Arkansas Professional

Official Magazine of the American Council of Engineering Companies of Arkansas & the Arkansas Society of Professional Engineers

Grand Concept

ENGINEER

There wasn't much of a reason to stop on Little Rock's Main Street before a demonstration project turned it into a destination. Now it's home to the city's Creative Corridor, and it's showing how engineering and landscaping can use natural processes to purify street runoff. That's why Crafton Tull's Brad Peterson, P.E., right, and landscape architects Frank Riggins, ASLA, center, and Austin Paul are this year's ACEC/A Grand Conceptor Award winners.



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Arkansas ENGINEER Professional

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22 Crafton Tull's Brad Peterson, P.E., right, and landscape architects Frank Riggins, ASLA, center, and Austin Paul are this year's ACEC/A Grand Conceptor Award winners.

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Public-private partnerships are growing in popularity because they help public and private sectors, says MCE's Susan Pendergrass.

- 18 Students build electric engine, legacy Bentonville High students – future engineers – are converting a gasoline engine to an electric motor.
- 20 Engineering focus of science standards Classes part school year in grades K 4 will feature and

Classes next school year in grades K-4 will feature engineering practices; high schoolers will learn earth and space science.

22 *Cover Story* / Crafton Tull's Main Street a grand concept

The firm's Little Rock Main Street project won the Grand Conceptor Award at this year's ACEC/A Engineering Excellence Awards. Meanwhile, Garver's Conway wastewater facility won the People's Choice Award.

Griffin: Reform agencies, then taxes

At the Engineering Excellence Awards banquet, the lieutenant governor said the path to tax reform and infrastructure reform starts with bringing state agencies into the 21st century.

CONGRATS TO OUR DESIGN TEAMS AND COMMUNITIES

TO OUR DESIGN TEAMS AND COMMUNITIES FOR 2 AWARD-WINNING PROJECTS

little rock MAIN STREET water quality demonstration







Categoru

Winner

ACEC

WATER RESOURCES

ARGE ENTRY LEVEL

Grand

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ACEC

Leadership is influence



ACEC President

Being in a position of influence is something many of us want. We want to make a difference. We want to know that what we're doing matters. Dr. John C. Maxwell writes that "leadership is influence, nothing more and nothing less." He maintains that effective influence – the real power to get things done – is what a real leader is all about.

Recently, our ACEC/A Emerging Leaders met for a roundtable discussion.

These are future engineering stars, whose peers and supervisors recommended them for this year-long opportunity to hone their promising leadership skills. During the conversation, it was interesting to see our board members

answer in ways that illustrated the value of ACEC – not only value, but also influence. Influence in government, influence in public policy, influence in our profession.

Here are two areas in which engineers can help lead the way.

1. Funding existing transportation infrastructure. How will we maintain existing highways and interstates and fund the projects to rebuild and repair them? Both sides in both the House and the Senate agree that funding such projects is a part of the role of government to promote interstate commerce. But the question of how to do that is often up for debate.

For example, consider the electric car. Who wouldn't want a Tesla to whisk silently around town, driving the kids to school, touting the benefits of zero tailpipe emissions, and taking clients to lunch after winning that next project contract? But, if the fuel tax remains how we fund our transportation infrastructure, then what happens to our roads and airfields? They'll crumble. So, government policy must keep up with technology. Engineers could lead (influence) the way.

2. New infrastructure for expanding energy needs. How will we sustain our ever increasing demand for energy? While an "all of the above" approach to oil, natural gas, nuclear, wind and solar

> sounds great, pulling it off is another matter. Again, the debate in Congress can grind to a halt, given the myriad, competing choices and interests. When we fail to respectfully listen to others' concerns – or worse, fail to respect-

fully voice our own – then we all lose.

As engineers, we ought to present clear and concise answers to technical questions, and help guide the debate. We don't have to do this alone. Through ACEC/A, we unite in voice and purpose to inform and influence lawmakers and elected officials, and that's real leadership. Come, join us.



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Promoting engineering

The NSPE strategic plan includes three elements: DEFINE. PROMOTE. PROTECT. In earlier columns, I discussed the NSPE's mission and what it means to DEFINE licensure. The profession must ensure clear, comprehensive requirements communicate to the public what it means to be a licensed engineer. To retain our trusted stature in our communities, the profession must increase compulsory education and professional development requirements.

Now let's focus on the PROMOTE part of the strategic plan – promoting our industry and the importance of professional licensure to the public, particularly students. One way to start is by self-identifying as professional engineers and engineer interns; just as important is proudly displaying the suffixes we worked so hard to earn.

How else can the profession promote itself? Through old ways and new ways.

• **PROMOTE through student outreach.** As members of the engineering profession, we have a duty to support and encourage those pursuing licensure. As I mentioned in my message on DE-FINE, colleges and universities must adopt a program to raise credit requirements as they apply to engineering. One way to start is by reaching out to students from primary school and higher. It is up to us to get involved as volunteers and mentors in programs like K5 Launch, Project Lead the Way, Girls of Promise, and high school engineering and computer science courses.

Few factors influence people more than other people, and nothing affects parents more than their children. Through speaking to students, parents, and educators, we find where our involvement will most impact the classroom. Parents and teachers can learn the importance of quality engineering and why helping sustain the profession is crucial. By volunteering at local schools and engaging in the programs mentioned above, we can show kids how vast and vibrant and cool the engineering profession is.

• **PROMOTE through social media.** Twitter, Facebook, and LinkedIn are part of the daily lives of up-and-coming engineers. However, using these platforms to promote our industry is a fairly new concept. Following NSPE, ASPE, ACEC, and other professional organizations on social media has a two-pronged effect. First, we can reach and



Brad Peterson, P.E. ASPE President engage an entire demographic through low cost marketing and promotion in a way that is relevant to their daily lives. Second, we can expand our network and message which, in turn, adds to our credibility. Promoting through these channels is vital to attracting the best and the brightest to engineering.

• **PROMOTE through traditional means.** In addition to new opportunities for promotion such as social me-

dia, it is just as important to preserve and build up the more traditional forms of outreach. Two such programs are Engineers Week and honor awards.

Engineers Week began in 1951 as a way to involve and educate students on the role of engineering in society. The program, now known as DiscoverE, occurs the third week in February. Every engineer should take part in some way. By meeting with colleagues, speaking to student groups, and hosting job shadow days, connections are made and interests are sparked. Prepackaged information and materials are available.

Honor Awards promote engineering careers at local, state, and national levels. As members of professional organizations, we have an obligation to nominate worthy colleagues who showcase talent and dedication to furthering and maintaining the integrity of our profession. Among these awards: Engineer of the Year, Young Engineer of the Year, and Distinguished Service Awards. Recognition by peers for service and achievement encourages excellence within our organizations. While the deadline is January 31, it is never too early to nominate and promote the contributions of a colleague.

The National Society of Professional Engineers is the only organization focused on addressing the needs of engineers working across all disciplines. Now, more than ever, we must turn public attention to our role in building a strong, safe, and sustainable society. By using the established means of promotion in conjunction with new marketing technologies, we are helping cultivate future engineers. Our efforts will ensure the status of our great profession is upheld and the foundation for the next generation of engineers is solid. Attract them early, foster their interest, highlight the path to licensure, and show them the benefits of becoming a well-rounded, fulfilled professional engineer; do the same for ourselves.

In the News



A rendering of CEREC.

Garver donates \$250K to UA for engineer facility

Garver has donated \$250,000 for the new Civil Engineering Research and Education Center, or CEREC, at the University of Arkansas.

The 25,000-square-foot facility will house structural engineering research and teaching facilities located at the Engineering Research Center in the Arkansas Technology Park. The University of Arkansas Board of Trustees has approved the issuance of up to \$5 million in bonds to match private donations for the project. The College of Engineering hopes to raise \$5 million in private funds.

Kevin Hall, civil engineering department head, said in a Garver blog post that CEREC will serve more than 9,000 undergraduate students and 1,750 graduate students during the next 25 years. The facility also will generate more than \$18 million of infrastructure-related research over that time period.

He called it a "living laboratory" for civil engineering undergraduate students who, in addition to using it upon completion, will also participate in the design and construction process.

Arkansas industries, agencies and higher education institutions will use it to find research-based solutions for infrastructure needs.

"Arkansas currently lacks a full-scale, comprehensive structural engineering laboratory," Hall said in the blog post. "CEREC will function as a truly statewide resource."

