MASTER-/DIPLOMARBEIT

Ecospace

Campingplatz am Golyam Beglik Stausee in Bulgarien
Campsite on Golyam Beglik reservoir in Bulgaria

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

Manfred Berthold
Prof Arch DI Dr

mit Betreuung von
Karl Deix
Ass Prof DI Dr techn

Dea Garboutcheva
Matr. Nr. 01326952

E253 - Institut für Architektur und Entwerfen

eingereicht an der Technischen Universität Wien
Fakultät für Architektur und Raumplanung

Wien, am _____
Datum

_____
Unterschrift

abstrakt

Das vorliegende Projekt stellt ein Designkonzept für einen Campingplatz am Golyam Beglik Stausee dar, ein Ort mit einem hohen Stellenwert für Bulgariens Landschaft und Umwelt. Der Campingplatz besteht aus einem Restaurant, einem Empfangsbereich mit Administration, Duschplätzen und aus selbstständigen, kompakten Freizeitstrukturen, die das “Glamping” (das sogenannte glamorous camping) verkörpern sollen.

Um die Einzigartigkeit der Landschaft and diesem Ort zu wahren wurde darauf geachtet, dass alle Strukturen so konzipiert sind, dass sie einen möglichst kleinen Eingriff in die Natur des Ortes und damit in die Umwelt darstellen. Innen- und Außenarchitektur sind so konzipiert, dass sie ineinanderfließen, um maximale Sichtverbindungen zu dem Stausee und den umliegenden Fichten- und Kiefernwäldern zu erreichen.

Ziel dieses Projekts ist es den Menschen mit der Natur und die Natur mit der Architektur in Einklang zu bringen. Mit der Verwendung von natürlichen Materialien wurde darauf geachtet, der umgebenden Natur zu erlauben trotz der Gebäude weiter zu wachsen und sich sogar mit den Gebäuden zu verbinden. Das Projekt soll nicht zuletzt zeigen, dass es möglich ist an diesen einzigartigen Orten wie dem Golyam Beglik Stausee zu bauen, ohne die Natur dort zu zerstören, sondern mehrnoch mit ihr in Harmonie zu leben.

abstract

The following project presents a design proposal for a campsite on Golyam Beglik reservoir- an area of high environmental value in Bulgaria. It has a restaurant, a reception area with administration, shower houses, and independent recreational structures that embody the so-called glamping.

With respect for the unique character of the site, all structures are designed to have a low environmental impact. The interior and exterior are deliberately blurred to achieve maximum visual connections to the reservoir and the surrounding spruce and pine woods.

The goal of this project is to connect people to the forest and connect the forest to the architecture. Using natural materials and allowing nature to grow and intertwine with the building, we can learn how to use the forest and its materials sustainably. This project also aims to show how we should be living in harmony with these beautiful habitats rather than destroying them.

contents

introduction

Camping invokes different feelings to different people. To me, camping is a way of spending time in complete harmony with nature, a way to unplug myself from the busy urban life and to escape into a place where my mind is at peace.
The chosen location for the campsite is one of my favorite places in Bulgaria where I often go camping. The area itself has a lot to offer but I think we owe places like this one respect, social responsibility, and environmental awareness. Conserving our natural and wild spaces for future generations is an important part of enjoying the outdoors. I believe we should all slow down and return to a more natural, less hectic, and demanding way of life. Our lives should become reconnected and in balance and cooperation with nature, if we want to develop sustainably.
Ecospace is a tribute to the landscape. Simplicity is the main goal of the design in order to highlight the views to the dam lake and the surrounding spruce trees.
I tried to focus on the balance between inside and out, geometry and nature.
Based on the mountain environment, adaption and connection with the surrounding area were crucial when designing. The trees are a symbol of belonging to the place and I believe the new structures should be related to them, if not interact with them. In these ways, the buildings not only blend into the surrounding but also respect it.

"You never change things by fighting the existing reality.
To change something, build a new model that makes the
existing model obsolete."

Buckminster Fuller

situation analysis

fig.1- “the dead city” near tsarevo, black sea

fig.2- a landslide in the middle of an illegal ski run in Pirin National Park, Bulgaria

Worldwide, forests and coastal zones are the main assets used for the construction of tourist facilities. However, when this takes place in protected areas where construction is prohibited, it leads to one of the main problems in Bulgaria- the illegal and uncontrolled development which is highly destructive to the environment.

It is good when such illegal constructions are caught on time, but if not it leads to another problem- loads of abandoned, unfinished buildings, some of which with the size of a village. Although these could be demolished, unique landscapes have already been destroyed and the consequences for the environment are irreversible. Many dunes on the seaside have already been destroyed and the whole Black Sea coast is poured with concrete. You have the feeling that the hotels will soon enter the water.

Deforestation is another problem in Bulgaria. To develop ski tourism hundred of hectares have been cut down. This is the case of Bulgaria’s biggest ski resort Bansko, situated in the Pirin Mountains. In 1983, Pirin was designated as a UNESCO World Heritage Site. However, due to the damage and destruction caused by construction around the Bansko ski zone, UNESCO removed the ski area from the World Heritage site in 2010, classifying them as “buffer zones.” The facilities required the clearing of more than 160 acres of woodland, including old-growth trees ranging in age from 120 to 300 years.

According to a WWF analysis released in January 2018, the building and expansion of the Bansko ski resort have caused irreversible damage to Pirin National Park. The ski resort has also harmed Pirin’s long-term economic value, according to the study.

And last but not least is that in Bulgaria sustainability is a topic you hardly hear to be talked about. Among architects, there is a lack of knowledge and understanding of sustainability as a concept which consequently leads to a lack of influence on customers.

Tourism is a complex phenomenon with social, environmental, cultural, and economic impacts. Initially an elitist trend, tourism grew in economic scale during the post-World War II period of democratization and modernization, transforming tourism into a mass movement.

Today tourism is becoming one of the world's fastest expanding sectors. . In some countries it is the primary source of income. It increases employment while also benefiting the country's economy and infrastructure.

However, when the arrival of large groups of visitors is uncontrolled, driven only by economic logic, tourism becomes a dangerously double-edged weapon- it generates economic profits but at the expense of the given location's attractiveness. The phenomena of increased levels of tourism flows becomes increasingly more problematic as the ecosystem of the destination becomes more vulnerable. The tourism industry, therefore, is essential to economic growth but has also resulted in a slew of environmental and socio-cultural issues around the world.

The exploitation and conversion of enormous natural lands to developed tourist-related infrastructure is a major aspect of mass tourism. One of the most serious global environmental repercussions of mass tourism expansion is deforestation. On the one hand, forests represent the natural capital and raw material of tourism, but they are also vulnerable to the effects of individual actions or mass tourist-related facility development. It is necessary to monitor and reduce the negative environmental impacts of tourism in order to conserve and maintain forest resources. To begin with, all relationships between the natural environment and tourism should include the creation and execution of nature protection-oriented policy objectives.

fig.3- tourism becoming "overtourism"

fig.4- crowds near the trevi fountain

fig.5- hiking- sustainable adventure travel

fig.6- mountain bikers

Due to growing ecological awareness, the needs of tourists have changed. More tourists choose open-air accommodations such as campgrounds because of the attraction of unspoiled, calm, and natural environments. This is supported, not just by general cultural logic, but also by a growing need among visitors to “unplug” themselves from urban life, combining the holiday experience with ideals of true relaxation and reconnection with nature. This is confirmed by the widespread expansion of so-called “alternative tourism”, such as ecotourism and rural tourism.

Ecotourism is gaining popularity and many people prefer exactly the opposite of mass tourism destinations- remote locations, small numbers of visitors, and less sophisticated amenities.

Ecotourism is defined as “responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education” (TIES, 2015).[1]

Although many people consider open-air tourism to be a bit spartan, recent trends highlight the rapid spread of a new kind of camping known as “glamping” or “glamorous camping”. In comparison to already known models, such development appears to combine the principles of respect for the environment with superior quality in terms of comfort and service.

1 https://ecotourism.org/what-is-ecotourism/

Tourism was among the sectors most affected by the COVID-19 pandemic, though the impact varied depending on the tourism type.
Following the Covid-19 outbreak, more people preferred outdoor accommodation. There was undoubtedly a surge in interest in camping among both experienced and new campers. Today's travelers prefer privacy, natural space, and outdoor recreation. Not only has camping become more popular, but it is still regarded as the safest type of travel.

Between April and September 2020, hotels and similar establishments recorded the highest drops (-63% compared with the same period in 2019), followed by rented holiday accommodation (-49%). EU campsites were the least affected tourist accommodation type (-38%). Similarly to the entire sector, nights spent at campsites fell more for international (-57%) than domestic tourism (-26%). Nights spent in campsites between April and September 2020 decreased in all EU Member States compared with the same period in 2019, with Greece being the most affected (-57%). When looking at the number of nights spent in EU campsites by domestic tourists, the situation differs. In contrast to the general development, the number of nights spent increased in 10 EU Member States (with available data) between April and September 2020 compared with the same period in 2019. Slovenia recorded the highest increase (+76%), followed by Austria (+32%) and Belgium (+25%). [1]

Tourism is thought to be responsible for about 8% of world carbon emissions. The crisis presents an opportunity to reconsider how tourism interacts with our societies, other economic sectors, natural resources, and ecosystems; to better measure and manage it; to ensure that its benefits are distributed fairly, and to accelerate the transition to a carbon-neutral and resilient tourism economy.[2]

People will certainly re-evaluate their conceptions of personal space, work, family, and hygiene; however, they will also reassess food security, travel, well-being, and their relationship with nature as a result of the Coronavirus and ensuing lockdown.

fig.7- statistic of nights spent in EU tourist accommodation

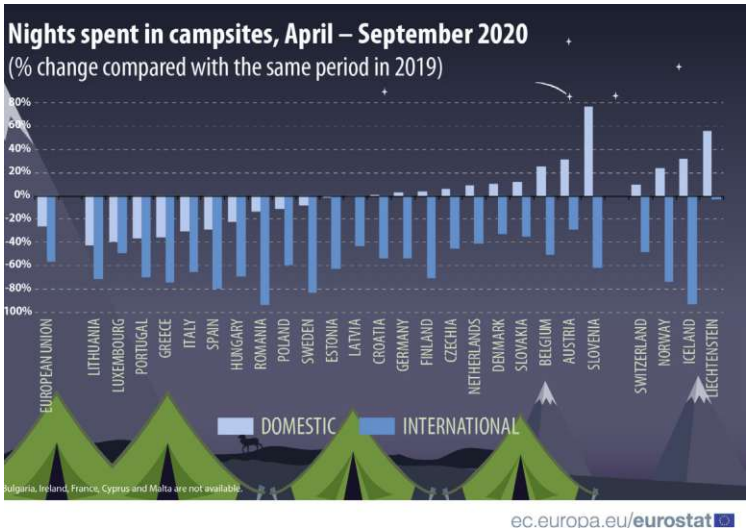


fig.8- statstic of nights spent in campsites

1 https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20210401-1
2 https://www.unwto.org/tourism-and-covid-19-unprecedented-economic-impacts

2.5 brief history of camping

fig.9- vintage photo camping

fig.10- nomadic camps

Thomas Hiram Holding, who in 1908 published the first edition of The Camper's Handbook, is considered the father of contemporary recreational camping. In the United Kingdom, the book helped popularize his hobby of camping as a recreational activity. Holding was inspired to write the book after reflecting on his childhood and the time he spent traveling across the United States in a wagon train with his family.

In the decades that followed, organizations like the Association of Cycle Campers and the still-popular Boy Scouts arose, fostering a culture and organizational structure centered on recreational camping.

In America from the early 1870s, people started camping in the woods for entertainment but there was no organized camping. William Henry Harrison Murray the author of Camp-Life in the Adirondacks (1869), essentially a how-to-camp guidebook, is credited with helping to popularize recreational camping. However, large-scale camper organization did not emerge until after World War II, when more leisure time and the introduction of motorized camping led to a massive surge in the activity.

Camps were also established around the world in locations where temporary bases were needed, such as gold mines, archaeological digs, and even military encampments. Camping was a way for soldiers to establish a base with some basic luxuries, from the American Civil War to Medieval European military battles to Roman and Greek epic military campaigns. Nomadic societies have built innumerable camps throughout history to temporarily house their people as they migrate about for social, religious, or seasonal reasons.[1] Their shelters were designed to keep people safe from the elements while also allowing them to transport large groups of people quickly.

1 https://abbeymedievalfestival.com/2020/10/a-brief-history-of-camping/

fig.11- tent- primitve camping

fig.12- caravan- RV (recreational vehicle) camping

fig.13- campervan- RV (recreational vehicle) camping

fig.14- cabins/pods- glamping (glamorous camping)

What is glamping ?

ˈglampɪŋ/

noun BRITISH Informal

1. a form of camping involving accommodation and facilities more luxurious than those associated with traditional camping. "glamping is likely to satisfy any city slicker seeking a little refuge in nature—without foregoing any of life's luxuries"[1]

1 https://languages.oup.com/google-dictionary-en/

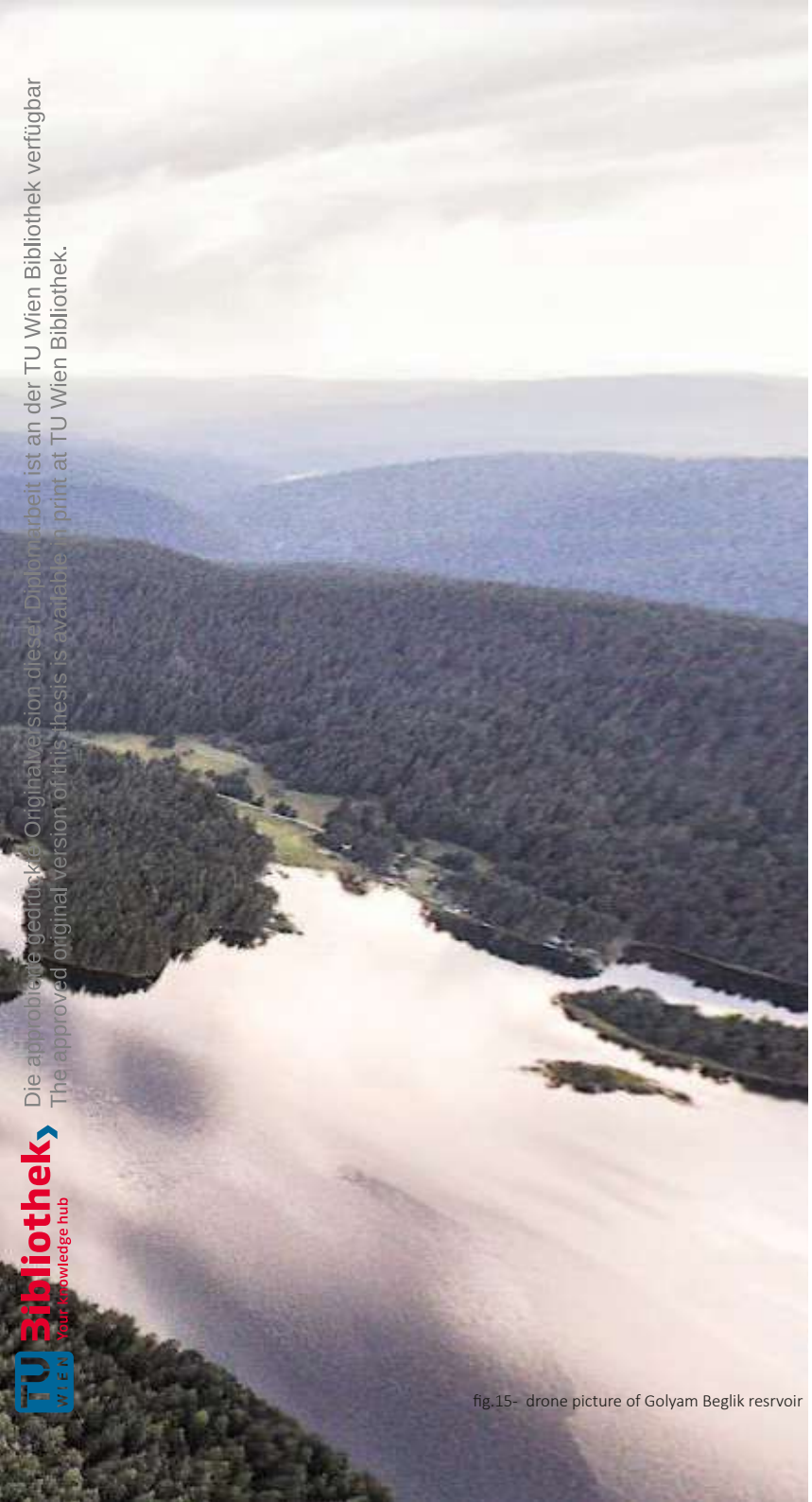


fig.15- drone picture of Golyam Beglik resrvoir

2.7 location

41°47'52.4"N 24°06'57.4"E

Golyam Beglik-an area of high environmental value- is one of the highest reservoirs in Bulgaria. It is located on the north-south axis on altitude of 1520m above sea level and is part of the Batak cascade in Rhodope Mountain. There are several reservoirs in the area from which Golyam Beglik is the largest- 4,1 km2. The area is densely forested, with many streams and minor rivers, and is almost entirely covered with taiga-coniferous forests, primarily Norwegian spruce and White pine. Near the reservoir territory, there is a wide variety of wildlife. Bears, wild pigs, deers, foxes, and wolves, as well as smaller animals like rabbits, wild ducks, and squirrels, live in the area.

The Beglika Natural Reserve, includes the area around Golyam Beglik. On its territory are located three protected areas:
- Samodivska Polyana- 124 ha
- Chatama- 28,5 ha
- Batlaboaz- 131, 3 ha

The road connecting the cities of Batak and Dospat is the main route to Golyam Beglik and the surrounding countryside. Tourism is currently underdeveloped, with only a few private villas. An interesting place is Chatama, located in the Chatama protected area. This is not simply a bungalow complex that provides lodging, but also a center, which offers adventurous summer camps for children, that include trekking, mountain biking, and kayaking.

