Environmental Sustainable Design (ARC1413)

Proposal

Project 1: Paying it Forward

Tutor: Ms. Suja

Members :

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LASS
Lost Animal Souls Shelter

Introduction:

In the beginning, we got to know that a non-profit animal shelter by the name of "Lost Animal Soul Shelter" (LASS) needed some help to improve its current environment. The animal shelter is located in an isolated area in Batang Berjuntai. It is a house for more than a hundred destitute abandoned dogs mainly from KL and Seremban area. After some conversations over the phone and emails with the founder of LASS, Ms Vignes, we decided to make a play area for the puppies that are in the animal shelter.

There are several reasons to why we are asked and decided to do the play area for puppies. Firstly, there is an empty land in the shelter itself measuring (1494 x 1123) cm^2 in which Ms Vignes hopes to make use of that piece of land to do something better. Secondly, there are some puppies in the shelter which are not able to live and sleep with the matured dogs as the matured dogs are larger in size and more aggressive, therefore the puppies have no choice but to stay with the workers themselves. Lastly, we would like to provide a protected, sustainable, and healthy place for the puppies to live in each day.

We are asked to finish making the play area for the puppies before 19th of May this year as it will be the grand opening day for LASS.

Project Objective:

1. To increase awareness of current issues regarding stray and abandoned animals, and most specifically dogs locally.
2. To induce creativity in attempting to explore the requirements needed for dogs as it differs from human needs
3. To allow students to explore the opportunity to work with the community and for the community
4. To create awareness of the importance of creating and environmentally sustainable product/design/services
5. To be able to understand and explain the principles of sustainability from environmental and social perspective

Specifications & Further Plans

Below are the few things Miss Vignes encouraged us to include:

a) Grass for the ground

b) Fencing

c) Play area for the puppies

d) Canopy

e) Sand pit

f) Dog huts

g) Doors

h) Elevated ground for the dog huts

She wanted a more naturalistic play area to enhance the visual of the shelter. Also, it is more environmental friendly. Hence, by planting grass, we could have a closer approach towards a greener environment.

The fencing is to prevent the puppies from wandering around the area. This is also to create a barrier between the adult dogs and the puppies.

The play area is strongly encouraged as the puppies now will have activities to spend their leisure time. They will no longer vandalise the area. Besides, they can bond better as the play area can prevent them from getting into fights.

The canopy is to prevent sunlight from penetrating the ground. If the sunlight hitting the ground is too strong, this will lead to discomfort of the puppies. The puppies will not like it to play under the hot sun, hence the area will not be utilised fully. Therefore, canopy which shades the area is encouraged.

The dog huts will be placed for the puppies to rest and for the shelter.

The doors will allow easy access of the caretakers to the play area. Hence, to increase the convenience, there will be 3 doors built. One would be near the back door of the house. This will prevent the workers from walking an unnecessary distance prior to entering the play area. Besides, a door will be built near to the adult cage area. This is in case of emergency, e.g fights, among the adult dogs, the caretakers can access the adult cage area with ease. Lastly, a door will be built near the main entrance. This is to provide convenience for the visitors to enter the play area.

The ground floor area for shelter will be made of concrete. The reason of elevating the ground is to prevent rainwater from entering the dog huts easily. Miss Vignes also provided us with tiles to beautify the concrete ground.

