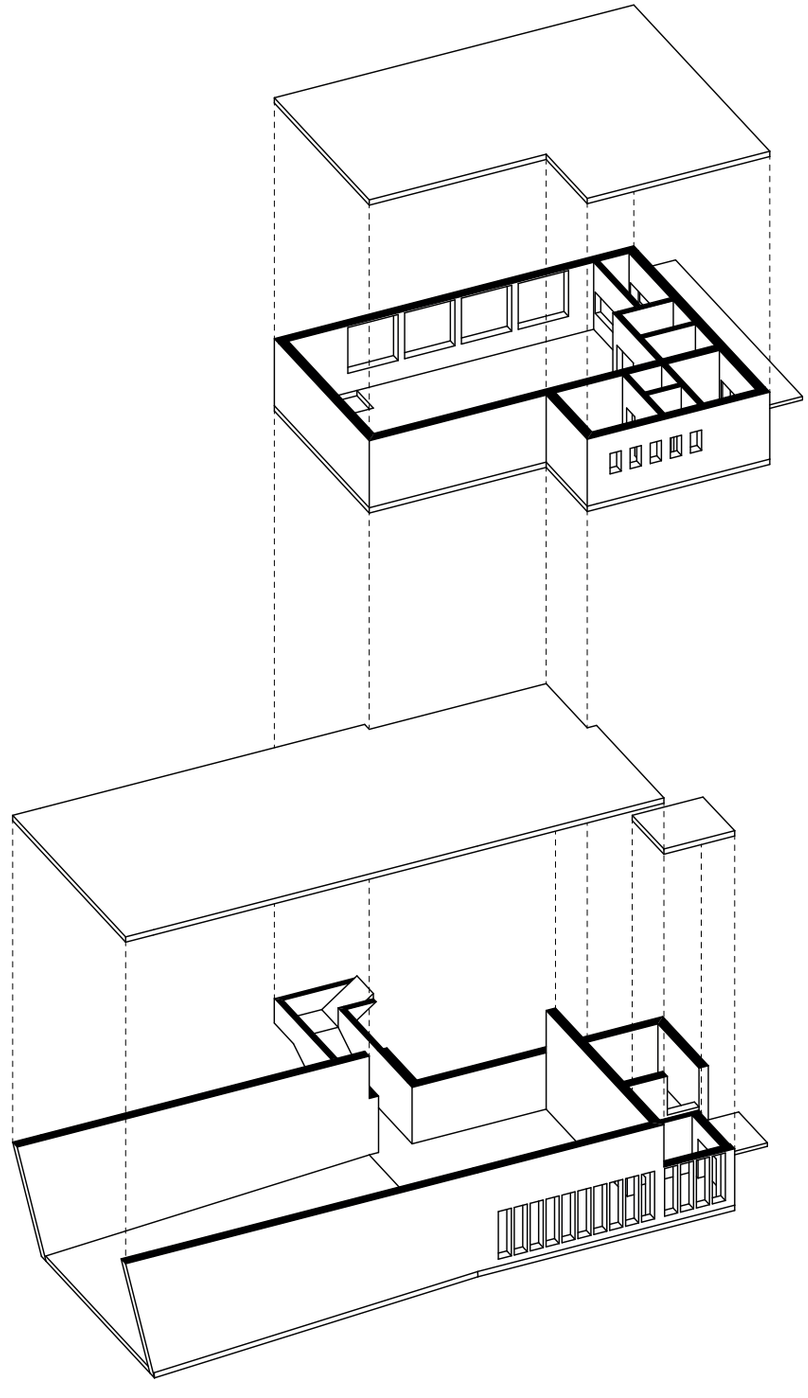
→ *Kopitoto Cablecar Station*
Lift users exit
Present Condition



← *Master Plan*
Kopitoto Area
M 1:5000

↙*Kopitoto Cableway station*
Axonometric projection

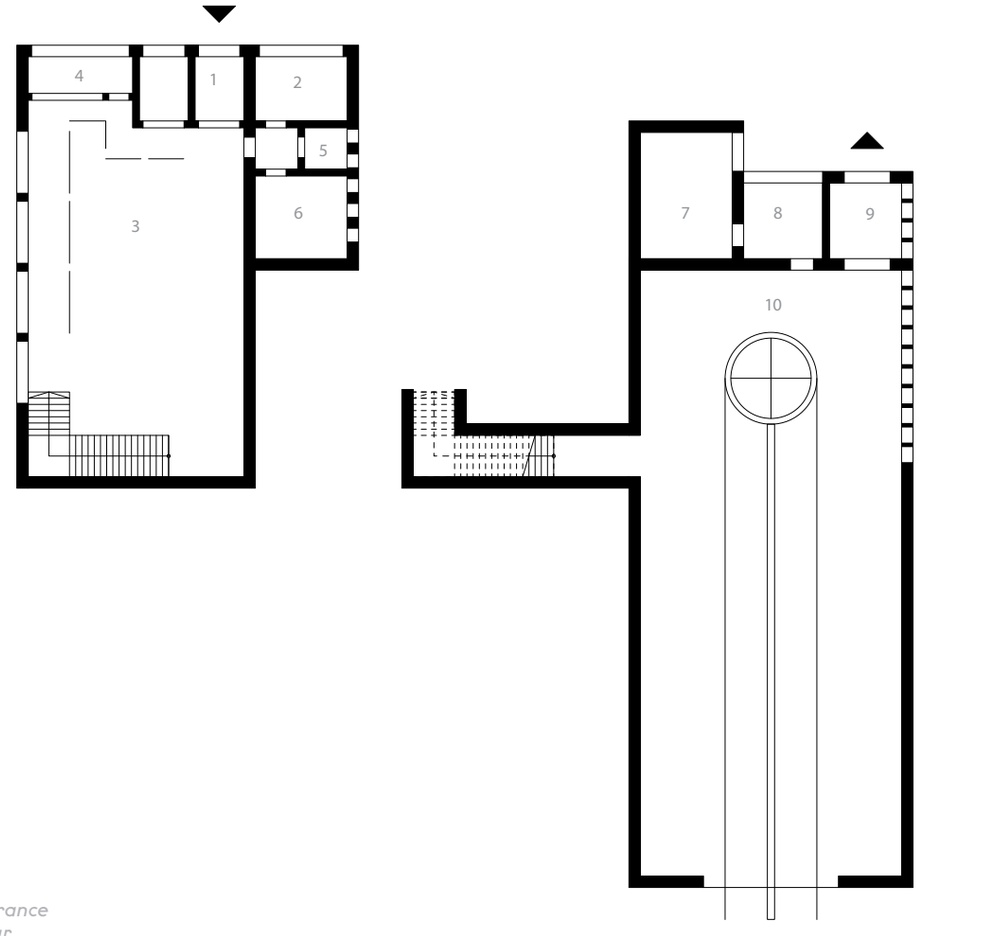




↗ *Kopitoto Cableway station*
explosion axonometric projection

← *Kopitoto Cableway station*
Cablecar Hall

↑ *Kopitoto Cableway station*
Waiting Room



↑ *1 Main Entrance*
2 Snack Bar
3 Waiting Room
4 Tickets Sales
5 WC Man
6 WC Woman

↗ *7 Administration*
8 Administration
9 Lift Users Exit
10 Cablecar Hall

KOPITOTO TV TOWER

The Integrated Radio and Television Centre "Vitosha", or the Kopitoto TV Tower, was put into operation in 1985. The programmes of the national radio and TV operators are being broadcast through the Kopitoto Television Tower for the capital and the Sofia Field. New digital television transmitters were added on 1 March 2013 for regular use. On 30 September 2013 at an official ceremony starting at 11:30 am the analogue TV transmitters were turned off, and thus Bulgaria moved to fully digital broadcasting.

- **Geographical coordinates: 23°29'E/42°45'N**
- **Altitude (ground level): 1,345 m**
- **Tower height: 186 metres**

Designers: architects Lyuben Popdonev, Stefan Tilev; Constructors: engineers Georgi Georgiev, Ivan Yantahtov, Zhechko Panayotov. The site was built following an innovation proposal.

Building a complex radio and television centre – a complicated structural, technological and also original architectural facility in the area of "Kopitoto" on Vitosha – is an essential element for the active perception of fusion of the capital city with the surrounding natural environment. Along with observing all technological and constructive requirements, the creative team faced the very serious task for this facility with a height of 186 meters to fit in the best possible way in the monumental silhouette of Vitosha mountain.

The characteristic configuration and location of the Kopitoto with its rocky forms have contributed for this part of Vitosha to be established as a vibrant tourist centre with a very good panoramic view not only over the city but also over the surrounding natural scenery: the Balkan Mountain Chain, the Lyulin Mountain, and the picturesque Vladaya Gorge. These two options for the visual perception: from the city to the mountains and backwards, have imposed specific architectural requirements, and considerations for spatial and functional conception of the complex radio-television centre.

←*Kopitoto TV Tower*
Photo taken from :http://www.sofia-guide.com/attraction/vitosha-mountain-tv-tower/

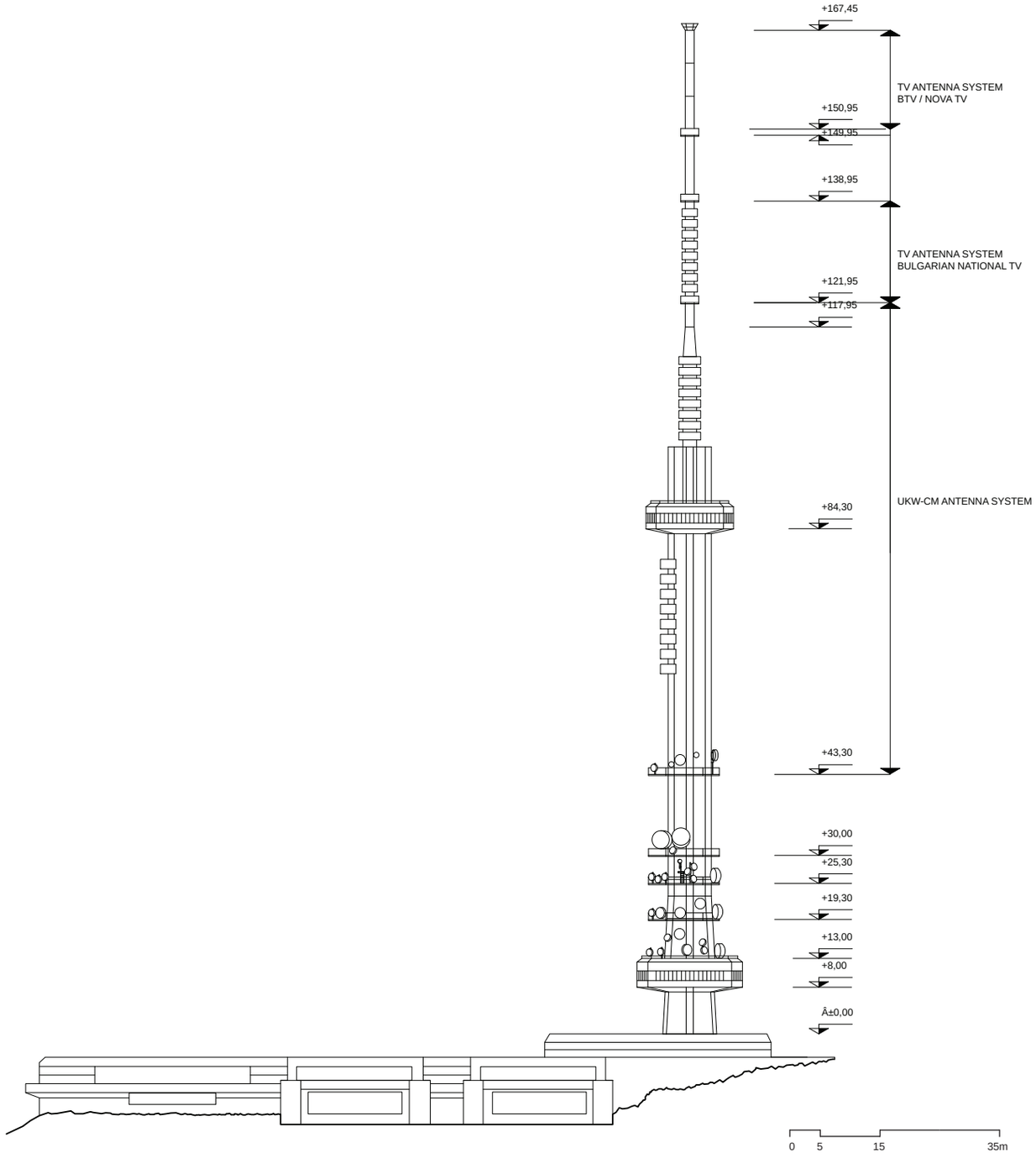
Including the two main components of the complex: The Tower and the Lower Part (containing the production and technical building, the residential building, and a representative cafe with a panoramic hall of the Sofia Council) into the composition of the area of the existing lift station has been discussed repeatedly since 1974 at specialized meetings of experts at the Ministry of Information and Communications, the Ministry of Construction and Architecture and the Architecture and Urban Development Committee.

The urban planning studies performed, accompanied by photomontages and the specific technological requirements confirm the appropriate choice of location of the tower as a dominant emphasis, ingrown in the rock platform of Kopitoto ("the hoof"). The tower has the cross-section of a hexagon, with two protrusions of a similar shape, symmetrical with respect to the vertical axis.

Apart from having undeniable structural advantages, this section, satisfying the many and varied requirements, improves the architectural detail of the tower and contributes to its proper volume and silhouette conception. Along with the search for the most potent vertical accent, designers have tried to find the counterweighing element in the volume and space composition with maximum connection to the environment. This has been achieved by placing the Lower Part along the eastern slope of the "Kopitoto". For a more immediate integration with the natural forms, instead of artificial terraces, an amphitheatre has been created with a panorama towards Sofia at the absolute elevation of 1,346 metres, in a natural environment – greenery, rocks and small architectural elements – restored after the construction. The entrance hall to the café and the service entrance are located at a terrace lower by 3 meters – thus achieving the required separation of the production and technical buildings. The unnecessary urbanization has been carefully avoided – the employee car parking and business premises are underground, and no public parking has been envisaged. Visitors would use the parking lot of the nearby hotel. The development of the idea of having a clear structure of functionally related elements of planning of the upper part led to digging the three tracts in the rocks: the halls of the television tower, the special section block, and the café.

←*Kopitoto TV Tower*
View from the bottom point

→*Kopitoto TV Tower*
Elevation



VITOSHA NATURE PARK MANAGEMENT PLAN 2016-2025

The public consultation and endorsement of a new 2015-2025 Vitosha Nature Park Management Plan is underway. It is based on national and international environmental legislation:

Protected Areas Act (PAA);
Ordinance on the elaboration of protected areas management plans
Assignment by the Ministry of Environment and Waters (MEW) on updating the current Vitosha Nature Park Management Plan
The purpose is for it to be an instrument for the management of the Nature Park for 10 years on the basis of updated and new data:

Assignor
Directorate of Vitosha Nature Park – a specialized body set up under the PAA to the Executive Forests Agency, the Ministry of Agriculture and Food (MAF), to implement the state policy on protected areas. The plan is a means for the team of the Administration – the Directorate of Vitosha Nature Park to manage and implement the medium and the endorsement of long-term objectives

Funding
Plan 2 is funded by 2007-2013 Operational Programme "Environment" as part of Project DTR-5113326-4-98 – "Activities for sustainable management of Vitosha Nature Park"

Administrative belonging
In terms of the administrative division of the Republic of Bulgaria, Vitosha Nature Park falls into 3 regions: Sofia – City, Sofia Region and Pernik Region as well as within the boundaries of Sofia Municipality, Pernik Municipality, Radomir Municipality and Samokov Municipality.

Ownership
The main types of ownership on the territory of Vitosha Nature Park are state ownership, municipal ownership and the ownership of natural and legal persons. There is a relatively large share of state ownership, expressed in percentage terms, compared to the entire park territory, in the lands of Sofia City, the villages of Bistritsa, Yarlovo, Bosnek, Chuypetlyovo and Kladnitsa.

Participants in the process
Team of experts: 46 experts are involved – interdisciplinary team of experts in various fields of science and practice, representatives of the scientific and academic communities, experts in the field of practical planning and management of protected areas.
Stakeholders are representatives of the Municipal Councils of Sofia Municipality (SM), Vitosha SM District, Pancharevo SM District, the municipalities of Pernik, Radomir, Samokov; Regional governors and experts from the regional administration of Sofia City, Sofia Region, Pernik Region; representatives of the scientific and academic community, non-profit organizations working in the field of environment protection, regional development, tourism, winter sports and services; owners of real property, buildings and facilities; designers, etc.

Public Advisory Council (PAC) to the Directorate of Vitosha Nature Park

Studies and findings
The "Update of the Vitosha Nature Park Management Plan" for the 2015-2024 period, including the elaboration of geo databases and maps as well as the elaboration of GIS of Vitosha Nature Park, summarize the findings of studies, analyses and evaluations in the process of elaboration of Plan 2. The detailed texts of the studies, working methods, specific findings of analyses, tables, figures, sketches and descriptions as well as environment and social-economic evaluation, recommendations, etc. are summarized in 4 collections: Abiotic Factors, Biological Characteristics, Description of Forest Territories and Forest Inventory and Social and Economic Aspects.

Use of the park and social and economic aspects
It comprises studies on the characteristics and evaluations of social and economic factors providing guidelines on decision-making as well as on creating conditions for sustainable development of tourism, minimizing the negative impact on ecosystems, habitats and species. There are detailed studies of the demographic characteristics, the links with Vitosha Nature Park and the development of tourism in the nearby towns and villages, the technical infrastructure, water use in the Park. Special attention is paid to the condition of the buildings used for shelter and eating.

Tourism, recreation, sport, services
The subject of study, evaluation and planning are the visitor infrastructure, the tourist routes, elements related to the various types of tourism and sport practiced on the territory of Vitosha Nature Park and functionally linked to the park territory.

↓ Taking part in the open discusions about the new plan for Vitosha Nature Park Management at 30.09.15

LONG-TERM OBJECTIVES AND LIMITATIONS

First main objective: Protection and maintenance of the biological and landscape diversity of the Nature Park as a protected area, a significant element of the National and European Environmental Network NATURA 2000.

Second main objective: Establishing the balance between protection and sustainable use of the resources in the Natural Park in compliance with the traditional forms of livelihood as well as ensuring the conditions for the development of tourism;
- Integration of all data bases in a new Digital Model of the Territory and a Geographical Information System of forest and forestless territories, technical and tourist infrastructure;
- To reflect the social and economic and environmental development of the municipalities in the adjacent area of the Nature Park;
Secondary Objectives:

1. Protection of the immovable cultural heritage on the territory of the Vitosha Nature Park and in the adjacent areas, revealing its potential for socialization as an important resource of cultural tourism;

- Conservation and protection of already socialized archaeological sites of immovable cultural heritage within the territory of the Nature Park;

- Support for the intangible cultural heritage in the adjacent areas of the park and enabling its description and digitization if possible. Promotion of the practices of revitalization of specific rituals, feasts and local traditions.

- Updating the information on the availability of archaeological sites within the park via new systematic field studies on the territory covered by the Vitosha Management Plan;

- Establishment of protected areas with boundaries and regimes of protection of archaeological immovable cultural values;

- Producing a program for integrated protection and socialization of cultural and natural values in Plan 2;

2. Creating the conditions for the development of scientific and educational activities

- Development of educational activities in the visitor and information centres, development of the network of information centres and offices;

- Taking information and education activities out in a natural environment, building thematic routes, green classrooms, participation of adolescents in habitat restoration activities, etc.;

- Maintenance of a wide range of sport training in the park (skiing, mountaineering, orienteering, paragliding, etc.), training mountain guides and providing lectures in biological aspects of cognition;

3. Achieving socio-economic benefits for specific target groups.

4. Preservation of agricultural lands by traditional land uses.

5. Building the capacity and improving the management of the Vitosha Nature Park Directorate.

6. Introduction of sustainable transport in Vitosha Nature Park, modernising the aerial lift transport, including through the construction of new facilities, limiting road transport, introducing electric vehicles as a means of environmentally-friendly transport for restricted areas of the park.

KEY ISSUES FOR FURTHER CLARIFICATION AND DEVELOPMENT IN THE NEW PLAN:

(Remarks made by the Chief Architect of Sofia, P. Dikov, during the public discussion of the plan – October 2015)

1. The zoning lacks detail. The plan needs to have spatial planning (urban development) part with some legal weight.

2. The zone for tourism is in the direst of needs for prevention and protection.

3. Accessibility – this is the most visited tourist site in Bulgaria. Over 5 million tourists visit the mountain annually. Most environmentally friendly transport is the cableway transport. It is necessary for cableways to reach down to places with access to public transport and parking – in the case of Sofia, this is the ring road and the suburbs in the foothills of the Vitosha Mountain.

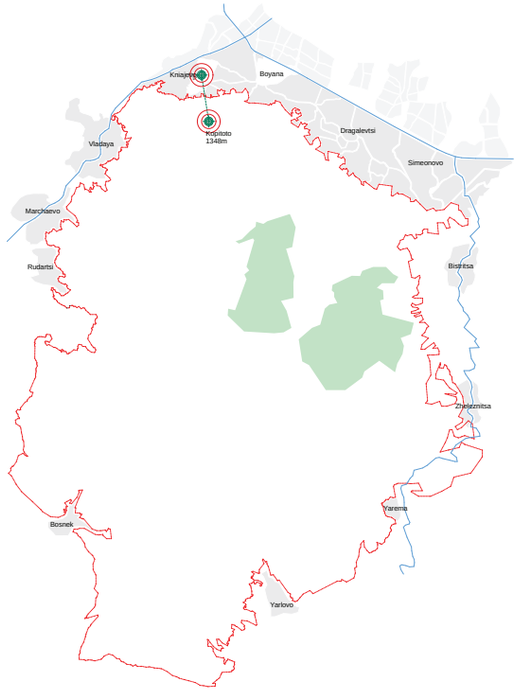
4. The access from the western and southern side of the mountain should be renewed and improved: Knyazhevo, Vladaya and Pernik.

