

COMPARSION ANALYSIS OF GREEN BUILDING MATERILAS AND CONVENTIAL MATERIALS

¹Mr Mayank Mathur ² Mr Trimurti Pandey ³ Mr Jitenndra Singh ⁴ Mr. Bharat Phulwari

⁵ Mr Utkarsh Mathur

¹ PG Scholar, Department of Civil Engineering Bhagwant University, Ajmer, Rajasthan, India

² Assistant Prof., Department of Civil Engineering Bhagwant University, Ajmer, Rajasthan, India

³ Assistant Prof., Department of Civil Engineering Bhagwant University, Ajmer, Rajasthan, India

⁴ Assistant Prof., Department of Civil Engineering Bhagwant University, Ajmer, Rajasthan, India

⁵ Researcher & Quality Control Engineer. Guru Kripa Test House, Ajmer, Rajasthan, India

ABSTRACT

Day by the day construction is increasing around us so rapidly that is why the energy consumption has increased a lot. The construction materials that is used to build a general building now days mostly consists of non-renewable materials which are neither long lasting nor Energy Efficient. These are health hazardous and less eco-friendly too. According to the economists concern, though these materials gives the low initial cost for making a building but leads to high energy consumption expenses and a high maintenance cost which results in increasing the overall cost of the building. So it is always challenging to a civil engineer that construct the buildings in such a way that construction is eco-friendly. In the market renewable or sustainable oddly green materials buildings are available which are eco friendly as well as not health hazardous.

KEYWORD:- GRIHA, LEED, TERI, IGBC, GREEN BUILDING, SUSTAINABLE

1. INTRODUCTION

Green building idea in broader terms is a building which is systematically planned, built, operated, maintained or reused with objectives to defend inhabitant health, improve employee efficiency, use wisely natural resources and reduce the environmental impact and damage. Green construction or sustainable building which complements the building plan with concerns of economy, utility, durability and comfort. In other words the green building procedure incorporates environmental considerations into every phase of the building structure. This process focuses on the design, construction, process and maintenance phases and takes into account the lot design and development effectiveness, energy and water effectiveness, resource efficiency, indoor environmental excellence, building-owner maintenance and the building's overall impact on the environment. A Green Building is one which utilizes fewer water, optimizes energy efficiency, conserves natural resources, generates less waste and provides healthier space for occupants as compared to conventional buildings.

2. GOAL OF GREEN BUILDING

The goal or objective of the green buildings is to develop buildings in such a way that utilize the natural resources to the minimal at the time of construction and operational stage. Green buildings emphasize on the resource usage efficiency and also press upon the three R's - Reduce, Reuse and Recycle. Green Building is a team effort and the designing and construction includes consultants from architectures, landscaping, air conditioning, plumbing, energy and electrical field. These consultants assess the impact of the each and every design on the environmental condition, keeping in brain the capital involved. The final design needs to be practicable and should minimize the unconstructive impacts that the building would have on the environment. Execution of the green building concept can lead to a decrease of carbon emission by thirty five percent, water handling by forty percent, solid waste decline by seventy percent and diminution in energy consumption by fifty percent. Green Building concept also calculates on the fact that an area with high bio-diversity should be avoided as a site for the construction of a building.

2.1 DIFFERENT FROM CONVENTIONAL BUILDINGS

If we will compare the conventional buildings with green buildings then these are more energy efficient, have lower functioning and maintenance costs, provide improved comfort and well being for occupants, have lower risk possible and reduce harmful impact on the atmosphere. A green building is always represents the most efficient and least troublesome way of using land, water and energy resources while ensuring the healthiest likely environment for the occupants. Green buildings use key assets like energy, water, materials, and land more economically than conventional buildings, thus reducing the widespread impact created upon environment by conventional construction till date. Conventional buildings don't integrate these efficient strategies to decrease the impact upon environment. So sometimes, the conventional methods of design and construction lead to utilization of natural resources, increased wastage, increased operational and maintenance costs.

2.2 INDIA'S GREEN BUILDING CERTIFICATION & COUNCIL

Green Rating of Integrated Habitat Assessment (GRIHA) Council, is an independent platform (registered as a society) for the interaction on scientific and administrative issues related to sustainable habitats in the Indian context It was founded by The Energy and Resources Institute (TERI) , New Delhi with support from the Ministry of New and Renewable Energy, Government of India (MNRE). Indian Green Building Council (IGBC) has launched IGBC Green New Buildings rating system to address the National priorities. This rating program is a tool which enables the designer to apply green concepts and reduce environmental impacts that are measurable. The rating program covers methodologies to cover diverse climatic zones and changing lifestyles.

