SPRING 2020

ENGINEERING INC.

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TARGETING DIVERSITY & INCLUSION

DPC Seeking to Improve Industry Workforce Makeup

COVID-19:
Members on Front Lines; Workplace Changes Explored

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"We need to create a much better environment so that diverse populations see opportunity in our industry change."

Mike Carragher
President and CEO
VHB

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Investment Banking for the Built Environment

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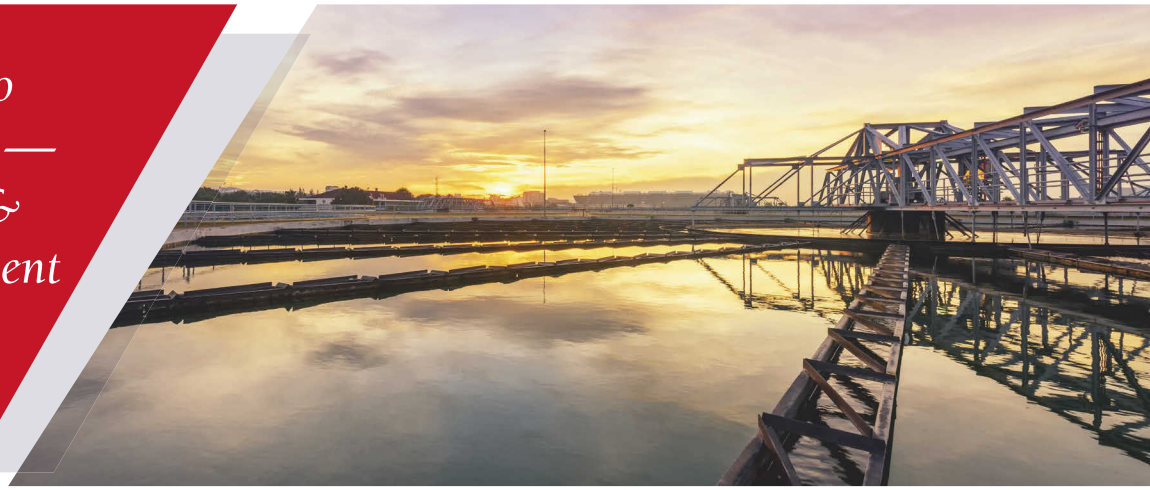

750+
Completed Transactions

30+
Annual Closed Transactions

100+
Annual Valuations, Internal Ownership Transfers and Financial Advisory Engagements

Recent Transactions

OAKTREE has partnered with management to acquire MWH CONSTRUCTORS from Stantec

The undersigned served as the exclusive financial advisor to Oaktree Capital Management in this transaction

FMI Capital Advisors

REVO2 SOLUTIONS has acquired **Absolute Aeration, LLC** creator of bluefrog TECHNOLOGIES

The undersigned served as the exclusive financial advisor to Absolute Aeration, LLC in this transaction

FMI Capital Advisors

res a portfolio company of KKR has merged with ANGLER ENVIRONMENTAL

The undersigned served as the exclusive financial advisor to Angler Environmental in this transaction

FMI Capital Advisors

AQUA-AEROBIC SYSTEMS, INC. has merged with METAWATER

The undersigned served as the exclusive financial advisor to METAWATER in this transaction

FMI Capital Advisors

William Charles Construction, RAGNAR BENSON CONSTRUCTION A WILLIAM CHARLES COMPANY has been acquired by IEA

The undersigned served as the exclusive financial advisor to William Charles in this transaction

FMI Capital Advisors

Greg Powell
Managing Director,
Engineering & Environment
919.785.9217
gpowell@fminet.com

James Holmes
Managing Director,
Chemicals
303.398.7264
jholmes@fminet.com

www.fminet.com/wfm

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COVER: GETTY IMAGES

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American Council of Engineering Companies

ACEC's award-winning bi-monthly 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.

The articles and editorials appearing in this magazine do not represent an official ACEC position or policy unless specifically identified as doing so.

Council, Member Firms Adapting to a New Business Normal

It is no longer a debate that COVID-19 has affected every aspect of our society—from the way we live to how we work and even play.

Also evident is how universal measures adopted to mitigate the pandemic, especially "stay-at-home" directives, have everyone searching for alternative ways to conduct important business, programs, and services.

Amid the turmoil, the Council has managed to sustain its operations.

Despite having to cancel the 2020 Annual Convention, we successfully conducted ACEC's first-ever virtual board meeting in April, which nearly 300 Member Organization leaders throughout the nation attended. The event was highlighted by installation of Charles Gozdziewski, chairman emeritus of Hardesty & Hanover, as the new 2020-2021 ACEC Chair, succeeding ACEC Chair-Emeritus Mitch Simpler. It also featured the introduction of six new members to the 2020-2021 Executive Committee *(see page 26)*.

Days later we also conducted a virtual ACEC/PAC Sweepstakes Drawing. Due to the success of these events, it is safe to say that virtual meetings will be a popular option for future Council meetings going forward.

To further address virus-related concerns, this issue of *Engineering Inc*. reports on the many Member Firms who are applying expertise to help those on the pandemic front lines *(see page 18)*, and several Member Firm CEO perspectives on anticipated challenges and opportunities for both the post-COVID-19 workplace and marketplace *(see page 22)*.

Furthermore, this issue's cover feature describes an innovative Design Professionals Coalition effort to promote industrywide progress on diversity and inclusion—a key goal of the Council's new Strategic Plan—and involves leaders of 22 of ACEC's largest firms.

On the same topic, the Council distributed a statement, available on the ACEC website, which reads in part: "The engineering profession has always been grounded in integrity, fairness, and service to community. We support equality and respect for all humankind. And we have the power to foster progress by breaking down the physical barriers that can inhibit economic and social equity."

Finally, we promise to keep you completely current on developing plans regarding the 2020 Fall Conference and the rescheduled 2020 Engineering Excellence Awards Gala, as well as other issues that can affect our industry.

In the meantime, please stay safe and healthy.

Charles J. Gozdziewski
ACEC Chairman

Linda Bauer Darr
ACEC President & CEO

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AMERICAN COUNCIL OF ENGINEERING COMPANIES

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VICE PRESIDENT, COMMUNICATIONS AND MARKETING Jeff Urbanchuk
DIRECTOR, MEMBER COMMUNICATIONS Alan D. Crockett
STAFF EDITOR Andrea Keeney akeeney@acec.org 202-682-4347
SENIOR COMMUNICATIONS WRITER Gerry Donohue
ADVERTISING SALES Rachael Ng 202-682-4337 rng@acec.org

IMAGINATION

MANAGING EDITOR Tim Gregorski
ART DIRECTOR Nancy Roy
PROJECT DIRECTOR Connie Otto

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Despite Industry Forecasts, Members Thrilled About Health Care Market

By Gerry Donohue

Construction forecasts for the health care sector in 2020 and beyond are fairly flat. Dodge Data & Analytics projects modest growth, and FMI forecasts 3 percent growth in 2020 but then little better than 1 percent annual growth through 2023.

Leaders of engineering firms working in the health care sector are decidedly more optimistic. "Health care is going to be a growth sector for the foreseeable future," says Mike Zorich, principal and director of health care at IMEG, one of the largest A/E/C firms in the health care sector. "We see a lot of potential."

Three factors form the foundation for Zorich and other firm leaders' optimism:

1. The tectonic market shifts caused by the Affordable Care Act (ACA)
2. The changing demographics of the country
3. The inevitable advance of technology

PACIFICENTERPRISE/GETTY

INFRASTRUCTURE MATCHING THE POLICY

When the ACA was passed in 2010, the health care industry went into the doldrums. For a long time, there was so much uncertainty about the law that many health care providers put capital projects on hold until they could get a better sense of the market's projection. It was not until 2015 that the market began to pick up again.

"They could not wait any longer," says David Huey, president of Dewberry Architects and director of the firm's health care practice. "There were a lot of deferred building and maintenance projects that had to move ahead to meet demand."

Industry leaders also needed time to understand the implications of the law on their business model.

"The industry had a challenge because the policy did not match up with the infrastructure in the industry," says Zorich. "It boiled down to changes in the reimbursement model. Previously it was fee-for-service, but under ACA it became fee-for-outcome. It has taken us this long to get back in synch, with the infrastructure matching the policy."

The impact of the reimbursement model change can be seen in the shifting character of capital projects. Most of the recent construction has concentrated on outpatient facilities, medical office buildings, small hospitals, and renovations and upgrades.

"We are seeing a client-driven focus on short-stay procedures and ambulatory care," says John Koch, associate partner at Jaros, Baum & Bolles (JB&B). "While maintaining quality of care, they are looking to provide the requisite services and get the patient back home."

According to FMI, a small number of very large health care campuses are in the design pipeline, but the health care market is moving away from the inpatient model.

Health Care Construction Put in Place

Year	Change from Prior Year
2014	-5%
2015	3%
2016	2%
2017	6%
2018	-1%
2019E	2%
2020F	3%
2021F	1%
2022F	0%
2023F	1%

Source: FMI

MILLENNIALS ARE DIFFERENT

The U.S. population is aging, and that means more demand for health care. In 2025, the last baby boomer will hit 65, and by 2030 1 in 5 Americans will be 65 years or older. According to the U.S. Centers for Disease Control and Prevention, people over 65 have three times more hospital days than the general public, and those over 75 have four times more.

"And they tend to be sicker patients with more complex needs, so we are seeing more intensive care beds than we saw in the past," Huey says.

At the other end of the population, "Millennials want to receive health care in a much different way than baby boomers. They are used to having everything at their fingertips, so they want their care to be convenient," Zorich says.

As a result, "We are seeing more neighborhood facilities, where you can check in easily and quickly, get treated, and leave," says Chris Prochner, a partner at JB&B.

Zorich points to the Mercy Health Systems building in St. Louis. "It is a virtual health care model with multiple doctors in one location servicing patients all over the U.S. It is much cheaper and more effective to build that building than an inpatient building," he says.

TODAY'S INFRASTRUCTURE, TOMORROW'S TECHNOLOGY

The biggest factor driving the sector—and the most difficult to plan for—is the rapid acceleration of technological development in the health care field.

"Technology is evolving at a rapid pace," Prochner says. "Health care institutions want to be sure the built environment can accept that technology, so we have to align today's infrastructure projects with tomorrow's technology."

Most health care clients have their own experts tracking technological developments, but they also expect their engineering firms to stay on top of the market.

"We have access to all the vendors' latest and greatest technological developments so we can tell our clients: 'Here is the current state, here is the trend, and here is potentially what is coming down the pipeline,'" Zorich says.

But the pace of technology and that of design and construction schedules do not tend to match. "It is not uncommon to delay decisions on which technology to buy and install until well into construction," Huey says.

According to Prochner, the key is staying flexible. "We have to design to give our clients the flexibility to adjust to technological change over the next 30 years. Even something as simple as putting data jacks in a facility has to keep one eye on where the technology is heading," he says.

And the pace of change is only increasing. "We have clients who initially tell us they want the flexibility to put in another transformer or chiller in, say, 10 years, but more often than not, they are calling us within a year telling us they need it now," Koch says. ■

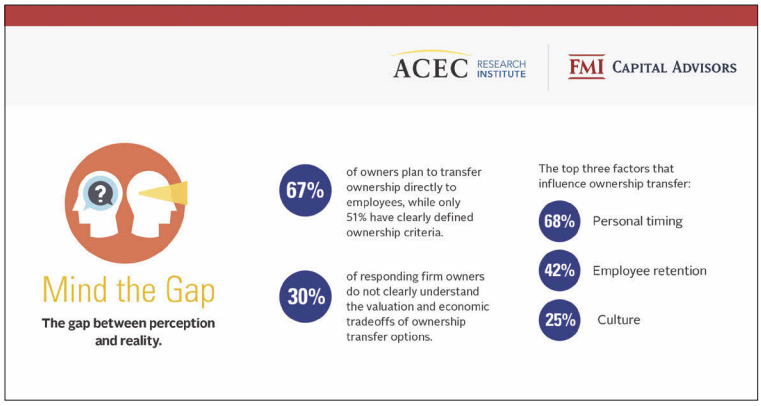
***Gerry Donohue** is ACEC's senior communications writer. He can be reached at gdonohue@acec.org.*

Research Institute/FMI Ownership Transition Study Finds Gap Between Knowledge and Intent

Engineering firm owners think they are better prepared for ownership transition and management succession (OTMS) than they actually are, according to a survey by the ACEC Research Institute and FMI Capital Advisors.

"With the accelerating retirement of baby boomers and engineering firms' vital need to attract younger engineers into management and ownership ranks, this study serves as both a wake-up call and a guide for firm owners," says Daphne Bryant, executive director, ACEC Research Institute.

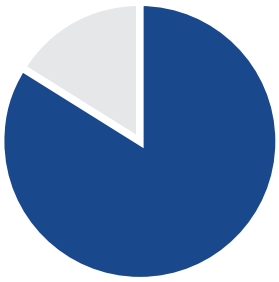
In the survey of 186 owners of firms, with annual revenues ranging from less than $2 million to more than $1 billion, fewer than two-thirds of respondents (63 percent) have an ownership plan in place, and barely half (51 percent) have a clearly defined set of ownership criteria.



While it is common under an ownership transition (OT) plan for firms of all sizes to "sell back to employees," only 26 percent of firms have ownership opportunities in place for executive leadership, and just 12 percent extend ownership opportunities to all employees.

Almost a third of firm owners do not clearly understand the valuation and economic trade-offs among the various ownership transfer options for their firm.

"Without a clear understanding of the valuation, tax, and other financial implications of all available OT options, owners are less likely to optimize the benefits for all stakeholders," says John Carrato, chair, ACEC Research Institute, and president and CEO, of Benesch, Inc., in Chicago.



84%
of respondents believe succession planning is important

Two other key takeaways from the survey are that firm size has a significant impact on OTMS preparedness and that management succession planning appears to be a blind spot for many.

Among firms with 200 or more employees, 89 percent of respondents have formal ownership transfer plans, but among firms with fewer than 50 employees, just half (51 percent) have a formal plan. And among those firms that do not have a formal plan, 41 percent of respondents—mostly smaller firms—said they have not explored any ownership transfer options.

"While smaller A/E firms might not be as complex as their larger counterparts, they must also address ownership transfer and identify new leaders," says Greg Powell, managing director, FMI Capital Advisors. "It appears, however, that smaller A/E firms have less clarity around what they want to do with the business or how they want to grow it."

Results also show that 84 percent of respondents believe management succession planning is important, but only 58 percent have formal succession plans in place for key roles in the company. Additionally, just over half (53 percent) say they are prepared to transition the president/CEO role, but only 13 percent of firms have formal succession plans for key midlevel employees.

"While companies predictably prioritize management succession planning for the top of the organizational chart," says Powell, "the best-run firms also focus on developing a deep bench so they can successfully backfill at all management levels as employees move up in the ranks."

The ongoing retirement of baby boomers adds to the pressure. Thirty percent of the firms reported that they will need successors for key roles within three years or less, and 33 percent said they will need successors within four to six years.

"As the baby boomers continue to transition out of leadership and management roles in the A/E industry," says Powell, "the need for well-planned ownership transition and succession planning is greater than it has ever been."

To view the executive summary of the survey, go to the research page on the ACEC Research Institute website at **www.acecresearchinstitute.org**. ■

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KEYNOTE SPEAKERS

JESSICA O. MATTHEWS
Founder and CEO
Uncharted Power

SCOTT HARRISON
Founder and CEO
charity:water

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ACEC Launches Rescue/Recover/Rebuild Advocacy Campaign

ACEC has launched its virtual grassroots advocacy campaign urging Congress to focus its COVID-19 recovery efforts on an infrastructure-based recovery legislative agenda.

The central message of ACEC's advocacy program is based on how a significant investment in the nation's physical and critical infrastructure is essential to unlock America's post-pandemic economic recovery. The program's theme of Rescue/Recover/Rebuild underscores the interconnection between economic growth and modern, future-looking infrastructure investment.

R3 ACEC
American Council of Engineering Companies
Rescue/Recover/Rebuild

"COVID-19 will change the way Americans interact with the built environment for the foreseeable future, and our infrastructure must adapt to meet the challenges of the 'new normal,'" says Linda Bauer Darr, president and CEO of ACEC.

Charlie Gozdziewski, chairman of ACEC, adds, "Congress should seize this opportunity and pass an infrastructure-focused recovery bill that not only jump-starts job creation but prepares America to lead in a post-pandemic economy."

The House and Senate already have the building blocks in place to create an infrastructure-based recovery agenda. Both chambers are moving their respective water and surface infrastructure reauthorization bills at the committee level. The next step involves leadership from House Speaker Nancy Pelosi, Senate Majority Leader Mitch McConnell, and President Donald Trump to fast-track these bills into a package to serve as the foundation for the next recovery bill.

America's engineering industry plays a central role in designing the built environment. In the near future, ACEC Member Firm Leaders will reach out to their elected officials and congressional leaders through virtual meetings, social media, phone calls, and emails to urge support for an infrastructure-first recovery agenda.

PINKOMELET / GETTY IMAGES

Senate Committee Clears ACEC-Backed Water Infrastructure Legislation

Water is a critical piece of ACEC's recovery agenda, and legislation advancing in the House and Senate creates an opportunity for passage before the end of the year.

The Senate Committee on Environment and Public Works unanimously approved the America's Water Infrastructure Act of 2020 and the Drinking Water Infrastructure Act of 2020. These measures authorize new U.S. Army Corps of Engineers navigation, flood control, and other water resource projects, as well as increased funding authority for the water and wastewater State Revolving Fund (SRF) programs. The bills increase funding for the Water Infrastructure Finance and Innovation Act program to incentivize private investment in water, and include provisions to enhance resilience, response to emerging contaminants, and other challenges.

The House Transportation and Infrastructure Committee has already passed H.R. 1497, the Water Quality Protection and Job Creation Act of 2019, a bipartisan bill to authorize about $16.7 billion over five years, of which $14 billion would be for the Clean Water SRF program. The committee is expected to release its own Corps of Engineers projects bill in the coming weeks, which will likely serve as a vehicle for passing additional water-related priorities, including H.R. 1497.

ACEC Urges DHS/CISA to Emphasize Professional Engineers in Essential Workforce Guidance

ACEC has urged the Department of Homeland Security/Cybersecurity and Infrastructure Security Agency (DHS/CISA) to refine the guidance on essential infrastructure workforce to reinforce the role of professional engineers.

The DHS/CISA Guidance on the Essential Critical Infrastructure Workforce: Ensuring Community and National Resilience in COVID-19 Response Version 2.0 and Version 3.0 establish a strong connection between the services engineering firms perform and the market sectors and related services deemed essential.

Version 3.1 was updated on May 19 to include "Engineers performing or supporting safety inspections."

These services include continuous inspections to assess deterioration due to aging, weather, and hazards; completion of ongoing construction; assessing the ability to repurpose for pandemic response; renovating to protect public and worker health and safety; designing needed changes to existing infrastructure and new infrastructure identified; support for ongoing and changing of operations and maintenance of existing infrastructure; and similar activities.

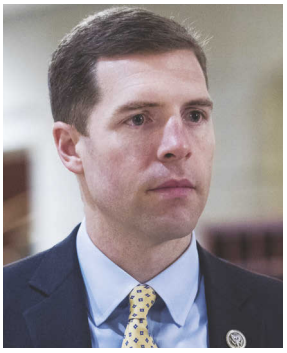
To be accomplished properly, these activities require site access and visits.

"We believe the guidance would be improved through more specific references to the services needed to support the critical sectors referenced, with particular emphasis on the necessary licensed professional engineering, architectural, and land surveying, and environmental science and related services," ACEC stated in the letter.

ACEC recommended the following additions to the Guidance:

- Licensed engineering and other design professionals and support personnel performing safety and functional inspections of physical infrastructure, to include buildings, transportation, energy, manufacturing, health care, logistics, water, waste, and utilities-related facilities.
- Licensed engineering and other design professionals and support personnel performing functions related to the operations, maintenance, expansion, or renovation for reuse of essential critical public or private infrastructure.
- Licensed engineering and other design professionals and support personnel performing functions related to the completion of ongoing construction deemed to be essential and critical to pandemic response, economic recovery, or quality of life.
- Licensed engineering and other design professionals and support personnel performing planning and design of new or repurposing of existing infrastructure deemed to be essential and critical to pandemic response, economic recovery, or quality of life.

