By Gary J. Tulacz

Market Still Remains Strong, But Execs Fear 2020 Vision

Many construction sector firms are now starting to plan how to be recession-proof

The construction market is enjoying a decade of steady growth, and most sector executives don't see an immediate cause for concern. But there is a growing sense of unease that the U.S. economy is softening, which could put an end to the industry's expansion.

The contrast between current conditions and future market expectations can be seen in the latest results of the ENR Construction Industry Confidence Index survey. The CICI remained static at 59 in the first quarter of 2019, from the previous quarter ending last year. Of the 205 executives from large construction and design firms responding to the survey, many believe the market will begin to decline sometime in 2020.

This sense of an impending downturn doesn't mean that the current construction market is in trouble. Only 3% of survey respondents believe it has started to decline now, and only 6% say it could start in three to six months. On the other hand, 25% speculate the market will start to shrink in the next 12 to 18 months, compared to only 15% who believe it will still be in a growth mode in that timeframe.

The CICI measures executive sentiment about the current market, where it will be in the next three to six months and over a 12- to 18-month period. A rating above 50 shows a growing market. The index is based on responses to surveys sent between Feb. 28 and March 27 to 6,000 U.S. companies on ENR's lists of leading general contractors, subcontractors and design firms.

CFMA: CFOs Prepare for Trouble

The contrast between what the industry is seeing in the current market and what it expects to see next year is even more dramatic in the soon-to-be-released results of the latest Confindex survey from the Construction Financial Management Association, Princeton, N.J., which show that CFOs are worried about the market climate in 2020.

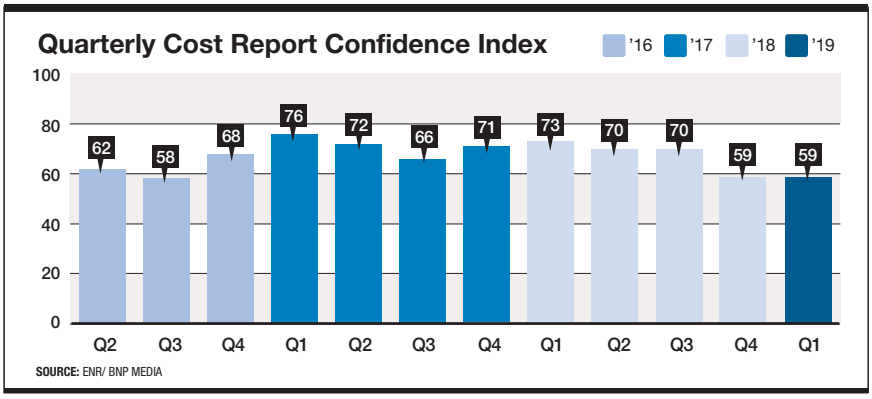
Each quarter, CFMA polls 200 CFOs from general and civil contractors and subcontractors. The CFMA Confindex is based on four separate financial and market components, each rated on a scale of 1 to 200. A rating of 100 indicates a stable market; higher ratings indicate market growth.

"The Confindex fell from 114 in the previous quarter to 109 in the current quarter," says Stuart Binstock, CFMA's CEO, noting it is the lowest rating since late 2010, when the industry was strug-

PROSPECTS IN INDIVIDUAL SECTORS BY FIRMS WORKING IN THOSE MARKETS

		CURRENTLY (%)			3-6 MONTHS (%)			12-18 MONTHS (%)		
	NUMBER OF FIRMS	DECLINING ACTIVITY	STABLE ACTIVITY	IMPROVING ACTIVITY	DECLINING ACTIVITY	STABLE ACTIVITY	IMPROVING ACTIVITY	DECLINING ACTIVITY	STABLE ACTIVITY	IMPROVING ACTIVITY
COMMERCIAL OFFICES	146	5	71	23	10	71	18	36	51	13
DISTRIBUTION, WAREHOUSE	65	5	48	48	6	46	48	15	49	35
EDUCATION K-12	96	6	59	34	3	62	35	11	61	27
ENTERTAINMENT, THEME PARKS, CULTURAL	58	12	78	10	16	69	16	22	62	16
HOSPITALS, HEALTH CARE	124	5	58	37	6	48	46	6	57	36
HIGHER EDUCATION	121	8	66	26	8	70	21	16	63	21
HOTELS, HOSPITALITY	91	2	71	26	16	60	24	28	62	10
MULTI-UNIT RESIDENTIAL	87	8	60	32	16	55	29	41	41	18
RETAIL	83	34	53	13	40	51	10	58	35	7
INDUSTRIAL, MANUFACTURING	86	3	69	28	8	55	37	17	55	28
TRANSPORTATION	69	4	61	35	4	55	41	7	45	48
WATER, SEWER AND WASTE	61	2	64	34	2	63	35	2	62	37
POWER	38	8	63	29	8	61	31	11	55	34
PETROLEUM, PETROCHEMICAL	31	0	83	17	3	68	29	3	57	40
ENVIRONMENTAL, HAZARDOUS WASTE	14	8	77	15	7	86	7	14	71	14

SOURCE: ENR/BNP MEDIA. FIGURES MAY NOT ADD UP TO 100% DUE TO ROUNDING



gling to climb out of a deep recession.

The bigger story is how the market is being viewed. The forward-looking "general business conditions" component plunged 11 points, to 102, while the "year-ahead outlook" took a similar dive, falling 10 points, to 95.

On the other hand, the Confindex components associated with the current market were stable. The "financial conditions" component remained steady at 115, while the "current conditions" component also was unchanged at 121.

Worrying About the Bottom Line

Even so, industry execs are watching news about the U.S. economy with growing concern. "I don't know if it is what [CFMA members] are seeing in the market, or what they are hearing from economists, but they are worried about next year," says Anirban Basu, CEO of economic consultant Sage Policy Group, Baltimore, and a CFMA adviser.

Basu says CFO members of CFMA are more focused on the bottom line than on markets. "There is a lot of work out there, but workers to do that work are getting more expensive, which means increasing volume does not necessarily mean increased profits," he points out.

