# Construction Starts Forecast

## Contents

> **The** jobless rate **in the U.S. in** September tightened **to** 4.2% **from** 4.4% **in** August. **Furthermore, the improvement was realized despite a** 'participation rate' **that** rose **to** 63.1% **from** 62.9% **the month prior.**

## Highlights

- US construction starts grew by 8.6% year-on-year in Q3, the third consecutive quarter of positive starts growth. The uptick in the civil engineering subcategory was most marked, 21.2% year-on-year, amid broad growth across civil engineering segments. Residential starts grew by 10.9% year-on-year. Non-residential starts were essentially unchanged relative to a year ago, slipping by 0.2%.

- US GDP grew by 3.1% annualised in Q2, buoyed by resurgent consumer spending and strengthening business investment. Inflation climbed to 2.1% in September, the first time above the Feds 2% target since April. The Fed meanwhile left its policy rate unchanged at 1-1.25% during its September meeting and announced that its balance sheet reduction would begin in October. Employment surprisingly fell by 33,000 jobs in September, though we think this is a one-off, with the labor market still moving in a positive direction.

- The headline construction starts forecast has been raised to 7.9% for 2017, slowing to 4% by the end of the decade. The residential sector will remain the major driver of US construction going forward as pent-up demand for housing continues to drive new starts. Civil engineering starts are also set to see robust growth as long-needed investments in US infrastructure start to be realized. The Trump administration has made much of the importance of infrastructure investment, and though we suspect these claims to be slightly overbaked, there remains significant political support for increased spending in this area.

- Canadian headline starts fell by 22% year-on-year in Q3. Declines were present in all three construction subsectors. Residential starts witnessed the sharpest drop, falling by 28.5%; civil engineering starts fell by 19.5%; non-residential starts fell by 10.2%.

- Looking forward, Canadian starts are set to rebound in 2018 as the economy adjusts to the lower oil price. Returning business investment will see non-residential starts grow at a double-digit pace in 2018, while the scope for catch-up activity in civil engineering will ensure fast-paced growth over the coming years.

**constructconnect**™
Powering connections. Improving results.

# Overview

## US non-residential building starts flat, civil engineering booming

Total construction starts grew by 8.6% year-on-year in Q3, marking the third consecutive quarter of US starts growth. The most significant annual growth occurred in the civil engineering sector, 21.2% year-on-year, followed by the residential sector, 10.9% year-on-year. Conversely, non-residential starts continued to disappoint, falling by 0.2% from a year earlier.

The strength of civil engineering starts was re-enforced by a number of mega-projects in the third quarter. An ExxonMobil petrochemical plant in Texas worth $10bn, a new Delta Airlines Terminal at LaGuardia Airport in New York worth $4bn and the Atlantic Sunrise natural gas pipeline in Pennsylvania, worth $3bn were all notable contributors. Nonetheless, the general trends within civil engineering are all currently pointing towards fast growth, as evidenced by across-the-board starts growth in all civil engineering sectors bar roads and water, sewage & treatment.

Non-residential starts maintained their disappointing trend in Q3. Private office starts fell by 33.7% year-on-year, educational facilities starts fell by 10.7%, and government offices fell by 21.5%. One positive note came from the industrial sector where the Exxon-Mobil megaproject was classified.

Other indicators of construction activity show a slowdown. The Census Bureau's put-in-place construction data show total construction growth continued to slow in Q2, dropping to 4.3% year-on-year, the slowest rate of growth since 2011. The Census Bureau's data shows the non-residential sector as being the major drag on overall construction, whereas the residential sector continues to expand at a double-digit pace, largely in line with our own data. Construction employment appears robust in the latest JOLTS labor market survey, with new hires growing by 17% year-on-year in Q2.

## GDP growth prospects remain positive…

GDP growth rose to an annualised rate of 3.1% in Q2, as consumer spending rebounded by 3.3% after a soft start to the year. Business investment also saw rapid growth against a backdrop of firm domestic activity and robust global growth.