Golyam Beglik reservoir is an isolated and less popular area in Bulgaria but an incredibly beautiful place, providing many opportunities for environmentally conscious tourism.

fig.16- drone pichture of the campsite location









fig.17- pictures of the site

A natural spring is one of the best sources of water. Luckily, there are several natural springs around the reservoirs, one of which is next to the chosen location for the campsite.

Natural wells are an easy way to think of springs. They're places where groundwater rises to the surface through fractures and fissures in the Earth.

Springs are free and, depending on their size, can give a lot of water. With a few pipes and a mechanism to redirect the water into storage, it's simple to tap into this water.

I found a hydro pump which is a perfect solution for delivering fresh spring water to the campsite. It doesn't use any electricity or fuel, it will pump water over long distances and to impressive heights. It works day and night, and because the technology is very simple there is very little to go wrong. The idea is simple- you pump water when it is plentiful to a storage tank at the highest point on your property- to use where and when you need it. You can gravity feed the stored water to animal troughs, for irrigation, or to your home for domestic use.[1]

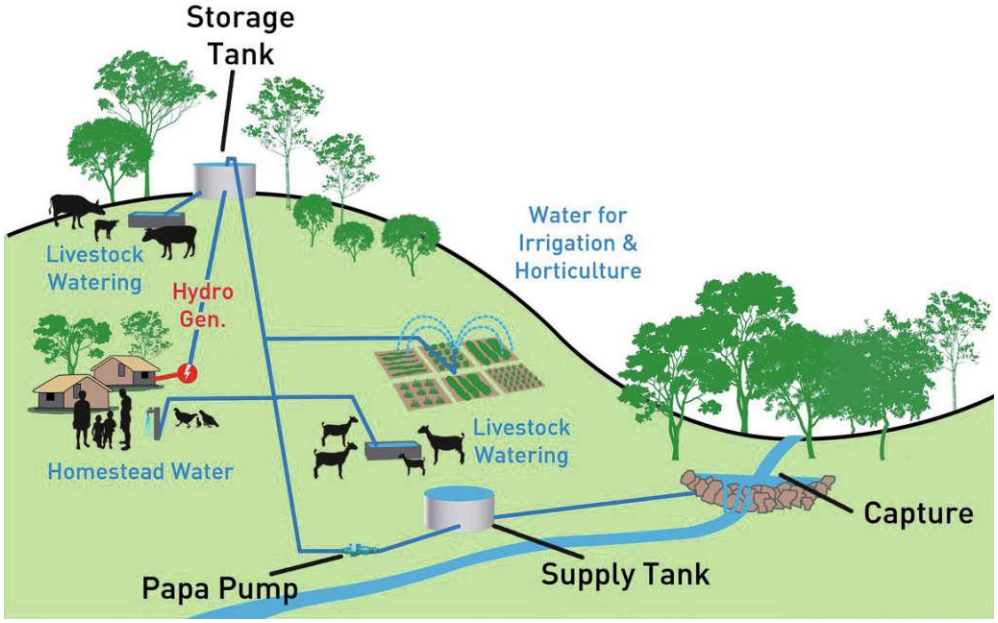


fig.18- off-grid water pump diagram

1 https://papapump.com/off-grid/#

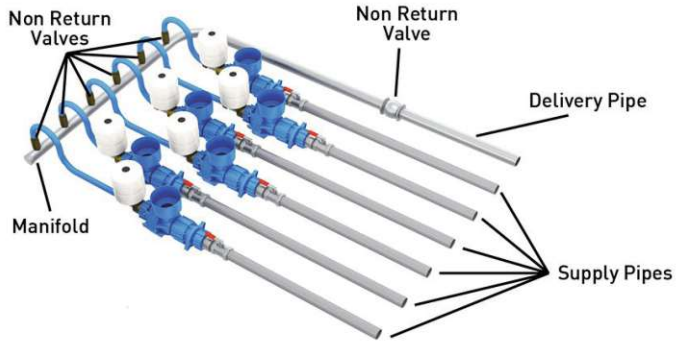


fig.19- multi pump water system

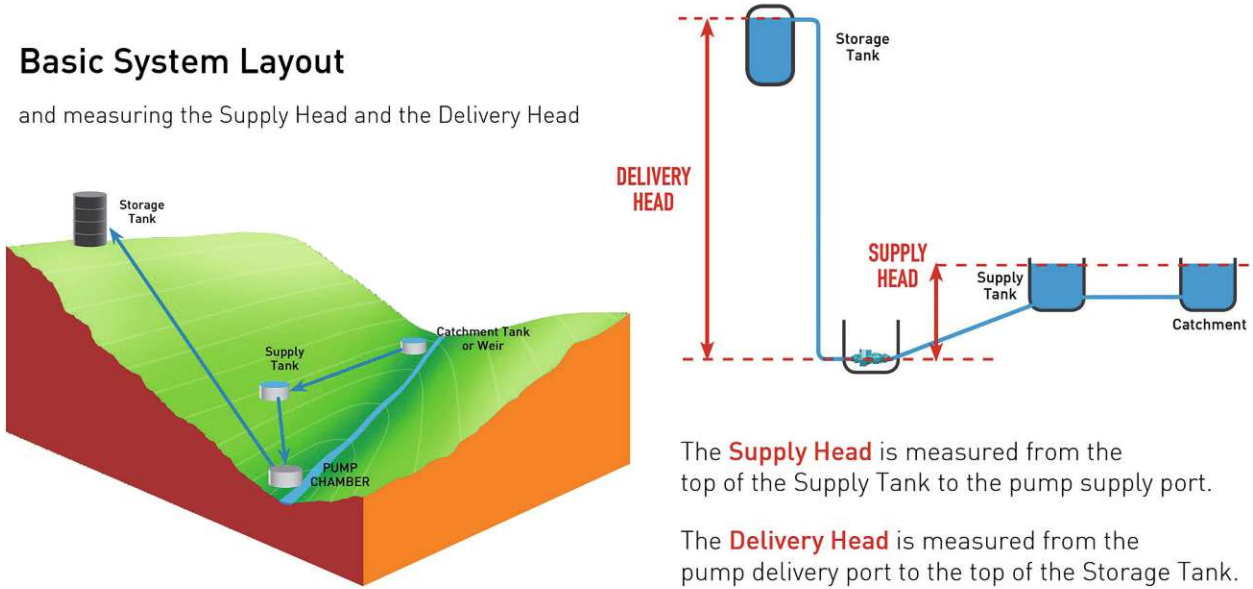


fig.20- water delivery principles

Wastewater treatment is

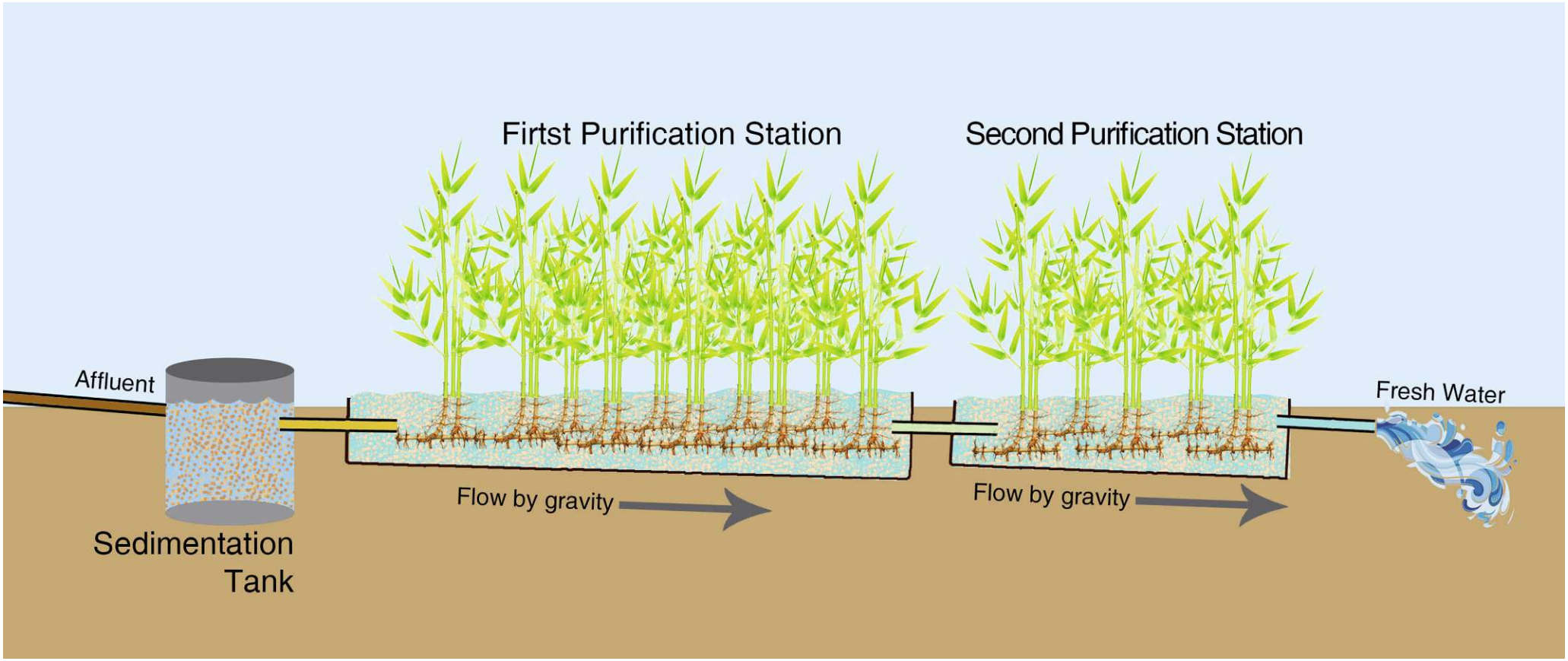


fig.21- natural wastewater treatment systems

The forest center satisfies its needs for electricity through photovoltaic cells. When the campsite is not functioning or there aren't many guests, the extra electricity could be stored in batteries, which could be "stacked", which means more batteries could be added until the desired storage capacity is reached. This allows the normal course of all activities with which the site is engaged. The restaurant's cooker is powered by gas bottles.

In addition, the local hydropower of the Golyam Beglik Dam provides electricity.

Hot water is supplied by a solar panel system integrated into the buildings.

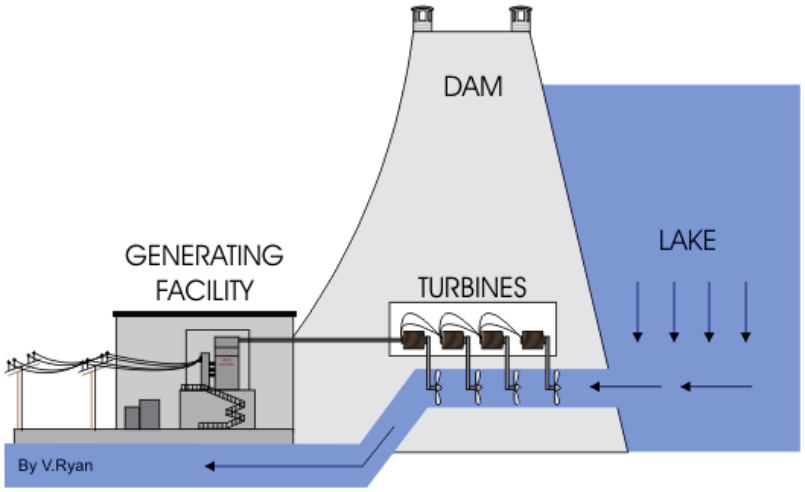


fig.23- hydroelectricity

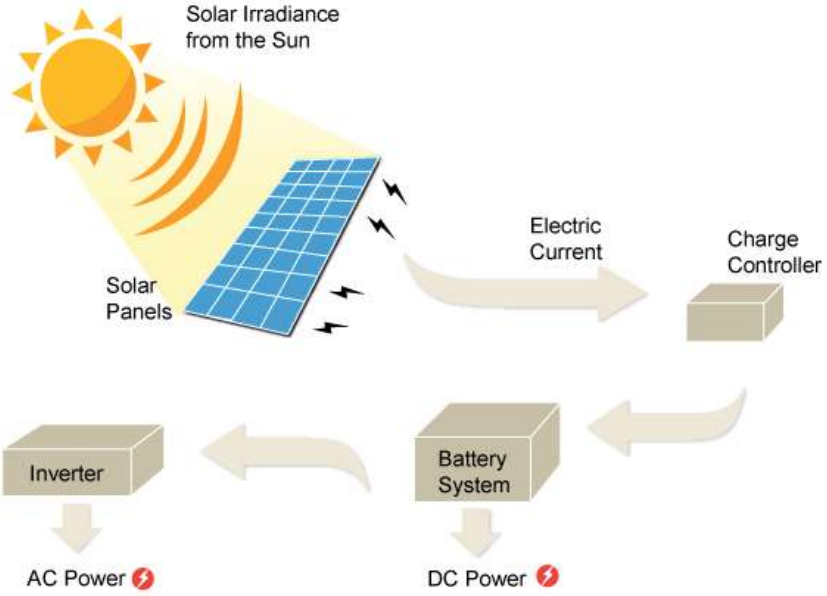


fig.22- solar energy

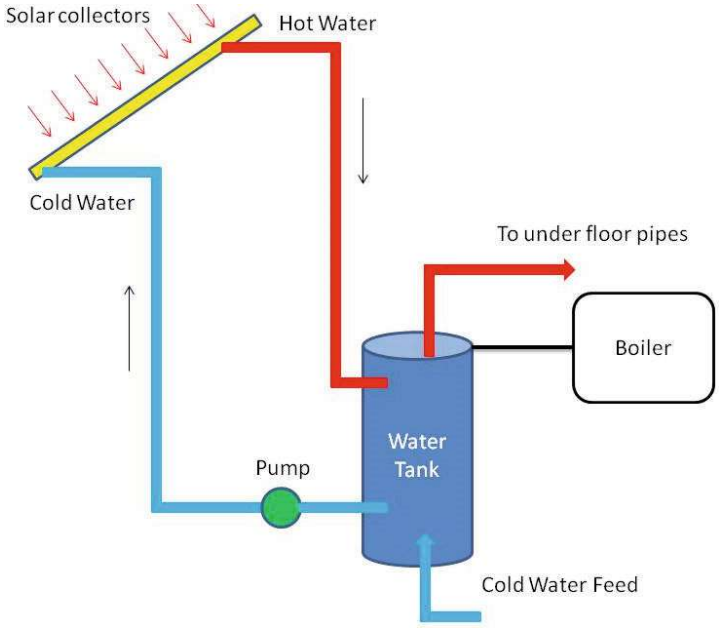


fig.24- solar water heater

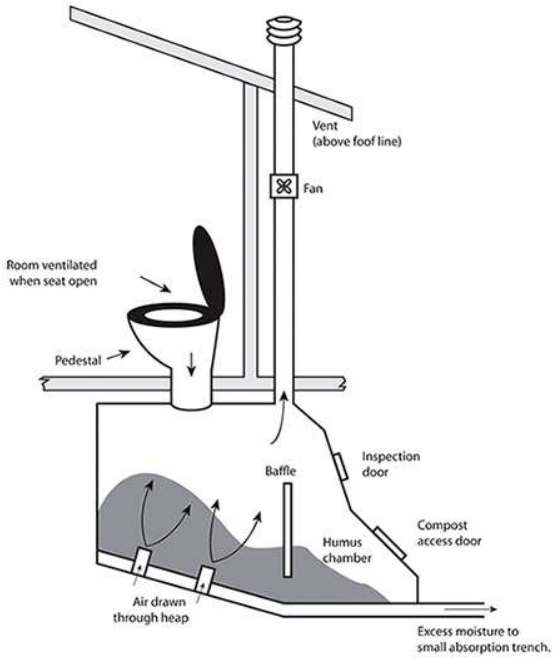


fig.25- composting toilet diagram

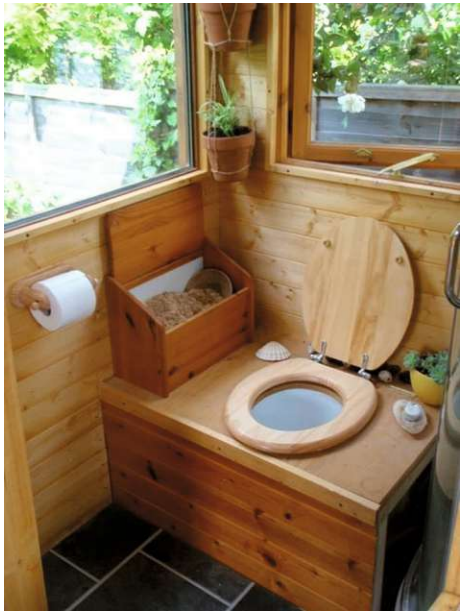


fig.26- an example of composting toilet

The toilets of the campsite are composting.

Composting toilets are a type of dry toilet (do not use water to flush) that turns solid human waste through a biological process known as composting into a hummus-like substance that can be used to improve the soil. Microorganisms (mostly bacteria and fungi) perform composting under controlled aerobic conditions. Many composting toilets use a separate urine container, which helps control the excess moisture.

Composting toilets, unlike flush toilets, do not require a septic tank or sewage system. National parks, remote vacation cottages, ecotourism sites, off-grid housing, and rural places in developing countries are all examples of typical uses.

After each use, a carbon component such as sawdust is added in many composting toilet designs. This method creates air pockets in human feces, allowing aerobic decomposition to occur. The carbon-to-nitrogen ratio is improved while the odor is reduced.

There are two types of composting toilets. The self-contained design, for example, houses the complete composting system beneath the bowl. These toilets are typically seen in RVs, boats, or tiny dwellings, while some are temporarily installed in cabins or other country properties. These toilets typically require manual emptying, whereas the other variety does not.

The central or remote composting toilet is the other type of composting toilet. These toilets send solid and liquid waste to a composter that is located somewhere on the site. Larger systems are suitable for large groups because they can link numerous toilets.

project goals

This project aims to connect people to the forest and connect the forest to the architecture. Using natural materials and allowing nature to grow and intertwine with the building, we can learn how to use the forest and its materials sustainably.

