

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI**

COLLEGE OF ARCHITECTURE AND PLANNING

FACULTY OF ARCHITECTURE AND BUILDING TECHNOLOGY

DEPARTMENT OF ARCHITECTURE

**THESIS TOPIC: WATERFRONT RESORT DESIGN
(MUNI LAGOON, WIINEBA)**

**DESIGN THESIS REPORT SUBMITTED TO THE COLLEGE OF ARCHITECTURE AND
PLANNING OF THE KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
AWARD OF THE POST GRADUATE DIPLOMA (HONS) IN ARCHITECTURE DEGREE.**

AUTHOR:

HIENGO, PEARL ABENA BRAKATUBEA

AUGUST 2009

DECLARATION

STUDENT

I hereby declare that I have personally, under supervision, undertaken the studies herein submitted.

Hiengo, Pearl Abena Brakatubea

Signature *PA*.....

Date *18/09/09*.....

SUPERVISOR

I declare that I have supervised the student in undertaking the studies submitted herein, and I confirm that the student has my permission to present it for assessment.

Mr. Daniel Amoateng - Mensah

Signature *DM*.....

Date *18/09/09*.....

HEAD OF DEPARTMENT

As the head of department of the Department of Architecture, KNUST, I declare that this thesis report was executed by the student under supervision.

Prof. G.W.K Intsiful

Signature.....

Date.....

L.B.RARY
KWAME NINSINAH UNIVERSITY OF
SCIENCE AND TECHNOLOGY
KUMASI-GHANA

DEDICATION

dedicate this thesis report to the Almighty God for protecting me through till this
lay, to my parents and siblings for their support and finally to anyone who will find
his piece of work useful.

KNUST



DEDICATION

I dedicate this thesis report to the Almighty God for protecting me through till this day, to my parents and siblings for their support and finally to anyone who will find this piece of work useful.

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ACKNOWLEDGEMENT

I give profound thanks to the Almighty God for how far He has brought me all these years, especially these past six years, I am grateful to him for his love and protection and for strengthening me throughout the and this thesis design.

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I finally give thanks to everyone who in their very small way contributed to the completion of my six years and most importantly my thesis.

ABSTRACT

Demand for tourism the world over is growing rapidly as the years go by; there is therefore the need for Ghana to catch up with this pace to help generate revenue for the country. Ghana holds great potential in the tourism industry with very interesting sites to marvel over; these include 540km of tropical white sand beaches, historical forts and castles, unique festivals and cultures, eco-tourism, etc.

Ghana's waterfronts holds great possibilities to help boost the country's tourism, thus attracting both international and local tourists if proper attention is given to its development; however very little developments has been seen at these sites.

This is a design thesis report which seeks to bring to light the; the state of Ghana's waterfronts, tourism and economic potential, how these can be achieved and lastly a design proposal of a waterfront resort at Muni Lagoon - Winneba.



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CHAPTER ONE

1.1 INTRODUCTION

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1.2 OVERVIEW



CHAPTER ONE

1.0 INTRODUCTION

1.1 OVERVIEW

In recent decades, coastal tourism has grown significantly bringing enormous economic benefits to host communities, and causing many environmental and social impacts to the coastal environment. Beach resort development faces problems due to an inability on the part of stakeholders to make sound decisions about sustainable design due, in part, to the complexity of the sustainability issues and the lack of a comprehensive decision-making tool to assist them.

“Sustainable Design Model”, which shifts the focus of stakeholders from the application of traditional physical carrying capacity procedures to a comprehensive approach linking sustainability indicators and carrying capacities. This approach includes an array of acceptable capacities based on the ecological, social, psychological, physical, economic, and managerial capacity thresholds of a site.

American respondents recognized the importance of sensitive environmental developments; there were significant differences due to differences in culture, environment, regulations, and priorities. The American sample placed greater importance on the ecological indicators, while the Egyptian sample placed greater importance on the social, psychological, and managerial indicators. The American sample conveyed a positive attitude toward government regulations, design, and

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management efforts to incorporate sustainability principles into the built environment, while the Egyptian respondents conveyed a more negative attitude. As a result of this study, future Egyptian policy may be better informed of the gap between the theoretical concepts of sustainability and real world coastal development implementation.¹

1.2 PROBLEM STATEMENT

Ghana is blessed with a beautiful coastline, stretching approximately 539 kilometers. This coastline can be developed to take advantage of tourism. The problem however is that most of these picturesque sites are littered with rubbish and waste materials. In some areas, clay materials are mined for domestic use. Other places are affected by sea erosion that needs reclamation for development. Within Ghana's coastline are stretches of white sand beaches that are not developed, whilst people desire for relaxation and recreation needs are not satisfied. From the above mentioned problem, it can be seen that Ghana's waterfronts are very underdeveloped; these sites can create good revenue for the country in the area of tourism if properly developed.

1.3 JUSTIFICATION

The central region has some of the most beautiful and clean beaches in the Ghana. The central region has very interesting culture, festivals and most of the fort and castles are located across its coastline.

These waterfronts have not been developed to take advantage of both domestic and foreign tourism which are on the increase. Each year the number of tourists visiting the country express concern about the lack of development of our beaches. The central region offers the potential for the development of waterfront resorts. The patronage of the existing beach sites are not high and Ghana stands to loose in terms of its contribution to national wealth.

Winneba is about one and half hours drive from Accra. Winneba has white sand beaches and two lagoons(Muni and Oyibi). The waterfronts are almost clean and the scenery is amazing. Winneba is also home to the 'Aboakyer' festival. Proposing a waterfront development here is a step closer to realizing the potential in the tourism industry of Winneba.

1.4 DEFINITION OF WATERFRONT DEVELOPMENT

Waterfront development is process of improving the coastline of a place through technology, culture, infrastructure to produce a sustainable facility. The main focus of this design is a resort which should be sustainable and environmentally friendly.

1.5 SCOPE

1. Leisure and entertainment
2. Sports and relaxation
3. Conferencing.

1.6 OBJECTIVE

1. To design a 4-star sustainable beach resort.
2. To combine technology, local and environmentally friendly materials to create intimacy between the resort and nature.
3. To create a one-stop relaxing, luxury and business resort.

1.7 TARGET GROUP

1. Tourists(both local and foreign)
2. Holiday makers
3. Executive clients
4. The discerning traveler (both transient and static).

1.8 CLIENTS

1. Caribbean Atlantic International
2. Ghana tourist board

REFERENCES

- ¹ Bakr Mourad Aly Ahmed: Sustainable Beach Resort Development, 2001



CHAPTER TWO

2.0 LITERATURE VIEW

2.1 INTRODUCTION

This chapter intends to bring to the fore, the historic bases of waterfront resorts, the understanding and what goes into the designing of a sustainable resort.

It is also looking to explore and understand the tourist industry needs and expectation of all major role players within the tourist industry. That is; understanding the vision and aims of the tourist industry to assist with promoting and facilitating development in the industry.

2.2 HISTORIC OVERVIEW OF WATERFRONT DEVELOPMENT

Waterfront developments have been in existence centuries ago. However some it started with the event of the fishing settlements. These settlements evolved from fisher folks living and fishing along water bodies for their livelihood. These fishermen in the olden days moved from town to town to live and fish but later settled in particular towns. They lived in temporal structures made of basically materials readily available, example, the habitants of the Akosua village in Winneba who travelled along the coast from Keta to fish and finally settled at Winneba, their structures are made of thatch, coconut fronds and sticks.

There are also earlier waterfront developments which happened because of security in the days of war. Example, Nzulenzu a village in the western region is located on a water body. This was because they were hiding from their enemies and also wanted to have an upper hand when they were found, in other words they moved there because of security. Now this village is a tourist attraction, but unfortunately not enough attention has been giving to it to develop it further.

2.3 DEFINITION OF A RESORT

Wikipedia defines a resort a place used for relaxation or recreation, attracting visitors for holidays or vacations. Resorts are places, towns or sometimes commercial establishment operated by a single company. Such a self-contained resort attempts to provide for most of a vacationer's wants while remaining on the premises, such as food, drink, lodging, sports, entertainment, and shopping. The term "resort" sometimes is misused to identify a hotel that does not provide the other amenities required of a full resort. However, a hotel is frequently a central feature of a resort.

2.4 TYPES OF RESORTS

2.4.1 Resort at a destination

A commercial establishment at a resort destination such as a recreational area, a scenic or historic site, a theme park, a gaming facility or other tourist attraction competes with

other businesses at that destination. Examples would be hotels in and around Walt Disney World, resorts in St. Martin in the Caribbean, and establishments at Aspen, Colorado in the USA, coconut grove resorts in Cape-Coast Ghana.

2.4.2 Destination resort

A destination resort is a resort that contains, in and of itself, the necessary guest attraction capabilities—that is to say that a destination resort does not need to be near a destination (town, historic site, theme park, or other) to attract its public. Consequently, another characteristic of a destination resort is that it offers food, drink, lodging, sports, entertainment, and shopping within the facility so that guests have no need to leave the facility throughout their stay. Commonly these facilities are of higher quality than would be expected if one were to stay at a hotel or eat in a town's restaurants. Some examples are Atlantis in the Bahamas.

2.4.3 All-inclusive resort

An all-inclusive resort is a resort that, besides providing all of the common amenities of a resort, charges a fixed price that includes most or all items. At a minimum, most inclusive resorts include lodging, unlimited food, drink, sports activities, and entertainment for the fixed price. In recent years, the number of resorts offering "all-inclusive" amenities has decreased dramatically; in 1961, over half offered such plans and in 2007, less than ten percent do so.

2.4.4 Historical resorts

A famous resort of the ancient world was Baiae, Italy, popular over 2,000 years ago.

Capri, an island near Naples, Italy, has attracted visitors since Roman times.

Another famous historical resort was Monte Ne near Rogers, Arkansas, which was active in the early 20th century. At its peak more than 10,000 people a year visited its hotels. It closed in the 1930s, and was ultimately submerged under Beaver Lake in the 1960s.²

2.4.5 Beach Resorts



Fig 2.4.1(source: www.vacationtimesharerentals.com/resort-types)

Beach resorts are resorts that are located on or within a short distance from a major beach. Many beach resorts have activities that include snorkeling, kayaking, scuba diving, parasailing, and boating. Some even have their own on-site beach, especially for guests.

2.4.6 Golf Resorts



Fig. 2.4.2 (source: www.vacationtimesharerentals.com/resort-types)

Golf resorts include resorts that either have an on-site golf course or are located within a reasonable distance from one or more golf courses. Some accommodations at these resorts will come with golf passes to allow guests to play the course free of charge.

2.4.7 Luxury Resorts



Fig. 2.4.3 (source: www.vacationtimesharerentals.com/resort-types)

A luxury resort is a very expensive vacation facility which is fully staffed and often boast many visitor activities and attractions such as golf, water sports, spa and beauty facilities, skiing, natural ecology and tranquility. A luxury resort is an elite luxury property which exhibits an exceptionally high degree of customer service and hospitality. A flawless execution of guest services will be the resort staff's and managements main concern. A luxury resort will commonly also feature a superb architectural interior and exterior design as well as an interesting physical location.

2.4.8 Mountain Resorts



Fig. 2.4.4 (source: www.vacationtimesharerentals.com/resort-types)

Mountain resorts are resorts located on or at the base of a mountain. Activities include down-hill skiing, cross-country skiing, snowmobiling, sightseeing and more.

2.4.9 Ski Resorts



Fig. 2.4.5 (source: www.vacationtimesharerentals.com/resort-types)

Ski resorts are located within or close to a ski area or ski village. Many ski resorts have other activities to engage in besides skiing and snowboarding, such as snowmobiling, sledding, horse-drawn sleds, dog-sledding, ice-skating indoor swimming, hot-tubbing, game rooms, and local forms of entertainment.

2.4.10 Spa Resorts



Fig. 2.4.6 (source: www.vacationtimesharerentals.com/resort-types)

Spa resorts are resorts that have a health or day spa located on-site. Spa resorts are a great way to get away from the stresses of work and career.

2.4.11 Theme Park Resorts



Fig. 2.4.7 (source: www.vacationtimesharerentals.com/resort-types)

Book lodging at numerous timeshare resorts near major theme parks world-wide. Maps show distance from resort to major theme parks.

2.4.12 Tropical Resorts



Fig. 2.4.8 (source: www.vacationtimesharerentals.com/resort-types)

Tropical resorts are located within tropical climates. A guest staying at a tropical resort will include year round warm and sunny weather.³

2.5 HYDROTHERAPY

Hydrotherapy is the therapeutic use of water for healing

Life can be harried and hectic. When the stresses of everyday life become too intense, wouldn't it be nice to have a way to relax and escape for a short time? One of the best stress relievers is the magical, soothing effect of water.

A fountain with the peaceful sound of flowing water can be a great stress reliever and can help promote relaxation.

Warm water induces relaxation, and soaking in your bathtub is the easiest, handiest hydrotherapy of all. Swimming is therapeutic. A whirlpool or Jacuzzi, sauna and steam room all can provide the benefits of muscle relaxation.⁴

2.6 Model for a sustainable resort

Too often in the tourism sector has an investment surge been followed by environmental degradation and social inequity that inevitably led to deteriorating infrastructure and services. Sustainability can be achieved through appropriate emphasis in the early stages of design and development to ensure that the mechanism for economic viability fully incorporates environmental and social considerations.

2.6.1 Master Planning for Sustainable Resort Development:

A comprehensive process:

1. *The Vision*

Mission Statement

2. *Assessment*

Examine the Resource

3. *The Site*

Nature

Cultural

Heritage

The Market

Local

Regional

National

International

Environment

Terminology

Utility

Infrastructure

The Economy

Capital

Life Cycle

4. Envisioning

Explore the Potential

Refine/Fine-tune the Vision

Define a Development Program

5. Resort/Feasibility

Economic Viability

No-Net-Negative

Environmental Impact

6. Master Plan

Business Plans

Site Development Concept

Four Seasons Facilities

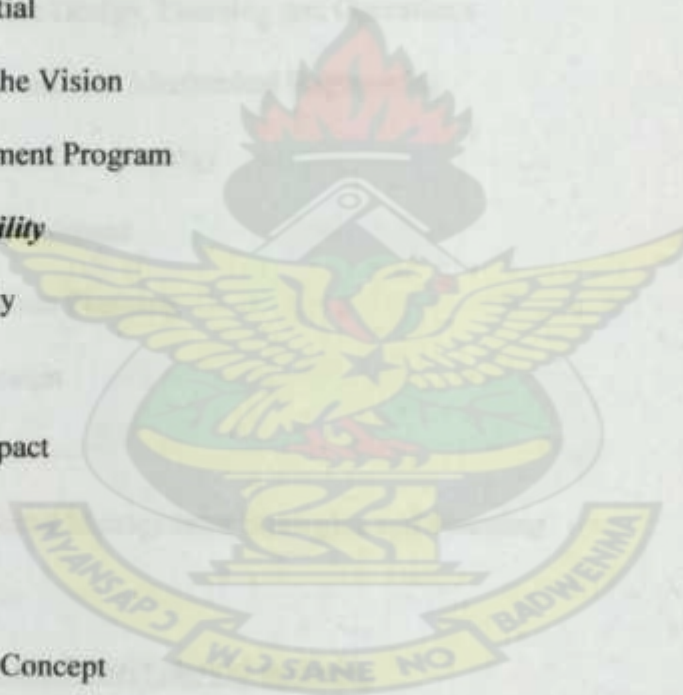
Implementation Strategy:

Site/Facility Designs Guidelines

Construction Procedures

Best Management Practices

KNUST



7. *Approval(s)*

8. *Implementation*

2.6.2 Effective Project Management Ensures No-Net-Negative Environmental

Impacts and includes the management of:

1. Resort Planning and Design
2. Biophysical Studies
3. Landscape Architecture
4. Infrastructure Design, Planning and Operations
5. Civil, Structural and Mechanical Engineering
6. Environmental Technology
7. Utilities Assessment
8. Transportation Planning
9. Interior Design
10. Construction
11. Environmental Management Strategies and Planning

2.6.3 The Sustainable Resort should include:

1. Four Seasons Recreation Relaxation
2. Accommodation Lodge/Hotel
3. Enjoyment, Health, Training
4. Economically Viable
5. Housing Lots/Condo

6. Effective Maintenance Environmentally Friendly

7. Green Power Efficiency

8. Water and Waste-Water Recycling

9. Solid Waste Recycling⁵

Finally measures should be put in place to develop surrounding settlements and also incorporating them into the design if possible.

2.7 GHANA TOURIST BOARD

Tourism development in Ghana is comprehensively aimed at a broad and desirable range of domestic, Sub-regional African and international tourists.

The Government is pursuing quality tourism development that is internationally competitive and compatible with Ghana's social values and environmental setting. It aims to attract tourists, who show respect for the country's history and environment.

Emphasis is being placed on tourism to help in the conservation of the country's historical and environmental heritage. Apart from the economic benefits, tourism is used to present Ghana's unique cultural, historical and environmental heritage to the international community and to educate Ghanaians about their own heritage.

