WINTER 2022

ENGINEERING INC.

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AWARD-WINNING BUSINESS MAGAZINE ● PUBLISHED BY AMERICAN C ERING COMPANIES

Building a Better America

White House Advisor Mitch Landrieu on the Historic Infrastructure Investment

The Brooks Act Turns 50

The Post-COVID Office

Africa: Opportunities and Challenges

Kennedy Jenks Gives Back

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Winter 2022

"There is simply no question that engineers are instrumental in our mission to build a better America."

Mitch Landrieu
Former Mayor of New Orleans
White House Senior Advisor and Infrastructure Coordinator

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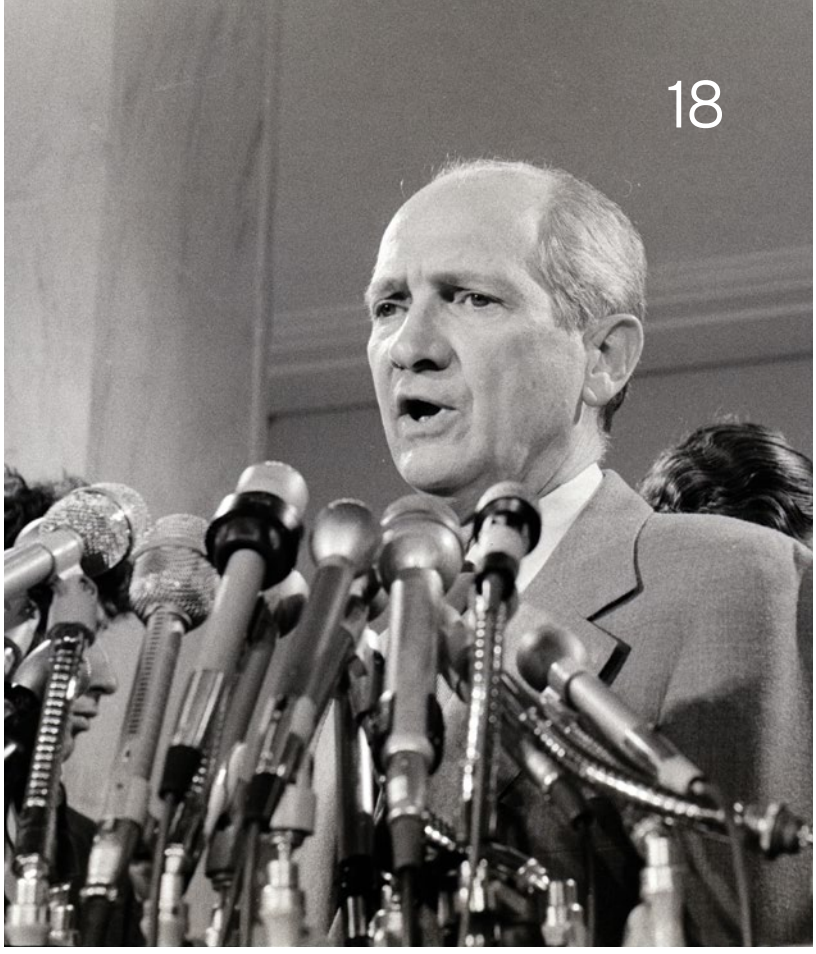

FEATURES

DEPARTMENTS

COVER: CHERYL GERBER

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ACEC's award-winning quarterly magazine *Engineering Inc.* provides expert analysis on all issues affecting the overall business of engineering. Other highlights include in-depth interviews with major policy makers whose decisions impact bottom lines; updates on critical advocacy issues and industry news, best practice management trends and marketplace projections, along with member firm innovations and announcements.

In Celebration of the Brooks Act

Celebration of the 50th anniversary of the Selection of Architects and Engineers statute, also known as the Brooks Act, is truly warranted in the industry—and even in the nation.

As one of the signature bills by legendary 21-term congressman Jack Brooks, D-Texas, the act is now known industry-wide as Qualifications-Based Selection (QBS). It requires that the U.S. federal government select professional engineering and architectural services based upon competency, qualifications, and experience, rather than by price.

Initially conceived in the mid-1960s and enacted into law in 1972, the Brooks Act has been the primary rule for all federal and federally funded engineering and architectural procurement acquisitions for decades. It often is cited as being a catalyst for the nation's advances in innovation and technology and providing quality services in a cost-efficient manner.

Most states also adopted the federal procurement mandate. Although challenges to the law at the state and local level still occur, thanks to Council advocacy the act remains a primary method for government procurement of engineering and architectural services throughout the nation.

This issue of *Engineering Inc.* features an in-depth interview with Jeb Brooks, son of the former congressman and chairman of the Jack Brooks Foundation, who shares his insights into his father's efforts to gain approval of QBS *(see page 18)*.

Also presented is an exclusive interview with former New Orleans Mayor and current White House Advisor Mitch Landrieu, chosen by President Joe Biden to coordinate implementation of the massive Infrastructure Investment and Jobs Act.

Landrieu discusses the enactment of the bipartisan infrastructure law one year in and explains how it will help stimulate private sector investments, bolster critical supply chains, and promote social equity *(see page 12)*.

This magazine issue also offers a comprehensive chronicle on the growth of infrastructure development in Africa and the opportunities presented for firms experienced in international projects *(see page 36)*.

Here's hoping everyone had a very happy holiday season, and we wish you all the best in the new year.

W. Arthur Barrett
ACEC Chair

Linda Bauer Darr
ACEC President & CEO

ENGINEERING INC.

PUBLISHED BY:
AMERICAN COUNCIL OF ENGINEERING COMPANIES

Engineering Inc., Volume 33, Number 4 (ISSN 1539-2694), is published quarterly by the American Council of Engineering Companies (ACEC), 1400 L Street, NW, Suite 400, Washington, D.C. 20005-2605. Periodicals postage paid at Washington, D.C., and at additional mailing offices. Annual subscriptions are $24 for members (included in dues as a non-deductible amount); $45 for U.S. non-members; $65 for institutional subscriptions. Back issues are $15.

POSTMASTER: Send address changes to *Engineering Inc.*, c/o ACEC, 1400 L Street, NW, Suite 400, Washington, D.C. 20005-2605.

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ACEC RESEARCH INSTITUTE

The ACEC Research Institute provides the engineering industry with cutting edge research, trend data, and economic analysis to help firm owners make decisions and delivers thought leadership that advances engineering's essential value to society.

The ACEC Research Institute wishes to extend its sincere appreciation to its generous contributors.

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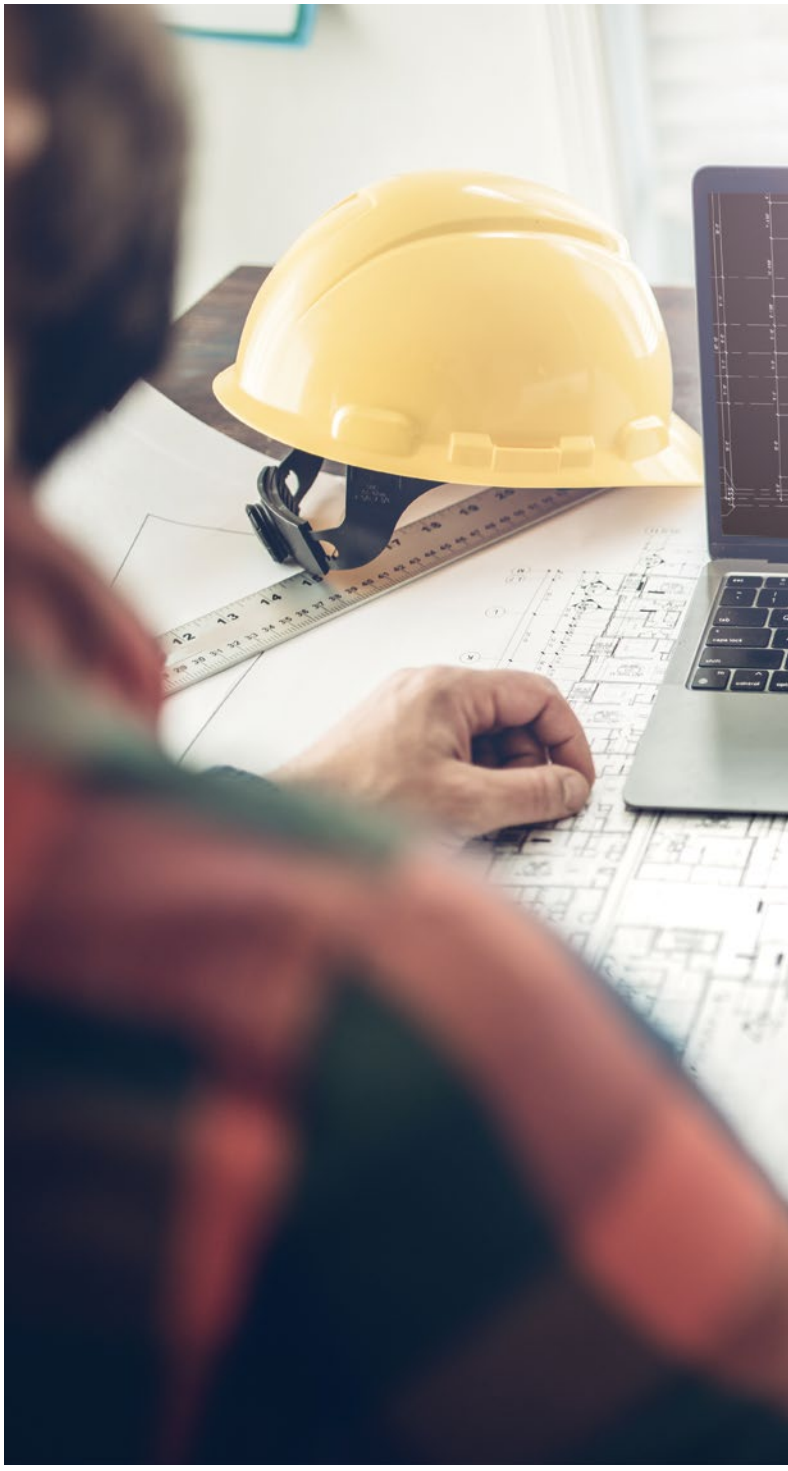
Institute Study Examines Design-Build Challenges, Provides Recommendations to Owners for Successful Project Outcomes

Keith Molenaar, dean of the University of Colorado Boulder's College of Engineering and Applied Science, presented highlights of the ACEC Research Institute's study performed in partnership with the university at ACEC's Fall Conference in Colorado Springs. Molenaar explained that while design-build (DB) projects have grown 84 percent over the past five years, the study found significant concern with larger infrastructure projects which could impact the success of the investments under the Infrastructure Investment and Jobs Act, also called the bipartisan infrastructure law.

Molenaar discussed how "data from larger design-build projects brought to light a clear imbalance in risk transfer practices, as evidenced by claims, disputes, litigation, liability gaps, and surging insurance costs." Furthermore, "design firms should seek to create long-term partnerships...to improve risk transfer and project harmony."

The White House cited the Institute study in the Action Plan to Accelerate Infrastructure fact sheet, which was unveiled in October during the Accelerating Infrastructure Summit. The event brought industry leaders together to discuss efficient implementation of the bipartisan infrastructure law. According to the White House, "about 90 percent of bipartisan infrastructure law funds will be delivered by nonfederal partners, who have worked closely with federal agencies to revitalize our nation's infrastructure."

The study, *Design-Build State of Practice*, was designed as a three-step approach to assess challenges and opportunities present in DB projects, in contrast to other delivery systems such as Design-Bid-Build (DBB) or the newer Progressive Design-Build (PDB) delivery. Data was gathered from 155 ACEC member firms of various sizes participating in design-build projects across diverse U.S. market sectors. Project performance data was obtained from 105 completed DB projects of various sizes delivered in the U.S. Sixteen interviews from the best- and worst-performing projects were conducted for inclusion and analysis in the study.



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MITIGATING RISK AND ENSURING PROJECT HARMONY

Molenaar recommended that owners and firms "clearly understand the risk allocation" to benefit all project participants. It means "engineering firms should perform rigorous contract risk

reviews when choosing whether to participate in a DB project," and owners should use unique DB programs or approaches, separate and distinct from DBB or other project delivery methods. Insurance requirements should be top of mind to mitigate the risk to all project participants, and on larger, high-risk projects, all firms should have candid conversations with owners and contractors to discuss the value and applicability of Project Specific Professional Liability (PSPL) policies which are becoming increasingly difficult to obtain and expensive if available. "Education and collaboration with owners regarding these implications becomes central to leading to future success," he said.

Because of the necessity for transparency early in the project decision-making process, Molenaar emphasized that having well-integrated DB teams "significantly improves risk transfer and project harmony." And "design firms should cautiously consider participating on large mega projects where, due to sheer size, the use of one-time project joint ventures are formed with limited existing relationships and trust at the onset of the project," he said.

ACEC Research Institute leaders hope the findings illuminate trend data and best practice guidelines for DB project delivery. Molenaar believes this "will help engineers deliver projects more effectively, avoid many of the pitfalls, and capture the advantages that design-build can offer."

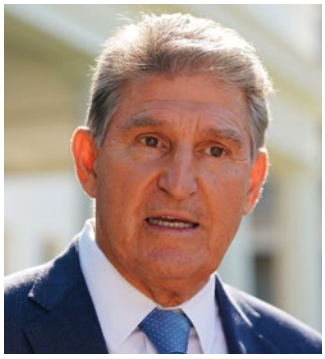
To download the full report: **https://program.acec.org/2022-design-build-study**. ■

Council Supports Energy Infrastructure Permitting Reform

ACEC is seeking passage of legislation to improve the regulatory process that governs the review and approval of energy infrastructure projects. The deal was part of a negotiation between Sen. Joe Manchin, D-W.Va., chair of the Senate Energy Committee, and Majority Leader Chuck Schumer, D-N.Y., to secure passage of the separate Inflation Reduction Act.

The bill would direct the president to designate and prioritize permitting for projects of national significance, set maximum timelines for reviews, reform Section 401 of the Clean Water Act, and set a statute of limitations for litigation. The bill would also clarify the jurisdiction of the Federal Energy Regulatory Commission and strengthen its authority over interstate transmission projects.

In ACEC's outreach to lawmakers, Council President and CEO Linda Bauer Darr noted that major infrastructure laws over the past three years—such as the ACEC-backed Energy Act of 2020, the Infrastructure Investment and Jobs Act of 2021, as well as the newly enacted Inflation Reduction Act of 2022—include unprecedented levels of investment in a broad range of energy infrastructure initiatives. Implementation of these laws will support achievement of the Biden administration's commitment to achieve the global goal of net-zero carbon emissions by 2050 and an interim U.S. goal of net-zero electricity by 2035.



Manchin

Schumer

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However, timely achievement of net-zero goals with reliable energy services remains elusive without comprehensive permitting reform, particularly for energy infrastructure and its supply chains, such as electricity, hydrogen, and carbon dioxide transmission; nuclear and renewables generation; energy storage; and noncarbon energy minerals production and processing. Potential beneficial effects from the recent infrastructure laws such as net-zero along with increased reliability and resilience depend on permitting reforms such as the framework proposed by Manchin.

The bill may be rolled into must-pass legislation by year-end.

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Project Labor Agreements Planned for Federal Construction Projects

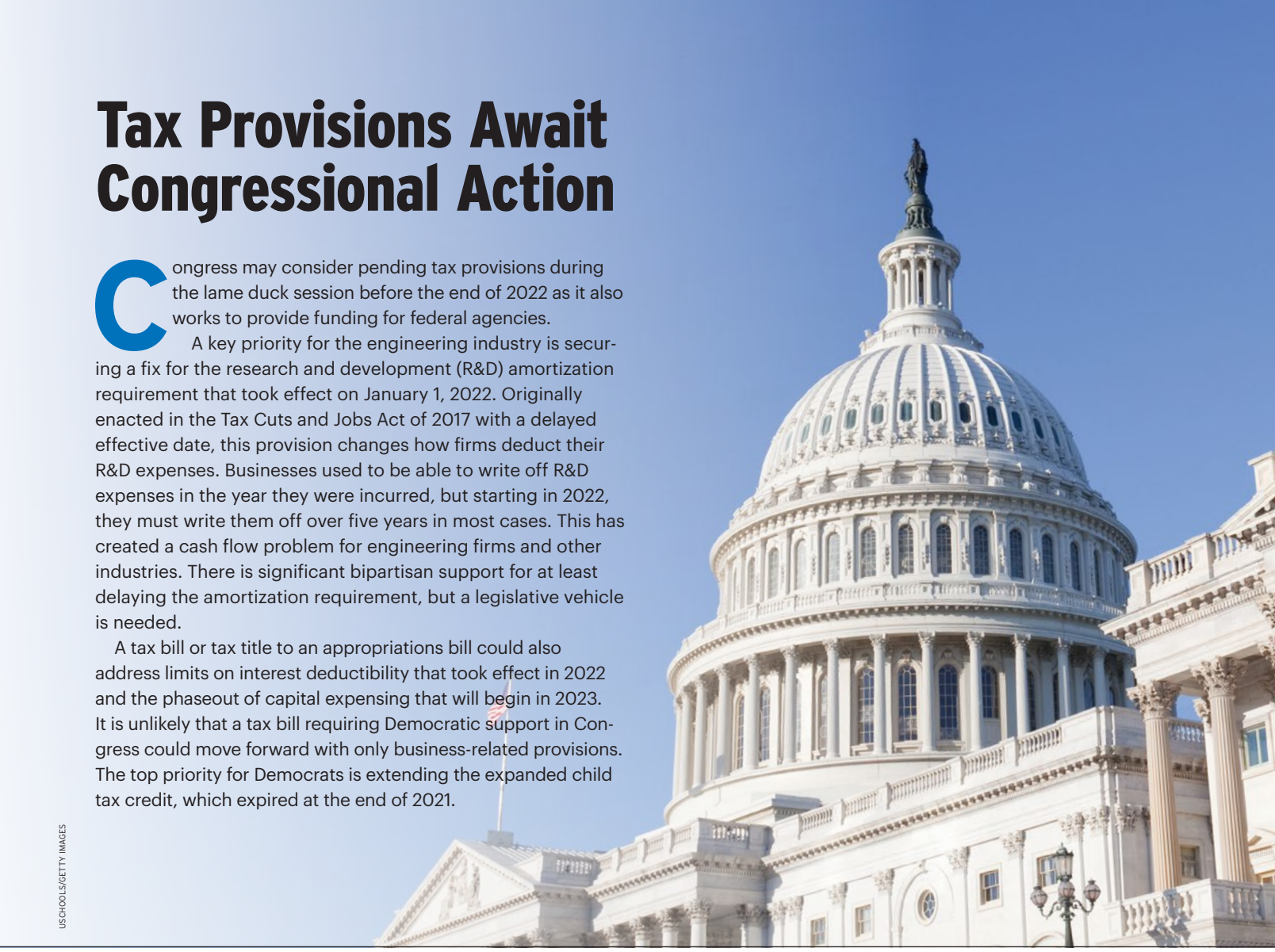
The Federal Acquisition Regulatory Council published a proposed rule implementing Executive Order 14063, which requires Project Labor Agreements (PLAs) on federal construction contracts exceeding $35 million. Executive Order 14063 applies to direct federal construction contractors, not federal-aid (e.g., federal-aid transportation) contractors. This policy could drive up the costs of projects by the U.S. Army Corps of Engineers, the Naval Facilities Engineering Systems Command, the U.S. General Services Administra-

Tax Provisions Await Congressional Action

Congress may consider pending tax provisions during the lame duck session before the end of 2022 as it also works to provide funding for federal agencies.

