

ABSTRACT:-

Retreat resort is a health resort luxurious retreat where you can get healthy and learn to stay healthy by trying meditate or learning yoga or having a physical therapy such or a spa treatments beside the food, drink, lodging, sports, entertainment, and shopping.

Resorts are a perfect way to soothe the soul from the daily life of human through natural treatments and to connect with the nature that is relaxing and pressure heeling.

The main goals of the project are: improving the reputation of Sudan in the field of physical therapy and resorts and to provide the demand of relaxation and retreat and natural treatments in Sudan without traveling outside for such treatments.

This report contains five chapters that represent the project, the first chapter is a general introduction to the project, the second chapter has two sections the historical side of the project and then some international examples, the third chapter is the project study and analysis which deals with two main things which are the data analysis and the site analysis till you reach the zoning, the fourth chapter is the design process which starts with the concept of the design going through the different phases and the stages the design went through till the final design, finally the fifth chapter which deals with the five sides of technical solutions which are structure, finishing, water supply, drainage and sewage, electricity, and HVAC and firefighting.

The main result of this project is to be able to study and design resorts which has all of the needed spaces for the project, functional, simple in circulation, structurally stable, appealing to the eye and finally able to profit the designers, the companies, the owners and finally the country as a whole.

DEDICATION

To my family ♡...

To my teachers...

To my friends...

GRATITUDE

First and foremost I am thanking God for blessing me with the knowledge I needed to work on this project.

Second I have to thank my supervisor: prof. Souud Al-Sadiq for guiding me in this project

And finally I am thanking my family ♥ friends for the support

Contents

ABSTRACT:-	1
DEDICATION	2
GRATITUDE.....	3
TABLES.....	7
CHAPTER ONE: - INTRODUCTION.....	8
1.2 PROJECT'S PURPOSE:-	9
1.3 PROJECT'S OBJECTIVES:-	9
1.4 THE REASONS BEHIND THE SELECTION OF THIS PROJECT:-.....	9
1.5 THE DIFFERENT ASPECT OF THE PROJECT:-	10
1.5.1 Functional Aspect:.....	10
1.5.2 Structural Aspect:.....	10
1.5.3 Financial Aspect:	10
1.5.4 Aesthetic Aspect:	10
CHAPTER TWO: - DATA COLLECTION	11
Data of Health resort and SPA, and its History	12
THE INTERNATIONAL EXAMPLES	23
HEALTH RESORT:-	23
➤ Architects	23
➤ Location	23
➤ Project type:-	23
➤ Project date:-	23
➤ Area	23
2- Eskisehir Hotel and Spa / GAD Architecture	26
➤ Architects	26
➤ Location	26
➤ Project Coordinator	26
➤ Design Team	26
➤ Area	26
CHAPTER THREE: - DATA ANALYSIS.....	29
Activities Component.....	30
HUMAN COMPONENTS:-	31

Number of the visitors of the resort 32

1-The local visetors number:- 32

2- The tourist number:-..... 32

SPATIAL COMPONENTS:- 33

SPATIAL COMPONENTS:- 34

SPACE STUDY..... 36

1-THE HEALTH CENTER SPACES 36

2- FITNESS CENTER..... 38

3- HOTEL SPACES:- 39

4- THE SERVICES SPACES:-..... 40

5- ENTERTAINMENT SPACES:-..... 42

THE HEALTH ACTIVITY TABLE 43

THE ENTERTAINMENT ACTIVITY TABLE..... 44

THE LODGING ACTIVITY TABLE 44

THE SEVICES ACTIVITY TABLE 45

THE ADMINISTRATIVE ACTIVITY TABLE..... 46

BUBBLE DIAGRAMS..... 47

Main bubble diagram:- 47

Services bubble diagram:-..... 47

Health bubble diagram:- 48

Hotel and chalet bubble diagram:- 49

Entertainment bubble diagram:- 49

Matrix relationship diagram:- 50

CIRCULATION DIAGRAMS:- 51

SITE SELECTION 54

SUGGESTION (A):- 55

SUGGESTION (B):- 56

SUGGESTION (B):- 57

COMPARISON BETWEEN THE SUGGESTED SITES:- 58

SITE SELECTION 59

Introduction:- 59

Additional requirements exclusive to the project include: 59

SITE INFORMATIONS:-..... 60

SITE REACHABLE:- 61

SITE SERVICES:- 61

CLIMATE ANALYSIS..... 62

TOPOGRAPHY:- 65

INDICATORS & GUIDELINES:- 66

ZONING 67

CHAPTER THREE: - THE ARCHITECTURE DESIGN 68

DESIGN CONCEPT 69

THE CONCEPT OF THE ARCHITECTURE DESIGN:- 70

THE DEVELOPED INITIAL DESIGN PHASE:- 72

THE FINAL DESIGN PHASE:-..... 75

CHAPTER THREE: - TECHNICAL SOLUTIONS 80

Structure 81

HOTEL STRUCTURE:..... 81

HEALTH CENTER & FITNESS CENTER STRUCTURE:..... 85

EXTENSION AND EXPANSION JOINTS:- 86

SITE FINISHINGS:- 89

WATER SUPPLY..... 92

DRAINAGE:-..... 94

Sewage: 94

MNHOLES DEPTH AND DIMENSIONS..... 96

AIR CONDITIONING (VRV):-..... 98

FIRE FIGHTING SYSTEM 102

REFERENCES:-..... 105

TABLES

Table 1 the suggested project percentage	32
Table 2 health activity	43
Table 3 entertainment activity.....	44
Table 4 lodging activity.....	44
Table 5 service activity	45
Table 6 administration activity	46
Table 7 zones total area	46
Table 8 the total area of the project	46
Table 9 cons and pros of the site A	55
Table 10 cons and pros of the site B	56
Table 11 cons and pros of the site C	57
Table 12 the cooperation between the suggested sites.....	58
Table 13climate data for portsudan (1961-1990).....	62
Table 14manholes depth and dimensions.....	96
Table 15 manholes depth and dimensions.....	97

CHAPTER ONE: - INTRODUCTION

1. Project's description
2. Project's purpose
3. Project's objectives
4. Reasons behind the selection of the project
5. The different aspects of the project

1.2 PROJECT'S PURPOSE:-

Designing a retreat resort and spa that optimizing with the special conditions of the site, and presenting the idea of overlapping the water spaces with the green spaces and the building, and providing the human needs under an organized design that provide the ways of the natural relaxation and recreations with the easthetics builings and nature, beside the intertainment activities and the hotels services.

1.3 PROJECT'S OBJECTIVES:-

- Provide a recreational environment for the resort through varieties of facilities and functions.while providing a natural treatment and entertainment at the same time.
- Relieving the negative sequels that come from the daily life pressures.
- Establishing such a projects like this will increase the tourist and the physiottherapy field of the county.

1.4 THE REASONS BEHIND THE SELECTION OF THIS PROJECT:-

- The demand and the need of a projects like this for releiving life pressures.
- The lack of spa resorts in the country that keep pace with the international standards and specifications.
- Take advantage of the sea view in Portsudan.

1.5 THE DIFFERENT ASPECT OF THE PROJECT:-

1.5.1 Functional Aspect:

- Improve the health and the entertainment field.
- Using a new innovative ways for relaxing and recreation and daily life changing.
- Overlap with the nature because it increase the inner peace.

1.5.2 Structural Aspect:

Designing, achieving and using a structural system that can solve all of the structural problems of the design with a unique touch to match the project.

1.5.3 Financial Aspect:

Reducing the cost of the buildings, repairing and functioning the building. Plus, finding a way to make the project financially stable throughout the years.

1.5.4 Aesthetic Aspect:

- Making the project and all of its components reflect the image of creativity and uniqueness
- Take advantages of the sea view by increasing its natural environment without ruining it.

CHAPTER TWO: - DATA COLLECTION

1. Data of Health resort and SPA, and its History.
2. Case study (International Examples)

Data of Health resort and SPA, and its History

RESORT ARCHITECTURE HISTORY:-

The architectural style of resort architecture was initially developed since the foundation of Heiligendamm in Mecklenburg in 1793, the first continental European seaside resort, as a style mixture that should appeal to the upper class, like the aristocracy and businessmen of Europe.



The style especially received a boost with the railway lines connecting the then booming seaside resorts of Germany to European metropolitan areas in the late 19th and early 20th century. It can be a variation of several styles with new elements, including historicism and Art Nouveau, for instance. It is often characterised by two to four storey buildings whose façades are often decorated with balconies, gables and verandas. In larger villas there are occasionally central avants-corps. Arched or rectangular windows predominate, occasionally flanked by half-columns or blind pilasters. Triangular gables and occasionally also curved gables or small turrets close off the ends of the attics. What is special about this form of architecture is its basic composition in classical styles that are very freely combined and which may be mixed with art nouveau ornamentation, for instance on the capitals.

THE RETREAT RESORTS:-

The retreat resorts present many different activities: **healthcare activities, lodging, entertainment activities.**

THE HEALTH CARE ACTIVITY:-

Health care or healthcare is the maintenance or improvement of health via the diagnosis, treatment, and prevention of disease, illness, injury, and other physical and mental impairments in human beings. Health care is delivered by health professionals (providers or practitioners) in allied health professions, chiropractic, physicians, physician associates, dentistry, midwifery, nursing, medicine, optometry, pharmacy,



Psychology, and other health professions. It includes the work done in providing primary care, secondary care, and tertiary care, as well as in public health.

The main healthcare services provided in this projects are:

- Physiotherapy
- Spa
- Fitness and weightloss
- meditaion

PHYSIOTHERAPY:-

Physical therapy or physiotherapy is a physical medicine and rehabilitation specialty that remediates impairments and promotes mobility, function, and quality of life through examination, diagnosis, prognosis, and physical intervention (therapy using mechanical force and movements). It is performed by physical therapists (known as physiotherapists in many countries).

**Specialty areas:-**

The body of knowledge of physical therapy is large, and therefore physical therapists may specialize in a specific clinical area. While there are many different types of physical therapy, the American Board of Physical Therapy Specialties lists nine current specialist certifications and they are:-

- Cardiovascular & pulmonary physiotherapy
- Clinical electrophysiology
- Geriatric
- Integumentary
- Neurological
- Orthopedic
- Pediatric
- Sports
- Palliative care

SPA:-

A spa is a place which provides a variety of services for the purpose of improving health, beauty and relaxation through personal care treatments such as hair, massages and facials. It is different from a beauty salon in that it contains facilities such as a sauna, pool, steam room, or whirlpool that guests may use in addition to their treatment. It offers similar services integrated into packages which include diet, exercise programs, instruction on wellness, life coaching, yoga, Tai Chi and accommodations where participants reside for the duration of their stay. A resort-spa may also function as a day spa, if they allow access to patrons who are not guests of the hotel.

**MASSAGE:-**

Massage involves working and acting on the body with pressure – structured, unstructured, stationary, or moving tension, motion, or vibration, done manually or with mechanical aids. Massage can be applied with the hands, fingers, elbows, knees, forearm, feet, or a massage device. Depending on the application and technique used, massage is used to promote relaxation and well-being, and is beneficial in treating sports injuries and other problems affecting the musculature of the body such as postural misalignment and many other painful conditions.



WAX TREATMENT:-

Paraffin wax has a long history of treating a variety of physical conditions. In fact, it was used in massage therapy as far back as the Roman Empire, and, in more recent years, it's become a popular physical therapy treatment for people with sports-related injuries.



Today, paraffin wax treatments are offered at many spas and salons, and these treatments are good for more than just softening and smoothing the skin.

THE BENEFITS OF THR PARAFFIN WAX:-:-

Paraffin wax is not only beneficial to skin, but it also has many other health benefits. It has been known to relax muscles, increase blood flow, relieve joint stiffness and reduce pain. People struggling with arthritis, muscle, tendon and ligament ailments, tendonitis, sprains and pulled muscles may find paraffin treatments very helpful.



ACUPUNCTURE TREATMENT:-

Acupuncture is a 3,000-year-old healing technique of Traditional Chinese Medicine. In 1997, the U.S. National Institutes of Health (NIH) documented and publicized acupuncture's safety and efficacy for treating a wide range of conditions. Acupuncture is now covered by many insurance policies and is used most broadly to relieve pain

**HOW DOES IT WORK?**

Acupuncture improves the body's functions and promotes the natural self-healing process by stimulating specific anatomic sites--commonly referred to as acupuncture points, or acupoints. The most common method used to stimulate acupoints is the insertion of fine, sterile needles into the skin. Pressure, heat, or electrical stimulation may further enhance the effects. Other acupoint stimulation techniques include: manual massage, moxibustion or heat therapy, cupping, and the application of topical herbal medicines and linaments.

MUD THERAPY:-

Mud is an important element of nature. It contains important minerals which have positive effects on human health. Mud can absorb toxins from human body therefore is very useful in preventing many diseases. It is also known for its healing properties. It also helps in cooling and relaxing body as it can hold moisture for a long time.

**Benefits of Mud therapy are:**

- 1- It relaxes muscles and improves blood circulationIt maintains metabolism rendering positive impact on digestion
- 2- It is useful in conditions of inflammation/ swelling and relieves pain
- 3- It is a good hair conditioner and is good for skin
- 4- It is useful in condition of stiff joints.

Why use mud therapy?

Out of the five constituent elements of this universe mud (earth) has a pivotal role to play in our well being. The dark color of mud helps in absorbing different colors and conveying them to the the body, giving it therapeutic properties. Also, its shape and consistency may be modified with ease, just by changing the water content, which makes it easy to use. A mud pack is advantageous over a cold compress (cold water therapy) as it retains the coolness over a longer period of time. Therefore, it is recommended whenever a prolonged cold application is required. Lastly, it is easily available and a cost effective treatment option.

STONE MASSAGE:-



A stone massage uses cold or water-heated stones to apply pressure and heat to the body. Stones coated in oil can also be used by the therapist delivering various massaging strokes. The hot stones used are commonly Basalt stones (or lava rocks) which over time have become extremely polished and smooth. As the stones are placed along the recipient's back, they help to retain heat which then deeply penetrates into the muscles.

FITNESS AND WEIGHT LOSS:-

fitness is a general state of health and well-being and, more specifically, the ability to perform aspects of sports, occupations and daily activities. Physical fitness is generally achieved through proper nutrition, moderate-vigorous physical exercise, and sufficient rest.

Before the industrial revolution, fitness was defined as the capacity to carry out the day's activities without undue fatigue. However, with automation and changes in lifestyles physical fitness is now considered a measure of the body's ability to function efficiently and effectively in work and leisure activities, to be healthy, to resist hypokinetic diseases, and to meet emergency situations.



FITNESS EFFECTS ON THE HUMAN BODY:-

- Controlling blood pressure.
- Cancer prevention.
- Inflammation.
- Immune system.
- Cardiovascular disease prevention.
- Weight control.
- Menopause and physical fitness.



YOGA:-

Yoga is a group of physical, mental, and spiritual practices or disciplines which originated in ancient India. There is a broad variety of Yoga schools, practices, and goals. The origins of yoga have been speculated to date back to pre-Vedic Indian traditions, it is mentioned in the Rigveda, but most likely developed around the sixth and fifth centuries BCE, in ancient India's ascetic and śramaṇa movements. Many studies have tried to determine the effectiveness of yoga as a complementary intervention for cancer, schizophrenia, asthma, and heart disease. The results of these studies have been mixed and inconclusive, with cancer studies suggesting none to unclear effectiveness, and others suggesting yoga may reduce risk factors and aid in a patient's psychological healing process.



YOGA BENEFITS:-

- Improves your flexibility
- Builds muscle strength
Strong muscles do more than look good. They also protect us from conditions like arthritis and back pain, and help prevent falls in elderly people. See also Why You Should Add Weights to Your Yoga Practice
- Better your bone health
- It's well documented that weight-bearing exercise strengthens bones and helps ward off osteoporosis.
- increase blood flow in handstand pose
- Drains your lymph and boosts immunity
- Lymphedema Relief Through Yoga
- Ups your heart rate and Drops your blood pressure
- Makes you happier & Founds a healthy lifestyle
- Helps you focus and Relaxes your system
- Improves your balance and Helps you sleep deeper
- Gives a peace of minds
- Gives you lungs room to breath

BENEFITS OF YOGA

YOU'RE HAPPIER

People that did yoga for an hour have 27% higher happy brain chemical, GABA.

HELPS YOU KEEP YOUR COOL

Doing yoga once a week for two years can decrease tension-triggered cytokine by 41%.

IMPROVES POSTURE & STRENGTHENS BACK

Two 90min. yoga class per week can ease soreness dramatically.

TOP TO TOE TONING

In some poses you're lifting every pound of your body weight.

BETTER LIBIDO

Yoga helps reduce anxiety, increase awareness, and speeds the release of hormones that rev up arousal.

CONFIDENCE BOOSTER

Women who practiced yoga regularly have 20% higher body satisfaction.

YOU SLEEP BETTER

45 minutes of yoga can help you sleep an hour longer and fall asleep faster.

MADITATION:-

Meditation is a practice where an individual trains the mind or induces a mode of consciousness, either to realize some benefit or for the mind to simply acknowledge its content without becoming identified with that content. The term meditation refers to a broad variety of practices that includes techniques designed to promote relaxation, build internal energy or life force and develop compassion, love, patience, generosity, and forgiveness. A particularly ambitious form of meditation aims at effortlessly sustained single-pointed concentration meant to enable its practitioner to enjoy an indestructible sense of well-being while engaging in any life activity.

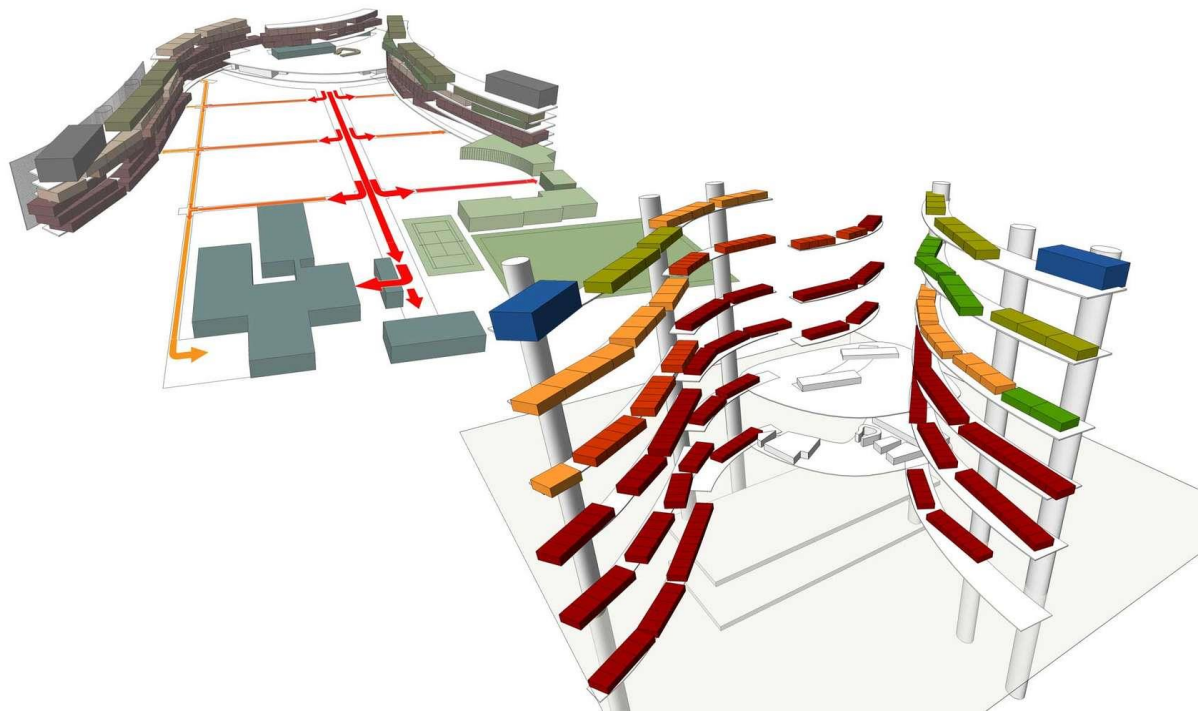


THE INTERNATIONAL EXAMPLES

HEALTH RESORT:-

- **Architects**
 - GBPA Architects
- **Location**
 - Shabazhen - China
- **Project type:-**
 - Hotel, sport, spa, hospitality
- **Project date:-**
 - 2014
- **Area**
 - 70,000 sqm





The project involves the construction of a high-level health facility.

The resort is designed as a modern hospital that offers a wide range, characterized by the use of advanced technologies and the presence of green spaces which help to ensure patients a comfortable treatment. Three independent areas are provided, respectively, for treatment, hospitalization and other services; areas are linked together by roads, waterways and bridges, so as to create an integrated system.





PROS.

- Both the building and the hotel, surrounded by a large green area.
- The green flat roof not only is thought to be a functional space, but its shapes and color also link it with the surrounding territory
- The SPA includes also a swimming pool and an entertainment area with a water park and a private club.



PROS.

- The buildings in the project are so apart and far from each other's which makes it hard to go from the hotel or the resident areas to the spa or the sport area and so on.

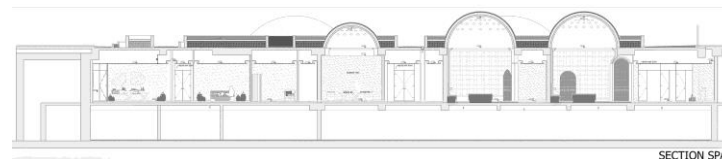
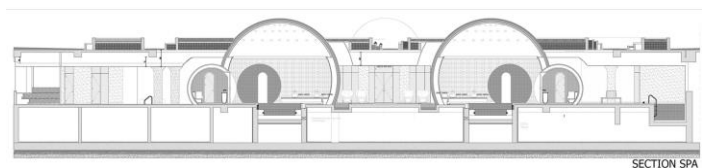
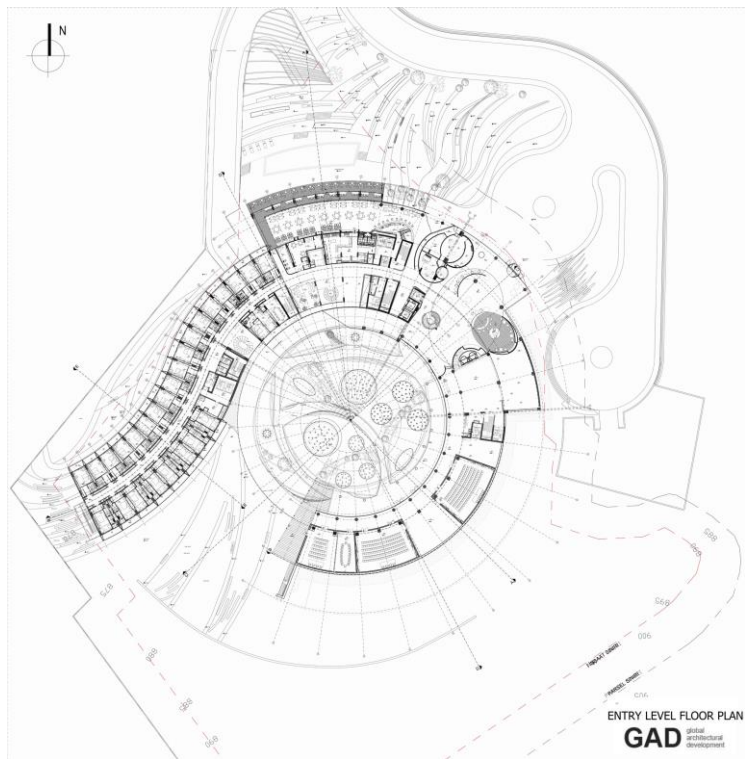
THE INTERNATIONAL EXAMPLES

2- Eskisehir Hotel and Spa / GAD Architecture

- **Architects**
 - GAD Architecture
- **Location**
 - Eskişehir/Eskisehir, Turkey
- **Project Coordinator**
 - Nesime Önel
- **Design Team**
 - Ertugrul Morcol, Carlos Valderama, Gizem Kiroglu, Omer Karaer, Durak Arıkan, Ayşegül Altuğ, Derya Arpac, Mehmet Baykara, Asli Genc, Muge Tan
- **Area**
 - 45000.0 sqm

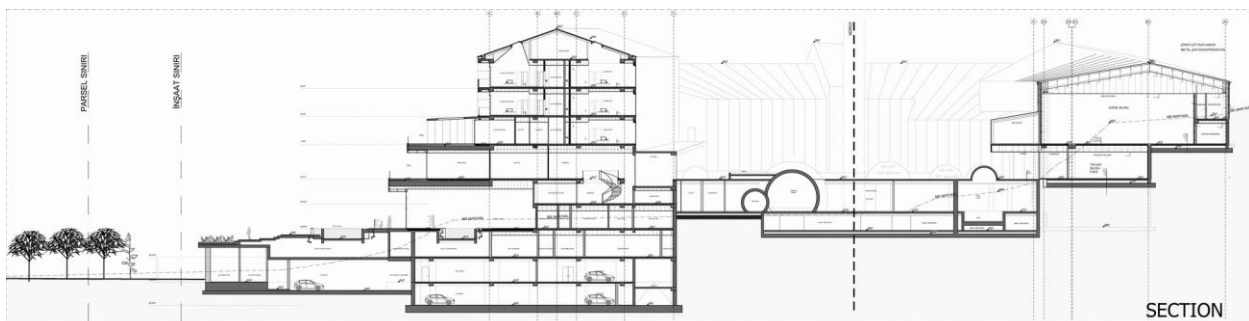


The resort is built around the spa, which comprises the core and centre of the building. It is no coincidence that Eskisehir Spa & Thermal Hotel is located here: The idea of the Eskisehir Spa & Thermal Hotel was conceived to use this natural resource for spa. The spa is coupled with earth, taking advantage of the site's geothermal features. The hotel is tiered following the natural topography and revolves around the spa in order to provide easy access to all of the hotel guests. The wedding venue is designed as a separate function from the hotel.



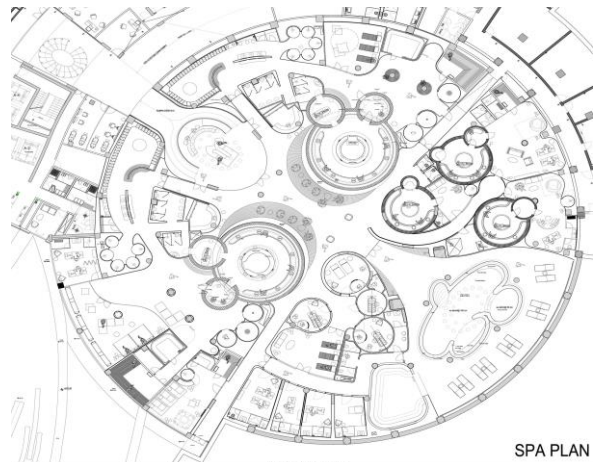
THE PROJECT COMPONENTS:-

The resort includes a spa and wellness center in the middle, and accommodation units on the perimeter. There is also a hotel, a wedding venue, and guest bungalows located in a hillside pine forest. The project site makes a perfect thermal spa location since it is extremely close to the geothermal water source. The spa and wellness center is buried in the ground in order to benefit from the land's geothermal features. The roof of the underground structure has the pools, pool decks and sunbath terrace. The domes placed in the pools work as roof-lights to allow natural daylight inside. The penetrating filtered light in the spa creates the illusion of a traditional hamam under a dome.



PROS.

- The project touches on the sustainable design aspects by making use of wind and solar energy.
- The site plan is formed after a careful consideration of the existing trees.



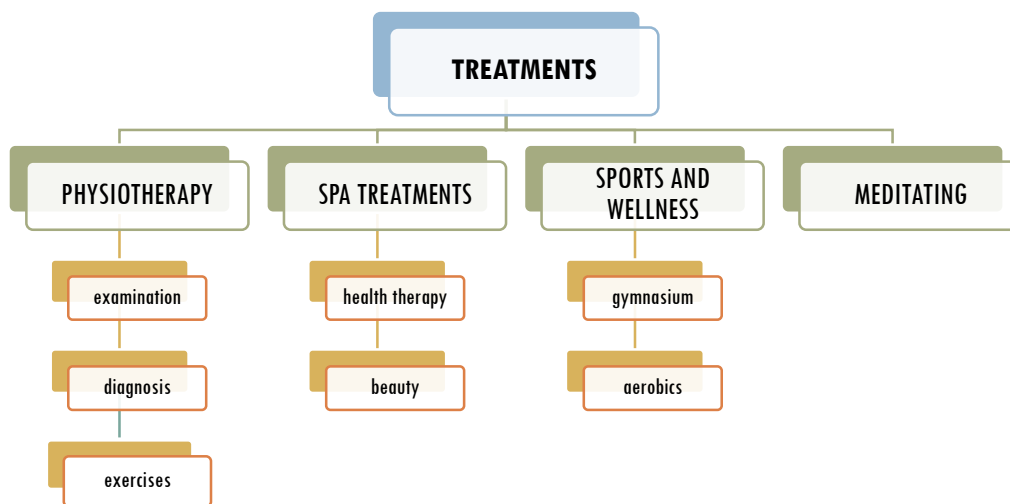
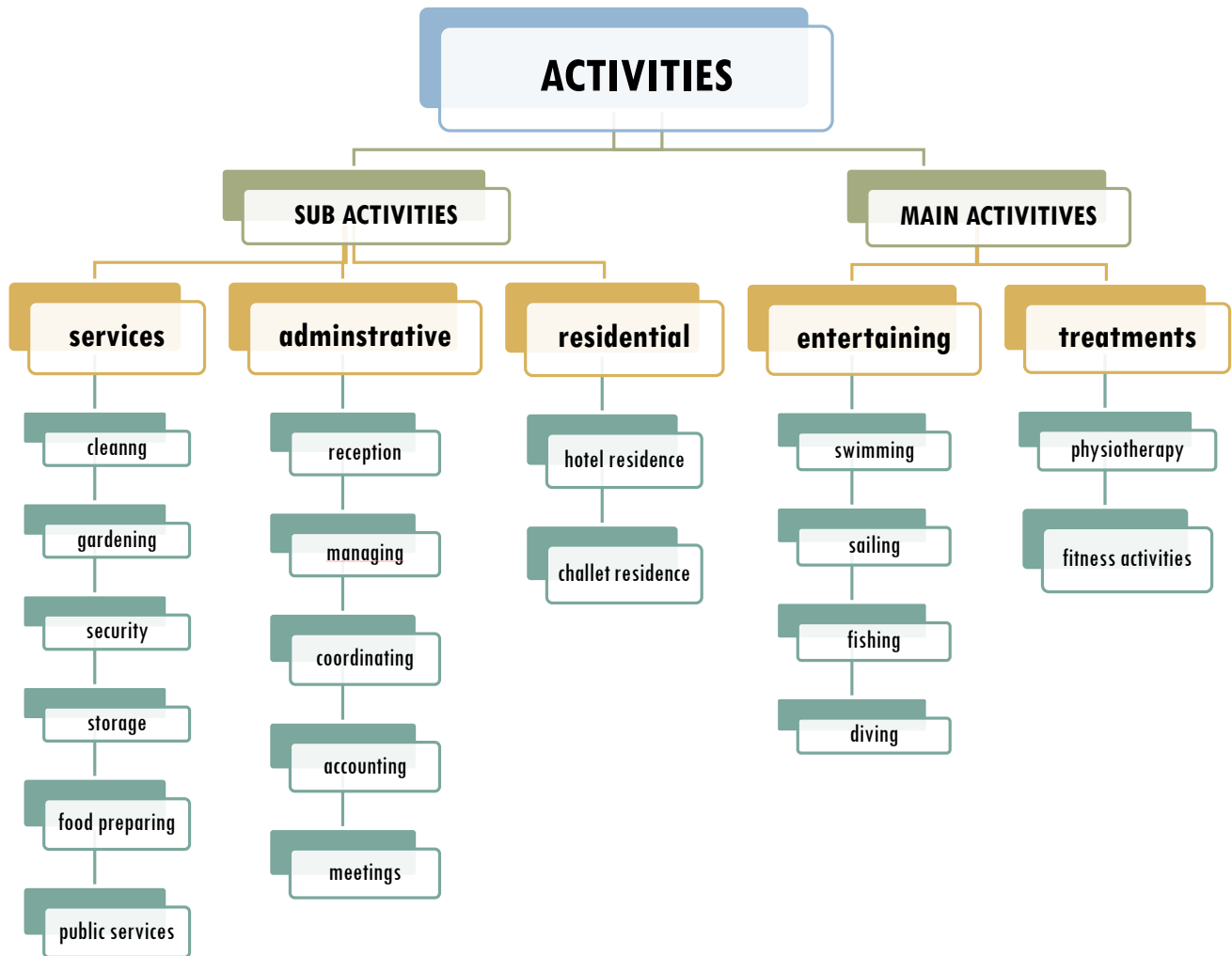
CONS.