The Government intends to use tourism as an alternative development strategy to help address broad national issues.

2.7.1 Ghana's Tourist Attractions:

Ghana is endowed with a wide range of natural, cultural and historical attractions, which could provide the basis for the promotion of a wide variety of tourism products. However, in line with her policy of using tourism to conserve her ecological, historical and cultural heritage, Ghana has attractions which lend themselves to the promotion of niche tourism which are to be focused. They are:

1. Pristine tropical beaches along the country's 540km Atlantic coastline; these are suitable for beach and golf activities.
2. Historic forts and castles built by eight different European empires during the 14th - 18th centuries whose dungeons were used to accommodate millions of Africans for the infamous Trans-Atlantic slave trade. The monuments today stand as World Heritage sites designated by UNESCO and attract Africans in the Diaspora who regard them as shrines, which every one of them must visit in their lifetime. It is also an attraction for students of history and culture as well as Europeans. The monuments are being promoted as heritage tourism for a special market.
3. Unique cultural heritage featuring calendar of festivals rich in ancient traditions, artisan excellence in goldsmithing, woodcarving, pottery, fabrics, fine painting and herbal medicine, etc.
4. Unique ecological and landscape systems featuring tropical rainforests, national parks, inland lakes and rivers.
5. A warm, friendly and hospitable people in a safe country with democratic institutions and laissez - faire economy.

2.7.2 Types of Tourism Being Focused On Currently:

1. Cultural Tourism: It is the main product of Ghana. However, it is best packaged in combination with the following attractions;
 - Historical Heritage sites;
 - Game viewing in national parks;
 - Nature walk and bird watching in eco parks and rainforests;
 - Beach stays, water sports and cruises on inland lakes.
2. Historical Heritage Tourism: This focuses on “roots packages” for the return of Africans in the Diaspora to their motherland on the African continent with Ghana as the gateway.
3. Beach Tourism: This covers niche resorts but is promoted advisedly against mass tourism.
4. Meetings, Incentives, Conventions and Events Tourism: This focuses on the promotion of the capital city as a convention destination in Africa, taking advantage of the friendliness of the Ghanaian people, the use of English as an official language, the political stability, peace and the absence of travel restrictions and foreign exchange controls, and the beauty of the countryside.
5. Ecotourism development in unique and interesting rural communities throughout the country.

2.7.2 Public Sector Priority Investment Projects

Servicing of Tourist sites to attract investment in receptive facilities;

The first priority is the servicing of prime tourist sites earmarked for the development of key resorts and other receptive facilities needed to promote Ghana as a destination for a

mixed-package of beach-stays flavoured with cultural trips, nature-walk in eco-tourism parks, water sports and cruises on inland lakes. The key sites include:

A) Beach Resort Areas

These sites are earmarked for niche resort development. Each of these sites require extensive infrastructure development including roads, water, electricity, telephone and sewerage, which is the responsibility of government and for which soft loans will be welcomed.

B) Game Park Sites for Safaris

The only national park with some facilities for game viewing i.e. Mole National Park, requires extensive infrastructural build-up to support a major investment to upgrade and expand the existing 40-room lodge into a major safari hotel with lodges in other parts of the reserve to support photo safari promotion.

The requirements include construction of extensive game viewing tracks in the park, the provision of treated water, and modernization of the park headquarters including housing and communication facilities for the park management. Electricity is to be tapped from the national grid.

C) Inland Lake Resort Sites

The Volta Lake Basin is earmarked for the development of niche resorts to promote cruising and other ecotourism activities and will require the expansion of existing marina and port facilities within the basin. Hotel sites will require infrastructure like treated water, electricity, telephone and sewerage systems. These sites may be serviced to attract investors and developers.

D) Community Eco-Tourism and Heritage Sites

These sites provide the opportunities for eco-tourism activities such as fauna and flora viewing, scientific research and outdoor recreational activities such as cycling and boating. Camping sites, village type accommodation and eco-lodges can be provided to boost the local economy. Historical/Heritage sites would require developments such as open air and indoor museums, monuments and exhibition centres.

Beyond awareness there has to be an infrastructure that will support tourism. This is taking shape now and the potential is great. Thus investment at this point in time is both crucial to tourism growth and of good return to investors and entrepreneurs alike.

Ghana has an economy that is growing in real terms and inflation is not excessive.

Political stability and the rule of law is good. It is peaceful and currently celebrating 50 years of Independence from the British, although strong and positive links remain with the old colonial masters.

New tourism related businesses and construction projects are the way forward. For example bike hire, hiking or camping equipment, or sea or river/lake fishing where specialist equipment is necessary for short periods of time and so can be rented at low cost. Construction of low cost 'beach hut' or 'log cabin' type and/or self catering accommodation can also be a viable investment.⁶

REFERENCES

² Wikipedia, the free encyclopedia, may 2009

³ www.vacationtimesharerentals.com/resort-types, June 2009

⁴ IRIS Environmental Systems Inc: Model For Sustainable Resort Development, May 2009

⁵ Leong, K. M.D: Health and wellness, September 2007

⁶ www.touringghana.com/investment/index.asp, August 2009

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CHAPTER THREE

3.0 RESEACH METHODOLOGY

3.1 INTRODUCTION

There are indispensable or fundamental research procedures to be followed in order to come out with a creative research work.

Depending on the type or topic of research, the procedures vary from assumptions, statistical, scientifically to a lot more.

This chapter known as the research methodology, as the name implies, seeks to adore how diverse methodologies were employed to find, collect, organize, document and analyze the relevant data to achieve the aims and objectives of the research stated before.

3.1.1 Primary source of data

- **Interviews**

Staff at the various resorts that was used as case studies were interviewed to enquire about the running of the resorts, in terms of patronage, services, customer needs and facilities available. Interviews were also conducted at the Ghana tourist board.

- **Personal observation**

An excursion through the various case studies was undertaken to observe and experience every little detail in the resorts.

There were also photographs taken to capture some significant moments, structures and artifacts.

3.1.2 Secondary source of data

- **Internet**

Information from the internet was very useful in bringing out the research topic.

- **BCI Asia: Architecture at 2008**

- **Journals**

Pictures and information from architectural journals also contributed to the research.

3.2 METHOD OF DATA ANALYSES

Statistical tools such as percentages were used to compile, arrange and interpret the collected data for precise assumptions and conclusions to be made.

3.3 LIMITATIONS

- Access to some space especially the accommodation spaces was not granted easily if not at all.

CASE STUDIES

3.4 CASE STUDY ONE (WHITESANDS BEACH RESORT, GOMOA FETTEH-GHANA)

3.4.1 Why the whitesands beach resort;

1. The building form and style.
2. Materials used
3. Location
4. Facilities and clientele

3.4.2 Overview

Whitesands beach resort is a 3-star private beach resort situated in the central region.

One and half hours away from Accra, as the name implies the resort lies along a stretch of white sand beach with an amazing view.

The clientele is mainly made up of holiday makers and club members. There is maximum occupancy during weekends, however the weekdays sees approximately 80% patronage.

Cost of rooms ranges from \$500-\$1200 a night.

This study was done under three main categories:

3.4.3 Structure

1. Building structure and frame

The maximum number of stories on the resort is two, building structure or frame is made from teak wood beams and columns, walls and some roofs are made of raw concrete supported with the teak beams and columns.



Fig. 3.4.1 Teak beams externally.



Fig. 3.4.2 Teak beams showing on the ceiling

There were three types of roof forms present;

- concrete flat roof
- Hip roof (clay tiles)
- Highly pitched thatch roof



Fig. 3.4.3 Flat roof



Fig. 3.4.4 Highly pitched thatch roof

2. Materials

Wood: Teak has been used extensively in the resort for beams, columns and railing.

There is also the ofram wood, which has been used at particular areas for columns because of its interesting look. Scrap wood from the harbor has been used for some part of the pavement. Bamboo has also been used scarcely in the resort.



Fig. 3.4.5 Ofram wood



Fig. 3.4.6 Scrap wood

Stone and brick: retaining walls have been constructed with rubble stone, however the retaining wall along the lagoon is built with fibre rock. Fibre rock is a kind of special rock that can be carved into different shapes easily. Paving around the pool area is also in stone, brick has been used to break the monotony of paving at some points.



Fig. 3.4.7 Rubble stone



Fig. 3.4.8 Fibre rock



Fig. 3.4.9 burnt brick & concrete

Concrete: this has been used for the construction of walls and for the main building roofs. There are also concrete slabs for some part of the pavement.

Thatch, shingles and clay tiles: Imported thatch from Burkina Faso has been used for roofing various facilities at the resort, these thatch roofs were constructed by artisans also from Burkina Faso. The thatch roofs have not been changed for five years and there is still no sign of leakage or deterioration.

Shingles have been used to cover or insulate the concrete flat roofs.

Clay tiles have been scarcely used at the resort; evidence of the material can be seen at the chalet area.

Metals: these have been avoided as much as possible because of the saline environment.

However hinges and bolts are of metals but have been coated.

3. Maintenance

General cleaning of the resort and its equipments is done every Monday. Exterior walls are also repainted every four weeks. Fixtures are replaced as and when necessary, especially metal ones because of rust from the sea.



Fig. 3.4.10 Effect of corrosion

3.4.4 Function

Facilities

1. Accommodation

- Executive chalet (accommodation for a couple)

Bedroom/bathroom *90 sq. metres*

Terrace *15 sq. metres*

Private garden *70 sq. metres*

Private pool *15 sq metres*

- Family chalet
- Standard rooms

2. Three restaurants
3. Water sports tennis court
4. Spa and gym (still under construction)
5. Swimming pool
6. Conferencing



Fig.3.4.11 Swimming pool
Overseeing the sea



Fig. 3.4.12 Spa & gym



Fig. 3.4.13 Beach sports



Fig. 3.4.14 Beach restaurant



Fig. 3.4.15 Conferencing (left)

Parking

This car park serves both guests and staff, however the guest living in the chalets are provided with golf cars.



Fig. 3.4.16 Main parking



Fig. 3.4.17 Service parking.

Movement pattern

There is a main and service entrance. From the first point of call that's the security post, one then moves to the reception. From the reception to the rooms there is an experience of the facility. However the chalets are off the main site.



Fig.3.4.18 Service entrance

3.4.5 Aesthetics

1. Architecture

There is a combination of traditional and modern architecture. This has been achieved through mainly the use of materials and forms.

2. Finishes

Walls: these have been finished with cement-sand plaster and then painted with a mixture of clay, salt and starch, which gives the buildings a traditional look.

Floors: there has been the extensive use of wood (pavements), stone (pavement), cement screed (pavement, reception area, staff canteen security).

Roofs: main buildings have concrete flat roofs covered with shingles, other structures have thatch (reception, security, restaurant, staff canteen) and clay tiles (the chalets).

3. Landscaping

There is a harmonizing use of vegetation, water, stone, wood and ornaments to create a soothing and relaxing effect.



**Fig. 3.4.19 The use of pots
For aesthetics**



**Fig.3.4.20 interplay of
water and plants**



Fig. 3.4.21 Effect of pergola

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3.5 CASE STUDY TWO (COCONUT GROVE BEACH RESORT, ELIMINA- GHANA)

3.5.1 Why this resort;

Materials

Location

Building heights

3.5.2 Overview

Coconut Grove Hotels started with Coconut Grove Beach Resort in Elmina. It was officially opened for business in December 1994. With 15 rooms set on the Coast of Mmoframa Akyinim in Elmina in the Central Region, the Resort has grown to become the preferred destination for the discerning traveler in West Africa.

- 90% of supplies bought from local producers & suppliers.
- Providing about 168 direct jobs to local community
- Patronage of local Cultural and Dance Troupes
- Eco-friendly hotel
- Encouraging the preservation of monuments
- Assisting local government in up-keep of the environment

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3.5.3 Structure

1. Building frame and structure

The highest building on the site is two storeys. The building structure is basically made up of columns and beams. Roof forms are mostly garble however the restaurant and bar have hipped roofs. The roofs frames are all made of wood.



Fig. 3.5.1 Gabble roof



Fig. 3.5.2 Conical roof

2. Materials

The dominant material at the facility is burnt brick which has been used to clad about 60% of the buildings, the rest of the buildings have been plastered and painted. Clay tiles have been used for the garble roofs and thatch for the hipped roofs.

3. Maintenance

Fixtures as door knobs are changed as and when they rust, because of the saline environment metals rust easily. Because of the salinity an effort has been made to cover the iron rods used for burglary proof with pvc pipes.



Fig. 3.5.3 Iron rod covered with pvc pipe



Fig. 3.5.4 Effect of corrosion

3.5.4 Function

1. Services

Facilities at service yard

- Bakery
- Housekeeping and maintenance
- Laundry
- Carpentry and repair
- Cold store
- Staff canteen



Fig. 3.5.5 Service area



Fig. 3.5.6 Carpentry and repairs



Fig. 3.5.7 Horse stable

Water

The facility taps its main water source from the Ghana water company, but there is a reservoir on site with the water holding capacity of



Fig. 3.5.8 Water reservoir



Fig. 3.5.9 Gas

Electricity

The resort is wired to the national grid; however there is a stand by generator present to cater for unexpected power outages.

Waste management

A central septic tank has been provided for sewage, but solid waste is taken away from the site by trucks.

2. Facilities

Accommodation

3 large family suites comprising of 2 bedrooms each, a living room and a kitchenette;

3 Executive Suites comprising 1 bedroom, a living room and kitchenette,

8 family rooms comprising 2 interconnecting bedrooms,

38 Standard rooms (ideal for both single and double occupancy).

All rooms are air-conditioned, with hot and cold water, mini bar, satellite multi channel TV reception, and Wi – Fi connection.



Fig. 3.5.10 Lounge



Fig. 3.5.11 Kitchenette



Fig 3.5.12 Chalets

Conferencing

The conference facility has 4 meeting rooms (seating from 50 – 400) and 4 syndicate rooms with a fully fitted secretariat.

Restaurant

The popular Ocean View Restaurant has an enviable reputation for the best sea food served fresh in the region.

There is present at the beach a cocktail bar.

Coconut Grove Beach Resort is the only hotel in Elmina that has access to a clean and safe beach.



Fig. 3.5.13



Fig. 3.5.14 Ocean view restaurant

Sports

The fresh water swimming pool close to the Atlantic Ocean, allows the guests access to swimming any time of day.

Two clay tennis courts

Basketball court is available for the sports enthusiast.

The hotel boasts of a well set 9-hole recreational golf course complete with well tended greens.

Horse riding and bird watching has been introduced to enhance the outdoor.



Fig. 3.5.15 Swimming pool



Fig. 3.5.16 Horse ridding

3.5.5 Aesthetics

1. Landscaping

There has been the extensive use greenery; walking areas have been outlined with pavements. There is also the use of coconut trees for beatification.



Fig.3.5.17 The use of coconut trees

Rooms & Rates

<u>Room Type</u>	<u>Low Season</u> <u>Rate</u>	<u>High Season</u> <u>Rate**</u>
Standard Rooms		
Standard - Single Occupancy	\$95.00	\$105.00
Standard - Double Occupancy	\$105.00	\$125.00

Family Apartments		
Family Suite w/ 2 bedrooms, living room & kitchenette	\$185.00	\$230.00
Family Unit w/ 2 interconnecting bedrooms	\$175.00	\$195.00
Executive Suite w/ 1 bedroom, living room & kitchenette	\$150.00	\$165.00

Table 3.1 Accommodation type and rate

3.6 PRECEDENCE STUDY (THE CAMPUAN RESORT, INDONESIA)

3.6.1 Why the Campuan resort:

To be adequate with an aim to unearth the resort's concept, the topography and its structural form; resulting from the function of spaces of numbers or accommodation.

3.6.2 The resort

The Campuan, is a resort villa development located in Ubud, Bali – Indonesia. It departs from the typical Balinese resort design that refers to traditional local architecture with pitched-roof buildings set up in a village-like kampong setting. The resort's owner,

instead, sought a development that adopted a new approach, both architecturally and environmentally.



(source: BCI Asia construction information Pte Ltd: Architecture @ 08)

The resort comprises seven three-bedroom villas, each with a private pool, laid out down a steep slope overlooking the Ayung Gorge. Aiming to respect the resort's natural environment, the architect wanted to limit the visibility of the buildings and create a contemporary look.

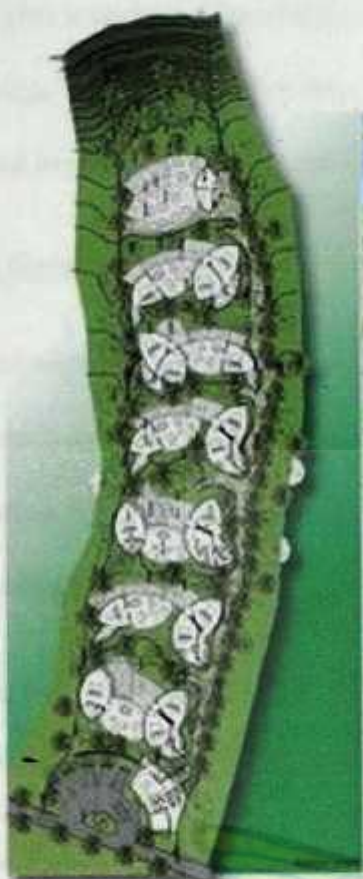


Fig 3.6.2 Master planning.

