Chapter one:

Introduction:

- Introduction
- Definition
- State of purposes
- Objectives
- Prospects
- Challenges
- Magnitude

Introduction

The overall vision of the project is to plan a tourism, recreational and commercial area of a different nature in accordance with the visions and theories adopted by the modern world.
Sudan is rich in natural resources such as oil, gold and others, as well as a prehistoric civilization heritage, which has contributed to providing a distinctive tourist environment for the country that needs attention and development to flourish effectively.

This project is considered to be an attempt to contribute to this development towards a better Sudan by exploiting this distinguished site which attract the attention of many external interests, which confirms the neglect of the tourism sector in the country, especially the Nile beaches.

Of course, many creative ideas have been put forward to develop the tourism sector, especially around the Nile, and here I am presenting my own vision, in which I put as much effort as I could.

The project also aims to connect the distinctive tourist attractions in the northern state in a distinctive and new way by developing the Nile tourism, which is famous for the region of Alkassinger and organize this activity and make the most of the nature of the region.

The project also aims to connect the distinctive tourist attractions in the northern state in a distinctive and new way by developing Nile tourism, which was famous for the region of Al-Kassinger and to make maximum use of the nature of the region and to organize this activity, which necessitated the adoption of tourist planning as a specialized science.

Project definition

KTV is a tourism project that contains a number of different complementary zones. The project aims to provide cultural activities reflecting the unique characteristic of the area in which the project is located.

Definition Diagram

Statement of purpose:

General:

- The unexploited tourism areas in Sudan.
- Develop the national economy.
- The large increasing of unemployment force in the country.
- Look for greater involvement from the aboriginal population for the interpretation of native history of Sudan, practices, beliefs.

Personal:

- My fondness of Sudan and it's both pharaonic & Nubian culture and their similarities and the differences between them.
- Keening to see a greater impact of the general African cultures in our community and the next generations for culture in a community is what gives the community its own unique identity.

Project Objectives:

1- Improving tourism's services in Northern state to emphasize its historical aspects.
2- Attracting large number of tourists according to the distinctive services and activities.
3-Enhancing country economic &increase the supply of foreign currency.
4- Initiating better relationship between the islands, Merowe, Nuri, Jabal Al-Barkal & all the historical shrines.

Project Aspects:

Cultural Aspect:
Reverse the culture of the Northern state & provide a venue for exhibitions and traditional celebration.

Functional Aspect:
Design a project suitable for the nature of the region.
Design tourism, leisure, commercial & economic service at a luxury level

Social Aspect:
Provide the greatest opportunity for social connection and acquaintance & the chance for intercultural communication and human knowledge of nations

Structural Aspect:
The use of greater strength structural systems so as to bear the load of the building at the lowest cost

Project challenges:

- Easy & attractive Transportation.
- Good supply of public services.
- Maximum satisfaction of the nature in the project planning.
- Topography & Nile shore.
- Suitable Structural system for the location characteristic.
- Sustainable and reasonable cost for the project.

project magnitude:

project has been assessed as a national magnitude project

Chapter Two:

Data collection:

I. Data collection

II. Case study

Definition of Tourism:

Tourism is defined as a temporary movement of group of people from their homelands to another non-permanent places for one reason or another.

Main tourism types:

- **International tourism**
- **Domestic tourism**

Types of tourist:

- **International tourist**
- **National tourist**
- **Regional tourist**

Tourism planning:

The emergence of tourism planning & development as well as importance in the emergence of tourism as phenomenon of civilization and behavior in terms of economic and social phenomenon on the other hand.

The element of tourism planning:

There are so many factors:

1/ Geographical factors:

- Area & size of the country
- Availability & diversity of tourism product
- Population distribution
- Beaches & natural rivers
- Ease of transportation

2/Economic factors:

- The economic progress of the state
- Provide the basic environment required for tourism activities
- Access to the public on their rights in domestic tourism in the country

3/Hospitality facilities:

Motels & hotels (with stars options)

Camps& guest house

Carnivals &seasonal festivals

Sub tourism types:

- **Cultural tourism**
- **Ecotourism**
- **Nautical tourism**
- **Conventional tourism**
- **Commercial tourism**
- **Sportive tourism**
- **Entertainment tourism**
- **Religious tourism**
- **wellness tourism**

The increase in the number of tourists:

- The continuous increase of world population
- The rise in per capita income in the major capitalist countries as it's the main source of tourism in the world.
- High living standard
- High cultural awareness and desire to discover
- Increasement of leisure and holidays
- Development of transport & travel with easy access guarantee

Importance of Tourism:

- Resource of hard currency for the country
- Good job opportunity for large number of people
- Encourages good investment
- An active agent of social transformation.

Tourism in Sudan

Sudan is the largest, yet one of the least visited, countries in Africa. Although various ongoing conflicts mean much of this vast nation remains off limits, travel is possible in the northeast, and in parts of the south. Much of the Middle East and Africa has a reputation for warmth and hospitality but Sudan is in a league of its own, making it a joy to travel in. It is common to be invited to stay at someone's home and most rural Sudanese would never dream of eating in front of you without inviting you to join them. Talking the afternoon away over a glass or five of tea is a serious national ritual, which extends to dealings with officials.

Sudan is as geographically diverse as it is culturally; in the north, the Nile cuts through the eastern edge of the Nubian desert, the site of the Ancient Kingdoms of Cush and Meroe, and the land of the Seti. Here, some modest farming and husbandry supplements the staple crop of date palms. The East and West are mountainous regions, and much of the rest of the country comprises of savannahs typical of much of central sub-Saharan Africa.

Historical background about tourism in Sudan: -

The first tourist organization was established in 1959, and it had the name of the arena.

In 1966, it was transformed into a social reformer.

- The second part of 1966 it has become an interest to the Department of Transport and Traffic.

- From 1971 it was combined with the interest of the arena and hotels in order to collect the activity of the coast and exploitation of wealth in the country.

- In 1983 the Ministry of the arena was established.

- In 1985, the arena was reorganized to become a second pillar of the military rule.

- In 1988 the arena became a central ministry

- In 1989, under the rule of the state of decline, the arena is organized to a level rather than a centralized ministry.

Tourism in Northern state:

Example of popular touristic places there:

- **Dongola**

Once an important center of power in ancient Nubia, the remains of the old northern-Sudanese city are being excavated by a Polish-led team — a project that has been in operation since 1964, the town is now noteworthy for its palm groves and its September date harvest, when young boys climb the palm trunks, carrying sharp knives in their teeth, to cut the clusters of dates. The fruit and vegetable market here are a colorful sight, occasionally dealing in camels, which the desert nomads bring in for sale

- **Karima**

This northern-Sudanese market town has a population of about 15,000. The town itself is of little interest, but there are several ancient sites nearby which are worth a visit Just 2km south of the town is the 100-metre high Jebel Barkal, a hill which was regarded as sacred by the Egyptians of the 18th Dynasty. From its summit, there is an excellent view of the Nile. At its foot lies the Temple of Amun, second only in length to the famous Temple of Karnak. This was once surrounded by about six smaller temples, and ruins of these, together with statuary and hieroglyphics, make this an interesting Cushite site, lying west of the temple are the Jebel Barkal Pyramids, similar in style to those at Meroe.

- **Karma**

  Located south of the 3rd cataract is a great archaeological site in Sudan, the town of Karma. The remains of unbaked bricks and archaeological materials make Karma a place worthy to see. The area retains lots of traditional objects of the Karma Kingdom dating back to 1500 B.C.

Tourism elements in Sudan:

- Ancient history & relics.
- Unique location in the middle of Africa
- Cultural diversity

Tourism obstacles in Sudan:

- The small interest of the state to activate tourism development projects
- The incomplete infrastructure in tourist areas
- The incomplete tourist laws that regulate tourism work
- Low public awareness of the concept of tourism
- The Distance between the center & tourist attractions
- High cost of tourist trip
- Neglect feasibility studies for tourism development projects

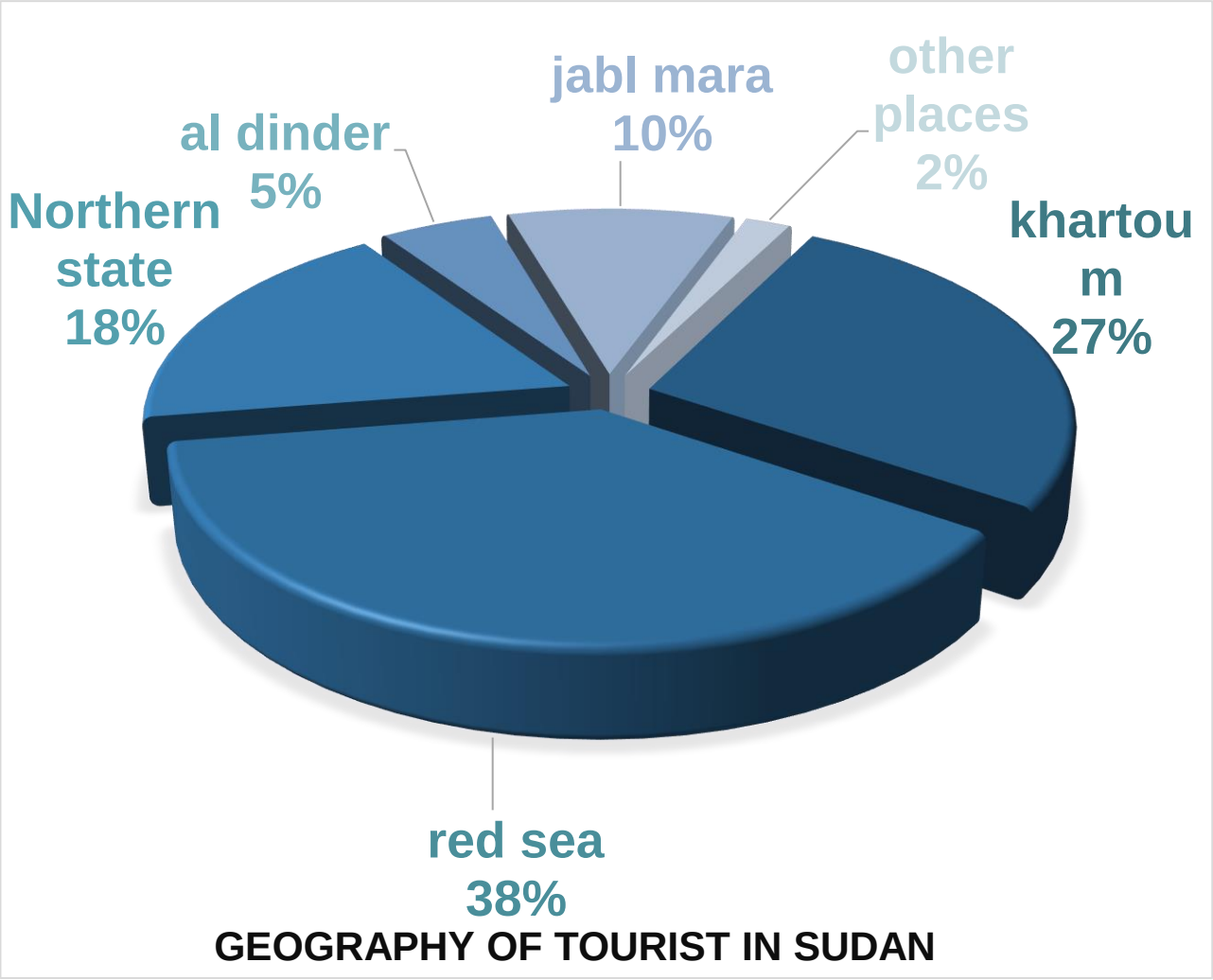
Statistics & enumerations:

Tourism National statistics:

year	NO. of Arrivals tourists (000)	Revenue in Million U.S. S
2008	439.7	548.7
2009	420.2	521.7
2010	495.2	616.6
2011	536.4	672.0
2012	574.6	720.0

Source: Ministry of tourism &national heritage

Enumerations



Reference: Ministry of tourism & National Heritage

Northern state enumerations

Number of Tourist by 2012: **574.6 (000)**

Northern state tourist: **18%** of total number of tourists

Increase in number of tourists annually is about **5%** in average
Number of tourists by 2025= 65%
65% * 574.6 = **948.09 tourists**

Portion of the northern state = 18% * 948.09 = **170.6562 tourists**

Portion of the state in winter **60%** of the whole year = 102.394
Portion of tourist coming for the project: 60%
Number of tourists = **614.364 tourists**

Entertainment: -

The definition of the entertainment: -

It means the facilitates that help us to be entertained and to spend a good time away from the pressure of work.

Types of entertainment: -

1 – **Tourism entertainment: -**

General Motors - Parks - Financial - Resorts

2 – **Cultural entertainment: -**

Such as the Art Galleries and the Art Forum.

3 **– Commercial entertainment: -**

Trade Centres - Duty Free - Exhibitions - Exhibitions

4 – **Sports entertainment:**

Problems facing luxury in Sudan: -

- The low level of living makes the basics of the life more important.

- There are no enough rules to arrange tourism activities.

The main guides to design tourism project: -

• The perfect location.

• To be easy to reach from a place to other using the corridors and trusses.

• design places to rest and places to service.

• designing the fountains and sculptures inside.

• Design an entertainment zones for adults and kids.

• The importance of giving the project an architectural character that is distinguished by its high quality.

A – During designing the project the human character must be observed:

1 / to be away from the crowed.

2 / to stay away from the daily routine.

3 / entertainment Places and sports halls.

B) The differences of climatic factors should be considered: -

1 / to keep the topography of the earth as it is.

2 / the link between the elements of different field uses should be taken into consideration by means of pedestrian corridors and road networks.

3 / the area of the site has to fit with users' number.

Designing the main location of the tourism project: -

1 / Choose the location.

2 / studying the function.

3 / studying the network of roads.

Choose the location: -

1 - Easy to be reached.

2 - The area of site has to fit the number of the audience.

Study of visual morphology: -

It includes: -

-Treatment of the site.

-Studying the visual relation between the buildings.

Hotels: -

Types of hotels: -

1 / Service Level: -

- Star.

- Two Stars.

- Three Stars.

- Four Stars.

- Five Stars.

2 / General site: -

Located in an area which has a natural view (in the city or out of it).

3 /the period of time that the tourist will stay in: -

- Short period (rooms).

- Long period (hotel apartments).

4/ according to function and the location: -

- Motels.

- Lobby hotels

- Resorts Hotels

- Hotels of government conferences

- City hotels.

- Airport hotels

Designing hotel is based on: -

- Hotel components.

- Traffic paths.

- Entries and exits.

-the exterior and the interior views.

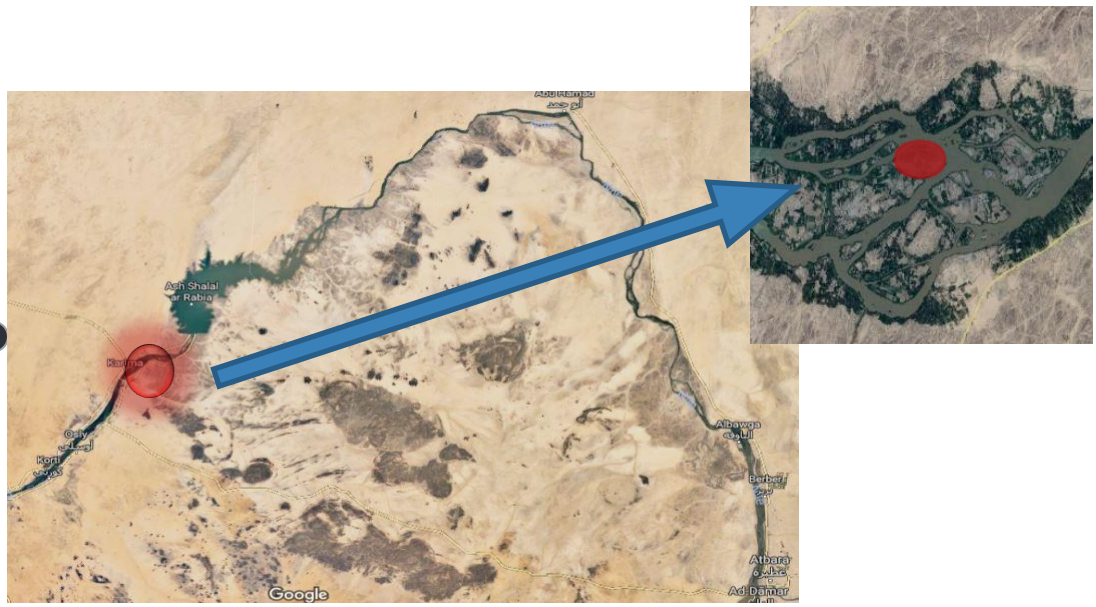
- Number of rooms

Site Selection:

Comparison has been between two sites in northern state so as to choose the best one.

Proposal 1: -
Kassinger islands

Selected island area: **26 hectares**
Its located in northern Sudan state near to Merowe dam's & Nuri.



Neighborhoods	
North	River Nile
East	Merowe Dam's
South	Nuri Territory
West	Albarkal Territory

Proposal 2: -
Merowe land

Area: **20 hectares**
Its located in Northern state-Sudan Norther east of Merowe Airport on the River shore.

Neighborhoods	
North	**Residential area**
East	**Residential area**
South	**Agricultural lands**
West	**River Nile**

Chapter Two:

Data collection:

III. Data collection

IV. Case study

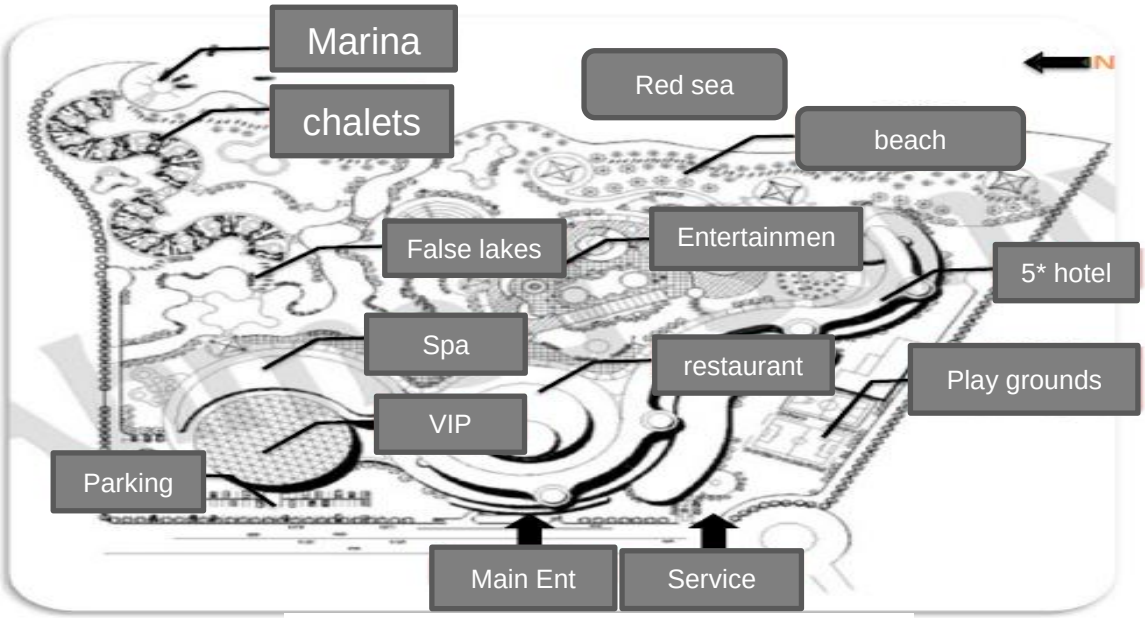
First example:
AL-Aien Alsokhna Resort

Location:

Eygpt-alswais

It's a Tourism Resort offers unique spa, entertainment & residential services.

Main zones & building are remarked on site plan.



Pic no (1): resort site plan

Advantages of the planning there:

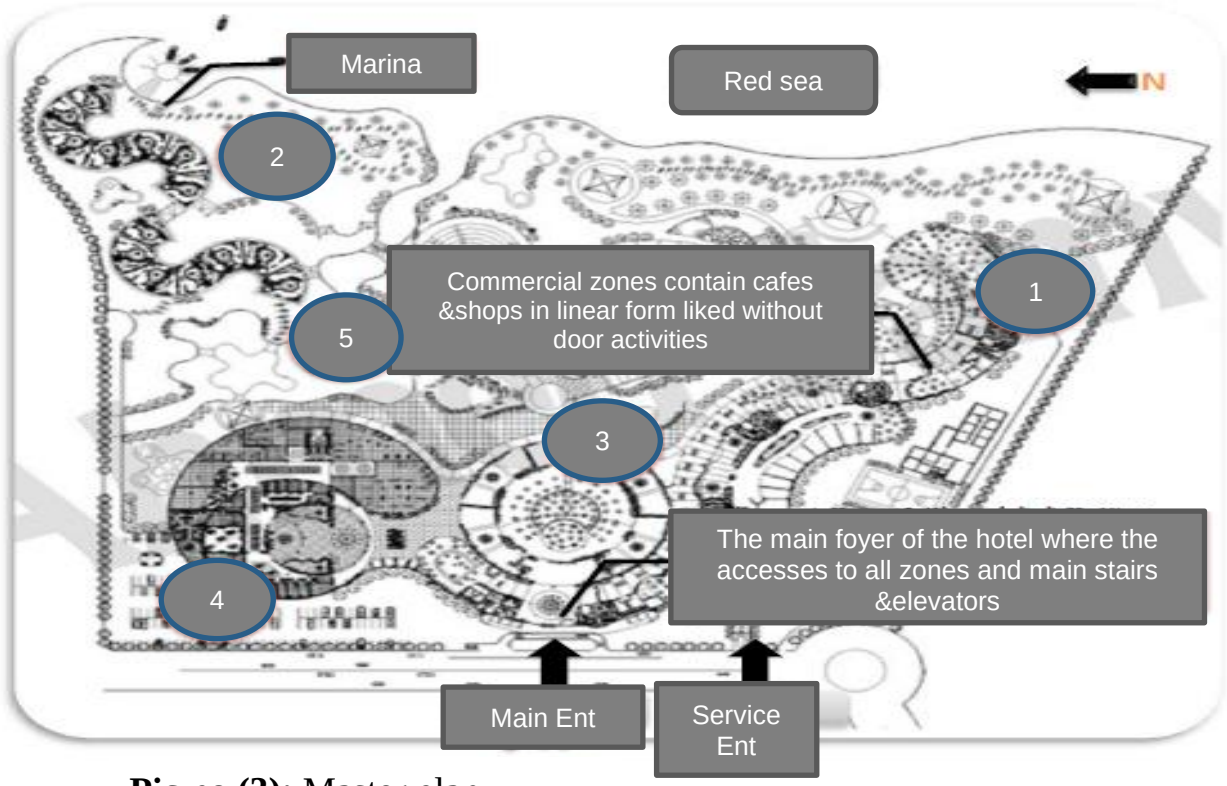
- Direct Entrances
- High interrelation between the design & the nature of the area.
- Good relation between the zones.
- Location of chalets is excellent.

Pic no (2): resort exterior

Ground Floor Plan

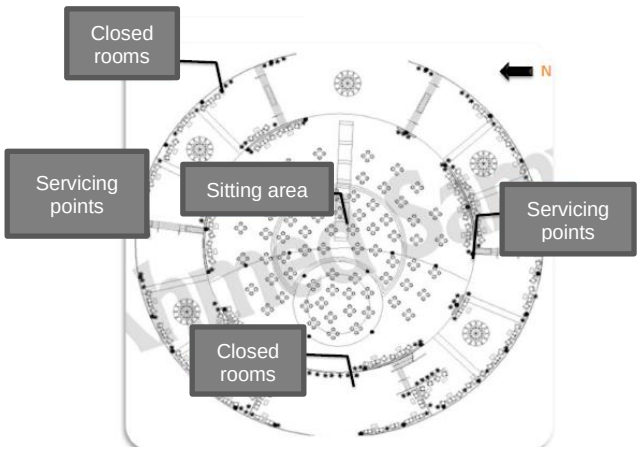
Ground floor zones:

1: Commercial zone
2: Chalets
3: VIP's Dome
4: Spa Zones
5: lakes & waterfalls
6: Entrances



Pic no (3): Master plan

Zones analysis

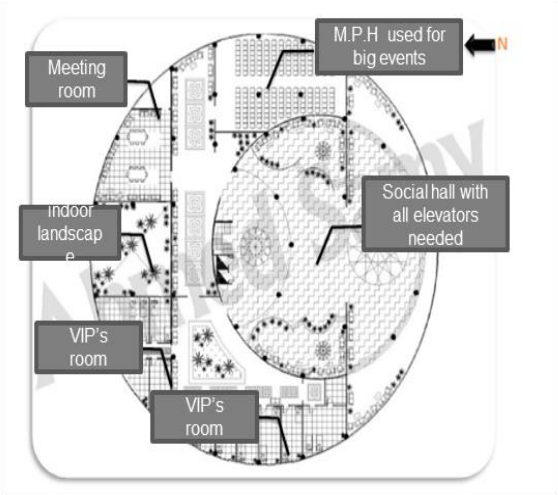


- **Food court(hall):**
- Area has been well used to serve large number of visitors.
- There is no outdoor view for the hall.
- No lobby between the main foyer & the hall.

Pic no (4): ground floor plan- food court

VIP's Dome:

- It has been designed in a shape that reflect Dominancy.
- the dome is separated to provide privacy & unique services required.
- Too much wasted area in the social room



Pic no (5): VIP's dome plan

Sections analysis:

Sevral constructions have been used in the bulding of the resort,th domain the maximum effieciancy of the builing spaces and properity.

