

Dojo

Architecture for
Ritualistic Movement



Viktoria Sørsdahl Holo
Diploma Spring 2024

Supervisors:
Beate Marie Høimebakk
Chris-Johan Engh

Institute of Architecture
Oslo School of Architecture and Design

Contents

Introduction and Thesis

Dojo

Martial Arts

Program and requirements

Mapping of dojos in the Oslo region

Limtomta

Tatami

Paper roofs

Original site

New site

Qigong

Kendo

Karate

Aikido

Ceremony

Model photo

Introduction

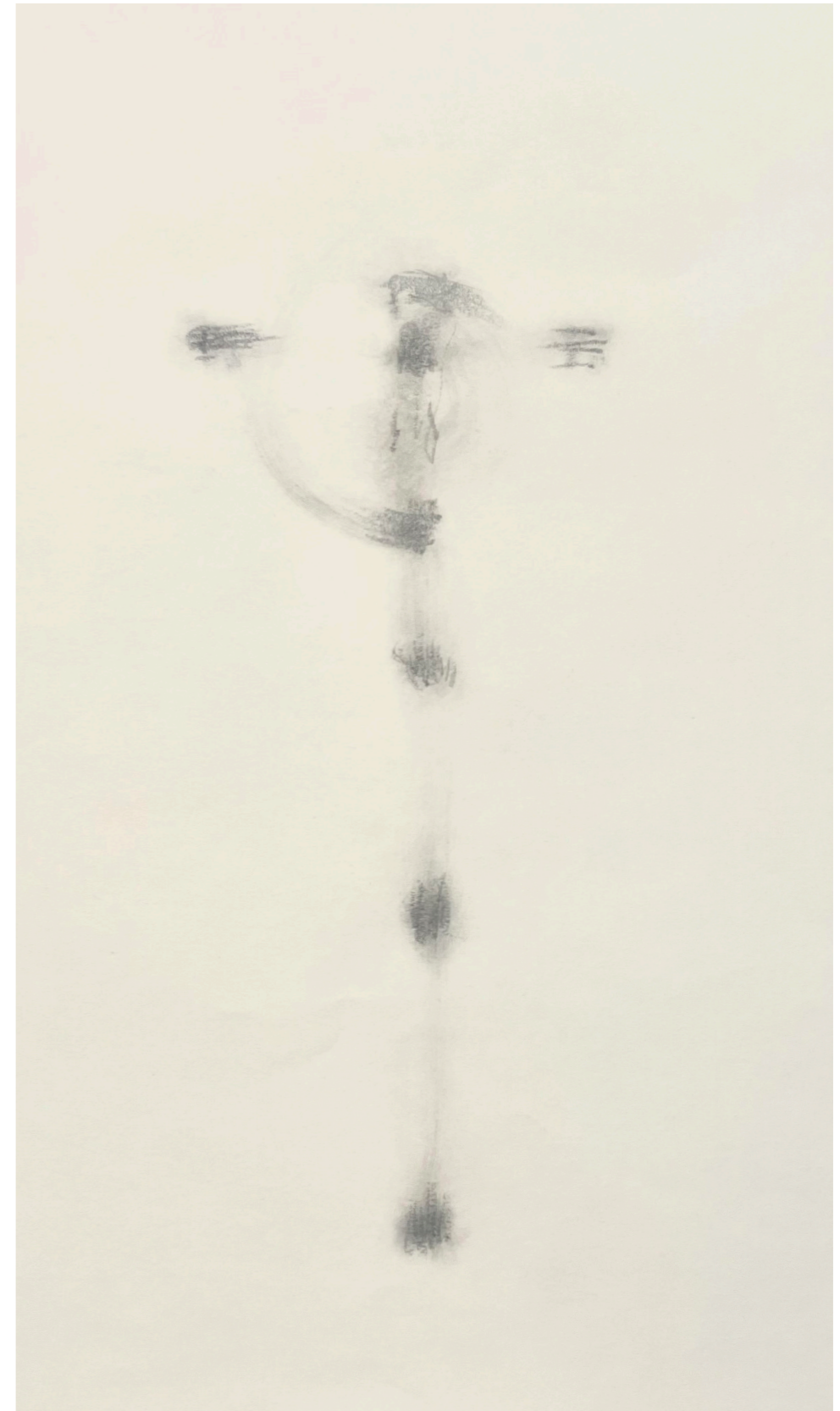
There are 180 different martial art styles in the world. Some more known than others, a large variety of style forms can be found practiced in Norway. The diversity resulting in a multitude of smaller clubs with specific requirements. As many have little means to invest in proper venues, they turn to unsuitable spaces for practice.

Martial arts are deeply embedded in rituals, that unfortunately are losing their meaning through the use of ill-adapted dojos. It is therefore a great need for dedicated spaces for martial arts, where the significance of the rituals are kept through adapted architecture.

Thesis

This diploma explores the adaptation of dojo architecture for everyday use. The aim of the task is to develop four dojos adapted to the movements and rituals of Karate, Aikido, Kendo and Qigong, each belonging to the four main styles of martial arts. Additionally, there will be a fifth building for daily ceremonial use and gathering of the martial art practitioners.

The diploma started with a research of dojo architecture and martial arts. The mapping of movement patterns, spatial requirements, traditional systems and ritualistic aspects has been used as a rule-set throughout the process. It is the interaction between these set parameters and the specific site conditions that has formed the dojos. The resulting buildings ment as explorations of the parameters rather than final projects.



Dojo

"The place of the way"

The western world exclusively use the term dojo for facilities used by Japanese martial arts. The term is still used for this thesis regardless of the martial arts origin, as these structures are meant to cater to more than just the four chosen style forms. Structured around rituals and traditions, these buildings bare a sacramental value and are considered to be more than just spaces for training. When studying both traditional and modern dojo's one can see a pattern of significant elements and functions that are crucial for the dojo to be optimal.

Spatial layout

A dojo must have enough space for multiple people to practice both kata (detailed movement patterns) and kumite (fight). The optimal spatial layout depends on which martial art is practiced, yet all requires open rooms with no obstacles.

Orientation

Traditionally, dojos face the rising sun. The cardinal orientation of the dojo is more significant for some style forms than others. Yet, the interaction with light is crucial for optimal training. A well lit room is essential for correcting movements, but direct light is not ideal, as it can be distracting and result in injuries.

Functional zones

In addition to the training spaces, the following rooms are needed: Warderobes, toilet, equipment storage, technical room and a waiting space which can be implemented for reflection.

Acoustics

Due to fast past fighting techniques, intentional yelling and throws to the floor, it is important to pick materials that absorb, or diffuse sound.

Climate control and ventilation

Proper ventilation is important when many people practice together. The option to open windows for manual ventilation is often a desirable element.

Material selection

Timber is typically used in dojos as it bares cultural meaning, as well as being optimal for practice. Smooth wood floors are most optimal when training with bare feet. For some it is crucial to have a cover on the floor due to throwing techniques. Tatami mats are then implemented to soften the falls.

Rituals

Martial arts are highly ritual based. For the practitioners the dojo itself is an honored space and should therefore accommodate for the specific rituals each martial art execute. This includes the smaller rituals like greeting the space and the cleaning of the dojo floor, as well as the ceremonies and the rituals embedded in the movements performed.



Martial Arts

Martial arts can be categorized into four main style forms: Striking martial arts, Grappling martial arts, Armed martial arts and Non-combat martial arts. I have chosen one martial art style from each of these four groups to adapt the dojos to. This allows for further use by other martial arts, based on which main styliform they belong to. This was an important choice for the project as to not undermine the lesser-known styles or smaller clubs.

Striking martial arts

Focus on striking and blocking the opponents' movements with force and speed. Fast, linear movements practiced alone, paired or in synchronised groups. Example: Karate, Taekwondo, Kung Fu, Kickboxing, Wing Chun, Capoeira, Muay Thai, Pencak Silat, Boxing.

Grappling martial arts

Focus on taking control of the opponents' movements to one's advantage, often redirecting it into throws. Circular movements of continuous close contact practiced in pairs. Example: Judo, Jujutsu, Brazilian Jiu-Jitsu, Aikido, Sumo, Hapkido, Kung Fu, Sambo, Wrestling.

Armed martial arts

Focus on weapon-based techniques. Used in both long range and close-range combat, the style form includes the use of different sized weapons such as sticks, knives, swords, archery etc. Example: Kendo, Kobudo, Kyudo, Bojutsu, Eskrima, Silat, Kalari-payattu, Kenjutsu, Fencing.

Non-combat martial arts

Slowed movements, concealing their true nature as fighting techniques. Paired with knowledge, the focus is on the improvement of wellbeing, health, confidence and stress, without the use of combat. Example: Qigong, Tai Chi, meditasjon, Baguzhang.

Program

Estimate of space requirement

Each dojo must contain following rooms:

6 m ²	Entrance + shoestorage
100-250 m ²	Training hall (found through research of movements)
60 m ²	2 Changing rooms
6 m ²	Hc wc
10 m ²	Storage for daily equipment
10 m ²	Maintenance + technical room
---	Waiting area / space for reflection

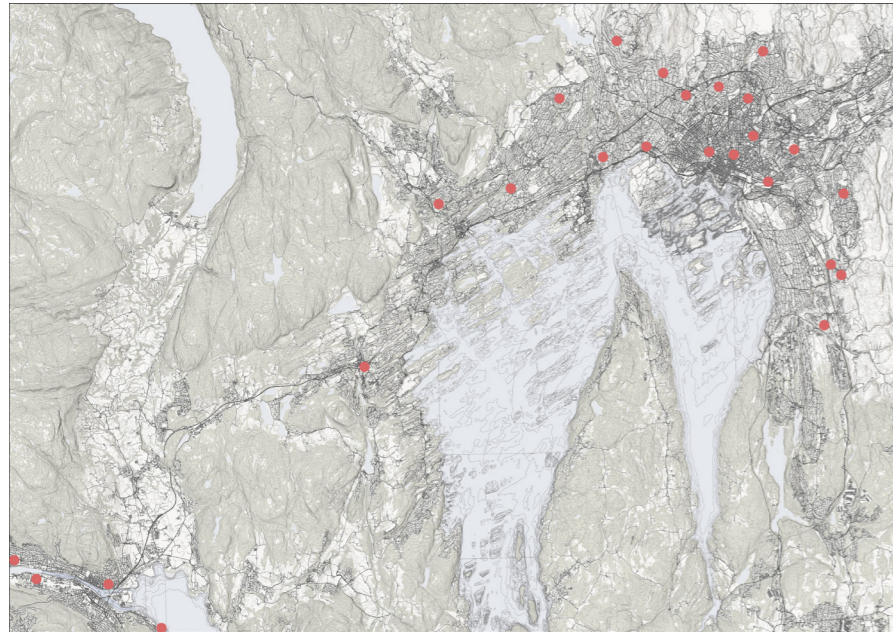
Each dojo will approximately be between 200-340 m², depending on required spatial needs.

Ceremonial building must contain:

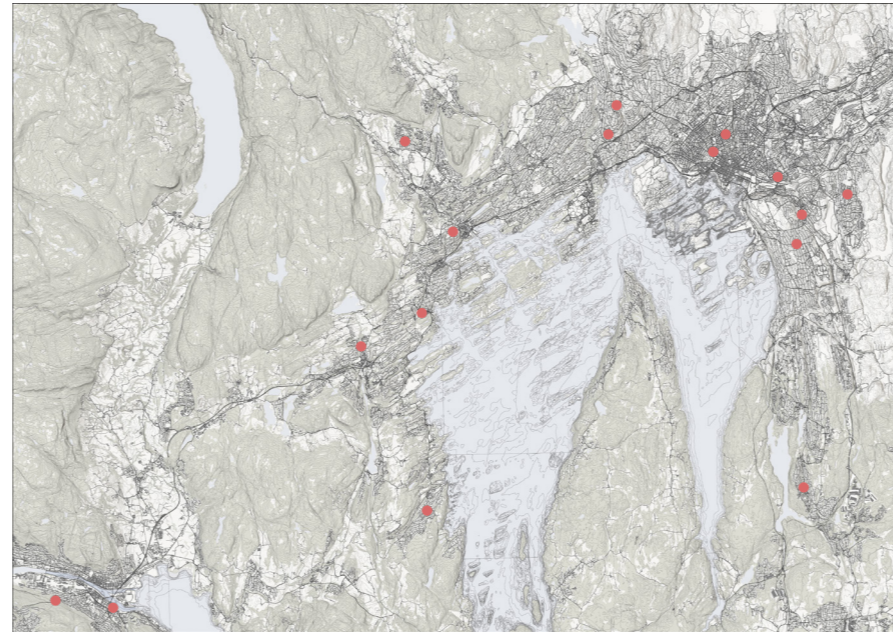
6 m ²	Entrance + shoestorage
6 m ²	Maintenance + technical room
6 m ²	Hc wc
---	Space for ceremonies and gathering

*Each dojo is adapted for 15 practitioners as this is the average amount of practitioners per practice. The larger clubs usually divide their sessions into either age or aquired belt rank, so the sensei (teacher) will have a better overview of the practitioners. The style forms training in pairs will be adapted for an even number.

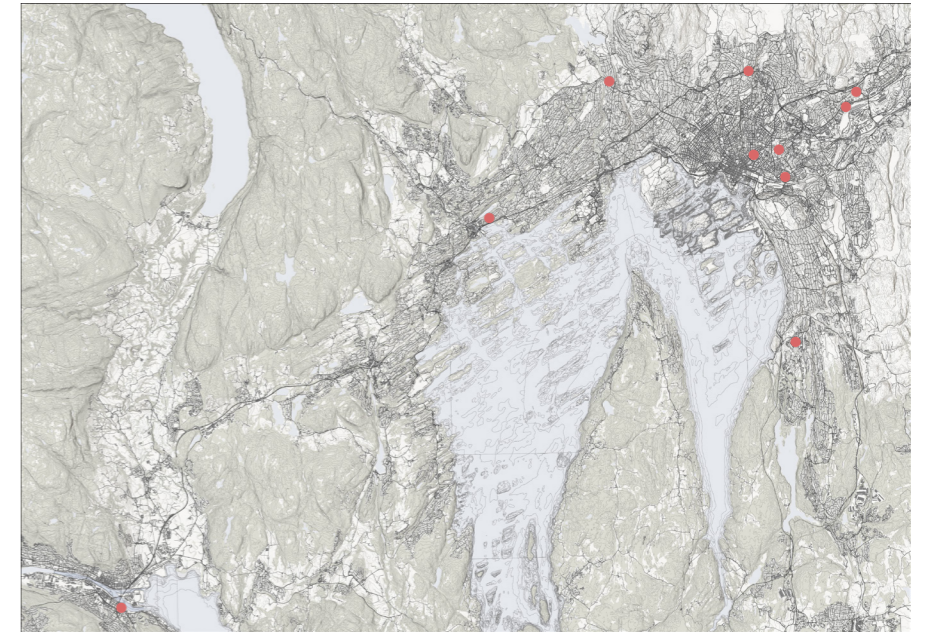
Striking Martial Arts



[Karate]

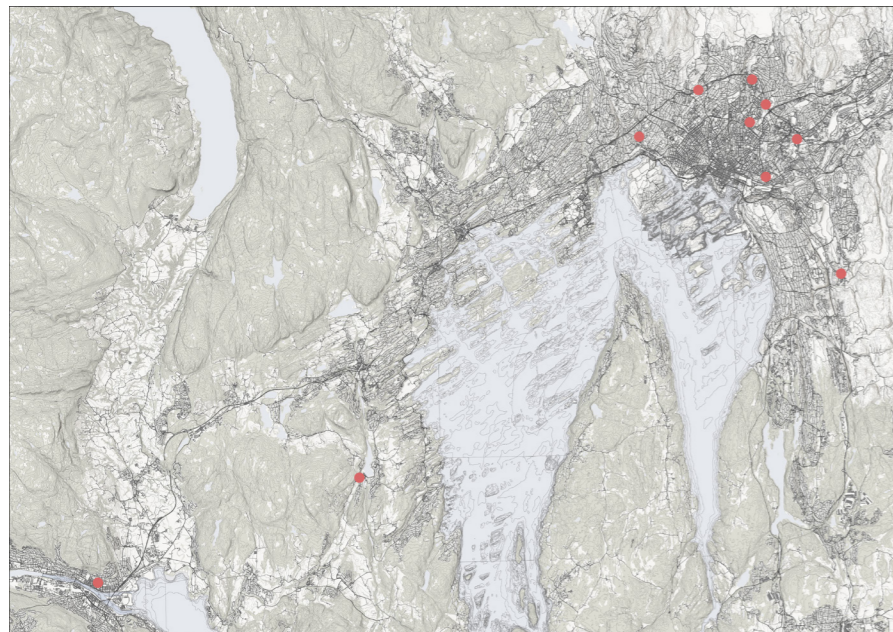


Taekwondo

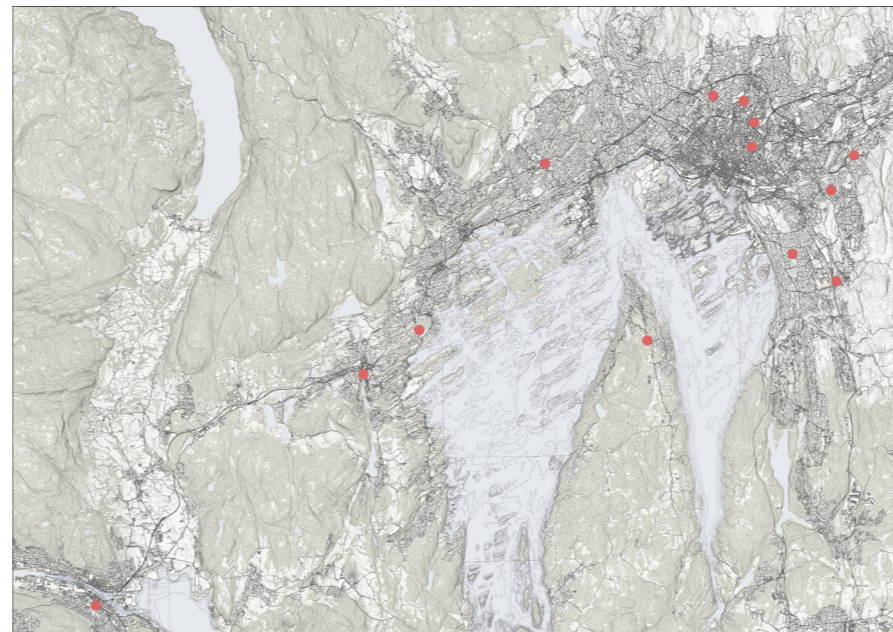


Kung Fu

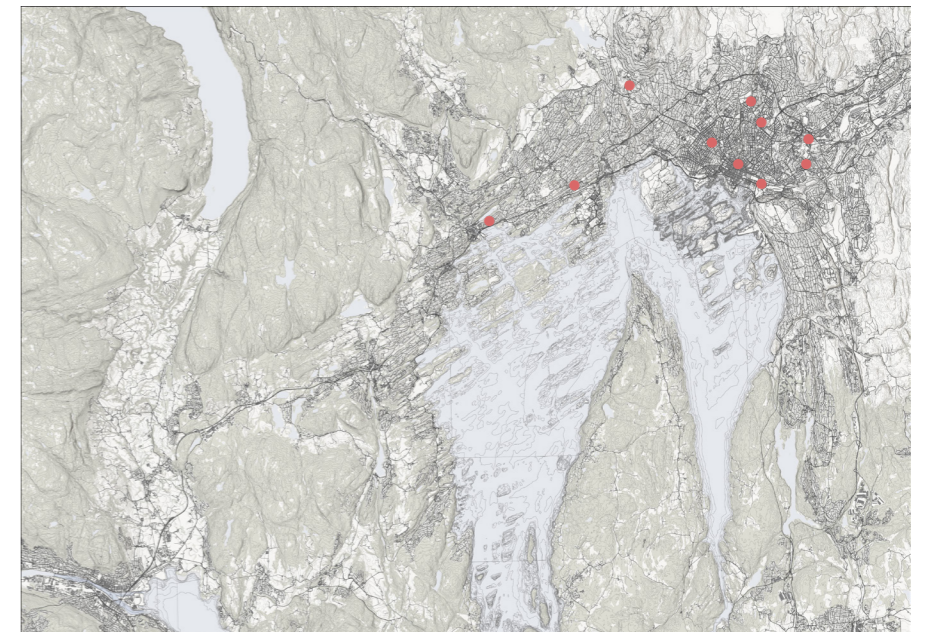
Grappling Martial Arts



[Aikido]