This shows the topography of the site with the contours and also how the spaces relate

to each other. (Source: BCI Asia construction information Pte Ltd: Architecture @ 08)



Fig. 3.6.3 Entrance to facility

showing the covered drive through and parking spaces.

As such, the villas are low-profile buildings, mindful of their surroundings. Flat, leaf-shaped roofs minimize the resort's silhouette. Roof gardens blanket each building, giving the resort the appearance of a chain of interlocking leaves. Jack fruits and coconut trees spring up through open spaces in the roofs.

Skylights introduce natural light during the day, and illuminate the gardens at night. The buildings are constructed of raw concrete, which provides a sharp contrast to their sleek, refined interiors. The villas are laid out to flow seamlessly from one room to another.

3.6.3 Green strategies

The architects have incorporated a number of environmentally friendly building strategies into the design. A lush tropical garden utilizes wastewater from the resort for irrigation. The water flows down the resort's sloping site, filtered by vegetation, and is then recycled for toilets.

Other green strategies include using solar panels to supplement electricity; recycled ironwood from an old boat for pool decking; and solar heat to warm up the water.

In addition to the villas, the resort has reception facilities, a restaurant and bar, and a spa.

Site area; 8,000 square metres.

Gross floor area; 2,500 square metres.

Building height (storeys); 2(maximum)⁷

SPECIAL STUDIES

3.7 GREEN ROOFS

With the proliferation of the sustainability movement within the construction industry, green roofing is touted as one of the ways to make roof systems more environmentally friendly.

A green roof system is defined as a roof area of plantings/landscaping installed above a waterproofed substrate at any building level that is separated from the ground beneath it by a man-made structure. A green roof system consists of a waterproofing system and its associated components; such as protection course, root barrier, drainage layer, thermal insulation and aeration layer and an overburden of growth medium and plantings."

As with all roof system types, proper design, quality materials and quality workmanship are needed to achieve a green roof system that will perform satisfactorily for its anticipated service life. Appropriate maintenance during a green roof system's service life also is necessary to ensure its success.⁸

3.7.1 Guidelines

Selected plant varieties commonly dictate a green roof system's necessary depth of growth medium. This also helps guide the specific component design.

Of course, when reroofing with a green roof system, a roof deck's structural capacity should be considered. Because of the varying depths of growth medium, a manual divides green roof systems into the following three primary categories:

- **Extensive (shallow):** a green roof system with an engineered soil-based growth medium approximately 2 to 6 inches deep
- **Semi-intensive (moderate depth):** a green roof system with an engineered soil-based growth medium approximately 6 to 10 inches deep
- **Intensive (deep):** a green roof system with an engineered soil-based growth medium greater than 10 inches deep

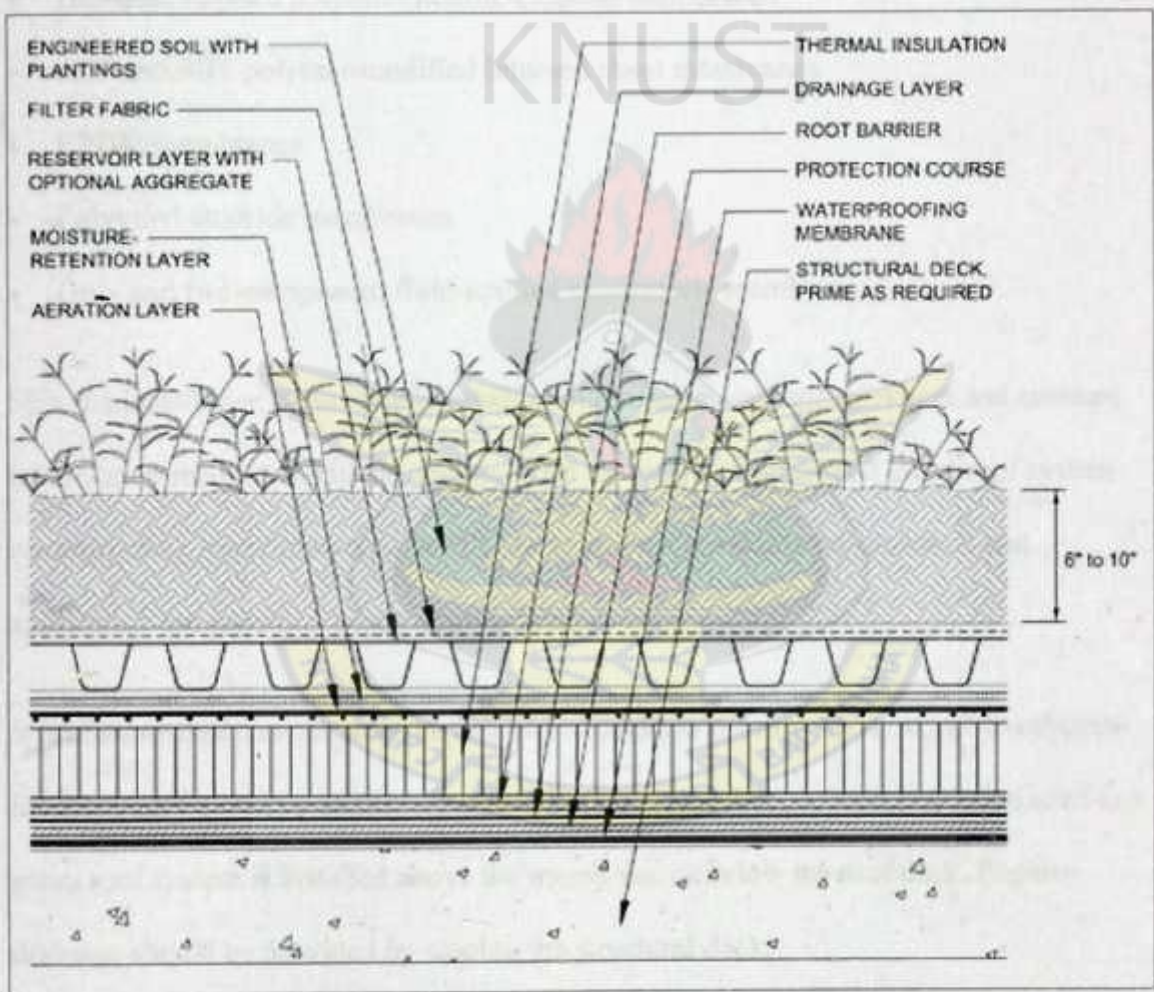


Fig. 3.7.1 A semi-intensive (moderate depth) green roof system (source: The NRCA Green Roof Systems Manual—2007 Edition)

Possible performance attributes include increased thermal efficiency, noise reduction and extended membrane service life. Likely performance attributes are storm water management, increased efficiency of roof-mounted photovoltaic panels and aesthetic benefits.

The green roof system details provide design and installation information for:

- Hot-fluid-applied polymer-modified asphalt membranes
- APP and SBS polymer-modified bitumen sheet membranes
- EPDM membranes
- Polyvinyl chloride membranes
- One- and two-component fluid-applied elastomeric membranes

Specific installation parameters, including minimum membrane thickness and ambient temperature recommendations, are provided for each recommended green roof system waterproofing membrane type. ASTM International standards for materials and application are provided where appropriate.

It is recommended membranes be adhered to decks to provide the most stable substrate for green roof system waterproofing membranes. Therefore, thermal insulation used in a green roof system is installed above the membrane or below the roof deck. Positive drainage should be provided by sloping the structural deck.

Construction details

For each membrane type, construction details are provided for eight common conditions. The details are arranged according to membrane type to assist roofing contractors with the submittal process. Additionally, details are provided for substrate crack preparation, nonmoving cold joints, cementitious board joints, sidewall penetrations, area dividers and paver edges.

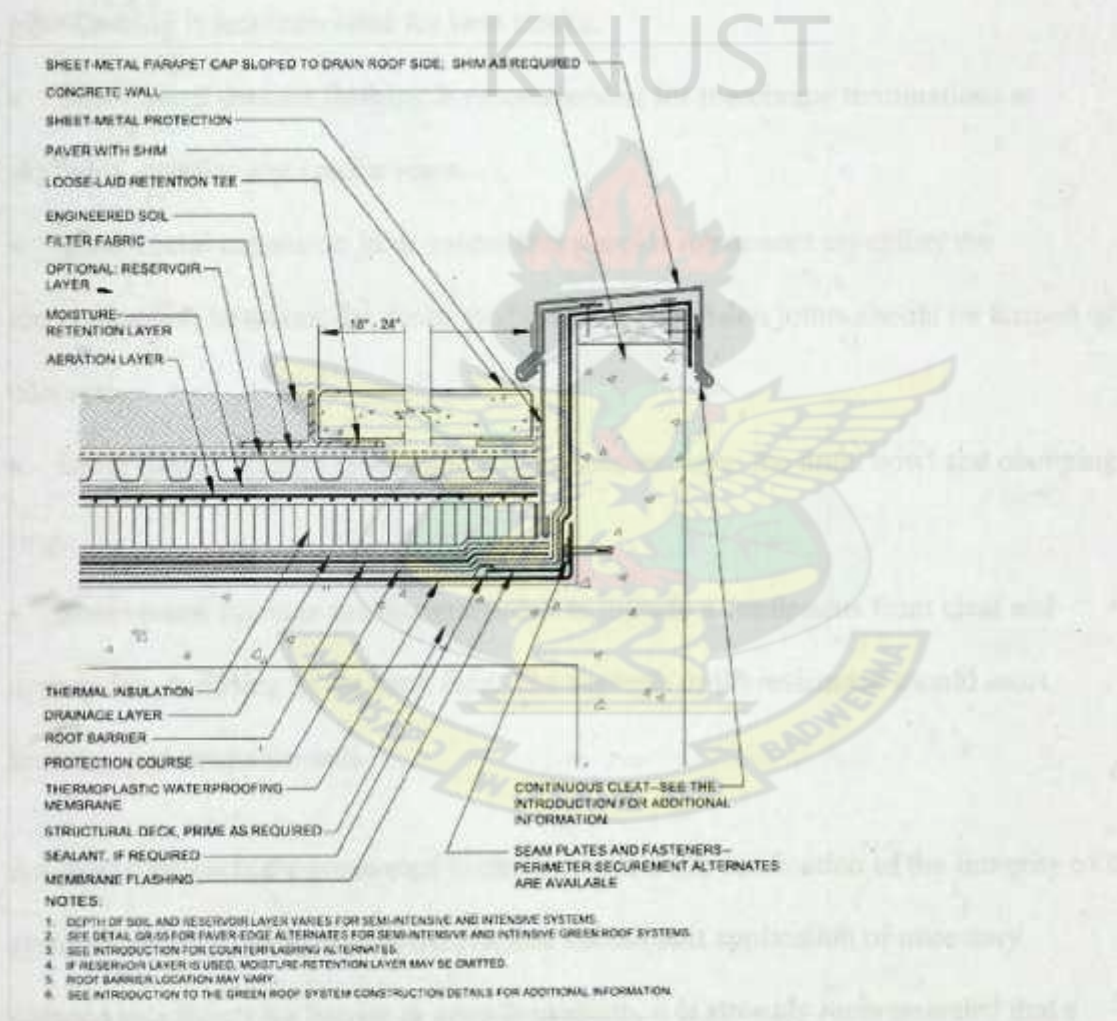


Fig.3.7.2 Low parapet flashing for thermoplastic waterproofing membrane—extensive (shallow) green roof system (source: The NRCA Green Roof Systems Manual—2007 Edition)

Construction detail concepts for green roof waterproofing membranes are similar to those pertaining to common roof system types. Some similarities are as follows:

- Membrane base flashings are recommended to be a minimum of 200mm above the surface of the membrane and 100mm above the overburden's top surface. For green roof systems, mechanical protection is recommended.
- Sheet-metal rain collars are recommended for penetration details, and soft-metal pipe flashing is recommended for vent stacks.
- Sheet-metal counter flashing is recommended for membrane terminations at skylights, scuttles and smoke vents.
- Sheet-metal expansion joint covers that provide movement capability are recommended; however, for green roof systems, expansion joints should be formed of concrete.
- Drain details include membrane compressed between the drain bowl and clamping ring.
- Sheet-metal copings are recommended to include a continuous front cleat and appropriate fastening in the back face. The coping's uplift resistance should meet building code requirements.

An important part of a green roof system project is the verification of the integrity of the system's waterproofing membrane. Before subsequent application of necessary components from root barrier to growth medium, it is strongly recommended that a water test be performed.

A water test may consist of a flood test or flowing water test depending on the structural capacity of the deck and slope; each typically lasts a minimum of 24 hours. A water test documents the performance of a green roof system's waterproofing membrane before placement of system components.⁹

Other construction details include creating contouring effects.

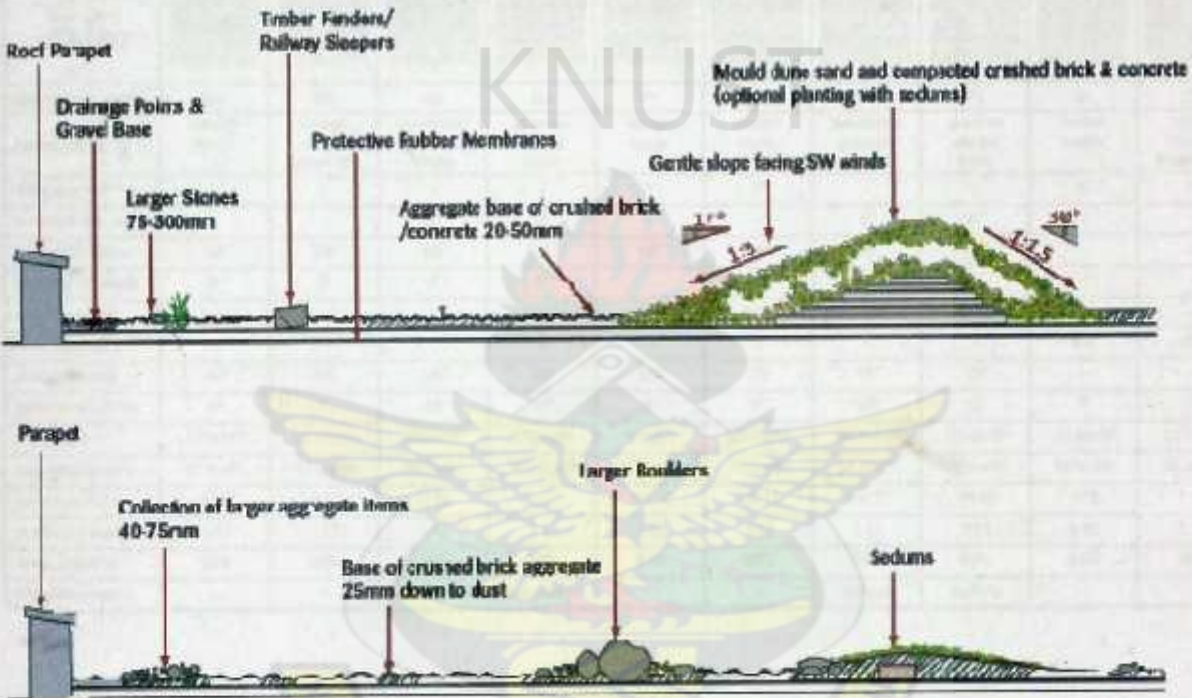


Fig. 3.7.3 Detail of contouring effect of roof garden (source: Black redstarts.org .uk:
proposed green roof for black redstarts, Isle of Dogs, London Borough of Tower Hamlets)

3.7.2 Types of plants and roof systems











GREEN ROOF SYSTEMS	SYSTEMS WITH GRANULAR DRAINAGE				SYSTEMS WITH DRAINAGE PLATES				SYSTEMS WITH DRAINAGE MATS		
											
	system designation	G1	G2	G3	G4	P1	P2	P3	P4	M1	M2
	typical plants	sedum herbs	sedum herbs perennials	perennials grasses shrubs	grasses shrubs trees	sedum herbs	sedum herbs perennials	perennials grasses shrubs	grasses shrubs trees	sedum herbs	sedum herbs perennials
	extensive soil mix	2"	4"	-	-	3"	6"	-	-	3"	6"
	intensive soil mix	-	-	6"	9"	-	-	8"	12"	-	-
	separation fabric	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	-	-
	granular drainage	2"	2"	4"	6"	-	-	-	-	-	-
	drainage plate	-	-	-	-	1"	1-1/2"	1-1/2"	2-1/2"	-	-
	drainage mat	-	-	-	-	-	-	-	-	3/8"	3/8"
protection mat	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	-	-	
nominal thickness	4"	6"	10"	15"	4"	7"	10"	15"	3"	6"	
dry weight	19 lbs/ft ²	28 lbs/ft ²	45 lbs/ft ²	69 lbs/ft ²	14 lbs/ft ²	23 lbs/ft ²	34 lbs/ft ²	52 lbs/ft ²	14 lbs/ft ²	22 lbs/ft ²	
saturated weight	26 lbs/ft ²	41 lbs/ft ²	70 lbs/ft ²	105 lbs/ft ²	23 lbs/ft ²	37 lbs/ft ²	57 lbs/ft ²	85 lbs/ft ²	23 lbs/ft ²	37 lbs/ft ²	
minimum slope	0:12	0:12	0:12	0:12	1/4:12	1/4:12	1/4:12	1/4:12	1:12	1:12	
maximum slope	1:12	1:12	1:12	1:12	1:12	1:12	1:12	1:12	3:12	3:12	
water retention	60%	60%	70%	80%	50%	60%	70%	80%	50%	60%	
irrigation system	-	-	subsurface	subsurface	-	-	surface	surface	-	-	

Fig.3.7.4 Types of plants (source: naturalarchitecture.blogspot.com)

3.8 THATCH

3.8.1 Types of Thatch

There are three commonly used thatching materials:

- Water Reed (Also Known As Norfolk Reed)
- Long Straw
- Combed Wheat Reed (Also Known As Devon Reed)

Others Include Flax, Heather, Broom, Sods, Marram Grass etc - for further information please contact T.A.S.

