

DEVELOPMENT OF A QUARRY - KALI KHAN IN SANGLI.

AR.VIJAY B.SAMBREKAR

M.ARCH (III), M.E. (Str.), L.L.B. (Sp.)

Principal - Appasaheba Birnale College of Arcitecture, Sangli.

Email - vbs3333@yahoo.com

1. Introduction :

1.1 Subject Requirements:-

Enjoyment is to experience pleasure. From the evolution of human each effort is done for achieving physical as well as mental pleasure. Throughout the human development, water is used for pleasing refreshing soul. It may be either in natural forms like lakes, rivers, falls etc. or in artificial forms like fountains, cascades etc. As we are living in 21st century, the changing times demand new and different regenerate for the next day and this is where a recreational is required which in may thought would also help a common man to come in contract with nature which is its town would help him to shed of tensions of day to day life and hence lead towards a more healthy life and automatically healthy life and automatically healthy society, both spiritually and physically.

India is a country where all types of cultures get absorbed. We are absorbing the western culture not to get influenced by them but to learn new techniques of pleasure that give fitness, fun and frolic. Club Aquaria is one such condition to these changing times and there is a need for such club in every city.

In the day today routine of the urban man tremendous amount of pollution has deteriorated marismental and physical health and today man is always in search of something which nature, always from his day to day routine is very essential.

1.2 Need of city :-

Sangli is a district place which is counted as 'A' Class city. Recently Sangli has become Municipal Corporation due to its enormous development in all fields i.e. financial, educational, cultural and industrial etc. There are many areas which are developing rapidly at the outskirts of this city eg. Miraj as medical centre, Madhavnagar for textile and sugar industry, Jaysingpur as trade centre. Because of these developments in and around the city and also due to easy access from the outskirts, Sangli is becoming a focal point for various activities.

But being a resident of Sangli, I know some of its problems and one of them is lack of recreational facilities. Taking this into account, these are inadequate recreational facilities as compaired to the density/ concentrated populated area in the city. Also when the visitors visiting Sangli there is nothing to show around expect the Ganapati Temple. City has small zoo and gardens and no other something more than a zoo and garden. Presently the zoo was packed up by

the corporation. Gardens are lungs of the city but there is very less development on vegetation of landscape where people find a place to release their mind and bodies.

Sangli one of the fast growing city of Maharashtra, should have all facilities for its good efficiency. So I wish to develop an ideal meeting place which will provide an intimate get-together with one's family, friends and a place which not only fulfill the recreational need of people but also helps interchanging and learning knowledge, knowledge about art crafts, knowledge about music ,about modern things while enjoying the nature and its all in one campus. The facility of club Aquaria in Sangli will attract more and more number of visitors and will give the whole city a new gush of life, spirit and enthusiasm.

1.3 Planning proposals:

A great place but not used worth it. This place has to have something in it which will make people realize its beauty. These were the first thoughts that came to my mind when I first saw the kali khan.

Large water body turned into dirty place. The only best use of the space ever is an exhibition, keeping this in mind it can be said that this place can be used as an entertainment as well as community center.

Landscape and deconstruction are always going to be a part of it while designing. Provision of a commercial space is always going to raise some funds for it.

Due to negligence the lake has become extremely dirty and polluted. A proposal has been put forth to clean up the lake and develop it as a public space which the city is in lack of.

The first concern of the area is the stagnant water which is getting unhygienic and poisonous day by day. So this project will convert it in to an environment friendly area.

The basic idea of the project is to create a green recreational place which touches the heart of people. A person visiting that place should have solitary existence and a walk of leisure and grace.

2 History of Kali Khan :

Earlier Sangli was limited only to six lanes. There was ample use of stone masonry in construction. This demand was full fill by excavating stone from the outskirts of the city that is from kali khan.

The excavation continued till it was banned by the government. Because of underground water table the pit became a natural source of water. Thus the 82 thousand sq.m. Area turned into a lake. This was of the origin of kali khan.

2.1 Need of the project :

Because of rapid increase in population the city grew beyond the 6 lanes. Facilities like Educational institutions, Entertainment places, Markets, Health centers, Parks, etc. where also developed. This created insufficient of drainage system. To over come this problem temporarily, the waste was directly discharged into kali khan Moreover the mass population surrounding kali khan used it for dumpling solid waste. As no one two any notice for years it became a breeding place for mosquitoes and diseases like malaria. All this in turn affected the area surrounding the lake.

Thus a place which could have been the most beautiful mark of the city was turned into a hazardous place. Today kali khan is located in the heart of the city and it needs to be taken care of before it is declared dead.

2.3 Process:

The Sangli-Miraj-Kupwad Municipal Corporation has a proposal of “Purification and development of kali khan”. The first step to be taken are,

- a) To stop the discharge of drainage water.
- b) To stop the discharge of solid waste.

For drainage water the public sewer has to be redesigned. This is being carried out in some part of the city. Apart from this the drainage water can be reused for gardening through SIBF system. This will also prevent the wastage of water. Any society or part of the city can have its own SIBF system. This system is easy to work out, is more economical than other processes and can act as a landscaping element.

In solid waste recycling is the only process for the nonbiodegradables. The remaining solid waste then be converted into rich organic manure with help of AVB process.

Purification of water is done through a series of treatments that are explained further.

