

NORTH AMERICA

QUARTERLY CONSTRUCTION COST REPORT

SECOND QUARTER 2017





ON THE COVER

COLGATE ICE ARENA HAMILTON, NEW YORK

In the fall of 2016, Colgate University formally opened The Class of 1965 Arena on its campus in Hamilton, New York.

Designed by Sasaki of Watertown, MA, the 2,222 seat, state-of-the-art facility will be the new home of the Colgate men's and women's ice hockey teams in addition to providing new locker rooms for The Raiders' men's and women's lacrosse and soccer teams.

RLB provided cost advisory services for the construction of this new athletic facility.

The ice surface in Colgate's Class of 1965 Arena will be known as Steven J. Riggs '65 Rink in honor of the former men's ice hockey team captain. Riggs was killed in combat in Vietnam in 1968 and was inducted posthumously into the Colgate Athletics Hall of Honor.

NORTH AMERICA

Heading into the summer months—high construction season here in North America—the industry remains robust. Cost escalation continues to trend significantly above the Consumer Price Index, in a reflection of the good times we’re currently experiencing in the field.

With labor shortages continuing, we have reason to believe it is limited in nature and easing somewhat. Once the effect of inflation on the value of construction put-in-place is calculated, it would appear that the increase in construction labor is still behind the up-turn in construction activity, but not as much as the raw numbers would suggest. In light of this, RLB sees the shortage as being specific to market sector, locale, and to particular trades. More worrying is the prospect that some of the shortage comprises under-skilled workers, which would reduce construction productivity at a time that the industry could use increased productivity.

On the topic of labor generally and the under-skilled sector in particular: In June, the President signed an executive order expanding federally funded apprenticeship programs, redirecting \$100 million to industry groups to develop retraining programs for trade workers that would be subject to approval by the Labor Department. At RLB, we would very much like to see similar support extended for careers in engineering, project management, and quantity surveying (construction cost management).

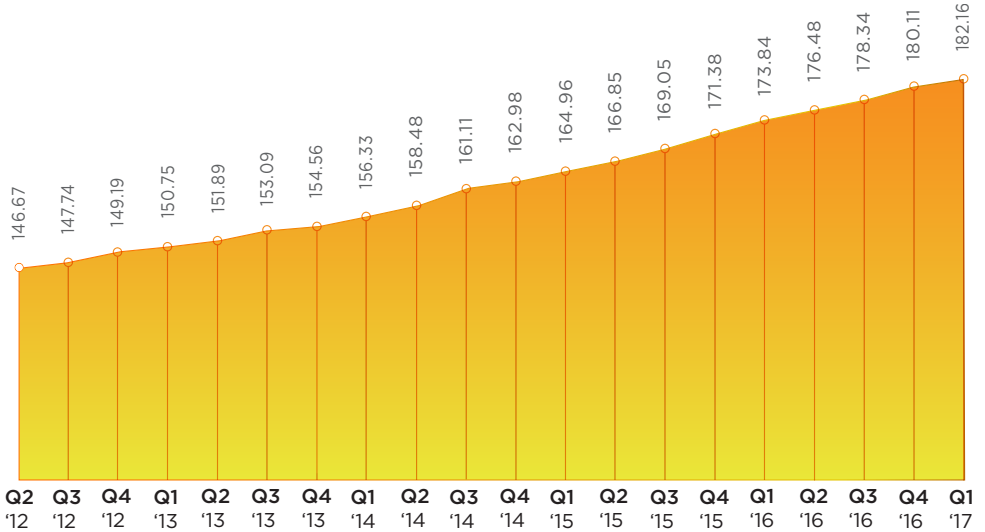
Regarding another proposed initiative, at the moment, the promised investment in national infrastructure has been shifted to individual states to fund and administer. With details of the program—which hinges on P3 partnerships—still sketchy, RLB is looking to Congress for action. While we wait for resolution on these matters, barring some external shock to the economy, we continue to expect a generally positive year for the construction industry.

As always, we at Rider Levett Bucknall thank you for your business and, more importantly, for your trust.



