

RE-DESIGNING DHAKA ZOO

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Abstract

We grow up learning about animals. When we were young the sight of an elephant or monkey excited us and amused us. Then as we grow older life tends to be busy and slowly through the process we start forgetting about the animals that taught us about alphabets, the animals that played with us through our rhymes. We learn to take care of ourselves and surrounding. Doesn't this surrounding include the animals that grew up with us? As a responsible citizen it is our responsibility to see and verify how the zoo is taken care and how other animals are kept in the zoo.

This paper is discussed on the need of how Dhaka National zoo can be re-designed for the welfare of the animals living in the zoo. What can be done to keep the environment of the zoo as natural as possible. A natural environment may keep the animals comfortable and thus the zoo visitors may experience the thousands of beautiful expressions that animals show when they are in the wild!

Acknowledgement

First of all I want to thank Almighty Allah for a fantastic journey in architecture and for making thesis possible. I take this opportunity to express special gratitude to the Chairperson of the prof. Fuad H.Mallick and Prof. Zainab F. Ali for their guidance, motivation during my entire study in BRAC University. I would also like to thank Sir Ehsan Khan for giving me his valuable time and patience and filling us with immense knowledge and guidance. I thank my supervisors, Sheikh Rubaiya Sultana, Mohammad Faruk, Nayeem Ahmed Kibria, for their guidance and critique and for pushing me to perform to the best of my abilities. I thank Sir, Khondokar Hasibul Kabir, and Abul Fazal Mohammad Nobi guiding me and providing valuable learning opportunities, enriching my academic experience with their inspiration and expert knowledge. I thank my advisor Sajjad Hossain for encouraging me and helping along my way.

I am very grateful to my parents for supporting me, gave me all logistical support and always encouraged me to do my best

I would like to thank my husband Zubair Bin Khayr for his strong support, for being there for me whenever I needed him, constantly providing motivation and helping me to stay focused and cheering me up in my low phases.

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Chapter 01

1.1 Project Introduction

Zoo is a **Zoological Garden** public or private park where living animals are kept for exhibition, research, recreation and study. Dhaka zoo has a huge contribution in our society. People from all over the country come to visit the largest zoo in Bangladesh. Sadly the poor condition and unpleasant environment in the zoo leads to an unsuccessful zoo visit since the animals barely interact. Zoo has a land area of 186.6 acres of which mostly are unused and wasted. One may be impressed with the size and the terrain of the zoo but saddened by the state of affairs inside and the health of the animals. The open grounds look untidy. Cages look as if they aren't cleaned and washed regularly. The pathways are not well defined, and pavement in many areas is missing. There is no carriage/caraway inside zoo for the elderly, handicapped and/or small children to move around in such a large area. It's sad, such a zoo site with beautiful surroundings and topography are not attracting people due to poor collection of animals and neglect by the management. Grubby cages, inexperienced keepers and poor equipment have long dishonored the reputation of Dhaka's zoo. The zoo is home to about 2,000 animals from 130 species, one of the few open spaces in a crowded city that is home to more than 12 million people.

Dhaka zoo is the largest zoo in Bangladesh situated at Mirpur, Dhaka. It is the national zoo under the Ministry of Fisheries and Livestock. It was ceremonially opened for public on June 23, 1974. Area of this zoo is about 75 hectares. It has two lakes of about 13 hectares, which receive thousands of waterfowls every year in winter. The total number of vertebrate fauna in the zoo is about 2,150 of 191 species. Included in these animals are about 551 mammals of 64 species, 1,543 birds of 90 species, 73 reptiles of 15 species, and about 104 aquarium fishes of 23 species.

To attract visitors besides many fascinating animals, there are 15 tigers, 21 lions, 9 hippopotamus, about 200 monkeys, and 33 pythons. Moreover, some rare and interesting animals such as the rhea, peacock, zebra, elephant, African grey parrot, water buck, impala, emu, baboon, chimpanzee, gayal, black bear, tapir, mandrill, and estuarine crocodile provide additional entertainment to the visitors.

The zoo has a captive breeding program and successfully bred the Royal Bengal Tiger, lion, leopard, primates, deer, and many birds. It has animal exchange programs with many zoos of the world. As gifts Bangladesh government presented about 300 zoo animals to different organizations and personalities of different countries including Saudi Arabia, Kuwait, Bahrain, and Iraq. The zoo regularly organizes various education programs for students. The various ornamental features of the garden provide an aesthetic background to the animal houses, enclosures and aviaries, scattered all over the area, exhibiting indigenous fauna of Bangladesh as well as exotic specimens collected from different countries of the world (Dhaka Zoo, 2007).

Name of Project: Re-designing Dhaka Zoo

Client: Ministry of fisheries and livestock

Location: Mirpur, Dhaka, Bangladesh

Site Area: 186.6 acres

1.2 Background of the project

Dhaka Zoo has always been one of the important places of recreation. Children from all over the country visit Dhaka zoo however what the condition of the zoo may be. Zoo has always been a childhood holiday memory to most of the people living in Bangladesh. During the 1985-1995 there were only a few places to visit like shishu park, savar picnic spots botanical garden and the zoo. Thus Dhaka zoo is a very significant place for the city. A particularly popular activity at Dhaka Zoo is going for an elephant-back ride, or for those who have a fear of heights, horse-back rides are also available. A visit to Dhaka Zoo is not only entertaining, but educational too, as visitors get to know more about animals found in Bangladesh, as well as animals from other parts of the world.

1.3 Historical Background

The necessity for establishment of Zoological garden and Botanical Gardens in the erstwhile province of East Pakistan was felt at the very inception of Pakistan in the year 1947 as there was no such garden in the province. This was receiving attention of the Government science 1947. In 26 December of 1950, then agricultural, cooperation and aid ministry officially declared to establish a zoo in Dhaka. Hence the zoo started that time near Dhaka high court with several spotted deer, monkey and elephant. A master plan was approved with a view to establish a zoological garden at Mirpur in 1960. An advisory board was constituted for establishment and proper management of zoo next year. The zoo was opened on June 23, 1974 after necessary construction and procurement of animals from home and abroad. Till then it has been gradually grown into a beautiful and attractive zoological garden exhibiting animals in natural settings using modern method of keeping. Main objectives of Dhaka Zoo are wildlife conservation through collection and breeding of rare

and endangered species of wild animals, research & education and recreation. Conservation of wild animal's diversity, education and research on wild animals and promotion of public awareness about these species of animals. All the exhibits are correctly named and described. Endangered and extinct species are illustrated with elaborate description along with.

About 4 million visitors visit Dhaka zoo every year. It is a center for healthy recreation of peoples of all ages and corners. Calm environment of the zoo attracts people to gate relief from the bustle and monotony of urban life.

REASONS FOR CHOOSING THE PROJECT

Dhaka is a densely populated city. However, there is not sufficient public spaces in Dhaka. As a result the city dwellers have no place to interact, spend time. They are mostly busy in their lives and often do not get chance to go somewhere peaceful. Whenever there is a cultural celebration, it is celebrated in Dhaka university campus out on the road. Celebration in Dhaka means going on a long drive or a ride in the rickshaw. Dhaka lacks a place where people may get together. A place where the people can get very close to nature, study or discover the variety and celebrate being there for some time. Few years ago, I took my nephew, Zayan to Dhaka zoo so that he gets to see animals very closely. As we entered the zoo he was very happy to see a huge space, trees, and water since Dhaka doesn't have large playgrounds for children. As we came close to the lion's cage he didn't understand anything. The lion was all tired and sleepy, he could barely stand up. I tried showing him other animals like monkeys, tiger, elephant, giraffe, zebra, but he didn't seem to enjoy it at all. I remember very clearly Zayan told me "the tiger is sleeping, let's go home". That's when I thought Dhaka zoo should be re-designed. The zoo is fifty years old and not at all maintained, walkways that tend to disappear, unmaintained landscape, dirty cages, unhygienic atmosphere and not a very safe place to go alone. I always wanted to design a place that will serve the nation. I always looked for national

issue that could be solved and develop our society. I wanted to propose a civic space where people would celebrate life. To develop such a place, I wanted to focus on the problems Dhaka was facing, lack of public place and hence Dhaka zoo came in mind.

Zoo is a place where families go in a group, spent some quality time with each other interact with animals and learn about their characteristics. It's a very educational place for children, since they may learn how to be sensitive with animals, how to take care of them.

1.4 Rationale Of The Project

Dhaka zoo is located in Mirpur, section 01. It has a huge area (186 acres), at present Dhaka Zoo is in the fourth position considering the land area of different zoos of the world. Also the botanical garden which enhances the zoo to keep its environment and atmosphere calm and forest like, and buffers sound and pollution. Mirpur is a developing area. The largest zoo in Bangladesh situated at Mirpur about 16 km from the centre of Dhaka city. It is the national zoo under the Ministry of Fisheries and Livestock. The zoo occupies an area of about 75 hectares. It has two lakes of about 13 hectares, which receive thousands of waterfowls every year in winter.

The zoo attracts around 10,000 visitors every day with the number increasing during the weekends. The existing zoo with its poor management may not be able to develop the needs of a standard zoo. A demand for public space can be seen here. Dhaka zoo has been located here for the past fifty years. Its environment and site condition is known to the animals. In most country a zoo is a tourist spot, an educational area for children and adults. Dhaka zoo has the potential to be one the hot spots in the city. It can act as a civic space for the country.

Moreover, the national stadium is also located very close to the zoo, thus tourist may visit the zoo and this may bring rise in our economic status.

1.5 Objectives of the project

The objectives of the project is to revitalize the area, making the zoo more interactive, lively and informative public place and make the national zoo an educational, recreational, and tourist area. The project will establish our country's urban development economically, socially, environmentally. This may possibly lead to great future for Dhaka tourism.

- to create a center for conservation of biodiversity through captive breeding programs
- to eliminate the 'caged' process of zoo
- to provide semi- natural spaces
- to provide activities with the two huge lakes
- employ more people for the welfare of the zoo and the unemployed society
- make the zoo as natural as possible
- provide vegetation that will provide food for the animals
- to create a zoo where animals are displayed but in a natural setting.
- To give the animals an a feeling that they are not enclosed or captivated, rather they are free.
- to make Dhaka zoo a centre of attraction of the city.

1.6 Given programs

- Entry Area (Ticketing, Entry plaza, toilets and ATMs, lost and found, Information booth, Lost and Found, Food courts)
- Administrative Area
- Zoo offices
- Walking trails, Nature Walks
- Sub Hubs
Food courts, Juice bars, Coffee shops, souvenir shops, ATMs, refreshments.
- Bird Parks
- Bird show
- Aquarium
- Polar bear and Penguin Aquarium
- Reptile zone
- suspended bridges
- greenhouse
- Parks
- Horticulture Parks
- Amphitheatres
- Information booths
- Animal exhibits
- Zoo Keeper and Emergencies
- Zoo Keeper's facilities
- Medical facilities
- Educational Facilities

Chapter 02

2.1 Site and location

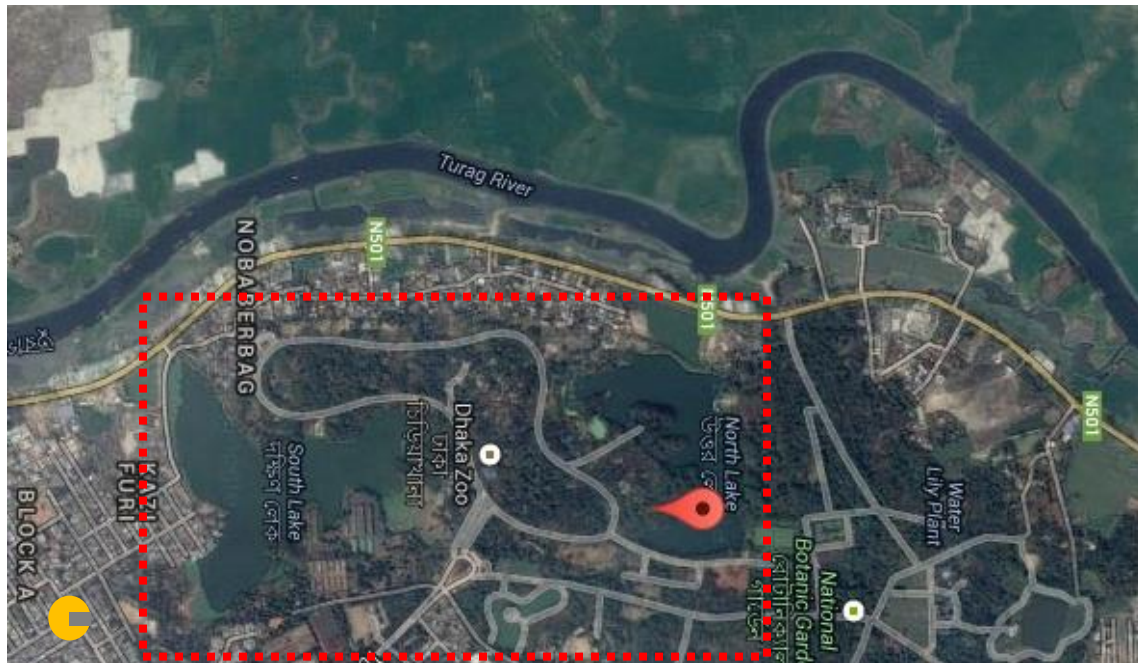


IMAGE 1: SATELLITE IMAGE OF NATIONAL ZOO, DHAKA

SOURCE: GOOGLE EARTH

2.1.1 Mirpur

Mirpur is a thana of Dhaka city, Bangladesh. It is bounded by Pallabi Thana and It is situated at north-east of Dhaka city. Mirpur is a very important area in Dhaka since it is famous for various historical places in Dhaka city such as the Dhaka Zoo, the National Botanical Garden of Bangladesh, Sher-e-Bangla Cricket Stadium, the Nobel Prize-winning Grameen Bank's head office, Mirpur Cantonment and renowned educational institutions including Military Institute of

Science and Technology, Bangladesh University of Professionals, SOS Hermann Gmeiner College, Dhaka Commerce College, Monipur High School.