ISSUES ON THE MOVE	WHAT'S NEXT
Grassroots Infrastructure Campaign	House, Senate action expected this summer
State DOT Funding	Action possible by July
DHS Guidance on Essential Services	Additional guidance possible in July



TOM WILLIAMS / GETTY IMAGES

Rep. Conor Lamb, D-Pa.

BILL CLARK / GETTY IMAGES

Rep. Bob Gibbs, R-Ohio

ACEC Supports Lawmakers' Push for $50 Billion Federal Highway Funding to State DOTs

As House and Senate members continue discussions over additional legislation to respond to the COVID-19 pandemic and its economic impact, ACEC is actively supporting a move to include a $50 billion infusion to state Departments of Transportation (DOTs).

The federal highway funds would backstop a projected 30 percent revenue decline over the next 18 months and mitigate additional project cancellations and postponements. Vehicle traffic has declined by 50 percent in most parts of the country due to work and travel restrictions, causing steep drops in state motor fuel tax and toll receipts, and severely impacting state transportation budgets.

ACEC helped to lead an effort to secure 137 House members on a letter to House Speaker Nancy Pelosi and House Minority Leader Kevin McCarthy in support of the request, led by Rep. Conor Lamb, D-Pa., and Rep. Bob Gibbs, R-Ohio.

"Supporting state DOTs now will enable the advancement of planned transportation projects in the near-term and allow state DOT employees and transportation construction workers essential to planning and delivering these projects to remain on the job," the lawmakers wrote in their letter to Pelosi and McCarthy.

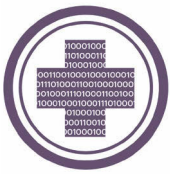
ACEC contacted every member of Congress in support of the sign-on letter.

For More News

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

Trends in Health Care Facilities, Population, and Employment Take on More Significance During Pandemic

By Erin McLaughlin



As the COVID-19 pandemic grips the United States and the world, it is interesting to look at recent health care and life science trends, how these have impacted this pivotal moment, and what the future may bring.

OUTPATIENT-FOCUSED FACILITY GROWTH

Health care facilities have continued their dramatic decentralization away from hospitals and inpatient settings. According to Statista/American Hospital Association, there were 5,534 hospitals in the United States in 2016, down from 7,156 in 1975. As the number of hospitals declines, there has been a dramatic surge in outpatient facilities (see *Number of Urgent Care Centers*), which provide a wider variety of treatments than ever before.

These properties include urgent care centers (UCCs), medical clinics with extended hours that are equipped to diagnose and treat a broad number of non-life- or limb-threatening conditions. UCCs partially fill a gap created by the nationwide closure of many rural hospitals. UCCs experienced an 18 times increase from 2006–2016, according to a March 2018 FAIR Health white paper, "FH Healthcare Indicators and FH Medical Price Index."

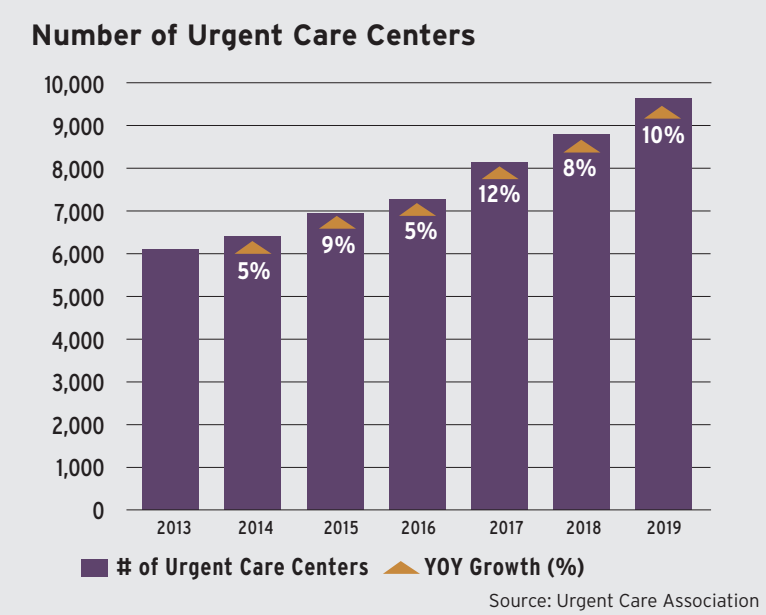
The strong growth of UCCs is expected to continue, as government-allowed health care reimbursements continue to favor outpatient over inpatient treatments. Besides UCCs, ambulatory surgery centers grew 80 percent between 2000 and 2014, according to the Medicare Payment Advisory Commission, a nonpartisan legislative branch agency. These centers average 15,500 square feet, housing multiple operating rooms.

Due to the focus on growth to outpatient facilities, traditional hospitals that have the beds, equipment, and staff to treat critical patients for one or more nights have declined, and this trend may not serve communities as well as once thought.

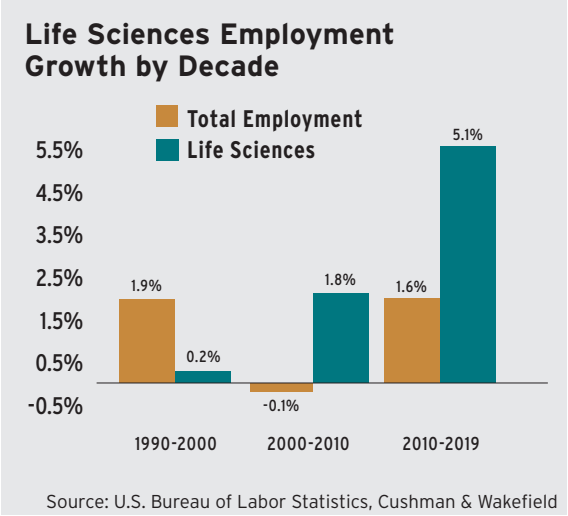
HEALTH CARE & S+T SECTORS CONSIDERED RECESSION RESISTANT

Health care and social assistance jobs grew 23 percent from 2008–2018, and the medical sector is the largest employer in the U.S., at 13.4 percent of the workforce, according to the U.S. Bureau of Labor Statistics. Life sciences employment—which includes those in the biotechnology, pharmaceutical, biomedical device, genetics/genomes, and research and development (R&D) sectors—has consistently outpaced total employment growth since 2000 (see *Life Sciences Employment Growth by Decade*).

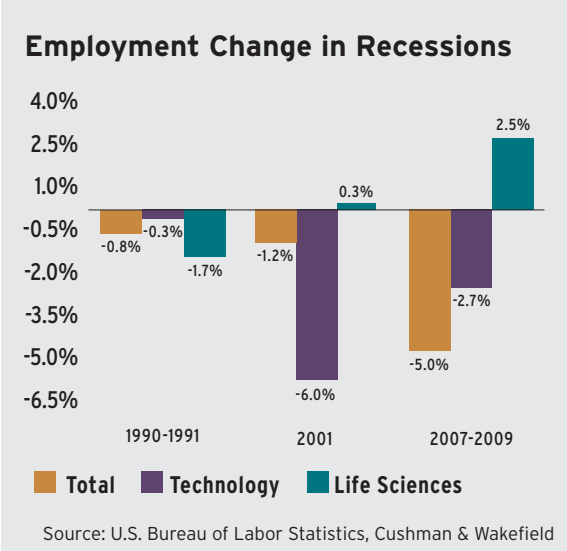
These sectors are considered relatively "recession resistant" by many economists during a normal recession (not triggered by a pandemic), and that theory is backed up by employment changes during the recent recessions of 2001 and 2007–2009 (see *Employment*



Source: Urgent Care Association



Source: U.S. Bureau of Labor Statistics, Cushman & Wakefield



Change in Recessions). Unlike employees in other market sectors, employees in health care and life sciences often cannot telework due to the nature of their jobs, so growth in demand for new facilities correlates strongly to the growth in employment.

AN AGING DEMOGRAPHIC SUPPORTS CONTINUED GROWTH

The U.S. Census Bureau predicts that by 2030, the median age in the U.S. will top 40 for the first time ever. With people 65 and older visiting doctors 2.5 times more than those age 25 to 44, according to Marcus & Millichap Research Services, the need for hospitals will continue to grow.

During the COVID-19 pandemic, older populations can be especially at risk and in need of long-term treatment. As a result, certain geographic areas are likely to have continued growth in the health care sector.

According to the U.S. Census Bureau, the top five metropolitan areas expected to have the strongest growth for those 65 in the coming years are:

1. Austin, Texas
2. Raleigh, North Carolina
3. Dallas
4. Houston
5. Charlotte, North Carolina

Rank	University Medical Schools	2018 NIH Funding
1	University of California, San Francisco	$577.72 M
2	Johns Hopkins University (MD)	$469.64 M
3	Stanford University (CA)	$456.27 M
4	Washington University (MO)	$449.34 M
5	University of Pennsylvania	$425.23 M
6	University of Pittsburgh (PA)	$415.67 M
7	Yale University (CT)	$407.46 M
8	Columbia University (NY)	$407.42 M
9	Duke University (NC)	$384.59 M
10	University of Michigan, Ann Arbor	$372.60 M

Rank	Biopharma Company (Headquarters)	2018 R&D Spend
1	Roche (Basel, Switzerland)	$9.803 B
2	Johnson & Johnson (New Brunswick, NJ)	$8.446 B
3	Novartis (Basel, Switzerland)	$8.154 B
4	Pfizer (New York, NY)	$7.962 B
5	Merck & Co. (Kenilworth, NJ)	$7.908 B
6	Sanofi (Paris, France)	$6.227 B
7	AbbVie (North Chicago, IL)	$5.093 B
8	GlaxoSmithKline (Brentford, England)	$4.987 B
9	Gilead Sciences (Foster City, CA)	$3.897 B
10	Amgen (Thousand Oaks, CA)	$3.657 B

Source: *Pharmaceutical Executive* Magazine

TRACKING THE FIRMS AND INSTITUTIONS INVESTING IN R&D

To better understand which health care institutions and biopharma firms may need upgraded or expanded laboratory, medical, and administrative spaces, it's useful to track which universities and hospitals are getting grant funding and what firms are investing in R&D.

The first table, "University Medical Schools," shows the top 10 universities whose medical schools received National Institutes of Health funding in 2018. The second table, "Biopharma Company," lists the top 10 biopharma companies that invested in R&D (which is not the 10 largest by sales or revenue). Institutions and companies investing in their futures are also investing in their facilities. ■

Commercial & Residential Real Estate

Intermodal & Logistics

Energy & Utilities

Health Care & Science+Technology

Economic Outlook

Public-Private Partnerships (P3s)

The Private Side is a regular department of *Engineering Inc.*, focusing on the private-sector markets listed to the left, and information and insights on public-private partnerships and economic data relevant to the industry. For more on these topics, subscribe to ACEC's bimonthly *Private Industry Briefs*: **https://programs.acec.org/industrybrief/**.

Erin McLaughlin *is ACEC's vice president of private market resources. She can be reached at* ***emclaughlin@acec.org****.*

EXPANDING THE CONVERSATION

Twenty-two engineering firms lead an effort to promote industrywide progress on diversity and inclusion

GETTY IMAGES

BY CALVIN HENNICK

Three women sit on the nine-member board of directors for Woodard & Curran; there are no people of color. And yet, "surprisingly and sadly," says Doug McKeown, CEO at Woodard & Curran, 33 percent of women on the board make the firm's board fairly "diverse"—at least when compared to the boards of many other engineering firms.

McKeown, along with representatives from 21 other engineering firms across the country, are working to change that reality. In concert with leaders at VHB and RS&H, McKeown spearheaded the effort to create a Diversity and Inclusion Working Group (DIWG) within the Design Professionals Coalition (DPC)—itself a coalition composed of senior executives representing some of ACEC's largest Member Firms.

After collaborating remotely for much of last year and then meeting in person for a day and a half in Chicago, DIWG has produced the in-depth report "Diversity & Inclusion, Keys to Success & Lessons Learned," which offers keys to success and lessons learned on the topics of diversity and inclusion.

Now, members of the working group are hoping their suggestions are adopted throughout the ACEC Member Firm family, eventually resulting in tangible change for an industry that has long sought change, but is still dominated—both in perception and in reality—by white men.

"Leaders are in a position to create change," says McKeown. "It is about giving people a voice and listening, and making sure you hear them, so you can recognize where the hurdles are, and put changes into practice based on their input. If you do not go and deliberately change anything, not much is going to be different."

"You cannot fake this stuff," McKeown adds. "If you make this a policy that people 'shall' follow, and they have to check off a box, managers can get around that. You have to change the culture of the firm."

A MISSED OPPORTUNITY

DIWG has its origins in discussions that took place in 2018 between McKeown, Mike Carragher, president and CEO at VHB, and Lisa Robert, executive vice president at RS&H.

Carragher heard McKeown and Robert present on diversity and inclusion at the 2018 ACEC Annual Convention and was moved by their discussion. Later when the topic came up as something DPC wanted to shed more light upon, Carragher recruited McKeown and Robert to partner with him to advance the discussion. Together, the trio recognized the need for the industry to not only increase the number of women and people of color going into (and staying in) engineering, but to also create a welcoming and inclusive environment for people of all backgrounds. Their brainstorming led to championing the first D&I-focused survey conducted in the A/E/C industry, establishing a baseline for the industry to benchmark diversity and inclusion program development over time. The survey results were presented to DPC in August 2018, and the strong feedback led to the establishment of DIWG.

"It is always incredible to me, when you get a group of engineering companies together, how willing we are to share ideas and information," says Robert. "That was incredibly powerful, whether it was with respect to our initial survey, the working group calls we had, or our meeting together. There was an incredible amount of passion and energy around this topic, and how we as an industry can better drive an inclusive environment for all of our employees."

The results of the initial survey, while not entirely surprising, illustrate the extent to which the industry has trouble attracting, engaging and retaining diverse candidates and employees. The data highlighted the need to focus on inclusion and belonging, and what can be done to make the industry more welcoming and inclusive so women and minorities want to stay and grow their careers.

According to the survey, around 32 percent of entry-level employees at DPC firms are women, and 26 percent are minorities. For C-level

DEFINING THE TERMS

Diversity and inclusion are related, but not synonymous, terms. Here is how the working group defines them:

DIVERSITY addresses "the differences in our people in a wide variety of ways," many of which can be measured. These include:

- Gender
- Race
- Ethnicity
- Sexual Orientation
- Religion
- Education
- Political Affiliation
- Communication Style
- Socio-Economic Background
- Disabilities

INCLUSION is about creating an environment that "provides opportunities for all employees to realize their full potential."

executives, those numbers drop to under 18 percent for women and under 4 percent for minority groups—with similar statistics for boardrooms.

"It highlighted the missed opportunity we are having," says Carragher, noting that engineering firms are competing not only with each other, but also with other fields, for top talent. "We need to create a much better environment so that diverse populations see opportunity in our industry change. We need to create an atmosphere where people feel like they can succeed and bring their whole self to work each day."

ESTABLISHING BEST PRACTICES

The DIWG report offers a wide range of suggestions. For example, Member Firms need to communicate about diversity and inclusion, develop strong programs, and measure outcomes, but they also need to embed these values in their culture through tone-setting from the top. Outside consultants are important, but companies should also invest in development for internal trainers. And while organizations should push for transformative change, they should also manage expectations and even prepare for the reality that they will likely make some missteps in their efforts.

"Leaders are in a position to create change."

DOUG MCKEOWN
CEO
WOODARD & CURRAN

Promoting diversity and inclusion is not just a matter of reaching out to a wider applicant pool, although that is part of it, according to Masai Lawson, director of talent acquisition for Gannett Fleming and a member of the working group. She notes that leaders also must watch out for behavior that they might otherwise not notice, such as men speaking over women in meetings.

"Some people just are not aware of certain behaviors because they have been condoned for so long," Lawson says. "You need to educate people, and then you need to charge leaders to manage that better and correct the behavior."

Lawson says that managers should also reflect carefully on their processes for making hiring and promotion decisions.

Message to Leadership

Members of the Diversity and Inclusion Working Group (DIWG) were asked what one thing they would like to tell or ask their firms' chief executives.

Among the DIWG members' messages to leadership, one response stood out: "Implementing diversity and inclusion will take COURAGE. Do you have that courage?"

Additional comments from DIWG members centered on the need for firm leaders to take diversity and inclusion seriously; to clearly display their commitment to the effort; and to make a commitment to listen objectively to the diversity and inclusion challenges that exist in a company, and not display insincere support for these issues.

DIWG

Back from left: **Tina Horn**, Alfred Benesch & Co; **Masai Lawson**, Gannett Fleming; **Beverly Williams**, Langan; **Stephanie Price**, Terracon; **Julianne Nevins**, Simpson Gumpertz & Heger; **Sean Samsel**, Psomas; **Carolyn Kitts**, Gresham Smith; **Keri Kocur**, VHB; **Lisa Robert**, RS&H; **Mina Biggs**, Hanson Professional Services; **Deb Gordon**, DPC; **Lori Hall**, Kimley-Horn; **Jennifer Palhete**, RS&H; **Stephanie Rodriguez**, Olsson; **Stephanie Bowers**, KCI; **Pamela Zapata**, STV. **Front from left:** **Meredith Clark**, Urban Engineers; **Doug McKeown**, Woodard & Curran; **Jennifer Chatt**, CHA; **Erin McConahey**, ARUP; **Mike Carragher**, VHB; and **Vanessa Ryder**, VHB.

"Who do you pick to lead projects? Is it always the same person?" Lawson asks. "Are you allowing people who do not look like you to step up and participate in meetings or lead them? And in the selection process, are you selecting based on skills or based on who you are comfortable with? If you do not have a structured interview process, implicit bias can come into play."

Meredith Clark, vice president and director of human resources for Urban Engineers, notes that her participation in the working group is already resulting in changes for her firm. For instance, the company recently named a new co-chair to its previously dormant diversity committee. Also, Clark is pushing to hold more social and professional events during mornings and lunches, rather than only at night, so more people can be included.

But to be successful, diversity and inclusion must be more than just an HR directive, according to Clark. "We have talked about doing cultural days, celebrating each others' cultures and food," she says. "It is an opportunity to get together and learn."

Stephanie Price, director of human resources for Terracon, notes that the opportunity to trade ideas and strategies among firms can help to accelerate change and promote best practices. For example, Price was already working on developing a women-in-leadership group at her firm, and Robert shared information about similar work RS&H had done.

"Seeing how they approached it made me feel like we can do that, too," Price says. "Seeing the positive impact made me feel that this is not just something we could be doing, but something we should probably all be doing."

"We are not going to make drastic change overnight on this," says Keri Kocur, chief people officer at VHB. "The work that the group has done, and those best practices and real actionable suggestions, will help move the needle and make improvements. It is going to be around things like: Are you checking biases in your recruiting decisions? When you have a meeting, is everyone getting the opportunity to speak? Those little things will add up over time and become consistent throughout a firm's culture."

BUSINESS BENEFITS

The DIWG report stresses that Member Firms should not only be pursuing diversity and inclusion goals for their own sake, but also because these values are likely to make their firms more successful and the industry as a whole more competitive in an increasingly diverse nation.

"We are hearing from clients that want to know what we are doing to recruit and retain diverse talent."

MASAI LAWSON
DIRECTOR OF TALENT ACQUISITION
GANNETT FLEMING

The report cites research from Deloitte Insights, which states that organizations with inclusive cultures are twice as likely to meet or exceed financial targets, three times as likely to be high-performing, and six times as likely to be innovative and agile.

"We need to do this because it is the right thing to do, but there is also a very legitimate business case behind it that cannot be ignored," says Price. "If we think about inclusion as a warm and squishy HR thing, it is easy for it to fall to the bottom of the priority list. But this can give us a positive differentiator in the marketplace."

"A lot of the clients we serve are in the public sector, and they are often far more advanced when it comes to diversity and inclusion than many engineering firms are," says Lawson. "More and more often, there are clients that are saying, 'We need to see something other than only white men sitting across the table from us,' to better reflect the key decision-makers in their communities. We are hearing from clients that want to know what we are doing to recruit and retain diverse talent."

THE POWER OF LEADERSHIP

Ambitions for industrywide change tend to succeed or fail depending on the extent to which they are embraced by leadership across the sector. There is hope among working group members that this effort—initiated by high-level leaders at three firms—will have the "legs" needed to carry it far beyond the work that has already been done.