Water Reed (*Phragmites Australis*) is the most durable thatching material.

Long Straw is a winter wheat straw which has not been combed (its name refers to a style of thatching rather than a material achieved by any singular process although generally for the last 90 years long straw thatching has used the processed straw from the threshing drum). It has the shortest life expectancy of the three commonly used materials.

Combed Wheat Reed is winter wheat straw which has had the leaf removed and is laid in a similar way to water reed. With modern farming methods tall strong straw has become less readily available.¹⁰

3.8.2 Life Expectancies

Water reed, which is the most durable thatch, can last up to 50 years. Maintenance will include re-ridging every 10 to 15 years.

Combed wheat reed can have a life expectancy of 25 to 35 years. Long straw will last from 15 to 25 years. As with water reed both these materials will require re-ridging at 10 to 15 year intervals.

These life expectancy figures can drop noticeably the further west the thatched property is situated. This appears to be due to climatic conditions. The warm, high humidity, clean air conditions experienced in the West Country are ideal for the microbes that begin the decomposition process

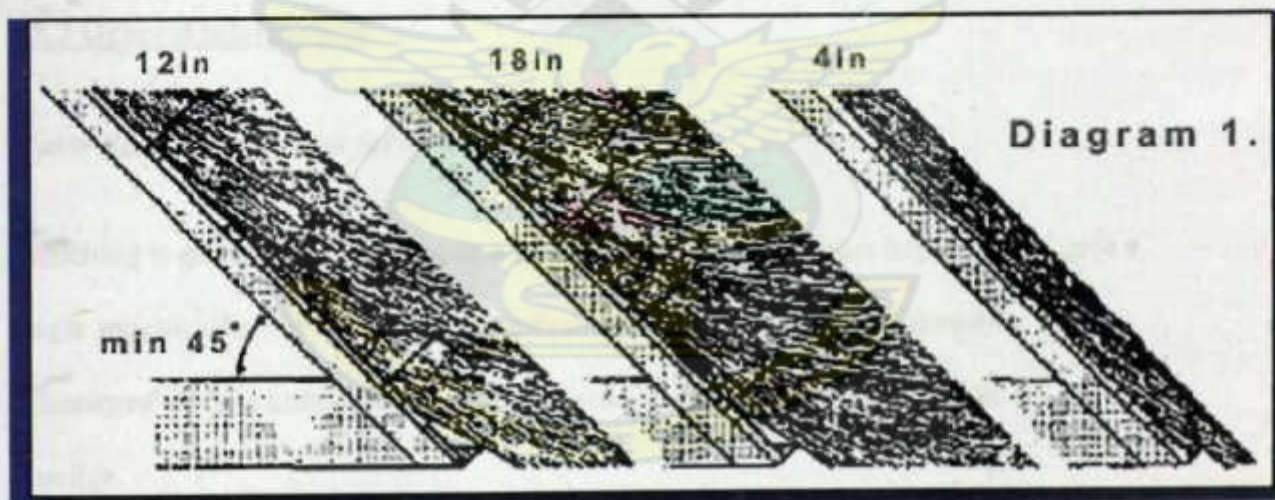


Fig 3.8.1 Angle of slop to thickness of thatch roof (source: Thatching Advisory Services

Ltd: the complete thatch guide)

The pitch of the roof will relate directly to the pitch of the thatch and equally the thickness of the thatch will influence the pitch of the thatch. Thus, an 18in coat of thatch will lie at a much slacker pitch than a 300mm coat and therefore a thicker coat will wear more quickly. The thinner the thatch, the steeper the pitch, however there must be adequate thickness of thatch over the fixings, thus a 4in coat of thatch is steeper than a 300mm coat, but because the exposed stem length is longer (and therefore wears more quickly) and because there will be very little thatch over the fixings the thatch will not last as long as a 12in coat. An optimum thickness for maximum longevity would be between 230-380mm for water reed and 230-300mm for combed wheat reed and long straw. Therefore, the point to remember is that there are an almost infinite number of specifications depending on pitch of roof and length of the thatching material.

3.8.3 General information

Water Reed Specification for New Build Thatch

Thatching is generally recognised as a craft and as such it is almost impossible to give a single specification for a re-thatch. However in the field of new build thatching the majority of work is undertaken using water reed and therefore a specification is possible.

Other specifications are:

- The Water Reed should be laid to a thickness of approximately 12" (300mm)
- The ridge most commonly used is a block cut, patterned and saddled type ridge

- Supply and fix, 3/4 inch (19mm), 22 gauge galvanised wire mesh to the ridge only
- Finally the thatcher should be expected to leave the site reasonably tidy.

Fixings (For All Types of Roof)

Hazel or steel runners can be applied and secured by steel thatching nails, fixing wires, twine or spars. The method will depend on the roof in question and the material used, however water reed on a new roof is usually fixed with thatching nails or stainless steel wires attached to rust proved screws.

Roof Pitch

It is advisable to set the pitch at about 50 degrees. This is not due to the weight of the material which is in fact not over heavy, but rather to facilitate efficient drainage. Dormer roofs and eaves window-roofs should be at least at a 45 degree pitch, if possible.

Insulation of a Thatched Roof

Thatch is inherently a good thermal insulator with 'r' values of 11.1 and 14.3 mK/W for reed and straw respectively. It is worth noting that generally thatch is considered a 'warm roof construction' and consequently does not require the ventilation of a tiled roof.

U Values

The U value of a roof refers to its thermal conductivity, that is, how quickly heat is lost from it, and is measured in watts per metre squared per Kelvin. The U value of 200mm of Water Reed on a pitch of 45 degrees is 0.35 W/sq m K. An R value is the inverse of U. The current building regulations state that the U value required from a new roof should be 0.25 W/sq m K. Therefore there has to be some sort of insulation even under a thatched roof.

The calculations for U value are relatively complicated and therefore should be left to the architects. However it is definitely worth telling any interested parties that Thatchbatts and Barrier Foil underneath the thatch give a U value of 0.16.

Weight of Thatch

When calculating for a roof construction a weight of 7 lbs/ft² (34 kg/m²) should be assumed.¹¹

3.8.4 Roof construction

Smaller Span Roofs

For a 16'6" (5.03m) span roof with a clear span a simple form of truss is required as indicated in diagram 3. The trusses should be set at between six to eight feet apart. Rafters, ties, collars and diagonals should be 4" x 2" (100 x 50mm). The diagonal members should be notched so that the purlins will be held at right angles to the rafters.

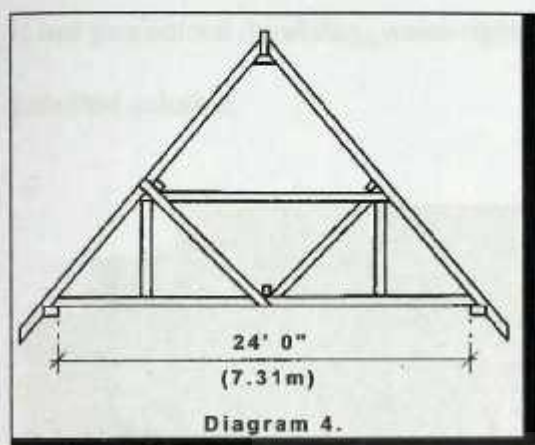


Fig. 3.8.2 Roof span (source: Thatching

Advisory Services Ltd: the complete thatch guide

3.8.5 Artificial thatch roofing:

This modern, robust and practical material was designed with a specific goal in mind: to revolutionize roofing by creating a permanent substitute for the majority of natural leaves used throughout the world.



Fig. 3.8.3 Thatch roofs (source: [www.palmex-](http://www.palmex-international.com)

[international .com](http://www.palmex-international.com), May 2009)

These endangered and fragile leaf species, such as the Pala Palas, Pandanus and Palma Cana have too short a life-span to be considered a profitable long-term investment.

It has guaranteed durability, water-tightness and UV protection due to our unique patented solution.



Fig. 3.8.4 Artificial thatch tiles

3.8.6 Thatch roofing - features

The availability of a 'fire-retardant' version completes the range of perfectly security-compliant models to suit specifications within the majority of countries and regions.

The visual aspect, both interior and exterior, is faithful to the look of roofs from many tropical countries.

The waterproof ability is assured by the layering of many leaves and by their profile.¹²



Fig. 3.8.5 Thatch waterproofing (source:

www.palmex-international.com, May 2009)

3.9 SOLAR ENERGY

Solar power is by far the Earth's most available energy source, easily capable of providing many times the total current energy demand. Covering 4% of the world's desert area with photovoltaics could supply all of the world's electricity.



Fig. 3.9.1 curved photovoltaic panel (source:

Wikipedia)

Solar power is an intermittent energy source, meaning that solar power is not available at all times, and is normally supplemented by storage or another energy source, for example with wind power and pumped-storage hydroelectricity

Solar power is the conversion of sunlight into electricity. Sunlight can be converted directly into electricity using photovoltaics (PV), or indirectly with concentrating solar power (CSP), which normally focuses the sun's energy to boil water which is then used to provide power, and other technologies, such as the sterling engine dishes which use a sterling cycle engine to power a generator. Photovoltaics were initially used to power small and medium-sized applications, from the calculator powered by a single solar cell to off-grid homes powered by a photovoltaic array.



Fig. 3.9.2 Array of photovoltaic panels (source:

Wikipedia)

The only significant problem with solar power is installation cost, although cost has been decreasing due to the learning curve. Developing countries in particular may not have the funds to build solar power plants, although small solar applications are now replacing other sources in the developing world.

Since solar power is intermittent, it must be combined either with storage or other energy sources to provide continuous power, although for small distributed producer/consumers, net metering makes this transparent to the consumer. A combined power plant has been demonstrated, using 100% renewable energy.

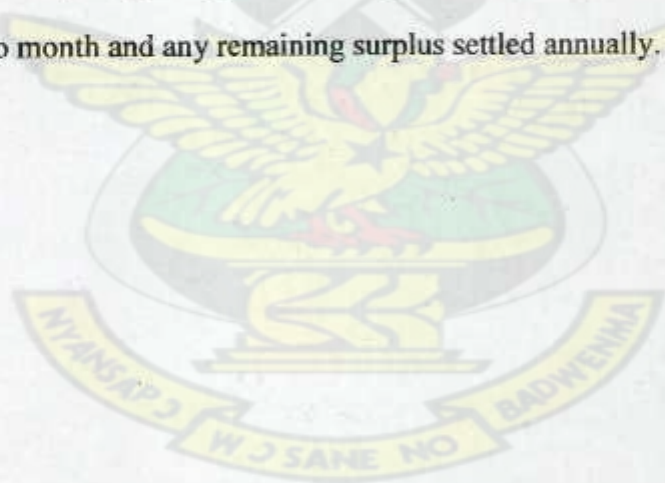
One fundamental difference between renewable energy and non-renewable energy is that non-renewable resources can be purchased as they are consumed, whereas with renewable resources, you pay up front for the next twenty years or so of energy.

Solar energy is not available at night, making energy storage an important issue in order to provide the continuous availability of energy. since solar power is an intermittent energy sources, meaning that all available output must be taken when it is available and

either stored for when it can be used, or transported, over transmission lines, to where it can be used.

Solar energy can be stored at high temperatures using molten salts. Salts are an effective storage medium because they are low-cost, have a high specific heat capacity and can deliver heat at temperatures compatible with conventional power systems.

Off-grid PV systems have traditionally used rechargeable batteries to store excess electricity. With grid-tied systems, excess electricity can be sent to the transmission grid. Net metering programs give these systems a credit for the electricity they deliver to the grid. This credit offsets electricity provided from the grid when the system cannot meet demand, effectively using the grid as a storage mechanism. Credits are normally rolled over month to month and any remaining surplus settled annually.¹³



REFERENCES

⁷ BCI Asia construction information Pte Ltd: Architecture @ 08, Yamagata (M) Sdn Bhd 2007

⁸ The NRCA Green Roof Systems Manual—2007 Edition

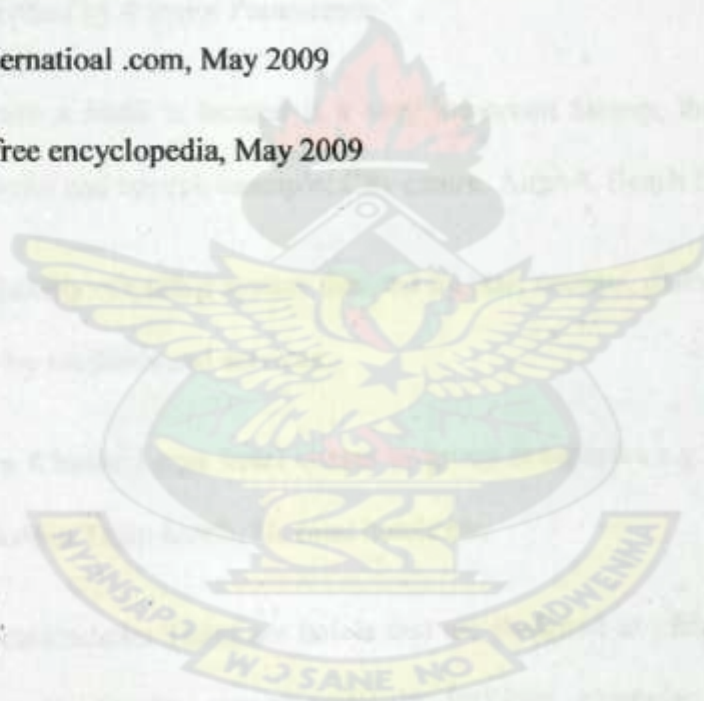
⁹ The NRCA Green Roof Systems Manual—2007 Edition

¹⁰ Thatching Advisory Services Ltd: the complete thatch guide

¹¹ Thatching Advisory Services Ltd: the complete thatch guide

¹² www.palmex-international.com, May 2009

¹³ Wikipedia, the free encyclopedia, May 2009



CHAPTER FOUR

4.0 RESEARCH FINDINGS AND DISCUSSIONS

4.1 DESIGN CONSIDERATION FOR HOTEL AND RESORTS

4.1.1 Hotels and resorts

Hotels may be described by 4 major Parameters:

- **Locations:** where a hotel is located is a very important factors, this adds to the description of the hotel and appeal, example; City centre, Airport, Beach front, etc.
- **Standard of Quality:** Grading system denoted by star, crowns, diamond etc. this is determined mostly by facilities and services.
- **Operation as a Chain:** Large hotel chains or group companies e.g. Nikko hotels, Meridian hotels, Golden Tulip hotels, Novotel hotels etc.
- **Extent of Specialization:** There are hotels that are designed to offer mostly some specific services or are revolve around particular facilities, example; Resort hotels, Convention hotels, Spa hotels, Casino hotels, etc.

4.1.2 Types of hotels

Mid-range hotels: Commercial hotels in suburban areas near Airports, Ferry ports and Towns.

High-grade hotels: City Centre hotels

Budget hotels: For transient users

Resort hotels: Mixed development resorts, vacation villages etc.

Suite hotels: Condominiums and serviced apartments

4.1.3 Beach resort hotels

Most resort hotels are based on the leisure attractions of water both as a visual setting and recreational amenity.

4.1.4 Location

The hotel site may front beaches, lagoons or lakes directly or provide elevated views with convenient access to the waterfront activities.

Resort hotels are often subject to planning and regulatory controls and other zoning requirement:

- Setbacks from the beach front are often 60 to 80 metres
- Restrictions on building height and density
- To protect the environment and other views, hotels may be integrated into backyard with appropriate landscaping, example; Axim beach resort.
- The location and landscaping of swimming pools may be used to create an interests for rooms and restaurants situated away from the beach from the beach, example Africa beach resort.