↑ The Chief Architect of Sofia, Peter Dikov talks about the new managment plan

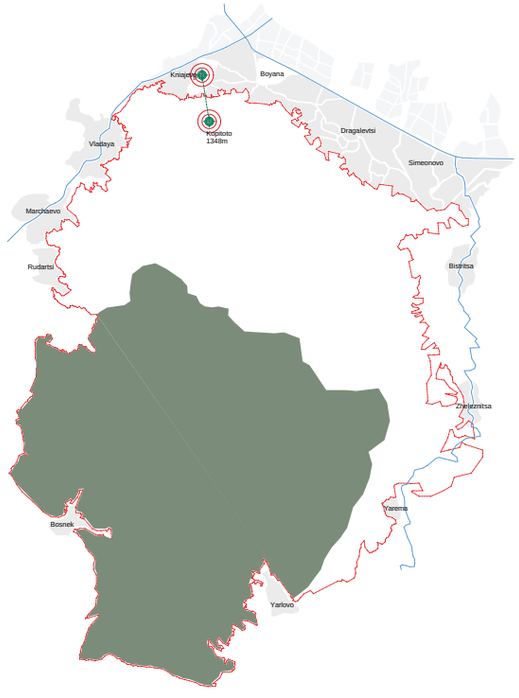
ZONING. FUNCTIONAL PURPOSES OF ZONES

The designated areas are consistent with the requirements of the Protected Areas Act, Article 19, Items 1, 2, 3, and 4, and the Assignment for Developing a Management Plan for the Period 2015-2024. The following zones have been designated in the Vitosha Nature Park by function and regulatory regime:

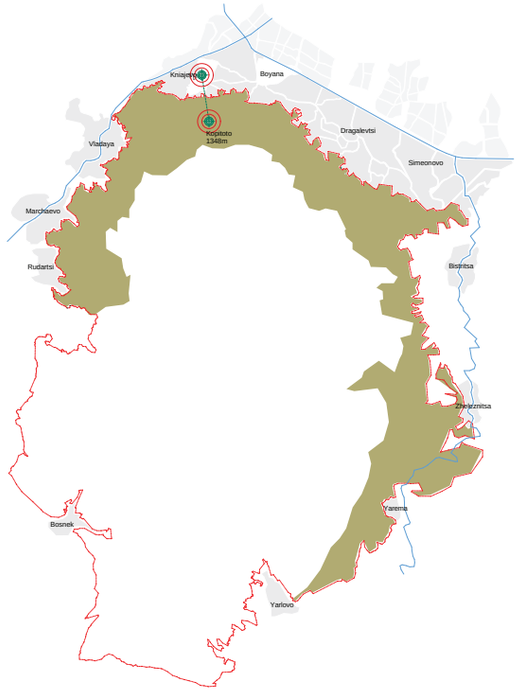
1. Reserves – 1,848.4 ha / 6.9%



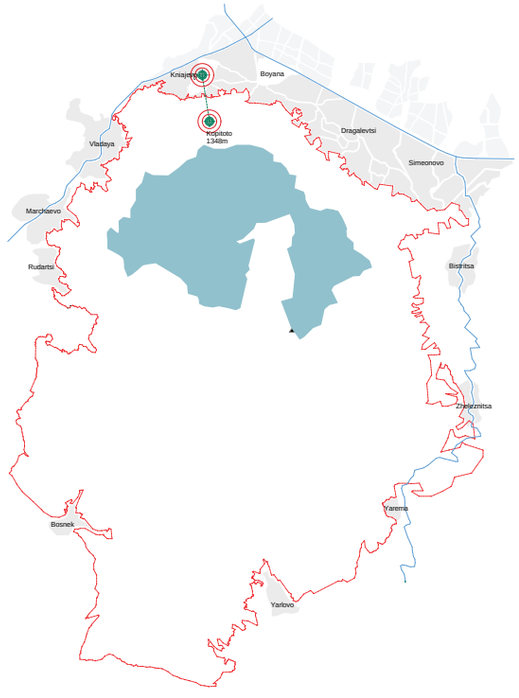
2. Zone for conservation of priority natural habitats - 14,726.7 ha / 54.8%



3. Zone for tourism, suburban recreation – 6,196.3 ha / 23.1%



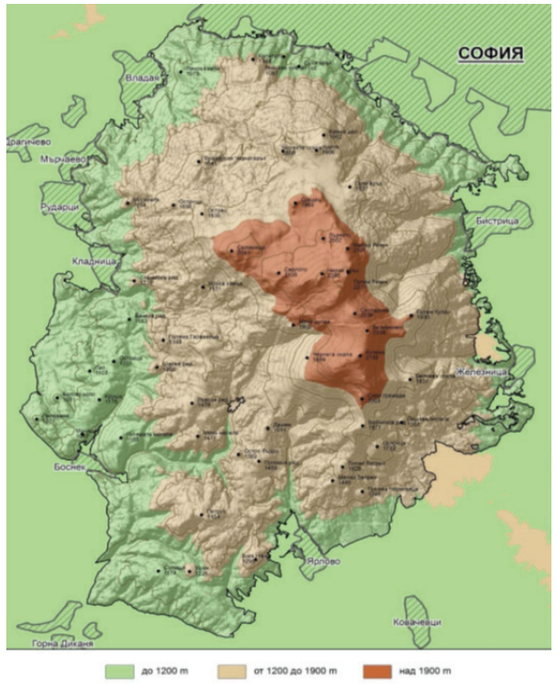
4. Zone of chalices, shelter buildings, sports facilities, administrative centres for park management – 4,089.4 ha / 15.2%



VITOSHA MOUNTAIN CLIMATE

Vitosha is characterized by a cold continental and mountainous climate. The following climate zones can be distinguished:

- **Low Mountain Zone – from 700 m to around 1,100-1,200 m. The annual precipitation in this belt does not exceed 600-700 millimetres. The average annual temperature is 18°C, the average annual fluctuation is 21-22°C, and the average winter duration is about 4 months;**
- **Mid-Mountain Zone – from 1,100-1,200 m. The annual precipitation here reaches 1,060 mm. The average annual temperature is 4°C, the average annual temperature fluctuation is 18-21°C, and the average winter length is 4-5 months. A sustained air temperature above 10°C occurs at the end of May. The average annual relative humidity is 79%.**
- **High Mountain (Subalpine) Zone – covers the tree bare areas with an altitude between 1,900 and 2,290 meters. The ridge of the mountain is one of the wettest places in the country. The average annual precipitation amounts to 1,177 mm and the average annual temperature is 0.3°C. The average annual amplitude is 16-17°C. Winter lasts 5-6 months in the high part of the mountains (above 2,000 m).**



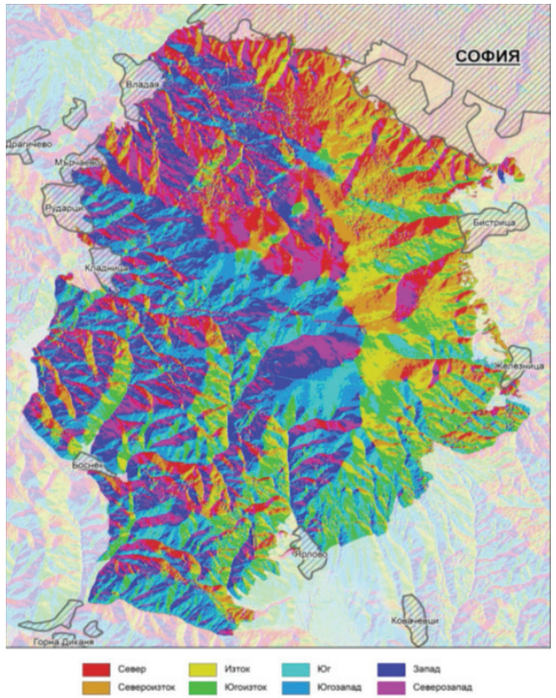
Sunshine:
The mountain is characterized by relatively small annual amounts of sunshine – from 2,500 to 1,900 hours (Cherni Vrah – 1960 hours), distributed by season as follows: in the summer: 740 hours, in the winter: 260 hours, in the spring and autumn: 440 hours.

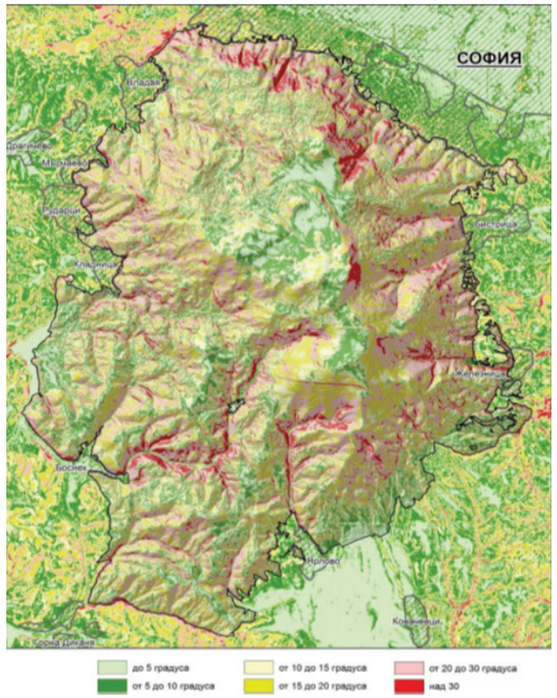
Solar radiation:
The annual solar radiation is 5,100 – 5,400 (MJ/m2). The total solar radiation for the period with air temperature over 10°C is 3,800-4,100 (MJ/m2), during which period the duration of sunshine is 1,500-1,600 hours.
The solar radiation at Cherni Vrah reaches its maximum in July - 19.3 (MJ/m2), and is 3-4 times greater than the values in January.

Air temperature:
The annual course of air temperature is with a minimum in January and a maximum in July. Temperature amplitude decreases from about 20°C in the low part to 16°C at Cherni Vrah.
At an altitude of over 1,000 metres the temperature decreases more strongly in the summer and less so in winter, which is why the annual amplitude is smaller than in the adjacent fields. Winter is cold, with an average January temperature of about minus 3°C to minus 5°C (Cherni Vrah – minus 8°C). Summer is cool, with average temperatures of 10 - 15°C (Cherni Vrah – about 8°C).
The average air temperature in winter shows a positive trend. The last years of the 20th century have been the years with the highest minimum air temperature.

Humidity:
The relative humidity at the high parts reaches its maximum in May, and the minimum is in August. The maximum in the lower parts is in January, February and December, and the minimum – again in August.
The air is driest in summer (August), when the relative humidity varies between 60% and 80%.
The maximum monthly values are observed in December (or November in places), and fluctuate from 80% to 90%.

Precipitation:
Annual precipitation ranges from 650-700 mm in the foothills to 1,000 mm in the highest parts of the mountain (Cherni Vrah – 1,030 mm). Precipitation is mainly of snow in winter with solid precipitation up to an altitude of 1,000 m being about 70-90% of the total precipitation and above that level - 100%.
The highest number of days with precipitation is in May and June – about 10-15, and at smallest – in August and September: 5-8. In December, January and February 50-70% of the precipitation is of snow and in the higher parts of the mountain precipitation is exceptionally of snow. At altitudes above 1,800 m in April and November, the number of days with snowfall is about 50-60% of the total number of days with precipitation.
Fluctuations in precipitation tend to have dropped at the end of the last century. The longest periods of drought have occurred in the 1940s and during the last two decades of the 20th century.
We have recently witnessed a marked reduction in the snow cover depth.





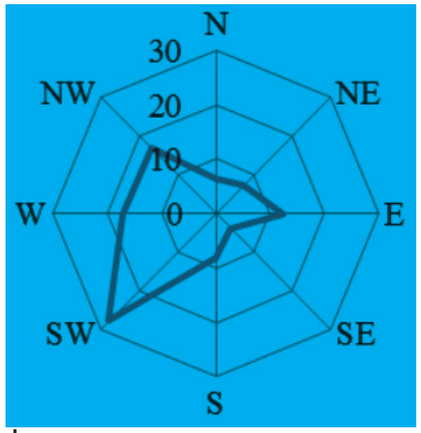
Slope Orientation
- There is an even distribution of north-oriented and south-oriented areas (with a difference of only 1,5% in favour of the sunny ones).
- Shady and sunny areas are also evenly distributed.
- West- and southwest-oriented areas account for the largest part of the park (14.5 and 14.4%), while the southeastern-oriented ones account for the smallest part (9.7%).

Steepness of Slopes:
- The steep slopes having a gradient of 15° to 20° account for 21.9 % of the park area.
- The extremely steep slopes having a gradient of 20° to 30° account for most of the park area – 28.1%.
- The slopes having a gradient of over 30° account for a limited park area – only 5.7%.

→ *Wind roses at the Kopitoto region during the different seasons:*

Wind:
Strong, mainly southwestern and western winds blow during most of the year at higher altitudes (above 1,600-1,800 m) at an average speed of about 8 m/sec. Meanwhile, in orthographically closed relief forms, their speed is about 1-2 m/sec.
The foehn is characteristic of the northern slopes, emerging upon southwestern airflow. It is due to the lowering of air mass having gone over the ridge, descending as a strong warm, dry wind, that very quickly melts the snow on the northern slopes of the mountain.

Cloud Formation:
The average annual values of the total cloud cover at low and medium-high mountain zones are poorly dependent on the altitude. The dependence is well expressed at an altitude exceeding 2,000 m. In winter, clouds are greater in the lower parts of the mountain and at the peaks. August is least cloudy – force 2-3 to 4-5 on the Beaufort scale depending on the altitude. There is almost no such fluctuation in the autumn. The wind force in October is 5-6.



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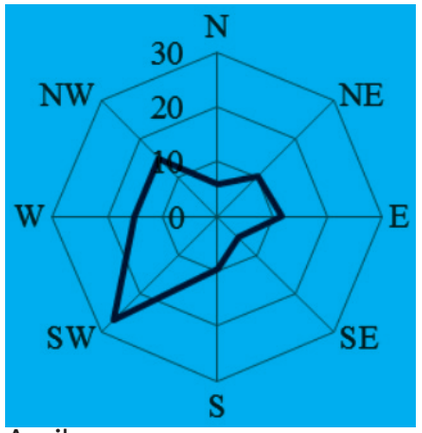

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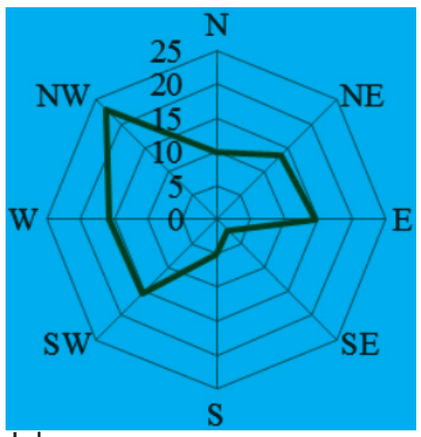

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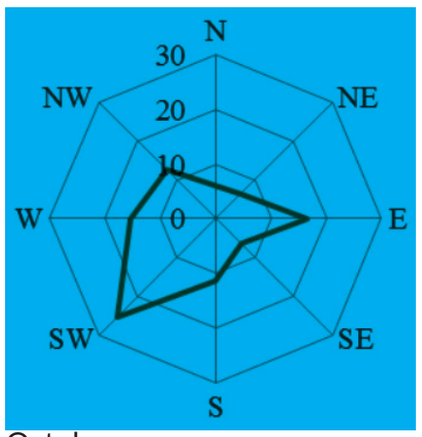


October

CHAPTER

/// The Sport Activities

↖ *Aleksandar Iliev in Vitosha Mountain 2015 Photo taken from: http://www.bikepornmag.com/*

HANG-GLIDE | PARAGLIDE

Hang gliding is one of the oldest forms of non-motorized flying whereby a pilot flies a light, non-motorized aircraft called hang glider. The name (in Bulgarian) originates from the shape of its wing which is similar to the Greek letter Δ (delta). Most modern hang gliders are made of an aluminium alloy or composite frame covered with synthetic sailcloth – also used to make parachutes – to form a closed kinetic chain. The pilot is ensconced in a harness suspended from the airframe, and exercises control by shifting body weight in opposition to a control frame. Other control devices are also used to facilitate take-off, control and landing. The launch requires gathering momentum and, thus, the pilots usually run downhill or use special support platforms. Then, following the air currents, the hang glider can soar in the air for hours, even a whole day, covering hundreds of km and going up thousands of meters above the ground. Practicing the sport requires preliminary training and special instructions. For training purposes, there are training wings which are safer and more secure because of the more stable construction allowing only for limited flying speed.

Paragliding is the easiest to access and the most popular flying method as the aircraft can be carried in a rucksack. It was created by the French army based on sports parachutes. Modern paragliders weigh about 15 kg. The equipment includes: a soft wing (canopy), harness (seat), reserve parachute, belts, carabiners, solid shoes and keenness. The wing is made of compartments which are filled with air, giving the lift force and allowing it to move with the air currents.

A paraglider is a non-motorized aircraft, however, thanks to the air currents, good pilots **can fly over 400 km and rise to 7,000 meters above the ground.** It is easy to take off, control and land. There can be precise paragliding or targeted landing; tandem paragliding – a pilot and a passenger flying with the same wing; long-distance paragliding and aerobatics – air acrobatics.

↑ *Veselin Ovcharov*
Photo taken from :
http://www.flytheearth.com

↖ *Photo taken from http://1.bp.blogspot.com/*

According to the Bulgarian National Aeroclub (BNAC) there are over 12,000 actively flying paragliders and over 600 hang gliders in Bulgaria. Although non-motorized flying on the territory of the Vitosha Natural Park has been practiced for over 30 years, there still lack information and directions signs indicating the places suitable for flying.
It has become clear, over the years, that the following places are suitable for taking off:

- **„Valchata skala" – with northern, northwestern and western winds (north, northeast, west)**
- **„Kominite" – with northern and northwestern wind (north, northeast)**
- **„Kopitoto" – with northwestern and western wind (northwest, west)**
- **„Rudnichar" – with southern, southwestern, southeastern wind (south, southwest, southeast) (take off in the area of Orlovets)**
- **„Romanski" – with eastern, northeastern, western and southwestern wind (east/northeast and west/southwest)**
- **„Reznyovete" – with northern, eastern and northeastern wind (north/east and northeast)**

Currently, only the area of Kominite is used for taking off. This is impossible from the other areas because of the lush plants and the lack of transport (the chairlifts are out of order). In accordance with the Vitosha Natural Park Management Plan in force, taking off is only allowed in the area of Kominite. Taking off is suitable for beginners and advanced gliders but there are the following shortcomings:

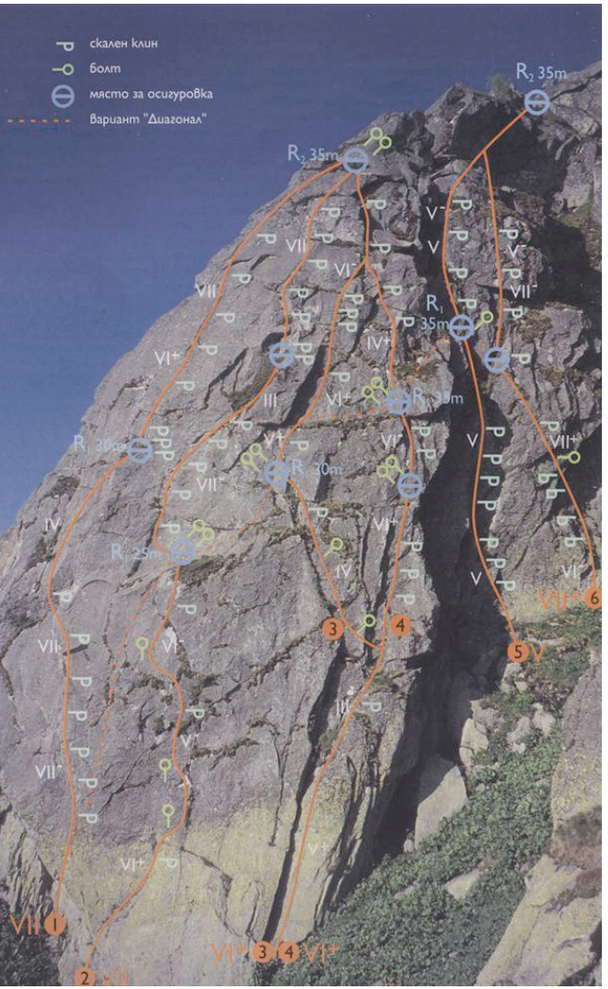
→ *Veselin Ovcharov at the Kopitoto preparing to fligh away*
Photo taken from :
http://www.flytheearth.com

- **The uneven surface, there being dangerous rocks there and the bushy land, which make taking off dangerous.**
- **The area is far away from the place where transport is available – in combination with the fact that the equipment weighs 15-20 kg in the case of para gliding and over 25 kg in the case of hang gliding, the equipment is also cumbersome and not easy to carry – all this makes it even more difficult to carry**
- **The place is suitable for taking off only with northern, northeastern winds which are relatively rare in Vitosha.**

The Dragalevski Livadi Area is one of the few places suitable for safe landing of hang gliders. The Boyansko Blato Area is also suitable but it is private property. All these locations have their specific characteristics which create problems for safe landing, particularly in perspective. The problems with landing places have to do with:

- **buildings**
- **plants**
- **private property**

ALPINISM / MOUNTAINEERING



Mountaineering – climbing categorized alpine sites (rocks, walls, peaks and slopes) by using special technical equipment. It may be summer and winter time mountaineering.

Because of the proximity of Sofia, the development of mountaineering in Bulgaria is closely linked to the climbing sites in Vitosha. The first successful climbing of Reznyovete was made by members of the Bulgarian Mountaineering Club (BMC) in the early 1920s.

Since then, various mountain sites were developed – they are of interest and are a challenge to mountaineers and climbers.

Although mountaineering and climbing have been practiced at Vitosha for over 80 years, the information on the mountaineering sites has never been developed and presented in detail in the official documents on the park management. As a result, the rocks continue to have undervalued potential in the development of the sport and specialized activities in the nature park.

Boulder climbing – climbing with no ropes on rocks of up to 5 meters which are difficult to climb.

Sport climbing – climbing with no ropes on routes equipped with permanent and reliable secure points (glued nails and/ or bolts) which are aimed to be used only for securing but not for passing.

Traditional climbing – climbing with a rope on routes whereby securing is left to the natural rock surface and special equipment (gadgets): clamps, rings, etc. which are gathered after passing. Similar to the sport climbing, the good style requires that they should only be used for securing but not for passing.

Ice climbing – climbing ice formations, including frozen waterfalls with ropes and devices for ice. Varieties of this type of climbing include mixed climbing and dry tooling whereby the climber climbs pieces of ice and rock and securing may include techniques from sport and traditional climbing.

Ski mountaineering – skiing alternate with going up and down ungroomed hills; mountaineering skills and techniques may need to be used.

← Alpinism in Bulgaria Photo taken from: http://bfka.org/activities/20130716_vitosha_climbing_strategia.pdf
↓ Photo taken from: http://www.summitpost.org/alpinism-101-an-introduction/756518

FREE SKI / SNOWBOARD

Skiing is one of the most popular types of active recreation, tourism and mountain trips in the winter months. Together with the main alpine skiing disciplines practiced in the ski resorts, the so-called “free riding” is also extremely popular worldwide. It includes various types of skiing and their common denominator is the fact that there is no need for a standardly groomed ski runs without bumps.

The expansion of the urban areas after the second half of the 20th century made a growing number of people seek opportunities for direct contact with uncontaminated natural environment and for practicing sport in their free time in as calm environment as possible. Skiing is an efficient movement method in the mountain in winter. In the case of deep snow, it makes it possible to go on walks in the mountain which would otherwise be extremely difficult. Thanks to the touring ski, winter climbing sites can be reached and, last but not least, it is pleasant to go skiing on the ungroomed slopes. That is why it is the winter tourism of choice in the mountain for people having the necessary skills. All this, along with the long-standing traditions, is one reason for the growing popularity of free riding worldwide.

Vitosha is a relatively small mountain for Bulgarian standards. Nevertheless, as it is close to the capital, it is a popular place for skiing tourism and free skiing. Traditions date back to the 1920s. There is a trend, over the last 10-15 years, of growing interest in free riding among the visitors of Vitosha.

The main objective for the near future is to systemize the available information for the free riding opportunities in Vitosha, to put forward measures for the development of skiing tourism routes, skiing and free riding areas, to set up mechanisms and activities to improve the safety of free riders and snowboarders.

There needs to be a sustainable use of ski sport resources at Vitosha taking into account as much as possible the natural characteristics and the aspiration to protect the valuable ecosystems on the planet.

↖ *Travice Rice shredding*
Photo taken from: http://blog.liftopia.com/blog/in-the-moment/

← *Aleksandar iliev*
Freeski ride in Vitosha Mountain 2015
Photo taken from: http://www.bikepornmag.com/

MOUNTAIN BIKING

Mountain biking is not a new sport for Vitosha. It is at Vitosha that the first mountain bikers appeared. Cross-country (an Olympic discipline), downhill and enduro mountain biking are practiced in the mountain. In the Vitosha Natural Park mountain biking is practiced on almost all trails. There has been a downhill track in Vitosha for at least 10 years – it has been created only by volunteers despite the fact that there is no official permission or opinion by any institution. On the other hand, there are practically limitless opportunities to practice cross-country and enduro. This makes it necessary to categorize the tracks and mark them.

Types of mountain biking disciplines:

- **Cross Countrey**
- **Enduro**
- **Downhill**

Target groups:

- **Beginners**
- **Intermediate**
- **Advanced**
- **Professional**

- The fact that Vitosha is close to Sofia is the main advantage for the development of this sport in the region;

- The mountain area offers a variety of tracks and routes to practice this sport;

- The mountain terrain presupposes full variety of tracks and routes for practicing this sport.

- The tracks are manually built;

- The use of excavators is allowed to the places which these vehicles can access and where the works cannot be carried out manually;

- The ground is cleared by means of hedge trimmers, a motor chainsaws, rakes and special manual tools for the soil;

- When constructing the tracks, no trees are cut and, thus, the environmental balance is not disrupted. The only plants to be eliminated are the low plants of no more than 50 cm. The tree sprouts are immediately planted elsewhere;

- The tacks are between 1 and 2 m wide and are made on existing paths and/or old trails;

- Wooden facilities are manually constructed. They are cut on the spot and the construction is assembled by using nails;

- The wood material is treated and calibrated in advance;

- When constructing the wood and earth hurdles, the most appropriate area is selected considering the fact that the track used for mountain biking should be dynamic and pleasant to ride on;

- The wood material is transported to the nearest possible point and then carried by hand;

- A hexagonal mesh is placed on the wood grill so that there is better cohesion between the tyres and the wood;

→ *Aleksandar iliev*
Enduro ride in Vitosha Mountain 2015

↓ *Aleksandar iliev*
Dpwnhill ride in Vitosha Mountain 2014
Photos taken from:http://www.bikepornmag.com/

INTERVIEW

NAME:
ALEKSANDAR ILIEV

BORN:
06.12.1986

LOCATION:
SOFIA, BULGARIA

STATUS:
RAM BIKES ATHLETE
MTB TRACKS DESIGNER

DISCIPLINE:
DOWNHILL/ENDURO MTB
FREERIDE SKI

One of the major objectives of this thesis is the creation of an integrated sports centre linked to the lift stations for the purpose of developing alternative sports in Bulgaria and giving a new lease of life in the declining western part of Vitosha. In view of the specifics of the topic, the easiest way to get to know the problems of one of the main functions related to my project, namely the creation of modern bike park infrastructure, was to ask one of the most competent people in Bulgaria on the subject, Alexander Iliev, to share his experience and opinion. We have known each other for 12 years, since I first went to Vitosha by bike. Back then, he was also a beginner but, in those years, everything was at a different level. We had no tracks, no equipment, no infrastructure except for an old lift from Communist times. He decided to specialize in this field and managed to create the only two bike parks in Bulgaria situated in the big ski resorts in the country. Thanks to my consultation with him, I managed to get the clearest idea of where and what would be necessary for the creation of such a sports tourist centre. Here is a part of our conversation:

↓Aleksandar iliev at the site of Borovetz Bike Pak in Rila mountain 2014
Photos taken from:http://www.bikepornmag.com/

Atanas Nikolov // You are responsible for the creation of the only two bike parks in Bulgaria. Which are the most important, the essential characteristics of the tracks?

