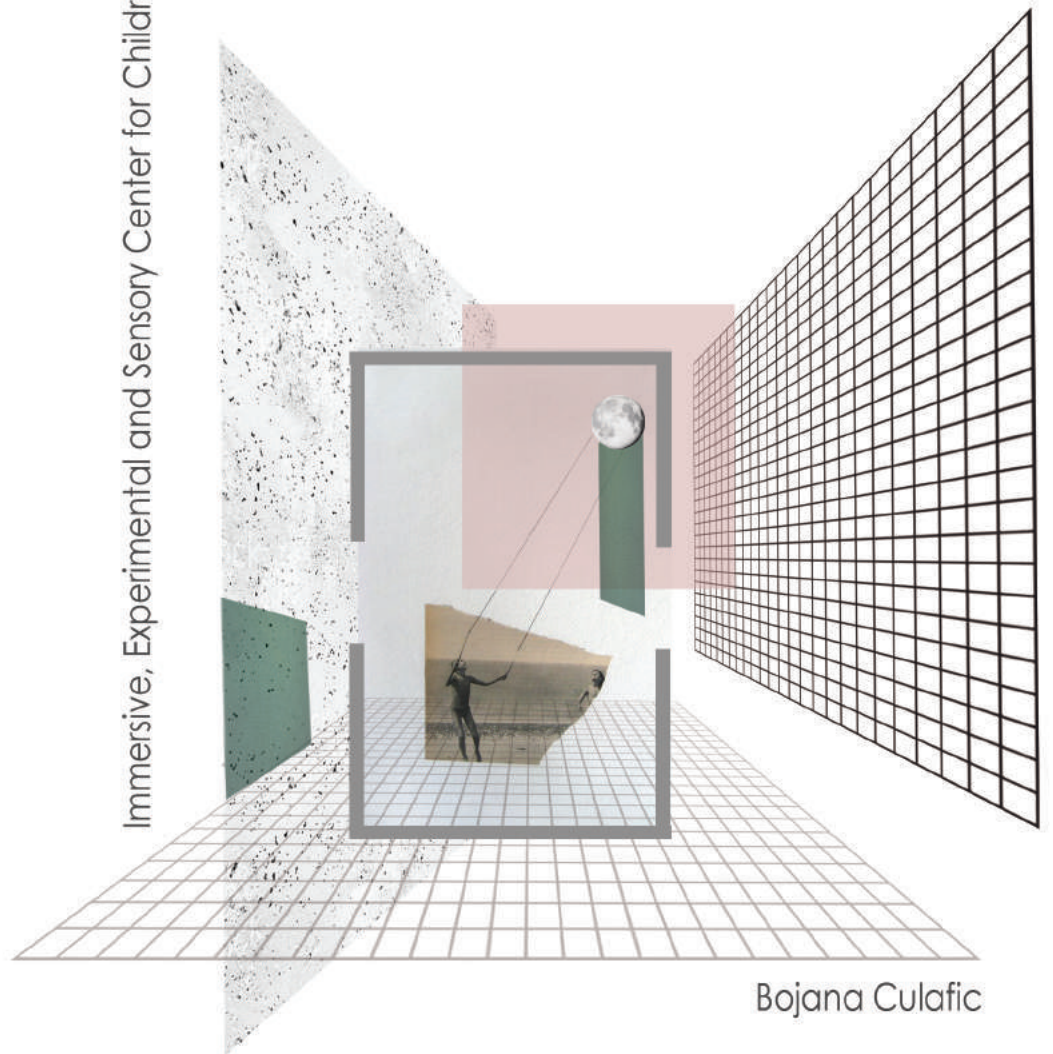


Immersive, Experimental and Sensory Center for Children



Bojana Culafic

MASTER THESIS PORTFOLIO

Immersive, Experimental and Sensory center for children
Prague, Czech Republic

Author: Bojana Čulafić
Supervisor: Henry W.A. Hanson IV, A RLA LED AP
Faculty of architecture, Czech Technical University
15121 Department of Spatial Planning
2017-2018 / summer semester

contents:

Assignments and declarations

Abstract

The river and islands.....	9-10
The character of vila Štvanice.....	11-20
-history	
Analysis of the site and relevant context.....	21-26
-use of land, transport map, flood map	
Sensory maps.....	27-30
-sight map, map of sound	
The natural child.....	31-34
-sensory development in children research summary	

Proposal:

Idea development.....	35-38
Site axonometric view.....	39-40
Floor plans.....	41-44
Axonometry activities.....	45-50
Sections and elevations.....	51-56
Details.....	57-58
Vizualization.....	59-72
Bibliography.....	73-74

Czech Technical University in Prague, Faculty of Architecture

2/ ASSIGNMENT of the diploma project

Mgr. program navazující

Name and Surname: Bojana Culafic

Date of Birth: 4.11.1994

Academic Year / Semestr: 2018/summer semester

Department Numer / Name: 15121 Department of Spatial Planning

Diploma Project Tutor: Henry W. A. Hanson IV, RA RLA LEED AP

Diploma Project Theme:

Immersive, Experimental and Sensory Center for Children

Assignment of the Diploma Project:

Description of the project assignment and the expected solution objective:

The main aim of the projects is to support natural and sensory development of children. The basis is to stimulate curiosity and creativity in children with an emphasis on learning through their own sensory experiences. The project is conceived as a center for free and spontaneous exploration, experimentation and discovery supporting individual talents and creativity of the children.

All parts of the facility stimulate learning about the world guided by their own desire and interest.

- sound "spatialization" atelier that is based on inter-relationship between sound, space and movement
- "resonances" atelier allowing the children to use video camera, photography and artworks to explore environments
- memory room
- observation room
- sensory garden where all senses can be explored with nature as the primary inspiration
- room of shadows where children can differentiate transparent, translucent and opaque
- craft room with prepared materials and environment for independent exploration and experimentation

Description of the final result, outputs and elaboration scales

1. Portfolio to include at a minimum:
 - Analysis of the site and relevant context,
 - Theoretical research summary of sensory development in children,
 - Developed of a facility program,
 - Case studies and relationship between architecture and senses, how architecture affects and emphasis sensory development, self-creation and exploration.
 - Graphic description of the proposal development process
 - Photographic documentation of development process in models
 - Complete set of final drawings showing the design proposal
 - Structural and material drawings that describe the general construction plus typical representative details.

- All images, quotes, diagrams etc. that are from non-author sources shall be credited at the place of their inclusion in the portfolio.

All drawings in the portfolio shall be at a scale that enables clear and legible information about the content.

2. Posters shall comply with the Faculty of Architecture dimension requirements and shall provide an outline description of all phases of the project and final design proposal. The following is considered the minimum requirements for the poster drawings:
 - Graphic and textual vision statement
 - Critical context and site analysis in the development of the proposal. Analysis of the site and immediate surrounding context shall be represented as three dimensional drawing such as axonometric, isometric, perspective.
 - Illustrative 'birds eye' representation of the overall design proposal at a scale sufficient for people representing the intended functions to be visible.
 - A minimum of two site and building section / elevation or section perspectives at a minimum scale of 1:500. These sections shall extend through the entire site area and include the immediate surroundings.
 - A minimum of two building section / elevations that describe the interior functions, inside / outside relationships, immediate surroundings and include activities of users of the facility. These sections shall be at a minimum scale of 1:100.
 - Elevation drawings at a minimum scale of 1:100 of primary exterior facades including their immediate context.
 - A minimum of two construction sections from foundation to sky at a minimum scale of 1:50.
 - A minimum of two eyelevel visualizations of the interior of the facility.
 - A minimum of three eyelevel visualizations of the exterior; one of these visualizations must be of the facility from a primary viewing point beyond the limits of the target site.
 - A material and construction diagram of the construction strategy.

3/list of further agreed-upon parts of the project (model)

Model of the building and relevant surrounding site areas at a minimum scale of 1:200. The model(s) shall be constructed exclusively of biodegradable materials.

Date and Signature of the Student

03.03.2018

Bojana Culafic

Date and Signature of the Diploma Project Tutor

3.3.2018



Date and Signature of the Dean of FA CTU

3.3.2018

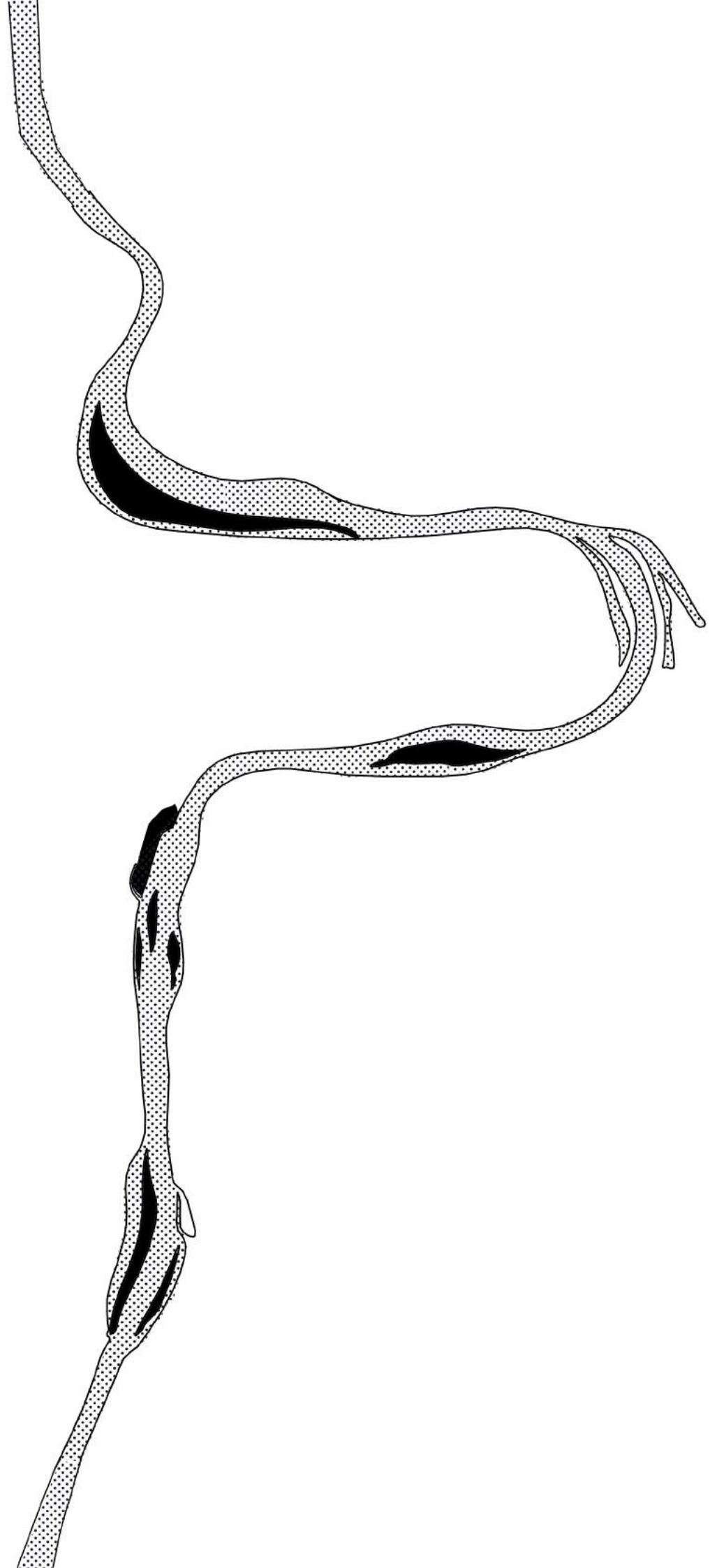


Abstract

Architecture is the art of reconciliation between ourselves and the world, and this mediation takes place through senses.

The master thesis focuses on exploring spaces that strengthen the existential experience, unique and distinctive aspects of the environment. It evaluates the role of architecture in emphasising and framing the segments of the environment that are identified as sensorial and experiential.

The research aims to support natural and sensory development and experiences of children and youth by stimulating free and spontaneous exploration and discovery.



The river and islands

The Vltava river is the most important city-forming element. The most beautiful thing of its flow of has always been the islands. Many islands had disappeared in time, while some of them became the experiments of man's hands. Only few of them have been left to our generation so far, not only for admiration, but also for entertainment and sports. All year round Prague's islands are a great source of countless outdoor activities. They represent a serene oasis just a few steps away from the city center.

The islands are part of the river, isolated from the city. Currently there are 9 independent islands on Vltava river: Trojský (Císařský) Island, Štvanice Island, Petržilkovský Island, Střelecký Island, Kampa Island, Children's Island, Rohanský Island, Veslařský Island, Slovanský Island..

*The island is place both for itself and a pretext for imaginings that need local habitation and a name. It can give relief and pleasure., or it can frustrate, isolate and negate. Above all, it invites and resists/contains or constrains- **the imagination.***

-Rajev S. Patke, Poetry and islands

The character of island Štvanice

Štvanice is an island on Vltava river, between Prague districts of Holešovice and Karlín. The history of the island dates back to 1118, when it was called the Great Island. In this area, the river was shallow and thus created a series of river islands. However, most of them disappeared in the regulation of the riverbed.

It was also called the Great Venice, since it was surrounded by many smaller islands.

Štvanice Island in has been the place of sport and culture for many years.

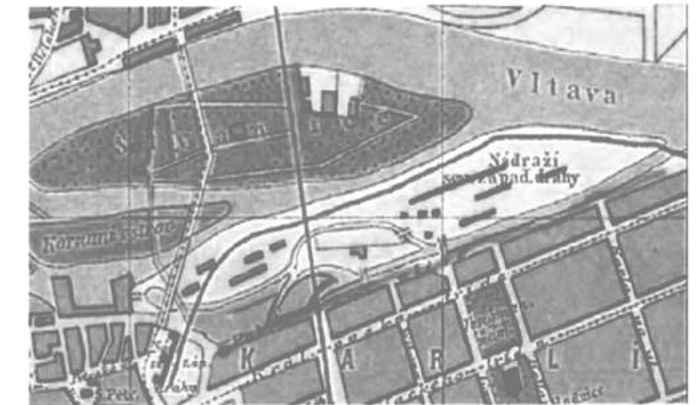
Island, however appears to be abandoned – this sense of having it all to yourself definitely contributes to its genius loci. Štvanice is like a place time has forgotten. For those who like urban exploration,

It is known that the island of Štvanice existed long ago, when Princess Libuše was the starry glory of the city of Prague. The island has long been an important place for the population on either side of the river, because between it and today's riverside was the only ford in the lower rivers of the Vltava river. This is the only route leading from Vysehrad and the Old Town to northern Bohemia.

Štvanice is worth a wander and expiriance.



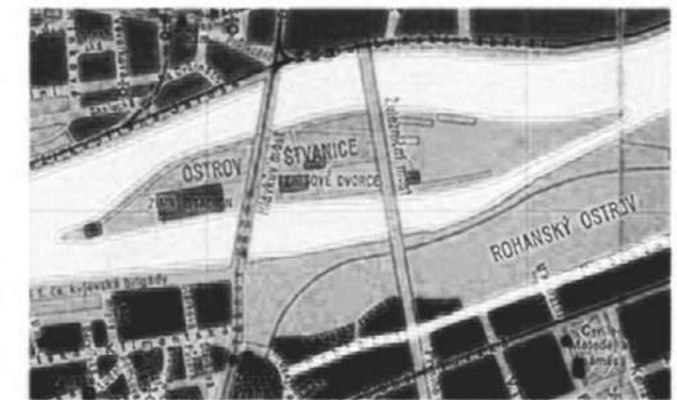
1840-1842/ Štvanice, Rohanský ostrov, Korunní ostrov, jeruzalémský ostrov..



