

THE MUNITIONS TRACK

DIGITAL FABRICATION AT ASIA SOCIETY

天

Climate

Weather is the state of the atmosphere, describing for example the degree to which it is hot or cold, wet or dry, calm or stormy, clear or cloudy.

地

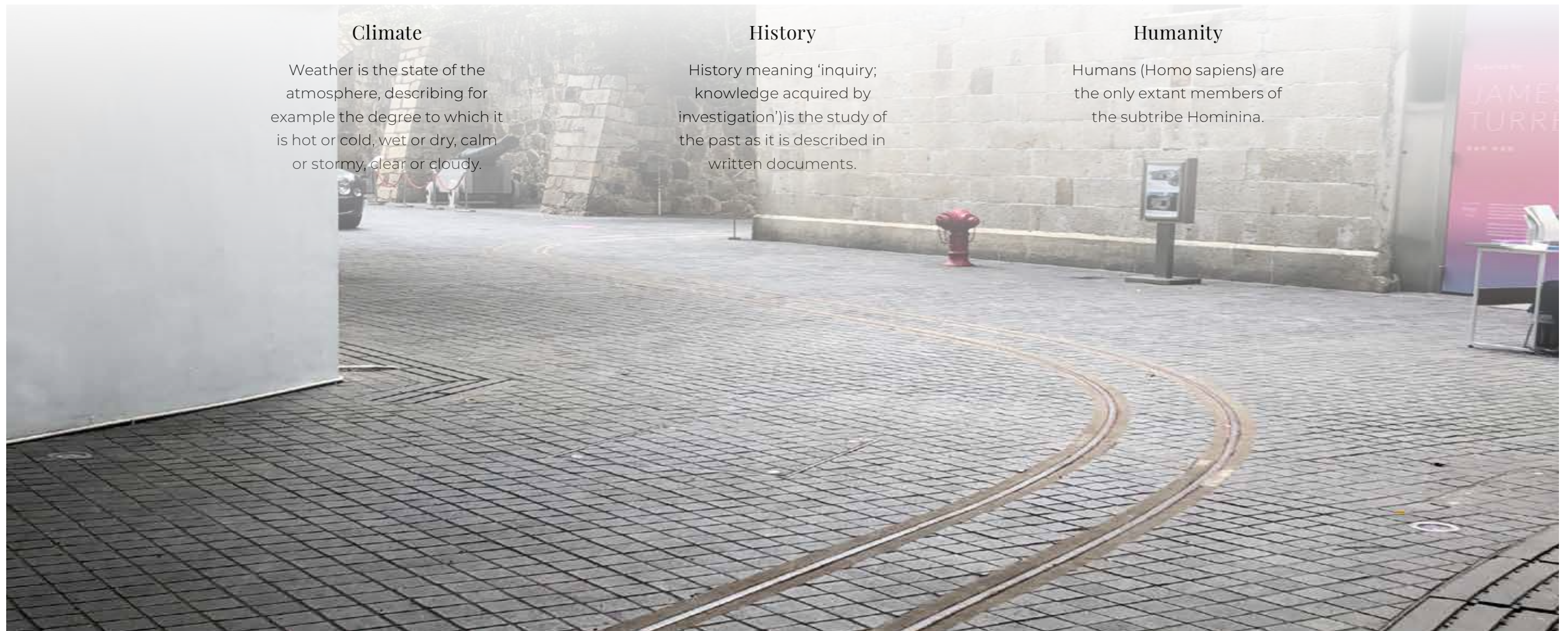
History

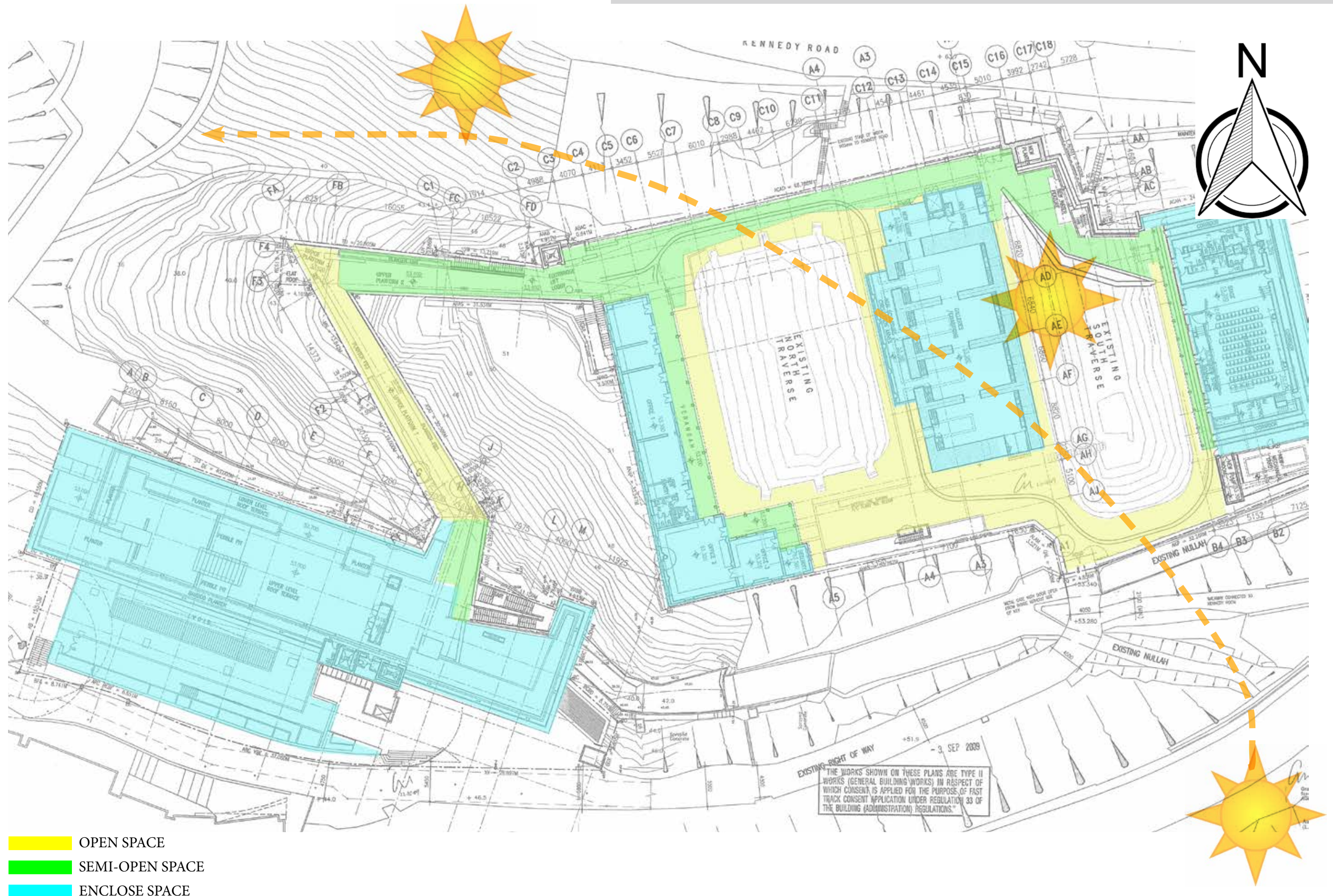
History meaning 'inquiry; knowledge acquired by investigation') is the study of the past as it is described in written documents.

人

Humanity

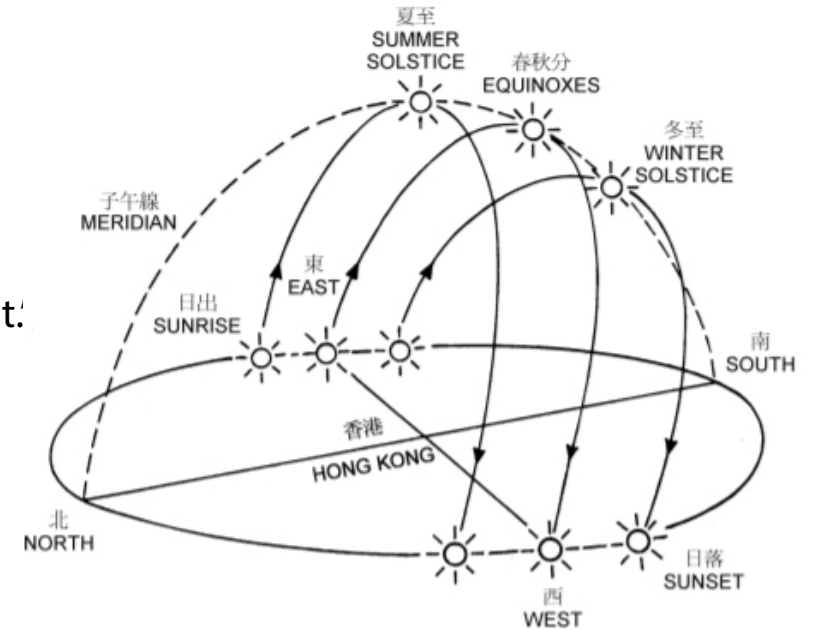
Humans (*Homo sapiens*) are the only extant members of the subtribe Hominina.





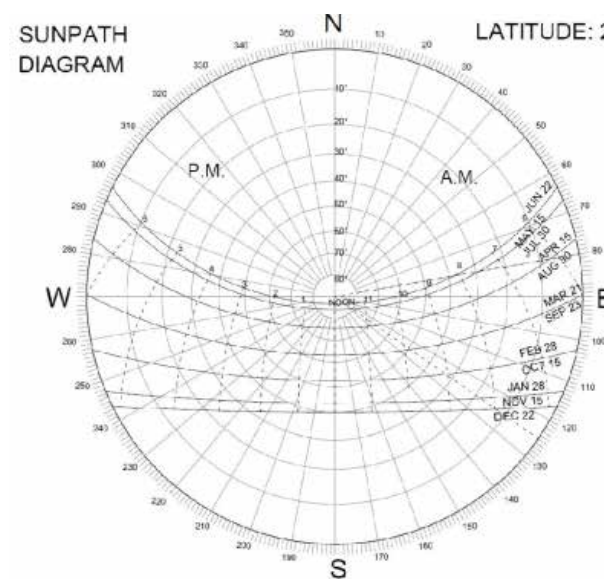
The Sun Path in Asia Society

Albert Pike — 'We must pass through the darkness, to reach the light.'

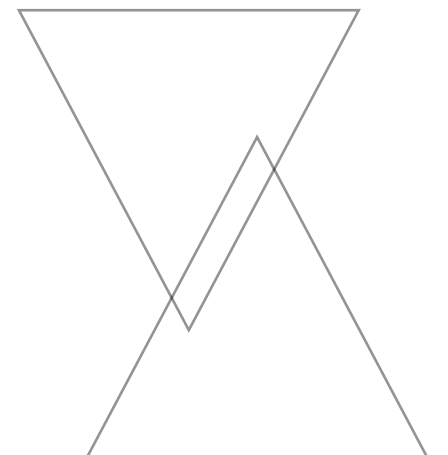


Asia Society build on high level with mountain site with mpd +50m, and public open at 11:00 - 18:00 everyday, during the day time, the sun will shin directly from east to west on the open space. The Sun is nearest to being directly overhead at Hong Kong at 12:21 on 3 June and again at 12:29 on 9 July. The site located in the concave of Magazine gap valley, it has a steep slope, and mature woodland surrounded the place. On a sunny day, the

tree and bush will obstruct sunlight to prevent the exposure of the sun. On a rainy day, the site might be very wet and high humidity because of the green and located in the concave of the valley and next to stream and nullah. The main ventilation of the site is from the Victoria Harbour, but wind may not directly get into the site because of the Skyscraper as a barrier obstructed wind ventilation.



*"Yours is the light by which my
spirit's born: - you are my sun, my
moon, and all my stars."
e. e. cummings*



Regarding the opium trade between British to China a military conflict in 1840 and 1841, both governments signed the treaty of Nanking on 29 August 1842, a statement to give British merchants freely trade in China, at the meantime island of Hong Kong ceded to Britain.

Since the first British garrisons to land on Hong Kong in September 1841, due to the accommodation issue, the Britain officer were

proposals to build multiple barracks in Hong Kong in order to provide a living place for the garrison. In 1851, when Victoria Barracks hasn't built its site was occupied by provision for ordinance clerks, and the explosives stored in the east of the future site of the Victoria barracks across the stream. After that, they started to build Magazine A and B in 1853-1868 for stores the ammunition.

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ASIA SOCIETY

History of the site, What is asia society?

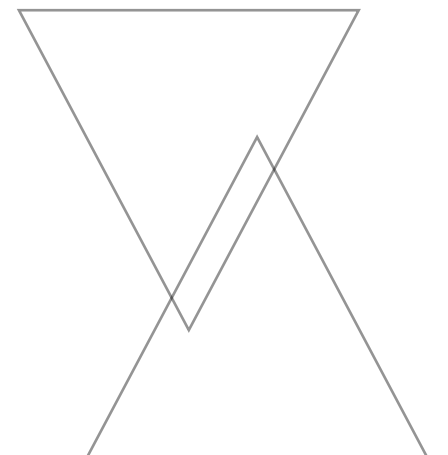


Located in the heart of the central business district, Asia Society Hong Kong Center (ASHK) is situated at the Former Explosives Magazine of the British old Victoria Barracks in Hong Kong, a site steeped in history, cultural significance and natural beauty.

Our Center houses a group of four former British military buildings. Part of the old Victoria Barracks, originally built during the mid-19th century to the early 20th century. The site was later abandoned in 1980s until it was granted to ASHK by the government of Hong Kong for adaptive reuse. The site was revitalized with

funds generously donated by The Hong Kong Jockey Club Charities Trust and other local and international individuals and organizations. Through the vision of internationally acclaimed architects Tod Williams and Billie Tsien and careful conservation, this transformed site was successfully opened to the public as a cultural, artistic and intellectual hub in Hong Kong in 2012

*“History is who we are and why we
are the way we are.”
David McCullough*



Starr-Greenberg Building (Former Laboratory)

Built in the 1860s by the British Army for mixing explosives, the old laboratory is a one-floor L-shaped structure consisting of the main building with subsidiary buildings. This Grade I historic building now houses one of the ASHK's administrative offices and two function rooms, including the Credit Suisse Room and Lee Quo Wei Room

Former Magazine A

Built between 1863 and 1868, this former magazine is among the oldest remaining military buildings from the colonial period in Hong Kong. It is constructed with thick granite wall.

This Grade I historic building has been thoughtfully restored and

adapted for use as a modern exhibition space of international museum standards

GG Block

Built circa late 1940s, GG Block was possibly used by the Special Investigation Branch of the Royal Military Police. In the 1970s, it was one of the locations of Hong Kong's "touch-base-policy" during the first wave of mass immigration. It is now a Grade II historic building, and has been conserved and restored as one of ASHK's administrative offices

Miller Theater (Former Magazine B)

Built between 1905 and 1907, this former magazine combined with a lighting passage along the sides and back was used for ammunition storage. Through multiple alterations, this Grade I historic building has now been transformed into a theater equipped with high-quality theatrical facilities that encompass over 100 seats for lectures, performances and film screenings.



the Munitions Track, is connecting all the blocks from Miller Theater (Former Magazine B), Former Magazine A, GG Block, to Starr-Greenberg Building (Former Laboratory).

THE MUNITIONS TRACK

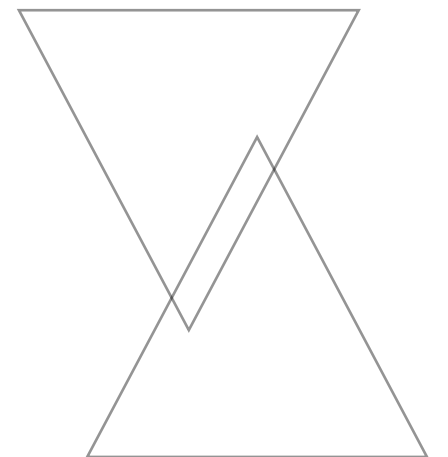
Connected the Former Laboratory, where shells were filled and examined, with Former Magazines A and B, where ammunition and gunpowder barrels were stored.



Constructed in the late 19th century to transport explosives within the British military sites, the Munitions Track connected the Former Laboratory, where shells were filled and examined, with Former Magazines A and B, where ammunition and gunpowder barrels were stored. Heavy shells loaded on four-foot long carts were pulled along the track by a winding engine located down the valley within the Victoria Barracks. In the early 20th century, the War Office erected an aerial ropeway near the end of the track on the north-eastern edge of the Former Laboratory. This

ropeway was designed to transport ammunition between the Explosives Magazine and the seafront within the Arsenal Yard in Wan Chai, it facilitated the deployment of explosives from the barracks to defensive locations throughout Hong Kong. The remains of the original tracks have been preserved in situ.

