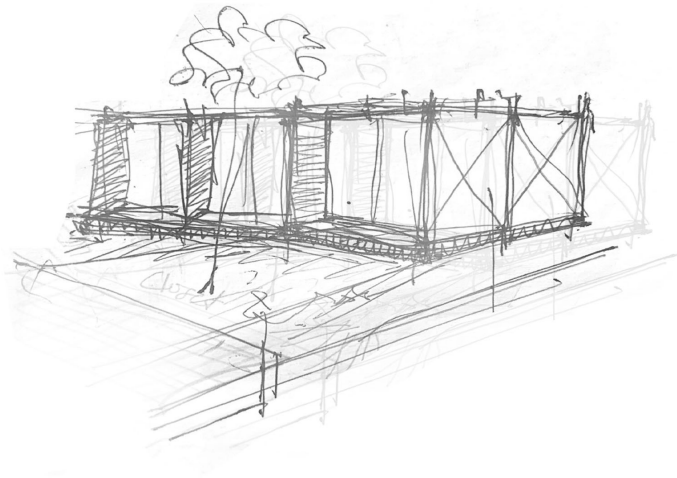


QUARANTINE NATION

- ISOLATE AND LIBERATE -



Project Background

The exercise is to design a 'Quarantine Shelter' and 'Self Isolation Pod' for the neighbourhood we live in. People with Covid-19 symptoms should dwell in the pods for 14 – 21 days without transmitting the virus to family members and neighbours. The shelter is for one person or more in the form of individual pods or clusters.



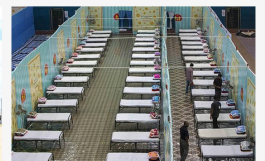
"freedom street" - LIBERATE

What is Isolation and Quarantine?

- Quarantine is a technique used to separate healthy individuals, who may have been exposed to the virus, from the rest of the population, with the objective of monitoring symptoms and early case identification.
- Isolation is a technique used to separate infected persons (confirmed cases) from those who are not infected (suspected/ non suspected cases), in order to prevent spread or contamination.
- A quarantined person is considered infected for the duration of the quarantine period, therefore the same rules and procedures apply to both categories (i.e. quarantine and isolation) in terms of the Infection Prevention & Control Infection Prevention & Control IPC measures to be in place.

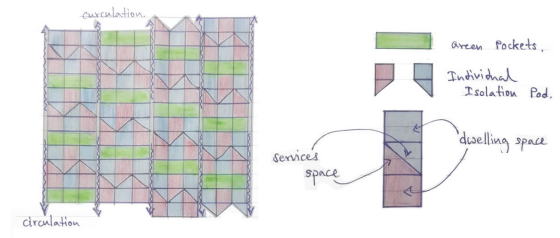
Current Issues identified in relation to 'self-isolation' & 'quarantine'

- People who Quarantine face the psychological and physical effects of being isolated from their families and day to day activities.
- Most of the current quarantine centers are located in areas very far from the user's home towns. Therefore people resist to go.
- Lots of privacy issues in large scale quarantine centers.
- Most of the people doesn't have the facilities to quarantine in their homes and there's a risk of spreading it to other family members.
- People can quarantine with proper guidance and medical assistance in a quarantine center rather than in their houses.



Design Objectives

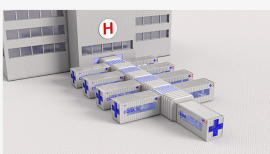
- Making interactions maintaining social distance.
- Reduce the psychological and physical effects of the people because of being isolated.
- Make visual connection among users.
- Facilitate recreation, play, exercise, relaxation & create friends.
- Well ventilated isolation pods to reduce the spread of virus.
- Ability of converting into any emergency shelter.
- Prefabricated module structure which can be adaptable with the context.



Isolation spaces face a central "freedom street" that offers a means for safe connections within "quarantine nation" - a community with boundaries

Precedents

1. CURA¹ Emergency Hospitals by Carlo Ritti Associates



2. Multi story Temporary Housing by Shigeru Ban Architects in Japan



3. Emergency Quarantine aid Hospitals in Philippines by WTA



"Isolation space" - ISOLATE

Design Approach

Colombo & nearby areas are having very limited free open areas due to the high population & high building density. Lots of those open areas are functioning as public spaces such as Parks, Squares, Play grounds, Recreational areas etc.

