Green Library Spotlight:

Ann Arbor builds with low-energy, recycled content material

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Contact Information

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Project Name:	Pittsfield Branch (opened March 2006)
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A. Green Mission

What was the purpose of the project?

Both the building itself and the surrounding landscape capitalize on environmental principles, thereby allowing the overall project to operate more in harmony with the ecosystem and the community in which it serves. The restoration and management areas include the existing watercourse, Malletts Creek and wetland. Restoration of these areas involves selective planting of species native to Southeast Michigan that are more appropriate and better adapted to the site than non-native species. This diverse array of native plant material also functions as wildlife food and shelter, and attracts pollinators to the area. Initial and long-term maintenance will be performed on this site to preserve the quality of the native plant systems and to assess their impact on the watercourse and wetland.

B. Challenges

What challenges did you encounter with the project and how did you overcome them?

Soil contamination and poor quality soil required removal and replacement in order to support the foundation. Invasive plant species were removed at the same time.

The headwaters of Malletts Creek are located on this site and it was therefore important that the wetlands be retained and improved. Two-thirds of the branch building is built up on piers, allowing the restored wetland below to remain intact.

C. Benefits

What benefits has your institution received as a result of this project? How has it positively impacted the mission of your institution?

1. Relationship to Site

The main space of the library faces south to capture the maximum heating benefit from the winter sun and maximum daylight throughout the year. The south wall is designed to admit maximum solar radiation in the winter but to block direct sun in the summer, admitting primarily indirect and reflected light. The north and west sides, those most exposed to winter winds, are service spaces and have minimal windows.

2. Building Cross-section

The high, arching ceiling combined with the roof monitor serves to reinforce the natural tendency of warm air to rise, thus facilitating convective cooling. In the summer, air in the monitor is heated by the sun and is allowed to escape through operating windows on the

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north side. It is replaced by cooler air entering near the floor on the south side and, to a lesser extent, air entering from under the eave on the north. In the winter, with the windows closed, the heated air in the monitor is pushed down by ceiling fans. Overhangs block the high angle summer sun but admit the lower angle winter sun.

3. Recycled Content Material
By way of example, the roof and much of the sidewalls are clad with pre-finished steel, made primarily from recycled material. The pre-finishing is with a low VOC content resin. The window frames are fabricated from recycled aluminum, and the carpet is woven with 50 percent recycled content yarn. The cellulose wall insulation consists of 90 percent recycled material, and the drywall is a minimum 50 percent recycled content.

4. Low Energy Content Material
The masonry for this building is burnished concrete masonry units rather than brick. Not only is far less energy consumed in the manufacture of these units than is required for brick, but also they are manufactured less than 50 miles from Ann Arbor, and therefore a relatively small amount of energy was consumed in their transportation to the site.

5. Materials from Renewable Resources
Wood for construction and for the fabrication of furnishings are from managed forests rather than from old-growth forest trees.

6. Coordinated and Efficient Lighting
The artificial lighting system is automatically monitored so that it is turned on only when the day lighting is insufficient for comfortable reading. If the day lighting level rises, the lights automatically shut off. A built-in time delay prevents frequent cycling on and off. The light fixtures utilize highly efficient T5Ho lamps with electronic ballasts, and limited accent lighting is low-voltage halogen.

7. Air Quality Management
Most commercial buildings operate with a constant quantity of outside air taken in by the mechanical system whether needed or not for health and/or comfort reasons. The Branch has sensitive air quality monitoring devices that modulate the air intake so that the only outside air that is heated or cooled is what is actually required at any given time.

8. Construction Practices
During construction, wood, plastic, and metal waste were separated so that it could be recycled, thereby diverting at least 50 percent of the usual construction waste from the landfill.

D. Your advice to other institutions/libraries …

What advice would you give other institutions in becoming greener?

Even small steps can be taken by organizations to reduce the environmental impact of their buildings. Environmentally friendly paints, flooring, building materials, heating and cooling are some of the ways to do this.

View images from the Pittsfield Branch:
http://www.aadl.org/aboutus/pittsfieldbanch/branchimages