



Kagoshima university

MA thesis report

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prototype construction

Information

**MA Thesis report.
UPV - K.U. Exchange
2016/2017**

Department of Architecture and
Architectural Engineering, KU

Student:

David Minton Albero

Tutor:

鷹野 敦 Takano, Atsushi

During the last year I have taken part in the Japan study exchange program. My academic work consisted of a research project in my field of study and Japanese language and culture classes. The Japanese language classes were held in the Global Initiative Center at K.U. and my MA thesis was developed at the Engineering Faculty.

My research project has been developed as an engineering student at the Department of Architecture and Architectural Engineering. For my research I joined the newly formed Takano lab. Together with my fellow students and under the guidance of Atsushi Takano.

The Takano lab is focused on environmental design and wood construction, since it's a very wide subject there are a great range of topics researched. My project focused on design as it's my current field of study in my home university. The work revolved around architecture design working on proposals for a barn and public gathering space.

Complementary to my studies I applied to work as a foreign language teacher for Japanese students during the first semester and from March I started part time as an architect in a local architecture studio.

activities

During the year many activities have taken place from university fieldtrips, complementary architecture classes, site visits and many kinds of events related with the international community in Kagoshima.

Here you can find a small recollection of some of the more interesting trips, workshops and personal projects I have taken part of during my stay.



Kagoshima design fair



acoustic concert



site visit in miyasaki



takano lab 16/17

VEGA WS

13.10.2016



株式会社 ベガハウス 〒899-2701
鹿児島県鹿児島市石谷町 3624-9

The VEGA workshop was one of the first activities from the Takano lab I joined and was a very interesting experience for me. The workshop took place at their office.

We arrived at lunchtime and started studying the documents we were given. During the afternoon architecture and furniture design were discussed through several case studies.

Among the furniture projects we discussed I was specially surprised by a table. It was a round surface with folding stands inspired in the Japanese traditional drinking table.

After the workshop took place we were invited to visit the surroundings. Near the main offices I discovered three small pavilions that were the result of the architecture school for children ongoing project. On the picture below we can see two of my colleagues next to one of the 3 built pavilions.



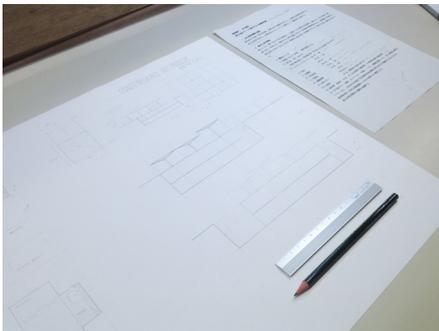
Design discussion



architecture school for children

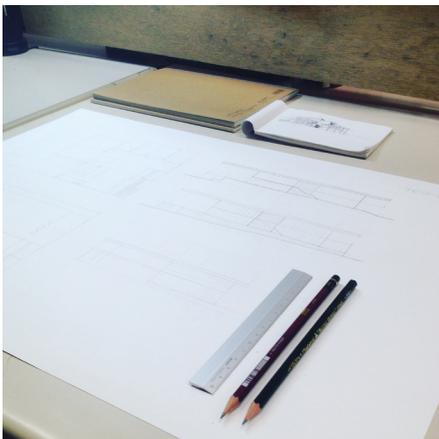
Ajisaka lab

As a preparation for architecture entry tests at companies students are asked to work on one day design challenges. The students are given a form with requirement descriptions and a site location. In a few hours a design concept and scaled plans for the building must be made without aid of computers.



The following week the drawings are discussed and construction issues arise. Distribution, structure, material, regulations,.. are only some of the many comments made regarding the proposals exposed on the roundtables.

Here you can find a small recollection of drawings from the time I joined the construction design class of Ajisaka, Toru sensei.



One day design projects



First sketches for the semester project

Graphic design

As a design student you are always involved in new project projects. This semester I did some graphic work for university posters, a logo design for a cafeteria and prepared my portfolio for job hunting.



portfolio design

3. Modern proposal

3 PINES
・ コーヒー ・ 茶 ・

Modern logo, uses number 3 as the icon of a coffee mug and simple typography to make the icon have a greater impact.
Icon can be used alone or in a more complex disposition to include more information.

Typography: Helvetica rounded
Underlined by main products: coffee and tea



logo design proposal



portfolio design

KASEI

28.05.2017



This project started last year after Kumamoto prefecture suffered a series of big earthquakes that destroyed homes and damaged the infrastructure. The disaster left around 40 000 people with no place to stay.

KASEI stands for 'Kyushu Architecture Student Supporters for Environmental Improvement project'. The Kaisei project is a voluntary program in which all of the Kyushuu universities are involved in working to help improve the living environment people affected by the Kumamoto earthquake.

I joined the volunteers in May and we worked on one of the sites of the relocated temporary housing creating green solar protection elements.

<http://kasei.kumamoto.jp>



fitting the green solar shading



pictures during the workshop

Wood processing

12.05.2017



Takano lab together with the Dept. of Agriculture organized a visit to a local sawmill and a wood market. There we were introduced to how the whole wood processing works from the forest exploitation, the timber trade and the processing as a construction material in a wood factory.

The visit helped us learn about the current Japanese wood industry and recognize the problems it's facing. Their focus was producing bigger sections and longer spans to introduce the use of Japanese cedar into contemporary construction.

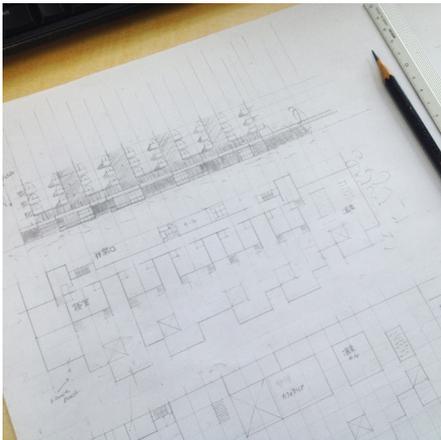


unprocessed wood

Pictures of wood piles and wood connection detail

DAI 建築 Design

01.03.2017 - 31.07.2017



From March 2017 I joined Dai 建築 Design. I worked as part of the design in team in several projects. The projects I developed were mainly residential, clinics and office buildings.

For the most part of the time I took part in developing projects working on new facade concepts proposals, construction detailing and visualization. I also worked in competition entries, a proposal for the a hotel resort in Nagashima island and a competition entry for the new 共進組 office building in Kagoshima.

Nagashima hotel design



島中邸 house



Miyako building



共進組 competition

Competition entry

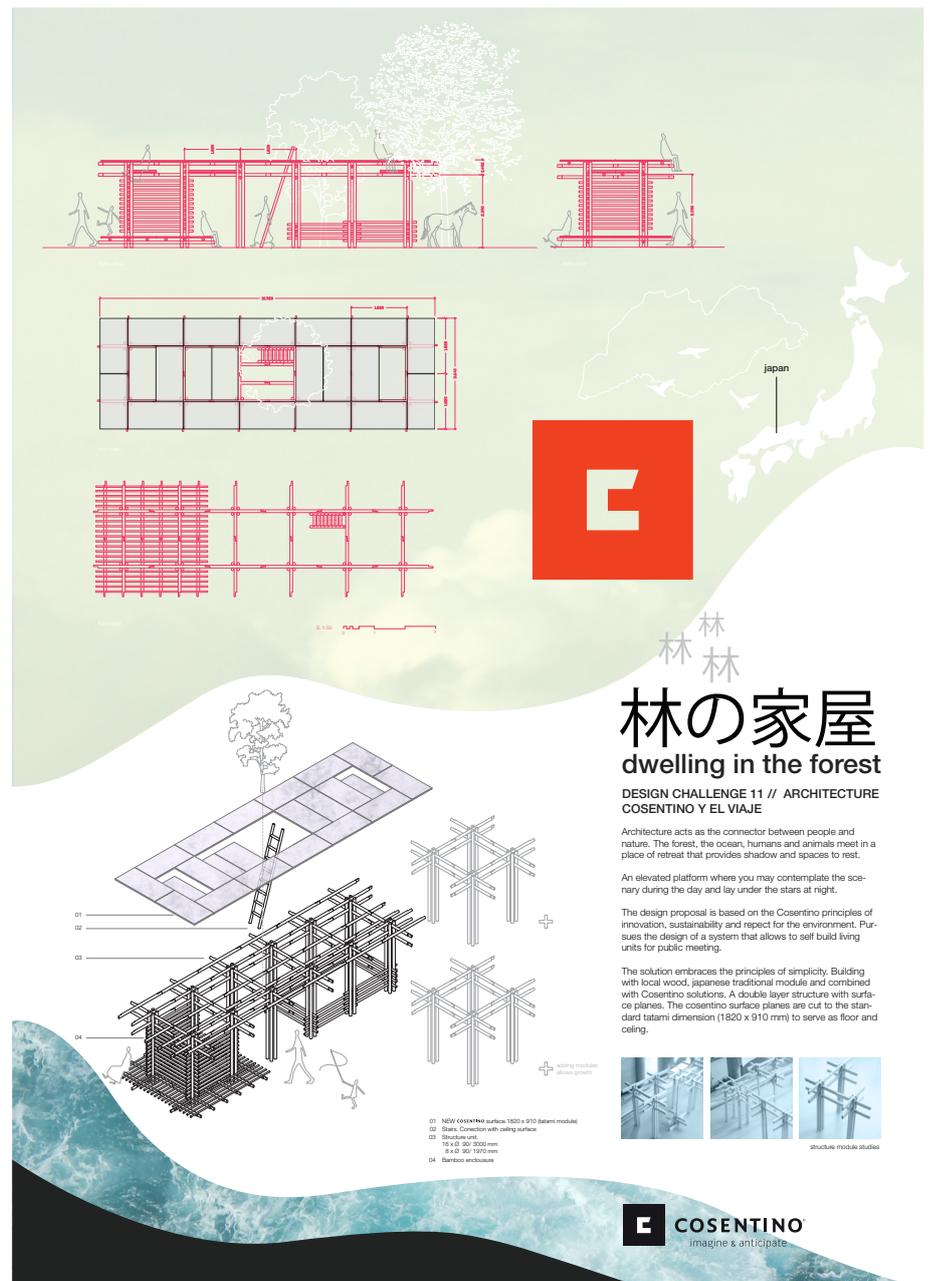
01.06.2017

Cosentino Design Challenge 11 is an international design competition for students that took place in June 2017.

This year the theme was Cosentino and the voyage. Since my work had been developed in Japan I felt it could be a good proposal for the competition.

In my entry architecture acts as the connector between people and nature. The forest, the ocean, humans and animals meet in a place of retreat that provides shadow and spaces to rest.

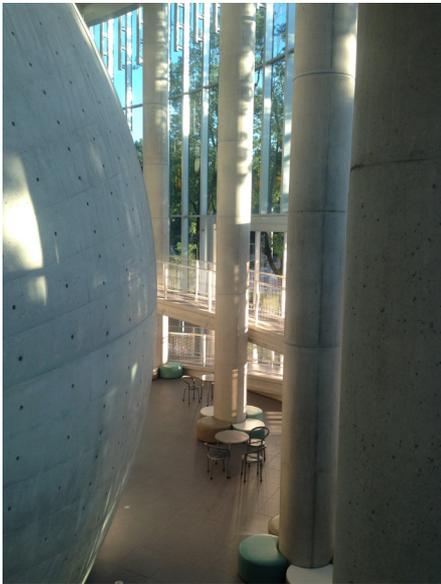
An elevated platform where you may contemplate the scenery during the day and lay under the stars at night.



travelling

journal

One of my greatest motivations to come to Japan was to get to know first hand Japanese architecture. Many of the contemporary architecture projects, for years, have been my subject of study. Until now I had only known the projects from pictures and plans, and only dreamt of wandering around inside them.



Inamori Hall. **Tadao Ando**

The beginning of my journey was the moment I stepped foot at the Inamori Hall located in Kagoshima University. The building is an architecture masterpiece by Ando, Tadao. Generally closed to the public, only opens on special occasions to hold conferences or events. Being located in the university campus I have had several opportunities to visit it since I came and remains one of my favourite spots in Kagoshima.



Ebino Kogen



旧島津氏玉里邸庭園
Tamazatotei teien

Fukuoka

20.10.16 - 25.10.16

ACROS Fukuoka
Bank of Fukuoka Office. **Kurokawa, K.**
Tenjin-Minami Subway Station Island
Island city Central Park. **Toyo Ito**
Nexus World.
Dazaifu Tenmangu Shrine.
Kyushu Geibunkan. **Kengo Kuma**
Tōchō-ji Temple

This is my first trip around Japan. I got to meet an old friend from my exchange in Belgium and planned to spend several days visiting the city and some of the interesting architecture.

The first day we arrive at Hakata Station, after a small tour in this area we leave for Takamiya where we will stay near to the Konkokyo Church.

The first days we spend walking and discovering interesting spots around Tenjin area, the Tenjin Minami station entrance (Shoei Yoh), ACROS Fukuoka (Nihon Sekkei) and the Bank of Fukuoka Head Office (Kisho Kurokawa) catch my attention.

In the evening we visit Canal City (Jerde Partnership) and enjoy eating next to the waterfront.



Kyushu Geibunkan. **Kengo Kuma**

The next days are one day trips. One day spent visiting Dazaifu Tenmangu Shrine, Kengo Kuma's Starbucks and Kyushu Geibunkan (Kengo Kuma). On the next day we went north to Island city a 400-hetare artificial island developed on the Eastern part of the Hakata bay. Where you can find a high-rise condominium under construction and the Island city Central Park (Toyo Ito) the most amazing place we got to visit in Fukuoka.

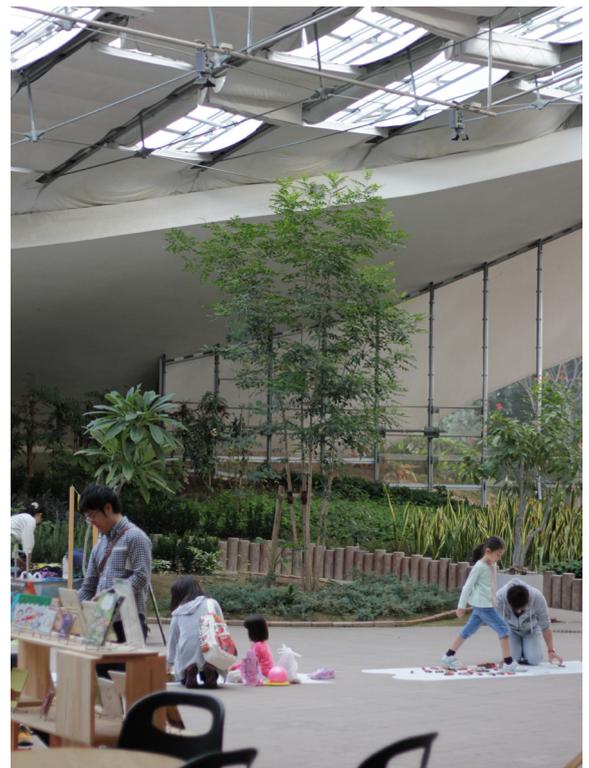
Finally we spent last days touring around the city and visited some traditional architectures such as Tōchō-ji Temple.



Dazaifu Tenmangu Shrine



Fukuoka river



Island City Central Park. Grin Grin park. **Toyo Ito**

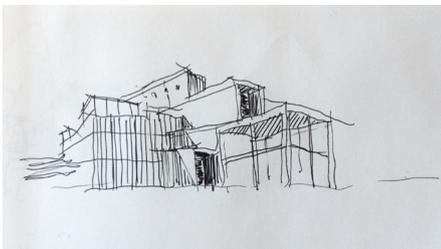
Ibusuki - Chiran

01.11.2016

Ibusuki Nanohana-kan. **Takasaki, M.**
Iwasaki Museum. **Fumihiko Maki**
Chiran historical preserved area

The departure was early in the morning towards Ibusuki Nanohana-kan, we spent a few hours walking in the premises and inside the impressive structure. Later we went to visit Iwasaki Museum and did some sketching outside.

The evening ended with the visit to the samurai houses in Chiran and the historical preserved area.



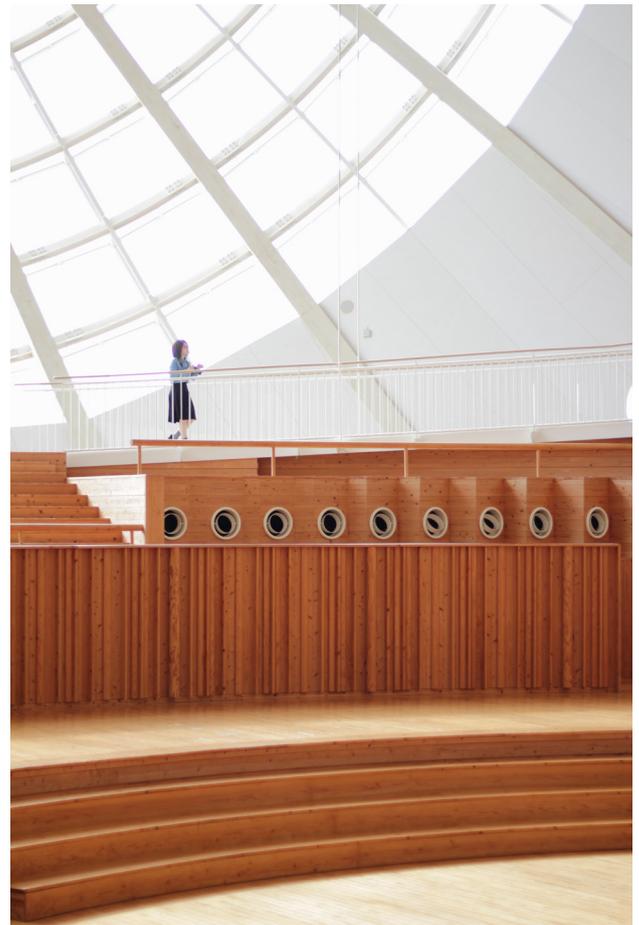
Iwasaki Art Museum. **Fumihiko Maki**



Chiran Samurai District



Chiran Samurai District



Ibusuki Nanohana-kan.
Takasaki, Masaharu

Tokyo

20.10.16 - 25.10.16

Ginza Area:

MIKIMOTO. **Toyo Ito**
 Maison Hermes. **Renzo Piano**
 Armani Ginza Tower. **Fuksas, M.**
 Sony Building. **Ashihara, Y.**
 Nicolas G. Hayek Center. **Shigeru Ban**
 Shizouka Press Center. **Kenzo Tange**
 Tiffany Ginza. **Kengo Kuma**
 Shiseido Building. **Ricardo Bofill**
 Louis Vuitton Ginza. **Jun Aoki**

Omotesando Area:

Tokyu Plaza Harajuku. **Nakamura, H.**
 One Omotesando. **Kengo Kuma**
 GYRE. **MVRDV**
 Dior Omotesando. **SANAA**
 TOD'S Omotesando. **Toyo Ito**
 Aoyama Palacio. **Ricardo Bofill**
 Prada Aoyama. **Herzog & de Meuron**
 La Collezione. **Tadao Ando**
 Spiral. **Fumihiko Maki**
 Nezu Museum. **Kengo Kuma**
 Apple Store. **Jun Mitsui**
 Sunny Hills. **Kengo Kuma**

Other districts:

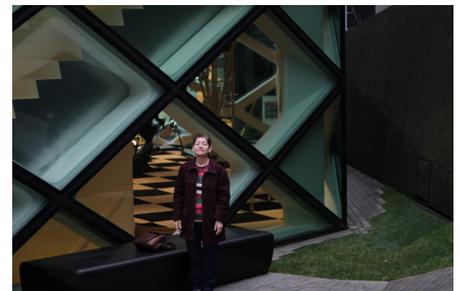
21 Design sight. **Tadao Ando**
 Asakusa Tourism Center. **Kengo Kuma**
 St. Mary's Cathedral. **Kenzo Tange**
 Yoyogi National Gym. **Kenzo Tange**
 Kabuki-za. **Kengo Kuma**
 Sanja-sama Shrine. Asakusa
 Asahi Beer Hall. **Philippe Stark**
 Hanazono Shrine. Shinjuku
 Nakagin Capsule Tower. **Kurokawa, K.**
 Meiji Jingū

In Tokyo I spent Christmas. It was the trip I was most looking for, I was meeting my mother there and I will finally be able to visit a great number of buildings from all of the best Japanese and world-famous architects.

