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ijirset@gmail.com

www.ijirset.com

Green Building

Misal Rutik Keshav, Kedari Digvijay Raghunath, Udar Swapnil Ambadas,

Bhondave Rohan Machindra, Asst Ms. P. A. Hase

Department of Civil Engineering, Rajarshi Shahu Collage of Engineering Polytechnic, Athawale, Maharashtra, India

Abstract: In recent years, the global community has witnessed a significant shift towards sustainable development, with green building emerging as a pivotal solution to address environmental challenges. This abstract explores the evolution of green building practices, highlighting its principles, benefits, and impact on the built environment.

I. INTRODUCTION

The introduction of green building marks a pivotal moment in the evolution of architecture and construction, representing a paradigm shift towards sustainability and environmental responsibility. In a world increasingly burdened by the impacts of climate change, resource depletion, and urbanization, the imperative for sustainable development has never been more urgent. Green building emerges as a multifaceted solution to address these pressing challenges, offering a holistic approach that integrates environmental stewardship, resource efficiency, and human well-being into the fabric of our built environment.

GREEN BUILDING



II. LITERATURE REVIEW

Avinash Shivajirao Pawar, et.al. "Green" or "sustainable" buildings use key resources like energy, water, materials, and land more efficiently than buildings that is just built to code. With more natural light and better air quality, green buildings typically contribute to improved health, comfort, and productivity. A green building depletes the natural resources to the minimum during its construction and operation.

T. Ramesh Ravi & Prakash.K.K, Shukla had published in which their studies includes both the residential and office buildings in which the results showed operating (80-90%) and embedded (10-20%) phases of energy use which are significant contributors to building life cycle energy demand. Building lifecycles energy demand can be reduced by reducing its operating energy significantly through the use of active and passive technologies even if it leads to a slight increase in embodied energy.

III. METHODOLOGY OF GREEN BUILDING

Green Building

A green building is an environmentally sustainable building, designed, constructed and operated to minimize the total environmental impacts.

SAVING OF GREEN BUILDING

Average savings og Green Building.

Major Criteria To Achieve Green Element In Building

1. Energy efficiency
2. Water efficiency
3. Material efficiency

1. Energy Efficiency

- ★ Energy Efficiency can be achieved by,
- ★ Using non-conventional and renewable sources of energy.
- ★ Reducing energy consumption.
- ★ Optimize energy performance.
- ★ Use of alternative renewable sources of Power such as Solar Power, Bio mass, Wind Power, Hydro Power etc.
- ★ In buildings, it is achieved by installing solar panels and photovoltaic, Solar water heater, natural lighting and ventilation and by use of low consumption electrical appliances.

2. Material Efficiency

- ★ Material Efficiency can be achieved by,
- ★ Using eco friendly materials
- ★ Construction waste management
- ★ Use of regional and rapidly renewable materials
- ★ Use of wastes and debris of demolition works
- ★ Compressed Earth Blocks, Fly ash Blocks, Stabilized Mud blocks, HVFC, Bamboo, Low VOC paints and other recycled materials.
- ★ Use of Solar Reflective Glass and Low VOC paints for better indoor air quality

3. Water Efficiency

- ★ Water Efficiency can be achieved by,
- ★ Treatment of waste water and Recycling of Grey water.
- ★ Water conservation and ground water recharge by Rainwater harvesting
- ★ Controlled water use and wastage reduction
- ★ Reducing storm water runoff by efficient landscaping

IV. OBJECTIVES

Resource Efficiency:

Green buildings aim to optimize the use of resources such as water, energy, and materials. This involves reducing consumption, reusing materials where possible, and recycling waste.

Energy Efficiency:

Green buildings prioritize energy efficiency through measures like high-efficiency lighting, heating, cooling, and ventilation systems. They may also incorporate renewable energy sources like solar panels or wind turbines to generate electricity on-site.

Water Conservation:

Green buildings employ various strategies to minimize water consumption, including low-flow fixtures, rainwater harvesting systems, and greywater recycling. These measures help preserve water resources and reduce strain on municipal water supplies.

Improved Indoor Environmental Quality (IEQ):

Green buildings prioritize the health and well-being of occupants by ensuring good indoor air quality, adequate ventilation, and natural daylighting. These factors contribute to a comfortable and productive indoor environment while reducing the risk of health issues.

V. FUTURE SCOPE

Integration of Smart Technologies:

Green buildings will increasingly incorporate smart technologies to optimize energy and resource usage, enhance occupant comfort, and improve overall building performance. This may include sensors, automation systems, and data analytics to monitor and control various building systems in real-time.

Net-Zero Energy Buildings:

The concept of net-zero energy buildings, which generate as much energy as they consume over the course of a year, will become more widespread. Advances in renewable energy technologies, energy storage, and energy-efficient building design will make achieving net-zero energy goals more feasible and cost-effective.

Circular Economy Principles:

Green building practices will increasingly embrace the principles of the circular economy, which prioritize resource efficiency, waste reduction, and the reuse and recycling of materials. This may involve designing buildings for disassembly and incorporating more recycled and renewable materials into construction projects.

Biophilic Design:

Biophilic design, which seeks to incorporate natural elements and patterns into the built environment to improve occupant well-being, will become more prevalent in green building projects. Features such as living walls, natural lighting, and indoor greenery can enhance indoor air quality, reduce stress, and increase productivity.

VI. CONCLUSIONS

The aim of the project was to understand, plan and design Green Building. That has been achieved by studying different green technologies for buildings. By planning and designing building layout, development of plan, elevation, sections etc. Various Green technologies and materials proposed with their feasibility study and cost comparison. The structure of the building is designed using ETABS software. And finally a self assessment is also done by considering LEED certification standards.

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