I want to show that we can actually develop tourism and make a place a popular tourist destination while minimizing the negative impacts and preserving rather than destroying the natural environment.

Furthermore, I want to demonstrate how not only camping and spending time in nature can benefit our physical and mental health, but also how the presence of human habitats and architecture, when combined with innovative eco-friendly solutions could turn the impact from a negative to a positive one.

Last but not least this project is also a fight for the protection of Bulgarian nature as well as a protest against the country's deforestation, overbuilding, and destruction of the Bulgarian coast and mountains.

methodology

fig.27- topographic map

fig.28- roads & water map

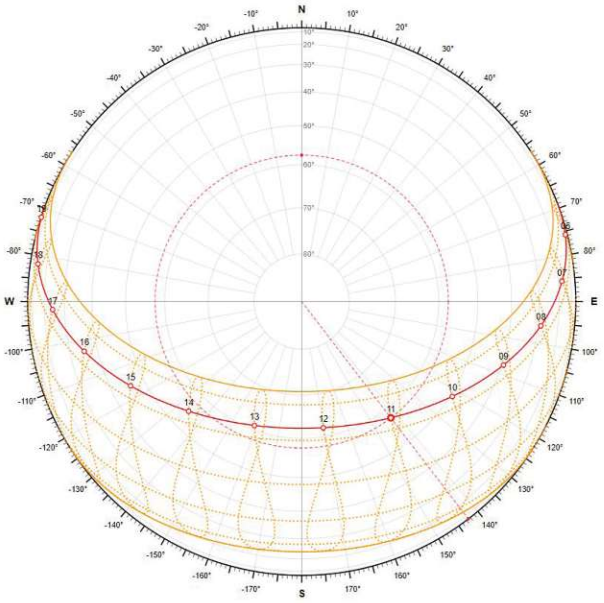


fig.29- sun path diagram 1. May

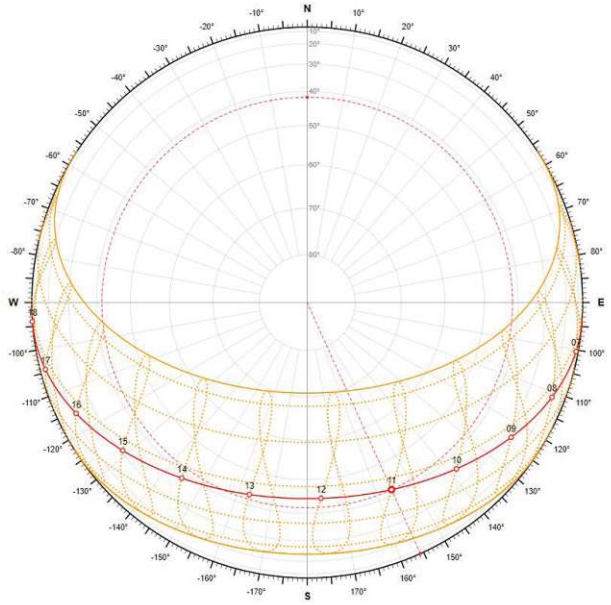


fig.30- sun path diagram 30. September

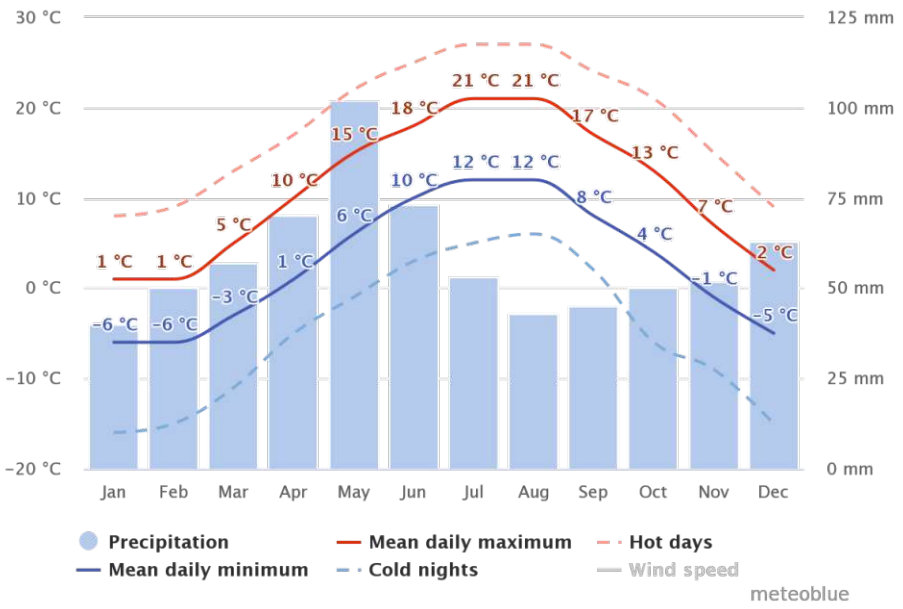


fig.31- average temperatures and precipitation

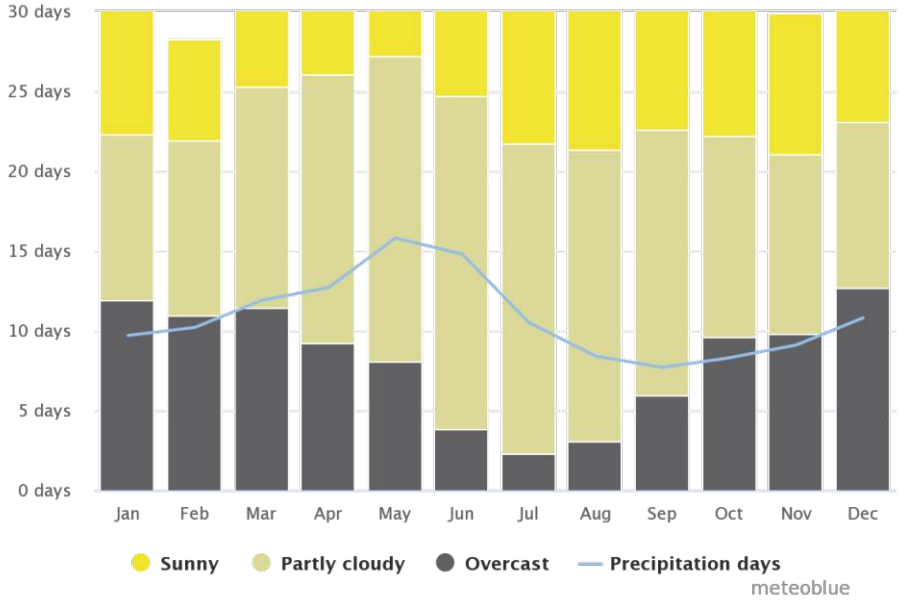


fig.32- cloudy, sunny and precipitation days

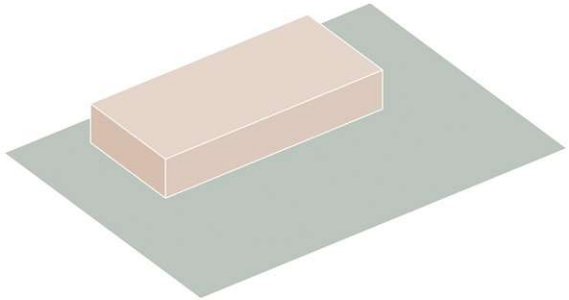
Ecospace campsite is a summertime retreat, functioning from May to September. The project includes a restaurant, a reception area with administration, shower houses, and independent recreational structures that embody the so-called glamping.

A centralized parking lot is located right after the entrance of the campsite. Distractions such as roads and vehicles will be kept to a minimum, bringing a new degree of serenity and peace to the overall outdoor experience and allowing guests to take full advantage of the forest setting.

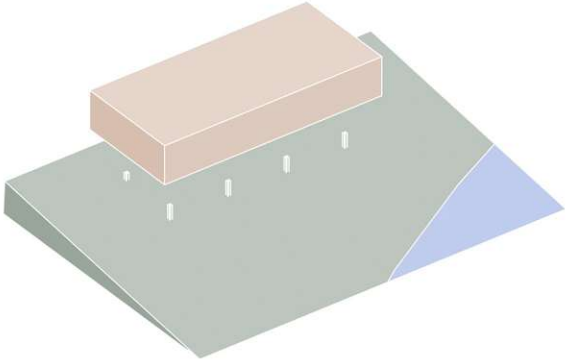
Ecospace is a tribute to the landscape. Simplicity is the main goal of the design in order to highlight the views to the lake and the surrounding spruce trees. I tried to focus on the balance between inside and out, geometry and nature.

Based on the mountain environment, adaption and connection with the surrounding area were crucial when designing. The trees are a symbol of belonging to the place and I believe the new structures should be related to them, if not interact with them. In these ways, the buildings not only blend into the surrounding but also respect it.

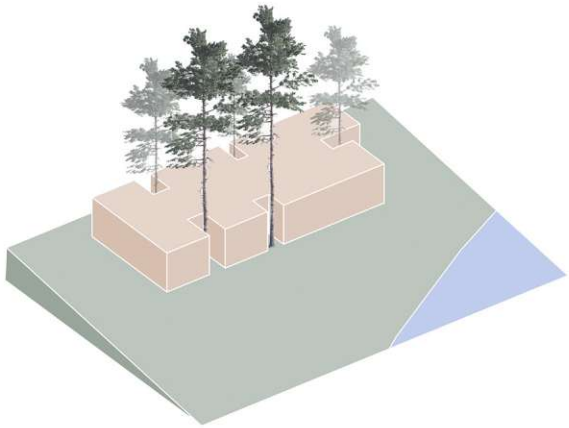
basic form



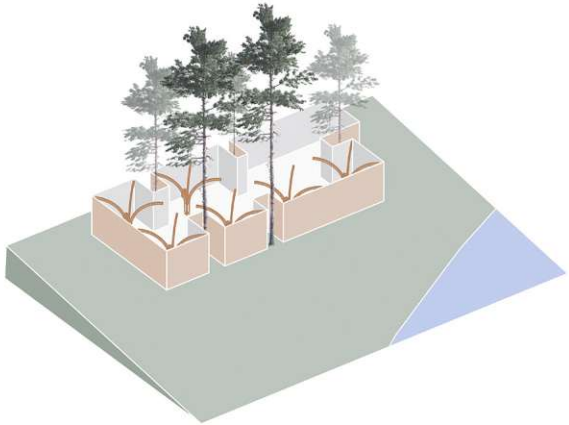
elevation from the ground



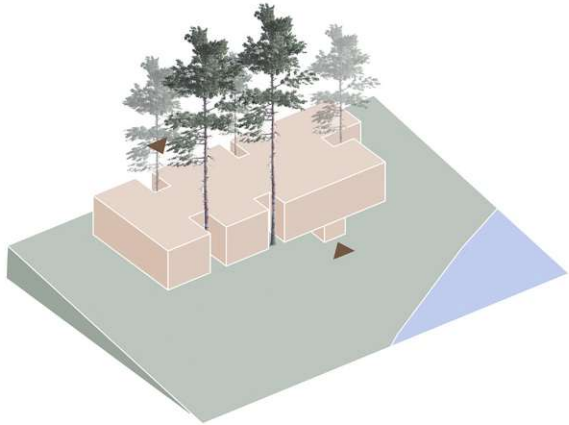
adaptation to nature



tree-like columns



access



exterior views

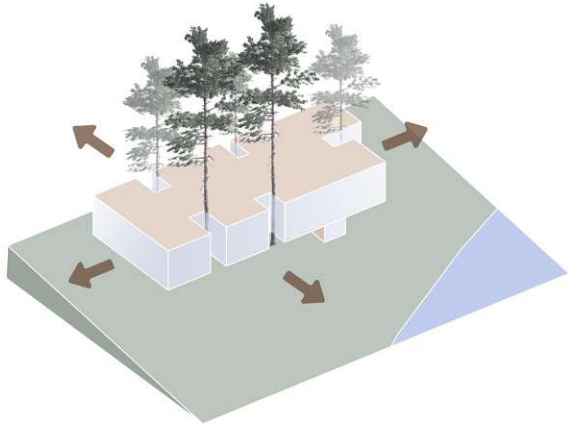


fig.33- concept diagram restaurant

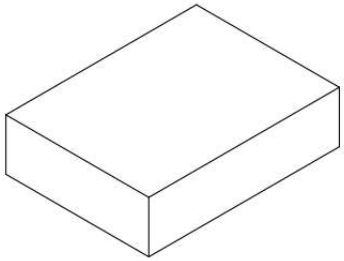
The restaurant is a single rectangular structure composed of wood gathered locally. The rectangle is not completely solid on all sides. Instead, it has many gaps in which small courtyards indent to allow trees and green space. The idea is to blur the lines between indoor and outdoor spaces by integrating nature into the structure. The building is therefore bright and transparent and there is a constant play between inside and outside.

The construction itself is a main part of the design concept. I wanted to create an environment that appeared to be alive and growing. Raising the restaurant above ground level was an intentional decision to create a relationship with the topography and the added height captures a breathtaking view of the lake. In addition, curved glulam tree-like columns that resemble the shape of trees transmit all of the loads from the flat roof through the branches and consequently into the foundation. The tree-like columns are a vigorous blend with the built and natural environment giving the entire building an open and inspiring vibe.

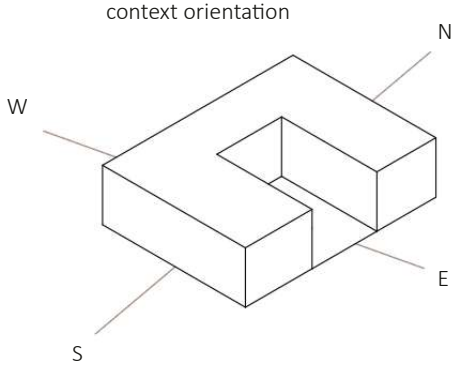
The construction relies heavily on natural materials, with steel and glass being utilized only when necessary to make the setting more immersive. The main focus of the restaurant is on the vast views of the dam lake and the relationship with its natural surrounding. Glazing each side opens the restaurant to views in all directions and achieves the affect of visual transparency.

The exterior cladding reflects the verticality of the fir trees. Fixed and folding shutters with identical vertical timber elements protect the openings and when closed provide a continuous elevation appearance.

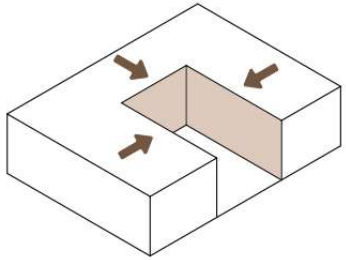
basic form



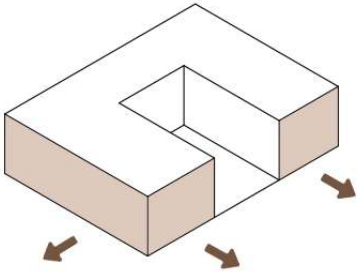
context orientation



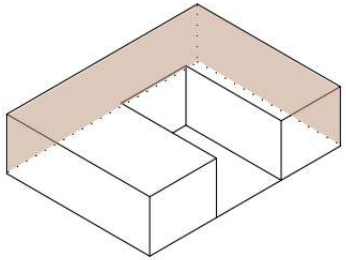
interior views



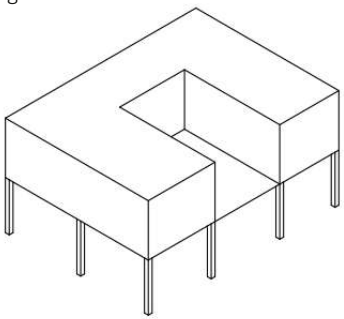
exterior views



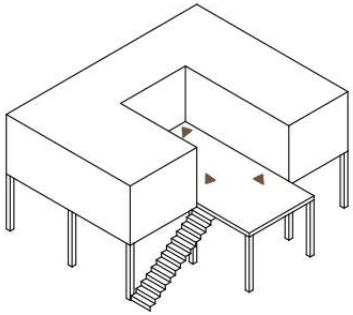
privacy from
neighbors



elevated from the
ground



access



connection
to nature

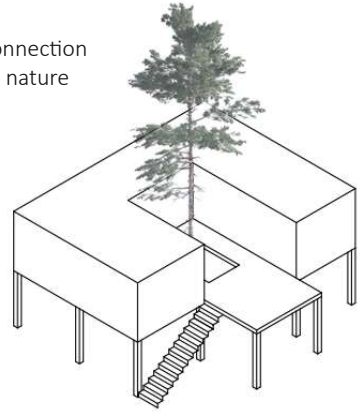


fig.34- concept diagram glamping

Following the concept of the restaurant, a group of lightweight, prefabricated wooden cabins is nestled in the landscape blending with the natural surroundings. Part of the volume is a void and forms an outdoor space that allows trees to intertwine with the architecture and it seems that the forest enters the building.

Each house is a separate glamping unit and is accessed by a staircase and a semi-private terrace which serves as a connective element between all the other functions in the house. From each room large folding and sliding doors can be opened up to create an immediate link with nature, allowing guests to experience a continual interior-exterior natural environment.

The cabin's free composition allows it to open and close itself while maintaining a sense of tranquillity and connection to nature. Large sliding windows and folding doors allow the concepts of privacy and transparency to co-exist. When they are open, the house blends into the landscape and gives a sense of transparency. When closed, the patio allows continuous daylight into the house and guests can enjoy the outdoors in their own privacy.

The shower becomes a semi-open-air bathing spot when a folding door opens onto the entry deck. The bathroom can easily be converted into a wetroom if tourists return from trekking covered in mud.

The north and the west façade are rather closed in order to create privacy and minimize the visual connections between the glamping units. Visitors can barely make out the neighbors, who are partially hidden by trees and landscaping. Causing minimal disturbance to the sloped terrain, these cabins are raised above the ground by screw piles and timber pillars giving a sense of height and lightness whilst providing stability. They are raised 2.5 meters above the ground at their highest point in the air. The screw piles are strategically placed so as not to disturb the roots of the surrounding spruce trees.