I did some research and learned in Tokyo there are two main areas where all the contemporary architects have worked. I spent 2 days sightseeing looking for all of them around Ginza and Omotesando. These two areas are specially impressive at night and together with the Christmas lighting I was totally amazed.



MIKIMOTO. **Toyo Ito**



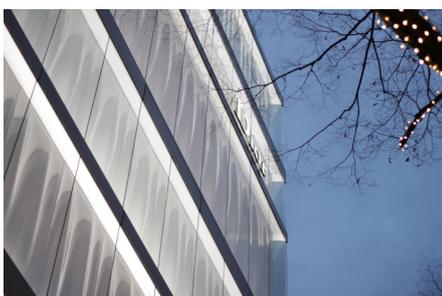
Prada Aoyama. **Herzog & de Meuron**



Sony Building. **Ashihara, Y.**



Maison Hermes. **Renzo Piano**



Dior Omotesando. **SANAA**

Taiwan

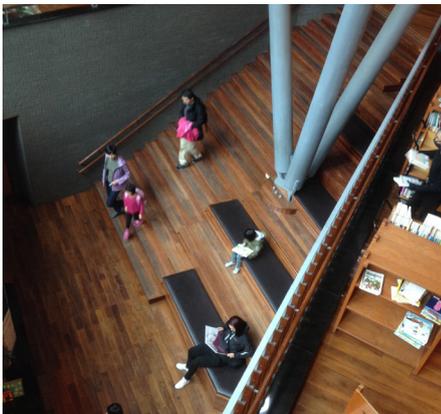
26.12.16 - 01.11.2016

Taipei:

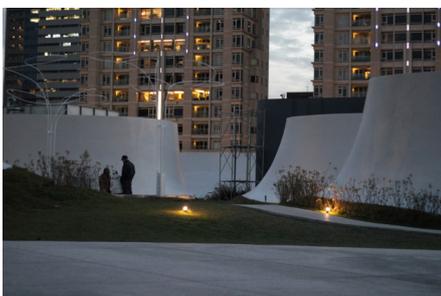
Museum Contemporary Art Taipei
Urban Regeneration Station 155
行天宮 Xingtian Temple
Dongmen district
Dadaocheng district
Public Library, Beitou
Hot Spring Museum, Beitou
National Taichung Theater, Taichung

I spent a few days after Christmas and new year in Taiwan. During my studies in Spain I had meet several people from Taiwan and I got to know about Taiwanese graphic designers and typographers. I had been interested in taiwan ever since. Before I planned the trip I learned about Toyo Ito's finalized Opera house and I finally decided I had to go.

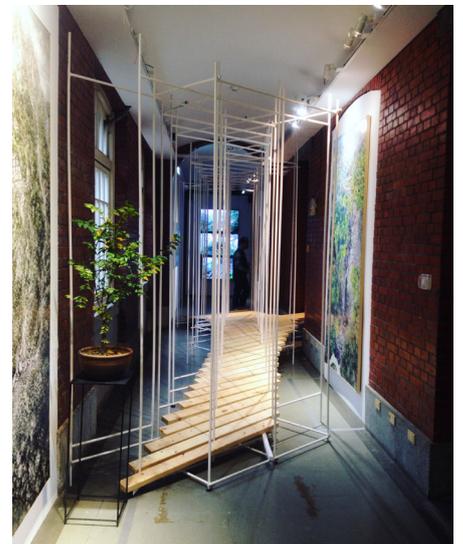
I spent my days between Taipei and Taichung. In the trip I was particularly surprised by the great number of young designers working in small coworking spaces and the great quality and intention of the Modern Art museum exhibitions in Taipei.



Beitou Library



National Taichung Theater. **Toyo Ito**



Taipei Museum of Contemporary Art

Kyoto - Osaka

20.10.16 - 25.10.16

Kiyomizu-dera Temple
 Kinkakuji Temple
 National Museum of Modern
 Art, Kyoto
 Kyoto Municipal Museum of Art
 Ryoan-ji Temple
 Toei Kyoto Studio Park

The trip was a very nice experience. It was organized for the international student community and took place when classes were just over. For some students was their last trip before they left for their countries.

The second day we spent visiting museums. After breakfast we walked down to the Museum of Modern Art where we enjoyed the collection of works from the permanent gallery and admired the architecture of the building designed by Fumihiko Maki. After the visit we went to the Kyoto Municipal Museum of Art, in front of the Museum of Modern Art and we were surprised to find an exhibition of art, design and architecture graduate projects from Kyoto University. By the time we finished visiting the museums we were in need to find a nice restaurant to eat and rest. After lunch we visited several shops and bookshops that were on the way to the hotel and stopped at the Heian shrine.



Kinkakuji Temple



Kyoto Municipal Museum of Art. Product design exhibition



Kiyomizu-dera Temple

Tokyo II

30.03.2017 - 3.04.2017

Sumida Hokusai Museum. **SANAA**

Sunny Hills. **Kengo Kuma**

Archi depot

Ueno Park:

Bunka Kaikan. **Kunio Maekawa**

Museum of Western Art. **Le Corbusier**

Tokyo Metropolitan Art Museum

Shinagawa:

Archideot

In my second visit to Tokyo I could visit some more contemporary architecture and exhibition. I spent the days around Sumida area and Ueno park where I could visit some interesting exhibitions at the Ueno park museums while enjoying the Hanami celebration.

My last day I went around Shinagawa area where I visited the David Bowie Tokyo exhibition and the Archidepot museum. Archidepot is a newly built place designed to store and exhibit architecture models.

At the time when the cherry trees bloom, starting around mid March in different parts of Japan it is a Japanese tradition to have a picnic lunch outside under the trees and admire the beauty of the cherry blossoms.



Hanami at Ueno Park



Hokusai Museum. **SANAA**



Sunny Hills. **Kengo Kuma**

Kumamoto

28.05.2017

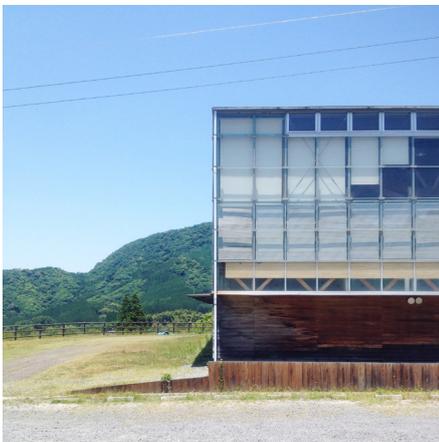
Taipei:

Tomochi Forestry Hall. **Taira Nishizawa**

Misumi Ferry terminal. **Shoei Yoh**

Fisheries control Office. **Kozai Kenji**

After we had spent the morning helping out at the KAISEI workshop we arranged the evening to visit some contemporary architecture projects in the Kumamoto Artpolis.



Tomochi Forestry Hall. **Taira Nishizawa**



Misumi Ferry terminal. **Shoei Yoh**



Fisheries control Office. **Kozai Kenji**

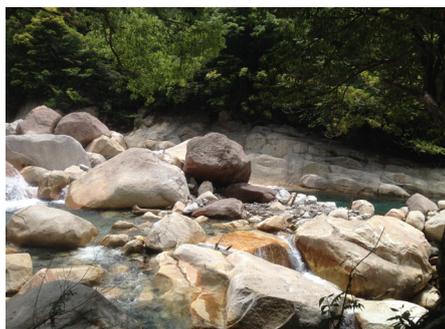
Sakurajima & Tarumizu

15.07.2017

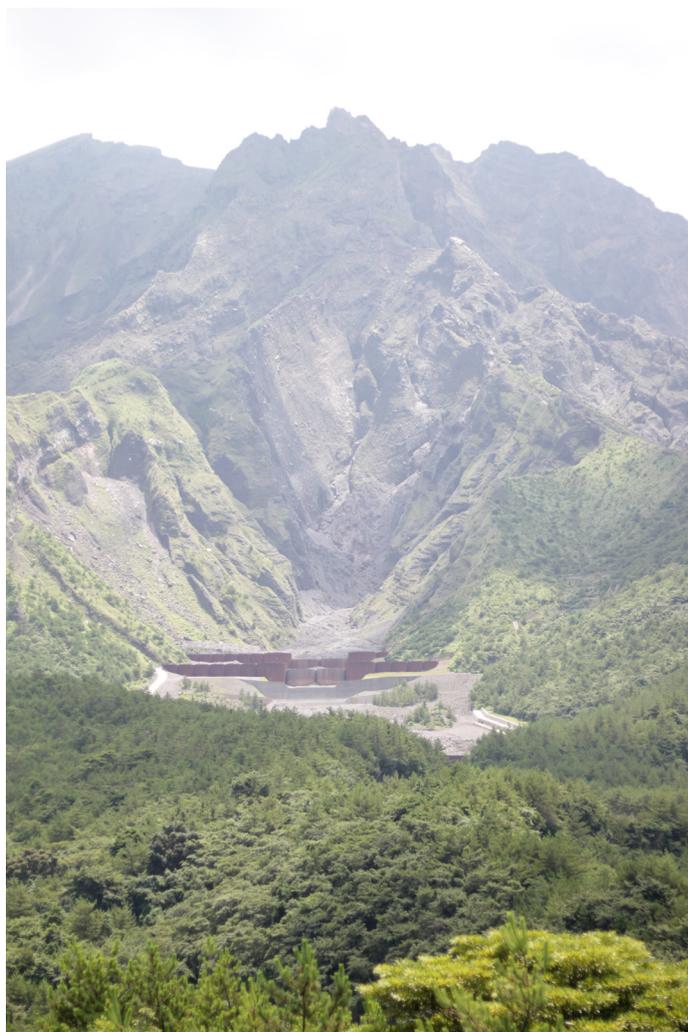
Here are some pictures of the main islands around Kagoshima that are connected with ferrys that depart every half and hour.



ferry connecting Sakurajima volcano



Tarumizu island



top of the mountain

Nagashima

28.04.2017 - 30.04.2017



I went to spend a day to Nagashima, an island north from Kagoshima. The trip was mainly to study a site where a future hotel project was due to be constructed.

I mainly collected impressions and pictures from the surrounding landscape and discussed design possibilities.



top of the mountain



views from the site

miyazaki

design project

Kagoshima University

Tutors:

鷹野 敦 Takano, Atsushi

木方 十根 Kikata, Junne

Urban studies

Location:
726 Ichiki, Kushima-shi,
Miyazaki-ken 〒 889-3311



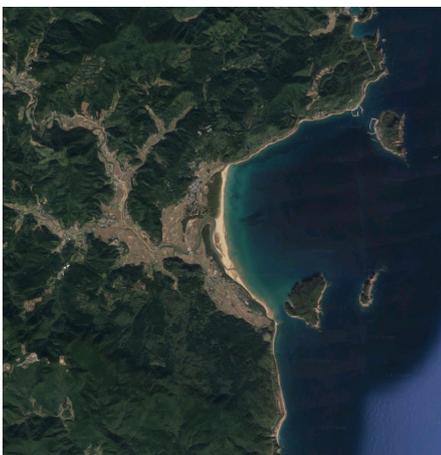
site view

The project is situated in the South of Japan, at Miyazaki Prefecture, located on the eastern coast of Kyushu island. Miyazaki Prefecture is characterised by it's great amount of natural park areas and low population density.

From an urban scale point of view the main motivation behind the project is to revitalize the area and make the most of the natural environment. The number of people permanently living in this community had been constantly decreasing.

With the arrival of newcomers different activities have started developing and our project aims to become a meeting point for future growth.

Among the main attractions of the site we find the surrounding landscape. It's located next to the sea. Small forest areas and mountains sum up to form the main landscape profile.



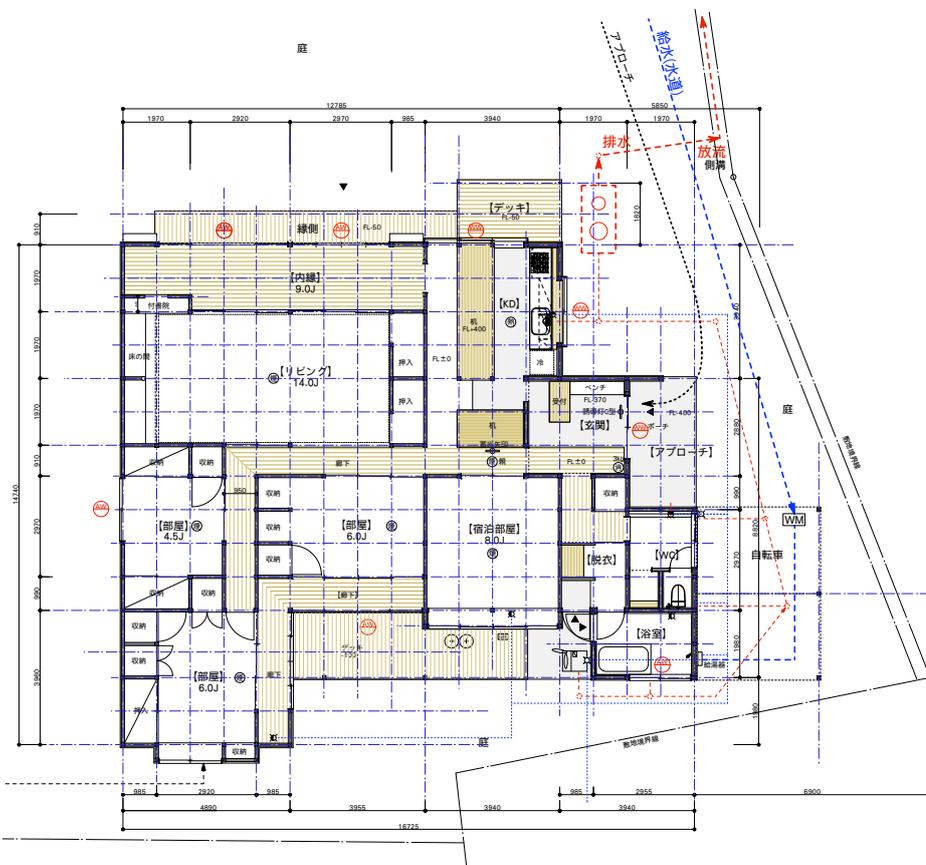
general view

Site visit

12.11.2017

The arrival to the location can be made by bus or by car. The work site is directly connected to an access route. This makes it easier for people that are passing by to be invited to come into the site and becomes an opportunity for the project to create a meeting place. At a walking distance we can find small service areas and a hotel.

The first contact with the site takes place in middle of November. A small field trip is organized and first impressions are collected. During the trip we spend our time in the house next to the site. This house was also in the process of remodeling. The dream is to establish a free school in the premise and the horse stable ccan be a fundamental part of it.



plans of the renovation



site visit

Reference projects

Kengo Kuma_Ginzan Onsen Fujiya
 CINEORAMA_Erika Hock
 Somis Hay Barn_SPF Architects
 Wiener Festwochen Vienna_installation
 Gartnerfuglen & Mariana de Delás_
 Retreat and Horse shelter
 Bamboo parasol_Deboer Architects
 Rising canes_Penda
 H Miller _Bar constellations
 TREEDOM_Atelier YokYok



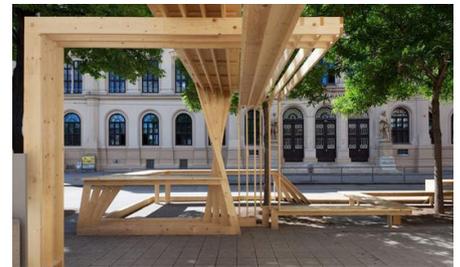
Kengo Kuma_Ginzan Onsen Fujiya



CINEORAMA_Erika Hock



Somis Hay Barn_SPF Architects



Wiener Festwochen Vienna_installation



Gartnerfuglen & Mariana de Delás_
Retreat and Horse shelter



Bamboo parasol_Deboer Architects



Rising canes_Penda



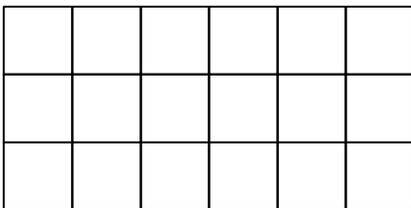
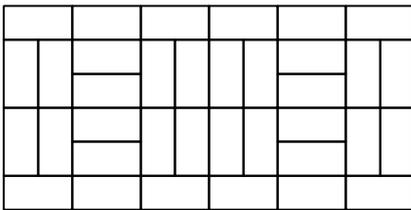
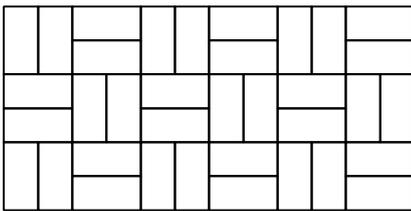
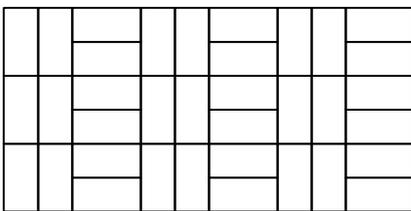
TREEDOM_Atelier YokYok



H Miller _Bar constellations

Concept design

Diferent tatami floor distribution:



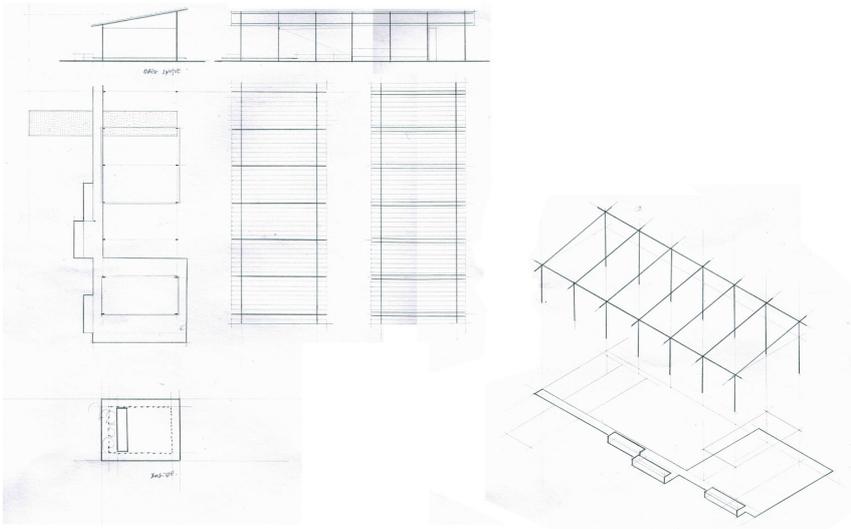
As a start point the project is conceived to solve a small horse stable and storage space. Nevertheless it's special location in the middle of nature and the open mind towards its design allows it to become a place with a more public vocation.

What should be its public function is unclear and many ideas are discussed. The possibility of involving the community in a participatory process for this purpose is considered.