Manufacturing and non-manufacturing PMI indices surged in September, indicating rebounding business investment activity and ongoing consumer spending momentum. However, we note that supply chain disruptions in August may have artificially boosted the readings, and higher input costs may curb activity in the future.

Inflation rose to 2.1% in September, having trailed the Fed's 2% target for the past four months. The Fed left its policy rate unchanged at 1-1.25% at its September meeting and announced that its balance sheet reduction would begin in October. The Fed continues to signal a further rate hike in 2017, with an additional three rates hikes forecast in 2018. This more hawkish tone from the Fed has led the markets to reprice the odds of a December rate hike from about 30% to 85%.

Non-farm employment surprisingly fell by 33,000 in September, the first such decline since September 2010. On a more positive note, strong growth in wages, at 2.9% year-on-year, lower unemployment, at 4.2% and a rising participation rate, to 63.1%, all point to a strong underlying labor market.

Policy momentum picked up with the release of the Republicans' tax policy framework. There is an increased chance of a modest fiscal package, but we believe the potential package will be highly regressive and much smaller than what is currently being discussed.

| Table 1: Summary forecasts (Annual percentage changes unless specified otherwise) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| **US** | | | | | | | |
| **Macro variables** | | | | | | | |
| GDP | 2.9 | 1.5 | 2.1 | 2.4 | 1.7 | 1.6 | 1.5 |
| Population growth | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Unemployment rate (%) | 5.3 | 4.8 | 4.4 | 4.2 | 4.2 | 4.2 | 4.2 |
| Real disposable income | 4.2 | 1.4 | 1.4 | 2.5 | 1.8 | 1.6 | 1.5 |
| Central bank rate (%) | 0.1 | 0.4 | 1.0 | 1.7 | 2.3 | 2.7 | 2.8 |
| 10-year government yield (%) | 2.1 | 1.8 | 2.3 | 2.6 | 2.9 | 3.1 | 3.4 |
| **Construction starts** (y/y % change of $ volumes) | | | | | | | |
| Total starts | 13.5 | 13.2 | 7.9 | 4.8 | 5.6 | 4.3 | 3.8 |
| Residential | 17.5 | 14.5 | 10.1 | 6.7 | 6.7 | 6.4 | 5.8 |
| Non-res bldg | 13.2 | 20.8 | -0.5 | 1.9 | 2.6 | 1.8 | 1.1 |
| Civil engineering | 6.9 | -3.9 | 23.1 | 6.6 | 9.0 | 4.6 | 4.3 |
| **Canada** | | | | | | | |
| Macro variables | | | | | | | |
| GDP | 0.9 | 1.5 | 3.0 | 2.0 | 1.9 | 1.8 | 1.7 |
| Population growth | 0.9 | 1.1 | 1.2 | 1.1 | 1.0 | 0.9 | 0.9 |
| Unemployment rate (%) | 6.9 | 7.0 | 6.5 | 6.4 | 6.3 | 6.3 | 6.4 |
| Real disposable income | 3.3 | 2.8 | 3.1 | 1.8 | 1.5 | 1.4 | 1.7 |
| Central bank rate (%) | 0.6 | 0.5 | 0.7 | 1.3 | 2.0 | 2.8 | 3.0 |
| 10-year government yield (%) | 1.5 | 1.3 | 1.8 | 2.6 | 3.1 | 3.5 | 3.6 |
| Exchange rate C$ per US$ | 1.28 | 1.33 | 1.30 | 1.28 | 1.28 | 1.28 | 1.27 |
| **Construction starts** (y/y % change of $ volumes) | | | | | | | |
| Total starts | -10.1 | -22.9 | -12.6 | 9.4 | 13.7 | 8.2 | 9.8 |
| Residential | 0.4 | 1.0 | -6.1 | 8.7 | 6.3 | 5.5 | 4.6 |
| Non-res bldg | 23.7 | -32.8 | 7.4 | 14.3 | 9.8 | 7.2 | 5.6 |
| Civil engineering | -25.5 | -34.4 | -29.7 | 6.6 | 27.5 | 12.0 | 18.6 |