*“Fear not for the future, weep not
for the past. Percy Bysshe,” Shelley*

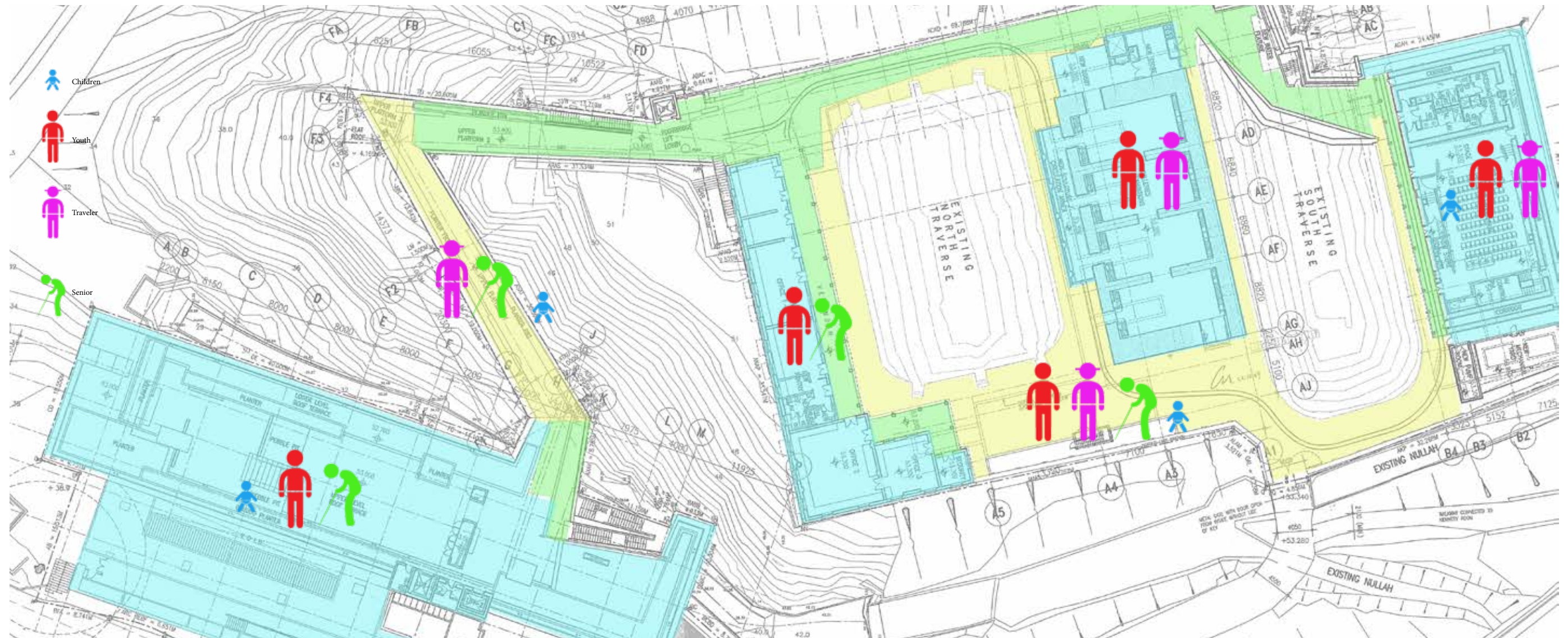




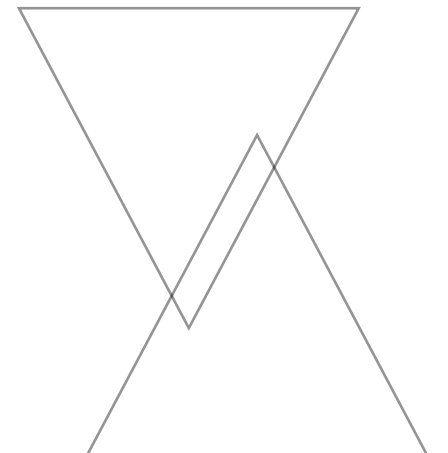
*The Munitions Track at asia society,
able to reuse by magnet for the
movable pavilion.*



Humanity
How the people enjoy Asia Society?



- OPEN SPACE
- SEMI-OPEN SPACE
- ENCLOSE SPACE

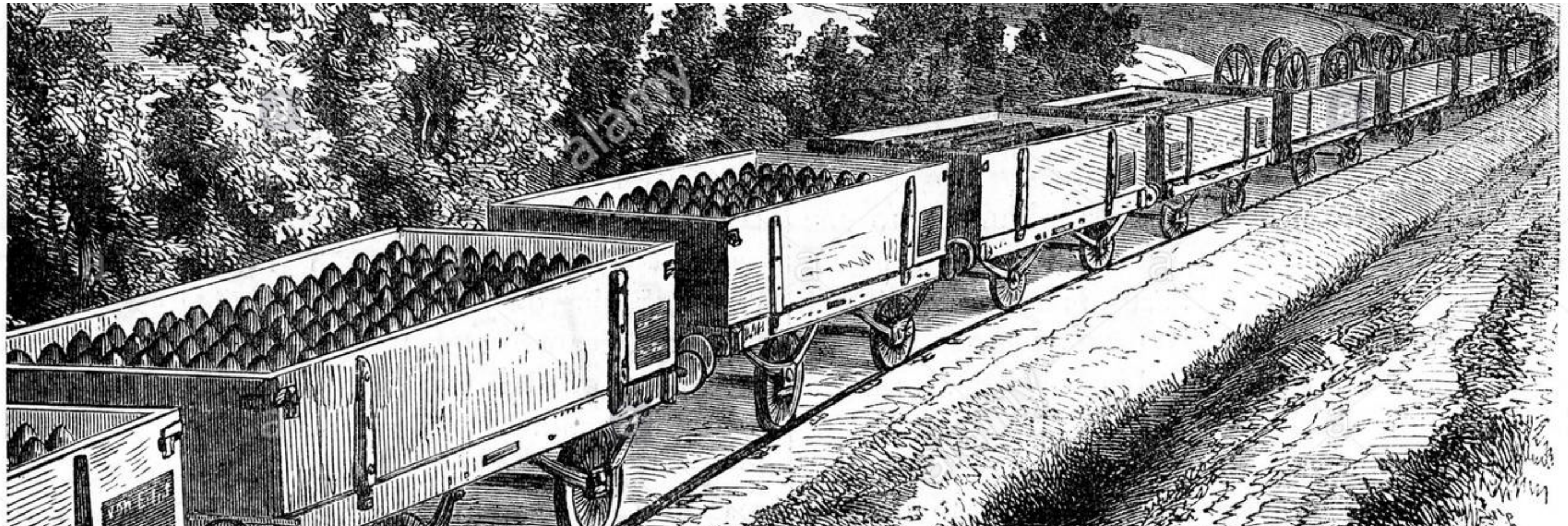


The open space for gathering, how can we
develop this area by site element and
digital fabrication??

Asia Society has held a lot cocktail party or gathering events, such as the Year End Celebration. the open space area will be used as the venue for these events, there will be tables and seats placed on the open-space. In our views, that is not an efficient arrangement for staff and visitors, the equipment such as draft beer machines, table, and seats are too heavy to move. Therefore, we start to design a new gathering way by the site elements and digital fabrication.

In one hand, we are looking for a movable table and seat for easy arrangement, on the other hand, we are studying about the sun, in the summertime, the sun will be directly overhead from the sky to the open space, people might feel hot and be exposed to the sun, so we have to create a cover to defend the sun.

*“Keep your face to the sun and you
will never see the shadows.”
Helen Keller.*



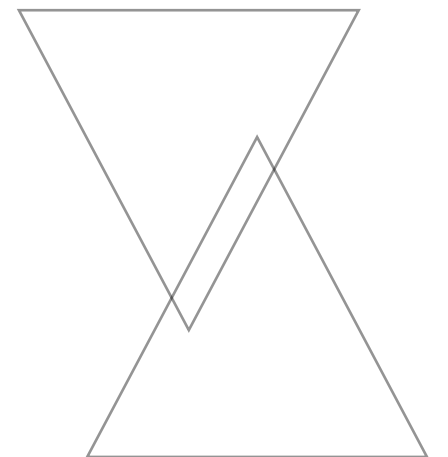
THE AMMUNITION TRAIN

Moveable, Transformable, Functionable



The ammunition train used to be a transfer train with boom, gun, butlet, rocket, AK-47, MP5, hand gun, machine gun, etc, for the army, with the track. And now, we are trying to design

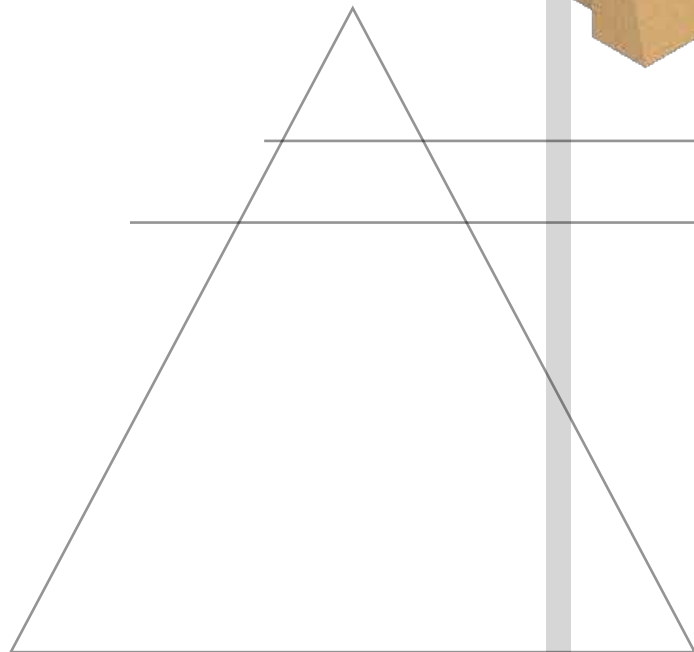
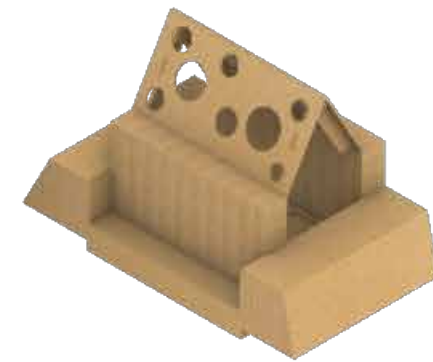
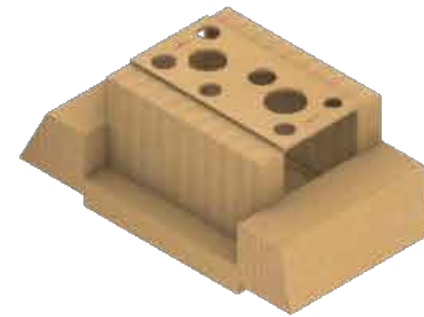
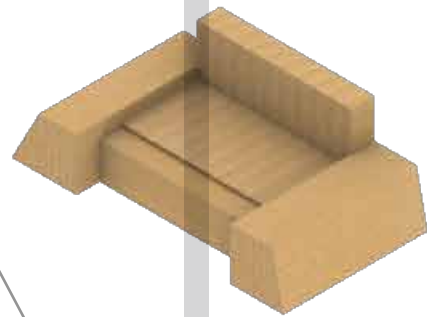
a moveable pavilion with beer, cocktail, alcoholic, gin, rum etc. Moveable pavillion is more efficient than moving table and seat by human force.



THE CONCEPT

DIGITAL FABRICATION AT ASIA SOCIETY

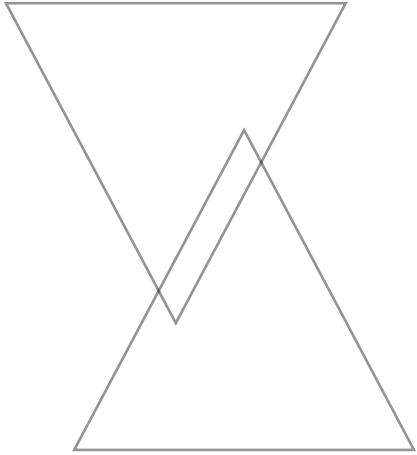
MOVEABLE
TRANSFORMABLE
ENJOYABLE





Our design project is a moveable and playable cocktail bar chair. In first, this train is able to transform for easier storage at the Storage area A or B(subject to weather), such like carts in the supermarket, Tri-wall is the best material for creating a sturdy hollow form. Secondly, we are trying to use the signature site element for our design, the Munitions Track is the signature element on the ground, however, the developer

made the track unusable, for re-use this element, we are decide to use magnet. the magnet wheels are able to direct the train to the right way with the track, this is efficient for staff to move the trains to the open space or storage area. Third, we are creating a sun shade canopy to defense to direct sunlight. The ammunition train able to provide a new functional cocktail bar area for people gathering and party.

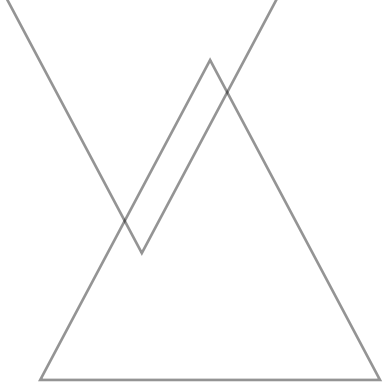




10/10



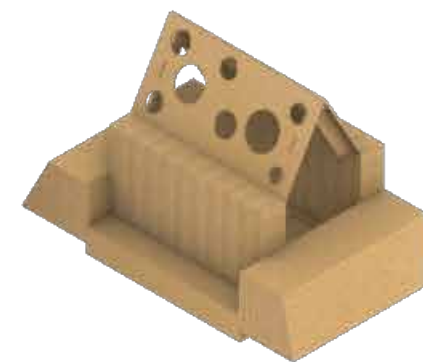
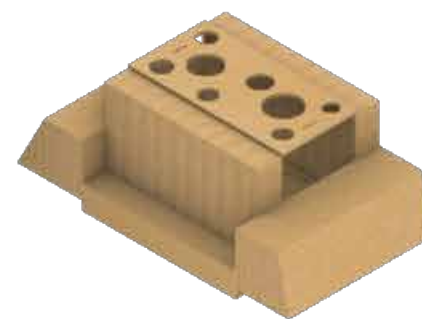
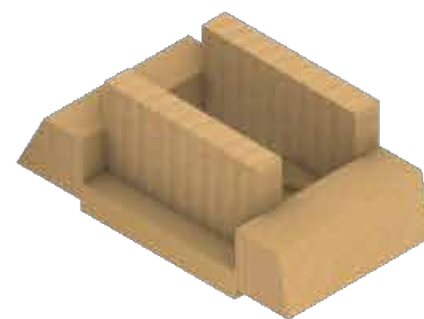
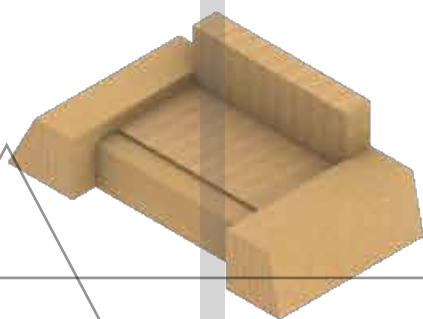
*The Moeable Privillion able to relocate
by following the track with magnet.*