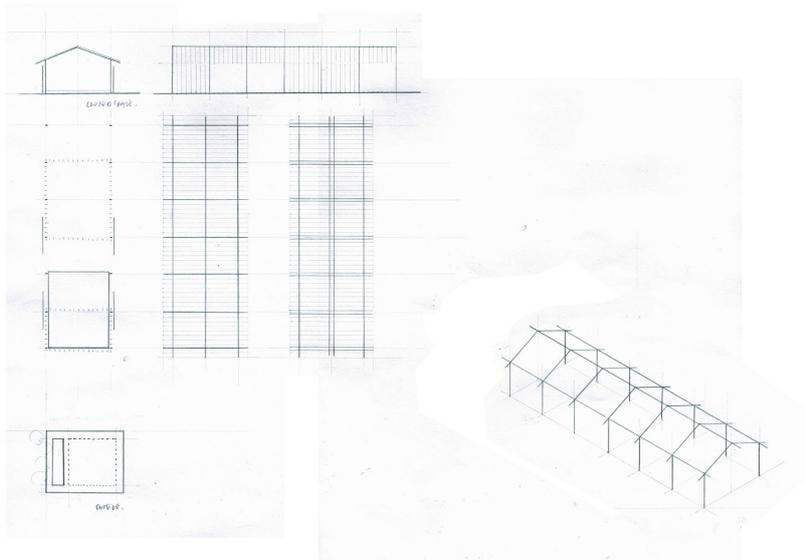
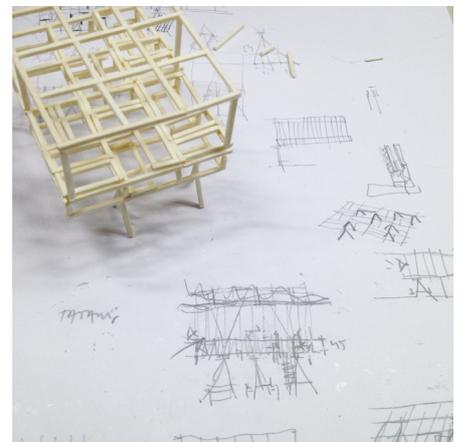
The project is intended to be a connection point for the community and the landscape but also is interesting to attract visitors. The client is starting a family business of his own importing chocolate and other goods and the option of installing a cafeteria is decided.

The first design idea is to create a roof. A covered space would protect from the sun and rain. When the roof has been placed, the animal has a basic shelter. Now storage and the public space become the main questions.

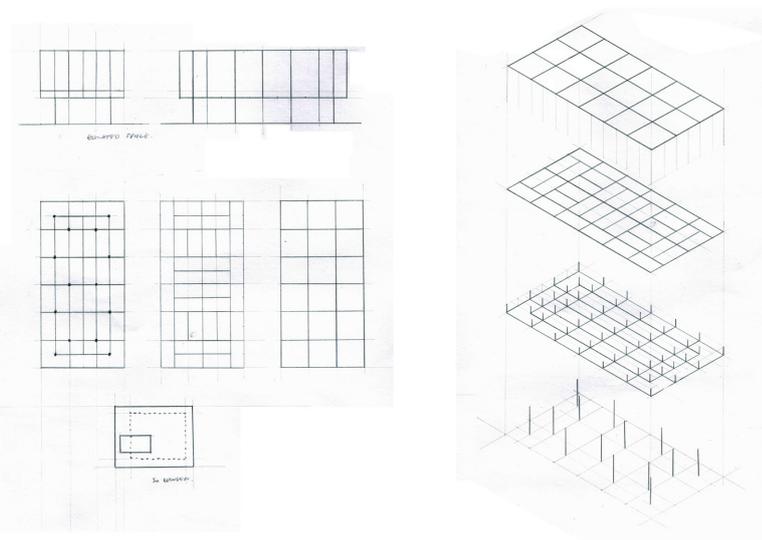
The study phase takes place until December and a first proposal is made then. In January the 3 design concepts are made and discussed. The elevated space is the most interesting option to develop.



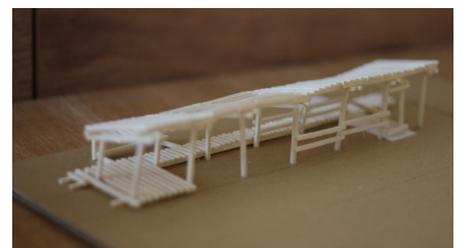
Concept 01. Open space



Concept 02. Closed space



Concept 03. Elevated space

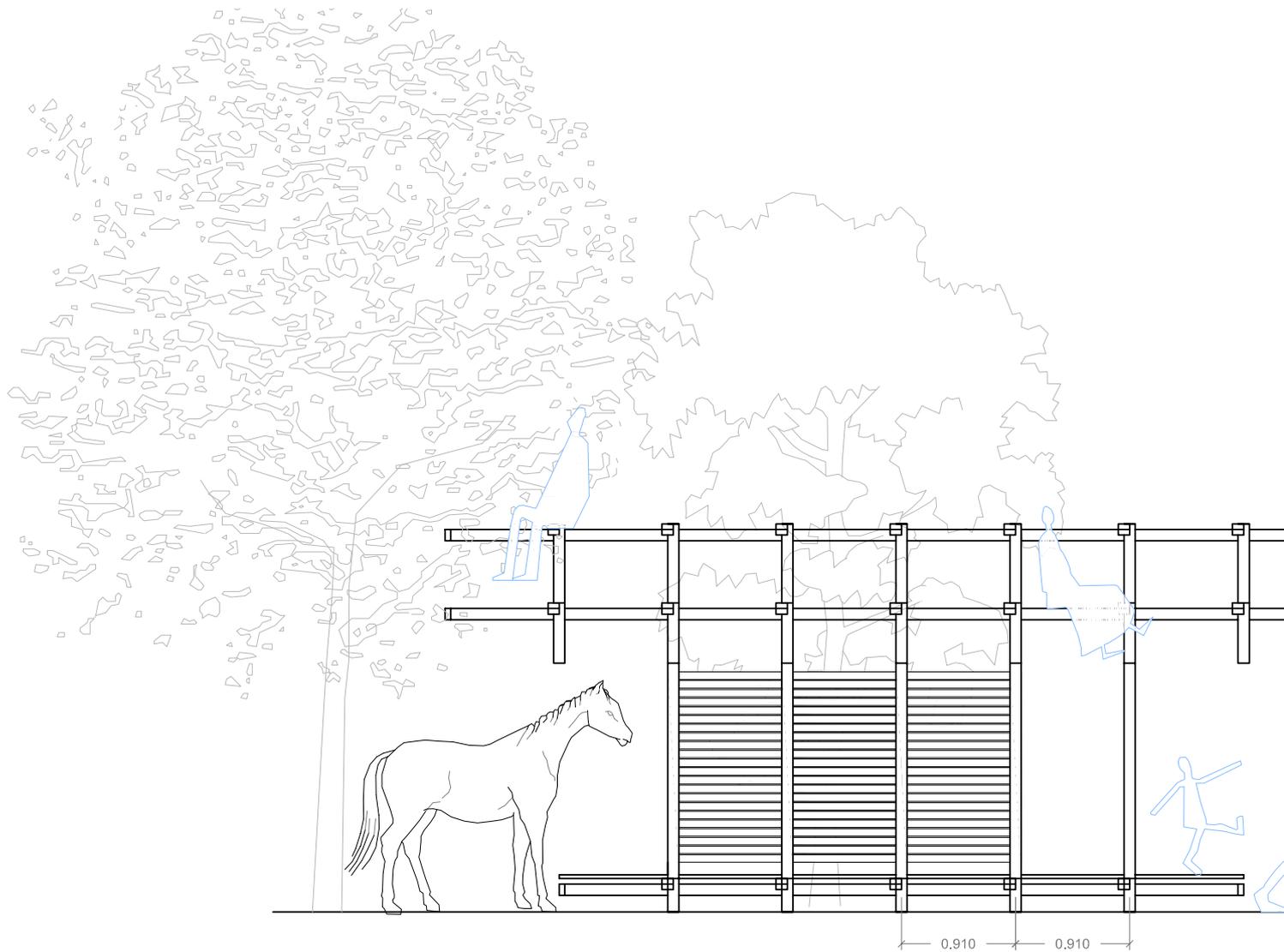


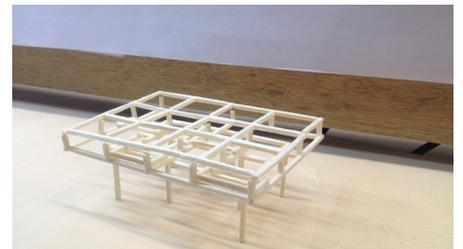
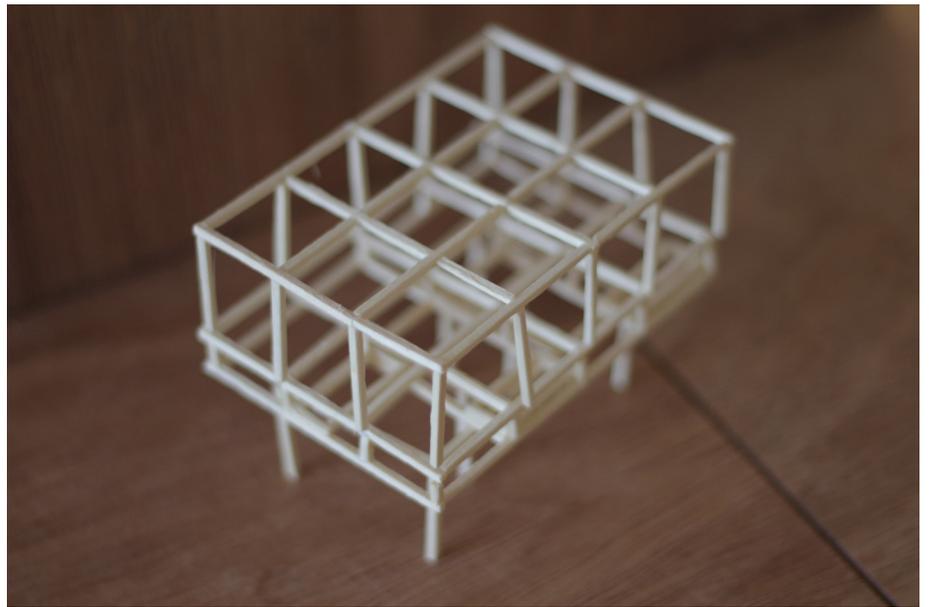
working with concept models

Construction design

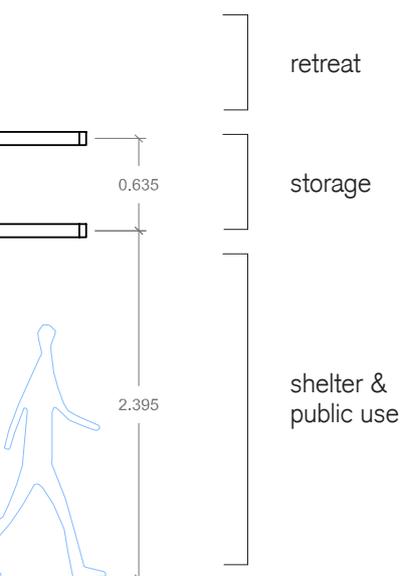
The elevated space is based on the idea that the roof could act both for purpose of storage and have public function. The elevated floor is made out of tatami mats as a space to retreat and look into the horizon.

The proposal allows to solve all the requirements within the same structure.



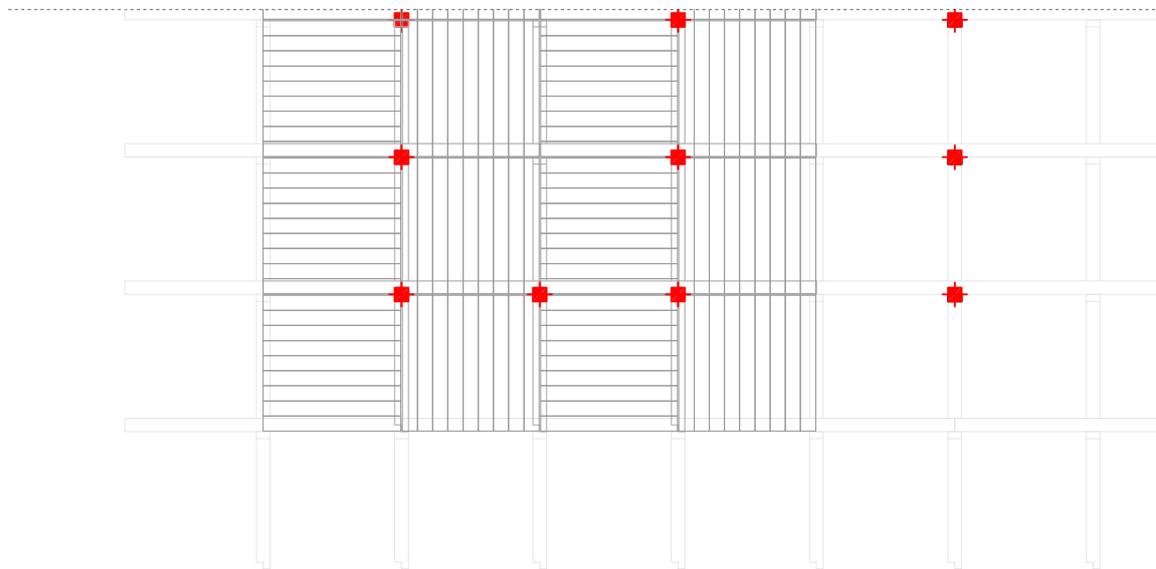
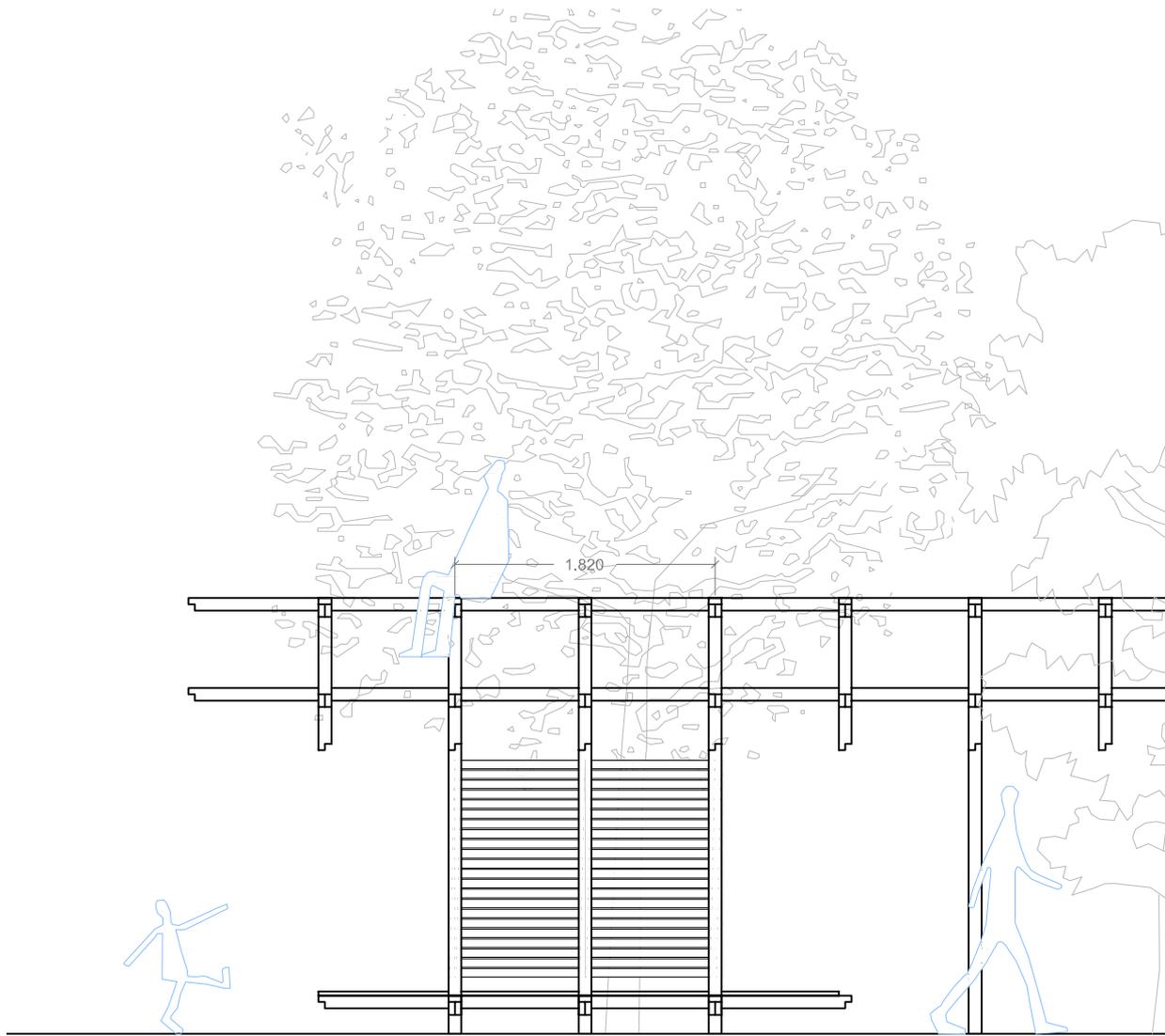


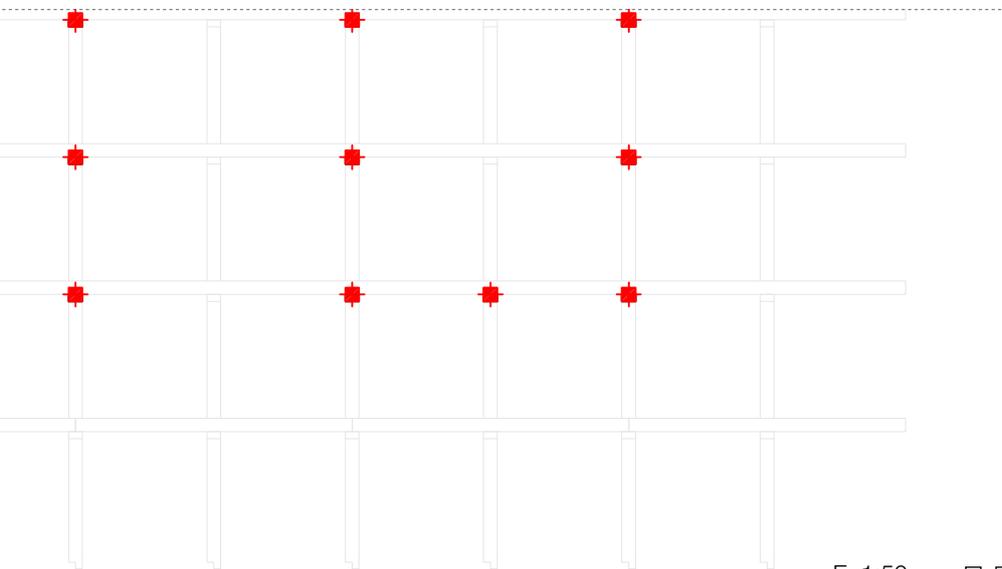
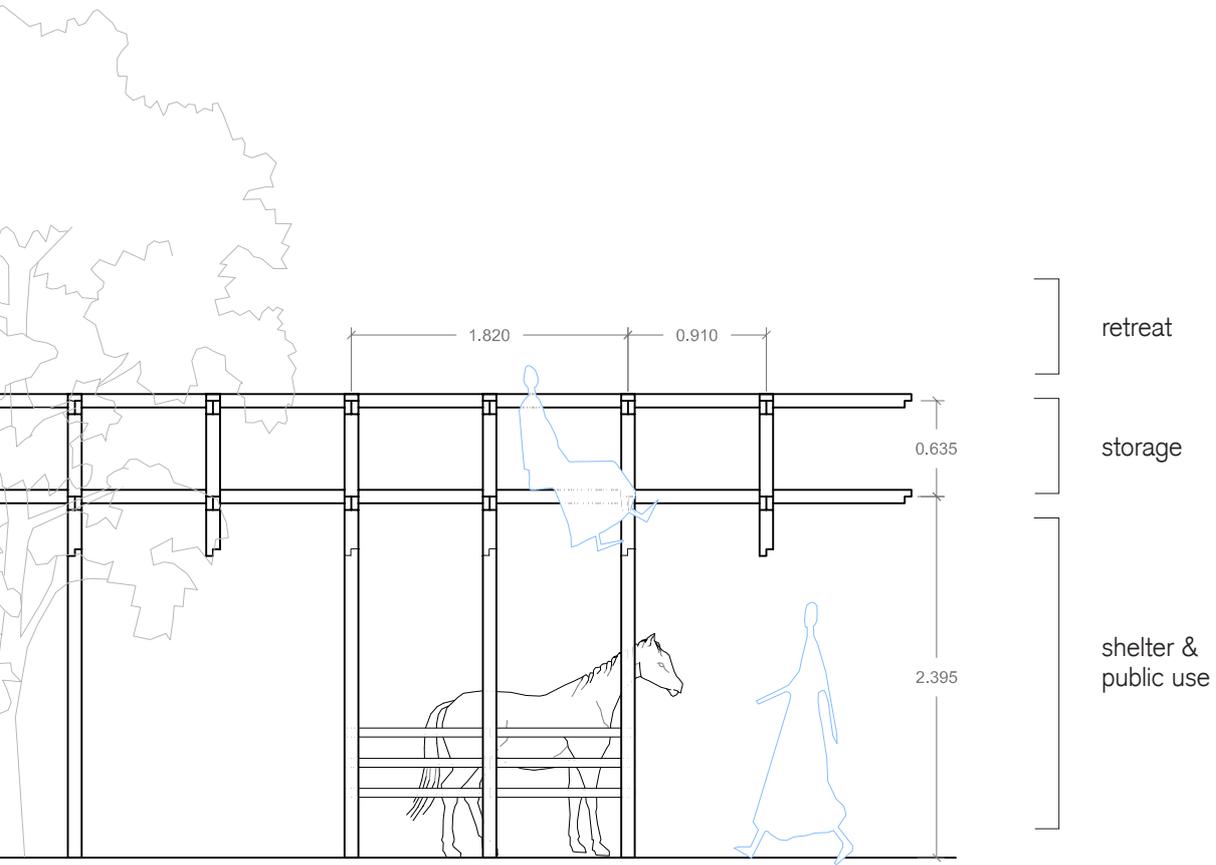
proposal concept model



