

Faulkner State Community College Charrette

A charrette was held at Faulkner State Community College on June 13th, 2003 to discuss high performance green building design and construction techniques. The charrette followed the structure of the LEED Rating System™, which serves as a clear and organized tool for examining the environmental aspects of building. What follows is a report of the issues discussed at the meeting and the ideas put forth by the design and construction community present.

About Southface

Southface is an independent non-profit organization that promotes sustainable homes, workplaces, and communities through education, research, advocacy, and technical assistance. Since its inception in 1978, Southface has helped Atlanta become a national leader in the green building community.

Why Green Building?

Buildings have a tremendous impact on the environment. Buildings in the U.S., for example, consume more than 30% of our total energy and 65% of our electricity. Water, wood, and other natural resources are used inefficiently, at a time when they are becoming increasingly scarce. Moreover, traditional construction methods have generated too much waste, much of which is comprised of harmful substances that are sent to landfills; a typical North American commercial construction project generates up to 2.2 pounds of solid waste per square foot of floor space.

Green design practices can substantially reduce these negative impacts, save money on energy and water, decrease maintenance and liability, and increase worker morale, productivity, and comfort. Sustainable design can also be used to harness positive public relations and more effective marketing.

There are many different concepts of green building design due to a broad range of sustainability issues and the novelty of sustainable principles. Definitions range from broad theories that incorporate all aspects of sustainability to narrow definitions that focus on one specific sustainable design feature such as recycled content materials or energy efficiency. The US Green Building Council defines sustainable building as “design and construction that significantly reduces the negative impact of buildings on the environment and occupants.”

Successful sustainable design takes an integrated “systems” approach in which different aspects of design -- such as architecture, HVAC engineering, site planning, and interior design – are studied in relation to each other. Therefore, early collaboration between those involved is extremely important. For each design, priorities will vary, and the client, architect, designers, and contractors will need to decide what is feasible and desirable. The charrette is a useful opportunity to bring these players to the table and to develop goals and strategies for making a project sustainable.

Fairhope, Alabama

Fairhope, AL is a small town located across the bay from Mobile. With a quickly growing population of almost 13,000, the town is experiencing many of the same growing pains being experienced throughout the country. Fairhope has a chance now to make the decision to become a model for smart growth in an age of sprawl. One of the most integral elements of smart growth is intelligent building. Designing and building while keeping an eye out for ways to reduce the building’s impact on the sensitive coastal environment is essential to the pursuit of successful smart growth pattern.

At the center of this town is the Fairhope campus of Faulkner State Community College. At a time when the College is looking at the construction of a new science building there is now the chance to review local design and construction practices, as they would apply to this specific project and investigate ways to improve them.

This charrette aimed to provide both a general overview of environmental issues that are regularly addressed by green building as well as provide a forum for the local community to discuss issues that are of specific importance in the development of Fairhope and coastal communities in general.

Regional Environmental Issues

During the charrette, the community voiced concerns regarding specific issues that they believed to have a superior urgency in the construction of buildings in this locale.

The LEED Rating System™ focuses on the major areas of: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, and Indoor Environmental Quality. Each of these categories applies to Fairhope in both the general sense, but also in region-specific ways that were of particular concern with the group.

Sustainable Sites

The Sustainable Sites category addresses issues related to both the location and the condition of the proposed building site. Of particular concern to the residents of the Fairhope area are location of building and that the construction of buildings does not contribute to the deterioration of the ecology of the bay and of its surrounding communities.

The location of a building greatly influences not only the surrounding ecology but also the transportation patterns related to the occupants and visitors of the building. By designating parking spaces for alternatively fueled vehicles, carpool vehicles and other lower-impact transportation modes, the facility moves to encourage more environmentally friendly transit. The main issues discussed by the group under this category included erosion and parking.

Erosion

To be sure that the building would meet the LEED standard for erosion control, the local regulations for erosion control must be compared with the LEED requirements. Erosion control during construction has a large impact on the water quality of the bay. Poor erosion and sediment control could lead to pollution from rain, washing sediment into the bay.

A suggestion made by the group was to include the design of bio-retention basins in conjunction with the design of the new buildings to ensure permanent sediment flow control. The already existing gullies could help to serve this purpose.

Parking

As the city of Fairhope grows, parking and transportation patterns will be greatly affected. In designing buildings, it is important to consider the transportation implications of the occupants of the building. Providing carpooling spaces and alternatively fueled vehicle parking could encourage methods of transportation with less impact. Additionally, the group noted that intelligent course-scheduling and/or coordination with the nearby church could result in shared parking and thus a smaller lot size.

Water Efficiency

The Water Efficiency category addresses both the quantity and the quality of water associated with the built environment.