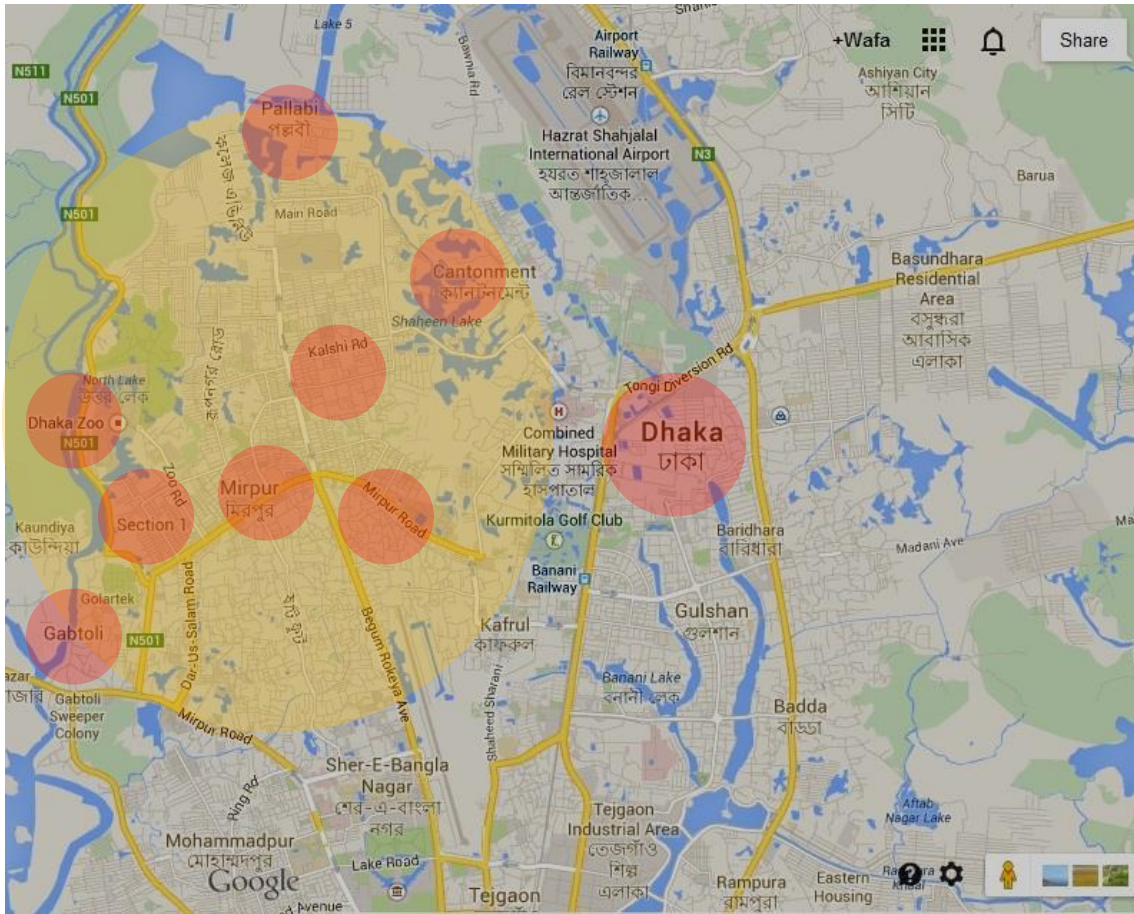


IMAGE 1: SATELLITE IMAGE OF NATIONAL ZOO, DHAKA

SOURCE: GOOGLE MAP



2.2 Dhaka Existing Zoo Details

Dhaka Zoo is the largest zoo in Bangladesh situated at Mirpur, about 16 km from the centre of Dhaka city.

It is the national zoo under the Ministry of Fisheries and Livestock, started as a menagerie at the High Court premises in Dhaka in 1964, and moved to its present location in 1974. In the same year it was ceremonially opened for public on June 23, the zoo occupies an area of about 75 hectares. It has two lakes of about 13 hectares which receive thousands of waterfowls every year in winter.

The total number of vertebrate fauna in the zoo is about 2,150 in 191 species. Included in these animals are about 551 mammals under 64 species, 1,543 birds under 90 species, 73 reptiles under 15 species, and about 104 aquarium fishes under 23 species. To attract visitors besides many fascinating animals, there are 15 tigers, 21 lions, 9 hippopotamus, about 200 monkeys,

and 33 pythons. Moreover, some rare and interesting animals such as the rhea, peacock, zebra, elephant, African grey parrot, water buck, impala, emus, baboon, chimpanzee, gayal, black bear, tapir, mandrill, and estuarine crocodile provide additional entertainment to the visitors.

About 3 million visitors visit the Zoo every year. Except Sunday the zoo remains open on other weekdays from 8:00 am to 5:00 pm (October-March) and from 8:00 am to 6:00 pm (April-September). It also remains open to the visitors for certain hours during government holidays. The beautiful natural environments of the zoo offer almost all recreational facilities to the visitors, a large part of which is constituted by the students and children. There is an information centre at the entrance. The visitors can seek any necessary information there. Even wheel chairs are available for old and disabled persons. The zoo has an advisory committee headed by the Minister, Ministry of Fisheries and Livestock.

The Zoo authority has taken projects upgrading atmospheres and the facilities of the zoo. The most important among them is upgrading the zoo as like Safari Park so that the animals may move openly and people would visit them within protection cage. Another plan is providing battery regulated client cars for old persons and children. The other plans include developing the children park of the zoo, to thrive the zoo museum and start zoo education. A new dolphin corner and a butterfly garden will be set up at Dhaka Zoo to attract more visitors. A master plan was accepted in 1960 for establishing central zoo. An advisory board was constituted for establishment. According to that master plan present zoo is developed.

Description of land

Acquired land 86.37 hectares, Handed over to central Poultry farm 8.15 hectare, Handed over for flood control embankment 2.7 hectare, Total land at present 75.53 hectare.

Two lakes of the zoo

South lake 7.29 hector, North lake 5.67 hector, Total lake 12.69 hector.

Enclosures, Infrastructure and facilities

Information on enclosures and infrastructures that are present in the existing zoo are given below.

- 33 enclosures
- primary road of 3.7meter
- walkways(brick soiling) of 3.14 meter
- Two island and picnic spotsUtshab and Niribily
- 13 resting sheds
- 3 toilets

Infrastructure

- Administration
- Accounts
- Information
- Animal health
- Research
- Mosque
- Animal nutrition
- Carnivores

- Avian/Birds
- Small mammals/Reptiles
- Herbivores & large animal
- Security
- Power station
- Electric & Engineering
- Arboriculture
- Museum
- Fisheries

Government Objective and Mission

The main Objective to Established a Zoo are Carer

- Conservation.
- Animal Welfare.
- Research.
- Education
- Recreation

Mission

'A direction for today and promise for tomorrow'

Dhaka Zoo Mission: Secure a better world for animals through human understanding.

Government Plan

Dhaka Zoo Facilities Master Plan

The National Zoo is undergoing a comprehensive master planning process. As we described last year, the Facilities Master Plan will guide the Zoo's facilities renewal, which will help the Zoo achieve its mission of providing leadership in animal care, science, education, and sustainability. This long process, which is far from over, considers a variety of alternatives and benefits from feedback from the public. The current phase involves an Environmental Assessment, which will be followed by such steps as comparing business plans

Dhaka Zoo Facilities.

Restaurant and souvenir shop

Two restaurants (Mainly first food) and two souvenir shop in the Zoo are opened for convenience of the visitors.

First aid Post

the Veterinary Surgeon or Information Centre will be near the entrance gate for First Aid.

Lost Children

lost children will be in the information centre near the entrance gate.

2.2.1 Site Location

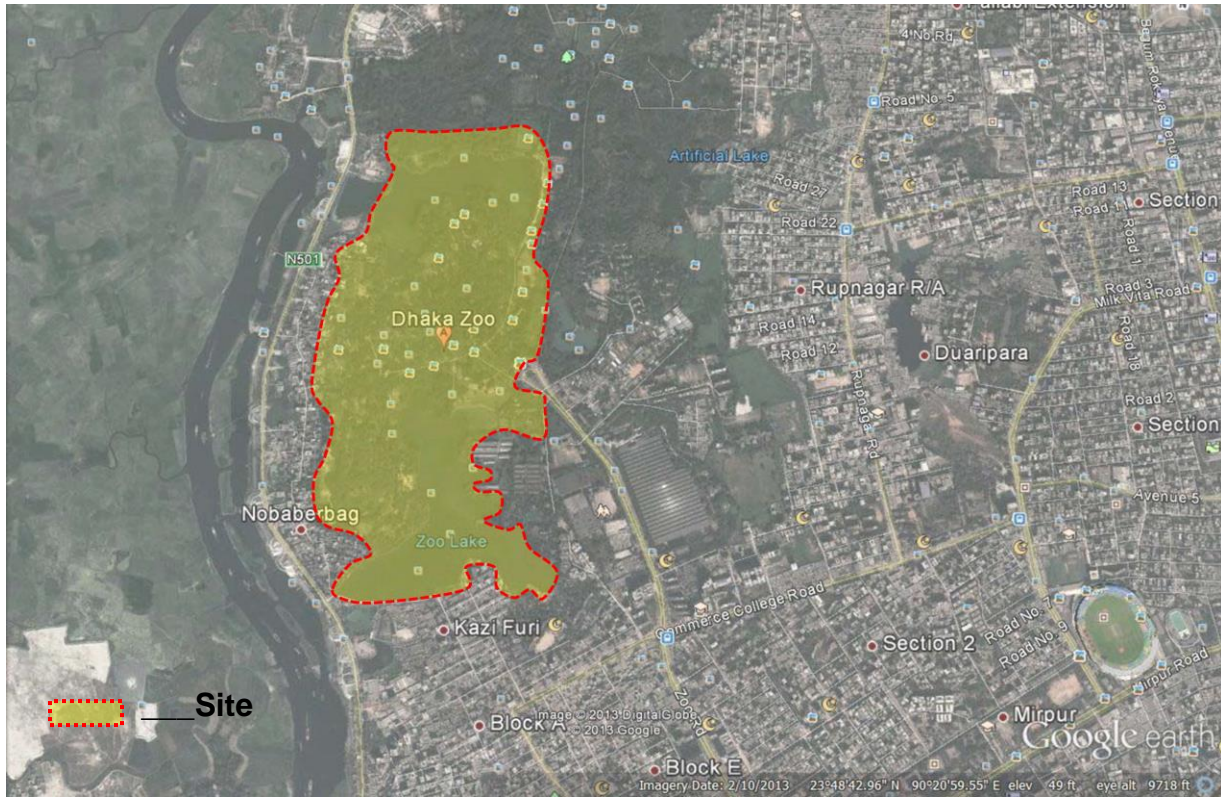
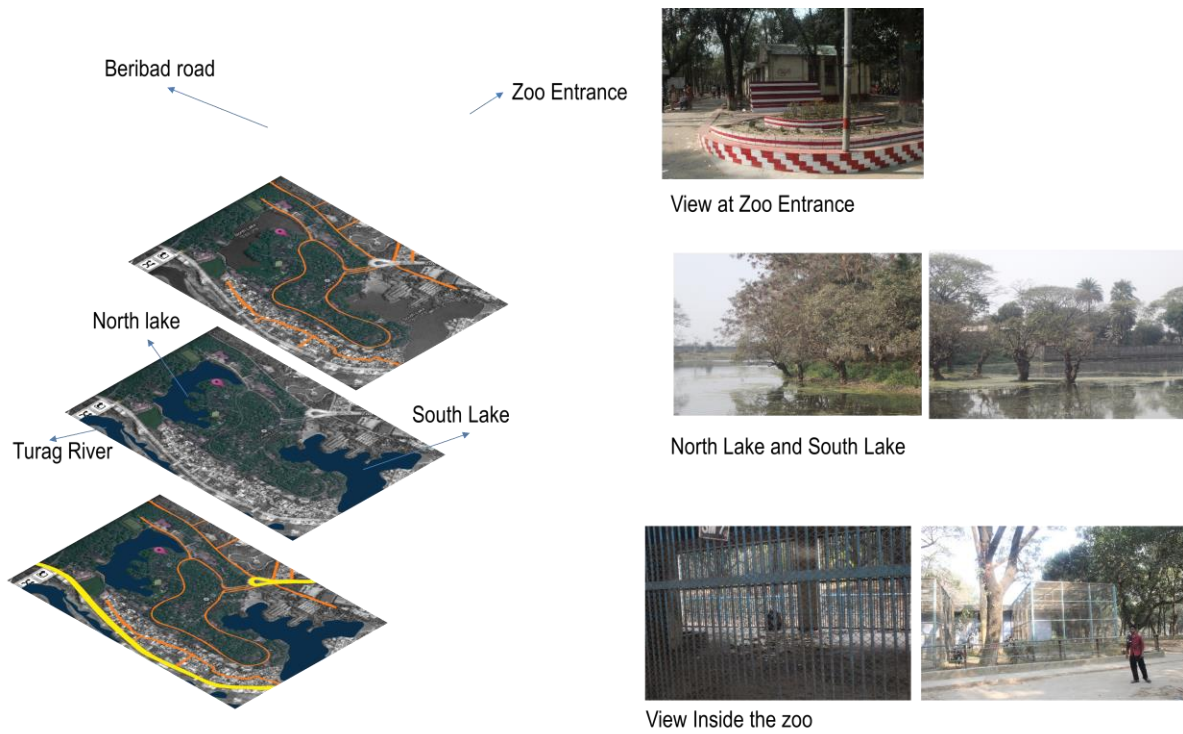
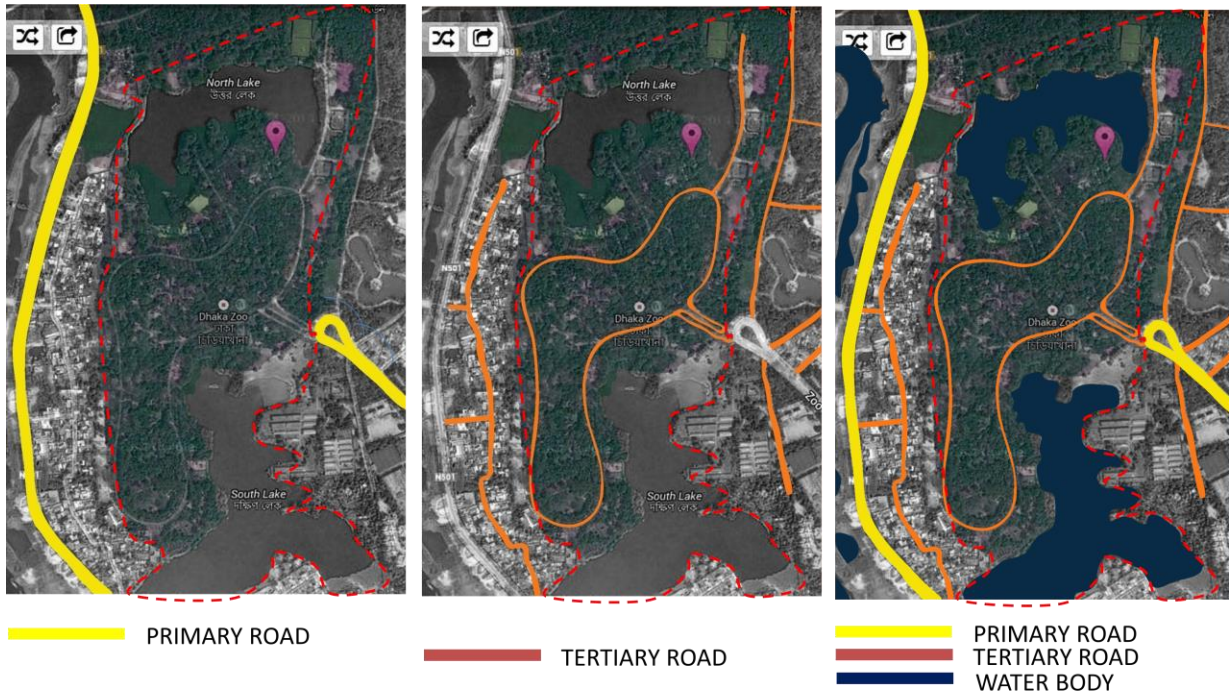