A key priority for the engineering industry is securing a fix for the research and development (R&D) amortization requirement that took effect on January 1, 2022. Originally enacted in the Tax Cuts and Jobs Act of 2017 with a delayed effective date, this provision changes how firms deduct their R&D expenses. Businesses used to be able to write off R&D expenses in the year they were incurred, but starting in 2022, they must write them off over five years in most cases. This has created a cash flow problem for engineering firms and other industries. There is significant bipartisan support for at least delaying the amortization requirement, but a legislative vehicle is needed.

A tax bill or tax title to an appropriations bill could also address limits on interest deductibility that took effect in 2022 and the phaseout of capital expensing that will begin in 2023. It is unlikely that a tax bill requiring Democratic support in Congress could move forward with only business-related provisions. The top priority for Democrats is extending the expanded child tax credit, which expired at the end of 2021.



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tion, and others and discourage firms from pursuing federal contracting opportunities.

In comments sent raising ACEC's concerns, the Council reaffirmed its belief that employees of engineering firms should be excluded from being parties to PLAs. This is essential to avoid conflicts of interest; to protect the public and property from short- and long-term harm; and to prevent negative impacts on the performance, costs, and schedules of projects being implemented.

Employees of engineering firms perform critical roles on construction sites. These include field representatives and surveyors monitoring sites to ensure that the work is being performed in compliance with design documents. To perform such work, these personnel must remain independent and objective. While this rule is directed at construction labor, its terms do not exclude designers, site engineers, surveyors, and other engineering-related site personnel.

ACEC also expressed concern that an engineer's quality assurance role risks being compromised if engineering field representatives and surveyors are not specifically excluded from PLA coverage. This quality assurance/quality control process is vital to protect public welfare, safety, and health. PLA coverage would likely create a conflict of interest, pitting the field representative's oversight role against the interests of union members among the construction workers.

ACEC is working with coalition partners in the built environment to support H.R. 1284/S.403, the Fair and Open Competition Act, which protects federal construction contracts from government-mandated project labor agreements.

For More News

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

Sustainable and Equitable Data Is Coming

BY DIANA ALEXANDER

The global demand for data is not showing any signs of slowing. The adoption of remote work, access to digital health care, the opportunity to stream live services, the growing popularity of digital currencies, and businesses shifting to cloud-based platforms are all propelling the data center and telecommunications market forward.

Increased consumer demand is driving data consumption rates, which results in an increase in the number of hyperscale data centers. The centers exceed 5,000 servers and 10,000 square feet, and provide faster network connections and higher bandwidth for large volumes of data.

This type of data center includes business-critical facilities designed to efficiently support robust applications associated with big data-producing companies, including Google, Amazon, Facebook, IBM, and Microsoft. According to Statista's *Energy Demand in Data Centers Worldwide*, energy demand by hyperscale centers worldwide hit an all-time high of approximately 87 terawatt hours (TWh) in 2021, up from 31 TWh in 2015 (see chart).

Larger data centers also mean higher consumption rates of water and energy. Data centers are already among the top 10 water-consuming industrial/commercial industries in the U.S., according to *Environmental Research Letters*. Data centers use 10 to 50 times more energy per floor space than a typical office building, according to the Office of Energy Efficiency and Renewable Energy. These sustainability concerns provide opportunities to engineers as data center owners look to them for alternative design solutions and power sources aimed at reducing a center's carbon footprint. This could include fresh air cooling techniques and the co-location of solar projects and data centers.

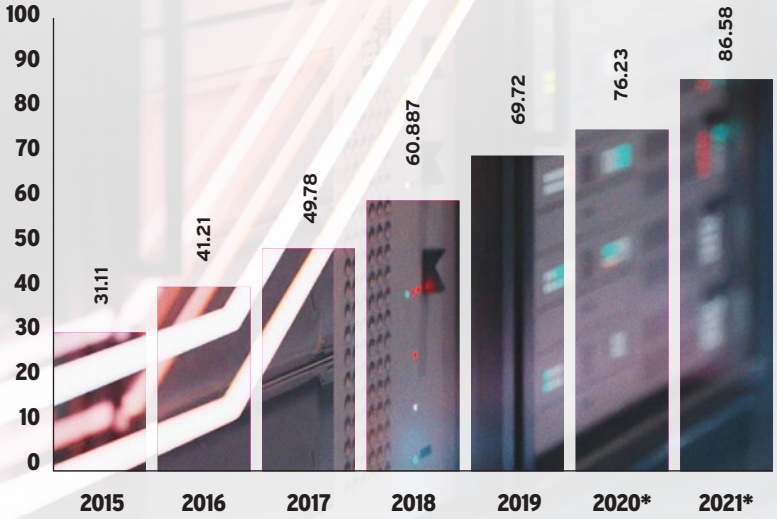
A surge of investment is also expected from the Infrastructure Investment and Jobs Act (IIJA). The broadband market stands to receive approximately $65 billion in funding over the course of five years from IIJA in support of data center and telecommunication infrastructure, coming in second to the largest recipient, transportation.

The broadband grants provision of the IIJA seeks to provide digital equity for "unserved and underserved" locations, as well as for community anchor institutions (CAIs). A CAI could be a school, library, health care facility, public safety entity, college, public housing, or community support organization that facilitates broadband service to vulnerable populations. Priority projects will be identified by Broadband DATA Maps, published by the Federal Communications Commission. **Eligible entities for grant funding include public-private partnerships, private companies, public or private utilities, public utility districts, and local governments**.

In response to the IIJA, the National Telecommunications and Information Administration established two broadband-focused offices, the Office of Internet Connectivity and Growth and the Office of Minority Broadband Initiatives, which will administer $48.2 billion of funding through the following programs:

- **Broadband Equity, Access & Deployment Program:** $42.45 billion for state-administered grants to expand high-speed internet through planning, infrastructure deployment, and adoption programs.
- **Digital Equity Act Programs:** $2.75 billion divided into three federal grant programs—$1.44 billion for a state capacity program, $1.25 billion for a competitive program to support digital inclusion projects, and $60 million for a state planning program.
- **Tribal Broadband Connectivity Program:** $2 billion for the broadband program.
- **Enabling Middle Mile Broadband Infrastructure:** $1 billion to connect major and local networks to ensure reliable high-speed internet service for remote communities.

ENERGY DEMAND IN TERAWATT HOURS IN DATA CENTERS WORLDWIDE



* Forecast
Source: Statista

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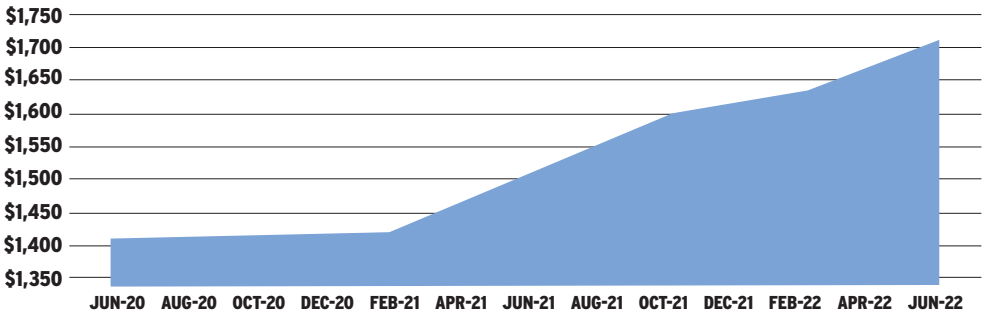
NATIONAL AVERAGE RENTS

National averages include 136 markets tracked by Matrix, not just the 30 metros featured in the report.



Source: *Yardi Matrix National Multifamily Report*

TOP 10 LOCATIONS FOR 2022

Fortune Builders and Commercial Real Estate Exchange Inc. (CREXI) named these top 10 locations for 2022 as having the best overall real estate prospects and the top multifamily markets:

Source: Fortune Builders and CREXI


Commercial & Residential Real Estate


Health Care & Science+ Technology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The Private Side column in *Engineering Inc.* focuses on the private-sector markets listed above, and information and insights on economic data relevant to the industry. For more on these topics, subscribe to ACEC's bimonthly *Private Industry Briefs*: **https://programs.acec.org/industrybrief**.

***Diana Alexander**, CPSM, is ACEC's director of private market resources. She can be reached at **dalexander@acec.org**.*

Millennials Are Driving Multifamily Rental Prices

Some asset classes in the commercial market have been hurt by the pandemic, while others have profited. Owners of office and hotel space were forced to look to retrofit opportunities to adapt to the aftereffects of the COVID-19 pandemic, while venture capital and National Institutes of Health investments for medical facilities and R&D laboratories soared. The residential market, on the other hand, has led design and construction spending over the last year.

One of the primary trends to watch in the residential market is demographics. The millennial generation is quickly becoming the leading home buyer in the U.S. At the same time, the U.S. is experiencing a shortage in housing inventory due to land availability, zoning constraints, construction workforce shortages, and the cost of materials, including lumber and steel. Rising mortgage rates have also forced the first-time home buying class to look to alternative residences, including multifamily rental properties. According to the *2022 Yardi Matrix Multifamily Report*, national average rents were up $19 in June 2022, over $1,700 for the first time (see chart). Ultimately, inflation and the slowing economy will cause the surge in rent hikes to slow. Rents have recently leveled out but remain above historic levels. For insight into which regions are forecasted to have the best overall real estate prospects and top multifamily markets for 2022, according to Fortune Builders and CREXI, see map above.

Former New Orleans Mayor Mitch Landrieu is tasked with implementing the Infrastructure Investment and Jobs Act.

BUILDING A BETTER AMERICA

Mitch Landrieu, former mayor of New Orleans and current White House senior advisor and infrastructure coordinator, weighs in on the historic infrastructure investment

The bipartisan passage of the Infrastructure Investment and Jobs Act (IIJA) in November 2021 provides the nation with the most comprehensive infrastructure investment in decades. It will not only create jobs but also transform numerous infrastructure sectors, from transportation and energy to high-speed internet and environmental resiliency.

Prior to signing the legislation into law, President Joe Biden named former New Orleans Mayor Mitch Landrieu senior advisor and infrastructure coordinator to implement the historic bipartisan infrastructure law.

Landrieu became mayor of New Orleans in 2010 as recovery from Hurricane Katrina and the BP oil spill had stalled. He is credited with leading one of the nation's greatest comeback stories and was subsequently named "Public Official of the Year" by *Governing* and "America's Top Turnaround Mayor" in a *Politico* survey of mayors.

In an exclusive interview with *Engineering Inc.,* Landrieu provides insights into his vision for the bipartisan infrastructure law and explains how the legislation will help stimulate private sector investments and bolster innovation and supply chains. He also highlights the critical role engineers play in building a better America.

CHERYL GERBER

ACEC: What was your reaction to being named the White House's coordinator for IIJA implementation? How did you approach the role when discussing the job with President Biden?

Mitch Landrieu: I was both honored and clear-eyed about the work ahead. For decades, American presidents have promised to invest in infrastructure but did not deliver. President Biden brought together Democrats, Independents, and Republicans to pass the largest investment in infrastructure in generations. We have a great responsibility to get this right.

> **"President Biden brought together Democrats, Independents, and Republicans to pass the largest investment in infrastructure in generations. We have a great responsibility to get this right."**

Having been a mayor and lieutenant governor after Hurricane Katrina, I saw the power of the government as a force for good and also noticed how a lack of coordination hurt on the ground. That's why we've been very focused on coordination and communication both across federal agencies and with state and local partners. From day one, we committed to deliver this generational investment wisely and well—on time, on task, and on budget.

We've also been clear that we have to get this right, making sure that we leave no community behind. The law's major investments must reach every community across this country as we work to build a better, stronger America. We have a lot of work ahead, but to date, we are delivering on that promise.

ACEC: You've talked about the need to go fast on IIJA implementation while also getting this right. For engineers, the "shovel-ready projects" that stemmed from the Obama-era American Recovery and Investment Act weren't the kind of game-changing infrastructure that the IIJA calls for. One year in, how have you been able to balance going fast but still going big with game-changing infrastructure?

Landrieu: This is about balance. Decades of neglect and underinvestment in our infrastructure have weakened supply chains, damaged U.S. competitiveness, and hurt the quality of life in communities big and small. It's not going to change overnight. At the same time, we have hit the ground running.

Our team is set up to do three things: build a team, deliver results, and tell the story. The first year has focused on getting the structural foundation right to be successful in the long term, as this is not something the country has done in a very long time.

As soon as I became infrastructure coordinator, I got to work—building the team across the federal government and with state and local partners who are the main folks executing on this investment. Approximately 90 percent of bipartisan infrastructure law funding will be implemented by nonfederal partners, so we requested right away that governors appoint infrastructure coordinators to manage the funds coming to their states. Since then, 54 states and territories, including Puerto Rico and Washington, D.C., have made those appointments. We also released a bipartisan infrastructure law guidebook early on to help state and local partners unlock the benefits of the law, and we've prioritized collaboration with inspectors general, knowing that results and accountability go hand in hand.

Also, we have to be clear that this is not a one-time stimulus like past efforts. This funding will be spent over the next five to seven (even 10) years. That's one reason we are now referring to this as the "infrastructure decade."

Since signing the bipartisan infrastructure law, the administration has hit the ground running to implement the law and deliver results, announcing over $180 billion to rebuild roads and bridges, as well as additional funds to modernize ports and airports, replace lead pipes, deliver cleaner air and water, and expand high-speed internet. This includes funding for over 5,000 specific projects, touching over 3,200 communities across all 50 states, D.C., and Puerto Rico.

The administration is also supporting or encouraging the funding of workforce training so there is a skilled workforce to take these infrastructure jobs, and to ensure all people, including people of color, women, and other populations who are underserved and underrepresented, can access these good middle-class jobs. Making sure we focus on that piece is key to our success over the next decade.

ACEC: The IIJA pushes for projects that incorporate domestically sourced materials and manufactured products. Engineers want to promote American manufacturing but, first and foremost, they must deliver on their commitment to safety and quality. Sometimes the products we need to deliver at this level aren't available domestically. How is the administration working to minimize the disruption of project delivery when the necessary materials aren't sourced in the U.S.?

Landrieu: Decades ago, domestic preference laws were put in place to ensure that taxpayer funds on infrastructure and federal procurement support American jobs and invest in the domestic industrial base. But despite the laws on the books, loopholes and waivers allowed billions of federal procurement dollars to flow overseas, supporting foreign manufacturers at the expense of American workers.

President Biden believes we have to use the power of this investment to rebuild domestic manufacturing capacity and good-paying jobs here at home. He made a commitment to make "Buy America" real to ensure taxpayer dollars create good-paying jobs here at home, strengthen critical supply chains, and position U.S. businesses to compete in strategic industries.

By requiring the use of "Made in America" content, the Build America, Buy America provisions in the bipartisan infrastructure

Mitch Landrieu, accompanied by senior officials and cabinet members from the Infrastructure Implementation Task Force, speaks during a news conference.

BLOOMBERG/GETTY IMAGES

law will help stimulate private sector investments in domestic manufacturing, bolster critical supply chains, and support the creation of good-paying union jobs so that America's workers and firms can compete and lead globally for years to come.

As we've learned from the pandemic, America's critical supply chains have gaps. Manufacturers will need time to find onshore suppliers and scale up production to meet demand. Agencies have the authority to issue waivers from Build America, Buy America requirements but will do so judiciously—only as needed—and strategically, with an aim toward ensuring that Made in America goods will be used once firms make needed investments to expand domestic production. Waivers will be limited, targeted, and, where appropriate, conditional. They will cover specific items or specific periods of time to enable agencies, recipients, and the private market to build capacity and respond to the new conditions.

Waivers will not be an alternative to increasing domestic production but a tool to promote investment in our domestic manufacturing base, strengthen critical supply chains, and position U.S. workers and businesses to compete and lead globally in the 21st century as our infrastructure is built by American workers with Made in America products.

That's also why legislation such as the new CHIPS and Science Act is so groundbreaking. CHIPS supercharges our efforts to make more semiconductors—which of course power everything from smartphones to automobiles—right here at home. We are firing on all cylinders to make more materials in America, ensuring that the important work of our engineers is as efficient and effective as possible.

One related point is that as we upgrade our ports, airports, rail, roads, and bridges through the bipartisan infrastructure law, we are going to improve our supply chains.

ACEC: A major feature of the IIJA is greater emphasis on clean energy, lower carbon emissions, and more resilient energy infrastructure. Many of these are new programs—can you give us a sense of how implementation is progressing?

Landrieu: Millions of Americans feel the effects climate change is reaping on our infrastructure each year when their roads wash out, power goes down, or schools get flooded. The bipartisan infrastructure law includes the largest investment in the resilience of physical and natural systems in American history, including over $50 billion to protect against droughts, heat, wildfires, floods, and other threats. It also provides the first down payment on investing in clean energy, rebuilding the power grid, and cleaning up pollution. The president's bipartisan infrastructure law provides the first down payment on a clean energy future with more than $170 billion for clean energy and

power, resilience in physical and natural systems, clean transportation, and cleaning up legacy pollution.

For example, the bipartisan infrastructure law's more than $65 billion investment in clean energy transmission and the electric grid will upgrade our power infrastructure by building thousands of miles of new, resilient transmission lines to facilitate the expansion of renewables and clean energy, while lowering costs. Transforming the U.S. electricity sector—and electrifying an increasing share of the economy—represents the biggest job creation and economic opportunity engine of the 21st century. The law funds new programs to support the development, demonstration, and deployment of cutting-edge clean energy technologies to accelerate our transition to a zero-emission economy, including long-duration energy storage technologies, $9.5 billion in clean hydrogen initiatives to help decarbonize industry and the transportation sector, upgrades to our existing hydropower fleet, demonstration programs for direct air capture, and a $6 billion Civil Nuclear Credit Program that will provide financial support to existing nuclear reactors that are at risk of closing and being replaced by higher-emitting power sources.

"We are firing on all cylinders to make more materials in America, ensuring that the important work of our engineers is as efficient and effective as possible."

We have also begun implementing the over $20 billion in bipartisan infrastructure law programs to clean up pollution, including orphaned oil and gas wells, abandoned mines, Superfund sites, and brownfields, to create good-paying union jobs, catalyze economic opportunity in energy communities, reduce the emission of methane and other harmful pollutants, and advance long overdue environmental justice.

We're making great progress on implementation. I'll share a few examples with you:

- On August 2, we announced $26 million in funding to increase the resilience of solar and wind grid services. And that's just one recent example of our investment in resilient energy infrastructure, which we are laser-focused on right now.
- On August 16, we announced over $1.6 billion in grants to transit agencies, territories, and states to invest in 150 bus fleets across the country, nearly doubling the number of electric transit buses on America's roads. More than 1,100 of these vehicles are going to use zero-emissions technology for cleaner air, and this investment is going to help us meet the president's goal of a net-zero emissions America by 2050.