Dan Williams, president and chief executive officer of Garver, said, "For nearly a century, Garver has relied on the skills, character and drive of its staff. To invest in an institution like the University of Arkansas College of Engineering is to invest in the quality of our future staff and ultimately the quality of our nation's infrastructure."





GARVER GIFT. From left are Garver CFO Dathan Gaskill, Marketing Communications Director Laura Nick, President and CEO Dan Williams, Chairman of the Board Dick Greenly, and Michael Graves, Garver's Oklahoma Water Team leader.

Garver gives \$14,000 to clean water charity

Garver's corporate giving arm, GarverGives, has granted \$14,000 to Water4, an Oklahoma City-based charity whose mission is to solve the global water crisis.

Through a joint water initiative with World Vision, Garver's gift will be matched four-to-one to fund training of Ethiopian drill teams bringing clean water to their own communities.

At its regional operation center in Addis Ababa, Ethiopia, Water4 trains local men and women in hydrogeology, geosurveying, and advanced drilling techniques. Water4 has helped more than a quarter million people gain access to clean drinking water in more than 15 countries.

"Our intention with GarverGives has always been to enable vibrant science, engineering, and technology initiatives, and to improve communities," said Garver President and CEO Dan Williams in a press release. "The Water4 mission is something we support as a company, but it's also something our individual employees and even our clients support, as is evidenced by the number of personal contributions GarverGives received specifically intended for Water4."

Garver is a multi-disciplined engineering, planning, and environmental services firm based in North Little Rock with 18 offices in 10 states. It provides services for aviation, transportation, water, energy, industrial, development, federal, survey, and construction administration projects.

Garver water leader named to UAMS board



The University of Arkansas for Medical Sciences' Fay W. Boozman College of Public Health has named Steve Jones, a senior vice president at Garver and the director of the company's Water Team, to its 2016

Jones

Advisory Board.

The Water Team provides engineering designs to water and wastewater facilities across the country.

Jones has more than 31 years of experience in water resource development

Water lab techni-

cian David

MCE adds six

three offices

new hires to its

added six employees to its three offices.

McClelland Consulting Engineers has

and the design and implementation of water and wastewater utilities infrastructure. He currently serves as a board member on the National Science Foundation Membrane Applied Science & Technology Industrial Advisory Board, and is pursuing his Ph.D. in Civil Engineering at the University of Arkansas.

MCE promotes 2 to associate



McClelland Consulting Engineers recently announced the promotion of David Cross and Steven Head to associates.

Cross has been managing MCE's Oklahoma office since



Head

company's Fayetteville office. He oversees the performance and scheduling of testing, special inspections and subsurface drilling operations.

MCE provides services including geotechnical engineering, environmental engineering, airport engineering, landscape architecture and professional land surveying. It has offices in Little Rock, Fayetteville and Tulsa and serves clients in Arkansas, Oklahoma, Missouri, Mississippi, Louisiana, and Tennessee.

2014, in addition to managing numerous civil engineering projects throughout the state.

Head joined MCE in 2012 as the supervisor of MCE's in-house construction materials testing laboratory in the

Gregory and project engineer Chid Dr. Kwelle, P.E., joined the Little Rock office. Caroline Fox, project designer, and



Kwelle





Kelly Freeman, project manager, joined Continued on next page

Roads should not be built for just cars and trucks MCE designs Complete Streets for the safety and comfort of all users.



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In the News (Cont'd)

the Fayetteville office. The Tulsa office has added two project engineers, Abby Thralls, P.E., and David Henke, P.E.

MCE CEO Byron Hicks, P.E., said in a press release, "We're experiencing strong solid growth at MCE, which, I believe, is a result of many factors: the uptick in the economy from the recession, our longterm clients' continued confidence in our work, and recent new project areas." Hicks also attributed the increase to being in business more than 50 years.

With the creation of new positions and replacing a small turnover from retirement, in just over a year the company has increased its number of employees from 98 to 110 and is adding a few more, the release said.

"Our clients are looking to hire firms that can offer a variety of services for their civil projects, so we are adding professionals who can accommodate their needs," said Hicks. "We've recently added a process engineer and a civil/mechanical designer to our water/wastewater department, and, in addition to our expanding civil engineering staff, our landscape architecture team has doubled in the last year."



THE ARKANSAS TECH Health Sciences and Wellness Building, designed by Crafton Tull, is dedicated March 17.

Crafton Tull designs facility for Arkansas Tech

Arkansas Tech University – Ozark Campus held classes for the first time in late January in the new Health Sciences and Wellness Building designed by Crafton Tull.

University leaders, faculty, staff, students, alumni, and community supporters gathered for the official dedication ceremony March 17.

Included in the 20,273-square-foot facility are offices for faculty, classrooms, lab spaces, and a fitness center, among other amenities. Students seeking the education needed to enter the medical field will now have access to the best technological capabilities available to them.

Crist's Dunn appointed to iron committee

Crist Engineers' Matt Dunn has been appointed to the American Water Works Association's Standards Committee on A21 Ductile Iron Pipe.

The mission of the A21 Committee is the development of standards

and manuals addressing ductile-iron pressure pipe, and ductile-iron and grayiron fittings for water. These standards and manuals include topics such as design, dimensions, materials, coatings, linings, joints, accessories, methods of inspection and test, and installation.

Dunn

Dunn has extensive project management experience in water distribution system hydraulic modeling; water treatment and distribution and wastewater collection infrastructure planning; design and construction management; water/wastewater system master planning; and regulatory analysis and permitting.

He began his career with Crist Engineers in 1999, became a partner in the firm in 2004, and currently is vice president. He received his Bachelor's Degree in Industrial Engineering in 1997 and his Master's Degree in Civil Engineering in 1998, both from the University of Arkansas. Founded in 1938, Crist Engineers is one of Arkansas' oldest consulting engineering firms. It specializes in water treatment and distribution, wastewater collection and treatment, and other services.

Geologist Thomas hired at FTN

FTN Associates, Ltd. recently hired geologist Jay Thomas to work out of the company's Little Rock location.

Thomas primarily will work with FTN's solid waste and site investigation/reme-



homas

diation service groups performing geological investigations and environmental compliance duties.

He is a native of Longmont, Colorado, and graduated from Colorado State University in 2014 with a bachelor's degree in geology. He resides in Little Rock and enjoys hiking, climbing, biking, playing and watching sports, and exploring.

FTN is an engineering and environmental consulting firm that is headquartered in Little Rock and has branch offices in Fayetteville, Baton Rouge, and Jackson, Mississippi.

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AHTD announces two promotions

The Arkansas Highway and Transportation Department has announced two promotions.

Stephen Sichmeller, P.E., has been named senior design engineer in the Roadway Design Division. Sichmeller began his career with the department as an engineering student intern in May 2010, prior to being hired as an engineer in roadway design in June 2011. A year later, he was promoted to Engineer I, then promoted to design engineer in June 2013. He was promoted to advanced design engineer in February 2015.

Andrew Hoggard, P.E., has been named district maintenance engineer for District 7 in Camden. He previously was resident engineer at Resident Engineer's Office #21 in Monticello, a position he had held since December 2013.

Hoggard began working for the department full time in January 2007 as a civil engineer at Resident Engineer's Office #76 in El Dorado and advanced up the ranks to assistant resident engineer at Resident Engineer's Office #76 in April 2012.

Former UALR engineering dean receives honor

Dr. Mary L. Good, founding dean of the UALR College of Engineering and Information Technology, will become the seventh recipient of Fribourgh the Award Sept. 15 at the Pleasant Val-

science.



Good

ley Country Club in Little Rock. The award is given to individuals for contributions to Arkansas in math and Created in 2010, the award honors the late Dr. James H. Fribourgh, who served the university more than 45 years as chair of Life Sciences, interim chancellor, vice chancellor for academic affairs, and distinguished professor of biology.

Sponsorships cost between \$1,000 to \$5,000. For more information, go to ualr. at/good or by contacting Joseph Lampo at 501.569.8326 or jwlampo@ualr.edu. Reservations will go on sale beginning *Continued on next page*

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In the News (Cont'd)

July 1 and are \$75 per person (\$50 is tax deductible).

Proceeds will benefit the Science and Mathematics Leadership Endowed Scholarship Fund, which is for undergraduate students.

According to a UALR press release, Good also has served as special adviser for economic development to Chancellor Joel E. Anderson and was chair of UALR's George W. Donaghey Emerging Analytics Center Management Board. She also served as undersecretary for technology for the Technology Administration in the U.S. Department of Commerce, served with the U.S. President's Council of Advisors on Science and Technology, and was chair of the Little Rock Technology Park Authority Board.