- Compensatory views may be provided through the development of golf courses, outdoor sporting interests and recreational facility for children, example; Busua beach resort.

4.1.5 Planning

- Resort hotels often need to be large for effective marketing and to finance extensive recreational provision.
- Often 300 – 400 rooms are common for major developments and 200 – 300 rooms for more exclusive luxury hotels.
- In addition to the main hotel building the development may include supplementary accommodation in the form of executive lanai suites, individual villas or village- style developments to provide alternative choice for long stay or family visitors.
- Smaller-scale units can be integrated into the grounds, associated with particular recreational interests (golf, riding, fishing, etc.) and constructed to traditional design.
- Site areas are usually extensive to allow for recreational needs and landscaping
- Orientation of the guestrooms wings perpendicular to the sea or lake is most efficient to allow rooms on each side of a double loaded corridor to enjoy 90 degree views.
- Future phases of extension and infrastructure requirements need to be incorporated at the initial planning stage, example; Busua beach resort

4.1.6 Accommodation

- The guestrooms in a resort hotel need to be large allowing for vacation (1-2 weeks or more) and convention (4-7 days) user requirements.
- Extensive wardrobe and luggage storage must be provided with adequate day space as well as sleeping areas
- Balconies are an advantage and must be at least 1.5m (5ft) wide for two sets of loungers and chairs plus a table
- Rooms are normally planned for twin beds with proportion of double bedrooms and family room combinations.

Public areas

In resort areas the lobby serves as a focus for information, assembly and relaxation.

- Shops may form part of lobby or arcade outside the main building.
- Restaurants and lounges are more extensive to provide for the high coincidence of demand at breakfast and evening meals
- The lounge, bar and traditional areas may be adjacent to allow extension for entertainment events.
- The main restaurant is often sub-divided to create more personal space and offer variety of choice which open up into the pool bar, café-bar and barbecue area.

4.1.7 Services

- There is the need for extensive installation of storage, treatment and generating plant because of inadequate and unreliable local utility supplies.
- The provision for kitchen, laundry, maintenance and plant areas is usually large because of the lack or remoteness of outside services.

4.1.8 Recreation

- Recreational facility must be sited externally in landscaped grounds
- Indoor swimming pool, gymnasium and other activity area may be required for extended season marketing
- Clubhouse facilities are usually provided where there are high-standard tennis courts and golf courses.

4.1.9 Trends

- Provision of spa and therapeutic treatment for non-seasonal marketing.
- Mixed development of hotel and serviced residential accommodation.
- Innovative extension of recreation and learning experiences.
- Environmental sensitivity in the sitting and integration of hotel buildings.¹⁴

4.2 COSIDERATIONS FOR SELECTING SITE

4.2.1 Landscape and topography

This was very important on the list. First of all the researcher wanted the facility to be situated near an estuary because of the view and the presence of two types of water bodies. Because the researcher wanted everyone at facility to experience a view the researcher wanted a slightly hilly site for the effect of terracing. Finally the researcher was also interested in the landscape, the researcher wanted the beaches to have coconut trees and the other parts of the site with soil able to support plants.

4.2.2 Location

The facility is supposed to be a peaceful relaxation hideout, away from the stressful and chaotic life of the city. For the above reason the researcher wanted a site not far from the capital and yet peaceful, therefore the Central region was considered.

4.2.3 Size

The facilities, type of landscaping and the layout in general I wanted to achieve, I needed a fairly large site to contain these and still have enough space for future development.

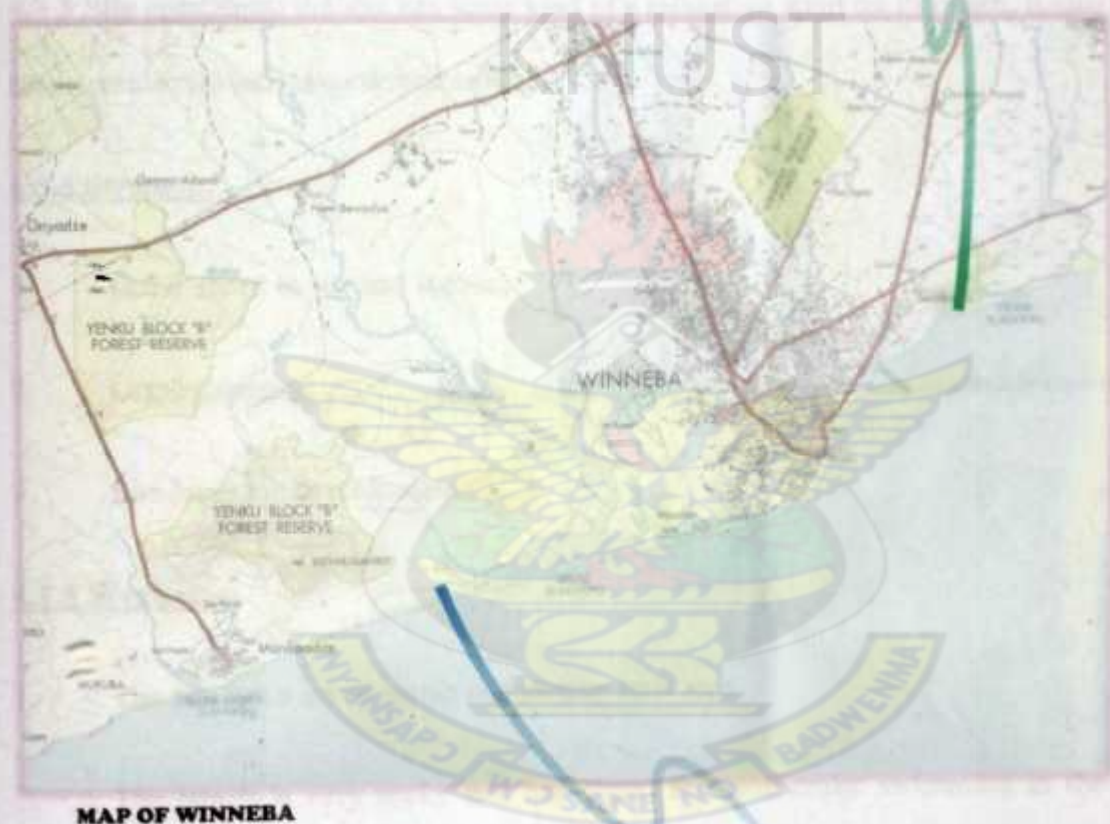
4.2.4 Access

This was a bit of a problem since most of the access routes to our beaches were bad. For that matter I needed a site with a proposed road nearby or a feeder road.

4.2.5 Type of beach

Because I wanted great scenery and the users of the facility to the beach, I was seeking for beautiful sandy beaches with minimal invasion by the sea.

OYIBI LAGOON SITE (OPTION 1)



MAP OF WINNEBA

MUNI LAGOON SITE (OPTION 2)

Fig.4.2.1 Map of Winneba

4.3 OYIBI LAGOON SITE

4.3.1 Landscape and topography: fairly flat land. There is the presence of an estuary, but the lagoon almost dries up in the dry season. Some parts of the site is also swampy.

4.3.2 Location: this site is located at the eastern coast of Winneba, at a suburb called Sankor. Winneba is an hours drive from Accra.

4.3.3 Site condition: the site has some kind of a relaxation sport on its beach, it also has some residential buildings dotted around.

4.3.4 Strength:

1. Good views to sea and lagoon.
2. Good greenery.
3. Site large for development.

4.3.5 Weakness:

1. The site has a lot of marsh and swamp land area.
2. The beach is very rocky and has algae; this will make swimming in the sea dangerous and the beach unpleasant.
3. The lagoon is very shallow and as such dries up during the dry season, hence losing some the views.
4. Access to the site is very bad.



Fig. 4.3.1 rocky beach showing algae

4.4 MUNI LAGOON SITE

4.4.1 Location: the site is located at the western border of Winneba; that is in between Winneba and Mankoadze.

4.4.2 Site condition: presently the site is fallow, however part of the site is a forest reserve with different species of birds, there is also the presence of the “Aboakyer hunting grounds at another part of the site.

4.4.3 Strength

1. The site commands good views to sea, lagoon and the forest reserve.
2. Very interesting landform, which will enhance landscaping.
3. There is a large land for development.



Fig 4.4.1 view of lagoon

4.4.4 Weakness:

1. Access to site is in a very poor condition.
2. There is a fishing settlement close to the site.

4.5 Site inventory

4.5.1 Development potentials

These are the things on the site that will be helpful in the design and development of the facility.

1. The confluence of the sea and the lagoon. This forms an interesting view and will aid the potential of the resort.
2. Beautiful white sand beaches with coconut trees.
3. The site is close to a forest reserve and the “Aboakyer” hunting grounds which has the presence of various animals that can be viewed.

4. The patches of islands on the lagoon forming a man-made scenery on the lagoon.

4.5.2 Development constraints

These are features on and around the site that will pose as a threat to the development of the project.

1. The presence of salt mining activities close to the site, there has also been a connection of a pipe from the sea to the salt mining site. Imposing an industrial activity.
2. The access to the site is not only bad but also does not go all the way to the site, it stops approximately two kilometers to the site.
3. Fishing settlement close to the site.

4.5.3 Site boundaries

Site is bounded at the north by vegetation and settlements, on the east by the lagoon, on the south by the Gulf of Guinea and on the west by a forest reserve.

4.5.4 Flora and Fauna

Vegetation present is mainly shrubs, grass and trees, and on the beach mainly coco-nut trees. Wildlife on and round the site include birds, game, reptiles, amphibians, insects.

4.5.5 Soil

Along the sea shore there is white sand, on the shore of the lagoon the sand is mixed with loam (sandy-loam) and so it is a little dirty and on the site itself the soil is loam, with some amount of sand.

4.5.6 The state of the lagoon

The lagoon is clean and supports aquatic life. It measures approximately 500m at its widest side.

4.6 SITE ANALYSIS

4.6.1 Strengths

1. Adequate site for development, with land area of approximately 80 acres
2. Fertile soil cover for landscaping
3. Site offers excellent aesthetically pleasing views to the sea, lagoon and forest.
4. Evidence of a forestation of coconut trees along the coast, which will give the resort not only elegance but also fresh fruits.
5. Site is well drained.



Fig 4.6.1 coconut trees along the beach

4.6.2 Weakness

1. Access to site is terrible
2. Lagoon becomes shallow during the dry season.



Fig 4.6.2 Present access to site

4.6.3 Opportunity

1. Site terrain, the presence of picturesque hills on certain parts of the site will provide interesting views and sometime dramatic series of spatial experience.
2. The site is close to the “Aboakyer” hunting grounds and a forest reserve with various animals, features that will attract tourists to the proposed resort.



Fig 4.6.3 Terrain

KNUST

4.6.4 Threat

1. Fishing settlement near site. This generate unwanted noise, which will pose as a threat to the site's serenity of the site.

4.6.5 Possibilities

1. The use of terracing to create aesthetically pleasing effects and maximize views view lines.
2. Taking an access route from the Winneba - Cape coast road, or a second access along the beach from the Winneba township.

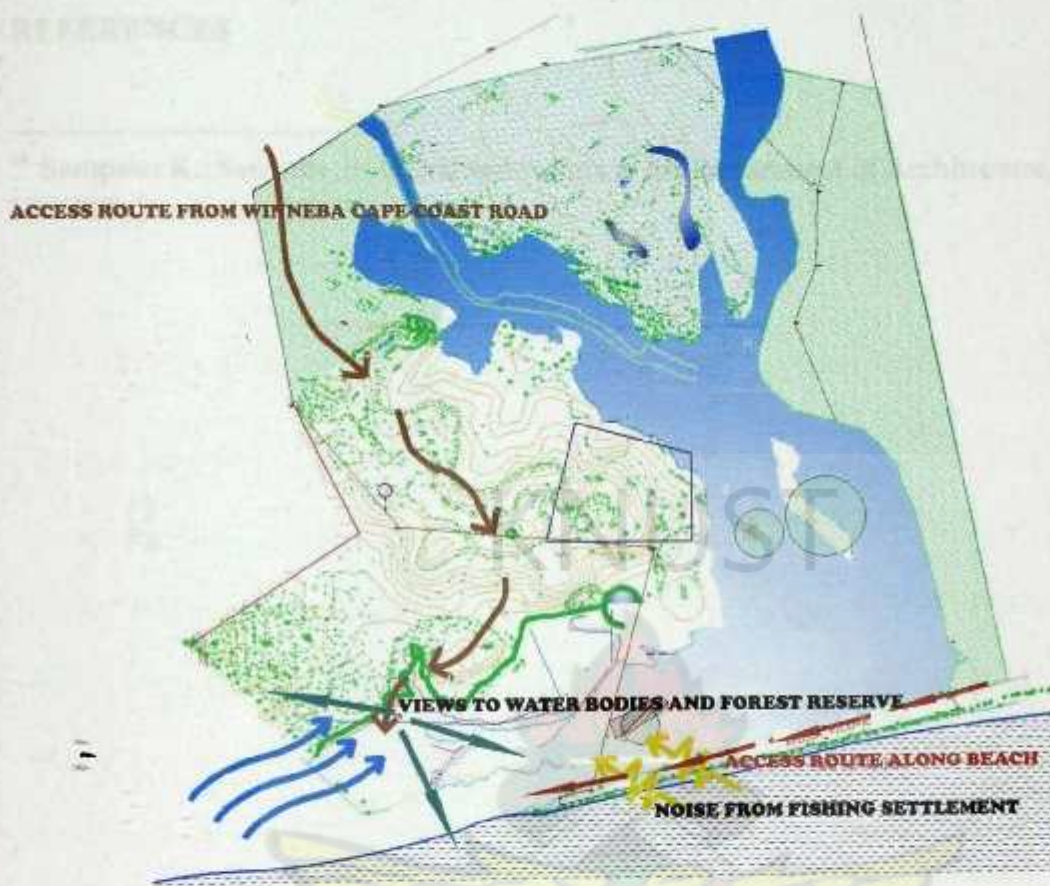


Fig. 4.5.6 Site analysis

Fig. 4.6.5 Schematic section through site; Site slopes gently towards the sea.

REFERENCES

¹⁴ Sampson K.: Seminar on hotels and resorts at the Department of Architecture, KNUST, December 2008

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Hotels and resorts are the mainstay of the Ghanaian tourism industry, which is the main source of foreign exchange for the country. With the influx of tourists from all over the world and the growth of the tourism industry, it is imperative that the Ghanaian government should take steps to improve the quality of the services provided by the hotels and resorts in the country. This paper has discussed the current state of the hotels and resorts in Ghana and has identified the major problems facing the industry. It has also suggested some possible solutions to these problems. The government should take steps to improve the infrastructure of the hotels and resorts, such as the provision of electricity, water, and telecommunications. It should also encourage the private sector to invest in the industry and to improve the quality of the services provided. The government should also take steps to protect the environment and to promote sustainable tourism.



CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Waterfronts, hotels and resorts cannot be left out when talking about the Ghana tourism industry; which is fourth revenue generator for the country, however not much has been done to promote the industry. With the influx of from all over the world and even locally, the Ghana tourist board realize the need to promote this sector. Measures should be put in place to make the industry as attractive as possible. Ghana's waterfronts also play a major in the tourism industry; all over the world countries are investing in their waterfronts and other holiday destinations to be a high revenue generator for their economy.

It is therefore possible to transform Ghana's coastline and other waterfront into a world class plush and luxurious tourist destination.

5.2 DESIGN PROPOSAL

5.2.1 DESIGN PHILOSOPHY

Enhancing nature

Nature and architecture should enhance one another in a manner and to create a sort of harmony by contrast.

Le Corbusier.

The facility is intended to create a lasting impression on the user; hence efforts have been made to combine nature, architecture, culture and technology to produce aesthetically pleasing yet sustainable design.

5.2.2 DESIGN CONCEPT

One of the main peculiarities of modern architecture is the combination and the synthesis of the elements of space to satisfy human needs. Recreational architecture is such a field of activity, the object of which is the establishment of recreational space. That is recreational areas and buildings in which intimate surroundings are valued. Space and not only buildings should be comfortable for the fulfillment of underlined functions on the types and form of resort.

The philosophy is intended to be achieved through; the use of natural shapes, local materials, site layout, green strategies and lush landscaping, to achieve a sustainable and environmentally friendly resort.

5.2.3 BRIEF DEVELOPMENT

5.2.3a Client's brief

The client wanted a waterfront resort comprising of

1. Accommodation facilities.
2. Conferencing.
3. Water sports and other sports.
4. Restaurant

The client did not go into detail specifics of each area.

5.2.3b Observations

Accommodation

Studies show that accommodation takes approximately 60% of the resorts facilities, with standard rooms taking more of this percentage. There is also a demand for privacy in resort accommodation hence the patronage of chalets. In recent times there has been the increase of entire families going on vacations, therefore the need to house them together.

Conferencing, sports and restaurants

These are essential features in a resort design apart from the accommodation facilities. The need therefore is to undertake town planning aspect of the whole layout to enhance recreation, communication and landscape within the resort.

