



# WHY + HOW

## the symposium

On March 18, the Florida A&M University (FAMU) School of Architecture (SOA) will host a Green Schools symposium. The discussion will bring together school board members, teachers, architects, contractors, researchers, facility managers and students. The event will provide a unique opportunity to address two essential questions regarding green schools; why + how.

The “why” discussions will focus on the relationship between green design and student health and academic performance in K-12 educational facilities. In addition, research will examine the short term and long term cost of being green.

The “how” discussions will focus on the work of award winning firms in the Southeast. During the lunch and learn, small firms will continue the discussion of cost. In the afternoon session, large firms will use their recent projects to clarify political and administrative challenges.

The Green Schools symposium will close with a panel discussion that includes all of the invited guests. The extended panel will provide an opportunity for designers to reflect on the research and for researchers to reflect the design work

*More than 20 %  
of our population  
spends a significant  
portion of every day  
in school as a stu-  
dent, teacher, staff  
member or adminis-  
trator.*

## the speakers

Sam Andras, AIA  
Senior Vice President, Andras, Allen, Starr  
Architecture, Columbus, GA

Modupe Arthur, AIA, LEED AP, NOMA  
Associate Principal, Schenkel/ Shultz Architecture,  
Orlando, FL

Thorn Grafton, AIA, LEED AP, BD+C  
Director of Sustainable Initiatives, Zyscovich  
Architects, Inc, Miami , FL

Mariana Figueiro, Ph.D.  
Program Director/ Assoc Prof, Rensselaer  
Polytechnic Institute, Troy, NY

Shawn Hamlin, AIA,  
Project Manager, Perkins + Will, Atlanta, GA

Lawrence Maxwell, AIA, LEED AP  
President, Spacecoast Architects, P.A., Indialantic, FL

Luke Andrew Nicholson, P.E.  
Ph.D. Candidate, University of Florida, Gainesville, FL

Darrell D. Phillips  
Senior Projects Architect, Office of Education  
Facilities, State of Florida Department of Education

Matt Scaringe, P.E., LEED AP, CxA  
Vice-President, H2Engineering, Inc,  
Tallahassee, FL

Brook K. Sherrard, AIA, LEED AP Associate  
Associate, Schenkel/ Shultz Architecture,  
Orlando, FL

Michael Starr, AIA, LEED AP  
Senior Vice President, Andras, Allen, Starr  
Architecture, Columbus, GA

*School construction  
and renovation have  
become one of the  
largest segments  
of the construction  
industry – a total of  
\$80 billion from 2006  
to 2008.*

# WHY + HOW

## the schedule

March 18, 2011, 10:00AM-5:00PM

09:00 check in/ parking assistance

### 10:00 introduction

Andrew Chin, Assistant Dean, FAMU School of Architecture

Gretchen Miller, Visiting Professor, FAMU School of Architecture

### context

Darrell D. Phillips Senior Projects Architect,  
Office of Education Facilities, State of Florida  
Department of Education

10:30-12:00

### why

The morning discussion will focus on the relationship between green design and student health and academic performance in K-12 educational facilities. In addition, research will examine the short term and long term cost of being green.

Mariana Figueiro, Ph.D. Program Director  
Rensselaer Polytechnic Institute, Troy, NY  
“Quantifying the Impact of Daylight and Electric Lighting on Student Alertness, Performance and Well-Being in K-12 Schools”

Luke Andrew Nicholson, P.E., Ph.D. Candidate  
University of Florida, Gainesville, FL  
“Design and Construction of Healthy Indoor

Environments for Elementary Schools in  
Orange County, Florida

Matt Scaringe, P.E., LEED AP, CxA,  
Vice-President H2Engineering, Inc,  
Tallahassee, FL

“The initial costs, life cycle costing,  
commissioning of LEED projects”

### questions + answers

Moderator: Modupe Arthur, AIA, NOMA, LEED  
AP, Associate Principal Schenkel/ Shultz  
Architect