Most of those areas became very small due to the boundaries from the congested building arrangements of the surrounding and only catering for the immediate neighbourhood. With the pandemic situation of the country, these spaces are not functioning. Therefore these becoming dead spaces.

One of the objectives of the design is to utilize these dead spaces with limited area to cater the neighbourhood in a pandemic situation.



"freedom street" - LIBERATE

Concept – "Liberation within isolation"

Freedom from isolation - a quarantine center where users find opportunity to liberate themselves from confinement

Gathering Creates Friends



Pandemic Situation (Social Distancing & Social Recession)



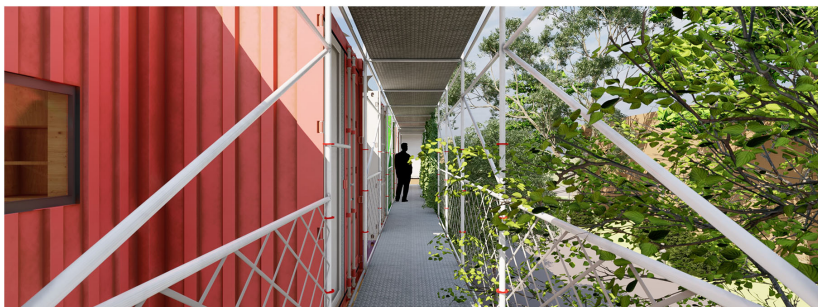
Gathering with Social Distancing

- Make visual and audible interactions among the users to reduce the sense of being isolated.
- Proposing of small/medium scale quarantine center in their own neighborhood will increase sense of belongingness and decrease the social scrutiny.
- Inspiring people to help each other in this pandemic situation and maintain the social interactions.
- Use of community services of the neighbors to maintenance of the quarantine center.

Quarantine Centre → Community Centre

Programme

- The 'Probable Cases' in the neighbourhood will be accommodated in the isolation pods with proper medical guidance and facilities.
- If any 'Confirmed cases' are reported in the quarantine process, they will be moved to the IDH.
- The idea of a Community center is a public location where members of a community tend to gather for group activities, social support, public information, and other purposes.
- With this proposal people will be inspired to face the pandemic situation as a whole.
- "The Caregivers' of the quarantine centre are the people from the neighbourhood. The caregivers will be educated with training materials properly.
- The people in the neighbourhood also can access to the medical facilities in the quarantine centre. Therefore people can always be aware of the situation and their health.
- The people can visit their family members in the quarantine shelter under proper precautionary settings and wearing protective gear.



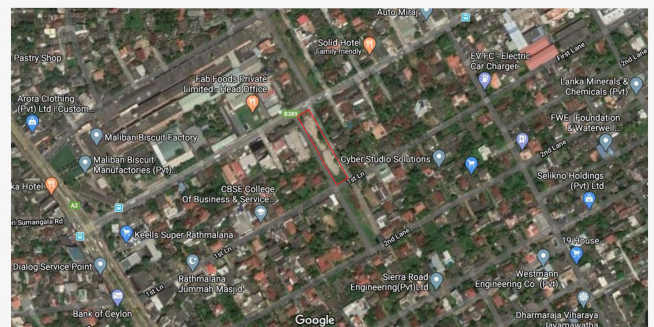
Context selection & Justification

When Consider the neighbourhood I live in which is Ratmalana, has reported for 3 confirmed cases in the pandemic period.

Therefore around 90 people who were the family members and immediate neighbours of those infected people were sent to Jaffna quarantine centre for quarantine programme and whole neighbourhoods were sealed.

Proposing a quarantine centre in our own neighbourhood will inspire people for maintain their social responsibility.

Context - Ratmalana



Site is located in Attidiya rd., Ratmalana. The land is adjoining with both Attidiya rd. & 1st Lane.

MARCO CONTEXT



- Site is located in Attidiya rd., Ratmalana. The land is adjoining with both Attidiya rd. & 1st Lane. Site is very near to the Galle rd. and it is around 15 – 20 minutes distance from site to Kalubowila base hospital. The site is easily accessible by neighboring houses.

- The neighbourhood is a residential area. An industrial belt is running parallel with the Attidiya rd. on the other side of the site. Residential area is consisting with single story & double stories houses and 3 stories or 4 stories apartments. Most of them are contemporary houses. No significant buildings in the immediate neighborhood.