E. 1:50

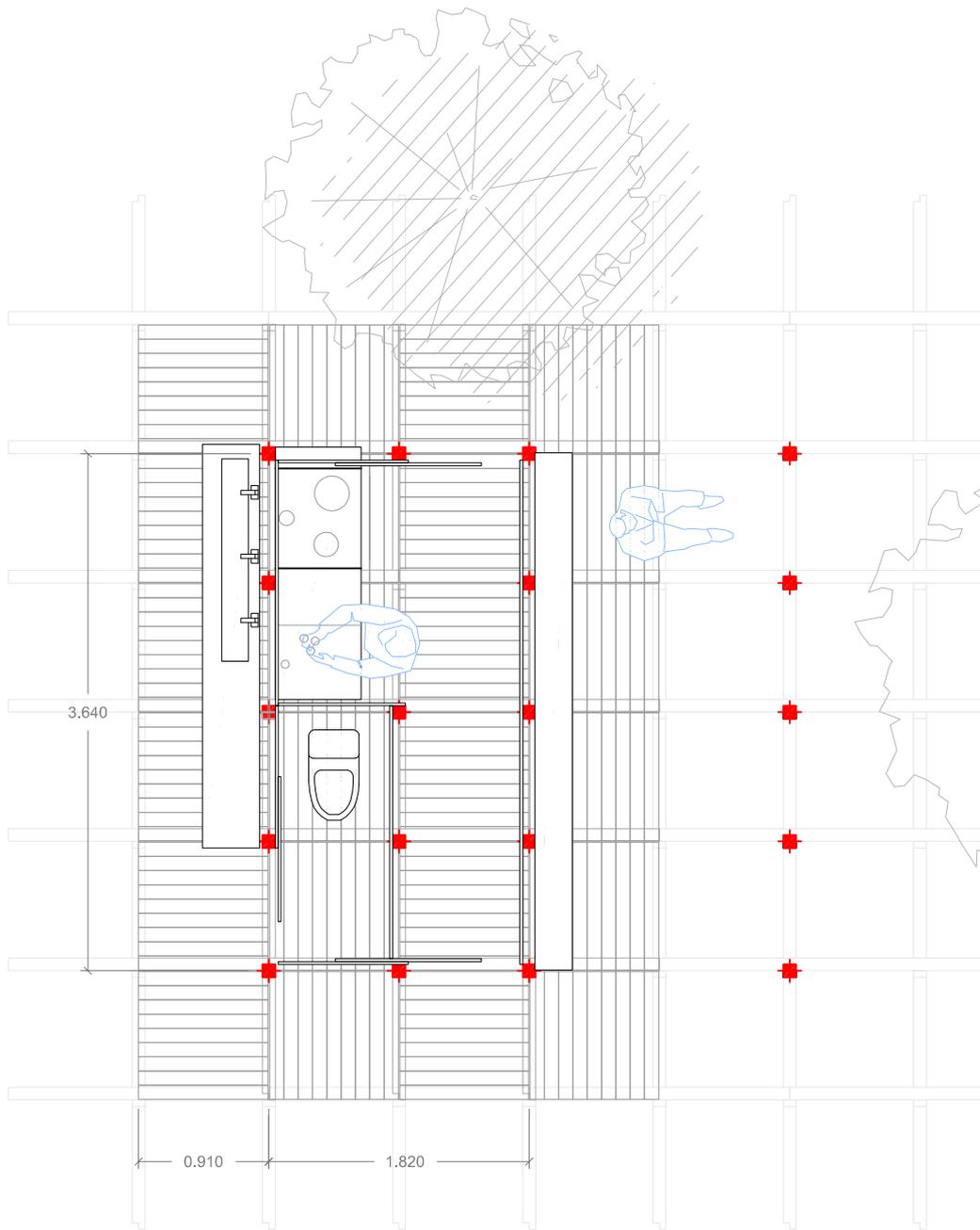




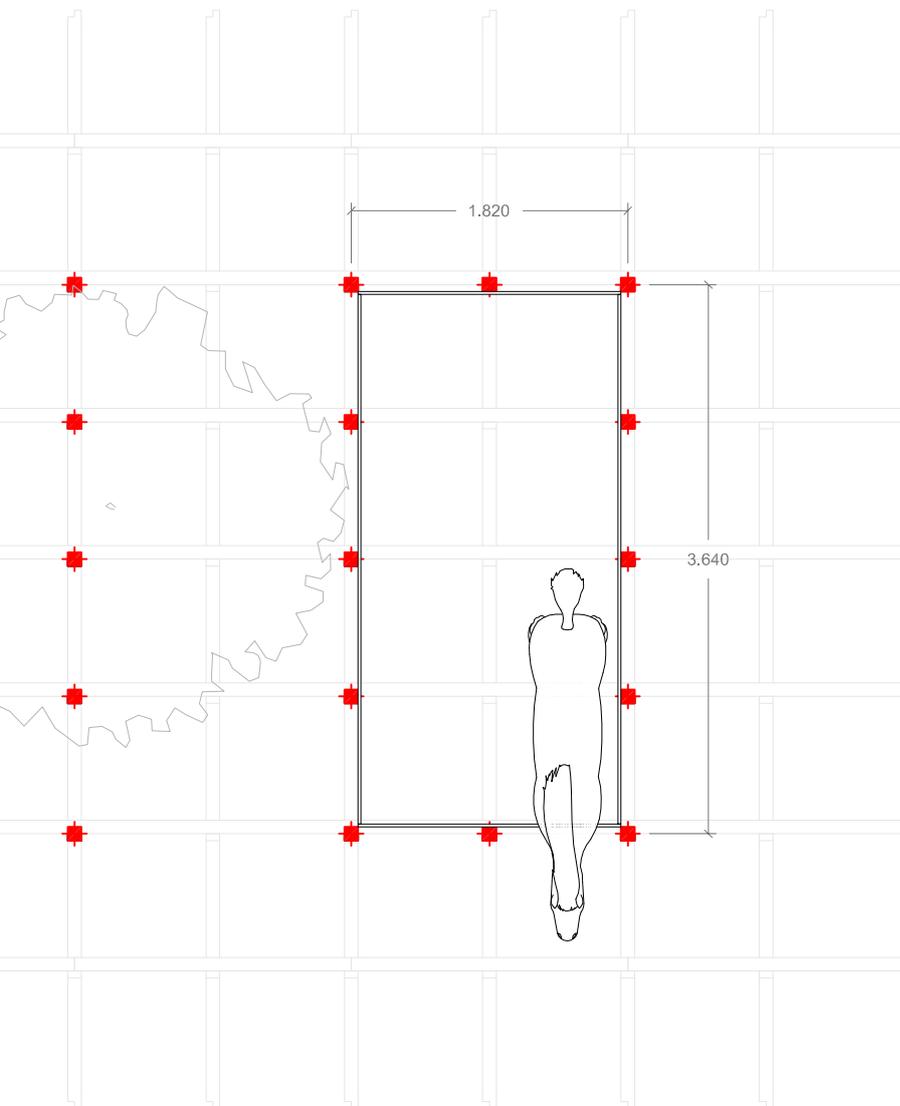


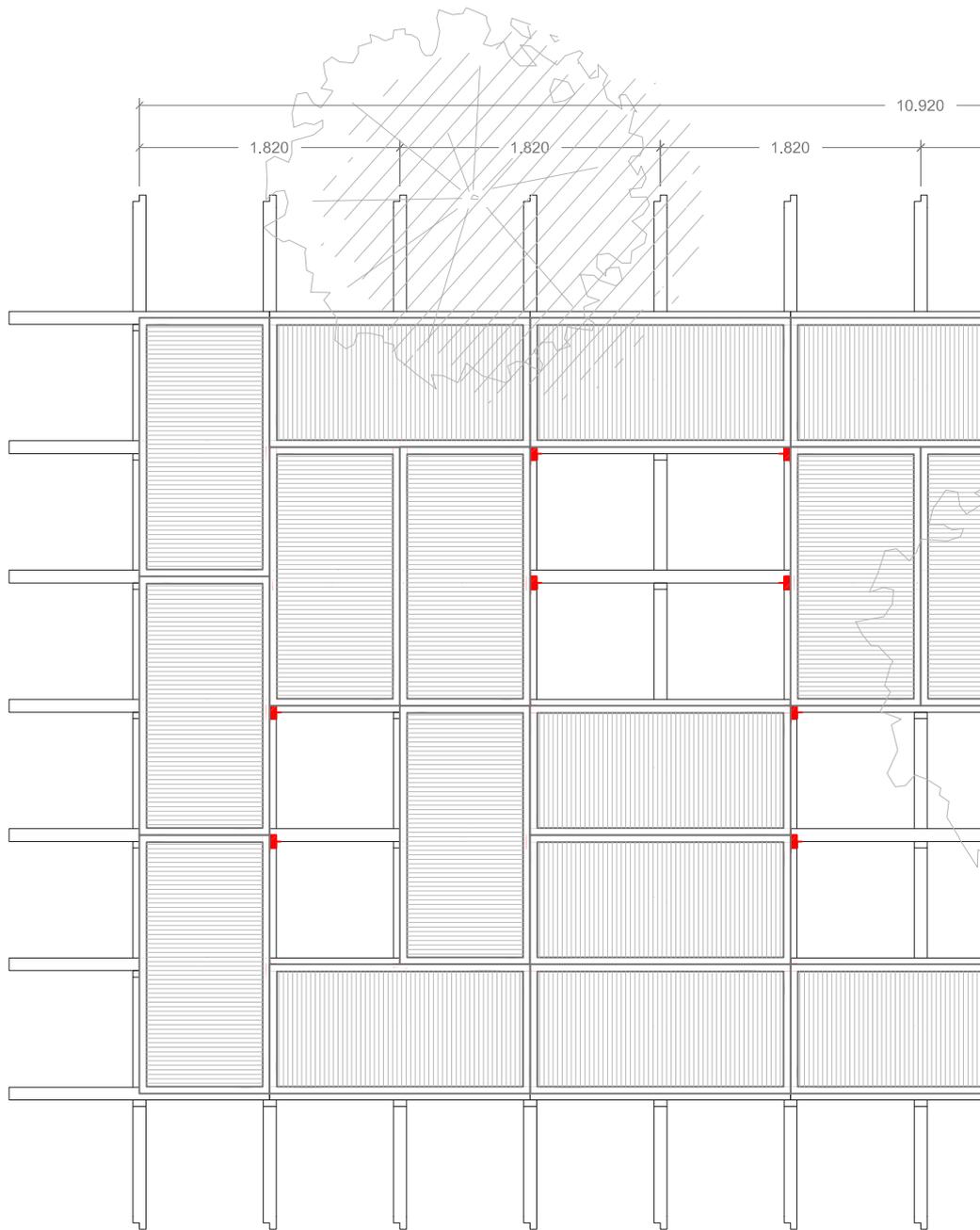
E. 1:50



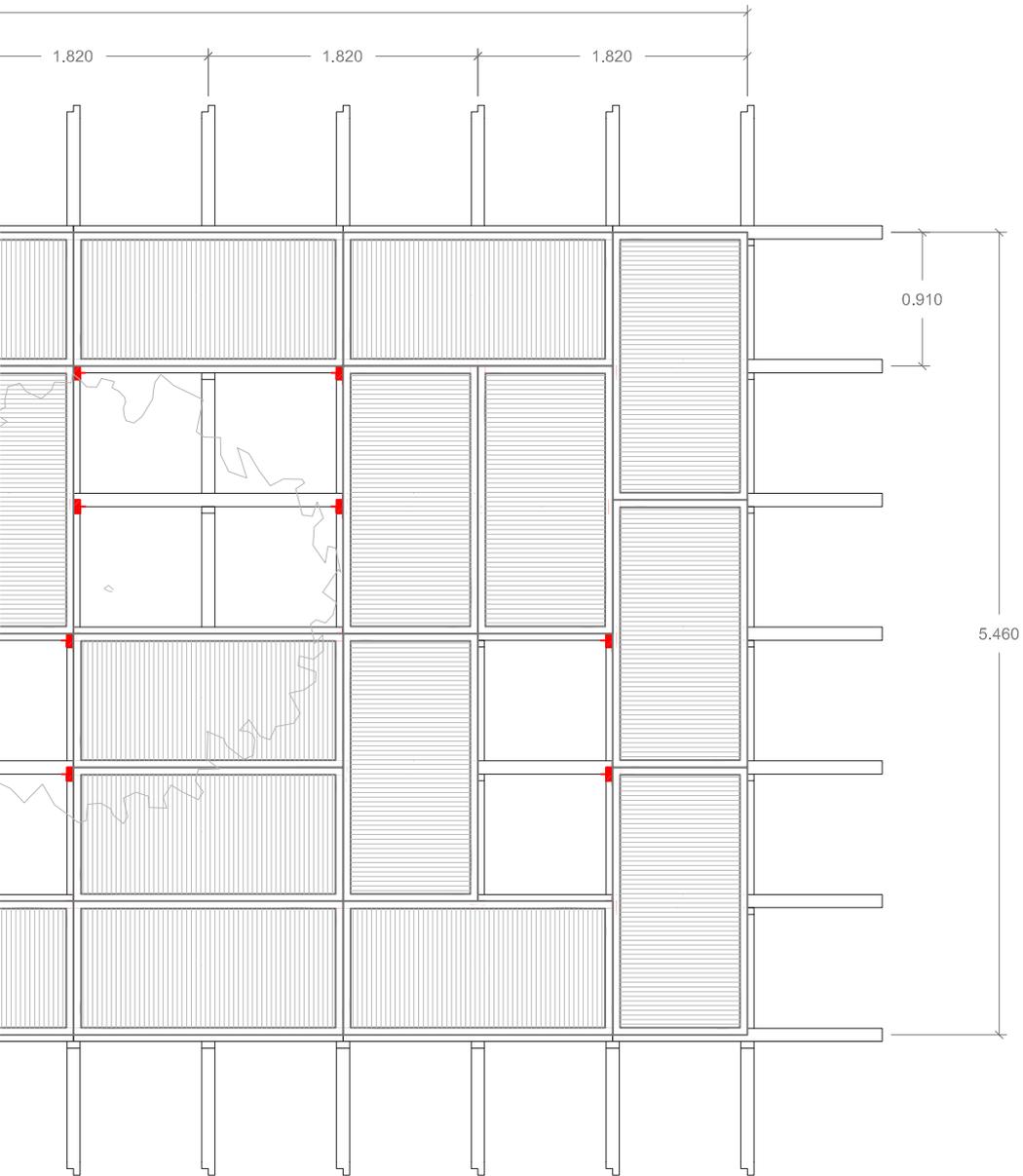


1F plan



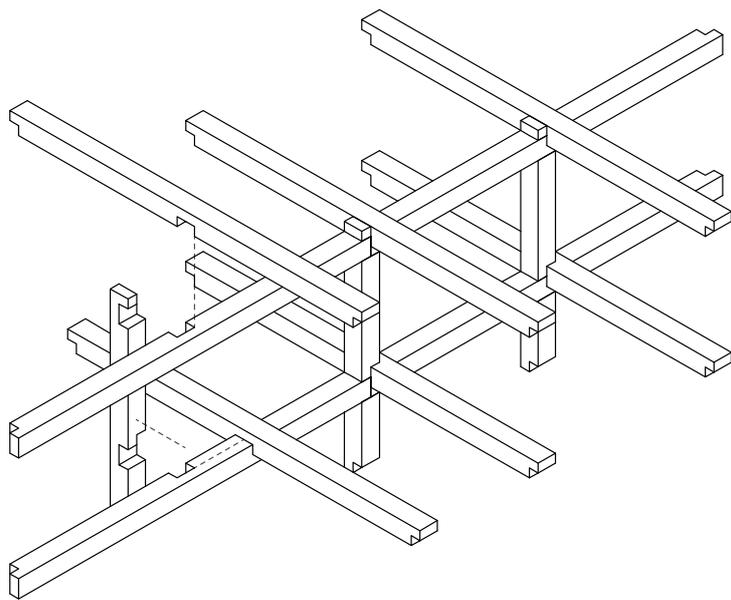
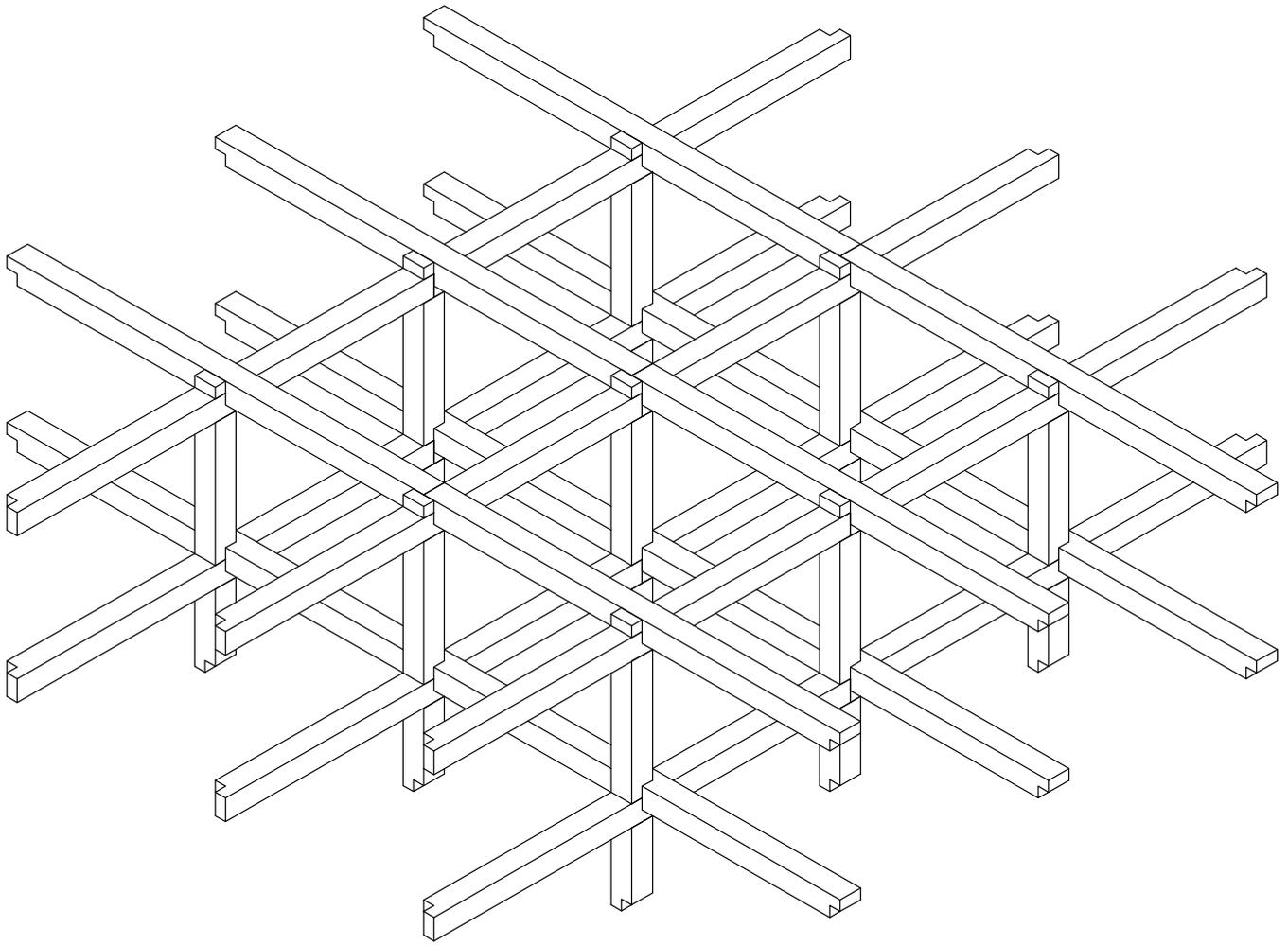