Another milestone was that all 50 states, D.C., and Puerto Rico submitted their electric vehicle (EV) plans to the federal government. That means we're seeing the whole country get on board to make EVs more accessible, and I'm proud to say that we're generally seeing strong interest from every state in many of our bipartisan infrastructure law programs.

Finally, this lays the foundation for more ahead. In August 2022, President Biden signed into law the Inflation Reduction Act, which is the largest investment in history to build a clean energy economy, tackle the climate crisis, and lower households' energy costs—providing $369 billion in clean energy and climate investments.

Overall, the president believes that by investing in clean energy and more resilient energy infrastructure through legislation such as the bipartisan infrastructure law and the newly passed Inflation Reduction Act, we can both safeguard Americans for decades to come and rebuild our economy from the bottom up and the middle out—for an economy that is stronger, more innovative, and more sustainable.

ACEC: Engineers are in short supply these days. Our firms are struggling to recruit and retain engineers in an increasingly competitive labor market. How can the administration help us to tackle this challenge at a time when our ACEC Research Institute is reporting that 82,000 new engineering and design jobs were created by the IIJA alone?

Landrieu: There is simply no question that engineers are instrumental in our mission to build a better America. Our civil engineers help us rebuild our roads and bridges, our electrical engineers help make our grids more resilient, and our environmental engineers help us deliver clean water and get rid of dangerous pollutants. We know they are in high demand, and so as we work to fill these roles, we're focused on underscoring the positive impact that workers can have by helping with bipartisan infrastructure law implementation—in lifting up communities, supporting our nation's economy, and ensuring an equitable and bright future for our nation. The work that's underway is fundamentally changing peoples' lives, and the engineers who oversee the projects are at the forefront of transformational change. As we recruit talent, it's important to emphasize these are mission-driven roles.

Finally, we're taking major steps to train talent. We've kicked off a Talent Pipeline Challenge, calling on employers, training providers, state and local governments, and more to help train workers of all backgrounds to fill these newly available and good-paying jobs. Increasing training opportunities is essential for us to hire qualified, diverse candidates. Additionally, the bipartisan infrastructure law includes over $800 million in dedicated funding to train workers in many fields—ranging from plumbing to engineering.

ACEC: The president has been working on ways to fend off the staggering inflation that is an increasing threat to the economy. For our industry, firms have had to increase salaries and other costs at an almost unprecedented pace to hire and retain staff, while still working under government contracts that cap rates. With expected rising demand for engineering services and limited capacity across all sectors, what is the

Mitch Landrieu speaks at ACEC's 2022 Annual Convention & Legislative Summit and is onstage with ACEC President and CEO Linda Bauer Darr.

administration doing to make sure that our agency partners are equipped to handle the increased costs?

Landrieu: As you noted, the president is laser-focused on tackling inflation and lowering costs. The bipartisan infrastructure law is an investment in bringing down costs, as it strengthens supply chains to help fix disruptions that increase the price of goods for consumers. The new funding for ports, waterways, rail, and airports is going to help get goods to market more cheaply. We're lowering energy costs and internet costs, too. We're also, of course, confident that the Inflation Reduction Act will help give families more breathing room. This new law is going to increase domestic manufacturing, reduce the federal deficit, lower energy costs, and bring down the cost of prescription drugs and health care.

ACEC: Social equity has been a major policy focus for President Biden and U.S. Secretary of Transportation Pete Buttigieg. What are your thoughts on the role infrastructure has historically played in fostering inequalities, and how does the administration want to use the IIJA to break down those barriers? Do you think engineering has a role in promoting social equity? How so?

Landrieu: You're right that equity has been a major focus of the entire administration, and it's certainly a priority as we're implementing the bipartisan infrastructure law.

Infrastructure can be an incredible force for good, leveling the playing field by connecting communities to economic and educational opportunities. Unfortunately, however, it can also have the opposite effect. There are highways across the country, for example, that were constructed through communities, displacing and barring disadvantaged communities from centers of opportunity, health care, and recreation. There is also the reality that too often, the communities that need infrastructure investments the most—in order to drink clean water or access the internet—are overlooked.

> **"There is simply no question that engineers are instrumental in our mission to build a better America."**

This administration is committed to changing that. We believe that building a better America means centering an equity lens on everything we do. That means we are focused on goals such as cleaning up legacy pollution that disproportionately affects vulnerable communities, replacing every single lead pipe so that every single child has clean water, reconnecting communities that have been divided by highways, and expanding high-speed internet across the country to close the digital divide. We cannot leave anybody behind.

And we cannot do this work without engineers. You are the planners. You are the ones helping design and plan the future of our communities. ■

THE BROOKS ACT AND QUALIFICATIONS-BASED SELECTION TURN 50

JEB BROOKS, SON OF QBS FOUNDER JACK BROOKS, REFLECTS ON HIS FATHER'S ACHIEVEMENT

2022 MARKED THE 50th ANNIVERSARY of the enactment of the Brooks Act, the law requiring the federal government to utilize Qualifications-Based Selection (QBS) when procuring engineering and architecture services. With QBS, firms are selected based on their experience and technical expertise rather than by price. Many states have subsequently followed the federal mandate for their state-funded projects.

Engineering Inc. recently spoke with Jeb Brooks, chairman of the board of directors of the Jack Brooks Foundation and son of former Congressman Jack Brooks, D-Texas, who was author of the Brooks Act legislation.

Jeb established the foundation as an apolitical nonprofit focused on increasing civic engagement.

ACEC: What does it mean for you to celebrate the 50th anniversary of your father's work?

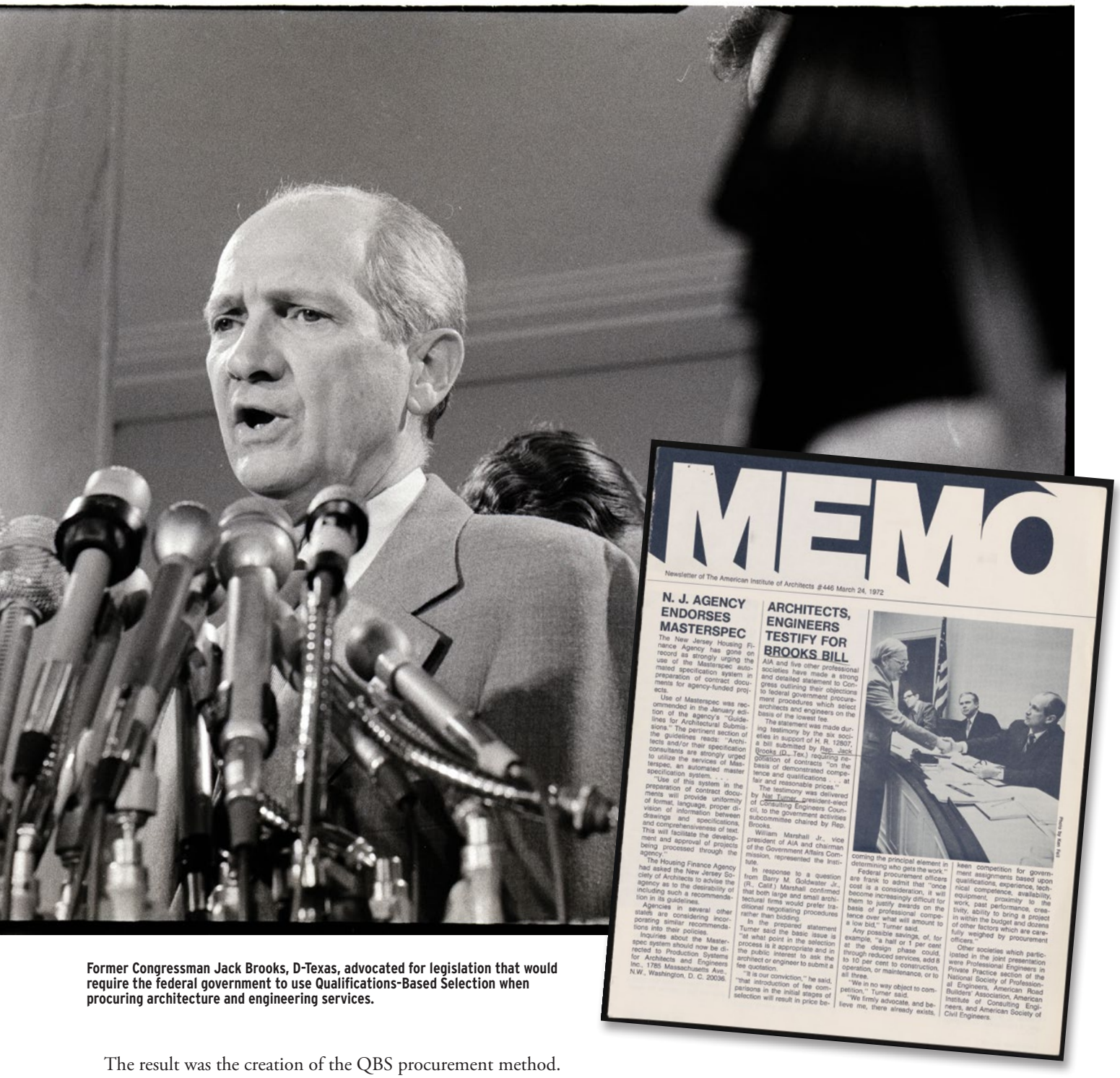
Jeb Brooks: I'm enormously proud of my father, and I'm grateful to ACEC for the opportunity to talk about some of his work. The Brooks Act of 1972 also is something to be proud of. It was the importance of my dad's contribution that led me to create the Jack Brooks Foundation. I would say that it is the legislation itself, my dad, and ACEC members that are the main cause for celebration today.

ACEC: What would you most want people to know about your father?

Brooks: I think he said it best himself: "You ought to be interested in helping people, but you ought to be interested in helping everybody." He embodied the kind of public servant who wanted the best for our country.

ACEC: What prompted your father to create legislation that emphasized the importance of quality engineering?

Brooks: Well, the story goes that in 1937, when my father was a young man, there was a natural gas explosion at a nearby school that killed almost 300 children. There were other incidents: In 1963 there was a reservoir collapse, in 1965 and 1967 there were three bridge collapses, and in 1971 there was a building collapse. I believe that the Brooks Act of 1972 was created to ensure that public funds were used to build sound, reliable projects—of whatever sort.



Former Congressman Jack Brooks, D-Texas, advocated for legislation that would require the federal government to use Qualifications-Based Selection when procuring architecture and engineering services.

BETTMANN/GETTY IMAGES

The result was the creation of the QBS procurement method. For some, QBS is important because it saves tax dollars over the long term. But for me, and I believe for my father as well, the number of lives that have been saved thanks to this legislation and thanks to QBS are even more important.

ACEC: What else about the Brooks Act of 1972 should people know?

Brooks: I would like for everyone, even beyond the constituents of ACEC, to understand how difficult it is to make law—to set down the basic rules that regulate American industry. Dad would explain to me that positive change doesn't come about just because you think something isn't right; it takes tough, tedious work. It was his determination to do that tough work to craft reliable, functional legislation that benefits the whole country. Any project built with quality and made to last takes that same kind of tough, determined work—if you don't believe me, just ask an engineer!

With that in mind, I'd also like for people to understand the challenge of public service. The Brooks Act took over five years of work in Congress to become law. Now, 50 years later, we can all appreciate how important public policy can be. There is no question that America works best when we all work together. This legislation has not only helped the engineering industry thrive, but every American has also benefited from the quality work exemplified by the projects honored earlier this year at ACEC's Engineering Excellence Awards (EEA) Gala.

gains, but still lacks consumer confidence in sufficient measure. He called for new programs of job training, abandonment of most of the Phase II wage and price controls, and a guaranteed reasonable mortgage rate to spur housing activity.

Rep. Jack Brooks (D., Tex.) told the architects and engineers they should mount a bipartisan effort to convince Congress that competitive procurement of their services on federal projects would not be in the best interests of the public.

A revolving construction fund for federal buildings was explained by one of its Congressional supporters, Rep. Kenneth Gray (D., Ill.). Gray said such a fund would help reduce the construction backlog of government buildings which have been authorized as needed, but which as yet are not funded.

Seminars featuring Congressional panelists and resource specialists from a variety of professional and trade groups met and discussed questions involving housing, transportation, land use, labor relations, and researched technical conversion.

A/Es at Public Affairs Conference had varied round of activities: luncheon talk by Sen. Edward Kennedy (opposite); visits to Capitol Hill of (N.J. Sen. Harrison Willi shown top left); receptio Smithsonian (CEC Presi William Sowers and AIA P dent Max Urbahn greet Albert Link of N.D., top mid speeches by Wisc. Sen. Wil Proxmire (top right). Texas R Jack Brooks (middle with A Commissioner of Governm Affairs William Marshall CEC President-elect Nat T ner), Minority Leader Ger Ford and Majority Leader H Boggs (below with Urbahn).

Photos by Charles Phillips

3 MEMO March 24, 1972

COMPONENTS' MEETINGS ON NATIONAL POLICY REPORT

As public interest in the recommendations of the AIA National Policy Task Force continues to mount, several Institute components and other organizations have scheduled meetings with Task Force Chairman Archibald C. Rogers, FAIA, to discuss the report.

In addition to presentations before AIA groups, Rogers will speak in the next few weeks to a student conference on the environment sponsored by the University of Arizona School of Architecture. He will also meet with the Northeastern Regional Development Association, and with the American Society of Planning Officials.

He was a featured speaker at a March 23 dinner sponsored by the Minnesota Society of Architects and the Minneapolis and St. Paul AIA chapters, honoring local and area legislators and government officials. The dinner marked the designation of the Twin Cities area as the All American Metro Area, by the National

INSTITUTE SUPPORTS FUND FOR COMMUNITY DEVELOPMENT

The Institute has proposed that a Community Development Fund replace the present Highway Trust Fund.

Representing AIA at a hearing of the House Public Works subcommittee on roads, Archibald Rogers, FAIA, vice president, said this would be a funding source at the federal level that would not only be multimodal in the transportation sense, but would be available to provide public infrastructures of all kinds necessary to sustain a high quality of urban and rural life.

"It is not necessary to document further the interrelationships between land use and transportation," he said. "This has been done very well by the Transportation Department and others."

The fund would have a combination of revenue sources, "ranging from quasi-user sources, such

The Brooks Act took more than five years of work in Congress to become law. Jack Brooks worked tirelessly to make it a reality after seeing how shoddy construction affected the well-being of citizens.

ACEC: Can a 50-year-old legal document still have relevance today?

Brooks: This is not just some dusty old document from a bygone age. The key issues that lead to the embodiment of QBS have already been debated for years and at the highest level. The questions confronted by the engineering industry today can be answered, solved, and contextualized by reviewing the process that led to this legislation. In general, reading history is categorically never bad.

That is why the Jack Brooks Foundation, in conjunction with the Briscoe Center for American History, is digitizing all of Dad's papers spanning his 42 years of service in Congress. We have just released a trove of documents relating to the discussions and debates that ultimately formed the bill as it stands today. I believe that having those documents available to the public can remind us of the whys, the wherefores, and ultimately the importance of QBS as public policy.

ACEC: How do you think your father would feel knowing that the Brooks Act is still in place today?

Brooks: This is not only a proud moment for the industry that ACEC represents, but also a proud and tangible example for America of what good public policy—and therefore good government—can achieve in the hands of a skilled political engineer like my dad.

ACEC: Is there anything else you would like to add?

Brooks: In closing, I could not be prouder of my father. While the 1972 act is something we can all be proud of, it is Americans who truly benefit from the beautiful creations and spaces created by ACEC engineers. As a former New Yorker, the rebirth of Penn Station into the Moynihan Train Hall—the 2022 EEA Grand Conceptor Award winner—gives me a renewed sense of pride in our country, all thanks to this bill and what has been achieved by engineers such as yourselves as a result.

All of these interlinking steps took years to accomplish. A politician (independent of party) worked to create rules that would help everybody. It was tough, tedious work. QBS and the members of ACEC took up the tough work of building this country project by quality project. Each step is and will be evaluated ultimately by quality and hard work acting in conjunction. This is not about just one bill, not just one man, not even one industry: This is America. ■

JACK BROOKS: SELECT QUOTES ON THE BROOKS ACT

FORMER CONGRESSMAN JACK BROOKS SPOKE ON THE IMPORTANCE OF QUALIFICATIONS-BASED SELECTION AS HE ADVOCATED FOR AND CELEBRATED THE PASSAGE OF THE BROOKS ACT.

THIS BILL IS FRAMED in terms of protecting the government's and the public's interest. The bill, for this reason, merits the support of the responsible members of your professions—those who are ready, willing, and able to compete for government contracts on the basis of their capabilities and qualifications to do the job—and who are also willing, after having won this crucial element of the competition, to perform the design work at a fee that is fair and reasonable to the government.

Addressing the American Institute of Architects and the Consulting Engineers Council of the U.S.
March 13, 1972

DESIGN COSTS are only a minor percentage of overall cost of construction and maintenance.

Yet, if design is poor, construction and maintenance costs can be unnecessarily high and the structure may be inefficient to use over a period of many decades.

Billions of dollars in construction will be undertaken by the federal government during the years to come, requiring the services of thousands of architects and engineers. It is imperative that those selected to perform the design work for the government have the highest qualifications and be willing to provide these services to the government at fair and reasonable prices.

Addressing the Architect/Engineer Selection Bill
February 1, 1972

LEGISLATION, AS YOU MAY KNOW, is an art, however, and not a science. We do not turn out good legislation like you stamp out bottle caps.

I am totally committed to the proposition that the federal government and the people of this nation have the benefit of the highest quality architectural and engineering services that the government can procure.

I want you to know how deeply I appreciate the support you have given me in the past in connection with this important legislation. During the years to come, countless billions of dollars in tax funds will be spent on a multiplicity of projects, requiring the very best that your professions can provide. As far as I am concerned, we must continue an all-out struggle to avoid compromise of this costly effort.

Addressing the American Institute of Architects and the Consulting Engineers Council
March 3, 1971

HIGH-QUALITY DESIGN SERVICES by members of the architectural and engineering professions are essential if the government wants to obtain more efficient buildings that are better suited to meet the needs of the public.

These designs that members of these professions provide the government are not an end in themselves but rather serve as a guide for constructing multimillion-dollar federal facilities. Common sense suggests that the government can save on construction and maintenance costs and also obtain better buildings and other structures if the most highly qualified architects and engineers are employed.

It is essential that the broadest possible competition be injected into architect/engineer selection so that all members of these professions will be given a fair opportunity to participate in federal design work that they are qualified to perform. Furthermore, contracts for these services must be at price levels that are fair and reasonable in order to protect the interests of the taxpayers.

Addressing the House approval of the Brooks Architect/Engineer Selection Bill
July 26, 1972

THE FEDERAL GOVERNMENT has a multibillion-dollar construction program to fill the needs for federal office buildings and other structures to be used in providing essential services to the public. We cannot compromise the quality of this construction work by accepting inferior designs.

This bill reflects the approach utilized throughout the Western world in acquiring these professional services. It is a time-tested system, universally recognized as the most effective means of selecting architects and engineers.