Second Example:

Nautilus Eco-resort

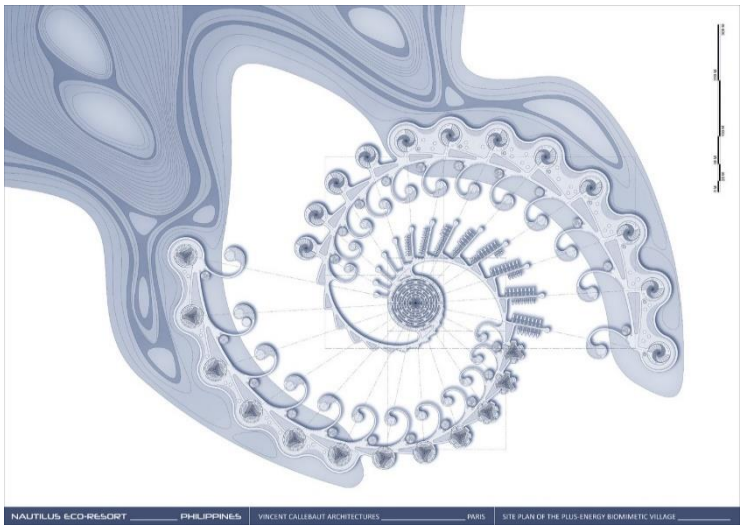
In Philippines

The Nautilus Eco-Resort would be located in a bay in an unspecified location in the Philippines, in shallow, calm waters, and would be supported on telescopic piles. The buildings would be arranged into a shape inspired by the Fibonacci sequence

Location: Palawan, Philippines
Client: Confidential
Surface area: 27 000 m²
Building height: 68m40
Program: Scientific Research & Learning Center, Elementary School, Nautical Base, Sports Hall, Rotating Apartments, Hotels
Status: Schematic Design Phase

the eco-resort's two main architectural entities — a series of shell-shaped hotels and rotating apartment towers — are organized in a spiral around a central island, which hosts the nautical center and the scientific research laboratories

Pic no (6): view

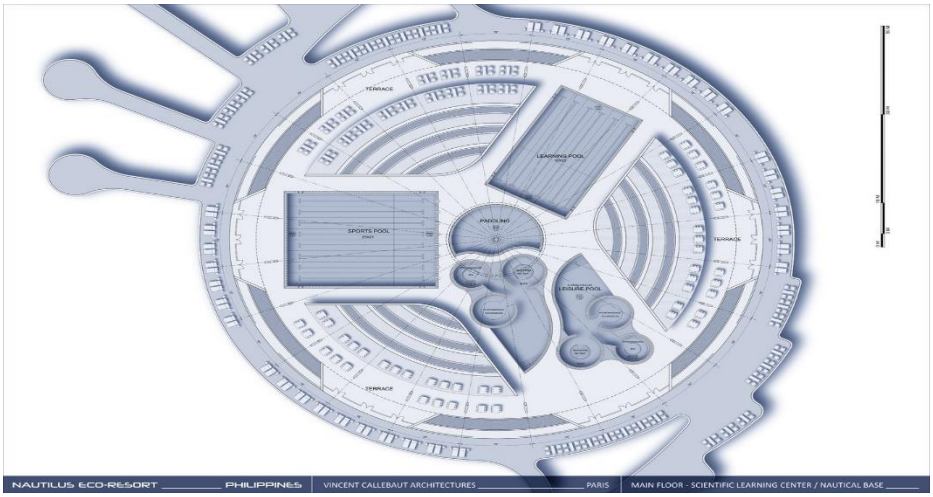


the façades and roofs combine plant walls and photovoltaic cells to increase the buildings' thermal inertia, optimize natural cooling, and generate electricity

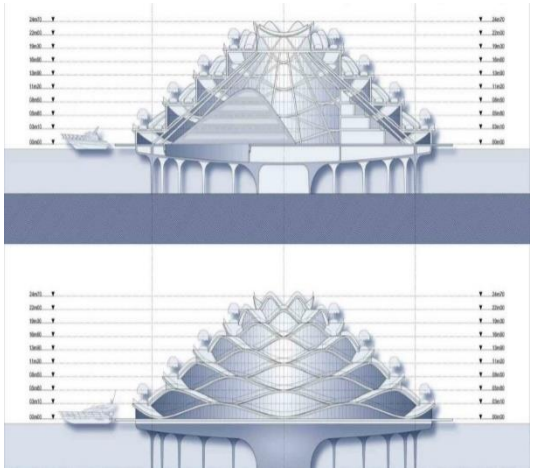
Pic no (7): Resort site plan

multi-purpose building:

It’s a large e timber building located at the center of the resort shaped like a mountain. Its roof would be covered with vegetable gardens and organic orchards, while the interior would include a sports pool and seawater leisure pool, scientific laboratories, an elementary school, a children's home, and a sports hall for local youth

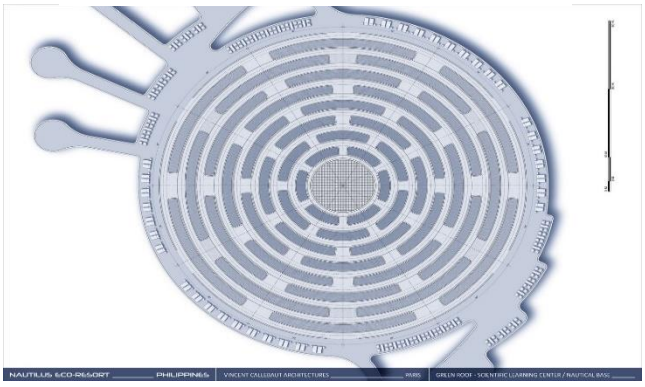


Pic no (8): ground floor plan



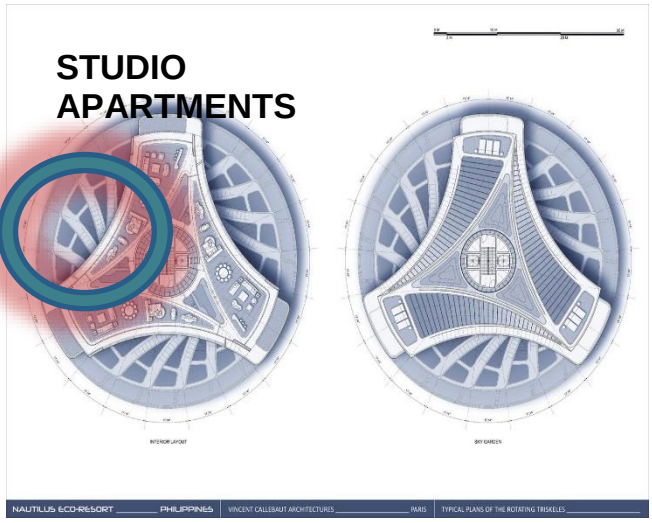
Pic no (9): ground floor plan
the façades and roofs combine plant walls and photovoltaic cells to increase the buildings’ thermal inertia, optimize natural cooling, and generate electricity. rainwater is re-used, while gray water is biologically recycled in waste stabilization ponds bordering the gardens.

Pic no (10): ground floor plan

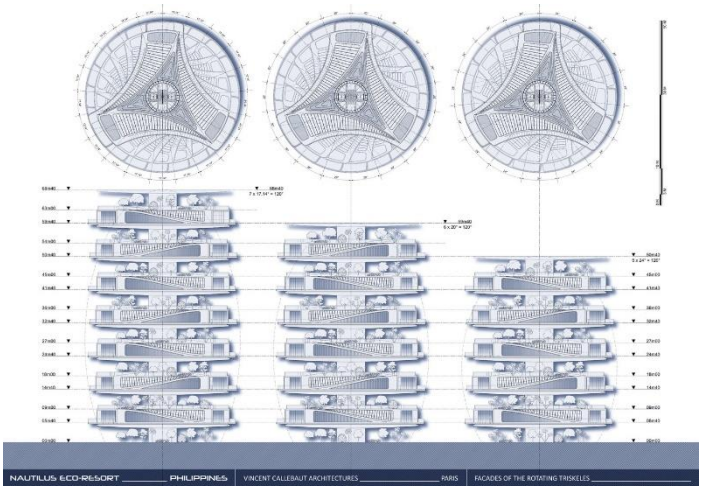


Pic no (11): Building site plan

To the east, 12 small spiral towers of varying heights contain apartments that rotate to follow the course of the sun.
distributed in three branches, the 162 apartments rotate 360 degrees in one day to offer sweeping views across the landscape. meanwhile, to the west, 12 small museum-hotels in the form of a sea snails seem to emerge out of the water. a series of small pavilions, which invite ecotourists to rest and relax, punctuate the quays. finally, an ‘origami mountain’ at the center of the lagoon contains the scientific research center and the nautical recreation base.



Pic no (12): interior layout for the studio departments & the roof plan of the tower



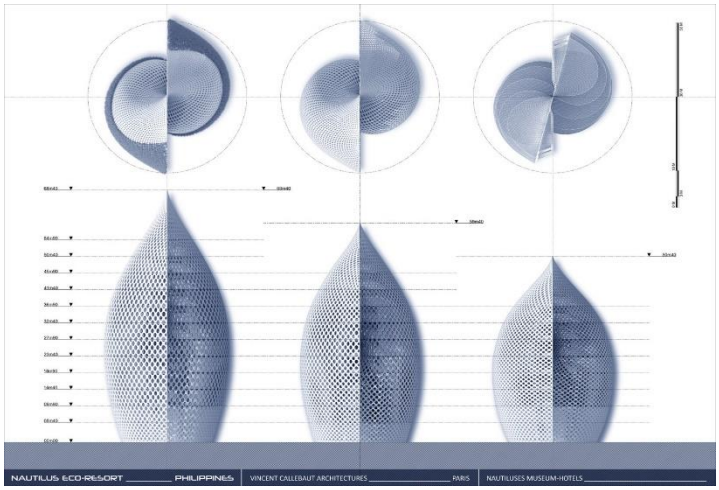
Pic No (13): Roof plans & elevations for the three examples of the towers

Pic no (14): ceiling plans & solar roofs

Pic no (15): view

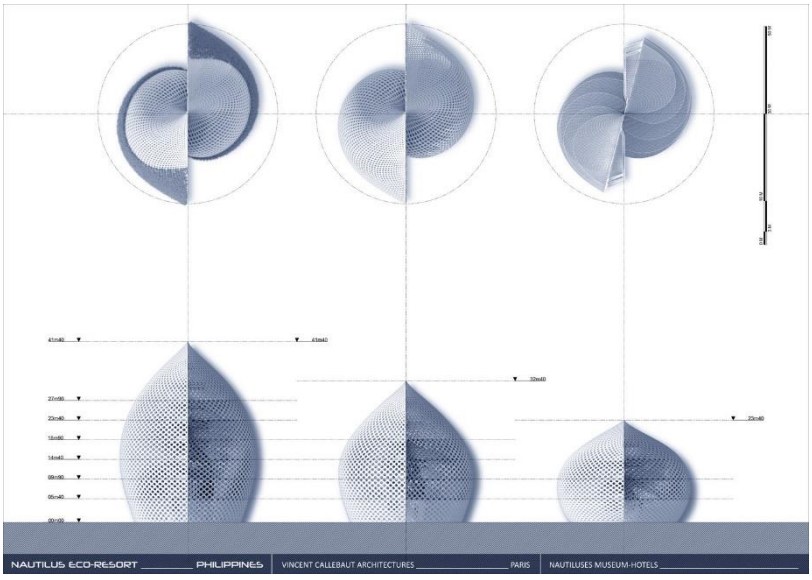
Hotels:

12 small hotels in the form of a sea snails seem to emerge out of the water. the sustainable structures vary in height.
the project would be completely built from reused or recycled materials
the scheme would be entirely self-sufficient in terms of both energy and food



Pic no (16): site plan for the three highest hotels

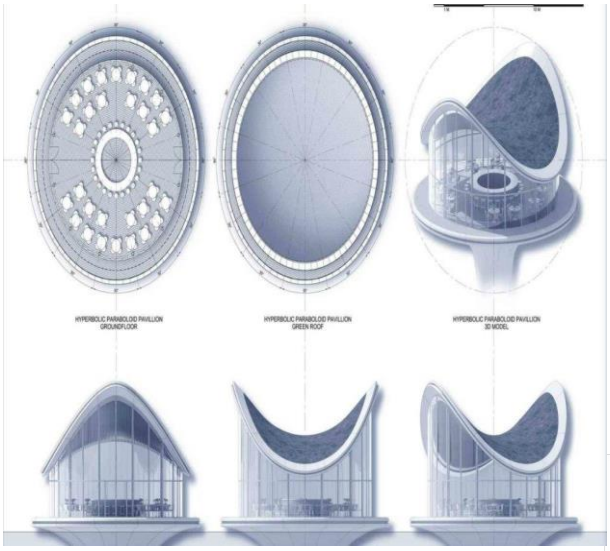
Pic no (17): site plan for the three Smallest hotels



Pic no (18): view

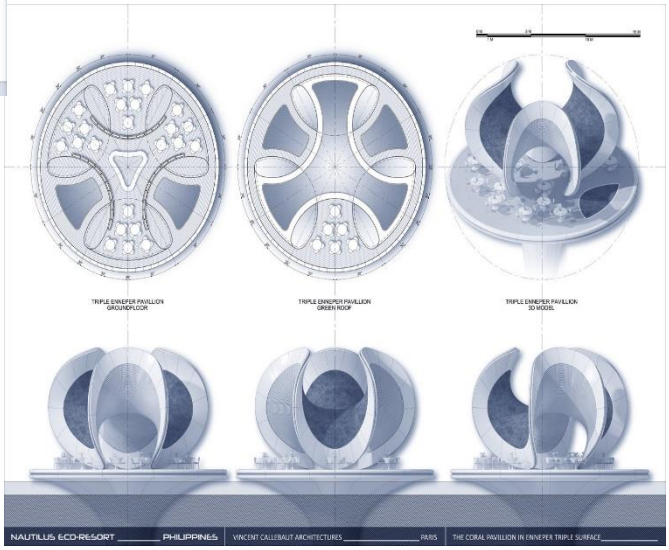
Service building at resort:

The main Bar had been designed in simple shape with full glazed elevations



Pic no (19): Bar design drawings

a set of small pavilions invite Eco tourists to rest and relax along the water



Pic no (20): resting pavilion design drawings

Pic no (21): view

Advantages & Disadvantages

Advantages	Disadvantages
Example 1: AL-Aien Alsokhna Rsort	
Chalets are in excellent place with good view.	Hotel Mass is in leaner formation which causes long walking distance.
separate the VIP's services in that special Dome.	Main foyer leads directly to very important & special space (restaurant).
very good usage of the area of the project.	There is no clear design concept
Example 1:*Nautilus Eco-esort*	
Self-power production	There is no clear Entrance.
Good Interrelation with nature	High cost of Construction
Nature Resource investment in every single detail of the Project.	Low Ratio between the size of the build area in the plan & the volume of the buildings.
Vertical expansion has produced high efficiency of the natural view.	No Direct access to the main building from Residential zone.
	Functional relation is so far from each other.

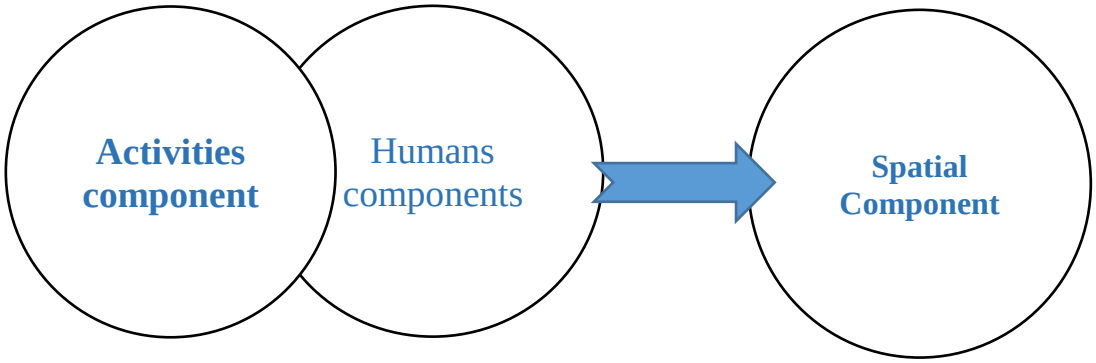
Chapter Three:

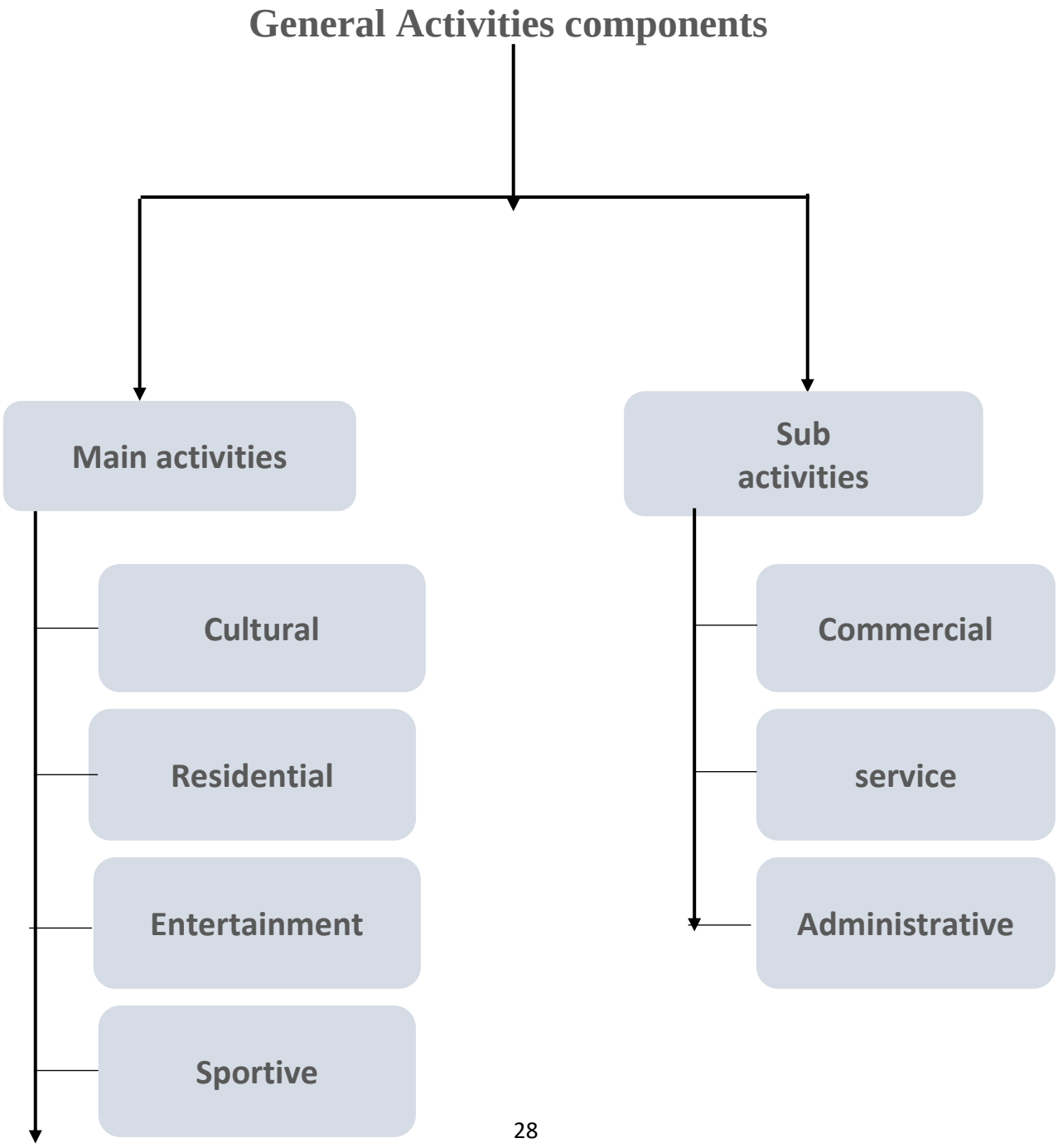
Data Analysis:

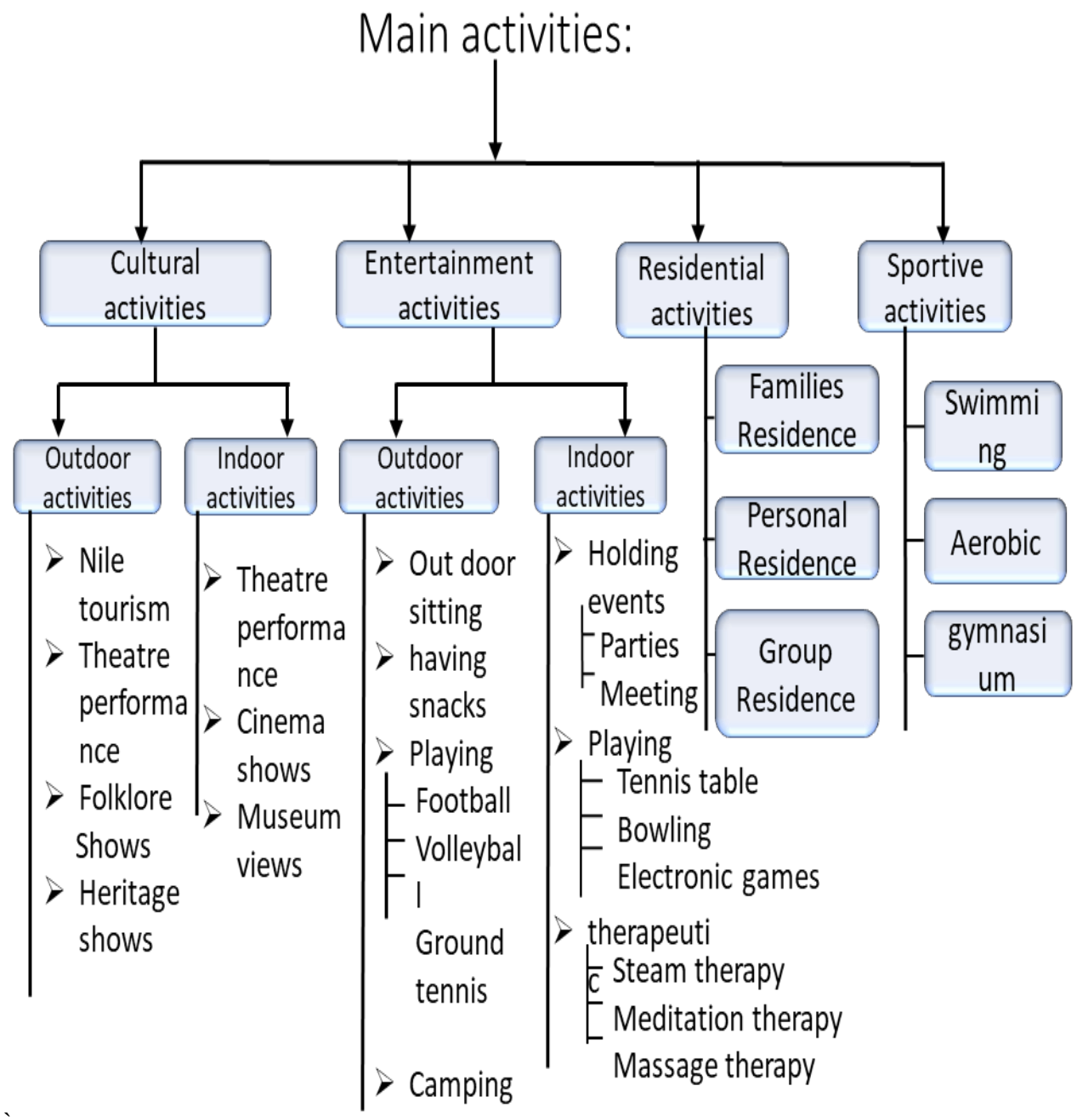
I. Data analysis:
   - Project components
   - Spatial component study
   - Diagrams

II. Site Analysis:

Project components:






Main activities:
Cultural activities
Entertainment activities
Residential activities
Sportive activities
Outdoor activities
Indoor activities
Outdoor activities
Indoor activities
Families Residence
Personal Residence
Group Residence
Swimming
Aerobic
gymnasium
Nile tourism
Theatre performance
Folklore Shows
Heritage shows
Theatre performance
Cinema shows
Museum views
Out door sitting
having snacks
Playing
Football
Volleyball
Ground tennis
Camping
Holding events
Parties
Meeting
Playing
Tennis table
Bowling
Electronic games
therapeuti
Steam therapy
Meditation therapy
Massage therapy