A) SOLID IMMOBILIZED BIO-FILTER(SIBF) SYSTEM-

[For wastewater treatment & reuse]

Waster water is a combination of clean water and valuable elements. The problem of pollution arises when such wastewater is released (disposed) untreated into the neighboring environment. But thinking globally is this not polluting the other environment? By such disposal, we are also losing some valuable element forever. This is where the environment regulation and enforcements come into being. It is our duty to adhere to these regulation as these help in maintaining the fragile ecological and nutrient balance. We should also strive to respect other environments (which constitute ecology of the earth) by not polluting them.

Apart form the pollution aspect, the ever – escalating cost of drinking quality water, population growth, contamination

of water resources, periodic are becoming pressing consideration for wastewater treatment and rules.

Why SIBF System?

While adopting any technique in wastewater treatment, the end product and its impact on the surrounding environment needs to be given importance. In other words, the end product should be environmentally safe preferably, usable. The aim should not be for treatment and disposal but for treatment and reuse.

This calls for adopting wastewater treatment system that would effectively do by

- Following simple process
- Using as little mechanization as possible
- Using as little electric power as possible
- Generating usable treated effluent

The Solid Immobilized Bio-Filter (SIBF) system encompasses all these salient points.

SIBF – THE PERFECT SOLUTION FOR WASTEWATER UTILIZATION

The Solid Immobilized Bio-Filter (SIBF) is the nature’s way of handling wastewater and is based on interacted vermiculture technology. The goal of separating solid to obtain clean water is effectively achieved through this system. SIBF houses the ecosystem primarily consisting of bacteria – earthworm-plant. The wastewater is processed by aerobic bacteria , which converts the solids trapped in the filter in to stable components making the water clean. The earthworms provide ideal condition for these bacteria to grow. Sludge is not produced in this process; thus handling of sludge as in other systems us obviated

(refer comparison table) . The treated water can be reduce for various purpose catering to zero – discharge tread. This system has less operational costs since it involves lesser skill and requires electricity only for about 5 hour pumping. The maintenance costs are also minimal as the system involves only pumps.

Salient features of SIBF system

- Aerobic process.
- Very low operation & maintains costs.
- Generates useable treated effluent, saving one of use of drinking quality water for non-potable uses.
- SIBF is sturdy It has minimum operational problems and is not by temporary or seasonal fluctuations in wastewater flow.
- Sludge is not produced in SIBF process.
- SIBF does not produced in SIBF process.
- SIBF also adds to the beautification of the premises. One could mistake it for a garden!

BJ AEROBIC VERMI-BACTERIAL(AVB) SYSTEM-

(For treating organic solid waste)

AVB system is based on vermiculture technology and is an effective way of dealing with organic wastes. This is completely aerobic and is effective to all kinds of wastes such as residues from canteens, hotels, resorts, dairies, food processing industries, fruit processing indentures and agro-based industries. This system can take mixed organic wastes for instance, in hotel wastes, the vegetable and non vegetable parts do not need separation.

The process : AVB system employs the ecosystem of bacteria and earthworm. Organic residues are fed to this ecosystem (on the ground and not in pits) and are processed by the bacteria. The residues are converted in to organic manure within 7 days. Essential elements are conserved as heat and leachates are not produced during aerobic process. The organic manure is harvested once in every four/six months and is used in fields.

Salient feature of AVB System:

- Eco-friendly system. The wastes is stabilized within 7 days
- Order-free processing.
- No instrumentation involved (such as turning mixing as in vermicomposting.)
- No energy required; no noise produced.
- Production of organic manure – has a great demanded in farmer's fields.

With this system, we not only solve the disposal problem but also obtain a value added products-

Useful out put – Organic manure: The end products of AVB processes are a rich organic manure. Due to the bacteria and earthworm activity, the waster gets converted to manure. Since the process occurs aerobically, the nutrients are not lost and also the time for conversion is less (about 7 days)

3 THE SANGLICITY :

The Sangli city is a district place in South Maharashtra.

LOCATION :

Latitude = 19o52' N longitude 74o54'E

Altitude = 550m above mean sea level.

The Sangli was established as Sangli district on 21st Nov. 1960. The population of sangli city is about 6 lakh.

COMMUNICATION :

Linked by south central railway & road. Important cities around – Poona -240km, Kolhapur- 48km,

Solapur-220km,Belgam-210km, Miraj-10km.

Sangli is bounded by Satara, Kolhapur, Solapur district.

The location of Sangli is such that it forms the centroid of the triangle with Kolhapur, Karad & Ichalkaranji forming its three end points. Thus people from all the three major cities can come to enjoy the facilities provided over here.

Climate -

The climate is typically monotonic It is fairly HOT & DRY.

Rainfall -

The average is rainfall is 38.33mm The rainfall in the area varies from nil to 159mm.

Humidity - Max 87% in July . Min 22% in Feb.

Temperature- 12C min in the month of December 42C max in the month of May.

Wind flow- From south-west to north-east major part of year.

Plantation - Low shrubs and trees in general.

Coconut, Gulmohar, Mahendi barrier trees found some places.

4. Physical Program of Proposed Design - Depending upon the studies & physical requirements the following physical program was worked out.

1) Parking --Two Wheelers & Four Wheelers

2) Administration block-

-General Manger's cabin

-Asst.Manager's cabin

-Workstation-

- Security guards /Life guards

- Toilets

3) Exhibition area & Amphitheatre-

4) Place for snack bars & ice – creams stalls

5) Toilets (3 in No.s)

6) Floating restaurant (100 persons)

7) A jetty for boats

8) A jogging track

9) A bridge

10) Solar lampposts

11) Water pumps

12) Gazebos (for viewing)

4.1 Design Approach :

1] Design mainly consisted of providing some elements that would attract the people and in turn make them realize the beauty of the place.

