

UNESCO FELLOWSHIP AWARD PROGRAM (2006-2007)
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Khmer Traditional House and Landscape Conservation
Khoh Dach Commune, Muk Kam Poul District, Kandal
Province, Cambodia

Final Report



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About the author

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Finally, my particular thanks for UNESCO for sponsor and financial support for this research and without this support this achievement would not be happened. The workshop and research can be success and benefit to local agencies and also academic agencies through the result from my previous research. Finally, I expect this outcome would generate some concepts to the area of interesting on cultural landscape issues in Cambodia.

Content

Section	Page No.
Part 1: Introduction of Research	4
1.1 Introduction	4
1.2 The objectives of the study:	4
1.3 Feasibility schedule:.....	4
Part 2: Situation and Analysis.....	6
2.1 The structure and characteristic of landscape	6
2.2 History and land use	7
2.3 Settlement pattern.....	7
2.4 Farming	8
2.5 Population	9
2.6 Cultural uses	10
2.6.1 traditional house.....	10
2.6.2 Social activities.....	24
2.7 Landscape change and trends threatening the landscape	26
2.7.1 Agriculture	26
2.7.2 Traditional house style	26
2.7.3 Environmental and tourism management	27
2.7.4 Landscape change and trends threatening the landscape	28
2.8 The future.....	28
Part 3: Data Collection.....	29
3.1 Interview and group discussion.....	29
3.1.1 Key performance of three carpenters in Khoh Dach	29
3.1.2 Vision of Traditional Khmer House.....	29
3.1.3 Believe of traditional house by people at the present time.....	30
3.1.4 Renovation of traditional house in Koh Dach	30
3.1.5 Construction Material	31
3.2 Interview cases of traditional house's owners.....	31
Part 4: Suggested Strategies.....	35
4.1 Tourism Guidelines	35
4.1.1 Interpretation of local information.....	35
4.1.2 Create Green Area/ Shading for Tourists.....	36
4.1.3 Parking and Circulation for Tourists	36
4.1.4 Promote suitable tourism	37
4.2 Environmental Guidelines	42
4.2.1 Solid Waste and Water Quality	43
4.2.2 Waste Water Management	43
4.3 Landscape Guidelines.....	44
4.3.1 Visual Impact.....	44
4.3.2 Sense of community and boundary.....	45
4.3.3 Take care of river terrace	46
4.3.4 Farming landscape of island	47
4.4 Architectural Guidelines	47
4.4.1 Window	48
4.4.2 Roof.....	48
4.4.3 Stair.....	48
4.4.4 Beam structure.....	49
4.4.5 Wooden decorative elements.....	49
References	50
Appendices.....	51
Appendix 1: Brochure for workshop announcement	51
Appendix 2: Seminar activities in RUFA	52
Appendix 3: Result from the workshop in Koh Dach Commune	58
Appendix 4: Feedback	59
Appendix 5: Sketching picture from workshop participants, architecture students	60
Appendix 6: Sketching picture from workshop participants, pupils at village	63

Part 1: Introduction of Research

1.1 Introduction

Land development in Phnom Penh is increasing since early 1990s. This has been affected on the local lives, especially traditional houses in many villages. Therefore, the aim of this study is to finding out how we can promote traditional house's conservation in the future. KOH DACH could be the reasonable answer for the above mentioned because it is located in one island of the Mekong River and it is located just around 10 Km. east of the Capital City, Phnom Penh. The shift of this area is slow perhaps because of no directly access of transportation, only raft is available.

There are more than 50 old houses in the island of Khoh Dach that still remain traditional style, some of them were built more than 80 years ago. Now, proximately there are 2,000 households in 5 villages in this area. Most of households do farming, waving and also some related tourism activities. Khoh Dach Island is well known as a tourism place in dry season, especially the river terrace. Many houses have been changed the original situation and condition, following the modern style and the developed area nearby without understanding or pay attention with the values and the potential characters of the Khmer traditional house.

Therefore, traditional houses should be maintained for the beautiful old style as most as possible. This concept should not promote only for local people but also for stakeholders, including the government, visitors, academic firms, craftsmen, architects etc.

1.2 The objectives of the study:

There are various objectives to be achieved for this research as indicated bellow:

1. To set up group of specialists from academic firms and professional architects who work with architecture conservation and also scholars from the community to explain the history and culture of traditional style to young architects and local students.
2. To promote the workshop program to students in the Faculty of Architecture and Archeology from all universities in Phnom Penh and young students in Khoh Dach village who are interested in the workshop to apply and select the participants to join the workshop.
3. To introduce the objective and educate the traditional house characteristic to the participants.
4. To survey and do site inventory for number of traditional houses in Khoh Dach community by young architects and students in the community.
5. To collect data and do mapping of traditional house locations of the village layout.
6. To measure or record the layout of site planning, landscaping and also functional plan of each house.
7. To take photograph and draw details of construction elements and materials.
8. To create local data and collect excellent samples of traditional houses and condition for each house in this present that should be useful in the future for local themselves and architects.
9. To conclude workshops outcomes and discuss with architectural students, local students and all experts and committee to set up the traditional houses categories and award for the excellent example of traditional houses.
10. To present and discuss with the community and other stakeholders such as local governments, planner, and academic agencies, etc.
11. To publish the brochures of workshop and community information on traditional houses to the public.

1.3 Feasibility schedule:

Table 1.1: Research schedule

Phase	Execution	Period	Month
Item	Main activities		week
A.	Form research and workshop teams	<u>4 weeks</u>	
	1. Search and form team of workshop working such as experts, committee, assistants, trainers and local scholars		
	2. Review literature and search data on traditional houses and history of community		
	3. Design questionnaires, interview key performances		
	4. <u>Meeting 1</u> : introduce workshop to academic firms and brain storming		
B.	Workshop preparation	<u>4 weeks</u>	
	1. Prepare workshop program and application forms		
	2. Site studying and site data collection		
	3. <u>Meeting 2</u> : introduce workshop to community people such as schools, community leaders, and brain storming.		
C.	Workshop Promotion	<u>5 weeks</u>	
	1. Promote workshop and announce for applicants from architecture, archeology students and local students		
	2 Prepare workshop schedule, invitation, topics, issues and detail program		
	3. <u>Meeting3</u> : select and announce the representatives by the committee.		
	4. <u>Meeting4</u> : introduce workshop program to all participants.		
	5. Manage transportation, site conventions, and survey materials.		
D.	Workshop and seminar	<u>1 week</u>	
	1. Start workshop for 4 days and brain storming		
	2. Conclude workshop outcome to all participants		
E.	Outcome preparation	<u>5 weeks</u>	
	1. Create local data and collect the excellent examples of traditional houses landscape conservation and cultural tourism guidelines		
	2. <u>Final present and discuss</u> with community and other stakeholders		
	3. Publish report and brochures on workshop and community information of traditional houses landscape conservation guidelines		
	4. Submit report to UNESCO		
Total periods of time		<u>15 weeks</u>	

Part 2: Situation and Analysis

2.1 The structure and characteristic of landscape

Koh Dach is located in the inner Mekong River and far about 1 kilometer to the west from the main land. The water level is below the river's terrace about 3-4 meters in May- June. Only sand is in the north of island, the riverbank is gradually slope down to the bottom of the river. Inner island, there are some swamps and ponds that now become vacant lands and plentiful of weeds. A few of farmlands exist and sugar palm and rubber trees were planted randomly.



Figure 1: Different level and distance of riverbank

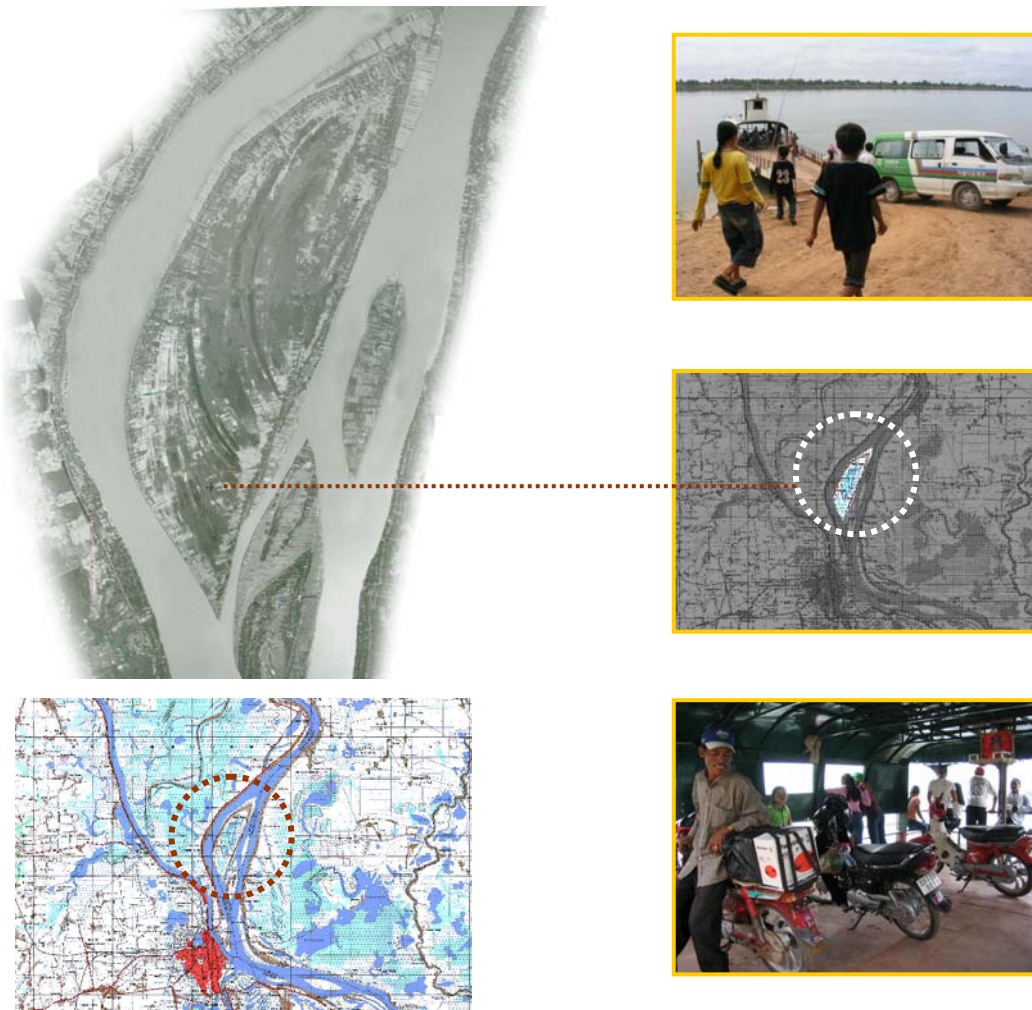


Figure 2: Map of Koh Dach and ferry to transport from mainland to island

There are many existing trees such as mangos, jackfruits and tamarinds in orchard in the north west of island. Those trees are also found in some households, which are located nearby the riverbank. The croplands are planted where river terraces are shallow as temporary farmland. They move upward as the water level arises.

2.2 History and land use

Before the era of Khmer Rouge, this area was the farmland that served agriculture products, such as crops and fruits to Phnom Penh. Mostly lands of inner island, was paddy field and crop farm. There were few families waving in the past. The core of communities is located at the north of island. Nowadays, there are many existing old style houses, including center of the commune. In the civil war period, most people were forced to move to other provinces or somewhere around the island and some of farmlands were kept vacant. Some houses were destroyed in the war time but many existing trees in orchard are still alive. In the present, just some of people came back and are staying in the same land lot while many others have migrated to other places in the country or other places in the island. They still work in their farm normally at their backyards. Many households move to work in the capital. People believe that the oxen, if sold to the butcher, will give more financial benefit than keep them as working animals for labor support. Moreover, the inner land nowadays is still vacant because there is no portable water supply.

2.3 Settlement pattern

Those villages are expanding in parallel with the riverbank, houses, temples, and schools are accessed directly from the main loopy thoroughfare. Most houses are concentrated on the northwest of the island because of several furies in this side. The shape of land plots are normally in rectangular. The houses are built to the front and the backside is farmland. The households extend nearby their areas not another side. The physical structure of village is determined by many factors such as mode of transportation, water supply, and security.

In the middle of island, there are a few shortcut roads for some families that work on labors in their rented- farm. However, many land plots are still out of product and keep vacant as shown in this picture due to less economic profit from agricultural product and lack of labour to clear the land for agricultural purposes.



Figure 3: Vacant areas in the inner of island

In term of settlement linkage to the main land, there are two opposite piers in front of two temples. That demonstrated the relationship of communities between both side of the river.

2.4 Farming

The main product is from seasoning cropland such as beans, sugarcanes, sesame and cassavas. There are also some orchards such as bananas, mangos, jackfruits that only in the north and west of island and some fruit trees in their houses.



Figure 4: Different types of farming in Koh Dach

Table 2.1: Number of family has access to irrigation system and using chemical

Village	No. of family has access to irrigation system	No. of family using chemical fertilizer	No. of family Using pesticides
Chong Koh	0	117	117
Lvea	312	156	108
Kbal Koh	0	120	75
Koh Dach	17	17	18
Ronash	0	124	120

Source: Commune Data Base, National Data 2002, Seila Program

Table 2.1 shows only two communities in the north and west of island that have access to irrigation system therefore farmland in this areas are productive. Moreover, the mixed orchard still can be discovered only in Koh Dach, the north of island. It means farm lands have been sustained for long time because the ecology is quite high benefit to each others. That is why farming can be maintained with less number of using chemical or pesticide. These reasons are different from cropland in other areas.



Figure 5: Water containers in their households and mixed orchard with variety of plants

Moreover, through observation, around 70 percent of households do their waving in their homes but all materials are imported from outside of the village by the middleman. That is a turning point when many households prefer to do waving more than do farming and keep their lands vacant. In term of market, many products send totally to Phnom Penh while people in Koh Dach still need to buy food (the same agricultural products in this island) from the city too. One example is one sugarcane juice shop brought sugarcane from market in Phnom Penh while this area has many sugarcane farms.

2.5 Population

The different of total gender population is not so distinguish but the numbers of women in working, ages 18-64 years old, are more than men. Therefore, we can assume that the labor force for local economic is mostly from women in their family such as waving and selling, etc.

Table 2.2: Number of population in different age in different village

Village	total family	total women	total men	women less than 17	men less than 17	Women(18-64)	Men (18-64)	Wom (65+)	Men(65+)
Chong Koh	346	908	806	255	348	459	287	194	171
Lvea	512	1336	1202	533	553	537	475	266	174
Kbal Koh	632	1569	1420	524	523	934	821	111	76
Koh Dach	482	1358	1476	569	759	744	648	45	69
Ronash	391	1071	1003	464	422	536	514	71	67

Source: Commune Data Base, National Data 2002, Seila Program

The most important transportation is motorcycle that many households need for traveling across the river to main city. Ox-carts and horse carts are only use for agriculture transportation inside island

Table 2.3: Number family owned assets in every village

Village	No. of motorbike	No. of car	No. of ox-card	No. of bicycle	No. of boat	No. of boat with machine	Total TV
Chong Koh	184	1	13	336	4	15	252
Lvea	260	3	18	160	38	6	392
Kbal Koh	252	5	7	485	39	28	472
Koh Dach	98	4	3	123	32	3	285
Ronash	34	2	15	79	24	13	153

Source: Commune Data Base, National Data 2002, Seila Program



Figure 6: Modes of transportation in the villages

2.6 Cultural uses

2. 6.1 traditional house

The main character of traditional house is shown by roof of the house. Many house roofs still made by tiles. Therefore the architecture values still remain in many houses especially through observation in Koh Dach village. However many houses tend to be changed their roofs to corrugated iron roof and fiber roof. Therefore, traditional house should be maintained for the beautiful old style as most as possible.

