Daniel F. and Ada L. Rice Plant Conservation Science Center
Fact Sheet ~ as of 6/10/09

Overall Details

- Groundbreaking on June 3, 2008; due for completion in Fall 2009
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Careful attention was paid to selection of energy-efficient lighting, mechanical equipment, insulation of exterior walls and roof, windows with low-E and high-performance glass and air lock vestibules at all entrances.

Roof Garden and Solar Power

Light colored roofing and a roof garden (16,000 square feet) will cover over 50% of the roof area, reducing the heat island effect. Solar photovoltaic panels on the roof will provide power directly to the building.

will be composed of laminated wood to emphasize the curvilinear structure of the bridge. The handrail is proposed to be steel with a bronze cap, and will be both a natural support and a structure from which to view the plantings and the surrounding landscape.

Woman's Board Rain Water Glen and Footbridge
The entrance to the Rice Science Center is defined by a 40-foot long gently sloping bridge that rises from the east road. The wood bridge will have a metal railing with a sloped top rail to include interpretive messages about the Rain Water Glen that can be viewed from the bridge. Benches and planters are integrated in the bridge's design as well as indirect lighting concealed under the handrail to give the bridge a subtle glow at night.

The Visitor Gallery/Atrium
A central visitor gallery will run the length of the Rice Science Center and rise two stories to a height of 25 feet, with clerestory windows filling the space with natural light. Ribbon windows line the gallery along the first floor providing visitors the opportunity to view researchers working in the laboratories. Science comes to life in the Visitor Gallery. It is a vehicle to educate the visitor about the work being done at the Garden. In addition to observing conservation science research being conducted in the labs, hands-on exhibitry will engage visitors and provide information about the Garden’s research programs and the importance of plants, and interpretive panels and interactive displays will provide information about all aspects of the buildings' green design, including energy-efficient technologies. Laboratories which can be viewed from the Visitor Gallery include (north side, from left to right) Herbarium, Plant Systematics Laboratory, Population Biology Laboratory, Ecology Laboratory and Soil Laboratory; (south side, from left to right) Microscopy Laboratory, National Tallgrass Prairie Seed Bank Preparation Laboratory, Reproductive Biology Laboratory, Economic Botany Laboratory and Plant Genetics Laboratory.

Herbarium
An herbarium is a reference collection of preserved plants complete with important data such as collecting location and date, ecological conditions and other plants found in close proximity. An herbarium is a historical record, documenting what plants grew where and when. It can be used to document when an invasive species arrived in an area, or the last documented record of a rare plant, or movements of plants due to climate change. It is useful for identifying unknown plants and describing a new plant species collected in the field, comparing unidentified plants against known species, or determining the variability between closely and distantly related plants. The herbarium collection is also a source of DNA which can be extracted from leaves or other plant material. It also allows researchers to document the specific plants that have been studied as part of a research project by creating a “voucher” specimen that can be used by future scientists to verify the identification of the plants that they studied. Additionally, an herbarium is invaluable for educational purposes such as training staff and volunteers in the identification of native plants, and for courses in plant taxonomy and morphology. It is also a shared resource that supports research projects at institutions from around the world. The new herbarium will be capable of housing hundreds of thousands of specimens, greatly expanding the Garden's current herbarium which is near capacity. The Herbarium

Ecology Laboratory
The Chicago Botanic Garden is actively maintaining, restoring and/or recreating five native habitats: McDonald Woods, the Dixon Prairie, the Skokie River corridor, the Barbara Brown Nature Reserve, and our 60-acre system of lakes. These activities teach restoration ecologists a great deal about habitat management that can be applied in other regions. The Ecology Laboratory enables scientists to study community ecology, water quality and other ecological factors important to our ability to effectively restore and manage these environments. What is learned will be shared with other organizations involved in similar pursuits. Activities will range from plant measurements to growing plants under different environmental conditions. The equipment in this lab will include several types of microscopes such as dissecting microscopes and stereomicroscopes and an automated analyzer for water and soil nutrient analyses. The combined space for the Population Biology Laboratory and Ecology Laboratory is 2,400 square feet.

Soil Laboratory and Soil Preparation Laboratory
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Biology Laboratory where they are germinated to ensure that they are viable. The remaining seeds are slowly dried to 15 percent humidity and 58 degrees Fahrenheit. They are then carefully labeled and packaged in large, heat-sealed foil containers before being stored in the Dixon National Tallgrass Prairie Seed Bank at -20 degrees Celsius. From the field to the freezer, the process takes approximately 6 months.

Dixon National Tallgrass Prairie Seed Bank (Freezer Door Is Visible from the Visitor Gallery)

The Dixon National Tallgrass Prairie Seed Bank safely houses the seeds collected as part of a conservation project of the Chicago Botanic Garden aiming to collect and store the seeds of the tallgrass prairie region flora. Between 2003 and 2009, the Chicago Botanic Garden has committed to collect 20,000 seeds from 1,500 native species across the Midwest, with an emphasis on tallgrass prairies species, with the goal of conserving prairie plants before they become further imperiled. The goal of the seed banking project is global in scope. The National Tallgrass Prairie Seed Bank, in association with the national Seeds of Success (SOS) program, is part of an international seed conservation initiative collectively known as the Millennium Seed Bank Project (MSBP), originally developed by the Royal Botanic Gardens, Kew, in the United Kingdom. This global program aims to bank 10 percent of the world's flora by 2010 for long-term storage and conservation. Seed banking — conserving and storing species away from their original habitats — enables plants to escape threats imposed by destructive habitat changes including urbanization, climate change, invasive species, overharvest, and pollution. The National Tallgrass Prairie Seed Preparation Laboratory and Dixon National Tallgrass Prairie Seed Bank are 1,000 square feet.