Former ASPE president passes

Arthur Eugene "Ott" Ray, P.E., 88, a former president of the Arkansas Society of Professional Engineers, died December 22, 2015.

Ott retired from Entergy as district manager after 37 years of service. He was president of the Institute of Electrical & Electronic Engineers and also was appointed by then-Governor Bill Clinton to the State Board of Registration for Professional Engineers and Land Surveyors.

Ott was a World War II Navy veteran and a 1950 electrical engineering graduate of the University of Arkansas.

He served as either president or chairman of the United Way of Garland County, Hot Springs Chamber of Commerce, Hot Springs Planning Commission, Hot Springs Civil Service Commission and Hot Springs Lions Club. A longstanding member of the Lake Ouachita Camping Association, he was an avid bird watcher, enjoyed playing golf, and held the title of World Champion in Washer Pitching.

Engineering Marketplace BancorpSouth's Septiment Estes named merinacro president of PLAN



Ken Estes, senior vice presiand dent risk consultant of BancorpSouth Insurance Services in Little Rock, is this year's president of PLAN, the Professional Liability

Estes

Agents Network.

The nationwide group, which includes members from Canada and Puerto Rico, involves members that handle liability insurance for design professionals. Members of the information sharing network agree not to call on each other's territories.

"If I have clients that are doing work in Canada, I can call my PLAN brother in Canada and say, 'Hey, we're in this province. What do I need to know to tell him?" Estes said.

Estes, who has been active in the group about eight years, became president in

September. There is typically only one member per state, and he's the Arkansas member. About 40 agents are members across the network.

New Water Systems is exclusive rep for Lone Star Blower

Lone Star Blower has named New Water Systems, LLC as its exclusive municipal water and wastewater market representative in Arkansas and Western Tennessee.

In a press release from the company, Andrew Balberg, Lone Star Blower president, said, "New Water Systems is a wellrespected and very technically compe-

tent group known for their commitment and service to their customers. We are glad to be partnered with them and share the same customer-first philosophy."



Lone Star manufactures, distributes, and services blowers and blower con-

trol systems. Its products include single stage and vertically split multistage turbo blowers, and related blower control systems. Lone Star also services many other brand blowers. Industries served include water and wastewater, power, petrochemical, oil and gas mining, and many others using compressed air or gas, pressure or vacuum applications.

Andy Davis, P.E., is president of New Water Systems. For information, call 501.888.0500, or go to www.newwatersystems.com

Van Horn named to design-build Russellville facility

Van Horn Construction has been selected by Russellville City Corporation to provide design-build services for its state-of-the-art Class A solids handling facility.

The project consists of a sludge dewatering system, a sludge processing system, a building to contain the dewatering system and process equipment, and a trailer loading area. The facility will provide an inexpensive, reliable, and EPA-approved means for producing a readily usable and valuable Class A product.

ACEC/A, AGC sign partnership agreement

Groups to work together to support members' needs, improve society

The American Council of Engineering Companies of Arkansas and the Associated General Contractors of America's Arkansas chapter have signed an agreement to work together in areas of mutual interest.

Signed Nov. 18, the partnership agreement says the two groups' goals will include:

 Protecting public health and welfare through competently designed and constructed products;

- Ensuring a dialogue between the groups' management and volunteer leadership;

- Supporting the groups' changing roles and needs;

- Fostering an attitude that explores opportunities and strives to resolve issues in a win-win manner;

- Enhancing professionalism and integrity throughout the design and construction industry;

 Promoting improved business practices that enhance the quality and sustainability of public infrastructure;

- Investing in infrastructure's future by promoting training, continuing education, new technology, and research and development;



PARTNERS WITH AGC. Richard Hedgecock, former president of the state chapter of the Associated General Contractors, signs a partnering agreement with ACEC/A. With him are, from left, William Fletcher, vice president of operations for Kinco Constructors; ACEC/A president Dee Brown, P.E., of Brown Engineers; and Angie Cooper, ACEC/A executive director.

 Supporting qualifications-based selection for procurement of architectural and engineering services;

- Coordinating with each other re-

garding legislative and regulatory agendas while pursuing national, state and legislative activities that promote mutual goals.

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-13

ACEC/A Member Spotlight GarNat born of recession, family Time off, family time led founder to start firm

Sometimes good things can come out of bad times. Such was the case with Benton-based GarNat Engineering.

The company was born in January 2011 after Vernon Williams, P.E., had seen his working hours reduced by his previous employer during the recession. With his wife, Jennifer Williams, P.E., still working full time for the Arkansas Highway and Transportation Department, Williams had become responsible for more of the duties at home involving the couple's three children - Garrett, Nathan and Natalie. He found he liked the arrangement so much that when the economy began to recover, he didn't want to go back to work for a big firm. So instead, he left his previous employer on good terms, became his own boss, and named the firm after his family - the "GarNat" from the first syllables of his children's names, while the initials "G-N-E" spoken quickly sound like "Jennie," his wife.

Williams said he "broke a lot of the rules" by not bringing one of his old firm's clients with him. Instead, he began looking for new business. The first year was tough. He plowed what little money he made back into the business. Then in late 2011-early 2012, he and Fred Oswald, P.E., formerly with Oswald Engineering, landed a major contract with the city of Harrison for a wastewater treatment plant renovation. It's still probably the largest job he's had.

"If you're going to point to one project, that was probably the project that this company was founded on," Williams said.

Today, the company provides a diverse set of services for a variety of clients. About 30 percent of its business is water, sewer and drainage work for municipal clients, with the Little Rock Public Works Department and the city of Hamburg among his major clients. About 30 percent of its work is civil site design, with a specialty in designing car dealerships. One such job was for the new McLarty Daniel Dodge Chrysler Jeep Ram auto dealership in Bentonville. Another cli-



ent is Access Control Devices, which provides print management software services for customers worldwide. The campus is being designed in the style of major technology companies with employee lounges and open spaces inside and out. Another 30 percent of GarNat's business CLIMBING THE HILL. Vernon Williams, P.E., stands in front of a mound at the future site in Benton of Access Control Devices, which provides print management software services for customers worldwide. Middle photo, the IT company's campus is being designed in the same style as tech companies' offices in Silicon Valley. Bottom, a rendering of the new McLarty Daniel Dodge Chrysler Jeep Ram auto dealership in Bentonville.

is land development, most of it in Saline County. The last 10 percent is "whatever comes in the door."

"What I've learned about myself as I've gotten older is that what I work on isn't really that important to me anymore," he said. "What I really enjoy about the business I'm in is helping people."

What started at the kitchen table is now a growing business. Williams hired his first employee at the beginning of 2015 and then hired two more in 2016. The staff now consists of Kelly Vanlandingham, P.E., P.S.; Jeremy Ventress, information technology director; and Robert Rayburn, survey party chief.

Even as the company grows, it's still a family affair involving Jennifer, who took the P.E. test the same day he did and whose P.E. number is the one before his, and his children.

"My whole family, especially my children, got to participate in the building of this business," he said. "You know, when times were slow and not much money was going in, my kids had a game where we'd go to the post office box to see if there was any money in it. My kids have been involved in or at least watched me go through sitting at the kitchen table trying to find professional lia-

bility insurance, trying to figure out what kind of printer to buy.

"That aspect of it, I mean, I've always enjoyed my job, but working for myself, I really, really love it. There's no way I could go back to doing the other thing, working for somebody else."

It's OK to tell the world you're a P.E.

Post-nominal suffixes (those letters placed after a person's name) help define us academically, professionally, or socially. Some of us accumulate multiple suffixes, but generally only use one or two at a time. Such restraint may have less to do with modesty than the practical space constraints of a business card, or uncertainty about the correct listing order required for proper etiquette. In the United States, the order observed for multiple suffixes is typically:

1. Religious orders and institutions

2. Theological or academic degrees (in that order)

3. Honorary degrees, honors, decorations

4. Professional licenses, certifications and affiliations

5. Retired uniformed service rank

Still, I often see professional engineers named in articles, interviews, personnel listings, or even government documents with no designation at all. It may be mentioned elsewhere in the text that the engineer is "licensed," "registered," or even "professional," but why omit that detail when identifying the engineer by name? If the engineer is the author of the piece, why omit that 2-letter emblem of gravitas in the byline?

