

SEPTEMBER/OCTOBER 2014

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# SEI

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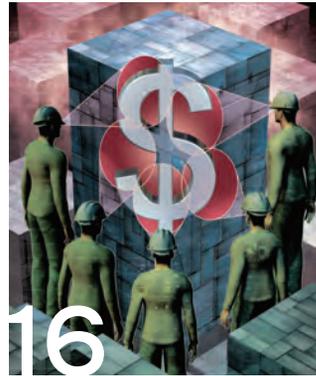
JON VALK

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RANDY LEYHUS

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# From ACEC to You

## Successful Engineers Become Effective Business Leaders

**T**wenty years ago, the Council recognized that engineering leadership required more than technical proficiency. To become effective and forward-looking stewards of their companies, senior executives needed to hone skills in business leadership and raise their understanding of public policy issues.

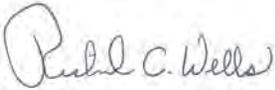
To meet the need, ACEC created the Senior Executives Institute (SEI)—a pioneering course that today has become the industry's gold standard for leadership training.

Over the past two decades, SEI has transformed almost 500 engineers from 150 companies into successful business leaders; many of them have become CEOs of their firms, such as Gannett Fleming, Stanley Consultants and Psomas.

We congratulate the entire SEI alumni body and faculty for their tremendous achievement. The report on the program in this issue of our magazine gives an excellent portrayal through the eyes of its participants. (*See page 10.*)

This issue also includes compelling articles on how to effectively manage a client's unrealistic expectations of perfection (*see page 40*); an analysis of the U.S. energy boom that provides new opportunities for our members (*see page 32*); unique solutions to underground engineering challenges (*see page 23*); and a range of other business topics.

See you all at the upcoming Fall Conference in Hawaii on October 22–25. Aloha!



Richard C. Wells  
ACEC Chairman



David A. Raymond  
ACEC President & CEO



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## President Signs Highway Trust Fund Patch Into Law; ACEC Decries 'Band-Aid' Approach

The president has signed legislation cleared by Congress to transfer \$10.8 billion into the Highway Trust Fund and extend MAP-21 highway and transit funding through May 2015. The legislation (H.R. 5021) averts a funding shortfall that would have forced the U.S. Department of Transportation to delay and ration project reimbursement payments to states.

ACEC joined with business groups, transportation users, safety advocates and other stakeholders in supporting a short-term patch, while also calling for a long-term funding solution. "The U.S. economy requires a surface transportation infrastructure network that can keep pace with growing demands," the group wrote in a letter to Congress. "A long-term federal commitment to prioritize and invest in our aging infrastructure and safety needs is essential to achieve this goal."

The Council worked to defeat an amendment from Sen. Mike Lee (R-Utah) to phase down the federal gas tax and turn over funding responsibility to the states. ACEC has consistently opposed these so-called "devolution" proposals, which weaken robust federal infrastructure investment. The Lee amendment "undermines more than 50 years of federal commitment to transportation infrastructure and places an unbearable burden on states," ACEC President Dave Raymond wrote in a letter to every senator. The Lee amendment was soundly rejected 28-69.

Raymond also participated in a strategy session on next steps with Sen. Tom Carper (D-Del.), chairman of the Transportation & Infrastructure Subcommittee. Raymond supported Carper's proposal to deal with long-term transportation funding this year rather than wait until next year.

"The patch is a Band-Aid when the patient really needs major surgery to survive," said Raymond.

The Senate initially voted to shorten the extension to end on December 2014, which would have forced action in a post-election lame duck session. The effort, led by Environment and Public Works Committee Chairman Barbara Boxer (D-Calif.), Sen. Tom Carper (D-Del.) and Sen. Bob Corker (R-Tenn.), was rejected by the House.

House Transportation & Infrastructure Committee Chairman Bill Shuster (R-Pa.) said the extension to next May will provide stability to state programs, while giving Congress time to work on a long-term solution.



## Member Firm Action Supports Cash Accounting

ACEC grassroots action prompted strong support in the Senate for the preservation of cash accounting for engineering firms and other businesses.

At the request of the Council and other business groups, Sens. Sherrod Brown (D-Ohio), Pat Roberts (R-Kan.), Angus King (I-Maine) and Ron Johnson (R-Wis.) circulated a letter to senators expressing opposition to imposing restrictions on the use of cash accounting. ACEC members contacted their senators in support of the bipartisan letter, generating 46 co-signers.

The letter was drafted in response to a tax reform proposal that would limit the use of cash accounting to firms with less than \$10 million in revenues and sole proprietors. ACEC embarked on a similar effort last year, and 71 members of the House of Representatives signed a bipartisan letter in support of retaining the cash method of accounting for engineering firms and other businesses.

Proposals affecting cash accounting and other tax code changes have been discussed in the context of broader reforms to the tax code. While action by Congress on tax reform is not expected this year, ACEC and its business community allies are working to shape the thinking of lawmakers in advance of future action.

## House Spending Bill Includes Major Cuts to Water Programs; ACEC Works to Restore Funding

The House Appropriations Committee has approved legislation to fund the Environmental Protection Agency (EPA) in 2015 that includes major cuts to the State Revolving Fund (SRF) programs that support water and wastewater projects.

The bill would fund the Clean Water SRF program at \$261 million and the Drinking Water SRF at \$757 million. Combined, these totals are \$1.36 billion less than the enacted 2014 levels for the programs.

ACEC is lobbying congressional leaders to increase funding levels for these vital infrastructure programs.

The bill would fund EPA at \$7.5 billion in 2015, a 9 percent cut from fiscal 2014. It includes \$75 million for Superfund grants but provides zero funding for brownfields infrastructure projects.

While the full House might vote on the measure in September, the Senate is not expected to take up this or other spending bills until after the November elections.



# ACEC Calls for Export-Import Bank Reauthorization

**A**CEC Member Firms have lined up in support of the reauthorization of the U.S. Export-Import Bank, which finances and insures foreign purchases of U.S. goods and services, enabling American firms to compete against those of other countries whose governments actively support their financing efforts.

Some House Republican leaders have targeted the bank for elimination by letting the current authorization expire at the end of the fiscal year on Sept. 30. ACEC is aggressively lobbying for reauthorization with reforms as necessary to satisfy opponents.

"We're a strong supporter of ACEC's efforts to continue funding for the Ex-Im Bank," says Richard Boehne, senior director of international programs at Merrick & Company.

"The Ex-Im Bank is an important partner with a key role in supporting the development of global infrastructure projects," says Black & Veatch Vice President of Government Affairs Paul Weida. "It helps maintain a level playing field for U.S. companies in competition with sovereign-backed, international firms."

POWER Engineers CEO Jack Hand adds: "The Ex-Im Bank has been a big help to our firm in the geothermal area in various countries. It has also been a player in numerous wind projects we've been involved with."



**Fred Hochberg, chairman and president of the U.S. Export-Import Bank, speaks during a House Financial Services Committee hearing.**

ANDREW HARRER/BLOOMBERG VIA GETTY IMAGES

## Tax Extenders Still in Limbo

**T**he tax provisions that expired at the end of 2013 remain on hold as the House and Senate take different approaches to extending them.

Instead of voting on the entire package of tax extenders, the House has approved several bills to make particular tax provisions permanent. These include the R&D tax credit, small business expensing, a provision to make it easier for S corporations that were previously structured as C corporations to access the firm's capital without tax penalties, and bonus depreciation for purchases of new equipment by firms of all sizes.

The Senate has attempted to complete consideration of a two-year extension of all of the expired provisions. The Senate bill includes a number of provisions adopted by the House, as well as parity for employer-provided transit benefits, increased small business expensing limits and the wind energy tax credit. The tax benefits would be in effect for 2014, retroactive to January 1, and 2015. Democrats and Republicans differ over what amendments will be offered during floor consideration.

It appears likely that final agreement between the two bodies will not occur until after the November elections.

### ISSUES ON THE MOVE

Highway Trust Fund "patch"

### WHAT'S NEXT

Action on long-term bill in early 2015

Extension of R&D tax credit and other expired provisions

Further consideration expected in November

Export-Import Bank reauthorization

Action in September

## Overtime Pay Legislation Introduced

**S**en. Tom Harkin (D-Iowa), chairman of the Senate Health, Education, Labor and Pensions Committee, has introduced legislation that would change the salary threshold and exemptions that determine whether employees who work more than 40 hours per week are eligible for overtime pay.

The *Restoring Overtime Pay for Working Americans Act* (S. 2486) would raise the salary threshold from the current level of \$455 per

week to \$1,090 per week and index it for inflation. Employees earning less than this threshold would be automatically eligible for overtime pay. The legislation would also increase the threshold for "highly compensated employees" from \$100,000 to \$125,000. These employees are typically exempt from overtime pay.

For employees whose salary is between these two thresholds, S. 2486 would require that 50 percent of the employee's duties fall under one of the exemptions in the law—such as professional, executive or administrative—for that employee to be exempt from overtime pay.

On March 13, President Obama issued an official memorandum directing the Department of Labor (DOL) to review and revise rules governing overtime pay. Although the presidential memorandum does not specify changes to the rules, Sen. Harkin's legislation may reflect the direction DOL would like to take. ACEC is gathering feedback from Member Firms on this proposal and expects to comment on the proposed rule, which is scheduled to be released at the end of 2014.

**Sen. Tom Harkin (D-Iowa)**



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MARTIN BARRAUD/GETTY IMAGES

### For More News

For weekly legislative news, visit ACEC's *Last Word* online at [www.acec.org](http://www.acec.org).

## Land Development Recovers— And Then Some

No market segment fell faster and harder in the financial meltdown than land development. The housing bubble and its perpetuating financial machinations were primary offenders in the crash.

But that was then.

As the economy gains momentum, no market segment is expanding with the same gusto as land development.

### Getting Off the Mat

Residential construction, by far the biggest driver in land development, started rolling toward the precipice in 2007 and finally went over in 2008 and 2009.

New residential construction put in place, both single family and multifamily, in 2006 was approximately \$474 billion, according to FMI. Activity dipped 24 percent in 2007, fell 34 percent in 2008, and was down another 41 percent in 2009. By the time the market stopped hemorrhaging in 2011, new residential construction totaled less than \$128 billion.

After scraping bottom for a couple of years, the residential market began to pick up in 2012, climbing almost 24 percent. Activity spiked more than 29 percent in 2013, and FMI estimates the market will expand nearly 20 percent in 2014, with an annual average growth rate of about 13 percent through 2017, when residential is expected to top \$355 billion.

Other market segments that contribute to land develop-

ment include commercial, office, lodging, health care, power and communication. All of these suffered declines during the recession—although none as precipitous as residential—and each has shown signs of rebounding.

“Residential development acts as a bellwether for where things are going to go,” says Mark Borushko, general manager of the Land Development Business Unit at David Evans and Associates, Inc., in Phoenix. “As it strengthens, it establishes a greater tax base that municipalities can use to fund capital improvement budgets and to support bond offerings to invest in capital infrastructure.”

### Strength In the Sun Belt

While land development is accelerating nationwide, some markets are stronger than others.

“California, Arizona and other places out west are picking up,” says Mike Kennedy, vice president of community development at Stantec. “Florida has rebounded pretty dramatically, Texas didn’t see the drop other places did, the Mid-Atlantic is doing well, and the upper Midwest is improving. Only in the Northeast do we still see some slowness.”

At David Evans, which operates primarily in the West, Borushko says he’s seeing “more confidence in all segments. Commercial is coming back and there are a lot of residential and institutional projects, lots of schools and light industrial projects.”



SMALL, PRO/GETTY IMAGES

Looking forward, Kennedy expects the Sun Belt markets to outperform the rest of the country. “We’re seeing migration again; people from the northern states have recovered enough equity in their homes to sell them.”

Master-planned communi-

ties in the Sun Belt have been performing especially well. “We’re seeing a big rebound there. If you look at the top 20 master-planned communities in the country, 10 or 12 of them are in Texas, and Florida and California have three or four each.”

### New Residential Construction Put in Place (Millions of Current Dollars)

Year	Single Family	Multi-Family	Total	Percent Change
2006	417,518	56,324	473,842	-2.02
2007	306,990	52,570	359,560	-24.12
2008	187,648	48,083	235,731	-34.44
2009	106,398	32,231	138,629	-41.19
2010	112,965	17,405	130,370	-5.96
2011	109,620	17,821	127,441	-2.25
2012	131,380	26,293	157,673	23.72
2013	168,395	36,227	204,622	29.78
2014*	198,469	46,713	245,182	19.82
2015*	231,368	52,350	283,718	15.72
2016*	263,814	57,353	321,167	13.20
2017*	294,415	60,869	355,284	10.62

Source: FMI

\*Projected

## Peaks and Valleys

One of the biggest challenges for firms active in land development is managing the market's volatility. The crash was so traumatic that it left a lot of firms cautious. Even as firms scramble to meet rising demand, many are quietly preparing for the next downturn.

"In order to manage the peaks and valleys, you have to take a long-term view of where things are going," says Borushko. "You have to keep your organization as nimble as possible."

Firms have been loath to ramp up staffing because a

sudden market reversal would force them to scale back. Larger firms such as Stantec are taking advantage of their size to temporarily move people out of slower markets to offices where they're needed.

At Dewberry, which is involved in land development along the Eastern seaboard, Senior Vice President Mike Snyder says diversification is critical.

"In 2007, residential and mixed-use development accounted for about 55 percent of our site/civil revenue," he says. "In 2013, it was only about 33 percent."

One area where Dewberry has seen a lot of growth is in work for power and telecommunications clients. "That's tracking to be one-third of our sales this year," says Snyder. "Back in 2007, it was not even enough to register."

Borushko says firms also must make themselves more valuable to their existing clients. "Strive to serve all of your clients as that 'trusted adviser' role. What you'll find is that even when activity slows down, they will stay with you, giving you as much work as they can."

Snyder agrees. "What we've tried to do in the site/civil

group is provide more types of services to our current clients. At the same time, we're looking to expand our services to more markets," he says.