IDEAS OF THE DESIGN

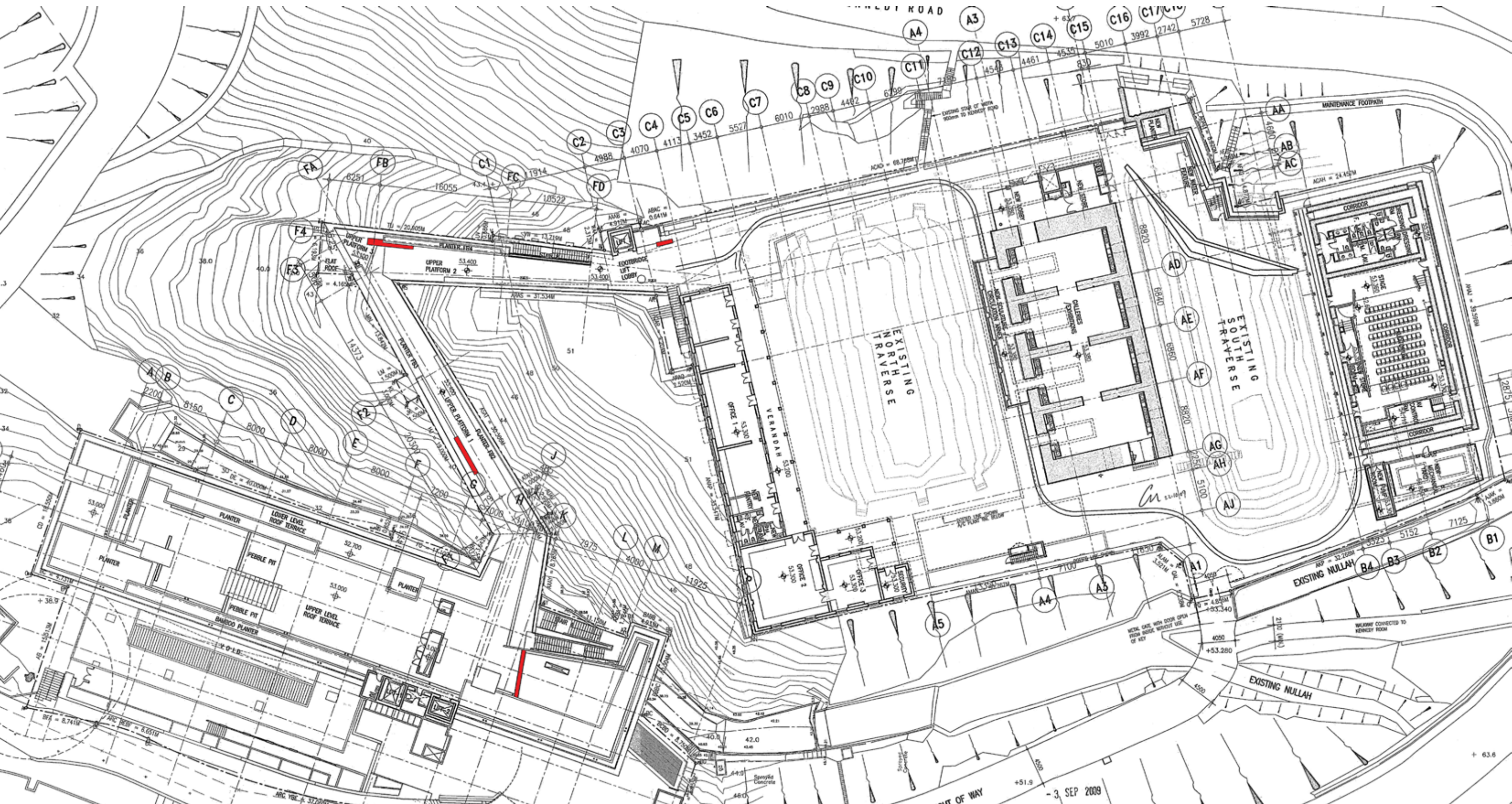
Moveable, Transformable, Functionable

By using the magnet wheels, the design can move and stay on the track. There are two transformations: events' mode and play's mode. For the events' mode, a simple launch form allows people use in the events and exhibitions. When there aren't any events, the product will stay in the play's mode which looks like a house shapes tunnels. Children can go in the tunnel where there are magnets puzzles placed inside the walls and the ground.



SEATING AREA IN AISA SOCIETY

Moveable, Transformable, Functionable



FOR ADULT

Moveable, Transformable, Functionable

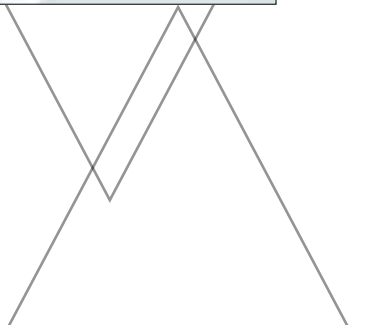
Outside the old lab and magazine A where next to the track, events and gatherings being hold month by month. However, there are not many seats and supportings around there where we think it would be nice if some seating can being place for people who needs since the events may have elderly or disabled people who can stand for a long time. Also, the launch have are flat arms allow people can put their drinks or food on top. cocktail bar area for people gathing and party.

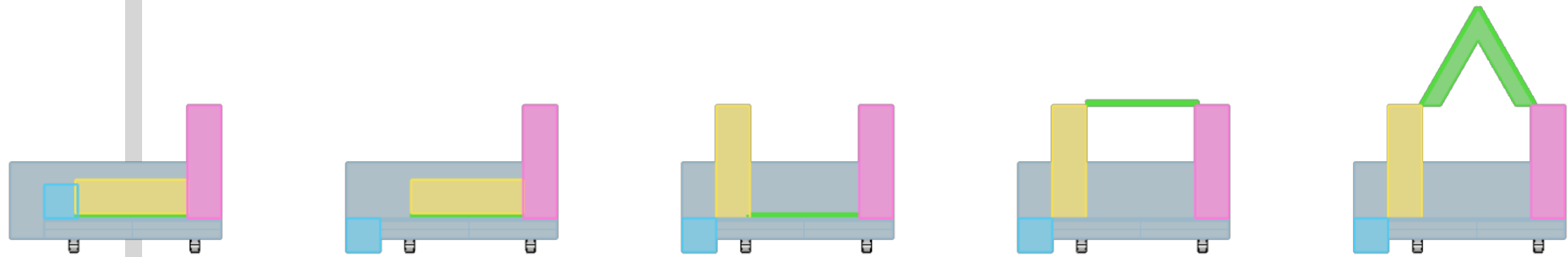


FOR CHILDREN

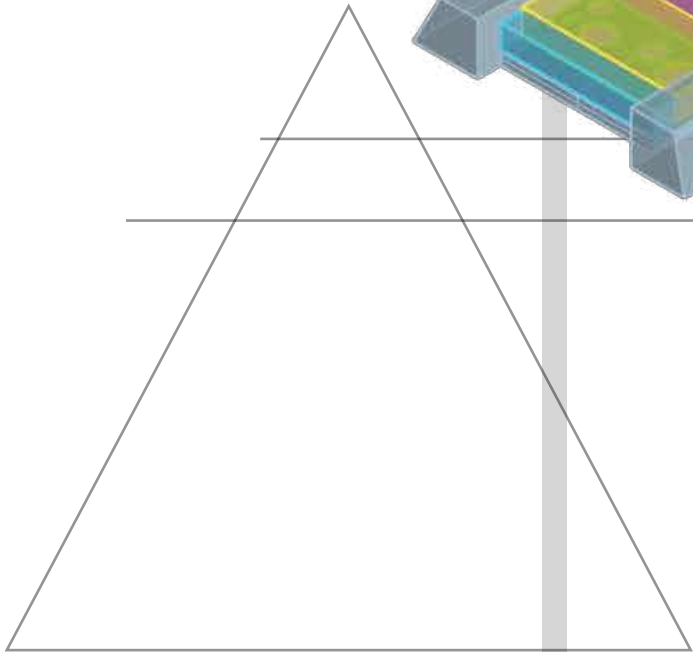
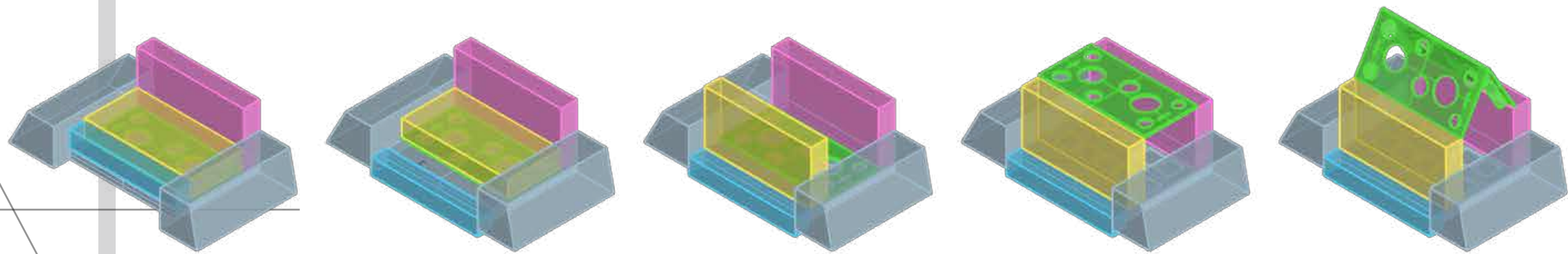
Moveable, Transformable, Functionable

On the other hand, when there aren't any events existed, the product can be transformed into play mode that looks like a house shapes tunnels which allows kids to climb in and out. Inside the tunnels, some magnet puzzles will be placed on the ground. Children can grab it up and stick on the wall to form a pictures of military appliances. The rooftop have different size of circle holes, the kids can look through it and see their family and sky while they having fun.





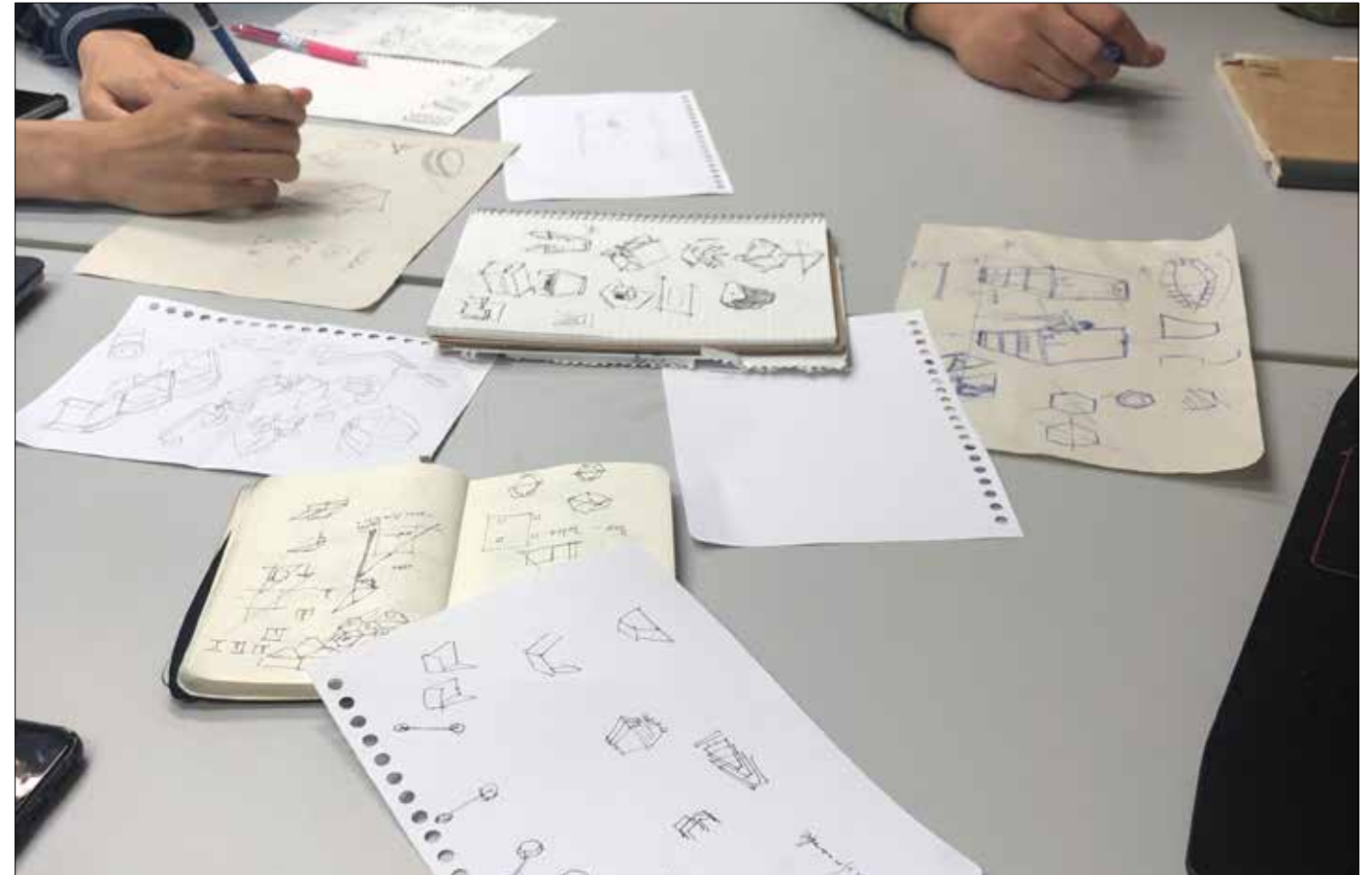
THE
DESIGN
DIGITAL FABRICATION AT ASIA SOCIETY

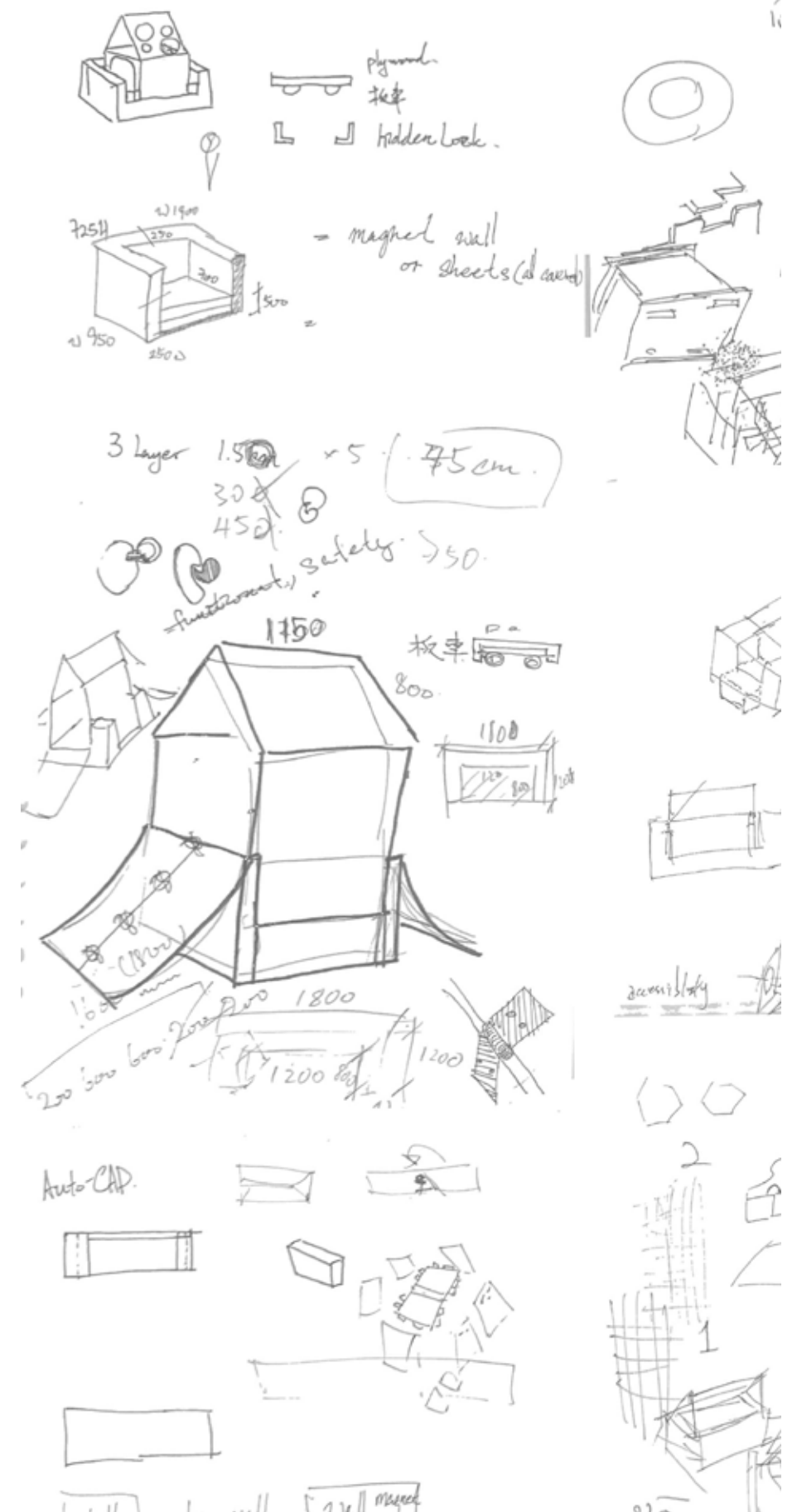
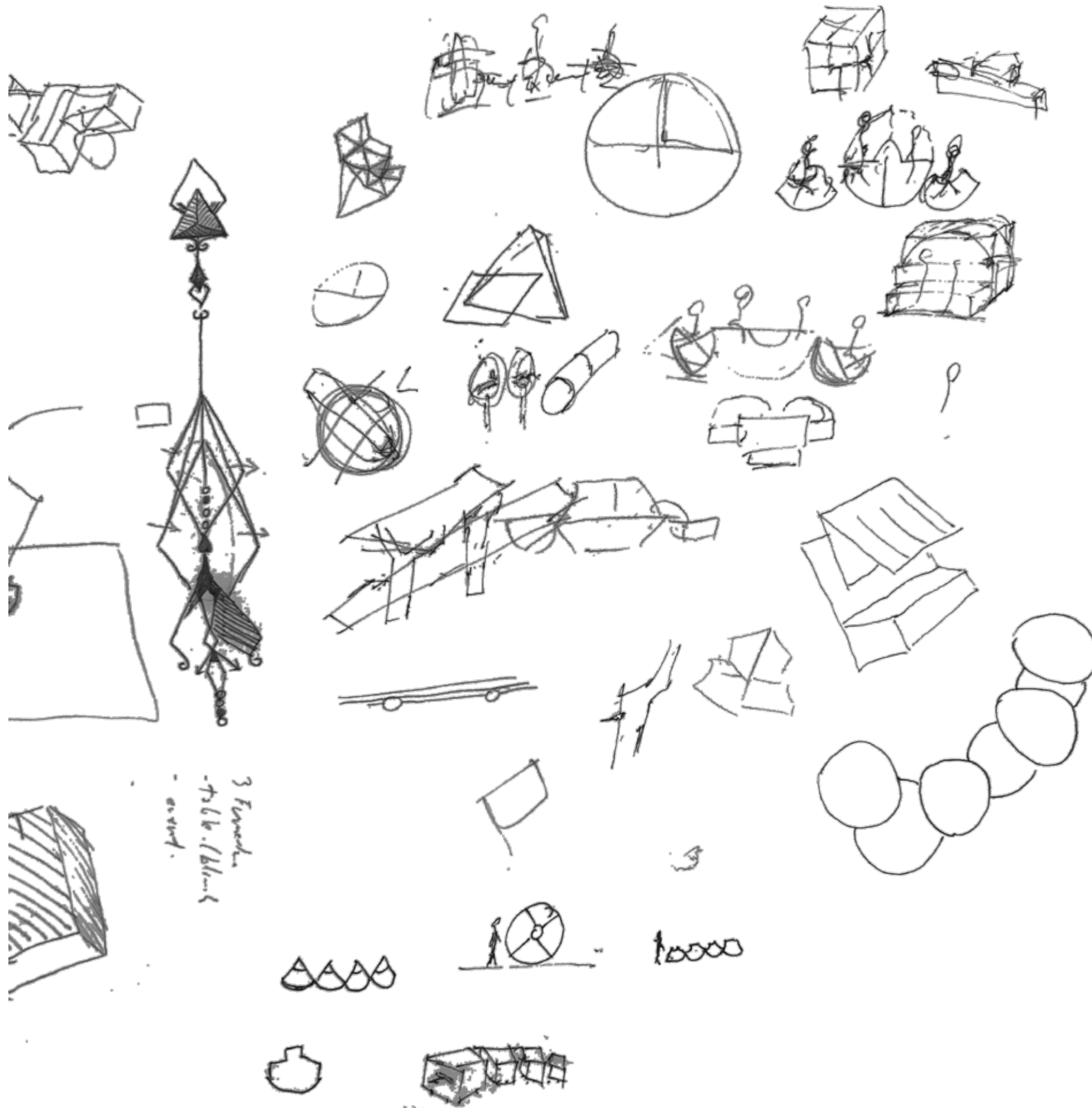


