

THE SUBLIME

INVESTIGATING HOW ARCHITECTURE CAN CONTRIBUTE TO THE
EXPERIENCE OF CLIMBING THE VOLCANO NYIRAGONGO, NORTH KIVU, DRC

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Investigating how architecture can contribute to the experience of climbing the volcano Nyiragongo, North Kivu, the DRC.

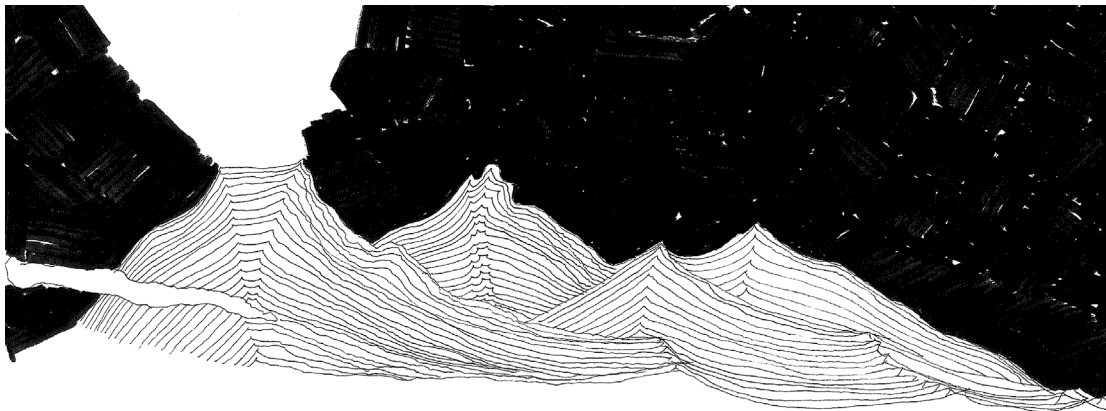


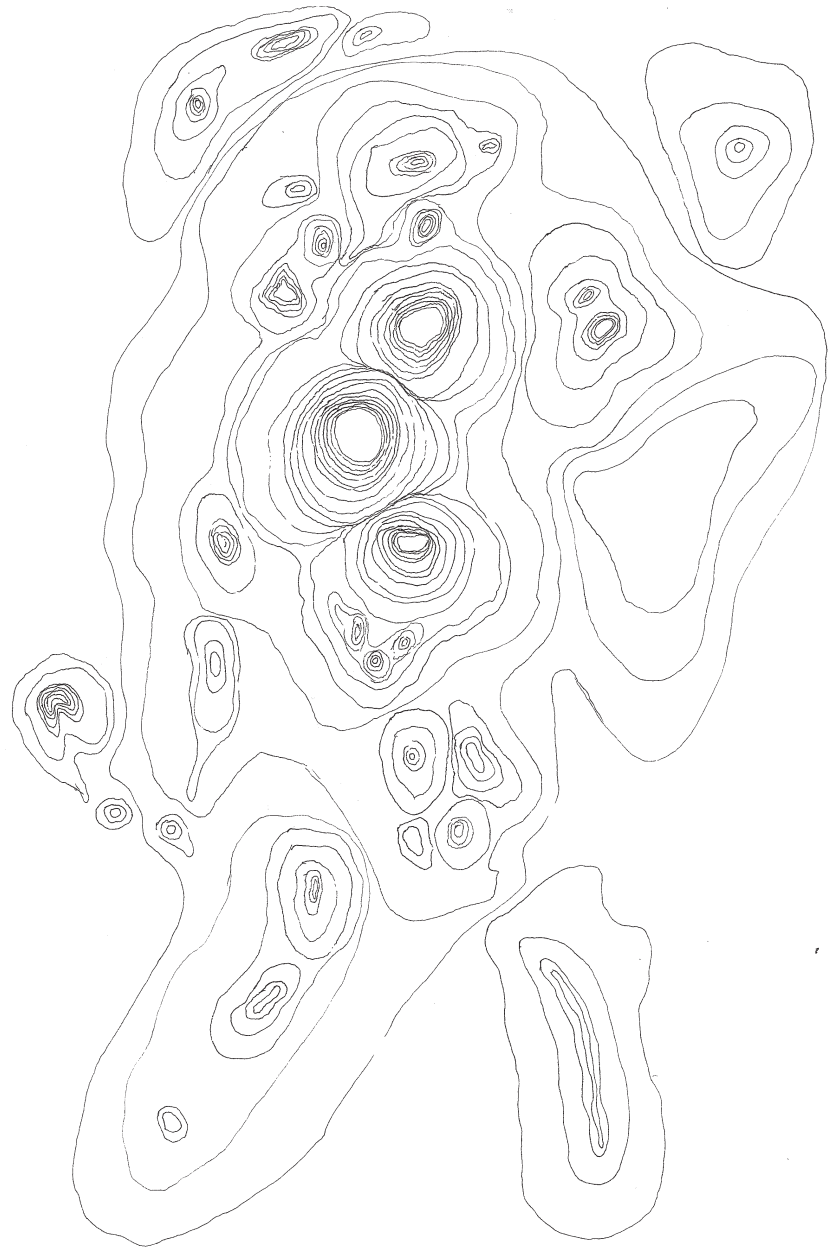
Disa Reuterswärd | AAHM01 Degree project in Architecture

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SPECIAL THANKS TO

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NYIRAGONGO VOLCANO 02-18

ABSTRACT

In our everyday life we live distant from the origin of life itself - nature. Dramatic landscape and fascinating views touch us in a way that few other things manage to do. It is something that make us recognize our powerlessness and the feeling of awe towards the nature. Experiencing striking nature is a way to create a deeper understanding of our own world and at the same time enrich our lives with strong emotions.

The sublime is a philosophical phenomena, developed by the philosophers Immanuel Kant and Edward Burke during the 18th century. The theory explains the kind of unique experience one feels when facing nature's might, certain kind of art or overwhelming architecture. The sublime is an emotion of pleasure, that is connected to, and only possible, when you at the same time experience displeasure (which in this case is fear or terror). To be able to experience the sublime, (which is the strongest emotion that the mind is capable of feeling, according to Burke) one have to feel that one is at safe distance, with no risk of destruction.

This project investigates how architecture can contribute to the sublime experience of a unique natural landscape. The proposal site is the Nyiragongo volcano, located in the eastern Democratic Republic of the Congo, the DRC. Tourists from all over the world cross the border from on a daily basis from Rwanda to visit Virunga national park and to climb Nyiragongo. From the rim of the volcano, visitors can look down into a lava lake and hear gases exploding and see a mosaic of molten lava. The tourist industry is an important economic engine that encourage the maintenance of safety in the region. This project investigates how architecture contribute to increase the status - highlighting the very uniqueness of Nyiragongo and Virunga national park in eastern DRC and how this can be done within the guide-lines of Eco-tourism.

Rangers by their camp at the top of Nyirangongo, getting ready for the evening. Photographer: Reutersward, D. (2016)



CONTENTS

1 | INTRODUCTION

| | |
|--------------|---|
| Introduction | 5 |
| Context | 7 |

2 | CONTEXT

| | |
|----------------------------------|----|
| The Sublime | 11 |
| Introduction to the DRC | 17 |
| Proposal site + route | 19 |
| UNESCO Heritage | 21 |
| Eco-tourism | 23 |
| Tourism references | 25 |
| Wind, sun and itchy lungs | 27 |
| Vernacular architecture + crater | 29 |
| Social context - the users | 31 |
| Activities on the hike | 35 |
| Safe Space | 37 |

3 | PROPOSAL

| | |
|-------------------------------|----|
| Materials, pozzolana + Liboyo | 45 |
| The entrance building | 47 |
| Landscape | 67 |
| The porters' house | 75 |
| The tourists' shelters | 83 |

4 | REFLECTIONS

99

5 | BIBLIOGRAPHY

| | |
|----------------|-----|
| Literature | 103 |
| Internet | |
| Images | |
| Video + verbal | |

1 | INTRODUCTION



INTRODUCTION

This project emerged after spending three months in Kigali, Rwanda, during an internship at ASA design studio Ltd. While working on various architectural design projects in Rwanda I was starting the research for my master thesis. Thinking of potential topics and sites in the area, there was this one place that people living in Kigali told stories about. Something that caught my attention - an active volcano in eastern DRC.

In our everyday life we live distant from the origin of life itself - nature. The artist Andy Goldsworthy once wrote "We often forget that we are nature. Nature is not something separate from us. So when we say we have lost our connection to nature, we have lost our connection to ourselves."¹

I felt the urge to get out of my daily routine and experience the greatness of this notorious volcano called Nyiragongo. And - it was mind-blowing. What I experienced, leaning over the crater's sharp edge, looking down into the mosaic of lava 800 meters below, feeling the heat from the earth's inside touching my face, was something surreal and difficult to explain. I was overwhelmed.

Terror, shock, and discomfort.
Astonishment, amazement and wonderment.
Powerlessness, awe, respect and happiness.

All emotions alternating at the same time. Hearing the volcano rumble at night, quietly asking it to stay calm and at the same time feeling proud and honored of being this close to its might. It was sublime.

Dramatic landscape and fascinating views touch us in a way that few other things manage to do. It is something that makes us recognize our powerlessness and the feeling of awe towards the nature. Experiencing striking

nature is a way to create a deeper understanding of our own world and at the same time enrich our lives with feelings.

The sublime is a philosophical phenomenon that explains this kind of experience one can have facing nature's might. The theory was developed during the 19th century by Immanuel Kant and Edward Burke. The theory explains the kind of unique experience one feels when facing nature's might, certain kind of art or overwhelming architecture. It is connected to displeasure, which is fear. But to be able to experience the sublime, one has to feel that one is safe with no risk of destruction.²

When a traveler returns back home after a journey, stories of fascination, like the ones I was told and now am telling, are spread and knowledge of a place reaches many ears. Which leads to more explorers - tourists.

Tourism is an enormous industry that is to be found all over the world. Its impacts, economic, social and environmental can be doing good or be doing harm. Eco-tourism, which usually is conducted in largely untouched natural areas, is a sustainable tourism that aims to minimize the negative impacts. To increase the positive impacts Eco-tourism focuses on conservation, education for visitors and benefits for the host communities.

The ambition of this project is to spatially investigate the architectural relation to a sublime experience of nature with Eco-tourism as a guideline.

Can architecture contribute to the sublime experience of a unique nature phenomenon? And can this be done within the guide-lines of Eco-tourism?

¹ Goldsworthy, A.

² Ginsborg, H. (2014).



CONTEXT

The investigation of the program is conducted through an architectural proposition on a specific site, which is the volcano Nyiragongo.

Nyiragongo is located in eastern Congo, 18 km away from the city Goma which is the capital of North Kivu province, situated on the shore of lake Kivu.

The volcano is a unique stratovolcano that features the world's largest lava lake. It is located in Virunga National park, that since the year of 1979 is an UNESCO heritage site.

The summit of Nyiragongo is devoid of vegetation and is now and then dusted with snow. Its lower slopes is home for various of animals such as gorillas, chimpanzees, bush-locks and monkeys.¹

The region is famous for its violent recent history dominated by the Rwandan genocide 1994 that fueled the First and Second Congo wars. These events had effects on the surroundings until 2010 and 2012 when Goma was captured by rebel groups during the M23 rebellion. The region has been retaken by the government forces, but the situation remains violent.²

However, tourists from all over the world cross the border from Rwanda every day to visit Virunga national park and to climb the Nyiragongo. The tourist industry is an important economic engine that encourage the maintenance of safety in the region.

From the rim of the volcano, visitors can look down into a lava lake and hear gases exploding and see a mosaic of molten lava. Nyiragongo is, compared to other stratovolcanoes always active and therefore somewhat predictable, which makes it safe to climb. Nonetheless, the volcano is greatly feared during

eruptions. In the 1970's it erupted fiercely and again the year of 2002. Nyiragongo's lava flows are extremely fluid. In 2002 Nyiragongo's lava flows were at the speed of 100 km/hr and reached all the way to Lake Kivu.

In March 2016 Nyiragongo was more active than usual and a third vent opened up in the volcano a few days before I climbed it - which gave the whole experience additional edge. However, the camp manager Julie Williams at Virunga parks is always monitoring the situation at the volcano to make sure that it is still safe to climb.³

The climate on the the volcano is rough. It is cold, windy and rainy. Starting the journey on 1870 meters above sea level, the temperature can be 30 degrees and reaching the top it is most likely 0 degrees. Rangers, tourists and porters have a tough journey ahead to reach the very top, but the experienced hikers I talked to who had climbed Nyiragongo told me that this hike was the most rewarding hike they had ever experienced.

This project will investigate if architecture contribute to highlight the very uniqueness of Nyiragongo and Virunga national park in eastern DRC and how architecture can contribute to the increase the status of the park? Can spaces produce the feeling of being safe while on top of the volcano, thus enable visitors to the experience of the sublime emotion?

The guide-lines of Eco-tourism is an important framework for this project to understand how local materials can be used, if travelers can learn about the environment they are visiting and how the host community can benefit from this project.

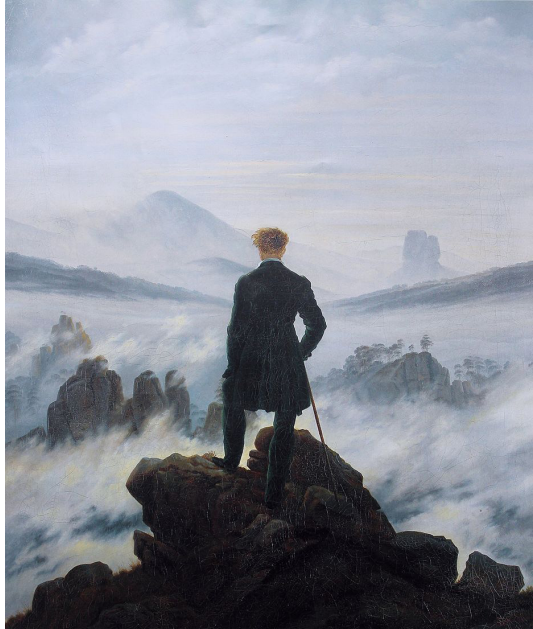
This is a 8 km long walk through the dramatic and surreal landscape of Nyiragongo.

1 Virunga.org [2016].

2 Turner, T. [2013].

3 Williams, J. [2016].

2 | CONTEXT



THE SUBLIME

The sublime is an aesthetic concept, originating in the Classical Greece era (1st century AD). At the time it was defined as differing from beauty and evoking more intense emotions by vastness, a quality that inspires awe. Whereas beauty may be found in the smooth, the small, the light and the everyday, the sublime is obscure, vast, irregular, and superhuman.

The sublime came to be a developed concept in the end of the 18th century through the writings of Lord Shaftesbury, Immanuel Kant and Edmund Burke.

It was during this time that art became a separate branch of philosophy, distinguished from theology, morals and ethics. Edmund Burke argued that pain is the strongest of the passions and that when we are opposed by danger or vastness at a safe distance, the result can be an experience of a certain kind of pleasure, defined as the sublime - "the strongest emotion which the mind is capable of feeling" according to Burke¹ who also said "I know of nothing which is sublime which is not connected to the sense of power."²

Examples of this could be paintings of a shipwreck or a thunderstorm, where the mind can experience the might of nature without having to fear for its own destruction. J.M.W Turner and Caspar David Friedrich are two painters among other who during the 19th century

Painted such motives.

Kant largely agreed with Burke's definition of the sublime. The importance of the sublime within Kant's aesthetic theory is a matter of dispute. Kant developed the concept, defining the dynamically sublime which is when we experience nature as fearful while knowing ourselves to be in a position of safety. The displeasure comes from the awareness of our physical powerlessness in the face of nature's might and the pleasure in the superiority of our reason over nature. It means that an object is repulsive and attractive at the same time. The Kantian sublime focuses on the sublime experience which is so great that the mind fails to comprehend it, and the fear/thrill lays in the fact that reason falters to understand what the mind is experiencing.³

Kant also explained the difference between beauty and the sublime: "The sublime moves, the beautiful charms." According to Kant, it is when the mind working harmoniously while attending an object the beautiful is the result of it, whilst the experience of the sublime is an violent, irrational reaction.⁴ Kant's examples of nature that evoke the sublime experience include thunder clouds, overhanging cliffs, hurricanes and volcanoes.

Since the late 18th century there has been art that is considered to be evoke sublime feelings, in the same way dramatic landscapes can do.

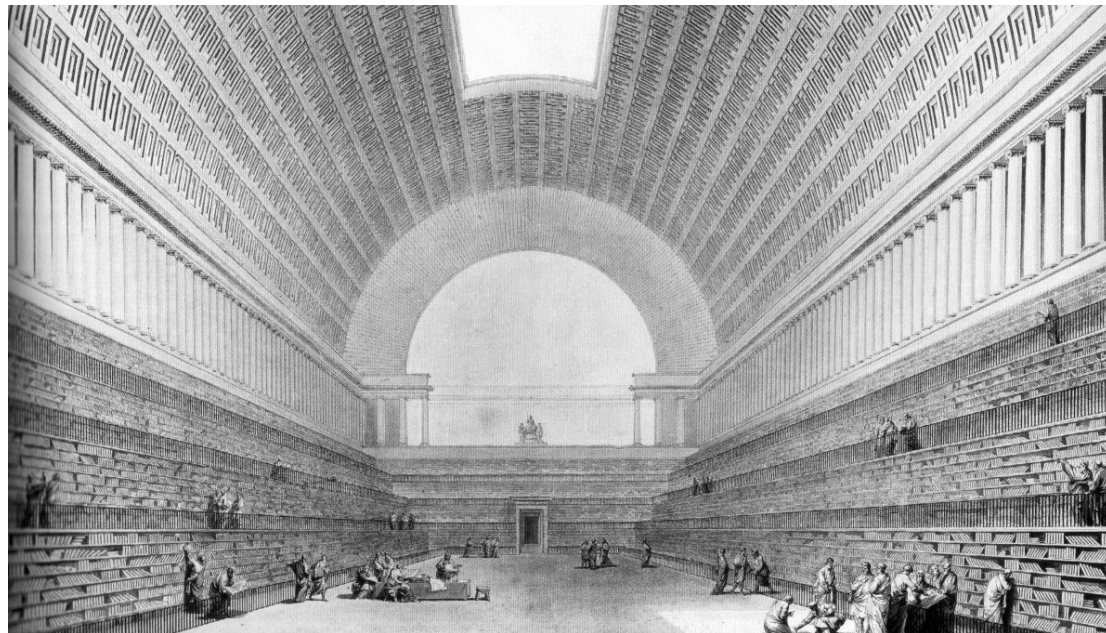
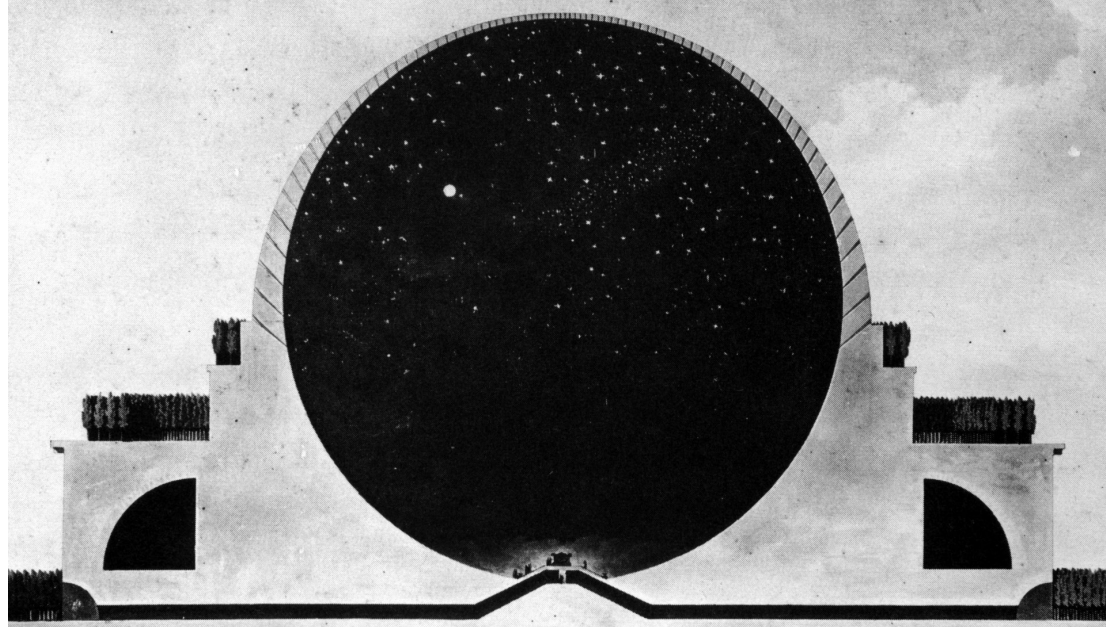
1 Rodgers, D. (2007-2016)

2 Nesbitt, K. (1995)

3 Ginsborg, H. (2014)

4 Nesbitt, K. (1995)

^ Etienne-Louis Boullée (1795) Cénotaphe a Newton | ~ Etienne-Louis Boullée (1785) Project for the National Library in Paris, France.