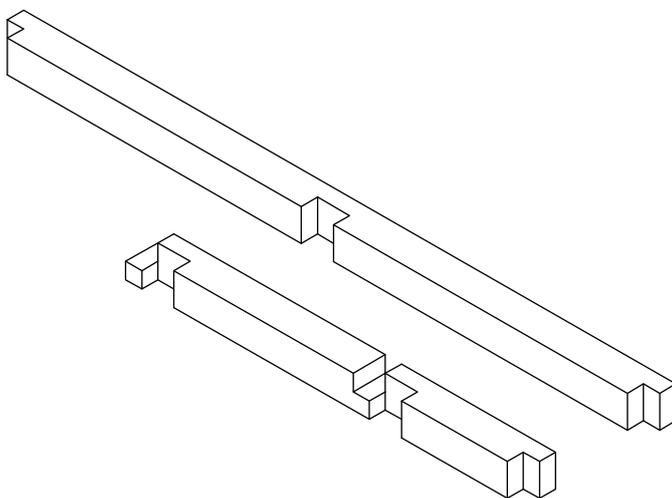
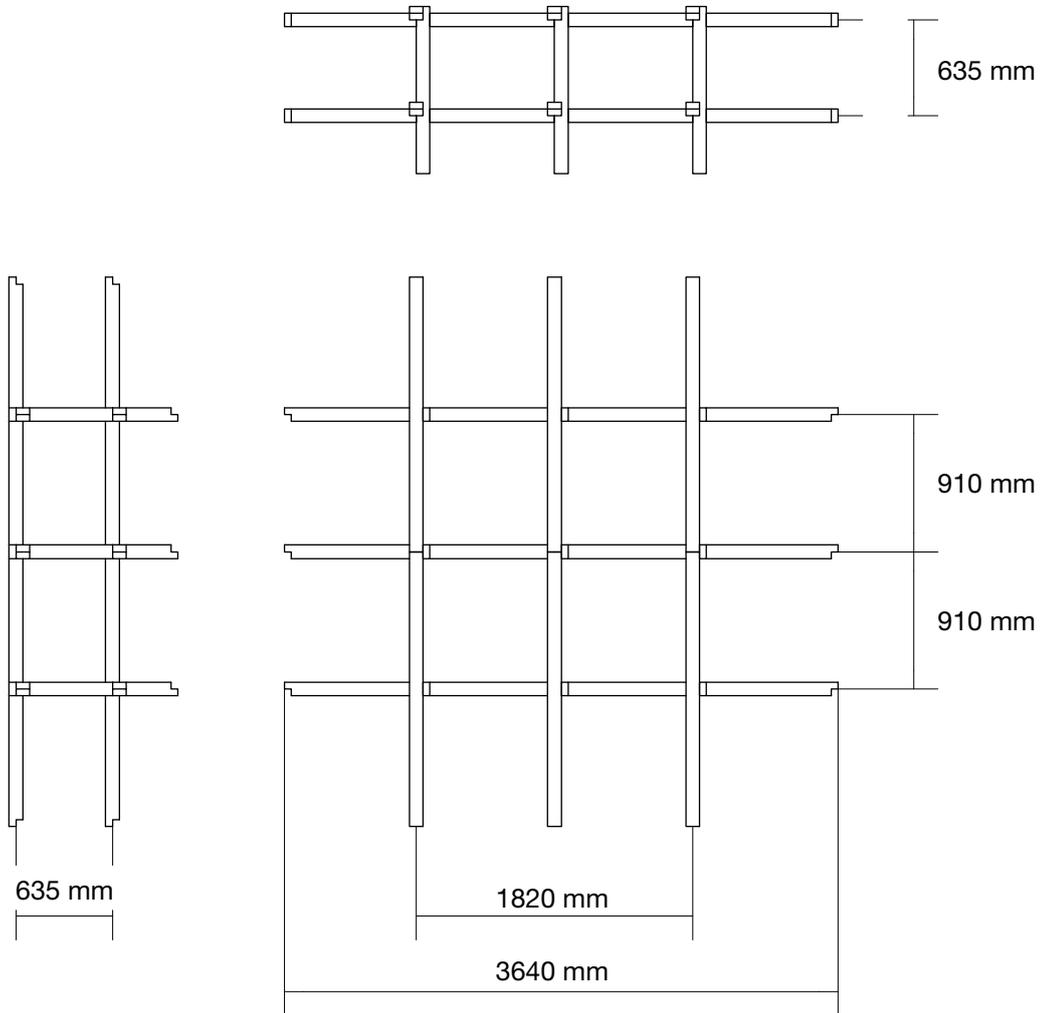
2F plan



E. 1:50







The construction system is based on this module and is assembled using traditional Japanese wood joints.

Schedule meeting

20.03.2017

The second meeting takes place in March. The purpose is to fix a schedule for the workshops and get to know what are the available materials for the building.

We visit the forest near the site and find that some wood has already been cut into trunks around 3000x250 mm big. The trunks have been drying for two years and seem ready to use.

The design proposal is discussed in terms of viability and new ideas regarding construction are considered in order to be optimized for the future workshop.



chainsaw and wood trunks



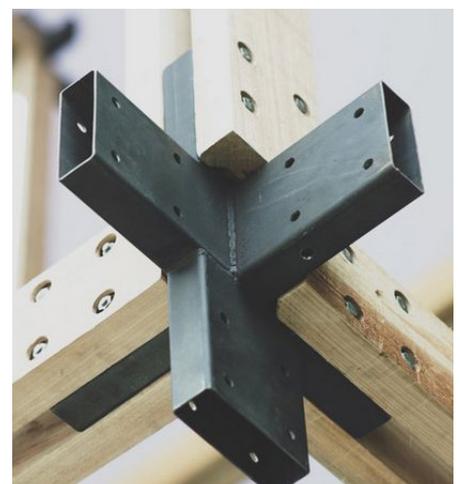
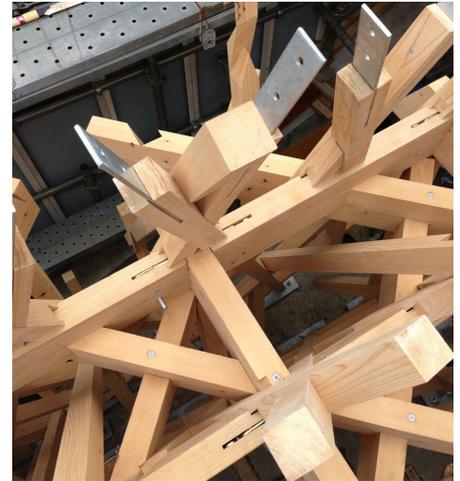
site visit

wood joinery study

09.04.2017

Many case studies are selected to see different approaches on wood joinery.

There are different options among them. Traditional wood joinery, bolted joints and joins with metal plates and auxiliary sections.

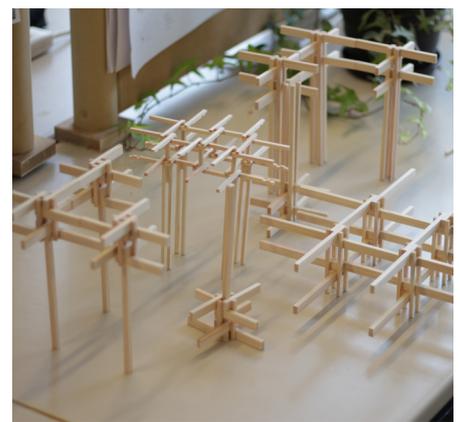
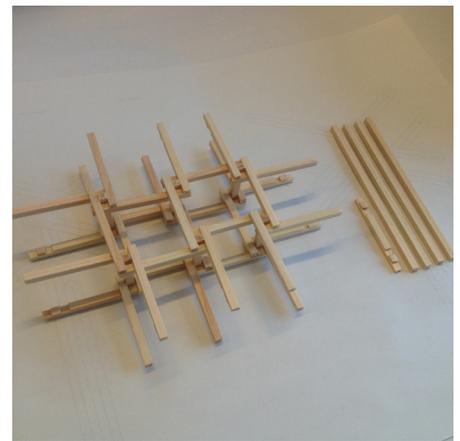
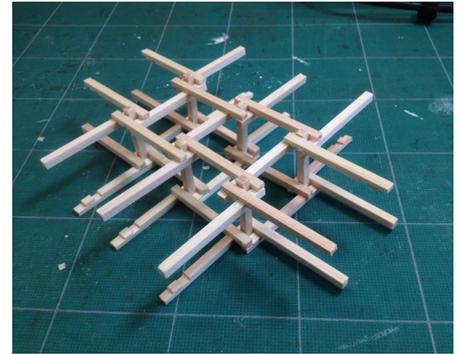
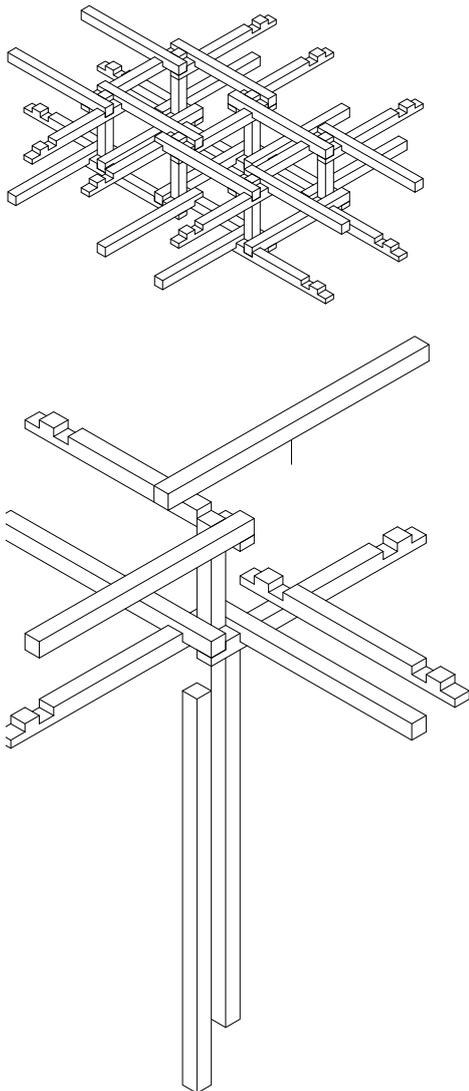


Wood joinery

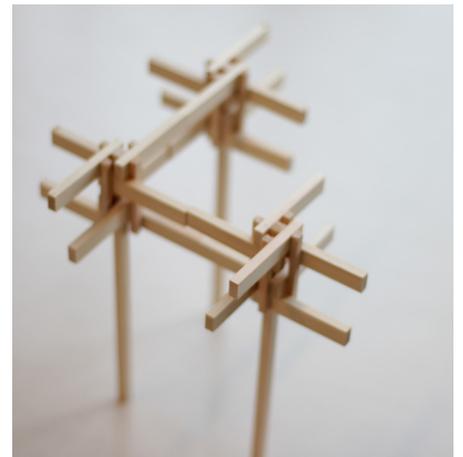
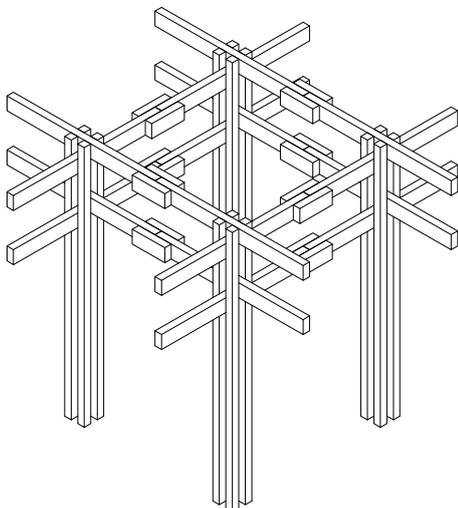
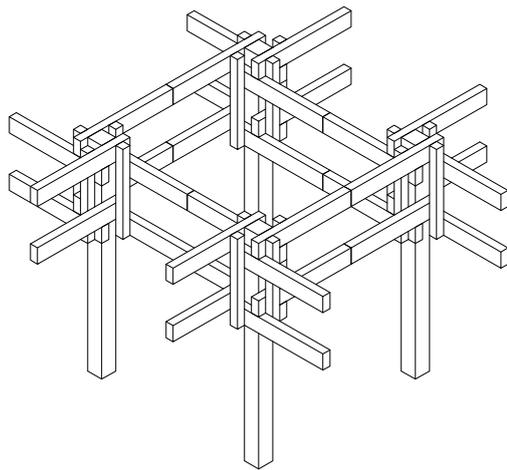
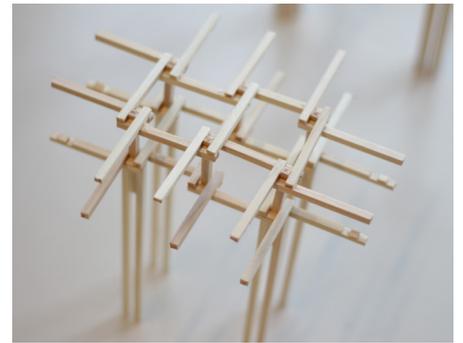
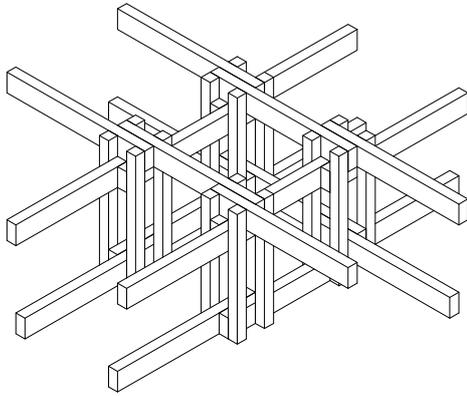
From this point the research is focused on the construction detail, going from 1:20 until 1:1 many models are produced and different solutions discussed.

The first proposal is made according to the traditional japanese idea of construction with no bolts. The system is made out two single different wood pieces that are conected in a 3D grid.

The beams wrap around the vertical pieces and create a double slab that would after be connected to the columns.



study models



main construction concepts

Workshop 01

28.04.2017 - 30.04.2017



On the first workshop the aim was to prepare wood and leave the tree trunks to dry for a month before we could start working on a mock up of the design to put it to test.

A small team of around 8 students and a several architects took part, we went to the near forest with the owner to cut down trees some of the trees and take them to the site.



drying the trunks



working at the forest



dinner party



moving trunks to site

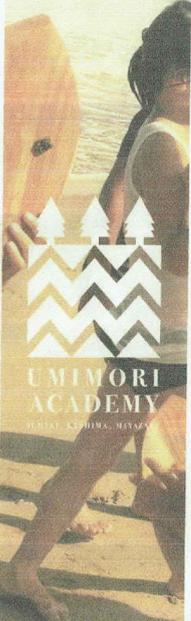
Umi Uma contest

17.05.2017

After the workshop had taken place. There was a specific number of wood that could be used for the project and conditions were defined. The option of using bamboo was also considered.

A student competition was organized to open the design proposal work to all the participants and develop more ideas for the project.

There were several teams that made a proposal. Finally the jury selected 3 of them to develop for two more weeks and hopefully be able to test on site.



森と海のあいだのアカデミー 馬ステーション設計競技

鹿大木方研・眞野研+渡邊、峯田

1. 森と海のあいだのアカデミー概要
海幸山幸の神話の故郷、宮崎県のかくれ里市木。森と海のあいだのアカデミーは、市木において子ども達が自然とつながること、すなわち森と海とのふれ合いを通じて多様な生き方を形作る時間を応援する活動を行う。
2. 設計競技概要
本設計競技では、馬ステーションの設計を行う。最優秀賞に選ばれた作品は、実際に建設される。そのため資材の運搬性や部材の加工と組み立て、解体の容易性など、自分たちで建物を成形することを踏まえた上での実現性が重要となる。総観計画と配置計画を熟考すること。機能・規模の変更に対応出来る拡張性と変更可能性、場や活動を魅力的に見せる意匠性が求められる。
4. 所要空間
馬ステーション：日陰の提供と座る場所の確保、その他（簡易な倉庫やシャワー、ブラッシングのための空間など馬ステーションの役割と目的に沿った機能）
 - <馬ステーションの役割と目的>
 - ①活動の拠点
馬と海に出かける前の集合場所である馬の基点となる
海水浴など海で遊ぶ拠点となる
集合の待ち時間を楽しめる雰囲気を持つ
(将来的にはモバイルハウスを牽引する発着所の機能も持たせたい)
 - ②馬と人の居場所
馬と人がお互いの存在を感じながら利用する
日影で長時間ポーとしてたり地域の人との印象を楽しむ
大人4人程度のスケール？
※利用者から見て馬の居る風景が魅力的であること
 - ③アカデミーの存在を示すサイン
現地の風景の中で魅力的な立ち姿を提供する
(アカデミーの看板は別途配置を考慮するので一体にする必要はない)

3. 課題敷地
宮崎県串間市市木 726 ※詳細は別紙参照
5. 提出物
図面 A3サイズ 2枚程度(表現方法は自由)
6. スケジュール
5/7(日) 資料配布、コンペスタート
5/17(水) 00:00 コンペ締切 ※アップロード先は別途指示
5/17(水) 午前中 スカイプ会議(鹿大+渡邊、峯田) ※模型等の説明資料を持参すること
7. 設計における注意点
 - ・地域やその場にあるモノやランドスケープの状況をうまく活用すること
 - ・人やモノの動きを考慮し、不便のない配置や形態を考へること
(管理系、家族、地元友達、子供友達、施設利用者、馬、馬具、運搬物、排泄物、ゴミ、水、風、泥…)
 - ・部材の加工と組み立て、解体においてある程度標準化できることが理想的である(例:竹テント)
 - ・基本的にはWS①(4/28~4/30)で切り出した木材の規格を使う(5.の木材実測データ参照)
 - ・9.の木材の他に材を増やす場合、必要となる人手や運送手段を考慮すること、竹材も可
 - ・うまの習性を考慮すること
 - ①馬は同じルーティンの生活をするを好む
 - ②ブランコやトランポリンなど同じ動きの繰り返しを見ると落ち着く
 - ③飼い主家族が見えたと安心する など
 - ・角馬場は現在ある面積をできるだけ減らさず正方形であることが望ましい
 - ・モバイルハウスの役割分担を設定する。
別途制作されている、モバイルハウスは馬場脇で終日たずむことができる小屋として機能する。
(1人~2人用、宿泊可、悪天候時中から馬を繋める事ができる)
長期利用しない時はワークショップ脇の屋根付きドックに収納
8. 参考
森と海のあいだのアカデミー HP
<http://uminokodomakai.com/>

番号	長さ	末口	元口
1	3170	120	165
2	3150	110	173
3	3070	150	174
4	3690	182	233
5	3110	112	154
6	3030	160	185
7	3930	154	185
8	3050	171	197
9	2850	140	157
10	2870	123	150
11	2810	110	143
12	3130	155	180
13	3060	160	190
14	3040	200	230
15	4040	180	214
16	3080	95	120
17	3200	78	109
18	3470	70	124
19	4228	70	129
20	2850	65	100
21	2580	75	120