12:15-1:15

### lunch + learn

The afternoon session will focus on cost  
issues related to the implementation of green

*Florida Statutes  
255.2575 will push  
Florida's future K-12  
construction to meet “a  
nationally recognized,  
high-performance  
green building rating  
system.”*

Sam Andras, AIA LEED, Principal  
Andras Allen Starr Architecture. Columbus, GA  
Live Oak Elementary, Albany, GA

Lawrence Maxwell, AIA, LEED AP, President  
Spacecoast Architects, P.A., Indialantic, FL  
Odyssey Charter School, Palm Bay, FL

#### questions + answers

Moderator

Modupe Arthur, AIA, NOMA, LEED AP, Associate  
Principal Schenkel/ Shultz Architect

1:30-3:30

#### how

The final session focuses on larger design firms that have produced multiple K-12 projects for various school districts. In addition to addressing the political challenges to incorporating green strategies, this session will focus on the role that architecture plays as a vehicle for environmental education.

#### welcome

Dean Rodner B. Wright, AIA, FAMU School of  
Architecture

Thorn Grafton, AIA, LEED AP BD+C, Director  
of Sustainable Initiatives,  
Zyscovich Architects, Inc. Miami, FL  
Pine Job Elementary, School, West Palm Beach,  
FL

Shawn Hamlin, Project Manager  
Perkins + Will. Atlanta, GA  
Arabia Mountain School, DeKalb County, GA

#### moderator

Modupe Arthur, AIA, NOMA, LEED AP,  
Associate Principal Schenkel/ Shultz Architect

3:30-4:30

#### panel discussion

all of the symposium guests are available to  
answer questions

#### closing comments

Andrew Chin, Assistant Dean, FAMU School of  
Architecture

Gretchen Miller, Visiting Professor, FAMU  
School of Architecture

4:30-5:00

#### Reception

## Mariana G. Figueiro



B.S. in architecture and urbanism, Federal University of Minas Gerais, Brazil; M.S. in lighting, Rensselaer Polytechnic Institute; Ph.D. in Multidisciplinary Science, Rensselaer Polytechnic

Dr. Figueiro is an assistant professor at Rensselaer Polytechnic Institute and a program director at Rensselaer's Lighting Research Center. Her research areas include photobiology, energy-efficient lighting, human factors in lighting, lighting applications, and working to better understand and quantify light as a stimulus for the circadian system.

She has written numerous scientific articles for archival journals and trade publications and worked on the 9th edition of the Illuminating Engineering Society of North America Lighting Handbook.

She also led the development of lighting design guidelines for older adults as outlined in the publication *Lighting the Way: A Key to Independence*, sponsored by the AARP Andrus Foundation



# Hypothesis:

Lack of morning light (or too much evening light) will delay dim light melatonin onset resulting in:

Later bedtimes

Shorter sleep times

Reduced performance and mood

## Daylight in Schools Study 1:

Site: Smith Middle School, NC

11 students participated in the within-subjects study

Students wore orange glasses while at school for one week

Dim light melatonin onset before and after wearing the glasses

Those wearing the orange glasses had:

Dim light melatonin onset (DLMO), delayed by approximately a half hour

## Daylight in Schools Study 2:

Site: Smith Middle School, NC

22 students participated in the between-subjects study

11 subjects wore orange glasses for one week while at school

11 subjects did not wear the glasses

Those wearing the orange glasses had:

Dim light melatonin onset (DLMO), delayed by approximately a half hour

Sleep times delayed by approximately 10 minutes

No significant effect on performance

## Daylight in Schools Study 3:

Site: Algonquin Middle School, NY

16 students participated in the study conducted in winter and spring 2009

Spring is associated with:

More evening light

Delay in circadian phase (DLMO)

Shorter sleep duration

## Luke Nicholson



Luke A. Nicholson,  
P.E., PhD Candidate,  
University of Florida  
College of Design  
Construction and  
Planning, Gainesville,  
Florida

Luke A. Nicholson is a licensed and practicing Civil Engineer and General Contractor. He has worked extensively in both Florida and Hawaii, and has recently specialized in Green Building opportunities in Orlando Florida. A recently completed project was the first Florida Green Building Coalition recognized residential renovation project in the area.