Julian Anderson FRICS
President

NATIONAL CONSTRUCTION COST INDEX



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

\$1,218.5 Billion According to the U.S. Department of Commerce, construction-put-in-place during April 2017 was estimated at a seasonally adjusted annual rate of \$1,218.5 billion, which is

1.4% below the revised March estimate of \$1,235.5 billion, and

6.7% above above the April 2016 estimate of \$1,142.5 billion.

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

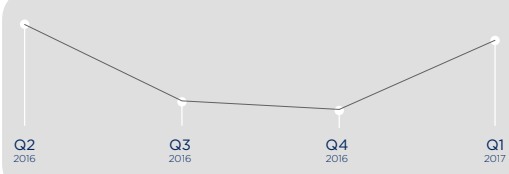
KEY UNITED STATES STATISTICS



Gross Domestic Product* (GDP)
Coming down from 3.2% in the third quarter of 2016, GDP reports at 1.20% as the start of 2017.

| Quarter | GDP Change (%) |
|---------|----------------|
| Q2 2016 | 3.2% |
| Q3 2016 | 1.20% |
| Q4 2016 | 1.20% |
| Q1 2017 | 1.20% |

Consumer Price Index (CPI)
CPI experiences its first increase in over a year, up 1% from the fourth quarter of 2016.

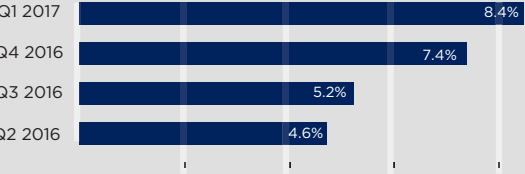


| Quarter | CPI Change (%) |
|---------|----------------|
| Q2 2016 | 1.20% |
| Q3 2016 | 1.20% |
| Q4 2016 | 1.20% |
| Q1 2017 | 2.20% |

Architectural Billings Index (ABI)
ABI is down from fourth quarter's reported billings but up from the 2016 average, indicating a healthy start to 2017.



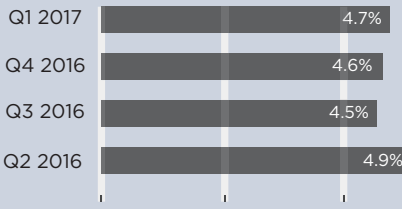
| Quarter | ABI Value |
|---------|-----------|
| Q2 2016 | 52.6 |
| Q3 2016 | 48.4 |
| Q4 2016 | 55.9 |
| Q1 2017 | 54.3 |



| Quarter | Construction Unemployment (%) |
|---------|-------------------------------|
| Q2 2016 | 4.6% |
| Q3 2016 | 5.2% |
| Q4 2016 | 7.4% |
| Q1 2017 | 8.4% |

Construction Unemployment
Construction unemployment continues to increase, starting out the year at 8.4%.

National Unemployment
National unemployment remained relatively steady into 2017, varying from 4.9% to 4.7%.



| Quarter | National Unemployment (%) |
|---------|---------------------------|
| Q2 2016 | 4.9% |
| Q3 2016 | 4.5% |
| Q4 2016 | 4.6% |
| Q1 2017 | 4.7% |

