ARCHITECTURE FOR THE NEGLECTED-
NOT NEGLECTED ARCHITECTURE

COMMUNITY

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COMMUNITY
Architecture for the Neglected -
Not neglected Architecture

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THANK YOU...

Masagana of Navotas Neighbourhood Association, for welcoming me so cordially and letting me be a part of your journey. Thank you, Maria Faith Varona, for your advice and assistance and for showing me around. Thank you, Professor Johnny Åstrand, for making this thesis happen. Thank you, TAO Pilipinas, for you help and time. Thank you, every one for making this journey possible.

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INTRODUCTION

In times when nearly a billion people live in slums across the world, it is more urgent than ever for architects to ask themselves; what can we do to assist? I asked myself that question and decided to dedicate my thesis to those who are in need of assistance. This project is based on the real needs of an actual client; the Masagana of Navotas Neighbourhood Association, Metro Manila, the Philippines. It is an organisation of previously informal settler families that have taken the initiative to change their poor living conditions in the pursuit of a better life. They have obtained a site about an hour's drive north of Metro Manila, where they will start a new life and build new houses. Community facilities are planned and this project aims to provide a design for some of these; a day care center, a chapel and a multi-purpose hall.

To design for a developing country in the tropics is substantially different from designing in Scandinavia, facing a different culture, traditions and climatic considerations. There are a lot of considerations to be made when building in a developing country. How can a building be affordable without compromising design and function? How do you deal with sustainability and social issues? How do you design a contemporary building, yet without losing cultural values and heritage? How can design and planning assist in improving people's lives? How can the design be made resilient to disasters and what can be learnt from traditional design?

During the process I have tried to find answers to these questions, and will continue to do so. These questions will be forever important as long as people live in undignified conditions anywhere in the world. This project is a journey that does not end here.

METHODOLOGY

The degree project is undertaken during 1 semester. In order to achieve the goals I set out initially, I defined a strategy of three stages.

Stage 1 In order to be in-the-know when I finally traveled to the Philippines, I started preparing some months earlier. During these months I studied informal settlements throughout the world and associated issues experienced by architects, design for tropical countries etc.

Stage 2 comprise site visits to the Philippines. There I was introduced first hand to Filipino culture and architecture. I visited social housing projects and informal settlements to acquire an understanding of living conditions of Masagana, but also to place their experiences in a wider context. During this time I also visited the relocation site three times and Navotas, the area were the families come from. To estalish a brief and to define the community's preferences and wishes, workshops were held.

Stage 3 After leaving the Philippines, the knowledge and ideas gathered during the previous stages are to be combined into a final design. As much as possible the ideas proposed is crosschecked with the community.

GOAL

'To provide an architectural solution that is within the means of the community and that **assists in redefining a contextual identity for** the relocated community'

DESIGN CONSIDERATIONS

- Social and communal aspirations
- Disaster resilient design
- Local conditions such as climate etc
- Culture
- Local building techniques
- **affordable construction & simple** maintenance
- Simple construction, to allow for unskilled labour
- Functional

THE PROJECT IN SHORT

BRIEF

Design Community facilities for Masagana that is affordable and disaster resilient.

APPROACH

The design approach is to take cues from traditional Filipino architecture whilst introducing contemporary ideas. The overall project approach has been to learn from previous generations and to use local materials and methods that the community is familiar with.

FOCUS

The focus has been on adding value by allowing the design to have double uses where possible.

OBJECTIVE

To provide a design that is affordable and that the community can build themselves, whilst retaining architectural quialities

METHOD

This project have been a collaboration with Masagana and TAO Pllipinas. Thourough research has been undertaken as preparation of the project. Site visits to day care centers and social housing projects formed a wider context. Workshops were held with the community to establish the brief for the community facilities.

CONCLUSION

Hopefully the design I have provided will be accepted by the community and will be constructed in the near future.

'The world cannot afford for everyone to reinvent the wheel, or nothing will move forward.'

KEY QUESTIONS

-How can a building be affordable without compromising design and function?

-How do you deal with sustainability and social issues?

-How do you design a contemporary building, yet without losing cultural values and heritage?

-How can design and planning assist in improving people's lives?

-How can the design be made resilient to disasters and what can be learnt from traditional design?

AN IMMENSE TASK...

With so many millions of people living in informal settlements throughout the Philippines, the task of constructing affordable housing at that scale is at risk of being too vast to be carried out in a sustainable way. Nearly every year more people are rendered homeless by another disaster, making the construction of housing comparable to pumping out water from a boat with a hole in the bottom.

Nevertheless, there are numerous officials and NGOs with great courage working together trying to improve the situation. Also the informal settlers themselves play an ever increasing role in working towards a more sustainable living situation, initiating resettlement projects or upgrading their current housing for improved disaster resiliency. I cannot but admire the immense strength and will power that these people possess, step by step persistently working towards a common goal.

Despite this, the challenges are great, especially for architects and urban planners setting out the new direction. Is building a sustainable community a luxury that cannot be afforded under these circumstances? Or is this vital in order not to have to relocate the same people again after ten years, rendering the previous efforts futile in the long term? That would certainly be a waste of resources that we cannot afford. Has the term 'building sustainably' been reduced to merely the physical notion of building durable structures without inlcuson of a concern to create a socially thriving community?

I have come to believe that there has to be balance between the two; and that it is not an impossible task, but difficult. There is a saying; "beggars cannot be choosers". In the harsh world we live in beggars cannot be choosers, but this is where the rest of us come into the picture, especially us professionals in the construction sector. We can choose, and we can choose the path to dignified lives for all. So let us not compromise this. This includes a great responsibility to learn from each other's successes and failures to keep them from being repeated. The world cannot afford for everyone to reinvent the wheel, or nothing will move forward.

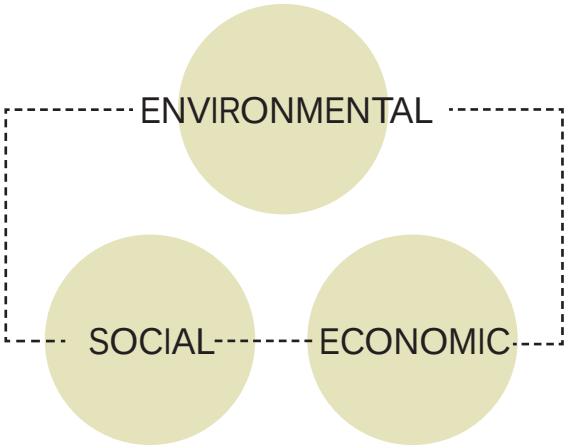
Still, how do you measure success? And how do you make sure a project is successful in another environment under different circumstances? The answer is that you can't. You can never know beforehand. But we can all work together for a common goal rather than against each other.

WHAT IS SUSTAINABILITY?

There are many definitions of sustainability. Maybe the simplest and most straightforward one is:

'...improving social welfare without degrading the environment'

(Belcher in Janssen, 200, p175)



(What is Sustainable Development, nd),

ARE WE DONE WITH SUSTAINABILTY?

For some people, the phrase sustainability has nearly lost its meaning. It is a term being used by anyone anywhere; in architecture, in the fashion industry, in magazines and also politically, often without any official criteria for calling it so. One can discuss if the term has been degraded to merely being a label used by companies or individuals in pursuit of the consent of the public. Is it now only a fashionable term indicating present-day ideals, where the intention is more valued than actual results? Are we done with sustainability?

I believe we are not. Sustainability still represents an idea that is becoming increasingly crucial to sustain the well-being of our planet, in the time of climate change, poverty and degradation of the environment. But it seems that maybe we have now reached the threshold where we might shred the label 'sustainable' and instead agree that this is the only way to move forward, that there is no acceptable alternative. In doing so, the term 'sustainability' becomes to some extent obsolete. Professionals should work towards the day when instead people label things as 'unsustainable', should it work against the common goals of a richer future for all. By this I do not mean that the majority of processes or production lines today already are sustainable, quite the opposite, but rather that the attitude amongst people should change from accepting this fact to disapproval and demanding change. The starting point in every undertaking should be sustainable, not merely seeing it as something to work towards. How can we have a starting point where something is not 'capable of being sustained'? Yet this is the reality for many people and processes, and this should not be forgotten or ignored. Change takes time and has to be conquered step by step.

But whether we need a phrase or not to tell us in which direction to go, the goals we are striving for will remain the same and just as important. So what are the goals? According to the World Commission on Environment and Development 1987 (quoted in What is Sustainable Development, nd), sustainable development is;

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

I might myself struggle to define sustainability, yet I unconsciously sense if the steps I am taking are along the right path or astray. It is a balance between the social, environmental and economic factors expressing the numerous needs and possibly contradicting yearnings that together shape the results and that defines if a project/an idea or a thing is 'sustainable'. (What is Sustainable Development, nd)

To find this balance in relation to the buildings and the community, is what I have strived for in this project. In search of this, I have worked with the community in establishing their needs and desires and I have evaluated and crosschecked with the families as much as possible throughout the project. A project of this kind means compromising between separate needs for an overall higher standard and some aspects require more focus than others. Just as there is no architectural solution fits all, there is no sustainable recipe that can be followed. So maybe we do not need a loosely defined phrase but just to open up and listen and continuously evaluate the balance to ensure that we are on the right path.

MY ROLE

In addition to provide technical assistance, I have tried to make good use of every penny **spent by maximising floor space and by adding** value by designing features to have double use whenever possible.

WHAT IS AN ARCHITECT'S ROLE?

Many of the problems relating to suffering and deplorable living conditions for millions of poor can be found in the built environment. This implies most of them can be dealt with by proper architectural and planning solutions;

"We are dealing with an urgent problem of our epoch, nay more, with the problem of our epoch. The balance of society comes down to a question of building. We **conclude these justifiable alternatives:** Architecture or Revolution. Revolution can be avoided." (Le Corbusier in Architecture for Humanity 2006, p35)

Although of great importance, architecture is not the only solution to the problem. In fact, this approach has long since been considered a failure (Özkan in Serageldin 1997 pp 41-46). The undignified living conditions of so many results from numerous combined issues, including failed policies and regulations, inappropriate politics and financial inequality, just to mention a few (Tannerfeldt & Ljung 2006, p 14). It is not solely an issue of building. Thus an architect's role needs to involve a lot more than just producing drawings for buildings. In fact, architects play a vital role in post- disaster recovery and policy making as a profession tying other professions, the people and governments or organisations together, looking to find a long term solution for all (Cesal, E. 2014).

Despite this, the focus often seems to be little on the people's needs (Serageldin 1997 pp 8-11). Have architects lost their role of serving the people and become mere artists, working more according to their own agenda than that of the people's? If so, is the connection between people and architects retrievable? People, it seems, lost some of their faith in the power of architecture to improve living conditions after the big failures of Modernism, and the profession have ever since had to make up for lost credibility (Architecture for Humanity 2006, p42). Yet progress is made and architects grow more aware every day of the importance of designing with the poor not only for them (Smith et al 2011). In addition, architects can encourage people to improve their lives. Ismail Serageldin (1997) promotes the shift from 'Architecture for the Poor' to 'Architecture of Empowerment';

'It is about challenging architects to do more than build for the poor, or encourage self-help. The architecture of empowerment invites them to rethink the premises of the process of design as much as the process of building. It challenges them to shed their assumed omnipotence and to become enablers for the poor.' (Yunus, M. in Ismail Serageldin 1997 p7)

During these past few months, I have pondered upon what my role in this project would be. I would like to see it just like that; someone who assists this community in finding alternative ways to an improved life. I am trying to see myself as their servant, employed by them to help realise their dreams and maybe most importantly, to add to them. As much as these people need technical assistance, they need someone to help in recognising the full potential of the project. I feel that my most important role in this project is identifying possibilities and multiplying values by make double use of features possible. In my eyes, this would give the highest return to the community. I have tried to focus on 'adding extra value' to every part of this project, and so the value of my work lies in introducing new concept rather than just producing drawings. I have had to crosscheck to make sure what I have proposed is in line with the goals I set out originally, and it has truly been a great challenge for me, but one that I am most grateful I undertook.

WHAT IS GLOBALISATION?

> **'The intensification of social relations** that link distant localities in such a way that local happenings are shaped by events occuring many miles away and vice versa'

(Giddens in Eldemery, 2009, p344)

GLOBALISATION; THE END OF CULTURE?

As the process of globalisation is ever increasing, so ideals deriving from one part of the world are introduced in others, sometimes to disastrous effects. For the most part though, globalisation and its associated trade are a valued source of income, especially for developing countries. But does globalisation have a downside? There are tendencies towards homogeneity both culturally and architecturally. Buildings erected as far apart as the Middle East and South America look more or less the same. This 'sameness' poses a threat to local traditions and cultural diversity (Eldemery 2009, p344-347).

In times of technology, constructions are standardised globally and buildings are increasingly designed without any consideration to context whatsoever. An obvious example is the popular shopping malls that in themselves constitute an isolated island ignoring climatic site conditions in favour of air-conditioning. Grace Ramos (2014) points out that the Philippines are very much part of this process with strong influences from the developed countries, but that it is a necessary step on the quest to improved development. Yet how do we preserve cultural heritage on the way? How can traditional architecture and heritage be promoted alongside economic growth? There is no simple answer to these questions. Ramos means that there is always a form of hybridisation of brands etc. establishing themselves in different countries and cultures; they are to some extent adapted to the local culture. But an overall homogenisation is still taking place and there is no evidence it will stop.

The Western world has a long history of colonisation, and with them they brought their culture and building traditions, often unsuitable for tropical climates (Fry & Drew 1956). The Philippines are part of this history. The Spanish and American periods are now part of the Philippine history and heritage, as the Filipinos adopted the styles introduced to them, yet managed to make them their own (Valera-Turalba 2005).

Today traditional lifestyles, housing and ideals are recurrently traded for Western ideals associated with progress and prestige (Eldemery 2009, p347). Eldemery argues that globalisation leads to the loss of 'place identity', which plays a crucial part in the network of physical, psychological and social notions that together constitutes culture. It would not only be madness to try and keep people living according to old traditions when the times are radically changing, but also unjust. Everyone has the same right to benefit from technological or social advances. Old ways of building and living might have been suitable when established, but may not necessarily be appropriate now. For example, notions such as equality and feminism bring radical changes to economic and social structures of families, communities and towns, and are in my opinion in general for the better. So as architects we also need to listen to the current beliefs and preferences among the people, otherwise there is a grave risk of rejection (Özkan in Serageldin 1997 pp 41-46). No matter how great the idea or agenda is on paper, if it does not correspond to the desires of the people, the efforts ca be both futile and costly.

The answer seems to be in involving the people directly to find a balance between local traditions and the new ideals (ibid.). It also includes the difficult task of evaluating what notions are still contemporary and what is changing. I believe that architecture can retain and promote cultural heritage and identity whilst remaining contemporary. Architecture cannot stop globalisation, but it can work with it.

general BACKGROUND

Before any design work can take place it is important for a designer to understand the context for the project, both social and environmental factors. In this chapter the reader is initially introduced to the Philippines as a country, and some cultural , historic and climatic aspects. The housing stuation is presented as a background to understand where Masagana as a community fit into the greater picture of the Philippines.

the PHILIPPINES

7107 ISLANDS

1. 1986 people power revolution

The official name of the county is the Republic of the Philippines and is located in Southeast Asia. The land area of some 300,000km2 is distributed over more than 7000 islands, whereof the largest one is Luzon where the capital Manila is situated. (Valenciano 2014) (Varona 2012)

The country was colonised by Spain in the 16th century. The Spaniard missionaries introduced Roman Catholicism to the Filipinos and the religion finally got established as the national religion (Valera-Turalba 2005). After a revolution at the end of the 19th Century to break free from the Spaniards, the Americans colonised the islands. They established schools and introduces English as the official language. The Philippines finally became independent 1946 (Tomeldan 2014).

Dispersed over the numerous islands is a population of nearly 100,000,000 inhabitants (National Statistics Office, nd). The population increased rapidly during the latter half of the 20th Century, and is expected to reach 140,000,000 by 2040 (*Philippine Population Would Reach Over 140 Million by the Year 2040 (Final Results from the 2000 Census-based Population Projections)* 2006)

POPULATION

YEAR 2000 **76,500,000**

YEAR 2010 **92,340,000**

YEAR 2040 **140,000,000**

(Philippine Population Would Reach Over 140 Million by the Year 2040 (Final Results from the 2000 Census-based Population Projections) 2006)

1534 COLONISED BY SPAIN
1896 PHILIPPINE REVOLUTION
1902 AMERICAN PERIOD
1942 JAPANESE OCCUPATION
1946 INDEPENDENCE
1986 PEOPLE POWER REVOLUTION

(Tomeldan 2014)

National Capital Region

Metro Manila

POLITICAL STRUCTURE

- NATIONAL GOVERNMENT
- REGIONAL GOVERNMENT
- PROVINCIAL GOVERNMENT
- MUNICIPAL GOVERNMENT
- BARANGAY (VILLAGE)

LGU

(UNICEF 2012 p6)

INFORMATION

POPULATION (2013)
92, 340 000*

CHILDREN 0-17YEARS (2007)
42%**

AREA
300,000km^2*

AVERAGE FAMILY INCOME (2012)
Php 235,000*

EMPLOYMENT RATE (2000)
93.5%*

SIMPLE LITERACY (2000)
92.3%*

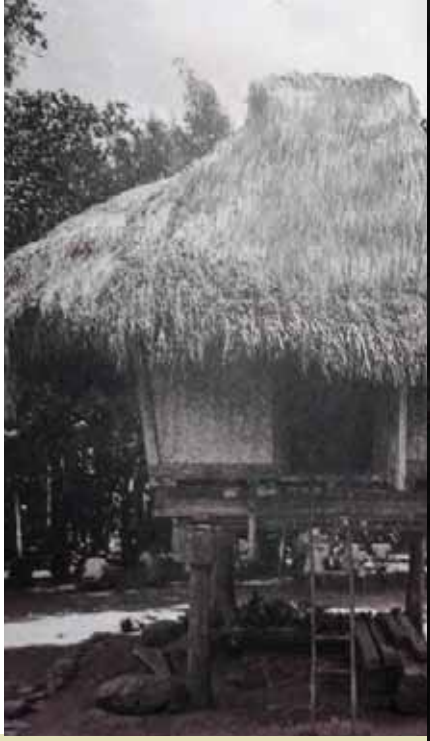
FUNCTIONING LITERACY (2008)
86.4%*

*(National Statistics Office, nd)
**(Council for the Welfare of Children 2012)

2.

TRADITIONAL HOUSING

Since the warm climate allows for much time spent outdoors, traditional housing in the Philippines was generally small huts made of available materials such as nipa and bamboo. Although the different tribes had different traditions and forms of buildings they all utilised the materials abundant in their surroundings. They were generally well ventilated with screens and weaves were the wind was allowed to penetrate the building. A common trait is the roof made of several layers of dry vegetation, often high pitched and sometimes descending as low as to eliminate the need for walls. Nipa and bamboo do not store heat and the structures were able to stay cool (Valera-Turalba 2005) (Perez, Encarnacion, Dacanay 1989).



4. All images on this page from (Perez, Encarnacion, Dacanay 1989)

CHALLENGE TODAY

The small human scale and the tactility are principles worth noting in the old traditional structures, something that often get lost in buildings today. The traditional buildings were well adapted to the tropical way of living. Many of them were elevated on stilts to keep moist from the ground and vermin away, as well as being safe for floods. The challenge we are facing today is how to manage affordable mass-production of housing yet still keep the human scale. Due to safety requirements and the need for affordable solutions, the housing produced today too often renders a monotonous concrete park where little counteracts the harshness of the material. In this environment colours, vegetation and organic materials play an important role in making the neighbourhoods more inviting. This is demonstrated incredibly well in St Hannibal Empowerment Centre.

3.

In the PHILIPPINES

93.3%
of families live in single houses

Nearly half of the poorest 30% live on
10-29M^2

16%
of all families do not have electricity in their homes

Characteristics of Poor Families in the Philippine Poverty Situation in the Philippines 2007 (2009)

BELOW In St Hannibal Empowerment Centre every resident are required to have at least 10 different types of plants; rendering a simple neighbourhood design successful in creating welcoming and green communal spaces.

INFORMAL SETTLEMENTS

GLOBALLY

Informal settlements are the norm in many part of the world, especially in developing countries where 43% of the total population is estimated to live in slums (Tannerfeldt & Ljung 2006, p54). The Philippines are no exception to this trend. People throughout the world continue to move to the cities and the urbanisation rate has never been as great as it is now. The cities struggle to accommodate the ever increasing population, and leave millions to live without essential amenities (ibid). Yet as these areas are homes for people, they are also vibrant neighbourhoods with micro-businesses 'popping up' everywhere.

WHAT IS A SLUM?

'...the products of failed policies, bad governance, inappropriate legal and regulatory frameworks, dysfunctional markets, **unresponsive financial** systems, corruption, and not least, a lack of political will.'

(Tannerfeldt & Ljund 2006, p14)

LOCALLY

Metro Manila has experienced informal settlers for a very long time but their presence became officially noted in the 1950s. In the 1970s the problem had escalated and huge informal communities had emerged where poverty, lack of education and housing was just a few of the problems associated with the areas. These challenges was nothing new to the world as urbanisation processes were taking place in most development countries during the latter half of 1900s (Cochran 1993) (Tannerfeldt & Ljung 2006).

The government and President M. L. Quezon acknowledged the problems already before the Second World War II, but any counteractive resettlement programmes were not to be implemented until the 1950s (Varona 2012).

Today informal settlements can be found throughout the whole metropolitan area. ISFs are interspersed within the formal urban fabric and they play an essential part in the business ecosystem of the city (Ramos 2014).

