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AWARD-WINNING BUSINESS MAGAZINE • PUBLISHED BY AMERICAN COUNCIL OF ENGINEERING COMPANIES

- » 2014 Legislative Priorities
- » New Carriers Enhance PLI Options
- » Global Engineering Challenges Mirror U.S.

STORM PROOFING

Adaptation to Climate Change Through Infrastructure Resiliency

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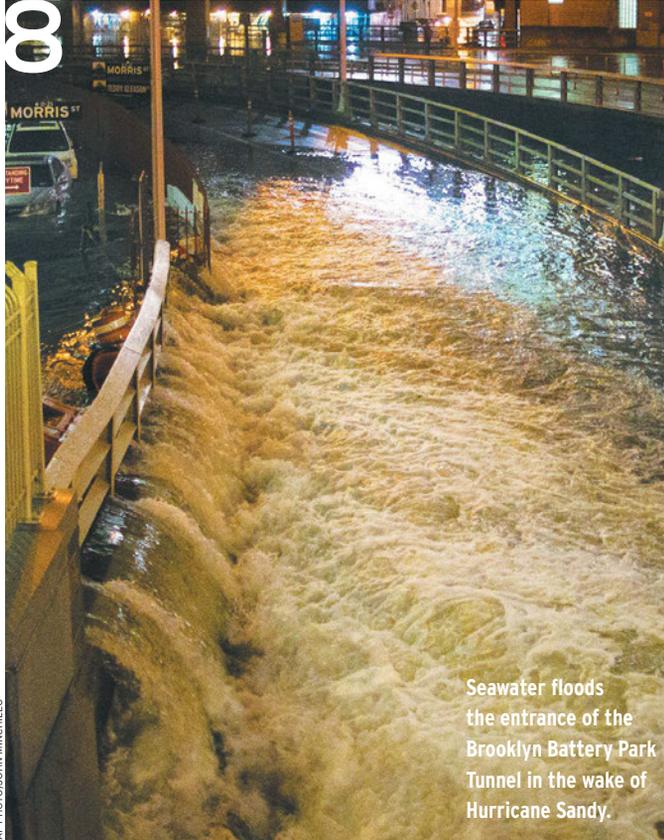
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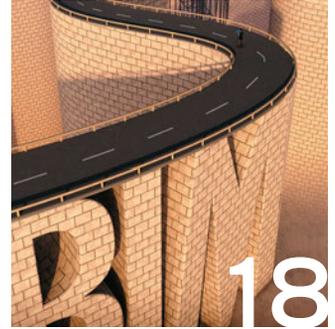
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From ACEC to You

Message to Congress: Get on With Bipartisan Accomplishments

Bipartisanship has been elusive on major issues before Congress such as a long-term budget deal, taxes and immigration reform. However, a willingness to cooperate was evidenced in the recent two-year budget deal, as well as broad vote margins in both the House and the Senate WRDA bills. A final bill is expected to be among the first accomplishments of the new year.

There is also bipartisan recognition that we need to invest more in surface transportation and water/wastewater infrastructure, as well as to develop more of America's energy resources.

Our message to Congress and the White House in the coming months is straightforward: There are bipartisan ideas on the table right now to spur the economy and build America's infrastructure—let's get it done.

The Council has earned a reputation on Capitol Hill and in the White House for strong and reliable industry advocacy. While the political challenges are obvious, we intend to stay on the offense and look for every opening to move our agenda forward.

This issue of *Engineering Inc.* examines some of the opportunities and challenges the Council faces in achieving meaningful legislative progress in the new year. Also included are features on how new carriers are enhancing PLI options for member firms and how adaptation to climate change is affecting infrastructure design.

We wish you all the best in the new year.



Gregs G. Thomopulos
ACEC Chairman



David A. Raymond
ACEC President & CEO



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2014 Construction Growth To Outpace the U.S. GDP

U.S. economic growth in 2014 and beyond will depend largely on the ability of 535 people to get their act together, say economists.

“Congress has certainly done a lot of things to stand in the way of growth,” says Bernie Markstein, chief economist at Reed Construction in Silver Spring, Md. “It has failed in its responsibility for fiscal policy. If we could get a good budget from the federal government and raise the debt ceiling for more than a few months, we would remove a lot of uncertainty from the economy.”

Such uncertainty is caustic for the economy, says Karen Blanford, research director of global construction services at IHS Economics in Lexington, Mass. “If the political climate doesn’t improve, we’re just going to go from crisis to crisis. That dampens consumer and business confidence. Without that confidence, nobody is willing to invest.”

One statistic starkly highlights the fallout from this lack of investment: Although the United States is in the fourth year of an economic recovery, employment remains 1.8 million jobs below its prerecession peak.

The engineering industry has felt its share of pain. Although engineering employment has increased in 29 of the 36 months since it hit its lowest point in October 2010, it is still 7 percent below its peak, which it last reached in February 2008.

“Firms aren’t expanding because they don’t have any confidence in their backlogs,” says

Steve Isaacs, division manager for architectural and engineering services at FMI. “They’re discounting the work they have underway because they’re not convinced it will keep going. They’re not even sure that the work they have scheduled to start will really start.”

And yet, the American economy remains a force. The United States has one of the largest population growth rates among countries with advanced economies, which fuels demand for housing, goods and services. The expansion in domestic natural gas and oil production provides a long-term reliable source of affordable energy. According to the International Energy Agency, The United States will surpass Russia in 2014 as the world’s largest oil producer.

Construction Growth and GDP

Citibank forecasts U.S. gross domestic product (GDP) to grow 2.7 percent, significantly outpacing the estimated 1.7 percent growth realized through 2013. From 2015–2017, Citibank projects 3.1 percent annual GDP growth.

That’s progress. But it’s nothing compared with projected construction growth.

According to FMI, total construction spending will grow at more than double the pace of U.S. GDP. Construction spending is projected to increase by 7 percent in 2014 to \$977 billion and average 7.7 percent annual growth from 2015–2017.

“Growth rates for construction are beginning to look good,” says Blanford, “but a lot of that is because the



JOENSTOCK/GETTY IMAGES

market really bottomed out in 2008–2009.”

Case in point: residential construction. The market leaped by an estimated 18 percent in 2013, and FMI forecasts annual growth exceeding 10 percent through 2017. That’s good. But, “even with these growth rates,” Blanford says, “we’re never going to see residential construction get back to the precrash levels.”

FMI’s projection of \$506 billion in residential construction spending in 2017 is still nearly 20 percent lower than its 2006 market peak.

Overall construction spending in the United States is expected to top its 2006 peak by 2017, due primarily to phenomenal growth in the power sector. That rate should slow in subsequent years, but the power sector will still average 8 percent growth annually through 2017.

“Everyone agrees we have a need for power and the need is going to get greater—both in this country and abroad,” Isaacs says.

Much of the recently discovered natural gas and oil reserves are far removed from

population centers and refineries, requiring a dramatic expansion in the pipeline network. According to the Interstate Natural Gas Association of America, the United States and Canada will require between 28,900 and 61,600 miles of new pipeline by 2030.

New clean-air regulations will drive the power generation industry to shutter existing coal plants in favor of new natural-gas-powered plants.

Other Sectors

Health care construction has bucked demographic trends in recent years. Both the growth and the aging of the U.S. population was expected to fuel a strong recovery in the sector, but it is still more than 11 percent below its 2008 peak.

“There’s a lot of uncertainty in the health care market because of the Affordable Care Act,” says Isaacs. “Nobody knows how it is going to play out.”

Additionally, the industry’s model for providing health care has changed. “We’re seeing fewer new big facilities,” he says. “More and more care

is being pushed out to medical office buildings.”

Despite these challenges, FMI still forecasts 6 percent growth in the health care market in 2014, and average annual growth of almost 9 percent in 2015–2017.

Employment growth is the prime driver in the office and commercial sectors, and it is forecast to be sluggish through 2015. The Federal Reserve predicts the current 7.2 percent unemployment will fall to only 6.5 percent by 2015.

As a result, FMI forecasts 4 percent growth in the office sector in 2014 and approximately 5.3 percent growth annually in 2015–2017. The commercial sector will be a little more robust, growing 5 percent in 2014 and averaging 7.6 percent in 2015–2017.

Manufacturing construction tends to lag behind the market by a year or two, says Blanford, but affordable and reliable domestic energy supply is fueling an early resurgence. “We’re seeing a significant amount of investment by chemical companies because their manufacturing facilities consume a lot of energy,” she says.

Overall, manufacturing construction is forecast to increase by 4 percent in 2014 and by 6 percent in 2015–2017.

Lagging Behind?

Construction spending in the private and public sectors will continue to move in opposite directions. Between 2010 and 2013, private-sector construction spending increased by about 28 percent; at the same time, public-sector spending

fell by almost 10 percent. At the federal level, funding is stalled by partisan philosophical differences; at the state and local levels, tax collections remain depressed from the slow economic recovery.

This trend has had a devastating impact on the transportation and water market sectors—federal, state and local governments are responsible for more than 75 percent of U.S. nondefense infrastructure spending.

Road and highway construction is forecast to climb just 2 percent in 2014, after falling an estimated 3 percent in 2013. The picture doesn’t get any brighter looking ahead. FMI forecasts just 1.6 percent annual growth in 2015–2017.

The water construction market will also be relatively flat, growing at just more than 2 percent in 2014 and less than 5 percent annually in 2015–2017.

“We’re missing a golden opportunity by not investing in our infrastructure right now,” says Markstein. “Interest rates are low, building materials prices are relatively low, and there are still a lot of unemployed construction workers. It would provide a significant stimulus to the economy.”

Gerry Donohue is ACEC’s senior communications writer. He can be reached at gdonohue@acec.org.

Construction Put in Place (Millions of Current Dollars)

	2013	2014	2015	2016	2017
Residential	338,163	379,599	420,452	465,383	505,941
Office	37,481	39,942	40,885	43,399	45,584
Commercial	47,256	49,691	53,773	57,942	62,041
Health Care	41,581	44,003	47,533	51,749	56,637
Educational	81,333	84,704	89,245	95,066	102,083
Manufacturing	45,874	47,533	49,901	53,111	57,017
Power	99,924	106,707	114,794	124,783	136,334
Highway and Street	78,242	80,085	81,167	82,595	84,354
Sewage and Waste Disposal	20,950	21,275	21,897	22,990	24,209
Water Supply	13,943	14,396	14,844	15,414	16,007

Source: FMI

Construction Put in Place (Change from Prior Year—Current Dollar Basis)

	2013	2014	2015	2016	2017
Residential	18%	12%	11%	11%	9%
Office	-2	4	5	6	5
Commercial	2	5	8	8	7
Health Care	-1	6	8	9	9
Educational	-4	4	5	7	7
Manufacturing	-2	4	5	6	7
Power	6	7	8	8	9
Highway and Street	-3	2	1	2	2
Sewage and Waste Disposal	-5	2	3	5	5
Water Supply	5	3	3	4	4

Source: FMI

Budget Deal Increases Discretionary Spending, Avoids Next Round of Sequestration Cuts

The House and Senate adopted a budget agreement prior to adjournment in December that increases caps on discretionary spending by \$63 billion over two years and replaces the impending automatic across-the-board sequestration with targeted cuts and federal fee increases.

ACEC supports the agreement; it will bring predictability to the federal budget process and should allow increased spending for critical infrastructure programs.

Non-defense spending would total \$491.8 billion in Fiscal Year 2014, which is \$14 billion less than the Senate had proposed but \$76.9 billion more than the original House budget. Defense programs would total \$518 billion, \$2.5 billion above current funding and \$22.4 billion above the projected post-sequestration level.

The bill would lower the compensation cap for federal contractors from \$952,308 to \$487,000 and would tie subsequent increases to the U.S. Bureau of Labor Statistics Employment Cost Index.

Passage of the two-year budget agreement should pave the way for action early in 2014 on one or more appropriations bills to fund specific agencies. Such action must occur prior to Jan. 15 in order to avoid another government shutdown.

ACEC Backs Federal Infrastructure Finance Bill; Helps Kick Off New P3 Caucus

Sens. Mark Warner (D-Va.) and Roy Blunt (R-Mo.) have introduced the bipartisan *Building and Renewing Infrastructure for Development and Growth in Employment Act*, or BRIDGE Act, which would create an independent infrastructure financing authority to provide loans and loan guarantees to states and localities for infrastructure projects of regional and national significance.

The fund would be initially capitalized with \$10 billion and used to leverage state, local and private dollars. Eligible projects include transportation and water infrastructure and energy transmission, distribution and storage projects, with a minimum cost of \$50 million. Five percent of funding would be set aside for rural, smaller projects.

ACEC endorsed the bill as providing another financing tool to address our country's infrastructure priorities, particularly large projects that cannot be undertaken with

conventional funding. "ACEC continues to strongly advocate increased investments through traditional core federal infrastructure programs," wrote ACEC President and CEO Dave Raymond in a letter to the bill's sponsors. "However, additional options are necessary to supplement existing funds and leverage private sources of capital."

ACEC Director of Transportation Programs Matt Reiffer delivered that same message at a briefing for the newly formed Congressional P3 Caucus. Reps. Mike Rogers (R-Ala.) and Gerry Connelly (D-Va.) formed the group to collect and disseminate information to their colleagues on public-private partnerships (PPPs). Reiffer joined representatives from the U.S. Chamber, Honeywell and George Mason University on a briefing panel to discuss how PPPs can facilitate infrastructure development and improve government service.

House Clears ACEC-Backed Energy Bills

The House cleared three ACEC-backed energy bills to expand domestic energy production late in 2013.

The Federal Lands Jobs and Energy Security Act of 2013 would reform the leasing process for onshore oil and natural gas projects on federal lands, ensure that funds are available for wind and solar permitting and establish clear rules for the development of U.S. oil shale resources.

The Protecting States' Rights to Promote American Energy Security Act would prohibit

the Interior Department from enforcing federal hydraulic fracturing regulations in any state that already has them and would recognize states' authority to regulate this type of activity.

Finally, the *Natural Gas Pipeline Permitting Reform Act* would expedite permitting for the construction of interstate natural gas pipelines. It would mandate that the Federal Energy Regulatory Commission rule on a requested pipeline certificate no later than 12 months after receiving a complete application.

The Senate is unlikely to act on these initiatives before the end of the year, although one

or more of them could come up in the context of a larger energy package in 2014.



CRAIG F. WALKER/THE DENVER POST VIA GETTY IMAGES

House Clears Bill to Address Patent 'Trolls'

The House passed legislation with bipartisan support in December 2013 that seeks to protect engineering firms and other businesses from so-called patent trolls.

The legislation is in response to concerns raised by ACEC and other business organizations regarding situations where law firms and/or shell companies have sent letters to engineering firms and other businesses demanding payments by asserting infringement of certain business process patents, such as commonly used technology to scan and send documents.