Asked if it is refreshing to see firm leaders actively embracing diversity and inclusion, Lawson was effusive in her response. "Oh my God, yes!" she says. "It really was, because they get it. Other CEOs in other firms listen to them. In HR, you only have so much influence. Who you get information from matters."

"Those three leaders felt that this is important enough that they have not only invested in their respective organizations, but they are willing to lead this group," says Price. "I thought that was extremely impactful." ■

"The work that the group has done, and those best practices and real actionable suggestions, will help move the needle and make improvements."

KERI KOCUR
CHIEF PEOPLE OFFICER
VHB

To view the DIWG report, visit https://bit.ly/dpc-diwg-report.

Calvin Hennick *is a business, technology, and travel writer based in Milton, Massachusetts.*

ACEC MEMBER FIRMS STEP UP TO ASSIST THEIR COMMUNITIES, CLIENTS, AND THE COUNTRY DURING THE COVID-19 PANDEMIC

ESSENTIAL SERVICES

Right: WSP USA workers are disinfected during a recent facility decontamination cleaning event in Virginia.

Left: Langan engineers provided environmental permitting and management of dredging operations to help make it possible for the USNS Comfort to dock in Manhattan.

"Engineering firms provide essential services to essential services," says Jay Patil, executive vice president at Brown and Caldwell. "In the COVID-19 pandemic, I like to think we did our part and made a difference."

ACEC Member Firms throughout the nation have contributed during the pandemic, serving their clients in health care, transportation, water, and other essential services in a difficult time and sometimes dangerous conditions.

Here are five of their stories.

AECOM has worked on alternate care facilities in five states to aid coronavirus response efforts, including this one constructed in partnership with the U.S. Army Corps of Engineers, New York District, in support of a FEMA mission, at SUNY College at Old Westbury on Long Island.

COURTESY KENT LEVI/AECOM

TO ESSENTIAL SERVICES

BY GERRY DONOHUE

KEEPING THE MAIL FLOWING

At 5 p.m. in early April, Vince Ricevuto, senior vice president at WSP USA, received a call from the U.S. Postal Service (USPS) about a case of COVID-19 at one of its distribution facilities. WSP USA has a long-standing Emergency Planning, Response, and Recovery Services contract with the USPS.

"It was at a location that required immediate mobilization," says Ricevuto. "We had a management team at the facility within two hours and met with the USPS management there to brief them on what we would need to clean the facility. We had one shift, from 12:01 a.m. to 8 a.m., to get it done."

This was not the first and would not be the last USPS facility that WSP decontaminated during the first months of the COVID-19 pandemic. Many of the facilities employed hundreds of workers, and the invisible spread of the virus during its early stages meant that employees may have worked for days before developing symptoms.

"The first confirmed case was at a large plant, and they did not want to shut it down completely for an extended time frame," Ricevuto says. "We focused on cleaning the contact areas where the person worked and then traced their steps back through the entire facility."

After that experience, WSP told the USPS that operations at the facilities, some of which are 1 million square feet, needed to stop during decontamination.

"It was too risky and was not effective having the plant in operation while we were cleaning," Ricevuto says. "On some of the projects, we still only had one shift to complete the work, but in the more complicated facilities, they gave us a full day."

Although WSP has had long experience in decontamination projects, having been involved in anthrax cleanup projects in 2001, there was still some on-the-job learning because of the unique nature of the COVID-19 virus, according to Ricevuto.

"We had established protocols from the Postal Service and the Centers for Disease Control, but we had continuing, collaborative discussions as we worked on these projects, always looking for ways to improve the effectiveness of the cleaning while ensuring the health and safety of the team and ultimately the client's employees," Ricevuto says.

DRILLING DOWN TO LOCAL IMPACT

As COVID-19's impact spread across the United States, two geospatial specialists at Woolpert, an international architecture, engineering, and geospatial firm headquartered in Dayton, Ohio, brainstormed about what the firm could do.

"We are a geospatial firm, and the dynamics of a virus are geospatial: how it spreads and how it changes," says Dan Michalec, innovation portfolio manager at Woolpert. "We looked at how we could use the firm's unique talents to help the community at large."

Michalec and Darren Johnson, database specialist at Woolpert, created a U.S. County COVID-19 Visualization dashboard that shows the county-by-county impact of the coronavirus across the U.S., including percentages of those affected as compared to each county's population.

"We pitched the idea to our Chief Technology Officer Keith Zecchini, and he gave us the go-ahead, seeing an opportunity to use technology to understand the situation," Michalec says. "We were very fortunate to have leadership that supported this, especially because the initial data sets were messy and we were not sure where this would end up."

Woolpert used data from Esri and Johns Hopkins University to build the dashboard.

"The data was available, but it was not structured for rapid use," Michalec says. "We searched for data sets we could rely on, stabilized them, made the data structured and time-aware, and then visualized it for a public audience."

Adds Johnson, "There were already maps showing the impact of COVID-19 at the national and state level, but there was not a good breakdown at the county level. You can drill down with this map."

The application, which Woolpert created pro bono, is available on its website as well as on the Esri hub that shares COVID-19 resources.

"We put it out there for public consumption for people to use as they see fit," Michalec says. "We just did it to help."

PREPPING FOR THE USNS COMFORT

When New York City was the epicenter of the COVID-19 epidemic and there were fears the city's health care facilities would be overwhelmed, President Trump sent one of the Navy's hospital ships, the USNS Comfort, to the city with its 1,000 beds and medical staff.

To prepare the Manhattan Cruise Terminal for the hospital ship, the New York City Economic Development Corporation and Skanska turned to Langan, a national environmental engineering firm headquartered in New Jersey.

"Engineers are essential, and putting them on this essential work gives meaning to us as an organization and as a profession."

KARL JENSEN
EXECUTIVE VICE PRESIDENT
AECOM NATIONAL GOVERNMENTS PRACTICE

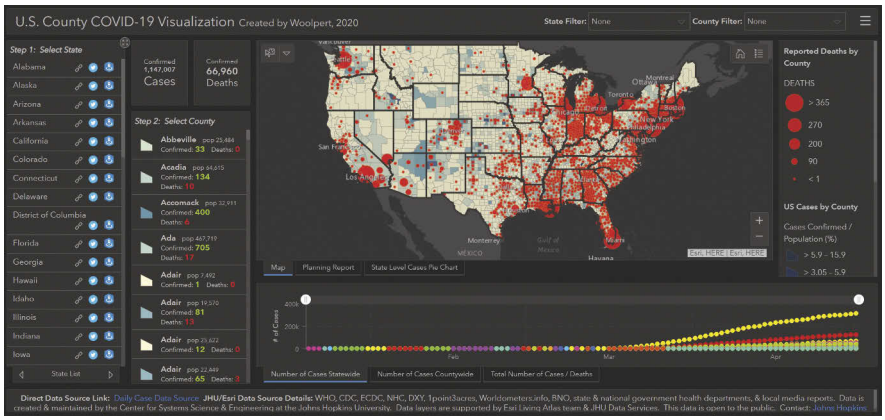
"It was pretty clear right away that where it needed to berth did not have the draft to accommodate the ship," says Dave Gockel, president and CEO at Langan. "So, what do you do? You dredge, but dredging requires a lot of upfront permitting and environmental work."

Langan deployed a team led by Jeffrey Stoicescu, senior associate, to work on two parallel tracks: one to obtain the emergency permits, and the other to do the environmental, civil, and dredge engineering support required to ensure all sediments were properly disposed and the berth was prepared to handle the hospital ship.

"I would say that there was probably six months' worth of work that happened in about six days," Gockel says. "When you think about the critical nature of the situation, the last thing in the world you wanted to happen was for the ship to come up the Hudson River and have to anchor while waiting for a berthing spot."

After docking, the USNS Comfort immediately started treating both COVID-19 and other patients, alleviating the pressure on the city's health care system. And in April, the USNS Comfort started treating COVID-19 patients from Philadelphia and the surrounding area.

"So often when we engineers are doing our work, it is a matter of time before people see the tangible end result," Gockel says. "In this instance, to be done with our work and literally a day later to see the USNS Comfort coming under the Verrazzano Bridge and up the Hudson River, it was an immediate sense of gratification for everyone involved."



This county-by-county dashboard developed by Woolpert includes confirmed COVID-19 cases and deaths, as well as a timeline for the spread of the virus across the U.S.

TRAINING ESSENTIAL SERVICES STAFF

Brown and Caldwell, an environmental engineering and construction services firm based in San Francisco, bills itself as "the best virtual company in the industry," which made a huge difference in adapting to the COVID-19 pandemic.

"We have invested hugely in technology and training, so we already had the IT structure in place when the Bay Area shut down," says Jay Patil, executive vice president at Brown and Caldwell. "A lot of our clients, however, were not as well prepared, and we took that as an opportunity to help them out and to make a difference."

The firm works primarily with water and wastewater clients, and while these utilities are essential services, many of its employees were not considered essential and had to obey stay-at-home orders.

"We hosted webinars twice a week for our clients on how to operate virtually," Patil says. "Many of them had Microsoft Teams but they had not enabled it fully. Our digital services group showed them how to do that, how to set up and share files in the cloud, and how to use all of the features."

Over the first two months of the pandemic, the firm provided free training to several hundred staff members at over 120 clients.

"We saw it as helping our clients continue to provide essential services to communities where we live and they serve," Patil says.

Because the utilities needed to continue to interact with state and regulatory agencies and the public during the shutdown, Brown and Caldwell created guidance to help them use tools and best practices to organize and conduct these meetings in a virtual environment.

"A lot of our clients had projects that are under construction, so we helped them with virtual tools and procedures to keep working," Patil says. "While the imposed restrictions added complexity and uncertainty, our clients have been able to pivot and emerge stronger to keep their projects moving forward."

COVID-19 Response Guide //

Virtual Delivery

How to Succeed with your Virtual Workshop

In response to an urgent need for social distancing and in many cases stay-at-home orders, we must explore new ways of interacting with internal staff, project teams, community stakeholders, and the public at large. Many of our projects rely on interactive workshops to advance ideas, gather feedback, and gain consensus on a path forward. These types of engagements are ideally held in person; however, under these new circumstances, BC has compiled the following guidance that includes tools, best practices, and lessons learned to help us transition to virtual workshops.

Workshop planning

Rethinking virtual workshop agendas, advanced materials, participant preparation, and presentation logistics.

Rethink agendas and facilitation approach

1. **Shorten sessions.** Consider breaking your workshop into multiple shorter sessions. For example, if you would normally have a two-hour live workshop, run two shorter online versions.
2. **Build in more time.** Add 15-20 minutes into the agenda to address technical issues associated with a new platform.
   - Provide materials and contacts for technical support in advance.
   - Without visual cues to rely on, add time to be able to call on each person.
3. **Bring facilitation support.** If you are planning a workshop with more than 10-15 people, bring in additional facilitation help. Your co-facilitator can manage things like the chat questions, interactive activities, and technical support if needed.

While there are many digital collaboration platforms available to conduct a virtual workshop, BC uses **Microsoft Teams**, which is available through the Microsoft Office Suite. Learn more, and even sign up for a free training session, at brownandcaldwell.com.

BC has no association to Microsoft, and all software noted in this document is subject to licensing and other terms and conditions.

Brown and Caldwell is here to serve our community. Please contact us with questions.

Wendy Broley
One Water Leader
wbroley@BrwnCald.com
858.571.6712

Rosey Jencks
Senior Manager Client Services
RJencks@BrwnCald.com
925.210.2466

Lisa Skutecki
Senior Manager Client Services
LSkutecki@BrwnCald.com
858.571.6739

Kirk Westphal
Managing Principal
Environmental Engineering
Kwestphal@BrwnCald.com
978.983.2064

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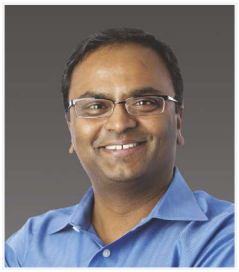
Excerpt from Brown and Caldwell's virtual workshop training guide developed for water and wastewater utility clients, which includes tools, best practices, and lessons learned to help them transition to virtual workshops.



"While the imposed restrictions added complexity and uncertainty, our clients have been able to pivot and emerge stronger to keep their projects moving forward."

JAY PATIL
EXECUTIVE VICE PRESIDENT
BROWN AND CALDWELL

BUILDING TEMPORARY HOSPITALS

Early in the pandemic, when forecast models predicted huge runs on hospitals in many cities, AECOM saw there would be a pressing need for emergency health care facilities.

"In the first few weeks, we submitted more than 35 qualifications and proposal packages to the Army Corps in support of Federal Emergency Management Agency missions to build temporary hospitals, and we communicated with states and municipalities about what we could do for them," says Karl Jensen, executive vice president of AECOM's National Governments practice.

AECOM's first project was to build a temporary hospital on the SUNY Old Westbury campus on Long Island in New York. The project, which AECOM turned over to local authorities at the end of April, has 1,000 beds, of which 90 percent are designated for COVID-19 care.

AECOM also was awarded contracts to transform McCormick Place in Chicago, a fairground in Colorado, and three facilities in Rhode Island into temporary hospitals.

As a construction manager, AECOM is committed to the safety of the workers on-site.

"We have had experience working with other epidemics—Ebola, Legionnaires' disease, anthrax—so we know what to do, but it was still a learning experience every day," says Jensen. "We had health and safety representatives on the teams from day one, establishing policies and ensuring people had training before they went on the site."

One of the early challenges was acquiring enough personal protective equipment for AECOM staff and the subcontractors.

"We had some gear already, but we also got in touch with our offices in China and other parts of Asia where the pandemic had eased up to get additional equipment," Jensen says.

The challenge of working in difficult conditions brought out the best in many people, according to Jensen.

"We had a team member on one of our job sites who lost a relative to COVID-19. We told him to take as much time as he needed, but he came right back to the job because he said finishing the hospital would mean that others might not die."

Another employee had a heart attack and within a week was lobbying his doctor to let him go back to work.

"Engineers are essential, and putting them on this essential work gives meaning to us as an organization and as a profession," Jensen says. "More than one team member has told me that these were the best projects they have worked on." ■

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

Member Firm Leaders Examine Post-COVID-19 Workplace and Markets

ROAD TO RECOVERY INCLUDES ALTERNATIVE DESIGN SOLUTIONS RESULTING IN NEW WAYS TO PROCURE AND DELIVER SERVICES

BY ALAN D. CROCKETT

As the world resets for a long-awaited post-coronavirus existence, new realities for business and life in general are taking shape.

Amid a plethora of forecasts on changes involving how and where post-COVID-19 business will be conducted, it is a safe bet that employee and overall public health will be a primary influencer as the evolution to the "next normal" begins.

COVID-19 already has forced many employers to close their doors, some temporarily and some permanently. Establishments from banks and supermarkets to gas stations and doctors' offices now must adopt new and more restrictive precautions for customers and staff including face coverings, temperature checks, and physical distancing measures.

The United States as well as many foreign governments have initiated piecemeal reopenings of their economies. Individual states and localities have begun a gradual easing of shelter-in-place restrictions—some imposed since March—to help jump-start the stagnant economy.

The restrictions have been eased despite medical expert warnings, including a U.S. draft government report that cautioned COVID-19 cases could surge to about 200,000 per day by June 1, accompanied by more than 3,000 deaths each day, if restrictions are lifted too soon.

COVID-19 WORKPLACE IMPACT

Engineering firms have adapted, with many already having most, if not all, staff working remotely. Combined with anticipated easing of COVID-19 shelter-in-place restrictions, firms are aggressively adopting new health-related business policies.

"In the wake of COVID, we ramped up to a 100 percent work-from-home firm very rapidly," says Dilip Choudhuri, president and CEO of Walter P Moore. "Our broad intent is to use this crisis to reimagine our business to fit the post-COVID realities and opportunities."

According to David Ott, CEO and president of Short Elliott Hendrickson, the immediate impact to his firm was a shift of nearly all 750 employees to telecommuting. "This transition has gone well," he says. "While in the COVID-19 environment, we also learned quickly how to sell our work and deliver our clients' projects through a more virtual environment."

For Baton Rouge-based Forte & Tablada, most of the office staff has been working remotely since March.

"Our surveying and advanced measurements field crews are still doing their work with a few changes such as staggering arrival and departure times, riding in separate vehicles to job sites, and keeping social distancing as much as possible and practical with their work," says Ann Forte Trappey, CEO and president. However, "Even though we believe remote work is efficient, we are concerned about maintaining our culture during distance work."

According to Eric Keen, chairman and CEO of HDR, his firm's operations have changed significantly over the last two months, and he anticipates many changes will remain well after the COVID-19 restrictions have eased. "How we interact with our clients and collaborate will continue to rely on the use of virtual environments that will improve our interactions through more frequent and detailed discussions," Keen says.

"Even though we believe remote work is efficient, we are concerned about maintaining our culture during distance work."

ANN FORTE TRAPPEY
CEO AND PRESIDENT
FORTE & TABLADA

Maria Clyde, director of human resources at B+H Insurance, adds that the post-COVID-19 workplace will require special coordination, noting that companies have policies, procedures, and people to worry about. "When it comes to people, the most important things to manage during a time of crisis or major change are morale and expectations," she says. "These truly are unprecedented times, and people are resorting to extreme thoughts and behavior, mostly because they are inundated with the media. On one hand, you have panic. On the other hand, you have rage because people question the virus's legitimacy and worry about destroying the economy."

Clyde emphasizes that communication by company leaders is paramount in helping employees adapt to new and sudden workplace changes, which can vary for every industry and every

TANJA COTOAGA KAUVCOTGOPA/UNSPLASH; THOMAS BARWICK/GETTY IMAGES

company. "I also recommend never saying 'when we return to normal,' because we all now know it is never going to be 'normal' again!"

Kenneth Smith, CEO at T. Baker Smith, says his firm has been "blessed" despite experiencing a 30 percent reduction in business since the beginning of the year, combined with plummeting oil prices, which has crippled the Louisiana area's economy. As a result, the firm initiated cost-cutting measures including hourly workweek reductions for staff. "I even cut my salary 25 percent—setting the bar for possible future salary cuts if needed," he says.

"No employee has the virus, but we do have three of their family members that do," Smith adds. "Remote working has already been a huge part of our firm since Hurricane Katrina. We are still busy and appear to be functioning."

Smith says his firm received much-needed funding from the Small Business Administration's Paycheck Protection Program loan. "This is a great liquidity injection for our firm and has finally given me some level of stability in our business," he says.

"We anticipate our health, science and research, and tech segments to grow as global supply chains diversify and flex to be less dependent upon more traditional networks."

ERIC KEEN
CHAIRMAN AND CEO
HDR

"Remote working has already been a huge part of our firm since Hurricane Katrina. We are still busy and appear to be functioning."

KENNETH SMITH
CEO
T. BAKER SMITH

COVID-19 MARKETPLACE IMPACT

Apart from workplace health concerns and the economic downturn, Member Firm leaders also foresee post-COVID-19 changes to major engineering markets and even how firms procure and deliver services.

In response to the stalled economy, Congress passed a series of funding measures such as the Coronavirus Preparedness and Response Supplemental Appropriations Act, which provided $8.3 billion in emergency funding for federal agencies to respond to the coronavirus outbreak, and the Coronavirus Aid, Relief, and Economic Security Act—a $2 trillion coronavirus relief bill, which included a $1,200 stipend to each American making $75,000 a year or less. The bill also provided $500 billion in loans or investments to businesses, states, and municipalities. More funding relief is being considered.

Firm leaders, however, also are focusing on the post-COVID-19 marketplace.