While FMI land development forecasts call for growth over the next three years, Snyder says his firm isn't taking anything for granted. "I think we're better prepared today for the next downturn than we were for the last one," he says.

*Gerry Donohue is ACEC's senior communications writer. He can be reached at [gdonohue@acec.org](mailto:gdonohue@acec.org).*

## HIRE THE BEST

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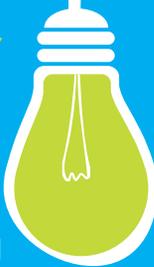
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HOW R&D AND ENERGY  
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INCENTIVES STRENGTHENED OUR BUSINESS:  
KERRY DUNN, DIRECTOR OF FINANCE AT BSA LIFESTRUCTURES

Despite predictions from many financial pundits and gurus of a strong economic recovery in 2014, more than half way through the new year, architecture, engineering and construction firms are still facing economic doubt and uncertainty. In the absence of a strong recovery, firms have been searching for new resources to remain competitive and achieve their business objectives. Two overlooked tax incentives, the R&D Tax Credit and the Energy Efficient Commercial Building Deduction (better known as Section 179D), could be the answer they need to strengthen their business.

For those unfamiliar with these powerful incentives, the R&D Tax Credit rewards businesses for improvements made to their products, processes and techniques while 179D is a tax deduction rewarding those in the business of designing and creating energy efficient buildings. For eligible architecture, engineering and construction firms, both the R&D Tax Credit and 179D represent a great opportunity to slash tax liability and generate the tax savings needed for reinvestment. But this can only happen if all eligible firms finally stop self-censoring themselves from claiming both incentives - a prospect that has proven very dicey so far.

**In an open conversation, Kerry Dunn shares his experience in claiming these**

**valuable incentives.** Kerry Dunn is the Director of Finance at BSA LifeStructures, an architecture and engineering firm that has designed facilities for some of the nation's top healthcare, higher education and research institutions. Recently, BSA LifeStructures completed dual R&D and Section 179D tax studies.

**When did you become aware of the R&D Tax Credit or Section 179D?** We were aware of both incentives for some time;

***“The tax savings generated from both our R&D and 179D studies have been a great asset in helping invest in this expansion and the growth of our company.”***

however, we never really went that far down the road with either, simply because we didn't feel we had the right expertise on hand to take advantage of these incentives. It was not until our CPA brought both R&D and 179D to our attention and introduced us to alliantgroup that we decided to explore the benefits.

**What prevented you from exploring these incentives sooner?** I would say mainly a lack of knowledge. Both the R&D credit and 179D typically require a deep technical understanding of eligible projects and the calculations needed to claim the full benefit under the tax code. There are always

challenges involved with working with such a specific area of the code and there is nothing wrong with getting extra support when necessary. Luckily, in alliantgroup, we had the very best partner possible to support and protect our claims.

**How have the R&D Tax Credit and 179D specifically benefited your firm?** These incentives, especially the R&D tax credit, provided us a big financial benefit, essentially bringing extra cash back into our pockets. Our owners and shareholders felt the full extent of these incentives as they have brought additional value to our firm. Anytime you are reducing your tax liability, it allows for major

reinvestment back into the business and our firm is certainly putting the extra dollars to good use. We are currently going through a period of major expansion, with offices springing up in cities such as Kansas City and Austin.

**How has working with a third-party tax specialist benefited your company?** When our CPA first introduced us to alliantgroup, it became clear to me that R&D and energy incentives were in alliantgroup's wheelhouse. This was clearly their specialty as a consultant and I always felt our tax studies were in the best hands. Given the complexities



## ADVERTISEMENT

of the tax code, I can tell you that it is impossible to ask a CPA to know every single incentive, in every single industry. There are just too many variables and even the best firms are going to need a little help from time to time. Knowing this, I was certainly happy that our CPA introduced us to professionals that live and breathe this area of the tax code.

**“Without alliantgroup’s help, I just don’t think we would have gotten as far down the road or achieved the same results.”**

**In your experience, what kinds of projects have qualified BSA LifeStructures for both the R&D Tax Credit and 179D?** As a firm specializing in facilities relating to healing, learning and discovery, many of our major design projects are often times healthcare, university or life science buildings. As you might expect, energy usage is a big deal with those kinds of buildings. Fortunately for us, energy efficiency is also one of the biggest opportunities for tax credits and incentives. Energy modeling is a big qualifier for both R&D and 179D and energy efficient improvements made to the interior lighting and HVAC of our buildings were big for us with respect to 179D. In short, if your company is considering energy efficiency in its designs, you could potentially be eligible for additional tax savings.

**In the process of claiming these incentives, what surprised you the most?** Architects and engineers are constantly creating and innovating in their designs, so in their minds they are performing R&D every day. To them, the R&D tax credit seemed like a no-brainer and a perfect fit for their work. The bigger surprise was 179D; specifically, how a business was eligible for the deduction per square foot (up to \$1.80 in the best case scenario). Needless to say, depending on the size of the project, an eligible architect, engineer or contractor could receive a substantial benefit for their work.

It was something our people had a hard time wrapping their heads around – but it was definitely a pleasant surprise in the end.

**Is there any advice you would give to a business exploring the possibility of claiming credits and incentives?** Being an S Corp, we are always looking to protect the interest of our shareholders and the biggest hurdle we

had to overcome was a mental one. If we were going to work with another consultant to claim these incentives,

then it had to be a firm we trusted and knew had our best interest at heart. In this respect, we relied on our CPA to put us in the best situation possible. After they gave a ringing endorsement of alliantgroup and everything the firm stands for, we began with our R&D credit study and the relationship just took off from there.

So to answer your question, I would say the best advice I could give them is to seek out a consultant you trust. Our firm and alliantgroup have created a partnership of real value for everyone involved – and having that comfort level that everything will be done the right way was the thing I appreciated most about this experience.



### CIVIL/ENVIRONMENTAL ENGINEERING FIRM

ANNUAL REVENUE: **\$14 MILLION**  
R&D CREDIT RESULT: **\$300,000**

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ANNUAL REVENUE: **\$40 MILLION**  
R&D CREDIT RESULT: **\$474,699**  
179D DEDUCTION RESULT: **\$100,926**

### ARCHITECTURE & ENGINEERING FIRM

ANNUAL REVENUE: **\$250 MILLION**  
R&D CREDIT RESULT: **\$607,000**  
179D DEDUCTION RESULT: **\$450,000**



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# Evolution of Excellence

## ACEC's Senior Executives Institute Celebrates 20 Years

By Melissa Thompson

**I**n its 20-year history, ACEC's flagship leadership development course, the Senior Executives Institute (SEI), has prepared nearly 500 engineering professionals for top executive positions at 150 engineering firms.

Many of these firms continue to send new generations of leaders to SEI. With each new class of graduates, the impact of SEI reverberates throughout the A/E industry.

### Recipe for Success

SEI faculty and alumni agree: The program's success is rooted in its ability to react effectively to changes in the industry and the overall business environment.

Past students attest to SEI's value; they are uniformly effusive in their praise of the program, and quick to attribute much of their career success to it. **Gayle Roberts**, a graduate of SEI Class 7, attended just before taking over as president and CEO of Muscatine, Iowa-based **Stanley**

**Consultants**. Roberts says SEI gave her the "confidence that I could take on this larger role."

**Blake Murillo**, chairman and CEO of California-based **Psomas**, and a graduate of SEI Class 1, says of SEI, "I don't know if I would have become CEO without it."

SEI was the brainchild of former ACEC Executive Vice President Howard Messner, who collaborated with former AIA CEO Lou Marines in the 1990s to develop a "mini-MBA" specifically tailored for engi-

neers to bridge the gap between practice expertise and innovation in business leadership. Messner and Marines hired faculty to develop the program and curriculum, which at first consisted of seven sessions spread out over three years with a heavy emphasis on business management, finance and marketing. Students liked the program, but they also made it clear they were not looking for another MBA-type course that they could obtain elsewhere.

ACEC leaders redesigned the program to focus on strategic thinking and leadership, public policy and so-called "soft skills" of personal mastery. Harder skills remain a priority, though, with attention to organizational planning and management, human resources, technology and other business issues. (See sidebar.)

ACEC staff have administered SEI throughout its history, and continue to fine-tune its curriculum. The program averages 25 students per class, who attend five sessions over 18 months.

The rigorous face-to-face sessions are each five or six days in length at locations throughout the United States. Attendees are immersed in an experiential and collaborative learning environment, in which they examine concepts such as the basics of leadership, strategic thinking and planning, and adaptive work. Once they've had an opportunity to explore those concepts on their own, "they get to try it out with others in the group," says longtime faculty member **Rod Hoffman**.

The in-person sessions are augmented by a reading program that includes the latest articles and books on personal mastery, leadership and business management. **Gannett Fleming** Chairman and CEO **Bill Stout**, a graduate of SEI Class 11, calls the readings "seminal works in the field" and says he still refers to them when preparing to address his firm's leadership.

Another key component of the program is the involvement of the Brookings Institution, one of the premier think tanks in Washington, D.C. SEI attendees spend much of Session I of the course at Brookings, broadening their horizons with in-depth briefings by policy experts on politics, global affairs and international economic trends, all of which ultimately impact the engineering industry.

### Digging Deeper

Some attendees have described the program as "life-changing." Business executive and author Arie de Geus pioneered the concept of "The Living Company," which he describes as "a community of human beings that is in business." SEI uses de Geus' book as a foundational text, zeroing in on this human element, which is often revelatory to engineering professionals who have not previously been exposed to this type of training.

**Kyle Davy**, an original designer of the SEI program, has noticed that the firms that have sent attendees to the course are "expressing much more fully the idea of being 'Living Companies.'" Specifically, "There is a new level of innovation, creativity and professional entrepreneurship" at these firms, he says.

Roberts says that SEI "made me think of the engineering business in a larger context of organizational growth and change," rather than as a series of projects to be managed.

Many firms even send succeeding generations of leaders to SEI to ensure that the insights and skill sets attained there remain current in their organizations. SEI faculty member **David Aitken** says the classes are always full and that SEI's popularity is the result of a certain "mystique and even legendary status" in the engineering industry.



**Gayle Roberts**  
President and CEO  
Stanley Consultants

**David Bohn**, senior principal of **VHB** in Virginia and a graduate of SEI Class 10, says he "is on a personal mission to ensure my company sends someone every year." The firm's seventh participant is now attending SEI. Senior leaders at Psomas, Gannett

Fleming, Ruckert/Mielke and others tell similar stories.

Current and former students agree that the focus on personal mastery, strategic thinking and leadership is one of the great strengths of the program. "The concentration on leadership is critical, because this entails skills that you just don't get in



**Blake Murillo**  
Chairman and CEO  
Psomas

## 5 Steps to Excellence – the SEI Curriculum

**Session 1:** Executives spend five or six days in Washington, D.C., including significant time at the Brookings Institution, on Capitol Hill, at ACEC and at a foreign embassy, broadening their understanding of global issues, economic trends and public policy debates.

**Session 2:** During four days in New Mexico, SEI participants work to develop better self-awareness and hone their interpersonal and communication skills.

**Session 3:** Participants meet in Boulder, Colo., for exercises in improved leadership, team building, adapting to change, strategic planning and management, and designing of successful organizations.

**Session 4:** Classmates travel to San Francisco to study new models for professional practice, explore lean theory and sustainability, update their knowledge of human resources and technology and delve deeper into strategic planning issues.

**Session 5:** Four days at Amelia Island, Fla., wrap up the SEI experience, as attendees explore creativity and innovation, partnering and alliances, coaching and mentoring, and learn how to integrate lessons learned through SEI into real-world business practices.



SEI Class 19 on Capitol Hill

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typical engineering education,” Murillo says.

At the heart of the curriculum is personal mastery of content. This is honed throughout the course, but is particularly emphasized in Session 2. Held outside of Albuquerque, N.M., this session is considered by students one of the most valuable.

Through extensive use of personality assessments and 360-degree peer appraisals, students gain a deep understanding of themselves and how they can “use personal strengths synergistically with others,” explains Roberts. Murillo says the intensive self-assessments are “powerful, emotional and unforgettable.” Across the board, students report that their experience in this session has a profound and positive impact on their personal lives, particularly in their relationships with others close to them, including their classmates.

The effect is twofold: SEI classmates form strong personal and professional bonds that outlive their participation in the course. Second, the lessons learned enable them to return to their firms and make changes that benefit employees and clients.

**Ruekert/Mielke Senior Vice President Stan Sugden**, a graduate of Class 10, describes SEI as “a network of people dealing with the same issues and concerns that I can trust and rely upon.” This “long-term support group,” as Hoffman calls it, typically holds regular reunions long after graduation.

Armed with a new understanding of the engineering profession as a fundamentally people-oriented business and of their firms as living entities, SEI graduates begin to reshape their companies with a new-



**Stan Sugden**  
Senior Vice President  
Ruekert/Mielke

found resilience, agility and willingness to adapt to changes in the business environment.

### Keeping Pace With Change

In addition to evolving into a leadership-focused course, SEI has kept pace with the most recent ideas on orga-

nizational culture, leadership and strategy. The practitioners who teach the course incorporate new ideas that are relevant to A/E firms. “I’m constantly changing what I present because my experience is constantly changing,” says Hoffman, CEO of S&H Consulting.

Hoffman says the underlying purpose of SEI is to develop strong leaders who will be good stewards of their “living companies,” cognizant of how they will leave their firms to their successors.

Students in the course learn that they live in a volatile, uncertain and ambiguous world. “Disruptive technologies” with the capacity to upset existing technologies and markets (think electric cars and iPads) are ever present. Hoffman says it’s up to SEI to “future proof” the nation’s engineering leaders by teaching them how to deal with the challenges presented by relentless change.

Similar to the firms served, SEI is itself a living entity that must be “future proofed” to survive and grow as it enters its third decade. Wholesale changes are neither needed nor warranted, according to participants, but they also recognize the program must remain cognizant of what is happening in their industry and in the world around it. Instant communications, generational issues, an ever-expanding technological revolution and

other topics are fodder for the curriculum.

