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Publisher: Gordon Koblitz ★ Editor: Suellen Ehrmann ★ Delivery Expert: Vicki Starr ★ Correspondent: John Gaston

Contributors: Ken Bielman, Suellen Ehrmann, John Gaston, Frank Jeness, Sid & Judy Lasswell, Jane Medved, Karen Mikowski, Frank Thompson, Tony Vega

## Publisher's Notes



Steve and Joan Kavalec (center) surrounded by Alumni History crew members Dave Evans, Gordon Koblitz, Jim Schwing, Susie Gaare, and Don Marske

At the Retreat in Denver, the Alumni History group recognized the huge contribution that Steve Kavalec/DEN makes to our Alumni History Website. Steve is our volunteer webmaster. Without his efforts, the website would simply not exist. We were pleased that he and his wife, Joan, were able to join us for the Monday night reception. If you haven't yet visited the site, we invite you to browse <http://www.history.ch2m.com/> to see not only his efforts, but the contributions of the entire crew pictured here. Steve also added the capability of easily accessing the Web site with your iPad, tablet, or smart phone. Check it out!

My special thanks to folks who shared updates and articles. But we welcome more contributors! Travel articles, too. Let me know at [gkoblitz@ch2m.com](mailto:gkoblitz@ch2m.com), including leads on other stories or pending retirements. The best of the stories come from YOU! Thanks also go to Suellen and Vicki for their superb help with getting this newsletter together and out!

Cheers!

*Gordon*

## LETTERS TO THE EDITOR

Hey Gordon: Just read the latest alumni newsletter and was really pleased. You and the ones who help are doing a terrific job. Please keep on with the good work.

I very much enjoyed seeing you and all the other old friends at the welcome dinner. Sorry I was unable to do more. I will keep on monitoring the alumni page and am hopeful that the next reunion will also be one that I can attend. I will be 90 and the lord willing I will be there.

Kudos to Nancy for taking on the job. Go CH2M HILL and the Broncos! My best regards, Harlan [Moyer]

## RECENT RETIREES

### Iverson Finally Retires

CONTRIBUTED BY JOHN GASTON ([JMGASTON1142@GMAIL.COM](mailto:JMGASTON1142@GMAIL.COM))

Author's preface: Following 40 years of work with CH2M HILL, Mike Iverson has retired. He and his wife, Kara, plan to be able to spend more time with their grandchildren and traveling. Mike had one interesting story about a trip he took. The trip was sponsored by his church and the purpose was to help out a small community that was planning on drilling a well. During the field trip and site visit at an altitude of 2,000 meters, he stopped to rest and was told to be careful of wild dogs (hyenas) because they liked to pick on stragglers. Therein is a lesson for all of us when we retire. Don't be a straggler and get eaten by the dogs.

It is fitting to note that November 19, 2013 was the 150<sup>th</sup> anniversary of President Lincoln's Gettysburg address, in which he stated, "Four score and seven years ago..." Mike Iverson started two score years ago under the founders, and this was his only employment. This is a wonderful story about someone who spent more than 40 years doing the kind of work that is still the cornerstone of the firm.

Mike grew up in a so-called suburb of Redding, California, near Shasta Dam, and the first time he encountered the engineering profession was a Boy Scout trip to Clair Hill's firm in 1963. Mike graduated with a B.S. from UC Davis in 1971 and an M.S. in 1973 before starting work that same year. Go, Aggies!

Perhaps it's best to let Mike tell the story.



Mike Iverson getting comfortable with retirement

"Within 3 months of having started with the firm, Jim Howland stopped by my desk, sat down, and started chatting. Clair Hill also invited me to his house for dinner. I was hired into the San Francisco office (SFO) in preparation for our work on the Southeast Water Pollution Control Plant. That was quite a start, as my initial duties were comprised of sampling sewage in all parts of

San Francisco at all hours using a bucket and rope. Things improved as I was able to work alongside Jerry Wilson and Archie Rice doing jar and pilot testing. This subsequently morphed into the design phase, where they imported most of the design team from Corvallis. That was a great experience, working with outstanding engineers. The conference room in the SFO office was converted into drafting space. Phil Hall, the regional manager, moved out of his office to provide room for Archie, and I got my first close-up look at project management, watching and working with Archie, Dave Evans, and John Filbert.

“While I was able to work on many water and wastewater projects in places such as San Diego, Seattle, Columbus, St. Louis, Singapore, Abu Dhabi, and Puerto Rico, most of my projects were in the San Francisco Bay area. From the mid-70s to the mid-80s, we had a lot of big projects. Several won statewide engineering awards and in one case, a national award. Along the way, I came to realize that no amount of tutoring by Glen Daigger and Bill Bellamy would turn me into a process engineer. Project management became my niche. At that time, there was not much in the way of formal training, and I made a number of significant mistakes. My goal was to never make the same mistake twice, and I had success with that approach.

“I finished my career working for the same client at the same wastewater plant in San Francisco. The project is in the capable hands of the junior engineer on one of our earlier projects. At last glance, he was busy mentoring the succeeding generation of project managers.”

### Culpepper Retires

Once deemed Gainesville’s best-dressed guy, **Mike Culpepper** was immediately recognized by his big western belt buckle, turquoise jewelry, and friendly smile. A Florida native and resident and part-time resident of Sedona, Arizona, Mike is riding into the sunset after 40 successful years with the company. His wife, Beverly, will be at his side.



Mike is well known as one of the best construction management business development resources the Water Business Group (WBG). But he was also responsible for project delivery, staffing, and technical performance for all WBG construction-phase services. His experience ranged from estimating costs for large programs and establishing baseline estimates for multibillion-dollar wastewater programs to providing guidelines for EPA hazardous waste programs. Recently he acted as program manager for the \$350-million Seminole County (FL) Water and Wastewater Capital Improvement Program, which encompassed 268 water, wastewater, and reclaimed water projects

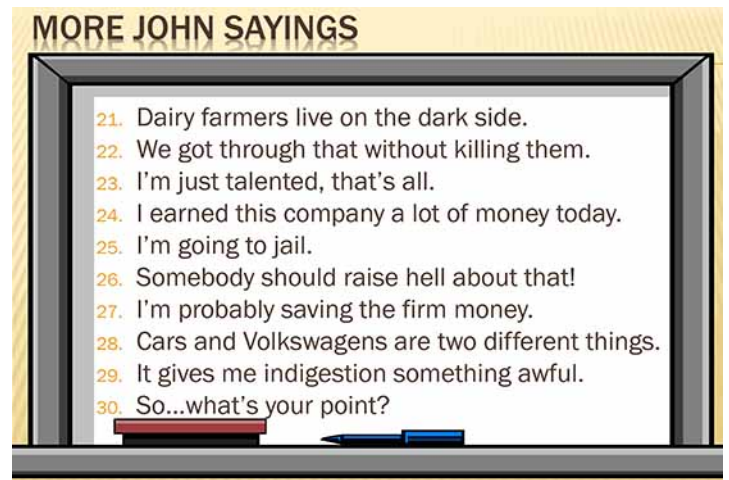
delivered over a 5-year period. And if that weren’t enough, he managed a co-located team providing project controls, engineering management, construction management, public involvement, IT support, and contract administration.

In addition to looking forward to spending the usual 2 months in Sedona, Mike and Beverly are planning travel adventures. Mike also plans on playing golf, fly fishing, woodworking, hiking, kayaking, and beating electronic solitaire in less than 1.5 minutes.”

### CVO Celebrates Hayes

CONTRIBUTED BY KAREN MIKOWSKI/CVO

Joined by family, friends, and peers, **John Hayes/CVO** celebrated his retirement at a party in January. Festivities included pictures of John through the ages, stories about work and hunting, and his whiteboard containing his infamous sayings.



One of five slides quoting 45 Hayesisms

John started as a mechanical technician in 1968 using pencil on linen. He has worked on projects across the US and became a senior mechanical designer. He specialized in the design of process piping and pumping systems for municipal wastewater treatment facilities. In addition, he became experienced assembling and utilizing hydraulic computer models to analyze hydraulics using AFT Fathom. He mentored many mechanical engineers coming through CVO.

*It seems like just yesterday when Fred Merryfield asked my opinion of graduates coming out of Salem Tech that spring of your graduation. I told Fred there were some bright new grads - one of them even had freckles...a can't-miss sort of guy...Arlen Borgen*



John will be working part-time to help finish work for the Ina Road, Arizona, record drawings and Woonsocket, Rhode Island, WWTF DBO design. Editor note: John's full PP presentation will be posted on his Bio on the Alumni History web site next month.

### Mickelson Retires



**Mike Mickelson**, a senior client service manager in Salt Lake City, has marked 42 years with the firm. Mike's first assignment was with Clair Hill in Redding, where he supported challenging water resource, irrigation, and land management projects.

Quickly, Mike demonstrated his exceptional client service and management capabilities—qualities which were extremely important to our fast-growing firm. After transferring through various offices in the western US, he moved to SLC in 1985 to help establish our Utah office.

Mike played a crucial role in developing and nurturing a relationship with Central Utah Water Conservancy District (CUWCD), arguably the largest and most influential water district in the state. His unique gift for gaining clients' trust and translating that into continuing work formed what is still the core of our Water Market's business in Utah – formulating, designing, and building the Central Utah Project.

Upon retiring, Mike and his wife Janice are "jumping from the fire pan to the fire" (Mike's words) having accepted a 3-year service mission for the Latter-day Saints Church where they will be the Directors of the Family History Center in St. George. Mike and Janice look forward to managing 150 service missionaries to help patrons and teach family history research. City of San Marcos Honors Beck

Whenever we ask clients what differentiates CH2M HILL from competitors, our people are at the top of their lists. When **Mike Beck/SAN** announced his retirement after 41 years in the water industry, including the past 8 as CH2M HILL's project director at San Marcos WWTP, Mayor Daniel Guerrero took that appreciation a step further by proclaiming December 17, Mike Beck Day in the Texas city of 42,000.

The proclamation noted Mike's 24 years with CH2M HILL "providing utility management for 20 communities in 5 states," adding that "the City of San Marcos wishes to express our admiration and gratitude for the exemplary service he has provided to the people of San Marcos."

Mike's service managing, operating, and maintaining water and wastewater facilities in Indiana, Colorado, Wisconsin, California, and Texas was lauded, and "more than four decades of...assuring the protection of our environmental resources and providing citizens with essential, life-sustaining services 24 hours a day, 7 days a week."

Mike's last day on the job was January 3. CH2M HILL has operated and maintained the city's wastewater treatment facility since 2005.



*Mike Beck shows off his proclamation, flanked by his wife, Brenda, co-workers, and San Marcos city council members and the mayor*

### Pruitt Celebrated; Family Faces Challenge

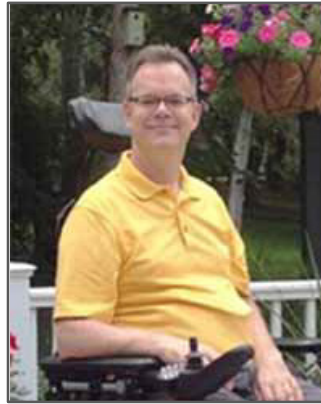


Over the past few years, **Bob Pruitt/CHC** and his family have faced his diagnosis of Amyotrophic Lateral Sclerosis (ALS, or Lou Gehrig's disease) and subsequent medical treatments. But that's not the whole story. In January 1986, Bob began his CH2M HILL career as a well-prepared

young engineer with a B.S. and M.S. in civil engineering from Oklahoma State University. Twenty-eight years later, co-workers thanked Bob for his service and reflected on his distinguished career and accomplishments.

Here are three excerpts among dozens left on an in-firm blog. "You are the tops in enthusiasm, integrity, genius, generosity of spirit, and empathy for all people you touch. Literally, willing to go where none has gone before, all with a wonderful sense of humor and humility. You're really the best of us, Bob." Kathy Freas. "(Bob) has a pretty magical way with people – even the tough characters." Gina Wammock. "Bob is a selfless individual who always put the firm first in all business dealings. When I transferred to Salt Lake City...Bob was there to smooth the way. At the time he was the local lead for the Water Business Group. He was charged with the job of recharging the group after the former lead left the firm to start his own business in direct competition to CH2M HILL and took several of our key WBG leaders with him...Bob's ability to develop trusting client relationships certainly smoothed the way for my transition. On a more personal note; Bob and Cheryl were quite welcoming to me and Mary. Cheryl was successful in getting my wife to get her ears pierced while we attended the AWWA Utah Section Conference in 2002. My wife had always been reluctant to have her ears pierced. It opened up a whole new world of ear-jewelry for my wife. Of course, that also hit the charge cards fairly hard." Jim Schwing

With his strong leadership, ability to work with a diverse client base, talent for mentoring, and knowledge of water systems engineering, Bob was often called on to help grow the water business across the country. As a result, he relocated several times and obtained his professional engineer registration from multiple states, including Tennessee, Oklahoma, Colorado, Utah, California, and Illinois.



Bob's career exemplified one of ongoing personal and professional growth with ever-increasing responsibility. With more than 20 years' worth of stormwater projects, he is a recognized expert in the industry. As a designer, project engineer, global water market manager, and program manager, his contributions are well noted and appreciated by his peers.

To honor Bob, CH2M HILL Water staff, our client Chicago Department of Water Management, and joint venture partners participated in the Chicago Shamrock Shuffle on March 30 to help the family offset medical expenses and support ALS research. DEN and SLC employees and clients also formed teams to run in their communities' St. Patrick's Day Walk/Runs.

Donations can be made by visiting Water People and Friends of Pruitt at <https://www.youcaring.com/PruittFamily2014> or by donating at [www.alsa.org](http://www.alsa.org).

### Information Technology's Sharrock Retires

BY DAVID ANDERSON, SENIOR VP AND CHIEF INFORMATION OFFICER

I am both happy and sad to announce the retirement of Diane Sharrock, Senior Director in our global IT organization and a key member of my IT leadership team. After 24 years with this great firm, Diane elected to retire on December 20.

Throughout her career, Diane provided leadership and input into many areas of our business including IT Operations, TAC, Infrastructure, Mergers and Acquisitions, and most recently, the Business Alliance Team. She has always been engaged with our business constituents, focusing them on IT strategies and strategic initiatives. Diane also spent 2 years leading the IT Program Management Office for the London 2012 Olympic Games and was a significant contributor in the firm's success on this major program.

I want to truly thank Diane for her many years of service and wish her the absolute best in her retirement.

### Vega Changes Course

CONTRIBUTED BY TONY VEGA ([TONYVEGA@CTEN.ORG](mailto:TONYVEGA@CTEN.ORG))



Joan and I have been married for 18 wonderful years, have 4 adult children and 3 grandchildren. We moved to Austin, Texas, in 1998 where we served at Hill Country Bible Church as small group shepherds and took

short-term trips to Thailand, East Asia, Haiti, and medical clinics in Mexico. These experiences led us to realize God's plan for us was full-time missions.

In fall 2008, we began to serve at Hill County Bible Church – UT, a missional church plant on the University of Texas campus. There they disciplined and mentored students, believing that "what happens at UT changes the world." While there, we took two trips to the Dominican Republic, which introduced us to Sharing the Vision (STV) in Santiago. STVs focus is to disciple and train Dominicans to be pastors and church leaders. STV also runs a team house, which hosts high-school and college teams.

As Joan and I head off on our Dominican adventure, I am definitely excited in anticipation of what the next few years will be like. But at the same time, I have been going to work every day for the last 26+ years at a place that in some way had a CH2M HILL sign on it...and I think I will miss that a little.

### Terry Sheldon, CMS Global Staffing Manager and Construction Manager, Retires

It's hard to think of anyone who has worked in the Construction Management Services (CMS) group during the past 40 years who **Terry Sheldon** hasn't known and who Terry hasn't also trained. Want to know what happened to the guy who left 5 years ago after his wastewater treatment plant CM project finished? Terry knows him, has kept in touch with him, and will help get him back for a new pursuit. Want to know every job a certain construction inspector has worked on and if he has a specific type of certification or expertise? Terry can tell you. Knowing the people who make CH2M HILL tick is what a great staffing manager does, and Terry is among the greatest.



"After booting up your e-mail in the morning, if you have a message that says simply 'How are you doing?' you know it is from Terry," said Jodie Willson/DEN. "Terry not only has his finger on the pulse of every CM job we have, he truly cares about the people working on them."

If you work in the CM arm of the company's business, you most likely have received training from Terry, either on the job or in one of the two long-time CH2M HILL University courses Terry helped develop and co-teaches: Introduction to Construction Project Administration and General Construction Inspection. These courses have proven to be a valuable resource for the firm, serving as the core training for internal CH2M HILL construction staff and for external clients as well. After participating in a training session in Fort Lauderdale, a client remarked, "The training has been very interactive and very informative. CH2M HILL has obviously provided the 'cream of the crop' personnel to facilitate this training. I see tons of value in this training not only for myself, however, for all who attend it."

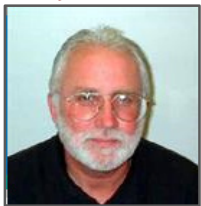
For the past 11 years, Terry has served as CH2M HILL's CMS Global Staffing Manager. In this role, he provided staff for CM projects across business groups and around the globe, and also advised on strategic staffing for CM growth across the enterprise. He was responsible for coordination and supervision of CMS staffing management, looked for trends in construction staffing, served as an advocate and mentor for staff, and developed opportunities to grow staff capabilities.

Four decades of experience providing construction management, project management, and inspection services on a variety of projects earned Terry the distinction of being considered one of CH2M HILL's primary experts for assisting clients with claims analysis, mitigation, and resolution.

Terry has held a succession of other CM leadership roles at CH2M HILL. He served as the Northeast and Canadian Region Construction Services Manager from 1998 to 2003, and as the Construction Management Services Director from 1996 to 1998. Terry was Senior Construction Advisor for the eastern U.S. from 1988 to 1996. In addition, he served as National Technology Leader for Resident Engineering and Inspection from 1996 to 2002.

Terry and his wife, Valorie, who are both native Oregonians, have lived throughout the U.S. supporting Terry's work in Oregon, Washington, Colorado, Oklahoma, Georgia, and Virginia. After many years in the WDC office, Terry and Val found their retirement home a few years back in Valdosta, Georgia. They have since had two grandsons born, who are sure to bring joy and energy to their retirement years.

### Larry Holm/KNV Retiring



Larry Holm, professional engineer, civil/geotechnical engineer, and program/project manager, is retiring after 34 years of exemplary service. Larry earned his bachelor's degree from Arizona State University, followed by a master's degree in civil engineering from Purdue University. After completing his coursework, he joined our firm.

Larry's resume reflects his progression as he increased his responsibilities and delivered a wide range of civil, infrastructure, geotechnical, military, and environmental engineering projects and programs throughout the US, Europe, and the Middle East. He held department, division, office management, and vice president positions over the years—contributing to a wide array of projects including construction management, design, assessment, and planning of infrastructure, hazardous waste facilities, and foundations for major structures and bridges, roadways, underground facilities, dams and embankments, treatment facilities, and wharf structures.

Clients and colleagues have described Larry as a contributor with an upbeat personality. Always dependable with a can-do attitude, Larry has been instrumental in turning around some difficult situations, projects, and client relationships. His client-centric service and years of dedication will be missed.

**Scott Normandin/BOI** recently retired after 35+ years, but at last notice was white-watering on the Snake River. We're looking forward to receiving a full report in the January newsletter to let folks know he's taken the big leap. He still is on the CH roster for consulting work; however, he also has his other email: [scott.normandin@gmail.com](mailto:scott.normandin@gmail.com).

### Clark Cosby/SPK Celebrates 40 Years

**Clark Cosby** began his career with the firm in Seattle as a starry-eyed 19 year old, fresh out of technical school. He was not sure what his first day, let alone his long career, would have in store for him.

Clark has worked on a wide variety of projects throughout his career as an engineer tech, and is still one of the first people to arrive and one of the last to leave at the end of the day.



*Clark Cosby next to a photo of himself taken in 1974, when he was an intern*

To get him to attend a surprise party in honor of his 40<sup>th</sup> anniversary with the firm, Clark's colleagues had to trick him into stepping away from his work, using the excuse of a mandatory safety meeting.

"Clark has seen a lot of changes in our company; but one thing hasn't changed - Clark is a wonderful person to work with and a shining example of why CH2M HILL has a stellar reputation and remains such a great place to work. It's all about our people," said friend and colleague, Roger Flint/SPK.

## NEW RETIREES AND EMERITUS (SEMI-RETIRED EMPLOYEES; WORKING LESS THAN FULL TIME)

The following employees recently retired or joined the contingent employee ranks.

|                     |                           |
|---------------------|---------------------------|
| Robert Bartlett     | John Lincoln              |
| Mike Beck           | Peter Magallones          |
| Gary Brown          | Lynn Matthews             |
| Wayne Buzzard       | Bryan McDonald            |
| Bobby Carroll       | Michael Mckelvy           |
| Jose Correa         | Terri Noe                 |
| Richard Corrigan    | Larry Nunn                |
| James Crawford      | Doug Parker               |
| Bob Cronin          | Julianne Parker-Guilbault |
| Randall Cummings    | Jeff Pearson              |
| Robert Daniels      | Robert Pedrolie           |
| Brian De Glanville  | Victor Pizzuto            |
| Russell Devick      | Carol Plambeck            |
| Merv Dickinson      | William Primm             |
| Tom Dillion II      | Sal Ramos-Garay           |
| Eddie Edwards       | Todd Rogers               |
| Daniel Fuller       | Brian Ruby                |
| Si Givens           | Ghassan Salameh           |
| Dotty Grady         | Carolyn Salters           |
| Ralph Guthary Jr    | Nanette Scruggs           |
| Georgene Heslop     | Diane Sharrock            |
| Rex Hesner          | Joe Shipman               |
| Dick Horning        | Rick Smith                |
| George Howroyd      | Thomas Tucker             |
| Mike Iverson        | Gregory Wasz              |
| Ike Johnson         | Ken Weigum                |
| Skip Johnson        | Jerry Wilhoyte            |
| Stephen Kambol      | James Williams            |
| Michael Keating     | Donald Zabilansky         |
| Christopher Keister | Donna Zampaglione         |
| Loren Krook         | Judy Zeigler              |
| John Lakey          |                           |

## RETIREES' NEWS

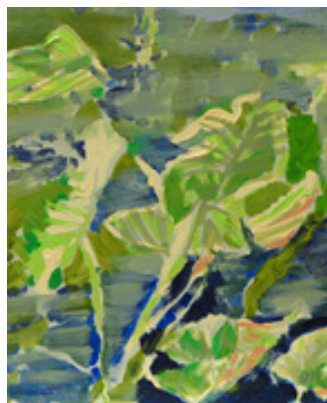
**Editor's note:** If you would like to share retirement stories, photos, or presentations, please forward information to [gkoblitz@ch2m.com](mailto:gkoblitz@ch2m.com), along with anyone's name inadvertently left off the newly retired list.