On the elevated terrace, there is a net made from knotted ropes. Guests can lay right up onto it and use the netted spot as a hammock, relaxing with a view of the treetops and the sky above.

restaurant floor plan must have's:

1. kitchen
- depends on the type of food being prepared, service type, and the cooking techniques

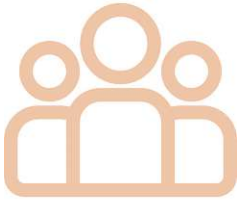
2. dining area
- should be flexible also for larger groups of visitors

3. payment station and POS system
- includes counter space, cutting tools, and storage containers
- to be placed near the refrigerator

4. entrance and waiting area
- customer's first impression of a restaurant
- the size of the waiting area can vary considerably

5. bar
- not all restaurants have a bar but could be the main attraction
- recommended to be placed close to the dining area

6. restrooms
- the doors should be away from the dining area
- recommended to be near the kitchen so that they use the same plumbing system
- often restroom's design could be a highlight of a visitor's restaurant experience.



The International Building Code uses the area of 1,4m per person in restaurants.

fig.35- visitors

the five components of a commercial kitchen:

1. storage

2. washing station
- separated washing for food and for dishes recommended

3. food preparation
- includes counter space, cutting tools, and storage containers
- to be placed near the refrigerator

4. cooking station

5. service
- used for dish plating and passing them to servers
- recommended to be placed close to the dining area

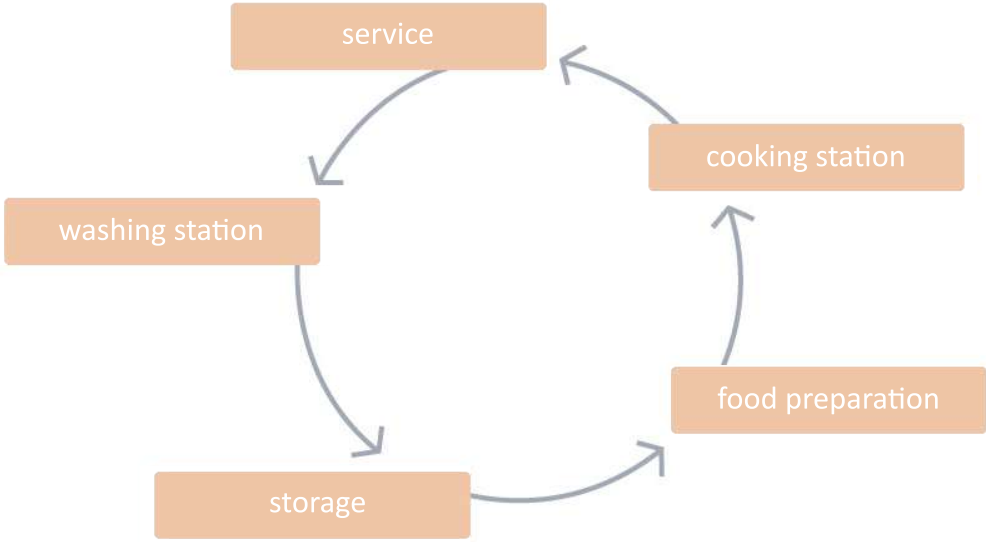


fig.36- restaurant kitchen workflow

assembly layout

- facilitates the production of lots of the same type of dish over and over again

- best for fast food restaurants or restaurants with limited menus that have similar preparation styles, like pizza parlours or build-your-own bowl restaurants[1]

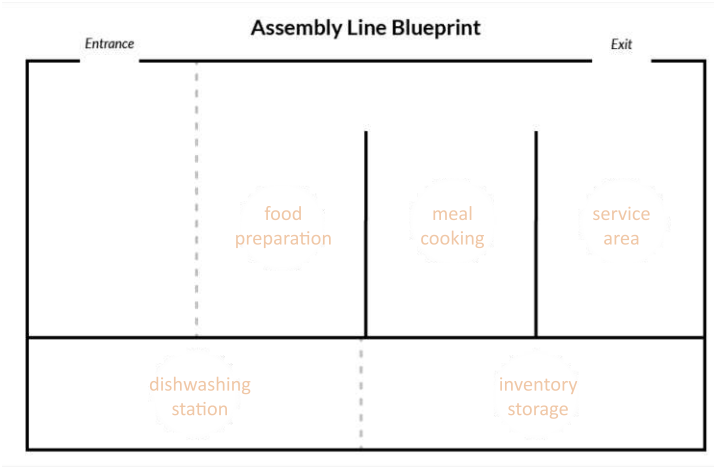


fig.37- assembly line layout

1 https://www.lightspeedhq.com.au/blog/commercial-kitchen-lay-out-and-design/

island layout

- facilitates staff communication and executive chef supervision

- best for restaurants with enough kitchen space to ensure that the island doesn't create an obstacle for staff[1]

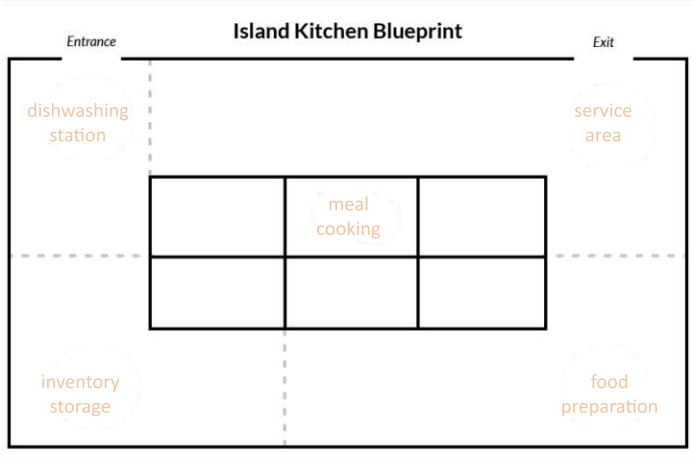


fig.38- island layout

1 https://www.lightspeedhq.com.au/blog/commercial-kitchen-lay-out-and-design/

zone-style layout

- separate zones for each type of activity in the kitchen or for each kind of dish

- keeps the kitchen organised and allows different types of dishes to be prepared at the same time

- best for restaurants with diverse menus and lots of staff, such as hotel restaurants[1]

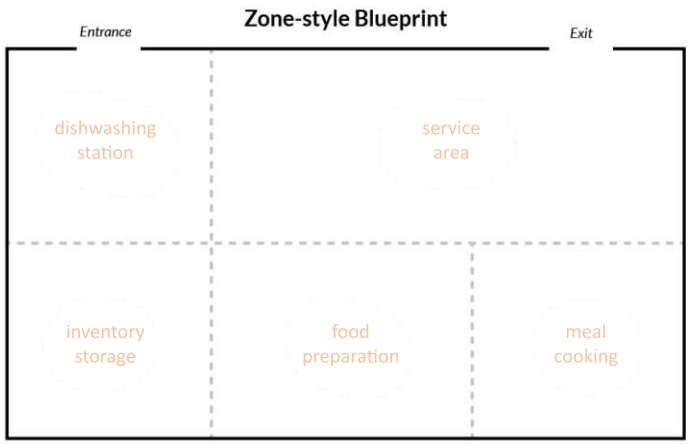


fig.39- zone-style layout

1 https://www.lightspeedhq.com.au/blog/commercial-kitchen-lay-out-and-design/

galley layout

- all stations and equipment are on the perimeter of the kitchen

- best for tight spaces with few staff, such as food trucks[1]

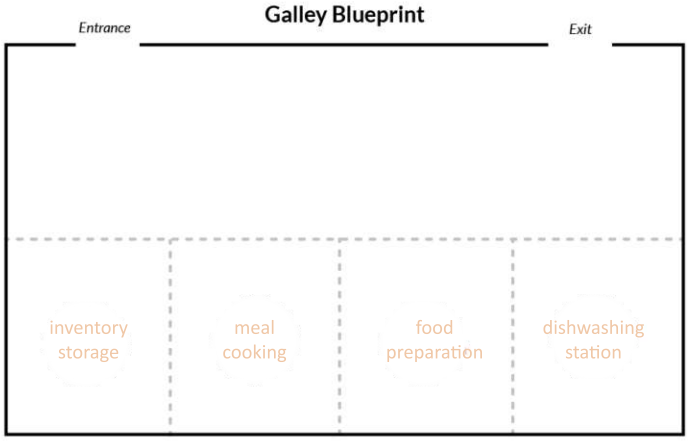


fig.40- galley layout

1 https://www.lightspeedhq.com.au/blog/commercial-kitchen-lay-out-and-design/

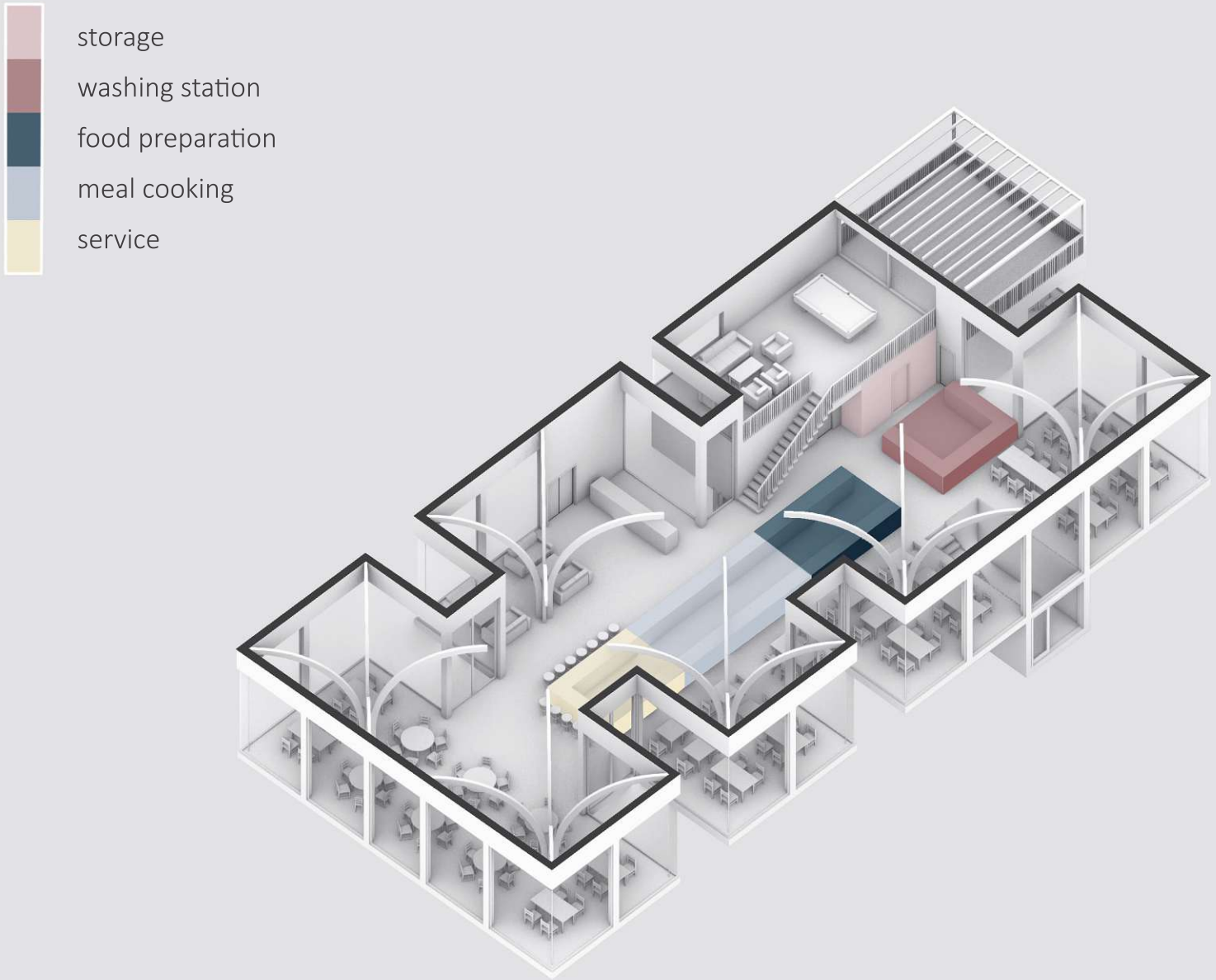


fig.41- functional diagram kitchen

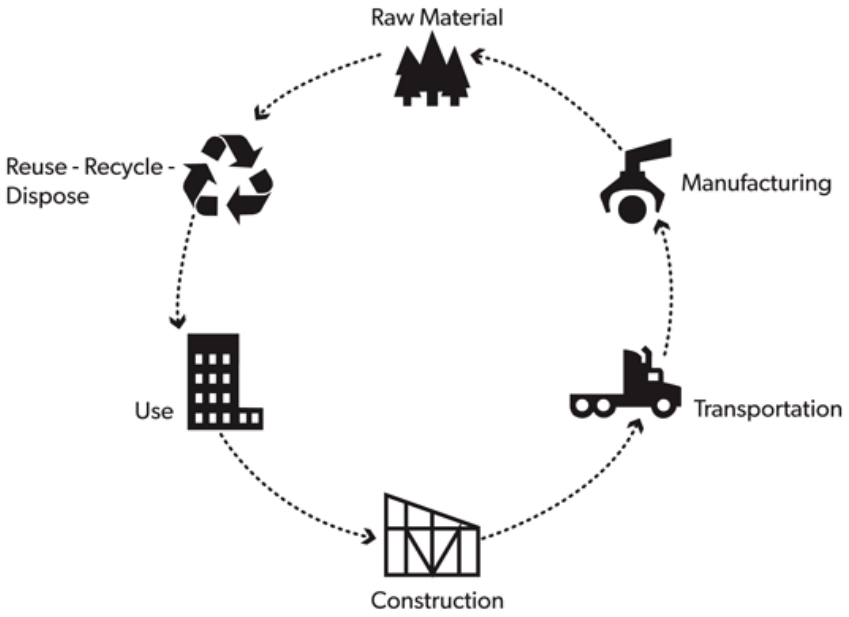


fig.42- life cycle of glulam products

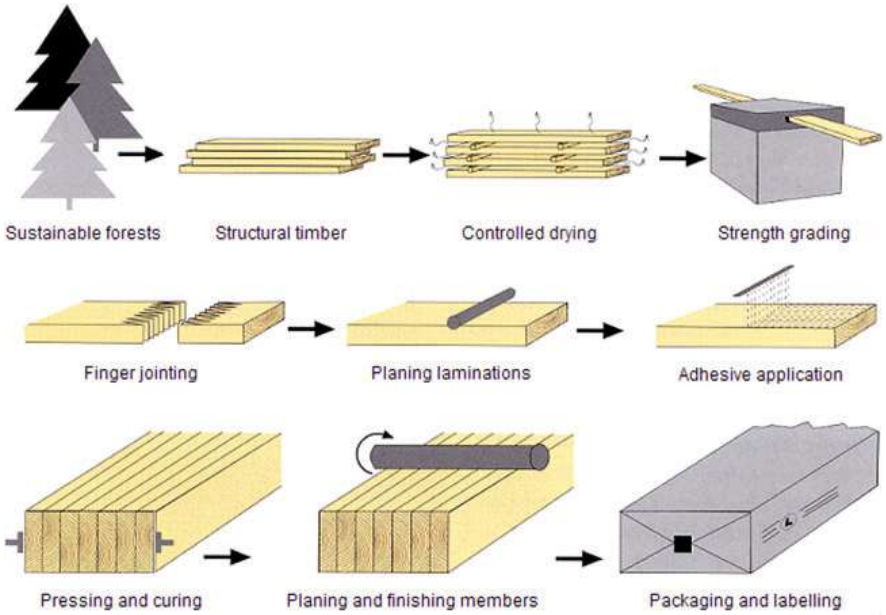


fig.43- production of glulam beams

Driven by the wish to limit carbon footprint, optimize energy performance and build economically in this remote location, the primary building material chosen for the campsite was timber.[1] Construction produces over 30% of the global CO2 emissions, but wood does the opposite - it stores carbon. Engineered wood is cost-competitive because it enables fast construction with prefabricated elements and modules. These elements are flexible and allow designs that are adaptable.[2]
Simplicity of timber creates complex structures and curates compelling spaces while being structurally efficient and sustainable. Steel and concrete are being utilized only when absolutely necessary.
The cellulose insulation is quite cheap, breathable, and environmentally friendly as well. It is blown into timber frame constructions and it has an insulating value that is comparable to rock wool.

The exterior cladding reflects the verticality of the fir trees. Fixed and folding shutters with identical vertical timber elements protect the openings and when closed provide a continuous elevation appearance.

1 https://www.livinginashoebox.com/guests-sleep-under-an-observation-turret-in-this-small-new-zealand-cabin/
2 https://www.archdaily.com/949727/call-for-entries-designing-for-adaptability-with-modular-wood-construction

The cellulose insulation is quite cheap, breathable, and environmentally friendly as well. It is blown into timber frame constructions and it has an insulating value that is comparable to rock wool.

The exterior cladding reflects the verticality of the fir trees. Fixed and folding shutters with identical vertical timber elements protect the openings and when closed provide a continuous elevation appearance.

fig.45- folding shutters

fig.44- cellulose insulation

fig.46- cladding

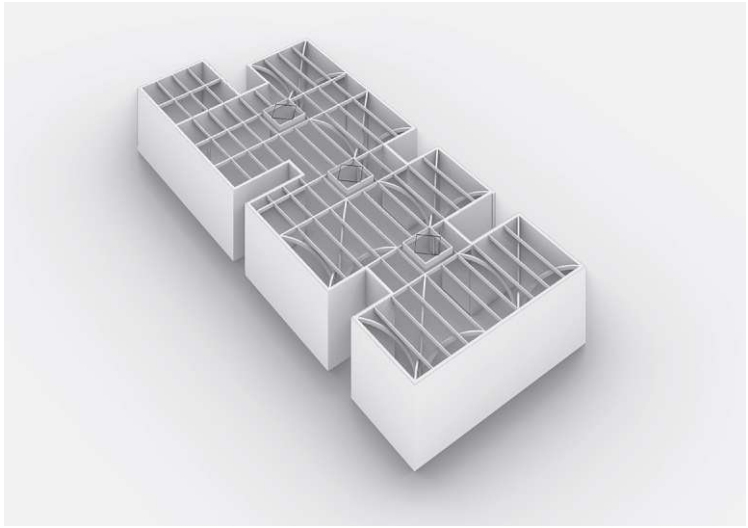


fig.47- axo restaurant

The restaurant is supported by curved glulam tree-like columns. The column's branches support the primary and secondary beams of the flat roof and transmit all of the loads through the branches and consequently into the foundation. The cabins, shower houses, and reception are all raised above the ground screw piles and timber pillars causing minimal disturbance to the sloped terrain. The screw piles are strategically placed so as not to disturb the roots of the surrounding spruce trees.

fig.48- supporting tree-like columns

fig.49- brenaches of tree-like columns

fig.50- forest trees

fig.52- timber cladding

fig. 51 house on stilts

fig.53- vertically folding sunshading system

"The outside is the only place we can truly be inside the world."