One thing that probably won’t change is the face-to-face format, which everyone agrees is absolutely imperative. The power of SEI is in the deep personal and professional connections that participants build with each other. SEI is “like boot camp for the Marines—you don’t do it online,” says Aitken.



**Bill Stout**  
Chairman and CEO  
Gannett Fleming

## Leadership Consultants



**Rod Hoffman**  
CEO, S&H Consulting



**Kyle Davy**  
Kyle V. Davy Consulting-  
Leadership & Management  
Development



**David Aitken**  
Aitken Leadership Group

As a result, the program’s proven capacity and willingness to evolve leave it well poised for continued success. ■

*Melissa Thompson is the executive assistant to the president and CEO of ACEC.*

A special reception for alumni and staff to honor SEI’s 20th anniversary will be held 5:15 p.m.-6:30 p.m. on Friday, Oct. 24, during the ACEC Fall Conference in Waikoloa, Hawaii. All Conference registrants are invited to attend.

**For more information on SEI, go to [sei.acec.org](http://sei.acec.org), or contact Deirdre McKenna at [dmckenna@acec.org](mailto:dmckenna@acec.org) or 202-347-7474.**

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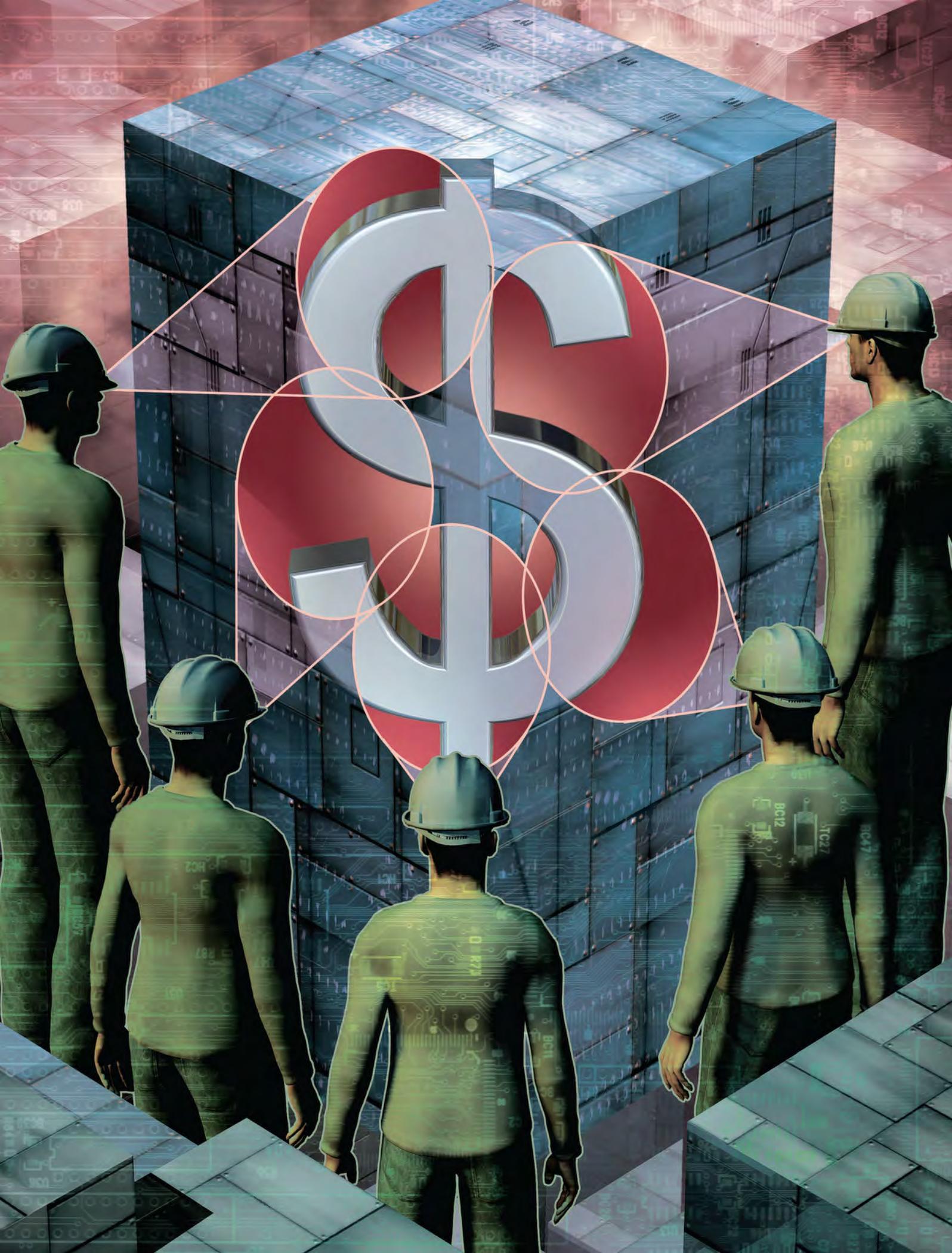
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– Mark Williams, Senior Vice President  
**Tetra Tech, Inc.**





# Big on Data, Long On Promise

By Bob Violino

How the evolution of data analytics and services is transforming the engineering industry

**T**he emergence of big data is having a huge impact on U.S. engineering firms, as engineers collect information and use new metrics to generate added value for clients.

Among the potential benefits are improved project efficiencies, insights into the environmental impact of ongoing design work and improved customer service.

But there's a catch: Collecting data alone doesn't create value; you have to know how to use it. >>

## How Big Is Big Data?

The term “big data” describes massive volumes of structured and unstructured data points. Huge blocks of information that often prove difficult to process using traditional databases.

Structured data—such as customer orders—reside in fixed fields within a record or file. Unstructured data, such as information from websites and social networks, generally refer to information that doesn't reside in a traditional row-column database.

A typical big data initiative includes petabytes or exabytes of data, literally billions of records from sources such as mobile devices, social media, web interactions, customer contact centers and other resources.

As the number of devices used to con-



**“We have to think about the levels of service for the assets we build and find new ways to create value for our clients.”**

DAN KIENY  
BLACK & VEATCH

nect and share information has grown, so too have the opportunities to collect and store project and customer data. Social media and smartphones and tablets—every device and web-based application—create new opportunities for data collection.

And that's before you start to consider the opportunities that exist within our growing networks—so called machine-to-machine connections.

## It's the Tools That Really Matter

The data that companies collect on projects and customers are important. But it's the emergence of analytical tools that help firms make more informed decisions, track market trends and provide enhanced services to clients. Big data analytics is the process of parsing huge amounts of information

to discover patterns and correlations. For firms, it's all about finding those hidden advantages that aren't necessarily apparent through lesser business intelligence tools.

The emergence of open source technologies, including Hadoop, NoSQL, MapReduce and others, allow firms to share large sets of data across system clusters for deeper integration.

These tools often help organizations address unstructured data sources when traditional data warehouses don't fit, or can't handle, the processing demands of big data.

## Not a New Concept

The engineering sector is no stranger to the potential of big data. Large civil projects, such as the design of bridges, tunnels, highways and power plants, often involve processing multiple terabytes of data. Technology, such as building information modeling (BIM), which has essentially become the industry standard for modeling, supports files that keep getting larger as designers add more intelligence to models.

“We are working with a number of engineering and construction firms today on big data projects,” says Ted Kempf, U.S. director of services industries at Microsoft. One example: A worldwide engineering firm that specializes in infrastructure projects wants to leverage sensors placed within water treatment facilities to monitor the effectiveness of its engineering and design work.

“By leveraging this data, the firm will have information to help it target areas for future engineering and design improvements,” Kempf says. “Armed with this data, firms can also demonstrate with actual figures the effectiveness of their work to future clients and win more bids.”

Other examples of how firms can leverage big data include tracking traffic patterns to optimize road system traffic flow and gathering geotechnical data to support a building site selection.

“Big data is even making inroads in the use of BIM solutions, where firms can attach specific information regarding every object in the design, including cost, dimensions, manufacturer, project warranty,” Kempf says. “This alone could greatly improve the entire estimating and procurement workloads within a firm.”

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## Making It Work

But managing big data can be challenging. Among the factors to consider are data integration, data quality, metadata management, security and governance.

"There are issues that come up on multiple levels, in terms of technology and people," says Frank Buytendijk, research vice president at Gartner, Inc.

Buytendijk says system integrators users must consider the three V's: volume, velocity and variety. "Volume is easiest. You need new hardware solutions or move data to the cloud," he says. "Velocity is a bit more of a challenge. You have to do stuff in real time or near real time to support business processes," and that requires that data and process people work together, even though they're often using different technologies and operating in different worlds. But variety is perhaps the toughest of all, Buytendijk says. Successfully linking different types of content, such as video feeds from a security camera, analytics tools or social media, is no easy task.

And then there is training. On the people side, one of the biggest challenges is acquiring the necessary skill sets, including data scientists.

"Most organizations already have a fair number of people with traditional analytics and business intelligence skills, and these people are strong deductive thinkers," Buytendijk says. "But what big data adds to the mix is not only a deeper view, but an inductive view of data" that enables analysts to look at data differently and see patterns and variations and gain new insights beyond the obvious.

## An Industry Priority

David Eaton, product manager for the business intelligence platform offered through Viewpoint Construction Software, has been closely following the emergence of big data analytics in engineering. He primarily attributes two factors to its increasingly widespread adoption.

"One is the volume of design/engineering content from software tools used in

design/construction and a push toward data-driven design," he says. "The other is a support of iterative design."

With iterative design, designers receive feedback from multiple sources throughout the design process. And they continue to refine their designs based on that feedback.

Engineering, consulting and construction company Black & Veatch in Overland Park, Kan., leverages big data and advanced analytics both internally and externally, says Dan Kieny, the company's CIO. The firm uses a combination of commercially available analytics tools from Alteryx Inc. and Tableau Software, and analytics applications developed in-house.

"Advanced analytics lets us better understand our workforce needs, so we can optimize it to meet the needs of our clients," Kieny says. "We use it for global resource planning, recruitment or moving our workforce around."

Externally, the firm uses analytics to provide enhanced services to clients. It tracks asset performance by examining data from utility meters, supervisory control and data acquisition (SCADA) systems, and geographical information systems. These insights enable Black & Veatch to more effectively predict client outcomes, Kieny says.

"We as an industry need to think like other industries have, that we're not just designing and building assets," Kieny says. "We have to think about the levels of service for the assets we build and find new ways to create value for our clients. Using data analytics helps us achieve these outcomes for our clients," Kieny says.

Indeed, these emerging technologies are changing the way the industry operates. "The world of technology for the last 40 years or so has focused on automation, helping organizations to be more efficient," Buytendijk says. But with a new emphasis on digitalization, the data "starts to become the value proposition. So, as an engineer, you're not selling a



**"Velocity is a bit more of a challenge. You have to do stuff in real time or near real time to support business processes."**

FRANK BUYTENDIJK  
GARTNER, INC.

## Do's and Don'ts for Big Data Analytics

### Do

- Initially treat projects as experimental to help foster innovation
- Use big data and analytics to differentiate from competitors
- Make sure you have an analytically driven corporate culture
- Understand what business problems you're trying to solve with big data analytics
- Ensure the high quality and accuracy of data

### Don't

- Think of big data as hype; it's real
- Devote huge budgets and resources to big data and analytics before first experimenting on a smaller scale
- Overlook the need for integration of big data resources
- Ignore the importance of finding and hiring skilled data scientists



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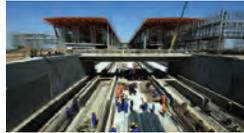
If your firm isn't using big data analytics in its projects, Buytendijk says it might be time to start.

"Asking if you should be doing something with big data is like saying, 'We heard about this thing called the Internet. Should we use this?' This stuff is happening now." ■

*Bob Violino is a business and technology writer based in Massapequa Park, N.Y.*

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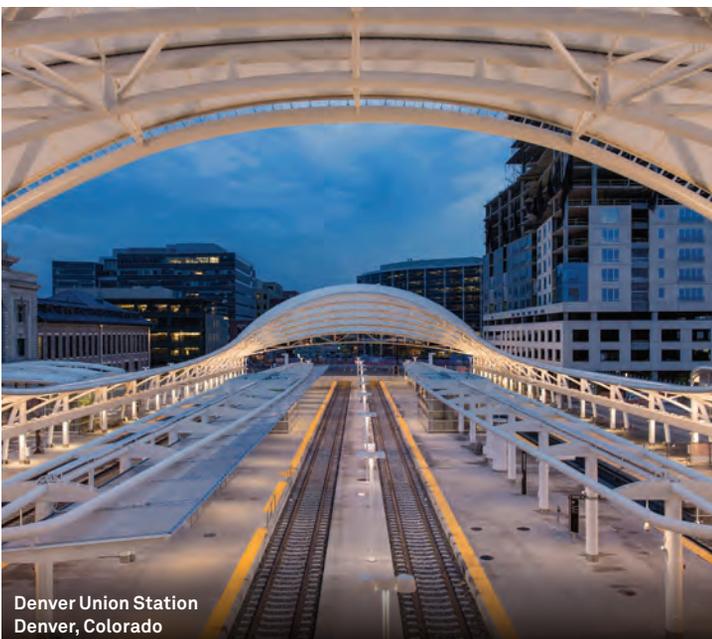
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# DEEP-ROOTED DESIGNS

By Darlene Bremer



**PROJECT:** Alewife Stormwater Wetland  
Cambridge, Mass.

**FIRM:** Kleinfelder  
San Diego, Calif.  
Cambridge, Mass.



**PROJECT:** Stonestrow Pump Station Trenchless Technology Solutions  
New Castle County, Del.

**FIRM:** Karins and Associates  
Newark, Del.



**PROJECT:** City of Davenport West Side Diversion Tunnel  
Davenport, Iowa

**FIRM:** CNA Consulting Engineers  
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**PROJECT:** Oakland-Macomb Interceptor Drain Repair Program  
Oakland and Macomb Counties, Mich.

