

Management of the Green Elements in Green Building Process

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Abstract:- In this thesis we study the green building and the elements associated with the construction and to manage those elements. There are many rating systems available across the world both private and public. The most well known is the LEED rating system developed by the United States Green Building Council. LEED has several rating programs now available. The eight elements of LEED for Homes are used as the basis of the research to create commonality throughout the documentation. The elements include innovation and design, location and linkages, sustainable sites, water efficiency, energy and atmosphere, material and resources, indoor environmental quality and awareness and education. The more significant focus in the construction projects examined is on water use and energy. This is not a surprising outcome considering the cost and availability of energy and water supplies. There are two significant main points that the research has provided, first the education of the general public about sustainability and its impact on a global scale. The second point from the research is the need for a holistic approach to building a green structure. A holistic approach includes the design, construction and operation of the building. Often times green features are an afterthought, resulting in the green aspects not being as effective.

1. INTRODUCTION

Global warming and climate changes have become a major concern for mankind today. In order to ensure that, development and environment conservation go hand in hand, major corporations around the world are empowering projects to slow down depletion of natural resources. We spend 90% of our lives in buildings that protect us from the extremes of the nature like heat, cold, rain, wind, snow etc. However, our buildings use enormous amount of energy, water, and material throughout their life cycle. They also create a large amount of waste and have a profound effect on ecosystem. The economic, health and environmental impact of our homes is apparent in our society. To meet the challenges of our built environment, a new way of designing & construction has evolved. It's a Green Building, this system follows design and construction practices that significantly reduce or eliminate the negative impact of the building on the environment and the occupants. In this paper we discuss structural and civil aspects for construction of green building. In this thesis we study the definition of a green building and the green elements associated with the construction of single family home versus an office building. There are many rating systems available across the Country both private and public.

2. STATEMENT OF THE PROBLEM

Many of the factors that lead to unnecessary energy and water use, that detrimentally affect health and comfort, and that result in large quantities of waste result directly from the design of buildings and their associated equipment.

3. OBJECTIVE

- Understand the green buildings and its issues & trends.
- Barriers that impacting the green buildings implementation
- To minimize construction demolition wastes and making building healthy.
- Minimizing the environmental impacts
- Protect and enhance sites.
- Role of green buildings to the environments.

4. PURPOSE OF STUDY

Since green elements are very much important for the green building process. Since many factors in environments can increase unnecessary energy and water use which can detrimentally affect the health and comfort, and that result in large quantities of waste result directly from the design of buildings and their associated equipment. The purpose of this research is to

complete an analysis and management of the elements of a green building process. This is also known as sustainable, green buildings which represent friendly structures that significantly reduce their impact on the environment.

5. HYPOTHESIS

The hypothesis of this study is that the green elements in the green building process contain more important value for it. Since many factors in environments can increase unnecessary energy and water use which can detrimentally affect the health and comfort, and that result in large quantities of waste result directly from the design of buildings and their associated equipment.

6. SIGNIFICANT OF STUDY

The green element in green building process signifies that energy and water use etc. Hence the unnecessary uses of these are very crucial impacts. So, this study enables how these green elements are managed.

7. NEED OF STUDY

Managing the green elements in green building process is very much important for the sake of environments. Hence the topic "*MANAGEMENT OF THE GREEN ELEMENTS IN GREEN BUILDING PROCESS*" resembles that, we study in this thesis how green elements are managed. Hence according to environments aspects this study may be very much needful.

8. SCOPE OF STUDY

After studying this thesis we would be able to improve the environmental condition by following the green buildings process and management of green elements whose unnecessary uses may be very dangerous for the environments that would be given in this research thesis.

