ENR THE TOP 600

NUMBER 39

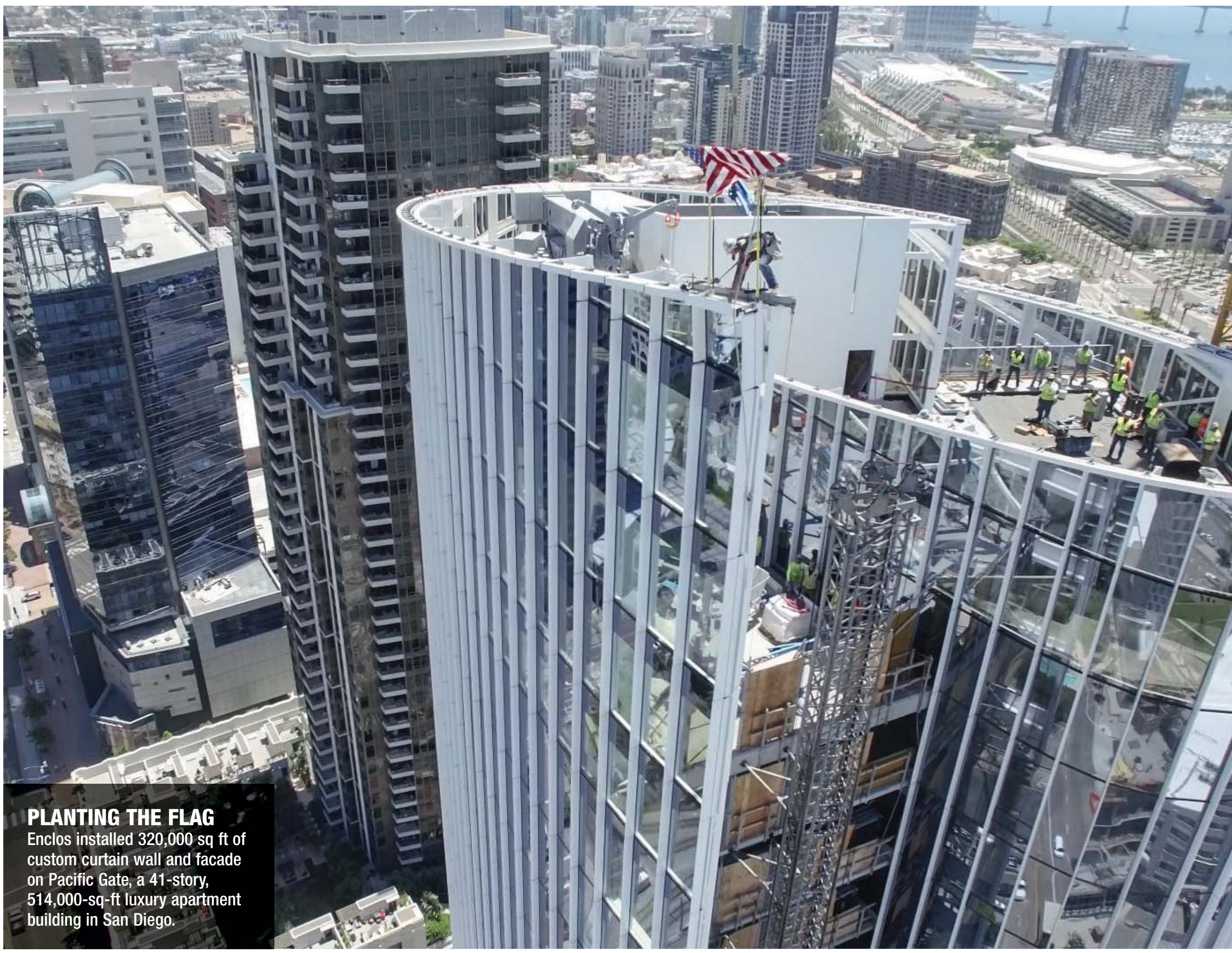


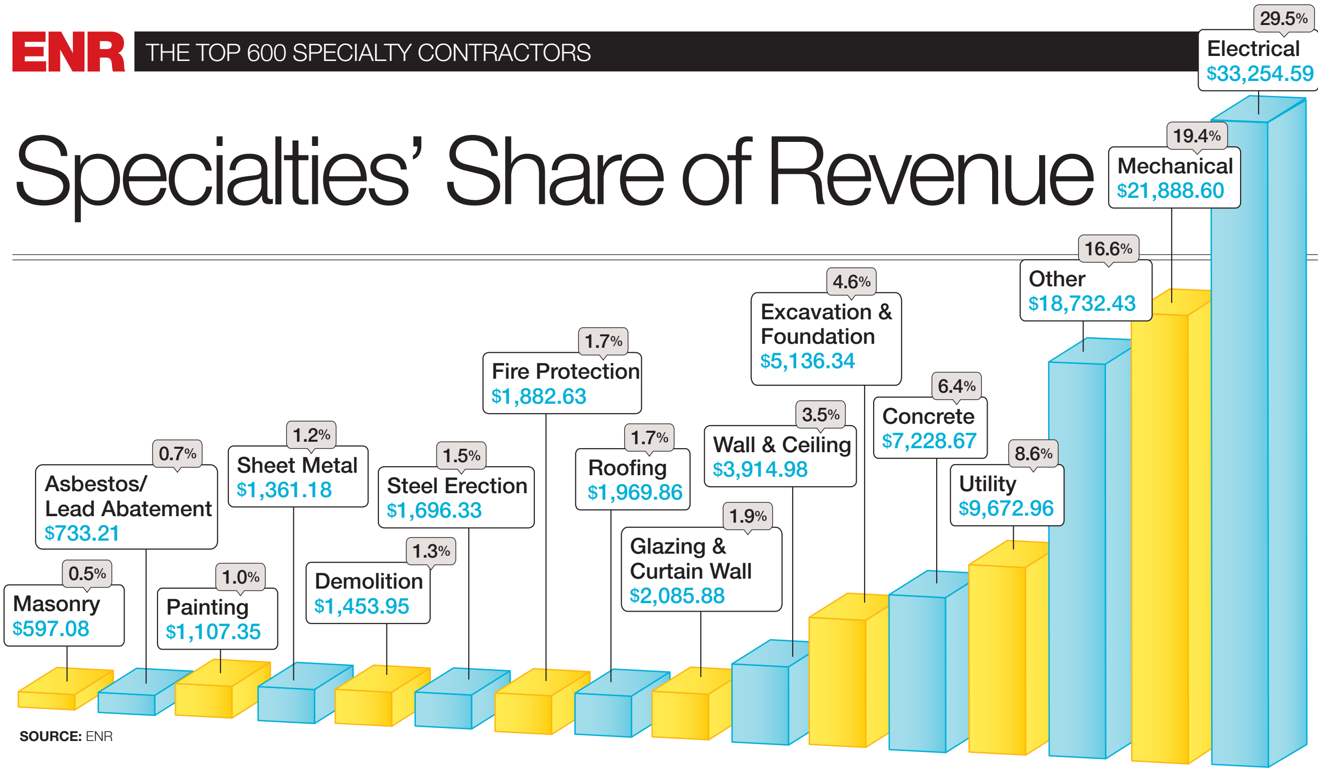
PHOTO COURTESY OF ENCLOS

PLANTING THE FLAG
Enclos installed 320,000 sq ft of custom curtain wall and facade on Pacific Gate, a 41-story, 514,000-sq-ft luxury apartment building in San Diego.