**FIRM:** NTH Consultants, Ltd.,  
Detroit

# Sewage Catastrophe Averted in Michigan

**PROJECT:** Oakland-Macomb Interceptor Drain Repair Program  
Oakland and Macomb Counties, Mich.

**FIRM:** NTH Consultants, Ltd., Detroit

Originally constructed in the 1970s, the Oakland-Macomb Interceptor Drain (OMID), which provides sewer and drainage services to more than 800,000 residents in Southeastern Michigan, has been prone to a catastrophic failure, with the last collapse occurring in 2004. The large diameter deep sanitary collection system features a network of 3.5-foot to 12.75-foot diameter sewers that range in depth from 30 feet to 100 feet. Most of the system extends below major railway and roadway corridors, as well as through the International Transmission Co.'s power corridor.

With no redundancies built into the system, experts predict that another breakdown would disrupt service to the entire upstream population. A total collapse would potentially disrupt transportation and power distribution for millions more. "Following the last collapse in 2004, the Detroit Water and Sewerage Department (DWSD) realized they needed to take a closer look at the entire system," explains Jason R. Edberg, vice president of NTH Consultants, the firm hired by DWSD to perform the initial condition assessment.

In 2009, ownership of the project was transferred to the Oakland-Macomb Interceptor Drain Drainage District, which hired a team of consultants led by NTH for the investigation, inspection, design of repairs and construction contract administration for all four phases of the OMID repair program. NTH provided geotechnical drilling, surface seismic profiling, sewer alignment surveys and various other tests. The firm also conducted evaluations and environmental assessments. Engineers designed in-system flow controls, a new pumping station, and four major gate/access structures and performed repair design for more than seven miles of sewer. The project is scheduled for completion in January 2016.

But the work hasn't been easy. A lack of existing flow control for construction within the interceptor, working at a depth of 100 feet in some places, and the combination of clays, silts and

sands in the soil around the project created several challenges for project engineers.

"The team developed a flow control system that would enable the safe implementation of repair activities and designed structures to be built around the existing interceptor that would not interrupt the flow," Edberg says. Flow control gates with interior sluice gates that are hydraulically and remotely actuated were installed in the shafts to provide flow control and to affect a cascade of storage weirs.

"This innovative approach allowed the team to take advantage of in-system storage time without creating any backup into metered connections," Edberg says.

His team has successfully overseen the construction of the first two phases of the project; the third phase is under construction, and a fourth is currently in design.



Jason R. Edberg



Hydraulic gates provide flow control



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# Smarter Stormwater Runoff in Cambridge



Planting new landscape in the Alewife Stormwater Wetland

**PROJECT:** Alewife Stormwater Wetland  
Cambridge, Mass.

**FIRM:** Kleinfelder  
San Diego, Calif., Cambridge, Mass.

Part of the federally mandated Boston Harbor Cleanup called for the City of Cambridge to complete sewer separation and stormwater management measures to protect the Alewife Brook and Little River from combined sewer overflows, eliminate flooding from a 10-year storm and restrict polluting runoff. San Diego-based Kleinfelder, with local offices in Cambridge, had worked with the city since 1997 and was tapped to lead this project in 2011.



John J. Struzziery

Wetland basin construction was completed in the fall of 2013, and construction of additional sewer separation units upstream is underway with an estimated completion date of December 2015.

“To meet the city’s goals, we created 3,000 feet of precast box culvert to convey separated stormwater to a 345-acre wetland and enable sewer separation and infrastructure renewal in an urban park with recreational and educational amenities,” explains John J. Struzziery, principal engineer for Kleinfelder.

Stormwater now flows to a wetland basin through a forebay that traps floatables, sediment and debris. From the forebay, water leaves via a pair of 12-inch pipes and goes into the water-quality swale before discharging to the main basin and, eventually, the Little River.



Kleinfelder’s scope of work incorporated the planning, design, permitting and construction oversight for the city, including evaluating and recommending opportunities for the use of trenchless technology applications and determining locations to be investigated for potential environmental concerns. “An upland plant assessment resulted in the removal of invasive plants and the reintegration of more than 120,000 wetland and 4,000 upland native plants,” Struzziery says.

The firm encountered several challenges, including court appeals from a local citizens group that questioned whether the project would achieve its goals. The firm also had to develop a workable construction phasing plan, relocate utilities in advance of construction of the main basin, conduct logistics for access and material delivery and removals, and determine the optimal sequence of plantings, among other challenges.

To overcome these issues, the firm met regularly with local regulatory agencies, contractors and other partners. It maintained project flexibility by employing sophisticated hydraulic modeling software, landscape/ecological services and trenchless technologies.

As the project nears completion, engineers say its innovative fusion of science, engineering, landscape architecture, ecology and construction have already helped resolve long-standing infrastructure challenges while providing benefits to the environment and the local community.



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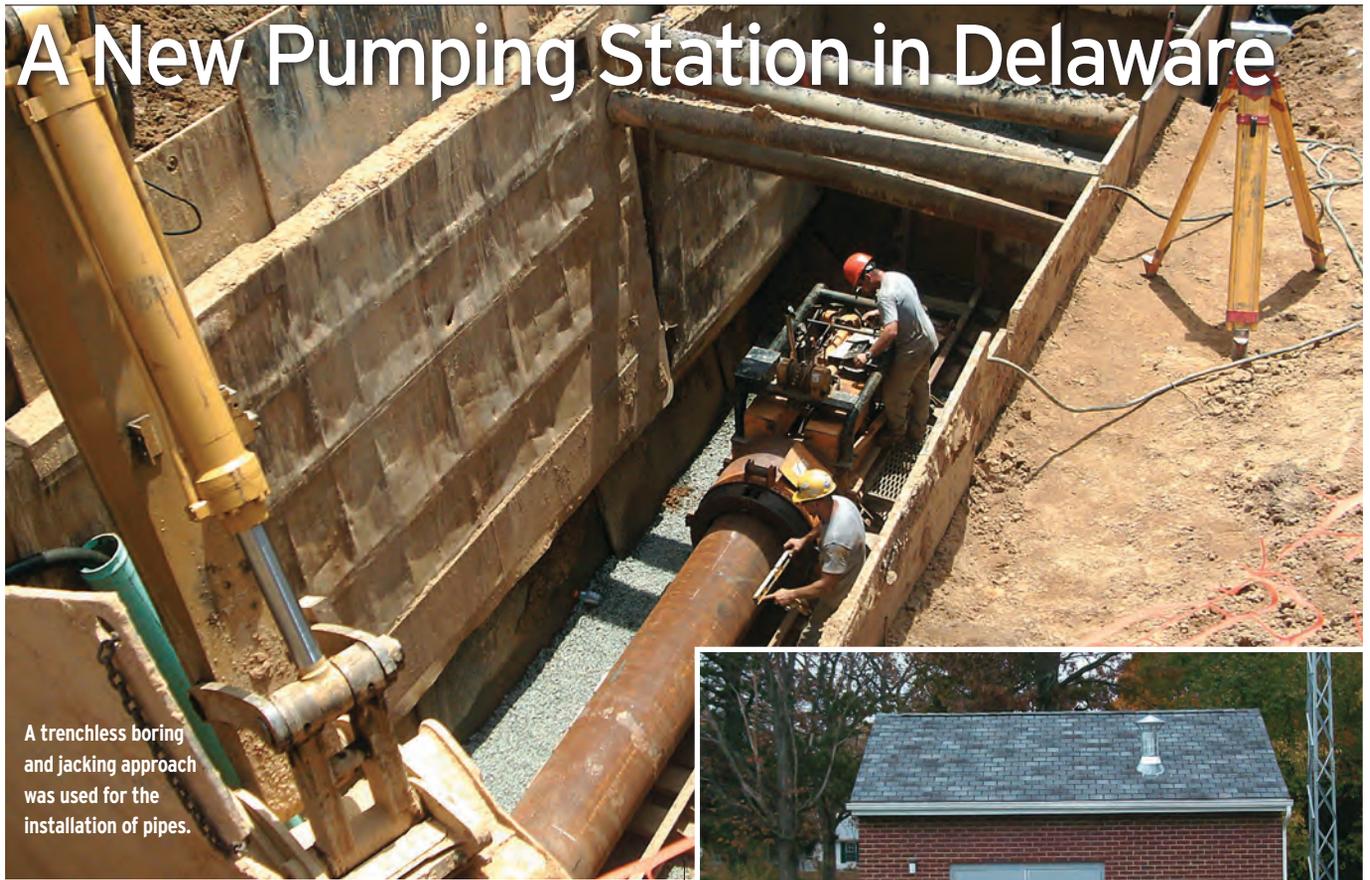
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# A New Pumping Station in Delaware



A trenchless boring and jacking approach was used for the installation of pipes.

**PROJECT:** Stonesthrow Pump Station Trenchless Technology Solutions, New Castle County, Del.

**FIRM:** Karins and Associates, Newark, Del.

**B**uilt in the 1970s, the Stonesthrow Pump Station is a regional county sanitary sewer system that serves residents of Delaware's New Castle County. More than four decades into its life cycle, officials say the antiquated pumping facility had become a safety hazard, largely due to its proximity to a busy roadway. The facility had also become difficult to maintain, thanks to a difficult entry point.



Tim Anderson

Tim Anderson, principal of Karins and Associates, whose firm was tapped to help redesign the aging pumping station, says the goal "was to create a new facility for the county that would be aesthetically pleasing and be designed with the latest technologies and operational capabilities on a new parcel located on the opposite side of the road."

Karins and Associates provided design and construction surveying and engineering services, including subdivision and real estate appraisal services for the new pump station site land acquisition; civil, mechanical, electrical and geotechnical services for the new pump station and sewer transmission mains; and construction management and inspection services during the construction phase of the project. The work started in 2008 and was completed in 2012.



One of the toughest challenges the design team encountered was how to effectively relocate the existing sanitary sewer pump station without disrupting sewer service and traffic within the affected community. The process required removal and abandonment of the existing station and the extension of the sewer inflow gravity piping and discharge sewer force main piping under the road to the new pump station site.

"A conventional trench installation approach would have required the long-term closure of a busy road used for traffic from a nearby school and a residential community," Anderson says. Such a process would have also made it difficult to preserve the utilities running along the shoulders of the roadway.

With input from a trenchless pipe contractor and the project owner and reviews by regulatory agencies, the firm opted for a trenchless boring and jacking approach for the pipe installation. Rather than having a receiving pit, which would have required significant excavation, each section of 60-linear-foot, 24-inch-diameter steel pipe casing was jacked through a bored hole to an existing sewer manhole. Using precise boring and jacking guidance technologies, the contractor bored and jacked the casing pipe to its required vertical and horizontal position with the receiving manhole. This eliminated the need for difficult and costly trenching and maintained existing pump operations until the new station was online.

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# Beyond Capacity in Davenport

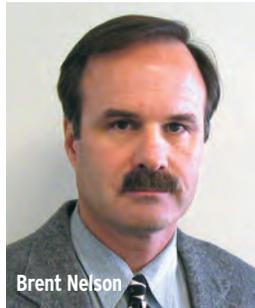
**PROJECT:** City of Davenport West Side Diversion Tunnel, Davenport, Iowa

**FIRM:** CNA Consulting Engineers, Minneapolis

**T**he city of Davenport in Iowa had a problem: Its current sewer system was overtaxed, which also meant that plans to develop a large swath of underdeveloped real estate could not move forward.

In 2005, the city contracted with CNA Consulting Engineers and prime consultant Stanley Consultants to develop a feasibility study for a new diversion tunnel.

Construction for Phase I of the project was completed in 2009, and Phase II was completed in the summer of 2013. “We



Brent Nelson

designed three short tunnels for Phase I and the 1.4-mile-long sanitary sewer Diversion Tunnel for Phase II,” Brent Nelson, project manager for CNA, explains.

The firm’s original scope of work included the tunnel conceptual study; selecting routes for the tunnel to minimize disruption and optimize tunneling conditions; geotechnical engineering and investigation of soil and groundwater conditions; tunnel design and plan and specification preparation; and construction observation. The tunnel was constructed in clays, sands and bedrock with depths of up to 120 feet. The construction contractor used ring beams, wood lagging and filter fabric for support as the tunnel-boring process progressed. When boring was complete, a reinforced concrete pipe with plastic lining was inserted and grouted into place.

Varying soil conditions proved challenging for the firm. “The tunnel goes through clays, sands, limestone and sandstone bedrock, and 2,000 feet of it was below the groundwater table,” Nelson says. That’s why his firm required the construction contractor

to use a special machine capable of negotiating variable soil and groundwater conditions. In efforts to de-water the existing groundwater table, CNA specified the installation of closely spaced deep wells.

The narrow residential streets were another challenge for CNA. By specifying equipment and materials with smaller footprints, the firm was able to keep sidewalks and streets open, except at the location of the three well shafts. “To ensure minimum disruption, the city held meetings with residents and kept them apprised of schedules,” Nelson says. ■



The tunnel was constructed in clays, sands and bedrock with depths of up to 120 feet.

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\* World Road Association (PIARC). Quiet Pavement Technologies. Report 2013R10EN, 2013  
\*\* Edelman Berland Survey, 2013

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BOOO

By Alan Joch

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## Growing U.S. Energy Markets Stretch the Engineering Industry

**R**evolutionary. Earth-shattering. Historic. In any other context, adjectives like these would be dismissed as hyperbole, but when it comes to the current state of the U.S. energy industry, they're spot on.

### Consider these stats from the U.S. Energy Information Administration (E/A):

- n **5.7 billion barrels** a day (bb/d), the average domestic crude oil production in 2011
- n **9.3 bb/d, the estimated average production by next year**
- n **60 percent**, the share of U.S. liquid fuel consumption met by imports in 2005
- n **22 percent**, the share of U.S. consumption expected to be met by imports in 2015, the lowest since 1970

Natural gas production is just as impressive. The United States produced **68.7 billion cubic feet** per day last March, according to EIA estimates, setting a historic high for any month.