Other professionals even get their own honorific title: a prefix that honors their



Brown Engineers

position (Doctor, Reverend, Councilor, Honorable, etc.). Maybe engineers don't need an honorific, but once we earn the right to place P.E. after our names, I submit that we should do just that.

Earning that P.E. takes eight years or more of education and experience, plus rigorous testing and a commitment to lifelong learning, all to establish, maintain and verify our capability and dedication to protecting the public health, safety, and welfare. So, to acknowledge the expertise and responsibility inherent in our certification as professional engineers, we are authorized by law to place the letters P.E after our name. It's an official acknowledgement of our status. It says something about us. So why is it so often omitted?

Has the luster and professional pride of licensure faded? Has the common (and highly incorrect) usage of "engineer" to describe technicians in sanitation, maintenance, and other fields so diluted the meaning and relevance of the word that actual engineers avoid its use?

Maybe it just seems pompous to use P.E., as if seeking prestige. But what's wrong with adding two little letters that subtly proclaim, "I am a Professional Engineer, a learned individual, whom you can trust to serve and protect the public"? Doctors and lawyers don't hide their credentials. I urge all of us who've earned our license to boldly stick that P.E after our names wherever and whenever we can. Encourage other professional engineers to do the same.

Also, let's remind others that the term "engineer" should truly only be applied to graduates from a college of engineering. It's a noble profession and a solemn responsibility. If this seems a little old school or old guard, you may be right.

The ACEC College of Fellows, comprised of many of the most experienced and accomplished professional engineers nationwide, is very concerned that the dignity and high standards of the engineering profession be preserved. Through scholarships, the Emerging Leaders program, and the Order of the Engineer, the Fellows are actively preparing the next generation to lead our industry. Being a professional engineer is both an honor and a privilege, so use those two little letters often, and use them with pride.

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Transport, engineering futures intersect

Autonomous vehicles could lead to loss of driving jobs, but they offer opportunities for engineers to lead the way

Transportation will evolve over the next several decades, and the rise of autonomous vehicles will be a main reason behind that change.

Of course, upending the transportation industry will have far-reaching impacts on our way of life. For instance, advancements in technology could fundamentally transform modes of transit to the point where many Americans view buying a car as unnecessary, and professional driving, as an industry, could be severely diminished. This, in turn, will alter almost every aspect of our economy, with many changes particularly relevant to engineers.

While the rise of ride-sharing services such as Uber have already caused significant disruption in the public transit industry, that impact is minimal compared to the introduction of automated driving technology. Fully autonomous cars are expected to be released within the next five years – already the technology is being adopted by almost every major automobile manufacturer and is becoming both cheaper and more widespread by the year. On a long enough timeline, even a small, rural state like Arkansas will not be immune from the implications of these technologies.

Currently, there are 3.5 million truck drivers in the United States, according to the American Trucking Associations, with some of the country's largest trucking companies headquartered in our state. Last May, the first self-driving truck had a successful test in Nevada. This truck was built by Freightliner, which says its trucks are beginning a 10-year testing phase to determine whether the technology is ready for widespread adoption.

Consider how automation will affect shipping and the truck driving industry. Without drivers, trucks can operate 24 hours a day with costs consisting only of the energy to move the truck plus maintenance. Continuously rising personnel costs, thanks to the proliferation of



By Sen. Tom Cotton U.S. Congress

rules and regulations that make salary and benefits for front-line employees a significant expense, will make eliminating those costs an easy business decision. Thus, while such changes could make shipping goods across the country safer and cheaper, it also would mean the loss of millions of well-paying jobs over time.

But in this challenge we should also recognize opportunity. The demand for folks with strong academic grounding in the STEM fields is likely to increase exponentially in the years to come – with new and plentiful jobs on offer – and we should ensure that our secondary and higher education systems are geared to provide those skills. Further, for those with engineering expertise today, your talents and experience will become invaluable – first, to solve the technical problems in the immediate term, and second, to train the next generation of professional engineers.

In a country with autonomous cars, trucks, and trains, there are sure to be countless opportunities to update information systems or to adapt existing infrastructure for technological developments. Beyond that, satellite systems and road sensors will require new innovations, the designs of our roads and interstates will likely change to increase efficiency, and vehicles will require new operating systems to interact with one another, just to name a few. This future technological ⁴⁴ For those with engineering expertise today, your talents and experience will become invaluable - first, to solve the technical problems in the immediate term, and second, to train the next generation of professional engineers. ⁹⁹

landscape will present exciting opportunities for engineers. My job, along with other political leaders, is to ensure that our laws and regulatory bodies are not prohibiting or complicating your efforts to prepare our country's infrastructure for the future.

Flying cars haven't happened. Humans have not achieved immortality. And a robot butler does not feed my son. Predictions about the future don't always turn out the way we expect. Nevertheless, we should be ready for a future like the one I describe.

The intersection of public policy and engineering will be critical in delivering major changes to the American economy for decades to come, and we must be thoughtful and humble in preparing for these changes. I'm proud to serve you all in the United States Senate, and I look forward to working together on these critical issues.

Editor's note: Sen. Tom Cotton was elected to the U.S. Senate in 2014 and now serves on the Committee on Armed Services; the Committee on Banking, Housing and Urban Affairs; the Select Committee on Intelligence; the Joint Economic Committee; and the Special Committee on Aging. He previously served one term in the U.S. House of Representatives representing Arkansas' 4th District. A Dardanelle native and Harvard Law School graduate, he served in Iraq with the 101st Airborne and in Afghanistan with a provincial reconstruction team, and won a Bronze Star medal.

P3s are a win for all

The Public-Private Partnership process, also known as a PPP or a P3, has been picking up steam in recent years, but it's not actually new. The Erie Canal connecting the Hudson River to Lake Erie is an example of a P3 that was completed in 1825.

While historically P3s have been the vehicle used for transportation-related projects, they now are being applied more among other sectors including water and wastewater systems, education, urban economic development and a wide range of other applications. The economic benefits for public agencies, private business and the regions in which they are constructed are numerous.

m ie ie . cle w nn, of b-By Susan Pendergrass

McClelland Consulting Engineers

A public-private partnership is a govern-

ment service or private business venture funded and operated through a partnership of government and one or more private sector companies. The private party provides a public service or project and assumes substantial financial, technical and operational risk. In some types of P3s, the cost of using the service is borne exclusively by the users of the service and not by the taxpayer.

There are typically two reasons why a group would want to pursue a P3. First, the public sector would use private sector knowledge and expertise to deliver a product or complete a project that would otherwise be accomplished by the public sector group. The second reason is that the P3 is designed so that the public sector entity will not be burdened by being held accountable for any borrowing.

The largest benefactors of decades of P3 projects are cities and counties that are enjoying the "lessons learned" results of successful projects. These agencies are rapidly applying these experiences to combine strengths and resources of both the public and private sectors. There have been significant improvements and refinements in the process over the years, and though they are sometimes more difficult to put into action than other types of programs, the lessons learned overall are that they can be worth the effort. The most renowned aspect of the P3 process is the "team" aspect of the partnership where all are invested, and therefore all want to see a rewarding program and end result.

Where in the past there may have been a combative culture between a private and public group to accomplish a goal, the feeling today is of a true alliance. No two P3s are alike, but each goes through similar processes to acquire the right "team."

Even though this is yet a growing concept in the United States, other countries around the globe have successfully accomplished this form of production for decades on practically every continent, with a strong showing in most western European nations. An example in the U.S. is that surprisingly, though mostly in the Northeast and some parts of California, 23 percent of our population is served by investor-owned firms running water and wastewater systems, according to the National Association of Water Companies. These are P3s from which both the public agencies and the private sectors benefit both financially and by providing excellent service to the communities they serve. These are the types of revenue sources that are simply waiting to be made for the right PPP, benefiting the private and public sectors.

There are so many advantages to this style of project procurement for all parties involved. P3s vary drastically from case to case because they are naturally customized for each project to specifically meet the community's exact needs for its situation. Even something as simple as leasing a water tower to a cell tower developer can create an otherwise lost revenue. The public entities are able to maximize their public assets and be

more involved in the process and their environment, while the private side establishes

itself as a good partner and might gain opportunities otherwise overlooked.

With the declining revenue among city and state agencies, a P3 is a viable solution to provide quality projects while also enabling the private sector to contribute work opportunities for the community. The key, which holds true for most business partnerships, is open communication, consistent leadership, maintaining clarity on the mutual shared vision or goal, and remaining fair throughout the entire process.





Students build electric engine, legacy

At Bentonville High, students are transforming a gas car into an electric one, and learning engineering, business and project management skills.