TOWARDS THE BETTER

54.4% 1990 ----> 40,9% 2009
of the urban population living in slums
United Nations human settlements programme (UN Habitat) 2013

57.0% 1990 ----> 22,0% 2011
infant mortality rate
(National Statistics Coordination Board 2012)

80.0% 1990 ----> 30,0% 2011
mortality rate under five years
(National Statistics Coordination Board 2012)

26.5% 1992 ----> 20,2% 2011
underweight children years 0-5
(National Statistics Coordination Board 2012)

WHAT IS A SLUM?

A settlement that lacks one or more **of these essentials:**

- safe water
- sanitation
- **durable & permanent housing**
- **sufficient living space**
- security of tenure

United Nations human settlements programme (UN Habitat) 2006

TROPICAL CLIMATE

The Philippines are located in the tropical zone and has generally a Warm- Humid Maritime Climate. As is common with islands, they demonstrate slightly different climate types due to variation in size and shape in combination with their location, prevailing winds and currents.

NATIONAL CLIMATE

1 Two pronounced seasons, dry from November- April and wet during the rest of the year. Maximum rain period is from June to September

2 No dry season with a very pronounced maximum rain period from December to February. There is not a single dry month. Minimum monthly rainfall occurs during the period from March to May

3 No very pronounced maximum rain period with a dry season lasting only from one to three months, either during the period of December to February or from March to May. This type resembles type 1 since it has a short dry season

4 Rainfall is more or less evenly distributed throughout the year. This type resembles type 2 since it has no dry season

SITE

FACTS

AVERAGE TEMPERATURE 26°
COLDEST MONTH : JANUARY
AVERAGE RELATIVE HUMIDITY : 70-85%

(*Climate of the Philippines*, nd)

DESIGN FOR TROPICAL CLIMATE

In warm climates people need to keep cool and overheating is mainly prevented through evaporation by sweating. In humid tropical climates on the other hand, cooling through evaporation is often limited due to the high relative humidity (RH) of the air, which reduces the amount of water vapour that can be transferred to the atmosphere.

Movement of the air removes the saturated air surrounding the body replacing it with air with lower RH, thus increasing the cooling effect in the body. To maximise air movement, buildings should be located and oriented as to take advantage of any prevailing winds. Long narrow buildings perform better than large squat ones. Openings should be large and allow for cross ventilation throughout the building. Often indigenous architecture in humid tropical climates lack walls altogether, thus allowing air to move freely (Fry & Drew 1956), (Koenigsberger et al., 1974) (Oakley 1961) (Valera-Turalba 2005) (May 2010) (Hendrickson 1995).

It is also important to protect the indoor space from direct sunlight in order to keep it as cool as possible. Excessive use of glass without proper shading may turn the building into a glasshouse, resulting in an extremely uncomfortable indoor area. Therefore, proper shading devices and/or large roof overhangs are of ultimate importance. The orientation of large openings should also be carefully considered and if possible, located on the side facing away from the equator (Fry & Drew 1956), (Koenigsberger et al.1974), (Oakley 1961).

The orientation of the building also affects the indoor climate. Since the sun is very high close to the equator, this means the roof is exposed to most of the direct sunlight during the day. In the morning and in the evening the sun is lower and so the eastern and western walls are exposed to intense sunlight. To minimise this effect, a long narrow plan would on the east – west axis would be preferable to one large and square. Thus the building exposes only the shorter walls to direct sunlight (Fry& Drew 1956), (Koenigsberger et al. 1974) (Oakley 1961).

KEY NOTES

- cross ventilation
- Small thermal mass
- **east-west axis**
- shade building
- avoid direct sunlight

DESIGN FOR EARTHQUAKES

The Philippines are a group of volcanic islands and are located in the Pacific 'Ring of Fire'. This means frequent and sometimes devastating earthquakes and eruptions of volcanos (Phivolcs - Philippine institute of volcanology and seismology).

The impact of an earthquake on a building depends on a variety of factors. The magnitude, the depth and the location of the epicentre are all major aspects. The soil composition and the structure of the building also influence the impact. (Murty, C. V. R., 2005)

Some structures perform better than others and in general a light weight construction withstands an earthquake better since the intensity of an earthquake has more effect on a building with higher mass. However, building light weight is difficult in a building comprising multiple levels (ibid.).

During an earthquake, buildings tend to rotate around the centre of the mass of the building, which can be very destructive. To minimise twisting the building should have as a symmetrical plan as possible, preferably circular or square with an even distribution of mass. In general, all components of the building such as walls, roof and foundations, should be securely connected to support each other (ibid.)

KEY NOTES

- Light structure
- Symmetry
- Securely attached parts
- Simple plan

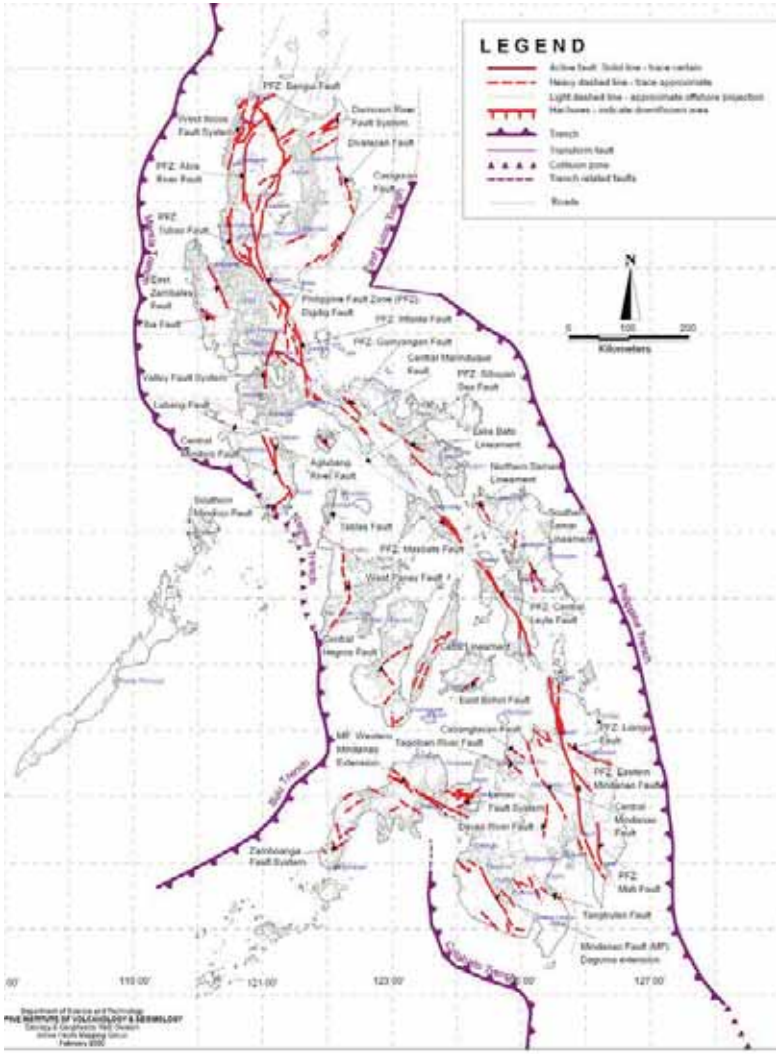
FACTS

In the Philippines there are

20 ACTIVE VOLCANOES

(Asian Inter-Parliamentary Assembly, 2011a p9)

5.



6.

KEY NOTES

- Heavy structure
- Avoid overhangs
- Securely attached parts
- Storm shutters
- Simple shapes

STATISTICS

typhoon	year	damage
Ondoy	2009	US$240M
Pepeng	2009	US$620M
Pedring	2011	US$340M
Pablo	2012	US$800M

(National Statistics Coordination Board 2012)

QUOTE

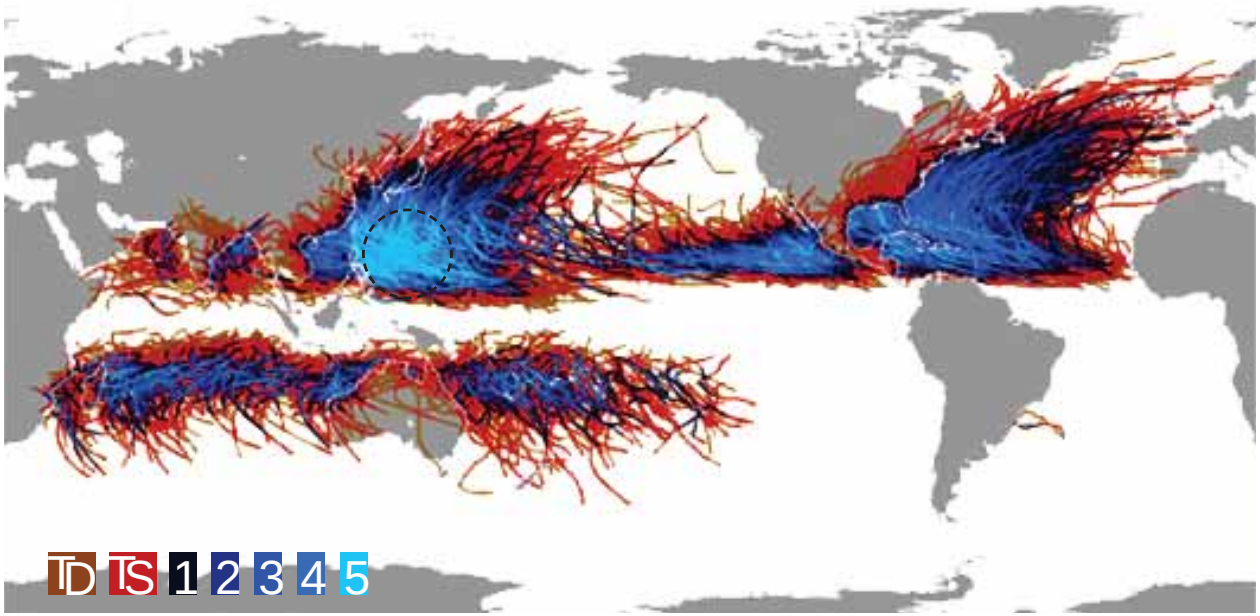
The Philippines are located in the **North Pacific Ocean where the highest** occurrences of cyclones are found in the world

(Typhoon Climatology, nd)

DESIGN FOR TYPHOONS

There are key strategies for a building to survive strong winds. Firstly, the mass of a building is important; the heavier the structure, the more likely it is to withstand the wind speed of a typhoon. Secondly; a strong roof securely attached to the walls of the building. The majority of damage to buildings is caused by the roof being blown off, thus weakening the rest of the structure. To reduce this risk, roof overhangs should be avoided.

Also, typhoons are not only characterised by high wind speed, but ultimately heavy rain and loose materials thrown around by the wind adds to the damage. This debris often breaks window panes. Glass splitter carried by strong winds should by all means be avoided. Therefore, protecting the windows is of ultimate importance to avoid injuries to people as well as property. Most commonly this is done by storm shutters in metal, timber or different kinds of boards (The Building and social housing foundation 2009-2010).



Saffir- Simpson Hurricane Intersity Scale

7. Tracks and intensity of tropical cyclones 1851- 2006

I visited several day care centers during my trip to the Philippines.

PROJECT BACKGROUND

The next step of preparation was to focus the research onto relevant subjects. As a day care center was my initial brief, I researched how they operate, what regulations, codes and requirements applied. I studied precedents to day care facilities, social housing, common construction methods and materials. In this chapter a summary of this information including inspirations and precedents are presented.

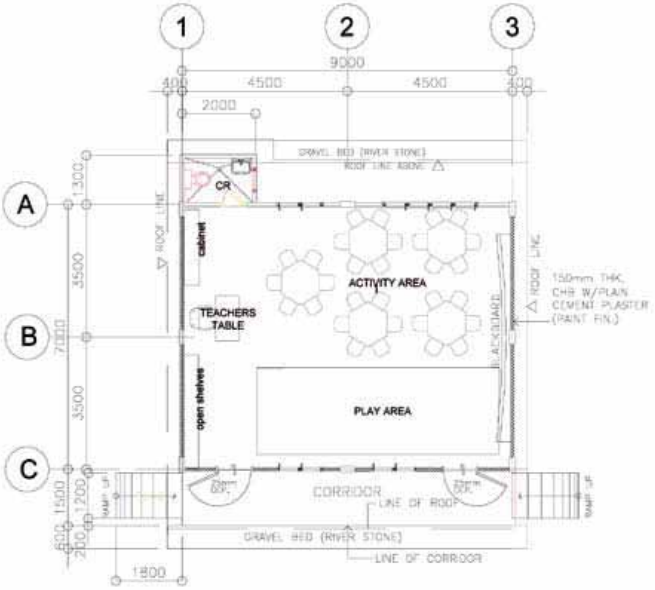
History:

DAY CARE in the PHILIPPINES

Day care has traditionally been a matter for the family themselves. In fact, it is still today based much upon the same arrangement, especially in under privileged areas where many extended family members live under the same roof as the nuclear family. Yet one can see a tendency that the break-up of these extended family bonds in conjunction with the increased urbanisation. Still, the mother most often has the primary responsibility for the upbringing of the child but the whole extended family might assists, including siblings and grandparents. Those who can afford employ a nanny. Often the nannies or 'yayas' come from rural areas and are staying with the family by whom they are employed. This has become the norm is middle class families. (Cochran, M. ed 1993)

Day care, although important, only plays a minor role in the upbringing of children as the sessions are only held for a couple of hours a day, and the government still officially emphasise the family's role in raising the children. However, preschool education has a quite long history in the country; already in the 20s the first preschools were established. These were non-governmental facilities often run by religious organisations. The government however, first included day care services in the legislation in 1964. This was implemented by the assistance from UNICEF Social Services Project. The day care services was decentralised 1978 with the Barangay Day Care Law , which transferred the administration of Day care centers to the local barangays. (Cochran 1993) 1990 the Republic Act 6972 reinforced this law by legislating at least 1 day care center in every barangay.

8. PERSPECTIVE OF TYPICAL PRE-SCHOOL BUILDING



9. TYPICAL PLAN FOR PRE-SCHOOL BUILDING
(Department of Education 2010)

Research:

HOW A DAY CARE CENTER FUNCTIONS

During my visit in the Philippines I visited several Day Care Centers (DCC) in different areas in Metro Manila. Before designing a DCC it is crucial to get an understanding of how they are run and organised but also to establish issues.

Most commonly, the typical DCC is run by the local Barangay. Occasionally, it is run by the local government or by an NGO or religious organisation. There is one or two teachers depending on capacity or funding. The children catered for are usually between 3-5 years old and are divided into different sessions lasting between 1-3 hours. The capacity varies greatly between different DCCs from 13 children to up to 60 in one session. However, around 50 seems to be the most common number. Some centers provide food for the children, it depends if they get food donated.

The buildings can vary from being purpose built to any covered space available. The general plan is one big classroom with other services such as a comfort room and possibly a kitchen attached. Depending on available space there might be a playground or open space for outdoor activities. Often the buildings are brightly painted to announce the function. Some DCCs are well equipped with TV, CD-player, books etc., whereas some lack essential equipment and even furniture.

It is important to point out that the DCCs in the Philippines are quite different from the ones in Sweden and in many other European countries. The Filipino DCCs are frequently relying upon the mothers to help out with tasks. These can be cleaning up every day, cooking and preparing food or assist in activities. They are usually assigned to a day when they are required to help out. This clearly shows that the DCC in the Philippines is not 'safekeeping' of the children to allow mothers to work as in Sweden, but rather the opposite. It can be more thought of as a preschool or 'förskola' in Swedish terms. Normally mothers stay home once they have children and can hence be dependent upon for the day to day tasks in the DCC. In some they even have their own space and the teacher might help in organising activities and livelihood training for the parents.

NAME	LOCATION	PUBLIC/ PRIVATE	TUITION FEE	NO. OF ROOMS	SIZE OF ROOM	CR	KIT.	SESSIONS /DAY	CHILDREN / SESSION	AGE	HOW MANY TEACHERS	SERVING FOOD	COST FOR BUILDING
LIGHTHOUSE	SMOKEY MOUNTAIN	PRIVATE	FREE	1	4.5X7M	1	NO	3 SESSIONS	50	3,5-5,5	1	NO	-
MANILA DAY CARE CENTER 1	BASECO	PUBLIC	FREE	2	5X5	1	NO	3 SESSIONS /TEACHER	50	3-5	3	NO	-
BGY VASRA DAY CARE CENTER	VASRA	PUBLIC	FREE	2	5X5	2	2	2 SESSION	40	3-4	1	YES	ESTIMATED PHP200,000
MANGGAHAN DAY CARE CENTER 1	KARANGALAN VILLAGE, PASIG CITY	PUBLIC	FREE	2	5X7	2	2	2 SESSIONS /TEACHER	50	4	2	YES	-
ST HANIBAL DAY CARE CENTER	ST HANIBAL EMPOWERMENT CENTRE, PASAY	PRIVATE	VOLUNTARY PHP10/ MONTH	1	3,5X5.5	1	NO	2 SESSION	13/21	3-6	1	NO	-
CHILDREN'S LITTLE UNIVERSITY	SOUTH TRIANGLE, QUEZON CITY	PRIVATE	FREE	1	3,5X5.5	1	NO	2 SESSION	13/21	3-6	1	NO	-
DONSOL EAST KINDERGARTEN 1	DONSOL, BICOL	PUBLIC	FREE	1	3,5X6.5	NO	NO	2 SESSION	10-12	4-5	1	NO	-
DONSOL EAST KINDERGARTEN 2	DONSOL, BICOL	PUBLIC	FREE	1	6,5X8,5	1	NO	2 SESSION	28/27	5-6	1	NO	-
DONSOL EAST KINDERGARTEN 3	DONSOL, BICOL	PUBLIC	FREE	1	5X7	1	NO	2 SESSION	25	5	1	NO	-
MOL DAY CARE CENTER 1	TANZA, NAVOTAS	PRIVATE	PHP10/ MONTH	1	5,5X8,5	1	NO	3 SESSION	12	3-4	1	NO	-

left a typical day care center in a rural town
right bamboo are often used instead of windows

'Education in the Philippines is a massive undertaking, with more than 54,000 schools catering to almost 20.5 million students and 15 per cent of the total national budget

(UNICEF2012p5)

COMMON ISSUES

- LACK OF SPACE
- LACK OF STORAGE
- LACK OF EQUIPMENT
- UNCOMFORTABLE TEMPERATURE

'Half of children who are the appropriate age for Grade 1 (6 or 7 years old) are not enrolled in school.Although the Government mandates free education, other school-related costs exist; therefore,

(UNICEF2012p5)

WHY FEEDING IS IMPORTANT

Undernutrition amongst preschoolers (5 years and below) is a big problem. The National Statistics Coordination Board stated that between 20-30% with an average of 26.6% of preschoolers in the Philippines were underweight in 2008. (National Statistical Coordination Board 2008) Therefore the providing of facilities for healthy preaparation of food is essential.

Site visits:

REFLECTIONS

During my visits to the DCCs I took the opportunity of interviewing some of the staff. They could tell me how they were organised, their capacity etc. Though they were happy to be of assistance, it was a struggle to receive any comment upon the performance of the actual building. The families interviewed had even more difficulties in imagine the building as something to be commented upon. This is understandable as to the rare occasions these families have of experiencing anything but the utmost necessity when it comes to the physical environment. Who can consider if it would be better with a bigger room, more toilets etc. if you are happy just to have a space and a CR in the first place.

There are way too many other issues to be dealt with before that step can be taken. So the most common requirements mentioned are regarding equipment, and a neat and tidy place.

The fact that this is so suggest that the main issues that people experiencing with the day care center are not in regards to the building. However, many can perhaps be addressed in a new building. Lack of furniture can for example be addressed by built in furniture. This also leaves a lot of responsibility for the designer to do a proper analysis to understand the need and to come up with a suitable solution that would allow progress.

THE IMPORTANCE OF PRESCHOOL EDUCATION

Children are shaped as human beings already when they are very young. They learn habits and values that they will carry with them for a long time, maybe for the rest of their lives. Therefore early education is very important to secure good and healthy behaviour amongst children in the challenge of improving peoples' abilities and lifestyles. The day care center should be a place where children can have the mind space and stimulating environment necessary to evolve socially, physically, cognitively and emotionally. This view is shared by Philippine Government and is part of the policy for early education. (Department of Social Welfare and Development 1991)

Unfortunately, despite the Governments good intentions for day care services, the necessary material means to fulfil them are often lacking. Regrettably, this pattern is most often seen in already unprivileged areas, yet preschool education would most likely have a bigger impact in these parts of society (Adams in Abulon 2013) (Department of Education, Culture & Sports, 1989). Even so, the importance of preschool education is acknowledged and all efforts are focused on improvement.

Interview: Ruth Palma

LIGHTHOUSE

DAY CARE AND LEARNING CENTER

Who is running the day care center?

The Christian association and the staff here are all volunteers. We don't have much money. The new building in the rear stopped midway during construction for lack of money. We hope to finish it and put a roof up before the wet season. We have to do it soon so that squatters do not claim the building.

What would your dream day care center be like?

- There would be a large room outdoors and a large room indoors for the children to gather and to play. There would be toys, lots of toys, because now the children only have recycled ones and very few. The center would be very clean neat and with proper toilets.

How many children comes here everyday?

About 150 children come here everyday. They are divided into three sessions. The first session is between 10am-12pm, second session between 12pm-2pm and the last session is between 2pm-4pm. We are already over capacity. Hopefully with the new building finished we can increase the capacity to 250.

