

NORTH AMERICA

QUARTERLY CONSTRUCTION COST REPORT

THIRD QUARTER 2017





ON THE COVER

OREGON STATE UNIVERSITY VALLEY FOOTBALL CENTER CORVALLIS, OR

As part of a 15-year comprehensive athletic and educational facilities plan, the Valley Football Center at Oregon State University has undergone a major renovation and expansion. The project added 37,932 SF to the facility and renovated 27,339 SF, bringing the facility to a total of over 119,000 SF.

This \$42M project included doubling the size of the current locker room, the addition of therapy pools, an additional ticket holder entrance, as well as a new media center. A new concourse connects the east and west stadium sides, and the end zone seating has been reconstructed with improved sightlines. The total stadium seating count after adding the new club seating at The Terrace in the North End Zone is 43,319 seats.

Rider Levett Bucknall provided cost management services from concept to construction, in addition to CM/GC cost reconciliation at each phase.

NORTH AMERICA

In a matter of hours, the one-two punch packed by hurricanes Harvey and Irma resulted in destruction that will take many years to repair. As initial assessments begin to quantify the losses—Enki Research estimates the cost of Harvey’s damage as \$85 billion, and Irma (in Florida) as \$58 billion, figures that are likely to escalate over time—we at Rider Levett Bucknall are mindful of the human toll as well as the economic repercussions, and hope for a full recovery for all.

The aftermath of the hurricanes heightened the urgency of the ongoing labor shortage affecting the construction industry. In a National Association of Home Builders survey completed just a few weeks before the storms hit, builders across the nation were reporting an increasingly tight market for most of the major trades; for example, 77% were encountering significant difficulties in hiring framing crews, 61% faced the same problem with drywall installers, and 58% were seeing roofers in short supply. The situation will only be exacerbated by the storms, as a spike in demand for construction services will trigger competition for laborers at all skill levels.

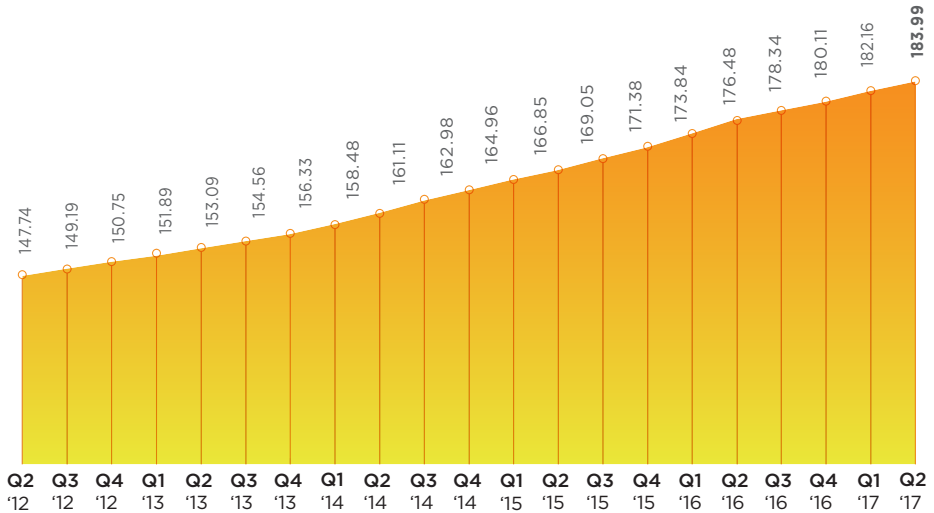
To attract a new generation of workers, contractors are using a variety of incentives. The most popular, not surprisingly, is to increase wages, followed by offering training programs to bring employees’ skills in line with advancing technologies. Other firms are taking an alternative approach, and turning to modular construction. Originally developed for the single-family residence sector, the often-automated production method is increasingly being applied to aspects of larger-scaled projects, including hotels, commercial, and multi-family buildings. Manufactured indoors, they are virtually immune to weather delays that can slow conventional construction, and the prefabricated units can be rapidly assembled on-site, making it a cost-effective process.

The events of Irma and Harvey have powerfully illustrated the broad connections between the built and natural environments, and the importance of devising a long-term, efficient response to the complex issues they pose is clear. The AEC communities are in a unique position to lead this effort, and I am confident that a balanced solution, beneficial to all, is within our grasp.



Julian Anderson FRICS
President, North America
Chairman of the Global Board

NATIONAL CONSTRUCTION COST INDEX



Welcome to the third quarter 2017 issue of the Rider Levett Bucknall Quarterly Cost Report! This issue contains data current to July 1, 2017.