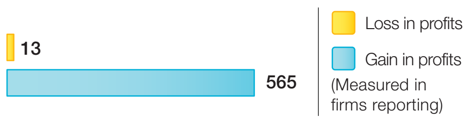
When Will the Market Top Out?

The construction market is strong and continues to grow at a brisk pace. But contractors wonder how long the good times will last. By Gary J. Tulacz

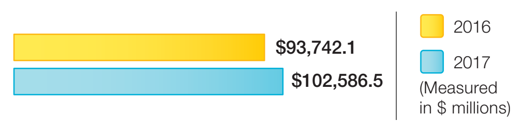
Specialties' Share of Revenue



SOURCE: ENR



SOURCE: ENR



After eight years of growth, the market still is thriving. Further, most firms believe it will continue to improve through the end of 2018 and have backlogs to prove it. But some firms are beginning to become wary about what 2019 will bring, both for the market and the economy as a whole.

The impressive strength of the market can be seen in the results of this year's ENR Top 600 Specialty Contractors list. As a group, the Top 600 cleared revenue of $112.72 billion in 2016, up an impressive 12.2%, from $100.43 billion, in 2015. Further, many Top 600 leaders think the recovery still has steam in it.

Many contractors are enthusiastic about the current and future market. "We are seeing tremendous growth year-on-year and have a record backlog," says Charles Bacon, CEO of Limbach Facility Services. He says Limbach currently is tracking $3.1 billion in opportunities, up from $2.4 billion at this time last year. "I don't see a recession any time soon," he adds.

One good sign of the expanding market is that backlogs are growing. The Washington, D.C.-based Associated Builders and Contractors' Construction Backlog Indicator, which measures the average length of backlogs among all its contractor members, rose to nine months during the first quarter of 2017, up 8.1% from the fourth quarter of 2016, says

"For the first time in the [Associated Builders and Contractors' Construction Backlog Indicator's] history, every category—firm size, industry and region—registered quarterly growth."

Chuck Goodrich, President, Gaylor Electric Inc.

Chuck Goodrich, president of Gaylor Electric Inc. and 2017 ABC chairman. "For the first time in the series' history, every category—firm size, industry and region—registered quarterly growth in CBI. CBI is up by 0.4 months, or 4%, on a year-over-year basis," he says.

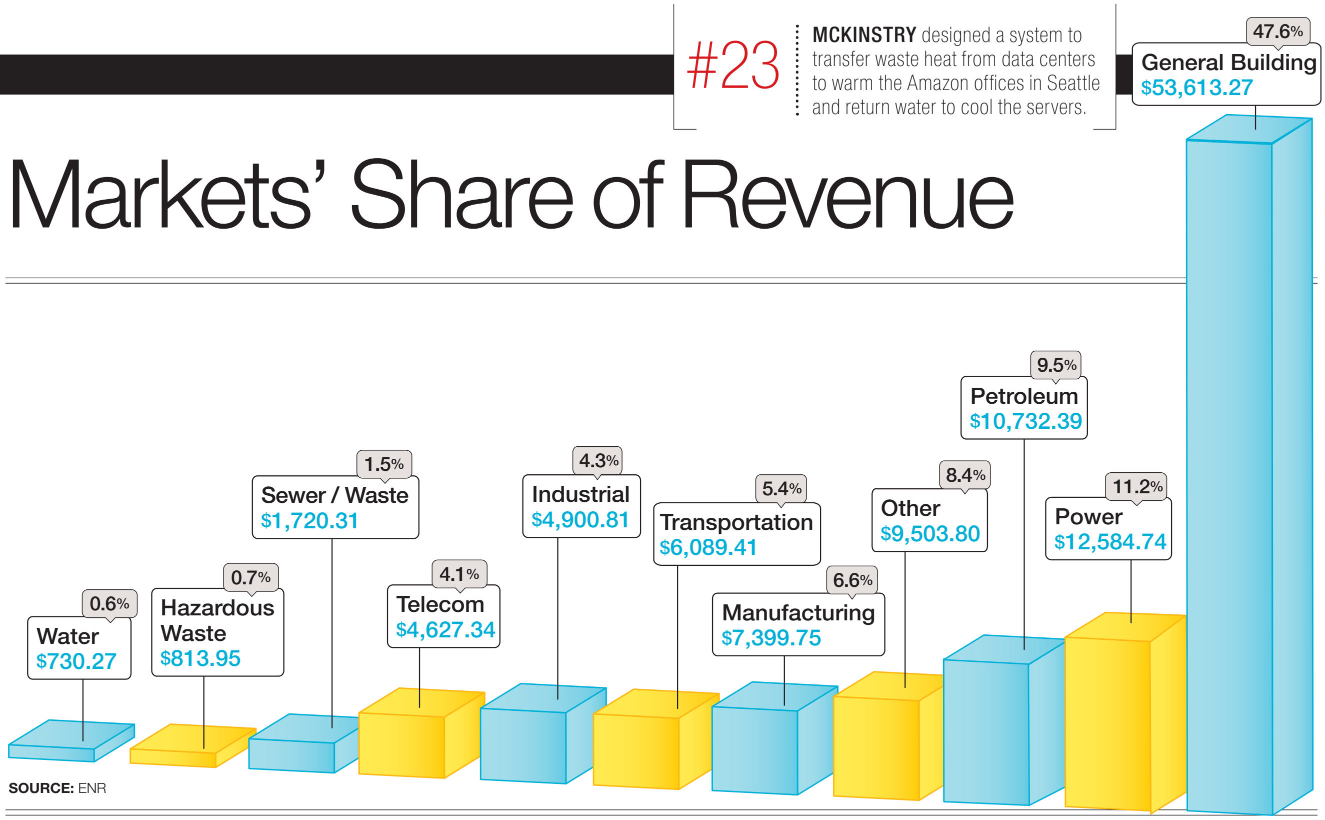
Many market sectors look very good. "There is a significant need to build new and maintain existing electric power and oil-and-gas infrastructure throughout North America. As a result, our customers' multiyear capital programs and projects are larger and more complex than they have ever been," says Duke Austin, CEO of Quanta Services.

The long-term prospects in energy markets seem strong. "Power plants are changing sources of energy, and that means the power market should be strong for the next 10 years," says Anthony Guzzi, CEO of Emcor Group. The domestic oil market also should continue to grow, he predicts.

On the buildings side, most contractors are optimistic. "Health care and manufacturing continue a steady growth. The emergence of internet-based retail sales has increased our focus on distribution and data-center construction," says Goodrich. "We have seen an increased demand in the mission-critical health-care and transportation markets, while commercial and residential markets have held steady. Our pipeline for

#23 **MCKINSTRY** designed a system to transfer waste heat from data centers to warm the Amazon offices in Seattle and return water to cool the servers.