So the children are only here for a maximum of 2 hours/day each, who takes care of them otherwise?

The children stay with their parents if they are not working or sometimes their grandparents help in taking care of the children.

Do you serve the children food here?

No, we don't anymore, but we used to. But that was when we had a sponsor that provided food. But we give them water for free.

What age group do you accept here at the Lighthouse?

They are between 3,5 years old to 5,5 years old. Sometimes we allow children that are 3,2 years old, but only if we think they are old enough. We do an assessment of all the children and their skilles before they enter and if a child is good we might take them on prematurely.

Interview: Elsa B. Costales

BGY VASRA

DAY CARE AND LIVELIHOOD CENTER

Who runs this facility?

It is funded by the local government by the initiative of the Mayor Herbert Baotista. But I run the actual facility.

Are you getting paid or are you volunteering?

Yes, I work for the social services and development department in the local government.

How many children and teachers do you have here?

I am the only teacher and I have two sessions every day. The morning session between 9am-11am and the afternoon session between 1pm-3pm. I have 40 children / session so 80 children everyday.

Is that the maximum capacity?

Yes, it is full. The demand is high. There is a three month waiting list with 17 children waiting to be accepted.

How old are the children and where do they live?

They all live in the vicinity. They are between 3 and 4 years old.

Can you tell me about this building, it seems very new?

Yes, it was finished last year in May. The previous building got flooded and it and all the things got damaged.

How long did it take to construct it and do you know how much it cost?

The construction started 9 February 2013 and was finished the 24 May 2013. I think it cost aroud Php 200,000.

Is the building only used for day care?

Sometimes I hold training sessions for the parents to the children. They are allowed to use the building when it is open between 8am and 5pm. They have tasks they help with such as cleaning and cooking for the children. Usually they use the room upstairs and downstairs is for the children.

Do you think it is a good building?

Yes, very good. But the ventilation is not too good, it gets so hot we would need air-conditioning. But it is a clean building. I also asked them to raise the ground floor so that we wouldn't have any more flooding.

Do you think it works well with two floors?

Yes, I think so. Then the parents can have their own space.

What would you want to improve?

We have no furniture for the adults upstairs so it is hard to have training classes. There is a lack of space, we have no playground. We have no books either. Our TV, CD-player and DVD-player got dirstoyed during the last flood and we hav not been able to replace them. I would like to have these things to teach the children, and so they can watch movies and play songs for recreational purposes. We have also very few toys for the children to play with. We have lego, that was a donation.

Interview: Doris

NATIONAL HOUSING AUTHORITY

What advice would you give to architects building in The Philippines?

Often they come up with too complicated and/or too technichal design solutions. It is also a shame that big manufacturers have too much influence in what gets built and with what materials. Designers should make use of local materials ore often that are suitable for our climate, not look to western culture too much.

So there is a lot of western influence?

Yes, I think so. It is very common for architects to design a house suitable for temperate climate here, but they should design for the tropics instead. But it is true that the people also strive for the western ideal. This is more common i urban areas than in rural. In rural areas people still build with bamboo and local materials beacause it is affordable. To shift from westernised design to a more sustainable and resilient design suitable for tropical climate would be the biggest challenge for the architect.

What should you consider before starting a social housing project?

Firstly cost, both for construction and land development. Maybe the site is not suitable for development. The location also influences the price, maybe the people cannot afford the location. Is the site prone to floodings etc. One should also consider detention of water on the site; it is not strange that there are floods, the water has to go somewhere. People do not build responsibly anymore. There should be a system on site to take care of the water, like a pond. Also, disaster resiliency and design for a tropical climate. We need too build better now, I'm afraid to say that we have been making the same mistakes every time. We read the same news in the newspapers 20 years ago about how many people died and how many homes have been destroyed after the last disaster. It is time to change.

What is the building situation like today?

It is very segregated, it is not good. But it is changing. Older generations prefer to have their own house but younger people are more openminded and might live in apartment blocks if they are close to work. But generally people tend t stay in the one house they have aquired because they cannot afford to move. Instead they upgrade their homes bit by bit.

'To shift from westernised design to a more sustainable and resilient design suitable for tropical climate would be the biggest challenge'

'We read the same news in the newspapers 20 years ago about how many people died and how many homes have been destroyed after the last disaster. It is time to change.'

Research: housing situation

SMOKEY MOUNTAIN

SOCIAL HOUSING PROJECT

FACTS

Smokey Mountain used to be one of Manila's biggest informal settlements with an estimate of 4147 families living there. It was located on a landfill area covered by a mountain of garbage stretching to the height of an 11-storey building in the harbour of Manila. In the early 90's the President ordered to have the dump removed and to build low cost housing on the cleared land for the unpriviledged families.

The first building were finished around year 2000 and was supposed to house some 2600 families. The buildings were 5 storeys, which is the maximum allowed without the provision of lifts. The project encountered difficulties by the extremely expensive foundations necessary to support the buildings on the soft landfill. Eventually the money ran out and the project were abandoned with finished foundations sticking up from the ground. New buildings were eventually constructed on the old foundations.

REFLECTIONS

I find the plan of the units with the loft remarkably good for the small area they cover. However, the area as a whole is very run down after only about ten years of occupation. This is a considerably short time for a building to be degraded to such a state. This is a very serious issue since once deterioration has commenced, it enters a bad spiral downhill to eventually become a 'vertical slum'. It discourages people from taking care and keeping the area clean, which in turn encoruage carelessness and crime. The effort was originally put in to make the area look nice with different coloured buildings etc, but dueto lack of funds has failed in providing maintenance. This is understandable since the rent collection rate is only estimated to about 20%. However, it is unacceptable and uneconomically to allow such new buildings to fall in disrepair so early on in their lifetime, One got to strive to create long term sustainable neighbourhoods, otherwise the good in building the blocks in the first place is undone.

UNIT SMOKEY MOUNTAIN

AREA 20m^2 + 12m^2 loft

COST CONSTRUCTION Php 268,621.48/ unit

COST INCL. FOUNDATION Php 2,000,000.00/ unit

PHILIPPINE CHRISTIAN SCHOOL

SMOKEY MOUNTAIN

An inspiring and **ingenious example** of good design for a minimum cost

below the triangular courtyard acts as the heart of the school visually connecting all the classrooms. It also doubles as a basket ball court/stage or assemply hall. It also serves as an oversized ventilation duct to create crossflow in the classrooms. To further improve ventilation the courtyard is open in the corners to allow light and air movement. the levels are painted in different colours to improve orientation.

BACKGROUND

This school was initiated by Philippine Christian Foundation (Philippine Community Fund in the UK), which was already running a school for children living in the Smokey Mountain area. After pressure on the local government the NGO was given a plot of land near the cleared dumpsite to build a school. However, the lot is located on reclaimed land and the foundations therefore was extremely expensive. But The NGO acknowledged the importance of building near where the children live in order to have them attend classes. A foundation made of piles down to 80m deep literally emptied the resorces for the project. But by using donated container vans to construct the school, the project could be realised.

The school not only teaches children, but doubles as a training center for adults, where adults can improve skills and their livelihood. This is an example in the policy of the NGO to assist in empowering poor people. For example they also hand out food at the end of each week for the children to bring home as an encouragement for the children to attend ad somwhat make up for loss of income as they are being unable to work. By giving extra allowances to children who behave well or performed well also acts as a carrot to learn.

With this philosophy, they also understand the value of an inspiring and functioning buiding as a learning environment.
(web ref O)

Precedents: housing solutions

EMPOWERING housing

Elemental Architects realised that a major issue with resettling of unpriviledged households is the need for organised progressive expansion once the families can afford it. They came up with a solution where a basic house is provided but where space is allocated adjacent to each housing unit for future expansion. This allows households to improve their living standards without forcing them to move. The concept provides safe structures and allows for individuality and a sense of ownership even in the poorest neighbourhood. A good concept that empowers people and a lesson to learn from.

10. ABOVE Quinta Monroy, Iquique, Chile
11. BELOW Villaverde, Constuticion, Chile

SAFE HAVEN bath house & library

This small project comprise of two separate buildings for the benefit of a orphanage in Ban Tha Song Yang in Thailand. Both buildings showcase a simple structure with unexpected architectural qualities, yet built by local people with local materials. Also recycled elements are incorporate in the design and are given new functions (Minguet, J. M. ed. 2011 , pp 148-157).

12.

13.

14.

Precedents: design for children

Soe Ker Tie House

ORPHANAGE

These small houses made by TYIN Tegnestue 2009 in Noh Bo, Tak, in Thailand, embody the care and the idea of play as an educating tool, creating spaces in the children's own scale that they can relate to and call a home. Building smaller houses rather than a larger dormitory gives the children sense of ownership and identity. The scattered plan forms hidden places and spaces outside between the buildings to be discovered. The loft configuration encourages play as well as being space efficient.

The little houses are built by local materials and are a good combination of traditional methods and materials with new ideas (Minguet, J. M. ed. 2011 , pp 158-169) (Architecture for Humanity, ed 2012, pp80-83)*Soe Ker Tie House* (2009).

WHAT: Orphanage

WHERE: Noh Bo, Tak, Thailand

WHEN: 2009

BY: Tyin Architects

BUDGET: $12,300 USD

AREA: 10M^2

OCCUPANCY: 4-6 people

15.

Precedents: disaster resiliency

MILLENNIUM SCHOOL

The Millennium School prototype as seen here in Camarines- Sur, The Philippines, is the winner in a competition held 2008. The aim of the competition was to instigate investment in sustainable and resilient construction rather than investing in rebuilding and reconstructing buildings that failed in disasters. This would save money and none the least lives.

The Design made by Architect Eleena Jamil utilises local materials such as reed and bamboo for structure. The design incorporates a large covered outdoor deck that ties the lineated classrooms together and provides shade and shelter (Smith, C. et al. 2011, pp158-159). web REF I.

16.

PHULONG YANTOK

The relocation site is currently undeveloped and the families that have relocated already are living in temporary housing.

THE COMMUNITY & CONTEXT

This is the story of Masagana: their past, their present and their future. It also present the relocation site and site analysis.

NAVOTAS

Some of the families have not yet relocated and still lived in Navotas. The photo below is taken by TAO Pilipinas after typhoon Pedring when many families' suffered severe floods.

17.

MASAGANA

Masagana of Navotas Neighbourhood Association is the targeted organisation for this project. The 69 member households are all informal settler families from an area in Navotas, Metro Manila. They have a long history of deplacement; initially due to a governmental infrastructure project through their original settlements. This forced the people of the area to start the organisation SANAGMANA in 2005 in order to find a resettlement site. Together they saved money to buy a resettlement site in the fishponds of Bgy Tanza, Navotas. However, in 2009 members realised that some of the former leaders had deceived them and swindled the common savings. The organisation was inevitably split - Masagana as we know it today was founded.

During September 2012 Typhoon Pedring struck the resettlement site with chesthigh stormsurges from Manila Bay damaging more than 40 Masagana members' houses, The dikes surrounding the site was also damaged and the water didn't recede. This made the Masagana members adamant to find a more suitable relocation site. They initiated projects to improve their community. After training in land research the organisation finally got a loan to buy a 1.4 has plot in Pulong Yantok, Angat, Bulacan, about an hours drive from Navotas. They received assistance from various NGOs and so their journey to an improved situation was finally on its way. (TAO Pilipinas 2011)

TO **ANGAT**

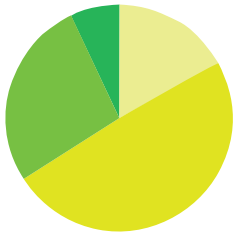
Bgy Pulong Yantok
1.4 has
Php 100-150(USD3.49)/m²

24km or
1 hour

FROM **NAVOTAS**

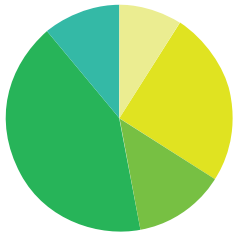
Bgy Tanza
5 has
Php700 (USD16.28)/m²

MASAGANA/SOCIO-ECONOMIC PROFILE



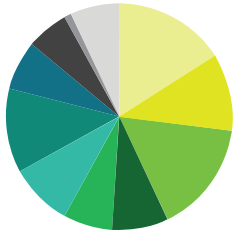
HOUSEHOLD SIZE

17%	1-3 MEMBERS
49%	4-6 MEMBERS
27%	7-9 MEMBERS
7%	10-12 MEMBERS



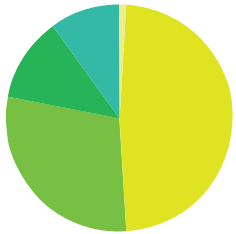
HOUSEHOLD INCOME

9%	1000-3000PhP/month
25%	4000-6000PhP/month
13%	7000-9000PhP/month
42%	10,000<PhP/month
11%	No response



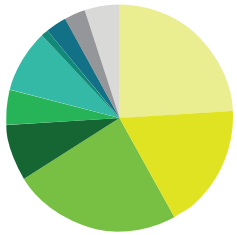
EXPENDITURES

16%	FOOD
11%	ELECTRICITY
16%	WATER
8%	EDUCATION
7%	MEDICINE
9%	TRANSPORTATION
12%	SAVINGS
7%	PAYMENTS FOR DEBTS
6%	VICES
1%	ENTERTAINMENT
7%	CELLPHONE LOAD



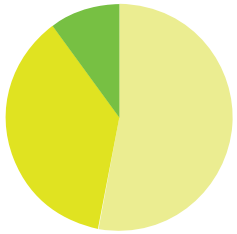
EDUCATION OF CHILDREN

1%	PRESCHOOL
48%	ELEMENTARY
29%	HIGH SCHOOL
12%	COLLEGE
10%	OUT OF SCHOOL YOUTH



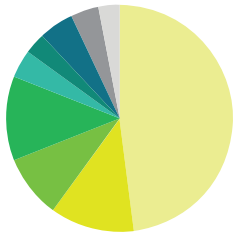
COMMON DISEASES

24%	COMMON COLDS
18%	FEVER
24%	COUGH
8%	DENTAL
5%	ASTHMA
9%	DIARRHEA
1%	MUMPS
3%	SKIN DISEASES
3%	RHEUMATISM
5%	OTHERS



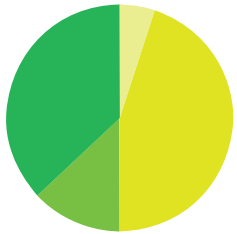
VACCINATION

53%	COMPLETE
37%	INCOMPLETE
10%	UNDERGOING



ACCESS TO MEDICINE

48%	NONE
12%	COMMON COLDS
9%	FEVER
12%	COUGH
4%	DENTAL
3%	ASTHMA
5%	DIARRHEA
4%	OTHER MEDICINES
3%	RECEIVED FROM LGU



WASTE MANAGEMENT

5%	BURNED
45%	COLLECTED
13%	COMPOSTING
37%	THROWN

SANITATION

58%	NO TOILET
42%	OWN TOLET

ELECTRICITY

64%	HAVE CONNECTIO
36%	NO CONNECTION

WATER SUPPLY

84%	BUY
2%	DEEP WELL
14%	WATER DISTRICT

HOUSING MATERIALS

85%	LIGHT
15%	MIXED
0%	CONCRETE

Interview:

MENELO ABUEVA

LEADER MASAGANA

How did the resettlement process start?

We needed to move from our previous settlement and needed to find land. We as a community did land research and finally found this site. it was difficult, it took a couple of years to find land that was affordable not too far away from Navotas.

How did you get funds to buy the site?

The Asian Coalition for Community Action gave us a loan. It was supposed to be paid back in three years but we negotiated it to five years instead. It would have been hard to pay back in three years. We also got help from Selavip, they were funding the temporary housing and will help with Php18000/family for permanent housing. The families mortgage are Php525/month for 64m² site and Php821/month for 100m².

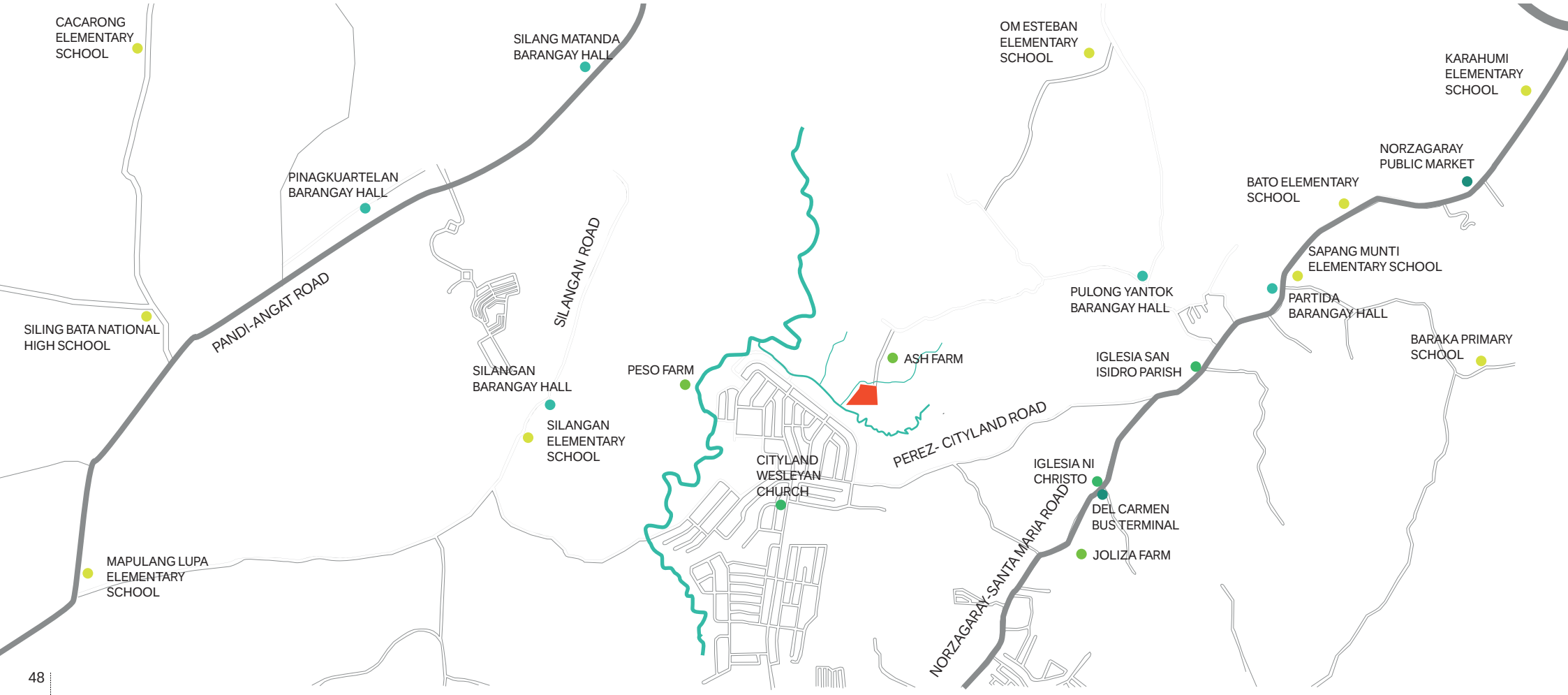
Could the whole community be involved in the planning of the housing?

Yes, we had workshops with TAO Pilipinas to decide what the houses would be like. We built models. At first we wanted single detached houses but it is cheaper to build duplexes. We voted which community facilities we wanted too. We are all very keen to start construction.

LEGEND

- SITE
- SCHOOL
- CHAPEL
- BARANGAY HALL
- OTHER PUBLIC SERVICES
- FARM

LOCATION PLAN



THE RELOCATION SITE

The relocation site is located in Phulong Yantok, Angat, in the province of Bulacan, about 30 km north of Metro Manila. The site is surrounded by farmland and is currently zoned as Agro- industrial land use. The closest neighbour is a poultry farm called Ash Farm with close to 30 large buildings which in themselves cover about twice the size of the relocation site. However, these buildings are hardly visual from the site due to the dense landscaping around the creek that runs along the northern and western boundary of the site. Unfortunately this creek is polluted by the poultry farm and cannot be utilised for drinking water.

18.

THE HOUSES

The planned houses are to be built by the families as part of sweat equity. They are designed to be duplexes to save money by sharing a wall. The structure will be reinforced concrete column and beam structure, for disaster resiliency. Most likely only one storey will be constructed originally but the structure allows for a second storey to be added incrementally. The walls will be built by concrete hollow block and comprise windows with traditional ventanillas underneath.

