University of Florida Facilities Planning & Construction presents:
Green Building Case Study

Mary Ann Harn Cofrin Pavilion
at the Harn Museum of Art
Gainesville, FL

Opening Remarks
Bahar Armaghani

Design, A/E
Kha Le Huu
Vince Briones

Construction
David Letlow
Dan Boda

Owner’s Perspective
Rebecca Nagy

Q&A/Closing Remarks
Bahar Armaghani
Building Green at University of Florida

- Opening Remarks
- UF’s LEED program
- Where we stand

Bahar Armaghani, LEED AP
Assistant Director, Project Manager
Facilities Planning & Construction

www.facilities.ufl.edu
University of Florida’s LEED Program

• In 2001, University of Florida officially adopted (LEED) for its major renovation and new construction projects

• Starting 2006, Minimum Silver LEED certification required
• LEED standards is first and foremost tool that enables a design team all the way through the design and construction process
• Over the last 5 years UF has used this tool to the benefit of projects all over University resulting in an entirely new breed of buildings at UF, the LEED certified green buildings
• This new generation of University of Florida building represents a giant step forward for the university
Why UF Adopted LEED

- As an educator plays a leading role in training leaders to make difference in the world
- UF consumes significant resources
- Students will have major environmental Impact as consumers, conservers when depart campus
Why UF Adopted LEED

• Be proactive in taking positive steps toward saving the environment
• Save Energy
• Occupants well being
• Lead
• Educate
• *It is the “right” thing to do!*
Utilities Consumption

- Electric: about $3.5 million per month
- Water: about $85,000 per month
- Steam: about $350,000 per month
## LEED-NC® Point Distribution

Five LEED credit categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Sites</td>
<td>14</td>
</tr>
<tr>
<td>Water Efficiency</td>
<td>5</td>
</tr>
<tr>
<td>Energy &amp; Atmosphere</td>
<td>17</td>
</tr>
<tr>
<td>Materials &amp; Resources</td>
<td>13</td>
</tr>
<tr>
<td>Indoor Environmental Air Quality</td>
<td>15</td>
</tr>
<tr>
<td>Innovation &amp; Design</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>69</strong></td>
</tr>
</tbody>
</table>

- **Indoor Environmental Quality**: 23%
- **Sustainable Sites**: 22%
- **Materials & Resources**: 20%
- **Energy & Atmosphere**: 27%
- **Water Efficiency**: 8%
Four levels of LEED-NC certification:

- Certified Level: 26 - 32 points
- Silver Level: 33 - 38 points
- Gold Level: 39 - 51 points
- Platinum Level: 52+ points

(69 points possible)
Design
Kha Le Huu, Architects

Kha Le Huu, AIA
SUSTAINABLE SITE CR4.1

• ALTERNATIVE TRANSPORTATION, PUBLIC TRANSPORTATION ACCESS

• The Campus Bus line (Later Gator) is 600’ from the building.

• The public bus line (Regional Transit System) is 710’ from the building.

• The Harn is visible in the background.
SUSTAINABLE SITE CR4.2

- ALTERNATIVE TRANSPORTATION, BICYCLE STORAGE & CHANGING ROOMS.

- Bicycle storage designed for main entry of Powell Hall and plaza entry for McGuire Hall.

- Shower and changing room use in the existing Harn as part of the building program.
SUSTAINABLE SITE CR4.4

• ALTERNATIVE TRANSPORTATION, PARKING CAPACITY

• No new parking has been added.

• The total number of full time employees allows for one car pool space.

• Car pool space has been provided adjacent to the building.
MATERIAL & RESOURCES PR-1

- **STORAGE & COLLECTION OF RECYCLABLES**

- Room G060 has been designated within the building for the storage and collection of recyclables.
INDOOR ENVIRONMENTAL AIR QUALITY EQ5

• **INDOOR CHEMICAL AND POLLUTANT SOURCE CONTROL**

• Permanent walk-off mats are provided at every high volume entryway.

