

The Whistle

FHEA

VOLUME XXV, NUMBER 1

SPRING 2009



I would like to first thank all the current members for their support in selecting me as FHEA State President. I am very honored and excited to have the opportunity to serve FHEA in this capacity. Support in the form of knowledge and information from this association has been very important to me – and one of the things I would like to see is our membership grow this year.

So I challenge all of us to promote membership in FHEA and bring new people to our group.

Our first Board of Directors' meeting took place in Orlando on February 6, 2009 and it

I am thrilled to report, was that the 80% inspections were reinstated! We are truly grateful to Kimberly and Rep. Van Zant - as well as Skip Gregory for taking the time to meet and come to this decision. I also want to thank each of the board members for their input; I look forward to continuing to work with all of them during this year.

At this board meeting, we also put together what I believe is an exceptional educational program for our 25th Spring Meeting coming up soon. Our venue is the beautiful Hilton Daytona Beach Oceanfront Resort. The theme for this meeting is "FHEA Takes the 'LEED'!" Details on the program are contained in this newsletter. Registration has been brisk – but if you have not

yet registered, please make every effort to find the time to attend. We're squeezing in as many tabletop exhibits as we can and I encourage you to spend time with these

supporting members who make our educational programs possible. They have much to share with us.

I foresee a great year ahead of us, with growing participation in district meetings around the state, and another great annual meeting and trade show in Orlando this fall. I want to see this association continue to grow. The time and effort we expend in this association is returned to us tenfold in the greater capacity we receive to do our jobs well.

The President's Corner

JOHN WILLINGHAM, CHE, PRESIDENT

proved to be an exceptionally productive meeting. A brilliant supporting member, Kimberly Hansen of Elkins Constructors, helped us to facilitate a meeting between AHCA, Office of Plans and Construction, and her father, Charles Van Zant, a newly elected state representative and member of the Health Care Regulation Policy Committee, to discuss the importance of the 80% inspection which had been eliminated due to budget cuts. At the board meeting we drafted a letter stating FHEA's position to be used during this meeting. The outcome of the meeting,

Our thanks to TLC, Engineering for Architecture for their generous sponsorship of this issue of the Whistle. If you are interested in sponsoring a future edition, we would be most happy to hear from you! Please contact the FHEA office at 407-332-7767 or email: fhea@earthlink.net

Welcome New Supporting Members

The following have joined our growing ranks since our last newsletter.

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Alethea Vitray Executive Director

In disaster planning for healthcare facilities, engineers need to follow the Boy Scout motto.

Engineers abide by the Boy Scout motto when designing hospital systems – they try to Be Prepared. It’s nearly impossible, not to mention cost-prohibitive, to plan for every unforeseen occurrence. But when natural and manmade catastrophes occur, they drive home the importance of designing our hospitals to withstand potential disasters.

Chapter 1.1 of the 2006 American Institute of Architects (AIA) “Guidelines for Design and Construction of Health Care Facilities,” Section 5, “Provisions

all along the Gulf Coast were totally incapacitated, the American Hospital Assn. advised all hospitals to assess their electrical capacity. Many hospitals sustained hurricane wind, water, and debris damage, which spawned several types of upgrade projects—none of which were required by code, but which the hospitals saw as a “bare minimum” to enable them to survive similar disasters in the future by keeping as fully functioning as practical. These projects included:

- Replacing generators with larger generators to serve loads that have been considered non-essential by the code books.
- Implementing water-repellent central utility building designs. A significant issue during a storm is water pen-

only thing sure about hospitals is that they will grow—often much faster than even your healthcare clients realize. Any design that doesn’t anticipate a large addition within five years is shortsighted.

In the following project case studies, disaster planning played a key part in the project design and decision-making process.

Florida:

All Children’s Hospital

Florida has long been a magnet for hurricanes forming in the Atlantic, and most any healthcare administrator in Florida can attest to the importance of hurricane preparedness and provide real-life examples and gripping first-person accounts.

Well Designed Hospitals *Are Prepared for What Comes*

***by Michael Sheerin, PE, LEED® AP
TLC Engineering for Architecture***

for Disasters,” gives fair warning to hospital owners and designers to consider the implications of disasters, and the ability to remain operational after such events. But the prescriptive requirements to accomplish this task are left to the design team themselves, based on a facility’s specific operational plan.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO), in its 2003 document, “Healthcare at the Crossroads: Strategies for Creating and Sustaining Community-Wide Emergency Preparedness Systems,” recommends that a facility “ensure a 48-72 hr stand-alone capability.” JCAHO also recognizes that for a hospital to serve its purpose, it must be able to withstand challenges with rigor, and if it should fail, to fail in a controlled fashion, which they refer to as “graceful degradation.” The goal is to “maintain its ability to provide care” and “avoid having the health system become a victim of the assault.”