Aleksandar Iliev // "The most important condition is that the mountain relief and the soil itself be appropriate. On certain slopes nature has given you everything and all you have to do is to put the finishing touches – that is to say to clear the ground, to mark the tracks and to build some small elements. As to the soil, the drier and rockier it is, the more difficult it is to make the track, respectively to maintain it."

AN // What tools are necessary for the creation and maintenance of a bike park. The most important aspect is the experienced staff to maintain and create the park.

AI // "The basic tools, such as shovels, pickaxes, rakes, motor chainsaws, etc. are a must. You cannot do without them. The type of track determines the use of more serious equipment. In a park, it's good to have both natural tracks, which take full advantage of the mountain characteristics, and tracks which require the investment of more funds, respectively the use of equipment. The second type are the so-called FLOW-tracks which are even paths with a lot of bumps and steep curves. The small chain excavators and fork lifts of up to 2 tons are the most appropriate. Another type of excavator used is the so-called spider excavator."

AN // Is there a serious risk as with the construction of ski runs? It is limited mostly to the area of the path but not outside it.

AI // "With the easier routes erosion is not much different than the one of a tourist trail. Even if there is any, it can easily be limited. With the more complex downhill tracks erosion even has a positive effect because the surface becomes rougher and more challenging."

AN // Could there be further problems with the flora and fauna?

AI // "No, mountain biking is an environmentally friendly sport and I do not think it can harm the flora and fauna. It is not much different from walking tourism."

AN // You have ridden a bike in some of the largest and most famous parks in Austria and the USA, what have you learnt looking at them and what are you trying to introduce in Bulgaria?

AI // "The terrains in Bulgaria are as good as the ones abroad. With the West European and American parks the essential is the good organization and the fact that the resorts are inclined to make larger investments. Here, there are small cautious steps. What struck me most, especially in some Austrian parks, is the fact that they have invested a lot in making good drainage for the tracks as well as in attractive start and finish zones."

AN // Do you think there is a future for this sport in Bulgaria? Tell us something more about the development of this sport over the recent years.

AI // "Of course, there is a future. The conditions in the Bulgarian mountains are appropriate for the development of mountain biking tourism. Mountain biking is a natural continuation in the development of every winter resort. It is pointless to invest in all this infrastructure of hotels, lift facilities, etc. and to use it only in winter months. In summer the mountain resorts in Bulgaria may continue developing their activities successfully. The investments in the creation of a good bike park in this country are much lower than the ones in Western Europe. Given the difference in prices here and abroad Bulgaria may be a super competitor of the Austrian and French bike parks."

„THE CONDITIONS IN THE BULGARIAN MOUNTAINS ARE APPROPRIATE FOR THE DEVELOPMENT OF MOUNTAIN BIKING TOURISM."

AN // Do you think the Western part of the mountain is appropriate for the creation of a bike park? Why?

AI // "In this area there have been, for many years, trails used by mountain bikers. The surface is appropriate for the creation of various mountain bike tracks. The area is easy to access. Snow melts at the end of March which means that the park can be used from April to December. The only real problem is the good asphalt road to Kopitoto which, with an inadequate management policy and with very high prices for the lifts, might make people prefer to use another type of transport."

AN // Please, describe in brief the perfect start/ finish area. What is necessary?

AI // "It is good to have a good panorama bar at the start area. A finish area which is more open and has better visibility contributes more to the atmosphere. I would give as an example of a perfect finish area the one in Leogang, Austria. An open finish with elements which are interesting to the public, a shop and bike repair shop as well as a few nice bars."

← Aleksandar iliev at the Musala Peak (2,925 m) 2015 Photo taken from:http://www.bikepornmag.com/

↓ Aleksandar iliev at Borovetz Bike Park 2014 Photo taken from:http://www.bikepornmag.com/

CHAPTER

//// Case Studies

TROLLSTIGEN VISITOR CENTER

TYPE:
LANDSCAPE,
VIEWPOINT
ARCHITECTURE

ARCHITECT:
REIULF RAMSTAD
ARKITEKTER AS.

LOCATION:
MØRE OG ROMSDAL,
NORWAY

STATUS:
COMPETITION, (2004)
COMPLETED, (2012)

→ *Panoramic Outlook I Photo taken from:w*

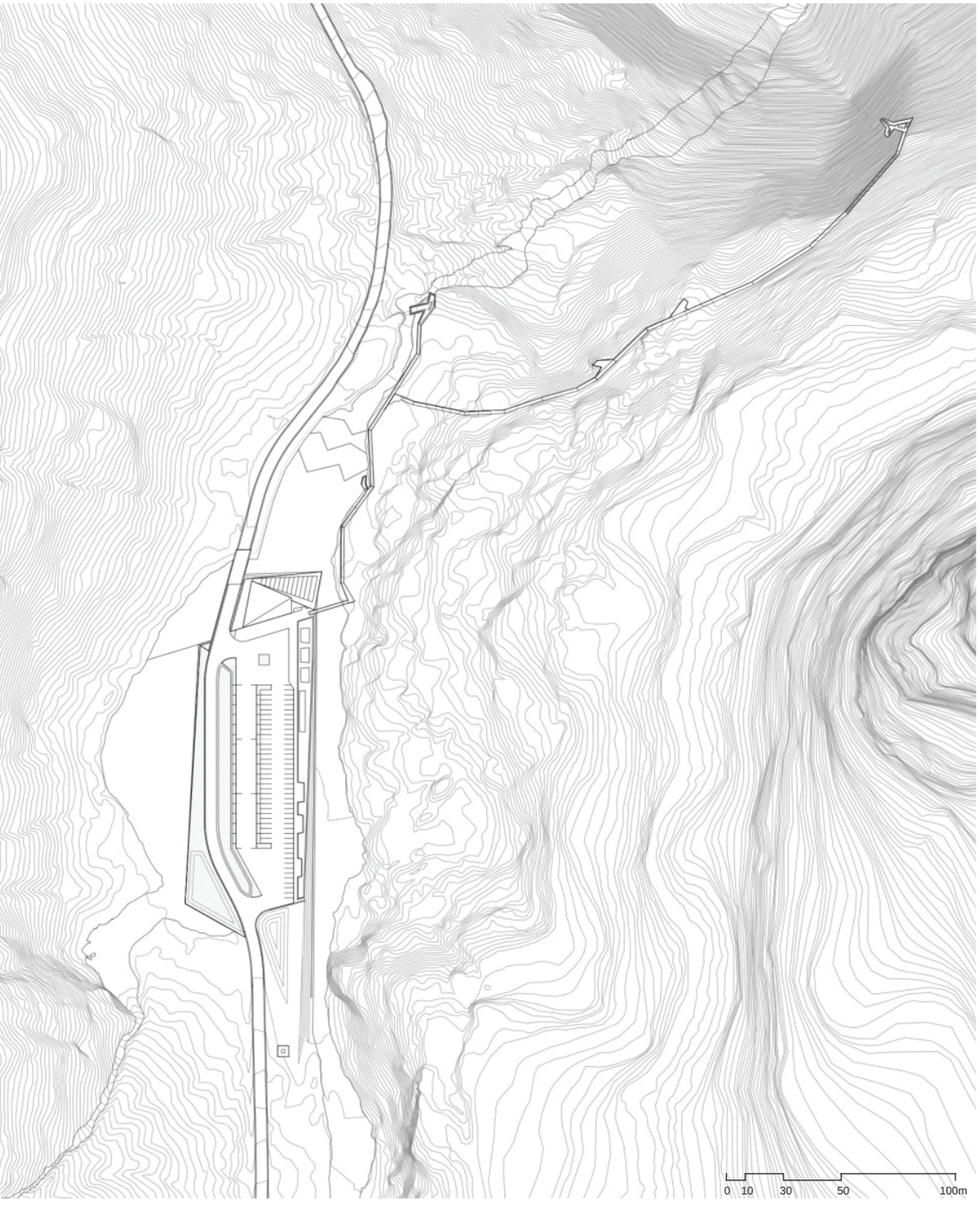
Trollstigen Visitor Centre is a project which is a part of my case studies precisely because of the non-typical functions it has. By referring to it, I express the need of information, educational centres mentioned in the Vitosha Nature Park Management Plan. Although it does not offer cable transport, this project is in line with my advantages for a composite tourist center high in the mountain which is in perfect unison with the surrounding nature. The main part of Trollstigen Visitor Center, which I would share in my thesis, is as follows: long trails starting from the main building and reaching the panorama places offering picturesque mountain views to the bottom of the valley. Thus, safety and access are ensured to everyone, even the people of limited mobility, so that they can walk the secured ramps and enjoy the beautiful view of Sofia.

„REIULF RAMSTAD IS ONE OF NORWAY'S MOST PROMISING ARCHITECTS AND A LEADING EXPONENT OF A NEW AND REVITALIZED NORDIC ARCHITECTURE REPRESENTING SOME OF THE CLASSICAL VIRTUES OF THE TRADITION KNOWN AS CRITICAL REGIONALISM." [1]

↖ The walk to the Panoramic Outlook

← Panoramic Outlook I Photo taken from: http://www.reiulframstadarchitects.com/

↑ Perspective View of the Visitor Center I Photos taken from: http://www.reiulframstadarchitects.com/



„The project enhances the experience of the Trollstigen plateau's location and nature. Thoughtfulness regarding elements and materials underscore the site's nature and character, and well-adapted, functional facilities augment the visitor experience.

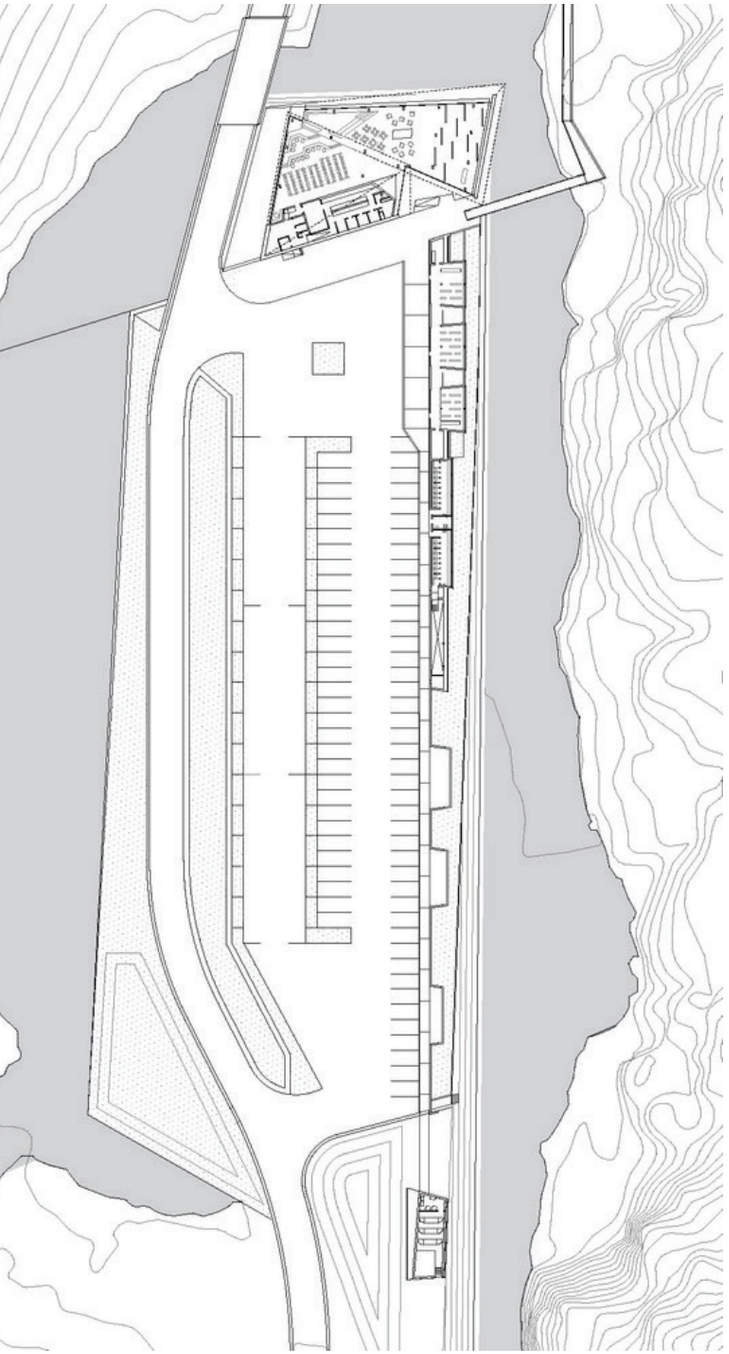
The architecture is characterized by clear and precise transitions between planned zones and the natural landscape. Through the notion of water as a dynamic element—from snow to running and then falling water—and rock as a static element, the project creates a series of prepositional relations that describe and magnify the unique spatiality of the site.

On the Trollstigen plateau you can experience this overwhelming and majestic landscape at close range. The architectural design is adapted to the landscape, with materials that can withstand the force of the elements.

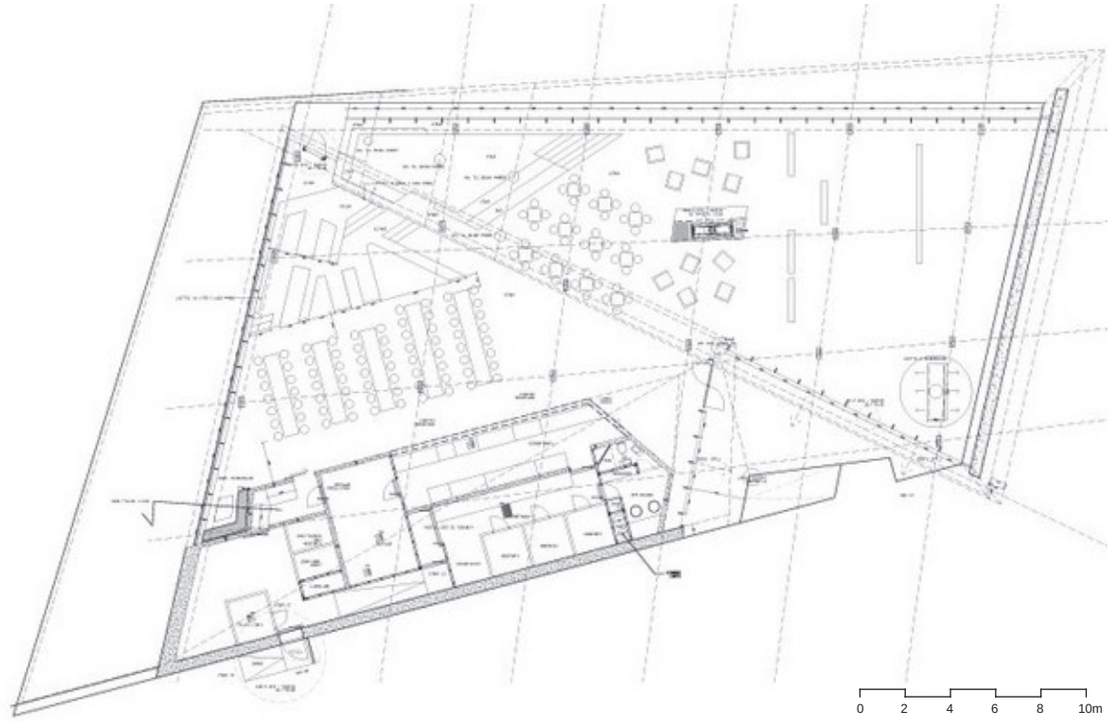
The viewing platforms hover above the Trollstigen road, which meanders along precipitous mountainsides and winds its way upwards on the near-vertical slopes." [2]

← *Site Plan | Photo taken from: http://www.reiulframstadarchitects.com/*

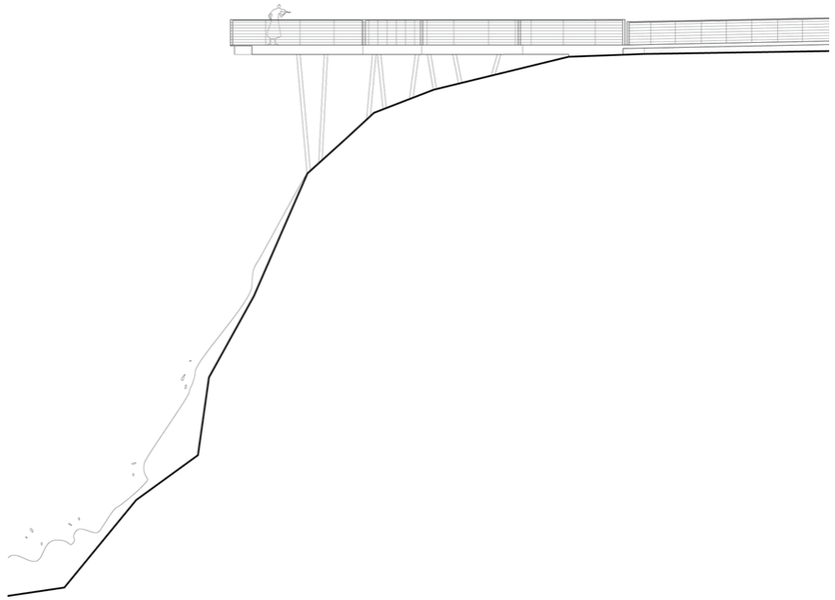
↓ *Bird view perspective | Photo taken from: http://www.reiulframstadarchitects.com/*



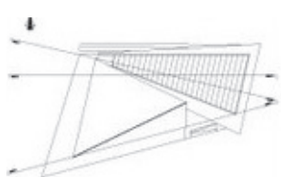
← *Site Plan | Photo taken from: http://www.reiulframstadarchitects.com/*



↑ *Gound Floor | Photo taken from: http://www.openbuildings.com/*



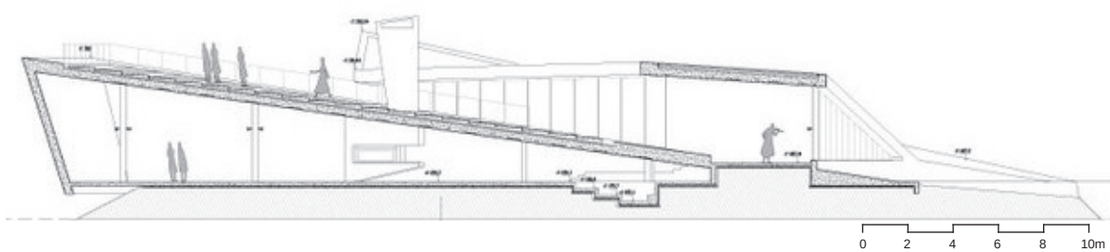
↑ *Section Panoramic Outlook I Photo taken from: https://circarq.wordpress.com/2015/02/18/trollstigenescalera-del-troll-el-poder-de-la-naturaleza-reiulf-ramstad/*



↗ *Section Tourist Center I*

↗ *Section Tourist Center II*

→ *Section Tourist CenterIII Photo taken from: https://circarq.wordpress.com/2015/02/18/trollstigenescalera-del-troll-el-poder-de-la-naturaleza-reiulf-ramstad/*

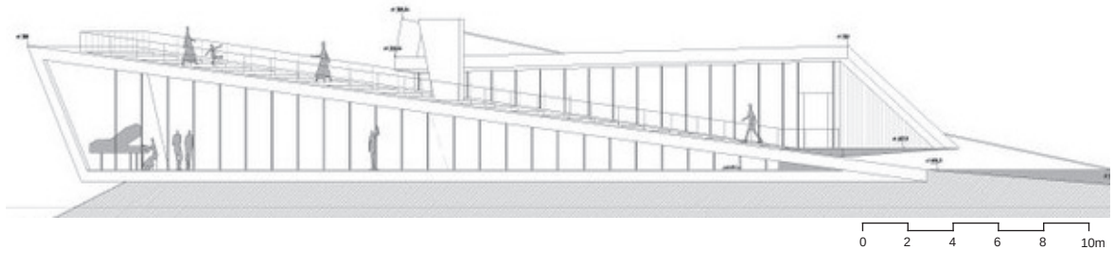


← *Interior design of tourist center | Photo taken from: http://www.reiulframstadarchitects.com/*

↙ *Perspective View of the Visitor Center | Photo taken from: http://www.reiulframstadarchitects.com/*

↓ *South facade*
Plan taken from: https://circarq.wordpress.com/2015/02/18/trollstigenescalera-del-troll-el-poder-de-la-naturaleza-reiulf-ramstad/

↓ *North facade*
Plan taken from: https://circarq.wordpress.com/2015/02/18/trollstigenescalera-del-troll-el-poder-de-la-naturaleza-reiulf-ramstad/



GAIA ROPEWAY CABLECAR

TYPE:
CABLE CAR STATION, TRANSPORT INFRASTRUCTURE, VIEWPOINT

ARCHITECT:
GUEDES + DE CAMPOS

LOCATION:
VILA NOVA DE GAIA, PORTO, PORTUGAL

STATUS:
COMPETITION, (2007)
COMPLETED, (2009)

→ *Perspective View of the upper station | Photo taken from: http://www.archdaily.com/cc*

Gaia Ropeway Cable Car is a reference project in my thesis as an example of a cable car which is entirely in an urban environment and which is used mainly as urban transport by the inhabitants of Vila Nova de Gaia to cross the river as well as by the tourists who enjoy the view of the river from the upper station. As the lower station in Kniajevo is in an urban environment, albeit as the last building before the mountain, there are some similarities between the two, namely the proximity to residential buildings.

The main reason for me to choose this project is also the minimalist architectural similarity to the old lift stations of the Knyazhevo ropeway. I have chosen this example in order to show in what architectural direction I am developing in my thesis.

„The challenge of the project is to intervene in the impressive scenario of the new Serra do Pilar – Cais de Gaia axis and, simultaneously, harmonising it with the technological complexity of a cable car. Basically it was also a question of creating a new – axial, functional and visual – urban axis characterised by the introduction of a very strong movement in the landscape.

His typology was proposed for the city of Vila Nova de Gaia with a ludic and functional approach with the aim of energising the site and the tourist offer connecting the Port wine lodges and the riverfront (with its many restaurants and bars) to the metro and Serra do Pilar on the higher level.

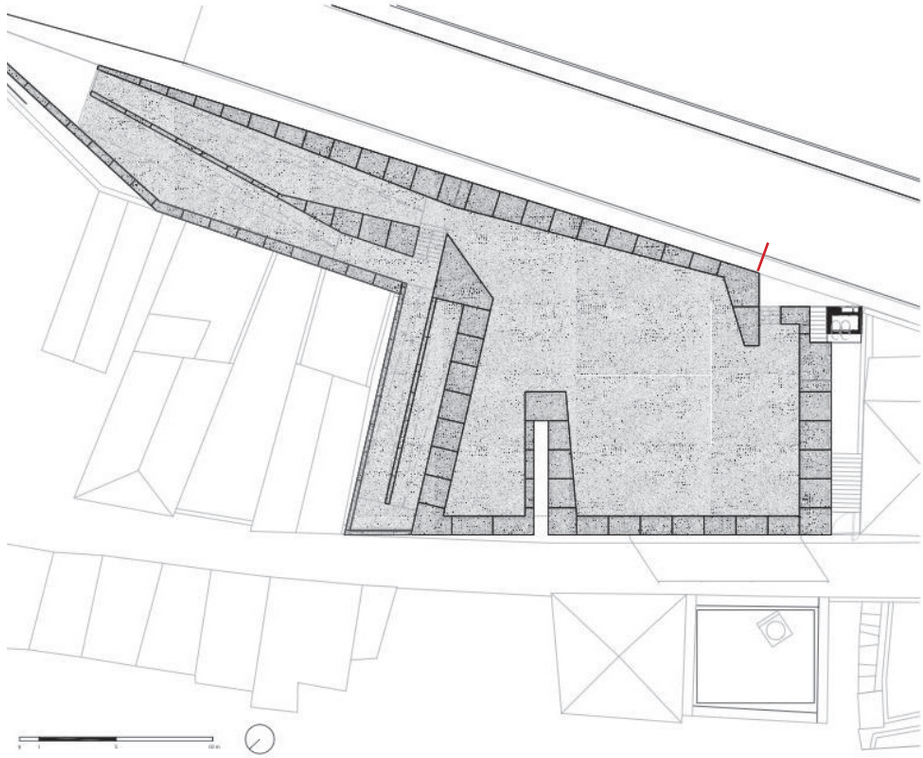
Upper Station – Cable House

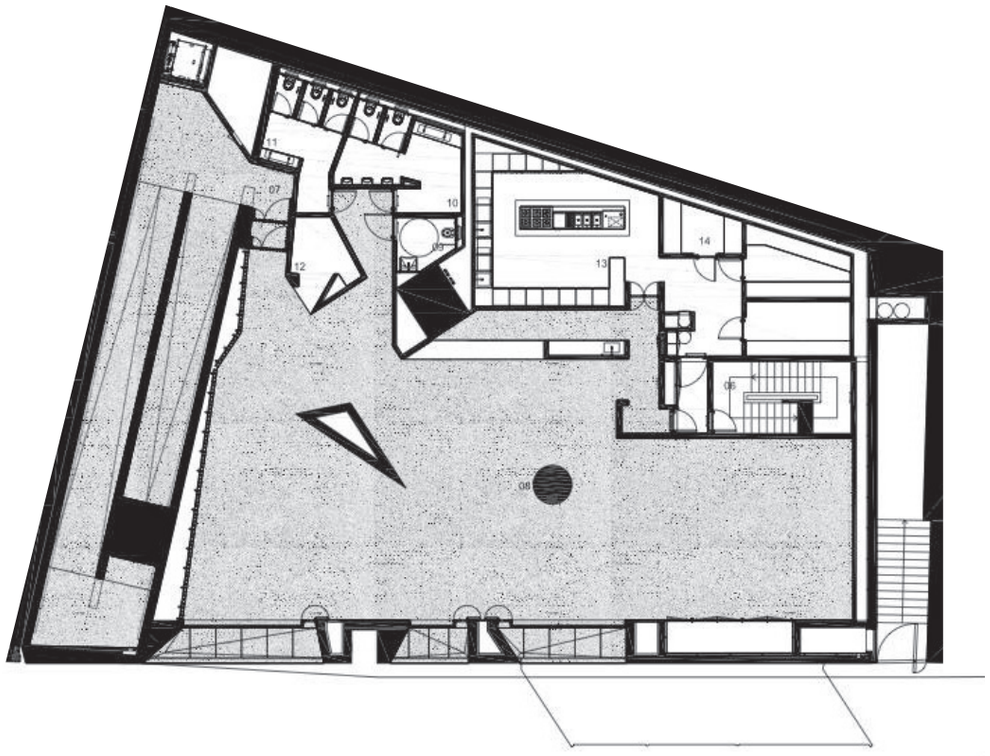
The Upper Station blends into the existing buttressed wall aiming to be neutral and abstract, with no language and almost timeless. The project seeks to reconcile the orthogonality of the houses with the obliqueness of the cable axis, juxtaposing the monumental character of the construction on the steep with the domestic scale of the adjacent houses. Access to the higher level is achieved by ramps and stairs that lead to the roof-belvedere which consolidates and completes the existing buttressed wall.