### The Art of Jane Medved

CONTRIBUTED BY JANE MEDVED

**How long were you at CH2M HILL, what was your specialty, and when did you retire?** I worked in the Gainesville office as a writer and editor for 11 years and retired in February 2005. Is there a project you're especially proud of? We

created a movie from a military guidebook to make sure people would actually pay attention to mind-numbing regulations. Our enthusiastic clients cheered us on. We wrote a comic script based on Forrest Gump, hired a film company, held auditions with a Tom Hanks lookalike, and filmed in a Tampa park.



[The Art of Jane Medved](#)

working a dual career has continued throughout my life.

**How has your art evolved?** After retirement, my husband Chris and I decided to make weekly trips to our endangered springs, which inspired me to paint bodies of water and bodies of people enjoying the springs. Since we like to travel abroad, my body of artwork expanded to include satiric maps of the world.

### What about your academic background?

Another eclectic path: BA in Philosophy (University of Wisconsin), AS in Graphic Design (Santa Fe College), and MA in Mass Communication (University of Florida).



**How and when did you build your art studio?** In 2011, we built a studio and gallery in the wooded lot behind our house in historic Gainesville. It was designed to

be compatible with our 1932 craftsman bungalow.

**Where have you exhibited?** My work's been shown at The Metropolitan Museum of Art, Brooklyn Museum, and Museum of Arts and Design in New York City, and Yellowstone Art Museum in Billings, Montana.

My paintings are currently at local venues. I also sell paintings from my studio and from my website:

<http://www.janemedved.com/>.

## Ehrmanns Enjoying US Van Trip

CONTRIBUTED BY SUELLEN EHREMAN/SAN

In the midst of the NBA Finals, Barry and I (a Spurs fan and **Susie Gaare's** basketball arch-enemy) left Alamo Heights on our semi-regular summer van adventure.

Now we're in Aspen. Everything's all right here. The temperature is temperate, the people are friendly, and town (as they refer to it in the local papers) is booming. Last week, Chanel planted a pop-up—a second-story showroom of their Paris-Dallas collection lasting only 10 days—complete with Perrier-Jouet champagne and toned sales staff pushing haute couture to anyone willing to pay for it. Also last week, the Ideas festival, with an appearance by Hillary Clinton, and a music festival.



Suellen gets down with the 2014 NBA Champions' logo on the street surrounding their home arena



Barry and puppies

Barry and I found a great site at the Forest Service Silver Bell Campground, and we've been cooking and sleeping well, stashing food in the bear-proof locker, and picking up our dog's poo. We gloat that in a place where properties average \$5 million, we're paying \$7.50 a day (thanks to our geezer pass).

Silver Sneakers membership opens the door to the Aspen and Red Brick recreation centers,

where I've participated in everything from water aerobics to Zumba. I've been working on this newsletter while sitting outside Red Brick or inside the Pitkin County Library. On our way west, we stopped at Lama Foundation outside Taos and dug up weeds as *seva* (volunteer work). Here in Aspen, we played with puppies and nuzzled two grown



Suellen and Jane 2 days after they met



Barry, Suellen, Jane, and Chris in Gainesville last year

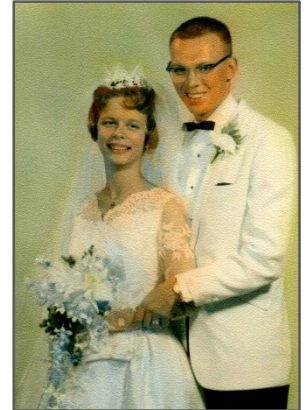
dogs at the animal shelter. What's next? The road will provide.

**Note:** Jane Medved and I were mistaken for each other decades years ago when I turned up in her office for a TDY. We've been friends ever since, and Barry and I visited Jane and Chris in 2013.

## Frank Thompson (Employee Number 90)

CONTRIBUTED BY FRANK THOMPSON

Linda and I are doing well, plan to stay in Boise for the duration, however long that is! We celebrated our 50<sup>th</sup> wedding anniversary in December 2012. I started with the firm in June 1963, so that is what we looked like then. I left the firm in 2003, not bad for a temporary hire. Never did figure out what I wanted to do when I grew up.



Newlyweds Frank and Linda Thompson in 1963, the same year that Frank started with the firm

Linda and I just returned from our annual winter trip to Hawaii. Cruised all the islands and then spent some time in Honolulu, Linda's old hangout (Punahou High School, class of 1961). Normally stay in Kona on the Big Island, but decided to do something a little different this year.



Frank, such a nut, on vacation

We have a small travel trailer we use quite a bit during the warm weather months. Enjoy camping with local family and friends. Have two daughters and families that live nearby. My son is in southern California. Have, I think, 6 grandchildren and at least a couple of great grandchildren. I get confused on this, as is so



Linda and Frank enjoy traveling to Hawaii annually

common these days, there have been a couple of marriage meltdowns and some reunifications that are still in progress. Anyway for the most part everyone is healthy and reasonably content. For Linda and me, the most important part is staying healthy, which so far is going well.

## Frank Jenes Update

Retirement is great in Walla Walla, Washington. We moved here in February 2006. Bobbie and I keep busy with family and neighbors, and travel locally to see other friends and family in Seattle and on down to Newport Beach, California. Last October we traveled to China to see what that was all about and had a great time. About every other year, Bobbie manages to find somewhere in the world we must see, but we always enjoy the trips almost as much as getting back home.

When I retired in March 2000 I took over the planning and cooking of all meals and still keep it up in addition to compiling an extensive recipe collection. Our neighborhood has joint dinners several times monthly. In June we had 14 for dinner and we were at the neighbors for a similar one a few weeks later.



L to R: Don Marske, Bobbi Jenes, Jill Stroope, Joan Marske, and Frank Jenes at the Stroopes'

Our son and his wife own a candy store here and we take care of their kids once in a while to accommodate them and enjoy the grandkids.

There are about 150 wineries in the Walla Walla Valley and we periodically sample their offerings and enjoy their wine events.



Rod Stroope relaxing at home in Laguna Woods

Last April we took a 3-week road trip to Newport Beach. On the way we stopped in Las Vegas to see Carol and **Dave Evans** and my sister. We eventually met up with Joan and **Don Marske** at Jill and **Rod Stroope's** home in Laguna Woods, California for dinner. Later we went to Portland and had dinner with Penny and **Chuck Kemper**. In September, we plan to travel to Utah and places nearby to see the great canyon national parks.

## Ken Bielman Celebrates His 90th Birthday

CONTRIBUTED BY KEN BIELMAN

Under mixed clouds and sun, a perfect Oregon day, 110 friends and family members gathered in Corvallis on June 21st to help **Ken Bielman** celebrate his 90th birthday, including CH2M'ers **Judy and Sid Lasswell, LaMont and**



**Ginny Matthews, Mary and Gordon Koblitz, Shirlene Humphry and Les Wierson.** Five of his six children and step-children from Denver, Santa Fe, Fredricksburg, Texas, and Oregon, plus five of his ten grandchildren and four of his ten great grandchildren attended the fun-filled event.



Ken (standing) with L to R: Les Wierson, LaMont and Ginny Mathews, Julie Bielman, and Mary and Gordon Koblitz

Ken's wife, Julie, did a superb job as organizer, cook, M.C. and social director as only she could do, according to Ken. The food she prepared was delicious, prompting oohs and aahs from the guests.

The whole afternoon passed without a hitch except that the PowerPoint presentation that Ken had spent many hours preparing wouldn't show correctly--the pictures had to be advanced by hand and only about half of the program was shown. The accompanying music, a recording prepared by Ken, was of him playing piano and keyboards, accompanied by sons Steve, guitar and vocals; Mark, bass; Clay on drums.



Ken gets a group hug from Judy and Sid Lasswell

Julie introduced many of the people present, and three of the CH2M'ers added humorous comments

about Ken, followed by a live performance by Ken's sons' rendition of "Song for My Father," which brought on a few teary eyes, including Ken's.



As a finale, the afternoon concluded with dancing. Editor's note: Ken's PP presentation will be added to his Bio on the Alumni History web site next month. Ken's email is: [bielman@comcast.net](mailto:bielman@comcast.net)

## Sid Lasswell Celebrates His 90th Birthday

CONTRIBUTED BY SID AND JUDY LASSWELL

Over 100 family members (36) and the rest CH2M colleagues, spouses, and friends gathered on May 17th at the Corvallis Country Club to celebrate **Sid Lasswell's** 90th birthday.



*Sid-isms*

Prior to the delicious buffet and program, guests mingled with longtime friends, many from offices around the country who had ties with Sid and CVO. A fun time-line PowerPoint presentation assembled by Judy, Mark, and grandson Scott played throughout the afternoon. It documented Sid's journey from childhood, Army days, CH2M HILL, and retirement enjoying family, travel, and friends.



*Mark at podium with Sid*

The official program began when Sid took his place in a chair (balloons attached) on stage while MCs Mark and Scott Lasswell and David Johnson and Steve Johnson shared observations and favorite moments in "Life with Sid".

They turned the mic over to the audience for comments. Sid, who had his yellow pad handy and was taking notes for his rebuttal, listened to many funny, heart-felt, and noteworthy reflections shared by family and friends.

When it was his time to take center stage, Sid shared highlights of his life, and about his party's most memorable moments, he mentioned, "Looking out over the great group of friends, being able to recognize them (important!), and remembering the great times and relationships extending almost 65 years." Then he added, "Being able to get up and down from the podium without help." And finally, "Like most of my speeches, both I and most listeners tend to forget them quickly."



*"All the 'Kids' present a special B-day greeting for Sid"*

"It was gratifying and a little overwhelming to see so many at Sid's celebration," Judy added later. "Sid really looked forward to the party, and it was wonderful that so many took the time, effort, and expense to join us. Thanks to all who made his day." Editor's note: Sid's PP presentation will be added to his Bio on the Alumni History web site next month. Sid's email is: [lasswell@teleport.com](mailto:lasswell@teleport.com).

## Apple Jacobs Featured in Fight for Vet Cemetery

BY ED JOYCE; FROM 89.3 KPCC, SOUTHERN CA PUBLIC RADIO



*Apple Jacobs places a flag, roses and crossword puzzle books at Bob's grave marker at the Riverside National Cemetery in May. She also put a single long-stem red rose across the top of the gravestone.*

Recently, Jacobs got in her car for a 45-mile drive to the Riverside National Cemetery. It's about an hour's drive. But she wishes her husband Bob's resting place was in a veteran's cemetery closer to home. "If he was in Orange County I would be there all the time, it would be closer and more convenient for me," said Jacobs. "And I would visit not just for special occasions, too. Not dealing with driving so far and the traffic would be nice."

Her husband of 25 years, **Bob Jacobs**, a Vietnam veteran, died in October 2012 at 67 of liver cancer. She's been driving

to see him in Riverside ever since. Like many military veterans, it was his wish to be buried in a vets' cemetery. But there isn't one in Orange County. And, in Los Angeles County, the national cemetery in Westwood has been closed for two decades. Jacobs said if her husband, who was awarded a Bronze Star, were buried closer, she and her two sons, Ryan, 22 and Kevin, 19, would visit more often. "I come here and visit and try to visit as much as I can with my boys, usually during special occasions or I make special trips with my boys [who do the driving] because it's kind of a long drive," said Jacobs.

Bob Jacobs, a former engineer with CH2M HILL, liked to do crossword puzzles, so she lays out several crossword books below the grave marker, too. "He's here and we always try to come visit him," said Jacobs. "But it would be wonderful if we had one [veteran's cemetery] closer."

The California Department of Veterans Affairs said there are 133,000 veterans living in Orange County. Many of those veterans hope that in the future their loved ones won't have to drive so far. And, they might not face such a long drive if legislation proposed by Orange County Assemblywoman Sharon Quirk-Silva is successful. Quirk-Silva, Chair of the California Assembly Committee of Veterans Affairs, has introduced legislation to create a veterans' cemetery in Orange County. Quirk-Silva's bill doesn't specify a location in Orange County, but there's a section of the former El Toro Marine Base in Irvine, now the Great Park, that veterans groups have been pursuing for more than a decade. Quirk-Silva said there is no opposition to the bill (AB 1453) and Governor Brown told her he'd sign it. In Orange County, the Irvine City Council has indicated it supports a vets' cemetery in the Great Park.

## GOODBYE, OLD FRIENDS



**Dr. Robert (Rob) McKim/BTR** passed away unexpectedly on March 21, 2014. Rob joined CH2M HILL in 2008 as an industry icon and a principal conveyance technologist specializing in pipeline assessment and rehabilitation. In 2009, Rob rejoined the Trenchless Technology Center (TTC) of Louisiana Tech University as

Administrative Director while also working at CH2M HILL as a flex employee.

Rob actively encouraged his graduate and undergrad engineering students to consider CH2M HILL as a future employer. In his dual TTC/CH2M HILL role, Rob brought active, exciting CH2M HILL projects to the classroom so students could experience real-world projects.

Rob left a lasting impression on all who worked with him, as well as the trenchless pipeline industry. He will be remembered for providing tremendous support and

guidance over the years to CH2M HILL, the TTC, his students and colleagues, and the industry as a whole.



**Larry Addison/RDD**, a licensed project surveyor and GPS coordinator, passed away on March 23, from complications of advanced prostate cancer. He was 73 years old.

Larry's family operated a sawmill and logging operation in Lance County, Oregon. After WWII, the operation moved to Humboldt County, California, and Larry grew up in Eureka. He met Donna Lawson in high school, and they married upon graduation in July 1958. Larry and Donna lived in Eureka from 1958 to 1973, then moved to Redding.

In an area dominated by the logging, lumber, and fishing industries, Larry (by sheer luck) found employment as a *bonehead* rear chainman on a county survey crew. This was followed by a couple of years in the same capacity for the Northwestern Pacific Railroad Co., then more permanent status with the state Division of Highways (now CALTRANS) through '75. This tenure brought a wider experience base for an engineering technician, including promotions with work design, materials testing, surveying, construction surveying, and inspection duties.

Larry and Donna owned and operated a motel for almost 4 years and later bought a fish market and ran that for 2 years. Their teenage son and daughter worked with them. Unfortunately their son, Mark, became a missing person at age 22 and was never found. Their daughter, Karen, had two children and passed away in 2004.

Larry had a lifelong commitment to learning and always wanted to know how things worked by taking them apart and putting them back together. He enjoyed hunting and shooting, and spent many hours building his own rear dragster.

Larry is survived by his wife of 55 years, Donna, two grandchildren, Cara Rickman and Jaime Ochoa, and two great grandchildren, Eastyn Rickman and Hunter Ochoa.

Jim Howland's widow, **Ruth Louise (Meisy) Meisenhelder**, died March 23 in Madison, Wisconsin. She was 95 years old.

Meisy was a strong supporter of the Corvallis community and well known among generations of CH2M HILL employees. She



*Jim and Meisy*

met Jim on a blind date in 1938 when she was a junior at

Radcliffe and Jim was a graduate student at MIT. They married in 1941 and were together until Jim died in 2008.

The Howlands' began their new life in Corvallis renting a bedroom in a boarding house where they shared living space with other residents and joined the college students for meals. It wasn't too long before Meisy and Jim moved into a small house of their own on Whiteside Drive, but it took some time to get fully situated. In the beginning, they had a stove and furnace, but no refrigerator, washer, or dryer.

As the firm grew, more engineers were hired and Meisy took it upon herself to make their families feel a sense of belonging. The Howlands' 900-square-foot home became a familiar place to all. "Those early years were great years," Meisy said. "We were young, the war was over, we were healthy and our children were normal, frisky, funny, delightful. The business was growing and new ideas engendered new functions. Old customers came back with new problems needing solutions. The CH2M staff was making the dream of a major engineering firm become a reality. Good people doing good work and having a great time in the process. We were all very happy people!"

Jim and Meisy were well-known and respected in the broader community where they were regarded as active civic leaders and humble contributors to numerous societies and the arts. In fact, the Corvallis Chamber of Commerce celebrates longtime civic engagement every year with an award that is named for the couple.

Read [Meisy's recollection of the early days](#) on the CH2M HILL Alumni History site and learn more about her recent years in a 2010 [AlumniConnect feature](#).

**Robert (Bob) Wright/PDX** a descendant of Oregon Trail pioneers, died February 9. He was 75.

Bob grew up in northeast Portland and graduated from Oregon State University with a degree in civil engineering. He married his high school sweetheart, Mary Ellen (Hunt) Wright, and they had three children, Michael, Nancy and Kathryn. After college, Bob worked as an engineer for Morrison-Knudsen and CH2M before starting his own firm, R.A. Wright Engineering in 1971. Thirteen years later, Kathy Thomas joined the business and the firm became Thomas/Wright, Inc. In the late '80s, Bob and Kathy fell in love. They shared the business, homes, vacations, adventures and everything else. Bob loved traveling to Mexico, working on his farm, and being with friends. Bob and Kathy had a condo in Puerto Vallarta and a farm in Yamhill.



"Bob was one of the pioneers in the PDX office that helped us grow from a staff of 5-10 to over 100 in 5 years. He will always be remembered as one of the "Young Turks" led by

Joe Worth, Ken Durant, Wayne Hanson, and John Rammage. We will remember him as a strong contributor to our family and CH2M HILL." Les Weirson

**John C. (Jack) Spalding/BOI** passed away on November 16, 2013 at the age of 89. His loving wife Gillian passed away on December 20, 2013 at the age of 86. They were both being cared for in Salt Lake by family after sudden illnesses. They were known by many as Jack and Jill.

Jack was a mechanical engineer in the Boise office from around 1978 through 1999, coming from STR Engineers in Portland. His main job was the care and feeding of St. Luke's Hospital mechanical heating and air conditioning systems in Boise along with numerous mechanical and HVAC projects around Idaho. Jack was a great neighbor and friend to Linda and **Frank Thompson** (see story above).

We recently lost these colleagues, as well.

|                            |                           |
|----------------------------|---------------------------|
| Johannes L. Eggers (1/8)   | Dennis G. Benjamin (3/26) |
| Larry L. Leach (1/15)      | Patrick J. Roche (4/1/)   |
| James B. Strickland (1/15) | Wayne H. Yarnall (4/7)    |
| Kou-Roung Chang (1/16)     | Grace W. Vollrath (4/30)  |
| Colleen F. Oakes (1/21)    | Darla N. Brown (5/27/)    |
| Edward P. DePreter (1/26)  | Thomas H. Queen (5/30)    |
| Bessie M. Bill (2/8)       | G. Kenneth Elwood (6/1)   |
| Francis A. Johnson (2/9)   | Odes Clements (6/4)       |
| Gene J. Wallace (2/20)     | Gary M. Carey (6/26)      |
| Robert C. Blaisdell (2/25) |                           |

## ASSOCIATES NEWS AND ACCOMPLISHMENTS

### 2015 CH2M Retreat Planning Update

BY GORDON KOBLITZ

Many people have asked about the 2015 Retreat status: where and when? Following our last retreat in Denver last fall, the planning committee, led by Nancy Tuor and Mike Jury, formed two subcommittees to explore the need for and feasibility of smaller regional gatherings funded mainly by attendees. Corporate staff would provide the retiree data base and communications network, assistance for facilities research and negotiations, and providing corporate leadership members at the gatherings for updates on CH2M HILL's major projects, performance and future outlook/direction.

The three main issues identified are:

- Despite significant outreach attempts, attendance has remained in the 100+/- range.
- The majority of attendees originated from or are currently in the Pacific NW area and include spouses who also have close friendships within the group over many years.

- The company would like to foster and support more regional groups across the U.S. and elsewhere, including the many companies who have become part of the CH2M HILL family.

A draft report has been prepared, and Nancy will be sharing the committee's draft report with John Madia/DEN later in August. Based on follow-up discussions and decisions, the recommendations will be shared with all retirees in a separate email or no later than the January newsletter. Any questions or comments may be sent to Nancy Tuor ( [ntuor.moore@gmail.com](mailto:ntuor.moore@gmail.com) ) or Gordon Koblitz ( [gkoblitz@ch2m.com](mailto:gkoblitz@ch2m.com) ) for sharing with the committee.

### McIntire to Retire; Hinman Takes His Place on Board

Lee McIntire will retire as chairman at the September board meeting. McIntire, who joined the firm in 2006 as president and COO, was chief executive from 2009 through 2013 and has been chairman since 2010.



"It has been an extreme privilege to serve this great company," McIntire said. "I look forward to its continued success under the leadership of Jacqueline Hinman and her team."

"Lee is a long-time industry leader and we greatly appreciate what he has done for us, especially internationally and with program management," Hinman said. "We wish him the very best in this new chapter."

On McIntire's watch, the firm grew from 15,000 employees and \$3 billion in annual revenue to 26,000 employees and \$6 billion in revenue.

The firm has managed significant projects around the world, including construction of venues for the London 2012 Olympics and Paralympic Games, the ongoing expansion of the Panama Canal, the Mumbai airport in India, and the Emirates Nuclear Energy program.

McIntire also is credited with spurring the firm's safety focus.

The Board of Directors unanimously appointed President and CEO Jacque Hinman as Chairman of the Board of CH2M HILL effective September 18. The Board also appointed Mark Fallon to serve out Lee McIntire's term on the Board.