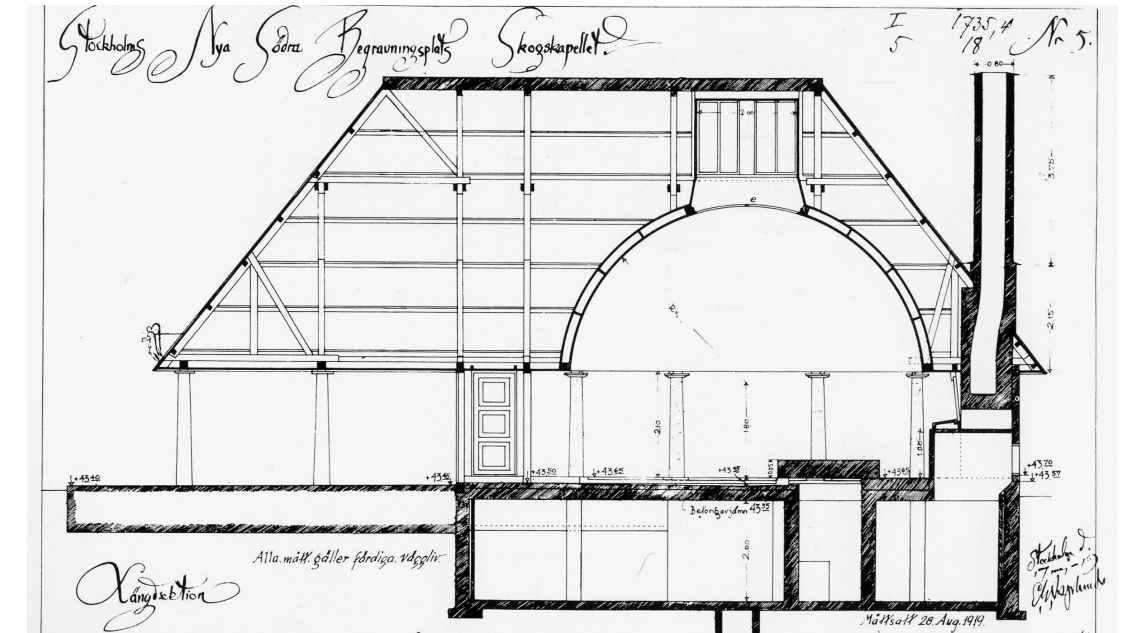


In architecture the feelings of the sublime can be found in for example gothic¹ and contemporary architecture. It is clear that in architecture monumentality, manipulation of scale and light are important to evoke the sublime. One of the first to investigate the sublime spatially was Étienne-

Louis Boullée. His unbuilt work "architecture of shadows" that was created late during the late 18th century is an example of manipulation of scale and monumentality. The architect designed for the state, which at the time had great power. The National Library of France is a projected building in which Boullée relied on an endless repetition of

1 Rodgers, D. (2007-2016)

THE SUBLIME ^ The Public Library, Gunnar Asplund (1928) | ~ The Woodland Chapel by Gunnar Asplund (1918-1920)



similar elements to manifest power.²

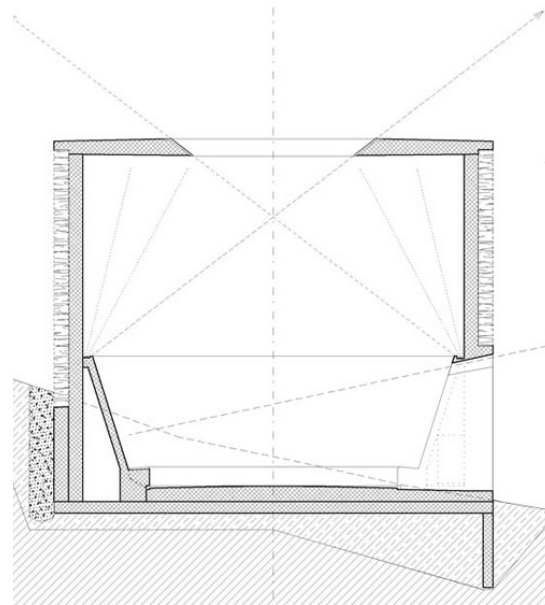
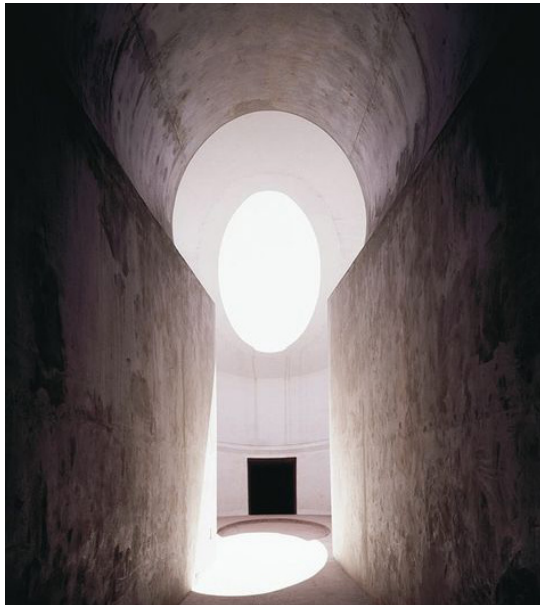
The sublime can be found in modern and contemporary architecture as well. The Woodland cemenary (1918-1920) designed by Asplund and Lewerentz where

architecture and landscape installations are considered to inspire sublime feelings. The Stockholm Public Library (1918-27) by Asplund is another example. The vault represents the sky and clouds are depicted in three dimensional plaster beneath it.³

2 Nesbitt, K. (1995)

3 Reisner-Cook, Y. (2009)

THE SUBLIME



Artists, such as Richard Serra and James Turrell, work with the sublime in a large, three dimensional scale creating spatial experiences. Richard Serra's piece "Matter of time" (2005) is a large sculpture with looming, labyrinthine corridors and coils of steel. When you walk into them you simple forget about yourself and pay attention only to the walls surrounding you, which creates a kind of materialistic meditation that overpowers the

viewers self-consciousness.¹ James Turrell's work is about sculpting light, not the sculpture itself. Turrell is interested in our relationship to light and how the experience of light can be enhanced. Turrell means that: "We have a strong primal relationship to light, when you stare into fire, for example, you enter into kind of non-thinking state, or, at least, a non- thinking-in-words state." and "Only when light is reduced considerably, can

1 Bell, J. (2013)

feeling move out of the eyes into space. My work is about reducing the loudness of light so that we feel its presence."²

He has created many skyscapes around the world, where the edge towards the sky is sharp and the visitors can

2 Reisner-Cook, Y. (2009)

experience light and the sky in an intense way. Roden Crater is an extinct volcanic cinder cone, situated in the a volcanic field near the Grand Canyon. Turrell is through architectural installations in the crater exploring the interplay of light and space. To me, both Serra and Turrel are a great source of inspiration.



The Democratic Republic of the Congo, DRC, is located in central Africa. DRC is the largest country by area in sub-Saharan Africa and has a population of 79 million people. DRC borders with the Central African Republic, South Sudan in the north, Zambia and Angola in the South, the Atlantic Ocean in the west and Uganda, Burundi and Rwanda in the east.

The DRC is extremely rich in natural resources, but colonial and commercial extraction have limited the country's holistic development. There is and has been political instability, corruption, lack of infrastructure and armed conflicts since King Leopold II of Belgium created Congo Free state in 1885. It is agreed that Congo Free state was a night mare¹ and the time after has been a continuous events of violence. The king held the state as his private property and the extreme violence that took place led to an international scandal and decolonization that was ill-prepared in the 1960's.

The DRC has been a playing field where extra-continental powers fight to take advantage.² In 1996 when Zaire (DRC was called Zaire 1971-1997) was invaded by Rwanda and Uganda. Eastern Congo, North Kivu, where Virunga National park is located, has ever since been a scene of conflicts. Active rebel groups and political conflicts with neighbouring Rwanda makes the city of Goma, admist to the National Park, an unsafe place. In 2010 and onwards extra-continental interests of oil hidden inside the park has fueled violence and tensions³ which poses a great threat to Virunga National Park which is a big potential source of income to this area.

The political situation in eastern DRC in late 2016 remains uncertain and the Swedish government as well as The Foreign and Commonwealth Office of the UK advise against all but essential travel to North Kivu and the city of Goma. Still tourists cross the border every day from Rwanda to pass through the city of Goma to experience the uniqueness of Virunga National park and Nyiragongo.

1 Hochschild, A. (1998)

2 Turner, T. (2013).

3 Virunga. (2014).

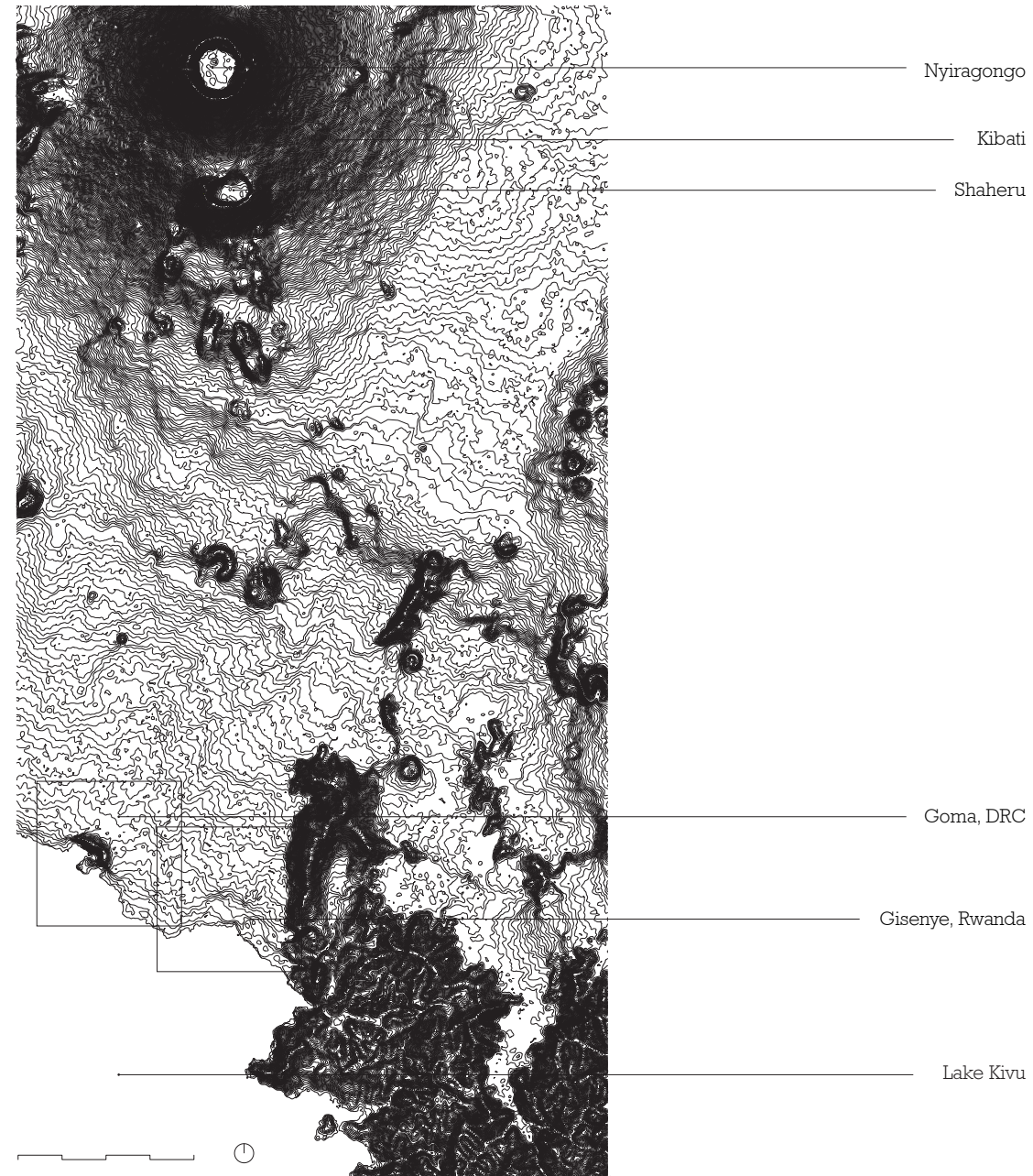
PROPOSAL SITE + ROUTE



The Nyiragongo volcano sector is located in the southern part of the Virunga park. South of Nyiragongo crater, with an active lava lake, there is a dry crater called Shaheru. The maps above show the the border of Rwanda and the DRC. Moreover he location of the neighboring cities Goma, DRC, and Gisenyi, Rwanda and lake Kivu in the south. Lake Kivu is one of Africa's great lakes. It is a freshwater lake with with a gaseous chemical composition that pose

a risk of exploding. It is the interaction with the volcano that has resulted in a high level of methane gas and carbon dioxide in the lake.

Nyiragongo is located about 20 km north of Goma. The dramatic landscape of the area can be depicted in the map of contour lines (5 meter interval) . At the satellite image above you can see the border of the Virunga



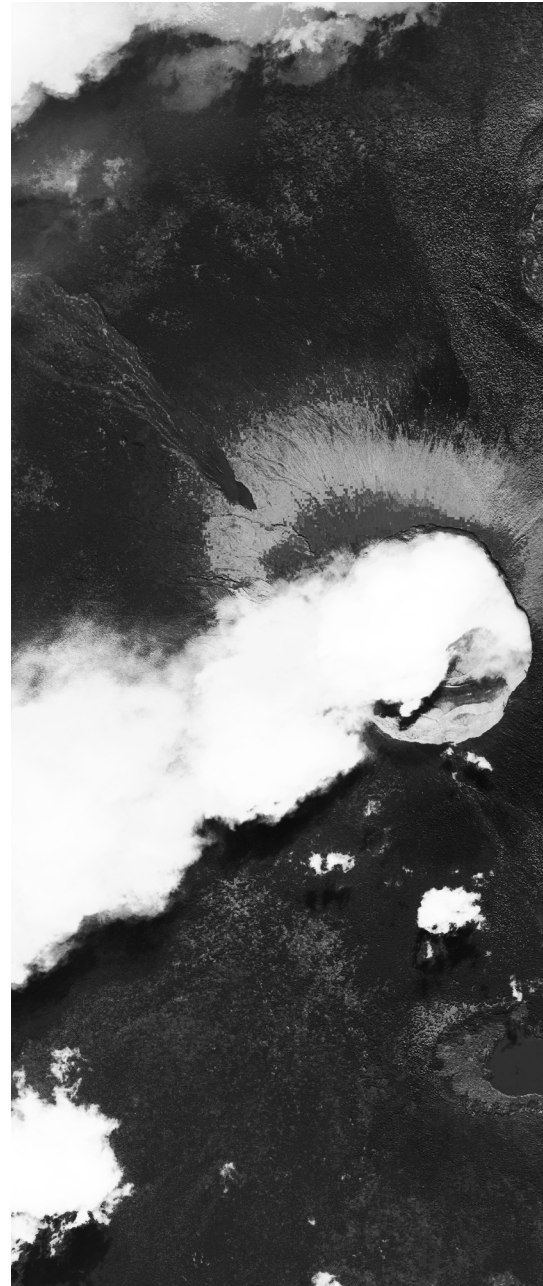
National Park in the difference of vegetation.

Likewise the border to Rwanda is visible. Hiking up Nyiragongo the view looking back, towards Rwanda was amazing. You could see the border sharply through the difference of vegetation. Rwanda is well kept and every single square meter cultivated. The DRC side, outside the park the ground, is empty. No trees and no agriculture,

which tell a story of the current state of the area today in comparison to Rwanda.

The sulfur smoke from Nyiragongo is moving in a southwest direction, which can be seen on the satellite image. The wind direction is normally north east - which is why the hike route is located on the west side of the volcano's crater.

Right: Map over the Virunga National park | Left: Nyiragongo volcano, Virunga National park, DRC, Nasa (2004)



UNESCO HERITAGE

Virunga National Park, that covers 7800 square kilometres of eastern DRC, is an unique park and an UNESCO heritage site since 1979. It is a national park since 1925, which makes it the oldest one in Africa. The rich diversity of habitats surpass those of any other African park and it contains savannas, steppes, low altitude and afro-montane forest belts.

The park is located at the Great Rift Valley and due to extension of earth's crust Virunga massif, eight volcanoes, has emerged. Among the seven of these, that are totally or partially located in the park, are the two most active volcanoes in Africa - Nyamuragira and Nyiragongo. These two are responsible for almost half of the volcanic eruptions at the African continent. Nyiragongo is, according to UNESCO, of world importance thanks to that the bottom of its crater is filled with lava, creating a quasi permanent lava lake.¹ Nyiragongo erupts periodically with catastrophic consequences for the local community. The extreme fluidity of the lava results in lava that travels in very high speed. During the 2002 eruption the lava flows were clocked at 100 km/h reaching 20 km from the crater.