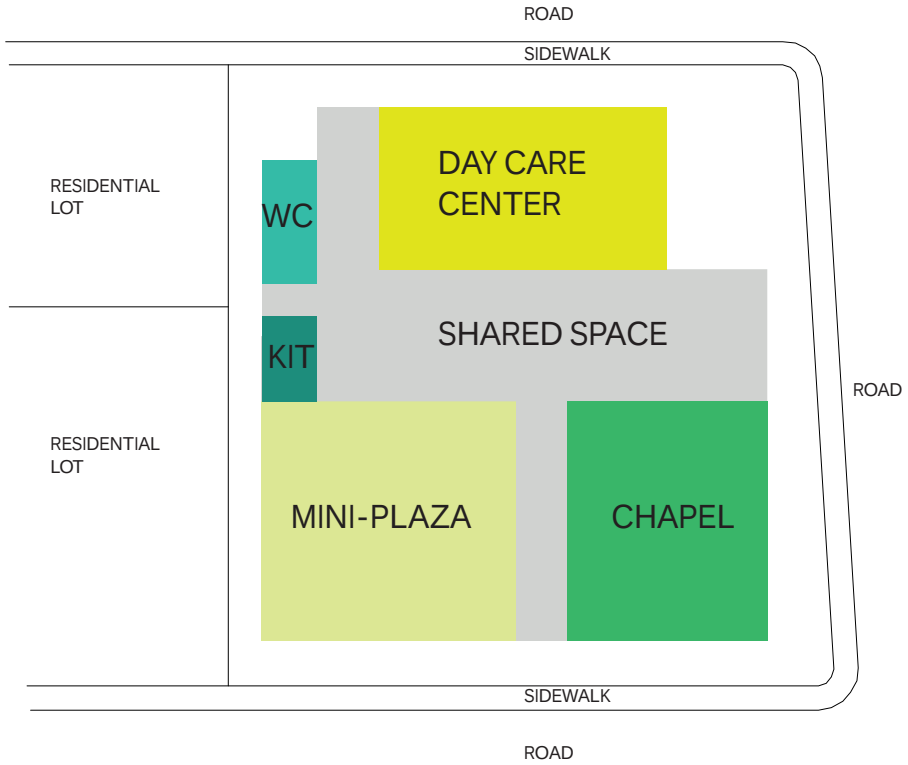
Right Model of housing at an early stage
Below photomontage of the housing, also at an early stage

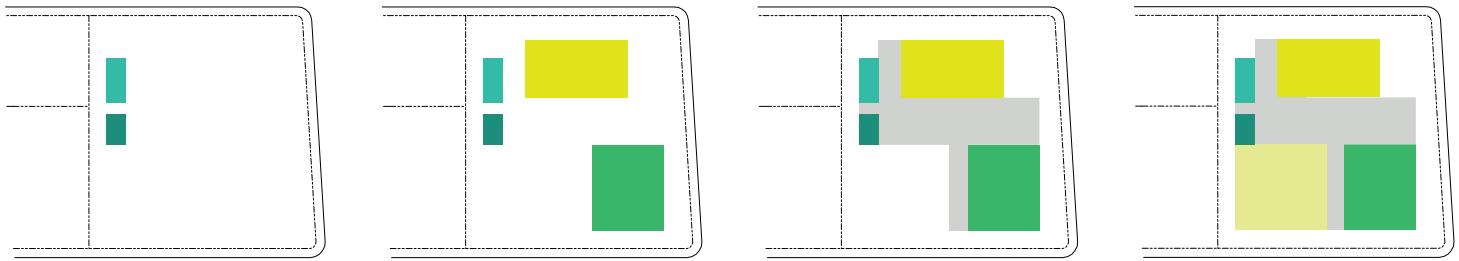
19.

THE RELOCATION SITE

The relocation site is surrounded by trees and dense landscaping on two out of four sides, although the actual site is currently used for agriculture by the community. There is an incline of about 14m from the creek to the southeast end of the site, with a very steep edge along the creek. This necessitates the use of gabions to secure the land from being subject to erosion and landslides. Due to cost this is initially only planned close to the access way to the site, which is run north along the eastern boundary past Ash Farm.

STRATEGIES/ **CONFIGURATION**





COMFORT ROOMS

The comfort rooms are already being constructed without any formal drawings. Their location are approximate

SHARED AREA

Due to the overlapping of functions throughout the day there is an opportunity to share facilities such as kitchen and comfort rooms. This way precious resources and space can be saved. This area will connect the different facilities.

DAY CARE CENTER

Since the day care operates frequently during day time the east west axis is more important here than in the chapel which is only used occasionally.

CHAPEL

The chapel will become a central gathering point in the Masagana community and deserves a welcoming and worthy setting.

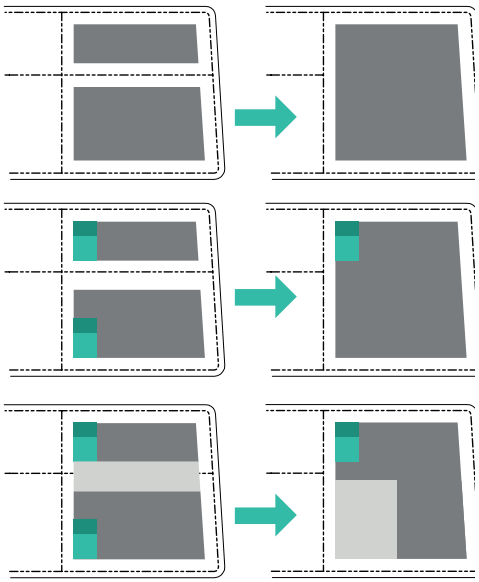
COMMUNAL PLAZA

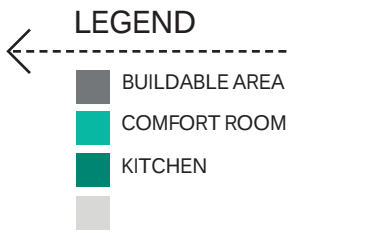
a forecourt or communal plaza can act as a lingering space and provide the otherwise often neglected open space.

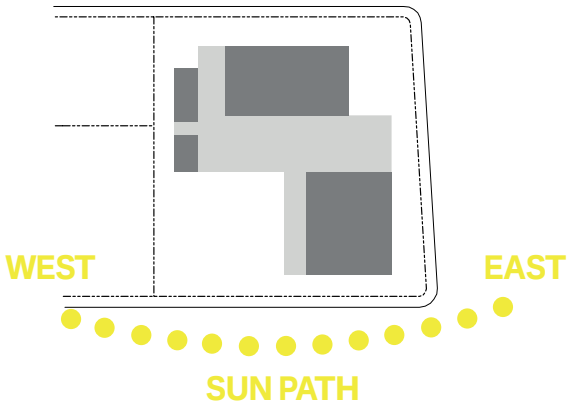
KITCHEN

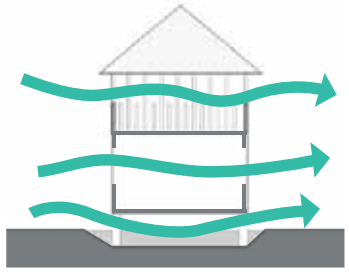
the kitchen is located close to the CR for easy water access and plumbing

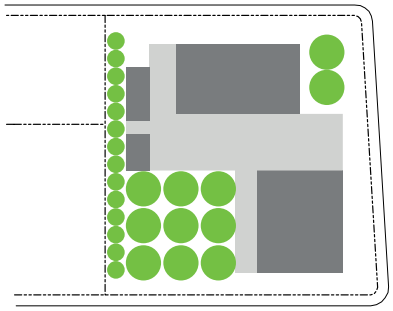
STRATEGIES/ **CONFIGURATION**

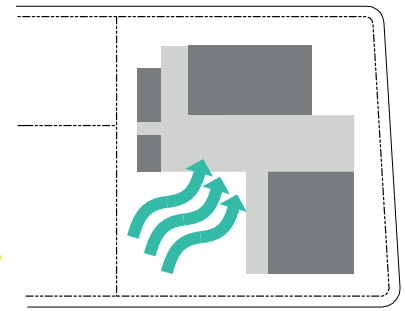


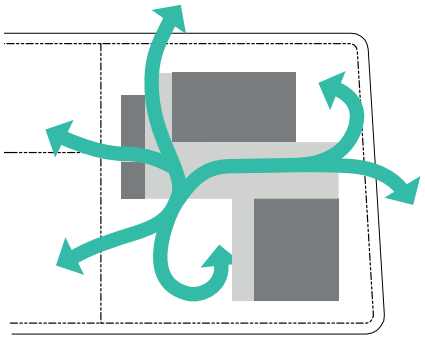


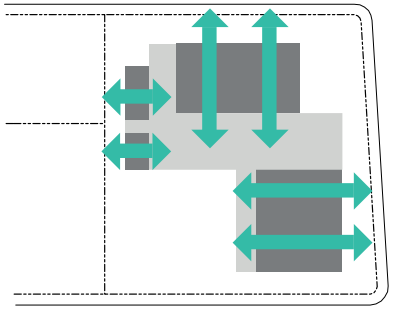












WIND FLOW DIAGRAMS

AMALGAMATION

By amalgamating the sites the allowable building area is increased and issues in regards to setbacks are reduced

SHARING FACILITIES

By locating facilities centrally these can be shared to save recources and space

OPEN SPACE

The space 'saved' from the setback is redistributed to a more useful area as a communal mini-plaza

SMALLER ENTITIES

By splitting functions into smaller separate buildings wind is allowed to freely move around rooms and to come from all directions

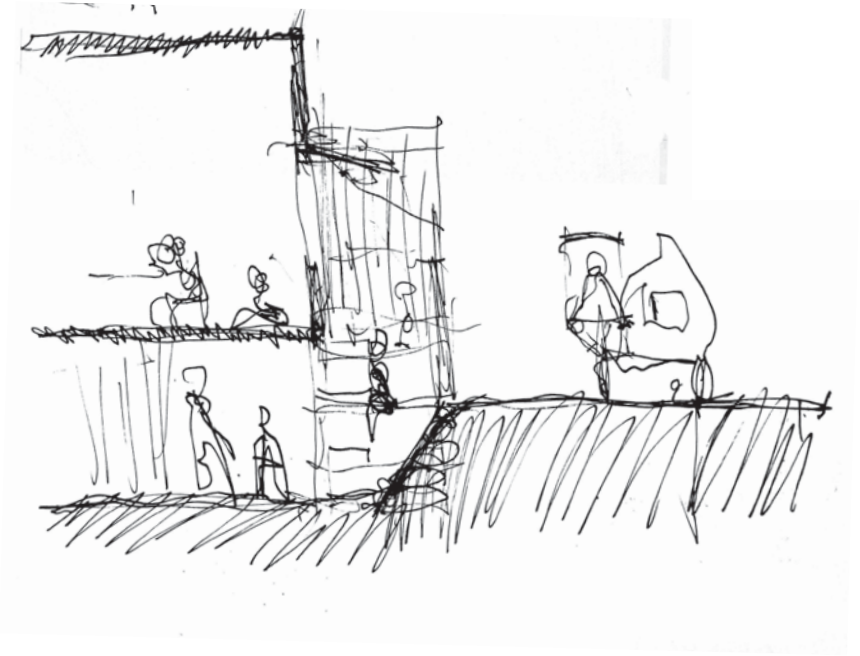
CROSS FLOW

Since every room is a freestanding building, cross flow is maximised from all directions. Also rooms are cooled further by alowing air to flow above and below

SHADE

Air is cooled when passing through vegetation and it can also be used to provide sought after shade. Bamboo is planted on the western boundary to shade the buildings from the low western sun and to function as a living fence. Trees are planted on the forecourt for shade.

PC SLIDING SCREENS
BAMBOO
SEAT
PLAYGROUND UNDER BUILDING
700
350
525
2
925
1000



THE PROCESS

Snapshots of the process is here gathered for anyone who wants further information.

OBJECTIVES

- To form a general idea of how a day care center should work in the eyes of the community.
- To make a list of necessary and optional spaces
- **To explore options and possibilities in ordering** and connection of rooms
- To establish critical and important factors
- To Involve the community in the design work

WORKSHOP/ **DAY CARE CENTER**

CONTENT

Like with any architecture project the most important step is to identify the need of the client. In this case the 'client' is Masagana community and my task is to help them materialise their wishes. They have already (before my involvement) established which community facilities they would require in their new neighbourhood. These were; a chapel, a day care center, a market, a training & livelihood center & a playground. Originally, I was only to assist with the design of the day care center, but since the site of the chapel was located adjacent it was proposed that I could assist in the design of both. This workshop was organised to initiate the design process by establishing a brief together with the community, but also for social bonding and to form an understanding of what is important to these people.

METHOD

The community will be divided into small groups to discuss how the day care center should be organised, how it should be built and with what kind of materials. With the help of card board with 1x1m grid system they will model a day care center with all its rooms and facilities. This allows them to explore the functionality of rooms and the relationship between them as well as understanding the spatial requirements.

Half the goups have the site of both the day care center and the adjacent site allocated for the chapel. The task is the same only they explore the possibility of linking the day care center with the chapel. At the end all groups present to each other and desired features are identified.

OUTCOMES

The people was very commited to their task and I was very much pleasantly surprised in how well they cooperated. Old and small, men and women, all were working together for a common outcome, helping each other, everyone one doing their part of the work.

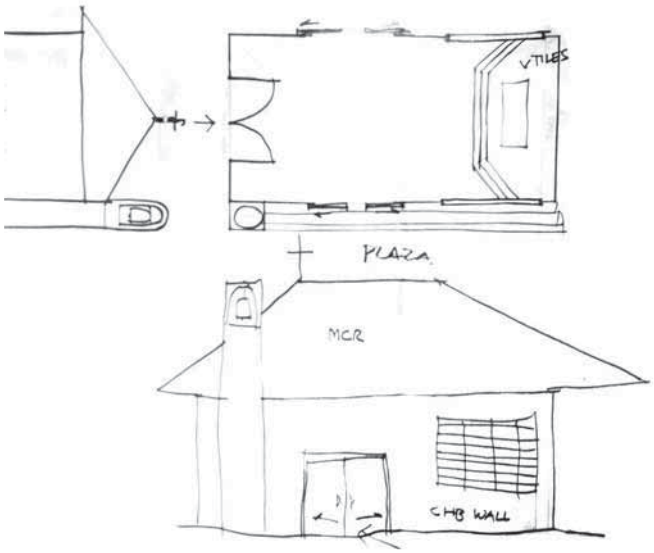
After a lot of effort and careful design they presented their ideas. The workshop did succeed in establishing preferred features and materials as well as setting out a brief for me to continue working on. However, there seemed not to be enough time to consider the chapel as well, so this will be treated in another workshop.

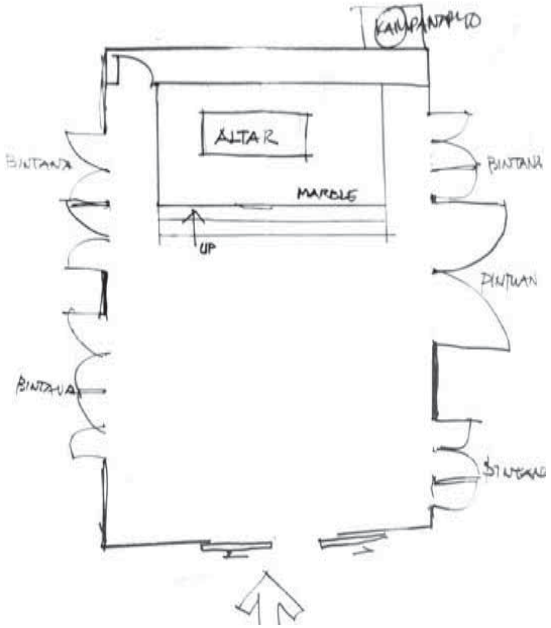
MATERIALS

- Micro concrete tiles
- Concrete hollow blocks
- Wood wool cement board
- **Borax treated bamboo**

FEATURES

- hip roof
- 1 kitchen
- 2 toilets, 1 for boys and 1 for girls
- Skylight
- Casement windows with grilles
- **Second floor multi purpose area**
- Garden
- Flagpole
- Shaded waiting area for parents
- Playground





WORKSHOP/ **CHAPEL**

OUTCOMES

This workshop was not only a workshop for the chapel, but also an opportunity to crosscheck my ideas with the community. The general outcome was a brief for the chapel and how it would relate to the other buildings. Although I could not be present during this workshop I had prepared sketches of a proposed building configuration and other design ideas for discussion during this meeting. The community agreed to the building configuration proposed in general and liked the proposed idea of a mini-plaza . However, they wanted to swap the chapel and the mini-plaza in order to locate the latter in a more protected position. They also agreed to raising the day care center a couple of steps higher than the chapel to accommodate the proposed playarea underneath. The community was also in favour of keeping the kitchen and the comfort rooms in separate buildings, to be shared by all facilities.

MATERIALS

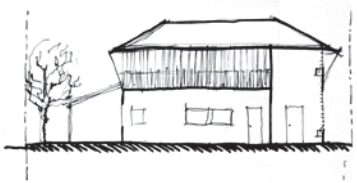
- Micro concrete tiles
- Concrete hollow blocks
- **Borax treated bamboo**

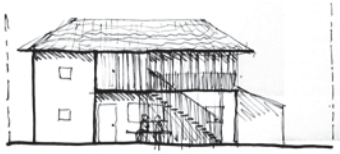
FEATURES

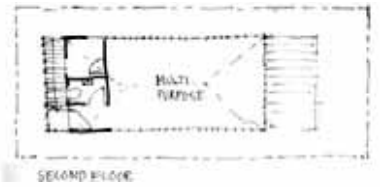
- Rectangular plan
- Raised platform for altar
- Bell tower
- Main doors to major road, with sliding side doors to mini-plaza and minor road
- Raised a couple of steps
- Steps to mini plaza can be used as stairs
- Lower part of wall CHB with upper part of Bamboo

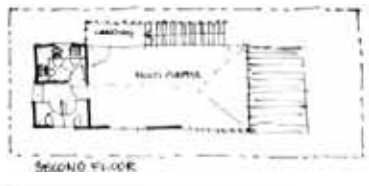
INITIAL SKETCHES

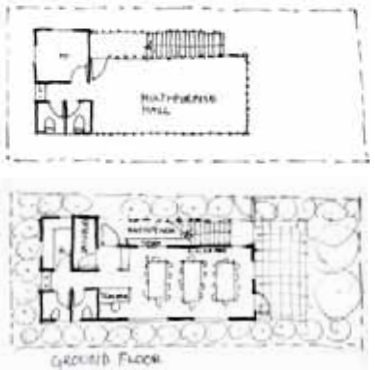
DAY CARE CENTER ONLY

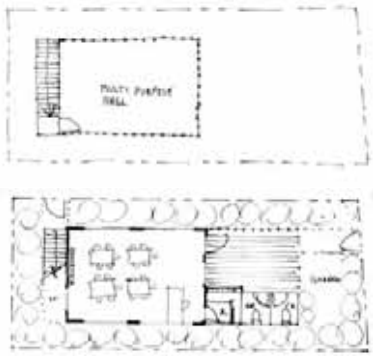


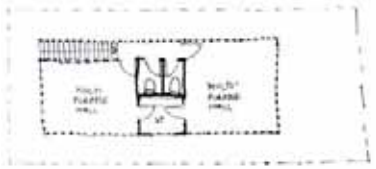


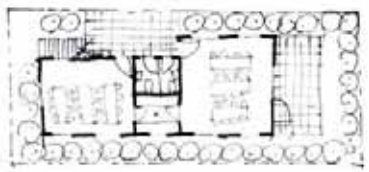


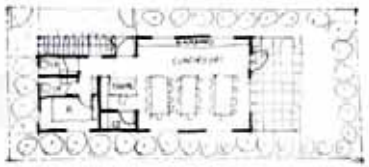


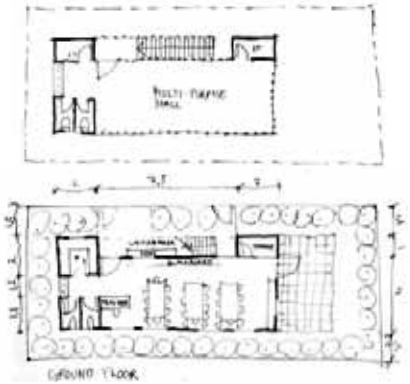


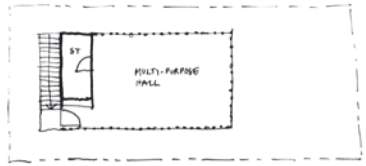


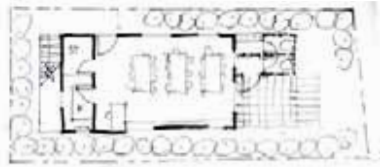




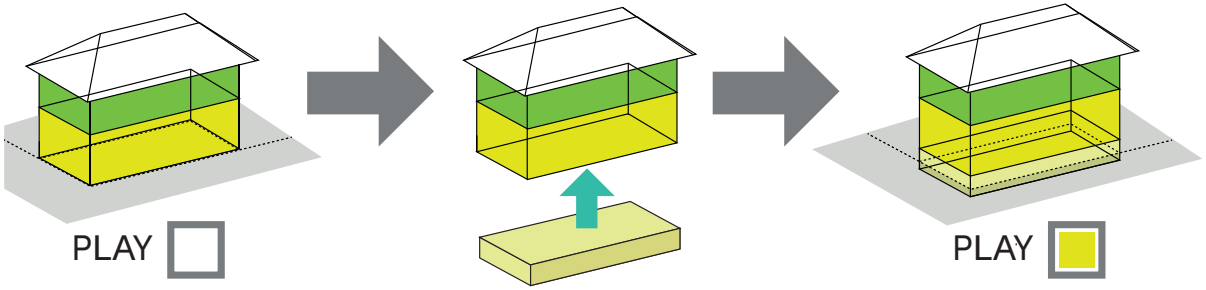






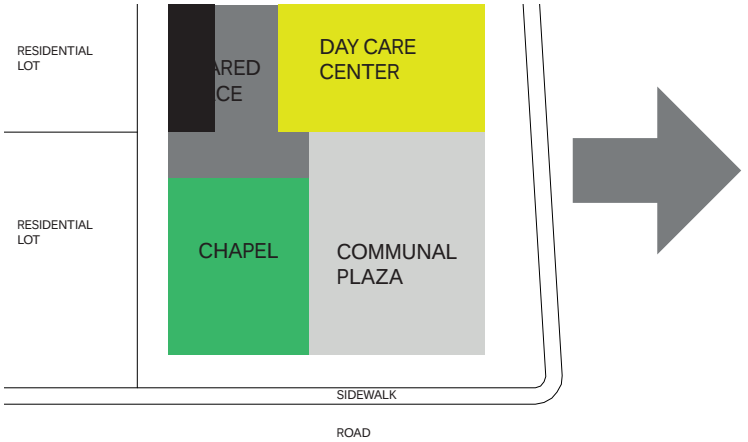


INITIAL CONCEPTS



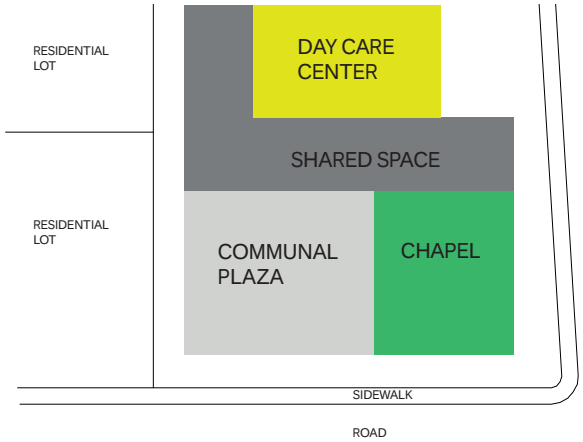
STEP 1

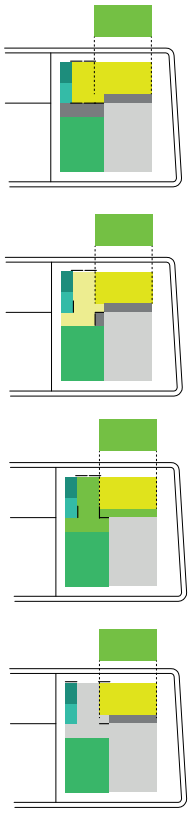
The first idea was to organise the buildings centralise the shared facilities around



STEP 2

The transitional or shared space in this project acts as a 'spine' around which the different functions are assembled.