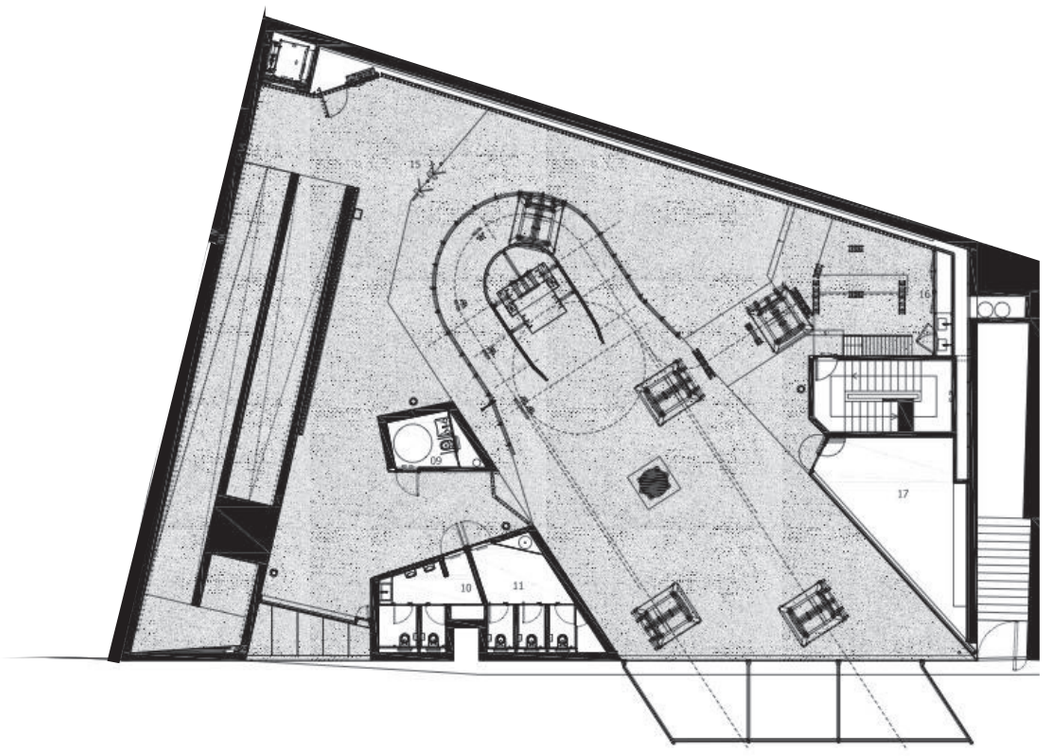
↖ *Perspective View of the top of the upper station | Photo taken from: http://www.archdaily.com/*

→ *View of the cablecar entry of the upper station | Photo taken from: http://www.archdaily.com/*

→ *Ground floor of the top of the upper station | Photo taken from: http://www.archdaily.com/*







↑ *3th ground floor | Photo taken from: http://www.archdaily.com/*

↗ *4th ground floor | Photo taken from: http://www.archdaily.com/*

← *Perspective View of the upper station |*
Photo taken from: http://www.archdaily.com/

↓ *Elevation of the upper station |*
Photo taken from: http://www.archdaily.com/

Lower Station – Cable Tensioning

The location of the Lower Station building on the Douro riverfront gives priority to the public's use of the space and improves accessibility. The ground station's architecture concept lies in a simple and pragmatic structure inspired on the framework of a boat: an iron skeleton with metal slats is suspended over a central concrete structure (the keel) forming two consoles. The two retractable suspension staircases shuts down the building when the service is closed with no need to resort to fencing thus guaranteeing the security of the site.

The architectural form appears as the demarcation of the specific axiality of this type of equipment in which the immaterial axis – the movement along the cable trail – coincides with the physical and structural axis of the building that incorporates the Station's posts. The structural axis supporting the building is also infrastructural concentrating various support equipments for the cable car (ticket offices, information booth, toilets) whilst the boarding platform is raised.

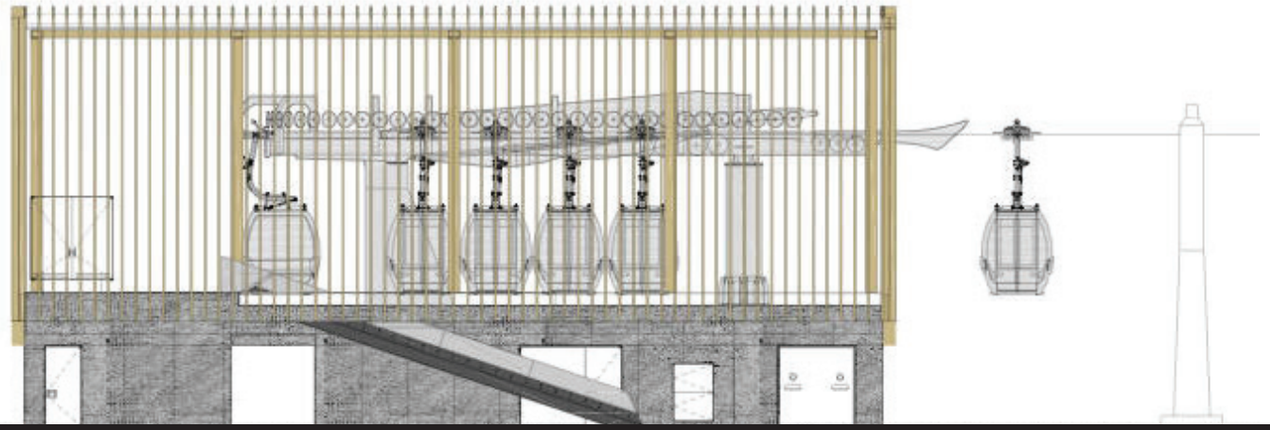
This is truly a play in two acts. The rhythmic form provided by the slats gives the object a mutating appearance with soft optical effects of transparency and opacity depending on the viewpoint and according to the changes in light throughout the day introducing rhythm, cadence, timing, all that is seen and all that is hidden." [3]

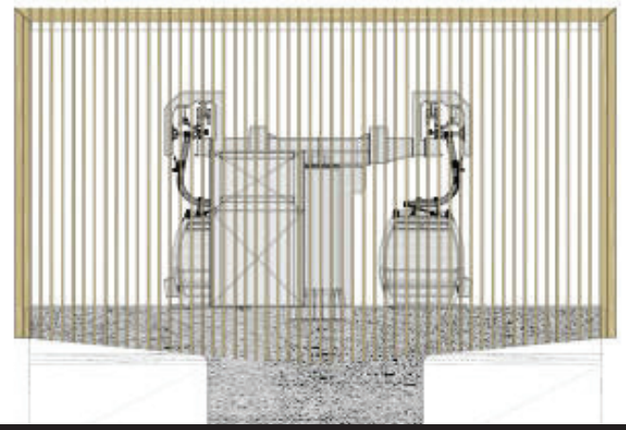
→ *Inside View of the lower lift station | Photo taken from: http://www.archdaily.com/*

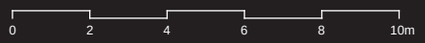
↓ *Perspective View of the lower lift station | Photo taken from: http://www.archdaily.com/*

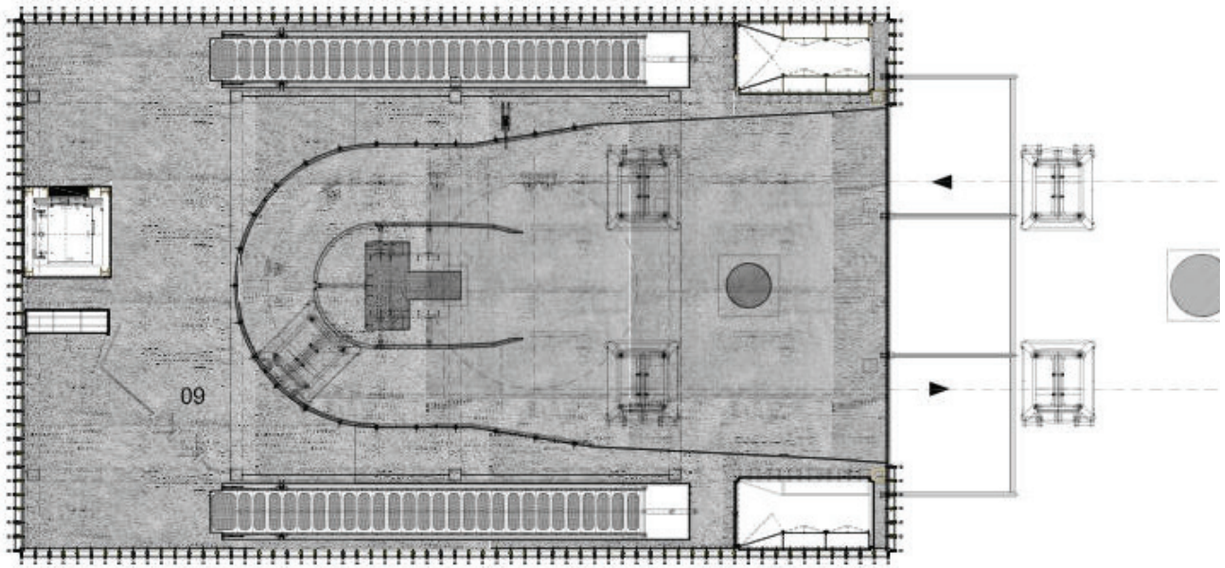
↘ *Elevation of the lower lift station |*
Photo taken from: http://www.archdaily.com/

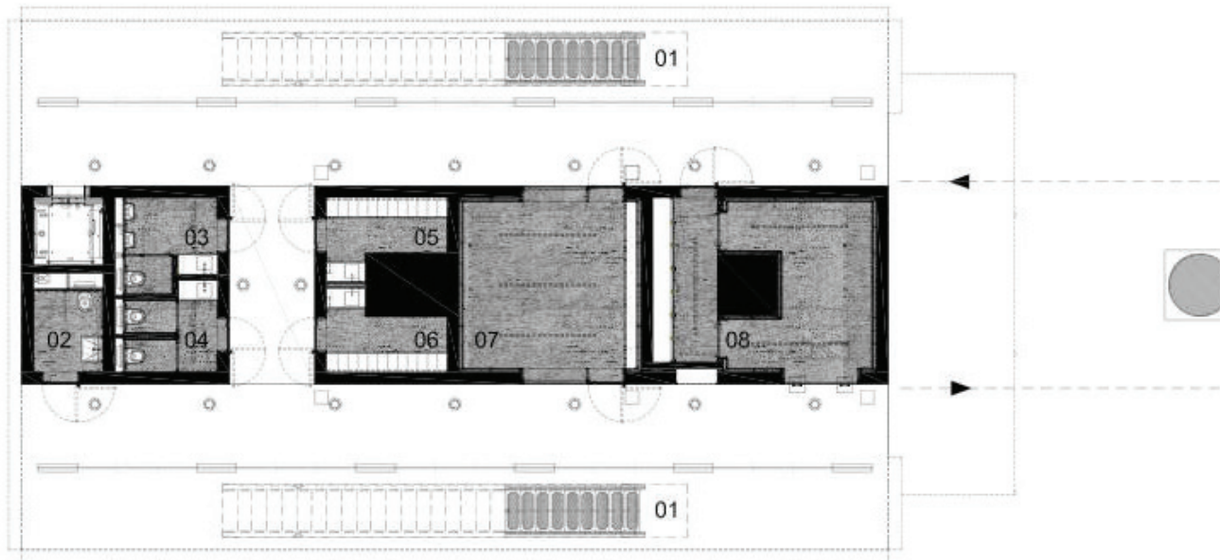
↓ *Elevation of the lower lift station |*
Photo taken from: http://www.archdaily.com/











0 2 4 6 8 10m

↖ 2nd ground floor of the lower lift station | Photo taken from: http://www.archdaily.com/

← 1st ground floor of the lower lift station | Photo taken from: http://www.archdaily.com/

→ Perspective View of the lower lift station | Photo taken from: http://www.archdaily.com/

CHÄSERRUGG GONDOLA

TYPE:
CABLE CAR STATION,
VIEWPOINT,
RESTURANT

ARCHITECT:
HERZOG &
DE MEURON

LOCATION:
TOGGENBURG,
SWITZERLAND

STATUS:
CONCEPT (2011),
COMPLETED (2015)

→ *Perspective View of the lift station |*
Photo taken from: https://www.herzogdemeuron.com/

The brand new station on the peak of Chäserrugg overhanging the Swiss resort of Toggenburg is the last station using a different type or ropeway technology, namely using just two gondolas but with a greater capacity. They start at the same time from the two stations in opposite directions and pass each other in the middle. This type of lift is used in case only few pillars can be placed or in mountainous (steep and rugged) terrain. They usually hang higher than the ordinary cabin lifts. The major common ground with my objective is the location of the station, right on the crest, with steep boulders just underneath.

The main focal points of this project are the huge consoles and the grandstands which create the illusion of a flight in the clouds. From a functional point of view, the panorama restaurant is also a focus of my thesis, apart from the lift station.

„The Chäserrugg at 2262 meters / 7420 feet is the easternmost peak of the seven mountains that make up the Churfirsten Massif. It rises up gently from the Toggenburg to the north and becomes a steep cliff to the south, plummeting almost 6250 ft down to the Lake of Walensee. The high flat plateau formed by the Hinterrugg, Rosenboden and Chäserrugg stands in great contrast to the steep, precipitous walls of the cliff. Behind this impressive topography, the backdrop of the Alps stretches all the way to the horizon. The region has been accessible since 1972 via the Unterwasser-Iltios-Chäserrugg Cable Car and can be reached in less than an hour from Zurich and St.Gallen.

↓ *Perspective View of the lift station I Photo taken from: https://www.herzogdemeuron.com/*

← *Perspective View of the wooden construction | Photo taken from: https://www.herzogdemeuron.com/*

↓ *Interior view of the restaurant | Photo taken from: https://www.herzogdemeuron.com/*

Ever since the cable car went into operation, the restaurant has been provisionally located in the housing originally built for the construction workers. Now it has been torn down to make room for a new restaurant. The station, a pragmatic steel structure on a concrete foundation typical of the 1970s, has remained and been clad in a different façade. The new mountain restaurant is placed perpendicular to the station, extending horizontally along the mountain panorama towards the south. A large roofed area connects the two structures and creates an outdoor arrival hall.

The new station Is constructed in solid wood on a concrete foundation. It was prefabricated by local craftspeople in the valley and assembled on top of the mountain in the course of a summer. The interior was completed the following winter. We decided to use wood because we wanted to echo local tradition. Equally important was a thoughtful exploitation of resources: except for the crane, which was transported by helicopter, all of the parts required for the building were transported by cable car in the course of its regular runs. The excavated earth was used to make the concrete and also as an ingredient of the gravel surfacing.

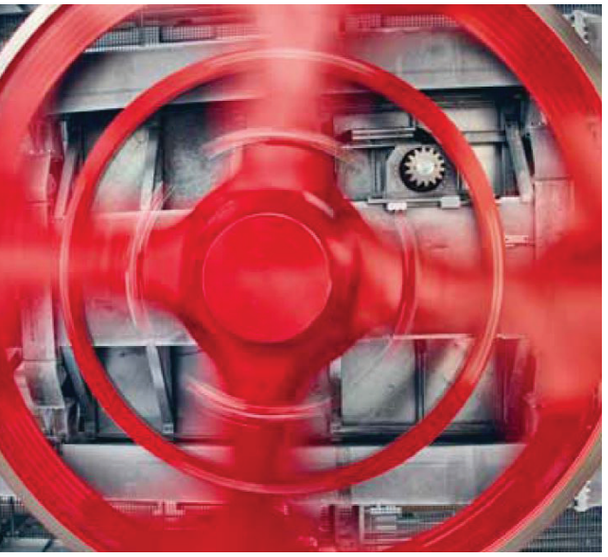
The restaurant is a long, flexible space, its atmosphere marked by the repetitive woodwork from locally sourced spruce trees. The low-hung roof resting on closely placed columns is the dominant element of the building with a covered terrace in front. Glazed on three sides, the restaurant offers spectacular views of the scenery. Niches with built-in benches and tables occupy the fourth side of the room. Each niche has its own window and thus its own framed view of the mountainscape." [4]

↗ *Perspective View of the lift station | Photo taken from: https://www.herzogdemeuron.com/*

↗ *Perspective View of the lift station | Photo taken from: https://www.herzogdemeuron.com/*

DOPPELMAYR LIFT TECHNOLIGY

Board and enjoy
For young and old, sunshine and snow



"The detachable gondola lift from Doppelmayr/Garaventa ranks as one of the most successful ropeway systems in the world. It features cabins to take four to 15 passengers and is used to transport winter sports enthusiasts up snow-covered mountains in the most popular ski resorts, helps to boost summer tourism and also blends in perfectly with the cityscape when employed in urban transport projects. Traveling on a detachable gondola lift from Doppelmayr/Garaventa is safe, comfortable and fast. Modern design, innovative safety components and top-grade structural steelwork ensure a successful combination of aesthetics, utmost safety and optimal added value. The panoramic windows allow a unique, all-round view – and create the sensation of being immersed in nature.

Time and again, the gondola lift demonstrates its many benefits through barrier-free access which means that strollers, wheelchairs or alternative winter sports equipment can be transported without any problem. The detachable grip technology perfected by Doppelmayr/Garaventa enables the carriers to separate from the haul rope in the stations, ensuring particularly comfortable loading and unloading for passengers. On the line, gondolas reach speeds of up to 6 m/s.

Key features at a glance:

-contemporary, ergonomic cabin design with space for four to 15 passengers
-readily adaptable to customer requirements
-transport capacities of up to 3,600 PPH
-wide choice of cabin designs and options
-functional, flexible cabin parking facilities to suit requirements
-maximum availability
-maintenance-friendly thanks to easy access to all components
-smooth, calm circulation of cabins – convenient, stress-free boarding for passengers
-utmost convenience – cabins also provide easy access for wheelchair users and strollers
-all components comply with EU directives (CEN)" [5]

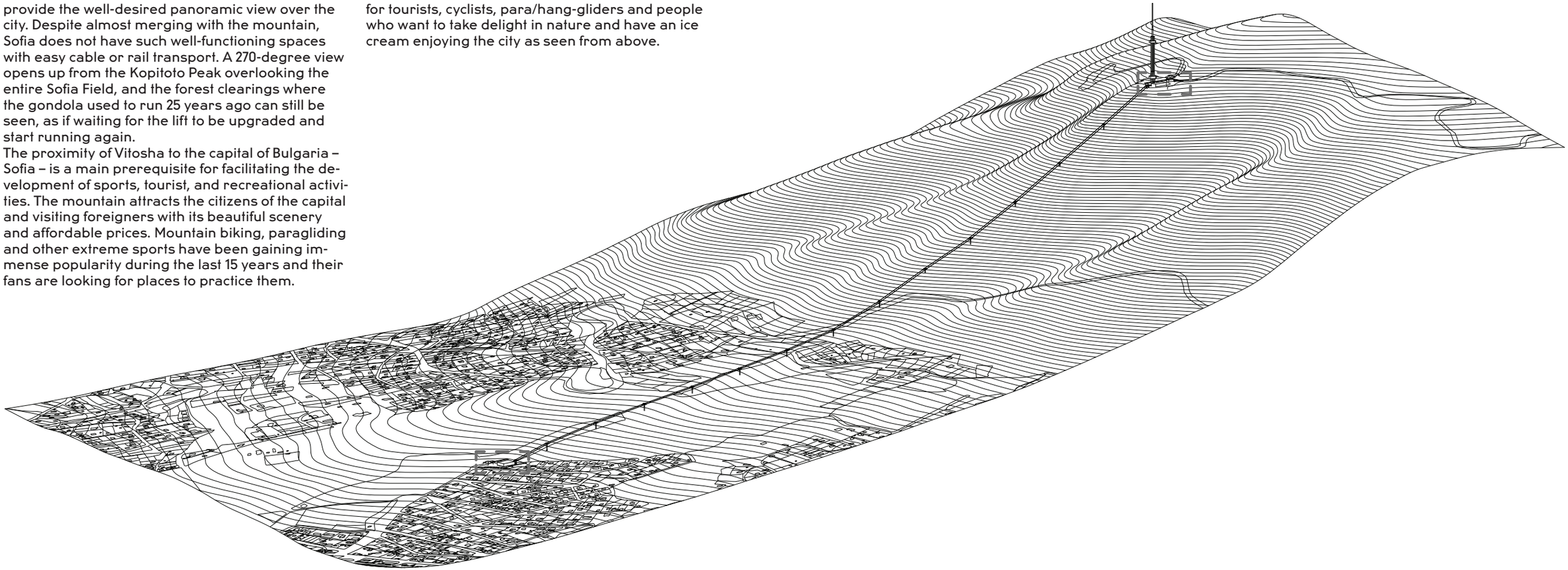
Photos taken from:
http://www.doppelmayr.com/en/products/detachable-gondola-lift/

CHAPTER
//// Concept

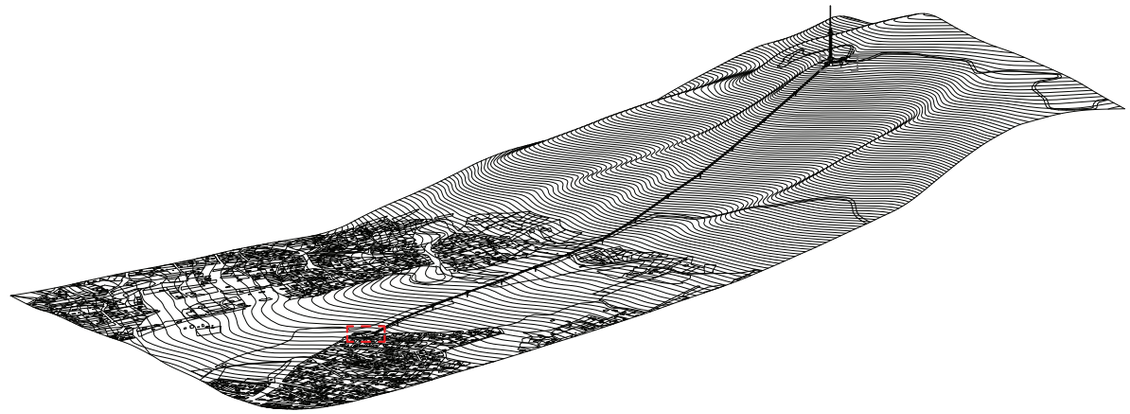
Assignment

It is a fundamental practice of European cities situated on mountainous and hilly terrains to have ensured that infrastructure is in place for easy access to high altitudinal points for enjoying the panoramas that open up there. Dubrovnik, Graz, Salzburg, Innsbruck, Zurich, and Barcelona are suitable examples of this. Other, flatter, cities such as London, Paris and Berlin look for alternative structures to provide the well-desired panoramic view over the city. Despite almost merging with the mountain, Sofia does not have such well-functioning spaces with easy cable or rail transport. A 270-degree view opens up from the Kopitoto Peak overlooking the entire Sofia Field, and the forest clearings where the gondola used to run 25 years ago can still be seen, as if waiting for the lift to be upgraded and start running again.
The proximity of Vitosha to the capital of Bulgaria – Sofia – is a main prerequisite for facilitating the development of sports, tourist, and recreational activities. The mountain attracts the citizens of the capital and visiting foreigners with its beautiful scenery and affordable prices. Mountain biking, paragliding and other extreme sports have been gaining immense popularity during the last 15 years and their fans are looking for places to practice them.

