

The Voice



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Chattanooga: Transitioning from Grey to Green Infrastructure

by: *Jim Luebbering, PE*
Assistant City Engineer, Water Quality
City of Chattanooga Public Works Department

For some time, Departments within the City of Chattanooga including the Regional Planning Agency, Economic & Community Development, and the Public Works Department have coordinated efforts to bring about a well-managed and hopefully “confusion free” transition from our existing stormwater management standards to the new



Jim Luebbering

standards mandated by the State of Tennessee. Existing development regulations tied to “grey” stormwater infrastructure systems will be swapped out for more sustainable and environmentally beneficial stormwater infil-

tration and stormwater reuse practices dubbed “green” infrastructure practices.

So why are existing stormwater systems and practices “grey”? Well, pipe is grey, some of the time. Ditches, heavily armored with grouted rip-rap to sustain high velocity flows, are grey (until major floods wash away the stone; then the channels are

brown). Detention ponds aren’t grey unless they are armored with concrete or incorporate cinder block walls into their design. Unfortunately, more than a few of these relics can still be seen across the U.S., never modified for water quality improvements and still standing as testament to a time when flood control was the sole stormwater condition placed on new developments. A final reason for the title of “grey” is that the fifty-year-old, semi-successful technology of flood control or “peak attenuation,” if you’re a hydrologist, is pretty boring and grey is, well, boring. Grey is utilitarian. It’s practical. It has served its purpose.

In contrast, newly mandated infiltration and reuse practices are “green.” The trees, plants, un-compacted subgrade, and good planting soil incorporated into infiltration practices such as rain gardens, bio-retention cells, vegetated roofs and infiltration berms are living stormwater systems. Even cisterns and rain barrels are “green”

because water reuse is as environmentally beneficial as it gets. Research also indicates that the installation cost of green infrastructure is often less expensive than grey, while the full life-cycle cost is almost always less expensive than grey. Once maintenance,

“Chattanooga’s mandated December 1, 2014, green infrastructure implementation deadline, that once seemed so far away, is now looming just over the horizon.”

(continued on page 2)

Entries Are In, Kevin Dyson and More



Kevin Dyson

Yes! It's true . . . former Titans wide receiver Kevin Dyson will be the featured speaker at the 2014 Engineering Excellence Awards Banquet. Dyson was a central figure in Titans football from 1998 to 2002, helping the team secure the AFC Championship and playing in the

team's only SuperBowl appearance (2000). He is best known for his role in the acclaimed Music City Miracle. Dyson is now the Assistant Principal and Athletic Director at Stewart's Creek High School in Smyrna, TN.

Twenty-three projects will compete for honors in the 2014 EEAs. The projects represent the hard work of firms from across the state, working as far away as Pennsylvania and New York. "These projects represent the best in Tennessee engineering," said Donna Corlew, EEA program Chair and C*Connect. "I am pleased with the level of quality that is reflected and believe each one speaks to the impact engineers have on the welfare of every Tennessean."

Now, entrants must complete and submit information notebooks and panels that describe the projects in more detail. Then in February, a panel of independent judges will convene to review all of the projects and complete evaluations.

Winners will be announced at the *Engineering Excellence Awards* Banquet on **March 11, 2014**, at the Franklin Marriott Cool Springs. A Grand Award will be presented in each entry category, while the *Grand Iris Award* will be presented to the top project overall in competition.

We're With the Band



The ACEC of Tennessee West delegation enjoyed the opportunity to have dinner together at Pinnacle Peak during a recent national conference in Scottsdale, Arizona. The band allowed the delegation to join them on stage! Pictured left to right: Jerry and Robin Stump, band member playing a double-neck guitar, Candy Toler, Everett and Katheryne Cowan, David Harrell, another band member, and Angie and Harold Cannon.