- The building has too many access witch is effect on the security of the building.
- The multi proposes halls are so close to the mineral pools

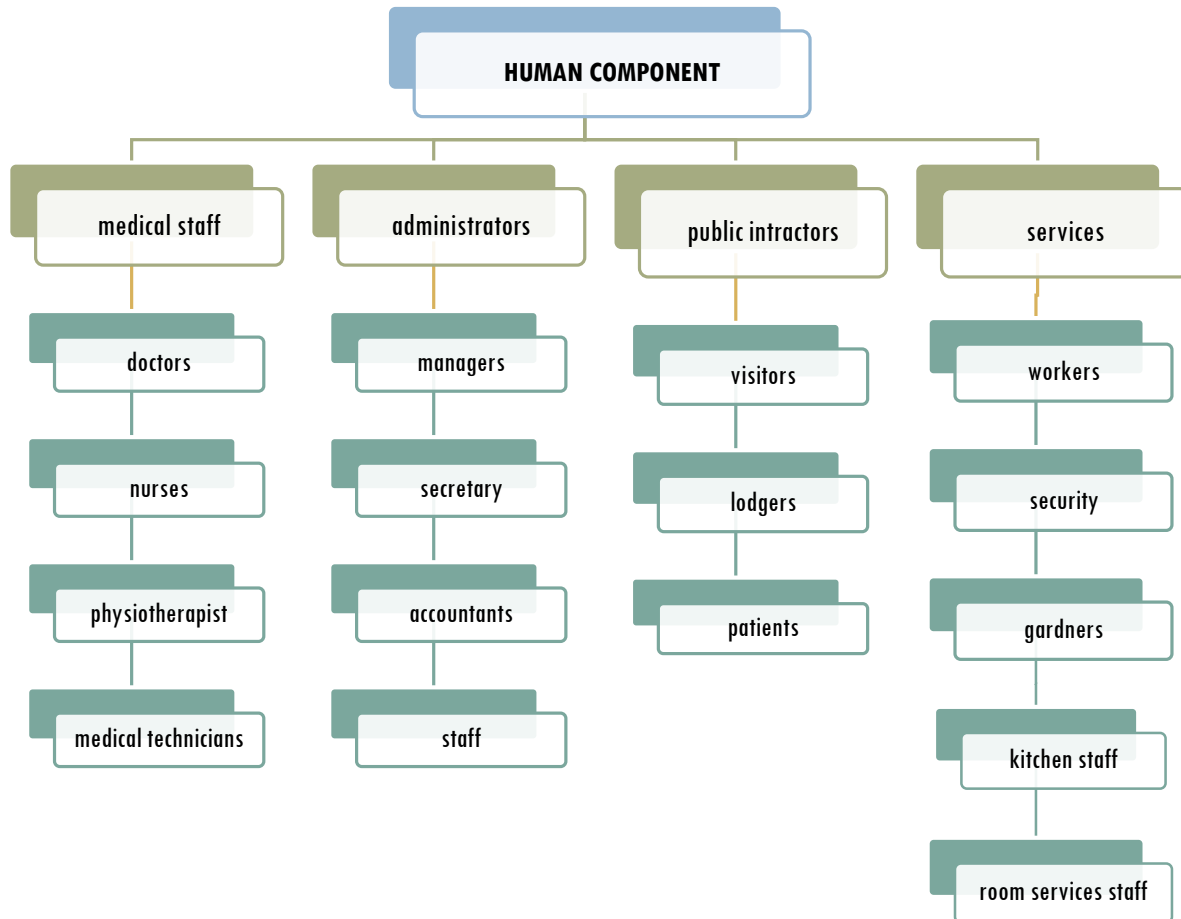
CHAPTER THREE: - DATA ANALYSIS

1. Activities Component
2. Human Component
3. Spatial Component
4. Spaces Study
5. Tables of Areas
6. Functional Relations Diagrams
7. Matrix relationship diagram
8. Circulation Diagrams
9. Site Selection
10. Indicators and Guidelines
11. Zoning

Activities Component



HUMAN COMPONENTS:-



Number of the visitors of the resort

1-The local visetors number:-

The number of the patients in the year 2012 is 19530 (the increasing percentage is 1.2% every year)

Because the resorts are expensive so the patients who go to resorts expected to be 30% of the patients.

$$19640 \times 30/100 = 5859 \text{ visitor}$$

2- The tourist number:-

- The number of tourists according to the latest statistics was 70000 tourist in the year 2012 to the red sea state witch Portsudan has 45%
- $70000 \times 45/100 = 31500$ tourist every year
- The projects in Portsudan distribute to two parts:-
 1. Established projects and it present 30%
 2. Suggested projects and it present 70%

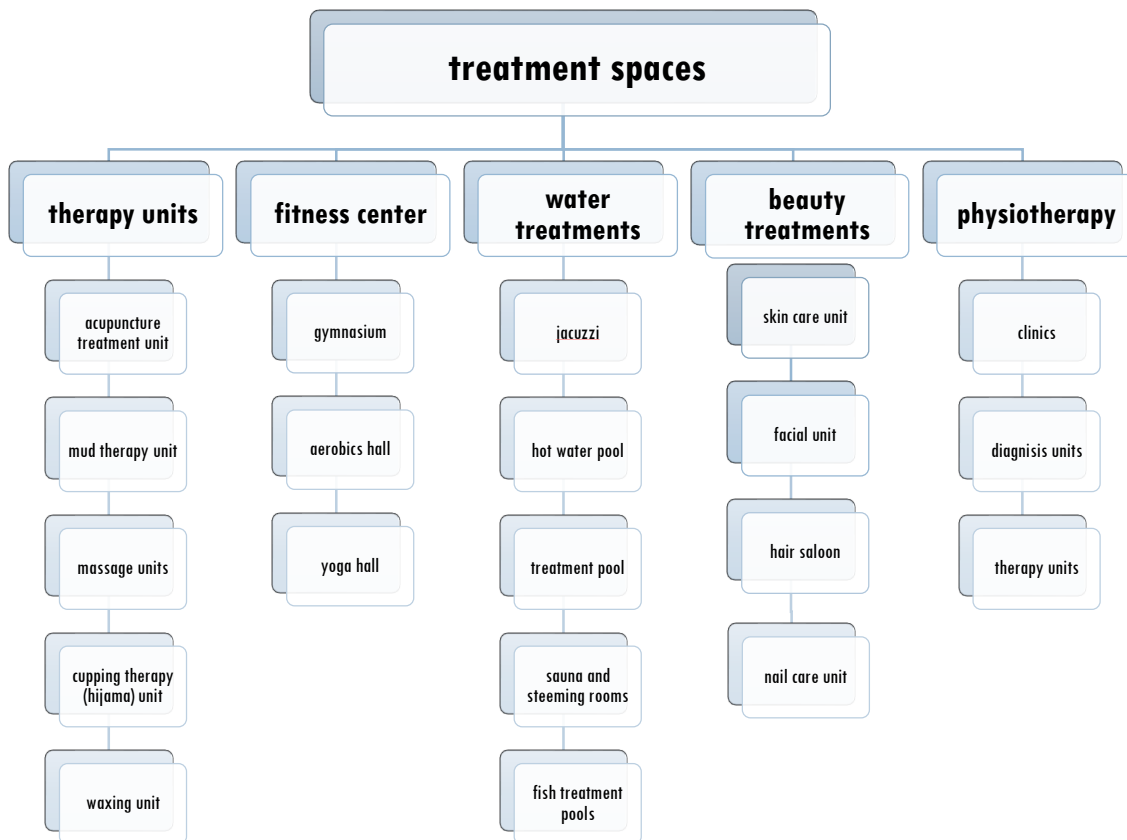
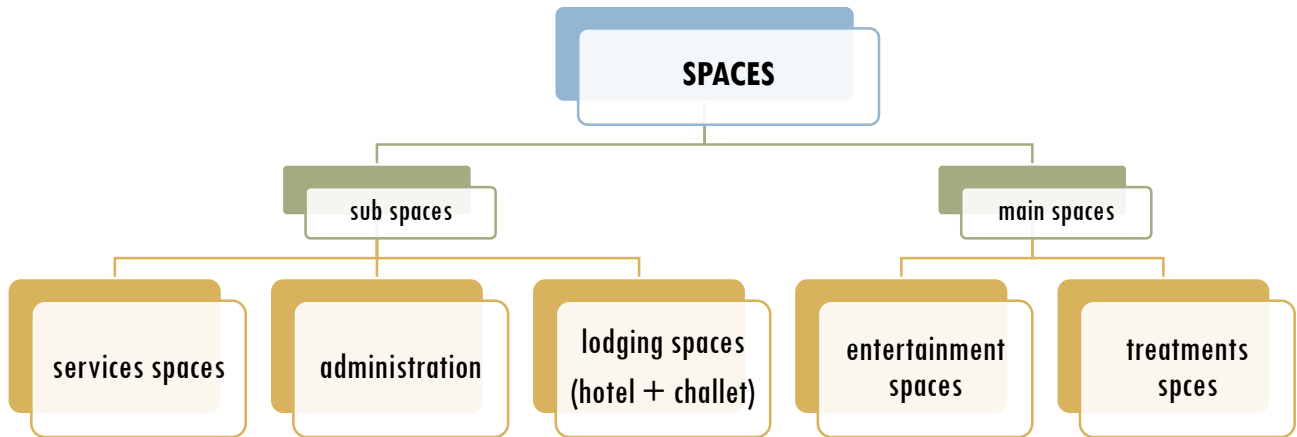
The suggested projects	percentage
Alaroos tourism village	20%
Arkawet tourism resort	30%
The shore and desert planning	20%

Table 1 the suggested project percentage

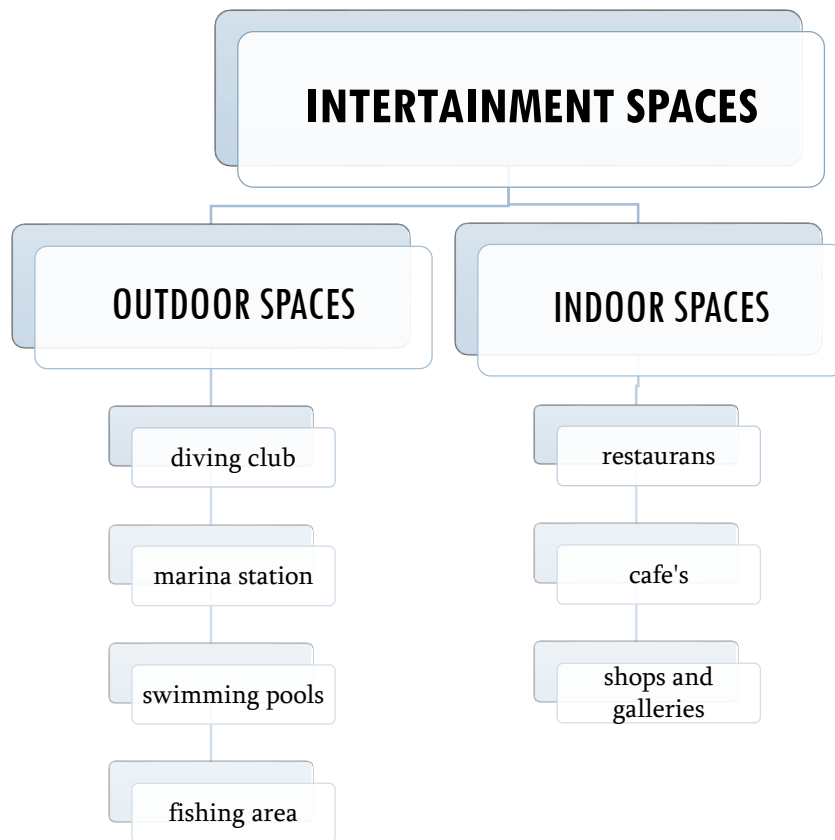
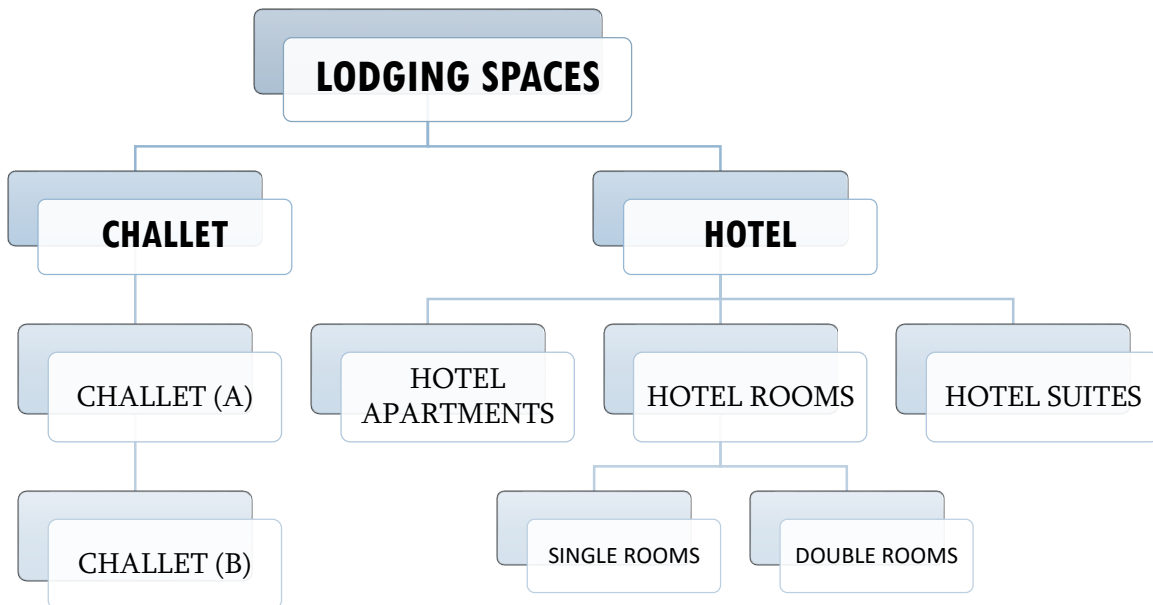
- The project expected to serve 20% of the tourist
- Then the percentage of project = 6300 tourist every year

The visitors and the lodgers of the project = 37800 every year

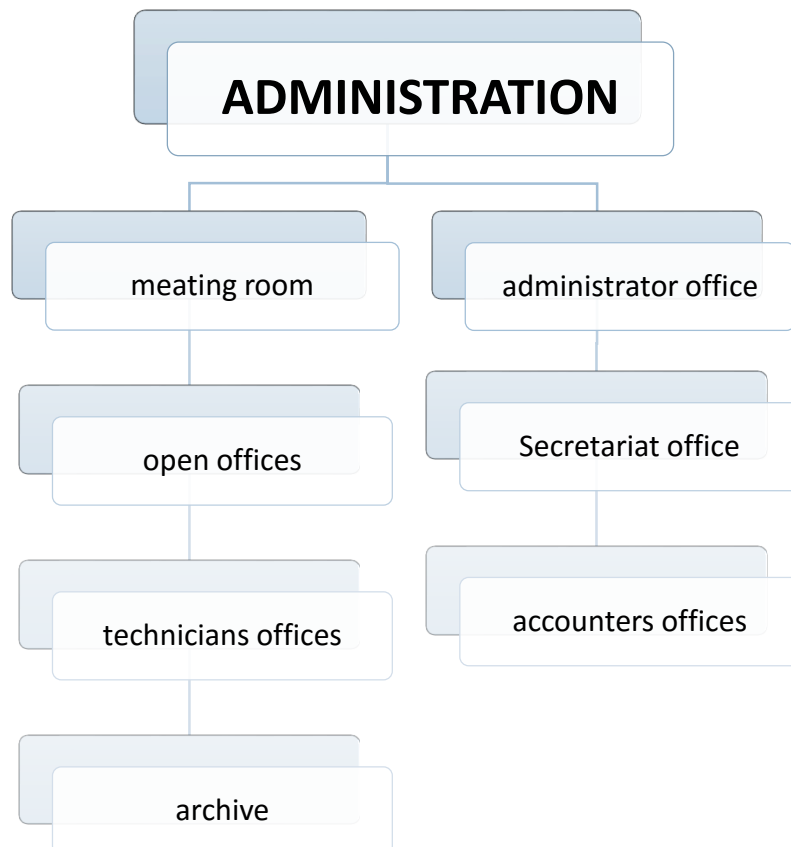
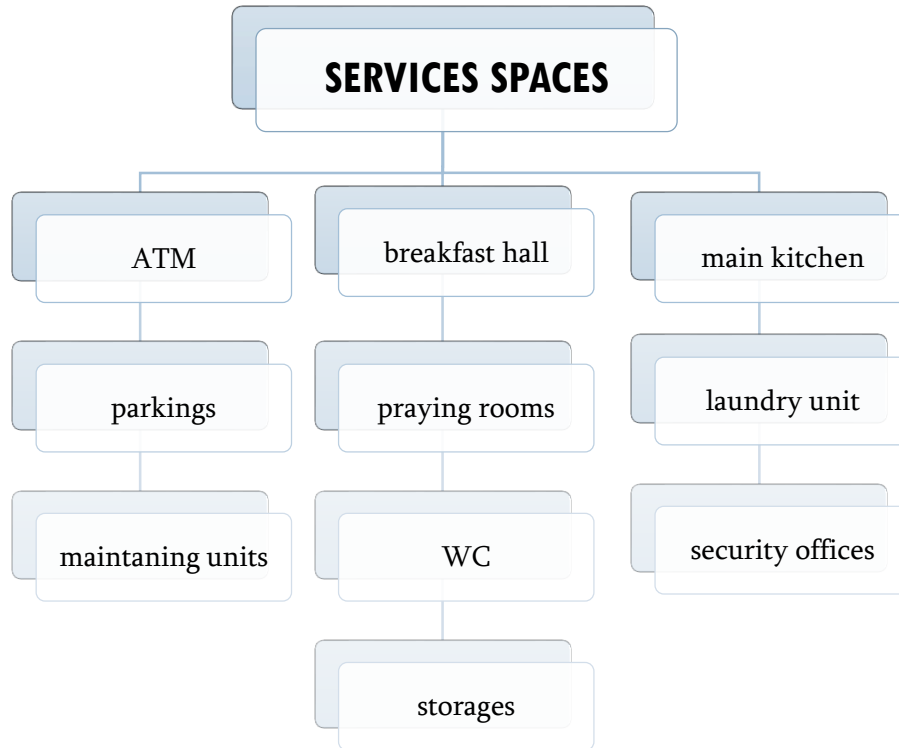
SPATIAL COMPONENTS:-



SPATIAL COMPONENTS:-



SPATIAL COMPONENTS:-



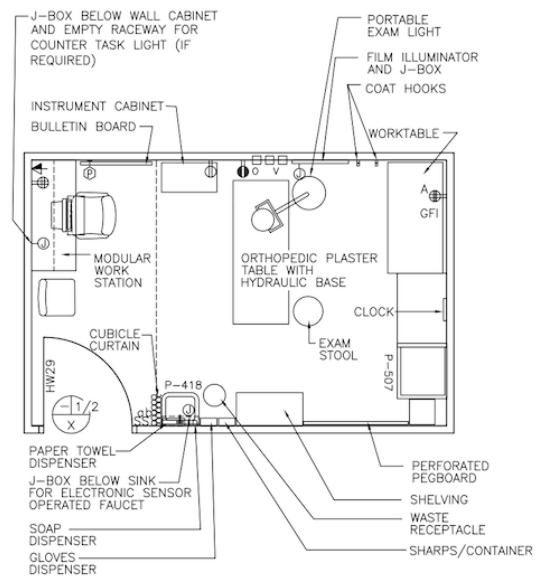
SPACE STUDY

1-THE HEALTH CENTER SPACES

THE CLINIC ROOM:-

The clinic contain medical bed, office, chair, basin, cabinet for equipment

Total area = 20m²



X-RAY ROOM:-

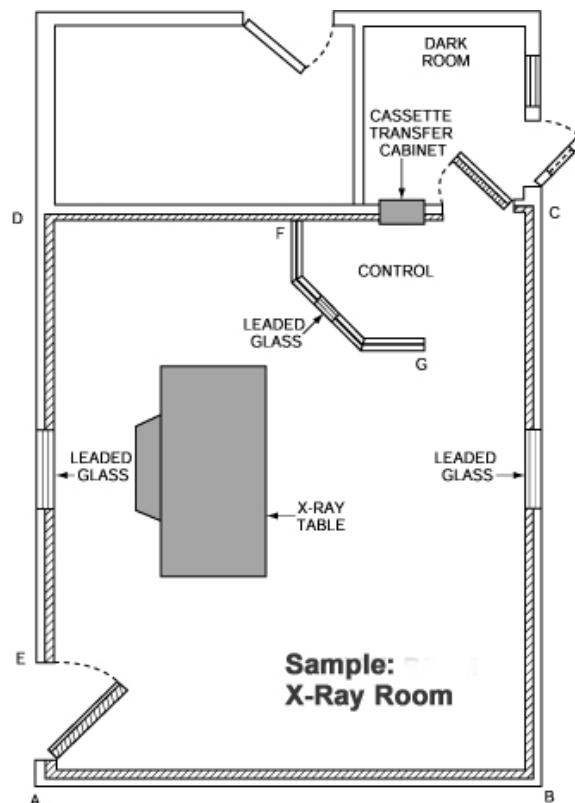
The x-ray room contains:

The changing room 2.7 m²

The x ray table, the chest stander

The operator office

Total area = 41m²



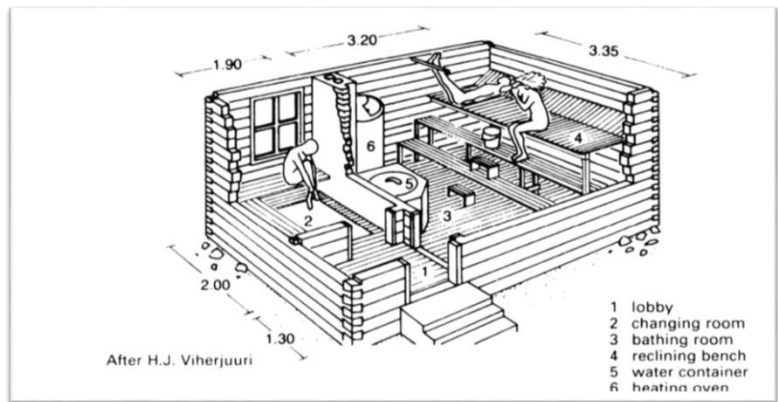
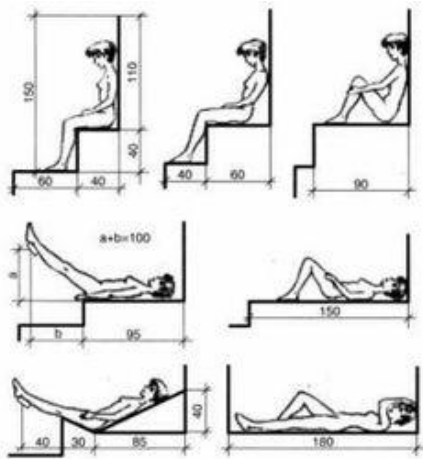
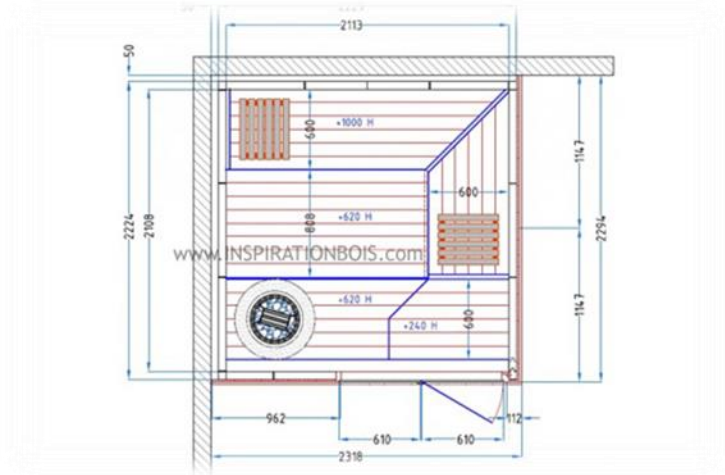
SAUNA and steaming room:-

Changing room = 8m

Sauna room = 6m²

Showers = 5.3m²

Total area = 34m² for 6 persons



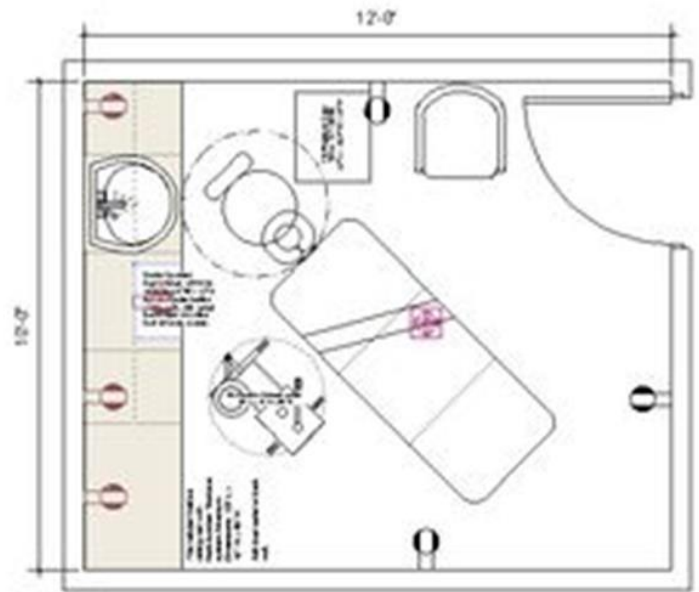
TREATMENT UNIT:-

Changing room = 8m

Treatment room = 6m²

Reception = 4.5m²

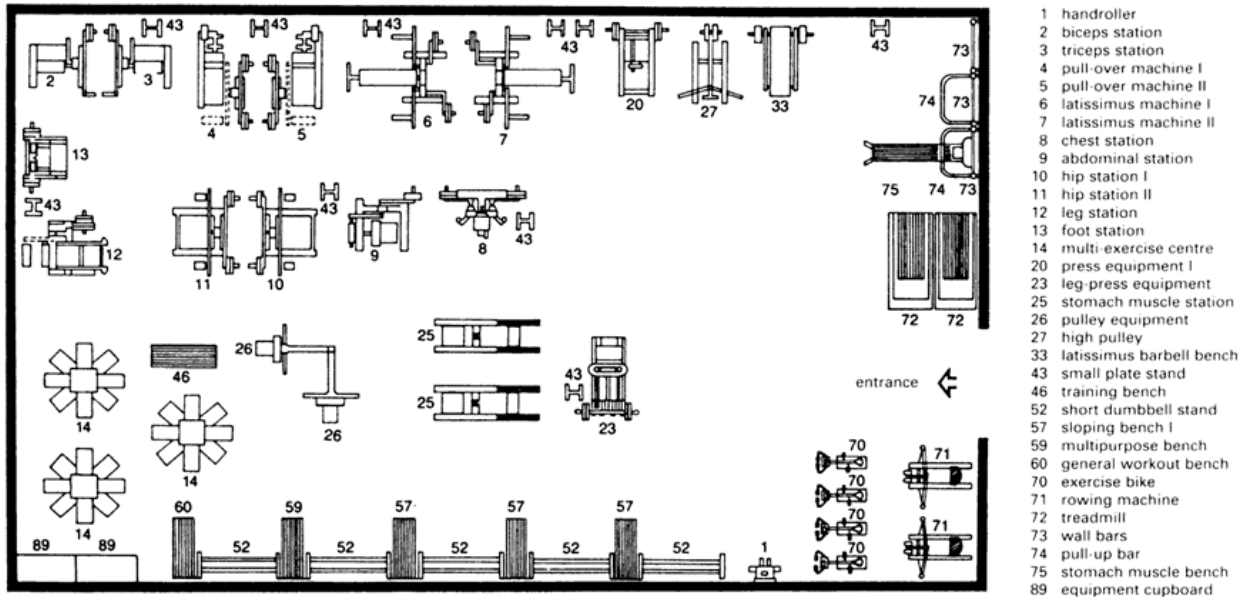
Total area = 45m²



2- FITNESS CENTER

GYMNASIUM:-

Total area = 300m² for 36 person



AEROBICS HALL:-

The user space = 7.1m²

Space area 7.1 x 28 = 198m²

Adding circulation = 52m²

Total area = 240m² for 28 person



YOGA HALL:-

The user space = 5.1m²

Space area 5.1 x 28 = 92m²

Adding circulation = 160m²

Total area = 160m² for 28 person

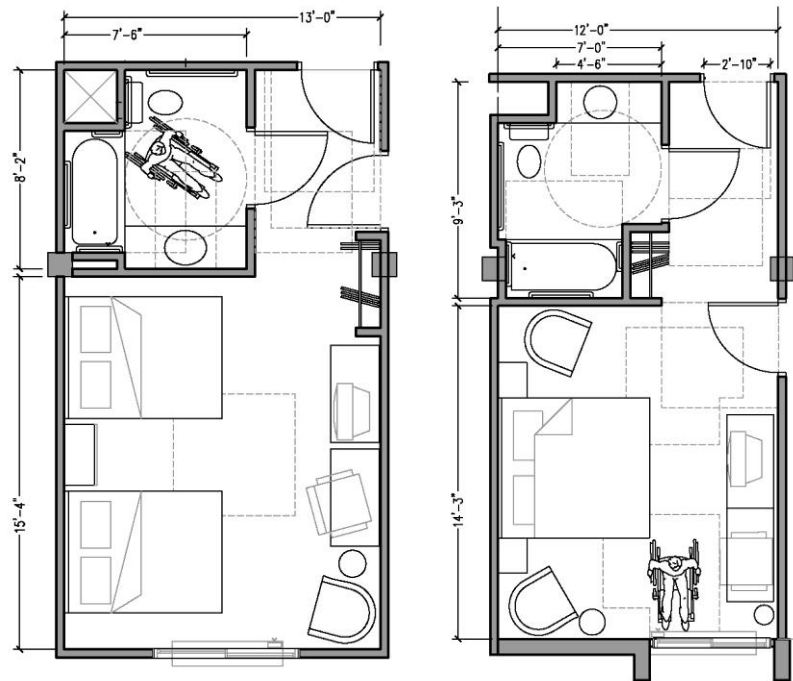


3- HOTEL SPACES:-

DOUBLE ROOM:-

The double room contains 2 single beds or one double bed, bath room, coffee table, chair, closet, tv,