IMAGE 1: SATELLITE IMAGE OF NATIONAL ZOO, DHAKA

SOURCE: GOOGLE EARTH

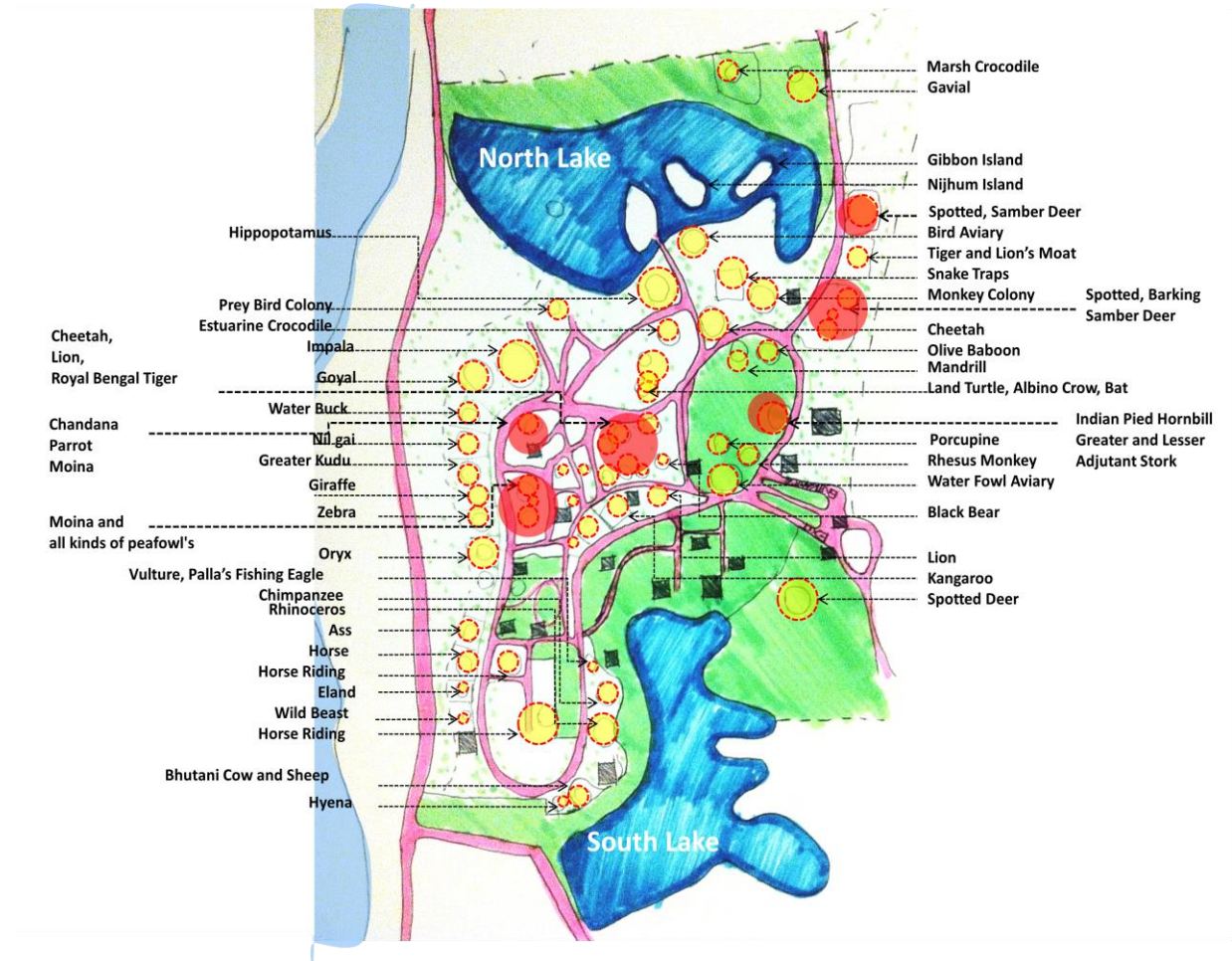
2.3 Site Analysis



Built Forms



Animal Location



2.4 SWOT Analysis

STRENGTH:

- The location is good for the objective of the zoo, since it is within close proximity of both residential and commercial zones
- The place can be a good urban public place and will act as a civic space in future.
- The area will be active and vibrant even during night.
- The site has two water bodies allowing good view, gentle breeze and also scope for different activities.
- The water body is at the north and south of the site allowing wind flow

WEAKNESS:

- The west side of the site connects the Beribadh road which might increase crime

OPPORTUNITIES:

- The site may be a potential social hub
- The accessibility from both the commercial and residential zones along with an educational institute beside it, provides an opportunity for the zoo to be fulfilled which the current locations lacks
- The climatic conditions of the site along with its view makes it potential for a public place

THREATS:

- The design must be done with proper care to the site and surroundings making sure that the activities do not suffer due to the land uses of the surrounding area.

Chapter 03 Literature Review

3.1 Zoo Planning

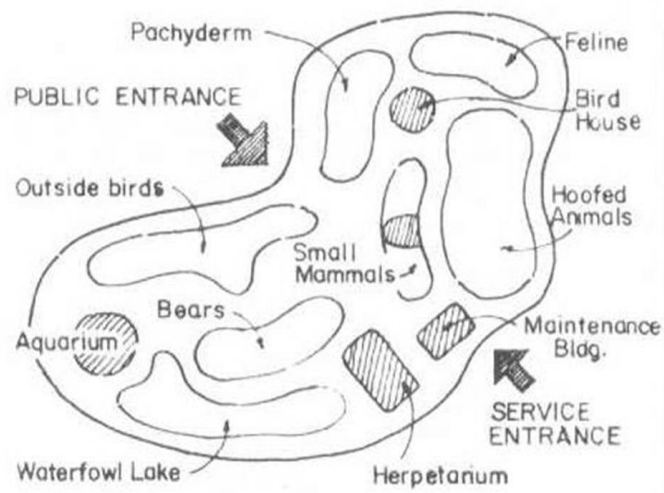
According to the standards, when a zoo is designed, it is classified according to nature and arrangement of exhibits.

The classification is

- Systematic
- Zoogeographic
- Habitat
- Behavioral
- Popular
- Combination Theme
- Zoo Botanic

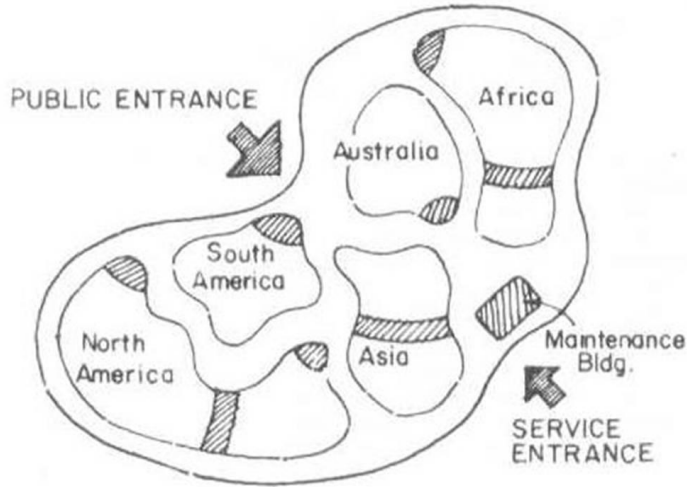
SYSTEMATIC _____ Same types of animals are kept close together as groups

- Easy maintenance
- People can link same types of species
- Visitors loose interest



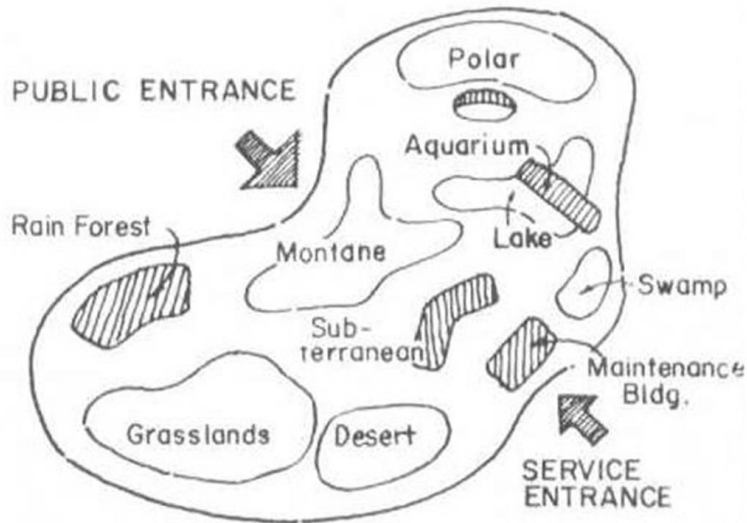
ZOOGEOGRAPHIC

Arrangement is done according to the animal's geographic Location. Geographic theme zoos.
 •Animals are kept at their area condition
 •Too expensive, cant be done in big zoos.



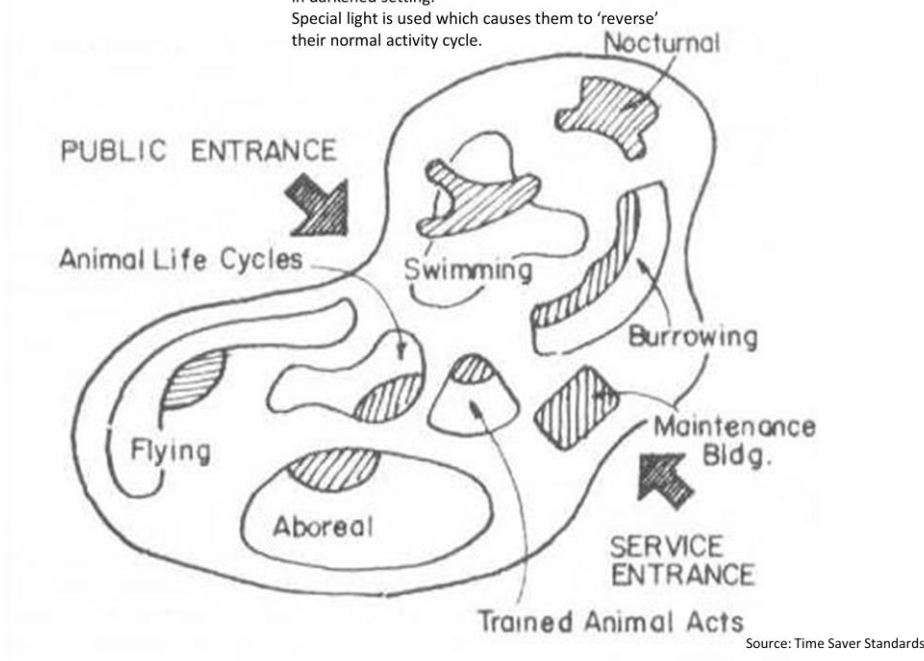
HABITAT

Animals are kept according to their ecological conditions and climatic conditions.
 •Depending on design, the single display may involve less maintenance cost than the series of single cage unit.



BEHAVIORAL

Nocturnal animal display where animals are normally active at night and are displayed in darkened setting. Special light is used which causes them to 'reverse' their normal activity cycle.