House Judiciary Committee Chairman Rep. Bob Goodlatte (R-Va.) has introduced legislation that would protect technology users and discourage trolls from taking cases to court.



Rep. Bob Goodlatte (R-Va.)

H.R. 3309, the *Innovation Act*, requires patent holders to provide more information about their products or services and how they're being infringed and would require the losing party in an infringement suit to pay the other side's costs.

The measure includes other changes to judicial procedures, as well as a "customer suit exception" that would relieve business users of the technology from legal actions.

Similar legislation has been introduced in the Senate by Patrick Leahy (D-Vt.) and Mike Lee (R-Utah), S. 1720.

The Leahy-Lee bill goes further by including language to clarify that sending misleading demand letters asserting patent infringement represents an unfair trade practice subject to prosecution by the Federal Trade Commission. The measure would also direct the Patent and Trademark Office to provide support to small businesses that are often targeted by patent trolls.



Sen. Patrick Leahy (D-Vt.)



Sen. Mike Lee (R-Utah)

ISSUES ON THE MOVE	WHAT'S NEXT
WRDA	Final passage expected in early 2014
BRIDGE Act to promote PPPs	To be considered as part of MAP-21 reauthorization bill
Energy development on federal lands, natural gas	Possible addition to larger energy measure
Tax Reform	House action in early 2014
Patent Trolls	Senate consideration, early 2014

Committee Chairmen Continue Push for Tax Reform

Chairmen of both House and Senate tax-writing committees have draft reform bills ready for consideration, but continued uncertainties over specific provisions and differences between the parties on major policy objectives have pushed consideration into 2014.

The government shutdown in October 2013 and concerns from House leadership have delayed House Ways and Means Committee Chairman Dave Camp's (R-Mich.) efforts to move tax reform legislation through his committee. Camp had pledged to hold a committee vote by the end of 2013. However, the difficult tradeoffs involved in eliminating tax preferences in order to lower rates led the House leadership to request that Camp engage in outreach among House Republicans before proceeding. Camp intends to hold a committee vote in early 2014, and his legislation is expected to build on the discussion drafts he released several months ago that focus on international tax, financial products, and small businesses and passthrough entities.

At the end of 2013, Senate Finance Committee Chairman Max Baucus (D-Mont.) unveiled draft language on the international tax system, taking a different approach from Camp. While Camp proposed a modified territorial system in which most foreign earnings would not be taxed in the United States, Baucus proposed a minimum tax on overseas earnings. He also drafted language on tax administration and cost-accounting issues. Of concern to ACEC, both Camp and Baucus proposed limiting the use of cash accounting to firms with less than \$10 million in revenues, which the Council strongly opposes.

Long-term prospects for tax reform remain challenging because of fundamental differences between the House and Senate on key pieces of the framework, such as whether the legislation should be revenue-neutral or raise revenues.



Sen. Max Baucus (D-Mont.)



Dave Camp (R-Mich.)

For More News

For weekly legislative news, visit ACEC's *Last Word* online at www.acec.org.



Extreme Weather

Flooding on the New Jersey shoreline caused by Hurricane Sandy. (inset) Restoration work in Mantoloking, N.J., following the storm.



As the evidence toward climate change continues to mount, engineers shift gears from mitigation to resiliency planning

AP PHOTO/MEL EVANS



her Resistance

AP PHOTO/U.S. AIR FORCE, MASTER SGT. MARK C. OLSEN

By Gerry Donohue

There was a time not long ago when any discussion of adaptation to climate change was considered taboo. Now, it's a critical component in nearly every new major infrastructure project. >>

A string of severe weather events that ravaged towns and cities from New Orleans to the New Jersey coast and beyond, including Typhoon Haiyan, which struck the Philippines in November, has prompted years of recovery and rebuilding. In response, scientists and other activists have sought to raise awareness of the dangers inherent in a warmer planet.

It hasn't been easy. Many have resisted talk of adaptation, choosing instead to focus on mitigation, such as reducing greenhouse gas (GHG) emissions.

But Claire Bonham-Carter, director of sustainable development at AECOM, says the reality has become too stark for firms to ignore. "People recognize that climate change is happening. While mitigation remains important to stop that change from accelerating, we need to adapt at the same time," she says.

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Number of initiatives in New York City's \$19.5 billion resiliency plan.

Global insurance giant Munich Re reports that 2011 was the costliest year ever for weather damage, topping \$400 billion in overall losses. In 2012, more than 800 extreme weather events caused \$130 billion in damage.

"People have become very sensitive to extreme weather events," says Kathy Freas, CH2M HILL's director of global water resources and ecosystems management planning. "And they are a signature of climate change."

This evolution stands to have a major impact on engineering firms and the industry at large. Experts say climate-change adaptation—also called resiliency—will create significant market opportunities. But it will also force firms and clients to think, plan and act differently than they have in the past.

"Climate change adaptation analysis will become standard for all areas of infrastructure planning and management," says Robyn L. McGuckin, director of clean energy and sustainability services at MWH Global.

At the same time, the emerging resiliency market introduces daunting technical and business challenges.

Evolving Market?

Engineering firms have been involved in climate-change mitigation for decades,

and projects to reduce GHG will continue to rank high on the priority list. But adaptation and resiliency adds another layer of complexity to the equation.

Tetra Tech, based in California, is active in several large mitigation projects in Asia, such as USAID's Indonesia Forestry and Climate Support Project, designed to curb rampant deforestation, a key contributor to Indonesia's status as the world's third-largest GHG emitter.

"Both mitigation and adaptation are potentially huge markets," says John Nittler, Tetra Tech's environment and natural resources sector director. "We are seeing a shift, though, toward more specific climate-change adaptation projects."

HDR Senior Hydro-Meteorologist Mike McMahon agrees. "Our resiliency business has increased fivefold in the past two years. Before, we spent a lot of time helping people better understand the risk. Now they're saying, 'You guys were right.



"If you're investing in a bridge that has a 100-year life span, you should take climate change into account."

CLAIRE BONHAM-CARTER
AECOM

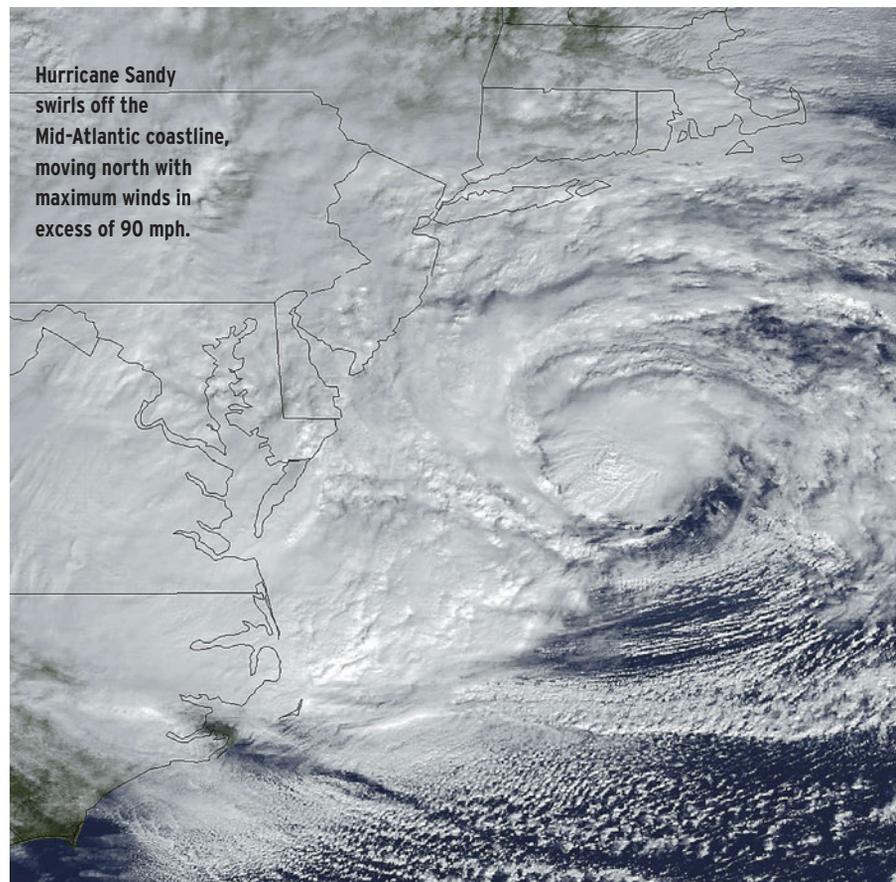
What do we do now?"

The size of the climate-change adaptation market is difficult to quantify. "It crosses all of our business lines—transportation, water, buildings and places, government services," says Bonham-Carter.

While many projects crop up as a direct response to an extreme weather event—consider Tetra Tech INCA's Lake Borgne Surge Barrier Project in New Orleans, which was built after Katrina—countless others are beginning to incorporate resilience as a matter of course.

"If you're investing in a bridge that has a 100-year life span, you should take climate change into account," says Bonham-Carter.

Resiliency is a global market. Europe and Australia were early adopters. Australia, in particular, has struggled with the effects of climate change, suffering from a decade-long drought and record-breaking floods. Its government has subsequently



AP PHOTO/NOAA

invested AU\$7.5 billion in desalination plants, water reuse systems, advanced treatment plants and a network of water pipelines to deliver treated wastewater to power plants and reservoirs.

The Netherlands has a national 200-year climate-change adaptation plan that focuses on coping with sea-level rise.

The United States has made some strides toward resiliency, though politicization of the issue has slowed its progress. Still, AECOM's Bonham-Carter says significant work is underway. "My colleagues in the U.K. say that what we're doing in adaptation in some areas is ahead of them, even though they started developing strategies five or six years ago."

Resilience is also rapidly taking hold in the Middle East and Asia. "We're working on several basis management projects in the Middle East," explains CH2M HILL's Freas, who says it's important for people in these regions "to change the way they use water."

Leading the Way

Climate change is a global issue, but adaptation starts at the local level. The majority of resilience projects are ad hoc, occurring in isolation with little or no connection to other efforts.

A recent survey of 298 local governments found that 59 percent are engaged in some form of adaptation planning. Much of that planning revolves around water. In many parts of the country, it's running out; in other parts, there's too much to go around.

"Clients don't want to just react," says ARCADIS Global Director for Water Eleanor Allen. "They want to get their assets ready."

The city of Keene, N.H., for example, has enlarged the culverts along its highways to accommodate increased storm runoff. San Antonio is building the nation's largest brackish groundwater facility.

Planning documents also reflect a change in thinking. A recent Community Climate and Energy Action

Untapped Potential?

Several indicators underscore possible opportunities for engineering firms in the emerging global resiliency market:

- The United Nations' Green Climate Fund has a target of disbursing \$100 billion annually by 2020 to implement adaptation projects in developing nations.
- Environmental Business International estimates the global resiliency market will grow by 12 percent to 20 percent annually through 2020.
- More than 1 billion people live in low-lying deltas—from Guangzhou to New Orleans—which will need to be protected from sea-level rise in the coming decades.
- According to the World Bank, global flooding damage could top \$1 trillion annually by 2050.
- The National Association of Clean Water Agencies and the Association of Metropolitan Water Agencies estimate that U.S. utilities will have to spend between \$448 billion and \$994 billion to address climate change issues through 2050.

Plan for the city of Eugene, Ore., calls for increased water conservation, the relocation of essential resources outside a 100-year flood zone, improved energy efficiency to reduce demand for hydroelectricity and a food security assessment, among other precautions.

But it's not just preparation that's driving change. Communities also bear the brunt of cleaning up after an extreme weather event and—worse still—preparing for the next one. It could be a storm or a drought. Disaster strikes in many forms.

In the wake of Superstorm Sandy, New York City created a \$19.5 billion resiliency plan that includes 257 initiatives—from incentive programs to more resilient buildings to something called Seaport City, a neighborhood built on acres of landfill levees stretching from the Brooklyn Bridge to the southern tip of Manhattan.

"With the number of extreme events in the past few years, people don't need to be convinced anymore," says HDR's McMahan. "Municipalities are finding it easier to get funding for adaptation projects."

At the state level, adaptation largely depends upon

coastal proximity. Only 15 states have completed climate adaptation plans, four are writing plans, and seven are contemplating their benefit.

State transportation agencies "are particularly concerned about adaptation because their assets will be affected by extreme events, such as heat waves or storm surge, and could severely impact their mission of keeping their state's population mobile," says AECOM's Bonham-Carter.

The Washington State Department of Transportation recently completed a climate-change vulnerability assessment of its key local regional and statewide transportation infrastructure, for example.

States that draw their water from the Colorado River contribute to an initiative known as the Colorado River Basin Supply and Demand Study. "There's a big gap between the amount of water we need from the river and what we think climate change will leave us," says CH2M HILL's Freas, who is working on the study. "The states realized their backs were to the wall, so each of them has put aside its individual agenda, and we've identified projects that can increase water supply to the basin."

At the federal level, all agencies are required to have policies and programs for adapting to climate change, but the government's biggest role is to provide funding and technical support for state and local governments. The Washington State DOT study, for example, was funded by the Federal Highway Administration.



"Both mitigation and adaptation are potentially huge markets. We are seeing a shift, though, toward more specific climate-change adaptation projects."

JOHN NITTLER
TETRA TECH

Still Not a Priority?

Two hundred years is a tough view for many American companies. Most are focused on the next quarter, or the next fiscal year. And the uncertainty around climate change makes those decisions even more challenging.

A recent report by the Center for Climate and Energy Solutions “reveals that while the vast majority of companies recognize risks from extreme weather and climate change, and many see these risks in the present or near term, uncertainty about the precise nature, timing and severity of climate impacts often inhibits investment in resilience. It is too long-term an issue to require near-term action,” the report said.

Among the S&P Global 100 companies—the largest corporations in the world—only 28 percent have undertaken climate-related vulnerability assessments, and only 18 percent have used climate-specific tools or models to comprehensively assess their risk. U.S. companies were the least prepared.

Since 2010, the Securities and Exchange Commission has required that all public companies operating in



“Clients don’t want to just react; they want to get their assets ready.”

ELEANOR ALLEN
ARCADIS

the United States disclose the financial risks associated with climate change in their filing documents. According to a recent study of the 3,865 companies on U.S. stock exchanges, only 27 percent even mentioned “climate change” or “global warming” in their most recent filing.

AECOM is working on a long-term resiliency plan for California’s Santa Clara County. Bonham-Carter says that although public agencies are very engaged in the project, “it can be harder

to engage the high-tech companies in Silicon Valley. Their industry moves so quickly, it’s hard for them to care about the impact of future climate change on their campuses.”