Total area = 30m²



SUITE:-

Hall = 20m²

Kitchen = 9m²

Bed room = 16m²

Bath room = 8m²

Total area = 72m²



APPARTMENT:-

Hall = 26m²

Kitchen = 12m²

2Bed room = 16m²

2Bath room = 8m²

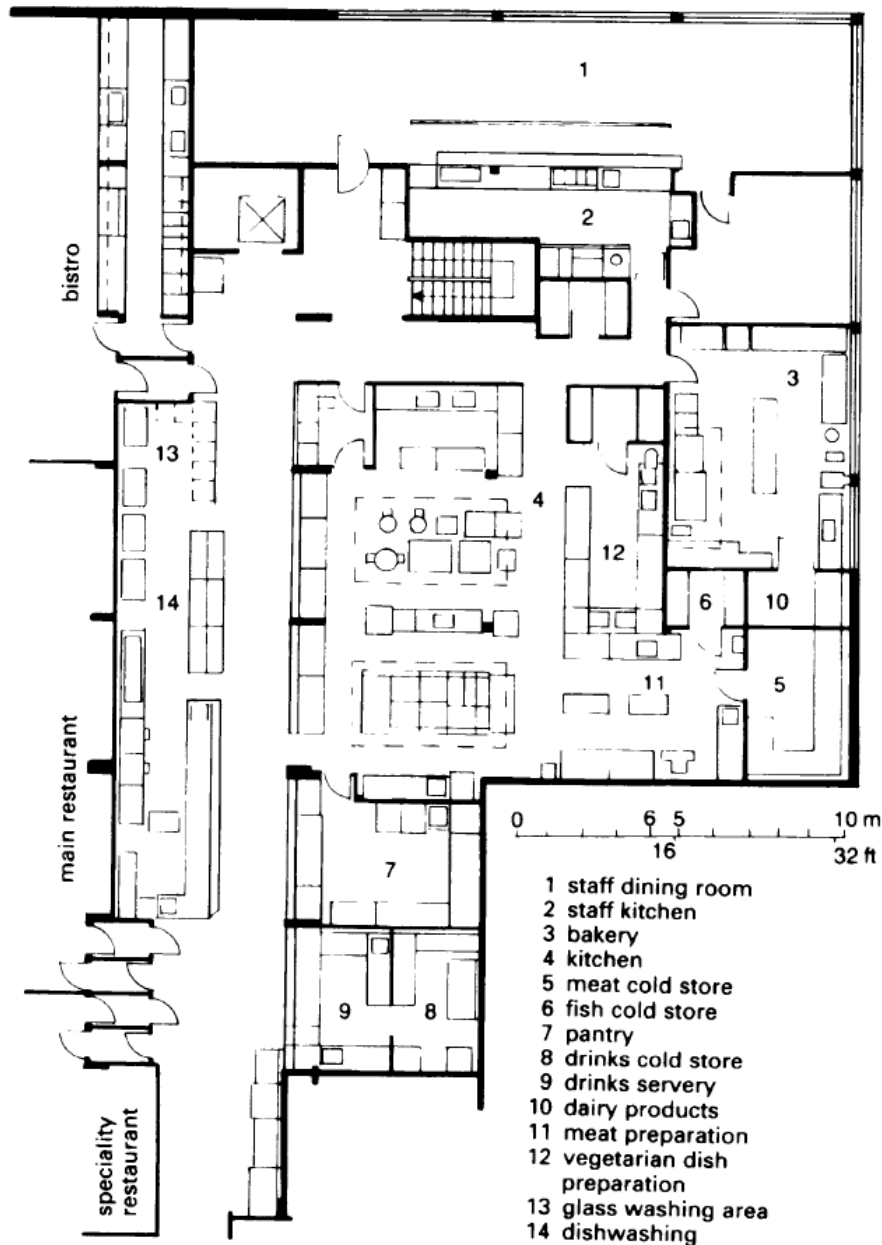
Total area = 102m²



4- THE SERVICES SPACES:-
THE MAIN KITCHEN:-

The main kitchen parts are the cooking area, preparing area, bakery, dish washing sinks, storages, fridges, service elevators and stairs.

Total area = 240m²

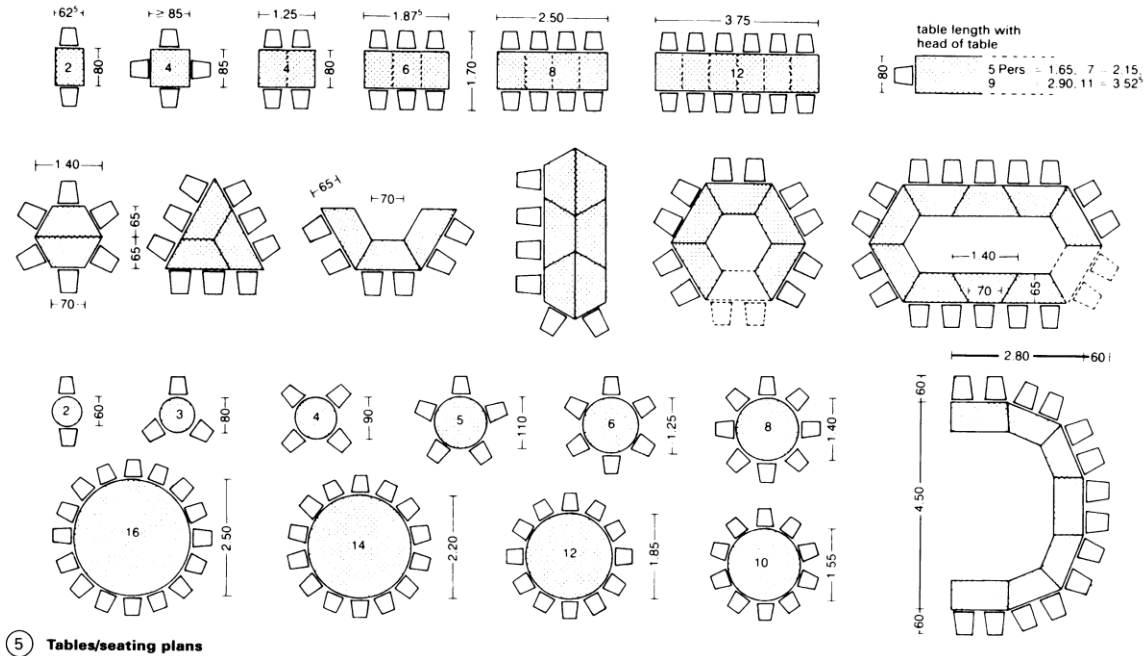


11 Kitchen for 100 standard meals, 100 speciality meals, 120 bistro covers and 80 staff meals

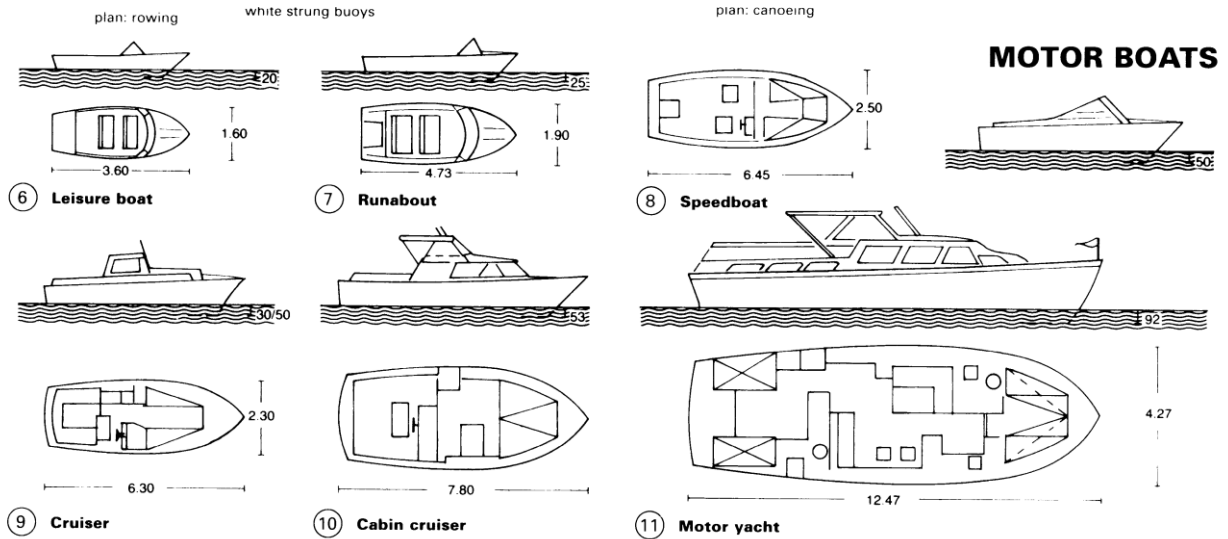
BREAKFAST HALL:-

The breakfast hall contains open buffet, indoor sitting area, outdoor sitting area

Total area = 300m²



5- ENTERTAINMENT SPACES:- MARINA STATION:-

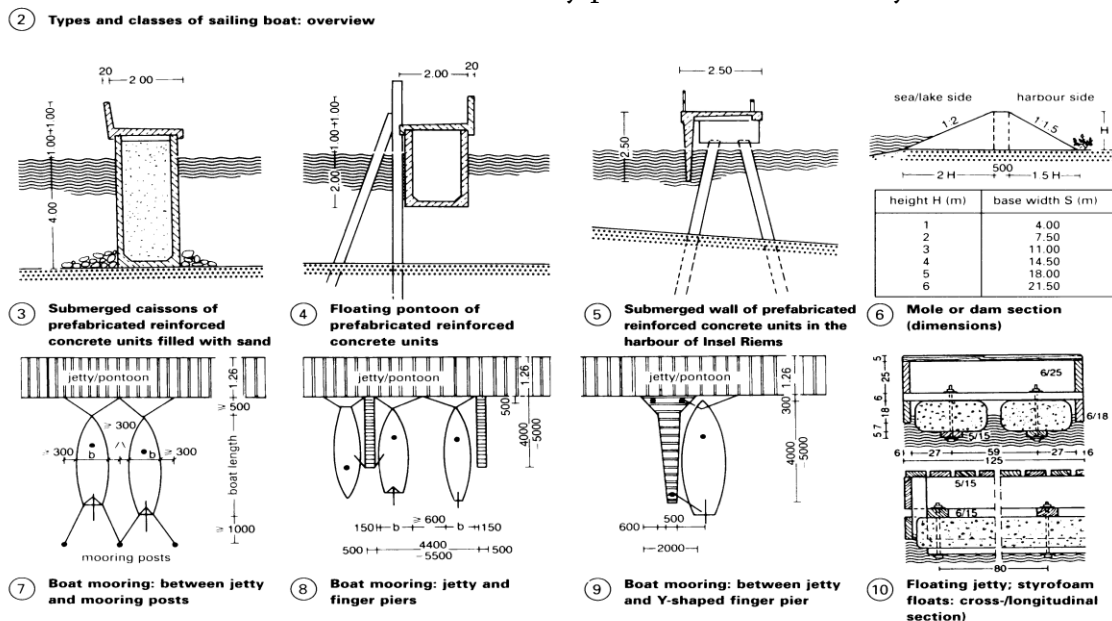


Mooring spaces for sailing and motor boats have to be planned carefully to make optimum use of the water area available.

The necessary depth of water in marines depends on the types of the boats to accommodate.

Using dinghies and yachts with center boards require a depth of 1250mm whereas fixed keel boats need 4000-5000mm.

Constant water levels are obviously preferable for the safety of boats.



THE HEALTH ACTIVITY TABLE

ACTIVITIES	USERES	SPACE NAME	NUMBER OF USERS	SPACE AREA	NO, OF SPACES	TOTAL AREA
<i>EXAMINATING</i>	PATIENT	CLINIC	3	20m ²	5	100m ²
<i>DIAGNOSIS</i>	DOCTORS	LABORATORY	8	120m ²	1	120m ²
<i>DIAGNOSIS</i>	TECHNICIANS PATIENTS	X-RAY UNIT	3	68m ²	1	68m ²
<i>EXERCISING</i>	TRAINERS PATIENTS	TREATMENT GMNASIUM	12	140m ²	2	280m ²
<i>TREATMENT</i>	PHYSIOTHERAPIST PATIENT	ELECTIC TREATMENT UNIT	3	38m ²	1	38m ²
<i>THERAPY</i>	PATIENT VISITORS	GROUP THERAPY HALL	35	250m ²	2	500m ²
<i>THERAPY</i>	VISITOR LODGER	SAUNA UNIT	6	32m ²	4	128m ²
<i>THERAPY</i>	VISITOR LODGER	STEEMING ROOM UNIT	6	32m ²	2	64m ²
<i>THERAPY</i>	VISITOR LODGER	FISH POOL UNIT	12	20m ²	2	20m ²
<i>THERAPY</i>	VISITOR LODGER	JACCUZY UNIT	6	26m ²	6	156m ²
<i>TREATMENT</i>	VISITOR LODGER	HOT WATER TREATMENT UNIT	35	120m ²	2	240m ²
<i>EXERCISING</i>	PATIENT PHYSIOTHERAPIST	TREATMENT SWIMMING POOL	12	120m ²	1	120m ²
<i>RELAXING</i>	VISITORS LODGERS	RLAXING ROOM	20	32m ²	8	256m ²
<i>EXERCISING</i>	VISITORS LODGERS	GYMNASIUM	36	300m ²	2	600m ²
<i>EXERCISING</i>	VISITORS LODGERS	AEROBIC HALL	28	243m ²	2	486m ²
<i>EXERCISING</i>	VISITORS LODGERS	YOGA HALL	28	160m ²	2	320m ²
<i>TREATMENT</i>	VISITOR LODGER	ACUPUNCTURE UNIT	4	45m ²	2	90m ²
<i>TREATMENT</i>	VISITOR LODGER	MUD UNIT	4	45m ²	2	90m ²
<i>TREATMENT</i>	VISITOR LODGER	MASSAGE UNIT	4	45m ²	2	90m ²
<i>TREATMENT</i>	VISITOR LODGER	CUPPING (HIJAMA) UNIT	4	45m ²	4	180m ²
<i>TREATMENT</i>	VISITOR LODGER	STONE MASSAGE UNIT	4	45m ²	2	90m ²
<i>TREATMENT</i>	VISITOR LODGER	WAXING UNIT	4	45m ²	2	90m ²
THE HEALTH TOTAL AREA = 4200m²						

Table 2 health activity

THE ENTERTAINMENT ACTIVITY TABLE

ACTIVITIES	USERES	SPACE NAME	NUMBER OF USERS	SPACE AREA	NO. OF SPACES	TOTAL AREA
EATING	VISITORS LODGERS	MAIN RESTAURANT	200	420m ²	1	420m ²
EATING DRINKING FISHING	VISITORS LODGERS	CAFÉ'	25	112m ²	3	336m ²
	LODGERS	FISHING AREA	160	450m ²	1	450m ²
SAILING	VISITORS LODGERS	MARINA STATION	50	840m ²	1	840m ²
DIVING	VISITORS LODGERS	DIVING CLUB	45	540m ²	1	540m ²
SWIMMING	VISITORS LODGERS	INDOOR SWIMMING POOL	40	480m ²	1	480m ²
SWIMMING	VISITORS LODGERS	OUTDOOR SWIMMING POOL	50	860m ²	1	860m ²
WATCHING	VISITORS LODGERS	GALLERY	38	180m ²	2	360m ²
THE TOTAL AREA OF THE INTERTAINING = 4300m²						

Table 3 entertainment activity

THE LODGING ACTIVITY TABLE

ACTIVITIES	USERES	SPACE NAME	NUMBER OF USERS	SPACE AREA	NO. OF SPACES	TOTAL AREA
LODGING	LODGERS	SINGLE ROOM	1	25m ²	22	550m ²
LODGING	LODGERS	DOUBLE ROOM	2	30m ²	108	3240m ²
LODGING	LODGERS	SUITE	2	72m ²	14	1008m ²
LODGING	LODGERS	APPARTMENT	5	102m ²	12	1224m ²
LODGING	LODGERS	CHALLET (A)	3	120m ²	8	960m ²
LODGING	LODGERS	CHALLET (B)	5	140m ²	13	1820m ²
THE TOTAL AREA OF THE HOTEL AND THE CALLETS = 8800m²						

Table 4 lodging activity

THE SERVICES ACTIVITY TABLE

ACTIVITIES	USERES	SPACE NAME	NUMBER OF USERS	SPACE AREA	NO. OF SPACES	TOTAL AREA
ADMINISTRATING	LODGERS VISITORS	MAIN LOBBY	250	620m ²	1	620m ²
MANAGING	LODGERS	BREAKFAST HALL	150	300m ²	2	600m ²
COUNTING	KITCHEN STAFF	MAIN KITCHEN	30	240m ²	1	240m ²
MEETING	WORKERS	LAUNDRY UNIT	10	160m ²	1	160m ²
OFFICE WORK	VISITORS LODGERS	PRAYING ROOM	100	130m ²	2	260m ²
OFFICE WORK	VISTORS LODGERS	WC	6-8	24m ²	8	192m ²
	VISTORS LODGERS	SHOP	4	30m ²	6	180m ²
	SECURITIES	SECURITY OFFICE	4	30m ²	4	120m ²
	VISITORS LODGERS	ATM	4	18m ²	1	18m ²
	EMPLOYEE	CONTROL ROOM	3	24m ²	2	48m ²
	TECHNICIANS	ELECTRICITY ROOM	4	36m ²	1	36m ²
	TECHNICIANS	HVAC UNIT	2	50m ²	2	100m ²
OFFICE WORK	TECHNICIANS	MAINTAINING UNIT	5	36m ²	2	72m ²
	WORKERS	WORKERS SERVICES (LOCKERS+ WC)	6	30m ²	6	180m ²
RECEPTION	ROOM SERVICE STAFF	SERVICE ROOM	3	12m ²	8	96m ²
ARCHIVING	WORKERS	STORE	4	45m ²	4	180m ²
SERVICES AREA = 3,100 m²						

Table 5 service activity

THE ADMINISTRATIVE ACTIVITY TABLE

ACTIVITIES	USERES	SPACE NAME	NUMBER OF USERS	SPACE AREA	NO. OF SPACES	TOTAL AREA
ADMINISTRATING	ADMINISTRATOR	ADMINISTRATOR OFFICE	1	32m ²	4	128m ²
MANAGING	MANAGER	MANAGEMENT OFFICE	1	24m ²	4	96m ²
COUNTING	ACCOUNTERS	ACCOUNTERS OFFICE	3	24m ²	1	24m ²
MEETING	ADMINISTRATOR EMPLOYEE	MEETING ROOM	30	160m ²	2	160m ²
OFFICE WORK	TECHNICIANS	TECHNICIANS OFFICE	6	32m ²	2	64m ²
OFFICE WORK	EMPLOYEES	OPEN OFFICES	8	16m ²	16	256m ²
OFFICE WORK	SECRETARY	Secretariat office	2	12m ²	5	60m ²
RECEPTION	EMPLOYEES VISITORS	RECEPTION	8	32m ²	1	32m ²
ARCHIVING	EMPLOYEES	ARCHIVE	3	16m ²	1	16m ²
THE ADMINISTRATION TOTAL AREA = 950m²						

Table 6 administration activity

Table 7 zones total area

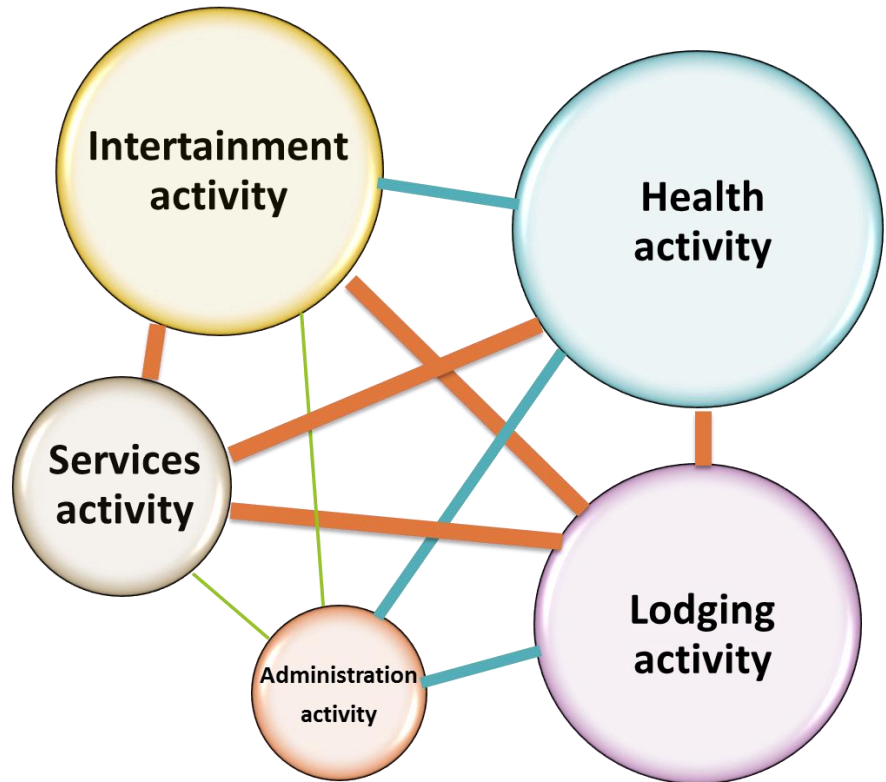
THE HEALTH TOTAL AREA	4200m ²
THE TOTAL AREA OF THE INTERTAINING	4300m ²
THE TOTAL AREA OF THE HOTEL AND THE CALLETS	8800m ²
THE SERVICES TOTAL AREA	3100 m ²
THE ADMINISTRATION TOTAL AREA	950m ²
PARKING TOTAL AREA	3750m ²
THE TOTAL BUILDING AREA IS = 21230m²	

THE GROUND BUILD TOTAL AREA	17560m²
THE NEEDED NON BUILD AREA = 60% of the project site	28100m²
THE PROJECT TOTAL AREA	45600m²