1900-1903 /wooden bridge over Štvanice, Jerusalem island .merged with Rohan Island



1937/situation



1957/ Hlavkuv bridge is finished (expansion and renovation)



1970/situation



2015/ Štvanice island, only remain island of archipelago

Štvanice through the history

Today's name Štvanice – hunt, chase – is derived from the popular entertainment at the time - dog hunts on animals that were held here at here in the 17th and 18th centuries.

In the late 19th century on the island were 3 restaurants and it was also the place for entertainment- animal games, theatrical performances, concerts, fireworks and dancing.



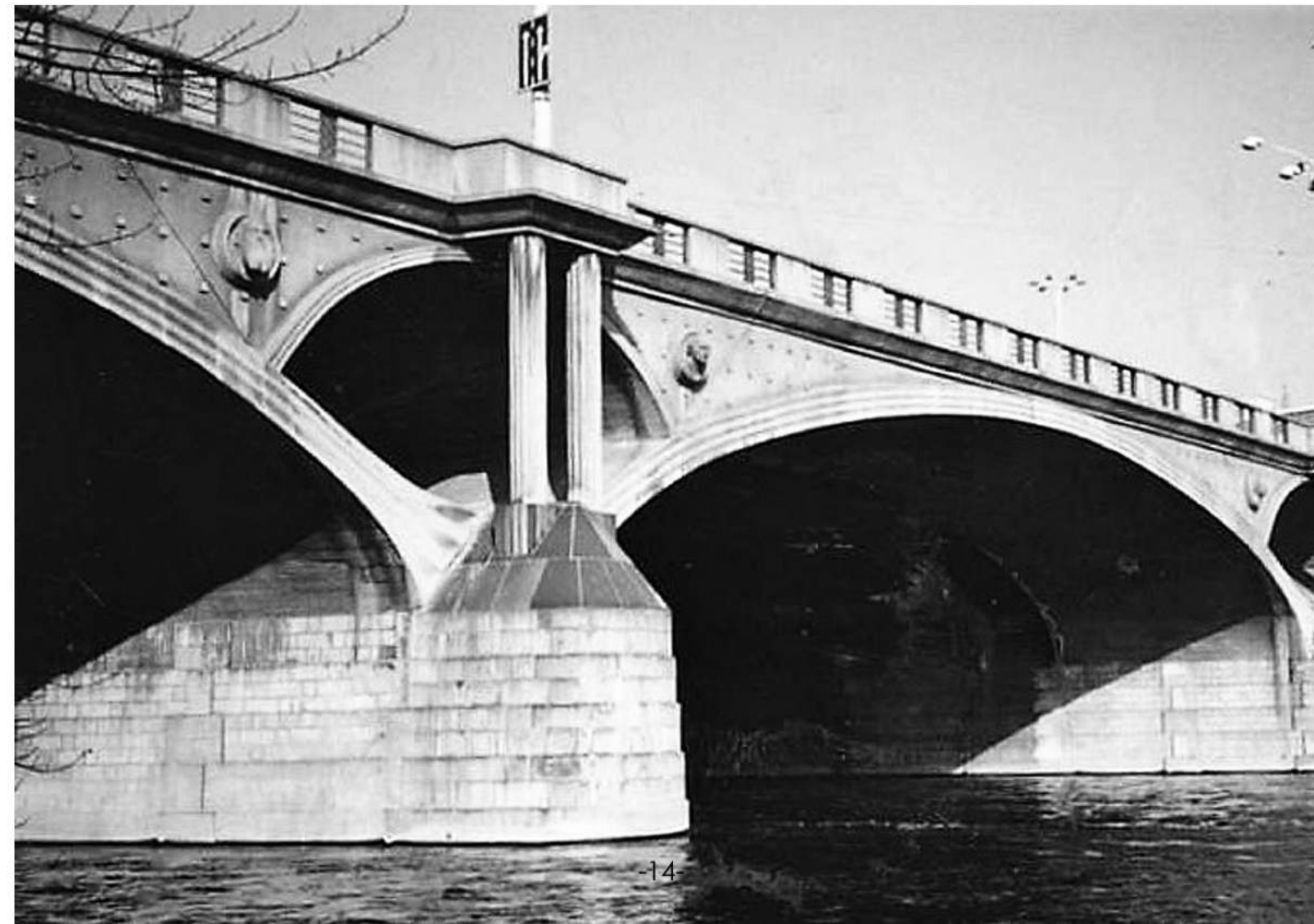
In the mid-19th century and Austrian-Italian railway builder Alois Negrelli built a viaduct for the track Prague – Dresden, which was the second stone bridge across the Vltava River and is still functional today.

Since 1877 there used to be a vaudeville-theater as well as other attractions. In 1898 the city of Prague bought the island from a private owner and built temporary wooden bridge, but in the years 1908 – 12, new steel bridge was built according to a design by architect Pavel Janák. It connects the New Town with Holešovice past the Štvanice Island.

The Hlavkuv bridge connects the right riverbank of Ludvík Svoboda and Rohanské riverbank with the left riverbank of Captain Jaroš and Bubenské riverbank. At the same time it connects the island Štvanice with both riverbanks. It is the twelfth bridge over the Vltava River in Prague.

Noteworthy about the bridge is its name or the fact that it as one of the few has never been changed. The bridge is made up of seven arches. Its decorations were designed by Bohumil Kafka and Ladislav Kofránek, the reliefs are over 2.5 meters high, and were carved directly into the concrete. In the corners of the main arches there are 12 medallions of the twelve leaders from Josef Maratka and Otto Gutfreund. The medallions depict the people who were responsible for building of the bridge.

Hlavkuv bridge is the last bridge, which can be reached on regular cruises our company offer .



The place of sport

Since the 20th century the island has been a place of sport.

Štvanice stadium was situated on this Island and was ranked among the oldest stadiums in Prague. The stadium was built in the early 1930s and was entirely made of wood. The stadium was in its heyday in the first half of the 20th Century, but had been in decline since 1961

Subsequently, the rink at Štvanice started to grow old and waste away. Only regional ice hockey and public skating kept it alive. After several years the stadium had to be closed due to poor repair.

As late as 1998, Štvanice stadium was repaired and reopened. It was open for public skating and hockey returned.

In 2000 Štvanice Arena was proclaimed a national cultural monument and was protected by the state. But it was not a happy ending. In summer 2002, Prague was hit by catastrophic flood and a big part of the stadium was damaged.

Štvanice Stadium has been definitively demolished in May 2011.

In 1986 there was opened a modern Tennis area Štvanice, which has 9 outdoor and 2 indoor courts, the central court has the capacity of 8.000 seats and is the annual place of ATP and WTA tournaments (Strabag Prague Open).



On the island is also a skate park and bike park. Štvanice skate park has a history dating to 1993, since that time it has become recognized not only in the Czech Republic but in the world as well. This park is namely very modern and hosts prestigious competitions such as the Mystic Sk8 Cup.



Prahá - Zimní stadion.

vila Štvanice

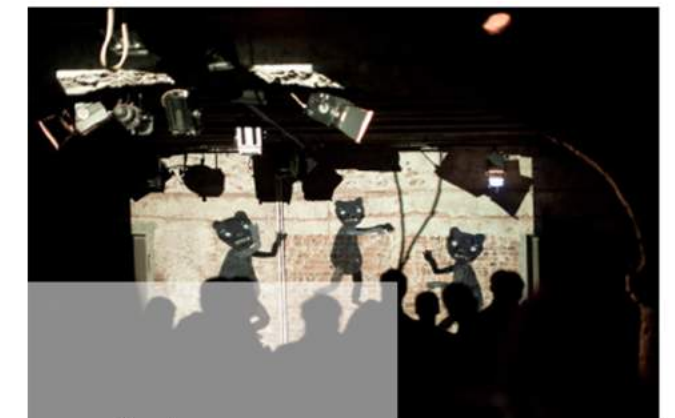
To the west of Hlávka Bridge stands the classical building from 1824, which is a protected cultural monument. In the past building used to be a dance hall, while in the 1990s it represented headquarters of Bonton Music

Since 2014, the building has been presented under the name Vila Štvanice as an "island scene".

It was operated by the Tiger Society, in distress, the Geisslers Hofcomoedianten and the Theater of Flight where art and photography workshops are held, as well as ateliers, scenic courses, literary events and lectures

For the first time here, in September 2013, a group of theater actors around Ivo Kristian Kubák, Tiger in Need presented a project called Golem Štvanice, the first immersive theatrical production in the Czech Republic.

During the performance, viewers walked through the villa area and were also part of the inspirations of events. The audience and criticism led to the introduction of the Golem Cube Multimedia Project, which was part of the Prague Quadrennial 2015.



event/performance/act



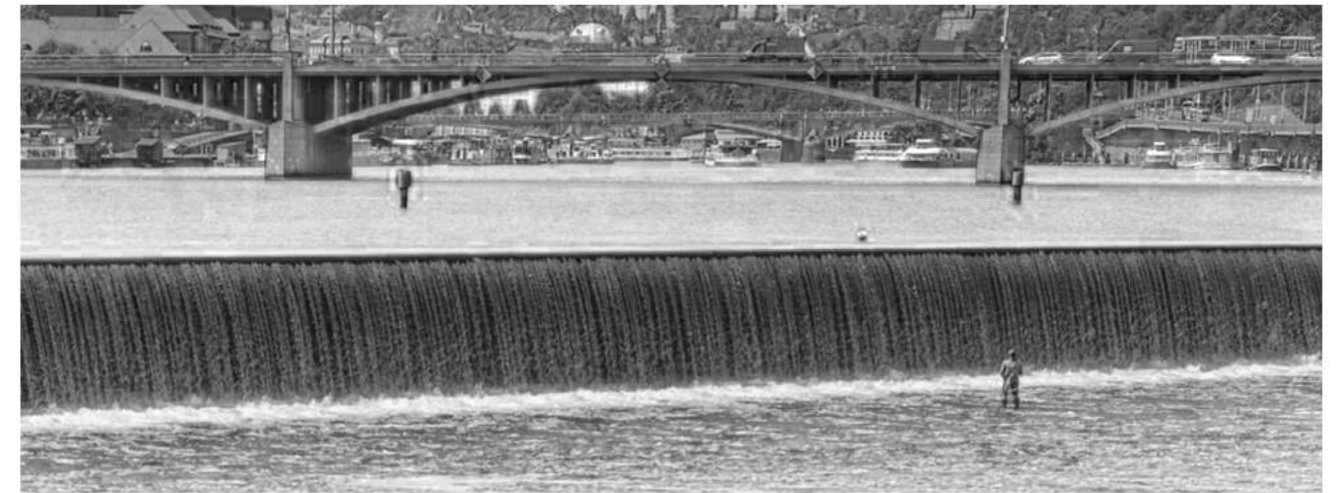
Hydro power plant

Hydro power plant on the western end of the Prague biggest island is an example of distinctive industrial architecture in style of Art Nouveau, which is a technical monument. At the end of the 19th century, when the matter of making the Vltava river navigable was dealt with, the idea arose that small water power stations supplying Prague households with energy and illuminating the city could be built. Two of them were built on the island. One was cancelled due to the fact that the river arm was backfilled in 1929.

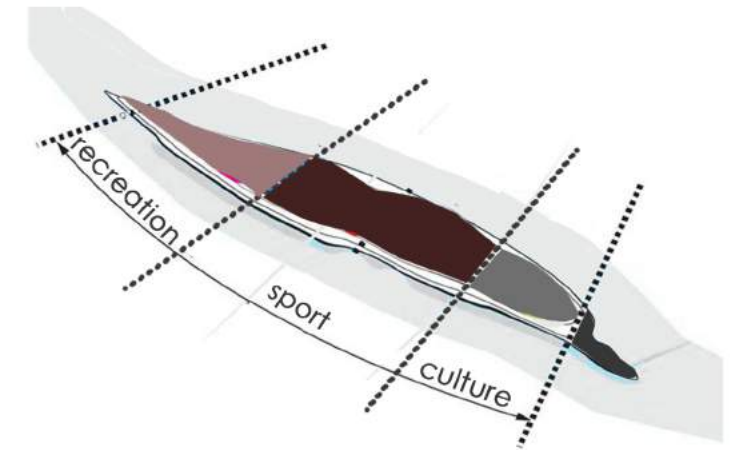
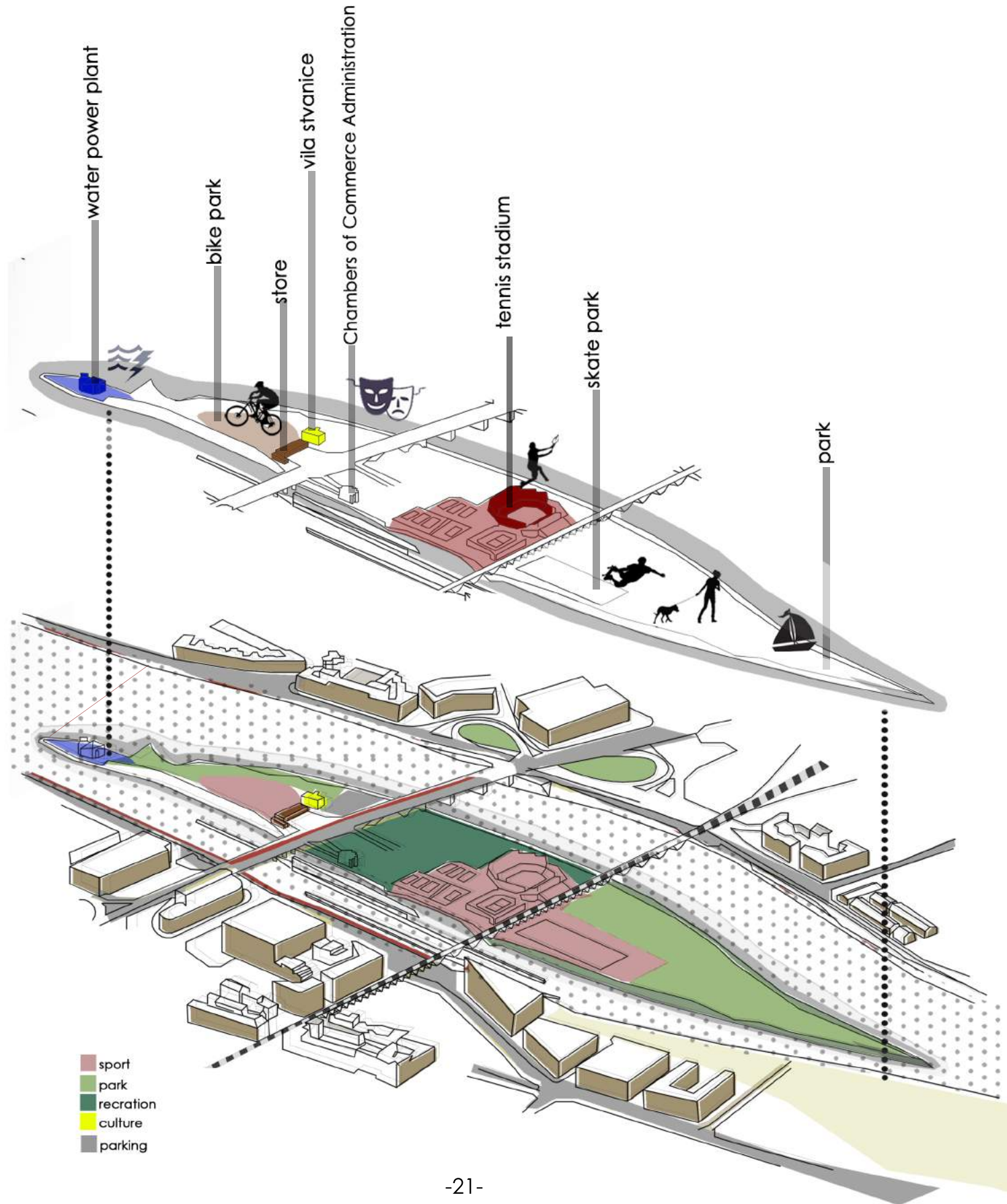
However, the other plant has been preserved up to these days. It was built in the 1913-1914. The project of its service building was developed by architect Alois Dlabac, who was inspired by the shape of some palace building in France. It was one of the first concrete constructions in Prague. The unique technical equipment, which included a gear wheel with wooden teeth, endured in operation incredibly long – until 1972 when the plant was shut down due to a complete wear and tear.