Mark was recently named President of the Facilities & Urban Environments Market, and previously served as Regional Managing Director (RMD) for Europe. Prior to his RMD role, Mark was President of the Nuclear Business Group. A 14-year veteran of the company, he brings experience in running successful business operations as well as extensive knowledge of our federal client base. He also has governance experience, having served on several CH2M HILL Board committees, and

on the boards of several of our Joint Venture companies and the Advisory Board of the U.S. EXIM Bank.

### FIRM'S RECENT HONORS, WINS, AND HEADLINES Firm Leads ENR Lists of Program Managers and Sewer/Wastewater Treatment Design

*Engineering News-Record* listed CH2M HILL as the No. 1 Program Management (PM) Firm in the US as well as Design Firm in Sewer/Wastewater (WW) Treatment. Also No. 2 in Transportation and Construction Management (CM) for Fee and PM, No. 3 Design Firm in Hazardous Waste and Water, No. 4 Design Firm in Manufacturing, and No. 5 in Combined Design and CM/PM Professional Service Revenue, No. 6 Design Firm in Designers in International Markets, No. 10 Design Firm in Industrial Processing/Petroleum, and No. 13 Design Firm in Telecommunications.

For complete lists, [see attached PDFs](#). The Top 500 Design Firms Sourcebook, which includes submarket rankings, will be published on July 14, 2014.

For the record, CH2M HILL has nearly 26,000 employees in offices worldwide (including JV companies and Halcrow). As of the second quarter of 2014, CH2M HILL was actively working in 108 countries/sovereign states/territories around the world.

### Firm Among World's Most Ethical Companies

CH2M HILL has been named one of the World's Most Ethical Companies® for 2014! This is the sixth consecutive year the firm has received this



designation from Ethisphere Institute, an independent research center that promotes best practices in corporate ethics and governance.

"I am immensely pleased, but not surprised by this honor," said Chief Executive Officer Jacque Hinman. "It represents the unimpeachable character of our people and core value of ethical practice throughout the enterprise. Our company is built on a foundation of quality and integrity, both reputational imperatives but also vitally important to our culture."

Ethisphere recognizes organizations with this award for their continued commitment to raising the bar on ethical leadership and corporate behavior. World's Most Ethical Company honorees understand the correlation among ethics, reputation and daily interactions with their brand.

"The entire community of World's Most Ethical Companies believes that customers, employees, investors and regulators place a high premium on trust and that ethics and good governance are key in earning it," said Ethisphere's Chief Executive Officer Timothy Erblich. "CH2M HILL joins an

exclusive community committed to driving performance through leading business practices. We congratulate everyone at CH2M HILL for this extraordinary achievement.”

The World’s Most Ethical Company assessment is based upon the Ethisphere Institute’s Ethics Quotient™ framework. The Ethics Quotient framework has been developed over years of effort to provide a means to assess an organization’s performance in an objective, consistent and standardized way. The information collected provides a comprehensive sampling of definitive criteria of core competencies, rather than all aspects of corporate governance, risk, sustainability, compliance and ethics. The Ethics Quotient framework and methodology was determined, vetted and refined by the expert advice and insights gleaned from Ethisphere’s network of thought leaders and from the World’s Most Ethical Company Methodology Advisory Panel.

Scores are generated in five key categories: ethics and compliance program (25%), reputation, leadership and innovation (20%), governance (10%), corporate citizenship and responsibility (25%) and culture of ethics (20%).

### Spokane Selects Firm for Design and Construction Management of Next Level of Treatment at Water Reclamation Facility

On March 11, the City of Spokane selected CH2M HILL for the design and construction management of a world-class tertiary membrane filtration project at the Riverside Park Water



City of Spokane's Riverside Park Water Reclamation Facility

Reclamation Facility (RPWRF). The new facility is targeting removal of phosphorus to the lowest levels in North America. The estimated constructed cost is \$80 to \$100 million; this upgrade will be the largest single project at the Riverside plant since the 1970s, and will contribute to a significantly cleaner Spokane River.

CH2M HILL, led by Kelly Irving/SPK, is currently the PM at RPWRF, where we have been working for almost two decades. The City followed a competitive consultant selection through their Request for Qualifications (RFQ) process and actively promoted the RFQ. What makes this win especially gratifying is that the City selected CH2M HILL from our Statement of Qualifications and references, electing not to interview proposers. This fast selection reflects the caliber of our proposed team, CH2M HILL’s

impressive membrane qualifications, and the great service our current team at RPWRF has provided to the City.

In 2013, CH2M HILL, masterminded by Dave Reynolds/SEA, also helped the City determine how to most effectively incorporate the membrane technology into the RPWRF, concluding that 50 mgd of membranes and a fifth primary clarifier provide the lowest life-cycle cost alternative and lowest cost per pound of pollutant removed, saving the City \$21 million, with a net environmental benefit for the Spokane River. In parallel, with our help (led by Jennifer Price/SEA and Amy Carlson/SEA), the City developed an innovative Integrated Clean Water Plan focused on evaluating the relationships between the collection system and the RPWRF to develop a capital plan that maximizes pollutant reduction and minimizes cost.

This important project will help keep the Spokane office and other supporting offices busy for the next 4 years. Key team members include **Craig Massie** (Project Manager); **Kelly Irving** (RPWRF Program Integration Manager); **Paul Mueller** and **Heidi DeBenedetti** (Membrane Procurement); **Roger Flint** (Principal-in-Charge); **Sheldon Barker** (Executive Sponsor); **Tom Helgeson** (Quality and Risk Manager); **Jim Lozier** and **Jesus Garcia-Aleman** (Senior Membrane Technology Advisors); **Dave Grigsby** (Design Manager); **Dave Reynolds** (Chief Engineer); **Brian Gomolski** (Construction Management Lead); **Terry Dokken** (Startup Lead); and **Jennifer Price** (Integrated Planning Liaison).

Our sales team included **Roger Flint** (Client Portfolio Manager, Area Manager, Northwest Government Affairs Director); **Sielen Namdar** (Sales Manager); **Elisa Blommer** (Proposal Manager); **Amy Norred**, **Aimee Hobson**, and **Sara Miller** (Graphic Designers); and **Sheldon Barker**, **Rod Brauer**, **Ron Williams**, **Sherrill Doran**, and **Court Harris** (Strategic Guidance).

### Oregon Celebrates Grand Opening of Wastewater Treatment Plant; City of Wilsonville Completes DBO Project on Time and Under Budget

*BLOOMBERG BUSINESSWEEK*

The City of Wilsonville, Oregon, celebrated completion of its new WWTP on April 24. The \$42-million Design-Build-Operation (DBO) project, awarded to CH2M HILL in May 2011, was completed ahead of schedule and under budget.

“Teamwork and collaboration are at the heart of DBO projects and was key to the successful completion of the new facility in Wilsonville,” said Joe Glicker, CH2M HILL DBO Director. “The plant’s expansion benefits the city in so many ways, and will protect the environment and help the community grow for years to come.”

Wilsonville’s wastewater treatment plant was rebuilt, upgraded, and expanded to include modern wastewater treatment technology, a new odor system, and increased capacity from 2.5 to 4 million gallons per day (mgd), with

future expansion capabilities to 7 mgd. The upgrade and expansion included two new structures, including a dewatering and drying building, as well as a head works building to produce Class A biosolids for land application and fertilizer.

The original facility was built in the 1970s and has undergone upgrades over the years to accommodate the city's population growth and maintain aging equipment. The latest comprehensive upgrade and expansion project enables Wilsonville to meet the community's current needs and future growth over the next 20 years and will ensure clean water for tomorrow by protecting the environment and improving the quality of effluent discharged to the Willamette River.

CH2M HILL took over the plant's operations in September 2011, during the construction phase, and will continue to operate the plant for the next 20 years.

Read the full story here:

<http://investing.businessweek.com/research/markets/news/article.asp?docKey=600-201405150528M2> EUPR 34c900000666c29d 3600-1

### Firm Gets New Chief Financial Officer

On August 4, Gary L. McArthur will join the firm as executive vice president and chief financial officer (CFO), responsible for oversight and leadership of day-to-day global financial operations, including accounting, treasury, tax, corporate development, financial reporting and information technology. He will report to CEO Jacqueline Hinman.

Mr. McArthur comes to the firm from Harris Corp., a Fortune 500 international communications and information technology company, where he served as CFO since 2006, and in various other financial positions since 1997. He has extensive experience in technical and program-centric industries with expertise at leading a global finance organization, overseeing accounting, treasury, tax, corporate development, risk management, banking, audit, global shared services and investor relations. He has more than 25 years of financial reporting experience with Securities and Exchange Commission-registered companies.

Mr. McArthur holds a BA in accounting from the University of Utah and an MBA from Harvard. He is a member of the American Institute of Certified Public Accountants.

## CH2M HILL CEO ENCOURAGES GRADUATES TO DRIVE POSITIVE CHANGE

PENN STATE NEWS

Approximately 1,120 students received their baccalaureate degrees at the College of Engineering's spring commencement exercises May 9 at the Bryce Jordan Center.

This year's commencement address was given by environmental engineering alumna Jacqueline Hinman, chief executive officer of CH2M HILL. The firm is a global leader in consulting, full-service engineering, construction, procurement, program management, and operations for public and private clients.

"What we do as engineers is to design and build a better world. As you receive your diploma, please do not take this lightly," she told the audience.

Hinman explained to graduates that no matter where their careers take them, they should not be the best in the world, but rather be the best for the world. "Being the best IN the world is about you. Being the best FOR the world is about others. The world needs your help."

She pointed out that despite decades of technological advancements, many of today's pressing issues, including hunger, pollution, urbanization and industrialization, are not isolated to developing countries. "There are challenges regarding mobility, energy and infrastructure right in this state and in this town." Hinman said engineering graduates "are the very people who can — and will — drive positive change."

She concluded, "What you really learned here, and what will always be part of you, is how to solve problems. Go ahead and solve a few that help you personally along the way. But make sure you solve some that help others, in your neighborhood, and beyond."

# ENR THE TOP 100

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NUMBER 09

## EPIC-SCALE MANAGEMENT

Hill International is managing the Jabal Omar Development program in Makkah, Saudi Arabia. The program includes 37 towers, totaling 21.5 million sq ft, including hospitality, residential, commercial and religious facilities.



PHOTO COURTESY OF HILL INTERNATIONAL

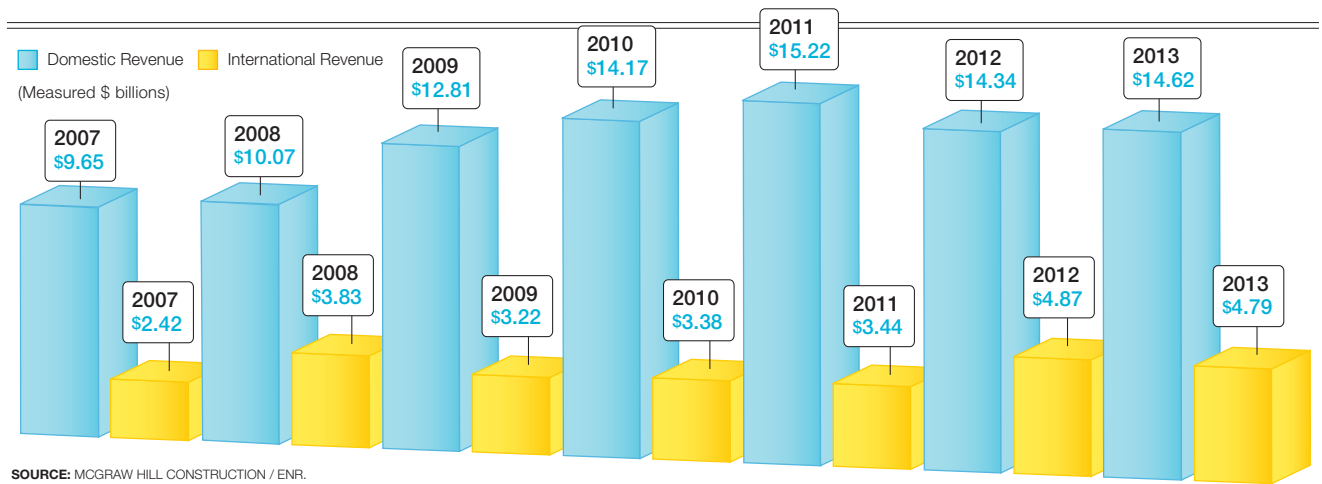
Professional Service Firms

## Owners Seek More Service

Firms providing professional construction services are being challenged by owners to provide a broader range of services By Gary J. Tulacz



# Domestic CMF-PM Rebounds



SOURCE: MCGRAW HILL CONSTRUCTION / ENR.

The recession took a toll on professional services firms, just like it hammered other sectors. However, owners have been hiring professional services firms to plan for projects, rather than hiring contractors and design firms to launch projects, which would require a major capital commitment. In an uncertain economy, worried owners have been using third-party professionals to explore their options.

The steady market for professional services firms can be seen in the results on ENR's Top 100 Construction Management-for-Fee and Program Management list. Revenue for the CM-PM group rose 1.0%, to \$19.41 billion, in 2013. Domestic revenue from CM-PM work rose 2.0%, to \$14.62 billion, in 2013. This marks a rebound for the domestic market, which had declined from 2011 to 2012, the first such decline since 2003. On the other hand, CM-PM revenue from projects and programs abroad fell 1.6%, to \$4.79 billion, in 2013 after rising 41.6% in the previous year.

Interest in CM and PM continues to grow. "As an organization, we are up to 12,400 members," says Bruce D'Agostino, CEO of the Construction Management Association of America (CMAA), McLean, Va. "A lot of this increase is driven by owners looking to stay current with the market and trends. Some owners lost in-house staff during the recession and need to know what is required to manage their projects now that the market is rebounding," he says.

Professional services firms are now reaping dividends from owners that downsized during the worst of the recession. "With fewer resources, [owners] are [realizing] they lack a strategic approach to the delivery of their projects and have less control over costs," says Peter Heald, president of Cumming. "Many owners



**"You have to have the ethics to tell a client you can't do the project for that price. Sometimes the best decision is just to walk away from an opportunity."**

Blake Peck,  
President,  
McDonough  
Bolyard Peck

are engaging [CM] firms on an on-call basis, providing ample flexibility while still enabling [the owners] to deliver a higher-quality capital project with a more predictable cost outcome," he says.

Owners are still trying to do more with less, downsizing their facilities staffs and relying on outsourced management. "PM-CM services are support functions for such organizations and critical to spending capital judiciously but not necessarily to core business services," says Herschel Baxi, managing director, PMA Consultants. So, many owners see no point in bringing CM-PM work in-house. Using third-party CM firms to deliver these services avoids adding to the owner's overhead, Baxi says.

## Broader Palette

The lack of trained in-house staff, coupled with a lack of funding, particularly among public agencies, is creating an opportunity for CM firms to expand their palette of services. "The market has shifted well beyond the need for hiring just a construction manager or owner's agent to do quality inspections," says Blake Peck, president of McDonough Bolyard Peck Inc. "We are getting more requests for services such as community outreach, planning facility move-outs, securing funding and the like. We are getting much more into high-input program management."

Heald says owners also are using CM firms to help with industry economic analysis before starting a construction program. "We are seeing a growing trend in needing to provide owners detailed market-condition data and information on current economic cost drivers," Heald says, adding that data collection and analysis helps minimize risk and maximize the value



of projects through cost and schedule management.

Program management is becoming a significant factor in large projects. "Transportation is strong for us, particularly in aviation," says David Richter, president of Hill International. He says Hill is working as PM on numerous airport projects in Phoenix, Los Angeles, San Francisco and Salt Lake City, among other cities. But Hill's biggest project is on the Muscat International and Salalah airports in Oman, where it has 360 staff at work, Richter says.

The energy sector is a growing market for program management firms. "Due to the scale, there is a growing need for centralized program management with the expertise to cover multiple projects," says Chris Baxter, senior vice president of Faithful+Gould.

Noting another trend, Baxter says the private sector is moving away from design-build to more traditional methods "because owners recognize they are not fully prepared to define their requirements and turn over control to the design-builder at the early stages." He says PM firms increasingly are being asked to guide owners to the most appropriate delivery system.

Demographics is helping expand the professional services market. As young people gravitate to urban areas and aging baby boomers and empty-nesters look for a more active lifestyle, developers are responding with large, mixed-use developments planned in cities and suburbs near downtowns. "The scale and complexity of these hospitality, residential and commercial projects [can reap] significant benefits using expertise from program management," says Baxter.

Green building is another area in which professional services are making an impact. Owners worried about the up-front costs of building green do not realize "the long-term benefits, not only to the environment but operating-cost savings," says Ronald Takaki, vice president of project operations at Gafcon Inc. He says the firm is often asked to investigate the economic feasibility of sustainable design and construction.

The international market continues to be strong for CM and PM service firms. "We have been asked to help open up the Mexican market to support all the oil and gas work there," says D'Agostino of CMAA.

Hill International is still finding success in the overseas market. "The Middle East continues to be really strong for us," says Richter. Hill and Louis Berger recently won a CM contract for three of the six lines of the \$22-billion Riyadh metro system, being built in Saudi Arabia.

But Richter says Hill is now targeting Asia. "We are finally getting some traction in the Chinese market," he says. India, with its vast infrastructure programs and needs, is a major focus. "There are not many Western

## The Top 20 Firms in Combined Design and CM/PM Professional Service Revenue

| RANK<br>2014 | FIRM  | 2013 REVENUE IN \$ MIL. |                       |               |
|--------------|---|-------------------------|-----------------------|---------------|
|              |   | DESIGN REVENUE          | CM/PM-FOR-FEE REVENUE | TOTAL REVENUE |
| 1            | JACOBS, Pasadena, Calif.                    | 6,820.2                 | 1,663.2               | 8,483.4       |
| 2            | AECOM TECHNOLOGY CORP., Los Angeles, Calif. | 7,240.9                 | 912.6                 | 8,153.5       |
| 3            | BECHTEL, San Francisco, Calif.              | 2,535.0                 | 4,382.0               | 6,917.0       |
| 4            | URS CORP., San Francisco, Calif.            | 5,270.0                 | 1,613.6               | 6,883.6       |
| 5            | CH2M HILL, Englewood, Colo.                 | 3,585.3                 | 2,291.5               | 5,876.8       |
| 6            | FLUOR CORP., Irving, Texas                  | 4,505.9                 | 13.5                  | 4,519.3       |
| 7            | AMEC, Tucker, Ga.                           | 2,978.0                 | 0.0                   | 2,978.0       |
| 8            | TETRA TECH INC., Pasadena, Calif.           | 2,542.0                 | 65.0                  | 2,607.0       |
| 9            | PARSONS, Pasadena, Calif.                   | 1,506.9                 | 1,066.6               | 2,573.5       |
| 10           | PARSONS BRINCKERHOFF, New York, N.Y.        | 1,724.1                 | 713.7                 | 2,437.8       |
| 11           | CB&I, The Woodlands, Texas                  | 2,105.0                 | 0.0                   | 2,105.0       |
| 12           | HDR, Omaha, Neb.                            | 1,762.1                 | 84.6                  | 1,846.7       |
| 13           | KBR, Houston, Texas                         | 1,767.1                 | 0.0                   | 1,767.1       |
| 14           | BLACK & VEATCH, Overland Park, Kan.         | 1,304.9                 | 241.6                 | 1,546.5       |
| 15           | WORLEYPARSONS GROUP INC., Bellaire, Texas   | 1,430.3                 | 84.6                  | 1,514.9       |
| 16           | ARCADIS U.S./RTKL, Highlands Ranch, Colo.   | 1,383.0                 | 119.0                 | 1,502.0       |
| 17           | WOOD GROUP MUSTANG INC., Houston, Texas     | 1,249.0                 | 180.2                 | 1,429.2       |
| 18           | BURNS & MCDONNELL, Kansas City, Mo.         | 1,039.3                 | 135.8                 | 1,175.1       |
| 19           | MWH GLOBAL, Broomfield, Colo.               | 942.9                   | 15.6                  | 958.5         |
| 20           | GENSLER, San Francisco, Calif.              | 883.2                   | 0.0                   | 883.2         |

## The Top 20 Firms in Combined Industry Revenue

| RANK<br>2014 | FIRM   | 2013 REVENUE IN \$ MIL. |                |                       |               |
|--------------|--|-------------------------|----------------|-----------------------|---------------|
|              |  | CONTRACTING REVENUE     | DESIGN REVENUE | CM/PM-FOR-FEE REVENUE | TOTAL REVENUE |
| 1            | BECHTEL, San Francisco, Calif.                   | 30,706.0                | 2,535.0        | 4,382.0               | 37,623.0      |
| 2            | FLUOR CORP., Irving, Texas                       | 22,144.1                | 4,505.9        | 13.5                  | 26,663.4      |
| 3            | JACOBS, Pasadena, Calif.                         | 4,685.5                 | 6,820.2        | 1,663.2               | 13,168.8      |
| 4            | CB&I, The Woodlands, Texas                       | 8,989.5                 | 2,105.0        | 0.0                   | 11,094.5      |
| 5            | KIEWIT CORP., Omaha, Neb.                        | 10,787.6                | 232.2          | 0.0                   | 11,019.7      |
| 6            | URS CORP., San Francisco, Calif.                 | 4,021.7                 | 5,270.0        | 1,613.6               | 10,905.3      |
| 7            | THE TURNER CORP., New York, N.Y.                 | 9,979.4                 | 0.0            | 140.6                 | 10,120.1      |
| 8            | AECOM TECHNOLOGY CORP., Los Angeles, Calif.      | 0.0                     | 7,240.9        | 912.6                 | 8,153.5       |
| 9            | PCL CONSTRUCTION ENTERPRISES INC., Denver, Colo. | 7,350.9                 | 0.0            | 0.0                   | 7,350.9       |
| 10           | KBR, Houston, Texas                              | 5,515.9                 | 1,767.1        | 0.0                   | 7,283.0       |
| 11           | SKANSKA USA, New York, N.Y.                      | 6,718.1                 | 0.0            | 46.1                  | 6,764.2       |
| 12           | CH2M HILL, Englewood, Colo.                      | 739.2                   | 3,585.3        | 2,291.5               | 6,616.0       |
| 13           | WHITING-TURNER CONTRACTING CO., Baltimore, Md.   | 5,062.7                 | 0.0            | 0.0                   | 5,062.7       |
| 14           | BALFOUR BEATTY US, Dallas, Texas                 | 4,607.3                 | 0.0            | 66.5                  | 4,673.7       |
| 15           | CLARK GROUP, Bethesda, Md.                       | 4,264.5                 | 0.0            | 0.1                   | 4,264.6       |
| 16           | TUTOR PERINI CORP., Sylmar, Calif.               | 4,175.7                 | 0.0            | 0.0                   | 4,175.7       |
| 17           | GILBANE BUILDING CO., Providence, R.I.           | 4,080.0                 | 0.0            | 63.0                  | 4,143.0       |
| 18           | THE WALSH GROUP LTD., Chicago, Ill.              | 4,034.7                 | 0.0            | 0.0                   | 4,034.7       |
| 19           | AMEC, Tucker, Ga.                                | 745.0                   | 2,978.0        | 0.0                   | 3,723.0       |
| 20           | BLACK & VEATCH, Overland Park, Kan.              | 2,016.0                 | 1,304.9        | 241.6                 | 3,562.5       |