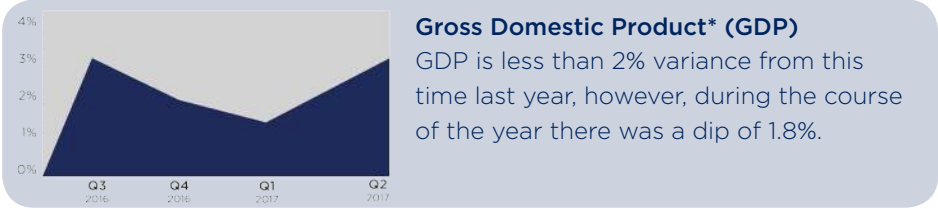
\$1,205.8 Billion According to the U.S. Department of Commerce, construction-put-in-place during June 2017 was estimated at a seasonally adjusted annual rate of \$1,205.8 billion, which is

1.3% below the revised May estimate of \$1,221.6 billion, and

1.6% above the June 2016 estimate of \$1,186.4 billion.

The National Construction Cost Index shows the changing cost of construction between July 2012 and July 2017, relative to a base of 100 in April 2001. Index recalibrated as of April 2011.

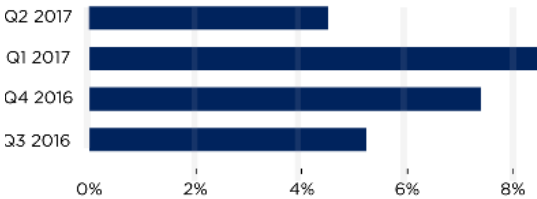
KEY UNITED STATES STATISTICS



Consumer Price Index (CPI)
 CPI fluctuates nominally. Inflation has not exceeded 1% over the previous four quarters.

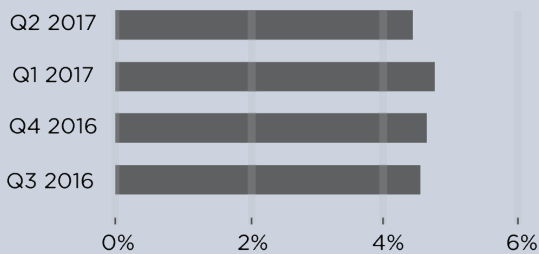


Architectural Billings Index (ABI)
 ABI remains relatively steady since last quarter, indicating a healthy start into 2017.



Construction Unemployment
 Experiencing a significant drop since last quarter, construction unemployment now resides at 4.5%.

National Unemployment
 National unemployment remains relatively steady over the course of the last year, varying 4.9% to 4.4%.



GDP represented in percent change from the preceding quarter, seasonally adjusted at annual rates. CPI quarterly figures represent the monthly value at the end of the quarter. Inflation rates represent the total price of inflation from the previous quarter, based on the change in the Consumer Price Index. ABI is derived from a monthly American Institute of Architects survey of architectural firms of their work on the boards, reported at the end of the period. Construction Put-in-Place figures represent total value of construction dollars in billions spent at a seasonally adjusted annual rate taken at the end of each quarter. General Unemployment rates are based on the total population 16 years and older. Construction Unemployment rates represent only the percent of experienced private wage and salary workers in the construction industry 16 years and older. Unemployment rates are seasonally adjusted, reported at the end of the period.

* Adjustments made to GDP based on amended changes from the Bureau of Economic Analysis.
 Sources: U.S. Bureau of Labor Statistics, Bureau of Economic Analysis, American Institute of Architects.