- The area usually has very warm, humid & rainy climate conditions all around the year. The topography of the site is flat. It has no threats of flooding and has proper drainage facilities.

- No man made features in the site. No proper views for the site and has noise disturbances from the surrounding roads. Site should be facilitated with utilities.

Site Analysis - SWOT

Strengths

- Located near to the Galle Road
- Flat land with no flooding threats
- Ease of access
- Availability of proper boundaries
- Proper drainage facilities

Weaknesses

- No views
- Noise disturbance
- No existing utility connections
- Very narrow shape of the site

Opportunities

- Residential neighbourhood around the site
- Accessible from all sides

Threats

- Less engagement of the people due to the pandemic situation

MIRCO CONTEXT



SITE IMAGES



User - People from vicinity

There are around 150 families in the neighborhood. It is consisted mostly with middle income families. People from several religions and nationalities are in the area. Basically the number of family members varies from 4 – 6. Lots of people are having permanent jobs and some are having day to day jobs and free lancing jobs. Age is variegating from small children to older adults.

General neighborhood attitude towards the site and potential build

Site is the main public open space of the area. It is used as the recreational hub of the neighborhood. Site is the children's playground, jogging & exercise park. Many public functions and gatherings are happening in this free open land. The proposed building is to cater the neighborhood in this pandemic situation. So the attitude of the neighborhood is to involve in the Covid-19 prevention programme.

Client – Ratmalana Welfare Association

Design Brief

35- 40 Isolation pods are proposed from the design proposal due to,

- Number of families in the neighbourhood
- Limited land availability
- Ability of maintenance & services

SPACE	AREA (m2)
Isolation Pod	
Dwelling space	5.6
Kitchen area	1.5
Wash room	2
Balcony	2.5
Medical Center	
1. Reception & Administration	9.5
2. Inpatient Ward	24
Nurse Station & Medical Records	
Beds	
Medical store	
Washroom	
3. Medical Testing Centre	24
Collection Vestibules	
Information Desk	
Dry Lab	
Wet Lab	
4. Medical staff area	40
Staff Resting Area	
Staff Dining & Common Area	
Doctors Meeting & Discussion Room	
Staff Changing Rooms & Washrooms	
Service Spaces	
1. Kitchen	20
Cooking Area	
Kitchen Counter	
Dry store	
Wet store	
2. Caregiver's Cleaning Area	28
Men's Area	
Women's Area	
3. Laundry	10
Washing Area	
Linen Store	
Medical Wear Store	
4. Janitors area	13
Janitor' Room	
Equipment Store	
Washroom	
5. Building Services	20
Generator Room	
Store Room	
Garbage Room	
Parking	5 plots
Service Vehicle Parking	
Staff Vehicle Parking	