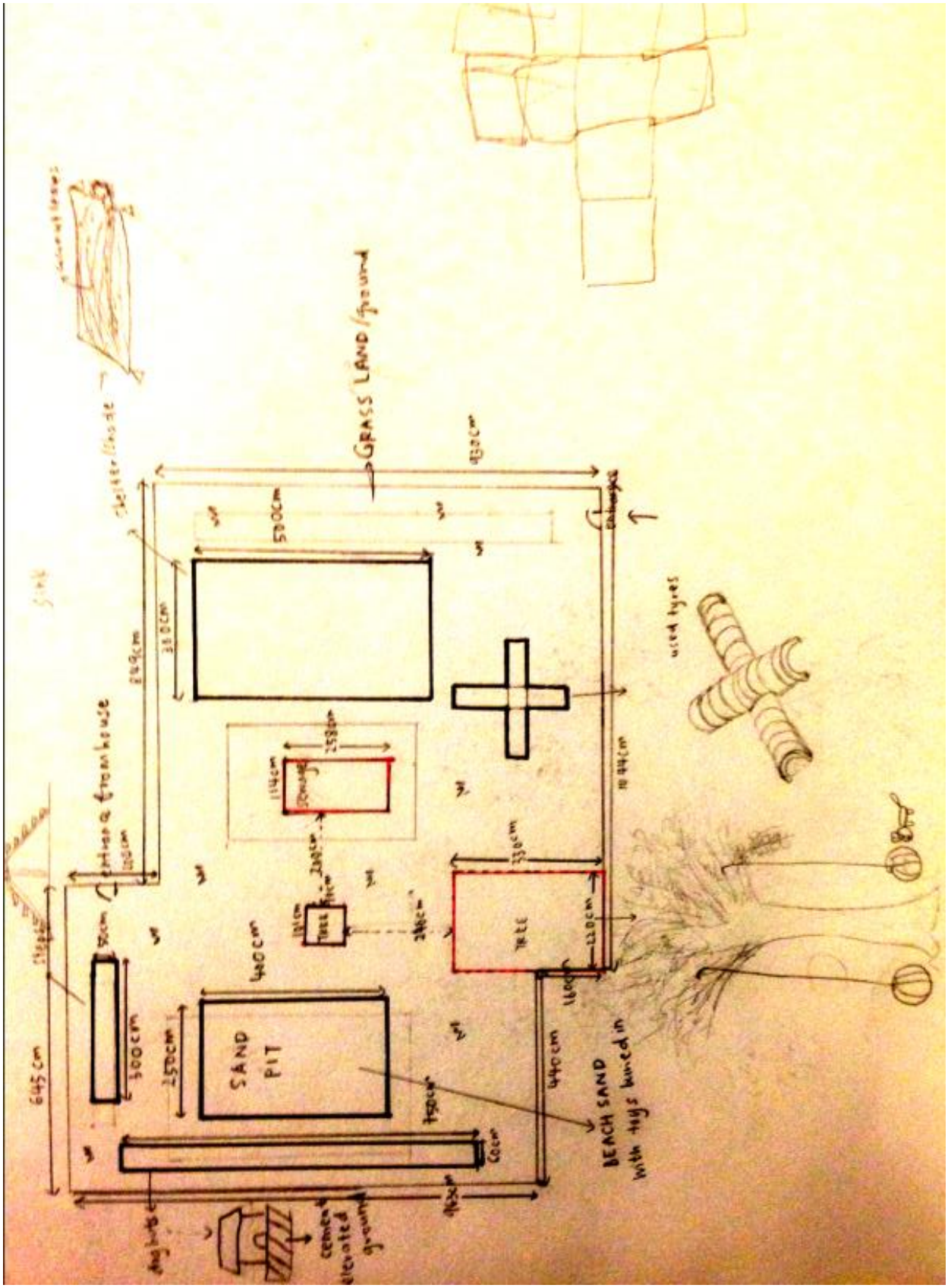
Site Condition

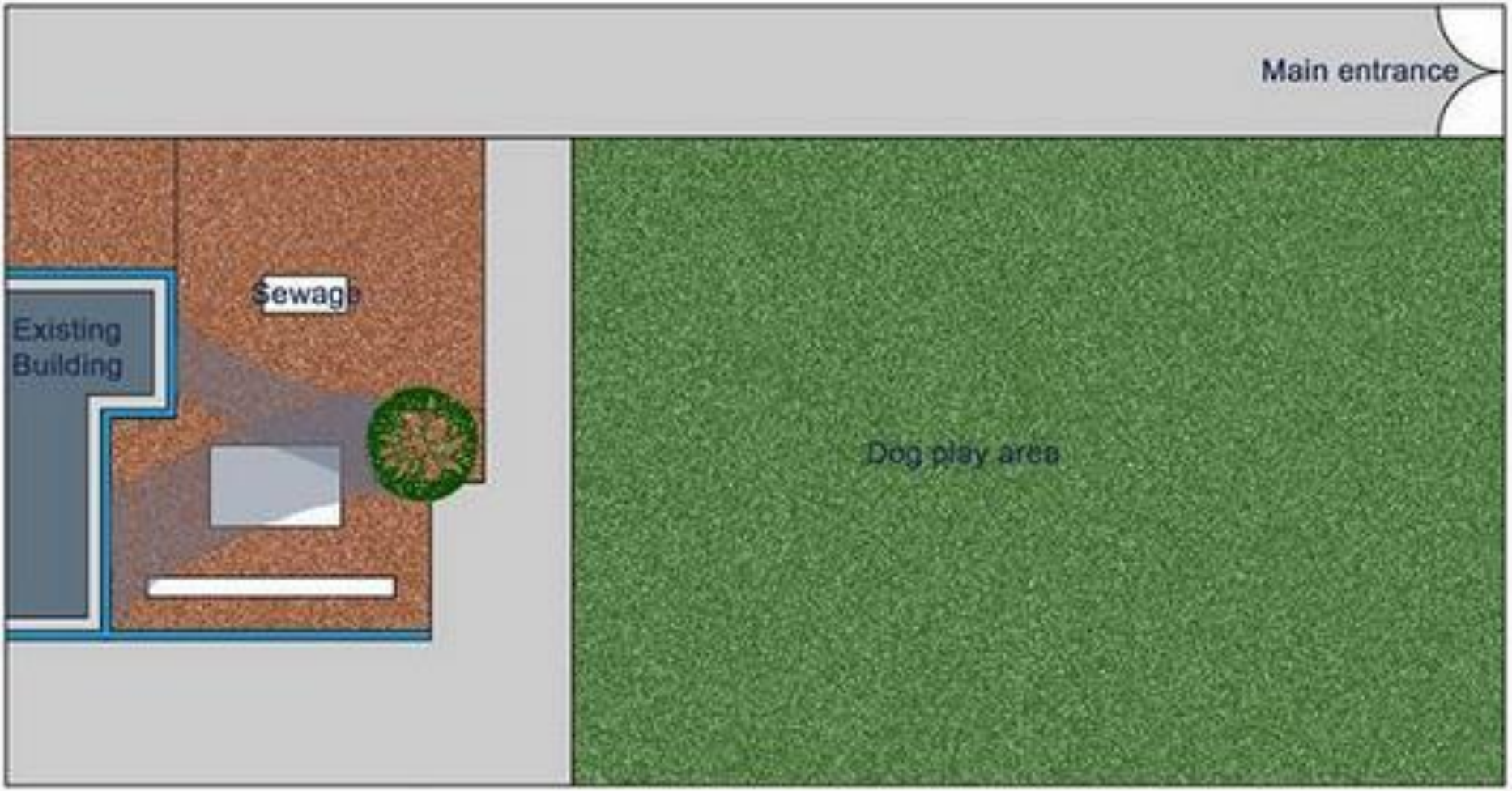