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

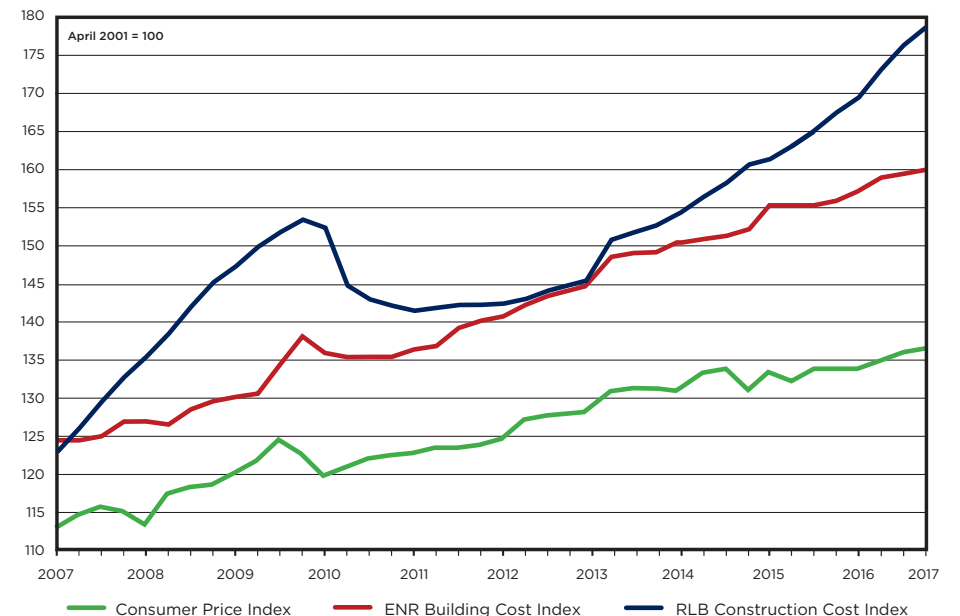
The data in the chart below represents estimates of current building costs in each respective market. Costs may vary as a consequence of factors such as site conditions, climatic conditions, standards of specification, market conditions, etc. Values of U.S. locations represent hard construction costs 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 |
| 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 | 75 | 95 | 85 | 145 | 550 | 720 | 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 | 70 | 90 | 115 | 150 | 500 | 645 | 70 | 90 | 130 | 205 | 190 | 330 | 170 | 195 | 200 | 230 | 200 | 295 |

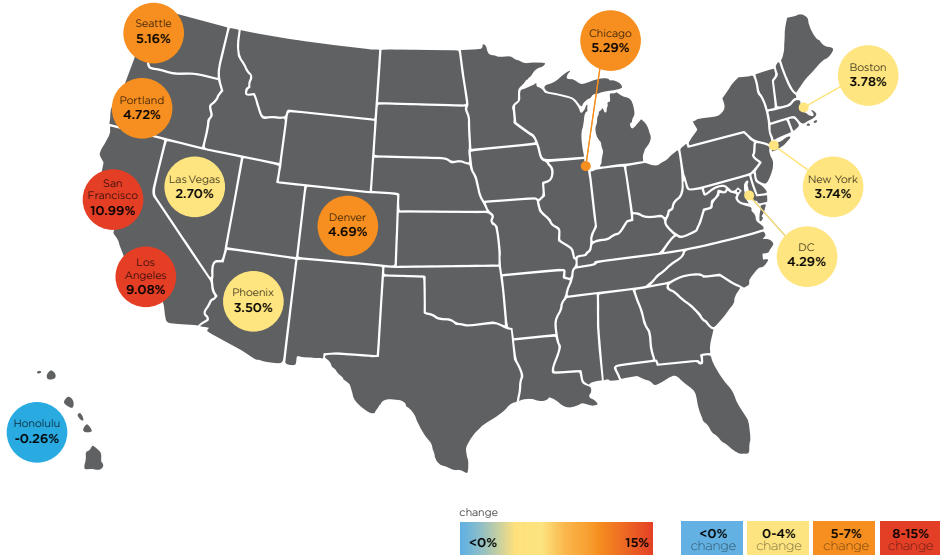
INFLATION INDEX COMPARISON

The chart on the following page demonstrates the relative differences in inflation between the cost of general goods and services (represented by the U.S. Bureau of Labor Statistics' Consumer Price Index), the cost of construction materials and labor (represented by Engineering News-Record's Building Cost Index) and the bid cost of construction (represented by Rider Levett Bucknall's National Construction Cost Index).

The distance between the cost of labor and materials (reflected in the ENR Building Cost Index) and the 'bid cost' (reflected in the RLB Index) indicates the relative health of the construction market; the bigger the gap, the more buoyant the construction industry. In times of recession, the gap usually closes up as contractors and sub-contractors cut overhead and profit to win work.