The bill approved today establishes federal policy that the broadest competition be pursued in architect and engineer selection and, further, that no contract be awarded at a fee that is not fair and reasonable to the government.

Final approval today of this legislation is a most gratifying result of a struggle of more than five years to protect the public's interest in the quality of our federal construction program.

Addressing Congressional approval of the Brooks Architect/Engineer Selection Bill
October 14, 1972

Part of the record-breaking Fall Conference crowd listen to Keynote Speaker Travis Mills.

ACEC President and CEO Linda Bauer Darr greets the Opening General Session attendees with optimism. "As an industry, we fear the headwinds we are beginning to face and the looming prospect of a recession, yet our companies are doing well, and wages are up. This growth reflects the overall optimism I hear from so many of you."

"With all the challenges around the world, it was exciting to hear the people that will propel our industry's future with a positive message of what we can achieve working together," said ACEC Chair Art Barrett.

2022 Fall Conference

BREAKS ATTENDANCE RECORDS

Speakers focus record-setting crowd on embracing the future

The more than 1,000 attendees at the recent 2022 Fall Conference in Colorado Springs, Colorado, represented an all-time high for Fall Conference attendance, breaking the previous high set in 2018 in Boston.

ACEC President and CEO Linda Bauer Darr greeted attendees with positive economic news about the industry, despite the impact of rising inflation and rumors of a looming recession.

"As an industry, we fear the headwinds we are beginning to face and the looming prospect of a recession, yet our companies are doing well, and wages are up," she said. "This growth reflects the overall optimism I hear from so many of you."

She cautioned, however, there are increasing concerns about the tight labor market. She pointed to a recent ACEC Research Institute Economic Sentiment Study which found that 51 percent of surveyed firms have turned down work over the past three months due to workforce shortages.

"There is also real concern about the inability of many of our firms to incorporate the cost of inflation into their overall project costs with their clients," Darr said.

Conference highlights included:

INSTITUTE ECONOMISTS SEE INDUSTRY FUTURE WITH 'MEASURED OPTIMISM'

Jon Gray, chief economist of the ACEC Research Institute, and Joe Bates, a research consultant for the Institute, introduced an optimistic industry-wide economic assessment and forecast at the 2022 Fall Conference.

"We had a very good year, the engineering and design services industry, rebounding from the pandemic in 2021," Gray said during the joint Conference presentation.

Results show that jobs and total industry employment are up just over 2 percent year over last year. This increase translates to 1.53 million jobs in 2021, compared to 1.5 million in 2020.

"I think that a couple of the numbers that jump out at me… are that we have a lot of really good-paying jobs," Bates said. "And we maintained that through the pandemic. We snapped back from the recession."

Gray said that the industry should expect 11 percent in nominal output (revenue) in 2022. Growth is expected to continue over the horizon of the forecast, but that growth will slow down. For instance, the total forecast indicates that growth will slow to 6.1 percent in 2023, and 2 percent in 2027.

"Inflation is really taking a bite out of revenue right now," Gray noted.

FIRM LEADERS DISCUSS ECONOMY AND INDUSTRY

Following ACEC Research Institute's presentation on their annual economic outlook, leaders of three member firms weighed in on their specific concerns regarding future economic conditions and the impacts of inflation, worker shortages, the Infrastructure Investment and Jobs Act (IIJA), and a looming recession.

Moderated by Research Institute Chair John Carrato, panel participants included Alyson Watson, CEO of Woodard & Curran in Portland, Maine; Keith Foxx, principal of FOXXSTEM in Washington, D.C.; and Mitch Simpler, managing partner emeritus of Jaros, Baum & Bolles in New York.

Chief Economist Jon Gray (left) and Institute Research Consultant Joe Bates (right) unveil the latest data on industry economic performance.

Jeb Brooks, son of the founder of QBS, praised ACEC's support for the historic legislation in honoring its 50th anniversary since becoming law.

Carrato spared no time in diving into the discussions by asking a very pointed question: "If we have a recession in the U.S., do you think it would affect the engineering and design services industry, and what, if anything, is your firm doing to plan for the potential of a recession?"

"My firm is all private sector, so a recession for us will have significant impacts because our clients have already started throttling back," noted Simpler. "Private sector firms rely on private sector developers and businesses to provide our business. But, when a recession starts to loom, they start reducing the amount of money they spend. They start slowing projects down."

Watson noted that her firm has both public and private sector clients. "In the private sector, we are seeing some budget contractions," she said. "Whether a recession will be significant, some of our clients will cut back on their budgets."

Keith Foxx, who called himself a newcomer to such a member firm leader panel, was more bullish on the economic future and especially on the IIJA. "We just see good things for the next 10 years," Foxx said. "The huge amount of funding that we see from IIJA will support small businesses in this industry. It seems like it's trickling, but it's coming."

TRAVIS MILLS: THE POWER OF ATTITUDE OVER OUTCOME

Travis Mills, a self-described joker who had "one bad day at work," eventually turned that bad day into an inspirational life purpose—helping other veterans and their families find their way back from injury and survival to lives filled with purpose and joy.

Member firm leaders (left to right), Alyson Watson, CEO, Woodard & Curran; Keith Foxx, principal, FOXXSTEM; Mitch Simpler, managing partner emeritus, Jaros, Baum & Bolles, discuss future economic issues and impact on firms during a panel discussion moderated by ACEC Research Institute Chair John Carrato (far right).

Injured war veteran Travis Mills delivered an inspirational presentation on overcoming challenges.

Former Bill & Melinda Gates Foundation CEO Dr. Sue Desmond-Hellmann discussed her role in developing a groundbreaking breast cancer drug, and how the drive toward innovation improves lives.

Keynote speaker and Futurist Amy Webb and Chair-Elect Jay Wolverton discussed future trends that could impact engineering firms. Webb identified three technology sectors that could impact engineering: the digital twins, or virtual models of physical systems or processes used for understanding or predicting; engineered/synthetic biology, or the design of new biological parts, devices, and systems for new purposes; and extended reality (XR), an umbrella term that encompasses virtual reality, augmented reality, and mixed reality.

The retired U.S. Army Staff Sergeant of the 82nd Airborne and founder of the Travis Mills Foundation for Veterans is one of only five quadruple amputees from the Iraq and Afghanistan wars. Nonetheless, he epitomizes resilience and the fact that human capability isn't limited by one's physique, but only by the remarkable power an attitude can have upon an outcome. Mills told the Fall Conference audience about his third deployment, just four days shy of his 25th birthday, to Afghanistan when he set his 120-pound pack on an improvised explosive device. Suddenly his world spun sickeningly out of control.

But despite his own catastrophic injuries, his immediate concern was the fate of the soldiers on his team. That focus has never left. He used wit and stubbornness to regularly defy the odds and carry him through grueling months of rehabilitation and therapy.

His efforts led to the creation of the Travis Mills Foundation for Veterans, which provides injured veterans and their families an all-inclusive, all-expenses paid, and barrier-free vacation to Maine. It's there they spend time with Mills and his family, participate in adaptive activities, bond with other veteran families, and enjoy much-needed rest and relaxation in Maine's great outdoors.

"We want them to know 'You're not alone.' Do not live life on the sidelines," he said.

The advice he gives other veterans, and anyone facing adversity, is to set goals and make them concrete. "Don't be afraid to push yourself," he said. "I was up on short legs just shy of two months because I had no internal injuries. It hurt like hell, but that's when I realized that if I could do this, then anything is possible."

DESMOND-HELLMANN TO ACEC: TURN INNOVATION INTO ACTION

Dr. Sue Desmond-Hellmann, the former CEO of the Bill & Melinda Gates Foundation and a sitting board member of the multinational pharmaceutical and biotechnology company Pfizer, delivered a keynote speech that tapped into a common language among technical professions of engineering and design, and medicine and biotechnology.

Her message was clear: "Turn innovation into action."

"I love engineers because they get things done," she said. Desmond-Hellmann shared stories from her career about innovations that she was directly involved in. Once those innovations were implemented, the lives of millions of people throughout the world were improved.

With a background in oncology, she was involved in the development of the drug trastuzumab, sold under the brand name of Herceptin. The drug works to stop HER2-positive breast cancer cells from growing. According to the American Cancer Society, HER2 is a protein that helps breast cancer cells grow quickly. Breast cancers that are HER2-negative grow slower, but HER2-positive cancers are more likely to respond to treatment, including drugs such as Herceptin.

Other awards presented include:

NEW COLLEGE OF FELLOWS INDUCTEES

- **Rick Baldocchi,** AVCON, INC., Orlando, Florida
- **Donald Booth,** DJG, Inc., Williamsburg, Virginia
- **Michael Cooper,** Harley Ellis Devereaux, Southfield, Michigan
- **Thomas Mosure,** ms consultants, inc., Columbus, Ohio
- **William Wilson,** Fred Wilson & Associates, Inc., a CMA company, Jacksonville, Florida
- **Jan Zander,** Ayres Associates, Eau Claire, Wisconsin

2022 SCHOLARSHIP WINNERS

- ACEC Scholar of the Year, **Gia Ha**, Virginia Tech
- ACEC Life/Health Trust Scholarship, **Qasim Akhlaq**, The Cooper Union for the Advancement of Science and Art
- a/e ProNet Engineering Scholarship, **Rebecca Rasmussen**, Brigham Young University
- College of Fellows Scholarship, **Grace Zalubas**, University of Michigan
- Coalition of American Structural Engineers Scholarship, **Taylor Drahota**, University of Nebraska-Lincoln
- J.A. Watts, Inc. Diversity in Engineering Scholarship, **Xavier Vera**, California State University, Fresno
- Joseph Egan Scholarship, **Kiara DiLoreto**, University of Dayton
- Lee Rice (LRE) Water Scholarship, **Anna LeClair**, Northeastern University
- Small Firm Coalition Scholarship, **Gracie Warren**, Boise State University

YOUNG PROFESSIONAL OF THE YEAR AWARDS

- **Bliss Kelley Bernard**, formerly of Fenstermaker, now at G.E.C., Inc., Baton Rouge, Louisiana
- **Julie Eaton Ernst**, Weston & Sampson, Reading, Massachusetts
- **Carrie Fischer**, NTM Engineering, Dillsburg, Pennsylvania
- **Bruna Parahos**, Jacobs, New York, New York
- **Alicia Suzuki**, Kennedy Jenks, Honolulu, Hawaii

COMMUNITY SERVICE AWARDS

- **Bryan Bross**, Klingner & Associates, Burlington, Iowa
- **Leanne Panduren**, ROWE Professional Services Company, Flint, Michigan
- **Jennifer Ray,** Johnson, Mirmiran & Thompson, Hunt Valley, Maryland

Attendees enjoy the spacious Fall Conference Exhibit Hall featuring more than 30 vendor booths.

COALITIONS DISTINGUISHED SERVICE AWARD

- **Joel Goodmonson**, Architectural Engineers, now IMEG, Boston

QBS AWARDS

State or Local Government Sector

Illinois Department of Transportation, Springfield, Illinois

QBS Merit Award

Town of Smithfield, Rhode Island

ACEC/PAC FALL CONFERENCE SWEEPSTAKES WINNERS

The winners of this year's PAC Sweepstakes: **Peter Strub** of **TranSystems** in Travelers Rest, South Carolina, won the $10,000 Grand Prize. **Travis Deane** of **Shannon and Wilson** in Burbank, California, and **Campbell Wallace** of **ACEC New York** in Albany, New York, each won $5,000. **Allison Sambol** of **Felsburg Holt & Ullevig** in Omaha, Nebraska, and **Bryan Bross** of **Klingner & Associates** in Burlington, Iowa, each won $2,500.

Ten people won $1,000 prizes: **Roman Grijalva** of **BGE** in Austin, Texas; **Brian Coltharp** of **Freese and Nichols** in Fort Worth, Texas; **Brian Klaes** of **Moreno Cardenas** in El Paso, Texas; **William Wilson** of **Chen Moore and Associates** in Jacksonville, Florida; **Jim Honea** of **Jacobs Engineering Group** in Albuquerque, New Mexico; **Adam Terronez** of **BSK Associates** in Bakersfield, California; **Keith London** of **Kennedy Jenks** in Murrieta, California; **Karen Tatman** of **Quincy Engineering** in Salem, Oregon; **Chuck Christiansen** of **Wood, Patel & Associates** in Phoenix, Arizona; and **Michael Statz** of **MSA Professional Services** in Madison, Wisconsin.

Conference attendees cheer on racers during the popular ACEC/PAC Pinewood Rally. The 2022 Pro Division winner was Elizabeth Stolfus from Stolfus and Associates.

ACEC awarded Kenny Smith (left) and Jack Hand this year's Chair Emeritus Award winners.

Developed when Desmond-Hellmann led the clinical group at Genentech, the Herceptin treatment soon became one of the most groundbreaking breast cancer treatments currently available on the U.S. market.

"The best thing for me is the thousands of hours, and the hundreds of thousands of women who, instead of the conversation I used to have with them about the impact of HER2, is now that we have something for that…As a biotech person, that's the best thing ever. That's what I love about innovation."

JACK HAND, KENNY SMITH ARE 2022 ACEC AWARD WINNERS

ACEC honored two longtime Council advocates, Jack Hand and Kenny Smith, as Chair Emeritus Award winners during the annual 2022 Fall Conference Awards Luncheon.

Selected by past Chair Emeritus Award winners, the annual award recognizes an individual or individuals who have demonstrated exemplary service to the Council, its member firms, and the industry. ACEC Chair Art Barrett presented the 2022 Chair Emeritus Awards.

"These two award winners and ACEC leaders helped to set the strategic vision for ACEC that's at the core of ACEC's success and our strategic plan goal related to vibrant member engagement," said Barrett.

Hand, the retired chairman and CEO of POWER Engineers and currently with River House Management Consulting, has dedicated years of service to making ACEC the political voice for the engineering industry.

"This is a very special and a very unexpected honor," Hand said in his remarks accepting the award. "Thank you, ACEC, and the individual members who made this happen."

Smith, CEO of Louisiana-based T. Baker Smith, has nearly three decades of service to ACEC. "Wow, I am honored and truly humbled to receive this award," Smith said. "I want to thank ACEC of Louisiana for always backing me up…ACEC is all about making things happen." ■

SPECIAL THANKS
TO OUR 2022 FALL CONFERENCE SPONSORS

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Reinventing the Office After COVID-19

5 NEW ADAPTATIONS FOR THE POST-PANDEMIC WORKPLACE

BY STACEY FREED

Even before the COVID-19 pandemic, office design was being reimagined. A few companies had dipped their toes into the remote work pool, offering hoteling, laptop lockers, and open workspaces and hubs where workers could collaborate. But as more companies adapted to working remotely during the pandemic, employees, C-suite executives, and designers have had an opportunity to rethink the office space and plan for the new reality of the world of work.

Many company leaders and employees have shifted their attitudes about the nature of work. The great remote work experiment has proved that many people can be productive working from spaces other than the traditional office. Corporate leaders have begun to more fully understand that where employees work has implications for space design, as well as how companies allocate capital and manage staff. Many companies have opted for a hybrid model in which employees split time between their homes and the office.

With more relaxed social distancing restrictions and people craving human connection, what does it mean to go back to the office? How can the office be beneficial to employee productivity, engagement, and well-being? "Top-performing companies understand the power of the physical workplace for their people to thrive, as well as for it to drive creativity and innovation," says Natalie Engels, work sector leader, design director, and principal at Gensler.

Here are five trends in post-pandemic workplace design:

1. DESTINATION CREATION

People want a compelling reason to commute to the workplace. "It has a new role as a destination, a place where employees can find experiences they can't get working remotely," Engels says.

But it's not about setting up Ping-Pong tables and beanbag chairs. A recent Gallup study found that an informal work environment is the least important factor among millennial job seekers and that only 18 percent of them report that a "fun place to work" is extremely important.

People are, though, looking for a way to be joyful again, to socialize and collaborate, Engels says. "Isolation took its toll."

Making the office a real draw includes asking employees about their needs and getting buy-in, and determining the best mix of open space and private space.

2. PLACE TO LEARN AND EXPLORE

While online meetings connected people, new hires, younger employees, and those who entered the workforce during the pandemic have missed out on the organic education that happens in a physical workplace—chats around the proverbial watercooler, a chance meeting in a hallway, an overheard conversation among colleagues about how to solve a problem. Offices need spaces to encourage those interactions, and Gallup's study supports that need, as nearly 6 out of 10 millennials say that opportunities to discover new insights are important to them when they're applying for a job.

The open floor plan was thought to be the way to create these gathering spaces, but post-pandemic design is more curated. Since people are no longer tied to desktops, they can bring their computers to spaces that are flexible in use, says Nathan Ferrance, senior interior designer at global design firm HKS, which designed ACEC's new office (see page 30). These spaces—lounge areas, café tables, accessible kitchen areas, open flex offices—make good spots for chance encounters.

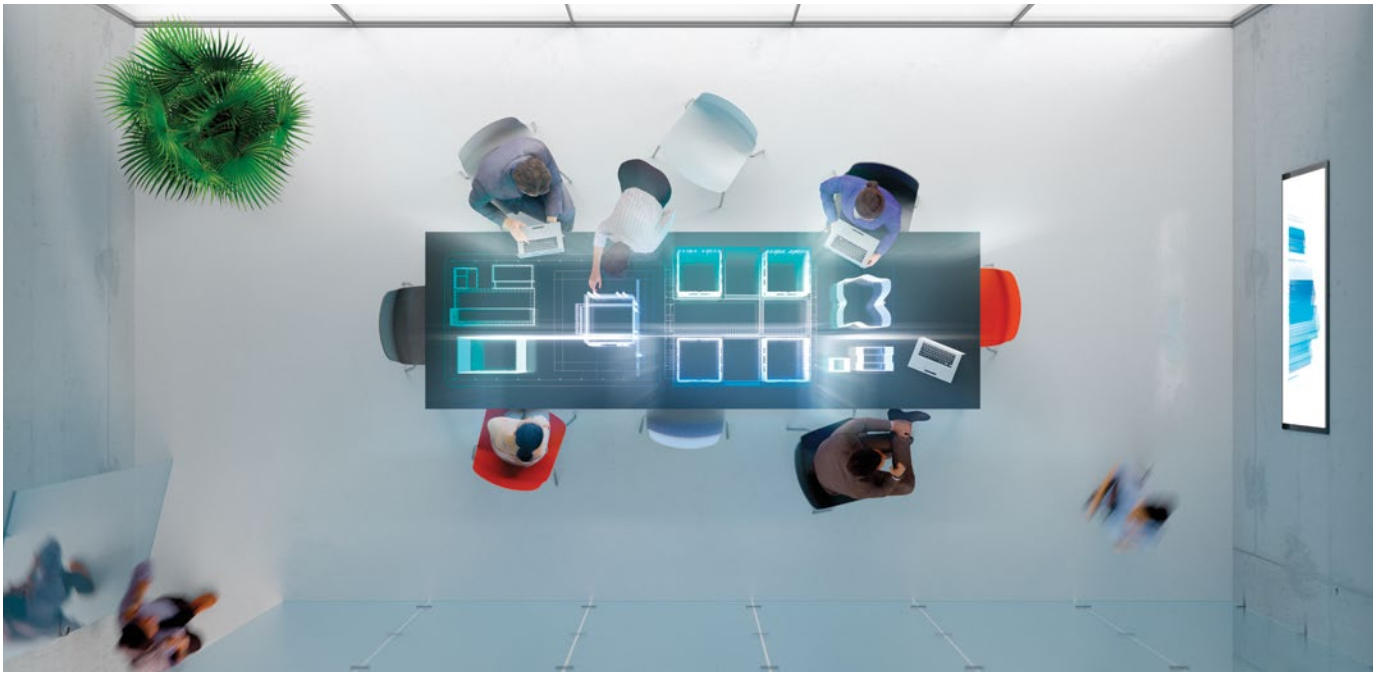
3. WORKSPACE VARIETY

While the open office with few walls, doors, or spatial boundaries was de rigueur for years, it had myriad problems, including noise issues. A 2021 Gensler survey found that 44 percent of workers wanted totally or mostly private offices post-pandemic, while only 28 percent wanted totally or mostly open spaces.

