High Rise Entertainment Mall

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Abstract—Our proposal is a fully equipped entertainment building that welcomes people around the world. This became our idea as our country still lacks impressive buildings. The concept we rely on is the sustainable method of construction. This could be one of the major attractions in the country. It looks like the tower has been enclosed inside a ball with aesthetic features. We have decided to make use of landscape architecture such that the building seems extremely attractive. Spacious environment has been decided to be provided. All floors will be air conditioned with refreshing plants around. We have planned to use glass and solar panels in a varying manner such that the building looks stunning and works efficient. A separate parking allotment has been provided underground such that the people can reach the mall through subway. A beautiful fountain has been designed which serves a part of water- treatment. We thought it would look even attractive if we are able to provide pool around the structure. We mainly think of implementing solar as major energy source. Small turbines are planned to be installed. Hot air from inside and wind blowing could provide a sufficient power. Energy ,when produced high, is stored and decided to serve places around. We have decided for a sewage and waste recycling plant and provision for rain water harvesting. RO plants are also installed for drinking water. Small vents and energy chargers are planned to be installed that can convert the friction from tyres of vehicles and human movement to energy source and more features. We have planned for a restaurant that protrudes outwards which will surely be the top attraction and not to mention the infinity pool. Elevators and escalators and fire exits are sufficiently provided. View ports are provided at each floor.

1. INTRODUCTION

Our building stands up to 40 stories. The height of each floor is 4.5 m. The total height of the structure is about 180 m. The horizontal dimension of the structure is about 80 m. The entire horizontal dimension of the site is nearly 114 m. We have a terrace at the top covered with a glass tomb. The essence of this tower is to quench the thirst of entertainment, excitement, fantasies, realities, etc of the people. We always believe in ergonomics. This structure will always be loved by the people.

Regarding the satisfaction of the people, quality is first looked upon. That quality is assured. As people enter the structure, they could feel the aura of joy. We have planned to delight people with more entertainment zones. We never compromise hospitality. We look forward having many happy people in our environment. We tend to offer you the best safety and all emergency and alternative options for any mishappenings that may occur. But we promise that this is the right place for people who love to look inside the depths of joy, family, bonds, love. The existence of such a structure will attract tourists all over the world which will promote tourism and increase the economic welfare of the country. We feel proud to introduce such an innovative structure.

2. FEATURES OF THE BUILDING

We have planned to erect a ball structure which resembles a peeled off orange. The ball encloses the towering capsule which inturn encloses the tower. Capsules are provided for every 10 floors. At the end of each capsule a flat platform has been created for planting greeneries.

At the top of the tower, projections are provided for aesthetical appearance. All floors are designed in circular shape. The structure has a shaft at the centre. Lifts are embodied within the shaft that connects all the floors through a passage of about 1 m. The lift provides a 360 degree view of the mall.

An open area is provided around the shaft for about 8 metres. The opening is provided for all 40 floors with an atrium at the top that allows natural light.

The open area ends in the vestibule of about 4 metres. Two escalators each of size $2m \times 2m$ have been planned to be provided in this vestibule for relaxed access. The rest of the floor area is allotted for shops and centers of size $10m \times 7m$ each. Beneath the structure we have three decked parking allottment. To and fro ways for the entry of vehicles has been provided. Coming to the much awaited part ,the structure has three protruding tomb shaped structures that serves as the restaurant. People are able feel the nature and warmth of the sky when they dine. It will be one of the top attractions of the tower. Restaurant is provided at the 25^{th} floor. In 26^{th} the lobbies of all hotels will be there.

Lifts each of size $1.5 \text{ m} \times 1.5 \text{ m}$, provided at each floor, runs vertically between the capsule and the tower giving a view of the entire surroundings. For safety, fire exits have also been provided in a planned manner for a width of about 2 m in each floor. Goods lifts of size 2m x 2m are also provided upto 40^{th} floor.

A list has been made for the stores or centres to be provided. This is not the complete list ,many features are yet to come. The list follows:

- Shopping centres
- Theatres
- Indoor games
- Swimming pool
- Gymnasium
- Artificial beach
- Artificial simulated forest
- Health centres
- Spa
- Beauty clinic
- Library
- Kids zone
- Restaurant
- Coffee shops
- Cycling zone
- Camping zone
- Pharmacy
- Concert halls
- Party halls
- Hotels
- Infinity pool
- Observation decks
- Mini amusement parks
- Green parks
- Pet shows
- Skywalk
- Meeting /conference halls etc.



Fig. 1.1: Skywalks

3. ARCHITECTURAL ASPECTS

The building incorporates half sculpture and half technical design (ratio of aesthetic to a function = zero).



Fig. 2.1: Ratio of aesthetic to a function

Both regular and irregular forms of architecture are implemented in the structure. The structure is symmetrical and has a formal balance. The structure vertical, horizontal, diagonal and curved lines.

Both warm and cool colours are planned to be provided. Open, spacious environment are given for people to feel the fresh air. Smooth textures are adopted both inside and outside of the structure. In some areas, like the parks, camping zone, the cycling zone etc, we have planned to give rough texture.

Shade and tint variant methods are adopted for the value of the structure. The rhythm of the structure is a combination of gradation, regular and random. Lines are provided in a varying manner.