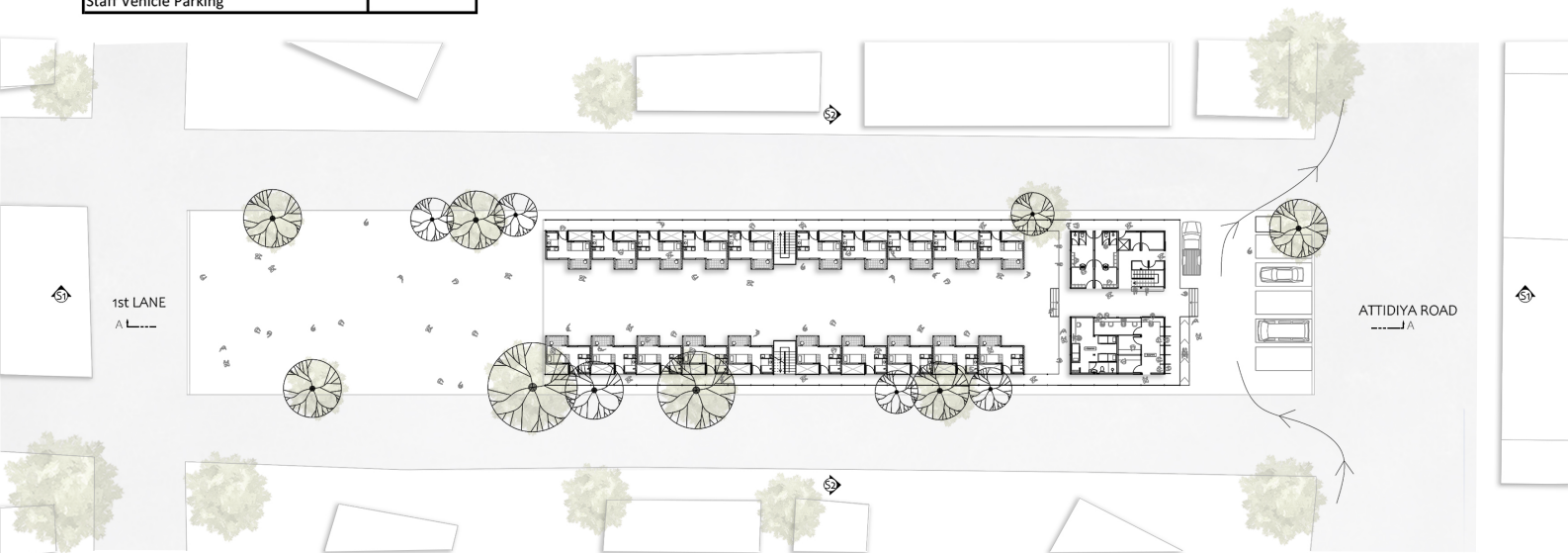


Master Plan

Through the masterplan the open public areas in the context will be utilised in this pandemic period to cater the surrounding neighbourhoods.



Play Grounds & Open Areas near Galle Road, Ratmalana.



SITE LAYOUT PLAN



SITE LAYOUT SECTION A-A



SITE LAYOUT ELEVATION

The concept sketch is very applicable for a huge land with lots of vacant area. But the selected site is a very narrow land with limited area. Therefore maintain the design idea and full-fill the design requirements, the best option is to arrange pods vertically.

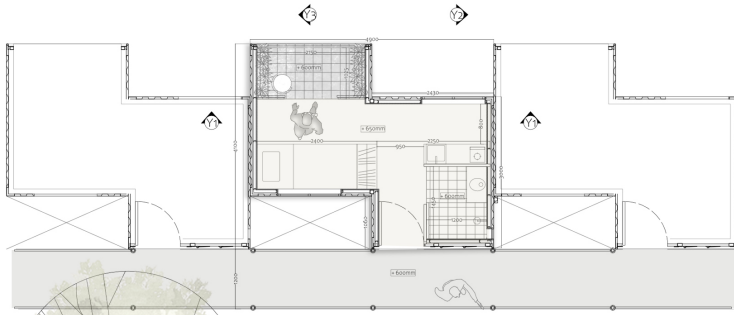


- Services Block & parking were zoned near the main road to the ease of access and maintenance. It will also allow general public to easily access the corona virus testing center.
- Isolation pods were zoned in the other side, which is closer to residential area. That will obtain privacy and reduce the noise disturbances from main road too.
- The isolation pods and services block are connected for the ease of services.
- By arranging pods in the site boundary form an edge to the site and obtain privacy for the shelter, while optimizing the site and creating the central court yard space.
- This central court yard space to allow natural light & ventilation to the pods.
- Central space helps to create visual connection among users in different levels and to create recreational activities for users.
- Solid - Void arrangement of the façade gives both privacy and social interaction for habitants, maintaining 'Social Distance'
- Arranging the services spaces at the edge to minimize the disturbances and to maintain clean and linear services.
- Pods are stacking up for 2 levels to match with the building scale of the neighborhood (the houses and buildings in the neighborhood are mostly 2 or 3 stories) and in a case of emergency.
- Leaving a part of the site for the public allows people to feel included in the normal life outside the quarantine center.
- Since the design proposal is for a short term period, effects and changes to the site should be minimum. By elevating the structures from ground level will minimize the impact on existing ground and won't disturb the natural drainage system of the site.
- The arrangement is flexible to expand or reduce due to the demand, When the quarantine process has less demand the number of the pods will be reduced and the open space for the neighborhood as play space and grounds will increase.