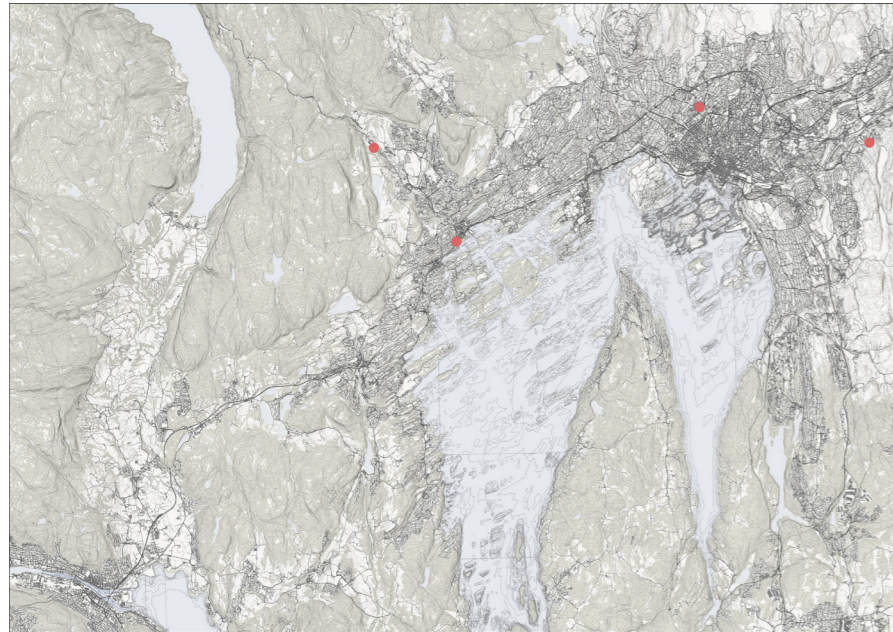


Judo

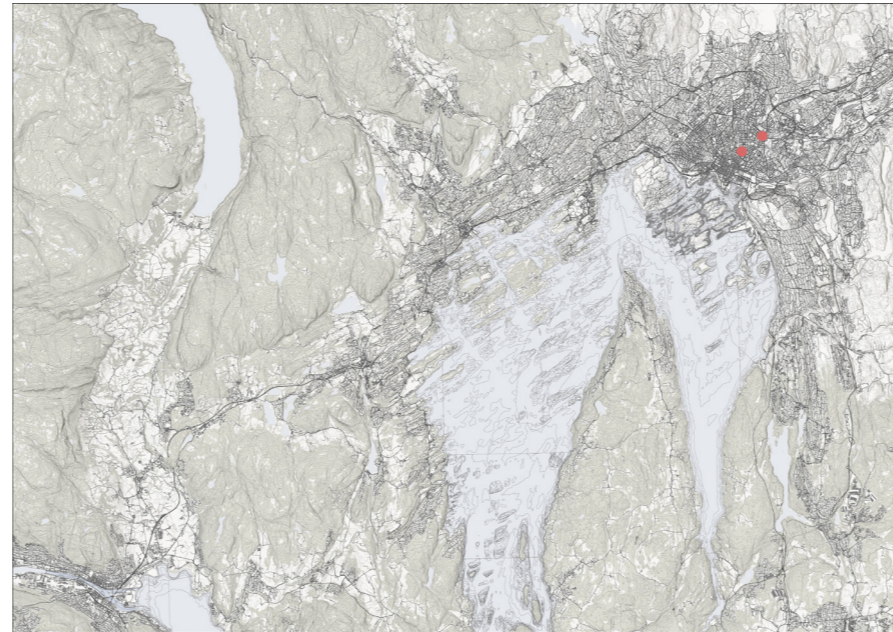


Jujitsu

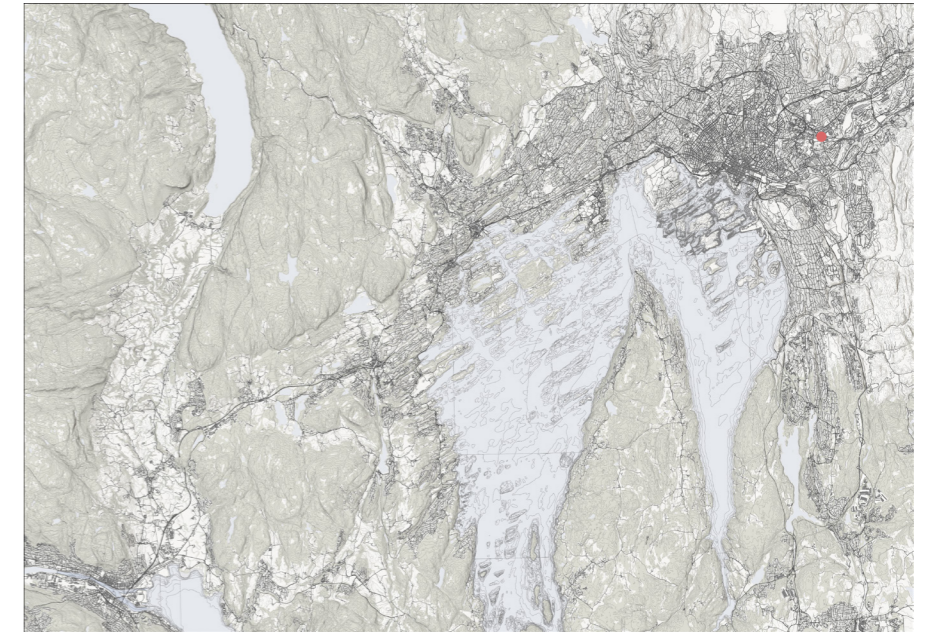
Armed Martial Arts



[Kendo]

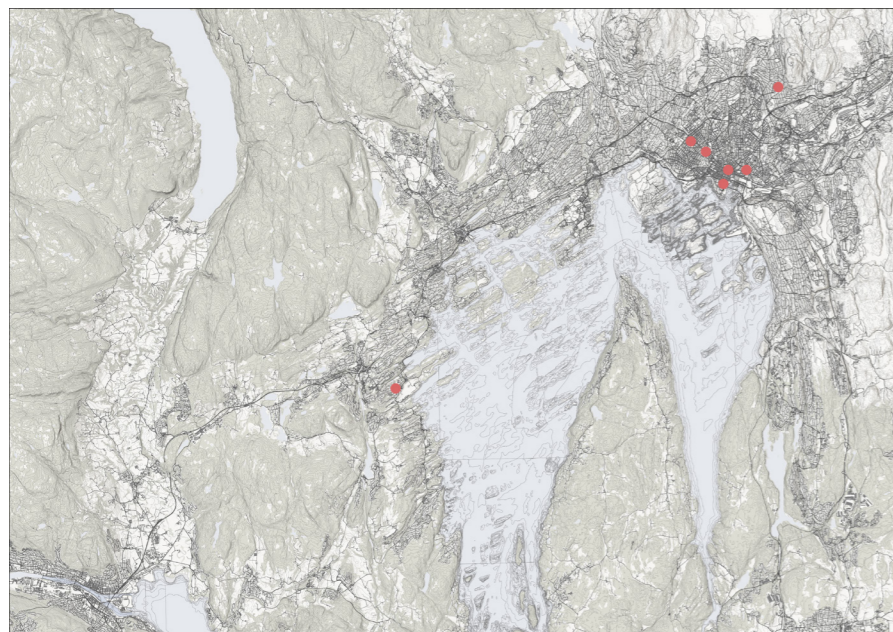


Kobudo

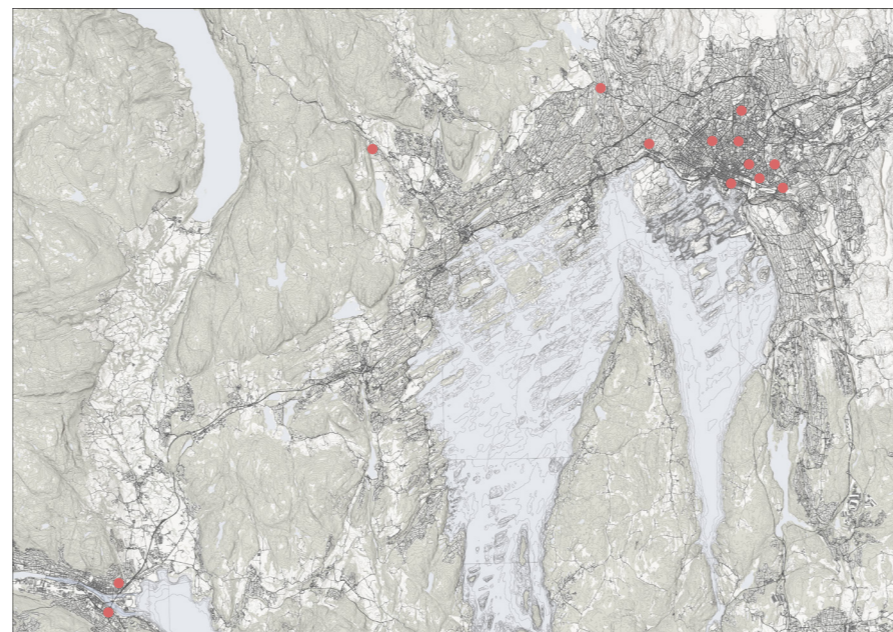


Kyudo

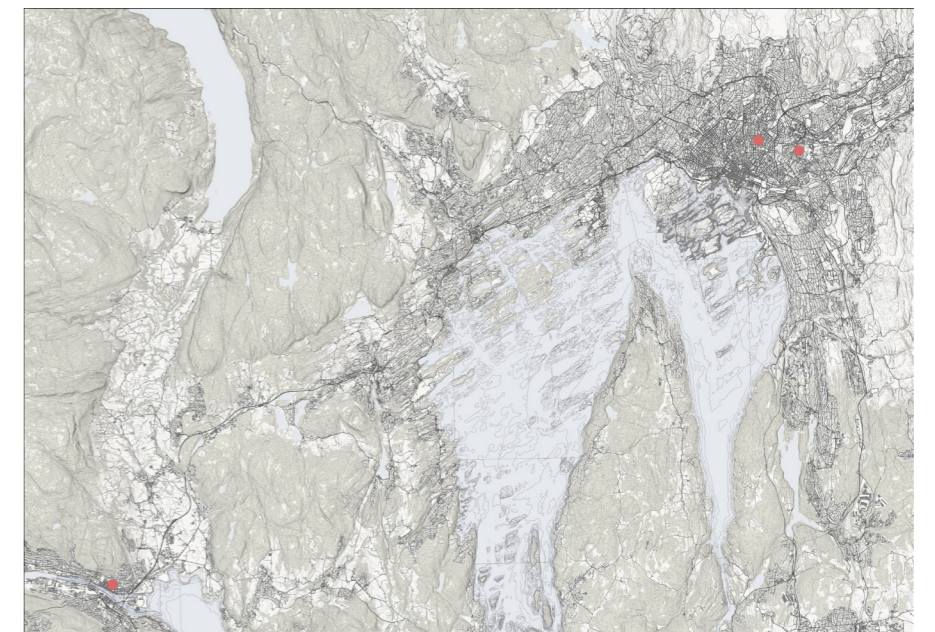
Non-Combat Martial Arts



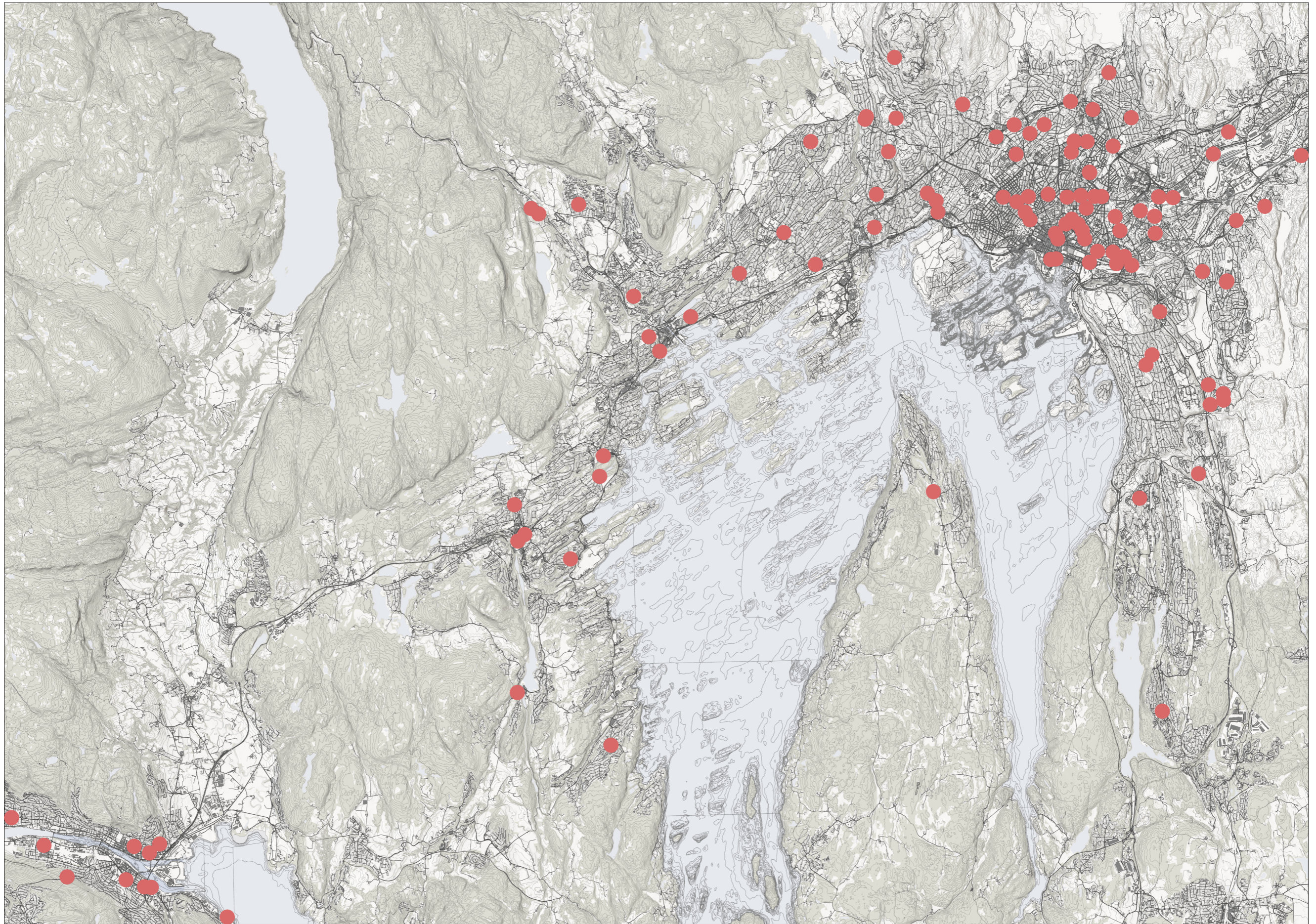
[Qigong]



Taichi



Other N.C.Martial arts



Limtomta

Since this project will not be realised, the site was chosen to further explore the meeting between the set parameters and site conditions. The site is not regulated for building but aspects such as accessibility and logistics has been considered to give the project a base in reality.

The choice of site is based on a concept study by NFK (Norwegian Martial Arts Federation), that explored possible municipalities for a martial arts arena. Bærum was chosen for this project, as it had the most practitioners divided on the fewest dojos. As the administrative centre in Bærum, Sandvika was the most accessible. Placed 600 m from the city's train and bus station, and in proximity to the highway, Limtomta adhered to all the logistical needs.

Containing an open park, forest, a river and floodable areas, the site gave contradicting conditions to adapt to. As martial arts are highly ritualistic, the site itself were a fitting choice. The ritual of entering the dojo itself is an important ritual as it aids in shifting the mindsets of the practitioners into a state of awareness. In comparison, the site acts as a transition, guiding people out of the city centre and into a world of its own. The meandering river enclosed by trees carve the site out of the city context, allowing the dream of a martial arts peninsula to be explored.