Virunga is not only a unique wildlife park, it is also a vital resource to local residents living in the area. The park is listed as a World heritage in danger by UNESCO. This is due to conflicts in the area, armed conflicts between

rebel groups and lately the park itself has been under attack since oil exploration companies are at the doorstep. With the oil comes pollution and destabilization which is threatening the park - thus the potential economic resource that it is.²

According to World Wildlife Fund, (WWF), Virunga's estimated annual economic value under present circumstances are 48.9 USD million. Whereas a stable situation conducive to tourism and economic growth the same value could be higher than 1.1 billion USD per year. The park could also be the source of at least 45 000 jobs, including the existing positions. The main contributors to the value of the park are tourism but also fisheries and hydropower.³

Today the Virunga National Park is a Public-Private Partnership between the Virunga foundation and and the Democratic Republic of Congo. The Virunga foundation is UK-based that exists to help protect the fauna and flora of the park but also the local communities. The partnership aims to reach high standards in conservation and to increase the financial and institutional sustainability of the park.⁴

1 UNESCO (1992-2016)

2 Virunga. (2014).

3 WWF/Dalberg, (2013)

4 Virunga. (2014).

Tourists looking down at the lava lake in the crater. Photographer Reutersward, D. (2016)



ECO-TOURISM

A trip to Virunga offers the traveler the opportunity to see some of the world's most spectacular landscapes, as well as wildlife, seen by relatively few people.

Tourism can be a huge resource but also fatal if not practiced in the right way.

Eco-tourism was developed during the global environment development movement during the late 70's and grew larger as a concept during the 90's. Eco-tourism encompasses that the concept that tourism can and should benefit the host communities and conservation.

The international Eco-tourism Society, (TIES), defines Eco-tourism as "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education".

The principles for those who participate, implement and market eco-tourism are:

1. Minimize physical, social, behavioral, and psychological impacts.
2. Build environmental and cultural awareness and respect.
3. Provide positive experiences for both visitors and hosts.
4. Provide direct financial benefits for conservation.
5. Generate financial benefits for both local people and private industry.
6. Deliver memorable interpretative experiences to visitors that help raise sensitivity to host countries' political, environmental, and social climates.
7. Design, construct and operate low-impact facilities.
8. Recognize the rights and spiritual beliefs of the Indigenous People in your community and work in

partnership with them to create empowerment."¹

Although all these principles are equally important, I have chosen to focus on the 3rd, 6th and 7th principle underlined above. That is out of interest and how I would like to investigate architecture at this point. I find it interesting to develop a journey that would be memorable for the visitors as well as the staff. Nevertheless, I believe, a project like this would benefit and fulfill all principles above. I see tourism in this case as a tool of empowerment and a way of enriching lives with experiences.

Tourists visiting Nyiragongo should be informed about the place that they are visiting. Likewise should education of staff be enabled and promoted.

Tourists should be inspired by what they are experiencing - creating a "buzz" to attract positive attention to Virunga National park and especially Nyiragongo.

The information and inspiration should lead to involvement. That means that involved visitors take action, engage in and to spread the notion about the importance of Virunga national park which hopefully would contribute to the economic growth, thus empowerment of the community.

¹ Ecolourism.org, (2015)



Some tourist destinations offer visitors something unique, an experience that they will never forget that is closely connected to the destination's nature and enhanced by exciting architecture. In Sauda, Norway, the architect Peter Zumthor has created three buildings for a tourist route at the old allmannajuvet zinc mines. The mines were in use during the end of the 19th century and is today a part of the Ryfylke National Tourist Route. Zumthor wanted

the buildings that include a cafe, a museum (about the mining history) and a service building to reference "the strenuous everyday lives" of the mine workers.¹ This kind of architecture is a part of the storytelling of this otherwise forgotten place. I think it represent a kind of tourist destination where architecture contributes to increase the

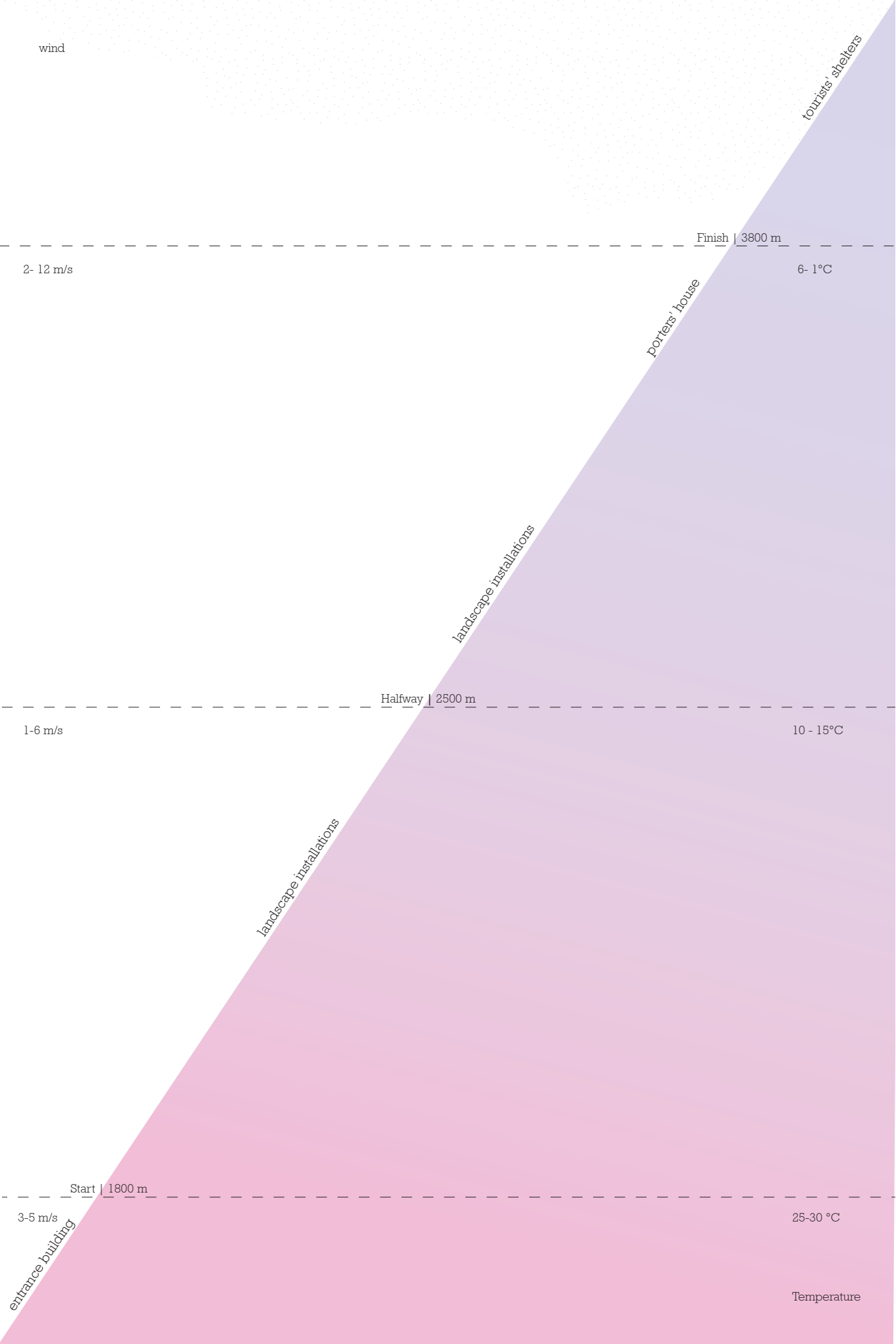
¹ Dezeen (2016)



status of a place. The Icehotel in Jukkasjärvi, northern Sweden, is an example of a tourist destination that few people have had the chance to visit. The hotel is built every year out of ice from the Torne river. Artists are handpicked every year, November till December, to build and design the hotel that house around 60 000 guests every year. It closes down in April when the winter is over and the hotel

building melt and return back to nature.² Tourists visiting sleep in rooms made of ice and snow and they can try to travel by dogsled. As a child I visited the Icehotel and it is an experience that I will never forget. My aim is to create the same kind of life-long memory out of the hike up Nyiragongo.

² Archdaily (2012)



WIND, SUN AND ITCHY LUNGS

In Virunga National Park the elevations, habitats and climates vary a lot. Virunga National Park is in a tropical climate zone. Within the park's boundaries the the highest and the lowest recorded rainfall within in the republic occur (500 mm - 3000 mm annually).

Hiking up Nyiragongo can be quite a challenge since the height difference is about 2000 meters in 6 hours. The climate has a huge impact on the experience of the journey. The diagram on the opposite page show the relation between, temperature, wind and height.

The hike starts when you arrive at Kibati patrol station, at the foot of the volcano which is located at 1800 meters above sea level. In Kibati it is often raining, the temperature is around 25-30 degrees and a little or almost no wind. Starting the hike one would like to wear light and water proof clothes. As one walk, the inclination increases which makes one sweat. At the same time the temperature decreases and the wind gets stronger. You want to change clothes, to keep warm. During the hike it can rain all way or not at all.

After almost 6 hours, when it is only half an hours hike remaining to reach the very rim of the volcano's crater, the terrain is very steep. The air smells of sulfur and while breathing ones lungs itch from the smoke from the volcano. The winds speed increases fast as you walk up, up the hard, and sharp volcanic rocks. Up at the crater it is best to put on gloves, hat, fleece jacket, thick socks, scarf - since the temperature has is close to 0 degrees and it is sometimes extremely windy.¹

The sun, that might have been shining at you or not during the hike, sets already at 6 pm and it is suddenly pitch dark and very cold. However, one can get some warmth leaning over the rim of the volcano, looking down into the lava lake. The heat from the molten lava 800 meters down hits your face, which makes one forget that your hands were freezing.

Sleeping in the shelters on top of the volcano is a chilly experience. The wind roars outside and at the same time you can hear the volcano rumble from inside.

¹ Mountain Forecast (2016)



In the area North Kivu, DRC, the vernacular building design and techniques were circular buildings made out of wooden inter-plaited structures covered with adobe.

Today most buildings at the Congo side of North Kivu are rectangular and built out of wood panels. Near the volcano lava rocks are used to build walls around gardens and properties. The circular shape for me is a strong but simple symbol that represent the shape of the crater, the vernacular design that was present for a long time in this area.

For storytelling and education the circular shape is also of importance. When gathering, the most common way to interact and spend learn from each other is when sitting in a circle. Thus this shape will reoccur for educational purposes in this project.

I also interpret the circle as a symbol for sustainability as a part of Eco-tourism. What goes around - comes around.



The target group for this project are tourists and the local community (porters, rangers, guides and volcano observers).

In March 2016 when I climbed Nyiragongo, we were a typical group of 13 tourists. Half of the group were tourists only visiting East Africa and the other half were expats living short or long term in the area. The tourists that came only for leisure arrived by plane to Kigali and then by car 3 hours to Gisenye. Me and my traveling partner also arrived to Gisenye the night before the hike. Gisenye in Rwanda is considered to be a safe place (like all of Rwanda), that is why most tourists spend the night here before crossing the border to Goma in the DRC heading towards the Virunga National Park (see maps on page 18-19).

The tourists in my group, which is a typical set of tourists climbing the volcano, came from Great Britain, The United States of America, Belgium, Israel, Australia, Germany, Italy and France. The age span was from 25 to 45, but

I have been told that kids over the age of 8 can join as well as elderly. Virunga National Park offer those who do not have the physical capability to manage the hike on their own, to be carried up. At first glance, this can seem crazy - but it is actually great source of income for the porters (since this service is costly) and it is great that those with disabilities also get a chance to experience the uniqueness of looking down into the lava lake.

My impression of the tourists in my group was that everyone were well prepared, cautious and careful. All of us had been traveling in East Africa before and were aware of the situation in eastern Congo, moreover well informed of the status of the activity of the volcano. The people I climbed with were well educated and curious. I also experienced that everyone were respectful and humble towards the park and the staff.

I believe that it is mostly well educated tourists that at this point visit the Nyiragongo since it is not very well known and located in a difficult area.



So today the typical persona doing this sort of journey is a well educated and well off foreigner - however the aim with this project is to widen the range of users. The hike up the Nyiragongo can be used in a educational purpose so that school kids and students can learn about their surroundings, the nature and the volcano.

Since safety is an issue in the area, the the Virunga National park has 380 rangers to protect the park's exceptional wildlife - that include elephants, gorillas and chimpanzees. Climbing the Nyiragongo volcano armed rangers make sure the group is safe. When I climbed there were four rangers who walked with us. They are well educated, as well as the two guides that came along. They are very serious about their job and the situation - which inspire respect and carefulness.

Travelling by car through Goma with jeeps from the Park armed female rangers joined to keep the tourists safe, but up the mountain only male rangers joined.

The guides inform the tourists about the hike and tell stories along the way.

The guides and rangers are hired and educated by Virunga National Park. Climbing up the mountain almost every tourist hire a porter to carry the heavier bag. The porters are not affiliated with the park, but the price is set and they are often well experienced. In the end walking up we were 13 tourists, 13 porters, 4 rangers and 2 guides - a total of 32 people walking in a row. Moreover, there are drivers administrative staff before and after the hike. This kind of tourism creates job opportunities.

Furthermore, users within this project are to be volcanic researchers. Souvenirs can be created and sold to the tourists to bring home as gifts and as a part of the storytelling. One idea is to do use the lava stone to create bowls, sculptures and lava pumice stones. Thus becoming a source of income for the local community - and part of spreading the word about The Virunga National park and Nyiragongo.

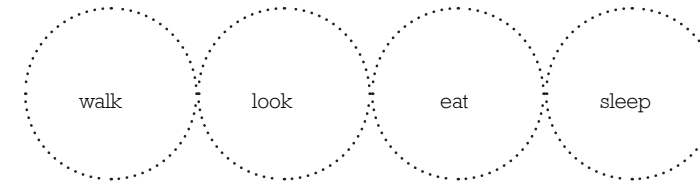
Glimpses from the 6 hours long hike



Preparing dinner at the top of Nyiragongo, view towards Rwanda, sky above and lavalake behind. Photographer Reutersward, D. (2016)



ACTIVITIES ON THE HIKE



The main activities for someone climbing Nyiragongo are the basic ones. It is a pretty tough height difference and the terrain changes a lot a long the hike - periodically it is quite challenging. Mud, gravel of different sizes and the lava rocks that are sharp.

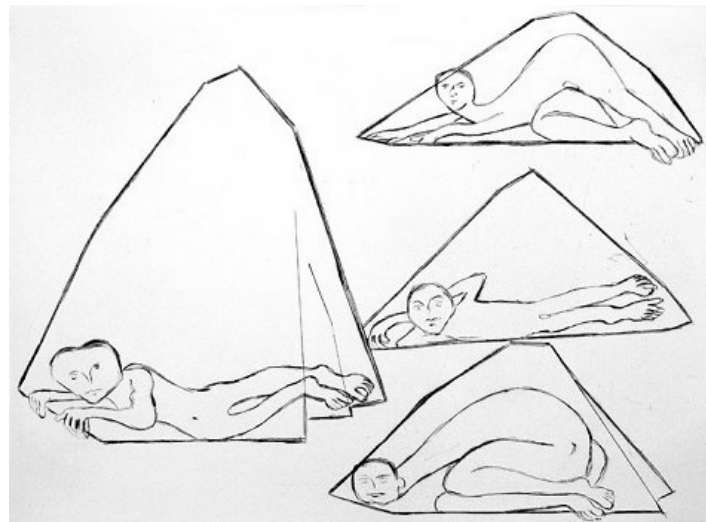
As you walk up you look at the view, in front of you and behind you. Ahead of you, you see the top of the crater in the distance at some points and sometimes only wood and the person walking in front of you. Looking back - the panorama is overwhelming - seeing Lake Kivu and other volcanoes in Rwanda. On top of the crater you can look down into the crater to see the most amazing view - the lava lake.

During the walk you eat something small and drink a lot of water. At the top of the crater around 6 pm when it gets

dark - it is time to cook and drink something hot because it is very chilly up here. This is done over an open fire.

After eating and looking down into the lava lake, it is time to get some sleep. Sleeping up here can be difficult since it is at an high altitude and it is very cold. What I experienced as scary was the sound. The roaming wind that got stronger and stronger as the hours passed by - and the sound of the volcano rumbling from the inside was surreal.

Other activities, not directly connected to the hike per say, that should be mentioned are education and research. The staff for this tourist activity should have the possibility to learn and teach about the volcano and its surroundings. Volcanic researchers today do not have proper facilities to monitor Nyiragongo's activity.



When defining the sublime as an aesthetic experience, Burke distinguished it from the feeling of terror by saying that the viewer must be untroubled by any practical concern or thoughts of preservation in order to experience the sublime.

To me, the process of planning and carrying through such a hike was an extremely challenging and gripping. It was attractive and repulsive at the same time.

The country was new to me, the terrain unknown, the hike demanding and the volcano's activity is quite frightening. Goma, in Eastern Congo has a recent history of insecurity and armed conflicts which means that one as a tourist can be, already before starting the hike, a little nervous to say the least. Human conflicts is one thing that gives the journey additional edge, but firstly it is the nature's might that you, already before experiencing it, know is overwhelming and that you stand powerless in relation to the volcano. There is always a risk that Nyiragongo volcano could erupt. The latest eruption 2002 took everyone by surprise.

One challenge in this project is to frame the route so that the visitor feels safe and untroubled - to enable the sublime emotion.

How can architecture contribute to a spatial experience that inspires safety? How can a safe space be defined? According to the researcher and architect Wånström Lindh, H, safety can be achieved through spatial enclosure which means being surrounded by clearly visible boundaries that increase spatial understanding.

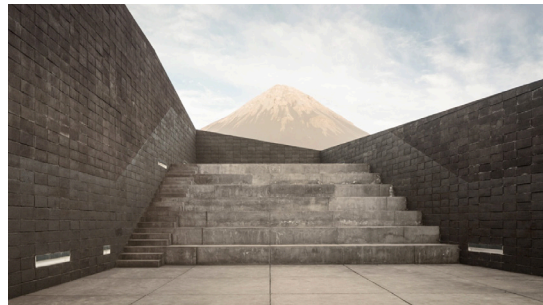
The physical space is a spatial unit enclosed by four walls but it can also be an experienced space that does not necessarily have physical walls.

A space can be created by adding (building), subtracting (cave, digging). Spaces can be huge or tiny.¹

We understand and apprehend the space through perception. The spatial experience, describing the experience of being inside a space is more about experience than perception since it include feelings.

Thus create the feeling of safety I will in this project be subjective - since the experience is based on my feelings.

¹ Wånström Lindh, U. (2012)



By the foot of the volcano on Fogo Island, Cap Verde, Lisbon-based Oto Arquitectos designed a building with the aim to strengthen the community. The building that was finished 2013 was located at height of 1800, meters, just next to the crater. Local black masonry blocks was made out of cement and ash from the site. The striking landscape that has a unique beauty was aspiring to become a world heritage and the idea was that architecture and the landscape would become accomplices.¹ Unfortunately the structure stood only for seven months - it was destroyed when Pico do Fogo volcano erupted not long after it was finished.