Isolation Pods

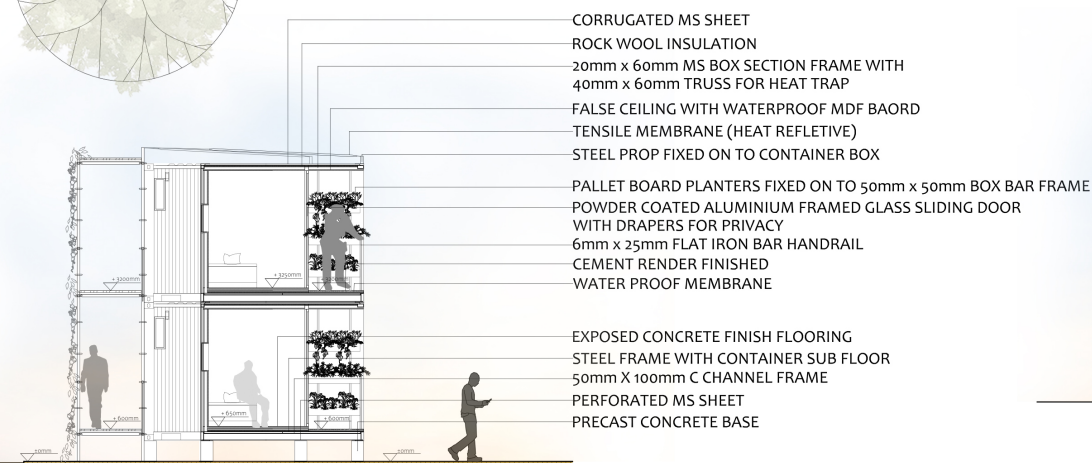
- Engage with the center courtyard while maintaining the privacy for the inhabitants.
- Balcony is the space which make interactions among users.
- Having a balcony recessed in the container box gives shade while maintaining a private space that visually connects with the surrounding.
- Detailing the balcony with small plants to give a touch of nature to the space while gaining the gardening activity for the users.
- Courtyard to promote shade and ventilation to the pods.
- The light wells between pods to improve the cross ventilation for prevent the virus.
- Large openings and proportionate inlets & outlets to maximize the air moment.
- Connecting the wash room and kitchen block for ease of services.
- Vertical in-line alignment of service spaces also increase the ease of building services.
- Use of container boxes as the building material in this emergency period due to cost effectiveness and quick assembly.
- Using 2 nos. of 10ft container box to build single isolation pod. These small boxes are easy to transport and handle in the site.
- Removing minimum amount of container skin while constructing the pod.
- The interior furniture are manufactured using treated Corrugated Paper Boards to make very cost effective and to change with the new comers.