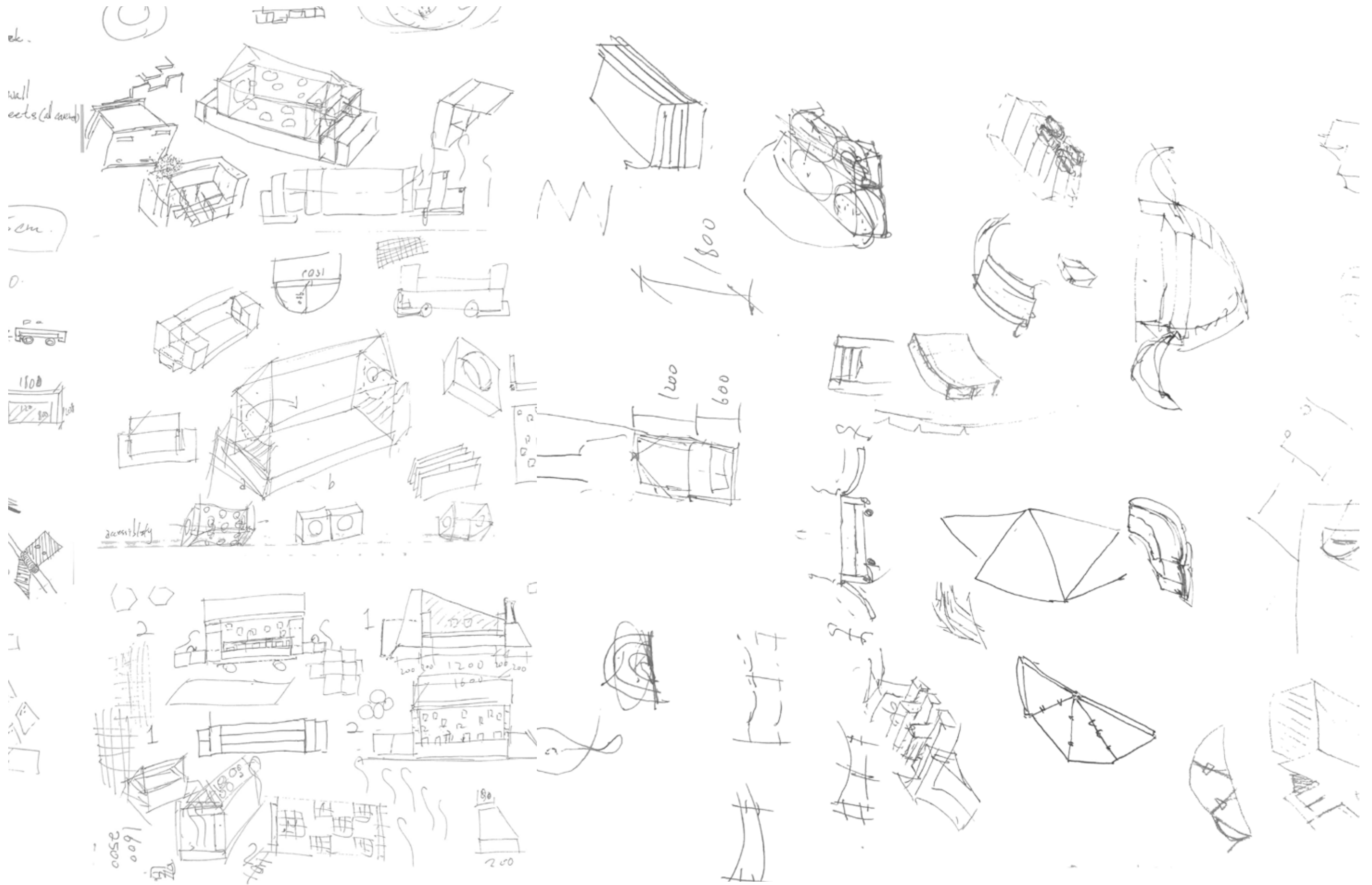
OUR DESIGN DEVELOPMENT

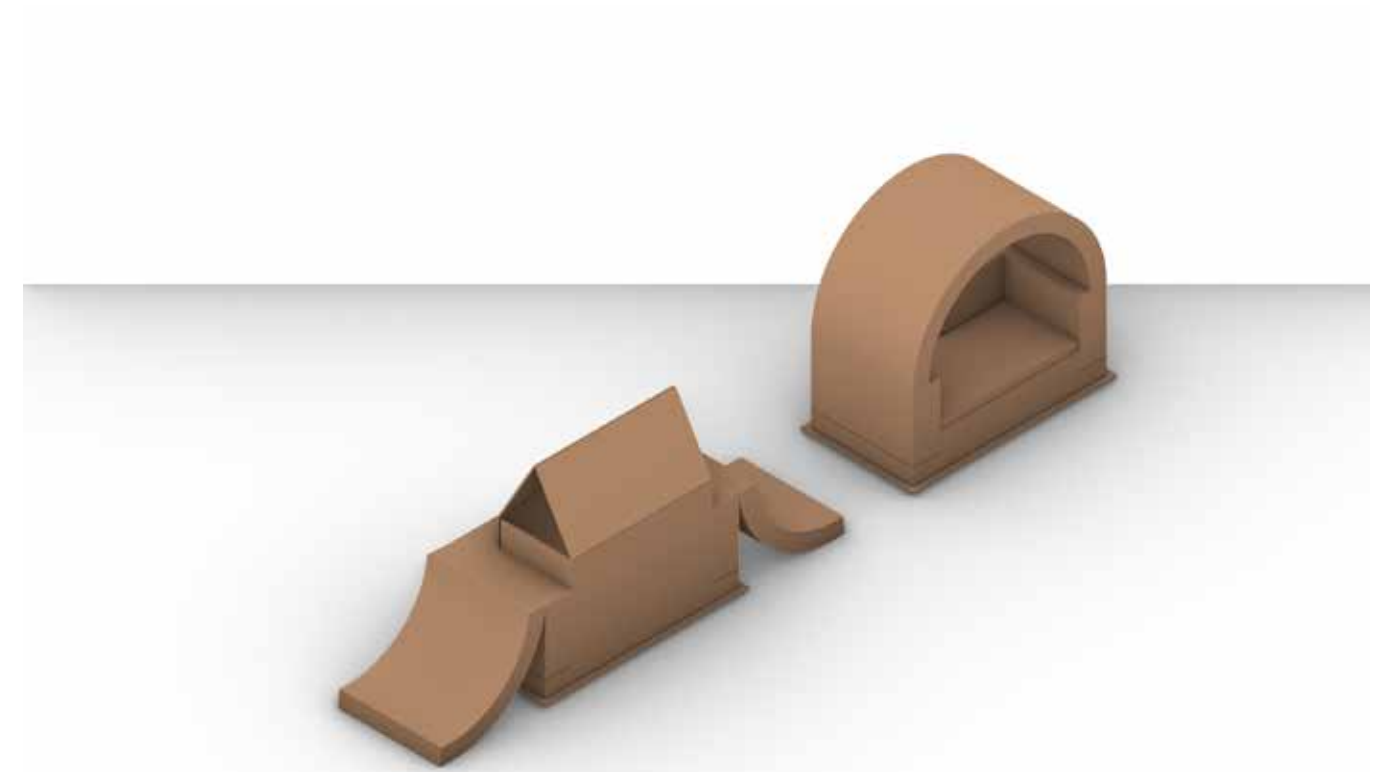
Moveable, Transformable, Functionable

The form of our design have been modified time by time. We would like to create a design that able to use the track outside magazine A since it is one of the historical relics. There are some hand sketches of out first ideas.

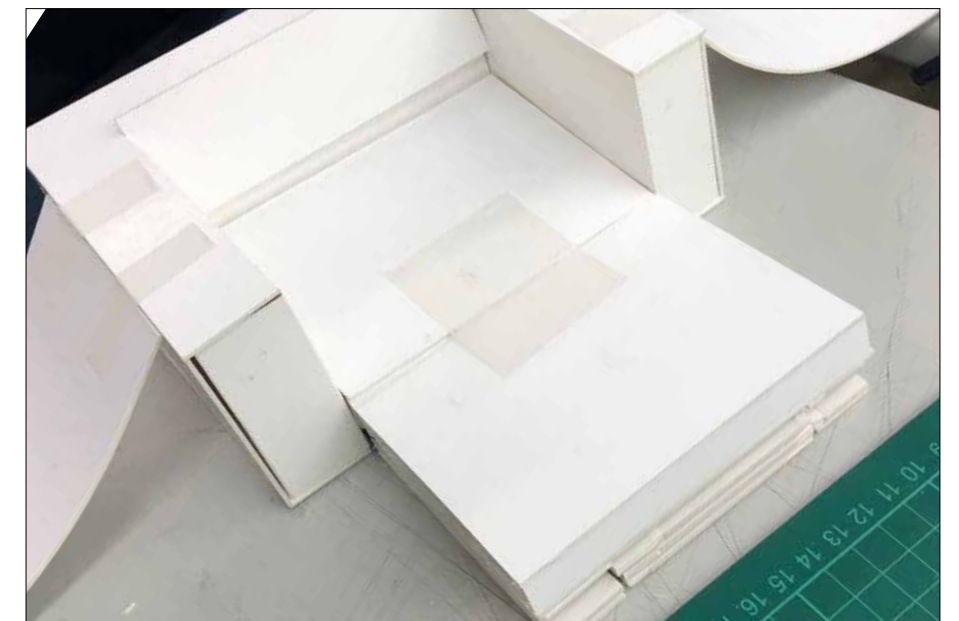
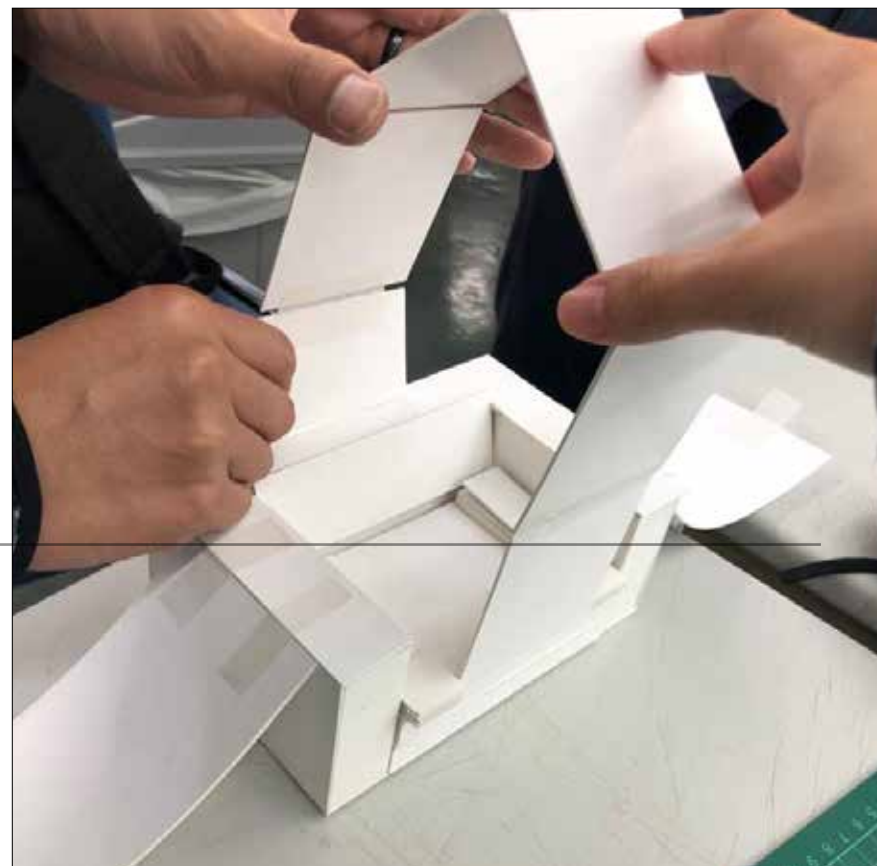
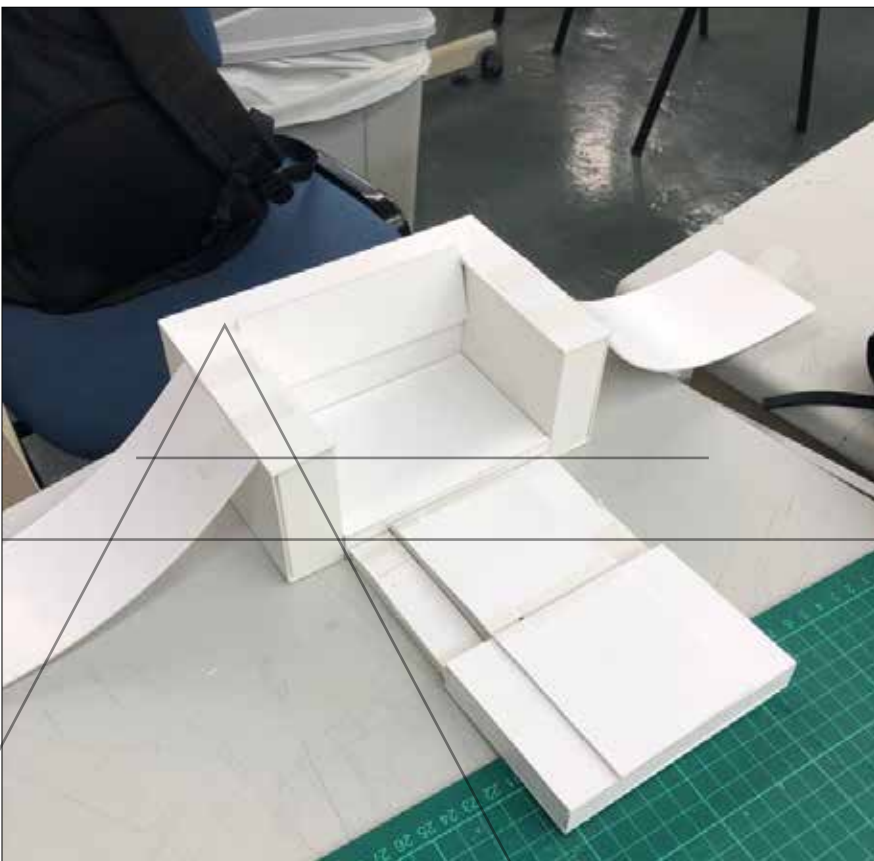