• Chemical use areas and copy rooms have been physically separated by deck-to-deck partitions.
Design

TLC Engineering for Architecture

Vince Briones, PE, LEED AP
EA CREDIT 1: 4 Points

- Optimize Energy Performance
  - Significantly improved level of energy performance above code requirements to reduce environmental and economic impacts of energy use
    - Improved building envelope
    - High-efficiency HVAC equipment
    - Demand Controlled Ventilation
    - High-efficiency lighting design

- Building is 30% more efficient than ASHRAE 90.1-199
EA CREDIT 1: 4 Points

• Building Envelope

  – Concrete wall assembly exceeds ASHRAE 90.1-2004 minimums for assembly U-value

  – Thermal mass properties of concrete help reduce amount of heat transfer into conditioned space

  – Little to no glazing in exhibit hall reduces solar heat gain
EA CREDIT 1: 4 Points

• High-Efficiency HVAC Equipment
  – Upgraded CEP as part of Facility upgrade
  – High-efficiency chiller / concrete cooling tower with ceramic tile fill efficiency = 0.55 kw/ton
  – For this facility, ASHRAE/LEED requires packaged DX heat pumps efficiency = 9.2 EER efficiency = 1.3 kw/ton
EA CREDIT 1: 4 Points

• Reduced Lighting
• Demand Controlled Ventilation (DCV)

  – DCV helps to ensure fresh air ventilation systems maintain design minimum levels
  – DCV saves energy during periods of low occupancy by reducing fresh air levels.
  – Lighting power density designed below ASHRAE 90.1 maximum levels
WE Credit 3: 2 points

- Water Use Reduction
  - Maximized water efficiency within the building to reduce burden on municipal water & wastewater systems
  - Metering faucets
  - Waterless urinals
WE Credit 3: 2 points

- Waterless urinals
  - Use a special cartridge to allow waste to drain but prevent odors from escaping
  - No flush valve means no handles to touch
  - Facility uses 40% less water
Construction
Skanska USA Building Inc.
David Letlow, LEED AP
Environmental Leadership

ISO-14001 Certification:
Preceded LEED
International, voluntary management standard addressing environmental management systems (EMS)
- Internal auditing
- Documentation
- Self-regulation
- Integrated environmental aspect control

**Skanska is the first construction firm in the U.S. to have all operations ISO-14001 Certified**
Skanska is a leader among Construction Managers in volume of LEED Registered projects in Florida.
Skanska USA Building’s Role

--Recycle Construction Waste
--Purchase Materials with Recycled Content
--Purchase Local Materials
--Protect Stored Materials during Construction
--Purchase Products with Low VOCs
MR Credit 2.1 and 2.2

Credit 2.1--Divert at least 50% of construction waste from landfill
Credit 2.2--Divert at least 75% of construction waste from landfill
MR Credit 4.1 and 4.2

Credit 4.1--Recycled Content 5% (post-consumer + ½ post industrial)
Credit 4.2--Recycled Content 10% (post-consumer + ½ post industrial)
MR Credit 5.1 and 5.2

Credit 5.1--20% Manufactured Regionally
Credit 5.2--50% of Above Materials Extracted Regionally
EQ Credit 3.1

Construction Indoor Air Quality Management Plan
  – Protect Materials before Installation
  – Filters During Construction
EQ Credit 4.1 thru 4.4

Credit 4.1--Low Emitting Materials (Adhesives and Sealants)
Credit 4.2--Low Emitting Materials (Paints and Coatings)
Credit 4.3--Low Emitting Materials (Carpet)
Credit 4.4--Low Emitting Materials (Composite Wood)
User’s Group

Rebecca Nagy
Director, Harn Museum of Art
Building Green at University of Florida
Q/A, closing remarks

Bahar Armaghani, LEED AP
Think Green

YOU HAVE the POWER™