5.2.4 REFINING THE BRIEF

The aim is to plan a resort where people can relax and unwind from stress.

Bases for brief:

5.2.4a Location

The cities have become choked with all sort of stress; therefore there was the need to locate this facility in the out of the city yet not far.

5.2.4b Environmental conditions and landscape

Because the facility's main purpose is for relaxation, the scenery and environmental conditions are very important. This proposes that resorts facilities should be located away from urban noise and stress, thus be located in a scenery with quality environmental conditions and water bodies; rivers, the sea, lagoon, lakes etc.

5.2.4c Refined brief

1. Reception

(Entrance lounge, general shop and gallery, business center)

2. Administration

(offices)

3. Accommodation

(Standard rooms, executive suites, executive chalets and luxury villas)

4. Restaurants

(inter-continental, local, beachside and cocktail bar)

5. Kitchen

(dry, wet, cold, hot, salad and juice, wine section and storage)

6. Health and sports

(mini clinic, Spa, gym, water sports tennis courts, basketball court, beach volley swimming pools and kids play area)

7. Services

(maintenance, storage, staff changing rooms)

8. Parking

(staff and visitors)

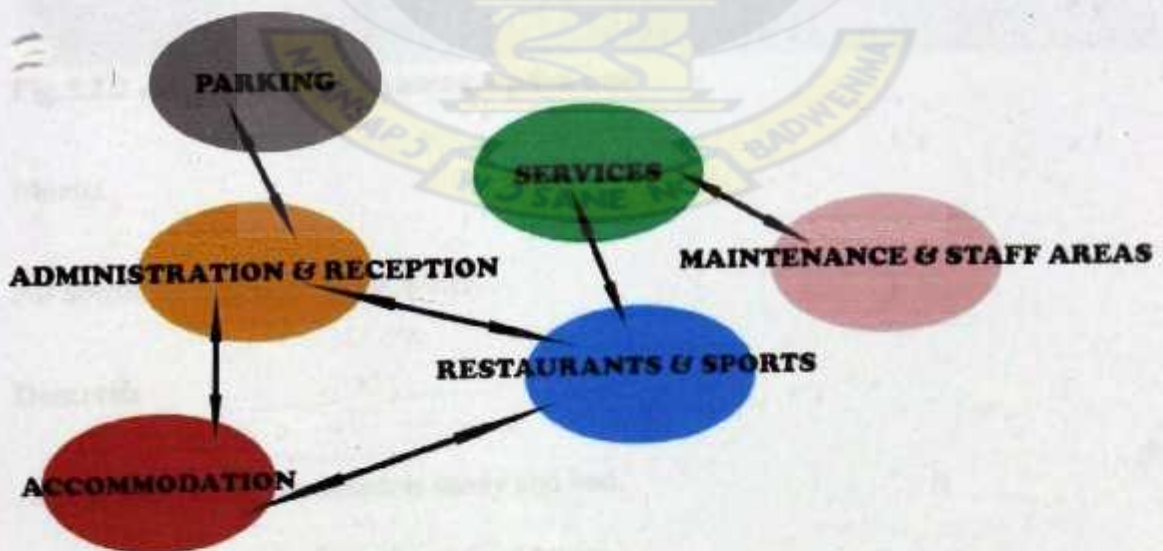


Fig. 5.2.1 functional diagram

5.2.5 PLANNING

5.2.5a Zoning

There is the need to segregate areas that is private from public. The accommodation facilities should be zoned from the facilities used by the public.

5.2.5b Conceptual site planning

Option one



Fig.5.2.2 conceptual site planning, option one

Merits

1. All accommodation faces the water.

Demerits

1. Access route along the beach is sandy and bad.
2. Parking area is too far from the main entrance.

Option two

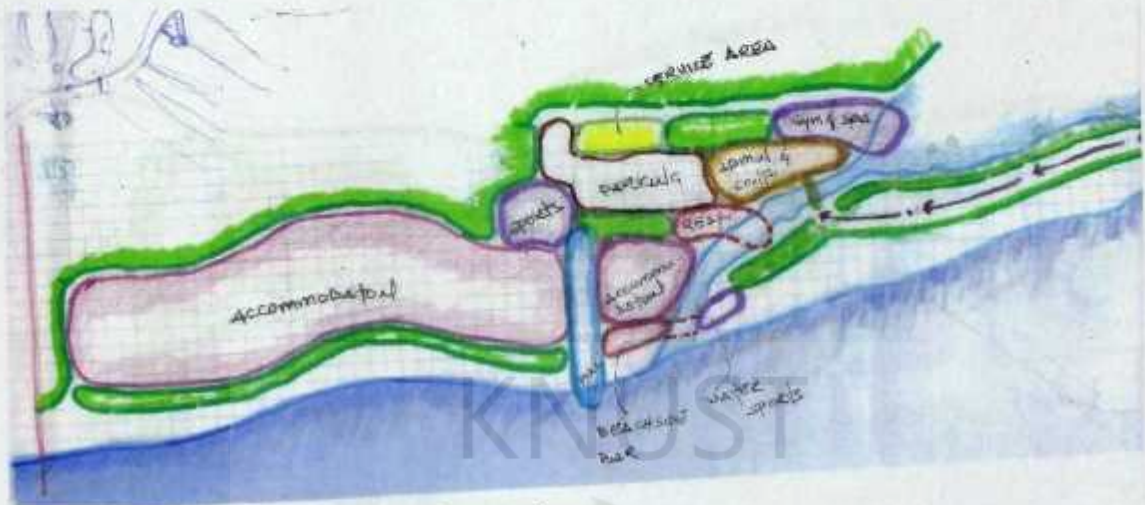


Fig.5.2.3 conceptual site planning, option two

Merits

1. Accommodation faces the sea.
2. The maintenance car park service's both the service area and the restaurant.

Demerits

1. Access route is sandy; it also takes away part of the beach.

Option three

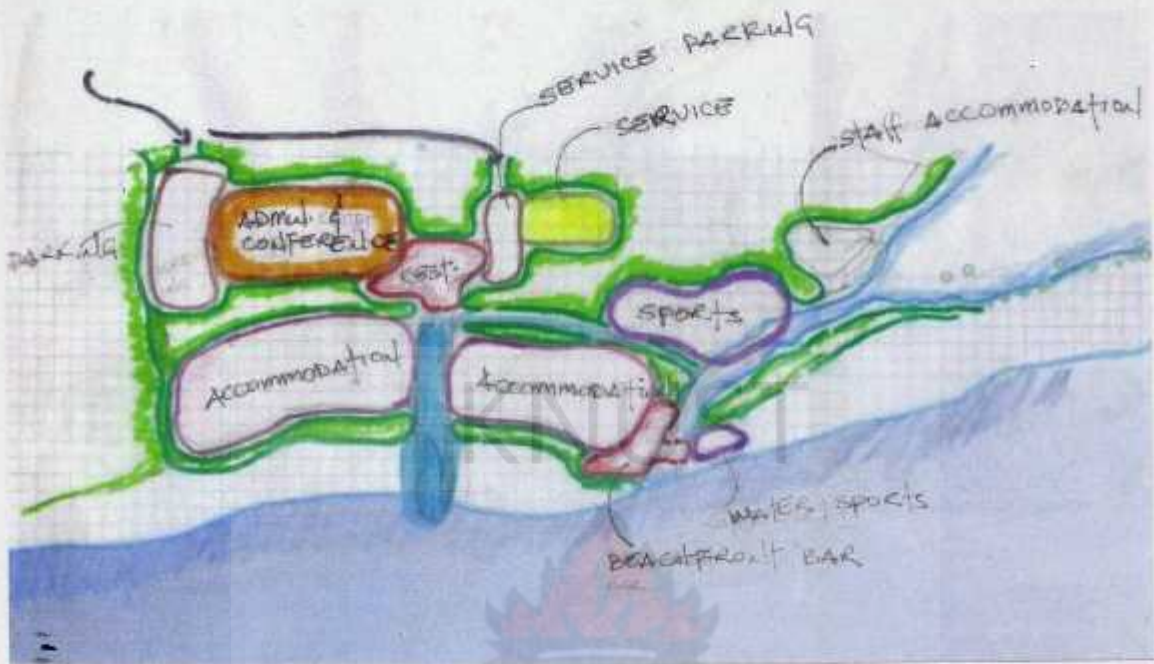


Fig.5.2.4 conceptual site planning, option three

Merits

1. Access route is from the main Winnebba Cape-Coast road.
2. All the accommodation facilities have views to the sea.

The layout the researcher chose is a combination of the merits of all three (3) options. This was because the access route along the beach will destroy the coastline and also there might be the case of flooding when the lagoon over flows its banks. There was also the need to have all restaurants at one area to avoid having a lot of service areas.



Fig.5.2.5 Initial development of the chosen option

NOTE: See appendix for design drawings.

5.2.6 DESIGN CONSIDERATIONS

5.2.6a CHARACTER

The general character of the resort is to portray the traditional and rustic feeling; however each zone comes with its own appeal.

1. The facility is zoned according to the
 - Public and noisy areas (reception, sports, conferencing, restaurant)
 - Private and quiet areas (accommodation)

2. Each zone is treated as a community on its own, but then blends into the facility as a whole.

Facilities

Accommodation types

Standard rooms

Executive suites

Executive chalets

Luxury villas

Administrative area

Offices

Reception

Shops

Conferencing

Recreation, relaxation and health

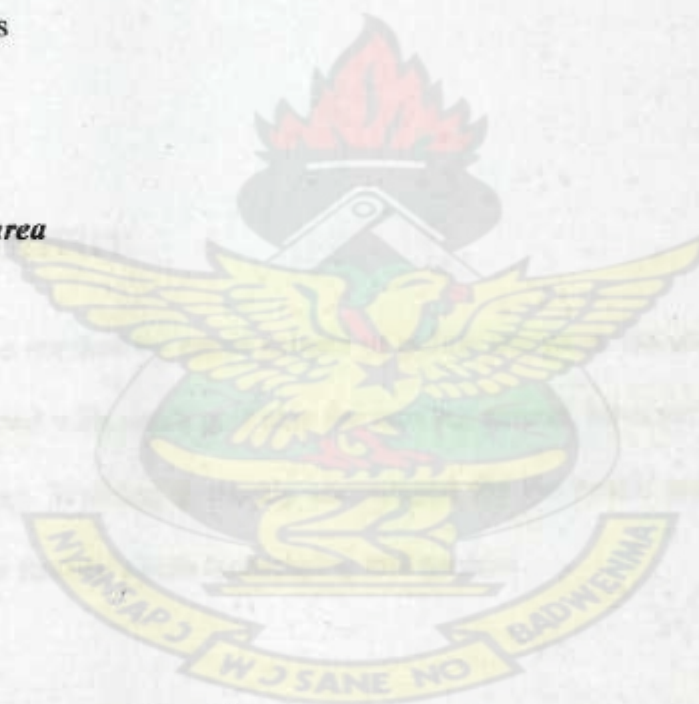
Tennis courts

Mini golf course

Swimming pools

Gym

KNUST



Spa

Basketball court

Water sports

Ancillaries

Mini clinic

Parking

Gardens

5.2.6b CONNECTIVITY

The resort can be reached by either private or public transport. On reaching the resort guests are provided with small golf cars for moving around, however there is also the option of walking. Walking is mostly encouraged for the health and also for better experience of the facility's lush landscaping and gardens.

5.2.6c GREEN STRATEGIES

Waste water

Waste water will be recycled to be re-used for the irrigation to the landscaping and also the flushing of water closets

Solar energy

We are blessed to be in this part of the world where the sun's energy is abundant. There is an effort to provide solar panels on some of the buildings on site to supplement the main power source. Street and garden lights to have been fitted with solar panels.

Also recycled wood from old boats and elsewhere will be used for the decking and walkways along the beach.

Water and vegetation has been used extensively not only for aesthetical purposes but also to cool the entire resort and to maintain the natural feel.

5.2.6d SERVICES

Natural lighting

Large windows and openings, fins and the avoidance of very wide spaces are employed in the design to ensure the natural day lighting is efficient as much as possible.

Artificial lighting

With the design considerations for maximum day lighting as possible, there are few areas that need supplementary lighting.

Artificial lighting has been used in the various interior spaces to aid in the night, different lights have been provided for different spaces in order to achieve a desired effect which suits the use of the space.

Street and garden lighting

Assorted lighting systems have been fixed in the gardens and along the streets; this is not only to aid in vision during the night but also to create aesthetic appeal and a desired effect in the specific locations they are provided.

5.2.6e VENTILATION

In this parts of the world where the sun's heat is above minimum, there has been an effort in the design to cut out as maximum sun rays as possible with the use of verandas, balconies and roof overhangs. I also took advantage of the north and south orientation to cut out the sun and also harvest the breeze. There is also the use of casement windows to bring in maximum breeze.

With all these design considerations put in place there is still the need for artificial means of ventilation to provide thermal comfort. These systems include, split air conditioners, semi-central air conditioners and extractor fans.

5.2.6f WATER SUPPLY

The resort will be linked to the water company lines; however there are storage tanks to store water for use if there are any interruptions in the main lines. There is also an effort to collect rain water for irrigation and flushing purposes. Reverse osmosis plants will also be installed for water treatment purposes.

5.2.6g WASTE

Sewage

There is a central septic tank with a treatment plant; the sewage will later be released into the sea. The liquid part of the sewage will be recycled and piped back for flushing and irrigation.

Solid waste

This will be carried away from the site, however organic and biodegradable waste will be used as manure for the gardens.

5.2.6h ELECTRICITY

The resort will be connected to the national grid, but there will also be a stand-by generator in case of power failure. There will also be solar farms to harvest the sun's energy, this will then be stored and used when the need arises.

5.2.6i STRUCTURE

The structure of the buildings are basically post and beam method of construction, except for the chalets which have their wall made from concrete all other buildings on site have the post and beam filled with sandcrete blocks.

5.2.6j MATERIALS

There has been a conscious effort to avoid anything metal, because of the saline environment; any metal component found is made of brass which is known to withstand salinity. All roofs have been made from artificial thatch. The use of traditional materials has been used extensively to create an effect; example, even though walls have been constructed in cement, it has been plastered and painted with a mixture of clay, salt and starch.

5.2.7 COSTING

The cost of the facility is an estimation to give the client a fair idea on the financial investment of the project.

1. Reception, Administration and gym	3200msq. X GH ¢490 = GH ¢1,568,000
2. Accommodation.....	14500msq. X GH ¢490 = GH ¢7,105,000
3. Restaurants and kitchen.....	2400msq. X GH ¢490 = GH ¢1,176,000
4. Health and sports.....	6000msq. X GH ¢490 = GH ¢2,940,000
5. Maintenance and staff areas.....	1000msq. X GH ¢490 = GH ¢490,000
6. Staff accommodation.....	1600msq. X GH ¢490 = GH ¢ 784,000
7. Marina.....	700mq. X GH ¢490 = GH ¢343,000
Total for buildings	GH ¢14,406,000
Solar plant.....	GH ¢2,000,000
Water treatment plant.....	GH ¢1,200,000
Total for buildings and plants.....	GH ¢17,606,000

5.2.8 PHASING

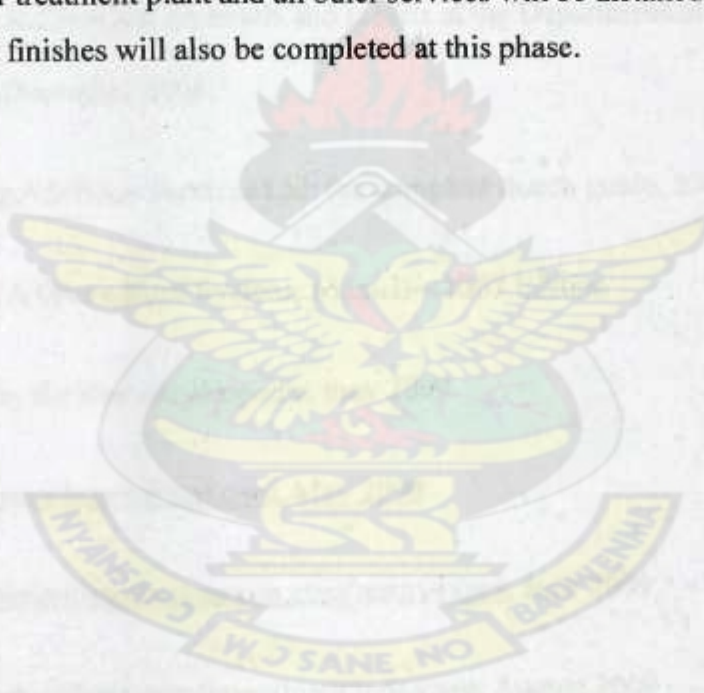
From the refined brief of the design, it can be seen that this is quit extensive and cost involving, therefore the project will be carried out in two phases.

Phase one

This phase will deal with the construction of the access road to the site, clearing of the site and construction of main structures. Landscaping will also be commenced.