Figure 1 (a) Shelter area for the big and fierce dogs.

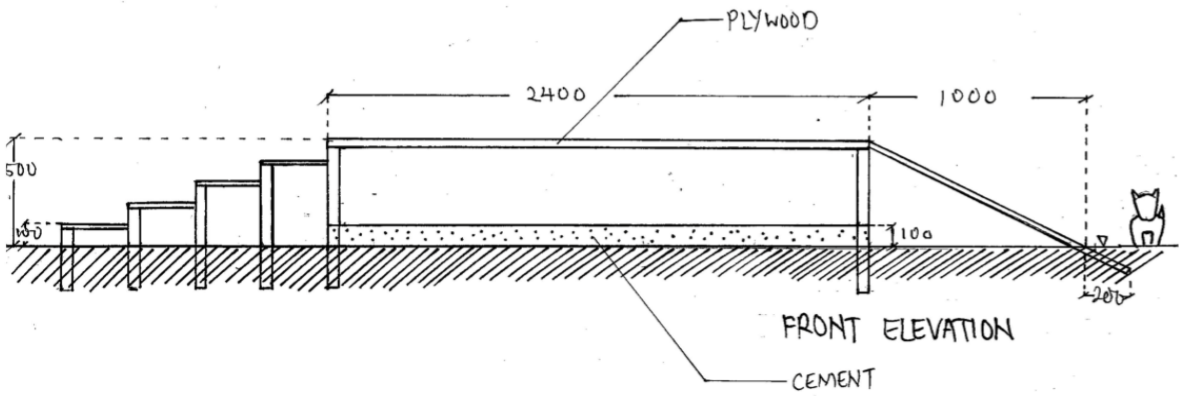
Figure 1 (b) Play area site.