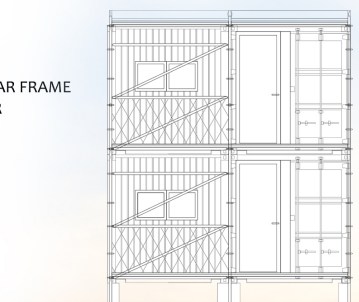
SITE LAYOUT PLAN



FRONT ELEVATION

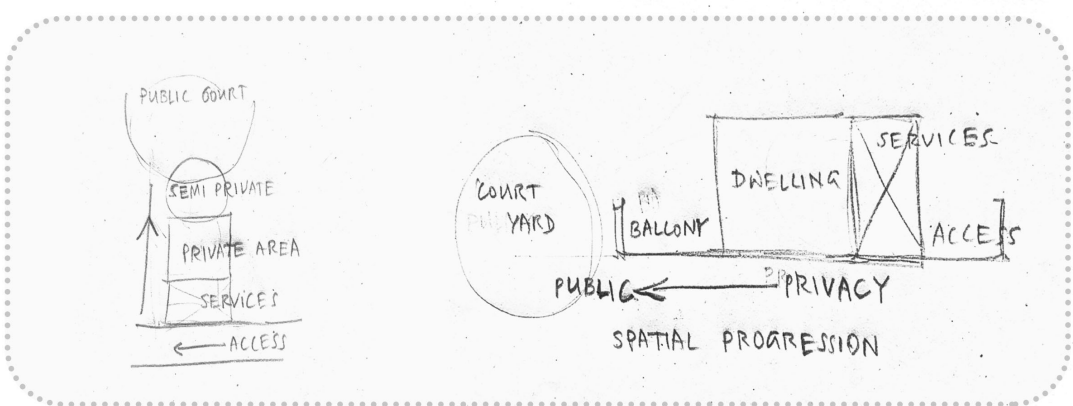


- CORRUGATED MS SHEET
- ROCK WOOL INSULATION
- 20mm x 60mm MS BOX SECTION FRAME WITH 40mm x 60mm TRUSS FOR HEAT TRAP
- FALSE CEILING WITH WATERPROOF MDF BAORD
- TENSILE MEMBRANE (HEAT REFLETIVE)
- STEEL PROP FIXED ON TO CONTAINER BOX
- PALLET BOARD PLANTERS FIXED ON TO 50mm x 50mm BOX BAR FRAME
- POWDER COATED ALUMINIUM FRAMED GLASS SLIDING DOOR WITH DRAPERS FOR PRIVACY
- 6mm x 25mm FLAT IRON BAR HANDRAIL
- CEMENT RENDER FINISHED
- WATER PROOF MEMBRANE
- EXPOSED CONCRETE FINISH FLOORING
- STEEL FRAME WITH CONTAINER SUB FLOOR
- 50mm X 100mm C CHANNEL FRAME
- PERFORATED MS SHEET
- PRECAST CONCRETE BASE



REAR ELEVATION





-view out from the pod-

- 12mm WATERPROOF MDF BAORD
- 60mm x 60mm BOX SECTION FRAME
- GLASS WOOL INSULATION BETWEEN STEEL FRAME
- CORRUGATED METAL SHEET
- ALUMINIUM SUNSHADE
- POWDER COATED ALUMINIUM FRAMED GLASS SLIDING WINDOW
- EXPOSED CONCRETE FINISH FLOORING
- STEEL FRAME WITH CONTAINER SUB FLOOR
- 50mm X 100mm C CHANNEL FRAME
- PERFORATED MS SHEET

- CORRUGATED MS SHEET
- ROCK WOOL INSULATION
- 20mm x 60mm MS BOX SECTION FRAME WITH 40mm x 60mm TRUSS FOR HEAT TRAP
- FALSE CEILING WITH WATERPROOF MDF BAORD
- TENSILE MEMBRANE (HEAT REFLECTIVE)
- SAFFOLDING BAR
- HOT GALVANIZED STEEL CHECKER PLATE FIXED ON TO SAFFOLDING BAR
- THUNBERGIA PLANTS ON SAFFOLDING STRUTURE AS A GREEN SCREEN

- MARINE PLYWOOD PARTITION BOARD
- CEMENT RENDER FINISHED
- WATER PROOF MEMBRANE
- HOT GALVANIZED STEEL CHECKER PLATE FIXED ON TO SAFFOLDING BAR
- THUNBERGIA PLANTS ON SAFFOLDING STRUTURE AS A GREEN SCREEN

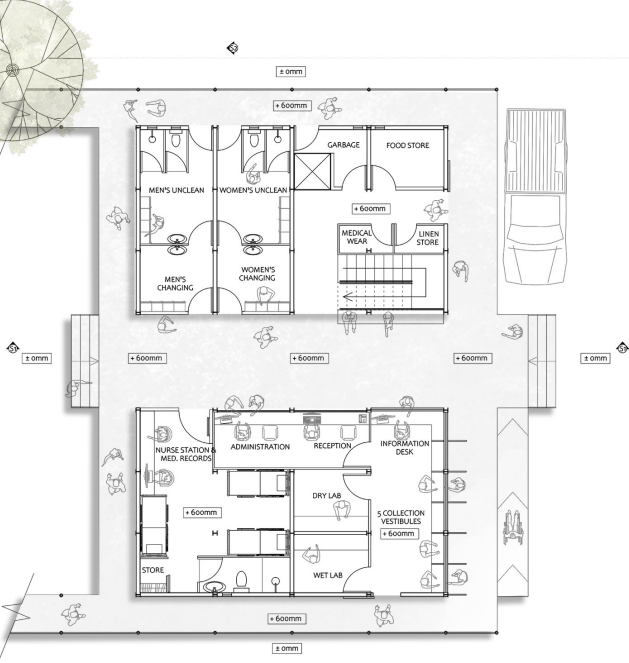
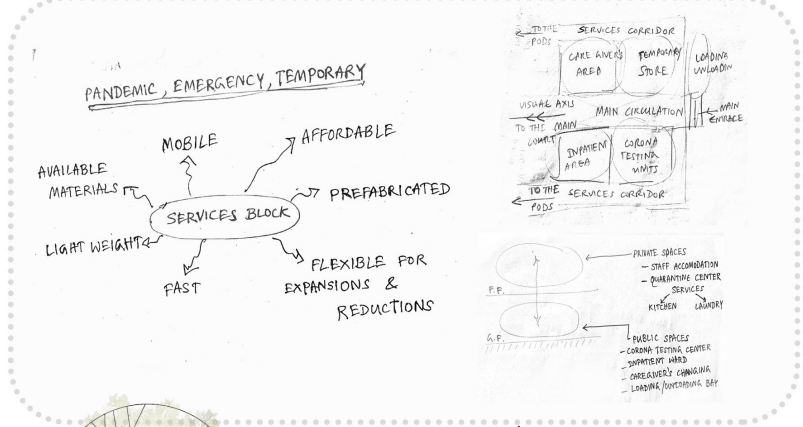
SECTION Y2 - Y2