The private clients who care most about climate change tend to be those with long-term investments in expensive infrastructure, such as mining companies and power producers.

“More frequent droughts might make many hydropower projects uneconomic,” explains MWH Global’s McGuckin. “More extreme rainfall may increase siltation and increase the risk of dam overtopping. Adapting design to these changing

conditions is critical to assuring the project benefits can be realized over its full lifetime.”

Gaining a Toehold

The reticence of many private clients and some public clients to incorporate resiliency puts the onus on engineering firms to convince them of the necessity.

“We help our clients understand the potential impact of extreme weather events on their projects,” says ARCADIS’ Allen. “We work with them on environmental issues and preparedness requirements, and we influence regulations and policies to help projects get funded and implemented.”

A lot of adaptation work, says HDR’s McMahon, is “integrated into other work. If we’re building roads or advising on oil and gas pipelines, we’re building and modeling to take climate change into account.”

Another challenge for firms: the local character of climate change. Just because a standard worked in one place doesn’t mean it will in another. The University of Michigan’s Graham Sustainability Institute publishes an interactive map that demonstrates how the impact of climate change differs from county to county.

Hard to Predict

The biggest challenge for firms, though, is that the past doesn’t necessarily predict the future.

Until recently, engineers have been able to forecast climate trends by studying past patterns. But global warming has changed all that. Climate change is no longer a slow progression; it’s a disruption.

“It’s new, volatile and driven by elements you can’t control,” says Allen. “You can plan all you want, but it depends on what nature brings.”

That volatility poses risk for engineering firms. “There is a lack of a single set of standards and a lack of good data about future climate projections,” says MWH Global’s McGuckin.

“We end up having to interpret climate science into reality,” says CH2M HILL’s Freas.

How does your firm work with clients to address climate change? ■



Flooding at the Brooklyn Battery Park Tunnel the day after Hurricane Sandy.

TIMOTHY CLARY/AFP/GETTY IMAGES

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2014 Legislative Outlook

By Stacy Collett

Cloudy Forecast

Despite partisan challenges,
progress foreseen



If you asked industry government affairs veteran Robin Black six months ago how confident she was that the U.S. Congress would pass legislation important to the engineering industry in 2014, her answer would have been more optimistic than it is today.

Black's confidence, along with that of other industry observers, suffered a serious jolt last year thanks to a string of disheartening events, beginning with sequestration and culminating with the 16-day government shutdown in October. Those diversions, coupled with little to no movement of existing legislation related to infrastructure projects and tax reform, have made industry analysts wary of projecting significant progress in 2014.

"The current climate is so volatile that it will have a definite adverse effect on the agenda," Black says, adding, "It's difficult to anticipate where Congress is headed. We didn't anticipate more than one day of a shutdown. We should remain very cautious in our optimism about moving forward an agenda."

With the effects of the government shutdown still ringing in almost every corner of industry, many government affairs experts say they are cautious, yet hopefully optimistic, for the months ahead. Here's a look at some of the industry's most pressing legislative issues.

The Water Resources Reform and Development Act

One piece of legislation that most government affairs leaders say could well pass this year is the *Water Resources Reform and Development Act* (WRRDA).

The bipartisan bill authorizes funding for capital projects carried out by the U.S. Army Corps of Engineers. The bill authorizes \$10 billion for the cost of 23 new port and inland waterway construction projects, offset by the cancellation of \$12 billion from more than a dozen old, inactive projects.

WRRDA unanimously passed the House Transportation and Infrastructure Committee in September and sailed through the full House in October. It's backed by House Republicans and the

White House and is expected to help create thousands of jobs.

In May of last year, the Senate overwhelmingly approved its version of the bill. In addition to authorizing new Corps projects and initiating numerous programmatic reforms, S. 601 would also bring more funding for water infrastructure projects through a financing pilot project known as the *Water Infrastructure Finance and Innovation Act* (WIFIA). Based on a similar program in the transportation sector, called the *Transportation Infrastructure Finance and Innovation Act*, WIFIA would access U.S. Treasury funds at long-term rates and put that money into the market in the form of credit or loans to support relevant water-related projects.

The House bill does not include the WIFIA provision. Instead, the House aims to move WIFIA separately at a later date. The House bill does include ACEC-supported reforms to streamline environmental reviews and accelerate project delivery. Select House and Senate conferees are meeting to reconcile differences in the two bills, and assuming those efforts are successful, the bill will advance to the president for his signature.

Bob Gibbs (R-Ohio), chairman of the House Subcommittee on Water Resources and Environment, discussed the prospects of the bill becoming law. "We are proud that our House bill eliminated wasteful projects and initiated reforms to improve the process of delivering projects. This legislation has bipartisan support; all that is left before sending this bill to the president's desk is ironing out the language differences with the Senate and finding a funding level where the conferees are comfortable."

WRRDA's success has been more about the process, says Matt Chiller, vice president of federal affairs at CH2M HILL out of Englewood, Colo. "The

majority of credit goes to Chairman Bill Shuster (R-Pa.) on this," says Chiller. "He has gone back to the process of regular order and bipartisanship, not in language but in deed. If you're going to do things in a very bipartisan way, it takes longer, you have to involve more people and it is difficult. But Shuster and [Rep. Nick] Rahall (D-W.Va.) stuck to that with WRRDA."

More Water Financing Initiatives

In addition to the WIFIA concept, other initiatives have been put forward that may get traction in 2014 to expand water markets.

One of these is legislation to expand the use of tax-exempt private activity bonds, which encourage private capital investment, create jobs and provide more affordable financing for water and wastewater infrastructure. At present, federally imposed state volume caps for private activity bonds limit bond issuance for water projects.

A bill championed by Rep. Bill Pascrell (D-N.J.) seeks to remove this cap. "This concept has bipartisan support and has overwhelmingly passed the House in recent years," Pascrell explains. "This legislation will encourage public-private partnerships that will unlock upwards of \$50 billion dollars of private capital for the public good. More people will be put back to work and more reliable water services will be provided in communities across the nation."

In addition to the Pascrell initiative, Rep. Tim Bishop (D-N.Y.) has introduced legislation to reauthorize the State Revolving Fund (SRF) for new water and wastewater projects. In addition to expanding the program to provide more loans for water projects, the bill includes numerous reforms, including a mandate to use Qualifications-Based Selection on projects funded under the SRF program.

Finally, Rep. John Delaney (D-Md.) has introduced legislation that would incentivize companies to repatriate earnings held overseas by offering lower tax rates in exchange for purchasing bonds used to fund infrastructure projects, including water, transportation, airports and other needs. The proposal, which is gaining strong bipartisan support, is expected to generate up to \$750 billion.

Energy Issues on the Table

There are a number of energy initiatives under consideration that could come to fruition in 2014.

Backers of the Keystone XL Pipeline continue to await a decision by the White House and the U.S. State Department, and Congress is expected to take additional legislative actions to force approval.

The Senate could reignite efforts to pass S. 1392, *The Energy Savings and Industrial Competitiveness Act* of 2013. The bill was on the Senate floor in 2013 but was derailed by amendments related to Obamacare. This bipartisan legislation would strengthen national model building codes to make new homes and commercial buildings more energy efficient. If passed, S. 1392 presents a vehicle to attach additional energy measures.

A package of ACEC-supported energy bills to expand domestic energy production passed the House at the end of 2013, and one or more of them could move as part of a larger energy or budget package. Each of these passed with bipartisan support. H.R.



1965, the *Federal Lands Jobs and Energy Security Act of 2013*, seeks to reform and streamline the leasing process for oil and natural gas projects on federal lands. H.R. 2728, the *Protecting States' Rights to Promote American Energy Security Act*, prohibits the Interior Department from enforcing federal hydraulic fracturing regulations in any state that already has them. And H.R. 1900, the *Natural Gas Pipeline Permitting Reform*, expedites the federal review process for natural gas pipeline permit applications.

MAP-21

Federal affairs leaders still hold out hope that Shuster's bipartisan success will serve as a blueprint for long-term reauthorization of MAP-21, the federal transportation

funding and policy bill.

"I take some encouragement from WRRDA on how MAP-21 could play out," says Cathy Connor, senior vice president, government relations at Parsons Brinckerhoff. "Particularly in the House, Chairman Shuster has really shown what it takes to get a bill done."

But there is a big difference between the bills. And it comes down to money. Funding for the water bill is a fraction of what is needed for MAP-21, which requires more than \$100 billion every two years.

MAP-21 expires Sept. 30, 2014. The policy part is relatively noncontroversial, Connor says, as lawmakers have resolved most of the hot-button issues, such as environmental streamlining, tolls and public-private partnerships.

"Reauthorization is now a funding issue and the reluctance to increase taxes," she explains.

MAP-21 legislation has been in existence for only two years. Most reauthorizations come up every five to six years. But the original bill was allowed to go forward without a long-term funding solution. "The thought was that in two-and-a-half years, we would be able to identify additional funding sources. But today we're no further along at all," Connor says.

There have been a variety of studies, commissions, hearings, roundtables and white papers intended to highlight different funding options and several members of Congress and industry trade groups have made it clear that everything and anything is on the table. "You could argue that's very open minded," says Connor. "But we haven't made any progress at all on whitening down what our options are."

At two recent hearings, proposed solutions included tolling the interstates and fees for vehicle miles traveled. "But the bottom line was all the people who testified ended up in saying in one way or another that the only realistic solution in the short term is a gas tax increase," explains Connor. Why? Because a gas tax is easy to implement, proven and definitive in the amount of revenue it generates.

Sen. Tom Carper (D-Del.), a senior



"I take some encouragement from WRRDA on how MAP-21 could play out."

CATHY CONNOR
PARSONS BRINCKERHOFF

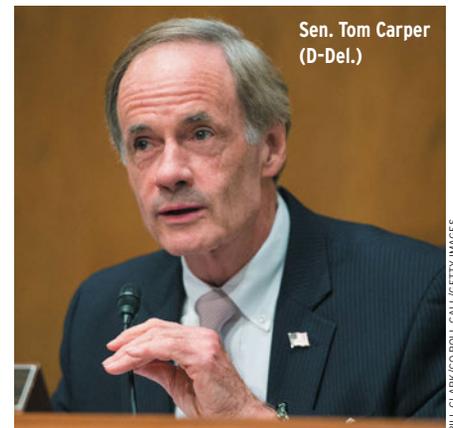
member of the Senate Finance Committee and Environment and Public Works Committee, has been a leading proponent of a long-term fix. "In MAP-21, we took steps toward making our transportation programs more efficient, requiring performance, and deploying new tools and technology to get better results for less money," he said at a recent hearing. "With the impending shortfall of the Highway Trust Fund, we're faced with a stark decision: continue transferring money from the General Fund or dramatically

scale back badly needed investments in our nation's transportation infrastructure. We shouldn't accept either of these options. Investing in a robust transportation network is a smart, pro-growth strategy, and we need to summon the political courage to do what we know is right."

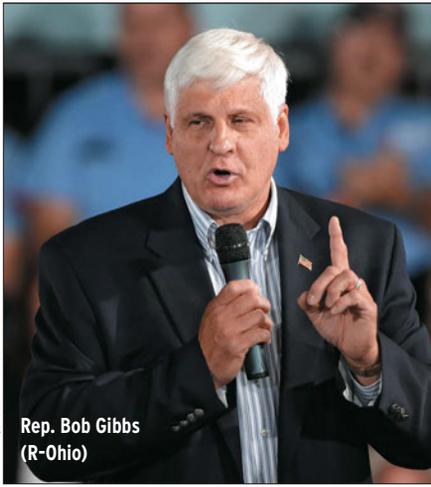
There had been hope earlier this fall that a grand bargain on the budget deficit or tax reform might include a gas tax increase, but that appears less likely these days. So committees are now exploring a wide variety of options and new fees from other sources to bolster that 18.4 cents-per-gallon gas tax already in place.

"We're supportive of that," Chiller says. "Things like vehicle miles traveled are the wave of the future and it's a system that inspires fairness, but it's certainly not ready for federal rollout" in 2014.

Experts are also looking at funding models applied by states. Virginia, for example, applies an annual fee to owners of hybrid and electric vehicles. The state also eliminated its flat gas and diesel taxes and



Sen. Tom Carper
(D-Del.)



AP PHOTO/SCOTT APPLEWHITE

Rep. Bob Gibbs
(R-Ohio)

replaced them with a percentage tax on the wholesale price of fuel.

For any tax increase to pass, “it has to be attached to a larger budget deal, which is what we’re fighting for. We want to see a larger budget deal and stability in the marketplace. We want tax reform,” Chiller adds.

Hope for Long-Term Funding?

But time may be running out. Without a long-term funding plan and with new spending for fiscal 2015 set to kick in Oct. 1, highway and transit programs would “essentially be cut to zero,” Connor says. Though the actual cut would be closer to 92 percent, it is still “astronomical.”

“That’s bad news, but in my mind it’s also good news because it’s a true debacle, a true emergency,” Connor says. “If the highway or transit program were proposed to be cut 20 percent, everybody would say it’s bad but we’ll just have to live with it. But this is such a huge proposed cut that it will make everybody stand up and take notice.”

Black says lingering funding issues dash any real hope of a long-term bill. “We might see a bill that focuses more on public-private partnerships as a way of alternative financing. But where’s the revenue going to come from? I don’t think that will be resolved in 2014.”

Black also says she expects a “shell of a bill” that will be short-term without significant financing included. And “it may just be kicked down

the road” with a continuing resolution. “If there’s no revenue-generating proposals that can pass both houses, then how can we have a long-term transportation bill?” she asks.

“Stability is what our clients want,” Chiller says. A long-term transportation reauthorization “would mean that our transportation business folks could really plan out, work with our clients, chart out these projects and take things off the shelf. Stability is good for everybody, and certainly a way to create more jobs and attack bigger projects. If you only have a couple years of funding, it’s really hard to do a 10- to 15-year, long-term, large-scale project. For a company like ours that specializes in the larger, more complex transportation projects, that’s what we’re good at. We want those projects.”

Connor hopes that Congress learned its lesson from the economic impact of the government shutdown, and therefore won’t let MAP-21 linger without reauthorization. “I still have some optimism here that they won’t let it fall off the cliff,” Connor adds. “The government shutdown had huge economic implications that reverberated throughout the globe. Obviously, the construction industry has huge ramifications for the economy. So I like to be optimistic that Congress will not let the highway transit industry fall off the cliff.”

Still, battle-tested government affairs professionals are preparing for more of the same. “We see 2014 as continuing to plant the seeds until maybe we get a new Congress” or some new members in 2015, Black says.

Tax Reform Still in Play

If Congress can agree to a long-term funding solution for highway programs, tax-reform legislation could be a logical vehicle. The congressional tax-writing committees worked hard in 2013 to make progress on major re-writes to the tax code. However, the question remains whether there is enough political will to agree to tough choices in an election year.