Daniel J. Rice

result

fig.54- site plan

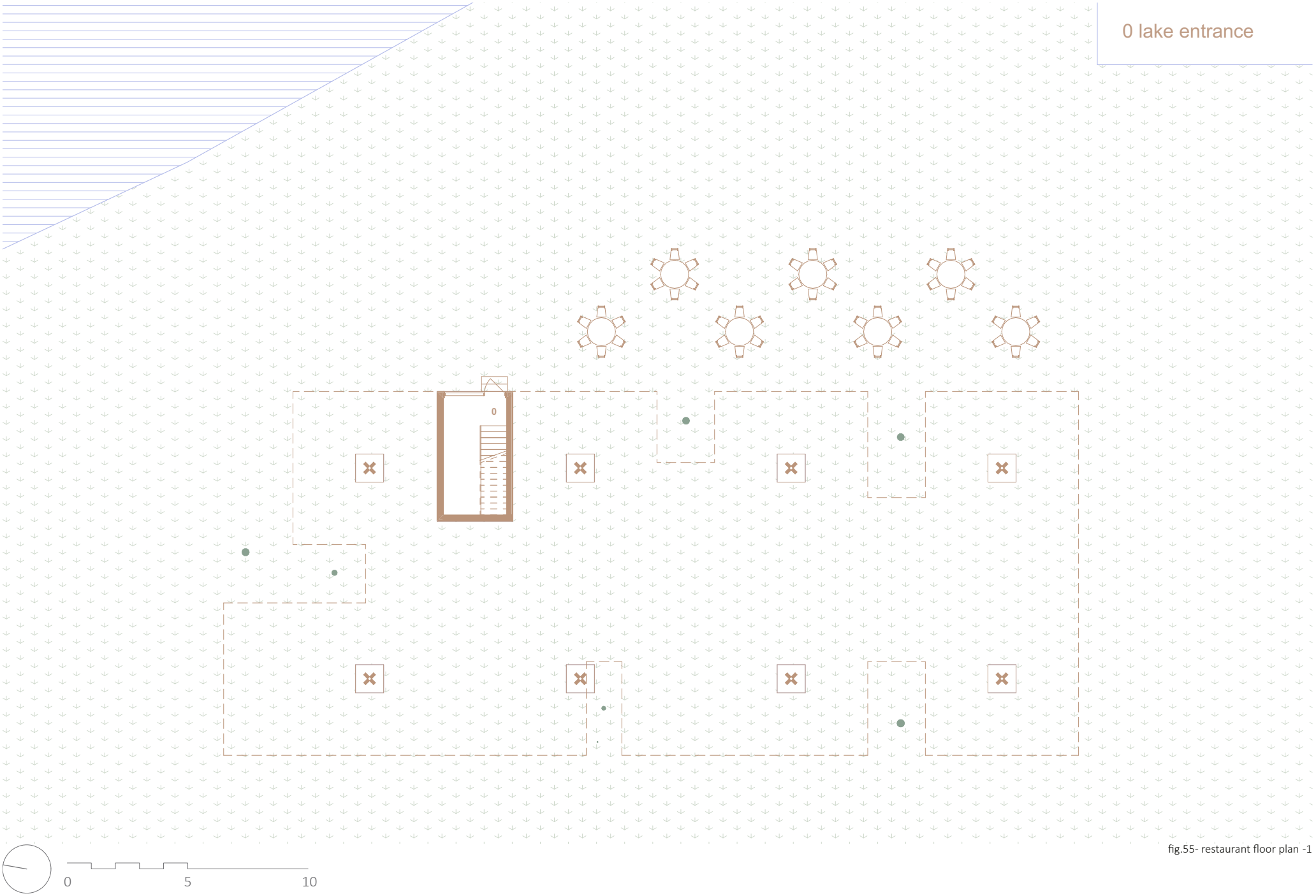


fig.55- restaurant floor plan -1

5.2 restaurant floor plans | ground floor |1:200

1 reception
2 entrance area
3 waiting area
4 dining area
5 open kitchen
6 washing station
7 staff room
8 storage
9 restroom

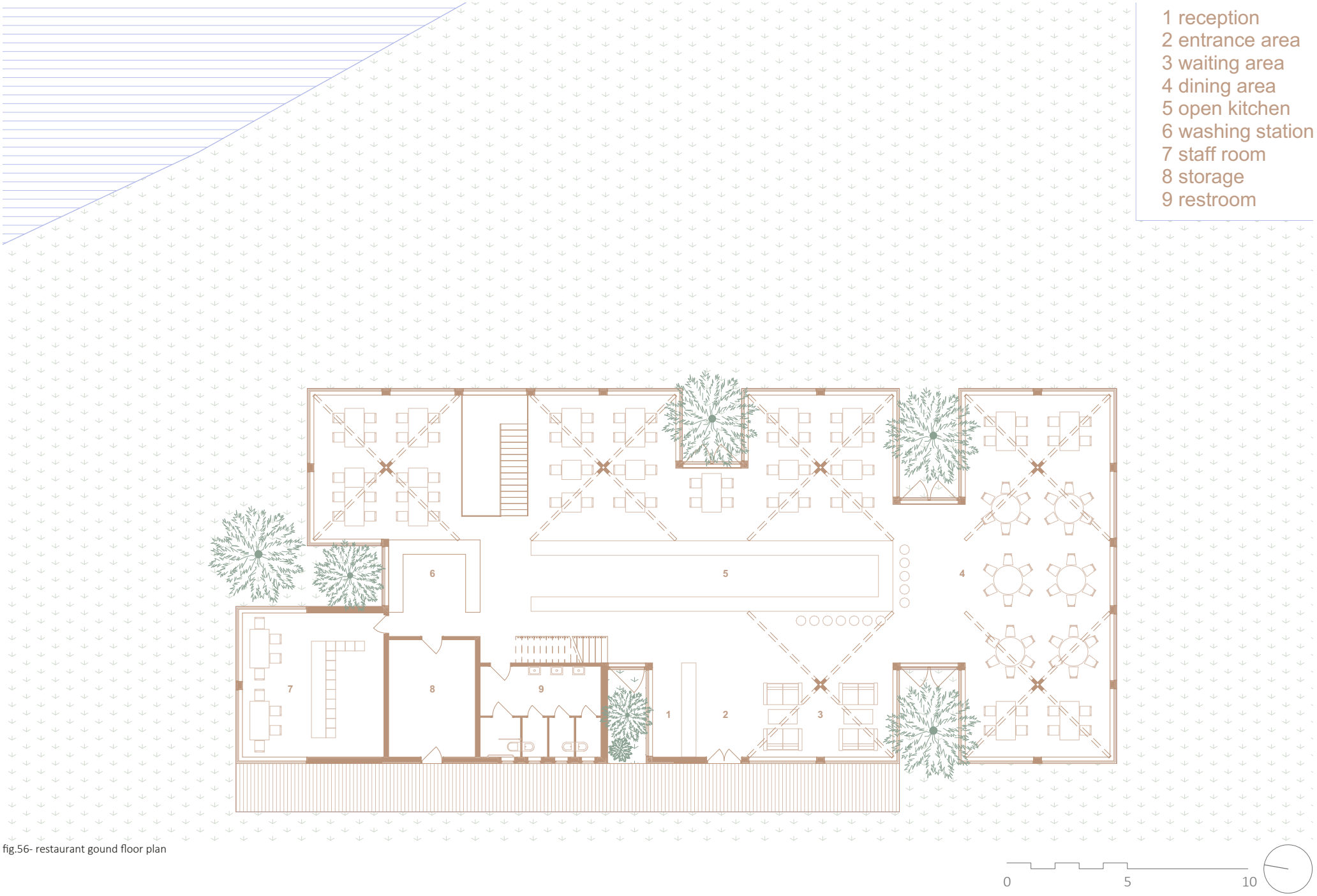
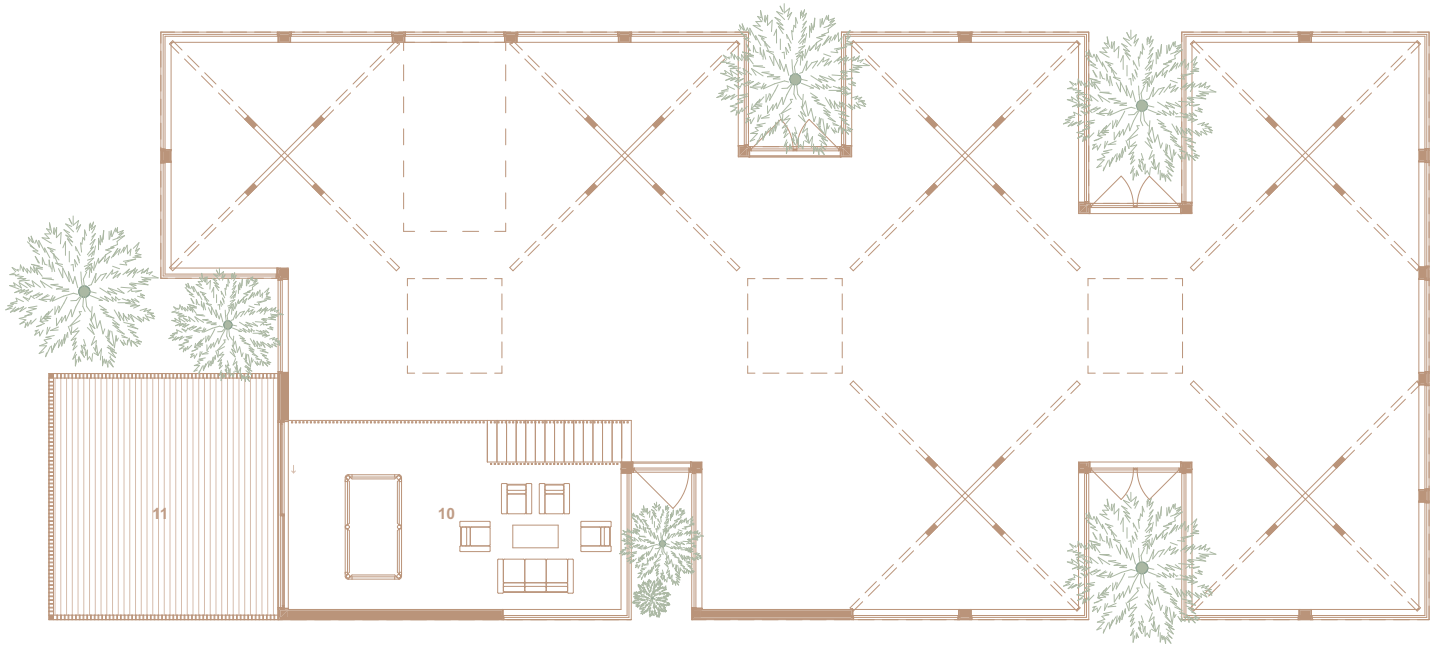