Municipality	Active members	Dojos
Asker	723	9
Bærum	1 049	7
Drammen	1 713	17

*Gathered statistics from NFK's concept study

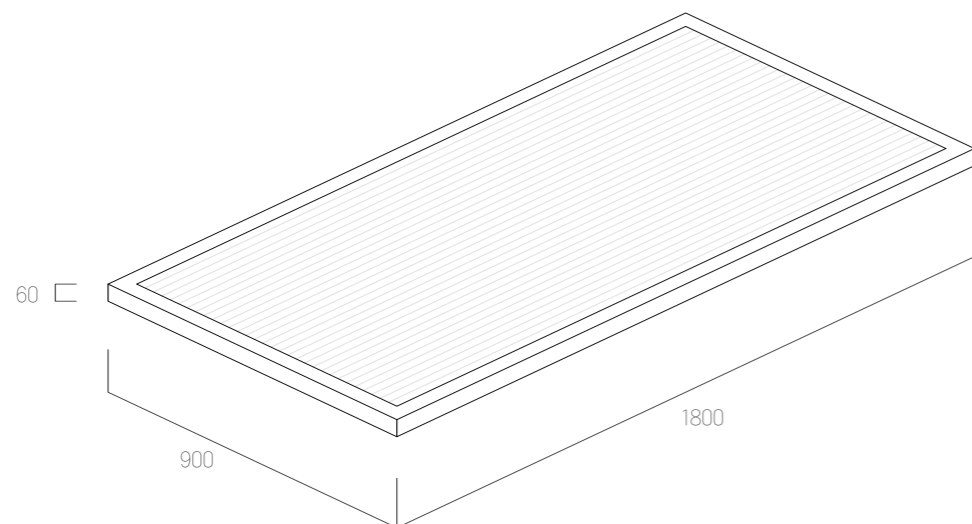


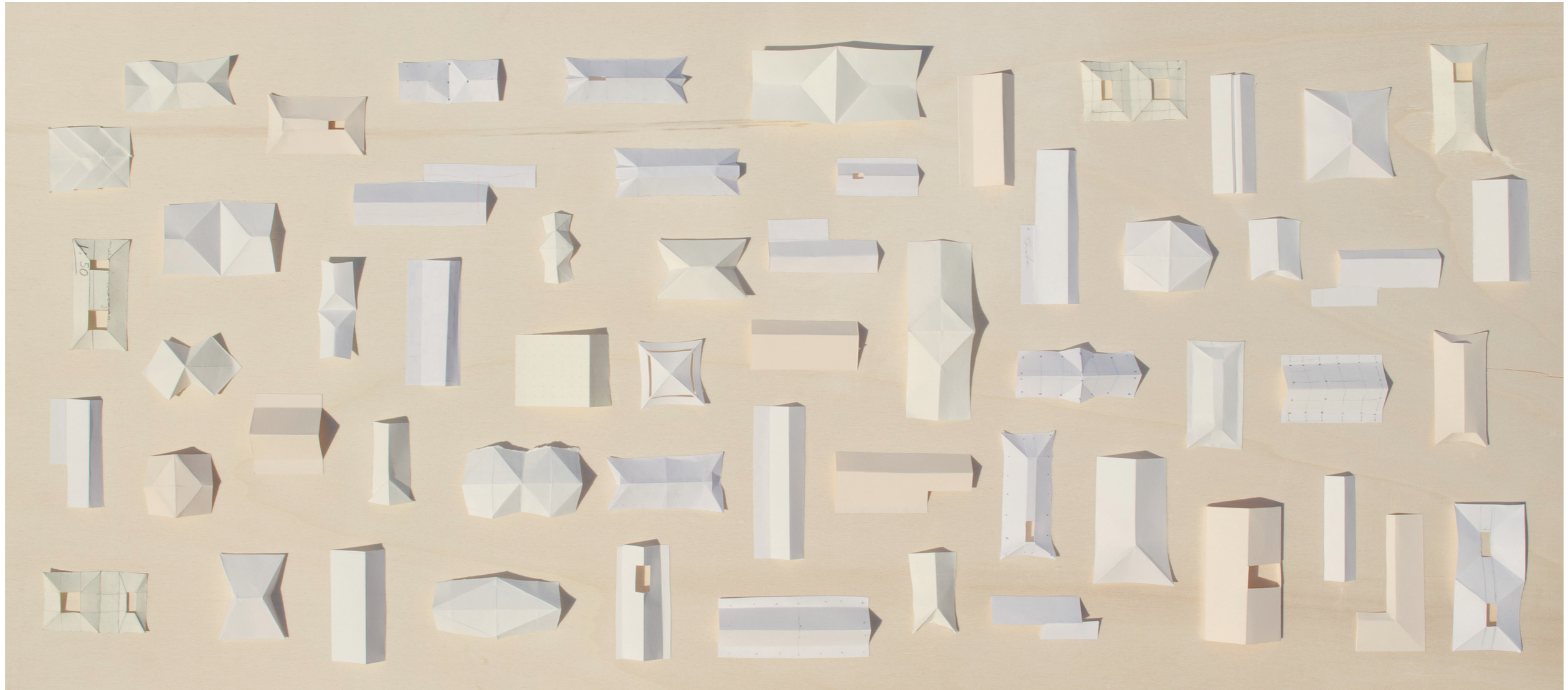
Tatami

The tatami is a traditional Japanese flooring material and is a requirement for grappling martial arts. The implementation of modernised mats is commonly used by other style forms as well. By many, stepping onto the tatami is considered a sacral entry into the martial arts zone.

In search of a constructive grid, the tatami mats were chosen as the mats are standardized to the dimensions of the human body. Based on the length of an average person lying down, the mats measure 1800 mm in length. The width of 900 mm is based on the distance between a person's knees when sitting in seiza, a traditional sitting posture implemented in the opening and ending ceremonies of most martial arts. Not only catering to ritualistic needs, but the tatami's dimensions also were found to align with the researched movement patterns.

The modular nature of the tatami enabled a flexible grid, through the composition of full sized and half sized mats. This were used throughout the process for placement of the constructive elements, walls and spatial layout.





Paper roofs

Dojos adapted for fewer practitioners would allow for more explorative roofs as the current spans of the training spaces acquires certain constructive dimensions



Selection of explored roofs





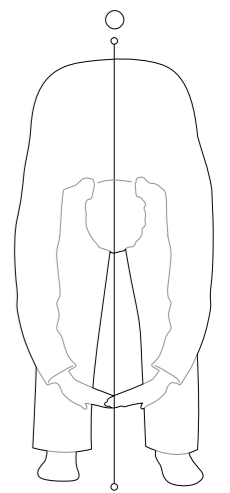
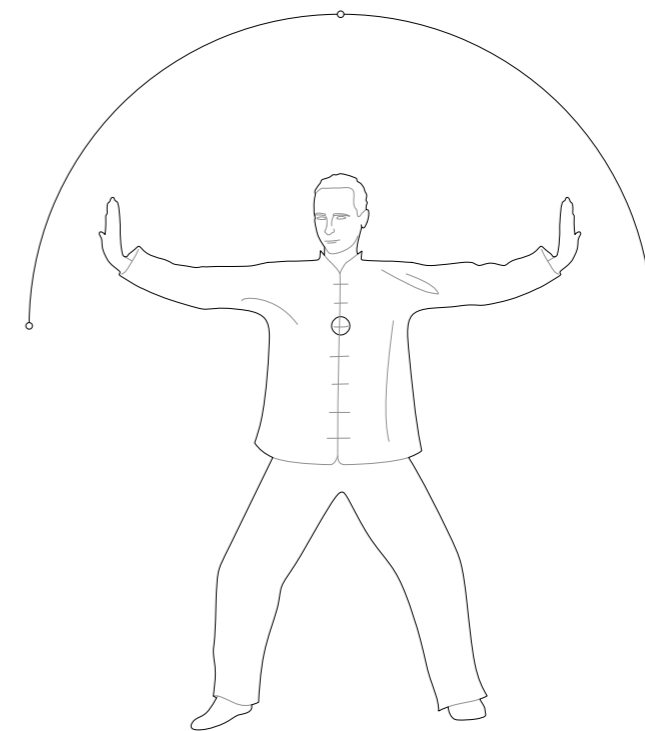
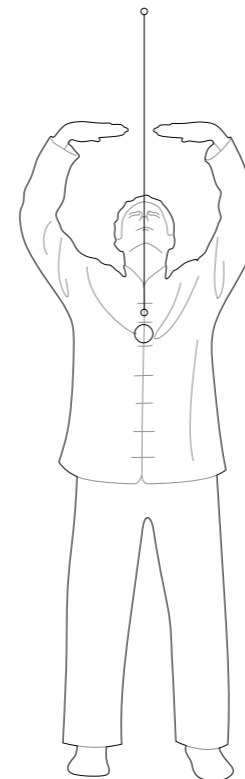
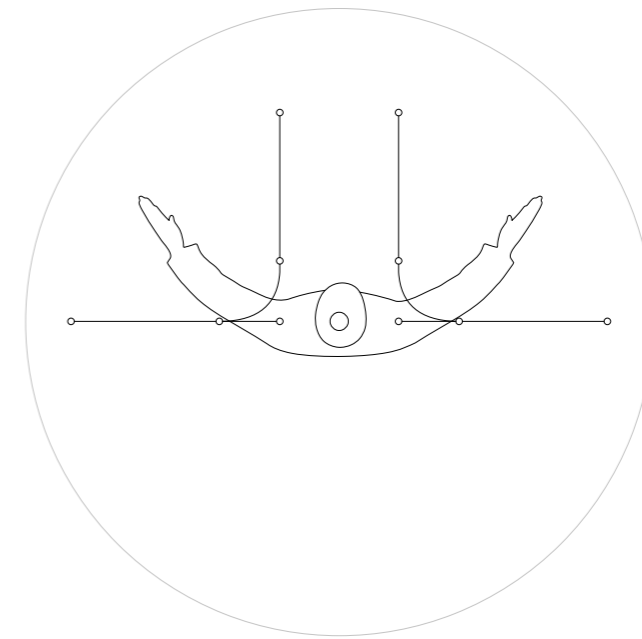
Qigong