This project is a inspiration for me since I think it is well adapted to the dramatic landscape that is similar to Nyiragongos. Also the building technique is interesting since I have chosen to work in a similar way. It is an example of how contemporary architecture can blend into a landscape and complement the surroundings.

¹ Archdaily (2014)

REFERENCES



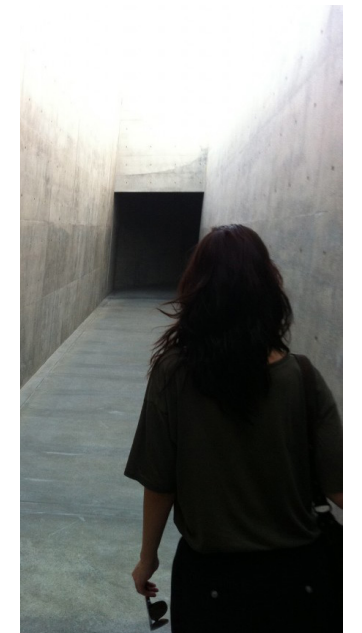
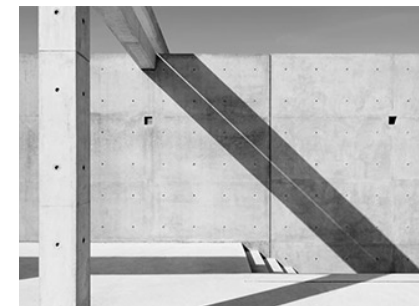


Akkarvik Roadside restroom designed by Manthey Kula (Beate Hølmebakk and Per Tamsen) is located on Moskenes island, Lofoten, Norway. It was built 2009 and the client was The National Tourist Routes. This is a restroom that is to give the visitor a pause from the intense experience of the nature, the mountains, sea and coastal climate. The restroom that is made of 10-12 mm thick corten steel sheets that offers an experience of sensuous qualities different from the surrounding.¹ Akkarvik Roadside restroom to me is a fantastic example of how a small room can enhance the experience for visitors who are at Lofoten most probably for the sake of nature. Moreover, this is an inspiration of how architecture can improve an otherwise forgotten function, such as visiting a bathroom. This restroom probably make the

¹ Manthey Kula (2016)

visitor forget that he or she was were in a hurry . The architect Tadao Ando is a great source of inspiration. Tadao Ando has designed and built several buildings that have rooms that to me are sublime since they are overwhelming and inspires different kinds of atmospheres. With one main material, concrete, Ando's buildings make a huge impression with few elements that many of times has an impressive way of enhancing the surrounding nature. Examples are Lee Ufan Museum and Chichu Art museum Naoshima, Japan and Wabi house. Wabi House in Puerto Escondido, Oax, in México, is a project that I find especially interesting thanks to it's relatively small scale and placement in the nature. Tadao Ando's aim with this building was to accentuate the landscape of the area.²

² Archdaily (2014)



3 | PROPOSAL



According to the guidelines of eco-tourism one should minimize the impact and design with awareness and respect. The choice of material has a great impact on the impression the buildings.

The materials used in this project are pozzolana, lava rocks and wood.

Pozzolana, pulvis puteolanus in Latin, is the concrete that was the Roman Empire's construction material of choice. Marcus Vitruvius Pollio described the building material and its recipe around 30 B.C. Pantheon in Rome, harbor structures as well as breakwaters was built in pozzolana. The name derives from the Romans primary source of volcanic ash in Italy - at Pozzuoli. According to Sara Yang, the author of the article "To improve today's concrete, do as the Romans did", Pozzolana could improve today's building technique. It would improve the durability. The buildings the romans build out of pozzolana has been standing i 2000 years, also often in difficult maritime conditions. Moreover, pozzalana leaves a smaller carbon footprint than cement. That is because the production of lime for roman concrete is much cleaner since the temperature required are two thirds of that required to make standard cement.

So why did the use of pozzolana decrease? One reason could be that the shipping industry decreased and another that buildings and harbors built out of pozzolana were so well built so they did not need to be replaced.¹

The surface of the pozzolana can be smooth and the blocks in different sizes. The black volcanic ash will give the buildings a character that suits well into the

¹ Yang, S. (2013)

surroundings.

Wood is commonly used in North Kivu, DRC, which to me was surprising since I am used to not seeing wood at all as a building material in neighbouring Rwanda where I have been spending most of my time.

Building on the top of the volcano and along the route requires that material has to be carried up if not found at the sites. Wood is quite easy to carry which is one reason that it is the other main material. Wood is also a familiar material that can be comforting in an otherwise unknown environment. Liboyo, Lova trichilioides, also called African walnut, is the material that Virunga Park has been using for previous structures. Although called African Walnut - it is not related to the walnut tree, thus is it does not bare nuts.²

I have chosen the same kind of wood that the camp manager of Virunga National park has been using recently. It is difficult to navigate in what species of wood that are not threatened or red listed.

One thought is that trees could be planted - also as an activity for the tourists. Trees that could later be used for construction, which would inspire sustainability, providing wood and knowledge.

Liboyo has a reddish brown to golden yellow color that tends to darken with age and weather exposure. Liboyo is commonly used in plywood, flooring, cabinetry and furniture. This wood is generally easy to work with both machine and hand tools.³

² Williams, J. (2016).

³ The wood databade (2008-2016)



THE ENTRANCE BUILDING

THE ENTRANCE BUILDING

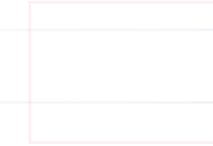


LANDSCAPE

Architectural installations
Places to rest and enjoy the view

Multipurpose space,
reception, lecture hall,
shop,
volcano observatory,
the gateway, restrooms

THE PORTERS HOUSE



Sleeping space for
the porters, places to
rest, enjoy the view
and prepare food,
restrooms

THE TOURISTS' SHELTER



Sleeping space
for the tourists and
guards, places to
rest, enjoy the view
and prepare food,
restrooms

Tourists

- entrance for visitors
3mx90m
- yard 7mx5m
- toilets 2mx4m
- shop 3mx7m

Staff's area

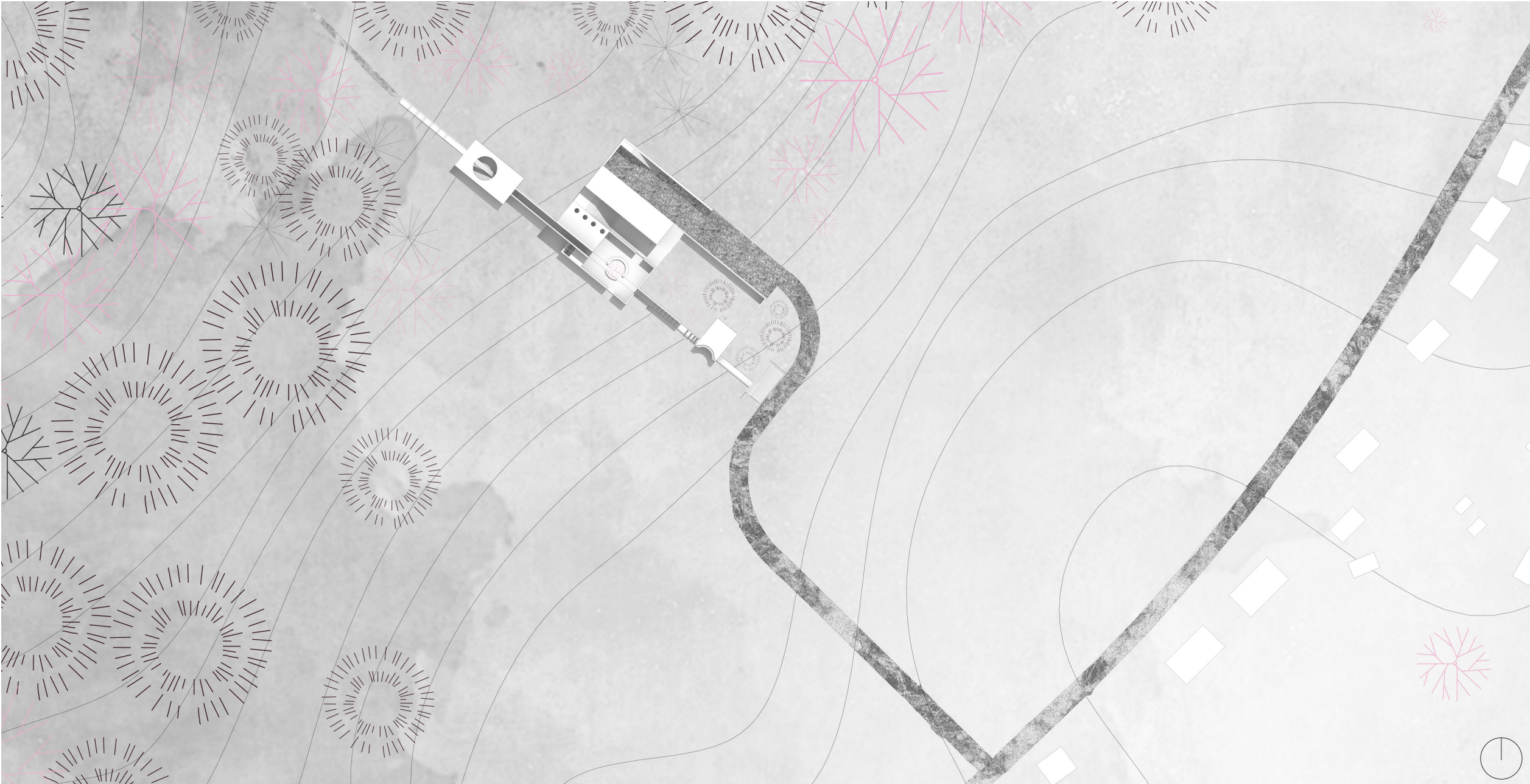
- reception /office 3m x 4m
- restrooms 2mx 4m
- storage 2m x 4m

Volcano observatory

- a big room to host the
electronical workshop and
the instruments 4m x2m
- storage acquisition
material 3m x 3m
- a room to host control
terminals and signals'
visualisation 3m x 3m
- offices room for
researchers, secretary,
director 3mx3mx3
- a storage room for the
material 3mx4m
- a room for the power
generator 2mx3m
- a room for radio
reception 2mx3m
- small kitchen 3mx3m
- restroom (3x4m)
- a big garage 3m x 4m