Despite this, a 2022 Gensler design forecast reported that workers still want a variety of places to work: "Third places and coworking spaces are increasingly preferred for a variety of work activities."

The key is for individual companies to find the ideal ratio between public and private workspaces, Engels says.

One popular design layout is the "neighborhood hub," where enclosed spaces like offices, meeting rooms, and team rooms are grouped together around a common area—often



"Top-performing companies understand the power of the physical workplace for their people to thrive, as well as for it to drive creativity and innovation."

NATALIE ENGELS
WORK SECTOR LEADER, DESIGN DIRECTOR, AND PRINCIPAL
GENSLER

creating a protection for the open collaboration area. Within the open area, Engels suggests, "there might be some taller elements, a hard wall or furniture wall that provides enough acoustic separation between office spaces/phone rooms, and you would have enough space for people to be able to sit and do laptop/task work, taller tables for people to casually meet with meeting screens/whiteboards, and taller booths for protective, impromptu meeting work."

4. MAKE HYBRID WORK

Deloitte reports that employee engagement "tends to be at its highest among employees who work remotely 60 to 80 percent of the time." In the new normal, most companies won't stick with the binary choice of all virtual or all in-office. Most are opting for a combination, where people can do telework when needed and come to an office for collaborative, team-based work.

Many companies that have adopted a hybrid model have downsized their offices to use space more efficiently since they no longer have their entire staff coming in every day. Some organizations have adopted desk-sharing arrangements like hot desking and hoteling. Hot desking requires employees to claim desks on a first-come, first-served basis. Hoteling offers a more organized approach in which employees reserve a spot in advance via an app or other reservation system. Hoteling can encourage employees to make the most of their time in the office by booking desks in close proximity to their teammates for collaboration purposes.

Andrew Keaschall, Illinois division manager of Alfred Benesch and Company, said his firm found hoteling had some drawbacks since the full staff wasn't in the office concurrently. "It was almost counterproductive to collaborate with half the people in the office and half virtual," he says.

They've now implemented collaboration days on Tuesdays and Thursdays, and almost all 60 employees are in the office together. Employees schedule large group meetings on those days. "The premise was to balance business needs and flexibility," Keaschall says.

Benesch's office is a whole floor in a Chicago high-rise, which the company built out in 2019. That included upgrades to wiring, technology, and videoconferencing equipment. They opted for workstations in an open floor plan but have since put in higher, clear plexiglass barriers to maintain the open feel but offer more germ protection.

Engels says that upgrading technology really helps to make these new work arrangements successful, adding that companies will need to experiment more.

"Maybe our phones become a point of security or know when I'm coming into the office and book me into an available conference room," she says.

PIRANKA/GETTY IMAGES

"The premise was to balance business needs and flexibility."

ANDREW KEASCHALL
ILLINOIS DIVISION MANAGER
ALFRED BENESCH AND COMPANY

5. HEALTH BOOST FROM MOTHER NATURE

In light of COVID-19, it's also crucial for employees to feel they're returning to an office that won't facilitate illness. Sometimes that's about "infrastructure—what people cannot necessarily see or appreciate, such as mechanical systems," Engels says.

Post-pandemic, this is particularly true of HVAC systems, improved air filtration, and the ability to import fresh, clean air. According to the EPA, people spend approximately 90 percent of their time indoors, whether in offices, cars, or homes, where concentrations of some pollutants are often two to five times higher than typical outdoor concentrations. "We should not be in buildings that can make people ill," Engels says. "We have technology that can detect and notify us about indoor air quality and the ability to remedy it."

And with an increasing number of workers reporting feeling burned out, hopeless, and exhausted, mental health issues are on the rise as well. Enter biophilic design and office layouts that encourage collaboration, socialization, and movement—all of which can help improve mental and physical well-being.

Biophilic design includes the use of natural light, plants, water, views of nature, and access to the outdoors. Numerous studies have shown nature's benefits on individual well-being, productivity, and creativity. In office spaces, these concepts can manifest themselves in living walls featuring plant life, planters used as barriers or wayfinding devices, the use of wood beams to suggest tree trunks, interior lighting that mimics the outdoors, large images of nature posted on conference room walls, and large windows to bring in as much natural light as possible.

"During the pandemic, people were happy to get outside to work, walk, breathe fresh air, and feel the sunlight," Engels points out. "It has made those in building design look at how people can have access to that and how to design for it in floor plans. It has been a huge ask from every generation." ■

Stacey Freed *is a writer based in Pittsford, New York, who has contributed to* This Old House, Professional Builder, *and* USA Today.

ACEC'S BIG REVEAL

ACEC'S NEW HEADQUARTERS checks all the post-pandemic design boxes to bring employees back to a healthy, light-filled, and dynamic space.

Located on the fourth floor of 1400 L Street, NW, in Washington, D.C., ACEC's new office is 15,000 square feet in a newly renovated building known as The Aleck.

ACEC's previous office was only a block and a half away, and in that building, the departments were siloed from each other in their own offices. "It could feel dark and almost like a bowling alley with its long corridors," says Erin McLaughlin, former vice president of private market resources at ACEC, who was involved in the planning of the project. The new space offers a fresh canvas on which the organization can make its mark post-pandemic.

ACEC worked with HKS, a member firm, to create an office design that reflects the organization's mission. "When it came to the design, it was important that ACEC's members knew that the organization was walking the walk and talking the talk," says Ferrance.

And the talk was all about reaching WELL certification and accommodating the new normal of a hybrid schedule for the organization's 48 employees. WELL certification concerns itself with how a building performs for its inhabitants and their health, as opposed to Leadership in Energy and Environmental Design (LEED) certification, which rates the physical building on factors such as energy efficiency and indoor environmental quality.

With current "requirements to fulfill green building codes, the newly renovated building pretty much follows LEED, so we decided to go for WELL Gold certification and focus on occupants' health," says Indy Lamba, senior interior designer at HKS. "We wanted to show that

mechanical, electrical, and plumbing and architecture together can create really healthy building spaces."

FORM FOLLOWS FUNCTION

Part of the design process was a discussion about how the office would be used. "Our office design team led the process, but they collaborated with staff and asked what our needs were," says Karen George, ACEC's director of human resources.

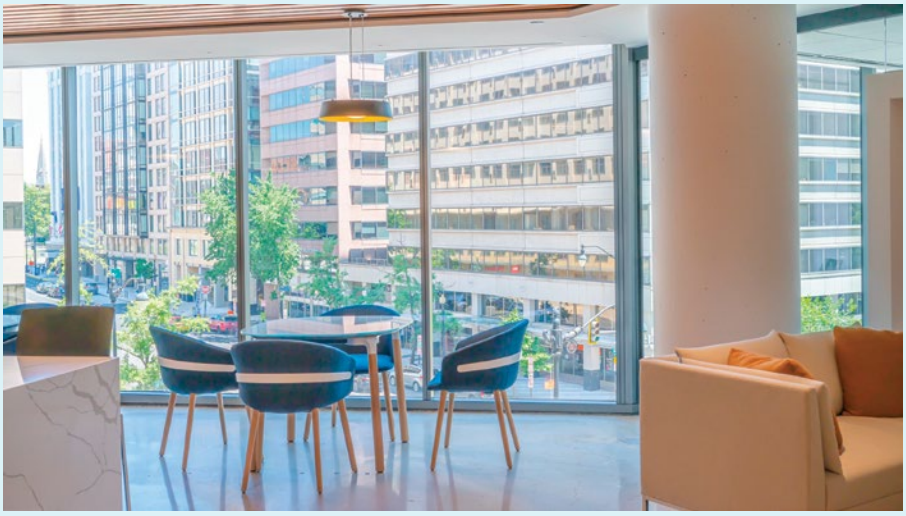
Although discussions began pre-pandemic, ACEC didn't sign a lease until 2021. "Prior to the pandemic, we had a culture of being in the office five days a week; we didn't have a hybrid model," says McLaughlin. "Then we all went virtual in March 2020, and doing our visioning session 16 months later was a moment of change. We had come around to acknowledging that we could work remotely and needed a hybrid model going forward."

That change drove the design of ACEC's new office.

A TOUR OF THE NEW SPACE

Gone are the siloed offices and dark hallways. In the new space, nine private executive offices are grouped together on one wall, with the other three walls hosting open office spaces and backed by windows to allow natural light to flood the interior space. Restrooms, the elevator bank, storage space, mechanicals, and a production studio are grouped in the center of the office, flanked on two sides by a total of nine flexible workspaces that can be used as videoconferencing rooms or for quiet work. There are one large and three small conference rooms, and two areas designated as collaboration spaces. The reception area is a social hub with varied seating—café style, lounge, and bar-height chairs—as well as a nearby pantry and a living wall, which helps with air filtration. The company now uses the Robin app to help manage desk use.

In a nod to ACEC's members, HKS allowed "engineering to shine in the space," Lamba says, "by letting the existing concrete live in its natural form and showing ductwork."



"It's totally different from what we had before," says ACEC Operations Director Mark Moulton, noting the natural light and open space. He appreciates the height-adjustable desks, ergonomic chairs, double screens at each workstation, and adjustable monitors.

To fulfill WELL certification requirements, HKS included air humidifiers and air-filtering devices. There's filtered water available within 25 feet of everyone's desk and at the café; 80 percent of the space has to be next to natural light. There are plants throughout.

"We also focused on controlling lighting, acoustics, and temperature," Lamba says. "We wanted zones to be comfortable for everyone. Each group of occupants has access to light-dimming controls, and we installed white noise so that all the rooms meet acoustical comfortability, whether people are in an office, open environment, or conference room."

Materials are also a huge component of WELL standards. HKS had to look at product life cycle analyses, and "everything had to have a product health declaration," Lamba explains. "We talked about the glue used to adhere the carpet to the floor. There are 12 points to achieve in the materials category, and we went for eight of them."

He adds that the building itself is Fitwel certified, a healthy building certification created by the U.S. Centers for Disease Control and Prevention and the U.S. General Services Administration. ACEC employees have access to the building's amenities, which include a gym with locker rooms, studios for yoga, a lactation room, and relaxation spaces. There's also easy access to an outdoor terrace.

"The new office is a breath of fresh air. It has an open environment with natural lighting and allows for collaboration," George says.


CYBERATTACKS:
IS
YOUR
COMPANY
NEXT

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HOW ENGINEERING FIRMS MUST PROTECT AGAINST DEVASTATING HACKS AND DATA BREACHES

BY STEVE HENDERSHOT

Many engineering firms aren't fully aware of the major threat that cybercriminals pose to their business. But hackers' ability and proclivity to cause expensive, destructive havoc is clear.

In 2022 alone, a teen-led, extortion-focused cyber gang called Lapsus$ breached the defenses of Microsoft, Samsung, and Nvidia; health systems across the U.S. reported data breaches; and cybercriminals hijacked TV screens in 7-Eleven convenience stores across Taiwan to display messages protesting the visit of American congressional leader Nancy Pelosi.

Yet many engineering firms, along with other small- and medium-sized businesses (SMBs), have been slow to shore up their cyber defenses. For example, nearly half (48 percent) of engineering firms haven't purchased stand-alone insurance policies to protect against a cyberattack, according to the *2022 ACEC PLI Survey of Member Firms*. That finding aligns with other recent research: Only half of SMBs have a cybersecurity plan in place, according to a survey from the service provider resource UpCity.

Insurance brokers who work with engineering firms say that to ignore cyber risk is to court disaster.

"Cyber coverage is not an optional coverage any longer. It's only a matter of time before a company will face some sort of an attack," says Mike Cosgrove, president of Professional Concepts Insurance Agency in Brighton, Michigan.

And there's more bad news for any engineering executives who are hoping that their businesses will fly under the radar of hackers: "Architects and engineers have really come to find that they are favorite targets," says Dan Buelow, managing director of WTW A&E, the architecture and engineering practice at insurance brokerage Willis Towers Watson. "We're seeing significant exposure for design professionals, as well as significant business interruptions."

"The need for firms of all sizes to have cyber coverage has grown tremendously over the past few years due to the increasing cyber crime activity," says Johnna Wangensteen, account executive for Kraus-Anderson Insurance. "Most cybersecurity experts state that it is not if you will experience a cyber breach but when you will. If you use a computer, you need cyber insurance."

Wangensteen adds, "We recommend for the vast majority of our clients to secure a stand-alone cyber policy. These policies typically offer a wider range of coverage as well as higher limit options. Our advice to all engineering firms would be to make sure you know and understand the coverage you are purchasing

and where your risk lies. There are multiple carriers trying to sell cybersecurity, and no two policy forms are the same. Watch for carriers that have some experience in this area and have solid cyber services."

Building and implementing a cyber defense strategy can be daunting, both because of the high stakes and the constantly evolving threat landscape. But as the volume and sophistication of cyberattacks increase, a robust and well-considered approach to cybersecurity is becoming a table-stakes component of corporate risk management. Accordingly, the most pressing question for engineering firms isn't whether to pursue a cyber strategy, but how.

HOW INSURANCE FITS WITHIN A CYBER STRATEGY

A well-rounded approach to cybersecurity has three primary elements. The first is prevention, which aims to keep attackers from gaining access to crucial systems or data. Firewalls, software patches, passwords, and data encryption all fall into this category.

In a perfect world, a strong perimeter defense would be enough to secure a company's data. But attackers have proven themselves able to breach nearly any system, often without being noticed. That leads to the second part of a strong cybersecurity strategy: Companies must establish processes aimed at identifying and responding to attacks. What data did an intruder access after breaching the system? Do the attackers still have access? Once there's conclusive evidence of an attack, specialists in digital forensics are often called upon to investigate the extent of the intrusion.

The third component to managing cyber risk is insurance. Over the last decade, cyber insurance has grown from an inexpensive, optional add-on to standard business insurance policies into stand-alone coverage that can come with hefty premiums—a consequence of a world where ransomware gangs routinely demand tens of millions of dollars from the companies they victimize.

"Cyber coverage is not an optional coverage any longer. It's only a matter of time before a company will face some sort of an attack."

MIKE COSGROVE
PRESIDENT
PROFESSIONAL CONCEPTS INSURANCE AGENCY

Increased insurance premiums are not the only thing to change because of the wave of cyberattacks. Insurance companies may cap the amount of an exposure-related coverage for a particular type of attack. For example, Cosgrove cautions that a $2 million coverage limit cyber policy may only provide $100,000 of protection against phishing and other social-engineered attacks.

In addition, insurance carriers are increasingly offering coverage to firms prioritizing strong cyberattack-prevention practices.

"There's a lot more underwriting scrutiny around this coverage than we've seen in a long time, just because the risk is very volatile right now," says Buelow, who sits on ACEC's Risk Management Committee and leads a cyber-focused subgroup. "We're seeing an evolution in the controls that these insurance carriers are asking their clients to have in place, and in some cases, the carriers will not offer insurance or even renewal terms if companies don't meet a certain standard."

"Stand-alone cyber policies are the preferred method of mitigating this risk," says Jeff Connelly, managing principal of Greyling. "Most stand-alone policies offer a broader cover compared to endorsed PLI policies. Stand-alone policies are more apt to provide higher limits of coverage along with the broader terms. However, just going through the exercise of purchasing a cyber policy requires firms to have the proper risk management practices in place such as MFA (multifactor authentication). Cyber insurance is becoming as essential as private liability insurance. It is just a matter of time before all contracts will require engineering firms to carry cyber insurance."

The good news for engineering firms purchasing stand-alone cyber insurance is that most policies not only provide a financial safety net, but also access to a partner who can help round out a company's approach to cybersecurity. While it's generally the insured's responsibility to have adequate processes to prevent cyberattacks, some insurers will step in quickly in the wake of a successful breach to assist with cyber forensics and response. For example, when one of Cosgrove's clients reported a multimillion-dollar theft, the insurance carrier quickly alerted the U.S. Secret Service, which was able to claw back a substantial amount of the total stolen.

"When you're buying a dedicated cyber policy, it's not the carrier's first rodeo. They'll know what to do; they will be connected with experts who can help you, and they will guide

CYBERCRIME GLOSSARY

Cybercriminals employ various tactics to carry out their attacks, usually aimed at breaking into company servers, gaining access to sensitive information, or redirecting payments to fraudulent accounts. Here are a few of the most common cyberattack methods:

Distributed Denial of Service (DDoS) attack: An attempt to cause a website to crash by overloading servers with traffic

Malware: An umbrella term for software designed to facilitate a cyberattack

Phishing: Fraudulent messages intended to gain access to sensitive data, often financial information; many phishing attacks appear to come from trusted senders

Ransomware: A type of malware that blocks access to a device or network until the owner pays a ransom

Spyware: A type of malware that enables the attacker to monitor activity and gather information

SUEBSIRI/GETTY IMAGES

you through the process of responding to an attack," says Karen Erger, senior vice president and director of practice risk management at Lockton Companies in Kansas City, Missouri. Erger is also a member of the ACEC Risk Management Committee and a risk management columnist for *Engineering Inc*.

Carriers can also provide other valuable connections in the immediate aftermath of a cyberattack, such as making connections to breach coaches who can provide counsel in the event of cyber extortion. Carriers can facilitate specialized legal counsel—there are implications, for example, with client notification requirements stemming from the exposure of third-party client data, which is an especially relevant concern for engineers.

"For engineers that are designing critical infrastructure or doing work with a government entity or anything that really touches the public, that's a real threat," says Erger. "It's also potentially a breach of contract in cases where you've signed a contract with a confidentiality clause."

Carriers sometimes also help with public relations expenses in the event that an attack threatens to harm a firm's reputation.

GETTING YOUR HOUSE IN ORDER

Of course, the ideal outcome for any engineering firm is never to have to deal with the fallout of a major cyberattack. The first step toward warding off cyber thieves is mounting a strong defense.

Cyber insurance experts recommend several best practices to bolster your company's defenses to prevent a cyberattack including the aforementioned MFA. Cosgrove says he's noticed an increase in the number of carriers that are requiring MFA to issue a cyber policy.

"If a firm says no to an MFA, these carriers are just saying, 'We wish you the best of luck, but we won't insure you, even if we've been insuring you for the last eight years.' Some carriers haven't gone quite that far, but I think it's just a matter of time," he says.