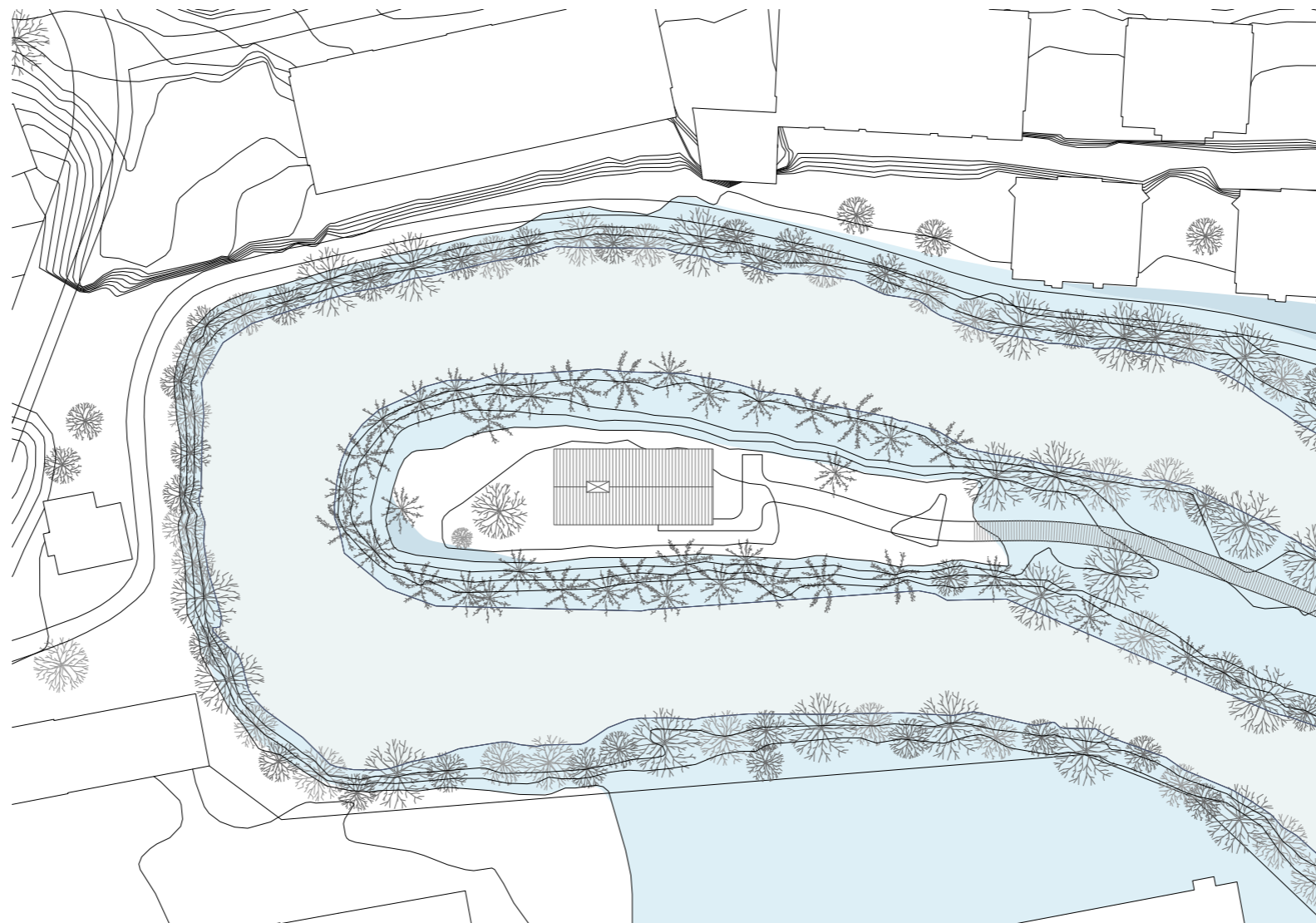
Non-Combat Martial Art

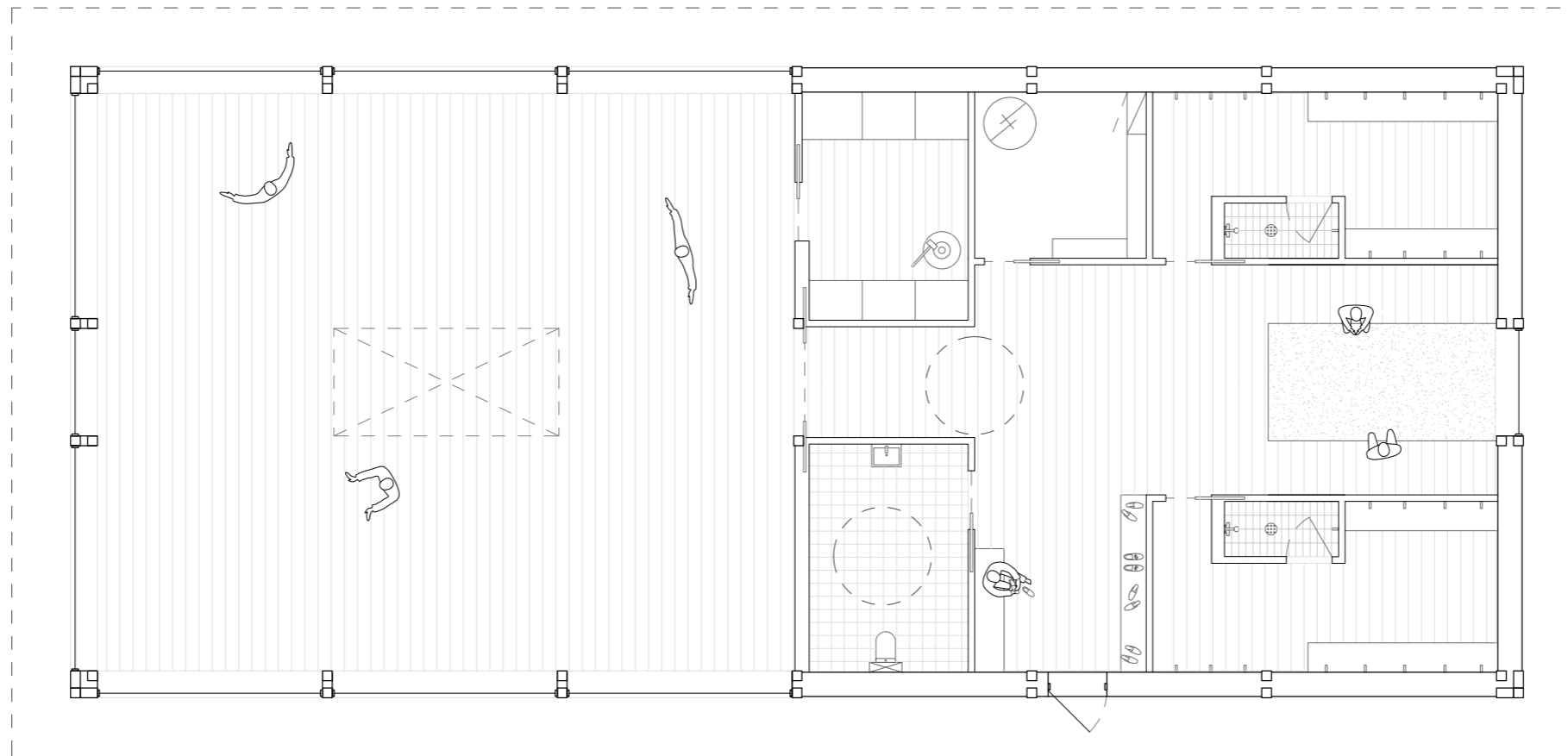


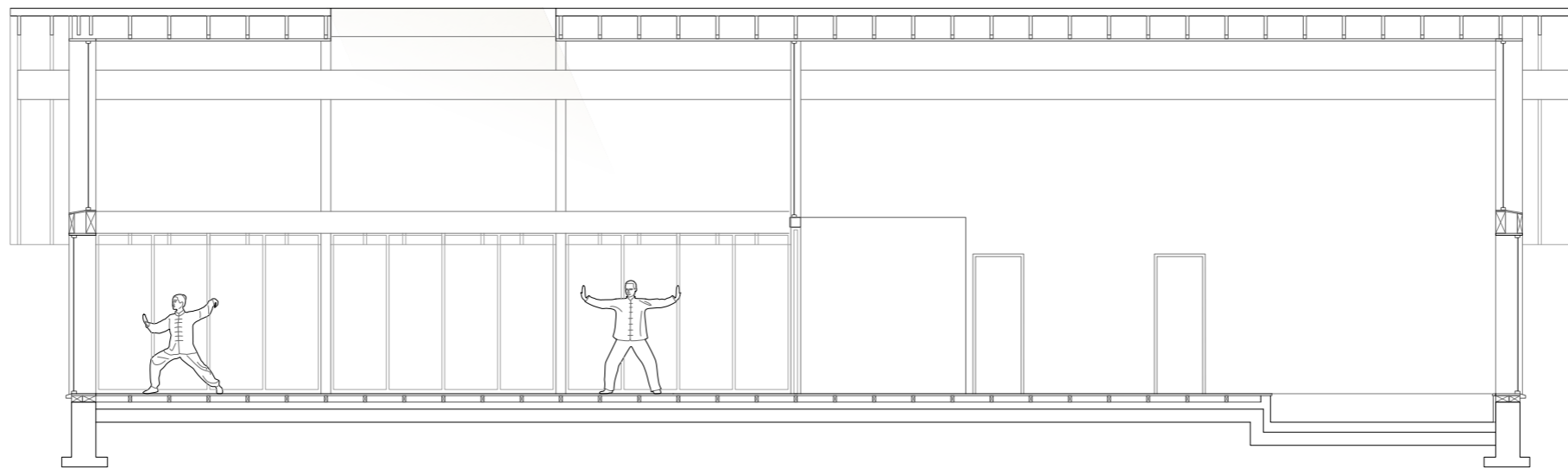
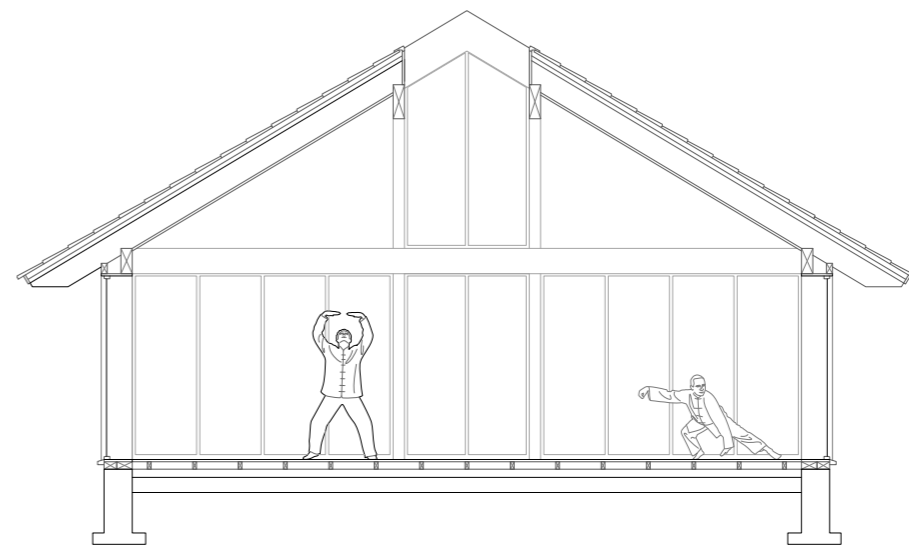
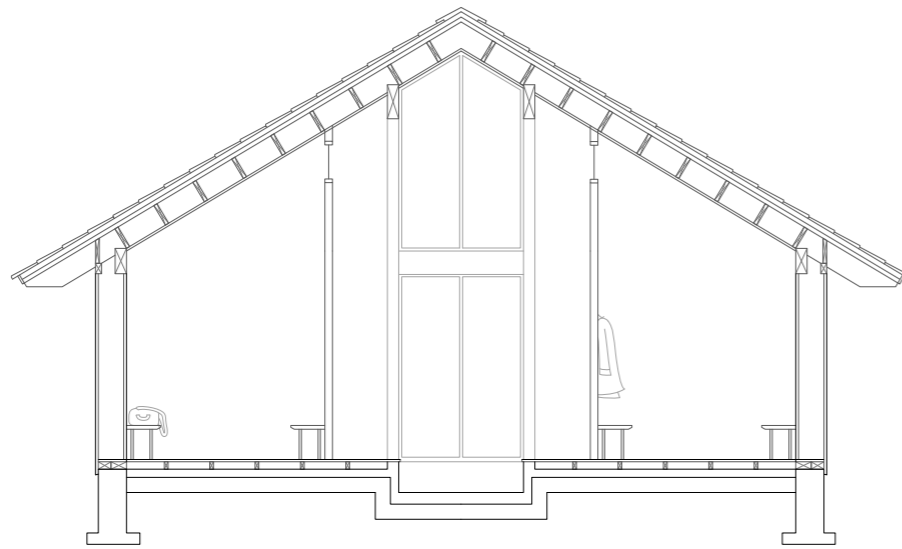
Parameters of Qigong

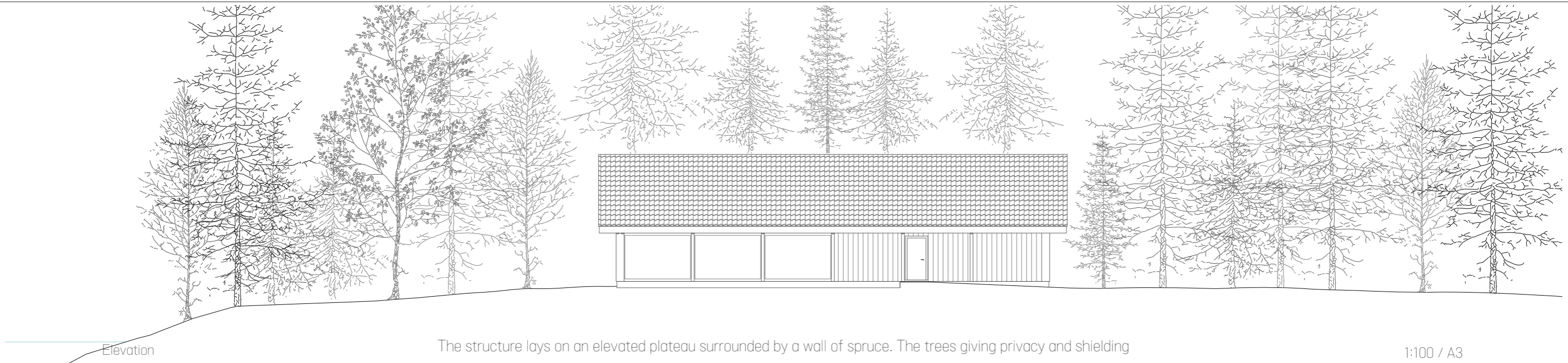
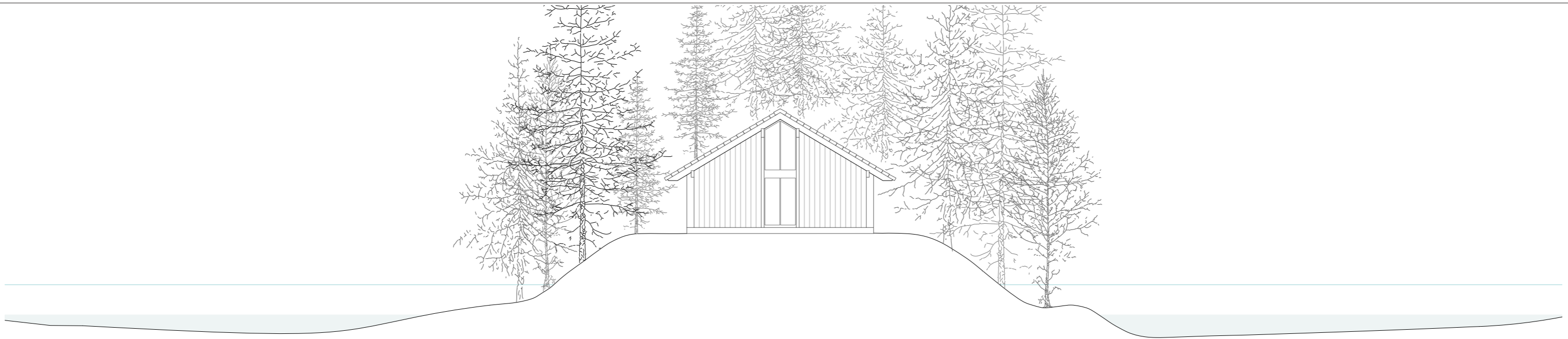
Qigong is a non-combat martial art originating from China. Defined by its calm, fluid movements, that traditionally were slowed down to conceal its true nature as fighting techniques. The art form is commonly practiced in parks as connection to nature is a significant ritual due to the style form's spiritual approach. The sky and ground as important natural elements are reflected through the style forms vertical movement patterns. The movements require less space per participant, resulting in a free placement of the participants inside space for training. As a lesser strict artform, Qigong has no rule as to how participants should enter the Kwoon (Chinese equivalent to the dojo), as it shifts the focus to the approach of the natural elements. Through ritualistic breathing and focus on calming the senses, the art form seeks serene spaces.







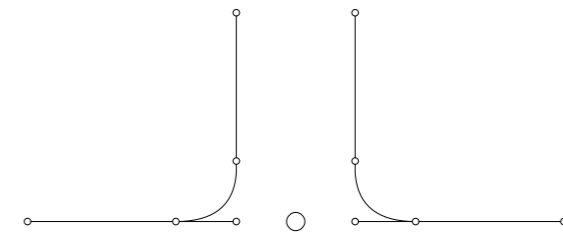
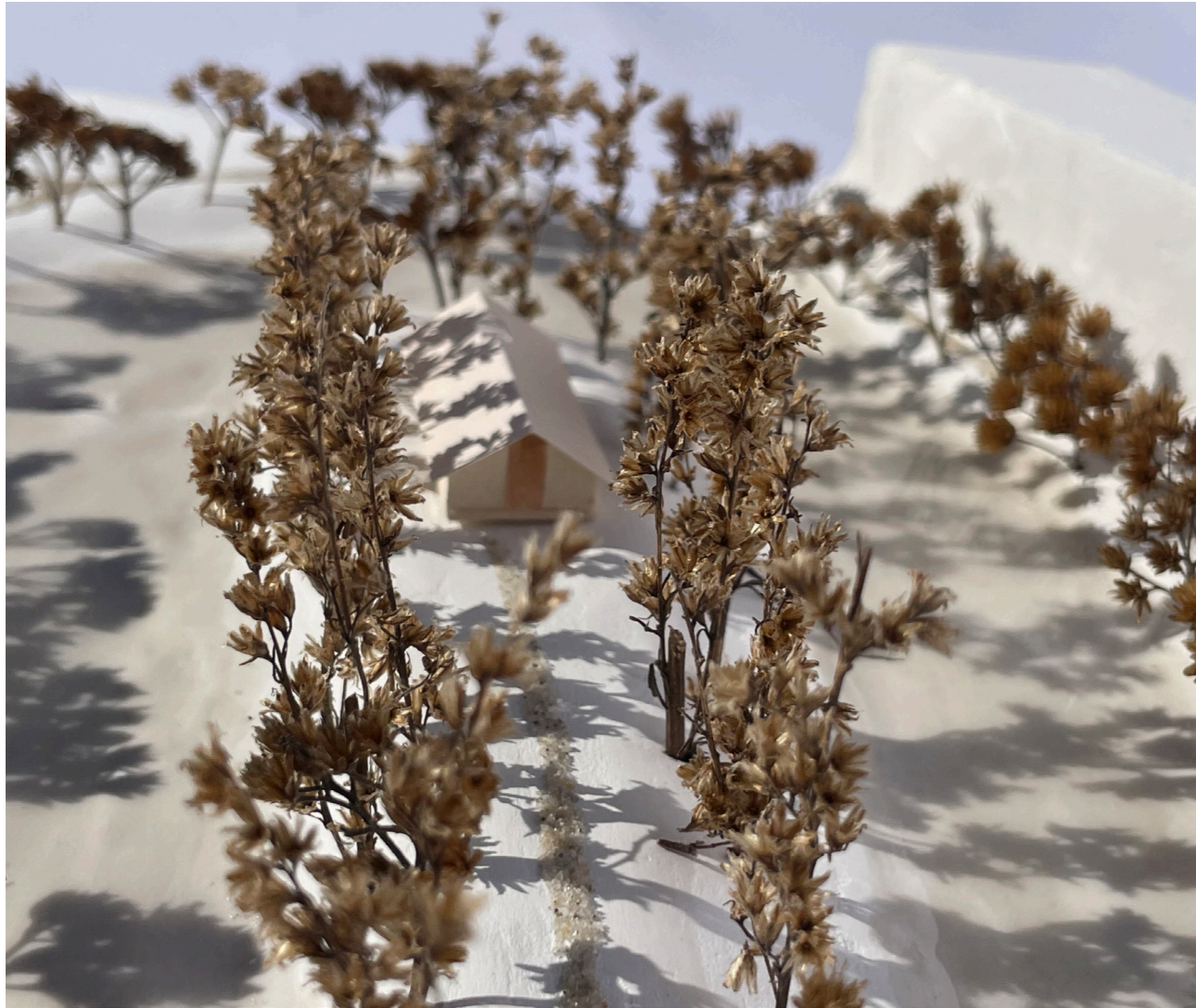




Elevation

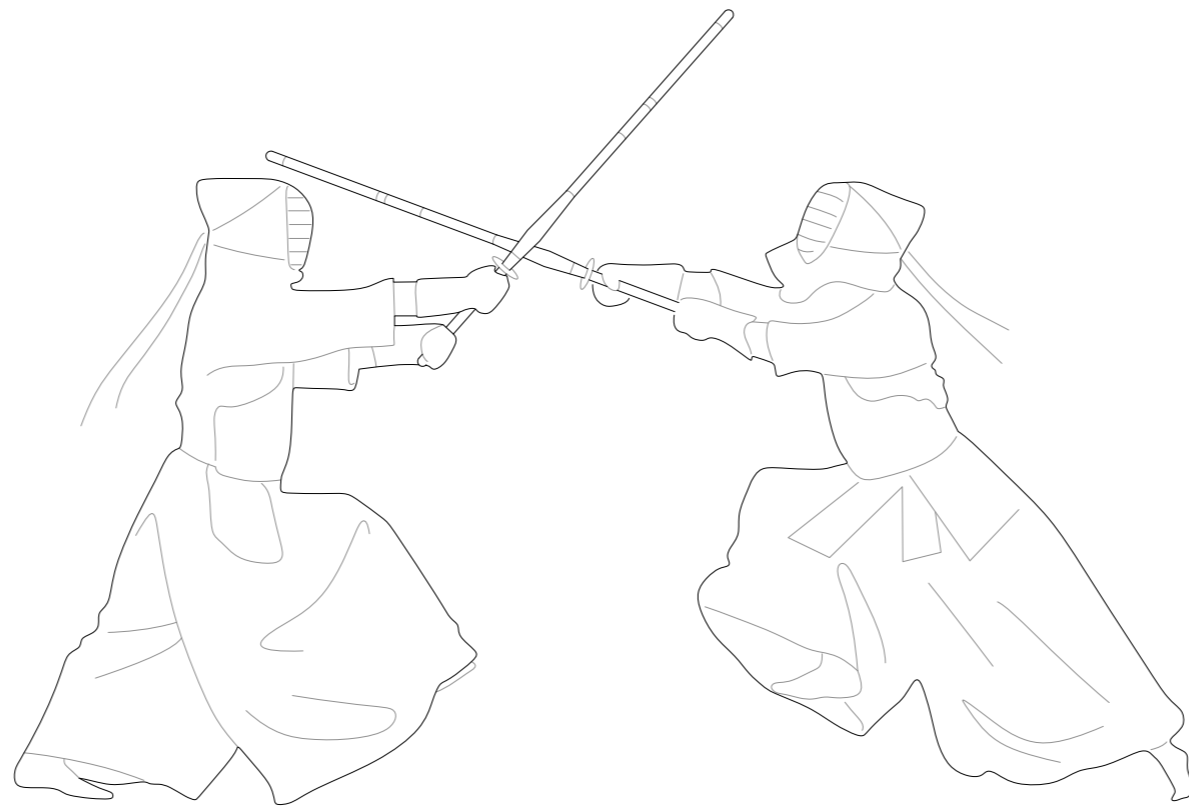
The structure lays on an elevated plateau surrounded by a wall of spruce. The trees giving privacy and shielding from harsh sunlight, allowing large windows in the training space for a better connection to the elements outside.

1:100 / A3



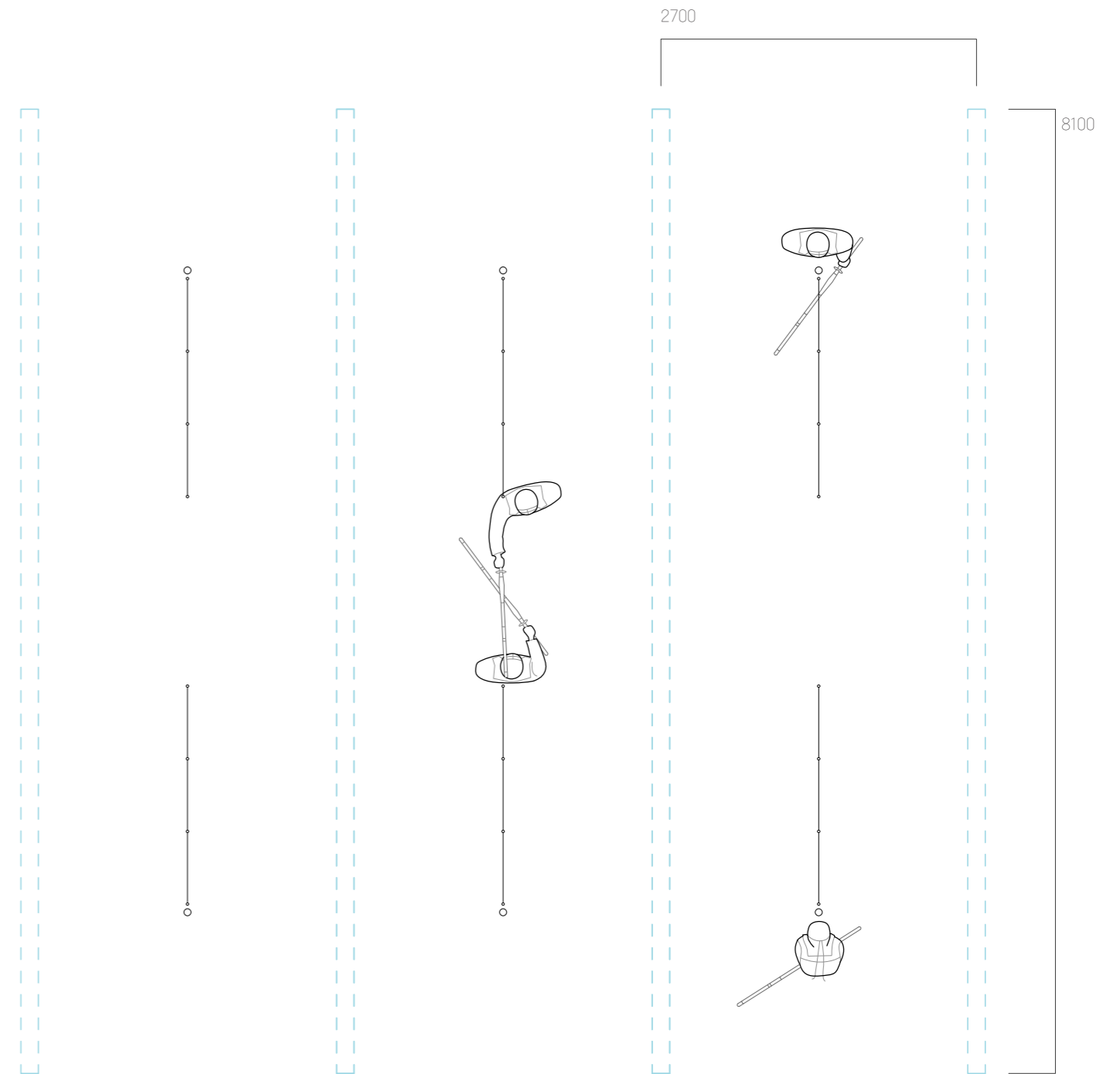
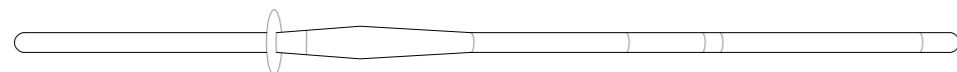
Kendo