Table 2.4: Number of houses with different kind of roof materials in each village

Village	Straw house	Tile house	Fiber Cement house	Corrugated Iron House	Concrete house
Chong Koh	30	130	4	132	3
Lvea	46	314	56	18	4
Kbal Koh	40	324	41	102	3
Koh Dach	34	226	8	112	2
Ronash	144	73	15	79	0

Source: Commune Data Base, National Data 2002, Seila Program





Figure 7: Beautiful traditional houses and also the new style houses

A- Roof type

From the 20 house samplings, we can conclude that the house average age is about 50-70 years old, some oldest are more than 100 years old. The member of household is almost 4-10 persons in one family, so they are not single family. They are quite big family because they still based on agricultural lifestyle. The people occupations are farmers and now many of them do waving as the main work. Some family feed animal to sell as their secondary income. In term of architecture, there are 4 kinds of roof styles of Khmer house. The roof style that is called Pet, means closed roof, Hip roof. Next, it is called Rong Deung means half-gabled roof and Kantang is called for Gable roof. Most of traditional roofs are used for religious or formal buildings, particularly pagodas. The most popular roof style in the village is Pet or Hip roof because they are easier for construction. Moreover, many households would like to renovate the gable roof for the extension rooms because it is not so big structure and can separate the roof easily.



Figure 8: This roof style is called as Rong Deung means half-gabled roof



Figure 9: Left picture shows Pet-roof or Hip roof, Right is Kantang roof or gable roof



Figure 10: The extension buildings for the new rooms are covered with gable roof

B- wooden decoration

There are some wooden patterns and elements to decorate Khmer traditional house such as, frame of window, rafter, top of roof, stair and louver under the roof. Even nowadays, some parts of these decorative elements are made by concrete but still can see detail of pattern like the traditional style such as top of roof, stair, and footer.

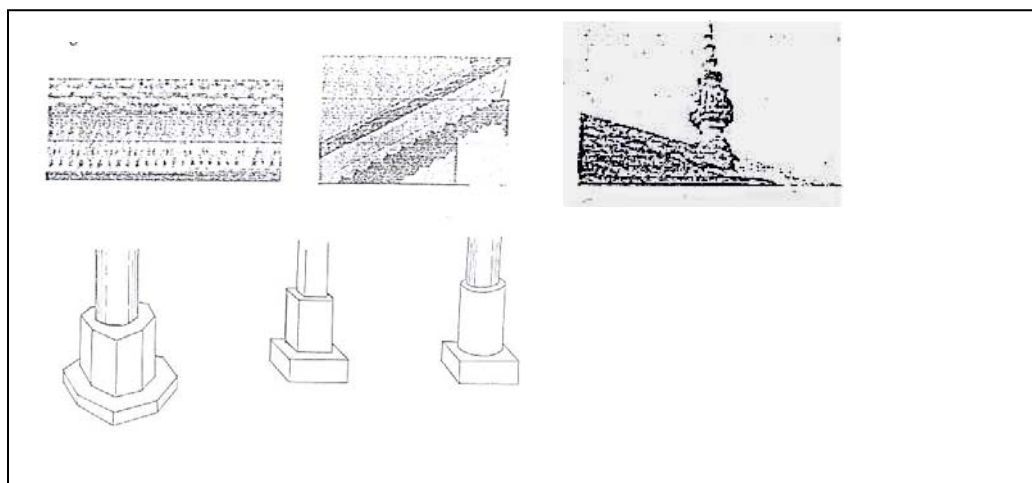




Figure 10: Main elements of Khmer traditional house picture from (1999 by Lem Try)



Figure 11: Decorative element show character of Khmer traditional element of house

C- Orientation of building

Ridge of the roof can be classified by the setting of those houses. There is 70% of sampling house locate the ridge of roof follow the sun direction. It means that the length side of their house layout follow east and west axis. Therefore, almost of front side of houses face to the east that is auspicious direction from Khmer traditional believes that is same as many Eastern countries. According to old believe, people still would like to keep the width side of their roof face to the east because of fortunately lives. Moreover, almost of house's proportion has length of house double to the width. It is follow traditional believe about good luck but it also practical module for wooden construction as bay of column and beam. In term of tropical climate, this proportion of house create long layout to face local wind direction from the southwest and northeast direction as well.

D- Plot of land

The plot of lands are normally in rectangular shape and they are very depth length, about 20-60 meters. The front space of each plot always keeps setback distance between their houses around 3-15 meters. There is no any regulation from the village but people feel comfortable to set their house at inner space because they would like to use the front for some activities such as, putting water jar, feed cow, planting, and recreation. Therefore, the landscape of total village has more open space from front side of each house can create sense of neighborhood living.

E- House's accessibility

The house's accessibility is not direct to main door of house, the main stair not face directly to the road and not usually point straightly to the upstairs' terrace. It also show the believe that may be concern with security and privacy whenever outsider come to their house. Some houses have another stair at the backside of their house, linked to the service zone such as kitchen, toilet, farming, and animal feedings.

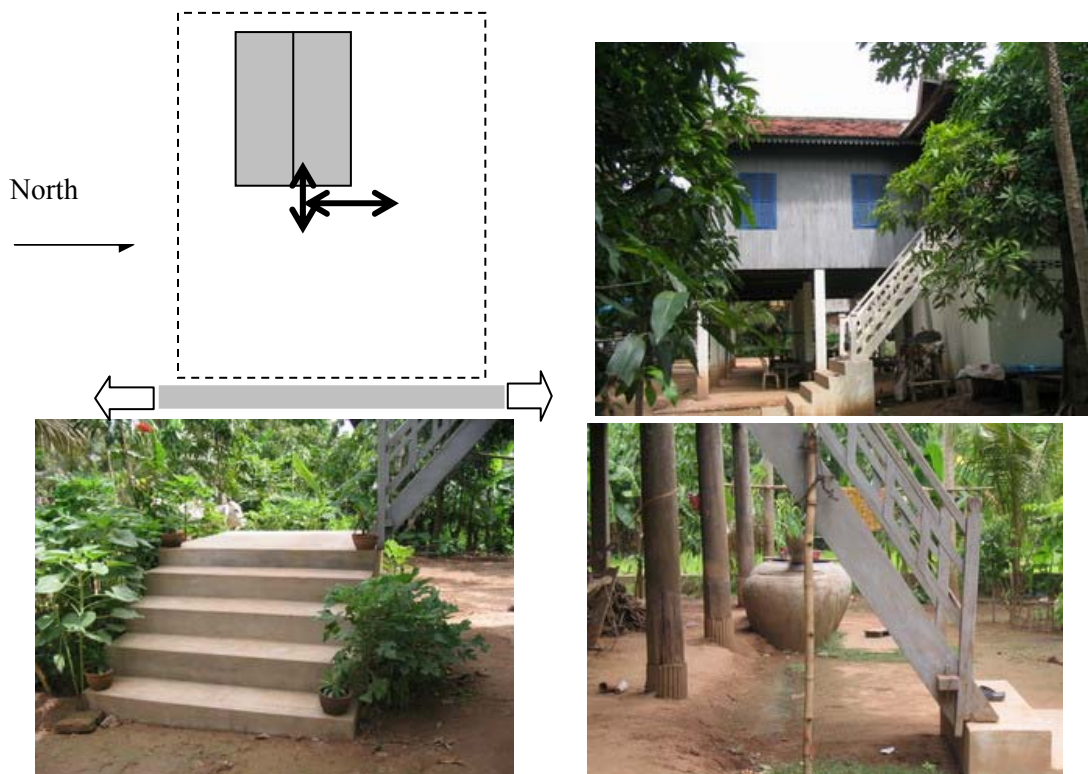


Figure 12: Stair direction

F- Uses and landscape

The shape of land plots are normally in rectangular. The houses are built to the front and the backside is farmland. The households extend nearby their areas not another side. The physical structure of village is determined by many factors such as mode of transportation, water supply and security. Most of the houses raise up first floor and keep ground floor for various activities such as kitchen, weaving and storage. Moreover, in front of their house normally they keep set back from the road about 5-8 meters without fences for open space where they can do recreation, agriculture or social activities like in these bellow pictures. However, some new houses do not set their fences and block their properties with modern material fences.



Figure 13: Space at ground floor use for waving





Figure 14: Many kinds of functions at front side space of houses

G- Animal feedings

Many houses feed oxen in front of their houses because it is easy to take them to eat outside and for transportation purposes. For chicken, they feed at the backyard, while they plant any vegetable and herbs nearby their kitchens. Some of villagers feed pig but they separate them far away from their houses normally only the farming or inside orchard areas because of bad smell from them.



Figure 15: Area for feeding animals at front side and backside of house

H- Plantation

The villager usually plant eatable tree and usable tree for fruit, construction and for selling such as mangoes, jackfruit, coconut, sugar palm, bamboo, and banana etc. The small shrubs normally plant for aromatic and herbal plants. The ornamental plant for colorful flower is planting only in the front side at stair or spirit house to decorate their special areas. The boundary between neighborhood and front road also can be identified by eatable plant in row.



Figure 16: Spaces of planting around the house

I- Water storage

People keep water collected from the river for any purpose in jars and every house have about 6-10 jars to preserve water for their lifestyle. The location of these jars are at the front side of their houses because it is easy to transport water from the river by horse cart.



Figure 17: Water container put on higher level for gravity benefit to flow water in pipe