ACEC has advocated a comprehensive approach to tax reform that treats C

corporations and pass-through entities, such as S corporations and partnerships, equally. In addition, the Council has asked Congress to promote competitiveness both domestically and internationally, and to retain key provisions such as the cash method of accounting. ACEC has also urged Congress to use the tax-reform process to promote the development of the nation’s critical infrastructure, including highways, bridges, transit systems, water and wastewater.

Based on numerous hearings and input from stakeholders, House Ways and Means Committee Chairman Dave Camp (R-Mich.) has developed draft legislation that he plans to move through committee



Rep. Peter Roskam (R-Ill.)

AP PHOTO/SCOTT APPLEWHITE

in early 2014. Whether House leaders will schedule a vote on a package that is likely to contain politically sensitive tradeoffs is an unresolved question. “Overhauling our tax code will give companies of all sizes the confidence they need to spur economic growth and compete on an international scale. A fairer, more balanced system that closes loopholes and lowers rates will allow organizations to create jobs and pay higher wages,” says Rep. Peter Roskam (R-Ill.), a member of the Ways and Means Committee.

In addition, Senate Finance Committee Chairman Max Baucus (D-Mont.) began releasing pieces of his tax-reform draft bill at the end of 2013. Camp and Baucus are both scheduled to step down from their committee chairmanships at the end of 2014, lending an additional layer of urgency to their legislative efforts. However, observers note that the landmark Tax Reform Act of 1986 took several years to complete. ■



“If you only have a couple years of funding, it’s really hard to do a 10- to 15-year, long-term, large-scale project.”

MATT CHILLER
CH2M HILL

Stacy Collett is a business and technology writer based in Chicago.

Model

Infrastructure

Advances in traditional modeling technology **take designs to a larger scale**

By Bob Violino

Building Information Modeling (BIM) is nothing new. The technology has slowly supplanted computer-aided design, or CAD, as the preferred method for designing and modeling large building projects. >>



But, as the technology evolves, it's beginning to show value in other areas—not the least of which is the design, construction and management of large-scale infrastructure projects. With the rapid advancement of cloud services, infrastructure design is undergoing an evolution of its own—both in capability and in usage.

The biggest difference between infrastructure design and building design software is the scope of the projects. “A building has a defined footprint. It can arguably get only so big,” says Paul McRoberts, vice president of the infrastructure modeling product group at Autodesk Inc., a provider of design software.

“You might think of a 2-million-square-foot building as being a big building, but with infrastructure we operate at a completely different scale,” McRoberts says. “A 2,000-mile road is not a lot for us. A hundred thousand miles of gas piping is not a lot.”

Infrastructure design software and its deployment throughout the industry have evolved significantly over the last 10 years.

Among the biggest advances of the software in recent years is the ability to better simulate the actual performance of an infrastructure component over time, says Huw Roberts, vice president of core marketing at Bentley Systems, which provides infrastructure software for projects such as processing plants, roads and bridges.

“Ten years ago, most people bought CAD to make documents to give to the guys who were building, so a main purpose of the CAD system was all about [the] production of documents,” Roberts says. “Now, design teams want to understand how that asset is going to perform.”

Another major advancement is the ability for users to collaborate on projects. “For years, software products typically have been discrete tools used by individuals,” Roberts says. “Today, collaboration is king, and you have integrated project teams spanning phases of a project and multiple companies and systems.”

New Benefits

Demand for infrastructure design software continues to grow, and engineering firms are realizing the benefits of the technology.

Englewood, Colo.-based CH2M HILL uses products provided by the industry's two predominant suppliers: Autodesk and Bentley, says Jane Alden, automation coordinator/global BIM leader for CH2M HILL's Transportation Business Group. Among the tools used at CH2M HILL are Bentley's civil engineering suite of applications (InRoads, Bentley Rail Suite, GEOPAK and MX) and Autodesk's civil applications Civil 3D and prior versions of CAiCE.

Bentley's new Open Roads technology, which unifies its three civil offerings, “offers engineers and designers modeling functionality yielding ‘design time visualizations,’” explains Brent Mauti, automation coordinator and global BIM leader at CH2M HILL's Water Business Group. “This is significant in providing engineers and the extended project team and stakeholders with a ‘real world’ collaborative environment to make better-informed decisions and construction-ready designs,” he says.

But the technology isn't perfect. CH2M HILL would like to see a broader offering of integrated BIM tools for various engineering disciplines and market segments such as transportation, Mauti says. It would also like to see touch-screen technologies for engineering teams to leverage for BIM development, creation and delivery.

Interoperability between software vendors' products will be important going forward, adds Alden. “Great strides have been made to share graphics and some data, but as [design software use] grows, the concept of



“The increased speed of delivery has allowed us to increase our capacity for projects.”

JACK LASHENIK
AMERICAN
STRUCTUREPOINT

sharing complete native BIM models between vendors will start to surface,” she says. “For example, in the future, a Civil 3D (Autodesk) model should be able to be fully converted into an InRoads (Bentley) model to meet the needs of a new project.”

Engineering and design firm American Structurepoint, based in Indianapolis, has used Bentley's Microstation and GEOPAK tools within its transportation groups since 2000 and Autodesk's Civil 3D for its survey, civil and utility Infrastructure groups since 2009.

One of the main business drivers for using the software

is time savings, says Jack Lashenik, the firm's vice president. “Our clients expect us to deliver on tight deadlines,” he says. “With the implementation of both Microstation and Civil 3D, we are better able to satisfy those demands.” Microstation and GEOPAK allow the firm to reduce its delivery time by as much as 40 percent, Lashenik says.

American Structurepoint has seen benefits across all of its business groups, thanks to the integration of software for infrastructure projects. “The increased speed of delivery has allowed us to increase our capacity for projects,” Lashenik says. “With the use of products from both major software companies, we are able to accept complex assignments.”

Not Without Challenges

But technology has its share of hangups, too. One of these is training. “The cost of training staff members for new software or upgrades can be expensive,” Lashenik says. “We choose to provide task-based training opportunities to our staff and full hands-on training to new staff members.”

Like CH2M HILL, American Structurepoint also would like to see more interoperability between the two vendor platforms.

Over the next several years, Autodesk's McRoberts anticipates ongoing convergence of technologies around GIS, BIM, CAD and software “really taking more of an agnostic approach toward the data sources in order to handle these massive



“Great strides have been made to share graphics and some data, but as [design software use] grows, the concept of sharing complete native BIM models between vendors will start to surface.”

JANE ALDEN
CH2M HILL

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amounts of information,” and providing greater levels of detail for projects and a better sense of how they will perform over time.

Another hope is that the software will get even better at simulating the performance of infrastructure components, Bentley’s Roberts says. “For example, with a water system you will be able to predict leaks and maintenance cycles and demand change” over time, he says. “We’re getting more connected to analytics, and able to look at dynamic functions, not just static conditions.”

Bentley will continue to drive the concept of “optioneering”—a new approach to design with simulated performance of multiple conditions driving design options. In the case of a bridge, for example, optioneering that uses data analytics would allow users to design a bridge optimally based on factors such as cost, number of vehicles expected to pass over it, appearance, and the minimum amount of concrete needed in construction to achieve goals.

A big part of the new analytics capabilities is being enabled by cloud services. “Tying the software into cloud servers enables you to take advantage of massively parallel computing,” Roberts says. “You can consider many options across multiple characteristics.”

While the cloud and “as-a-service” offerings provide significant operational benefits, such as cost reduction, the real value is in the technologies’ ability to enhance and extend the capabilities of design software, Roberts says. Translation: Users will no longer be limited by the power of their own computers.

“With the cloud, you can connect to massively more powerful systems and collaborative workflows to do much bigger calculations extremely fast,” Roberts says. “Things that might have taken weeks to complete, you now can do in minutes.”

“I can buy one computer and allow something to run for a day, or I can buy a thousand computers and allow it to run for a minute,” McRoberts says. “But I’m not going to buy—I’m going to basically lease the power from the cloud, and I’m able to do these things much more efficiently.” ■

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

Infrastructure Modeling Software

There are two primary players in the infrastructure design software market. Here’s a summary of their offerings:

Autodesk

- InfraWorks 360 Pro provides the latest 3D modeling, visualization and cloud-based collaboration technologies, and enhances BIM workflows by enabling multidiscipline infrastructure project stakeholders in geographically dispersed offices to publish, store, collaborate on and manage large models centrally in the cloud via desktop or mobile devices.
- Civil 3-D software is a civil engineering design and documentation solution that supports BIM workflows. Using AutoCAD Civil 3D, infrastructure professionals can better understand project performance, maintain more consistent data and processes, and respond faster to change.

Bentley Systems

- The ProjectWise system of collaboration servers and services provides scalable and interoperable architectural, engineering, construction, operations (AECO) work-sharing, content reuse, and dynamic feedback capabilities essential to leveraging information modeling through integrated projects for high-performing, intelligent infrastructure.
- MicroStation is an information-modeling environment developed for the demanding requirements of AECO and geospatial professionals. It’s ideally suited for all infrastructure types and can be used either as a software application or as a technology platform for a range of discipline-specific applications.
- STAAD.Pro V8i is a comprehensive and integrated finite element analysis and design offering, including a user interface, visualization tools and international design codes. It’s capable of analyzing any structure exposed to static loading, a dynamic response, soil-structure interaction, wind, earthquake and moving loads.
- Bentley Civil V8i (SELECTseries 3) versions of InRoads, GEOPAK and MXROAD products feature the capabilities of Bentley’s OpenRoads technology, which provides information modeling for multidiscipline roadway teams. OpenRoads provides workflow, data structure and modeling tools.





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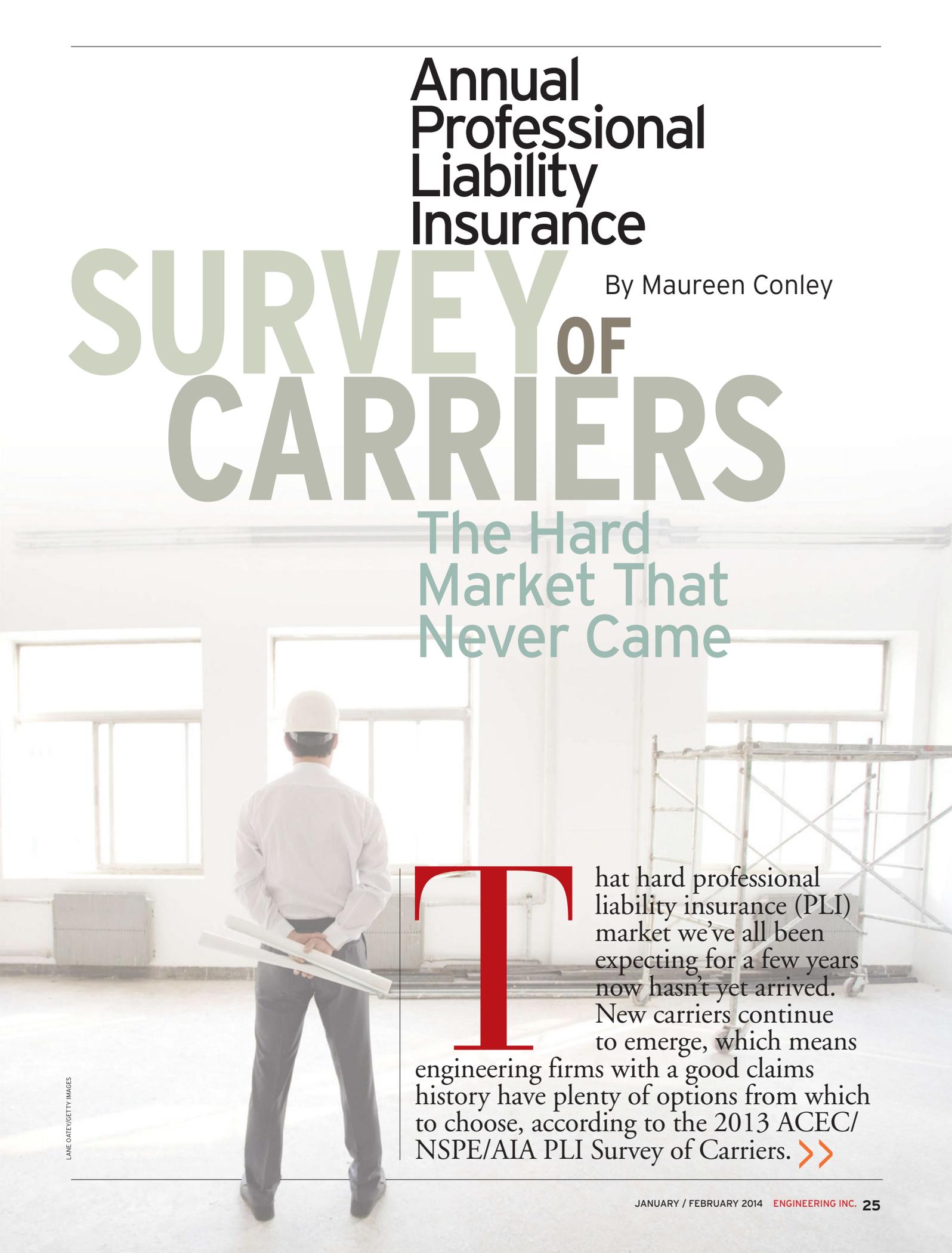


Annual Professional Liability Insurance

By Maureen Conley

SURVEY OF CARRIERS

The Hard Market That Never Came



That hard professional liability insurance (PLI) market we've all been expecting for a few years now hasn't yet arrived. New carriers continue to emerge, which means engineering firms with a good claims history have plenty of options from which to choose, according to the 2013 ACEC/NSPE/AIA PLI Survey of Carriers. >>

Characteristics in the Premium Determination Process

(1 is the highest level of influence; 8 is the lowest)

	AIG/ Lexington Insurance Company	Aspen Insurance	AXIS Insurance Company	Beazley	Catlin Design Professional	Euclid Managers	Hanover Insurance Company	HCC Specialty	Liberty International Underwriters	Markel	Navigators Management Company, Inc.	RLI Insurance Company	Travelers Insurance	XL GROUP
Location of firm	7	7	7	6	6	6	1	4	8	7	1	8	4	7
Location of projects	6	8	8	5	7	7	1	7	7	8	1	6	7	8
Type of practice	4	2	2	2	2	2	1	1	3	2	1	3	3	2
Type of projects	5	4	4	4	3	4	1	2	4	4	1	4	5	3
Annual billings	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Claims history	2	3	6	3	4	3	1	1	2	3	1	2	2	4
Firm experience	3	5	5	7	5	5	1	3	6	5	1	5	6	6
Other	*	6	*	*	*	*	*	*	5	6	*	*	*	5

*Did not answer

Source: 2013 ACEC/NSPE/AIA Professional Liability Insurance Survey of Carriers

And experts say they do not foresee a major change anytime soon.