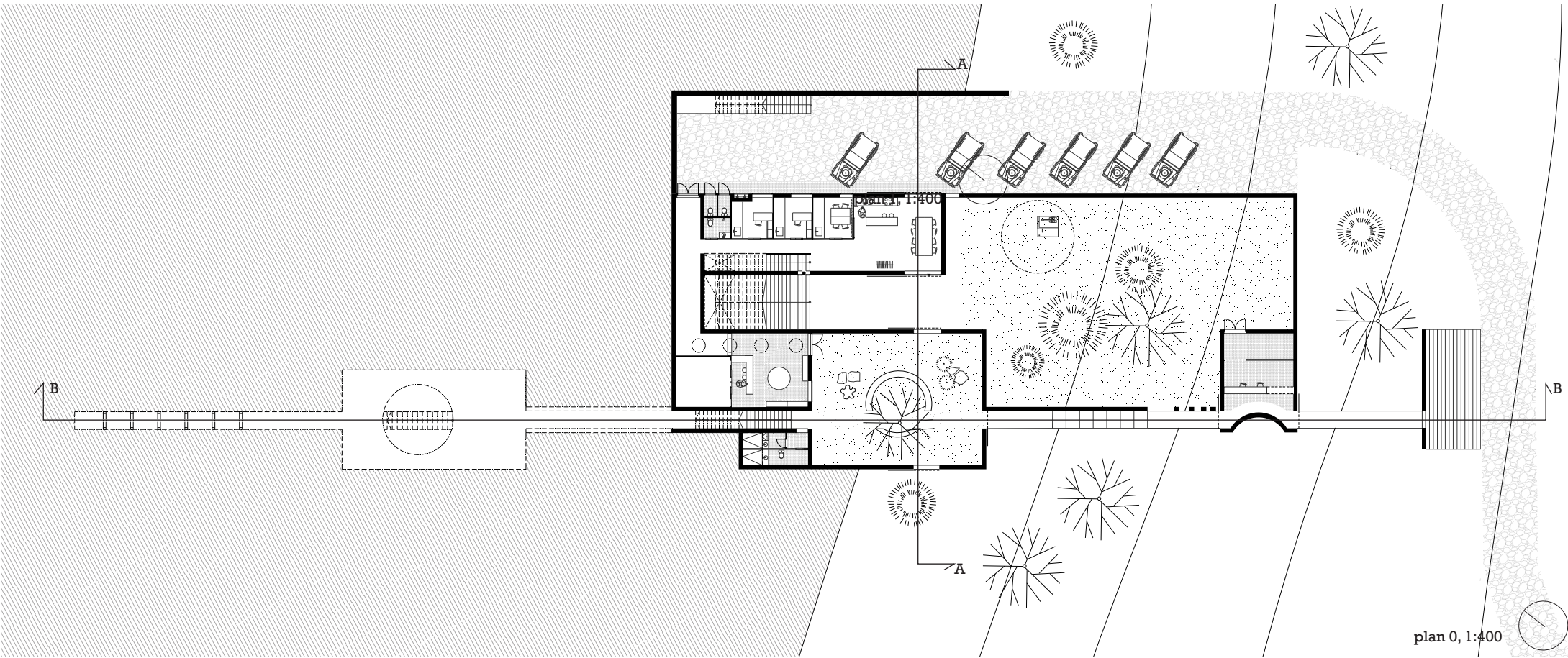
270 sqm

ENTRANCE BUILDING

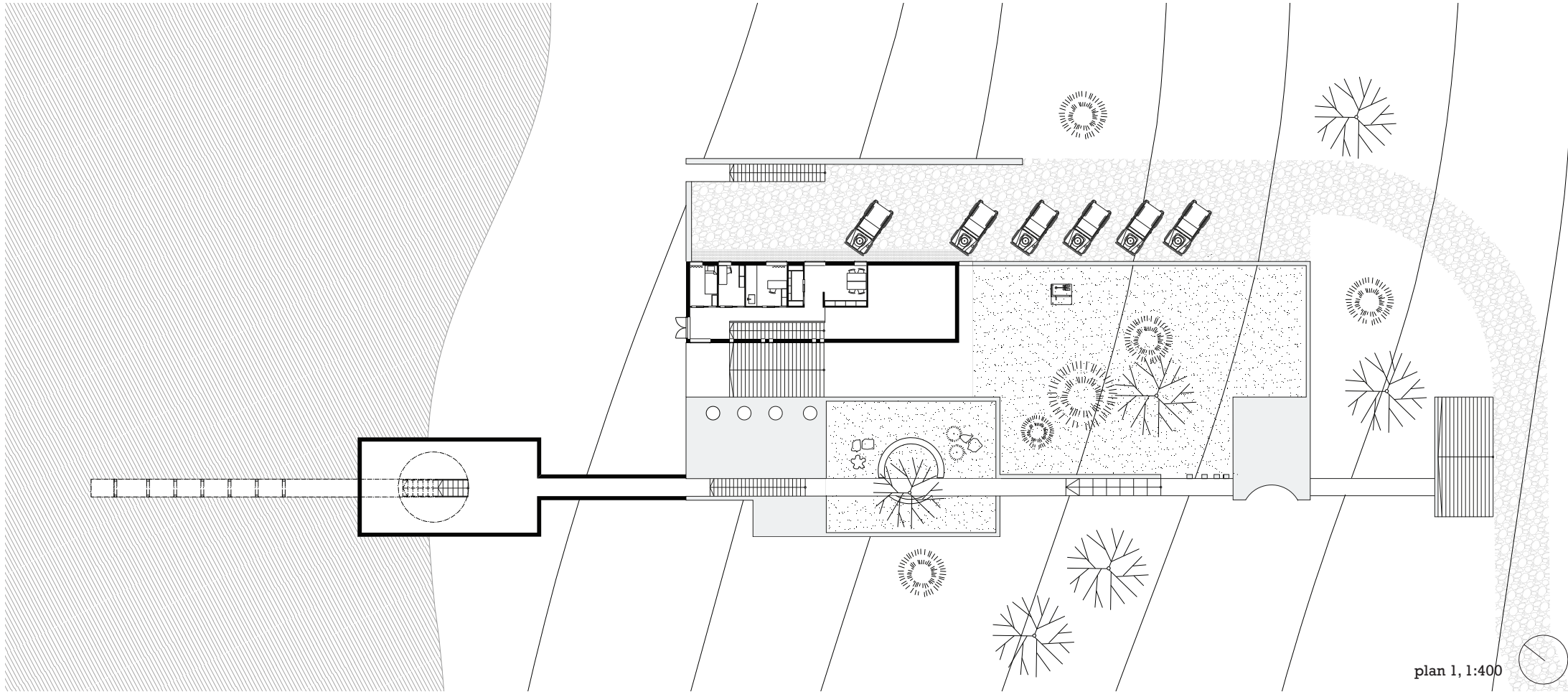


Siteplan 1:800

ENTRANCE BUILDING



ENTRANCE BUILDING

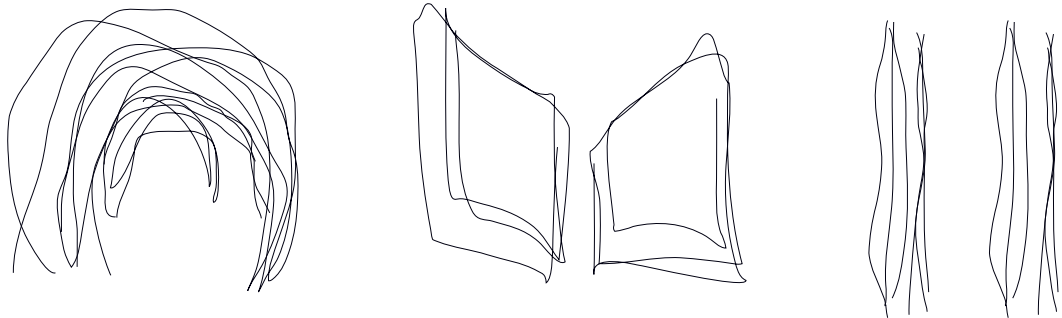


plan 1, 1:400

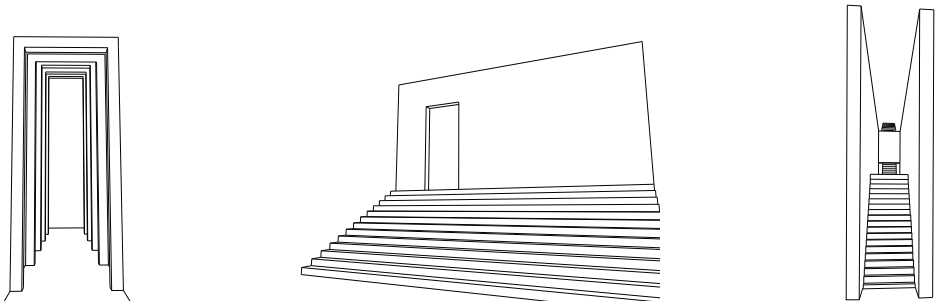




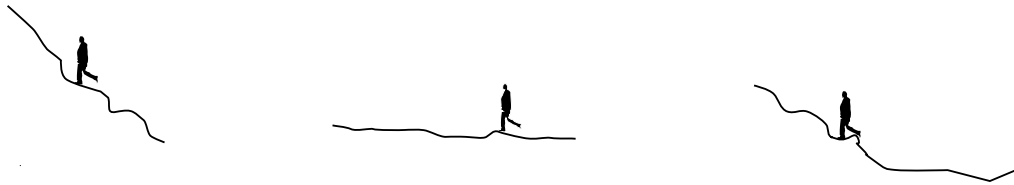
elements in the nature



represented in the entrance building



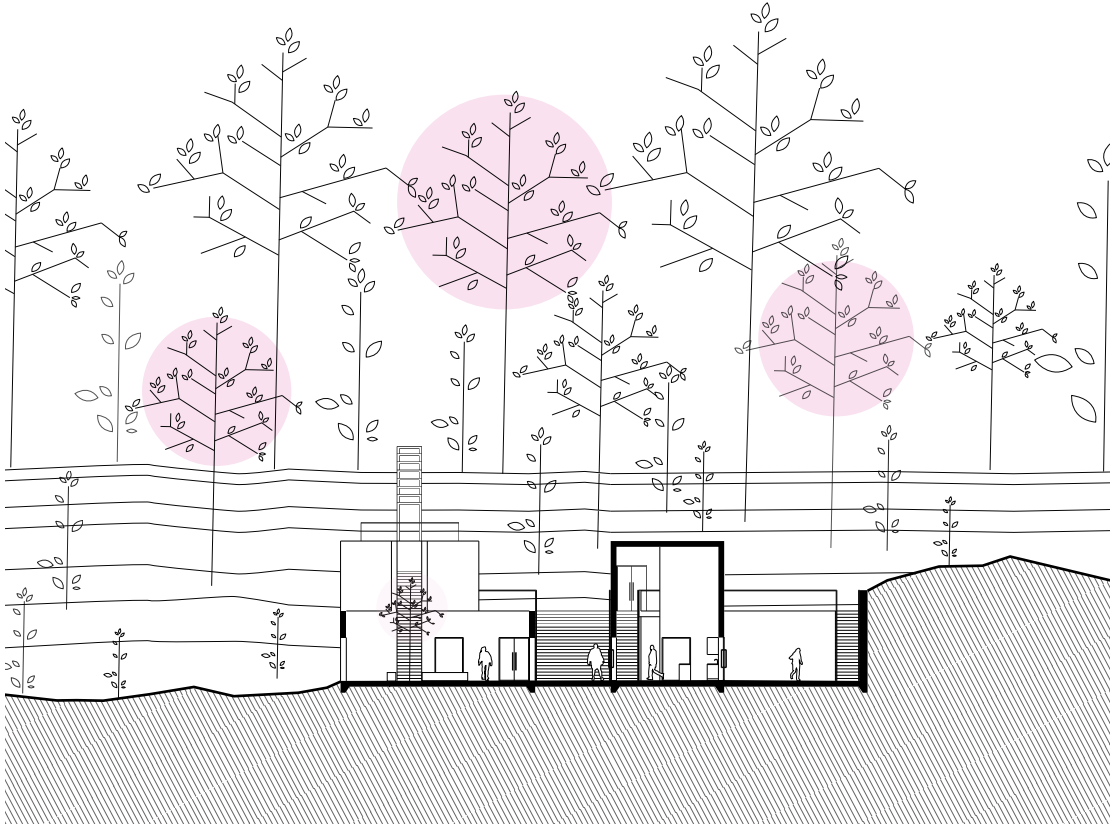
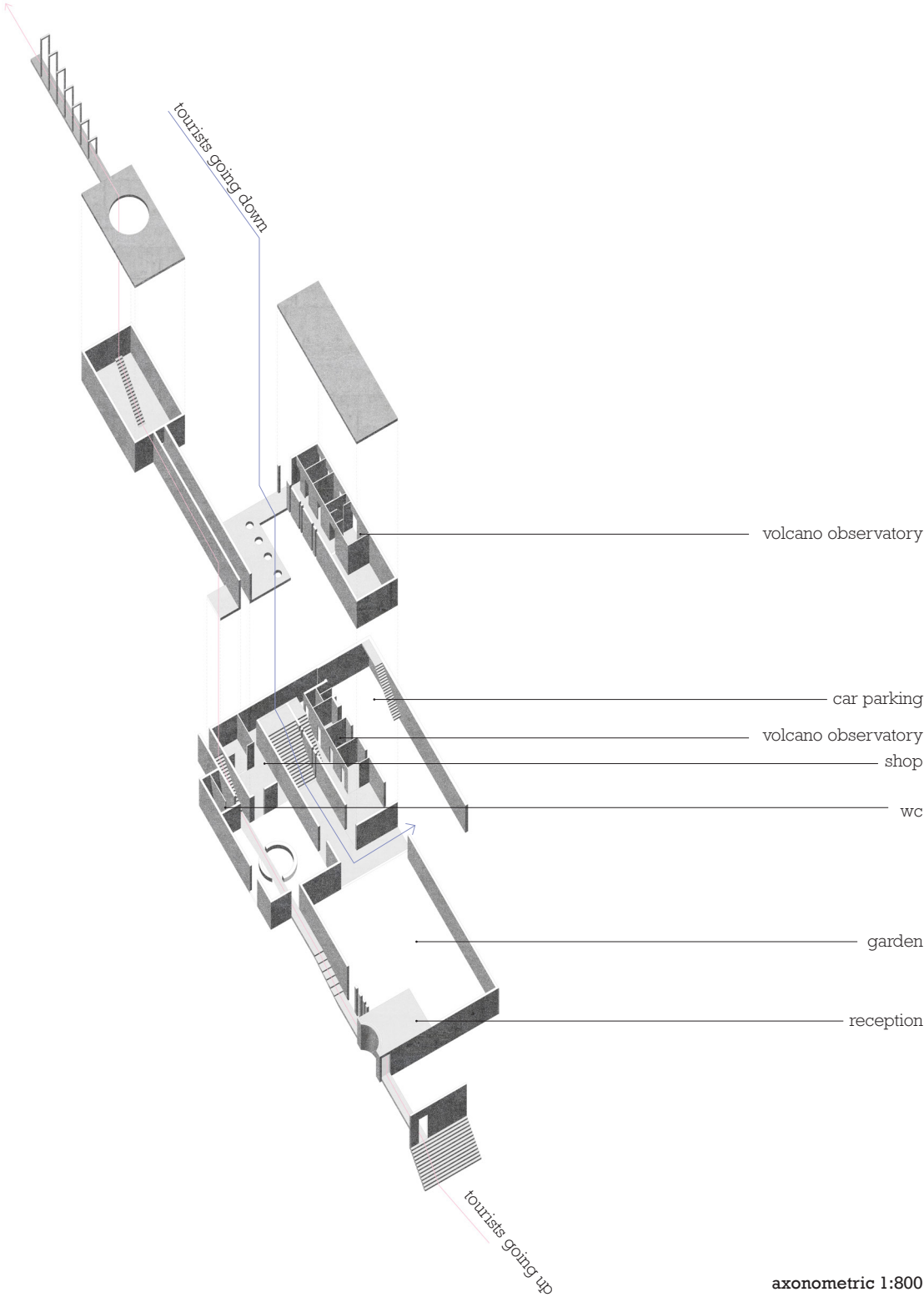
inclination of the hike



represented in the entrance building

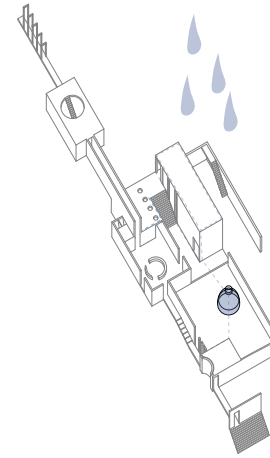


ENTRANCE BUILDING

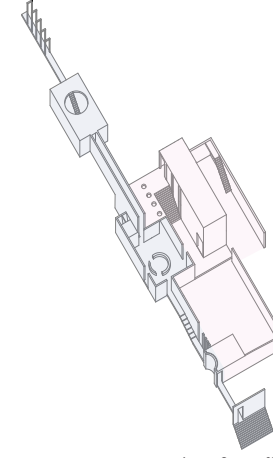


Sequences along the tourists' path in the entrance building towards the volcano.

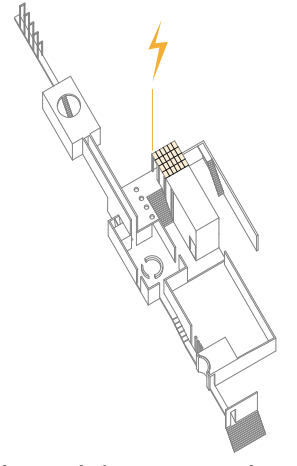
ENTRANCE BUILDING



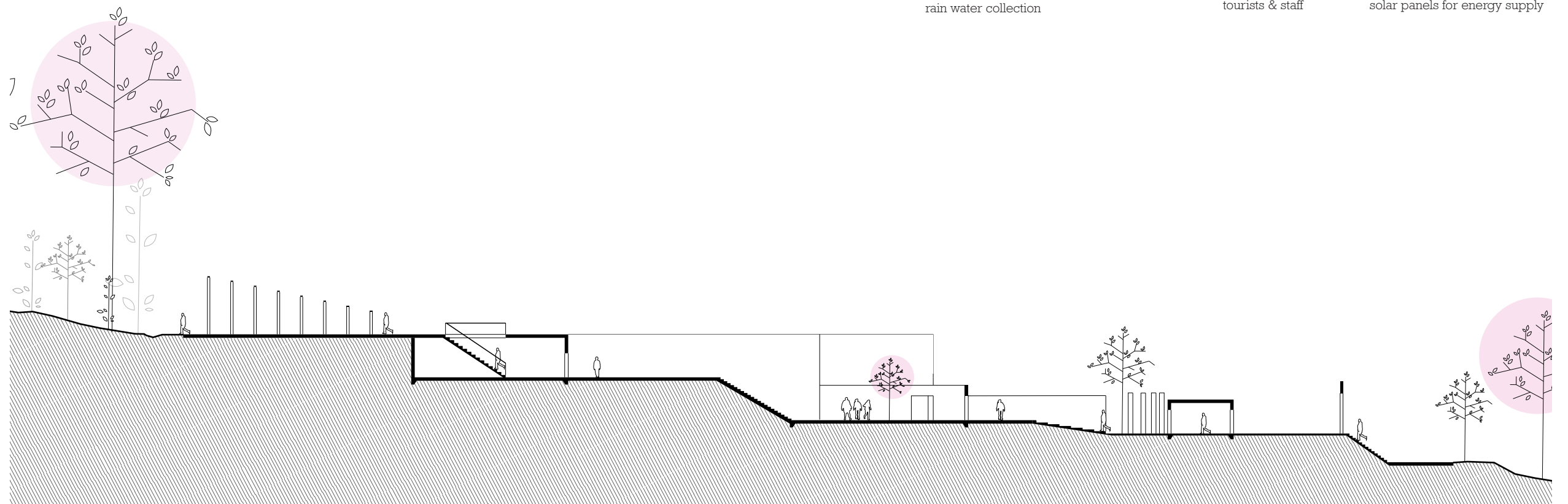
rain water collection



tourists & staff

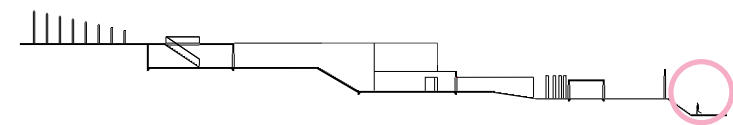


solar panels for energy supply

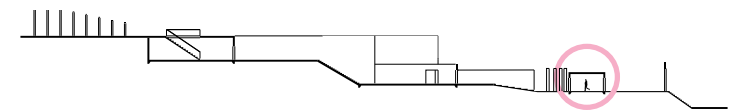
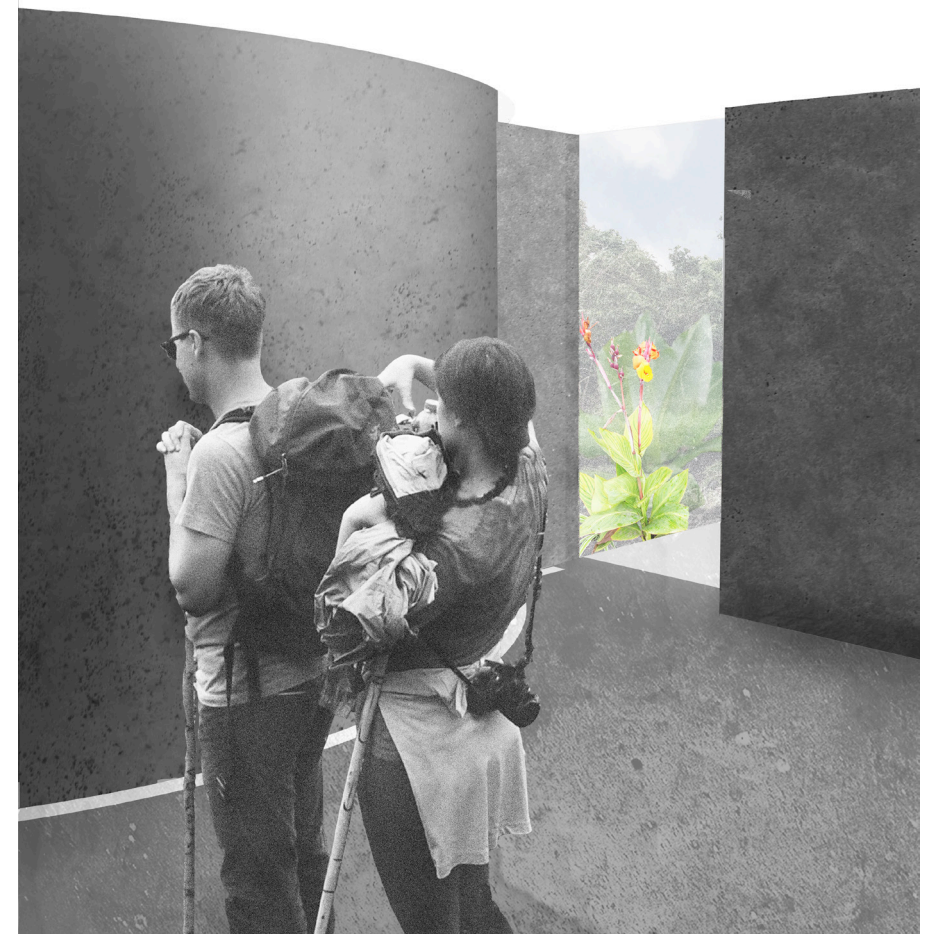


B-B 1:400

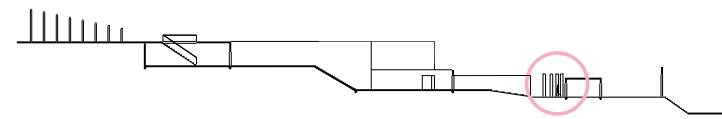
Main entrance to the hike.



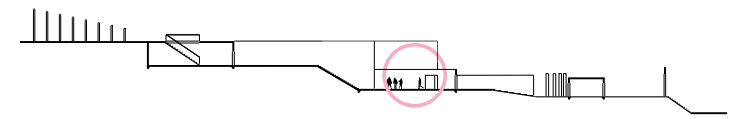
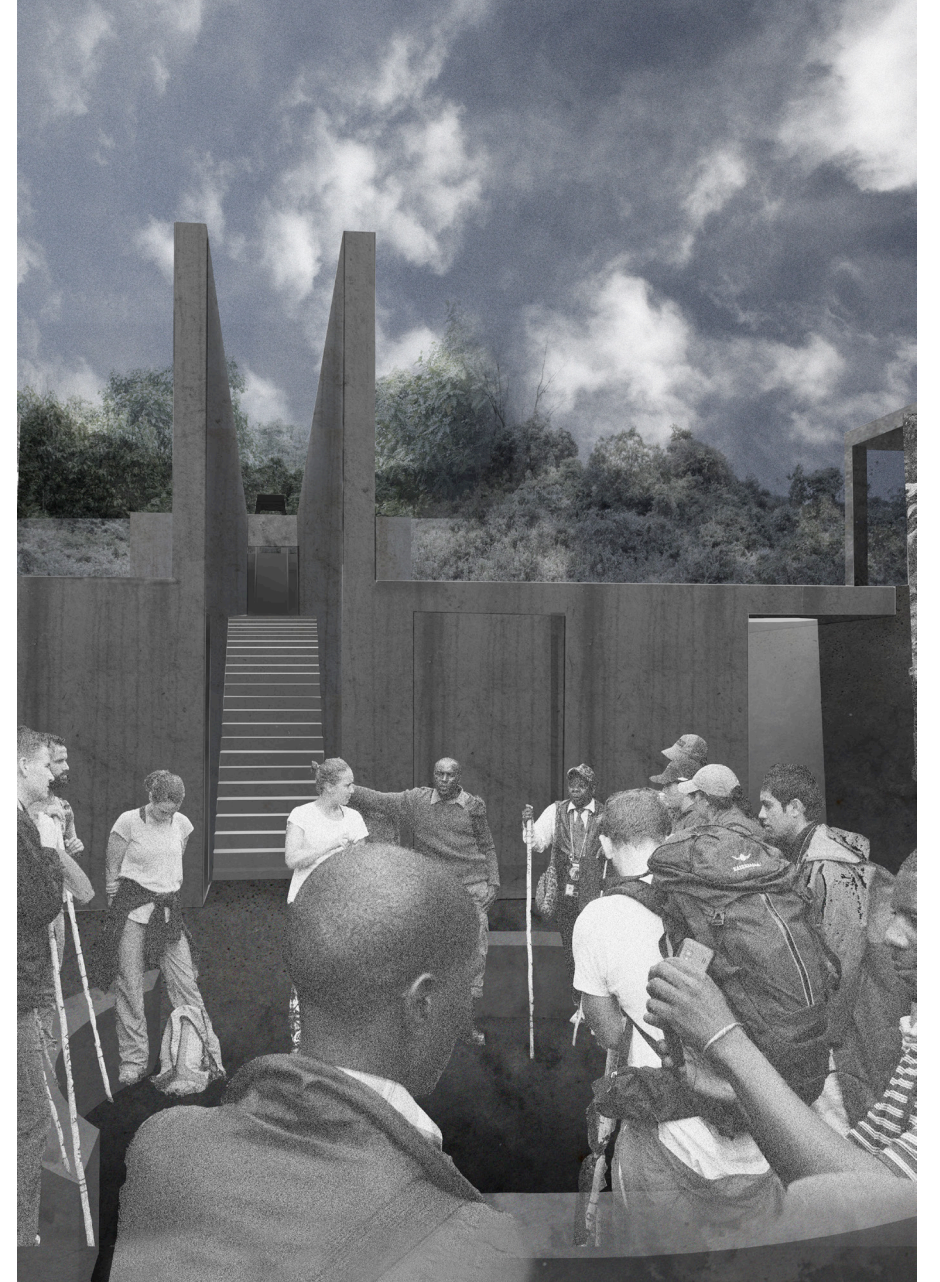
Reception - where the tourists are registered upon arrival.