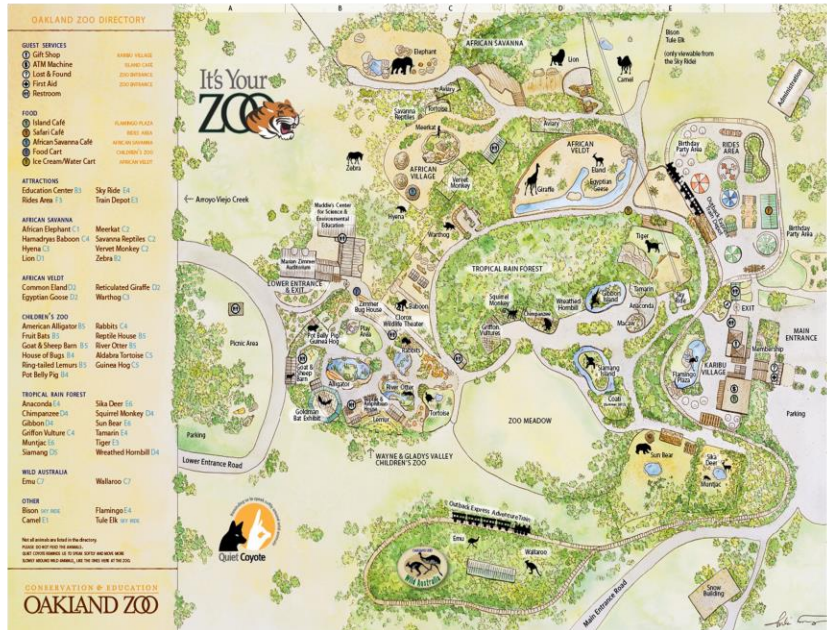


OREGON ZOO



64 acre
Zoogeographic

OAKLAND ZOO
525 acre
Habitat



Grounds

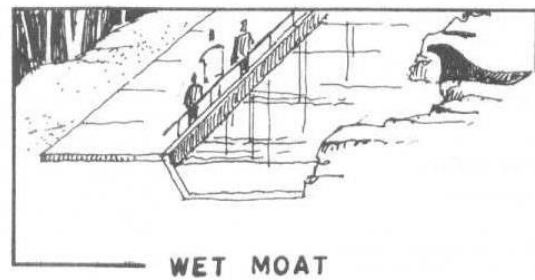
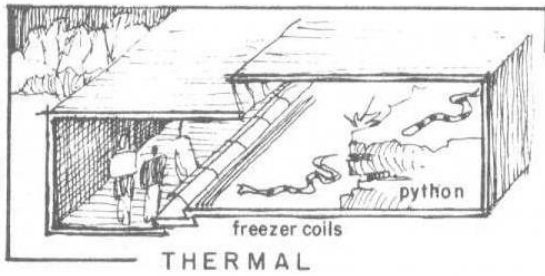
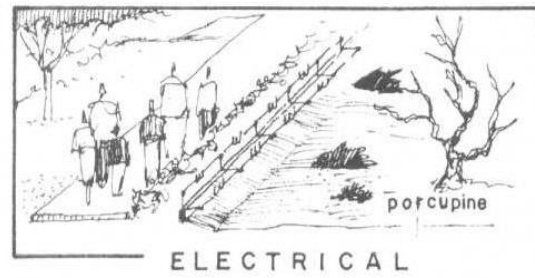
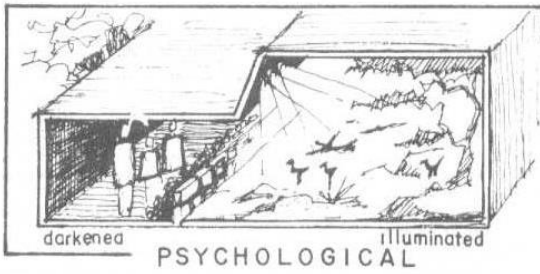
Specific features of the ground, features which are not considered as part of the animal exhibit or maintenance structures are discussed below.

1. **Parking**__ Adequate parking to accommodate maximum visitation.
2. **Entrance**__ Combination entrance and exit for the public is most practical and preferable.
3. **Landscaping**__
 - a. Topography
 - b. Soil
 - c. Climate
 - d. Available irrigation soil
4. **Miscellaneous**__ Walking trail
 Visitor's transportation system
 Cycling trail
 Barriers__
 1. Hedges
 2. Guard rails
 3. Masonry walls
 4. Low fences
 5. Cables
 6. Spiny plantings
5. **Perimeter fences**

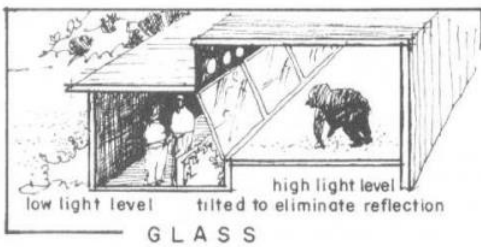
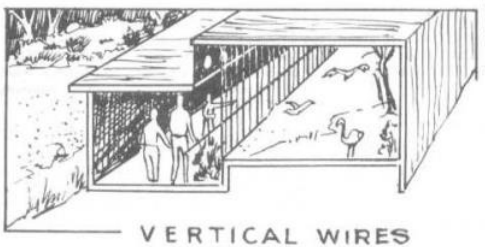
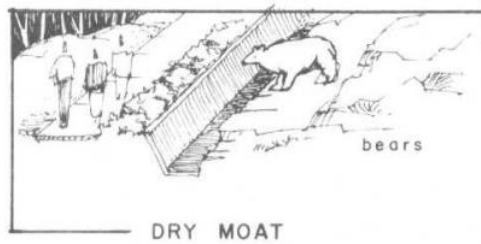
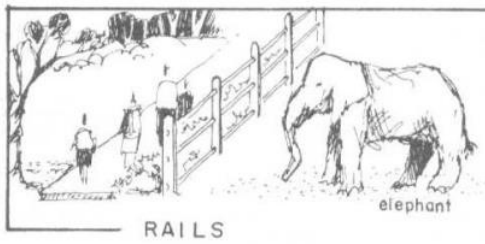
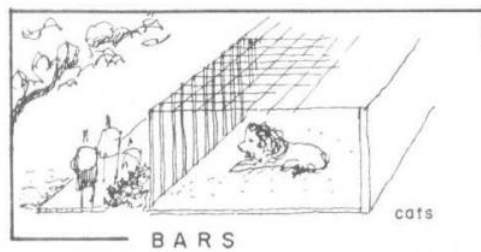
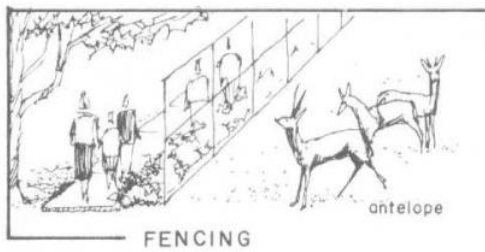
Animal exhibits

1. Visitors
2. Attendant of Animals

3.2 Types of Viewing



3.2 Types of Moat



Programs

Exhibit Building

List of possible exhibit buildings

<p><i>Mammals:</i></p> <ul style="list-style-type: none"> Monkey house Ape house Feline house Small mammal house Large mammal house Nocturnal mammal house Pachyderm house Aquatic mammal house <p><i>Birds:</i></p> <ul style="list-style-type: none"> Tropical bird house Aquatic bird house Penguin house 	<p><i>Other animals:</i></p> <ul style="list-style-type: none"> Insect house Reptile house Herpetarium (reptiles and amphibians) <p><i>Habitat buildings:</i></p> <ul style="list-style-type: none"> Aquarium (aquatic life) Underground zoo Rain forest "Habitat house" (several different habitat scenes exhibited) <p><i>Miscellaneous:</i></p> <ul style="list-style-type: none"> Special exhibits buildings Nocturnal animal house
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Source: Time Saver Standards

Service structure

Administrative_ Offices

Maintenance_i. Kitchen

ii. Refrigerated holding facilities

iii. Storage

Hospitals_i. Pharmacy & lab

ii. Operating room

iii. Equipment and supplies

iv. Post mortem room

v. Sick wards

vi. Quarantine section

Reserve animal area

Personal facilities_ Locker

Shower

Restrooms

Dining area

Public service_ Rest rooms

Special services

Café

Souvenir shops

Refreshment stands

General_ visitor's information center

Chapter 04

4.1 Case Study

Solar-powered Zoological Park in France

This a beautiful project of the renovated zoological park located in Vincennes, France. TN PLUS Landscape Architects is the company responsible for designing the landscape of the zoo, while the buildings of the park are designed by Beckmann N'Thepe, a design company from Paris.

One of the most interesting aspects of the new zoo is that it will run partly on solar energy. The entire complex will be divided into 6 bio zones with each zone replicating the climates of savannah, equatorial African rainforests, Patagonia, French Guiana, Madagascar, and Europe.

The team of designers works together with two zoo experts: Jean-Mark Lernould and Monika Fiby. The Former previously held the position of the director of Mulhouse Zoo, and is currently the chairman of CEPA, an organization for the protection of endangered species, while the latter is a zoo consultant, zoo designer, as well as the project manager of the ZooLex Zoo Design Organization, based in Austria.

In order to accomplish the project, designers also needed help from experts in the fields of urbanism, tourism, scenography, green building, as well as engineering.

It is worth mentioning that for the first time the zoo opened its doors for visitors back in 1934. It had an area of 14.5 acres and was located in the park of Bois de Vincennes. The landmark of the zoological park is a 67 meters-long artificial rock, called "le grand rocher."

Particular aspects and materials: Technique of the standard concrete "false rocks". Greenhouses out of membrane ETFE screen printed like continuity (dematerialization) of the rocks - specific work with the artist Susanna Fritscher. Step HQE

TEXT: "Marked by the emotive heritage of a shared culture, the architecture of the new Zoo of Vincennes is given to see in a developed geography, moved away from one time when architecture continued and anchored itself in a formalism and a reducing temporality. An invitation for the visitors with the discovery, between science and leisure, in order to build future memories there... The emblematic identity of the "false rocks" of the Zoological gardens is thus reinforced, and dictates its rules for the installation of its future program. In the logical continuation, the greenhouses develop like a continuity by a soft and natural intervention: they find their modeling by a coarse pixellisation of the rocks and marry their irregular forms. The new tandem Rock/Serre allows the establishment of last technologies and research on High Environmental Quality. Here a landscape invented between form and informs, absolutely modern, i.e. nine and artificial, which marries the silhouette familiar of the six landscapes (biozones) suggested. It seizes their natural materials, rocks and granitic stones, trees, shrubs, foams and lichens in an imitation pretend since mix with it with the interventions with materials of human industry, glass and metal, in frank inclusions and out of scale which cap the rocks of various functions. This new identity relief wants to be intriguing, mysterious and gravitational to be able to become the icon of the new life of the Zoological gardens"

SIMULATED ENVIRONMENTS FOR ANIMALS



These are some plans for a new zoological park in Vincennes, France. The zoo's landscapes are designed by TN PLUS Landscape Architects, its buildings by Paris architects Beckmann N'Thepe.

The project is noteworthy for, among other things, what could be called its simulated geology.



These artificial earthforms will contain simulated environments within which animals will live. The whole complex will encompass 15 hectares and six "biozones," and it will run partly on solarpower.



The park's "biozones" include the savannah, the equatorial African rain forest, Patagonia, French Guiana, Madagascar, and Europe.



So the zoo – like all zoos, of course – will be a simulation intended for animals. Zoos, in other words, are a particularly bizarre form of trans-species communication, attempted on the level of architecture and landscape design.

They're like hieroglyphs that animals inhabit – spaces defined entirely by their ability to refer to something they are not.



And I have to say that the renderings of this place look pretty cool.

But why do we only build zoos like this? Why not suburbs or college campuses? You mold landforms out of reinforced concrete, and you install artificial waterfalls and fake rivers, and you grow rare orchids under the cover of geodesic domes. And then your grandkids can grow up in

a savannah-themed suburb outside Orlando. The next town over, kids run around through giant fern trees, chasing parrots.

Perhaps *themed biozones* are the future of suburban design?



Google opens a new administrative complex outside London – on the grounds of a former zoo.

Your "cubicle" is partly outside.

Hidden nozzles mist your neck on every lunch break.



4.2 Study

TOP TEN ZOOS OF THE WORLD

NAME OF ZOO	PLACE	AREA OF LAND	NUMBER OF ANIMALS	DATE OF ESTABLISH
Disney's Animal Kingdom	Orlando, Florida	580 acres	1,500	1998
Basel Zoo	Switzerland	32 acres	6,000	1874
Zoo Parc de beaval	France	67 acres	4,000	1980
Bronx Zoo	New York	265 acres	4,000	1899
National Zoo Garden	South Africa	210 acres	2,500	1899
Berlin Zoo Logical Garden	Berlin, Germany	84 acres	19,500	1844
Smithsonian National Zoological Park	W.D.C	163 acres	2,000	1889
Toronto Zoo	Canada	710 acres	5,000	1974
Singapore Zoo	Singapore	69 acres	2,530	1973

Chapter 05

Program and development

ENTRY AREA

FUNCTION NAME	Quantity	Space
TICKETING	2	250
ENTRY PLAZA		89,900 SFT
TOILETS	3(Male&Female) per hub	(770X15)11,550SFT
INFORMATION CENTER	1	180 SFT
LOST AND FOUND	1	250 SFT
FOOD COURT	20stalls	16,000 SFT
ATM BOOTHS	4	(120X4) 480 SFT

ADMINISTRATIVE AREA (ZOO OFFICE)

FUNCTION NAME	SIZE
CURATOR'S OFFICE	350 SFT
DEPUTY CURATOR'S OFFICE (SURVEY)	200 SFT
DEPUTY CURATOR'S OFFICE (ADMINISTRATION)	200 SFT
RECEPTION	100 SFT
ACCOUNTS DEPARTMENT	100 SFT
INFORMATION	100 SFT
ANIMAL HEALTH DEPT	150 SFT
ZOO OFFICER , RESEARCH, ANIMAL NUTRITION	150 SFT
ZOO OFFICER, CARNIVORES	150 SFT
ZOO OFFICER , AVIAN/BIRDS	150 SFT
ZOO OFFICER , SMALL MAMMALS/REPTILES	150 SFT
ZOO OFFICER , HERBIVORES & LARGE ANIMALS	100 SFT
ZOO SECURITY SECTION	100 SFT
ZOO, ELECTRIC & ENGINEERING	100 SFT
OFFICE OF ARBORICULTURE	100 SFT
DEPARTMENT OF MUSEUM	100 SFT
PUBLICITY OFFICER'S OFFICE	100 SFT
ZOO RESEARCH & EDUCATION	100 SFT
ZOO ESTATE LAW DEPT	100 SFT
ZOO OFFICER , FISHERIES	100 SFT