As a result of the energy crisis in the early 80s, it was decided to reconstruct and build small hydroelectric power plants, and so from 1984 the Štvanice plant was also reconstructed. The renovation was particularly difficult because the architects on the project wanted to preserve the original Art Nouveau exterior of the building, as well as the period stone trimmings on the site.

The reconstructed Štvanice plant was put into operation in 1988.



Use of land



recreation



park



culture



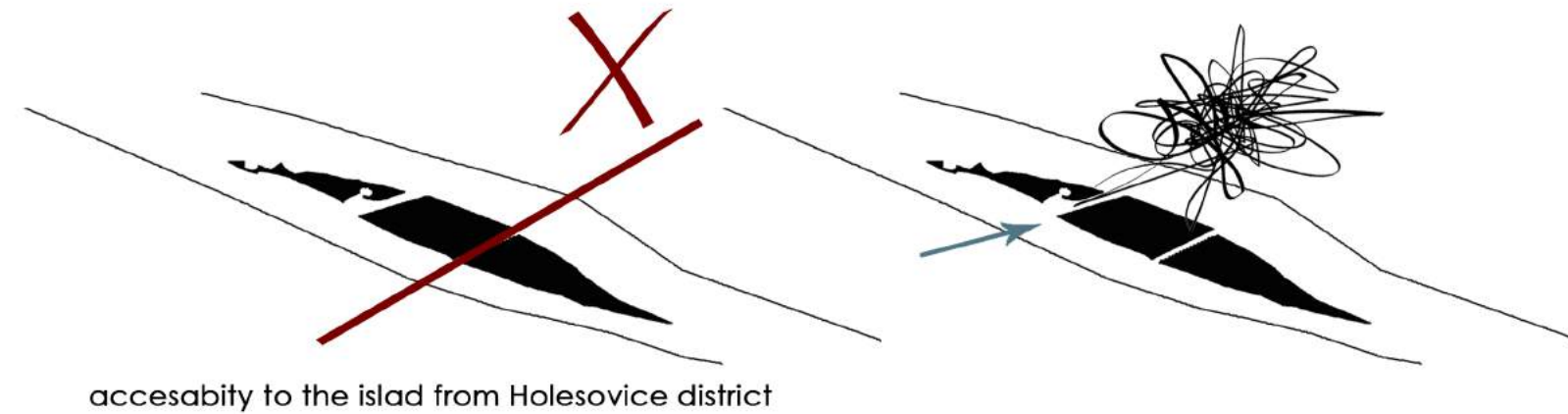
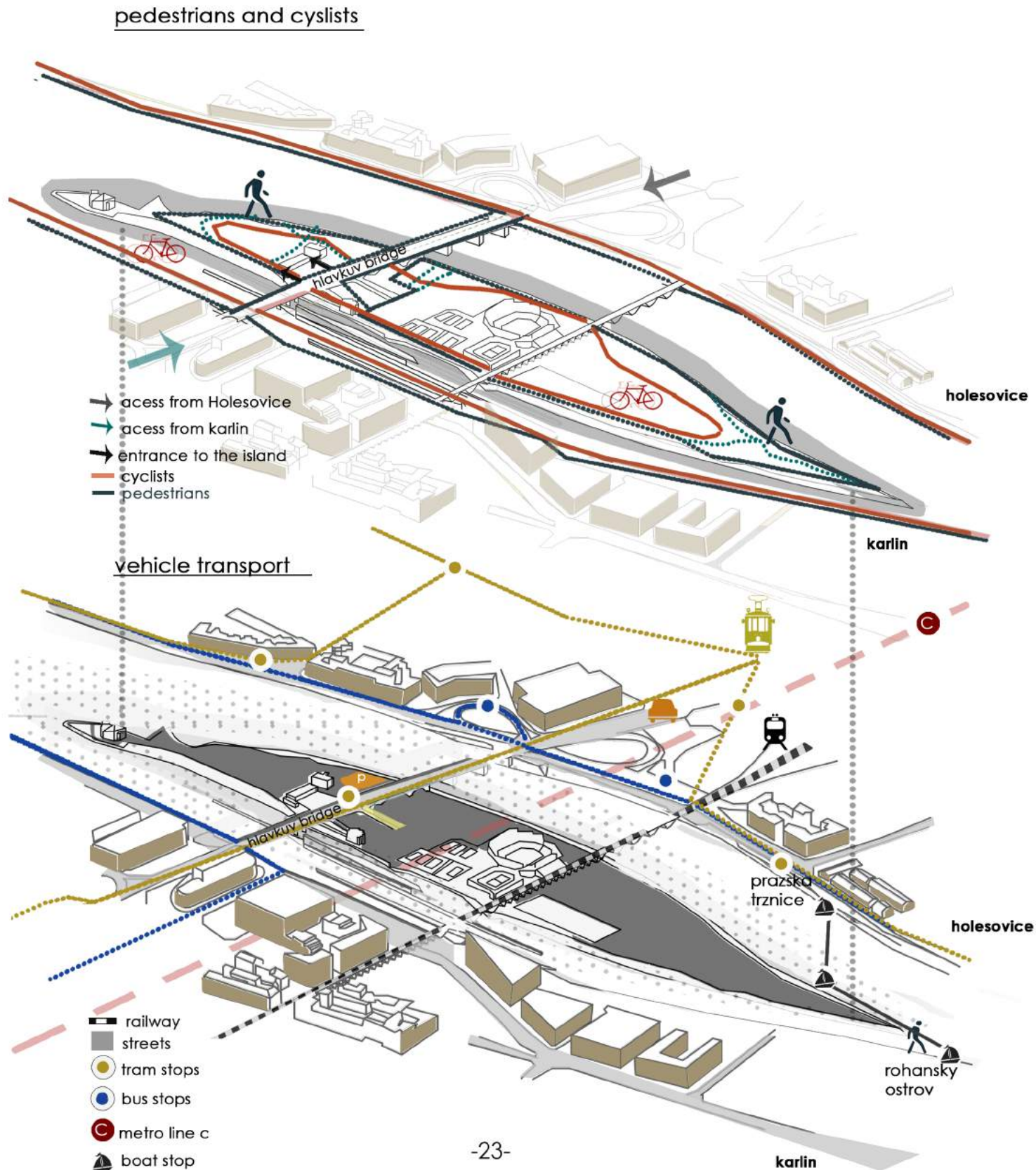
sport

Map of transport

The main pedestrian and car access to the island is from Hlavkuv bridge. There is a Stvanice tram stop directly on the bridge which provides fastest connection of public transports.

During the warmer months there is a possibility to use a pontoon boat with transport line Holesovice-Stvanice-Karlin.

However there is a lack of good connection between Holesovice and island especially for pedestrians and cyclists. This problem is already considered to be solved by adding pedestrian bridge that will provide connection between two river banks and open the access to the island.



metro C



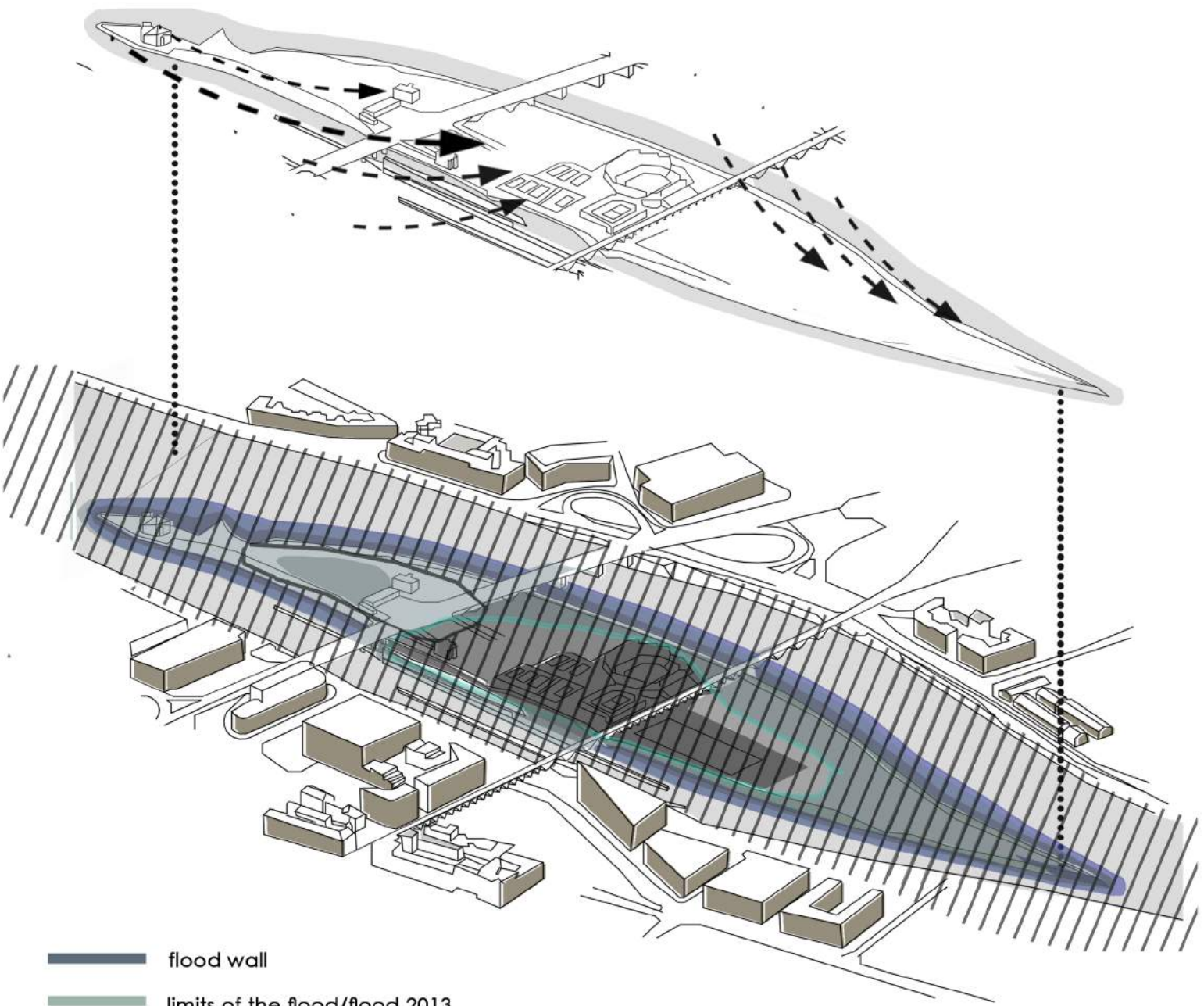
stvanice

water and wind movement

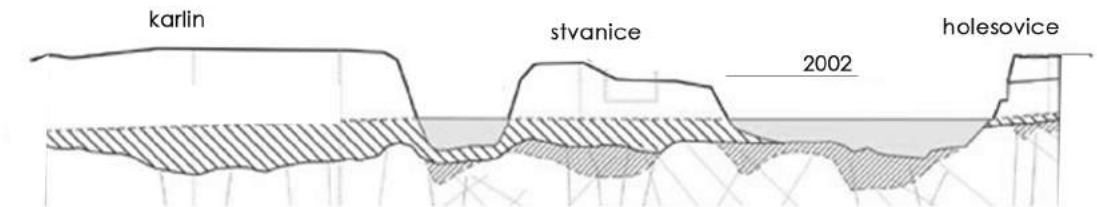
month of year	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
domin. wind direction	↖	↗	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
average air temp	1	2	7	12	17	20	23	22	17	11	6	11

Floods are the primary sculpting force of Prague's structure and identity. For centuries water was a natural part of the urban structure. In recent human history city started to rely on engineering and concrete walls to protect citizens from the disruptive might.

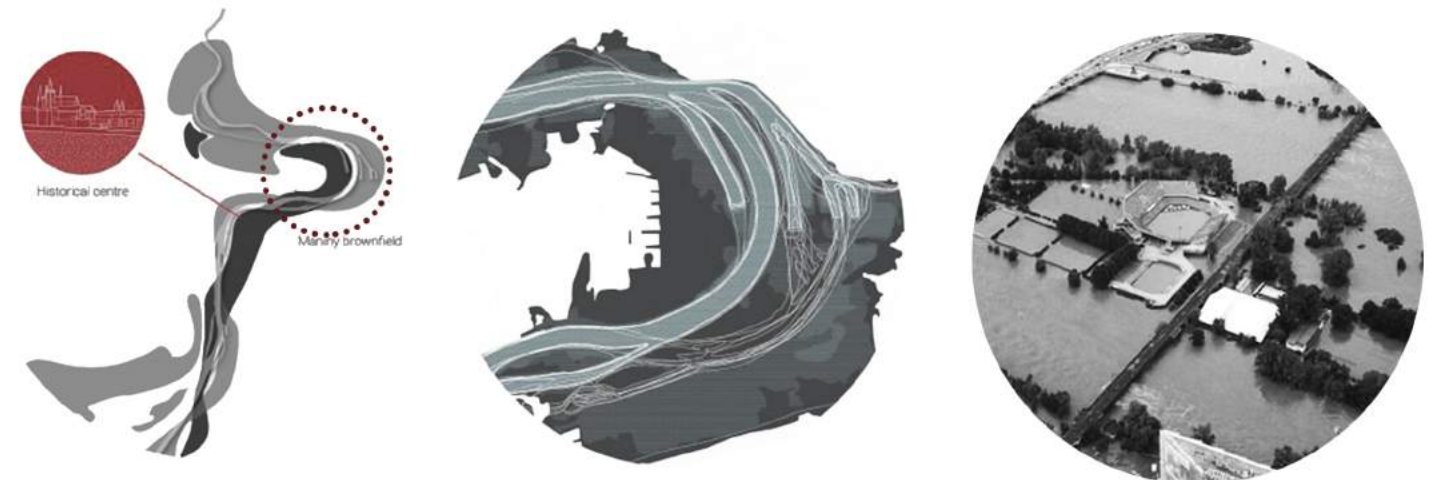
The technological progress makes us believe in our mastery over nature. In August 2002 a catastrophic flood hit Prague and left many neighbourhoods destroyed.