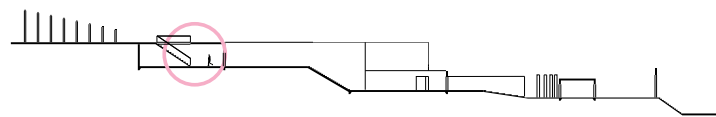
Towards the volcano that can be seen in the distance.



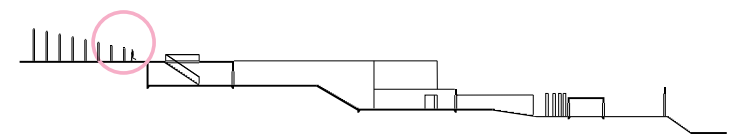
Yard - a place for information and gathering.



Crater.



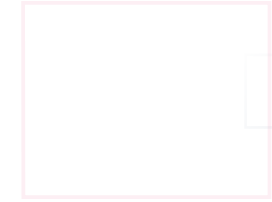
Tunnel.





LANDSCAPE

THE ENTRANCE BUILDING

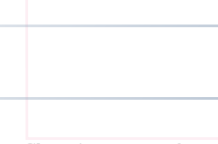


LANDSCAPE

Architectural installations
Places to rest and enjoy the view

Multipurpose space,
reception, lecture hall,
shop,
volcano observatory,
the gateway, restrooms

THE PORTERS HOUSE

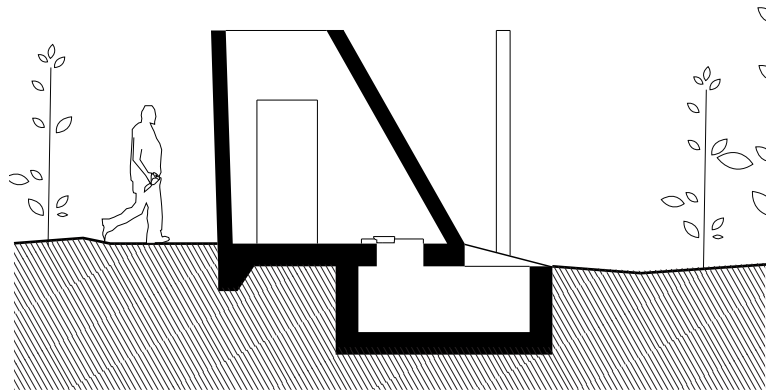


Sleeping space for
the porters, places to
rest, enjoy the view
and prepare food,
restrooms

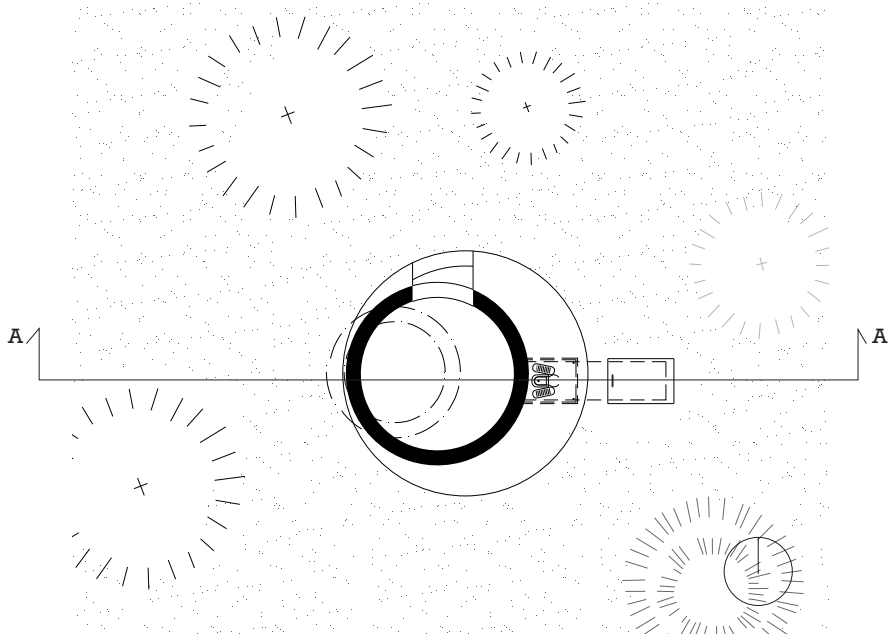
THE TOURISTS' SHELTERS



Sleeping space
for the tourists and
guards, places to
rest, enjoy the view
and prepare food,
restrooms



A-A, 1:100

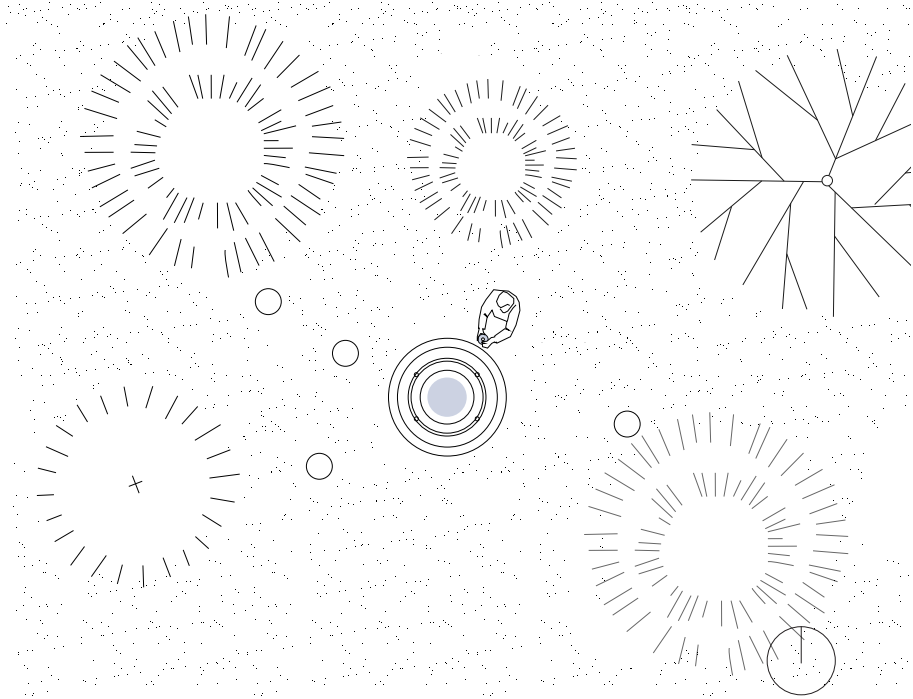


plan 1:100



During the six hours long hike - the need of visiting a bathroom is needed. This wc is a composting toilet and this room is a pause from all impressions, views and

thoughts. The sky is framed, thus intensified creating and focus and hopefully meditative private experience.



plan 1:100

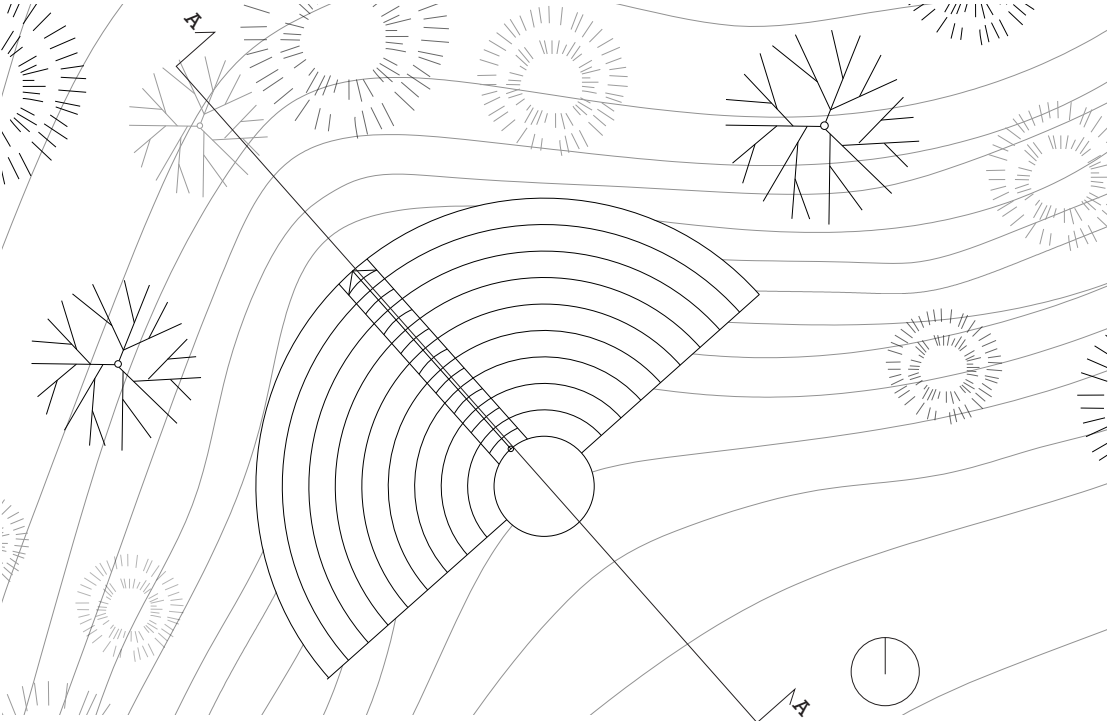


facade, 1:100

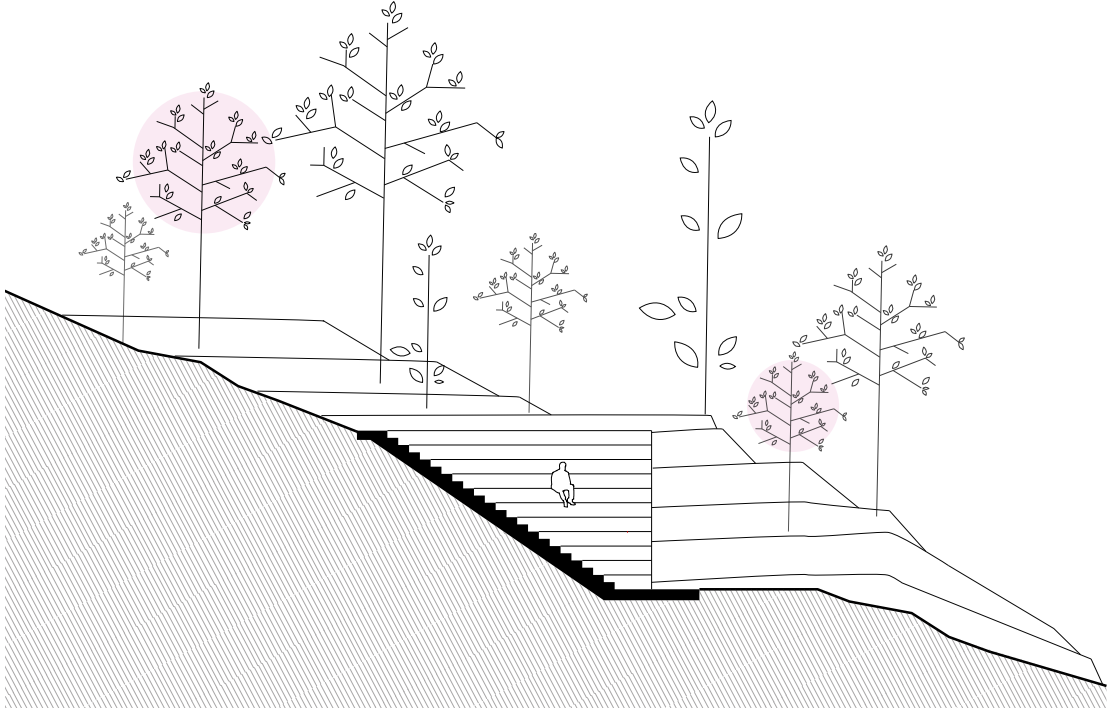
Volcanic stone has been used as water filter in different volcanic areas around the world. This is an installation to remind and inspire the tourists and rangers that it is time to drink. The hike is exhausting and due to the heat in inclination it is important to drink a lot of water. Rain water

is filtered through this volcanic stone. The group can rest sitting on small wooden stools and rest their bodies and minds while watching the water drip slowly from the tip of the volcanic stone cone.

LANDSCAPE - RELAX



plan 1:200



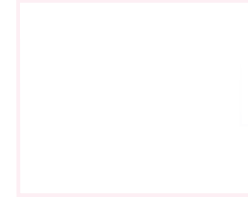
A-A, 1:200

The hike requires longer pauses to chat, rest, relax, snack and chat. This amphitheater embrace the circle and take advantage of the already existing landscape. Porters,

tourists and rangers can all sit comfortably looking at the view, or at each other. The soft shape inspires a comforting feeling, almost like a hug.

THE PORTERS' HOUSE

THE ENTRANCE BUILDING

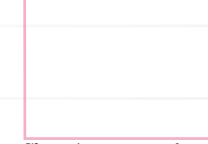


LANDSCAPE

Architectural installations
Places to rest and enjoy the view

Multipurpose space,
reception, lecture hall,
shop,
volcance observatory,
the gateway, restrooms

THE PORTERS HOUSE



Sleeping space for
the porters, places to
rest, enjoy the view
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THE TOURISTS' SHELTERS



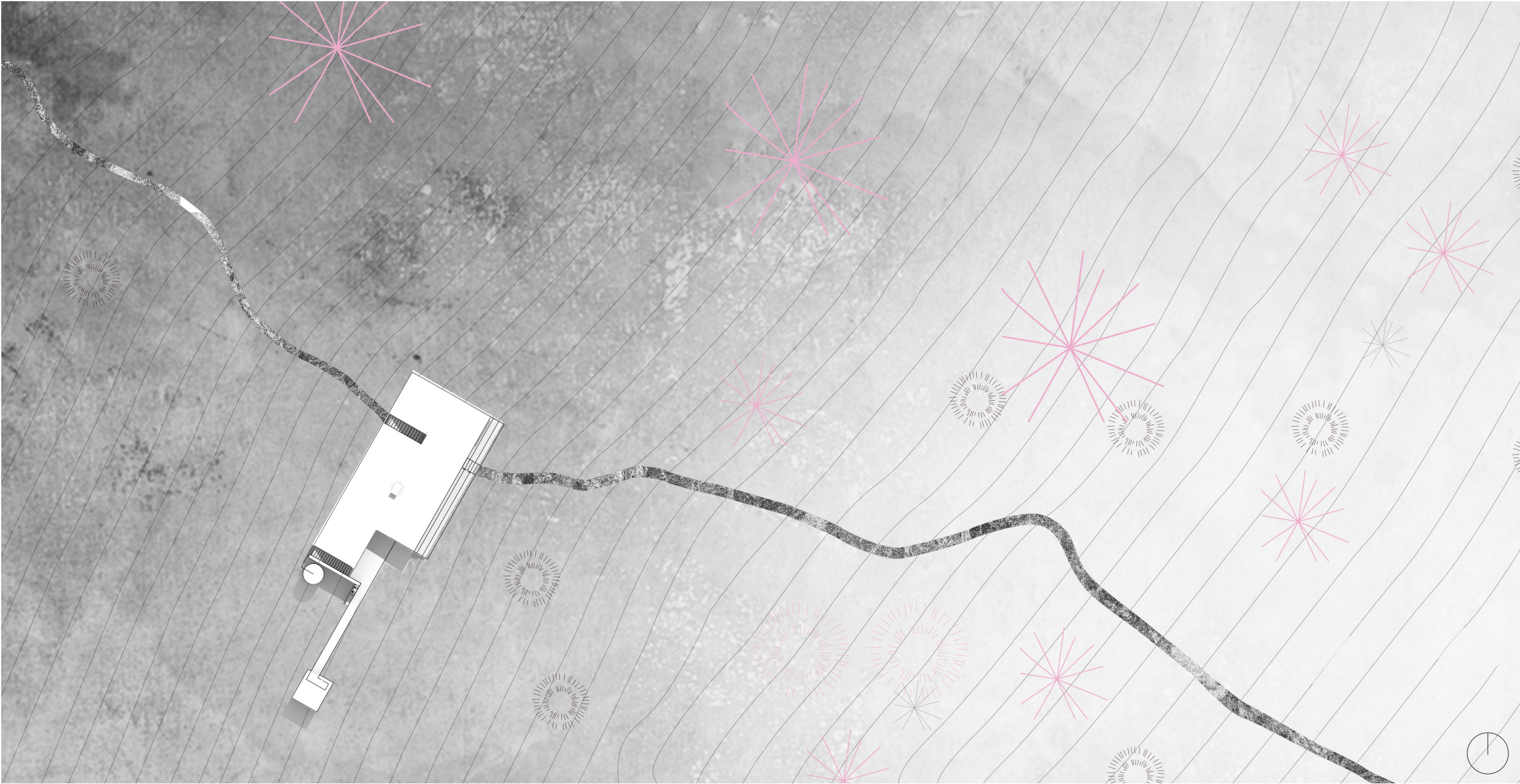
Sleeping space
for the tourists and
guards, places to
rest, enjoy the view
and prepare food,
restrooms

12 porters

- kitchen 3m x 4m
- bedroom 12 m x 3 m
- restroom 2 m x 1m
- seperate room for
tourists to change