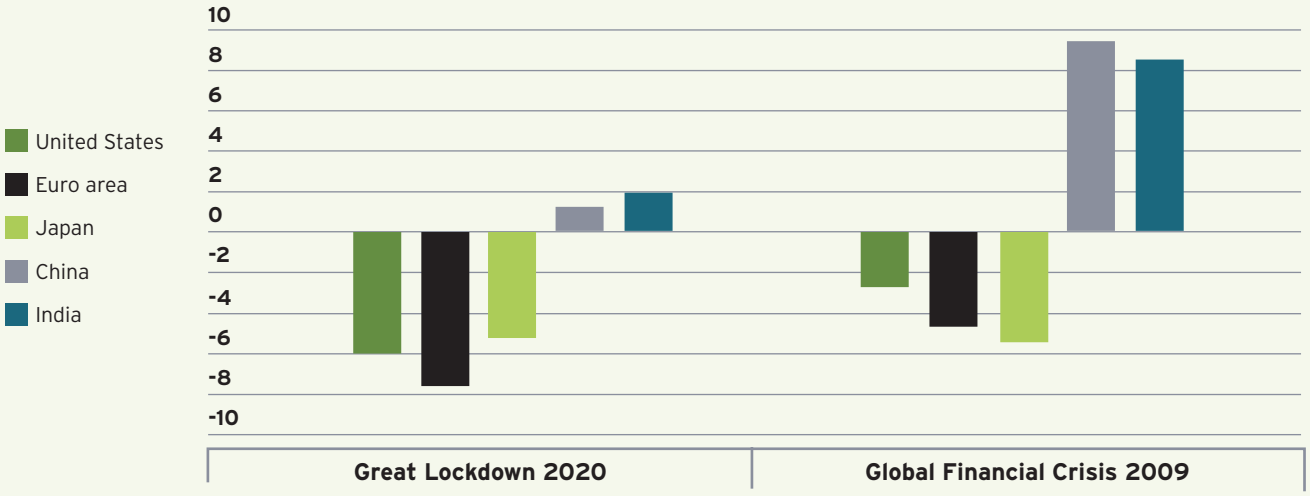
Ott believes the greatest areas of change for his firm will involve digital sales, project delivery, recruitment, and design solutions.

"We will need to look at alternative design solutions based on a post-COVID-19 world," he says. "Retail spaces may need

ADAMKAZ / GETTY IMAGES

GLOBAL ECONOMIC IMPACT COMPARISON OF THE "GREAT SHUTDOWN"

(real GDP growth, year-on-year percent change)



Source: International Monetary Fund, World Economic Outlook, April 2020

to be laid out differently to enhance distancing of customers and offer some protection to workers; public travel may change, which could impact how we deliver transportation services; pedestrian movement may be altered to provide additional spacing; and healthy spaces may become more of a focus."

Trappey is concerned about COVID-19's impact on public markets in Louisiana. "Since the bulk of our work is municipal/public works, we are unsure what will happen with our state's budget and what, if any, effect it may have on the services we provide to multiple state and local agencies. Our private client work is almost nonexistent, and work at certain facilities, which we cannot access at this time due to the virus, is on hold."

However, Keen sees opportunities in the new marketplace. "We anticipate our health, science and research, and tech segments to grow as global supply chains diversify and flex to be less dependent upon more traditional networks," he says. "Infrastructure will also need governmental support to address revenue shortfalls that occurred during the pandemic to aid in the global recovery."

"While in the COVID-19 environment, we also learned quickly how to sell our work and deliver our clients' projects through a more virtual environment."

DAVID OTT
CEO AND PRESIDENT
SHORT ELLIOTT HENDRICKSON

"Our broad intent is to use this crisis to reimagine our business to fit the post-COVID realities and opportunities."

DILIP CHOUDHURI
PRESIDENT AND CEO
WALTER P MOORE

Choudhuri believes all parts of Walter P Moore's business will require reshaping to thrive in the post-COVID world. He notes that recovery will comprise at least three phases—the current response to a 100 percent work-from-home edict, with phase two being the period before the world has a comprehensive set of interventions (testing, tracing, vaccine, and drugs) readily available to fight COVID-19, and phase three being the post-vaccine phase where we learn to operate in the "next normal."

"The A/E/C industry will likely have a variable recovery depending upon the geographical locations firms have exposure to and also the market sectors that drive each firm's specific economic engine," Choudhuri says.

Trappey emphasized that medical science remains the key to allowing not only the engineering industry, but global business, to really get back on track. "We are fighting to ensure the safety and health of our employees and their families," she says.

"Until there is a vaccine for this virus, despite attempts to open the economy and politicians' best efforts to get people back to work, the world we are in will be the world we are in. Until there is a vaccine for this virus, that has to be a priority." ■

Alan D. Crockett *is ACEC's director of member communications. He can be reached at acrockett@acec.org.*

ACEC Board of Directors Meeting GOES VIRTUAL

CHARLES GOZDZIEWSKI BECOMES NEW CHAIRMAN

Despite cancellation of the 2020 ACEC Annual Convention, the show still went on for the Board of Directors meeting, which was conducted virtually for the first time.

Nearly 300 Member Organization leaders participated in the virtual meeting, which was highlighted by Charles Gozdziewski, chairman emeritus of Hardesty & Hanover in New York, accepting the chairman's gavel from outgoing Chair Mitch Simpler. Another high point of the meeting was the installation of six new Executive Committee members.

The Board of Directors also unanimously voted to forgo the planned 1.6 percent Consumer Price Index (CPI) increase to 2021 Member Firm dues. In addition, the Board of Directors received a formal introduction to the new ACEC Research Institute.

Not implementing the CPI increase "translates to about $180,000 in lost revenue," says Linda Bauer Darr, ACEC president and CEO. "We will offset this by continuing to review where we can cut our operational costs, examining our outside consulting and membership expenses, and working to keep revenue growing by bringing in new members.

"Even as we move forward in this crisis, our priorities remain close to fully funded at levels before the crisis," Darr adds. "Our Business Resources and Education, Communications, and Advocacy departments are in overdrive to do more with less."

"We are going through the most challenging times of our careers. The good news is that we have a strong and active organization to help us through these times."

CHARLES GOZDZIEWSKI
CHAIRMAN
ACEC
CHAIRMAN EMERITUS
HARDESTY & HANOVER

Adds Gozdziewski, "We are going through the most challenging times of our careers. The good news is that we have a strong and active organization to help us through these times.

"ACEC is a national leader, especially now, in advocating for our interests," Gozdziewski says. "ACEC played a significant role in getting engineering services designated as essential during the shutdown; helped to develop federal assistance programs; and developed webinars, surveys, roundtables, and the new COVID-19 Resource Center to help firms through this crisis."

NEW EXECUTIVE COMMITTEE MEMBERS

New Executive Committee members include: **Chair-Elect Robin Greenleaf**, CEO of Architectural Engineers, Inc., in Boston; **Vice Chair Edmond Alizadeh**, CEO of Geotechnology, Inc., in St. Louis; **Vice Chair Michael Cooper,** president and managing principal of Harley Ellis Devereaux in Southfield, Michigan; **Treasurer and Vice Chair Matthew Hirst**, president and CEO of CRS Consulting Engineers, Inc., in Salt Lake City; **Vice Chair Gary Raba**, president of Raba Kistner, Inc., in San Antonio; and ACEC North Carolina Executive Director **James Smith,** as **NAECE Representative**.

RESEARCH INSTITUTE & STRATEGIC PLAN

ACEC Research Institute Chairman John Carrato, president and CEO of Benesch, introduced the rebranded Institute, with the vision of being "the leading source of knowledge and thought leadership for creating a more sustainable, safe, secure, and technically advanced built environment."

The Institute's official introduction included airing of its new promo video.

Darr provided an update on the Council's new Strategic Plan and applauded Member Firms actively involved on the front lines of the national COVID-19 response, including Langan, Jaros, Baum & Bolles, WSP, and AECOM.

"I could go on and on," Darr says. "But when the pandemic has moved on, there should be no lingering doubt in anyone's mind about engineering's essential value to modern society."

In his final board address as chairman, Simpler pointed to Council accomplishments over the past year, including the new Strategic Plan and approval of a new three-year budget.

"I have been involved with ACEC for many years and have served in many different roles," says Simpler. "Serving as chair has been clearly the most challenging but by far the most rewarding. I am proud of all that we as a team have accomplished, and I am incredibly excited for the accomplishments yet to come."

Smith, a new Executive Committee member, called the Council's first-ever virtual Board of Directors meeting a complete success.

"This could be a model for more online meetings in the future as we enter a new normal world," he says. ■

JOKERPRO/GETTY IMAGES

"When the pandemic has moved on, there should be no lingering doubt in anyone's mind about engineering's essential value to modern society."

LINDA BAUER DARR
PRESIDENT AND CEO
ACEC

"Serving as chair has been clearly the most challenging but by far the most rewarding. I am proud of all that we as a team have accomplished, and I am incredibly excited for the accomplishments yet to come."

MITCH SIMPLER
CHAIR EMERITUS
ACEC
PARTNER AND MANAGING PARTNER EMERITUS
JAROS, BAUM & BOLLES

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Member Firms Use National Engineers Week to Spread the Word

This year's National Engineers Week (EWeek), held February 16–22, featured several ACEC Member Organizations and Member Firms celebrating and emphasizing the value of engineering to everyone's quality of life as well as the attractiveness of engineering as a career choice.

Examples of 2020 EWeek ACEC activities included:

▶ MOTT MACDONALD

For the fifth consecutive year, Mott MacDonald sponsored an activity at the Liberty Science Center in Jersey City, New Jersey.

The sponsorship included a booth at the center, where Mott MacDonald leaders hosted a soil experiment for students. Other firm booths at the event featured bridge building, load testing, tunneling, and traffic planning—in addition to the typical Science Center exhibits.

▶ PARSONS

Each year during EWeek, Parsons takes on the challenge of recognizing excellence among its own engineering stars throughout the nation and the world.

All Parsons employees are invited to nominate outstanding engineers and technical trailblazers they work with for its Annual Engineering & Technical Excellence Awards.

This year, 12 winners from around the globe were chosen for furthering Parsons' quest to deliver a better world; providing inventive solutions to its clients' complex challenges; and being agile, disruptive, collaborative, and innovative.

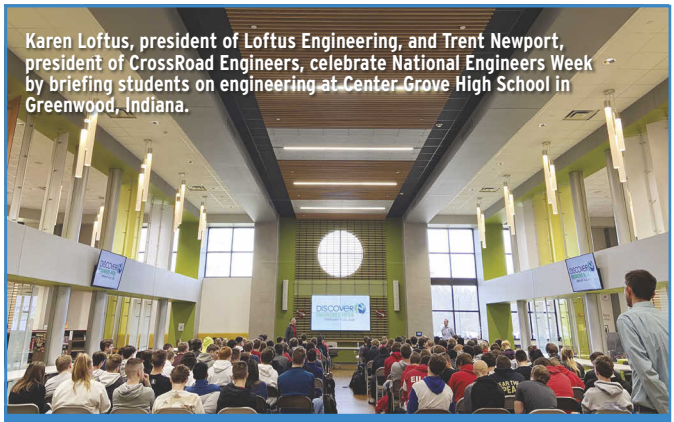
To meet the 2020 winners, visit **www.parsons.com**.

▶ ACEC COLORADO

ACEC Colorado coordinated several events as part of its EWeek celebration, which began with a proclamation honoring National Engineers Week signed by Colorado Gov. Jared Polis.

The week included ACEC Colorado hosting more than 40 engineers during its 2020 Legislative Day, which featured a tribute to EWeek from the floor of the Colorado House by state Rep. Brianna Titone. The Legislative Day also featured a tour of the Capitol building and committee hearing visits.

Furthermore, Colorado's EWeek included 10 state legislators enjoying a private reception with ACEC Colorado members to discuss issues of common concern related to business practices, and ACEC Colorado hosting a Colorado Business Roundtable for building owners and managers.



Karen Loftus, president of Loftus Engineering, and Trent Newport, president of CrossRoad Engineers, celebrate National Engineers Week by briefing students on engineering at Center Grove High School in Greenwood, Indiana.

▶ ACEC INDIANA

During EWeek, ACEC Indiana coordinates an extensive student outreach effort where members conduct presentations at elementary, middle, and high schools throughout the state to encourage students to pursue a job in engineering or a related field. This year's event touched more than 2,500 students in 83 classrooms across the state.

ACEC Oregon members enjoying the annual luncheon included (at left) ACEC Oregon President Tony Roos, principal engineer at Kittelson & Associates, and (center, blue shirt) ACEC Oregon member Bob Thayne, water resources engineer at Mead & Hunt. Also in attendance but not pictured was ACEC Oregon Secretary/Treasurer Ron Vandehey, principal structural engineer at Miller Consulting Engineers.

▶ ACEC OREGON

ACEC Oregon co-sponsored and manned an exhibition booth at the 56th Annual EWeek High School Program held in Portland. This year's sold-out event attracted 360 students and 240 engineers.

ACEC Oregon also displayed project panels featuring winners from its recent Engineering Excellence Awards.

▶ ACEC OHIO

More than 160 guests attended the Central Ohio Engineers Week Luncheon, (pictured) sponsored by ACEC Ohio's Central Chapter. In addition, more than 100 guests attended the Annual Engineers Week Luncheon in Toledo, Ohio, which was hosted by the National Society of Professional Engineers, Toledo Chapter, and sponsored by ACEC Ohio.

▶ ACEC MISSISSIPPI (ACEC/MS)

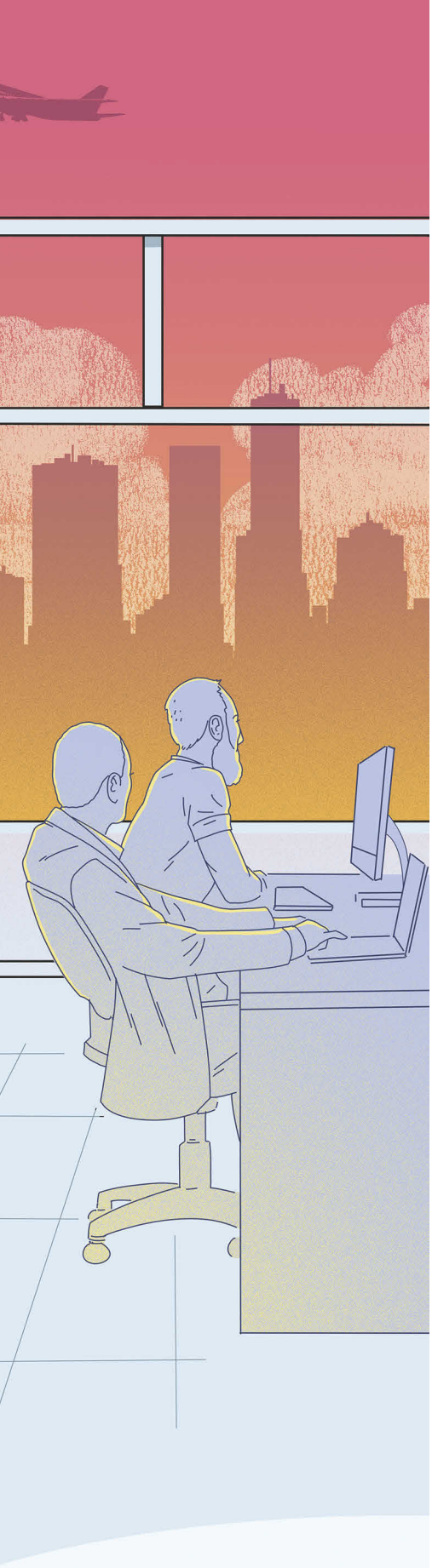
As part of its EWeek recognition, ACEC/MS coordinated the display of winning project panels from its recent Engineering Excellence Awards in the hallway of the Mississippi State Capitol in Jackson. ACEC/MS also produced a special EWeek radio promo to highlight the importance of engineering.

▶ 2020 FUTURE CITY CHAMPION

A key showcase of the nation's National Engineers Week celebration is the Future City competition.

Now in its 28th year, the prestigious international program held in Washington, D.C., allows students to compete in designing a city of the future.

This year's Grand Prize winner was "Yemoja" engineered by students from Norwell Middle School in Ossian, Indiana. ■



DOMINIC BUGATTO

BY GERRY DONOHUE

Career Reboot

CDM SMITH LAUNCHES INNOVATIVE PROGRAM TO REHIRE MIDCAREER PROFESSIONALS WHO HAVE TAKEN LEAVE FROM THE INDUSTRY

In the summer of 2018, CDM Smith Chairman and CEO Tim Wall lamented to one of his board members about the difficulty of finding and hiring top talent. Though this is a common problem discussed in many engineering firm board meetings, the board member's response still caught him by surprise.

"She said there is a huge talent pool of midcareer people out there that the industry was not tapping," says Wall. "Professionals who have taken a break from the industry for various reasons, maybe to raise a family, help with elderly family members, or just to try something else. She suggested that we develop a program to bring them back in."

CDM SMITH

Senior geologist and hiring manager Jill Greene (left) works with her team member, Reboot participant and environmental scientist Sarah Scarff, in CDM Smith's Boston headquarters.

Lucas worked with managers throughout the firm's Boston office to determine which of their staffing needs would fit into the Reboot program.

Jill Greene, a project manager at CDM Smith who oversees a staff of 19 scientists, had one of those open positions. "When I had my kids, I considered taking a leave from my career, but I decided to keep working," she says. "Hearing about this program, I knew I wanted to participate."

The firm designated four positions for the program and began accepting applications in January 2019. To be eligible, candidates must have a career break of two or more years, a bachelor's degree in a STEM-related field, three years of experience in their field, meet any additional requirements nec-

Intrigued, Wall and his team pursued the idea and soon learned about the STEM Reentry Task Force program sponsored by the Society of Women Engineers (SWE) and iRelaunch, which helps STEM professionals rejoin the workforce after a career break.

"They promote the idea of a 'returnship' program along the lines of an 'internship,'" Wall says. "Much to our surprise, we found that it had never been done in the A/E/C industry."

PUTTING THE PROGRAM TOGETHER

Partnering with SWE and iRelaunch, CDM Smith created the Reboot Re-entry Program.

"It took us about six months to set up," says Julie Lucas, manager of talent acquisition programs and operations at CDM Smith. "During that time, we worked closely with SWE and iRelaunch to build on what they had learned yet customized it to fit with our culture of offering careers rather than jobs."

According to Lucas, one of the biggest challenges was getting the word out to prospective candidates for the program.

"This is a difficult crowd to reach because a lot of them may not even be looking for jobs," Lucas says. "SWE and iRelaunch helped us with their distribution lists, and we promoted it on our website and on social media."

One of the best sources of leads were the firm's employees. "Our employees shared the news about Reboot with their networks, and a number of former employees reached out to us," Lucas says.

CDM SMITH

essary for the position, and commit to working full time for the 12-week "returnship" period.

"As a manager, the process was the same as a regular hire," Greene says. "We held the candidates to the same standards. The interviews were the same."

Except for one difference. "They were not penalized for having a gap in their resume," she says. "It is really discouraging to me how much of an impact that can have on the ability to get interviews."

100 PERCENT CONVERSION

Ultimately, CDM Smith ended up hiring two Reboot applicants. Environmental scientist Sarah Scarff returned to work after a three-year break to have children, and water resources engineer Faith Kuria was looking to restart her career after serving in the military.

"Once we identified our hires, they attended a firmwide orientation and then a shorter Reboot orientation," Lucas says. "Over the 12-week period, they worked full time with their teams on real projects."

Every other week, Scarff and Kuria participated in a lunch-and-learn to find out more about the company culture and resources. Each of them also worked with a mentor. "We identified individuals who were especially interested in being Reboot mentors," Greene says. "They were women who had similarly taken leave and come back."

"Tapping this talent pool does not result in firms cannibalizing each other. We can pursue these midcareer folks, and it does not cause a staff shortage for any of us. It could be transformational in the industry."

TIM WALL
CHAIRMAN AND CEO
CDM SMITH

According to Lucas, the "returnship" period gives the Reboot employees a chance to consider their decision. "For people coming back into the workforce, the transition can be scary. With Reboot, it is a great opportunity for the candidate and CDM Smith to test things out. They may decide they are not ready to return to work."

Both Scarff and Kuria decided to continue working at CDM Smith. "Our goal is to have a 100 percent conversion rate," Lucas says. However, after six months Kuria decided to take a job in Texas with one of the firm's clients, the Bureau of Reclamation.

"It was primarily a location decision," Lucas says. "We did not have any openings in Texas, but the bureau had a good match for her skills and goals. We like to think the Reboot program gave her the opportunity to reacclimate herself to her career path."

For the second cycle of the Reboot program, which began in January 2020, CDM Smith offered eight opportunities in five locations. Additionally, the firm started a Talent Community on its website for professionals who are interested in restarting their careers but whose skill set or location do not match any of the current offerings.

"We are always looking for ways to expand the program," Lucas says. "In the first 40 days after we started the Talent Community, 35 people signed up."