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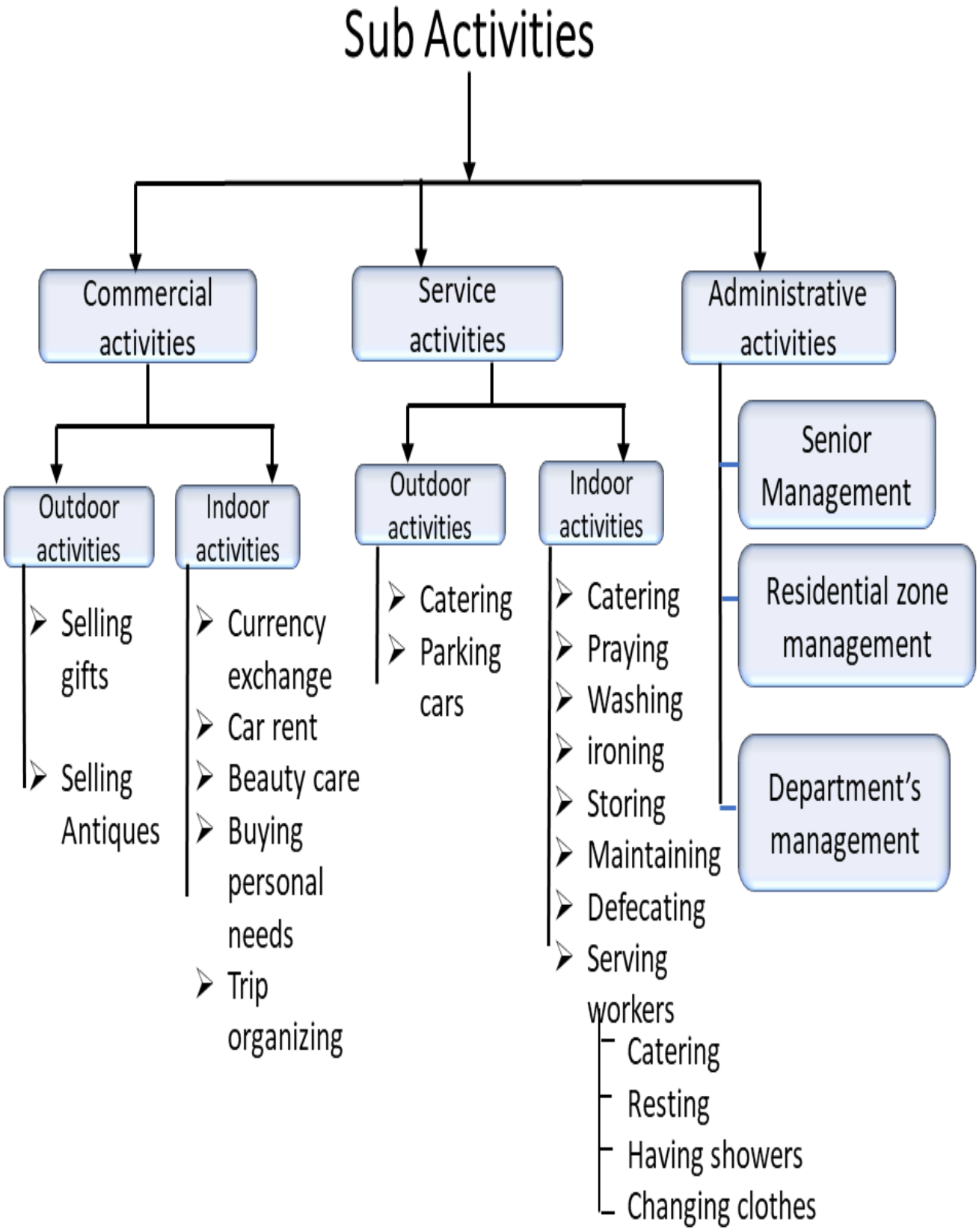
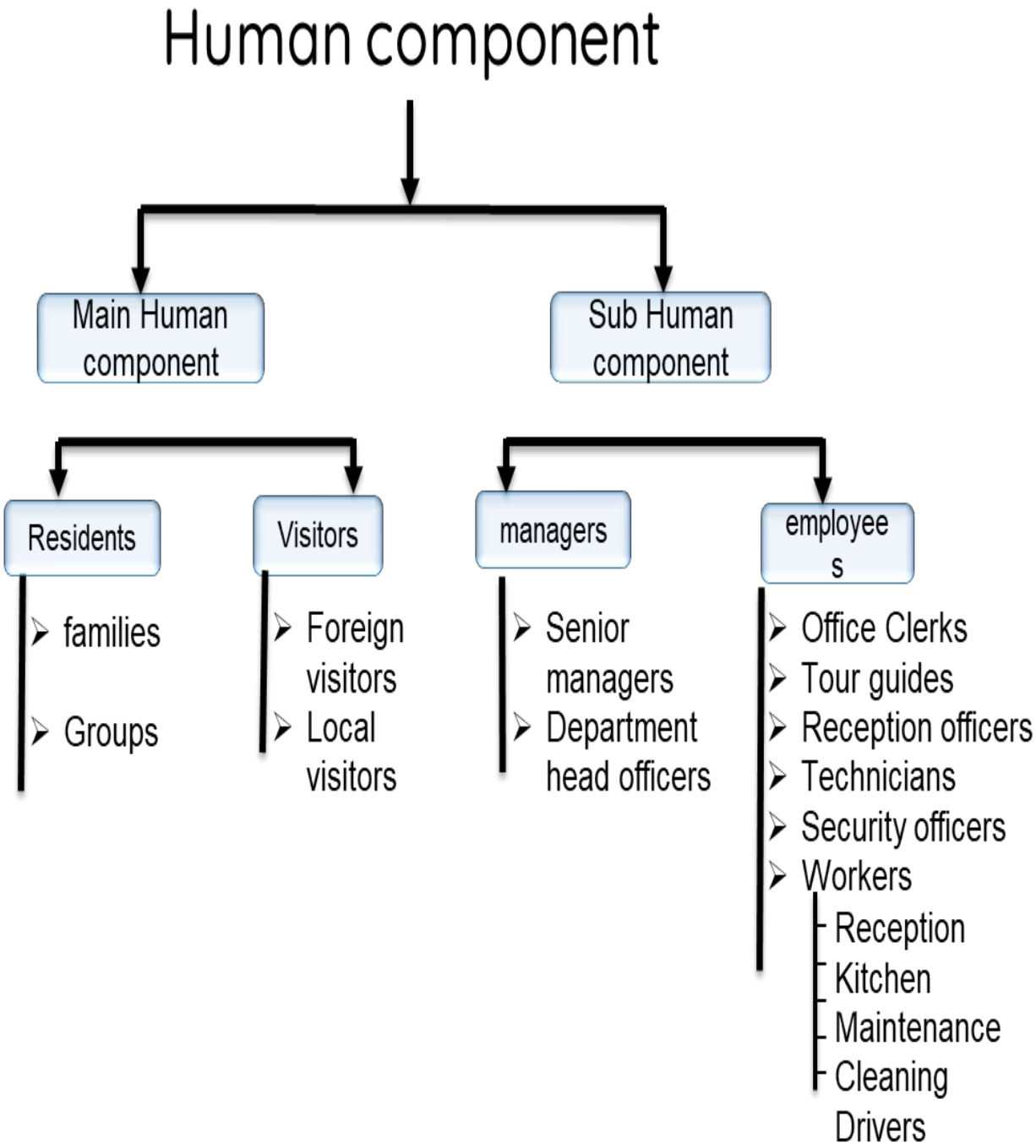
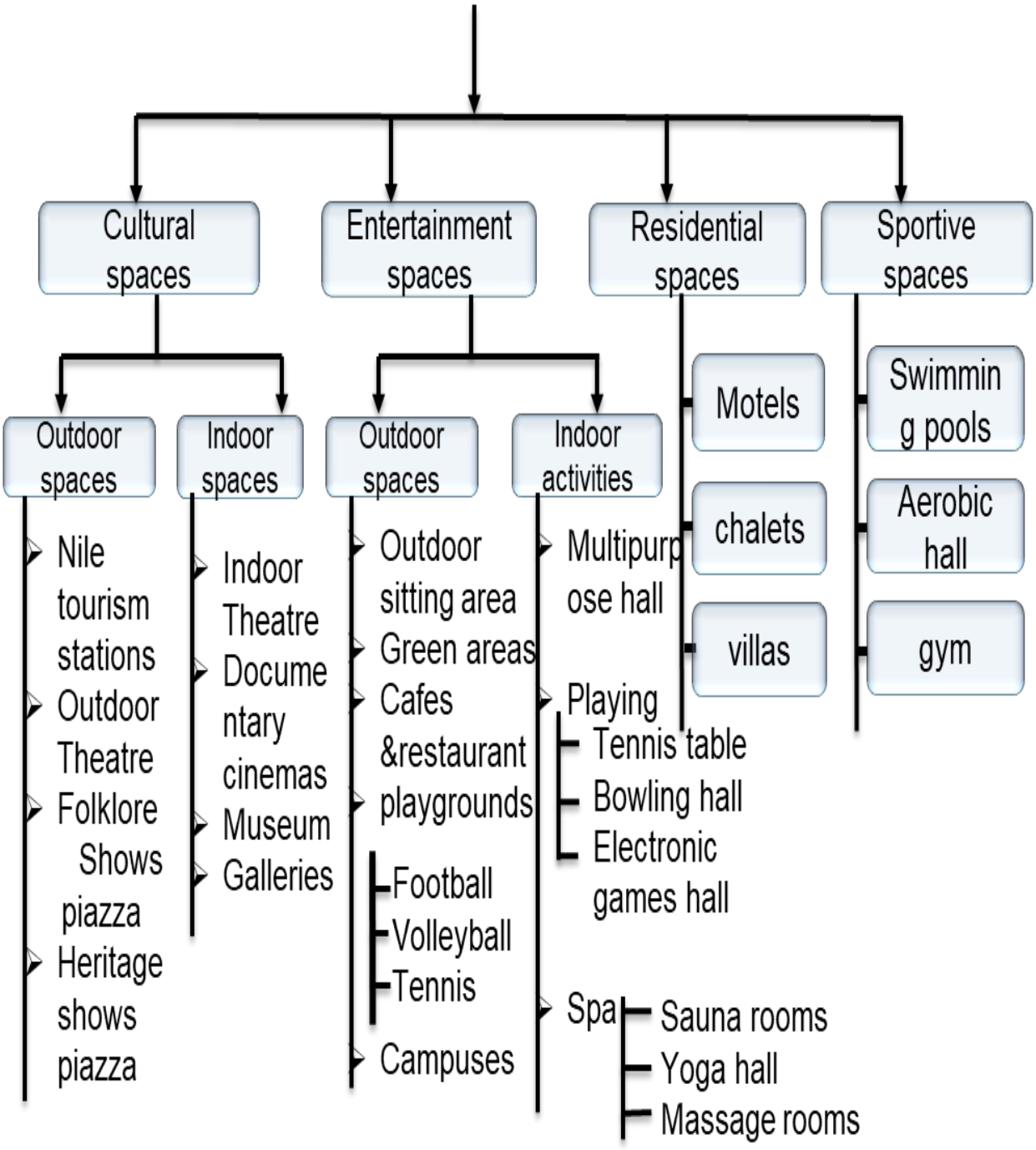

Sub Activities
Commercial activities
Service activities
Administrative activities
Outdoor activities
Indoor activities
Outdoor activities
Indoor activities
Senior Management
Residential zone management
Department's management
Selling gifts
Selling Antiques
Currency exchange
Car rent
Beauty care
Buying personal needs
Trip organizing
Catering
Parking cars
Catering
Praying
Washing
ironing
Storing
Maintaining
Defecating
Serving workers
Catering
Resting
Having showers
Changing clothes

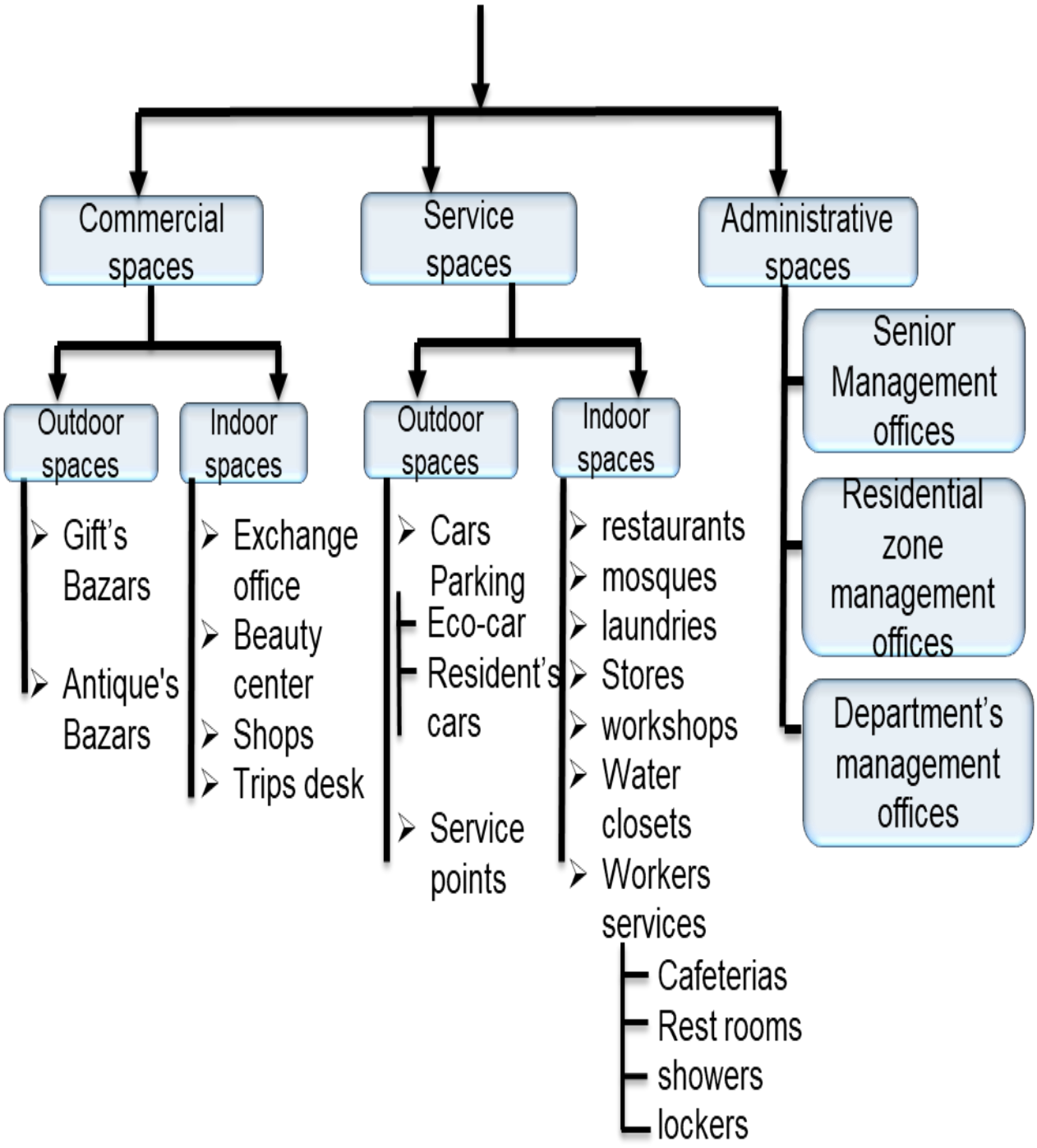

Human component
Main Human component
Sub Human component
Residents
Visitors
managers
employees
families
Groups
Foreign visitors
Local visitors
Senior managers
Department head officers
Office Clerks
Tour guides
Reception officers
Technicians
Security officers
Workers
Reception
Kitchen
Maintenance
Cleaning
Drivers

c

Main spatial component



Sub Spatial component



Chapter Three:

Data Analysis:

III. Data analysis:

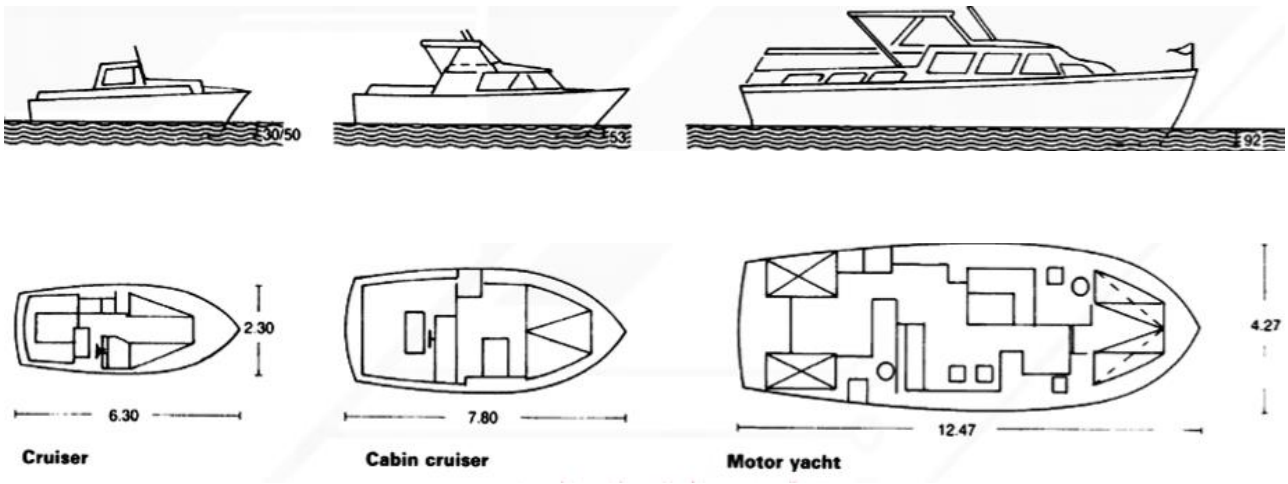
- Project components
- Spatial component study
- Diagrams

IV. Site Analysis:

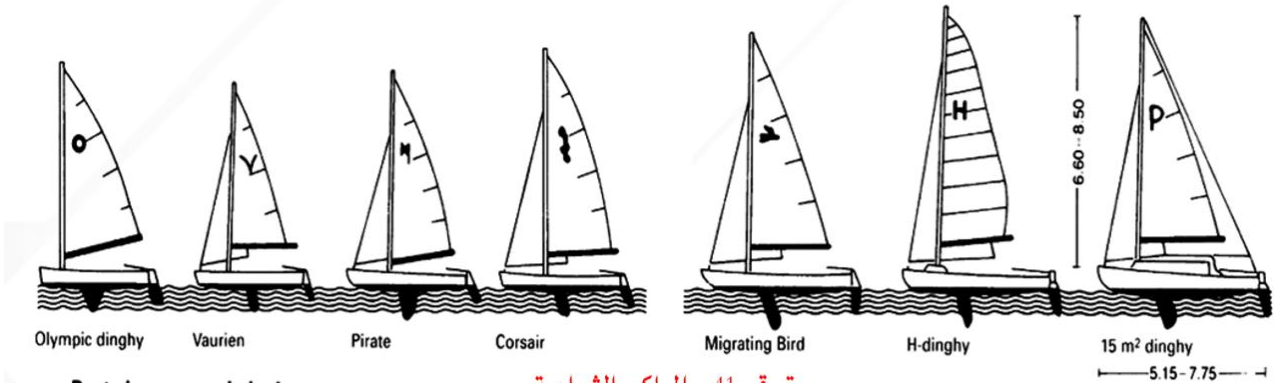
Spatial Component Study:

1/ Marina:

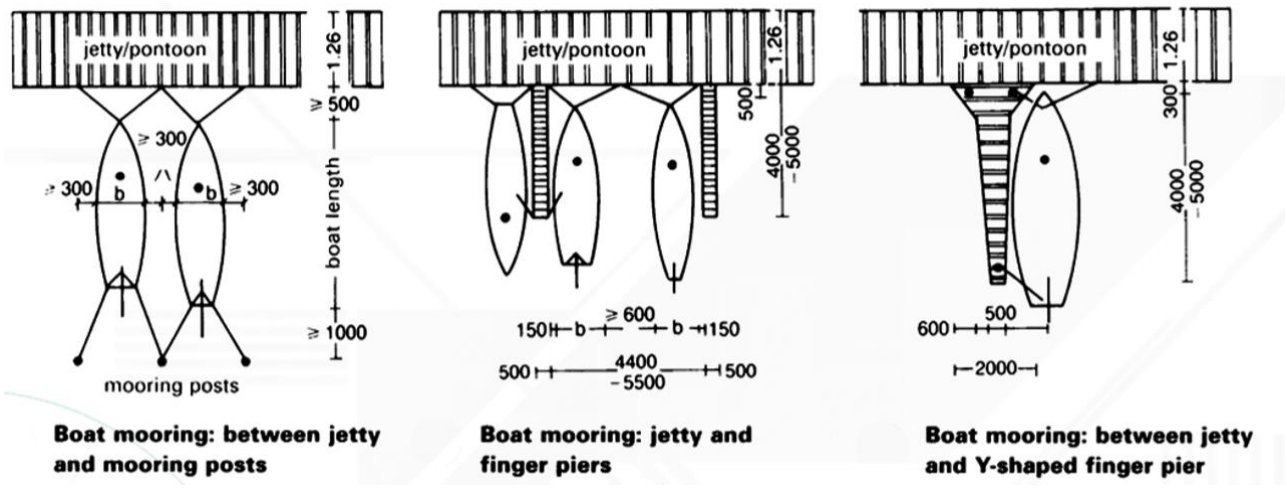
It is a dock or basin with moorings and supplies for yachts and small boats.



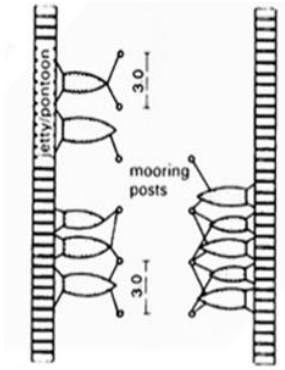
Motorboat pic no **(22)**



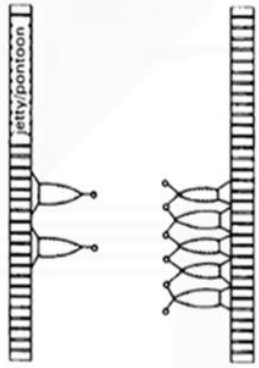
Sailboat pic no (23)



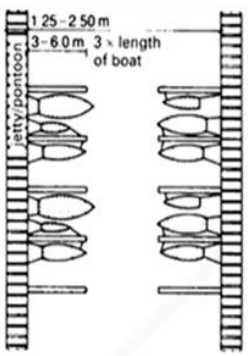
Boat mooring standard dimensions pic no (24)



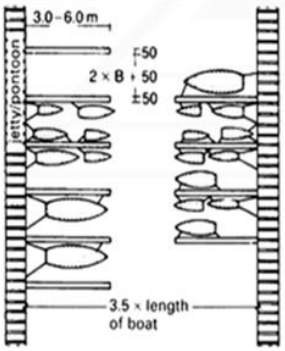
1 Berths for sport boats: in Rotterdam



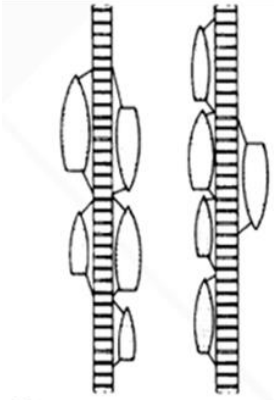
2 in the Mediterranean Sea



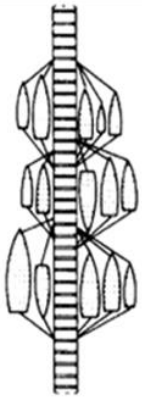
3 in American waters



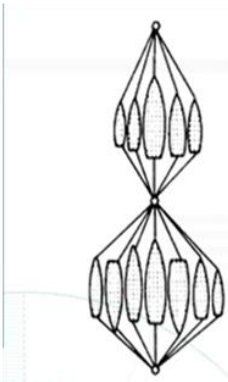
4 in Port Hamble



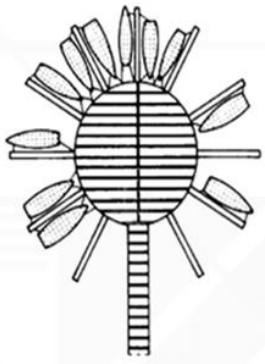
5 in Granville



6 in St Rochelle

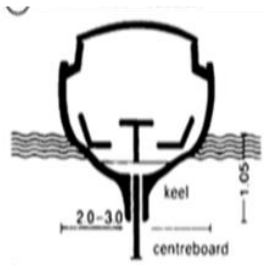


7 in Yarmouth



8 in San Francisco

16 Centreboard keel cruiser

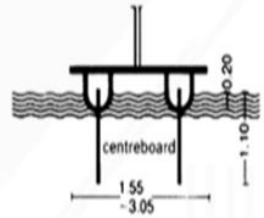


17 Centreboard keel cruiser: section

18 Twin keeled cruiser

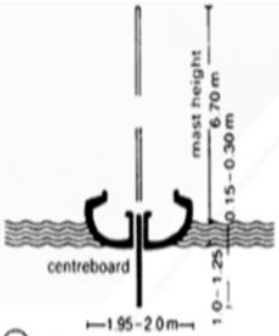
19 Twin keeled cruiser: section

20 Open catamaran



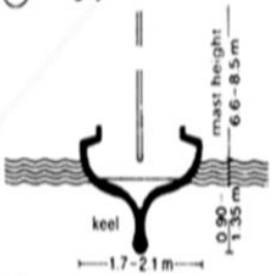
21 Open catamaran: section

10 Dinghy



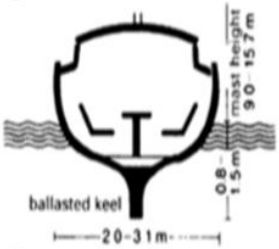
11 Dinghy: section

12 Open-keel boat



13 Open-keel boat: section

14 Keel cruiser

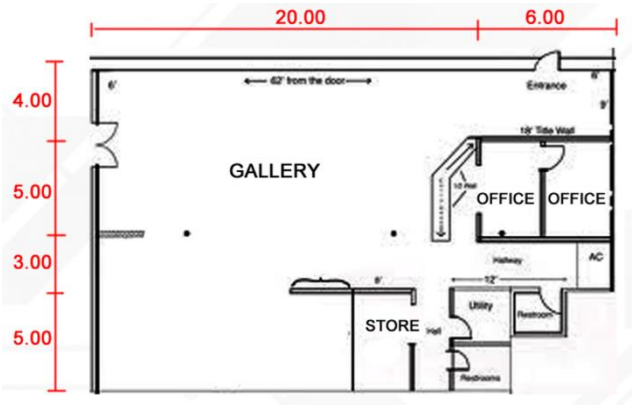


15 Keel cruiser: section

2/ cultural zone:

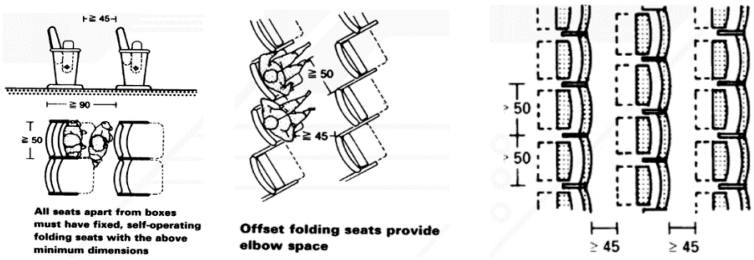
2/1/ Galleries:

I. **Antiques galleries**
II. **Paintings galleries**

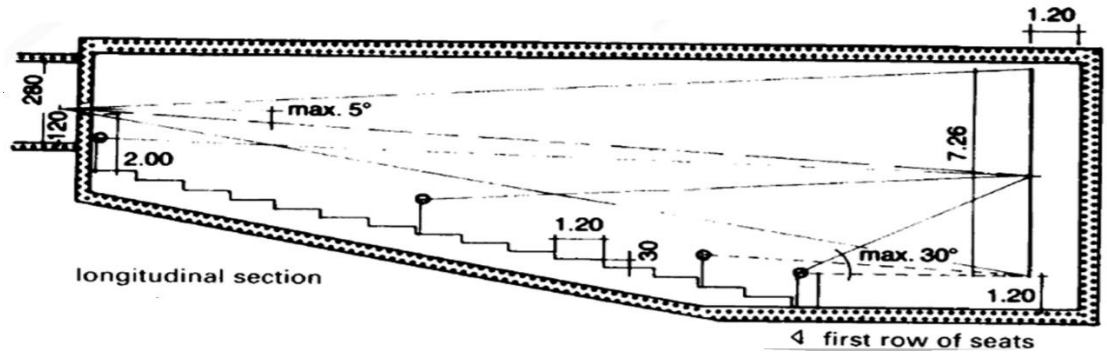


Pic no (26): galleries in the cultural building

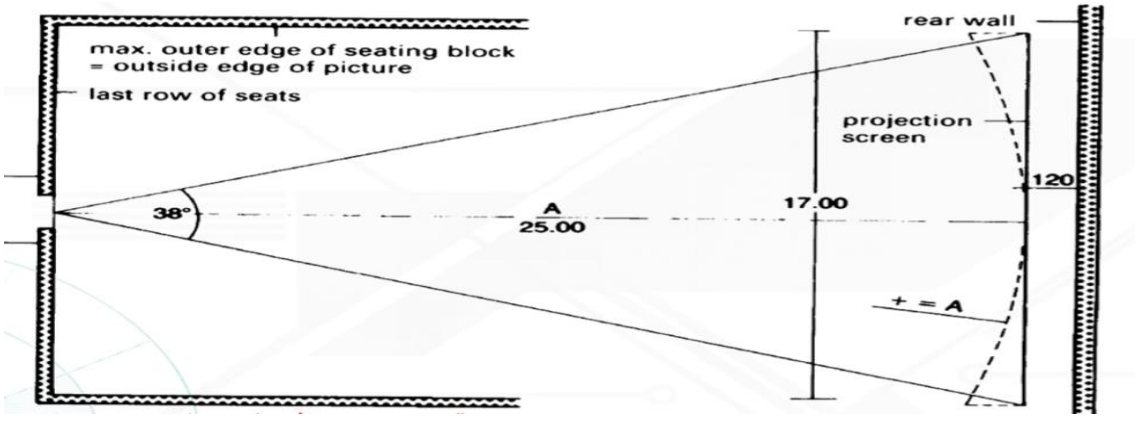
2/2/ Cinema:



pic no (27): sitting standard dimension



Pic no (28): longitude section in a cinema



Pic no (29): cinema's plan

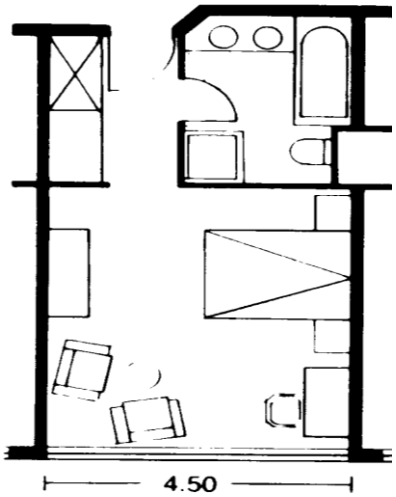
3/Residential Zone:

3/1/: Hotel room:

As the hotel designed to be 3 stars hotel where Accommodation is deemed "very good". The project offers variable room types:

- **room for 1 person**

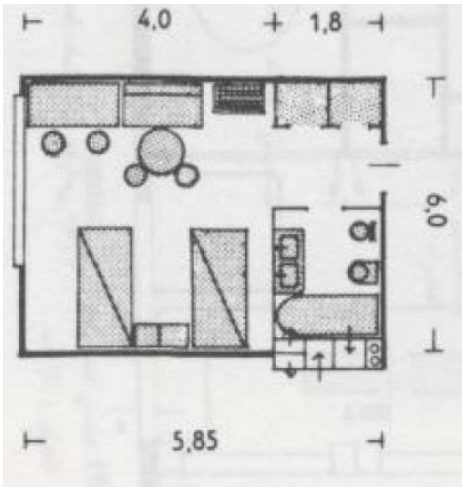
Movement ratio (30%)



Pic no (30): Single room (20-22 m2)

- **room for 2 persons**

Movement ratio (40%)



Pic no (31): Double room(30-32m2)

Total area of the room= total furniture area+ movement ratio+ bathroom area

- **Room for 4 persons**

Movement ratio (40-60%)

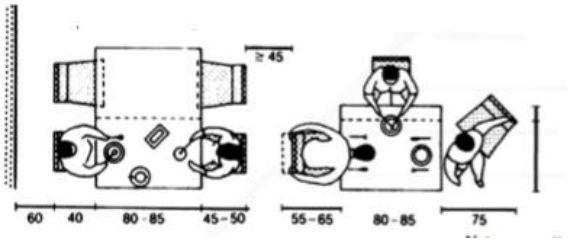
Pic no (33):Quad room (35-38m2)

4/ Entertainment Zone:

4/1/: Restaurants:

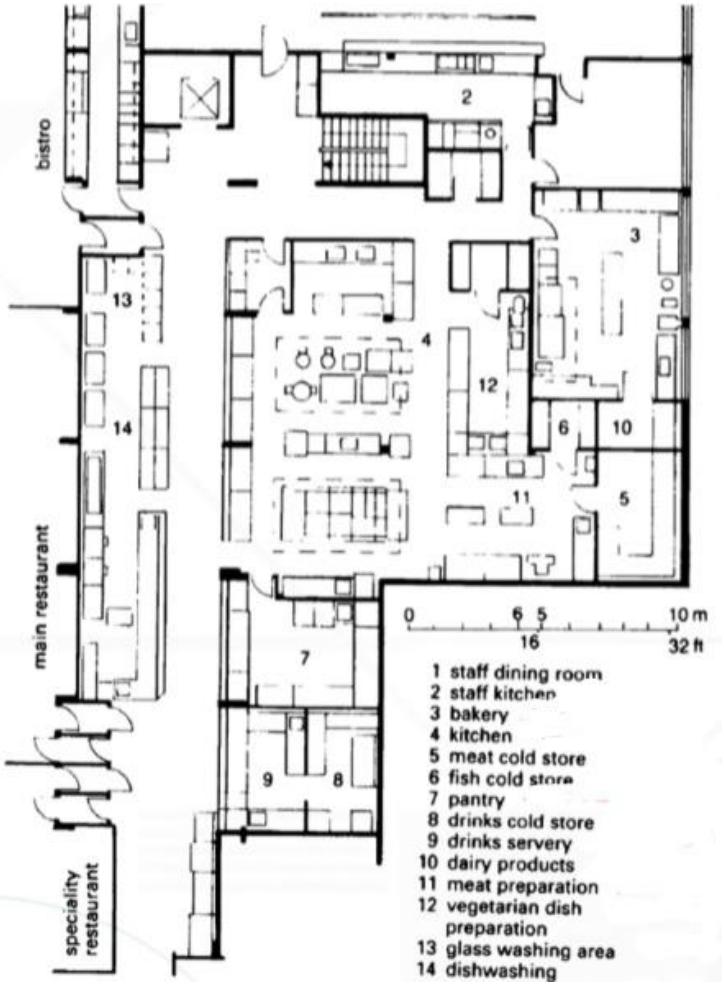
project is offering different styles of restaurants but there are main components are common for all of them:

- **kitchen**
- **Store**
- **Dining area**
- **Water closets for both gender**
- **Kid playing area (optional)**
- **Praying rooms for both gender (optional)**



Pic no (34):

standard of restaurant sitting



Calculations:

Module: **2m**

Number of users:**500** person

Number of tables:**120**

Space per person: **1** m2

Dining hall: **500** m2

Surrounding movement ratio **20%**

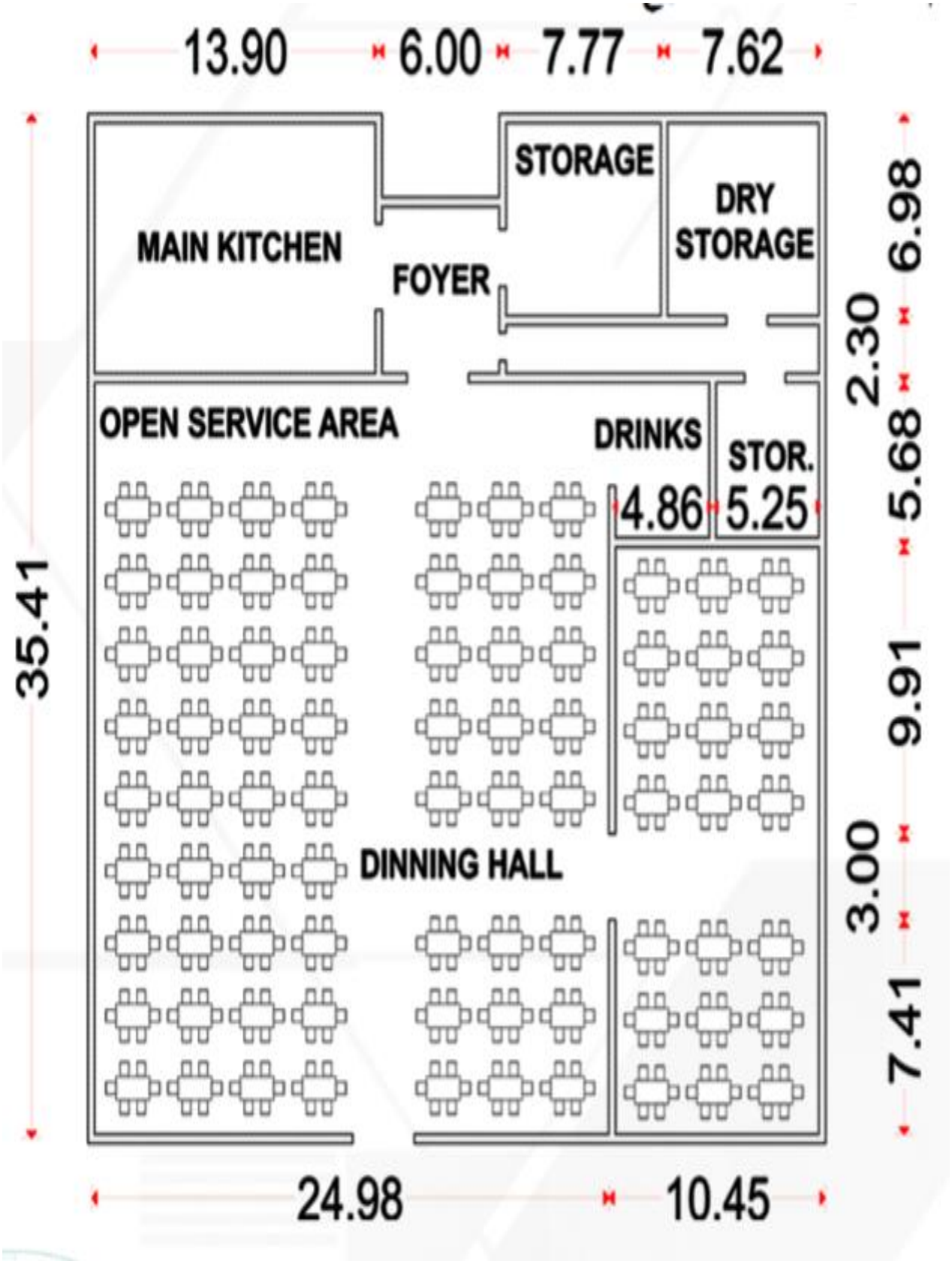
Total hall area= **600** m2

Area for (kitchen, services& open buffet) = **200** m2

Outdoor terrace= **200** m2

Total area=**1000**m2

Pic no (35): Example for a kitchen designed to serve 320 meal containing main zones



Pic no (36): example for main dining hall

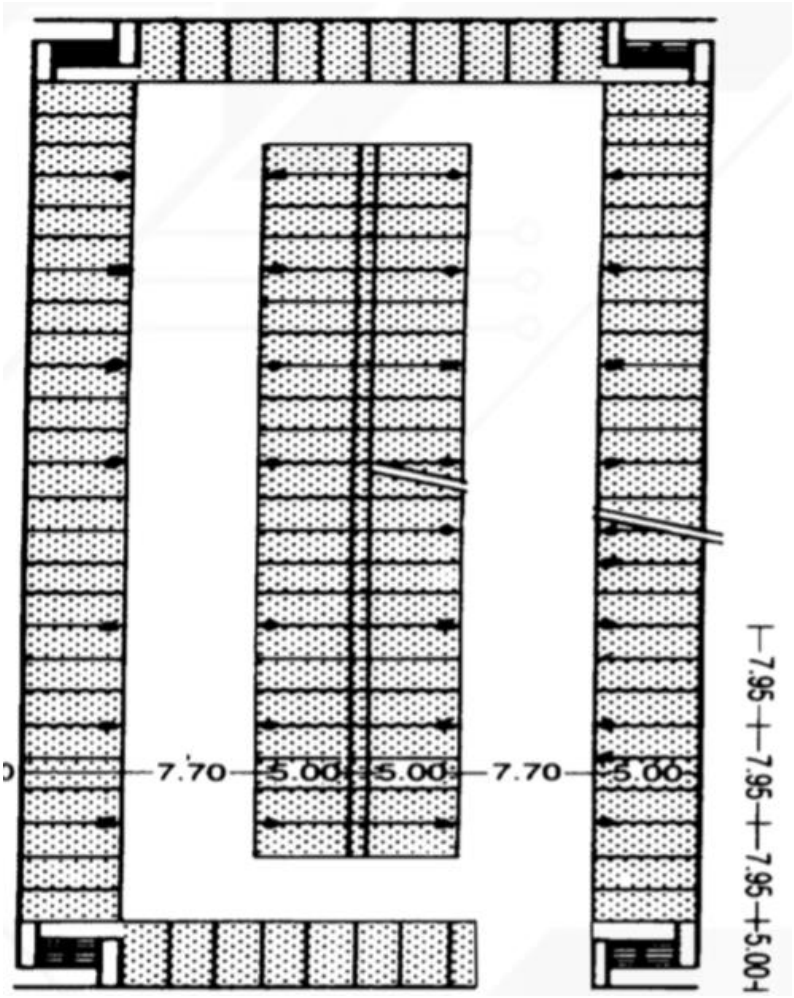
5/ Parking:

5/1/ Car Parking:

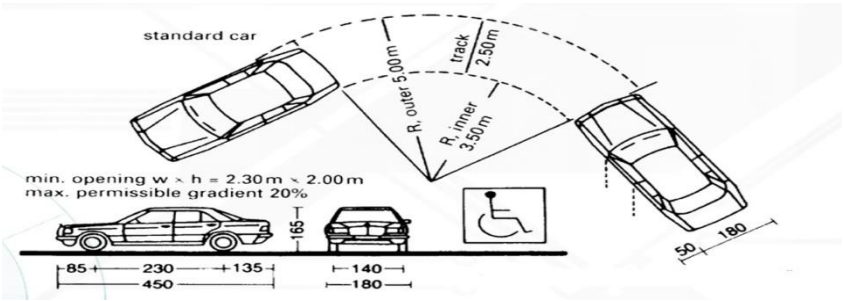
A well-planned area specially for residents, employees& guests' cars.

Considerations:

- Car size (2.50-3.00 * 5m).
- Number of cars served.
- Ramp In case of multi-stories parking



Pic no (37): sample of ready designed parking with standard dimensions



Pic no (38):

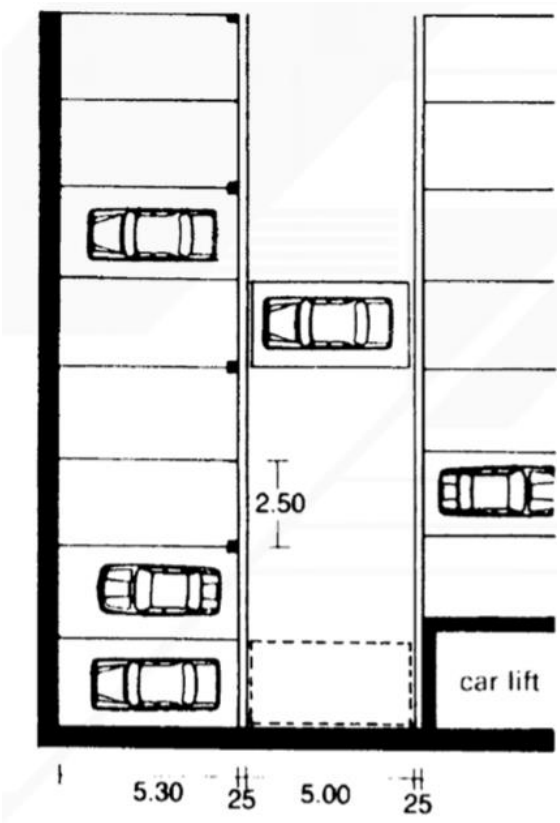
Standard dimensions for car movement

5/1/1/Multi-stories Parking:

A feasible Design where there is a large number of cars to be served in one place to obtain security & control as required in this project.

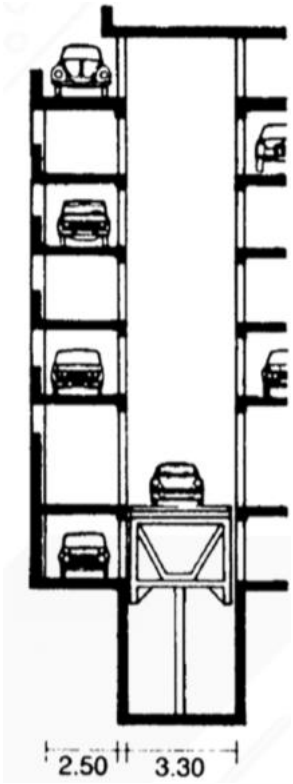
Considerations:

- Total parking area.
- Hydraulic winch.
- Car lift



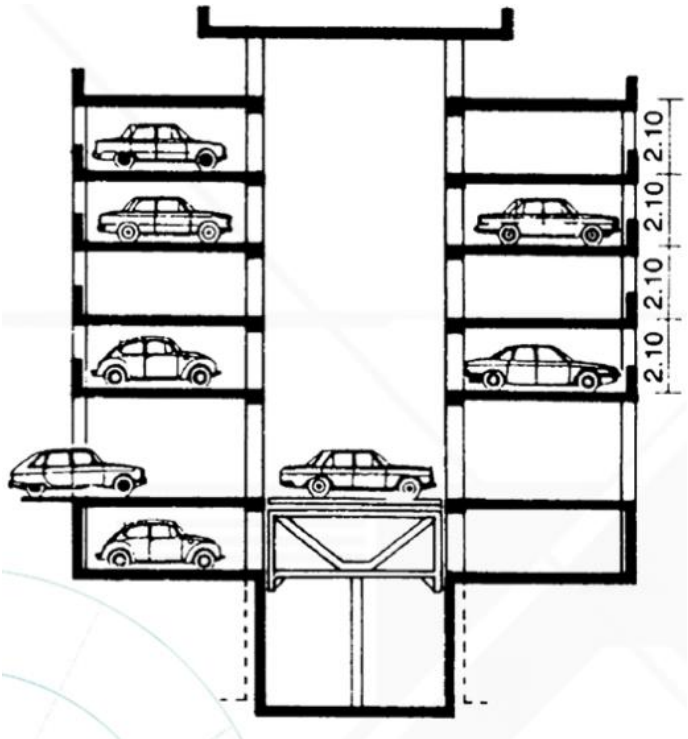
Pic no (39):

Plan of garage lift system



Pic no (40):

Transverse stacking winch system



Calculations:

Total Number of cars in the project= 1200 cars

Parking for a car= 12.5m2

Parking area= 15,000m2

Surrounding ratio=40% of parking area=6000m2

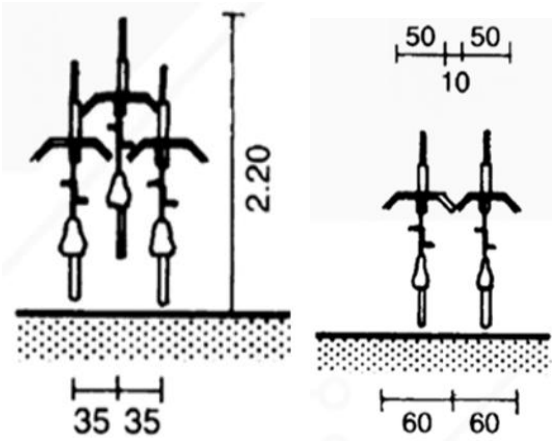
Total parking area = 21,000m2

5/2/: Cycle parking:

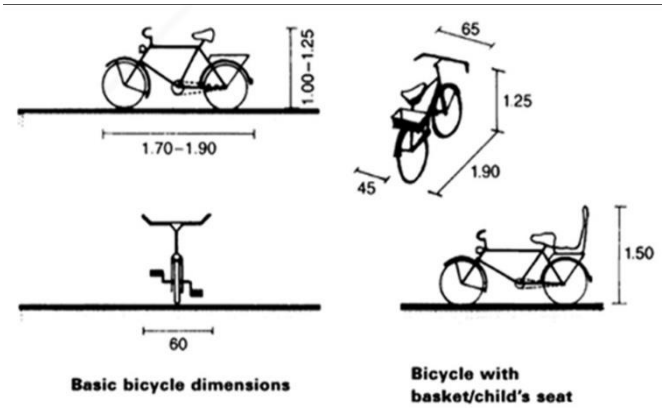
As cycle is an important transportation in the project special for residents within project site.

Consideration:

- Rail or Guard rail. – Cycle locker - Cycle parking



Pic no (42): cycle parking styles



Pic no (43): Cycle dimensions

Calculations:

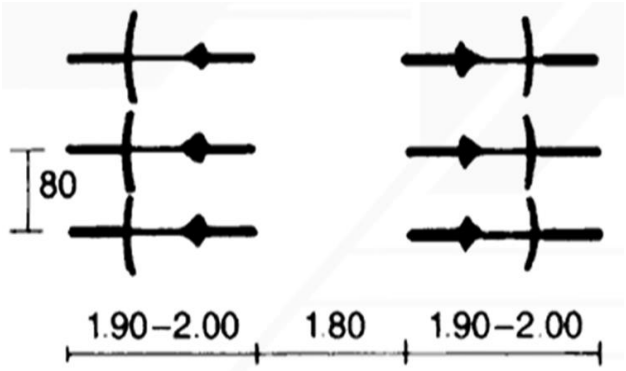
Total number of cycles in the project=100 cycle

parking for a cycle=1.6m2

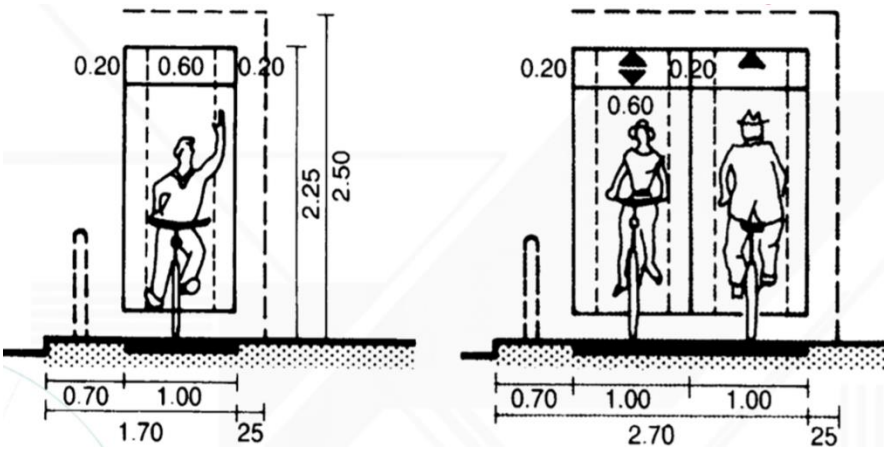
Parking area= 160 m2

Surrounding ratio=50%

Total cycle parking area= 240m2



Pic no (44): Cycle parking dimensions



5/3/: small shuttle cars (Golf cart) parking:

An Eco, small car used as the main transportation inside the site. Its parking's would be spread in different locations in the project.

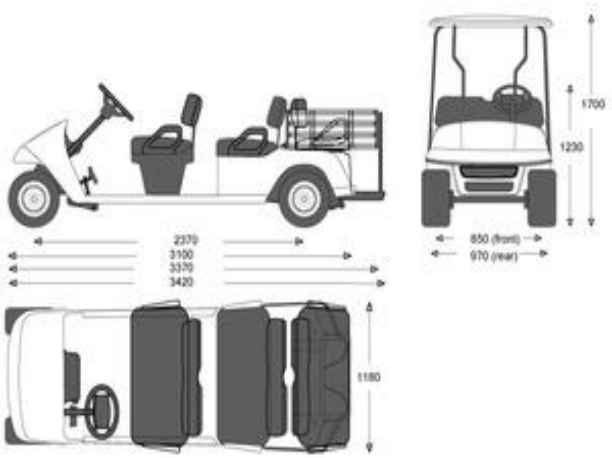
Calculations:

Number of cars:

200 for hosts

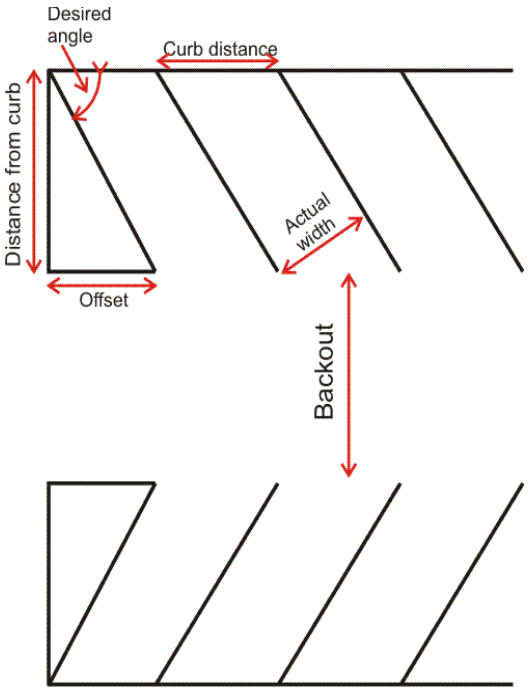
100 for staff

Total number of cars300 cars



Pic no (46):

Golf cart dimension count on number of passengers.