Irrigation

At present, the Faulkner campus has irrigation in select locations. The new building may or may not have irrigation, depending on the plants used in the landscape scheme. There is already some salt-water intrusion into the bay and the groundwater recharge has decreased. Farmers have been constructing landscapes for water retention in the area for years. The Chesapeake Bay Foundation used rainwater collection in their buildings precisely because of the stress that their water usage put on the bay ecosystem.

Energy and Atmosphere

The Energy and Atmosphere category addresses issues associated with energy used and the effects of that energy used on the greater environment.



Fairhope Post Office with high albedo roof.

Some of the strategies discussed were to emphasize the envelope of the building to be able to reduce the size of the mechanical systems. This involves using better windows (double-paned, low-e glass) and better insulation and air sealing. Additionally, the use of white roofs, or lightly colored roofs could reduce the cooling load of a building. The focus for energy savings should be on reducing cooling loads, especially on the dehumidification portion of this load, in this area of the Southeast.

Materials and Resources

There exists the possibility of salvage of material from the current gymnasium to be used in the future science building or in other campus or local projects. The hardwood floor is one of these commodities. Recycling of construction waste primarily depends on training of the contractors and providing a staging area. Resources may be found in Mobile for recycling of major materials such as steel and concrete.

Indoor Environmental Quality

The Indoor Environmental Quality category is concerned with addressing the health and air quality of the interior built environment. Many of the details of this category were not addressed in this one-day workshop as they will become more prominent in later phases of planning for the Faulkner building.

Group Design

After the introduction to the LEED program and high performance design and construction techniques, the charrette group was split into four teams with the task of devising a preliminary site plan for the new science building as well as a press release to accompany the new building construction.

The results from each team follow.

Group 1

Press Release:

Faulkner Leads the LEED



Group 1 at work

Faulkner State Community College turns green, not because of mold but to continue the environmental goals of the community.

Due to some lofty thinkers, the design of the new environmental science building will be the showcase for the future of design. Many of the environmental innovations will include:

- Capturing all on site water; that which falls from the sky and that which comes from the tap, and re-use it for the water retention pond, the ½ gallon turbo flush toilets, the waterless urinals and Greywater showers. The shower will become the focal element of the entry experience through the indigenous flora.
- Capturing the predominantly southwest wind power flowing through the courtyard and sell back to the city of Fairhope for positive cash flow and thus financing the project.

All of these innovations have only produced slight delays with minimal cost increases but the result of incorporating these building innovations will result in a construction cost of 3.78 \$/sf.

Design Features:

“Interactive” shower

Predominantly southwest winds exist,

therefore include a trellis on north side with wind chimes to generate energy

Courtyard effect (similar to the University of Virginia)

All of classrooms have North light.

Covered porch on south side.



Drawing created by Group 1

Carpooling, bicycle racks to encourage alternative transportation.

Water retention pond to deal with stormwater issues

Office for Lisa

Hardwood floors recycled from gym used in new building

Paths from recycled concrete from demolition

Creation of green space to attract the eye.

Take advantage of large live oak.

Create quadrangle that connects to other quadrangle to preserve campus feel.

Group 2



Group 2 discussing plans

Press Release:

Faulkner State University announces the construction of a new high performance science facility integrating community, environmental, occupant and energy aspects. This facility shall preserve pedestrian and environmentally friendly character of the campus at the center of Fairhope. It is to be constructed to meet design criteria for becoming Leadership in Energy and Environmental Design (LEED) certified. Specific features shall incorporate energy and water conservation as well as efficient HVAC and lighting systems. Daylighting will be incorporated for better student productivity. This includes a storm water enhancement plan for the entire campus and surrounding streets.

Design Features:

Detailed design

Keep the building facing North / South in the same site location to reduce site disturbance.

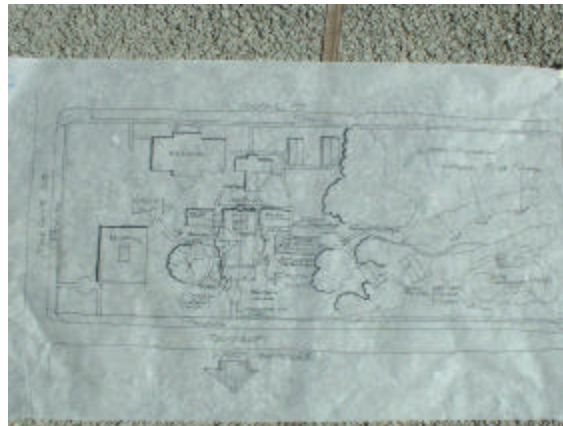
Gable on North side for additional light

Balcony on North side

South side – extend overhang but keep natural daylight.

Geothermal reflecting pond

Rainwater from roof goes into cistern on side with recycling center.



Plans from Group 2

Natural berm through site that fingers down to filter with site detention pond feeding into science research wetland.

Bringing entire site into new science facility to make the site interactive with the building.