- flood wall
- limits of the flood/flood 2013
- Q2002 floods in 2002



2002 flooding and its consequences



sight map



landscape



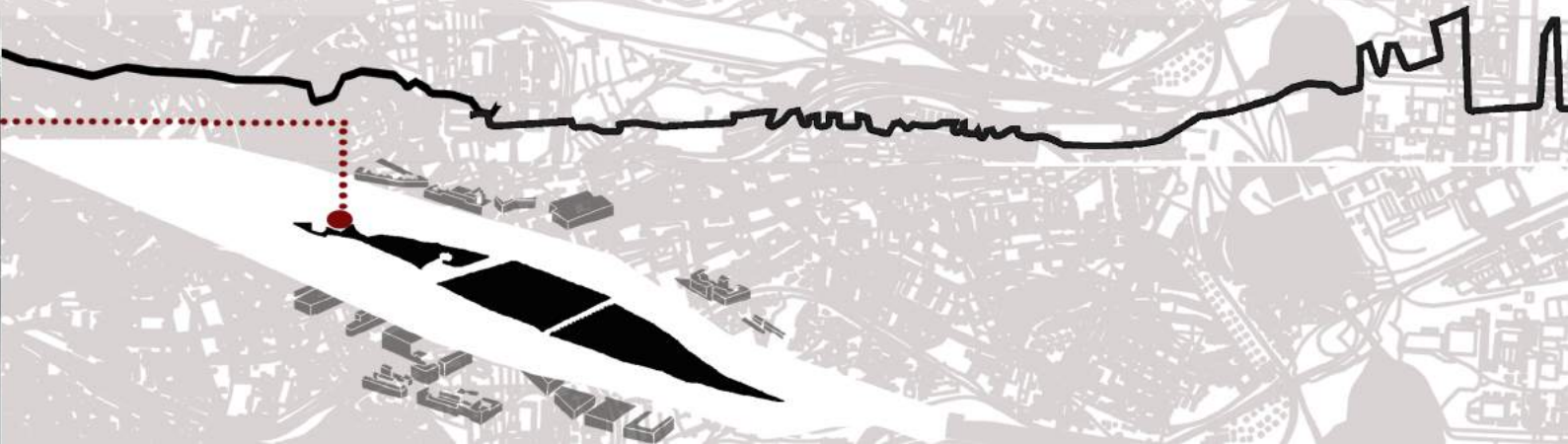
Prague castle



Petrin hill



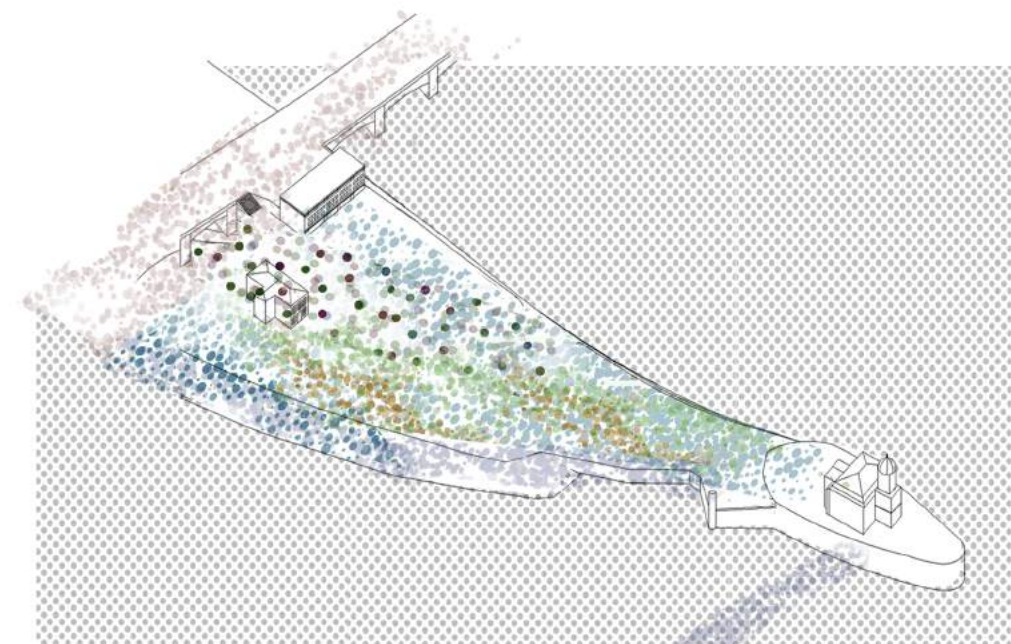
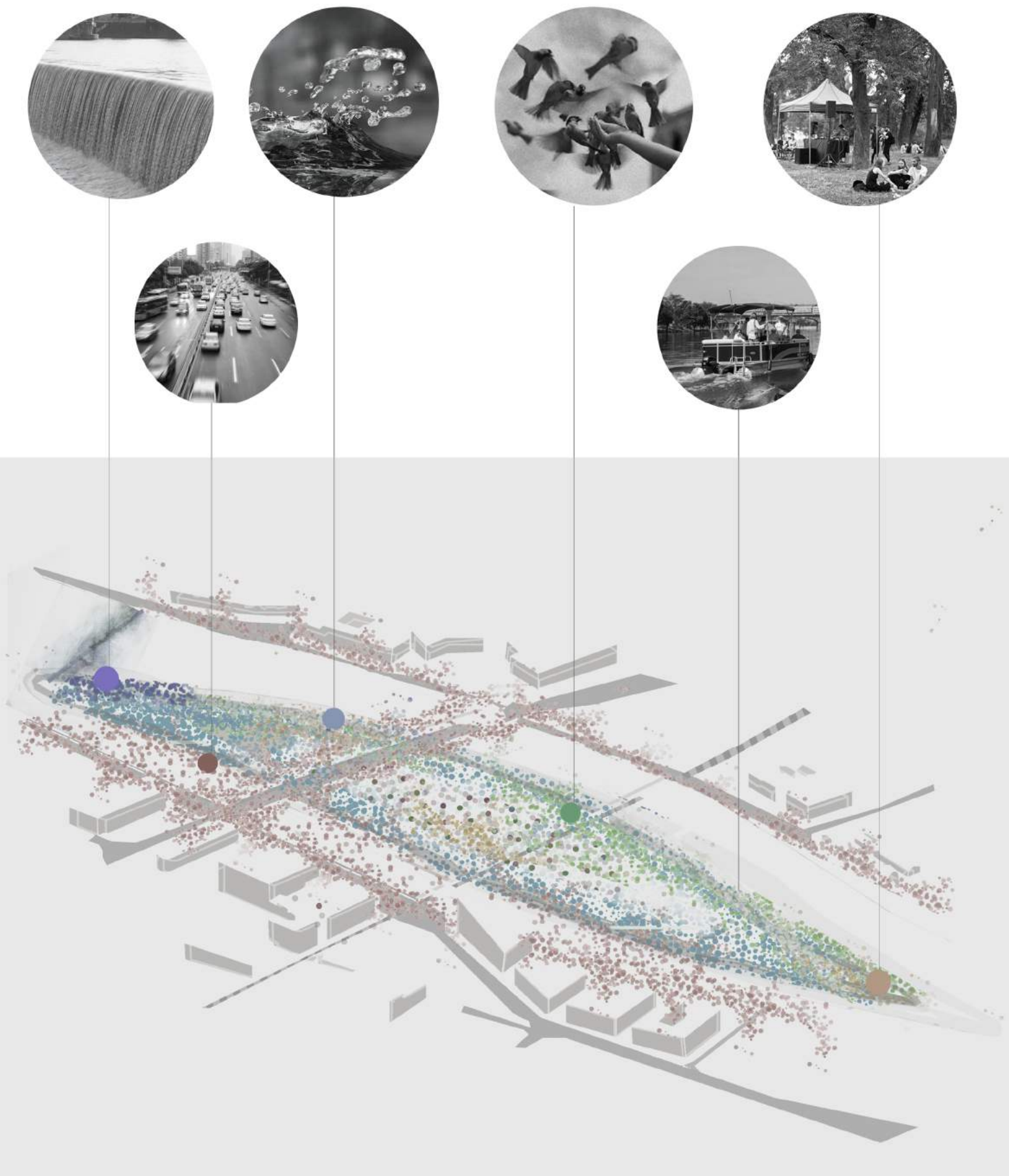
Zizkov tower



Sound map of islan Stvanice

Island visitors and wildlife interact with each other and park resources through their senses, including the sense of hearing. So, protection of natural sounds supports both ecosystems and quality visitor experiences.

Sound map represent one expeimental study that differs and collects sounds on he island. The sound on the island is an environmenly unique estuary that neds to be protected.



"Be not afeard; the isle is full of noises, Sounds, and sweet airs, that give delight and hurt not. Sometimes a thousand twangling instruments Will hum about mine ears; and sometime voices, That, if I then had waked after long sleep, Will make me sleep again: and then, in dreaming, The clouds methought would open, and show riches Ready to drop upon me; that, when I waked, I cried to dream again."

— William Shakespeare, *The Tempest*

Program

The proposed building represents the sensory and experiential center for children and youth.

The main aim of the projects is to support natural and sensory development of children. The basis is to stimulate curiosity and creativity in children with an emphasis on learning through their own sensory experiences. The project is conceived as a center for free and spontaneous exploration, experimentation and discovery supporting individual talents and creativity.

The Center coordinates after school programs and activities for youth of all age. It is dedicated to improve the quality of life for children in the community. It is to improve personal development skills in all youth by offering programs and services in the areas of personal enrichment, improved study skills, life skills, art, youth counseling, and recreation, for children and youth.

It is the center of non traditional learning wich consists of closed and open ateliers for learning. Open ateliers are stimlate social interaction and provide visitors to directly get acquainted with the work in the ateliers. The main focus of the ateliers is on psychology arts,craft, music,sound and photography.

All parts of the facility stimulate learning about the world guided by their own desire and interest.

- sound "spatialization" atelier that is based on inter-relationship between sound, space and movement.
- labaratory
- "resonances" atelier allowing the children to use video camera , photography and artworks to explore environments
- memory room
- observation room on the roof
- sensory garden where all senses can be explored with nature as the primary inspiration - room of shadows where children can differentiate transparent, translucent and opaque
- craft room with prepared materials and environment for independent exploration and experimentation

Besides these ateliers there are as well other facilities provided for young people as well as children.

- The library,
- Auditorium
- Coffee shop which is orientated to the vila Stvanice and creates interrelationship and open public area.
- officies
- cantina

The resulting solution provides a design that organizes the space for multi-functions, and a true sense of a "home" fo for gathering,and individual interaction..

Construction

The building is supported with reinforced system of columns and walls. The dimensions of columns and beams are 30x30 cm.

Building is divided in three parts and in case of floods it acts as a resistant building. The middle part is supported with stronger beams -dimension 30x60.

The foundation is designed with pilots that are 10m deep.

Roof is a green public space therefore it is designed to support big loads.

Landscape

The main orientation of the building is towards the views of Prague castle and vila Stvanice where small public square and outdoor theatre is created.

Bulding is covered with the terrain in order to provide clear way on the roof towards cstle and play sculptures

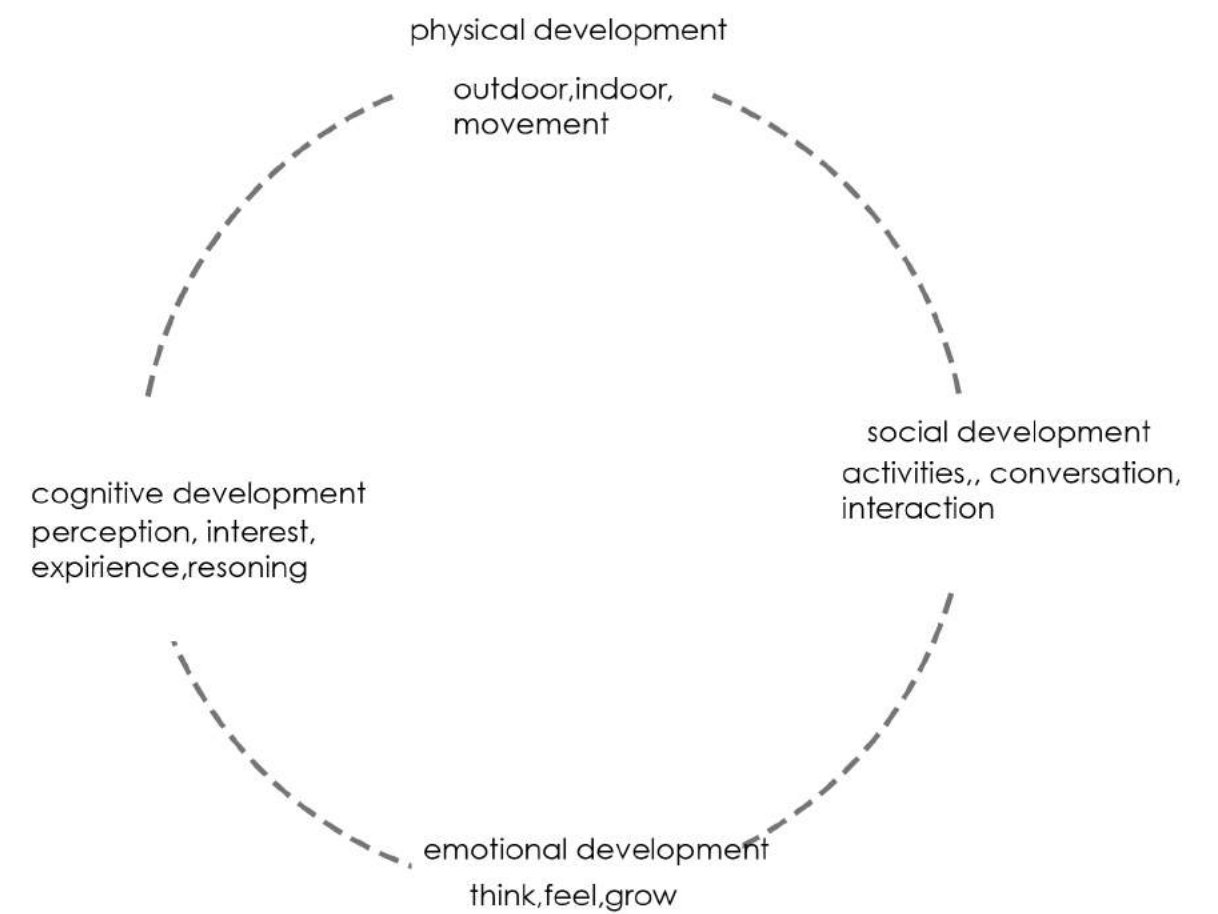


collage/ emotions

The natural child

The design of children spaces must be conformed to their physical, cognitive and social functioning and development. Physical development is the patterns of bodily growth and maturation of children interacting with the surroundings, indoor and outdoor spaces and their features. Cognitive functioning is the perceptual responses of the children with the spaces and features. percepts have large effect on the children's cognitive development.

The cognitive development examines the systematic changes in children's reasoning, concepts, memory, and language. And finally, social development explores the changes in children's feelings, ways of coping and building relationships with peers. It is clear that the functioning and development of the children are influenced by the children interaction and transaction in the physical features as well as by people.



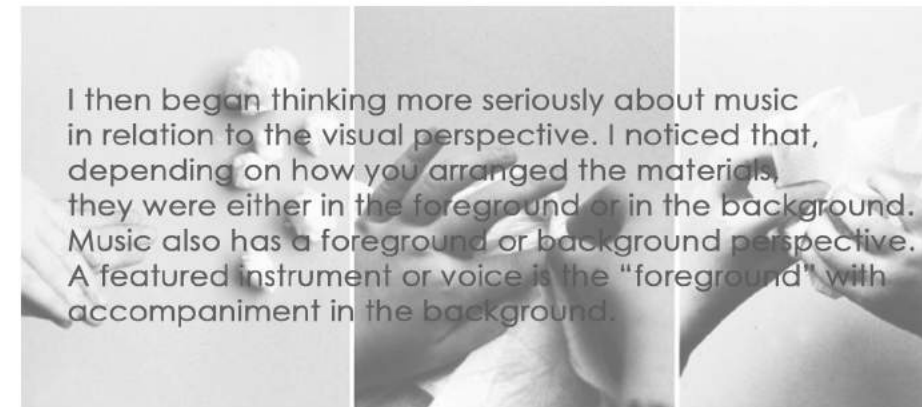
The Ernesto Balducci music atelier

The school is surrounding the inside "piazza" square in which the glass music atelier is placed. The atelier was set up to convey a broad landscape of sound experiences such as "sound spatialization" or the interrelationship between sound space and movement. People are invited to experiment with movement in the space as a means of their active embodiment of sound and within the common matrix connecting sound space and movement.