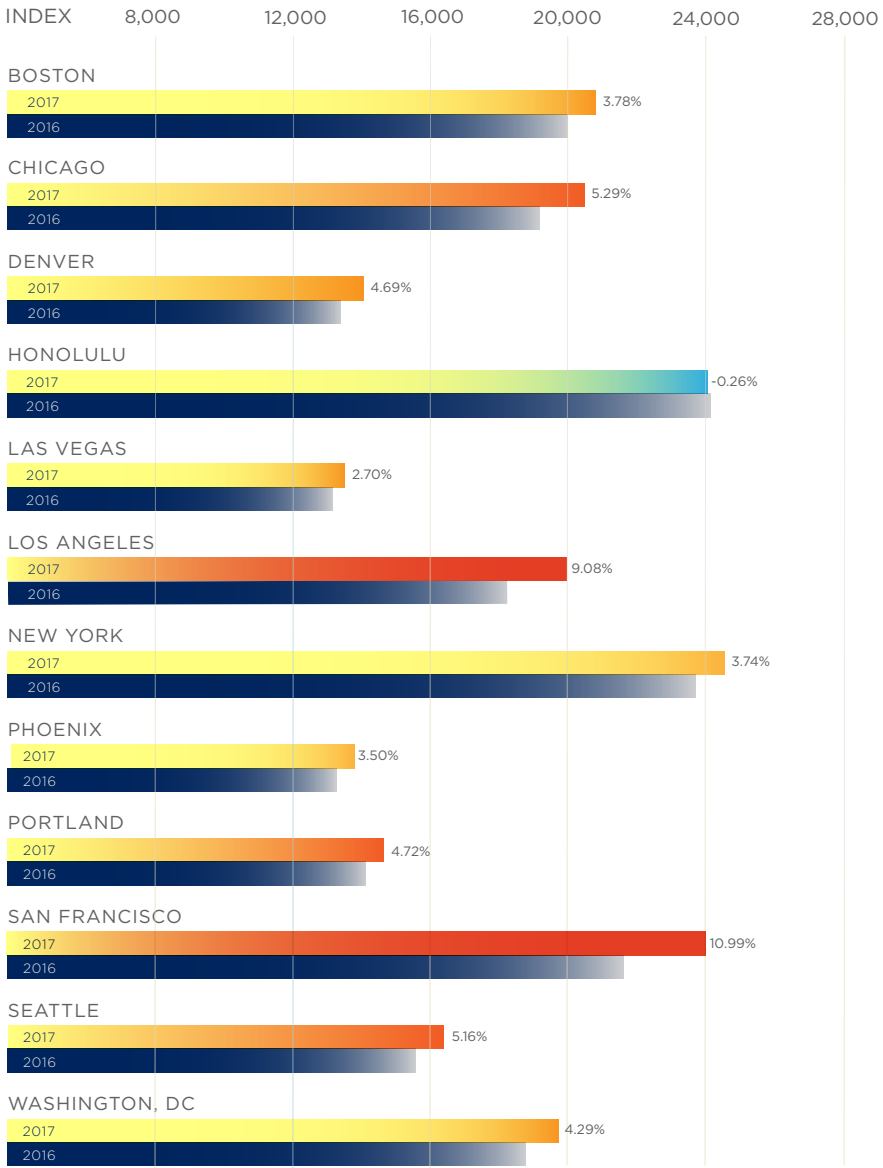


COMPARATIVE COST INDEX



| City | April 2016 | July 2016 | October 2016 | January 2017 | April 2017 | % Change |
|------------------|------------|-----------|--------------|--------------|------------|----------|
| • Boston | 20,076 | 20,257 | 20,489 | 20,671 | 20,835 | 3.78% |
| • Chicago | 19,388 | 19,547 | 19,809 | 20,103 | 20,414 | 5.29% |
| • Denver | 13,466 | 13,660 | 13,932 | 13,987 | 14,097 | 4.69% |
| • Honolulu | 24,122 | 24,338 | 24,181 | 24,082 | 24,060 | -0.26% |
| • Las Vegas | 13,155 | 13,251 | 13,342 | 13,435 | 13,510 | 2.70% |
| • Los Angeles | 18,332 | 19,041 | 19,225 | 19,401 | 19,997 | 9.08% |
| • New York | 23,617 | 23,837 | 24,101 | 24,303 | 24,499 | 3.74% |
| • Phoenix | 13,318 | 13,481 | 13,578 | 13,659 | 13,785 | 3.50% |
| • Portland | 14,162 | 14,287 | 14,469 | 14,638 | 14,830 | 4.72% |
| • San Francisco | 21,659 | 22,625 | 23,005 | 23,677 | 24,039 | 10.99% |
| • Seattle | 15,613 | 15,774 | 15,972 | 16,190 | 16,419 | 5.16% |
| • Washington, DC | 18,961 | 19,163 | 19,376 | 19,586 | 19,774 | 4.29% |