J- Plan layout and elevation of Khmer house

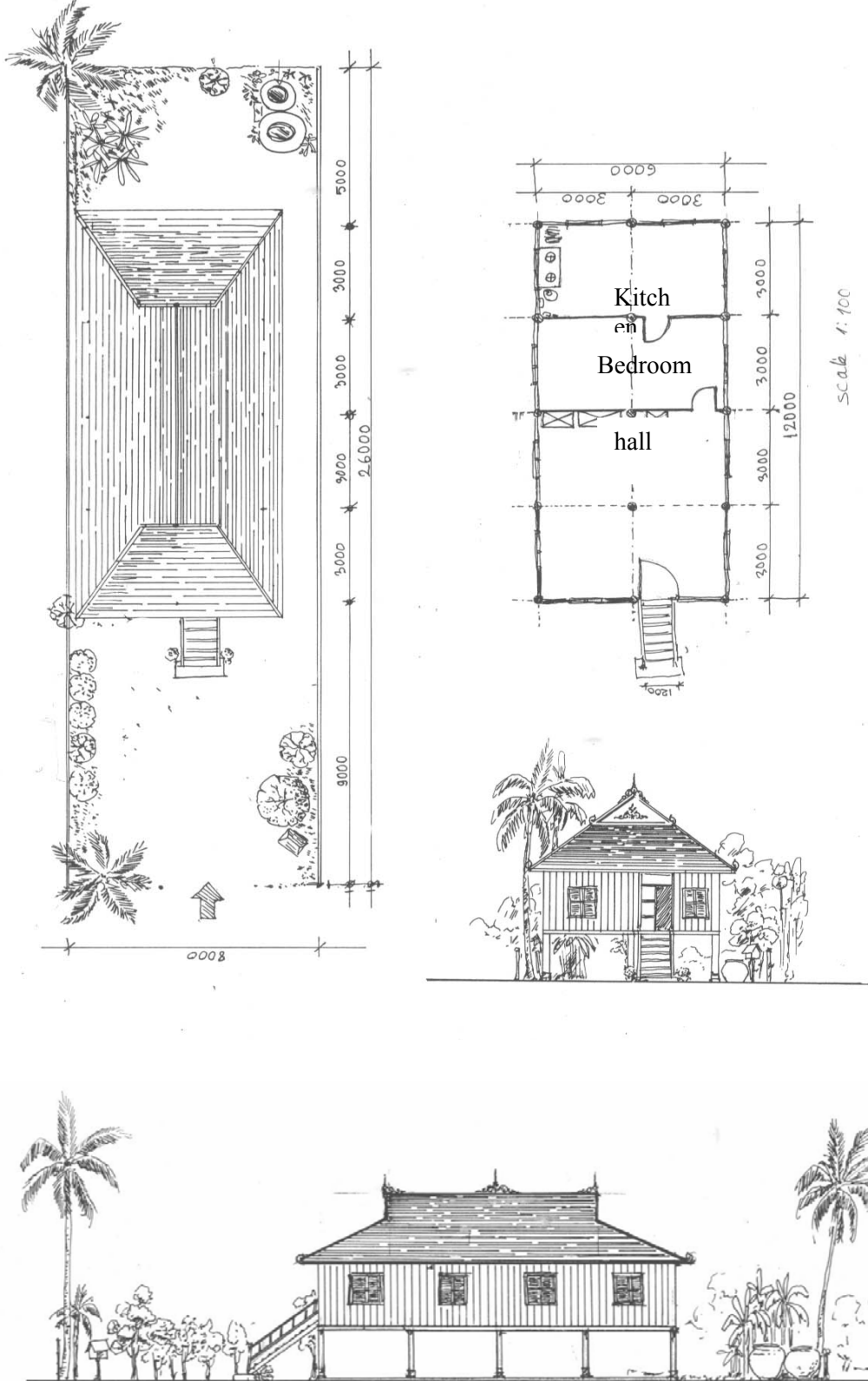


Figure 18: Rong Deung Roof

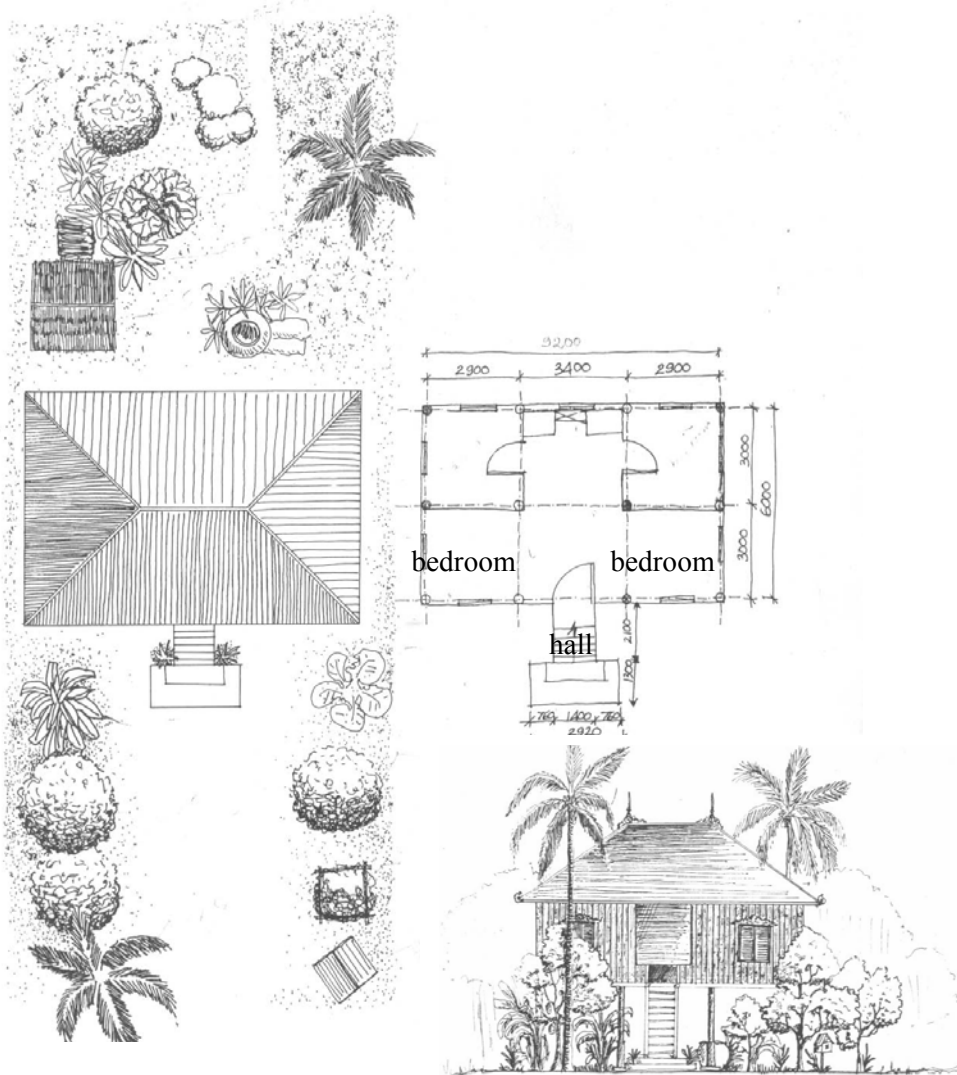


Figure 19: Pit roof

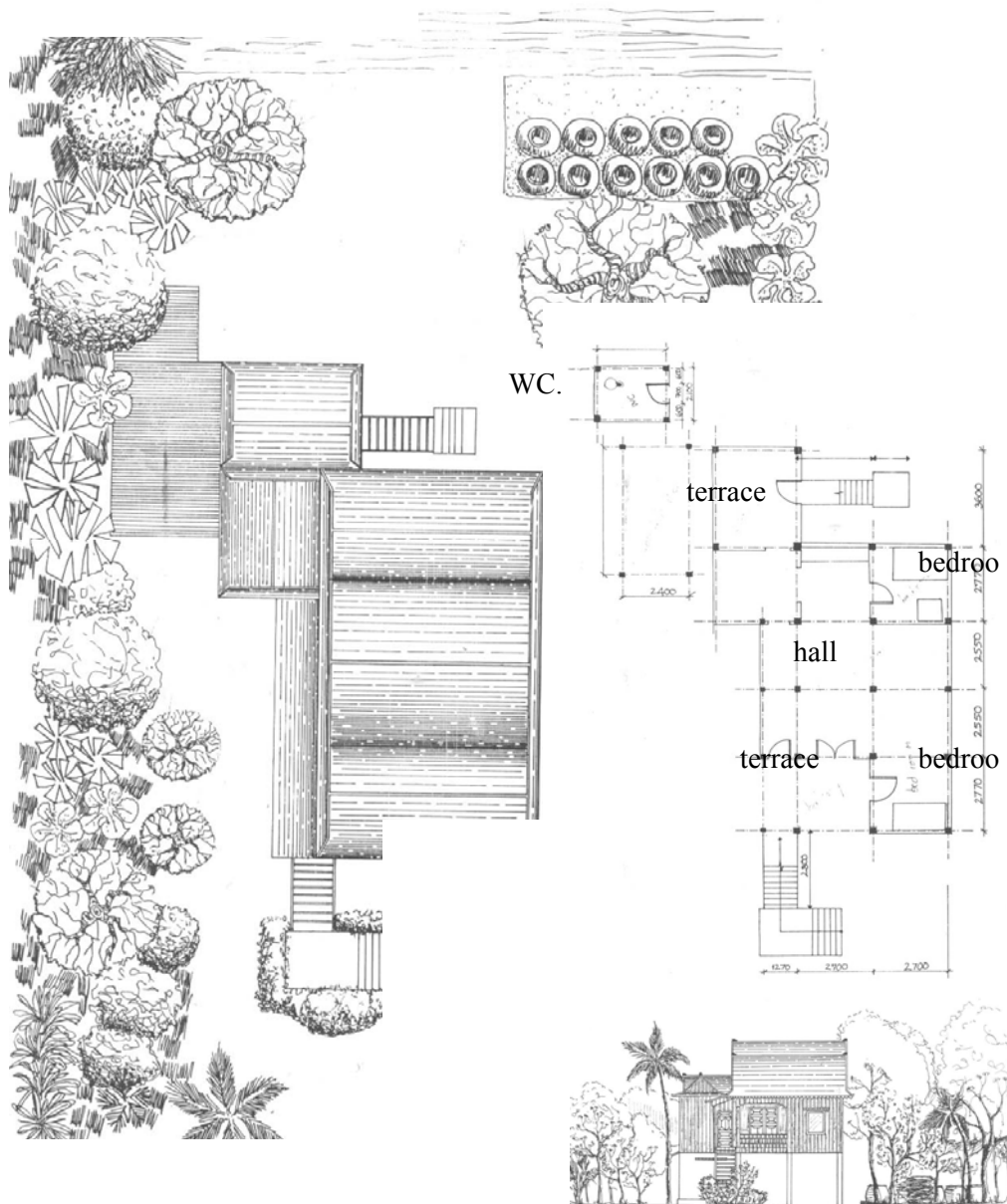


Figure 20: Kantang Roof



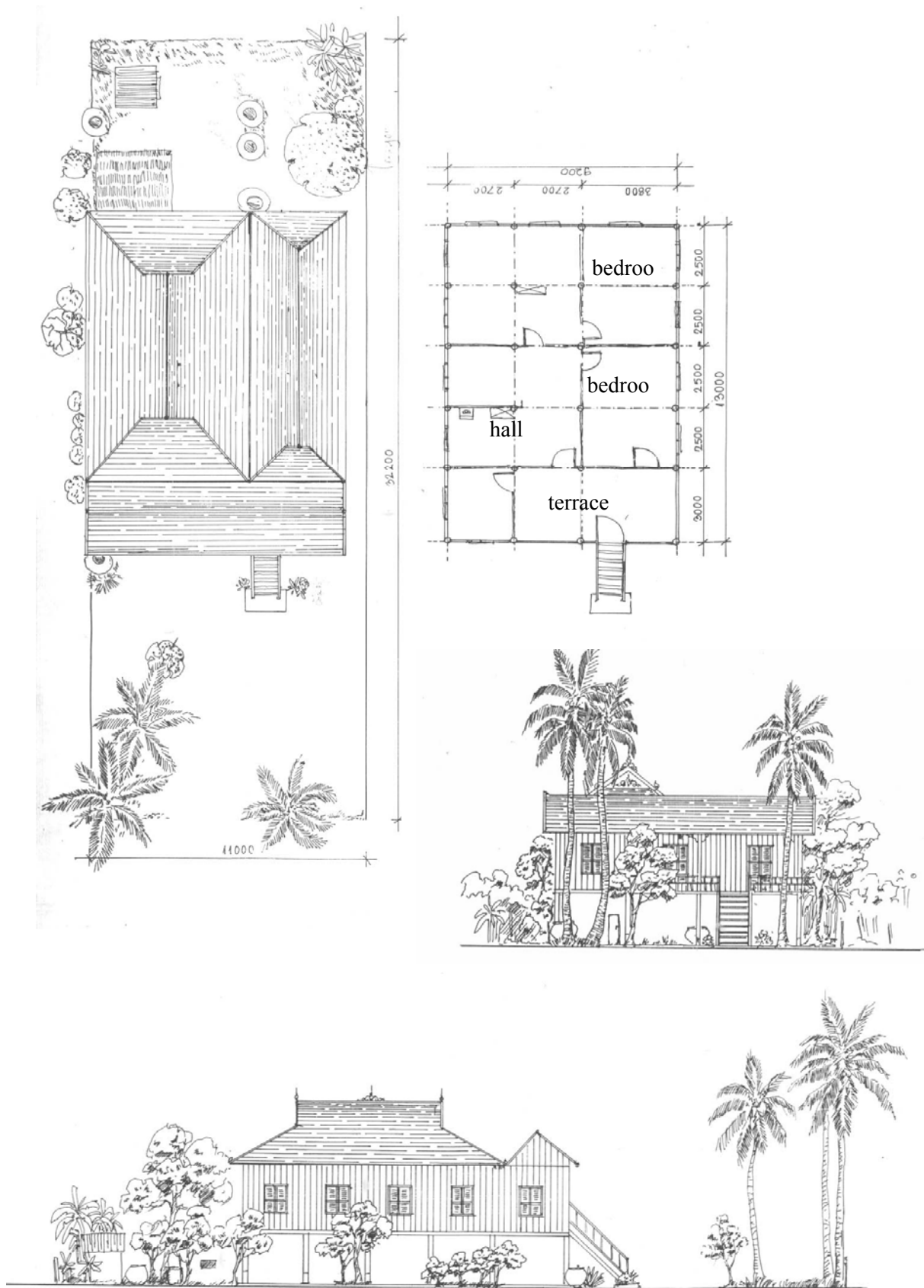


Figure 21: Rong Deuong mixed with Kantang roof

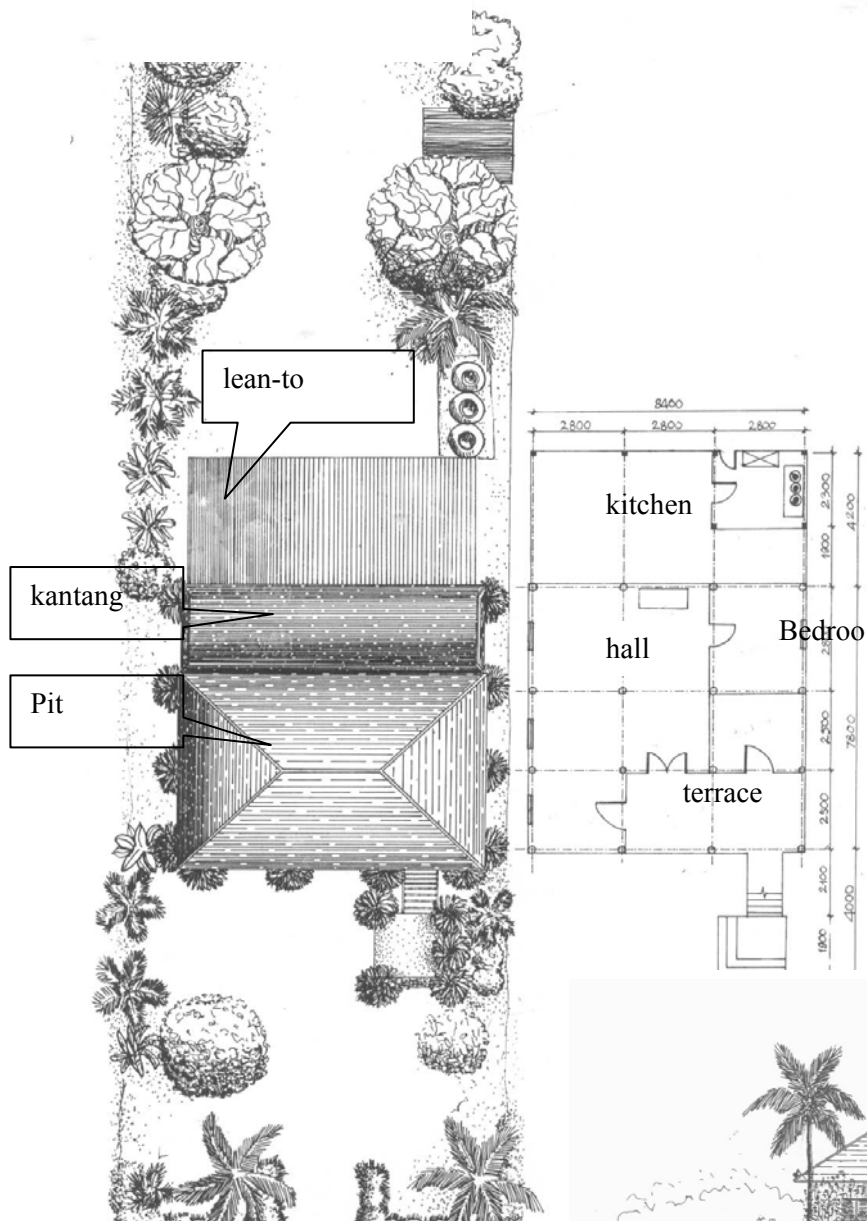


Figure 22: Pit mixed with Kantang roof

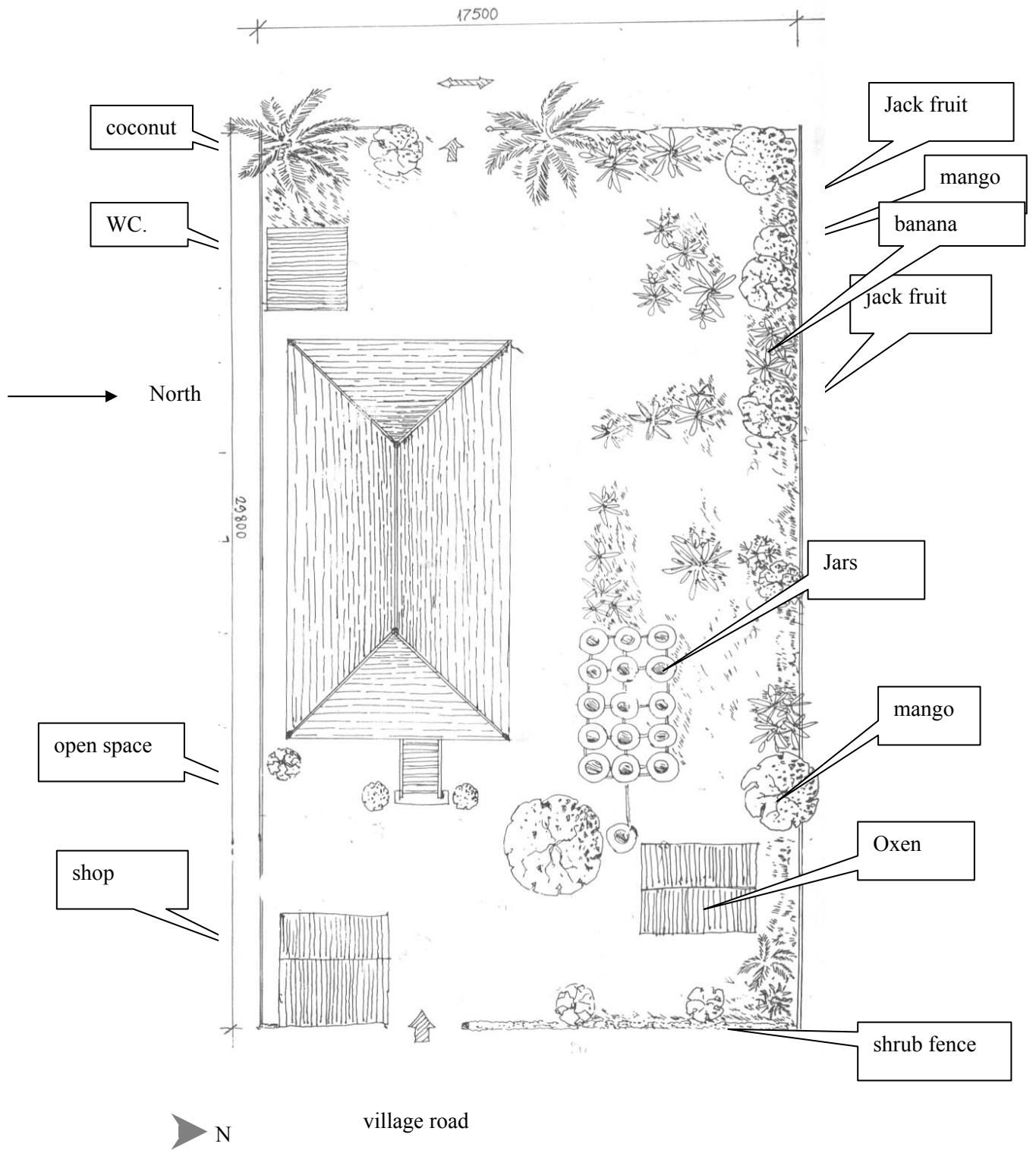


Figure 23: Landscape layout shows planting and uses

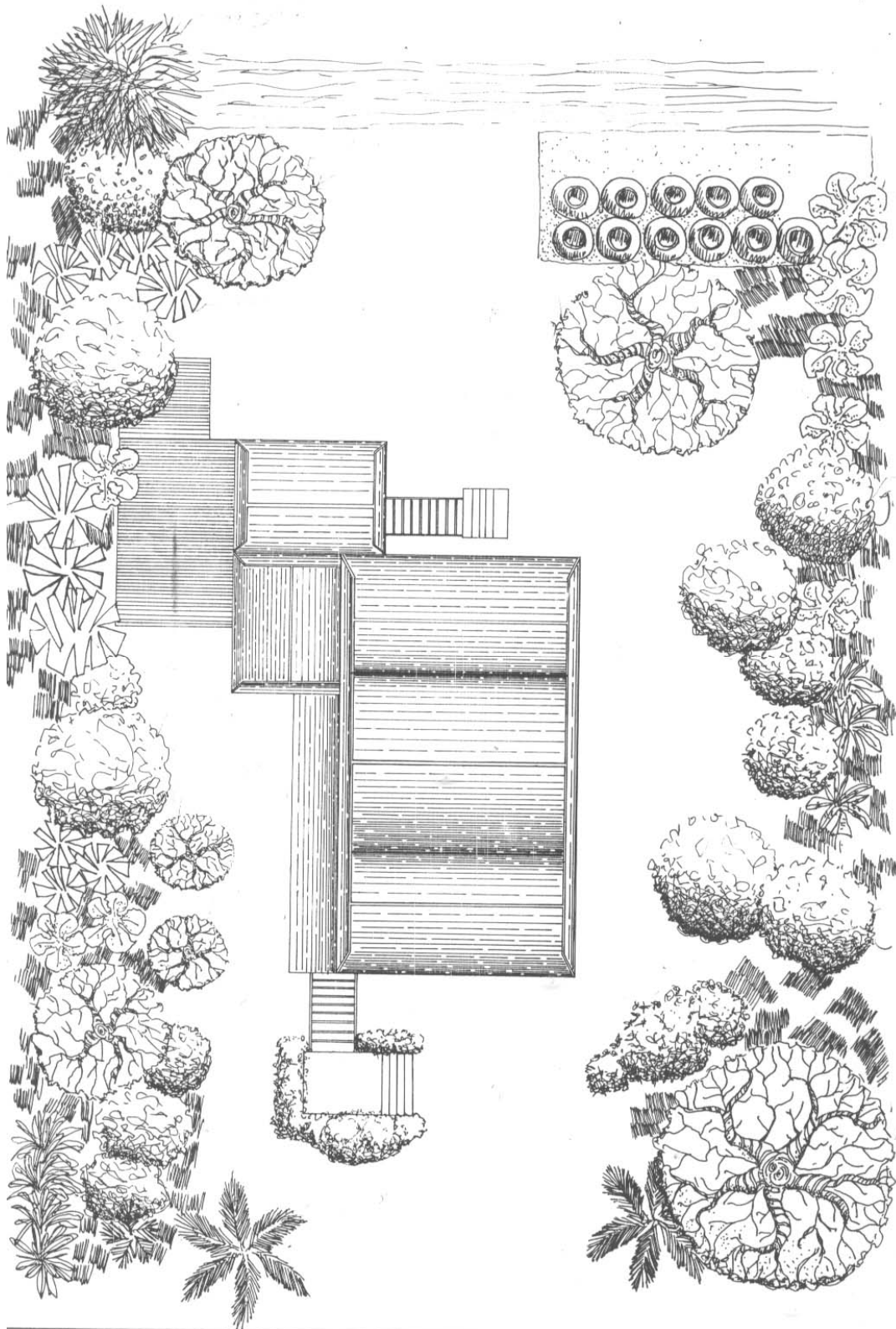


Figure 24: Planting and uses

2.6.2 Social activities

There is one local market and small shop for petroleum or people open small businesses in front of their house. Temples are the node of social activities especially Buddhist ceremony such as the end of Buddhist lent. There are no any big markets on this island only small shop in front of their houses selling some vegetables, fuel

and grocery things. Therefore, these areas become nodes of each group of households. Next, temples also the main node of activities, there are 5 temples for Buddhist activities and mostly people there always participate with ceremony. Finally, the main open space for teenagers is located under mango grove where they play sepak takraw. This area is also tourist service in dry season that local villagers can make small businesses and earn money from tourists who pass to visit sand shore in the lower land.



Figure 25: Space for community activities

2.6.3 Recreation and tourism

In the north of the island, there is a tourist area that can attract local tourist from Phnom Penh to visit the area during dry season. Because this area has a sand shore, that is good for swimming and relaxing for Khmer tourist mostly. There are only a few months in flood season that people cannot enjoy sand shore. Nowadays, the commune authority is charging entrance fee from visitor of CR1000 (0.25 USD) per motorbike and CR2000 (0.50 USD) per car. This tourist area should be better organized such as toilet, garbage container, and parking etc. while other agricultural

and cultural activities such as traditional Khmer house, farming, and waving do not get any benefits or be promoted yet from tourisms.



Figure 26: Small shelters for relaxing and eating along the sand shore

2.7 Landscape change and trends threatening the landscape

2.7.1 Agriculture

Many agriculture lands have been kept as vacant land because many people move to work in city and they also lack of labor forces and water management's inner the island. New farming consumes more pesticide and chemical fertilize, not friendly with environment. Old farm as mixed orchard owner can earn every seasons and make more diversity of plantation. In fact, these areas should be preserved and should be the agricultural productive lands to support Phnom Penh people's foods. That is why suitable land use should be promoted for local benefits and kept their characteristics of farmlands.

2.7.2 Traditional house style

Nearby the main road or furry, the characteristics have been changed to be the modern style by new materials of building construction such as, pavements, height and dense of fences and uses in their land plots. Nowadays, there are many land speculators who take opportunity to buy farm land along the river and there are no any land use plan for any authority to protect environment and visual impact along the river after the new developments. However,, there are still more potential to conserve and promote the traditional buildings by people's awareness. That is unique with the special characteristics of the villages.



Figure 27: New house style changes to be modern construction and also outstanding color



Figure 28: Fence becomes important element for security and also for social status separated to the neighborhood

2.7.3 Environmental and tourism management

There are no sewage system for toilet at tourist areas and kitchen from the restaurants. There are also no any garbage managements and plastic consuming is increasing by tourists. People throw some garbage directly to the river easily. Moreover, dust, noise and air pollution from motorcycle nearby the sand shore and also community's surroundings and community road cannot support for heavy traffic both cars or motorcycles.



Figure 29: Rainy season, people cannot earn money from sand shore terrace.

Furthermore, in term of income from tourism circulates only to some groups of people while the community values are ignored by tourist and also local people. People can earn only in tourist season, dry season. In the north of the island, there is a tourist area that can attract local tourist from Phnom Penh to visit the area during dry season. Because this area has a sand shore that is good for swimming and relaxing. There are only a few months in flood season that people cannot enjoy sand shore. Nowadays, the commune authority is charging entrance fee from visitor of CR1000 (0.25 USD) per motorbike and CR2000 (0.50 USD) per car. This tourist area is not well organized such as toilet, garbage container, parking and etc. while other agricultural activities do not get any benefits or be promoted yet.



Picture 30: Sand shore that become tourist area

2.7.4 Landscape change and trends threatening the landscape

Many agriculture lands have been kept as vacant land because many people move to work in city and also they lack of labor forces and water managements inner the island. In fact, these areas should be preserved and should be the agricultural productive lands to support Phnom Penh people's foods. That why suitable land use should be promoted for local benefits and kept their characteristics of farmlands.

In term of house style, nearby the main road or furry, the characteristics have been changed to be the modern style that can be distinguished by new materials of building construction such as, pavements, height and dense of fences and uses in their land plots. However, there are still more potential to conserve and promote the traditional buildings by people's awareness. That is unique with the special characteristics of the villages.

2.8 The future

Tourism may make some environmental problems to local people such as noise, dust, air, traffic, garbage, and water pollution etc., if there are not well organized. However, tourism also can create local jobs and incomes and also make visitors understand this area very well if we promote eco-tourism including agriculture activities such bicycle or walking tracks through farming, learning people way of life such as waving or farming, pick up or harvest agriculture products, ecology learning, farm stay, and farm sight- seeing etc.

Moreover, in term of cultural values, such as some traditional houses can be promoted for local awareness and appreciated in their values as lively exhibitions, galleries or museums. The community's incomes are both agriculture and tourism activities that should be generated the understandings on this area to the local and also visitor at the same time.

Part 3: Data Collection

The research had taken place in Koh Dach, one of research point of view is interviewing and workshop preparation for the period of three months. The main activities in first step of research are interviewing with group discussions. Mr. Chea Sitha is a local people in Koh Dach and also is studying in 5th year at the Faculty of Architecture in Royal University of Fine Arts in Phnom Penh. This is very important connection and fortunate for our research as he can link to local participation and also have given us the chance to organize series of group discussions, interviews and surveying.

3.1 Interview and group discussion

We have interviewed three main carpenters in the village at Mr. Chea Sitha's house in Kbal Koh village, Koh Dach Commune, Muk kampoul District, Kandal Province.

3.1.1 Key performance of three crpenters in Khoh Dach