Reproductive Biology Laboratory

For a seed bank to be successful we must know how long seeds remain viable after they have been placed in the seed bank and we must understand conditions under which seeds germinate. This 700-square-foot lab is where scientists and graduate students will study such factors as seed germination, reproductive biology (pollination), and the quantity of seeds produced by different species. Here, scientists will better understand reproductive success and population stability in a number of rare and endangered plant species. Seeds can be germinated, grown and analyzed for genetic differences and viability. Samples of seeds stored in the Dixon National Tallgrass Prairie Seed Bank will be regularly tested to see that they will still germinate, and to determine the rate of decline of viability over time. If it is determined that viability has started to decline, the seeds can be replaced with new collections. Alternatively, we may take existing seeds out of the Seed Bank, grow them, harvest new seeds and replenish the seed bank collection.

Economic Botany Lab

Economic Botany examines the complex relationship between plants and people. The field explores the cultural uses of plants to determine which could be exploited for medicines, industrial use, or new food crops. In addition, some researchers in this area document the geographic origin and wild relatives of crop plants to aid in plant breeding programs and to develop strategies for the sustainable use of plant resources. Economic botanists often investigate the chemistry of particular plants to assess the potential

medicinal properties or economic benefits of selected species. Initial chemical screening can occur in this lab as part of collaborative research with major centers at universities and/or private and federal laboratories. New uses may be discovered from the plants we are conserving.

Plant Genetics Laboratory
As increased understanding of the molecular genetics of rare and endangered plants is gained, populations of these plants, and the community that they grow in, can be better managed and preserved. One of the many scientists and graduate students who will use this laboratory is Dr. Jeremie Fant, a conservation scientist in molecular ecology population genetics. Dr. Fant uses a combination of molecular and quantitative techniques to better understand the level and distribution of genetic diversity within rare and endangered species. One of his projects has been the reintroduction of the Pitcher's thistle to the Illinois Beach State Park, a species once extinct in Illinois. He studies the manner in which evolutionary forces like adaptation and migration shape the patterns of biodiversity and how these natural processes continue despite disturbances to habitats. The Plant Genetics Laboratory will house specialized equipment such as a DNA sequencer and centrifuge that will be used by graduate students, interns and scientists who utilize molecular biology techniques in their research. The Economic Botany Laboratory and the Plant Genetics Laboratory are 2,000 square feet.

Additional Areas in the Rice Science Center

Academic Seminar Suite
One large room with a retractable wall which can be used to form two smaller rooms comprises the Academic Seminar Suite. Classes held through the Garden and Northwestern University joint MS and PhD programs in Plant Biology and Conservation as well as some classes through the Regenstein School of the Chicago Botanic Garden will be taught here. Additionally the suite will be a place where scientists will gather to discuss their research and other topical subjects with their peers. Seminars, meetings and programs will be conducted and visiting scientists will have space to meet with their colleagues. When fully open, the 800-square-foot suite will have space for 70-80 people in a lecture style seating arrangement. The room will have a conference table and state of the art audio-visual equipment for presentations.

Lenhardt Library - Rice Science Center
The Lenhardt Plant Science Library will house scientific journals and books. It will include an information desk, a large compact shelving unit, shelving on the outside walls under the windows, one work table for six, two computer stations, two lounge seats and a table. The space is 1,200 square feet. The main Lenhardt Library is located in the Regenstein Center.

Roof Garden Staircase

At the east end of the Visitor's Gallery, a "monumental" staircase will rise to the second level of the Rice Center. In keeping with the feel of the building, the glass, stone and metal stairs will have an open and contemporary design with one landing. The stairs will lead to an interior space at the roof level containing a conference room and inner corridor that will overlook the Visitor's Gallery and out to the Roof Gardens. At either end of the East hallway, doors will allow access to the Roof Gardens.

Roof Garden Overlook and Conference Room
With a view over the East Entrance Terrace and Garden, the Roof Garden Conference Room will be an elegant venue for meetings and small gatherings and events. The 450-square-foot space will have state-of-the-art audio-visual equipment for presentations. The glass walls will allow slotted views out to the Roof Gardens on the west side. The Roof Garden Staircase ends on the second level at the Roof Garden Overlook. This area is adjacent to the Roof Garden Conference Room and also expands north and south to glass doors that lead to the decks of the Roof Gardens. It will contain interpretive panels educating visitors about all aspects of the building's green design. From the Overlook, there will be a dramatic view back down to the Visitor Gallery, out to the Roof Gardens and west toward the Evaluation Garden, the Dixon Prairie and Evening Island.

Roof Gardens North and South
Crowning the new Rice Center will be two rooftop gardens, on either side of the atrium clerestory. Each side of the roof is designed as a demonstration garden representing the currently accepted best plants for roof top gardening. The gardens will be a beautiful display reflecting the talents of the horticultural staff at the Chicago Botanic Garden. Additionally, each side is an evaluation garden for roof top garden plants - a site for rigorously studying the adaptability of plants on a roof to ultimately increase the diversity of plants currently used in this extreme type of setting. Plants native to this region and elsewhere in North America will be studied. The roof will be a living classroom for visitors offering them the opportunity to learn the best materials and practices used in roof top gardening and the extent to which a roof top garden can ameliorate air pollution, the urban heat island effect and non-point source pollution caused by storm water runoff.

East Entry Terrace and Garden
For staff, visiting colleagues and volunteers arriving by car, the primary entrance to the Rice Science Center will be on the east side of the building. The stairway leading to the glass curtain entrance will be flanked by walkways along the building edged with a landscaped berm and understory plantings. These gently upward sloping walks provide an ADA accessible entrance. Trees will adorn the east wall next to the walkway.