A ROADMAP TOWARDS SUSTAINABLE BUILDING

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ABSTRACT

In the present scenario,we all know the effect of Green house on Resource, Depletion, Environmental Degredation to our planet. Earth is badly in need of sustainable development by reducing pollution, reducing dependence on natural resources, reducing Global Warming etc. Else, after almost 200 years, there will be no life on Earth as predicted by Professor Stephen Hawking. It will be similar like any other planets where it is impossible to live. Even the smallest changes that we can make will help to great extent to promote a better Earth as similar to butterfly effect. The developed countries are more advanced in their technologies and rules to have eco friendly constructions. Whereas the developing countries are not so much aware of this fact. The studies and the research works in these countries are also way far behind as compared to the developed nations in the world. But exceptionally, India being a developing country, it is quite advanced in this aspect and have a good rank when compared to all other countries. Aim and objective of ecofriendly constructions or green building projects is to reduce the significant impact of construction industry on the environment. There are certain criteria on the basis of which a building is rated and certified. It assures that the building would follow those criteria throughout the life of the building. Government of many States in India provides incentives for such kind of constructions. Green buildings not.

only save nature to a great extent but also save the inhabitants by providing an healthy environment to live in. This report is a study that shows the roadmap towards constructing a building which is Economical, Energy Efficient, Water efficient and Environmental friendly

GENERAL INTRODUCTION:-

The beginning of the twenty-first century has ushered in the era of green buildings. Normal buildings use energy inefficiently, generate large amounts of waste in their construction and operation, and emit large quantities of pollutants and greenhouse gases. In contrast to conventional buildings, green buildings seek to use land and energy efficiently, conserve water and other resources, improve indoor and outdoor, air quality, and increase the use of recycled and renewable materials. While green buildings still constitute a tiny subset of existing buildings, their numbers are increasing rapidly. Green building (also known as green construction or sustainable building) refers to both a structure and the application of processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from planning to design, construction, operation, maintenance, renovation, and demolition. This requires close cooperation of the contractor, the architects, the engineers, and the client at all project stages. The Green Building

practice expands and complements the classical building design concerns of economy, utility, durability, and

comfort. Green building brings together a vast array of practices, techniques, and skills to reduce and ultimately eliminate the impacts of buildings on the environment and human health. It often emphasizes taking advantage of renewable resources, e.g., using sunlight through passive solar, active solar, and photovoltaic equipment, and using plants and trees through green roofs, rain gardens, and reduction of rainwater run-off. Many other techniques are used, such as using low-impact building materials or using packed gravel or permeable concrete instead of conventional concrete or asphalt to enhance replenishment of ground water.

While the practices or technologies employed in green building are constantly evolving and may differ from region to region, fundamental principles persist from which the method is derived: siting and structure design efficiency, energy efficiency, water efficiency, materials efficiency, indoor environmental quality enhancement, operations and maintenance optimization and waste and toxics reduction. The essence of green building is an optimization of one or more of these principles. Also, with the proper synergistic design, individual green building technologies may work together to produce a greater cumulative effect.

On the aesthetic side of green architecture or sustainable design is the 3.3 Site Design

3.4 Building Orientation and Configuration

3.5 Building Systems Design

philosophy of designing a building that 3.6 Interior Finishes and Appliances Selection

is in harmony with the natural features.

and resources surrounding the site. There are several key steps in designing sustainable buildings: specify 'green' building materials from local sources, reduce loads, optimize systems, and generate on-site renewable energy

OBJECTIVES

A truly sustainable built environment re-integrates humanity into nature. In a natural system there is no such thing as waste and each individual's waste products become inputs for someone else. It is possible for humanity to once again become part of these natural cyclical systems.

Buildings that take their cue from nature and their surroundings can support, strengthen and improve the functioning of natural systems while also improving their own functionality.

CONSERVING THE NATURAL ENVIRONMENT

OPTIMUM USE OF BUILDING MATERIALS

ENERGY EFFICIENCY

WATER EFFICIENCY

WASTE MANAGEMENT

SOCIETY AND THE HUMAN EXPERIENCE

HEALTH

ECONOMIC SUSTAINABILITY

DESIGN OF GREEN BUILDING.