Mr. Oeun Oum (Ta Oum): He is 70 years old. He is a lay man of L'vea pagoda and also a well known carpenter with lots of work experiences in Koh Dach Commune. He is the old man who the villagers respected. He had moved to Koh Dach since he was 22 years old. When he was 24, he started to work as a simple carpenter. At that time he learnt very hard and done lots of researches from the good carpenters. Nowadays, many house builders and carpenters have been studying this knowledge from him. In Koh Dach there are about 20 well known house builders and carpenters and they are learning from each other to satisfy the villagers need. Ta Oum's children and his children in law are following his work. In Koh Dach, besides Ta Oum there is another well known carpenter who is in the same age with him, named Chok who is living in L'vea village.

Mr. Chim Chork: He is one of the chief contractors or skilled workers in Khoh Dach. He is as old as Ta Oum who is the greatest and the oldest contractor in this commune. Mr. Chim Chork learnt this skill from his uncle by just looking and doing observation since before Khmer Rouge regime, and after that in 1979 he has been starting work with this career by himself. From day to day this career teaches him a lot and his experiences come after that.

Mr. Sim Sngat: He is also one of the chief contractors. Nowadays; he is the youngest among Ta Oum and Mr. Chim Chork. Since Khmer Rouge regime finished, he has been starting his work as a normal laborer in one house construction. His career leads him to becoming a great Skillman in the construction work. Now, there are lots of people come to learn this construction skill from him.



Figure 31: Group discussion with villagers and carpenter

3.1.2 Vision of Traditional Khmer House

According to Ta Oum, he is interested most of the wooden houses which were built in the village after the Khmer Rouge regime. In the past, people loved to build Pet house (Hip roof)

, Roong Daul, and Roong Doeung (half garble roof), but later on there are more Kantang house (garble roof), and many owners prefer to build this kind of house than the others, because they realized that Kantang house is more modern and in the other hand, carpenter did not need to cut the wood to many pieces of roof structure as the Pet house. Mr.Chom Chork and Mr. Sim Sngat have mentioned that wooden house is more beautiful and provide more esthetic than the concrete and they prefer to build the new house than renovate the old one. The reason is that the new house spend less time and easy than the renovation. Normally, the carpenter needs to discuss with the owner about the style of the house, they cannot decide it by themselves. These two carpenters usually add extra scale on the old Khmer traditional house proportion for more comfortable and convenient in concrete structure.

3.1.3 Believe of traditional house by people at the present time

Before building a house, they always give offering and ask for permission to build on the site from the spirit of land. They also said that in order to start a new house construction, we need to have a celebration to ask permission from the land spirits. This usually done by Ta Oum. Actually, the other carpenters or skill workers also know how to celebrate it but it does depend on the owner's wish.

3.1.4 Renovation of traditional house in Koh Dach

According to Ta Oum, nowadays most of carpenters still present and work in the village and have less chance than the concrete builders who have better chance to go to work outside the village because they can find more works. Being a house builder they prefer to build a new house rather than renovating the old one. Nowadays, people focus on stair. In the past they used the wooden stair for Khmer traditional house but now most of the houses in Khoh Dach have change their stair to a concrete one because wooden stair cannot stand with the rain due to its joints. The wooden handrail of the stair is much more beautiful than the concrete. The history of this changing has since early 1970s. The wooden stair usually made from some kinds of wood such as: P'chek and Sokrom.

Since the 1990s many rich families in the village try to develop the ground floor of their house by using brick wall in order to get more living space. This change has affected badly to the esthetic of the Khmer traditional house especially the façade of the house. Moreover, column is different from the past because it is easier to do concrete foundation to support on ground column while the past they did not have concrete foundation.

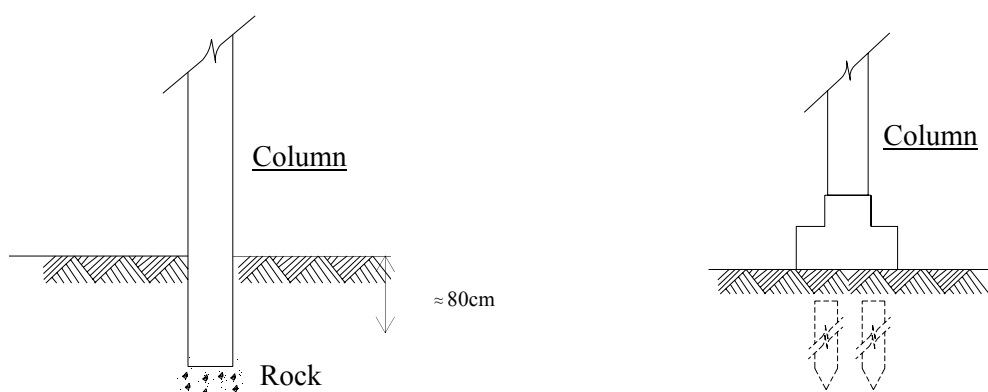


Figure 32: Classic and modern concrete foundation

Moreover, we just found that concrete fences is the most attractive fashion at the present time, people would like to follow others like Phnom Penh house. The reason that nowadays we can see tall concrete fence is people want to determine their own land boundary and social status. However, it is sure that some parts of house is replaced by cement or concrete in stead of wood because wooden elements can not last for long. Today, the part of house may be changed from wood to brick wall and concrete stair.

In the past, they did not use nail for building but they use interpenetrated with pieces of small wooden and tension, it is more strength. Nowadays this technique cannot complete with labor skill and time of construction, therefore they use nails to joint of structure.

3.1.5 Construction Material

Wooden material is imported by vendor. It was easy to find 10 meters length piece of wood in the past but now there is only 9 meters length in the construction market. Most of the construction materials are imported from Phnom Penh city such as wood, roof tile, and brick, gravel, etc. There are middlemen who operate retail shop for those construction materials. Footing and window normally produce on site whenever they need them.

3.2 Interview cases of traditional house's owners

Group of houses

This house close to Cheng Koh temple the south of Island, there are only few old houses in this community. Her house is the most special case because they stay in a big group of families. There are 4 houses of relative in one big plot of land and without boundary. Her grandmother's house was moved to the back since Khmer Rouge regime was over. They feed cow, chicken, and pig. One house got 10 meters of land width and more than 100 meters length. This shows common space and share facility in group of houses such as firewood, spirit houses, and open space etc,



Mrs. Chantha

This house locates at L'vea community. This house was built in her grandmother period. So, it should be around 3 generations already. Last year the wall has been renovated once. Now

there is no plan to renovate and just for temporary staying because her family are living in Siem Reap province. Her house at ground floor is full of weaving equipments.



Mrs. Meak Sary

The age of the house is around 30 years old . The columns are the original since her parent time and this house never renovated. After Khmer Rouge regime, she came to build this house by using the old columns and other existing materials from the original house that has been removed during the Khmer Rouge time and have been laid down on the ground and fulfilling by some other new walls. She got only half land length compare to her neighbors.



Mrs. Chhit Met

The house ages more than 100 years (since her grandfather period). The stair is the new one. She plant mixed fruits and feed only some chickens and horses. She son is operation battery charging for those villagers who did not have access to electricity connection.



This house is located in Kbal Koh community; it is the most beautiful one. Unfortunately, the owner has moved to stay in Phnom Penh and they do not want to keep the wooden structure as it is too old and they didn't want to renovate it. They plan to destroy this house and build up the modern one soon.



