MotionLab01

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ARCHIP

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This project is located on Letna plain where the remains of the communist statue reside. The site will include the park area up to the main road where the Sparta stadium and Sparta tram stops are located. The project will be to revitalize the area for all seasons with a facility located centrally to encourage more use of the park year-round.

The goal of the project is to blend the two main cultures that are on site, what I call “urban” and “leisure.” The facility will be near the art installation of the metronome but will not interfere while allowing access to the site's original title of Belveder or scenic view. This will be done by keeping the number of floors for the building low while setting the facility back to lessen its impact on the city skyline from the perspective of the pedestrian. The site had a bomb shelter created and will also utilize this space to bring a new life to an abandoned area

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Project name: Architectural Design 6 – Sharing: AKA - Dragonfly

Location: Letna Park, Praha, Czech Republic – Old Stalin statue site

Type of building: Multifunctional sports and leisure complex

Site: GPS: 50.09815610, 14.41741170

Southern border: Nabrezi Edvarda Benese street (tram stop Cechuv Most)
Northern border: Milady Horakove street (tram stop Sparta and Sparta Stadium)
Western border: Badeniho street (tram stop Hradcanska ul. Badeniho)
Eastern border: The land before the Ministry of Interior building and Gymnazium Nad Stolou

| | | |
|---|---|---|
| Developed | | 0.3 km² |
| Built-up volume | | 200,000 m³ |
| Parking | 15,900 m² | Already Existing |
| Green Areas | | 0.3 km² |


Map of Prague

Letna Site



Highlight of Concept area


Historical map of Prague with the word belvedere - meaning scenic or beautiful view

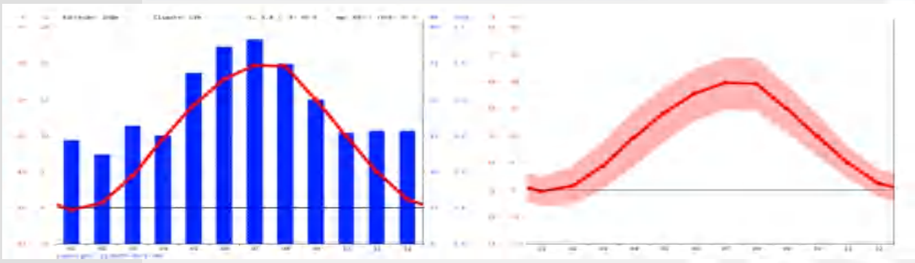
monument of Stalin that measured 15.5 meters high and 22 meters long with a bomb shelter created below it. It took 3 attempts to demolish it to the remnants of what it is today

The Velvet Revolution had a gathering of 750,000 people that happened on the site, this was a non-violent transition of power in 1989 ending more than 40 years of communist rule.

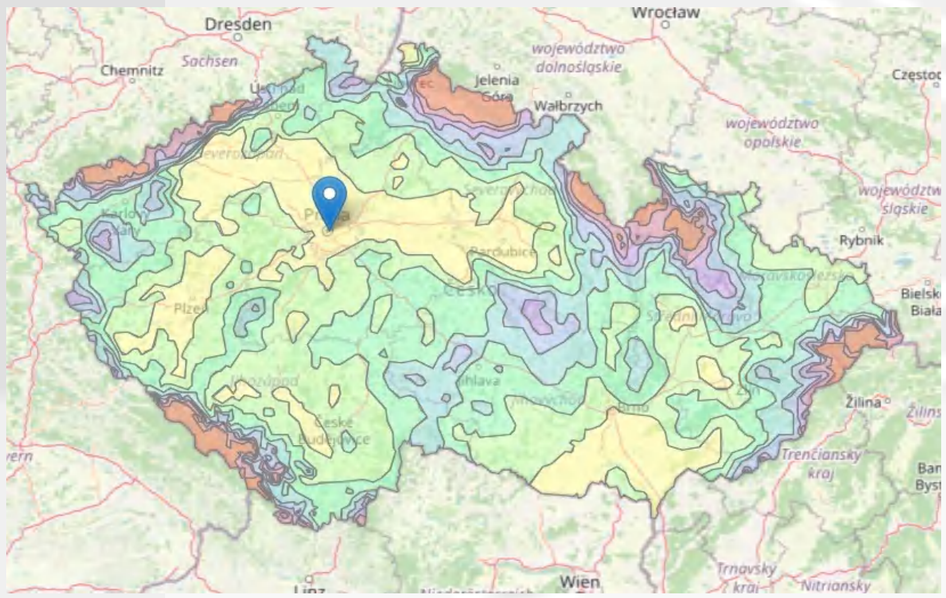
A demonstration that was the largest protest in the Czech Republic since the fall of communism was the Je to na Nas! (It is up to us!) demonstration and was held on Letna Plain and had 250,000 people in attendance demanding the resignation of the Czech prime minister Andrej Babiš and his justice secretary Marie Benešová. The site has also held several large concerts.

## Rain

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Avg. Temperature °C (°F) | -0.3 °C (31.5) | 0.7 °C (33.2) | 4.4 °C (39.9) | 9.6 °C (49.3) | 14.2 °C (57.6) | 17.8 °C (64.1) | 19.8 °C (67.6) | 19.6 °C (67.3) | 15 °C (59) | 9.9 °C (49.9) | 5 °C (41) | 1.2 °C (34.1) |
| Min. Temperature °C (°F) | -3 °C (26.5) | -2.7 °C (27.1) | 0.1 °C (32.2) | 4.2 °C (39.5) | 8.9 °C (48.1) | 12.7 °C (54.8) | 14.7 °C (58.5) | 14.6 °C (58.2) | 10.6 °C (51.1) | 6.3 °C (43.3) | 2.1 °C (35.8) | -1.3 °C (29.7) |
| Max. Temperature °C (°F) | 2.5 °C (36.4) | 4.3 °C (39.8) | 8.9 °C (48) | 14.6 °C (58.4) | 18.9 °C (66.1) | 22.3 °C (72.1) | 24.4 °C (75.9) | 24.4 °C (75.9) | 19.5 °C (67.2) | 13.9 °C (57.1) | 8 °C (46.4) | 3.8 °C (38.8) |
| Precipitation / Rainfall mm (in) | 43 (1.7) | 37 (1.5) | 49 (1.9) | 45 (1.8) | 71 (2.8) | 82 (3.2) | 85 (3.3) | 75 (3) | 60 (2.4) | 46 (1.8) | 47 (1.9) | 47 (1.9) |
| Humidity | 80% | 78% | 73% | 66% | 67% | 65% | 64% | 63% | 70% | 78% | 83% | 81% |
| Rainy days | 11 | 9 | 12 | 10 | 12 | 12 | 13 | 11 | 10 | 9 | 10 | 11 |



## Snow





**Sunrise**

**Sunset**

**Summer**

**Winter**

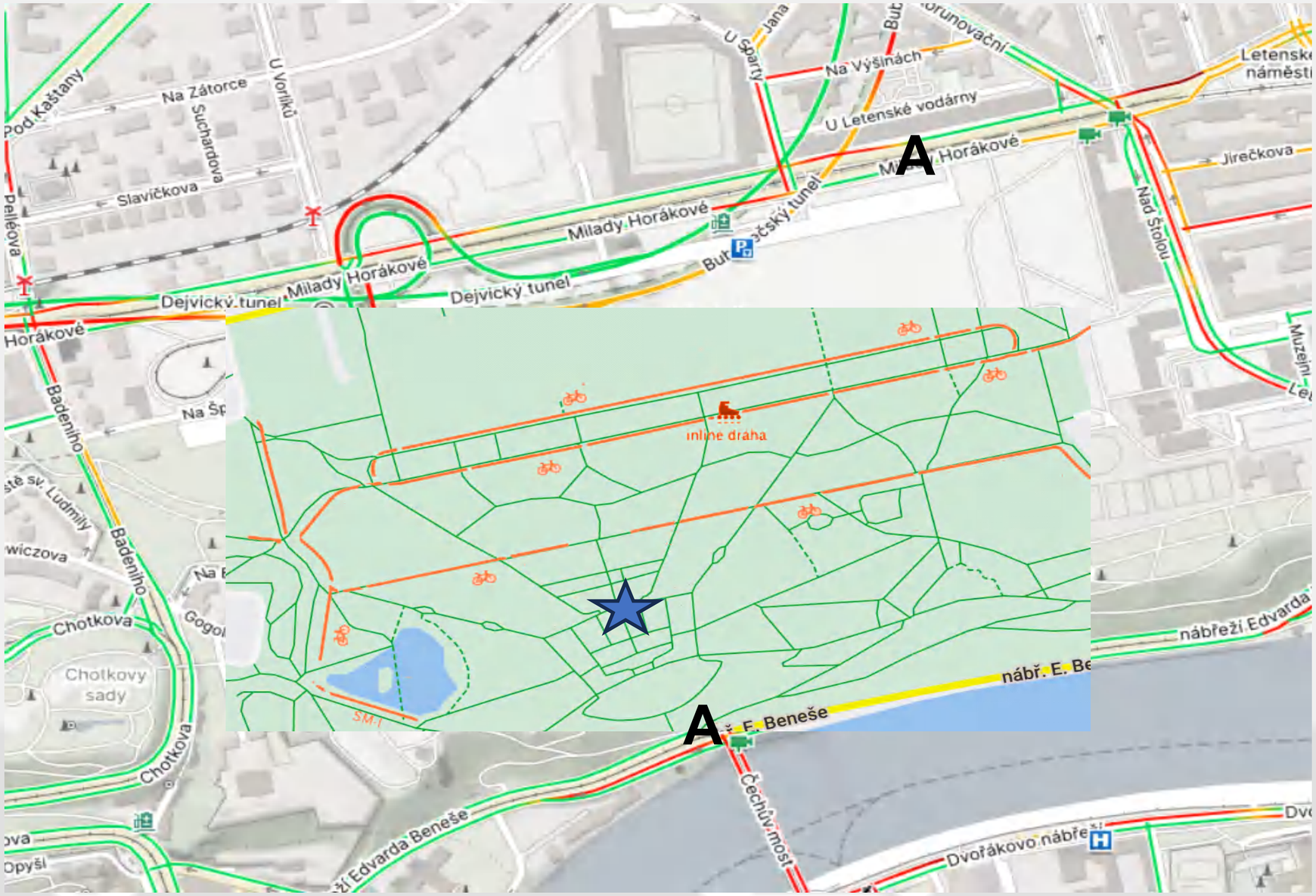
Transportation / Movement

Transit access surrounding site is good

No ease of access from south side

A = 9 mins
B = 14 mins

Star = Metronome



# Site Utilities

**Electricity**

**Water**

Gas

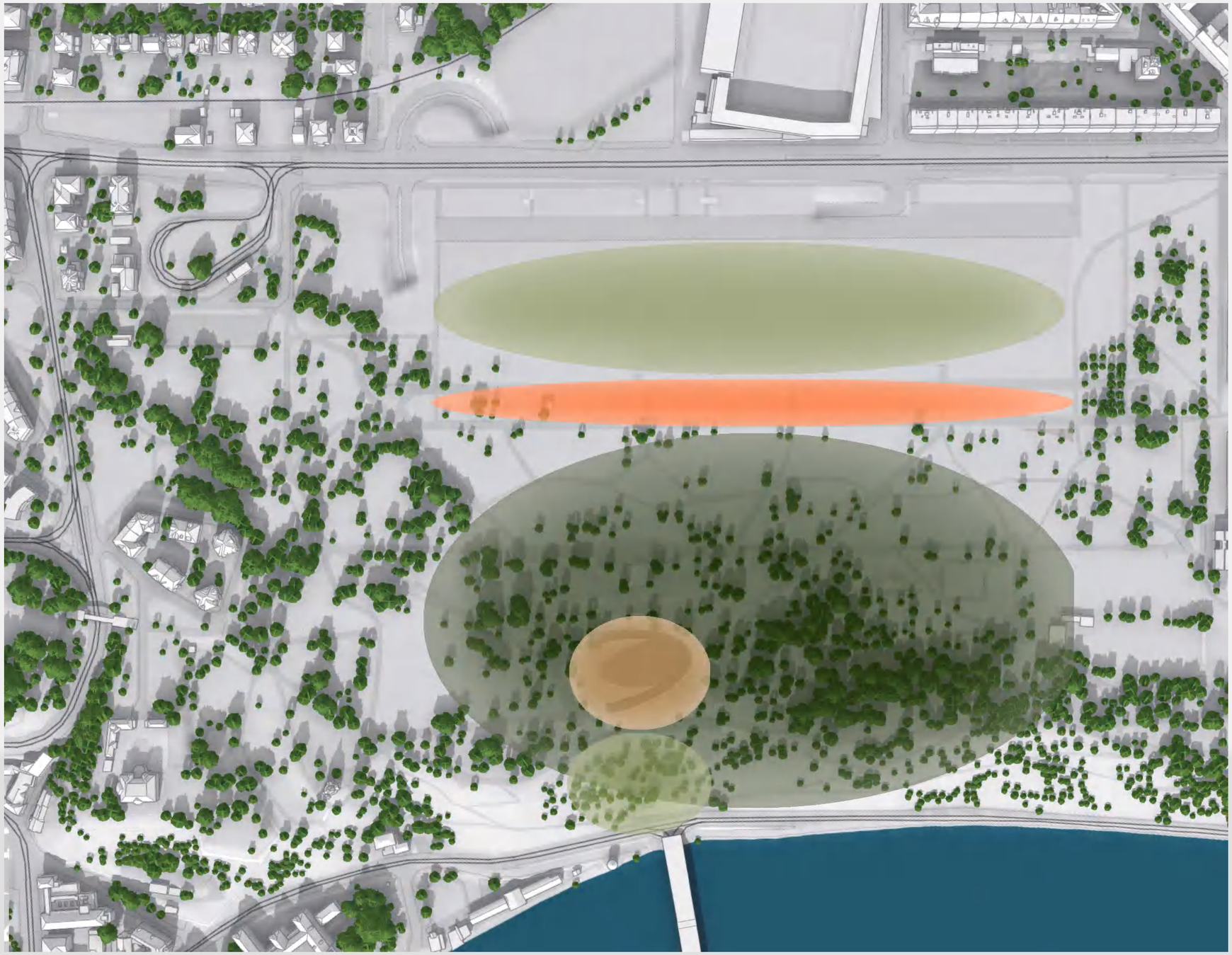
Sewage

# Concept

- Public
- Leisure
- Blend
- Building

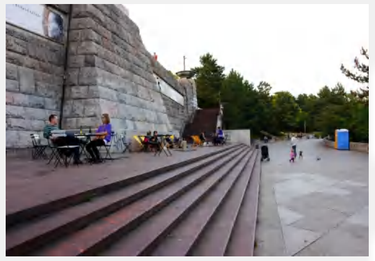
The site has a number of spaces that are utlized, however the concentration of activity happens on the statue remains near the metronome

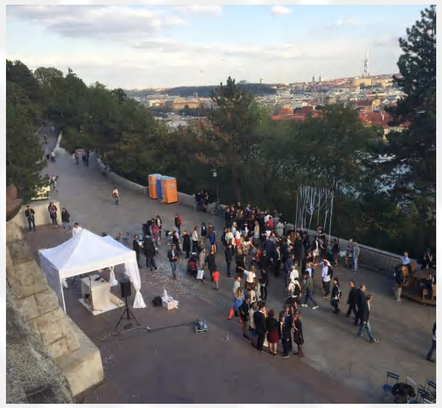
The idea would be to create a blending of these zones with the metronome area to remain as the central gathering area



The site is well used during the warmer months as however during the colder months, close to two-thirds of the year, the site is dead and empty.

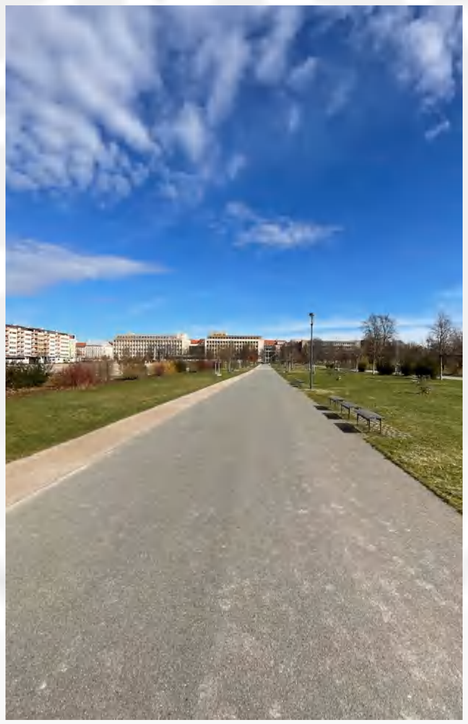
The concept is to keep as many of the activities on site year-round.









## Impressions

- Forgotten place and relatively empty
- Difficult climb of stairs or double the time to take steep path
- Great view all though very obstructed
- Could be beautiful in season but very empty and dead during winter
- Public areas are used by few locals and main area of use is near metronome

## Potentials

- Site has a lot of area that could be used for leisure activities
- Development of area for a sharing of locals and tourists/leisure
- Lessen the separation of the "cultures" similar to how the metronome area is but stretch it out to other parts of the park
- Redevelop so that the dirt area can be utilized as a square with multiple functions
- Multiyear gardens so that the area does not look so bare

Public Square

Garden/Park

Walking Bridge

Facility

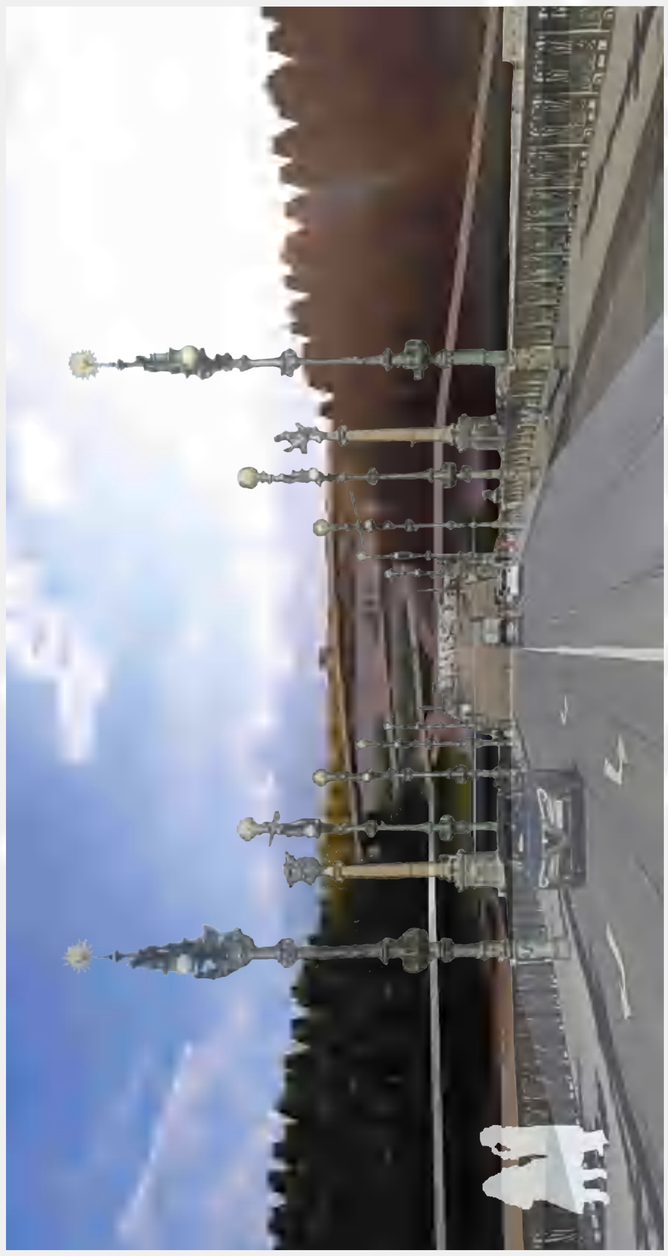
## The Site was divided into four sections

For each a concept was created that would allow a sharing of spaces for both urban and leisure groups

Concept - Bridge

For the hill area a walking bridge to the site from the tram station was thought of and the use of a spiral walkway theat carved into the hill allowed a lower profile. The facility was also set back on the site to not change the city skyline from the pedestrians point of view