fig.56- restaurant gound floor plan



10 lounge area
11 terrace

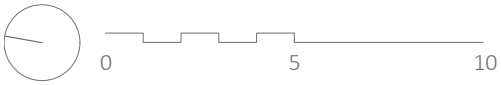


fig.57- restaurant floor plan +1

5.2 restaurant floor plans | top view |1:200

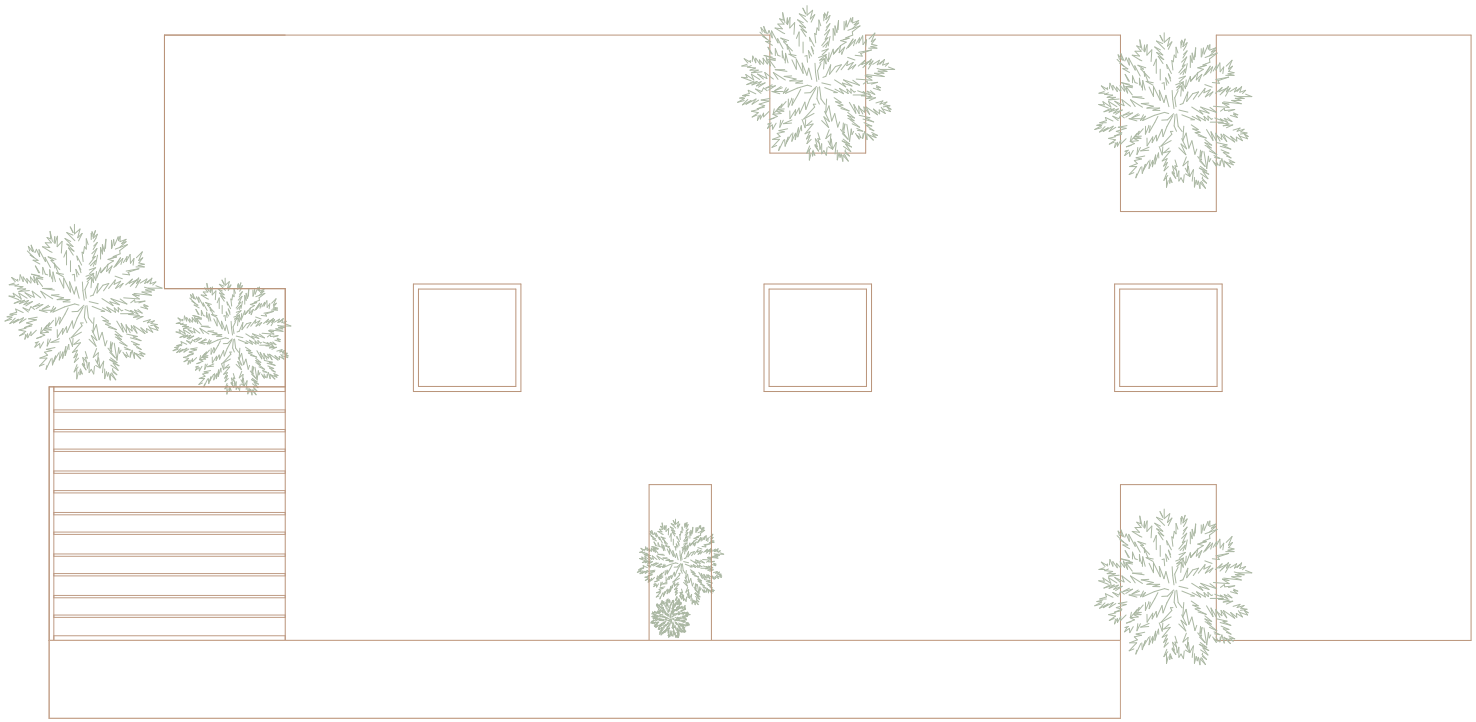


fig.58- restaurant top view

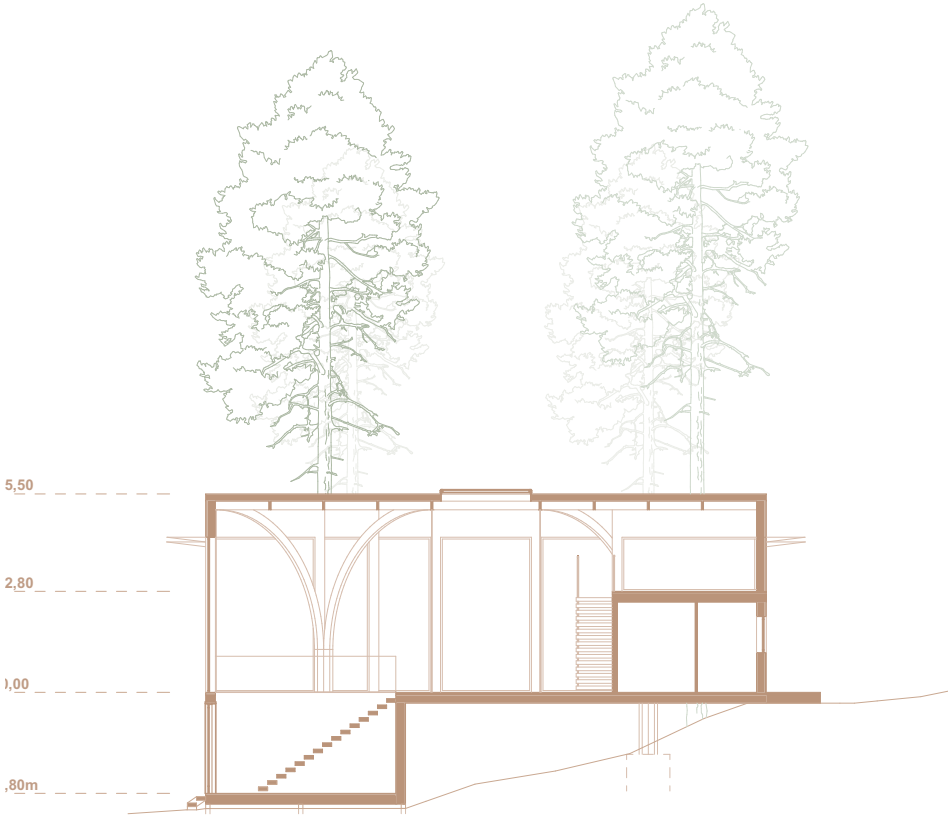


fig.59- restaurant section a-a

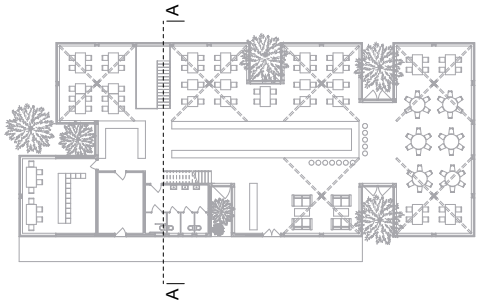


fig.60- section line a-a

0 5 10

5.3 restaurant sections | section b-b |1:200

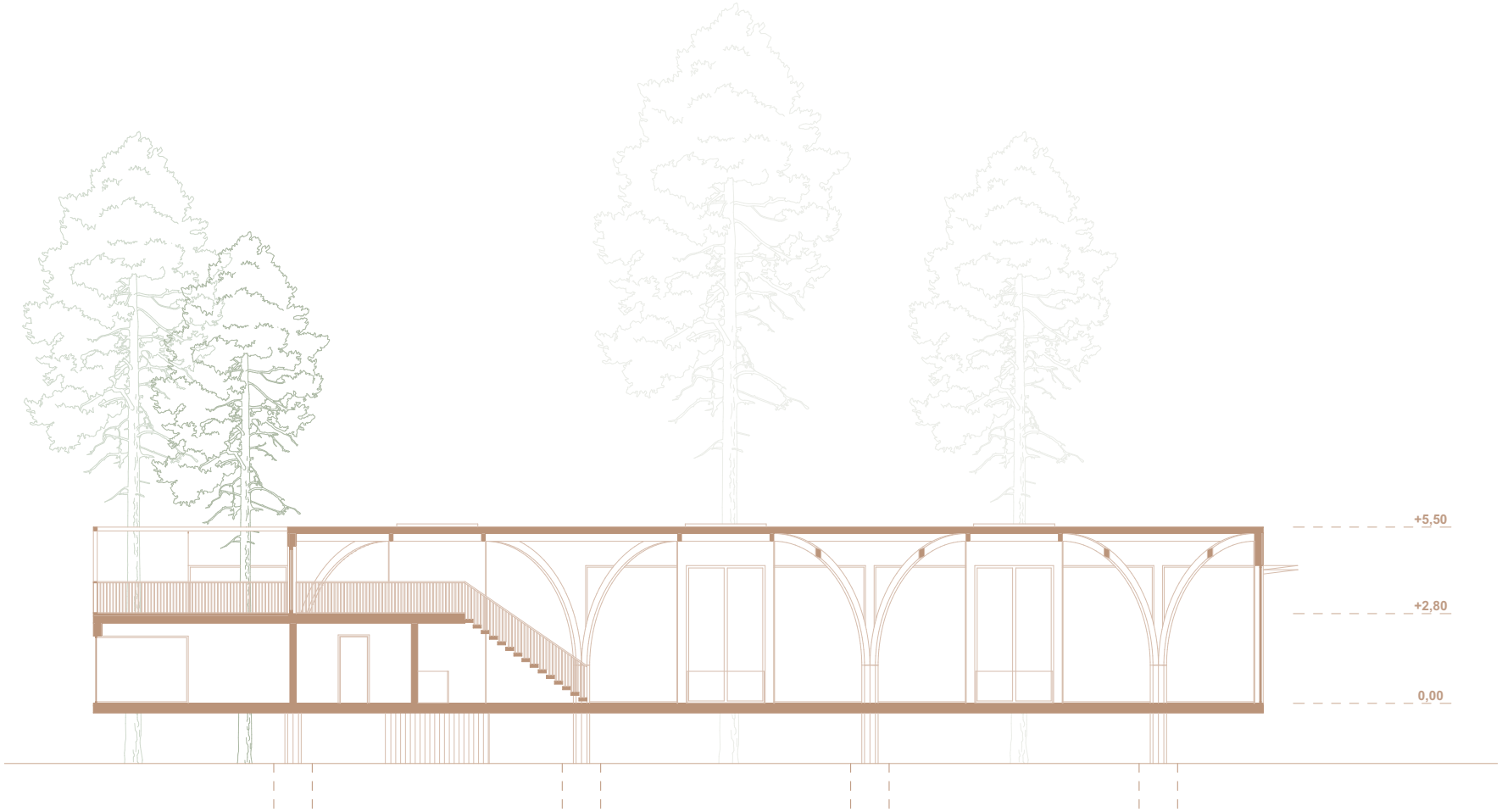


fig.61- restaurant section b-b

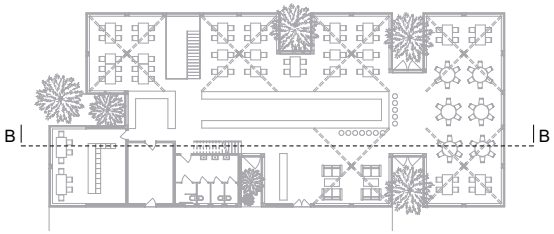


fig.62- section line b-b

0 5 10

fig.63- restaurant elevation east

5.4 restaurant elevations | facade south |1:200

fig.64- restaurant elevation south

0 5 10

fig.65- restaurant elevation west

0 5 10

5.4 restaurant elevations | facade north |1:200

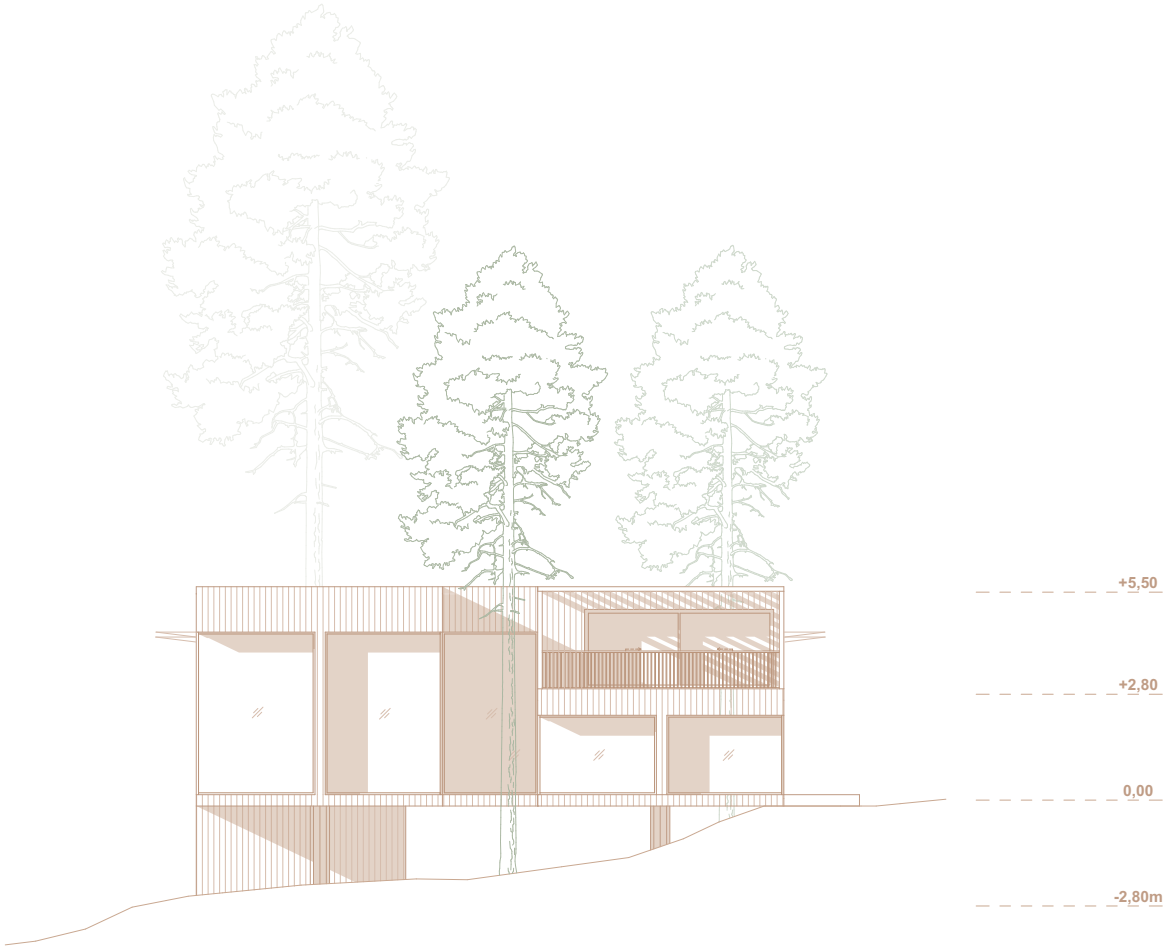


fig.66- restaurant elevation north

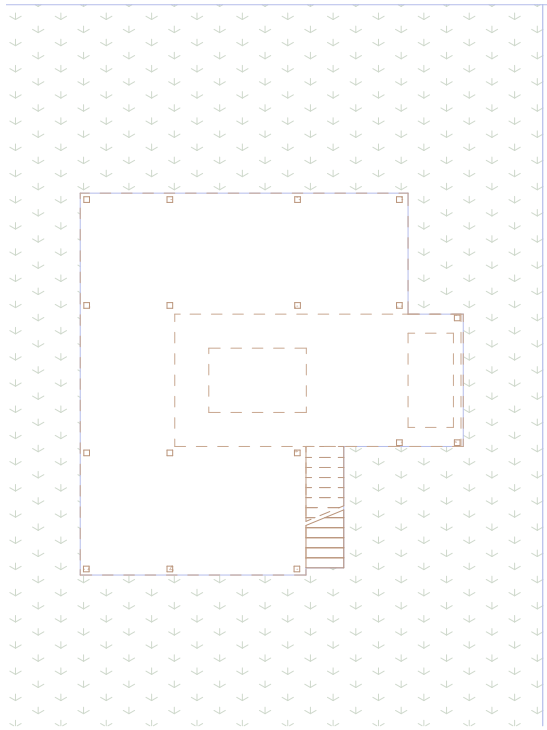


fig.67- floor plan -1

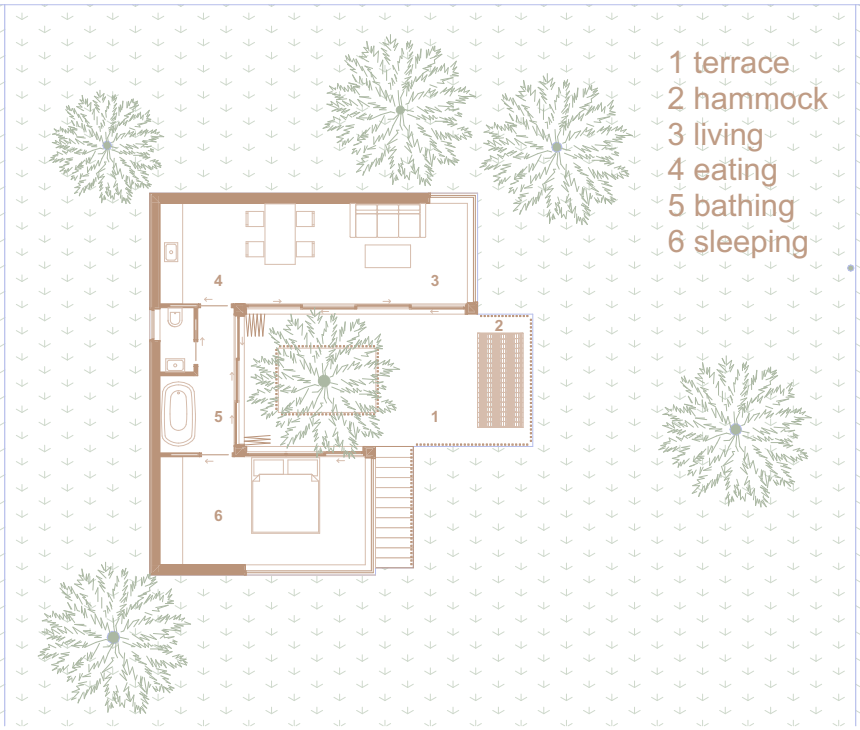


fig.68- ground floor

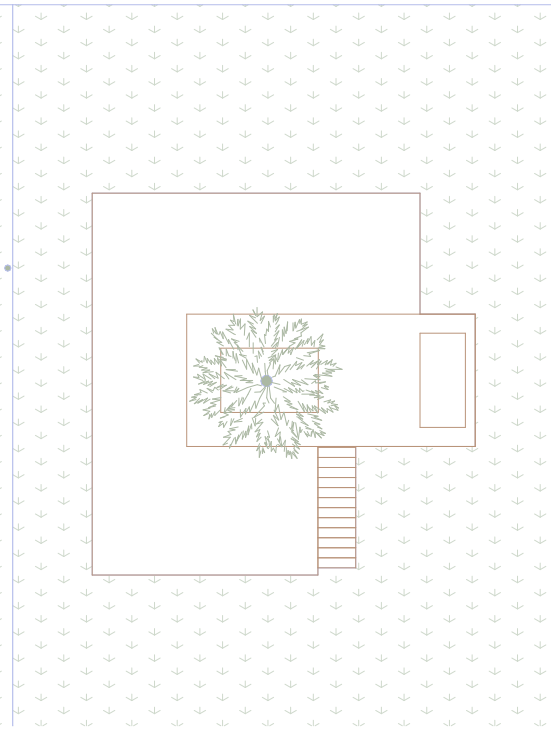
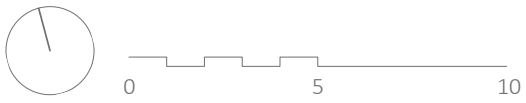


fig.69- top view



5.6 glamping sections | 1:200

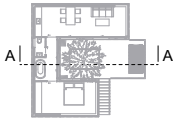


fig.70- section line a-a

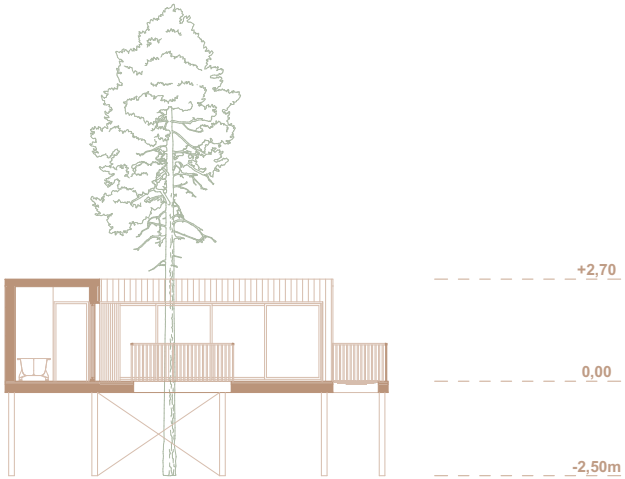


fig.71- section a-a

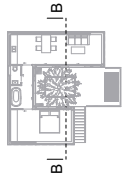


fig.72- section line b-b

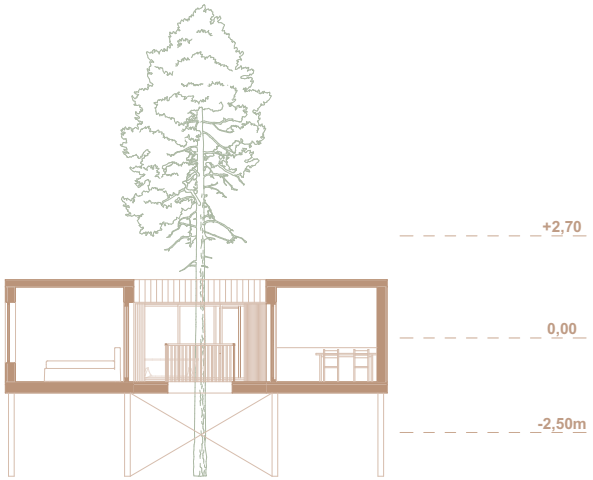


fig.73- section b-b

5.7 glamping elevations | 1:200

fig.74- facade east

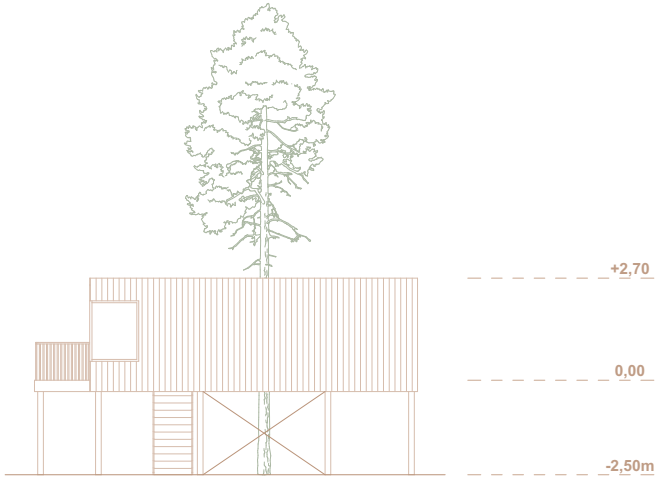


fig.76- facade north

fig.75- facade south

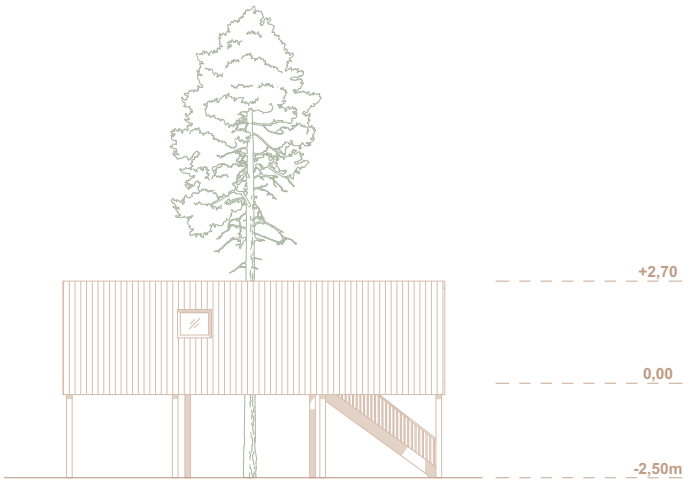


fig.77- facade west

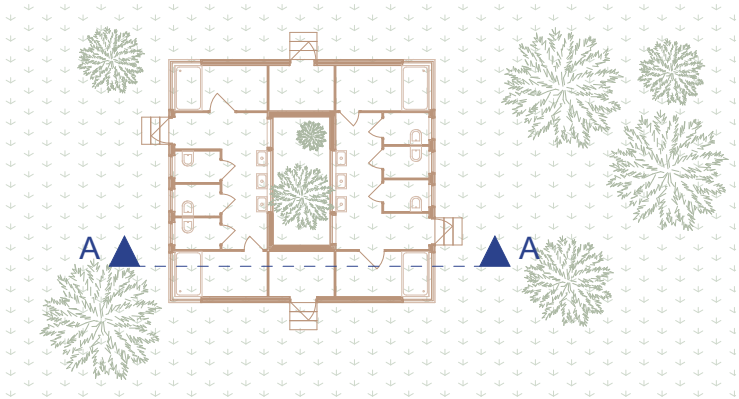
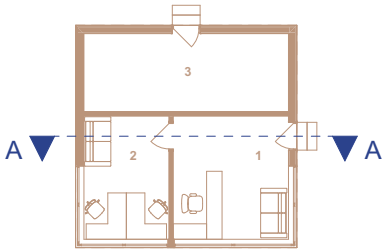