Figure 33: Samples houses that have been selected for interviews





Figure 34: Other cases of the houses that located on Kbal Koh community at the north part of island

Part 4: Suggested Strategies

In order to promote and preserve traditional culture in this commune, we should promote: i) Tourism Guidelines, ii) Environmental Guidelines, iii) Architectural Guidelines, and iv) Landscape Guidelines.

4.1 Tourism Guidelines

For Tourism Guidelines, we can achieve it through: i) interpretation of local information, ii) create green areas or shading for tourists, and iii) parking and circulation for tourists.

4.1.1 Interpretation of local information

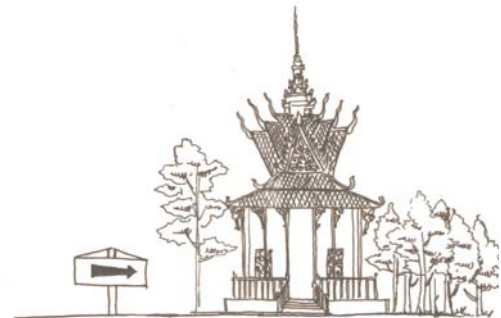
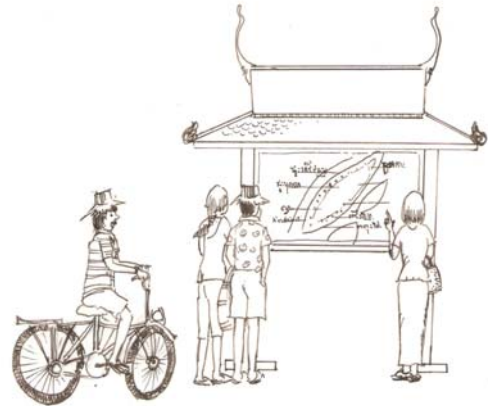
Nowadays, there is no any existing interpretation of Khmer traditional house and cultural landscape heritage in Koh Dach Island, therefore it should be settled some permanent information center such as Village Library or Information Center in any public buildings such as school or pagoda. The information center also can generate any update or coordination among local people, and local authority such as village chiefs and commune council.

Moreover, another benefit of Information Center also can be useful for tourists, wherever is attractive point for tourist and can be tourist center. There are potential to provide in some existing traditional building such as center point of village, temple, pier, or local pavilion. We can promote value of old Khmer style building in the communities.

Moreover, the story of communities can be presented by photos, postcards, leaflets, books, maps, or a model at visitor center and at the village Information Center. There are also briefing notes for group of traditional houses, tourist attractive areas, calendar of village products and activities, plantation and farming, and public and religious buildings, etc. These are easily accessible and economic ways to tell the story and also educate people on the significance of the site. Other information at the site consists of small signs identifying significant areas or buildings.

Furthermore, local student volunteers should offer free guided tours for the communities on weekends.

Therefore, Information Center should be linked with local agencies such as school and tourism service and can be updated any information or training to all stakeholders and volunteers.



4.1.2 Create Green Area/ Shading for Tourists

The group of trees in farmland, such as mango farms and bananas can create shade for tourists who want to walk along the street, particularly at noontime when they would like to take a break from other attractive areas nearby for example from sand shore to group traditional houses at Kbal Koh village or communities. Tourist would feel relax and enjoy scenery and farming experiences at the same time.

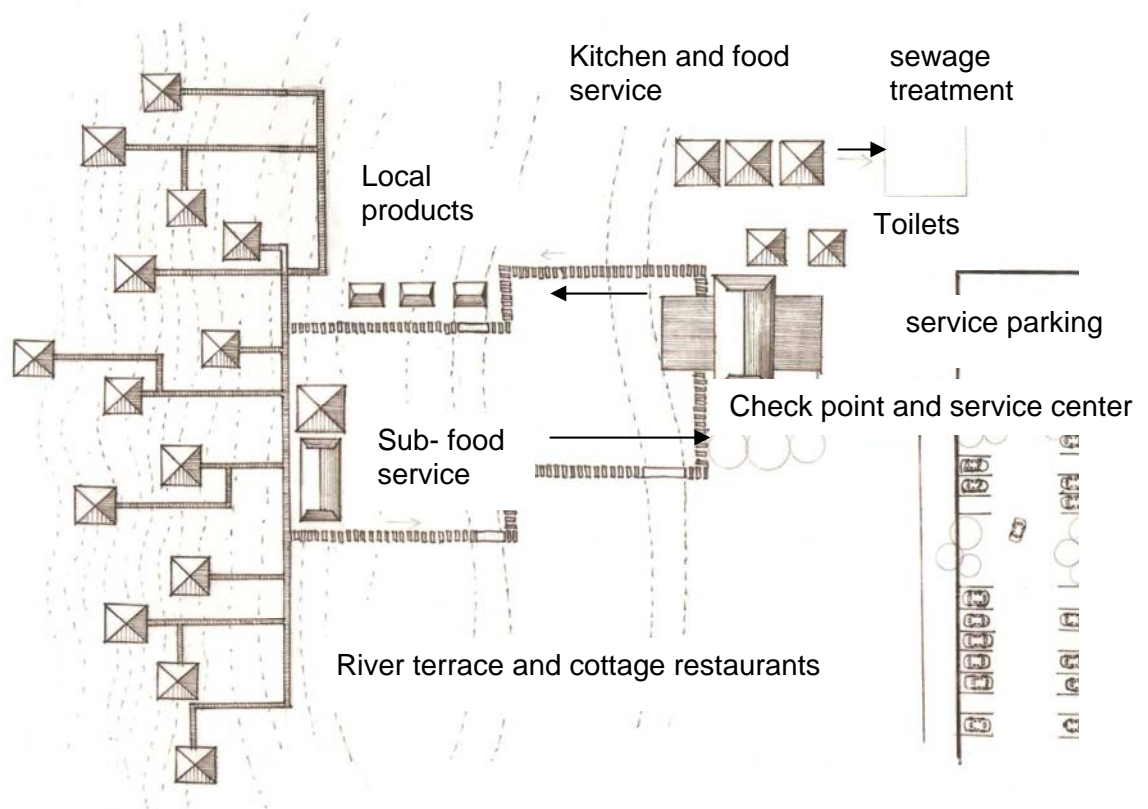


4.1.3 Parking and Circulation for Tourists

A- Parking lot

Inappropriate parking lot location especially at sand shore in Kbal koh communities which brings traffic and air pollution problems to the area. Therefore, parking lot may need to locate on the river bank and should be limiting the road to sand shore directly. We should encourage people to walk down to riverside. However, we should search for any shortcut walking to compensated inconvenience of their walking, we hope the tourist should understand and follow the route. The walkway can be designed for temporary with local material such as bamboo walkway, boardwalk or stepping concrete slaps.

The entire walkway element should be temporary fixable and adjustable with river tide level and environment of sand shore.



Note: Conceptual diagram of site design and doesn't fit to scale.



River terrace and cottage restaurants

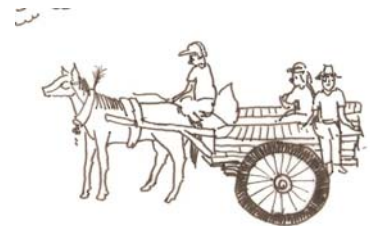
Sub- food service

Bamboo stair and walkway

Check point and service center

B-Traffic

Most people traveling by motorcycles sometime in big group like gangsters of teenagers, therefore they produce noise, air and visual impacts that affect local people and the site. On the other hand, if we promote local transport, such as horse cart, local people use for agricultural transportation, it should be created more benefit for local labors and initiate income. The most important, it should be better way to make friendly environment. However, horse cart riders should be trained for safety first service and adapt their cart for seating and more comfortable but still keep sense of adventure and discovery of traveling.




4.1.4 Promote suitable tourism

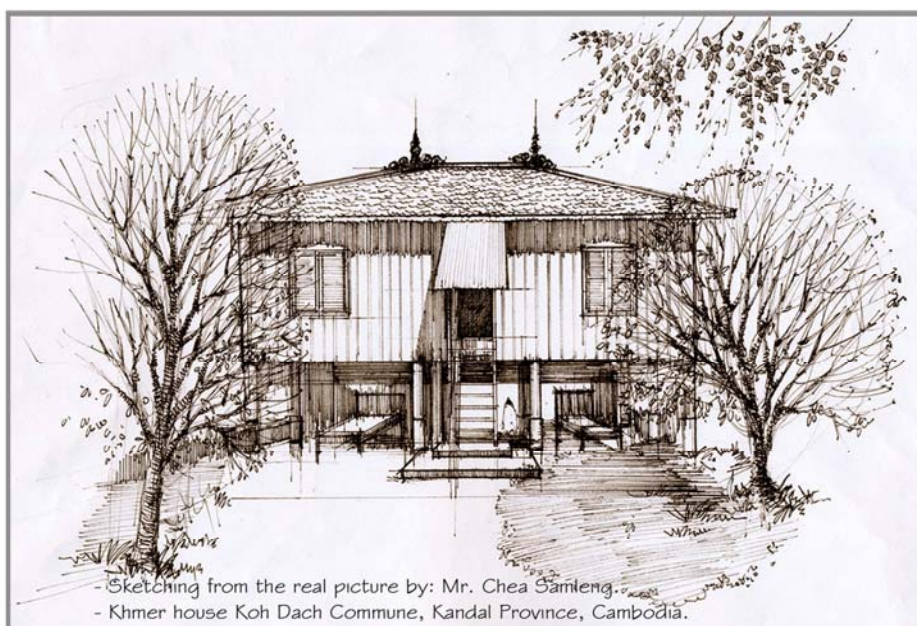
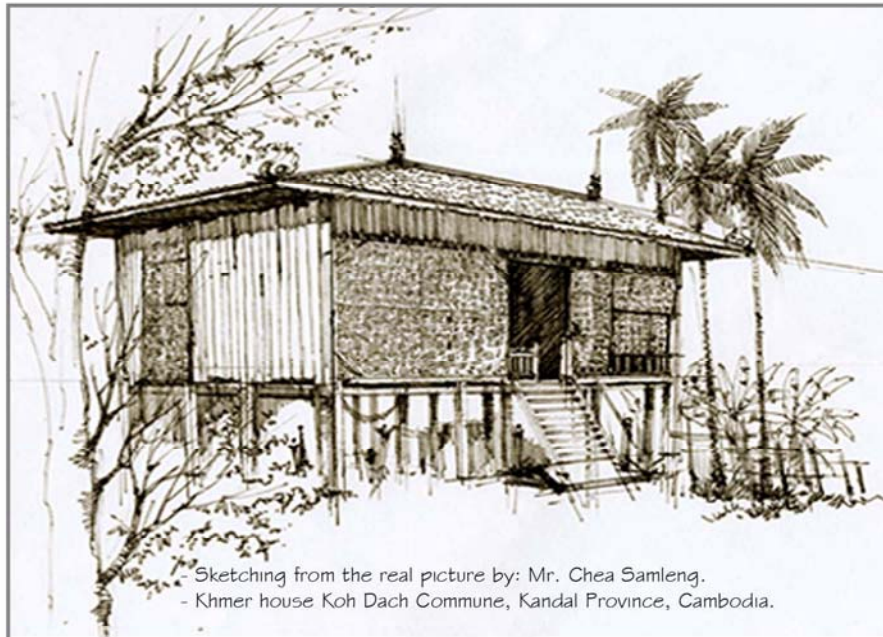
The Commune Council should set up program to educate local guide and tourism agents on local characteristic and new concept related to agro tourism such as farming visiting, fruit picking up or home stay. There should be more NGOs to set up any tourism program and train local people about local product and how to add more value for farming product such as preserving fruits, and dried fruits, etc. However, we should promote local products like calendar of farming, so that tourist will have more information. Whenever, they come to visit

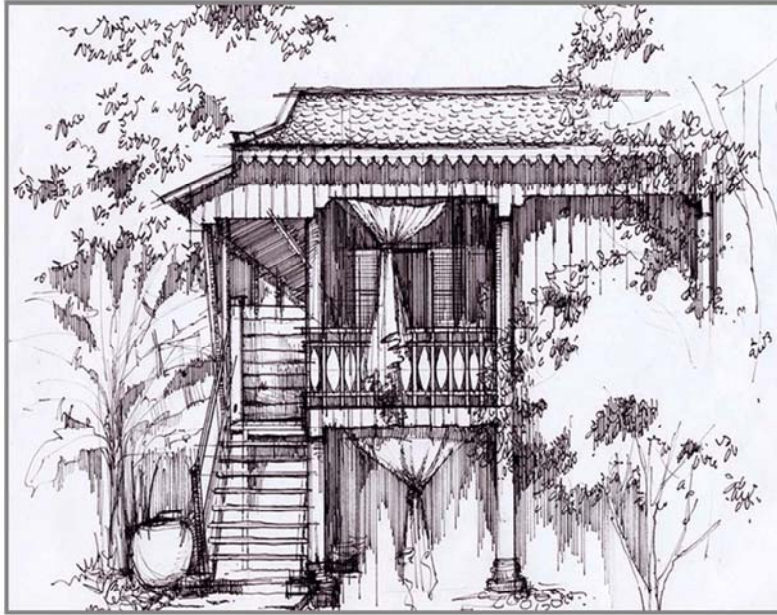
community, they can taste or buy many kinds of local products. Moreover, local people can create other calendar of ceremony or local activities such as boat racing, or water festival and Khmer New Year in local activities and ceremony calendar also.

Crop Calendar of the year in Khoh Dach Commune, Muk kam Poul District, Kandal Province.

January	February	March	April	May	June	July	August	September	October	November	December
	Tomato, Red Pepper, Cucumber, Water Convolvulus (Tror Koun), Pumpkin, Egg Plant, Papaya, Corn, Wax Melon, Gourd, Bean, Banana, Coconut, Jackfruit and Dry season rice (Srov Prang)(April-May)...etc.										
			Corn, Sesame, Pek Kouk, Kdart, Arum(Trav) and Rainny season rice(Srov Vosar) and some vegetable...etc.								
									Rainny season rice (Srov Vosar)		
											
											
											
											
Fishing											
											
											
											
											
											
											
											
											

Finally, the main information or the style of traditional house can be promoted as gift or souvenir from Koh Dach like postcards and tourist guide book, etc. This postcard also can generate income to community as well. The main important is that there is no any support from government or any NGOs yet, the research would like to set up some ideas and examples for local and other agencies to implement in the future. We can promote traditional house by image of post cards and presents as the original picture of Koh dach communities. See more pictured in the appendix, there are many sketch pictures by architecture students who participated and visited Koh Dach community during workshop.





- Sketching from the real picture by: Mr. Chea Samleng.
 - Khmer house Koh Dach Commune, Kandal Province, Cambodia.

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- Khmer cultural landscape traditional house, case study at Koh Dach, Kandal Province, Cambodia (30 Nov -1 Nov 2007)
 - UNESCO fellowship award program in support of priority programe areas (2006 -2007)

4.2 Environmental Guidelines

For the promotion of environmental issues in the commune, we should guide those stakeholders who are working or enjoying related tourism field through tourism friendly environment. The environmental guidelines should be focused on i) solid waste and water quality, ii) waste water management, and iii) visual impact.