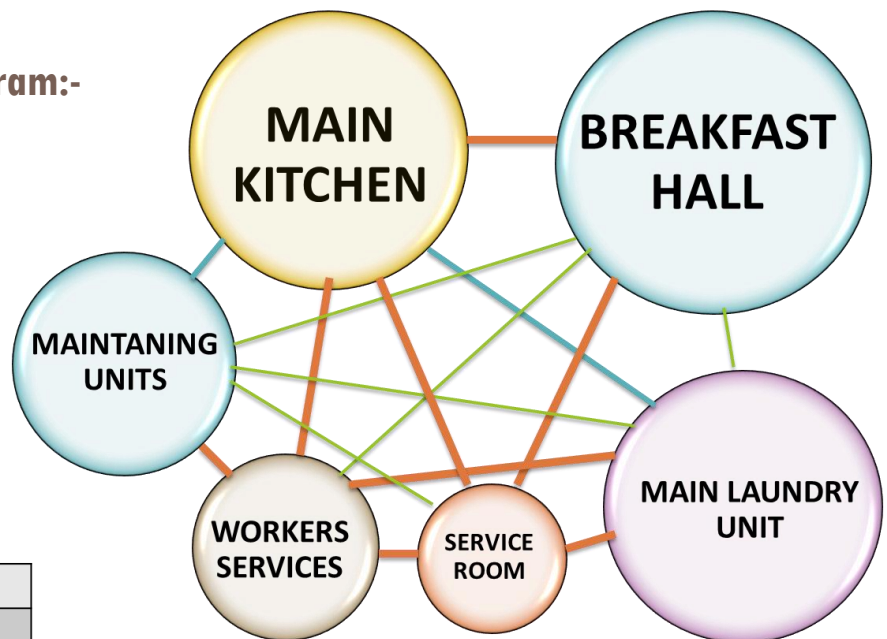
Table 8 the total area of the project




BUBBLE DIAGRAMS

Main bubble diagram:-

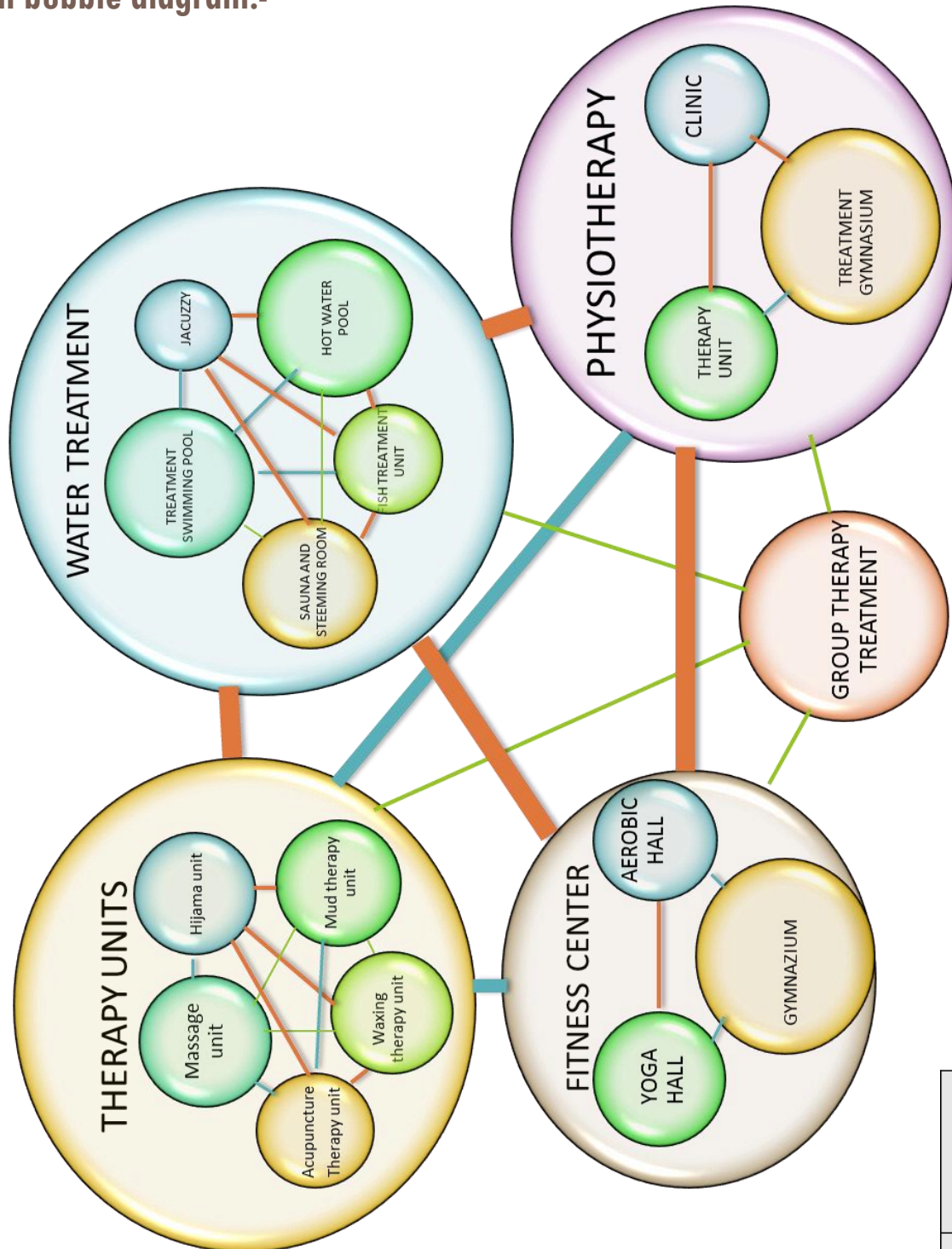


Services bubble diagram:-



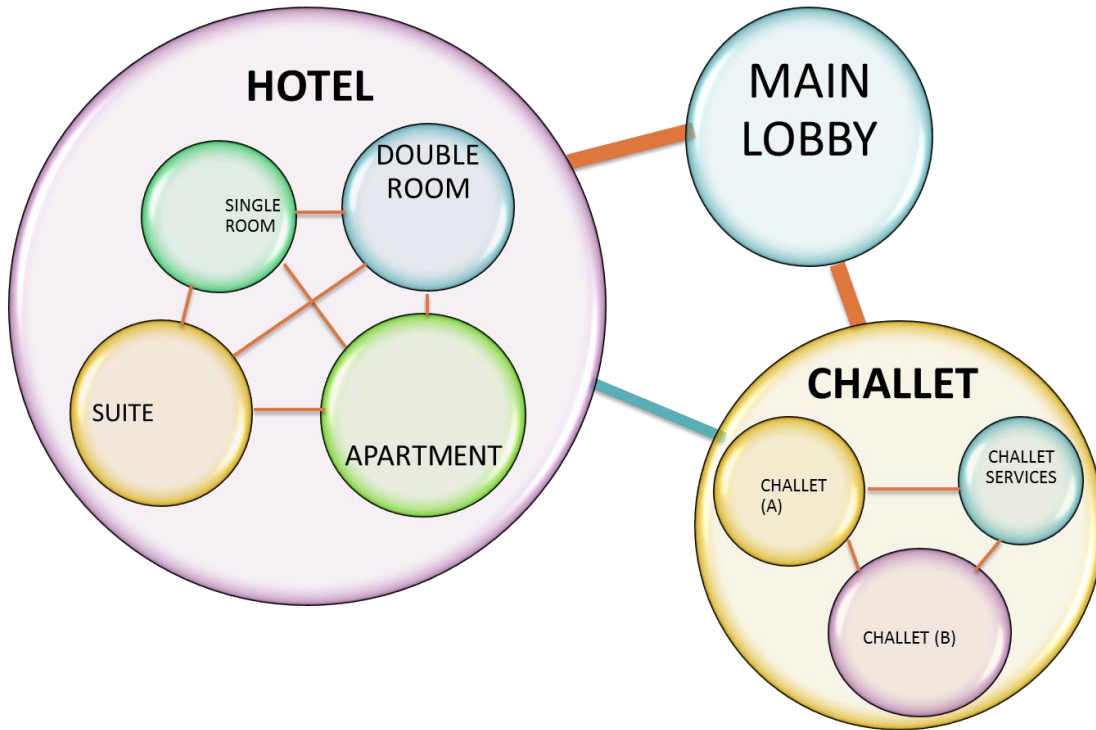
	STRONG
	MEDIUM
	WEAK

Health bubble diagram:-

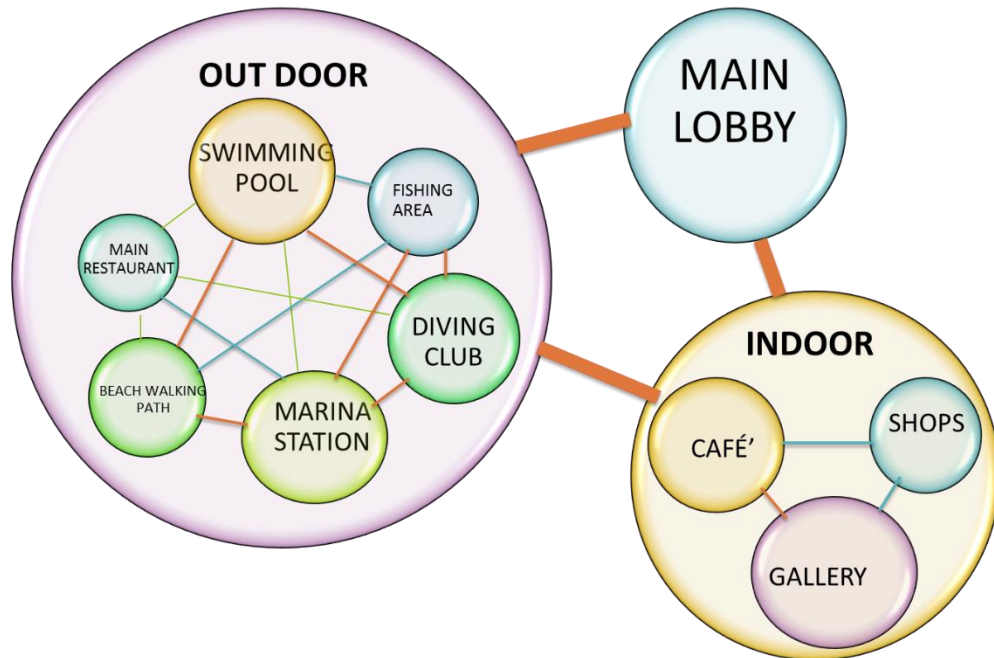


	STRONG
	MEDIUM
	WEAK

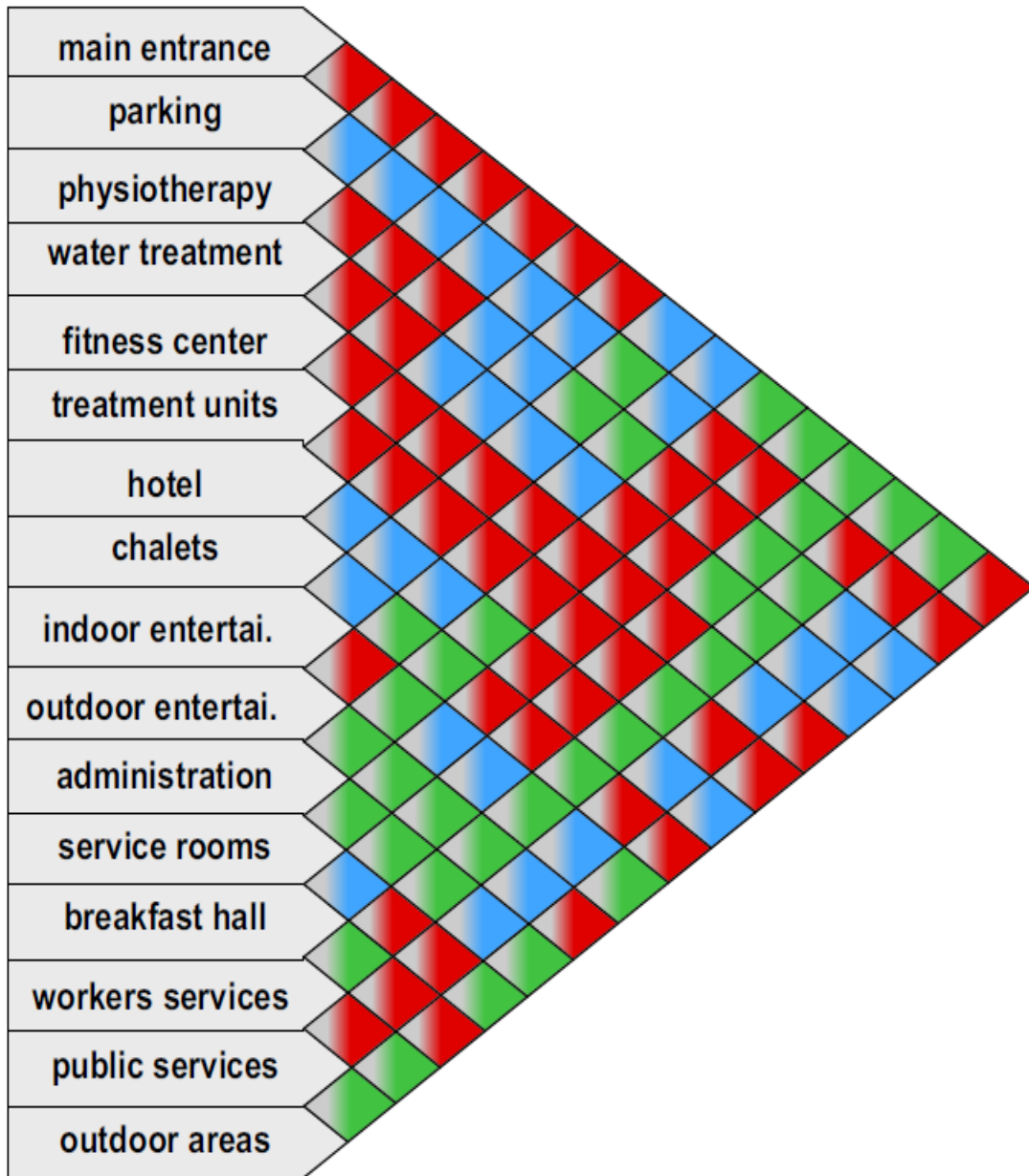
Hotel and chalet bubble diagram:-



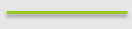


Entertainment bubble diagram:-

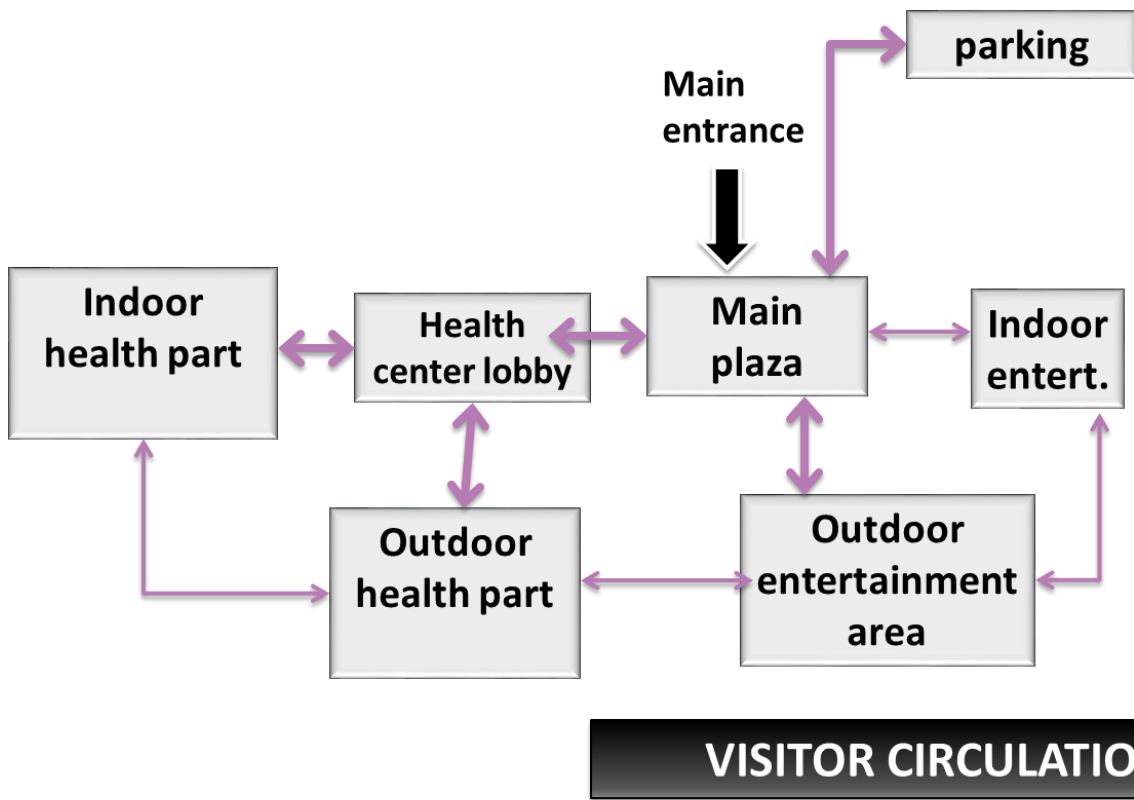
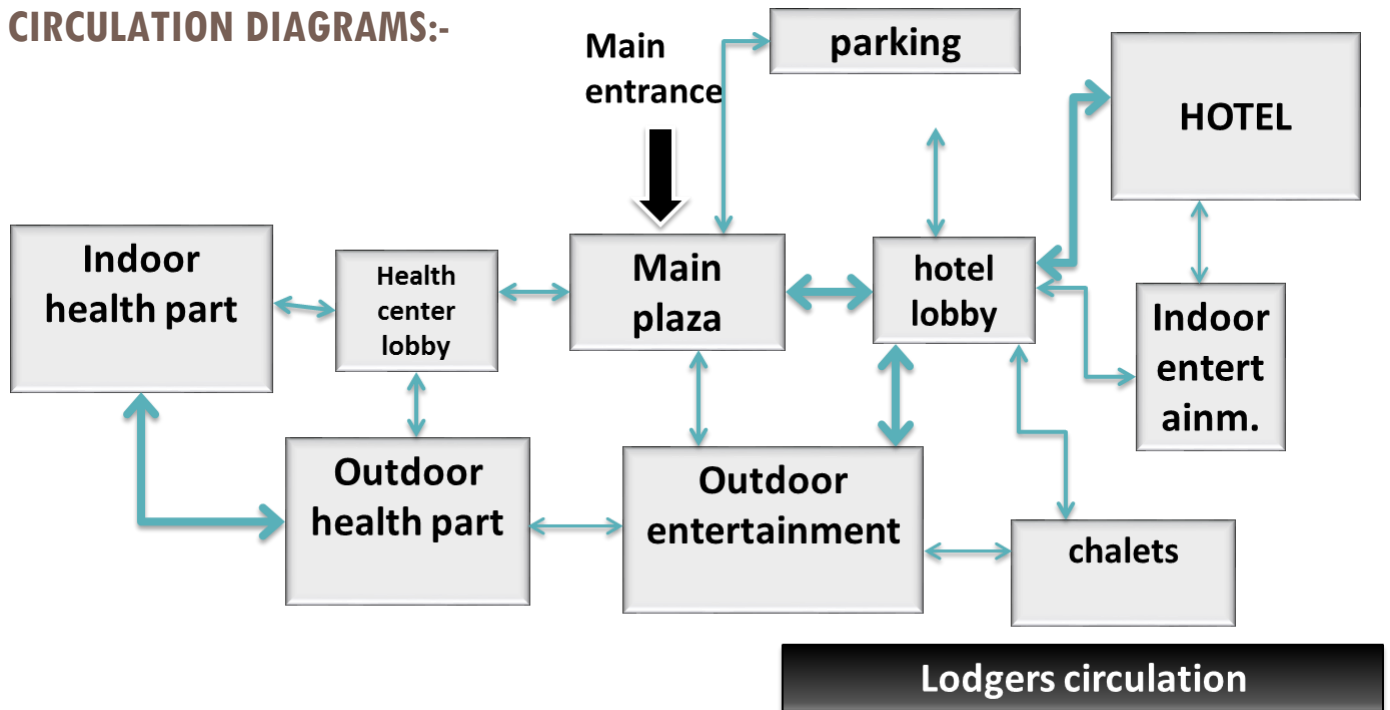


Matrix relationship diagram:-

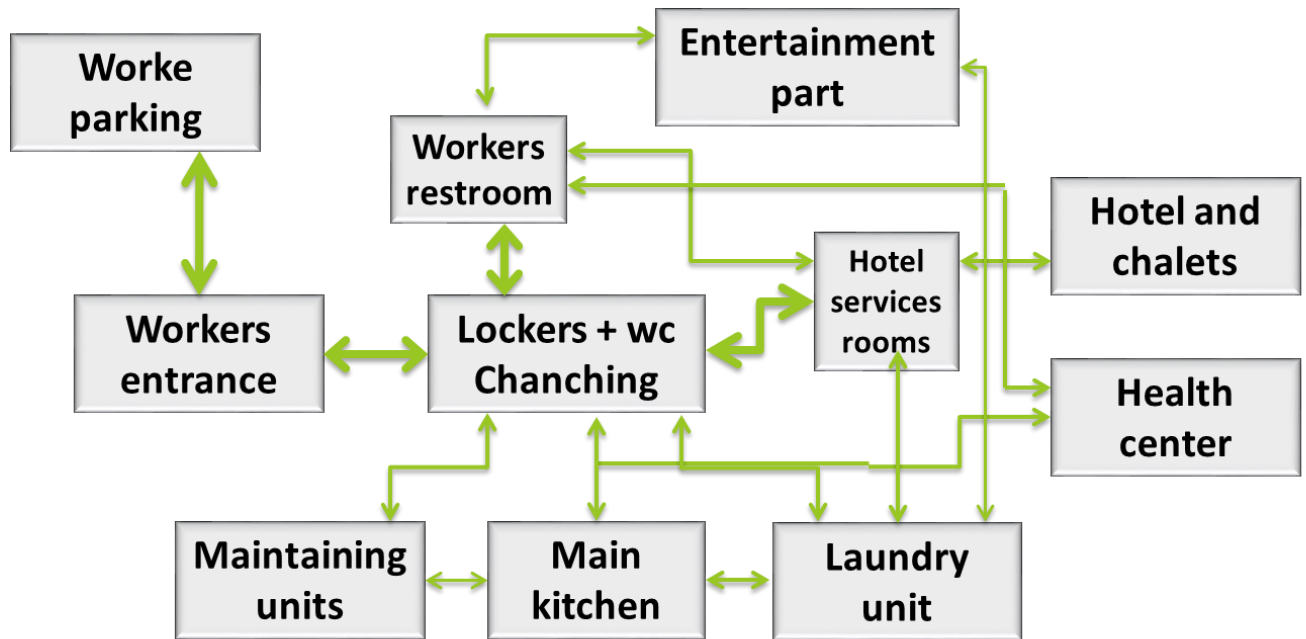


	STRONG
	MEDIUM
	WEEK

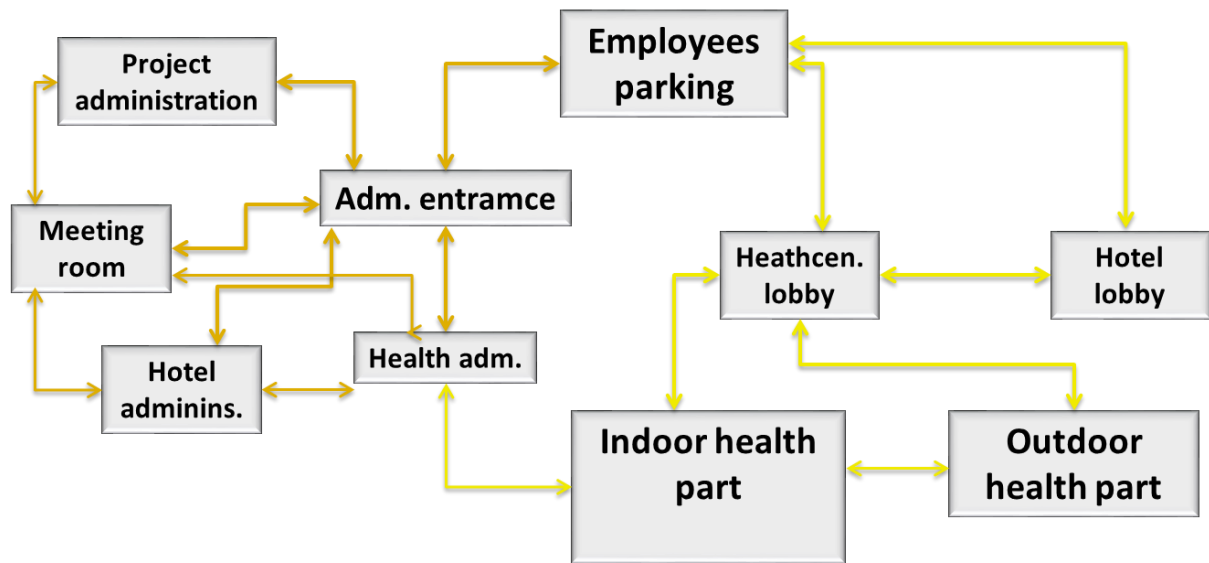
CIRCULATION DIAGRAMS:-



CIRCULATION DIAGRAMS:-

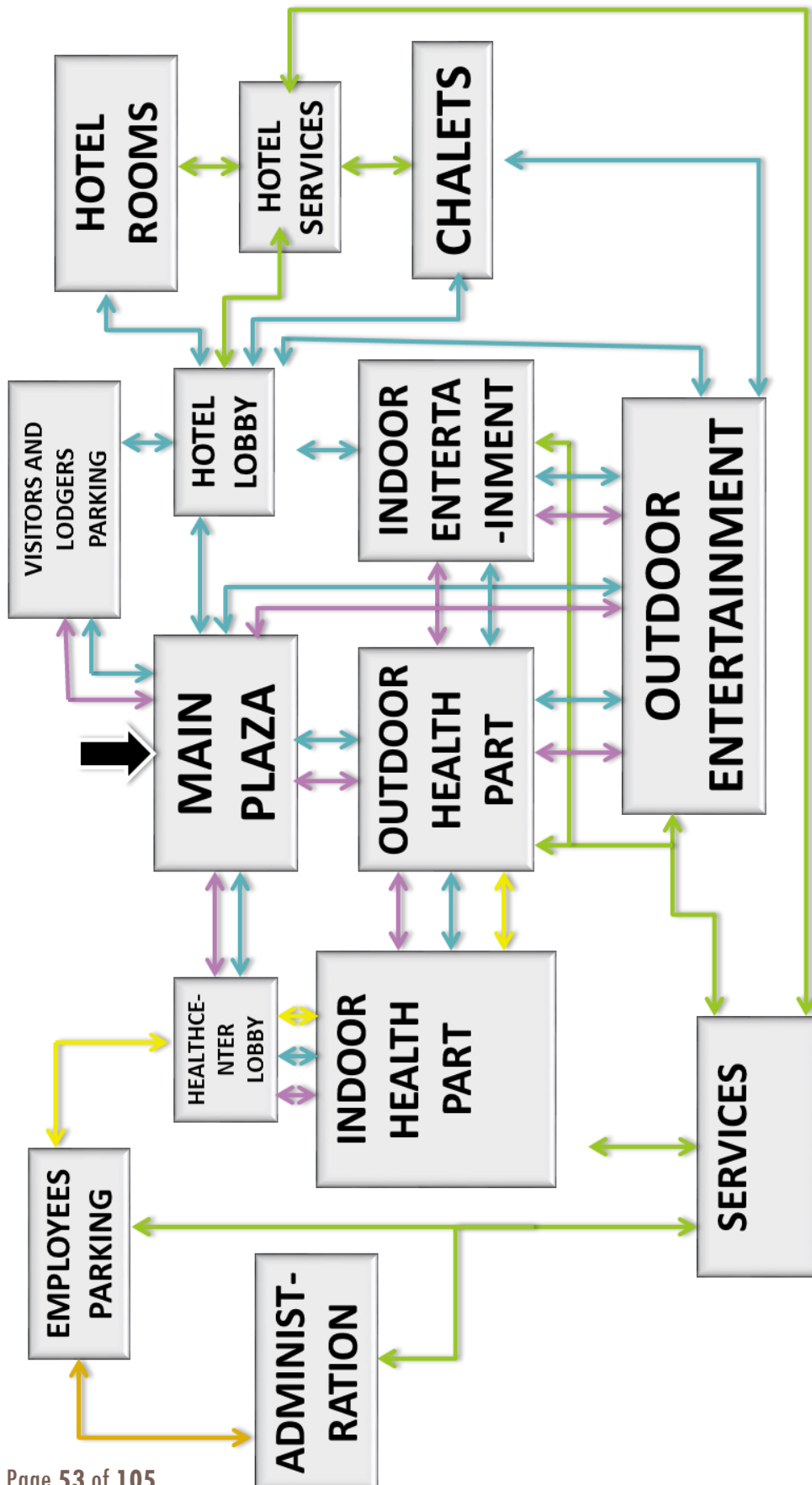


Workers and circulation



Employees and managers circulation

	Managers cerulation
	Employees cerulation



THE MAIN CIRCULATION DIAGRAM

	Visitors circulation
	Lodgers circulation
	Managers circulation
	Employee circulation
	Workers circulation

SITE SELECTION



Site suggestion A located in north Khartoum



Site suggestion B & C locted in portsudan

SUGGESTION (A):-

SITE:-

North Khartoum

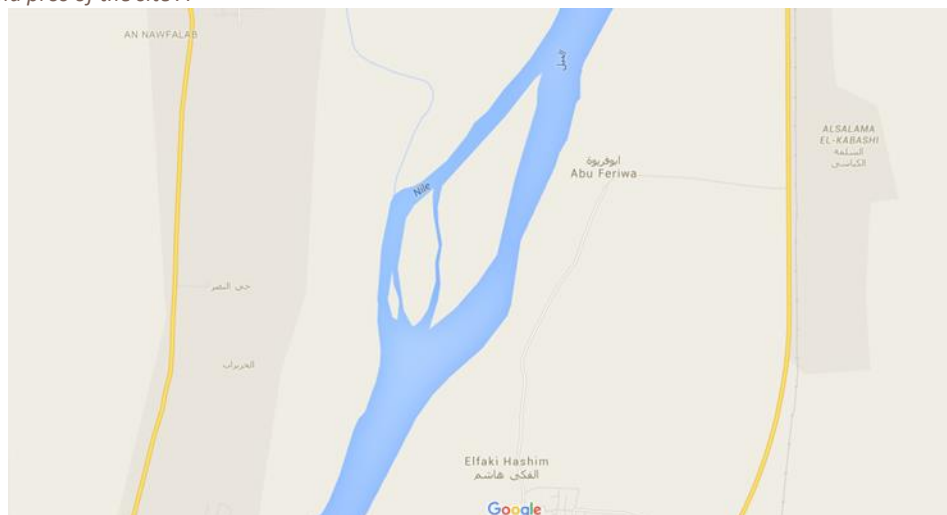
An island in the Nile River near Alfakhi Hashim

Totally area = 66000m² (6.6 hectare)



Cons.	Pros.
The Nile river is not proper to the water activities	It's far away from the city pollution
There is no direct roads to the site	The view is good because the water surrounding the site
The utilities is not available at the site yet	The soil of the site can be used for the treatment use
The area is not a the tourism projects	

Table 9 cons and pros of the site A



SUGGESTION (B):-

SITE:-

Portsudan

Totally area = 267155m² (26.7 hectare)

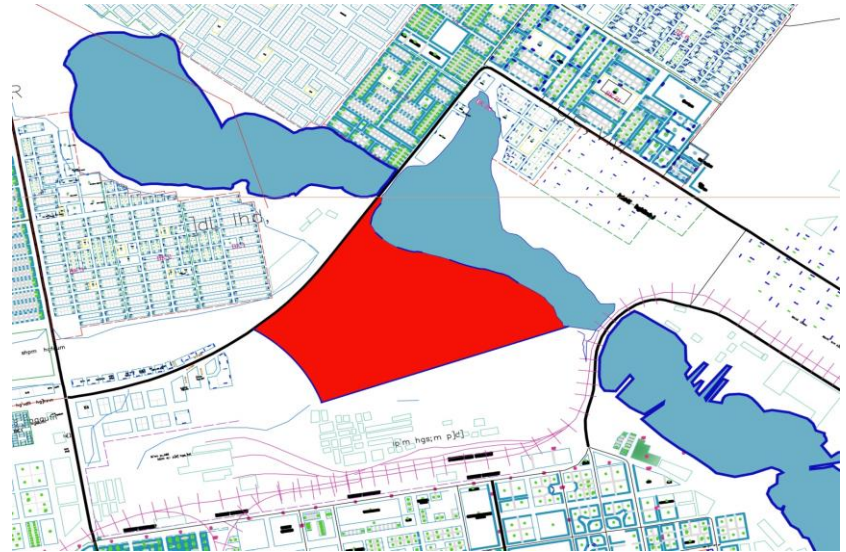
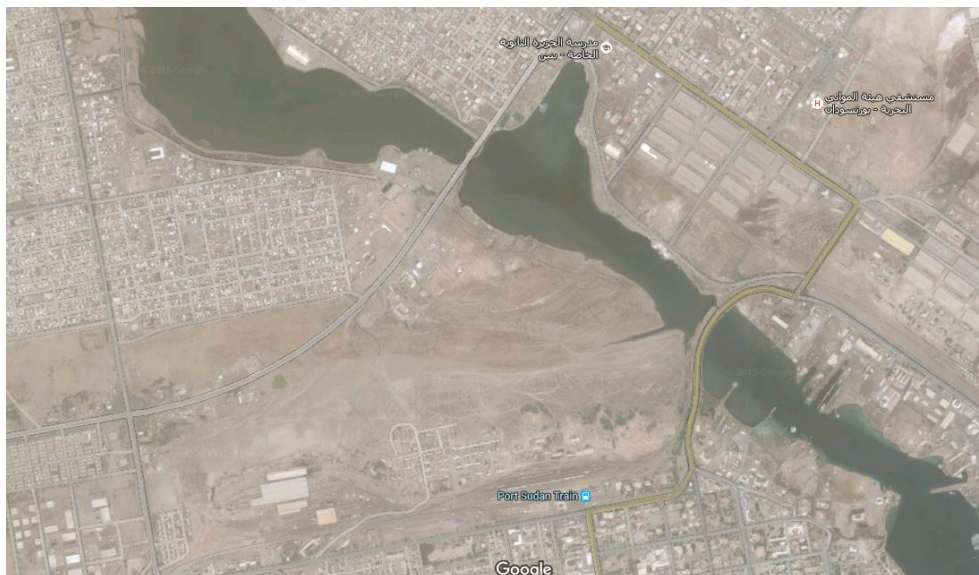


Table 10 cons and pros of the site B

CONS.	PROS.
The area planned for the entertainment field only	Near to the city
The noise pollution because of the railway line	Easy to reach
The depth of the sea is not proper for the water activities	The utilities is available at the site
The view of the sea is limited	The soil of the site is proper for the foundations
	The shape of the site is appropriate



SUGGESTION (B):-

SITE:-

Portsudan

North portsudan at flamingo gulf

Totally area = 57000m² (5.7 hectare)



CONS.	PROS.
Far from portsudan airport	The site is rich with the coral reefs and marine life rare
The soil of the site is salinity	Plain land of the site free of obstacles that are difficult to remove
The humidity is so high specially in the summer	The site is far from the city pollutions
	Good view which the site surround with the water from 2 sides
	Transparent waters of the Gulf near the site

Table 11 cons and pros of the site C



COMPARISON BETWEEN THE SUGGESTED SITES:-

THE FACTORS AFFECTING ON THE SITE SELECTION		The percentage	SITE A	SITE B	SITE C
EASTHETIC FACTORS		20%			
The variety of the land	5		4	3	4
Contour lines	10		5	5	7
The view	5		2	1	5
TECHNICAL FACTORS		10%			
appropriate to the foundation	10		6	6	3
LEGAL FACTORS		10%			
Appropriate to the city planning	8		5	3	8
The government property	2		2	2	2
FONCTIONAL FACTORS		20%			
Near to the city center	4		3	4	2
Reachability	3		2	3	2
Near to the airport	2		1	2	1
The area activity	5		2	1	5
The utilities	4		1	3	2
Future expansion	2		1	2	2
ENVIRONMENTAL FACTORS		40%			
Transparent water	10		4	7	10
Near to the coast	5		3	4	5
the coral reefs and marine life rare	10		2	5	10
Far from the pollutions	8		7	3	8
The climate	7		6	6	6
		100%	47%	60%	82%

Table 12 the cooperation between the suggested sites

THE SELECTED SITE IS C

SITE SELECTION

Introduction:-

Site selection is the most crucial part of the design process. It involves a detailed analysis and study of the impacts the project would have on its surroundings on the short and long terms. It considers the macro-climate, accessibility, geography, history, and land uses to locate a suitable and feasible site that would benefit the client and user.

Port Sudan is a port city in eastern Sudan, and the capital of the state of Red Sea. As of 2007, it has 489,725 residents. Located on the Red Sea, it is the Republic of Sudan's main port city.