／表1 木材実測データ
写真1 木材番号 15-1
写真2 木材番号 21-16

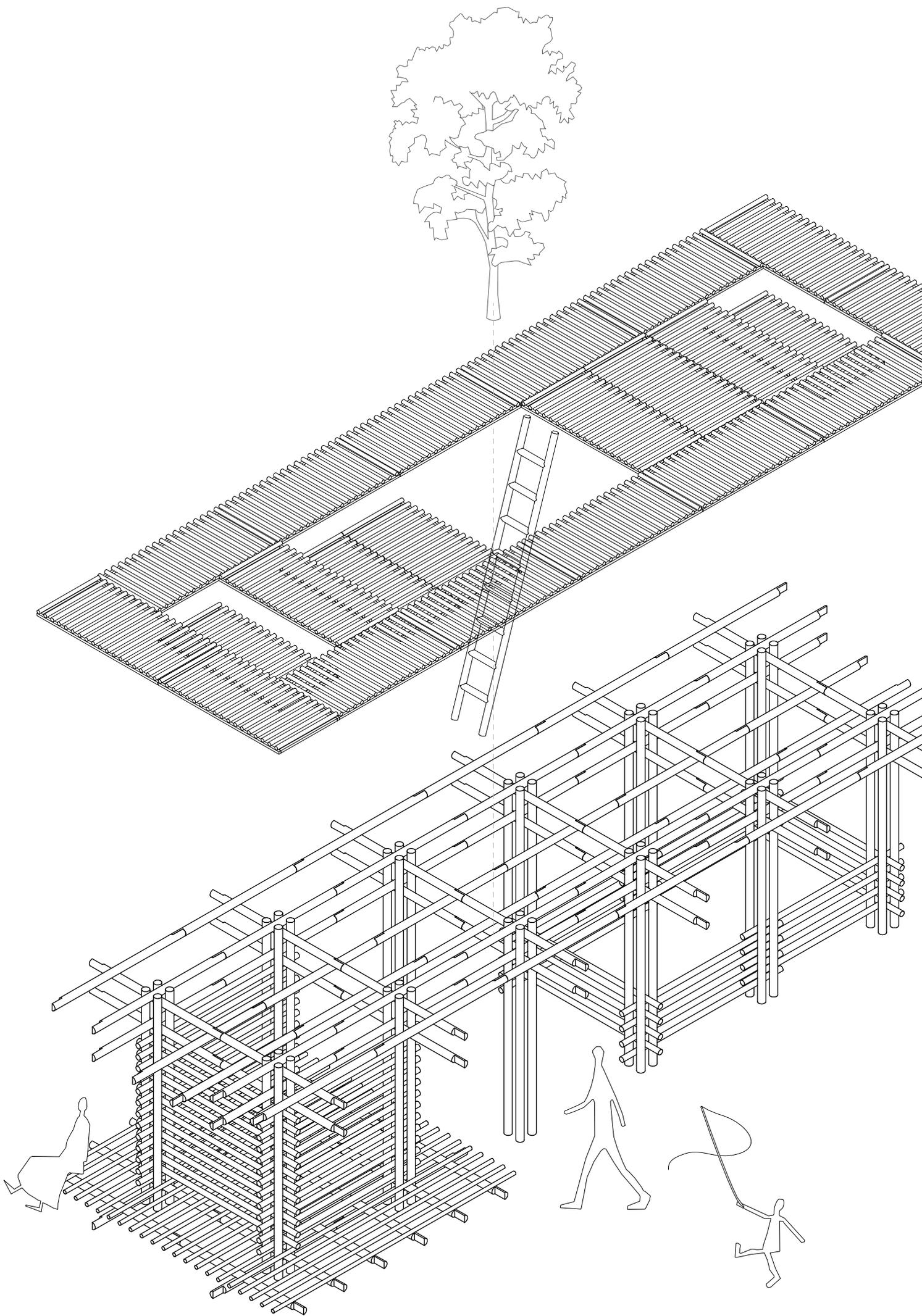
competition outlines



Takano lab proposals



selected project



林の家屋

dwelling in the forest

Design a system that allows to self build living units, that provide shadow, resting and public spaces in the forested areas.

Building materials are local unprocessed wood and bamboo. The modular nature of the solution allows to adapt to different needs and freely grow in a future.

The solution embraces the principles of simplicity. It is based on the japanese wood module 910 mm and the tatami room.

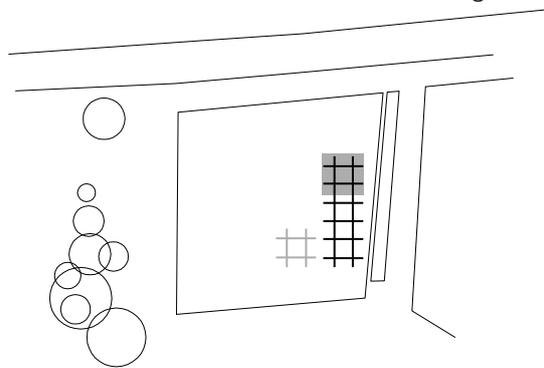
The traditional closed space of retreat is elevated and made open offering a special view on the scenery and a different kind of resting space.

Location

The setting of the project can follow two strategies.

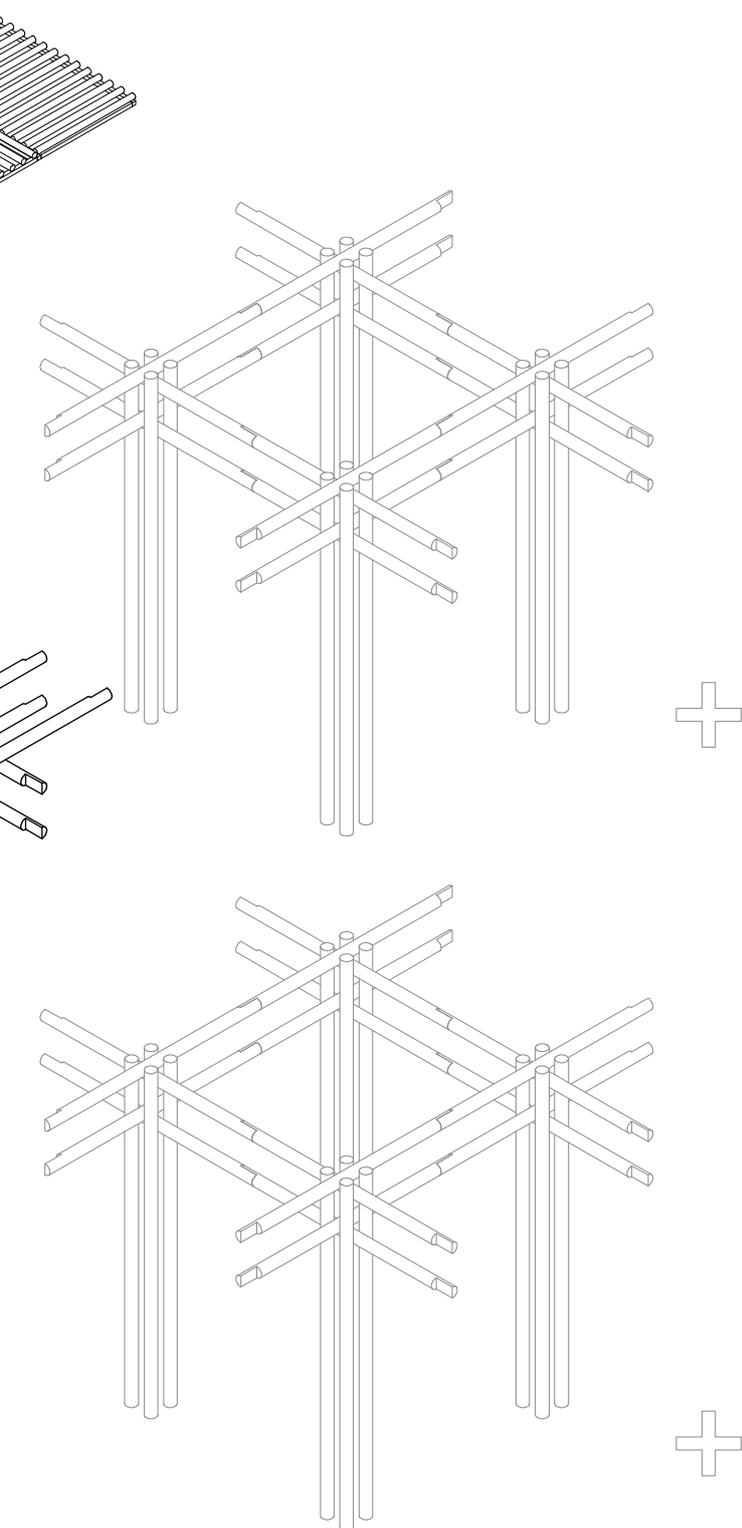
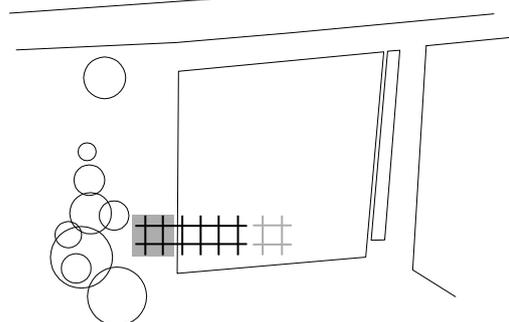
A. Connected to the house

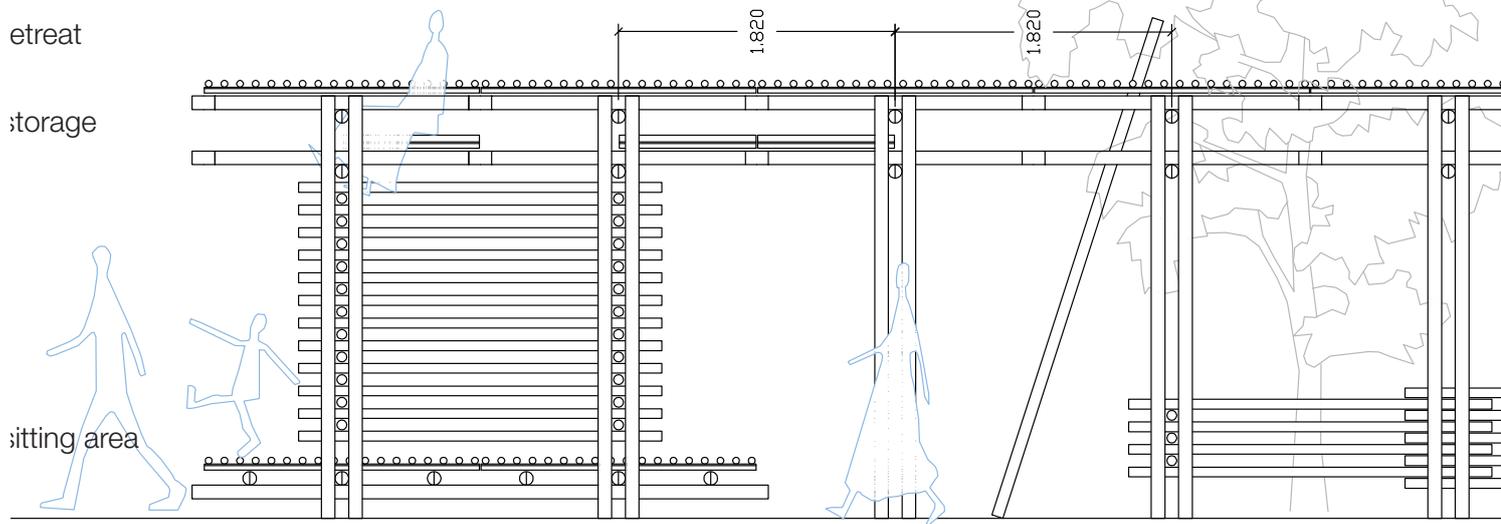
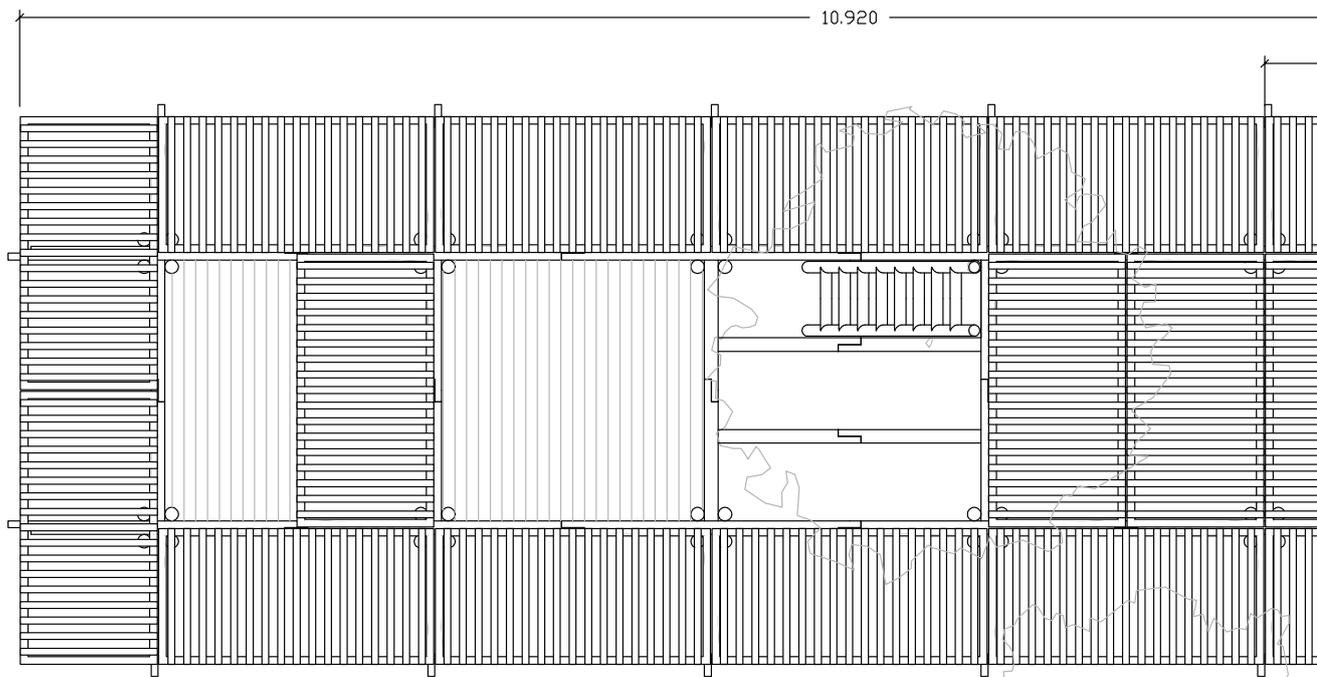
Enclosed space for the horse. It creates a threshold between house and horse allows free growth.



B. Connected to the trees

Open space for the horse. Leaves the house to a side and grows along the road. Focus on public function keeping visual connection with the house.



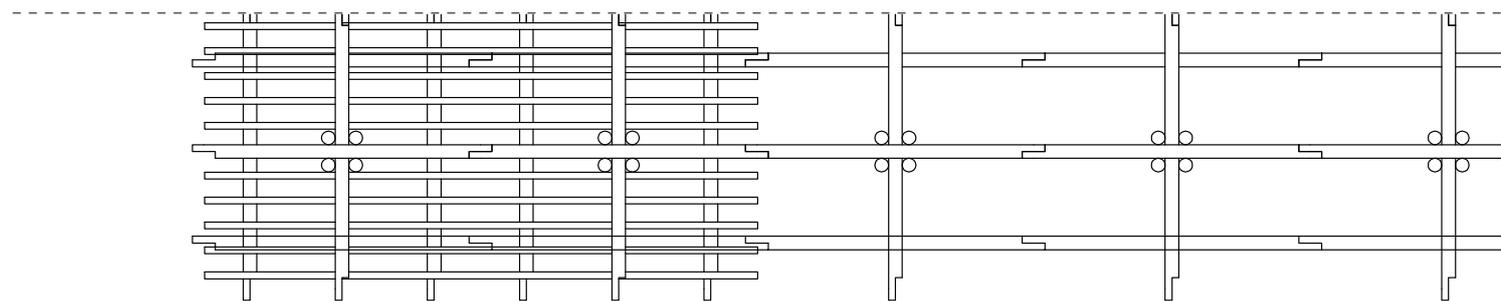


Elevation

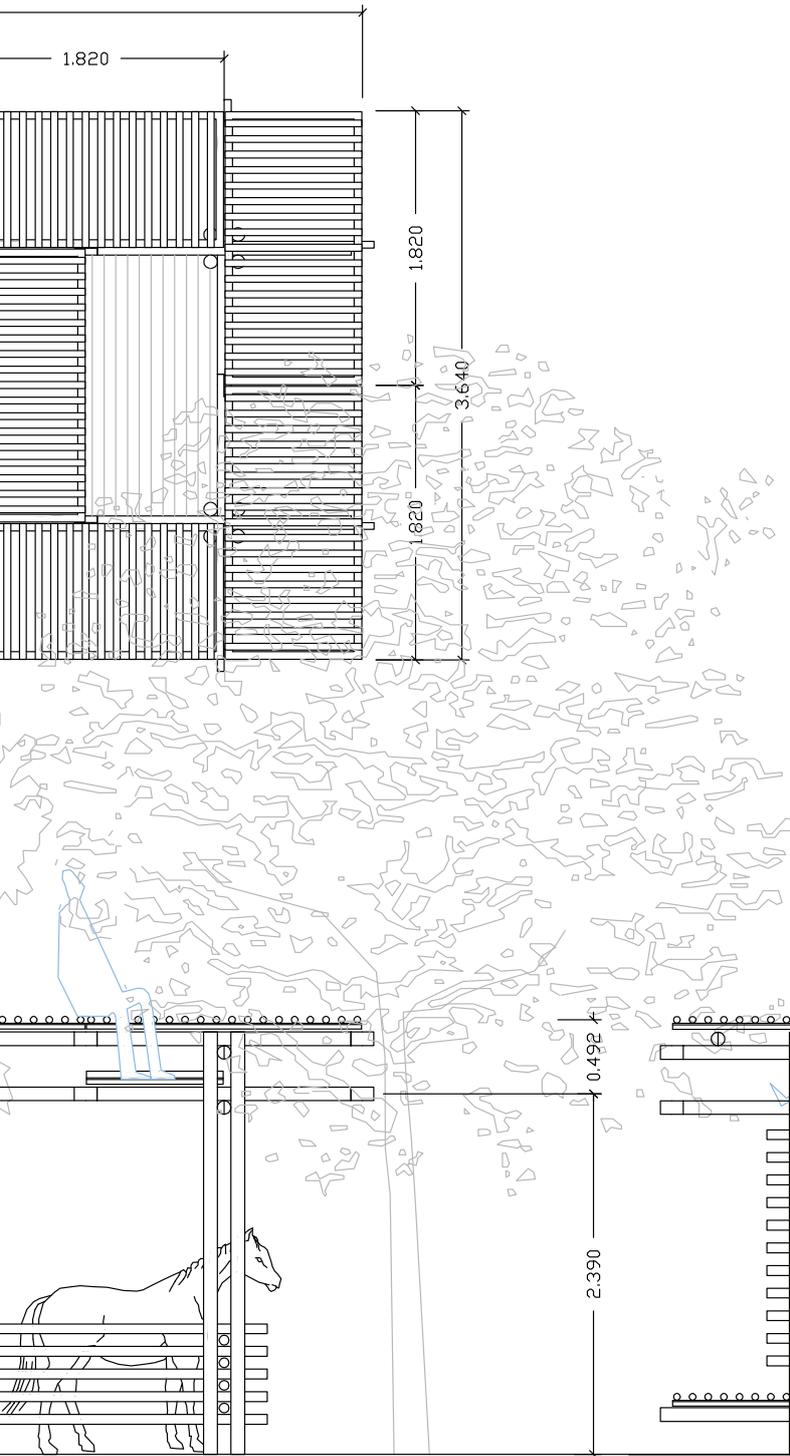
closed space for shower

Common space/
Mobile house storage

Space for the



Sectioned floor plan



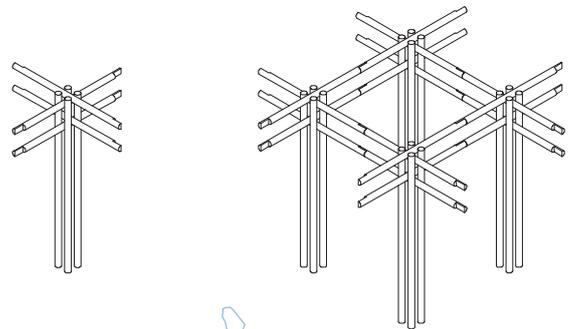
Basic structure module description:
 Japanese cedar $\approx 500 \text{ kg/ m}^3$ (semidry)

Unit: $\approx 60 \text{ kg} \approx v = 0.12 \text{ m}^3$
 4 x $\varnothing 900/ 3000 \text{ mm}$.
 2 x $\varnothing 900/ 1970 \text{ mm}$

Module $\rightarrow 4 \text{ Units} \approx 240 \text{ kg} \approx v = 0.48 \text{ m}^3$
 16 x $\varnothing 900/ 3000 \text{ mm}$
 8 x $\varnothing 900/ 1970 \text{ mm}$

Material description

The module construction requires 3 modules.
 The project needs around a total volume of 1.5 m^3 unprocessed wood 750 kg , to be transported on site.

