

# Design Challenge Sarasota County

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**Rethinking Sustainable Construction 2006**

**September 18-22, 2006**

**Challenge Launch: 1-5 p.m. Monday, Aug. 18, Ritz-Carlton.**

Challenge your creative muse in Sarasota. Assemble a team in advance or join others at RSC06 to form a discovery team that will provide key input into the world's first sustainable biological field station, Base Camp Sarasota!

**Bring your best product, technology and design knowledge to bear for this challenge and help plan and design a state-of-the-art Biological Field Station.** This multi-use research facility tucked in a pristine canopied wetland will require the highest standards of sustainable design, construction and harmony with nature. Not an exercise, this station will move forward during the coming year, as a working home for students and scientists and an international demonstration of best practices. Field stations around the world provide scientists and visitors safe haven and comfortable live/work environment while affording intimate contact with the ecosystems to be studied. Common facilities support conviviality and a rich environment for collaboration and learning.

Sarasota County has dedicated five acres of pristine natural environment within a 54,000-acre site at its Carlton Reserve. This area, called the Horse Pond site, is representative of the many wetland features of the Carlton expanse. Ecosystems here include wetlands with seasonal ponds, oak-palm hammock, open pine flatwoods with a burning regime and public access areas to study human impact. The terrain is wet, with up to four feet of standing water during part of the year. Sarasota County is a prime hurricane target.

- **What is a biological field station?**

This facility will provide a "base camp" for research and education that will guide future land use policy and environmental decisions based on both economics and biology. Base Camp Sarasota is part of a larger initiative known as the Center for Progressive Land Use being jointly developed by Sarasota County Government, New College of Florida, the University of Florida, University of South Florida and the Florida House Institute.

Research conducted at this field station will result in the first comprehensive biological inventory of the region and provide an experimental setting for assessing the ecological impacts of land use practices. For one- or two-week periods year round, groups of up to 20 students will live onsite with their instructors. Faculty may choose to bring family to accompany them. Research, meeting and dining facilities, as well as sleeping accommodations, will be included in the overall campus plan. The goal will be to assimilate the scientists into the site; integrate them into the ecosystems. The biological field station created on this environmentally sensitive tract will provide an excellent setting for the scientific community to study southwest Florida's unique subtropical ecosystems. What the scientists experience and document here can be replicated worldwide by others in similar climates. The site has an excellent diversity of habitat and an aura of natural beauty that will make it ideal for small conferences and for activities such as biomimicry workshops.

- **High performance foundation and building systems**

Preliminary feasibility studies, site selection exercise and the field experience of New College of Florida's Dr. Meg Lowman and the science advisory team have provided a rich point of departure for the coming design phase. This facility will need to help visitors cope with periodic flooding and Southwest Florida's hot, humid semi-tropical climate. Shade and tree canopy is both a quality of life issue and prime research opportunity. Foundations will need to be light- and tree-friendly while supporting buildings and walkways and providing stability in hurricane force winds. What kind of building system will work here? Imagine the opportunity to design contemporary facilities for the millions of stilt houses worldwide where these conditions reflect everyday living.

- **Stand-alone energy, water and waste systems**

The remote nature of this site and need for minimum disturbance create the opportunity to demonstrate state of the art strategies for stand-alone energy and life support infrastructure. Energy will be needed for lighting, cooking, HVAC, dehumidification, refrigeration, laboratory processes, AV, data processing and telecommunications. Potable water and

electric utilities are available in relative proximity so grid-interconnected PV is an option. Solar aquatic, composting and other waste systems will be explored with composting toilets a viable option. Help understand our options for systems integration for the various buildings and the facility as a whole.

- **Facility requirements**

The ideal facility will make the least environmental impact, occupy the smallest footprint and provide opportunities for inhabitants to interact with natural systems. The educational experience should be first-rate. Consider the following:

- laboratory accommodating 8-10 researchers
- library/classroom/lecture space
- space for three offices
- two-bedroom residential unit for scientists conducting long-term research
- bunkhouse with five rooms accommodating four persons in each, plus two bathrooms; a covered porch
- dining/meeting area that can serve up to 60; and a full kitchen
- adequate adjacent parking will connect to the main Carlton Reserve parking area

- **Considerations:** Go light on the land. Optimize sustainable products and practices.

1. Snuggle into the landscape
2. Maximize natural light
3. Minimize habitat disturbance
4. Incorporate natural materials and aesthetics so that users feel they are out in nature even when they are inside
5. Maximize ecosystem awareness with views, aspects and pulling the outdoors inside
6. Incorporate local or sustainable materials with scientific interpretation into all design elements
7. Provide museum quality messages that give the user some take-home messages
8. Involve users in the mission of the building, with such components as an aerial map to pinpoint bird nests, a daily weather chart, a plant and bird list--- all in a public place so people can participate in ecosystem monitoring
9. Create a modular plan scalable for future growth and friendly to these intended residents: student scientists/faculty/family friendly. Requires dormitory for 20 students; sleeping accommodations for faculty and families; cooking and dining facility; research and meeting facilities
10. Consider zero- or near-zero energy, biomimetic/biomimic design

**Outcomes** will be evaluated on an integrated systems approach and components and strategies for:

- Foundation systems and walkways
- Building systems
- Energy systems and conversion devices (lighting HVAC refrigeration etc)
- Water systems, conservation, purification, rain-catchment
- Wastewater treatment and reuse