Data storage is also a critical topic. Whether a firm's data is encrypted, whether its servers are segmented, and how its backups are maintained all are components of an overall strategy aimed at resilience in the event of an attack.

"Architects and engineers have really come to find that they are favorite targets. We're seeing significant exposure for design professionals, as well as significant business interruptions."

DAN BUELOW
MEMBER
ACEC RISK MANAGEMENT COMMITTEE
MANAGING DIRECTOR OF WTW A&E
WILLIS TOWERS WATSON

"Don't understate the importance of continuously sensitizing employees to the need not to click on fishy links and not to respond to emails that say the CEO is traveling and needs money right away."

KAREN ERGER
MEMBER
ACEC RISK MANAGEMENT COMMITTEE
SENIOR VICE PRESIDENT AND DIRECTOR OF PRACTICE
RISK MANAGEMENT
LOCKTON COMPANIES

Another flashpoint is establishing and communicating strong protocols around wire transfers. Cyber thieves have gotten very good at asking for money, often sending emails that impersonate clients with astonishing precision. Buelow says some attackers have even updated engineering project documents to enhance the faux-authenticity of their communications—before supplying a new routing number and asking for payment.

Mounting a defense against such attacks can include process changes such as requiring verbal verification before replacing a routing number. Companies can also mandate that alterations to payment details occur only at a laptop or desktop computer, because it's more difficult to spot a fraudulent email on a mobile device.

It's just as critical to communicate frequently with employees about those processes.

"Don't understate the importance of continuously sensitizing employees to the need not to click on fishy links and not to respond to emails that say the CEO is traveling and needs money right away," says Erger.

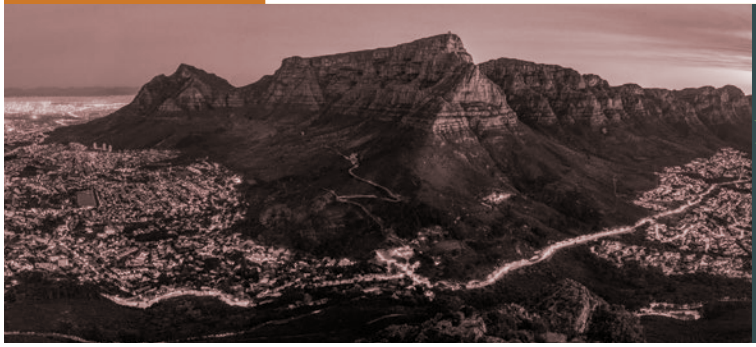
That's especially true given the sophisticated nature of advanced social engineering attacks. Sometimes the CEO really is traveling, a fact that the attackers may have gleaned by snooping on company email servers. Employees need to know that no request, no matter how urgent or apparently authoritative, is worth overriding the company's security protocol.

Cybercriminals are growing more audacious, more sophisticated, more ruthless, and more effective. Rather than crossing their fingers and hoping to avoid an attack, engineering firms should develop a proactive approach to cybersecurity—one that incorporates best practices for attack prevention, as well as partnerships with insurers that can offer resilience in the event that an attacker does break through. ■

Steve Hendershot *is a journalist based in Chicago. He has contributed to* Crain's Chicago Business, Chicago *magazine, Chicago's NPR affiliate, WBEZ, and the Project Management Institute's* Projectified *podcast.*

Possibilities abound for firms interested in expanding their global footprint—but risks remain on the continent

BY SAMUEL GREENGARD



ANDREI MOLKENTIN/GETTY IMAGES

AFRICA:

SIGNIFICANT OPPORTUNITIES WITH SIGNIFICANT CHALLENGES

The rise of Africa on the world economic map is nothing less than spectacular. About half the continent's 1.4 billion people have been born over the last two decades. In country after country, enormous change is unfolding—and opportunities for education, work, and economic gain are all on the rise.

Yet, in many ways, Africa remains a tale of two continents. Despite monumental advances and growing prosperity, challenges remain. In many of the 54 countries across the continent, water quality and sanitation are inadequate, transportation is difficult, power is substandard, and digital infrastructure—including data centers—is lacking.

"Enormous opportunities exist for engineering firms," says Tshaka Dennis, former senior infrastructure advisor at UNOPS for Anglophone West Africa and former deputy CEO of Millennium Challenge Account–Liberia, a legal, independent, and autonomous agency of the government of Liberia that administered the compact grant between the governments of Liberia and the U.S., acting through the Millennium Challenge Corporation. "There are huge needs in terms of physical infrastructure, including power, water, storm water, sanitation, transportation, housing, health care, and public works. Almost no sector remains untouched."

For engineering firms looking to expand their global footprint and forge a better future for the continent, the business opportunities are impressive—and daunting. While Africa is rapidly shedding its colonial past and many ideas about the continent are obsolete, it remains a diverse place with varying cultures and ways of doing business. There can also be hurdles involving quality standards, corruption, and intense competition from global firms.

"It isn't possible to simply drop in and do business in any new place. This is especially true in an enormous continent with diverse cultures, languages, and economies such as Africa," says Bill Howard, former executive vice president of CDM Smith who also served as past chair of ACEC and past president of the International Federation of Consulting Engineers (FIDIC). "There's a need to understand Africa and prepare before seeking work on the continent."

The quality of work should always be the highest priority of a firm with ambitions to work in Africa, says Gregs Thomopulos, chair emeritus, past president and CEO of Stanley Consultants, past chair of ACEC, and past president of FIDIC. "There are many capable national firms in the various countries of Africa," he says. "It is essential for a U.S. firm venturing overseas for the first time to identify and associate with a national firm with knowledge of local conditions and codes."

Thomopulos also notes that building a strong relationship with a national firm is a requirement for success. "It is important to be aware that national firms have competent engineers, many of whom have been educated and trained overseas," he says. "The foreign (American) firm usually brings expertise that may not be locally available, and it is essential that the projects are staffed by senior and experienced professionals. A firm with a reputation for high-quality work will always be in demand and help with capacity building in nations of Africa."

A CONTINENT TRANSFORMED

The enormous growth of African countries isn't something to take lightly, and for many Africans, quality of life is on the rise. Poverty rates have steadily declined from nearly 60 percent in the early 1990s to just over 40 percent today, according to *The Economist.* Meanwhile, literacy rates and access to education are improving, sanitation and health care are advancing, and economic activity is on the uptick. For example, the gross domestic product (GDP) for Kenya is now growing at an annual rate of 7.6 percent, while Niger is 6.9 percent, according to Statista.

While huge challenges persist—and some countries are advancing faster than others—engineering projects in Africa are in demand. "The continent is going through a massive urbanization phase," says Manish Kothari, president and CEO of Sheladia Associates, past chair of ACEC, and current FIDIC board member. "There are needs in a wide range of areas. These projects are essential for countries achieving the desired economic growth."

The vast majority of projects in Africa revolve around basic infrastructure, including water treatment facilities, transportation systems, and power grids. The World Bank notes that about half of the population in sub-Saharan Africa still lacks access to electricity, and the figure can rise as high as approximately 80 percent in rural areas. This affects the daily lives of Africans, but it also inhibits business and economic growth.

Yet Kothari says that it's unwise to draw highly detailed conclusions about the continent based on the needs of specific countries and regions. It's crucial to view countries individually and consider projects in a broad way. These include transport, water and power, cyber-infrastructure such as more advanced internet backbones and data centers, and communication such as more advanced mobile networks. For now, only about one-third of the continent has a reliable internet connection. "In many countries, physical infrastructure is considerably constrained, and this impacts economic progress," Kothari says.

"It is essential for a U.S. firm venturing overseas for the first time to identify and associate with a national firm with knowledge of local conditions and codes."

GREGS THOMOPULOS
CHAIR EMERITUS, PAST PRESIDENT AND CEO OF STANLEY CONSULTANTS
PAST CHAIR OF ACEC
PAST PRESIDENT OF FIDIC

"There are huge needs in terms of physical infrastructure, including power, water, sanitation, transportation, housing, health care, and public works. Almost no sector remains untouched."

TSHAKA DENNIS
FORMER SENIOR INFRASTRUCTURE ADVISOR
UNOPS

WILPUNT/GETTY IMAGES

"Companies that successfully enter the market are positioned for enormous growth for many years."

MANISH KOTHARI
PRESIDENT AND CEO
SHELADIA ASSOCIATES
PAST CHAIR OF ACEC
FIDIC BOARD MEMBER

RISKS AND RESPONSIBILITIES

Translating opportunity into tangible results isn't a simple proposition. "It's important to thoroughly understand how things work in a country before moving forward," says Christopher Campbell, CEO of Consulting Engineers South Africa (CESA), an organization that advocates for the industry and promotes standards in that country.

To be sure, Libya isn't South Africa, and Nigeria isn't Kenya. The diversity of Africa is part of its appeal and its challenge. "There are many aspects to address, ranging from politics and business practices to quality standards and labor," Campbell says. "In some cases, processes don't take place the same way they might in the U.S. or Europe. It isn't enough to have a high level of technical expertise."

In fact, U.S. firms often encounter a steep learning curve in Africa. Europe's colonial history, while detrimental in many ways, offers EU firms a baseline for knowledge about local politics,

7 KEYS TO SUCCEEDING IN AFRICA

1. **Understand your motivations.** It's unwise to enter any market strictly for revenue and profit. Your firm has the opportunity to improve the quality of life in a country.
2. **Avoid stereotypes.** Africa is not the place depicted in numerous books and movies. In many cases, cities are modern, and the colonial vestiges of the past are vanishing. Enter Africa with an open mind.
3. **Prepare and do the necessary due diligence.** You can't parachute in; you need to understand the country, the people, and the business opportunities.
4. **Develop trusted partners.** It's arrogant to think that you can set up shop in a country and achieve instant success. You need local and knowledgeable partners who can speak the language, negotiate the culture, and facilitate business there. Networking through organizations like ACEC and FIDIC is invaluable.
5. **Respect the culture.** Not everything happens on U.S. time or with U.S. sensibilities. While this may be frustrating, it's vital to accept the way another culture operates and adjust business practices and social interactions accordingly.
6. **Avoid any hint of corruption.** Don't risk bad press and prison time. There are effective ways to steer clear of problems—and it may sometimes be necessary to walk away from a project, if a bribe or kickback is involved.
7. **Vet contracts closely.** It isn't unusual for a contract to contain objectionable—and sometimes illegal—clauses. Ensure that attorneys read the fine print before you sign on the dotted line.

language, and culture, Dennis explains. Engineering companies from other places, such as Asia, often take a longer-term view of projects and relationships. Chinese firms—operating under their country's Belt and Road Initiative, a vast global infrastructure development framework—have taken an aggressive business stance. This includes low interest rate loans underwritten by development banks in China. As a result, Chinese firms have claimed about 30 percent of Africa's internationally linked construction market, according to the World Bank. Among larger projects, the figure rises to about 50 percent, McKinsey & Company reports.

Peter Macy, president of RockBlue, a nonprofit organization dedicated to improvements in urban water and sanitation in Africa and other developing regions, says that engineering firms shouldn't view the growing Chinese presence in Africa as a reason to avoid entering the market. In many cases, U.S. firms have a significant advantage for complex projects. "You won't be as competitive going after less sophisticated and smaller projects. There's typically a different level of expertise and a different sense of quality standards on those types of projects," he says.

One way to address cost-competitive challenges is to emphasize the importance of quality engineering and construction work, including Qualifications-Based Selection (QBS) standards, Macy explains. The first choice would be for the client to be convinced to go the QBS route. If this is not possible then you should still focus on quality. Quality distinguishes you from other offerors by stressing the long-term/life cycle benefits of high-quality infrastructure. If you can, try and reinforce that QBS uses quality, along with experience, education, approach, offeror strength and stability, and team composition, to select the most qualified offeror and leaves negotiating final scope and fair and reasonable cost of work with that offeror after selection, before finalizing a contract.

Another issue, experts say, is a tendency for Western firms to adopt a somewhat paternalistic approach and even talk down to government officials and business leaders in Africa. Not surprisingly, this attitude introduces friction and resentment. One reason Chinese companies have enjoyed enormous success in Africa, observers say, is their willingness to adopt a highly collaborative approach—and focus on debt relief and other financial issues that are an imperative to cash-strapped developing nations.

STANDARDS MATTER

A tougher issue can be dealing with corruption, including bribes and kickbacks. Although illegal and unethical activities aren't nearly as common as they once were—for example, some countries, such as Liberia, have introduced transparency frameworks and laws, while the Millennium Challenge Corporation, created by the U.S. Congress in 2004 to deliver smart U.S. foreign assistance by focusing on good policies, country ownership, and results, and CESA have developed standards and codes of conduct—U.S. firms must be prepared to face an occasional problem.

One way to address the issue is to take a proactive stance, Dennis says. This means stating upfront that a firm abides to widely adopted ethical standards. And when there's funding from an entity such as the U.S. or the World Bank, it's advisable to contact an embassy so that a commercial officer can emphasize to governments the importance of legal and transparent work taking place during a project life cycle. "This can make people think twice about acting inappropriately," Dennis explains.

Yet, in some cases, walking away from projects is the only viable option, Kothari says. Adds Macy: "You must be willing to decline any further discussion—even if it's an attractive and potentially lucrative project. It isn't worth destroying your or your organization's professional reputation. That said, it is pos-

"If you are already a successful company, you have to ask not what you can gain, but what you can give."

BILL HOWARD
FORMER EXECUTIVE VICE PRESIDENT OF CDM SMITH
PAST CHAIR OF ACEC
PAST PRESIDENT OF FIDIC

"It's important to thoroughly understand how things work in a country before moving forward."

CHRISTOPHER CAMPBELL
CEO
CONSULTING ENGINEERS SOUTH AFRICA

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sible to successfully do business in Africa without succumbing to any corrupt requests or demands."

Corruption takes place in many forms, including direct payments to officials of the national governments, use of a third party such as an agent to facilitate payments or the local associates to secure contracts, says Thomopulos. "This is a mine field that American companies can be caught in which could result in violation of the Foreign Corrupt Practices Act," Thomopulos says. "It is most important that firms working internationally in the developing countries have strict ethical and integrity policies that are driven down from the top leadership of the firms."

BUILDING A FRAMEWORK FOR SUCCESS

If an engineering firm is pondering the possibilities, opportunities, and challenges of doing business in Africa, a few factors stand out. First, identify your firm's motivation for doing work on the continent, Howard advises. While revenues and profits are primary considerations, determine whether your firm is willing and equipped to broaden its geographic footprint. "If you are already a successful company, you have to ask not what you can gain, but what you can give," he says.

It's also vital to approach a particular market or country strategically, Howard adds. Rather than tossing a wide net and attempting to deliver services across the African continent, "identify specific countries that are an excellent fit with your firm's knowledge and skills," he says.

There's also a need to conduct detailed research and due diligence. This includes identifying a local partner that's equipped to navigate a country's business, social, and legal frameworks.

In fact, local expertise can make or break projects, Dennis says. Macy notes that a knowledgeable business partner, carefully vetted, can open doors to government officials, identify top-quality engineering and construction firms in the region, and aid in identifying specialized local expertise as well as labor for projects. "They can keep their ear to the ground and keep you posted about how things are unfolding," Macy adds.

And shed stereotypical thinking. "There is a remarkable pool of talent available in many African countries," Campbell says. "Many engineers have studied in the U.S. and have a high level of proficiency. The only thing they are often lacking is experience—and that's something that Western firms can aid with."

What's more, "as these engineers gain experience in the real world, they can take on greater responsibility in the future. This benefits both the individual and the engineering firm doing business in Africa," Campbell adds.

Finally, it's essential to vet contracts and clauses carefully, says Richard Stump, vice president at RS&H, member of ACEC's International Committee, and current chair of FIDIC's Integrity Management Committee. He has seen government officials and other clients try to incorporate objectionable and sometimes illegal clauses into contracts. For example, when Stump was with a previous firm, his company received a proposed contract that stipulated his firm would honor a secondary boycott of Israel. "This violated U.S. policy and the company's policy," Stump says. "We promptly reported it to the U.S. Department of Justice, as we were required to do by law at that time. We then had to navigate some very sensitive issues with the client."

"It can be a very rewarding experience both culturally and professionally."

PETER MACY
PRESIDENT
ROCKBLUE

THE FUTURE OF ENGINEERING AND INFRASTRUCTURE

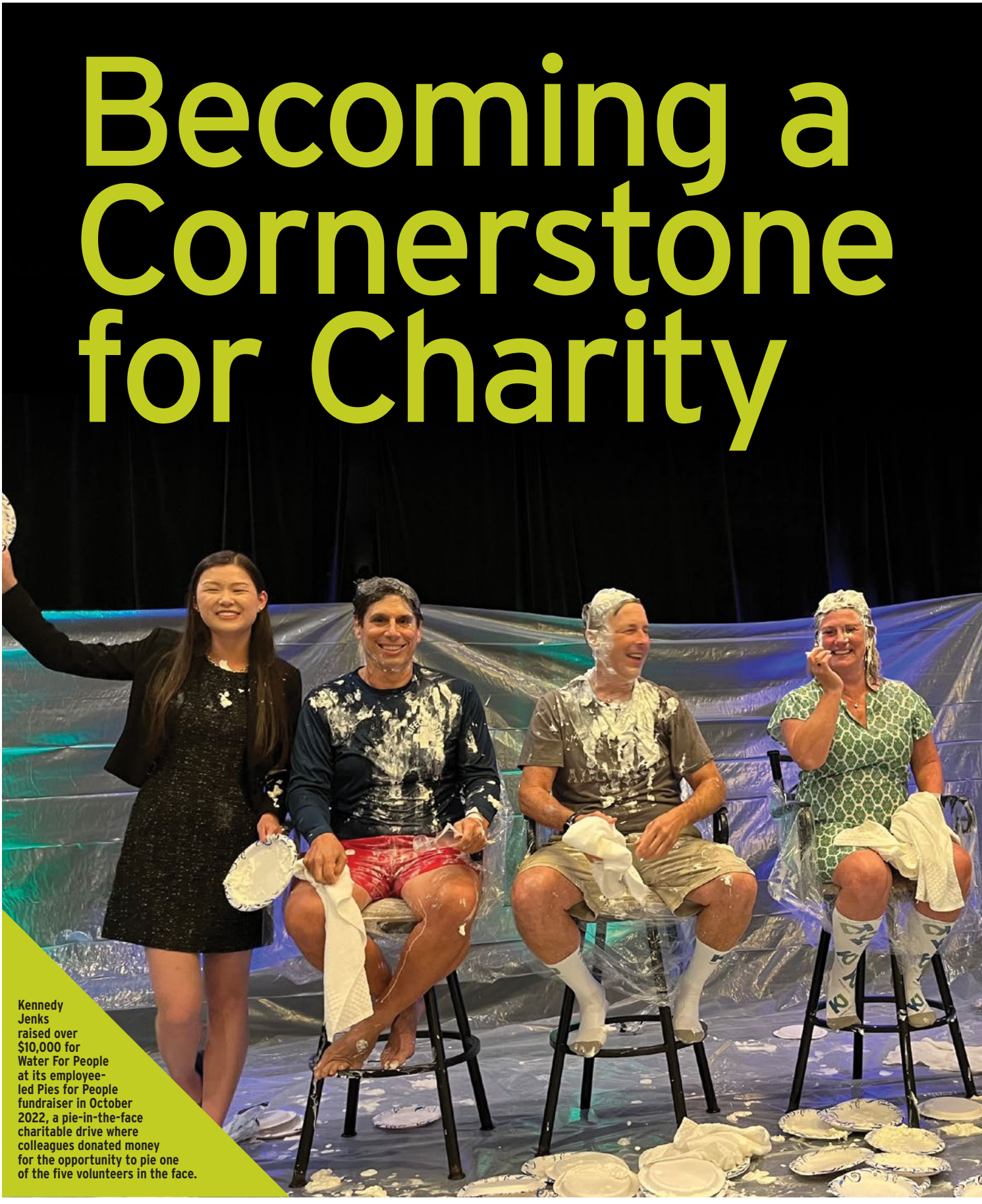
Africa isn't an ideal choice for every firm. Yet it's an option that U.S. firms should at least consider. "High risk and high reward" is how Macy describes Africa. "It can be a tough environment, but if you get things right, the opportunities are enormous—and the profit margins can be extremely high," he says.