# Concept - Bridge



## Concept - Bridge

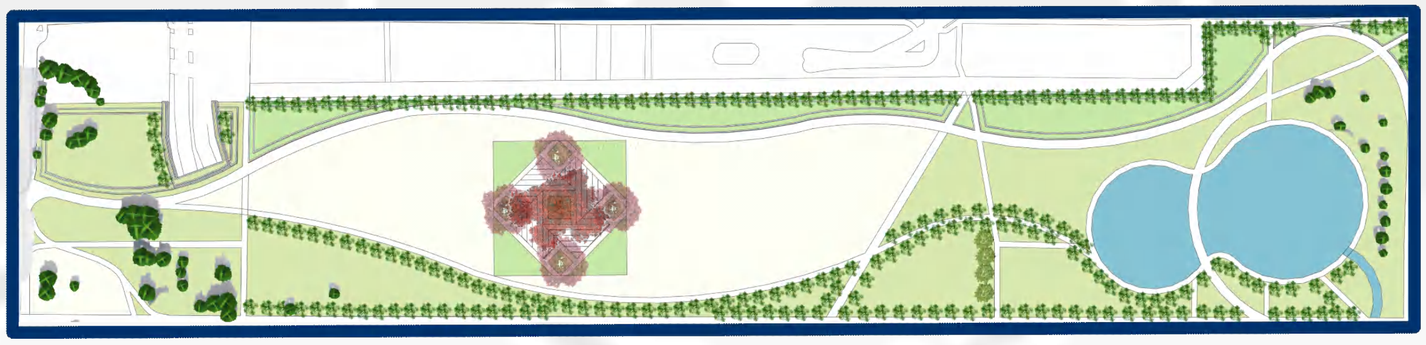
**The bridge would also have a hanging garden under the walking paths**



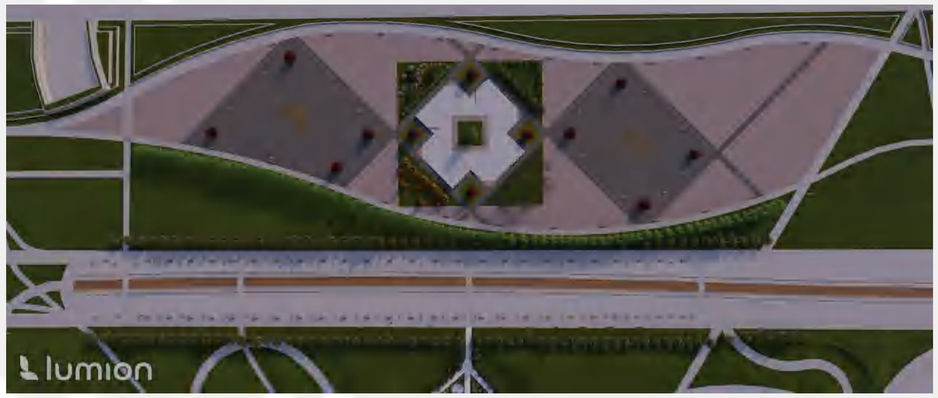

# Concept - Public Squre

**The Public square went through a number of changes. Due to the history of the area and proximity to residences a large square was thought appropriate.**

**The square would get a large seating areas as well as a pond that could be drained and frozen in the winter to ice-skate since a temporary structure is put up and taken down every season.**



# The final design of the site with all four seasons







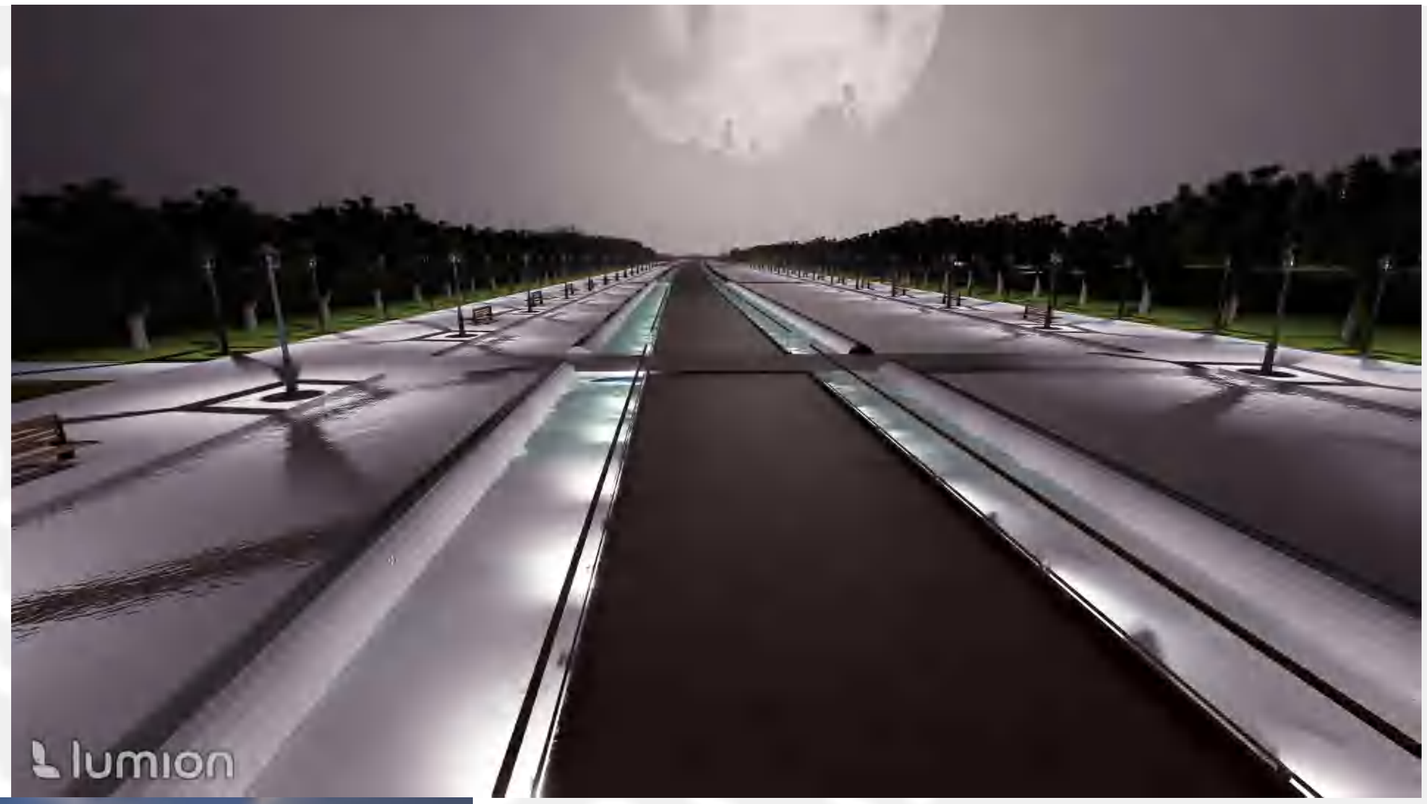
# Concept - Park

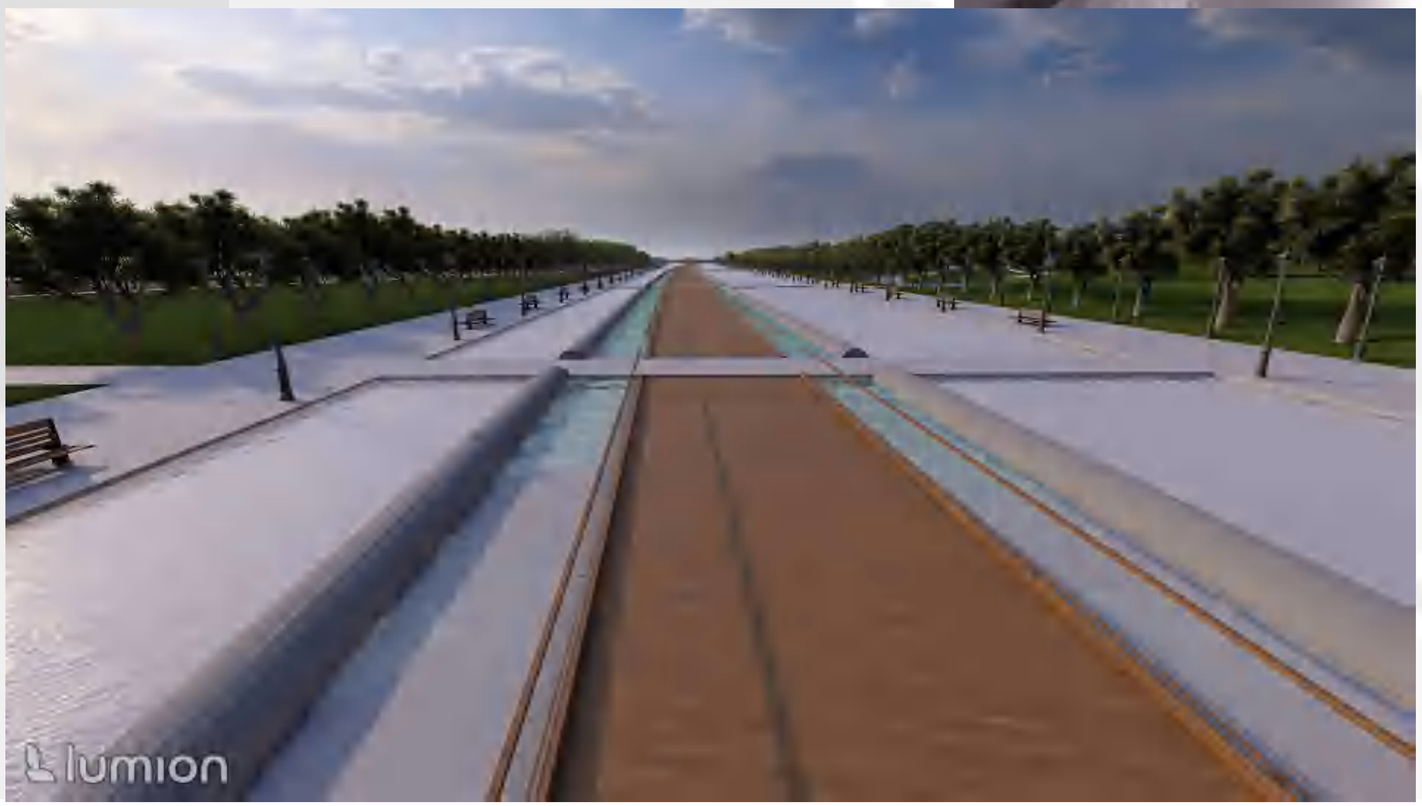
**The park area was always thought of as a nice place to be able to wander, so curving paths with alcoves were in mind.**

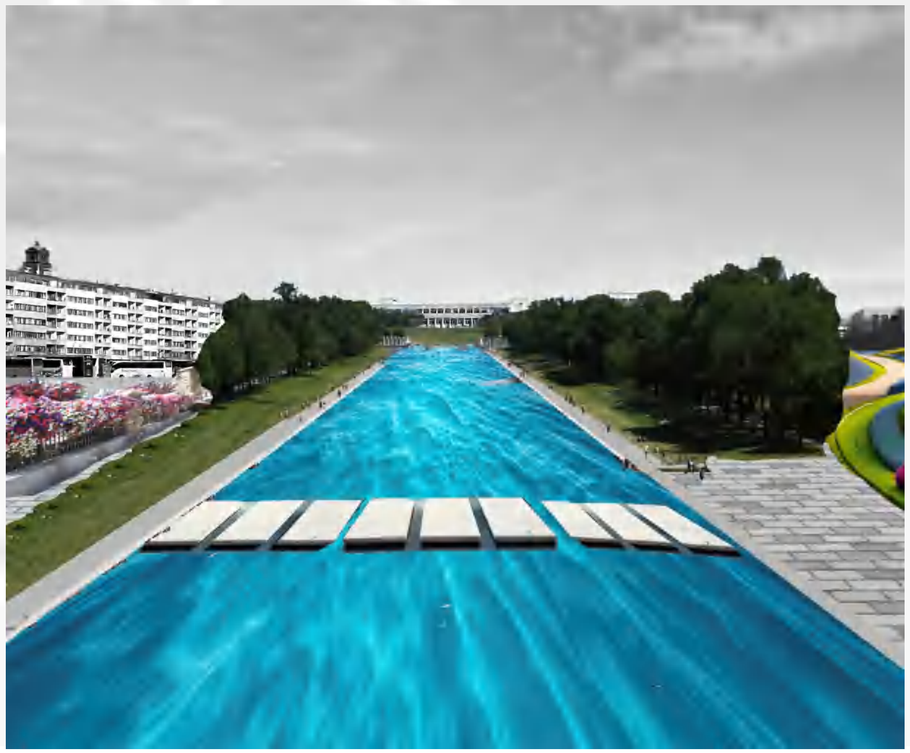
# Final design of the park with the four seasons




**The rollerblading path within the park area will be turned into a promenade with more lighting in mind. The center area will also be for water collection and storage of the site for sustainability purposes.**

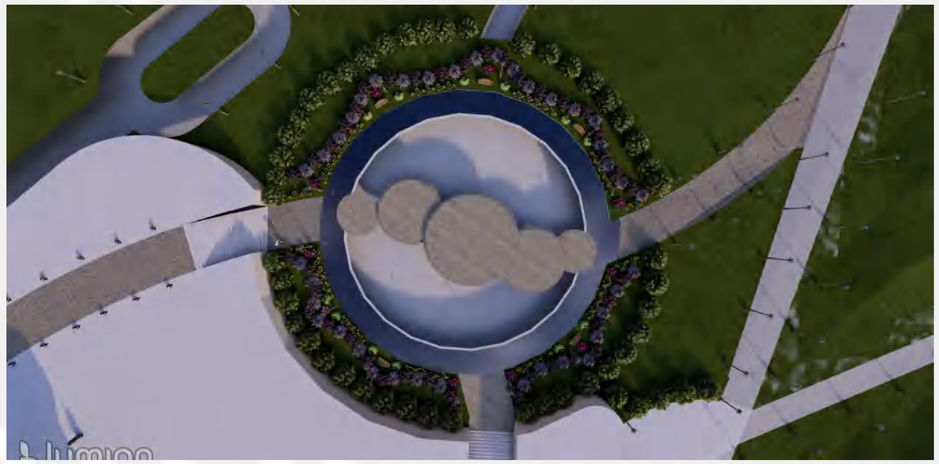


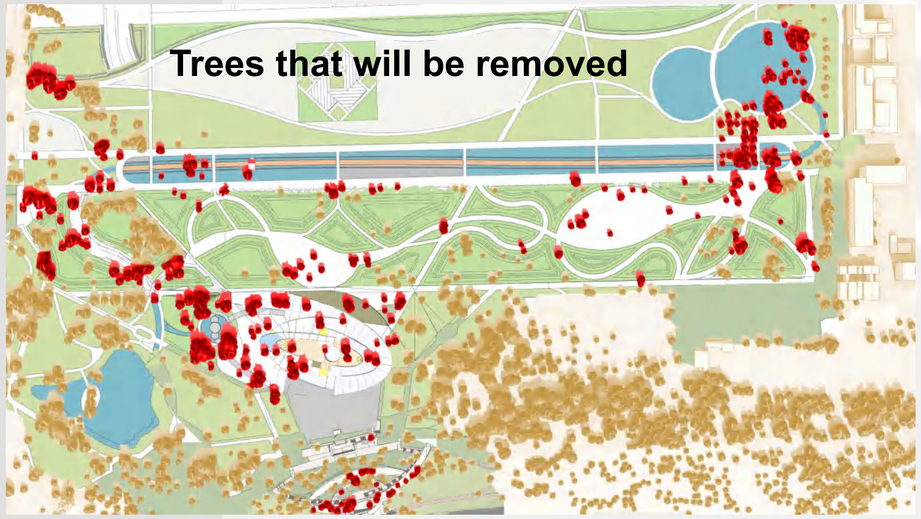
## Concept - Entrance

**The Facility entrance would have a nice resting area that will allow any rain to runn down to a small pool that would then connect to the lake already on site.**