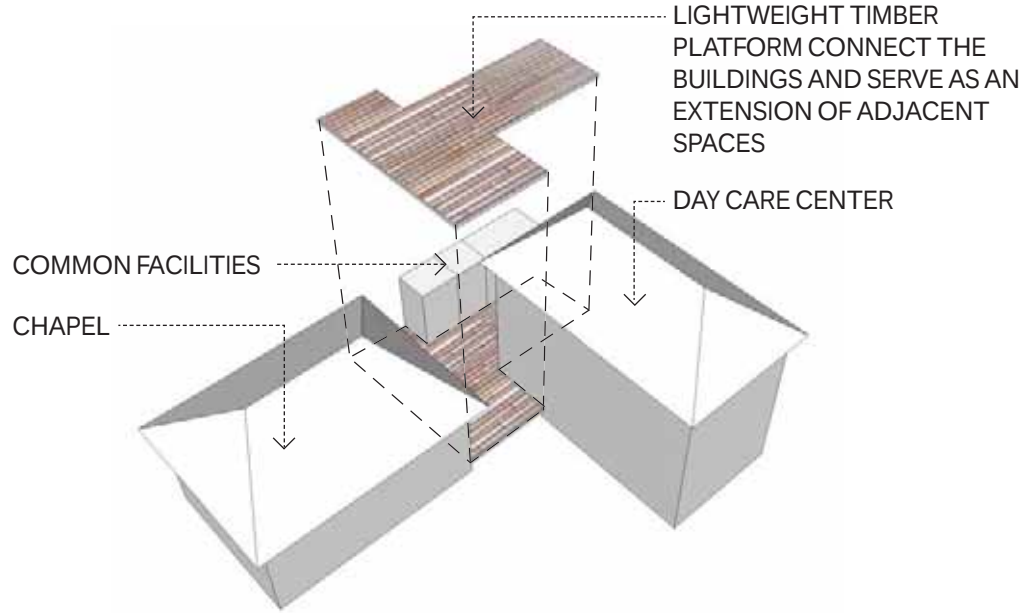
FLEXIBLE USE

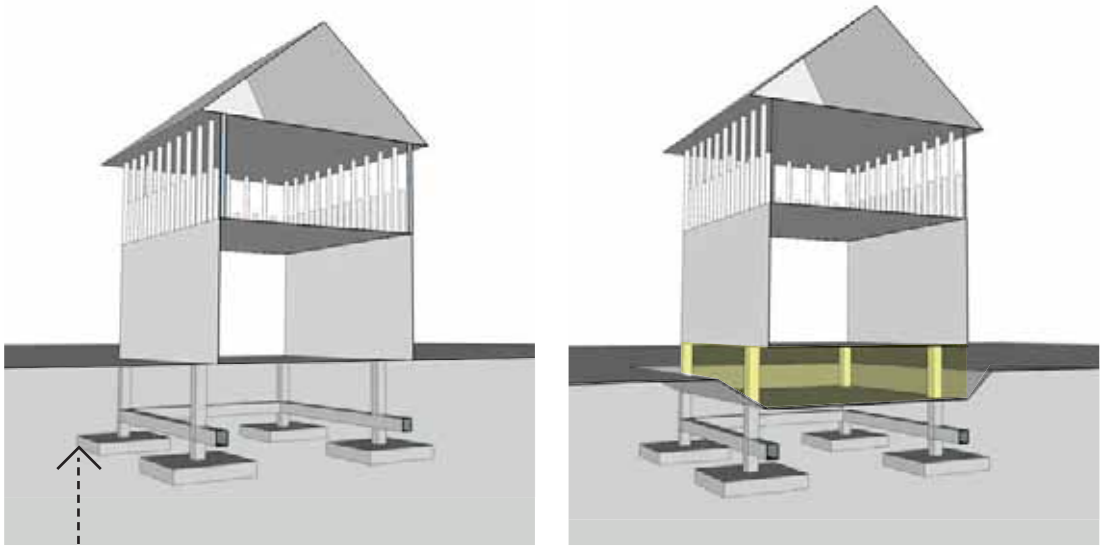
By moving doors or partitions the shared area can serve as an extension to adjacent rooms and functions. This way the space is utilised more carefully throughout the day and provide numerous options on how to use the space.

LEGEND

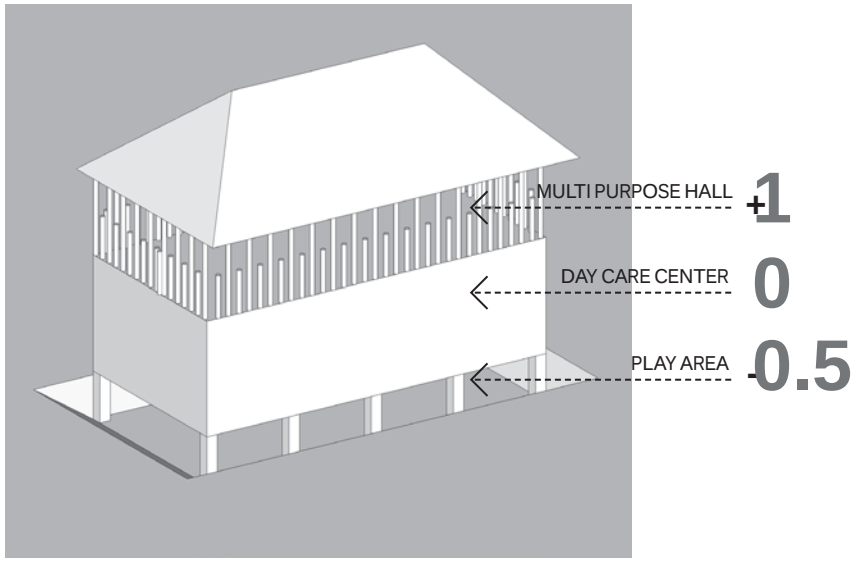
- DAY CARE CENTER
- CHAPEL
- SHARED AREA
- COMFORT ROOM
- KITCHEN
- SEMI OUTDOOR DAY CARE
- MULTI-PURPOSE HALL
- FORECOURT/PLAZA

INITIAL CONCEPTS





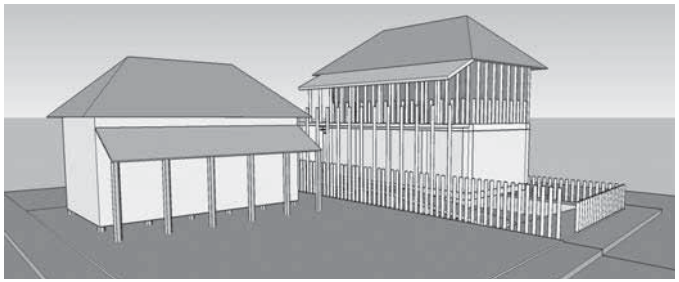
The extensive foundation necessary allows for a slightly raised ground floor with play ground underneath



PROCESS MODELS

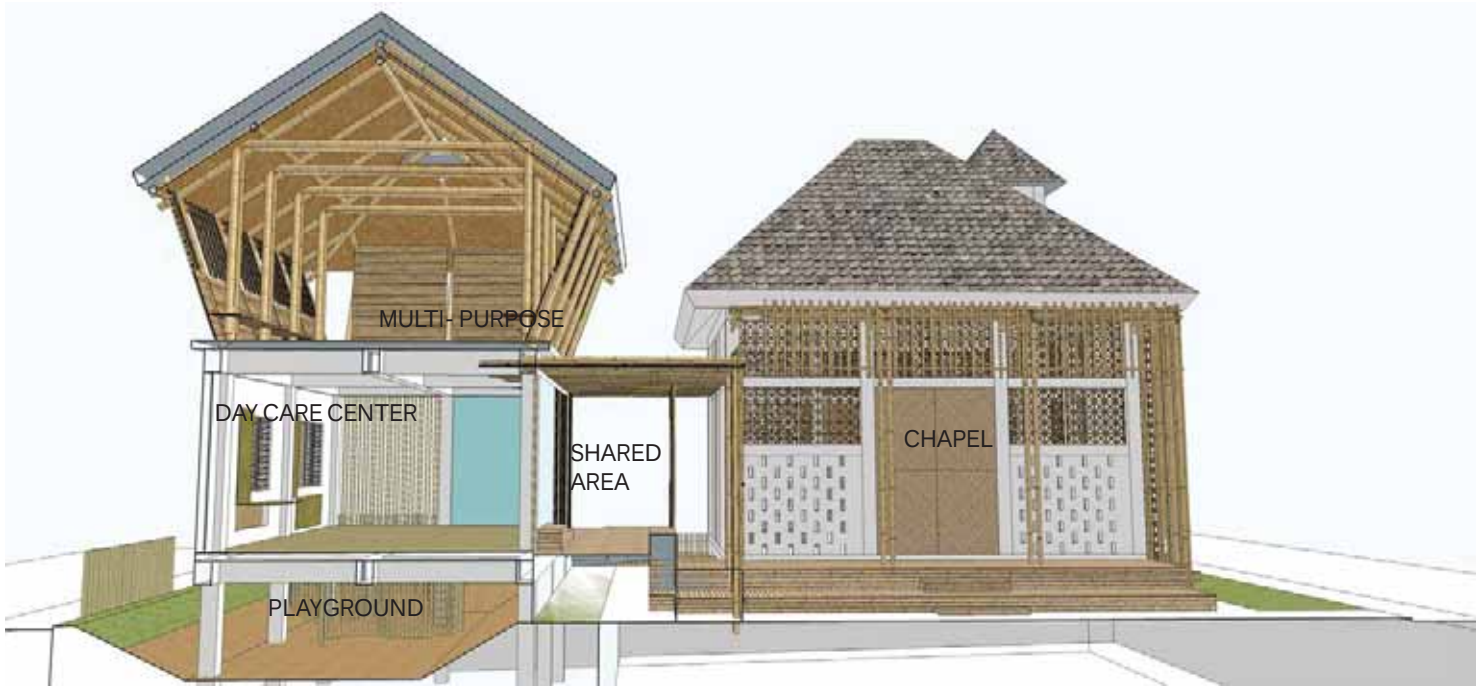
EARLY WORK

Intially the chapel and the day care center building were closer together with the shared space where the buildings met with the kitchen and the WC. During the chapel workshop the community agreed that they wanted to swap the chapel and mini-plaza. The models seen here are previous to that decision.



PROCESS MODELS

Many designs were explored and modelled in order to find a suitable design solution.



PROCESS MODELS

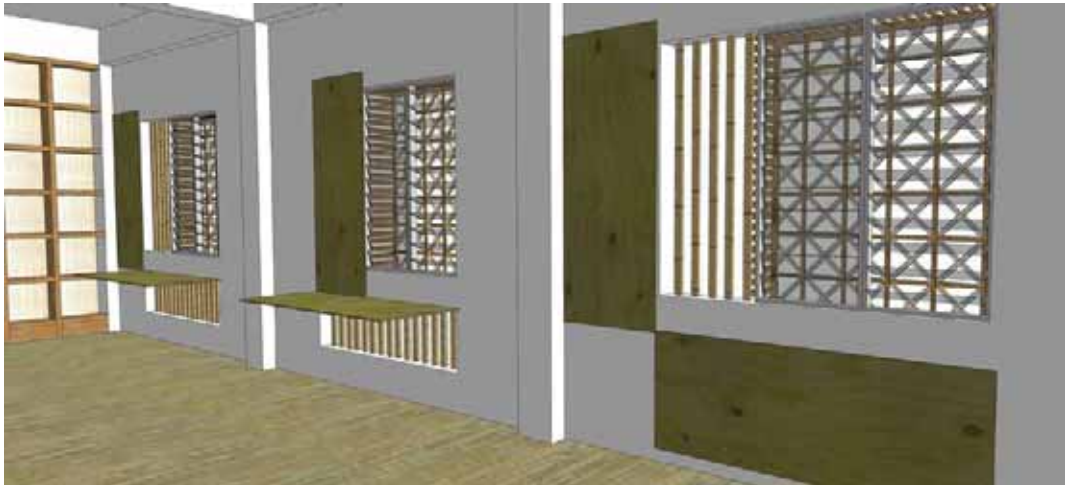
CHAPEL DESIGN

ALTERNATIVES
I explored many alternative for the stair/ ramps. Eventually, it was simplifed.

DAY CARE CENTER

ALTERNATIVE 2. design not based on traditional windows style. bamboo, CHB and shelf infills with translucent PC sheeting.

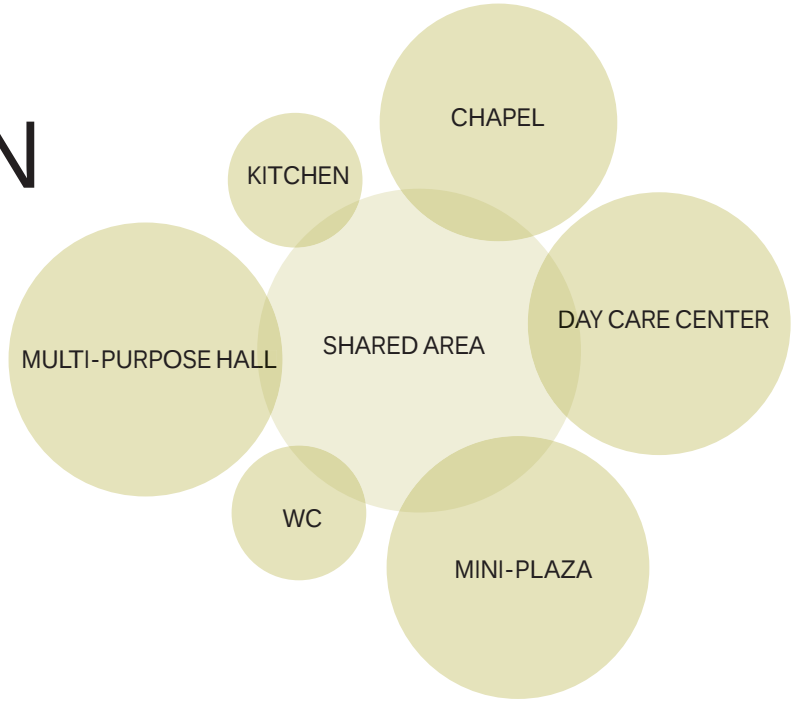
ALTERNATIVE1. traditional windows style wall infills with grills. Combined desks

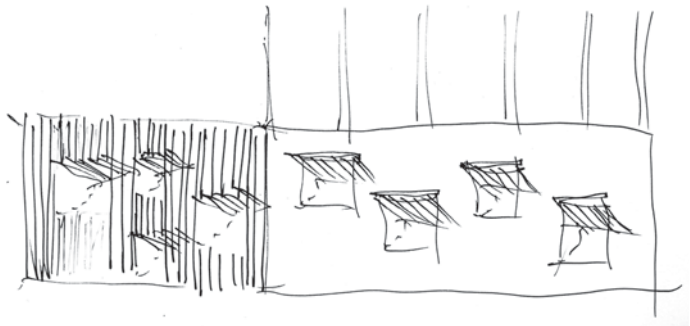


Perspective from the east of the proposed developments

THE PROPOSED DESIGN

The proposal includes a finished design for a day care center, a chapel and a multi-purpose hall. This chapter introduces the design concepts and strategies. Photomontages and diagrams help communicate the ideas.





STRATEGIES/ **TRANSITIONAL SPACE**

Transitional space is here considered just what its name implies; a space between spaces that is defined by the spaces surrounding it and in turn defines them. It can announce a change in function, private and public space or between indoors and outdoors. As such, it 'softens the edge'; generating an easier 'flow' between spaces and thus creating a more inviting space. To move from private to public or from indoors to outdoors seem psychologically easiern if there is a transition space in between (Gehl, J. 2006, p 113). Unfortunately, the design of this space is often neglected. Yet it plays an important role in subdividing areas into smaller and more graspable areas that people can relate to more easily. By providing places to linger, sit or chat before moving from one space to another, the transfer of activities of different kinds are encouraged to take place (Gehl, J. 2006, pp, 187-197).

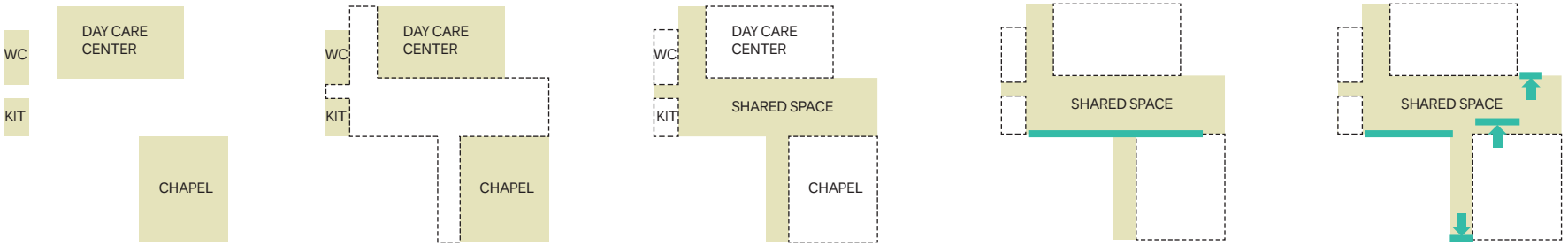
A 'pre-entry' space is crucial for reassuring children to depart from their safe environment and their family members and continue on their own. It should be a considered a natural gathering space where families and visitors can wait and socialise. As such, it should provide a good overview over the different activity areas, in order to stay well connected to both the day care center and the world outside. By being a defined space it can act as a natural threshold where children and parents can depart (Sanoff, H. & Sanoff, J. 1981 p28)(Osmon 1971, pp27-30) .This space could with benefit be partly protected from the weather and more importantly provide shade in this climate.

This project is focusing around producing a functional transitional space between the buildings, thus creating a semi private area belonging to the whole community. The transitional or shared space in this project acts as a 'spine' around which the different functions are assembled. In a way it is intended to work as the 'living room' of the community, linking the separate activities taking place. By ramps and stairs it physically links the day care center, the chapel and the multi-purpose hall with the street level, creating a seamless transition between functions. It can be used as an inexpensive extension of the day care center or as a foyer to the multi-purpose hall upstairs. This area also contains the shared facilities such as the comfort rooms and kitchen, which is partly tucked away from the public character of the mini -plaza.

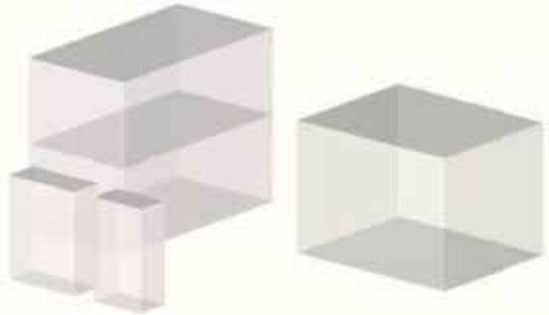
The shared area is covered by a penetrable lightweight bamboo 'shell', allowing the highly appreciated breezes through. A shaded semi-outdoor space can also improve the indoor conditions as it cools the air before it enters the house (Oakley, D. 1961, pp188, 205-206). The bamboo 'shell' defines the shared area and gives it a slightly less public character than the mini-plaza or buildings surrounding it, whilst keeping visual and acoustic connection between the spaces. Thus it connects the indoor with the outdoor and the private with the public.

The walkway in bamboo provide a shaded waiting area for parents and can be used as play area for children.
The flaps can be operated by pulleys.