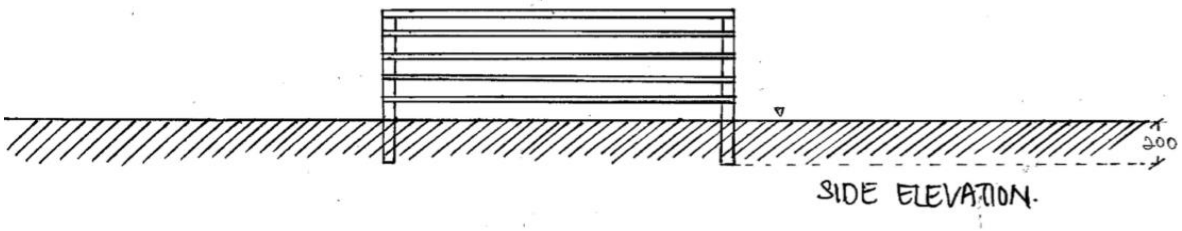
Figure 1 (c) These were the soil condition before loosening, which is very dry and has a lot of big and small rocks.

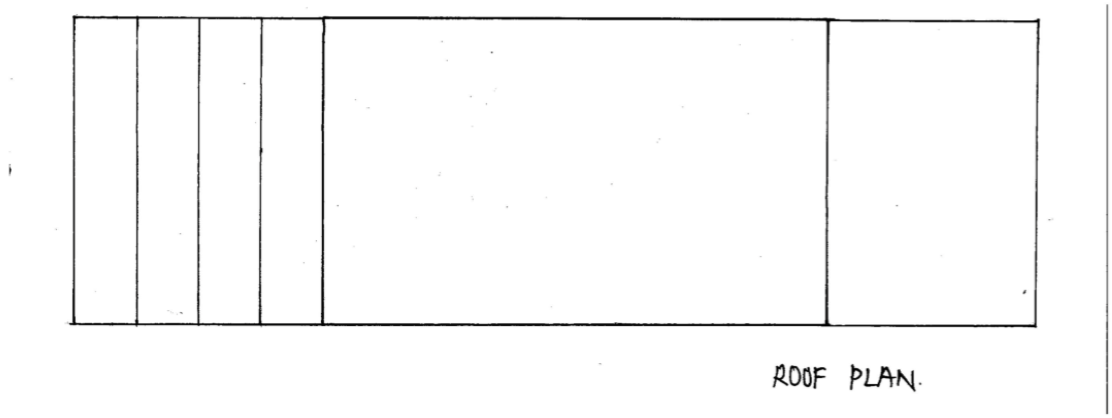
Site Plan


GRASS LAND /ground
SAND PIT
BEACH SAND
with toys buried in
TREE
TREE
used tyres

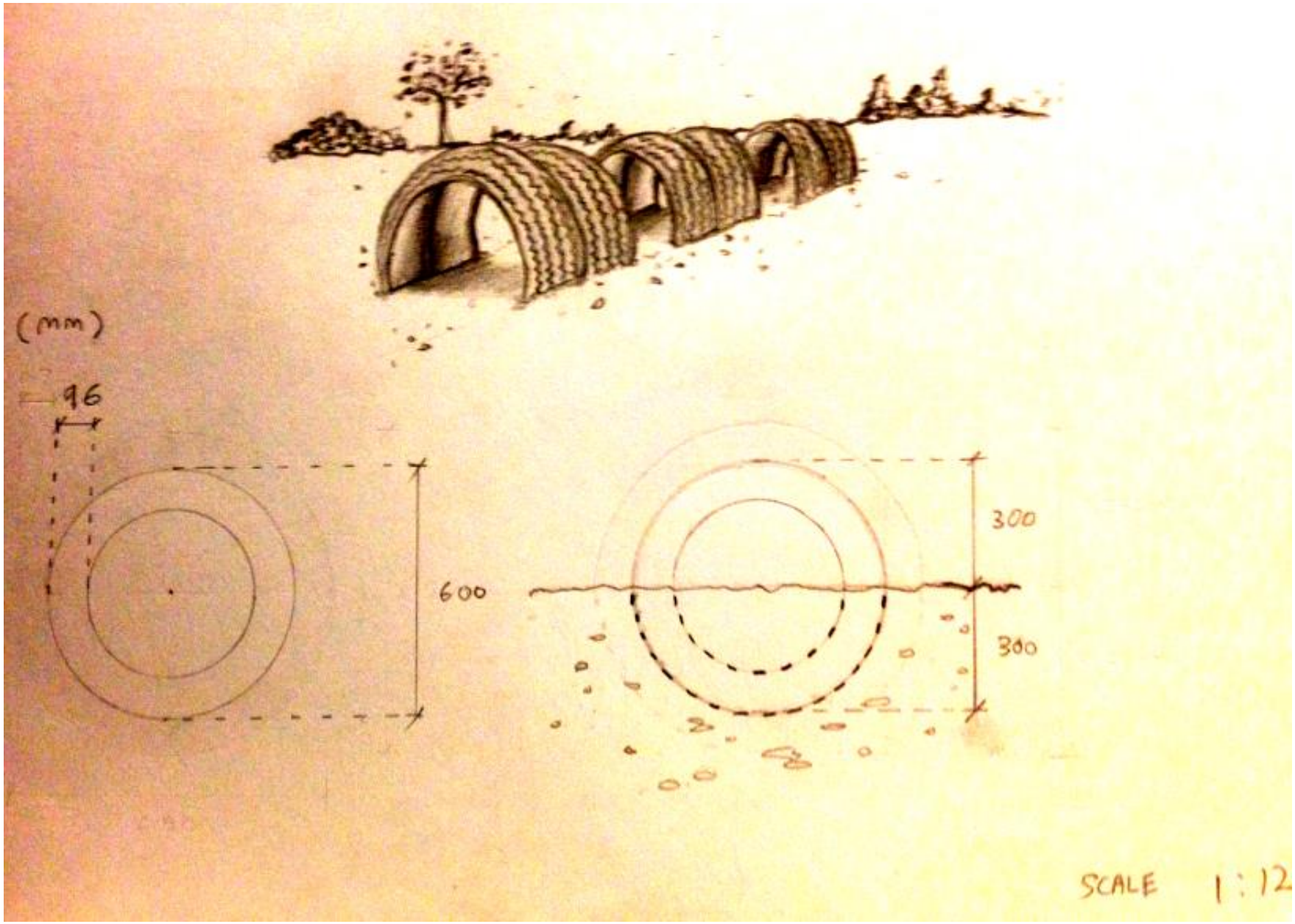

Main entrance
Existing Building
Sewage
Dog play area


PLYWOOD
2400
1000
500
100
200
FRONT ELEVATION
CEMENT


200
SIDE ELEVATION.


ROOF PLAN.

Tyre Tunnel


(mm)
96
600
300
300
SCALE 1:12

List of Materials

1. Steel poles
2. Cement
3. Wire mesh
4. Steel wire
5. Soil
6. Cow grass
7. Used tyres
8. Shellac
9. Plywood
10. Sand
11. Nails

Materials Detailing and Installation

1. Steel

Steel is an alloy of iron and carbon, which is stronger than iron as carbon act as a hardening agent. Steel is suitable used in either indoor or outdoor. For the outdoor, it would remain unchanged even in a sunny or rainy weather; hence its durability is higher than any other materials.

(a) Steel rod

Steel is an alloy of iron and carbon, which is stronger than iron as carbon act as a hardening agent. Steel is suitable used in either indoor or outdoor. For the outdoor, it would remain unchanged even in a sunny or rainy weather; hence its durability is higher than any other materials.

The steel rods are being used to build the fencing in the playing area. Cement will be applied underground to strengthen the columns so that it won't fall off when there's strong wind. We also made several columns in a row so that it could support the fence better.

Steps :

1. Digging a hole approx. 20 cm below ground level. This step is a bit exhausting for us as the ground is quite rocky around the edge of the field given.
2. Putting in the pole. With total length of 150cm, we put approx. 20 cm inside the ground, leaving around 130cm above the ground. For stronger base, we put small amount of cement mixtures to the hole then we put in the pole.
3. Next, we adjust the pole with a leveler to see whether it's straight or not. Then we pour about a bucket of cement mixture and flatten it to ground level to hold the pole so that it steady and strong enough to support the fence.

For installing the pole, we need at least 2 people. 1 to measure, to hold and to make sure that the pole is straight, and the other one is in charge of the cement.