By Steve Brawner Editor

A dozen juniors and seniors at Bentonville High School have been spending their seminar periods and their Saturday mornings converting a 2002 Chevy Malibu into an electric car.

The students were trying to finish the project for an April contest in North Carolina sponsored by the electric vehicle company EVAmerica. Students from across the country will compete to see which car can maintain the longest charge, has the best acceleration, and competes best in a slalom course.

The Technical Student Association Club project began when teachers challenged students to pick a project with an engineering slant. Students decided on the engine conversion and then researched the project using YouTube videos and other online resources.

The 12 students all plan to have engineering careers. All have taken classes through Project Lead the Way, a national STEM-based (science, technology, engineering, math) program. Students have worked in groups on Tuesdays and Thursdays during their seminar periods – the district is on block scheduling – and then have met every Saturday morning from 8:30 a.m. until noon. They are not receiving class credit for the project.

Kelly Parker, who teaches two classes, Principles of Engineering, and Intro to Engineering and Design, said the adults facilitate and offer guidance, but the project is student led.

"They're learning about design," she said. "They're learning about project management, and it's their idea, and because of that, we're able to add in that instructional piece, and they don't even realize that they're learning. ... They have become their own advocates, which is really all I could hope for my students."

Mechanical engineering skills are only part of the project. To manage the work flow, they've been practicing project



ELECTRICAL CONVERSION. Students Kyle Watson, left, and Steven Douglass, right, work on a soon-to-be-removed gas engine with help from teacher Tye Killingsworth. Opposite page, the three, along with fellow student Tyler Scifres, stand next to the gas tank, which had just been removed.

management skills such as using Gannt charts, which are work timelines that help teams stay on schedule. The charts are important because students haven't all worked on the project on the same day, so they've had to communicate. Students created a business plan so they could market the project to the community. They approached community partners with help and guidance from Parker and Tye Killingsworth, who teaches Digital Electronics along with Engineering Design and Development. Crain Hyundai of Bentonville promised to give the students a future trade-in it couldn't sell and then soon delivered the Malibu. Keith Brown, owner of Brown's Collision Center across the street from the high school, has let the students work on the car at his shop and also has provided expertise. To raise money for the conversion, the students met with Tom Douglas, director of Wal-Mart's Lab 415-C, which provides grants for innovative technologies. It gave them \$9,000. Douglas said that although Killingsworth was present, the students performed the entire presentation and then provided him a one-pager that he could take to his leadership team.

"The fact that they came fully prepared, business plan, this is what our end goal is, showed me that they really cared and were passionate about what they were doing, and that provided us an avenue to be able to say, 'Hey, these guys are really entrepreneurs, and we want to encourage entrepreneurship at every point," he said.

Douglas said his Lab 415-C's role is to research technology that can help Wal-Mart beat its competition. Wal-Mart won't be selling electric cars, but that's not the point.

"What's important is to understand how energy and sustainability work," he said, "and to encourage people to be involved in STEM, and to understand what the results of those kind of tests and what that kind of experimentation can be. ... Hopefully what we get out of it is a bunch of encouraged students that move on into STEM and eventually can come back and work for Wal-Mart and do what I do."

The students are aware that they're learning important skills that will serve them well after graduation.

"It's one thing to say we're going to come in here, and we're going to convert the car, but it took months of preparation beforehand, talking to people and reaching out to the community to get support before we could even get the car in here to start tearing it apart and converting it, so it's been a learning experience," said senior Kyle Watson.

Students also were helped by Jeff Amerine, the founding principal of Startup Junkie Consulting, which offers consulting services for entrepreneurial ventures. He's helped them through the process as if they're running a startup company. Amerine has answered the students' questions while peppering them with questions of his own, such as whether car conversions could be a viable business venture.

Amerine said Startup Junkie had 900 engagements last year with entrepreneurs of all ages. He sees plenty of potential in today's students. "The young people are really interested in doing their own thing," he said. "It's like anything else – it's not all of them. But there's a lot of them that view their reality as being one where they've got to be kind of the master of their own career, and entrepreneurship is a means to that end."

Killingsworth said the students have improved at their people-oriented "soft skills." They've asked teachers to proofread emails and practice phone calls before they make them.

"Kelly and I from the beginning said we're going to let the kids handle this," Killingsworth said. "It's going to be their thing. And if they fail, then they're all right. We'll try to dust them off and put them on the right path to being successful. But failure is never a bad thing as far as this stuff goes."

When Arkansas Professional Engineer paid its visit Feb. 9, seniors Watson and Tyler Scifres and junior Steven Douglass worked on the car in the shop. The gas tank was removed thanks to Brown, the shop's owner, who did much of the work because of the task's inherent dangers. The project is a perfect one for Watson, who hopes to be a mechanical engineer designing a Chevrolet truck powered



by alternative energy. Scifres is already working at Sand Creek Engineering, a local electrical engineering firm. He works on cars at home in his free time. Douglass wants to manage his own aerospace engineering firm – an entrepreneurial interest he said has been encouraged by this effort.

Establishing a legacy

The students naturally have idealistic motivations for taking on the project. They want to help develop a sustainable, renewable resource. They also hope to "establish kind of a legacy" for future students, said Watson. According to Douglass, "The thing that I really enjoy about it is knowing that we are changing our community – you know, just something as simple as taking any car and converting it to electric and showing our community that it's possible. And also something I get from this is that young engineers in the school district are capable of doing things bigger than just something in the classroom. We are learning in the classroom, and we are applying our skills outside the classroom to make big changes in our community and just all around town and how people view us."

The students worked on a tight schedule. As of February, they still had a lot of work left to do – including raising the money to transport the car to North Carolina. Completing it on time was a goal but not an obsession. If they missed the deadline, they intended to finish the car regardless. There's always next year.

"By us taking on this challenge, we kind of signed an agreement saying, 'We're going to do this for the community. We're going to do this for the school. We're going to do this for the engineers in our school," Douglass said. "So we're going to finish it regardless of if we meet that deadline or not."



Engineering focus of science standards

Classes next school year in grades K-4 will feature engineering practices; high schoolers to learn earth and space science.

The new Arkansas K-12 Science Standards, which for the first time include engineering practices from kindergarten through the 12th grade, will be introduced this August in grades K-4.

The Next Generation Science Standards will be introduced in middle school in 2017-18 and in high school in 2018-19. The state adopted the internationally benchmarked standards for grades K-8 last year and is in the process of writing them for high school.

The standards were published in 2013 after being created with input from teams from 26 states, including educators, higher educators, and stakeholders, along with 40 writers. The process was managed by Achieve, a nonpartisan education reform organization that helped develop the Common Core. The standards are aligned with Common Core literacy and math. After they were published, the states customized them to fit their own mandates. The standards were "gradebanded" – covering high school, for example, so Arkansas had to delineate them by specific grades.

Michele Snyder, science curriculum advisor, said the science standards haven't been controversial despite their associations with the Common Core.

Snyder said teachers will have to change how they instruct students. Instead of regurgitating facts on an assessment, the focus will shift to students learning to apply problem-solving skills in the real world. She said that "these standards really put the role of being a scientist into the hands of students." Students will be expected to ask questions, make observations, and gather information to define a simple problem that can be solved through the development of a new or improved object or tool. An example of how the standards work is that kindergarten students will be asked to analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull. In first grade, students will



SCIENCE AND ENGINEERING. In this 2015 photo, Trenton Harlan, a student at Greenbrier High School, studies simple harmonic motion using a spring/mass system and Vernier motion sensors in an AP Physics I class.

design a solution to a human problem by mimicking how plants and animals use their external parts to survive – for example, deterring intruders by mimicking animal quills or thorns.

Meanwhile, the new standards include earth and space content from grades K-12 - a change from Arkansas' historical standards that ended instruction in those areas in the eighth grade.

"That's going to be a big game-changer because geoscience careers in Arkansas are very plentiful and extremely lucrative with just a bachelor's degree, and those careers funnel into agriculture, forestry, the petroleum (industry), aeronautics," she said. "It really feeds into a lot of the STEM industry here in our state."

"STEM" is an acronym standing for "science, technology, engineering, math."

One challenge in implementing the model is that teachers are not trained in engineering design cycles. Snyder said colleges have begun adjusting their programs of study to fill that need.

Snyder said that schools need to create engineering partnerships with local industries where students can solve realworld problems. Such a partnership exists in Camden, where Lockheed Martin has been working with the Camden Fairview School District.