Services Block

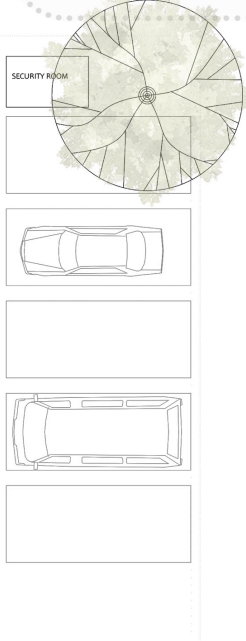
- The use of already available and standardize materials enough for quick fabrication
- The idea considers pre-fabrication and on-site assembly while minimizing in-situ construction.
- After the pandemic, the shelter can be easily disassembled and transported.
- The ability to easily modified and be ready for any emergency, in the future.

zoning

- Going for 2 levels to minimize the building foot print
- Elevated structure to minimize the impact on site.
- Utilization of elevated space for building services
- Naturally lit and ventilated spaces
- Ease of connecting the service path ways of isolation pods.
- Grid arrangement for flexibility.

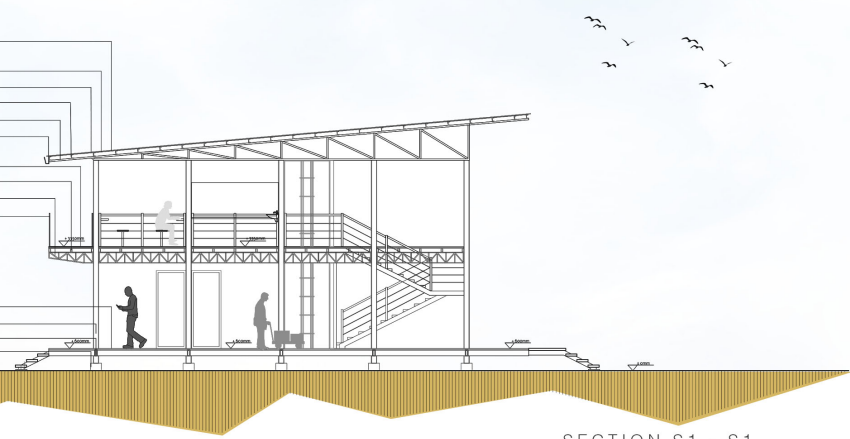


GROUND FLOOR PLAN

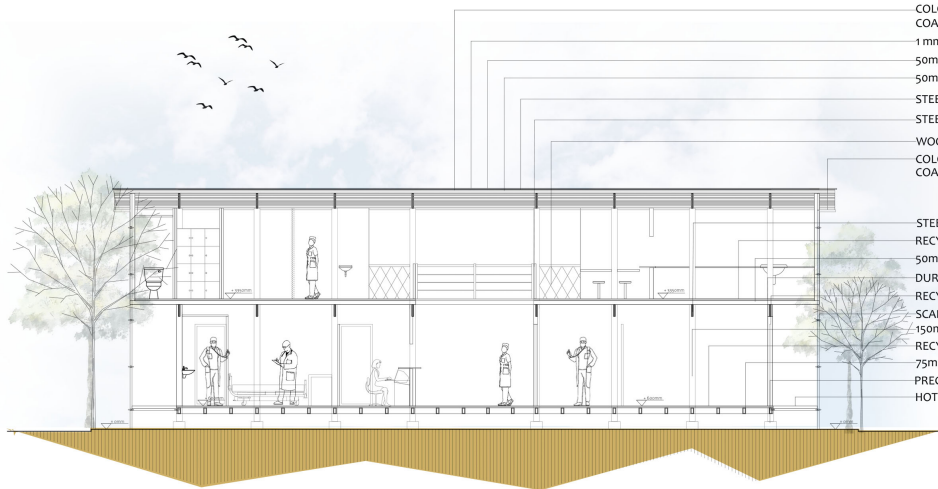


FIRST FLOOR PLAN Y2 - Y2

- COLOURBOND CORRUGATED ZINC ALUM COATED HIGH TENSILE STEEL ROOFING SHEET (COLOUR WHITE)
- 1mm THK TWO WAY REINFORCED ALUMINIUM FOIL
- 50mm x 50mm BRC MESH
- 50mm x 100mm STEEL 'C' PURLINS @ 600mm C/Cs.
- STEEL ROOF TRUSS
- COLOURBOND CORRUGATED ZINC ALUM COATED HIGH TENSILE STEEL GUTTER
- RECYCLABLE PLYWOOD DECK FINISHED WITH VINYL FLOORING
- 50mm x 100mm STEEL BOX CHANNELS @ 600mm C/Cs.
- STEEL TRUSS
- WOOL CODE NET FIXED ON TO SCAFFOLDING BAR
- RECYCLABLE PLYWOOD DECK FINISHED WITH VINYL FLOORING
- 150mm x 150mm STEEL I COLUMNS
- 75mm x 150mm STEEL BOX CHANNELS @ 600mm C/Cs.
- PRECAST CONCRETE BASE



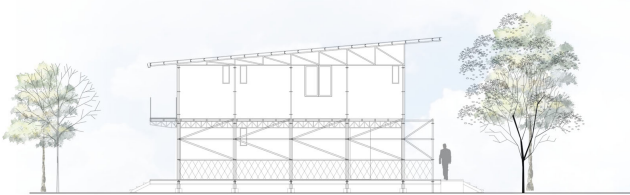
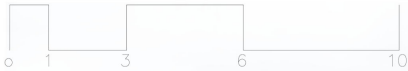