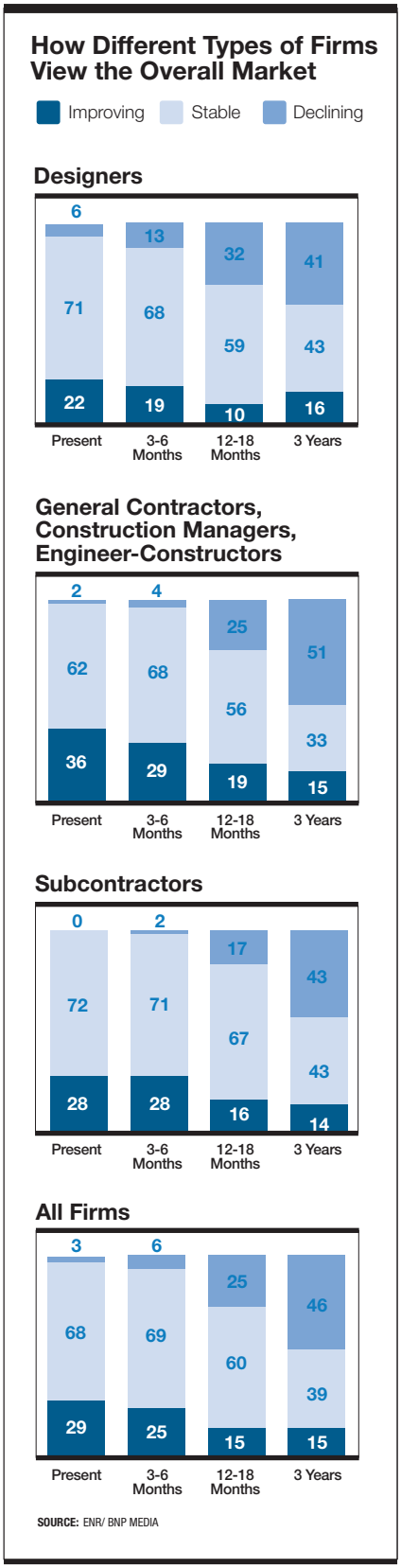
Despite the active market, firms are not necessarily awash in cash. Only 29% of CICI survey respondents report higher profits compared to this time last year, while 14.5% said profits were actually down. This compares to a year ago, when 37.1% said profits were up year-over-year, and only 11.8% said they had fallen.

Binstock notes a similar trend in the Confindex survey. In the last quarter, 39% of respondents believed that profits would be up next year, compared with the 27% who thought profits would be in decline, he says. The current quarter's responses are in sharp contrast to the last quarter, with only 20% believing profits will be up next year, as opposed to the 37% who believe profits will be down.

One area where companies are finding a little relief is in materials prices, with current numbers indicating that increases seem to be more modest than expected even in the wake of the Trump Administration's imposition of tariffs on such materials as steel, aluminum and lumber. ENR's CICI survey asked whether firms were seeing upward price pressure on any materials or equipment.

While 70.4% of CICI survey execs said they were seeing price pressures, this is down sharply from the 87.2% in the third quarter survey and 80.5% in the fourth quarter who saw rising prices. "People are finding that the impact of the tariffs is less than they anticipated," Basu says.

The market may be solid right now, but industry firms are having to pay a premium to hire enough people to do all the work. "If the market goes into recession next year, companies will be stuck with a lot of high-priced people with not enough to do," says Basu. "So CFOs are beginning to look at how to protect the bottom line if the downturn comes, going into a recession-planning mode." ■



By Alisa Zevin

Gas Prices Set To Fall, But Small Hikes for Some Materials in 2019

Following a slow start, construction will reach last year's numbers, but won't exceed them

Lumber's escalation rate is slowly declining, after a prolonged period of double-digit price increases. The ENR 20-city average price for the most common types of lumber is up 6.9% over this time last year, after a 10.4% hike at the end of the first quarter of 2018. Following steel tariff-related uncertainty in 2018, price increases have steadied. ENR's 20-city average price for steel is up 5% in 2019, while IHS Markit expects small hikes in several steel products over the year.

"Prices will try to increase across mid-2019 but the movement will be erratic," says John Anton, director of steel at IHS Markit. "Look for prices to rally through midyear but stay far below their mid-2018 peak. The average price for 2019 will be below 2018, but above January levels."

Consumption and Cost

ENR's 20-city average price for cement is up 5%, while IHS Markit predicts a 3.1% increase in 2019. The research firm's senior economist, Deni Koenhemsi, predicts that "producers are trying to pass on the higher energy costs incurred in 2018." The Portland Cement Association predicts that total cement consumption will rise 2.3% in 2019 but will cool off somewhat in 2020 and 2021, escalating at 1.8% and 0.5%, respectively.

After large hikes in oil and gas prices in 2018, IHS Markit also predicts decreases across the board in 2019, including a 12% decline for U.S. gasoline as well as a 7.5% drop for West Texas crude oil.