ZOOKEEPERS FACILITIES

FUNCTION NAME	SIZE
ACCOMMODATION	2000 SFT
LOCKER ROOMS	400 SFT
PRAYER ROOM	200 SFT
CONFERENCE	1000 SFT

PUBLIC FACILITIES

FUNCTION NAME	SIZE
PICNIC AREA	25,600 SFT
PLAY GROUNDS	3 ACRES (250 families)
AQUARIUM	41,240SFT
HORTICULTURE PARK	60,000 SFT
FRIGID ZONE	70,900SFT
AMPHITHEATRE	30,000SFT
LAKES	12.69 hec (2 lakes)
SOUVENIR SHOPS	300SFT (each)
OFF-EXHIBIT MULTI PURPOSE ENCLOSURE	1500-2500 SFT
BIRD PARK + BUTTERFLY PARK	(140,040+28.150)SFT
PRAYER ROOMS	300 SFT

EDUCATIONAL FACILITIES

FUNCTION NAME	SIZE
ANIMAL MUSEUM	300 SFT
EDUCATIONAL CLASSROOM + CONFERENCE + STUDENT WORKSHOP + ACCOMMODATION	1500 SFT
GREENHOUSE	400 SFT
FARMING & VEGETATION CENTRE	700 SFT
SCIENCE CENTRE	400 SFT
INFORMATION CENTRE ON WORLD ZOOS	400 SFT
BREEDING AND RESEARCH CENTRE	200 SFT
LIBRARY	400 SFT

HEALTH FACILITIES

FUNCTION NAME	SIZE
FIRST AID STANDS	200 SFT
ANIMAL WELFARE	200 SFT
VETERINARY HOSPITAL ANIMAL HEALTH CHECKUPS VACCINATION CENTRE INFANT'S CARE CENTRE	2,000 SFT

EXHIBITS

FUNCTION NAME	SIZE
ROYAL BENGAL TIGER	35,026 SFT
GRAZERS AND ANTELOPES	(18,056 +2 4,539) SFT
GIRAFFE	23,333 SFT
ELEPHANT	40,000 SFT
BUTTERFLY PARK	1400 SFT
RHINICEROS	21,527.8 SFT
BIRDS AVIARY	6,500 SFT
FLAMINGO	1,500 SFT
PEACOCK	800 SFT
OSRTICH EMU CROSSWARY	15,000 SFT
REPTILES	20,763 SFT
WILDEBEEEST	4,000 SFT
LIONS DEN	4,000 SFT
WILD CATS	5,400 SFT
AQUARIUM	30,000 SFT
PRIMATES	20,000 SFT
BINTURONG LARGE INDIAN CIVET COMMON OTTER	6,000 SFT
INDIAN FRUIT BAT	3,000 SFT
SQUIRREL	3,000 SFT
SPOTTED AND STRIPED HYAENA	2,400 SFT

Chapter 06

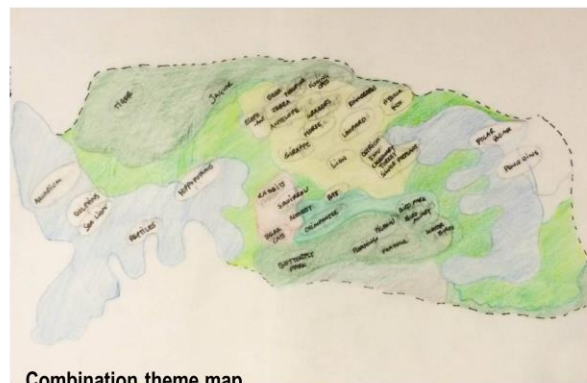
Conceptual Stage and Design Development

According to the 'combination theme' the zoo site is divided into sections.

- Tropical rain forest
- Grassland
- Arboreal
- Burrowing
- Swimming
- Polar
- And semi-dense forest



Topography



Combination theme map



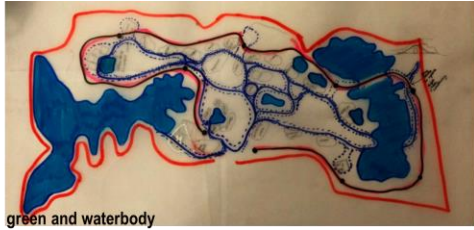
enclosures



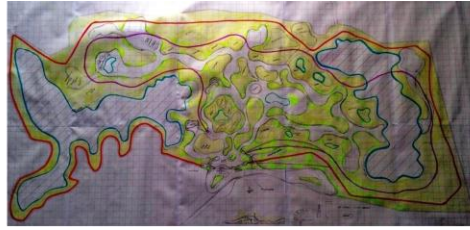
routes

The animals are positioned according to their behavior and habitat. Walkways, bus routes are then designed.

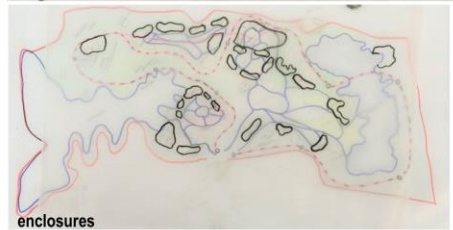
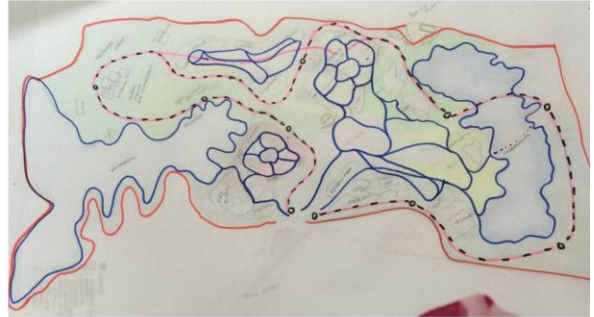
Design Development of routes and animal enclosures



green and waterbody



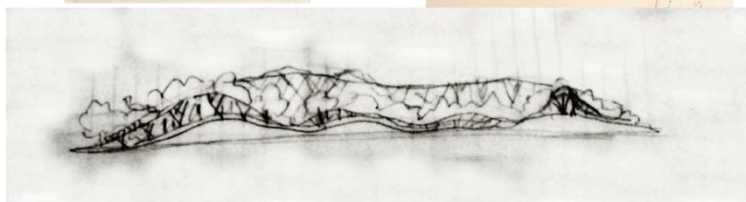
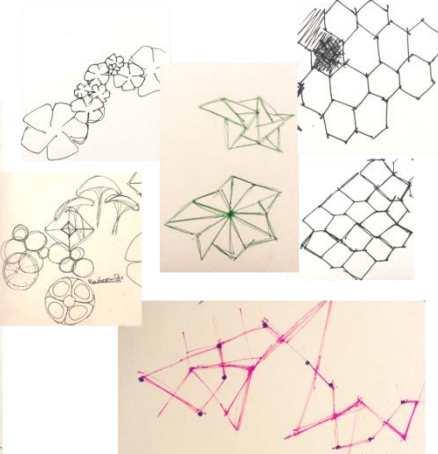
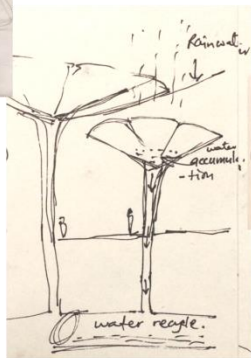
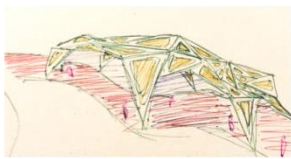
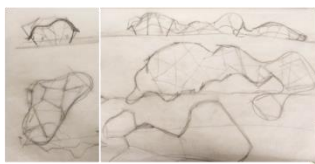
routes



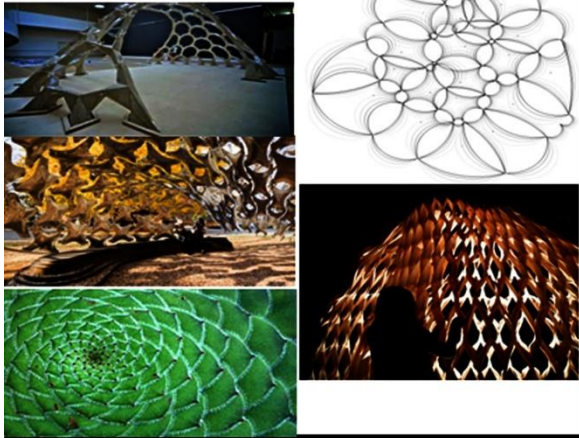
enclosures



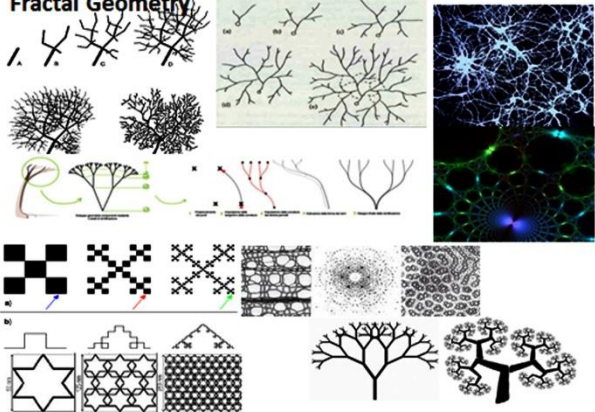
Structural study



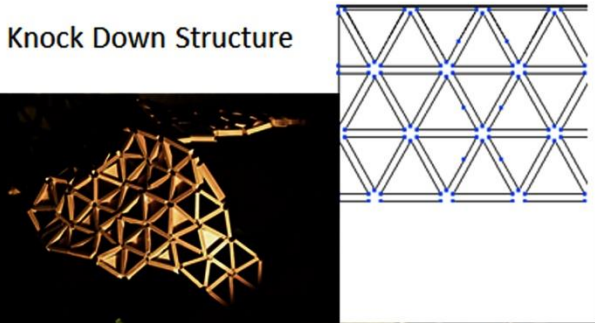
Digital Pavillion



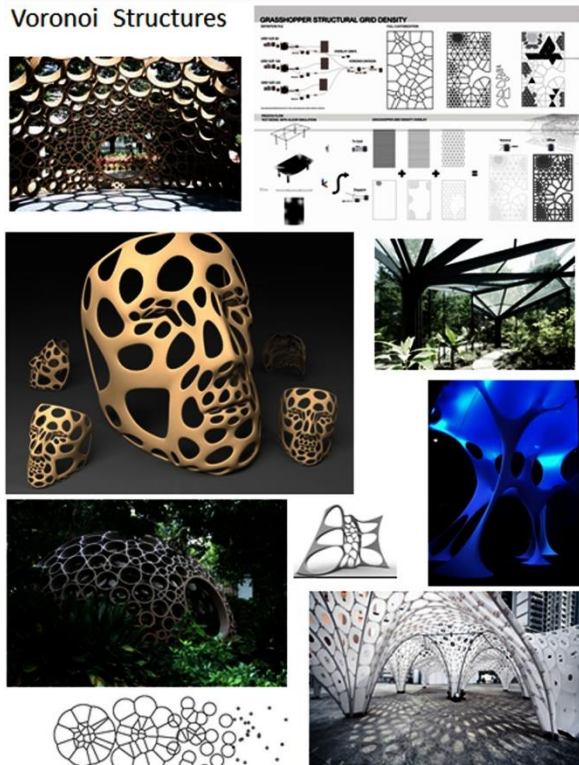
Fractal Geometry



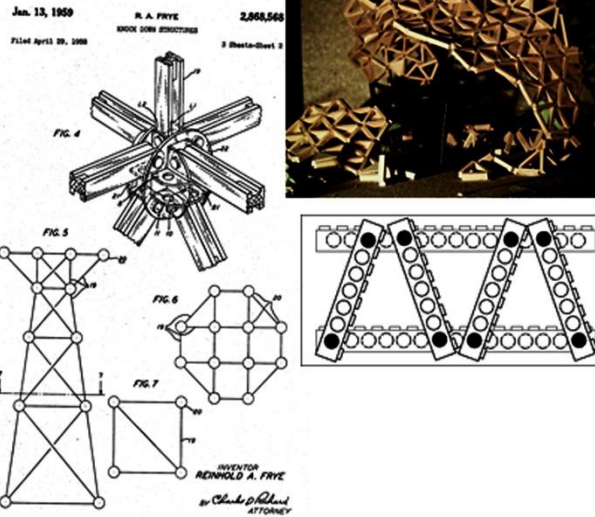
Knock Down Structure



Voronoi Structures



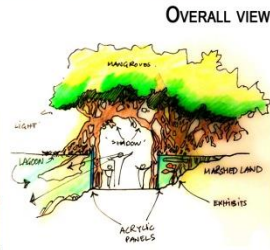
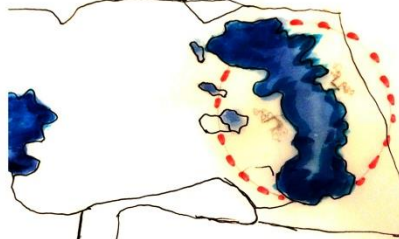
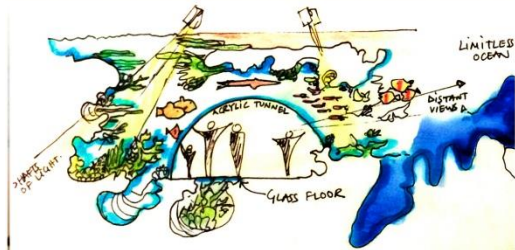
Knock Down Structure Patent



Studying structures that look organic and natural. Structures that may look as if it has grown with time, something that is not very hard or rigid

Initial thoughts and Idea

Study of different types of barriers between visitor and animals. A partition that is natural and secure.