West side – two story southern porch with colonnades (or Victorian).

Maintained all pedestrian circulation.

Donated rocking chairs on second floor

Digital computer systems controlling everything.

Shared parking with the nearby church to save on paved space.

Salvaged wood floor from current gymnasium and donate to library across the street

Group 3



Group 3 in discussion

Press Release:

FSCC announces the initiation of a capital campaign for the construction of a new Environmental Sciences building at their Fairhope, AL campus.

Utilizing state of the art technologies in building construction, site development, and energy efficiency, FSCC will become the first University in the State of Alabama to utilize the LEED program in design and construction.

LEED (Leadership in Energy and Environmental Design) is a grading system taking into account the overall site, building water efficiency, energy efficiency, the building materials, and overall air quality of the building. The more efficient and environmentally friendly the design, the higher the building rating.

Concepts to be used include captured rainwater for irrigation, pervious walking paths, placement of windows for natural lighting, motion systems to activate lighting and plumbing fixtures, and alternative transportation such as bicycle parking, designated carpool parking, and shared parking. Features will include low-e windows, a geothermal heat pump system, recycled building materials, and a rooftop garden for the capture of stormwater. These measures will provide FSCC with a model for design and cost effectiveness throughout the Southeastern U.S.

Design Features:

Deciduous trees on East and West sides.

Minimal glass on those sides
Porches all the way around the building.
Permeable concrete sidewalk to bike parking, shower and locker area.
Rooftop garden above the second story porch – rainwater falls off garden into the cistern that will be used for irrigation.
Small gazebo
Carpooling parking.
Used the slab from existing building – same footprint to reduce site disturbance.



Plans from Group 3

Group 4



Group 4 planning

Press Release:

Faulkner State Community College **NEW** Addition to Campus
Evolutionary Design of Science Building
Incorporates latest green technology in energy conservation and environmental friendliness
Projected O&M cost savings of \$1.25 million over life of structure
Model of Commercial building design in Southeast segment of USA
Functional Educational Tool for campus to teach architecture and landscape design / maintenance
All donations accepted (tax deductible)

Design Features:

Plan uses the footprint of the existing building
Ampitheater- excess rain storage

Extra challenge – do it all for 100 \$/ft
Plan for erosion control by landscaping with many trees.
Create a plaza on the West side of the building with new tree plantings.



Plans from Group 4

Conclusion and Next Steps

The one-day event held at the Fairhope campus of Faulkner State Community College is only one of the first steps in working towards a more sustainable community. Southface challenges the folks that participated to take what was explored and learned and provide community leadership by incorporating green building and sustainable principles into your individual lives and workplaces. Applying these design and construction techniques into buildings in Fairhope, specifically on the Faulkner campus, could position Fairhope as a leader of sustainability in Alabama, spreading these ideas throughout the state.

As Faulkner State Community College proceeds into the next phases of design and construction of its new science facility, it may benefit the college to consider the many impacts this building will have on the surrounding community and environment. As a prominent presence at the center of town, the activities of this college will be seen by many residents of Fairhope as well as by the town's many visitors. The construction of this building, therefore, has the power to influence the community in very positive ways.

Environmentally, the impact of this building is in many ways similar and in many ways different from all other buildings of this type built throughout the country. Fairhope experiences a climate unlike any other part of the country, and thus has different challenges to overcome regarding climate control and water usage and disposal. However, the materials used in the building, the waste generated by the building, and many other aspects of its design and construction can be informed by the experiences of other projects nationwide to produce as sustainable a building as possible.

In order to accomplish this, the LEED Rating System can serve as a useful tool in focusing the sights of the team on critical energy and environmental issues. Additionally, it is advisory that the college take advantage of the experience and wisdom of the local design and construction professionals as it relates to the very site-specific issues of Fairhope.

Finally, Faulkner may use this building as a teaching tool itself, and thus should use input from its instructors and students as well as the local community as to what the most useful educational elements of this building may be. For instance, rain water runoff and erosion are a serious concern to the health of the marine life in the bay – the way that the college addresses this problem can be used both as an important case study for the area and as an example of commitment to marine health and as a demonstration from which that students will learn. Perhaps the biggest educational impact this building will have will be on the design and construction community of Alabama, where it will serve as a shining example of high performance building in the state.

As the community continues to develop and strives to implement more environmentally friendly building practices, few opportunities will be as valuable as the upcoming construction on the Faulkner State Community College campus. The partnering of professionals in the community with the school could accelerate the learning process of both parties. In addition to partnering with the school, there are many other ways to bring sustainable design to Fairhope. Some actions that could be taken include:

- Combining resources and sharing ideas with local organizations
- Developing training and outreach programs
- Identifying champions in local government
- Carefully consider local and regional opportunities and identify the most difficult barriers
- Develop and adopt local green building guidelines

Ultimately, the shift from conventional construction to a more sustainable method is one that requires education and buy-in from the general public. Such a task may be accomplished by following the ideas listed above, all of which requires commitment from the advocates. The expertise, passion and interest present in the room during the charrette proved that such a drive exists in Fairhope. The challenge lies in taking the first steps presented at the charrette and combining them all to begin to shape the path of development in Fairhope to a sustainable, environmentally friendly community.