“There are more carriers writing this line of business than at any other time,” says James Bechter, senior vice president at HCC Specialty. Without this new capacity, one would expect that the economic slump coupled with a relatively low investment yield would have led to a harder insurance market. But that hasn’t been the case. Instead, we’re “transitioning out of a soft market into a more stable market,” explains Beazley US A&E Focus Leader James Schwartz. Kevin Collins, senior vice president at Victor O. Schinnerer & Co., says that while established carriers may look for rate increases, “there are always new markets looking for market share.”

Design firms have weathered a sluggish economy with fewer claims than expected. But Collins says most carriers increased rates in recent years because paltry investment returns meant they were forced to rely on underwriting to drive profits. Such pressures could eventually prompt price increases, perhaps through higher deductibles or restrictions on limits, particularly for accounts with claims, says Bechter.

Across the board, PLI carriers are in growth mode. Every respondent expressed a desire to grow market share

in 2014, all while maintaining underwriting standards. Most expect rates to remain flat or increase only slightly. As always, firms with claims should expect rate increases, and many could find it tougher to secure the policies they want.

That’s part of the reason John Farrar, vice president at Clark Dietz, suggests that all firms shop around for new carriers every few years. Just don’t make price the sole deciding factor. “There is a world of difference in what carriers offer,” says Farrar, who participated as one of three ACEC representatives in this year’s interview process, along with Tim Corbett, president and founder of SmartRisk, and Jim Messmore, vice chairman of ACEC’s Risk Management Committee and senior vice president of Hanson Professional Services.



“Competition has leveled the playing field, with newer entrants hiring experienced staff and offering risk management programs similar to some veteran carriers.”

TIM CORBETT
SMARTRISK

Carrier Offerings

Corbett puts PLI carriers into three categories: value-added services, limited services and bare-bones policies. “Competition has leveled the playing field, with newer entrants hiring experienced staff and offering risk management programs similar to some veteran carriers,” he says. To maintain their edge, some of the more established players in the market have introduced new programs.

When shopping for car-

riers, experts caution that A/E-specific knowledge and the general quality of claim managers varies, as does access to reliable counsel, claims services, pre-claims assistance and other benefits. Most carriers offer contract reviews. Some even provide deductible credits for mediated and early settlements. While many carriers will refuse to provide the higher limits sought by some project owners, others will offer multiple project-specific limits if the underwriters agree to terms.

Competition across the market is tight, which means design firms have better choices today than in the past. Price may well be the clearest distinguishing factor. But this year’s survey reinforces that it pays to read the fine print. Some low-priced carriers feature exclusions that can increase your risk.

Jeff Todd, president of Charlotte-based Insurance Management Consultations and current president of a/e ProNet, noted an instance where the lowest quoted price did not include coverage for prior acts, leaving one firm without coverage for years’ worth of work.

PLI brokers also often differ in the tools they use to help current and prospective clients better understand their choices, says Darren Peters, president of the Pro-

30% to 50%
Percentage of claims filed with carriers that related to technical errors.
Source: 2013 Professional Liability Insurance Survey of Carriers

Professional Liability Agents Network (PLAN). Collins recommends that firms talk with their insurance broker to understand their options, identify what is important, and choose a PLI carrier that meets their needs.

Is your firm worried about its ability to secure PLI? Some carriers might be willing to negotiate rather than deny coverage outright, says Todd. Though it can be challenging to place a firm with existing claims, it is the broker's job "to present their story as best you can to find markets willing to write the coverage," he says.

When Is It Time to Change Carriers?

PLI carriers and brokers alike say there are more than a few good reasons to consider switching insurance carriers. "Firms may adjust their business model, doing a little more international work or riskier projects, like bridges, that their current carrier doesn't like," explains Jeff Connelly, senior vice president of Marsh, broker for the ACEC Business Insurance Trust. As a result, these firms might not be able to renew with their existing carrier. They might need higher liability limits or want certain risk management services that their current carrier does not offer.

Some carriers offer unique coverage that a firm may not get elsewhere, says Peters. Or a firm might have had a bad experience with a carrier and want a change, adds Todd. The list of reasons goes on. Firms with losses might benefit from choosing a carrier that looks back five rather than 10 years, explains Connelly. Newer carriers are often more aggressive, which can mean differences in premiums of 20 percent or more, he adds.

Keeping in mind that pric-



"One advantage of BIM is that it involves all parties associated with the project from its start... effectively reducing the chances of claims down the road."

AL RABASCA
DESIGN PROFESSIONAL
UNIT OF XL GROUP

or "properly finance a defense," Peters says. Todd warns that picking the lowest-priced policy might result in a firm paying more in the long run in legal expenses and damages.

If firms do select a new carrier, Farrar urges great care in reporting any potential claims, both to the existing carrier and the new carrier, so those claims will not be excluded.

A Rise in Claims

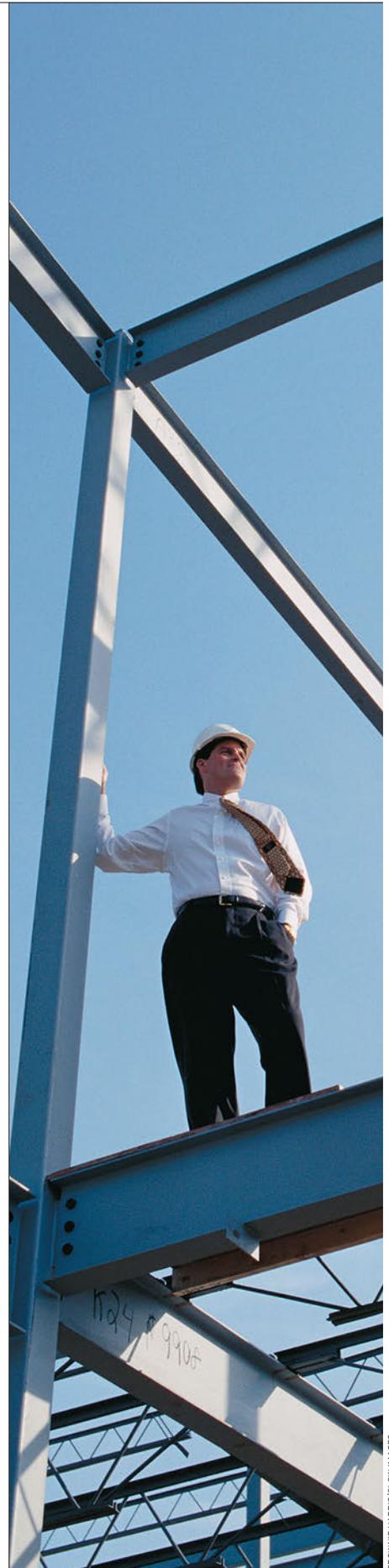
The number of claims submitted to insurance carriers increased, according to this year's survey, largely as a result of technical errors on the part of design firms.

Between 30 percent and 50 percent of claims filed with carriers related to technical errors—a finding Farrar says surprised everyone. He said a number of factors likely contributed to these increases, including tight budgets, inadequate review time, turnover of experienced staff due to layoffs, and firms



"The best way to prevent losses is to arm yourself and your staff with the tools necessary to minimize and mitigate risk."

DARREN PETERS
PLAN



BROWNE HARRIS/GLOW IMAGES

working outside their areas of expertise.

Overall, claims frequency was flat or up slightly, while severity of claims showed a modest increase, according to the survey. Though plaintiffs are typically asking for more in claims, such requests have not translated to higher amounts being paid out.

Over the past five years, about one in five firms have filed claims—consistent with what Schinnerer saw before the financial collapse, says Collins.

Structural engineers face significant challenges when it comes to claims severity, because it's easy for errors to be repeated, Bechter says. Claims against mechanical engineers stem from "performance shortfalls," which Bechter attributes to technical errors combined with poor management of expectations. Geotechnical claims, along with those filed in larger states—California, New York, New Jersey, Texas, Florida and Illinois—experience the most litigation from claims. Large infrastructure projects such as bridges, reservoirs and wastewater treatment facilities also see higher claims, says Schwartz, largely due to their size and complexity.

On the Horizon

Building Information Modeling (BIM), integrated project delivery, and sustainable design have not necessarily opened the door to more claims, as several carriers expected. A few carriers found BIM projects to be low-risk; some even went as far as giving discounts to design clients that used BIM.

Al Rabasca, director of industry relations for XL Group's Design Professional unit, says "one potential advantage of BIM is that it involves all parties associated with the project from its start, putting everyone on the same page and effec-



"There is growing concern among carriers that engineers will be forced to model for storms of increasing severity."

JIM MESSMORE
HANSON PROFESSIONAL
SERVICES

Enhanced building codes can expand scope, which by definition can result in more claims against designers, says Schwartz. (See Engineering Inc. cover feature on infrastructure resiliency on page 8.)

Keeping Risk Low

As the economy continues to recover and work becomes more plentiful, Schwartz says it's important for firms to "maintain discipline" when selecting projects.



"There is a world of difference in what carriers offer."

JOHN FARRAR
CLARK DIETZ

tively reducing the chances of claims down the road." XL "absolutely thinks this is a positive thing" for the design and construction industry, he says.

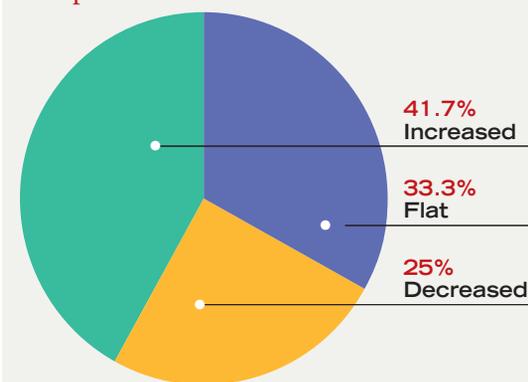
These days, carriers are on the lookout for potential claims related to climate change and its impact on building materials. Fracking, for example, is a claims hot spot, as are public-private partnerships.

Climate change and an increase in severe weather events "could change the rules" for designers, Farrar cautions. Messmore says "there is growing concern among carriers that engineers will be forced to model for storms of increasing severity."



CORBIS/GETTY IMAGES

How Have Rates Increased (or Decreased) Compared With the Previous Year?



Source: 2013 ACEC/NSPE/AIA Professional Liability Insurance Survey of Carriers (12 of 15 firms responding)

Collins urges designers to focus

on quality control around contract negotiations. "Project owners are becoming more creative and harder to negotiate with," requiring engineering firms to "manage that process more effectively," he says. He recommends firms "evaluate your old clients as much as the new ones."

Rabasca expects the biggest risk over the next year to 18 months to come from "getting the right people with the right experience" to design and manage projects. Many

firms were forced to cut staff, put inexperienced employees on projects, accept low fees or sign risky contracts because they were in "survival mode," he says. Now that the market is recovering, the challenge lies not only in halting these "bad habits," but also in teaching new hires how to manage and conduct business the right way.

As Peters observed, "The best way to prevent losses is to arm yourself and your staff with the tools necessary to minimize and mitigate risk." The most important tool is education. ■

Maureen Conley is a business and technology writer based outside Washington, D.C.

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2013 Fall Conference:

Focusing on the Bottom Line



Member Firm CEOs analyzed private client markets during a Fall Conference general session: (left to right) David Cooper, president and CEO, WSP USA; Henry Lucas, president and CEO, ECS; Kam Movassaghi, president, Fenstermaker; and Mahadev Raman, chairman, Arup Americas.



ACEC Chairman Gregs Thomopoulos welcomes attendees at the Opening General Session.

Attendees at the recently concluded ACEC Fall Conference in Scottsdale, Ariz., discovered an oasis of business insights and market assessments. More than 850 members attended the Conference at the sprawling Fairmont Scottsdale Princess resort—including a record 71 first-time attendees. “I thought former governor Mitch Daniels gave a great talk,” said Howard Perry of S&ME, Inc., in Spartanburg, S.C., “I also enjoyed the CEO Panel—it was interesting to see each panelist’s perspectives.”

"I specifically came down for the sessions on Building Information Modeling, leadership transition and succession planning, and they were well worth the money," says Kevin Power of KPE-Consulting Engineers in Bellevue, Neb.

'Value Creation' Vital to Private Client Success

Four Member Firm CEO panelists stressed the importance of "value creation" in private client markets.

"Value creation is what drives private clients," said WSP USA President and CEO David Cooper. "It drives efficiency and fosters innovation."

ECS President and CEO Henry Lucas concurred: "Public markets tend to be process-oriented. Private markets are much more results-oriented. Clients want the work done fast and they want it done right. If you're going to create value, you're going to do it through increased efficiency."

Mahadev Raman, chairman of Arup Americas, explained how his firm stripped \$24 mil-

lion from a recent bid for a public-private partnership—a move he says was critical to eventually landing the business. "Ingenuity and creativity play a huge role in private client markets, and the profit potential is much greater," he said.

So, too, are the challenges, said Fenstermaker President Kam Movassaghi. His company, which specializes in surveying for the oil and gas industry on the U.S. Gulf Coast, completes 250 jobs per month. "When you're working at that volume, you're constantly marketing," Movassaghi said. "And getting paid is always an issue."

Firms Must Embrace Rapid Advances in Technology

"Technology is a living thing," Microsoft futurist Dave Coulombe told Fall Conference attendees. "It's going to come faster and faster."

Just how fast are we talking about here? Coulombe offered more than a few eye-opening statistics about the pace of technological change:

- 75 percent of the companies

Gov. Daniels, FHWA's Mendez Underscore Infrastructure Investment

Former Indiana Gov. Mitch Daniels told Conference attendees that "a critical part of building a strong economy is having an excellent infrastructure. That ought to be a subject on which people who disagree on a lot of other things can agree."

Daniels, who privatized the Indiana Toll Road during his administration, also praised contracting out to the private sector.

To get the economy moving again, Daniels said it's important for Congress to reform entitlement programs and adopt pro-growth policies. "A nation that can't agree to build the Keystone XL pipeline is not serious about economic growth," he said.

FHWA Administrator Victor Mendez said money is a major factor. Specifically, he pointed out that increased transportation funding is necessary to "create jobs, grow our economy and help our businesses compete."

"The big issue is funding—the level of funding and how do we fund transportation in the future. Are we as a nation prepared to move the economy forward and move jobs forward?" he asked.

MAP-21 "basically held the status quo for two years," said Mendez. But come next summer, "we'll be back facing the same challenge of finding a sustainable way to fund our surface transportation programs.