VIEWING FROM A DIFFERENT ANGLE



VIEWING THROUGH GLASS

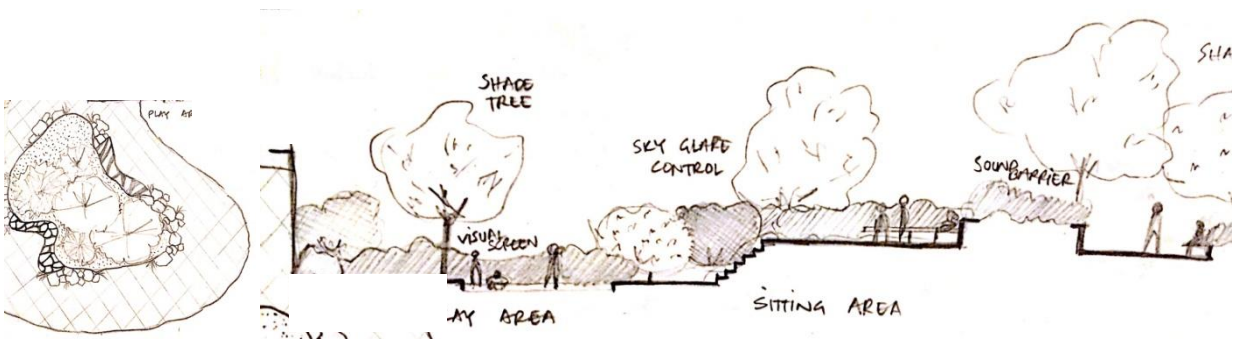




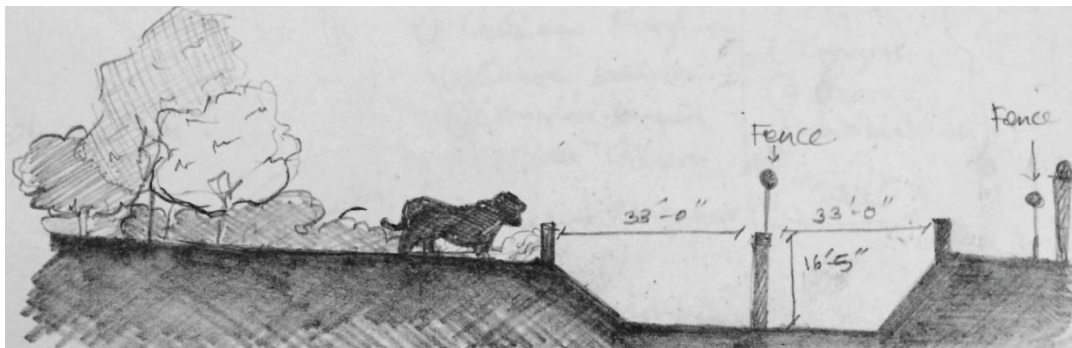
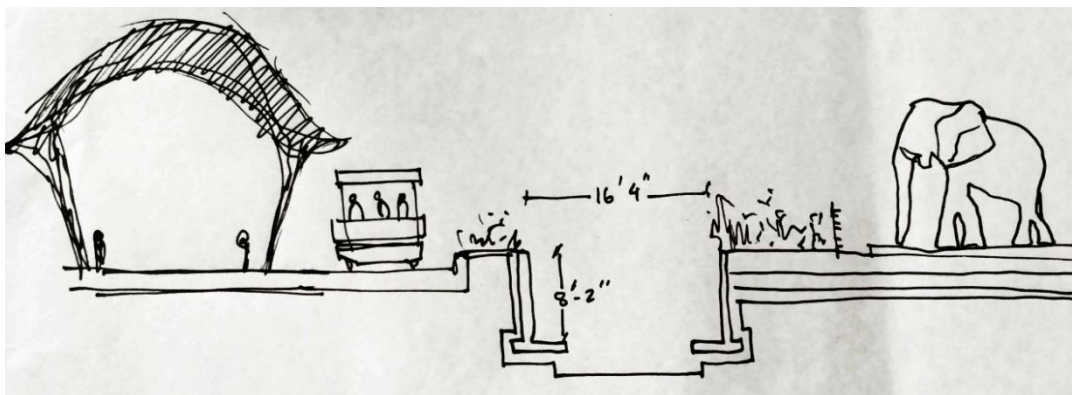
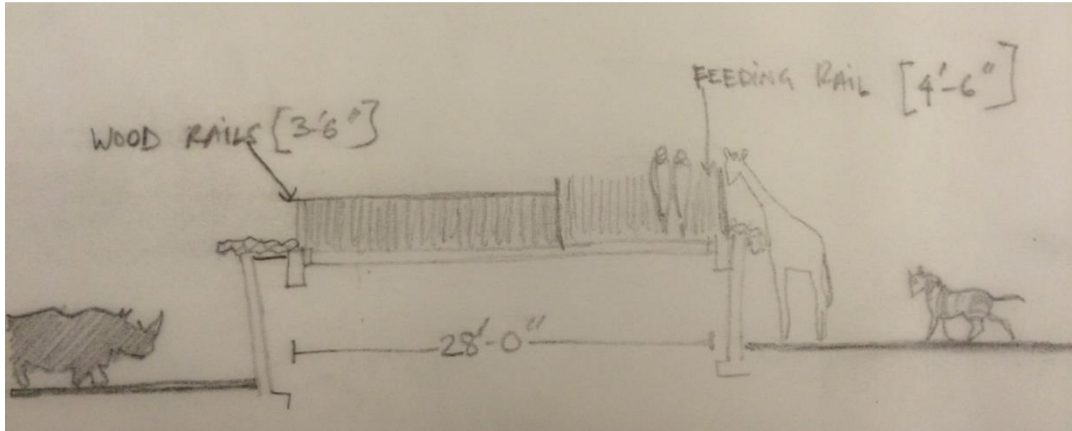
Primates enclosure



Tiger enclosure

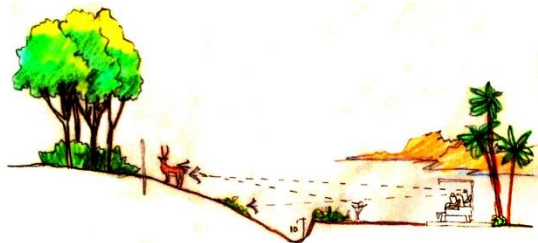


Sketches of idea development



Studying natural barriers and measurements

Concept of animals being free from enclosed space while visitors in an enclosed area or freeing both parties and maintain security.



CROSS SECTION OF PRIMATE ENCLOSURE

DERIVATION OF FINAL IDEA

SEPARATION BETWEEN VISITORS AND ANIMALS THROUGH NATURAL SETTINGS



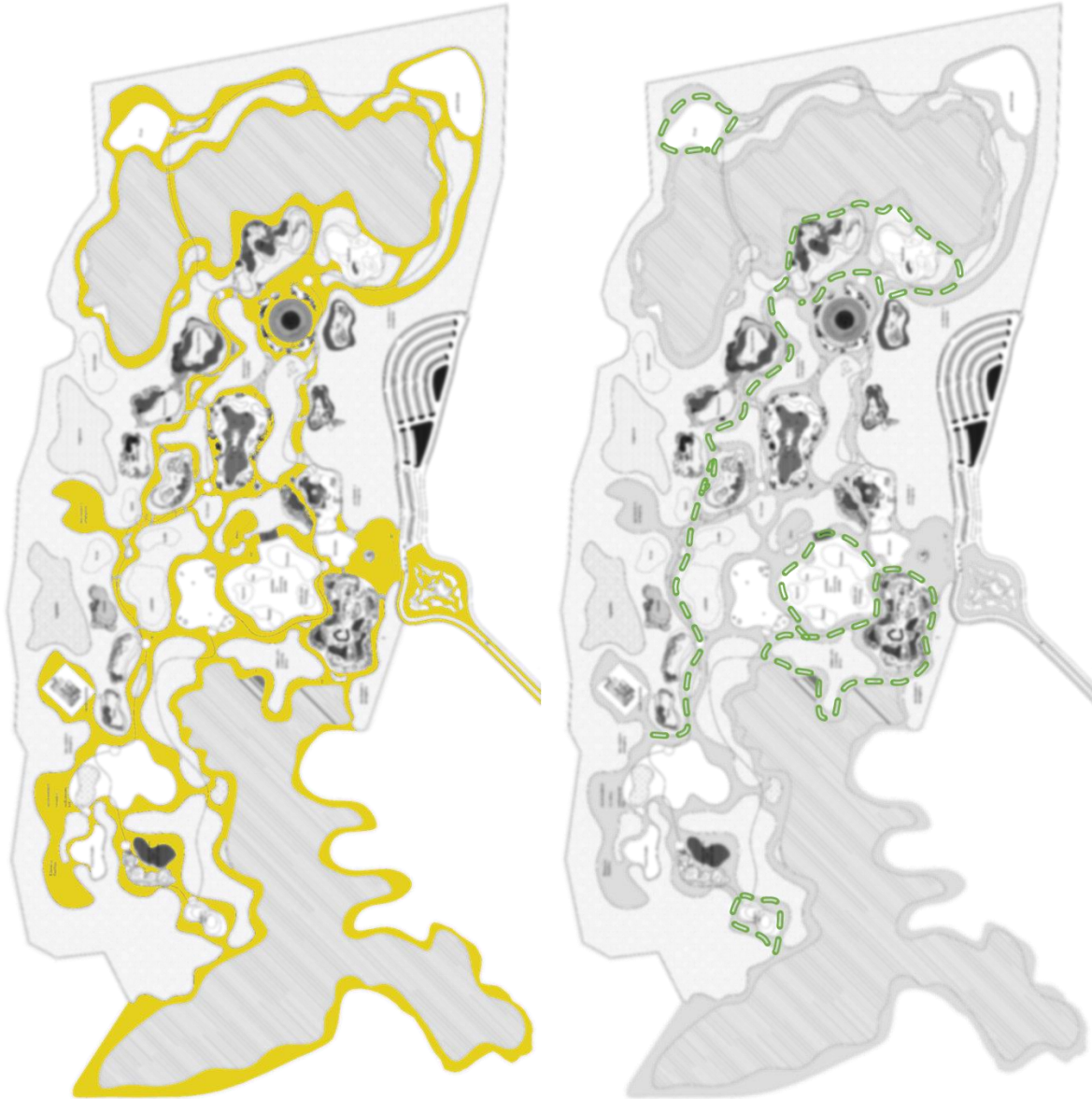
ELEPHANT ENCLOSURE WITH WET MOAT



MULTI SPECIES EXHIBIT WITH 'U' SHAPED MOAT

MASTER PLAN 
SCALE: 3/256"=1'-0"