Markets' Share of Revenue



SOURCE: ENR

Comparing the Past Decade's Specialty Contractor Revenue

Measured in $ billions **Source:** ENR

the next 12 to 24 months looks very healthy," adds Brian Brobst, marketing director for Rosendin Electric.

Storm Clouds Forming?

However, there are many who see storm clouds on the horizon. "I am hearing more contractors talking about the potential for a recession coming up in the next 12 to 18 months," says E. Colette Nelson, chief advocacy officer for the American Subcontractors Association, Alexandria, Va. She says many contractors don't believe the market will drop off in the foreseeable future, but she cautions contractors should prepare just in case.

Nelson is not the only one who is concerned about long-term markets. "National construction market forecasts predict a slowdown in 2018 due to general concerns about a sluggish U.S. economy." says Marc Paolicelli, chief customer officer at RK Mechanical Inc.

Many contractors are preparing in case of a downturn. "Earlier this year, we felt a need to be prepared in case markets slowed later in 2018 or into 2019," says Brad Wucherpfennig, president of Baker Concrete Construction. "However, so far, the volume of work appears to be fairly steady."

Generally, contractors predict this surge will be maintained through 2018 and into 2019. "[But] we believe that building a strategically intelligent backlog of business is paramount in the ability to successfully thrive and survive the inevitable changes in our market place," says Skip Mancini, president of B.T. Mancini Co.

515
Firms on the list that sent in a survey in 2016

69.1%
Firms that increased revenue in 2016 from 2015

29.7%
Firms that had lower revenue in 2016 than in 2015

One of the difficulties in a market this strong is that many contractors are tempted to expand by pursuing larger projects, which can cause problems. "We have invested heavily in training, safety and technology because that is what customers demand," says Guzzi. He says firms that chase work into high-end markets may run into problems coping with these demands. "It is a tough time for small and midsize contractors trying to do bigger jobs than they are used to," he observes.

Guzzi says contractors have to be especially careful in such a strong market. "You can't take jobs that you can't staff, and you have to be careful who you team with and how clearly defined the scope of work is," he says. "Contractors that chase work just to add volume will be the first ones to get into trouble."

Mergers and Acquisitions

Mergers and acquisitions continue to have an impact on the specialty-contractor market. The recent merger between Brand Energy & Infrastructure and Safway Group was the biggest on the list, becoming the $4.6-billion industrial services giant BrandSafway.

Another major acquisition last year was Emcor Groups' purchase of Ardent Services, a $250-million

Electrical Contracting

Encore Goes the LED Route

At the new Colorado State University Stadium in Fort Collins, Encore Electric Inc. **(No. 170)** installed LED sports lights, rather than high-intensity discharge lights. LED lights improved the schedule and the environment. ■

electrical contractor in the industrial section. Guzzi says Emcor continues to look for the right firms to acquire. He adds, "We are looking for solid firms … preferably in the $100-million to $150-million range."

Many in the industry say the M&A trend will start to accelerate. "It seems as if there is a high concentration of baby boomers. As these individuals transition out of their businesses, there is an opportunity to see acquisitions reduce the number of players," says Greg Hosch, CEO, Harris Cos.

Ted Lynch, CEO of Southland Industries, says the industry is seeing the beginnings of another series of roll-ups, as larger firms begin to acquire smaller firms. "There are a lot of smaller firms that are having second thoughts about continuing to go it alone and are considering selling to stay viable," he says.

Limbach is another firm on the acquisition trail. After going public this time last year, it has been searching for suitable candidates for acquisition. "We just hired a new executive vice president in charge of mergers and acquisitions," notes Bacon.

Bacon says Limbach's dedicated design group provides a full range of design services. But the firm is now actively scouting electrical contractors for acquisition to go along with its mechanical work. This strategy will help Limbach to provide the full MEP package on design-build and integrated-project-delivery jobs, says Bacon.

"You can't take jobs that you can't staff, and you have to be careful who you team with and how clearly defined the scope of work is."

Anthony Guzzi, CEO, Emcor Group

Southland Industries is another mechanical contractor that has a dedicated design group to provide a full MEP design package to projects. Lynch says Southland always is looking for potential acquisitions. But unlike Limbach, Southland is not actively pursuing electrical contracting capabilities. "We have a lot of great electrical contractor partners and are not looking to replace them with in-house capacity," he says.

Limbach and Southland are not alone in expanding their capabilities beyond their core. Power Design recently expanded to include a mechanical division, hiring a team of mechanical engineers to learn its business model and start taking on projects. "This is a big step for us as an electrical subcontractor because now we can offer even more of a holistic solution to our customers by bringing in the mechanical engineering piece," says Lauren Permuy, vice president of business development. "It gives us more of a competitive edge against other electrical contractors and engineers, and we look forward to seeing the division grow."

Collaborative Environment

These moves into a wider range of contracting and design is a reflection of general contractors' and owners' increasing demands on subcontractors and specialty contractors to provide more services, sooner. For example, Austin notes that, "in anticipation of our industries' growing emphasis on turnkey projects, Quanta developed a full range of planning, engineering, procurement and construction capabilities." He says Quanta's integrated, self-perform model allows it to meet electric power and oil-and-gas infrastructure demands.

Design-build and integrated project delivery increasingly are demanding early subcontractor input. In fact, major subcontractors now are being seen more as partners than as hired hands. "In these projects, a core team of the general contractor, architect and major key subcontractors, such as mechanical and electrical, assemble early to set the project's goals and establish shared norms for the project," says Ash Awad, chief market officer for McKinstry.

As complexity in the building envelope increases, project teams are seeking earlier involvement from many different trades to assist in constructibility-driven design decision-making and accurate budget pricing. "What has emerged is an extensive design-assist period that integrates intense specialty-contractor involvement in helping the owners, construction managers and general contractors mitigate cost and schedule risks," says Jeffrey Vaglio, director of the advanced technology studio at Enclos.

Technology is helping subcontractors to participate early in the construction process. "The use of three

PHOTO COURTESY OF ENCORE ELECTRIC INC.

#39 **ENCLOS** won a $90-million contract to construct the 397,000-sq-ft facade on the 77-story, 1,050-ft 53W53 building, located in New York City.

dimensional computer-based design is revolutionizing our industry. This technology is enabling true collaboration in the preconstruction phase and aiding in the delivery of information to the workface," says Goodrich of Gaylor Electric.

Risky Business

While subcontractors are giving more input into the construction process, many complain that some owners and GCs continue to impose tough contract conditions. Contracts are becoming more onerous, requiring longer legal reviews and costs. "Gone are the days of a handshake and signature. Many contracts require quite a bit of back-and-forth for weeks or even months before getting someone on board," says Michael Haber, managing partner of W&W Glass.

These contract clauses are causing more interactions not over the project but over what is expected and what is required. "Relations [with GCs] are good. However, the consistent additional risk we, as a large subcontractor, are being asked to assume means additional discussion on both ends regarding terms and conditions," says Jeff Heymann, vice president of Benson Industries Inc.