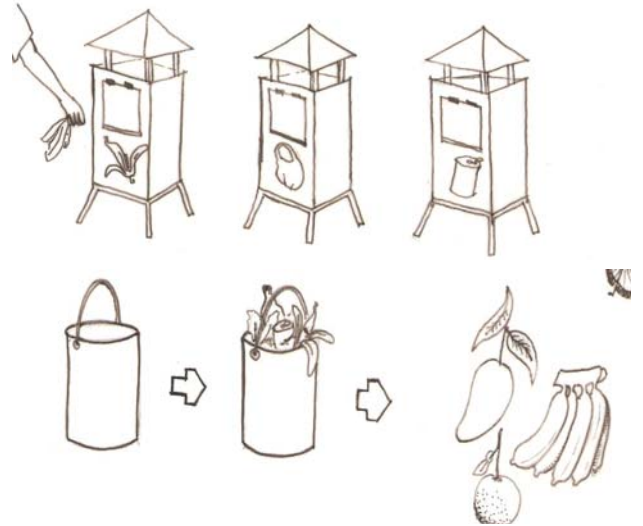
Tourism brings with it added pressures on the environment and infrastructure of Koh Dach. Increasing visitors' length of stay could, if in the future there will be promotion of home stay or other accommodations, also exacerbate some of environmental problems. The high

number of tourists already increasing problems with sewage and litter. These are issues that should be dealt with to improve Koh Dach for tourists and residents alike.

4.2.1 Solid Waste and Water Quality

There is no garbage treatment system in Koh Dach, especially at sand shore. Accordingly, the water quality of the Mekong River, has deteriorated due to garbage from tourist at sand shore restaurants released directly into the river.

In addition, Commune Council itself also lacks of capability in terms of well-trained staff, technical and financial support to cope with this solid waste management problem. Therefore, there should be NGOs to promote them to separate garbage, such as foods and organic garbage that they can collect to produce fertilizer while can, paper, and plastic should be recycled or reused. Moreover, they should promote tourists to take care their garbage and also have volunteers to collect the garbage from the site. For example, we can charge tourist entrance fee to the sand beach and provide them the recycle bag, when they have time to recreate, or have meals all of the garbage should be thrown in that bag. Then, when they finish their leisure, they just return that bag to the check point they will get bonus such as local fruits or some local souvenirs.

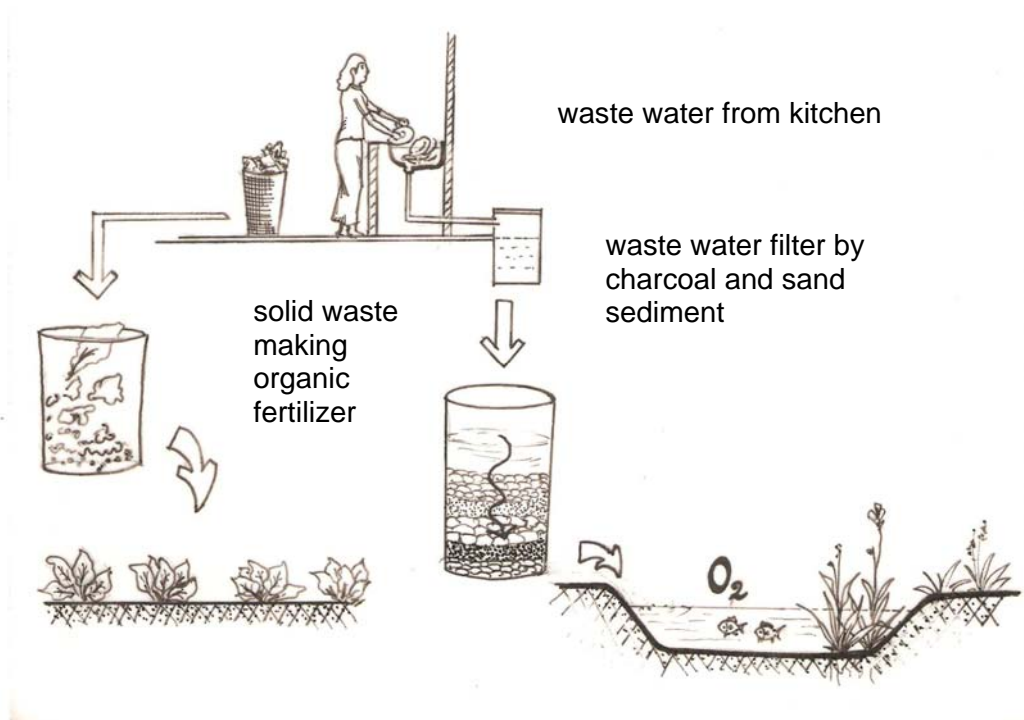


Return collected garbage bag for bonus

4.2.2 Waste Water Management

Currently there is no public toilet provided for tourists which make it inconvenient and leads to the dirty of the place, sand shore in particular. There is a need to provide sufficient facility. It has been proposed by Commune Council to build public toilet in the area where the parking lot is located at the upper terrace of sand shore. However, the sewage and waste water drainage must be not polluted or discharged to the river nearby. The location should be suitable ecology for both dry and flood season because ground water and under ground sandy soil may be not fully absorbable sewage water and odor from toilets.

Moreover, waste water from kitchens of many food shops should be treated before drain to the river. The method to purify waste water is recommended by small charcoal tank and natural plant treatment basin as demonstrated in the following diagram.



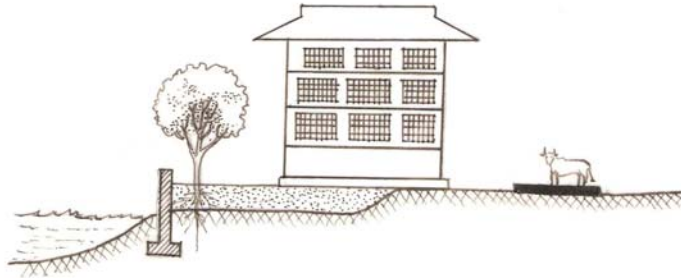
4.3 Landscape Guidelines

In term of landscape guidelines, focus should be paid on many aspects related to natural landscape of river bank, farm land, including cultural landscape such as sense of community, image of agricultural community, ecology and also visual impact of community's landscape.

4.3.1 Visual Impact

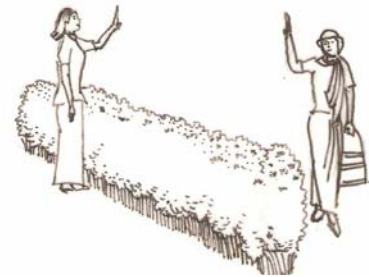
There are many land speculator occupiers, especially the prime areas nearby or along river, in Kbal Koh and L'Vea village or communities because they are easier to transport by ferries. In the future, there would be many guest houses, resorts or restaurants that would grow up along river terrace. If local authority do not pay attention, investors may build up new high buildings that would obstruct and change profile of landscape along the river. It can create extreme contrast from farm landscape and new development. Therefore, they should provide style, height and function of any new development to be suitable with existing communities.





4.3.2 Sense of community and boundary

In the past, people keep their front side space of their house and community road without any boundary because they have sense of community and neighborhoods. However, many houses need to have boundary of property and privacy so they start to build up fence or any vertical plane for screening view from community road. From surveying, we found that green fence with low shrub or plantation can create sense of boundary and still keep sense of community.



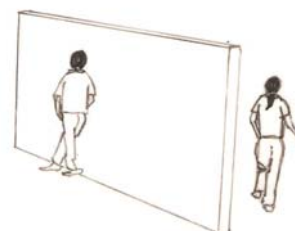
Therefore, it should be recommended to create low fence or mix material but still can be link space of community. It is found that height solid wall is very huge scale if it is compared with community road and obstructs sense of community among neighbors.



This element also affect to image of agricultural community. People can build up fence by local plantation or eatable vegetable. However, in the community nowadays, people would like to use concrete fence as well because it is strong and low maintenance. They can be mix concrete wall as lower part of fence and top part with solid structure such as bamboo or steel bars.

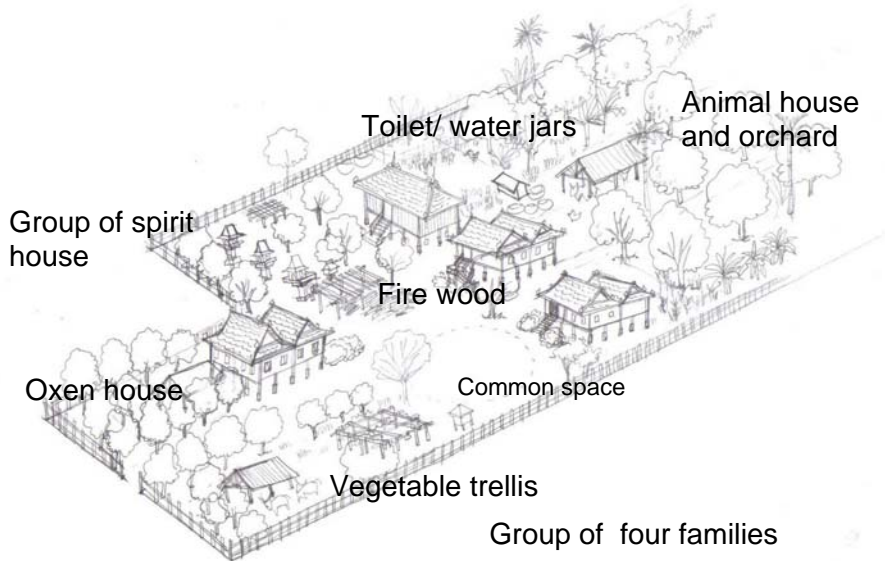
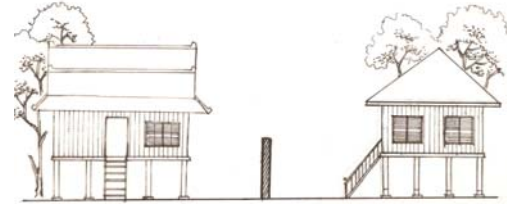


However, the size and height of fence should not be gigantic and colorful because it will be impact to image of both sides community's road.



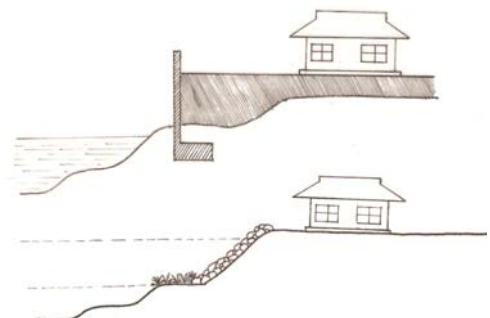
Finally, the past farmer family always stay in group close to each other without boundary between group of them. After Khmer Rouge period, as communist system they must set up regulation for each family to occupy the area of household in same size and almost in rectangular shape. In the research, we found that there is just few families that still stay together in big family since after Khmer Rouge time, and until now they create sharing common space together for multi-functions inside big family.

It shows in bellow layout of 3 to 4 houses, they share open space for vegetable planting, keep fire woods and recreations. This layout is basically shown in farming family in many communities in neighborhood country, that can be assumed that if the then regime did not divided the land for them, they should stay in group of family and share space for many households together even no any boundary because they have strongly sense of neighborhood. Therefore, many families still enlarge new family to next plot of land but they may keep boundary line clearer than in the past. However, in sense of farming they still keep plantation as boundary.

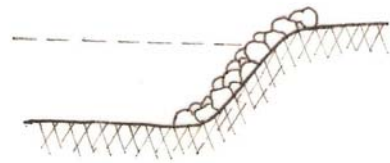
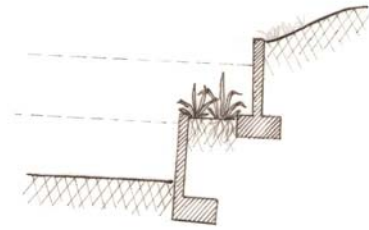


4.3.3 Take care of river terrace

In term of landscape ecology along the river bank, they should be keep the terrace areas as setback for any built up buildings. The local knowledge is shown how people stay base on water especially farming following season. In the dry season, farmer plant crops on the terrace and it generate ecology



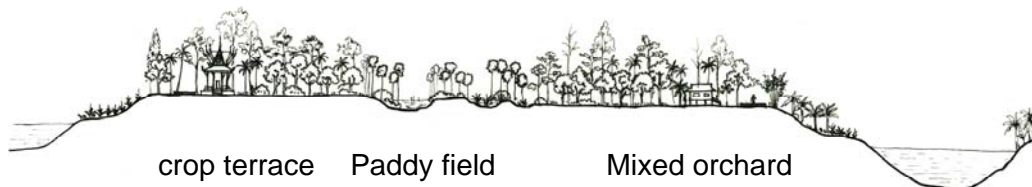
friendly along river bank because that area is sediment processing of soil deposition. However, many house owners would like to increase their boundaries, not propose of seasonal farming, but they would like to sell their lands for rich people. This is a newest threatening condition, the lands along the river would be fill up with big concrete retaining walls. In term of ecology, the process of soil deposition and soil erosion along both sides of river bank will be seriously rapid changing in the future.



What we should recommend people to treat their river fronts, is try to keep the natural process and should not build up big scale of retaining wall. It can be stepping of series of walls to reduce huge construction over there. Moreover, they should not build up too steep slope of retaining wall because it will be damaged the neighborhood riverfronts by strongly reversed wave from river tide. The best way is keeping and planting some water plants that root can be deeply direct grew to under ground level. This is the best solution to reduce erosion along the river and still remain ecology system of riverfront's landscape.

4.3.4. Farming landscape of island

The people understand about their lands and does farming follow the characteristics of landscape. The area inner part is wetland therefore there are paddy field there, while the area nearby their house is orchard as mix plantation because it is easy to take care of and it is also both for eatable plant and useful plant for their household and for selling such as mango, rose apple, coconut, and bamboo, etc. By the way, the area along the river is seasoning crop only in dry season such as bean, corn, sesame, and potato etc. Therefore, this local knowledge is adjustable with season and environment of landscape. This could be promoted, especially for local product and should educate farmer about organic farming that is not base on chemical fertilizer and pesticide.



Cross profile of Koh Dach island

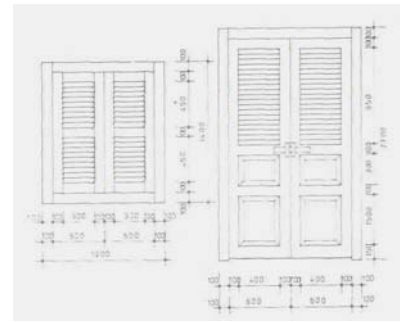
4.4 Architectural Guidelines

This guideline applied by interview data from Mr. Var Morin, Vice dean of Faculty of Architecture. The important characteristics of Khmer traditional elements are recommended to keep the same size and same shape of materials follow the Khmer method of

construction. At the present of times, there are new kinds of modern materials but the contractor should follow traditional proportions. He recommends keeping this following item as main characteristics of Khmer house.

4.4.1 Window

If it is wooden window, it should be fit with wooden house but in case that owner really want mirror window, try to keep wooden frame and proportion of size and shape of wooden style. In case of function inside the room, wooden window is better choice for privacy space, while mirror window; we may need to add curtain for each window inside the room if we need sense of privacy space. However, the window with louver can be represented wooden window and frame for traditional style very well.



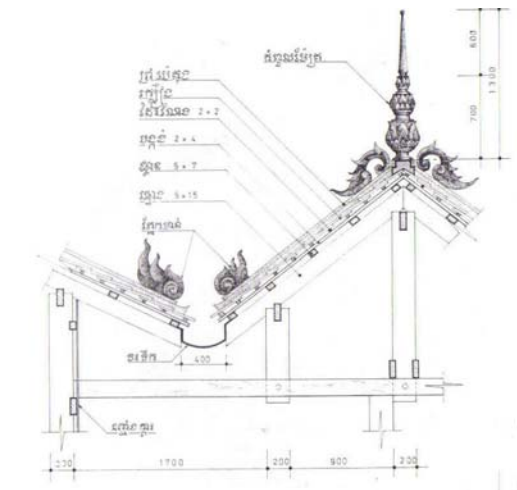
4.4.2 Roof

Nowadays, the structure of roof they can use steel structure, and the material of roof tile could be local clay tiles because it is local products but people

would like to use corrugate iron tiles because it is cheaper than clay tile roof structure and easier for construction. However, they should select color of corrugate that not so colorful or too bright surface.