In addition, there's often less competition for the larger, more sophisticated projects in the developing world, and most importantly, there's an opportunity to make a significant impact—and improve the quality of life for people. "It can be a very rewarding experience both culturally and professionally," Macy says.

Success lies in moving beyond myths, misconceptions, and stereotypes, Kothari says. The economic growth of Africa—and the resulting demand for major engineering projects—is unmatched in nearly every other corner of the world. "In many ways, Africa represents the future of engineering and infrastructure," he says. "Companies that successfully enter the market are positioned for enormous growth for many years. A young population, greater wealth, and more stable governments are fueling enormous advances." ■

***Samuel Greengard** is a technology writer based in West Linn, Oregon.*

Becoming a Cornerstone for Charity



Kennedy Jenks raised over $10,000 for Water For People at its employee-led Pies for People fundraiser in October 2022, a pie-in-the-face charitable drive where colleagues donated money for the opportunity to pie one of the five volunteers in the face.

Kennedy Jenks empowers employees to give back to their communities

BY MICHELE MEYER

At Kennedy Jenks (KJ), you'll find rank-and-file employees who devote their time to bettering the world.

You'll meet Laura Weiden, a Seattle-area associate civil engineer who headed groups that planted vegetation or laid stones along pedestrian paths near Washington state's Green River and pumpkin patches.

You'll meet Jamie Kolkey, an operations vice president in Sacramento, California, who united colleagues to help University of California at Los Angeles engineering students to brush up their résumés and interview skills at an annual bootcamp.

Top leadership also participates in volunteer efforts—every board member and senior manager gives back—but they prefer to recognize staff members for their efforts.

"We give credit where credit is due," says Keith London, the firm's president and CEO, in Murrieta, California. "Our employees deserve the recognition."

Kennedy Jenks has 425 employees in 34 offices coast-to-coast. Founded in 1919, it became entirely employee-owned 50 years ago. Its engineers, scientists, and project managers design, build, and manage water and wastewater treatment plants and confront environmental challenges such as dangerous contaminants in soil and water.

CORNERSTONE STEERS GIVING

London says that Kennedy Jenks has had a long culture of community involvement. But in 2017, leadership decided that this altruism needed a defined purpose and a name. Enter the company's Cornerstone giving program.

"People already were donating," London says. "We just institutionalized it and gave it an identity they could rally around."

Being employee-driven is the key to Cornerstone's success, he says. A committee of 12 has complete autonomy of decisions, with a budget approved by company leadership. Committee members are spread from Hawaii to New Jersey.

"That's intentional and our strength," says Bronwyn Rolph, co-founder of Cornerstone and a project engineer in Seattle. "We represent different backgrounds and perspectives, which inspire different events. And wherever you are, you have a connection with someone on the committee."

Its members believe generosity grows when workers can choose to give to causes they are passionate about. Up to 50 percent of the staff volunteers or donates in some form during the year.

Some programs are typical for engineering firms: charitable matches, holiday gifts, tutoring, and food and clothing drives. Recently, Kennedy Jenks rolled out a plan to match volunteer time.

"We recognize some people have a lot of time to give but not a lot of extra money, whereas others have money but not much time," Rolph says. "Now we can support both."

Also new are enhanced charitable matches, where the firm doubles the amount donated by workers to tax-exempt groups such as Doctors Without Borders and World Relief, following a natural disaster or calamity.

Some members of KJ's Cornerstone group convene at KJ's TechEx 2022, a technical excellence conference designed to bring employees together to share technical accomplishments and more.

Kennedy Jenks regularly sponsors events like the Los Angeles Committee Water For People Luncheon.

General Counsel and Chief Risk Officer Jerry Cavaluzzi participates in a virtual fundraiser relay with his dogs Basil and Penny. These virtual events were one way KJers remained connected to one another throughout the pandemic.

"Everyone in leadership and on the board of directors is very much on our side," says Claire Gambrill, former Cornerstone committee co-chair and former staff environmental scientist in Princeton, New Jersey.

Counting employee gifts and the Kennedy Jenks match, Cornerstone expects to donate about $120,000 in 2022, up from $114,000 last year.

"We've worked toward maxing out the charitable budget," Gambrill says. "We're always proud and excited when we do."

FROM SUSTAINABILITY TO STEM

Considering Kennedy Jenks' work, three charities are natural fits: Water For People and Engineers Without Borders (both of which champion sustainable, long-term safe water and sanitation where needed worldwide), as well as the Plastic Free July eco-challenge.

"I think most of us joined KJ because we care about the environment," Rolph says.

She and Cornerstone committee co-chair and Seattle resident engineer Bobbie Gilmour are among the many employees who visit schools and encourage students to pursue science, technology, engineering, and math (STEM) classes and careers.

"It makes total sense as an engineering-based firm to pass along our enthusiasm," Rolph says. "People like me had teachers and professors who went above and beyond to support and inspire us."

"I'm shocked by the amount of commitment and passion they have. Seeing their passion reignites mine."

BOBBIE GILMOUR
CORNERSTONE COMMITTEE CO-CHAIR
RESIDENT ENGINEER
KENNEDY JENKS

"Our staff comes together and builds bonds that will stay with them for the rest of their lives."

KEITH LONDON
PRESIDENT AND CEO
KENNEDY JENKS

4 WAYS TO EMPOWER EMPLOYEES TO GIVE BACK

TRUST YOUR STAFF TO GALVANIZE GIVING. KENNEDY JENKS SHOWS HOW THIS LEADS TO SUCCESS.

1. Empower your employees. Leadership can give the green light but should allow employees to make a program of their own and to choose which organizations to fund.

2. Be open to ideas and different forms of volunteering. A diverse committee can lead to varying perspectives and bold pitches.

3. Make it a joy. "It's not hard to convince people when you turn it into a fun event," says Rita Newman, staff engineer. Kennedy Jenks' whipped cream pie-throwing benefit rewarded top earners with pies in their faces. "The more money raised, the more pies we got to throw at them!"

4. Start small, with achievable goals—and be patient. When rooted in good practice and values, volunteerism grows with time. "Maybe everyone doesn't go to each meeting, but if a few share the word, that brings in more people," says field engineer Bobbie Gilmour, co-chair of Cornerstone's committee.

For many employees, giving efforts have a personal meaning. The Princeton office "adopted" two local kids during the holidays to provide gifts and gear, as Gambrill and her mother did when she was young.

Employees get excited when they choose a nearby food bank or the school that their children attend, Rolph says. "It's exciting for them to see the impact in their local community."

Even Kennedy Jenks clients get a say. As part of the company's annual holiday card, clients can vote on which of three charities the firm should donate more to. All such groups receive money, but one gets extra. Last year's winner was Water For People.

CREDIT WHERE CREDIT IS DUE

In part to enable weekday time for charity, Kennedy Jenks offers flexible work hours. "As long as we can accommodate clients' needs, it's good," London says.

Volunteers don't often boast how much time they give, Gilmour says. But Cornerstone regularly cites individuals' generosity at staff meetings, and a yearly President's Award also is bestowed on an employee.

"I'm shocked by the amount of commitment and passion they have," she says. "Seeing their passion reignites mine."

Like many of her colleagues, latest award recipient Rita Newman, a San Francisco staff engineer, volunteered during college.

"It's exciting for them to see the impact in their local community."

BRONWYN ROLPH
CORNERSTONE CO-FOUNDER
PROJECT ENGINEER
KENNEDY JENKS

"I realize how vital the work I do is for people's lives."

RITA NEWMAN
STAFF ENGINEER
KENNEDY JENKS

With Engineers Without Borders, she installed rainwater harvesting systems in rural Guatemala, an experience that has driven her career path—and altruism—ever since.

"Women and children walked for hours to get water," she says. "I experienced firsthand the impact of not having safe water. I realize how vital the work I do is for people's lives."

At Kennedy Jenks, Newman was recognized for her fun, inventive, and frequent fundraising efforts for Water For People. When the pandemic was at its worst, she helped Water For People organize virtual happenings including wine tastings; trivia contests; virtual escape rooms; and yoga, meditation, and cooking classes.

CREATING A LASTING IMPACT

Kennedy Jenks' environmental, social, and governance efforts often attract talent to the company.

"People who are eager to contribute to their communities want to be at KJ," London says. "They see here a higher purpose than themselves. The generation coming out of high school and college is purpose-driven. They need to know an organization gives back."

Once people are at Kennedy Jenks, Cornerstone helps breed loyalty.

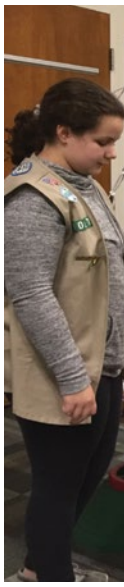
"Our staff comes together and builds bonds that will stay with them for the rest of their lives," London says.

"The fact that our company supports you as a whole person and not just as an engineer or scientist speaks volumes about the culture we've built," Gilmour says. "I'm proud to be part of KJ. I feel connected to the company, and it makes me excited to come to work every day." ■

***Michele Meyer** is a management and marketing writer based in Houston. She has written for* Forbes, Entrepreneur, *and the International Association of Business Communicators.*

2022 YOUNG PROFESSIONAL OF THE YEAR AWARDS

YOUNG PROFESSIONALS Shine in Fall Conference Spotlight



AT THIS YEAR'S 2022 FALL CONFERENCE at The Broadmoor in Colorado Springs, Colorado, ACEC presented five engineers with prestigious Young Professional of the Year Awards.

Employed by member firms, the recipients were selected by the College of Fellows for already demonstrating outstanding contributions to the engineering profession despite being in the early stages of their careers.

"These young engineers who were recognized let all of us know that the future of our industry continues to be promising," said ACEC President and CEO Linda Bauer Darr.

Nominees must have been 35 years of age or younger on Dec. 31, 2021, and be a registered professional engineer. Nominations are made through ACEC's 52 state and regional Member Organizations. The 2022 Young Professional of the Year Award winners are:

Bliss Kelley Bernard (right) talks with Gov. John Bel Edwards at the Queen Bess Island wildlife refuge dedication.

BLISS KELLEY BERNARD
FORMERLY OF FENSTERMAKER, NOW AT G.E.C.
BATON ROUGE, LOUISIANA

As vice president, environmental/business development, Bernard conducted research to understand project impacts on bird/wildlife habitats.

Her most significant environmental/conservation contribution is the Queen Bess Island Restoration Project, where she produced a technical report on the best habitats for nesting waterbirds. The report has become a model for future bird breeding restoration projects.

Bernard also is a member of the Baton Rouge town council.

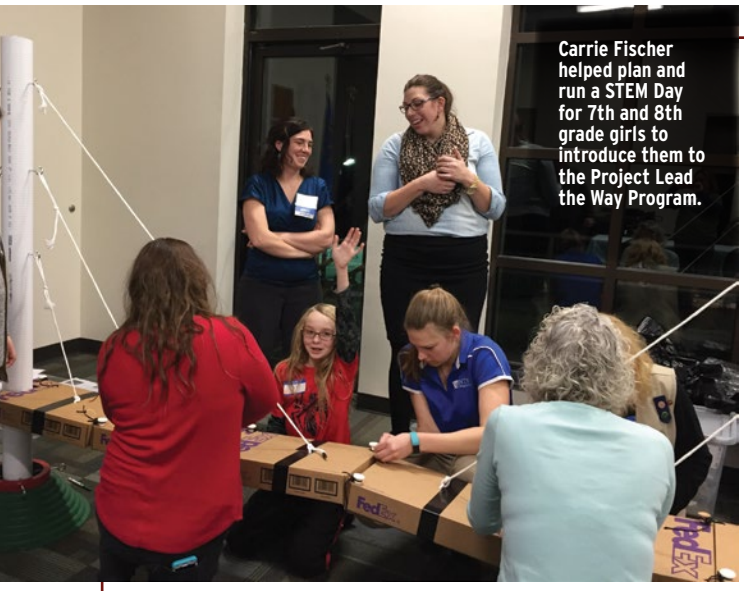
JULIE EATON ERNST
WESTON & SAMPSON
READING, MASSACHUSETTS

In her young career, Ernst has led a climate resilience strategic initiative fueled by her personal experience while in college in New Orleans when Hurricane Katrina struck in 2005.

She has since championed her firm's Climate Resilience Strategic Initiative, which has grown over the past five years from three to more than 20 professionals along the East Coast. She also is a former chair of the Climate Change and Air Committee for the Environmental Business Council of New England.

Ernst was climate resilient engineering lead for Boston's resilient waterfront parks initiatives and was project manager for the Resilient Massachusetts Action Team to provide statewide climate resilience design standards tools.

Julie Eaton Ernst serves as organizer and speaker for educational tours for the Consulting Planners of Massachusetts for "King Tide & Resilience Along the Boston Waterfront" in 2020—from Downtown to Fort Point Channel, and in 2021—Downtown to North End. The tours presented the flood risk and resilience strategies along these sections of Boston's waterfront.



Carrie Fischer helped plan and run a STEM Day for 7th and 8th grade girls to introduce them to the Project Lead the Way Program.

CARRIE FISCHER
NTM ENGINEERING
DILLSBURG, PENNSYLVANIA

With her specialty in water resources and waterway permitting, Fischer has conducted research efforts to improve water resources modeling practices throughout Pennsylvania.

She also was a hydraulics/hydrology engineer for PennDOT's I-81 Section 511 Corridor project and worked on the replacement of two bridges over the Susquehanna River and Trowbridge Creek.

Fischer's report, "Salinity Transport in an Urban Bioretention Basin Due to Winter Storm De-icing Salt Applications," is available on the Penn State University ScholarSphere Library with findings soon to be published.

BRUNA PARANHOS
JACOBS
NEW YORK CITY, NEW YORK

Paranhos specializes in climate resiliency and sustainable infrastructure initiatives. A native New Yorker, she has spent time learning her craft in Brasília, Brazil; Palo Alto, California; Zürich; and Paris.

Her resume includes work on the first Manhattan East Side resiliency project. She also led strategic investment review about Electreon, an Israeli electric vehicle technology company focused on inductive charging.

After delivering a compelling business case, Jacobs' executive leadership voted unanimously to accept the investment proposal.

Bruna Paranhos delivers a presentation about sustainability.

Alicia Suzuki, who sponsors mentoring events for young engineers, is leading efforts to inspire elementary school students to pursue careers in engineering through videos and discussions on how important water is to society.

ALICIA SUZUKI
KENNEDY JENKS
HONOLULU, HAWAII

In a leadership role in Kennedy Jenks' wastewater and water practice in Hawaii, Suzuki's efforts have included a project in Waimea town on Kauai, where she was tasked with identifying and solving the causes of inconsistent effluent quality compliance. Suzuki led the Waimea water treatment staff in gathering necessary data and ways to implement corrective changes.

Suzuki also serves as project manager and lead design engineer for a complex water project for the Honolulu Board of Water Supply and its customers of Windward Oahu. She is president of the Hawaii Water Environment Association and helped lead development of a promotional video for students to become interested in protecting the environment through wastewater treatment. ■

The Heat Is On

BY NICK BELITZ

Despite forecasts of economic storm clouds gathering on the horizon, it was nothing but blue skies for engineering industry deal-makers last summer as the blistering pace of mergers and acquisitions matched the red-hot temperatures that scorched much of the United States.

Balance sheets and backlogs remained robust as engineering firms brushed off the economic headwinds caused by soaring inflation, rising interest rates, and declining consumer confidence. Merger and acquisition activity in the A/E industry reached unparalleled heights in the first half of 2022 with a record 253 transactions that included U.S.-based sellers, surpassing last year's midpoint total of 209 by more than 21 percent.

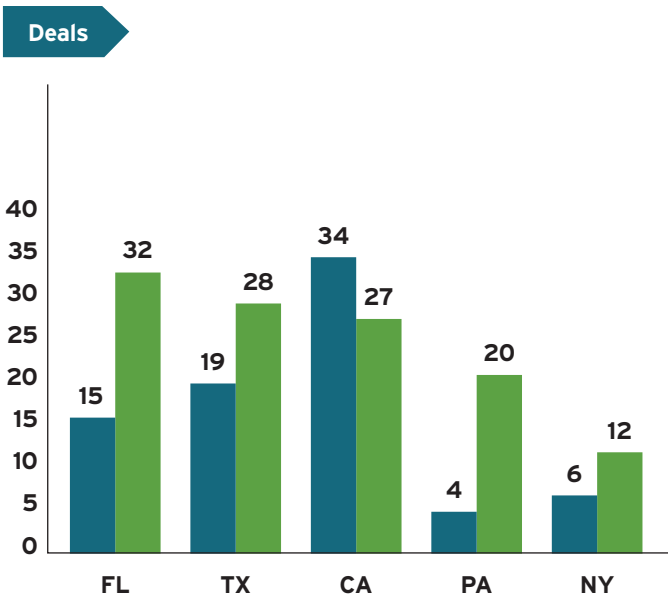
Perhaps fittingly, the hottest market activity has centered on states with the warmest climates as buyers cast their eyes to the Sun Belt to make strategic acquisitions. After ranking third out of the 50 states in the number of deals in 2021, Florida surged to the top in the first half of 2022 with 32 firm sales. That six-month figure nearly matched the 37 firm sales in Florida for the entirety of 2021. Texas was second in the number of firm sales with 28—followed closely by California, which was the leading state for deals in 2021.

ACEC firms were among those continuing to expand in the South and West this summer. For example, **Universal Engineering Sciences (UES)** (Orlando, Fla.) announced two acquisitions in as many weeks this July with its purchases of Rock Engineering & Testing Laboratory (Corpus Christi, Texas) and Speedie and Associates (Phoenix, Ariz.). **Bowman Consulting Group** (Reston, Va.) also looked to the Sun Belt in acquiring Fabre Engineering (Pensacola, Fla.) and Project Design Consultants (PDC) (San Diego)—its third and fourth acquisitions of the year.