Pic no (47): example for golf parking layout

Pic no (48): Standard calculation for parking

Cultural Zone:

activity	space	Number of users	users	Number of spaces	Space area	Total area
sailing	*Boat Anchorage*	800	Residents-Visitors-employee	5	2200m2	11.000m2
Heritage shows	Heritage Piazza	800	Residents-Visitors	4	450m2	1800m2
Folklore shows	Folklore Piazza	800	Residents-Visitors	4	450m2	1800m2
Theatre shows	*outdoor theatre*	200	Residents-Visitors-employee	1	270m2	270m2
Painting shows	Gallery	200	Residents-Visitors	4	200m2	800m2
Antiques shows	Gallery	200	Residents-Visitors	6	200m2	1200m2
Watching films	Cinema	300	Residents-Visitors-employee	2	200m2	400m2
Museum shows	Museum	600	Residents-Visitors-employee	1	8000m2	8000m2
Theatre shows	*Indoor theatre*	200	Residents-Visitors-employee	1	270m2	270m2
						26,540 m2

Residential Zone:

activity	space	Number of users	users	Number of spaces	Space area	Total area
Single Residence	Single room	1	Resident	350	21m	7350 m
Twin residence	Double room	2	Resident	200	32m	6400 m
Triple residence	Triple room	2 4	Resident	150	100m	15000m
Group Residence	villa	5 6 7	Resident	80	200m	16000m
Chalets Residence	chalets	2 4	Resident	50	200m	10000m
						54,750 m2

Entertainment Zone

activity	space	Number of users	users	Number of spaces	Area of space	Total area
sitting	*Outdoor sitting area*	400	Resident Visitors	-		***8000***
catering	*cafes*	800	Resident Visitors	***10***	***180m***	***1800m2***
Playing	volleyball	12	Resident Visitors	2	9 * 18 162=	324m2
Playing	Basketball	12	Resident Visitors	2	=15 * 28 420	840m2
Playing tennis	Grounded tennis	2	Resident Visitors	2	8.23* 23.77 195.7 =	392m2
Playing football	Football playground	22	Resident Visitors	3	924=22*42	2772m2
camping	*campus*	*60*	Resident Visitors	*12*	*120m*	*1440m2*
Playing tennis table	Tennis table hall	4 - 2	Resident Visitors	*2*	*100*	*200*
Playing	Electronic games	*40*	Resident Visitors	*2*	*500*	*1000*
Playing	*bowling*	*12*	Resident Visitors	*2*	*24*+4.50=108*	*216*
Hosting events	*Multi purpose hall*	*800*	Residents- Visitors- employee	*1*	*1200*	*1200*

reception	reception	80	Residents-visitors-patients	2	72m	144m
Water healing	Water pools	2	Residents-visitors-workers	10	20m	200m
Thermal healing	Sauna	6	Residents-visitors-workers	12	4m	48m
Jacuzzi	Jacuzzi	2	Residents-visitors-workers	10	9m	90m
Sulphur water healing	Sulphur water Jacuzzi	2	Residents-visitors-workers	10	15m	150m
Electronic massage	Electronic massage room	10	Residents-visitors-workers	12	30m	360m
Manual massage	Massage room	2	Residents-visitors-workers	12	9m	108m
Fitness	GYM	36	Residents-visitors-workers	4	300m2	1200m2
Aerobic dancing	Aerobic hall	30	Residents-visitors-workers	4	105m2	420m2
swimming	Swimming pool	***350***	Residents-visitors-workers	8	312.5m2	2500m2
						23,204m2

Commercial zone

activity	space	Number of users	users	Number of spaces	Space area	Total area
Selling gifts	Gift Bazar	600	Residents-Visitors	4	*150*	*600*
Selling Antique	Antique Bazar	500	Residents-Visitors	4	*150*	*600*
Selling clothes	Clothes shops	625	Residents-Visitors	4	250	1000
Selling shoes	Shoes shops	625	Residents-Visitors	2	500	1000
Selling jewelry	jewelry	30	Residents-Visitors	2	50	100
Selling electronics	Electronic shops	625	Residents-Visitors	1	500	500
beauty	Beauty center	50	Residents-Visitors	1	400	400
Selling daily needs	hypermarket	625	Residents-Visitors	1	900	900
Money exchange	exchange		Residents-Visitors	4	100	400
Trip organization	Travel agency	300	Residents-Visitors	4	100	400
						5,540 m2

Service Zone

activity	space	Number of users	users	Number of spaces	Space area	Total area
Preparing food	Central kitchen	20	workers	5	250m	1250m2
Washing& ironing	Central laundry	20	workers	5	300m2	1500m2
praying	mosque	100	Residents-Visitors	4	100m2	400m2
Room service	Service rooms	80	workers	20	36m2	720m2
maintenance	workshops	10	workers	12	50m2	600m2
storing	stores	10	workers	10	60m2	600m2
defecating	Water closets	1	Residents-Visitors-workers-managers	60	4m2	240m2
Car parking	parking	400	Residents-Visitors-managers	400	12.5m2	5000m2
	landscape	2500	Residents-Visitors-managers	-	-	37500m2
						47,810 m2

Administration Zone

activity	space	Number of users	users	Number of spaces	Space area	Total area
General management	General manager	1	General manager	2	60m	120m
Department management	Head offices	1	headmasters	12	40m	480m
management	Deputy general manager	1	Deputy manager	9	40m	360m
secretory	Secretory offices	1	secretory	9	30m	270m
Project management	Employee offices	4	employees	9	24m	216m
Human resource management	Employee offices	2	employees	2	25m	50m
accounting	Accountant offices	2	employees	4	24m	96m
Engineering management	Engineers offices	4	engineers	6	24m	144m
Holing meetings	Meeting room	24	Managers-employees-visitors	4	80m	320m
archiving	archive	2	Employees-workers	4	16m	64m
						2,120 m2

Chapter Three:

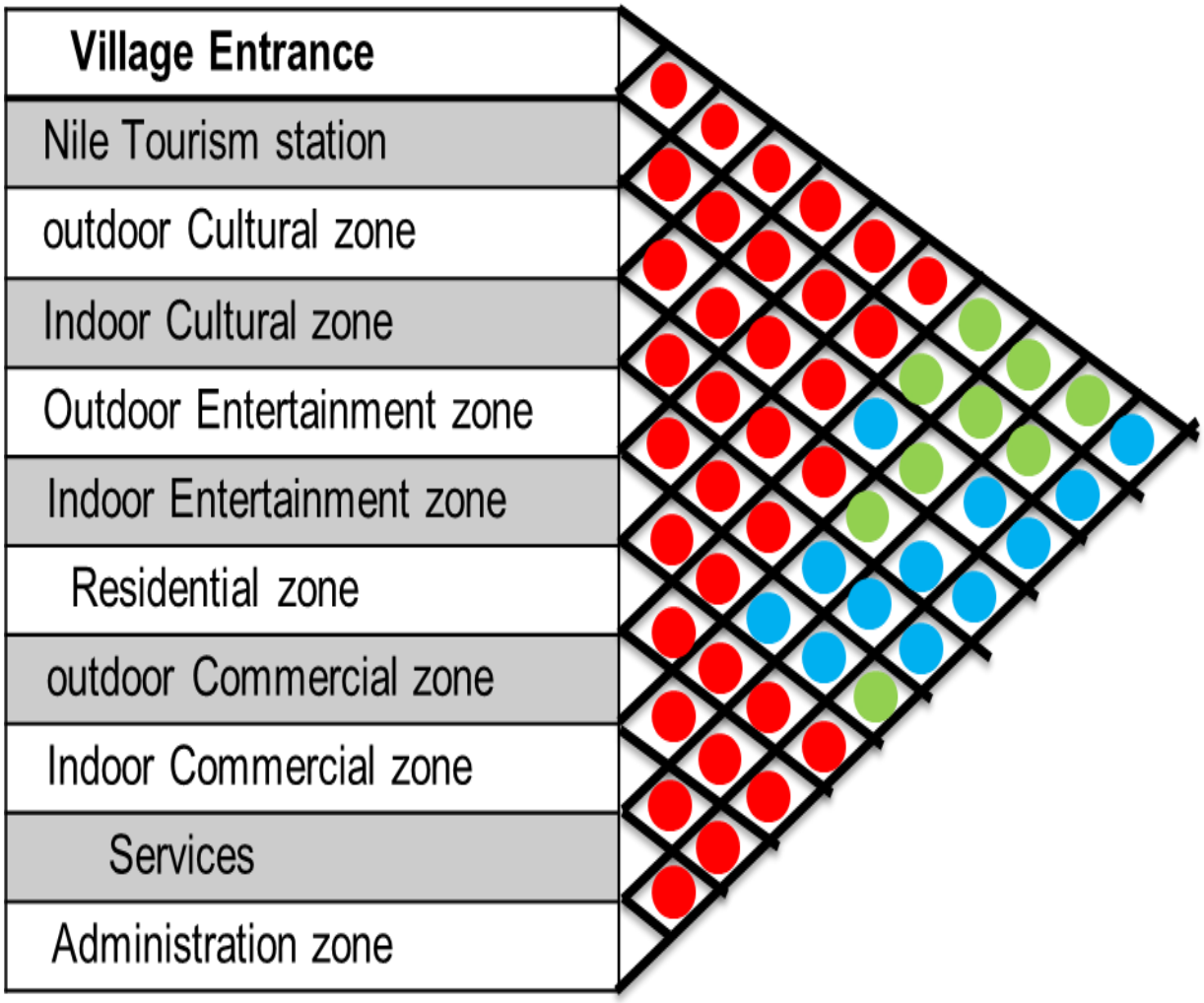
Data Analysis:

V. Data analysis:

- Project components
- Spatial component study
- Diagrams

VI. Site Analysis:

Functional Matrix diagram

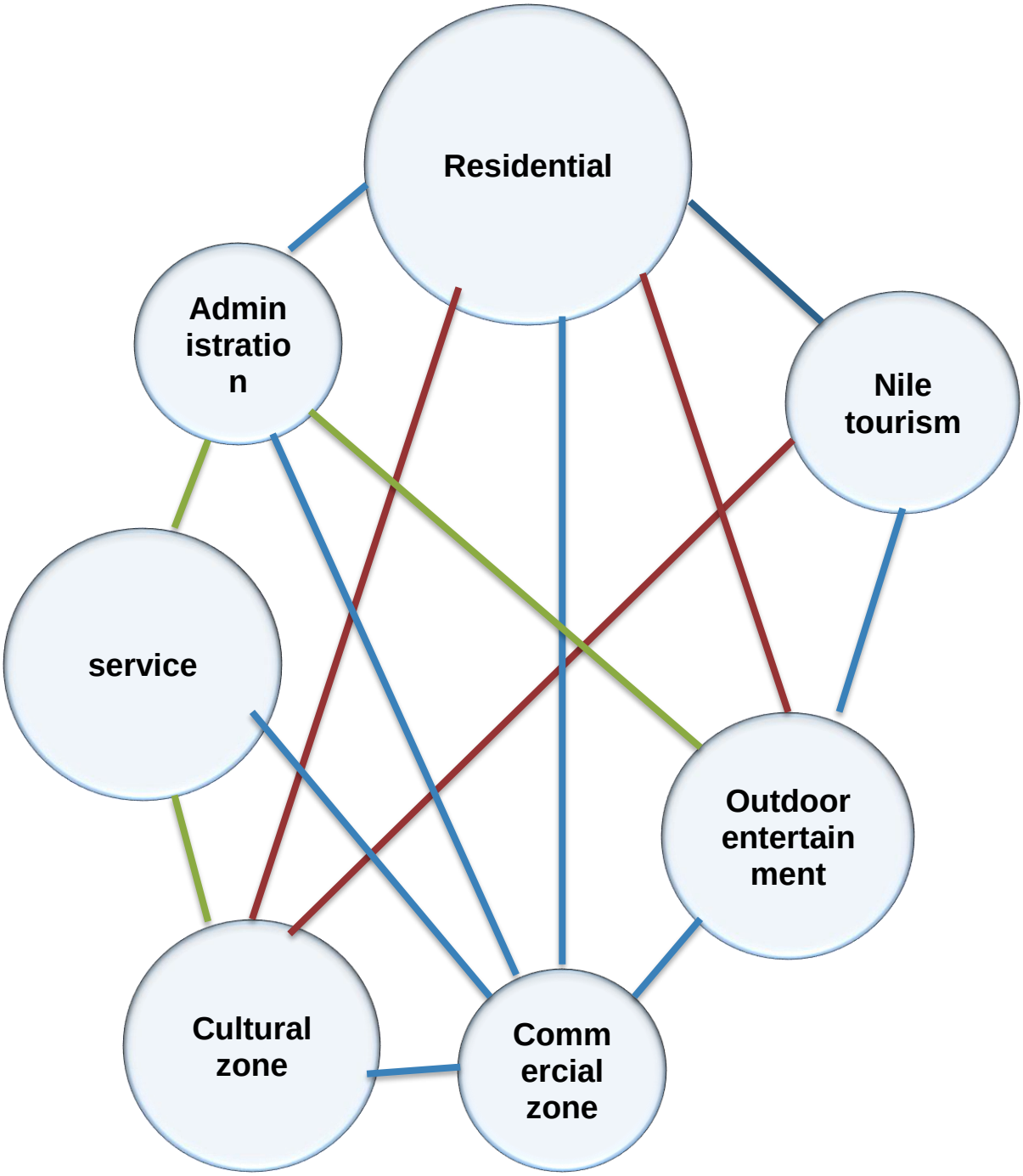


Strong correlate

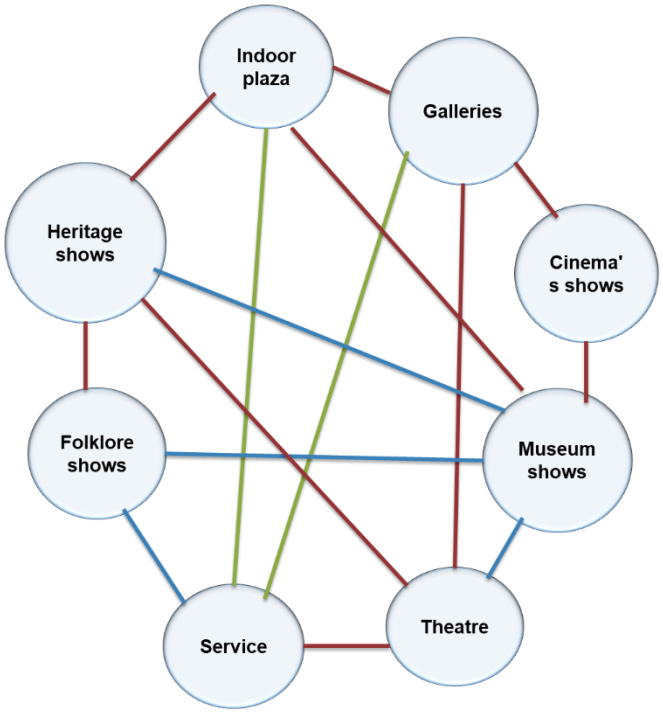
Medium correlate

Weak correlate

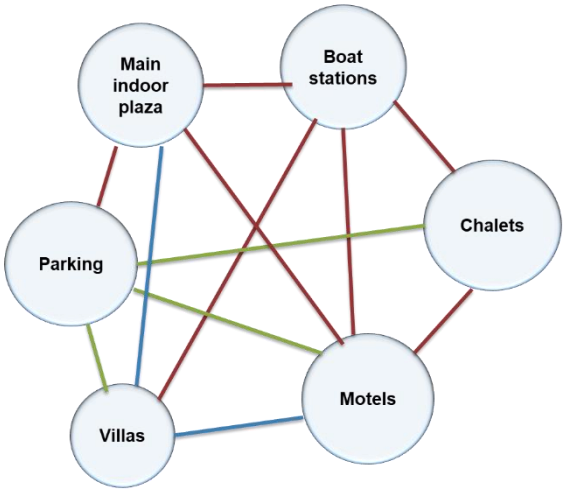
Main zones correlations



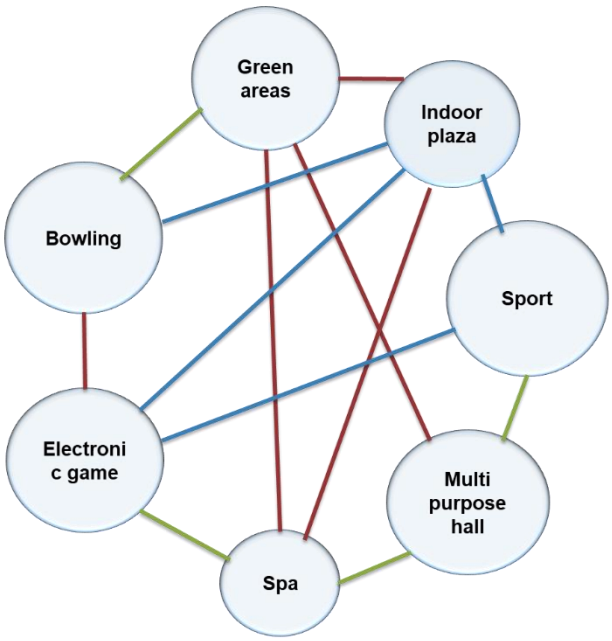
Cultural zone correlations



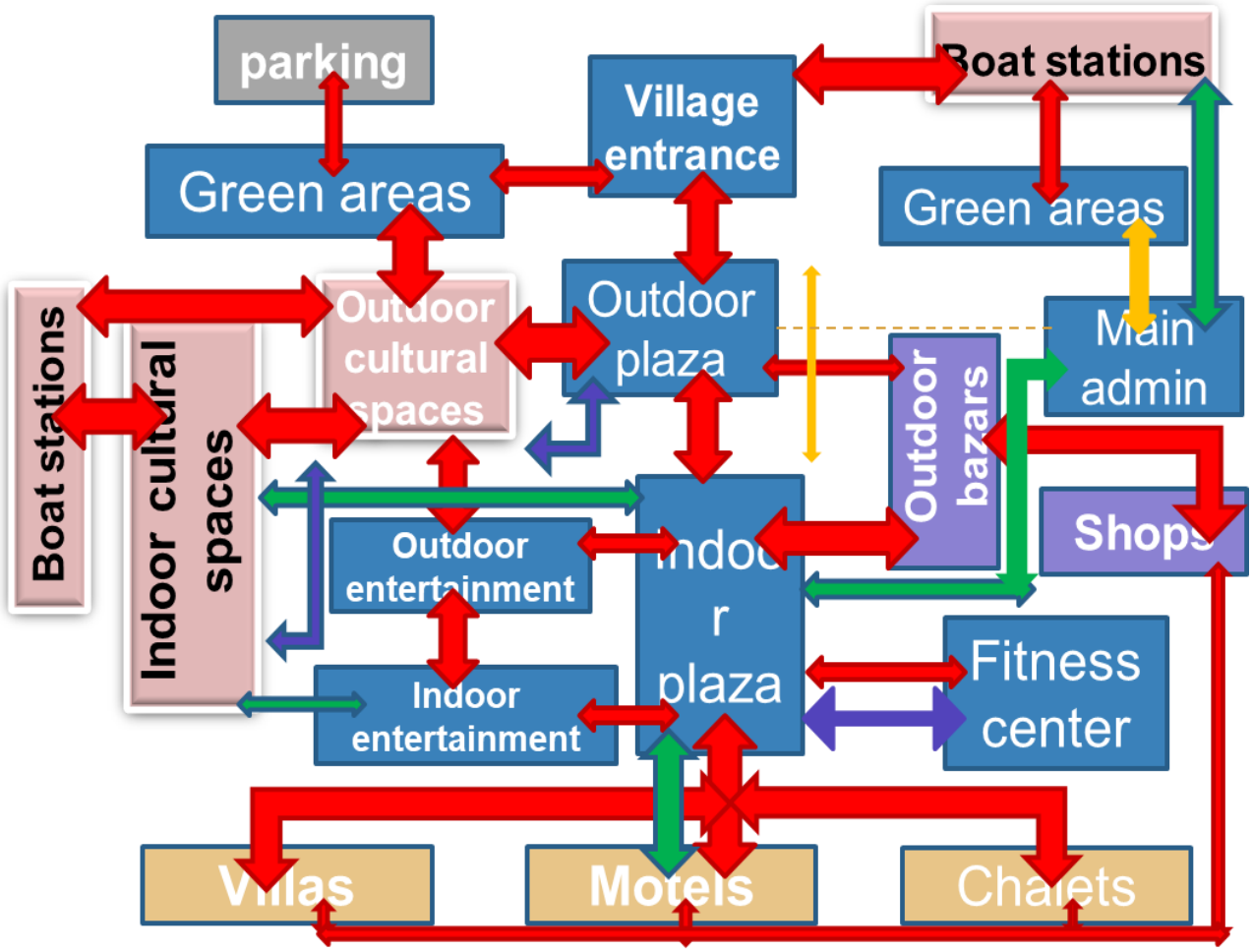
Residential zone correlations



Entertainment zone Correlations



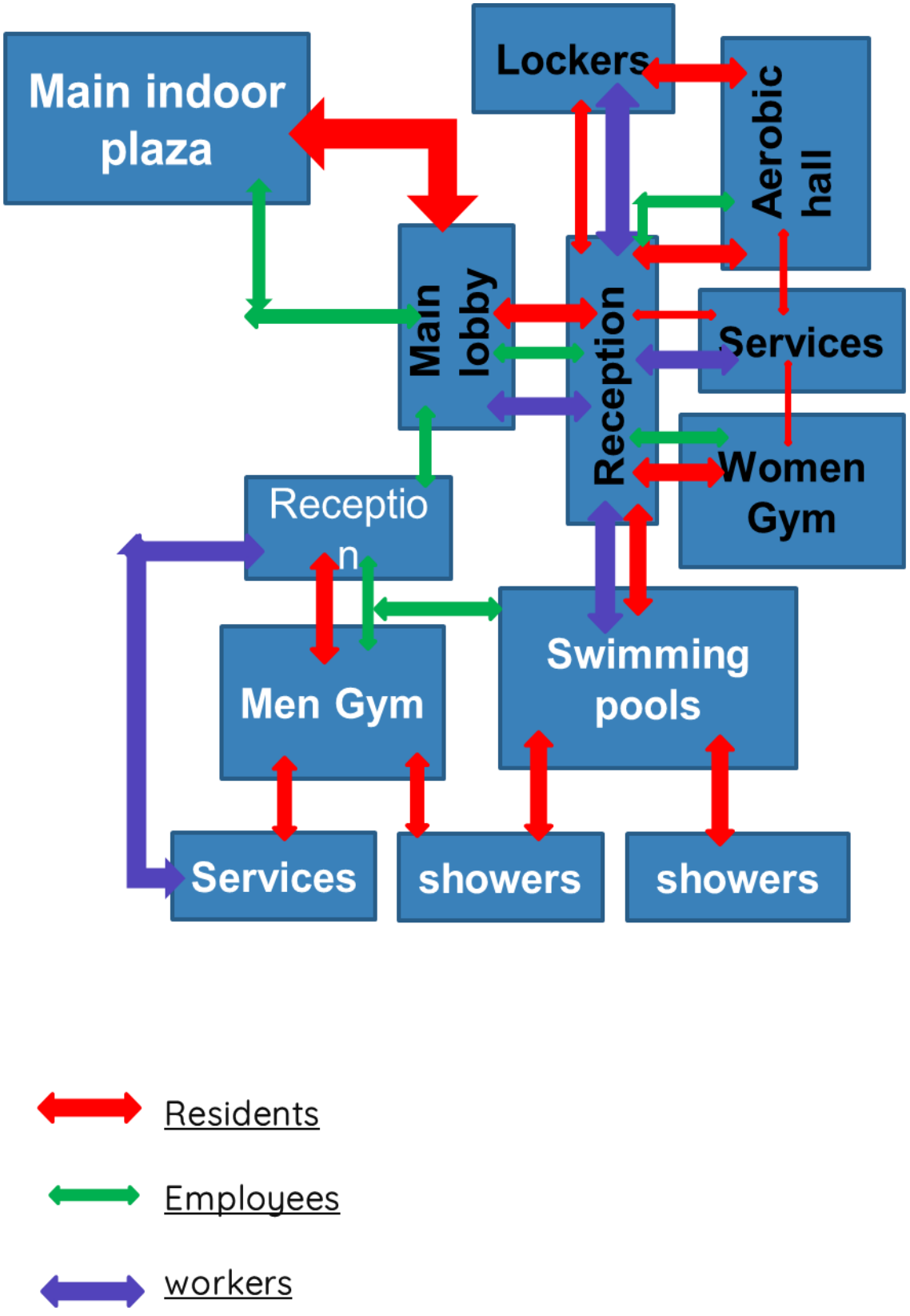
Main Movement Diagram



Movement diagram key:

Residents
Employees
Workers
Managers

The differences in thickness of the arrows have been used to show the density of the movement for the particular group of users for the project


Main indoor plaza
Lockers
Aerobic hall
Main lobby
Reception
Services
Women Gym
Receptio n
Men Gym
Swimming pools
Services
showers
showers
Residents
Employees
workers

Chapter Three:

Data Analysis:

VII. Data analysis:

- Project components
- Spatial component study
- Diagrams

VIII. Site Analysis:

Site Analysis:

Location:

As a result of sites comparison **Kassenger site** has been select due to its distinctive Location & view.