# The Top 50 Program Management Firms

| RANK<br>2014 | FIRM   | 2013 REVENUE IN \$ MIL. |               |               |
|--------------|--|-------------------------|---------------|---------------|
|              |  | DOMESTIC REVENUE        | INT'L REVENUE | TOTAL REVENUE |
| 1            | CH2M HILL, Englewood, Colo.                            | 1,763.7                 | 527.7         | 2,291.5       |
| 2            | BECHTEL, San Francisco, Calif.                         | 1,313.0                 | 5.0           | 1,318.0       |
| 3            | URS CORP., San Francisco, Calif.                       | 1,251.9                 | 51.7          | 1,303.6       |
| 4            | JACOBS, Pasadena, Calif.                               | 555.2                   | 654.9         | 1,210.1       |
| 5            | AECOM TECHNOLOGY CORP., Los Angeles, Calif.            | 493.7                   | 418.9         | 912.6         |
| 6            | PARSONS, Pasadena, Calif.                              | 744.7                   | 98.6          | 843.3         |
| 7            | LEIDOS, Reston, Va.                                    | 510.9                   | 0.0           | 510.9         |
| 8            | PARSONS BRINCKERHOFF, New York, N.Y.                   | 293.2                   | 152.2         | 445.4         |
| 9            | JONES LANG LASALLE, Chicago, Ill.                      | 209.8                   | 214.6         | 424.4         |
| 10           | CBRE INC., Los Angeles, Calif.                         | 215.0                   | 202.8         | 417.8         |
| 11           | HILL INTERNATIONAL, Marlton, N.J.                      | 96.7                    | 304.9         | 401.6         |
| 12           | LOUIS BERGER, Morristown, N.J.                         | 42.2                    | 134.7         | 176.9         |
| 13           | ATKINS NORTH AMERICA / FAITHFUL+GOULD, Tampa, Fla.     | 166.3                   | 10.1          | 176.4         |
| 14           | BURNS & MCDONNELL, Kansas City, Mo.                    | 135.8                   | 0.0           | 135.8         |
| 15           | CDM SMITH, Cambridge, Mass.                            | 73.8                    | 32.0          | 105.7         |
| 16           | BARTON MALOW CO., Southfield, Mich.                    | 100.5                   | 0.0           | 100.5         |
| 17           | BLACK & VEATCH, Overland Park, Kan.                    | 32.3                    | 64.5          | 96.8          |
| 18           | INFRASTRUCTURE CORP. OF AMERICA, Brentwood, Tenn.      | 94.5                    | 0.0           | 94.5          |
| 19           | WORLEYPARSONS GROUP INC., Bellaire, Texas              | 33.1                    | 51.5          | 84.6          |
| 20           | HDR, Omaha, Neb.                                       | 83.3                    | 1.3           | 84.6          |
| 21           | ARCADIS U.S./RTKL, Highlands Ranch, Colo.              | 84.0                    | 0.0           | 84.0          |
| 22           | ANVIL CORP., Bellingham, Wash.                         | 70.0                    | 0.0           | 70.0          |
| 23           | TETRA TECH INC., Pasadena, Calif.                      | 65.0                    | 0.0           | 65.0          |
| 24           | HALMAR INTERNATIONAL, Nanuet, N.Y.                     | 60.0                    | 0.0           | 60.0          |
| 25           | HEERY INTERNATIONAL INC., Atlanta, Ga.                 | 56.1                    | 0.0           | 56.1          |
| 26           | LEND LEASE, New York, N.Y.                             | 41.4                    | 11.9          | 53.3          |
| 27           | TURNER & TOWNSEND INC., New York, N.Y.                 | 36.0                    | 0.0           | 36.0          |
| 28           | RS&H INC., Jacksonville, Fla.                          | 35.3                    | 0.0           | 35.3          |
| 29           | GILBANE BUILDING CO., Providence, R.I.                 | 33.5                    | 0.0           | 34.2          |
| 30           | STANTEC INC., Irvine, Calif.                           | 33.4                    | 0.0           | 33.4          |
| 31           | CASSIDY TURLEY, Washington, D.C.                       | 32.2                    | 0.0           | 32.2          |
| 32           | VANIR CONSTRUCTION MANAGEMENT INC., Sacramento, Calif. | 30.0                    | 0.0           | 30.0          |
| 33           | MCDONOUGH BOLYARD PECK INC., Fairfax, Va.              | 25.4                    | 4.4           | 29.8          |
| 34           | ALPHA CORP., Dulles, Va.                               | 25.0                    | 2.8           | 27.8          |
| 35           | PROJECT TIME & COST LLC, Atlanta, Ga.                  | 23.4                    | 4.2           | 27.6          |
| 36           | HATCH MOTT MACDONALD, Iselin, N.J.                     | 21.9                    | 5.7           | 27.6          |
| 37           | BALFOUR BEATTY US, Dallas, Texas                       | 25.2                    | 0.0           | 25.2          |
| 38           | LEA+ELLIOTT INC., Grand Prairie, Texas                 | 20.0                    | 5.0           | 25.0          |
| 39           | OHL USA INC., New York, N.Y.                           | 25.0                    | 0.0           | 25.0          |
| 40           | CORDOBA CORP., Los Angeles, Calif.                     | 22.6                    | 0.0           | 22.6          |
| 41           | CUSHMAN & WAKEFIELD, New York, N.Y.                    | 7.1                     | 12.7          | 19.8          |
| 42           | DLZ, Columbus, Ohio                                    | 8.7                     | 10.1          | 18.8          |
| 43           | ON-BOARD ENGINEERING CORP., East Windsor, N.J.         | 18.7                    | 0.0           | 18.7          |
| 44           | HOAR PROGRAM MANAGEMENT, Birmingham, Ala.              | 18.2                    | 0.0           | 18.2          |
| 45           | MCKISSACK & MCKISSACK, Washington, D.C.                | 17.3                    | 0.0           | 17.3          |
| 46           | Sgi CONSTRUCTION MANAGEMENT, Pasadena, Calif.          | 17.1                    | 0.0           | 17.1          |
| 47           | PMA CONSULTANTS LLC, Detroit, Mich.                    | 16.9                    | 0.0           | 16.9          |
| 48           | LPCIMINELLI INC., Buffalo, N.Y.                        | 16.9                    | 0.0           | 16.9          |
| 49           | BROADDUS & ASSOCIATES, Austin, Texas                   | 16.4                    | 0.0           | 16.4          |
| 50           | GAFCON INC., San Diego, Calif.                         | 16.2                    | 0.0           | 16.2          |

firms doing a lot of program management work there, but interest in Western management techniques in India is growing,” Richter says.

## Finger-Pointing

While the market for professional services firms is growing, the recession has left its scars. A developing issue is the increasing number of disputes over perceived failures of professional services providers on bad projects. “During any market downturn, there is a tendency for owners to go for the lowest price without regard for qualifications,” says Peck. This mentality has resulted in standard-of-care disputes in cases involving a low-bidding program manager that did not perform to the owner’s satisfaction, he says.

Many CM firms are concerned by the increasing number of claims against construction professionals in the past few years. Some firms say most of the claims are errors-and-omissions claims against designers, but CM firms worry the wave of litigation may hit them, as well.

To avoid disputes, CM firms have to be clear about what duties and responsibilities they are prepared to assume against what the owner’s expectations are, says Peck. He says it is a matter of communication. Further, if client expectations exceed what a firm is prepared to assume for the proposed price, the CM firms should just say no to the project. “You can’t let your marketing side make promises that are not being paid for. You have to have the ethics to tell a client you can’t do the job for that price. Sometimes, the best decision is simply to walk away from an opportunity,” Peck says.

One important development in the professional services arena was the decision last July by ABET (formerly, the Accreditation Board for Engineering and Technology) to make CMAA an ABET member group and invite the organization to develop standards to enhance and improve the quality of education for professional construction management in higher education.

“Most university construction-management programs are offshoots of construction programs where the emphasis is on contracting,” says D’Agostino. Today, professional managers need to be more adept at the soft sciences, such as communication skills and leadership, than calculus, he says.

“The current construction process is becoming more concerned about communication, cooperation and fostering a team environment than which delivery system is being used,” D’Agostino points out. “A construction manager has to be able to break down the silos between various players and get them to work together.” ■

AECOM'S Tishman Construction is PM and CM on phase one of Metropolis, a \$1-billion, mixed-use project in downtown Los Angeles.

# Construction Management-for-Fee and PM Firms

| RANK<br>2014 | 2013 | FIRM  | FIRM<br>TYPE | 2013 REVENUE IN \$ MIL. |                  |
|--------------|------|---|--------------|-------------------------|------------------|
|              |      |   |              | TOTAL REV.<br>(\$ MIL.) | INT'L<br>REVENUE |
| 1            | 1    | BECHTEL, San Francisco, Calif.                    | EC           | 4,382.0                 | 831.0            |
| 2            | 2    | CH2M HILL, Englewood, Colo.                       | EC           | 2,291.5                 | 527.7            |
| 3            | 3    | JACOBS, Pasadena, Calif.                          | AEC          | 1,663.2                 | 884.6            |
| 4            | 4    | URS CORP., San Francisco, Calif.                  | EAC          | 1,613.6                 | 51.7             |
| 5            | 6    | PARSONS, Pasadena, Calif.                         | EC           | 1,066.6                 | 123.5            |
| 6            | 7    | AECOM TECHNOLOGY CORP., Los Angeles, Calif.       | EA           | 912.6                   | 418.9            |
| 7            | 5    | JONES LANG LASALLE, Chicago, Ill.                 | CM           | 848.9                   | 429.2            |
| 8            | 8    | PARSONS BRINCKERHOFF, New York, N.Y.              | EA           | 713.7                   | 211.2            |
| 9            | 9    | HILL INTERNATIONAL, Marlton, N.J.                 | CM           | 576.7                   | 408.7            |
| 10           | 10   | LEIDOS, Reston, Va.                               | EAC          | 516.7                   | 0.0              |
| 11           | 12   | CBRE INC., Los Angeles, Calif.                    | CM           | 470.5                   | 210.8            |
| 12           | 14   | BLACK & VEATCH, Overland Park, Kan.               | EC           | 241.6                   | 162.8            |
| 13           | 11   | LOUIS BERGER, Morristown, N.J.                    | EAP          | 241.3                   | 184.2            |
| 14           | 19   | ATKINS N. AMERICA/FAITHFUL+GOULD, Tampa, Fla.     | CM           | 226.1                   | 11.0             |
| 15           | **   | WOOD GROUP MUSTANG INC., Houston, Texas           | EC           | 180.2                   | 1.8              |
| 16           | 15   | THE TURNER CORP., New York, N.Y.                  | EC           | 140.6                   | 27.0             |
| 17           | 13   | BURNS & MCDONNELL, Kansas City, Mo.               | EAC          | 135.8                   | 0.0              |
| 18           | 16   | ARCADIS U.S./RTKL, Highlands Ranch, Colo.         | E            | 119.0                   | 0.0              |
| 19           | 27   | THE LIRO GROUP, Syosset, N.Y.                     | EA           | 112.0                   | 0.0              |
| 20           | 18   | CDM SMITH, Cambridge, Mass.                       | EC           | 105.7                   | 32.0             |
| 21           | 32   | BARTON MALOW CO., Southfield, Mich.               | EC           | 100.5                   | 0.0              |
| 22           | 23   | INFRASTRUCTURE CORP. OF AMER., Brentwood, Tenn.   | E            | 94.5                    | 0.0              |
| 23           | 29   | CUSHMAN & WAKEFIELD, New York, N.Y.               | CM           | 91.0                    | 64.7             |
| 24           | 36   | CASSIDY TURLEY, Washington, D.C.                  | CM           | 85.7                    | 2.1              |
| 25           | 17   | LEND LEASE, New York, N.Y.                        | C            | 85.3                    | 18.0             |
| 26           | **   | WORLEYPARSONS GROUP INC., Bellaire, Texas         | EC           | 84.6                    | 51.5             |
| 27           | 35   | HDR, Omaha, Neb.                                  | EA           | 84.6                    | 1.3              |
| 28           | 52   | UNIVERSALPEGASUS INT'L INC., Houston, Texas       | EC           | 78.0                    | 8.0              |
| 29           | 22   | HEERY INTERNATIONAL INC., Atlanta, Ga.            | O            | 70.0                    | 0.0              |
| 30           | 37   | ANVIL CORP., Bellingham, Wash.                    | E            | 70.0                    | 0.0              |
| 31           | **   | HALMAR INTERNATIONAL, Nanuet, N.Y.                | EC           | 68.0                    | 0.0              |
| 32           | 30   | BALFOUR BEATTY US, Dallas, Texas                  | C            | 66.5                    | 0.0              |
| 33           | 20   | VANIR CONSTRUCTION MGMT. INC., Sacramento, Calif. | CM           | 66.0                    | 3.3              |
| 34           | 25   | TETRA TECH INC., Pasadena, Calif.                 | E            | 65.0                    | 0.0              |
| 35           | 24   | GILBANE BUILDING CO., Providence, R.I.            | C            | 63.0                    | 0.0              |
| 36           | 26   | HATCH MOTT MACDONALD, Iselin, N.J.                | E            | 59.4                    | 14.8             |
| 37           | 21   | MICHAEL BAKER INTERNATIONAL, Moon Township, Pa.   | EA           | 58.2                    | 2.8              |
| 38           | 33   | CUMMING, San Diego, Calif.                        | CM           | 57.8                    | 2.8              |
| 39           | **   | CAROLLO ENGINEERS INC., Walnut Creek, Calif.      | E            | 57.5                    | 0.0              |
| 40           | 43   | TURNER & TOWNSEND INC., New York, N.Y.            | CM           | 54.8                    | 0.0              |
| 41           | 55   | RS&H INC., Jacksonville, Fla.                     | EA           | 52.2                    | 0.0              |
| 42           | **   | HENSEL PHELPS, Greeley, Colo.                     | C            | 50.7                    | 0.0              |
| 43           | 70   | THE VERTEX COS. INC., Weymouth, Mass.             | CM           | 46.7                    | 1.5              |
| 44           | **   | SKANSKA USA, New York, N.Y.                       | C            | 46.1                    | 0.0              |
| 45           | 40   | MCDONOUGH BOLYARD PECK INC., Fairfax, Va.         | CM           | 44.4                    | 4.4              |
| 46           | 34   | HARRIS & ASSOCIATES INC., Concord, Calif.         | E            | 43.1                    | 0.0              |
| 47           | 31   | VERSAR INC., Springfield, Va.                     | ENV          | 40.9                    | 37.3             |
| 48           | 41   | URBAN ENGINEERS INC., Philadelphia, Pa.           | E            | 40.4                    | 0.0              |
| 49           | 39   | PMA CONSULTANTS LLC, Detroit, Mich.               | CM           | 34.6                    | 0.0              |
| 50           | 47   | GANNETT FLEMING, Harrisburg, Pa.                  | EA           | 34.4                    | 0.0              |

| RANK<br>2014 | 2013 | FIRM  | FIRM<br>TYPE | 2013 REVENUE IN \$ MIL. |                  |
|--------------|------|---|--------------|-------------------------|------------------|
|              |      |   |              | TOTAL REV.<br>(\$ MIL.) | INT'L<br>REVENUE |
| 51           | 75   | STANTEC INC., Irvine, Calif.                        | EAL          | 33.4                    | 0.0              |
| 52           | 42   | KITCHELL CORP., Phoenix, Ariz.                      | EC           | 32.9                    | 0.0              |
| 53           | **   | PLAZA CONSTRUCTION CORP., New York, N.Y.            | C            | 30.8                    | 0.0              |
| 54           | 49   | VALI COOPER AND ASSOCIATES INC., Emeryville, Calif. | CM           | 29.9                    | 0.0              |
| 55           | 44   | ALPHA CORP., Dulles, Va.                            | CM           | 29.8                    | 3.2              |
| 56           | 46   | BOSWELL ENGINEERING, South Hackensack, N.J.         | E            | 28.3                    | 0.0              |
| 57           | 51   | PROJECT TIME & COST LLC, Atlanta, Ga.               | CM           | 27.6                    | 4.2              |
| 58           | 77   | MCCARTHY HOLDINGS INC., St. Louis, Mo.              | C            | 26.0                    | 0.0              |
| 59           | 50   | LEA+ELLIOTT INC., Grand Prairie, Texas              | EA           | 25.0                    | 5.0              |
| 60           | **   | OHL USA INC., New York, N.Y.                        | C            | 25.0                    | 0.0              |
| 61           | 56   | MCKISSACK & MCKISSACK, Washington, D.C.             | AE           | 24.5                    | 0.0              |
| 62           | 63   | GAFCON INC., San Diego, Calif.                      | CM           | 24.2                    | 0.0              |
| 63           | 53   | KLEINFELDER, San Diego, Calif.                      | EA           | 24.0                    | 0.0              |
| 64           | 58   | DLZ, Columbus, Ohio                                 | EA           | 23.2                    | 10.1             |
| 65           | 62   | CORDOBA CORP., Los Angeles, Calif.                  | E            | 23.2                    | 0.0              |
| 66           | 61   | TECTONIC ENG'G & SURVEYING, Mountainville, N.Y.     | E            | 22.7                    | 0.0              |
| 67           | **   | THE PIKE COS. LTD., Rochester, N.Y.                 | EC           | 22.0                    | 0.0              |
| 68           | 60   | METRIC ENGINEERING INC., Miami, Fla.                | E            | 21.9                    | 0.0              |
| 69           | 67   | NV5 HOLDINGS INC., Hollywood, Fla.                  | E            | 21.1                    | 0.0              |
| 70           | **   | HOAR PROGRAM MANAGEMENT, Birmingham, Ala.           | CM           | 20.7                    | 0.0              |
| 71           | 38   | LPCIMINELLI INC., Buffalo, N.Y.                     | C            | 19.5                    | 0.0              |
| 72           | 84   | ON-BOARD ENGINEERING CORP., East Windsor, N.J.      | E            | 18.7                    | 0.0              |
| 73           | 54   | CPM, San Juan, P.R.                                 | CM           | 18.0                    | 1.9              |
| 74           | 90   | KS ENGINEERS PC, Newark, N.J.                       | E            | 18.0                    | 0.0              |
| 75           | 57   | SAVIN ENGINEERS PC, Pleasantville, N.Y.             | CM           | 17.9                    | 0.0              |
| 76           | 65   | SGI CONSTRUCTION MANAGEMENT, Pasadena, Calif.       | CM           | 17.8                    | 0.0              |
| 77           | **   | COTTER CONSULTING INC., Chicago, Ill.               | CM           | 17.7                    | 0.0              |
| 78           | 64   | CSA GROUP, San Juan, P.R.                           | AE           | 17.6                    | 1.1              |
| 79           | **   | SWINERTON INC., San Francisco, Calif.               | C            | 17.5                    | 0.0              |
| 80           | 68   | TARGET ENGINEERING GROUP INC., Coral Gables, Fla.   | CM           | 16.9                    | 0.0              |
| 81           | 85   | POWER ENGINEERS INC., Hailey, Idaho                 | E            | 16.7                    | 2.5              |
| 82           | 74   | BROADDUS & ASSOCIATES, Austin, Texas                | CM           | 16.4                    | 0.0              |
| 83           | 78   | CHANEN CONSTRUCTION CO. INC., Phoenix, Ariz.        | C            | 15.6                    | 0.0              |
| 84           | **   | MWH GLOBAL, Broomfield, Colo.                       | EC           | 15.6                    | 0.0              |
| 85           | 69   | ALLEN & SHARIFF CORP., Columbia, Md.                | EC           | 15.2                    | 15.2             |
| 86           | **   | MARKON SOLUTIONS, Falls Church, Va.                 | CM           | 14.9                    | 0.0              |
| 87           | 48   | NXL CONSTRUCTION SERVICES INC., Richmond, Va.       | CM           | 14.3                    | 0.0              |
| 88           | **   | MORTENSON CONSTRUCTION, Minneapolis, Minn.          | C            | 13.7                    | 0.0              |
| 89           | **   | FLUOR CORP., Irving, Texas                          | EC           | 13.5                    | 13.4             |
| 90           | 81   | KRAUS-ANDERSON CONSTRUCTION, Minneapolis, Minn.     | C            | 13.0                    | 0.0              |
| 91           | **   | CRB, St. Louis, Mo.                                 | C            | 12.7                    | 0.0              |
| 92           | 91   | JACOBS ASSOCIATES, San Francisco, Calif.            | E            | 12.6                    | 0.0              |
| 93           | 99   | THE YATES COS. INC., Philadelphia, Miss.            | EC           | 12.5                    | 0.0              |
| 94           | **   | HR GREEN INC., Cedar Rapids, Iowa                   | EA           | 12.0                    | 0.0              |
| 95           | **   | HUNTER ROBERTS CONSTR. GROUP, New York, N.Y.        | C            | 12.0                    | 0.0              |
| 96           | **   | HASKELL, Jacksonville, Fla.                         | EC           | 11.0                    | 0.0              |
| 97           | 89   | PJ DICK-TRUMBULL-LINDY PAVING, Pittsburgh, Pa.      | C            | 11.0                    | 0.0              |
| 98           | 93   | DANNENBAUM ENGINEERING CORP., Houston, Texas        | E            | 10.9                    | 0.0              |
| 99           | **   | AFG GROUP INC., Herndon, Va.                        | CM           | 10.2                    | 0.0              |
| 100          | **   | BMWC CONSTRUCTORS INC., Indianapolis, Ind.          | C            | 10.0                    | 0.0              |

COMPANIES ARE RANKED BASED ON TOTAL 2013 REVENUE IN \$ MILLIONS FOR CONSTRUCTION-MANAGEMENT OR PROJECT/PROGRAM-MANAGEMENT SERVICES PERFORMED AS A PROFESSIONAL SERVICE FOR A FEE. \*\*=NOT RANKED IN 2013 AMONG THE TOP 100 CMS. KEY TO TYPE OF FIRM: A=ARCHITECT; C=CONTRACTOR; CM=CONSTRUCTION MANAGEMENT FIRM; EC=ENGINEER-CONTRACTOR; ENV=ENVIRONMENTAL FIRM. OTHER COMBINATIONS ARE POSSIBLE.