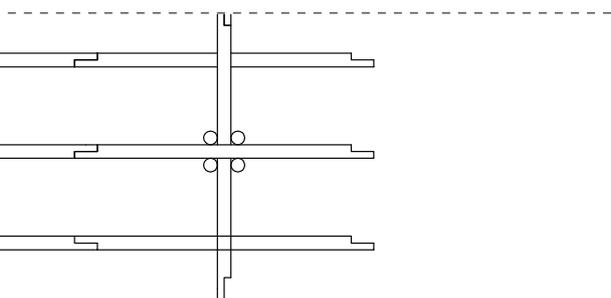


horse

Elevation

Ceiling and enclosure

The structure is closed with a bamboo skin.
 On the ceiling with DIY bamboo tatami modules
 and the walls with tied 2000 mm bamboo.



E. 1:50



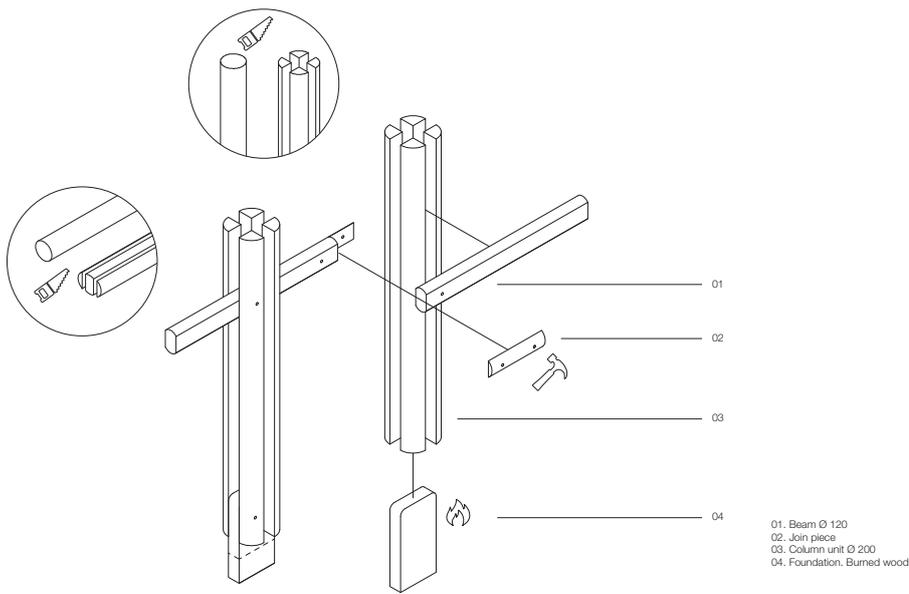
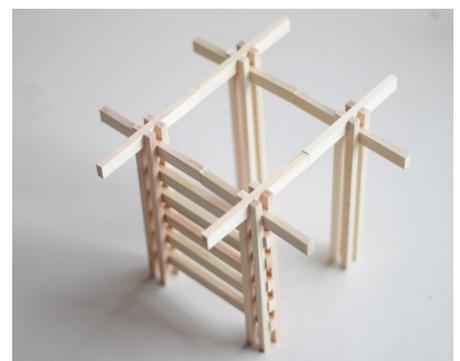
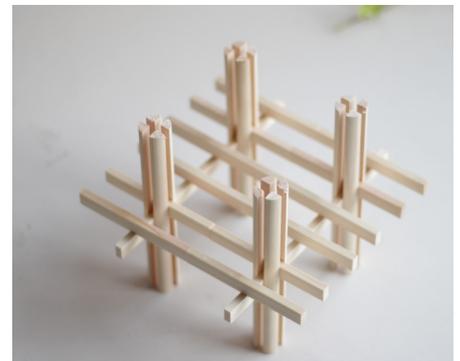
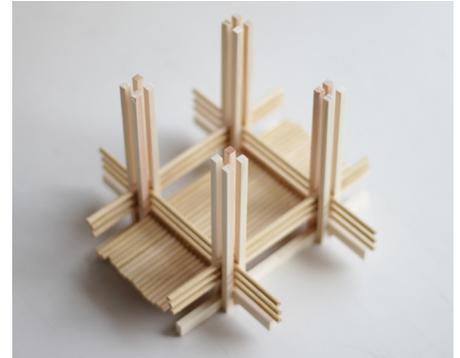
Design development

28.04.2017 - 30.04.2017



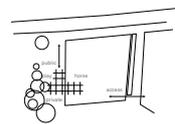
After the competition was held. A skype meeting was held with the client and having my project been among the 3 selected I started working on the new guidelines.

The competition proposal was refined and the construction system developed. For this work several 1:20 module units were constructed and more function were introduced into the units.



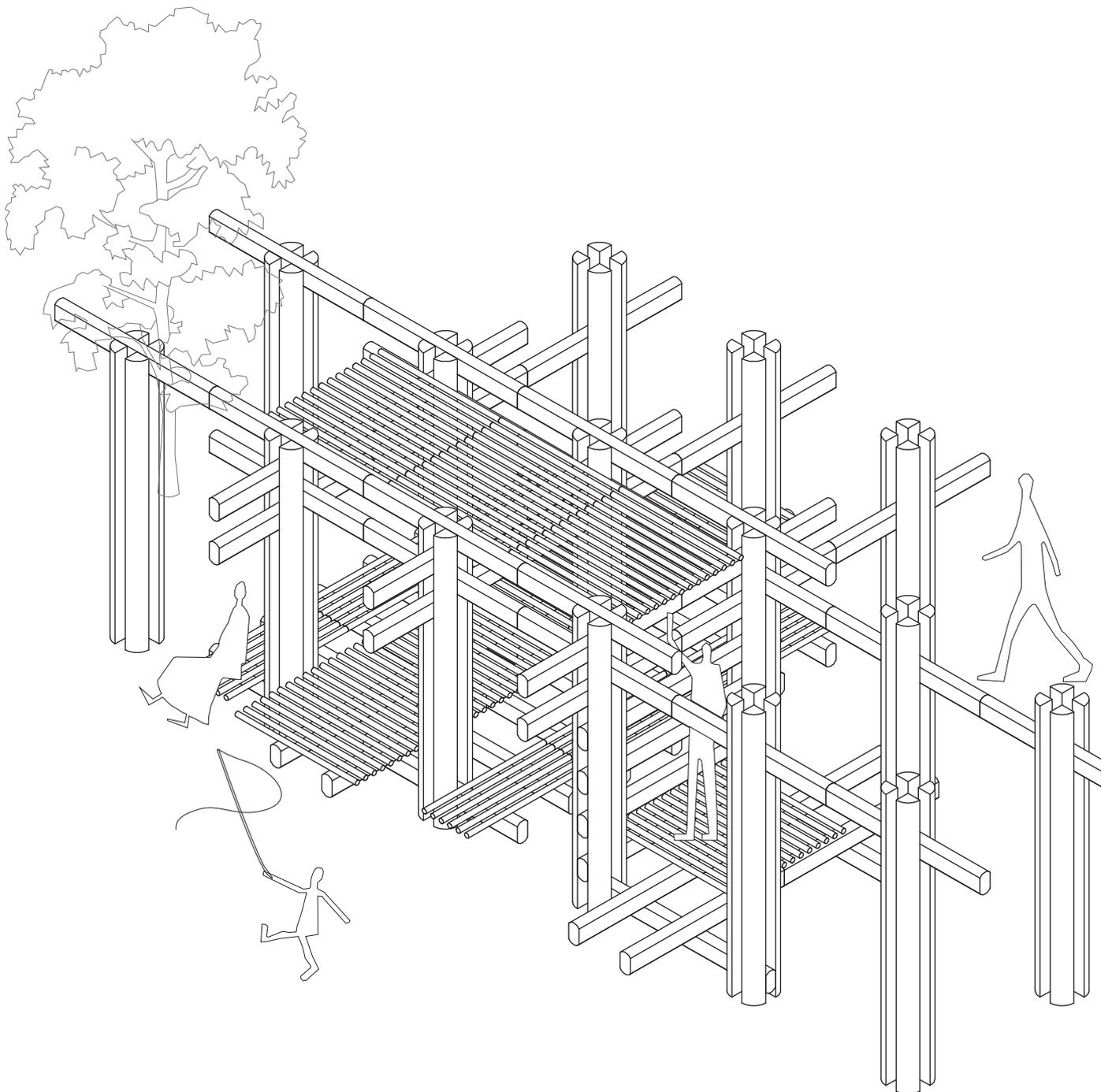
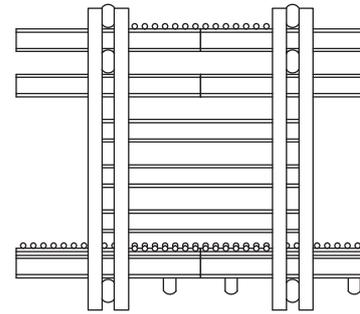
construction system diagram

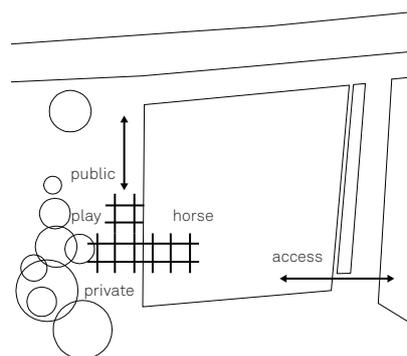
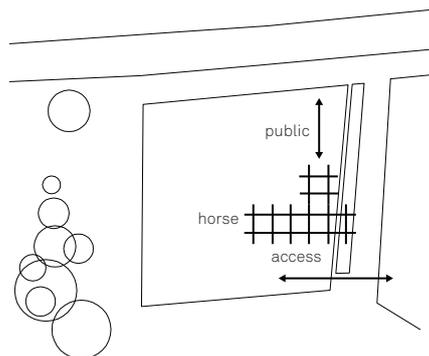
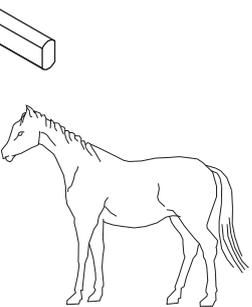
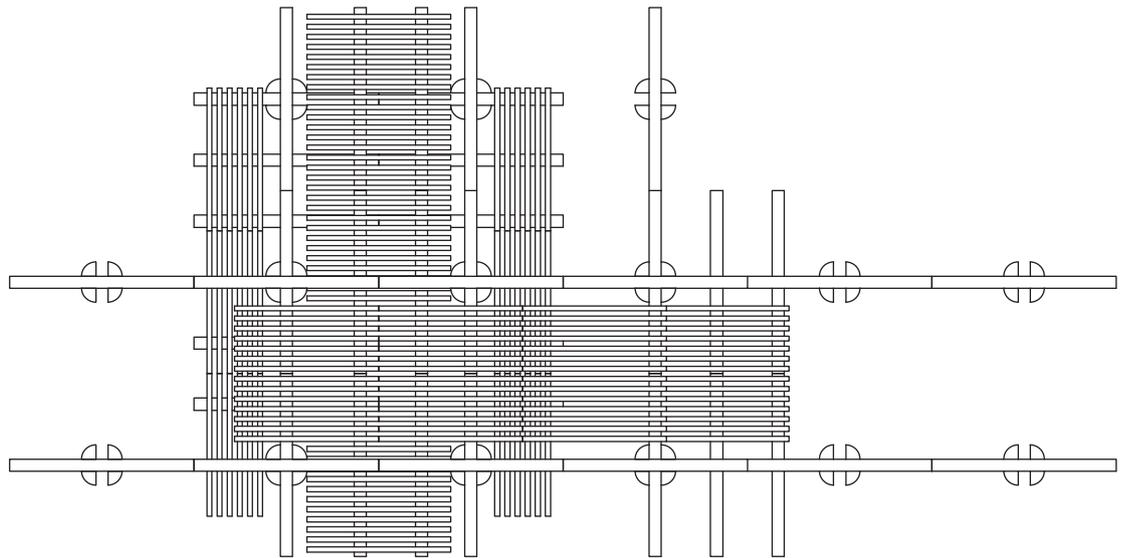
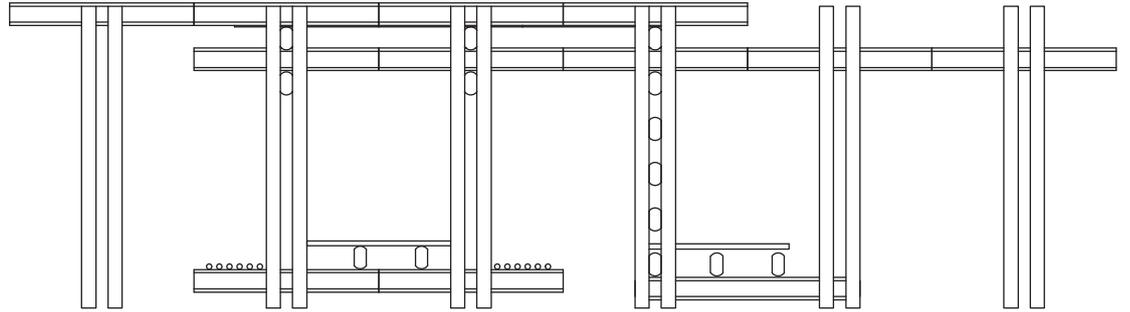
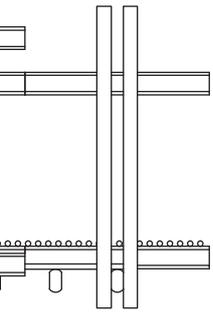
Umiuma スケジュール -Umiuma Schedule-

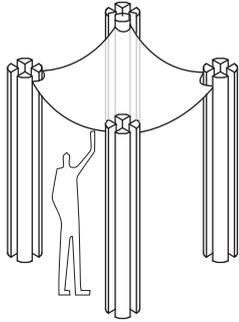


<p>朝 -Morning-</p> <p>昼 -Noon-</p> <p>夕方 -Evening-</p> <p>夜 -Night-</p>	<p>馬を出す 海へ行く Bring the horse Go to the sea</p> <p>昼寝 Take a nap</p> <p>・そうじやブラッシング ・馬を厩小屋へしまつ Cleaning and brushing Take horse to the stable</p> <p>・BBQ ・映画鑑賞 ・星を見る BBQ Watch a film See the stars</p>	<p>・ひき馬や乗馬をする ・馬に水を飲ませる ・馬にスズをあげる ・散歩の人々が寄り道を ・馬が馬場を走り回る ・子どもたちがハンモックやブランコで遊ぶ ・読書する ・乗馬の待合 ・通りすがりの人たちが立ち止まる</p> <p>・Horse riding ・Horse drink water ・Feed the horse ・Tourists make a stop ・Horses run around ・Nap time/ hammock ・Children playtime ・Reading ・Waiting for a horse ride ・Passing people stop</p>
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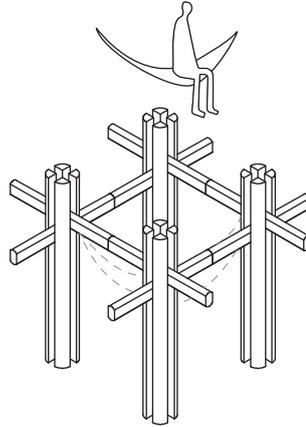
1:20 models