The increased risk-shifting may jeopardize contractors that are not used to assuming such liability. Newtron Group President John Schempf says, "We expect that some contractors will struggle financially to compete with contractors that have regularly accepted risk in the past."

Subcontractors also worry about other contract terms. At the project level, "we have seen a shift in overall management responsibilities that owners put on demolition contractors," says David H. Griffin Jr., president of D.H. Griffin Cos. The industry is shifting toward a "design and deconstruct" model, with owners requesting complete technical and strategic plans at the beginning of the bidding process, particularly in the power industry, he says.

The increasing use of so-called owner-controlled insurance programs (OCIPs) and contractor-controlled insurance programs (CCIPs) is a cause of concern, too. "The problem arises when the OCIP or CCIP insurance doesn't provide the same coverage your own insurance normally provides, both in coverage and deductibles," says Richard Pennington, executive vice president of Dorvin D. Leis Co.

A perennial problem for subcontractors is getting fully paid in a timely manner. A sign of this problem is found in the results of the Top 600 survey. Over the past three years, the average percentage of late payments and the average number of days late have remained consistent. In fact, the average number of days late has increased to 37.2 in 2017 from 35.6 in 2015.

Productivity

Subs Are Getting Lean

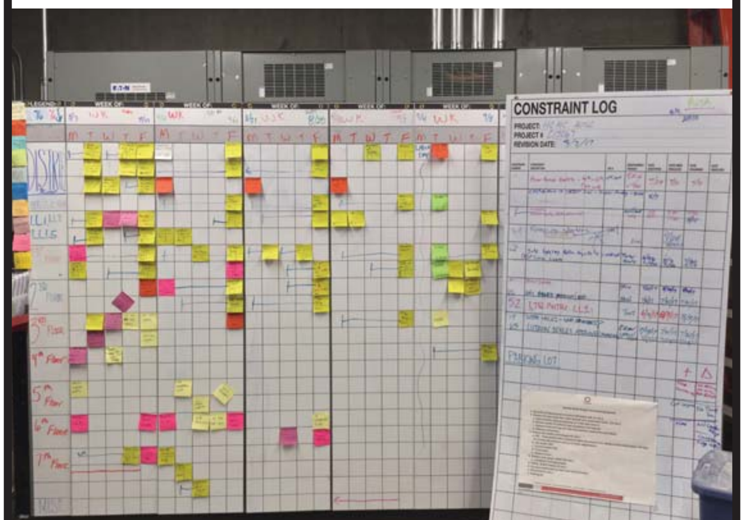


PHOTO COURTESY OF PARSONS ELECTRIC INC.

With owners and general contractors demanding more-efficient project delivery, subcontractors are under increasing pressure to cut waste. Firms are employing many methods to squeeze waste out of their processes. These tactics range from new technologies and prefabrication to having workers in the field identify inefficiencies.

For example, CVC Concrete Value Corp. **(No. 187)** has instituted an incentive program, "Save the Waste," to reward workers who identify waste in the field, says Paul Eshe, CEO. He says the program rewards workers who meet measurable goals and improve productivity.

But productivity remains illusive. "Analysis of government data by the Bureau of Economic Analysis shows that the construction industry has failed to achieve any significant improvements in productivity in the last 50 years," says Chuck Goodrich, president of Gaylor Electric Inc. **(No. 124)**. But Gaylor is using an increasingly popular technique to improve the efficiency of its own processes: lean construction.

Lean construction is becoming more prevalent, and more general contractors are beginning to request lean-construction expertise on their projects. "Scheduling processes are becoming more interactive, using lean tools [such as] Last Planner. For the GCs that are getting it, jobs are more productive and are being executed better," says Joel Moryn, CEO of Parsons Electric **(No. 72)** (see photo above).

J.C. Cannistraro **(No. 86)** is another firm that is employing lean construction. Cannistraro identified the need for more streamlined and standardized procedures for scheduling and communication within its project teams, so it purchased TouchPlan software, a web-based application, says Joe Mierzejewski, Cannistraro's vice president for plumbing. He says the program "bridges the gap between pull-planning and schedule creation for short-interval planning."

While many specialty contractors are using lean principles, there are obstacles. "The risk is that it is hard to do really well," says Moryn. He says many firms come onto a project as the low bidder, which makes it hard to insist they be qualified in software packages such as Last Planner and 5S and in managing the "eight wastes" addressed in the lean process, says Moryn, adding, "This will make it difficult to be the game-changer we think it has the potential to be." However, Moryn is optimistic that lean construction will be transformative. ■

#109 **ACOUSTI ENGINEERING CO. OF FLORIDA** provided most of the wall and ceiling work for the recently opened Atlanta Falcons Stadium.

"These payment delays affect the industry as a whole, [resulting in] higher prices to cover lost interest and earnings, lawsuits for damages and delays in timely payments. Quick pay must be the hot topic going forward," says Jim Verner, president of Acousti Engineering Co. of Florida.

For many subcontractors, payment transparency is critical. "Most contracts around the country have pay-when-paid clauses," says Nelson of ASA. But subs often don't know when the GC is paid, so they don't know when they should expect their own payment. She notes that some cities, such as San Antonio and the District of Columbia, already publish on their websites their disbursements to contractors, giving subs a heads-up on when their progress payments should be expected.

Now, the state of California Legislature has passed a statewide requirement that mandates all state agencies to publish in the state contracts register notice of progress payments made to prime contractors within 10 days of payment. And Congress has proposed a federal Small Business Act [H.R. 2350] amendment that would impose similar requirements on federal agencies for progress payments on federal projects.

Hiring a team of mechanical engineers "is a big step for us as an electrical subcontractor because now we can offer even more of a holistic solution to our customers."

Lauren Permuy, Vice President of Business Development, Power Design

Staff Shortages

Perhaps the biggest issue among subcontractors is the growing staff shortages around the country. "Young people just aren't seeking out skilled training at the rate that they're seeking out college degrees, despite the good wages and challenging work," says John Boncher, president and CEO of Cupertino Electric Inc. He says Cupertino has been educating students and their parents about what a career in the skilled trades can offer. "We need to update our approach, embrace social media and getting this next generation excited about a future in the construction industry."

Many firms worry that the Trump administration's continuing efforts to limit immigration may hurt the industry. "What hurts is the clamping down on workers from other countries and the policy of not allowing guest workers," says Permuy. "This will continue to negatively impact costs to the industry."