INDICATIVE CONSTRUCTION COSTS

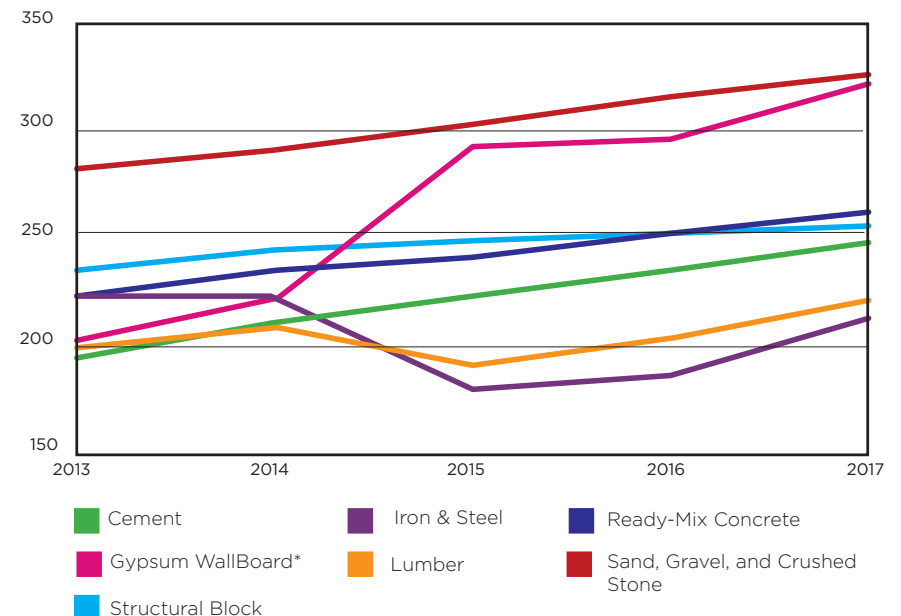
The data in the chart below represents estimates of current building costs in each respective market. Costs may vary as a consequence of factors such as site conditions, climatic conditions, standards of specification, market conditions, etc. Values of U.S. locations represent hard construction costs based on U.S. dollars per square foot of gross floor area, while values of Canadian locations represent hard construction costs based on Canadian dollars per square foot.

| LOCATION | OFFICES | | | | RETAIL SHOPPING | | | | HOTELS | | | | HOSPITAL | | INDUSTRIAL | | PARKING | | | | RESIDENTIAL | | | | EDUCATION | | | | | | |
|---------------|---------|------|-----------|------|-----------------|------|-------|------|--------|------|--------|------|----------|------|------------|------|---------|------|----------|------|--------------|------|---------------|------|------------|------|-------------|------|------------|------|-----|
| | PRIME | | SECONDARY | | CENTER | | STRIP | | 5 STAR | | 3 STAR | | GENERAL | | WAREHOUSE | | GROUND | | BASEMENT | | MULTI-FAMILY | | SINGLE-FAMILY | | ELEMENTARY | | HIGH SCHOOL | | UNIVERSITY | | |
| | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW |
| USA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Boston | 300 | 475 | 200 | 300 | 175 | 275 | 125 | 200 | 375 | 550 | 250 | 375 | 400 | 650 | 100 | 175 | 75 | 125 | 90 | 150 | 175 | 300 | 250 | 350 | 280 | 380 | 290 | 405 | 330 | 480 | |
| Chicago | 280 | 450 | 175 | 280 | 185 | 280 | 135 | 220 | 390 | 650 | 270 | 390 | 360 | 630 | 110 | 185 | 80 | 125 | 90 | 155 | 160 | 340 | 220 | 420 | 250 | 380 | 300 | 380 | 345 | 480 | |
| Denver | 160 | 255 | 115 | 175 | 90 | 145 | 70 | 135 | 200 | 310 | 150 | 185 | 370 | 455 | 90 | 150 | 50 | 70 | 90 | 120 | 85 | 190 | 90 | 400 | 245 | 300 | 260 | 310 | 285 | 400 | |
| Honolulu | 285 | 530 | 245 | 400 | 210 | 495 | 175 | 435 | 515 | 745 | 325 | 545 | 475 | 760 | 145 | 225 | 100 | 145 | 140 | 265 | 195 | 445 | 280 | 760 | 340 | 475 | 405 | 610 | 445 | 720 | |
| Las Vegas | 140 | 295 | 105 | 190 | 115 | 480 | 65 | 145 | 350 | 500 | 150 | 300 | 285 | 455 | 50 | 100 | 50 | 85 | 60 | 150 | 70 | 405 | 90 | 350 | 180 | 315 | 200 | 455 | 235 | 455 | |
| Los Angeles | 220 | 340 | 160 | 245 | 145 | 325 | 115 | 180 | 350 | 515 | 250 | 325 | 470 | 700 | 105 | 175 | 100 | 120 | 125 | 170 | 180 | 290 | 190 | 335 | 335 | 445 | 355 | 480 | 385 | 550 | |
| New York | 375 | 575 | 300 | 400 | 275 | 425 | 175 | 300 | 400 | 600 | 300 | 400 | 475 | 700 | 115 | 200 | 95 | 175 | 125 | 200 | 200 | 375 | 275 | 400 | 295 | 405 | 305 | 455 | 330 | 480 | |
| Phoenix | 160 | 275 | 110 | 175 | 120 | 200 | 80 | 140 | 300 | 500 | 150 | 250 | 350 | 500 | 55 | 100 | 45 | 70 | 60 | 110 | 90 | 185 | 100 | 400 | 170 | 250 | 220 | 340 | 280 | 420 | |
| Portland | 180 | 250 | 130 | 180 | 140 | 240 | 120 | 180 | 190 | 275 | 150 | 190 | 380 | 525 | 90 | 150 | 85 | 105 | 110 | 150 | 150 | 240 | 125 | 280 | 235 | 295 | 250 | 310 | 280 | 400 | |
| San Francisco | 210 | 325 | 190 | 300 | 225 | 350 | 225 | 325 | 400 | 600 | 350 | 500 | 450 | 650 | 140 | 190 | 110 | 145 | 175 | 215 | 320 | 430 | 200 | 400 | 320 | 400 | 315 | 400 | 250 | 375 | |
| Seattle | 200 | 250 | 145 | 200 | 135 | 305 | 110 | 155 | 240 | 330 | 220 | 235 | 385 | 530 | 95 | 125 | 90 | 110 | 130 | 160 | 150 | 250 | 165 | 285 | 250 | 300 | 275 | 465 | 315 | 465 | |
| Washington | 275 | 425 | 200 | 300 | 150 | 275 | 125 | 175 | 350 | 525 | 250 | 350 | 400 | 650 | 90 | 150 | 70 | 125 | 80 | 125 | 175 | 300 | 250 | 350 | 280 | 355 | 280 | 380 | 330 | 480 | |
| CANADA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calgary | 235 | 295 | 190 | 285 | 220 | 310 | 110 | 160 | 300 | 450 | 190 | 245 | 550 | 720 | 85 | 145 | 75 | 90 | 75 | 120 | 140 | 215 | 125 | 315 | 185 | 260 | 220 | 310 | 300 | 450 | |
| Toronto | 195 | 260 | 170 | 250 | 200 | 250 | 105 | 160 | 300 | 355 | 195 | 260 | 500 | 645 | 115 | 150 | 70 | 90 | 70 | 90 | 130 | 205 | 190 | 330 | 170 | 195 | 200 | 230 | 200 | 295 | |