Loris Malaguzzi international centre

A place aims to offer opportunities for creativity to children, youth, and families, and new opportunities to the international educational community and to all those who embrace and pursue learning and innovation. The Centre houses the Ateliers, the Marco Gerra exhibition hall, the Documentation and Educational Research

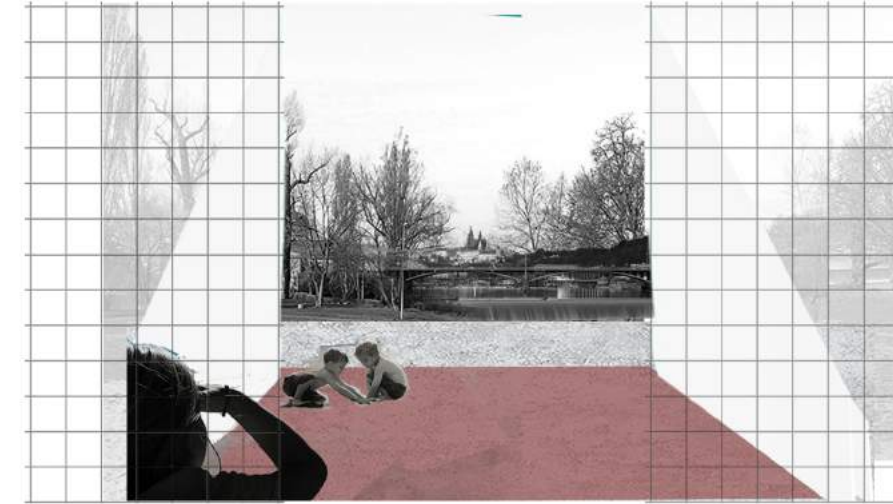
Ateliers - since 2006 the spaces of the Ateliers has hosted the 'Ray of Light', a place of research and experimentation, whereby an environment of light in various forms can be investigated by means of explorations that provoke curiosity and wonder, and stimulate creativity. The atelier's main guiding question was, "how do we interpret what is going on in front of our eyes?"



Idea development

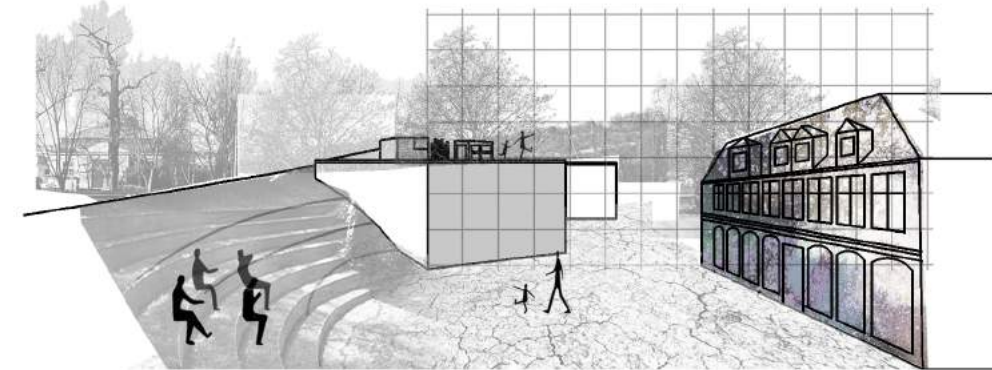
The design proposal of the building is primarily focused on 3 established goals.

1/ The emphasis is on the characteristic view on Prague castle and waterfall (water power plant) together with Letna park. Through the interior spaces and roof slope the view sequences are inviting people to discover place and intention of creating an oasis united with the island.



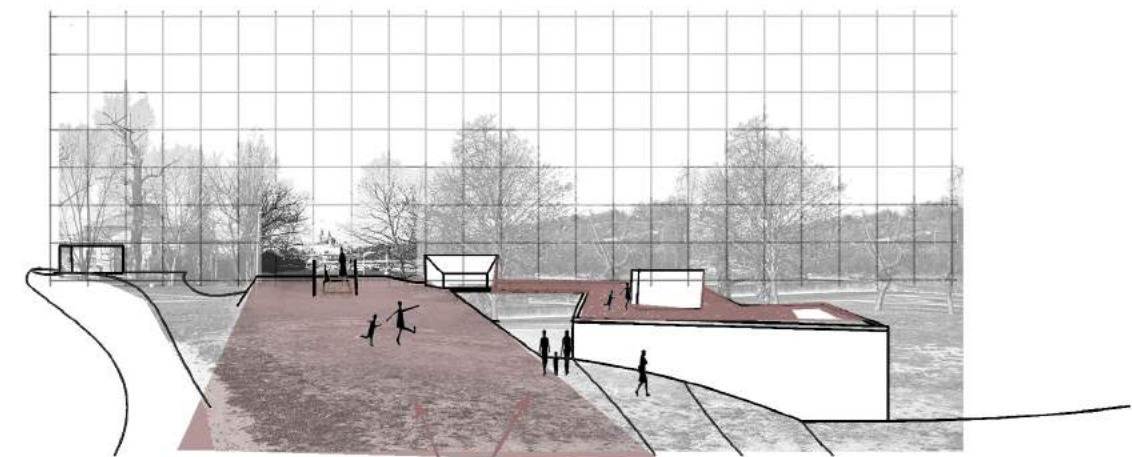
intention/ view

2/ Vila Stvanice is a protected cultural monument and place for various cultural activities. The idea is to orientate building in order to create public space that emphasizes the importance of cultural activities and create interaction between two buildings.

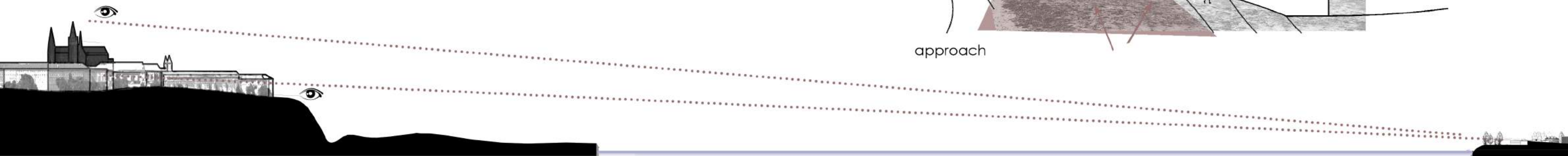


interaction/ vila Stvanice

3/ The approach from Hlavkuv bridge to the island is leaving two choices. The intention is to bring people to the water trough building or to lead to the roof.



approach

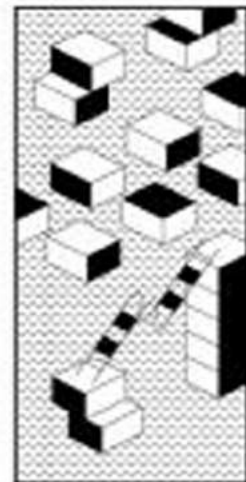
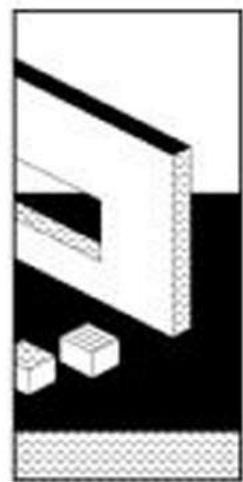




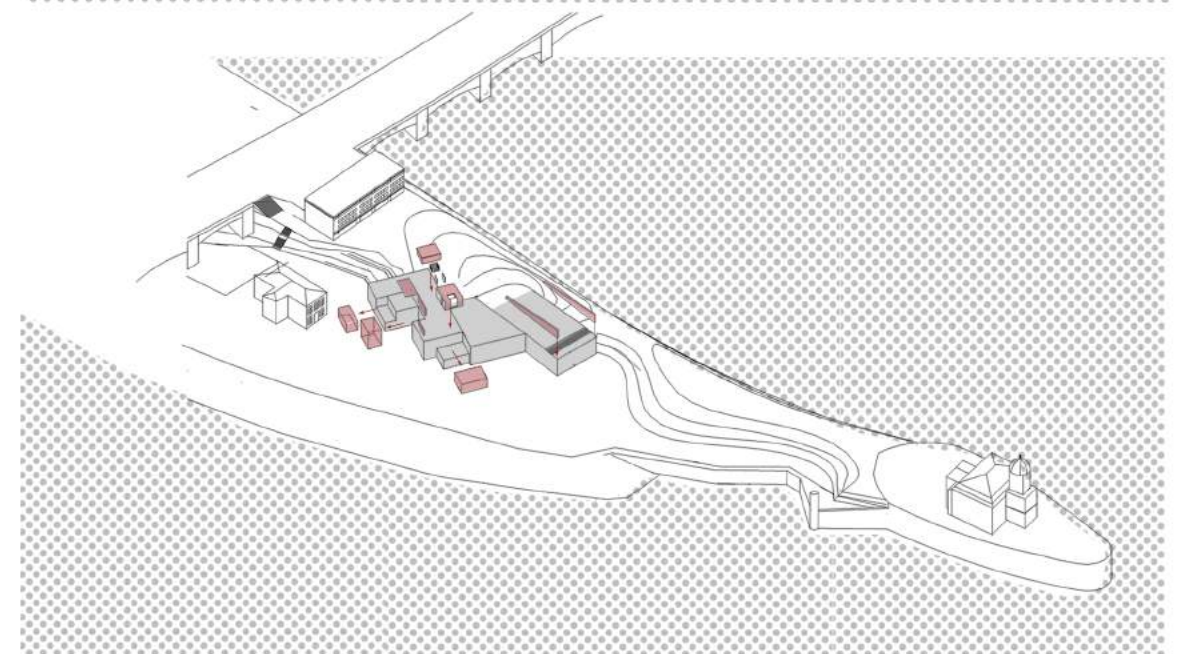
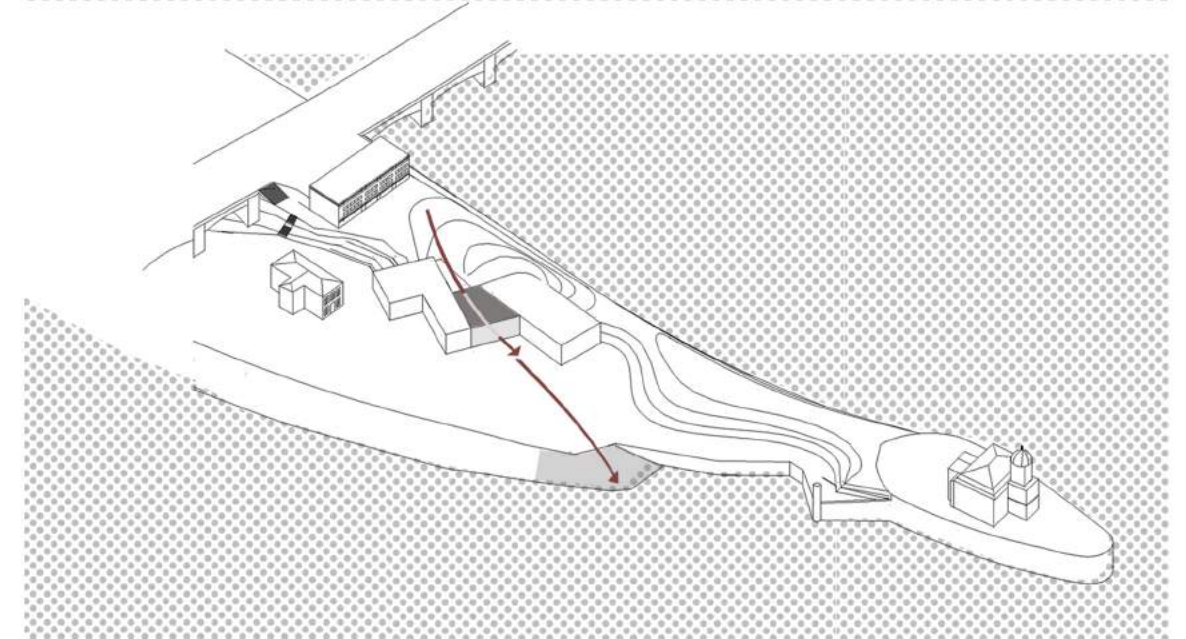
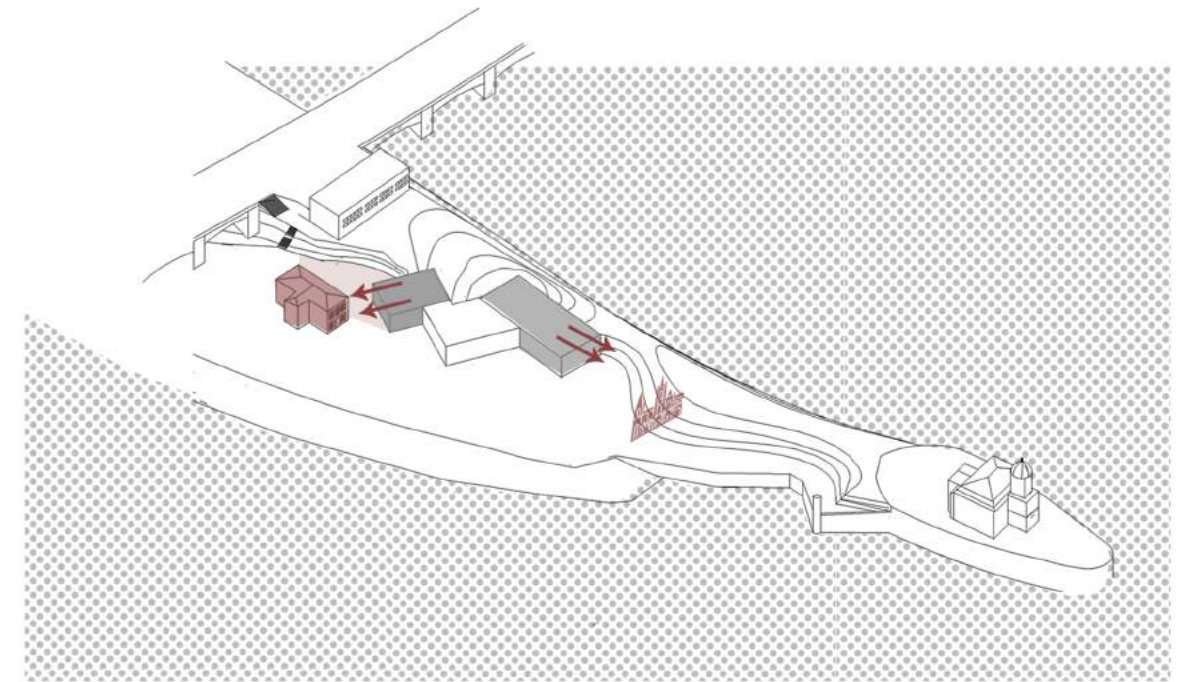
orientations