Retaining qualified people is a key to success. Guzzi of Emcor says workers are looking to firms that will pro-

THE TOP 50 FIRMS IN ELECTRICAL

RANK 2017	RANK 2016	FIRM	($ MIL.) 2016 REV.	% CHANGE '15-'16
1	1	QUANTA SERVICES	4,850.1	-2
2	3	ROSENDIN ELECTRIC	1,959.3	+80
3	2	EMCOR GROUP INC.	1,717.6	+25
4	4	MYR GROUP INC.	1,142.0	+8
5	5	CUPERTINO ELECTRIC INC.	714.7	-6
6	6	MMR GROUP INC.	695.0	-1
7	7	M.C. DEAN INC.	643.6	+3
8	10	MASTEC INC.	616.2	+22
9	8	FIVE STAR ELECTRIC CORP.	566.7	+3
10	15	MDU CONSTRUCTION SERVICES GROUP INC.	547.4	+28
11	11	HELIX ELECTRIC	524.7	+17
12	17	MORROW-MEADOWS CORP.	513.1	+34
13	16	FAITH TECHNOLOGIES. INC.	483.2	+13
14	9	BERGELECTRIC CORP.	483.2	-5
15	12	THE NEWTRON GROUP	450.0	+2
16	**	IES HOLDINGS INC.	448.5	NA
17	13	ALDRIDGE ELECTRIC INC.	440.2	+3
18	14	CONTI CORP.	439.4	+3
19	26	POWER DESIGN INC.	397.0	+49
20	19	REDWOOD ELECTRIC GROUP INC.	375.0	+7
21	20	CACHE VALLEY ELECTRIC CO.	366.3	+7
22	21	ISC CONSTRUCTORS LLC	352.0	+7
23	23	WAYNE J. GRIFFIN ELECTRIC INC.	333.6	+10
24	22	E-J ELECTRIC INSTALLATION CO.	323.0	+3
25	18	HUNT ELECTRIC CORP.	311.0	-13
26	30	DAVIS H. ELLIOT CO.	295.2	+17
27	24	PARSONS ELECTRIC	282.7	+4
28	27	MOTOR CITY ELECTRIC CO.	279.0	+5
29	37	WALKER ENGINEERING INC.	270.0	+31
30	31	FISK ELECTRIC CO.	263.6	+11
31	28	SPRIG ELECTRIC	260.8	+0
32	34	HATZEL & BUEHLER INC.	256.4	+15
33	29	MILLER ELECTRIC CO.	249.1	-4
34	**	PHALCON LTD.	243.0	NA
35	25	NEW RIVER ELECTRICAL CORP.	241.5	-11
36	35	SACHS ELECTRIC CO.	233.3	+5
37	38	CSI ELECTRICAL CONTRACTORS INC.	222.1	+16
38	**	PRIME ELECTRIC	216.7	NA
39	36	COCHRAN INC.	202.4	-7
40	**	UNITY INTERNATIONAL GROUP	197.2	NA
41	**	BAKER ELECTRIC INC.	183.5	+37
42	33	INGLETT & STUBBS LLC	182.0	-21
43	40	GAYLOR ELECTRIC INC.	180.0	+4
44	48	TRI-CITY ELECTRICAL CONTRACTORS INC.	178.3	+21
45	44	THE MORSE GROUP INC.	173.1	+9
46	39	LAKE ERIE ELECTRIC COS.	171.2	-5
47	46	TRI-CITY ELECTRIC CO.	165.3	+6
48	42	THE STATE GROUP INC.	163.3	-2
49	**	SULLIVAN & MCLAUGHLIN COS. INC.	163.0	NA
50	45	EGAN CO.	160.7	+2

NA=NOT AVAILABLE. ** =NOT PREVIOUSLY RANKED.

vide basic security. He says workers are asking, "Are you going to pay me at the end of every week, and are you going to make sure the jobsite is safe? Do you have supervisors who will provide leadership? And if I do a good job, can I expect to become a regular member of the team?" Keeping these issues in mind during the downturn and throughout the long recovery, Emcor has worked hard to answer yes to all these questions.

However, Nelson of ASA points out that, if the industry goes into recession in the next year or two, the loss of workers could have a devastating long-term impact on the industry workforce. "The baby-boom generation, who continued to come back time and again after cutbacks in previous industry recessions, may decide to hang it up if they are laid off or end up being put on short hours during the next recession," she says. Further, Nelson points out that the younger generation of workers who haven't experienced the cyclical nature of the industry may decide they are better off in other industries, rather than holding on or returning to construction after their first down cycle rebounds, leaving the industry's staffing crisis even more severe.

One plus in the recruitment of young people is the

"The baby-boom generation ... may decide to hang it up if they are laid off or end up being put on short hours during the next recession."

E. Colette Nelson, Chief Advocacy Officer, American Subcontractors Association

recent Trump administration move to expand apprenticeship programs. Goodrich of Gaylor Electric believes this action will be a big boost to the industry. "Approving high-quality, industry-recognized apprenticeship programs will go a long way toward bridging the skills gap and training the construction workforce we need today and tomorrow," he says. Across the country in 1,400 locations, ABC has built a network of chapters and affiliated training centers that offer more than 800 apprenticeship, craft, safety and management training programs to build the people who build America, he says.

A legal issue for subcontractors is workers' compensation. Nelson says there are concerns that an aging workforce may increase the number of on-site accidents, putting pressure on workers'-comp rates.

Some contractors say there is not enough policing of questionable workers'-comp claims. "We would like to see more attention given to fitness for duty as a way to mitigate this situation," says Victor E. Salerno, CEO of O'Connell Electric Co. Inc.

However, a Texas trial court's recent workers'-compensation ruling has many in the industry and insurance watching carefully. It concerns "exclusive remedy"

THE TOP 50 FIRMS IN MECHANICAL

RANK 2017	RANK 2016	FIRM	($ MIL.) 2016 REV.	% CHANGE '15-'16
1	1	EMCOR GROUP INC.	3,503.6	+10
2	2	COMFORT SYSTEMS USA	1,340.2	+3
3	3	ACCO ENGINEERED SYSTEMS	806.2	+12
4	7	SOUTHLAND INDUSTRIES	748.3	+78
5	6	API GROUP INC.	730.4	+57
6	5	MCKINSTRY	496.0	+3
7	9	TEAM INDUSTRIAL SERVICES	480.0	+54
8	4	TDINDUSTRIES INC.	456.0	-15
9	8	HARRIS COS.	448.2	+10
10	12	LIMBACH FACILITY SERVICES	447.0	+50
11	20	APOLLO MECHANICAL CONTRACTORS	341.5	+47
12	14	MCKENNEY'S INC.	314.0	+17
13	13	THE BRANDT COS. LLC	291.2	+5
14	18	AZCO INC.	290.5	+25
15	**	PAN-PACIFIC MECHANICAL LLC	290.0	NA
16	**	KIRLIN GROUP	289.2	NA
17	30	MACDONALD MILLER FACILITY SOLUTIONS	274.0	+79
18	17	MURPHY CO. MECHANICAL CONT'RS AND ENG'RS	272.3	+17
19	11	WDF	263.7	-12
20	21	U.S. ENGINEERING CO.	251.0	+14
21	16	MMC CONTRACTORS INC.	230.0	-4
22	24	HARDER MECHANICAL CONTRACTORS INC.	228.6	+27
23	19	MURRAY CO.	225.0	-3
24	10	CRITCHFIELD MECHANICAL INC.	221.0	-28
25	25	J.C. CANNISTRARO LLC	220.5	+23
26	38	MECHANICAL INC.	209.1	+56
27	**	TERRA MILLENNIUM CORP.	196.0	NA
28	23	JOHN E. GREEN CO.	194.4	+3
29	29	KSW MECHANICAL	185.2	+20
30	28	COASTAL MECHANICAL SERVICES GROUP	180.2	+17
31	33	HILL MECHANICAL CORP.	177.9	+20
32	26	RK MECHANICAL INC.	176.9	-1
33	31	IVEY MECHANICAL CO.	176.1	+16
34	**	MB MECHANICALS HOLDINGS	175.4	NA
35	**	RMF NOOTER INC.	173.9	NA
36	27	E.M. DUGGAN INC.	154.7	-12
37	**	CECO CONSTRUCTION GROUP	149.9	+212
38	**	P1 GROUP INC.	145.2	NA
39	35	DORVIN D. LEIS CO. INC.	144.0	+5
40	45	J.F. AHERN CO.	137.9	+28
41	32	SAUER HOLDINGS INC.	132.7	-12
42	**	MDU CONSTRUCTION SERVICES GROUP INC.	128.8	+54
43	34	MCCARL'S INC.	128.7	-13
44	41	LETSOS CO.	126.1	+6
45	39	A.O. REED & CO.	125.3	-4
46	49	SHAPIRO & DUNCAN INC.	122.5	+24
47	46	MTECH MECHANICAL	120.5	+16
48	**	AMPAM PARKS MECHANICAL	117.0	NA
49	37	WORTH AND CO.	114.3	-15
50	44	GRUNAU CO.	114.0	+4