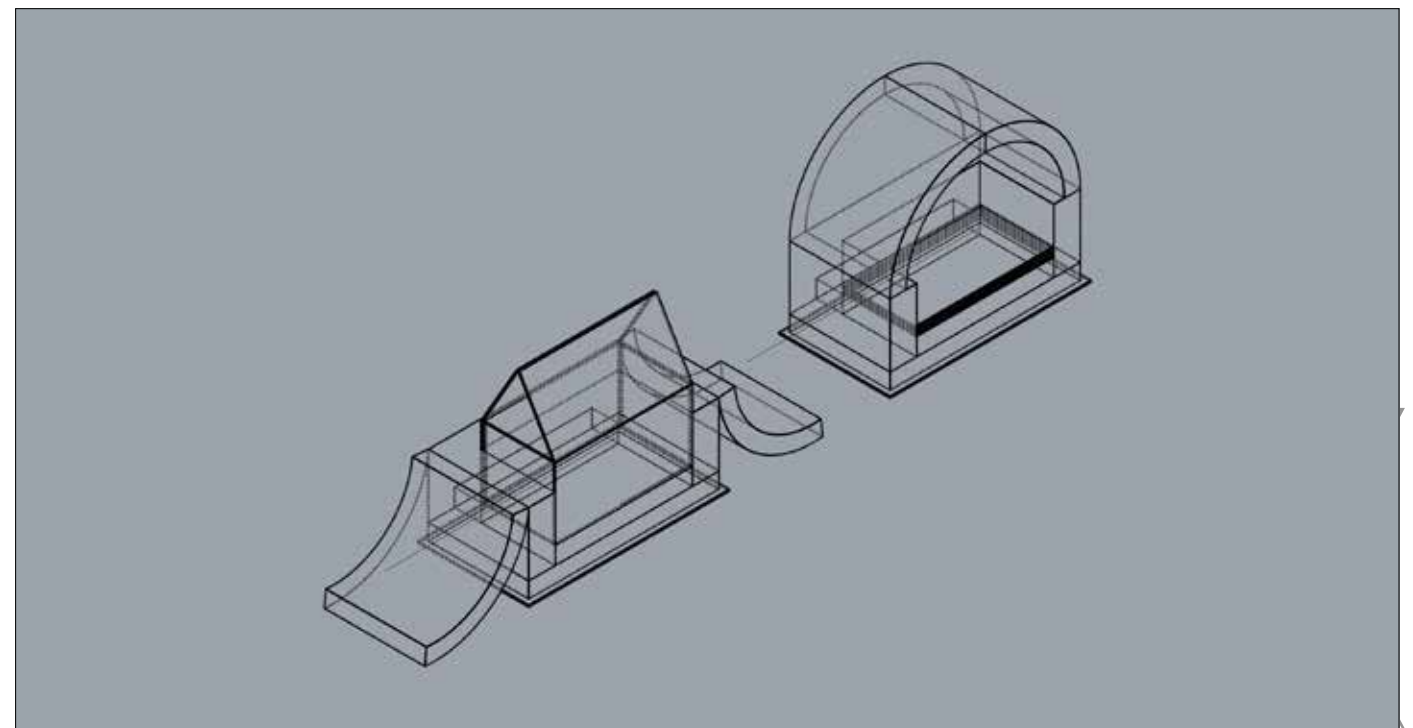
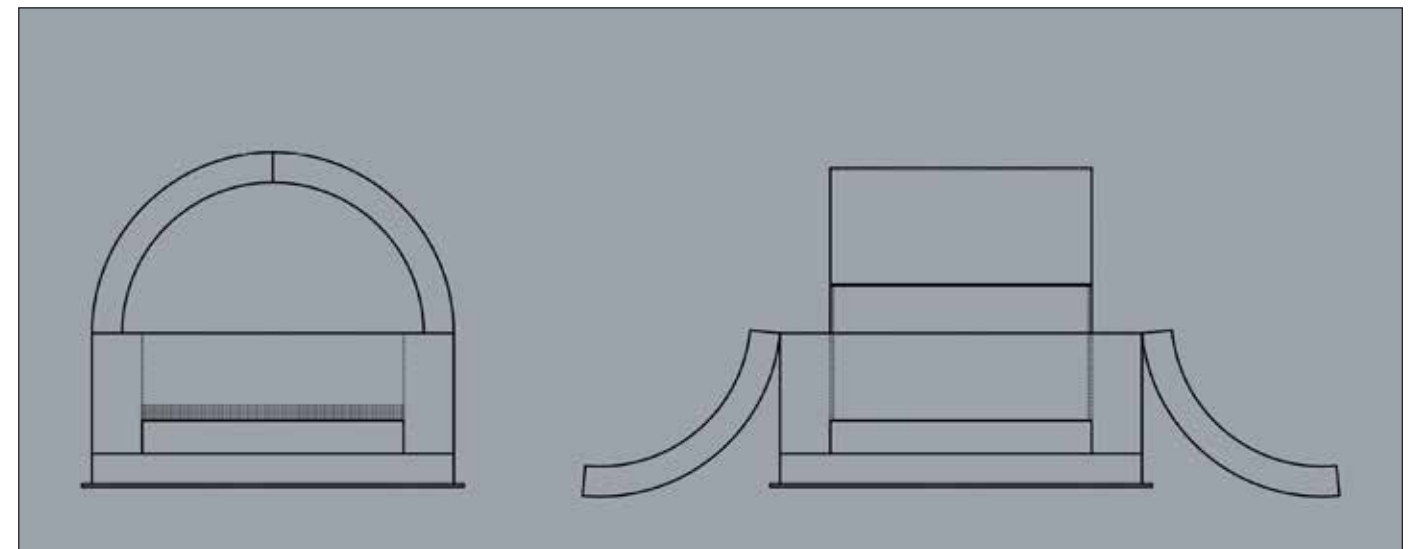
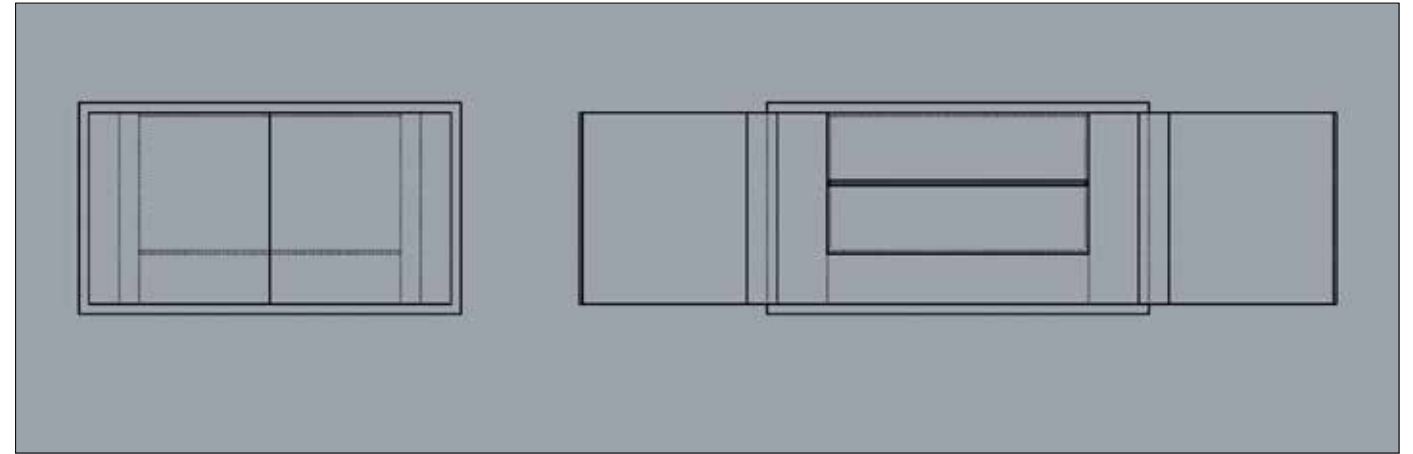






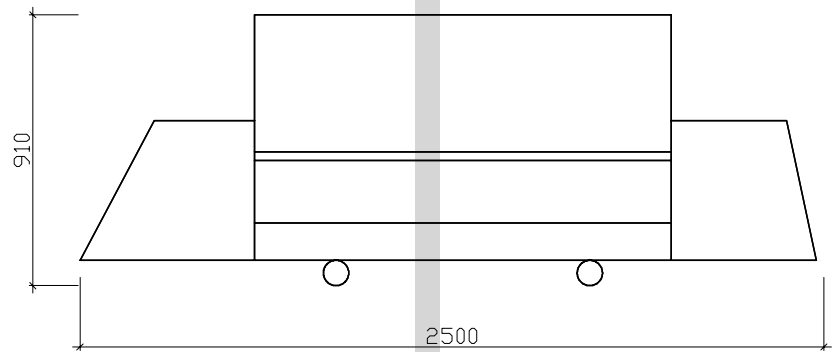
*The Moeable Privillion able to relocate
by following the track with magnet.*