fig.78- shower house floor plan



1 reception
2 office
3 storage

fig.79- reception floor plan

fig.80- shower house section a-a

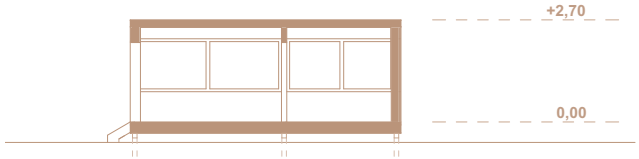


fig.81- reception sectiom a-a

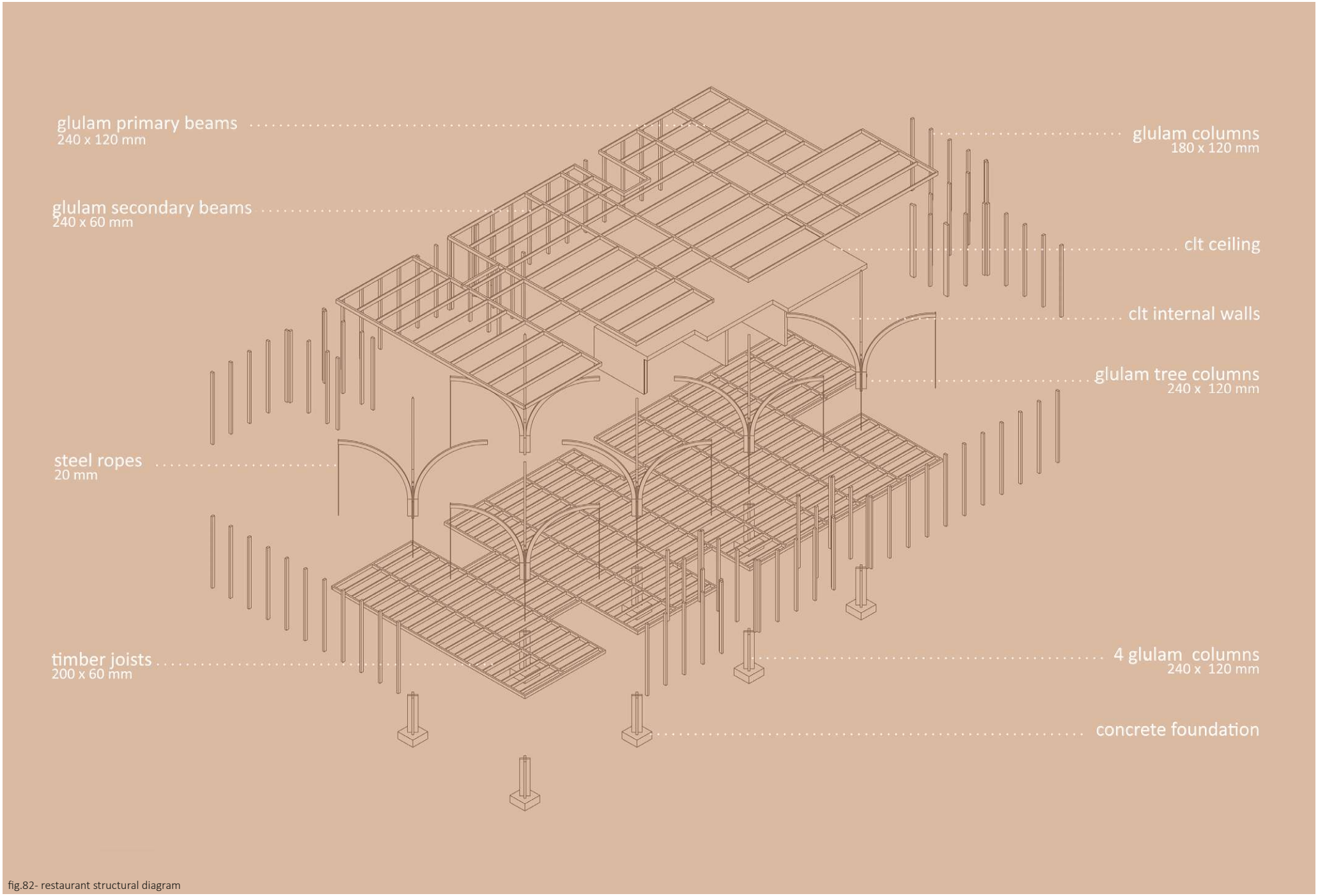


fig.82- restaurant structural diagram

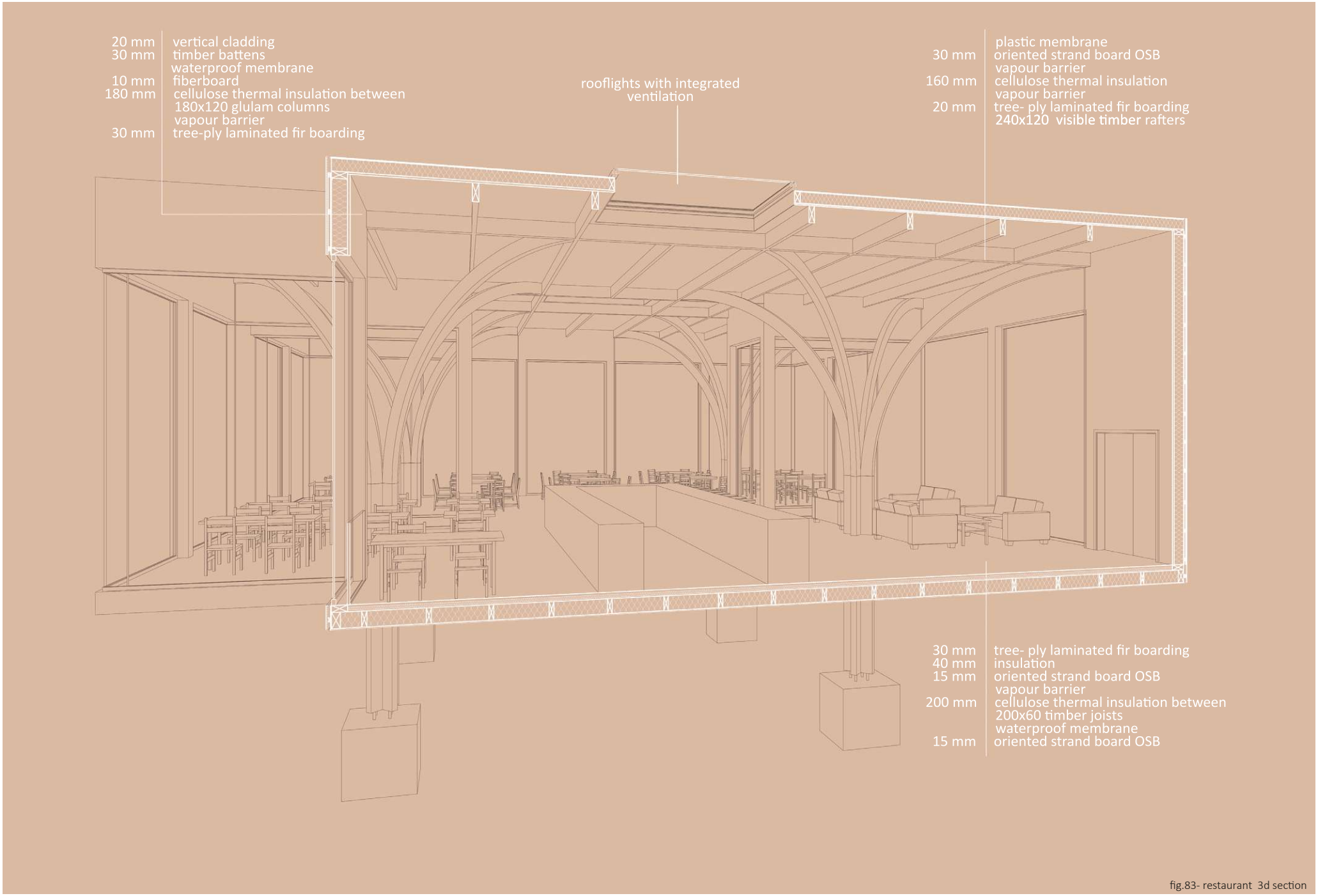


fig.83- restaurant 3d section

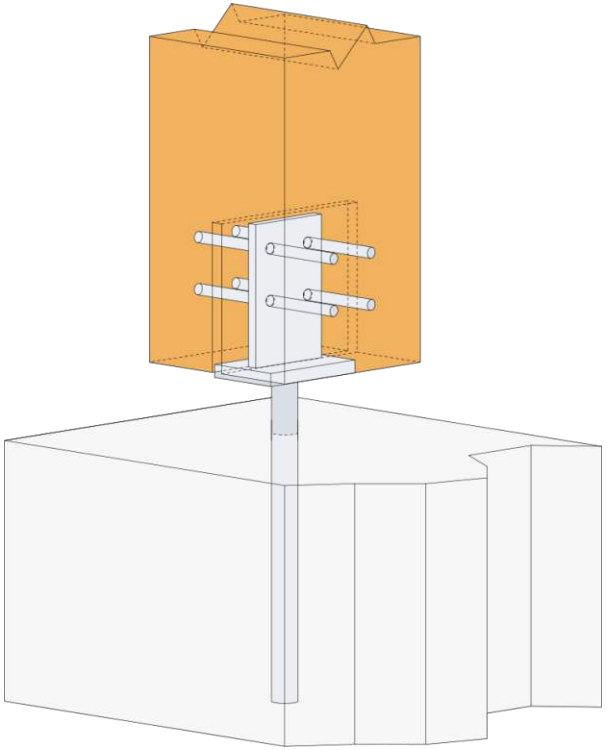


fig.84- timber- concrete steel connector scheme

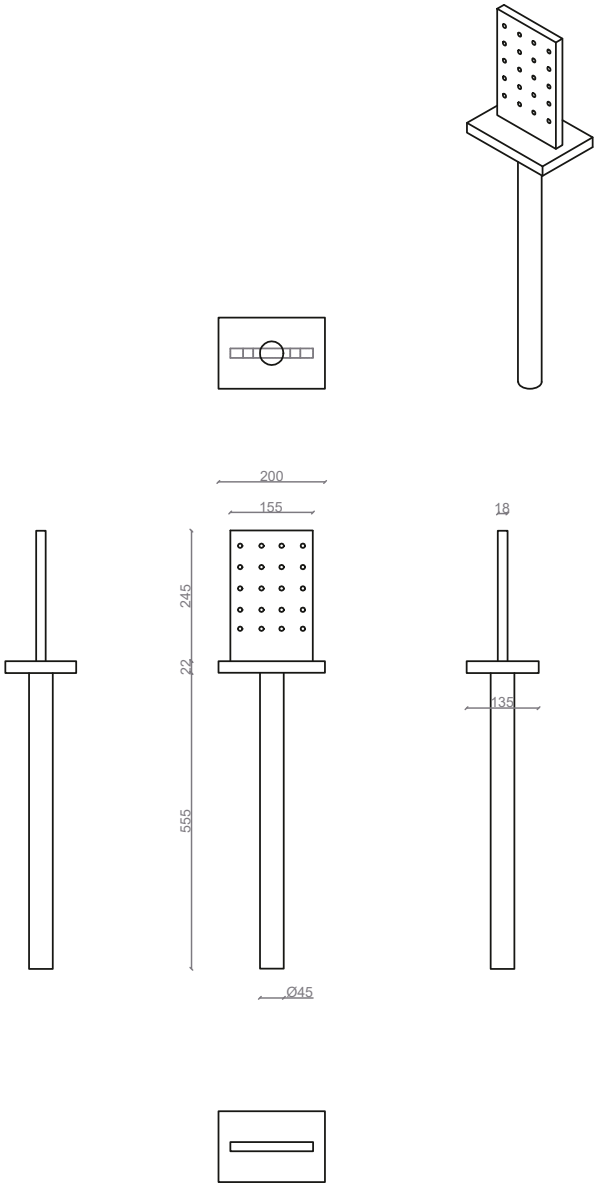


fig.85- timber- concrete steel connector plans

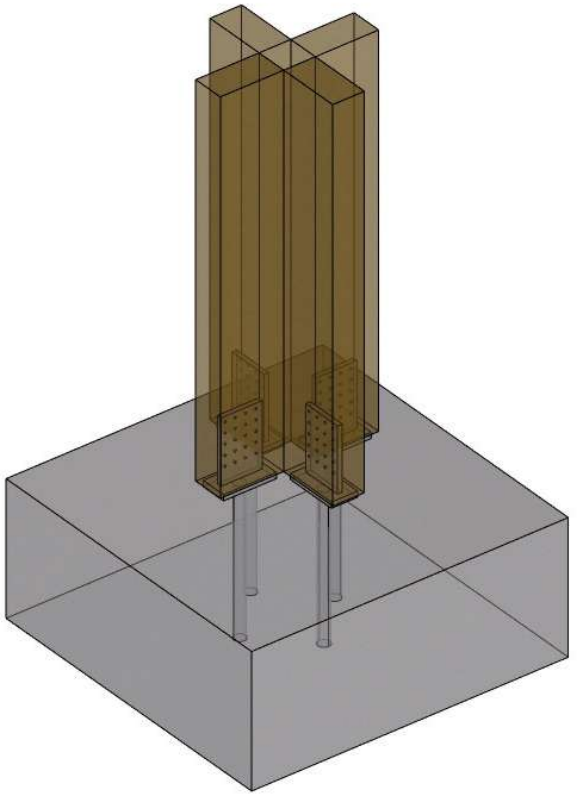


fig.86- timber- concrete steel connector 3D detail

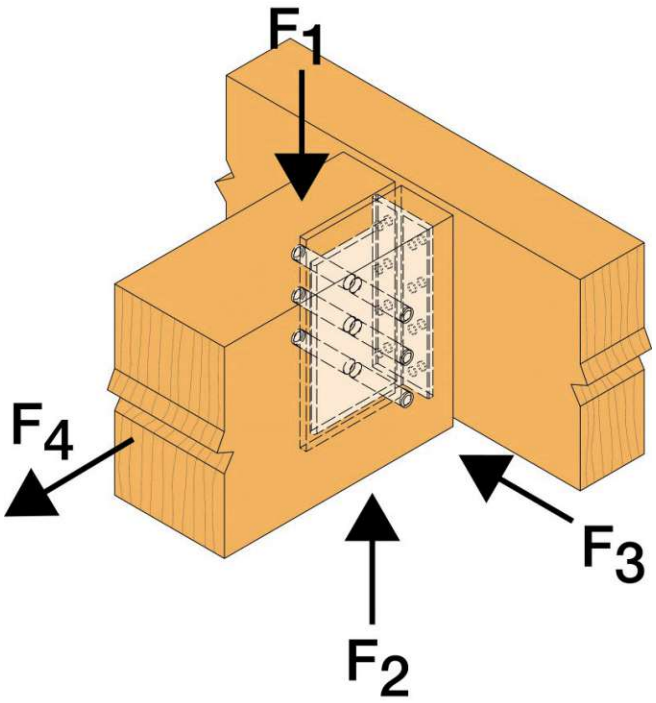


fig.87- beam-beam steel connector scheme

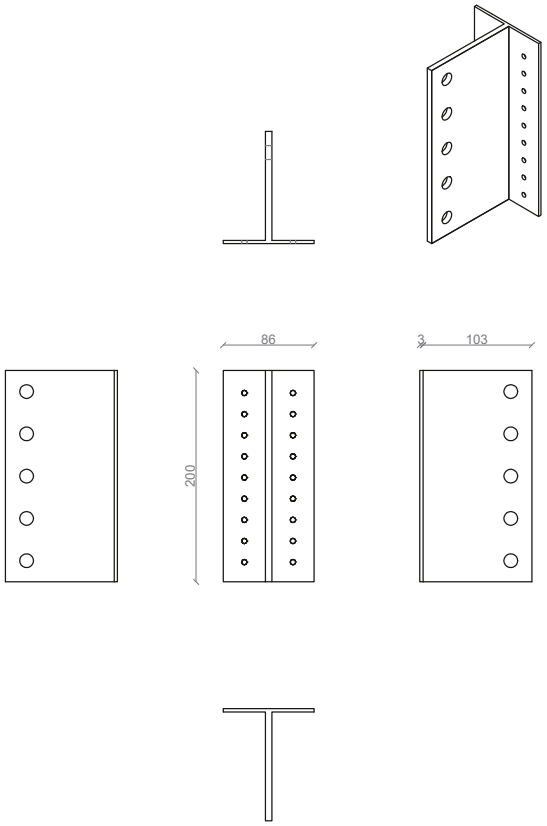


fig.88- beam-beam steel connector plans

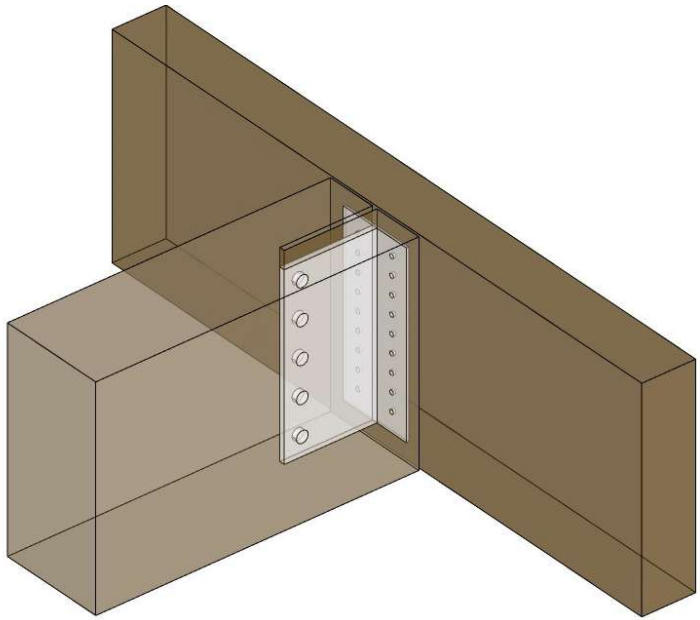


fig.89- beam-beam steel connector 3D detail

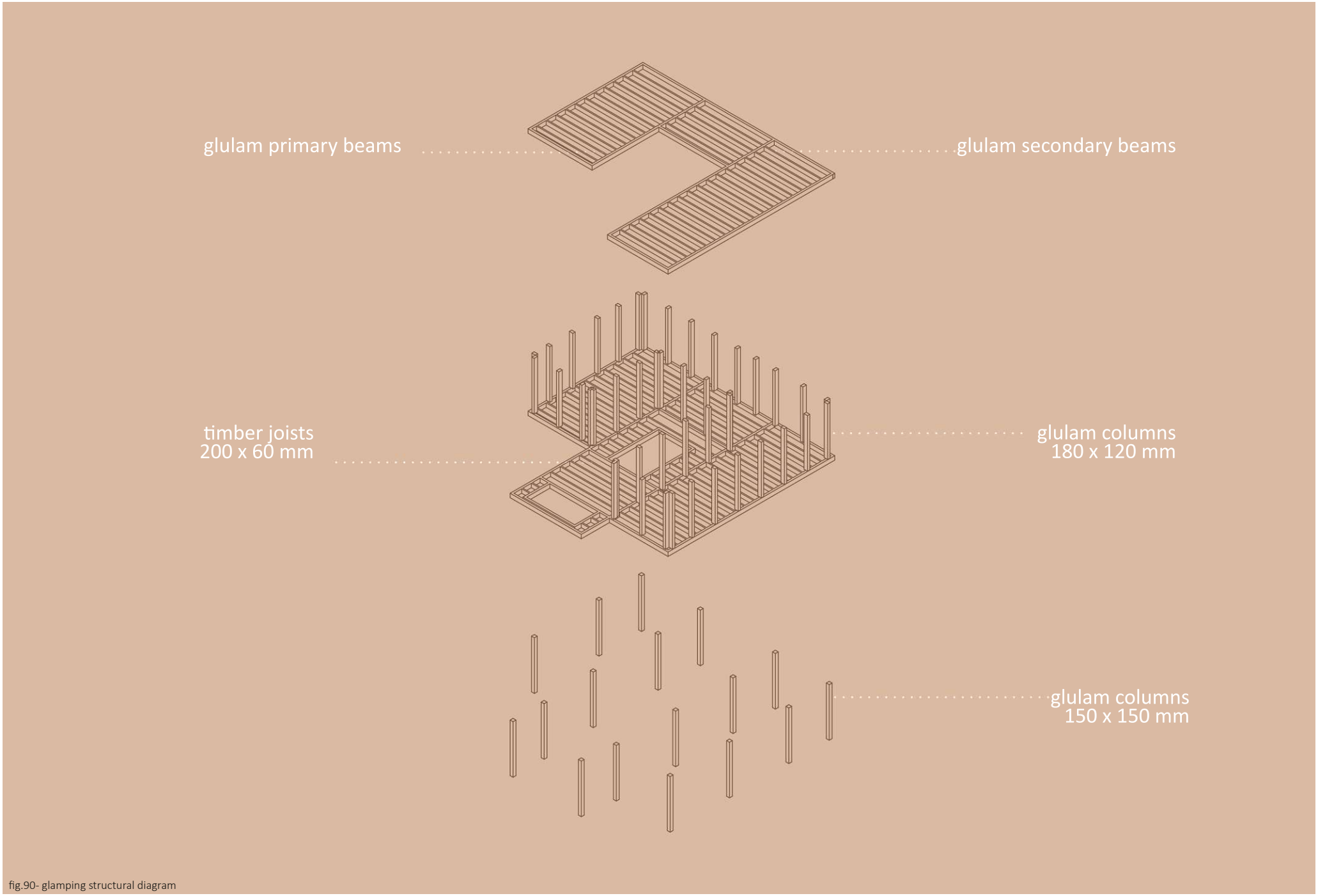


fig.90- glamping structural diagram

fig.91- exterior visualisation restaurant

fig.92- exterior visualisation restaurant

fig.93- exterior visualisation restaurant without sunshade

fig.94- exterior visualisation restaurant with sunshade

fig.95- interior visualisation restaurant without sunshade

fig.96- interior isualisation restaurant with sunshade

fig.97- interior visualisation restaurant

fig.98- night visualisation restaurant

fig.99- exteriror visualisation glamping

fig.100- exterior visualisation glamping

fig.101- interior visualisation glamping

fig.102- interior visualisation glamping

fig.103- animation snapshots

5.11 animation snapshots

fig.104- animation snapshots

fig.105- animation snapshots

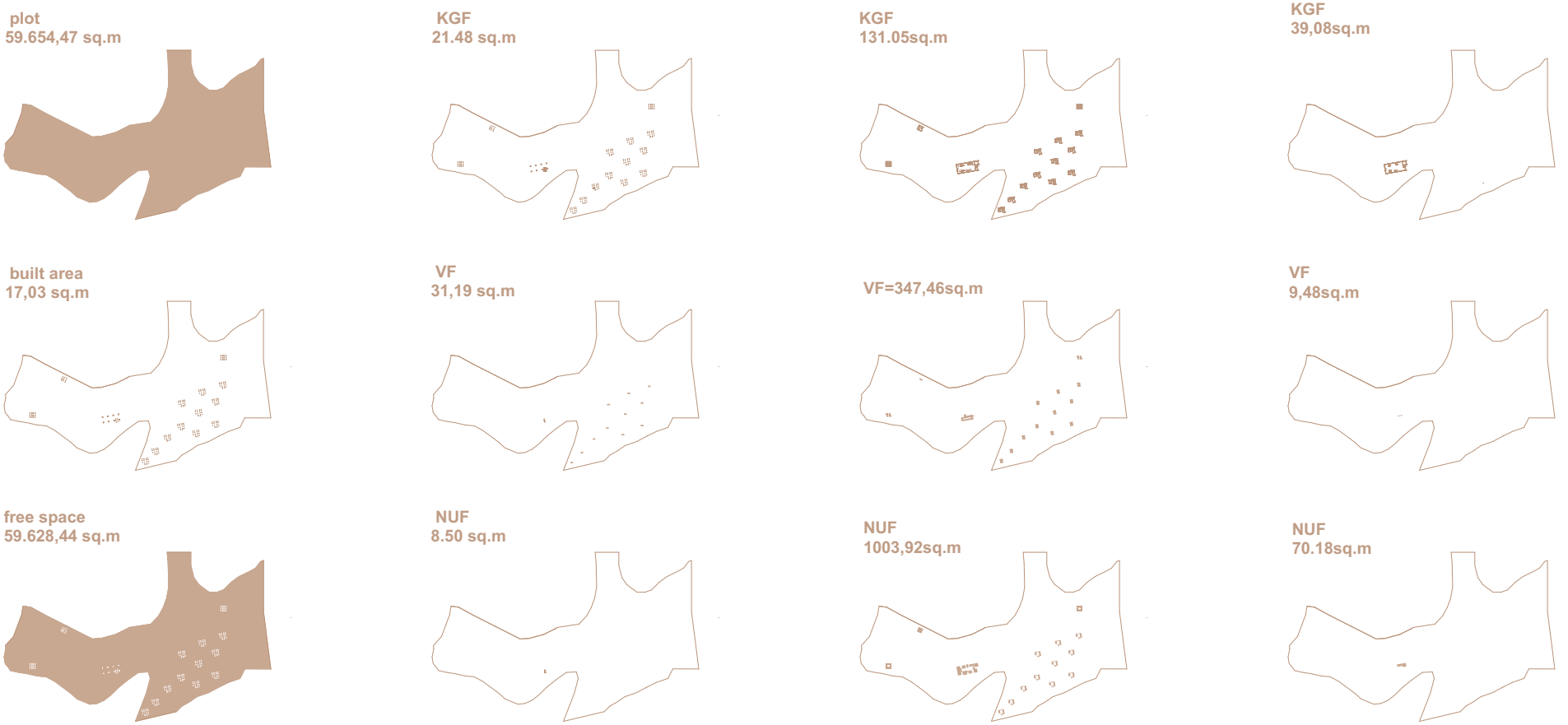


fig.106- area calculation

conclusion

Ecospace is a place to appreciate nature, to unplug and escape from modern society without giving up the conveniences that many of us have grown accustomed to, while yet having the opportunity to sleep among the treetops in the center of the forest and get closer to nature.

The campground will cater to the demands of the environmentally conscious, socially responsible, and thoughtful traveler. Its mission is to serve as a center for environmental projects, training, and demonstrations of sustainable tourism and development techniques.

ABOUT ME

name	Dea Garboutcheva
nationality	Bulgarian
date of birth	21/march/1994
current location	Plovdiv, Bulgaria

CONTACT ME

email	dea.garbucheva.bg@gmail.com
phone	+359893963330

EDUCATION

Tachnical University of Vienna
2018-2021 Master degree in Architecture
2013-2017 Bachelor degree in Architecture
Vienna, Austria

English Language School 'Plovdiv'
2008-2013 Secondary Education
Plovdiv, Bulgaria

'Dusho Hadzhidekov' School
2001-2008 Primary Education
Plovdiv, Bulgaria

INTER SHIP

Bureau of Architecture 'ATEX' Ltd.
Göbl Arhitektur
Forma Studio
Gasteh

LANGUAGES

Bulgarian	C2
English	C1
German	C1

PROFICIENCY

AutoCAD
ArchiCAD
Rhinoceros
Adobe Photoshop
Abobe InDesign
Adobe Illustrator
Revit
Sketchup
3ds Max
V-ray
Microsoft Office

HOBBIES

Camping
Skiing
Hiking
Reading
Travelling
Photography
Drawing
Exploring

bibliograpgy

Camping and Open-Air Tourism: An Opportunity for Sustainable Tourism in Coastal Areas- Marilena Lucivero, 2012

Caampground Industry Analysis COVID-19 Update-Final Lora Uhlman/Tamara Delaplane,2020

Trends in camping and outdoor hospitality—An international review- Marion Joppe, Ed Brooker, 2013

Timber Construction- Details, Products, Case Studies- Detail Praxis, 2004

Tree-inspired dendriforms and fractal-like branching structures in architecture: A brief historical overview- Iasef Md Riann, Mario Sassone, 2014

Sherpa Magazin- 2020

websites

https://www.wwf.mg/en/?332050/Plans-to-open-up-Pirin-World-Heritage-site-for-construction-are-illegal-Court-rules

https://www.bbc.co.uk/bitesize/guides/zpfd4qt/revision/1

https://abbeymuseum.com.au/a-very-brief-history-of-camping/

https://www.lightspeedhq.com.au/blog/restaurant-floor-plan/

https://www.lightspeedhq.com.au/blog/commercial-kitchen-layout-and-design/

https://environmentjournal.online/articles/can-adventure-travel-ever-be-sustainable/

https://en.wikipedia.org/wiki/Composting_toilet

http://www.shopisthica.com/dry-compost-toilet-creates-the-source-of-human-compost-homestead-survival/

https://www.greenmatters.com/p/how-do-composting-toilets-work

https://www.energysage.com/energy-storage/storage-101/how-do-batteries-work/

https://www.insulation-info.co.uk/eco-friendly-insulation

https://www.rikysongsu.com/blog/2017/4/26/stuttgart-airport

http://web.archive.org/web/20210815093023/https://www.unwto.org/tourism-and-covid-19-unprecedented-economic-impacts

https://ec.europa.eu/eurostat/web/products-eurostat-news/product/-/asset_publisher/VWJkHuaYvLIN/content/id/12622854/pop_up