Pictured left to right: Julie Lucas, manager of talent acquisition programs and operations; Matthew Gamache, Reboot hiring manager and senior water resources engineer; Faith Kuria, program participant and water resources engineer; Tim Wall, chairman and CEO; Sarah Scarff, program participant and environmental scientist; and Jill Greene, Reboot hiring manager and senior geologist.

"Our employees shared the news about Reboot with their networks, and a number of former employees reached out to us."

JULIE LUCAS
MANAGER OF TALENT ACQUISITION PROGRAMS AND OPERATIONS
CDM SMITH

TRANSFORMATIONAL FOR THE INDUSTRY

In addition to giving the firm access to a large pool of potential qualified employees, Wall sees numerous benefits from the Reboot program.

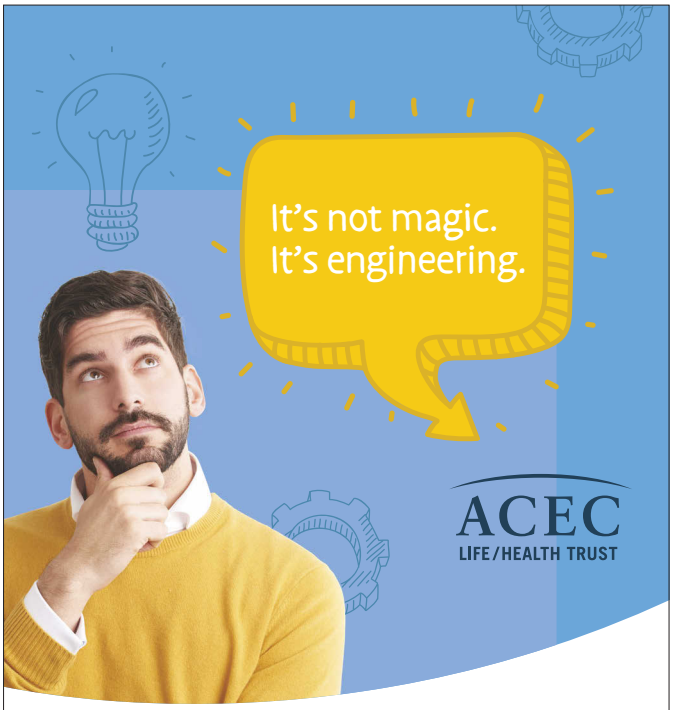
"These folks make us stronger," he says. "They bring other life experiences and have a higher maturity level for their level of experience in the industry. They have elevated the rest of us."

He notes the program also enhances diversity within the firm. "At the current time, professionals who take career pauses are overwhelmingly women. The program is a tremendous opportunity for us to reach out to them," he says.

Wall adds that an unexpected benefit has been the pride among employees for being the first in the industry to implement this. "It is really important that our actions back up our philosophy, and this is an important demonstration of our values," he says.

And a final benefit? "Tapping this talent pool does not result in firms cannibalizing each other," Wall says. "We can pursue these midcareer folks, and it does not cause a staff shortage for any of us. It could be transformational in the industry." ■

__Gerry Donohue__ is ACEC's senior communications writer. He can be reached at gdonohue@acec.org.



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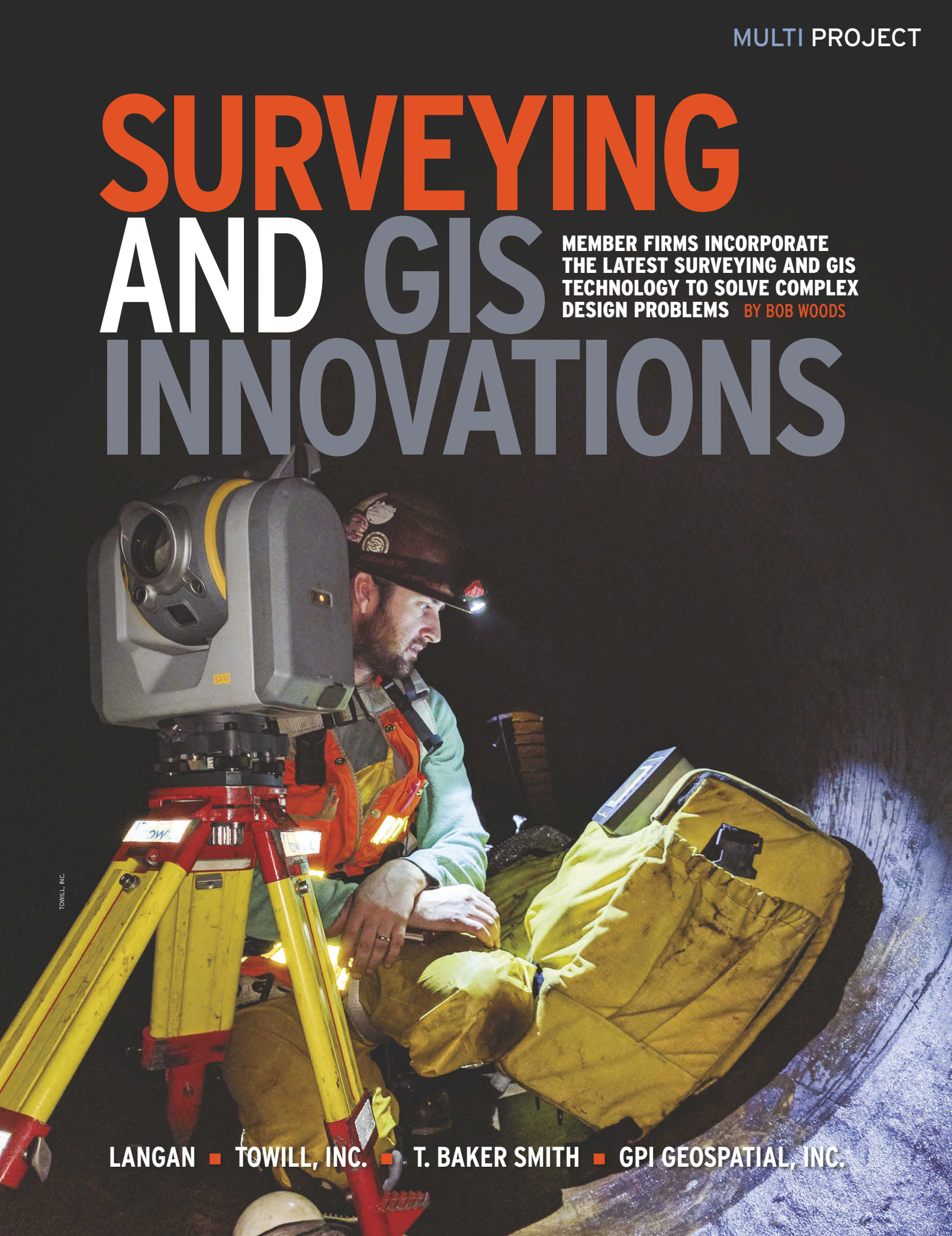
SURVEYING AND GIS INNOVATIONS

MEMBER FIRMS INCORPORATE THE LATEST SURVEYING AND GIS TECHNOLOGY TO SOLVE COMPLEX DESIGN PROBLEMS BY BOB WOODS



TOWILL, INC.

LANGAN ■ TOWILL, INC. ■ T. BAKER SMITH ■ GPI GEOSPATIAL, INC.

BIM HELPS TWA HOTEL TAKE OFF

The revitalized TWA Flight Center at JFK Airport is part of the newly constructed TWA Hotel (background).

TWA HOTEL

PROJECT: TWA HOTEL ▪ JFK AIRPORT, JAMAICA, NEW YORK
FIRM: LANGAN ▪ PARSIPPANY, NEW JERSEY

Langan has completed thousands of projects over its 50-year history, but none quite like one that involved an architectural landmark, a Florida university, and a New York hotel developer.

In 2015, Langan was contacted by Lori Walters, a professor and director of the ChronoPoints laser-scanning initiative at the University of Central Florida's Institute for Simulation and Training. Walters wanted the firm to help create a 3D, digital model documenting the TWA Flight Center—the iconic, wing-shaped building designed by the late Finnish-American architect Eero Saarinen—which opened in 1962 and closed in 2001.

Walters' request connected Langan to MCR Development when it began planning a $265 million transformation of the Flight Center into part of a 505-room, first-class hotel.

"MCR Development wanted an existing-conditions Building Information Model (BIM) to refer to during the design and construction of the hotel," says Joseph Romano, principal who oversees surveying and mapping efforts at Langan.

The Langan team, headed by Matt Sipple, senior project manager, and John Hsu, BIM manager, along with several staff, had to overcome several unique challenges in its dual-client undertaking. One issue involved surveying the distinct interior and exterior of the architecturally complex structure amid JFK's vehicle and pedestrian traffic, limited access to secure areas, and myriad objects above ground and below the adjacent JetBlue terminal.

"We solved that problem by utilizing Leica's Pegasus Mobile Mapping System to collect data quickly and efficiently," Romano says. "We could drive the system around the area on a truck instead of having a surveyor walk a stationary scanner from point to point."

Next came the challenge of scanning the Flight Center's extraordinary interior and its unique shapes and forms. To meet that challenge, the team employed multiple Leica 3D laser terrestrial scanners. All together, they collected more than 600 scans with point cloud data at millimeter-grid density.

JOE ROMANO
Principal/Vice President
Surveying & Mapping
Langan

Weaving the data together to develop the BIM of the entire structure, inside and out, presented Langan with its greatest challenge. The team had to tweak Revit software, which is most efficient at modeling flat surfaces and linear structures, not the amorphous elements of the Flight Center. The innovative process involved "slicing" the point clouds—similar to layers of a cake—and modeling each layer, or slice, individually. The slices were then merged into single-model elements that defined the features of the building.

"This required a tremendous amount of collaboration between our surveyors, scanners, and modelers and the client's architects to ensure we delivered something usable for the hotel design," says Hsu. "We did test studies within the building to make sure we were complying with their standards and the end user's needs."

Ultimately, Langan's deliverables allowed the design team to create connection points for the new TWA Hotel's (www.twahotel.com) towers and JetBlue terminal, adjacent to the Flight Center, and provided the entire project team with a detailed understanding of the architectural and structural complexity of Saarinen's design.

"When you have a team of innovative thinkers and the correct technologies are applied, every challenge can be conquered," Romano says.

SAN ANDREAS PIPELINE

PROJECT: SAN FRANCISCO PUBLIC UTILITIES COMMISSION'S SAN ANDREAS PIPELINE NO. 2 ▪ SAN BRUNO, CALIFORNIA
FIRM: TOWILL, INC. ▪ CONCORD, CALIFORNIA

The San Francisco Public Utilities Commission (SFPUC) wanted to improve its vast water infrastructure to protect against future earthquake damage. One of the projects involved replacing three sections of pipeline totaling 1,800 feet of the San Andreas Pipeline No. 2, built in 1929 as part of the Hetch Hetchy regional drinking water system that supplies water to 1.8 million residents and businesses in the Bay Area.

Instead of digging up and replacing the buried pipeline, SFPUC decided to incorporate a sliplining method, which involved inserting a new 48-inch diameter pipe into the existing 54-inch pipe. Sliplining would not only save time and money but also avoid road closures and environmental impacts during the project.

However, SFPUC's original drawings and other information for the nearly 100-year-old pipeline were outdated and incomplete. So the project's design firm, Kennedy/Jenks Consultants, contracted Towill, Inc., to collect and analyze new information using integrated surveying and static terrestrial laser scanning (STLS) technologies.

"Determining the exact size of the pipe was definitely a challenge we faced," says Frank Borges, principal at Towill.

The traditional measurement process is to assemble a simple wooden cross to the replacement pipe's diameter and simply walk it down the middle of the existing pipe to determine if the new one will fit. But with such an old pipeline and antiquated schematics, it was feared the cross technique might miss vital details and not be accurate.

FRANK BORGES
Principal
Towill, Inc.

"Our project manager, John T. May, came up with the solution of scanning the inside of the pipe to get highly precise information," Borges says.

This entailed in some places cutting access holes on top of the pipe, lowering a person inside with their equipment and making scans in 10-foot increments.

Although the Towill team was familiar with the necessary technologies, "I would classify this as a dynamic project," Borges says. "We needed to maintain accurate data, so we needed a flexible plan for when unexpected things came up."

Towill actually tested the idea in its offices, simulating scanning methods and targets along a corridor between cubicles that had the same width as the replacement pipe.

However, once inside the existing pipe itself, employees discovered that the interior was even narrower than predicted, since it was lined with 2 inches of calcite that was not shown on any plan set. Furthermore, instead of using magnets to affix the STLS control targets to the interior walls of the pipe, as originally planned, they came up with an alternate solution: to affix steel washers with high-grade marine epoxy. Based on the survey information, a final recommendation was made for a 42-inch replacement pipe.

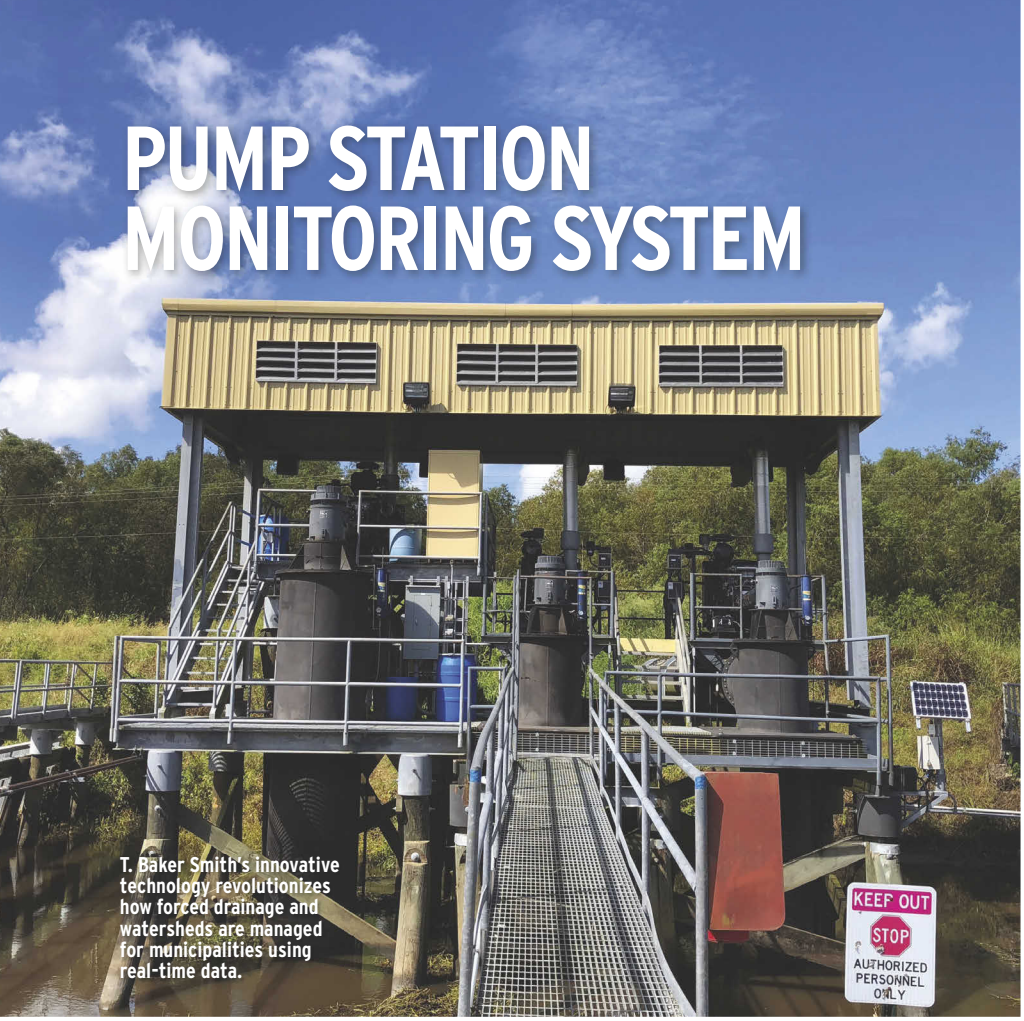
The four surveyors chosen for the fieldwork underwent extensive safety training to qualify for access to the confined spaces. They finished the project in eight days, two fewer than planned, and ultimately provided the client with survey data allowing it to begin the sliplining project.

"Our work was performed safely, on time, within budget, without incident, and to the client and owner's satisfaction," Borges says.

Towill field staff access a pipeline at one of three project locations.

TOWILL, INC.

PUMP STATION MONITORING SYSTEM



T. Baker Smith's innovative technology revolutionizes how forced drainage and watersheds are managed for municipalities using real-time data.

T. BAKER SMITH

PROJECT: PUMP STATION MONITORING SYSTEM ▪ LAFOURCHE PARISH, LOUISIANA
FIRM: T. BAKER SMITH ▪ HOUMA, LOUISIANA

Lafourche Parish, just south of New Orleans, encompasses a maze of intercoastal waterways and infrastructure in order to help provide flood protection. The parish includes the North Lafourche Levee District (NLLD), which maintains more than 250 miles of levees and 40 pump stations that include a network of 38 forced drainage systems.

Managing the pump stations depends on parish workers and key district personnel who inspect and operate them on-site. However, too often the workers did not have access to accurate, real-time water level data and engine-run status, resulting in a series of issues. Especially troublesome was over-pumping, which can burn out pump engines and compromise the integrity of the levees due to land erosion and subsidence in the drainage areas.

Last year, NLLD contracted T. Baker Smith (TBS) to modernize the pump stations by designing, building, and installing an automated, electronic monitoring system that would solve data collection and retrieval problems.

"Working from scratch, we began by building several models of a physical box containing the system that could be mounted in the pump stations," says Tony Rivera, chief innovation officer at TBS.

An initial challenge was designing and constructing a system that could withstand the area's harsh heat, humidity, and rain conditions. Ultimately, the TBS team designed a self-contained, weatherproof, and internet-connected box that is self-powered using a small solar panel and storage battery.

The system boasts a unique combination of technology, including cloud computing, to provide user-friendly access to critical data. The designers leveraged internet of things technology, as well as custom machine learning algorithms to precisely collect, transmit, and manage the pump station data.

TONY RIVERA
Chief Innovation Officer
T. Baker Smith

"Basically, our team came up with a hardware package that allows us to run custom written code for different sensors to observe and collect water levels and engine vibrations. These observations are communicated securely back to a server, where clients can access the data for analysis," Rivera says.

The real-time data from the sensors is integrated into a geographic information system, previously created for NLLD by TBS, that monitors and analyzes data in relation to current LIDAR information for each pump station. If the system detects a problem anywhere across the network, proactive alerts are automatically transmitted to the appropriate personnel. Additionally, historical data is stored and displayed in custom dashboards for future project planning, according to Rivera.

Beyond automating the monitoring system, the project delivered other benefits. For example, by optimizing the operation of each pump, the risks of land erosion and subsidence are greatly reduced, thereby keeping NLLD's levee maintenance costs in check.

In effect, the system helps the entire community, which in coastal Louisiana includes a variety of endemic challenges. Because much of the impacted land is in low-lying areas, the combination of land subsidence, rising sea levels, and growing uncertainty of tropical storm events creates an ever-increasing flood risk. In turn, flooding impacts the levee and drainage systems, so improving their cost-effectiveness helps avoid public funding challenges.

"We went from a manual process to an elegant, proactive system that gives NLLD the ability to react quicker to a single event or multiple problems, as well as provide real-time data for future engineering design purposes," Rivera says. "We were privileged to work with the right client with the right vision."

DIGITAL SURVEYING EXTENDS PLANE TRAIN

PROJECT: HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT, PLANE TRAIN EXTENSION, PHASE I ▪ ATLANTA
FIRM: GPI GEOSPATIAL, INC. ▪ ATLANTA

Atlanta's Hartsfield-Jackson International Airport was already the world's busiest when the city launched a $6 billion improvement plan in 2016 to further increase capacity. The multiyear design-build project includes extending the western portion of the automated Plane Train that carries people between terminals.

Before construction could begin, however, the city's design build team, CAT JV, contracted with GPI Geospatial, Inc., (GPI) to perform a Building Information Modeling survey. Although GPI's services include multiple types of intricate digital surveying, the firm's team had to contend with several logistical issues on the project.

"One of our largest challenges was working inside secure areas, which meant limiting our work hours from 11 p.m. to 5 a.m., so that we would not interfere with the airport's daytime staff and passengers," says Allen Brock, vice president of business development at GPI.