2014 EEA Entrants

- AECOM: *Special Projects* - Wolf Creek Bridge Rehabilitation, Cocke County, TN
- AECOM: *Transportation* - I-40 Widening Design/Build Project, Mt. Juliet, TN
- AMEC Environment & Infrastructure, Inc.: *Surveying and Mapping* - West Valley Data Management System, West Valley, NY
- ARCADIS: *Waste and Stormwater* - City of Chattanooga Area 2 Closure Construction, Chattanooga, TN
- Atkins North America, Inc.: *Special Projects* - Chattanooga Regional ITS System CEI, Chattanooga, TN
- Atkins North America Inc.: *Transportation* - C-5 Upgrade and Extend Runway and Taxiway, Martinsburg, W VA
- Barge Waggoner Sumner and Cannon, Inc.: *Environmental* - Beaver Creek WWTP Decommissioning, Dothan, AL
- CDM Smith: *Special Projects* - Lyons View Pike Utility Replacement, Knoxville, TN
- Civil & Environmental Consultants, Inc.: *Small Projects* - Marion County Park Shoreline Stabilization, Jasper, TN
- EnSafe Inc.: *Studies Research & Consulting* - Stormwater Runoff from TN Highways, Anderson, Knox, and Sumner Counties, TN
- EnSafe Inc.: *Surveying and Mapping* - TDOT Facility Attribute Surveys, Tennessee
- Garver: *Transportation* - Nashville International Airport Taxiway Kilo Recon., Nashville, TN
- Geotechnology, Inc.: *Special Projects* - Memphis Pyramid, Memphis, TN
- Gresham, Smith and Partners/CDM Smith: *Special Projects* - UT Cherokee Farm Infrastructure Improvements, Knoxville, TN
- K.S. Ware & Associates: *Studies Research & Consulting* - East Branch Dam Independent External Peer Review, Elk County, PA
- LDA Engineering: *Small Projects* - Spring Creek 1A: Horizontal Directional Drilling, Morristown, TN
- LDA Engineering: *Studies Research & Consulting* - Stormwater Planning and Program Management, Morristown, TN
- LDA Engineering/Cannon & Cannon, Inc.: *Waste and Stormwater* - Citico Creek Interceptor Rehabilitation, Chattanooga, TN
- LDA Engineering: *Water Resources* - Founders Park, Johnson City, TN
- Ross Bryan Associates, Inc.: *Structural Systems* - Music City Center, Nashville, TN
- S & M E, Inc.: *Waste Resources* - Paw Paw Creek Mitigation, Roane County, TN
- Smith Seckman Reid, Inc.: *Transportation* - Wolf River Boulevard Connector, Germantown, TN
- TTL, Inc.: *Special Projects* - Stones River Greenway, Murfreesboro, TN

Thank you, EEA Sponsors!

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DECEMBER

5

TDOT Audit Seminar

1-4 pm at TEC,
Nashville

*ACEC Members
Only*

DECEMBER

12

ACEC of TN Board

10 am at TEC,
Nashville

DECEMBER

23-27

ACEC of TN & TSPE

Office Closed for
Holiday

FEBRUARY

16-22

Engineers' Week

MARCH

11

Engineers' Day
on the Hill

Engineering Excellence
Awards Banquet

WELCOME NEW PARTNER

Lewis King Krieg &
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620 Market Street
Knoxville, TN 37922
(865) 546-4646

Contact: Lisa Cole, CEO
lcole@lewisking.com

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defense of design liability
claims and represent more
engineers in TN than any
other law firm.

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Pause for Perspective at the Holidays

by David Harrell, PE
President, ACEC of Tennessee

While a time for celebrating the holidays and enjoying time with family and friends, December is also a time for us to reflect and take stock of the past year. It has been a challenging one for me professionally as I have taken on the many tasks associated with being president of this outstanding organization while still attempting to fulfill my duties as Regional Vice President of the company that enables me to provide food, shelter and other necessities for me and my family. It



David Harrell

seems there is never enough time in the day to devote the necessary hours to be adequately effective in my position here at Vaughn and Melton, my role as ACEC president, and perhaps my two most important responsibilities of all, which are a husband to my lovely wife of 23 years and a father to my two wonderful children. A wise man once told me that you'll never hear someone on their death bed say they wish they had more

time to spend on that critical project at work or with that major client. While these things are important, you should never lose your perspective on what is *most important*.

As we have moved through the Thanksgiving holiday and are approaching the Christmas holiday, I suggest that we all reflect on how thankful we are for the things we have and be cognizant of those less fortunate than we are. Those of us in the engineering profession have taken an oath to protect the health, safety and welfare of those we serve. And most in our profession are generally considered relatively wealthy when compared to the median incomes of our fellow citizens. When trying to divide our time between work, family and the trappings of the holidays, it's so easy to get caught in the hustle and bustle of the season and forget those around us that are in need. I encourage you to take some time this year and consider giving of your time, money or both to aid in improving the health, safety and/or welfare of someone or some family who has a need for any of these items. If you choose to do so, you will find that giving of your time and money will provide you with as much joy as it provides to those to which you give. I wish you all an enjoyable and safe holiday season!

Chattanooga (cont. from page 1)

system replacement, land and utility costs and resulting property values are factored into the cost equation, green infrastructure can save money or add to property values so "green" also means affordable. Grey is utilitarian but maybe green is also utilitarian, just in a better way.

