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## Examining Contemporary Issues for Green Buildings from Contractors' Perspectives

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### Abstract

Sustainable planning and design is a mass movement for changes in the construction industry. Among many other green building rating systems, the USGBC's LEED has been gaining momentum throughout the years since its advent. With sustainable design and construction, people could live in a more environmentally friendly world which would ensure that our future generations to come would have the necessary resources to live their lives comfortably and thrive. To implement the LEED process, construction contractors need to modify and enhance the way they have historically planned and executed design and construction work. With the rising change in the way a building is built to satisfy the LEED green building intents and requirements, there comes added fears and negative perceptions due to the lack of knowledge from the contractors' perspectives. Thus, this paper presents a comprehensive analysis of 40 surveys collected from the contractors with previous experience in green building projects. The main issues include increased time demand, fear of change, increased equipment costs, fear of auditing of construction documents and many more. By examining the main issues contractors revealed with the green building delivery method, this study will serve as a platform in which future researchers may continue and expand on the issues and/or concerns in order to make the green building delivery method more acceptable to the general contractors and subcontractors.

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## 1. Introduction

Green building is a method which is environmentally responsible, supports resource efficiency throughout the buildings life cycle: during design, construction, maintenance, renovation and demolition. Close cooperation of the design team, contractors, engineers, architects and the client throughout all the project stages is required for green building projects. Green building practice builds and advances upon the traditional methods of the classical building design method to take into consideration the economy, utility, design concerns, environment, natural surroundings, and comfort of the inhabitants of that building. Green buildings are designed to reduce the overall impact of the built environment by reducing energy consumption, resources, waste, water and other resources more efficiently. Although there are newly developed technologies to complement the current practices of the traditional building method, the above examples of the benefits green buildings provide should be sufficient enough for there to be a need to implement it into current and future construction projects [1].

Green building is an important topic nowadays and only once it is fully understood, may it be implemented and put into practice. To do so, one must measure the benefits of the costs and amount of money saved throughout the lifecycle of the building as well as the amount of resources saved as well to fully realize the fruits this delivery method invokes. The whole intent of the green building delivery method is to provide an environmentally clean and healthy society which would utilize less of our limited building resources as well as natural resources so as to create a sustainable world. Sustainable development here means meeting the needs of the present without compromising the ability of future generations to meet their needs [2]. Future generations will not have to worry about living in a time where resources might be scarce or might in turn not be available for them to thrive. Such valuable resources might be potable water, wood, a clean environment/healthy environment (reduced carbon emissions), etc. [3]. To provide this ideal future for our prospective generations, the people in charge at present with the construction and design processes should be taught the concept of building green.

Currently, the green building construction industry is presented with issues in the various phases such as the pre-design, design, construction, and post-occupancy phases. The issues presented below are obtained through the literature reviews and an interview with an experienced construction professional. The issues contractors face during each phase of a construction project are as follows:

- 1) Pre-Design
  - Participating in Design Charrettes can be time intensive
  - Extensive collaboration with the design team, architects, team leader (AP)
  - The fear of documentation being auditing
- 2) Design
  - Identification of specifications for credits, i.e., SS, IEQ is unfavorable
  - Climate sensitive green materials require more speculation during design when compared to their counterparts
  - Increased time/participation is required to understand the scope of the design intents
- 3) Construction
  - Perceived additional risk of dealing with unknown innovations
  - More frequent construction inspections to ensure components are installed within the intent of the design team
  - Restricts the equipment and materials they can buy, more expensive than conventional equipment
  - Extra efforts to collect, store, and submit documentation
- 4) Post-Occupancy
  - Contractor is tasked with providing new owner training for the equipment to be used
  - Special green cleaning products are to be used to satisfy certain intents and credits

Such issues reside in the fact that general contractors and subcontractors are not too fond of accepting of the high

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