Luke's research in support of his PhD work involves analysis of the effect that improved indoor environmental quality has on standardized test scores of elementary school students in Orange County Florida. Several of Luke's study schools in Orange County showed significant improvement in standardized test scores immediately after renovations were completed.

The presentation for Florida Agricultural and Mechanical University's Green Building Symposium on March 18, 2011 examined one study school, Tildenville Elementary School, in Winter Garden, Florida.







The renovation resulted in the school having No evidence of mold or mildew anywhere, No excessive complaints of coughing, itchy eyes, etc. and Positive feedback from almost all building occupants

Built in 1964 and had a minor renovation and addition in 1985.

Teachers complained of black mold present at AC Diffusers and that they sneezed and coughed at work all the time.

In 2006 the school underwent comprehensive renovation, including:

- Added Square Footage
- HVAC Improvements/Upgrades
- Humidity Controls, Air Stream Driers (65/60)
- CO2 Sensors 1000ppm/600ppm
- Lighting Upgrades
- Fenestration Upgrades

The correlation between IEQ and improved student learning was measured by improvement in the students FCAT scores:

1996-2005

Average Grade 3 Reading Score: 270.40

Average Grade 5 Math Score: 279.40

2006-2010

Average Grade 3 Reading Score: 293.00

Average Grade 5 Math Score: 319.00

Conclusion: Improved Indoor Environmental Quality has a Measurable, Positive Effect on Elementary School Student Learning

## Matt Scaringe



Matt joined H2Engineering first as an intern in college and later as an engineer in 1997 after leaving Pond & Company in Springfield, Virginia. His ability to relate to the client and provide responsive solutions was immediately evident.

Matt became a principal owner in 2000. Since then, his leadership has been a catalyst for company growth. He is responsible for business development efforts, particularly assuring that client service remains the focus of the company

### Education

Bachelor of Science in Mechanical Engineering, University of Florida, 1995

### Registration

Professional Engineer, State of Alabama

Professional Engineer, State of Florida

Professional Engineer, State of Georgia

Professional Engineer, State of Mississippi

Professional Engineer, State of Washington

LEED Accredited Professional



# LEED: Costs and Benefits

“Studies show savings of \$4 over first 5 years for every \$1 invested in commissioning”

“Whole Building Design Guide”, NIBC 2010

6-9% Energy Savings for New Projects; 12-15% for Existing Buildings

Portland Energy Conservation, Inc. (PECI) (2000)

5-15% Energy Savings

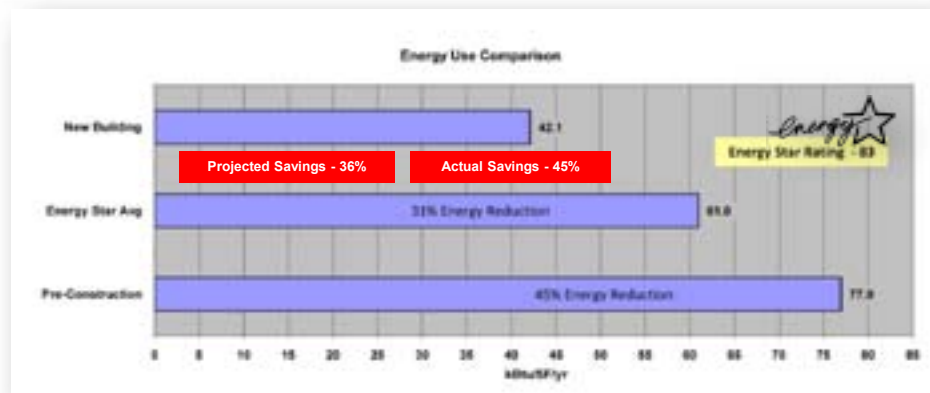
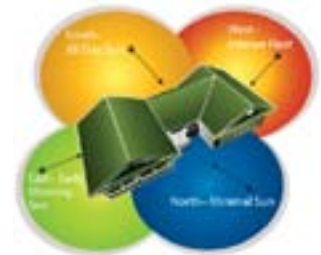
New York Energy Smart Program