3.1 Architectural points covered

- Balance
- Rhythm
- Unity
- Value
- Texture
- Colour
- Lines
- Symmetry

4. RENEWABLE ENERGY TECHNIQUES

The structure works on renewable energies like solar energy, wind energy, heat energy, etc.

Solar panels and photovoltaic cells are planted to convert solar energy to electrical energy. These cells provide power even during gloomy and rainy days. The cooking areas rely on usage of solar energy.

Small wings are provided that are attached to the wind turbines that converts wind energy to electrical energy.

Separate solid and liquid recycling zones are constructed where modern methods of recycling are adopted. Giant water tanks are provided below the ground that acts as ice batteries. They freeze overnight and become a source of running air conditioners during day time.

Small turbines are installed in the chimney systems. These turbines rotate when it comes into contact with the hot air expelled out through chimneys. The rotation of these turbines provide enough energy to add up to the efficient method. Here heat is converted into electricity.



Fig. 3.1: Power generation from chimneys

Small sensors, heat detectors and nano-generators are installed on the underside of the pavement, the cycling track and in parking lots and in areas where consistent friction develops. These sensors detect the frictional energy and converts the friction to small charges and store them up in nano generators. When these charges are piled up to a desired level, it is converted to electricity and gets added up to the energy system of the building.



Fig. 3.2: Pavegen systems

5. SURROUNDINGS

It is always pleasing to have a refreshing environment ,as people walk in through the gates of the mall, colourful plants covers the circumference of the entire area. Authentic lawns are provided in between the plants and the bushes. It appears like the lawn has been bordered by flowers and bushes on either side. The lawns can be accessed by the people.

Along the inner circle's circumference ,small bushes are planted. To bring out the royalty of the garden, statues, small gardens, fountains are provided. Separate pavements are allotted for vehicles and people. The pavement provided for vehicles reaches the underground parking lot. Escalators are provided in the parking lot for the people in the basement to reach the ground floor of the tower. Landscape architecture has been carefully planned so that the structure stands as sign of loyalty The gardens resemble British and French Landscape architecture.



Fig. 4.1: landscape architecture france

6. MATERIALS

Sustainable building materials are implemented in the construction of the structure and assessed with the help of sustainable assessment methods.

The list of materials are showcased and any other innovative and efficient materials if possible will also be used.

- Permeable pavements
- Vermiculate plasters
- Sensors for HVAC system (heating, ventilation, air conditioning
- Fire resisting materials
- Steel
- Glass
- Marbonites
- Concrete
- Solar panels
- Photovoltaic cells
- RO systems
- Air ducts
- Chimneys
- SIP (Structural Integrated Panels)
- Polystyrene foam
- Recycled paper for insulation
- Triple and double glazed windows
- Low emittance glasses
- Prefabricated steel
- Copper slag in partition walls
- CRD waste (Construction, Renovation and Demolition)
- Non VOC paints (Volatile Organic Compounds)
- Smart glass technology



Fig. 5.1: low emittance glass

7. STRUCTURAL ELEMENTS

The base of the skyscraper is supported by a underground substructure. Spread footings are given with grillage. The central core of the tower is planned to be provided as steel skeleton and important features like vertical columns provision riveting with beams, girder beams and also curtain walls, vertical transportation, fire and safety requirements are the must do's.



According to the standards, type II interacting systems are provided for nearly 40 floors. The framework is frame with shear truss.



Fig. 6.2: Loads on skyscrapers.

8. EARTHQUAKE RESISTANCE

The resistance to earthquake is offered by the steel shear wall. These shear walls collect the lateral forces created by earthquakes and winds and then transmits it to the ground by shear. It increases the strength and stiffnesss of the building.



Fig. 7.1: Steel shear wall provisions

9. WIND RESISTANCE

When the height of the building exceeds 120m, wind analysis has to be done so it is a must for us. The wind Tunnel experiment checks for the behavior of the structure. The connections of horizontal girder plates with the vertical column has to be bolted up and welded to increase the tightness of the structure. Wind tunnel studies provide accurate wind load.



Fig. 8.1: As our structure is circular in plan, this will be the vortex shedding behaviour.

10. CAD DRAWINGS

The attachment part include the AutoCAD drawings of our structure with various views for better understanding of our proposed structure.



Fig. 9.1: The garden and the environment inside the boundary of construction (the tower occupies the central part and encircled by the picture showcased)



Fig. 9.2: The elevation of the proposed mall



Fig. 7.3 :Cut section of the ball structure –revealing the tower inside







Fig. 9.5: 26th floor plan

The 26^{th} floor is especially meant for the lift facilities to reach the desired hotels.



Fig. 9.6: Plan of basement parking

11. DISCUSSIONS

The structure has been checked for aesthetical performance by using the architectural aspects criteria. The materials proposed to use are sustainable Materials that offers us long life activity of the building. Efficient use of the structure has been linked with the renewable energy techniques adopted in the structure. The installation of renewable techniques may cost much but in the end the gain we get ,i.e the outcome will be more. It will be humongous.

The resources for construction purpose are to be brought from nearby areas to save lot of transportational charges. We aim at attaining the highest of the ratings in sustainability criteria and surely it will secure its ratings.

12. CONCLUSION

The structure we proposed is really a green one and sustainable one. It will surely become one of the most attractive places that people would love to go.

As said earlier, we strongly emphasize that this structure will attract people from all over the world in eager of indulging themselves in utmost pleasure, joy and happiness with acceptance to the standards of sustainability and construction.

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