ALLEN BROCK
Vice President, Business Development
GPI Geospatial, Inc.

In order to maximize its limited time, the GPI team added a second crew. That necessitated the purchase of a second static scanner to collect the high-density LIDAR data and imagery needed to create the 3D model of the building's interior, including multiple floors and interior rooms, as well as a utility corridor above the existing Plane Train.

"Another challenge was communicating and coordinating with airport security personnel when the scanning crews were working in certain areas," Brock says.

For example, airport personnel had to let GPI crews in and out of the areas and remove ceiling tiles so the crews could scan piping and conduits.

GPI custom-built a mobile mount for the scanners, allowing them to reduce time between scan position changes and to optimize field productivity and increase equipment mobility.

"We also had to set up our own lighting to capture still images in dark rooms and areas with heavy shadows," Brock says.

Once the scanning was complete, the level of development 300 model was created. It contained detailed modeling of the building's architectural and structural elements, including interior and exterior walls, windows, stairs, escalators and elevator features, columns, slabs, beams, furniture, HVAC, water, sewer, communication, lighting, power, and other visible features. Besides the Plane Train extension project, the model can be used for future design needs and constructability reviews.

GPI completed its work ahead of schedule, finishing the job in about a month.

Riegl VZ400i simultaneously capturing imagery and LIDAR for 3D modeling of the Plane Train platform.

GPI GEOSPATIAL, INC.

"It speaks to the efficiency of the crews and our ability to coordinate with airport personnel—being a partner and not a hindrance," Brock says.

The takeaway for GPI was the opportunity to expand the firm's expertise in this specialized service.

"We always learn something from every project to improve our processes going forward," Brock says. ■

***Bob Woods** is a technology and business writer based in Madison, Connecticut.*

PHILANTHROPIC Fun

BY CALVIN HENNICK

ONEINCHPUNCH/SHUTTERSTOCK

For two weeks each year, the leadership and staff of VAA race to raise as much money as possible for local charities

The engineering firm VAA has a long history of philanthropy with community organizations. For years, employees and leaders at the firm headquartered in Plymouth, Minnesota, a suburb of Minneapolis, would raise money and volunteer their time during events and campaigns that seemed to stretch nonstop from the early summer through the end of the holiday season.

"We started to feel like our employees were getting hit with a lot," says Jeff Schrock, CEO of VAA.

While VAA employees still participate in volunteer events year-round, in recent years the firm has dedicated two weeks each August to a fundraising blitz for two charities selected by an employee-run wellness and outreach team. The resulting effort, dubbed the Community Caring Campaign, has spurred a sense of community—as well as a spirit of competition—among employees as they raise as much money as possible within the time frame.

GEOFFBLACK/GETTY

"We decided to go with the two-week time frame to increase our sense of focus and maximize our impact," Schrock says. "It has gone well. Compressing the schedule lends itself to better results."

In 2019, VAA employees in partnership with their clients raised more than $50,000 for two local nonprofits—Second Harvest Heartland and Interfaith Outreach & Community Partners—a number that is even more impressive considering the size of the firm—approximately 150 employees.

While a simple call for donations would be unlikely to spur generous donations, VAA staffers get energized for the two-week campaign, which includes company get-togethers, an executive dunk tank, games and prizes, and fierce competitions.

"Fun is a key element of these efforts," Schrock says. "It needs to be fun."

A crowd of VAA employees gather for lunchtime bingo at their office in Minneapolis.

"Fun is a key element of these efforts."

JEFF SCHROCK
CEO
VAA

CREATING A LINEUP OF EVENTS

Employee organizers tried out a variety of events in 2018, the first year of the two-week blitz, trying to create the right mix of activities that would both engage VAA staffers and raise funds for the two charities. The results were sometimes surprising. For example, in-office happy hours (where employees paid a fee in the afternoon to enjoy beverages and music with their colleagues) turned out to be a dud. However, VAA employees went wild for lunchtime bingo games that featured prizes such as gift cards, cash, and hours of paid time off.

"When we have bingo, the lunchroom is absolutely packed," says Patrick Koehnen, senior civil engineer at VAA who represented the firm's leadership team in planning the 2019 Community Caring Campaign. "People buy large numbers of bingo tickets—more than they can even keep track of—because it is going to charity."

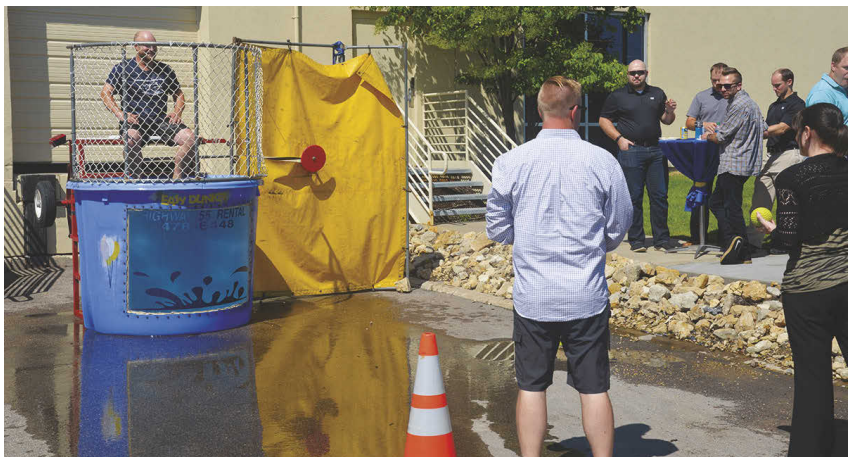
"People are really amped for bingo—I was surprised," says James Snyder, structural engineer at VAA who co-led the 2019 campaign. "We have all played bingo in the past, but it is more about the people in the room than it is about the game itself."

The company pays for all prizes and event costs, allowing 100 percent of employee contributions to make their way to the participating charities. Around three-quarters of the total fundraising comes from employee pledges and payroll contributions, but the lineup of events helps create a company-wide buzz that leads to widespread participation.

Approximately 60 percent of VAA employees made pledges for payroll deductions or online contributions in 2019, and around 90 percent participated on some level by making donations to various fundraising activities during the two-week campaign.

Other popular events include a company barbecue where employees line up to try to soak company owners in the dunk tank and a "treat trolley" offering muffins and candy bars for a small donation. Employees can also "buy" a compliment for their colleagues, paying a few dollars for a card that gets hand-delivered by someone wearing an inflatable T-Rex dinosaur costume. Additionally, some events, such as a session where employees packaged up donations of rice and detergent, tie in with the charities being helped.

The 2019 campaign wrapped with a "The Price Is Right" style game. Everyone who filled out a pledge form was placed in a drawing to "come on down" and compete for prizes. But there was perhaps just as much excitement for a simpler competition—a "change challenge" where teams competed to raise as much money as possible by stuffing their team's jars full of coins. Employees could also subtract points from other teams



Civil Designer Jeremy Lewandowski gets ready to dunk CEO Jeff Schrock during the company's barbecue to raise money for two local charities.

The change challenge ended up raising around $4,500—more than any other event during the two weeks

DIBROVA/GETTY

Left: Partner Brian Utoft receives a hand-delivered compliment card. Above: Partner Kelsey Brown and Shellie Mathews, senior project coordinator, fill their team's jar during the event's change challenge.

by putting paper money into those teams' jars. The challenge ignited a competitive spark in VAA staffers, who by the end of the two weeks were shoving $100 bills into other teams' jars, hoping to take the top prize of a team outing to a Minnesota Twins game.

The change challenge ended up raising around $4,500—more than any other event during the two weeks.

"I went to the bank three times in two days to get rolls of quarters," Koehnen says. "There was a deadline, 3 p.m. on a Thursday. And at 2:59, one employee came and put $1,000 in quarters in their jar, and they won it all. People were high-fiving and laughing. In the whole year, I cannot think of another moment where we have had that much excitement, watching the clock and counting down."

COMPANY CULTURE AND COMMUNITY IMPACT

The two-week focus on two local charities—rather than a broader, longer-lasting campaign—helps employees see the impact of their efforts, and ultimately motivates them to donate more money, according to Koehnen.

"I give $1 to Interfaith Outreach & Community Partners, and they can turn it into $7 worth of food that you can buy at a grocery store," he says. "Those are the stories we tell to help people understand why we should donate. If we spread the Community Caring Campaign out and had an event here and an event there and a thing there, I do not think we would generate as much money. We certainly would not have that enthusiasm."

Jill Kohler, donor engagement manager at Interfaith Outreach & Community Partners, says that VAA has been an "unbelievable" partner, and the donations resulting from the Community Caring Campaign make the company one of the nonprofit's biggest donors.

"Rental assistance that keeps a family in their home for a month costs about $900," Kohler says. "There are 25 families right here in our own community who would be homeless today if not for VAA's support this year."

Each year, representatives from Interfaith Outreach & Community Partners and Second Harvest Heartland attend a VAA companywide meeting to share information about their work. Interfaith Outreach & Community Partners helps around 2,000 low-income individuals and families in Twin Cities' suburbs with resources such as housing, food, employment, and transportation.

"It is important for me to work for a company that takes initiative and makes giving back a priority."

JAMES SNYDER
STRUCTURAL ENGINEER
VAA

"It is great to get different groups of people together. It builds up relationships within VAA."

PATRICK KOEHNEN
SENIOR CIVIL ENGINEER
VAA

It is easy to tell when corporate engagement is heartfelt, Kohler says. "Definitely, at VAA, you have people who are personally invested in this."

VAA leaders also view the annual campaign as a way to boost company culture and demonstrate the firm's values.

"What is easy to get lost is the cultural significance of doing something like this," Snyder says. "It is important for me to work for a company that takes initiative and makes giving back a priority."

Koehnen says the two-week campaign is an opportunity for teams to bond as they develop strategies for activities like the change challenge. "It is great to get different groups of people together," he says. "It builds up relationships within VAA."

The ultimate aim, according to Snyder, is for the Community Caring Campaign to be something that employees look forward to, rather than being a burden or an obligation.

"That is the goal," he says. "That is what we are really trying for, and why we pivoted into this kind of style. I think it has been successful. The feedback has been really good. People are looking forward to the competition and celebration the event brings. It is inspiring when you have people who are really getting into the spirit of things." ■

***Calvin Hennick** is a business, technology, and travel writer based in Milton, Massachusetts.*

From left: Jeremy Lewandowski, civil designer; Pat Koehnen, senior civil engineer; Ann Junkerman, marketing manager; Greg Mosier, senior structural engineer; and Aaron Fortunato, structural engineer, work together filling bags of rice for Interfaith Outreach & Community Partners.

Other VAA Efforts

Scholarships: Since 2014, VAA has granted two scholarships each year to students attending Dunwoody College of Technology. The program has awarded a total of $20,000 to Dunwoody students since its launch.

Job Shadowing: Twice each year, VAA hosts high school students at its offices for a job shadow experience, providing an in-depth look at engineering work. The most recent event drew 15 students.

Blood Drives: Three to four times per year, VAA and its employees participate in blood drives to support the American Red Cross.

Feed My Starving Children: For the past three years, employees have participated twice per year in volunteer events for Feed My Starving Children, a Minnesota-based nonprofit that coordinates the packaging and distribution of food to people in developing countries. In September 2019, VAA employees hand-packed more than 6,000 meals for children in Haiti.

Habitat for Humanity: VAA employees have participated in home builds for the past three years.

Walk for Animals: For three years running, Twin Cities employees have raised funds for this Animal Humane Society event, collecting more than $1,300 in 2019.

DRAGONTIGER/GETTY

Completed in 2019, the $252 million Marc Basnight Bridge (right), which spans North Carolina's Oregon Inlet, was designed using engineering concepts that were not available when the Herbert C. Bonner Bridge (left) was constructed in 1963.

ACEC OF NORTH CAROLINA GROWING THE INFLUENCE

BY STACY COLLETT

Celebrating 50 years, ACEC/NC continues to build relationships in order to thrive during economic growth and withstand climate challenges

In February 2019, the massive Marc Basnight Bridge, which spans Oregon Inlet connecting Hatteras Island to mainland North Carolina, was opened to traffic. For the massive 2.8-mile project, more than 100 engineers were involved in its planning and design—including many ACEC/NC Member Firms.

Construction of the $252 million superstructure included materials and engineering concepts that were not even available in 1963 when its predecessor, the Herbert C. Bonner Bridge, was built.

The Basnight Bridge was constructed using segmental box girders, creating a lighter and stronger structure. Also unlike its predecessor, the Basnight Bridge has a design life of 100 years—70 years longer than the planned life of the original span.

Similar to the Basnight Bridge, North Carolina's engineering industry also is a beneficiary of many technical and socioeconomic advancements over the last

HDR

50 years—with plenty of room for growth ahead.

Thanks to an influx of new technology firms, manufacturing and distribution centers, and increasingly affordable living, North Carolina was ranked one of the top three states for doing business in 2019, according to CNBC. The ranking considers each state's workforce, economy, and infrastructure. The state's growing population—currently at 10.5 million—is projected to reach 10.8 million by 2021.

"With this surge in population comes a surge in new development and the need for new infrastructure, new and improved facilities, and maintenance of existing facilities and infrastructure," says Derek Clyburn, ACEC/NC president and senior vice president at Engineering Consulting Services (ECS Ltd.). "When it comes to economic development in North Carolina, consulting engineering companies are at the foundation of it, with ACEC/NC at its center."

Celebrating its 50th anniversary last year, ACEC/NC includes 235 Member Firms representing 10,500 employees, up from 185 Member Firms in 2013. Member Firms throughout the state are engaged in a wide range of engineering projects that propel the economy and safeguard the state's quality of life.

The organization hosts a dozen major events each year for its members, and its budget tops $1.2 million, double its $560,000 budget in 2013.

Furthermore, the state organization serves as a powerful political voice for the engineering industry at the North Carolina General Assembly.

ACEC/NC AT-A-GLANCE

ACEC/NC's membership includes 235 firms representing 10,500 employees, up from 185 Member Firms in 2013. In 2019, ACEC/NC celebrated its 50th anniversary

ACEC/NC is led by Executive Director and ExCom NAECE Representative James Smith and President Derek Clyburn, senior vice president at Engineering Consulting Services

MAJOR LEGISLATIVE ACHIEVEMENTS

Over the last decade, ACEC/NC has scored several major legislative victories for engineers that have paved the way for better business relationships with public and private clients.

One major win saw ACEC/NC lead a coalition of professional service organizations in 2018–2019 that protected engineering firms from onerous, third-party indemnification and duty to defend requirements on both public and private contracts. Third-party indemnification has dogged professional services organizations such as engineering firms for decades. They become particularly onerous when project owners pile on duty to defend requirements where an engineer has to pay for the defense costs of an owner regardless of whether the engineer had any fault in the lawsuit.

"We were one of the first states, along with Indiana, that actually got that protection for both private and public contracts," says James Smith, executive director of ACEC/NC and ExCom NAECE Representative. "Because it affects every one of our Member Firms—that would probably be one of the biggest achievements we have had.

"Particularly, small firms do not have the resources to do that," Smith says. "It could be a year or two before a lawsuit is settled, and in the meantime, you could go bankrupt. Professional liability insurance does not cover third-party lawsuits, so getting rid of that was huge."

ACEC/NC also helped lead the effort (along with other A/E/C industry organizations) to pass a bill that corrected and eliminated the loophole in North Carolina's Qualifications-Based Selection (QBS) law. Most states such as North Carolina have mini-Brooks Acts that mirror but customize the federal QBS legislation. However, North Carolina allowed public entities to *opt out* of using the Act and QBS in project solicitations.

"We were one of the first states, along with Indiana, that actually got that protection for both private and public contracts."

JAMES SMITH
EXECUTIVE DIRECTOR
ACEC/NC
EXCOM NAECE REPRESENTATIVE

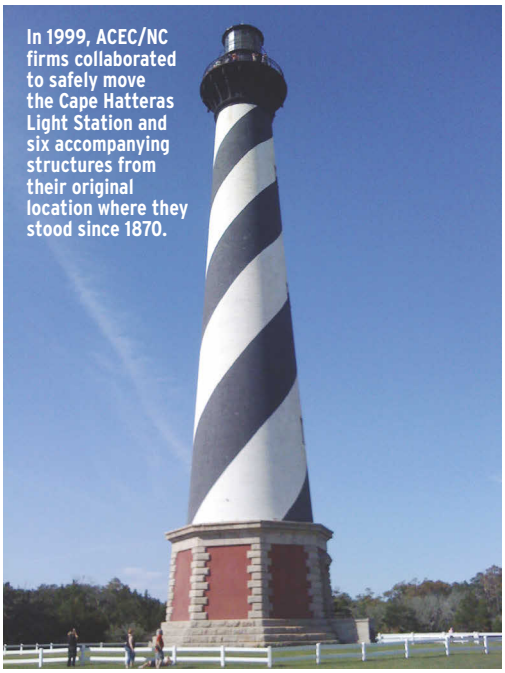
"A number of municipalities were famous for opting out of every contract. It just became a standard procedure with their local governing entities," Smith says. ACEC/NC and the coalition was able to package the legislation within a larger bill that set up design-build contracting in North Carolina.

"We were able to get buy-in from all the disparate entities who really wanted design-build and were willing to give up that loophole of the QBS opt-out in exchange," Smith adds.

ACEC/NC has also been instrumental in getting several state bills passed to increase transportation funding. The organization was part of a broad-based state chamber-led coalition in 2016 that helped establish the base for the motor fuels tax and increased DMV fees.

"This effort probably ended up increasing funding to transportation infrastructure by nearly $1 billion every two-year cycle," Smith says.

In 2017, the coalition helped pass a $2 billion vertical infrastructure bill, called Connect NC, that focused on new building construction around the state. In 2018, the state passed the Build NC Bond Act, a 10-year, $3 billion program to maintain accelerated project delivery.



In 1999, ACEC/NC firms collaborated to safely move the Cape Hatteras Light Station and six accompanying structures from their original location where they stood since 1870.

MILESTONE PROJECTS

ACEC/NC Member Firms have been involved in many milestone projects that showcase innovative engineering practices.

The Linn Cove Viaduct, a 1,243-foot concrete segmental bridge that snakes around the slopes of Grandfather Mountain in North Carolina connecting to the Blue Ridge Parkway, is considered one of the state's most challenging bridge constructions in terms of complexity and environmental concerns.

The viaduct was built to minimize damage that a traditional cut-and-fill road would have caused to Grandfather Mountain. Supported by seven massive pillars, the cantilever viaduct does not disturb the land below. To eliminate damage to the environment, no access roads were built for transporting heavy equipment on the ground. The bridge's segments were precast at an indoor facility and transported to the bridge site, where each section was lowered into place by a custom crane placed on both edges of the existing structure.

ACEC/NC awarded its Grand Conceptor Award to WK Dickson for its USDA Raw Water Main Project in Boone—the largest public infrastructure project in the town's history. The project expands the town's existing water treatment plant from 3.0 MGD to 4.5 MGD and the project's infiltration gallery is the first and only one of its kind east of the Mississippi River.

Several state historic landmarks have also benefited from ACEC/NC Member Firm ingenuity.

In 1999, the Cape Hatteras Light Station, a nearly 5,000-ton, nearly 19-story tall lighthouse along with six accompanying historic structures, was successfully relocated about a half-mile from the spot on which it had stood since 1870 to escape an eroding shoreline. The entire light station was safely moved to a new site where the historic buildings and cisterns were placed exactly as they had been at the original site.

ACEC/NC firms were instrumental in plans to move the lighthouse to safety without damaging the structures and ensuring that the new location could support it.

"That was some incredible engineering design work provided by our Member Firms," Clyburn says. "It took very sophisticated geotechnical engineering, structural engineering, and forensic engineering to be able to move this lighthouse. It is not something that other firms in the nation have pulled off."

NORTH CAROLINA'S ENGINEERING MARKET

When it comes to describing the business climate for engineers in the state, "healthy, but very competitive" is the overall sentiment.

"There are a lot of infrastructure needs and firms expanding into the North Carolina market, which is increasing competition, but there are plenty of opportunities out there," says Gary Hartong, president of The Wooten Co. and national director of ACEC/NC.

"When it comes to economic development in North Carolina, consulting engineering companies are at the foundation of it, with ACEC/NC at its center."