2] Providing a commercial aspect would always release some funds making the project as much self sustainable as possible.

3] Purification of the water consists of a series of continuous processes that are to be carried out of a long period of time. Thus use of these processes as designing elements was considered.

4] The supporting figures gives the idea of proposal of development of a quarry - kali khan

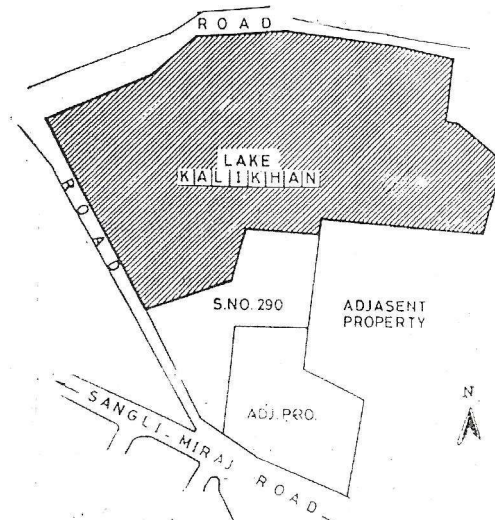
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3) MANUAL OF SOLID WASTE MANAGEMENT

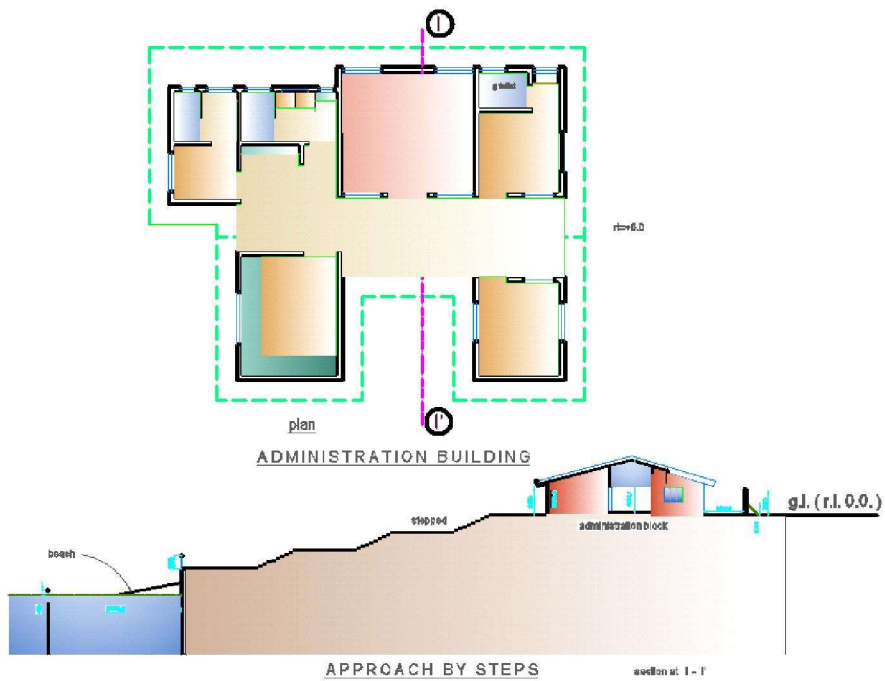
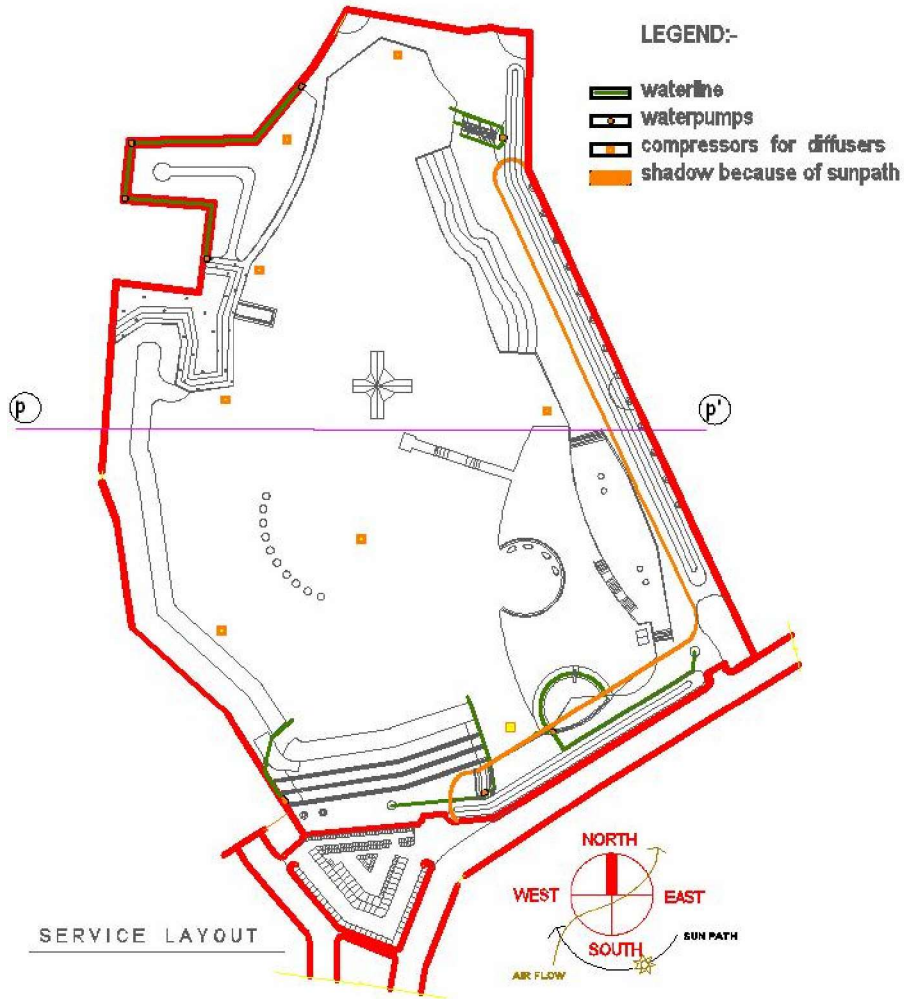
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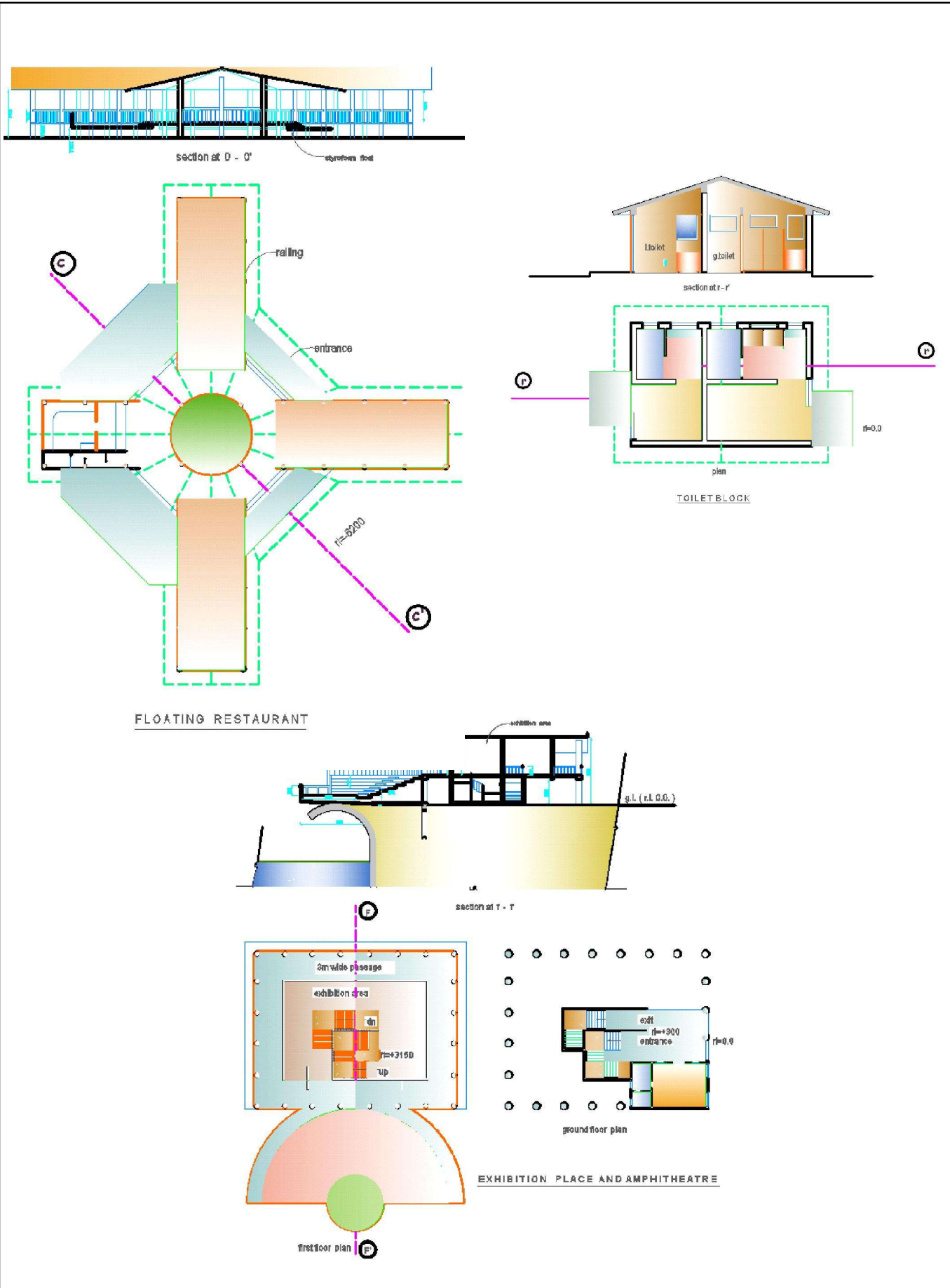


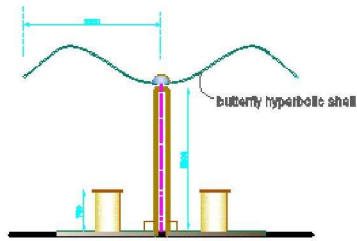
OUT LINE MAP OF
KALIKHAN DIST. SANGLI.

