

Characteristics of High Performance Green Buildings

By:

Dr. Musibau A. Shofoluwe
NCA&T State University



Sustainable construction & Green Building

- The terms, “high performance”, “green”, and “sustainable construction” are often used interchangeably
- Both terms focus on ecological, social, and economic issues of a building
- The major goal of sustainable construction is to create a healthy built environment based on efficient use of resources and smart ecological design

What is Green Building?

- Green building has been defined in various, but related ways. Examples include:
 - A structure designed, built, renovated, operated, or reused in an ecological and resource-efficient manner (Source: CalRecycle.ca.gov)
 - A process of creating buildings and supportive infrastructure that reduce the use of resources, create healthier living environments for people, and minimize negative impacts on local, regional, and global ecosystems (Source: Global Green USA)

Why so much interest in Green Construction?

- Sustainable development has become a global issue
- Global climate change has become an increasingly serious concern for the future
- Concern over the impacts of built environment on natural environment, economy, health, and productivity

In the United States, buildings account for:

- 72% of electricity consumption
- 39% of energy use
- 38% of all carbon dioxide (CO₂) emissions
- 40% of raw material use
- 30% of waste output
- 136 million tons of waste from construction and demolition
- 12% of potable water supplies

Elements of Sustainable (Green) Buildings

- Sustainable site development
- Water conservation and savings
- Energy efficiency
- Resource Efficient Materials
- Healthy Indoor environmental quality

How is Green Building Created?

- Green building uses whole-building (integrated) design concept to achieve energy, economic, and environmental performance of building.
- By using principles and methodologies of sustainable construction

Elements of Integrated Design

- Green construction should be based on integrated design process to ensure its success
- Decision should be made early whether to incorporate green building strategies
- Start early – during conceptual phase
- Encourage collaboration – involve all parties involved early in the project
- Make commitment – Emphasize the importance of following green construction principles
- Clear goals must be set – Provide specific direction for the project and establish performance standards
- Encourage feedback from project team members
- Analyze cost – Review cost periodically to justify green integration
- Organize a Charrette – to create a clear vision for the project

U.S. Green Building Council (USGBC)

- L – Leadership in
 - E – Energy &
 - E – Environmental
 - D – Design
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- Rating System created by the U.S. Green Building Council (USGBC) that is nationally accepted as a standard for the design, construction, and operation of high performance green buildings.

LEED Green Building Rating System is:

1. Voluntary
2. Consensus-based
3. Market-driven
4. Based on accepted energy and environmental principles
5. Performance-oriented system; Points are earned for satisfying performance criteria
6. Levels of green building certification are awarded based on the total points earned.

LEED Rating Systems

- LEED for New Construction
- LEED for Core & Shell
- LEED for Schools (K-12)
- LEED for Health Care
- LEED for Retail
- LEED for Commercial Interiors
- LEED for Retail Interiors
- LEED for Existing Buildings
- LEED for Existing Schools
- LEED for Homes
- LEED for Neighborhood Development

Level of Certifications

- Certified (40-49 points)
 - Silver (50-59 points)
 - Gold (60-79 points)
 - Platinum (80 + points)
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- NOTE: Only buildings can get LEED Certified – not people. Only individuals become LEED AP – not firms

Why is LEED important?

- Reduces operating costs
- Enhances Building marketability
- Increases worker productivity
- Reduces potential liability resulting from indoor air quality problems

Who is involved in LEED?

- Governments
- Non-governmental organizations
- Civil servants
- Environmental activists
- Local government officials & community groups
- Development agencies & grassroots organizations
- Planners and commercial developers
- Industrial & environmental agencies

Benefits of Green Buildings

- Environmental Benefits
 - Protect ecosystems & biodiversity
 - Improve air and water quality
 - Reduce solid waste
 - Conserve natural resources
 - Reduce harmful emissions, etc..
- Economic Benefits
 - Energy and water savings
 - Increased property values
 - Improved employee productivity and job satisfaction
 - Reduced operating cost, etc..

Benefits of Green Buildings

- Social Benefits
 - Improve Lifestyles and Recreation (Quality of Life)
 - Enhance occupant comfort and health
 - Minimize strain on local infrastructure
 - Improve air, thermal, and acoustic environments
 - Improve local schools (ex: test scores and high attendance rate)

Affordable Green Housing



Green Building



Green Building



Green Building



Thank You!!

ANY QUESTIONS?