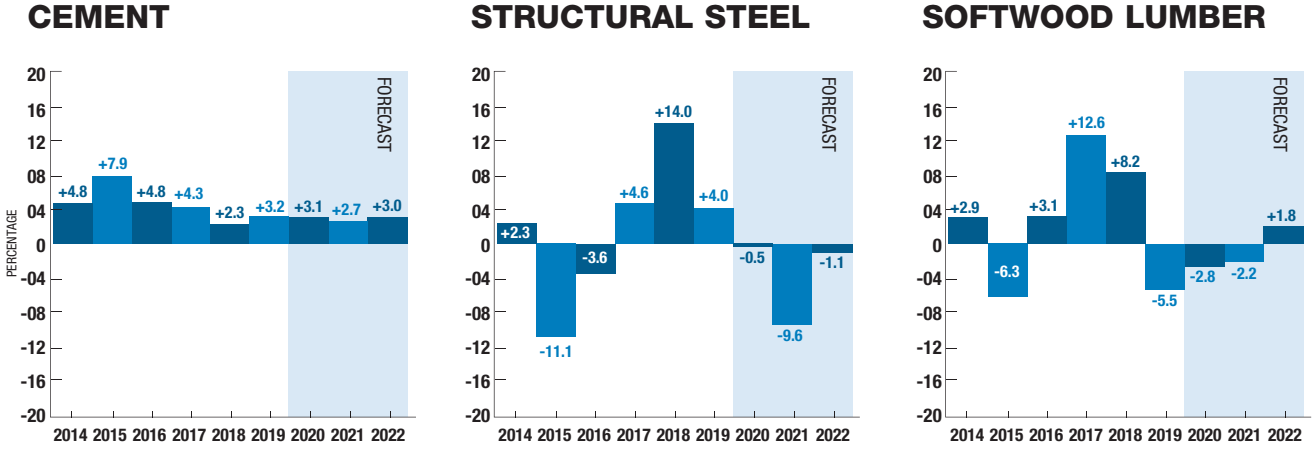
"We have lowered our forecast for natural gas prices through 2019," says Thomas McCartin, IHS Markit energy analyst. "After the spike in November that helped lift average prices in the fourth quarter to $3.79/MMBtu, prices will fall, averaging $2.77/MMBtu in the first quarter of 2019." He points out that with winter over, production gains will build inventories, but risks ahead include "a stronger supply or cooler-than-expected summer that could put downward pressure on prices."

Following a slow start to the year, construction is expected to pick up for the rest of 2019, with activity at roughly the same levels as in 2018, according to Robert A. Murray, chief economist at Dodge Data & Analytics. He cites building work such as the Toyota/Mazda auto assembly plant in Alabama and the Foxconn display plant in Wisconsin, and transportation work such as the new airport terminal in Kansas City as large projects that will provide a boost.

Signs of Slowdown

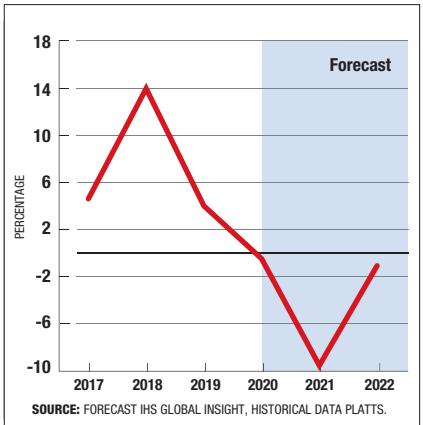
"On the plus side, federal transportation spending for fiscal 2019 was finalized in mid-February, and included a 2% increase for the federal-aid highway program," Murray says. "Interest rates have settled back, and inflation has subsided for now. Market fundamentals for office buildings and warehouses have not yet begun to erode."

But Murray also cautions that U.S. economic growth is set to slow in 2019



SOURCE: IHS GLOBAL INSIGHT

Structural-Steel Forecast



SOURCE: FORECAST IHS GLOBAL INSIGHT, HISTORICAL DATA PLATTS.

with "exports dampened by the slowing global economy." He adds that "recent surveys of bank lending officers indicate that some tightening of lending standards is now taking place, reflecting a more cautious stance by the banking sector toward commercial real estate loans."

Wage Rates Climb

Related to labor costs, ENR's 20-city average posted 1.7% and 1.6% respective increases in the first quarter for common wages, which applies to nonunion labor, and skilled wages, which is based on union worker compensation, compared with the same time last year.

The Construction Labor Research Council (CLRC), which tracks North American organized labor collective-bargaining settlements, reported increases in the 2.6%-3% range for 2018.

"For regions, the largest average percent increase, by far, in 2018 was in the Northwest region and the smallest in the Mountain Northern Plains," says Carey L. Peters, executive director at CLRC.

Insulators, carpenters and pipefitters/plumbers had the largest increases among the crafts, at 4.7%, 3.9% and 3.7%, respectively. Bricklayers, boilermakers, plasterers and teamsters had the smallest increases, at less than 2.5%.

In the coming year, CLRC "expects to see more of the same," says Peters. "Small but steady increases, with many over the 3.0% threshold." ■

BUILDERS' CONSTRUCTION COST INDEXES

NAME, AREA AND TYPE	JANUARY 2018	APRIL 2018	JULY 2018	OCTOBER 2018	JANUARY 2019	% CHANGE QTR.	% CHANGE YEAR
GENERAL-PURPOSE COST INDEXES:							
ENR 20-CITY: CONSTRUCTION COST[1]	1012.70	1021.43	1034.89	1040.94	1045.27	+0.4	+3.2
ENR 20-CITY: BUILDING COST[1]	876.46	881.32	894.46	901.95	904.34	+0.3	+3.2
BUREC: GENERAL BUILDINGS[2]	377.00	383.00	391.00	391.00	390.00	–0.3	+3.4
FM GLOBAL: INDUSTRIAL[3]	NA	NA	NA	NA	NA	NA	NA
SIERRA WEST: GENERAL BUILDING	1008.47	1012.74	1032.76	NA	NA	NA	NA
LELAND SAYLOR: MATERIAL/LABOR	1021.97	1045.12	1051.33	1041.82	1046.98	+0.5	+2.4
ECC, EDWARTOSKI COST CONSULTING[4]	185.48	185.96	188.41	188.51	NA	NA	NA
SELLING PRICES INDEXES—BUILDING:							
SIERRA WEST: SELLING PRICE	1323.60	1337.33	1416.21	NA	NA	NA	NA
TURNER: GENERAL BUILDING[1]	1071.00	1089.00	1105.01	1120.48	1135.49	+1.3	+6.0
LELAND SAYLOR: SUBCONTRACT	1054.98	1070.35	1068.38	1070.96	1079.90	+0.8	+2.4
RIDER LEVETT BUCKNALL[5]	187.58	189.80	192.66	195.48	198.33	+1.5	+5.7
SPECIAL-PURPOSE BUILDING COST INDEXES:							
U.S. COMMERCE: ONE-FAMILY HOUSE[6]	128.10	129.60	130.80	131.40	132.30	+0.7	+3.3
U.S. COMMERCE: NEW WAREHOUSES[6]	149.60	151.00	152.00	154.40	156.00	+1.0	+4.3
U.S. COMMERCE: NEW SCHOOL BUILDINGS[6]	157.90	159.90	160.10	164.60	165.70	+0.7	+4.9
U.S. COMMERCE: NEW OFFICE BUILDINGS[6]	132.80	135.00	136.40	138.80	140.20	+1.0	+5.6
POWER ADVOCATE: POWER PLANT[7]	193.40	196.63	202.18	202.66	201.07	–0.8	+4.0