3.1 Program Planning and Site Selection.

3.2 Stage in the Process: Selection of Design Team.

CRITERIA FRAMEWORK

After studying the rating tools, a criteria framework has to be prepared by selecting the criteria which are most suitable criteria have been selected under 7 different categories, after the studying the rating tools. The following table shows a comparative study of the three rating tools under each column. This gives us a brief idea about the criteria covered under each of these rating tools. It also helps us to know which criterion has been missed out under a particular rating tool.

Group A – Sustainable site planning (SSP)
Group B- Health and well-being (HW) during construction
Group C - Material Management
Group D – Water
Group E – Energy
Group F – Health and well-being (HW) post construction
Group G – Waste Management

07 Conclusion

This research identified the exciting developments taking place on the technology front and analyzes their implications for intelligent and green buildings, highlighting examples of "best in class" buildings employing green and intelligent technologies. These buildings are dynamic environments that respond to their occupants" changing needs and lifestyles. This research provided documented evidence to educate and influence end-users, building owners, architects, and contractors that a "greener building" can be achieved using intelligent technology and that this "greening" will provide a tangible and significant return on investment. Green buildings have greater payoffs than the cost to construct them making them a good investment over using standard building sites and materials. Many components play into the construction and design of a green building including location and building materials.

Green buildings, whether they are homes, offices, or schools, are built to reduce pollution, conserve energy used, and to more efficiently use renewable resources. Several practices that are now used by those "going green" were used long ago. Ancient Greeks built homes structured to attract solar heat during the winter months. Green buildings (aka sustainable buildings) ideas became much more popular during the 1990s. In 1992 the first green building program began in Austin, Texas, the following year the U.S. Green Building Council (USGBC) was founded and in 1998 they launched the Leadership in Energy and Environmental Design (LEED) which is a green building rating system and certification program that is nationally accepted.

Location is important when constructing a green building and many factors are to be considered when choosing a construction site. Environmentally sensitive areas are not most desirable when searching for a location. The most beneficial spots to build upon are former parking lots, shopping centers, and/or factories. Buildings should be constructed within easy walking distance from public transportation, schools, and stores so that bicycles or walking can be used as opposed to driving your car (which emits pollution into the air). Also the building should be placed where it can receive great amounts of natural daylight to reduce lighting requirements, and make the most of what can naturally be used. Windows should also strategically be placed to bring in daylight. A new technology that is now used frequently instead ofstandard windows is dual glazed windows (they reduce heat gain in the summer and heat loss in the winter). This research identified the exciting developments taking place on the technology front and analyzes their implications for intelligent and green buildings, highlighting examples of "best in class" buildings employing green and intelligent technologies. These buildings are dynamic environments that respond to their occupants changing needs and lifestyles. This research provided documented the development of the criteria weights based on the responses of the experts. These weights can be utilized for the development of Green Building Rating Tool.

evidence to educate and influence end-users, building owners, architects, and contractors that a "greener building" can be achieved using intelligent technology and that this "greening" will provide a tangible and significant return on investment .to all of the above going 'GREEN' IS THE ONLY. Green Buildings can be made cost neutral with the right implementation of strategy at the correct aspect. Maintaining the balance between the cost raise and cost decrease a neutral approach can be attained where in a premium rating at no additional cost can be realized. The benefits on the life cycle performance are the added advantage for the project with long terms savings. Every activity associated with green is for the wider cause of the sustainable parameter and always proves beneficial to every stakeholder directly or indirectly. A sufficient economic return on energy-efficiency investments is crucial for the sustainable development of the green building industry. The concern of environment and sustainable development has been increased recently. These problems force the countries to adopt a number of policies that enhance energy efficiency and apply baseline parameters in accordance with international standards. Green building has now become a forefront of sustainable development in this century that takes the responsibility for balancing long-term economic, environmental and social health. It offers an opportunity to create environmentally efficient buildings by using an integrated approach of design. Further, this research article provides a systematic methodology for the generation of the criteria and then the procedure for

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