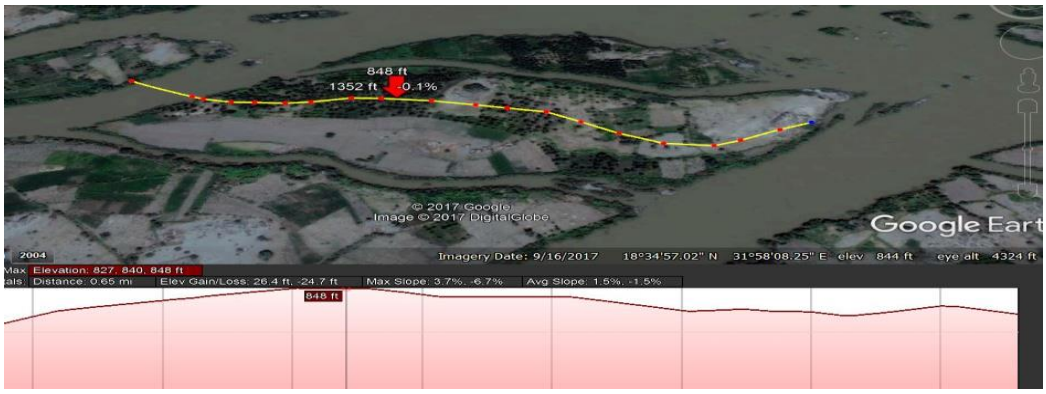
Pic no (49): World map

Pic no (50): Sudan map

Site Analysis:

Topography Study:

There's no remarkable sharp (steep) slope due the islands.
Slope is remarked near Nile sides. Slope there is controllable weather to be treated or to use it in planning.



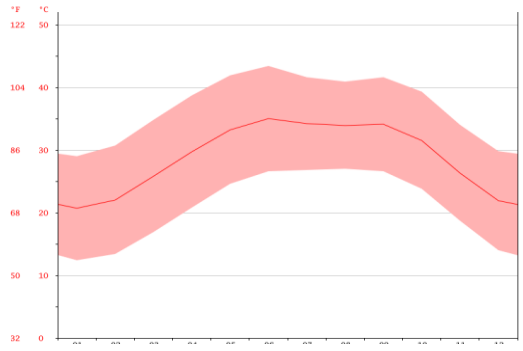
Pic no (51): location Topography

Temperature Study:

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	20.7	22	25.8	29.7	33.2	35	34.2	33.9	34.1	31.5	26.3	21.9
Min. Temperature (°C)	12.4	13.4	16.9	20.8	24.6	26.6	26.8	27	26.6	23.8	18.7	14
Max. Temperature (°C)	29	30.7	34.8	38.7	41.9	43.4	41.6	40.9	41.6	39.3	34	29.8

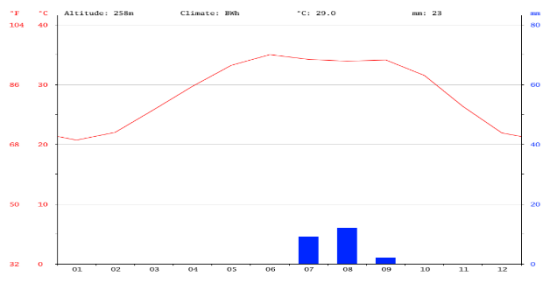
Pic no (52): Temperature averages

Highest Temperature: 35
Which is remarked In June
Lowest Temperature: 20.7
Which is remarked in January
The average Temperature:29



Pic no (53): Temperature levels

Average Proportion with Temperature degrees
Highest level of Rains is remarked in August &Lowest level is remarked in January.

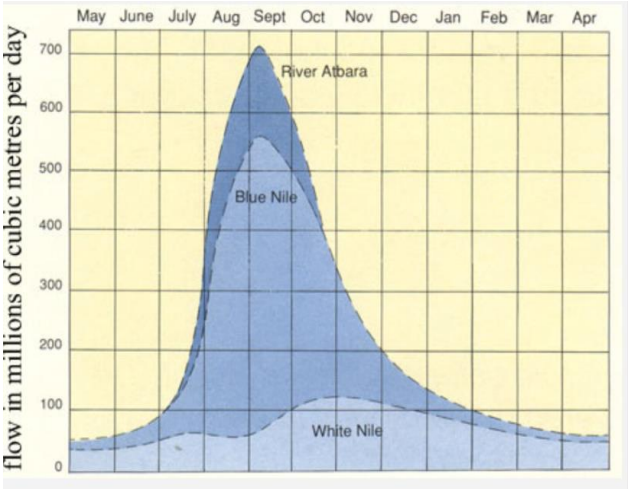


Pic no (54): proportion of temperature degree & rain level

Site Analysis:

Flood study:

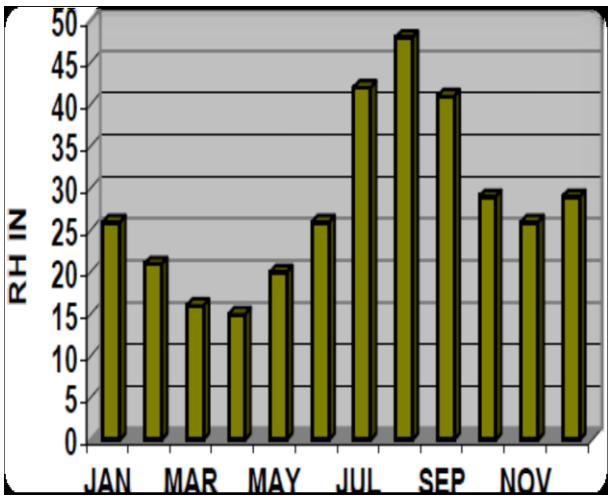
High flood's levels are in Rain season (August-September).
The highest level is in September(38.88 cubic meters per day.



Pic no (54): flood levels

Humidity Study:

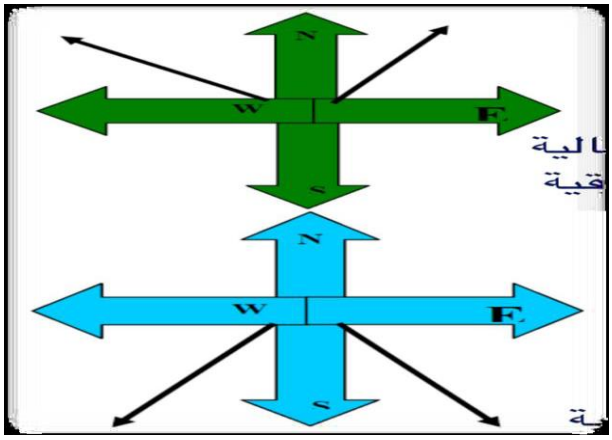
Most of the year Humidity Ratio in general is 15-45% .
In Rain season mainly at early morning humidity ratio reach 85%/
In March & April humidity ratio remarked it's Lowest number 10% as a result of Dry Northern East-west wind flow. .



Pic no (55): Humidity ratio

Wind study:

Most of the year wind flow speed is in medium range of 14-17 km/h.
In Rain season it would be large variation between the minimum &maximum speed ratio. Wind flow speed in this season is in range of 30-47 km/h sometimes it's about to 70 km/h.
Northern east_ west dry wind flow in winter
Seasonal southern east_ west wind flow

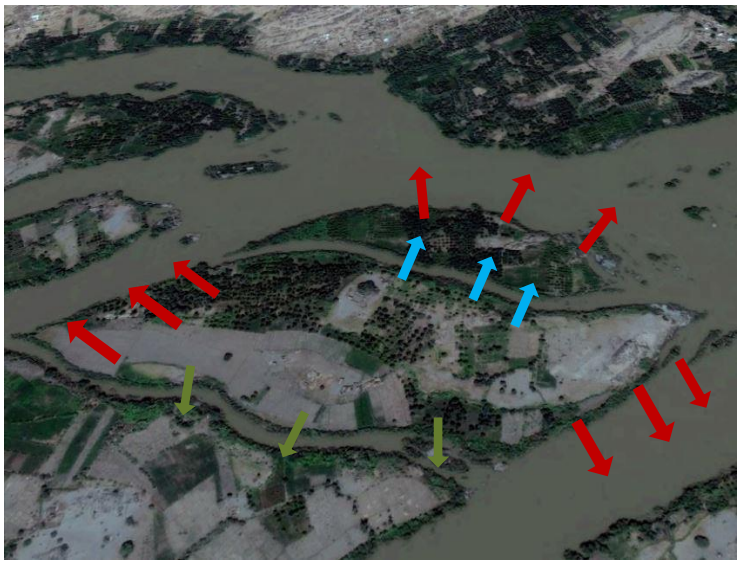


Pic no (56): wind direction

Site Analysis:

6/ The View

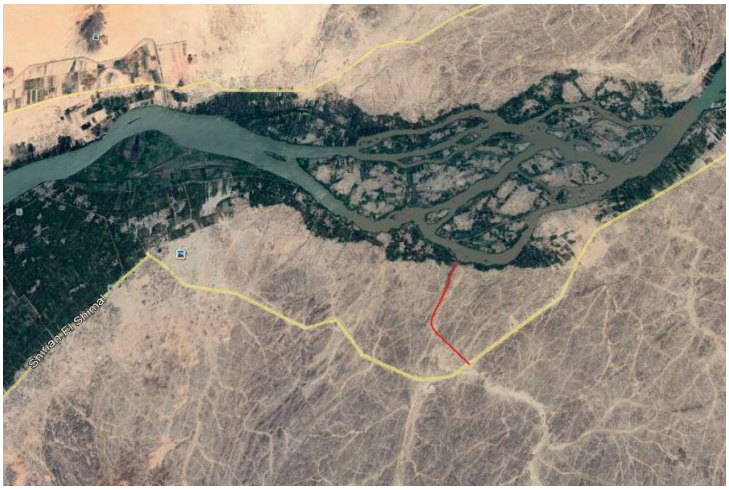
Strong view in the northern east of the small island, southern east & northern west of the whole location.
Medium strength view in the area between the two islands.
Weak strength view in the southern west of the location.
*__Result:__
Building should be planned axes so as to gain the maximum benefit



Pic no (57): views study

7/ accessibility:

There is only one well-constructed road coming from Nuri coming from the main road of the state “Sherian alshemal”
*__Result:__
There should be a proposal to construct a bridge to make the islands reachable for those who have seasickness.



Pic no (58): constructed roads

Chapter Four:

Planning & Design concept

The Concept:

Planning:

I have planned the project for all the residential and cultural activities and the accompanying, which we talked about previously and detailed planning of the residential section.

Accessibility & transportation:

The main idea of choosing this islands is to develop Nile tourism as it's well known there & till now boats are the only transportation there. So that I planned to use this concept but there was the problem of seasickness & fear, so the decision was to offer all the types of transportation:

Boats & yachts: scheduled trips from Nuri for those who are coming from airport.

Also boats used as a transportation for cultural trips to all tourism attractions around.

shuttles: for those who are coming by public transport suffering seasickness or fear.

Also offer **Multi-stories car parking** for those who are coming by private cars.

Transportation inside the village by golf cart.

Design:

I have designed a building from the residential area of the complex's various points The hotel building as well as the boat terminal

Site Selection Philosophy:

The choice of location is an integral part of philosophy Of being in an area with potential in line with nature & the project function, where tourist attractions are available and the tranquility and psychological comfort of the tourist. In my schematic this I tried Striving to benefit from the location of the distinguished project to located in an area characterized by nature and Nile landscape.

Helping to keep the project efficiency.

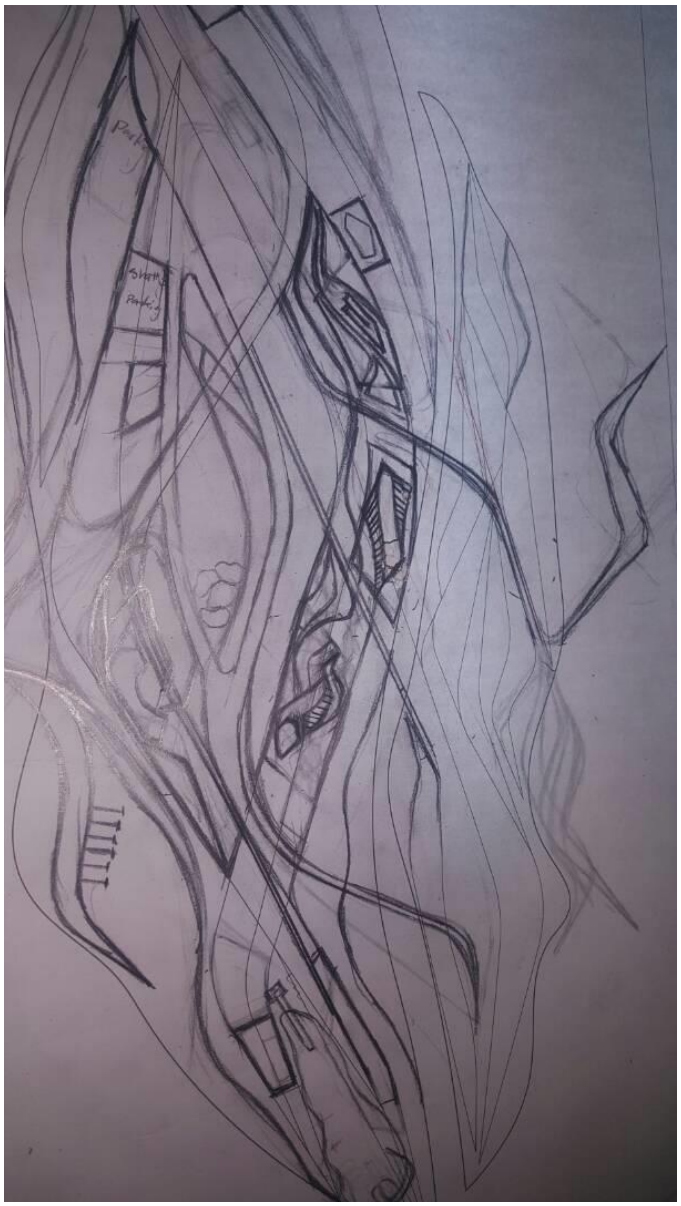
Planning philosophy:

Optical Communication:

During the planning philosophy of the project, visual communication of axes and lines (streets, corridors, and horizontal projections of buildings) was adopted to give a sense of continuity.

• **Using curved lines:**

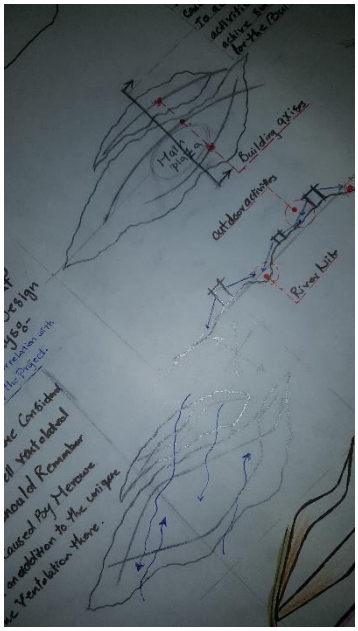
It has been used in street and lane traffic for smooth line flow and ease of movement.



Pic no (60): early start of planning concept

• **Distribution of buildings in axes:**

It also took into account that the domains are not completely separate but are connected to each other through distribution in certain axes so as to ensure the Nile view of all buildings with all their height and also ensures the basic idea is to have good correlation with the environment and non-anomalies.



Pic no (61): Panning concept

Design Concept:

I have chosen the residential building without the administrative, investment or other buildings in the village for the following reasons:

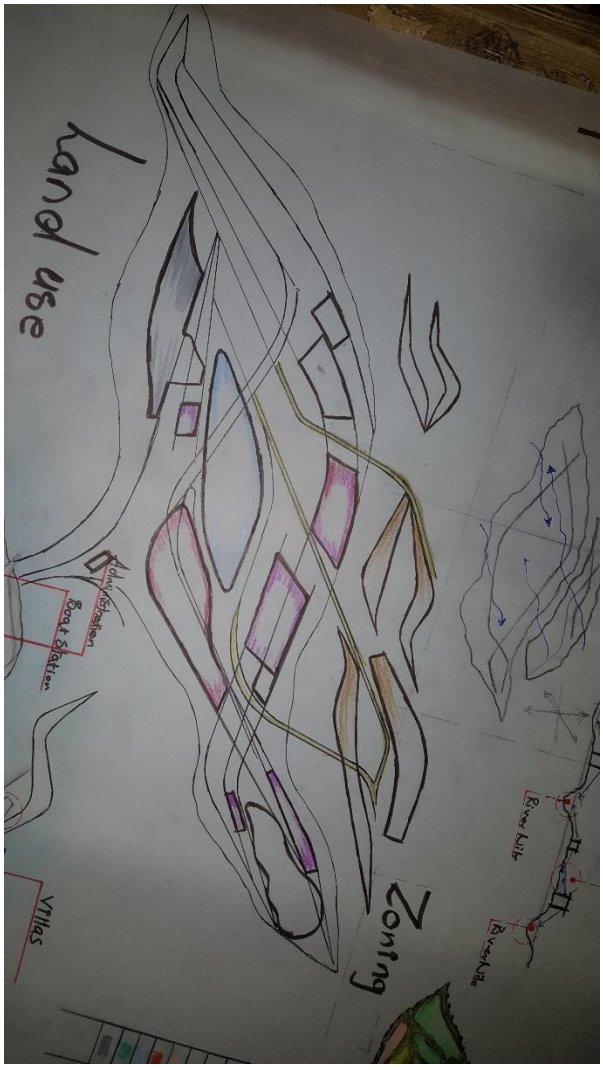
• As accommodation is the basic service that must be provided to the tourist
• Provide adequate accommodation to encourage tourists to travel this distance
• To reflect the concept of multi-choice housing to suit all tourists with several payment options.

Stage one:

The initial stage:

1/Planning:

The project has been in many zones :



Residential zone:

Contains three types of accommodation:

- **Villas** for group accommodation
- **Hotels** for separated accommodation
- **Chalet** for luxury family housing

Cultural zone:

Contains galleries, theatres, documentary cinemas & multipurpose hall

Entertainment zone:

Contains restaurants, cafes, playing halls & small aqua-activities

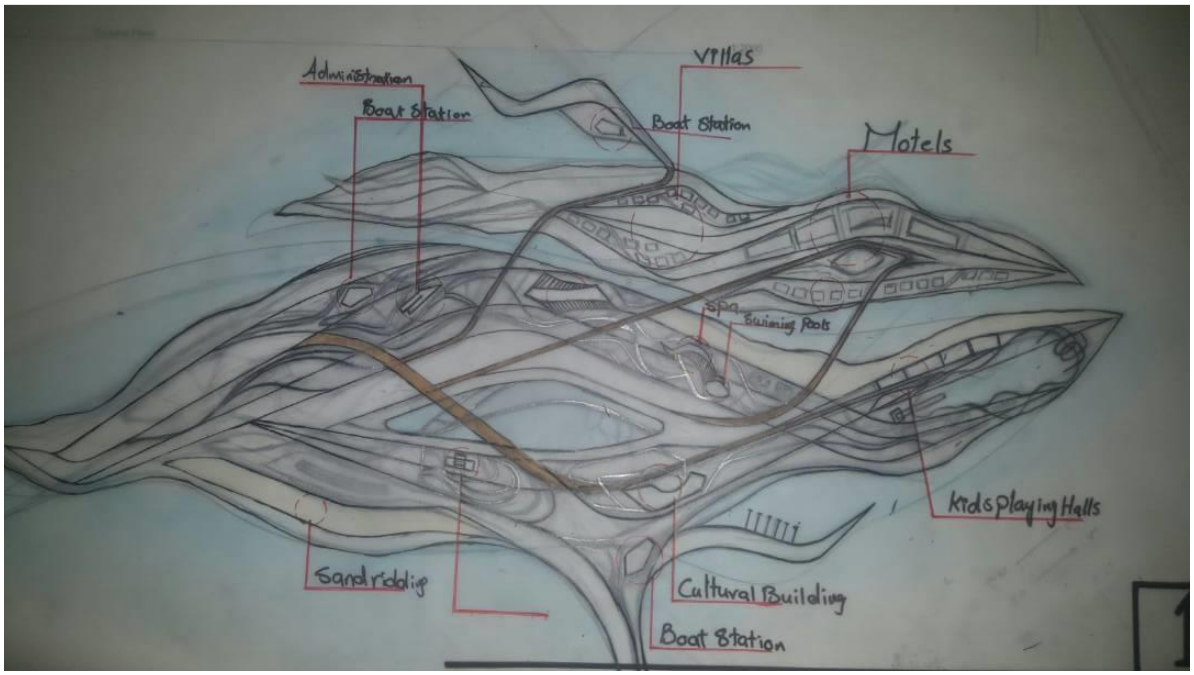
Sport zone:

Contains Marina, Spa, Gym, Relaxing activities &outdoor playgrounds

Commercial zone:

Contains Outdoor bazars, daily need market& small commercial building

Pic no (62): main zones of the village

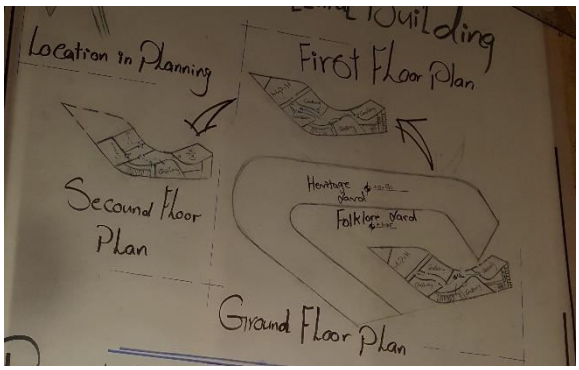


Pic no (63): structure plan

Design:

My idea was to design the cultural building so as to focus on the history & heritage of the state where the project is located.

1/ Cultural building contains:



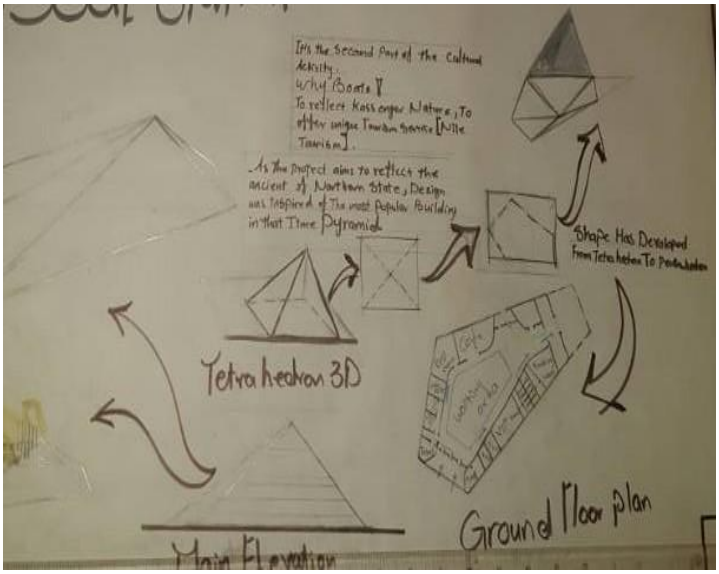
- Galleries
- Documentary cinemas
- Multi-purpose hall
- Theater
- Heritage & folklore piazza

Pic no (64): Cultural building design

2/ Boat station:

The idea of this terminal (station)

Is to organize cultural trips & to control boats of arrival tourists.



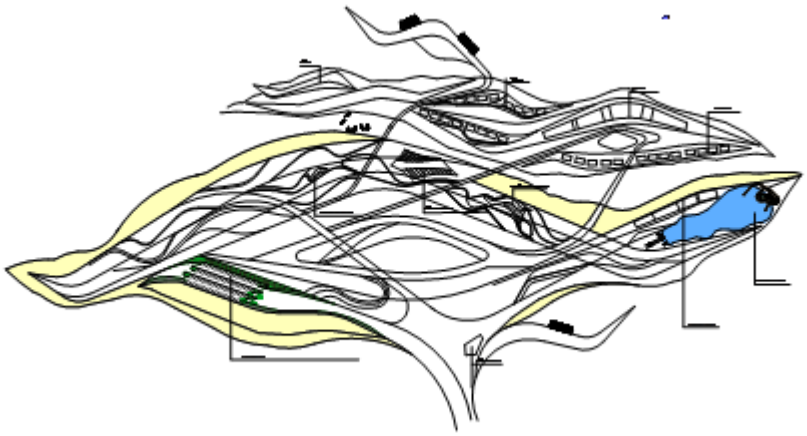
Pic no (65): boat station

Results of this stage:

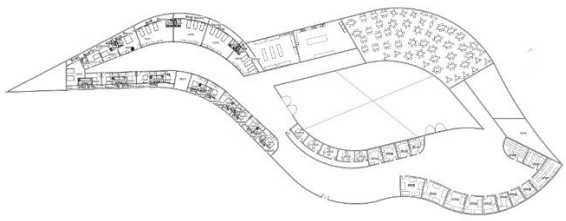
- More detail to ensure planning concept
- Roads & pathways must be more smooth
- The design of cultural building has been canceled
- The new design would be for the hotel building as the accommodation is the more important.

Developed stage:

Planning:
The concept has been more clear



Pic no (66): developed planning



Results:

-long corridor would make movement more Difficult.