In case of ceiling, in the past, traditional house had no ceiling, but nowadays it depends on owner of the house if they would like to have ceiling under roof especially for bedroom at first floor. However, the ceiling is not a problem for traditional characters if they would like to add this part in their houses.

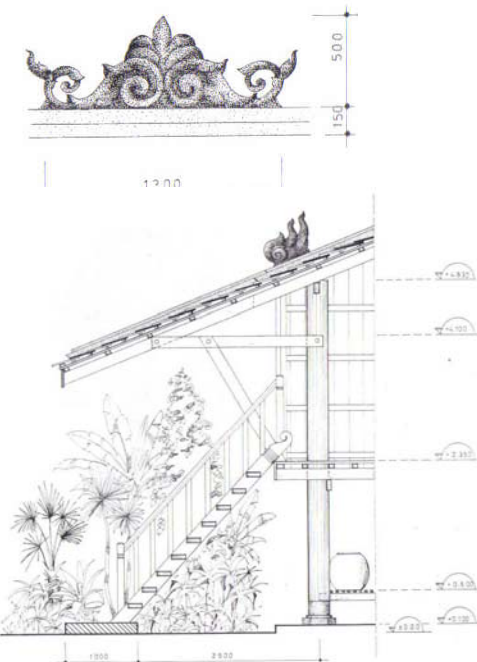
Moreover, the top part of Khmer roof can be recognized by decorative element as head of the roof and end of each ridge corner of roof.



4.4.3 Stair

The main important of Khmer style is head of stair and beam of stair, it should be remained with the wooden style of pattern or decorative pattern. However, many houses would like to change stair to be a concrete stair because of long-term maintenance and safety for elderly people.

Mr.Var Morin recommends that it is fine if the concrete should be mixed with grey or little brown color but should not be either in white or colorful part of handrail, step or stair itself.

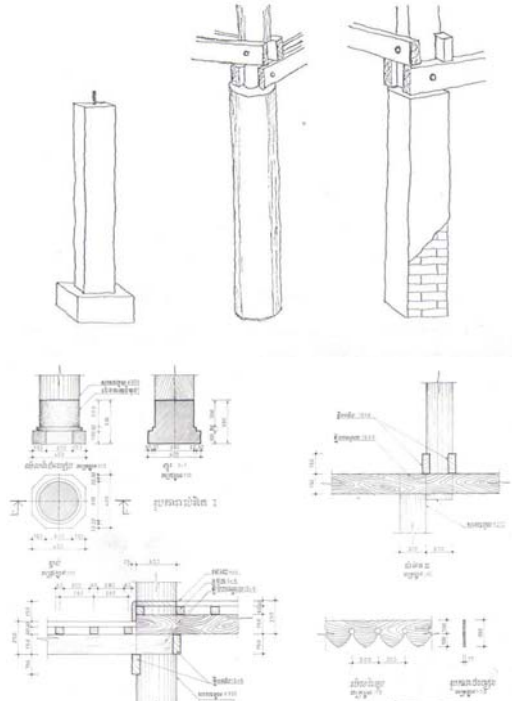
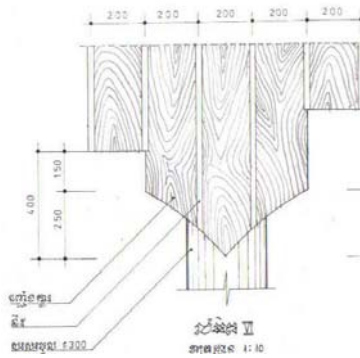


4.4.4 Beam structure

Mr. Var Morin, Vice Dean of Architecture, RUFA, also mentioned about main pole of wooden house at the middle span. Those columns are almost constructed with two beams both side of head of columns. He said that this is a local knowledge and traditional style of Khmer house. He would like to recommend that any renovated traditional house should be followed by this structure of wooden system though they will change wooden to concrete column.

4.4.5 Wooden decorative elements

Many details of traditional wooden house should keep wooden decorative element such as window frames, wall, and louver, etc. This can be recognized as artwork and skill of local carpenters and represents Khmer style as well.

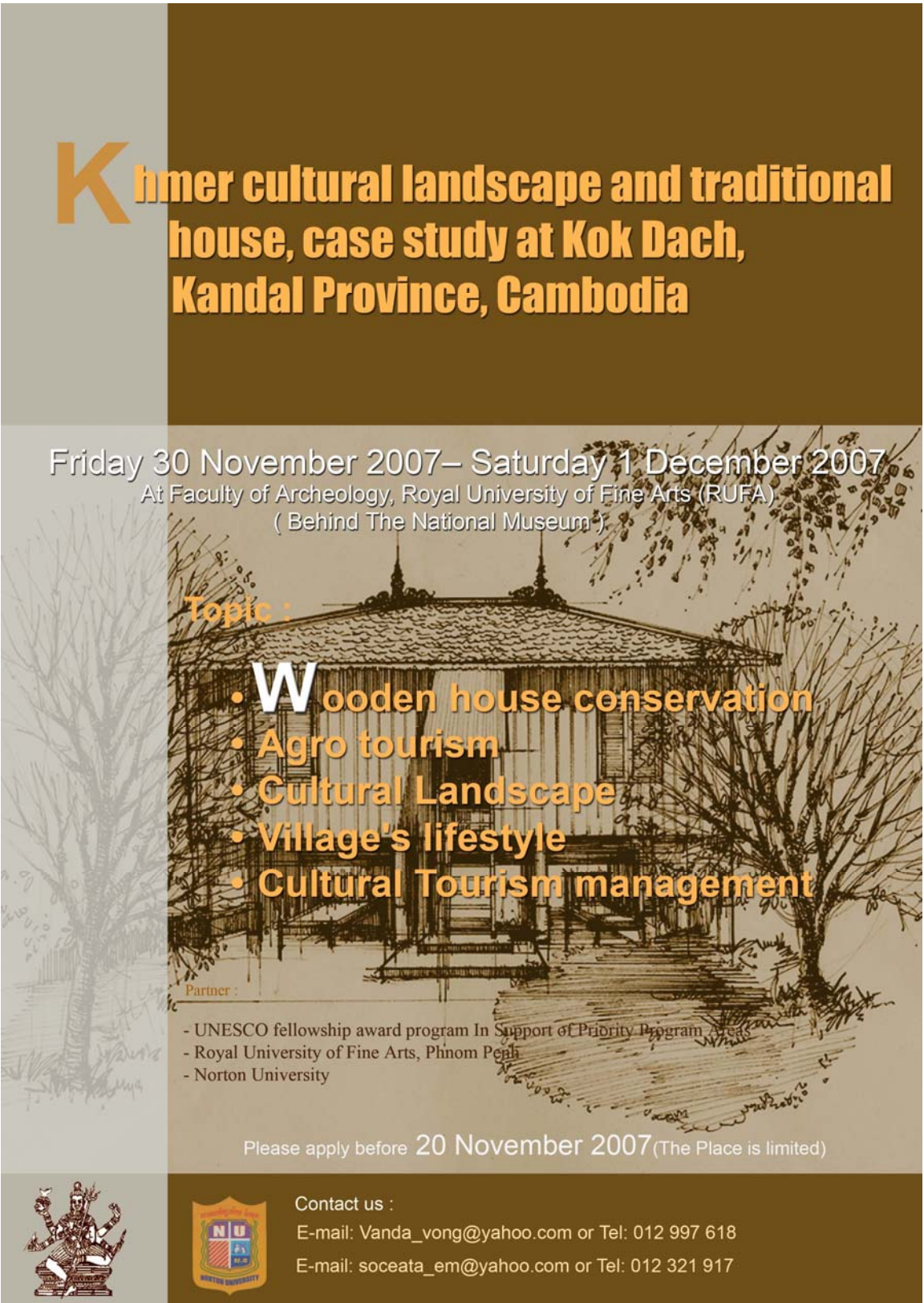


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Appendices

Appendix 1: Brochure for workshop announcement



Khmer cultural landscape and traditional house, case study at Kok Dach, Kandal Province, Cambodia

Friday 30 November 2007– Saturday 1 December 2007
At Faculty of Archeology, Royal University of Fine Arts (RUFA)
(Behind The National Museum)



Topic :

- **W**ooden house conservation
- **A**gro tourism
- **C**ultural Landscape
- **V**illage's lifestyle
- **C**ultural Tourism management

Partner :

- UNESCO fellowship award program In Support of Priority Program Areas
- Royal University of Fine Arts, Phnom Penh
- Norton University

Please apply before 20 November 2007 (The Place is limited)



Contact us :
E-mail: Vanda_yong@yahoo.com or Tel: 012 997 618
E-mail: soceata_em@yahoo.com or Tel: 012 321 917

Appendix 2: Seminar activities in RUFA

The research provides seminar and workshop for local scholars, specialists, and architecture and archeology students. There are over 80 participants and 12 of them from communities of Koh Dach. They are commune chief, village chiefs from all villages, carpenters and contractors. Almost of participant are students from Architecture, Norton University and and architecture and archeology from Royal university of Fine arts. There are some NGOS such as Mlub Bai Tong who concern with ecotourism and Khmer Architecture Tour who is promoting architectural tour in Phnom Penh city. The host of seminar is the Faculty of Archeology in the Royal university of Fine arts. There are various speakers who came to give lecture and presentations on traditional house, architecture, conservation and ecotourism. The program of the workshop is presented in Table 3.1 below.

Program of the workshop

Time	Friday 30 th November	Saturday 1 st December
7.30	Registration	Start Trip to Koh Dach
8.00-8.20	Seminar opening Introduction of workshop	
8.20-9.20	Academics activity related to Khmer traditional house in university -Mr. Pheng Sitha, Dean of Fac. Archeology, RUFA - Mr. Ching Chhom mony, Dean of Fac. of Architecture and Urbanism, RUFA - Mr. Tous Saphoeun, Dean of Fac. of Architecture, Norton University	Traveling inside island by local horse cart Visiting: -Landscape of group of household -Farm land sight seeing -Visit old temples -Life style of villager -Cement jar making -Weaving
9.20-10.00	Wooden house conservation and renovation by Mr.Var Morin, Vice Dean of Fac. of Architecture, RUFA	
10.00-10.20	Break	Break
10.20-11.00	Cultural management for local heritage awareness by Prof. Dr. Seng Soth, Fac. of Archeology, RUFA	Meet community peoples, scholars, local carpenters, and local students
11.00-11.40	Some experiences of traditional house conservation in Japan, by Dr. So Sokuntheary, Project coordinator of Sambor Prei Kuk conservation project	
11.40-12.20	Cultural landscape meaning and conservation By, Sarunya Lormaneenopparat, part time lecturer, Norton University	
12.20-13.30	Lunch	Lunch at temple
13.30-14.10	Cultural tourism management , by Prof. Long Ponnasirivath, Fac.of Archeology, RUFA	Visit wooden house and residential landscape surveying
14.10-14.50	Eco-tourism experiences by Mlub Baitong	
14.50-15.10	Break	Break
15.10-15.40	Presentation for Khmer wooden house past and now by Mr. Hok Sokol, researcher	Sketching image of Khmer cultural landscape and traditional house by students and participants
15.40-16.20	Khmer architecture tour , case study in Phnom Penh	Present award for participant
16.20-17.00	Sketching presentation on case study of wooden house sketching and measurement and sense of drawing and sketching technique, by Mr. Chea Samleng (artist and architect)	
17.00	Conclusion	Come back to RUFA



Workshop event and speakers

The contents of presentations and the name of those speakers are presented and listed in section below.

Mr. Pheng Sitha: (Dean of the Faculty Archeology, RUFA)

Topic: “Academics activity related to Khmer traditional house in university”

Form and situation of ancient house: There are two sources state and meaning of Khmer language about the form and situation of ancient house:

- Stone Inscription {
 - “**Nokor**” refer to: Town
 - “**Borak**” refer to: crowded area
 - “**Kream**” refer to: Village
 - “**Srok**” Unidentify

- Archeological evident {
 - “**House**” Usually found: Wooden material
 - “**Religious Building**” Usually found: Brick material
 - “**Tomb**” Usually found: Pottery parts

House:

In the ancient time, people live in group or community and settle their house in round shape known as round village or earth work. There are a lot of evidences on earth works in Cambodia and Thailand. Among those evidences, in Cambodia there are 3 big and well known round villages: in Kampong Cham Province, Phnom Penh (near Cherg Ek genocidal museum) and Siem Reap province. The transformation of earth work mean that it changes from round or circle shape to rectangular shape from the time of prehistory to Angkor period.

House of minority region in Cambodia: These groups of people also live in round shape community and the children normally separate the house from the parent when they grow up to adult by moving to the front side of the main house. The daughter's House is located near the parent's house and raise off from the ground but not so high. The son's House goes further and raise off from the ground much higher than the girl's house. The guy who is the girl's lover can go to visit and sleep in the girl house but must return home before sun rise and make sure that he doesn't treat anything wrong to the girl during his sleep and break the custom law before he left. The shelter for women to give birth are usually located at the back and near the main house.

Mr. Ching Chhom Mony: (Dean of the Faculty Architecture, RUFA)

Topic: "Academics activity related to Khmer traditional house in university"

Long time ago, people use their simple habitat just only to protect rain then they develop and design their house to become better and better. They know how to design ceiling, roof, stair, and the whole parts of the house. Storage become as part of their house extension. The basic material was burned clay mixed with cow stool grass that can be used as wall of the house. Moreover, they feed chicken, pig, cow, and fish, etc. They did plantation for their dialy living condition. Khmer has specific formula or structure to build the house. For new house construction, owner usually bury valuable thing such as gold, silver or jeweler inside the main column hold and follow the land spirit celebration because Khmer believe that these will bring them with good luck and prosperity. Khmer has many kind of houses such as: Pet, Kantang, Rong Dol, Rong Deurng, Kantang Slap, etc. Among those houses, we usually can see: Kantang, Kantang Slap, Rong Derng and Rong Dol that can stay until nowadays. We should help conserve these kinds of Khmer houses from now on.

Mr. Tous Saphoun: (Dean of the Faculty Architecture, NORTON)

Topic: "Academics activity related to Khmer traditional house in university"

He just offered a brief discussion on (i) general condition and characteristic of Khmer traditional wooden house, (ii) feeling on ancient and contemporary design and construction, (iii) propose integration of Khmer context or concept in new design, and (iv) promote conservation activities as much as possible.

Mr. Var Morin: (Vice Dean of the Faculty Architecture, RUFA)

Topic: "Wooden House Renovation and Conservation"

- Introduction: Conservation activity would work well unless everybody getting to know that one heritage object is really necessary and doesn't want to lose it anyway.

- Meaning of wooden construction conservation: Wooden conservation is parts of technical work that help to postpone the period of getting lost one heritage object in case of many reasons. Before starting the conservation work, we must understand about:

1- Nature of wood and the reasons cause wood decay: Firstly, plant needs water to survive and grow up by CO₂ gas with reaction from direct sun light. Wood is a kind of construction material that was made up of complicated structure-known as Cellulose, Biopolymers, and Lignin, etc. Wood has low resistant of compression, tension, heat transmittance, and easy to get fire but can stand very well with chemical elements or reactions and wood reduce strength when the humidity inside turn to 30%. The main factors that cause wood damage is so much heat, lack of wind ventilation and too much moisture, water- especially *salty water*, insect and low maintenance, etc.

2- Treatment and prevent wood from decay: The surface coating paint can protect original wood color and insect or fungi destroy. Good ventilation can get rid of moisture inside wood to reduce the humidity that harms the wooden structure. Usually, local people use smoke of burning firewood to chase insect in the month of May (starting rain in Cambodia). During this month insect start giving birth to their next generation.

3- Strengthen and Consolidation: Wood must dry up very well before we use for construction and carpenter should clean and cut 50cm out from the decay part before reuse. It should be coated surface of wood to protect insect. The owner should reform or replace a new one before the structure seriously damage and being lost. Carpenter or designer must try to make it unique between the new and the old part of building.