DEREK CLYBURN
PRESIDENT
ACEC/NC
SENIOR VICE PRESIDENT
ENGINEERING CONSULTING SERVICES

"There are a lot of infrastructure needs and firms expanding into the North Carolina market, which is increasing competition, but there are plenty of opportunities out there."

GARY HARTONG
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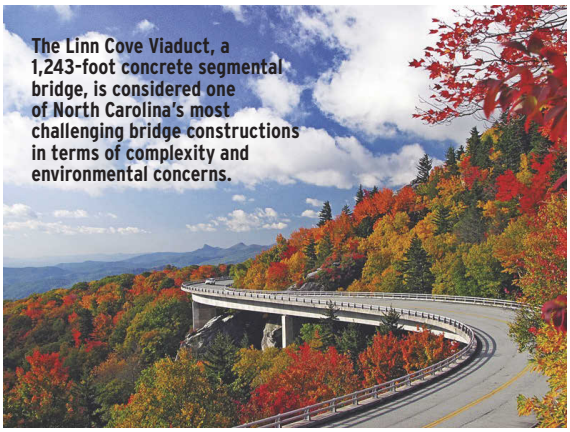
ACEC/NC
PRESIDENT
THE WOOTEN CO.

But the state also shares the national challenges of funding and talent resource shortages.

"Like most every other marketplace, our Member Firms are having a hard time finding good qualified people," says Smith, who also sees a growing movement toward moving project management responsibilities away from traditional engineers to free them up for more technical tasks.

"Those tasks could be done by non-engineers who have the training. And if you bring in people to do that work from other industries, whether it is pharmaceutical or manufacturing, you end up bringing in a more diverse workforce, as well," he says.

Macro-environmental conditions, such as recent hurricanes, climate change, and the need for clean energy, also present industry challenges, according to Clyburn. In fact, environmental issues have become so prevalent that in October 2018, North Carolina Gov. Roy Cooper signed an executive order that not only supports the 2015 Paris Agreement on climate goals, but pledges that by 2025, North Carolina will reduce statewide greenhouse gas emissions to 40 percent below 2005 levels, increase the number of registered, zero-emission vehicles to at least 80,000, and reduce energy consumption per square foot in state-owned buildings by at least 40 percent from 2002–2003 levels.



The Linn Cove Viaduct, a 1,243-foot concrete segmental bridge, is considered one of North Carolina's most challenging bridge constructions in terms of complexity and environmental concerns.

By 2025, North Carolina will reduce statewide greenhouse gas emissions to 40 percent below 2005 levels

Major hurricanes in 2016 and 2018 caused significant business disruptions, slowed projects, and halted funding for many infrastructure projects. Those hurricanes played a major role in the North Carolina Department of Transportation's (NCDOT) cash crunch in 2018, which impacted many ACEC/NC Member Firms.

In 2016, NCDOT pledged to ramp up transportation project delivery. The budget for engineering and planning nearly doubled in size from about $250 million per year to over $500 million.

"Our firms scrambled to ramp up and deliver the program," Smith says. However, after a series of substantially damaging hurricanes, NCDOT went from spending about $60 million for storm recovery to well over $200 million. Along with lawsuit settlements as a result of a bill called the Map Act, which allowed NCDOT to reserve land for future projects, that was ruled unconstitutional, the state quickly reached its mandated cash balance floor, which led to more than 900 accelerated transportation projects being suspended indefinitely.

"That was a huge blow to the industry," Smith says. "Many firms held on to what they still had going, but by the time we got to October, we had a lot of firms facing major layoffs come the holiday season."

In response, the state organization led a coalition effort that successfully urged the legislature to infuse over $200 million into the NCDOT budget, which helped get many projects restarted. It was also able to push restart dates up by two months, so most of the layoffs did not occur, according to Smith.

It has been the relationships built over the last 50 years, with the state's General Assembly and with state agency leaders, that provided the foundation for the state's engineering industry to receive legislative help through this "NCDOT Cash Balance," a crisis which affected both large and small Member Firms.

"Our sole mission is to promote the business interests of engineering firms in North Carolina through legislative advocacy and business services," Clyburn says. "We are the watchdogs for legislation that can affect the business of engineering in North Carolina, and we have the strategic relationships and regular contact with leaders to make sure we are articulating the concerns of the industry and meeting their best interests." ■

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

Another RECORD YEAR for ACEC/PAC

Success comes across the board: in receipts, disbursements, and total contributors

BY BOB VIOLINO

MARCHMEENA29/GETTY

For the ACEC Political Action Committee (ACEC/PAC), the nation's only political organization protecting engineering firms and their legislative interests, 2019 was yet another record-breaking year.

Due to a wide variety of efforts, national PAC contributions totaled $1.1 million in 2019. It was the fourth consecutive year ACEC/PAC raised more than $1 million, and in each of those years the fundraising totals surpassed the previous year.

It is no longer a coincidence, since ACEC/PAC has been on an upward trajectory for the past 10 years. In 2009 it raised $579,673, approximately half of what was raised in 2019.

The $1.1 million in funding was a result of record receipts, disbursements, and total contributors. ACEC ranked first in the country in receipts among design-build industry PACs; 18th of 730 in trade association PACs; 50th in all trade and corporate PACs; and in the top 2 percent of all federal PACs.

The total number of individual donors was 3,079, and 42 states reached their fundraising goals. Among the highlights for states in 2019: New York raised $93,235, the highest amount ever raised by a state; Delaware raised 165 percent of its goal; and California raised $76,877, an increase of more than $13,000 over 2018.

In addition, ACEC/PAC increased the number of Capitol Club members: donors who contribute the legal maximum of $5,000. Furthermore, ACEC/PAC unveiled the new ACEC Townhouse, where the PAC hosts events both for members of Congress and ACEC members.

"As the success of our advocacy efforts keeps growing, more and more of our members understand the value of supporting ACEC/PAC," says John Carrato, chairman of ACEC/PAC and CEO of Benesch.

"There have been significant wins for our industry, including a new 20 percent tax deduction for engineering firms organized as passthrough businesses," Carrato says. "Our advocacy team is second to none when working on Capitol Hill."

The overall success of ACEC/PAC is attributed to State Member Organization PAC Champions as well as the tireless efforts of Dave Bender, vice president of political affairs at ACEC, and Jennifer Pugh, political director at ACEC, according to Carrato.

"They work hard to educate our members on the value of contributing," he says.

This year, 1,475 Member Firms, representing over 52,000 Member Firm employees, gave their prior approval to ACEC/PAC, which is a record. This signed authorization from Member Firms, which is legally required, gives ACEC/PAC permission to receive PAC contributions from firm employees, which is critical in order for states to be able to reach their PAC goals.

ADVOCACY EFFORTS

ACEC/PAC plays an essential role in the success of ACEC's advocacy program, supporting federal candidates on a bipartisan basis who support the engineering industry's legislative agenda in Congress.

"Because of the size of our PAC, we certainly command attention," Carrato says. "When you couple that with an excellent advocacy effort led by ACEC Senior Vice President for Advocacy Steve Hall and his excellent staff, it leads to great success."

Success, based on ACEC/PAC's impact on business and trade legislation, breeds followership and engagement, according to Gary Raba, vice chair of ACEC/PAC and president of Raba-Kistner.

"The organization has demonstrated the power of a trade association, establishing Capitol Hill relationships and speaking with one collective voice," Raba says. "These relationships can make an impact upon the rules, regulations, and laws affecting our respective members' business of engineering and enhancing good public policy."

Raba attributes ACEC/PAC's success in Washington, D.C., and throughout the nation to staying focused on the original vision and mission of the organization.

"Driving good public policy drives the well-being of our employees, their families, our clients, and the communities in which we live," Raba says. "As the program has matured, it is rewarding to see more engagement by a very wide range of small to large business, young, midlevel, and senior executives. This engagement indicates that the profession is beginning to understand that one must 'get into politics or get out of business.'"

ACEC's Advocacy Department utilizes ACEC/PAC in order to build relationships and actively monitor ongoing legislative activities. ACEC/PAC provides funding for members to support federal candidates on a bipartisan basis, according to Raba. It also

National ACEC/PAC contributions totaled $1.1 million in 2019

offers boots-on-the-ground resources to monitor and make predictions about legislation being considered, long before any committee meeting.

"Assessment of future legislative trends allows ACEC to better formulate strategy around supporting the engineering industry's agenda," Raba says.

MEMBER SUCCESS STORIES

Success on the national level is made possible in large part by the efforts of individual PACs in various states. In 2019, ACEC Member Organizations throughout the U.S. found creative and interesting ways to increase fundraising and employee engagement.

For ACEC California, one of the most improved PAC contribution states last year, fundraising efforts are focused on three key areas, according to Jason Matson, ACEC California PAC Champion, and regional leader and principal at Kimley-Horn.

First is the detailed engagement of the ACEC California Board of Directors.

"The board, with nearly 60 members, continues to set the example by their participation during board meeting events and sweepstakes in support of the PAC," Matson says.

A second focus area is chapter-level involvement. ACEC California comprises 22 regional chapters, each with its own board and recurring member activities.

"Many of our chapters help support ACEC/PAC with their own sweepstakes, receptions, and other group activities," Matson says.

Finally, the third area is Enhanced Donor Club commitments. For example, the number of Millennium Club ($1,000) and higher contributors in California is at an all-time record, according to Matson.

"We want to continue to expand this group of strong contributors to further help reach our state goal for 2020," he says.

ACEC California has held several special events in recent years that have created a great experience for contributors.

Jason Matson, regional leader and principal at Kimley-Horn, and ACEC California PAC Champion, welcomes members and guests to a fundraiser that included a private reception and tour of the Queen Mary ship in Long Beach, California.

The total number of individual donors was 3,079, and 42 states reached their fundraising goals

"Last summer we had a private reception and tour of the famous Queen Mary ship in Long Beach, California," Matson says.

The prior year, the organization held a behind-the-scenes tour of the NBA's Sacramento Kings Golden 1 Center home, an ACEC California Engineering Excellence Golden State Award Winning Project. Another notable chapter-level event in 2019 was an architecture tour and reception at the Hotel Figueroa, a property deeply rooted in the women's movement in 1920s-era Los Angeles.

"We also introduced 'young professional' contributor opportunities, involving reduced registration/entry contribution amounts for ACEC/PAC events, to further encourage the next generation of advocates for our industry," Matson says.

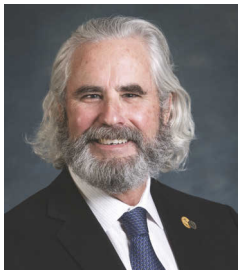
Having the largest PAC goal of any state in the country presents its own challenges, adds Matson.

"We cannot rely entirely on a small group of large donors like other, smaller states," he says. "In 2019, we were proud to have nearly 150 individual contributors, and we would like to see that grow to 200 or more in the years ahead."

In the coming year, ACEC California plans to routinely

"There have been significant wins for our industry, including a new 20 percent tax deduction for engineering firms organized as passthrough businesses. Our advocacy team is second to none when working on Capitol Hill."

JOHN CARRATO
CHAIRMAN
ACEC/PAC
CEO
BENESCH



"Assessment of future legislative trends allows ACEC to better formulate strategy around supporting the engineering industry's agenda."

GARY RABA
VICE CHAIR
ACEC/PAC
PRESIDENT
RABA-KISTNER

include PAC events at regular board meetings and other activities, continually raise awareness among board members, and assist chapters with ideas for their own events. All of these efforts are aimed at helping to increase participation.

One of the more unique fundraising events in 2019 was an ax-throwing competition held by the ACEC Nebraska PAC organization.

"Nebraska has been successful in meeting our PAC goals for several years," says Terry Atkins, senior vice president and COO at Lamp Rynearson and Associates.

The organization asked each board member and committee member to participate in fundraising. Atkins personally reached out to and visited firms in the state to request money.

"I find this very helpful; I usually see a bump in contributions because of these in-person meetings," he says.

Such in-person get-togethers provide Atkins the opportunity to educate future leaders and donors.

"As I explain to them, if we are not willing to support our industry, who will?" he asks. "We make our living as engineers. We need to be willing to give something back to advance our causes."

The ACEC Nebraska PAC is starting to involve its early career professionals in the fundraising efforts.

"If we do not get the next generation prepared to support our PAC, we are in trouble," Atkins says. "Education and financial support need to be the responsibility of everyone, not just a few people at the top."

Another state organization, ACEC-New Hampshire (ACEC-NH), has aimed to create innovative fundraising initiatives that attract young engineers.

"In 2019, our Emerging Leaders Committee took the reins of our PAC fundraising and spearheaded a bowling tournament," says Chris Mulleavey, ACEC/PAC Champion for New Hampshire and president and CEO at Hoyle, Tanner & Associates.

The bowling event was attended by almost 100 ACEC-NH Member Firm representatives and included a raffle with prizes and sponsorships donated by Member Firms, according to Mulleavey. The event raised nearly $6,000, which was close to the state's PAC goal.

ACEC-NH intends to host a second bowling tournament in May.

"We hope it's an even bigger success this year," Mulleavey says.

ACEC ranked first in the country in receipts among design and construction industry PACs; and in the top 2 percent of all federal PACs

FUTURE GOALS

Looking ahead, ACEC/PAC will aim to continue its past success in steering good public policy and assisting lawmakers in their analysis of complex policies as they relate to business laws, rules, and regulations, according to Raba.

"We must also increase awareness of our profession's willingness to serve as an expert professional/trusted adviser for challenges regarding investment in maintaining and building of our nation's infrastructure, to support continual prosperity," Raba says.

Because of the efforts of ACEC/PAC and its state champions, engineering firms nationwide should feel confident that they have a political organization that is looking out for their legislative interests. ■

***Bob Violino** is a business and technology writer based in Massapequa Park, New York.*

ACEC North Carolina members held a casino night to boost their PAC fundraising efforts.

Thornton Tomasetti's Beacon tool, an open source Revit plug-in, measures embodied carbon.

Thornton Tomasetti Releases Embodied Carbon Study, Open-Source Measurement Tool

In late 2019, Thornton Tomasetti released results from an ongoing study into the extent of embodied carbon in building structures, identifying the types of structures, materials, and components that have the highest carbon emissions.

The firm also released its Beacon tool (visit **https://core-studio.gitbook.io/beacon/**), which measures embodied carbon. The Revit-based tool allows structural engineers to measure the embodied-carbon impact of their design choices at any point in the design process.

The firm's embodied carbon efforts began in 2011 when it joined the AIA 2030 Commitment, which aims to meet the Architecture 2030 vision of carbon-neutral buildings by 2030.

"We were asked to measure the operational energy use of our building projects, but that did not seem like the best path for us because we were primarily structural engineers at the time," says Amy Hattan, vice president of corporate responsibility at Thornton Tomasetti. "Embodied carbon was where we had the greatest impact on climate change."

The firm decided to focus on embodied carbon and over the past seven years has studied its impact on more than 600 of its structural projects.

The firm defines embodied carbon as the material's energy impact from the moment it is mined until it leaves the factory gate. The impact can be significant. For example, studies have found that the three most commonly used structural materials—concrete, steel, and steel rebar—account for more than 22 percent of global carbon dioxide emissions. Furthermore, in a typical building, 55 percent of the embodied carbon is in the structure and substructure.

Thornton Tomasetti found that in a typical building, **55 percent** of the embodied carbon is in the structure and substructure

The study is ongoing, but key findings so far include:

- The increased use of recycled steel and fly ash in cement has been the largest driver in reducing embodied carbon over the past seven years.
- Almost all building types have the highest proportion of embodied carbon in their slabs.
- Skyscrapers have the highest proportion of embodied carbon in their columns rather than the foundations.
- LEED-certified buildings have slightly lower embodied carbon levels than non-LEED buildings.
- Steel buildings have more embodied carbon than concrete buildings.

"That last one is not what people tend to think," says Rob Otani, chief technology officer at Thornton Tomasetti. "Concrete is known as being high in carbon dioxide emissions. The reason it has that reputation is because it is by far the most used material in the world. But when we look at our projects, our steel framed buildings tend to have more embodied carbon."

One of the prime reasons for releasing the results of the study is to drive home the impact that structural engineering has on climate change, according to Hattan.

Given the pace of climate change, she says, "We need to make dramatic changes in the next 10 to 15 years. Up to now, the focus has been on operational energy efficiency, and that made sense because its

"Reducing embodied carbon has the biggest immediate effect because all of its impact is in the early stages of a structure's life cycle."

AMY HATTAN
VICE PRESIDENT OF CORPORATE RESPONSIBILITY
THORNTON TOMASETTI

"Beacon provides a quick understanding of the options, based on cost, aesthetics, and embodied carbon, which can be easily shared with the design team and owner."

ROB OTANI
CHIEF TECHNOLOGY OFFICER
THORNTON TOMASETTI

impact grows more and more over time. However, reducing embodied carbon has the biggest immediate effect because all of its impact is in the early stages of a structure's life cycle."

Adds Otani, "We wanted engineers and owners to be aware of where they stand in terms of embodied carbon. That is the first step in finding a way to reduce it."

The firm's Beacon tool is designed to help those reductions.

"There is still a lack of tools in the toolbox to study embodied carbon in the very early design stages," Otani says. "Beacon provides a quick understanding of the options, based on cost, aesthetics, and embodied carbon, which can be easily shared with the design team and owner."

When the firm began analyzing the embodied carbon, Otani says, "We used a combination of simple tools to extract quantities from models and a bunch of interns to verify the quantities, backed up by high-level feedback from our project managers."

Once Beacon migrated to Building Information Modeling, it became "much better and more complete," he says. "It is now a fully automated process that does a quantity takeoff directly from the Revit model and calculates the embodied carbon from those quantities."

On giving the tool away and making it open source, the decision was easy, according to Hattan. "We view it as contributing to the industry. It is more powerful when it is widely available," she says. ■

If your firm has an item to submit to *In the News*, **please contact Gerry Donohue at gdonohue@acec.org.**

Deal-Makers of a Feather Flock Together

BY NICK BELITZ

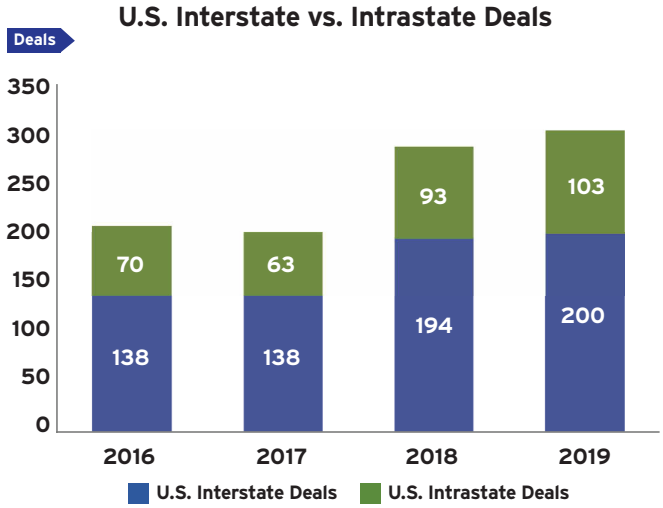
After notching the highest-ever total of industry transactions in a year in 2019, ACEC deal-makers wasted no time getting 2020 off to a strong start. As of this writing, Morrissey Goodale tracked 320 deals over the prior 12 months, topping the 311 deals consummated during full-year 2019. While the impact of COVID-19 on deal-making and the larger engineering and business community is still unknown, the most recent data indicates industry executives continued an aggressive push in deal-making over the winter of 2019–2020.

The latest spate of transactions with ACEC members also shows a continuation of a trend previously reviewed in this column. Specifically, there are a high number of *intra*state transactions—or deals done with buyers and sellers headquartered in the same state—as a component of all M&As.

Typically, M&As are used as an offensive growth initiative by firm leaders to jump to new markets and/or capture new services. By virtue of that strategy, most of these deals cross state lines. But as shown in the accompanying chart (*U.S. Interstate vs. Intrastate Deals*), intrastate transactions have accounted for approximately one-third to one-half of all deals completed annually for the last several years. Echoing that pattern, ACEC deal-makers did their part to bolster the trend last winter, with buyers and sellers from the New England area, Florida, Illinois, North Dakota, Colorado, and California all closing transactions with partners close to home.

Morrissey Goodale offers the following points explaining the popularity of same-state deals:

1. **Ease of connectivity.** Even in the 21st century with all the communication technology available, engineering is still a relationship-driven business based on people. Intrastate deal-making not only offers the opportunity to partner permanently with that great firm down the road, but it presents a relatively straightforward means of connecting with (and checking on) each firm's work, people, and clients.