[1]BASE: 1967=100; [2]BASE: 1977=100; [3]BASE: 1980=100; [4]FORMERLY SMITH GROUP, 1992=100; [5]BASE: APRIL 2001=100; [6]BASE: 1992=100; [7]POWER PLANT FOR A 550-MW COMBINED-CYCLE FACILITY.

CONSTRUCTION MATERIALS PRICE MOVEMENT IN 2019

		JULY	AUG.	SEPT.	NOV.	DEC.	JAN.	FEB.
AGGREGATES	MONTHLY % CHG.	+0.1	–0.2	+0.1	0.0	0.0	+2.5	–0.5
	ANNUAL % CHG.	+3.7	+3.2	+3.2	+4.5	+4.1	+5.4	+4.2
ALUMINUM SHEET	MONTHLY % CHG.	-4.1	–0.1	–0.9	–3.3	+0.8	-0.2	+1.6
	ANNUAL % CHG.	+16.5	+14.5	+11.1	+5.2	+6.8	+5.1	+5.2
ASPHALT PAVING	MONTHLY % CHG.	+1.3	+1.9	+0.4	–1.9	0.0	+4.9	–0.1
	ANNUAL % CHG.	+6.0	+9.3	+11.2	+8.9	+10.3	+6.7	+5.4
CEMENT	MONTHLY % CHG.	–0.3	–0.3	0.0	–0.3	+0.1	+0.9	–0.1
	ANNUAL % CHG.	+1.9	+1.6	+2.0	+2.5	+2.7	+2.1	+2.1
CONCRETE PIPE	MONTHLY % CHG.	+0.3	–0.9	+1.2	0.0	0.0	+2.2	+0.3
	ANNUAL % CHG.	+1.7	+1.0	+1.7	-1.0	–0.6	+3.7	+4.5
COPPER PIPE	MONTHLY % CHG.	–4.4	–1.8	–3.9	+0.3	+0.5	–1.0	+0.8
	ANNUAL % CHG.	+10.0	+3.5	–5.0	–3.7	–2.4	–6.0	–5.9
DIESEL FUEL	MONTHLY % CHG.	–1.7	–1.0	+3.2	–1.6	–12.1	–14.5	+8.4
	ANNUAL % CHG.	+43.1	+34.6	+28.6	+19.5	+5.0	–12.4	–3.9
FABRICATED STEEL	MONTHLY % CHG.	+0.9	+0.3	+0.4	–0.2	–0.2	+0.7	+0.8
	ANNUAL % CHG.	+8.9	+8.4	+8.5	+8.3	+7.9	+7.7	+8.3
GYPSUM PRODUCTS	MONTHLY % CHG.	+1.2	+1.3	–0.5	–3.8	+0.9	–0.9	–0.4
	ANNUAL % CHG.	+5.0	+7.5	+7.2	+2.2	+3.0	–0.1	–7.3
LUMBER, SOFTWOOD	MONTHLY % CHG.	–2.9	–9.3	–1.4	–2.7	+1.0	–0.8	+4.8
	ANNUAL % CHG.	+19.2	+5.1	+4.5	–10.5	–8.9	–10.4	–12.2
PLYWOOD	MONTHLY % CHG.	–1.5	–3.7	–0.2	–2.8	–4.4	–0.7	+0.1
	ANNUAL % CHG.	+20.5	+14.1	+11.6	+0.8	–2.4	–3.8	–7.1
PVC PRODUCTS	MONTHLY % CHG.	–0.2	+0.5	+0.1	+0.2	0.0	+0.8	–0.2
	ANNUAL % CHG.	+4.7	+4.0	+3.9	+2.5	+2.7	+3.9	+2.9
READY-MIX CONCRETE	MONTHLY % CHG.	–0.1	+0.3	+0.2	–0.6	+0.6	+0.9	–0.5
	ANNUAL % CHG.	+3.9	+4.1	+4.2	+3.0	+3.2	+2.5	+1.8
SHEET METAL	MONTHLY % CHG.	+0.3	+0.7	+0.0	–0.7	+0.3	+1.1	0.0
	ANNUAL % CHG.	+5.5	+6.2	+6.2	+7.1	+7.4	+8.4	+7.5
EQUIPMENT	MONTHLY % CHG.	+0.2	+0.2	+0.3	+0.3	0.0	+1.0	–0.8
	ANNUAL % CHG.	+2.9	+3.1	+2.8	+3.0	+2.8	+3.2	+1.9

SOURCE: BUREAU OF LABOR STATISTICS. MONTHLY AND YEAR-TO-YEAR PERCENT CHANGES FOR PRODUCER PRICE INDEXES FOR LATEST EIGHT-MONTH PERIOD.

By Jeff Yoders

Shut Out of Raw Steel Tariffs, US Fabricators Seek Parity

American Institute of Steel Construction trade case could be a boon to fabricators, costly to contractors

EXPANDED COLLECTION? Two federal agencies now will continue a probe into whether fabricated steel imports from China, Mexico and Canada should be subject to anti-dumping duties.

The U.S. International Trade Commission said on Mar. 20 that domestic steel fabricators were being harmed by imports of fabricated structural steel from Canada, China and Mexico. That means an investigation will continue into whether the three countries' imports are harming U.S.-based fabricators, which could result in anti-dumping duties placed on structural steel products used by U.S. contractors.