FIG. NO. 2-(A)
SOURCE - SANGLI MUNICIPAL COUNCIL.
CIVIL DEPT. SANGLI
S. NO. 290

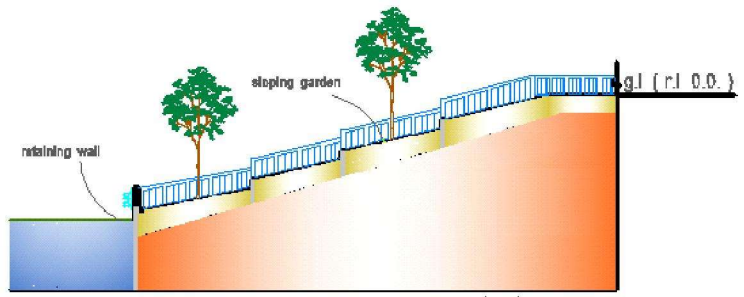




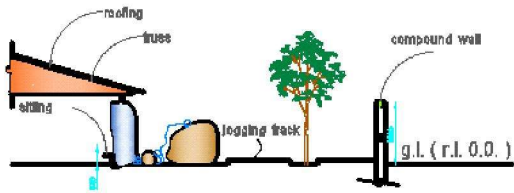




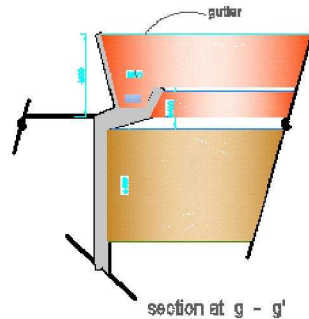
SNACK BAR



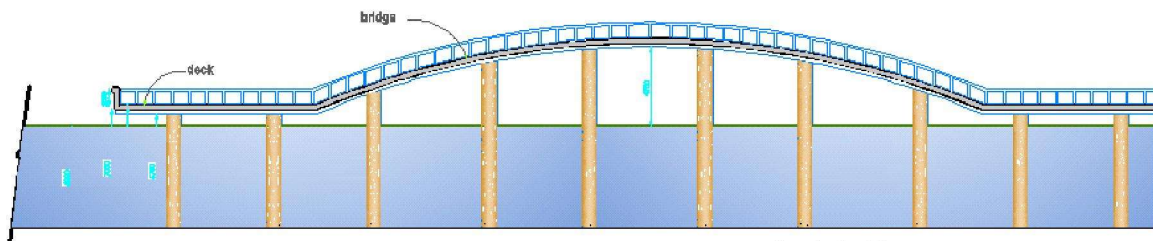
SLOPING GARDEN



LANDSCAPE DETAIL

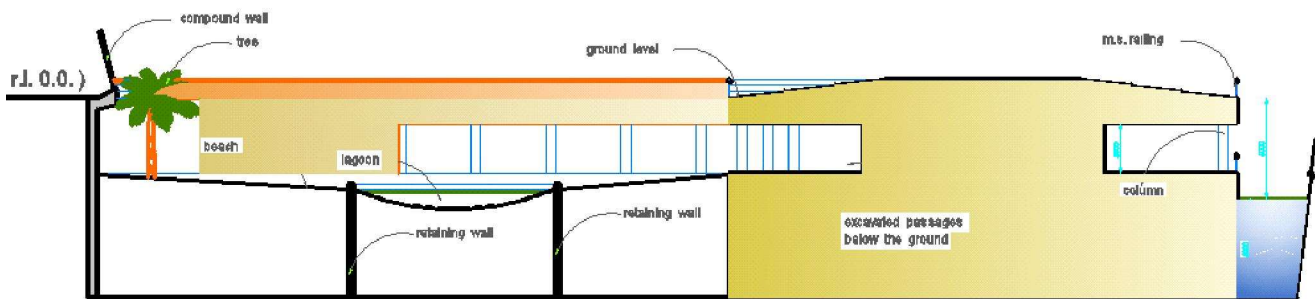


WATERFALL DETAIL



BRIDGE TO DECK

section at C - C'



LAGOON DETAIL

section at j - j'

'GREEN BUILDINGS' – A NEW REVOLUTION

AR.VIJAY B.SAMBREKAR

M.ARCH (III), M.E. (Str.), L.L.B. (Sp.)

Principal I/C - Appasaheba Birnale College of Architecture, Sangli.

Email - vbs3333@yahoo.com

The building sector is growing at a rapid pace & is the third largest consumer of energy after industry & agriculture. Therefore environmental friendly concepts can contribute to conservation of natural resources, besides saving on the operation costs. World over today the focus is on constructing "green buildings" which addresses environmentally sustainable issues in a holistic manner.

What is a green building ?

'Green' or 'Sustainable' building concept is a design approach that reduces the impact of buildings on our environment through alternative building design, land use & construction strategies.

A green building may be defined as ' the building which encompasses the use of clean & renewable energy, efficient use of water, use of recycled or

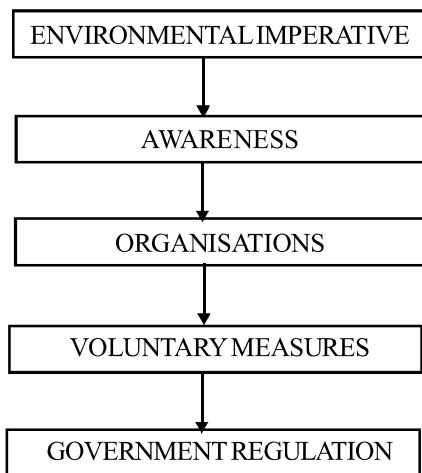
Recyclable materials & provide healthy indoor air quality.