4 -Reconstruct and New wooden construction: New construction should follow the significance of the old style. The successful conservation will be made if there is agreement between owners, authority, and skillful conservator. The local governance should have Coordination Committee help checking the conservation process.

Mr. Seng Sout: (Lecturer of the Faculty Archeology, RUFA)

Topic: “Broaden awareness on Cultural Heritage Management”

There are laws of protecting cultural heritage in Cambodia released in 1996, chapter 4 of this law states that in order to judge one object to become as the national heritage of Cambodia, we must focus on its 4 values below: science value, historical value, art value and religious value.

Cultural Heritage in Phnom Penh: Most of traditional and historical Buildings in Phnom Penh are already registered in the inventory such as: Post office, Le Royal Raffle hotel, some colonial buildings, etc but beside these, we don't have any record on heritages outside Phnom Penh especially in Koh Dach, so we must ready to do the registration soon on traditional house in this island before it's too late. Cambodia doesn't have any law or regulation state about the age of the building to considered as a national heritage like other country, for example: In Burma, objects that stand more than 50 years become the national heritage and everybody must help to conserve it. In Saudi Arabia, the age of the object that considered as the national heritage must be over 200 years.

Cultural Heritage in Koh Dach Commune: Koh Dach Island is located in the north of Phnom Penh city, surrounded by upper Mekong River. Ferry is the only way to reach this island. People settle their houses along the river bank and ring road around the island.

Culture Potential:

- Abstract Cultural Heritage
 - Non abstract Cultural Heritage
- | | |
|---|--|
| } | <ul style="list-style-type: none">- House- Strong respectfully place/Temple- School- Equipment and Cultural hand made product |
|---|--|

Conservation Method:

- Educate and Publicize to community
- Set up conservation program
- Inventoried those Cultural Heritage

Dr. So Sokuntheary: (Project coordinator of Sambor Prei Kuk conservation project in Kampong Thom Province)

Topic: “Some experiences of traditional house conservation in Japan”

Japanese traditional houses were built up of wood, but raised off from the ground not as tall as Cambodian because they need more heat. Construction material during that time can be wood, tile, and straw. The floor inside the house uses tatami (Mat). In Samarai Village, there is a big palace for the general of the military during the ancient time of Japan. The structure of the Japanese traditional house look like an umbrella, they can get a big open space after they take out the mobile wooden wall. The house provided good ventilation but still can store the heat well. The concept of Japanese buildings is to provide big and clear window to get enough sun light.

In Japan, there is a cultural village that designed to reveal the traditional buildings of this nation by follows the old object one especially material, color, structure, style, etc. Most of visitors come to this village are Japanese, because they want to do research and study on their cultural heritage. People earn a lot from expose and sell local product to tourists in this area.

Recommendation: New design should combine with the old/ traditional context for conservation. Conservation for Development means that conserve our cultural heritage and develops society by earns the money from tourism activities at the same time. We must try to promote local product and sell to tourist as much as possible, avoid import product to cheat visitors.

Ms. Sarunya Lormaneenopparat, part time lecturer, Norton University

Topic Cultural landscape meaning and conservation

Meaning of cultural landscape and categories of studying can be included history of communities, characteristic of landscape and landform, land uses including farming, recreation tourism area, human settlement, culture and activities of people and trend of changes. Case study of Koh Dach can be representing residential landscape characteristic of suburb areas of the past of Phnom Penh city. In term of planning and conservation, it cannot focus only house or building but must be integrated all aspects such as environments, social and way of life, local economic, cultures, tourism and art, etc. The main point of economic development should be generating income from suitable tourism, promote local products and traditional house value in both local and provincial level. The future of traditional house conservation should be started by local awareness and appreciation.

Mr. Long Ponnasirivath, Deputy Director General in charge of Cultural Relations and Copyright Affairs and also the lecturer at the Faculty of Archeology, RUFA

Topic: Cultural Tourism Management

Cultural tourism:

- Cultural tourism management (business benefit)
- “movement of people” with natural understanding and traditional
- Use of cultural heritage resource such as: temple tourism site, museum, royal palace, historical buildings, art of caving and sculpture, painting, performance, and other heritage objects. All of them consisted of humanity and cultural characteristic.

Objective of tourism site management:

- Deal with the need of tourists and economic benefit in industrial tourism
- Reduce negative affect
- Help to improve local business
- Environment, benefit and social condition of local people

Productivity development:

Product creativity: normally targeted site or tourism area always has its own nature, culture, construction and other service of visitors such as:

- Local transportation system:
 - o Set up tourism site development to attract tourists
 - o Development project must adopt with the local situation or condition, local lifestyle and keep preserving the special characteristic or context of the site.
 - o The design should provide open space, parking, landscape, transportation system and other recreation place and deal with cultural environment.
- Standard for development:
 - o Building height
 - o Building harmony (buildings should adopt with the atmosphere and environment surrounded)
 - o Create sign, pedestrian way and relaxing area, etc.
 - o Size of building compare to the land (far & oar)

Creative concept for development standard: such as local style roof, try to use local material or resource, deal with existing environment, and landscape arrangement

Creative concept for tourism product: accommodation, restaurant, hospital, toilet, and other special event and tourism services

Site analysis:

- The benefit of community resource: such as attract the industry activity, cultural activity, provide cultural heritage and special events or opportunity, local component, attraction of local people, natural context, leisure and ruin activities
- Community infrastructure: such as parking, private and public transportation, waste and drainage management, clean water, air quality, rental car
- Tourism infrastructure: such as transportation, accommodation, food and drink, internet, open space or recreation area
- Tourism service s: store or shop, guiding, information center of tourists or visitors, sign and direction, local labor supply, safety and emergency service, medical care service, rental car service

Environmental Impact Assessment (EIA):

- Effect of economic, social and environment
- Safety and try to reduce the environment and social negative impacts
- Propose research management and monitoring
- Strong hotel and other building evaluation, weather affect to our tourism site or not. Try to find solutions for those negative impacts.

Mr. Heng Bunny: (Director of Mlup Baitong Development Program)

Topic: “Eco-Tourism in Cambodia (Chambok Community-Based Ecotourism Project in Cambodia)”

Site location: Mlup Baitong has 3 sites, located in Kampong Speu, Kampong Thom and Sterng Treng Province. **Chambok** Project, in Kampong Speu is one of the most successful among the Mlup Baitong Projects. Chambok located in Chambok Commune, Phnom Srouch District, Kampong Speu Province and 100 kilometers north-west of Phnom Penh capital city. Nowadays More than 2000 people claim benefit from this successful project. Under support of ministry of environment and local authority and funded from OGB, ADB, KNCF, SCIAF, mcknight, and Canada Fund.

Attractive activities in Chambok Area:

- Visitor have chance to enjoy bathing with waterfall from 30 meters height hill and 2 other beautiful canals, two bat caves, and some wild animals
- Enjoy walking or riding ox cart along the 3.5 Kilometers road with great natural forestry view

Purpose of Ecotourism Project:

- Involve in wild life and forest conservation activity
- Point out important points of natural resource and educate local people how to use this resource smartly and sustainability
- Poverty reduction will be made if Chambok community people earn money from this project

Activities of Mlup Baitong in Chambok Tourism Site:

- Train local people with many skills such as: leadership, meeting coordination, report writing, accounting, guiding, English and computer skill, environment, ecotourism, sculpture, traditional dance, and many other skills related to service providing

Service: Available services in this area are: ticket selling and guide, parking ox cart, bike for rent, food, guest house, and traditional dance- performed by local teenagers

Income distribution:

- Build up meeting buildings in 9 villages
- donate for infrastructure development, commune development council, temple committee including parking fee
- Help poor people
- Community will go to ACLEDA bank account to save up for community and keep for emergency case

Mr. Hok Sokol: (Architect and Researcher)

Khmer wooden house past and now

His presentation mostly focus on situation of Khmer traditional wooden house, sample of wooden house conservation, and experiences on wooden house construction and conservation.

Ms. Sim Sitho: (Architect & Guide) Representative of KA Tour

KA-Tour (Khmer Architecture Tour)-Tour in Phnom Penh

Her presentation mostly focus on her institution's background, services of tours (Cyclo, Bus, Walking) and other heritage building in Phnom Penh, and her personal feeling on heritage buildings in and around Phnom Penh.

Mr. Chea Samleng: (Artist & Architect)

Topic: "Wooden house sketching, measurement, sense of drawing, and sketching technique"

His presentation mostly focus on methodology of sketching, how to select good view or place for your sketch, how to shadow objects, and present some sample of Khmer wooden house sketch in Koh Dach.

Appendix 3: Result from the workshop in Koh Dach Commune

On the 1st, November 2007 in Koh Dach Commune, Muk Kampoul District, Kandal Province, there was a seminar on the researched case study under this program. The topic is on "Landscape and Khmer Traditional House Conservation in Koh Dach". In the morning, all participants traveled by boat from Phnom Penh to Koh Dach. Inside communities, they traveled by horse carts to visit temples, houses, jar making house, farmland, weaving, and boat racing storage at Chrong Koh pagoda etc.





In the afternoon, the seminar started from 2 pm as soon as our guest speakers and participants arrived in the hall of the Samky Kbal Koh pagoda after lunch break. For the opening, we have some introduction and objective presented by Ms. Sarunya Lormaneenopparat who is the coordinator of the seminar. Most participations are RUFA and Norton's Student. In addition, we have the honor to hear from our guest speaker like: Ms. Perl Sokhom, Deputy Chief of Koh Dach Commune officer, representative of Mlub Baitong Organization, Mr. Ern Oum, carpenter in Koh Dach Commune, Mr. Oum Cheng Ki, skilful person in Plantation.

There are some main points presented by our guest speakers:

Ms. Perl Sokhom (Deputy Chief of Koh Dach Commune): History and development project of Koh Dach Commune, traditional and life style of Koh Dach people, Koh Dach potential (weaving, wplantation, sand shore recreation area), activities of local people, and condition and type of houses.

Representative of Mlub Baitong Organization): Example and mission of Mlub Baitong Organization in other province, opinion on Koh Dach island and some target, and strategy in tourism site management

Mr. Oum Cheng Ki (Skilful person in Plantation): local main crop and plantation and kinds of vegetable and seasonal fruit.

Mr. Eurn Oum (Carpenter in Koh Dach Commune): development of house from the past until now, methodology to calculate the proportion especially the roof, and process of house construction.

At the end, the participants and students from Kbal Koh School joined the sketching contest to express their feeling and appreciation on communities and present awards to participants (see the participants output in the appendix).

Appendix 4: Feedback

After 2days participation with the workshop under topic of "Landscape and Khmer Traditional House Conservation" the students found that:

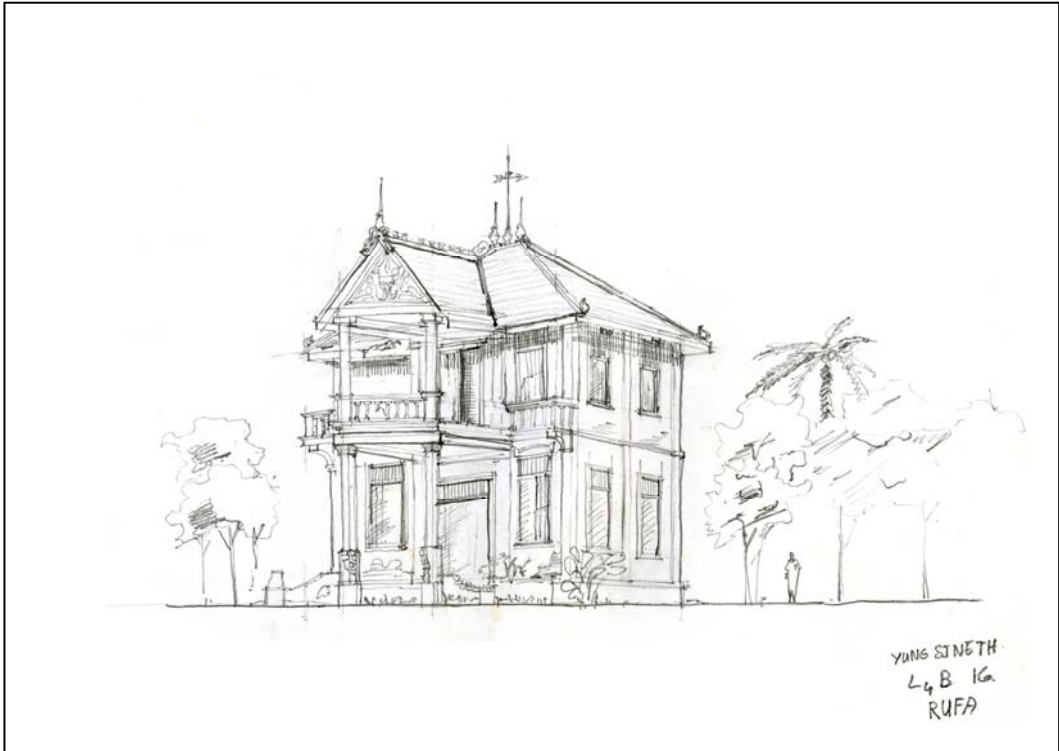
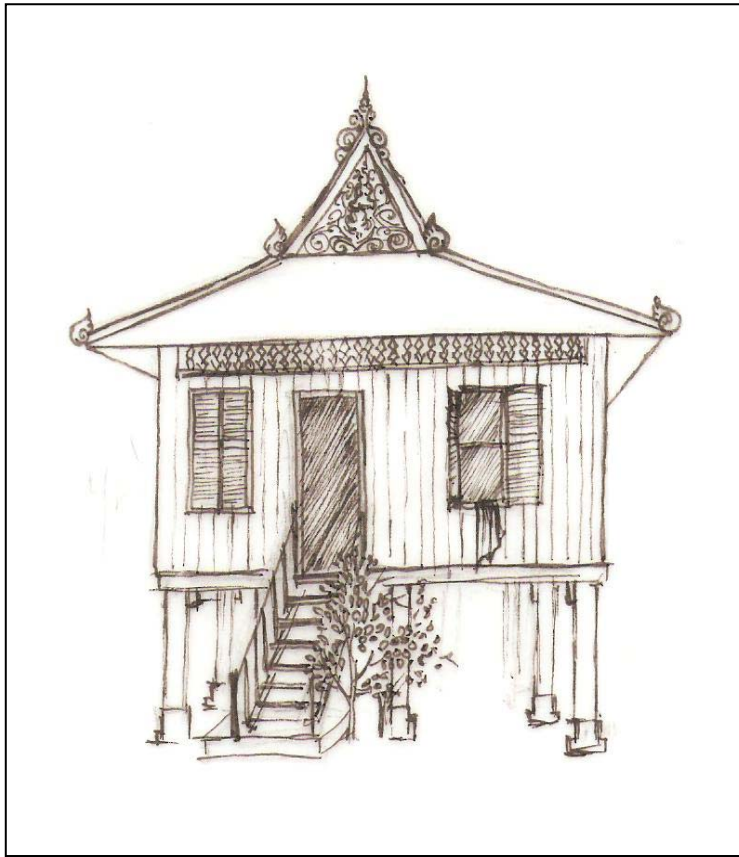
	<u>Very Good</u>	<u>Good</u>	<u>Normal</u>	<u>Bad</u>
• Awareness on Khmer traditional house conservation	54%	46%	0	0
• Awareness on relationship between landscape and Khmer traditional lifestyle	22%	66%	12%	
• Awareness on tourism site and cultural heritage management	36%	64%	0	0
• Scholars	26%	74%	%	0

• Transportation	16%	56%	28%	0
• Location of the research project	16%	64%	18%	2%

Other recommendation: (i) try to promote this kind of activity more in order to conserve the cultural heritage in Cambodia, (ii) hope there is another workshop next year again, (iii) we support and love this workshop very much , (iv) Seminar in Phnom Penh should be longer, so students can have lots of questions and answers.

Appendix 5: Sketching picture from workshop participants, architecture students







Appendix 6: Sketching picture from workshop participants, pupils at village