Sustainable Design Web Sites & Videos:

Southface Energy Institute (<http://www.southface.org>)

Includes fact sheets and information on Southface educational programs and the Greenprints annual conference.

Building Green/Environmental Building News (<http://www.BuildingGreen.com>)

Includes material from EBN, bibliography and other resources, calendar of events, ordering information for GreenSpec, Green Building Advisor, and other resources

NREL (<http://www.nrel.gov/highperformance>)

Includes case studies and information on energy efficient strategies

U.S. Department of Energy (<http://www.eren.doe.gov/buildings>)

Software tools, case studies, other resources

Federal Energy Management Program, U.S. Department of Energy

(<http://www.eren.doe.gov/femp>)

Information on alternative financing, case studies, training opportunities, resources; includes *Greening of Grand Canyon* and other Greening reports and *Greening Federal Facilities Guide*

U.S. Green Building Council (<http://www.usgbc.org>)

Information on the Council and the LEED™ Rating System, including reference materials and training on the LEED™ Rating System

Whole Building Design Guide (<http://www.wbdg.org>)

Good overall site for sustainable building information. Energy issues are covered extensively; it is quickly being updated for materials and other sustainable considerations. Also, the site has information on productivity.

Green Building Challenge (<http://www.greenbuilding.ca>)

Information on an international effort to develop a method for assessing "green-ness" of buildings

U.S. Environmental Protection Agency (<http://www.epa.gov>)

Includes information on statutes and regulations, indoor air quality, environmental databases (see, for example, Surf Your Watershed)

U.S. EPA New Building Design Guidance and Target Finder

(<http://www.energystar.gov> Search: New Building Design)

Energy Star tools and resources Target Finder and New Building Design Guidance assist users with setting energy targets, enhancing the conventional design process, and moving toward energy performance goals

Environmentally Preferable Purchasing Program/EPA

(<http://www.epa.gov/opptintr/epp/>)

Includes "how to" information and resources, including EPP guidelines

General Services Administration/Planet GSA (<http://www.gsa.gov/planetgsa>)

Another government agency resource, includes case studies, resources

REDI Database (<http://www.oikos.com>)

A searchable database with up-to-date information on products/materials

Sustainable Sources

(<http://www.greenbuilder.com/general/BuildingSources.html>)

Includes materials from the Austin, Texas, Green Builder Program and other resources

Greenbuilding Discussion Group

(<http://www.crest.org/sustainable/greenbuilding-list-archive>)

Active, wide-ranging discussion of green building issues and ideas

Rocky Mountain Institute (<http://www.rmi.org>)

Includes resources and information, ordering information for publications

Commonwealth of Pennsylvania/Building Green

(<http://www.gggc.state.pa.us>)

Includes information on Pennsylvania's green building activities, an extensive list of library holdings (bibliography), *Guidelines for Creating High-Performance Green Buildings*, and an order form for the free video of the Department of Environmental Protection office building.

City of New York, Department of Design and Construction

(<http://www.ci.nyc.ny.us/nyclink/html/ddc/home.html>)

Contains downloadable High Performance Building Guidelines including useful appendices

AIA Committee on the Environment

(http://www.AIA_TopTen.org)

Includes top green projects for the last approximately five years

Videos:

1) **Greening the Red, White, and Blue Video and DOD Energy 10 Video:**

Contact: Sandy Cannon-Brown

VideoTakes, Inc.

1521 N. Danville St.

Arlington, VA 22201

Phone: (703) 276-7077

Fax: (703) 276-7079 – fax

E-mail: Sandy Cannon-Brown <sandy@videotakes.com>

www.VideoTakes.com

OR Allen Bryant @ Naval Facilities Engineering Command in Norfolk

Phone: (757) 322-4202

E-mail: <BryantAG@efdlant.navfac.navy.mil>

2) **Pennsylvania’s “Lessons Learned” CD and “The Story of Pennsylvania’s First Green Building: DEP South Central Office Building” Video**

Contact: Pennsylvania Department of Environmental Protection

P.O. Box 2063

Harrisburg, PA 17105

Call: (717) 787-4190 or go to the website: www.dep.state.pa.us

3) **Chesapeake Bay Foundation “Growing Smart” Video**

Contact: Chesapeake Bay Foundation

Philip Merrill Environmental Center

6 Herndon Avenue

Annapolis, MD

Call: (410) 268-8816 or go to the website: www.savethebay.cbf.org