Considering the general location requirements for the resort, it is apparent that it must be located in a sea view area which is in Port Sudan accessible to the airport and main roads in order to serve tourist and civilians efficiently.



Additional requirements exclusive to the project include:

1. Research in related topic to simplify the problems related to resort design
2. Iconic resort with multi facilities in well-organized manner
3. Planning and designing resort with all indoor and outdoor amenities
4. Use of green technologies and environment sustainable design
5. Use of different design concept to acquire final built structure with proper interior and exterior complying with surrounding
6. Providing nature environment good viewing.

Through careful consideration of the requirements, a site located in the flamingo gulf was found to match the above addition to providing the project with stunning and matched views of the red sea. The area is planned for shore and desert future tourism projects.

SITE INFORMATIONS:-

Location: North portsudan in the planning of the shore and desert projects on the flamingo gulf

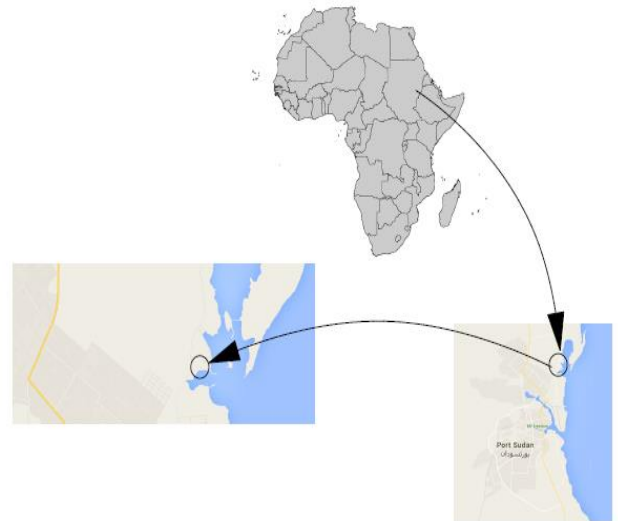
Neighbors:

North: the planning for shore and desert future projects

East and south: The red sea (flamingo gulf)

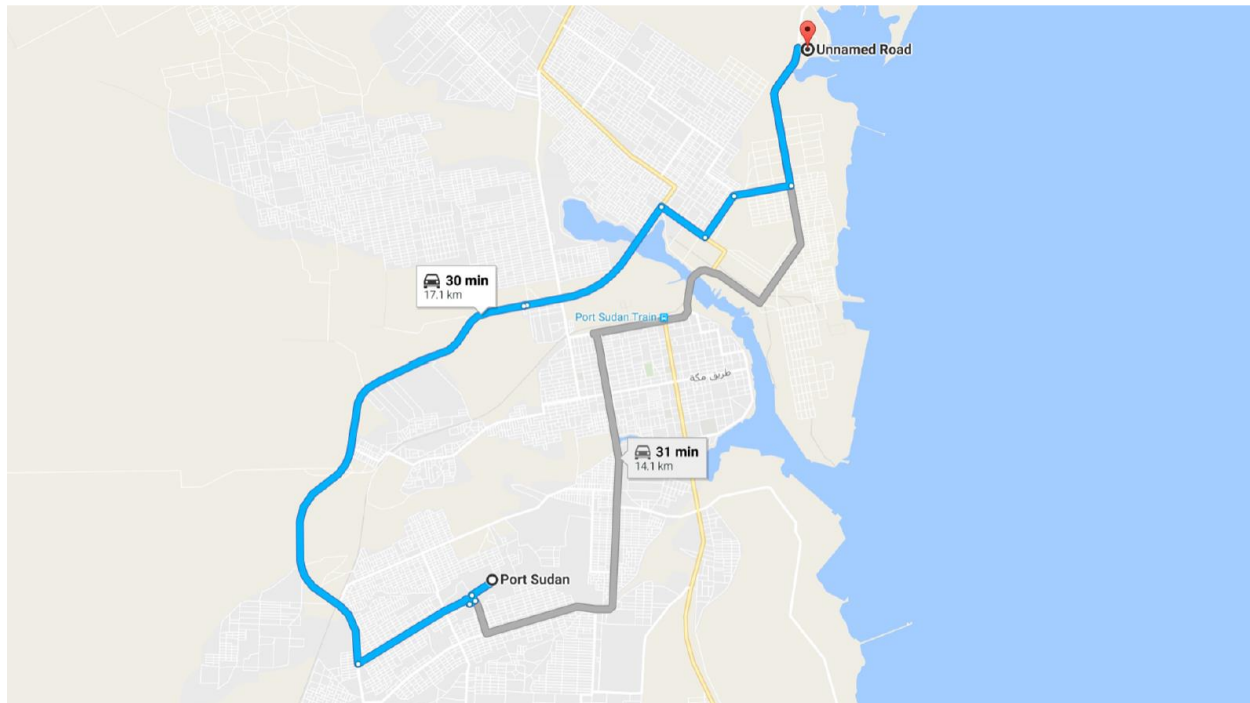
West: portsudan city the continental road

Total area = 5.7 hectares



SITE REACHABLE:-

The following figures will show how the site is connected to the main transportation Areas in the city of Portsudan, its 31min maximum to get to the proposal site from the center of the Portsudan city via Almadina Almonaara road or the continental road.



SITE SERVICES:-

The electricity line is the red one and the blue one is the water supply.

The services lines comes with the continental road from the center of the city.



CLIMATE ANALYSIS

Climate in Portsudan in general:-

Port Sudan has a hot desert climate with extremely hot summers and moderately hot winters, requiring the acquisition of fresh water from Wadi Arba'at in the Red Sea Hills and from salt- evaporating pans. Temperatures can easily exceed 30 °C (86 °F) in winter and 45C in summer. Over 90% of the annual rainfall falls between October and January, mostly in November, with the wettest month on record being November 1947 with 182 millimeters (7.2 in), whilst the wettest year was from July 1923 to June 1924 with 231 millimeters (9.1 in). Average annual rainfall is 76 millimeters (3.0 in), and no rainfall occurred between January 1983 and June 1984. The average temperature is 28.4 °C (83.1 °F).

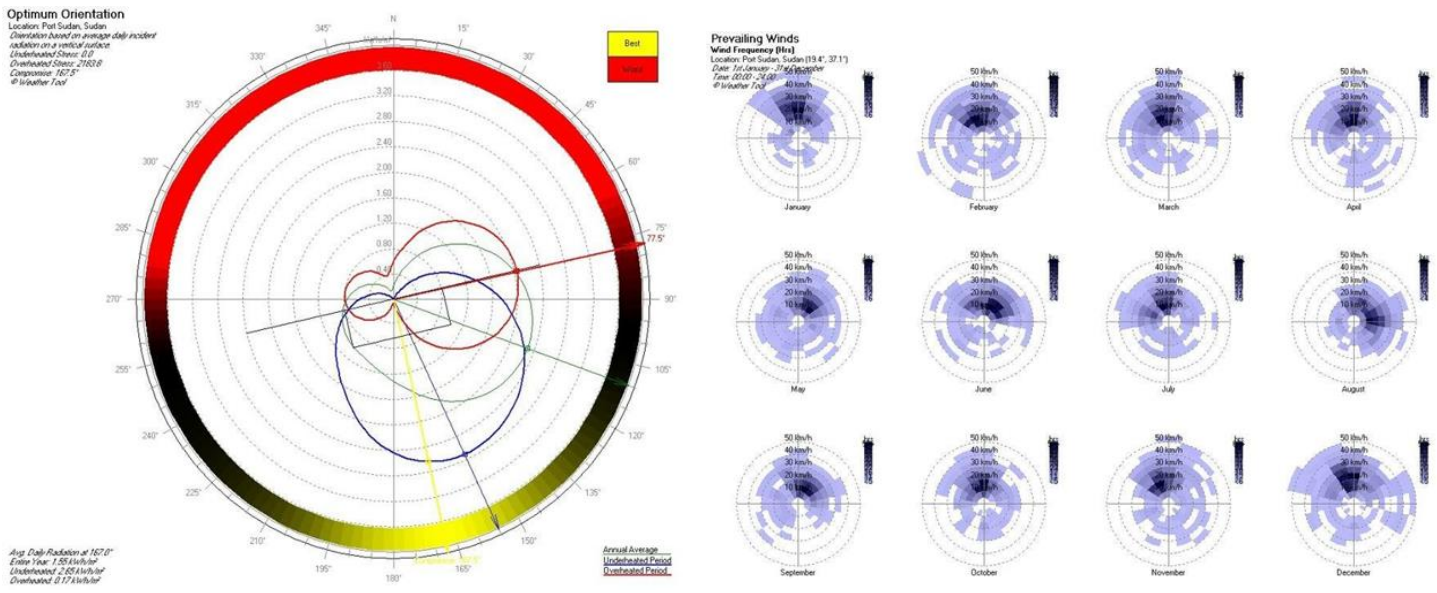
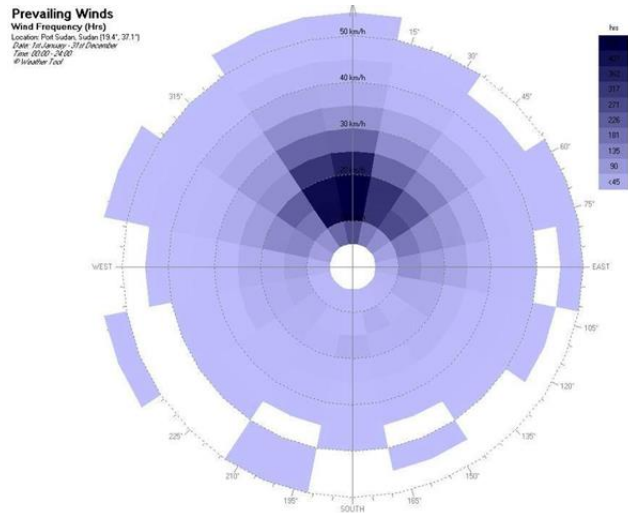
Climate data for Port Sudan, Sudan (1961–1990)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	33.8 (92.8)	32.0 (89.6)	35.0 (95)	38.2 (100.8)	45.7 (114.3)	46.0 (114.8)	46.3 (115.3)	46.4 (115.5)	46.1 (115)	39.4 (102.9)	34.7 (94.5)	33.6 (92.5)	46.4 (115)
Average high °C (°F)	26.8 (80.2)	27 (81)	28.8 (83.8)	31.4 (88.5)	35 (95)	38.5 (101.3)	40.1 (104.2)	40.2 (104.4)	37.4 (99.3)	33.4 (92.1)	30.8 (87.4)	28.8 (83.8)	33.2 (91.8)
Daily mean °C (°F)	23.3 (73.9)	23 (73)	24.3 (75.7)	26.5 (79.7)	29.3 (84.7)	32.2 (90)	34.1 (93.4)	34.5 (94.1)	32.1 (89.8)	29.3 (84.7)	27.3 (81.1)	24.7 (76.5)	28.4 (83.1)
Average low °C (°F)	19.7 (67.5)	19 (66)	19.9 (67.8)	21.6 (70.9)	23.7 (74.7)	25.9 (78.6)	28.2 (82.8)	28.9 (84)	26.8 (80.2)	25.3 (77.5)	23.8 (74.8)	21.3 (70.3)	23.7 (74.7)
Record low °C (°F)	11.4 (52.5)	13.3 (55.9)	14.2 (57.6)	14.6 (58.3)	17.4 (63.3)	20.8 (69.4)	22.2 (72)	23.0 (73.4)	22.2 (72)	17.5 (63.5)	17.5 (63.5)	13.8 (56.8)	11.4 (52.5)
Average rainfall mm (inches)	7.2 (0.283)	0.9 (0.035)	0.9 (0.035)	0.2 (0.008)	1.1 (0.043)	0.2 (0.008)	3.8 (0.15)	1.4 (0.055)	0 (0)	13.9 (0.547)	35 (1.38)	10 (0.39)	76.1 (2.99)
Average rainy days	1.2	0.2	0.2	0.3	0.3	0.1	0.8	0.3	0	1.2	4.1	1.7	10.4
relative humidity (%)	69	70	69	65	58	50	49	50	60	72	72	71	63
monthly sunshine hours	195.3	226.8	282.1	306	322.4	285	272.8	288.3	282	297.6	225	213.9	3,197
daily sunshine hours	6.3	8.1	9.1	10.2	10.4	9.5	8.8	9.3	9.4	9.6	7.5	6.9	8.8

Table 13 climate data for portsudan (1961-1990)

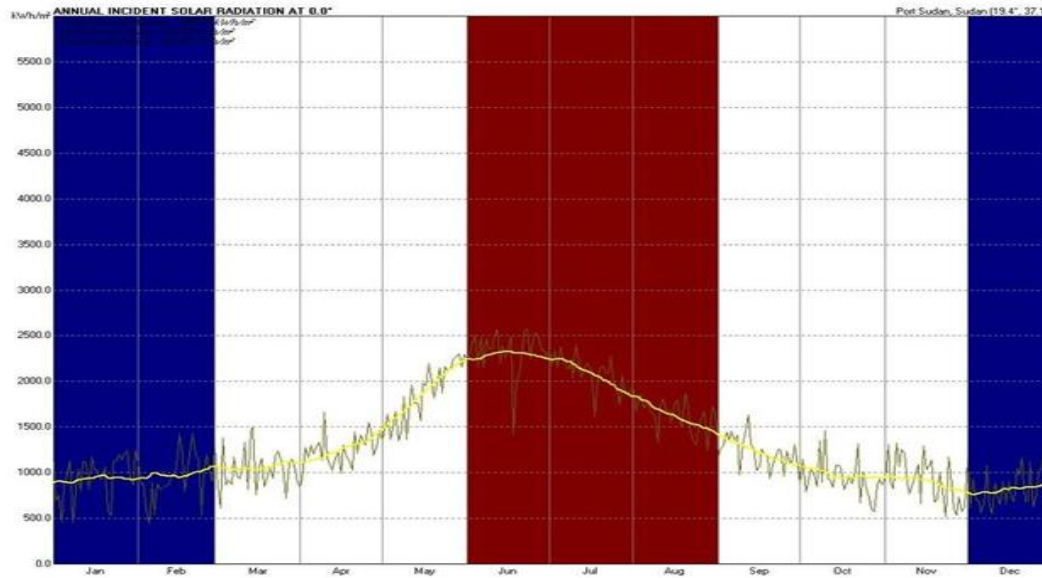
WINDS:-

- The site is located under the influence of northeast winds in the winter, which is estimated speed of between 50-80 kilometers per hour.
- In the summer the winds are northwest, but the prevailing winds are north.
- Southwesterly monsoon winds laden with dust and rain.
- Since the site overlooking the sea climate is influenced by the night breeze, which helps to improve the atmosphere.



TEMPERATURE:-

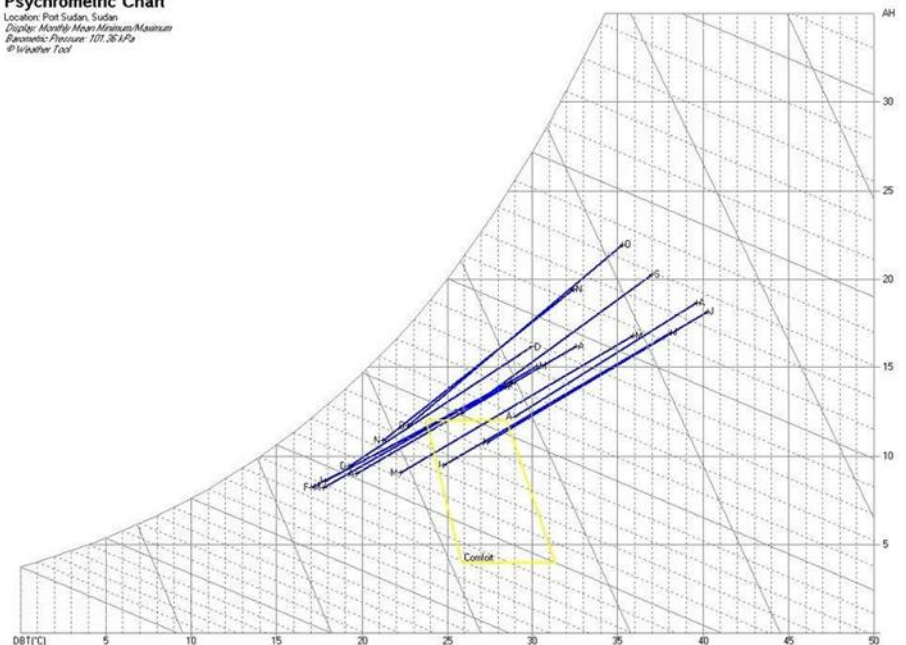
- Temperature range 15-47 ° C
- It classifies the region within the desert climate of the region and the semi-desert



RAINS:-

- Red Sea State is located in the winter rains scale.
- The annual average is currently only 1.1 mm
- Relative humidity ranging between 42-70 and grow as we head to the south with the increased rainfall

Psychrometric Chart
 Location: Port Sudan, Sudan
 Climate: Arid (Hot) - Minimum/Maximum
 Barometric Pressure: 101.36 kPa
 © Weather Tool



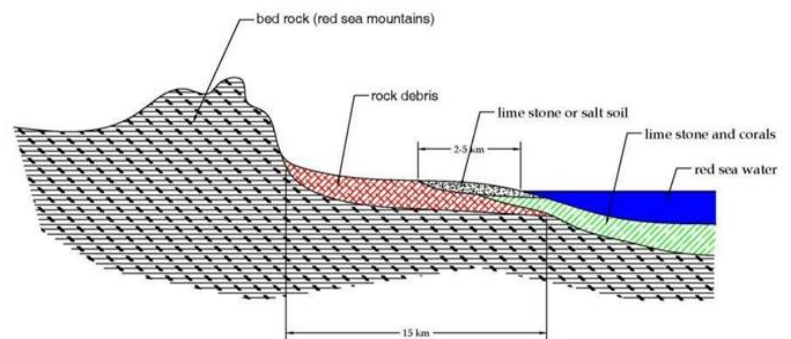
TOPOGRAPHY:-

Topsoil:-

Soil surface location mostly sandy soil soft white with the remnants of coral reefs and the advantage itself on being free of rocks.

Deep soil:-

Stony increases with depth, a Red Sea Mountains rocks and increase salinity, so you must find a private processors in the foundation to protect it from salts



The contour of the site:

- The highest point in the location height of 2.8 meters and is located on the eastern side.
- The steppe region is poor of plants because of the severity of soil salinity, which obliges us to a private agriculture processors.



INDICATORS & GUIDELINES:-

The main street is in the west side of the site
The sub street is in the north side of the site

- 1- The main entrance from the west
- 2- The sub entrance from the north
- 3- The services entrance from the north

The weather is extremely hot most of the year

Softening through afforestation and landscaping
Use umbrellas in sitting area and hallways

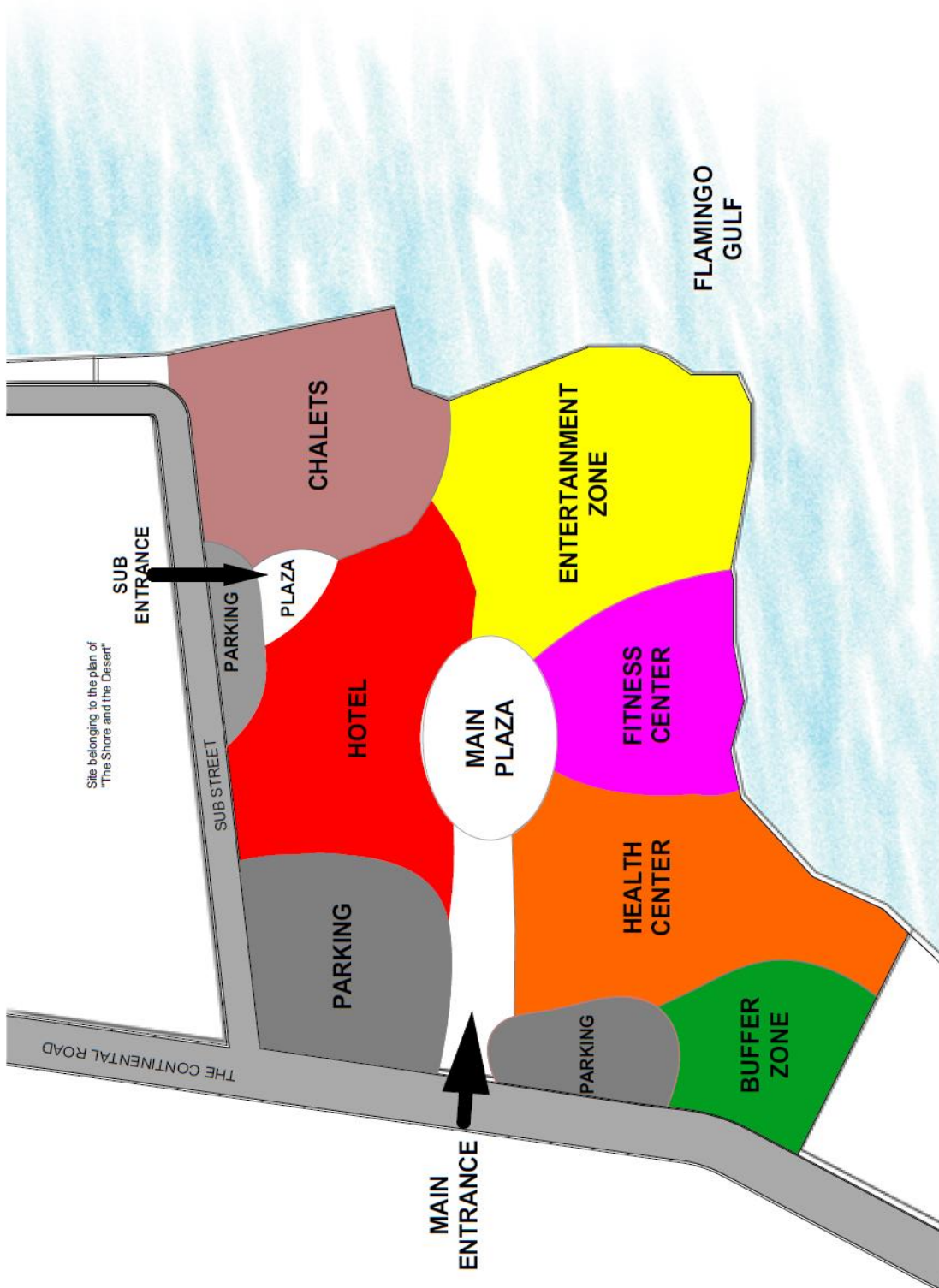
The soil of the site is salinity

The use of materials resistant to salts in the foundation of the building
Using deep foundations (piles) for the construction of the building
Using isolations

The noise pollution comes from the west side
(from the main road)

The building should be far as possible from the west
Doing a buffer zone and landscaping on the west side

ZONING



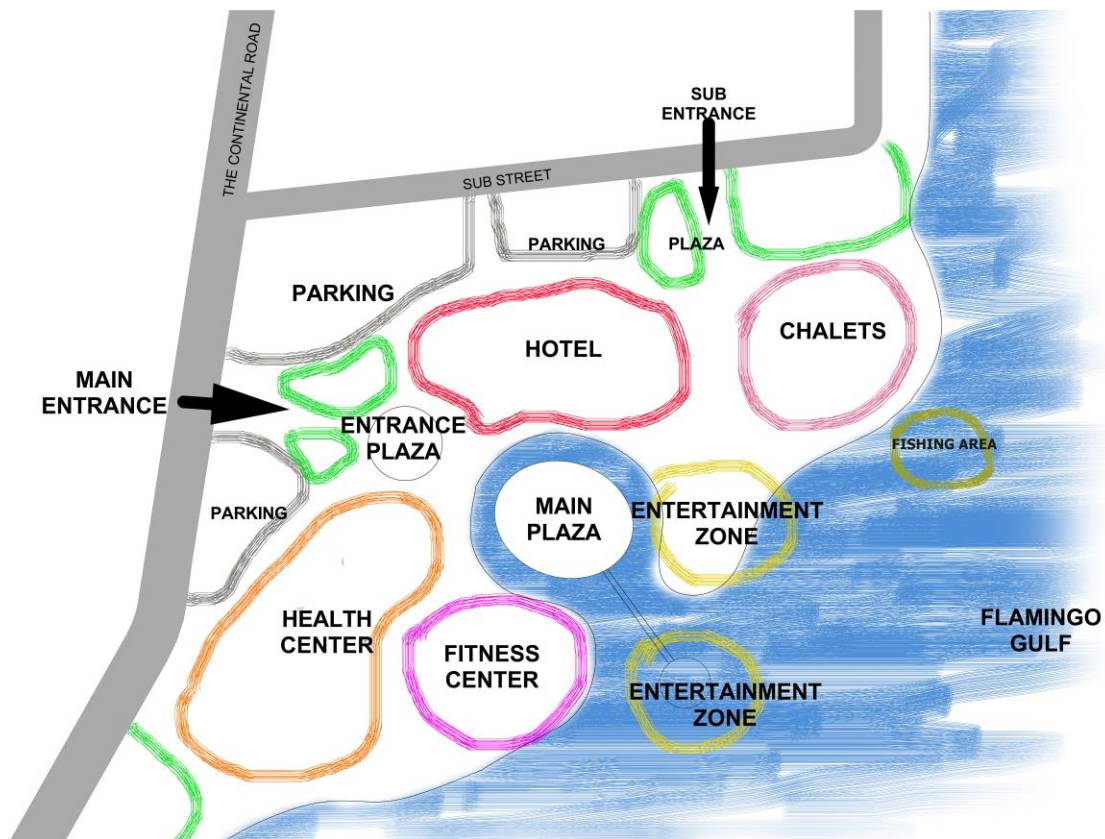
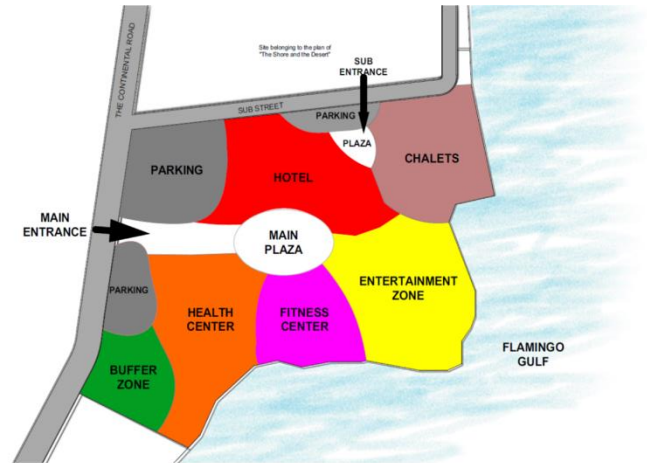
CHAPTER THREE: - THE ARCHITECTURE DESIGN

1. Design Concept
2. Design progress and development
3. Final Design

DESIGN CONCEPT:-

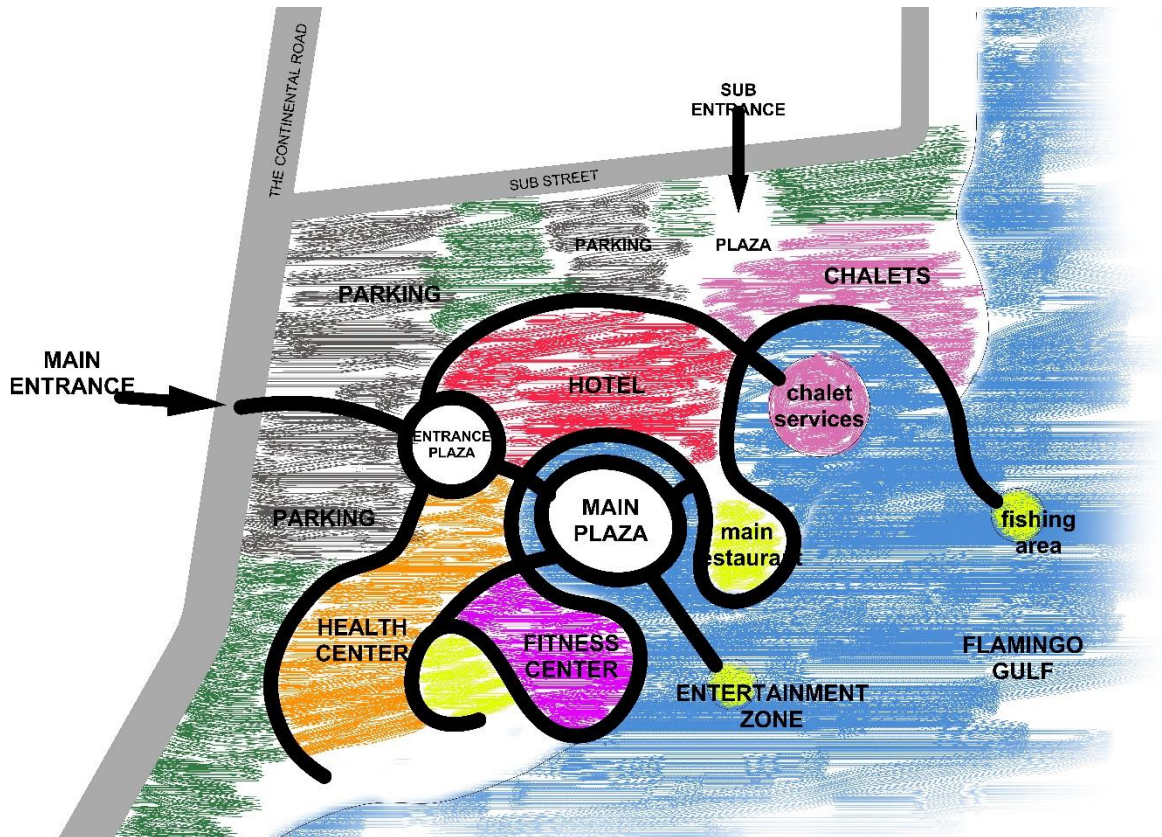
The concept of the design came from the site and the project analysis plus the general layout of the zoning.

The spaces between the main zones of the site represent the main hallways and roads which are distributed from the main plaza which makes the main plaza the area that connect all the zones and activities together



Drag the sea water inside the site in the main plaza area so it's separate the health zone from the entertainment zone and the chalet. Connect the plaza with the entertainment zone that is on the sea which contain the diving club and the marina activity.

There are streets inside the site which are used by special vehicles that belong to the resort these vehicles are used by people who can't walk for long distance, the streets are connecting the plaza with other zones and dividing the zones.



THE CONCEPT OF THE ARCHITECTURE DESIGN:-

Using the linear shapes on the hallways and on the buildings and the elevations that match with the sea waves.

