

The Voice

NOVEMBER 2011

Voice

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Tullahoma Readiness Center: "Ready" for New Geothermal HVAC System

Geothermal system is right choice because of sustainability, safety & low maintenance

by Bennie Pandorf, Jr., P.E., MBA, LEED AP+
I.C. Thomasson Associates, Inc.
Nashville, TN

In 2007, when the Tennessee Army National Guard envisioned its new Readiness Center in Tullahoma, TN, it had two goals in mind. The Guard wanted a home for the soldiers of the 30th Troop Command and the 1175th Transportation Company. It also wanted to be a good neighbor to the local community while protecting its soldiers.



Bennie Pandorf

Readiness Centers, in general, provide full-time operations support for planning, administration, training, storage and recruiting associated with the assigned military units. These facilities must be designed to allow operational compartmentalization of certain areas while other functions remain active. In addition, Readiness Centers provide for both military and public social functions as well as for shelters during emergencies or natural disasters.



To fulfill the multiple functions of this new state-of-the-art facility—and to keep it safe, comfortable and sustainable with a low maintenance Heating, Ventilation and Air Conditioning (HVAC) system—the National Guard partnered with Hart Freeland Roberts, Inc. and I.C. Thomasson Associates, Inc. (ICT).

ICT modeled the HVAC energy usage for different types of systems, with the goal of LEED Silver-NC version 2.2 in mind. A Water Source Heat Pump system with dedicated 100% outside air seemed to be a good fit to provide the required compartmentalization and still allow the number of thermostat control points that would be necessary for comfort.

Decision Points for the Geothermal System

The two options for the cooling/heating water loop system were: 1) a standard Cooling Tower and Boiler plant (herein referred to as "WSHP") or 2) an underground Geothermal Loop (Ground Source: herein referred to as "GSHPs") with a vertically piped borefield.

Comparisons of both systems were performed with the goal of minimizing energy usage. In the end, it was clear that the GSHP

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It's Up to Us to Make Things Happen

*by Mike Pohlman, PE
President, ACEC of Tennessee*

I have just returned from the ACEC Fall Conference with renewed vigor and a desire to make something happen.

**Mike Pohlman**

It was very interesting to hear from colleagues from all over the country who are dealing with state legislative and economic issues that are similar to those we face here in Tennessee. Memphis, Nashville and Knoxville were well represented at the meeting; however, there was plenty of room for more state representation. For those of you, like myself until now, who have never attended a National Conference, I strongly urge you to consider attending either the Spring Conference in Washington, DC, or next year's Fall Conference in Boca Raton, FL.

Information, Inspiration, Involvement

The conference offered the opportunity to earn PDHs with a wide variety of topics from the Human Resources, Insurance, Marketing,

Contracting and IT arenas. Over and above these opportunities was the ability to participate in enlightening discussions which brought out varying points of view from all over the country. The discussions also shed some new light on a few issues that we may want to deal with in Tennessee. There were some thought-provoking statements made in regards to QBS (Qualifications Based Selection); professional liability protection thru the use of Certificate of Merit laws; and regulatory issues pertaining to project permitting and execution. Some of these issues were presented as federal issues, but most pertain to local and state agencies' policies and inefficiencies.

With local, state and federal government policies causing delays in the review and permitting of projects—which ultimately brings economic development to a standstill—we as a profession don't need to be sitting on our hands and waiting for someone else to make it happen. I ask that our committee chairs and members get active and proactively deal with the correction of process approval issues.

I also ask ALL member firms to get involved, stay involved and make a difference in the promotion and improvement of our profession.

Geothermal *(continued from page 1)*

system was the more energy efficient option — saving approximately \$14,000/yr. compared to the standard WSHP system and over \$33,000/yr. when compared to the ASHRAE “baseline” packaged rooftop system.

The more complex method of calculation required by LEED enabled us to show a 28% improvement (6 Credits of the 33 total required for LEED Silver status) over 2004-ASHRAE 90.1, which is the prevailing energy standard for LEED evaluation.

Geothermal HVAC System at Tullahoma Readiness Center

Total Capacity: 173 tons**Expandability:** 56 tons**Vertical bore quantity:** 85**Vertical Bore piping:** 1" U-tube
configuration**Vertical Bore depth:** 300 ft.**Vertical Bore separation:** 25 ft.**Borefield piping material:** HDPE

However, there was bad news: this efficiency came with a \$550,000 premium (based on 2007 costs). Good news came next: by the time the project was priced, due to a growing familiarity of geothermal systems within the HVAC industry, the premium of this GSHP system had decreased to \$195,000. This “revised” cost allowed a payback of approximately 5.8 years compared to the “baseline” and 14 years compared to the WSHP system.

Also, the GSHP option became very viable once several other factors were considered: 1) **Sustainability.** The Army defines a Geothermal system to be renewable energy which enabled the \$195,000 premium to be entirely federally funded; 2) **Safety.** The underground system is more secure against attack; and 3) **Maintenance.** The underground HDPE piping carries a 50 year warranty.

The use of a geothermal HVAC system in the new Tullahoma Readiness Center will help the Tennessee Army National Guard achieve its immediate and long-term goals for this facility.

Tennessee Engineering Foundation: More Important than Ever

by Greg Reed, PhD, PE
President, TEF Board of Trustees
Associate Vice Chancellor for Research, UT

Since the Tennessee Engineering Foundation (TEF) was established jointly by ACEC and TSPE 25 years ago in 1986, its mission has increased in importance as business and public leaders and the public have recognized the urgency of preparing students for careers in math and science.

During the past year, TEF's efforts have centered on administering college scholarships for engineering students and establishing a mechanism to partner with professional society local chapters or other groups raising funds to promote engineering in education. How about it ACEC chapters?