MATERIALS PRICE INDEX

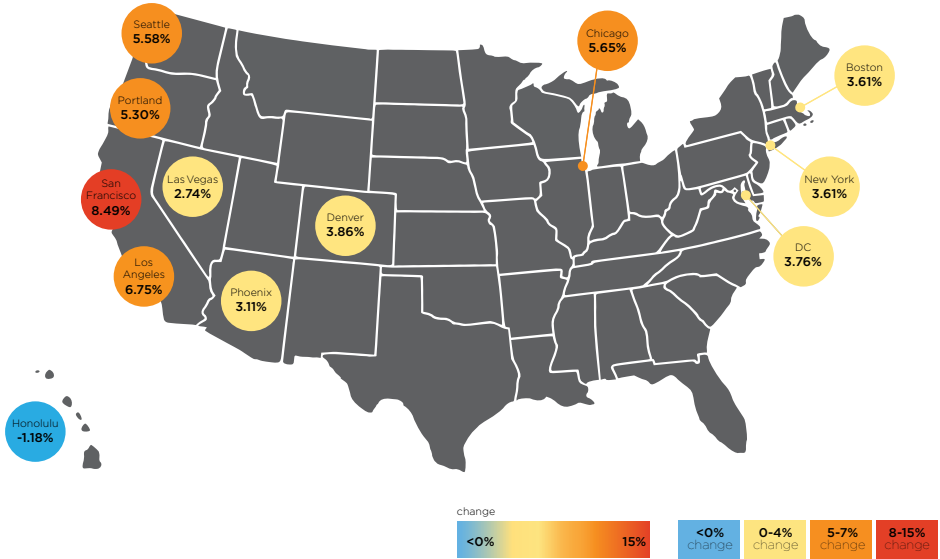
The events of hurricanes Harvey and Irma have resulted in devastation which will take a number of years to recover from. Preliminary estimates indicate that around 136,000 homes were damaged in Harris County, Texas and a large portion of them destroyed completely. Similarly, in Florida Keys, according to Federal Emergency Management Agency, around 25% houses on the chains of islands were completely destroyed and a big portion of them, around 65%, suffered major damage. It is likely that these two catastrophic events will have some effect on nation's construction costs. However, the affected areas and the adjacent states might see an increase of about 4%-6% above the national costs.

Lumber and gypsum wall board prices continue to soar when compared to the other building materials. Lumber price index increased 7.2% and gypsum wallboard 8.4% year over year in the month of August 2017. During the same period, cement, structural concrete block, and ready-mixed concrete increased by 4.8%, 2.3% and 3.3% respectively. Gypsum wallboard will certainly be one of most affected commodities when repairing of the houses is started in the areas affected by Harvey and Irma.