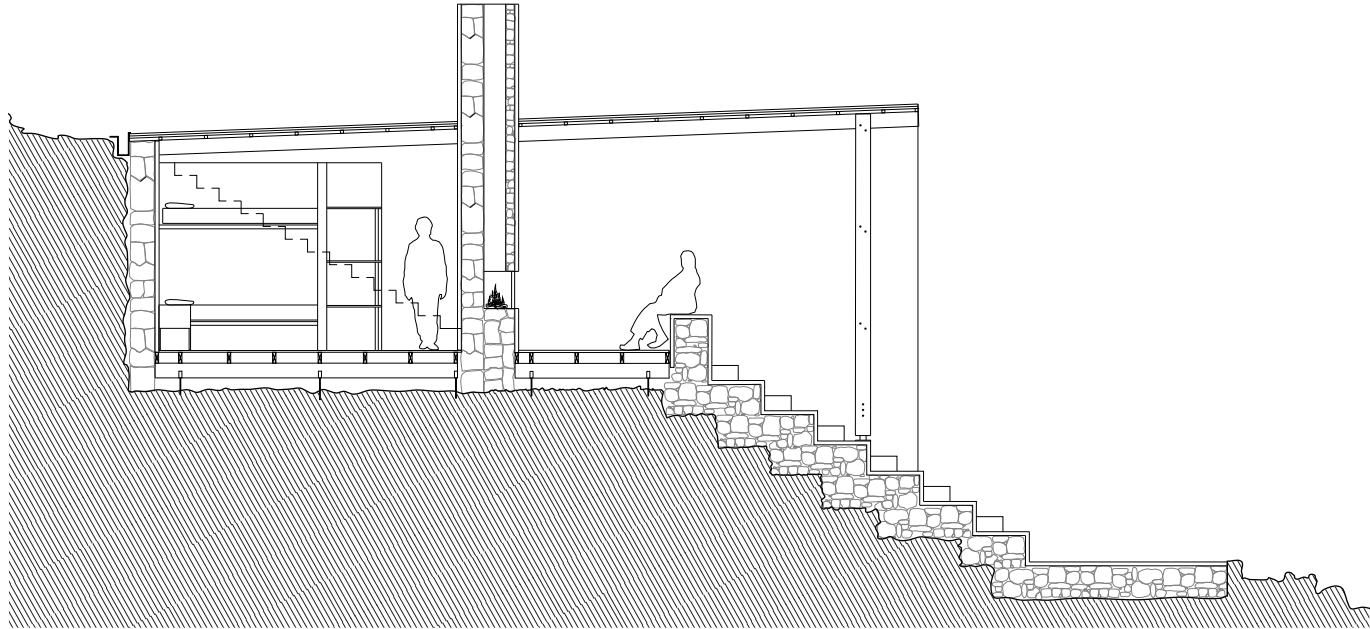


THE PORTERS' HOUSE

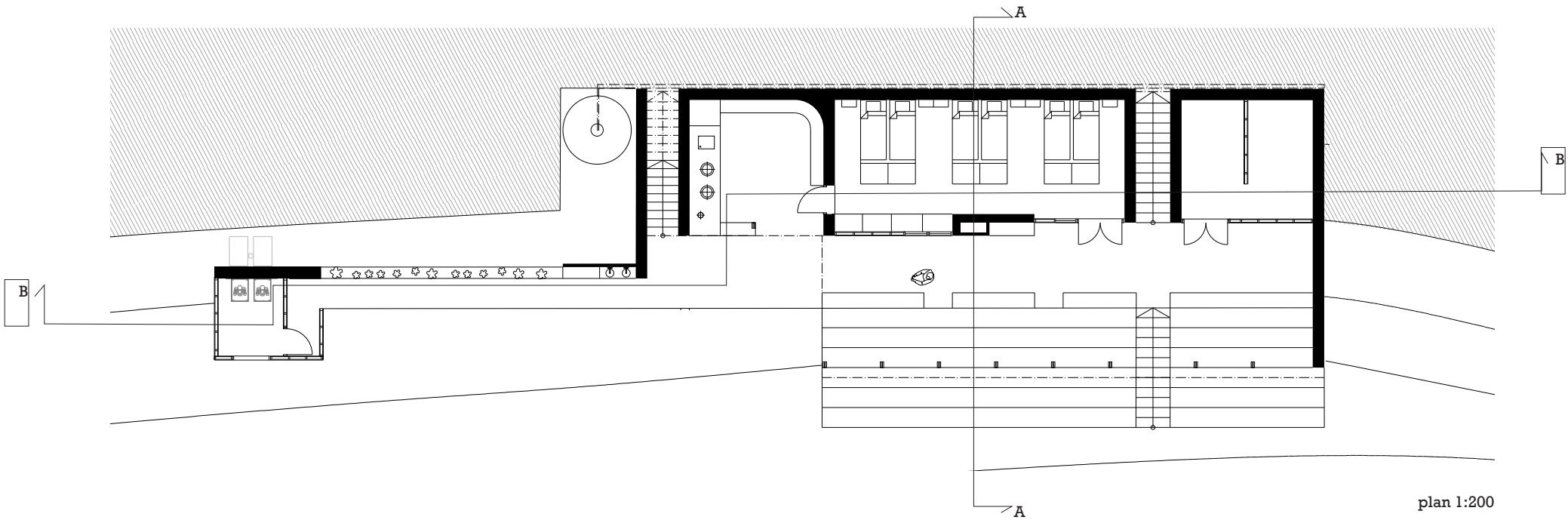


siteplan 1:400

THE PORTERS' HOUSE

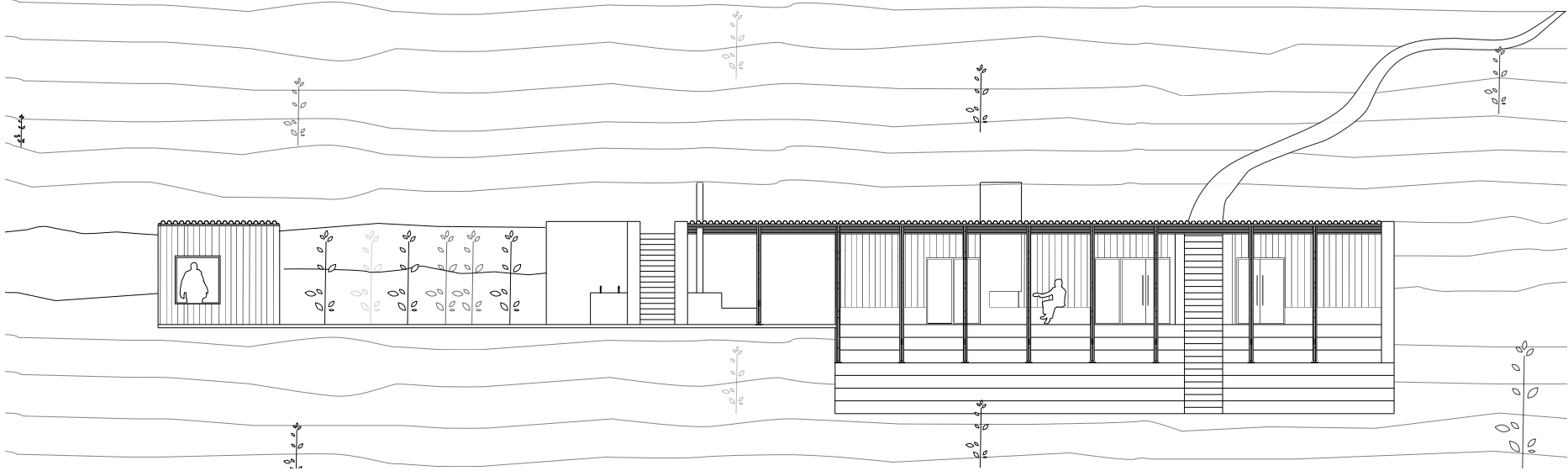


A-A, 1:100

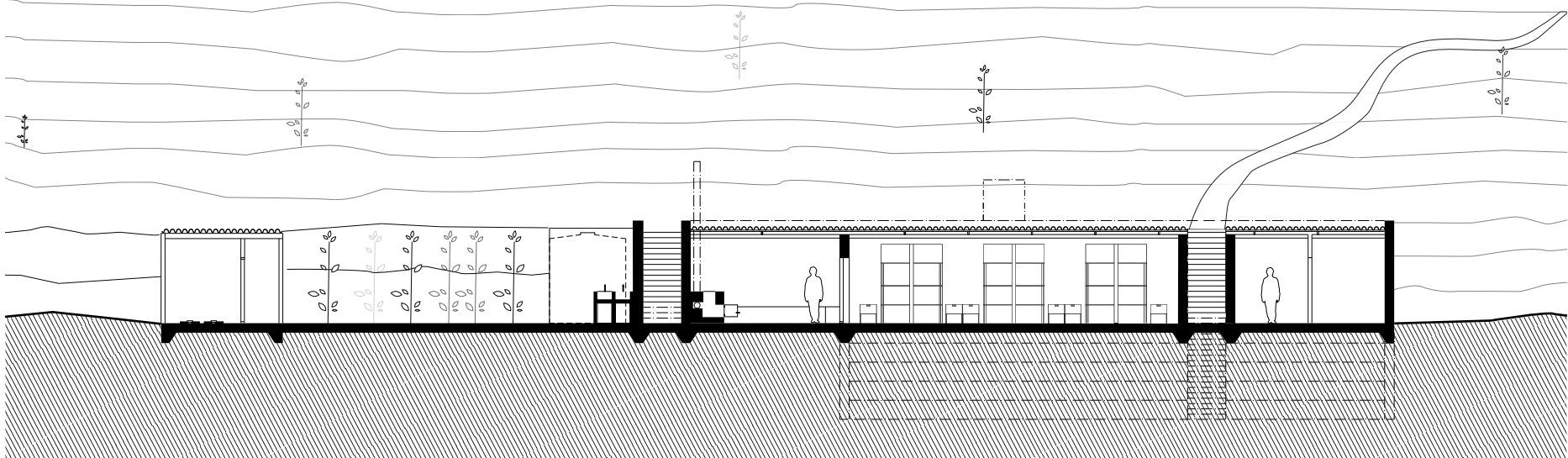


plan 1:200

THE PORTERS' HOUSE



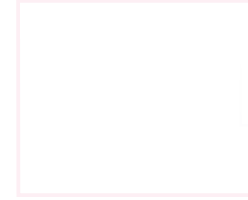
facade 1:200



B-B, 1:200

THE TOURISTS' SHELTERS

THE ENTRANCE BUILDING

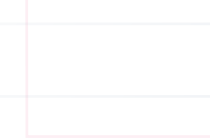


LANDSCAPE

Architectural installations
Places to rest and enjoy the view

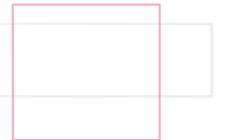
Multipurpose space,
reception, lecture hall,
shop,
volcane observatory,
the gateway, restrooms

THE PORTERS HOUSE



Sleeping space for
the porters, places to
rest, enjoy the view
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THE TOURISTS' SHELTERS

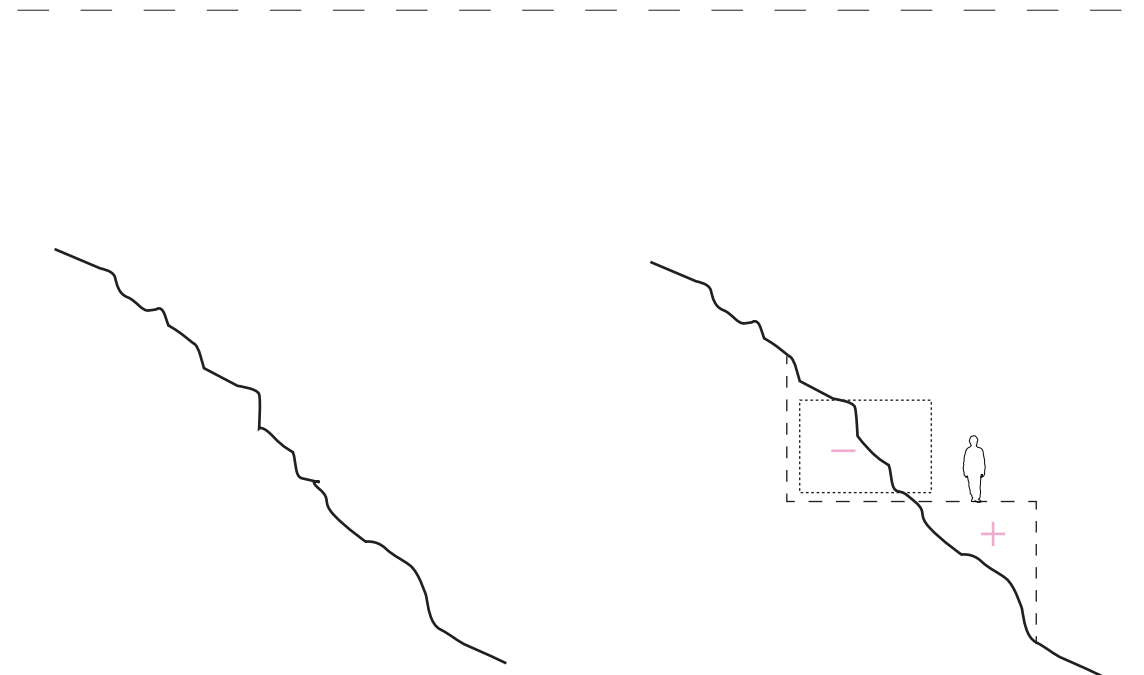


Sleeping space
for the tourists and
guards, places to
rest, enjoy the view
and prepare food,
restrooms

10 tourists

-sleeping huts
10 m x2,5 m

-viewing points



Subtract stone to create a cave, move and add to create a walkway.



smaller viewpoint

rangers fireplace
and shelter

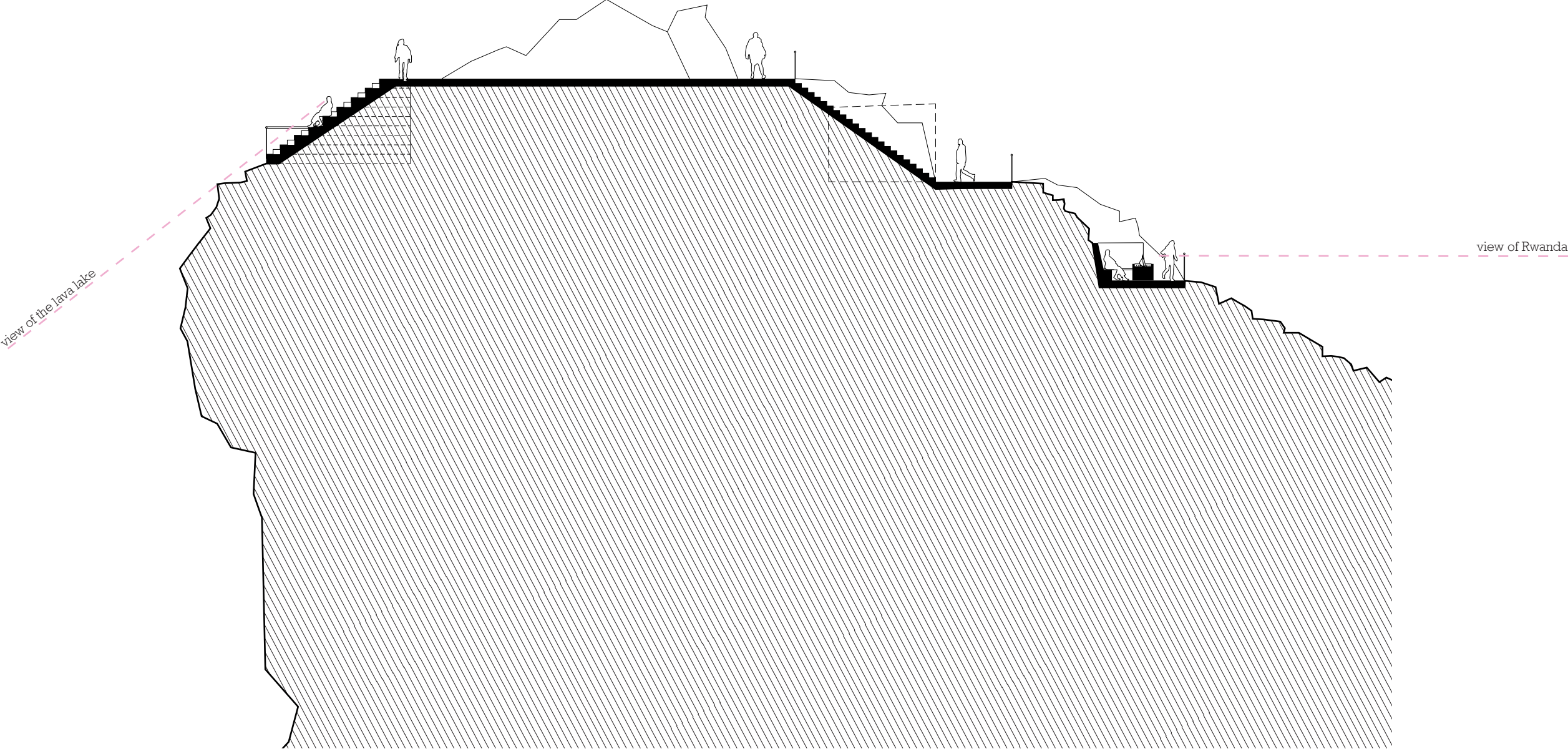
viewpoint towards
the lava lake

shelter for tourists
(two in each)