"I'm hopeful that the same sense of bipartisanship that's always been a hallmark of our transportation policy—and that helped make MAP-21 possible—will lead to success once again," he said.



Former Indiana Gov. Mitch Daniels emphasized the need for infrastructure investment.



FHWA Administrator Victor Mendez is "hopeful of a bipartisan solution" for transportation funding.



The education session "P3s: Opportunities and Risks for Consulting Engineers" was one of four sessions live-streamed online for the first time for non-Conference attendees.

ACEC President Dave Raymond addresses the Board of Directors on new initiatives



Microsoft's Dave Coulombe

- 1.8 zettabytes of data were added to the Web in 2008; in 2015, 8 zettabytes will be added; and
 - The use of mobile applications exceeded the use of desktop applications in 2013.
- “Change management is huge, and it’s a commitment your company has to make,” Coulombe told attendees.

U.S. Transportation Funding Outlook Challenging; State/Local Picture Brighter

Securing increased federal investment in transportation infrastructure will be a chal-

that will be on the S&P 500 in 2020 are not on it today or don’t exist yet;



Addressing the future of transportation funding were (left to right) American Highway Users Alliance President and CEO Greg Cohen; former Assistant Secretary of Transportation Emil Frankel; and Building America's Future Vice President and Director of Public Policy Kerry O'Hare.

lenge, said a panel of experts, but funding initiatives at the state and local levels hold more promise, at least in the near term.

Greg Cohen, president and CEO of the American Highway Users Alliance, called the future of federal transportation funding and its reliance on the Highway Trust Fund “extremely dire.”

Cohen urged continued legislative engagement to overcome political hurdles and praised ACEC for its leadership role.

Emil Frankel, former assistant secretary of transportation, expressed doubt that an adequate funding solution to the nation’s transportation needs would be reached anytime soon. “If we’re going to deal with a sustainable funding solution for transportation, I see it only happening in the broader context of overall tax and fiscal reform,” Frankel said. “I’m skeptical whether this is even possible in the current political climate.”

Kerry O’Hare, vice president and director of public policy for Building America’s Future, said state and local governments have more success increasing funding. Four states—Wyoming, Virginia, Vermont and Maryland—recently approved gas or sales tax increases to fund transportation infrastructure.

“Understanding that federal funding is not and will not be as reliable as in the past, states have been stepping up to the plate,” O’Hare said. “Many states are also aggressively seeking public/private partnership agreements to meet their transportation needs.”



Matt Pfohl of GeoSpec Systems addresses the CIO Council session on information technology, one of more than 30 cutting-edge education sessions available to Fall Conference attendees.

ACEC/PAC Sets Fundraising Record

ACEC/PAC raised nearly \$170,000 at the ACEC Fall Conference—a new Conference record.

ACEC/PAC activities included the sold-out Fall Sweepstakes raffle, a second drawing targeted at the Emerging Leaders Forum, an inaugural VIP breakfast to recognize ACEC/PAC's major donors, and the ACEC/PAC Golf Tournament and Reception.

Michael Riemann of the Becker Morgan Group in Dover, Del., won the Sweepstakes \$10,000 Grand Prize; **Larry Fox** of OBEC Consulting Engineers in Eugene, Ore., took the \$5,000 second prize; and **David Coffman** of Coffman Engineers in Seattle won the \$2,500 third prize.

The \$1,000 prize winners were **Terry Aaker** of SPN and Associates in Mitchell, S.D.; **Ron Cassada** of Gardner Engineering in Indianola, Miss.; **Andrew Cummings** of Connelly and Wicker in Jacksonville, Fla.; **Joel Goodmonson** of Architectural Engineers, Inc., in Boston; **Philip Houser** of Farnsworth Group in Bloomington, Ill.; **Stuart Monical** of MKK Consulting

Engineers in Greenwood Village, Colo.; and **Paul Yarossi** of HNTB in New York City. **Mike Waldron** of Strand Associates in Joliet, Ill., won the special secondary drawing for a \$250 gift card.

College of Fellows Inducts New Members; Kleinfelder's Bart Patton Receives Chairmen Emeritus Award

The ACEC Committee of Fellows welcomed four new members into the College of Fellows: **Dennis Ford** of FTN Associates in Little Rock, Ark.; **Richard Geraci** of Brown Engineers in Little Rock; **Anthony Mumphrey** of The Mumphrey Group in New Orleans; and **Mary Hall** of GZA GeoEnvironmental, Inc., in Boston.

The **2013 ACEC Chairmen Emeritus Award**, which is voted upon by past ACEC chairmen, went to **Bart Patton** of Kleinfelder in Irvine, Calif.

Two **Community Service Awards** were presented to members for having an extraordinary impact on the quality of life in their communities: **Tim Groover** of Wiley Wilson in Lynchburg, Va., and **Wil-**

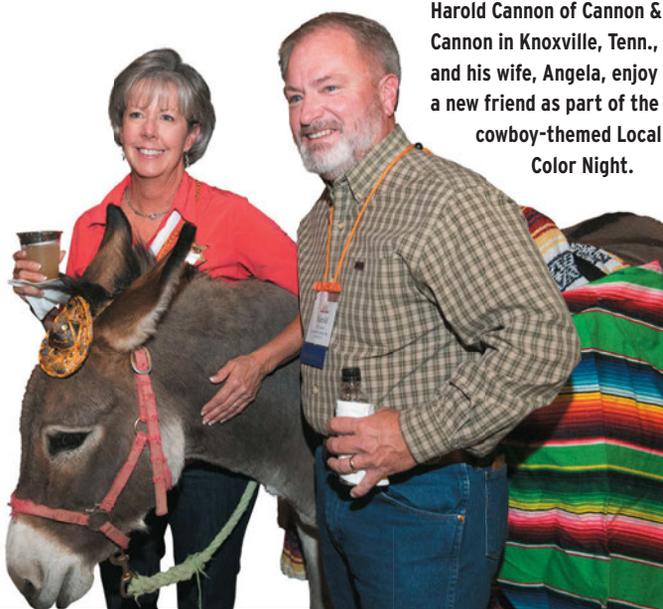


Tricia Huneke of Ruby + Associates, Inc., in Farmington, Mass., and Matthew Murello of Lewis S. Goodfriend and Associates in Whippany, N.J., enjoy the Fall Conference ambiance.

liam Toole of W.R. Toole Engineers, Inc., in Augusta, Ga.

Additionally, the **2013 Coalitions Distinguished Service Award** was presented to **Frazier Christy** of Christy/

Cobb, Inc., in Birmingham, Ala. Previously publicized winners of the 2013 ACEC scholarships and Young Professional of the Year awards were also recognized. ■



Harold Cannon of Cannon & Cannon in Knoxville, Tenn., and his wife, Angela, enjoy a new friend as part of the cowboy-themed Local Color Night.

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By Samuel Greengard

Mirrored Concerns

Engineering leaders worldwide
encounter similar industry challenges

As part of the 2013 Annual Convention of the International Federation of Consulting Engineers (FIDIC), ACEC President and CEO Dave Raymond, along with Johanne Desrochers, president of Quebec's consulting engineers association (Association des ingénieurs-conseils du Québec), co-chaired a roundtable on global industry challenges.

Here's a look at five of the most pressing issues to emerge from that discussion as seen by industry leaders from Australia, Canada, South Africa, United Kingdom and Uzbekistan. How many sound familiar? >>



Lack of Engineers

Increasingly complex projects, retiring baby boomer engineers and a shortage of engineering graduates are creating challenges for engineering firms across the globe. Mirakhmedov Mirodil Makhamadjanovich, chairman of Uzbek Association of Consulting Engineers, notes that “an inadequate inflow of new talent affects both government and private firms and ripples across every industry sector.”

Lefadi Makibinyane, CEO of the Consulting Engineers of South Africa (CESA), says that “there has been a natural attrition of technical and engineering personnel from the public sector since the advent of democracy in 1994.” He added that South Africa’s ratio of qualified professional engineers per million stands at just over 1:1. “This is lower than most developed countries. The cracks are showing,” Makibinyane says.



There are no simple answers to the engineering shortage. In many countries, including the United States and Canada, industry associations are working to relax visa and immigration restrictions to increase the flow of talent, says John Gamble, president of the Association of Consulting Engineering Companies in Canada.

Shortage of Infrastructure Funding

Another global industry challenge is the need for increased infrastructure funding,

particularly in the transportation and water sectors. Just as in the U.S., elsewhere in the world highways, bridges, ports, power generation facilities and water treatment plants constructed decades ago have fallen into disrepair.

At the same time, governments are increasingly strapped for capital. Developing nations with high growth rates are struggling to build the infrastructure needed to accommodate their populations let alone compete on the global stage. “The infrastructure deficiencies in most of the world are staggering,” Gamble says.

Part of the problem can be attributed to a fundamental lack of understanding about the value of projects among public officials and taxpayers, Gamble adds. “There’s a need to take a long-term view of infrastructure investments and understand that they connect to economic prosperity and quality of life.”

Some countries are taking dramatic steps to address funding deficiencies. Canada recently adopted a 10-year \$57 billion plan to upgrade its infrastructure. The United Kingdom adopted a Comprehensive National Infrastructure Plan in 2010 that prioritizes infrastructure projects and investments.

And in late 2012, South Africa unveiled a 15-year infrastructure plan that includes approximately \$97 billion in earmarked improvements for the first three years.

Satisfactorily addressing the global infrastructure financing challenge will require more innovative approaches, says Megan Motto, CEO for Consult Australia. An increase in public-private partnerships (PPPs), debt financing, infrastructure bond schemes, and tax increment financing and value capture are required, she says.

Nelson Ogunshakin, chief executive at the Association for Consultancy and Engineering (ACE) in the U.K., noted how a lack of government capital for funding projects has forced his country to rethink its priorities. “Infrastructure is critical to attracting outside investments and creating long-term stability,” he says. Instead of approaching projects with a strict PPP



“Fraud and corruption affect the ethos of our society.”

LEFADI MAKIBINYANE
CESA

model, where private companies invest for a predetermined period, Ogunshakin says that the U.K. government itself is taking a larger stake in the process, typically 30 percent to 40 percent.

Outside Competition

Over the past several decades, nations have increasingly adopted free trade agreements and taken other steps to open the door to global competition.

The result has been a global business environ-

ment that is more complex and demanding, says the U.K.’s Ogunshakin. High GDP growth in South America, Asia and Africa is fueling demand for projects, but local firms, with valuable knowledge of local physical, cultural and political issues, often aren’t equipped to handle the complexity of these jobs. This reality has led to an increase in acquisitions, alliances and growing interest from foreign engineering and design firms looking to expand their global footprint. This has also led to the emergence of a new class of “mega firms” that provide end-to-end services for clients, Ogunshakin says.

Additionally, “boundaries are blurring the role of the architect, engineer, constructor and investor,” he adds. “The situation is creating very different risks and rewards in domestic and international markets.” Consider that firms in China and other emerging markets often use a different model than their international counterparts. “There is not the separation between the professional services and the construction side,” he explains. “You may even see the investor involved with the entire project.”

Today’s open markets tend to “swing both ways,” notes Canada’s Gamble. They create challenges but also new opportunities. For example, an impending agreement between Canada and the EU would introduce new procurement provisions at provincial and municipal levels of government, including how and where projects beyond a certain value are advertised. “This could create greater competition at the local level, but it could also lead to a greater focus on price,” he says.

Some engineers have expressed concern

that foreign firms entering their markets have a tendency to submit overly optimistic bids and lack the skills needed for specific projects.

There's also the added challenge in many instances of private firms being forced to compete against state-run entities.

Makhamadjanovich says that a lack of openness and transparency creates unfair business conditions and could potentially lead to technical deficiencies. In the past, many private firms have lacked the capital and technical expertise to tackle larger projects in Uzbekistan. That is changing as firms gain capital and experience, he says. But the process remains rocky at best.

As a result, many countries, such as Australia, have enacted rigorous competition policies that aim to level the playing field. Yet, "it is common for a pre-qualification process to be used for larger-scale capital work," Motto says.

Price Competition

No matter where a firm has conducted its business, it's likely to have faced greater pressure over pricing in recent years. The trend globally has been for clients to focus more on upfront costs and less on qualifications and reputation.

The situation is partly due to an extended global recession and sluggish recovery, but fundamental changes in the marketplace have also occurred. More advanced information technology and the evolution of the Internet and cloud computing have helped companies bid and compete more aggressively—and do more with less.

Pricing pressures, however, impact a firm's margins and bottom lines. That, in turn, can lead to several problems, including limited innovation; staffing mismatches; reduced training, development, and tools; and projects gone wrong. In a worst case scenario, public health and safety can be put at risk.

Some firms have turned to offshoring and outsourc-

ing to reduce costs. But such approaches, according to Gamble and others, harbor their own challenges. Ultimately, the fallout from these changes is at least partly responsible for a push globally toward some form of Qualifications-Based Selection (QBS), which introduces pricing only after a firm is selected based on qualifications. Still, QBS is not required for most contracts and is not legally binding for private clients in most countries outside the U.S.

Ogunshakin says that in Europe and the U.K. the selection process entails a combination of quality and pricing—typically 70 percent quality to 30 percent pricing. By contrast, in the United States and Canada, the best-qualified firms are selected and then a fair price is negotiated. FIDIC supports QBS as a best practice but recognizes that "best value" procurements, although not QBS, are used in many countries.

Either way, the concept of QBS is gaining traction. In Australia, Motto says procurement already leans heavily on QBS, "so there is very little likelihood of a mandate." In South Africa, Makibinyane says there's an ongoing push to rewrite current procurement policies put in place by the federal government. However, in Uzbekistan and other countries in Central Asia, Makhamadjanovich says QBS remains a sensitive issue.



"It is common for a pre-qualification process and panels to be used for larger-scale capital work."

MEGAN MOTTO
CONSULT AUSTRALIA

Potential for Corruption

The potential for corruption on large-scale international engineering projects is a common concern for industry practitioners. Bribes, graft, extortion, price fixing and general dishonesty have long been a part of the picture. Laws vary from country to country, ranging from strong to weak to almost nonexistent, with corruption being demand-driven by government officials with the power to select contractors.

Several engineering organizations and some governments have zeroed in on corruption in recent years. The Foreign Corrupt Practices Act in the United States and the Bribery Act in the U.K.

ACEC Delegation At the FIDIC 2013 Annual Convention

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(former FIDIC chairman)

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Former Chairman Eric Flicker

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Gayle Roberts, Stanley Consultants

David Delizza
Pennon Associates, Inc.

Michael DeChiara, Zetlin & De Chiara

Arthur Johnson,
KPFF Consulting Engineers

Mark Steiner, ACEC

are two high-profile examples. In addition, FIDIC has introduced an integrity management system for firms called FIMS. All recognize that corruption and fraud complicates and damages true competition and performance.