And the linear shapes is a symbol for the relaxation and the recreation.

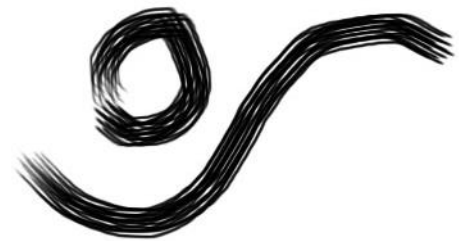


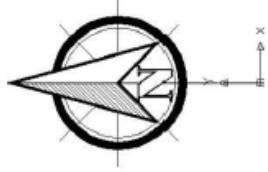
The second concept:-

The symbols of yoga are all linear and match with the site



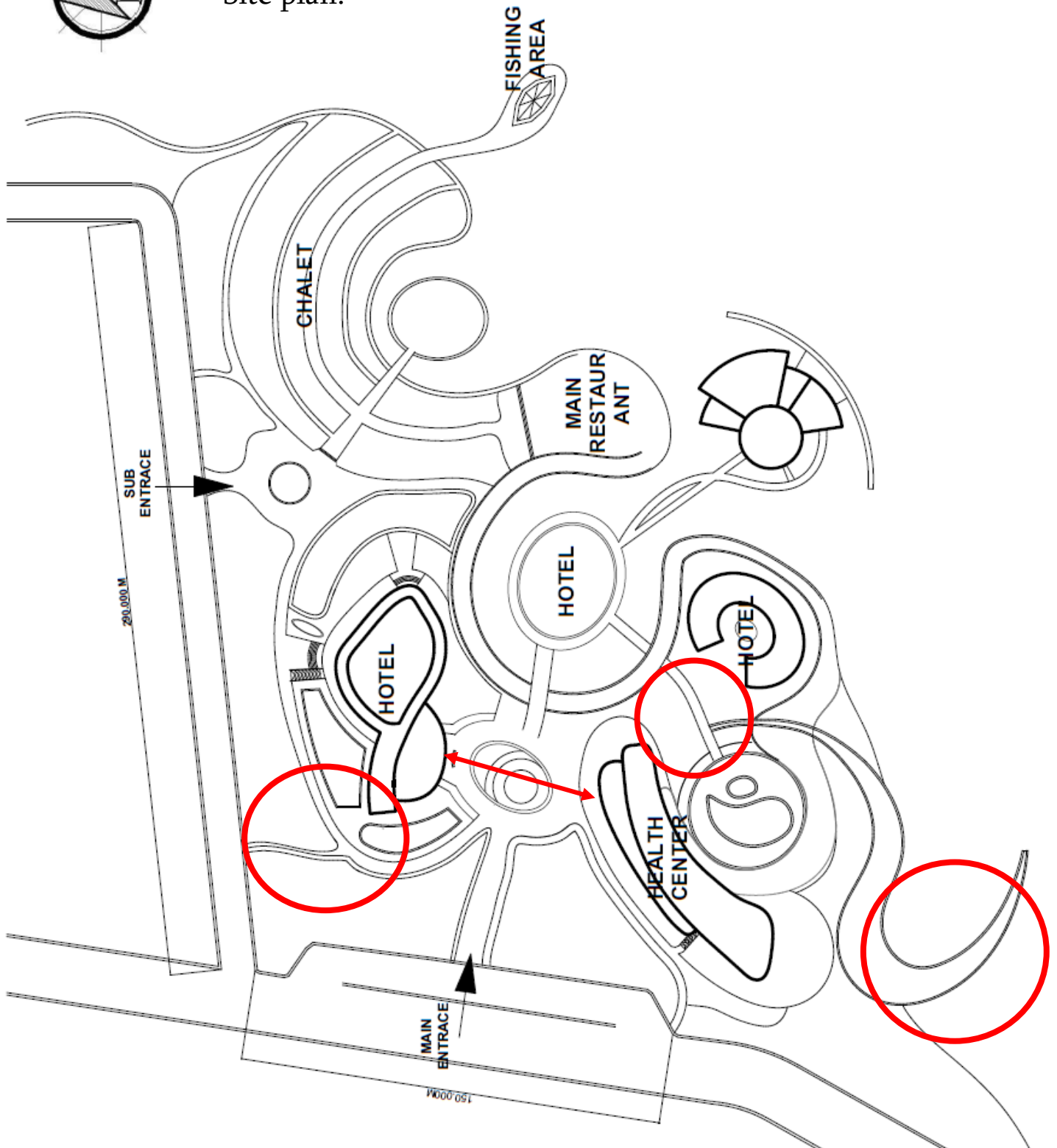
This shape been inspired by the above concept and it is a linea shape with a circle that give a good function and a match shape with the design which containment shape, the circle can be the plaza and the linear shap is the building or the hallway.





THE DEVELOPED INITIAL DESIGN PHASE:-

Site plan:-



The entrance:-

The main entrance on the west main road, making a sub road because the road is a high way.

The sub entrance from the north street for the services and the chalet lodgers.

The buildings:-

The hotel north the main plaza and the chalet is near it on the beach side.

The health center and the fitness center are south the main plaza and on the beach

The diving club and the marina station extended from the site in order to get to a deeper place for the boats and the diving.



The problems I faced in this design:-

1. The health center and the fitness center are not connected with a hallway.
2. The landscape is not matched with the building and the hallways,
3. The entrance plaza has a large width comparing with the buildings areas.

Figure showing the ground floor plan of the hotel



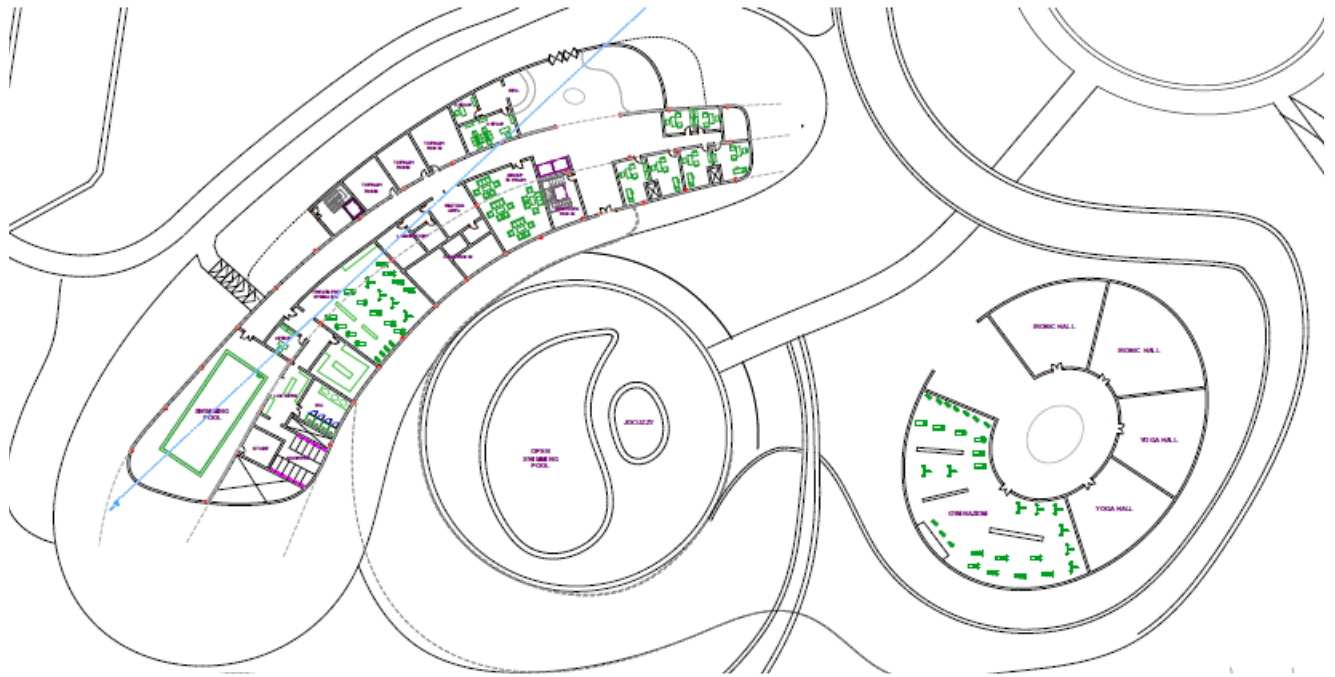
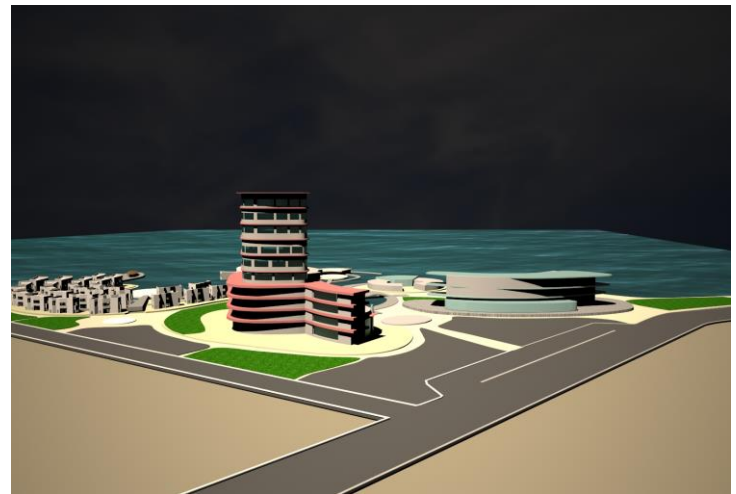
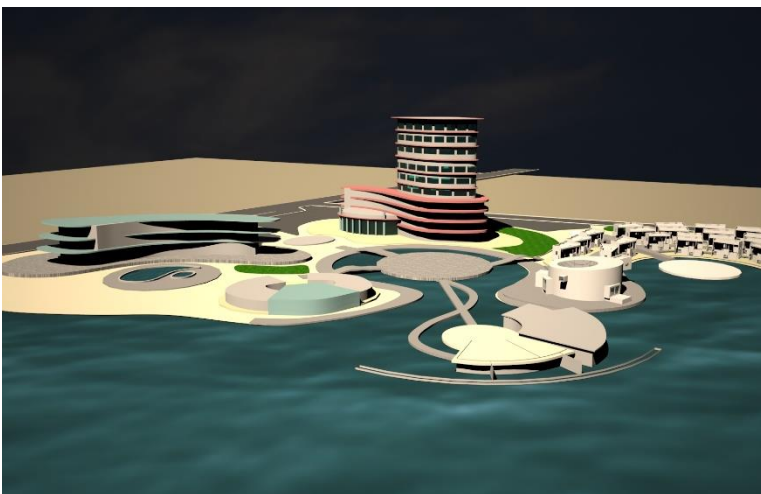


Figure presenting the ground floor plan for the health center and the fitness center



THE FINAL DESIGN PHASE:-

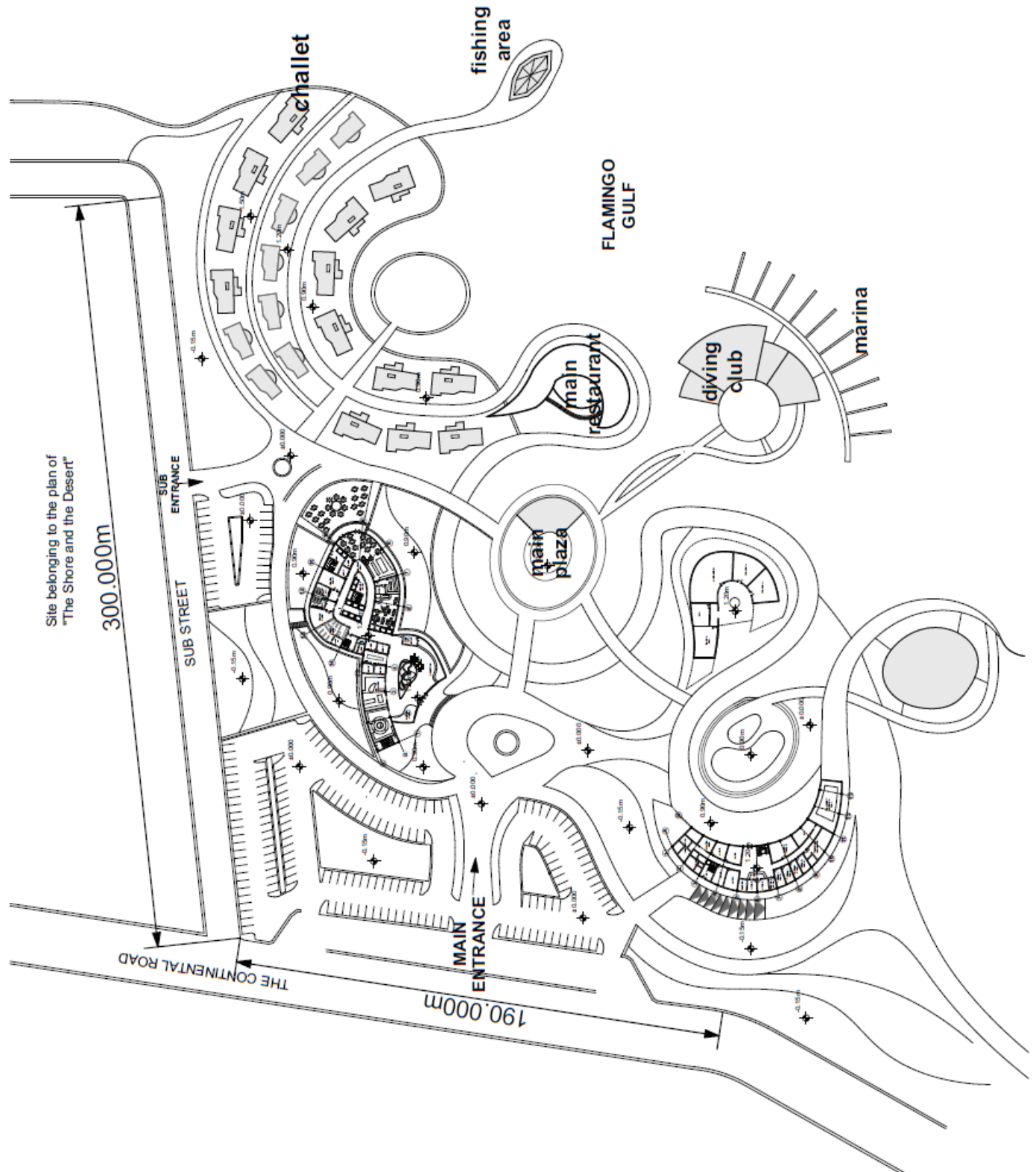
The difference from the older site plan:-

- *Working more on creating the contrast between the landscape and the built areas.*
- *Changing the buildings of the health center and the fitness center*
- *Organizing the shapes of the landscape to match with the building and the hallways*
- *Working more on the main entrance plaza.*

Site plan:-



MASTER PLAN:-



ELEVATIONS:-

Figure west elevation



Figure south elevation

The difference from the old elevations:-

- More details in the elevations.
- Changing the design of the health centre and the fitness centre

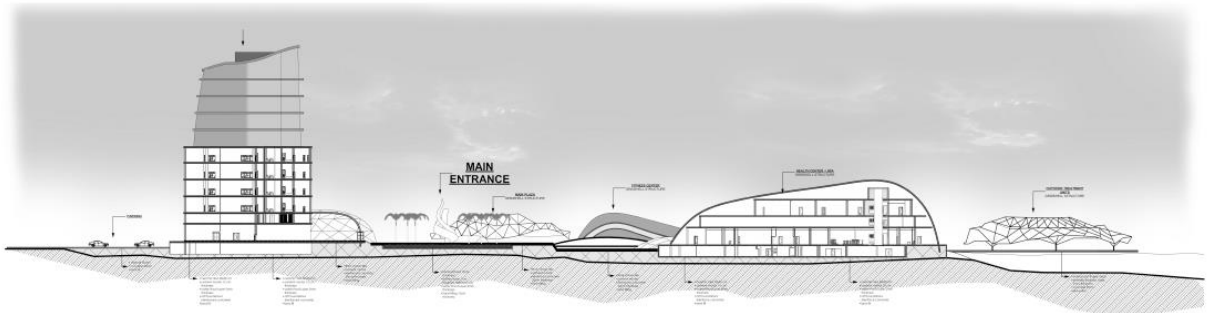


Figure panoramic section

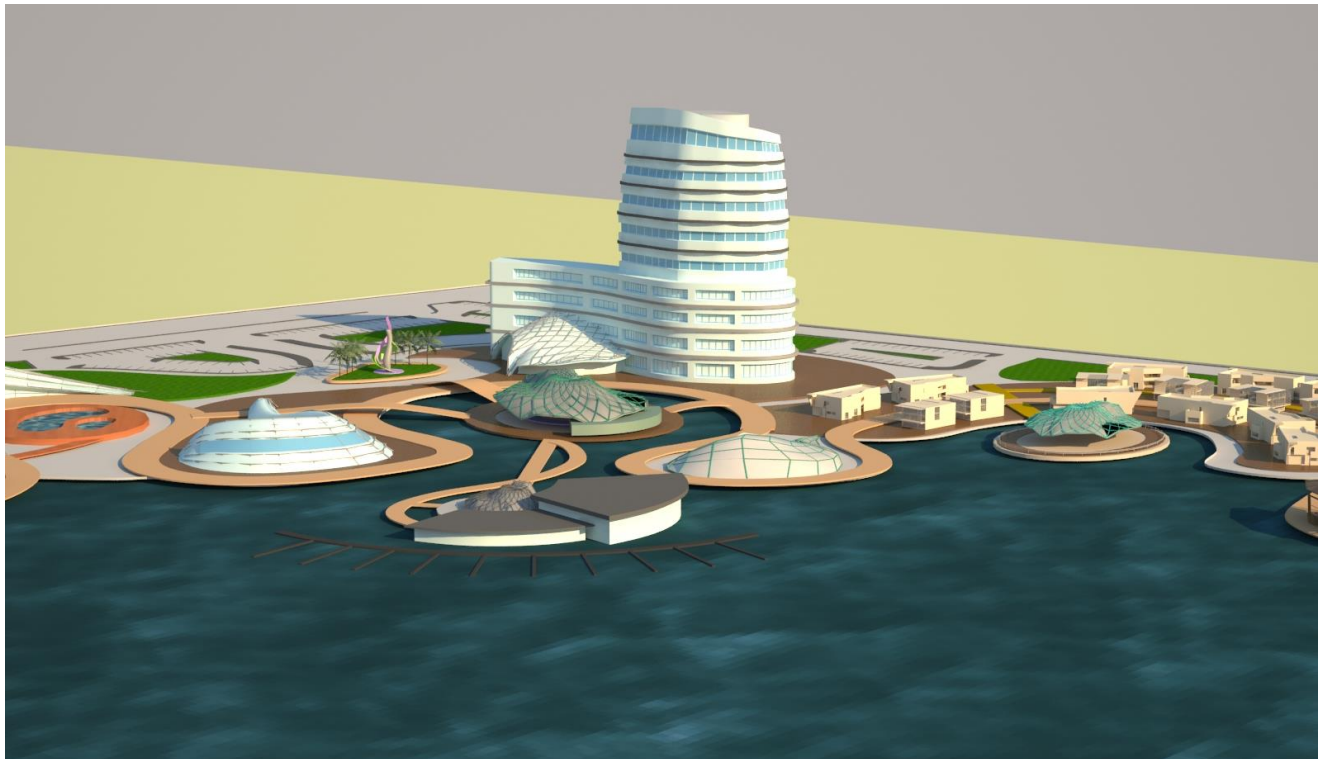


Figure perspective

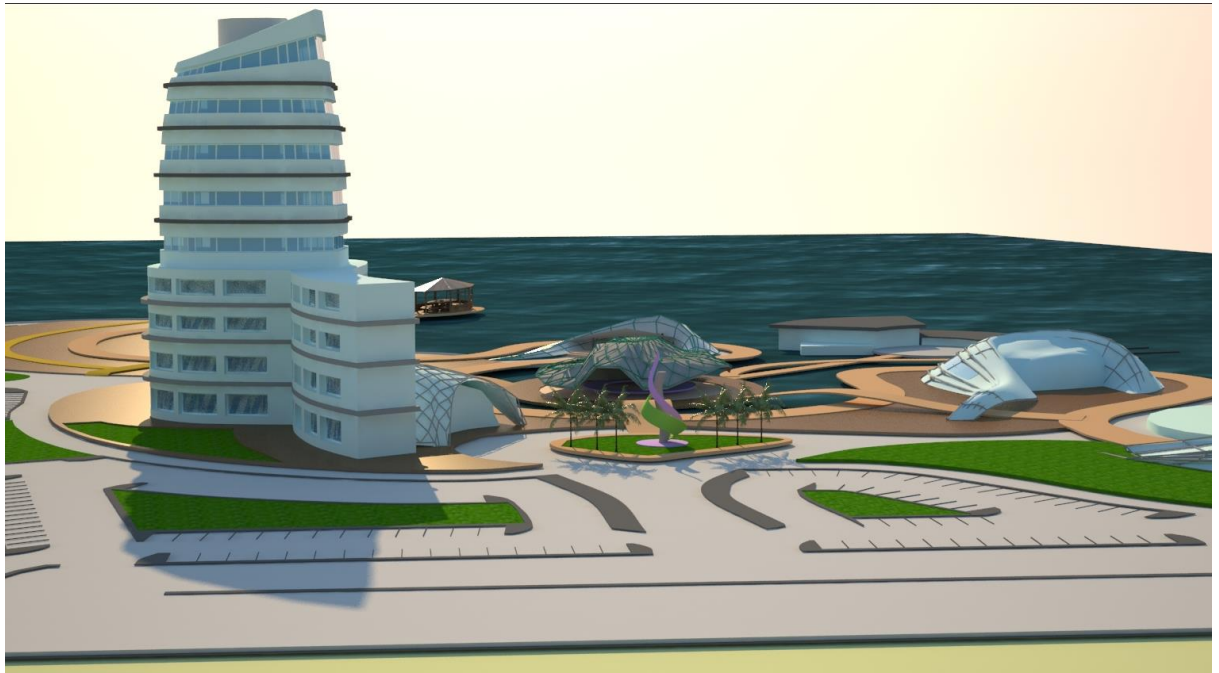


Figure perspective

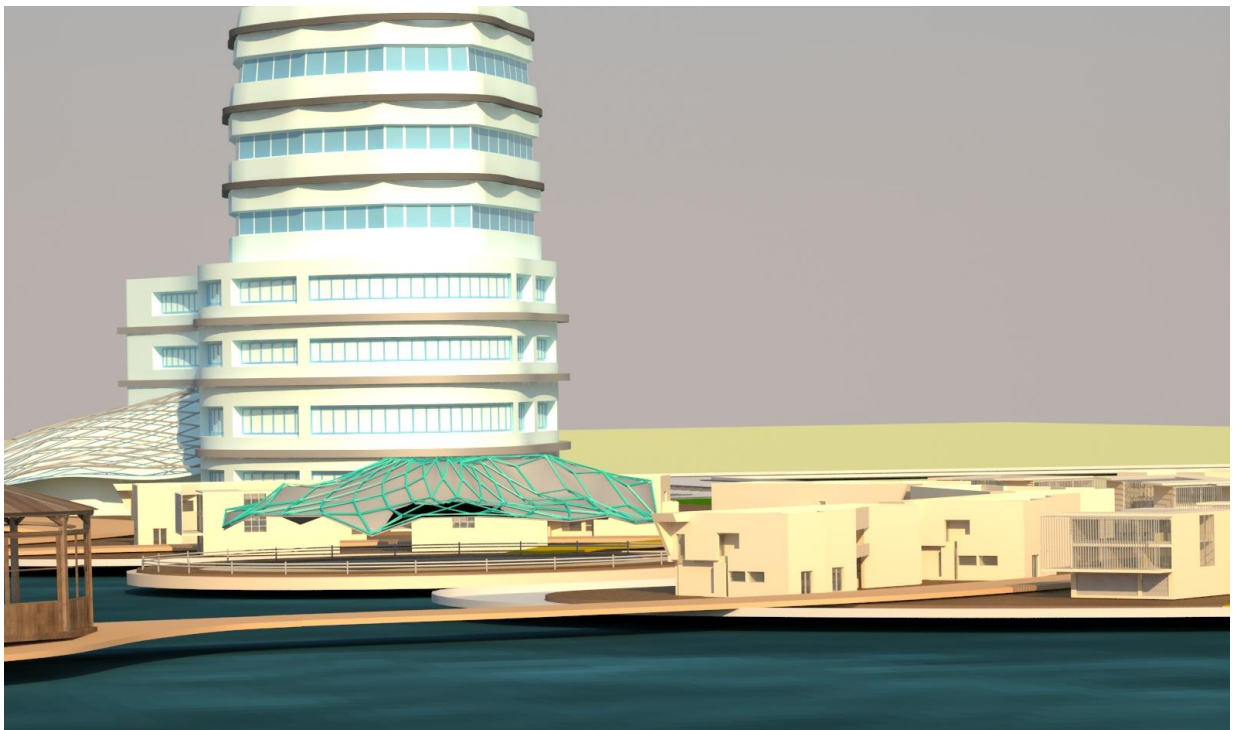


Figure perspective

CHAPTER THREE: - TECHNICAL SOLUTIONS

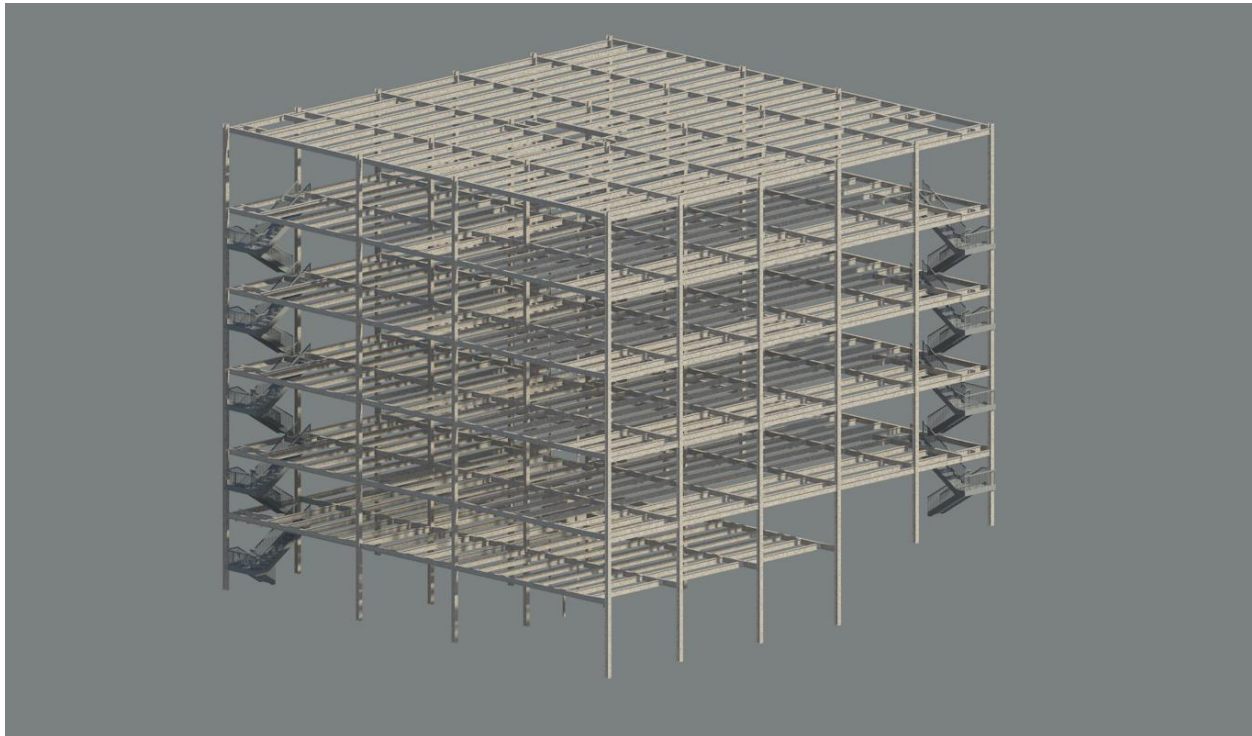
1. Structural solutions
2. Finishing solutions
3. Water supply, drainage and sewage solutions
4. Electricity solutions
5. HVAC solutions
6. Firefighting solutions

Structure

HOTEL STRUCTURE:

Post and Beam ((structural steel framing)):-

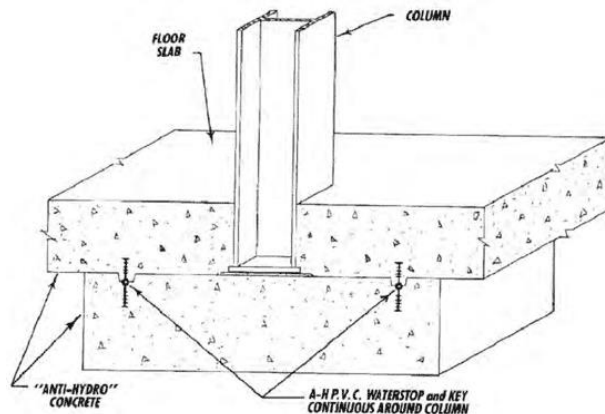
The rolled steel "profile" or cross section of steel columns takes the shape of the letter "I". The two wide flanges of a column are thicker and wider than the flanges on a beam, to better withstand compressive stress in the structure. Square and round tubular sections of steel can also be used, often filled with concrete. Steel beams are connected to the columns with bolts and threaded fasteners, and historically connected by rivets. The central "web" of the steel I-beams is often wider than a column web to resist the higher bending moments that occur in beams.