2. **Competition for deals.** For years, the engineering industry's M&A market has enjoyed high participation from both buyers and sellers. The most attractive sellers entertain a greater number of suitors. When deciding between candidates in a hiring situation, people tend to pick the person who is better known versus the stranger, and the same goes for M&A deal-makers.
3. **Mitigation of risk.** While the business of engineering is much the same across the country (hint: Serve each client as if they are your only client), variations among state and local agencies, laws, and regulations affect each firm's day-to-day work. Picking an M&A partner familiar with the nuances of a state's quirks and jurisdictions can lessen the risk—perceived or actual—in an M&A deal. In other words, it is the bridge *not* too far.

As an additional note drawn from the latest deals among ACEC members, a special shoutout goes to North Dakota. We would be remiss if we didn't mention recent activity in the Peace Garden State. During and immediately after the Great Recession, North Dakota's economy was the envy of the country, driven by the height of the oil and gas fracking boom. But despite the soaring demand for engineering services of all types, few firms based in North Dakota transacted. Even in more recent years and prior to 2019, only one North Dakota firm sold in a deal in 2017.

But since December of last year and through the first quarter of 2020, *three* North Dakota firm transactions were tracked, setting a blistering pace compared to the prior decade.

Finally, while it is anticipated COVID-19 will affect the entire industry before the pandemic subsides, it is expected the long-term drivers of industry consolidation will remain in force, both within states and across state lines, throughout 2020.

ACEC DEAL-MAKERS

FEBRUARY 2020

ACEC member **Thomas & Hutton** (Savannah, Ga.), a southeast professional consulting and engineering firm, acquired municipal engineering specialist **Dempsey, Dilling & Associates** (Smyrna, Tenn.).

ACEC member **KCI Technologies** (Sparks, Md.) acquired the civil engineering and construction engineering and inspection practices of **Landtech** (Houston).

ACEC member **Richland Engineering Ltd.** (Mansfield, Ohio) joined multidiscipline civil engineering and environmental consulting firm **WallacePancher Group** (Hermitage, Pa.).

Burgess & Niple (Columbus, Ohio) announced its pending acquisition of transportation planning and design firm **ICON Consultant Group** (Tampa, Fla.). Both firms are ACEC members.

Parrish Hansen Structural Engineers (Clovis, Calif.) joined **Provost & Pritchard Consulting Group** (Fresno, Calif.), an ACEC member firm that offers civil and agricultural engineering,

environmental engineering, hydrogeology, planning, and construction management services.

Roof Engineering Associates (REA) (Palm Harbor, Fla.) joined the operations of **REI Engineers** (Raleigh, N.C.), an ACEC member. REA has building enclosure consulting experience, working primarily with government, commercial clients, and school districts.

ACEC member **Landev Engineers** (Houston) acquired **Cates-Clark & Associates** (Dallas), a civil engineering firm specializing in retail, multifamily, and medical projects.

In an all-New England combination, **CES, Inc.,** (Brewer, Maine) acquired water/wastewater expert **Haley and Ward** (Maynard, Mass.). Both firms are ACEC members.

Consulting and engineering firm **Ardurra Group** (Tampa, Fla.) acquired ACEC member **LNV** (Corpus Christi, Texas), a multidiscipline engineering, architectural, and surveying firm.

ACEC member **JVA** (Boulder, Colo.), a structural, civil, and environmental consulting engineering firm, acquired **Structural Consultants** (Denver).

Terracon (Olathe, Kan.) acquired environmental consulting and engineering services company **Skelly and Loy** (Harrisburg, Pa.). Both firms are ACEC members.

IMEG Corp. (Rock Island, Ill.) acquired **Clark Engineering** (Minneapolis). Clark provides civil and structural design, landscape architecture, land surveying, and environmental services to a variety of market sectors nationwide and abroad. Both firms are ACEC members.

JANUARY 2020

ACEC member **Farnsworth Group** (Bloomington, Ill.), a national full-service A/E and survey firm, acquired **FWAI Architects** (Springfield, Ill.), a 13-person architecture firm.

Full-service architecture and civil engineering firm **Ackerman-Estvold** (Minot, N.D.) merged with architecture and planning firm **Anderson Wade & Whitty** (Minot, N.D.). Ackerman-Estvold is an ACEC member.

GFA International (Delray Beach, Fla.) and **Universal Engineering Sciences** (Orlando, Fla.) announced their merger. The move creates a significant player in the southeast and mid-Atlantic markets for geotechnical engineering, environmental consulting, construction materials testing and inspections, building code compliance, and facilities consulting. Both firms are ACEC members.

ACEC member **GZA GeoEnvironmental** (Norwood, Mass.) acquired **Vieau Associates** (Edina, Minn.). Vieau specializes in environmental due diligence, brownfield remediation, vapor intrusion mitigation, petroleum remediation, and asbestos, lead, and mold.

ACEC member **J-U-B Engineers** (Boise, Idaho) and **Dyer Engineering Consultants (DEC)** (Reno, Nev.) merged. DEC provides aviation, roadway, water resources, mining, and land development engineering services.

ACEC member **LJB** (Miamisburg, Ohio) acquired multidisciplinary design firm **GGJ** (Eastlake, Ohio).

ACEC member **Delta Engineers, Architects, & Land Surveyors** (Endwell, N.Y.) acquired environmental consulting firm **Terrestrial Environmental Specialists** (Phoenix, N.Y.).

ACEC member **KCI Technologies** (Sparks, Md.) acquired **GCA, Inc.** (Atlanta), a consulting firm specializing in transportation planning and engineering.

ACEC member **CHA Consulting** (Albany, N.Y.) acquired 85-person **CME Associates** (Mansfield, Conn.), a transportation engineering firm with a focus on highway and bridge projects, and national expertise in accelerated bridge construction.

Structural engineering firm **Monroe & Newell Engineers** (Denver) joined **IMEG Corp.** (Rock Island, Ill.), a design and consulting firm. Both firms are ACEC members.

ACEC member **IMEG Corp.** (Rock Island, Ill.) acquired **W.L. Cassell & Associates** (Kansas City, Mo.), a mechanical, electrical, and data communications design firm, and **Territorial Landworks** (Missoula, Mont.), a civil engineering, surveying, and land use consulting firm.

ACEC member **Bennett & Pless** (Atlanta) and **Carpenter Wright Engineers** (Nashville, Tenn.) merged. The combined entity will maintain offices in seven locations across the Southeast.

ACEC member **T. Baker Smith** (Houma, La.) acquired **Naismith Marine Services** (Rockport, Texas), a hydrographic, geophysical surveying, and environmental firm.

ACEC member **Bowers + Kubota Consulting** (Waipahu, Hawaii), an architecture, engineering, and construction management firm, and **Belt Collins Hawaii** (Honolulu), a planning, design, and consulting firm, announced the merger of their two firms.

Mission Critical Partners (Port Matilda, Pa.), a public safety consulting and information technology support services firm, acquired **Black & Veatch's Public Safety Consulting Division** (Overland Park, Kan.). Black & Veatch is an ACEC member.

ACEC member **ECS** (Chantilly, Va.) acquired **Atlanta Environmental Management** (Atlanta), a firm that specializes in environmental consulting services.

ACEC member **WSP** (Montreal, Canada) acquired **LT Environmental** (Arvada, Colo.), expanding WSP's geographic presence in the U.S. and strengthening the firm's expertise in the environmental sector.

ACEC member **Ulteig** (Fargo, N.D.), a provider of design engineering, program management, and technical and field services, acquired **Pacific Power Engineers** (Sacramento, Calif.), a power systems engineering firm.

ACEC member **Tighe & Bond** (Westfield, Mass.), an engineering and environmental consulting firm, acquired **Halvorson Design** (Boston), a firm specializing in landscape architecture, planning, and urban design. ■

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, executive coaching, leadership development and executive search services. He can be reached at **nbelitz@morrisseygoodale.com**.

On the Move

Chantilly, Virginia-based **Engineering Consulting Services (ECS)** announced that **Tony Fiorillo** has been promoted to president of the ECS Group of Companies. Former president, **Henry Lucas**, will serve as CEO and chairman for the remainder of 2020, and as chairman through 2022. Fiorillo, who most recently served as COO, is based in the headquarters office.

Chicago-based **Clark Dietz, Inc.**, named **Charles Craddock** as president and CEO, succeeding **John I. Boldt**, who previously served as CEO and chairman and will continue as chairman.

Williamsport, Pennsylvania-based **Larson Design Group (LDG)**, announced that **David Martin**, LDG's current president and COO, has assumed the CEO role from **Keith Kuzio**, who is retiring. Kuzio, who served as president for nearly 20 years, and as CEO for 15 years, will transition to a leadership advisory role with the company. Martin will be based in the company's Pittsburgh office.

Boise, Idaho-based **J-U-B Engineers, Inc. (J-U-B)** announced the following senior-level appointments: Company President **Tim Haener** has been appointed the additional role of CEO, succeeding former CEO **Lee Cammack**, who is retiring and transitioning to vice president and senior adviser to the firm. Cammack served as CEO since 2008. **Brian Smith** was appointed an executive vice president and is based in the headquarters office. **Ben Volk** has been appointed a vice president and is based in the Reno, Nevada, office. **Brian Deeter** was elected to J-U-B's board of directors and is based in Kaysville, Utah.

New York-based **Sam Schwartz** announced that **Michael A. Shamma** was promoted to president of the firm and **Samuel I. Schwartz** will continue to serve as company CEO. **Meera Joshi** joined the company as principal and New York general manager. Shamma previously served as senior vice president and Northeast area manager.

Highlands Ranch, Colorado-based **Arcadis** promoted **Heather Polinsky** to COO for North America. She recently led the firm's Eastern regional operations of the North American environment business. Polinsky will lead the region's client service and delivery efforts, project management, and other strategic priorities.

New York-based **WSP USA** announced the following appointments: **Andrew Esposito** joined the company as CFO and is based in the Orange, California, office. **Rich Driggs** was promoted to COO. He previously served as president, property and buildings, and is based in the Atlanta office. **Steve Summers** joined the firm as senior vice president and director of project excellence and delivery. He is based in the Denver office. **Theodore Gargagliano** joined the company as senior vice president and director of the national aviation practice. **Robert Ostermiller** was named a senior vice president and senior transportation program director for the Northwest. He is based in Glenwood Springs, Colorado. **Jason Majzoub** has been named vice president and senior area manager for the transportation team in the Inland Empire and Orange County regions of California. He is based in the San Bernardino, California, office. **Andrew Brennan** joined the company as vice president and as Texas/Mountain region's director of strategic initiatives for

Tony Fiorillo

Charles Craddock

David Martin

Tim Haener

Brian Smith

Ben Volk

Brian Deeter

Michael A. Shamma

Meera Joshi

Heather Polinsky

Andrew Esposito

Rich Driggs

alternative delivery projects. He is based in the firm's Houston office.

Matthew R. Rechtien rejoins Houston-based **Walter P Moore** as general counsel after 12 years of practice at two Detroit-based law firms, most recently Bodman PLC, where he focused on construction law and commercial and insurance litigation. During Rechtien's first stint with the company from 1999 to 2004, he worked as a structural engineer in the Houston office before joining the team that founded the firm's Austin office.

Sheila Jordan was named chief marketing officer at San Francisco-based **T.Y. Lin International**. She most recently served as vice president, business development, marketing and organizational development for Verus, a California-based engineering and technical services firm.

Chris Williams joined **Stantec** as a senior vice president leading the firm's U.S. Federal Program. He previously served as division vice president for Jacobs' Buildings and Infrastructure Division. Williams will work from one of Stantec's Denver offices.

Kansas City, Missouri-based **TranSystems** announced the following vice president appointments: **Muhammad Ammad**, based in the Fort Worth, Texas, office; **Sara Clark**, based in the headquarters office; **Slade Engstrom**, based in the Wichita, Kansas, office; **Stephan Freese**, based in the Chicago office; **Todd Herman**, based in the headquarters office; **James (Mitch) Lambeth**, based in the headquarters office; and **Lynne Marie Whately**, based in the Berkeley, California, office.

David Isabelle joined New York-based **STV** as vice president and operations director of the Northeast region Transportation & Infrastructure Division. Isabelle previously served as senior vice president and Northeast regional team leader for H.W. Lochner.

Richard T. Hammer joined **Mott MacDonald** as a vice president in the company's transportation practice. Based in the firm's Iselin, New Jersey, headquarters, he is responsible for several major assignments and business development for the Northeast U.S. He formerly worked for the New Jersey Department of Transportation, where he served as commissioner of transportation.

Steve Summers

Theodore Gargagliano

Robert Ostermiller

Jason Majzoub

Andrew Brennan

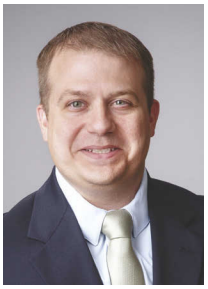
Matthew R. Rechtien

Sheila Jordan

Chris Williams

Muhammad Ammad

Sara Clark


Slade Engstrom

Stephan Freese

Todd Herman

James (Mitch) Lambeth

Lynne Marie Whately

David Isabelle

Richard T. Hammer

Welcome New Member Firms

ACEC Arizona
ACS Services, LLC
Mesa
Pangolin Structural, LLC
Phoenix
T2 Utility Engineers
Phoenix
Willis Engineering, Inc.
Phoenix

ACEC California
Culp & Tanner, Inc.
Chico
PES Environmental, Inc.
Novato
Risha Engineering Group, Inc.
Burbank
Salimi Management, LLC dba Salimi Construction Management
San Francisco
Weber Grant Land Services
Stockton

ACEC Colorado
Agapito Associates, Inc.
Grand Junction
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AUGUST 2020

6 Enhance Your Communication Skills to Achieve Measurable Benefits of Diversity in the Workplace (online class)

12 Diversity & Inclusion Keys to Success: DPC's Playbook on ACEC Firm's Best Practices (online class)

13 Secrets to Superior Negotiation (online class)

18 Knowledge is Revenue: How to Conduct Killer Competitor Research (online class)

19 Ownership Transition: How to Design a Sustainable Program (online class)

26 Self-Funded Health Insurance: What Does That Mean? (online class)

SEPTEMBER

2 More Than Projects or Money: How to Attract and Retain Top Talent and Clients with Advanced Social Impact Design (online class)

3 Large Project Management: Best Practices and Common Pitfalls to be Aware of (online class)

8 Engineering in the Age of Pandemics (online class)

9 Navigating Cyber Security in Engineering (online class)

10 Modernizing the Financial Department (online class)

17 Emotional Intelligence at Work (online class)

22 ESOP Exit Strategies and Internal Buyouts (online class)

23 Cash is King: Managing Cash Flow During Economic Recovery (online class)

OCTOBER

6 Mastering the SF-330—A Key Step in Winning Government Business (online class)

20 Don't Let Them Go: Best Practices in Retaining Talent (online class)

28-31 **ACEC Fall Conference, San Diego**

NOVEMBER

10 Engineering Ethics: Engineers and Fiduciary Duties (online class)

11 How to Plan, Develop and Execute a Standout Email Marketing Program for Your Firm (online class)

12 Start Leading (online class)

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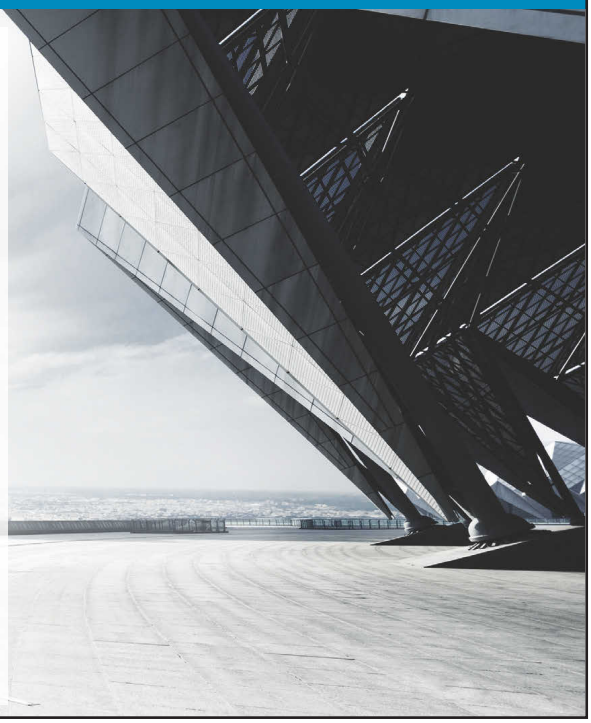


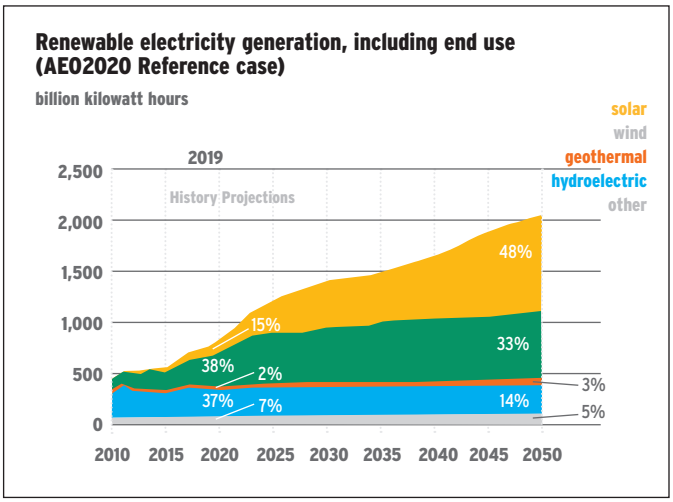
Economic Slowdown Halts Fast Growth of Solar

Before the COVID-19 pandemic, renewable energy technologies—specifically solar—were on track to continue a trajectory of rapid growth and be the leading source of electricity generation through 2050, according to the U.S. Energy Information Administration.

However, momentum has significantly slowed due to the economic failure that has resulted in supply chain delays, tightening of tax equity markets, and permitting challenges, according to the Solar Energy Industries Association (SEIA). The setback is expected to negate five years of solar industry growth, pushing the sector's employment levels back to what they were in 2014, resulting in a decline of 38 percent from pre-pandemic forecasts, according to SEIA.

The U.S. is now expected to install just 3 gigawatts of solar capacity in Q2 2020, a decline of 37 percent from pre-COVID forecasts, according to SEIA. Through the first half of 2020, the losses in U.S. solar deployment due to COVID-19 are equivalent to powering 303,000 homes and $3.4 billion in economic investment.

The impact is expected to be greatest in the northeastern states of Connecticut, New Hampshire, New York, New Jersey, and Pennsylvania, as well as the northwestern states of Idaho and Washington, according to SEIA.



Source: U.S. Energy Information Administration

LEADERSHIP TRAINING FOR THE NEXT GENERATION

Registration is now open for Class 5 of ACEC's mid-career leadership development program, Pathways to Executive Leadership, beginning Oct. 27–29, 2020, in San Diego. Sessions prepare participants for new leadership roles by teaching them how to explore personal mastery, recognize industry trends, and build long-term client relationships.

In addition to coursework, participants have the opportunity to connect with a trusted, national network of colleagues from which to draw best practices as well as exchange knowledge. The six-month hybrid program consists of two in-person seminars and three virtual learning sessions tailored to those transitioning to managing teams and other managers.

For more information, visit the ACEC website or contact Katie Goodman, director of leadership programs, at 202-682-4332 or e-mail **kgoodman@acec.org**. Registration is limited.

RESCUE, REBUILD, RECOVER

ACEC has launched free, virtual education under the Rescue, Rebuild, Recover campaign. The series features over 30 roundtables, webinars, and tools to help firms succeed in a new business environment and remain resilient in an uncertain economy. The one-hour presentations also provide insight on how businesses can prepare offices and operations for when stay-at-home orders have been fully lifted.

R3 ACEC American Council of Engineering Companies Rescue/Recover/Rebuild

Recent presentations have focused on reducing risk for employees upon returning to the office, positioning firms for growth, and viewpoints from experts on the post-pandemic economy, housing, and commercial real estate markets.

ACEC members receive full complimentary and on-demand access to the series through the Bookstore or the Coronavirus Resource Center on the ACEC website at **www.acec.org**. ■

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