(b) <u>Galvanized Metal Fence</u>

The play area is surrounded by the galvanized metal fence to prevent the puppies run away from the play area. This material is being chosen because of it is long-last enough and it would not get corroded easily as there is a galvanizing layer applied on the metal fence. As there are different sizes of dogs in this shelter, this fence could also at least prevent the larger size dogs to come in.

Steps:

1. Before setting the fence, we measure the distance between poles and cut the fence following the measurement.

2. For safety reason, we chose to bend over the edge of the wire fence (using plier) so that it won't hurt anyone and the puppies as they are playing and running around.

   As for bending over the sharp edge of wire, we need at least one people to hold the wire while the other one to the bending job.

3. After the wire fence is safe enough to be set, we need to tie it up onto the pole using metal wire. It is tied over the upper, middle and lower part of the fence to ensure that it is strong enough and wouldn't off even when the dogs play around and with the fence.

For setting the fence, we need at least 2 people to hold on each pole (each side of fence) and 1 person to tie the metal wire.

2. <u>Metal wire</u>

The metal wire is basically used to connect the metal rod and the galvanized metal fence. Moreover, we use the metal wire to maintain the shape of the fencing wall. We have two different thickness of metal wire, the thicker is to maintain the shape and the thinner is doing the connection. The metal wire is strong to hold other materials thus it is being used in this situation.

We have two types of metal wire being used. The thinner wire is being used to tie up the fence and the pole, while the thicker wire is for us to put along the fence to maintain the shape of it so that it's strong and firm enough to be a fence for the puppies' play area.

Steps (thin wire):

1. We cut it about 20cm to tie the the fence and roll it few times around the pole then make a knot to make it stronger.

Steps (thick wire):

2. We consistently pull the thick wire horizontally along the fence and make a small knot around every pole then continue to other fence and so on

3. We make sure that the metal wire is straight enough and not bent over as it is used to maintain the shape of the fence.

4. The same as thin wire, we put along the thicker wire on three parts of the fence which is upper part, middle part, and the lower part.

For cutting and tying, basically we only need 1 person to do it, but for pulling the thick wire along, we need more people (about 2 or 3) to hold on to straighten the wire, the fence and to pull and tie it.

3. Cement

Generally, cement is a mixture of limestone, clay, silica and gypsum. It is the most commonly used in construction. In this project, cement is used to elevate higher than the ground and the dog huts are built on the cement platform. It is used to avoid the dog huts flooded when raining. Moreover, cement is used to build a higher obstacle behind the fence so the puppies will not run away from the play area. The benefits of using cement to build the platform are long-lasting, -strong, and water resistance. Cement produces a lesser CO2 hence it provides a better environmental sustainability.

Steps:

1. We make the cement mixture at ratio approx. 1:4

This work only need a person, as the workers at the shelter also help us mixing the cement.

4. **Top Soil**

The top soil is laid on the ground to plant the cow grasses. The water and soil in a rough ration of 5:2 are mixing so the soil can be equivalently laid on the ground. The materials in the top soil such as potassium, phosphorus, calcium and magnesium are very suitable to plant cow grasses on it.

Steps:

1. On the first attempt, we planned to directly throw the soil to the ground then , but then we realized that the soil is too sticky that we would waste the soil if we continued to do it that way.
2. Then we tried mixing the soil with water (approx. ratio 1:5) until the soil all dissolved and thick enough then pour and splash it all over the ground.
3. We waited for the soil-water mixture to absorbed into the ground.

For this part we need 3 people as it will faster and more efficient that way. 1 person to do the stirring (mixing soil and water), 1 person to control the water amount (for the mixture not to be too watery, and another 1 person to pour the mixture onto the ground).

4. **Cow grass**

The cow grass is mostly suitable planted in the field and the leaves are wide and short. Moreover the cow grass is very suitable for the dogs to play around. The cow grass has provided a very natural and green environment. It also provides fresh atmosphere for the dogs to stay in the playground for quite a long time. The growth of the grass is slow hence it is low maintenance.

5. Ply Wood

The plywood has a higher grade of face vaneers than core vaneers, which is to increase the plywood resistance to bending. Hence, it is suitable to be chosen for building the dog huts. Plywood is easier to be cut or shaped with basic tools. Plywood is producing less energy and fewer green house gas emissions if compared with other materials.