*Cont'd from page 2*

For 2017 as a whole, we forecast the economy to grow by 2.1%, with consumer spending moderating slightly from its 2016 pace, but with business investment and exports rising. The 2018 stimulus package (assumed to be $500bn over the next decade) will help boost growth to 2.4% in 2018. Over the next five years, we expect moderate growth of just under 2%. Key drivers of growth will be ongoing consumer spending strength, underscored by the healthy, albeit, maturing labor market, and an ongoing revival in business investment.

## ….but construction starts are expected to gradually slow

The outlook for construction in 2017 has been raised since the previous iteration of this report. Total starts are now forecast to grow by 7.9% this year. Civil engineering is forecast to grow by 23% this year, slowing to 6.6% in 2018. The residential sector remains the workhorse for US construction, forecast to grow by 10% this year, before stabilising between 6-7% over the next four years. Non-residential starts growth will be far slower, with a forecast decline of 0.5% this year, followed by low growth of between 1-2% over the next five years.

The major emphasis underpinning US construction continues to come from the residential sector. Homebuilding is forecast to grow at double digit pace this year as ongoing demand for new homes rises. As of 2018, we forecast the growth rate to slow to the 6½% range, though this will still be ahead of the other construction sectors.

Within residential construction, the single-family sector will spearhead growth going forward. The reasons for this are manifold, but chiefly among them is the fact that single-family accommodation fell the most sharply during the sub-prime crisis, and thus has the greatest potential for catch-up growth going forward. Beyond this, the rise in incomes and employment are empowering potential homebuyers to afford the typically more expensive single-family housing, rather than urban-based multi-family properties. Indeed, the latter type of housing abounded in popularity during the long slump following the financial crisis as incomes were more constrained and potential homeowners elected to rent apartments rather than buy their own properties. Finally, demographic shifts are set to further strengthen demand for single-family housing as the large millennial generation reaches family-bearing age and increasingly moves away from the city into suburban housing.

The non-residential sector will see far slower growth over the forecast period, averaging less than 2%. This year, non-residential starts growth has disappointed amid broad based slowdowns across the sector, resulting in overall starts being forecast to fall by 0.5%.

The one point of strength within the non-residential sector this year comes from the industrial sector which, due to a $10bn petrochemical plant in Texas and some other projects, is forecast to grow 35%. Though we are forecasting a decline next year (a natural contraction following such strong growth in 2017), we expect the industrial sector to grow at a comfortable 7% pace over the remainder of the decade. The US maintains significant advantages within the global manufacturing sphere, stemming from advanced technologies, relatively competitive labor markets, cheap and plentiful energy and a large and wealthy domestic market to sell into.

The civil engineering sector is set for the most impressive growth in 2017 amid strong starts growth in the year-to-date. Beyond the immediate future, the outlook for civil engineering is likewise positive, with annual growth at slightly below 5% by the end of the decade. Increasing recognition of the need for focused new investment in the area, which crosses party lines, will drive a slew of new funding rounds notwithstanding the slow start to President Trump's ambitious goals.

Among the most important of the civil engineering categories is the all other civil classification, which contains civil engineering projects within the US's ever-expanding energy sector. The Trump administration's plan to expand the capacity of US energy production will underpin significant investments in the country's oil & gas infrastructure. The Keystone XL and Dakota Access pipelines were both approved by executive order within the first few days of Mr. Trump coming to power, giving some sense of the administration's commitment to this sector.