Why paint the old and new technologies as either grey or green? For one reason, it's easier to remember; two, the terms are pretty descriptive of the practice; and three, it's easier to remember. Three irrefutable reasons for these descriptive terms! The excitement level within the City's departments and partner agencies is building. Staff and administration are fine tuning draft ordinances, installation guidelines and design examples. The State of Tennessee has mandated these changes. Whether you are whole-heartedly for it, summarily against it, or just unsure, Chattanooga's mandated December 1, 2014, green infrastructure implementation deadline, that once seemed so far away, is now looming just over the horizon.

The application of grey infrastructure will not disappear—its wholesale application should and will. Existing grey stormwater infrastructure systems such as pipe, above-ground detention and armored swales served their purpose and will continue to do so to a lesser extent. Conveyance pipes collected erosive and polluted urban stormwater runoff and then safely conveyed it to a central stormwater detention pond. Ponds metered out the flood wave in a controlled, yet elon-

gated and sometimes detrimental, manner. By doing so, the pond eked out some pollution reduction. It acted as a sump to collect sediment and pollutants for nutrient uptake or later removal. It slowed the velocity of runoff and, at least over the last fifteen years, better designed water quality ponds incorporated plant life, extended detention, filtration berms, forebays and other devices to up the ante in the urban pollution removal business.

Over the past ten years, grey infrastructure is slowly becoming less grey. Green infrastructure takes it a step beyond. Whereas grey infrastructure was about simple conveyance of stormwater from separate sources to a centralized pond, green infrastructure proposes collecting and treating urban runoff "where it lands." It's decentralized. It incorporates infiltration and reuse. Erosive velocities aren't designed into the equation because long runs of pipe are avoided in favor of pocket treatment practices dispersed throughout a development.

Thanks to public input, guidance from business owners, assistance from partner agencies, staff's hard work and some very descriptive and user friendly design manuals and countless guidance documents prepared by ARCADIS with assistance from *Andropogon Associates and Meliora Design*, the City is now prepared to propose green infrastructure programs and design tools to administrative staff and City Council in plenty of time to meet the State's implementation deadlines.

Tennessee Engineering Center
800 Fort Negley Boulevard
Nashville, TN 37203

Return Service Requested

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Welcome New Members!

Collier Engineering Co., Inc.
5560 Franklin Pike Circle
Brentwood, TN 37027
(615) 331-1441
www.collierengineering.com

Key contact:
Chad A. Collier, PE
chad.collier@collierengineering.com

Civil engineering firm specializing in pavement management assessment and systems, road and bridge design for county highway departments.

Structural Detailing, LLC
229 Ward Circle, Suite C12
Brentwood, TN 37027
(615) 369-0200
www.STRDetail.com

Key contact:
W. Scott Goodrich, PE
scotty@strdetail.com

Offering structural engineering design for commercial, industrial, healthcare, retail and institutional projects, the company also provides BIM coordination, review and documentation, and structural steel shop drawings for fabrication.

FROM THE EXECUTIVE DIRECTOR

Architects' and Engineers' Board Update

by Candy Toler
Executive Director, ACEC of Tennessee

The licensing board had its planning retreat at Tennessee Tech this year. At the retreat, the board developed a list of “mega” issues including license mobility, the fragmentation of the disciplines, public outreach, and more. Prioritizing the issues comes next.



Candy Toler

The Board reported that it awarded grants of \$250,000 to seven universities, allowing them to purchase instructional, computer and laboratory equipment to enhance education for students in accredited programs.

Engineering schools receiving grants this year are:

- Tennessee State University - \$22,553 to the College of Engineering, allowing the school to purchase “intelligent classroom” equipment to enhance the learning experience for students.
- Tennessee Technological University - \$43,059 will enable the College of Engineering to purchase mobile learning environment and systems infrastructure studio equipment and accessories.
- University of Memphis - \$27,246 will be used to buy

a precision impedance analyzer for the engineering program's Bioelectronics laboratory.

- University of Tennessee-Chattanooga - the College of Engineering and Computer Science will purchase equipment to update the engineering design courses with its \$28,819 grant.
- University of Tennessee-Knoxville - \$49,201 will fund equipment for a Thin Film and Microelectronic Fabrication Teaching Facility for the College of Engineering.
- University of Tennessee-Martin - the College of Engineering and Natural Sciences will use its grant of \$19,872 to purchase laboratory equipment, including a metallurgical mounting press, a potentiostat, a box and pan sheet metal brake, and computer scales.

The grants support engineering schools at a time when they need it most because their general appropriations have not been increased to meet the growing technological needs. Thanks to all of the engineers licensed in Tennessee.

The Board recently approved a revision to its rule requiring registrants to notify it of changes in name, phone number, mailing and email addresses within 30 days. This will go into effect in about 3 months.

There is a veritable plethora of information on the Engineers' and Architects' Board website, including what qualifies for professional development and new rules. I encourage you to check it out - <http://tn.gov/regboards/ae/>