That is why, creating conditions for practicing sports and tourist activities and facilitating the access to the mountain is of paramount importance for the capital city.
The goal of the present project is to create a new lift facility, modern and with expanded features, in place of the old one, which has been inoperative for years. The final lift stations will be focal points for tourists, cyclists, para/hang-gliders and people who want to take delight in nature and have an ice cream enjoying the city as seen from above.



KNIAJEVO CABLEWAY STATION 2.0

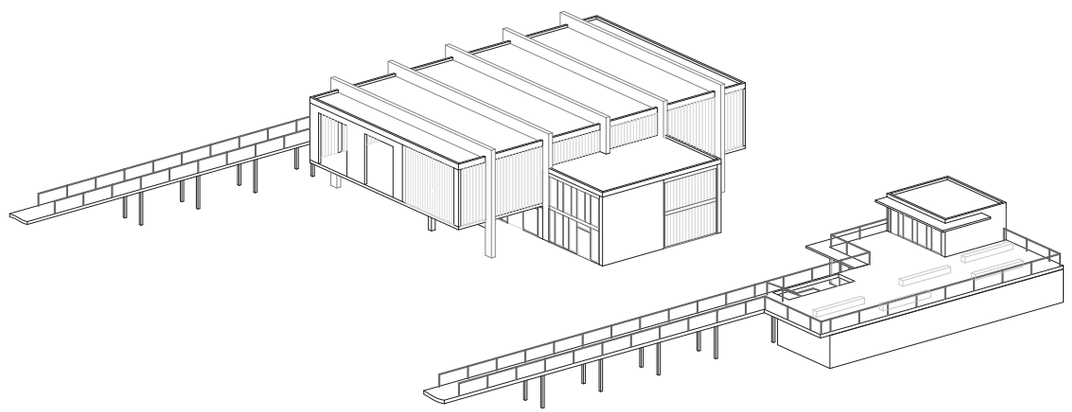


Situation

The bottom lift station – “Kniajevo” – is located at an altitude of 744 m, at the level of the last houses of the Kniajevo suburb.
Kniajevo is one of the districts of Sofia, bordering the Vitosha Mountain. The terrain is steep and broken by gullies, and the higher parts are harder to access, which is why the buildings are smaller. Single-family houses and villas predominate, situated on the slopes of the gorge between the two mountains – Vitosha and Lyulin. Road E79 runs at the bottom of the gorge accommodating a large part of the flow of cars in the direction of southwest Bulgaria, Macedonia and Greece. In the opposite direction it grows into “Tsar Boris III” Blvd., which is one of the main boulevards in Sofia, continuing in a straight line to the city centre. There is a tram line along the entire length of the boulevard whose last stop is 500 meters away from the bottom lift station. The walk, albeit on a steep terrain, is very nice and passes completely through the pine forest.

← *Kniajevo site plan M1:1000*

↙ *Axonometric view*



Contents and Functional Solution

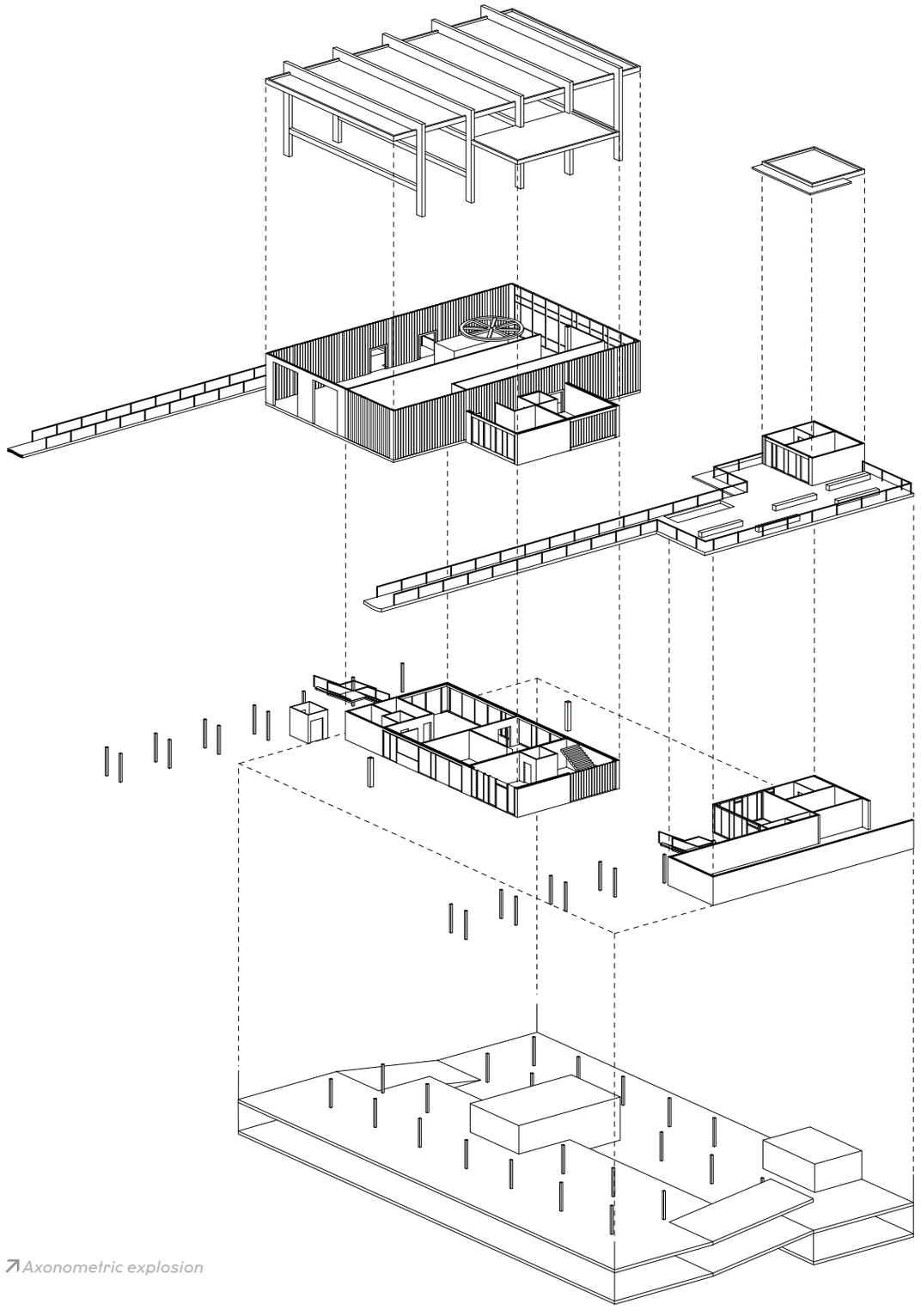
The project envisages an underground parking garage for visitors arriving by car, to reduce the urbanistic impact on the residential district, bordering the bottom lift station. It will have 4 half-levels with space for 134 cars, 20 of which will be suitable for people with impaired physical mobility (disabled).
Two vertical communications will lead visitors up from the ground levels and out:

- One centrally located, serving each half-level of the parking garage. It will be adjacent to the main building of the lift. Having parked their cars visitors will be able to get to the ground floor, where they would have to pass through the ticket counter and then head to the outside staircase on the west side of the building, taking them to the upper level, where one boards the gondola. In the opposite direction, arriving passengers get off on the first floor, pass along the panoramic view window overlooking the city and head to the central vertical communication leading them either directly to the parking lot or to the ground floor and the exit of the building.

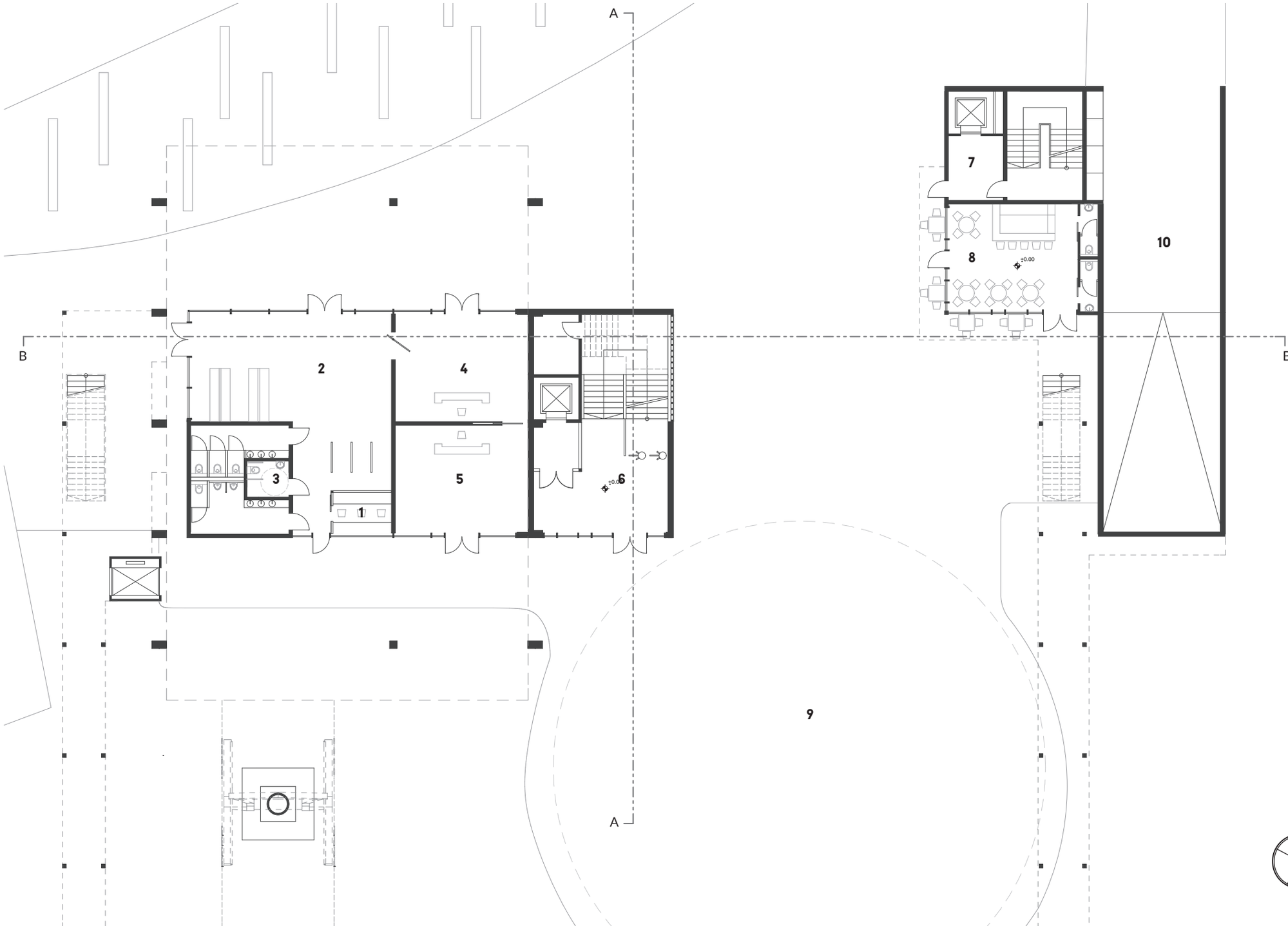
- The second vertical communication is located in the eastern direction next to the ramp to the parking lot. It is secondary, and has an additional emergency function. It connects the levels of the underground parking with the entry level, where a small café offering coffee and snacks will be located, and leads up another level to a panoramic view terrace. The terrace transforms into a bridge that merges with the landscape.

The space on the ground floor in the main building and the area around the building is divided into two main areas, northern and southern one. The northern area welcomes visitors. The entrances to the main lobby are on this side, where the ticket counters, sports shop and service spaces (toilets) are located.
On the south side, mirroring the shop, will be the service, where one can rent sports equipment, and next to it there will be an outside ticket counter, which will serve all regular sportsmen who will repeatedly use the gondola lift and already have sport equipment – bicycles, skis, etc. A connection is envisioned from the south side to the lobby for access to the toilets, as well as an external cargo elevator, which will carry cyclists and persons with reduced mobility from the ground floor to the first floor and to the footbridge where the entrances to the gondola hall are located.

This organization, also aided by modern checkpoint and IT resources, enables splitting passenger flows in two so that they do not interfere with one another. On the first floor, everyone passes through ticket inspection before entering through different entrances to the hall where people get distributed in gondolas. Cyclists or skiers who have already descended and want to repeat it can use a direct bridge link that takes them to the ticket control point. Thus, they will not need to go down the bottom and pass through the cargo elevator.
On the south side, a central space is formed between the two buildings that will be used as a landing site for paragliders, and as a finish zone in competitions. In sport events, the two bridges connecting the higher points of the mountainous terrain and the upper levels of the buildings could be used as spectator stands for observing the finishing athletes and the awarding ceremony.
The hall on the first floor is divided into two parts: eastern and western. The western part, with its net width of 11 m, houses all the equipment necessary for the propulsion and manoeuvring of the gondolas. The floor level is aligned to that of the moving gondola, to allow passengers to disembark or board freely. The direction of rotation of the cable line is always the same – counter clockwise - except in emergencies. The gondolas are stored in the eastern part of the hall when the lift is not working. This is one of the differences between old and new cable cars. This is why the bottom station is almost twice as wide as the top one. The same floor, next to the central vertical communication, houses the administration too.



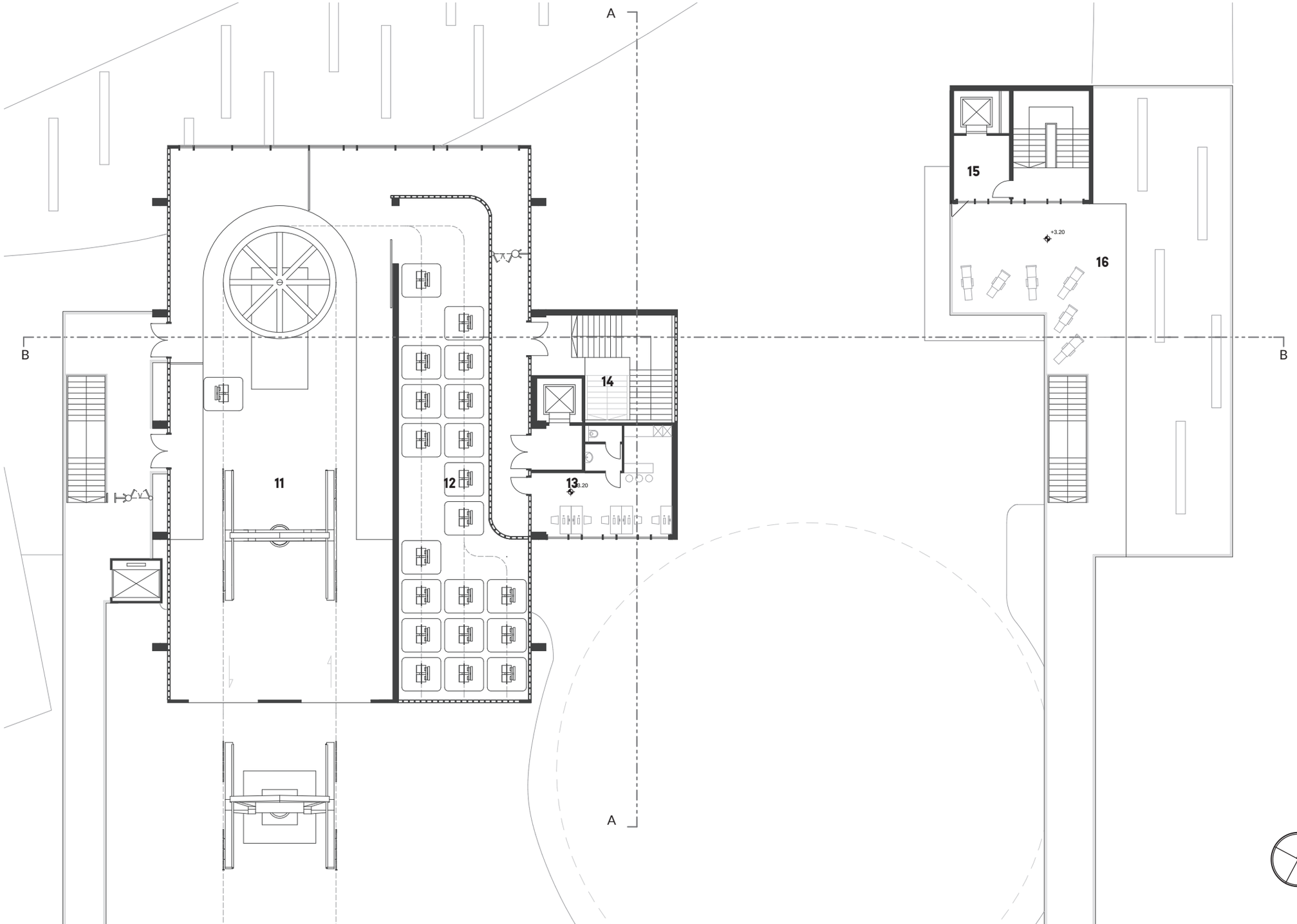
↗ *Axonometric explosion*



1- Ticket Counter	8 m²
2- Waiting Room	85 m²
3- Toilets	30 m²
4- Sports Equipment Shop	44 m²
5- Sports Equipment Service	44 m²
6-Central Vertical Communication	88m²
7-Secondary Vertical Communication	44m²
8- Café	50 m²
9- Finish Line Area	550 m²
10. Parking Entrance	77 m²

Kniajevo
Ground floor plan

0 5 10m



11- Lift Hall **360 m²**

12- Gondola Storage Hall **160 m²**

13- Administration **42 m²**

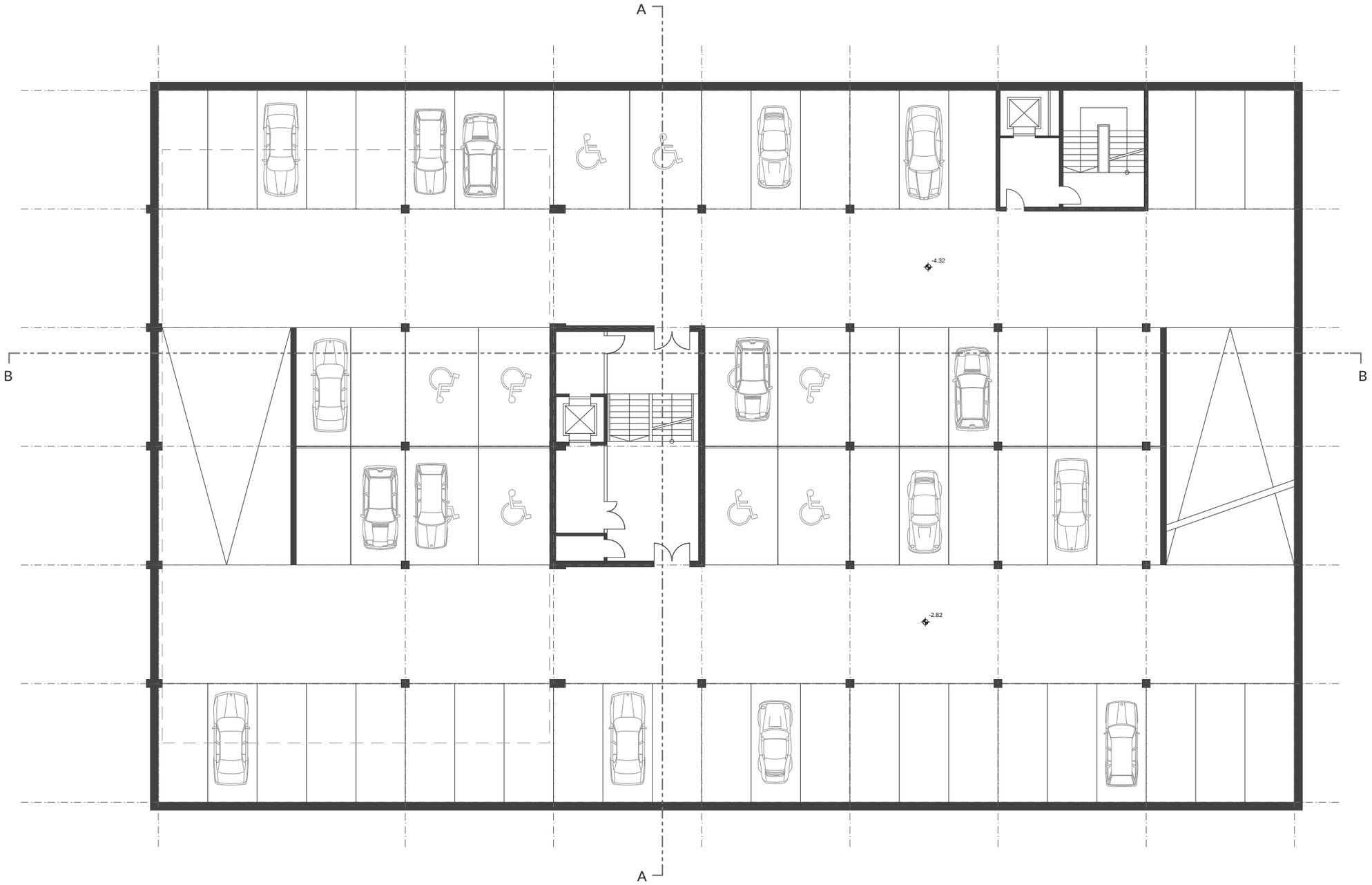
14-Central Vertical Communication **52 m²**