Helping you help ACEC/A

Have you ever thought you might like to become more involved in your state's engineering associations, but you weren't sure how, and you weren't sure how much you could commit?

That's understandable. As an engineer, you already have plenty on your plate fulfilling your professional responsibilities. It's because of you that our roads are safe, our water is clean, and our buildings have safe electricity. So you're forgiven if you can't always attend to the needs of the American engineering profession.

Still, we need you, which is why ACEC/A's leadership is changing how it's organized. Traditionally, the board of directors has consisted of one state and one national director in addition to the "higher-ups": president, president-elect, secretary-treasurer, and past president. New board members typically have entered as a state director and been expected to move up the ladder, one year at a time, holding every position except national director on their way to serving as president and then past president.

That's quite a commitment, and it's shut out a lot of members who have wanted to serve but haven't been sure they can serve that much and don't want to commit to eventually serving as president. One thing about engineers: If they start something, they want to be sure they can follow through.

If you're going to help ACEC/A, it must help you. So starting this upcoming year, we've added more state director positions that will serve up to two terms of two or three years and be expected to chair one of ACEC/A's committees. They're not getting off easy. However, only one will be eligible to stay on the board and begin moving through the rotation of other offices.

We think this new arrangement will broaden the base of professional engineers who have served in a leadership position and can stay active without having to make such a long commitment.



Angie W. Cooper Executive Director

Meanwhile, there will be other opportunities for Arkansas engineers to volunteer. Serving on a committee is a much smaller commitment, but still an important one. The same applies to the Arkansas Society of Professional Engineers, which supports the profession in a different way as the only one representing the interests of professional engineers.

This will be an eventful couple of months for engineers and the engineering profession. By the time you read this, state legislators will have completed a special session focused on health care issues and will be in the middle of a fiscal session deciding how the state will allocate funding for fiscal year 2017. That session, too, is being dominated by health care, and because health care is such a big part of the economy, it will set the tone for everything else.

Depending on what happens, the fiscal session will be followed by another special session that will be focused on a subject that is near and dear to engineers. Gov. Asa Hutchinson wants Arkansas to increase highway funding by \$750 million over the next 10 years, making the state eligible for \$2 billion in federal matching funds. For the first time, the state would dedicate a small part of its general revenue budget to highways, including part of the sales taxes from the sales of vehicles.

Currently, that money goes into a big pot and is spent on other needs – schools, higher education, prisons, human services, etc. Advocates for those groups will oppose Hutchinson's plans because they fear their piece of the pie will be a little smaller.

All of those are important priorities, but all depend on a solid and dependable transportation infrastructure. The engineering profession must add its voice to the mix.

That means we need leaders on our boards and in committees. ACEC/A is helping you help it, so we can all help Arkansas have a stronger future.



TOR. Crafton Tull won the Engineering Excellence Awards' top award with its Little Rock Main Street Water Quality Demonstration Project. Pictured are, front row, Marsha Guffey, Little Rock Creative coordina-Corridor tor. Middle row, from left, Randy Young; director of Arkansas Natural Resources Commission; Caran Curry, grants manager for the city of Little Rock; Brad Peterson, P.E., CFM, LEED AP, Crafton Tull; Jerry Kelso, P.E., Crafton Tull senior vice president. Back row from left are Frank Riggins, ASLA, Crafton Tull landscape architect; Tony Ramick, Natural Arkansas **Resources Commis**sion physical and program manager for the nonpoint source management program; Dave Roberts, ASLA, Crafton Tull vice president - Planning Department; and Austin Paul, Crafton Tull landscape architect.



Crafton Tull's street a grand concept

The firm's Little Rock Main Street project took the top honor at this year's ACEC/A Engineering Excellence Awards. Meanwhile, Garver's Conway wastewater facility won the People's Choice Award.

Crafton Tull won the Grand Conceptor Award for its Little Rock Main Street Water Quality Demonstration project at this year's ACEC/A Engineering Excellence Awards March 17 at the Arkansas Arts Center.

Completed in the fall of 2015, the \$1.9 million project has transformed the north part of Main Street by using urban low-impact development techniques to



Crafton Tull Little Rock Main Street project cleanse runoff water naturally before it flows into the Arkansas River.

The project came about through several grants: a Greening America's Capitals grant that started the process; a grant from the National Endowment for the Arts to develop what became the Creative Corridor, and then a \$900,000 federal nonpoint source pollution grant from the EPA through the Arkansas Natural Resources Commission to develop the demonstration project. The city also contributed funds to cover project costs.

A primary goal was restoring a connection to the hydrologic cycle within the urban environment while educating the community. Notable aspects include outdoor classrooms bordered by vegetated walls, a pervious paver gateway with light garden, and a bioswale boardwalk with LED lighting.

Crafton Tull worked closely with city staff, the Arkansas Natural Resources

GRAND

CONCEP-



PEOPLE'S CHOICE. Garver's Conway Wastewater Treatment Plant Improvements project won the award selected by banquet attendees and presented by BancorpSouth Insurance Services. Pictured are, from left, Ken Estes with BancorpSouth; Paul Strickland, P.E., project manager; and Dave Bradley, water systems manager, Conway Corporation.

Commission, community stakeholders, and the University of Arkansas Community Design Center. Brad Peterson, P.E., CFM, LEED AP, of Crafton Tull, this year's ASPE president, was project manager.

The project is part of a larger redevelopment effort that is reinvigorating the street into the Creative Corridor. Instead of four lanes jutted against the buildings, the street consists of two lanes with ample sidewalks and green space. Marsha Guffey, Ph.D., Little Rock's Creative Corridor coordinator, said the idea was to use the arts as a catalyst for development. The Arkansas Repertory Theater already was there, and now the Arkansas Symphony Orchestra and Ballet Arkansas are coming. Several advertising and creative firms have located there as well. More than \$100 million of private money has been invested. Now the Little Rock Technology Park, which will provide a home for technology-based businesses, is also locating on Main Street.

The demonstration project is a small but vital part of the effort because it beautified a street that consisted mostly of unattractive buildings where little of interest was occurring. "With the whole Main Street Creative Corridor, the idea was to have this 'live, work and play 24-7 environment' that was fun to hang out in," said Guffey. "And before, you wouldn't want to walk down Main Street after dark. You really wouldn't even want to walk down it during the daytime because there was no 'there' there."

Among the engineering challenges was remaking an existing corridor instead of starting from scratch on a greenfield. Rather than working on a static design, Crafton Tull designers were part of a changing process where each block had its own identity. Guffey said the firm's challenges included protecting downtown basements from flooding and making adjustments to have more flowering plants that were still appropriate for a low-impact development (LID) streetscape.

"In Arkansas, dealing with LID is pretty new to all of us, and I'm sure they had some experience with it, but it was a work in progress for all of us, and they did a great job of capturing a lot of things that needed to be captured there," Guffey said.

According to Crafton Tull's Peterson, being part of a project with a larger goal was rewarding.

"You get to see how the development money can lead to an improvement in the community," he said in an interview last year. "You're not just spending the money to kind of patch things and hold things together. I mean, people have a vision. They have an idea, and so you become a part of that."

The project also won in **Category G** – **Water Resources**.



Garver Conway Wastewater project

People's Choice – Garver

The winner of the People's Choice Award, given to a project selected by banquet attendees, didn't win in its own *Continued on next page*





ARKANSAS WATER PLAN. Top photo, FTN and CDM Smith won in Category A -Studies, Research and Consulting Engineering Services, for the Arkansas State Water Plan. Pictured from left are Linda Johnson, P.E., CFM, FTN project manager; Randy Young, Arkansas Natural Resources Commission director; Kelly Collins, P.G., BCES, CDM Smith project manager; Edward Swaim, ANRC Water **Resources Division manager;** and Tony Ramick, Arkansas Natural Resources Commission. Right, Garver won the Honor Award for the Springdale Water Utilities Water and Wastewater Master Plan. Pictured are Chris Button, P.E., Garver, project manager; Rick Pulvirenti, P.E., Springdale Water Utilities chief operating officer; Heath Ward, executive director; and Shawn Dorman, Springdale Water Utilities, director of distribution.

category. Attendees selected Garver's Conway Wastewater Treatment Plant Improvements project, which Garver completed for the Conway Corporation. The award was sponsored by BancorpSouth Insurance Services. The project also won an Honor Award in Category F – Water and Wastewater, Large Project.

The attendees were impressed by the \$90 million project, the largest ever for



the Conway Corporation and the largest wastewater project in Garver's history. According to Paul Strickland, P.E., the project manager, at least three dozen Garver staff members were involved.