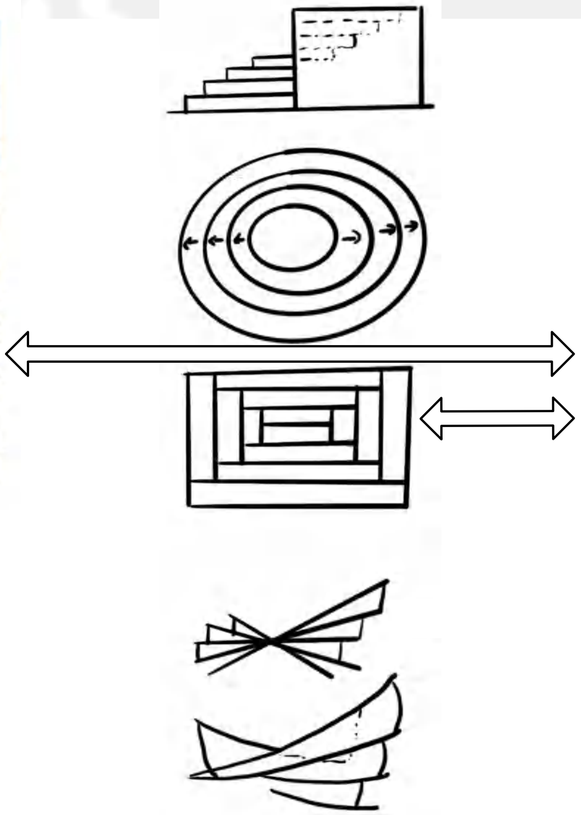


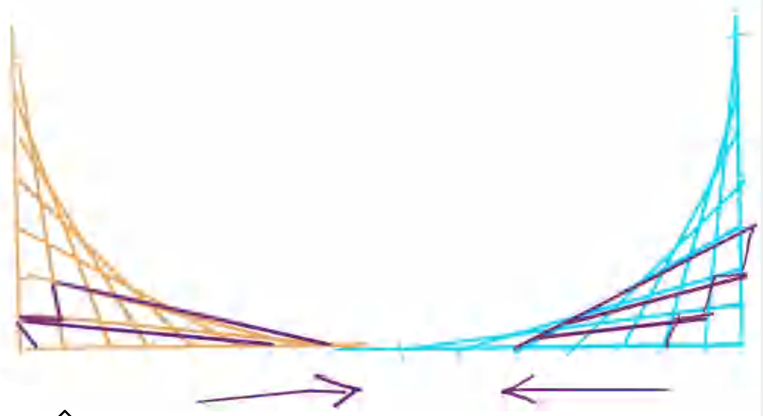
New site with old and new trees

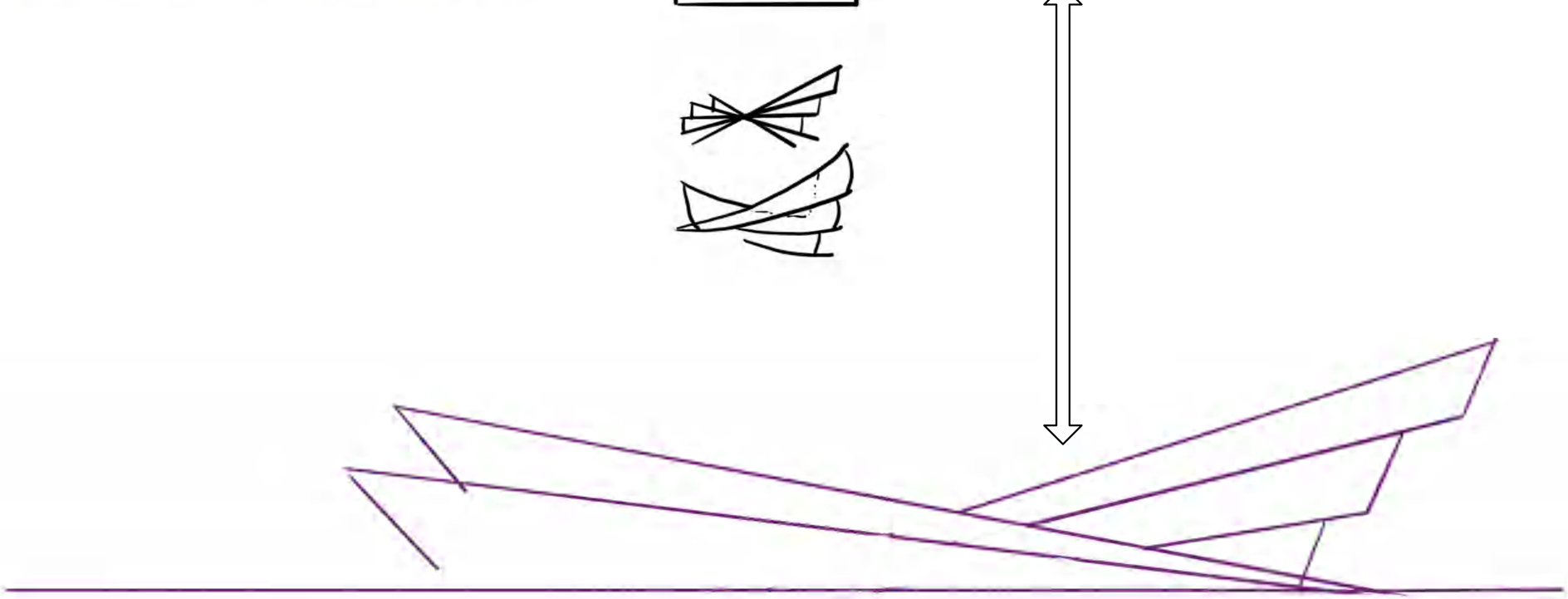
Conservation

# Concept - Facility

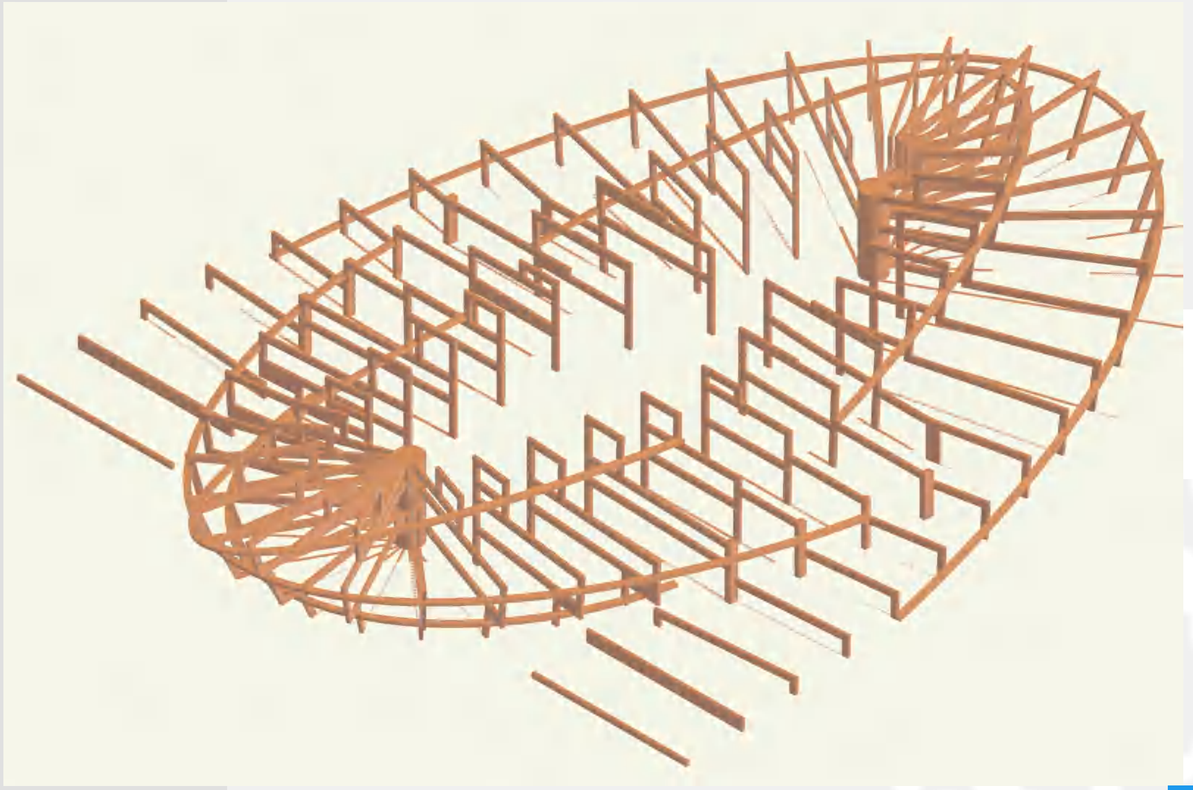
The facilities shape was a number of different ideas from a step design that then meshed with the “V’ shape created by the stairs in the hill. With this the lines were used to create curved geometry and the grid in between the lines was used as inspiration for the shape.

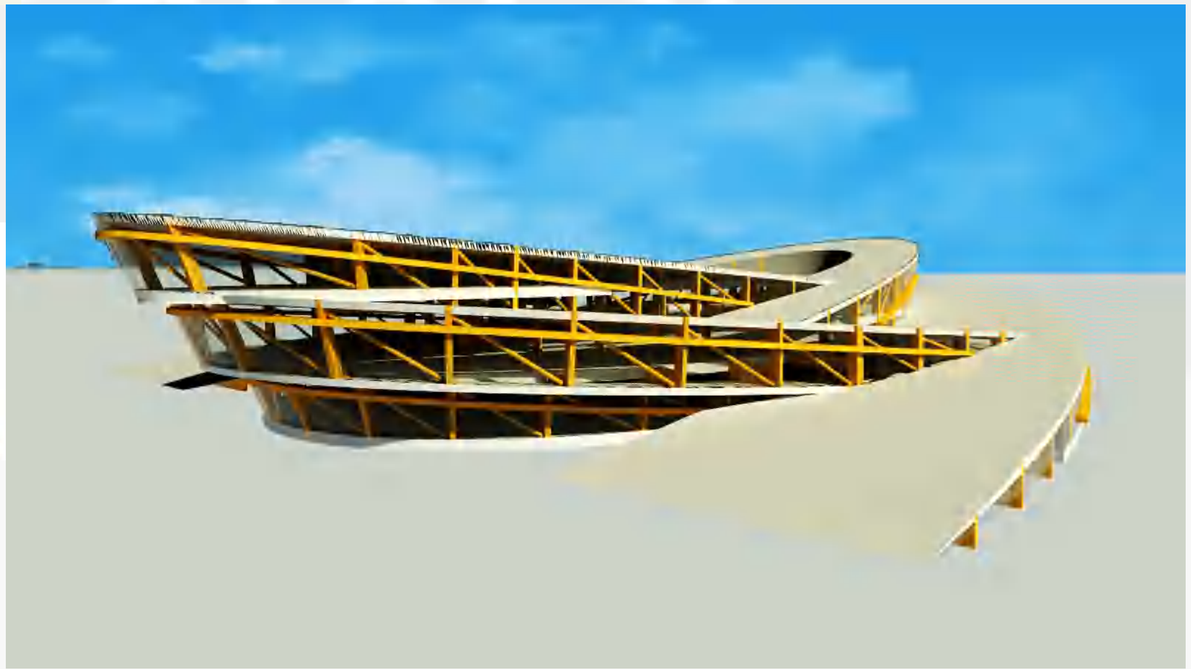






# Concept - Facility

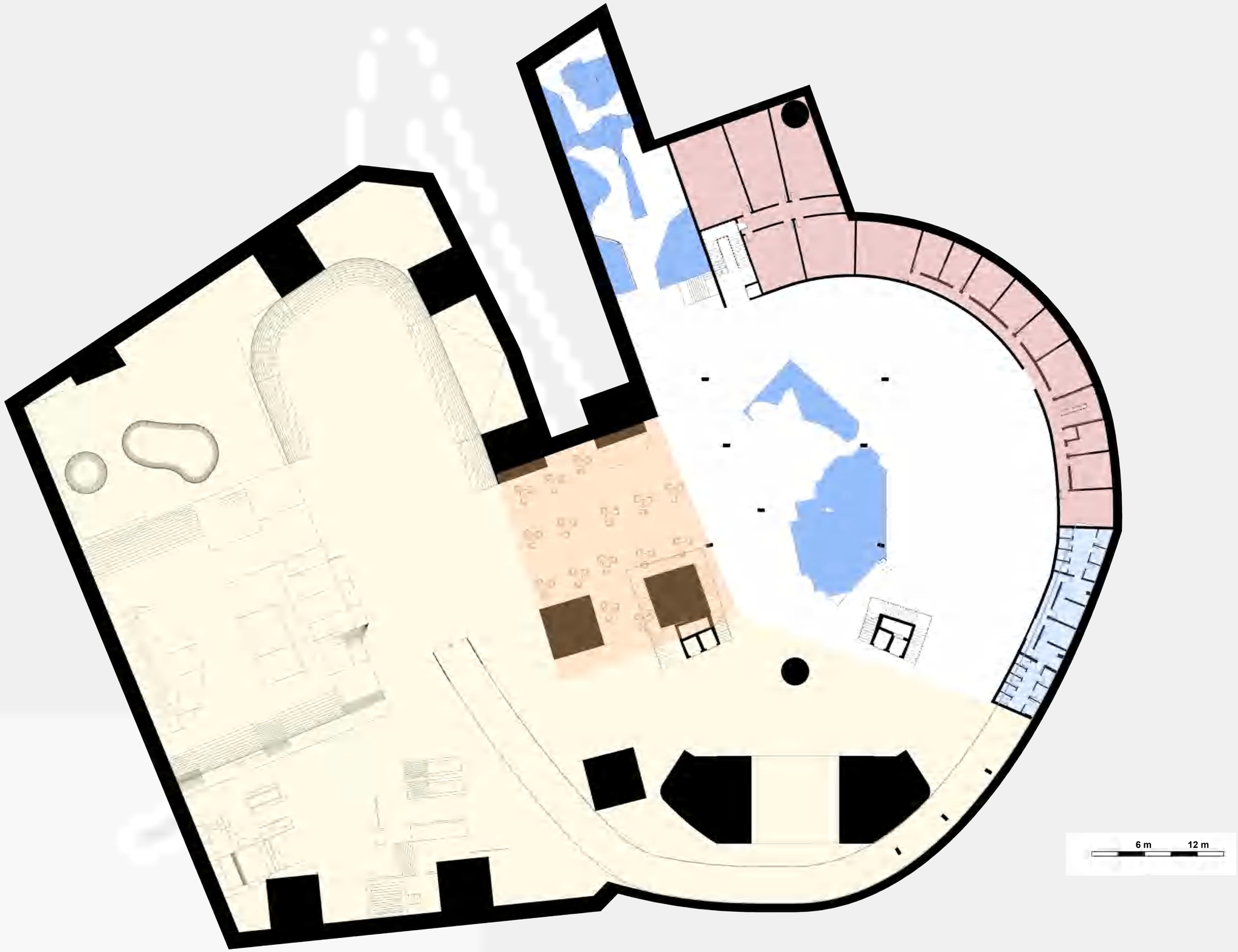




**The building from the start was designed to be a wooden framed structure.**

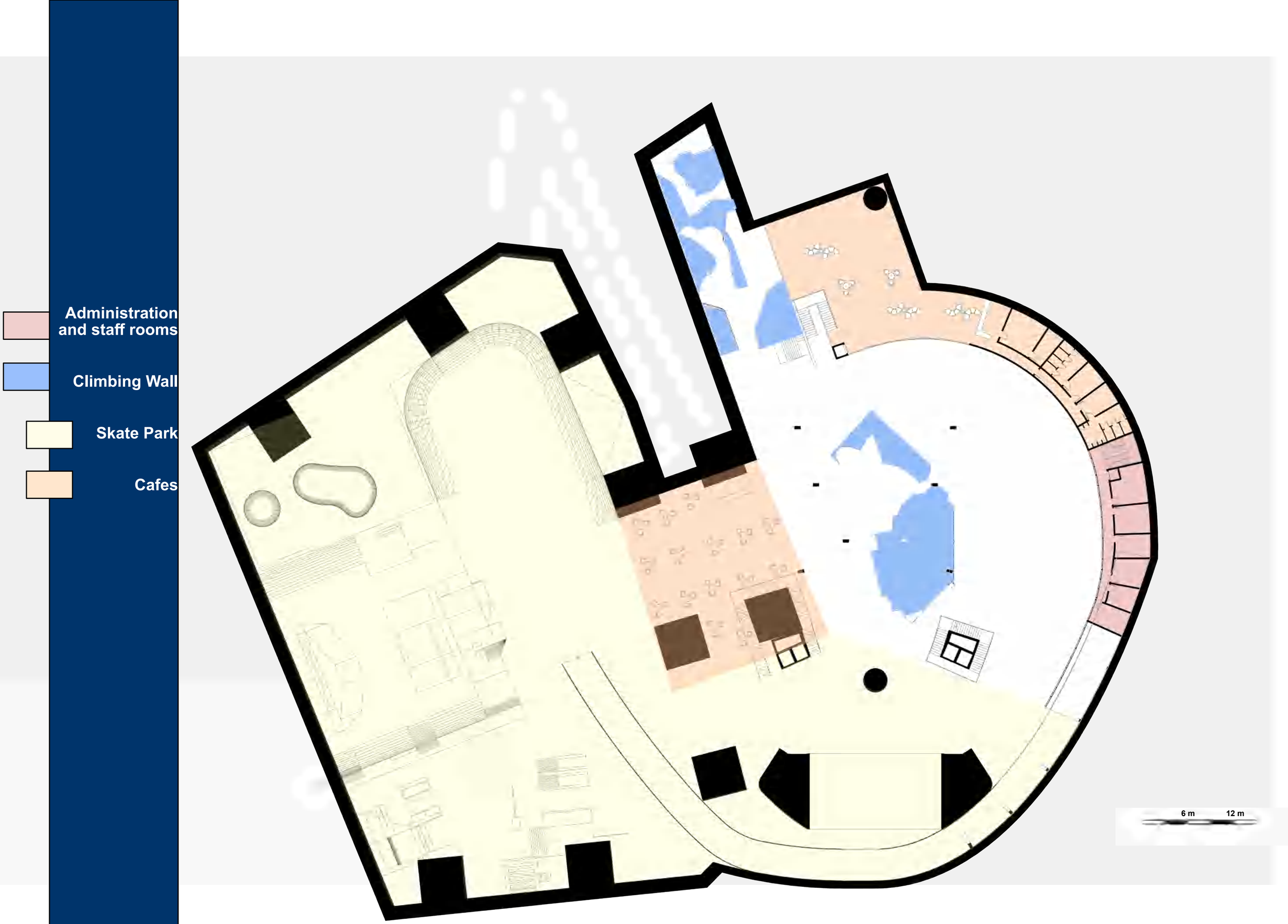
## Basement level 2

- Storage and tech rooms
- WC
- Climbing / bouldering
- Skate park
- Cafe and seating