15-Secondary Vertical Communication **44m²**

16- Panoramic View Terrace **350 m²**

Kniajevo Level One

0 5 10m

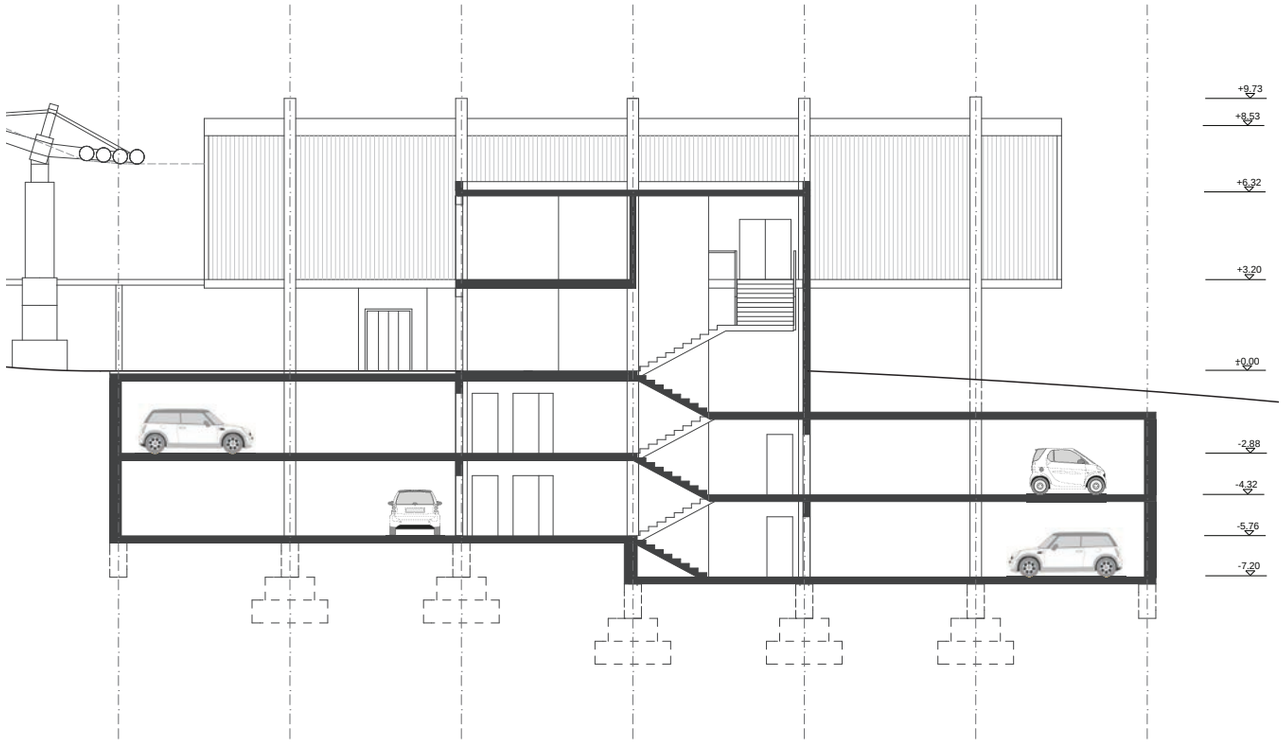


- Underground Parking Lot
4000 m²

4 half-levels; 134 parking slots

Kniajevo Underground Parking Lot

0 5 10m



↗ Section A-A

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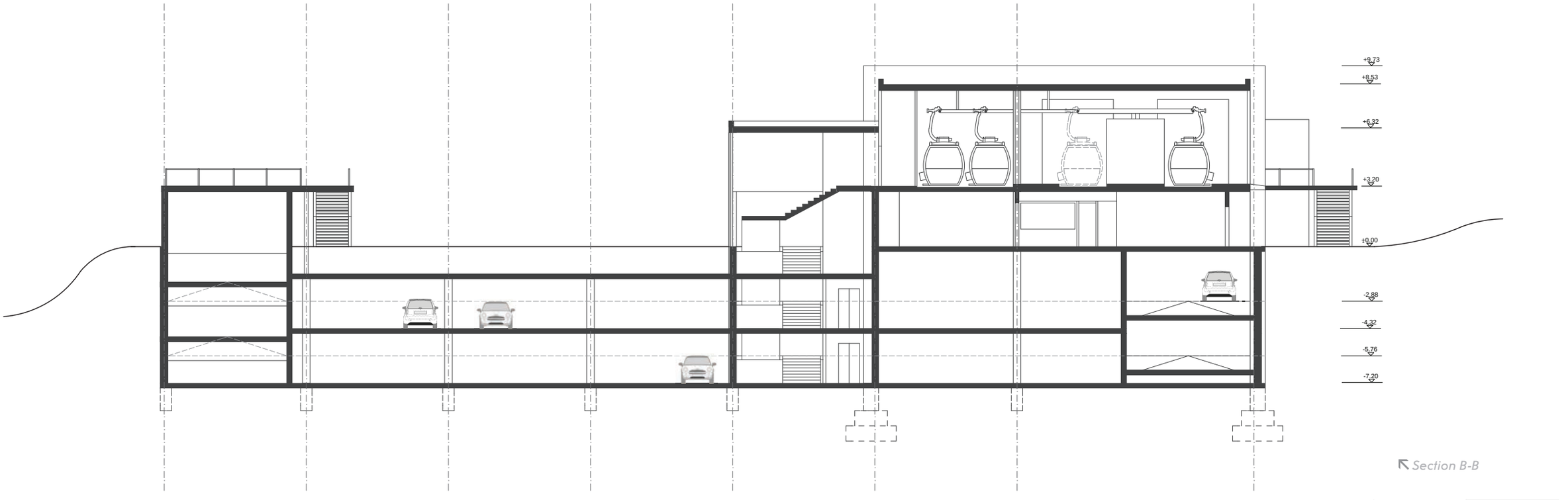
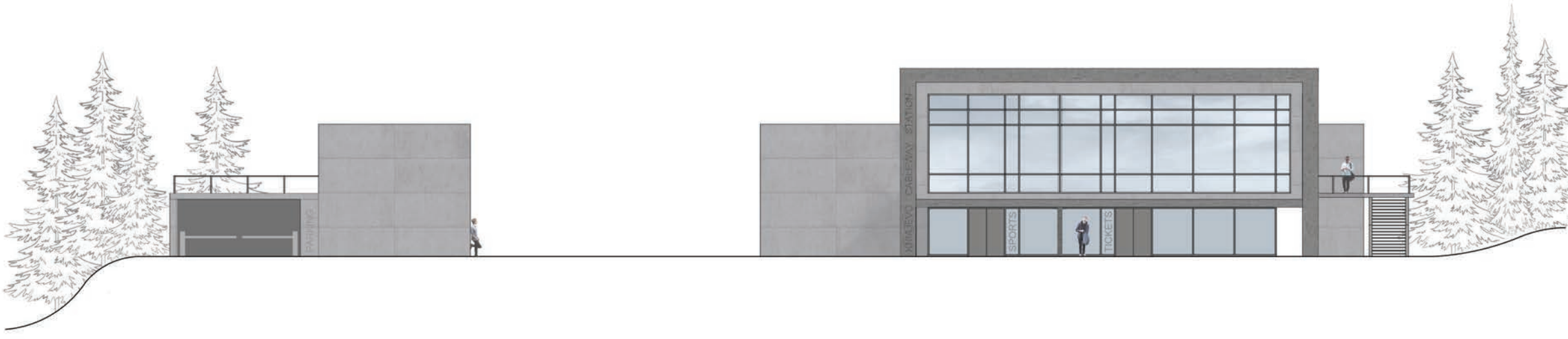
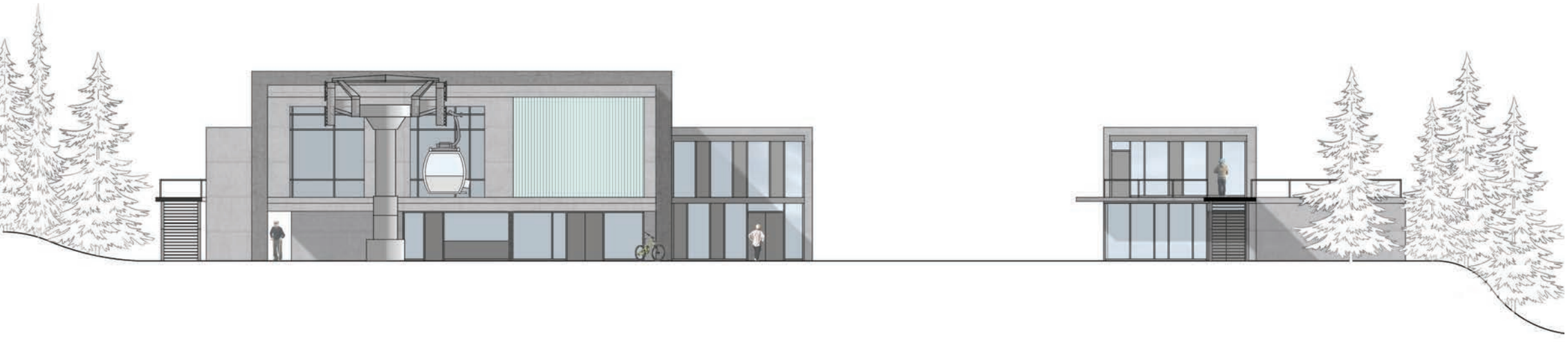

+9.73
+8.53
+6.32
+3.20
±0.00
-2.88
-4.32
-5.76
-7.20
Section B-B
0
5
10m



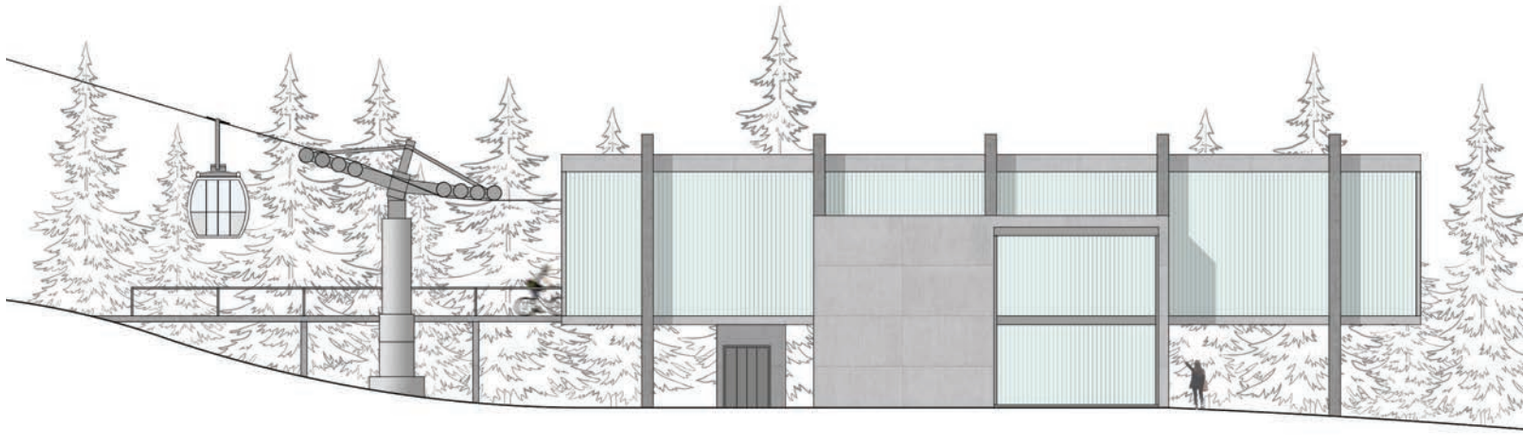
↖ *Kniajevo Elevation North*

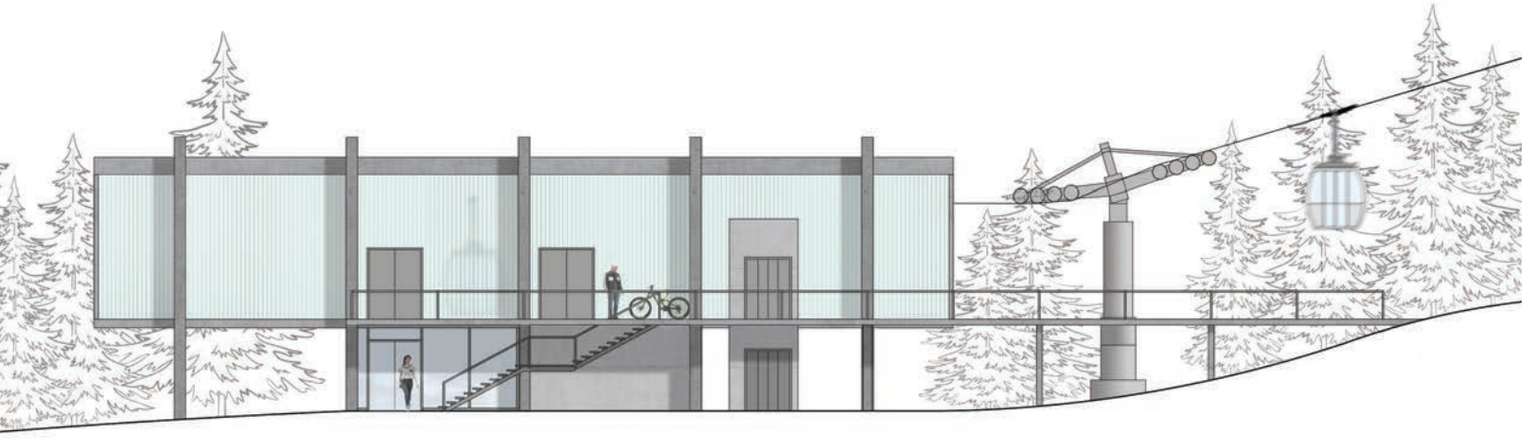
0 5 10m



Kniajevo Elevation South

0 5 10m

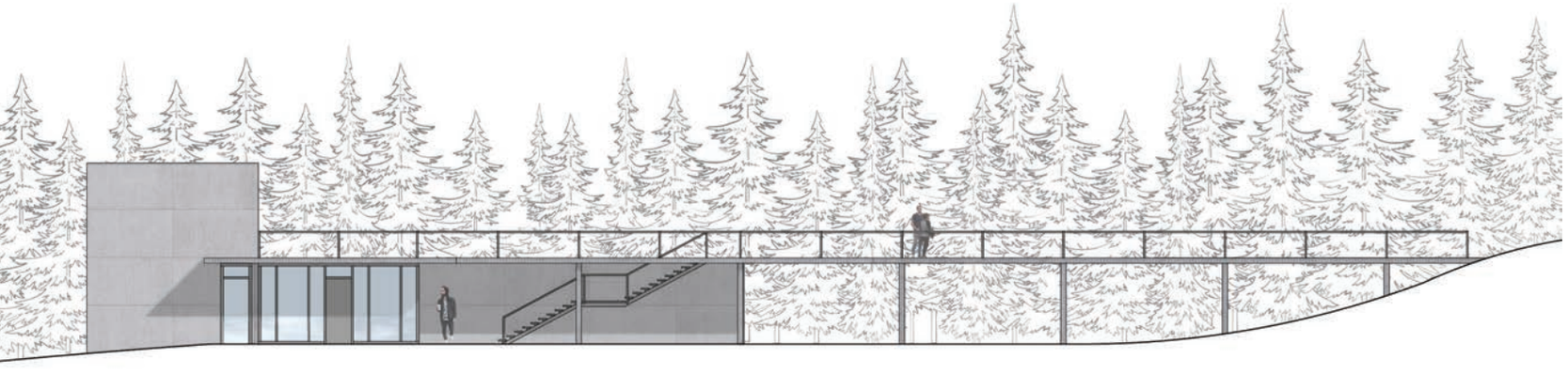




↗ *Kniajevo Elevation East*

↑ *Kniajevo Elevation West*

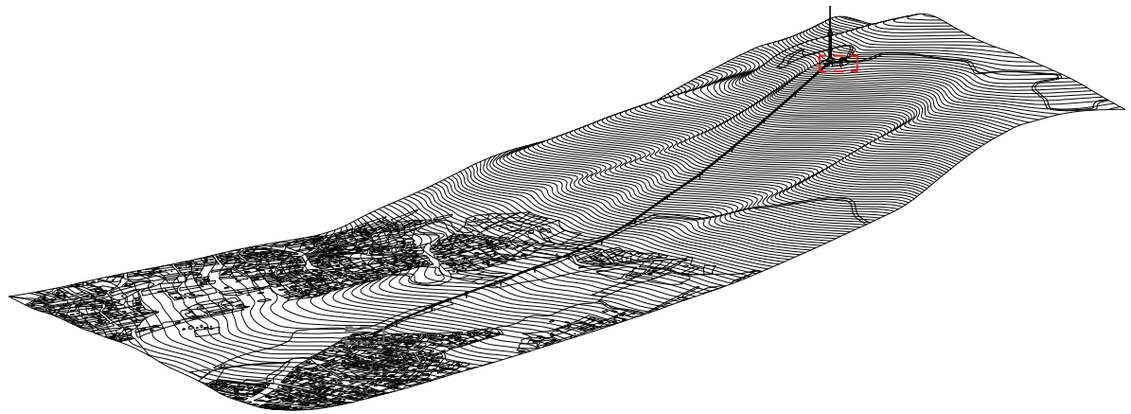
0 5 10m



↗ *Kniajevo Elevation West-2*

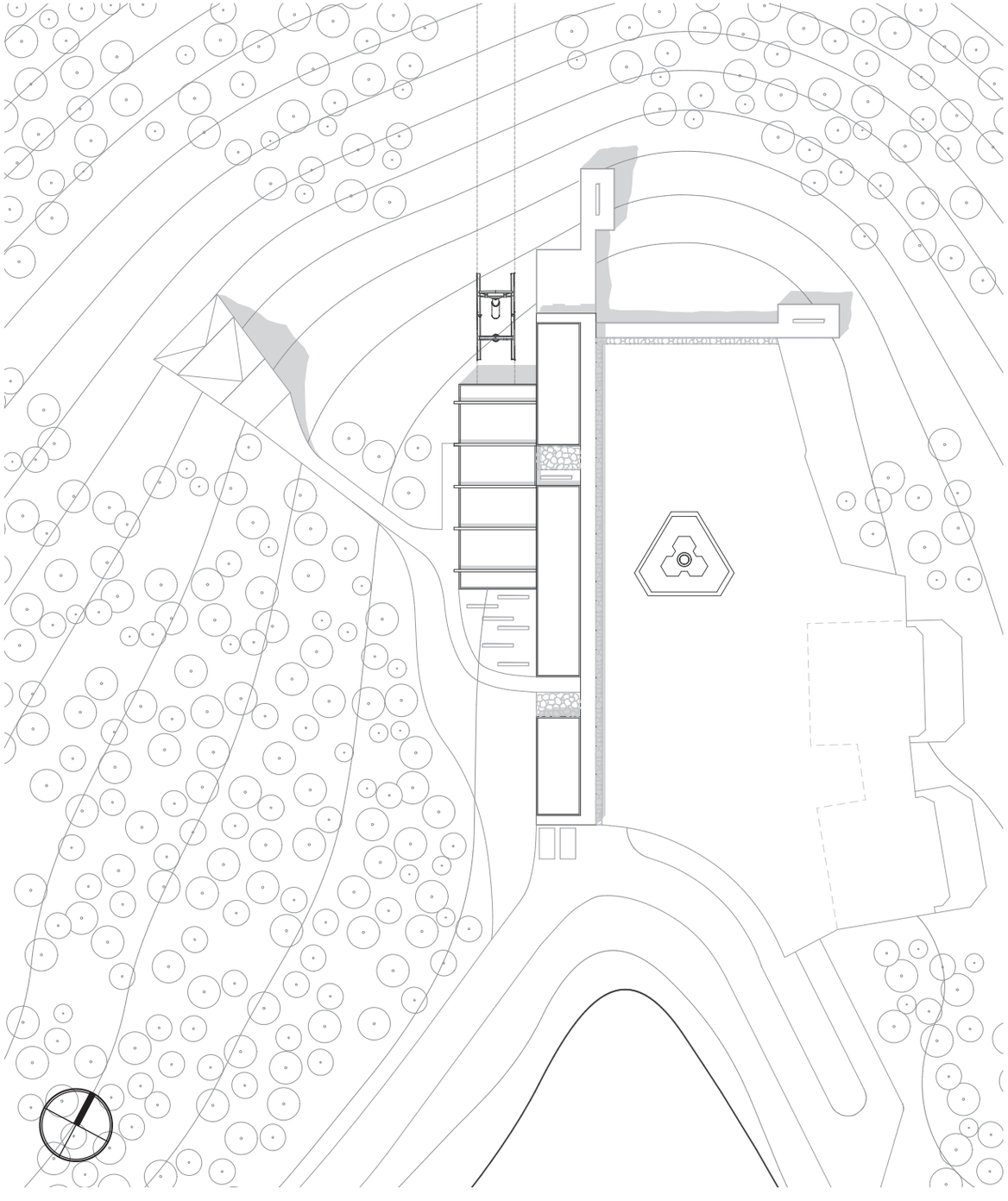
0 5 10m

KOPITOTO CABLEWAY STATION 2.0



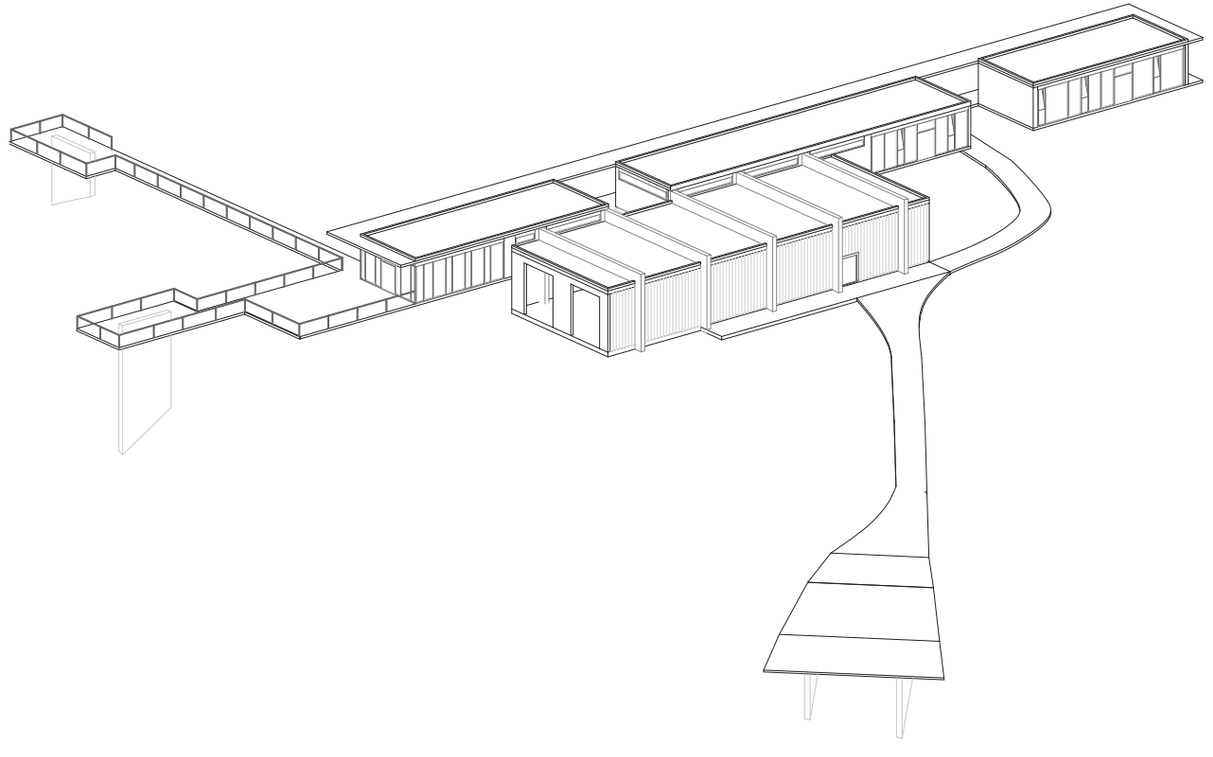
Situation

The top lift station – “Kopitoto” will be located at the very Kopitoto Peak replacing the old station and near the television tower.
The Kopitoto Peak is in the north-western part of the Vitosha Mountain and has an altitude of 1348 m. Its name (literally, “the hoof”) comes from its U-shaped form. At the very top are the old lift station and the functioning “Kopitoto” TV Tower which is visible from the entire city making the silhouette of the mountain and the city as a whole very distinctive. It is currently accessible via an 11 km road leading back to the Boyana Quarter. The Kopitoto Hotel Complex is located in the immediate proximity to the peak, 350 meters away eastwards, which, in recent years, has shared the fate of the gondola lift. It is still preserved, because it has security. Given a working gondola, the hotel could operate again and provide beds near the lift.



← *Kopitoto site plan M1:1000*

↙ *Axonometric view*



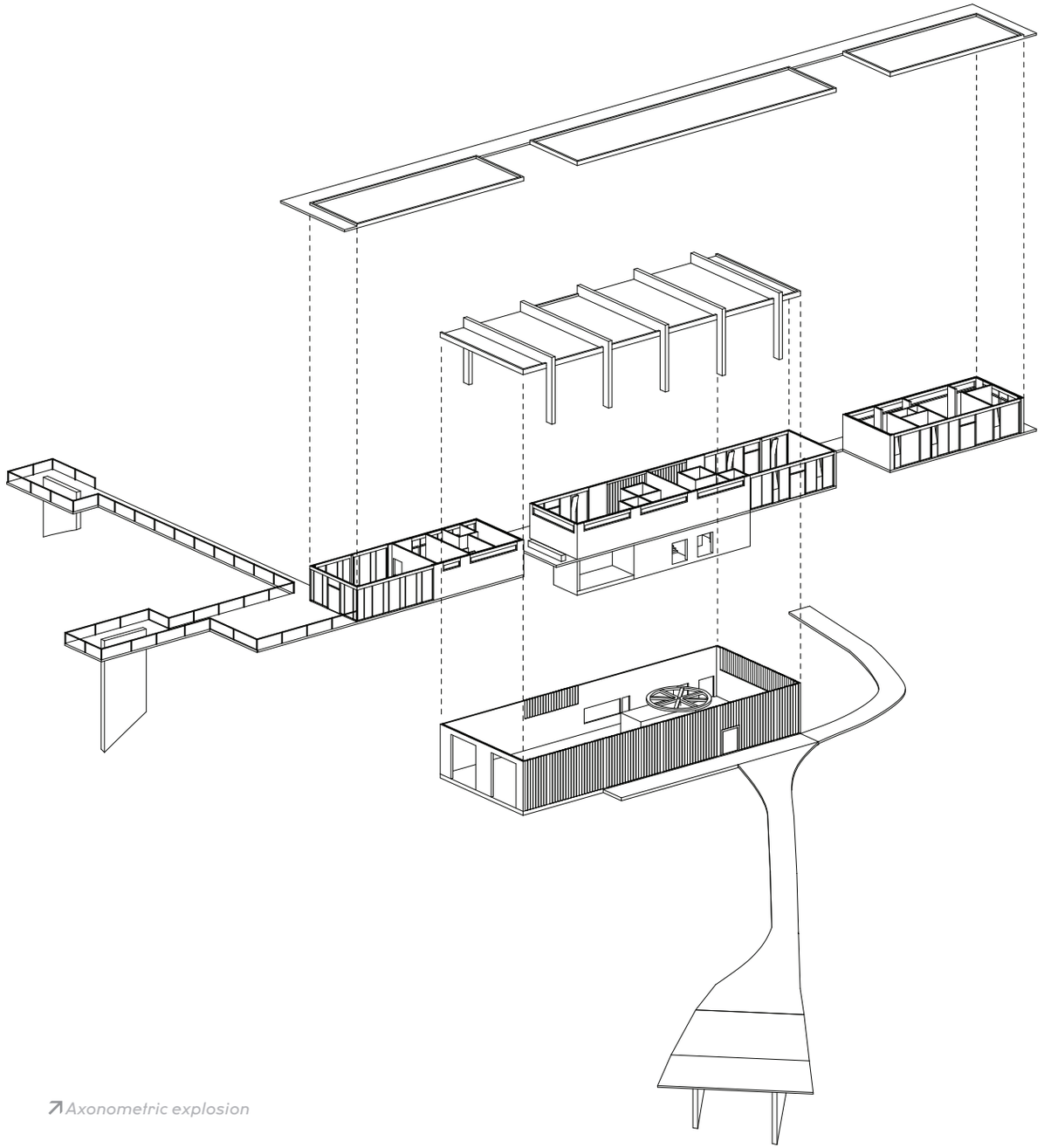
Contents and Functional Solution

The top lift station is also divided in two main bodies, arranged next to each other. The hall designed to accommodate the machinery of the lift is located 3.2 m lower than all other functions. On the eastern side, running in parallel to the hall, along the line, situated north – south (Sofia – Vitosha), there are panoramic platforms, a restaurant with a kitchen, toilets, a waiting room and a ticket counter, vertical communications, an information centre and a rescue centre.
Moving passenger flows are again split into arriving and departing ones. Those arriving from the city, in turn, also split in two, immediately after disembarking the gondolas. Sportsmen carrying bicycles or paragliders would come out directly from the hall and head freely westwards, where the start area is. Everybody else disembarking the gondolas would head east through the vertical communication leading to the information centre on the upper level. Passing through it people can get free information on the region.
Tourists heading down to the city must pass through the waiting room, where the ticket counter is located before they go down, through the vertical communication, to the lift hall, where they would be distributed in the gondolas.
A special ramp for taking off is envisaged for para- and hang-gliding lovers.
The restaurant is located along the northern part. One can look at three directions from it – east, north and west. In the afternoon hours, when it would be visited the most, it would be well illuminated from the west. The restaurant offers 40 indoor seats and about 70 outdoor seats on the terrace.
The view from the Kopitoto Peak is one of the most important arguments for rebuilding the gondola lift. Even in its current state, the rocks surrounding the old lift station enjoy human presence 24 hours a day.
Visitors who would like to enjoy the view without sitting in the restaurant would have two panoramic platforms at their disposal – one protruding to the north, offering a 270-degree view, and the other – to the east, parallel to the border of the terrain of the TV tower, revealing the steepest slopes of the mountain.