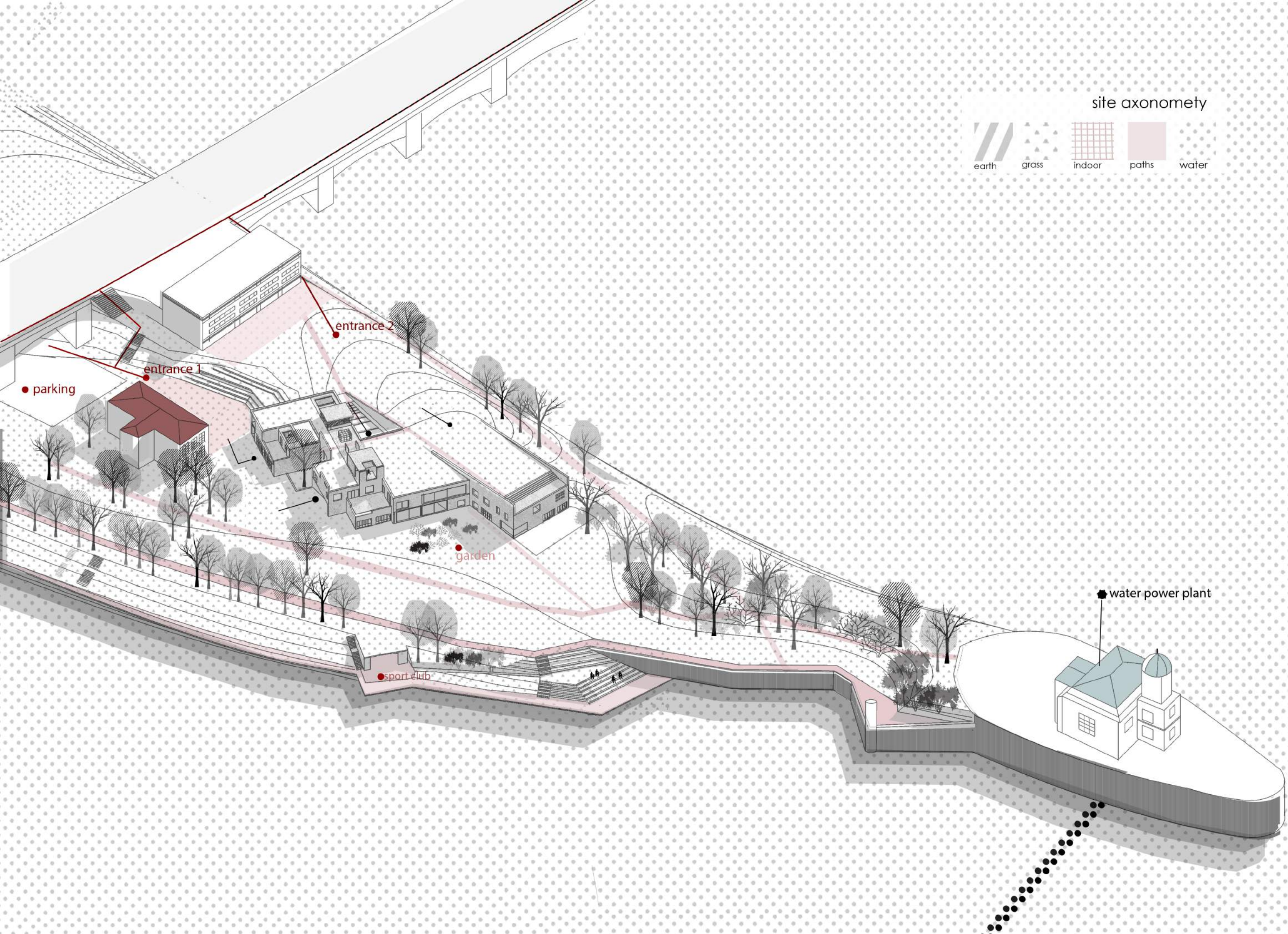


approach



subtraction and addition





site axonometry

- earth
- grass
- indoor
- paths
- water

● parking

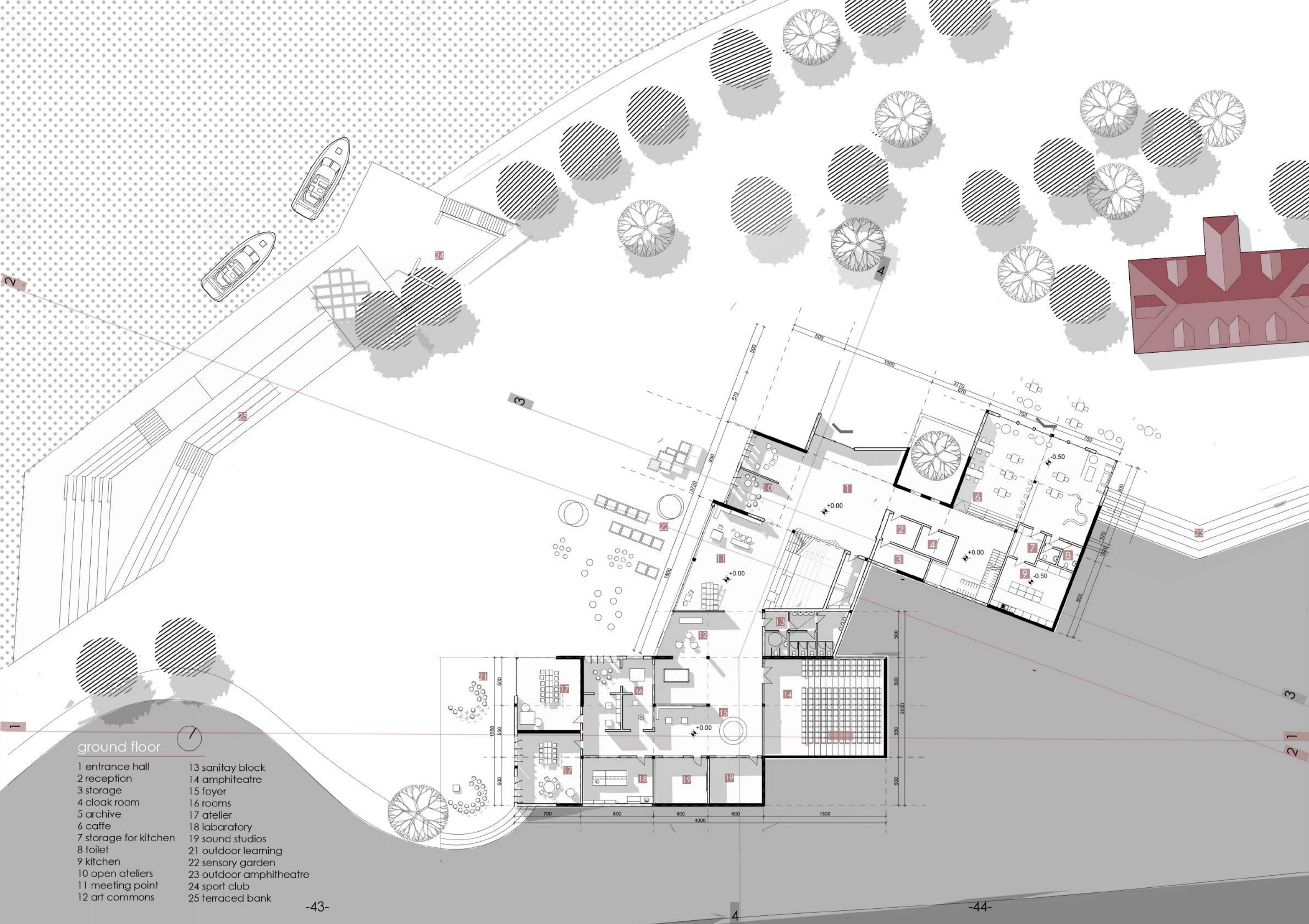
● entrance 1

● entrance 2

● garden

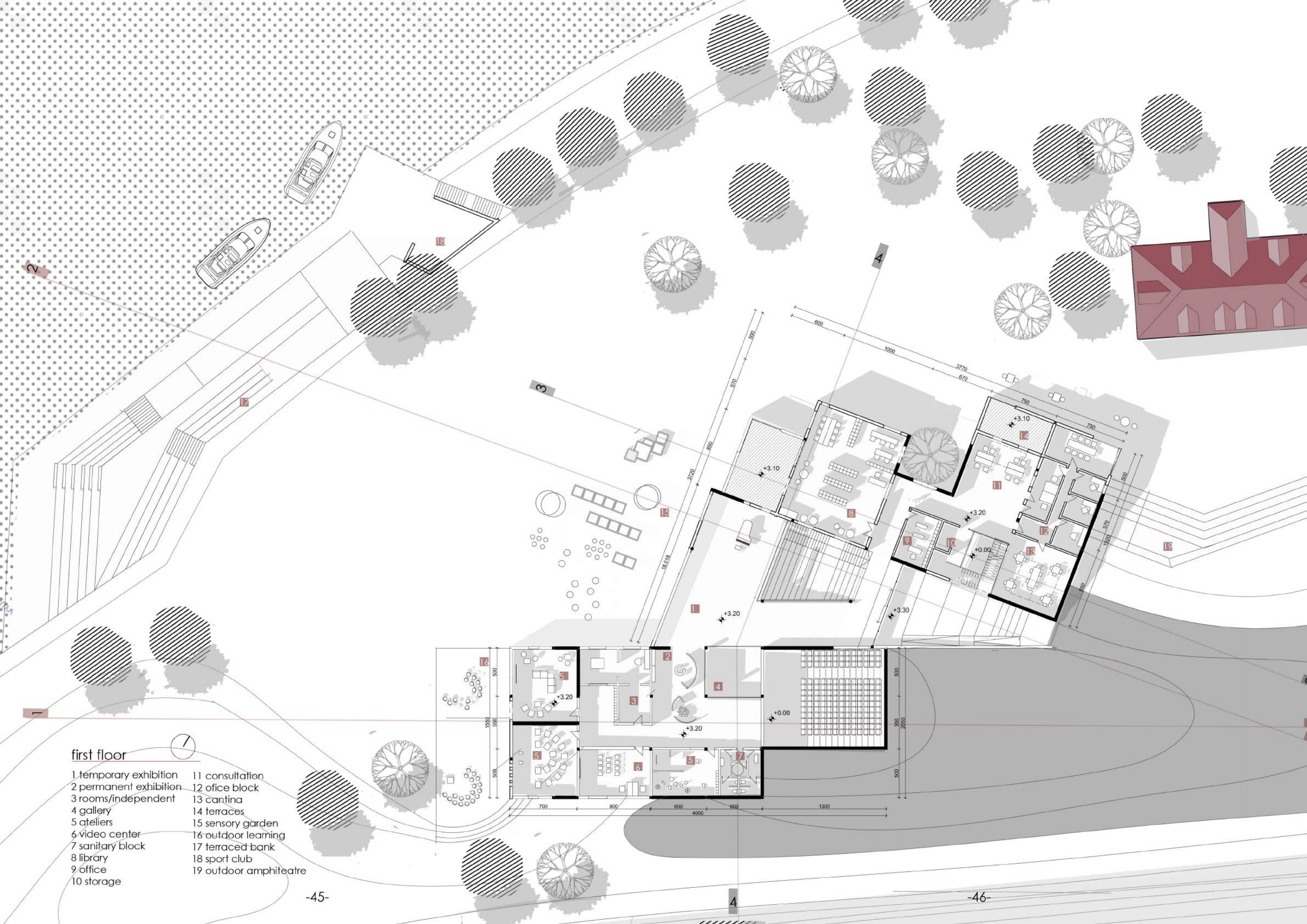
● sport club

● water power plant



ground floor

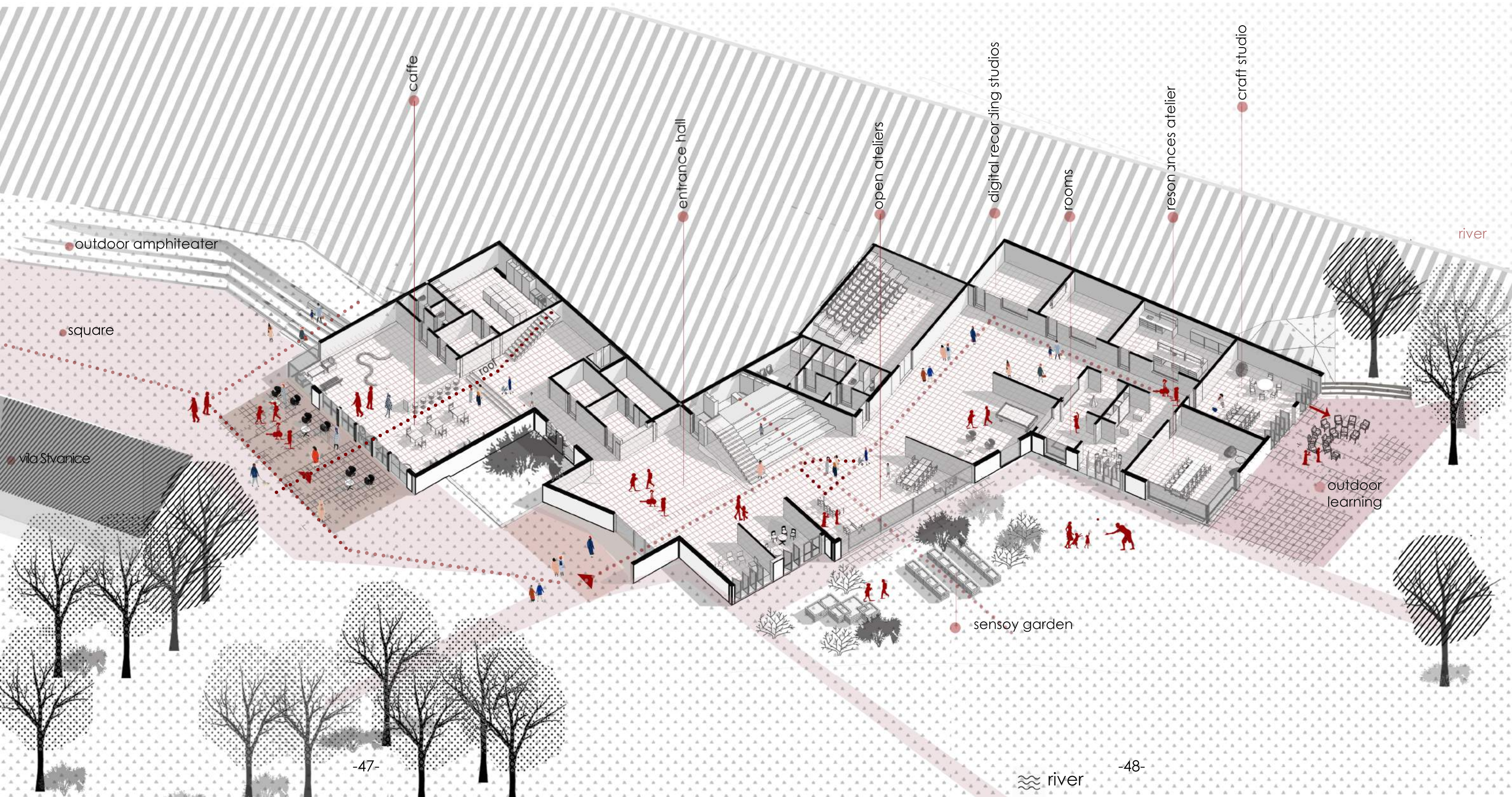
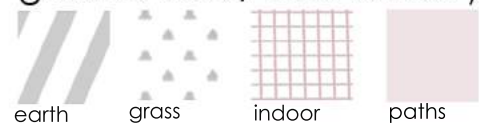
- | | |
|-----------------------|-------------------------|
| 1 entrance hall | 13 sanitay block |
| 2 reception | 14 amphitatre |
| 3 storage | 15 foyer |
| 4 cloak room | 16 rooms |
| 5 archive | 17 atelier |
| 6 caffe | 18 laboratory |
| 7 storage for kitchen | 19 sound studios |
| 8 toilet | 21 outdoor learning |
| 9 kitchen | 22 sensory garden |
| 10 open ateliers | 23 outdoor amphitheatre |
| 11 meeting point | 24 sport club |
| 12 art commons | 25 terraced bank |