## Case Study: H2Engineering Office Building Addition

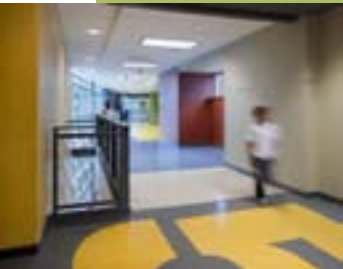
-LEED Gold Certified-

### Whole Team Approach:

- Sited Building for Best Solar Angles
- External Shading on South Façade
- Minimal Windows on East / West
- Utilized Daylight to Reduce Artificial Light
- Open Plan Style to Maintain Views



Sam Andras





Live Oak Elementary, is situated on a 30 acre abandoned agricultural tract near Albany, Georgia. Challenged by the Dougherty County School System (DCSS) to design “a school like no other in the State of Georgia,” the design team sought to create a school strongly rooted in its sense of place while underscoring the DCSS motto “Pursuing Excellence” by way of careful site evaluation, program analysis, and thoughtful form-giving.

The school’s organization was driven by the desire to provide abundant high-quality light to the learning units. In order to achieve this, three (3) two-story rectangular classroom “houses” were oriented east-west and arranged around courtyards. Classrooms were provided with two oversized window openings totaling over 90 square feet and oriented north or south. South-facing windows were equipped with continuous sunshades to filter glare and mitigate solar gain.

## Lawrence Maxwell

*Spacecoast Architects*  
provides services to their  
clients from preliminary  
site selection and  
analysis, through design  
and construction, to final  
building occupancy.

Lawrence Maxwell, AIA, LEED AP, is President of Spacecoast Architects, P.A. is the former Director of the State of Florida's Building Design Assistance Center at the Florida Solar Energy Center, and is a nationally recognized expert in the area of hot-humid climate design.

Mr. Maxwell's experience and expertise have earned him invitations to provide educational and informational presentations across the country and the Caribbean.

He has - and continues to provide expert advice and consultation on issues of environmental design and energy efficiency to private and governmental agencies, including the State of Florida's Department of Management Services, the Florida Department of Education, and numerous local governments, cities, and school boards.







Odyssey Charter School , is a 46,619 square foot prekindergarten through eighth grade charter school that was designed by Spacecoast Architects P.A. of Indialantic, FL, and constructed in 2005. Odyssey uses 30 percent less energy and spends 70 percent less money on its power bills compared to the industry standard for K-12 schools. These savings were realized without adding any cost to the construction of the facility. In fact, even with Odyssey's sustainability benefits, the school was constructed at the price of \$70 per square foot, almost half the average price of other public schools in the area.

Odyssey achieves its energy efficiency through appropriate site orientation, extensive use of daylighting, incorporation of mass, proper material selection, advanced HVAC design, and demand management strategies. The school also saves energy costs by using native plantings to accent the facility, which don't require fertilizers, insect control, or an irrigation system. Since opening in 2005, Odyssey has seen numerous measurable benefits, including lower energy bills, lower absenteeism, and high academic performance. Odyssey Charter School is Florida's first high performance school and also received a Florida A+ rating from the state.

## Thorn Grafton



A third generation South Florida architect, Thorn brings a historical perspective to his work on the built environment in a hot and humid subtropical climate.

An Architect for 30 years, Thorn's projects have ranged from historic preservation, community development, environmental education, and neighborhood planning to sustainable design and construction.

