

# K-STATE SUSTAINABILITY CONFERENCE

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# 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

# History

- ▣ 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



Aerial View Looking West

# Building Details

- ▣ 35,000 SF total space
- ▣ Public Lobby
- ▣ Permanent Exhibits
- ▣ Classrooms
- ▣ Multi-Purpose Rooms
- ▣ Offices

# FHDC Purpose

- ▣ 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

# Interpretive Displays Outcomes

- ▣ 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



# Interpretive Displays Outcomes

- ▣ KSU ARE/CNS Department
  - Providing an educational service to the community
  - Support the FHDC staff with in-kind expertise & organization

# Interpretive Displays Outcomes

- ▣ 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?



# Information to be Contained on Displays

- ▣ 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?

# Information to be Contained on Displays

- ▣ 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

# Information to be Contained on Displays

- ▣ 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

# Information to be Contained on 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



# Information to be Contained on Displays

- ▣ 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?

# Conclusions

- ▣ 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