*Refer to the diagram of dog hut constrution

6. Shellac

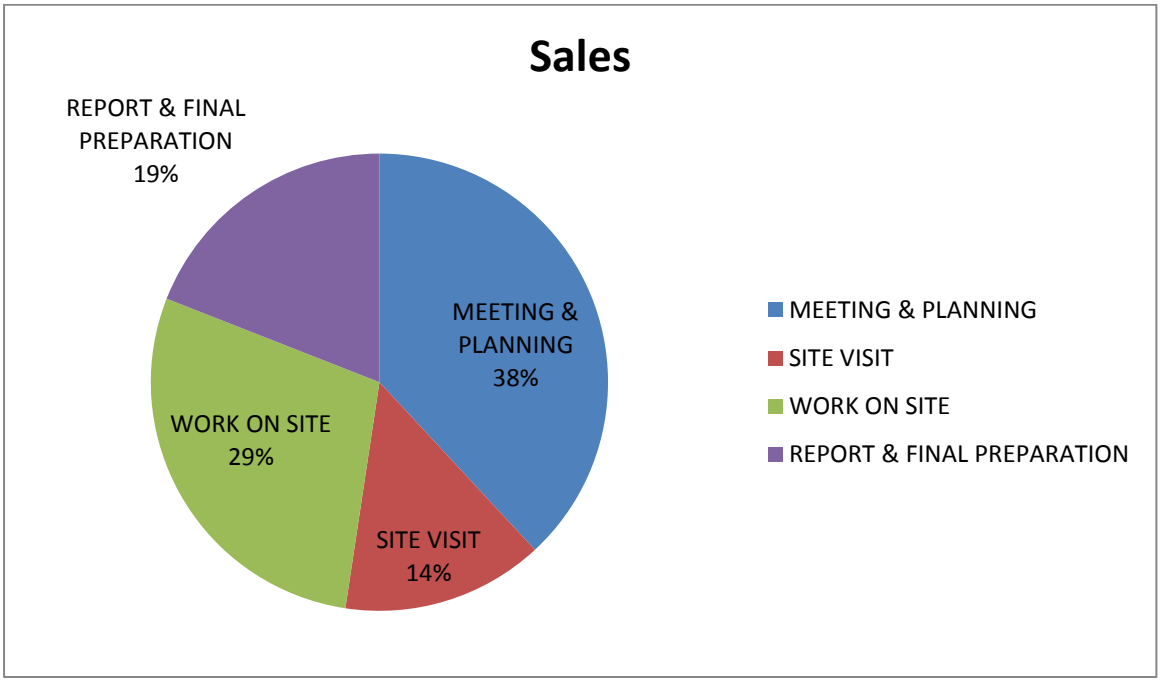
A thin layer of shellac is applied on the plywood to protect the surface being harmed from the environment. In considering with the environment for the puppies, a VOC (Volatile Organic Compound) shellac is being chosen in this project to increase the sustainability of the environment. The VOC shellac does not have the chemical smell and it is long durability to protect to plywood.

7. Canopy net

The canopy net is using in the play area to avoid the heat from the sun directly reflect on the ground, the absorption of heat from the ground will decrease so it provides a cooler atmosphere to the puppies.

TIMELINE AND BAR CHART

		week 1	week 2	week 3	week 4	week 5	week 6	week 7	week 8	week 9
Planning & Brainstorming		■	■							
Measurement of site				■						
Landscape	Loosening the soil				■	■	■	■	■	
	Placement of the soil						■			
	Grass Planting						■			
Fencing	Placement of the poles					■	■			
	Measuring & Cutting					■	■			
	Placement of the fence					■	■			
Multipurpose	Measurements & Cutting of the wood								■	
	Formwork								■	
	Treatment								■	
	Nailing the wood								■	
	Cement					■	■		■	
	Tyres								■	



WEEK	
1	Briefing about the project: The lecturer told us to identify an environmental-community related issue in our local community. The issues have to be genuine and any solutions provided by our team must have an impact to the environment and community. We need to visit our project site more than once to collect a variety of observations before making suggestions or proposals. As this is a community project, we are not supposed to spend a single cent on this. Instead, we should get funding from sponsors.
2	Searching for place to do the project: We did a research and shortlist our potential sites and found out that the most suitable site is "LOST ANIMAL SOULS SHELTER" in Kuala Selangor. We contacted the person in charge and propose our idea to the owner, MS.VIGNES.