The American Institute of Steel Construction (AISC) asked the U.S. Commerce Dept. for anti-dumping or countervailing duties of 31.46% for Canada, 41.39% for Mexico and a whopping 218.95% for China. The trade group notes the long decision-making process, but says it would have filed this action with or without tariffs the Trump administration has placed on raw steel and aluminum coming into the U.S. Commerce usually rules on such petitions 11 months from the filing date.

"Our preliminary investigation looked at the period of 2015 to 2017 and most of 2018, well before those tariffs were in place," says David Zalesne, AISC vice chair and president of Owen Steel, Columbia, S.C. "It's important to clarify that this case was brought based on an investigation of facts and law. It's in the hands of agencies to evaluate those … and follow the process."

Supply Gap?

If anti-dumping duties are placed on fabricated steel, there is little doubt contractors would see their costs increase for imports. "It could lift fabrication prices for structural steel," says Tyler Kenyon, a research analyst at investment banking firm Cowen and Co. "The question ultimately is, will there be other countries, or regions, that can fill the gap on the supply side? If supply from Canada, Mexico and China completely goes away, will there be another country that steps in to help fill that void?"

Negotiations between the U.S. and China on a new trade deal could also impact how the case is decided. Until there's more certainty about fabricated steel prices, contractors are watching closely.

"We've been following this one closer than some others," says Josh Lawrence, senior vice president of preconstruction services at McCarthy Building Cos. "It has some potential impact to some of our clients and, certainly our industry partners that are in the domestic fabrication business." He says that fabricated steel has been a volatile market for years and that McCarthy's standard preconstruction service is to plan ahead, look for early procurement strategies and time the market.

Added Costs

According to Lawrence, McCarthy has seen some cost increases as a result of last year's tariffs that were levied under sections 232 and 301 of the 1962 Trade Expansion Act, adding that firm managers are monitoring this investigation because of potential impacts on the type of projects the company bids on. "We definitely have seen impacts," he says. "We've seen some upward price pressures on projects where structural steel is a significant portion of the project. We build a lot of steel frames and a lot of concrete frames, so there definitely have been impacts."

Analyst Kenyon adds that successful duties could have effects beyond the cost of steel, including on transportation to and from domestic fabricators and mills. "Prohibitive duties placed on imports of structural steel from Canada, Mexico and China [have] the potential to increase prices for fabricated steel," he points out. "It could also increase the level of upstream fuel demand that's being consumed domestically with [contractors] not able to source fabricated steel from overseas and buying from more onshore fabricators." ■

By Bruce Buckley

More Double-Digit Bonuses, With Ops Managers Leading

Top construction executives continue to benefit from strong employer revenue and improved margins, earning significant bonuses for their efforts in a competitive market. After big jumps last year, many executives saw a double-digit increase in variable pay again this year, according to data from compensation specialist PAS Inc.

Firm president Jeff Robinson says most executives surveyed received bonus increases between 10% and 15% last year. "That's a significant change," he notes. "It says something about companies being more profitable. They have better margins and don't need to chase work like they used to. They are fat and happy right now."

Vice presidents of operations, who saw a 21% average increase in bonuses in 2017, received a 17% bonus bump in 2018, according to PAS. Executive vice presidents also earned a big boost in bonuses last year with an average increase of 27%. Company presidents, who were the first to see big bonuses after the construction market rebounded, garnered comparatively modest increases of 9.5% in 2017 and 8% in 2018. The firm surveys 3,000 individuals in 18 executive roles.

Robinson says that bonuses have been particularly aggressive on the operations side of construction companies, reflecting an overall demand for talent in that key area. Operations managers, for example, saw bonuses jump 38% last year. He also notes strong compensation improvements for project managers due to high demand. "Overall, we're seeing good rewards on the operations side," he says. "When you start increasing compensation for one [group], the others start to rise as well."

Dan Pauletich, senior managing director of industry executive search firm Specialty Consultants, says he has seen bonuses jump by more than 20% with some outliers achieving 50%. "The volume of work is off the charts and the margins are good, so owners and top executives are sharing in that windfall," he says.

Pauletich says many companies have transitioned to offering a bigger bonus structure and they are now paying out on those promises. "There are folks in cities like Boston, D.C. and N.Y., where the bonus incentive is equal to base salaries," he says. "You didn't see that in the 1990s."

By comparison, base salaries for executives has remained relatively stable. In 2018, companies reported average executive salary increases of 4.1%—the same rate of increase as 2017. Since 2013, companies have reported average executive base salary hikes between 3.8% and 4.1%.

Although companies are reporting average base salary increases of around 4%, Robinson says many companies have made market-based adjustments to base salaries that aren't reflected in PAS data. As a result, some executives saw increases in the 7% to 8% range. "A company might give an annual increase of 4.1%, but they see that they are below the competition, so they make an adjustment and give another increase to bring things in line," he says. "It's not counted as an annual increase. It's an adjustment outside of that to stay competitive."

Recruiter Michael Ketner of Michael L. Ketner & Associates says he's seen several firms give a 3% to 4% increase at the start of the year, followed by another similar increase at midyear. "Two increases in one year—I'd never seen anything like that personally in 40 years of business," he says.

Ketner notes that strong compensation offers to help lure talent from other companies are driving up those averages. "Someone may get 7% or 8% staying where they are, but they could get a 15% increase if they change jobs," he says.

Despite the attraction of higher base pay, many executives choose to stay at their current companies and reap the recent bonus increases, says Pauletich. In addition, fewer companies see the need to bring on new executives, unless someone retires.