https://papapump.com/off-grid/#

https://www.livinginashoebox.com/guests-sleep-under-an-observation-turret-in-this-small-new-zealand-cabin/

https://www.unwto.org/tourism-and-covid-19-unprecedented-economic-impact

https://en.wikipedia.org/wiki/Golyam_Beglik

list of figures

fig.22- solar energy- https://balukenergy.in/

fig.23- hydroelectricity- https://technologystudent.com/energy1/hydr1.htm

fig.24- solar water heater- https://www.hot-water-heaters-reviews.com/active-solar-heating.html

fig.25 composting toilet diagram- https://www.waternsw.com.au/water-quality/catchment/living/wastewater/systems/composting-toilets

fig.26- an example of composting toilet- https://theownerbuildernetwork.co/house-hunting/tiny-homes/diy-house-on-wheels/

fig.27- topographic map- Dea Garboutcheva | AutoCAD | Photoshop

fig.28- roads & water map- Dea Garboutcheva | AutoCAD | Photoshop

fig.29- sun path diagram 1. May- http://andrewmarsh.com/apps/releases/sunpath2d.html

fig.30- sun path diagram 30. September- http://andrewmarsh.com/apps/releases/sunpath2d.html

fig.31- average temperatures and precipitation- https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/yazovir-golyam-beglik_bulgaria_726034

fig.32- cloudy, sunny and precipitation days- https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/yazovir-golyam-beglik_bulgaria_726034

fig.33- concept diagram restaurant- Dea Garboutcheva | Sketchup | Illustrator | Photoshop

fig.34- concept diagram glamping- Dea Garboutcheva | Sketchup | Illustrator | Photoshop

fig.35- visitors- https://www.flaticon.com/search?word=people&type=icon | Dea Garboutcheva

fig.36- restaurant kitchen workflow- https://www.lightspeedhq.com.au/blog/commercial-kitchen-layout-and-design/ | Dea Garboutcheva | Photoshop

fig.37- assembly line layout- https://www.lightspeedhq.com.au/blog/commercial-kitchen-layout-and-design/ | Dea Garboutcheva | Photoshop

fig.38- island layout- https://www.lightspeedhq.com.au/blog/commercial-kitchen-layout-and-design/ | Dea Garboutcheva | Photoshop

fig.39- zone-style layout- https://www.lightspeedhq.com.au/blog/commercial-kitchen-layout-and-design/ | Dea Garboutcheva | Photoshop

fig.40- galley layout- https://www.lightspeedhq.com.au/blog/commercial-kitchen-layout-and-design/ | Dea Garboutcheva | Photoshop

fig.41- functional diagram kitchen- Dea Garboutcheva | ArchiCAD | Rhino | Photoshop

fig.42- life cycle of glulam products- https://www2.unbc.ca/engineering/wood-innovation-and-design-centre

fig.43- production of glulam beams- https://glulambeams.co.uk/about-glulam/what-is-glulam/

fig.44- cellulose insulation- https://www.toute-la-franchise.com/vie-de-la-franchise-A27942-franchises-isolation.html

fig.45- folding shutters- https://rabel.com.cy/media/products/rabel-14000/Rabel_14000.pdf

fig.46- cladding- https://lightfieldstudios.net/275025052/stock-photo-wood-texture-background.html

fig.47- axo restaurant- Dea Garboutcheva | Rhino

fig.48- supporting tree-like columns- https://www.archdaily.com/901885/sanctuaires-de-lourdes-inca-architectes

fig.49- branches of tree-like columns- https://www.archdaily.com/901885/sanctuaires-de-lourdes-inca-architectes

fig.50- forest trees- https://freeartbackgrounds.com/?1176,forest-trees-background

fig. 51 house on stilts- https://www.archdaily.com/924306/media-perra-house-santos-bolivar/5acbadd5f197ccbe8a00007f-media-perra-house-santos-bolivar-photo

fig.52- timber cladding- https://fi.pinterest.com/pin/326722147972297110/

fig.53- vertically folding sunshading system- https://www.archdaily.com/catalog/us/products/26915/facade-vertical-folding-shading-system-rabel-14200-rabel-aluminium-systems

fig.54- site plan- Dea Garboutcheva | AutoCAD | Photoshop

fig.55- restaurant floor plan -1- Dea Garboutcheva | ArchiCAD

fig.56- restaurant gound floor plan- Dea Garboutcheva | ArchiCAD

fig.57- restaurant floor plan +1- Dea Garboutcheva | ArchiCAD

fig.58- restaurant top view- Dea Garboutcheva | ArchiCAD

fig.59- restaurant section a-a- Dea Garboutcheva | ArchiCAD

fig.60- section line a-a- Dea Garboutcheva | ArchiCAD

fig.61- restaurant section b-b- Dea Garboutcheva | ArchiCAD

fig.62- section line b-b- Dea Garboutcheva | ArchiCAD

fig.63- restaurant elevation east- Dea Garboutcheva | ArchiCAD

fig.64- restaurant elevation south- Dea Garboutcheva | ArchiCAD

fig.65- restaurant elevation west- Dea Garboutcheva | ArchiCAD

fig.66- restaurant elevation north- Dea Garboutcheva | ArchiCAD

fig.67- floor plan -1- Dea Garboutcheva | ArchiCAD

fig.68- ground floor- Dea Garboutcheva | ArchiCAD

fig.69- top view- Dea Garboutcheva | ArchiCAD

fig.70- section line a-a- Dea Garboutcheva | ArchiCAD

fig.71- section a-a- Dea Garboutcheva | ArchiCAD

fig.72- section line b-b- Dea Garboutcheva | ArchiCAD

fig.73- section b-b- Dea Garboutcheva | ArchiCAD