Following the disastrous hurricane seasons of 2004 and 2005, in which numerous major hospitals in Florida and

etration, where water blows through window glazing, walls deflect several inches from the force, and water flows into the building through every crack and unsealed conduit.

- Enacting greater code detail with respect to wind debris impact. Most states have specific wind loading requirements, but few go further into details of wind debris impact. Florida has building code requirements for both, plus specific guidelines for hurricane preparedness for new hospitals and additions.
- Developing a “hardened shelter” within the hospital building itself.

Engineers face two major challenges in upgrading the power at a hospital: service interruption and scalability. Service interruption is the single most daunting challenge, because a hospital cannot tolerate any interruption of service. Often new electrical systems must be built in parallel with an existing system with a single tie-in/changeover date. Electrical systems in healthcare design are often designed to accommodate life safety issues rather than first-cost criteria. The

This is why when All Children’s Hospital in St Petersburg planned to build a new 10-story children’s hospital and central plant, they made disaster preparedness a top priority.

The heart of the hospital’s disaster preparedness plan, the central plant, is designed to withstand Category 5 hurricane winds and any storm surge that might flood the first floor. The boilers, chillers, and normal service switchboards are all located on the second floor, and the third floor houses the emergency power system and the cooling towers. All openings to the exterior are protected by louvers or doors that have been tested to withstand the impact of a flying 2x4 moving at 150 mph. In a hurricane, the breaching of a door or window can allow winds, water, and flying debris to wreak havoc on a building’s interior; in the case of a home, it could be enough to lift the roof from below.

All Children’s central plant is designed to include three chillers and associated pumps, with the peak usage being a little over two chillers until

shell areas are filled out. The emergency power system is designed to completely back up everything in the hospital and the plant. Furthermore, the emergency system is split into two systems, A and B, which includes a parallel switchgear and three 2-MW generators each, for a total of 12-MW of emergency power. Of the 12 MW of emergency power, 8 MW can be on in 10 sec., suitable for all Priority 1 essential loads.

All too often, the evaluation of a hospital or central plant results in too many “if only” statements: If only the prior design had allowed for expansion to the building. If only the generator was one size larger. If only the chiller piping was one size larger. Staff at All Children’s determined that they wanted the new hospital plant designed to be expandable so that it could serve future as well as current needs. The entire facility is designed with enough infrastructure and space to double in capacity. Housekeeping pads are provided for a second normal service, a fourth chiller, two additional generators, and an additional boiler. Pipes are sized to accommodate future capacity, and the facility includes space for an additional chiller. In addition, the entire building is scalable to allow for horizontal expansion that includes two more chillers, four more generators, another boiler, and additional pumps—all without replacing the infrastructure.

The plant serves a campus that currently includes the hospital, a new medical office building on the hospital campus, and the plant itself. The campus distribution is designed with numerous connection points to expand and accommodate future loads as they are added on the campus.

“Designed to operate as an island” is a common phrase in healthcare engineering. It refers to the need for a hospital to be able to function by itself for an extended period of time. Hospitals have gone without power for two weeks or more after a hurricane. All Children’s learned from others’ experience and decided to have a total of 150,000 gal. of diesel fuel storage below grade, suitable for generator operation at 100% for seven days.

However, All Children’s did not

want the disaster preparedness to end with the central energy plant; they applied the same philosophy to the hospital design itself. The building has two normal service entrances, which serve an A side and a B side, with the A side emergency power fed from the B side for redundancy. HVAC equipment, rather than being located on the roof, is all housed within the hospital building where it is protected from debris impact, allowing the air-handling units to maintain operation during and after a disaster.

All Children’s disaster preparedness gives the facility full functionality during a catastrophe. And if a disaster should strike, it will enable them to focus on patient care instead of on the power.

Georgia: Sumter Regional Hospital

Sometimes, planning of any kind is overwhelmed by circumstances. When a record 21 tornados struck Georgia in March, 2007, the Sumter Regional Hospital in Americus, along with many homes and businesses, was devastated. This meant not only the temporary loss of the place of refuge and caring on which the city’s residents had relied, but that a major regional employer was essentially knocked out of business. The staff at Sumter, after ensuring the safe transfer of 60 patients to other hospitals and relief to the storm’s injured—remarkably there were no fatalities at the hospital—began the process of assessing what was left of their facility and what they could do with it.