NA=NOT AVAILABLE. ** =NOT PREVIOUSLY RANKED.

THE TOP 20 FIRMS IN GLAZING AND CURTAIN WALL

RANK 2017	RANK 2016	FIRM	($ MIL.) 2016 REV.	% CHANGE '15-'16
1	**	ENCLOS CORP.	452.0	NA
2	1	HARMON	270.9	+10
3	2	BENSON INDUSTRIES INC.	260.0	+11
4	3	W&W GLASS LLC	180.0	+24
5	4	ARCHITECTURAL GLASS & ALUMINUM CO. INC.	124.0	+21
6	6	CROWN CORR INC.	122.6	+53
7	7	KARAS & KARAS GLASS CO. INC.	94.6	+42
8	**	ALLIANCE GLAZING TECHNOLOGIES	77.0	NA
9	5	PIONEER CLADDING & GLAZING SYSTEMS LLC	56.3	-31
10	10	HALEY-GREER INC.	48.0	+30
11	12	GIROUX GLASS INC.	43.7	+34
12	11	AJAY GLASS CO.	42.2	+22
13	**	FLYNN GROUP OF COS.	33.6	+125
14	16	CRAWFORD-TRACEY CORP.	31.6	+39
15	8	ARCHITECTURAL WALL SYSTEMS LLC	28.9	-47
16	**	WESTERN SPECIALTY CONTRACTORS	25.1	NA
17	17	NATIONAL ENCLOSURE CO.	24.8	+24
18	13	EGAN CO.	24.7	-21
19	14	KOVACH BUILDING ENCLOSURES	24.5	-6
20	18	H.J. MARTIN AND SON	24.2	+40

NA=NOT AVAILABLE. ** =NOT PREVIOUSLY RANKED.

THE TOP 20 FIRMS IN PAINTING

RANK 2017	RANK 2016	FIRM	($ MIL.) 2016 REV.	% CHANGE '15-'16
1	1	BRANDSAFWAY	291.6	+40
2	4	F.D. THOMAS INC.	86.7	+15
3	**	K2 INDUSTRIAL SERVICES INC.	63.9	NA
4	5	AVALOTIS CORP.	50.3	+0
5	6	SWANSON & YOUNGDALE INC.	43.4	-11
6	7	HARTMAN WALSH INDUSTRIAL SERVICES	43.3	+8
7	8	THOMAS INDUSTRIAL COATINGS INC.	39.1	+0
8	10	JERRY THOMPSON & SONS	38.4	+2
9	9	DUNKIN & BUSH INC.	37.9	-1
10	11	ASCHER BROTHERS CO. INC.	36.8	+2
11	12	LONG PAINTING CO.	36.1	+23
12	13	GEORGE E. MASKER INC.	34.9	+22
13	18	GRAYDAZE CONTRACTING INC.	30.3	+39
14	16	HARRISON CONTRACTING CO. INC.	28.9	+21
15	15	BAKER PAINT & CONTRACTING CO. INC.	28.5	+14
16	20	THOMARIOS	26.5	+25
17	17	INTECH CONTRACTING LLC	26.3	+15
18	**	NATIONAL COATINGS	23.1	NA
19	14	CERTIFIED COATINGS CO.	20.5	-20
20	**	COATINGS UNLIMITED INC.	20.1	NA

NA=NOT AVAILABLE. ** =NOT PREVIOUSLY RANKED.

THE TOP 20 FIRMS IN EXCAVATION AND FOUNDATION

RANK 2017	RANK 2016	FIRM	($ MIL.) 2016 REV.	% CHANGE '15-'16
1	1	HAYWARD BAKER INC., A KELLER CO.	526.1	-6
2	5	MALCOLM DRILLING CO. INC.	285.1	+2
3	4	BERKEL & CO. CONTRACTORS INC.	246.0	-17
4	3	MASTEC INC.	205.4	-46
5	7	MANAFORT BROTHERS INC.	197.2	+13
6	15	J. DERENZO CO.	175.0	+42
7	6	BEAVER EXCAVATING CO.	173.0	-8
8	**	MORETRENCH	171.6	NA
9	**	INDEPENDENCE EXCAVATING INC.	165.4	+141
10	12	REMEDIAL CONSTRUCTION SERVICES LP	164.7	+20
11	13	RYAN INC. CENTRAL	159.6	+22
12	18	PLATEAU EXCAVATION INC.	156.2	+33
13	9	CASE FOUNDATION CO., A KELLER CO.	152.3	+2
14	8	VEIT & CO. INC.	144.3	-10
15	17	CONDON-JOHNSON & ASSOCIATES	138.8	+15
16	**	LANDMARK CONSTRUCTION CO. INC.	114.4	NA
17	19	DRILL TECH DRILLING & SHORING	109.8	+4
18	14	MCKINNEY DRILLING CO., A KELLER CO.	107.9	-13
19	16	HJ FOUNDATION, A KELLER CO.	100.8	-17
20	**	KELLER (CANADA), A KELLER CO.	96.7	-7

NA=NOT AVAILABLE. ** =NOT PREVIOUSLY RANKED.

THE TOP 20 FIRMS IN ROOFING

RANK 2017	RANK 2016	FIRM	($ MIL.) 2016 REV.	% CHANGE '15-'16
1	1	CENTIMARK CORP.	528.6	+3
2	2	BAKER ROOFING CO.	192.8	-5
3	**	NATIONS ROOF	148.5	NA
4	**	PANELIZED STRUCTURES INC.	135.9	NA
5	3	KALKREUTH ROOFING AND SHEET METAL	114.9	+13
6	8	FLYNN GROUP OF COS.	93.4	+87
7	**	HOLLAND ROOFING GROUP	73.0	NA
8	**	BEST CONTRACTING SERVICES INC.	70.0	NA
9	4	SCHREIBER CORP.	67.0	+3
10	6	LATITE ROOFING LLC	63.0	+22
11	10	KPOST CO.	52.5	+39
12	7	DOUGLASS COLONY GROUP	50.0	-1
13	9	THE BULLDOG GROUP INC.	48.4	+4
14	14	THE ROOF DEPOT INC.	44.1	+52
15	13	ORNDORFF & SPAID INC.	39.7	+19
16	11	KING OF TEXAS ROOFING CO. LP	36.2	+2
17	15	WAYNE'S ROOFING INC.	34.6	+21
18	**	ALCAL SPECIALTY CONTRACTING	33.6	NA
19	5	BIRDAIR INC.	32.5	-48
20	17	SUTTER ROOFING	25.6	+18

NA=NOT AVAILABLE. ** =NOT PREVIOUSLY RANKED.