"Overall, we're seeing less movement on the executive side," he says. "The compensation that the top tier executives make with the amount that margins are expanding has slowed down volatility. After the recession, more people were receptive to making a move, when companies were looking for new growth opportunities like opening new territories and expanding main offices. They are now in a position where the senior slots are more stable. They are focused on quality and profits." ■

CONTRACTOR EXECUTIVE PAY

TITLE	MEDIAN BASE COMPENSATION ($)	MEDIAN BONUS ($)
PRESIDENT	$272,985	$182,750
CHAIR	$377,500	$407.500
EXECUTIVE VP	$229,500	$142,450
SENIOR VP	$218,973	$117,950
VP, OPERATIONS	$170,000	$67,620
VP, ESTIMATING	$161,700	$47,150
VP, BUS. DEVELOPMENT	$154,600	$33,076
VP, PRECONSTRUCTION	$165,000	$51,451
VP, ADMINISTRATION	$159,533	$40,500
VP, CFO	$183,352	$63,500
VP, HUMAN RESOURCES	$153,958	$32,500
GENERAL COUNSEL	$233,210	$80,950
OPERATIONS MANAGER	$142,852	$31,425
IT-MIS DIRECTOR	$129,400	$23,428
DIVISIONAL MANAGER	$142,966	$43,042
GEN. SUPERINTENDENT	$144,770	$34,500
CONTROLLER	$117,200	$18,325

SOURCE: PAS INC. 2019 EXECUTIVE COMPENSATION SURVEY

By Alisa Zevin

Inflation Is Moderate in 2018

Lumber prices finally begin to decline, while cement and steel see an increase

Although ENR's indexes measure the costs of non-residential buildings, the housing market has had a major impact on index movement. After a long period of double-digit growth, the ENR 20-city average price for 2x4 lumber rose 6.9% in the past year. Structural steel and cement prices posted larger increases last year than in 2017, at 5% and 5.1%, respectively. Labor costs also experienced a modest gain. As a result, the ENR Building Cost Index is up 2.8% for the year, after rising 2.6% in 2017, while the Construction Cost Index is 2.5% higher, following a 2.7% increase a year before.

ENR began reporting changes in materials prices and wages systematically in 1909, but it did not establish the CCI until 1921. It was designed as a general-purpose tool to chart basic cost trends and today remains a weighted aggregate index of the prices of a constant quantity of structural steel, portland cement, lumber and common labor. This package of goods was valued at $100, using 1913 prices.

The original use of common labor in the CCI was intended to reflect wage-rate activity for all construction workers. In the 1930s, however, wage and fringe benefit rates climbed much faster in percentage terms for common laborers than for workers in the skilled trades. In response to this trend, ENR in 1938 introduced its Building Cost Index (BCI) to weigh the impact of skilled-labor wage changes on overall costs.

The BCI labor component is the average union wage rate, plus fringe benefits, for carpenters, bricklayers and ironworkers. The materials component is the same as the CCI's. The BCI also represents a hypothetical package of these construction items, valued at $100 in 1913.

Both indexes are designed to indicate the basic underlying trends of construction costs in the U.S. Therefore, components are based on construction materials that are influenced less by local conditions. ENR chose steel, cement and lumber because they have a stable relationship to the U.S. economy and play a predominant role in construction.

As a practical matter, ENR selected these materials because reliable price quotations are available for all three, ensuring both indexes can be computed on a timely basis. While there may be some weaknesses in any index based on a limited number of components, ENR thinks a larger number of elements would increase the time lag between verifying prices and releasing the index. Also, an index with fewer components is more sensitive to price changes than one that includes many.

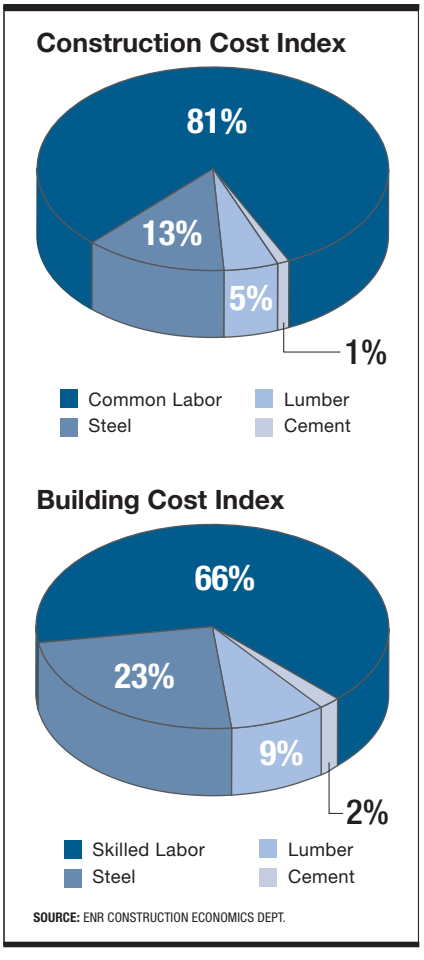
On the downside, however, the use of only a few cost components can cause indexes for individual cities to be more vulnerable to source changes. These aberrations tend to average out for the 20-city indexes, which ENR recommends for general use.

Since the indexes are computed with real prices, the proportion of a given component within the index will vary with its relative escalation rate.

In the late 1970s, labor's share of the index dropped because materials prices were in the grip of hyperinflation. In 1979, for example, lumber prices increased 16%, cement prices rose 13% and steel prices jumped 11%, but labor went up just 8%. These developments resulted in materials gaining a larger percentage of the index.

In the original CCI, the components were weighted at 38% for labor, 38% for steel, 17% for lumber and 7% for portland cement. The shifting tide of inflation changed the weight of the CCI components, making labor 81%, steel 13%, lumber 5% and cement 1%. This shift was less dramatic for the BCI, which is now 66% for labor, 23% for steel, 9% for lumber and 2% for cement.

Neither index is adjusted for productivity, contractor overhead or profits. However, the indexes can get a fix on these factors. As a rule, when productivity is low, the selling price will be relatively higher than the ENR index. Generally, when competition is sharp, the selling price of finished construction will fall below ENR's indexes. ■



SOURCE: ENR CONSTRUCTION ECONOMICS DEPT.

By Alisa Zevin

Using ENR's Cost Indexes

An overview of the differences between the building and construction cost indexes

Readers of ENR often ask questions about the magazine's cost indexes and how to apply them accurately to construction projects. To help clarify the nature and use of the cost indexes, below is a compilation of answers to several frequently asked questions, as well as suggestions on how to avoid costly mistakes when using the indexes.