An F-3 tornado, with winds up to 206 mph, had blown out windows and torn off sections of the roof. Brick walls and debris had destroyed their MRI unit. As had occurred in many buildings during Hurricane Katrina, the rain and water intrusion of the storm created an additional concern. Wet interior building materials meant the possibility of electrical hazard, and mold and mildew made the facility untenable. Ultimately, everything removed from the facility needed to be sterilized before being reused in patient care areas. The day after the storm, temporary tents were in place to serve urgent care functions, complete with generator-driven lights and power.

The big challenge, apart from just being operational, was getting enough data service bandwidth to accommodate transmitting X-ray imaging files to remote radiologists.

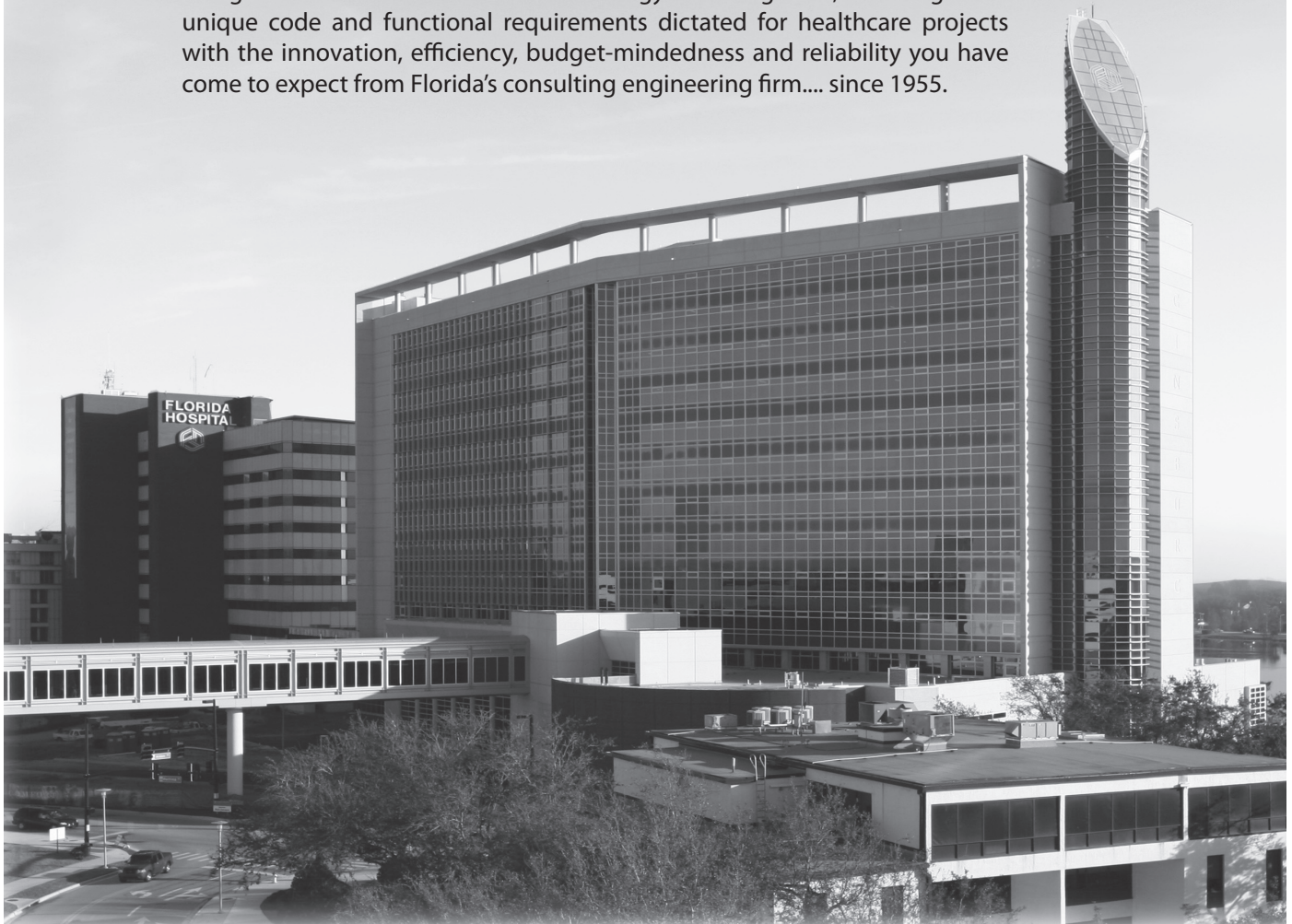
Within a month, modular buildings were laid out on-site to allow more hospital functions to be restored, more staff to be back in action. The Federal Emergency Management Agency (FEMA) provided much of the funding for a temporary facility, with modular interlocking trailers called COGIN units built in Italy and shipped through Houston to the site, after depletion of the available stockpile of units FEMA had in Alabama. As the concrete pad from which to start, they used the slab of their demolished medical office building. The temporary facility would grow to comprise more than 300 modules, condensing an approximately 250,000-sq.-ft hospital into fewer than 70,000 sq. ft, and creating an 80-bed, fully functioning hospital in less than six months. It is expected to be in use for three years until a new replacement “brick and mortar” hospital can be designed and built. Apart from fitting it out with MEP systems for specific hospital functions, getting adequate phone and data in place to provide access to electronic medical records, electronic medication systems, and relocated functions has been the ongoing strain. Billing services were backed up for more than two months due to network system and computer availability.