The buildings in the 20th century as that are designed and used on today's context contribute too serious environmental problems, because of excessive use of energy and other natural resources. These buildings only fulfill the requirement of modern age and artificial comforts. Every new building is energy consuming

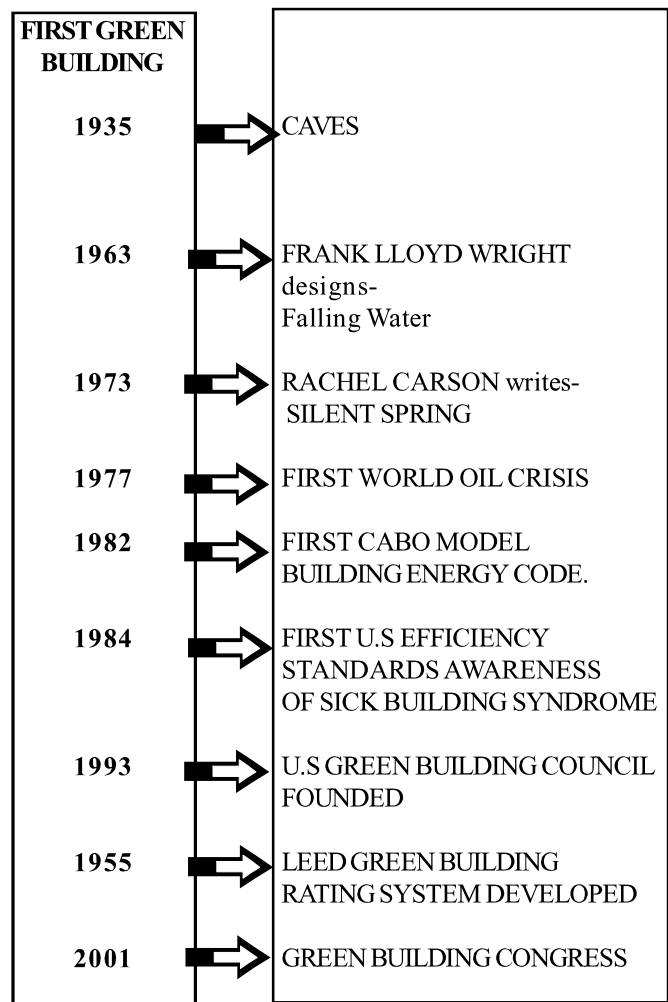
The general awareness of green buildings in india is scarce & scattered. Though architects are adopting concepts like passive architecture & natural air-conditioning an integrated & holistic approach towards geen buildings is yet to emerge.