3. FEATURES OF GREEN BUILDING

Green building justify to both structure and the using of processes that are environmentally responsible and reserve efficient throughout a building's life cycle from identifying the location to design, construction, operation, maintenance, renovation, and demolition. Leadership in Energy and Environmental Design (LEED) is a set of ranking systems for the design, construction, operation, and maintenance of green buildings which was urbanized by the U.S. Green building council. Although new technologies are continually being developed to complement current practices in creating greener structures, the common purpose is that green buildings are designed to reduce the on the entire impact of the built environment on human fitness and the natural environment by efficiently by means of energy, water and other resources, protecting occupant health and improving employee productivity, plummeting waste, pollution and environmental deprivation.

4. GRIHA

GRIHA (GREEN RATING OF INTERGATED HABITAT ASSESSMENT) was developed as a unique building rating system, mainly to address and assess non air conditioned or partly air conditioned buildings. GRIHA has been urbanized to rate industrial, institutional and housing buildings in India emphasizing national environmental concerns, local climatic conditions, and indigenous solutions.

GRIHA focus on passive solar techniques for optimizing optical and thermal comfort indoors which encourages the use of refrigeration based and energy challenging air conditioning systems only in cases of extreme thermal discomfort.

5. GREN BUILDING MATERIALS VS CONVENTIONAL MATERIALS

In present senior energy expenditure has increased a lot. The boost in energy consumption is due to increase in number of building that is being constructed these days. The materials that are used to build a general building now a days, mostly consists of non renewable materials which are neither durable nor energy competent. These are health dangerous and less eco friendly too. As far as economist is concern, though these material gives the low initial cost for making a building but leads to high energy expenditure and a high protection cost which results in increasing the overall cost of the building. Green building materials recommend specific benefits to the building owner and building occupants by reducing maintenance and replacement costs over the life of the building, energy conservation, improved occupant health and productivity, lower costs associated with changing space configurations. Table 1 shows the application of Green Materials over the conventional materials.

Table -1 Conventional Material replaces Green Materials

S. No	Item	Conventional Material	Green Material	Application of Green Materials over the Conventional Materials
1	Windows and Openings	Aluminium Panelled	Insulated Glass (IG Units)	<ul style="list-style-type: none"> • Sun Protection • Heat insulation, energy conservation • Sound insulation • Light transmittance • Safety
2	Lighting Fixture	Tube Lights & CFLs	Low Watt LED Tube Lights & Bulbs	<ul style="list-style-type: none"> • 30% More Efficient • Payback & Life more • Not Contain any Mercury • Save Electricity Bill
3	Plumbing Fixtures	Conventional Fixtures	Special Green Fixtures	<ul style="list-style-type: none"> • Conservation and water use efficiency practices • 3 members household can reduce its water use by 54000 gallons water. • Water bills reduces by about INR 3600
4	Floorings	Vitrified & Glazed Tiles, PVC Tiles	Ceramic Tiles , Hardwood, Linoleum etc	<ul style="list-style-type: none"> • Made of Natural Ingredients without added chemical or volatile materials • Renewable & Note harmful for human as well as environment
5	Doors	Pine Wood	Engineering Wood	<ul style="list-style-type: none"> • Sustainable and manmade can be designed into desired shape easily. • Available in various thickness, sizes & grades • Very Stable & some offer greater strength
6	Paints	Plastic VOC	Plastic Non VOC	<ul style="list-style-type: none"> • Non Voc

				<p>Chemical Compound or Zero –VOC paints</p> <ul style="list-style-type: none"> • VOC content less than 5 gram per litre of paint • Made of natural compounds such as tree resins , water ,palm oil, essential oil & natural dyes • No odour & Non toxic
7	Bricks	Clay Burnt Bricks	Flyash Bricks	<ul style="list-style-type: none"> • Very Smooth Surface no need to plaster • Lighter in weight • Made of waste material such as coal ash no harmful for environment
8	Cement	Ordinary Portland Cement(OPC)	Portland Pozzalana Cement(PPC)	<ul style="list-style-type: none"> • Based on fly ash which is environment friendly • Reacts with water less emission of CO₂ gases. • Provide Equivalent strength of OPC after its maturation period.
9	Installation of Rain Water Harvesting System	Not Provided	Provided	<ul style="list-style-type: none"> • Improve Water Supply, food production and ultimately food security after collect the rain water in artificial storage tank.

CONCLUSION

After all study and compare the sustainable building or green building, application over the conventional building only one concluded that Green building is versatile art which is adopt not only that safe and better environment. No doubt initial cost of construction is more but payback is more as compare to other conventional building

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