STRATEGIES/ **SHARED SPACE**



BAMBOO INFILL +



SEPARATE FUNCTIONS

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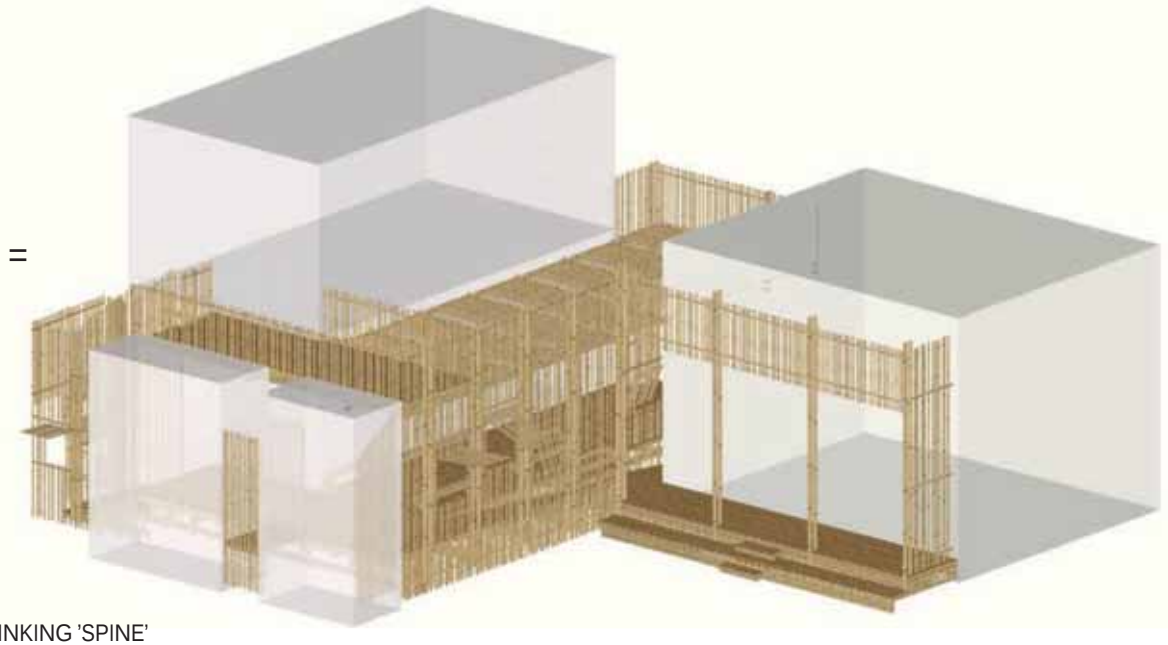
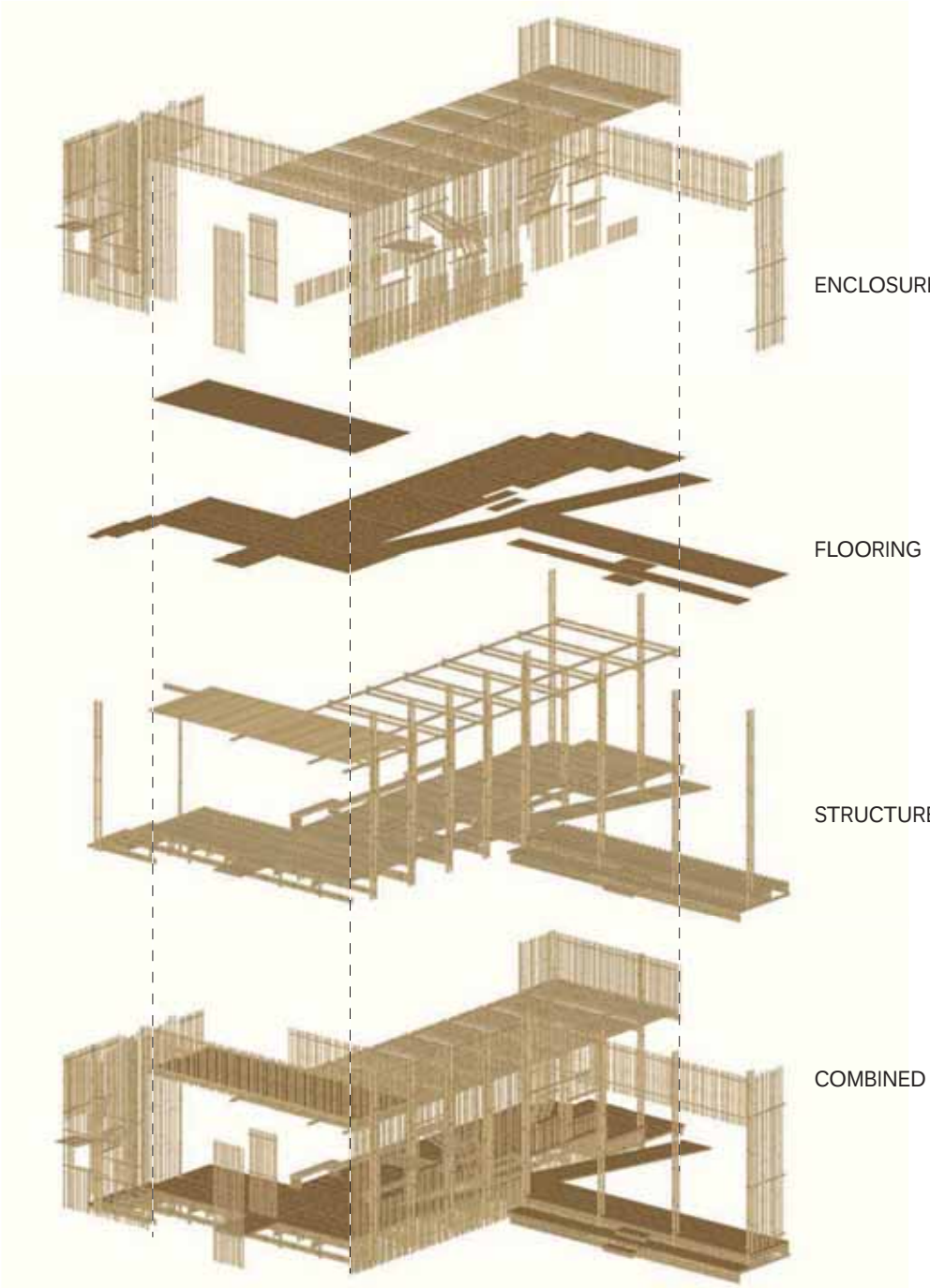


LINKING 'SPINE'



‘Integration of various activities and functions in and around public spaces allows the people involved to function together and to stimulate and inspire one another’ (Gehl, 2006, p 101)

’Make the school a more integrated part of the community by enabling the building and its **playing fields to be used for non-**school events and functions.’

(Department of Education 2010 p 41)

’Simple porches and patios can be used to enlarge the useful living space of a house at little addition to cost’ (Oakley 1961, p 201)

STAIR & ACCESS RAMPS EXPLORATIONS

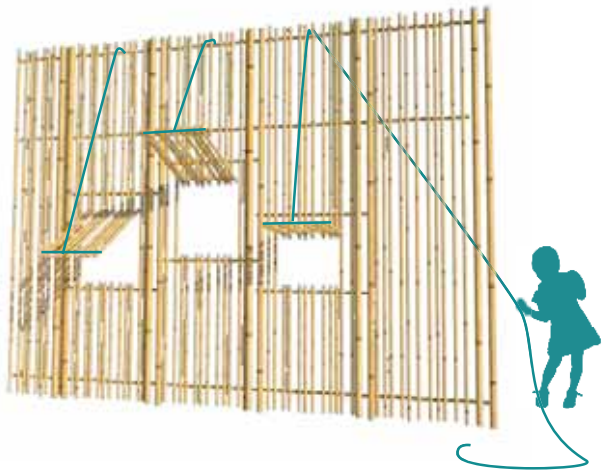
STRATEGIES/ **ELEVATING GROUND FLOOR**

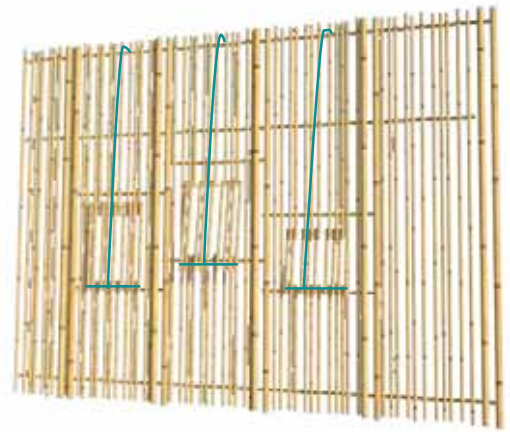
Elevating the ground floor is a common strategy in the Philippines (Perez, Encarnacion & Dacanay, 1989), as it protects from floods, vermin and allows for air circulation under the slab, cooling the interior. It also removes bamboo structures from direct contact with the soil, increasing its lifespan.

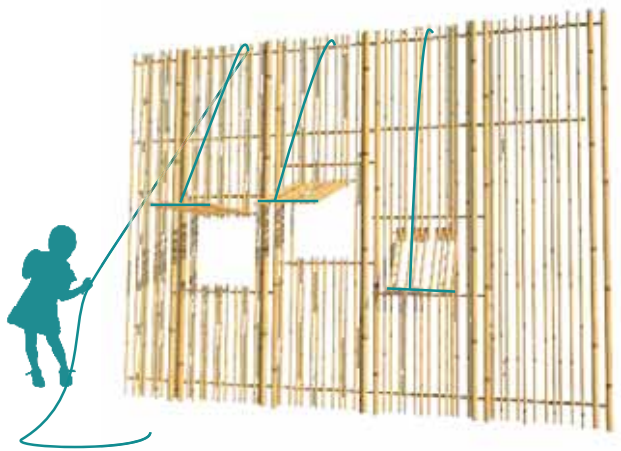
Even so, people are in general discouraged by changes in level and prefer horizontal movement to vertical. (Gehl 2006 pp142-146) Therefore the way of access to the buildings is of uttermost importance. To prevent falls and to allow for fast evacuation in case of emergency, regulations mandate a day care center must be located on the ground floor (The Department of Social Welfare and Development 1991, p13). Careful attention has been given to design around this fact, as I believe there are benefits in elevating the day care center about a metre off the ground. However, I acknowledge the issues with doing so; Gehl points out that people's sensory apparatus are strongly horizontal, and care therefore need to be taken in order not to lose the connection with the street level and people passing by. (Gehl 2006, p63) I have tried to find a balance between elevating enough to benefit from a play area underneath the building, yet simultaneously keeping the ground floor low enough not to visually turn it into a first floor. To achieve this, the head height is slightly lower in the play area; less than where an adult can stand upright but high enough for children to play. In case of emergency, an adult can easily bend over in the space whilst at the same time allowing for an intimate play area exclusively for children. In fact, an intimate place with low enough ceiling height not to allow for adults is preferable to a low ceiling place where adults can enter, as adults then might seem excessively large compared to the small space in which they are enclosed. (Osmon, 1971, p21) In Design Standards for Children's Environments (2000) Ruth points out that the average American child at 3 is around 950mm tall and at 5years old 1050mm, which if one assumes that Filipino children would not be larger, gives them plenty of room to play underneath the building. It also means, however, due to their short legs that stairs are not easily managed and hence need to be well designed. In order to deal with this potential issue, alternative ways with varying level of difficulty are offered to reach the raised level. These include a ramp or steps with maximum two risers at a time with big landings in between. Designed this way, they can stimulate and train the coordination amongst children encouraging them to increase the level of difficulty as they grow more confident. (Barnard 1980 p 40) (Broto 2010, p23) For instance, it is often easier for children to climb stairs than to descend. If so, they can choose the ramp as an alternative. Moreover, the design allows for use as seating, providing lower areas for children and slightly higher ones for adults. Platforms can double as a play area where the children can explore, but should not be higher than 510mm without a guardrail (Ruth, 2000, p21).

IASAGANA
AY CARE CENTER
ULTI-PURPOSE HALL

MASAGANA
DAY CARE CENTER
MULTI-PURPOSE HALL







DESIGN FOR CHILDREN?

Planning a building where the main occupants are children requires quite different strategies from one used by adults. The smaller size and skills of children often require adaptations, for examples lower sinks and toilets. But it is also important that not everything is adapted to children as they need to learn to be part of the adults' realm (Osmon 1971, pp19-21). The platform and stairs as mentioned earlier are adapted to children and provides seating at different heights, suitable for both children and adults. This is important as many of the common facilities are shared and not strictly used by children. However, except from these obvious differences in size and motor activity between children and adults, I believe the design concepts discussed below are greatly appreciated by both adults and children.

A child's realm is focused on a lower level than an adult's due to their smaller size (ibid). This requires attention to detail. Young children are very explorative and a variety of surfaces, texture and tactile environments stimulate their development and sensory experience (Broto 2010, p24)(Barnard 1980 p 4). The design is based on this concept and aims to provide such a rich and interesting place within the constrained means of the community. By and large, this means 'making something out of nothing'; to take advantage of the potential of the physical setting through remodelled topography and bamboo to add tactility and non-rectilinear shapes. A play of light and shadow can seemingly add texture to otherwise hard surfaces and transform the setting throughout the day for virtually no cost. The need is a range of experiences; 'An environment which gives children access to a diversity of experiences offers more scope for them to discover their talents and develop their abilities' (Barnard 1980, p1) These can be provided through clever planning and design without the necessity of a big budget.

In addition to the diverse physical setting, Barnard (1980) points out the importance of flexible space, or space that children can change according to their own need. The playground features malleable sand and loose bamboo poles that can be played or built with according to fancy. I have tried to include this concept into the physical building as well; making it less fixed. By making the building interactive where possible it can become part of the explorative journey and be used as a tool to stimulate development. For example the bamboo screens become transformable with flaps operable by pulleys that the children can play with and open and close. The classrooms colour scheme can be manipulated by sliding shutters painted in different colours. This way the building adapts to its inhabitants and is defined by them rather than the reversed.

KEY MATERIALS

- **recycled timber floor**
- concrete hollow blocks
- louvre windows
- bamboo grilles
- PC-sheets

DESIGN/ **DAY CARE CENTER**

During the workshop for the day care center, many ideas came forward. After discussions Masagana agreed they wanted CHB walls and micro concrete tiles on a hipped roof. Luvre windows with grilles was There was to be a kitchen and two WC:s. Due to the need for sanitary facilities the WC:s are being constructed already so the design needed to be adapted accordingly.

The building comprise only one large room, the classroom. The design is a simple box made of reinforced concrete columns and beams. Openings are mainly located on the long south and north sides to ensure adequate ventilation throughout the room. Half of the infill between the columns on these sides are CHB, the remaining half contain louvre windows with bamboo grilles and a modern take on the traditional 'ventanilla', an opening for ventilation with shutters beneath the window. These provide light and ventilation at the children's lower level. The omniboard shutters are painted in different colours and reveal colours behind when moved from open to closed. This way the children can interact with the building and transform the classroom. Blue and green shades are selected as they generate a cooling and calming effect. These colours are mainly confined to the lower part of the wall at chidlren's height, with a 'calmer' white surface at the top. The solid parts of the wall allow for exhibits and posters.

The much-used concrete floor is rejected due to its hard surface in favour of a more fall-friendly timber floor. If available, recycled timber flooring is preferred as this will reduce costs.

One section of the wall is made up of enlarged timber studs to create a combined shelf system and much needed storage. Attached to these studs are white translucent poly-carbonate sheets, providing a weatherproof skin allows for light. Since this wall is largely shaded by the lavatories and the bamboo screens, any heat gain through these sheet would be minimal.

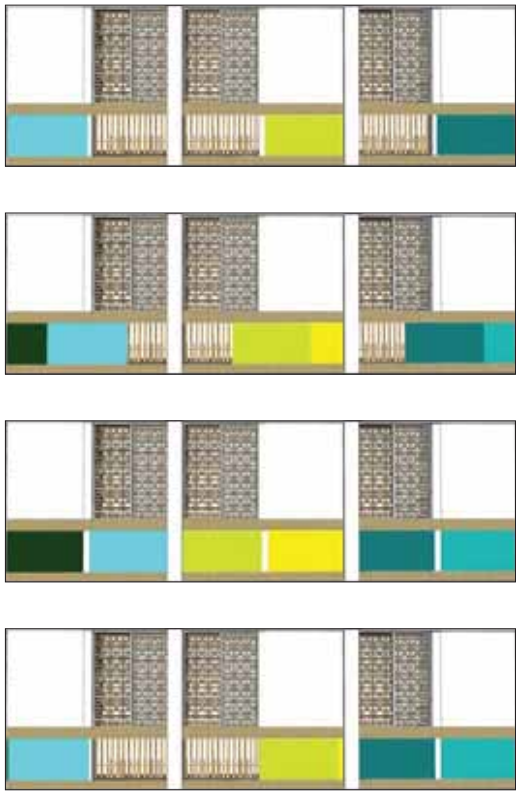
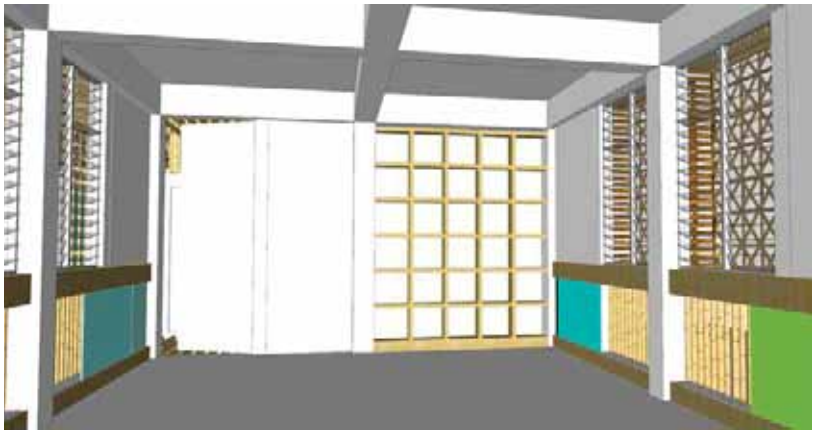


DIAGRAM VENTANILLAS

One wall infill is timber bookshelves with translucent PC-sheets for weatherproofing. This generates a back-lit effect upon the shelves as seen in the inspiration image below.

20.



STRATEGIES/
PLAYGROUND UNDERNEATH

Play is a substantial part of the development of children. In the tropical climate a shaded and covered play area is particularly important. The site allocated for the playground on the neighbourhood plan will most likely be of a traditional type featuring slides, swings and basketball courts catering for slightly older children. Some of these features might be unsuitable for younger children who have not yet developed the motor skills required (Ruth, 1999, p55) .

This necessitates a playground of a different kind specifically catering for younger children. To provide a variety of spaces to allow children to explore and play are essential for their development (Barnard 1980, pp18-22, 38-39, 44).

Since the site is very limited it is important to utilise every squaremeter in the best possible way. Unfortunately there is not much space left on the site for a playground. However, there opportunity of raising the ground floor slab a couple of steps off the ground and locating a small play area underneath the building. Due to the unstable clay soil i n the area the proposed dwellings on adjacent sites have substantial footings at a couple of metres depth. Using the same foundation type means that the ground floor slab can be elevated. By raising it a couple of steps off the ground a covered play area can be proposed underneath.

Initial playground concept

UNCONVENTIONAL PLAYGROUND

In this project I have tried to complement the planned neighbourhood playground with a different kind of playground. An unconventional playground can cater to different needs amongst children, sometimes neglected in the traditional playground. Barnard (1980, pp30-33) identifies three different kinds of play; active play, social play and creative play, all of which require different settings. They are all important for the development of the child and should all be given attention. Places for quiet play are sometimes neglected, yet it is important to provide spaces where children can play alone or in a smaller group, exploring social relationships. Great playgrounds do not necessarily need to involve expensive equipment. In fact, undefined abstract shapes are often preferred by children as they stimulate imaginative play (Broto 2010, p23).

For pre-schoolers, playing with water, sand, gravel and other materials that they can scoop, build, pour and sculpt is very popular (Barnard, 1980, p44) (Broto 2010, p10). It is a way of exploring the world around them and encourages them to be creative. Also, sand is a good ground cover in a playground as it is a soft material to fall on. By covering the area underneath the building with sand it turns the whole area into a giant sand pit that can be sculpted and changed as per the children's wishes.

The sides to the sand pit are sloped with different incline and will provide a play opportunity. In fact, Sliding down and climbing up slopes is particularly funny and interesting for young children and uneven terrain provides them with an opportunity to be imaginative (Broto 2010, p18). Cubbies and caves are also popular as they stimulate make- believe play and provide enclosure (Ibid p 8). The bamboo structures generate a variety of semi enclosed spaces for children to play in smaller groups or individually. The curvilinear undefined shape provides a range of opportunities for play and is preferred by children over rectilinear forms (Ibid p 8). The space underneath the building is seemingly a great maze with endless hiding places. Loose bamboo poles offer another opportunity of improvising and changing the setting.

DESIGN/ **MULTI-PURPOSE HALL**

The brief for the multi-purpose hall was less detailed than the ones for the day care center and the chapel. The only concept was to put it on top of the day care center, to be accessed by an external stair of steel. The community agreed to use lightweight materials including bamboo for the structure. This was the starting point and since then I have tried to improve and develop the potential of a common assembly hall.

The concept is to seal the day care center with a reinforced concrete slab, and lift the roof to generate a space underneath. The multi-purpose hall can be seen as a space within the extended bamboo trusses. The reinforced concrete is durable and can transfer the load of a large group of people to the columns. It would also reduce noise impact to the day care center below and protect from potential rain seepage. Between the trusses are built in seats of bamboo. Often common facilities experience a lack of furniture due to a very tight budget. With this in mind I wanted to make the room usable even without the extra expense of loose furniture. Instead additional furniture can be added imcrementally. The rest of the walls comprise of bamboo screens to allow good ventilation throughout the hall. This is extremely important in this climate, especially in an assembly hall. The whole floor has been designed as open as possible for this reason. Furthermore, the lightweight structure has low thermal capacity and speeds up cooling at night. To protect this'penetrable skin' from rain, the roof extends in an overhang of about 1m. This will also shade the room from the sun to reduce heat gain.