# ENR THE TOP 500

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NUMBER 36



RENDERING COURTESY OF HOK

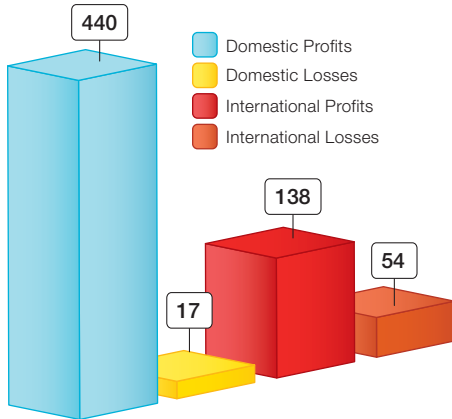
## A Recovery in Need of Speed

The industry recession is slowly fading to a bad memory, but design firms are finding a changed landscape in the market By Gary J. Tulacz

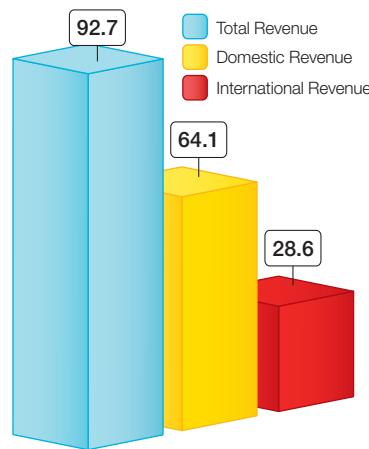


# 2013-2014 at a Glance

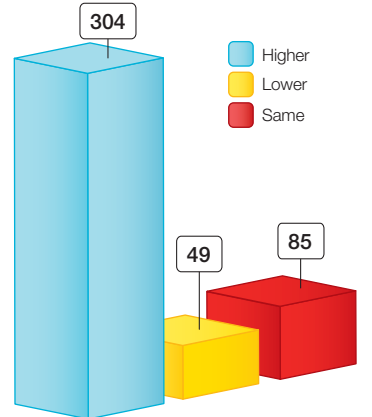
## Number of Firms Reporting Profitability



## Volume (in \$ billions)



## Number of Firms Reporting Size of Backlog



## Comparing the Past Decade's Design Revenue

(in \$ billions) Source: McGraw Hill Construction ENR.



The design profession has been hit hard over the past six years. By some estimates, as many as 40% of architects were unemployed during the height of the recession, in 2009. Engineers fared better but not by much. Everybody did more with less. Now, after several fits and starts over the past few years, the market finally is in recovery mode. It's no bull market, but strength is building. Still, many "lean and mean" project delivery methods born of the recession remain in place.

This slow recovery can be seen in the data from ENR's Top 500 Design Firms list. Taken as a group, the Top 500 firms had design revenue of \$92.69 billion in 2013, up 2.7% from \$90.24 billion in 2012. This marks the third consecutive year the Top 500 experienced revenue growth since the recession began.

Market growth was modest on the domestic side. The Top 500 did see a 3.7% gain, to \$64.13 billion, in revenue from projects in the U.S. in 2013, from \$61.86 billion in 2012. This figure still has not reached the record \$68.14 billion in domestic design revenue generated in 2008. The international market was even softer: Revenue from projects outside the U.S. rose only 0.6%, to \$28.55 billion, in 2013.

Domestically, public-sector markets did not fare well. Revenue from water-supply projects fell 5.6% in 2013 from 2012, and revenue from sewer and waste projects fell 5.1%. Hazardous-waste project revenue



**"I see a slight acceleration in the market, but we shouldn't expect a snap-back recovery."**

George Pierson, CEO, Parsons Brinckerhoff

also was down in 2013, dropping 1.8%. Transportation was a bright spot in the U.S. market, rising 7.5%, to \$14.31 billion, fueled by a series of megaprojects.

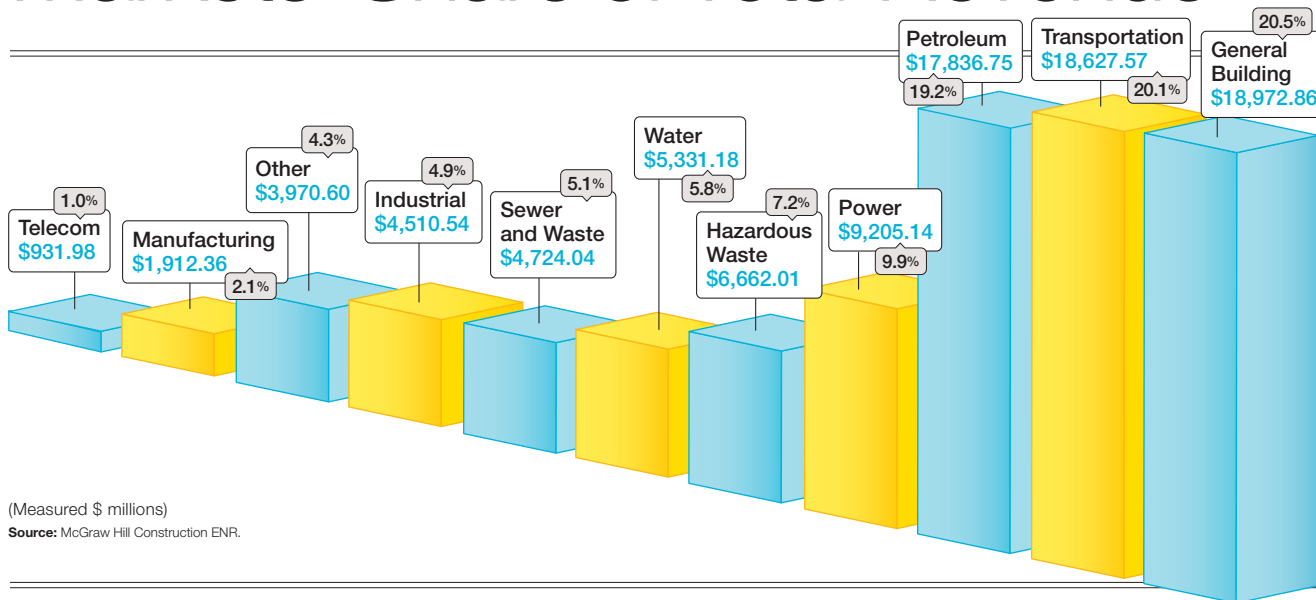
AECOM once again topped ENR's Top 500 Design Firms list, where it has reigned for the past five years. In a major development, Michael S. Burke was named CEO on March 6, 2014, and continues as president. Burke succeeds John M. Dionisio, who becomes executive chairman of the firm.

Jacobs moved up to No. 2 on the list, powered by a series of major acquisitions over the past three years. In 2011, Jacobs acquired Aker Solutions' process-and-construction business, which consists of approximately 4,500 employees in the metals and mining markets. It also acquired KlingStubbins, a 500-person architect-engineer based in Philadelphia.

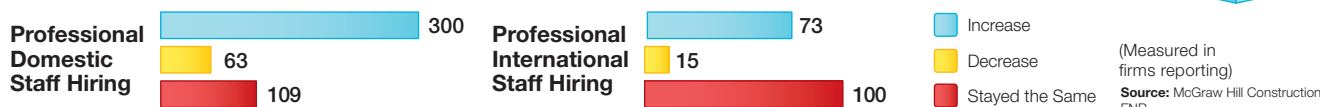
Industry consolidation continued apace in 2013. CB&I acquired Baton Rouge, La.-based Shaw Group in February 2013. Shaw ranked at No. 13 on last year's Top 500. Conestoga-Rovers & Associates, Niagara Falls, N.Y., which ranked at No. 33 on last year's Top 500, declined to participate in this year's survey as it was in the process of being acquired by Australia's GHD. And Jacobs acquired Houston-based Eagleton Engineering LLC, which ranked at No. 198 last year.

"We continue to see large-scale industry consolida-

# Markets' Share of Total Revenue



(Measured \$ millions)  
Source: McGraw Hill Construction ENR.



(Measured in firms reporting)  
Source: McGraw Hill Construction ENR

tion through mergers and acquisitions and are watching that trend carefully,” says Greg Graves, CEO of Burns & McDonnell. “We have done a couple of small acquisitions in recent years but still believe the best path for [us] is through organic growth.”

Many firms are making acquisitions to “buy into markets,” says Chris Vincze, CEO of TRC Cos. He cites as examples the U.K.’s WSP acquiring Alberta, Canada-based Focus Group Holdings, a 1,700-person engineering firm, on March 12, and Australia’s Cardno Ltd. acquiring Houston-based PPI Group, a 760-person firm, on March 17. “Both the acquired firms were in the oil-and-gas sector,” he notes. Vincze says TRC also is on the acquisition trail. “We are growing both internally and through acquisition. We have acquired eight companies in the past three years.”

Overall, the market is recovering, but many firms are hoping for a more robust recovery. However, most firms are not expecting a sudden surge in activity. “I see a slight acceleration in the market, but we shouldn’t expect a snap-back recovery,” says George Pierson, CEO of Parsons Brinckerhoff.

Pierson says a more robust recovery may not be good for the industry, citing the potential for spikes in materials prices and possible labor shortages. “Plus, if the recovery is too quick, we risk another sudden downturn,” he says.

**468**

Top 500 firms that sent in surveys last year.

**69.9%**

Saw revenue increases between 2012 and 2013.

**29.9%**

Saw revenue declines between 2012 and 2013.

## The Drive Toward Alternate Delivery

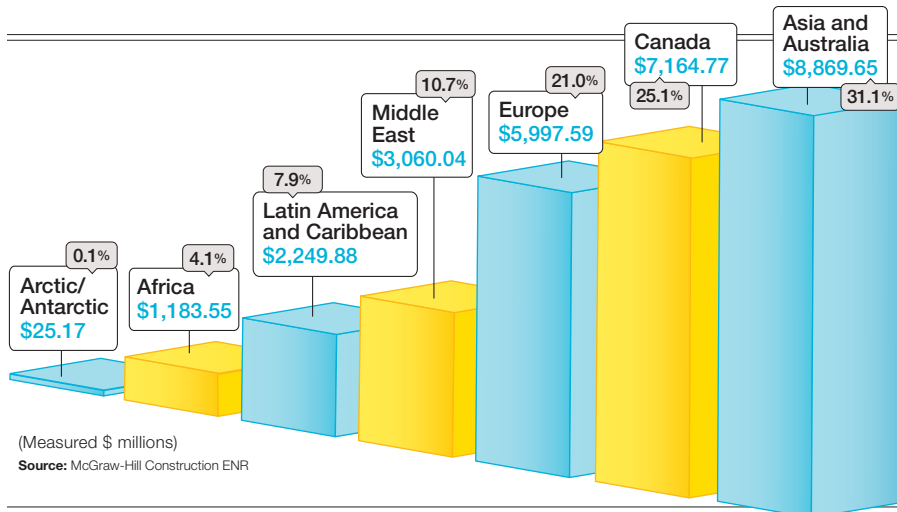
For some firms, the transportation market is thriving. “Transportation is solid for us, to a great extent because we are in the large-project market,” says Robert Slimp, CEO of HNTB Corp. He cites projects such as the Bay Area Rapid Transit Warm Springs extension project in California, the Crenshaw-LAX Transit Corridor Project in Los Angeles and the \$2-billion state Route 99 Tunnel Project in Seattle.

Slimp says many major projects now have multiple funding streams, such as tolling or public-private partnerships. “P3s are growing, and the states now authorizing them should be commended.”

However, many public transportation agencies continue to experience budget uncertainties. To make up for funding shortfalls, more states are resorting to alternate project delivery. “We see alternative funding sources continuing to be the norm at all levels of government,” says L. Joe Boyer, CEO, Atkins North America. He says he expects a recovery in the housing market that will generate more tax revenue, which will allow an increase in funding for municipal infrastructure projects.

“Design-build and P3s, as alternative delivery methods, are changing the landscape of transportation engineering,” says Mark Acuff, president of ICA Engineering. He says the effort to deliver projects

# International Market Analysis



Gensler (No. 20) is the architect and Thornton Tomasetti (No. 85) is the engineer on the 2,073-ft tall Shanghai Tower, which is scheduled to be completed later this year.

more efficiently is a trend “that is rightfully challenging the traditional design-bid-build industry.” Acuff says design firms will be successful if they can maintain separate relationships with the client and the contractor but also work as a team with both.

However, alternate project delivery is having an impact on smaller infrastructure design firms. “It is good for larger players as they are better positioned to assume that level of risk,” says Pierson. He notes that preparing bids on design-build transportation projects is not cheap. “There is a greater risk, but there is also the prospect for greater reward,” he says. But Pierson admits that smaller firms may not be positioned to assume that level of risk.

Slimp says smaller firms have to be able to assess the amount of risk they are willing to assume when bidding on design-build projects. “But there still is plenty of room for smaller firms through joint ventures, teams and other vehicles. For example, we have 150 engineers on the Crenshaw line project,” he says.

Not everyone agrees that design-build is always the answer. “Alternate delivery is being introduced to the infrastructure market as the panacea for all ailments,” says Tony Mardam, vice president of Stanley Consultants. He says design-build, P3s or design-build-operate project delivery may offer benefits in some cases, but “the medicine is not universal to solve all the challenges.”

For many designers, design-build and other delivery methods can put pressure on designers that are not used to working in teams. “With lower levels of funding, contractual relationships are constantly tested,” says Boyer. “That being said, our client relationships are generally solid in spite of contractual pressures.”



“We launched our AECOM Capital operation in early 2013 to help provide direct investment in certain projects to help get them started.”

Vahid Ownjazayeri, CEO, Global Civil Infrastructure, AECOM

With the scramble by clients for funding alternatives, some larger firms are getting more actively involved in assisting them in securing project financing. “We’re noticing an uptick, especially in the United States, of clients who are looking to engineering and construction firms for guidance on financing for projects,” says Vahid Ownjazayeri, group CEO, global civil infrastructure, for AECOM. “In addition to our work advising clients on public-private partnerships and other forms of alternative delivery, we launched our AECOM Capital operation in early 2013 to help provide direct investment in certain projects to help get them started—projects that can also benefit from AECOM’s other offerings.”

Ownjazayeri says AECOM Capital investments have helped enable the start-up of more than \$900 million in projects that are currently under way, including high-rise residential mixed-use projects in New York City and Los Angeles. “This model also could enable more activity at the construction joint-venture level on infrastructure design-build projects.”

Slimp and other firms in the infrastructure market are excited about states assuming a greater role in funding transportation programs. “Some states are seeing rewards for local funding of transportation programs, and there hasn’t been much fallout from the new taxes and fees to support them,” says Slimp. He cites Pennsylvania and Virginia as two states that have been at the forefront of such programs.

## Federal Funding Needed

However, most designers in the transportation market say a federal funding bill is necessary to ensure adequate funding levels for long-term projects. “I really

can't predict it, but I would suggest that we are better positioned for a federal transportation bill now than the last time it came up," says Pierson. He says there is more bipartisan support in Congress as members realize investment in infrastructure is necessary for the nation's economic health.

Failure to do long-term planning and construction of infrastructure projects could have a devastating impact. "The transportation business keeps rumbling along, but it is truly time for a comprehensive strategy to address the chronic underfunding of our nation's infrastructure," says Ruth Bonsignore, senior vice president at Vanasse Hangen Brustlin.

Bonsignore says engineers are problem solvers who figure out ways to keep the system going even with inadequate resources. "I sometimes wonder, in working so hard to patch things together, if the planning and engineering community is being an accessory to the demise by neglect of our infrastructure system," says Bonsignore. The industry must come together to articulate the full needs of a 21st-century transportation system and educate the public on this topic, she says.

On the water-and-wastewater side, firms have seen their clients struggle. "It has been a very difficult few years for the U.S. public sector, and many agencies are still working on improving their balance sheets, prioritizing deferred investments and returning cash to reserve funds," says Alan J. Krause, CEO of MWH Global. He says funding pressures will result in a shift from asset creation to asset optimization, "integrating sophisticated data modeling to creatively improve service levels and operational efficiencies of the existing system."

Many firms believe the growing concern over climate change is spurring activity. "On the water-resources side, we expect that, with climate change and extreme weather patterns like droughts or floods, cities and regional water agencies will revise their planning," says Mardam of Stanley Consultants. "Whether we are looking at flood mitigation in the Midwest or drought-response measures, including needs for more water in the West, America needs to recalibrate its water-resources strategy."

Failure to fund the water sector may have wide-ranging impacts. "The drought in the western U.S. could have some negative effects on the overall economy if hydropower cannot keep up and there are electrical shortages," says Eric Keen, HDR vice chairman.

### Uneven Building Sector

The general buildings market has been growing but unevenly. "Corporations have an enormous amount of

Technology | By Gary J. Tulacz

## WHPacific Scans the Horizon



When moviegoers watched the film "Walking With Dinosaurs 3D" (above), which premiered on Dec. 20, 2013, they were not just seeing the work of gifted computer animators—they also were seeing the work of WHPacific Inc. (**No. 202**), an engineering and surveying firm. Many background scenes in the film were digital manipulations of mobile-mapping images generated by WHPacific from the Denali National Forest in Alaska.

WHPacific is a 400-person engineering firm with a 100-person surveying group. It is wholly owned by NANA Regional Corporation Inc., an Alaska Native corporation. "We were contacted by Evergreen Studios, the film's producer, to generate computer images of wilderness areas both in Alaska and in New Zealand," says Dan Wobbe, WHPacific's business development manager. NANA also has an ownership stake in Evergreen.

WHPacific had a team digitally capture about 10 sq miles of the Denali forest using LiDAR technology, a light-sensing, remote-scanning system. "We used trucks, boats and all-terrain vehicles to map and model the terrain to create the digital images and then synced them with the camera movements in the dinosaur animations in the [story's] foreground," Wobbe says.

This innovative use of LiDAR and mobile mapping is nothing new for WHPacific. "We were one of the first engineering firms to use it, which was over five years ago," says Jason Keck, vice president of surveying and mapping. He notes that the firm

is using LiDAR for projects as diverse as highways, irrigation systems, and facility operations and maintenance.

WHPacific used LiDAR to scan part of Los Angeles' I-405 freeway to identify problems as part of the Sepulveda Pass widening project. "We took a LiDAR truck out at midnight and were able to scan 19 miles in one night," says Eric DeLeon, director of LiDAR technology at WHPacific. No surveyors were put at risk, and traffic was unimpeded. The scans assisted in the early reopening of that I-405 section, avoiding what the press had predicted would be "Carmageddon" (ENR 7/25/11 p. 8).

The firm is pushing mobile mapping further. "We are now doing digitized images of facilities, [such as] hospitals and airport terminals, to help owners to decide where to make repairs or expand their facilities," DeLeon says.

For example, using conventional GPS data, WHPacific was hired to do a digital scan of the parking structure at Boise Airport to prepare a topographic base map of the structure in anticipation of a proposed expansion. Further, Wobbe says San Diego Gas & Electric has embraced LiDAR imaging to examine its maintenance and upgrade needs.

