Characteristics of High Performance Green Buildings

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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

• 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)

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?