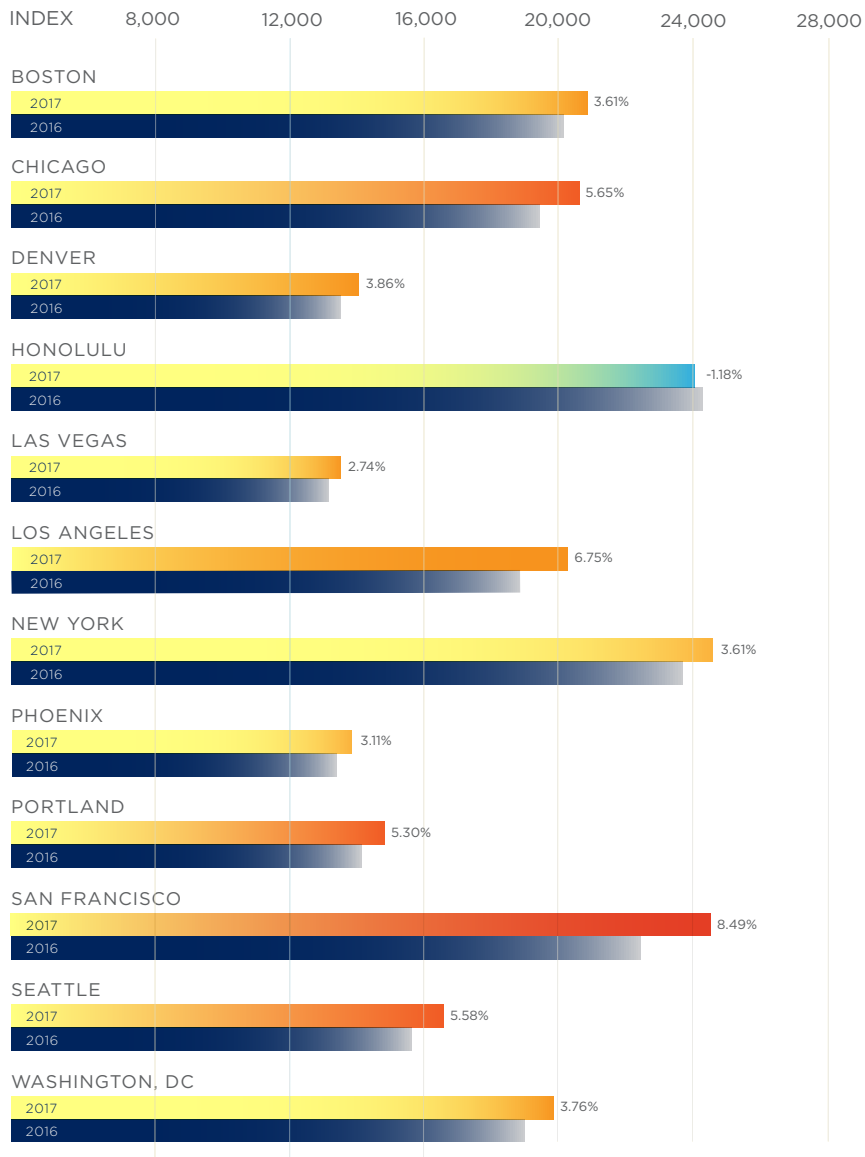
Sources: U.S. Bureau of Labor Statistics
*for Gypsum Wall Board only, base = 100 at 1994

COMPARATIVE COST INDEX



| City | July 2016 | October 2016 | January 2017 | April 2017 | July 2017 | % Change |
|------------------|-----------|--------------|--------------|------------|-----------|----------|
| • Boston | 20,257 | 20,489 | 20,671 | 20,835 | 20,989 | 3.61% |
| • Chicago | 19,547 | 19,809 | 20,103 | 20,414 | 20,652 | 5.65% |
| • Denver | 13,660 | 13,932 | 13,987 | 14,097 | 14,187 | 3.86% |
| • Honolulu | 24,338 | 24,181 | 24,082 | 24,060 | 24,050 | -1.18% |
| • Las Vegas | 13,251 | 13,342 | 13,435 | 13,510 | 13,614 | 2.74% |
| • Los Angeles | 19,041 | 19,225 | 19,401 | 19,997 | 20,326 | 6.75% |
| • New York | 23,837 | 24,101 | 24,303 | 24,499 | 24,698 | 3.61% |
| • Phoenix | 13,481 | 13,578 | 13,659 | 13,785 | 13,900 | 3.11% |
| • Portland | 14,287 | 14,469 | 14,638 | 14,830 | 15,044 | 5.30% |
| • San Francisco | 22,625 | 23,005 | 23,677 | 24,039 | 24,546 | 8.49% |
| • Seattle | 15,774 | 15,972 | 16,190 | 16,419 | 16,654 | 5.58% |
| • Washington, DC | 19,163 | 19,376 | 19,586 | 19,774 | 19,884 | 3.76% |

Comparative Cost Map and Bar Graph Indicate percentage change between July 2016 and July 2017.