■ What is the difference between ENR's Construction Cost Index (CCI) and the Building Cost Index (BCI)?

The difference between the two indexes is in their respective labor components. The CCI calculation uses 200 hours of common labor, multiplied by the 20-city average rate for wages and fringe benefits. The BCI derives its calculation from a baseline of 68.38 hours of skilled labor, multiplied by the 20-city wage-fringe average for three trades: bricklayers, carpenters and structural ironworkers. For their materials components, both indexes use 25 cwt of standard fabricated structural steel at the 20-city average price, 1.128 tons of locally priced bulk portland cement and 1,088 board-ft of 2x4 lumber, which also is priced locally. The ENR indexes measure how much it costs to purchase this hypothetical package of goods compared with the price in the base year.

■ What kinds of construction are represented in the ENR indexes?

The two indexes apply to general construction costs. The CCI can be used when labor costs are a high proportion of total costs. The BCI is more applicable to structures.

■ Where does ENR get its data?

ENR's price reporters check local prices in 20 U.S. cities. The prices are quoted by the same suppliers each month. ENR computes its latest indexes from these figures as well as local union wage rates.

■ Are price materials averaged?

No. ENR reporters collect spot prices from a single source for all materials tracked, including those in the index. The reporters survey the same suppliers each month for materials that affect the index. Actual prices within a city may vary, depending on the competitiveness of the market and local discounting practices. This method allows for a quick indicator of price movement, which is the primary objective of both indexes.

■ Do the indexes measure cost differences between cities?

No. This is a common error in the application of ENR's indexes, which measure trends only in each individual city and in the U.S. as a whole. Differentials between cities may reflect differences in labor productivity and building codes. Moreover, price quotations for lumber and cement vary from one city to the next. One city may report list prices, while another city may include discounts in its reported price for the same material.

BUILDING COST INDEX HISTORY (1929-2018)

HOW ENR BUILDS THE INDEX: 68.38 hours of skilled labor at the 20-city average wage of bricklayers, carpenters and structural ironworkers, plus 25 cwt of standard structural-steel shapes at the mill price prior to 1996 and the fabricated 20-city price from 1996, plus 1.128 tons of portland cement at the 20-city price, plus 1,088 board-ft of 2x4 lumber at the 20-city price.

ANNUAL AVERAGE, 1993=100

1929: 191	**1953:** 431	**1977:** 1545
1930: 185	**1954:** 446	**1978:** 1674
1931: 168	**1955:** 469	**1979:** 1819
1932: 131	**1956:** 491	**1980:** 1941
1933: 148	**1957:** 509	**1981:** 2097
1934: 167	**1958:** 525	**1982:** 2234
1935: 166	**1959:** 548	**1983:** 2384
1936: 172	**1960:** 559	**1984:** 2417
1937: 196	**1961:** 568	**1985:** 2425
1938: 197	**1962:** 580	**1986:** 2483
1939: 197	**1963:** 594	**1987:** 2541
1940: 203	**1964:** 612	**1988:** 2598
1941: 211	**1965:** 627	**1989:** 2634
1942: 222	**1966:** 650	**1990:** 2702
1943: 229	**1967:** 676	**1991:** 2751
1944: 235	**1968:** 721	**1992:** 2834
1945: 239	**1969:** 790	**1993:** 2996
1946: 262	**1970:** 836	**1994:** 3111
1947: 313	**1971:** 948	**1995:** 3112
1948: 341	**1972:** 1048	**1996:** 3203
1949: 352	**1973:** 1138	**1997:** 3364
1950: 375	**1974:** 1205	**1998:** 3391
1951: 401	**1975:** 1306	**1999:** 3456
1952: 416	**1976:** 1425	**2000:** 3539

	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL AVERAGE
2001	3545	3536	3541	3541	3547	3572	3625	3605	3597	3602	3596	3577	3574
2002	3581	3581	3597	3583	3612	3624	3652	3648	3655	3651	3654	3640	3623
2003	3648	3655	3649	3652	3660	3677	3684	3712	3717	3745	3766	3758	3694
2004	3767	3802	3859	3908	3955	3996	4013	4027	4103	4129	4128	4123	3984
2005	4112	4116	4127	4168	4189	4195	4197	4210	4242	4265	4312	4329	4205
2006	4335	4337	4330	4335	4331	4340	4356	4360	4375	4431	4462	4441	4369
2007	4432	4432	4411	4416	4475	4471	4493	4515	4533	4535	4558	4556	4486
2008	4557	4556	4571	4574	4599	4640	4723	4733	4827	4867	4847	4797	4691
2009	4782	4765	4767	4761	4773	4771	4762	4768	4764	4762	4757	4795	4769
2010	4800	4812	4811	4817	4858	4888	4910	4905	4910	4947	4968	4970	4883
2011	4969	5007	5010	5028	5035	5059	5074	5091	5098	5104	5113	5115	5059
2012	5120	5122	5144	5150	5167	5170	5184	5204	5195	5204	5213	5210	5174
2013	5226	5246	5249	5257	5272	5286	5281	5277	5285	5308	5317	5326	5278
2014	5324	5321	5336	2357	5370	5375	5383	5390	5409	5442	5468	5480	5387
2015	5497	5488	5487	5501	5490	5507	5510	5515	5541	5544	5564	5560	5517
2016	5562	5588	5606	5633	5637	5637	5660	5670	5657	5682	5690	5723	5645
2017	5734	5742	5789	5802	5816	5826	5844	5862	5873	5867	5902	5914	5831
2018	5921	5932	5942	5954	5995	6005	6043	6060	6081	6093	6093	6105	6019

■ Are the cost indexes seasonally adjusted?
No. This is an important point for index users to keep in mind. Wages, the most important component, usually affect the indexes once or twice a year. Cement prices tend to be more active in the spring, while pricing for fabricated structural steel tends to have monthly adjustments.

Lumber prices, which are more dependent on local pricing and producing conditions, are the most volatile and can change appreciably from month to month. Declines in the indexes are most often the result of falling lumber and steel prices.