#160 **O'CONNELL ELECTRIC CO. INC.** supplied 30 bucket trucks and 60 linemen from its Rochester, N.Y., office to help with Hurricane Irma in Florida.

THE TOP 20 FIRMS IN FIRE PROTECTION AND SPRINKLERS

RANK 2017	RANK 2016*	FIRM	($ MIL.) 2016 REV.	% CHANGE '15-'16*
1	1	API GROUP INC.	1,069.5	+4
2	2	EMCOR GROUP INC.	304.0	+13
3	3	J.F. AHERN CO.	123.2	+23
4	5	WAYNE AUTOMATIC FIRE SPRINKLERS INC.	95.0	+22
5	**	KIRLIN GROUP	52.6	NA
6	7	MDU CONSTRUCTION SERVICES GROUP INC.	32.2	+16
7	8	J.C. CANNISTRARO LLC	25.9	-3
8	10	HILL MECHANICAL CORP.	25.0	+7
9	13	PITTSBURG TANK & TOWER GROUP INC.	22.1	+10
10	12	JOHN E. GREEN CO.	21.6	+3
11	14	HAMPSHIRE FIRE PROTECTION	20.2	+0
12	9	APS FIRE CO.	20.1	-24
13	11	WDF	16.8	-27
14	**	K2 INDUSTRIAL SERVICES INC.	14.2	NA
15	17	AMERICAN FIRE TECHNOLOGIES	13.2	+10
16	15	ARDEN BUILDING COS. LLC	12.2	-7
17	**	THOMAS G. GALLAGHER INC.	10.8	NA
18	19	CONTI CORP.	9.6	+2
19	20	WYATT INC.	8.7	+9
20	21	THE PIPCO COS. LTD.	8.6	+25

* NA=NOT AVAILABLE. ** =NOT PREVIOUSLY RANKED.

Museums

Baker's Band of Brothers

Baker Concrete Construction **(No. 15)** is building the cylindrical cast-in-place concrete structure for the National Veterans Memorial and Museum, in Columbus, Ohio. The exhibition areas will feature exposed concrete, wood flooring and custom ceilings. The 55,000-sq-ft venue will feature a central Cyclorama space, a rooftop sanctuary, a Memorial Grove, and grounds with views of the nearby Scioto River. The museum is scheduled to open in summer 2018. Turner Construction is the general contractor. ■

provisions in workers'-comp laws, barring injured workers from suing their employers if the employer is covered by state-authorized workers'-comp insurance.

Texas A&M University awarded a $4.5-million contract to expand and renovate Kyle Field on the campus at College Station. The job was covered by an OCIP, including a workers'-comp policy that covered the GC and major subcontractors.

A worker was killed on the job, and his family sued the GC and several subcontractors for wrongful death. Despite a Texas law that says workers' comp is the exclusive remedy for worker injuries and deaths, a Texas trial court ruled in Manhattan | Vaughn, JVP v. Garcia that, since neither the GC nor the subs were the direct purchaser of the workers'-comp insurance and were only OCIP subscribers, workers' comp was not the exclusive remedy for a worker's death. The court upheld the jury's $53.8-million wrongful-death verdict.

ASA and other organizations are working to overturn this ruling. Nelson of ASA says the decision conflicts with other rulings on the issue in Texas and elsewhere and hopes the Houston court of appeals will reverse it. Still, this is "a scary scenario" if other courts start looking at this case for guidance, she says. ■

On the Web

For expanded content on ENR's Top Lists, see ENR.com/toplists.

How To Read the Tables

KEY TO TYPE OF FIRM
A=asbestos abatement; **C**=concrete; **D**=demolition/wrecking; **E**=electrical; **F**=fire protection and sprinklers; **G**=glazing/curtain wall; **M**=mechanical; **MA**=masonry; **O**=other; **P**=painting; **R**=roofing; **SH**=sheet metal; **ST**=steel erection; **U**=utility; **W**=wall/ceiling; **X**=excavation/foundation.

Companies are ranked according to construction revenue in 2016 in ($) millions from specialty contracting in a prime or subcontracting capacity. Firms that were not ranked in 2015 are designated by double asterisks (**). New contract awards refer to contracts awarded in 2016. 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 includes 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 includes thermal and hydroelectric power plants, 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 includes 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.

PHOTO COURTESY OF BAKER CONCRETE CONSTRUCTION

#60 **E-J ELECTRIC INSTALLATION CO.** is doing electrical work on One Vanderbilt Place, a new, 1,300-ft office tower on 42nd Street in New York City.