Armed Martial Art

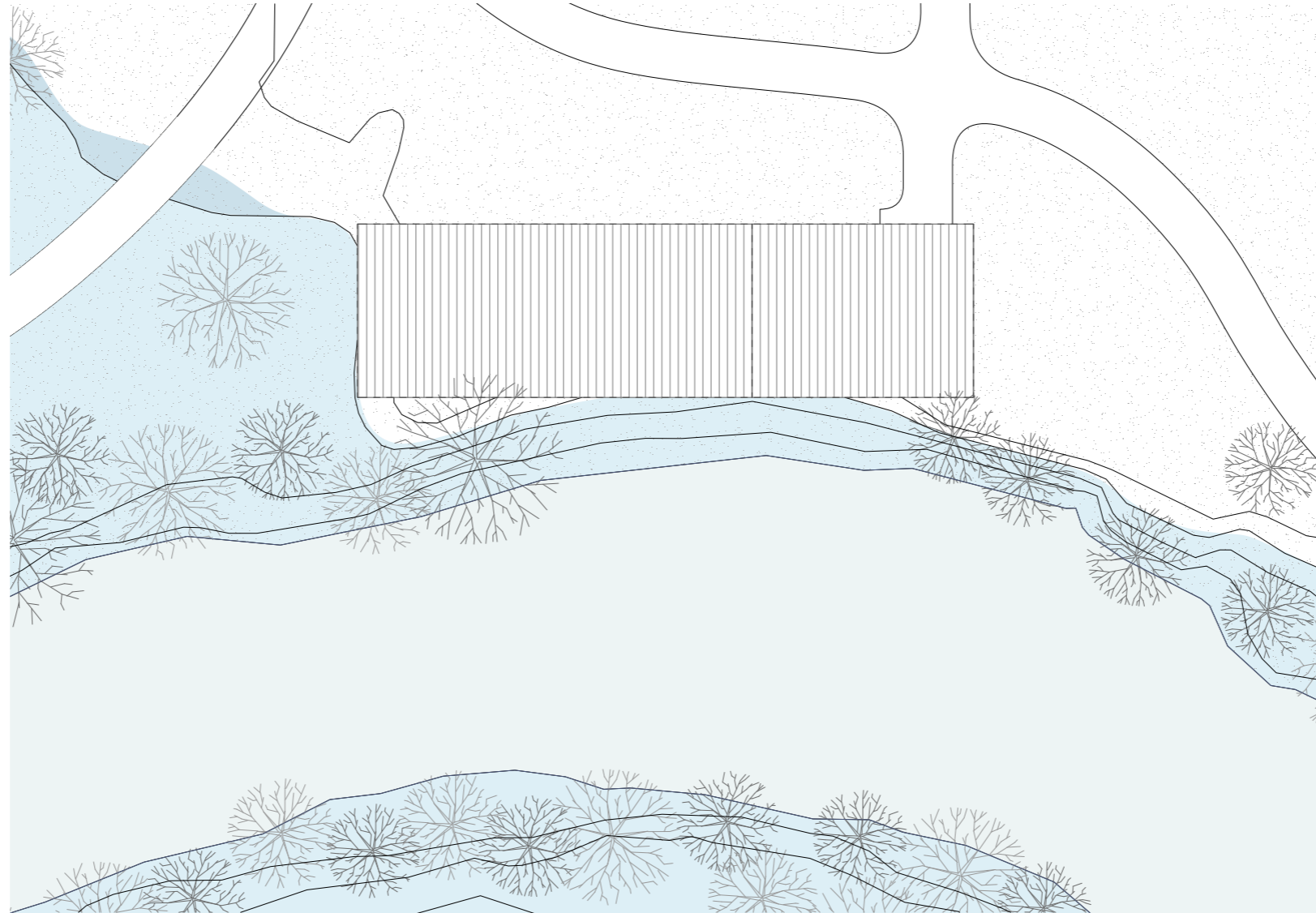


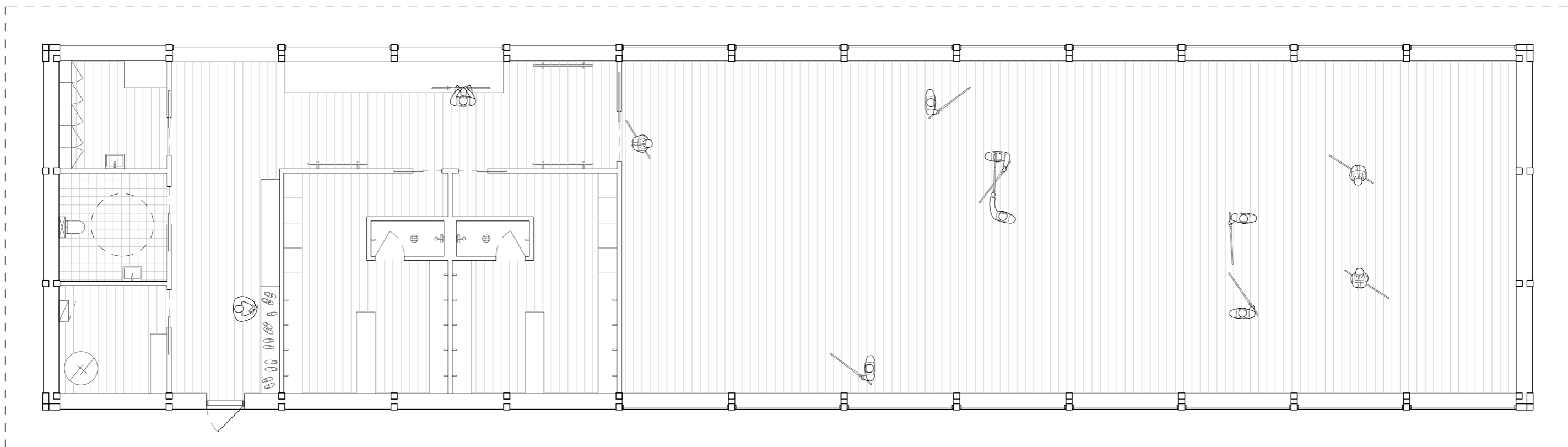
Parameters of Kendo

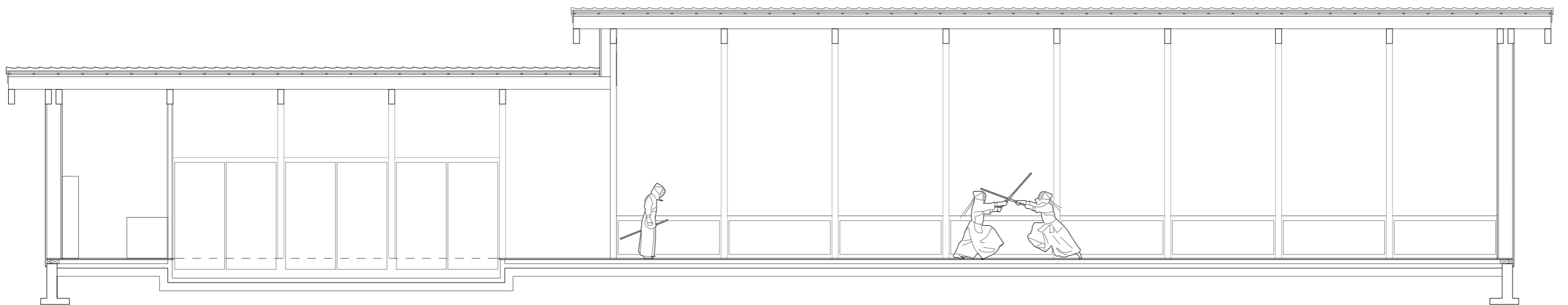
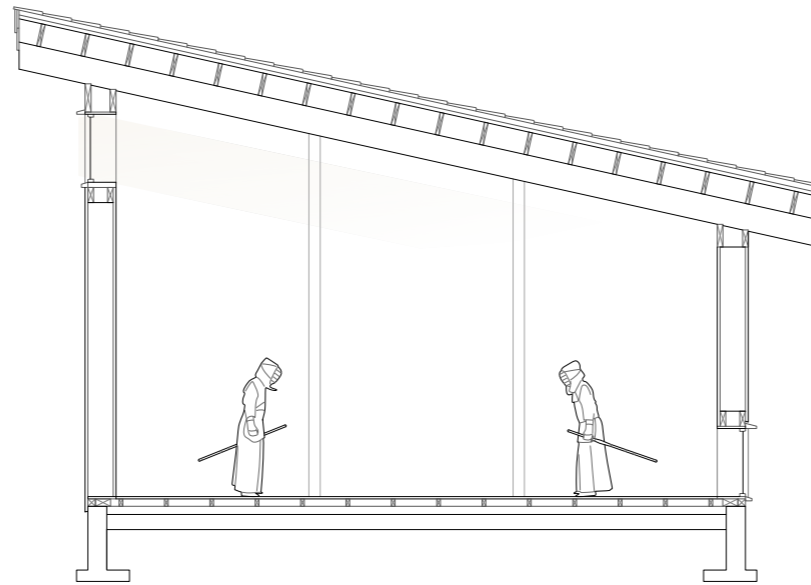
Kendo is an armed martial art originating from Japan. With a main focus on weapon-based techniques, Kendo implements special equipments such as shinai (bamboo sword) and bogu (protective armour) in their daily practice. Defined by linear movements performed in pairs, the practitioners are constricted to a parallel system as they are distanced by their weapons. The practitioner with the highest belt rank conveying knowledge of the art to their paired opponent, leading to a hierarchy of honour which dictates movements and rituals performed between the pairs.

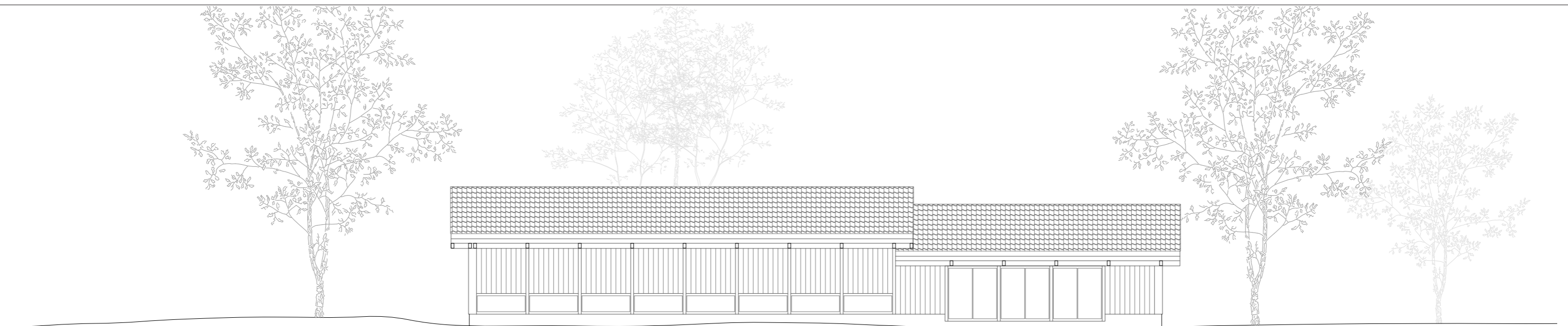
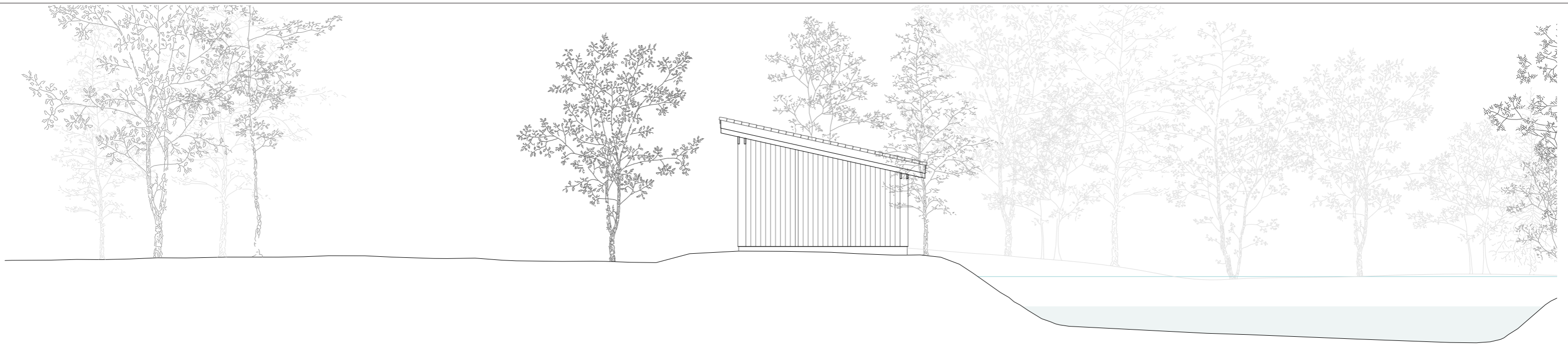
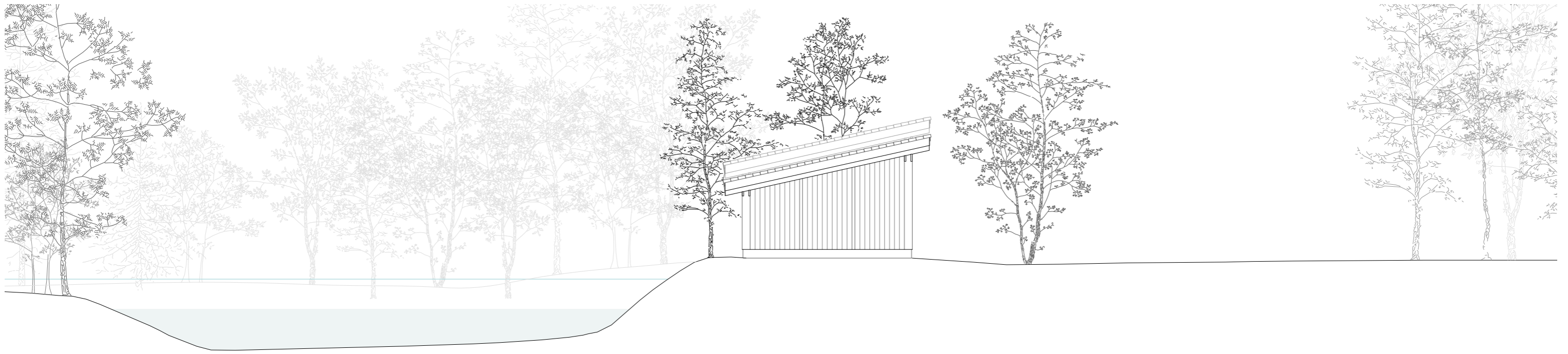


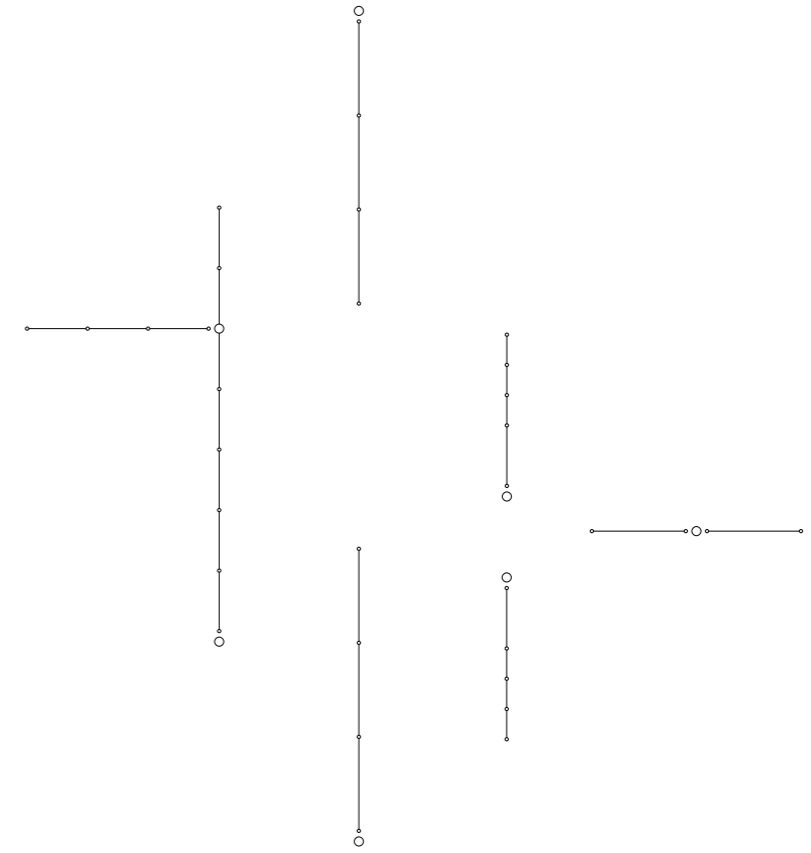
The constructive elements based on tatami, sections the dojo. The required space for participants implemented in the beams. Proper distance is important due to the weapons further elongating the fast paste, linear movements.