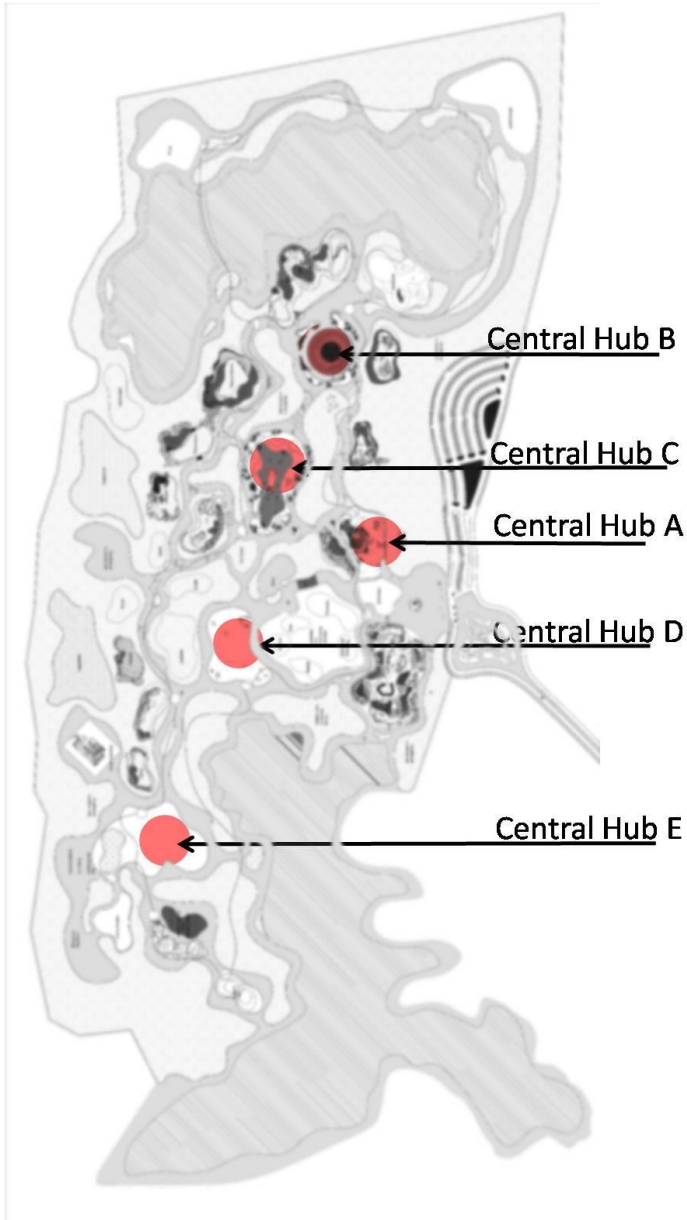
 Walkway

 Primary Visitor Circulation Exhibit









 Bus Routes

 Water Bodies



VISITOR CIRCULATION

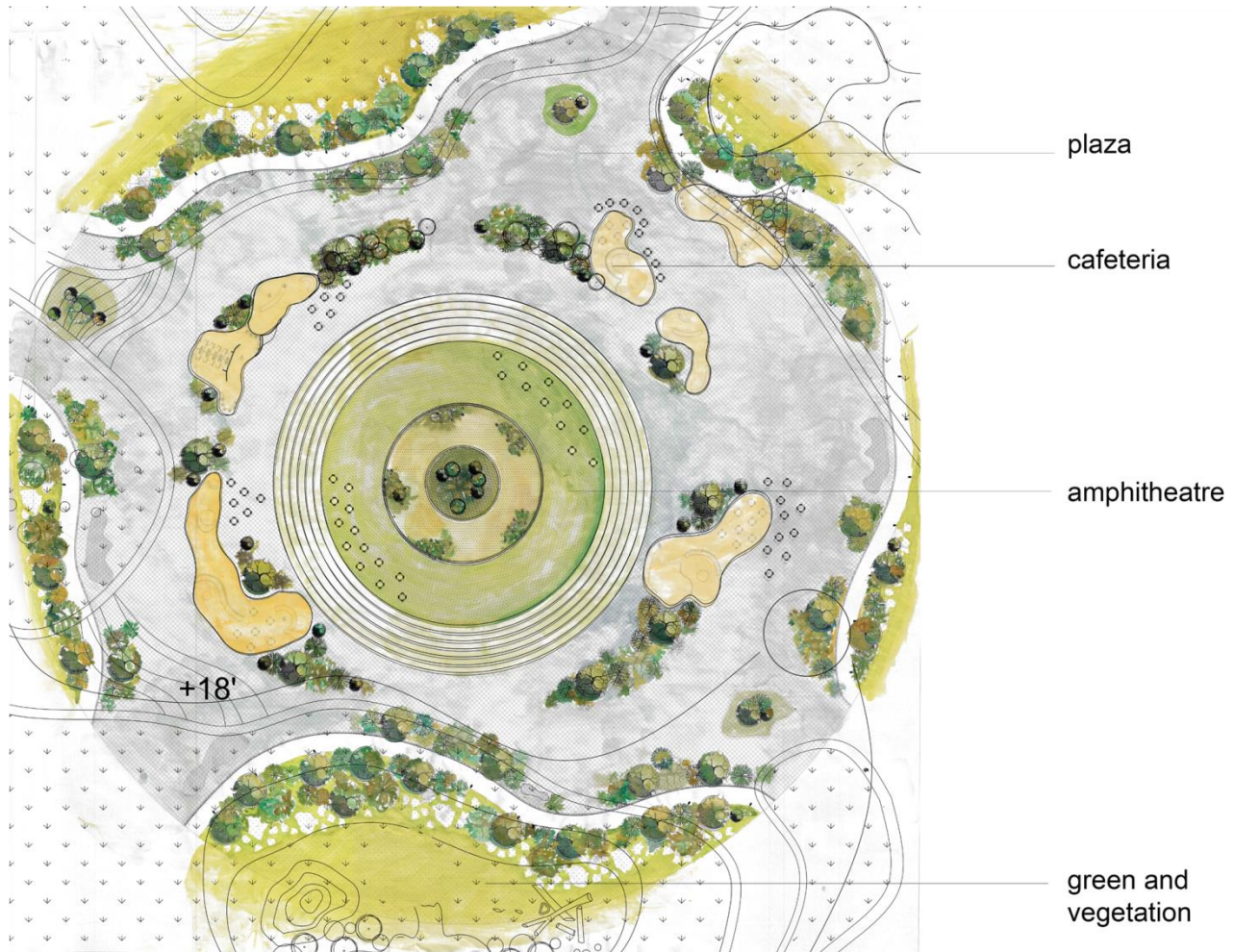
-  Spine
-  Walkway
-  Secondary Visitor circulation
-  Bus Route
-  Primary Visitor circulation exhibit
-  Central hubs

Detail Drawing Of Central Hub A, B and C

CENTRAL HUB-A



CENTRAL HUB-B



Section of central hub B and

CENTRAL HUB-C



Flower garden

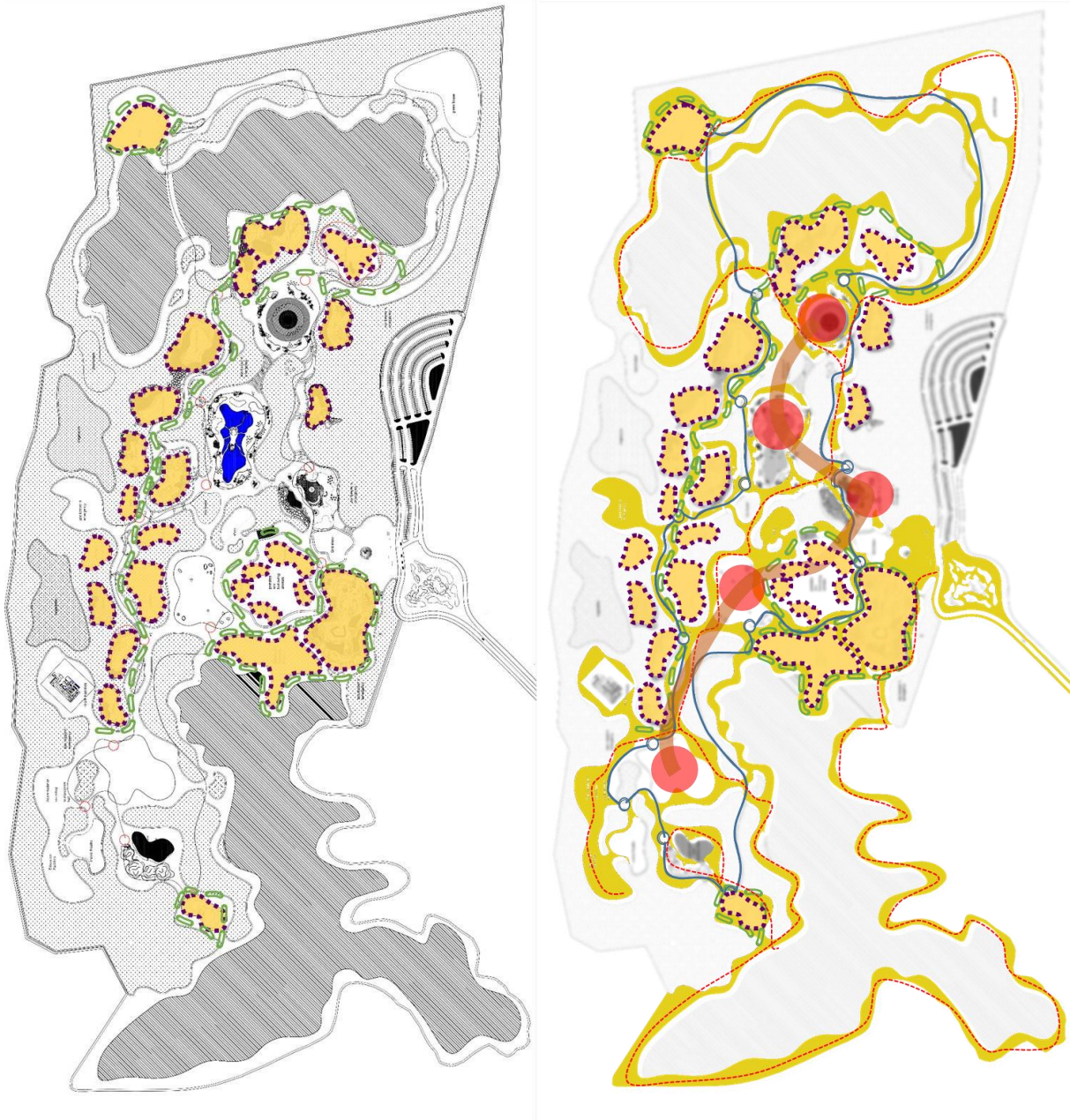
Souvenir shop

Insect Information centre

Water body with boating

Food court

Plaza



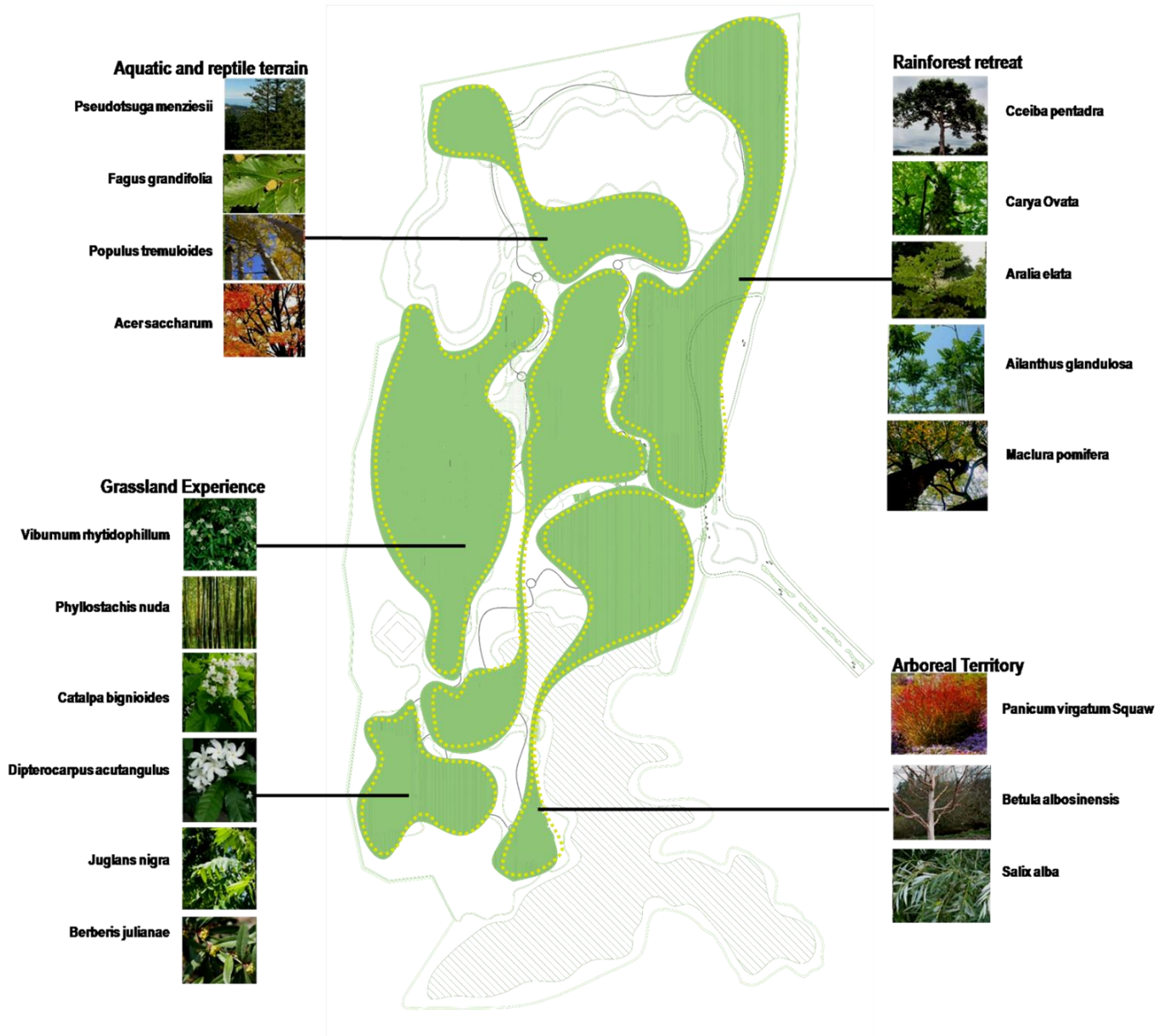
EXHIBITS AND VISITOR BOUNDARIES

- Exhibits
- Primary Visitor circulation

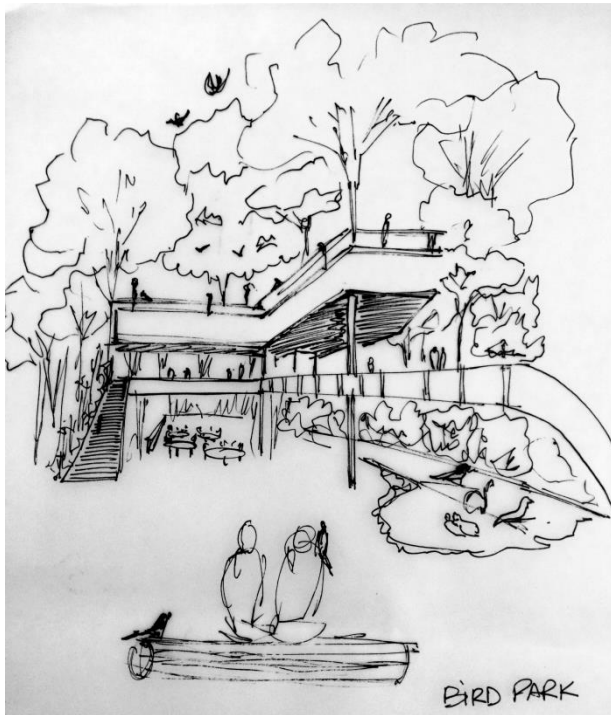
VISITOR CIRCULATION

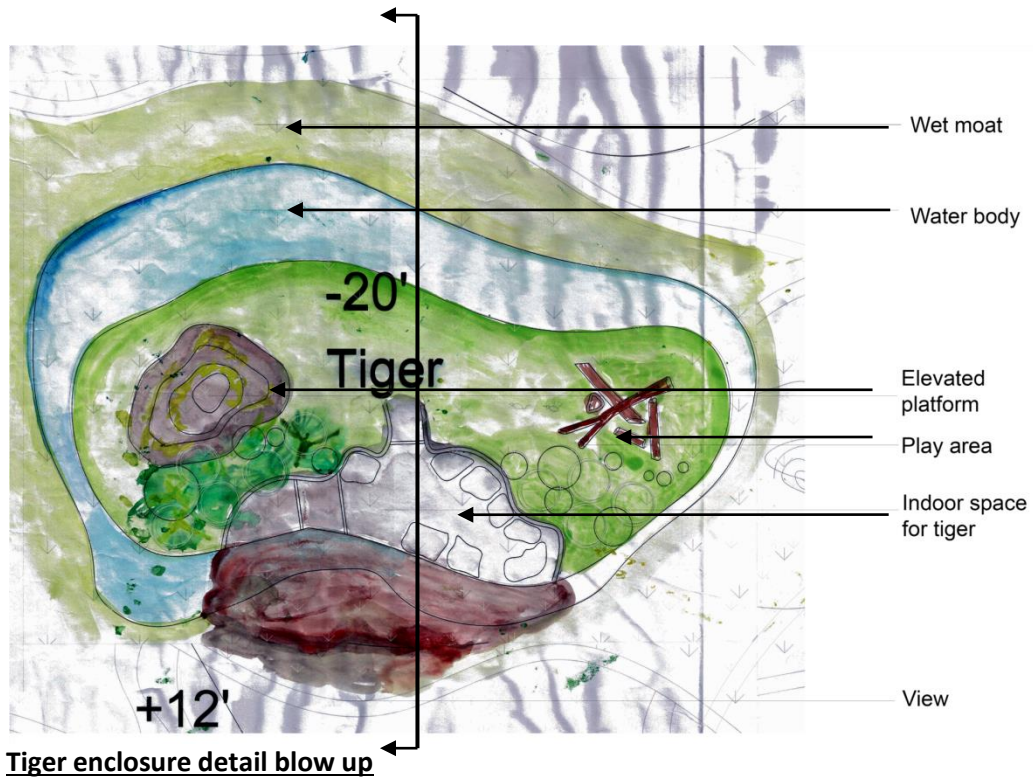
- Spine
- Walkway
- Secondary Visitor circulation
- Bus Route
- Primary Visitor circulation exhibit
- Central hubs