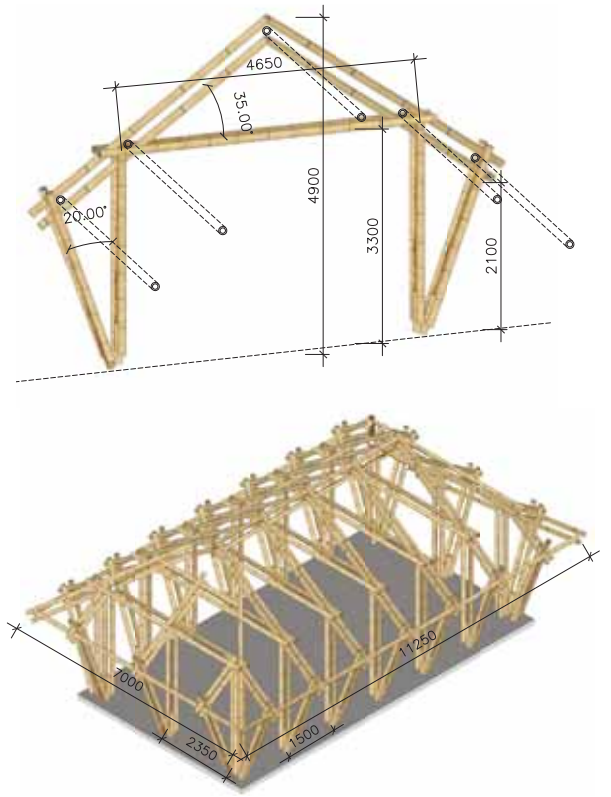
KEY CRITERIA

- lightweight
- **flexibility**
- comfort
- **affordability**
- terrace

KEY MATERIALS

- **concrete floor**
- bamboo structure
- bamboo screens
- sawali ceiling

TECHNICHAL INFORMATION



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DESIGN/ **CHAPEL**

The chapel was not originally part of the brief, but after considering the advantages of amalgamating the sites and sharing services with the day care center, the community gave their consent. The community set out a brief; a rectangular plan with a platform for the altar. The lower part of the walls was to be constructed with concrete hollow blocks and with bamboo on the upper half for ventilation. They also wanted the inclusion of a bell tower.

The design is simple yet seemingly complex. To improve distaster resiliency, the structure is based on RC columns and beams. Traditional windows are excluded in favour of perforated bond of CHB and bamboo panels on the upper part. This allows for privacy without compromising ventilation and the extra expense of windows. The doors are made up of bamboo slats and allows air movement through the building even if closed.

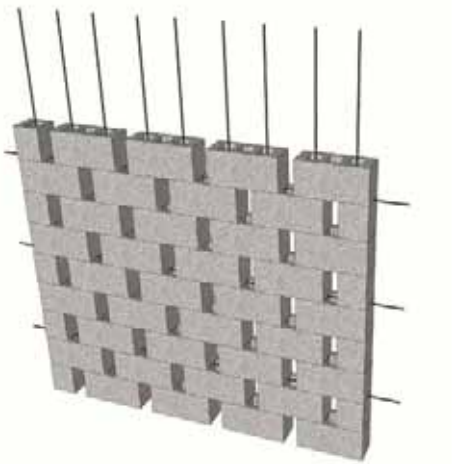
A play of light and shadow have been the approach to reach an atmosphere of tranquility and solemnity within the prospects of Masagana. Bamboo panels can be crafted by the women in the community. These panels are also used in the ceiling and as shading devices to soften the harsh feel of concrete.

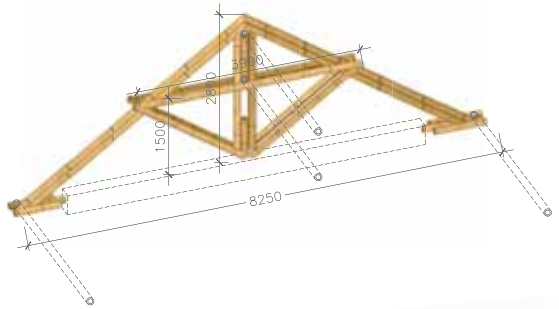
The central concrete columns on the north and south sides form together with the beams a large cross in the central axis. This acts as a backdrop to the altar. The infills at the main entry are bamboo doors and panels contrasting in colour from the white cross. The infill to the north is proposed as white translucent polycarbonate sheets. However, they can be replaced by frosted glass or glass blocks, depending on availability and affordability.

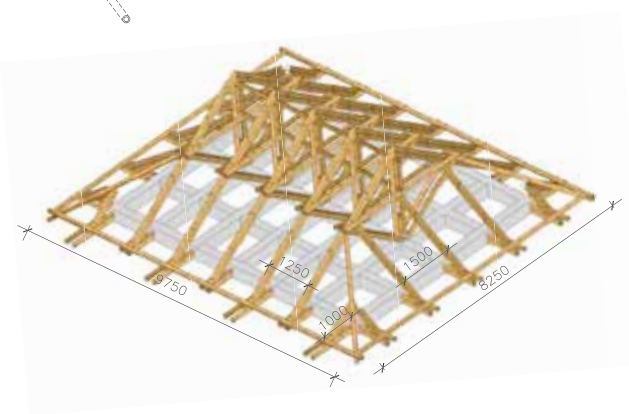
KEY MATERIALS

- **concrete floor**
- concrete hollow blocks
- bamboo trusses
- bamboo screens
- micro concrete roof tiles

TECHNICHAL INFORMATION







Bamboo screens and perforated blockwork generates a play of light and shadow to the chapel.

'An environment which gives children access to a diversity of **experiences offers more scope** for them to discover their talents and develop their abilities' (Barnard 1980, p1)

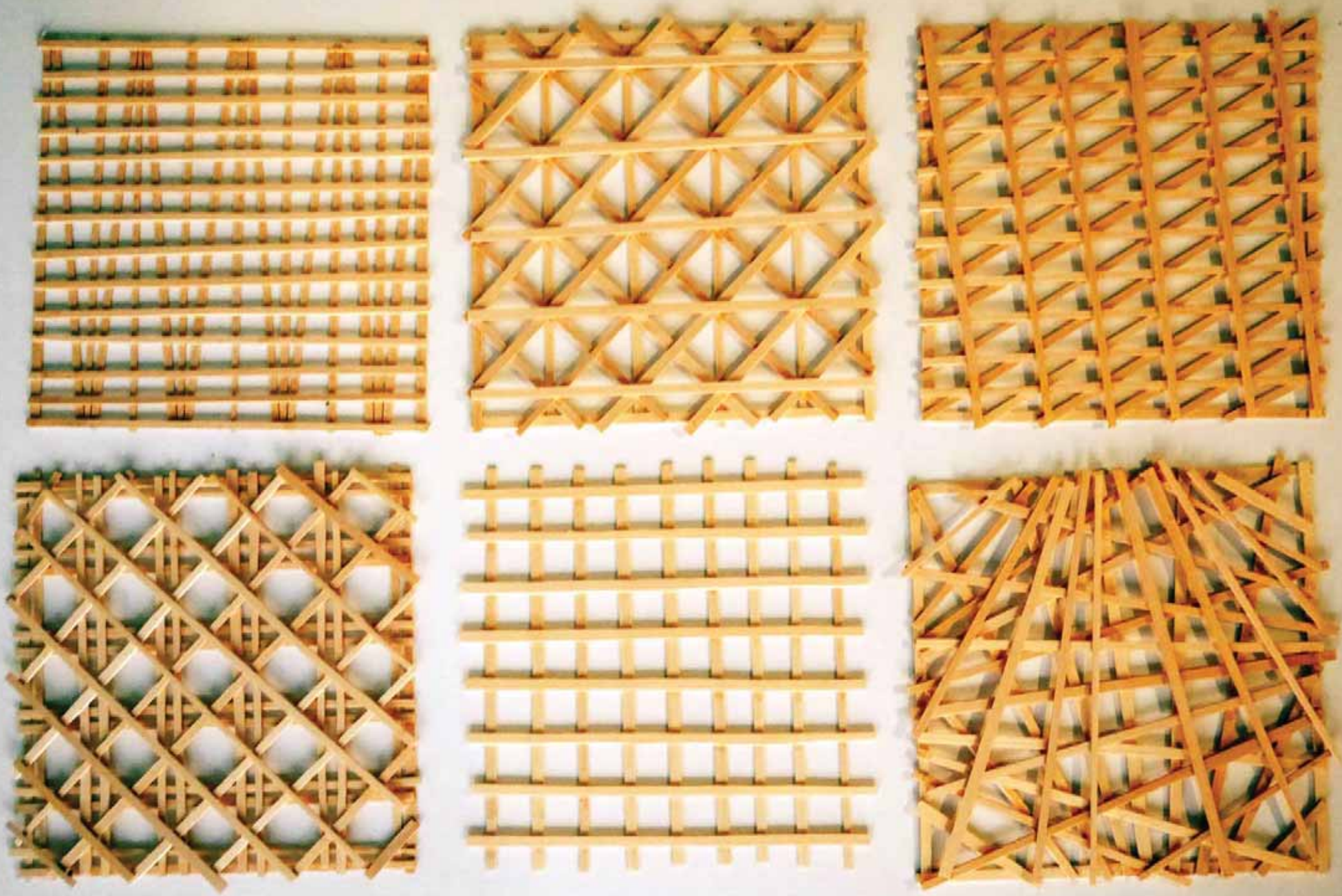
NOTES

- diversity
- multi-sensory
- **flexibility**
- challenge
- curvilinear shapes
- interactive

SENSORY ARCHITECTURE

In order to establish a relationship between the built environment and the people occupying it extending that of the eye, a building must appeal to the other senses as well. Children explore the world through all their senses, seemingly more so than adults (ibid)(Barnard 1980, p38). They eat, touch, smell and make sound to learn about the world and their relationship with it. Yet vision has long played a primary role in contemporary architecture, often to the expense of other sensory stimuli, rendering buildings merely visual objects (Pallasmaa in Brislin 2008, pp93-99). This project aims at enhancing this explorative urge amongst children by interchangeable and interactive features but also to provide the sensory experience needed through a diversity of materials and textures. Light and shadow, patterns, colour and organic materials all add a degree of sensory stimuli. I believe this form of 'sensory architecture' is addressing all occupants of a building, children as well as adults, and have tried to maximise the tactile experience within the building.

By mixing organic materials such as timber and bamboo with harder materials such as concrete, an interesting contrast is created which enhances the characteristics of both materials. Light and shadow is treated as an intermediary layer. Different materials help defining different spaces; the bamboo platform gives a creaky, less formal sound upon walking than the timber floor in the classroom. The more formal classroom demands attention and is enclosed by more rigid walls with less detail than the informal bamboo platform for waiting or playing. The playground is a step further with soft sand 'floor' with less formal organisation of structures within the space and curvilinear flowing shapes, inviting for touch and imaginative play. This way the sensory qualities help give meaning to spaces and a relationship between occupants and building is established.



Explorative models of different bamboo screens

STRATEGIES/ **MATERIALS**

The materials used in this project are chosen by the criteria in the adjacent box. The choice of material is also greatly influenced by the wishes of the community, their associations with materials playing an important role. This should not be neglected as the construction of these buildings influence their social status and identity as a community. They have expressed a wish for concrete structure and concrete hollow blocks, as being associated with permanence and rigidity.

The community have previously been introduced to some technical considerations to form and materials when planning their own housing. They will also construct much of their housing themselves as part of sweat equity, to reduce costs. This means that they will have considerable knowledge about the materials used in this process. By using the same materials to as great an extent as possible, time and money can be saved. This is especially important as they most likely will construct the community facilities themselves too.

CRITERIA

- **Cost, direct & indirect**
- Materials used for the housing
- Availability, local or transported
- Durability, lifespan and required maintenance
- Loadbearing capabilities
- Fire resistance
- Disaster resiliency
- Thermal mass or climatic performance

Materials used in this project

USING BAMBOO

Traditionally most Filipino dwellings have been constructed with bamboo. (Perez, Encarnacion & Dacanay 1989) It is a cheap material readily available in the Philippines and it grows locally in and around the site in Bulacan. The temporary houses that some families have built on site are made from bamboo harvested there. This makes it a suitable material for construction of the new buildings. However, the association of bamboo as a poor man's material is widely spread (Janssen 2000 p 142-143), and the Philippines are no exception to this rule (Villalon 2013). Bamboo was accepted by Masagana to be used partially as a cheap alternative only after persuasion.

This is where architects may help in improving the reputation of bamboo; by showing it also is a modern material. Janssen (2000) means that by increasingly designing with bamboo and establishing standards, architects can influence the attitude amongst people to the better and make it more acceptable.

Bamboo can be treated to extend the otherwise low lifespan. Boric acid is cheap and commonly used in the Philippines. Bamboo lasts longer if kept away from water and sun. The design protects the structural components of the buildings from rain and sun by large overhangs and separation from soil. The elevated walkways are exposed to the elements and will have to be maintained regularly, yet this is probably still a cheaper solution than timber.

The platform is constructed entirely by bamboo.

BAMBOO TRIVIA

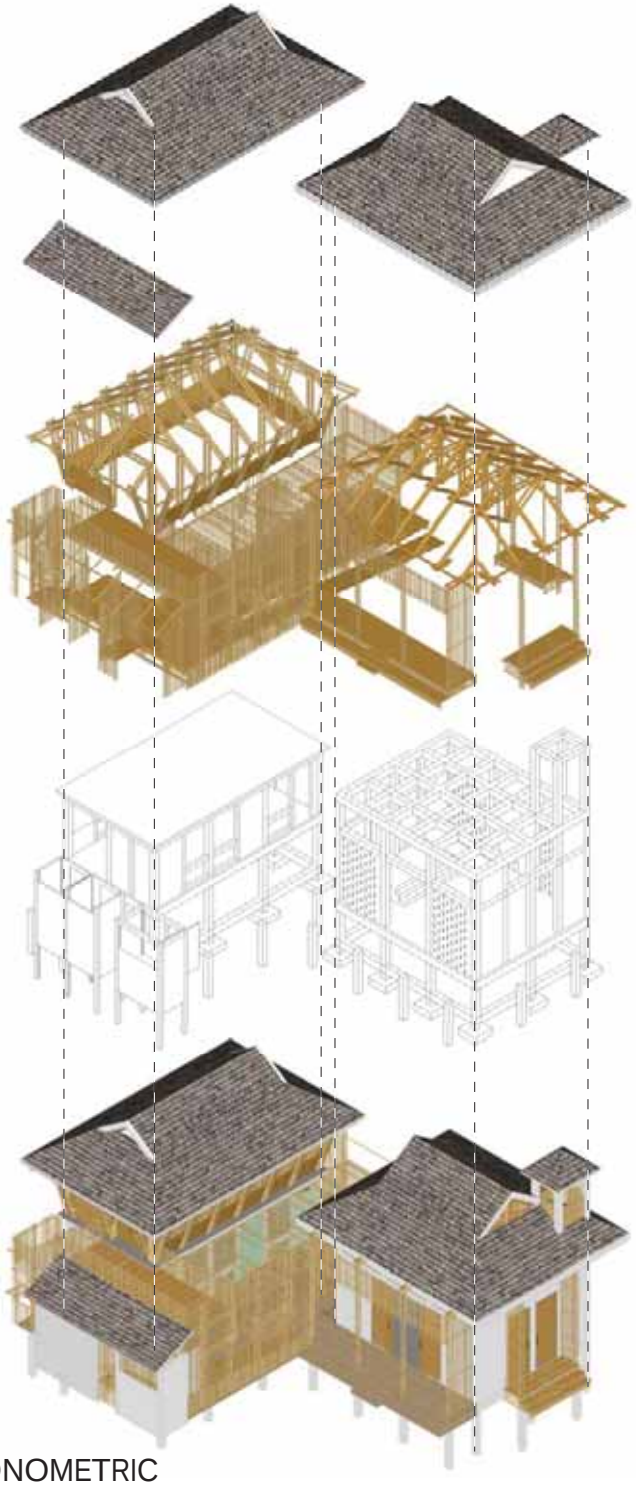
- There are 123 species of Bamboo in the Philippines

-Bamboo is the world's fastest growing plant and some species can become fully grown in less than 90 days

-The lifespan of untreated bamboo under bad condition can be as low as 1-3 years and up to 15 years for treated bamboo

(Villalon 2013) (*Life - Plants* 2009)

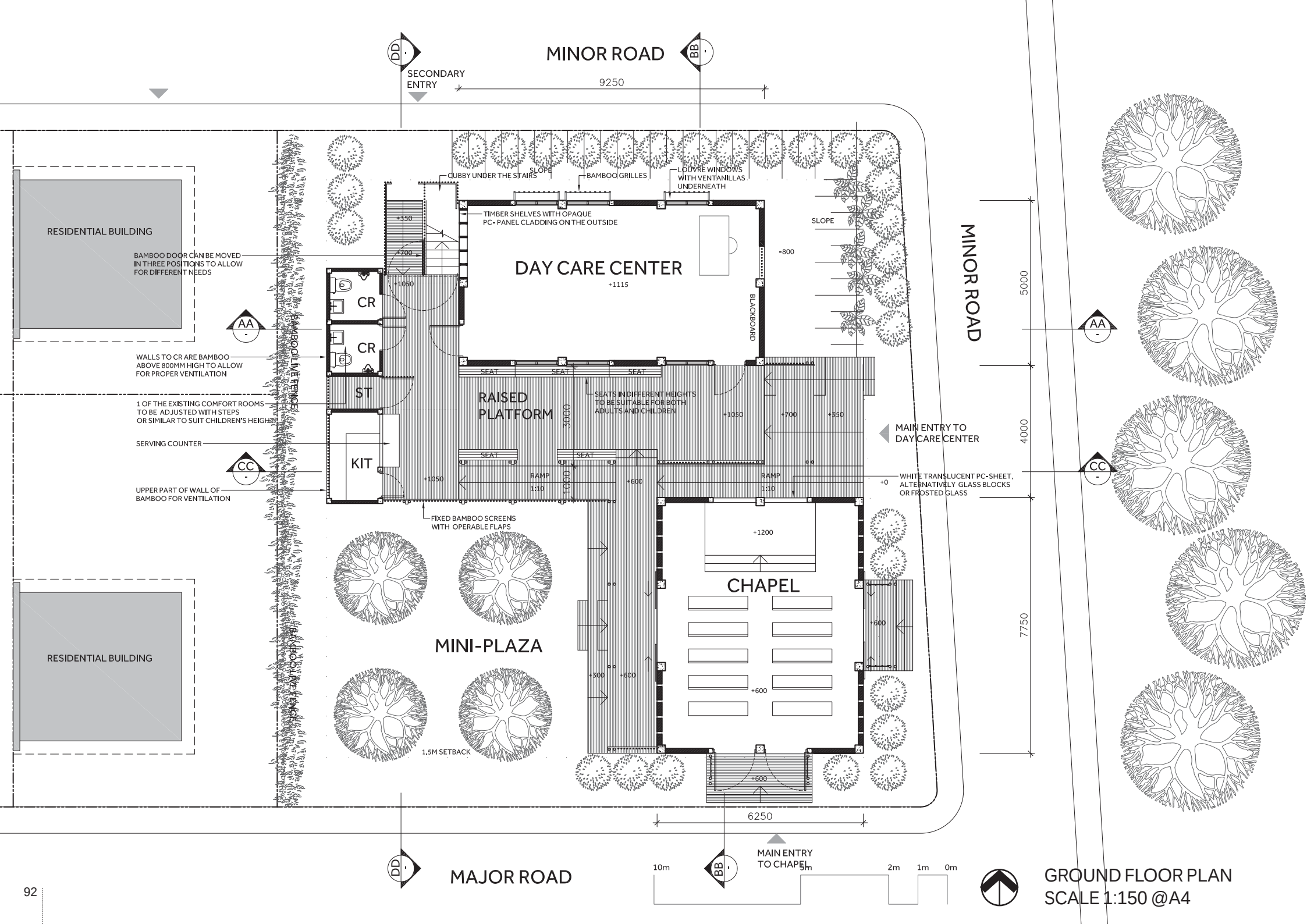
Bamboo is found close to the site



AXONOMETRIC

THE DRAWINGS

This chapter comprise the complete set of drawings. Please refer to the chapter 'The Proposed Design' for any further information.