Some organizations, such as South Africa's CESA, have taken direct aim at entrenched corruption. The organization has established an anticorruption fund designed to take action against municipalities and private firms that have acted illegally in the award or securing of contracts. It also has lodged complaints on behalf of member firms and it continues to work with the government to strengthen laws. Says Makibinyane, "Fraud and corruption affect the ethos of our society."

ACE's Ogunshakin says that the biggest challenge for the international engineering community is "how to take advantage of a global presence while maintaining integrity in countries that are challenging." In the end, he says, "firms must be as transparent as possible. They must provide unbiased professional services that deliver value." ■

Samuel Greengard is a business technology writer based in West Linn, Ore.

Words to Watch When Reviewing Contract Language

Tips and tricks for editing risk out of standard business agreements

When a design professional reviews a contract, the sight of certain words or phrases can make engineers uncomfortable. This uneasy sensation is caused by an overly broad standard of care and the appearance of certain duties that should not be part of a professional services agreement.

Recognizing and negotiating these words or phrases out of an agreement will help a design professional create an equitable playing field and allocate risk in an appropriate way. A few examples:

“All” — In the phrase “comply with **all** codes, laws, rules,” the word **“all”** increases the obligations of the design professional. There are thousands of codes, laws and rules, and some of them conflict with one another and many are open to interpretation by a public official. At a minimum, the word **“all”** should be replaced with the word **“applicable.”**

Another instance where the word **“all”** is troublesome is in “the design professional agrees to be responsible for **all** their errors and omissions.” Professional services do not have to be perfect, and non-negligent errors and omissions are allowable while still meeting the standard of care. The words **“all their”** should be replaced with **“their negligent.”**

“Assure” or **“Ensure”** — These words imply accuracy is being guaranteed. In the phrase “during site visits, the design professional shall **ensure** the contractor’s work is being done in conformance with the construction documents,” the design professional is required to make sure the work is in conformance with the contract documents. It is not appropriate for the design professional to guarantee the contractor’s work. Instead, use a phrase such as **“the design professional shall observe the quality and progress of the contractor’s work.”**

“Best” — In many instances, the word **“best”** is troublesome. These include “the firm will assign its **best** staff to the project,” “the design professional will use its **best** judgment” and “the design professional will use its **best** efforts.” Because there is only one **“best,”** the design professional should not be agreeing to provide it. The word **“best”** should be deleted and, if appropriate, replaced with **“good.”**

“Complete” and **“Accurate”** — The phrase “the design professional’s construction document shall be **complete** and **accurate”** is problematic. There has never been a **“complete and accurate”** set of construction documents, because perfection is virtually impossible to attain when professional services are being provided. Non-negligent errors and omissions normally occur in construction documents. Perfection is something that is strived for, but is not required under the standard of care. The words **“complete”** and **“accurate”** should not be used.

“Certifications,” “Guarantees” and **“Warranties”** — These words should never be provided. They are asked for in phrases

like “design professional **certifies** the project was constructed in conformance with the construction documents” or “the design professional **guarantees** the project will be certified LEED Gold” or “design professional **warrants** that the project will comply with all codes, laws and rules.” Design professionals are providing a service, not a product. Hence, **“certifications, guarantees and warranties”** are not appropriate and they are not covered by professional liability insurance policies. These words should be stricken.

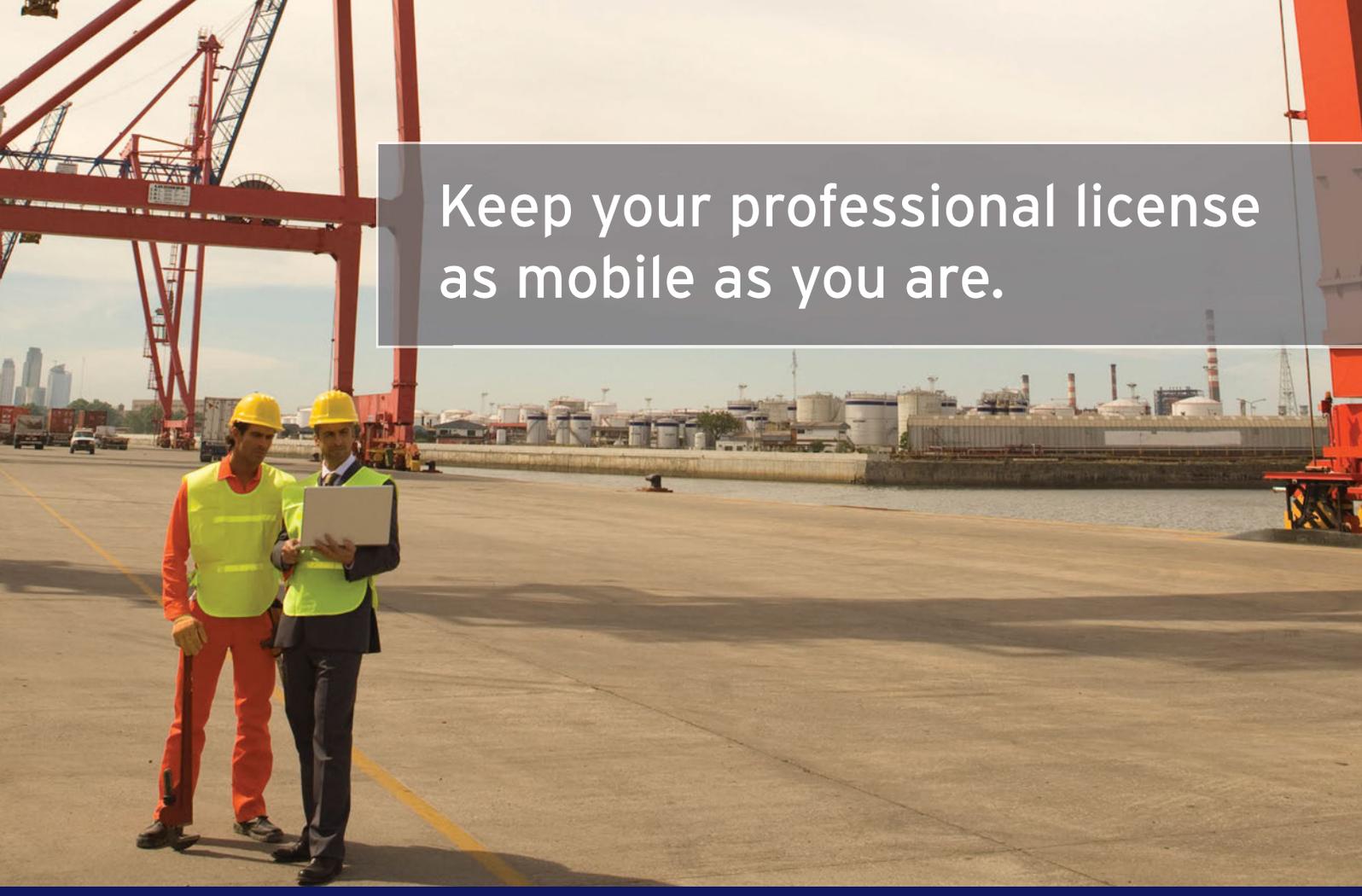
“Highest” — The phrase “the design professional shall perform to the **highest** professional standards” raises the standard of care. A design professional is only required to “perform with that degree of care and skill ordinarily exercised by members of the same profession.” No firm states that they are “ordinary” in their marketing material. However, if a design professional agrees to perform to a higher standard of care, they could find that they do not have coverage under their professional liability policy.

“Sole” — In a client-drafted indemnity, the word **“sole”** may appear, as in “the design professional shall indemnify the client for any claim caused in whole or part by the design professional, except for those caused by the **sole** negligence of the client.” This means the client could be 99 percent at fault, and the design professional would be liable for all the costs of the claim. It is rare that any entity is **“solely”** responsible for something, and the word should be stricken.

These are some of the words and phrases that do not belong in an equitable professional services agreement. Design professionals should make sure they are only agreeing to perform with the degree and skill ordinarily exercised by design professionals. If they find themselves in a lawsuit, they will be glad to have made these considerations and changes in advance.

Glen R. Mangold is the managing director of the Architects/Engineers program for Markel Corporation, a leading provider of professional liability insurance. He has more than 23 years’ experience in the insurance industry. He can be reached at gmangold@MarkelCorp.com. Charles W. Kopplin has more than 40 years’ experience as a consulting engineer, including 14 years as the risk manager for an ENR Top 500 Design Firm. He can be reached at cw.kopplin@gmail.com.

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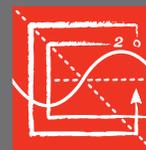
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$$\int \left(\frac{1}{1-z^2u^2} \right) du = \int g dt$$
$$\int \frac{1}{(1+zu)(1-zu)} du = \int g dt$$

aside $\frac{1}{1-x^2}$

$$\left(\frac{1}{1+x} + \frac{1}{1-x} \right) = \frac{(1-x) + (1+x)}{(1+x)(1-x)}$$

so $\frac{1}{1-x^2} = \frac{1}{2} \left(\frac{1}{1+x} + \frac{1}{1-x} \right)$

$$\frac{1}{2} \int \left(\frac{1}{1-zu} + \frac{1}{1+zu} \right) du$$
$$\frac{1}{2z} \ln \left(\frac{1+zu}{1-zu} \right) =$$
$$\frac{1+zu}{1-zu} = e$$

let

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ACEC's highly regarded *Business of Design Consulting* course is a comprehensive update for 2014 on the primary underpinnings of the successful A/E business, and a unique playbook for building leadership and managing your firm at the most effective levels. Join us March 19–22 in Chicago, where ACEC's expert and experienced faculty of industry practitioners will focus on contemporary best practices and critical operational management methods.

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Visit www.acec.org/education and click on "In-Person Courses" for more information.

Indemnification Clauses In Engineering Contracts

Engineers are increasingly being asked—and sometimes required—to sign contracts that may unfairly force them to indemnify their client (and possibly others) against losses the client might suffer on a project. The indemnification clause is often so broadly worded that it could be applied to any loss the client might suffer, whether or not that loss is attributable to the engineer. Trade associations and professional societies have long condemned such clauses because they impose liability on design professionals beyond their proper responsibility, involve exposure in excess of what the law would normally require and are not always covered by insurance. EJCDC standard documents provide for recognition and assumption by the engineer of *appropriate* responsibility as a licensed professional.

Unfair indemnification clauses represent an attempt by project owners (or counsel) to subject the design professional to greater responsibilities than the law would normally impose, including for undesired outcomes that could occur even when the design professional meets the standard of care. It is an endeavor to reallocate risk and assign responsibility to the design professional for elements over which they have no control—and with no compensation.

EJCDC recognizes that owners are pressuring engineers to include some form of indemnification of the owner. That is why EJCDC's Owner/Engineer Agreement (E-500) includes language that the engineer indemnifies the owner against claims caused by the "negligent act or omission" of the engineer. In most cases, this would be covered by the engineer's professional liability policy. E-500 similarly provides cross-indemnification by the owner for the engineer's benefit. To review *The Owner/Engineer Agreement E-500* and the full array of EJCDC documents, go to www.acec.org/bookstore and click the "Contracts" link on the left.

Business Practices and Contracts For Professional Surveyors

Because risk assessment and planning while delivering quality engineering services are key factors in firm sustainability, the Council of Professional Surveyors (COPS) has developed the Seven Baselines of Business Practices: (1) Culture; (2) Planning; (3) Education; (4) Contract Documents; (5) Policy & Procedures; (6) Communications & Correspondence; and (7) Technical Tools & Documents. Each includes worksheets and sample documents.

New Releases

Baseline 2-7: Pre-Proposal Risk Assessment Form

Created to help firms identify potential risks before pursuing opportunities, the form includes questions related to Market Risk, Professional Liability Risk and Financial Risk.

Baseline 4-5: Client Contract—Business & Technical Review Checklist

This quick-review form will help firms minimize business and/or technical risk.

Baseline 6-5: Client Feedback Form

This easy-to-use addition to the internal QC/QA process will help firms get comprehensive and actionable feedback.

COPS Contract 4-1: Client and Consultants Professional Services 2013

COPS Contract 4-2: Agreement between Consultant and Sub-consultant for Professional Services 2013

All ACEC Coalition-developed products are available at www.acec.org/bookstore.

ACEC's Business Resources and Education Department provides comprehensive and accessible business management education for engineering company principals and their staffs.

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geotechnical constructability review

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geotechnical laboratory testing

foundation load testing

construction testing, inspection, & monitoring

electrical & thermal resistivity testing



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On The Move

Steve Edwards is the new chairman, president and CEO of **Black & Veatch**, Overland Park, Kan., succeeding Len Rodman, who retired after 42 years with the company and 15 years as CEO. In April 2013, Edwards was named COO and chosen to succeed Rodman following a transition period.

Thomas R. White was named chairman, president and CEO of **Sargent & Lundy**, Chicago, Ill., succeeding Alan W. (Bud) Wendorf, who retired at the end of 2013 after 22 years with the firm, the last nine as president and CEO. White joined the firm in 1985 and has been an owner since 2000.

Christopher Sherry was named COO of Greenwood Village, Colo.-based **Merrick & Company**. Sherry formerly served as senior vice president of its corporate & business development group.

Michael E. Kenealy, CFO of Boston-headquartered **Nitsch Engineering**, was promoted to executive vice president.

Savannah Maziya was named chairman of **Parsons Brinckerhoff Africa (Pty**

Ltd., the affiliate of the New York City-headquartered firm.

Olie Abbamonto has joined **Moffatt & Nichol** as CFO. She formerly served as vice president of finance, CFO and principal with Cardno ERI.

Broomfield, Colo.-based **MWH Global** appointed **Nora Okusu**, senior vice president and director of marketing and strategy, Broomfield, Colo.; **David Harrison**, senior vice president and director of ETS client service managers, Broomfield, Colo.; **Melissa Carter**, vice president and senior project manager, Boston; **Matt Garcia**, vice president and principal client service manager, Dallas; **Julie Labonte**, vice president and director of program management for the Americas, San Francisco; **Geno Lehman**, vice president and research manager, Arcadia, Calif.; **John Tehaney**, vice president and chief structural engineer-design, Sacramento, Calif.; **Glenn Fawcett**, vice president and global director of business transformation services, Broomfield, Colo.; **Kevin Kammerzell**, vice president and principal engineer, Tempe, Ariz.; **Masrouf Kizilbash**, vice president and principal geolo-

gist, grouting specialist, Lahore, Pakistan; **Peter Kolenda**, vice president and lead mechanical engineer, Chicago; **Carrie Sabin**, vice president and technical and knowledge manager, Steamboat Springs, Colo.; and **Frank Topel**, vice president and principal mechanical engineer, Chicago.