Consulting firm McKinsey & Company estimates domestic shale oil and natural gas production combined could create an estimated 1.7 million new jobs by 2020—approximately half of those for engineers. The other jobs would be in the supply chain that supports the energy industry.

To gauge the long-term impact of a growing U.S. energy industry on the nation and its engineers, our editors reached out to top executives from engineering firms, energy companies and research organizations. The bottom line: Business opportunities for engineers in the energy sector are poised to grow for years to come. >>

CHIP FORELLI/GETTY IMAGES



*“The ability to produce significantly larger percentages of energy domestically as opposed to importing so much of it will have huge benefits for the country.”*

DAVID HUDSON, SOUTHWESTERN PUBLIC SERVICE CO.

**What will the new and abundant U.S. oil/natural gas supplies mean for the nation’s future energy picture and overall economy?**

“The impact is earth-shattering,” says **John Harju**, associate director for research at the **Energy and Environmental Research Center at the University of North Dakota**. “We’re seeing a complete disruption of a 40-year economic assumption that the United States’ petroleum production would slowly erode and any increased hydrocarbon consumption would be addressed by imports. It’s now conceivable that North America could become 100 percent self-reliant sometime in the future. Abundant and affordable energy fundamentally changes the ability of this country to compete globally, and lower energy costs mean more disposable income and greater economic mobility for consumers. When we have abundant and reasonably priced energy, the whole economy just churns. The impact of abundance on markets is profound.”

“The economics of oil production have completely changed, and that is having a positive impact not only in the Southwest, but also across the entire nation,” says **David Hudson**, president and CEO of **Southwestern Public Service Co.**, a wholly owned subsidiary of Xcel Energy that supplies electricity to customers in Texas and New Mexico. “The ability to produce significantly larger percentages of energy domestically as opposed to importing so much of it will have huge benefits for the country.”

“Low-cost natural gas is bringing back



John Somerhalder  
AGL Resources

fertilizer plants to this country,” says **John Somerhalder**, chairman and CEO of **AGL Resources**, an energy services holding company with operations in natural gas distribution and other sectors. “Steel plants are moving back to states like Louisiana. It’s just amazing what is happening in terms of bringing manufacturing back to the United States. But it goes even one step further: Industries that are not energy intensive are also benefitting from lower natural gas prices and an abundance of shale oil. In addition, our customers are seeing lower bills, which give them more disposable income. The ripple effect of what’s happening in energy is huge.”

“The long-term impact is we have an opportunity in this country to revitalize our manufacturing industry,” says **Steve Bakken**, business development director for **Larson Engineering**, with offices near the North Dakota shale region. “Manufacturing is being revitalized thanks to cheaper energy in this country, and many extremely depressed areas have an opportunity to boom again. There’s a chance for energy abundance to reverse the trend over many decades of manufacturing moving to China and Taiwan and India.”

**What is needed for the U.S. to maximize the potential of this newfound energy abundance?**

“Processing facilities and the distribution networks that go with them are lagging behind in many areas; they certainly are in North Dakota,” says **Brock Storrusten**, branch manager at the Minot, N.D., office of **Moore Engineering**. “Railroads are being impacted tremendously—they’re expanding services, but they cannot keep up with demand. Even though more and more dollars are being spent on infrastructure and transportation networks, our infrastructure has not caught up. Neither have housing units and commercial spaces. Schools are becoming overwhelmed, and some schools have trouble finding teachers because of the lack and high cost of housing. As a result, in these oil plays, it’s difficult to bring families

into the areas that are seeing all this growth. We need housing to get good people to come into the region with their families and become part of the community.”

“We’d all be better off if we had certainty about being able to export LNG [liquefied natural gas] to non-FTA countries [nations that haven’t signed a free trade agreement with the U.S.],” says Somerhalder. “We’d see a more stable natural gas market long term if we opened up those markets, and we’d encourage more jobs and more production in more areas. That would be better for all companies that sell natural gas and build infrastructure related to this industry.”



John Harju  
Energy and Environmental Research  
Center, University of North Dakota

“Right now we’ve got the environmentalists and the EPA basing what they call facts on flawed science that is 35 to 50 years old in some cases,” says Bakken. “We need to clean up the science on global warming because the whole climate change caveat is a roadblock to economic development. The biggest threat to this country moving forward economically and in terms of energy is the polarization of politics.”

**How will this change the way the energy industry operates, including new or expanding markets?**

“In the oil industry, we are going to see many more opportunities for production and growth in the upstream and downstream industries that provide support infrastructure,” says Hudson. “We’re going to see a lot more oil processing—processing of the salt water that is brought up with the oil and processing of the natural gas that’s produced along with the oil—and then growth in the transportation capabilities to ship the oil and gas to other areas.”

He adds that electric utilities like his are seeing a dramatic increase in demand for power, sometimes from areas that lack the resources to address these requests. “We’re having to work with the Southwest power pool to develop additional transmission



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# Corporate Governance in ESOP Companies: Fiduciary Structure



## ESOP Trustees and Fiduciaries

Boards of Directors are giving more thought to how an ESOP fits into the governance of a company, including the structure of the ESOP fiduciary, the structure of the Board of Directors and the interaction between the two bodies. This article will focus on the first consideration, the structure of the ESOP fiduciary. We will describe the four most common structures. In addition, we will comment on the method of allocation of fiduciary responsibility for the most commonly exercised fiduciary powers. The three most common fiduciary powers exercised by ESOP fiduciaries are: (i) setting the annual stock value; (ii) voting the stock owned by the ESOP; and (iii) responding to offers to buy or sell employer stock.

### Most Common ESOP Fiduciary Structures

#### I. One or More Individuals

The most common ESOP fiduciary structure is to provide for one or more individuals to serve as the trustee of the ESOP. When more than one individual is appointed to serve, the group is usually designated as a “Board of Trustees.” The Board of Directors selects and appoints these individuals, and also has the power to remove them. In a Board of Trustees, the decision of the majority of the individuals controls.

With regard to the three major powers listed above, the individual trustee or Board of Trustees (acting by majority vote) would have the power and authority to set the annual share value, vote the employer stock, and enter into purchases and sales of employer securities. Generally, they act as discretionary, rather than directed, trustees.

#### II. ESOP Committee - Institutional Trustee

In the second most common structure, the Board of Directors appoints a trust company or other institution to serve as trustee. The Board of Directors also appoints a group of individuals to serve as an



*“The rules of the road for corporate governance at ESOP companies are contained in legal documents that require some dusting now and then. We recommend that Boards and fiduciaries revisit their understanding of their respective roles and responsibilities to ensure that common understandings are in fact accurate prior to the time the allocation of responsibility becomes important.”*

*- Larry Goldberg, ESOP Law Group*

ESOP Committee. Generally, the trustee agrees to act solely at the direction of an ESOP Committee. Therefore, the trustee is not a decision maker on most matters. Rather, it follows the written directions of the Committee. ERISA contemplates this “directed trustee” arrangement. ERISA provides that a fiduciary who is directed by another fiduciary will not be liable for following such directions, so long as the directions are “proper” and do not violate ERISA.

With regard to the three major powers identified above, the institutional trustee usually retains the power to set the annual stock value without direction from the Committee. However, the institutional trustee generally agrees to vote the employer stock at the direction of the ESOP Committee. For a purchase or sale of employer stock, the trust agreement would usually provide that the institution would only act at the direction of the ESOP Committee, with the understanding that if and when a transaction is to occur, the Board of Directors would enter into an engagement with the institutional trustee to act in a discretionary manner in evaluating the transaction.

#### III. ESOP Committee - Individual Trustee

Similar to the second approach, in this approach, the Board of Directors makes the ESOP Committee

*“Corporate governance of an ESOP is a topic of great concern, not only for companies that are considering an ESOP, but also for those that have had one for a number of years. We find that the governance structure of most ESOP companies evolves over time as the company grows and its leaders become more educated on the nuances of the ESOP. It is important to understand that, regardless of the structure you chose, the fiduciaries’ responsibility is not to run the company on a daily basis, nor is it to provide strategic direction. Rather, the fiduciaries’ primary responsibility is to look out for the best interests of the participants of the ESOP.”*

- Chris Staloch, Chartwell Capital Solutions



a discretionary fiduciary and the trustee a directed fiduciary. The Board of Directors may choose an individual who is a paid independent fiduciary to serve as trustee or may use an employee of the company. If an employee is selected as trustee, the employee is usually directed by the Committee on all matters. However, if the individual is a paid, independent trustee, that independent trustee will usually be given the discretion to exercise one or more of the three major powers mentioned

#### IV. Institutional Trustee - No Committee

In this approach, the Board of Directors appoints an institutional trustee that has the power to take all actions on behalf of the ESOP without directions from any other fiduciary. This approach is probably the least common and is more frequently found in ESOPs that hold publicly traded stock.

The institutional trustee would have discretionary power with respect to the annual stock value, voting the employer stock, and purchasing or selling employer stock.

#### Document Review

In creating ESOPs, companies have sometimes overlooked the importance of establishing the rules for the interaction between the Board of Directors and the ESOP’s fiduciaries. A careful review of the ESOP plan document, the ESOP trust agreement, the company’s Articles of Incorporation and by-laws (and any Committee charters) is necessary to determine first, the allocation of roles and responsibilities, and second, to understand whether the documents accurately reflect the parties’ intentions. It is best for the Board of Directors and the ESOP fiduciaries to be clear about these matters before any particular issue arises that requires the joint efforts of the Board and the fiduciaries to resolve.

#### Summary

ERISA provides employers with flexibility in determining the persons who will serve as fiduciaries of an ESOP and the discretionary powers to be allocated among them. The Board of Directors of an ESOP company can use this flexibility to design an ESOP governance process that is appropriate for the company.

## Fall Conference Finance Track CFO Council Program

These topics and much more will be explored at the ACEC 2014 Fall Conference held on October 22-25 in Waikoloa Village, Hawaii as part of the Finance Track, sponsored by Chartwell and ESOP Law Group. Please visit [www.acec.org](http://www.acec.org) for further information.

#### Thursday, October 23

6:30am-7:45am

**“The Three R’s: Recruit, Retain & Reward the Next Generation of Engineers”** Presented by: Katy MacDonald, ExactSource; Matt Keene, Chartwell Capital Solutions

10:30am-11:45am

**“Preparing your Firm for Sale”**

Presented by: Neil Churman, Morrissey Goodale

2:30pm-3:45pm

**“Is an ESOP Right For Your Firm?”**

Presented by: Howard Kaplan, Benefit Trust Company; Lynn DuBois, ESOP Law Group; Panel of ACEC companies

#### Friday, October 24, 2014

9:15am-10:30am

**“ESOP Implementation: Getting It Done”**

Presented by: Katie Daly, Chartwell Capital Solutions; Larry Goldberg, ESOP Law Group; Panel of ACEC companies

11am-12:15pm

**“Using Advanced Metrics to Better Assess Marketing ROI”**

Presented by: Chris Nordfors, GeoEngineers, Inc.

2:30pm-3:45pm

**“Mergers & Acquisitions: Market Update”**

Presented by: Chris Staloch, Chartwell Capital Solutions; Panel of ACEC companies

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**Larry Goldberg**  
Partner

**Larry Goldberg** is a Partner at **ESOP Law Group, LLP**. He focuses his practice on the design, implementation, and operation of Employee Stock Ownership Plans (ESOPs), and he is nationally recognized for his extensive experience in structuring a wide variety of ESOP transactions. Mr. Goldberg has advised numerous corporations, shareholders and directors, of both closely-held and publicly-traded companies, on the use of ESOPs and ESOP-related strategies. He regularly serves as legal counsel to ESOP trustees, and advises investors and lenders with respect to ESOP transactions.



**Lynn DuBois**  
Partner

**Lynn DuBois** is a Partner at **ESOP Law Group, LLP** where she focuses her practice on all aspects of Employee Stock Ownership Plans (ESOPs), including the design, implementation, and operation of ESOPs. Her practice includes company, trustee, and shareholder representation in a wide variety of ESOP transactions, including leveraged buy-outs, corporate stock repurchases, ownership succession transactions, and corporate reorganizations.

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infrastructure and work with the states and their regulatory agencies to develop more distribution infrastructure to serve the increased demand requirements,” Hudson says.

“In terms of new markets, we need to develop new technologies to enable greater use of natural gas for transportation,” according to Somerhalder. “We’ll need to develop new types of engines to get marine, rail, highway trucking and even personal vehicles to use more natural gas. That development is happening.”

He says the overall growth in the energy industry has had a positive impact on his company’s primary business distributing natural gas. “Abundant gas supplies and prices that are more stable help us with our growth and our ability to invest money back in our business,” he says. “But we have other businesses, such as energy trading and natural gas storage, and because gas prices are lower and less volatile, our margins for storing natural gas really aren’t there.”

“For our firm, it’s meant some very good growth,” says Storrusten. “We opened our office in Minot to expand our services to new geographical areas. But in terms of the logistics of running our business, we’re finding it difficult to keep workers for the long term. There’s a lot more turnover than what we typically see in the engineering field. That really taxes our resources. We have to spend more time onboarding and training people. We want a stable core of people—it’s just a little more difficult and it takes a little bit more time to achieve that goal when you’re faced with some of the difficulties that the shale play has brought to this area.”

“There is growth potential in every segment of the engineering world because of the growth of these shale plays,” says Bakken. “In North Dakota, we didn’t have a lot of pipeline we didn’t have a lot of the infrastructure for the communities. We’ve seen unprecedented growth—the state has added 250,000 people in five years. In the last census, North Dakota had about 550,000 people with a declining population. With the influx of population, we can’t produce enough locally grown



*“The biggest threat to this country moving forward economically and in terms of energy is the polarization of politics.”*

STEVE BAKKEN, LARSON ENGINEERING

talent to supply all the jobs that we need. There’s a job for everybody, and then some. Extrapolate that out to every sector of the engineering world, and there’s an amazing opportunity.”