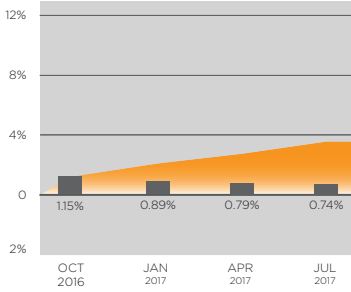
Each quarter we look at the comparative cost of construction in 12 US cities, indexing them to show how costs are changing in each city in particular, and against the costs in the other 11 locations. You will be able to find this information in the graph titled *Comparative Cost Index (above)* and in the *Cost and Change Summary (right)*.

Our Comparative Cost Index tracks the 'true' bid cost of construction, which includes, in addition to costs of labor and materials, general contractor and sub-contractor overhead costs and fees (profit). The index also includes applicable sales/use taxes that 'standard' construction contracts attract. In a 'boom,' construction costs typically increase more rapidly than the net cost of labor and materials. This happens as the overhead levels and profit margins are increased in response to the increasing demand. Similarly, in a 'bust,' construction cost increases are dampened (or may even be reversed) due to reductions in overheads and profit margins.

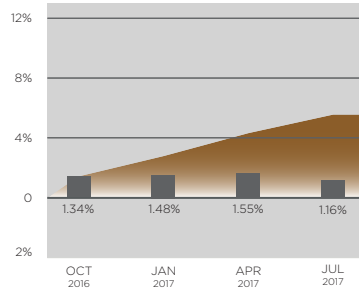
The following escalation charts track changes in the cost of construction each quarter in many of the cities where RLB offices are located. Each chart illustrates the percentage change per period and the cumulative percentage change throughout the charted timeline.

 Percentage change per quarter  Cumulative percentage change for the period shown

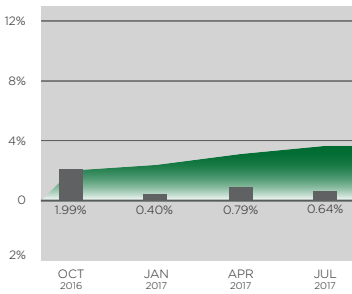
COST INDEX Boston



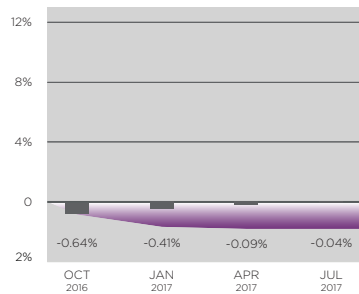
COST INDEX Chicago



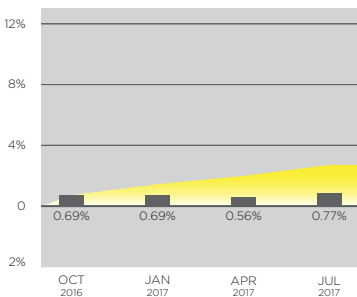
COST INDEX Denver



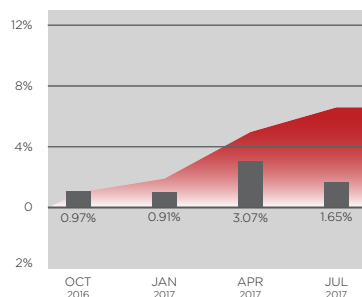
COST INDEX Honolulu



COST INDEX Las Vegas

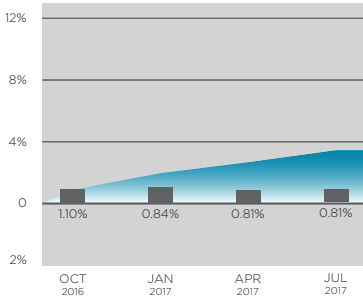


COST INDEX Los Angeles

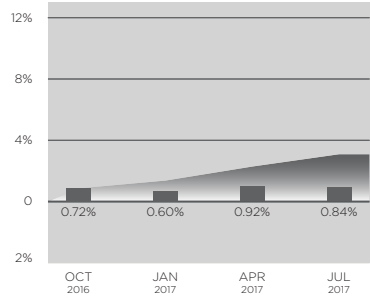


Our research suggests that between April 1, 2017 and July 1, 2017 the national average increase in construction was approximately 1.01%. Chicago, Los Angeles, Portland, San Francisco, and Seattle all experienced increases over 1% in the quarter. Boston, Denver, Las Vegas, New York, Phoenix, and Washington DC experienced modest gains of less than one percent, while Honolulu continues to experience a mild decline in construction costs.