-No clear concept in the design

-Too much waisted area

Pic no (67): Hotel ground floor

Ground floor plan consist of:

Main lobby

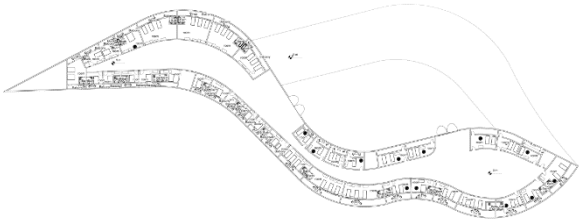
Administration

Breakfast hall

small shops

Rooms

Pic no (68): Hotel first floor

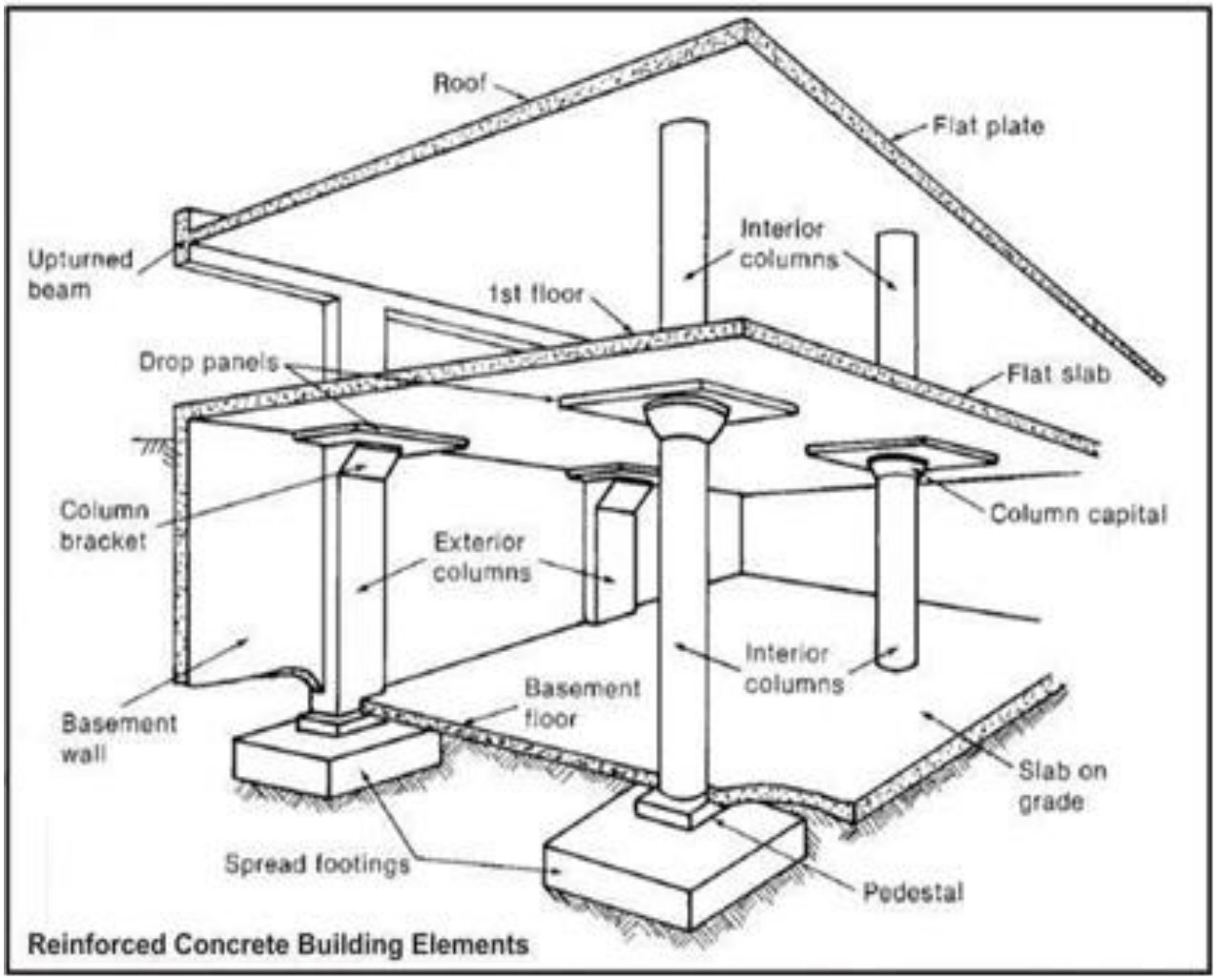


Pic no(69): Hotel secound floor

Pic no: (70): section

BEAM AND COLUMN STRUCTURE SYSTEM:

-The type of building consists of a frame or skeleton of concrete. Horizontal members of this frame are called beams and slabs ,and vertical members are called columns. The column is the most important, as it is the primary load carrying element of the building.

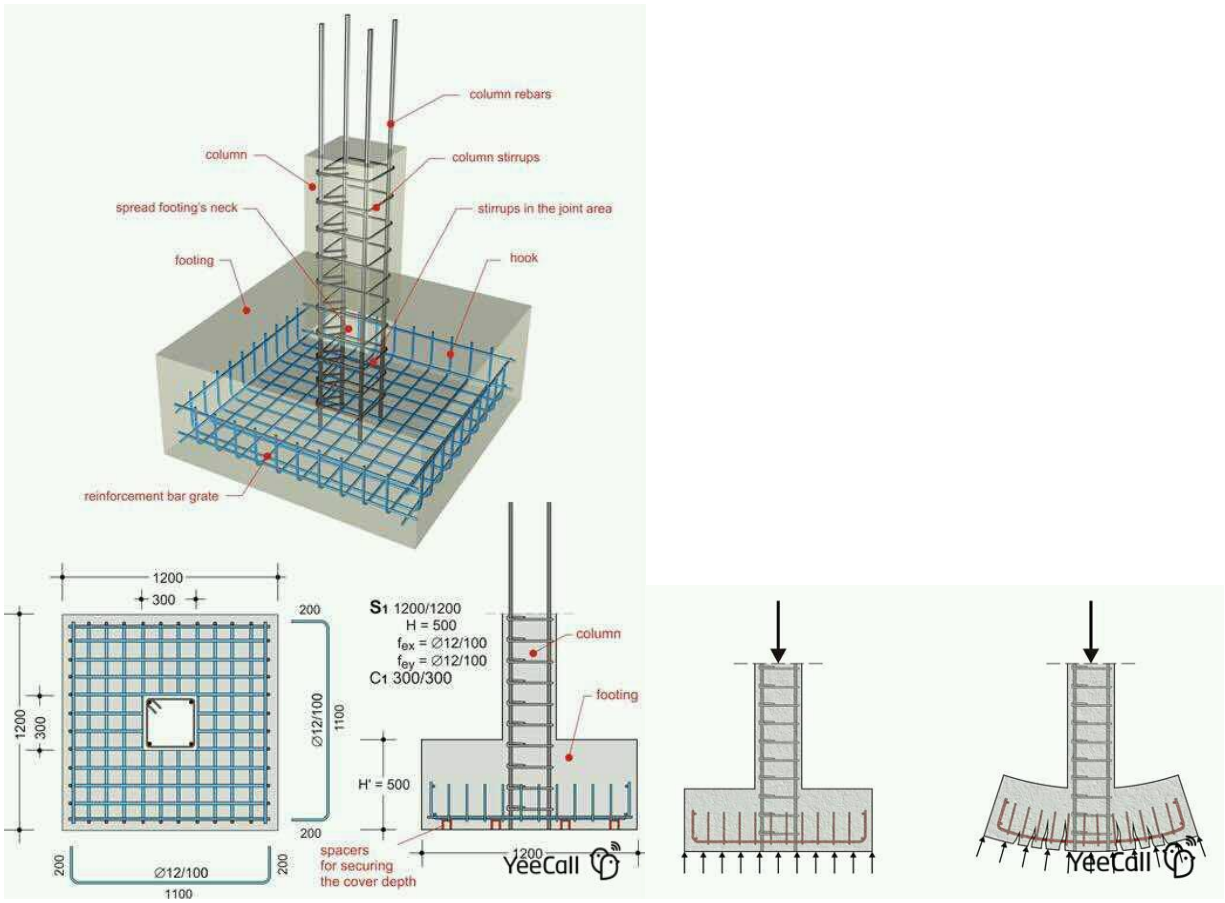


Pic no (71): Reinforced concrete building elements

A.FOUNDATIONS:

- (The used type is the). SPREAD FOUNDATIONS:

-It behaves like an inverted cantilever with loads applied in the upward direction .As a rule , a spread footing is a quite rigid element , therefore ,the applied soil stresses are almost linear .These soil pressure are the loads carried by the footing that behaves like a slab and deformed by the way shown at figure.

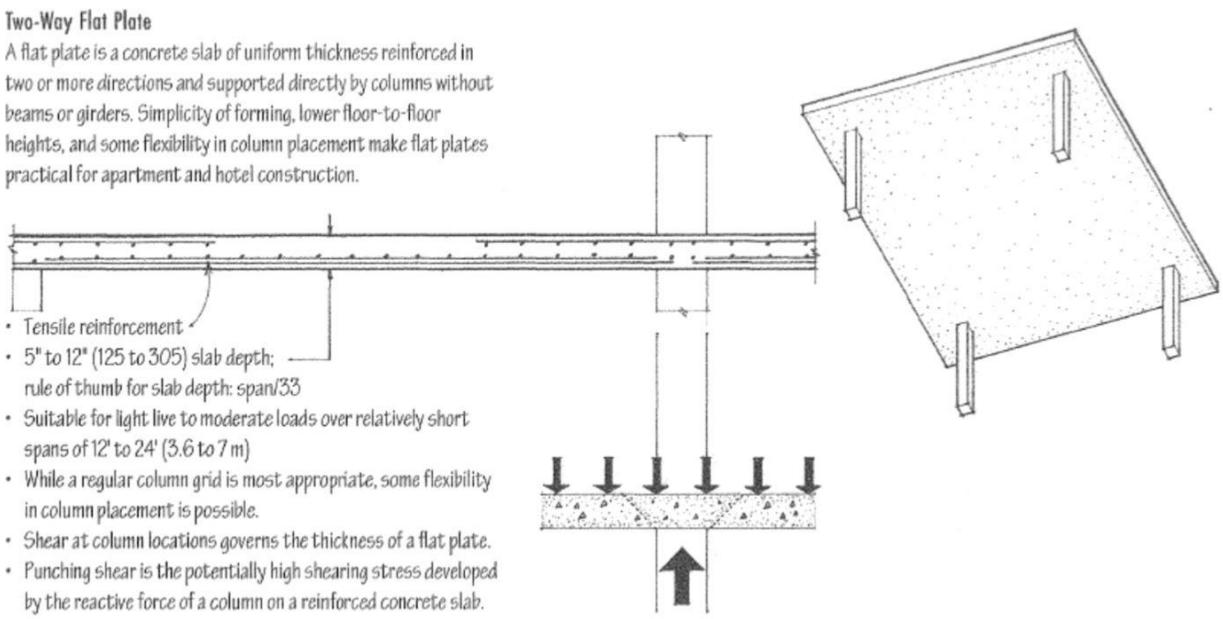


Pic no (72): Load spreading in the soil

B. FLOORS:

THE FLAT PLATE (SLAB):

The flat slab is a two-way reinforced concrete slab that usually does not have beams and girders, and the loads are transferred directly to the supporting concrete columns.



Pic no (73): two-way slab

C. Columns:

***THE COLUMN TENDS TO PUNCH THROUGH THE SLAB IN FLAT SLABS, WHICH CAN BE TREATED BY THREE METHODS:**

a. Using a drop panel and a column capital in flat slab

b. Using a drop panel without a column capital in flat slab.

c. Using a column capital without drop panel in Different types of flat slab.

Uses of column heads :

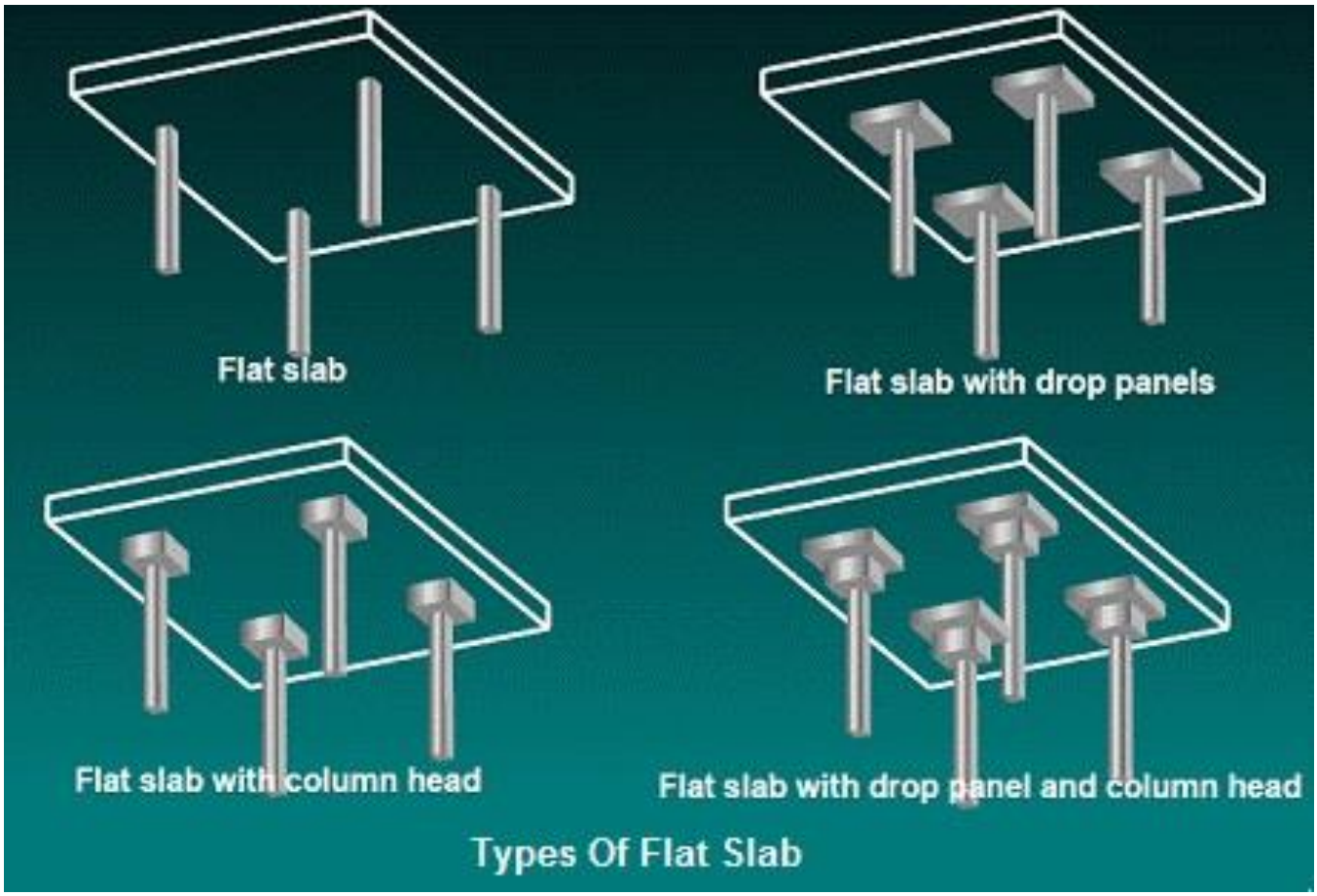
Shear strength of flat slab is increased by using column heads.

Column heads reduce the clear or effective span, and therefore, reduce the moment in the flat slab floor

- Uses of column heads :
    a. Shear strength of flat slab is increased by using column heads.

b. Column heads reduce the clear or effective span, and therefore, reduce the moment in the flat slab floor

- Uses of drop panels :



1. Drop panels increase the shear strength of flat slab floor.
2. Drop panels increase flat slab's negative moment capacity.
3. Drop panels reduce deflection by stiffening the flat slabs

- *Advantages of Flat Slab*

Flat Slabs are used by engineers in many building due to its advantages over other reinforced concrete floor system in different cases. The most important advantages of flat slabs are given below:

1, Flexibility in room layout.

-Partition walls can be placed anywhere.

-Offers a variety of room layout to the owner.

-False ceilings can be omitted.

2, Reinforcement placement is easier.

As reinforcement detailing of flat slab is simple, it is easier to place

3, Ease of Framework installation.

Big table framework can be used in flat slab

4, Building height can be reduced.

-As no beam is used, floor height can be reduced and consequently the building height will be reduced.

-Approximately 10% of the vertical member could be saved

-Foundation load will also reduce.

5, Less construction time.

Use of big table framework helps to reduce construction time

6, Prefabricated welded mesh.

-Standard sizes

-Less installation time

-Better quality control.

7, Auto sprinkler is easier.

- *Disadvantages of Flat Slab*

Flat slabs have some disadvantages also. The major disadvantages are given below:

1. Span length is medium.

In flat plate system, it is not possible to have large span.

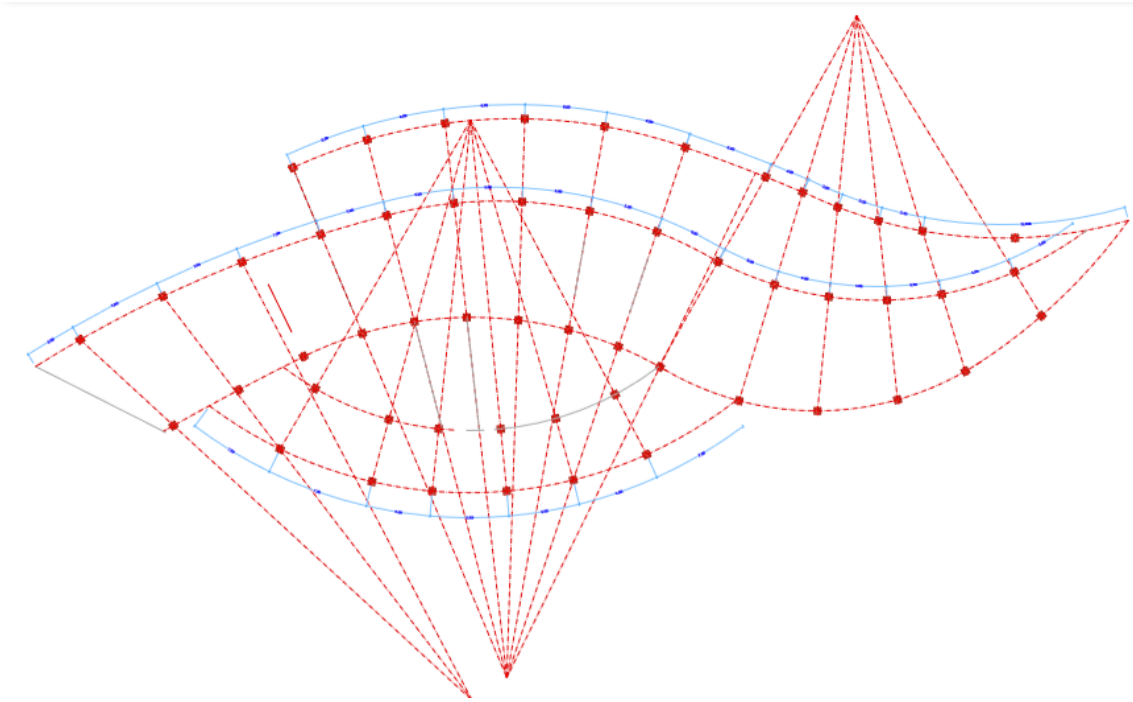
2. Not suitable for supporting brittle (masonry) partitions
3. Use of drop panels may interfere with larger mechanical ducting
4. Critical middle strip deflection

In flat slabs, the middle strip deflection may be critical.

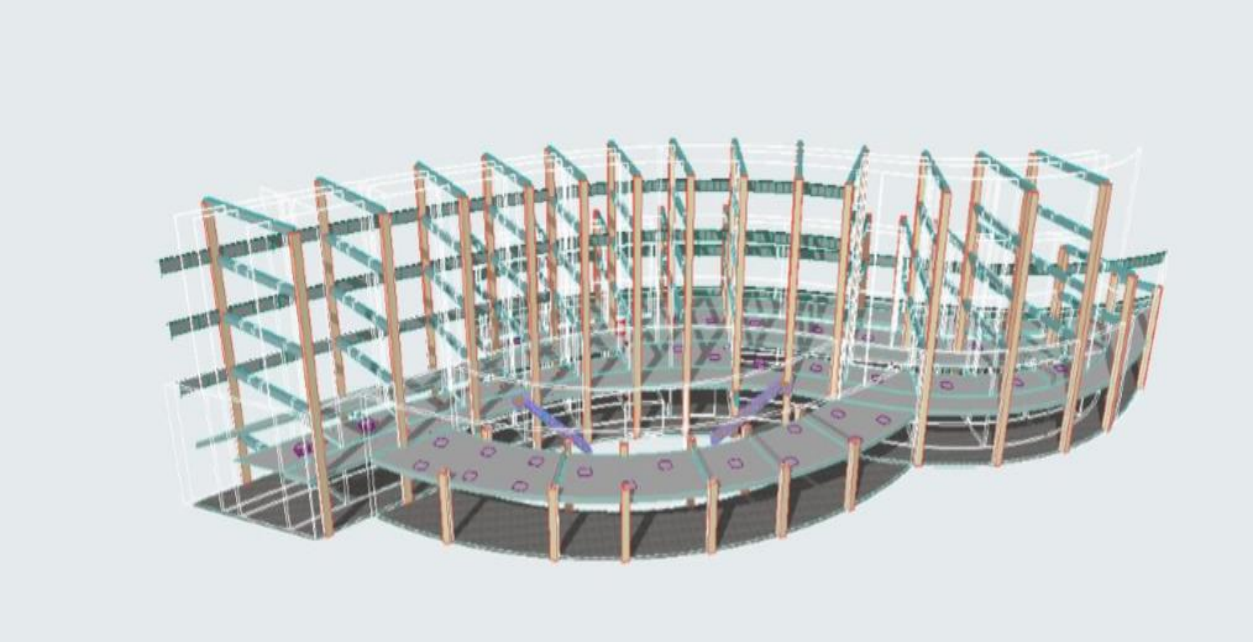
5. Higher slab thickness

Compared to typical reinforced concrete two way slab system, the thickness of flat plate slabs are higher .

- CONCRETE SKELETON ELEMENTS:



Pic no (75): Grid plan



Pic no (76): 3d Structure

Water & Electric supply solution:

Water & Electric supply solution:

As a result of the large total area of the site & the location of it, the cost of all closed system would be too high. So the water supply would be using none-closed systems by supplying to grounded tanks for each group of buildings (4" pipe) then to each single roof tank separately (with 2" pipe).

The acquired quantity of water = Daily water use + Fire protection water.

Daily water use = Daily water use per person + Landscape water use

The daily use of water depends on the building function and the number of users within the building, which can be taken from the analysis and project study.

Building purpose	Storage/person/24 hrs	
Boarding school	90 litres	
Day school	30	
Department store with canteen	45	(3)
Department store without canteen	40	(3)
Dwellings	90	(1)
Factory with canteen	45	
Factory without canteen	40	
Hostel	90	
Hotel	135	(2) (3)
Medical accommodation	115	
Office with canteen	45	
Office without canteen	40	
Public toilets	15	
Restaurant	7 per meal	

The selected building is the hotel which serve 120 User and the number of the minimum quantity of water per 2 person per day in gallons =135

Which means: 120 x 135= 16,200 gallons ⇒ 16,200 x 3.8 = 61,560 Liters/day

Opening hours are 24 hours which mean the daily use of gallons is 74,040 Liter

The landscape is excluded

Tank Capacity (Litres)	Tank Capacity (Gallons)	External Diameter (mm)	External Height (mm)	Site/Hole Diameter (mm)
5,400	1,200	2,000	2,450	4,000
13,500	3,000	3,250	2,400	5,250
22,500	5,000	3,900	2,250	5,900
27,000	6,000	4,300	2,550	6,300
34,000	7,500	5,100	2,400	7,100
45,000	10,000	5,700	2,250	7,700
52,000	11,500	5,750	2,550	7,750
95,000	21,000	7,800	2,550	9,800
144,000	32,000	9,500	2,550	11,500
400,000	90,000	15,600	2,650	17,600
500,000	111,000	15,700	3,050	17,700
600,000	133,000	15,700	3,600	17,700
700,000	155,000	15,700	4,200	17,700

The flow rate of the sanitary appliance are:

WC cisterns flow rate is 0.11 liter/sec

Hand basin flow rate is 0.15 liter/sec

$$d = \sqrt[5]{\frac{q^2 \times 25 \times L \times 10^5}{H}}$$

where: d = diameter (bore) of pipe (mm)
q = flow rate (l/s)
H = head or pressure (m)
L = length (effective) of pipe (m)
(actual length + allowance for bends, tees, etc.)

- The main water supply pipe is 8 inches radius (PPR).

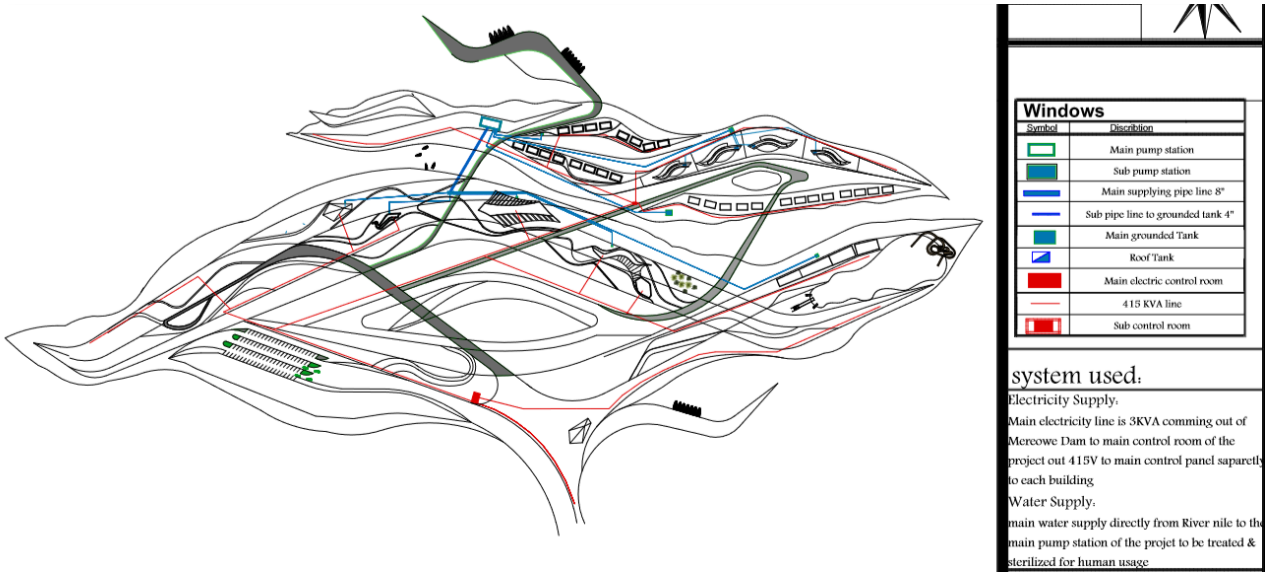
- The entering pipe to the site property is (4-6) inches radius (PPR).