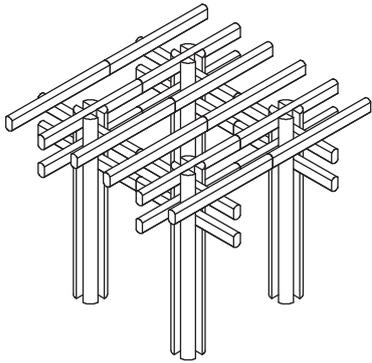
basic



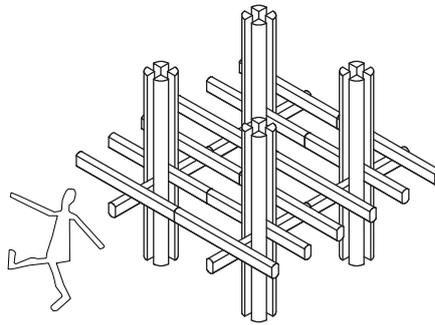
low roof hammock



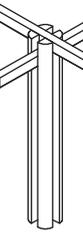
swing



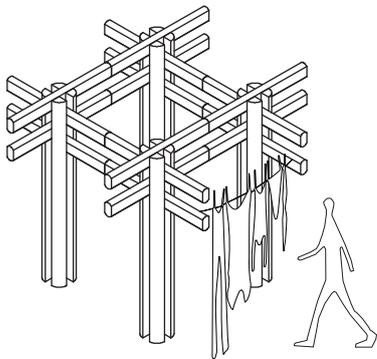
double roof



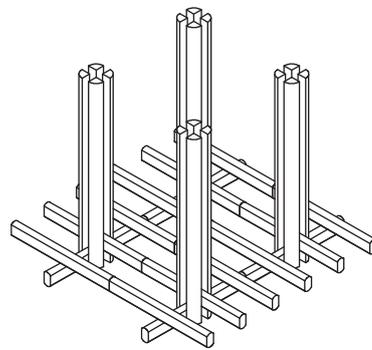
secret space



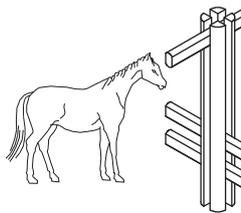
stairs



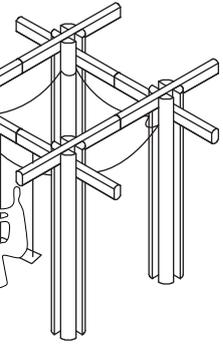
storage



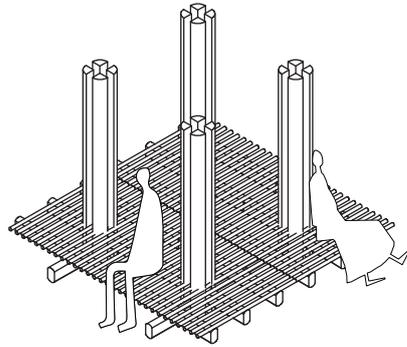
floor space



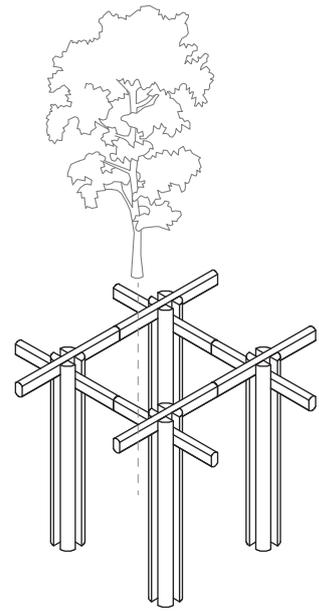
horse



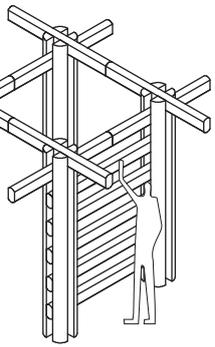
ing and shadow



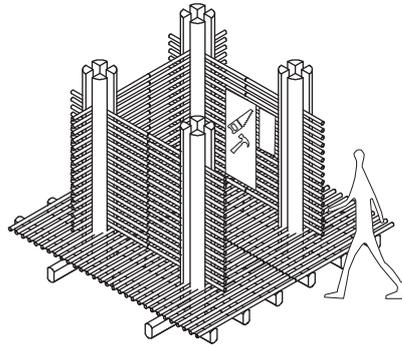
bamboo floor



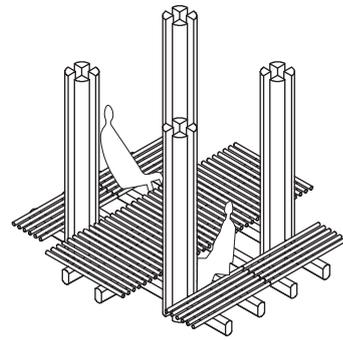
tree shadow



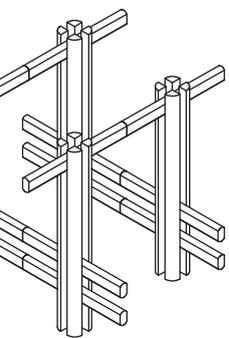
s



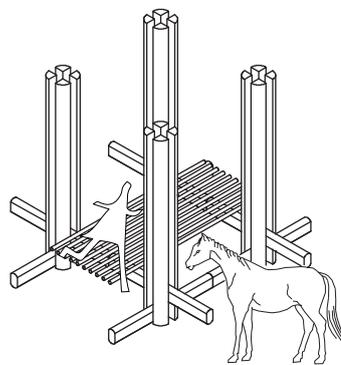
workshop



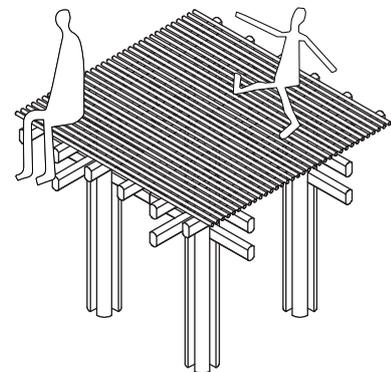
table/ eating space



e space



connection



look at the stars

Workshop 02

09.06.2017 - 11.06.2017

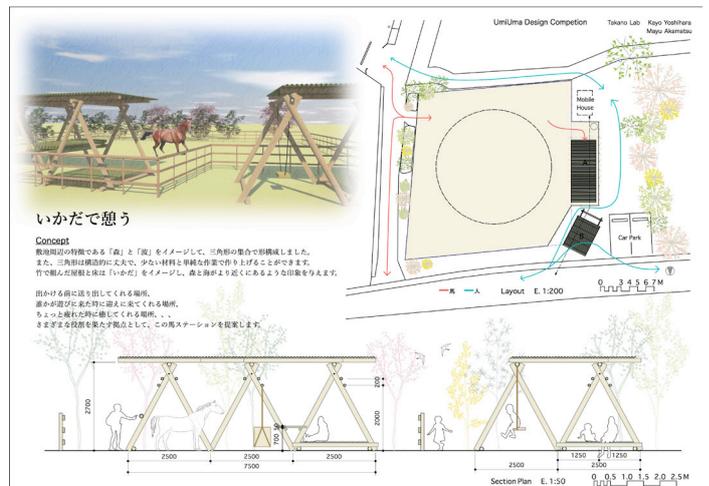
The workshop was held again. One of the projects from Takano lab that had been selected was the perfect choice to make a mock up on site.

A team was put up again and we all started working. While some students built the structure I went with another group to cut some more bamboo trunks that were needed.

The last day the structure was held up and tested as a swing.



work on site



A3 panels selected proposal



work on site

Construction system

Elevation Plan (A)

Elevation Plan (B)

Material Requirement (本)

	必要本数	取にある本数	切り出す本数
大木	3m 18	17 (4本取れ)	1
	2.5m 4	4	0
材	6m 50	0	50

切れ端などの余った材で、椅子やベンチなどを作る。

Work process

- 選の整備
- 材料調達
- 材料加工
- 構造体組み立て
- 屋根・床の組み立て
- 素材で小物づくり

Plan (A)

Plan (B)

UniLima Design Competition Takano Lab Kayo Yoshitara Mayu Akamatsu

Time Schedule

Time	Normal day	Weekend	Special day
6:00	起床	起床	起床
9:00	朝食	朝食	朝食
12:00	昼食	昼食	昼食
15:00	作業	作業	作業
18:00	夕食	夕食	夕食
21:00	就寝	就寝	就寝

E. 1:50 0, 0.5 1.0 1.5 2.0 2.5M



after completion

Prototype

01.07.2017 - 30.07.2017

As a final output of my thesis research a 1:1 prototype of my system would be constructed. There was not an option of making the mock up on site so it was decided to use the same system but change material and design to make the real scale model.

My work was defining the last design solution and managing the construction. I made several proposals with slight changes in function and the wood sections until a final proposal was decided.

At this point in a team with Miyu Hirakawa to find wood providers.

FULL PART LIST. PROTOTYPE

24x 3000x60x60 (1, 11):

- 16 x wood column
- 8 x sun protection

15x 3000x120x60 (2,7,12):

- 12x main beams (roof and floor)
- 2x table structure II (horizontal)
- 1x top assembly (cross) 8x 180x120x 60

8x 3000x90x60 (3,6,8):

- 6x secondary beam (roof)
- 2x table structure I (vertical) and (horizontal)

32 x 3000x80x15* (4,5,9,10): (floor covering 3000 x 3000) (check availability)

- 32x floor covering I and II
- 32x table surface I & II

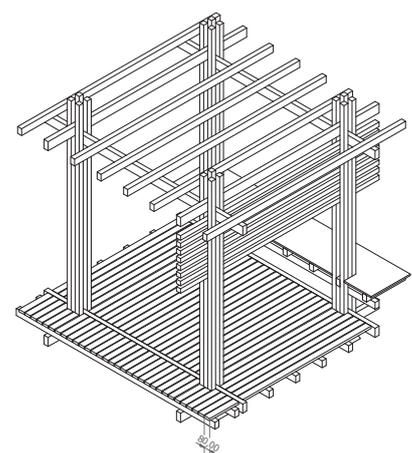
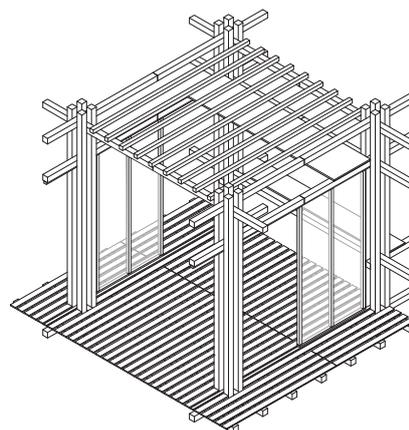
4x Wood surface (12): 280x280x30

- 4x top assembly cap

4x foundation (13)

- 4x (minimum 250x150)

	QTY	PART	DESCRIPTION
1	16	column	3000x60x60
2	12	main beams (roof and floor)	3000x120x60
3	6	secondary beam (roof)	3000x90x60
4	28	floor covering I	2060x80x30
5	4	floor covering II	1820x80x30
6	2	table structure I (horizontal)	590x90x60
7	2	table structure II (horizontal)	3000x120x60
8	4	table structure(vertical)	670x60x90
9	28	table surface I	480x120x30
10	4	table surface II	260x120x30
11	8	sun protection	3000x60x60
12	4	top assembly	260x260
13	4	foundation	250x150



final designs



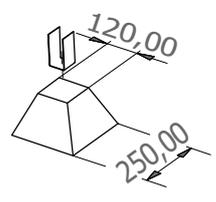
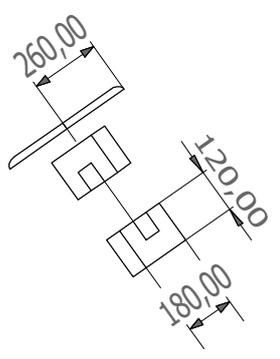
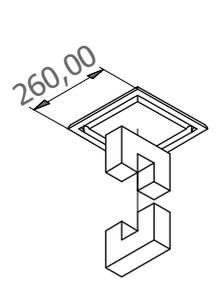
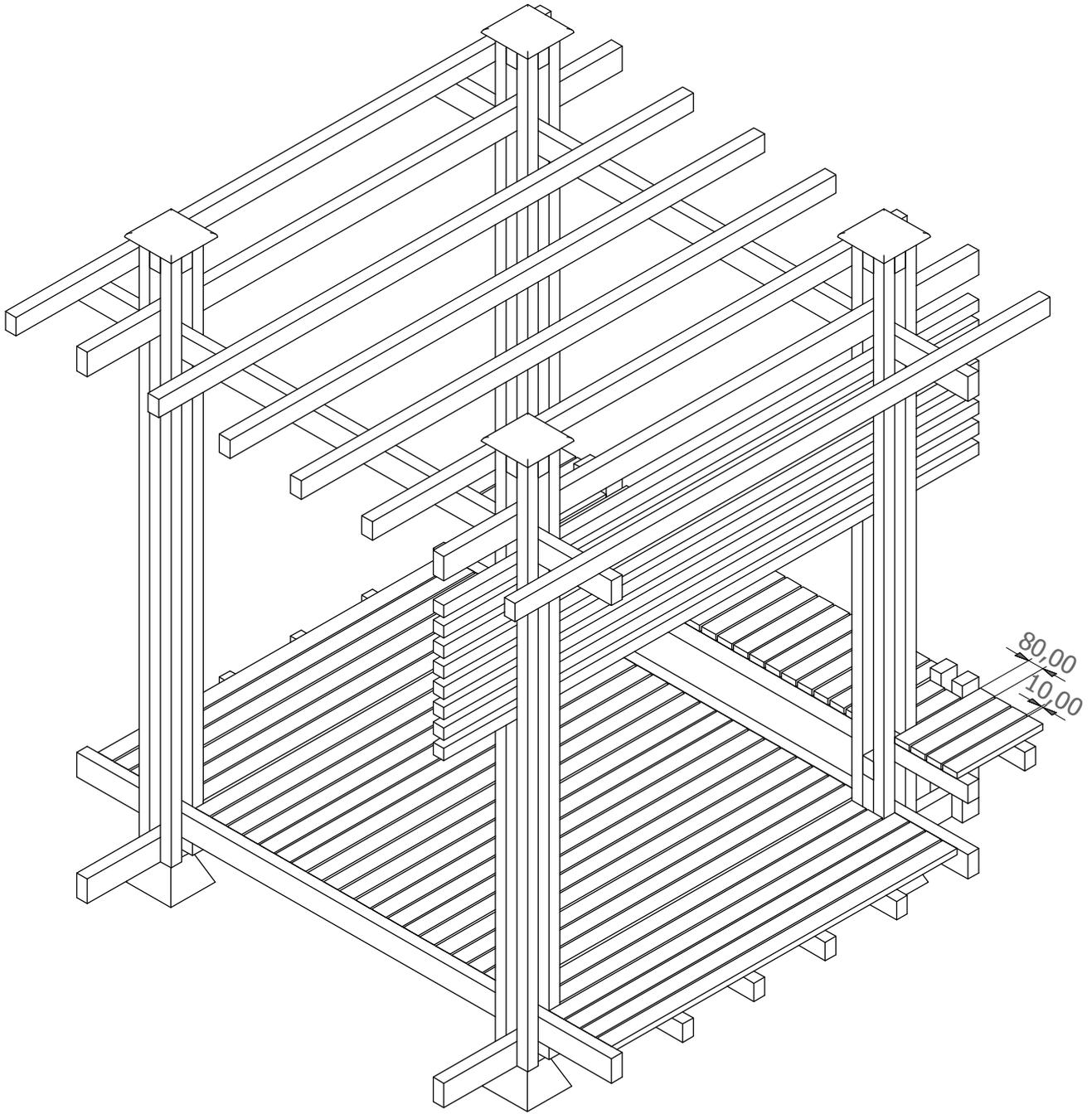
Handsman

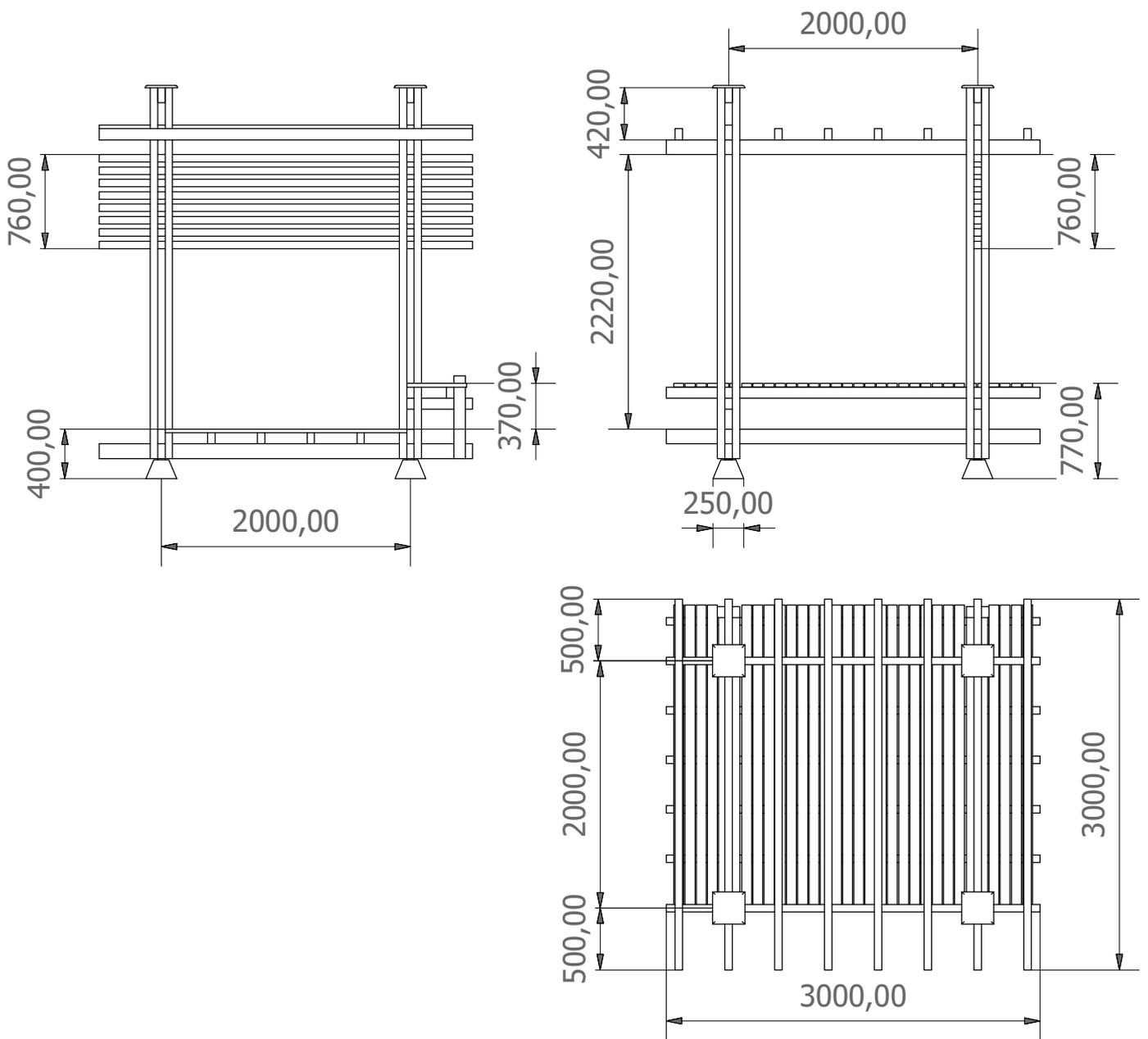
The project is covered by the research budget so it's must be kept tight.

The wood in the proposal is minimized to the essentials and two local distributors are consulted. Nishimuta and Handsman. Due to the availability and price, Handsman is selected and a team is then organized for the construction.



Students teams





PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	16	column	3000x60x60
2	8	main beams_roof and floor	3000x60x120
3	10	secondary beam	3000x90x60
4	28	floor covering I	1940x80x30
5	4	floor covering II	1820x160x30
6	2	table structure_beam I	590x90x60
7	2	table structure_beam II	3000x90x60
8	4	table structure_column	670x60x90
9	28	table surface I	480x120x30
10	4	table surface II	260x120x30
11	8	sun protection	3000x60x60
12	4	top assembly	260x260
13	4	foundation	250x150

1:1

18.07.2017 - 20.07.2017

The construction of the module takes place. The site decided for building is a rooftop of a private house. The structure will be kept and used after completion.

Supervisor

鷹野 敦 Takano Atsushi

Construction team:

平川 美憂 Hirakawa, Miyu

林田 真知 Hayashida, Machi

俊典 畠 Toshinori, Hatake

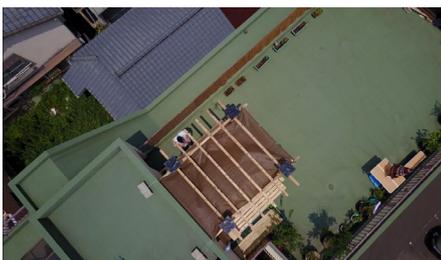
田村 健太郎 Tamura, Kentaro

吉原 佳代 Yoshihara, Kayo

赤松 麻由 Akamatsu, Mayu

宮坂 遼太郎 Miyasaka, Ryotaro

加藤 佳輝 Kato, Yoshiki



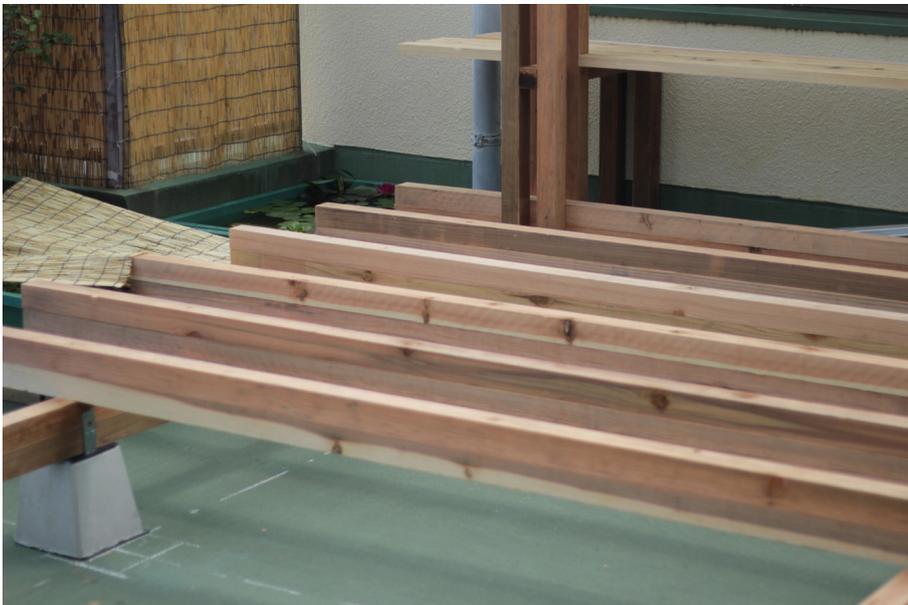
Location:

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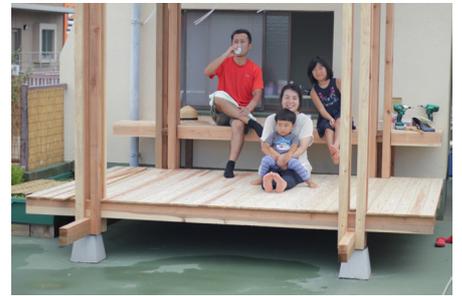
鹿児島県鹿児島市上之園町3-4-6



view from the street



work in progress day 1



work in progress day 2



barbacue afterparty



final 1:1 installation

reference material

- 木造の詳細<第3>住宅設計編 (1969年)
- Wood Joints in Classical Japanese Architecture. 1991. Torasichi Sumiyoshi, Gengo Matsui
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