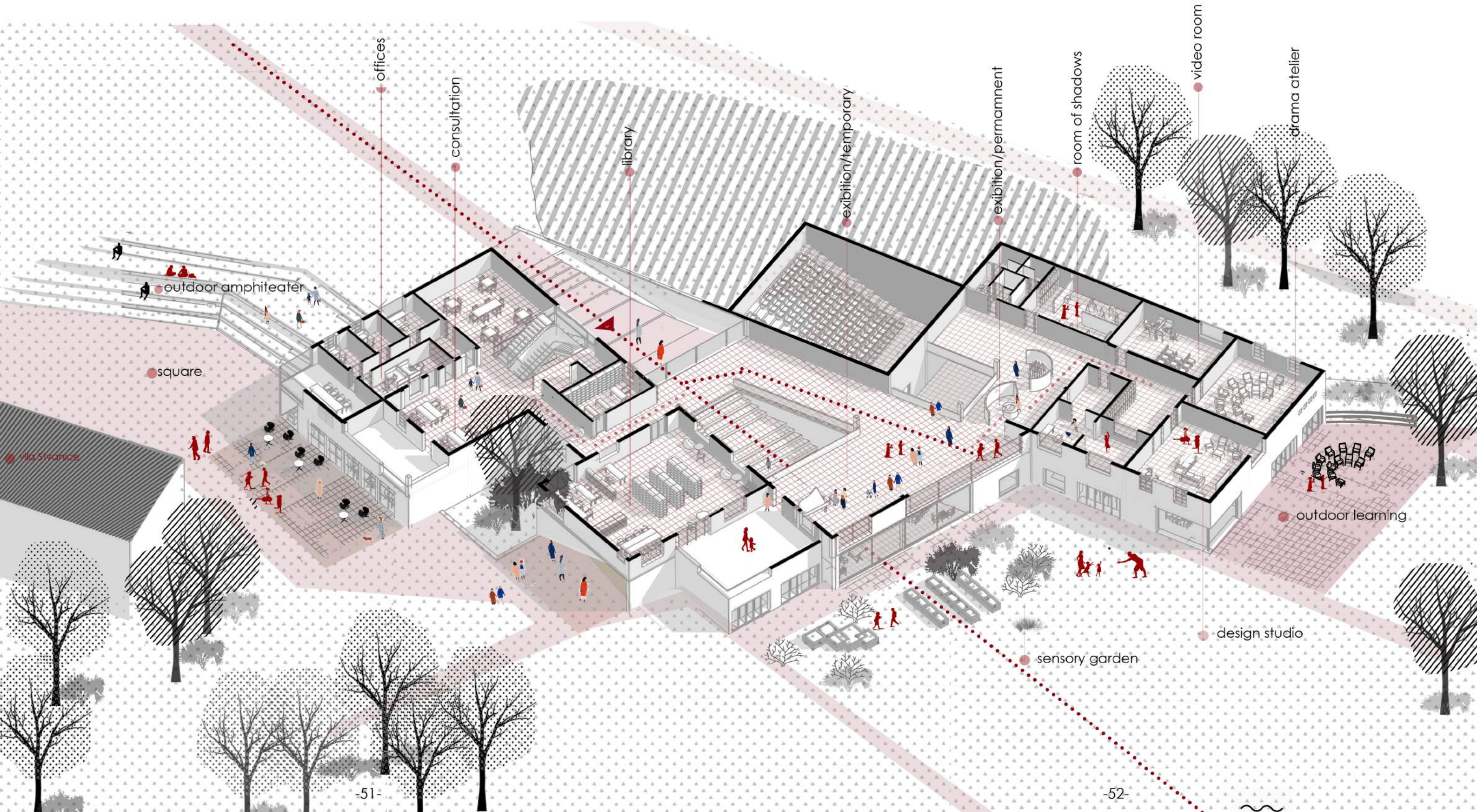
first floor

- | | |
|------------------------|-------------------------|
| 1 temporary exhibition | 11 consultation |
| 2 permanent exhibition | 12 office block |
| 3 rooms/independent | 13 cantina |
| 4 gallery | 14 terraces |
| 5 ateliers | 15 sensory garden |
| 6 video center | 16 outdoor learning |
| 7 sanitary block | 17 terraced bank |
| 8 library | 18 sport club |
| 9 office | 19 outdoor amphitheatre |
| 10 storage | |

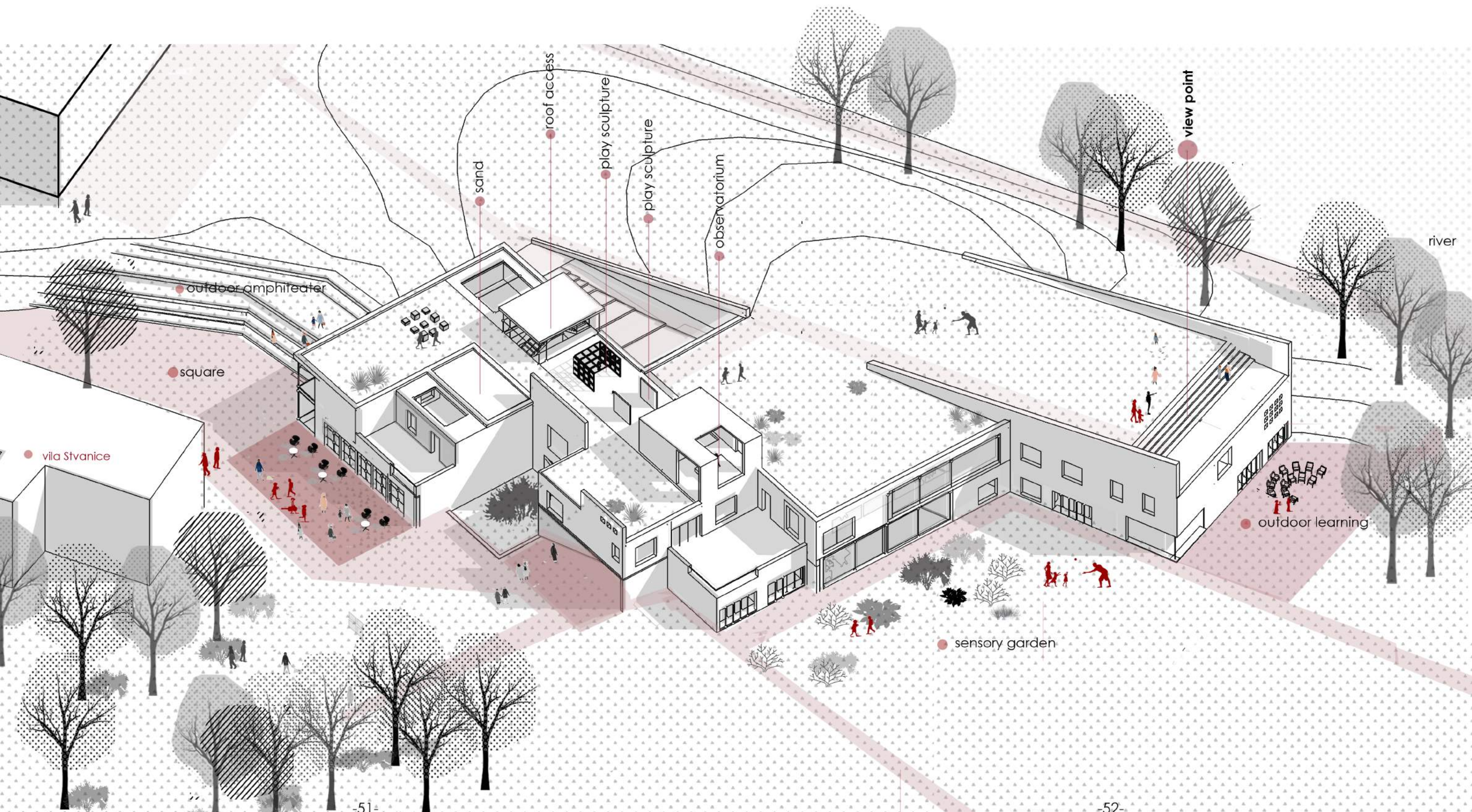
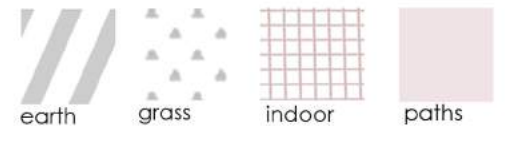
ground floor/ axonometry



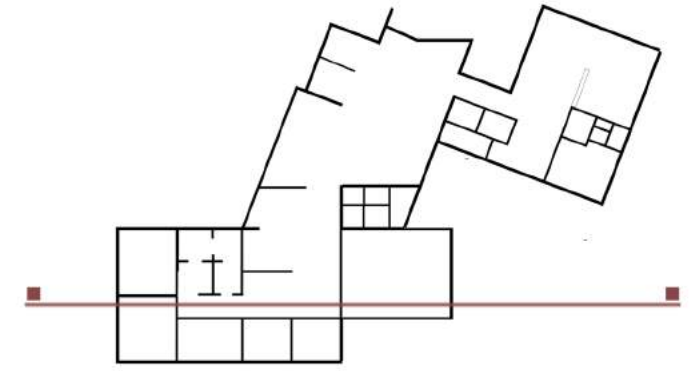
first floor/ axonometry



third floor-roof/ axonometry

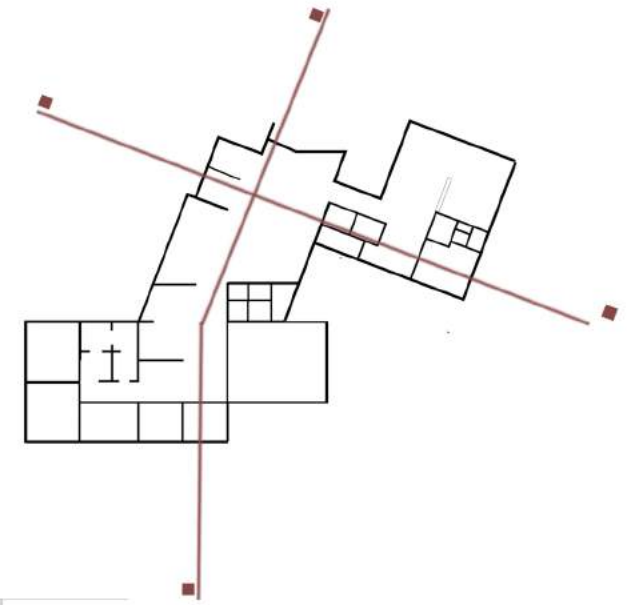
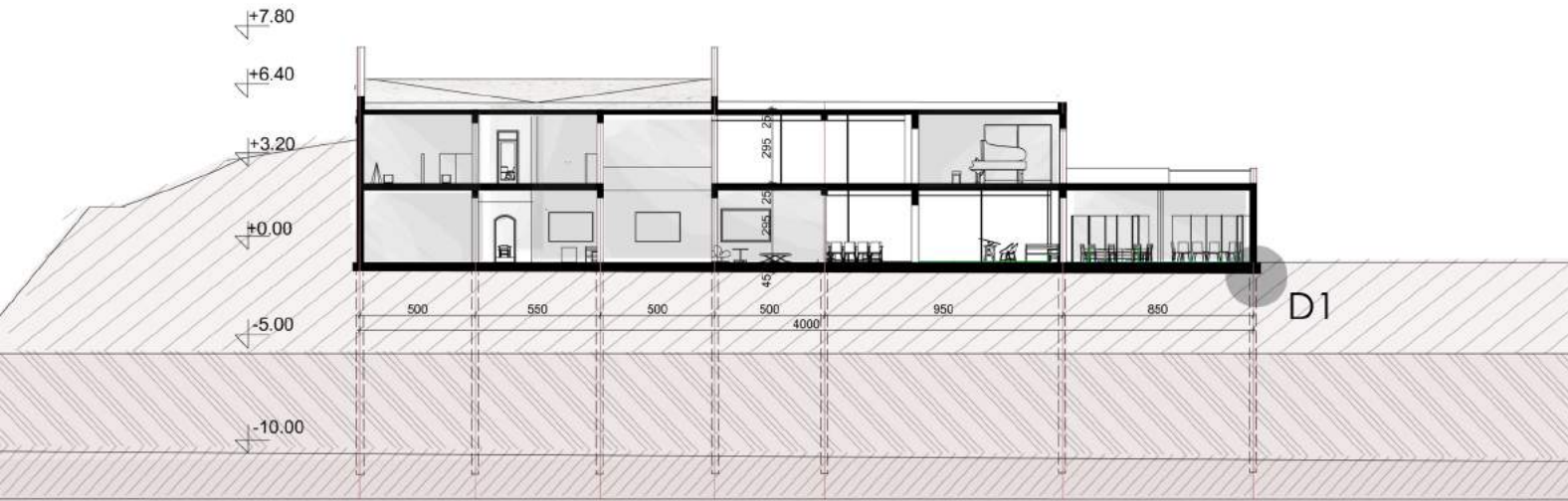