9. METHODOLOGY

Since Global warming and climate changes have become a major concern for mankind today. In order to ensure that, development and environment conservation go hand in hand, major corporations around the world are empowering projects to slow down depletion of natural resources. We spend 90% of our lives in buildings that protect us from the extremes of the nature like heat, cold, rain, wind, snow etc. However, our buildings use enormous amount of energy, water, and material throughout their life cycle. They also create a large amount of waste and have a profound effect on ecosystem. The economic, health and environmental impact of our homes is apparent in our society. To meet the challenges of our built environment, a new way of designing & construction has evolved. It's a Green Building, this system follows design and construction practices that significantly reduce or eliminate the negative impact of the building on the environment and the occupants. Therefore, in this research thesis, we'll do an analytical study on green building processes and its role for the environments. And also the purpose of this research is to contribute to a better understanding of the concept of green building process and its role for achieving sustainable development through developing an effective green building rating system for residential units in Jordan in terms of the dimensions through which sustainable development tools are being produced and according to the local context. Developing and managing such system is becoming necessary in the Developing World because of the considerable environmental, social and economical problems. Jordan as one of these countries is in need for this system, especially with poor resources and inefficient use. Therefore, this research studied international green building assessment tools such as LEED, CASBEE, BREEAM, GB Tool, and others. The outcome of the research was a suggested green building assessment tool (SABA Green Building Rating System) – computer based program – that suits the Jordanian context in terms of environmental, social and economical perspectives.

Research Analytical Approach

Building Simulation Analysis: Building simulation solutions allow you to address the thermodynamic complexities involved in construction of a building and undertake integrated performance appraisals of various options at a reasonable cost. Simulation provides a way to assess the benefits of particular schemes, improve life cycle performance, enhance design quality, appraise climate change mitigation measures, undertake scenario based energy planning, link energy and health and enable inter-organization partnerships. The biggest advantage for simulation at the design stage is to integrate the different technical domains and identify the trade-offs to arrive at an optimum solution.

Energy Analysis: The purpose of energy simulation is to estimate the total annual energy consumption of buildings so as to inform and managing the building design process to create energy efficient choices. Energy analysis takes into account variety of factors involved in the design, including but not limited to.

Fenestration Analysis: It is the study of glazing and fenestration systems to determine their thermal, solar and optical properties. Fenestration systems play a very important role in the energy requirement of the building, hence this analysis assumes significance. The results of fenestration analysis can be used as an input into energy simulation in buildings. This helps in selection of optimum fenestration system for the building depending on location, orientation etc.

Reflection & glare Analysis: Reflection analysis helps in understanding the glare-pattern on the site. This helps in designing and managing the facade of the property with an understanding of its implications to nearby locations (e.g. pools, parking, roads). Using reflection analysis, it is possible to calculate and display the effects of reflections in the same way as shadows.

Using a sun-path diagram, the entire annual potential for reflections at the selected focus point on a building can be obtained at any given point.

"Green building" is architecture design developing trend under the guidance of sustainable development, focusing on resources and efficient interests of energy, harmless and economy of materials and construction method, high quality living environment, elastic variable space system and the respect of the local technology and the architectural history, expecting the realization of the protection and control of ecological system gradually from single building to town---the whole environment. Green building is a complicated multifactor and multilevel large "nature---society" artificial system, which has many design goals, involving in economy, society and ecological environment and many fields, with mutual connection, restrict each other. Green building evaluation index system level. When we build the green building evaluation index system, first, we can determine comprehensive goals which can be divided into further several sub goals. Sub goals reflect the requirements of the general objective from different angles and different levels, and layer rule layers are established below the sub goals. Standards should not only reflect the requirements of the comprehensive target for architecture, and also can be decomposed step by step. Rule layers can be divided into index layers that reflect the specific requirements green building meets relatively accurately.

10. RESULT

Green building is one whose structure is designed, built, and operated in such a way that the negative impact to human health and the environment will be reduced. This includes resources used during construction and operation of the building once it is completed. The making of a green building starts with the design. Design of green buildings is critical and considers many components. The Green Building Council and the National Association of Home Builders has developed a rating system that gives a building a number. The higher the number the more a building meets the definition of green.

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