### **What specific technological innovations are needed now and in the future to help the nation enhance its future energy-producing potential?**

“Many of the big changes have already occurred—everything from hydraulic fracturing to horizontal drilling to innovations in the pipeline industry,” explains Somerhalder. “The technologies that will move us forward are those that encourage more natural gas for transportation and innovations for combining power and distributed generation. Many of these technologies are already available. It’s a matter of making them more commercially attractive and more cost-effective. Technological improvements in all these areas will help us serve additional customers with this abundant energy.”

“There’s a lot of natural gas that is within the shale play in the Bakken Region, and people are trying to capture the gas that’s being flared,” says Storrusten.

But just trying is not enough.

“To maintain the industry’s current trajectory, we need to fundamentally change the recovery percentages we’re seeing from the shale reserves,” says Harju. “For instance, in the Bakken system, there’s

between 400 billion to 900 billion barrels of oil in the ground, but we’re recovering only 4 percent to 6 percent of the resource with today’s technology. Each percentage increase represents 4 billion to 9 billion more barrels of oil. So changing recovery rates from 4 percent to 6 percent to 12 percent or 13 percent would be huge. Chang-

ing the rate to 20 percent would be quite profound. The focal point of upstream oil and gas research is to change those recovery factors in a meaningful way.”

The distribution of energy will also be important.

“We need new ways to distribute electricity more efficiently, as well as improvements in substation engineering,” says Hudson. “Also, we’re incorporating many new security requirements today, and that requires a lot more expertise.”

But with big opportunities come some very real challenges, not the least of which are infrastructure and having systems and teams in place to manage larger projects.

“There needs to be a paradigm shift in the engineering industry in the scope of projects,” says Bakken. “These shale plays tend to be in rural areas, where communities planned to add maybe five houses a year. Now, everything is on a grander scale. The engineering industry needs to think outside the box to address quicker, faster-paced growth, larger-sized projects and different varieties of projects. In addition, we need to ramp up the education of petroleum engineers. We’re at a deficit right now—there’s a huge shortage of students and engineers.” ■

*Alan Joch is a business and technology writer based in Frankestown, N.H.*

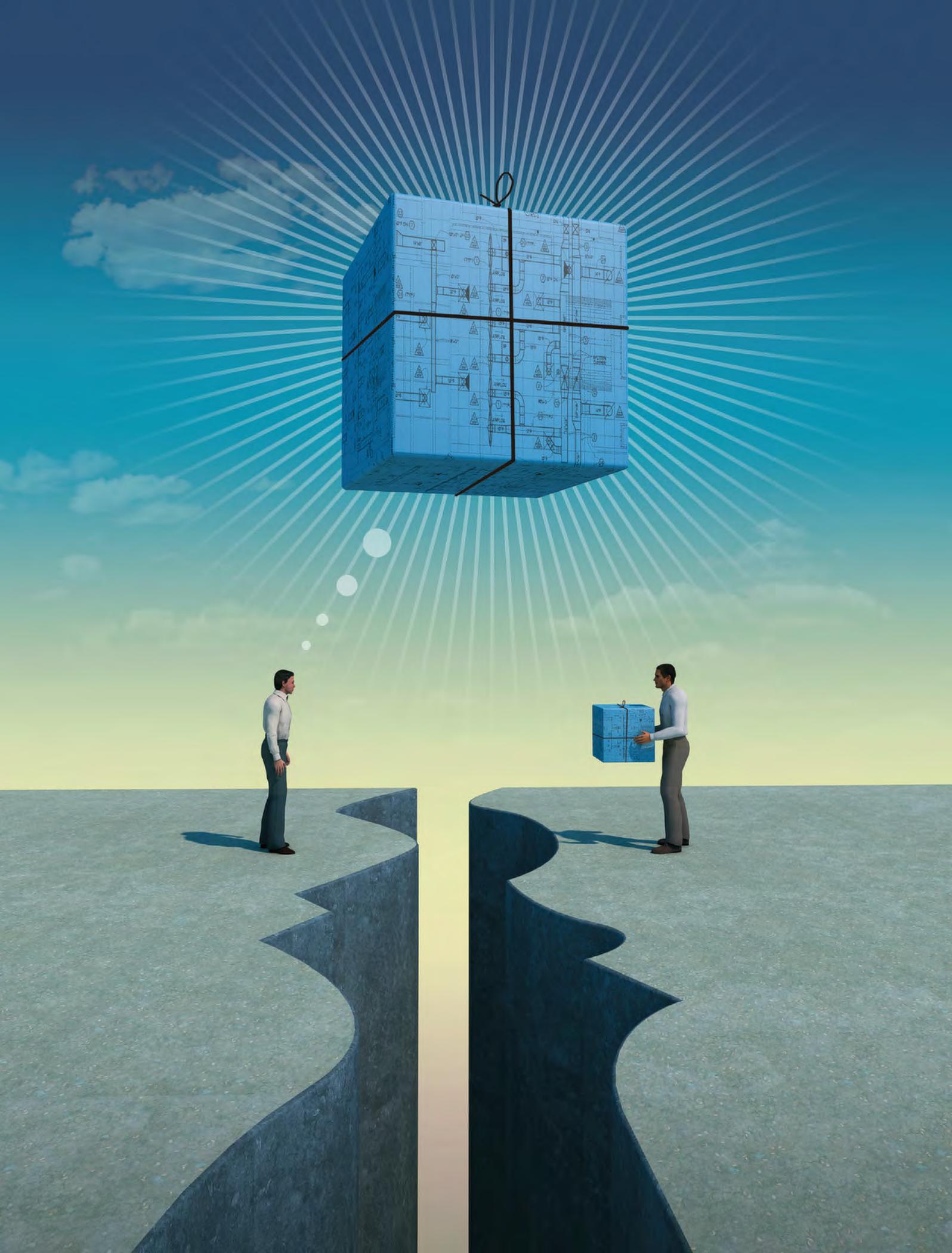
## **Fall Conference to Spotlight Energy Opportunities**

The upcoming ACEC Fall Conference in Waikoloa, Hawaii, Oct. 22–25, will feature an expert panel on **“Engineering Opportunities in Booming Energy Markets,”** including Steve Bakken, Larson Engineering; Tony Bartolomeo, Pennoni Associates, and Kendal W. King, Freese & Nichols.

Tony Clark, commissioner of the Federal Energy Regulatory Commission, will address **“Development of America’s New Energy Infrastructure.”**



**Brock Storrusten**  
Moore Engineering



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By Gerry Donohue

# Reality Check

## How to deal with **unrealistic** contract expectations

**I**f you allow a client to enter into a project with unrealistic expectations, there's a good chance that somewhere along the line those expectations will go unmet.

But be careful: In today's litigious society, that's sometimes all it takes to land your firm in court.

"The only thing you need for a claim is a disappointed client," says Karen Erger, vice president and director of practice risk management at Lockton Companies in Kansas City, Mo. "The specific circumstances of each case differ, but that disappointment is often at the heart of the claim." >>

Though the industry often talks about “client expectations of perfection,” the bar doesn’t need to be anywhere near that high for a client to file a claim. Clients only need to prove that they were justified in expecting better than standard performance from your firm—based on contract language, written statements or oral representations. If the complaint is justified, the consequences can be devastating for a firm because professional liability insurance policies will not provide coverage.

“The policy will cover you if you fail to meet the industry standard of care, but it won’t cover you if you assume a higher duty,” says Erger. “Insurers don’t insure against things that they know are going to happen, and they know that no project will be perfect.”

### Unrealistic Expectations

Clients often expect perfection from engineers because they don’t understand the nature of their work.

“Professional services are not goods. They’re not pencils that are manufactured over and over again, and—under the law—are impliedly warranted to be perfect,” says Erger. “A designer’s services are comparable to those of a doctor. They choose a course of treatment, and the patient or client is involved in making the solution happen. The law doesn’t require engineers to guarantee perfect design.”

A second factor is the stark contrast between the designer and the contractor. “In general, the general contractors guarantee and warranty their work,” says Christine Drage of the law firm Weil & Drage. “Clients don’t understand why general contractors guarantee their work but the engineers don’t guarantee their services.”

She says client expectations have been “an issue in every case I’ve handled over the past 21 years.”

The solution seems simple enough: Tamp down unrealistic expectations with a dose of straight talk.

But it’s not always that easy, says Matt Richards,

vice president and corporate secretary at Strand Associates in Madison, Wis. “To a certain extent, we’ve created this problem for ourselves. It’s not intentional, but as engineers our inherent nature is to serve clients as best we can, and we never want to feel like we’re letting the client down.”

Janice Marsters, chair of the ACEC Risk Management Committee and a senior environmental engineer at Kennedy/Jenks Consultants in Honolulu, agrees. “It’s hard for firms to tell potential clients that their work might not be perfect,” she says. “Who wants to have that conversation at the start of the project? Firms need to make sure their clients have realistic expectations, though. In reality, you’re fulfilling your role as a trusted adviser to the client.”

### Reasonable Contract Language

Firms can take steps to set proper client expectations, but the first step should be to ensure that the firm is legally protected by negotiating appropriate contract terms.

Client-provided contracts tend to be one-sided. It’s not unusual for project owners to shift risk onto the engineer. “I’ve seen contracts that make the engineer responsible for all damages or losses related to the project that are not the client’s sole fault,” says Marsters.

Richards says he’s reviewed contracts that would have required “the firm to guarantee that the project would be delivered without change orders and with no additional costs.”

The most important risk management contract language for engineers is the standard of care clause, which stipulates the level of performance to which the engineering firm is held.

The latest version of the



“Facts are more persuasive and won’t get you into trouble.”

KAREN ERGER  
LOCKTON COMPANIES

Engineers Joint Contract Documents Committee “standard of care” document reads: “The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Engineer makes no warranties, express or implied, under this Agree-

ment or otherwise, in connection with any services performed or furnished by Engineer.”

Most client contracts do not contain such a clear-cut statement. That’s why Drage recommends that firms “cut and paste clauses from the design industry standard agreements. It is really important to get the good clauses you need into your contract,” she says.

Even if you do manage to get the right standard of care language into the contract, you’re not necessarily out of the woods. Firms should also scrub contracts of words and phrases that could elevate the level of services beyond the customary standard of care, such as promises to perform services to a “heightened level of performance” or promises to provide “experts as part of the team.”

### Strategies and Tactics

A reasonable contract provides a solid foundation upon which to build a successful client relationship and manage expectations. Here are six other steps firms can take:

**Pick Your Clients.** At Strand Associates, Richards says the firm strives to avoid projects where the competition is based on price because the interests of the firm and the owner won’t necessarily align.

“We look for folks who really understand the process, understand the role of the consultant,” he says. “They’re looking to work through a problem in a reasonable manner rather than litigating. They understand that risk should be borne by the party most able to manage it.”



Client expectations have been “an issue in every case I’ve handled over the past 21 years.”

CHRISTINE DRAGE  
WEIL & DRAGE



# CardnoKnows how to see below the surface

Cardno delivers accurate subsurface utility information allowing our clients to make informed decisions and eliminate risk.

The Clark County Water Reclamation District wanted complete and accurate utility information for the Flamingo Water Resource Center to help reduce utility conflicts, redesign, delays and expenses during maintenance or construction. They hired Cardno to provide complete subsurface utility engineering services (CI/ASCE 38-02 Quality Levels D – A). Using non-destructive vacuum excavation methods, we completed up to 120 test holes (CI/ASCE 38-02 Quality Level A) per week and installed subsurface marker ball transmitters at each confirmed utility location for future detection capabilities. Cardno used detectable fiberglass push rods with metallic wire to locate pipes that could not be pressurized. Our in-house GIS experts seamlessly update the District's GIS system, delivering information and tools they can use for years to come.

To learn more about how Cardno can help you address complex challenges visit [www.cardno.com](http://www.cardno.com).

**Educate the Client.** Those “good” clients can be tough to find. Your firm could end up negotiating with corporate lawyers or managers who don’t have a construction background.

“They often have no understanding of who bears the risk or of the industry standard of care,” says Richards. “In that instance, it falls on us to educate them.”

Al Rabasca, director of industry relations for the Design Professional Unit of XL Insurance, says firms should explain to the client why transferring risk onto the designer is a mistake. “The client must understand that the design professional doesn’t have the coverage for what they’re demanding, nor do they personally have the financial ability to pay for it themselves,” he explains. “In essence, the client is trying to transfer an uninsurable risk onto an unviable party, so even if they get the engineer to agree, it’s really just a Pyrrhic victory.”

**Have the Talk.** It’s important early on in the process to sit down with the client and explain project realities.

“Clients need to understand the concept of standard of care, why your work can’t be perfect, why you are reluctant to take on certain terms, and how those terms might hurt them in the long run,” says Marsters.

Richards recommends breaking this news as early as possible. “We try to do it the first time we get into the agreement or scope negotiations,” he says. “That’s when the tone is set.”

**Clean Up Marketing Materials.** In some court cases, an engineering firm’s marketing materials have been interpreted to elevate the standard of care.

“When you represent in

marketing materials or agreements that you are the best, that you are the experts in your field, then the expectation will be one of perfection, and there will be far less tolerance for the customary changes and mistakes that happen on every single project,” says Drage. “You do not want to find yourself in litigation against a lawyer



arguing that you were supposed to be better than everyone else in the industry and therefore every RFI, change order, error or omission is tantamount to negligent services.”

While the law allows some degree of “puffery” in marketing to put a service provider or even a product in a good light, says Rabasca, “engineering firms can’t afford to make statements about their professional services that are beyond reality and may heighten the standard of care.”

For example, says Marsters, “a firm may claim that a LEED building will save energy and result in more productive employees. But how can that firm possibly guarantee that someone’s employees are going to be happier, or that the building will be oper-

ated and maintained in a way that saves energy?”

When it comes to marketing materials, it’s best to stick to the facts.

“Say things like ‘Our firm has designed 5,000 bridges’ rather than ‘We are an expert in bridge design,’” says Erger. “Facts are more persuasive and won’t get you into trouble.”

