K-STATE SUSTAINABILITY CONFERENCE

March 31, 2011
Interpretive Materials for the Flint Hills Discovery Center

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Agenda

- History of the FHDC
- Design Team
- Building Details
- FHDC Purpose
- Sustainable Design Concepts of the Building
- Interpretive Displays Goals
- Information to be Contained on Displays
FHDC created in 2004 by the City of Manhattan
Funding via a STAR bond from KDOC
Portion of the Manhattan South Redevelopment Entertainment Area
Master plan design team commissioned in 2008
Construction documents begin in 2009
Construction Manager at Risk hired in 2009
New director of FHDC hired in 2009
Construction starts in July 2010
Estimated building completion fall 2011
Estimated museum opening spring 2012
Design Team

- Architect: Verner Johnson, Inc. – Boston MA
- Local Architect: Bowman Bowman Novick, Inc. – Manhattan, KS
- Landscape Architect: Bowman Bowman Novick, Inc. – Manhattan, KS
- Exhibit Design: Gerard Hilferty & Assoc., Inc. – Athens, OH
- Multimedia Production: Donna Lawrence Productions – Louisville, KY
- MEP Engineering: Orazem & Scalora Engineering – Manhattan, KS
- Structural Engineering: Dudley Williams & Associates – Wichita, KS
- Civil Engineering: HWS Consulting Group – Manhattan, KS
- Construction Manager: McCownGordon Construction, LLC – Kansas City, MO
Building Details

Site Plan
Building Details

Rear Elevation
Building Details

Front Elevation
Building Details

- 35,000 SF total space
- Public Lobby
- Permanent Exhibits
- Classrooms
- Multi-Purpose Rooms
- Offices
Science & history learning center
How were the Flint Hills made and what is the history & importance of the Tall Grass Prairie?
Interactive displays for all ages
Dedicated children’s area
Sustainable Design Concepts of the Building

- “naturally suited to combine a green mission with sustainable design”
- “the intent to build with as little impact on the environment as possible is fitting”
- “LEED certified museum can serve as an educational tool”
- “a space that invokes the forms of the land while integrating water and energy savings strategies that metaphorically represent the natural, integrated cycles of the complex yet subtle prairie ecosystem”
- Project goal is LEED Gold certification from USGBC

Excerpts from the March 16, 2010 100% Design Development Manual
Interpretive Displays Goals

- Displays in public and gallery spaces
- Develop eco-intelligence through behavioral modification
- Displays are to be used to earn an Innovation in Design credit for LEED certification
- Utilize a joint effort between KSU ARE/CNS Dept. and KSU USGBC Student Chapter
- Showcase the sustainable design aspects of the building
- Utilize graphics or hands on activities to attract people to the displays
Flint Hills Discovery Center
- Gaining insights from target constituencies
- Help with conceptual development of displays
- Added exposure from KSU
- Showcase the sustainable aspects of the building
- Earn 1 point for Innovation in Design
KSU ARE/CNS Department
- Providing an educational service to the community
- Support the FHDC staff with in-kind expertise & organization
KSU USGBC Student Chapter
- Develop interdisciplinary relationships
- Hands-on opportunity to interpret sustainable design
- Experience the process of sustainable design & USGBC certification
Interpretive Displays Outcomes

- Visitors to FHDC
  - What is involved in sustainable or “green” design?
  - See how fragile our environment really is
  - How can the things I’ve learned be applied in my life?
Water Efficiency

- Issues related to the building design
  - Reduction of water consumption by 30%
  - Low flow plumbing fixtures
  - Infrared sensor operated flush valves & faucets

- Material to be placed on a static display
  - How much water is expected to be saved each year at this building?
  - Relate this to the amount of water in the City Pool or water used by a typical residence each year
  - How many gallons could a homeowner save by replacing your toilet or shower head with low flow type?
What is the USGBC & LEED?
- Issues related to the building design
  - Building is planned for LEED Gold certification
- Material to be placed on a static display
  - Describe the mission and makeup of the USGBC
  - Introduce the LEED green building certification program
  - Include graphics showing the different ratings and points to be earned
  - Explain what rating this building is to receive and how it is accomplished
  - Tell why owners can benefit from a LEED certified building
Optimized Energy Performance

- Issues related to the building design
  - Increased “R” value of walls & roof and high performance glass
  - Geothermal heat pump heating & cooling system
  - Energy recovery to preheat outside air
  - Daylight harvesting

- Materials to be placed on a static display
  - Simple diagrams of how a GSHP system works
  - How much energy/money could be saved by the average household each year?

- Interactive display
  - Dynamic connection to the building BMS system showing specific temperature points in the system
  - Model of the overall system that would show the water moving thru piping to indoor units and the well field
  - “Plug-in” cart that has a small operational heat pump on it with water and air temperature displays
Recycling

- Issues related to the building design
  - Divert 50% of construction waste from landfill
  - Utilize building materials with recycled content
- Material to be placed on a static display
  - Show what the magnitude of diverted waste is for this project. How does this relate to the trash generated by a typical household?
  - Highlight the recycled materials seen from the main lobby
  - Show visitors how to identify recycled content in the things they buy
  - Calculate the amount of trash that could be saved by a typical household through recycling
Light Pollution

- Issues related to the building design
  - Minimize exterior lighting
  - Utilize cut-off fixtures, placed away from property lines
- Materials to be placed on a static display
  - Photo of North America at night. Showcase the amount of light trespass and difficulty viewing the night sky
  - Show visitors how to identify cut-off type fixtures and use them at their homes
  - How can homeowners create controls so lights are only on when needed?
The FHDC offers a great opportunity to educate the public on the latest energy saving techniques and “green” design.

Utilizing KSU faculty and students offers a way to share expertise at no cost to the City.

Students are given an opportunity to develop knowledge and skills outside of the classroom.

Visitors to the FHDC may actually find something they can apply in their own daily lives.