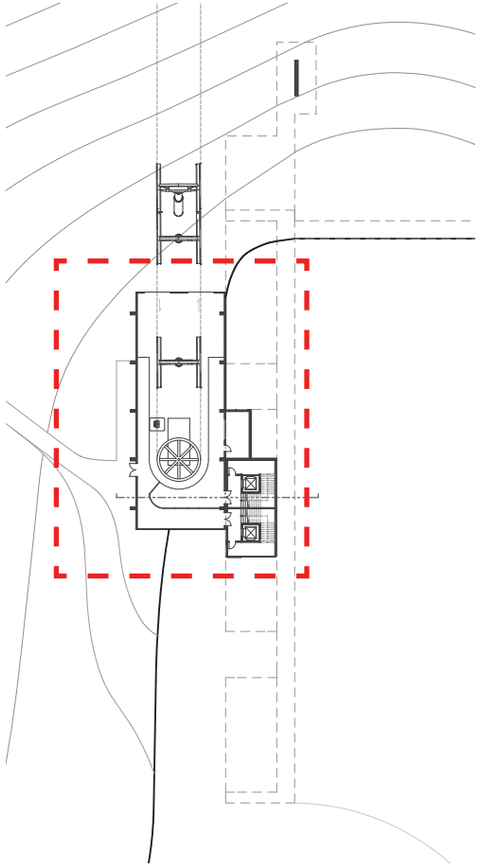
24/7 Mountain Rescue Duty Post

Two tourists died trapped in an avalanche near "Aleko" Chalet during the night of 21.01.2016 in Vitosha. The search involved 14 rescuers and two rescue dogs. Five avalanches occurred just that night near the "Stenata" Area of Vitosha. This is just the most recent of many such unfortunate cases, accompanying life in the mountains close to such a big city. Avalanches are just one of the dangers lurking in the mountains. There are numerous cases of tourists injured, attacked by wild animals or simply getting lost in the mountains.

THERE IS ONLY ONE 24/7 MOUNTAIN RESCUE DUTY POST IN VITOSHA, and it is located near the "Aleko" Chalet, in the north-eastern part of the mountain, at the foot of the ski area, adjacent to the existing gondola. The lift allows transportation of the injured person after he or she is given first aid. However, such a post is missing in the western, more touristy, part of the mountain, where the "Kopitoto" is located. The presence of a Mountain Rescue Service base would save valuable time, as currently lifeguards on duty leave with their heavy equipment from their base in Sofia, 15 km away.
The Rescue Centre will house a first aid centre, a warehouse for the machinery, common area with a kitchen, where rescuers would spend their shifts, administration room, bathroom, a toilet and a bedroom.



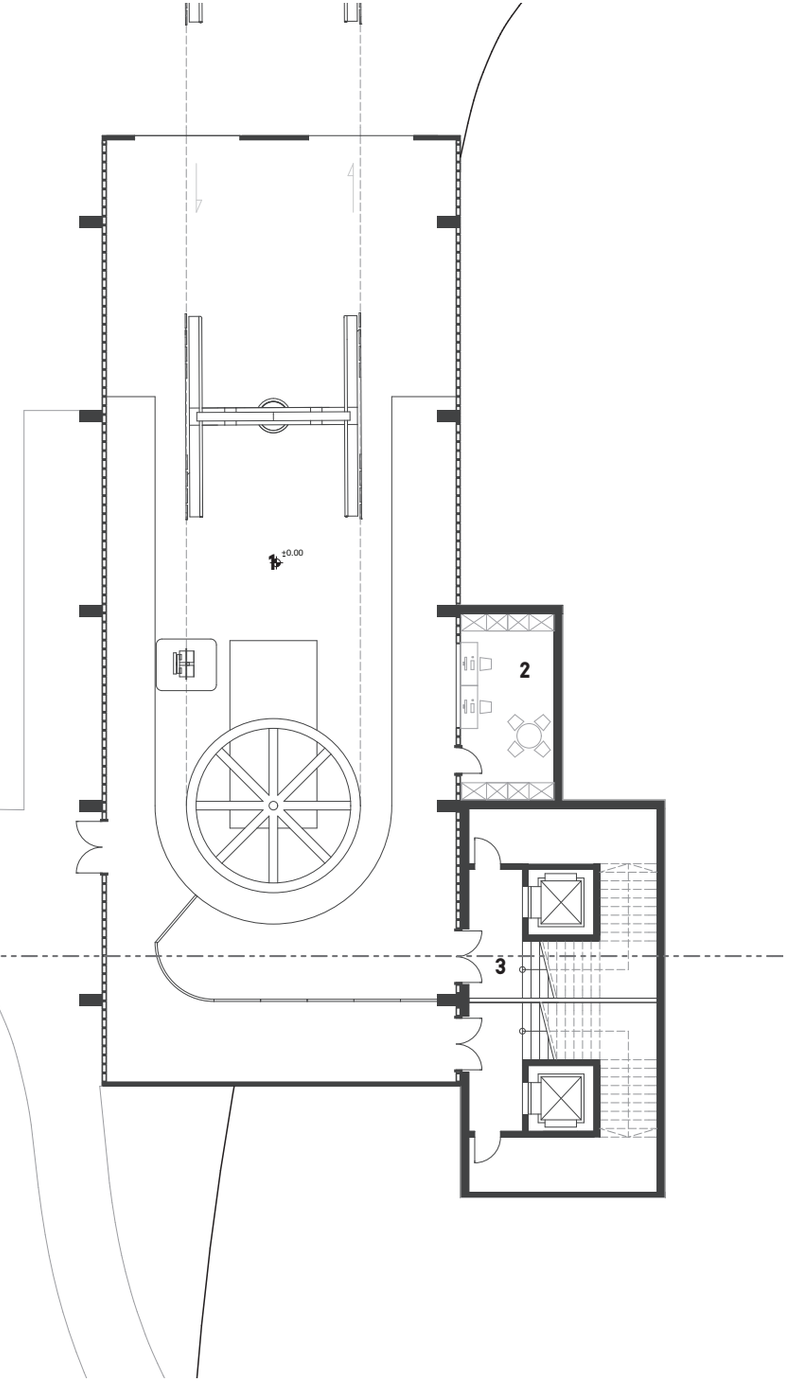
↗ *Axonometric explosion*

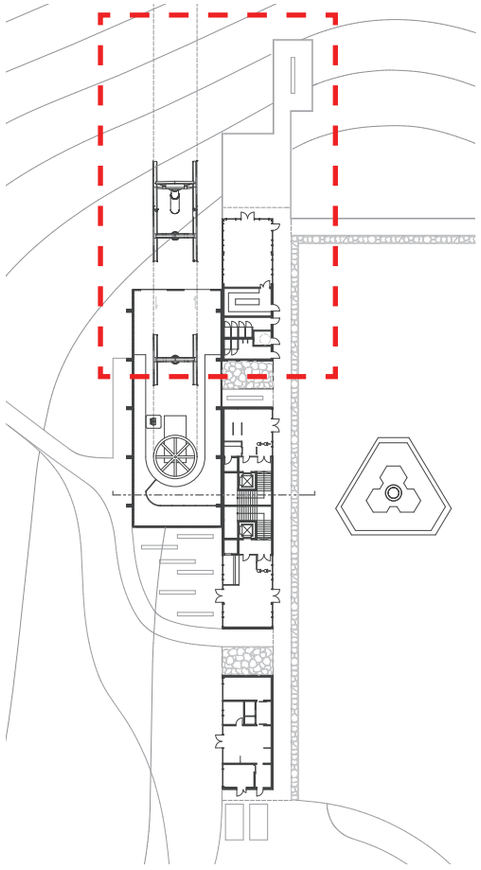


1- Lift Hall **400 m²**[26]

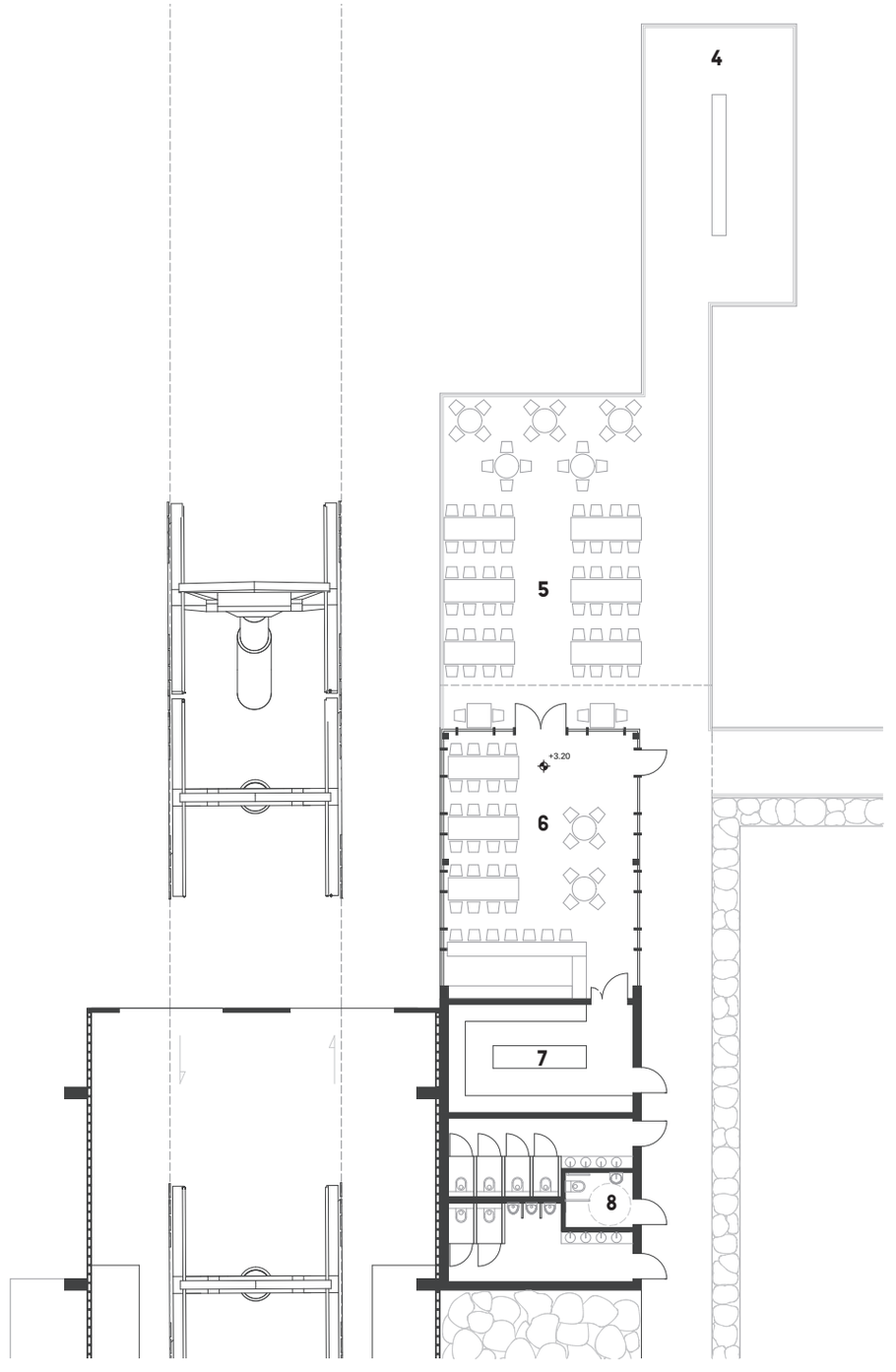
2- Vertical Communications **88 m²**

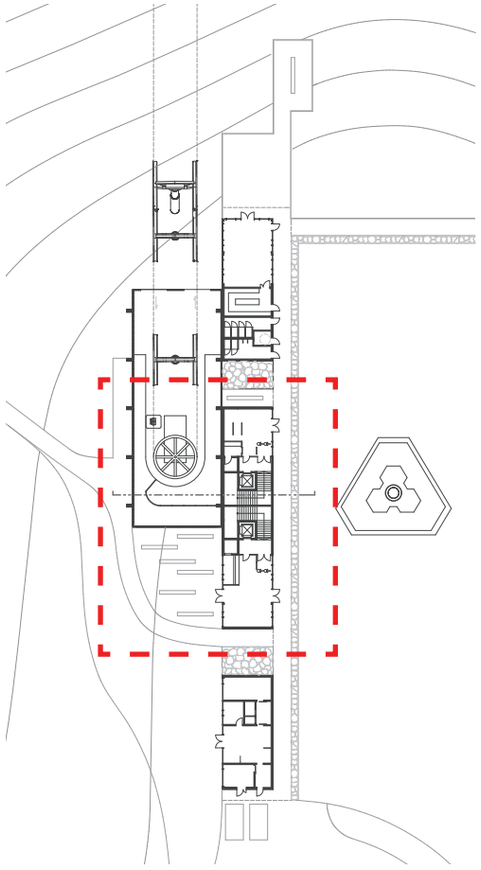
3- Control Room **22 m²**





4- Panoramic View Platforms Overlooking Sofia		228 m²
5- Restaurant Terrace	capacity: 72 seats	84 m²
6- Restaurant	capacity: 40 seats	70 m²
7- Kitchen		25 m²
8- Toilets		38 m²