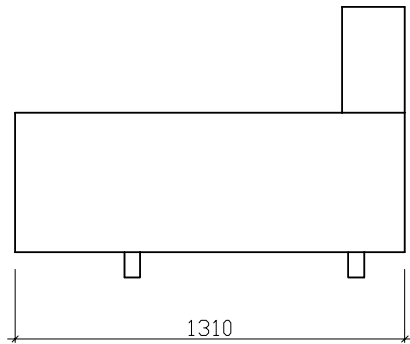


FINAL DESIGN

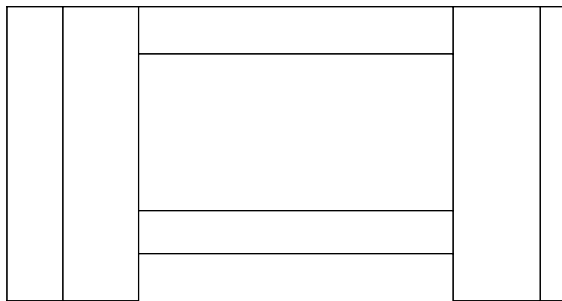
Moveable, Transformable, Functionable



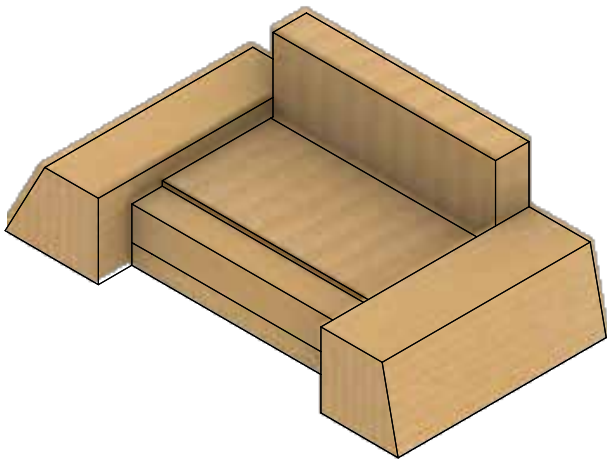
front view



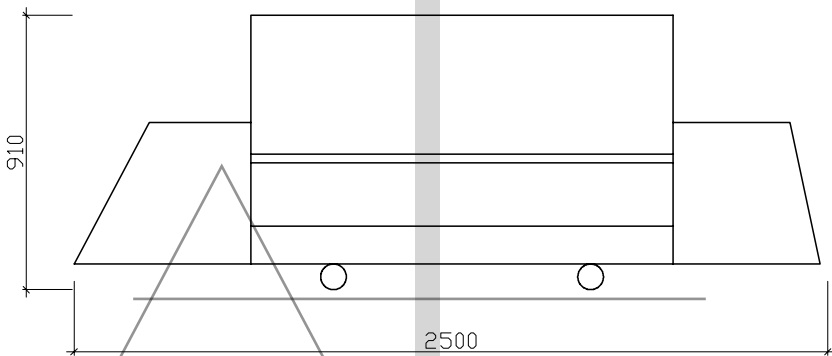
side view



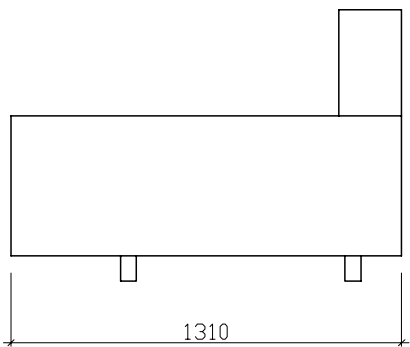
top view



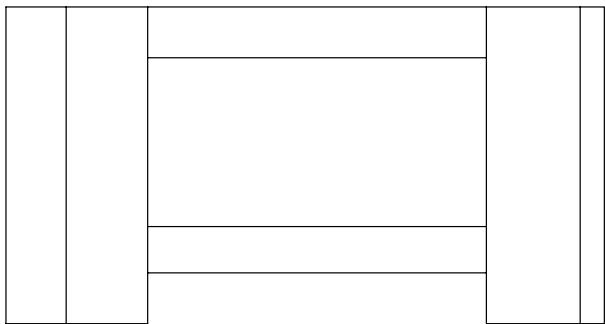
the Events' mode



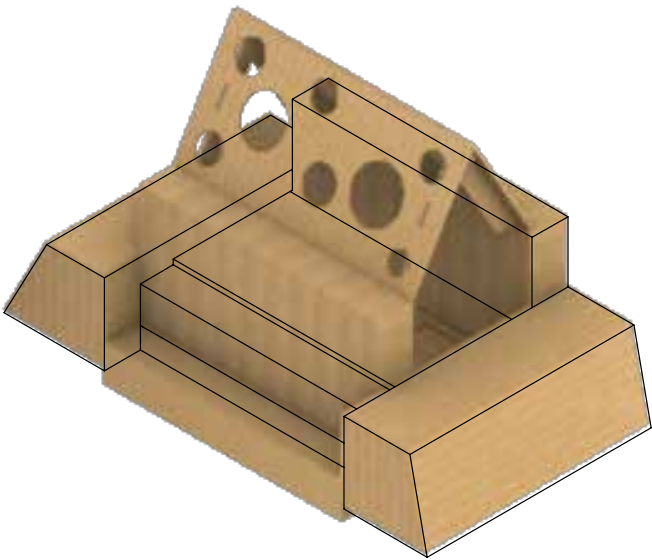
front view



side view



top view

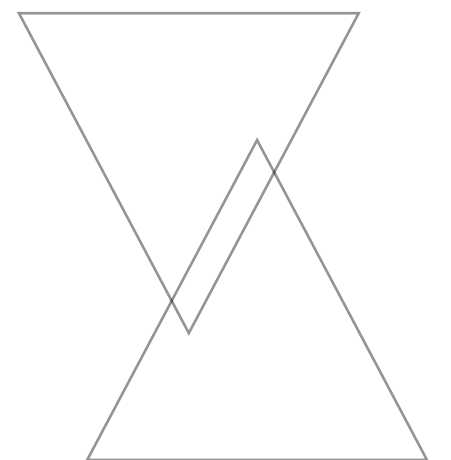


the play mode

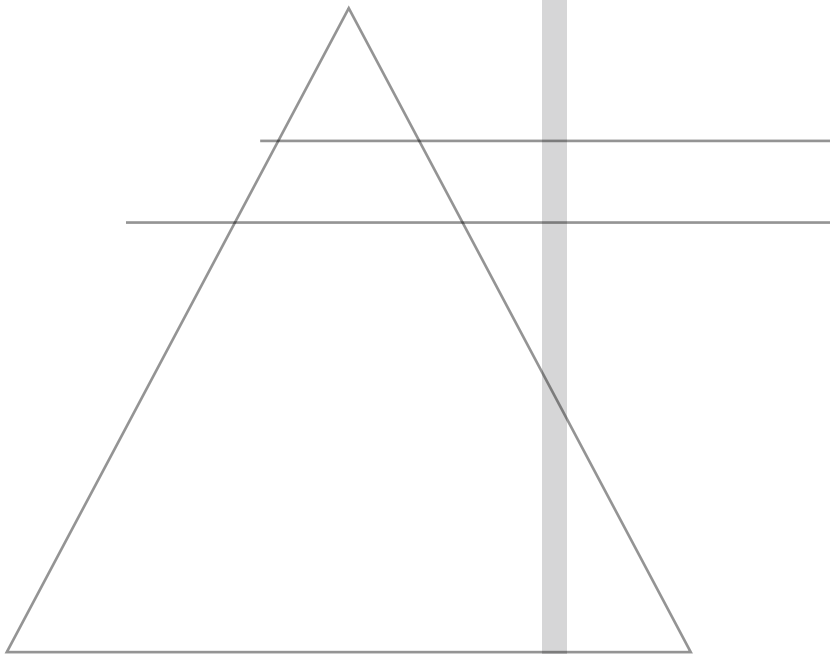
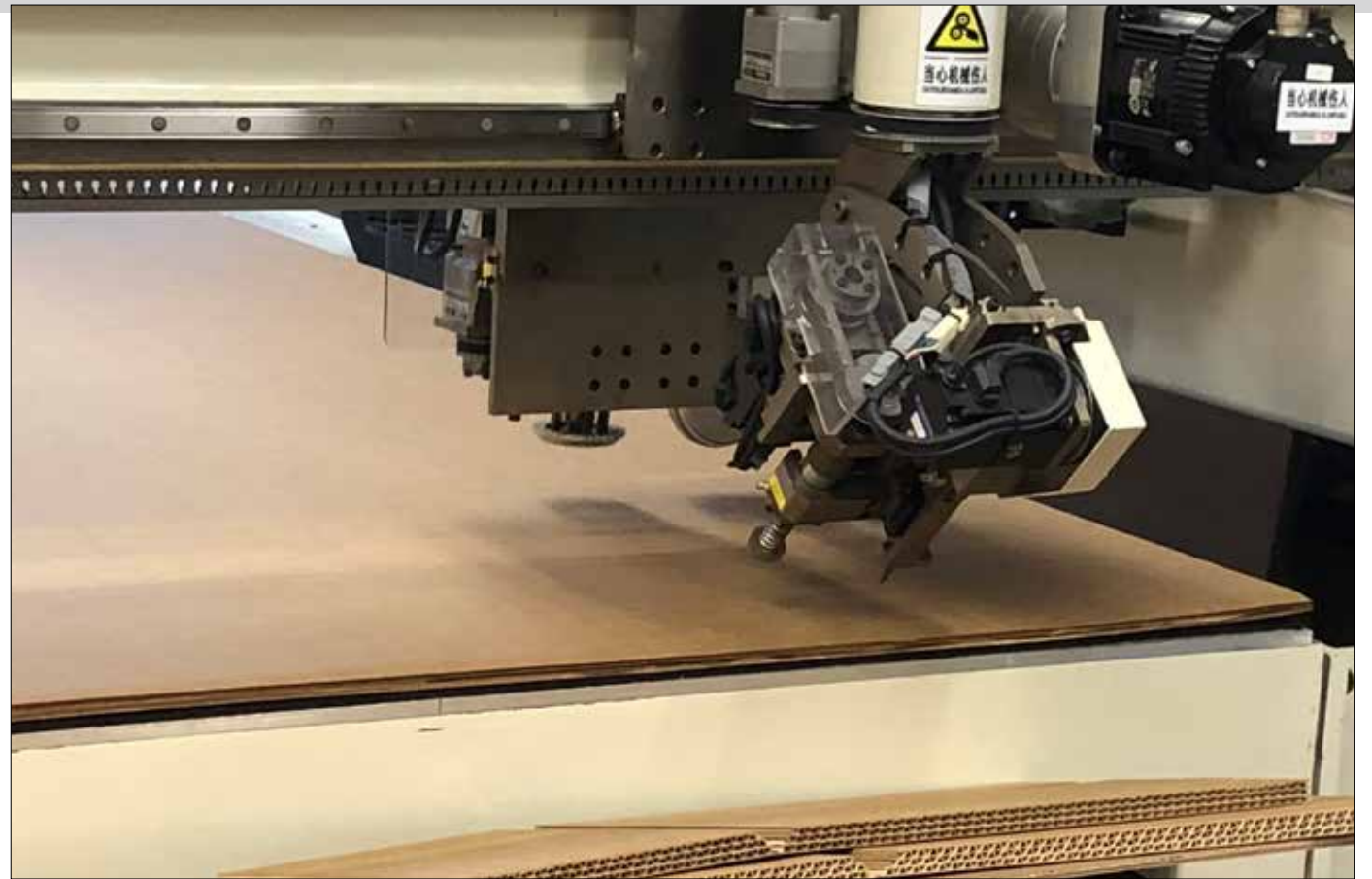
PRODUCTION PROCESS

Moveable, Transformable, Functionable

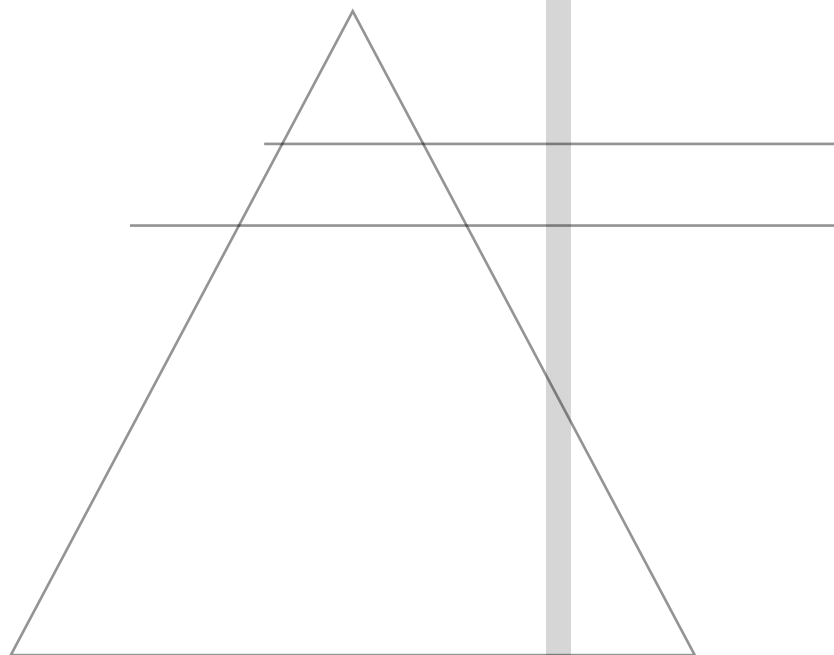
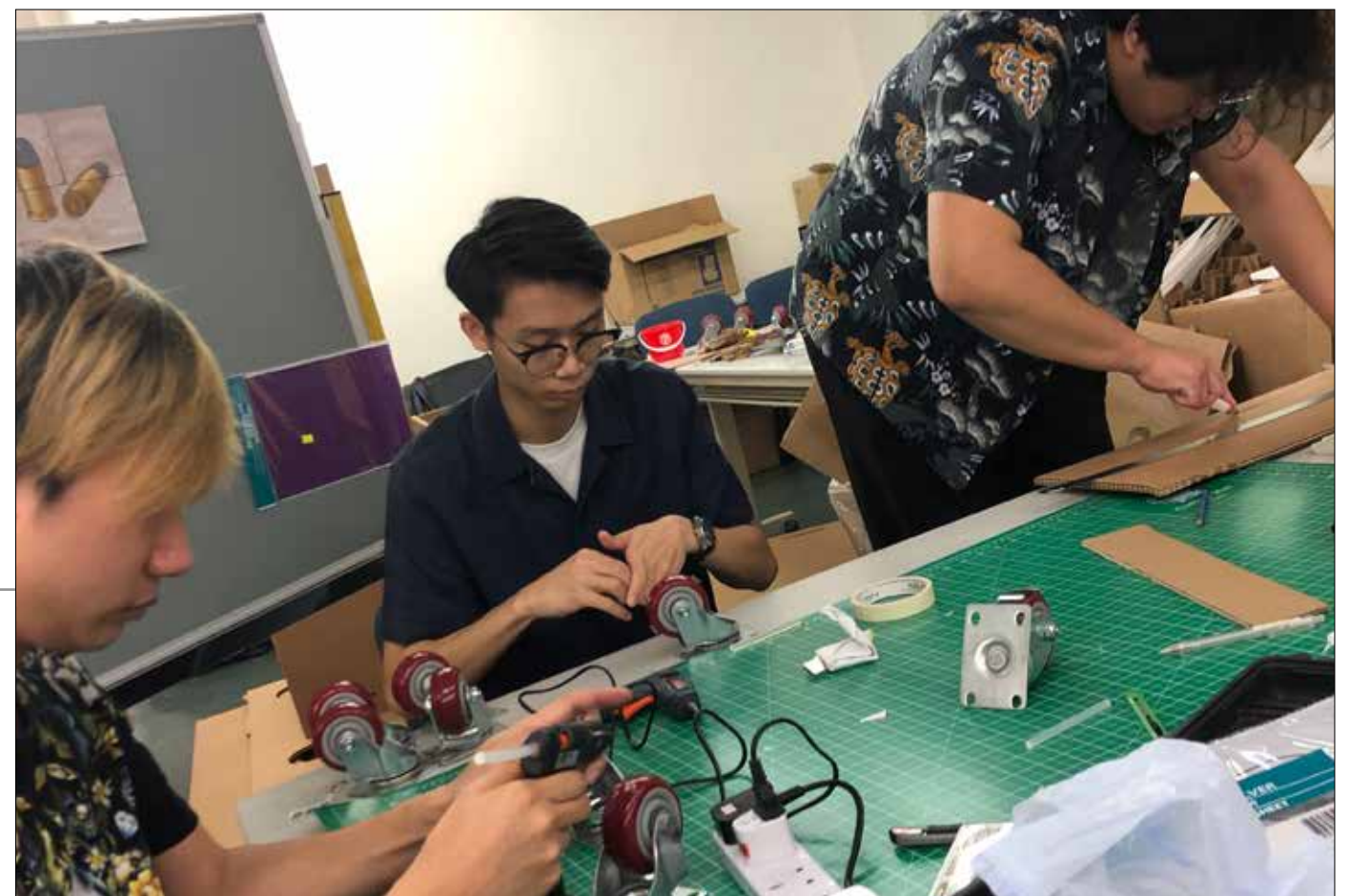
When the final form of the design is confirmed, we went to Mori San studio to do the tri-wall cutting and go to gather the other materials we need such as the magnets, wheels and the painting colours.



Afterwards, during the build up, we discover some of the joints and the structure of the rooftop may not as stable as we think it is. Therefore we add up some interlocking systems to make sure it is solid.

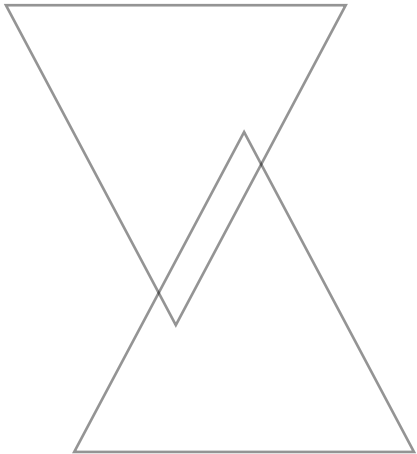


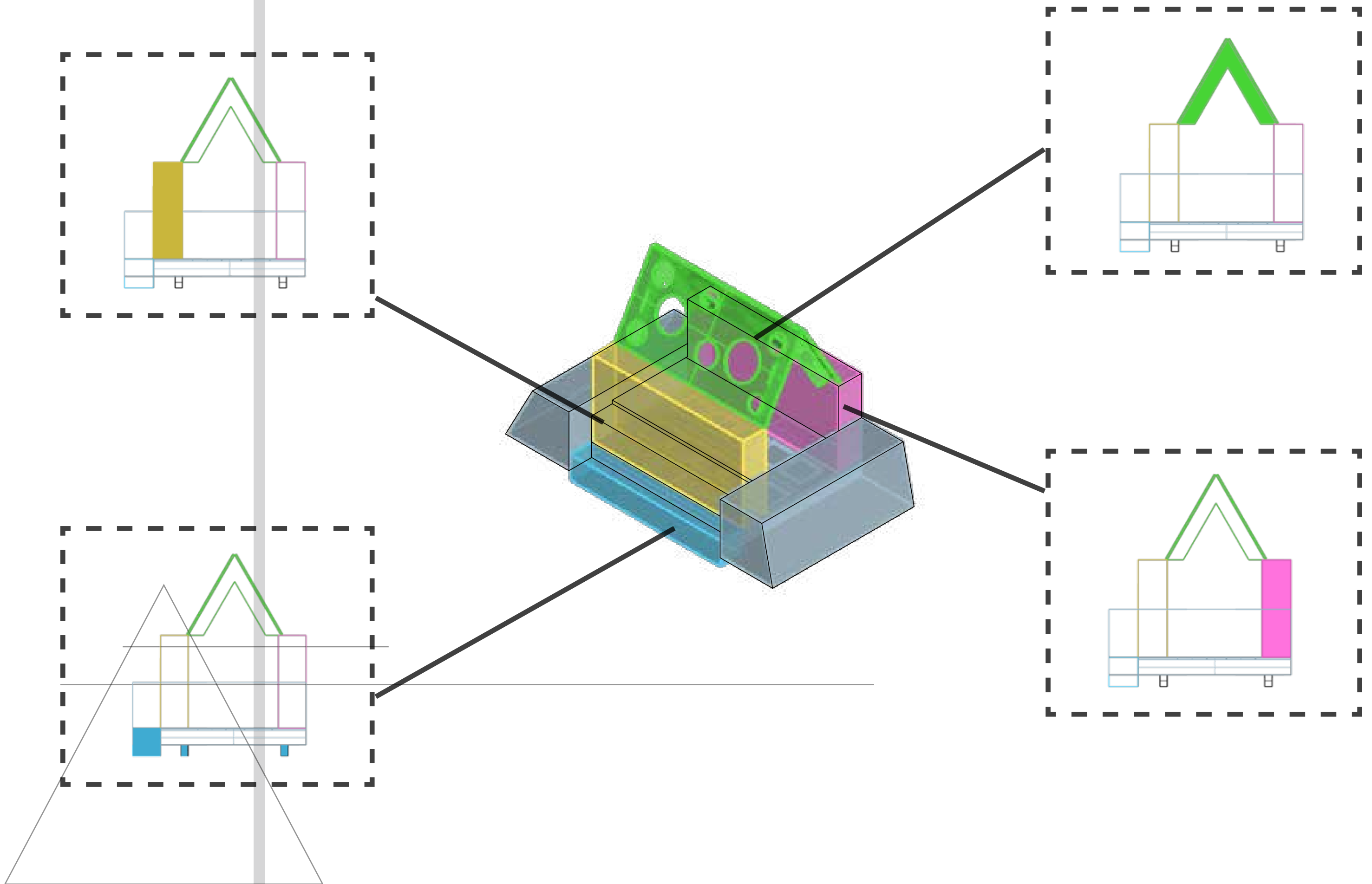




PRODUCTION PROCESS & DETAILS

Moveable, Transformable, Functionable

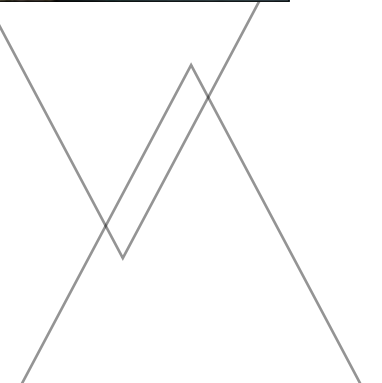
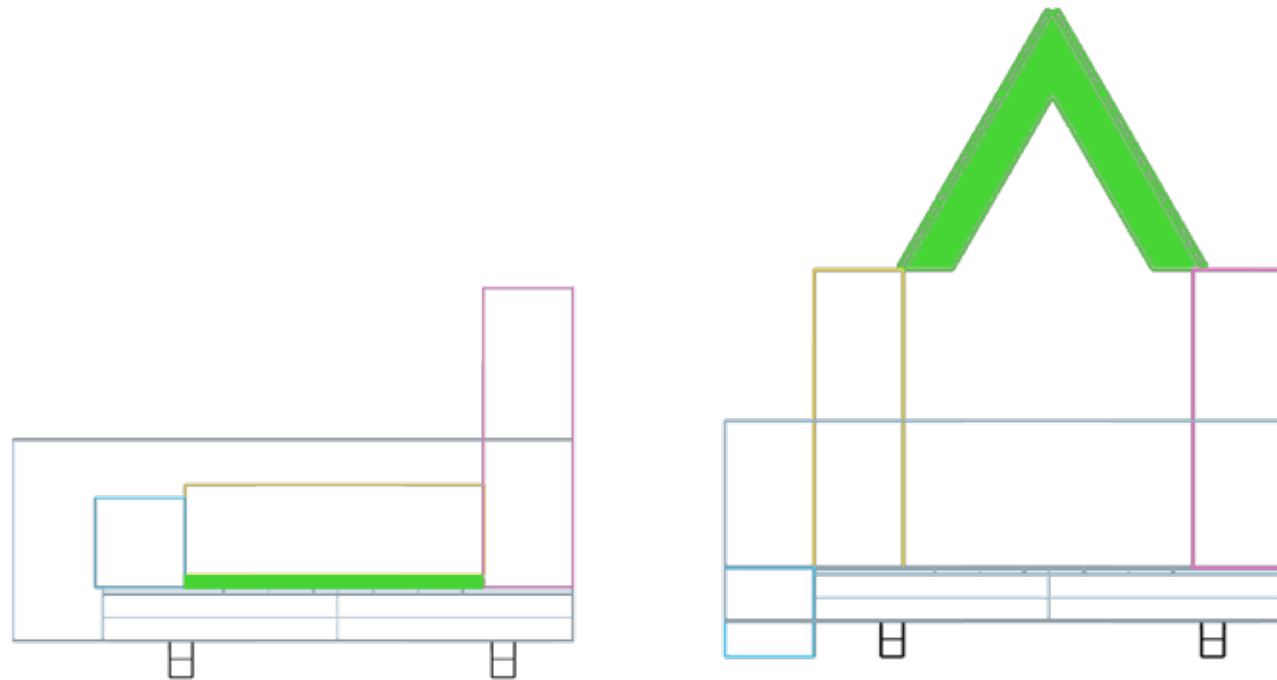




