ROLE OF CIVIL ENGINEERS IN GREEN BUILDING

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Abstract:- *There are three Green Building Rating system operational in India. Although it is considered that design and development of Green Buildings are Architects, Mechanical and Electrical Engineers job. It is the Civil Engineers create need and chose site for Building. They are involved all the phases of building from planning, execution ,maintenance,addition alteration and disposal of building. Apart of aesthetics and comfort creation by electro-mechanical means it is the civil engineering profession who recognizes the reality of limited natural resources and directly responsible for strength and durability of buildings. This paper discusses a framework of green building rating systems and civil engineering role in it. By providing a better understanding of Green Buildings, civil engineers can provide proactive solution to competitive global infrastructures.*

KEYWORDS: *Sustainable construction, civil engineering, green buildings, Sustainable development.*

Introduction

Globally, the construction industry is one of the main contributors to the depletion of natural resources and a major cause of unwanted side effects such as air and water pollution, solid waste, deforestation, health hazards, global warming, and other negative consequences.

In order to stay competitive and to meet upcoming stricter environmental regulations and customer requirements, designers have a key role in designing civil infrastructure so that it is environmentally sustainable. These and other factors have compelled the engineer to design with greater care and in more detail. The changing roles of engineers will be highlighted, in order to react to changes in climate.

Conventionally the prime focus of a civil engineer is building strength and lifespan, but with present changing scenario , awareness and responsibility toward environment the characterization of civil engineer has changed from “The one who directs nature great power source to convenience and use of man” to “the guardians of built and natural environment” (Ochsendorf, 2005).

A **sustainable building**, or **green building** is an outcome of a design which focuses on increasing the efficiency of resource use — energy, water, and materials — while reducing building impacts on human health and the environment during the building's lifecycle, through better sitting, design, construction, operation, maintenance, and removal. Green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by:

- Efficiently using energy, water, and other resources
- Protecting occupant health and improving employee productivity
- Reducing waste, pollution and environmental degradation

The `Green Building' concept is gaining importance in various countries, including India. In India there are two Systems of Green Building Certification

I. CII- LEED INDIA (Indian green Building Council).

II. GRIHA system developed by The Energy and Resource Institute (TERI).

Both the above system has almost identical rating system and aim. The criteria's are categorized as follows:

IGBC Green Homes Rating System	GRIHA Rating System
❖ Site Selection and Planning ❖ Local Regulations Required ❖ Soil Erosion Required Required ❖ Water Efficiency ❖ Rainwater Harvesting, 50% Required ❖ Water Efficient Fixtures Required ❖ Energy Efficiency ❖ CFC Free Equipment Required ❖ Materials ❖ Separation of Waste Required ❖ Indoor Environmental Quality ❖ Tobacco Smoke Control Required ❖ Daylighting : 50% Required ❖ Fresh Air Ventilation Required ❖ Innovation and Design Process	❖ Site Selection and Site planning ❖ Conservation and efficient utilization of resources Health and well being Building planning and construction stage Water ❖ Energy: end use ❖ Energy: embodied and construction ❖ Energy: renewable ❖ Recycle, recharge, and reuse of water ❖ Waste management ❖ Building operation and maintenance

Civil engineers are involved all the phases of building construction i.e. planning, execution, operation and demolition ,they have role in making a building green.

Role of Civil Engineers at Planning Stage

The Major role of engineer is resource conservation. This starts with site selection. The site should be near to public transport and the day to day amenities shall be available in around 500m from the site. The site should have good bearing capacity to hold multistory building which reduces load on land. It is preferable to promote brown field project in place of green field project. Plan proper drainage with rainwater harvesting on site with effective sedimentation control measure .At this stage a plan of material procurement from local sources, storage on site and with labour camp shall be prepared.

Role of Civil Engineers at Execution Stage

The engineer on site shall ensure that Green plan shall be implemented. At this stage labour welfare shall be ensured. Monitoring hygiene at site is the primary role of engineer at this stage. Maintaining high level of shifty at site is requirement of green building movement. Material shall be used to reduce wastage and it can either be used on site or off site.

Role of Civil Engineers at Operational Stage

Constructing a building is easy but maintainit is a challenge. Role engineer at this stage to use recycle water to its maximum potential. Dispose of solid recyclable waste to recycler and organic waste can be composted. Proper shifty shall be maintained in and around the building. Effective Tobacco Smoke Control shall be ensured. A effective check shall be put on place to ensure that users use only CFC Free Equipment and low VOC material in their part of Building.

Role of Civil Engineers at Demolition and Dispersion Stage

Demolition and disposing of building material is a great challenge. Here Civil Engineer shall identify recyclable material and potential user. At the time of demolition proper safety of man at work and recyclable material shall be ensured.

Conclusion

With global warming increasing, ice cap melting and climate changing, its needless to say green construction is the demand of current scenario. Civil engineer must opt for more environment friendly materials, should bring recyclable material for use and must come up with creative solution to support sustainable design practice.

References

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