Phase two

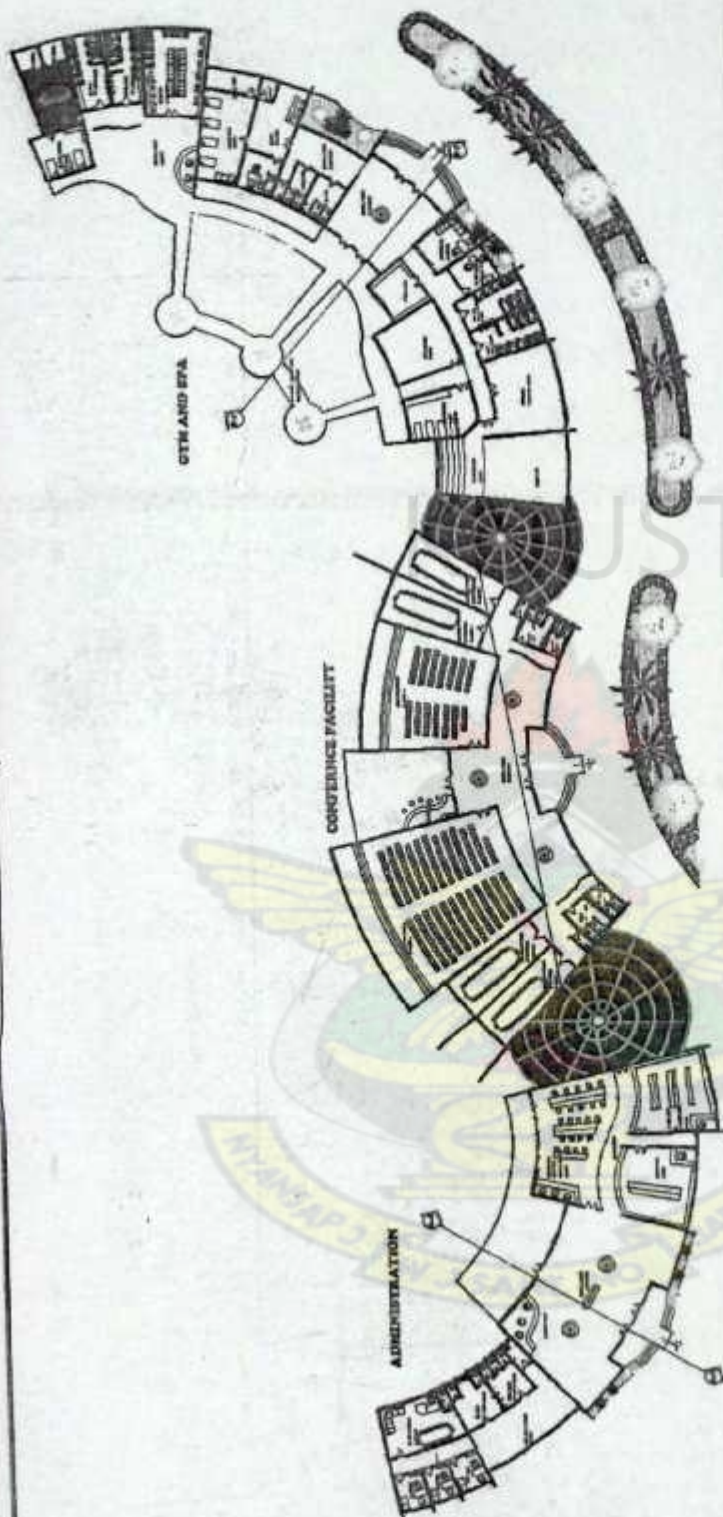
Solar plant, water treatment plant and all other services will be installed at the stage. Landscaping and finishes will also be completed at this phase.



BIBLIOGRAPHY

1. Bakr Mourad Aly Ahmed: Sustainable Beach Resort Development, 2001
2. BCI Asia construction information Pte Ltd: Architecture @ 08, Yamagata (M) Sdn Bhd 2007
3. IRIS Environmental Systems Inc: Model for Sustainable Resort
4. Development, May 2009
5. Leong, K. M.D: Health and wellness, September 2007
6. Sampson K.: Seminar on hotels and resorts at the Department of Architecture, KNUST, December 2008.
7. Thatching Advisory Services Ltd: the complete thatch guide, 2009
8. The NRCA Green Roof Systems Manual—2007 Edition
9. Wikipedia, the free encyclopedia, may 2009
10. www.palmex-international.com, May 2009
11. www.vacationtimesharerentals.com/resort-types, June 2009
12. www.touringghana.com/investment/index.asp, August 2009

BLOCK A (GROUND FLOOR PLAN)



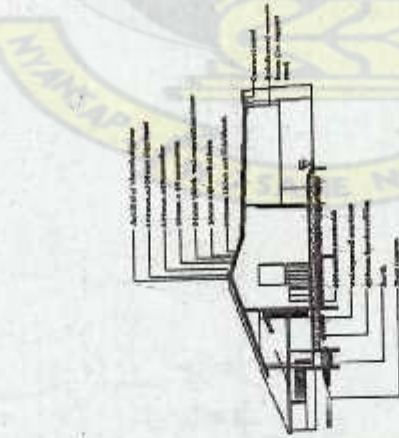
WATERFRONT RESORT - MUNI LAGOON, WINNEBA

DEPARTMENT OF ADMINISTRATION
 NAME: MICHAEL A. A.
 DESIGN: YOUNG DESIGN
 SCALE: 1:1000
 DATE: 1998

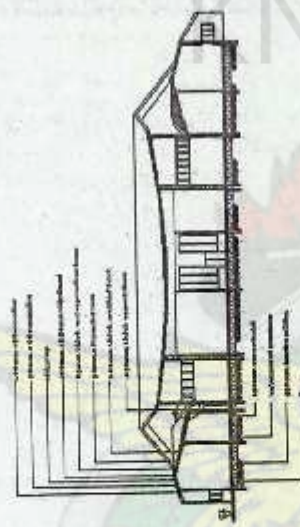
SCALE: 1:1000

PROJECT NO.

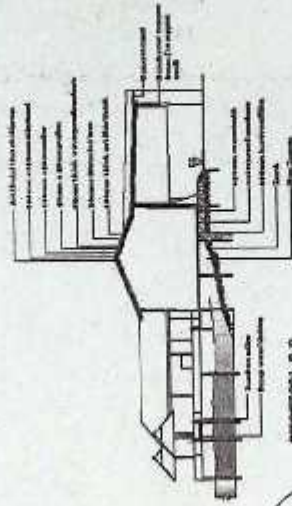
BLOCK A (SECTIONS)



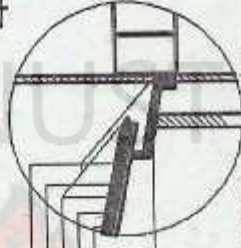
SECTION A-A



SECTION B-B



SECTION P-P



DETAIL AT A CORNER 1:20

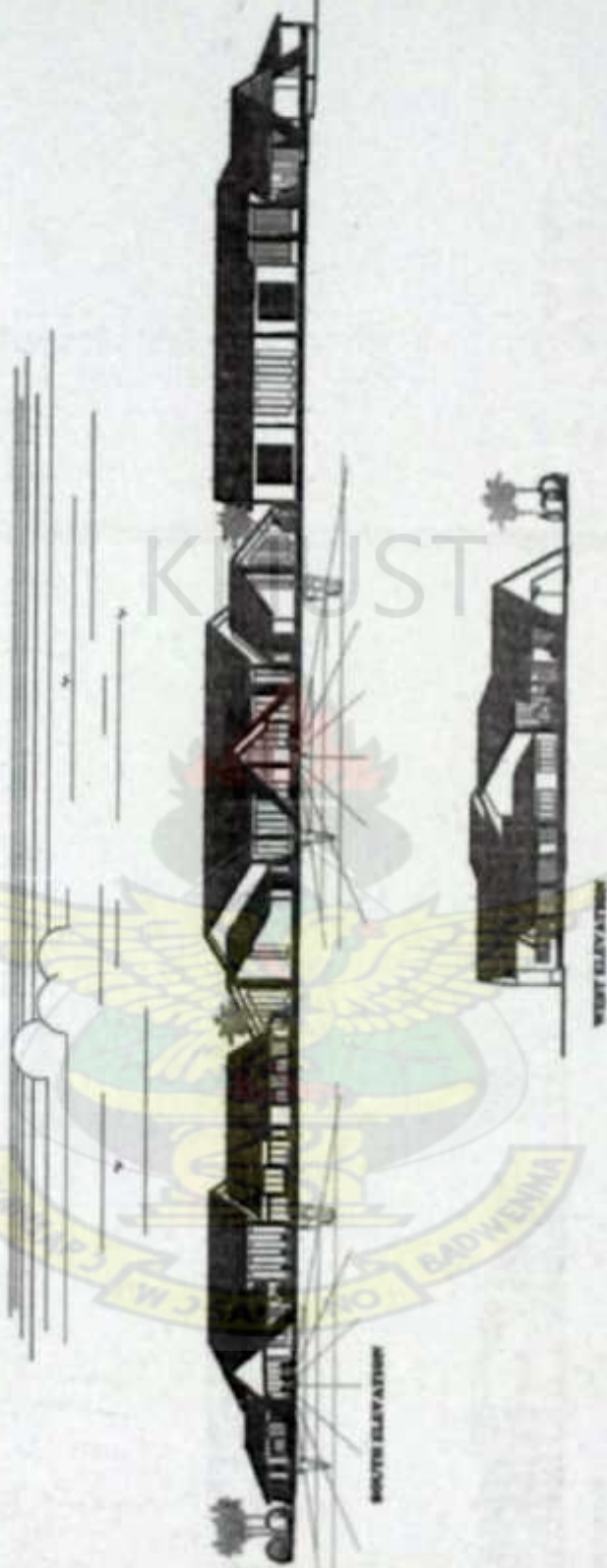
WATERFRONT RESORT - MUNI LAGOON, WINNEBA

DEPARTMENT OF ARCHITECTURE,
MINISTRY OF
WORKS AND
CONSTRUCTION
NATIONAL
ARCHITECTURE IN
NIGERIA

SCALE:
1:1250

PROJECT NO.

BLOCK A (ELEVATIONS)

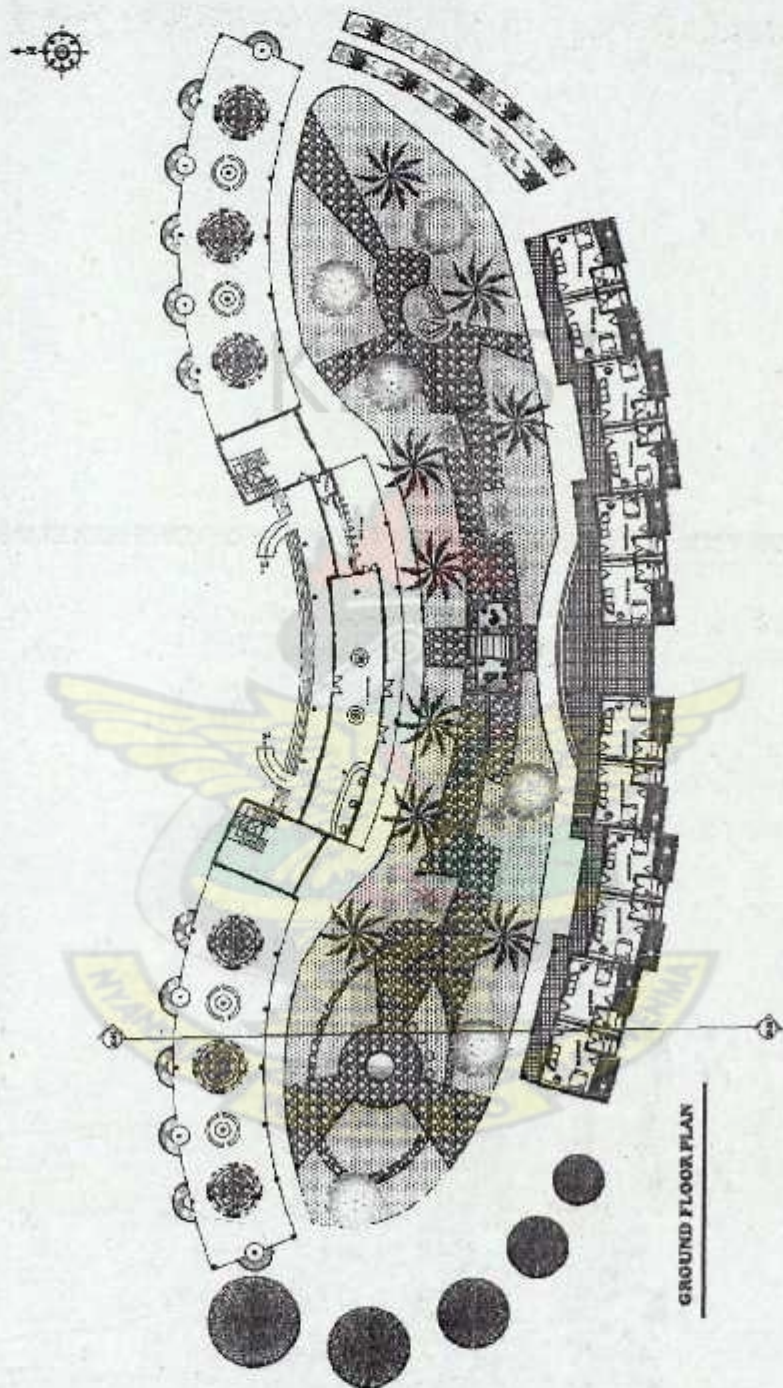


WATERFRONT RESORT - MUNI LAGOON, WINNEBA

DEPARTMENT OF ARCHITECTURE
 ARCHITECT
 NAME: JAMES J. JAMES
 TITLE: ARCHITECT
 FIRM: J. J. JAMES & ASSOCIATES
 ADDRESS: 1000 N. 1ST ST.
 CITY: WINNEBA, MINN.
 STATE: MINN.
 ZIP: 55093

SCALE:
 1/8" = 1'-0"

BLOCK C (ACCOMMODATION) - PLANS



GROUND FLOOR PLAN

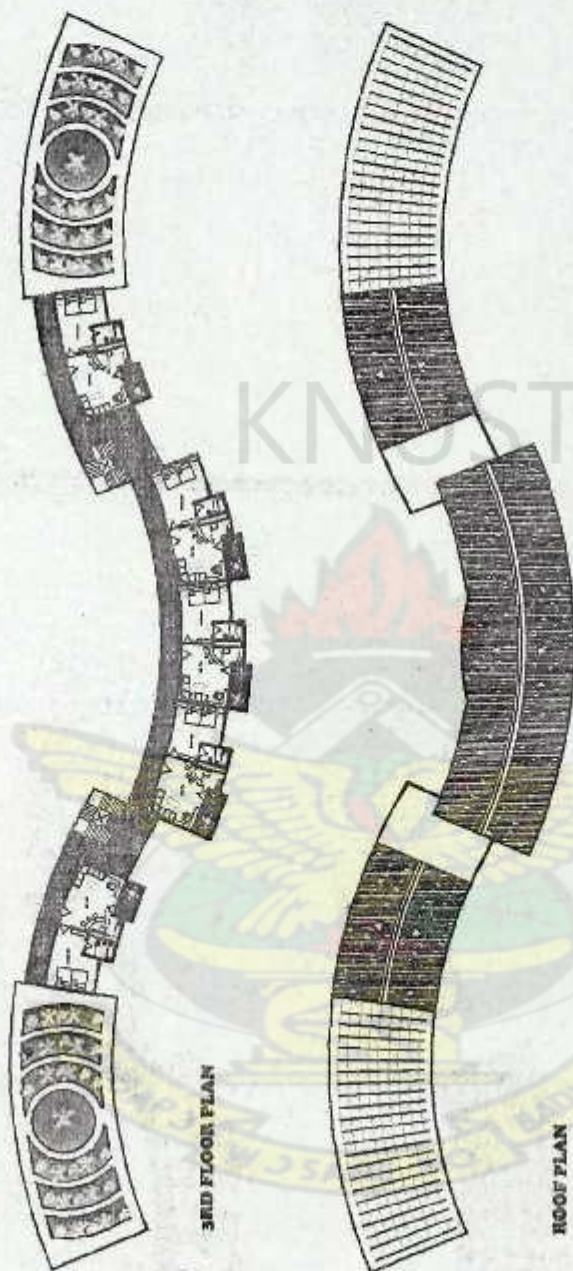
PROJECT NO.