Wobbe says the market for LiDAR is growing rapidly. "The hardware and software for handling and manipulating the immense amount of data supplied by LiDAR is finally catching up," he says. "It is faster, cheaper and safer than traditional surveying methods." ■



# The Top 20 Design Firms by Sector

| 1    |    | <b>INDUSTRIAL PROCESS/<br/>PETROLEUM</b>                     |      |
|------|----|--|------|
|      |    | Top 20 Revenue: \$18.7 Billion<br>Top 20 Market Share: 83.6% |      |
| RANK |    | 2014   | 2013 |
| 1    | 1  | FLUOR CORP.  |      |
| 2    | 2  | JACOBS   |      |
| 3    | 3  | BECHTEL  |      |
| 4    | 5  | KBR  |      |
| 5    | 4  | AMEC   |      |
| 6    | 8  | WOOD GROUP MUSTANG INC.                                      |      |
| 7    | 9  | WORLEYPARSONS GROUP INC.                                     |      |
| 8    | 7  | CB&I   |      |
| 9    | 6  | URS CORP.  |      |
| 10   | 11 | CH2M HILL  |      |
| 11   | 17 | TETRA TECH INC.  |      |
| 12   | 10 | S&B ENGINEERS & CONSTRUCTORS LTD.                            |      |
| 13   | 13 | CDI CORP.  |      |
| 14   | 16 | WILLBROS GROUP INC.  |      |
| 15   | 19 | GULF INTERSTATE ENGINEERING CO.                              |      |
| 16   | 18 | AEGION CORP.   |      |
| 17   | 15 | CARDNO   |      |
| 18   | 20 | UNIVERSALPEGASUS INTERNATIONAL INC.                          |      |
| 19   | ** | BURNS & MCDONNELL  |      |
| 20   | ** | BUREAU VERITAS   |      |

| 2    |    | <b>TRANSPORTATION</b>   |      |
|------|----|---|------|
|      |    | Top 20 Revenue: \$12.21 Billion<br>Top 20 Market Share: 65.5% |      |
| RANK |    | 2014  | 2013 |
| 1    | 1  | AECOM TECHNOLOGY CORP.  |      |
| 2    | 2  | URS CORP.   |      |
| 3    | 3  | PARSONS BRINCKERHOFF  |      |
| 4    | 4  | CH2M HILL   |      |
| 5    | 6  | JACOBS  |      |
| 6    | 5  | HNTB COS.   |      |
| 7    | 8  | PARSONS   |      |
| 8    | 7  | HDR   |      |
| 9    | 9  | LOUIS BERGER  |      |
| 10   | 17 | STANTEC INC.  |      |
| 11   | 13 | T.Y. LIN INTERNATIONAL  |      |
| 12   | 11 | STV GROUP INC.  |      |
| 13   | 12 | MICHAEL BAKER INTERNATIONAL                                   |      |
| 14   | 15 | HATCH MOTT MACDONALD  |      |
| 15   | 16 | KIMLEY-HORN AND ASSOCIATES INC.                               |      |
| 16   | 20 | AMEC  |      |
| 17   | 14 | TRANSYSTEMS CORP.   |      |
| 18   | 10 | ATKINS NORTH AMERICA  |      |
| 19   | 19 | CDM SMITH   |      |
| 20   | ** | GANNETT FLEMING   |      |

| 3    |    | <b>GENERAL<br/>BUILDING</b>                                  |      |
|------|----|--|------|
|      |    | Top 20 Revenue: \$8.86 Billion<br>Top 20 Market Share: 46.7% |      |
| RANK |    | 2014   | 2013 |
| 1    | 1  | AECOM TECHNOLOGY CORP.                                       |      |
| 2    | 3  | JACOBS   |      |
| 3    | 2  | GENSLER  |      |
| 4    | 4  | URS CORP.  |      |
| 5    | 5  | HDR  |      |
| 6    | 7  | HOK  |      |
| 7    | 6  | PERKINS+WILL   |      |
| 8    | 8  | SKIDMORE OWINGS & MERRILL LLP                                |      |
| 9    | 11 | HKS INC.   |      |
| 10   | 10 | PARSONS BRINCKERHOFF   |      |
| 11   | 18 | PARSONS  |      |
| 12   | 13 | CANNON DESIGN  |      |
| 13   | 12 | ARCADIS U.S./RTKL  |      |
| 14   | 14 | NBBJ   |      |
| 15   | 15 | TERRACON CONSULTANTS INC.                                    |      |
| 16   | ** | KIMLEY-HORN AND ASSOCIATES INC.                              |      |
| 17   | 17 | SMITHGROUPJJR  |      |
| 18   | ** | CALLISON   |      |
| 19   | 16 | STANTEC INC.   |      |
| 20   | ** | PERKINS EASTMAN  |      |

pent-up capital that we are seeing released in new projects,” says Mark Chen, senior vice president at Heery. He says health-care spending has been cautious as clients are retooling for the future, which requires changes to their physical plants.

However, state-funded work, especially higher education, remains relatively slow, and larger health-care capital projects are relatively less common due to health-care client concern about their future business, says Phil Harrison, CEO of Perkins+Will. “The health-care market has moved away from the mega-projects and into more renovation and repositioning of current space,” says Carl Roehling, SmithGroupJJR CEO. Further, one of the hottest building markets, multi-unit residential, may be nearing the saturation point, says J. Peter Devereaux, president of Harley Ellis Devereaux.

Sustainability continues to be a major factor in the market. Callison recently introduced Matrix by Callison (Matrix.Callison.com), a free, online sustainability design tool. “With easy online access and user-friendly navigation, Matrix by Callison evaluates more than 80 specific strategies for design performance, serving to identify the top strategies for any given project anywhere in the world,” says John Jastrem, CEO.

Jastrem says the firm has used the tool internally



**“I wonder, in working so hard to patch things together, if the planning and engineering community is being an accessory to the demise by neglect of our infrastructure.”**

Ruth Bonsignore, Senior Vice President, Vanasse Hangen Brustlin

for the past six years on more than 90 projects—accounting for more than 18 million sq meters. “We are sharing it with the industry because we believe this is a key tool that can have a big impact on the sustainable-design industry globally,” he says.

Another trend with commercial clients reflects changes in work-space planning. “Increased density within office buildings continues to be a factor in the office market,” says Steve M. Smith, Cooper Carry principal. He says companies are reducing their real estate costs by putting more people in less space. “Owners will need to keep an eye on the increasing populations within their office buildings because the increased densities can impact the performance of building systems, such as elevators and mechanical, electrical and plumbing systems.”

This trend also means more opportunities for redesigning and rehabilitating existing facilities. “Instead of creating office space, many developers and owners are looking at repositioning their existing portfolio. In our D.C. office, we are currently involved in projects that repurpose older office buildings for educational, hospitality and residential uses,” says Smith.

Alternate project delivery has become an increasing presence in the buildings markets. Some design firms are reacting to take advantage of this trend. “Burns &

| 4    |      | POWER  |  |
|------|------|--|--|
| RANK |      | Top 20 Revenue: \$7.13 Billion<br>Top 20 Market Share: 77.4% |  |
| 2014 | 2013 |  |  |
| 1    | **   | CB&I   |  |
| 2    | 1    | AECOM TECHNOLOGY CORP.                                       |  |
| 3    | 3    | BLACK & VEATCH   |  |
| 4    | 5    | BURNS & MCDONNELL  |  |
| 5    | 4    | SARGENT & LUNDY LLC  |  |
| 6    | 7    | TETRA TECH INC.  |  |
| 7    | 6    | BECHTEL  |  |
| 8    | 8    | URS CORP.  |  |
| 9    | 11   | JACOBS   |  |
| 10   | 10   | AMEC   |  |
| 11   | 9    | PARSONS BRINCKERHOFF   |  |
| 12   | 15   | POWER ENGINEERS INC.   |  |
| 13   | 14   | ZACHRY HOLDINGS INC.   |  |
| 14   | 18   | ENERCON SERVICES INC.  |  |
| 15   | 12   | KIEWIT CORP.   |  |
| 16   | 17   | HDR  |  |
| 17   | 20   | TRC COS. INC.  |  |
| 18   | 16   | WORLEYPARSONS GROUP INC.                                     |  |
| 19   | **   | THE BABCOCK & WILCOX CO.                                     |  |
| 20   | **   | KBR  |  |

| 5    |      | HAZARDOUS WASTE  |  |
|------|------|--|--|
| RANK |      | Top 20 Revenue: \$5.65 Billion<br>Top 20 Market Share: 84.8% |  |
| 2014 | 2013 |  |  |
| 1    | 1    | URS CORP.  |  |
| 2    | 2    | ARCADIS U.S./RTKL  |  |
| 3    | 5    | CH2M HILL  |  |
| 4    | 3    | AECOM TECHNOLOGY CORP.                                       |  |
| 5    | 4    | TETRA TECH INC.  |  |
| 6    | 11   | JACOBS   |  |
| 7    | 9    | PARSONS  |  |
| 8    | 7    | BECHTEL  |  |
| 9    | 12   | AMEC   |  |
| 10   | 13   | TRC COS. INC.  |  |
| 11   | 10   | FLUOR CORP.  |  |
| 12   | 14   | WESTON SOLUTIONS INC.  |  |
| 13   | 16   | KLEINFELDER  |  |
| 14   | 15   | GEOSYNTEC CONSULTANTS  |  |
| 15   | 17   | CDM SMITH  |  |
| 16   | **   | CB&I   |  |
| 17   | 19   | BROWN AND CALDWELL   |  |
| 18   | 18   | CARDNO   |  |
| 19   | 20   | TERRACON CONSULTANTS INC.                                    |  |
| 20   | **   | HALEY & ALDRICH INC.   |  |

| 6    |      | WATER  |  |
|------|------|--|--|
| RANK |      | Top 20 Revenue: \$3.98 Billion<br>Top 20 Market Share: 74.7% |  |
| 2014 | 2013 |  |  |
| 1    | 1    | TETRA TECH INC.  |  |
| 2    | 3    | AECOM TECHNOLOGY CORP.                                       |  |
| 3    | 2    | CH2M HILL  |  |
| 4    | 5    | MWH GLOBAL   |  |
| 5    | 4    | URS CORP.  |  |
| 6    | 7    | BLACK & VEATCH   |  |
| 7    | 8    | CDM SMITH  |  |
| 8    | 6    | HDR  |  |
| 9    | 9    | ARCADIS U.S./RTKL  |  |
| 10   | 10   | JACOBS   |  |
| 11   | 14   | MICHAEL BAKER INTERNATIONAL                                  |  |
| 12   | 12   | STANTEC INC.   |  |
| 13   | 11   | AMEC   |  |
| 14   | 15   | CAROLLO ENGINEERS INC.                                       |  |
| 15   | **   | BROWN AND CALDWELL   |  |
| 16   | **   | KBR  |  |
| 17   | **   | LOUIS BERGER   |  |
| 18   | 18   | DEWBERRY   |  |
| 19   | 20   | HAZEN AND SAWYER PC  |  |
| 20   | 13   | ATKINS NORTH AMERICA   |  |

McDonnell created [in 2013] a department within our construction group that is focused on commercial projects such as retail, office buildings and similar facilities, and we believe our ability to dedicate integrated design teams of architects, engineers and construction managers will be very important,” says Graves.

“Integrated project delivery continues to grow as the preferred delivery method for owners, so it is important that we continue to strengthen our design and construction capabilities and build strong partnerships with contractors, financiers and other consultants,” says Keen of HDR. “We must bring additional value to the team, outside of traditional design expertise.”

But for many architects, this trend toward design-build means fighting to maintain their role in safeguarding the design against budgetary pressures by the rest of the team. “Page is fiercely determined to advocate for the quality of the built environment through our vital leadership role of the design process on these ‘conglomerate’ teaming arrangements, regardless of the manner in which that quality is measured,” says James M. Wright, senior principal of Page. Wright says design firms with experience in design-build and P3 teams in the buildings market are best positioned to safeguard the design.

In the wake of several natural disasters, especially



“Opportunities in [the oil-and-gas] sector develop quickly, move fast and require a certain entrepreneurial streak.”

Alan J. Krause, CEO, MWH Global

the flooding and blackouts in the New York City metropolitan area that came in the wake of 2012’s Superstorm Sandy, building designers are becoming more focused on building resiliency. “Designers will focus on creating buildings that account for the possibility of natural disasters,” says Harrison of Perkins+Will.

**Boomtown**

The U.S. shale oil-and-gas boom has drawn many design firms, but the market is not for the faint of heart. “The opportunities in this sector develop quickly, move fast and require a certain entrepreneurial streak,” says Krause of MWH Global. “This approach to growth and risk management has created some exciting opportunities for us, and we continue to have a bullish view on opportunities in this sector.”

The oil-and-gas boom in the U.S. is making an impact on the international market, too. “India has announced a portfolio of LNG import terminals in the planning stage,” says Dean Oskvig, CEO of Black & Veatch Energy. He says these terminals are designed to take advantage of the opportunity to import cheap gas from the U.S. “I believe at least five of these terminals will be built in the next 10 years,” he predicts.

The pipeline market also is booming. “We are still waiting for word from the [Obama] administration on

# The Top 20 Design Firms by Sector

| 7    |      | SEWER AND WASTE  |  |
|------|------|--|--|
| RANK |      | Top 20 Revenue: \$3.11 Billion<br>Top 20 Market Share: 65.9% |  |
| 2014 | 2013 |  |  |
| 1    | 1    | CH2M HILL  |  |
| 2    | 2    | MWH GLOBAL   |  |
| 3    | 3    | AECOM TECHNOLOGY CORP.                                       |  |
| 4    | 7    | CDM SMITH  |  |
| 5    | 4    | TETRA TECH INC.  |  |
| 6    | 6    | HDR  |  |
| 7    | 9    | BROWN AND CALDWELL   |  |
| 8    | 8    | BLACK & VEATCH   |  |
| 9    | 5    | URS CORP.  |  |
| 10   | 10   | ARCADIS U.S./RTKL  |  |
| 11   | 11   | HAZEN AND SAWYER PC  |  |
| 12   | 14   | PARSONS  |  |
| 13   | 12   | SCS ENGINEERS  |  |
| 14   | 13   | CAROLLO ENGINEERS INC.                                       |  |
| 15   | 16   | JACOBS   |  |
| 16   | 15   | GREELEY AND HANSEN LLC                                       |  |
| 17   | 18   | STANTEC INC.   |  |
| 18   | 20   | HATCH MOTT MACDONALD   |  |
| 19   | 17   | AMEC   |  |
| 20   | **   | WOODARD & CURRAN   |  |

| 8    |      | MANUFACTURING  |  |
|------|------|--|--|
| RANK |      | Top 20 Revenue: \$1.58 Billion<br>Top 20 Market Share: 82.6% |  |
| 2014 | 2013 |  |  |
| 1    | 1    | JACOBS   |  |
| 2    | 6    | M+W U.S. INC.  |  |
| 3    | 3    | TETRA TECH INC.  |  |
| 4    | 4    | CH2M HILL  |  |
| 5    | 2    | URS CORP.  |  |
| 6    | 12   | FLUOR CORP.  |  |
| 7    | 7    | GHAFARI ASSOCIATES LLC                                       |  |
| 8    | 9    | AMEC   |  |
| 9    | 11   | CDI CORP.  |  |
| 10   | 5    | SSEO GROUP   |  |
| 11   | 10   | BUREAU VERITAS   |  |
| 12   | **   | KBR  |  |
| 13   | 16   | CHA CONSULTING INC.  |  |
| 14   | 17   | RCM TECHNOLOGIES INC.  |  |
| 15   | 13   | MIDDOUGH INC.  |  |
| 16   | 18   | RS&H INC.  |  |
| 17   | 15   | GOLDER ASSOCIATES INC.                                       |  |
| 18   | **   | WSP USA  |  |
| 19   | 19   | BURNS & MCDONNELL  |  |
| 20   | **   | PROCESS PLUS LLC   |  |

| 9    |      | TELECOMMUNICATIONS  |  |
|------|------|---|--|
| RANK |      | Top 20 Revenue: \$737.6 Million<br>Top 20 Market Share: 79.1% |  |
| 2014 | 2013 |   |  |
| 1    | 1    | BLACK & VEATCH  |  |
| 2    | 2    | BECHTEL   |  |
| 3    | 3    | PARSONS   |  |
| 4    | 5    | JACOBS  |  |
| 5    | 6    | SYSKA HENNESSY GROUP  |  |
| 6    | 4    | EXP US SERVICES INC.  |  |
| 7    | 7    | KCI TECHNOLOGIES INC.   |  |
| 8    | 10   | GPD GROUP   |  |
| 9    | 8    | MORRISON HERSHFIELD   |  |
| 10   | 9    | CORGAN  |  |
| 11   | **   | VANDERWEIL ENGINEERS  |  |
| 12   | 11   | GENSLER   |  |
| 13   | 19   | CH2M HILL   |  |
| 14   | 15   | TECTONIC ENGINEERING & SURVEYING                              |  |
| 15   | 12   | URS CORP.   |  |
| 16   | 13   | MICHEL'S CORP.  |  |
| 17   | **   | ALFA TECH CONSULTING ENTERPRISES INC.                         |  |
| 18   | 18   | PAGE  |  |
| 19   | 16   | KADRMAS LEE & JACKSON INC. (KLJ)                              |  |
| 20   | 14   | POWER ENGINEERS INC.  |  |

the Keystone XL pipeline project,” says Vincze of TRC. “However, considering the amount of pipeline projects that are in the permitting stage, if they all get approved and funded, there will be a serious shortage of people to do the work in two to three years,” he says.

The oil-and-gas revolution in the U.S. has led to an increase in industrial and manufacturing projects as more corporate clients see low energy prices as a spur to expansion in this country. “We are seeing increased activity in manufacturing, industrial and oil-and-gas work,” says Jim Moos, Leidos Engineering Solutions group president. He says manufacturing activity in consumer-product and food-and-beverage projects is particularly high, and industrial work continues to increase in the chemicals market.

“Our clients are demanding much more flexible solutions as the fracking boom continues to keep feedstock pricing low,” says Bill Wasilewski, executive vice president, CDI Corp. “We’ve seen double-digit revenue growth as clients look for ways to boost production from existing facilities.”

International firms also are moving to the U.S. to establish manufacturing and industrial facilities to take advantage of low energy prices. “We’ve also seen an influx of European firms establishing facilities in the U.S., leveraging our abundant feedstock supplies and



“Considering the amount of pipeline projects in the permitting stage, if they all get approved and funded, there will be a serious shortage of people to do the work.”

Chris Vincze, CO, TRC Cos.

superior distribution infrastructure,” says Wasilewski. He says this influx is reshaping the entire industrial-process market and creating unprecedented mid-stream design demand. “This also flows over into the chemicals markets as owners seek to create value-added products for use in domestic U.S. production as well as for export. Engineering creativity and flexibility is at a premium in this environment,” says Wasilewski.

### Plugging In

One of the more uncertain major markets is power. Capacity demand has not expanded as fast as many expected. Also, federal environmental regulations are putting pressure on coal-fired plants. “The U.S. power demand is still close to pre-2008 levels. Until the U.S. economy gets into full gear, engineering-services companies will continue to focus on well-targeted power-generation engineering opportunities,” says Keith Roe, chairman of Burns & Roe Group.

“Power providers are having to react and respond to a number of threats [that] are causing a number of structural changes,” says Graves. He says these threats range from physical and cyber attacks to preparation for weather events to economic threats caused by large energy consumers leaving the system. “That certainly creates a market opportunity for us as we help our util-

# The Top 50 Designers in International Markets

| RANK |      |                          |
|------|------|--------------------------|
| 2014 | 2013 |                          |
| 1    | 4    | JACOBS                   |
| 2    | 1    | FLUOR CORP.              |
| 3    | 2    | AECOM TECHNOLOGY CORP.   |
| 4    | 3    | AMEC                     |
| 5    | 5    | BECHTEL                  |
| 6    | 7    | CH2M HILL                |
| 7    | 6    | KBR                      |
| 8    | 8    | URS CORP.                |
| 9    | 9    | PARSONS BRINCKERHOFF     |
| 10   | 10   | CB&I                     |
| 11   | 11   | TETRA TECH INC.          |
| 12   | 16   | WOOD GROUP MUSTANG INC.  |
| 13   | 13   | WORLEYPARSONS GROUP INC. |
| 14   | 12   | MWH GLOBAL               |
| 15   | 14   | BLACK & VEATCH           |
| 16   | 19   | PARSONS                  |
| 17   | 15   | LOUIS BERGER             |

| RANK |      |                                 |
|------|------|---------------------------------|
| 2014 | 2013 |                                 |
| 18   | 20   | GENSLER                         |
| 19   | 25   | HDR                             |
| 20   | 27   | CDI CORP.                       |
| 21   | 24   | HATCH MOTT MACDONALD            |
| 22   | 26   | ARCADIS U.S./RTKL               |
| 23   | 23   | SKIDMORE OWINGS & MERRILL LLP   |
| 24   | 28   | T.Y. LIN INTERNATIONAL          |
| 25   | 22   | HOK                             |
| 26   | 29   | CDM SMITH                       |
| 27   | 30   | KOHN PEDERSEN FOX ASSOCIATES PC |
| 28   | **   | WOODS BAGOT                     |
| 29   | 31   | AEGION CORP.                    |
| 30   | 32   | MORRISON HERSHFIELD             |
| 31   | 35   | ENVIRON HOLDINGS INC.           |
| 32   | 43   | CALLISON                        |
| 33   | 34   | PERKINS+WILL                    |
| 34   | **   | AUSENCO                         |

| RANK |      |                                     |
|------|------|-------------------------------------|
| 2014 | 2013 |                                     |
| 35   | 39   | SARGENT & LUNDY LLC                 |
| 36   | 36   | THE BABCOCK & WILCOX CO.            |
| 37   | 42   | WATG / WIMBERLY INTERIORS           |
| 38   | 37   | BURNS AND ROE GROUP INC.            |
| 39   | 50   | NBBJ                                |
| 40   | 40   | CANNON DESIGN                       |
| 41   | 41   | ECOLOGY & ENVIRONMENT INC.          |
| 42   | **   | UNIVERSALPEGASUS INTERNATIONAL INC. |
| 43   | **   | THE LAUREN CORP.                    |
| 44   | 47   | GEOSYNTEC CONSULTANTS               |
| 45   | 46   | PAGE                                |
| 46   | **   | FUGRO                               |
| 47   | 51   | PERKINS EASTMAN                     |
| 48   | **   | THORNTON TOMASETTI INC.             |
| 49   | 49   | MULVANNY2 ARCHITECTURE              |
| 50   | 44   | BURNS & MCDONNELL                   |

ity and energy clients work through these challenges.”

Nuclear power showed signs of a major expansion five years ago. But the market now is in flux due to the growing availability and low cost of local natural-gas supplies as well as concerns stemming from the Fukushima nuclear-plant meltdown.

The soft market for nuclear power and the increasing emphasis on cheap, gas-fired plants has some firms in that sector refocusing their strategy. For example, approximately 40% of Altran North America’s revenue traditionally came from the nuclear-power-plant sector, says Thomas Foley, CEO. “We have had to aggressively compete to increase market share within nuclear and also quickly adjust to increase efforts in the oil-and-gas and power-delivery sectors, which we believe will be the primary growth areas over the next decade.”

However, many firms in that market predict nuclear power will continue to be a factor in the U.S. “We do a lot of planning and consulting for existing nuclear plants,” says Oskvig of Black & Veatch Energy. He says there are a lot of plans on the boards for new plants, but utilities are waiting to see how the new nuclear plants currently under construction work out before committing to any more new plants.