**Institute Processes.** Several processes can help keep your firm out of trouble.

“Document the entire project from beginning to end,” Rabasca says. “The stronger paper trail that you have, the better positioned you will be. It starts with the contract. Have the client initial the key clauses. Document the discussions. These steps can’t stop them from suing you, but they give you the ammunition to defend yourself.”

At Strand, says Richards, “We have our risk managers review proposal language and agreement language. We review our marketing materials as if they would be incorporated into the contract.”

Richards also recommends training staff “on ways to communicate with clients and manage expectations.”

**Be Willing to Say No.** If clients refuse to budge after all efforts to educate them and allocate risk based on who can best manage it, “You need to just walk away,” Rabasca says. “If you’re having this problem at the start, imagine how they’re going to be by the middle of the project.”

In the 2014 ACEC Professional Liability Survey (*Engineering Inc.*, July/August 2014), 40 percent of participating firms said they sometimes turn down work due to liability concerns. The two most frequent concerns cited were the contract (57 percent) and high risk (54 percent).

“There are certainly times when the risk to the firm is so much greater than the rewards you could expect,” says Erger. “In those instances, you would be well advised to walk away.”

For more on client expectations, please visit the Risk Management webpage of the ACEC website at [www.acec.org/risk-management](http://www.acec.org/risk-management). ■

*Gerry Donohue is ACEC’s senior communications writer. He can be reached at [gdonohue@acec.org](mailto:gdonohue@acec.org).*



**“The stronger paper trail that you have, the better positioned you will be.”**

AL RABASCA  
XL INSURANCE

## Strengthen Your Competitive Edge: Increase Your Decision-Making Skills

Does your company have data but lack insight? Is the rapid pace of change a challenge to timely decision-making? Is valuable time wasted searching for just one more piece of data?

As a leader of a small firm, you face increasingly complex decisions—decisions that are filled with ambiguity, uncertainty and risk. To remain competitive, you can't wait for complete data and certainty. To save time and money you must decide now. Successful leaders know the secret. They gather as much information as feasible *and* they pay attention to intuition—their gut feeling. Powerful decisions come from balancing cognition and intuition in a skilled internal calculus. New neuroscience research reveals the processes your brain uses to perform that calculus. Now you can harness that power to better manage your firm and develop future leaders.

Discover practical skills that put neuroscience to work for you and your business so that you can avoid the pitfalls of overthinking, sidestep analysis paralysis, learn techniques to simplify complex decisions and develop future leaders who are both smart *and* insightful at ACEC's Small Firm Council's (SFC) annual Winter Meeting February 20–21 in Nashville. Speaker, coach and author Shelley Row, of Shelley Row Associates LLC, will explore complex decision-making based on personal interviews with more than 70 leaders. The data confirm that the most effective leaders make decisions by gathering information while trusting their intuition. That combination is what Shelley calls *infotuition*<sup>TM</sup>.

SFC was established to protect and promote the interests of smaller firms within ACEC. Its winter meeting provides an exclusive forum for small-firm principals to attend seminars, network with peers, address key issues affecting their firms, and learn and share new ideas. Attendees provide valuable input that helps SFC direct the business and legislative agenda for the coming year. To learn more about SFC, visit [www.acec.org/sfc](http://www.acec.org/sfc).



### Critical Continuing Education Online: On-Demand Webinar 10-Packs

Most states require licensed engineers to achieve a certain number of PDHs each year and file the credits with the appropriate state licensing boards. But for many engineering and surveying professionals, the time and expense of a multiday training program is hard to manage. Often, as their renewal deadline approaches, employees realize that they are short the necessary credits to maintain their licenses. That's when the search begins for convenient educational offerings that can be completed online at their convenience to earn the required credits.

Educational convenience, topicality, flexibility and cost savings come together with ACEC On-Demand Webinars. Find popular

engineering business management topics and earn PDHs when and where you need them. **The On-Demand Webinar 10-Pack makes continuing education immediate, accessible and cost-effective.**

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- *and more!*

For a complete list of available topics, visit [www.acec.org/education/on\\_demand\\_search.cfm](http://www.acec.org/education/on_demand_search.cfm).

### New Amazon Portal

Knowledge is power—and your firm's greatest asset. Whether the goal is keeping ahead of the competition or improving your bottom line, increasing your employee knowledge base can only help. Fortunately, your ability to access trusted A/E and business resources recently became a lot easier.

In early September, ACEC launched its new webstore, the ACEC Business Resource Center, on the Amazon e-commerce platform. ACEC members, as well as A/E professionals worldwide, can enjoy fast access to hundreds of engineering and general business resources published by ACEC and others through one convenient hub. As an added benefit, current Amazon Prime members enjoy the privileges of Prime membership—including free two-day shipping—when purchasing resources through the ACEC Business Resource Center.

**Visit the ACEC Business Resource Center at**  
[www.ACECEngineeringBookCenter.org](http://www.ACECEngineeringBookCenter.org).

ACEC's Business Resources and Education Department provides comprehensive and accessible business management education for engineering company principals and their staffs. Visit ACEC's online educational events calendar at [www.acec.org/calendar/index.cfm](http://www.acec.org/calendar/index.cfm) or bookstore at [www.acec.org/bookstore](http://www.acec.org/bookstore), or call 202-347-7474, ext. 324, for further information.

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**Tony Clark**  
*Commissioner, Federal Energy Regulatory Commission (FERC)*  
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### Business Management Focus

- Top Engineering CEOs Forecast 2015 Business Outlook
- Engineering Opportunities in Booming Energy Market
- Impact of Emerging Technologies on Engineering Business
- Lessons Learned from Recent State Transportation Funding Initiatives
- Characteristics of Higher Performing Design Firms
- Managing the Enduring Risks of Professional Practice



### More Conference Highlights

- CASE Risk Management Convocation
- Business and Legal Forums
- CIO, CFO, Emerging Leaders Tracks
- CEO Roundtables
- Awards Presentations

### Social Events/Sightseeing Tours

- Local Color Night: “Surfs Up” with Jimmy Mac and the Kool Kats
- Volcano and Waterfall Helicopter Tour
- Picnic Snorkel Sail
- Kohala Waterfall Hike
- Mauna Kea Summit and Stars Tour

### ACEC/PAC Activities

- Golf Tournament at the Hilton Waikoloa Village Kings’ Course
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### Hotel Information

**Hilton Waikoloa Village**  
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[hiltonwaikoloavillage.com](http://hiltonwaikoloavillage.com)

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**For more information and to register online, go to [conf.acec.org](http://conf.acec.org).**



# Members in the News

## On The Move

**John W. Braccio** was named president and CEO of New England-based **Wright-Pierce**. He succeeds **William E. Brown**, who will continue to serve as the firm's chairman. Braccio formerly served as a senior vice president in charge of wastewater engineering.

Effective Jan. 1, 2015, **Rizwan Siddiqi** will become president of Baltimore-based **EBA Engineering**. **Harish Patel** will become first executive vice president, and **Steve Diggins** will take over as secretary. Former President **Nanda Sen** and outgoing Executive Vice President **Kunal Gangopadhyay** will stay on through the transition.

**Gary L. McArthur** joined Englewood, Colo.-based **CH2M HILL** as executive vice president and CFO. **JoAnn Shea**, who assumed the role of acting CFO in February 2014, returns to her role as chief accounting officer and controller of CH2M HILL.

**Jason Hoskins** was promoted to COO at **Ulteig**. Hoskins previously served as market leader, senior vice president and sector leader. He will be based in the firm's St. Paul, Minn., headquarters.

**Parsons** announced the following appointments: **Dante V. Caravaggio** joined the firm as executive vice president and global business development director of its environment and infrastructure business unit. He will be based in the firm's Pasadena, Calif., headquarters. **Rhet Schmidt** was named vice president and district manager for Florida in Parsons' Road & Highway division. Based in Orlando, he will oversee the Jacksonville, Miami, Orlando, Tallahassee, and Tampa offices. **Patricia Walsh** joined the firm's transportation business unit as vice president and director of business development—Midwest, based in Chicago.

**Michael J. Carragher** was elected president and CEO of Watertown, Mass.-based **VHB**. He succeeds **Robert Brustlin**, a co-founder of VHB, who will continue to serve as chairman.

**The Louis Berger Group** announced the following appointments: **Andrew V. Bailey II** will assume leadership for Louis Berger's Services operation as its new president. He will be based in Greenville, S.C. **Sofia Berger** was promoted to vice president in charge of Latin American and Caribbean operations. Berger succeeds Carlos Marcenaro, who will assume new responsibilities within the firm. Berger will be based in Panama City, Panama.

**Robert (Bob) Clifford**, former executive director of the Tampa Bay Area Regional Transportation Authority (TBARTA), was named vice president and Tampa area manager at **Parsons Brinckerhoff**.

**R. Stephen Spinazzola** joined Sparks, Md.-based **KCI Technologies, Inc.**, as vice president and regional practice leader for mechanical, electrical, plumbing and fire protection.



John W. Braccio



Rizwan Siddiqi



Harish Patel



Gary L. McArthur



Jason Hoskins



Dante V. Caravaggio



Michael J. Carragher



Andrew Bailey



Sofia Berger



Robert (Bob) Clifford



R. Stephen Spinazzola

## Anniversary

### Parsons Commemorates 70 Years

This year marks the 70th anniversary of **Parsons**. The Pasadena, Calif.-based firm has grown from eight employees in a small Los Angeles office to 15,000 employees in more than 100 offices in 28 countries worldwide.

“On this significant milestone, we honor our founder and celebrate our successes. I believe that Ralph M. Parsons—an engineer who loved solving challenging technical problems—would be proud of the company that Parsons has become. He

would be very proud of the talented team of professionals who embody Parsons, and he would be just as proud of the projects we deliver for our customers, our innovations, our accomplishments, and our contributions to delivering a better world,” says Chuck Harrington, Parsons’ chairman and CEO.

The company, which specializes in several sectors, including transportation, environmental/industrial and defense/security, is currently engaged in more than 3,000 projects worldwide.

### Louis Berger Group Celebrates 60 Years

**The Louis Berger Group** celebrates its 60th anniversary this year.

When it launched in 1953, Louis Berger was a 12-employee consulting firm based in Harrisburg, Pa. The firm, which quickly expanded into foreign markets, recognized the importance of combining state-of-the-art engineering practices with local training to develop and maintain infrastructure systems in developing countries.

“My father’s vision as an engineer was to improve lives by developing an understand-

ing of the communities in which he worked, and then providing the best solutions by implementing them on-site in partnership with local professionals,” says Fredric S. Berger, chairman of The Louis Berger Group. “In his words, ‘Doing good engineering is not enough; we need to eliminate the need for us to perform the same thing a second time.’”

Today, the firm has more than 6,000 employees in offices across the United States and in more than 140 countries.

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*Lee W. Slade*

*Walter P. Moore Engineers & Consultants*

*SEI Class V*

SEI Class 20 begins September 2014.  
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## Members in the News

### Awards

#### Engineering Inc. Wins Top National Publication Award

Engineering Inc. received a Grand Award for publication excellence in the national 2014 APEX Awards. The APEX Awards is an annual competition for communications professionals; more than 2,100 publications from across the country competed in the program this year.



In selecting the May/June 2013 *Engineering Inc.* for a top honor, the judges wrote: "Striking spreads, crisp, interesting copy (the Annual Convention copy, in particular, is both readable and concise, a deft achievement), and appealing photos combine to make this a magazine that industry professionals will actually read."

In the same competition ACEC's online newsletter, *Last Word* (Oct. 23, 2013), the January/February 2013 issue of *Engineering Inc.*, and the November/December 2013 electronic version of *Engineering Inc.* received APEX Awards of Excellence.

## LET *Engineering Inc.* WORK FOR YOU

**With an ad in  
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you can:**

- **REACH** your clients and colleagues.
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- **THANK** those important to your success.



Contact ACEC Assistant Director of Marketing Rachael Ng at 202-682-4337, by e-mail at [rng@acec.org](mailto:rng@acec.org), or visit the website at [community.acec.org/acecmainsite/publications/advertising](http://community.acec.org/acecmainsite/publications/advertising)

# Welcome New Member Firms

## **ACEC/Alabama**

JRM Engineering, Inc., Gadsden

## **ACEC/Arizona**

Achen-Gardner Construction LLC, Chandler  
Hoskin-Ryan Consultants, Inc., Phoenix  
Meade Engineering, Phoenix  
Vesecky Engineering & Surveying, Scottsdale

## **ACEC/California**

DMG Corporation, Orange  
Environ Strategy Consultants, Inc., Orange  
PENCO Engineering, Inc., Irvine  
Randall Lamb Associates, San Francisco  
VER Consultants, San Jose

## **ACEC/Colorado**

BNP Associates, Inc., Denver

## **ACEC/Delaware**

Davis, Bowen & Friedel, Inc., Milford

## **ACEC/Florida**

Beiswenger, Hoch and Associates, Inc., Sunrise  
Bolton Perez & Associates, Miami  
EcoShore International, Inc., Boca Raton  
HB Associates, LLC, Altamonte Springs  
HBC Engineering Company, Miami  
HighSpans Engineering, Inc., Fort Myers  
Kennedy Engineering & Associates Group, LLC, Fort Walton  
Landmark Engineering & Surveying Corporation, Tampa  
Lighthouse Engineering, Inc., Safety Harbor  
MWS Engineering, Weirsdale  
Ross Engineering, Inc., Davie  
RWA, Inc., Naples  
TLP Engineering Consultants, Inc., Orlando

## **ACEC/Georgia**

Chatham Engineering, Savannah  
Environmental Research Group, LLC, Allenhurst

## **ACEC/Hawaii**

Libbey Heywood, Inc., Honolulu

## **ACEC/Idaho**

Currant Creek Consulting, Boise

## **ACEC/Illinois**

Mackie Consultants, LLC, Rosemont  
**ACEC/Indiana**  
HWC Engineering, Indianapolis  
Lougheed & Associates, Inc., Fort Wayne  
Northpointe Engineering & Surveying, Inc., Indianapolis

## **ACEC/Louisiana**

Owen Engineering, LLC, Shreveport

## **ACEC/Maryland**

AB Consultants, Inc., Baltimore  
Daft McCune Walker, Inc., Towson  
E2CR, Inc., Baltimore  
Epona Engineering, Elkridge  
Hanover Land Services, Westminster  
Hillis-Carnes Engineering Associates, Inc., Annapolis Junction  
Progressive Engineering Consultants, Inc., Hunt Valley

## **ACEC/Massachusetts**

Bryant Associates, Inc., Boston  
Pare Corporation, Lincoln, R.I.