Strickland said the project was needed for Conway's continued growth. The plant will take the place of two older treatment plans, one of which was being taken offline quickly and the other which will be.

Garver planned and designed a new wastewater treatment plant and collection system improvements while providing full-time construction observation and administration. The project included modifying, refurbishing, and decommissioning old facilities and constructing new ones. The project was coordinated and designed so that the system improvements, capacity, and anticipated regulatory and treatment goals could be achieved as projected to the year 2030. It includes more than 25,000 linear feet of collection system piping ranging from 24 inches to 72 inches, two new pump stations, and upgrades to one of the existing wastewater treatment plants. Garver's services included environmental surveys, permitting, geotechnical investigations, design, bidding, and construction phase services, as well as Arkansas Natural Resources Commission funding assistance.

The plant was located in a greenfield and discharges into the adjacent Arkansas River, which meant it drew opposition.

"There were definitely political hurdles that had to be overcome and environmental hurdles as well," Strickland said.

Other winners were the following.



FTN/CDM Smith State Water Plan

Category A – Studies, Research and Consulting Engineering Services: Arkansas State Water Plan, by FTN Associates and CDM Smith

FTN Associates and CDM Smith won in this category for the 2014 Arkansas Water Plan update, which is the culmination of two years of data analysis and synthesis to understand the complexity of sources, available supply, and the demand for water in Arkansas. Despite the state's relative abundance of water, many citizens lack access to dependable water and wastewater services due to distance to supplies, insufficient infrastructure or storage, wa-



BUILDING, TECHNOLOGY SYSTEMS. Garver won in this category for the LIT BHS generator system for the Bill and Hillary Clinton National Airport. Pictured are Adam Roberson, P.E., project manager; Eric Farmer, P.E., senior project manager; Tom Clarke, P.E., airport director of properties, planning and development; Bryan Malinowski, airport deputy executive director; and Mike Griffin, P.E., Garver director of aviation.



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Hawkins-Weir Van Buren Study



Garver Springdale plan

support growth and economic development for the next 40 years.

Receiving Honor Awards in this category were: Garver, for the Springdale Water Utilities Water and Wastewater Master Plan; and Hawkins Weir Engineers for the Van Buren System Evaluation Study for the Van Buren Municipal Utilities.



Garver Clinton Airport project

Category B – Building/Technology Systems, Large Project: Garver

Garver won this award for the LIT BHS generator system for the Bill and Hillary Clinton National Airport. The airport had recently installed two 1-MW emergency generators sized for carrying the existing building load. Because of a terminal renovation project, Garver recognized a third parallel generator would Continued on next page







Andy Davis, PE OWNER, SALES

Todd Piller, PE OUTSIDE SALE





Charlotte Hayes INSIDE SALES





Bryan Floyd FIELD SERVICE, OPERATOR



Tyler Smith FABRICATION, DELIVERY



Jimmy Lowery NWA FIELD SERVICE, OPERATOR



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MORE AWARDS. Left photo, Garver won the Structural Systems award for the city of Fayetteville's Spring Street Parking Deck. Pictured are Ron Petrie, P.E., Garver, senior project manager; Jeremy Pate, Fayetteville director of development services; Chris Brown, P.E., Fayetteville city engineer; Jeff Webb, P.E., Garver, project manager; David Clement, P.E, S.E., Garver, structural engineer. Right photo, FTN Associates won in the Environmental, Large Project category for the Utility Services, Inc., Remedial Action Construction Project for the Arkansas Department of Environmental Quality. Pictured are Mark Koch, FTN, project manager; Annette Cusher, P.E., ADEQ engineer supervisor; Tammie Hynum, ADEQ senior manager of the regulated waste programs; Paul Crawford, P.E., P.G., FTN, senior project manager.



be required. Garver designed this system, including parallel switchgear improvements, building automation system con-

trol integration upgrades, and new isolation switch installation as required by Entergy. WATER AND WASTE-WATER. Left photo, McGoodwin, Williams & Yates won the Water and Wastewater, Large Project award for the **Clarksville Water Treat**ment Facility Expansion for Clarksville Light & Water Company. Pictured are John Lester, general manager of Clarksville Light & Water Company; Jim Vetter, P.E., MWY project engineer; and Brad Hammond, P.E., MWY president. Right photo, Bond Consulting Engineers and Crist Engineers won an Honor Award in the category for a project for the Lonoke White Public Water Authority. Pictured are Bond's Tommy Bond, P.E., P.S., and Crist's Stewart Noland, P.E.

The new generator location was determined during the report phase to ensure adjacent equipment space ex-

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SPECIAL PROJECTS. Left photo, Crafton Tull won this award for the Walton Arkansas **Municipal Pavilion for** the Walton Arts Center. Pictured are Daniel Ellis, P.E., Crafton Tull vice president; and Zak Johnston, P.E., Crafton Tull, project engineer. Right photo, CEI won an Honor Award for the Rogers Veterans Park Memorial Plaza. Pictured are Jacob Shy, CEI, assistant project manager; Tom Oppenheim, P.E., CEI department manager, local development; and Lance Jobe, P.E., city of Rogers, project engineer.



TRANSPORTATION AWARD. Garver won this award for the Frisco Multi-Use Trail for the city of Fayetteville. Pictured are Chris Brown, P.E., Fayetteville city engineer; Jeremy Pate, Fayetteville director of development services; Ron Petrie, P.E., Garver, senior project manager; Dylan Cobb, P.E., project engineer.

isted and loading dock areas remained operational. Generator emissions were specified to meet more stringent EPA requirements for non-emergency generator usage. Switchgear upgrades included a dedicated circuit breaker for annual load bank testing of the three generators for improved testing and reliability. Garver coordinated meetings with the airport and Entergy in order to determine the facility interconnect classification and the required interruptible agreement equipment and protective relaying. Garver also designed a new uninterruptible power supplies system for the government-installed conveyor system to eliminate restart times at the conveyor control panels.



Garver Spring Street parking deck Category C – Structural Systems: Garver

Garver won this award for the city of Fayetteville's Spring Street Parking Deck. The parking facility includes a new parking deck with two liner buildings and a three-story office building. For the site selection phase of this project, the design team conducted site surveys and compiled data for four potential sites. The most challenging site was chosen by the city and required a large volume of excavation. The four-level, 236-space vehicle parking deck is located in the downtown entertainment district and is adjacent to the Walton Arts Center. The project also included the replacement and expansion of the Walton Arts Center administrative offices and backstage space. The administration office building design included drilled piers and structural steel with moment frames and composite beams. The parking facility uses the same pay-byspace parking system already utilized in the entertainment district by providing drivers with six payment kiosks located throughout the deck. Additionally, free parking is available for 24 bicycles. The new facility provides the city with convenient, secure parking for citizens who frequent the existing downtown merchants, and it provides the parking infrastructure needed to draw new businesses to the vibrant downtown area.



FTN Utility Services remedial project

Category E – Environmental, Large Project: FTN

FTN won this award for the Utility Services, Inc., Remedial Action Construction Project for the Arkansas Department of Environmental Quality. Utility Services, Inc. was an Arkansas corporation that began operation in 1973 and handled potentially hazardous materials until its operations ceased in 1986. Between 1981 and 2009, a number of investigations conducted at the USI site in rural Jefferson County indicated hazardous substances had been released into the environment due to improper management of the substances. In 1991, ADEQ issued a consent administrative order to Arkansas Power & Light - now Entergy - which was identified as a possible generator of some of the hazardous substances. AP&L stabilized the site and removed 185 drums of waste materials.



ENERGY. Brown Engineers won the Energy award for the Statehouse Chiller Replacement Project for the Little Rock Convention & Visitors Bureau. Pictured are Bruce Brown, P.E., principal in charge; Jim Rice, Little Rock Convention and Visitors Bureau; Mark Eakin, P.E., Brown Engineers, mechanical project engineer; Alex Trulove, Brown Engineers, design engineer; Doc Doolittle, Little Rock Convention and Visitors Bureau director of facilities maintenance/engineering; and Dee Brown, P.E., Brown Engineers, principal.

ADEQ assessed the site between 2004 and 2007 and determined elevated levels of metals, pesticides, and PCB were present in the soil and groundwater around the site. ADEQ contracted FTN to perform a comprehensive site assessment to determine the environmental impacts of the site's previous usage. ADEQ determined remedial action was required due to unacceptable health risks.