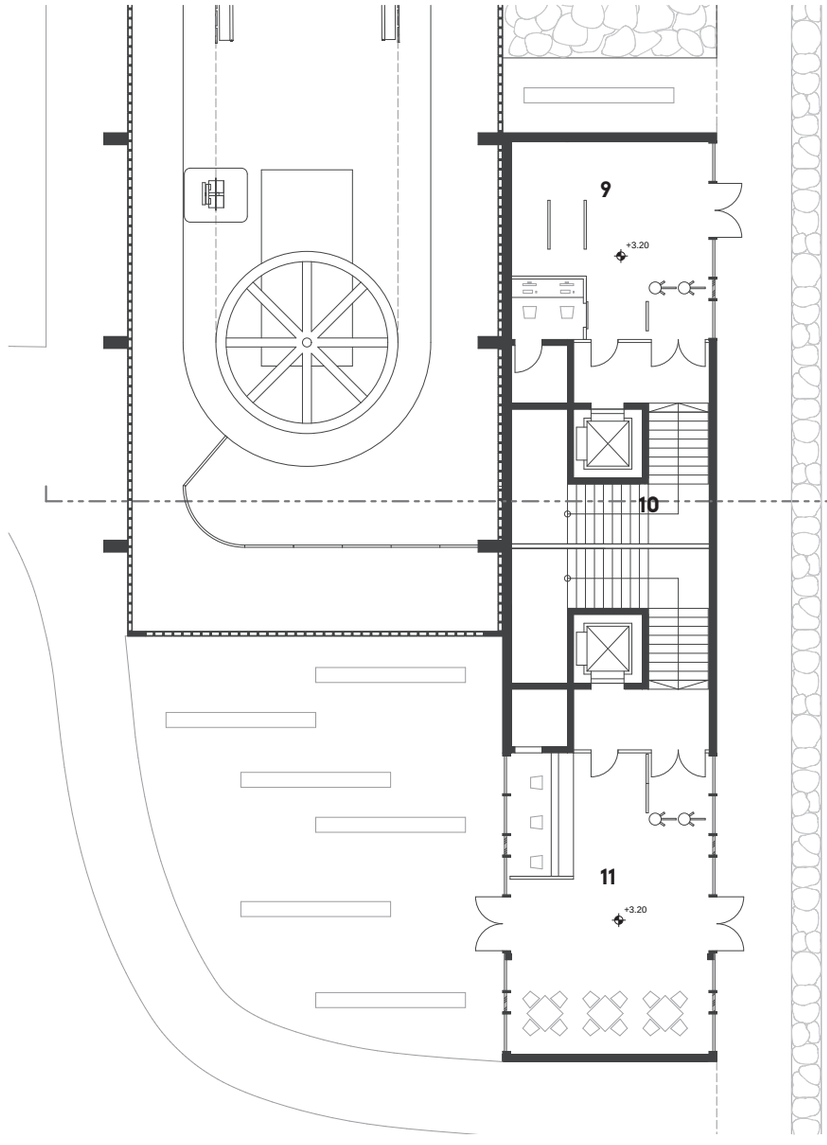




9- Ticket Counter and Waiting Room **50 m²**

10- Vertical Communications **88 m²**

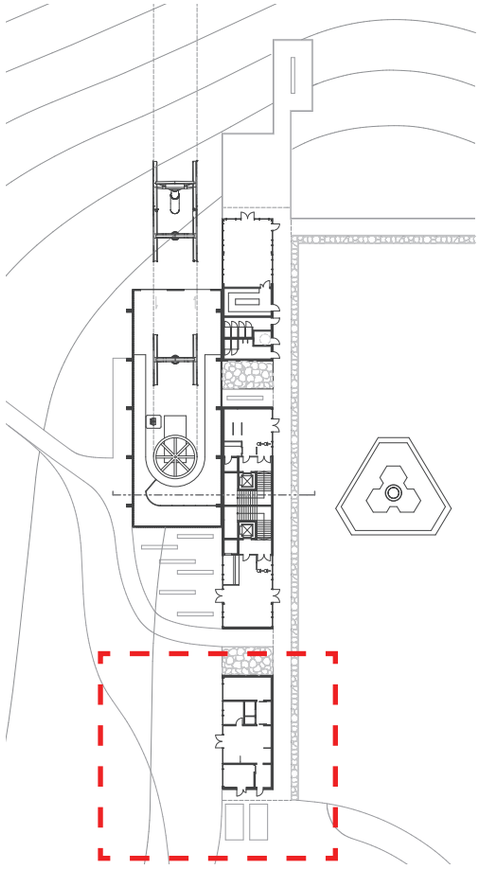
11- Tourist Information **73 m²**

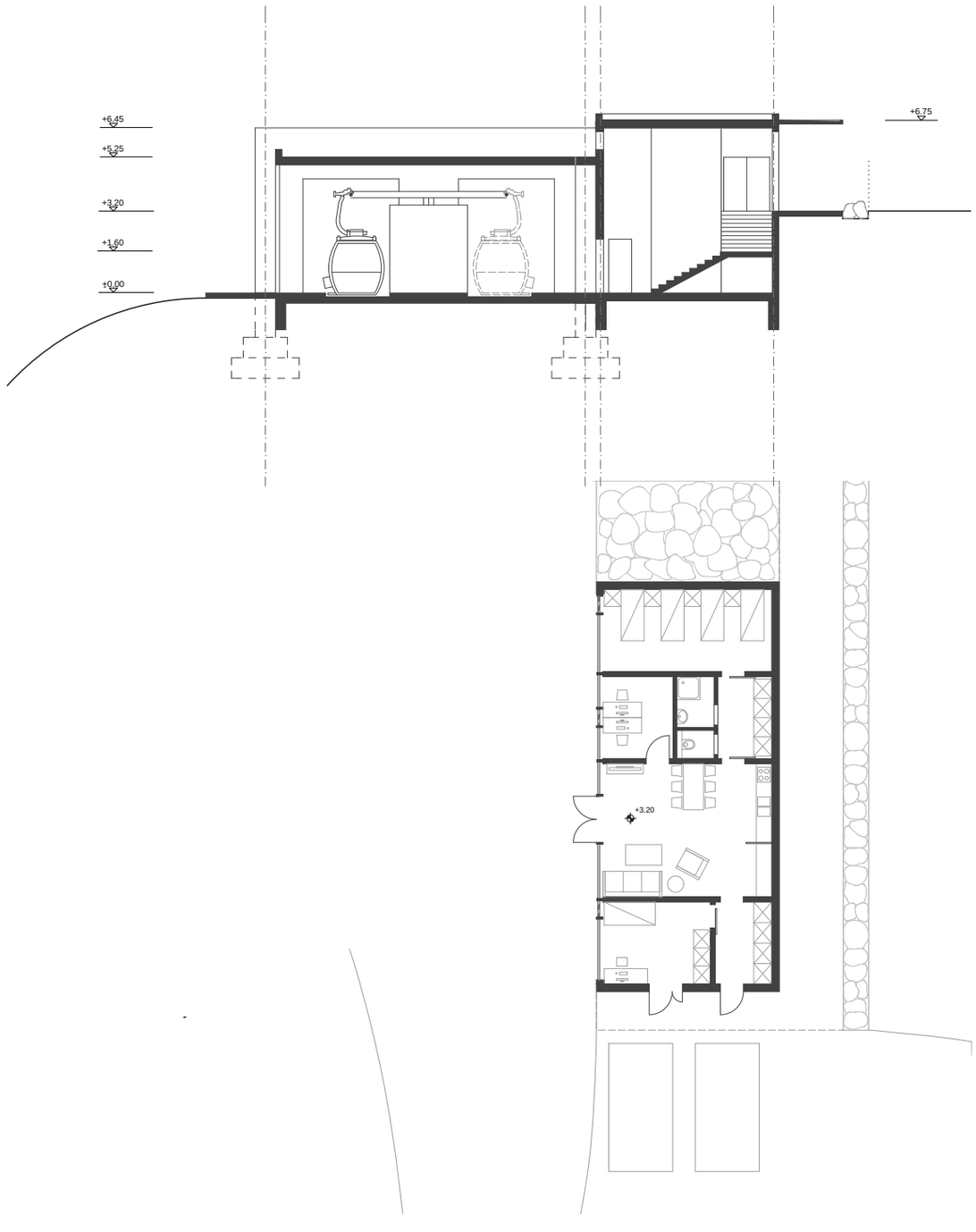


↗ *Kopitoto Level One Enntrance/Exit*

0 5 10m

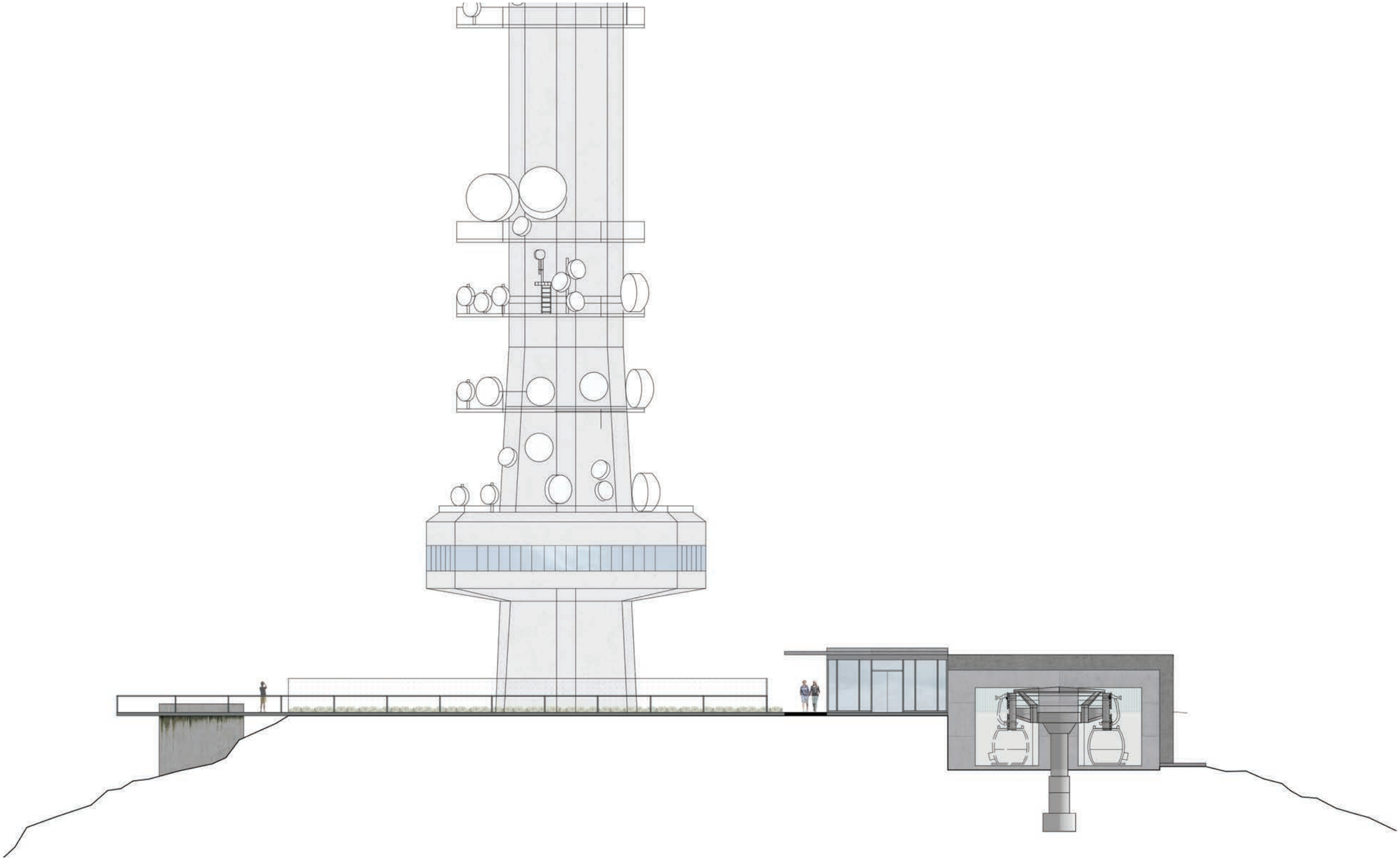
→ *Section C-C*





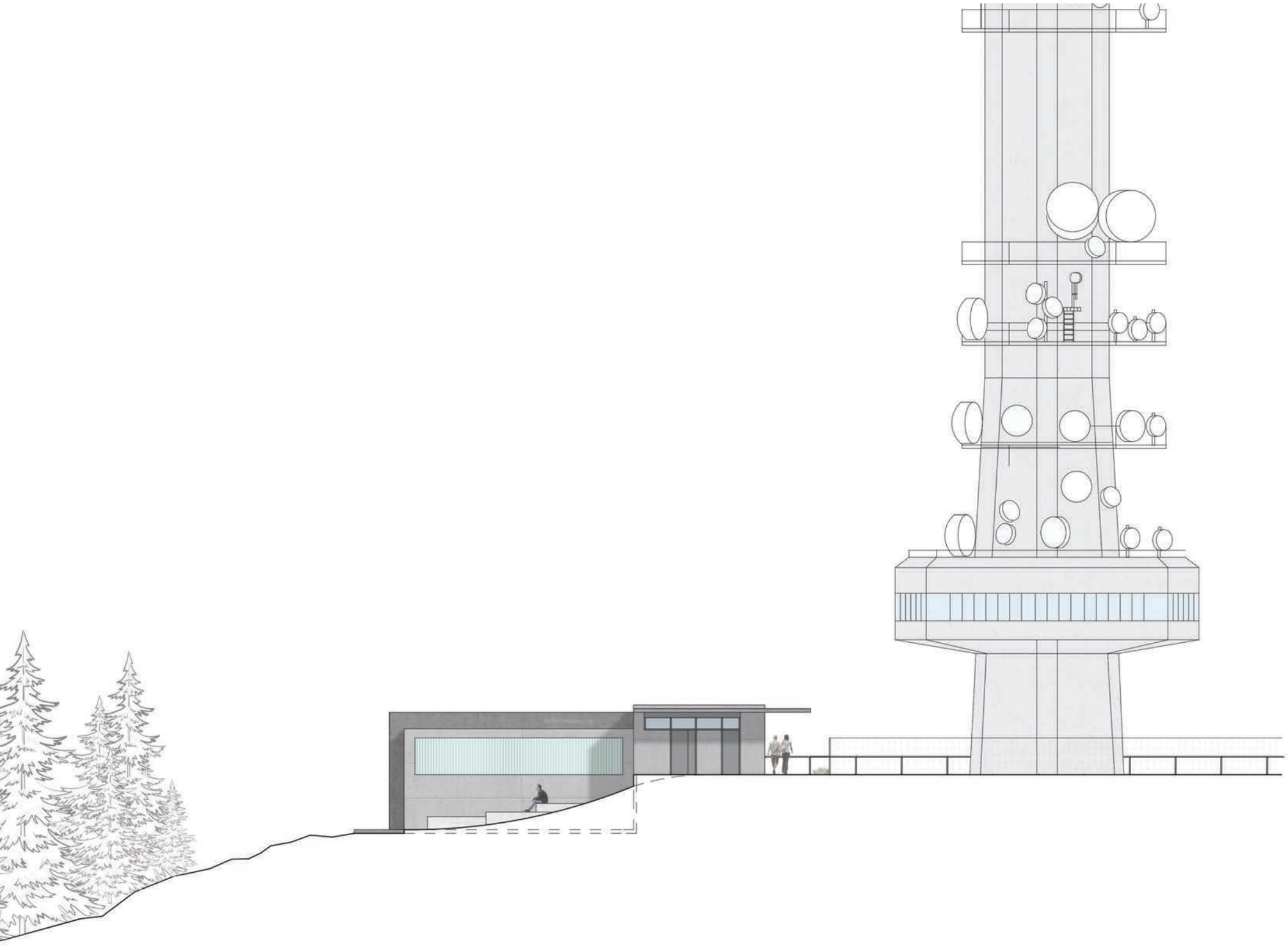
↗ *Kopitoto Level One Rescue Center*

0 5 10m



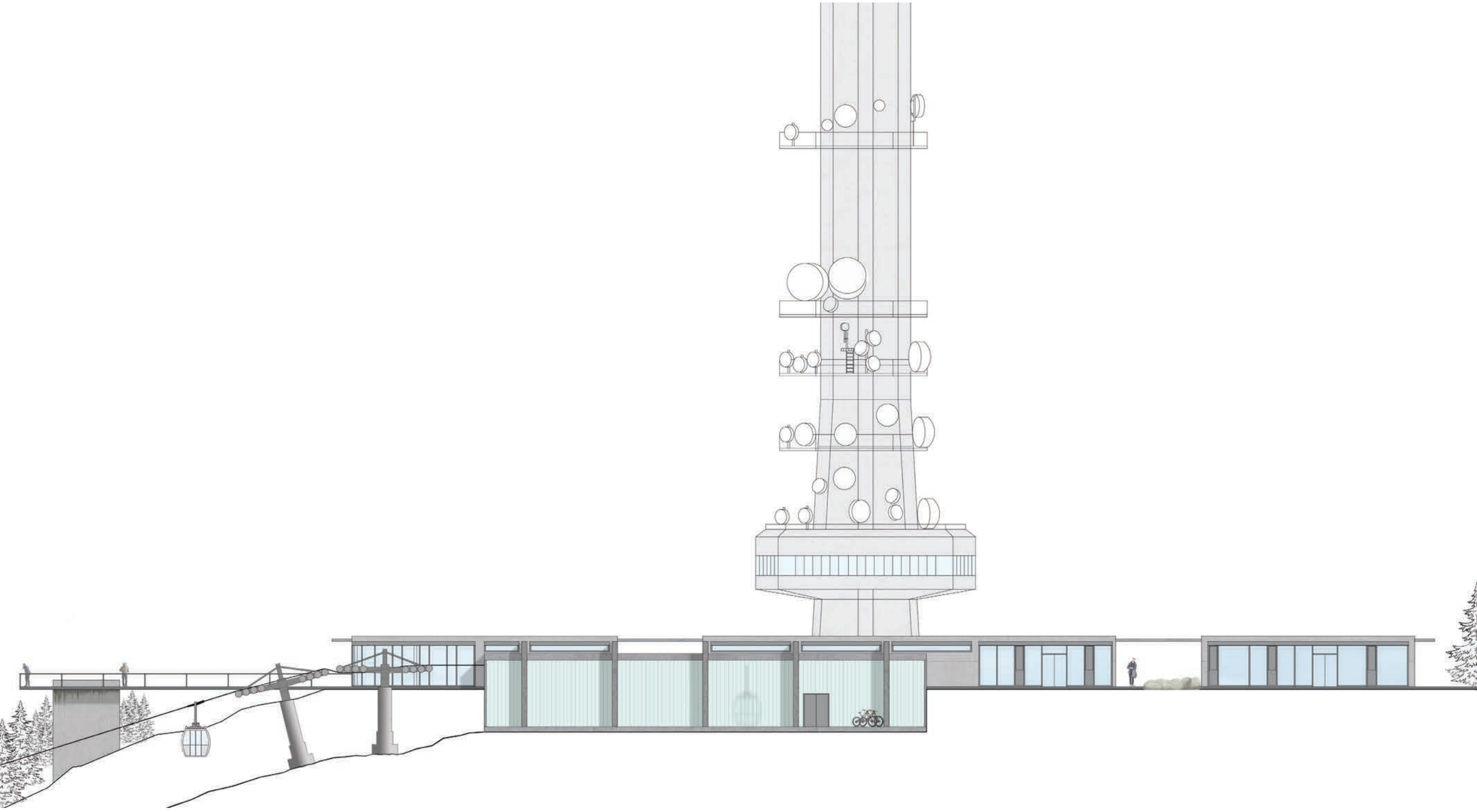
↗ *Kopitoto Elevation North*

0 5 10m



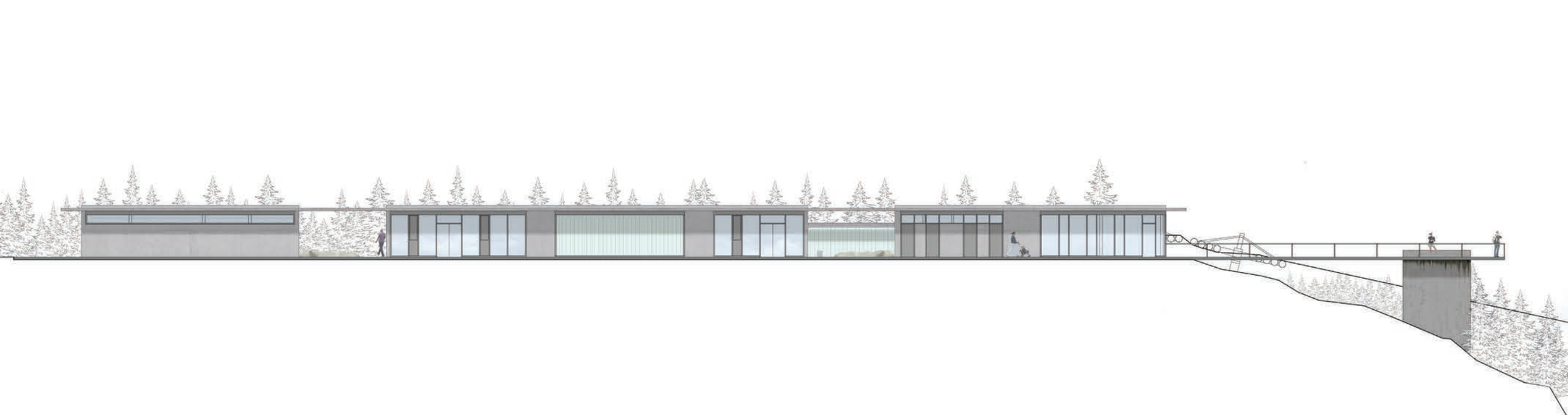
Kopitoto Elevation South

0 5 10m



↖ *Kopitoto Elevation West*

0 5 10m



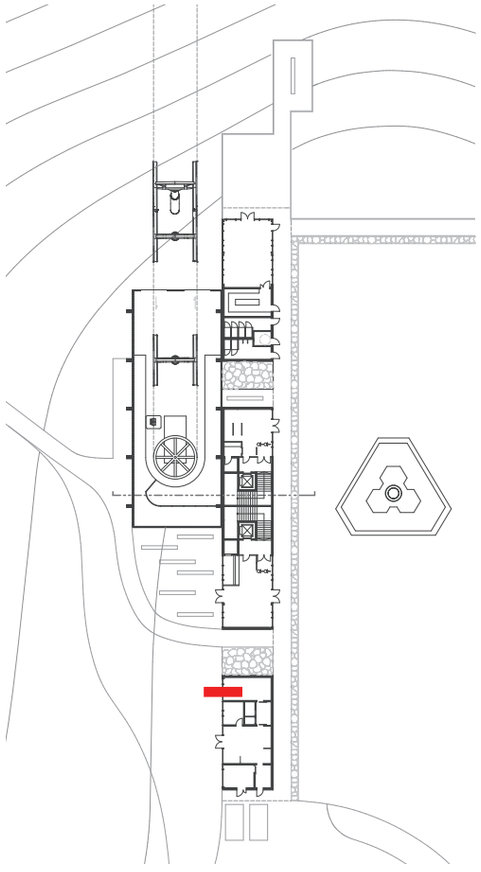
↗ *Kopitoto Elevation East*

0 5 10m

Architectural and Construction Part and Exterior

The main supporting structure of the lift halls is of reinforced concrete frames enfolding the buildings from the outside, emphasizing the orthogonal structure. This is necessary to ensure the proper column-free space inside needed for the lift machines. The construction is repeated in a similar way in both lift stations. The main materials used on the facades of the halls are architectural concrete and frosted glass vertical profiles letting in diffuse light. The halls are not heated and are intended mainly to protect from rain and wind.
The adjoining buildings are also constructed of reinforced concrete. The surrounding walls are made of architectural concrete with insulation, so as to be resistant to weather changes and to be in line with the television tower. The joinery is made of aluminium, with adequate insulation parameters. Apart from the non-openable windows, the facades also contain aluminium elements that can be opened for ventilation and create a certain aesthetic image of the buildings. The materials thus chosen for buildings: architectural concrete, anthracite aluminium and greenish glass would fit in harmoniously with the dominant hard rock terrain characteristic of the "Kopitoto" Peak.
The main areas in the lift halls are covered with thick perforated rubber flooring allowing water to drain through the holes and providing stability even upon stepping with ski boots. The interior spaces will be covered with self-levelling, or PVC flooring which is unassuming, anti-slip, easy to maintain and also providing stability. The garage will be covered with polished concrete.
Large syenite rocks will be placed in free spaces. They are popularly called "moraines" and are typical only for this mountain in Bulgaria, thus its symbol. Over time, grasses would grow among the "moraines", which would contribute to a little warmer feeling in the harsh natural surroundings.

→ *Panorama from the restaurant*



1 Attikaabdeckung Aluminiumblech

2 Kompriband

3 Aluminiumprofil L, anthrazit Anschlussfuge

4 Riegel Aluminiumrohr, anthrazit 40/150mm

5 Isokorb

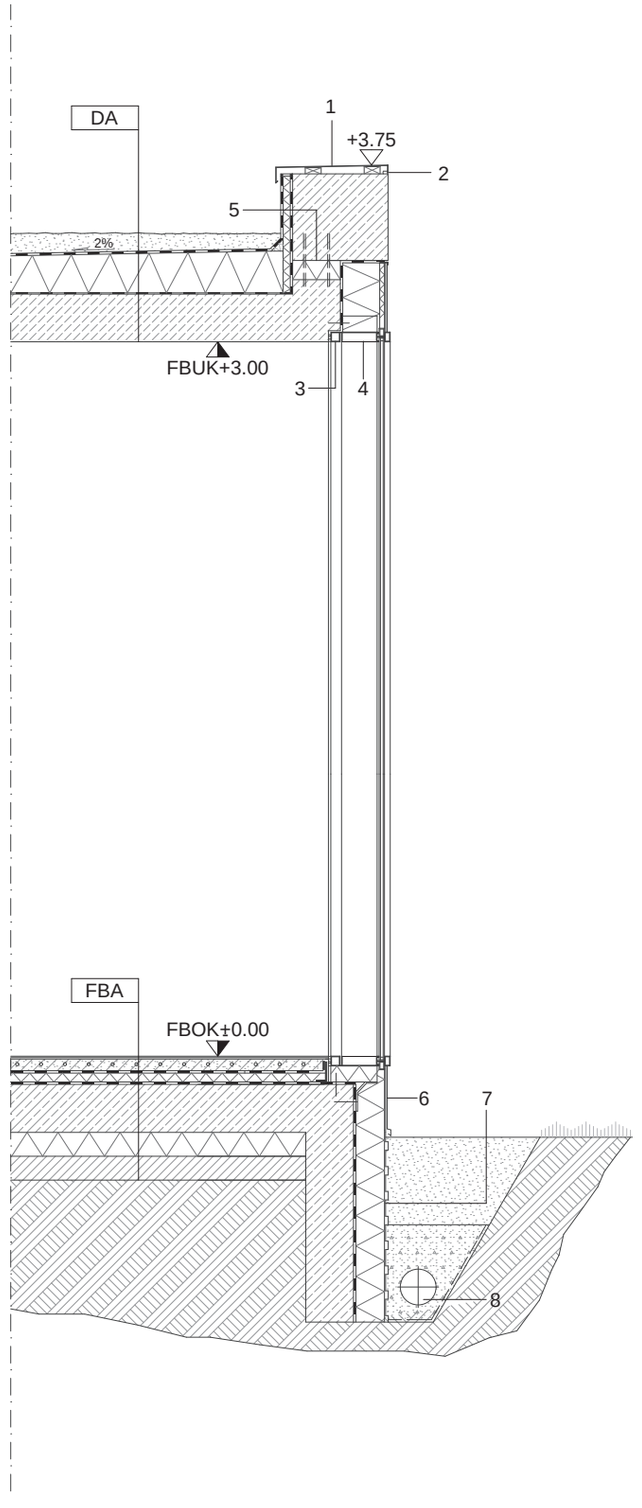
6 Aluminiumblech 3mm

7 Noppenbahn 20mm

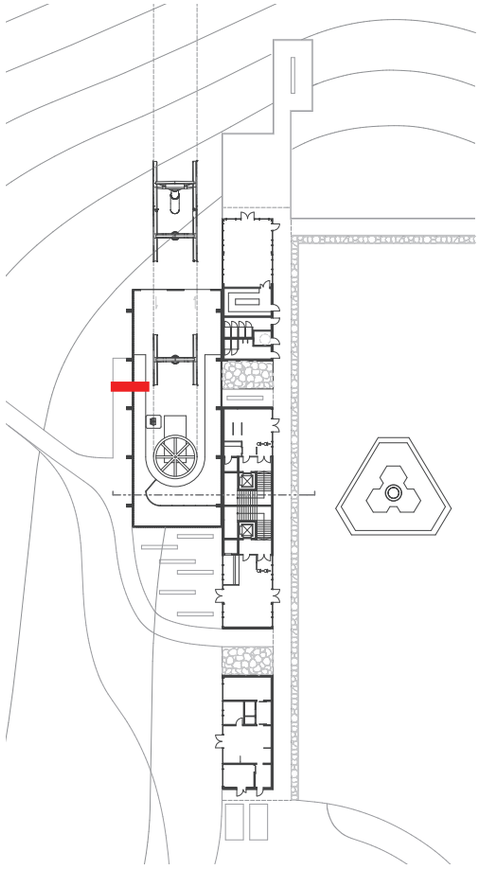
8 Drainage DN150

Dachaufbau
- Kiesschotter 80mm
- Schutzvlies
- Bitumen Abdichtung 2 lagig
- Gefälledämmung 200mm 2%
- Dampfsperre
- STB Decke 200mm

Fussbodenaufbau
- Fließen
- Estrich 60mm
- PE Folie
- Trittschalldämmung EPS 40mm
- Bitumenschicht Abdichtung 2 lagig
- STB 200mm
- Schaumglas Dämmplatte 100mm
- Sauberkeitschicht 100mm



Kopitoto Wall Section 1
Rescue Center



1 Attikaabdeckung Aluminiumblech

2 Kompriband

3 STB Stütze 400x800mm

4 STB Träger 400x1200mm

5 Aluminiumprofil L, anthrazit

6 Profilglas

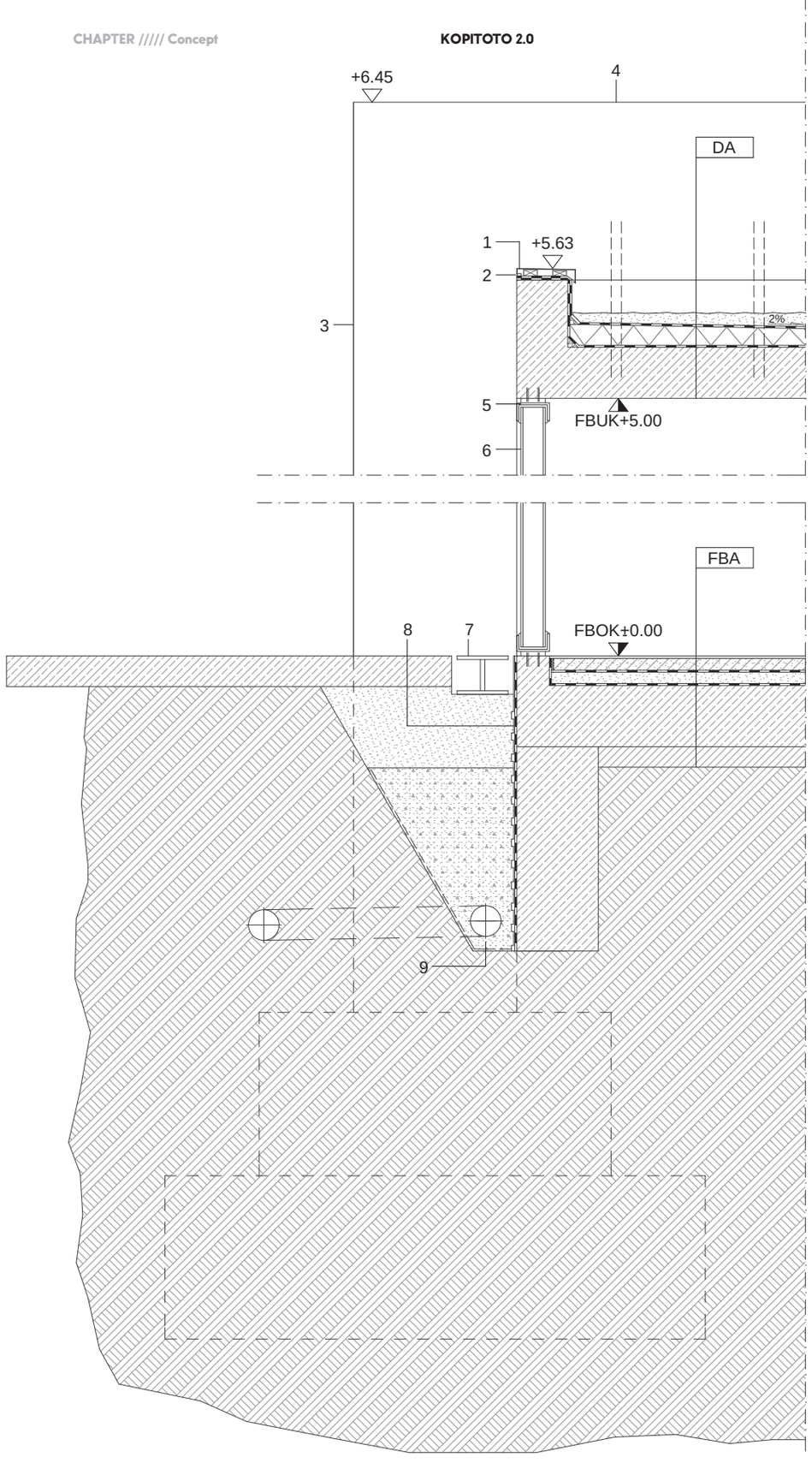
7 Gitterrost

8 Noppenbahn 20mm

9 Drainage DN150

Dachaufbau
- Kiesschotter 80mm
- Schutzvlies
- Bitumen Abdichtung 2 lagig
- Gefälledämmung 2%
- Dampfsperre
- STB Decke 250mm

Fussbodenaufbau
- Gummibelag 20mm
- Heizestrich 60mm
- PE Folie
- Kiesschotter 60mm
- Bitumen Abdichtung 2 lagig
- STB 300mm
- Sauberkeitschicht 100mm



↗ *Kopitoto Wall Section 2*
Lift Hall

ANNEX

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