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



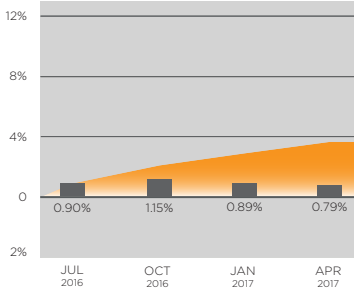
Each quarter we look at the comparative cost of construction in 12 US cities, indexing them to show how costs are changing in each city in particular, and against the costs in the other 11 locations. You will be able to find this information in the graph titled *Comparative Cost Index (above)* and in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

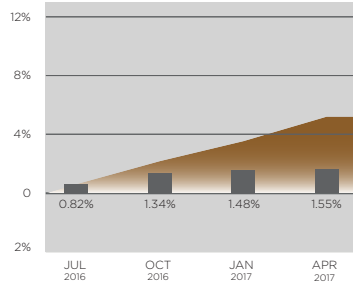
The following escalation charts track changes in the cost of construction each quarter in many of the cities where RLB offices are located. Each chart illustrates the percentage change per period and the cumulative percentage change throughout the charted timeline.

 Percentage change per quarter  Cumulative percentage change for the period shown

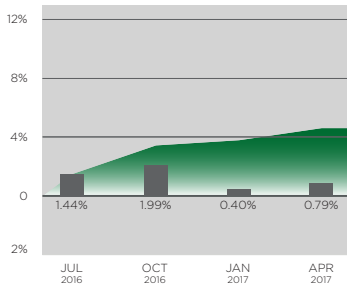
COST INDEX Boston



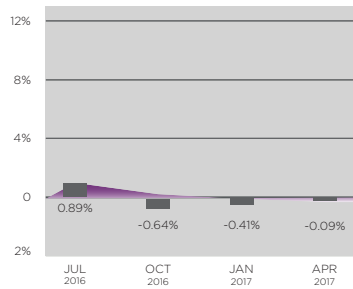
COST INDEX Chicago



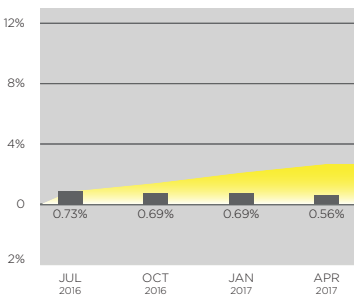
COST INDEX Denver



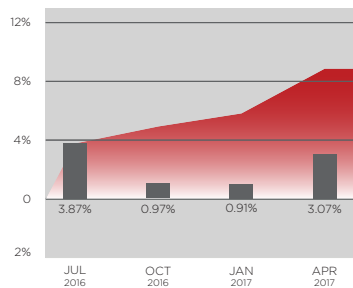
COST INDEX Honolulu



COST INDEX Las Vegas

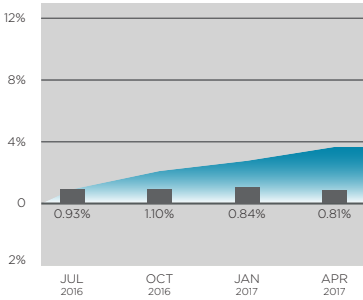


COST INDEX Los Angeles

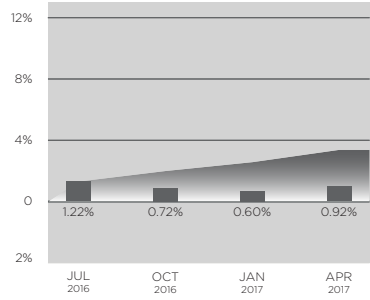


Our research suggests that between January 1, 2017 and April 1, 2017 the national average increase in construction cost was approximately 1.1%. Chicago, Los Angeles, Portland, San Francisco and Seattle all experienced increases over 1% in the quarter. Most other locations had more modest gains and, for the third consecutive quarter, Honolulu experienced a slight decrease.