But Oskvig says he is confident in the future of U.S. nuclear power. “Keep in mind, nuclear plants provide about 20% of the total U.S. generating capacity. To maintain that ratio as demand continues to rise, another 15 to 20 new plants will have to come on line in the next 20 years.”

Project delivery changes also are affecting the power market. “During the past 10 years, the power-generation project-delivery approach gradually shifted to turnkey [engineer-procure-construct]. Now, almost all new generation projects are executed on an EPC basis,” says Roe. “In the past, owners hired Burns and Roe as their detailed design engineer. We are now aligning ourselves with selected EPC contractors.”

Transmission and distribution (T&D) continues to be a hot market. “There is a lot of capital spending on T&D and utility infrastructure,” says Vincze of TRC. He says the Federal Energy Regulatory Commission

**Buildings**

Kohn Pedersen Fox (No. 67) designed the Riverside 66 retail project in Tianjin, China; it is scheduled to open in September 2014. The 1.6-million-sq-ft structure is 1,150 ft long and six stories tall. ■

# The Top 100 Pure Designers

| RANK | FIRM                                  | FIRM TYPE |
|------|---------------------------------------|-----------|
| 1    | AECOM TECHNOLOGY CORP.                | EA        |
| 2    | PARSONS BRINCKERHOFF                  | EA        |
| 3    | WORLEYPARSONS GROUP INC.              | EC        |
| 4    | ARCADIS U.S./RTKL                     | E         |
| 5    | GENSLER                               | A         |
| 6    | HNTB COS.                             | EA        |
| 7    | STANTEC INC.                          | EAL       |
| 8    | LOUIS BERGER                          | EAP       |
| 9    | CDI CORP.                             | EA        |
| 10   | CARDNO                                | E         |
| 11   | SARGENT & LUNDY LLC                   | E         |
| 12   | FUGRO                                 | GE        |
| 13   | TRC COS. INC.                         | E         |
| 14   | HATCH MOTT MACDONALD                  | E         |
| 15   | KIMLEY-HORN AND ASSOCIATES INC.       | E         |
| 16   | BUREAU VERITAS                        | E         |
| 17   | TERRACON CONSULTANTS INC.             | E         |
| 18   | HOK                                   | AE        |
| 19   | ATKINS NORTH AMERICA                  | AE        |
| 20   | PERKINS+WILL                          | A         |
| 21   | KLEINFELDER                           | EA        |
| 22   | SKIDMORE OWINGS & MERRILL LLP         | AE        |
| 23   | STV GROUP INC.                        | EA        |
| 24   | T.Y. LIN INTERNATIONAL                | EA        |
| 25   | DEWBERRY                              | EA        |
| 26   | BROWN AND CALDWELL                    | EC        |
| 27   | ENVIRON HOLDINGS INC.                 | ENV       |
| 28   | GANNETT FLEMING                       | EA        |
| 29   | PROFESSIONAL SERVICE INDUSTRIES (PSI) | E         |
| 30   | ARUP                                  | E         |
| 31   | HKS INC.                              | AE        |
| 32   | GULF INTERSTATE ENGINEERING CO.       | EA        |
| 33   | CHA CONSULTING, INC.                  | EA        |
| 34   | ENERCON SERVICES INC.                 | AE        |
| 35   | GEOSYNTEC CONSULTANTS                 | E         |

| RANK | FIRM                                  | FIRM TYPE |
|------|---------------------------------------|-----------|
| 36   | UNIVERSALPEGASUS INTERNATIONAL INC.   | EC        |
| 37   | CANNON DESIGN                         | AE        |
| 38   | TRANSYSTEMS CORP.                     | EA        |
| 39   | WSP USA                               | E         |
| 40   | NBBJ                                  | A         |
| 41   | GREENMAN-PEDERSEN INC.                | E         |
| 42   | KOHN PEDERSEN FOX ASSOCIATES PC       | A         |
| 43   | RS&H INC.                             | EA        |
| 44   | LANGAN ENG'G AND ENVIRONMENTAL        | E         |
| 45   | SMITHGROUPJJR                         | AE        |
| 46   | HAZEN AND SAWYER PC                   | E         |
| 47   | CALLISON                              | A         |
| 48   | KCI TECHNOLOGIES INC.                 | E         |
| 49   | STANLEY CONSULTANTS INC.              | E         |
| 50   | VANASSE HANGEN BRUSTLIN INC. (VHB)    | E         |
| 51   | PERKINS EASTMAN                       | A         |
| 52   | CAROLLO ENGINEERS INC.                | E         |
| 53   | LEO A DALY                            | AE        |
| 54   | WOODS BAGOT                           | A         |
| 55   | WOODARD & CURRAN                      | E         |
| 56   | THORNTON TOMASETTI INC.               | EA        |
| 57   | RUMMEL KLEPPER & KAHL LLP             | E         |
| 58   | MORRISON HERSHFIELD                   | EA        |
| 59   | ECOLOGY & ENVIRONMENT INC.            | ENV       |
| 60   | MOFFATT & NICHOL                      | E         |
| 61   | SSEO GROUP                            | EP        |
| 62   | JOHNSON, MIRMIRAN & THOMPSON INC.     | EA        |
| 63   | ZGF ARCHITECTS LLP                    | A         |
| 64   | PENNONI ASSOCIATES INC.               | E         |
| 65   | SURVEYING AND MAPPING INC. (SAM INC.) | E/O       |
| 66   | FOTH COMPANIES                        | E         |
| 67   | GHAFARI ASSOCIATES LLC                | EA        |
| 68   | BURNS AND ROE GROUP INC.              | EA        |
| 69   | S&ME INC.                             | E         |
| 70   | KADRMAS LEE & JACKSON INC. (KLJ)      | E         |

| RANK | FIRM                                   | FIRM TYPE |
|------|--|-----------|
| 71   | ECS                                    | E         |
| 72   | HAMMEL GREEN AND ABRAHAMSON INC.       | AE        |
| 73   | DAVID EVANS AND ASSOCIATES INC.        | EA        |
| 74   | VOLKERT INC.                           | E         |
| 75   | KPFF CONSULTING ENGINEERS              | E         |
| 76   | POPULOUS                               | A         |
| 77   | GRESHAM, SMITH AND PARTNERS            | AE        |
| 78   | EXP US SERVICES INC.                   | EA        |
| 79   | DLR GROUP                              | AE        |
| 80   | WOOLPERT INC.                          | AEP       |
| 81   | MERRICK & CO.                          | AE        |
| 82   | WISS, JANNEY, ELSTNER ASSOCIATES INC.  | EA        |
| 83   | HARGROVE ENGINEERS + CONSTRUCTORS      | E         |
| 84   | GAI CONSULTANTS INC.                   | E         |
| 85   | WHITMAN, REQUARDT & ASSOCIATES LLP     | EA        |
| 86   | CIVIL & ENVIRONMENTAL CONSULTANTS INC. | E         |
| 87   | DLZ                                    | EA        |
| 88   | AMBITECH ENGINEERING CORP.             | E         |
| 89   | GEI CONSULTANTS INC.                   | E         |
| 90   | AFFILIATED ENGINEERS INC.              | E         |
| 91   | SIMPSON GUMPERTZ & HEGER INC.          | E         |
| 92   | MIDDOUGH INC.                          | EA        |
| 93   | AUSENCO                                | E         |
| 94   | PAGE                                   | AE        |
| 95   | FREESE AND NICHOLS INC.                | EA        |
| 96   | ALFRED BENESCH & CO.                   | E         |
| 97   | CRB                                    | EA        |
| 98   | CORGAN                                 | A         |
| 99   | SYSKA HENNESSY GROUP                   | E         |
| 100  | HAKS ENG'RS, ARCHS, AND SURVEYORS      | EA        |

**KEY TO TYPE OF FIRM**

A architect, E engineer, EC engineer-contractor  
 AE architect-engineer, EA engineer-architect  
 ENV environmental, GE geotechnical engineer  
 L landscape architect, P planner and O other  
 Other combinations are possible. Firms classified themselves.

is opening up numerous corridors for T&D.

“We are seeing the advent of microgrids, which might draw capacity during parts of the day but then be positioned to feed excess capacity back into the grid at other times,” says Oskvig. He notes that this is a throwback to when the power industry consisted of a loose and disorganized collection of microgrids, before the power industry evolved into a centralized T&D system managed by large utilities. “The problem is that traditional utilities do not have a business model to manage a smart grid. That is what we and many other firms like ours are working on,” he says.

Oskvig also notes that the current regulatory environment is not prepared to deal with a smart grid.



For expanded content on the ENR Top Lists see [enr.com/toplists](http://enr.com/toplists).

“There are several thousand utilities in 50 states, each with their own regulatory regime. There are also federal, state and local cooperatives. Their response to the new smart grid will be shaped by the complexity of the regulatory environment,” he observes.

**Techno World**

The pressure on productivity from the recession has continued to the drive toward finding technologies that will help firms do more with less. “I’m seeing the fine-tuning of existing technologies that have the ability to pay dividends in both the design and construction processes. Easier-to-use tools that are more mobile, faster and cloud-based are changing the market,” says Moos.

Younger designers are helping to drive much of the technology revolution. “The new generation of consulting professionals thinks in a different mode than the consultants of just 15 years ago. They think in terms of the ‘technology insert,’” says Kurt Bergman, CEO, Michael Baker International. He says his firm encourages creative thought, lets them push new technology inserts and supports them with its application development team.

However, this increasing reliance on technology is reshaping the role of the designer in the project delivery process. “We continue to be involved in an increasing amount of design-build projects, integrated-project-delivery projects and projects with negotiated contracts with general contractors [that] come aboard during the design phase,” says Devereaux of Harley Ellis Devereaux. “The conventional delivery method of design-bid-build seems to be diminishing.”

### Contracts Are Behind the Times

For many designers, building information modeling is a big advance in the construction process, but many worry it poses unforeseen legal or contractual snags. “The legal profession hasn’t shifted [its] thinking to three-dimensional digital models yet but, rather, continue to draft contract language that focuses on contract documents as represented by two-dimensional sheets of drawings and the accompanying books of specifications,” says Devereaux.

Devereaux says design content and specifications that exist only in the 3D model must be duplicated into separate 2D specification books, which is inefficient and could introduce the potential for errors. “We simply won’t reap the full reward of increased efficiency from BIM until such time as [owners and contracts] accept the digital model as the primary conveyance of information,” he says.

Another concern is the level of design detail that can be incorporated into a BIM model raises an expectation that designers will increase their level of design coordination of all these details, “of course, all within the same fee structure as when we designed in 2D,” says Clay Seckman, senior principal at Smith Seckman Reid Inc. He says the best approach is to create buy-in on the level of detail and coordination in deliverables. Explaining responsibilities beforehand “seems to be more impactful to managing liability than having the right contract language,” he notes.

Many designers urge the adoption of a common legal understanding of design standards in contracts. “The standard of care has to be reasonable, not perfection, because BIM will not result in perfect drawings,” says Anjanette Bobrow, an attorney with Syska Hen-

Power | By Gary J. Tulacz

## Protecting the Grid



At about 1:00 a.m. on April 16, 2013, snipers hit and knocked out 17 transformers in 19 minutes at the Pacific Gas & Electric’s Metcalf power transmission station near San Jose, Calif. This illustrates a nightmare scenario for electric utilities: A physical or cyber attack that disrupts power transmission.

More and more utilities are bringing in engineers to examine the electrical grid’s vulnerabilities to attacks. “Our security consulting division is closely involved with our utility customers to find the best ways to achieve both the physical and intellectual hardening of their facilities,” says Chris Vincze, CEO of TRC Cos. Inc. (No. 30).

Black & Veatch (No. 16) also is working on electric-power resiliency, says Dean Oskvig, CEO of Black &

Veatch Energy. “It is our job to determine what our customers need and what they can do in case of major power interruptions,” he says, adding that Black & Veatch is actively engaged with customers in tabletop simulations of cyber attacks to prevent power disruptions.

The U.S. Dept. of Homeland Security has said electric utilities are responsible for protecting the grid, Vincze notes. “This is a big issue, and it will be for years to come. We can figure out the layers of protection for the grid now, but the trick is to figure out how to stay ahead of the game,” he says.

“You can protect against the current level of attacks, but you can never be 100% secure. Hackers do not play by the rules, and you have to be prepared for that,” Oskvig says. ■

nessy Group Inc. She says owners need to understand that a contingency for construction coordination issues during construction is still going to be necessary. “Ownership of the BIM model is also an issue, so an electronic data transfer and use agreement should be utilized setting out how and who can use the model,” she says.

“The contractual vehicles that facilitate the BIM process have not kept pace. Integrated-project-delivery methods and guiding concepts emerging from [American Institute of Architects’] contract documents begin to establish fair and reasonable expectations for those pursuing BIM as a process,” says Charlie Williams, design director of information and technology at LPA Inc. “These methods and concepts need to be an

# The Top 500 Dialogue

## Do you see any trends facing engineers and architects that are affecting the industry?



**JOHN MARROW, CEO**  
**HARRIS GROUP INC.**  
Seattle



The trend we see is the aging engineer staff leaving the workforce. The baby boomers are retiring, and we need to build the next round of managers and leaders. [We are] adapting to motivate and retain our next generation.



**JIM UPTIGROVE, VICE PRESIDENT**  
**HARGROVE ENGINEERS+CONSTRUCTORS**  
Mobile, Ala.



To combat the increasing cost of design, owners are responding with reduced funding for front-end planning and price-based competition for detailed design. But incomplete front-end planning can be disastrous.



**MARK SWALLOW, PRESIDENT**  
**GOLDER ASSOCIATES INC.**  
Atlanta



The need for natural resources, energy and infrastructure will continue to drive our industry, but we see a greater emphasis being placed on water conservation, renewable energy, climate change and sustainability.



**ROBERT BRUSTLIN, CEO**  
**VANASSE HANGEN BRUSTLIN INC.**  
Watertown, Mass.



Traditional funding cannot match the needs for better transportation infrastructure, so we find ways to deliver more for less through new procurement measures and accelerated, technology-driven construction.



**KURT BERGMAN, CEO**  
**MICHAEL BAKER INTERNATIONAL**  
Moon Township, Pa.



An exciting trend is that some states are taking a larger role in the development of their revenue streams. Pennsylvania has established a new tax that is resulting in almost \$2.3 billion of additional infrastructure-related revenues.

## Do you see any existing or new technologies that are helping change the industry?



**AINE BRAZIL, VICE CHAIRMAN**  
**THORNTON TOMASETTI**  
New York City



Using BIM tools as a means of delivering projects is encouraging and helps create greater teamwork among all members of the design and construction teams, blurring the lines between design and construction.



**J. PETER DEVEREAUX, PRESIDENT**  
**HARLEY ELLIS DEVEREAUX**  
Southfield, Mich.



BIM still has the potential to be transformative. However, contracts and liability concerns still stand in the way of utilizing BIM, in the most efficient manner, to streamline the design-to-construction continuum.



**JAMES M. WRIGHT, SR. PRINCIPAL**  
**PAGE**  
Washington, D.C.



While everyone seems to be awakening to the unlocked potential of BIM, the quest for better communications tools have our immediate attention, especially applications that may help deal with communication overload.



**ALEXANDRA POLLOCK, TECH. DIR.**  
**FXFOWLE ARCHITECTS**  
New York City



Cloud-based technologies are increasing the speed of collaboration and allow for real-time tracking and feedback. Looking forward, digital fabrication, 3D printing and robotics are poised to change the construction process further.



**KEITH ROE, CHAIRMAN**  
**BURNS AND ROE GROUP INC.**  
Oradell, N.J.



The intersection of technologies is changing the relationship between design and construction and how projects are being executed. One example is allowing constructors to excavate by using data directly from a 3D model.

integral part of contractual vehicles used by designers, builders and owners.”

However, once the legal and contractual issues are ironed out, BIM could go a long way to avoiding disputes. “As we see BIM being used more and more, theoretically, there could be a decline in professional liability claims over the next few years because of the ability to discover design errors and omissions prior to the start of construction,” Bobrow says.

**Worried About a Lost Generation**

The recession could not have come at a worse time for design-firm staffing purposes. At a time when many baby boomers are considering or entering retirement, industry firms were forced to lay off people, usually from the younger and less experienced staff members. Many of those laid off have left the industry, creating a lost generation of talent. Now that the market is beginning to turn around and more baby boomers are closer to retirement than they were in 2008, when the market cratered, demand for experienced staff and young people is becoming more urgent.

This has caused many design firms to worry about the future of the profession. “There is a dearth of professionals, and we expect a battle for talent for very few fresh graduates and also for mid- and senior-level engineers,” says Mardam of Stanley Consultants. “We anticipate a shortage of project managers with solid and successful experience with integrated project delivery,” says Keen of HDR. “We are putting an emphasis on providing our budding project managers with top-notch learning experiences.”

But some design firms say now is the opportunity to put their best foot forward in recruiting young talent. “The drive to find, hire and retain top talent can’t be viewed as an added burden in this rebounding economy. It is an opportunity for firms that can differentiate themselves and become a magnet for the best engineers” says Wasilewski of CDI Corp. ■

Company on the Move | By Debra K. Rubin

Power Engineers: Flying High



Daredevil aerialist Nik Wallenda safely crossed 1,250 ft above a Grand Canyon gorge last June (above), thanks to the cable-rigging design prowess of POWER Engineers Inc. But the Hailey, Idaho, power-sector engineer did some high flying of its own in 2013.

With core work in transmission and delivery and acquisitions boosting diversification, POWER’s revenue rose 14%, to \$316 million, last year. This pushed the firm to No. 43 from No. 52 on the Top 500 list, which was on top of a 25% revenue hike in 2012. “Power delivery is the best business out there, and we’re well positioned,” says CEO Jack Hand, noting industry “peak spend.” Growing eastward and westward in the U.S. in 2013, the firm fortified its environmental, geospatial and architect-led expertise.

Hand, who has led the firm since 1998, sees continued growth in alternative-energy transmission work and power generation. Lack of tax credits “killed geothermal in the U.S.,” but POWER has projects in Turkey, India and Indonesia, among

other nations; about 15% of the firm’s revenue is non-U.S. The firm also diversified into federal work and design for the food-and-beverage sector.

POWER, with about 2,000 staff, has been among designers scoring highest over the years in the “happiness quotient,” a ranking by industry financial consultant EFCG Inc. that combines revenue and profit to show employee and shareholder satisfaction. But even as it grows, the firm embraces its culture and the excitement of its work. It still marks the annual anniversary of a 1977 fire that destroyed its first Idaho headquarters with a party called the “Burnout,” and Hand terms the firm’s work for Wallenda as “really cool.”

While Hand sees a revenue rise in 2014, this year’s focus is on a better bottom-line return. Earnings growth slowed last year, with some over-budget projects and staff learning-curve challenges, he admits. “The biggest issue was too much opportunity and not enough resources,” says Hand. ■

**How to Read the Tables**

**KEY TO TYPE OF FIRM**

**A** architect, **E** engineer, **EC** engineer-contractor, **AE** architect-engineer, **EA** engineer-architect, **ENV** environmental, **GE** geotechnical engineer, **L** landscape architect, **P** planner and **O** other. Other combinations are possible. Firms classified themselves.

**Companies** are ranked according to revenue for design services performed in 2013 in \$ millions (\*). Those with subsidiaries are indicated by (†). For information on subsidiaries and where each firm worked

outside of the U.S., see www.enr.com. \*\*Firms not ranked last year. Some markets may not add up to 100% due to omission of “other” miscellaneous market category and rounding. NA-Not available.

**General Building** as a category includes commercial buildings, offices, stores, educational facilities, government buildings, hospitals, medical facilities, hotels, apartments, housing, etc.

**Hazardous Waste** includes chemical and nuclear waste treatment,

asbestos and lead abatement, etc.

**Industrial Process** comprises pulp and paper mills, steel mills, nonferrous metal refineries, pharmaceutical plants, chemical plants, food and other processing plants, etc.

**Manufacturing** includes auto, electronic assembly, textile plants, etc.

**Petroleum** includes refineries, petrochemical plants, offshore facilities, pipelines, etc.

**Power** comprises thermal and hydroelectric powerplants, waste-to-energy plants, transmission lines, substations, cogeneration plants, etc.

**Sewerage / Solid Waste** includes sanitary and storm sewers, treatment plants, pumping plants, incinerators, industrial waste facilities, etc.

**Telecommunications** comprises transmission lines and cabling, towers and antennae, data centers, etc.

**Transportation** includes airports, bridges, roads, canals, locks, dredging, marine facilities, piers, railroads, tunnels, etc.

