

## Talking Points for Tour of the Phillips Eco-Enterprise Center (PEEC)

September 11, 2009

### Lobby

- **History:** The Phillips Eco-Enterprise Center (PEEC) was developed by the Green Institute between 1998 and 1999.
- This site was originally slated for a **garbage transfer station**. The Green Institute, founded by neighborhood activists, organized for six years against this county proposal.
- The Green Institute not only won the rights to the land, it developed a **dream resolution** that went to the root problems afflicting the Phillips community: pollution and poverty: the PEEC and the ReUse Center.
- **PEEC was a national pilot for the U.S. Green Building Council's Leadership in Energy & Environmental Design for New Construction (LEED - NC) , an evolving green building certification program.** The building was completed before the LEED- NC standards were completely developed, and actually helped to inform the creation of those standards. It was the first speculatively built green commercial building in the State of Minnesota.
- The building became a "living experiment" for all parties involved in its development.
  - The capital costs of the building were from loans and the financial viability of the project required finding tenants to occupy the building to pay the mortgages
  - The goal was to encourage green job development in a former brownfields and marginalized low-income neighborhood
- **Materials:**
  - Lobby made of **salvaged wood and recycled-content steel** shares space with a prominent staircase that promotes the energy-free usage of stairs as opposed to the elevator.
  - **22,000 bricks were salvaged from a warehouse in Chicago and re-used in the lobby.** The polished finish and aggregate variation and finish of the cinder blocks (Wisconsin) eliminated the need for an application of sheetrock, reducing the total materials without sacrificing the visual appeal of the wall. **Production of one square foot of gypsum drywall uses 2,600 BTUs,**
  - The **window sills are made from recycled soybean** and all can be opened manually.
  - **Natural linoleum flooring made from linseed oil. Linoleum was utilized for durability purposes,** as it is designed to be a long-lasting product.
- **Roadblocks:**
  - The soil was contaminated with arsenic from a history of production of grasshopper pesticide north of the site.
  - Was competing for an area already under speculation by other agencies, namely MN DOT, which was planning the path of the Light Rail Transit line.

### Corridor

- **Unlike most commercial buildings (for "green practices"):**
  - **Shared conference room and bathrooms, corridor and loading dock – communal feeling and reduced footprint**
- Recycled glass tiles from a telephone utility product were obtained by the ReUse Center. Zero- VOC acrylic paints, and other low-toxicity standards applied to all interior materials and finishes.
- High-efficiency and **compact fluorescent lights (CFLs) span the corridor and the offices.** At the time of development, some of these types of light bulbs were new and were not commonly utilized in buildings.

### Mechanical room

- **One mechanical room instead of two** thanks to the space efficiency of the ground source heat pump equipment, **other** room converted to "**break room**"
- **ERV: The energy recovery ventilator handles air flow exchange with a filter.** The heat exchanger captures the energy of the air being exhausted to heat (or cool) the incoming fresh air.
- The direct current (DC) from the solar array is transformed into alternating current (AC) by the PV generator. **Wiring from the roof is connected to the direct current which changes voltage, which then goes to the battery, to later be converted and integrated into the grid.**
- **Solar power provides roughly ¼ of the base electrical load (lighting, plugs, pumps) of the Green Institute offices.**

- **Energy Efficiency:**
  - a. **Geo-Exchange Heat Pump: consists of 120 wells** dug in the prairie, each going 60 ft. deep; a food-grade antifreeze mixture is constantly pumped through the pipes.
    - i. 55 degree F year-round ground temperature used: takes heat out of the earth in winter, and rejects it back into the earth in the summer through heat pumps
    - ii. The system produces about 4 units of useful heat and cooling energy for every 1 unit of energy consumed from the utility.
- **No need for back-up because of the ground source heat pump system.** Even if only five of the nineteen total series of wells were operational, the system would still perform on the coldest day of the year

### **Warehouse Corridor**

- The shared corridor, drive-in and loading door for the shipping and receiving of things manufactured by tenants reduces heat loss and encourages interaction.
- The shared corridor reduced the building footprint to allow for more prairie, stormwater treatment ponds and the field for ground source heat pumps.

### **Rooftop Garden/Energy Efficiency Information**

#### **Energy Efficiency: Roof**

- Solar tracking skylights use three mirrors reposition throughout the day vis a vis the sun to maximize the entry of natural light into the warehouse space. At times when it is sunny, there is 10 times more light with this system than with a standard window.
- The 34 KW array consists of almost 800 donated panels. **Enough solar energy is collected to supply approximately 25% of the base electrical load of the office part of the building (or 5% of the total building's needs), at time when it generates more power than is needed or can be stored, the excess is redirected and sold to Xcel Energy.**

#### **Rooftop Garden:**

- The garden covers 4000 sq.ft. of roof area and features a deck constructed from recycled plastic lumber.
- Two types of plant communities: European varieties (shallow soil) and native river bluff species (deep soil)
- Garden helps retain storm water and reduces the peak energy demand of the building. The site-wide storm water retention system **retains more than 2 million gallons of runoff each year.**
- Parking lot is designed for maximum retention as well, trees are planted to reduce heat absorption, create habitat, and absorb water before it reaches storm sewers. The surface is sloped in such a way that rainfall travels to nearby planting beds and not to the sewer.