CANOPY

Moveable, Transformable, Functionable

The cover of the tunnel can be flipped and hided inside when the it needed transform back to event's mode. With the circle hollows, parents can watch their children while they are playing.

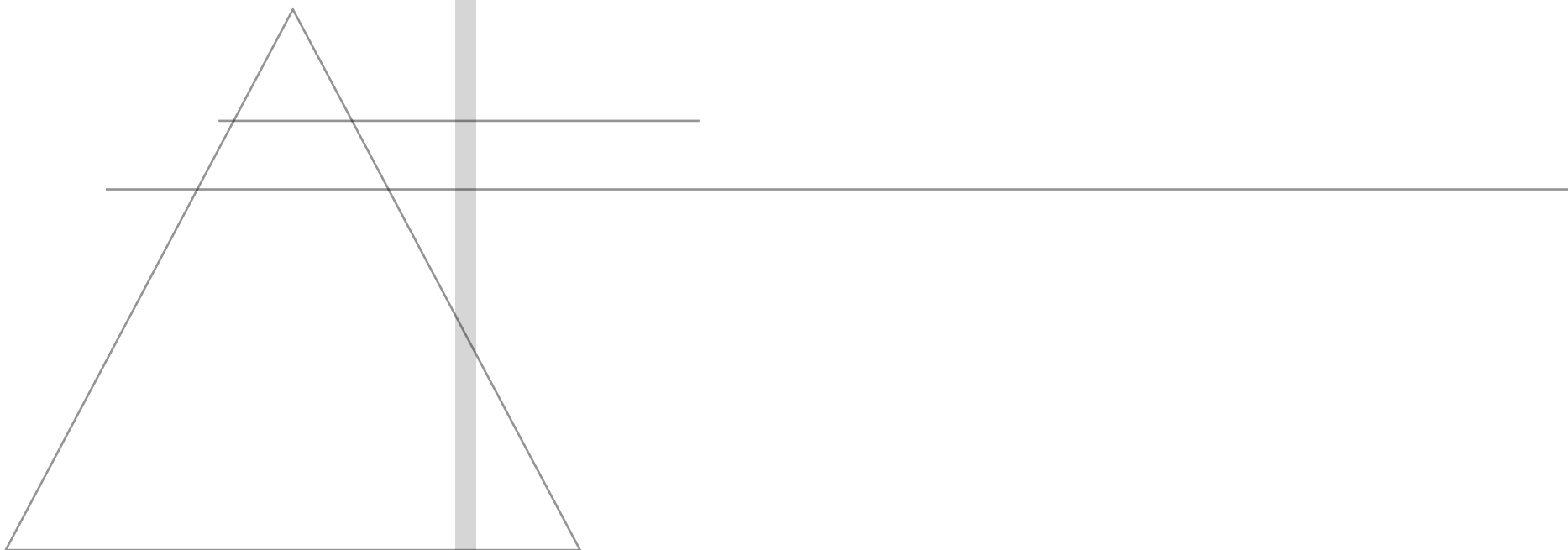






WHEEL AND BREAK SYSTEM

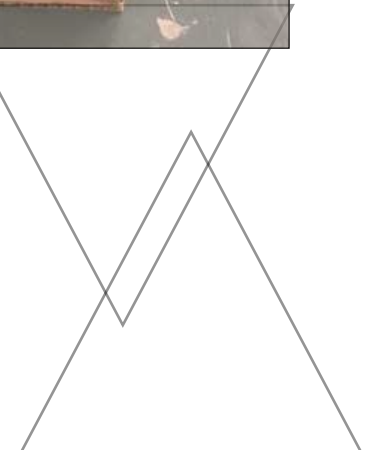
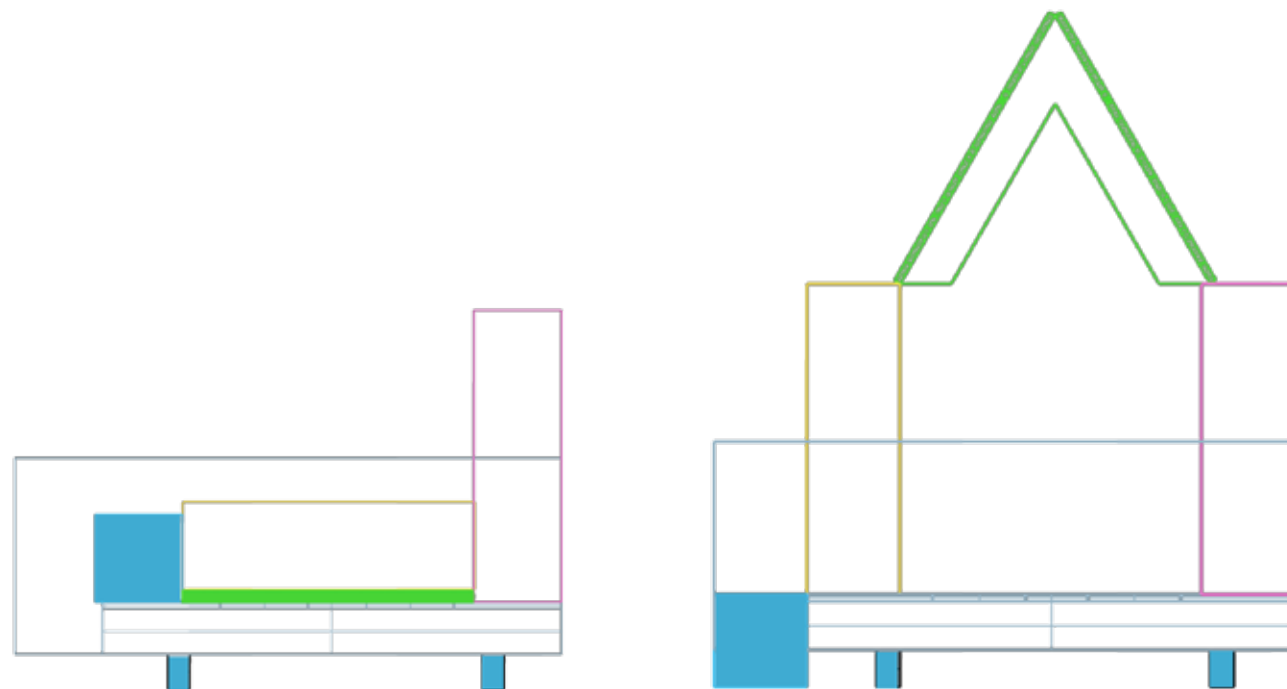
Moveable, Transformable, Functionable



BEAM

Moveable, Transformable, Functionable

Beam is created for a supporting use because of the event's mode, the canopy and the one side of the wall will flipped back to form the launch shapes.



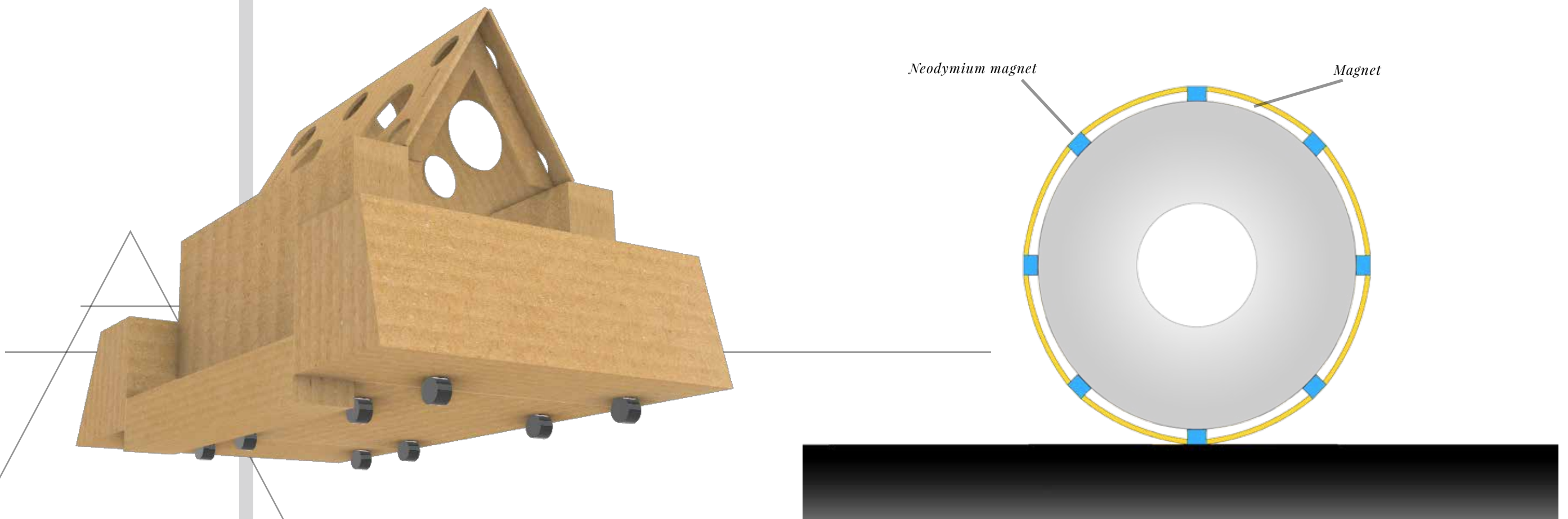
WHEELS

Moveable, Transformable, Functionable

Since we would like to use the track outside the magazine A and B, we created a magnet wheels and place it under. There are two different magnetic forces in the wheel where eight pieces of magnets have much stronger forces so the wheel can attach on the track. The rest of it are the magnets just for supporting. There will be some supporting wheel on two sides.