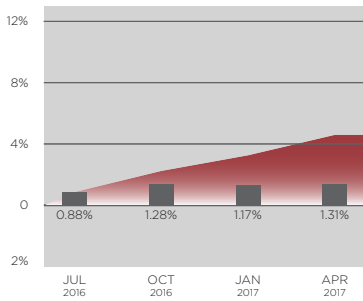
COST INDEX New York



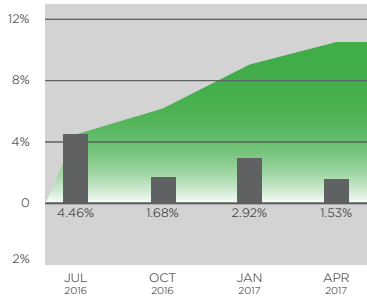
COST INDEX Phoenix



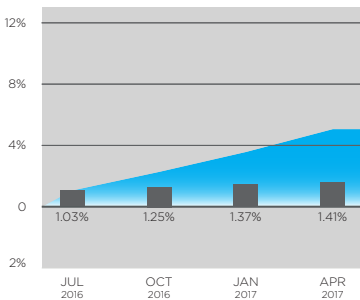
COST INDEX Portland



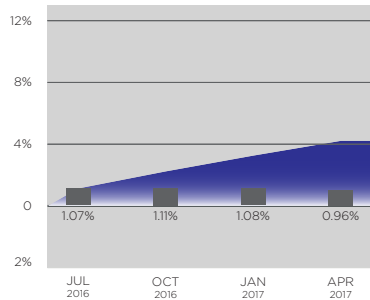
COST INDEX San Francisco



COST INDEX Seattle

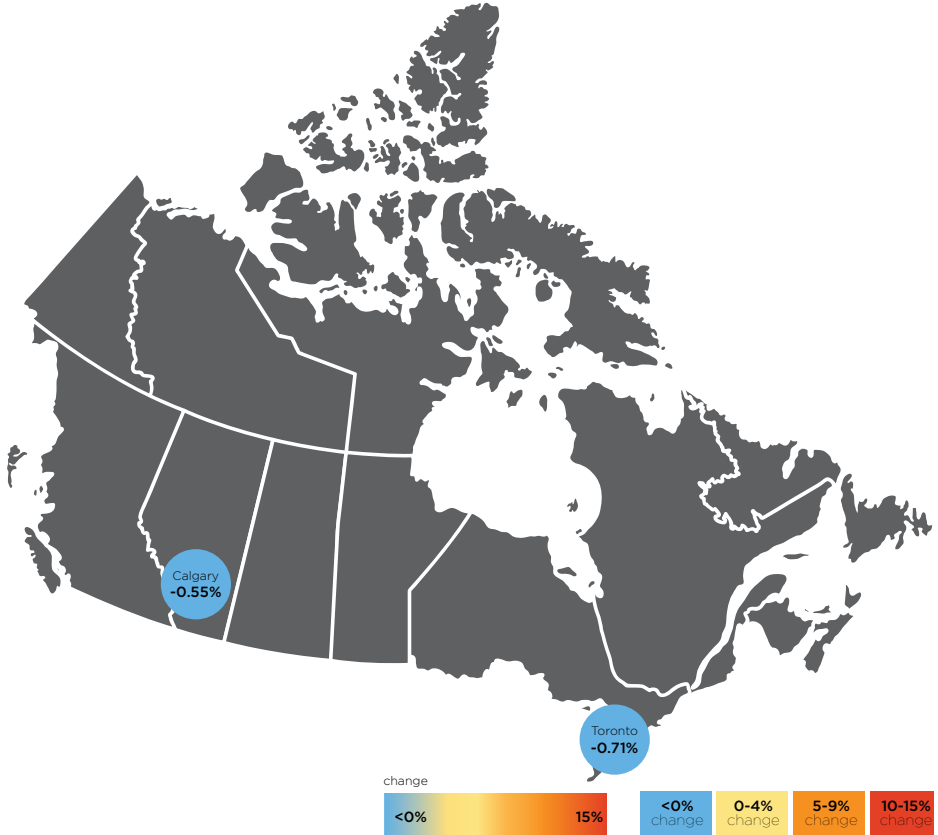


COST INDEX Washington DC





COMPARATIVE COST INDEX



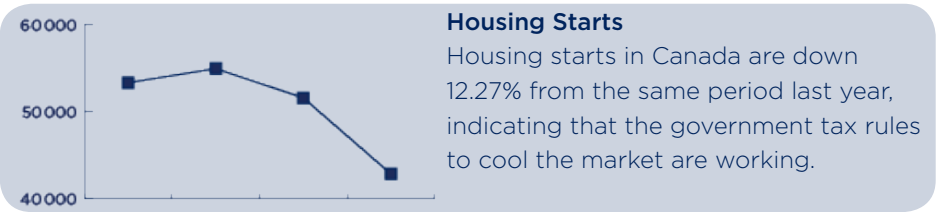
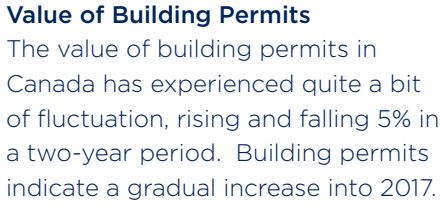
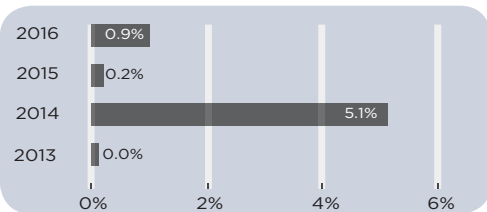
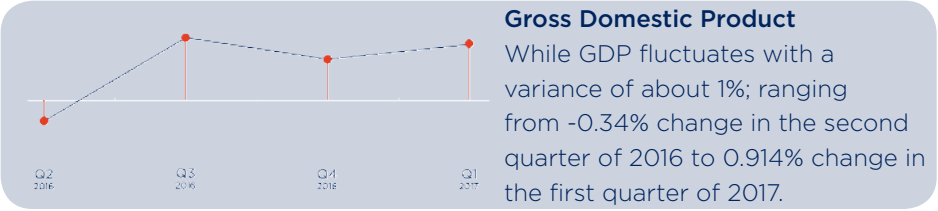
| City | October 2016 | January 2017 | April 2017 | Quarterly % Change |
|-----------|--------------|--------------|------------|--------------------|
| • Calgary | 18,435 | 18,190 | 18,089 | -0.55% |
| • Toronto | 18,690 | 18,800 | 18,664 | -0.71% |

The Toronto construction market rebounded from a seasonal slowdown and continues to be a construction engine for the province of Ontario.

While overall construction employment has been almost static since 2014, unemployment in Ontario has dipped to 5.8% in April 2017, the lowest it's been in more than 16 years. Construction employment is slowly increasing but is being offset by the decrease in 'average hours worked' in construction.

Government programs are expected to rein in foreign investment in residential real estate. Toronto is also the recipient of billions of dollars in federal, provincial, and municipal funding for transit and infrastructure that will balance the construction market and employment for years to come.

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.

This issue was compiled by Taryn Harbert with contributions from Evans Pomegas, Grant Owen, Edd Hamzanlui, Paul Brussow, Maelyn Uyehara, Cassie Idehara, Simon James, Philip Mathur, Scott Macpherson, Graham Roy, Daniel Junge, George Bergeron, Peter Knowles, Catherine Stoupas, Joe Pendlebury, and Edward Traore.

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