The study of index movement for a period of less than 12 months can sometimes miss these important developments. Users of an index for individual cities should take note of the timing of wage settlements as well. Stalled labor negotiations may keep the old wage rate in effect longer than a 12-month period, giving the appearance of a low inflation rate.

■ Is it more accurate to use an index that is closest to my home city?
No. The 20-city average index is generally more appropriate—because it has more elements, it has a smoother trend. Indexes for individual cities are more susceptible to price spikes.

■ Are the annual averages weighted?
No. They are straight mathematical averages.

■ Are the indexes verifiable?
Yes. In ENR's Construction Economics section, the national indexes are updated in the first week of each month, while the indexes for individual cities appear in the second issue of each month.

Prices for the indexes' materials components can be found in the preceding month's Construction Economics pages: Cement prices appear in the first issue, pipe in the second issue, lumber prices in the third and steel in the fourth. Wages for all 20 cities are published in the Third Quarterly Cost Report. Readers can compute ENR's indexes by multiplying the published prices and wages by the appropriate weights (shown in the tables below) and tallying the results.

■ Does ENR forecast its indexes?
Yes. Once a year. ENR projects its BCI and CCI for the next 12 months in the Fourth Quarterly Cost Report in December. To reach its forecast, ENR incorporates the new wage rates called for in multiyear, collective-bargaining agreements and estimates for cities in which new contract terms will be negotiated. Further, ENR estimates the materials component by studying consumption forecasts as well as price trends.

■ Does ENR change the weighting of the index components?
No. The components are always multiplied by the same factors. However, a component's share of an index's total will shift with its relative escalation rate.

■ Has ENR ever changed the makeup of the indexes' components?
Only once. In 1996, ENR switched from the mill price for structural steel to the 20-city average fabricated price for channel beams, I-beams and wide flanges after ENR's two sources for mill prices left the structural market.

■ Does ENR revise the indexes?
On some occasions, ENR must revise the indexes. Its March 2004 indexes were revised shortly after their initial publication to reflect huge surcharges being placed on structural steel. Any revisions to the national indexes for individual cities are published in the cost report at ENR.com.

■ Is ENR's cost data online?
Yes. All of ENR's cost indexes, wage rates, material prices and cost-issue articles can be found at ENR.com. ■

CONSTRUCTION COST INDEX HISTORY (1929-2018)

HOW ENR BUILDS THE INDEX: Two hundred hours of common labor at the 20-city average common-labor wage rates, plus 25 cwt of standard structural-steel shapes at the mill price prior to 1996 and the fabricated 20-city price from 1996, plus 1.128 tons of portland cement at the 20-city price, plus 1,088 board-ft of 2x4 lumber at the 20-city price.

ANNUAL AVERAGE, 1993=100

1929: 207	**1953:** 600	**1977:** 2576
1930: 203	**1954:** 628	**1978:** 2776
1931: 181	**1955:** 660	**1979:** 3003
1932: 157	**1956:** 692	**1980:** 3237
1933: 170	**1957:** 724	**1981:** 3535
1934: 198	**1958:** 759	**1982:** 3825
1935: 196	**1959:** 797	**1983:** 4066
1936: 206	**1960:** 824	**1984:** 4148
1937: 235	**1961:** 847	**1985:** 4182
1938: 236	**1962:** 872	**1986:** 4295
1939: 236	**1963:** 901	**1987:** 4406
1940: 242	**1964:** 936	**1988:** 4519
1941: 258	**1965:** 971	**1989:** 4615
1942: 276	**1966:** 1019	**1990:** 4732
1943: 290	**1967:** 1074	**1991:** 4835
1944: 299	**1968:** 1155	**1992:** 4985
1945: 308	**1969:** 1269	**1993:** 5210
1946: 346	**1970:** 1381	**1994:** 5408
1947: 413	**1971:** 1581	**1995:** 5471
1948: 461	**1972:** 1753	**1996:** 5620
1949: 477	**1973:** 1895	**1997:** 5826
1950: 510	**1974:** 2020	**1998:** 5920
1951: 543	**1975:** 2212	**1999:** 6059
1952: 569	**1976:** 2401	**2000:** 6221

	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL AVERAGE
2001	6281	6272	6279	6286	6288	6318	6404	6389	6391	6397	6410	6390	6334
2002	6462	6462	6502	6480	6512	6532	6605	6592	6589	6579	6578	6563	6538
2003	6581	6640	6627	6635	6642	6694	6696	6733	6741	6771	6794	6782	6695
2004	6825	6861	6957	7017	7064	7109	7126	7188	7298	7314	7312	7308	7115
2005	7297	7298	7309	7355	7398	7415	7422	7479	7540	7563	7630	7647	7446
2006	7660	7689	7692	7695	7691	7700	7721	7723	7763	7883	7911	7888	7751
2007	7880	7880	7856	7865	7942	7939	7959	8007	8050	8045	8092	8089	7967
2008	8090	8094	8109	8112	8141	8185	8293	8362	8557	8623	8602	8551	8310
2009	8549	8533	8534	8528	8574	8578	8566	8564	8586	8596	8592	8641	8570
2010	8660	8672	8671	8677	8761	8805	8844	8837	8836	8921	8951	8952	8799
2011	8938	8998	9011	9027	9035	9053	9080	9088	9116	9147	9173	9172	9070
2012	9176	9198	9268	9273	9290	9291	9324	9351	9341	9376	9398	9412	9308
2013	9437	9453	9456	9484	9516	9542	9552	9545	9552	9689	9666	9668	9547
2014	9664	9681	9702	9750	9796	9800	9835	9846	9870	9886	9912	9936	9806
2015	9972	9962	9972	9992	9975	10039	10037	10039	10065	10128	10092	10135	10034
2016	10133	10182	10242	10279	10315	10337	10379	10385	10403	10435	10443	10531	10339
2017	10542	10559	10667	10678	10692	10703	10789	10826	10823	10817	10870	10873	10737
2018	10878	10889	10959	10971	11013	11069	11116	11124	11170	11183	11184	11186	11062