Another trend we're seeing is that some of the industry's biggest firms just keep getting bigger. While 37 percent of U.S. deals in 2021 involved *Engineering News-Record (ENR)* 500 firms, that number grew to surpass 44 percent in the first half of 2022 and showed no signs of slowing down based on summertime acquisitions made by numerous ACEC members. In addition to the pair of deals by UES, summertime transactions made by *ENR* 100 firms that are detailed below include those by **Tetra Tech** (Pasadena, Calif.), **Stantec** (Edmonton, Canada), **TRC Companies** (Windsor, Conn.), **Terracon** (Olathe, Kan.), **NV5** (Hollywood, Fla.), **KCI** (Sparks, Md.), **LJA Engineering** (Houston), **Thornton Tomasetti** (New York), **IMEG Corp.** (Rock Island, Ill.), **CONSOR Engineers** (Houston), and **David Evans and Associates** (Portland, Ore.)

The industry's biggest firms weren't all buyers, however. In fact, a growing number have become acquisition targets themselves. While it has been typical for about 10 *ENR* 500 firms to sell or recapitalize in any given year, that number ballooned to 26 last year and is on pace to be eclipsed in 2022 with 14 *ENR* 500 firms having been sold or recapitalized in the first half of the year.

TRANSACTIONS THROUGH THE FIRST SIX MONTHS



Most of the recent sales or recapitalizations of *ENR* 500 firms involved private equity firms or private equity-backed buyers. Again in 2022, we are seeing significant interest by private equity in acquiring A/E firms, a trend that began more than four years ago and has accelerated since the pandemic. The number of industry transactions backed by private equity rose from 69 in the first half of 2021 to 76 in the first six months of 2022. Another such deal occurred in July when Copley Equity Partners partnered with the management team of civil and structural engineering firm **LJB** (Dayton, Ohio) to acquire an equity interest in the company.

As a result, we are seeing industry platforms that didn't even exist two years ago now poised to join the ranks of the *ENR* 500 in 2023. For example, Trilon Group, backed by private equity firm Alpine Investors, announced three strategic partnerships in June and July alone. Two of those included *ENR* 500 firms **The Mannik & Smith Group (MSG)** (Maumee, Ohio) and **CPH** (Sanford, Fla.). The HFW Companies, which is backed by private investment firm VSS Capital Partners, and DCCM, backed by private equity firm White Wolf Capital, have also completed a string of acquisitions in the past year.

As long as interest from private equity, a tight labor market, and the largest federal public infrastructure investment in decades continue to make firm acquisitions an attractive growth strategy for many industry players, the forecast shows no signs of cooling down.

The following is a list of recent transactions, with ACEC members highlighted in **bold**.

JULY 2022

Copley Equity Partners (Quincy, Mass.) partnered with the management team of civil and structural engineering firm **LJB** (Dayton, Ohio) (*ENR* #432) to acquire an equity interest in the company.

Shive-Hattery (Cedar Rapids, Iowa) (*ENR* #232) acquired KdG Architects (St. Louis, Mo.), an architecture, engineering, and interior design firm focused on the hospitality, gaming, commercial, and government markets.

The Mannik & Smith Group (MSG) (Maumee, Ohio) (*ENR* #320) announced a strategic partnership with Trilon Group (Denver). MSG will lead Trilon's Midwest Platform with a focus on environment, transportation, water, and community infrastructure markets.

David Evans and Associates (Portland, Ore.) (*ENR* #99) acquired **Civil Works Engineers** (Costa Mesa, Calif.), a planning, design, and project management services firm.

Godspeed Capital (Washington, D.C.) and its strategic platform, **Huckabee** (Fort Worth, Texas) (*ENR* #212), submitted an offer to acquire 100 percent of Hill International (Philadelphia), ENR's number 10 CM/PM-For Fee firm.

Project Design Consultants (PDC) (San Diego), a leading Southern California civil engineering, surveying, planning, and landscape architecture firm, joined **Bowman** (Reston, Va.) (*ENR* #118).

Employee-owned industry leader **Terracon** (Olathe, Kan.) (*ENR* #21) expanded its drilling services with the acquisition of Drilling Engineers (Fort Collins, Colo.).

Ardurra Group (Tampa, Fla.) (*ENR* #114) acquired and merged with 300 Engineering Group (Miami), a water and wastewater and public works engineering firm.

Civil engineering consulting firm **CDG** (Andalusia, Ala.) (*ENR* #461) acquired Shield Engineering (Charlotte, N.C.), an environmental, civil design, geotechnical, and construction engineering services firm.

Christopher Consultants (Fairfax, Va.), a civil engineering, surveying, planning, and landscape architecture firm, agreed to join **IMEG Corp.** (Rock Island, Ill.) (*ENR* #71).

Universal Engineering Sciences (UES) (Orlando, Fla.) (*ENR* #42) acquired **Rock Engineering & Testing Laboratory** (Corpus Christi, Texas), a geotechnical engineering, geotechnical drilling, and construction materials testing firm.

TRC Companies (Windsor, Conn.) (*ENR* #17) expanded its renewable energy capabilities with the acquisition of Blue Oak Energy (Sacramento, Calif.), a firm that specializes in engineering for utility-scale photovoltaic and solar energy storage projects.

WGI (West Palm Beach, Fla.) (*ENR* #167) acquired The Atlantic Group (Huntsville, Ala.), adding strength and new services in the geospatial aerial mapping, remote sensing, and photogrammetry markets.

Planning, environmental design, and engineering firm **Environmental Design Group (EDG)** (Akron, Ohio) acquired Spagnuolo & Associates (Fairlawn, Ohio), a civil engineering and land survey consulting firm. The acquisition expands EDG's land development, survey, geospatial, data collection, and mapping services in Ohio.

Tetra Tech (Pasadena, Calif.) (*ENR* #4) expanded its digital water practice through the acquisition of systems integration and engineering services company The Integration Group of Americas (Houston).

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

Nick Belitz is a principal with Morrissey Goodale LLC, a management consulting firm that specializes in the A/E industry and provides strategic business planning, merger and acquisition, valuation, ownership transition, executive coaching, and leadership development services. He can be reached at nbelitz@morrisseygoodale.com.

BDY Environmental (Nashville, Tenn.) joined natural resource planning and management firm **Davey Resource Group** (Kent, Ohio).

Universal Engineering Sciences (UES) (Orlando, Fla.) (*ENR* #42) acquired Speedie and Associates (Phoenix, Ariz.), a geotechnical, environmental, construction materials testing, and inspection services firm.

Farr West Engineering (Reno, Nev.), a specialist in municipal engineering and public works, merged with planning, surveying, civil and transportation, and environmental services firm **DOWL** (Redmond, Wash.) (*ENR* #204).

CM/PM firm Fountainhead Consulting (Anaheim, Calif.) acquired **PPM Group** (Fontana, Calif.), a transportation, public works, and infrastructure construction management firm.

DCCM (Houston) (*ENR* #174) acquired **RQAW** (Fishers, Ind.), an engineering and architecture firm serving state and local government entities, educational institutions, and the military, commercial, and health care sectors.

JUNE 2022

Transportation and infrastructure engineering firm **CONSOR Engineers** (Houston) (*ENR* #76) acquired **Project Engineering Consultants** (West Jordan, Utah), an engineering firm specializing in transportation, water, and CM services.

Forte and Tablada (Baton Rouge, La.) acquired Boyd Holmes Engineering (Baton Rouge, La.), a firm that specializes in engineering design of urban and rural bridges.

KCI (Sparks, Md.) (*ENR* #48) acquired AmChel Communications (Wylie, Texas), a telecommunications firm with expertise in turnkey cellular tower installation.

NV5 (Hollywood, Fla.) (*ENR* #24) acquired GEO1 (Hawthorne, Calif.), a firm that offers geospatial lidar, aerial imagery, and data analytics solutions to utilities, government agencies, and the environmental sector.

Wilson Environmental Technologies (Grand Island, N.Y.), a firm that specializes in federal and state wetland delineations, wetland mitigation design and monitoring, and regulatory issues, joined natural resource planning and management firm **Davey Resource Group** (Metairie, La.).

Thornton Tomasetti (New York) (*ENR* #65) made a notable financial investment in innovative transportation and technology company HyperloopTT (Los Angeles). ■

On the Move

Jonathon Stage has joined New York-based **Thornton Tomasetti** as vice president. He will lead the company's sustainability team on the West Coast, supporting clients with a range of sustainability solutions for new building and retrofit projects. Stage, who most recently served as a vice president at Willdan, is based in the firm's San Francisco office.

John Baker has joined Houston-based **Lockwood, Andrews & Newnam Inc. (LAN)** as senior program manager and vice president of infrastructure, where he will oversee public sector infrastructure projects. Baker formerly served as a colonel in the U.S. Army, with more than 25 years of military service, and served as the director of operations for the U.S. Army Installation Management Command, managing services and infrastructure for 75 Army bases around the world. Baker is based in the company's San Antonio, Texas, office.

Retired Major General **James Trogdon** has joined Dallas-based **AECOM** as its North Carolina transportation lead, where he will develop strategic relationships and oversee transportation infrastructure projects across the state. Prior to retiring, Trogdon held several notable positions at the North Carolina Department of Transportation and served as secretary from 2017 to 2020.

Olathe, Kan.-based **Terracon** announced the following appointments: **John Norwood** has been named national manager for materials technology and innovation, and he is responsible for partnering with Terracon's operations and service line leaders to explore future technology needs and drive technology adoptions. He is based in Terracon's Raleigh, N.C., office. **Lori Cathcart** has been named director of corporate sustainability. Cathcart joined Terracon in 2017 as environmental assistant service line director for the company's western operating group. She is based in the firm's Laguna Hills, Calif., office.

Christopher LaTuso has been promoted to transportation market strategy director at Omaha, Neb.-based **HDR** where he will drive the continued growth of HDR's global transportation program across all transportation modes and markets. LaTuso most recently served as director of HDR's global transportation infrastructure advisory services practice and as East Region transportation market development director.

Statement of Ownership, Management, and Circulation

Engineering Inc. (USPS 0007395) is published (quarterly) four times a year by the American Council of Engineering Companies. The mailing address of the publication is 1400 L Street, N.W., Suite 400, Washington, D.C. 20005. The mailing address of the publisher is 1400 L Street, N.W., Washington, D.C. 20005-3592. The publisher is the American Council of Engineering Companies, the editor is Andrea Keeney, and the co-managing editors are Elizabeth Cotner Glennon and Matthew Wright. The owner of the publication is the American Council of Engineering Companies. There were 12,330 copies of Engineering Inc. published for the Fall 2022 issue; the average for the preceding 12 months was 12,319. The paid/requested outside county mail subscriptions for the Fall 2022 issue were 11,932; the average for the preceding 12 months was 11,954. The other classes mailed through USPS for the Fall 2022 issue were 65; the average for the preceding 12 months was 77. Total distribution for the Fall 2022 issue was 12,054; the average for the preceding 12 months was 12,075. Copies of Engineering Inc. that were not distributed during the Fall 2022 issue (office use, leftovers) was 276 and the average number of copies not distributed during the preceding 12 months (office use, leftovers) was 244. The percent paid/requested circulation for the Fall 2022 issue was 99%. The average percent paid/requested circulation for the preceding 12 months was 99%.


Jonathon Stage


John Baker


James Trogdon


John Norwood


Lori Cathcart


Christopher LaTuso

Welcome New Member Firms

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Intertek PSI
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Cayucos
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FMF Pandion
Encinitas
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ACEC-FL
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Cocoa Beach

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ABE Associates, Inc.
Detroit

ACEC/Missouri
Design Group Facility Solutions, Inc.
St. Louis

ACEC Nevada
Schwob Acoustics
Las Vegas

ACECNJ
EnTech Engineering of New Jersey
Iselin
LiRo Engineers, Inc.
Jersey City
Sadat Associates, Inc.
Trenton
UrbanTech Consulting Engineering, PC
Cherry Hill

ACEC New York
EYP
Albany
SLR International Corporation
New Paltz

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AKF Group, PLLC
Raleigh
The Thrasher Group, Inc.
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ACEC Ohio
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Worthington
Energy Land & Infrastructure (ELI)
Bowling Green
GAI Consultants, Inc.
North Canton

ACEC OKLAHOMA
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Tulsa
W2 Engineering, Inc.
Oklahoma City

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ACMS Northwest
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Envision Consultants, Ltd.
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Black & Veatch
Memphis
GarzaEMC, LLC
Nashville
Goodwyn Mills Cawood, Inc.
Nashville
Rockfield Engineering, LLC
Memphis

ACEC Texas
Architectural Engineers Collaborative
Austin

ACEC Virginia
Whitney, Bailey, Cox & Magnani (WBCM)
Lexington

ACEC Washington
Farallon Consulting
Issaquah

JANUARY 2023

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19 Making Sure Your Strategic Plan Won't Languish or Fail (online class)

24 Delegated Design: Managing Risk and Fulfilling Contractual Obligations (online class)

25 How Much Value Do You Put on ROI in AEC When It Comes to Technology (online class)

26 Airports Transform Communities into Development Districts (online class)

31 M&A Outlook for Engineering Firms–Industry Realignment Continues (online class)

FEBRUARY

1 Employee Development and the Influence of Gaming (online class)

14 The Electrifying Truth: The Impacts of Vehicle Electrification (online class)

14–23 Managing Small Projects Successfully (online class)

15 Networking 101: Learn to Network Like a Rock Star (online class)

27–3/1 Business of Design Consulting, Scottsdale, Arizona

28–3/1 Business Development & Marketing Forum, Scottsdale, Arizona

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Professional Development at Your Convenience: On-Demand Webinar 10-Packs

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EJCDC CONSTRUCTION MANAGER AS ADVISOR

Completely new to EJCDC, the EJCDC® 2021 Construction Manager as Advisor Series is intended for projects in which the owner's primary representative during construction will be the construction manager as advisor and is comprised of contract documents, administrative forms, bonds, bidding, and procurement documents.

The new CM as Advisor Series serves the needs of projects in which the design professional focuses on core design and technical services—including engineering services that are required during the construction phase, such as technical review of shop drawings—while a construction manager assists the owner with administrative tasks ranging from budgeting to scheduling to quality management. Several factors inspired EJCDC's development of the CM as Advisor set of documents:

- Many infrastructure projects are very complex, often involving multiple construction contracts over a period of years, creating the need for highly specialized administrative services provided by construction management professionals.
- Some public owners are required by local rules to use a third party (other than the engineer of record) to administer construction contracts, while other owners prefer the third-party approach as standard operating policy.
- In other cases, the expertise that a construction manager can bring to the project during the pre-construction phase, particularly with respect to scheduling, cost estimating, value engineering, and procurement, is a compelling factor.
- Some project owners conduct construction contract administration using internal construction management teams. In this case, defining the delineation of services and responsibilities in the CM as Advisor Series will be useful as a starting point in setting up appropriate administrative procedures and establishing the construction contracts, and in crafting the scope of the engineer of record's construction-phase services.

At the heart of the CM as Advisor Series is EJCDC CMA-501 (2021), Agreement Between Owner and Construction Manager as Advisor. This agreement is based on standard professional services contract principles, and addresses the schedule for rendering services, insurance and indemnification, the standard of care, and the scope of the CM's services. The scope is set out in a comprehensive exhibit that is coordinated with the scope of engineer's services, to avoid duplication of effort.

Most of the remainder of the CM as Advisor Series documents are modeled on counterpart documents in the EJCDC Construction Series, with modifications made to accommodate the role of the CM as Advisor during the bidding/procurement process and the construction phase.

Purchasers of the CM as Advisor series will receive copies of several standard C-Series bond forms that did not require modification for the CM as Advisor process.

To purchase EJCDC documents at the ACEC member rate (50 percent off list price), go to **bit.do/EJCDC-CMA-Series**. ■

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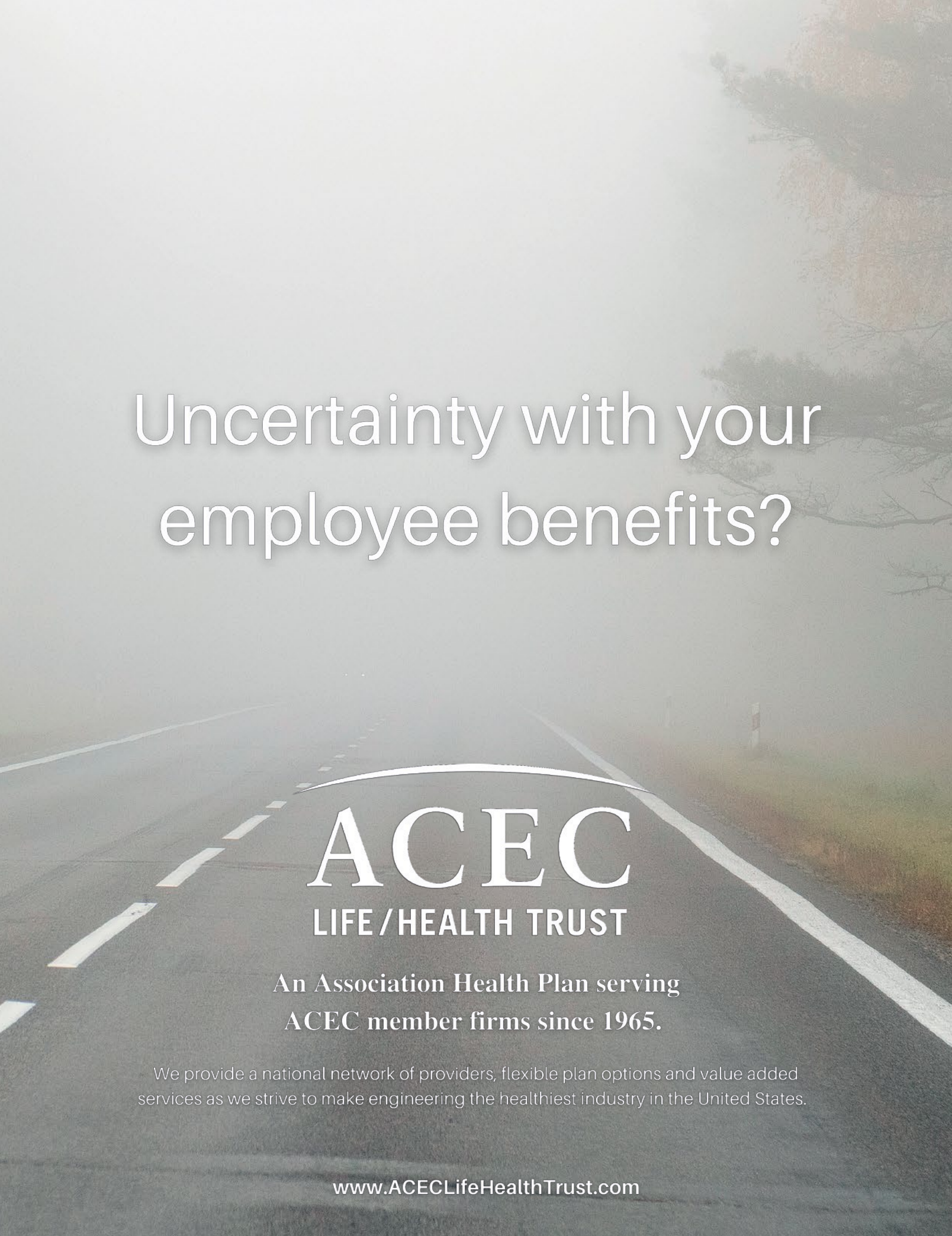
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