RANK 2017	RANK 2016	FIRM	FIRM TYPE	2016 REVENUE ($ MIL) TOTAL REVENUE	NEW CONTRACTS	MARKETS (% OF 2016 REVENUE) GENERAL BUILDING	MANUFACTURING	POWER	WATER SUPPLY	SEWER / WASTE	INDUS. / PETROLEUM	TRANSPORTATION	HAZARDOUS WASTE	TELECOM.
401	417	**ASSOCIATED MECHANICAL CONTRACTORS INC.,** Shakopee, Minn.	M	51.3	102.5	100	0	0	0	0	0	0	0	0
402	400	**TRI-STATE DRILLING INC.,** Plymouth, Minn.[402]	X	51.1	72.4	0	0	100	0	0	0	0	0	0
403	377	**BARNUM & CELILLO ELECTRIC INC.,** Sacramento, Calif.	E	51.0	60.0	70	20	0	0	0	10	0	0	0
404	397	**TERRY'S ELECTRIC INC.,** Kissimmee, Fla.	E	50.9	41.6	80	0	10	0	0	0	0	0	10
405	372	**SLACK & CO. CONTRACTING INC.,** Houston, Texas	U/X/O	50.2	81.0	85	0	0	5	5	0	5	0	0
406	359	**WESTERN ALLIED CORP.,** Santa Fe Springs, Calif.	M	49.7	51.9	100	0	0	0	0	0	0	0	0
407	395	**DUNN BUILDING CO. LLC,** Birmingham, Ala.	ST/R/C/X	49.7	40.3	10	40	15	0	0	35	0	0	0
408	476	**CONCRETE PROTECTION AND RESTORATION INC.,** Baltimore, Md.[408]	C	49.1	56.2	96	2	0	0	2	0	0	0	0
409	450	**ACE ELECTRIC INC.,** Valdosta, Ga.	E	48.4	116.5	68	10	5	0	0	15	2	0	0
410	**	**ZAK COS. INC.,** Fenton, Mo.	E/M	48.4	28.9	49	0	0	0	51	0	0	0	0
411	407	**MID-CITY ELECTRIC CO.,** Columbus, Ohio[411]	E/O	48.2	37.9	0	0	0	0	0	0	0	0	0
412	409	**C.A. LINDMAN COS.,** Jessup, Md.	MA/C	48.2	52.4	100	0	0	0	0	0	0	0	0
413	**	**COMPREHENSIVE ENERGY SERVICES INC.,** Longwood, Fla.[413]	M/O/SH	48.0	32.8	100	0	0	0	0	0	0	0	0
414	443	**HALEY-GREER INC.,** Dallas, Texas	G	48.0	41.8	100	0	0	0	0	0	0	0	0
415	340	**INTERNATIONAL CHIMNEY CORP.,** Williamsville, N.Y.[415]	C/MA/D	47.9	36.0	7	5	36	5	3	32	2	5	5
416	**	**J&E COS.,** Grand Prairie, Texas	MA	47.9	58.4	100	0	0	0	0	0	0	0	0
417	480	**INTERSTATE MECHANICAL CORP. DBA IMCOR,** Phoenix, Ariz.[417]	M/SH/O	47.5	31.9	92	3	0	0	4	0	1	0	0
418	504	**CORBINS ELECTRIC,** Phoenix, Ariz.	E	47.5	84.1	20	60	0	0	0	0	5	0	15
419	428	**ORNDORFF & SPAID INC.,** Beltsville, Md.	R/SH	47.3	45.8	83	10	0	0	0	7	0	0	0
420	**	**PRECISION DEMOLITION LLC,** Lewisville, Texas	D	47.3	48.6	80	10	0	0	0	0	10	0	0
421	347	**CLEVELAND CEMENT CONTRACTORS INC.,** Cleveland, Ohio	C	47.2	70.0	75	20	0	0	5	0	0	0	0
422	547	**W.D. MANOR MECHANICAL CONTRACTORS INC.,** Phoenix, Ariz.	M	47.0	20.0	100	0	0	0	0	0	0	0	0
423	405	**PERLECTRIC INC.,** Fairfax, Va.	E	47.0	40.4	90	0	0	0	0	0	0	0	10
424	349	**BEARD CONSTRUCTION GROUP LLC,** Port Allen, La.	X	46.5	40.4	0	0	23	0	9	60	8	0	0
425	**	**GEO-SOLUTIONS INC.,** New Kensington, Pa.[425]	O	46.4	52.0	0	0	0	0	0	0	0	100	0
426	358	**MEISNER ELECTRIC INC.,** Delray Beach, Fla.	E	45.4	56.6	97	0	0	0	0	0	1	0	2
427	419	**APEX IMAGING SERVICES,** Pomona, Calif.	P/W/D	45.1	35.0	100	0	0	0	0	0	0	0	0
428	**	**HEATING & PLUMBING ENGINEERS INC.,** Colorado Springs, Colo.	M	45.0	45.0	95	5	0	0	0	0	0	0	0
429	399	**DUNKIN & BUSH INC.,** Kirkland, Wash.[429]	P/O	44.6	45.0	0	0	4	0	0	86	10	0	0
430	458	**CULLUM MECHANICAL CONSTRUCTION INC.,** North Charleston, S.C.	M	44.5	25.8	42	50	0	0	0	8	0	0	0
431	398	**AREA ERECTORS INC.,** Rockford, Ill.	ST	44.2	49.3	80	10	0	0	5	5	0	0	0
432	444	**ACOUSTIC CEILING & PARTITION CO.,** Ann Arbor, Mich.	W	44.2	36.2	98	2	0	0	0	0	0	0	0
433	478	**SPACECON SPECIALTY CONTRACTORS LLC,** Wheat Ridge, Colo.	W	44.2	44.2	65	0	0	0	0	0	35	0	0
434	402	**PRECISION ENVIRONMENTAL CO.,** Independence, Ohio	A	44.1	46.7	0	0	0	0	0	0	0	100	0
435	503	**THE ROOF DEPOT INC.,** Alpharetta, Fla.	R	44.1	28.5	100	0	0	0	0	0	0	0	0
436	507	**GRIFFIN DEWATERING,** Houston, Texas[436]	O	44.0	43.6	63	0	14	5	2	7	0	0	0
437	**	**BUILDERS PLUS INC.,** Boynton Beach, Fla.[437]	O	43.9	30.8	100	0	0	0	0	0	0	0	0
438	424	**TRINITY DRYWALL AND PLASTERING SYSTEMS LP,** Fort Worth, Texas	W	43.7	53.2	100	0	0	0	0	0	0	0	0
439	475	**GIROUX GLASS INC.,** Los Angeles, Calif.	G	43.7	63.3	100	0	0	0	0	0	0	0	0
440	423	**HARTMAN WALSH INDUSTRIAL SERVICES,** St. Louis, Mo.	P	43.3	NA	3	5	25	25	5	20	10	5	2
441	422	**INTEX ELECTRICAL CONTRACTORS INC.,** Forney, Texas	E	42.9	31.8	100	0	0	0	0	0	0	0	0
442	464	**MID ATLANTIC MECHANICAL INC.,** Glen Mills, Pa.	M	42.8	37.5	100	0	0	0	0	0	0	0	0
443	**	**GREINER ELECTRIC LLC,** Littleton, Colo.	E	42.6	31.2	100	0	0	0	0	0	0	0	0
444	448	**GRIBBINS INSULATION,** Evansville, Ind.[444]	O	42.5	31.0	10	5	45	5	0	35	0	0	0
445	384	**SUPERIOR RIGGING & ERECTING CO. INC.,** Atlanta, Ariz.[445]	ST/O	42.4	36.5	80	15	0	0	0	5	0	0	0
446	268	**DANNY'S CONSTRUCTION CO. LLC,** Shakopee, Minn.	ST	42.3	67.8	28	1	0	0	1	0	26	0	0
447	465	**AJAY GLASS CO.,** Canandaigua, N.Y.	G	42.2	47.4	100	0	0	0	0	0	0	0	0
448	403	**ARC ABATEMENT,** Waco, Texas	A/D	42.1	35.2	0	0	0	0	0	0	0	100	0
449	**	**CB STRUCTURES,** Pompano Beach, Fla.	C	42.0	33.0	100	0	0	0	0	0	0	0	0
450	396	**ADRIAN L. MERTON INC.,** Capitol Heights, Md.	M	41.3	41.3	100	0	0	0	0	0	0	0	0

FOOTNOTES: 402 = SHAFTS 408 = LANDSCAPING, ETC. 411 = TELEDATA 413 = SERVICE AND BUILDING AUTOMATION SYSTEMS 415 = HISTORICAL 417 = PLUMBING AND SERVICE 425 = HAZARDOUS WASTE/SOLID WASTE 429 = SCAFFOLDING AND INSULATION 436 = COMMERCIAL DEWATERING 437 = TILT UP 444 = MECHANICAL INSULATION 445 = CRANE RENTAL/RIGGING