Neodymium magnet

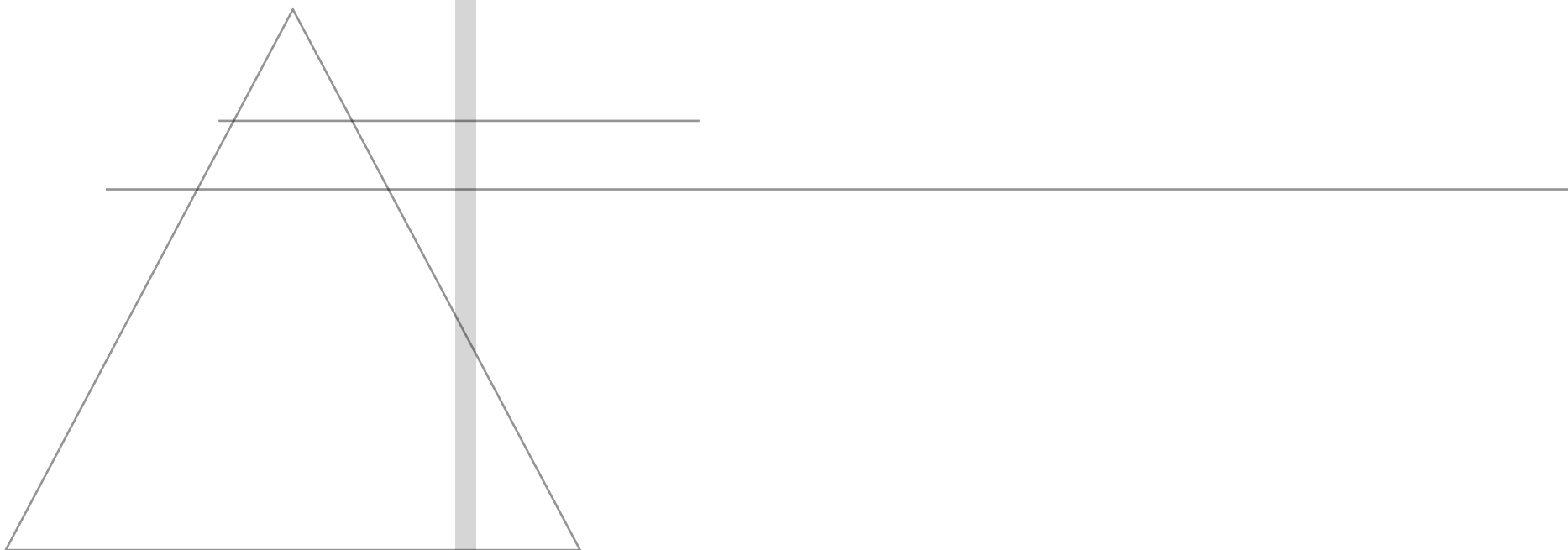
Magnet





PLAY MODE

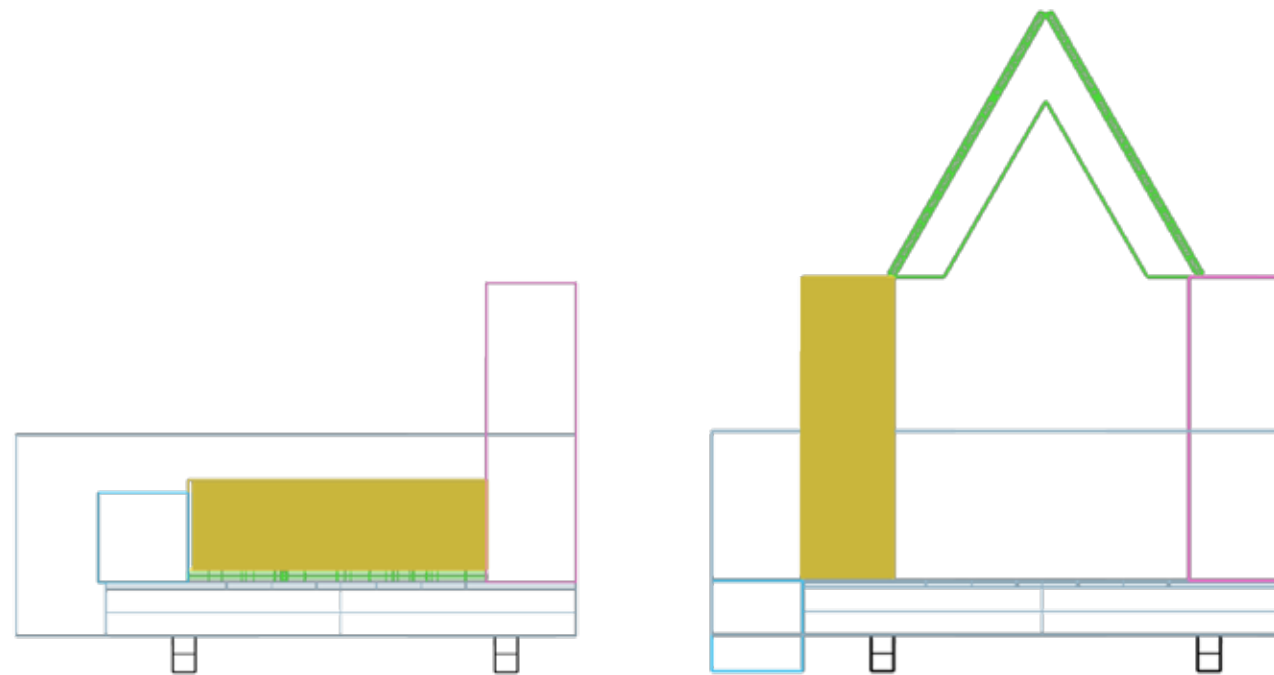
Moveable, Transformable, Functionable



WALLS AND TUNNELS

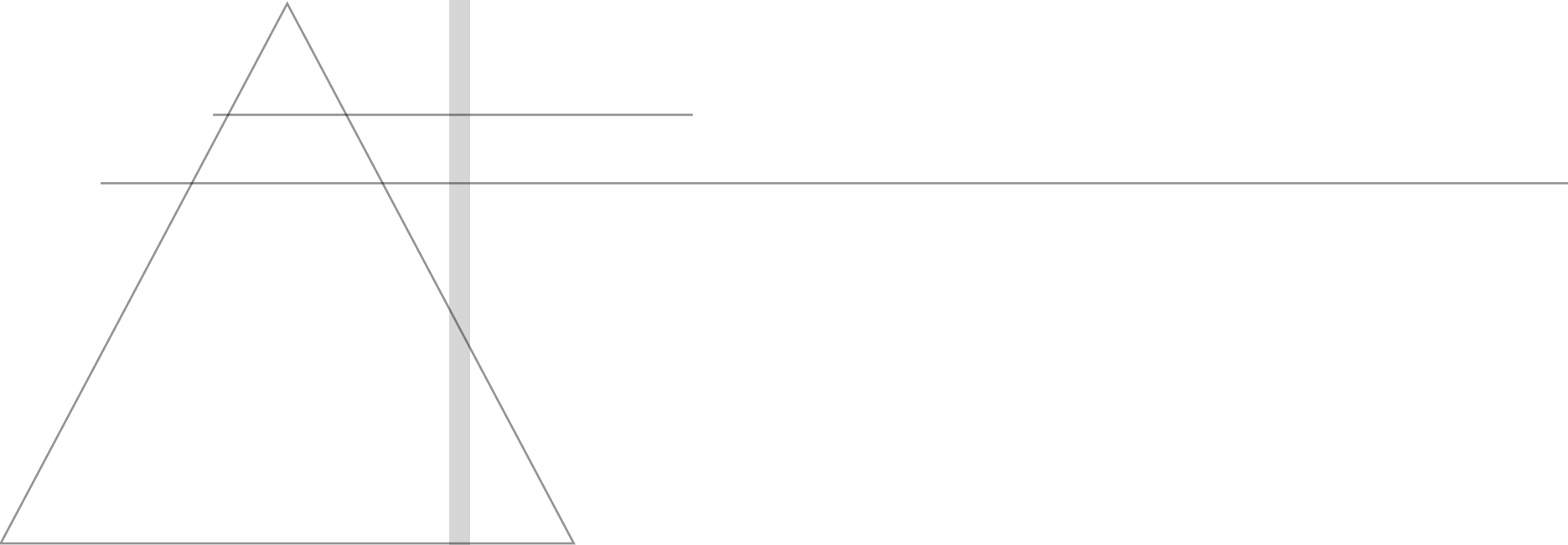
Moveable, Transformable, Functionable

Here is a joint problem we have fixed. When we flip the wall over, there are some grab and the joints needed to be redesign. Therefore, we add one more layer for us to attach the new joints.



EARTHQUAKE-RESISTANT STRUCTURES SYSTEM

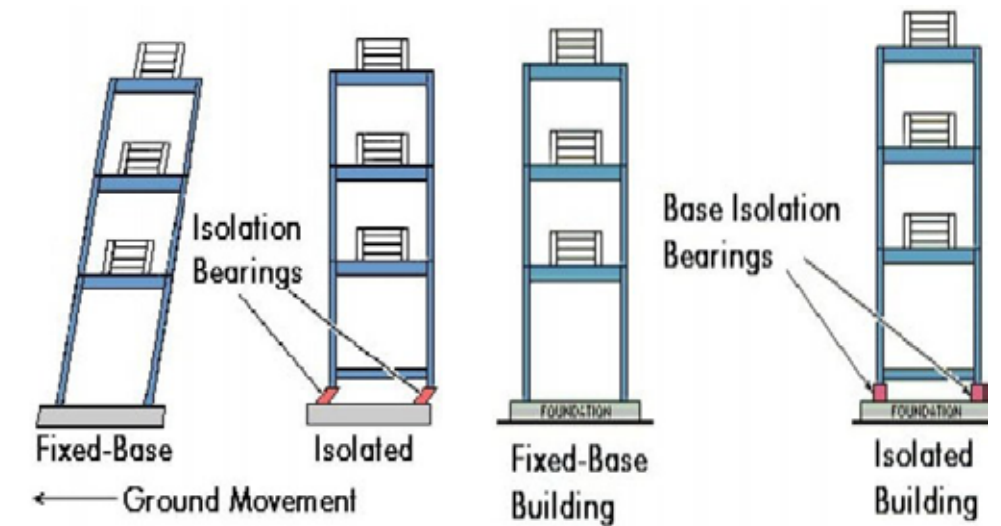
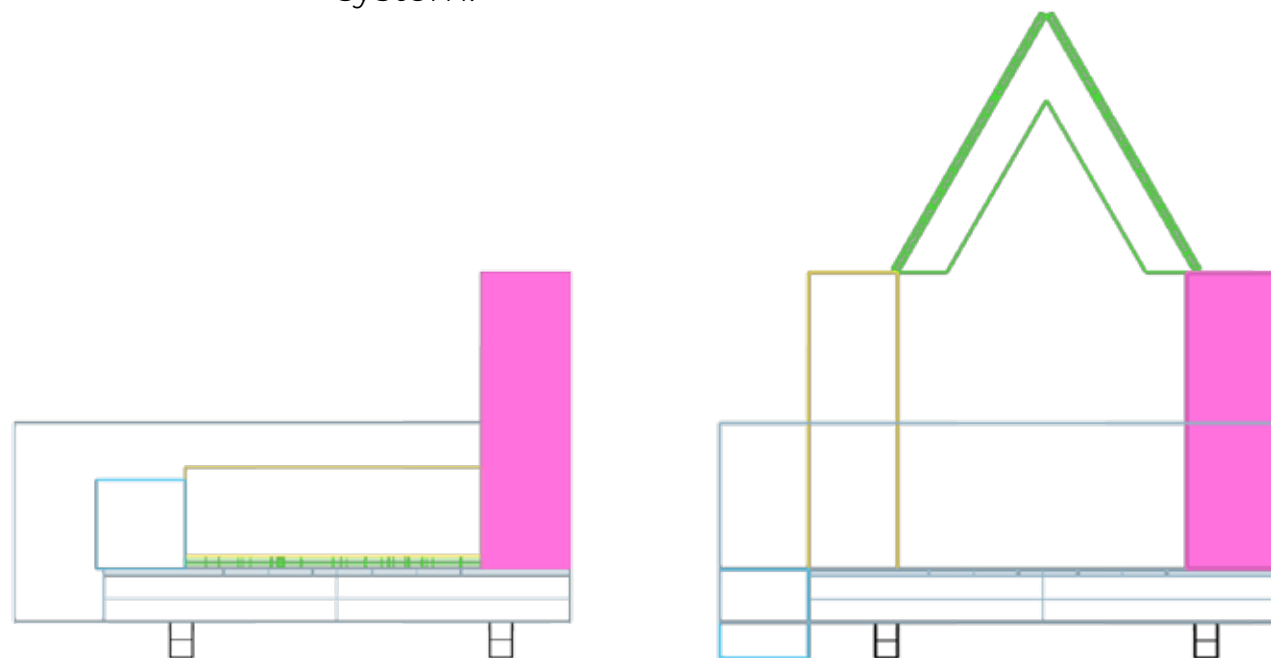
Moveable, Transformable, Functionable



EARTHQUAKE-RESISTANT STRUCTURES SYSTEM

Moveable, Transformable, Functionable

As we all know, children are monsters, they are able to collapse everything when they are having fun, in order to prevent this massive disaster, we studied some architecture structures in Japan which are able to absorb the force from earthquake, that is it, earthquake resistant structures system.

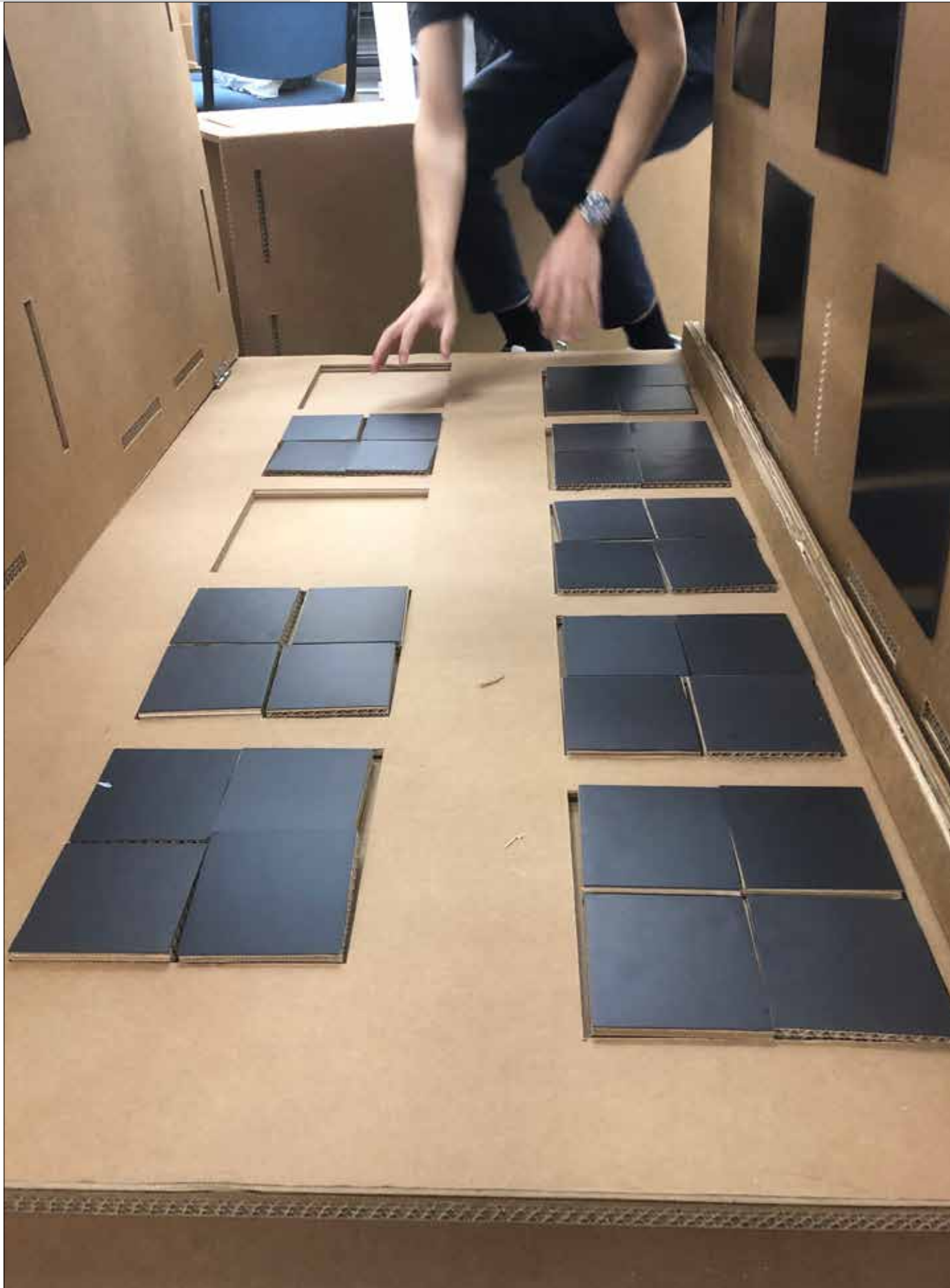


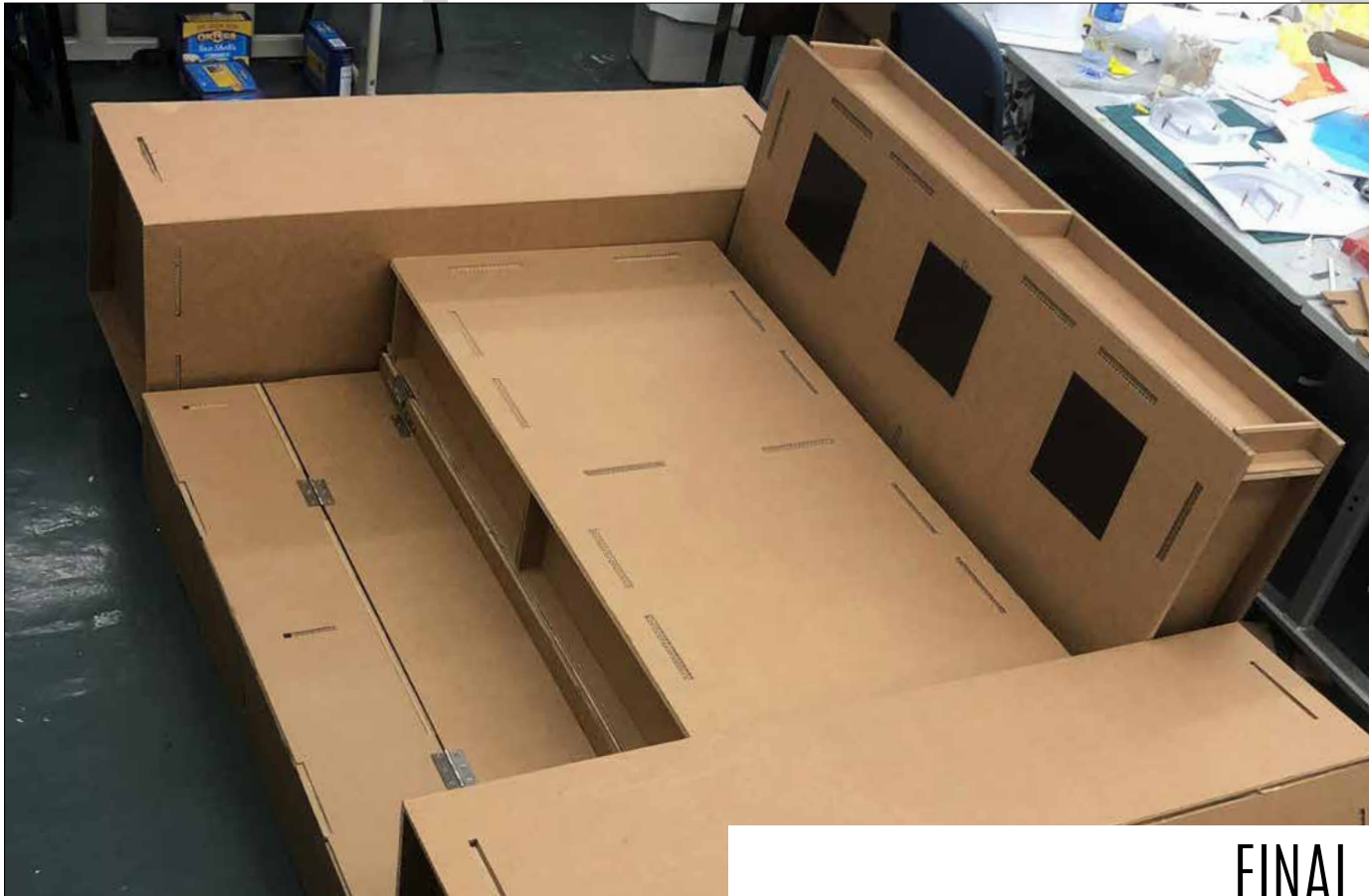
PROTABLE SEATING

Moveable, Transformable, Functionable

Inside the tunnels, some magnet puzzles will be placed on the ground. Children can grab it up and stick on the wall to form a pictures of military appliances. there about 40 puzzels which can form 10 pictures







FINAL PRODUCT

Moveable, Transformable, Functionable





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