SECTION S1 - S1



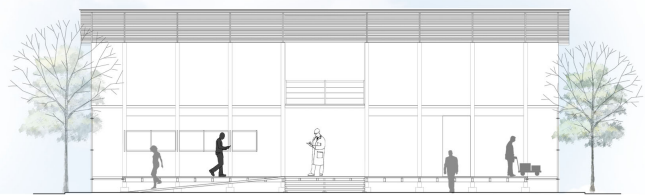
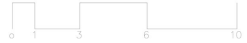
COLOURBOND CORRUGATED ZINC ALUM
COATED HIGH TENSILE STEEL ROOFING SHEET (COLOUR WHITE)
1mm THK TWO WAY REINFORCED ALUMINIUM FOIL
50mm x 50mm BRC MESH
50mm x 100mm STEEL 'C' PURLINS @ 600mm C/Cs.
STEEL ROOF TRUSS
STEEL CABLES HANDRAIL FIXED ON TO 50mm x 50mm BOX CHANNELS
WOOL CODE NET FIXED ON TO SCAFFOLDING BAR
COLOURBOND CORRUGATED ZINC ALUM
COATED HIGH TENSILE STEEL GUTTER

STEEL TRUSS
RECYCABLE PLYWOOD DECK FINISHED WITH VINYL FLOORING
50mm x 100mm STEEL BOX CHANNELS @ 600mm C/Cs.
DURRA PANELS FIXED ON TO BOX FRAME
RECYCABLE PLYWOOD DOORS
SCAFFOLDING STRUCTURE
150mm x 150mm STEEL I COLUMNS
RECYCABLE PLYWOOD DECK FINISHED WITH VINYL FLOORING
75mm x 150mm STEEL BOX CHANNELS @ 600mm C/Cs.
PRECAST CONCRETE BASE
HOT GALVANIZED STEEL CHECKER PLATE FLOORING

SECTION S2 - S2



SIDE ELEVATION



FRONT ELEVATION



The proposed buildings are prefabricated module structures. Due to the pandemic situation of the country, customized productions can have a good productivity and quality, rather than on site building.

The economy of the prefabricated system is based on the low number of moulds and high number of units being manufactured from each mould. Therefore use the repetitive material arrangement for decrease the construction cost.

Modular construction can be completed within shorter period. These module structures are more sustainable and can be utilised in another pandemic situation.