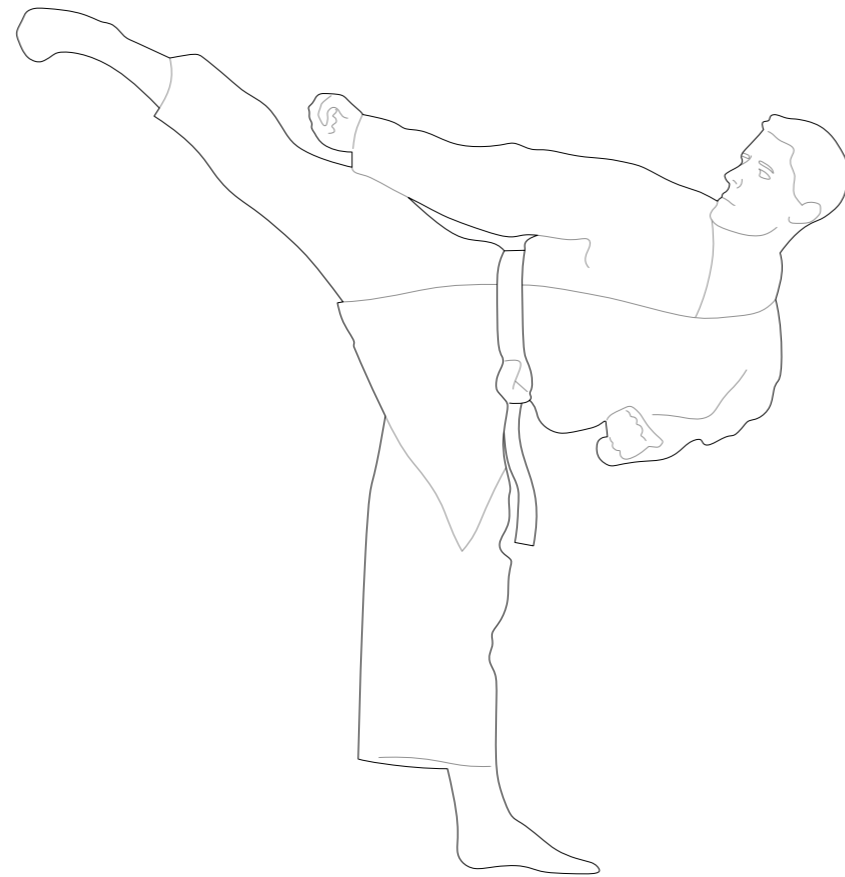






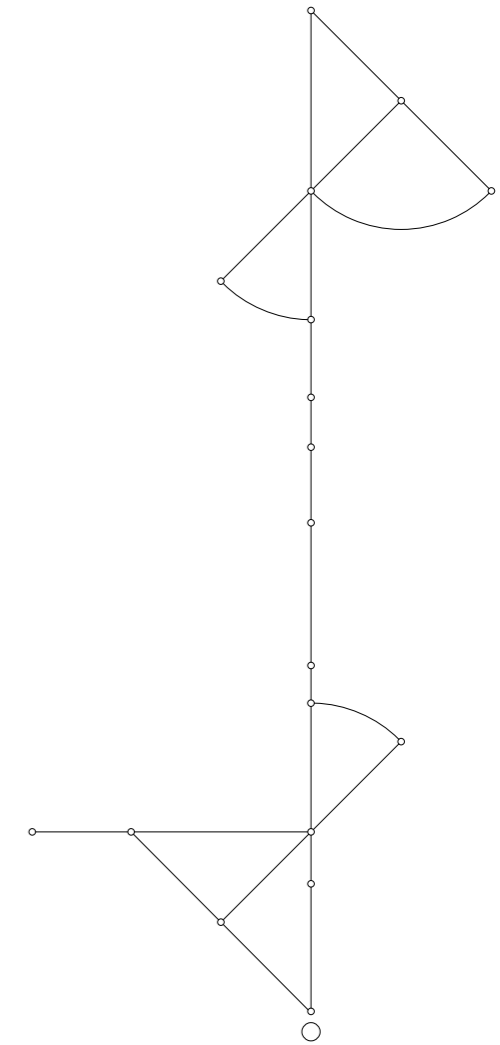
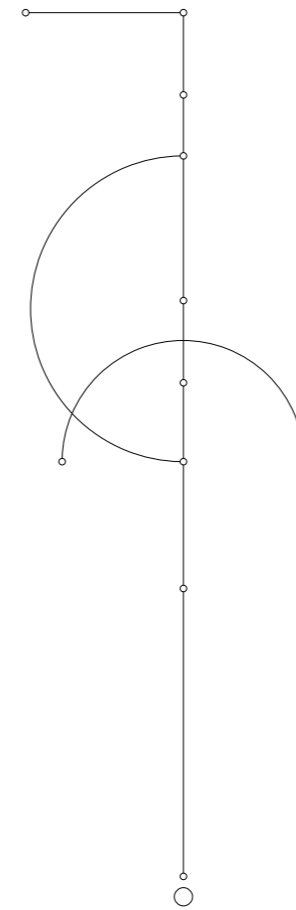
Karate

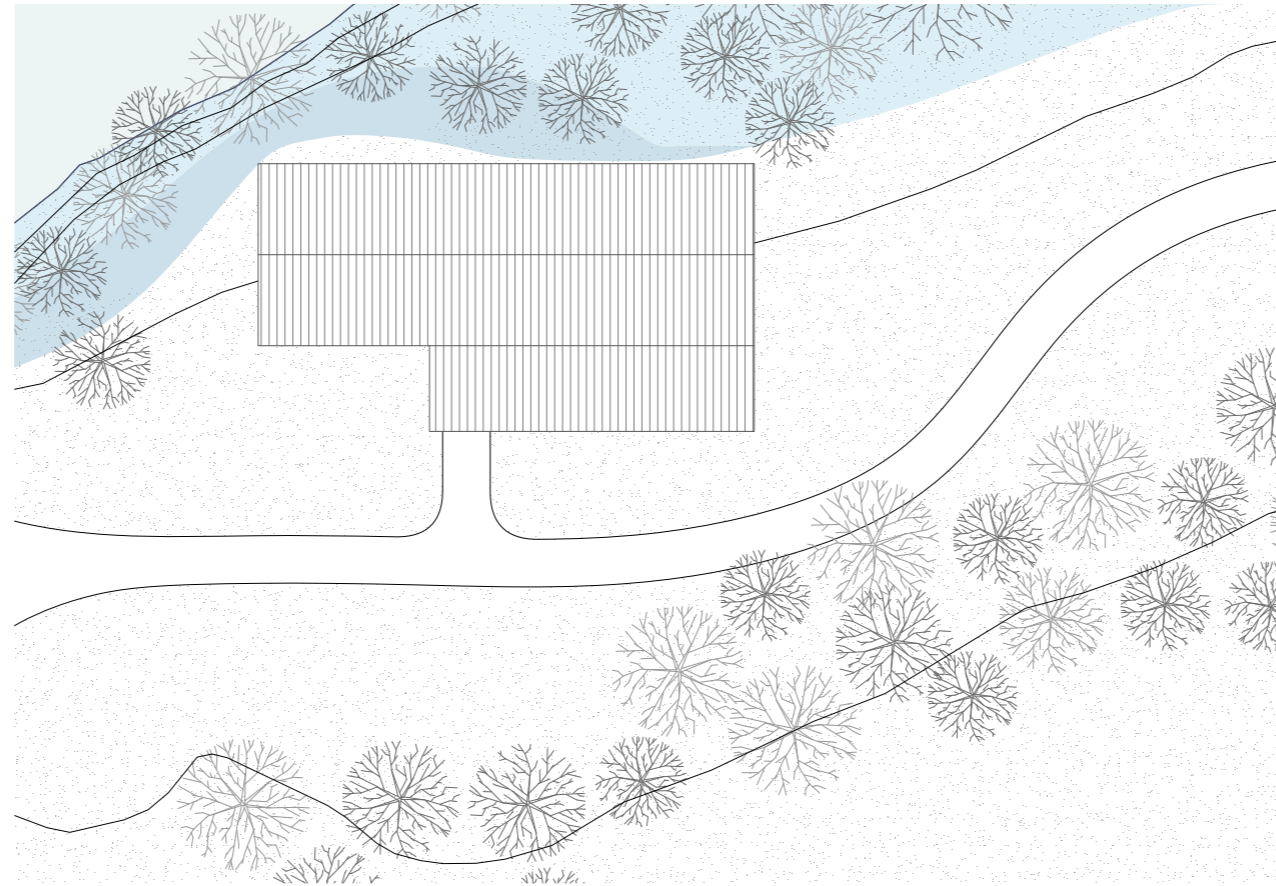
Striking Martial Art



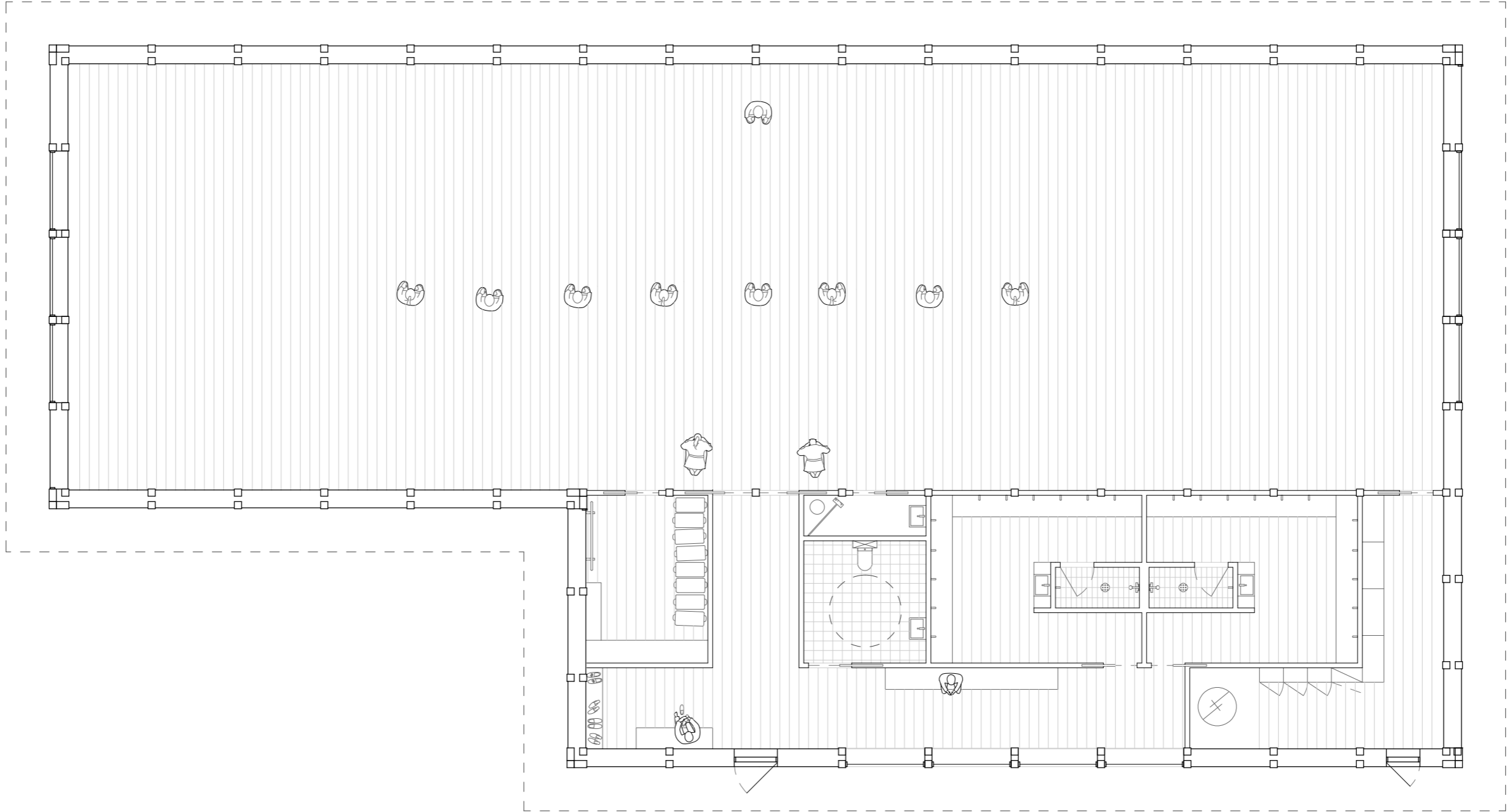
Parameters of Karate

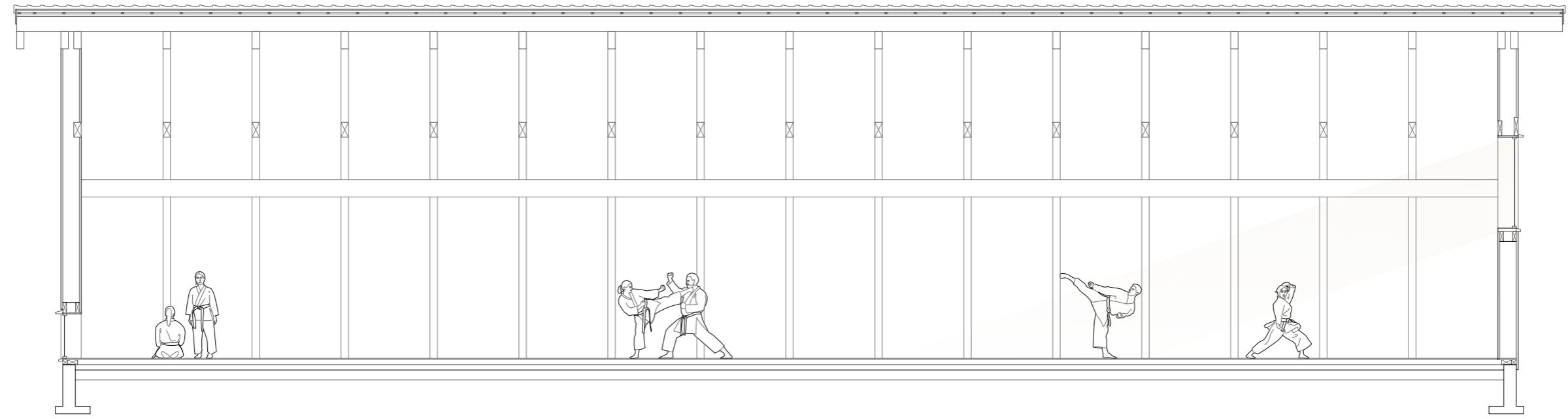
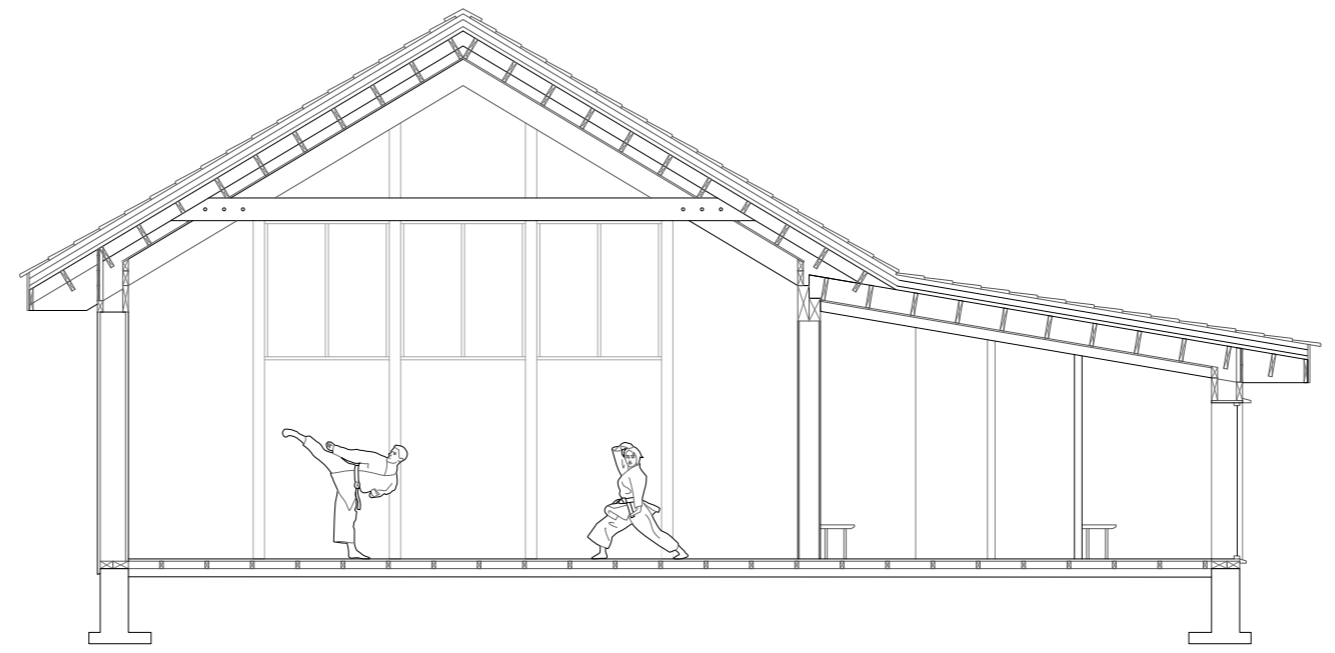
Karate is a striking martial art originating from Japan. Movements that stress speed and techniques are used to strike or block the opponents' movements. Practiced either individually through kata (ritualistic movements repeated) in pairs through kumite (controlled fight) or synchronised as a united group. Karate adheres to strict rule sets both in movements and in the approach of the dojo. Either lined up or structured in a alternate pattern, the movements are strictly contained in a specific axis of the dojo. One's placement decided by belt rank. The highest graded, placed along the east wall with the rising sun. The Joseki (right wall) signifying acquired knowledge. Restricted from free circulation along the north wall, as it bares significant value. The teacher, allowed to move freely as a show of respect. The rest of the practitioners may only move freely along the south wall.

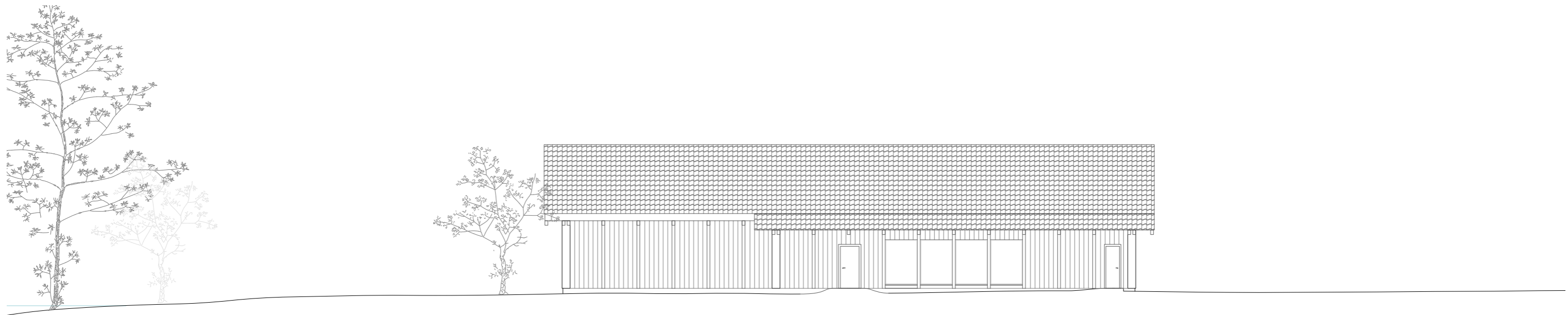


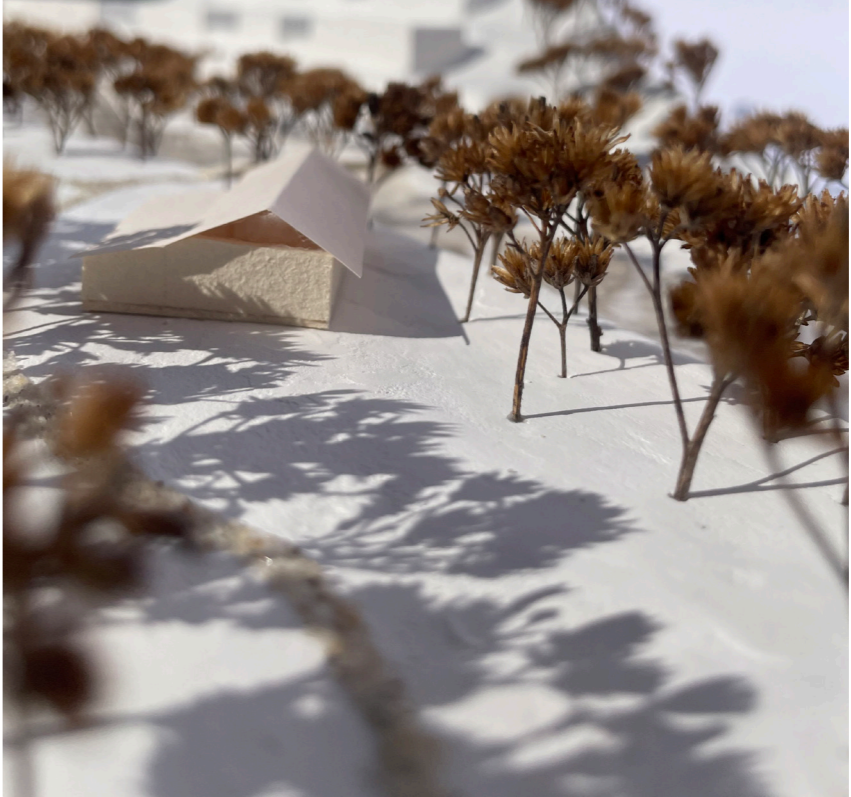


The significance of the cardinal directions overruling the sites terrain.