## **ACEC/Metro Washington**

Dominion Engineering, Inc., Reston, Va.

## **ACEC/Michigan**

Integral Blue, LLC, Madison Heights  
Lakeshore Global Corporation, Detroit

## **ACEC/Mississippi**

Floyd & Baird Engineering, Inc., Clinton  
Geotechnical Engineering Associates, LLC, Brandon  
Jon D. Rice & Associates, LLC, Flowood

## **ACEC/Missouri**

Malisko Engineering, Inc., St. Louis  
Malone Finkle Eckhardt & Collins, Inc., Springfield

## **ACEC/Nebraska**

Structural [design] Group, Lincoln

Transduction Technologies, Omaha

## **ACEC/Nevada**

CA Group, Las Vegas

## **ACEC/New Hampshire**

Northpoint Engineering, LLC, Pembroke

## **ACEC/New Jersey**

Advanced Infrastructure Design, Inc., Hamilton  
Fastech Consulting Engineers, Teaneck

## **ACEC/New Mexico**

Daniel B. Stephens & Associates, Inc., Albuquerque

## **ACEC/North Carolina**

Dieffenbach & Hritz, PLLC, Wilmington

## **ACEC/Ohio**

DGL Consulting Engineers, LLC, Maumee  
Fanning Howey, Celina

## **ACEC/Texas**

AG|CM, Inc., Corpus Christi  
Aqua Strategies, Inc., Dripping Springs  
DP Engineering, Fort Worth  
EAKOM Engineering & Consulting, Midland  
Electric Power Engineers, Inc., Austin  
Entech Civil Engineers, Inc., Houston  
R Squared Consulting Engineers, Inc., McKinney  
Rone Engineering Services, Ltd., Dallas  
Sierra Engineering, Midland  
Sierra Petroleum Services, Ltd., Midland  
Smith Turrieta Engineering, Austin  
TRWA, Inc., Fort Worth

## **ACEC/Utah**

Meridian Engineering Inc., West Jordan  
Trailhead Engineering, LLC, Salt Lake City

## **ACEC/Wisconsin**

MEP Associates, LLC, Eau Claire

## **ACEC/Wyoming**

CPG Engineering, Buffalo

## **Members-at-Large**

UNIPRO—Architects, Engineers and Planners, Guaynabo, P.R.

## Calendar of Events

### SEPTEMBER

- 9** Betting the Firm: Managing the Risks of Indemnity Clauses in Professional Services Agreements (webinar)
- 10** Legal Issues Unique to Design-Build (webinar)
- 11** Strategic Planning—Don't Waste Your Time! (webinar)
- 15-16** Information Technology Forum, Denver
- 15-16** Finance Forum, Denver
- 17** How Buyers Buy (webinar)
- 22-23** Human Resources Forum, Chicago
- 23** Ten Top Tips of Terrific Communicators (webinar)
- 24** A Tour of the Horizon for Architecture, Engineering and Construction Service Opportunities with the U.S. Government (webinar)
- 25** Opportunities Lost: 16 Missing Things from Most Marketing and Business Strategies (webinar)
- 30** Be Memorable and Win More Work: The Difference-Makers for Winning Proposals (webinar)

### OCTOBER

- 2** Negotiating Better Engineering Contracts (webinar)
- 7** Raising Your Marketing ROI—Using Real-World Numbers to Measure and Manage Your Firm's Marketing and Business Development Activities (webinar)
- 8** Expand Your Business: How to Diversify Your Network and Get Out of a Rut (webinar)
- 14** Content and Social Media for Professional Services: 5 Things Every Executive Should Know (webinar)

To sign up for ACEC online seminars, go to [www.acec.org/education](http://www.acec.org/education).

Additional information on all ACEC activities is available at [www.acec.org](http://www.acec.org).

## First-Half 2014 M&A Highlighted by AECOM Purchase of URS

The second half of 2014 started off with a bang with the announcement of one of the largest deals in the industry's history. Global engineering design firm AECOM announced an agreement to acquire engineering, construction and technical services firm URS in a deal valued at approximately \$6 billion.

This megadeal creates a conglomerate with more than 95,000 employees in 150 countries worldwide. The deal capped a busy first half of 2014 for engineering mergers and acquisitions activity. A few highlights from the year so far include:

**Domestic Activity on Pace for Strong 2014:** Through the first six months of 2014, Morrissey Goodale tracked 101 sales of U.S.-based A/E firms—roughly the same number transacted during the first six months of a robust 2013, putting this year on pace for another strong year for domestic M&A activity (Graph 1).

**Texas and California Lead States in M&A Activity:** Regionally, Texas led all states in deal activity with 16 Texas-based A/E firm sales through June 30, 2014 (Graph 2). Deals in the Lone Star State continue to be driven by a combination of strong economic growth and oil and gas activity. California, a perennial hot state for industry dealmaking, followed with 12 firm sales. Colorado, which was among the top states for firm sales in 2013 with 11, has seen seven state-based firms sell in 2014 so far.

**The U.K. and Canada Lead International Destinations:** International deals lagged through the first six months with just 43 sales of internationally based A/E firms so far in 2014 compared with 54 during the first six months of 2013. The United Kingdom and

Canada were the top destinations for international firm sales through the first half of 2014 (Graph 3). Australia, New Zealand and South Africa were also bright spots in the international space.

**The Megadeal Is Back:** On the heels of several large deals in the back half of 2013, megadeals continued into the first half of 2014. A/E firms continued to seek transformational opportunities to differentiate their businesses. Notable large deals so far in 2014 include AECOM's agreement to acquire 50,000-person URS; AMEC's agreement to acquire 14,000-person Foster Wheeler; Conestoga-Rovers' merger with 5,500-person GHD; Cardno's acquisition of 760-person PPI Group; WSP Group's acquisition of 1,700-person Focus Group; and Parsons' acquisition of 800-person Delcan.

### Other Recent ACEC Deal-Makers JULY

- ACEC Member **Jviation** (Denver) acquired **Creamer & Noble** (St. George, Utah), an engineering firm specializing in the aviation and municipal/transportation markets.
- ACEC Member **Kleinfelder** (San Diego) acquired **Hood Engineering & Technical Services** (Edmonton, Canada). Hood offers a range of engineering, procurement and construction management services.
- ACEC Member **TRC Companies** (Lowell, Mass.) acquired **Covino Environmental Associates** (Woburn, Mass.), a provider of building sciences and industrial hygiene services.
- ACEC Member **NV5** (Hollywood, Fla.) acquired **Owner's Representative Services** (Centennial, Colo.), a program management firm specializing in health care facilities development and construction projects.

### JUNE

- ACEC Member **Salas O'Brien** (San Jose, Calif.) acquired ACEC Member **Kalmans Marshall Engineering** (Houston), a consulting engineering firm specializing in MEP design.
- ACEC Member **Professional Service Industries (PSI)** (Oakbrook Terrace, Ill.) acquired **Cobblestone Engineering, Inc.** (Harlingen, Texas), a provider of geotechnical engineering, drilling services, environmental consulting, and construction materials testing services.

Graph 1



Graph 2



Graph 3

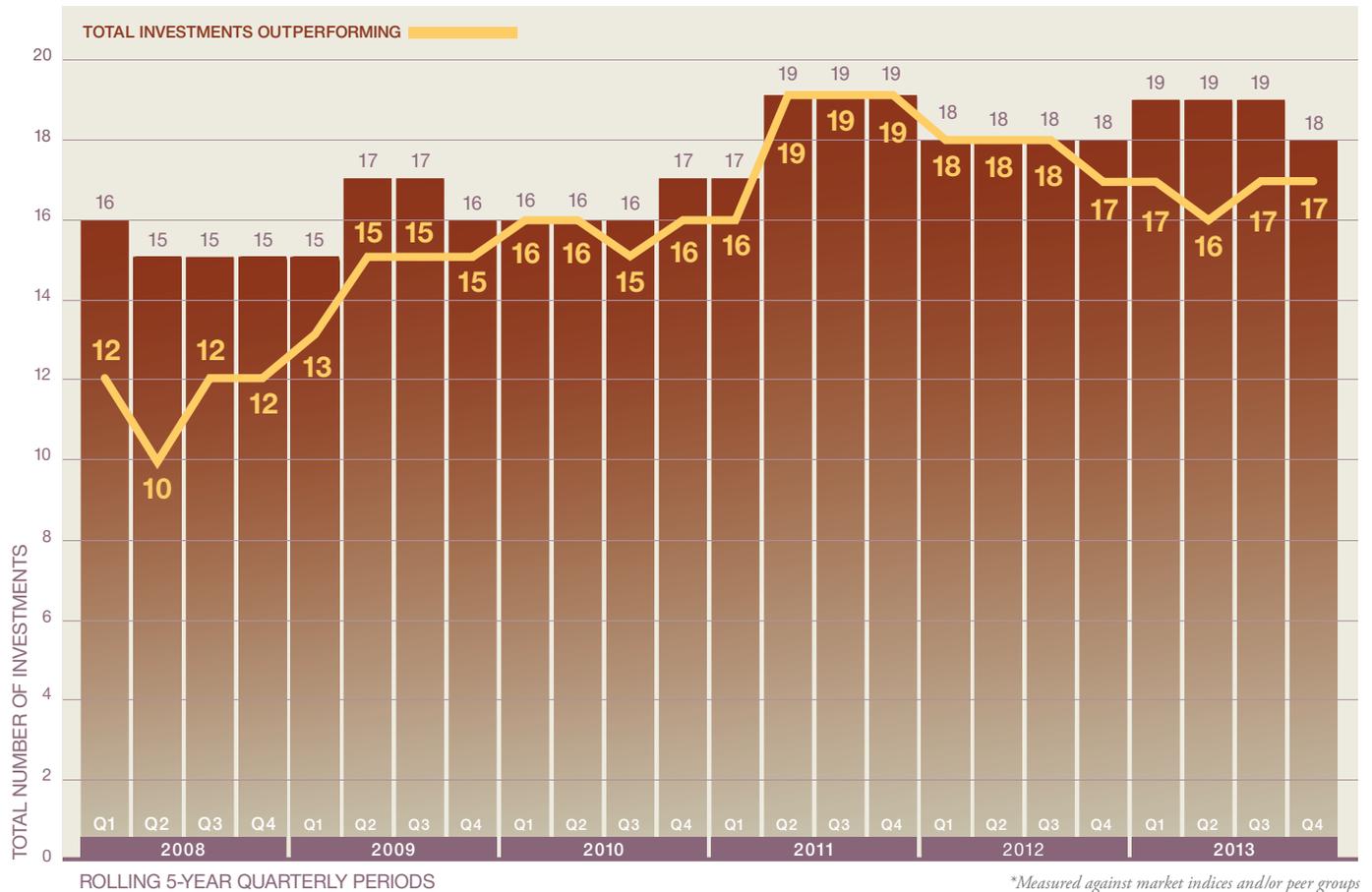


Watch the **M&A Takeaway** video that accompanies this article, presented by Mick Morrissey, at [www.morrisseygoodale.com/ACECMergers/SeptOct2014](http://www.morrisseygoodale.com/ACECMergers/SeptOct2014).



Neil Churman is principal consultant of Morrissey Goodale LLC—a strategy, M&A and human capital solutions firm serving the A/E/C industry. Churman, who is based in the firm's Houston office, can be reached at [nchurman@morrisseygoodale.com](mailto:nchurman@morrisseygoodale.com).

# How to provide your participants the best retirement opportunities.



## ACEC RT Investment Lineup Performance Results\*

- ▶ On average, 94% of the investments have performed at or above market indices and/or peer groups.



*A retirement plan for engineers...by engineers.*

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Now more than ever, it's important to have options and flexibility in offering health care coverage for your employees. With the ACEC Life/Health Trust for ACEC members (insured by UnitedHealthcare), you'll find an array of affordable health plan solutions to meet your unique needs – **all while easing the burden around health care reform compliance.**

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- **Preferred Savings** – Potential savings on annual medical plan premiums.\*\*
- **Dedicated Service Team** – Our dedicated account service team is U.S.-based with more than 20 years of combined engineering industry and health care experience.
- **A Broad Network** – UnitedHealthcare's vast provider network provides local access to 99% of the U.S. population.\*\*\*
- **Streamlined Administration** – Moving from your current health plan is surprisingly simple. Plus, ongoing online administration is easy and secure for increased accuracy and efficiency.

Learn how your engineering firm can take advantage of health care solutions tailored to your needs with the ACEC Life/Health Trust.

**Call 1-877-232-8621, or visit [uhctogether.com/acec1](http://uhctogether.com/acec1) for more information and to download a complimentary copy of our white paper.**



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The American Council of Engineering Companies (ACEC), the ACEC Life/Health Insurance Trust and UnitedHealthcare Insurance Company are three separate legal operating entities and, as such, the organizations are governed and function independently. UnitedHealthcare's services are provided with the authorization of the ACEC Life/Health Trust. Questions related to health benefits offered through the Life/Health Trust should be directed to 1-800-573-0415. Must be UnitedHealthcare insurance license products; and HMO products do not apply. ACEC membership qualification is determined by the association.

\*The ACEC Life/Health Trust offers 35 medical plan design options for groups with 2-50 eligible employees; and it offers 85 medical plan design options for groups with 51 or more employees.

\*\*ACEC members may receive potential savings on annual premiums, as compared to UnitedHealthcare insurance license products sold outside the ACEC Life/Health Trust.

\*\*\*Network statistic based on GeoAccess information and UnitedHealthcare standard network access mileage criteria, 2013.

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