

Pacific Business News (Honolulu) - July 30, 2007

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PACIFIC BUSINESS NEWS

Friday, July 27, 2007

Botanical garden gets 'greener'

Pacific Business News (Honolulu) - by [Jon Letman](#) PBN Contributor

The nonprofit **National Tropical Botanical Garden** in Kalaheo is building what will be Kauai's first so-called "green" building, a 20,000-square-foot **Botanical Research Center**.



When completed early next year, the center will house a 56,000-specimen herbarium, rare-plant storage and research facilities and a botanical library with more than 20,000 books, journals and archival materials.

Because the two-story center will contain irreplaceable items, it was designed as a heavily reinforced concrete structure with dual-pane impact-resistant window systems that meet Miami-Dade County, Florida, hurricane requirements, according to project manager Todd Lang of Unlimited Construction Services Inc.

Designed as "a box within a box within a box," the building is expected to have a life of 100 years.

Goal: LEED Silver certification

Builders of the center are aiming for the U.S. Green Building Council's LEED Silver certification -- LEED stands for Leadership in **Energy and Environmental Design**.

To that end, it has mechanical and electrical systems that are both highly efficient and environmentally friendly, using less energy and occupancy sensors throughout.

Photovoltaic cells on the roof will harness energy from the sun for use in the building as a 25,000-gallon in-ground storage system catches rainfall for irrigating the garden below.

The building also features plug-ins for electric cars and sidewalks made of recycled plastic that allow rainwater to filter and trap contaminants.

Chipper Wichman, CEO and director of the botanical garden, hopes the center will influence future construction practices on Kauai and across the state.

"This will help transform our construction industry, a major force in our state economy, probably second only to the visitor industry," he said, noting that LEED is "a whole new way of looking at construction."

Lang said that close to 75 percent of the volume of construction waste taken off site will be diverted from Kauai's landfill, mostly through recycling. Metal, wood, drywall, plastic, pipe, concrete and asphalt are being collected and recycled through the Kauai County Recycling program for use as road base, fill and mulch.

Trees removed from the center's construction site were relocated in the garden or chipped, said Unlimited Construction Services project engineer Brett Schmauch.

Even soil is being stockpiled for use on other projects.

Schmauch said construction of the center has created between nine and 12 yards of landfill waste compared with 300 to 400 yards of recycled material.

"For an island with only one landfill that is already over capacity, this is a critical issue," Wichman said. "I felt that as an organization dedicated to conservation, we needed to lead the way in this field."

Managing the Project

Lang said comprehensive recycling does require added discipline and management of the overall project.

The Botanical Research Center was designed by Honolulu-born architect Dean Sakamoto, now based in Connecticut, where he is a critic and director of exhibits at Yale University.

Together, Wichman and Sakamoto committed to fully incorporating LEED concepts from the beginning of the project.

For Sakamoto, designing the center was a natural, having spent the past five years researching Russian-born Honolulu architect Vladimir Ossipoff for a book and upcoming exhibit at the

Honolulu Academy of Arts.

Ossipoff, revered as a leader in Hawaiian modern architecture and early proponent of sustainable design, created the master plan for the original botanical garden campus.

Sakamoto said he conceived of the center's design as a bridge between the front of the campus and the original buildings below with research, storage and meeting space intended to encourage creative exchange.

"I've learned that sometimes architecture has to step back and be more modest," he said. "Ossipoff was a master in this regard."

Since embarking on the Kauai project, Sakamoto has earned LEED certification, praising the standards as a step in the right direction that adds to the momentum of change in design and construction practices.

The National Tropical Botanical Garden, Unlimited Construction and Sakamoto also worked closely with Craig Grabber, a LEED consultant, as all navigated their way for the first time through what can be a complex process of incorporating LEED concepts.

Next: 'Green' visitor center

As the project advances, Wichman said the botanical garden already has begun studying the feasibility of a LEED-certified visitor center at its Kahanu Garden site on Maui's Hana Coast.

Next month, both the National Tropical Botanical Garden and Unlimited Construction will be presented the Kauai Green Business Initiative Award by the Rotary Club of Kapaa.

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