fireplace

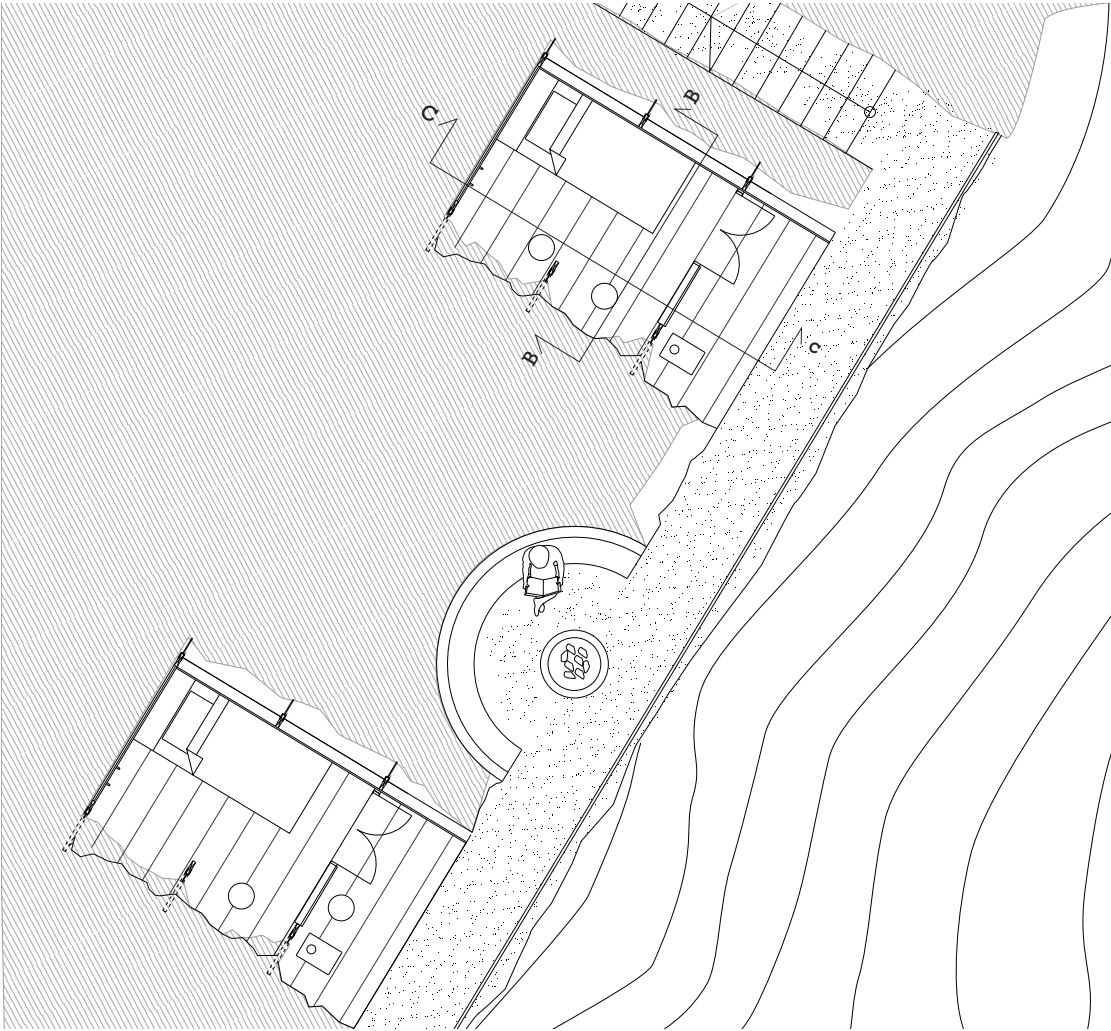
siteplan 1:400

THE TOURISTS' SHELTERS

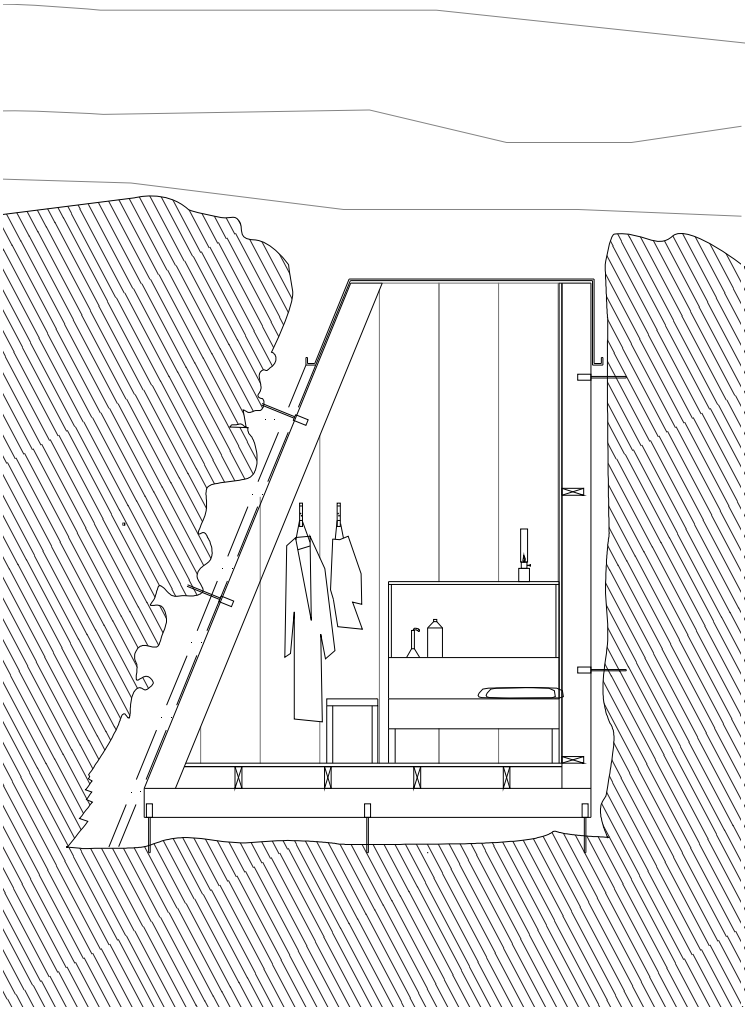


A-A, 1:400

THE TOURISTS' SHELTERS

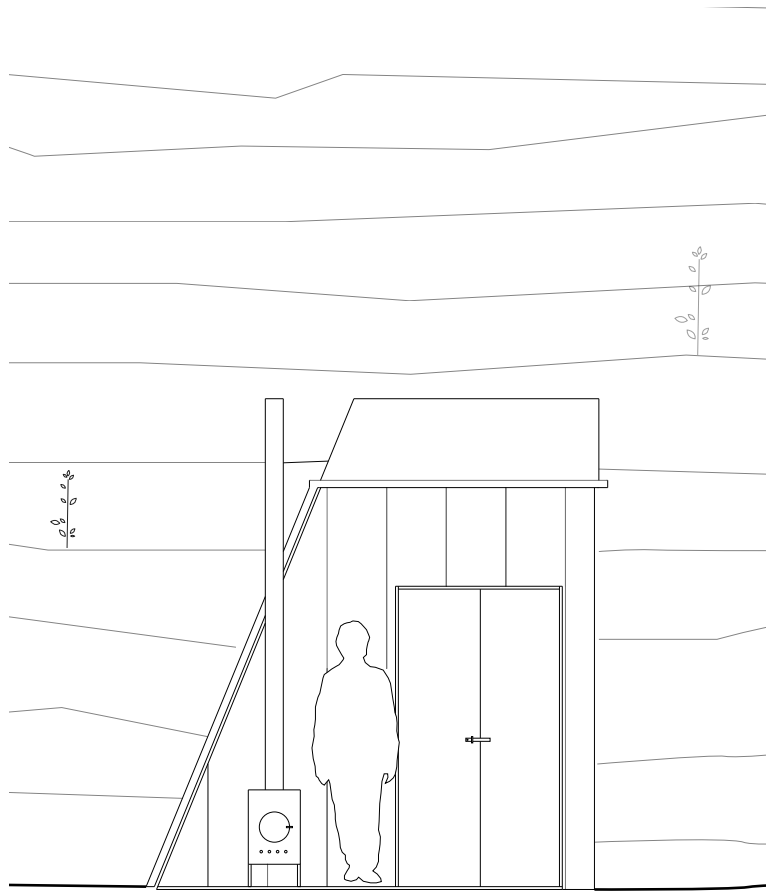


plan, 1:100

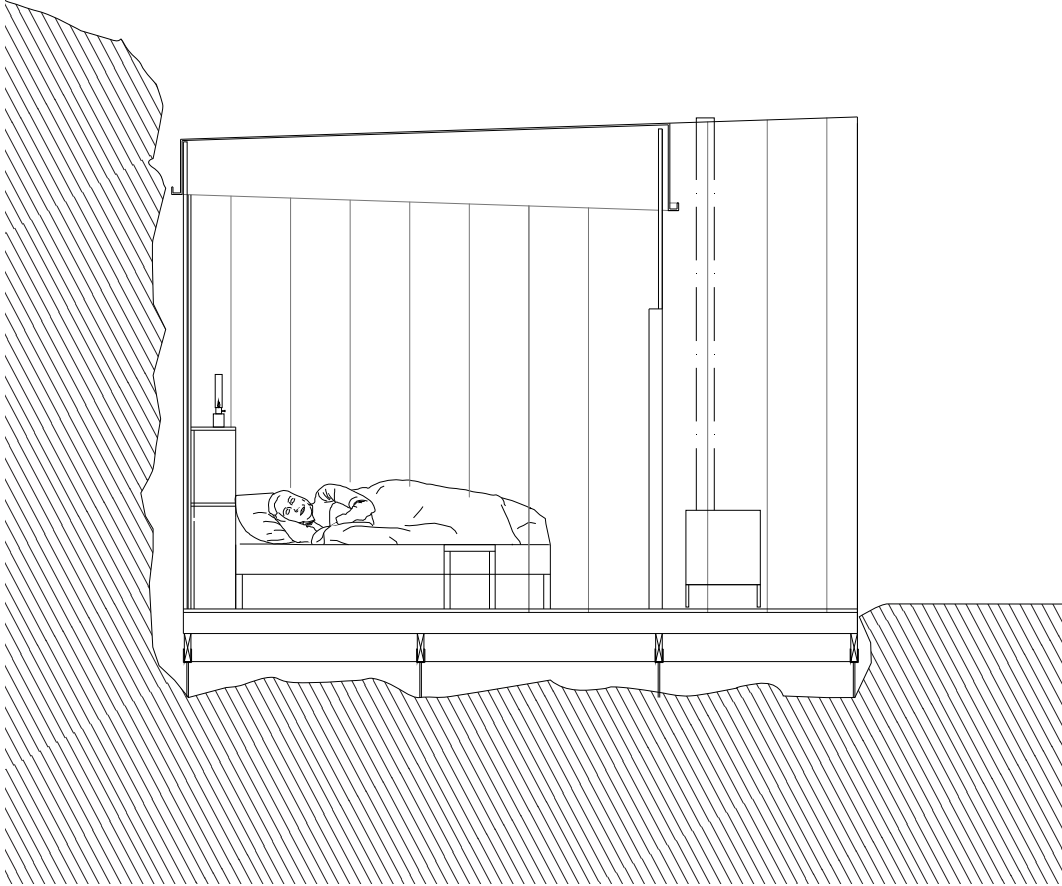


B-B, 1:50

THE TOURISTS' SHELTERS



facade, 1:50



C-C, 1:50

View from the shelter towards Goma and Rwanda.



The shelter in which the tourist sleep is a simple structure. A cave covered with wood panels. All walls except one that is where the volcanic exposed. A friendly reminder of where you are - inside a volcano. The dimensions are small so that it feels safe. The view out of the shelter has been in focus - waking up you

simple open the doors and the amazing view of the crater Shakeru, lake Kivu, Goma and Rwanda at your feet. Outside your shelter you have a small stove on which you can heat water for tea or coffee and next door you have a sitting area with an open fire to share with you neighbors for cooking

View from the terrace down into the molten lava lake.



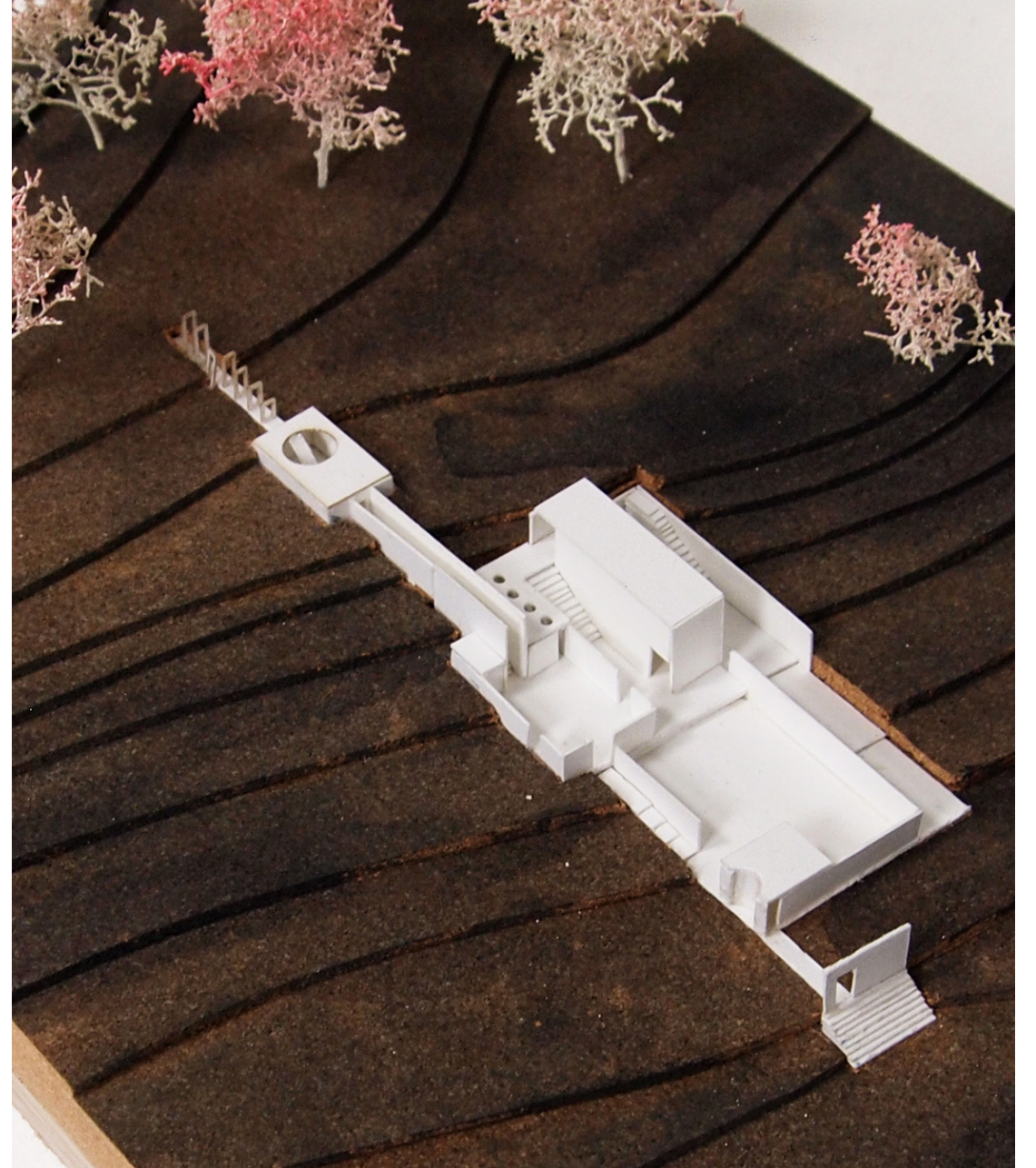
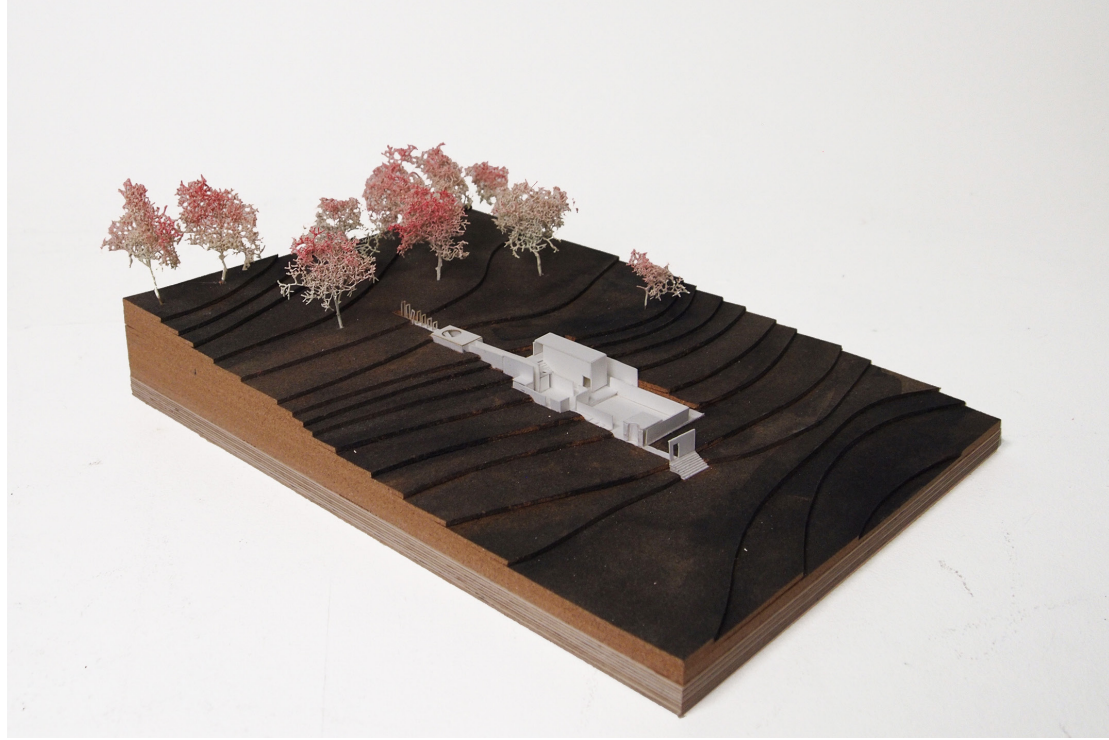
At the top of the volcano the tourists can watch the exploding lava lake from a safe distance at the inversed amphitheater. Everyone can fit, sitting down, watching the scenery from different angels. It is comforting that you can choose, to sit a little bit behind, above your friends or as close as possible at the edge of the platform. Moreover

the plan of this landscape proposal is supposed to look interesting and appealing from above (satellite images). North of the large viewpoint there is a smaller one - intended for the sunrise and morning stroll when the other tourists might still be a sleep.

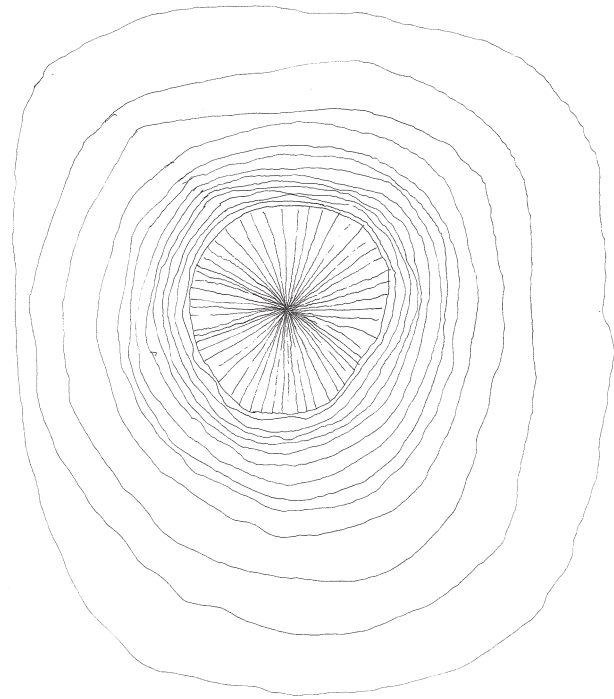
Pin-up: drawings and illustrations on the wall, model, lava stones and the research booklet on the table.



Model of the entrance building, 1:400.



4 | REFLECTIONS



At the presentation of my project - I got to learn about my project from the jury's and students point of view - which was interesting and comforting since my project seemed to make sense to them.

Most importantly it was discussed how the architecture in my project is relating to the theory of the sublime. The architecture in this proposal is not suggesting to inspire the sublime emotion itself- it is merely giving a hint of what is to be seen at the top of the crater - gently pushing the tourist towards the molten lava lake. So it was clarified and confirmed that the overwhelming lava lake itself is sublime enough - architecture is only there to frame the experience. Although the proposal is quite modest - it was discussed whether all of it was necessary. Could the landscape architecture installations have been reduced or left out or do they contribute to the hike? Was the landscape at the top of the crater too much - reducing the extreme feeling of being that close to danger? These objections were then put down through different arguments. For example that the installations are there to remind the tourists that they are in safe hands and that the view points at the top are necessary since it today is a real risk of falling down the 800 meters.

The jury questioned the different scales that I have chosen to present my project with. The model of the entrance building (1:400) could have been bigger for the viewers to get a greater understanding of the different dimensions of the sequence. Likewise - the scale of the drawings of the entrance building (1:200) could have been larger.

If more time was spent on this project I would develop the construction details and create more illustrations to show more of the different sequences of the whole route. Furthermore, extra diagrams and text explaining the project would have been created and written. The tourist's small scale experience has been in focus in this project - with more time I would have developed the volcano observatory and the overall plan of the park.

To sum up, I think, agreeing with the jury, that my proposal is enhancing the sublime experience of climbing the volcano Nyiragongo in a rather balanced way.

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