- The water pipe is connected to the underground water tank.

Water Supply Pipe Diameter inch	**Number of supply branched pipes diameter in inches**								
	0.50	**0.75**	**1.0**	**1.25**	**1.50**	**2.0**	**2.50**	**3.0**	**4.0**
0.50	**1**								
0.75	**3**	**1**							
1.0	**6**	**2**	**1**						

1.25	**10**	**4**	**2**	**1**					
1.50	**15**	**6**	**4**	**2**	**1**				
2.0	**32**	**12**	**6**	**3**	**2**	**1**			
2.50	**56**	**20**	**10**	**6**	**4**	**2**	**1**		
3.0	**88**	**32**	**15**	**9**	**6**	**3**	**2**	**1**	
4.0	**181**	**66**	**32**	**18**	**12**	**6**	**3**	**2**	**1**

- The Green lawn is supplied with a 2 inches pipe from the treatment plant station pipe which branches to a ¾ inch pipes and then to ½ inch which supply the sprinklers.



Pic no (77): Water & electric supply

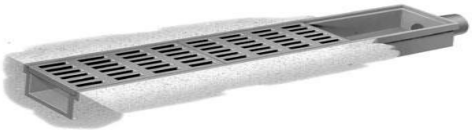
Sewage and Drainage System:

The used system is the Separate system; this has foul water from the sanitary appliances. Conveyed in a foul water drain to a foul water sewer. The rainwater from roofs and other surfaces is conveyed in a surface water drain into a surface water sewer or a soak away.

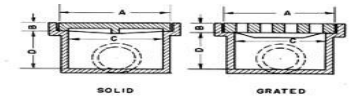
1 | Drainage Systems

A | *Ground Surface Drainage*

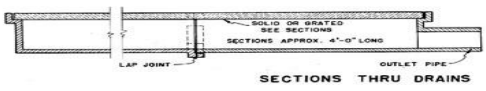
The site has different levels within the design of the outdoor and the landscape. Therefore, all the surfaces are drained through trenches and underground pipes, which eject the water to the White Nile River, considering it a clean natural water, which came from rains and any similar sources. The surfaces slope is 1:100.



Illustrating Type M frame with grated cover. Standard with 4-inch outside caulk outlet. Can be equipped for inside caulk if specified.

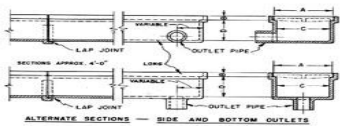


Trench covers are used over areas requiring long drainage assemblies. Can be supplied in a variety of sizes and lengths to meet special needs. For trenches of irregular pattern, arrangements can be made to furnish cover to fit.



Standard 4-inch outlet at end of drain. Special size outlets are available on special order. Side and bottom outlets optional and furnished only when specified.

Sections: Thru Drains, Type M



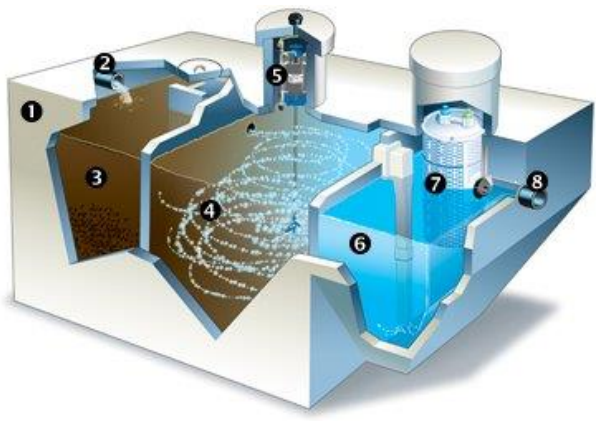
As for the green landscape and lawns all the overflowed water are disposed through lawn drains.

2 | Sewage System

The site property is located in none- planned area, in northern state. The area does not have any kind of sewer system. Therefore, a water waste treatment plant is added to the site of the project. I have used two treatment plant separately in every island.

The plant will be located at the east side of the property at non ventilated direction.

Norweco's Singular Aerobic Treatment System



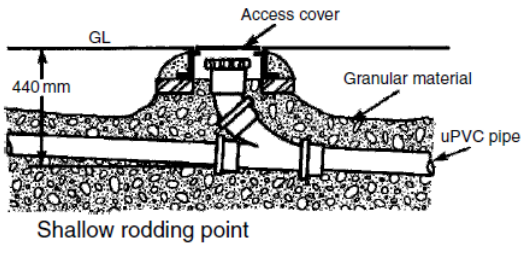
1. **Precast Concrete Tank:** The Singular tank, access risers and covers are reinforced precast concrete manufactured locally by your factory-trained, licensed Norweco distributor.
2. **Inlet:** Untreated wastewater enters the system here.
3. **Pretreatment Chamber:** Wastewater enters at the Singular inlet and is equalized here as anaerobic bacteria and gravity precondition it.
4. **Aeration Chamber:** Safe, living aerobic bacteria convert the wastewater into stable substances.
5. **Singular Aerator:** Our exclusive aerator infuses the fresh air that safe, living microorganisms require to fully digest and treat wastewater inside the aeration chamber.
6. **Clarification Chamber:** Flow equalization enhances the settling of biologically active substances inside the Clarification Chamber.
7. **Bio-Kinetic System:** Our Bio-Kinetic system combines filtration, settling, non-mechanical flow equalization, optional disinfection, adjustable outlet weir and optional DE chlorination features into a single package.
8. **Outlet:** Only a clear, safe and odorless liquid exits the system here for return to the environment.

Designed for domestic wastewater flows ranging from 500 to 1,500 gallons per day, performance of the Singular system is certified by NSF International and the Canadian Standards Association. Sold only through local, licensed, factory-trained distributors, the Singular system is backed by Norweco's fifty-year warranty and exchange program. The Singular system is a trouble-free answer to domestic wastewater disposal and insures a safe, sanitary home environment.

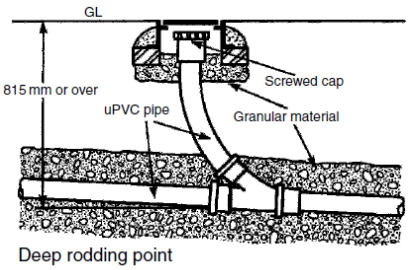
Manholes

For the whole site property, the manholes are distributed at the main roads inside the project in shape of a public network, which they all lead to the treatment plant at the east side of the property.

The rodding point system is used for each of the building as an inexpensive access at the head of the drain or on shallow drain runs for rodding in the direction of flow.



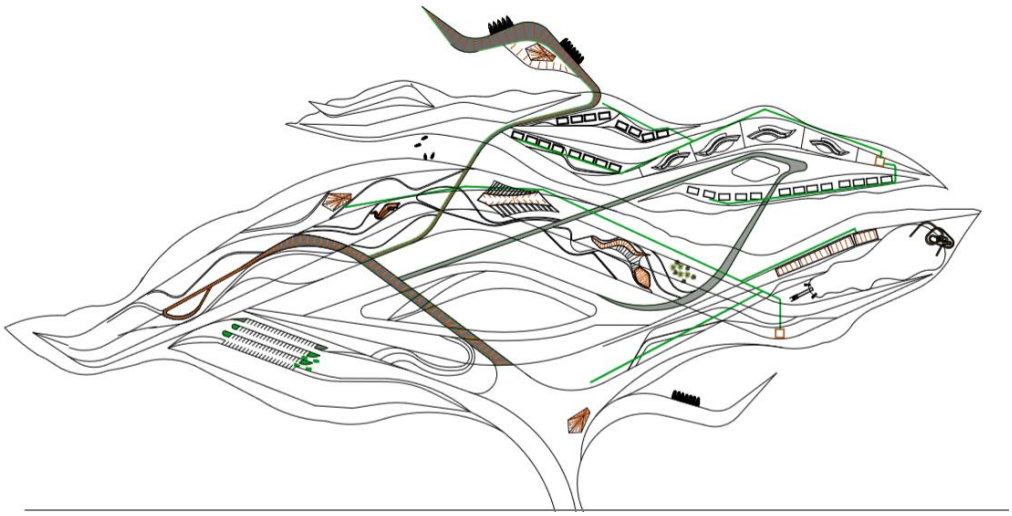
Shallow rodding point



Deep rodding point

The fall of the foul drain is 1:40, and the dimension of manholes are listed in this schedule

MANHOLE MARK	*DEPTH IN CM*	*LENGTH IN CM*	*WIDTH IN CM*	*WALL THICKNESS IN CM*
MH_1	45	45	45	12
MH_2	60	60	45	12
MH_3	70	75	57	24
MH_4	80	75	70	24
MH_5	87.5	75	70	24
MH_6	95	100	75	24
MH_7	105	100	75	24
MH_8	120	100	75	24
MH_9	135	100	75	24
MH_{10}	150	100	75	24
MH_{11}	161.25	100	75	24
MH_{12}	172.5	100	75	24



Drainage & sewage site plan

4 | Air Condition System

The determination of the HVAC system depends on specifying the buildings with its parts and sectors and this will be through the table below.

Building Specifications

Space Function Type		***Main Use of the AC System***		***Important Requirements***		***Less Important Requirements***		***AC Control System***		***Spaces Sizes***	
	Large main space	*	*Cooling or heating*	*	*Temperature*		*Temperature*		*Central*		*Large*
*	*Multiple Spaces*		*Cooling or heating big quantities*		*Air recycling*	*	*Air recycling*	*	*Single space control*	*	*small*
		*	*Variable temperature*	*	*Quiet sounding*		*Quiet sounding*				
					Humidity	*	*Humidity*				
					Sterilized Air		*Sterilized Air*				

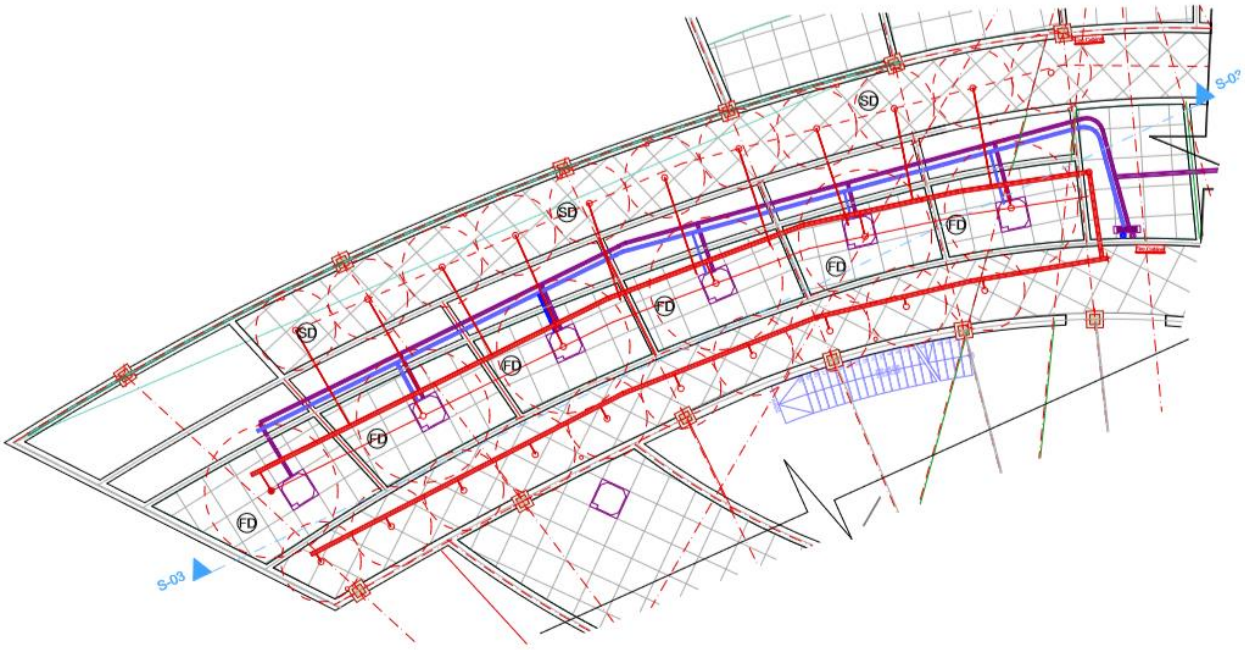
(Tables No 1)

Air Condition System Selection

Space Function Type		***Main Use of the AC System***		***Important Requirements***		***Less Important Requirements***		***AC Control System***		***Spaces Sizes***	
	Large main space		*Cooling or heating*	*	*Temperature*		*Temperature*		*Central*		*Large*
*	*Multiple Spaces*		*Cooling or heating big quantities*		*Air recycling*	*	*Air recycling*	*	*Single space control*	*	*small*
		*	*Variable temperature*	*	*Quiet sounding*		*Quiet sounding*				
					Humidity		*Humidity*				
					Sterilized Air	*	*Sterilized Air*				

(Table No 2)

For the air conditioning system, the VRV system (AAS) has been chosen after completing the table No 1 and comparing it to table No 2.



6 | Vertical Circulation System

Building Type

Small Homes & Health Centers	***Medium Size Apartment Building & Small Hotels***	***High Rise Residential Building & Office Buildings***	***Large Buildings with special Sectors***	***Crowded Buildings 6 floors maximum***
	*			

Vertical Circulation System Selection

Small Homes & Health Centers	***Medium Size Apartment Building & Small Hotels***	***High Rise Residential Building & Office Buildings***	***Large Buildings with special Sectors***	***Crowded Buildings 6 floors maximum***
Internal control system lifts	*Down Aggregation Lifts*	*All Aggregation Lifts*	*Lifts allocation system*	*Escalator System*

Initial Estimating of lifts Number

No of Lifts	Service Rate
1 every 3 stories	Good
1 every 4 stories	Acceptable
1 every 5 stories	Low

For the vertical circulation in the building looking at his specs both **Lift allocation system** .

5 | Fire Fighting System

Building Specifications

Building Masses		***Building Risk Users Rating***		***Building Risk Components Rating***		***Space Function***		***Fire Rating*** ***Material Type***		***Building Dimensions***	
*	*Single Mass*		*Theater, Restaurants, Hospitals, Airports*		*High Hazard*		*Storing*	*	*A* *Hard carbon materials*		*2 floors with 1000 m^2 of area*
	Single main mass + Scattered masses		*Banks, Universities*	*	*Ordinary Hazard*	*	*Education* *Admin* *Housing and Hosting*		*B* *Flammable Liquids*		*5 Floors* *(Wet Pipes)*
			Schools and Kindergartens		*Light Hazard*		*Quiet sounding*		*C* *Electrical Equips*	*	*Above 5 Floors* *(Dry Pipes)*
			Factories				*Industry*		*D* *Metallic and chemical Materials*		
			Laboratories								
			Prisons								
			Commercial Buildings								
			Laboratories								
		*	*Houses and Hotels*								
			Warehouses								

Chapter Five:

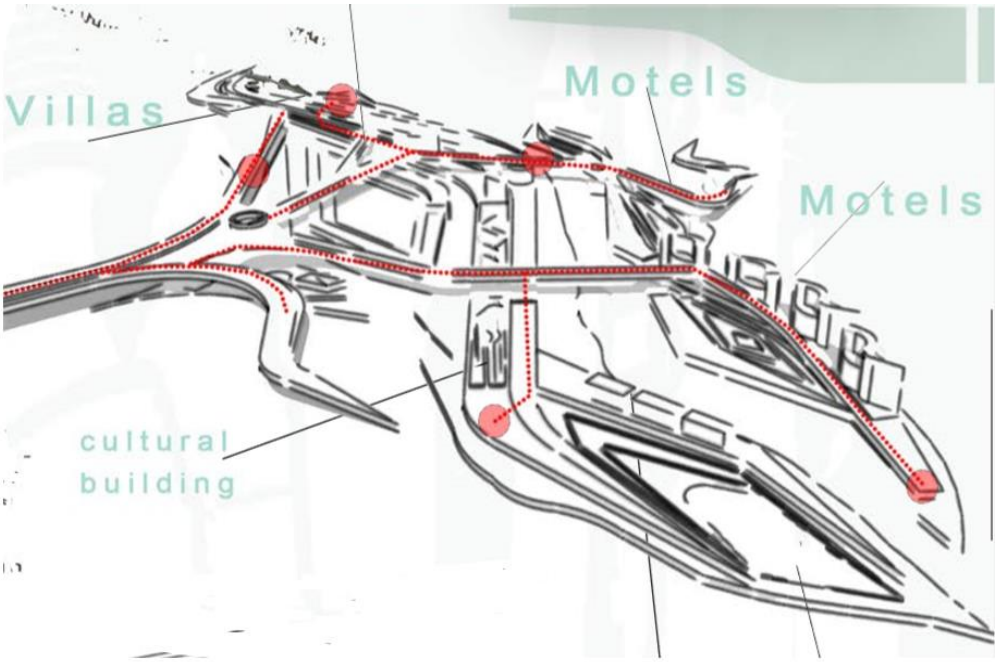
Final Design & conclusion

Early start of final presentation:

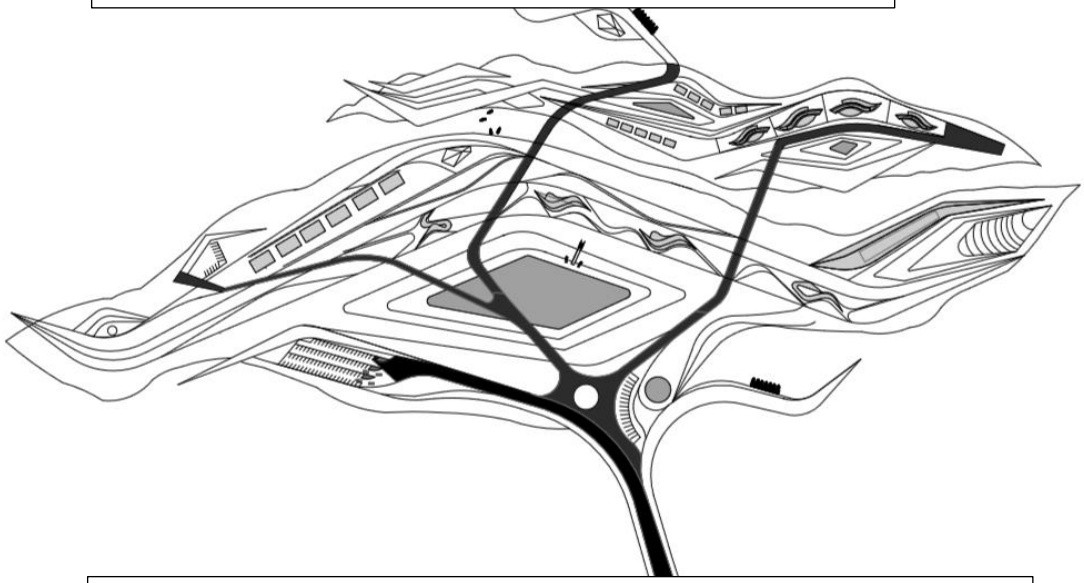
Planning:

Entrance has been more clear

Roads & streets are improved



Pic no (71): transportation &main building

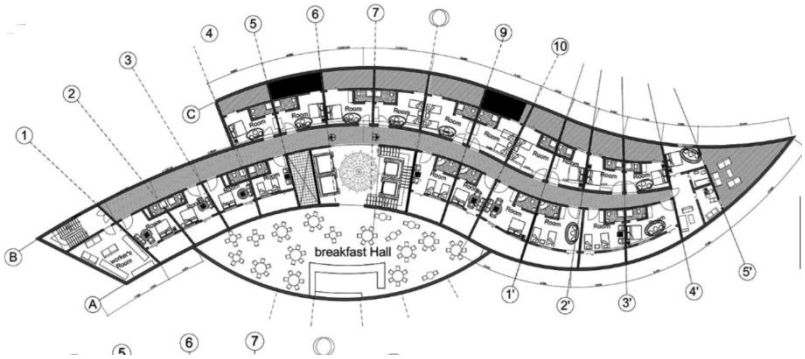


Pic no (72): Developing structure plan

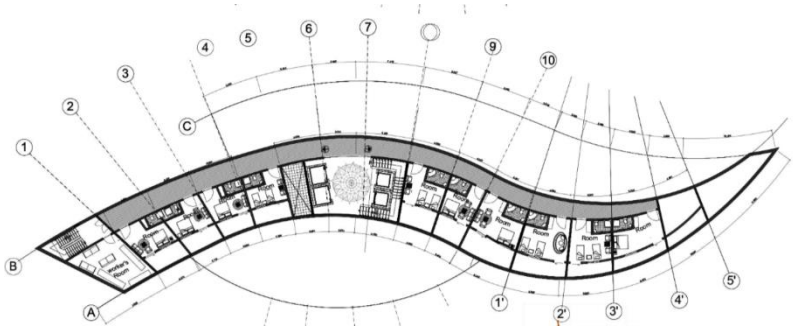
Design:

The most remarkable thin is that the hotel design ha been developed very well so as to avoid all the previous disadvantages

Pic no (73): Developed ground



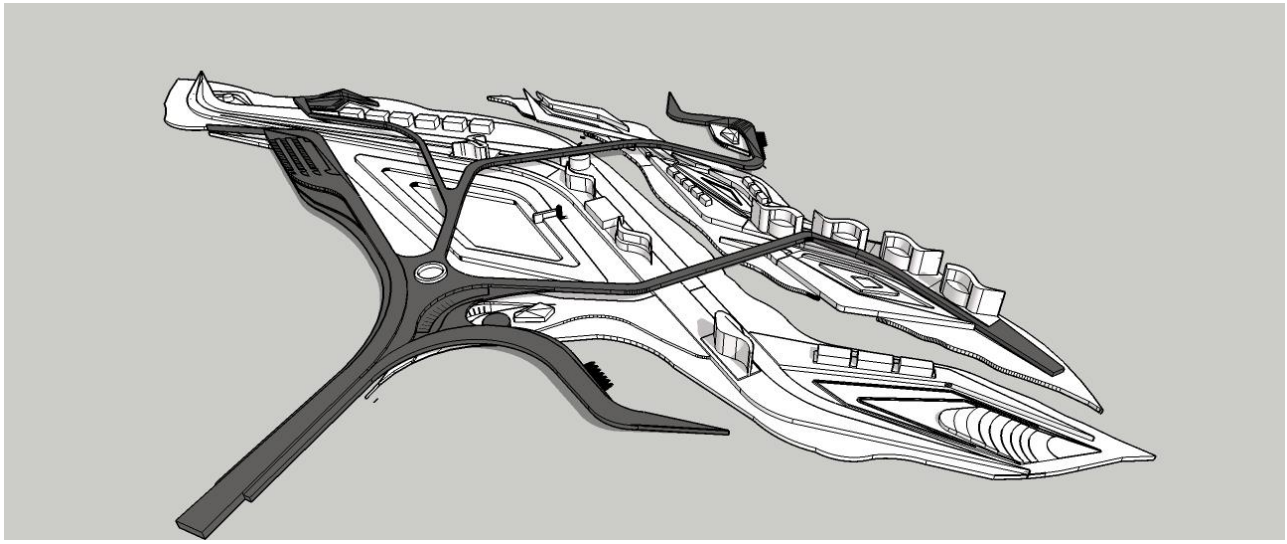
Pic no (74): first floor plan



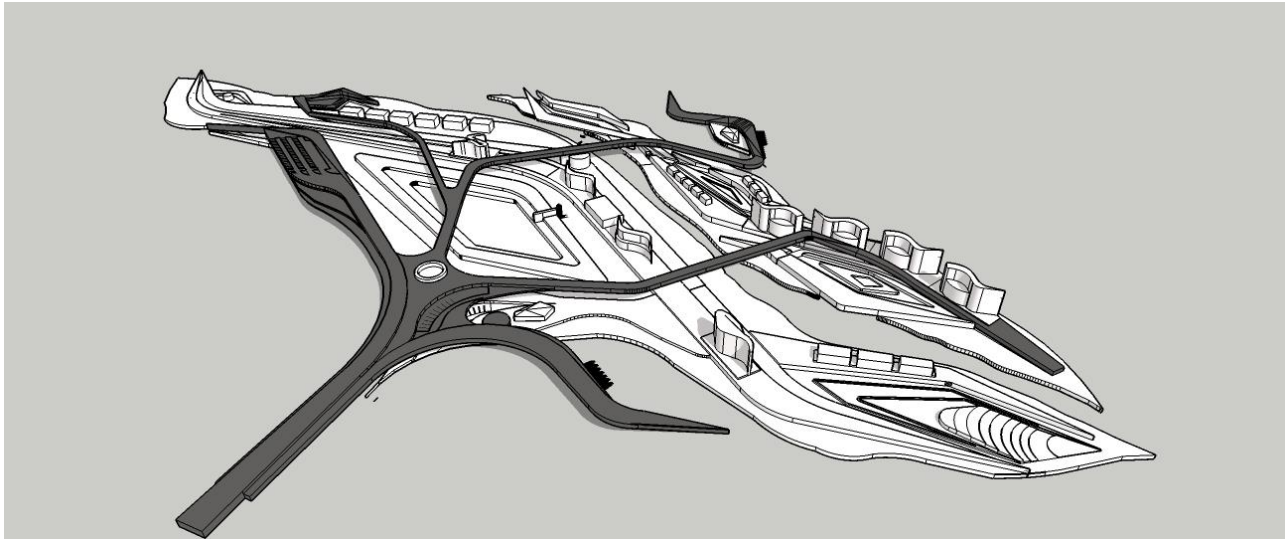
Pic no (75): typical floor plan

Views:

Pic no (77): exterior Model



Pic no (78): view



Pic no (79): view

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