Michelle Cunico Johnson was appointed vice president of Golden, Colo.-based **Martin and Wood Water Consultants, Inc.** Johnson is based at the firm's headquarters.

James H. "Jim" Trogdon III joined **Atkins** as vice president of regional business development and sales for the U.S. mid-Atlantic region. Trogdon is based in Raleigh, N.C.

Anchorage, Alaska-based **WHPacific, Inc.**, appointed **Tom Jones** vice president of development and facilities, Portland, Ore.; **Morgan Kramm**, vice president of construction/project management, Albuquerque, N.M.; **Jason Kack**, vice president of survey, Seattle; and **L. Michael Burns**, vice president of energy, Colorado Springs, Colo.



Steve Edwards



Thomas R. White



Christopher Sherry



Michael E. Kenealy



Savannah Maziya



Olie Abbamonto



James H. "Jim" Trogdon III



Tom Jones



Morgan Kramm



Jason Kack



L. Michael Burns

Members in the News

Welcome New Member Firms

ACEC/California

Alpha 3 Construction Management, San Rafael
Chec USA, Inc., San Ramon
IDModeling, Inc., Arcadia
Inland Foundation Engineering, Inc., San Jacinto
MKC Global Protection, Inc., Glendale
Patrick Flynn Consulting Group, Folsom
The Source Group, Inc., Pleasant Hill
Vanguard Construction Services, Inc., Fresno
Yamabe & Horn Engineering, Inc., Fresno

ACEC/Colorado

Engineering Analytics, Fort Collins
J. F. Sato and Associates, Inc., Littleton
Ross & Baruzzini, Inc., Evergreen
Walsh Environmental Scientists & Engineers, LLC, Denver
West Sage Water Consultants, Denver

ACEC/Florida

HSA Golden, Orlando

ACEC/Georgia

Columbia Engineering & Services, Inc., Duluth

ACEC/Illinois

Edwin Hancock Engineering Co., Westchester
Globetrotters Engineering Corp., Chicago
Pi Surveying Group, P.C., Chicago
Structure Designs, Inc., Chicago

ACEC/Kentucky

Premier Environmental Consultants, LLC, Lexington

ACEC/Louisiana

JPL Engineering, LLC, Lafayette

ACEC/Massachusetts

Beals and Thomas, Inc., Southborough
Hart Design Group, LTD, Cumberland, R.I.

ACEC/Metro

Washington
McDonough Bolyard Peck, Inc., Fairfax, Va.

ACEC/Michigan

ABE Associates, Inc., Detroit
D&M Site, Inc., Saginaw
Kieft Engineering, Inc., Clarkston
Nowak & Fraus Engineers, Royal Oak

ACEC/Mississippi

Kemp Associates, Noxapater

ACEC/Missouri

Schultz Surveying and Engineering, Inc., Poplar Bluff

ACEC/New Jersey

R & S Landscaping, Midland Park

ACEC/New York

Ocean and Coastal Consultants Engineering, P.C., New York City

ACEC/North Carolina

Andrew Consulting Engineers, P.C., Wilmington
Environmental Services & Solutions, Wilmington

ACEC/Ohio

Carpenter Marty Transportation, Inc., Dublin

ACEC/Oklahoma

Keystone Engineering & Land Surveying, Stillwater

ACEC/Oregon

JHI Engineering, Portland
Systems West Engineers, Inc., Eugene

ACEC/Tennessee

Broadway Electric Service Corporation, Knoxville
Collier Engineering Company, Inc., Brentwood
Logan Patri Engineering, Inc., Nashville
Swift Creek, Inc., Chattanooga

ACEC/Texas

All-Terra Engineering, Inc., Houston
Eikon Consultant Group, LLC, Sanger
Gonzalez Kypuros and White, Inc., San Antonio
Kalsi Engineering, Inc., Sugar Land
Paramount Engineering, LLC, Houston
Pharis Structural Engineers, P.C., Amarillo
The Transtec Group, Inc., Austin

ACEC/Washington

Saez Consulting Engineers, Inc., Bainbridge Island
SCJ Alliance, Inc., Vancouver

ACEC/West Virginia

HRG, Morgantown
Martin Engineering, Hurricane
White Brothers Consulting, LLC, Belle

ACEC/Wisconsin

Applied Technologies, Inc., Brookfield
Pierce Engineers, Inc., Milwaukee

ACEC/Wyoming

Altitude Land Consulting, P.C., Buffalo

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www.acec.org/jobbank/index.cfm

Anniversary

Stanley Consultants Marks Milestone 100th Anniversary

What was started in 1913 by Charles Young as a one-man civil engineering firm in Muscatine, Iowa, is today a global industry leader with 30 offices worldwide, and more than 1,000 employees.

The still Muscatine-based **Stanley Consultants, Inc.**, recently celebrated its 100th-year anniversary. Since its founding, it has accomplished more than 24,000 projects in all 50 states, several U.S. territories and 103 countries.

In 1932, Young was joined by C. Maxwell Stanley and the firm became Young and Stanley, Inc. The company was renamed Stanley Engineering Company in 1938 after Young retired and became Stanley Consultants, Inc., in 1966.

Stanley Consultants Chairman Gregs Thomopulos, who is also ACEC Chairman said, "What makes me proud is that whenever someone learns that I work for Stanley Consultants, what always follows is, 'great company, great reputation, great integrity.' You can't ask for anything better than that."

To mark its 100th anniversary, Stanley's employees donated over \$110,000 to charity and performed more than 8,500 hours of community service throughout the world.



(left to right) Chairman Emeritus Richard Stanley; President and CEO Gayle Roberts; and Chairman Gregs Thomopulos.

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sei.acec.org



Calendar of Events

JANUARY

- 8 Client Research: Debunking Myths and Maximizing ROI (webinar)
- 14 Ten Keys to Business Continuity Planning (webinar)
- 15 Strategic Decision-Making in Uncertain Times (webinar)
- 22 Sellwood Bridge: Team-Building to Drive Complex Project Delivery (webinar)
- 28 Privacy & Security Simplified—Federal and State Privacy and Security Law Requirements (webinar)
- 29 Writing Winning Proposals—2014 (webinar)

FEBRUARY

- 5 Ownership Transition 2.0 (webinar)
- 7-8 SFC 2014 Winter Meeting, New Orleans
- 11 Are You Fighting Fires Instead of Managing Your Employees?—2014 (webinar)
- 26 Enabling Social Collaboration and Engagement in the Workplace (webinar)

MARCH

- 4 Why Clients REALLY Select Your Firm (webinar)
- 12 PR Tips, Tactics and Insights to Build Your Company's Brand (webinar)
- 18 Ensuring Profitable Growth, Developing Winning Strategies for Solid, Measurable Results (webinar)
- 19-22 Business of Design Consulting—2014, Chicago
- 20 Ethical Decision-Making for PEs: Today's Standards and Benefits (webinar)
- 25 Rebranding Your Firm—Why? What? and How? (webinar)

APRIL

- 2 14 Touches to Win the Sales Cycle (webinar)
- 8 Mergers and Acquisitions 2.0 (webinar)
- 27-30 ACEC 2014 Annual Convention and Legislative Summit, Washington, D.C.

To sign up for ACEC online seminars, go to www.acec.org/education.

Industry M&A Outlook for 2014

Last year was expected to be a banner year for engineering industry mergers and acquisitions (M&As), but the latest data indicate that M&A activity will track down from 2012's record year. The economy has, by and large, climbed out of the depths of the Great Recession. Many industry firms saw their businesses turn the corner in 2012 and return to the performance levels they experienced prior to the economic downturn.

But through the first three quarters of 2013, we observed 150 domestic M&A transactions, compared with 155 in 2012—a decline of about 3 percent.

Several firms that had their sights set on ownership transition during the recession chose to hold off until performance improved. Many of these firms then returned to test the M&A waters once the outlook improved in late 2011 and early 2012.

So what to expect for 2014? We anticipate sustained to slightly increased M&A activ-

ity due in part to concerns among sellers. Key sell-side drivers include:

- **Owners want to go out on top.** Many baby boomers who sought to transition ownership of their firms were stymied by the recession. But now that many firms have had an opportunity to build a track record of several years of solid performance, owners will likely seek to exit at what may be a high-water mark for their business.
- **Talent is migrating in waves.** Many of the best and brightest engineers are being wooed away to other industries—energy in particular. As firm owners lose sight of their next generation of managers and leaders, internal ownership transition is less likely to be a viable option. Owners will increasingly look to M&A as a means of ownership and leadership transition.
- **The squeeze is on.** Continued industry consolidation, particularly among the largest firms, has resulted in

a pressure cooker of competition for smaller firms. Project owners increasingly seek the full suite of integrated services; many specialized firms find it tough to compete with the largest players. As competition continues to bear down on small firms, firm owners will join larger entities to remain competitive.

Given these and other considerations, we anticipate M&A will continue to be an attractive vehicle for firms to execute ownership and leadership transition and will continue to drive industry M&A activity into 2014.

Recent ACEC Deal-Makers November 2013

ACEC Member **DLZ** (Columbus, Ohio) acquired the assets of **American Drilling & Testing** (Melvindale, Mich.).

ACEC Member **Kimley-Horn** (Raleigh, N.C.) joined forces with ACEC Member **Southern Civil Engineers** (SCE) (Alpharetta, Ga.).

October 2013

ACEC Member **KLJ** (Bismarck, N.D.) acquired ACEC Member **Stelling Engineers** (Great Falls, Mont.).

ACEC Member **HDR** (Omaha, Neb.) acquired architecture, planning and design firm **Rice Daubney** (Sydney, Australia). The combined firm will operate as HDR|Rice Daubney.

ACEC Member **Woodard & Curran** (Portland, Maine) acquired environmental engineering and management firm **TREC** (Bozeman, Mont.).

ACEC Member **Cardno**

(Brisbane, Australia) signed an agreement to acquire **Haynes Whaley Associates** (Houston). The firm will operate as Cardno Haynes Whaley, Inc.

ACEC Member **Hardesty & Hanover** (New York, N.Y.) acquired **Lawrie & Associates** (L&A) (Alexandria, Va.), which specializes in complex bridge engineering including concrete segmental and cable-supported bridge design.

ACEC Member **GEC** (Baton Rouge, La.) acquired 10-person coastal, harbor and water engineering firm **Noble Consultants** (Novato, Calif.).

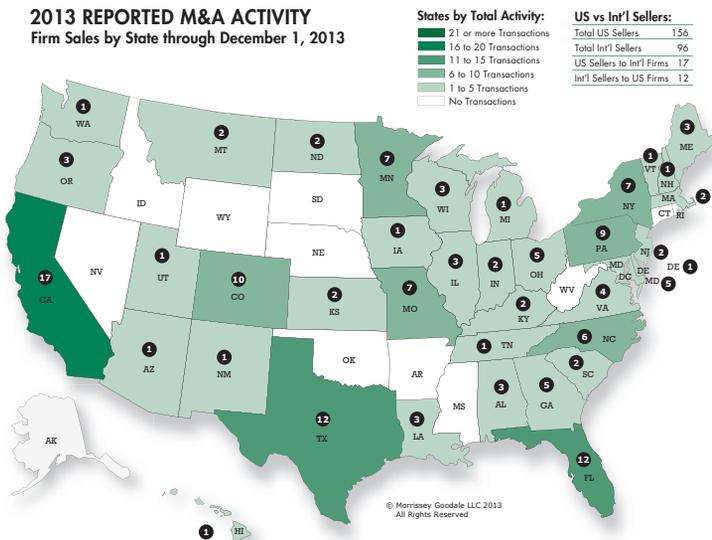
To view the most up-to-date and “live” versions of the M&A heat maps accompanying this article and see who are the buyers and sellers in each state, go to www.morrisseygoodale.com.

Watch the M&A Takeaway video that accompanies this article, presented by Mick Morrissey at www.morrisseygoodale.com/ACECMergers/JanFeb2014.



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, Texas, office, can be reached at nchurman@morrisseygoodale.com.

2013 REPORTED M&A ACTIVITY
Firm Sales by State through December 1, 2013

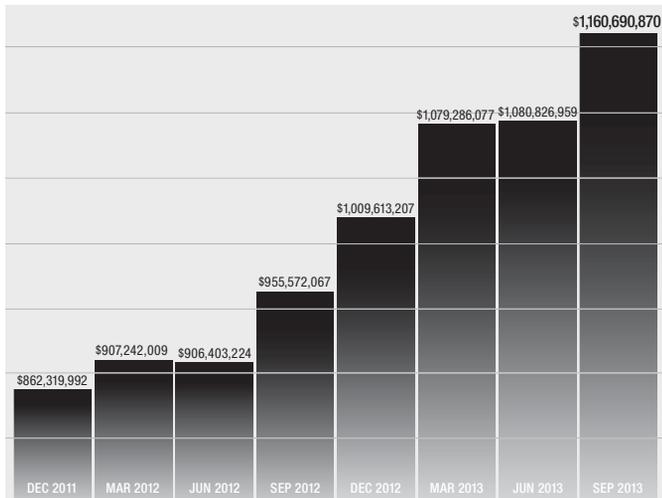


Are your numbers adding up to the overall performance of the Trust?

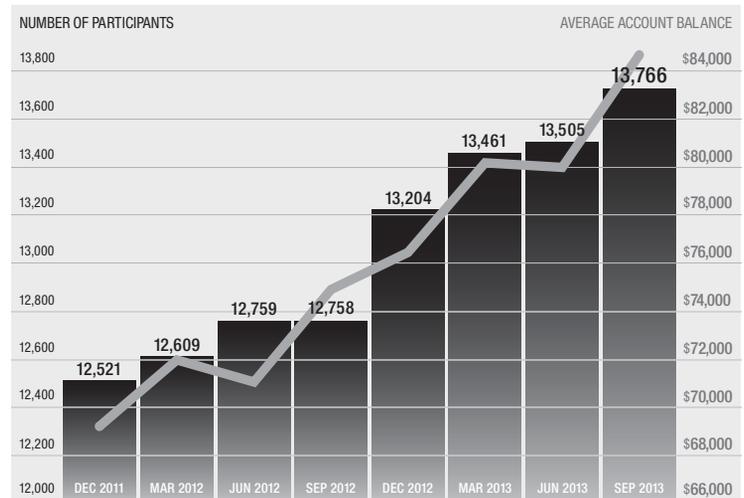
The focus of the Trust is on five year returns with performance at or above the median benchmark and/or peer group median.

94% (322/344) of the funds have achieved this objective on a quarterly basis over the past five years.

TRUST ASSETS



PARTICIPANTS AND AVERAGE ACCOUNT BALANCE



Data research by CAPTRUST Advisors

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*Potential 12% savings on annual premiums for businesses with 2-99 employees, 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, 2010.

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