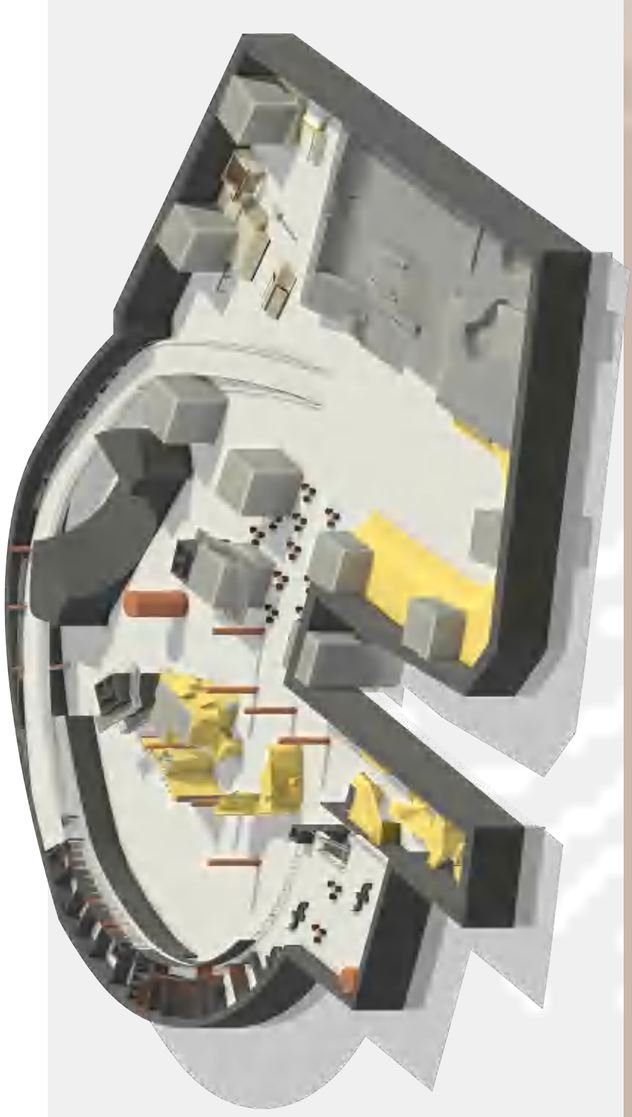


## Basement level 2

## Basement level 1



## Basement level 1



Entrance

Kids area

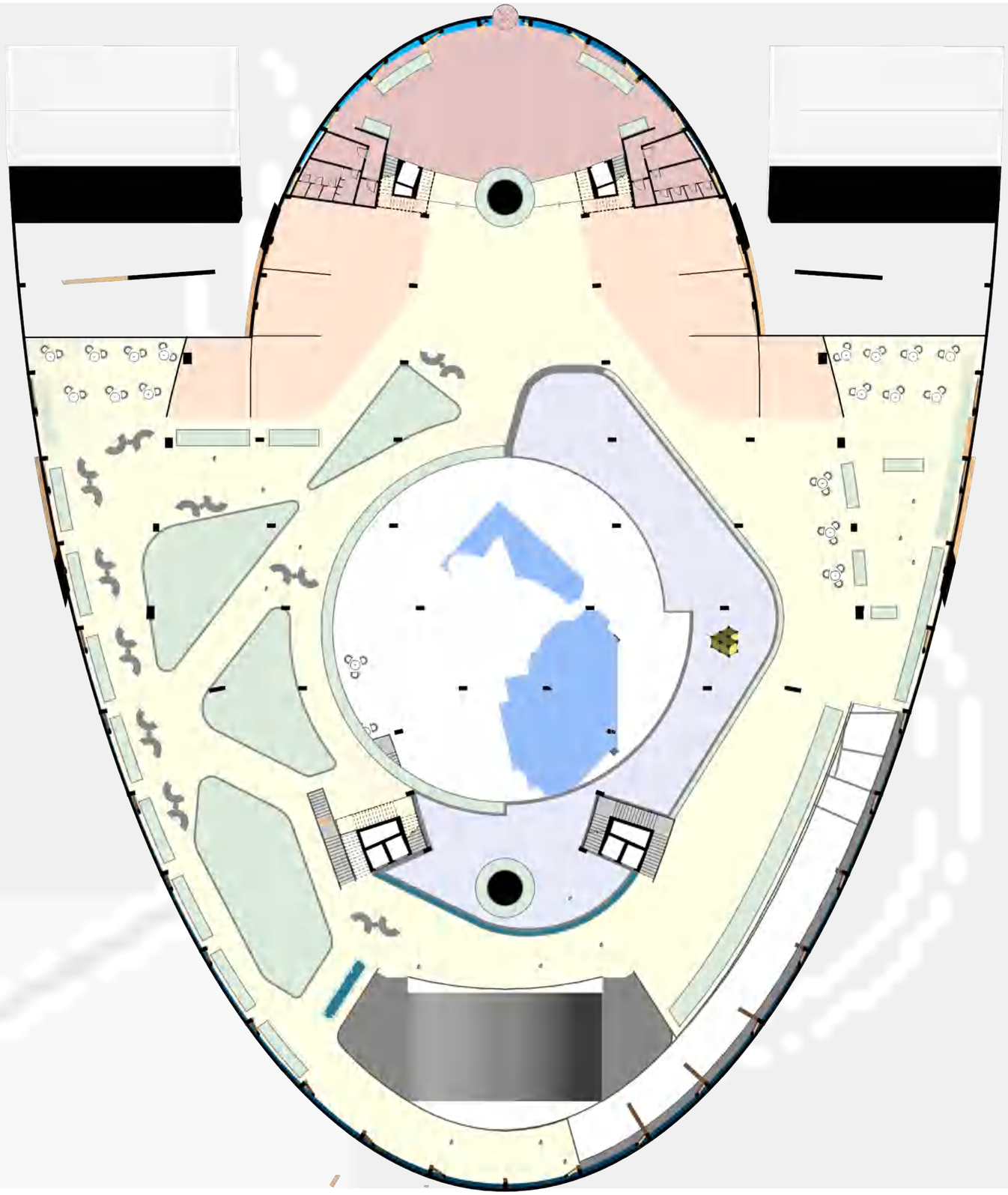
Climbing Wall

Public area

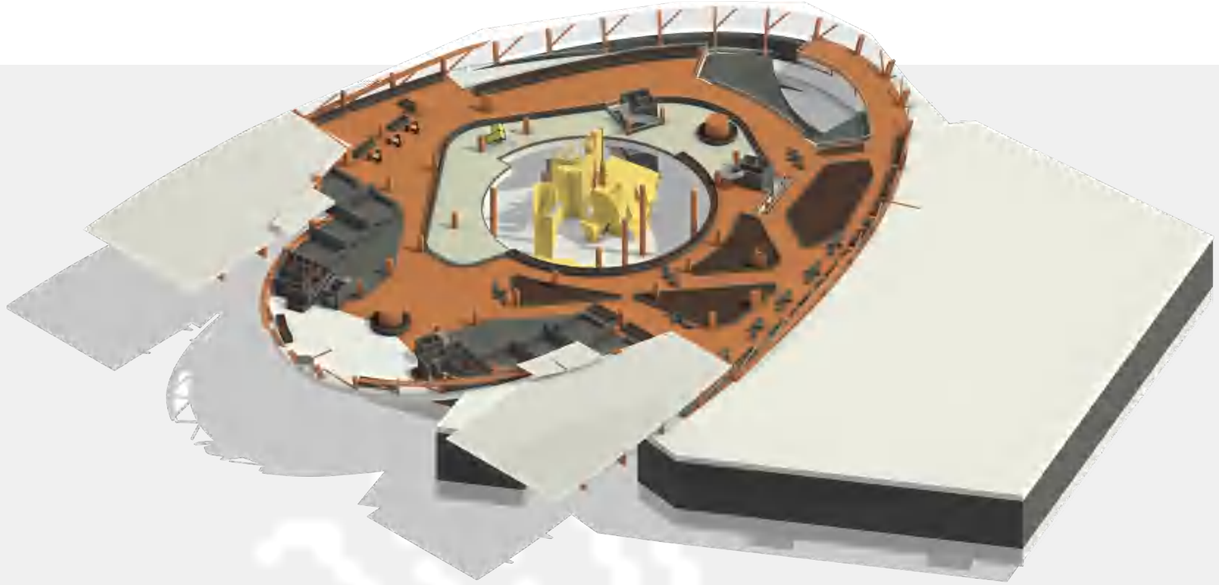
Shops

Greenery

First floor



6 m 12 m




First floor

Indoor Archery

Squash Court

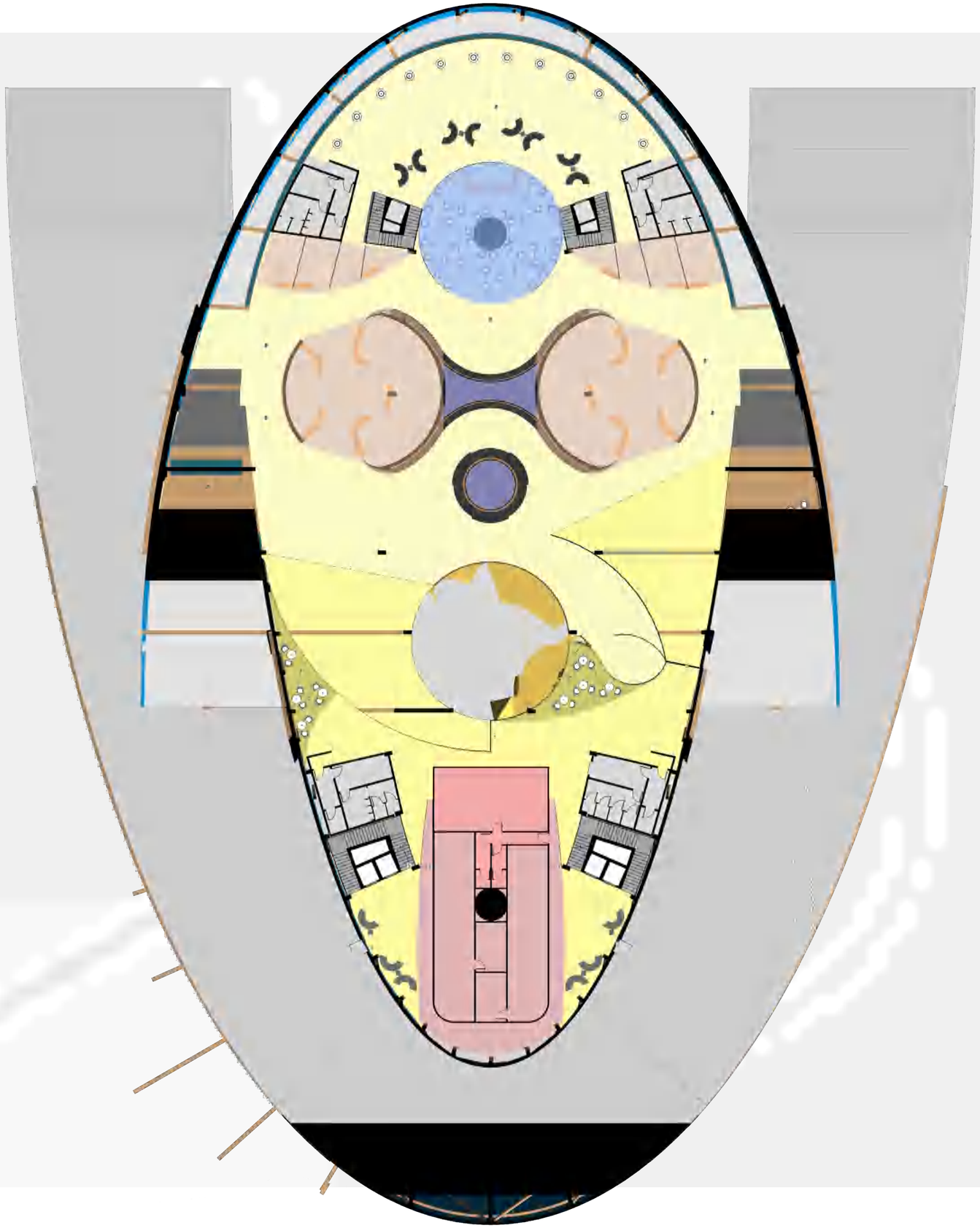
Cafe

Second Floor

Shops

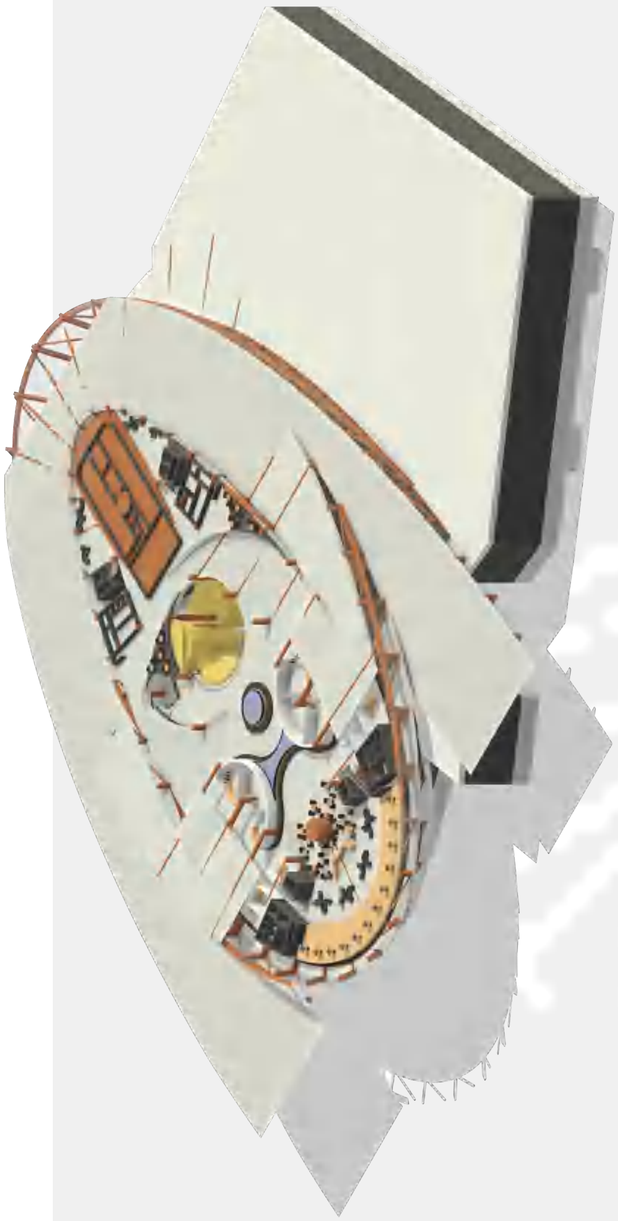
Third Floor

## Second and third floor



6 m 12 m

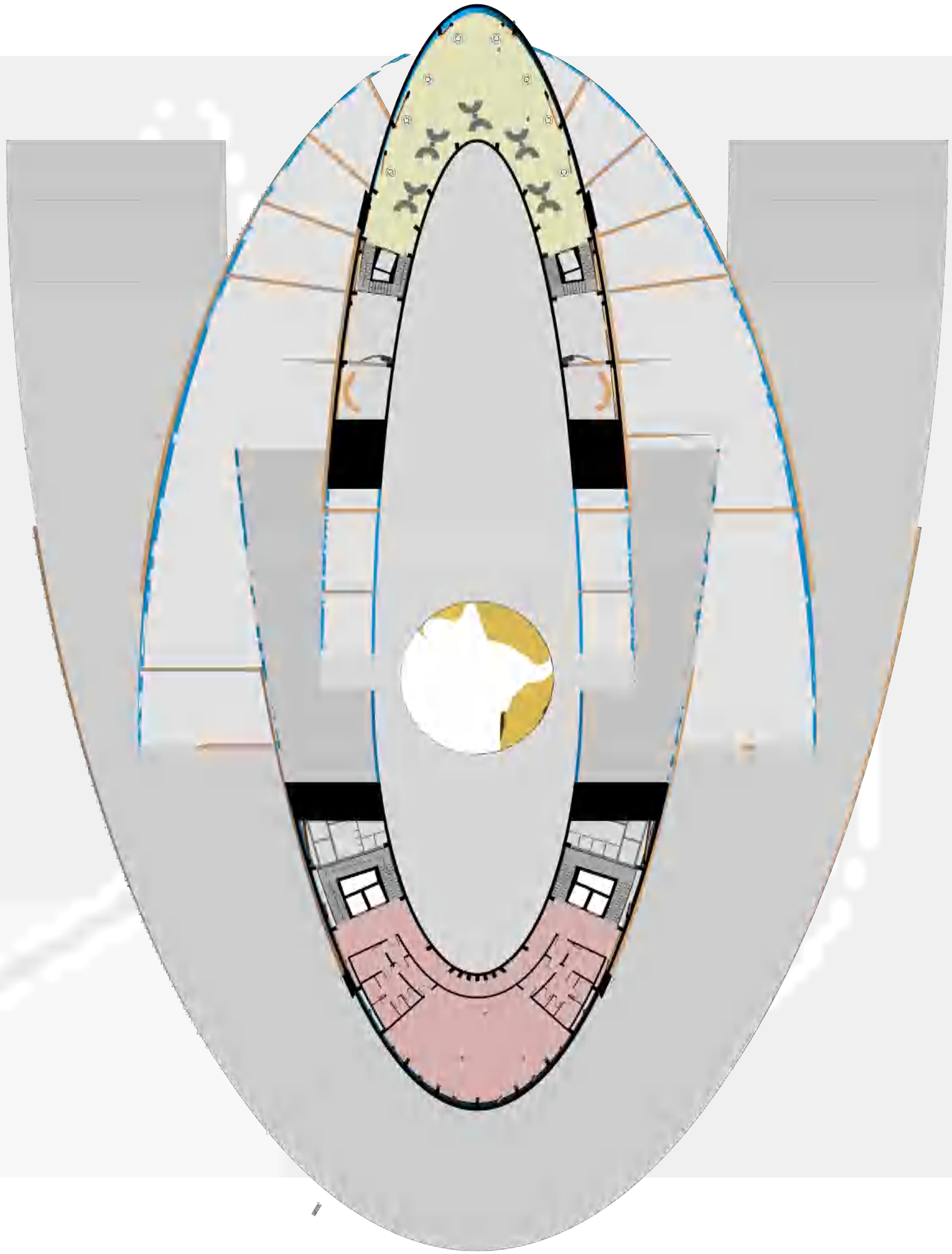
## Second and third floor



Dance and fencing hall

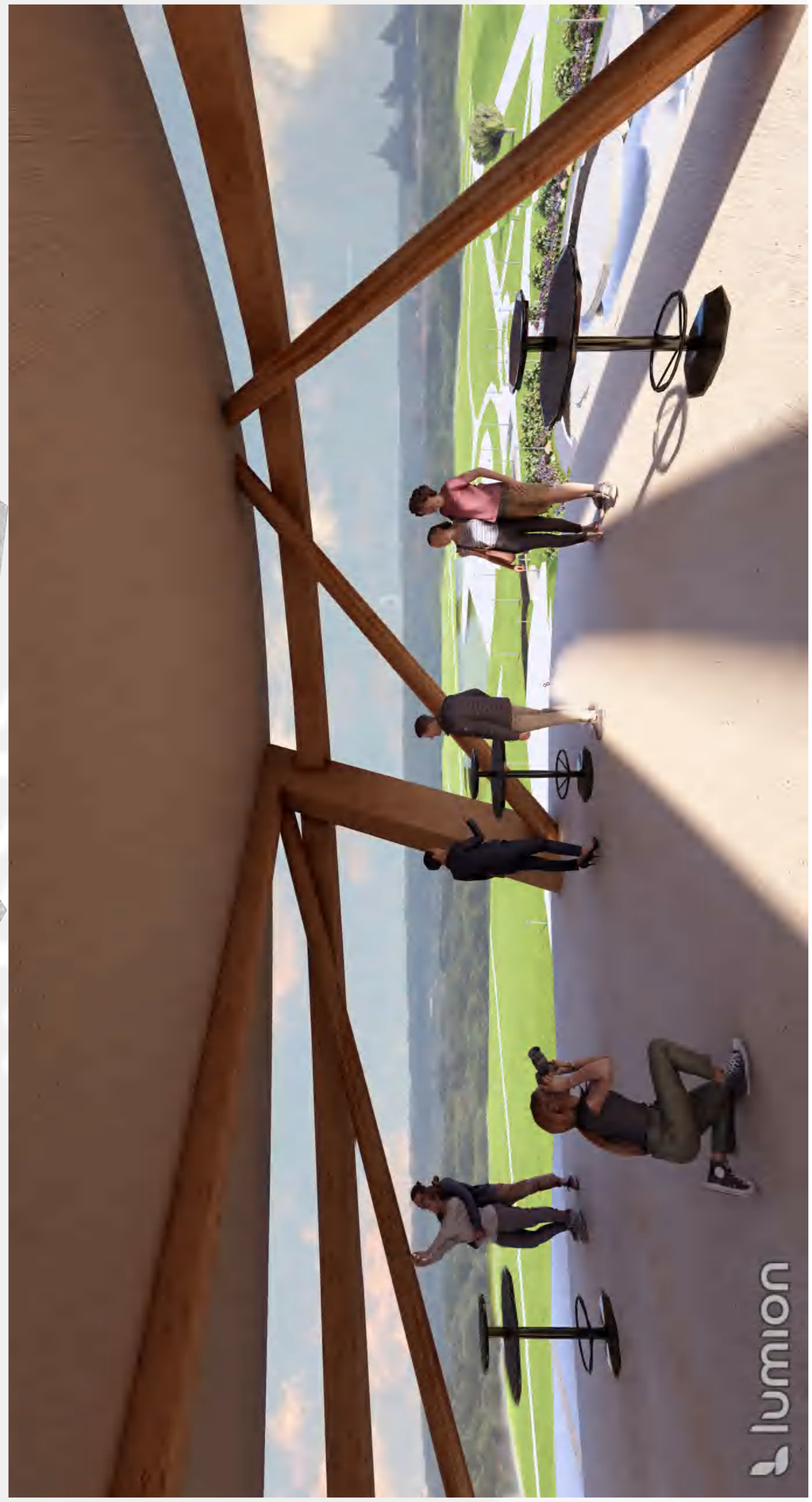
Viewing Area

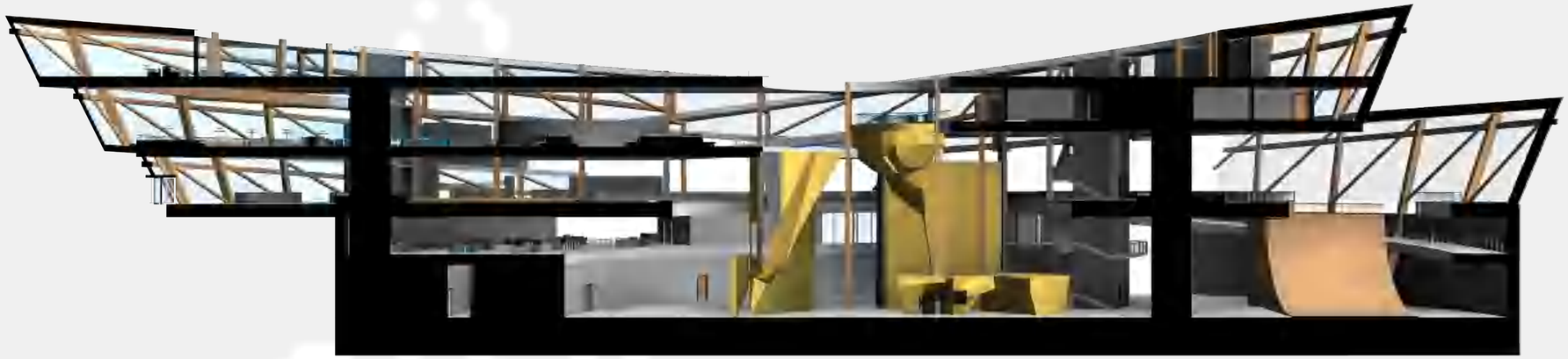
## Fourth floor



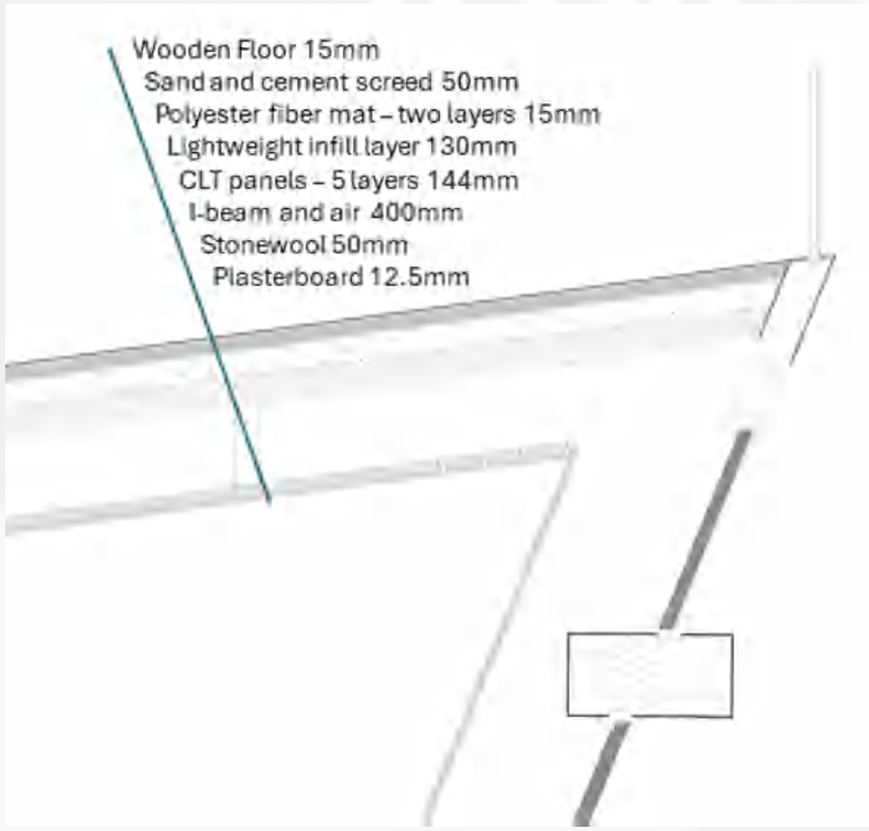
6 m 12 m

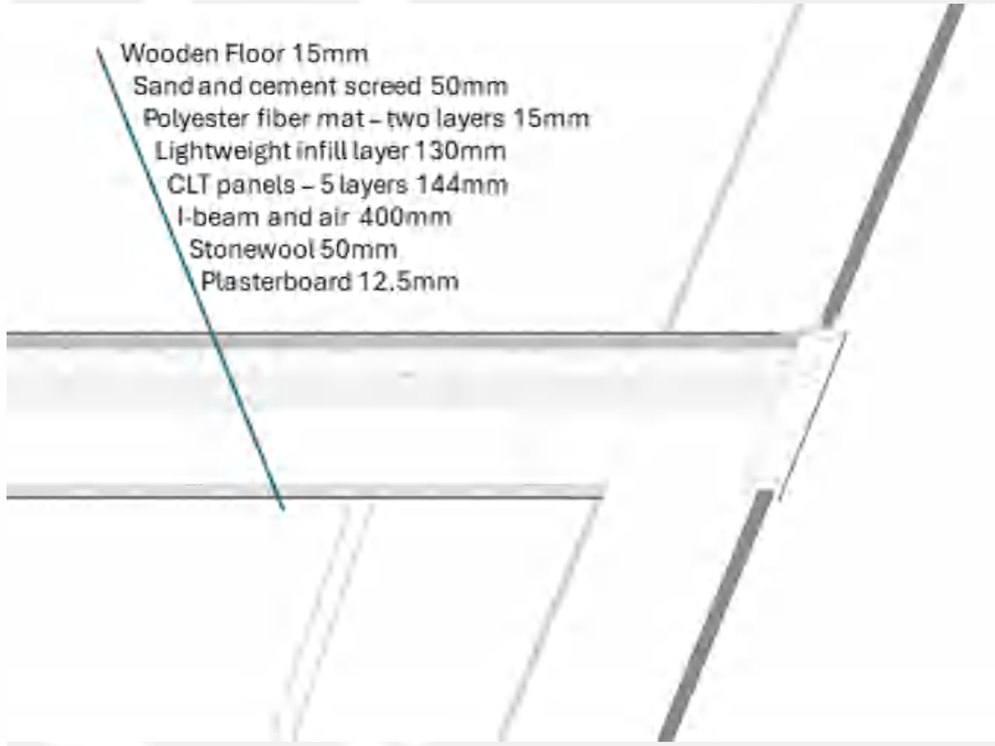
## Fourth floor





6 m 12 m


Wooden Floor 15mm
Sand and cement screed 50mm
Polyester fiber mat – two layers 15mm
Lightweight infill layer 130mm
CLT panels – 5 layers 144mm
I-beam and air 400mm
Stonewool 50mm
Plasterboard 12.5mm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CLT panels – 5 layers 144mm
I-beam and air 400mm
Stonewool 50mm
Plasterboard 12.5mm