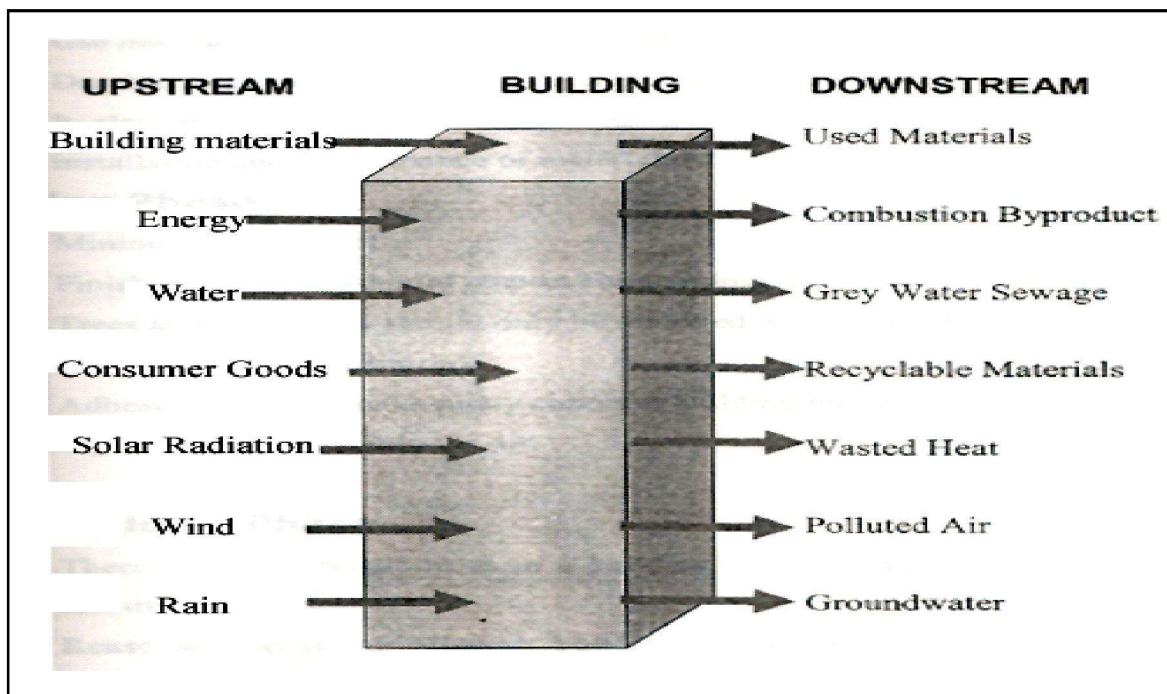
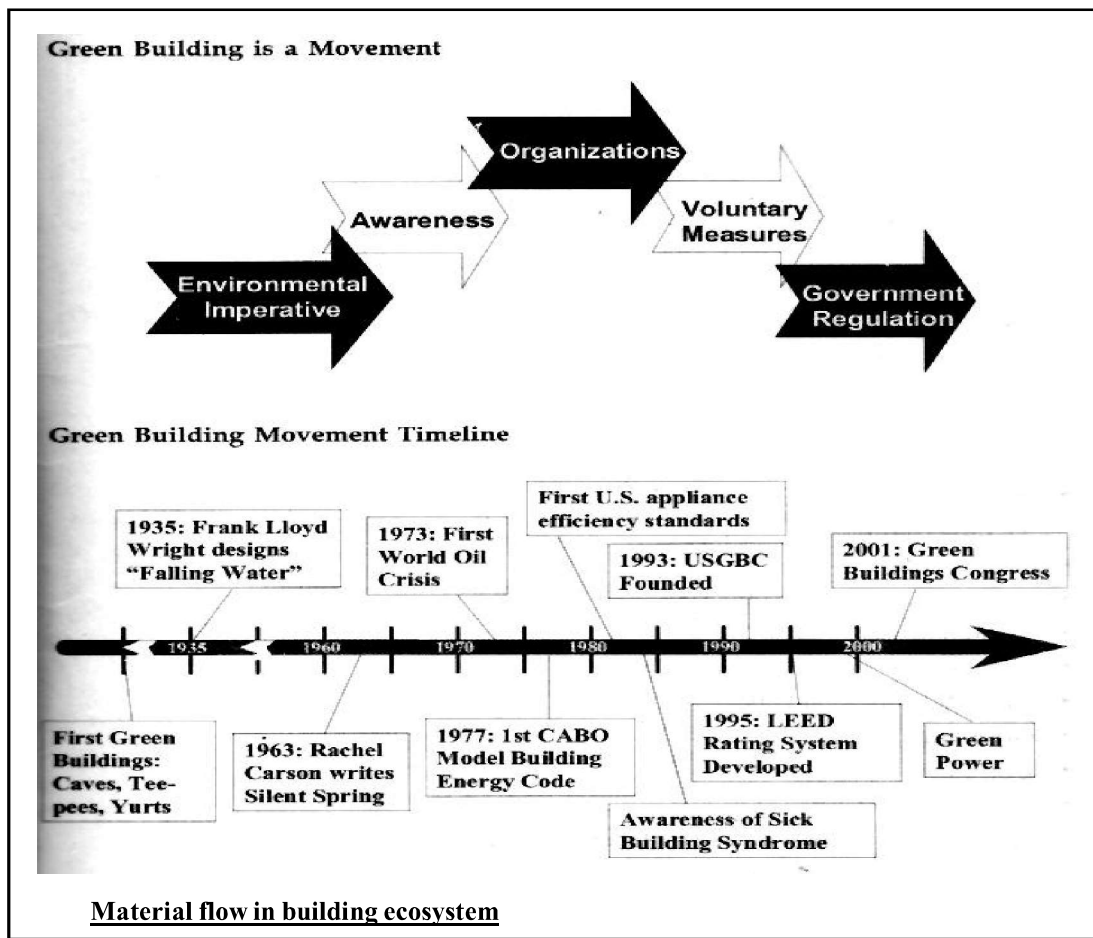
A look at green building history