Foundations of the Hotel:-

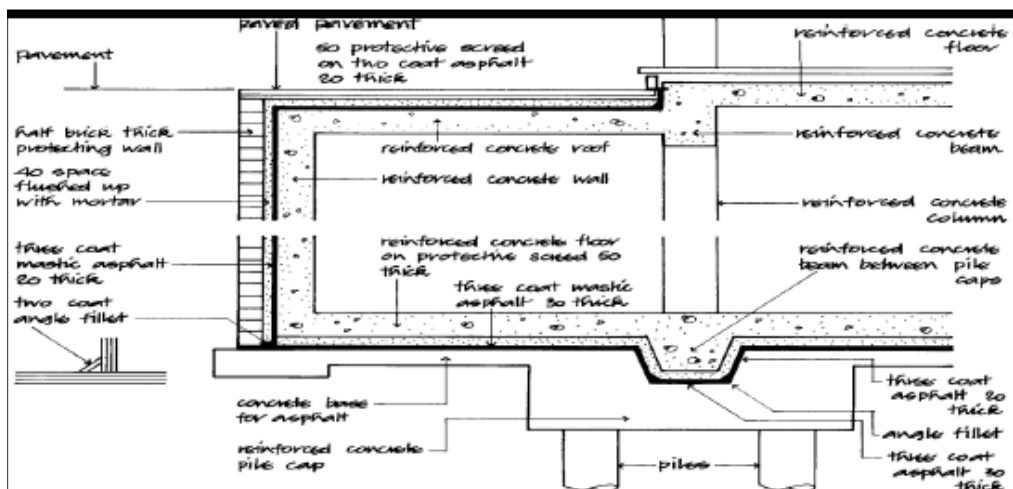
Raft foundation:-

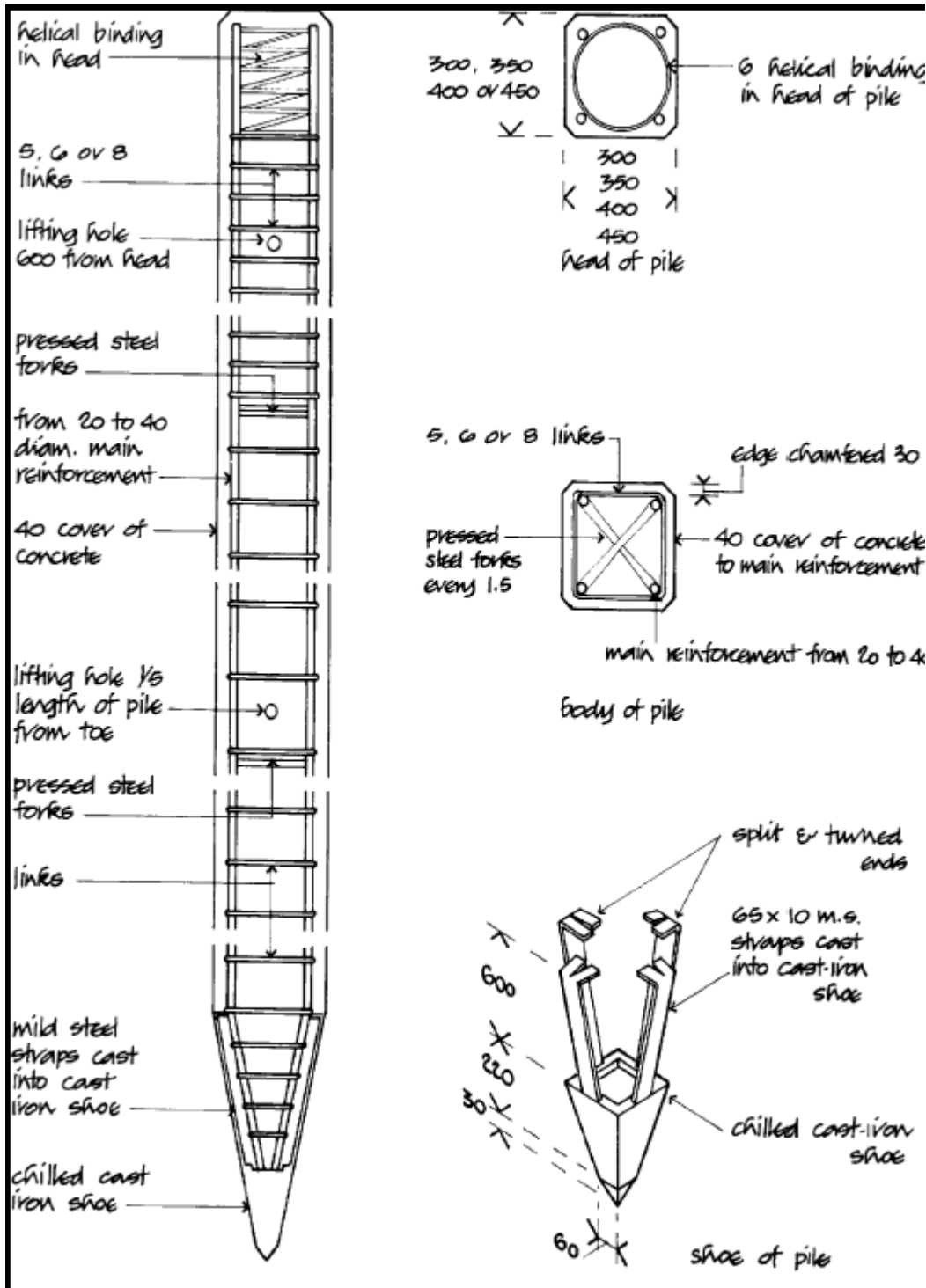
Raft foundations (sometimes known as Mat Foundations) are a large concrete slab which can support a number of columns and walls. The slab is spread out under the entire building or at least a large part of it which lowers the contact pressure compared to the traditionally used strip or trench footings.

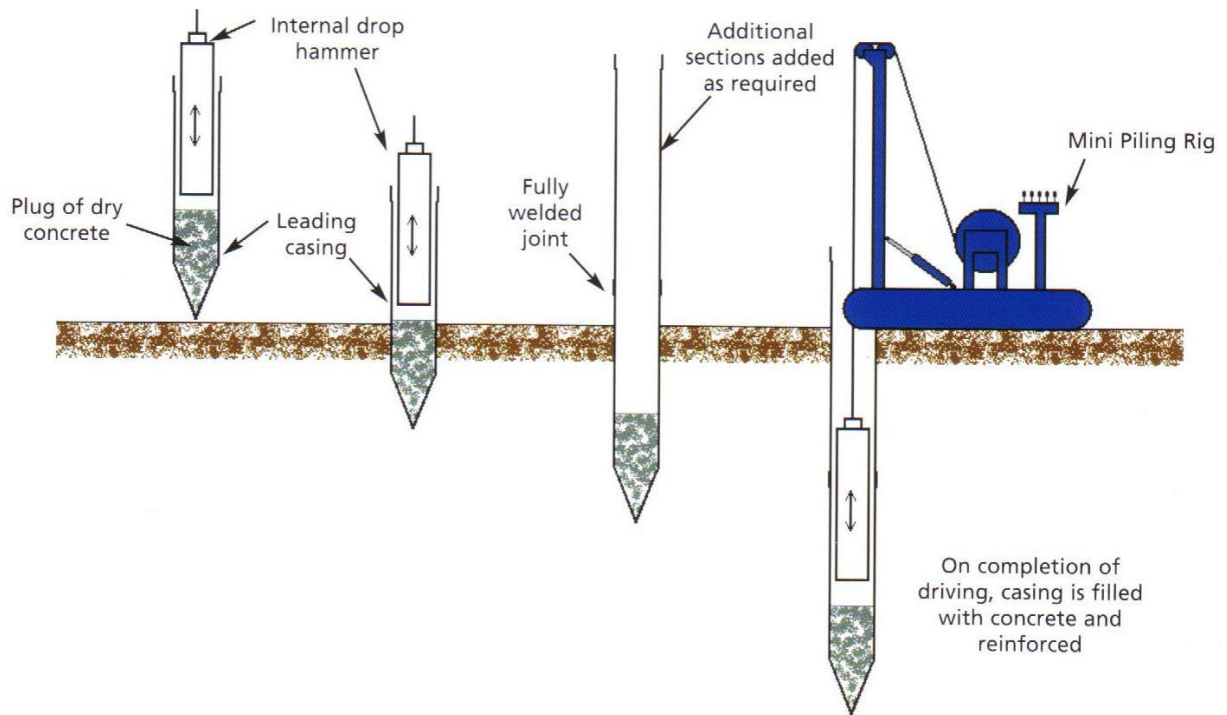


PILES:-

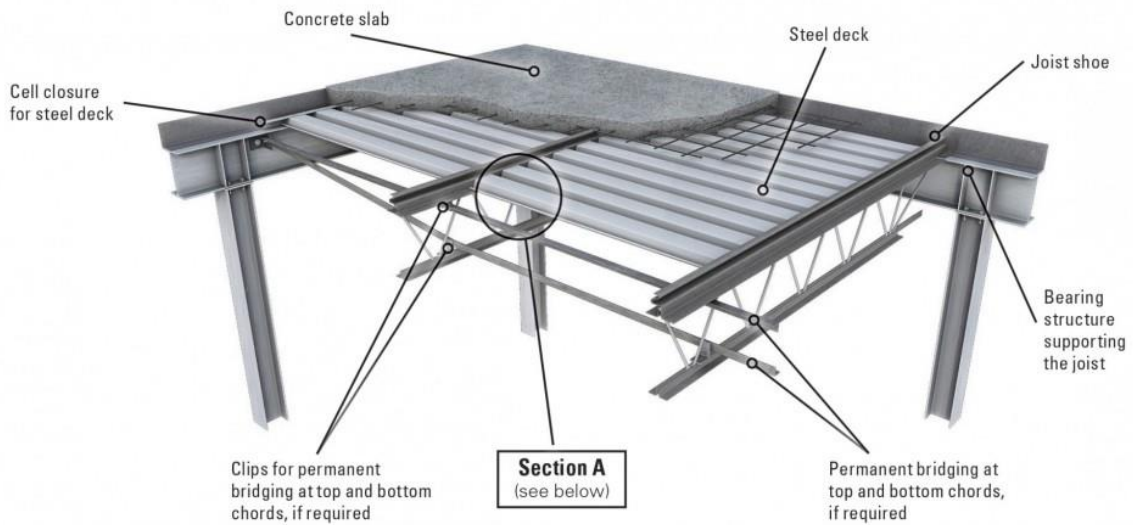
A deep foundation is a type of foundation which transfers building loads to the earth farther down from the surface than a shallow foundation does, to a subsurface layer or a range of depths. A pile is a vertical structural element of a deep foundation, driven deep into the ground at the building site.







Slabs (Deck Slab):-



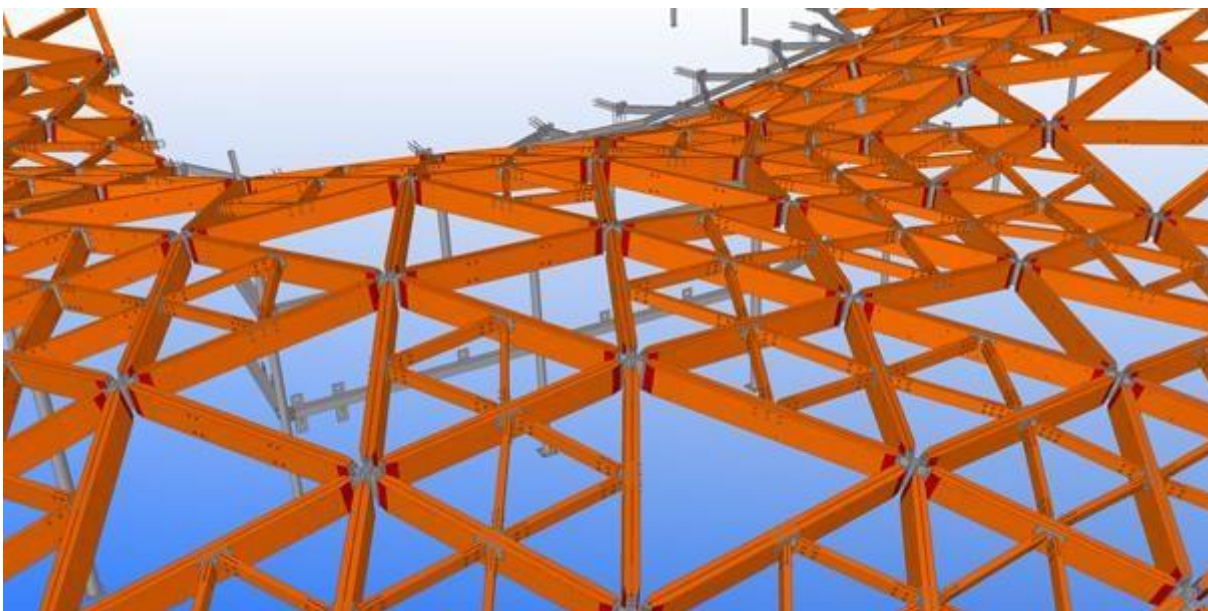
HEALTH CENTER & FITNESS CENTER STRUCTURE:

GridShell Structures:-

- A gridshell is a structure which derives its strength from its double curvature (in the same way that a fabric structure derives strength from double curvature), but is constructed of a grid or lattice.
- The grid can be made of any material, but is most often wood (similar to garden trellis) or steel.
- A gridshell is a type of diagrid.

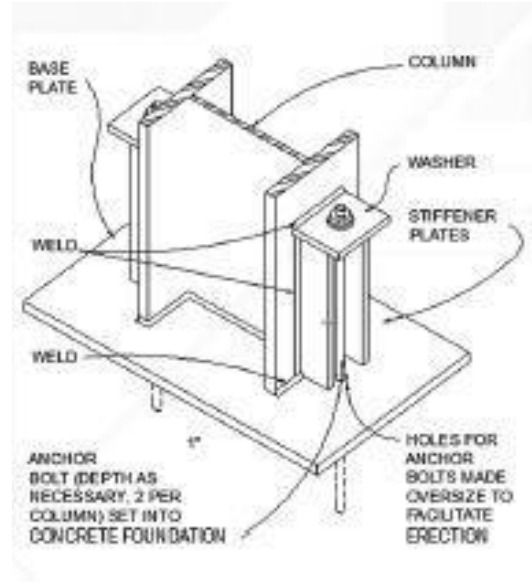
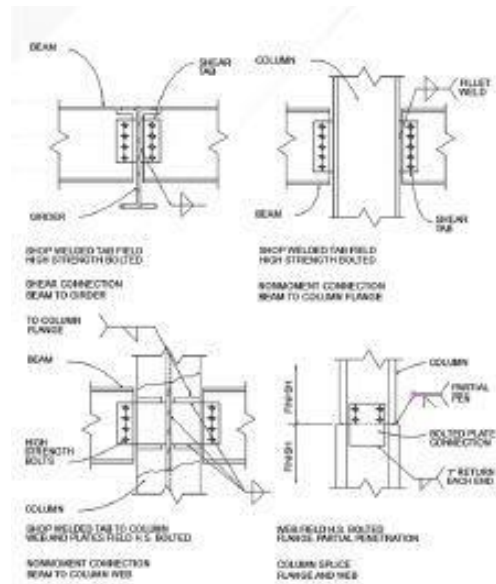
Advantages of GridShell Structures:-

- Tri-dimensional surfaces.
- Resist loads through their geometry.
- Self supported structures.
- No additional columns or frames needed.
- Can form any shape.



COLUMNS:-

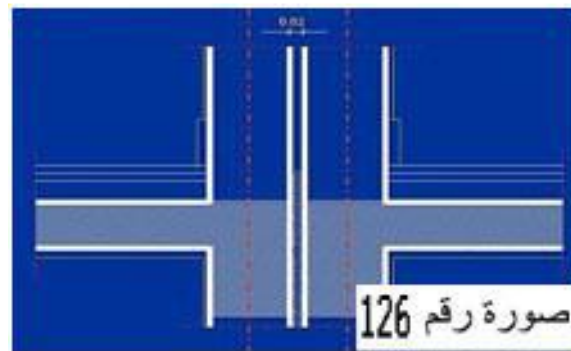
The column used in the building is I section steel columns



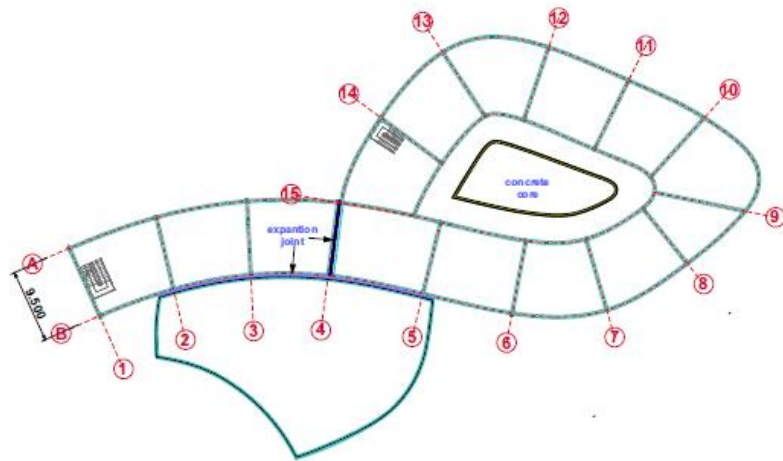
EXTENSION AND EXPANSION JOINTS:-

Extension joint:

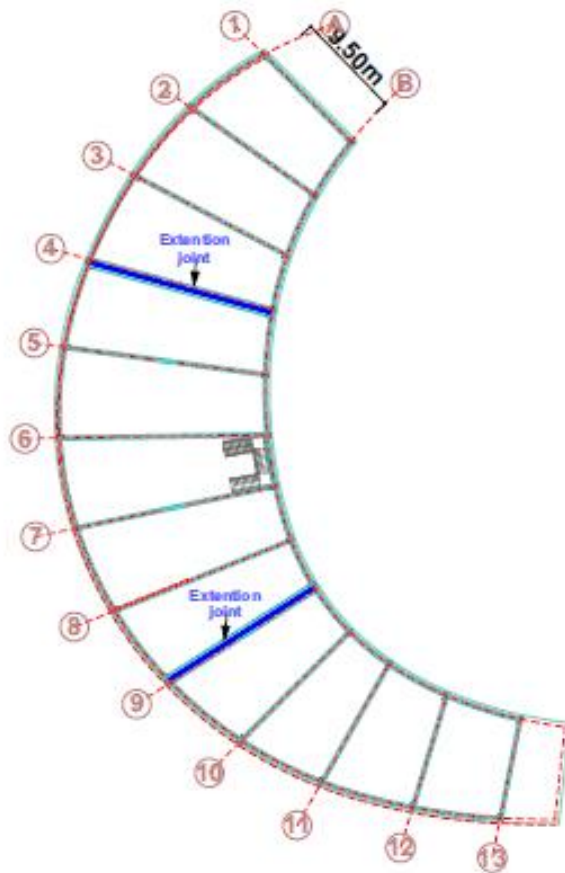
Expansion joints:

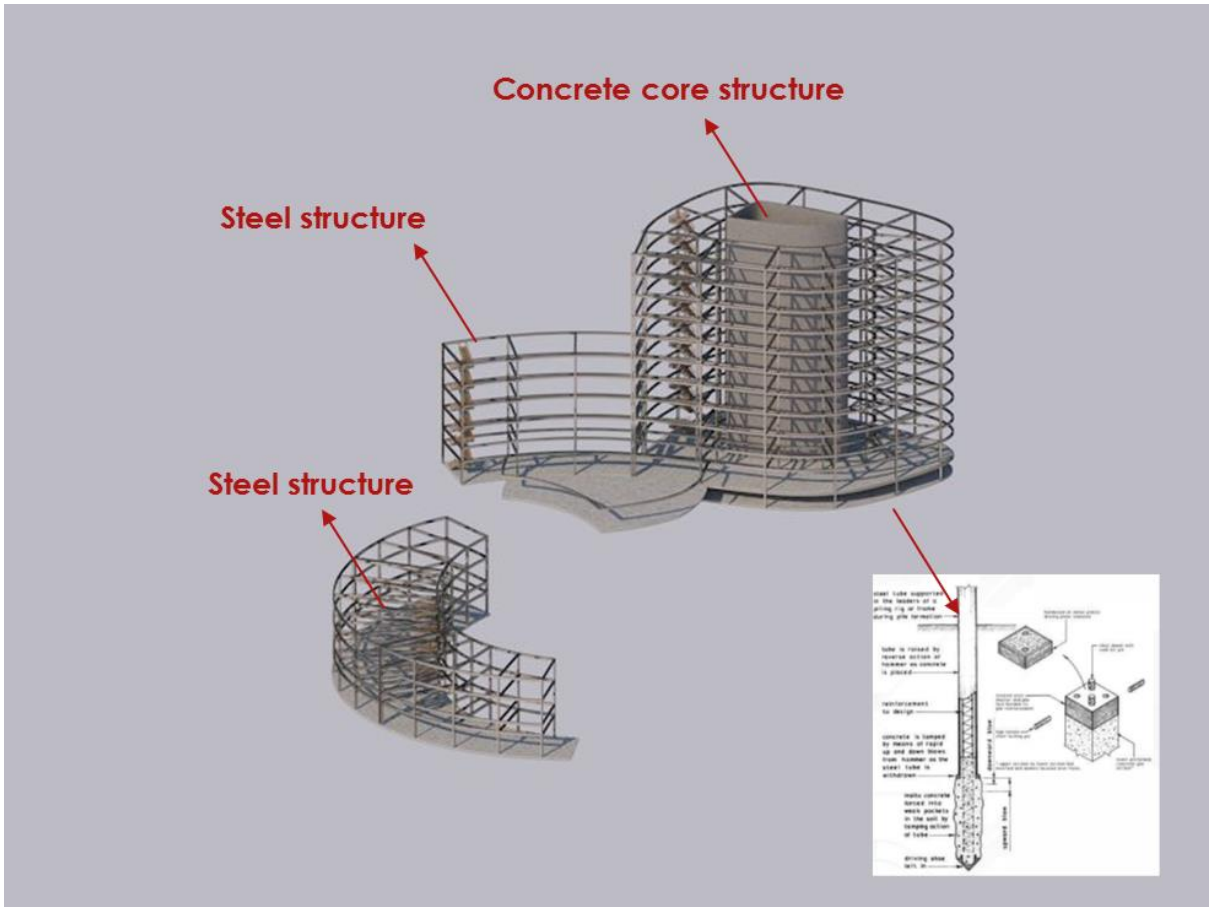


Hotel column structure:-

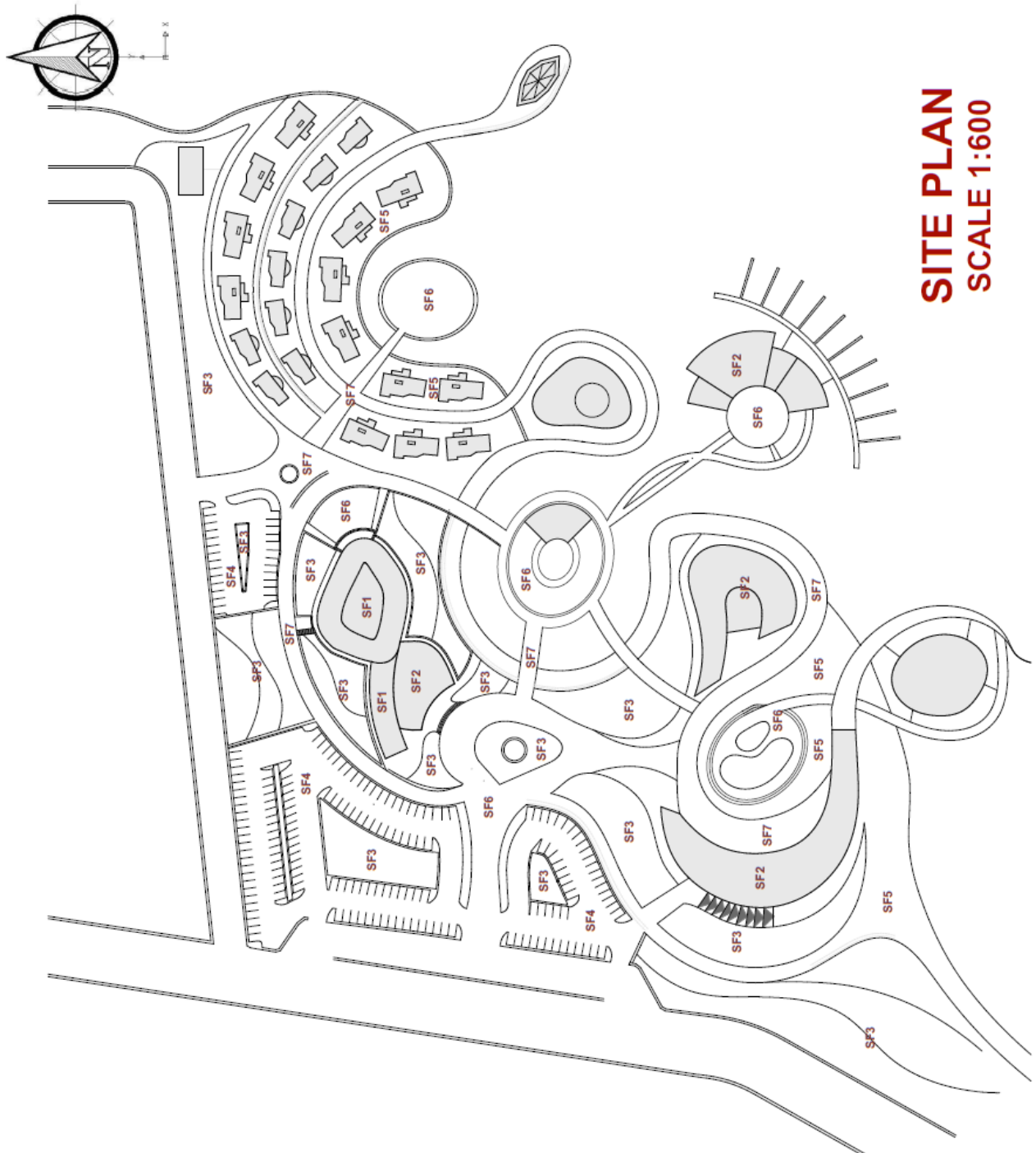


Health center column structure:-





SITE FINISHINGS:-



SITE PLAN
SCALE 1:600

► SF1: DECK SLAB ROOF:-

- Concrete slab (10cm thickness)
- Insulation cover
- Steel deck

► SF2: GRIDSHELL:-

- Steel cladding sheets
- Thermal insulation
- Water proof layer (2mm thickness)
- Gridshell

► SF3: GRASS:-

- Normal Grass 10cm thickness
- Flattery layer 7cm thickness (fretizeld soil)
- water Proof Layer 2mm thickness
- Sand filling 12cm thickness

► SF4: parking finishing:-

- 50mm asphalt
- 200mm concrete
- Surface court

- Prepared subgrade

▶ **SF5: BEACH AREA:-**

- Nature sand

▶ **SF6: ENTRANCE AREA:-**

- River rock tiles 60x60cm
- 7cm of mortar 1:8 mix
- Insulation layer 2cm thickness
- Prepared subgrade

▶ **SF7: WALKING AREA:-**

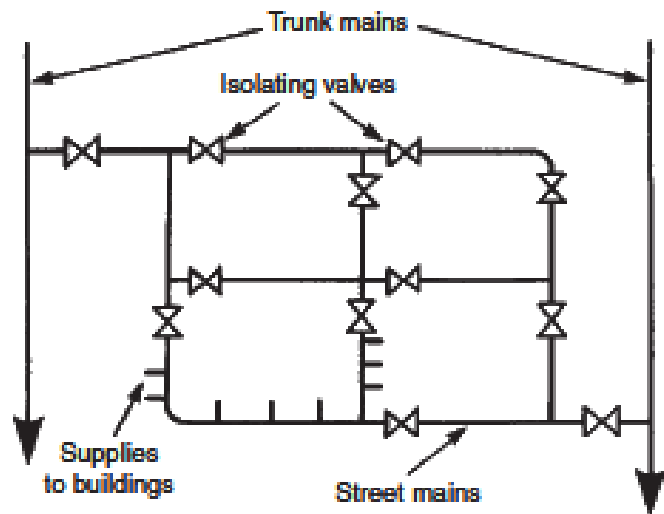
- interlock tiles 15X30cm
- 7cm of mortar 1:8 mix
- Insulation layer 2cm thickness
- Prepared subgrade

WATER SUPPLY

Water supply system for the site: (Ring Main Distribution System):-

The purpose of distribution system is to deliver water to consumer with appropriate quality, quantity & pressure.

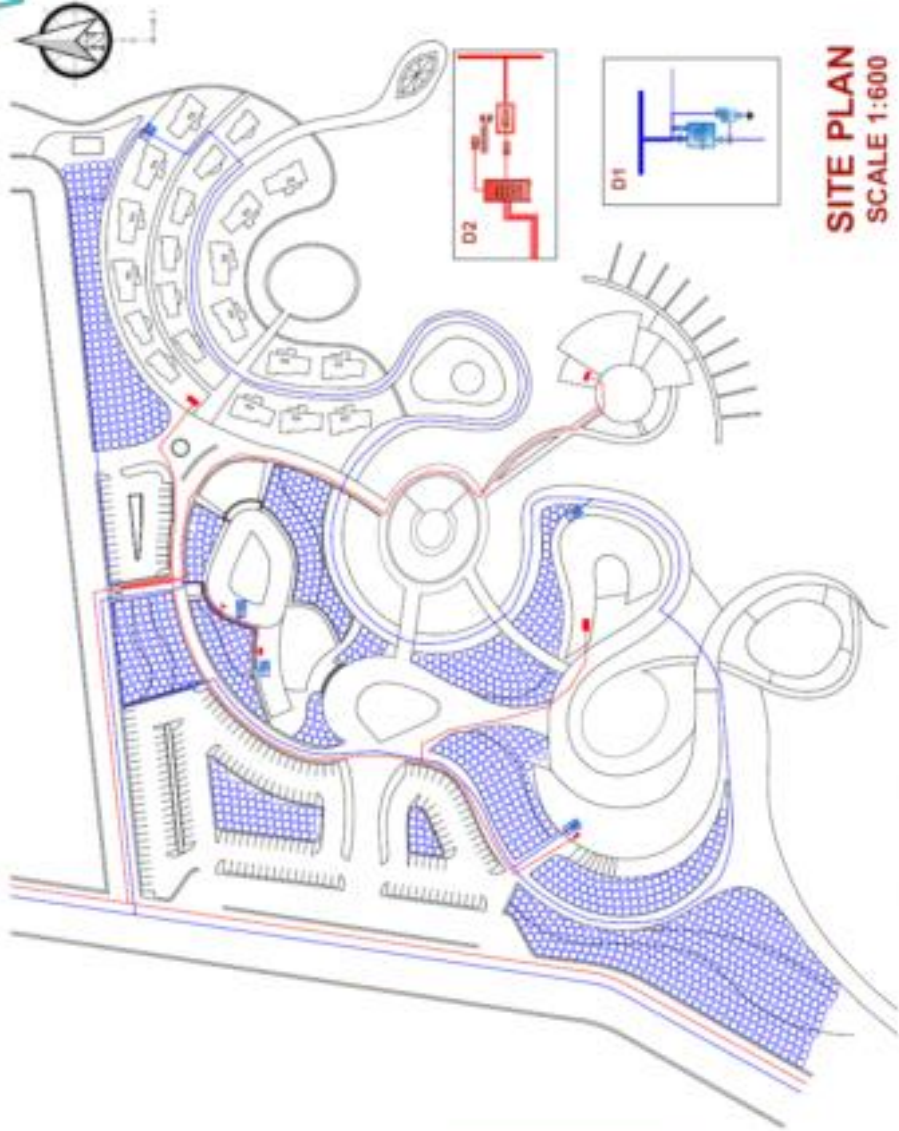
Distribution system is used to describe collectively the facilities used to supply water from its source to the point of usage.