1 m

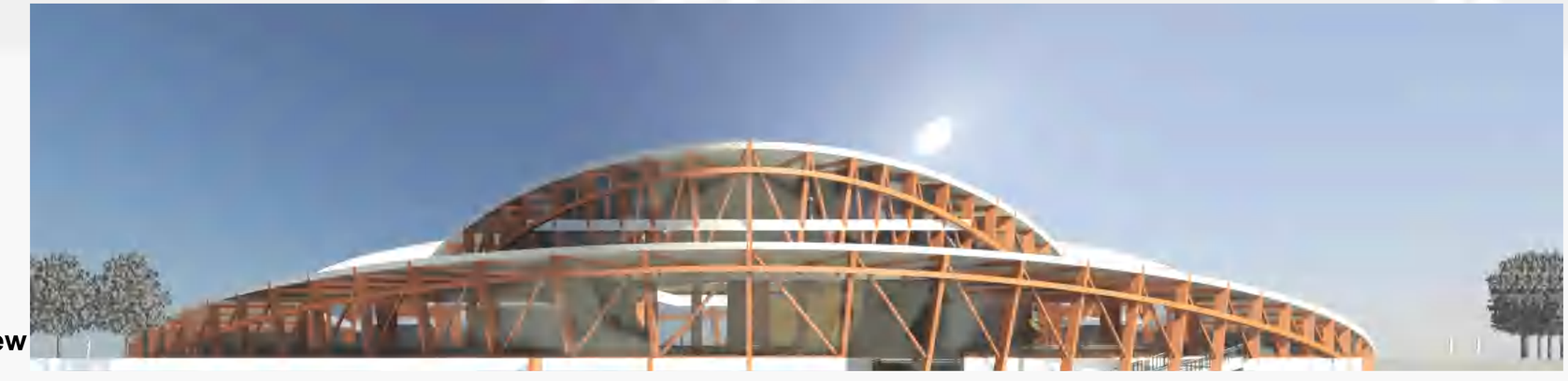
# Elevattions

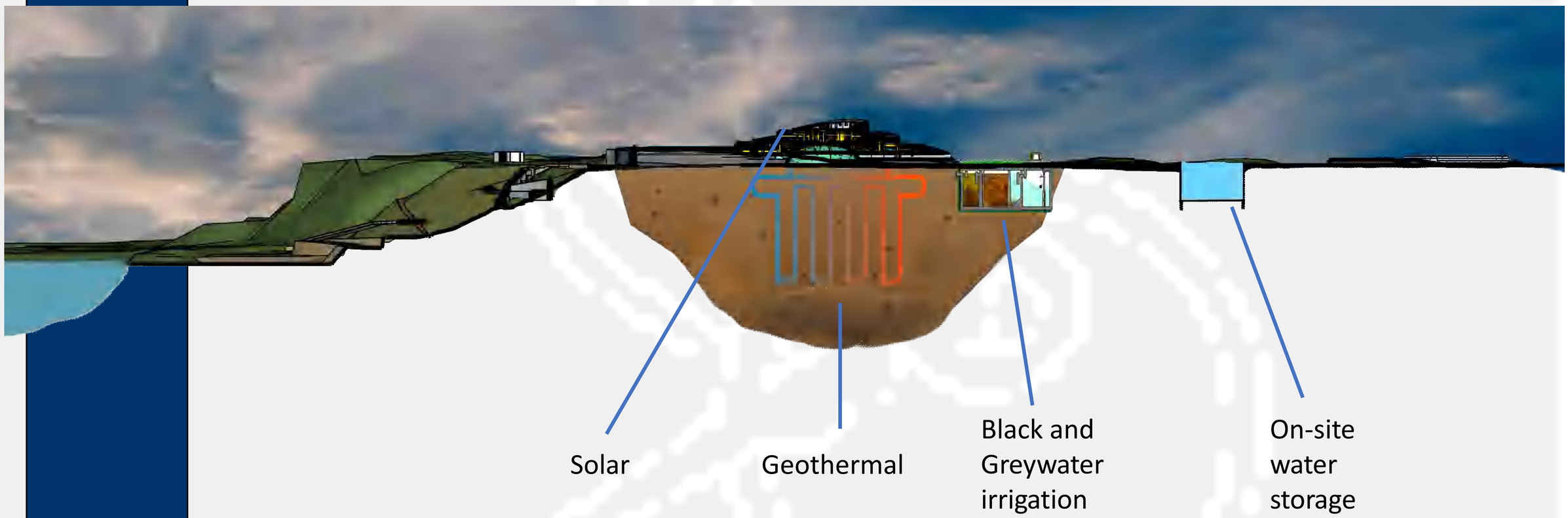
Southern View

Northern View

Eastern View

Western View




Solar
Geothermal
Black and Greywater irrigation
On-site water storage

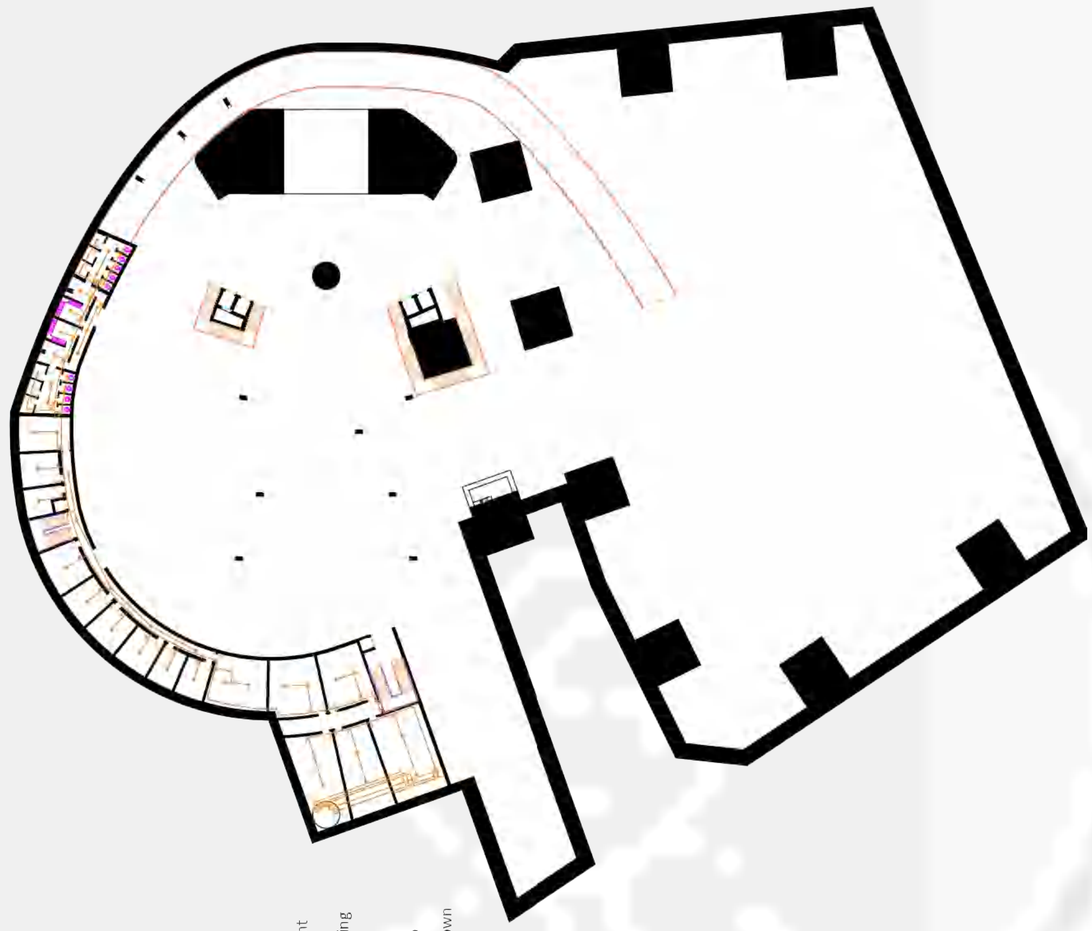



Renders

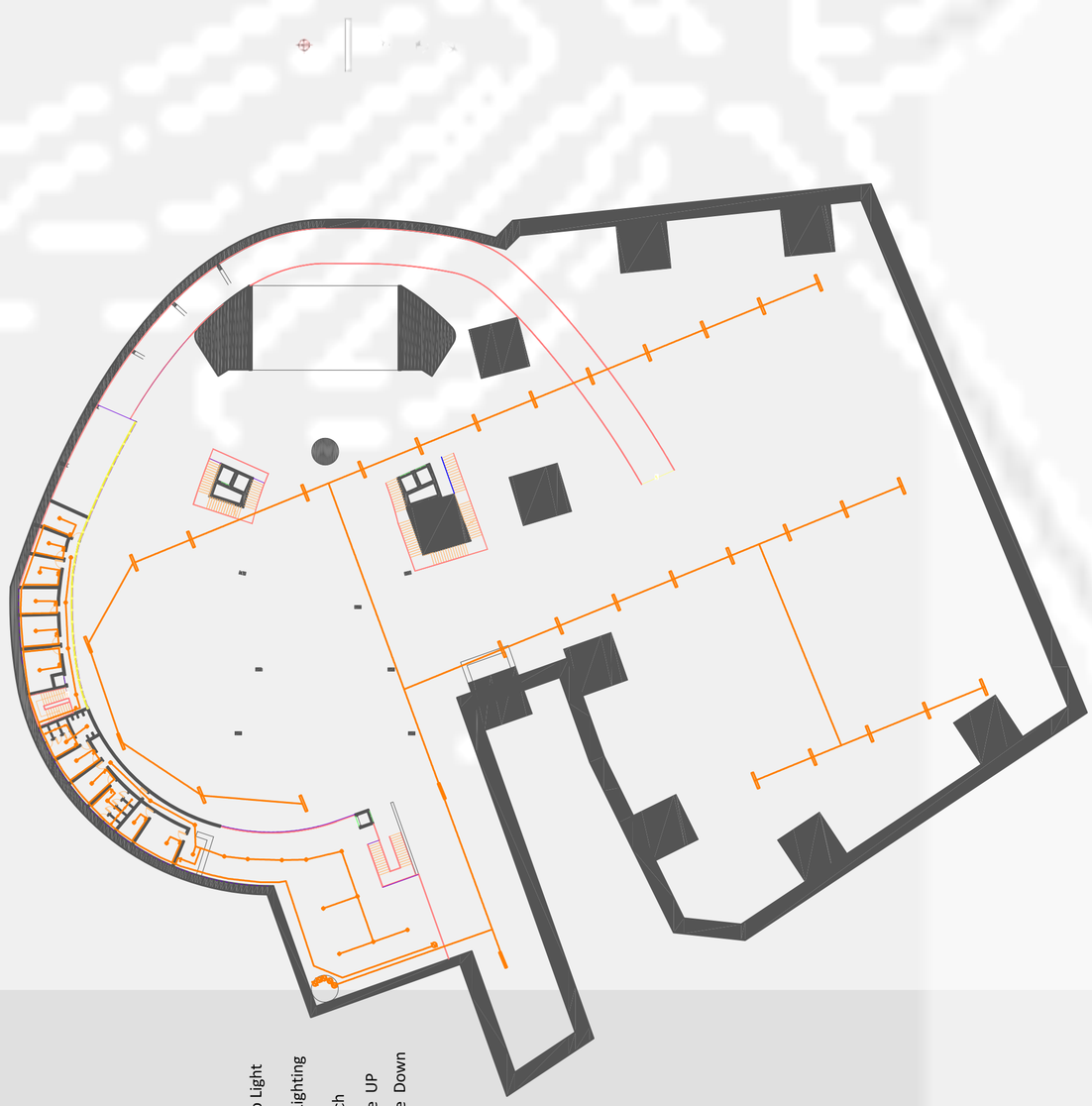
Renders



# MEP - Electric



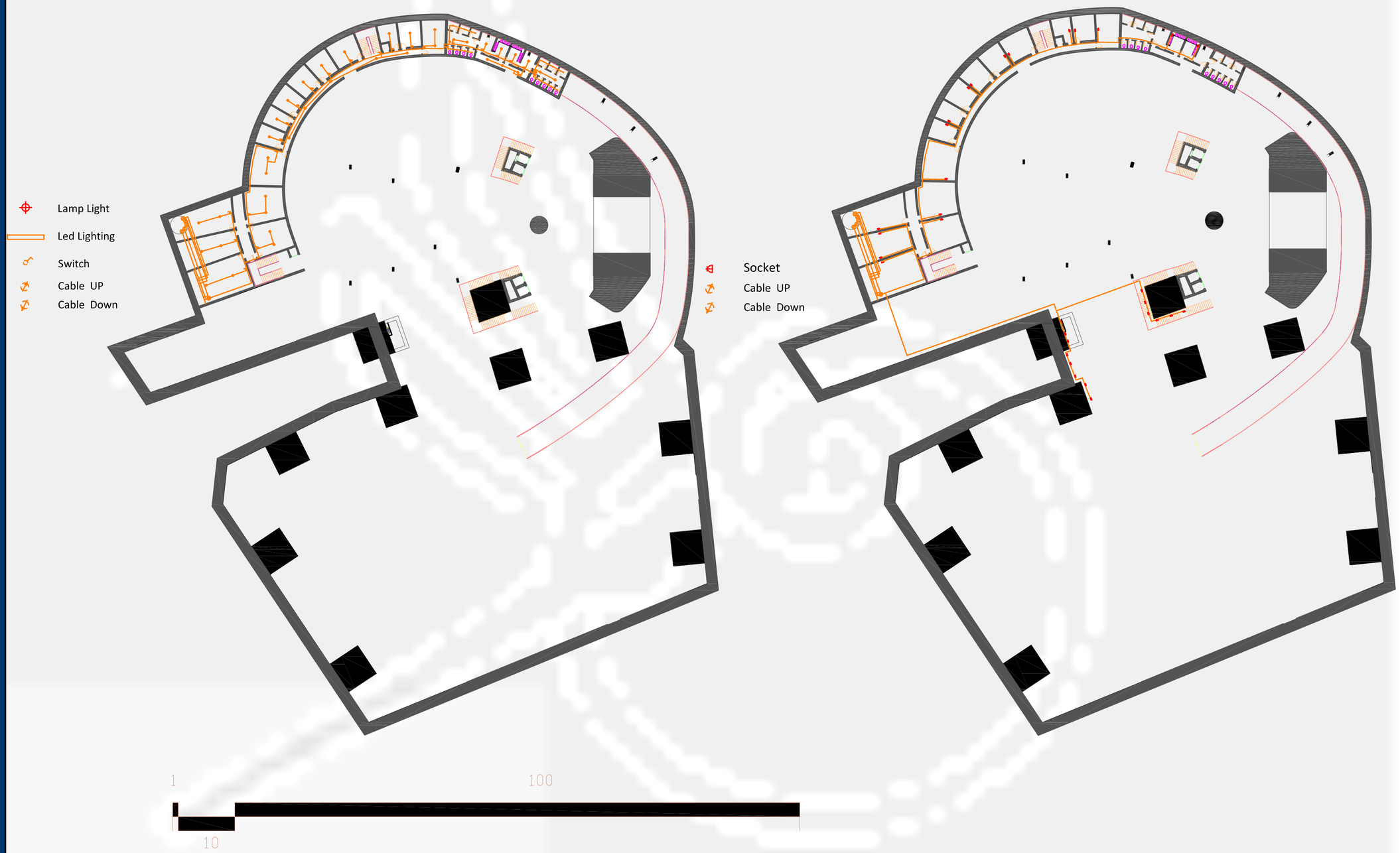
Lamp Light
Led Lighting
Switch
Cable UP
Cable Down



Lamp Light
Led Lighting
Switch
Cable UP
Cable Down

1 10 100

# MEP - Electric



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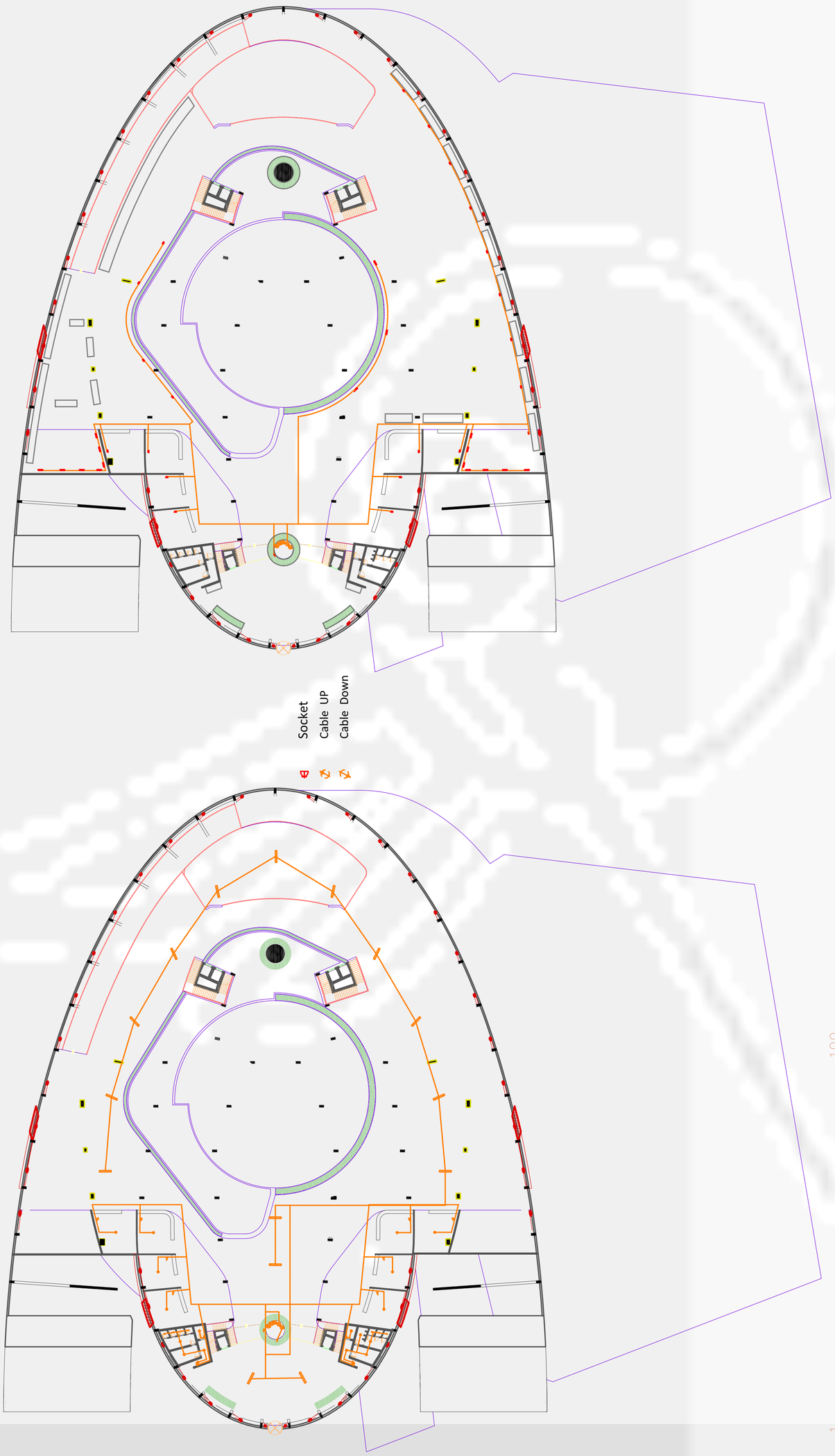

