

GREEN SCHOOL DESIGN

(Revision no.1, Dated 07/14/2010)

I. Introduction:

Public school facilities must be designed and constructed to be efficient, effective, and sustainable for their expected building life. Section 255.2575, Florida Statutes, requires all school district, college, and university buildings to be constructed to meet the requirements of one of the three green building standards approved by the Department of Management Services. In response to this statutory requirement, the Florida Department of Management Services, requires that “state-owned facilities meet the same standards required in the private sector.”

The three models of compliance: United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED), Green Building Initiative (GBI) Green Globes rating system, Florida Green Building Coalition Standards (FGBC), “or a nationally recognized, high-performance green building rating system as approved by the Department of Management Services”.

Each school district or college, after much consideration, shall select a model for each facility’s project to follow. Each model requires the assistance of a registered design professional to direct the project in accordance with the selected model’s measurement criteria. The model chosen by the school district or college must have a unit of measurement that ensures efficiency, effectiveness (outcomes), and conversion of the defined objectives and frequently subjective standards to meet the model’s application. Each model will lend itself to adaptation with school district and college dynamics to varying degrees.

The school district or college organizational structures shall be set up to include all necessary decision makers in accordance with the model selected for the green school design. The model selected shall consider that all Florida’s public schools must be built of Type I, II, or IV construction, precluding the application of combustible materials.

II. Summary of State-Approved Methods:

- A. (USGBC) LEED Rating System: “LEED” is an acronym that stands for “Leadership in Energy and Environmental Design.” “USGBC” refers to the United States Green Building Council. The USGBC Web site is www.usgbc.org. Information concerning organizational membership is accessible online at: www.usgbc.org.

This model of green building standard is well assembled and organized. According to this model there are six basic areas of consideration for achieving a green school status: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation and Design Process. There are four different levels of achievement; based on assessment points for each facility, certified, silver, gold, and platinum.

Costs to obtain organizational membership, a level of achievement for each school building, and a method to maintain or improve the facilities level of certification may easily total thousands of dollars, which can be offset in operational savings benefits to the owner of the facility. The LEED online Web page provides a “Schools Reference Guide” that explains how to achieve various levels of facility certification. Each area of consideration is thoroughly explained, definitions for technical terms are provided, and assessment points are based on certification ratings in each area of consideration. Also, information resources for each area of consideration are given with Web sites to review pertinent standards. USGBC estimates that the cost to merely register and certify a facility is an average of \$5,500 for new facilities and \$3,500 for existing facilities, not including facility improvements.

This model is easy to follow, and offers comprehensive and pertinent coverage of applicable information, but cost for membership and facility certifications is considerable. LEED claims to be a voluntary market-driven

rating system to evaluate green building technology for various buildings. The LEED model is intended to be comprehensive in coverage but simple in application. As LEED develops new technology and new materials are developed, online amendments and notices will be available for review.

- B. (GBI) Green Globes Rating System: “GBI” is an acronym that stands for “Green Building Initiative.” Information about GBI is accessible online at www.greenglobes.com/design.

In 2004, GBI acquired the rights to distribute Green Globes in the United States. In 2005, the American National Standards Institute (ANSI) accredited GBI as a standards developer for developing Green Globes as an official standard under the American National Standard Institute (ANSI). The standard is written in easy-to-understand terms; no environmental design experience is needed to use the system. The system requires no training and is computer-friendly.

Green Globes is focused on reducing the environmental impacts of buildings based on the following assessment categories: energy, indoor environment, site, resources, water, emissions and effluents, and project management. Green Globes provides for the architect, engineer, construction group, and building owner to determine the methods to reduce operating costs and enhance the living and working environment for the occupants through the GBI system.

The Green Globes Tool is an online survey that provides the user with numerous options, tools, tips, and clarifications for the completion of the survey. The survey compares seven categories: energy, indoor environment, site impact, water, resources, emissions, and project management. Based on the responses submitted, points are assigned and a rating level for the facility is established. The rating level is based on a percentage.

The report indicates how the facility rates (percentage) and recommends how to improve scores. The four rating levels that buildings can achieve are: 35-

54%, 55-69%, 70-84%, and 85-100%. The cost to register a facility and use third-party verification is approximately \$5,000 to \$7,000, not including the facility improvements.

- C. (FGBC) Florida Green Building Coalition. Information regarding the FGBC is accessible online at www.floridagreenbuilding.org. For commercial building information, select “Certification” at the top of the page, then select “Commercial” for the commercial building aspects of FGBC.