Some TEF efforts are more visible such as the continued sponsorship of MATHCOUNTS and its support of K-12 STEM activities including Nashville STEM hub and Girls Raised In Tennessee Science. TEF is always open to additional partnerships in support of K-12 STEM-related activities.

TEF was particularly in the spotlight on August 25 at a fundraising luncheon featuring keynote speaker TDOT Commissioner John Schroer. The event generated just over \$17,000 for TEF.

Looking ahead, TEF is in discussions with three other organizations that we hope will choose TEF to administer their college scholarship programs. TEF is increasing its efforts to encourage engineering firms, professional organizations, and allied businesses to establish engineering scholarships in partnership with TEF. The Board is exploring the possibility of securing grant funds for scholarships or education programs from government and foundation sources. TEF is also in preliminary conversations with an independent organization whose purpose is to raise funds and volunteers to enhance STEM education in K-12 school curricula.

TEF actively works to provide educational opportunities that will ensure a bright future not only for Tennessee students, but for our profession and nation.



Greg Reed



Qualifications

Based Selection

The U.S. Army Corps of Engineers adopted ACEC's position that commissioning services be performed by engineering firms and selected through QBS in a recent Corps ID/IQ solicitation.

Tennessee Engineering Foundation

Thank you, Luncheon Sponsors

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Smiles all around at ACEC Fall National Conference: Attending were (left to right) Harold Cannon (Cannon & Cannon, Knoxville); Kathy Ware (K S Ware & Associates, Nashville); Everett Cowan, Chair of the ACEC Council of Fellows (Gresham Smith & Partners, Nashville); Steve Lane, National Director (Smith Seckman Reid, Nashville); Ryan Sisemore (Garver, Brentwood); and Mike Poblman, ACEC of Tennessee President (Pickering Firm, Memphis). Also attending were Angie Cannon (Cannon & Cannon, Knoxville) and Candy Toler (ACEC of Tennessee).

CALENDAR

NOVEMBER 30

Professional Liability Seminar & A & E Board Law and Rules

Knoxville

Information:
ctoler@tnec.org

DECEMBER 1

Professional Liability Seminar & A & E Board Law and Rules

Nashville

Information:
ctoler@tnec.org

DECEMBER 2

Professional Liability Seminar & A & E Board Law and Rules

Memphis

Information:
ctoler@tnec.org

FEBRUARY 19-25

Engineers' Week

MARCH 5

Legislative Reception
Sheraton Nashville
Downtown
6:00 p.m. to 7:30 p.m.

MARCH 6

Engineers' Day on the Hill
State Capitol, Nashville
9:00 a.m. to 1:30 p.m.

Engineering Excellence Awards Banquet
Franklin Marriott
Cool Springs
6:00 p.m. to 9:00 p.m.

Tennessee Engineering Center
800 Fort Negley Boulevard
Nashville, TN 37203

Return Service Requested

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MEMBER NEWS

- Askew Hargraves Harcourt & Associates, Inc. (A2H) has opened a new location in Nashville. This is the firm's 3rd office; it also has an office in Hernando, MS, and is headquartered in Lakeland, just east of Memphis.
- Jack L. Wood, Chairman Emeritus of Barge Waggoner Sumner and Cannon, Inc. (BWSC), was honored by the Nashville Downtown Partnership as its 2011 Volunteer of the Year. Wood was CEO of BWSC from 1989 to 2002. He chaired the committee overseeing establishment of the Tennessee Engineering Center in 2002, the first facility of its kind in the U.S.
- S&ME, Inc. has acquired Ohio-based BBC&M Engineering, Inc., a firm with expertise in geodesign services and experience with mine reclamation and earthen structures. S&ME will now employ nearly 1,100 people, working from 27 offices located in nine states.
- Daniel D. Terranova, PE has joined Stantec in Nashville, as a senior geotechnical engineer in the firm's Environmental Services practice. He has more than 22 years of experience related to highways and bridges, retail and commercial structures, dams and levees and other construction projects across the southeastern U.S.

FROM THE EXECUTIVE DIRECTOR

A & E Board Serves the Public and Professionals

by Candy Toler
Executive Director, ACEC of Tennessee

Do you know that there are 14,812 engineers and 3,693 architects licensed in The Volunteer State?

Through the State Board of Architectural and Engineering Examiners, Tennessee sets the standards for the education, experience and performance of these professionals. Often referred to as the A & E Board, it works in a variety of ways with engineering schools and professional organizations such as ACEC of Tennessee.



Candy Toler

One of these ways is through meetings and Open Forums such as those for students and registrants held in October in Knoxville. Several participants took the opportunity to address the Board and ask questions. The Board had a lively discussion on a wide variety of topics, including:

- requiring all continuing education to be directly related to health, safety, and welfare; prohibiting carryover hours;

- adding a prohibition for "bidding" architectural and engineering services on local public works projects to the Rules of Professional Conduct;

- use of the title by retired and inactive registrants – inactive registrants may not use the title, but retired PEs may use "PE (retired)" if they choose;

- the cost of the Fundamentals of Engineering exam has been subsidized by the State Board; in 2014 the exam will be computer-based and available more than twice a year, but there will be a significant increase in the cost; and

- encouraging engineering students to take the Fundamentals exam and faculty to take the PE exam and get licensed.

Upcoming Opportunity

John Cothron, executive director, and members of the Architects' and Engineers' Board will offer a session on the Board's policies and the law and rules in conjunction with the Crow Friedman Group "Road Show" in a city near you later this month and early in December. The complete schedule is on the Calendar on page 3 of this newsletter. If you have not reviewed the State Board's policies, I encourage you to do so:
<http://www.state.tn.us/commerce/boards/ae/policies.shtml>