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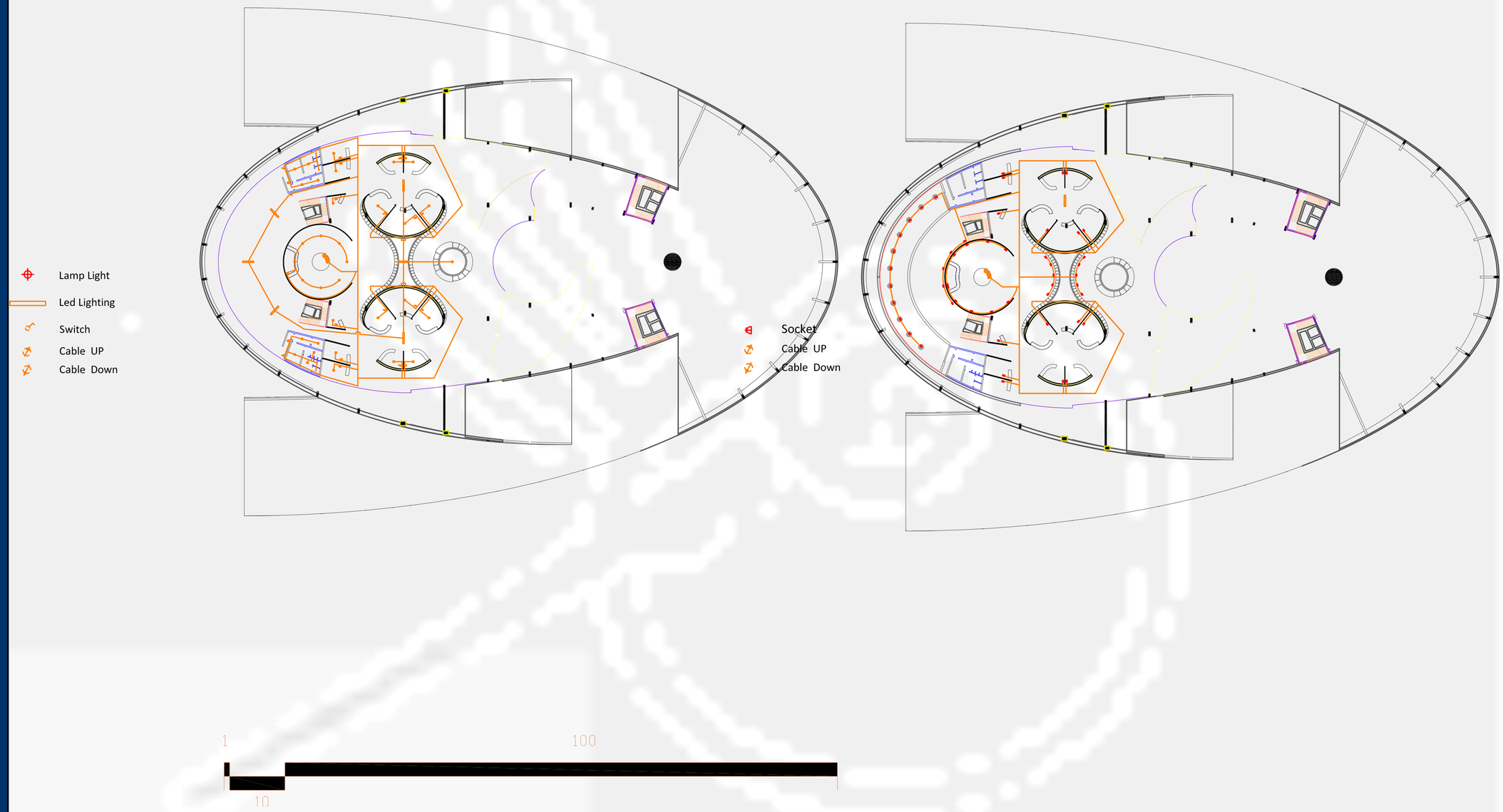

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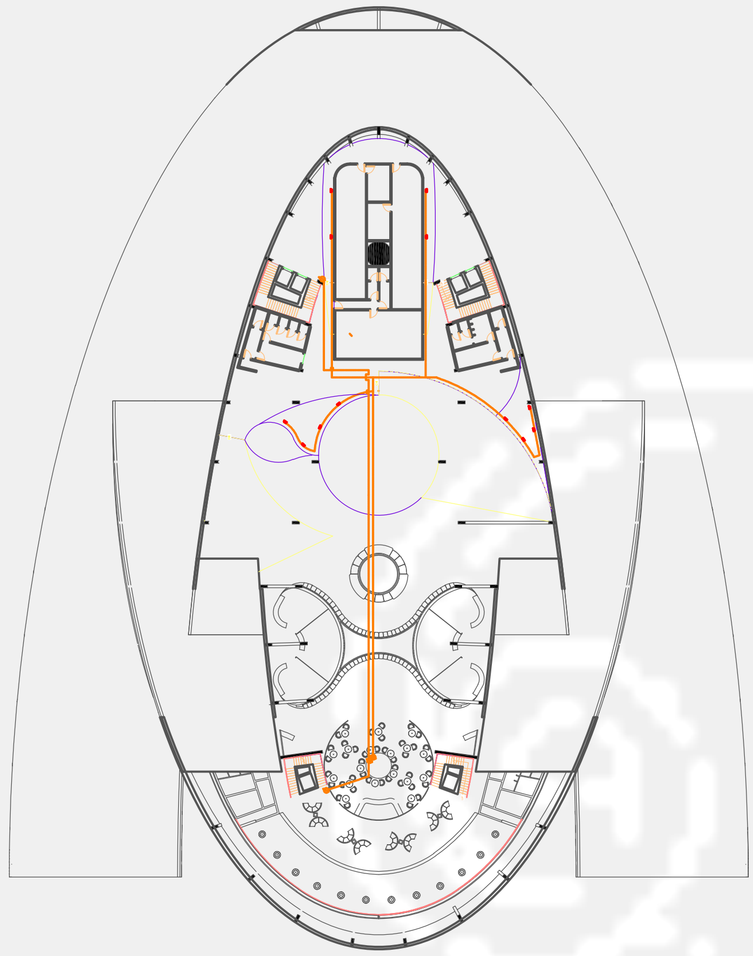
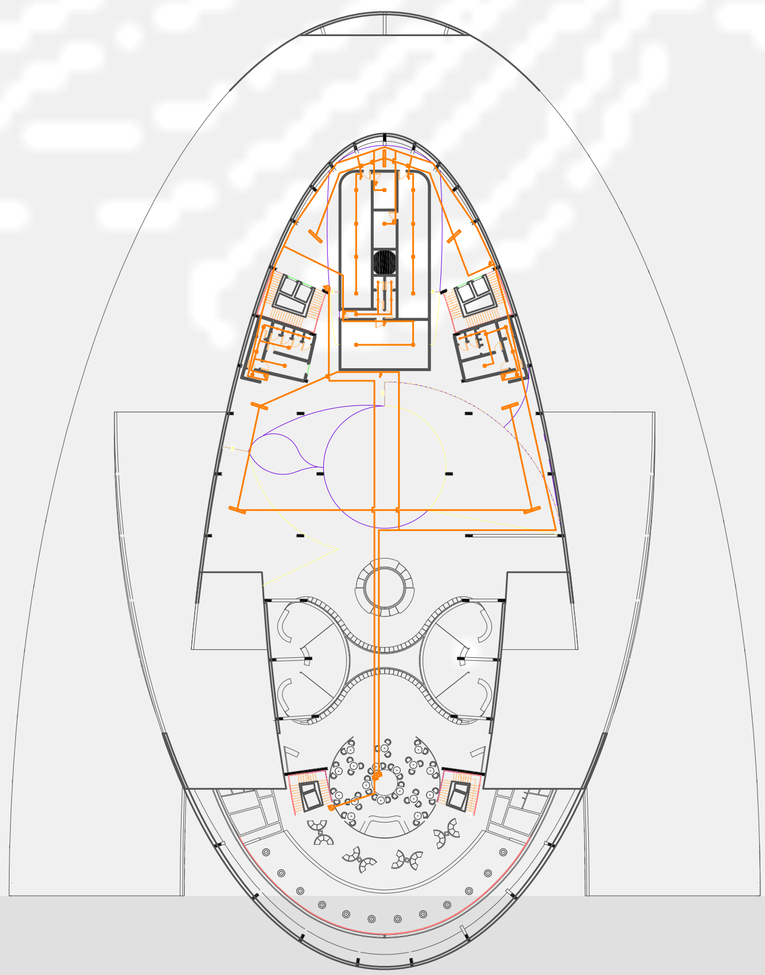


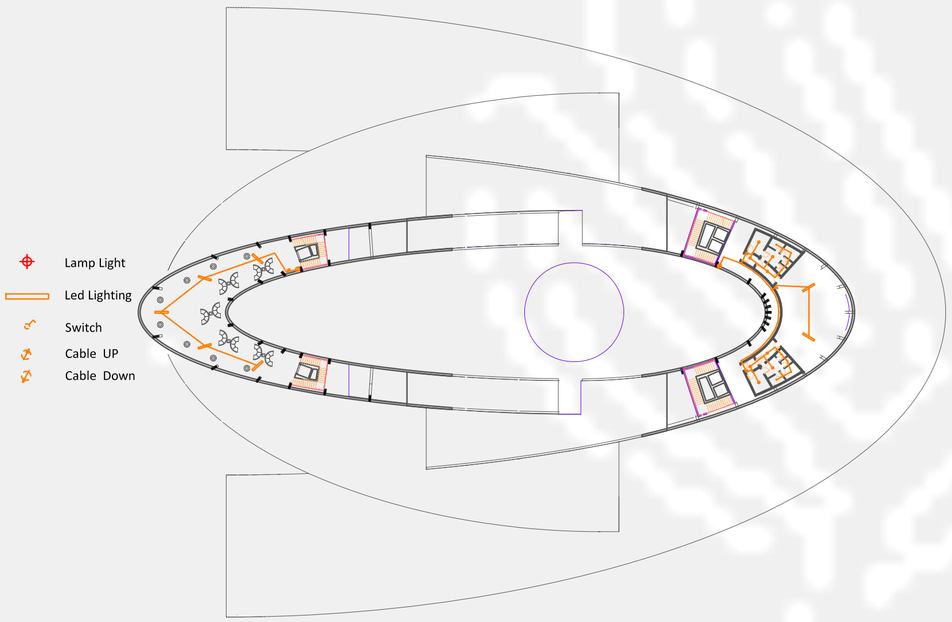
Socket
Cable UP
Cable Down

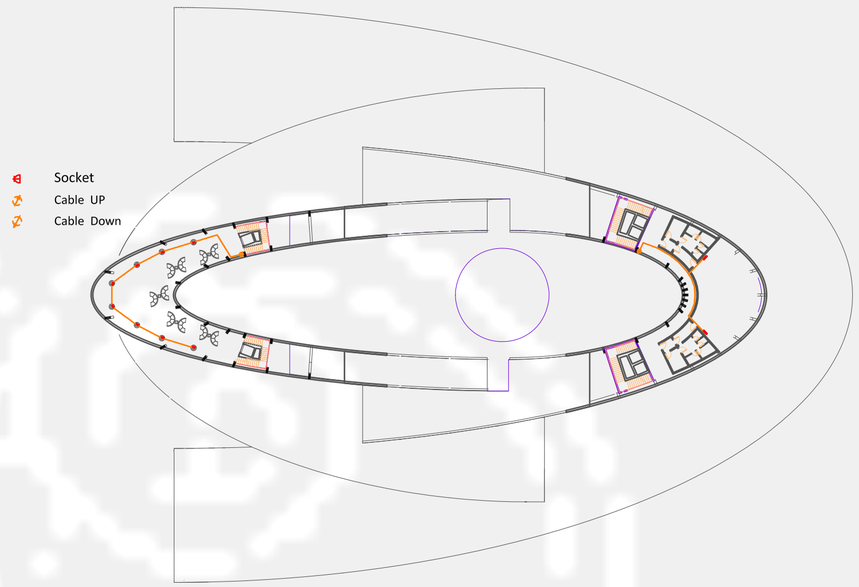


Lamp Light
Led Lighting
Switch
Cable UP
Cable Down

1 100

# MEP - Electric

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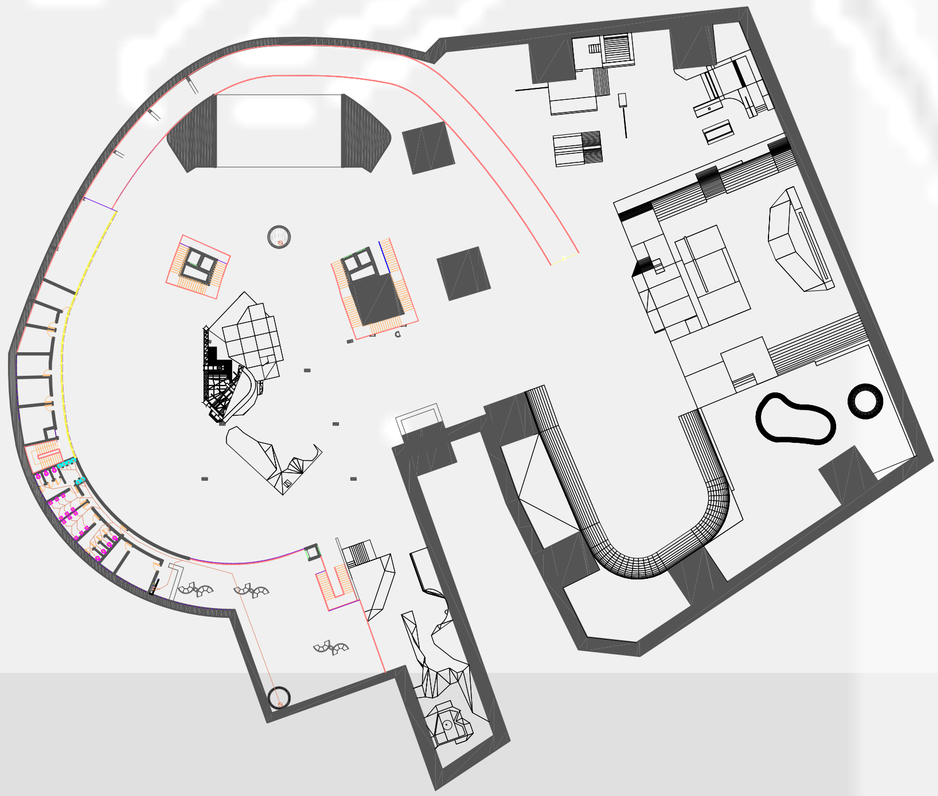

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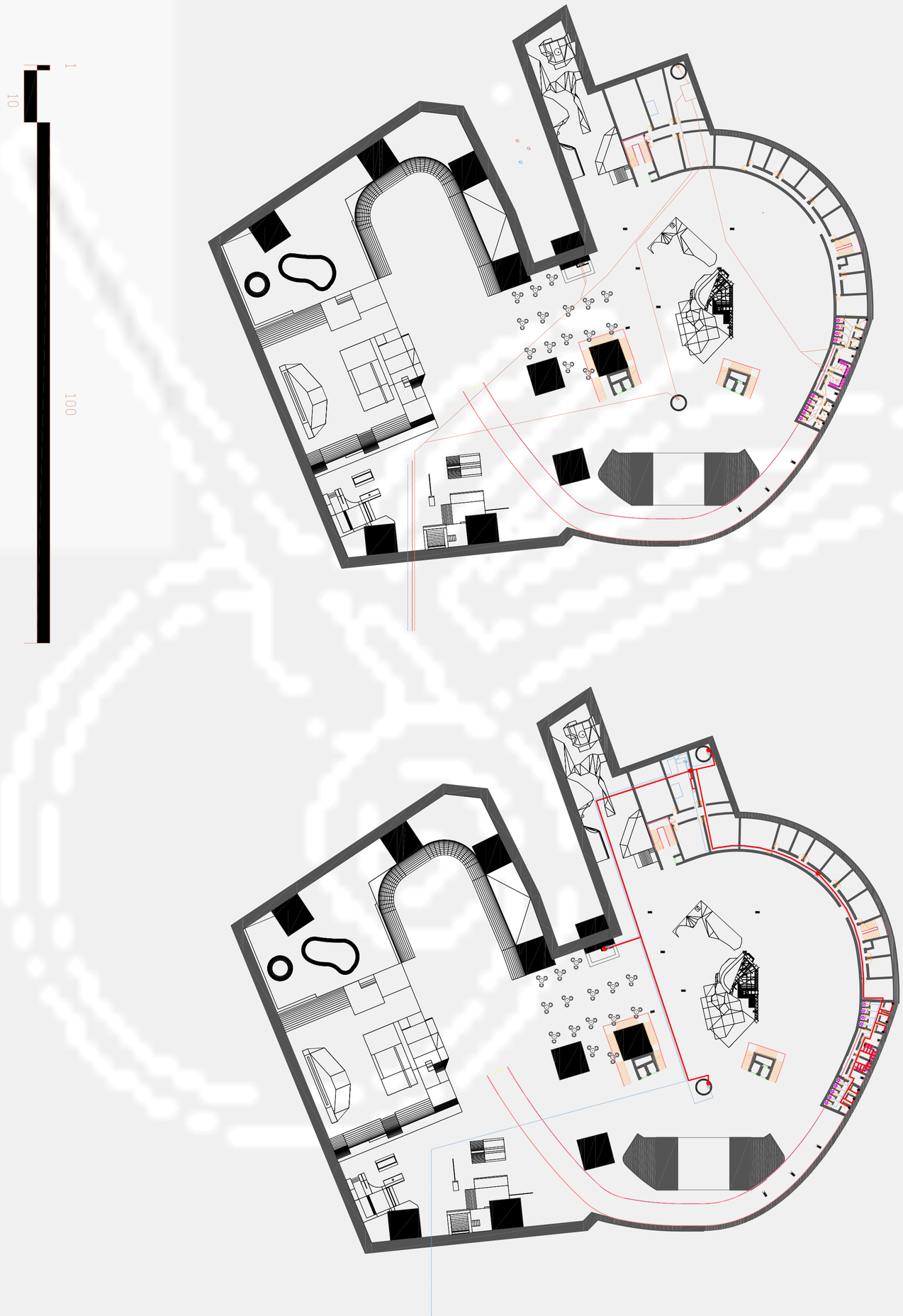

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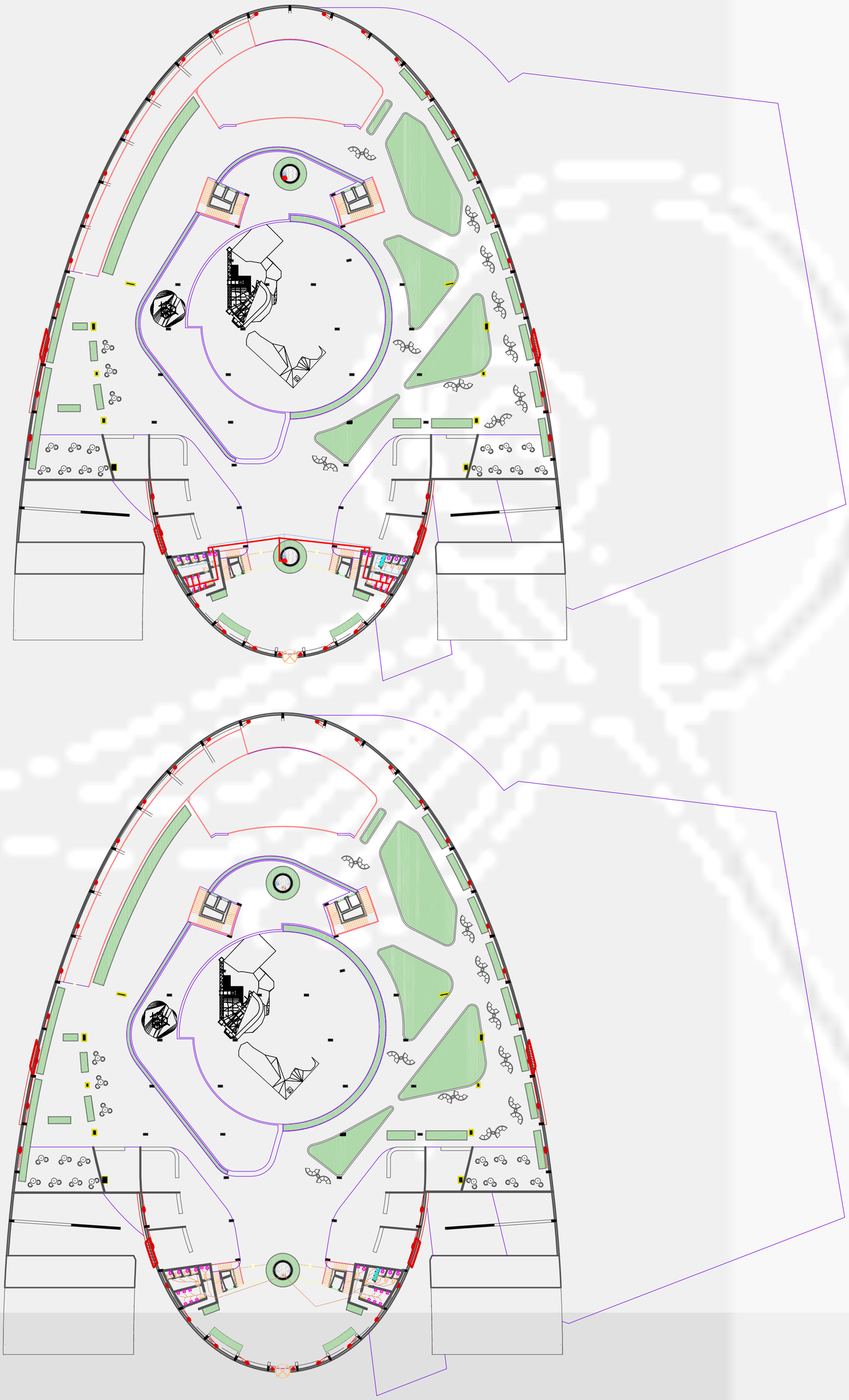