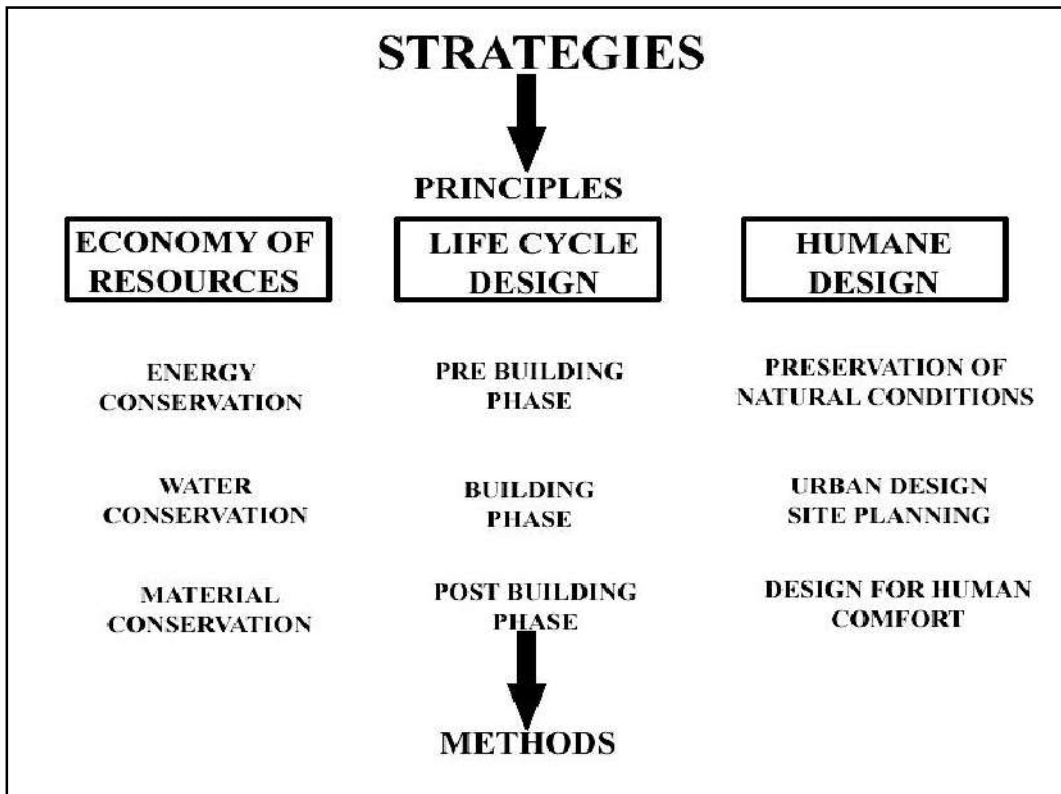
* **Green building is a movement**



*** the timeline of this green building movement







***** Benefits of green building design for better future**

Going for ‘green buildings’ have tremendous benefits. The most important benefit is in reduction of operating energy & water costs right from day one during the entire life cycle of the building.

Green buildings offer a range of benefits. Green building design includes

All players in the development process. The goal of this process is to

Create buildings that meet the needs of the building occupants while being mindful of the needs of the future generations. The following benefits are enjoyed by the inhabitants of the green buildings

- 30% to 40% reduction in operation cost
- Green corporate image
- Health & safety of the building occupants
- Enhance occupant comfort
- Improvement in quality of life
- Latest techniques & technologies.

Many buildings have some attributes, which may be described as green. To demonstrate green architecture, it is necessary to fragment the holistic green approach. The following are the green strategies that are to be considered for designing of buildings.

1] sustainable site planning

- One must work in the nature & not against it.
- Fragile ecosystem must be given highest priority

- Control erosion to reduce negative impact on water & air quality
- Conserve existing natural areas & restore damage areas i.e. Reduce site disturbance
- Landscape & exterior design to reduce heat island effect
- Take efforts to plant native species

2] water efficiency

water requirement is 100 litres per person

- 15 litres – for cooking & drinking
- 55 litres – for washing & bathing
- 30 litres – for toilet flushes

Water conservation is one of the major issues. Water conservation

Can be done in the following ways

- Rain water harvesting system
- Preservation of run off water before leaving the compound
- Water efficient landscaping system
- Provide responsible waste water system to minimize ground pollution
- Grey water re-use
- Augmenting ground water tables

3] energy & atmosphere

- Avoid use of ozone depleting materials. Eg. Cfc based refrigerants
- Reduce use of fossil fuels
- Optimize use of space through efficient design

- Orientation in the right direction
- Use of recycled products produced from waste
- Reduce the air contaminants that are odorous or irritating to the Occupants
- Provide connection between indoor & outdoor environment through the interaction of sunlight & views with the occupied area of the building.

4] materials & resources

- Use salvaged goods & materials (reduce, reuse & recycle)
- Use recycled materials produced from waste
- Avoid materials that generate lot of pollutant during manufacturing & use.
- Reduce the use by depletion of finite raw & long cycle renewable materials by replacing with rapidly renewable materials.
- Promote environment friendly forest management by use of certified wood

Conclusion

There are many ways to make a building green. The climate & the geography of the area also play an important role in opting for the right strategy. Always start with the easier goals & pursue it with passion.

The result will be a building that is 'green'. Each & every individual irrespective of his profession, should be aware of the environment & its consequences. If we don't take it seriously atleast now the generations to follow will pay the penalty.

GREEN BUILDING RATINGSYSTEM

USGBC – United States Green Building Council formed in 1993 defines the measures of GREEN BUILDING. Based on five major factors, Green building rating system was derived and named LEED – Leadership in Energy and Environmental Design. Several standards were kept as a basis.

The five major environmental categories are :

- Sustainable site
- Water Efficiency
- Energy & Atmosphere
- Indoor environmental quality
- Materials and Resource.

GREEN RATING APPROACH

Project team has to register with USGBC for obtaining LEED certification. Then an application shall be submitted to USGBC with possible credit ratings, project narrative, and project scorecard showing prerequisite and credits and the total score for the project, and documentation for each prerequisite.

On going through the calculation and execution the project will be awarded as follows by USGBC.

- 26 – 32 points LEED Certified building
- 33 – 38 points Silver Rated building

39 – 51 points Gold Rated building

55 – 69 points Platinum Rated Building.

CASE STUDY- SOHRABJI GODREJ GREEN BUSINESS CENTRE, HYDERABAD

Project Credits

- **Architect** : Karan Grover & Associates, Baroda, India
- **Energy Consultants**: Tata Energy Research Institute, New Delhi, India
- **Structural Consultants**: Comten Engineers, Baroda
- **Services**: Spectral Consultants, New Delhi
- **Landscape**: Arati Chari & Associates, Chennai, India
- **Civil Works**: Consolidated Construction Consortium Limited, Hyderabad, India

SALIENT FEATURES

- 20000 sqft built up area with exhibition spaces, seminar hall, offices, meeting rooms & cafeteria.
- Open courtyards act as light wells illuminating adjacent work areas.
- 90% of building spaces have daylight access and views to outside.
- Waste water is recycled by root zone treatment. Treated water used for domestic purpose.
- 77% of building materials used recycled content in the form of broken glass, broken tiles, recycled paper, bagasse etc.
- Waste management plan ensures 96% of construction waste recycling.

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