**Water Supply** includes dams, reservoirs, transmission pipelines, distribution mains, irrigation canals, desalination and potability treatment plants, pumping stations, etc.



| RANK<br>2014 | RANK<br>2013 | FIRM   | FIRM<br>TYPE | 2013 REVENUE \$ MIL. |         | GENERAL BUILDING | MANUFACTURING | POWER | WATER SUPPLY | SEWER / WASTE | INDUS. / PETROLEUM | TRANSPORTATION | HAZARDOUS WASTE | TELECOM |
|--------------|--------------|--|--------------|----------------------|---------|------------------|---------------|-------|--------------|---------------|--------------------|----------------|-----------------|---------|
|              |              |  |              | TOTAL                | INT'L   |                  |               |       |              |               |                    |                |                 |         |
| 1            | 1            | <b>AECOM TECHNOLOGY CORP.</b> , Los Angeles, Calif. †                              | EA           | 7,240.9              | 3,323.9 | 40               | 0             | 10    | 9            | 4             | 0                  | 29             | 7               | 0       |
| 2            | 3            | <b>JACOBS</b> , Pasadena, Calif.   | AEC          | 6,820.2              | 3,691.2 | 12               | 5             | 5     | 2            | 1             | 43                 | 15             | 5               | 1       |
| 3            | 2            | <b>URS CORP.</b> , San Francisco, Calif. †   | EAC          | 5,270.0              | 1,358.4 | 11               | 2             | 6     | 6            | 3             | 19                 | 34             | 17              | 0       |
| 4            | 4            | <b>FLUOR CORP.</b> , Irving, Texas †   | EC           | 4,505.9              | 3,522.0 | 1                | 2             | 2     | 0            | 0             | 76                 | 0              | 4               | 0       |
| 5            | 5            | <b>CH2M HILL</b> , Englewood, Colo. †  | EC           | 3,585.3              | 1,640.3 | 4                | 4             | 4     | 15           | 14            | 14                 | 30             | 15              | 1       |
| 6            | 6            | <b>AMEC</b> , Tucker, Ga. †  | EC           | 2,978.0              | 1,902.0 | 5                | 3             | 9     | 2            | 1             | 45                 | 7              | 7               | 0       |
| 7            | 8            | <b>TETRA TECH INC.</b> , Pasadena, Calif. †  | E            | 2,542.0              | 788.0   | 4                | 6             | 16    | 26           | 7             | 19                 | 2              | 19              | 0       |
| 8            | 7            | <b>BECHTEL</b> , San Francisco, Calif. †   | EC           | 2,535.0              | 1,699.0 | 0                | 0             | 15    | 0            | 0             | 69                 | 4              | 9               | 3       |
| 9            | 17           | <b>CB&amp;I</b> , The Woodlands, Texas †   | EC           | 2,105.0              | 885.9   | 0                | 0             | 42    | 0            | 1             | 51                 | 1              | 5               | 0       |
| 10           | 9            | <b>KBR</b> , Houston, Texas †  | EC           | 1,767.1              | 1,364.2 | 0                | 2             | 8     | 3            | 0             | 80                 | 6              | 0               | 0       |
| 11           | 11           | <b>HDR</b> , Omaha, Neb. †   | EA           | 1,762.1              | 190.8   | 22               | 0             | 11    | 10           | 10            | 2                  | 41             | 3               | 0       |
| 12           | 10           | <b>PARSONS BRINCKERHOFF</b> , New York, N.Y. †                                     | EA           | 1,724.1              | 924.4   | 14               | 0             | 16    | 2            | 0             | 0                  | 66             | 0               | 0       |
| 13           | 15           | <b>PARSONS</b> , Pasadena, Calif. †  | EC           | 1,506.9              | 345.7   | 14               | 0             | 2     | 2            | 7             | 0                  | 49             | 19              | 5       |
| 14           | 16           | <b>WORLEYPARSONS GROUP INC.</b> , Bellaire, Texas †                                | EC           | 1,430.3              | 647.0   | 0                | 0             | 12    | 0            | 0             | 87                 | 1              | 0               | 0       |
| 15           | 12           | <b>ARCADIS U.S./RTKL</b> , Highlands Ranch, Colo. †                                | E            | 1,383.0              | 179.0   | 15               | 0             | 0     | 13           | 8             | 0                  | 4              | 60              | 1       |
| 16           | 14           | <b>BLACK &amp; VEATCH</b> , Overland Park, Kan. †                                  | EC           | 1,304.9              | 419.9   | 3                | 0             | 47    | 16           | 12            | 6                  | 0              | 2               | 13      |
| 17           | 18           | <b>WOOD GROUP MUSTANG INC.</b> , Houston, Texas †                                  | EC           | 1,249.0              | 735.3   | 0                | 0             | 0     | 0            | 0             | 100                | 0              | 0               | 0       |
| 18           | 20           | <b>BURNS &amp; MCDONNELL</b> , Kansas City, Mo.                                    | EAC          | 1,039.3              | 37.2    | 8                | 2             | 56    | 3            | 3             | 16                 | 8              | 5               | 0       |
| 19           | 19           | <b>MWH GLOBAL</b> , Broomfield, Colo. †  | EC           | 942.9                | 563.7   | 4                | 0             | 14    | 39           | 39            | 0                  | 4              | 0               | 0       |
| 20           | 22           | <b>GENSLER</b> , San Francisco, Calif.   | A            | 883.2                | 218.7   | 92               | 0             | 0     | 0            | 0             | 0                  | 5              | 0               | 2       |
| 21           | 21           | <b>HNTB COS.</b> , Kansas City, Mo.  | EA           | 855.9                | 1.4     | 3                | 0             | 0     | 2            | 2             | 0                  | 93             | 0               | 0       |
| 22           | 24           | <b>STANTEC INC.</b> , Irvine, Calif. †   | EAL          | 809.0                | 0.0     | 19               | 0             | 6     | 12           | 8             | 16                 | 33             | 4               | 0       |
| 23           | 23           | <b>CDM SMITH</b> , Cambridge, Mass. †  | EC           | 752.9                | 144.7   | 4                | 0             | 2     | 23           | 26            | 3                  | 25             | 16              | 0       |
| 24           | 25           | <b>LOUIS BERGER</b> , Morristown, N.J. †   | EAP          | 615.1                | 312.3   | 2                | 0             | 10    | 8            | 1             | 5                  | 57             | 10              | 0       |
| 25           | 28           | <b>CDI CORP.</b> , Philadelphia, Pa. †   | EA           | 584.7                | 186.5   | 9                | 13            | 11    | 0            | 0             | 56                 | 9              | 0               | 2       |
| 26           | 30           | <b>MICHAEL BAKER INTERNATIONAL</b> , Moon Township, Pa. †                          | EA           | 574.4                | 3.2     | 16               | 0             | 0     | 18           | 7             | 7                  | 45             | 7               | 0       |
| 27           | 26           | <b>CARDNO</b> , Portland, Ore. †   | E/ENV        | 571.5                | 15.2    | 11               | 0             | 4     | 3            | 1             | 38                 | 17             | 14              | 1       |
| 28           | 29           | <b>SARGENT &amp; LUNDY LLC</b> , Chicago, Ill. †                                   | E            | 521.7                | 78.5    | 0                | 0             | 100   | 0            | 0             | 0                  | 0              | 0               | 0       |
| 29           | **           | <b>FUGRO</b> , Houston, Texas †  | GE           | 480.0                | 40.0    | 0                | 0             | 21    | 6            | 0             | 25                 | 2              | 0               | 0       |
| 30           | 32           | <b>TRC COS. INC.</b> , Lowell, Mass. †   | E            | 457.9                | 3.4     | 6                | 0             | 37    | 0            | 0             | 2                  | 15             | 40              | 0       |
| 31           | 36           | <b>HATCH MOTT MACDONALD</b> , Iselin, N.J. †                                       | E            | 455.4                | 180.4   | 2                | 0             | 0     | 7            | 11            | 24                 | 52             | 4               | 0       |
| 32           | **           | <b>S&amp;B ENGINEERS AND CONSTRUCTORS LTD. &amp; AFFILIATES</b> , Houston, Texas † | EC           | 446.3                | 0.0     | 0                | 0             | 0     | 0            | 0             | 98                 | 2              | 0               | 0       |
| 33           | 39           | <b>KIMLEY-HORN AND ASSOCIATES INC.</b> , Raleigh, N.C.                             | E            | 437.4                | 3.0     | 40               | 0             | 0     | 8            | 0             | 0                  | 52             | 0               | 0       |
| 34           | 35           | <b>BUREAU VERITAS</b> , Fort Lauderdale, Fla. †                                    | E            | 430.2                | 0.0     | 13               | 13            | 6     | 2            | 2             | 37                 | 8              | 11              | 1       |
| 35           | 38           | <b>TERRACON CONSULTANTS INC.</b> , Olathe, Kan. †                                  | E            | 422.9                | 0.5     | 46               | 2             | 6     | 3            | 3             | 7                  | 14             | 16              | 2       |
| 36           | 37           | <b>HOK</b> , St. Louis, Mo. †  | AE           | 409.0                | 146.1   | 89               | 0             | 0     | 0            | 0             | 0                  | 11             | 0               | 0       |
| 37           | 31           | <b>ATKINS NORTH AMERICA</b> , Tampa, Fla. †  | AE           | 376.9                | 18.3    | 12               | 1             | 5     | 13           | 5             | 9                  | 53             | 0               | 1       |
| 38           | 41           | <b>PERKINS+WILL</b> , Chicago, Ill. †  | A            | 356.4                | 86.4    | 99               | 0             | 0     | 0            | 0             | 0                  | 1              | 0               | 0       |
| 39           | 42           | <b>KLEINFELDER</b> , San Diego, Calif. †   | EA           | 344.4                | 22.2    | 13               | 1             | 2     | 13           | 10            | 4                  | 19             | 39              | 1       |
| 40           | 34           | <b>LEIDOS</b> , Reston, Va. †  | EAC          | 342.5                | 12.5    | 9                | 5             | 35    | 0            | 2             | 11                 | 6              | 1               | 1       |
| 41           | 45           | <b>SKIDMORE OWINGS &amp; MERRILL LLP</b> , New York, N.Y. †                        | AE           | 334.4                | 174.8   | 93               | 0             | 0     | 0            | 0             | 0                  | 7              | 0               | 0       |
| 42           | 40           | <b>STV GROUP INC.</b> , New York, N.Y. †   | EA           | 320.0                | 2.8     | 15               | 0             | 0     | 0            | 0             | 4                  | 81             | 0               | 0       |
| 43           | 52           | <b>POWER ENGINEERS INC.</b> , Hailey, Idaho †                                      | E            | 315.9                | 5.2     | 1                | 0             | 83    | 0            | 0             | 12                 | 0              | 0               | 4       |
| 44           | 48           | <b>T.Y. LIN INTERNATIONAL</b> , San Francisco, Calif. †                            | EA           | 313.7                | 170.4   | 13               | 0             | 0     | 1            | 1             | 0                  | 84             | 0               | 0       |
| 45           | 44           | <b>DEWBERRY</b> , Fairfax, Va. †   | EA           | 307.8                | 0.5     | 35               | 0             | 3     | 16           | 6             | 0                  | 36             | 1               | 2       |
| 46           | 50           | <b>BROWN AND CALDWELL</b> , Walnut Creek, Calif. †                                 | EC           | 307.0                | 0.0     | 0                | 0             | 0     | 18           | 52            | 0                  | 0              | 30              | 0       |
| 47           | 47           | <b>AEGION CORP.</b> , Chesterfield, Mo. †  | EC           | 299.1                | 124.6   | 8                | 0             | 0     | 0            | 14            | 78                 | 0              | 0               | 0       |
| 48           | 49           | <b>ENVIRON HOLDINGS INC.</b> , Arlington, Va. †                                    | ENV          | 292.9                | 103.5   | 0                | 0             | 0     | 0            | 4             | 0                  | 0              | 0               | 0       |
| 49           | 51           | <b>GANNETT FLEMING</b> , Harrisburg, Pa. †   | EA           | 277.2                | 12.2    | 7                | 0             | 4     | 17           | 6             | 0                  | 60             | 6               | 0       |
| 50           | 53           | <b>ZACHRY HOLDINGS INC.</b> , San Antonio, Texas †                                 | EC           | 273.6                | 0.0     | 0                | 0             | 89    | 0            | 0             | 10                 | 1              | 0               | 0       |

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|--------------|--------------|--|--------------|----------------------|-------|------------------|---------------|-------|--------------|---------------|--------------------|----------------|-----------------|---------|
|              |              |  |              | TOTAL                | INT'L |                  |               |       |              |               |                    |                |                 |         |
| 51           | 60           | PROFESSIONAL SERVICE INDUSTRIES (PSI), Oakbrook Terrace, Ill.    | E            | 266.8                | 0.0   | 42               | 2             | 3     | 0            | 2             | 31                 | 16             | 1               | 2       |
| 52           | 55           | ARUP, New York, N.Y.†  | E            | 259.1                | 16.2  | 46               | 0             | 0     | 1            | 0             | 11                 | 42             | 0               | 1       |
| 53           | 54           | WILLBROS GROUP INC., Houston, Texas†                             | EC           | 257.1                | 0.0   | 0                | 0             | 0     | 0            | 0             | 100                | 0              | 0               | 0       |
| 54           | 56           | HKS INC., Dallas, Texas†   | AE           | 255.1                | 36.2  | 98               | 0             | 0     | 0            | 0             | 0                  | 2              | 0               | 0       |
| 55           | 57           | GOLDER ASSOCIATES INC., Atlanta, Ga.†                            | EC           | 253.9                | 10.6  | 0                | 9             | 8     | 2            | 12            | 19                 | 7              | 1               | 0       |
| 56           | 65           | GULF INTERSTATE ENGINEERING CO., Houston, Texas†                 | EA           | 253.0                | 33.5  | 0                | 0             | 0     | 0            | 0             | 100                | 0              | 0               | 0       |
| 57           | 69           | CHA CONSULTING INC., Albany, N.Y.†                               | EA           | 247.6                | 16.1  | 35               | 10            | 16    | 2            | 4             | 3                  | 29             | 2               | 0       |
| 58           | 46           | KIEWIT CORP., Omaha, Neb.†                                       | EC           | 232.2                | 15.2  | 0                | 0             | 91    | 4            | 0             | 5                  | 0              | 0               | 0       |
| 59           | 61           | ENERCON SERVICES INC., Kennesaw, Ga.†                            | AE           | 230.1                | 5.1   | 0                | 0             | 98    | 0            | 0             | 1                  | 0              | 0               | 0       |
| 60           | 62           | GEOSYNTEC CONSULTANTS, Atlanta, Ga.†                             | E            | 220.7                | 45.1  | 0                | 0             | 6     | 8            | 17            | 8                  | 3              | 56              | 0       |
| 61           | 71           | UNIVERSALPEGASUS INTERNATIONAL INC., Houston, Texas†             | E            | 217.0                | 47.0  | 0                | 0             | 0     | 0            | 0             | 100                | 0              | 0               | 0       |
| 62           | 63           | CANNON DESIGN, Grand Island, N.Y.                                | AE           | 212.7                | 47.7  | 100              | 0             | 0     | 0            | 0             | 0                  | 0              | 0               | 0       |
| 63           | 58           | TRANSYSTEMS CORP., Kansas City, Mo.                              | EA           | 204.8                | 0.1   | 0                | 0             | 0     | 0            | 0             | 0                  | 100            | 0               | 0       |
| 64           | 70           | WSP USA, New York, N.Y.†   | E            | 204.2                | 17.5  | 59               | 10            | 1     | 0            | 0             | 3                  | 24             | 0               | 0       |
| 65           | 67           | NBBJ, Seattle, Wash.†  | A            | 197.3                | 52.3  | 100              | 0             | 0     | 0            | 0             | 0                  | 0              | 0               | 0       |
| 66           | 68           | GREENMAN-PEDERSEN INC., Babylon, N.Y.†                           | E            | 188.5                | 1.4   | 10               | 0             | 5     | 1            | 0             | 1                  | 79             | 0               | 1       |
| 67           | 77           | KOHN PEDERSEN FOX ASSOCIATES PC, New York, N.Y.†                 | A            | 177.7                | 135.6 | 82               | 0             | 0     | 0            | 0             | 0                  | 18             | 0               | 0       |
| 68           | 64           | WESTON SOLUTIONS INC., West Chester, Pa.                         | ENV          | 173.0                | 0.1   | 4                | 0             | 0     | 2            | 5             | 0                  | 2              | 87              | 0       |
| 69           | 80           | RS&H INC., Jacksonville, Fla.†                                   | EA           | 171.1                | 0.0   | 7                | 14            | 0     | 0            | 0             | 0                  | 79             | 0               | 0       |
| 70           | 85           | LANGAN ENG'G AND ENVIRONMENTAL SERVICES INC., Elmwood Park, N.J. | E            | 165.0                | 12.1  | 39               | 2             | 0     | 8            | 8             | 12                 | 5              | 24              | 1       |
| 71           | 73           | SMITHGROUPJJR, Detroit, Mich.†                                   | AE           | 163.0                | 13.1  | 100              | 0             | 0     | 0            | 0             | 0                  | 0              | 0               | 0       |
| 72           | 75           | HAZEN AND SAWYER PC, New York, N.Y.                              | E            | 162.6                | 5.1   | 0                | 0             | 0     | 30           | 70            | 0                  | 0              | 0               | 0       |
| 73           | 87           | CALLISON, Seattle, Wash.   | A            | 160.9                | 88.0  | 98               | 0             | 0     | 0            | 0             | 0                  | 0              | 0               | 2       |
| 74           | 81           | KCI TECHNOLOGIES INC., Sparks, Md.†                              | E            | 160.0                | 0.0   | 14               | 0             | 1     | 6            | 7             | 0                  | 45             | 2               | 22      |
| 75           | 72           | STANLEY CONSULTANTS INC., Muscatine, Iowa†                       | E            | 159.0                | 33.4  | 3                | 0             | 46    | 2            | 13            | 0                  | 36             | 0               | 0       |
| 76           | 78           | VANASSE HANGEN BRUSTLIN INC. (VHB), Watertown, Mass.             | E            | 157.5                | 0.0   | 29               | 0             | 5     | 2            | 0             | 0                  | 64             | 0               | 1       |
| 77           | 82           | PERKINS EASTMAN, New York, N.Y.†                                 | A            | 155.0                | 38.8  | 100              | 0             | 0     | 0            | 0             | 0                  | 0              | 0               | 0       |
| 78           | 114          | M+W U.S. INC., Watervliet, N.Y.                                  | EC           | 154.9                | 0.6   | 0                | 100           | 0     | 0            | 0             | 0                  | 0              | 0               | 0       |
| 79           | 79           | CAROLLO ENGINEERS INC., Walnut Creek, Calif.†                    | E            | 154.9                | 0.0   | 0                | 0             | 0     | 39           | 61            | 0                  | 0              | 0               | 0       |
| 80           | 83           | THE BABCOCK & WILCOX CO., Charlotte, N.C.†                       | EC           | 154.3                | 64.7  | 0                | 0             | 100   | 0            | 0             | 0                  | 0              | 0               | 0       |
| 81           | 74           | LEO A DALY, Omaha, Neb.†   | AE           | 149.7                | 19.2  | 48               | 0             | 0     | 16           | 5             | 0                  | 31             | 0               | 0       |
| 82           | **           | WOODS BAGOT, New York, N.Y.†                                     | A            | 149.0                | 130.0 | 100              | 0             | 0     | 0            | 0             | 0                  | 0              | 0               | 0       |
| 83           | **           | ENGLOBAL U.S. INC., Houston, Texas†                              | EC           | 147.0                | 20.0  | 0                | 0             | 0     | 0            | 0             | 100                | 0              | 0               | 0       |
| 84           | 89           | WOODARD & CURRAN, Portland, Maine†                               | E            | 145.2                | 0.7   | 3                | 6             | 8     | 17           | 29            | 5                  | 1              | 27              | 0       |
| 85           | 91           | THORNTON TOMASETTI INC., New York, N.Y.                          | EA           | 145.0                | 38.6  | 95               | 0             | 0     | 0            | 0             | 0                  | 4              | 0               | 1       |
| 86           | 86           | SCS ENGINEERS, Long Beach, Calif.†                               | ENV          | 142.4                | 3.4   | 0                | 0             | 0     | 0            | 73            | 0                  | 0              | 27              | 0       |
| 87           | 84           | RUMMEL KLEPPER & KAHL LLP, Baltimore, Md.                        | E            | 139.1                | 0.0   | 1                | 0             | 0     | 3            | 10            | 3                  | 84             | 0               | 0       |
| 88           | 88           | MORRISON HERSHFIELD, Atlanta, Ga.†                               | EA           | 137.1                | 115.5 | 40               | 0             | 2     | 2            | 2             | 3                  | 26             | 2               | 17      |
| 89           | 169          | TRANSCORE, Nashville, Tenn.                                      | EC           | 136.5                | 11.2  | 0                | 0             | 0     | 0            | 0             | 0                  | 100            | 0               | 0       |
| 90           | 105          | O'BRIEN & GERE, Syracuse, N.Y.†                                  | EC           | 135.0                | 0.8   | 0                | 4             | 0     | 8            | 23            | 26                 | 0              | 38              | 0       |
| 91           | 76           | ECOLOGY & ENVIRONMENT INC., Lancaster, N.Y.†                     | ENV          | 134.9                | 47.0  | 2                | 1             | 28    | 6            | 6             | 25                 | 4              | 24              | 0       |
| 92           | **           | MOFFATT & NICHOL, Long Beach, Calif.†                            | E            | 134.0                | 25.3  | 0                | 0             | 0     | 0            | 0             | 0                  | 100            | 0               | 0       |
| 93           | 66           | SSOE GROUP, Toledo, Ohio†  | EP           | 133.0                | 11.8  | 9                | 47            | 5     | 0            | 0             | 39                 | 0              | 0               | 0       |
| 94           | 100          | JOHNSON, MIRMIRAN & THOMPSON INC., Sparks, Md.†                  | EA           | 132.2                | 0.0   | 3                | 0             | 0     | 0            | 6             | 0                  | 91             | 0               | 0       |
| 95           | 113          | ZGF ARCHITECTS LLP, Portland, Ore.                               | A            | 128.1                | 16.0  | 98               | 0             | 0     | 0            | 0             | 0                  | 2              | 0               | 0       |
| 96           | 92           | PENNONI ASSOCIATES INC., Philadelphia, Pa.†                      | E            | 127.6                | 0.4   | 28               | 0             | 0     | 2            | 4             | 1                  | 29             | 4               | 2       |
| 97           | 126          | SURVEYING AND MAPPING INC. (SAM INC.), Austin, Texas†            | EO           | 127.5                | 0.0   | 1                | 0             | 13    | 0            | 0             | 71                 | 15             | 0               | 0       |
| 98           | 90           | FOTH COS., De Pere, Wis.†  | E            | 126.9                | 7.4   | 0                | 0             | 0     | 5            | 6             | 73                 | 8              | 8               | 0       |
| 99           | 111          | GHAFAARI ASSOCIATES LLC, Dearborn, Mich.†                        | EA           | 125.6                | 28.6  | 9                | 69            | 0     | 0            | 0             | 4                  | 18             | 0               | 0       |
| 100          | 93           | BURNS AND ROE GROUP INC., Oradell, N.J.†                         | EA           | 122.7                | 58.2  | 34               | 0             | 66    | 0            | 0             | 0                  | 0              | 0               | 0       |