GROUND FLOOR PLAN
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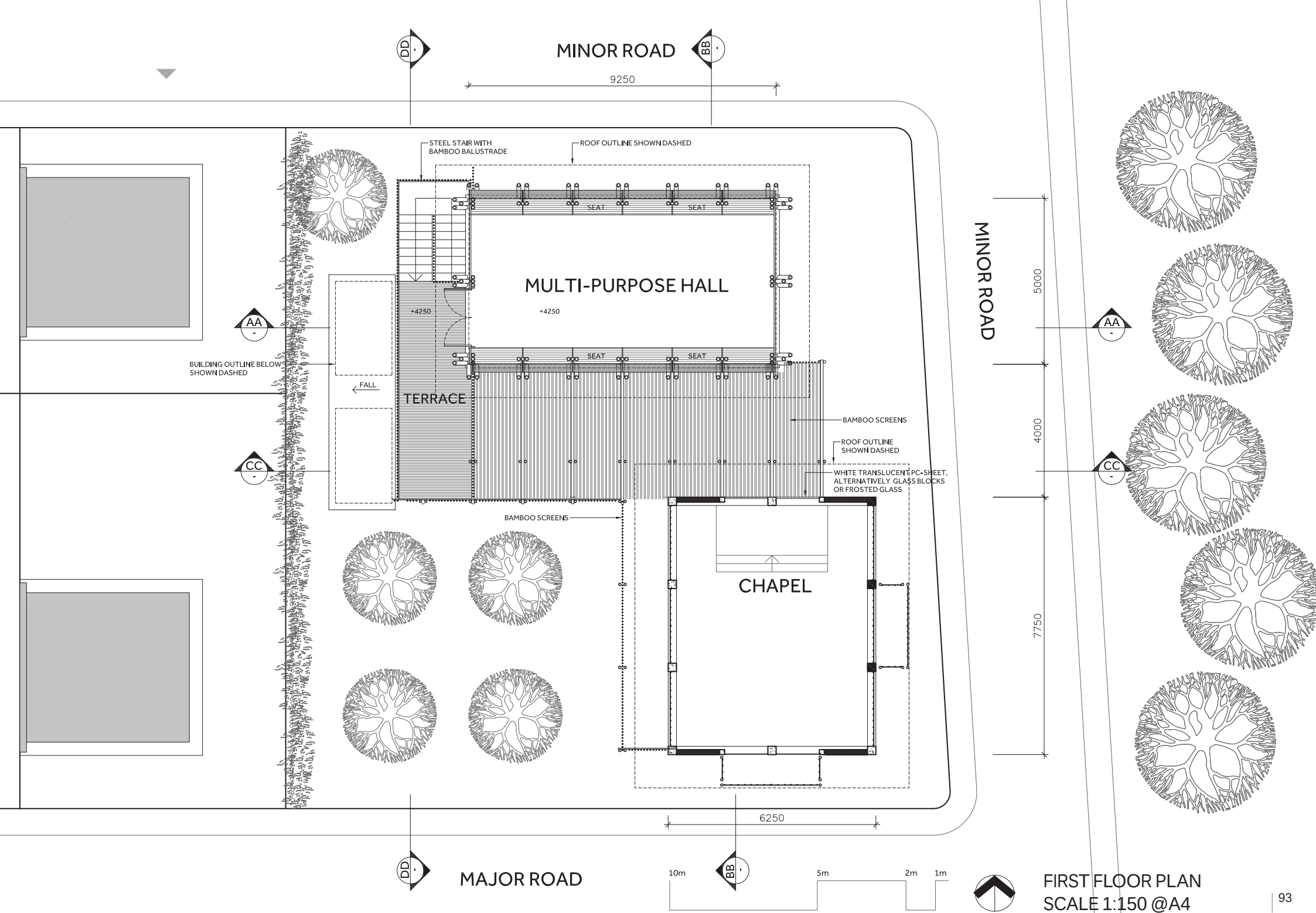

FIRST FLOOR PLAN
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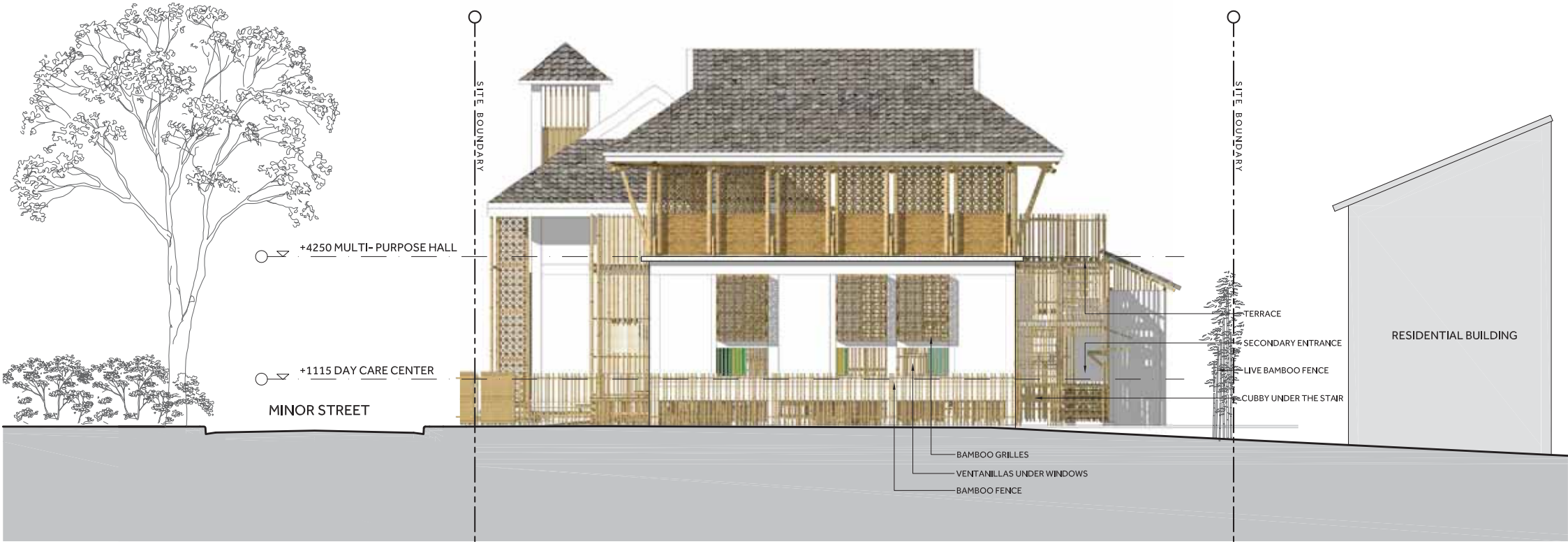
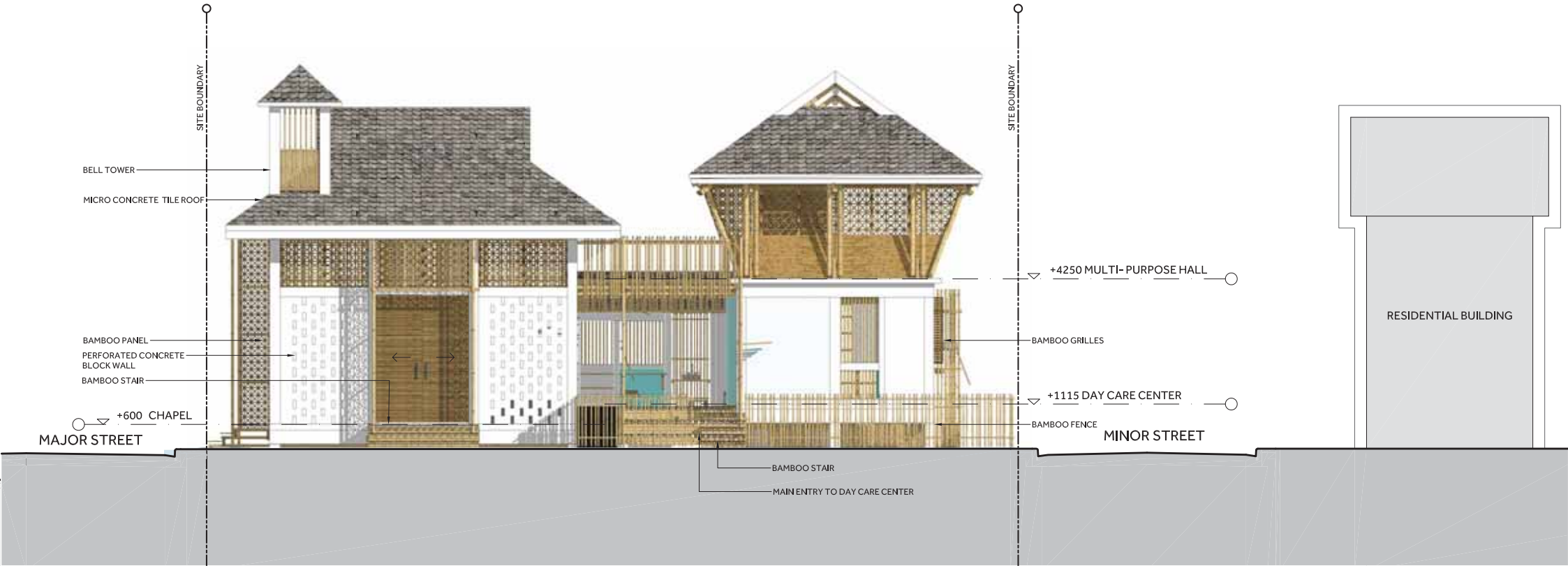


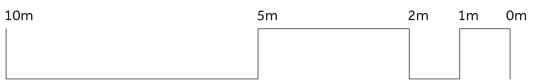
10m 5m 2m 1m 0m

NORTH ELEVATION
SCALE 1:150 @A4

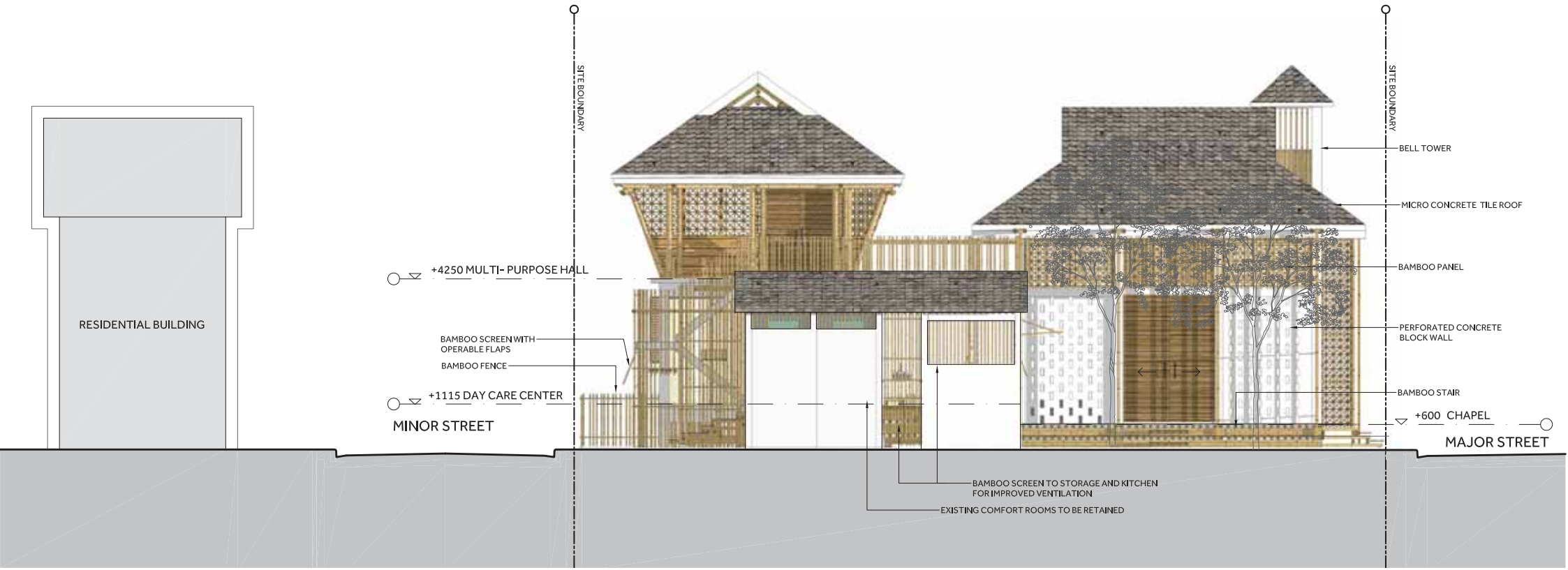


10m 5m 2m 1m 0m

EAST ELEVATION
SCALE 1:150 @A4

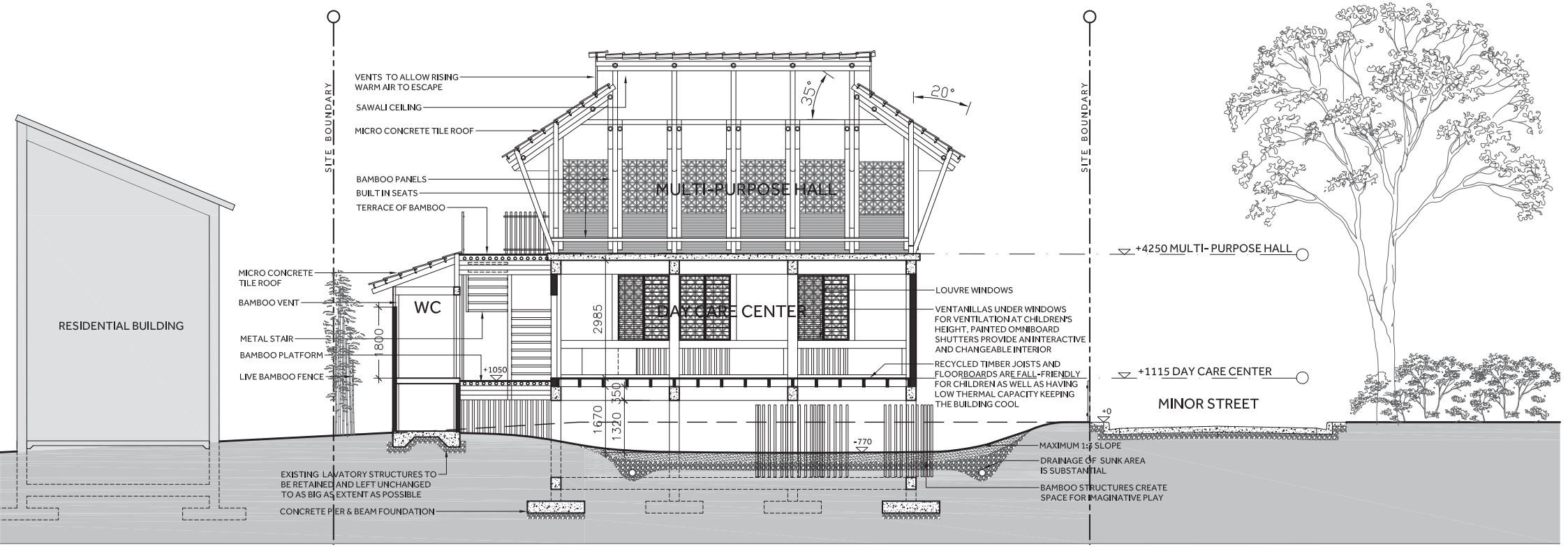


SOUTH ELEVATION
SCALE 1:150 @A4



10m 5m 2m 1m 0m

WEST ELEVATION
SCALE 1:150 @A4



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SECTION AA
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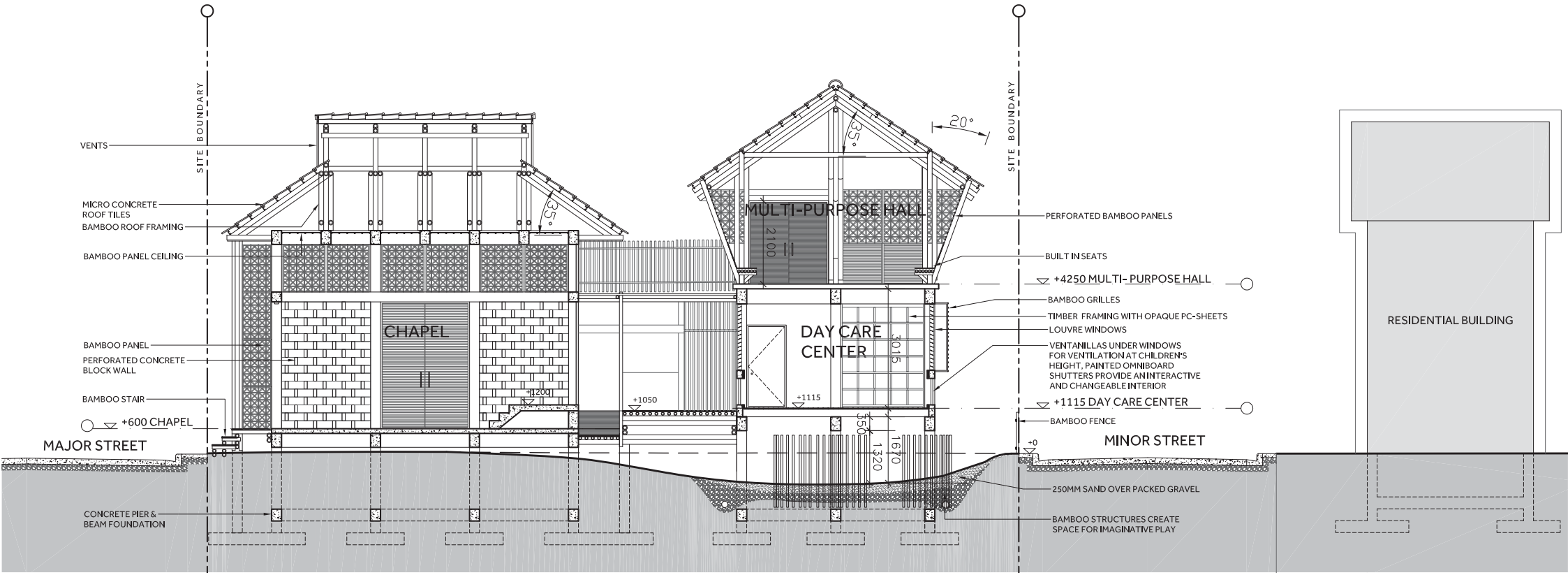

10m 5m 2m 1m 0m

SECTION BB
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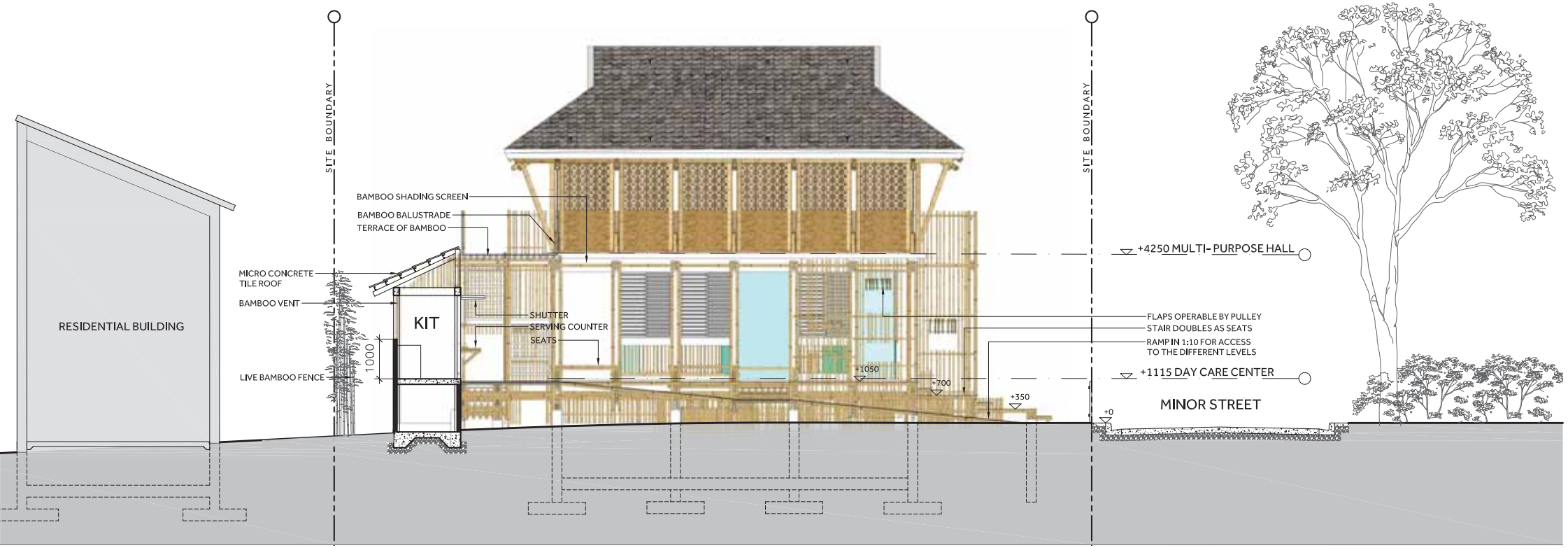

10m 5m 2m 1m 0m

SECTION CC
SCALE 1:150 @A4

10m 5m 2m 1m 0m

SECTION DD
SCALE 1:150 @A4

CONCLUSION

During the process I have faced problems and issues associated with designing in a developing country, and have come to realise there is no one solution. I have strived to develop an appropriate design that fulfills the needs of the community. I will present the finalised design proposal to Masagana, for the people's input and comments. Since I was not able to fully discuss the proposal with the community during the process, I am sure that they will have ideas and suggestions to make. Hopefully, we will continue to co-operate in order to improve the project further, even after the thesis is concluded. I hope that Masagana have enjoyed it as much as I have and that my work can be useful to them.

LAST WORDS

The seed to this project germinated some years ago when I was in the audience at a lecture addressing housing issues in a developing country. Then I thought I would like to do something similar as my degree project. A couple of years later I am now writing the conclusion to the project. Looking back at the process and thinking what a journey it has been, I feel proud that I have seen it through. It has truly been a worthwhile experience; to some extent it has been an eye-opener to me. Despite inevitable downsides, it has mainly been an inspiring and uplifting experience. It showed me clearly how the world is full of wonders and incredible and brave people. I experienced cultural differences and sometimes a difficulty in communicating with Filipinos. However, what I will remember is the Filipinos and Masaganas positive outlook on life. How they welcomed me to their homes and invited me for meals. I am looking forward to my return and I am proud to play a part, although small, in their history,

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