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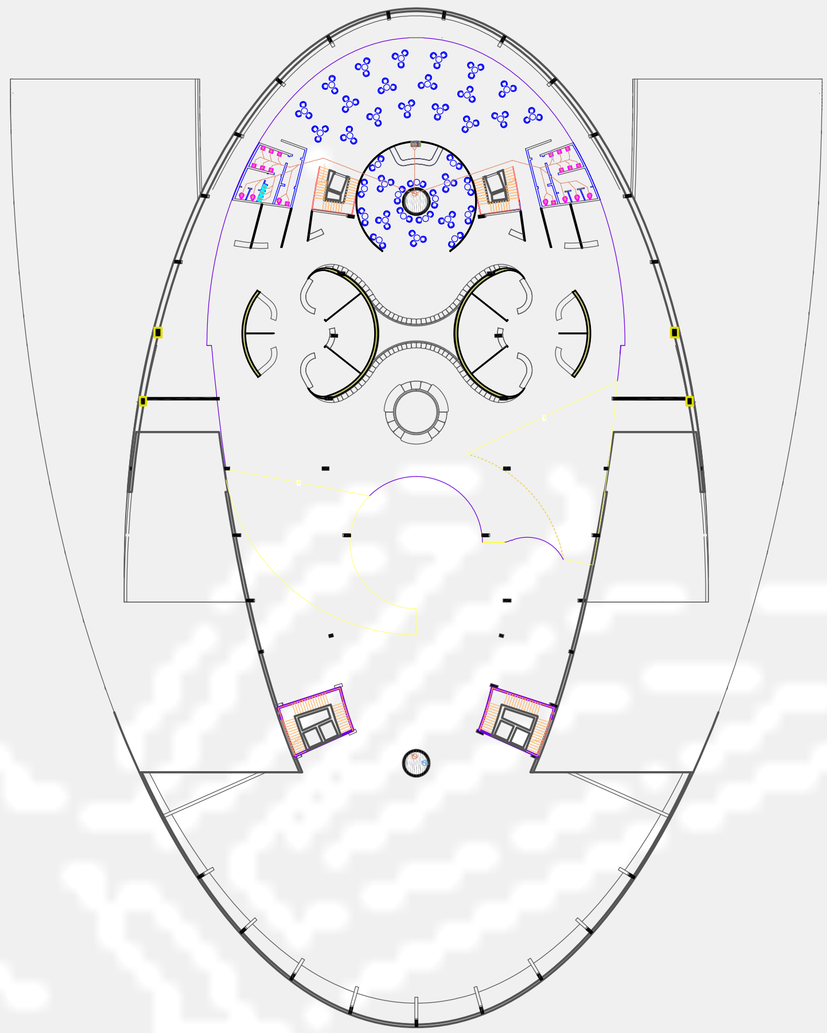

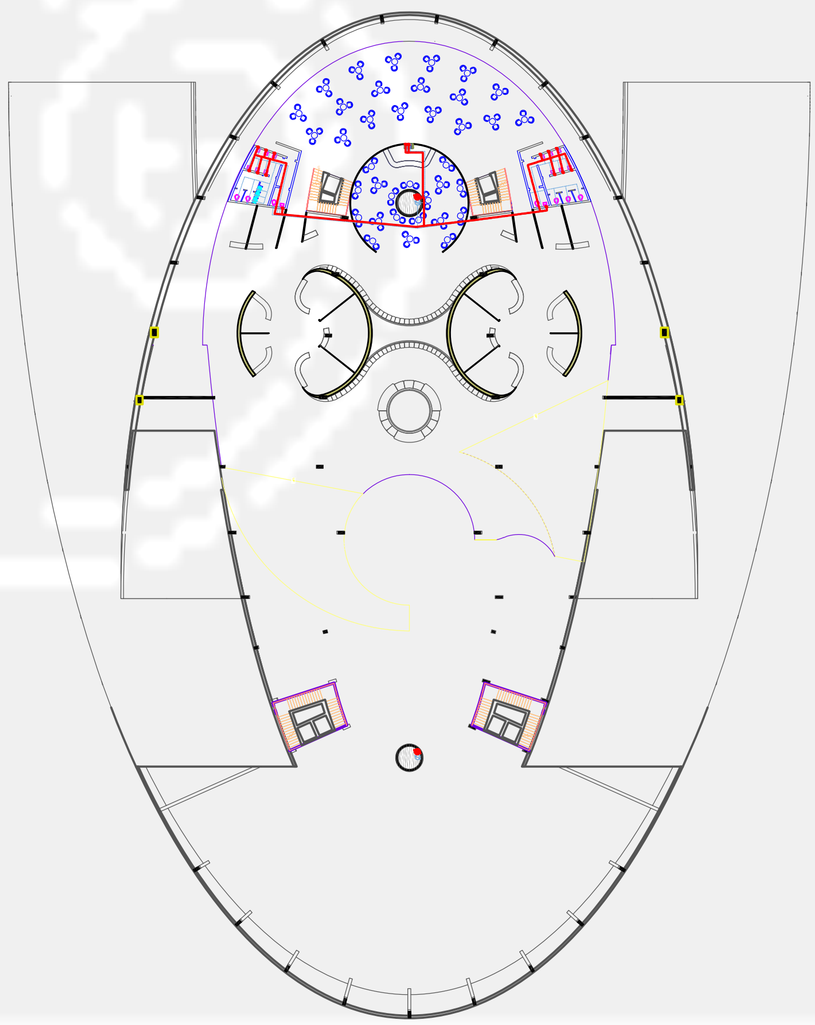

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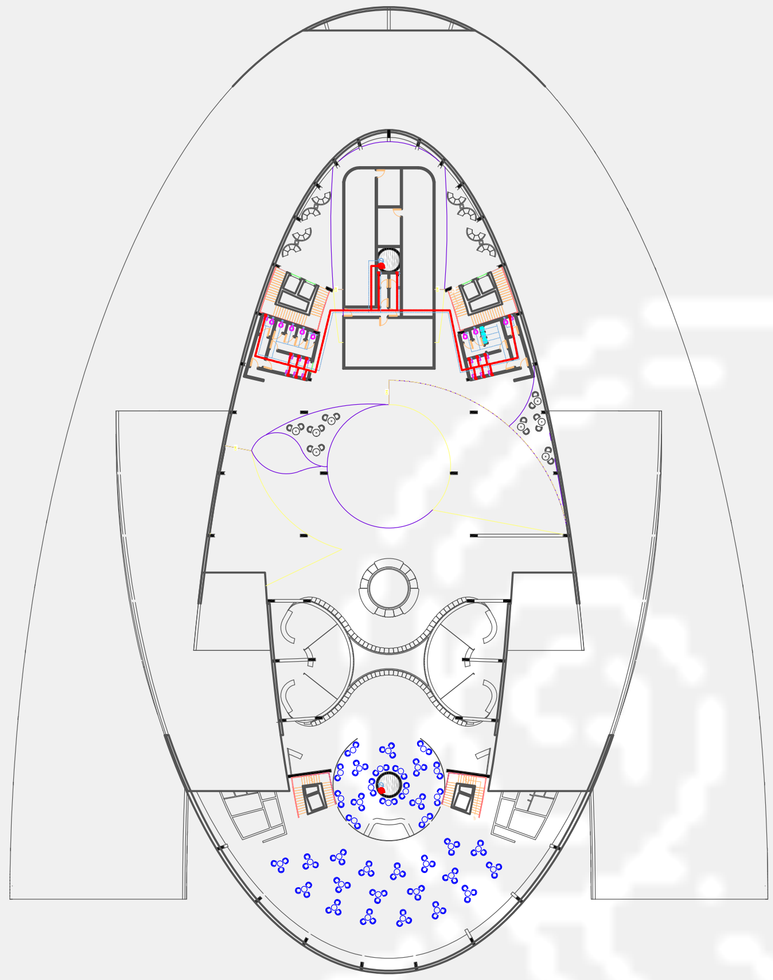

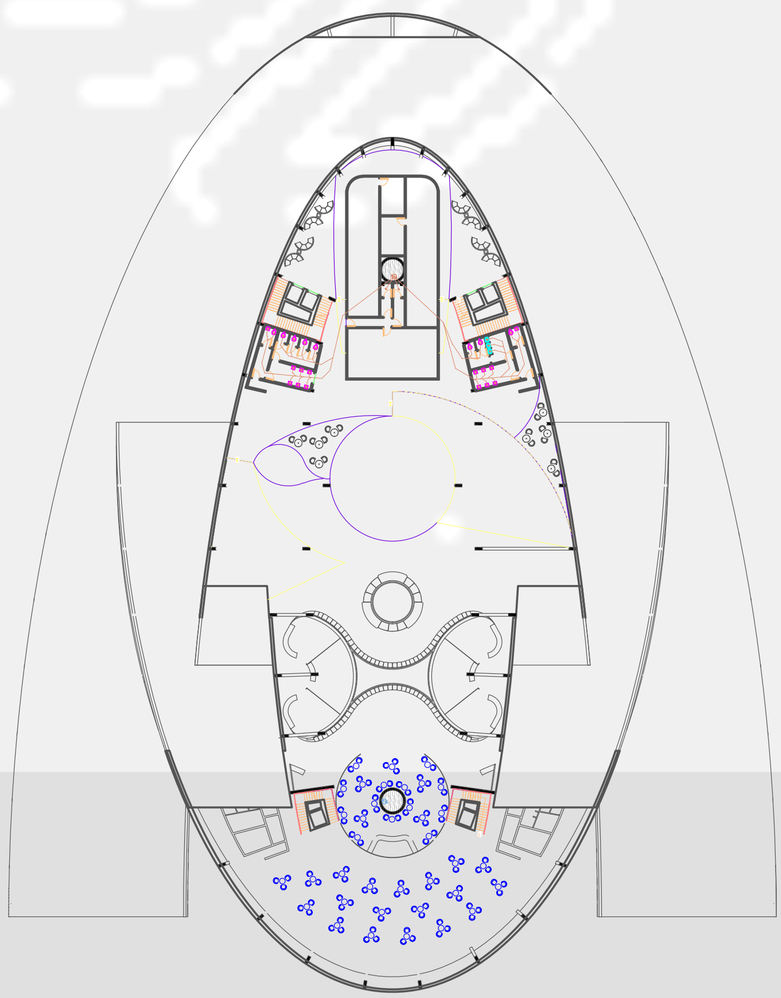

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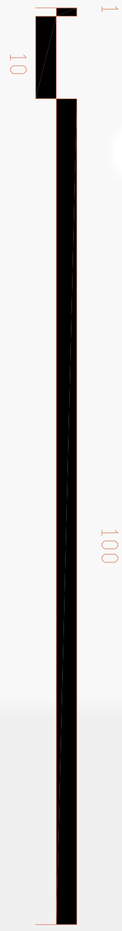


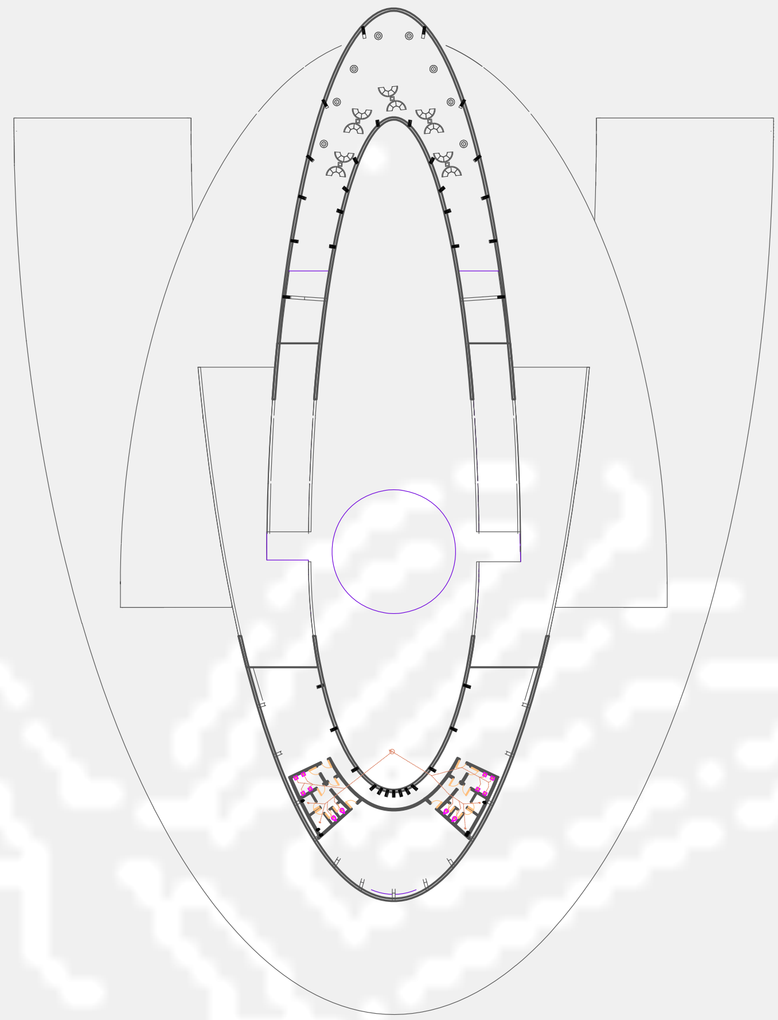

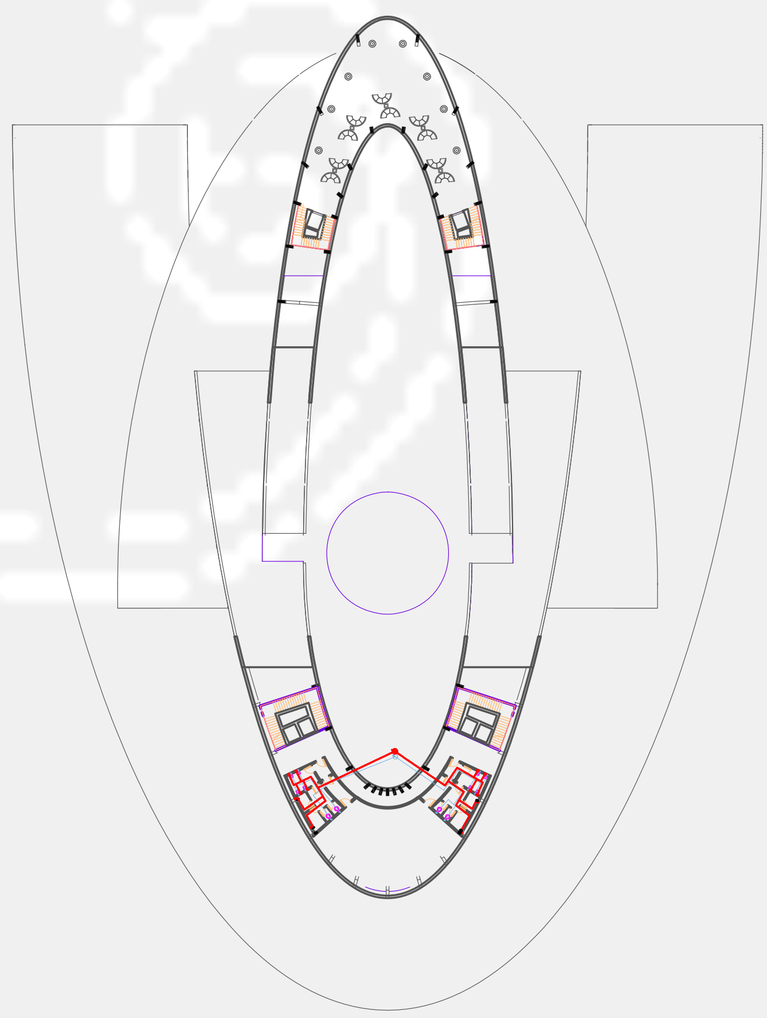

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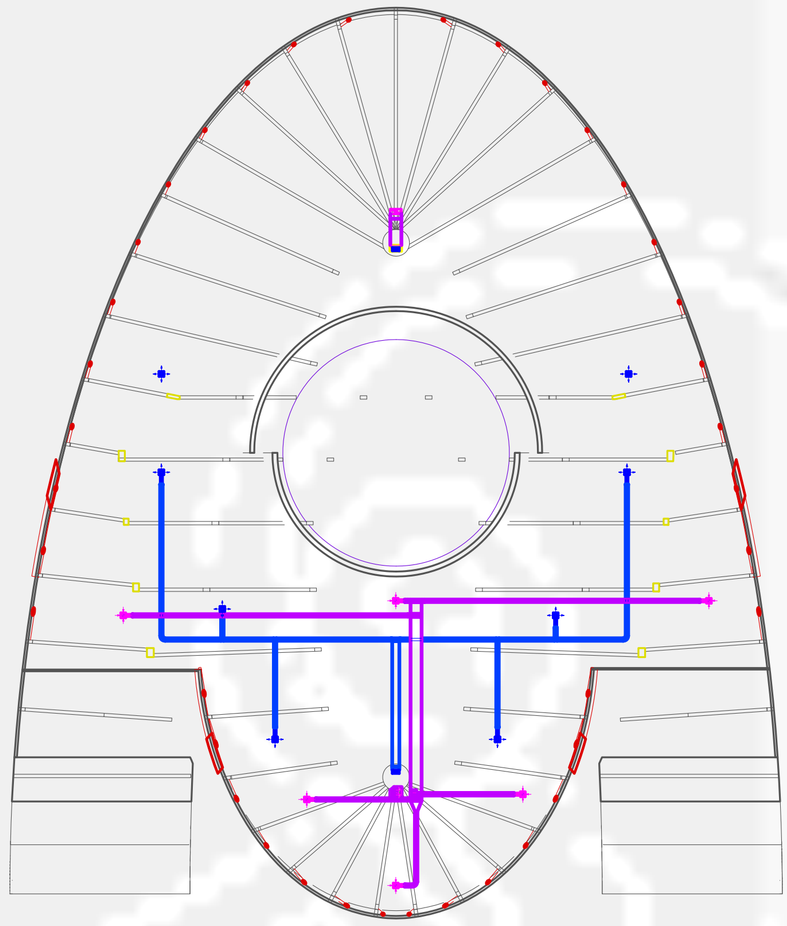