Green and Vegetation

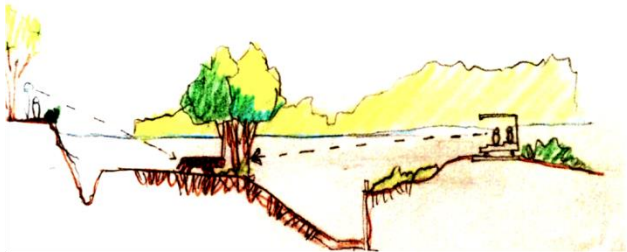
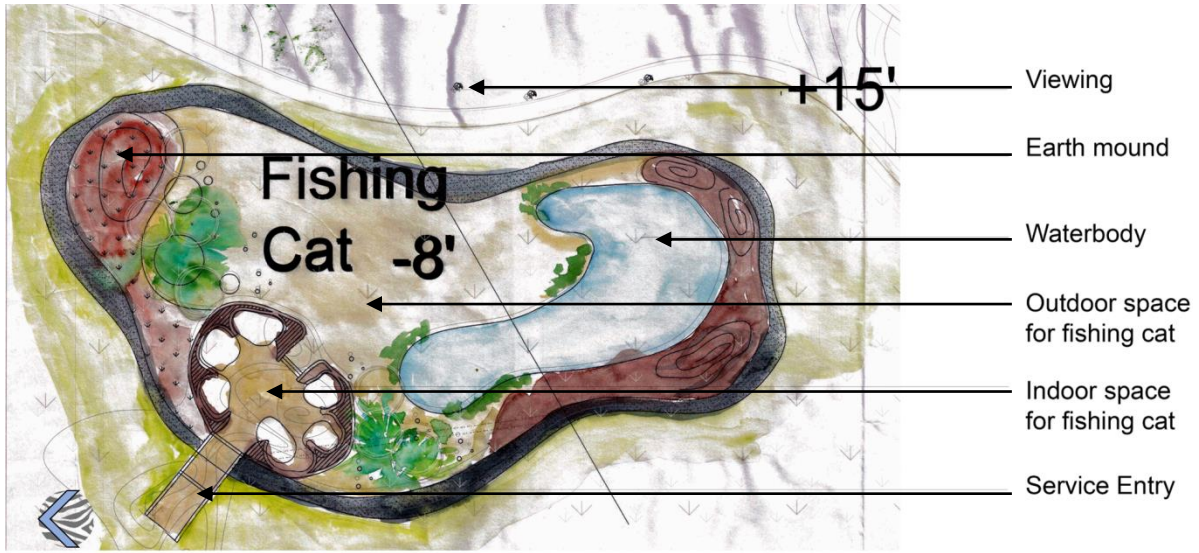


Master plan Exhibits

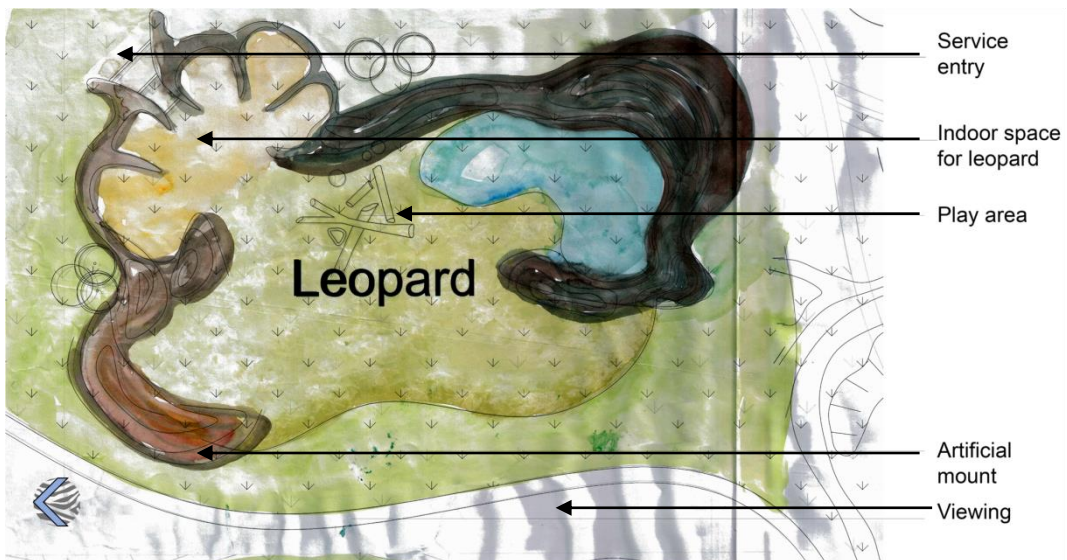




Section of tiger enclosure



Physical connectivity barred by moat retaining visual connectivity

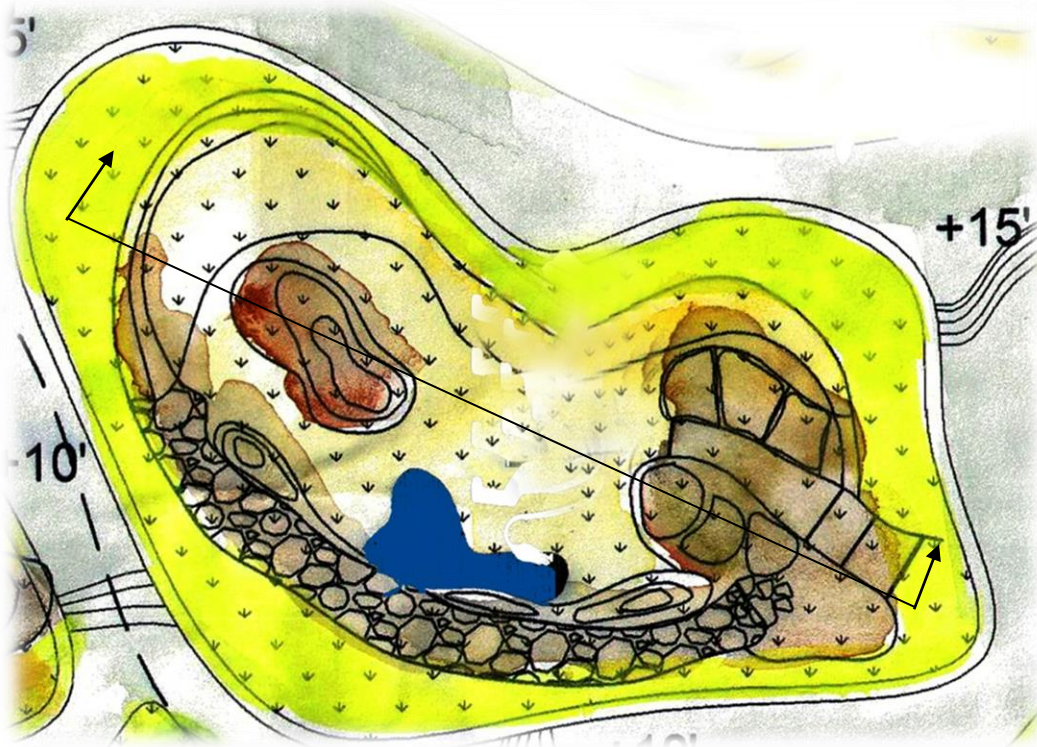




Elephant and Giraffe Enclosure



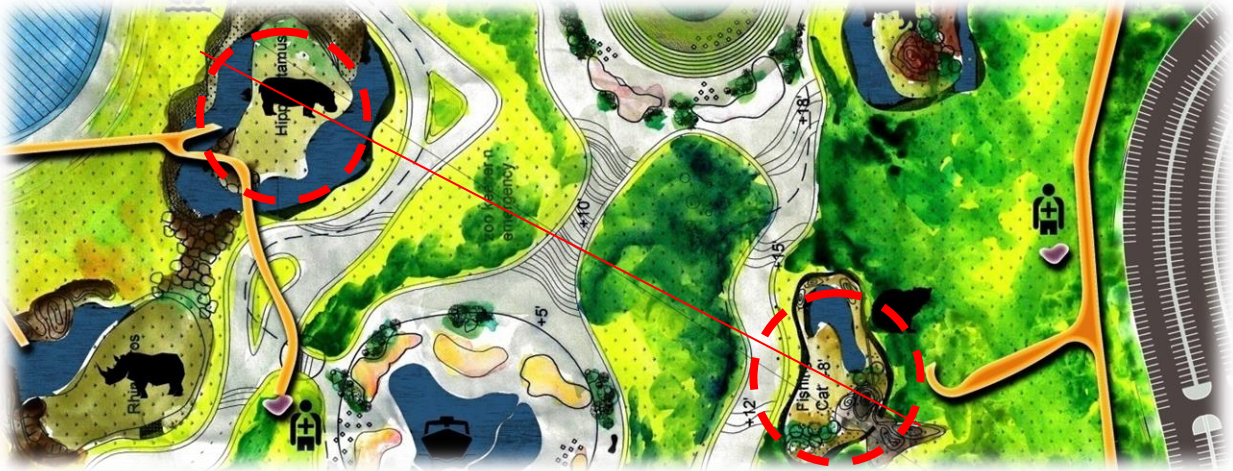
Perspective view



Lion Enclosure

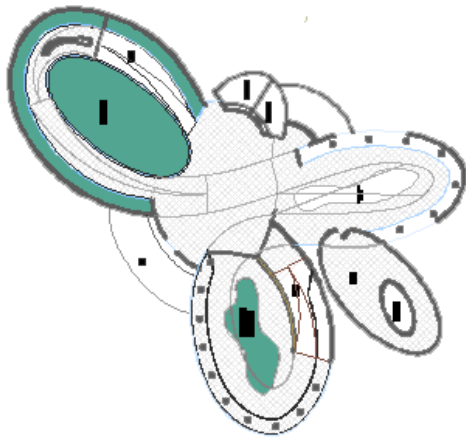


Section of Lion Enclosure

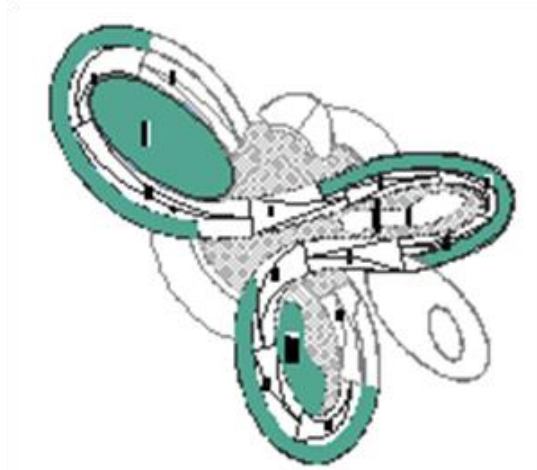


Entry plaza

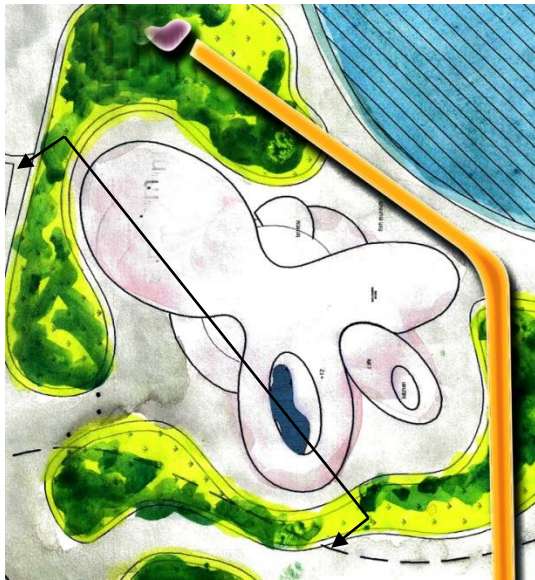
AQUARIUM



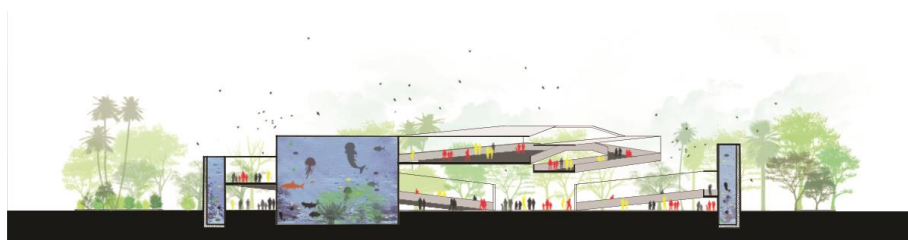
Ground Floor Plan



First Floor Plan



Roof Plan



Conceptual Section of Aquarium

Conclusion

The above chapters describe the entire process and the method followed to develop the proposed design. Zoo is just not a zoo but frames of memories for a person. These memories stay forever. With time people are getting so busy that they barely spend time together with families. There are hardly any picnic spots in Dhaka. Dhaka zoo is losing all that it had and this project may bring children and families back to the zoo. Families will have somewhere to spend their day together and participate in family time.

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