Water supplied with 8" supply pipe from the north of the site with the ring main distribution system to deliver to the whole parts of the site.

- Main pipes ppr 8"
- Sub pipes ppr 6"

Water supply & electricity



SITE PLAN
SCALE 1:600

Water supply:

Key	Meaning
	Water Tank
	Main Underground Tank
	Valve
	Pump
	Sprinkler
	sprinklers diameter 3.5"/1.5 M
	Main pipe (public system) size 8" DI
	Main Pipe 6"DI -6bar
	Secondary pipe size 6"1/4" DI -6bar
	Landscape pipe size 2"DI

Electricity:

Key	meaning
	Distribution Board stand by generators 2 hours
	fuel tank
	Main Transformers main line cable size 415
	Secondary cable line size 220
	Secondary cable line size 180

DRAINAGE:-

Draining the water from the roofs of the buildings from the rain is done by slope of 1:100 directing the water towards the down pipes placed inside the ducts of the buildings to prevent the water from running down the elevations of the buildings which will affect the elevations and so on. The water will then be drained towards the trunches then the trunches will take the water out of the site to the treatment unit.

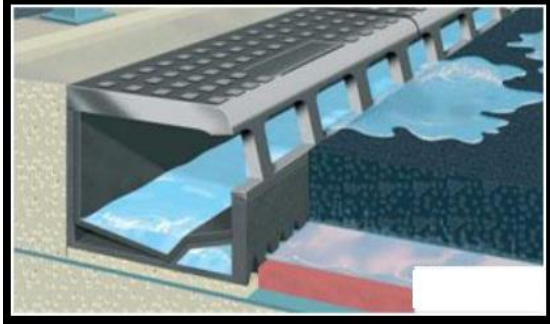









photo of the trunches

Sewage:

The two pipes system is used for the sewage of the bathrooms to get rid of the smell and to make sure that the pipes don't get close, by helping to maintain the air pressure inside of the pipes, then the waste is transferred into the lines where it goes through the manholes till it reaches the treatment units of the water in the site.

DRAINING

- ▶ All miniholes covers are made from R.concrete
- ▶ All pipes are (p.p.r) type
- ▶ Roof slope is 1:20

KEY	MEANING
	Drain channels (trunches)
	Sewage draining pipes
	Surface drainage from ground
	Surface drainage from roofs
	Over flow indicator
	Down pipe made of zinc 8" diam
	Draining Minihole



SITE PLAN
SCALE 1:600

MNHOLES DEPTH AND DIMENSIONS

▶ **MNHOLES DEPTH and dimensions:**

MH	Length	width	depth	Wall thickn
MH1	0.45	0.45	0.45	0.12
MH2	0.45	0.45	0.65	0.12
MH3	0.45	0.65	0.85	0.12
MH4	0.65	0.65	1.05	0.24
MH5	0.65	0.65	1.35	0.24
MH6	0.65	0.65	1.65	0.24
MH7	0.65	0.65	1.80	0.24
MH8	0.65	0.65	2.10	0.24
MH9	0.45	0.45	0.45	0.12
MH10	0.45	0.65	0.75	0.12
MH11	0.65	0.65	1.05	0.24
MH12	0.65	0.65	1.35	0.24
MH13	0.65	0.65	1.65	0.24
MH14	0.65	0.65	1.95	0.24
MH15	0.65	0.65	2.15	0.24
MH16	0.45	0.45	0.45	0.12
MH17	0.45	0.45	0.60	0.12
MH18	0.45	0.65	0.90	0.12
MH19	0.65	0.65	1.20	0.24
MH20	0.65	0.65	1.50	0.24
MH21	0.65	0.65	1.80	0.24
MH22	0.65	0.65	2.10	0.24
MH23	0.45	0.45	0.45	0.12
MH24	0.45	0.65	0.75	0.12

Pump up manhole
 Normal manhole
 Drop manhole

▶ **MNHOLES DEPTH and dimensions:**

MH	Length	width	depth	Wall thickn
MH25	0.45	0.45	1.05	0.24
MH26	0.45	0.45	1.35	0.24
MH27	0.45	0.45	1.65	0.24
MH28	0.45	0.45	0.45	0.12
MH29	0.45	0.45	0.75	0.12
MH30	0.45	0.45	1.05	0.24
MH31	0.45	0.45	1.35	0.24
MH32	0.45	0.45	1.65	0.24
MH33	0.45	0.45	1.95	0.24
MH34	0.45	0.45	2.25	0.24
MH35	0.45	0.45	0.45	0.12
MH36	0.45	0.45	0.75	0.12
MH37	0.45	0.45	0.90	0.12
MH38	0.45	0.45	1.05	0.24
MH39	0.45	0.45	0.45	0.12
MH40	0.45	0.45	0.60	0.12
MH41	0.45	0.45	0.70	0.12
MH42	0.45	0.45	1.00	0.24
MH43	0.45	0.45	1.30	0.24
MH44	0.45	0.45	1.60	0.24
MH45	0.45	0.45	1.90	0.24
MH46	0.45	0.45	2.10	0.24
MH47	0.45	0.45	0.45	0.12
MH48	0.45	0.45	0.75	0.12

Pump up manhole
 Normal manhole
 Drop manhole

Table 14 manholes depth and dimensions

▶ **MNHOLES DEPTH and dimensions:**

MH	Length	width	depth	Wall thickn
MH1	0.45	0.45	0.45	0.12
MH2	0.45	0.45	0.75	0.12
MH3	0.45	0.45	1.05	0.24
MH4	0.45	0.45	1.25	0.24
MH5	0.45	0.45	1.45	0.24
MH6	0.45	0.45	1.75	0.24
MH7	0.45	0.45	2.05	0.24
MH8	0.45	0.45	0.45	0.12
MH9	0.45	0.45	0.75	0.12
MH10	0.45	0.45	1.05	0.12
MH11	0.45	0.45	1.25	0.24
MH12	0.45	0.45	1.45	0.24
MH13	0.45	0.45	0.45	0.12
MH14	0.45	0.45	0.75	0.12
MH15	0.45	0.45	1.05	0.24
MH16	0.45	0.45	1.35	0.24
MH17	0.45	0.45	1.65	0.24
MH18	0.45	0.45	1.95	0.24
MH19	0.45	0.45	2.25	0.24
MH20	0.45	0.45	0.45	0.12
MH21	0.45	0.45	0.75	0.12
MH22	0.45	0.45	1.05	0.24
MH23	0.45	0.45	1.35	0.24
MH24	0.45	0.45	1.65	0.24

Pump up manhole

Normal manhole

Drop manhole

▶ **MNHOLES DEPTH and dimensions:**

MH	Length	width	depth	Wall thickn
MH25	0.65	0.65	1.95	0.24
MH26	0.65	0.65	2.25	0.24
MH27	0.45	0.45	0.45	0.12
MH28	0.65	0.45	0.75	0.12
MH29	0.65	0.65	1.05	0.24
MH30	0.65	0.65	1.35	0.24
MH31	0.65	0.65	1.65	0.24
MH32	0.65	0.65	1.95	0.24
MH33	0.65	0.65	2.25	0.24

Pump up manhole

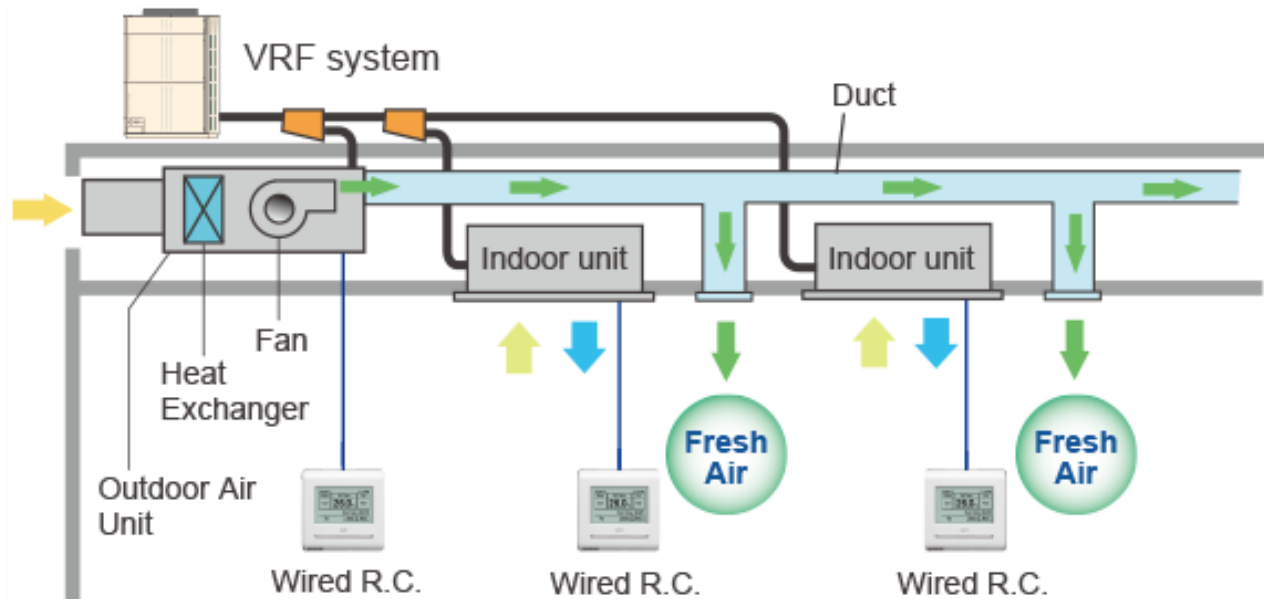
Normal manhole

Drop manhole

Table 15 manholes depth and dimensions

AIR CONDITIONING (VRV):-

The Daikin VRV system is a multi-split type air conditioner for commercial buildings that uses variable refrigerant flow control developed by Daikin to provide customers with the ability to maintain individual zone control in each room and floor of a building.



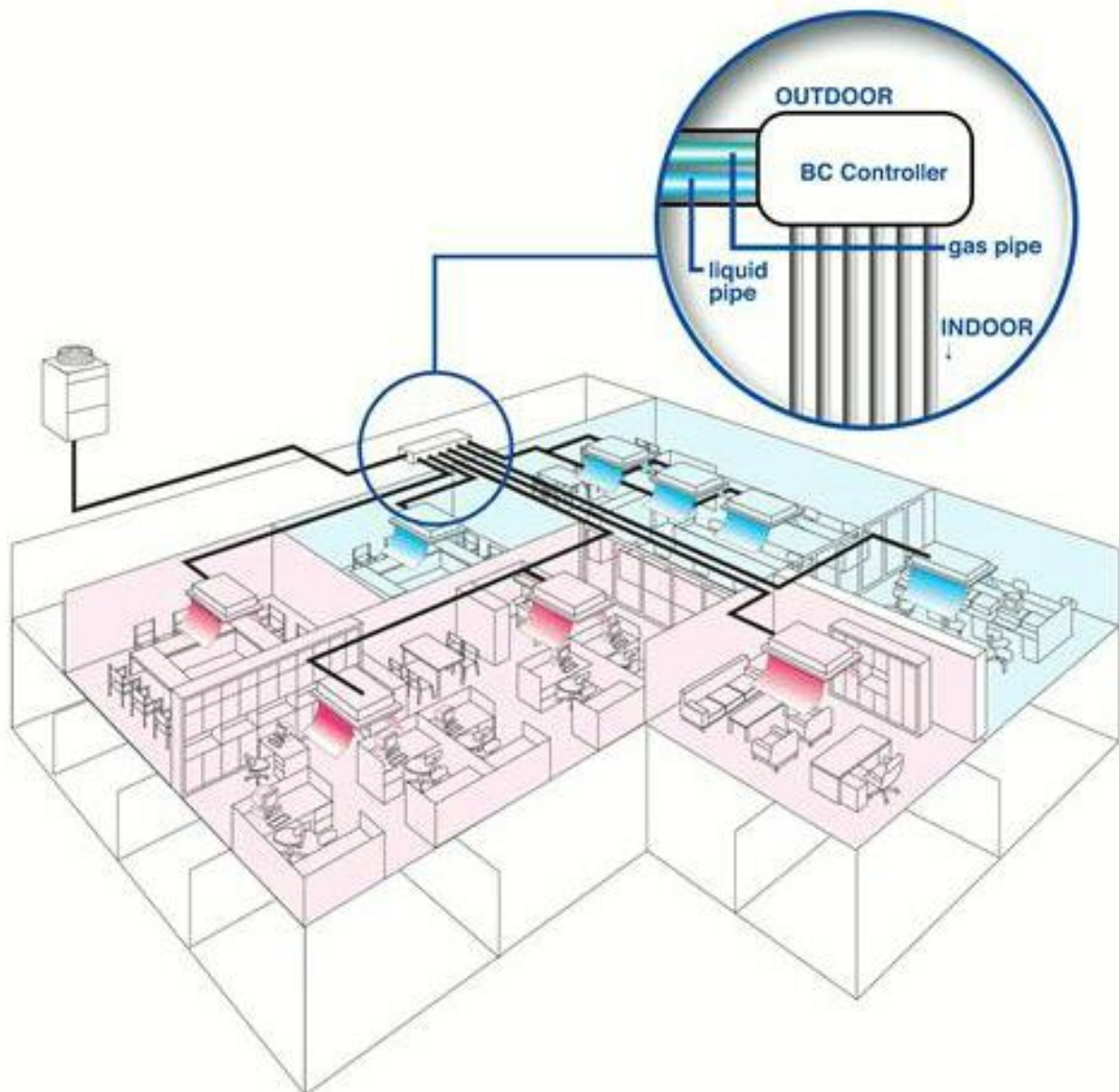
HOW IT WORKS?!

The basic idea is that a large outdoor unit serves multiple indoor units. Each indoor unit uses an LEV (electronic liquid expansion valve) to control its refrigerant supply to match the demand of the space it serves. The outdoor unit also varies its output to match the communal demands of the indoor units it serves. Thus, at any point in a system there will be a variable volume of refrigerant flowing. Various strategies are used to vary the output of the outdoor units including;

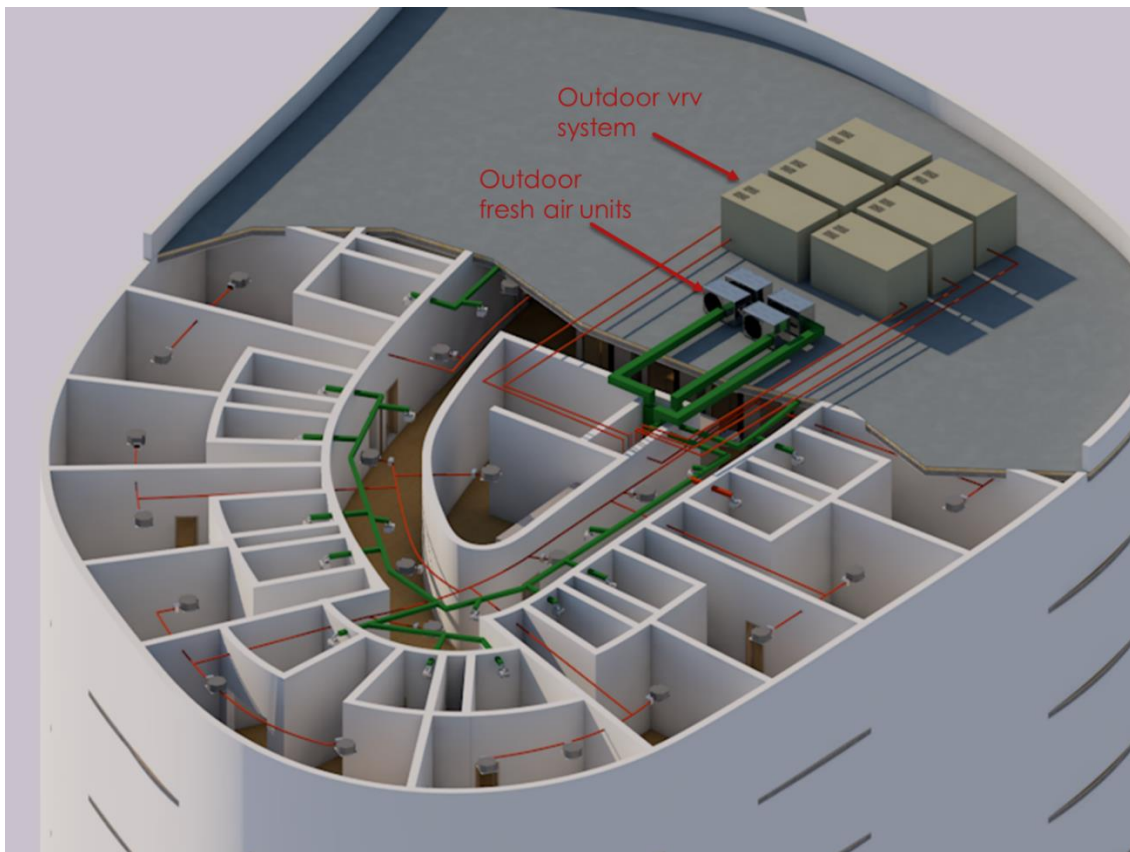
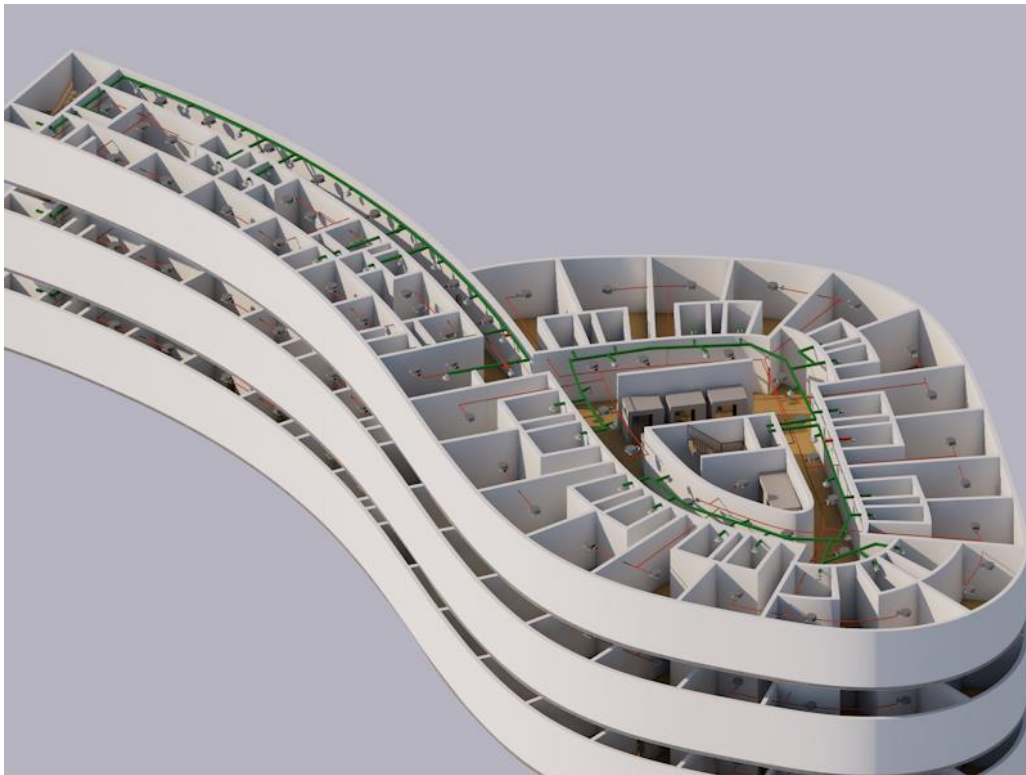
- Modulating fan/s
- Heat exchanger valves in sections
- Variable speed inverter drive compressor/s

- Multiple compressors
- Twin or multiple modular outdoor units

Outdoor unit capacities range from around 14 kW to over 100 kW. Indoor units cover the full range of DX models normally available.







FIRE FIGHTING SYSTEM

General Fire Fighting Equipment:-

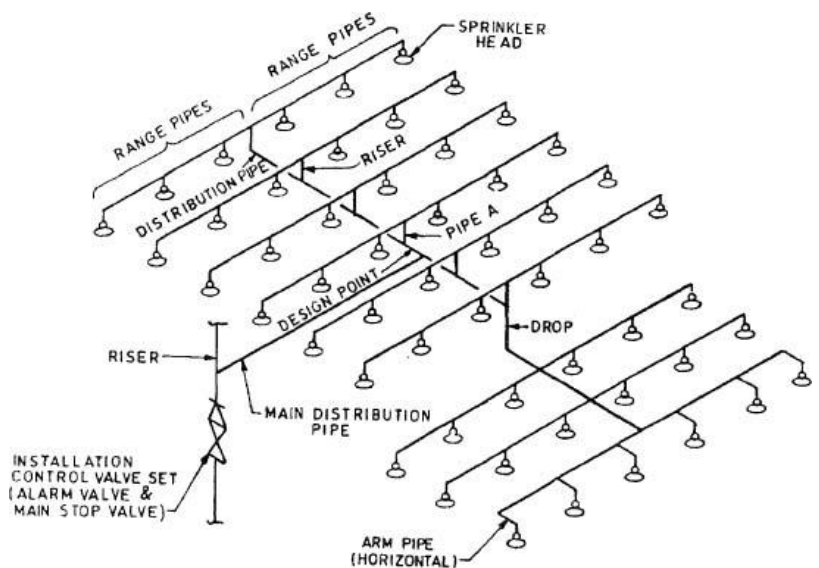
Firefighting systems and equipment vary depending on the age, size, use and type of building construction. A building may contain some or all of the following features:

- Fire extinguishers
- Fire hose reels
- Fire hydrant systems
- Automatic sprinkler systems



Automatic Sprinkler Systems

Time is essential in the control of fire. Automatic sprinkler systems are one of the most reliable methods available for controlling fires. Today's automatic fire sprinkler systems offer state of the art protection of life and property from the effects of fire. Sprinkler heads are now available which are twenty times more sensitive to fire than they were ten years ago.

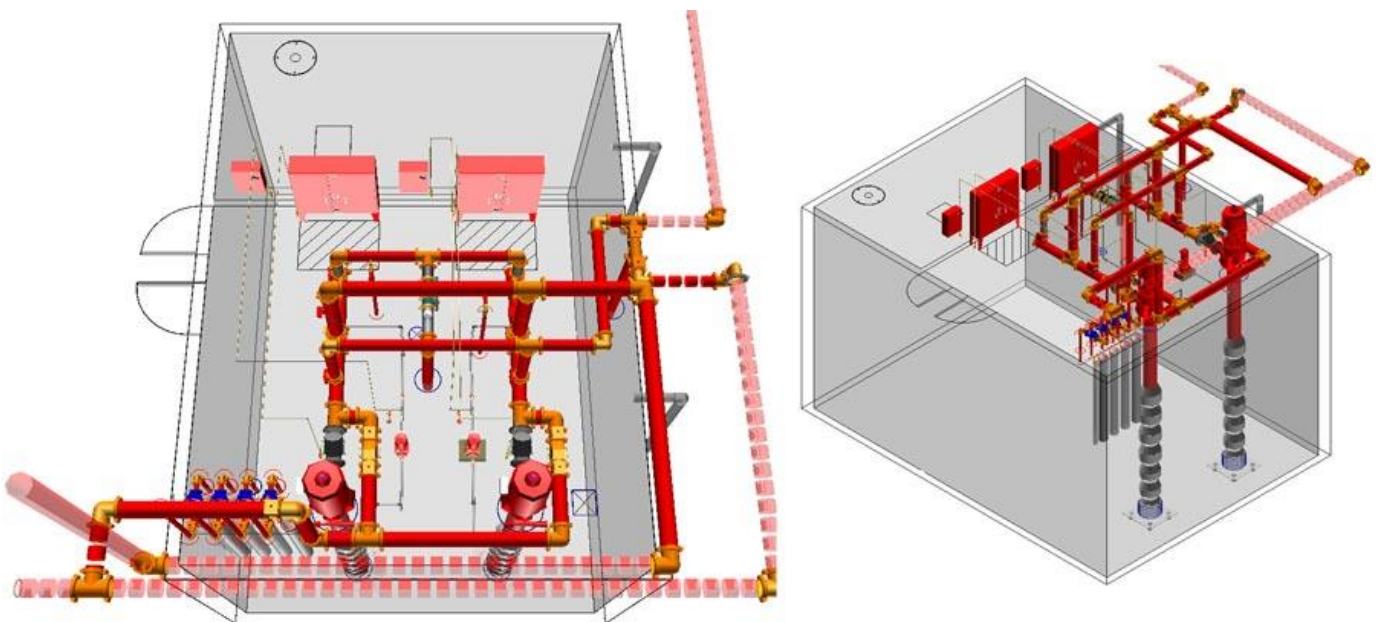


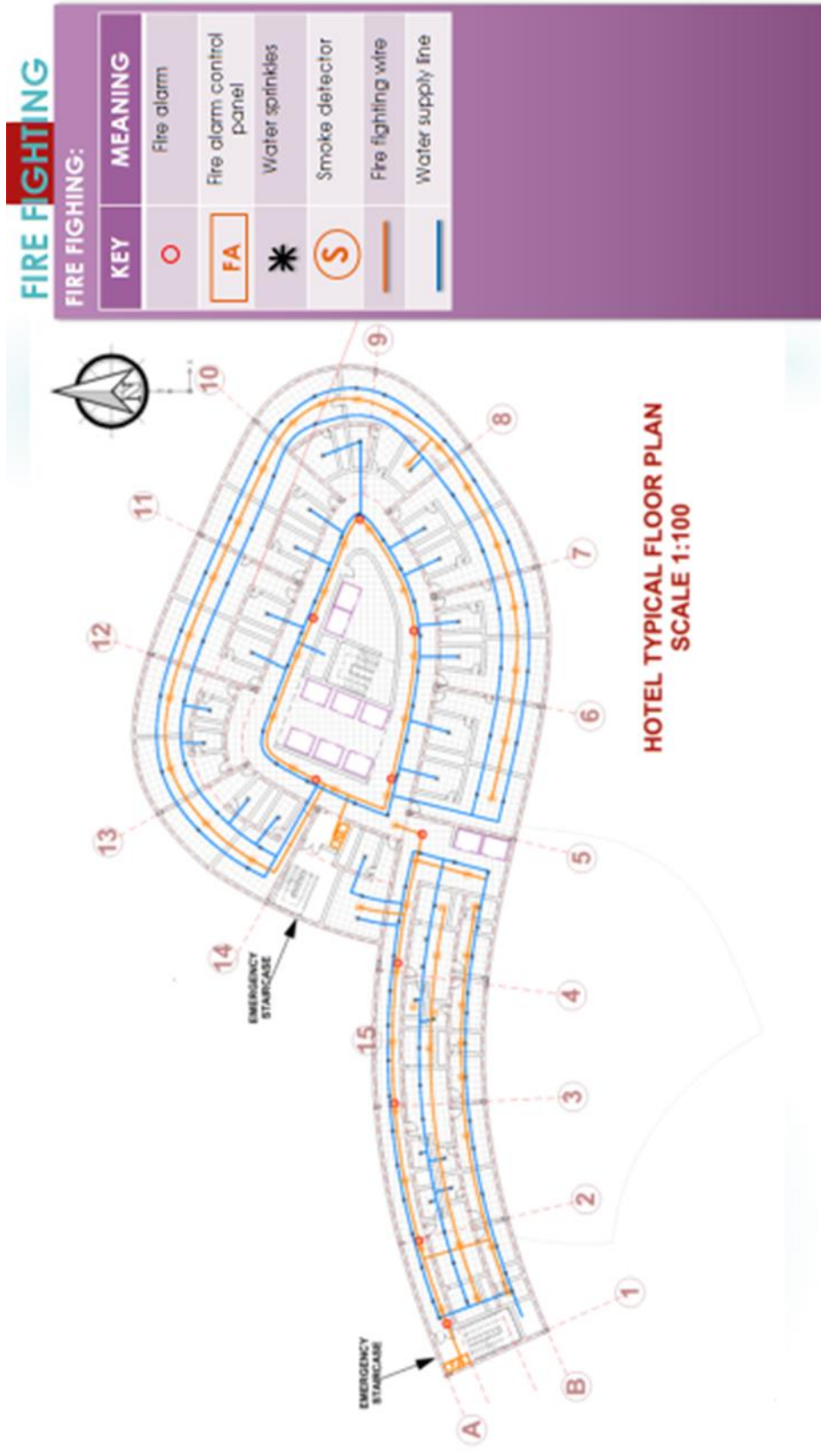
A sprinkler head is really an automatic (open once only) tap. The sprinkler head is connected to a pressurized water system. When the fire heats up the sprinkler head, it opens at a preset temperature, thus allowing pressurized water to be sprayed both down onto the fire and also up to cool the hot smoky layer and the building structure above the fire. This spray also wets combustible material in the vicinity of the fire, making it difficult to ignite, thereby slowing down or preventing fire spread and growth.



Sprinkler systems are usually installed in high or large buildings and high fire hazard occupancies. Statistics show that in a majority of cases where sprinklers are installed the fire has been controlled by one sprinkler head alone.

For further discussion or advice on these issues, please contact the Community Safety Department.





REFERENCES:-

<https://en.wikipedia.org/wiki>

<https://mettayogalife.wordpress.com>

<http://www.yogajournal.com/article/health>

<http://www.telegraph.co.uk/finance/financialcrisis/7154609/Dubai-discovers-new-off-shore-oil-field.html>

<http://www.highbeam.com/doc/1P2-16640640.html>

<http://www.caribbeanhotelassociation.com/source/Members/DataCenter/Research-UofMemphis.pdf>

http://en.wikipedia.org/wiki/Resort#Historical_resorts

<http://www.caribbeanhotelassociation.com/source/Members/DataCenter/Research-UofMemphis.pdf>

www.tripadvisor.com/Hotels-9293889-Nepal-Hotels.html

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=502&ArticleID=5545&l=en>

<http://nepal-meteo.ru/en/bkhaktapur/pivot/wind>

Time saver building type

Architects Data- Neufert

Google Maps

Newa Village Resort: Thesis 2009, by Anjana Pradananga

Eco-Sensitive Resort: Thesis 2010, by Puspa Thapa

Agro Tourism Resort: Thesis 2010, by Mahesh Bista