SECTION 1-1



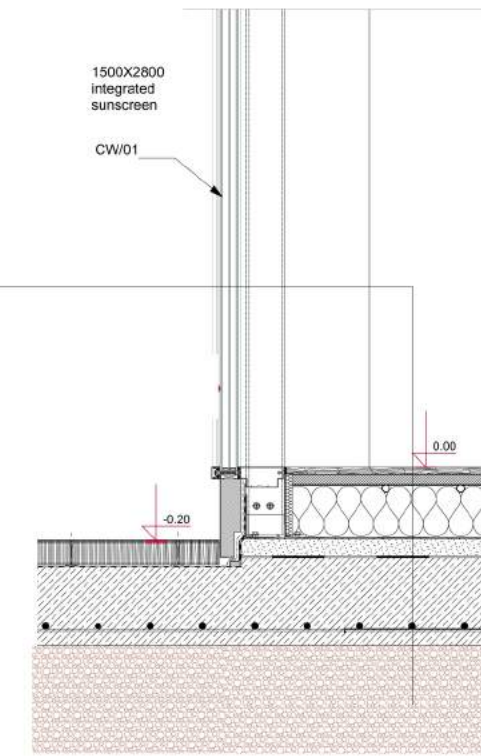
SECTIONS

section 4-4



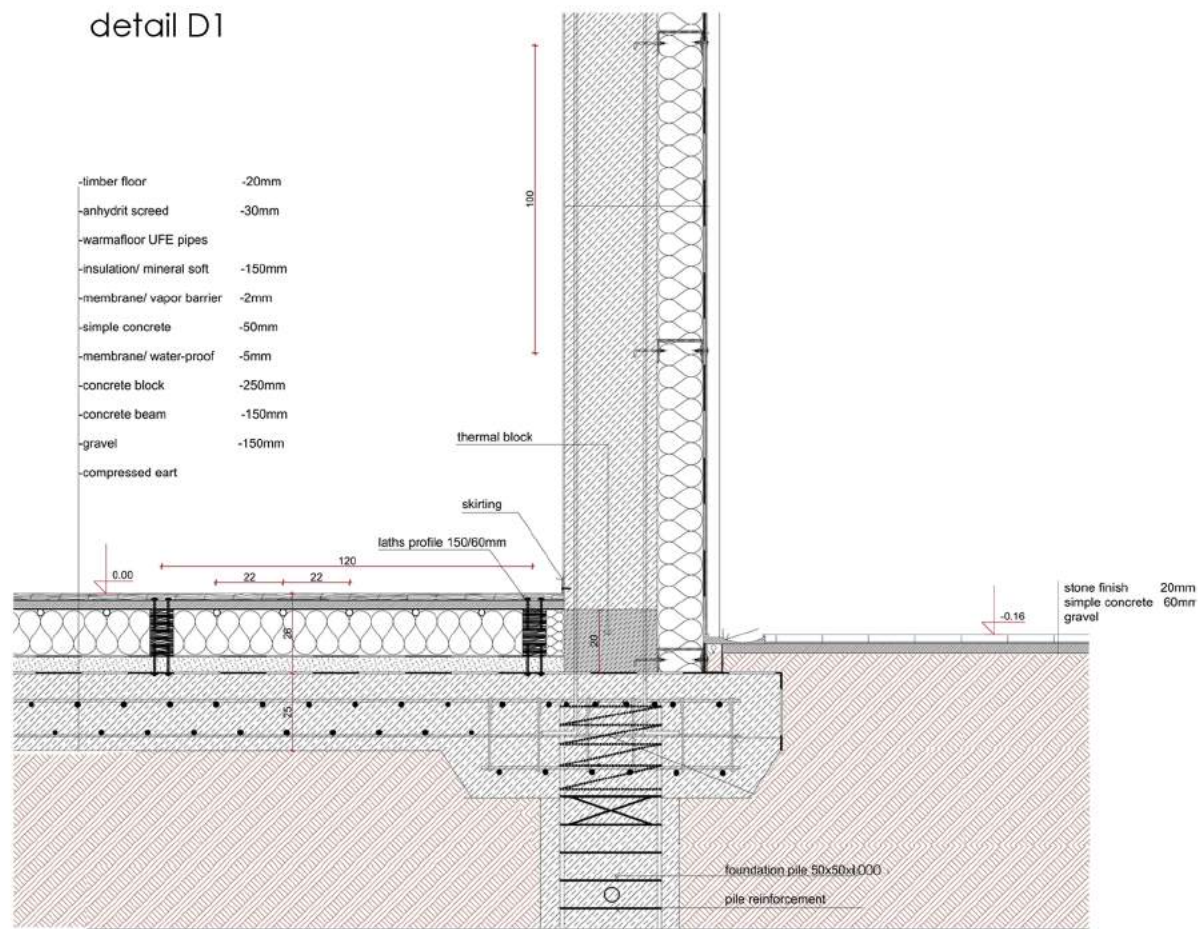
detail D2

- timber floor -20mm
- anhydrit screed -30mm
- warmfloor UFE pipes -150mm
- insulation/ mineral soft -2mm
- membrane/ vapor barrier -50mm
- simple concrete -5mm
- membrane/ water-proof -250mm
- concrete block -150mm
- concrete beam -150mm
- compressed eart -150mm

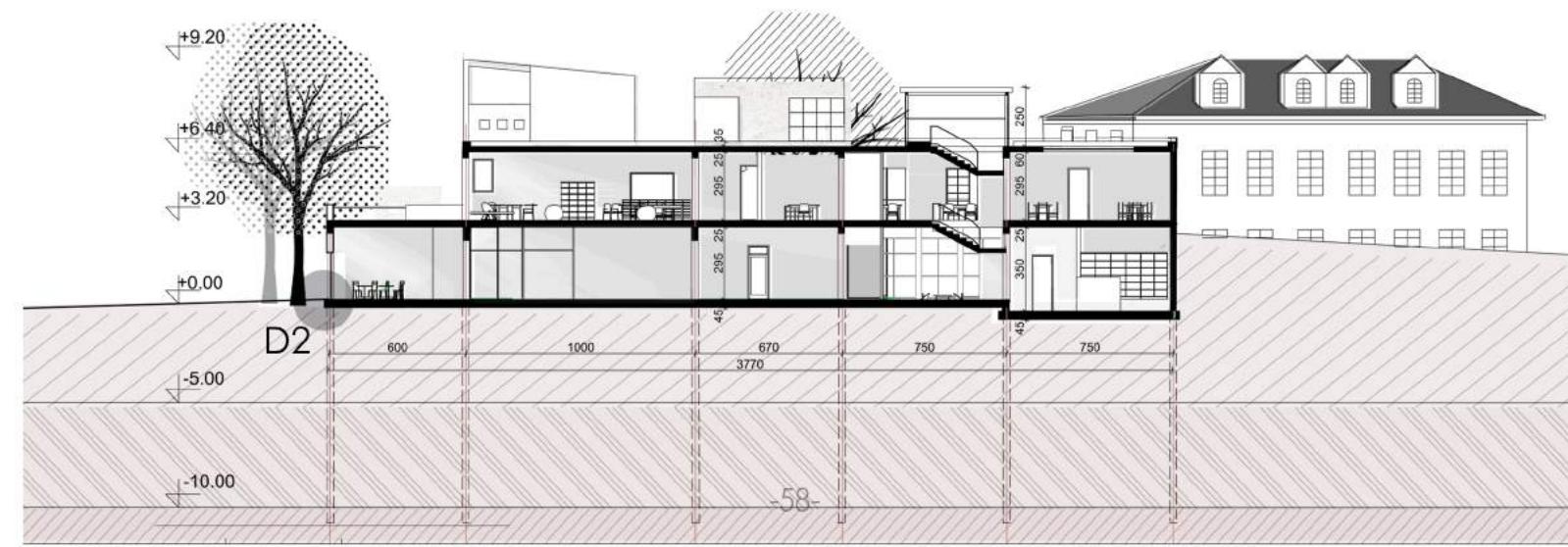


detail D1

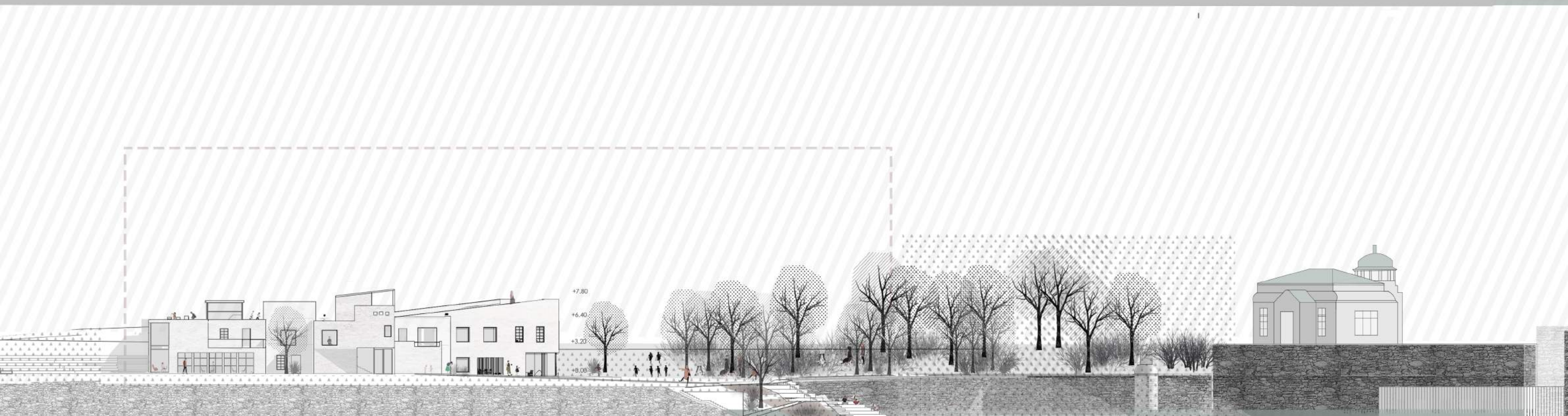
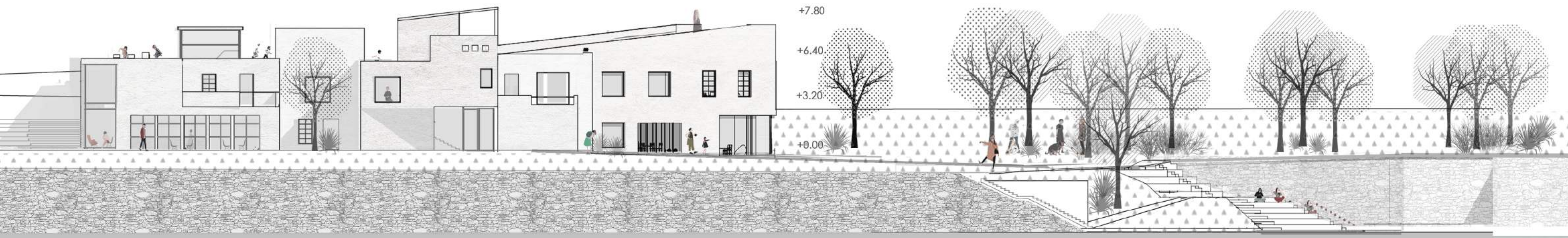
- timber floor -20mm
- anhydrit screed -30mm
- warmfloor UFE pipes -150mm
- insulation/ mineral soft -2mm
- membrane/ vapor barrier -50mm
- simple concrete -5mm
- membrane/ water-proof -250mm
- concrete block -150mm
- concrete beam -150mm
- gravel -150mm
- compressed eart -150mm



section 3-3



elevation



visualization
idea of framed view





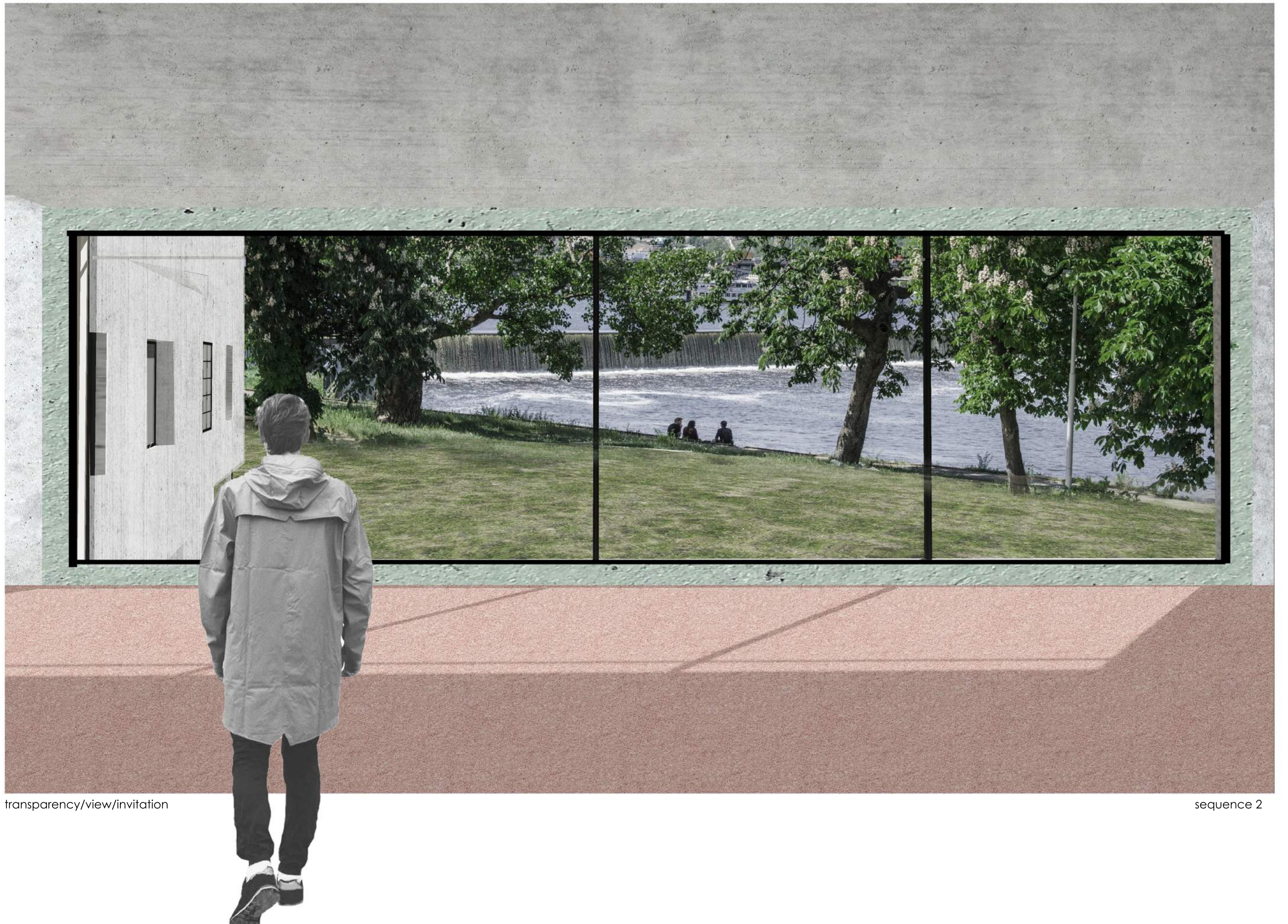
visualization

vila Stvanice



transparent/view/invitation

entrance/ sequence 1



transparency/view/invitation

sequence 2





Bibliography:

- Pallasmaa, Juhani. The Eyes of the Skin: Architecture and the Senses., 2005. Print. Human Structures and Architectural Archetypes: Aldo Van Eyck's Playgrounds (1947 – 1978)
- Linking architecture and education- Sustainable design of Learning environments
- Pallasmaa, Juhani Steven Holl Questions of perception, Phenomenology of architecture,
- Jean Piaget and Barbel Inhelder, The child's conception of space
- Kevin Lynch, The image of the city
- Maral Anbari , Hossein Soltanzadeh, Child-oriented architecture from the perspective of environmental psychology
- Ismail Said , Architecture for Children: Understanding Children Perception towards Built Environment
- Aldo Van Eyck: Designing For Children, PlaygroundsNov 2, 2002
- FIALOVÁ, Dana, Michaela STEYEROVÁ a Eva SEMOTANOVÁ. Vltavské ostrovy v Praze: Vltava islands in Prague. Praha: Česká geografická společnost, 2015
- Ana Barbara,Anthony Perliss Invisible Architecture: Experiencing Places Through the Sense of Smell
- Peter Zumthor, Thinking architecture
- Louis I. Kahn Light and space December 1993
- Jungman J.,Embraced by the river Vltava,museum hl. mesta Prahy
- Aldo Van Eyck - Seventeen Playgrounds

Map sources:

- <http://www.geopraha.cz/>
- <https://en.mapy.cz/zakladni?x=14.4667000&y=50.0833020&z=11>
- <https://mapa.prahounakole.cz/#>

Other sources:

- <http://neviditelnypes.lidovky.cz>
- <http://www.vilastvanice.cz/>
- <https://www.re-thinkingthefuture.com/cultural/the-temple-of-sense-ebrahimi-associates/>
- Exploratorium in San Francisco <https://www.exploratorium.edu/education>
- <https://sites.google.com/site/dennisfyksenportfolio1/concept-s/sensation-and-perception>
- <https://www.youtube.com/watch?v=AYhpFEHJkkl>
- <https://www.youtube.com/watch?v=7ZffYOD5I8M&t=384s>