The Web page has a vast array of valuable information as it relates to sustainable economics, and the environmental and social benefits of providing green building standards. The commercial building standard side of FGBC focuses on public schools (K-12), and Group B occupancies for educational facilities over grade 12 (i.e., colleges), as listed in the Florida Building Code. The FGBC standard is used to adopt environmental strategies during the design and construction phases of a project so that the facility can be recognized for its efforts.

The standard recognizes seven categories: energy, water, site, health, materials, disaster mitigation, and general values. A total of 100 possible points can be generated for each category. The project team reviews all categories to determine what credits to target and how many points are to be pursued for the project. When all paper work is completed by the submitting designee, the application fees are determined, and payment is forwarded to FGBC, then the FGBC appoints an evaluator to begin his/her review of the project. The processing fees are based on building size (square footage) and the fees vary from \$3,000 to \$6,000 for each building, not including improvements.

The FGBC evaluates the project upon receipt of appropriate fees and determines whether the project is in compliance with FGBC standards. If the project is compliant, the FGBC issues a certificate to the designee for use by

the owner. If the project is deemed non-compliant, the designee can correct the deficiencies and resubmit the project to FGBC.

III. Areas of Design Concern in Public Schools

Some areas of design concern for public schools are listed below; however, the list does not include all items that a district/college may need to consider when designing, remodeling, or renovating a facility.

Energy Efficiency: Energy efficiency can be enhanced through energy-saving activities such as renewable energy solar and wind power; basic changes in day-to-day operations; proactive maintenance; encouraging new individual behavior as it relates to energy savings; and encouraging students to apply the lessons of energy-efficiency methodology in their homes and communities.

Water Efficiency: Water efficiency can be accomplished through conservation of water usage for cleaning, cooking, washing, and irrigation; the collection and distribution of rain water for the watering of landscape and the storage of rain water for later usage; and the treatment and recycling of effluent water for use as irrigation of the landscape as an alternate source for watering.

Sustainable Site Features: Sustainable landscapes include features native to the area or region; watershed features that can be used to hold or divert waters away from the facility; and operational and maintenance enhancements.

Health and Indoor Air Quality: Ventilation systems that are appropriate for the region; lighting (artificial or natural); thermal insulated building envelope and high-efficiency HVAC comfort systems; implementing better design features and materials; improving construction performance by maintaining cleaner interiors during construction; commissioning of the facility; and operating and maintaining the facility in ways to reduce the indoor pollution while ensuring that fresh air is continually supplied and properly circulated.

Construction Materials: The use of building materials that are climate-rated for the construction region in which the facility is erected should be considered. The

recycling of building contents, the re-use of demolition materials or refurbished existing building materials, and the re-use of demountable partitions and adaptable interior wall systems should be considered as part of the construction material selection process. The recycling of demolition materials shall be considered in order to lessen the impact on the environment.

Disaster Mitigation: How quickly could a district restore a facility back into operation after a natural disaster such as a hurricane, tornado, wind storm, lightning strike, hail storm, fire, or a flood event? Policy set forth by the local school/college board should consider the following: funding source for clean-up, and disaster relief from local, state, and federal government agencies.

IV District and Community College Policy Options

The District and Community College Policy Options for public schools are listed below; however, the list is not all-inclusive. A district or college may need to consider other policy options when designing, remodeling, or renovating a school facility.

- Publish goals and objectives for green school designs
- Communicate which state-approved method or standard is to be used
- Establish an internal evaluation process
- In-house school staff training

V. Conclusion

Boards must develop policies to clarify their intent to design and build efficient, effective, and sustainable public school facilities in accordance with Section 255.2575, Florida Statutes. Through these policies, Florida public schools will provide cleaner, greener, and healthier learning environments. By making simple yet effective changes, we can dramatically reduce our carbon footprint and leave a cleaner, more comfortable earth for future generations.

Benefits to Being a Green School:

- Healthy, safe learning environment
- High student performance
- Increase teacher and support staff satisfaction and retention
- Increase attendance by reducing health risks and triggers for asthma
- Increase sense of ownership by teachers, staff, students, and parents
- Increase connection between the community and school
- Prepare students to understand and act on the current and future environmental challenges
- Build partnerships with the local community to design and implement projects and programs that will result in a healthier environment and safer school
- Use of the school buildings and grounds as a teaching tool
- Model environmental and conservation best management practices in building, landscape design, and maintenance can reduce costs
- Avoidance of costly repairs
- Reduce operating costs
- Save money by reducing consumption and operating cost
- Protect natural resources
- Reduce liability; avoid negative publicity