On a parallel path to creating a temporary facility was the process of determining a long-term permanent replacement hospital. Though still in the planning stages, there is little doubt that disaster preparedness will be a top priority in the hospital’s design decision-making process. This will include hardening protection of tele/data systems, wind-loading and impact protection, concern for the roof system and roof-mounted equipment, and planning flexible use of areas. They have learned some hard lessons, and through improvisation, perseverance, and commitment to their mission, have taught others how to survive another day.

Article originally appeared in Consulting-Engineer magazine.

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25th SPRING MEETING - DAYTONA BEACH April 30 - May 1, 2009

FHEA Takes the 'LEED'!

PROGRAM

THURSDAY, APRIL 30, 2009

A.M.

- 8:30 2nd Annual Golf Scramble
LPGA International - Legends course
Daytona Beach

P.M.

- 2:00 Early Registration (Lobby)
4:00 Board of Directors Meeting
6:00 Hospitality Suites

FRIDAY, MAY 1, 2009

Meeting and guest room block located in the **North Tower**; the meeting will take place in **Coquina Ballroom D**.

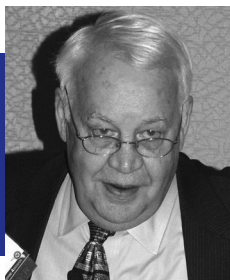
A.M.

- 7:00 Registration/Table-Top Displays/
Breakfast on your own
8:15 Welcome/Announcements/Introductions
– John Willingham, CHE, President
8:30 **Keynote Presentation - Shelburn Wilkes, CAE**
"The Past, A Prologue"
9:15 **General Building and LEED Commissioning**
– Marion C. Harris, LEED AP, CMC, CAC
Affiliated Engineers, AEI
10:00 Break/Table-Top Displays
10:30 **Emergency Management**
– David Stymiest, P.E., CHFM, FASHE, CEM, GBE
Smith Seckman Reid, Inc.
11:15 **Lehigh Valley Hospital, Kasych Family Pavilion,**
A LEED Case Study
– Gerald Versluys, P.E., LEED AP
TLC, Engineering for Architecture
Noon Luncheon – visit Table-Top Exhibits -

P.M.

- 1:15 **New Codes & Standards Updates 2009 —**
Changes to NFPA Codes, FL Building Codes and the
Inside story on 2010 Guidelines for the Design
& Construction of Health Care Facilities
– Skip Gregory, NCARB
Bureau Chief, Agency for Health Care Admin.
2:00 Ice Cream Social/Table-Top Exhibits
2:30 Questions & Answers
Closing Comments/Evaluations
Door Prizes
– John Willingham, CHE President
3:00 Adjournment

**Shelburn Wilkes
returns!**



Faculty



Marion C. Harris, LEED AP, CMC, CAC
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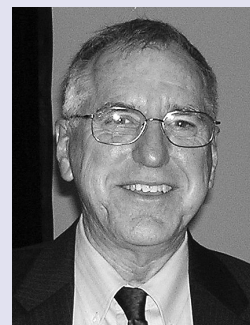
36 years intensive professional ex-
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tional, industrial, commercial, civil
works, transportation, and electri-
cal utility projects.



Gerald Versluys, PE, LEED AP

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Over 20 years of experience in
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the majority of which as a consul-
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25th Spring Meeting SPONSORS

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If interested please contact
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or (727) 864-7767



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25TH SPRING MEETING **FHEA Takes the 'LEED'!**



Hilton
Daytona Beach
Oceanfront Resort



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OCEANFRONT RESORT
DAYTONA BEACH, FLORIDA

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for details, or register online in the calendar section of www.fhea.org