3	MS.VIGNES confirmed that we can do our project in her place and after discussing with her, she wanted us to repair the roof in her place. Unfortunately, our lecturer didn't encourage us because it's too dangerous. We come with another idea to Ms.Vignes to make the play area for the puppies and she wants us to come with the design. We are starting to search for sponsorship.
4	We come to her place to measure all the area that she gives. After that, we make a few designed and merge them to come into the conclusion for our last design. We come back to MS.VIGNES to show her our design and she agrees with it.
5	Start to buy all the materials to make the play area. • Search for the best type of the grass, soil, fence and the net. • The best type for the grass is "COW GRASS" • The best type for the soil is "TOP SOIL" • We use the normal steel poles and wires to connect and tightened the fencing. • Buy the Black Net
6	Start loosening the soil and think how to do the fencing. After we got the idea, we start to measure the distance to put all the poles. Before put the poles, we make the cement first and then we can put the poles and pour the cement to make it stronger. The next step is we do the fencing to protect the grass that we want to plant in the play area. The last step is to put the soil and plant the grass.
7	Loosening the soil to prevent it become harder.
8	Start to buy all the woods to make formwork, measure and cut it first into smaller pieces. We nail the wood to make the formwork and pour the cement below the fence to make it stronger. We also make use of the tyres to build a tunnel to let puppies play on it.
9	Report, final preparation & video presentation.

Job allocation of members

1. Landscape

(a) Loosening the soil

- Everyone except Kai Sheng, Nicholas, Andy and Felicia

(b) Placement of the soil

- Andy / Meera / Felicia

(c) Grass planting

- Everyone except Nicholas, Pui Yi and Pei Yi

2. Fencing

(a) Placement of poles

- Everyone

(b) Measuring & Cutting

- Meera / Jocelyn / Wen Yee / Felicia

(c) Placement of the fence

- Qin Ni / Vendy / Andy / Kai Sheng

3. Multipurpose Play Area

(a) Measurements

- Felicia

(b) Cutting of the Wood

- Andy / Chloe

(c) Treatment

- Jocelyn / Qin Ni / Meera

(d) Nailing the wood

- Qin Ni / Jocelyn / Meera

(e) Cement

- Vendy / Nicholas / Kai Sheng

4. Sandpit

(a) Sand Collection

- Nicholas / Meera / Andy

(b) Cement

- Vendy / Nicholas / Kai Sheng

(c) Finishing (Everyone)

Budgeting

Materials	Quantity (No.)	Price per (RM)	Estimated Price (RM)
1. Fencing (a) Steel Rod - 1.5m length - 1 inch in diameter	20	20.00	400.00
(b) Galvanized Steel Fence - 0.91m in height - 50 ft in length	3 rolls	50.00	150.00
(c) Steel Wire - Price per kg - Price per 10m	 2kg 10m	 4.00 3.00	 16.00 3.00
(d) Pliers	1	15.00	15.00
(e) Canopy net	1	100.00	100.00
2. Elevation of Dog Huts (a) Cement - Product name: Floor Screed - 15kg per bag	40 bags	25.00	1000.00
(b) Transportation	-	200.00	200.00
3. Landscape (a) Soil - 5kg per gunny sack	2	5	10.00
(b) Cow Grass - (1 x 2)ft	100	1.20	120.00
(c) Transportation	-	70.00	70.00
4. Multipurpose Play Area (a) Ply Wood - (8 x 5)ft - 180cm thickness	10	81.00	810.00
(b) Shellac	1	30.00	30.00
Total Price			**2924.00**

Sponsorships

Company / Individual	Materials	Sponsor (RM)	Total Sponsor (RM)
1. Aalborg Portland Malaysia Sdh Bhd (Sponsorship by Hexadaya)	Floor Screed used for the elevation of the dog huts	1000 + 200	1200.00
2. Chia Pin	-	200.00	200.00
3. Andrew Chee	-	5.00	5.00
4. Nicholas Lai	2 tyres	-	-
5. Maple Yeow	4 tyres	-	-
6. Lost Animals Souls Shelter	a) Canopy b) Wood c) Paint d) Normal Cement	- - - -	- - - -
Total Sponsored			**1405.00**

Remaining Sponsors

Budget : RM2 904

Sponsors : RM1 405

Remaining : RM1 499

Plan for the remaining : Each group member is required to collect RM200 as a donation to accommodate the expences.