Thorn served as project manager and LEED coordinator for both the FAU / Pine Jog Environmental Education Center (LEED Gold), and the Pine Jog Elementary School in West Palm Beach, Florida's first public school campus LEED Certified at the Gold level.

He is the firm's Preservation Architect for the historic rehabilitation and expansion of Miami Senior High School, a National Register Historic Landmark, and was a planning coordinator for Zyscovich's post-Katrina New Orleans Neighborhood Rebuilding Plans, encompassing five historic neighborhoods, including Treme and the 7th Ward, in 2006.







Pine Jog Elementary School, built on the edge of a natural pineland habitat, has become the first school in Florida to receive LEED® Gold Certification from the U.S. Green Building Council – one of the highest standards given to measure a project's environmental stewardship. The project is a partnership between the School District of Palm Beach County and Florida Atlantic University (FAU) and the campus includes the new

Environmental Education Center, which received its own LEED® Gold Certification. Designed by Zyscovich Architects, a nationally renowned firm with offices in Miami, West Palm Beach, Orlando and New York City, the Pine Jog campus maximizes energy and water conservation, utilizes environmentally-appropriate materials and engages students to learn about environmental sustainability first-hand.

## Shawn Hamlin



Shawn Hamlin, AIA, LEED AP BD+C, is an associate with Perkins+Will. An Atlanta native, Mr. Hamlin has been practicing for nearly 18 years, focusing mainly on K-12 education. He is a graduate of Georgia Tech, with both undergraduate and graduate degrees in Architecture, as well as an undergraduate degree in Building Construction.

Mr. Hamlin has been a senior project architect with Perkins+Will for nearly 6 years. In that time, he's been focusing on sustainable design and construction implementation. Mr Hamlin has been worked on several LEED projects, as well as many other K-12 projects with Perkins+Will.

As the project manager for the Arabia Mountain High School, he was involved early in project development and responsible for project oversight. Mr Hamlin was tasked in developing and instrumental in overseeing the achieved sustainable goals for the project.





### Arabia Mountain High School

sits on the edge of the Arabia Mountain Nature Preserve in Lithonia, Georgia. Designed as a LEED Silver building, the building is oriented with the classrooms facing north and south with large expanses of glass to capture the view of the preserve, allow natural light deep into the classrooms and maximize energy efficiency. Bio-swales along the building capture the rain water from the roof drains and clean the run-off before it is returned to the natural stream system. The façade of brick and metal panels provide a fresh look for this sustainable high school, while high-performance glass and overhangs help minimize energy consumption.

The building is divided into three smaller learning communities that support various career and technical pathways and magnet programs in environment/agriculture, family/consumer services, healthcare, business/computer services and engineering/technology. A continuous spine with shared science and career tech labs runs adjacent to the smaller learning communities. Assistant principals and counselors are distributed throughout the learning communities allowing supervision and support to be readily available. Arabia Mountain is a high school that proves innovative in both its educational planning and sustainable design.





Mariana Figueiro, Ph.D., Program Director/ Associate Professor, Rensselaer Polytechnic



Luke Nicholson, P.E., Ph.D. Candidate, Univ. of Florida



Matt Scaringe, P.E., LEED AP, VP, H2Engineering, Inc



Lawrence Maxwell, AIA, NOMA, LEED AP, President Spacecoast Architects



Shawn Hamlin, AIA, Project Manager, Perkins + Wil



Thorn Grafton, AIA, LEED AP, Zyscovich Architects, Inc



Representative Alan B. Williams, District 8, Florida House of Representative



## the partners

Florida A&M University School of Architecture  
(FAMUSOA)

Wachovia Bank

Florida A&M University Title III Programs Office

Florida Campus Compact (FCC)

Sustainable Tallahassee

Tallahassee Chapter of the American Institute  
of Architects (AIA)

USGBC Florida Capital Region Chapter