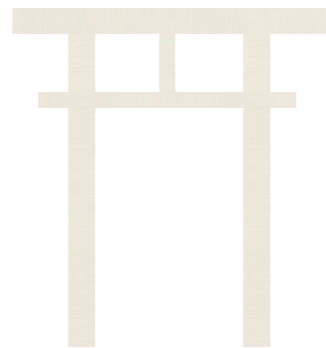
Aikido

Grappling Martial Art

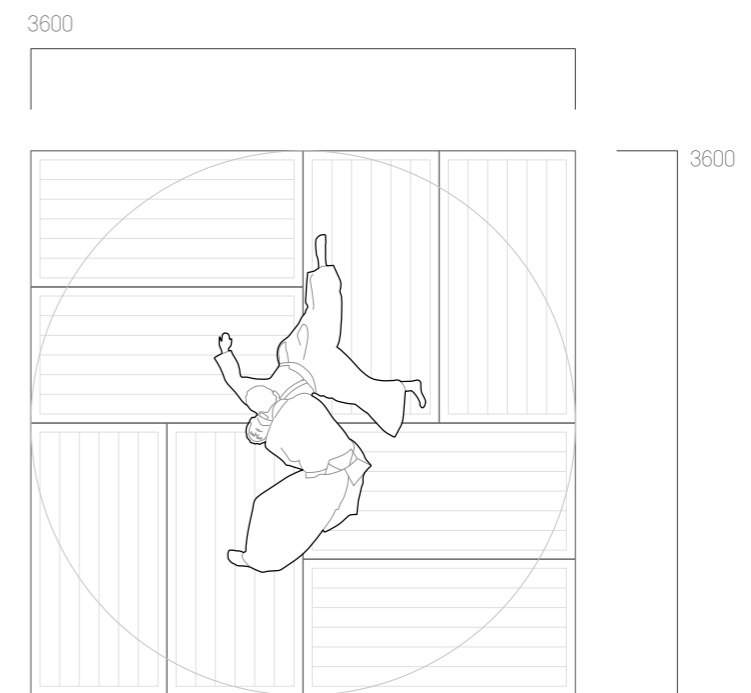


Parameters of Aikido

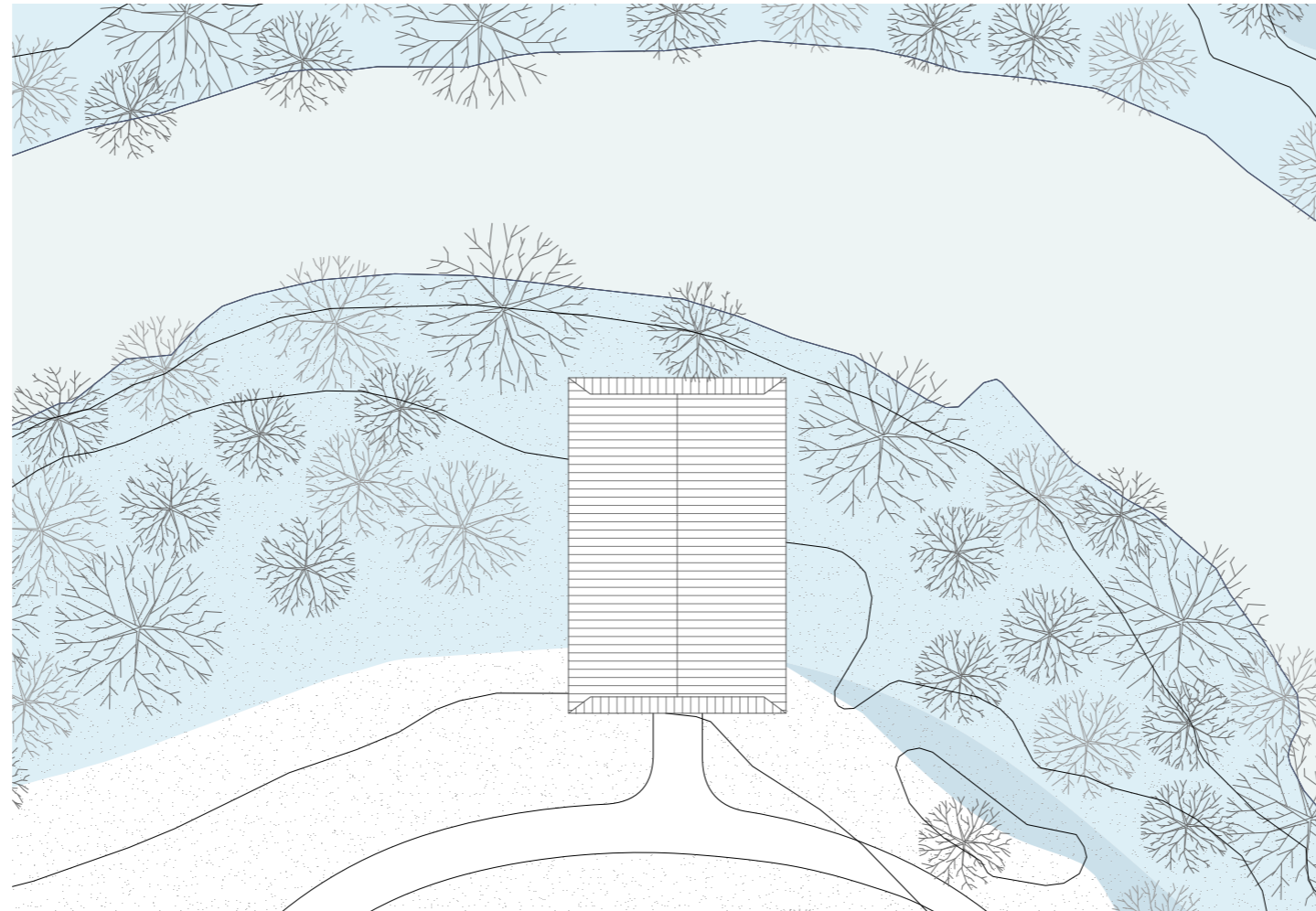
Aikido is a grappling martial art that originates from Japan. With the main focus on taking control of the opponents' movements, redirecting it into throws, locks or pin downs to the floor. The circular movements confined by the modular composition of the tatami mats the art form requires. Directed at the northern wall, the practitioners perform multiple rites during each practice. Here the Shinto shrine stands as an important element in every Aikido dojo.



Structured by the tatami, the implementation of the shinto in the constructive grid overruled the need for a dividing construction in the roof

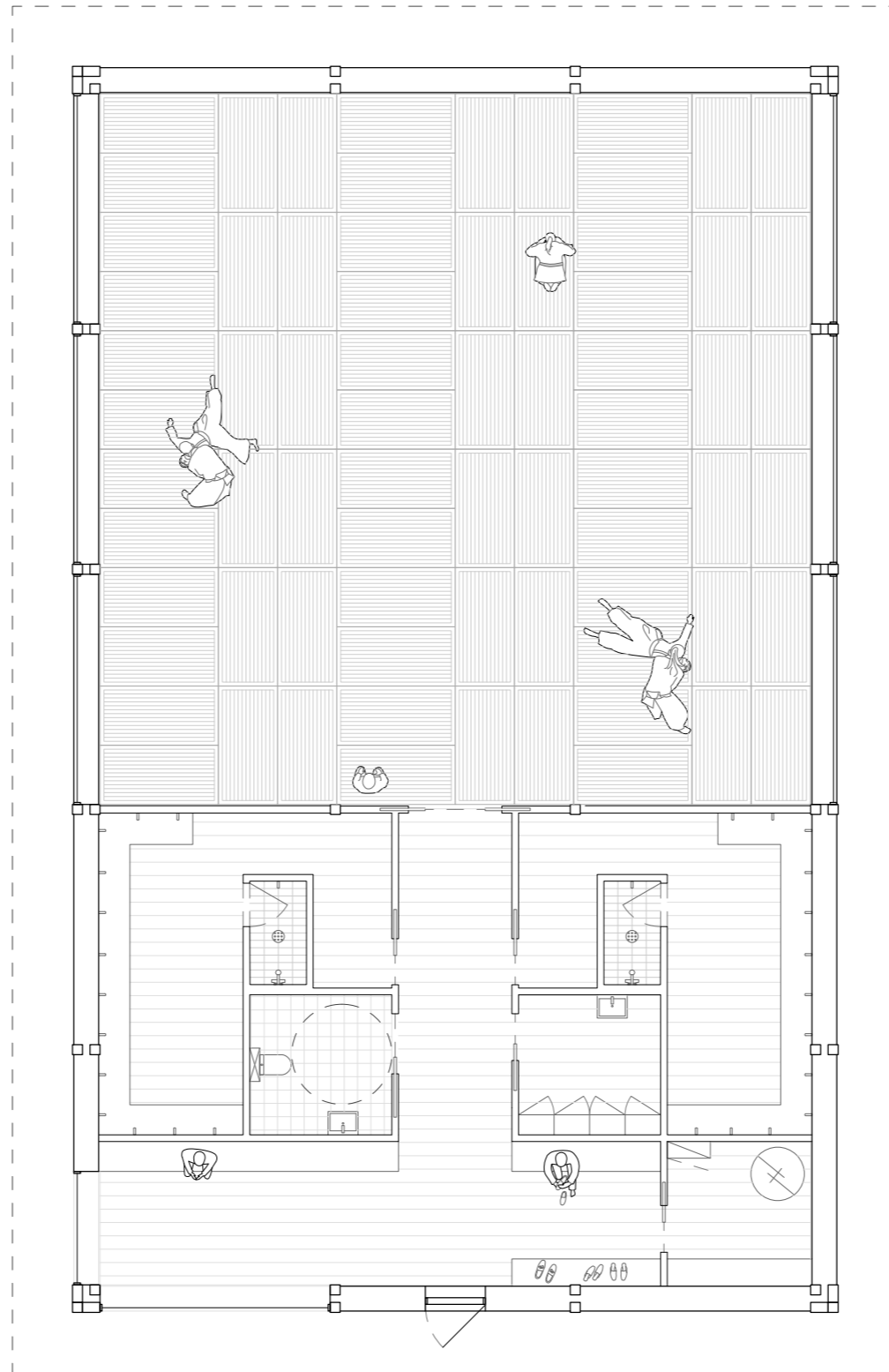


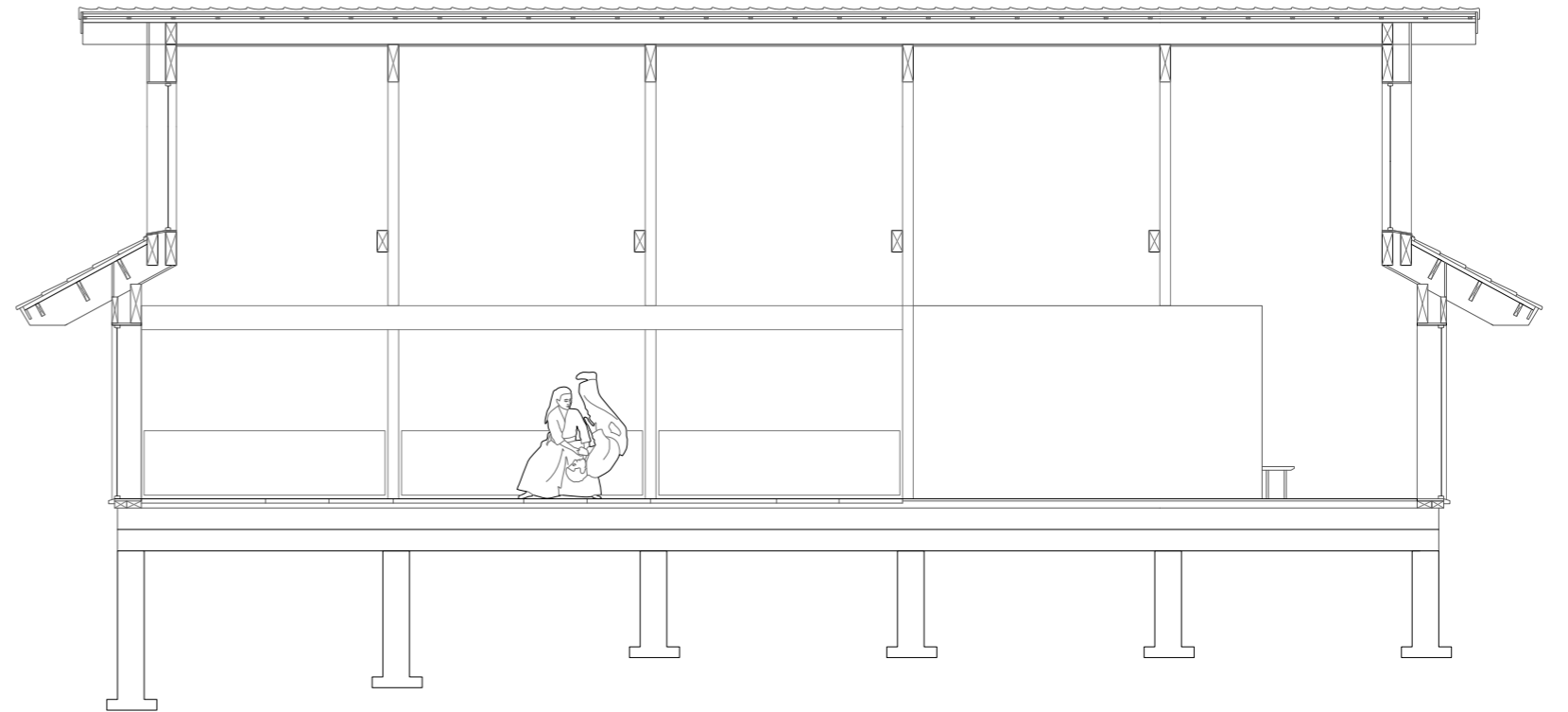
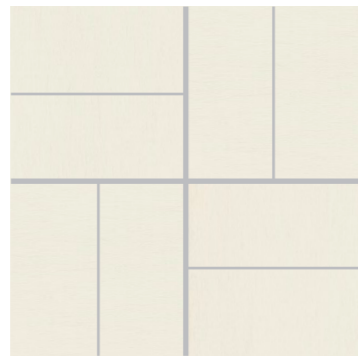
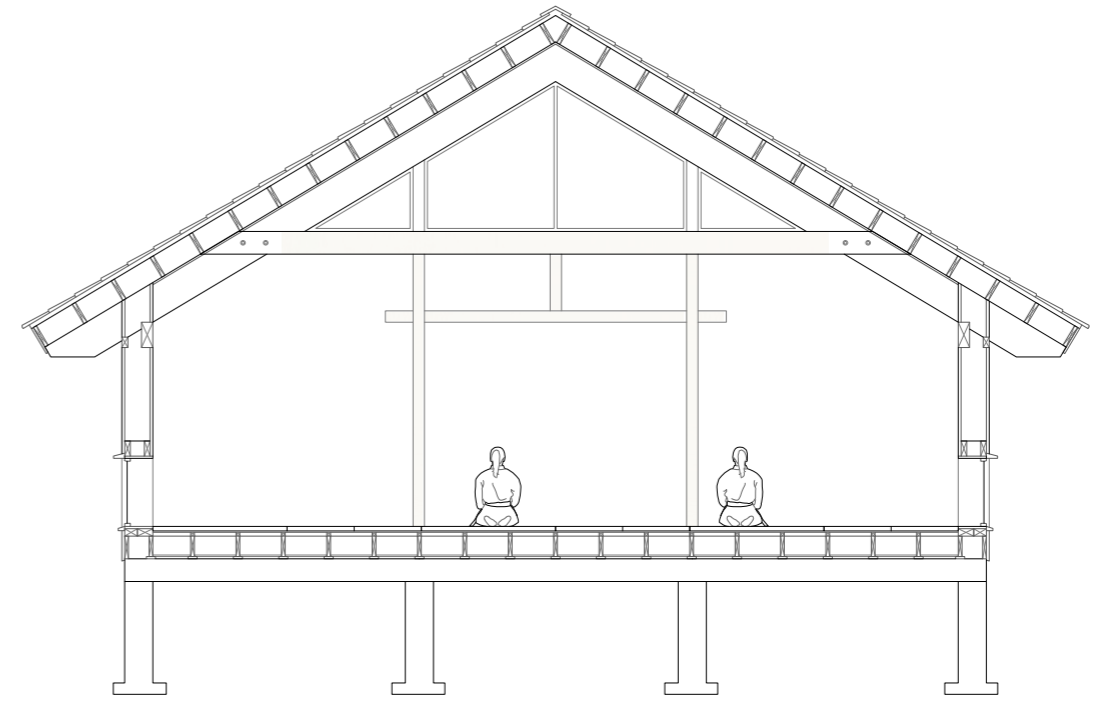
As Nagoya tatami were used for the constructive grid, Tokyo tatami was implemented on the floor of the aikido dojo. The same mats could not be used as the walls had to adjust for the norwegian climate.