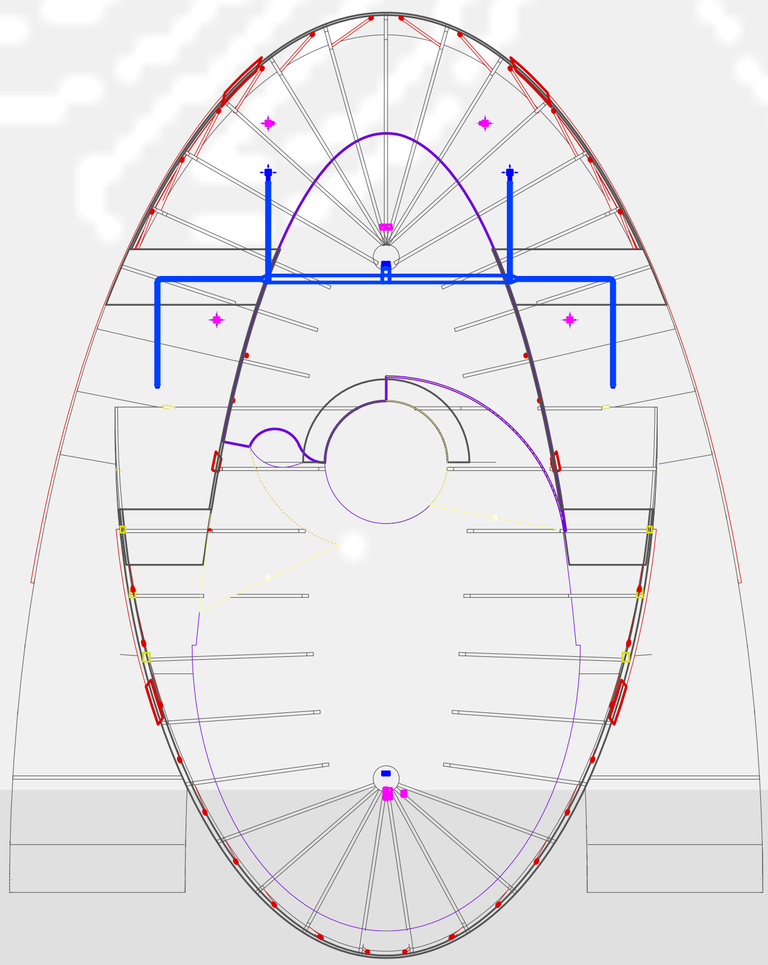

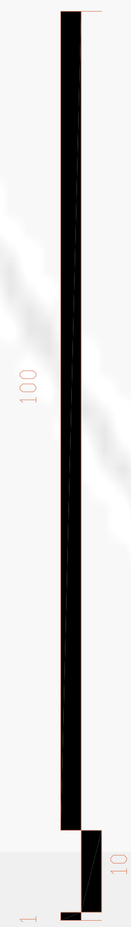

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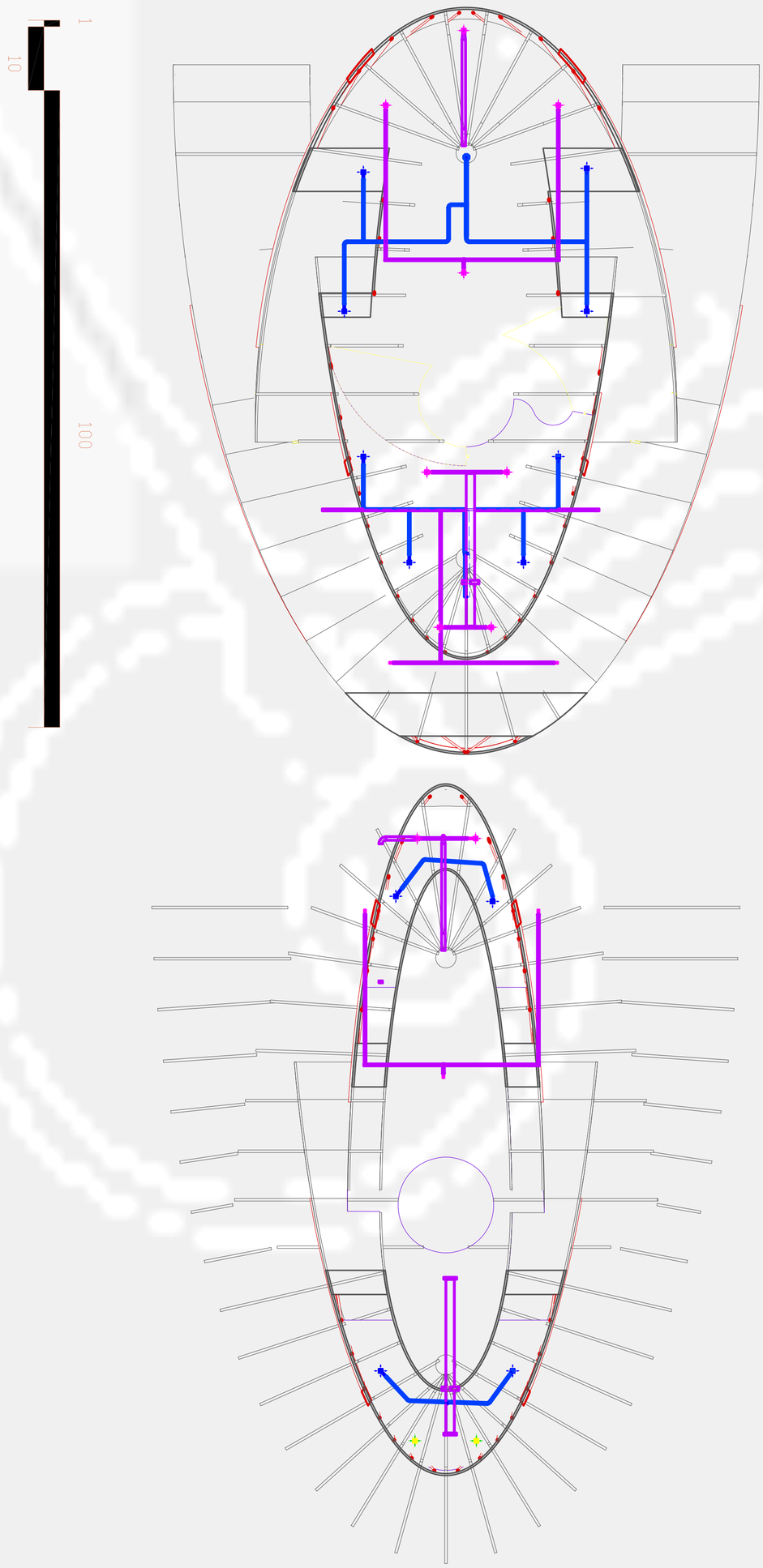

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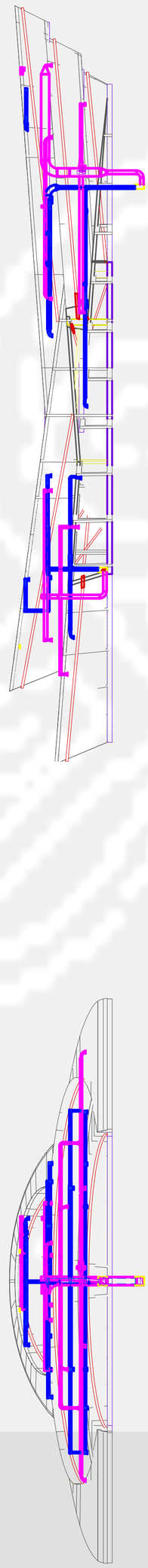

# ABSTRACT

This project is located on Letna plain where the remains of the communist statue reside. The site will include the park area up to the main road where the Sparta stadium and Sparta tram stops are located. The project will be to revitalize the area for all seasons with a facility located centrally to encourage more use of the park year-round. The goal of the project is to blend the two main cultures that are on site, what I call “urban” and “leisure.” The facility will be near the art installation of the metronome but will not interfere while allowing access to the site's original title of Belveder or scenic view. This will be done by keeping the number of floors for the building low while setting the facility back to lessen its impact on the city skyline from the perspective of the pedestrian. The site had a bomb shelter created and will also utilize this space to bring a new life to an abandoned area.

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## 1. BRIEF

New mixed social culture use of the derelict area of the former totalitarian monument and improvements to the existing Letna park

## 2. INTRODUCTION

This project is to focus on the sharing of the space in Letna park near the old Stalin statue ruins. The project will aim to create a blending of the socio-cultural elements that already use the site without removing or pushing away one or the other. The two main elements are leisure time and alternative sports (i.e. “skaters”). The project will blend these two differing lifestyles so that each can enjoy the time at the site with separate areas with the center of the building for interaction and viewing. This will also occur outside the garden area with separate areas to enjoy nature, art and alternative arts and a blended area for interaction and potential discussions.

## 3. PURPOSE OF THE BUILDING

A new mixed social culture use building on site of the derelict area of the former totalitarian monument with additions to the existing Letna park.

MAIN GOAL OF THE PROJECT:

- To insert a new multi-sport and leisure facility into the area behind the `Metronome` kinetic sculpture for all year use and with responsive technologies.
- To revitalise and improve existing park and gardens and insert new leisure and sporting activities for different social and age groups
- To allow the all-season use of internal and external facilities and to improve the viewing of city panorama for visitors

## 4. PROJECT IDENTIFICATION DATA

| | |
|---|---|
| Project name: | Architectural Design 6 – Sharing: AKA - Dragonfly |
| Location: | Letna Park, Praha, Czech Republic – Old Stalin statue site |
| Type of building: | Multifunctional sports and leisure complex |
| Site: | GPS: 50.09815610, 14.41741170 |
| Southern border: | Nabrezi Edvarda Benese street (tram stop Cechuv Most) |
| Northern border: | Milady Horakove street (tram stop Sparta and Sparta Stadium) |
| Western border: | Badeniho street (tram stop Hradcanska ul. Badeniho) |
| Eastern border: | The land before the Ministry of Interior building and Gymnazium Nad Stolou |

| | | |
|---|---|---|
| Developed | | 0.3 km² |
| Built-up volume | | 200,000 m³ |
| Parking | 15,900 m² | Already Existing |
| Green Areas | | 0.3 km² |

## 5. BASIC PROJECT DATA

Subdivision of the project:

The area will be split into 4 sections that will revitalize the space incorporating new sustainability measures and creating an all-season park with paths that lead to the structure built on the site.

### 5.1. Public Square

This space will start from the existing parking area and will extend the full length east to west of the site. The area will end at the already existing rollerblading paths that were installed.

The public square additions are a pond that connects to a water storage unit that will run between the kept large parallel walking paths. This will serve multiple purposes; during the warmer weather, it can be a playing area for people and help cool the area. During the colder winter season, the area can be drained to become an ice-skating rink similar to the one that is usually built temporarily on the site.

The west area of the public square will have a large seating area that has small gardens for each of the four seasons with a tree in the center.

### 5.2. Garden

This subdivision will start from the rollerblading paths that will become a promenade and extend the full length of the site east to west.

The southern area of the subdivision will be the large straight path that was already created.

The area between the rollerblading path will be excavated to create water storage with a stream being dug out to connect the lake that is already on site and will continue to the reflecting pool/ice skating space

This part of the site will have an all-season garden with mechanical “art walls” that will showcase artists work and can be voted on by the locals both for urban and more traditional art.

### 5.3. Walking Bridges

This section will be a connection from the bottom of the hill to the top to create a non-barrier accessible path while keeping the existing stairs. There will be two “carve-outs” created on the hill to keep the paths walkable and more compact on the site.

### 5.4. Facility

This section will be between the walking bridges and the garden sections with no changes to the children's park or lake that is already on site. A new pond will be created near the entrance with a stream to connect to the lake and the garden paths blending into the structure.

## 6. RESULTS OF CONDUCTED SURVEYS

### 6.1. History

Letna Plain, where the site is located, has an important and turbulent history. Within its current history the site was the location of a large statue/monument of Stalin that measured 15.5 meters high and 22 meters long with a bomb shelter created below it. It took 3 attempts to demolish it to the remnants of what it is today.

The Velvet Revolution had a gathering of 750,000 people that happened on the site, this was a non-violent transition of power in 1989 ending more than 40 years of communist rule.

Another demonstration that was the largest protest in the Czech Republic since the fall of communism was the Je to na Nas! (It is up to us!) demonstration and was held on Letna Plain and had 250,000 people in attendance demanding the resignation of the Czech prime minister Andrej Babiš and his justice secretary Marie Benešová. The site has also held several large concerts.

### 6.2. Geological survey and information on local geological conditions

The site consists of rhythmic alternation of sandstones, quartzites, intercalated with siltstones and shales with limestone

### 6.3. Site utilities

High voltage, low voltage, water, and sewage is already on site due to the bomb shelter that was built. The structure is located in this area and will require extensions to connect after subsequent inspections are made to the already existing utilities.

### 6.4. Existing site buildings and green

The Metronome is the only approved building on the site, there are two other small unapproved buildings on the site. One located near the children's park where the structure will be built and another between the rollerblading paths where the promenade will be built (north most of garden area and south of public square).

### 6.5. Surrounding development

The surrounding development consists of residential buildings, Sparta Stadium with the tram stop Sparta to the north. Ministry of Interior building and Gymnazium Nad Stolou to the east. Residential building to the west and tram line to the south at the bottom of the hill with Cechuv Most.

## 7. STRUCTURES

### 7.1 Existing

There are two existing structures on the site that are both considered illegal. They are not located within the site of the new structure and will not affect the build.

There is also the art piece of the Letna Metronome that is located to the south of the new structure and will also not be affected

### 7.2 New

#### 7.2.1 Excavations

Excavation will need to be done to extend the northern side of the already existing underground site. The excavated material will be used in the creation of the hills for the garden/park area.

#### 7.2.2. Foundation

The original foundation will be used with an extension into the north side to support the offset part of the main structure.

#### 7.2.3. Waterproofing and DPC

For the existing foundation new cement waterproofing will be used to ensure durability of systems already in place and for an extra degree of protection.

For the new structure bitumen waterproofing will be used.

#### 7.2.4. Existing Bearing structures

The existing bearing structures consist of stone and mortar construction with the columns measuring 6 meters by 6 meters. This area will be kept after inspection for stability, apart from, the north wall where the excavation will take place and the new foundation is to be applied.

#### 7.2.5. New Bearing structures

The new bearing structures for the basement area will be reinforced concrete. The floors above ground bearing structures will be a “skeleton-system” of glue-laminated columns and beams supported by a modified Burr truss, which will also be constructed of glue-laminated timber. All near glue-laminated bearing structures will be oak from a local region.

#### 7.2.6. Horizontal bearing structures

The horizontal bearing structures will be created from glue-laminated timber, oak from a local region.

#### 7.2.7. Glazed façade elements

All glazed facade elements will be recycled triple-paned glass with the highest UV rating available at that time to protect the wooden structure.

#### 7.2.8. Roof and additions

All roofs will be walkable. The roofs will be comprised of cross-laminated timber, with bitumen waterproofing below the cement walking path. There will be a large 8-meter diameter circle within the center of the fourth floor for a mechanical glass roof that will open for ventilation.

In the basement there will be a bouldering wall, skate park and two climbing walls. One of the climbing walls will reach the second floor and the second climbing wall will reach the third floor.

#### 7.2.9. Envelope and drainage

The envelope will comprise of a triple-glazed high UV rated curtain wall. Where the curtain wall meets the burr truss and ceilings/floors will be seals.

The drainage will follow the curtain walls along the walking path of the roofs and at points of pedestrian crossing will have grating. The drainage will flow into the pond in front of the entrance.

#### 7.2.10. Thermal and acoustic insulation

Thermal insulation will be provided by triple-pane glazing as well as the wooden support structures.

Acoustic insulation will be located under the cross-laminated floors and will be of local sheep's wool if possible or another sustainable source, perhaps cellulose.

#### 7.2.11 Floors

Floors will be made of cross-laminated, locally sourced pine. All I-beams will also be from wood as well.

#### 7.2.12. Lifts/Staircases

Lift shafts will be created from cross-laminated timber.

Staircases will be made of wood with the railings being made of glass and recycled aluminum.

#### 7.2.13. Fire protection

Fire protection will be two layers of gypsum board on ceilings and the main bearing structures. Fire protection will also be in the form of sprinklers. Fire escape is located on each floor directly out to the walkable roof that gives direct access to the ground.

# 8. MEP

## 8.1. Mechanical

8.1.1. Geothermal

The main component will be located in the basement mechanical room connecting to the HVAC system. Due to the depth of the preexisting basement the piping will already be under the frost layer and can therefore be a coil-system instead.

8.1.2. Photovoltaic

These will be located on the southern side of the building on the bearing structures. The shading wings will also have photovoltaic cells on them as well.

8.1.3. Roof vent

The roof vent will consist of eight movable elements that will hide under a false under the actual roof.

8.1.4. Shade “Wings”

The shading device will be hidden in the walls of the roof and will have movable elements that will lift the entire part so that it may fold out and offer shade as well as store energy with the photovoltaic cells.

## 8.2. Electrical

8.2.1. High Voltage

This is already on site from the bomb shelter that was previously built and will be used in the design. After inspection, the existing line will be used to supply electricity to the facility.

8.2.2. Low Voltage

This will be provided to the facility through multiple breaker boxes and splits located on every level of the building.

8.2.3. Photovoltaic Storage

This will be located in the mechanical rooms

## 8.3. Plumbing

8.3.1. Hot Water

This will be created via heat pumps through the geothermal unit. The water will be sourced from the city with the piping that is already on site from the bomb-shelter (after inspection).

8.3.2. Cold Water

The water will be sourced from the city with the piping that is already on site from the bomb-shelter (after inspection).

8.3.3. Greywater

Filtration and irrigation to the landscaping will be in a separate mechanical room for greywater.

8.3.4. Blackwater

Filtration and irrigation to the landscaping will be in a separate mechanical room for blackwater.

8.3.5. Sewage

The sewage will be minimized as much as possible using the blackwater system. The original sewage piping for the bomb-shelter (after inspection) will be connected to the rest of the new facility.

## 9. SUSTAINABILITY

### 9.1. Rainwater storage

The area between the rollerblade paths will be excavated about 15 meters deep to allow water storage on site. A stream will connect the lake on-site through the excavated water storage to the reflecting pool/ice rink.

### 9.2. Greywater

A greywater filtration will be held within the structure. All showers and sinks will drain into the storage to be filtrated then used for watering the landscaping and non-potable water use (i.e. flushing toilets).

### 9.3. Blackwater

Installing onsite treatment systems like bio-digesters or constructed wetlands to treat blackwater. These systems use natural processes to break down organic matter and filter out contaminants, producing water that can be safely reused or discharged.

Another possibility is a TEvap system located in the basement level. The TEvap system can use a root filtration system at a depth that will allow the roots of large plants to reach the system. This will allow no effluent to leave the system while nourishing the plants and minimizing sewage.

### 9.4. Geothermal

The heating and ventilation of the building will utilize geothermal to minimize power and electricity consumption. The basement is low enough under the frost layer that the system can be placed in the basement with the coil unit under the floor or with deeper pipes for a larger unit.

In some geothermal systems, the heat extracted from the ground loop can be directly used to heat water. This can be achieved by passing the fluid from the ground loop through a heat exchanger connected to a separate water heating system. Geothermal water heating systems can be scaled to meet the hot water demand of large buildings by sizing the ground loop and heat pump units accordingly.

### 9.5. Solar

Panels will be located along the “skeleton” of the building across the entire southern side. These panels will stack and slide out from each other to maximize sun exposure. The heat gain will be minimized by the panels extending to their maximum in full sun and stacking when there is little or no light and will be reactive to the amount of light while being self-powered.

Battery storage for the reserve power produced from the panels will be in the basement.

## 10. CONCLUSIONS

These suggested additions to the Letna site will assist in merging the two “cultures” of urban and leisure; without removing or redistributing one or the other. In many cases, the unwanted element is removed or pushed out, This will not need to be done with this design. Urban culture is part of our everyday life and can be shown for what it is, art.

The graffiti on site is there because the area is used little during most of the year and has poor lighting. The lighting and use will increase with this design. The underlying thought of graffiti as a negative aspect to a site is possible to change and has; for instance, graffiti as a mural placed on the side of a building. This same idea can be utilized with the art walls in smaller measures which can then be voted on by the public. This will allow locals to have a say regarding what they see and the interaction when they walk by the wall thinking, “hey that’s the one I voted for.” Another positive aspect is the competition will allow more street artist to showcase their work and has been shown as a way to lessen unwanted graffiti. The secondary moving wall will have another more classic piece of art that can be seen, so the park, just like the seasons, is constantly changing.

The structure was placed further back so it does not disturb the skyline of the city from the pedestrian point of view. The height of the structure will still raise a person in the cafe or on its roof to allow a scenic view from the location, returning the site to its historically labeled function.

This facility allows a sharing of space for both the urban and leisure cultures with areas of separation if so chosen. The cafe and viewing platform are places the leisure culture can enjoy. The bouldering wall and skating area in the basement are for the urban cultures. These two cultures blend throughout the building with the climbing wall extending through the center and viewing spots for the half-pipe with plenty of places for people to watch sports, have their children play, or just rest in the indoor garden.

Last, the proposed additions are to highlight a more sustainable future and at least a step in the next direction. The site has storage for rainwater so that it is not lost to the river which can then be used to help water plants and lessen the hill's erosion. The greywater and blackwater systems will irrigate the plants and lessen waste. The structure itself uses many sustainable elements with a mindset to assist in achieving targets set by the EU. We can at least start by building with wood, even if this is just a concept.

The warmth wood adds to a space is something that cannot be imitated and just like the people who would share this facility each are one of a kind, however their unity is what makes life sublime, this can be a structure built to last, much like our life.

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# Exploded Axo of shade and solar wings for facility