Category F – Water and Wastewater, Large Project: McGoodwin, Williams and Yates

MWY won this award for the Clarksville Water Treatment Facility Expansion for Clarksville Light & Water Company. The Clarksville Light & Water Company faced challenges with both capacity and regulatory issues, and time was limited. It was under contract to serve a new large user, and it had just been notified it was one of seven water districts in the state that needed additional treatment credits for a parasite found in the source water and regulated under the EPA's new Long Term 2 (LT2) Enhanced Surface Water Treatment regulations. MWY, in direct consultation with the owner, quickly analyzed alternatives and recommended additional filtration and an expansion to the ozone system, both of which provided increased capacity and disinfection credits for the parasite. The new ozone contact facility was the first in the state to use ozone for LT2 compliance, and the project was the first municipal water project in the nation to use the new HyDOZ ozone injection system by BlueInGreen. To save time and costs and to reduce risk, an alternative procurement process of selecting a construction manager based on qualifications was utilized. With a contractor as a member of the design team, design alternatives were fully vetted from costs and constructability standpoints, resulting in significant reductions in

project costs and a solution that was on time and under budget.

Receiving Honor Awards in this category were: Garver, for the Conway Wastewater Treatment Plant Improvements project for the Conway Corporation; and Bond Consulting Engineers & Crist Engineers, for a project for the Lonoke White Public Water Authority.



Garver Frisco Multi-Use Trail

Category H – Transportation, Large Project: Garver

Garver won this award for the Frisco Multi-Use Trail for the city of Fayetteville. The Frisco Trail project provides the missing link to connect Walker Park to the city trail network, allowing citizens an alternative way to access the park and a safe alternative route from south Fayetteville to the university area. The trail has attracted new developments and revitalization of existing properties. Additionally, the adjacent stream will bring attention to trail users of the importance of protecting the streams and keeping them free from litter. During the planning phase, Garver evaluated several alternative trail alignments with a cost analysis to provide design recommendations. The planning phase also included evaluating the crossings of two major arterials, which included evaluating an at-grade crossing, a pedestrian bridge, and a pedestrian tunnel. Garver also provided surveying, design, property acquisition documents, bidding, and construction phase services to complete the trail. Improvements included extending the Frisco Trail from Martin Luther King Jr. Boulevard to the trail located in Walker Park, including a half mile of 12-foot-wide trail with lighting, a 120-foot tunnel under MLK Boulevard, two prefabricated bridges, and a pedestrian hybrid beacon crossing at Highway 71B and South School Avenue.



Crafton Tull Walton AMP project

Category I – Special Projects, Large Project: Crafton Tull

Crafton Tull won this award for the Walton Arkansas Municipal Pavilion for the Walton Arts Center. Crafton Tull served as the civil engineering and surveying consultant for one of the state's premier outdoor entertainment amphitheaters. The Walmart AMP has become a nationally recognized venue for musical artists of all genres. Crafton Tull worked with Core Architects and a team of other engineering firms to design an innovative venue that will impact Northwest Arkansas for decades to come. Located in Rogers, the Walmart AMP attracts patrons from many miles for large productions. The venue opened in June 2014 and accommodates nearly 10,000 people, with 3,200 covered seats under a 40,000-square-foot fabric tensile structure and additional general admission seating on a sloped lawn. The AMP has air-conditioned concessions and restrooms, a permanent pavilion, and the biggest stage house in Arkansas. From an infrastructure perspective, the project consisted of more than 6.4 acres of asphalt paving, 2,000 feet of storm sewer, 680 feet of sanitary sewer, 3,188 feet of waterline, and 83,000 cubic yards of soil moved. Other design challenges included designing a landscape capable of noise re-



CEI Rogers Veterans Park Memorial Plaza

duction and meeting stormwater quality standards on a regional scale.

Receiving an Honor Award in this category was CEI Engineering Associates for the Rogers Veterans Park Memorial Plaza.

Category J – Energy: Brown Engineers

Brown Engineers won this award for the Statehouse Chiller Replacement for the Little Rock Convention & Visitors

Bureau. When one of the two aging chillers at the Statehouse Convention Center died, Brown Engineers wanted the job but knew it would have only four weeks to design it. Team members did a lot of advance preparation to show their com-



Brown Engineers Statehouse Chiller Replacement project

mitment. They toured the site, created a digital model of existing space, equipment and layout, and used that model to test options and spark creativity. Brown's combination of initiative and deep remediation expertise paid off with this creative reworking of a crowded mechanical room. This project not only replaced both chillers on time and \$443,000 under budget, but it also improved cooling performance and energy efficiency of the chilled water system; it prepared the site for future upgrades; it added connections for temporary chillers to improve reliability and redundancy; it upgraded digital controls for better performance and energy efficiency; it eliminated an extreme maintenance hassle; it reclaimed extensive square footage for future upgrades; and it qualified for more than \$100,000 in energy-efficient incentives.

Griffin: Reform agencies, then taxes

At the Engineering Excellence Awards banquet, the state's lieutenant governor said the path to tax reform and infrastructure reform starts with bringing state agencies into the 21st century.

By Steve Brawner Editor

To free up money for tax reform and infrastructure investments, Arkansas state government must first reorganize state agencies, Lt. Governor Tim Griffin said at the Engineering Excellence Awards banquet March 17.

Griffin told attendees that the state needs bold tax reform – and not just tax reform – to compete with other states that have more pro-growth strategies and are more nimble and aggressive in seeking the jobs Arkansans want. If the state were in the top five in job growth, it could tweak its policies, but because it's near the bottom, it needs a complete overhaul, he said.

"Don't pay a lot of attention to how things are," he said. "Think about how things should be. ... Basically, start with a blank sheet of paper. Do not give any credence to any idea because it's old."

However, any attempt at bold tax reform will be stopped by status quo forces. The Department of Finance and Administration will always worry that tax reform will not produce enough revenue to fund the government – an amount that's always determined by what was spent to fund the government the year before. Griffin said he was unable to pass a \$10 million exemption for military retirees in 2015 because the money supposedly wasn't there, despite the benefits of attracting that population to Arkansas.

Start with agency reform

How, then, can the state find the flexibility to enact tax reform? By reorganizing state agencies that were created decades ago with a top-down, industrial model, Griffin said.

Griffin recently completed a review of the Department of Human Services and found the agency is organized inefficient-



LIEUTENANT GOVERNOR Tim Griffin speaks about the importance of reorganizing state government at the Engineering Excellence Awards banquet.

ly into divisions that don't communicate with each other.

Other agencies at both the state and federal levels also need a more bottomup approach, he said. For example, U.S. Veterans Administration Director Robert McDonald, the former CEO of Procter & Gamble, has struggled to reform the agency because of its bureaucracy and rules, particularly regarding personnel.

"A lot of times when you see the problems with the VA and other things, it's not because they're doing the worst they can do," he said. "It's because under the circumstances, they're doing the best they can do. Given the magnitude of their mission and the rules that they have in place and the bureaucratic silos, it's impossible to fix it."

The state's 2016 general revenue budget was \$5.2 billion. Griffin said that if 10 percent could be saved by increasing efficiencies through reform, the state would have \$500 million to use for tax reform, for infrastructure improvements and for other priorities – and that's assuming there would be no revenue growth created by a better tax system. Meanwhile, state government would be providing better services because it would be organized based on its users, he said.

Griffin said that, in 2010, the Blue Ribbon Committee on Highway Finance said state general revenue funds should be dedicated to infrastructure. Earlier this year, Gov. Asa Hutchinson announced plans to call a special session this spring where legislators will consider that idea. Griffin said finding dedicated funds is necessary because federal funds are disappearing. An Army Reservist, he said his unit can't participate in some training activities because of a lack of funds.

Griffin said making such changes to state government will require political will, and political will comes from public support.

"Everybody wins if you start with bringing the government into the 21st century," he said. "That's where you start, folks. But here's the deal. It ain't going to ever happen unless you demand it. I know there's a lot of talk about politicians don't do this and that. My experience in public service is, politicians to a fault do exactly what they're told to do."



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Adam Hall grew up driving up and down the streets of Little Rock and back and forth across the city's bridges. Now that he's got a family of his own, Adam knows the work he's doing on projects like the Broadway Bridge isn't just for this generation of Little Rock. He's designing the infrastructure for his city now with the thought that his daughter and granddaughter will be using it in the years to come. *WE WORK HERE. WE LIVE HERE. WE'RE INVESTED IN OUR COMMUNITIES.*



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