WATERFRONT RESORT - WINDY LAKE, WINDY LAKE, WINDY LAKE

SCALE:
1:1000

DESIGNED BY: ARCHITECTS
ARCHITECT: ARCHITECTS
ARCHITECT: ARCHITECTS
ARCHITECT: ARCHITECTS
ARCHITECT: ARCHITECTS

BLOCK C (ACCOMMODATION) - PLANS



3RD FLOOR PLAN

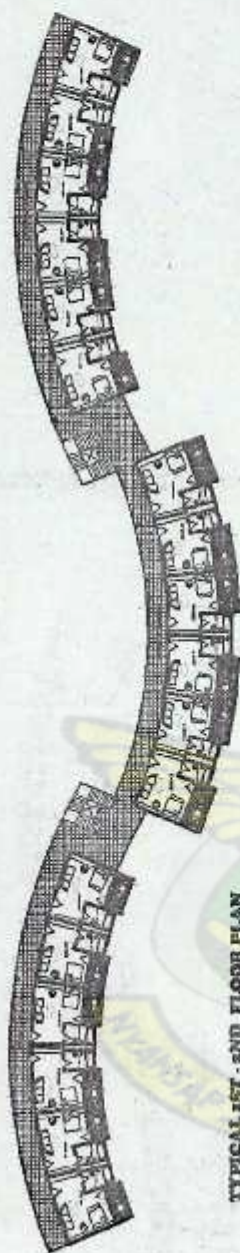
ROOF PLAN

WATERFRONT RESORT - MUNI LAGOON, WINNEBA

DEPARTMENT OF ARCHITECTURE,
MINISTRY OF
HARBOUR, WINDWARD PASS, A.S.
DESIGNED BY
ARCHITECT
DATE: MAY 1966

SCALE:
1:1000

BLOCK C (ACCOMMODATION)



TYPICAL 1ST- AND FLOOR PLAN



ROOF PLAN

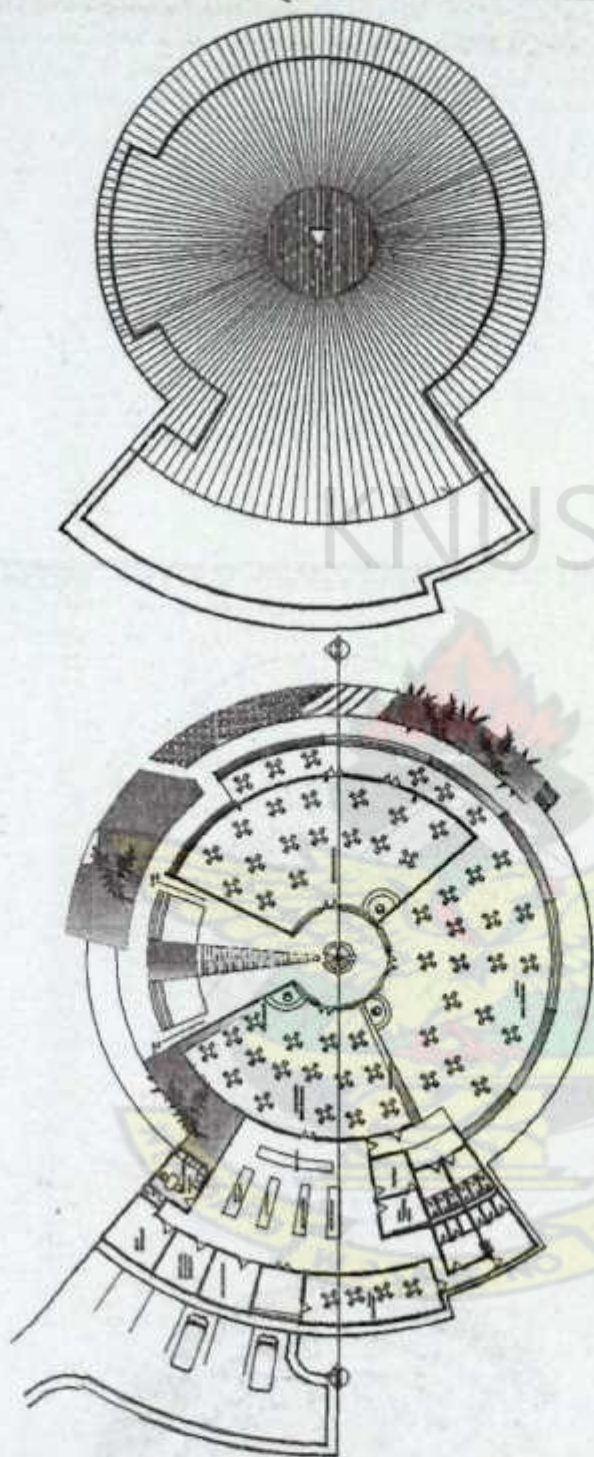
DEPARTMENT OF AGRICULTURE,
BUREAU.

NAME: HERBOLD FRANK A. JR.
COLUMBIA
FARM: 5-2234- AGRI-ADVERTISING IN

SCALE: 1 : 300

WATERFRONT RESORT - MUNI LAGOON, WINNEBA

BLOCK D (RESTAURANT) - PLANS



GROUND FLOOR PLAN

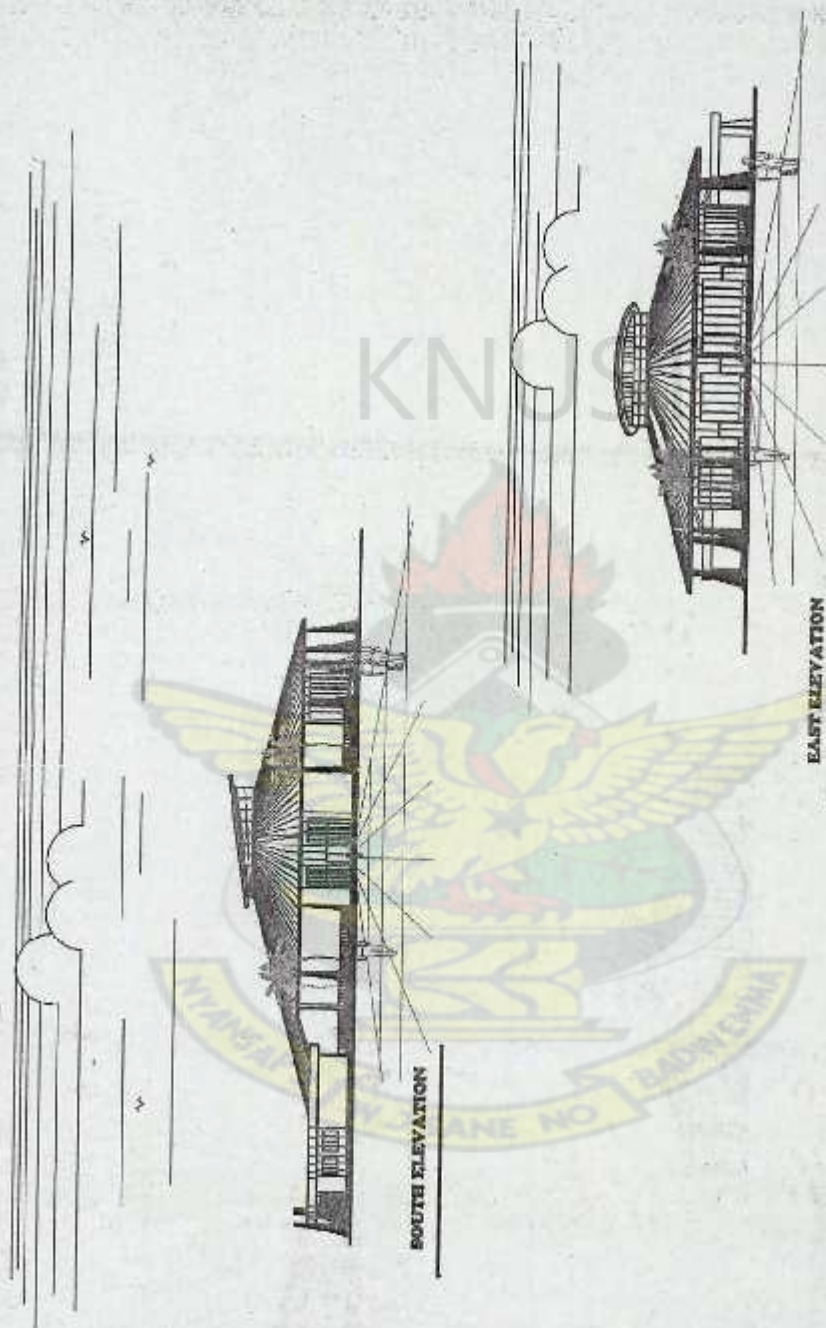
ROOF PLAN

DEPARTMENT OF ADMINISTRATION
PLANS
NAME: MUNI LAGOON, WINNEGA
ADDRESS: 10000 WISCONSIN
CITY: WINNEGA
STATE: MINN.
ZIP: 55120

SCALE:
1/8" = 1'-0"

WATERFRONT RESORT - MUNI LAGOON, WINNEGA

BLOCK D (RESTAURANT) - ELEVATIONS



SOUTH ELEVATION

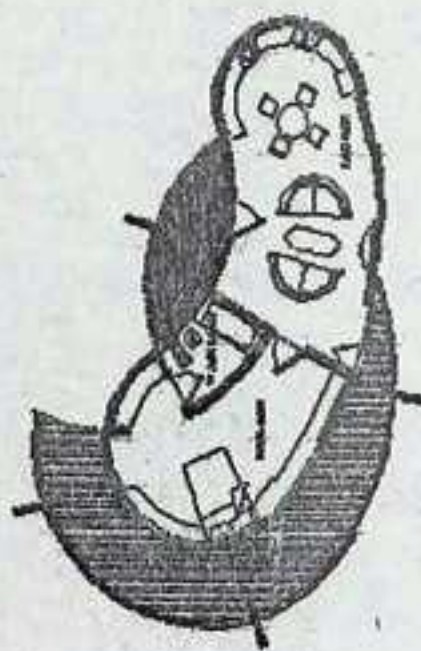
EAST ELEVATION

PROJECT NO.	WATERFRONT RESORT - MUNI LAGOON, WINNEBA	DEPARTMENT OF ARCHITECTURE NAME: MESSENGER A. A. COURSE: ARCHITECTURE SEMESTER: 1ST DATE: MAY 2024

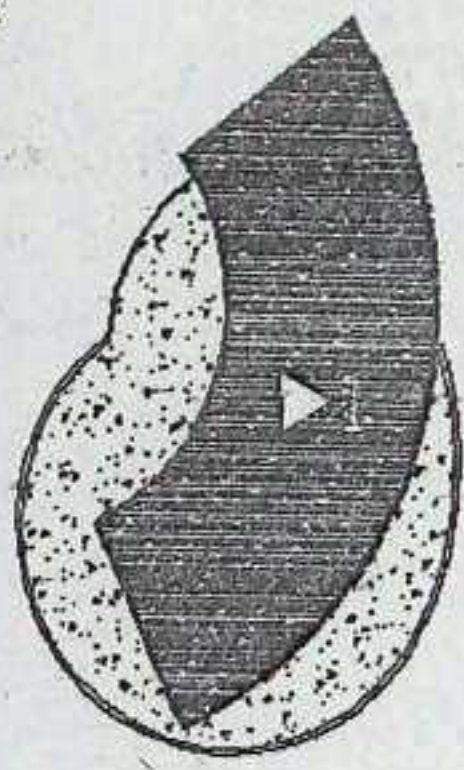
BLOCK E (EXECUTIVE CHALET)



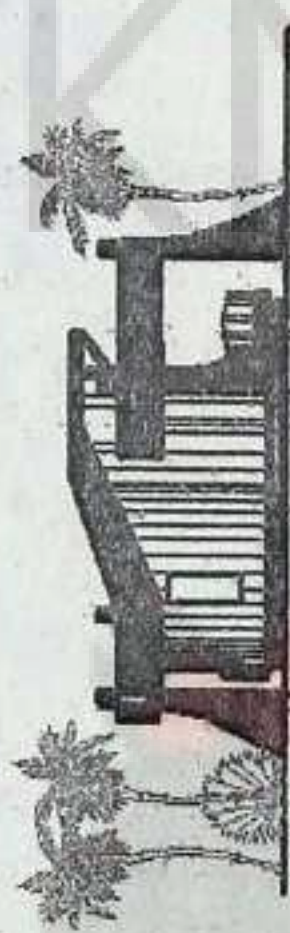
CLUSTER SCALE: 1:250



GROUND FLOOR PLAN



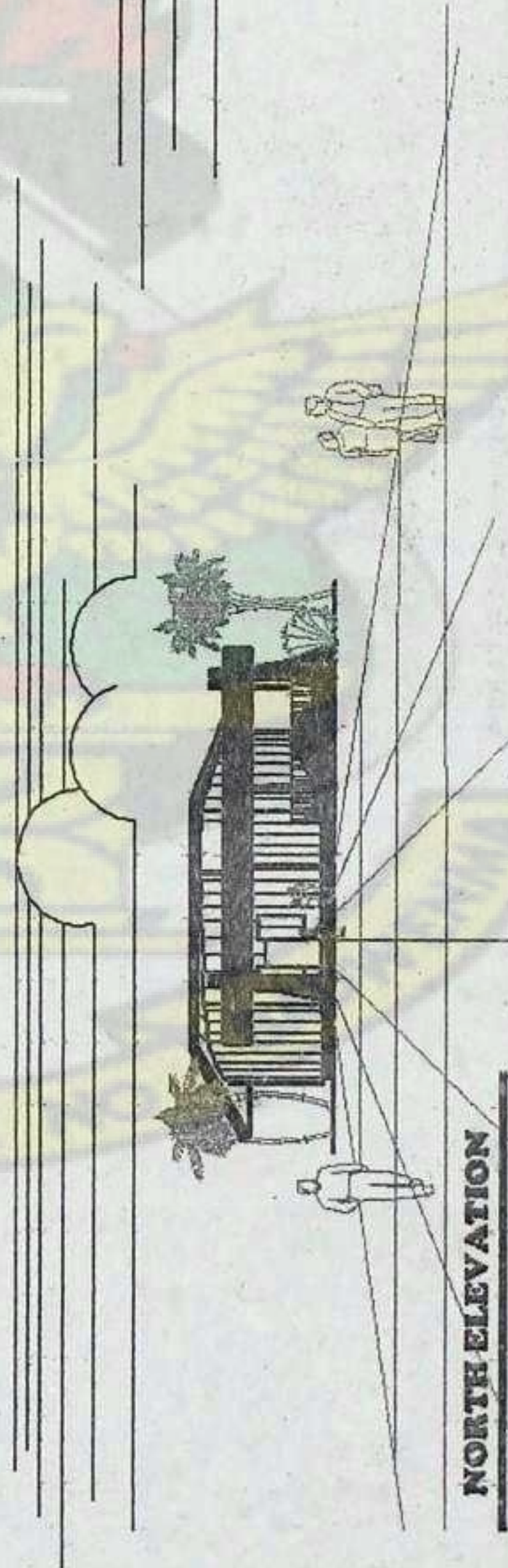
ROOF PLAN



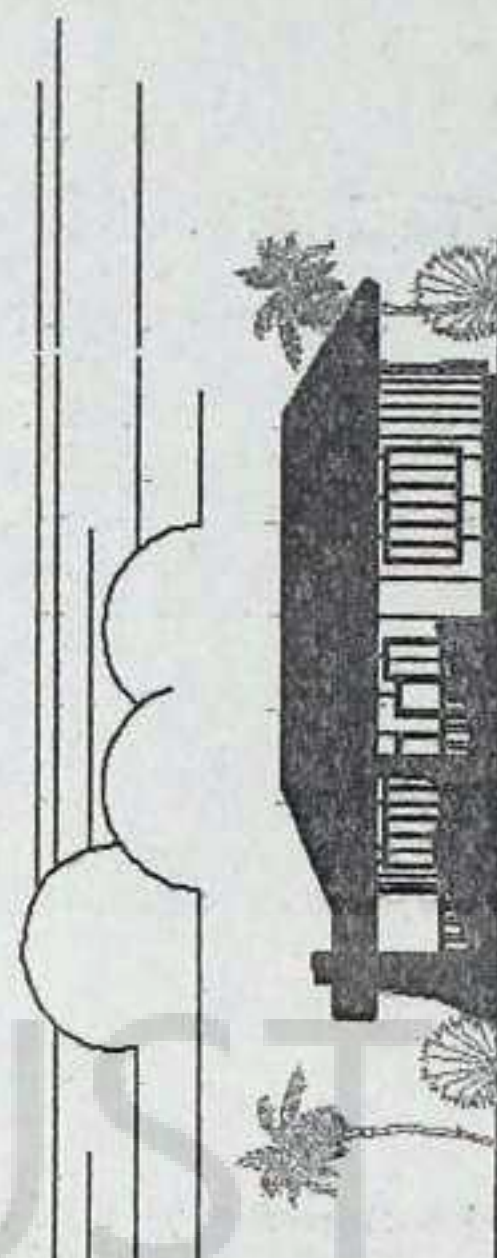
EAST ELEVATION



WEST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION

SHEET NO.



WATERFRONT RESORT - MUNI LAGOON, WINNEBA

SCALE:

1:150

DEPARTMENT OF ARCHITECTURE,

KNUST.

NAME: MINGO PEARL A.B.

DESIGNER: TERRY DESIGN

DATE: MAY 2009