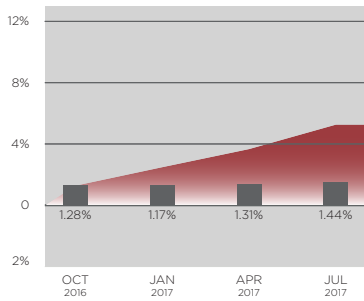
COST INDEX New York



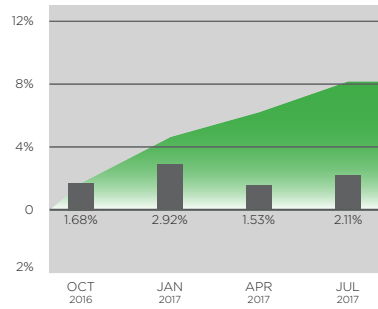
COST INDEX Phoenix



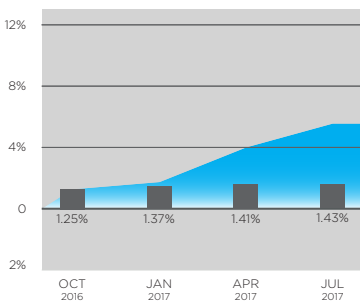
COST INDEX Portland



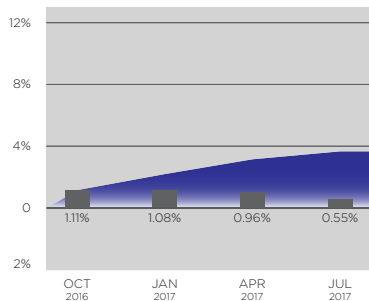
COST INDEX San Francisco



COST INDEX Seattle

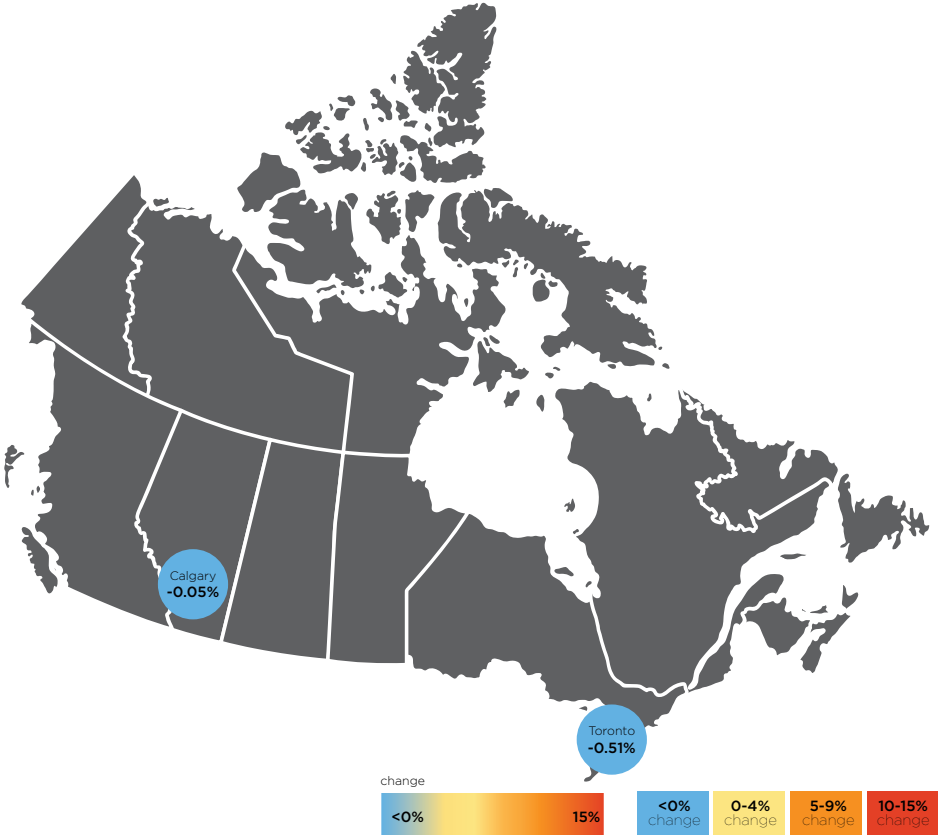


COST INDEX Washington DC





COMPARATIVE COST INDEX

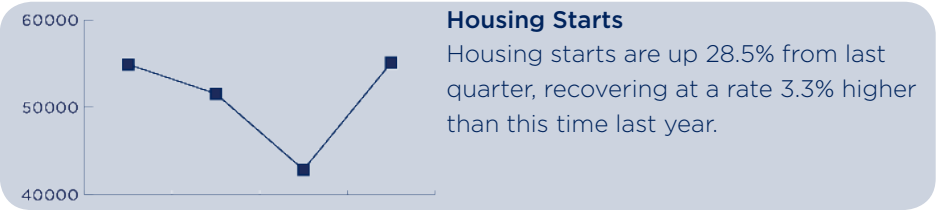
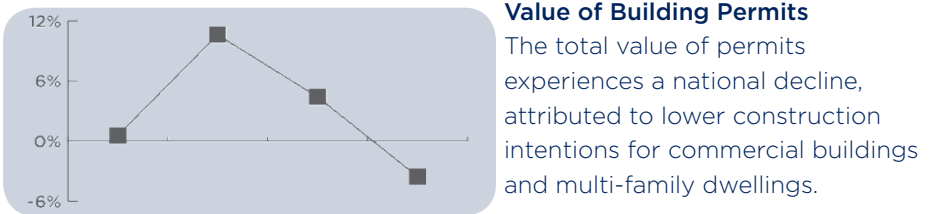
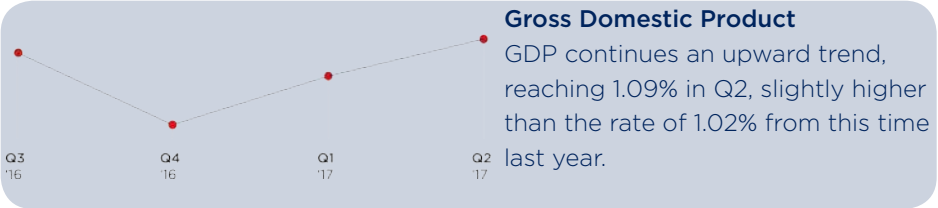


| City | October 2016 | January 2017 | April 2017 | July 2017 | Quarterly % Change |
|-----------|--------------|--------------|------------|-----------|--------------------|
| • Calgary | 18,435 | 18,190 | 18,089 | 18,080 | -0.05% |
| • Toronto | 18,690 | 18,800 | 18,664 | 18,569 | -0.51% |

Canadian construction starts saw year-on-year contractions in Q1 and Q2 of 2017, with changes in activities varying significantly by region/province. The outlook for the Canadian non-residential construction activity suggests further overall contraction in 2017, before the return of relatively healthy growth in 2018. Canadian residential construction is up 28.5% from last quarter, recovering at a rate slightly higher than this time last year.

Considerable improvement is expected based on a strong outlook for the oil and gas sector by the end of 2017. This should stimulate a recovery in demand for oil-related services in regions such as Alberta, with subsequent increases in demand for new office space and Oilfield construction rebound from its current lows. Overall, the government spending plan targeting infrastructure investments should see growth in civil engineering sector, and hospitality sector is also expected to gain strength with government support driven by an aging population.

KEY CANADIAN STATISTICS



GDP represented in percent change from the preceding quarter, seasonally adjusted at annual rates. CPI quarterly figures represent the monthly value at the end of the quarter. Inflation rates represent the total price of inflation from the previous quarter, based on the change in the Consumer Price Index. General Unemployment rates are based on the total population 16 years and older. Construction Unemployment rates represent only the percent of experienced private wage and salary workers in the construction industry 15 years and older. Unemployment rates are seasonally adjusted, reported at the end of the period.

Sources: Statistics Canada



ABOUT RIDER LEVETT BUCKNALL

Rider Levett Bucknall is an award-winning international firm known for providing project management, construction cost consulting, and related property and construction advisory services – at all stages of the design and construction process. The firm was voted #1 Cost Consultant in 2016 and 2017 by World Architecture Magazine.

While the information in this publication is believed to be correct, no responsibility is accepted for its accuracy. Persons desiring to utilize any information appearing in this publication should verify its applicability to their specific circumstances.

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