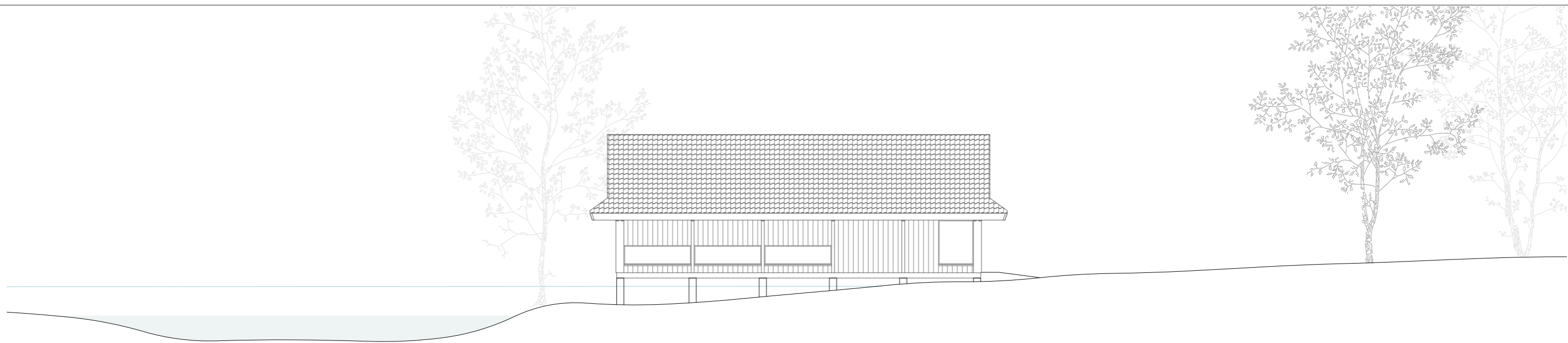
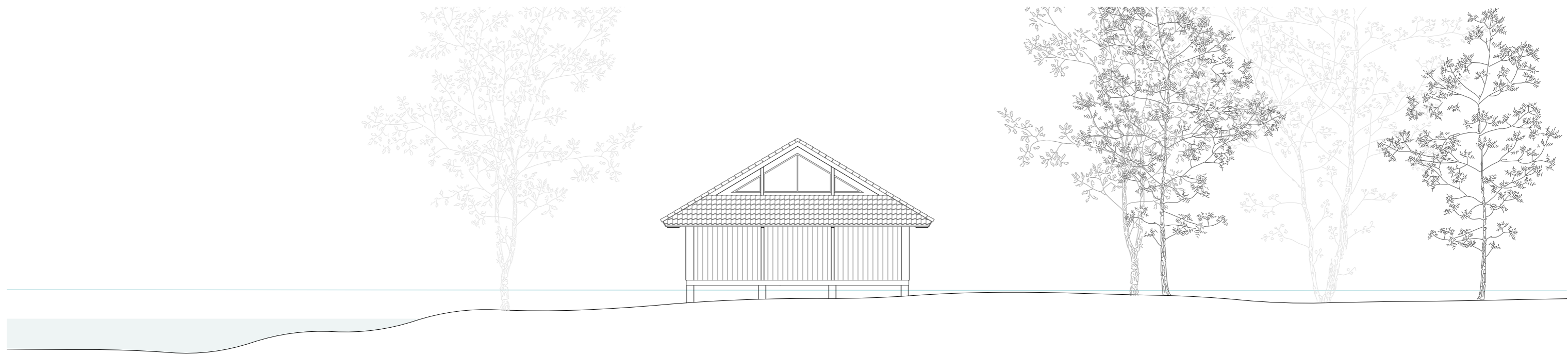


Aikido operates in two levels of stance, upright and laying down. Placed on a floodable part of the site, the dojo adapts to a changing ground level.







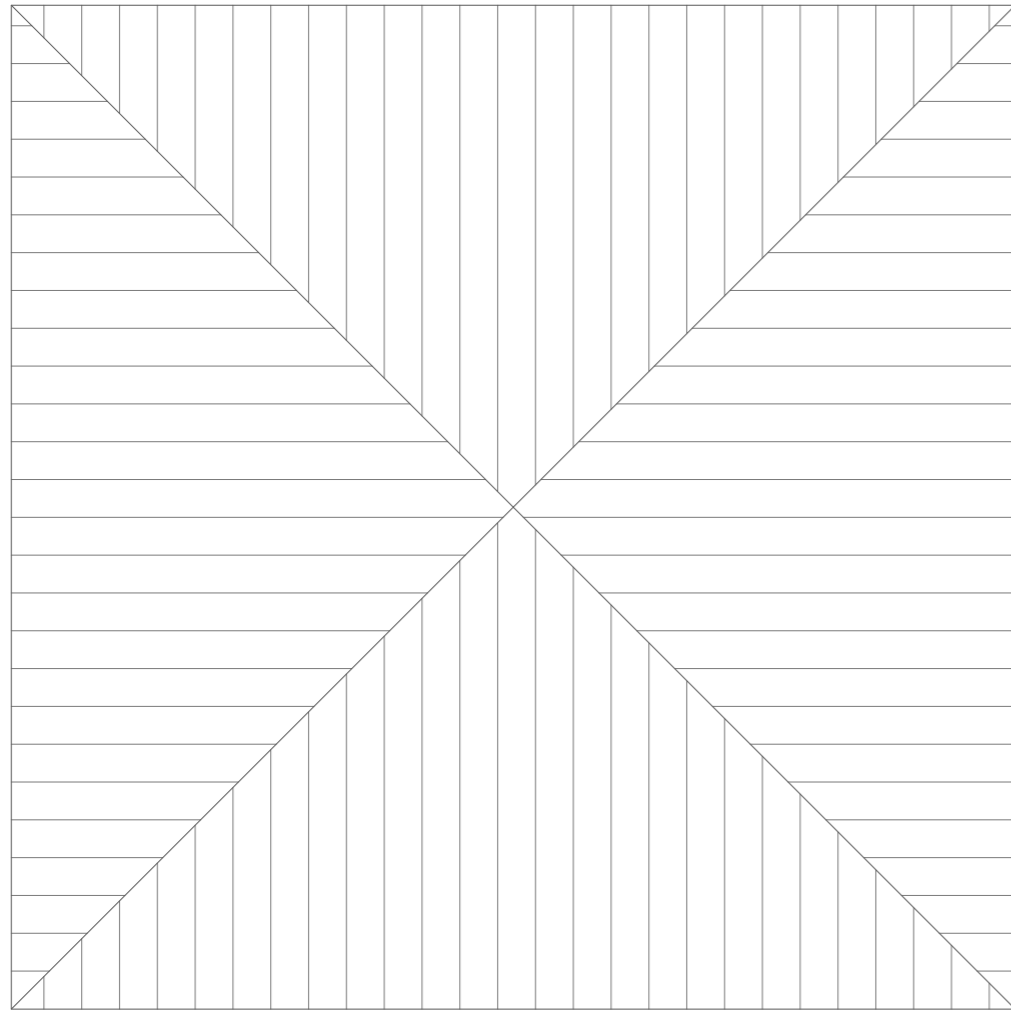


Ceremony

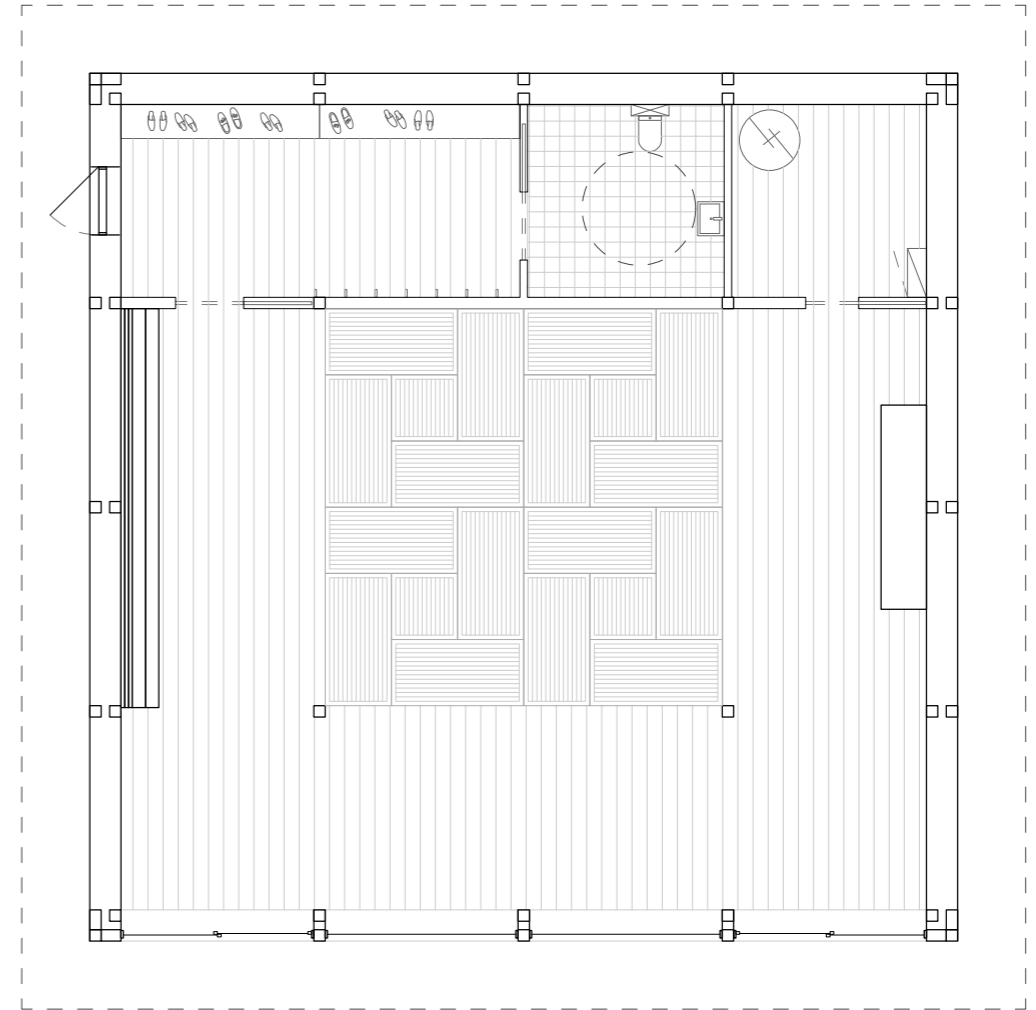
Gathering of the practitioners

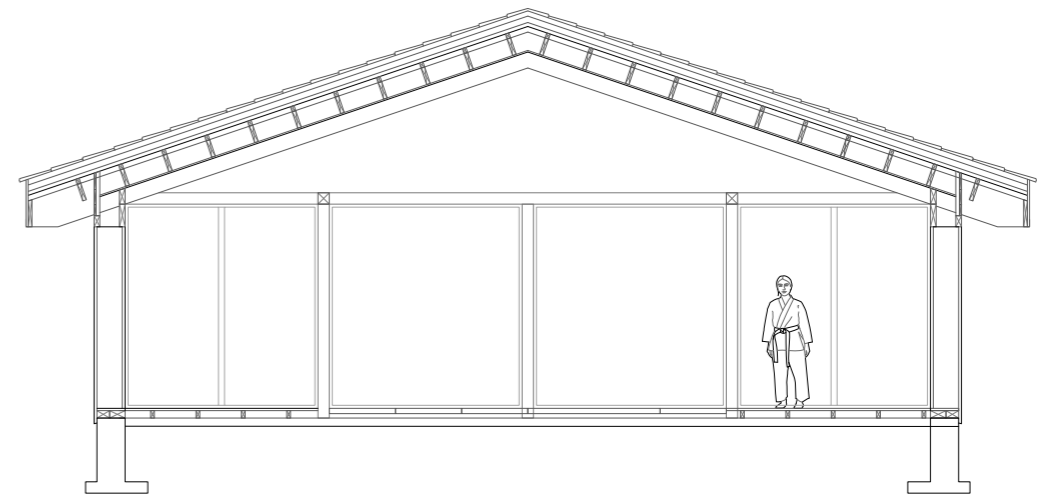
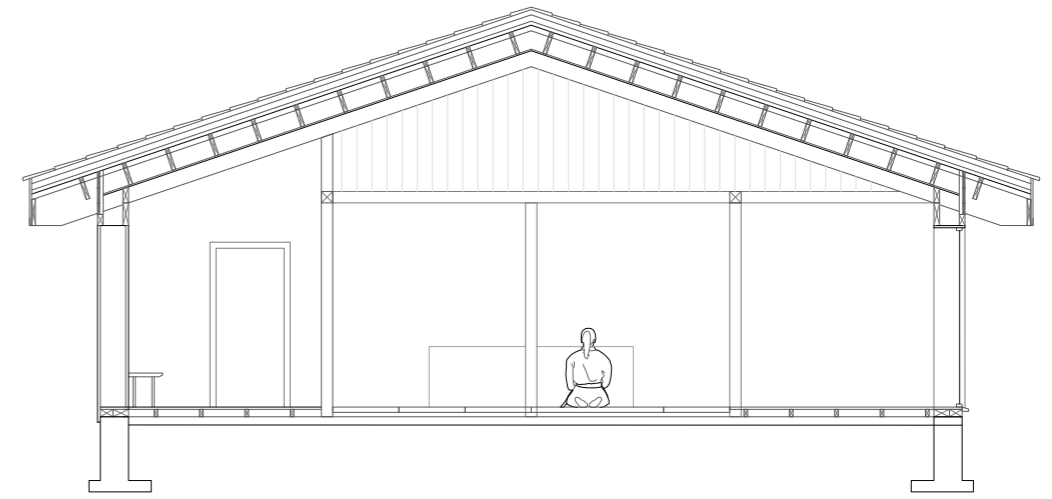
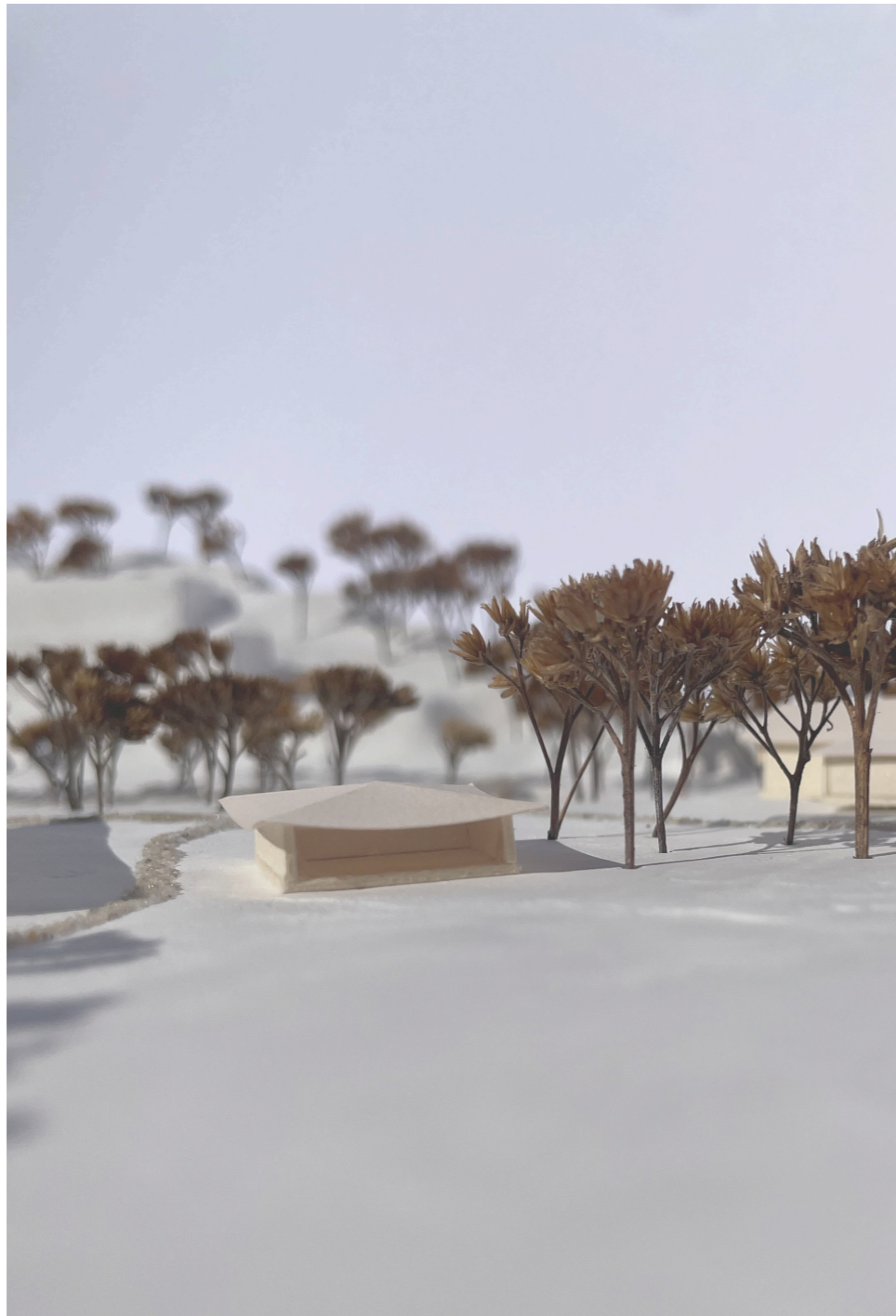
A ceremonial place for everyday use. A common meeting place for the practitioners. Not only to breathe new life into lost rituals, but for the practitioners to have a space to share knowledge across the style forms. Partly lost by time, the tea ceremony is only implemented by a few martial arts as a closing ritual after practice. With a dedicated structure this ritual can be revived, well

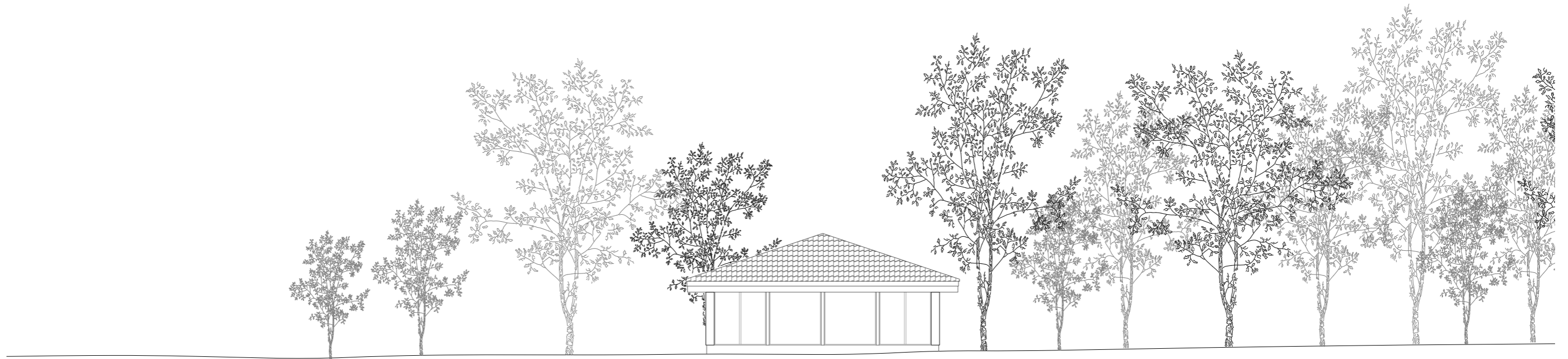




Plan









Viktoria Sørsdahl Holo
Diploma Spring 2024

Supervisors:
Beate Marie Høimebakk
Chris-Johan Engh

Institute of Architecture
Oslo School of Architecture and Design