Beyond oil & gas, the Trump administration's general infrastructure plan, if fully implemented, will generate a significant upswing in civil engineering. The plan has stressed the importance of partnering with private capital to create revenue generating new projects. This most easily gives way to construction projects such as roads and bridges, which can be tolled and hence can deliver financial returns to private investors.

| Table 2: Drivers of headline sectors | | |
|---|---|---|
| **Sector** | **Short-term drivers** | **Long-term drivers** |
| Residential | Unemployment rate; Household liabilities; Mortgage interest rates; House prices; Population trends | House prices; Incomes |
| Non-residential building | Output trends in relevant sector; Population trends; Capacity utilization; Borrowing costs; Employment in relevant sector; Disposable income | Output trends in relevant sector; Employment in relevant sector |
| Civil engineering | Federal/State/Provincial spending; Government borrowing costs; Employment in government sector; Output trends in relevant sector | Federal/State/Provincial spending; Output trends in relevant sector |

## Second consecutive year of decline in Canada in 2017

Total Canadian construction starts fell by 22.1% year-on-year in Q3, marking two consecutive quarters of falling starts in year-on-year terms. Declining starts were witnessed across all major sub-categories of construction. Residential starts fell most sharply, 28.5% year-on-year. Similarly, the civil engineering sector witnessed starts falling by 19.5% as demand for new projects has not yet fully resumed following the 2014 oil price slump, though signs from the general economy are that things are slowly improving. Non-residential starts declined by the least of the major subsectors, 10.2% year-on-year, as falls in commercial and industrial starts impacted on activity.

The Canadian economy continues to grow at a rapid pace, expanding by 4.5% annualized in Q2, making it the fastest growing G7 country of 2017 so far. Business investment rose for a second consecutive quarter, up 7.1%, on the back of broad-based gains in machinery & equipment and intellectual property. These gains come after several years of lacklustre capital spending in the Canadian economy resulting from the late-2014 oil price decline that cut into profitability. The structural adjustment to oil prices appears to be nearing completion in the broader economy, though downbeat oil prices may cause challenges to linger in the oil & gas sector itself. In addition, rising external demand will provide a mild boost over the coming quarters. Overall, we forecast total investment to grow by 1.7% this year, after falling 4.6% and 3.1% in 2015 and 2016 respectively. The Bank of Canada raised the overnight rate by 25%bp to 1% in September. Going forward, we expect the BoC to proceed more cautiously as policy makers observe whether the higher rate affects consumer and business spending, particularly given the high levels of household debt.

Canadian starts are forecast to decline this year, after the disappointing data so far in 2017. This will mark the third consecutive year of declining starts in Canada. The major cause stems from the civil engineering sector, which is again set to decline by nearly 30% this year after similar declines in 2015 and 2016. Non-residential starts mark the one area that is forecast to expand amid renewed business investment across the economy. Looking ahead to the rest of the decade, headline growth will average roughly 10% per annum, though this strong growth should be viewed in the context of the past three years of decline. Despite this rebound, total starts will still be below their 2014 peak by 2021.

Canadian residential starts are forecast to fall by 6.1% this year, before rebounding by 8.7% in 2018. Potential catch-up growth is far more limited compared to the US, particularly with the multi-family segment which is near historic highs. The nationwide housing market continues to grow at a firm pace, despite a summer slowdown in Toronto house prices, indicating that there is ongoing demand for Canadian housing.

Non-residential is the only construction subsector where starts are expected to grow this year. Stronger business investment and rebounding confidence have helped drive up starts growth this year. Industrial starts are set for particularly strong growth as manufacturers benefit from a gradually improving export environment and the impact of low oil prices on capital spending begins to fade. We expect these dynamics to remain over the forecast period, leading industrial spending to be one of the major drivers of non-residential starts going forward. Starts growth in the hospitals/clinics segment is forecast for similar strong growth amid the aging dynamics of the Canadian populace and strong government support. Beyond the healthcare system, the Trudeau government's fiscal spending plan will see investment centred on the transportation and water systems.

The civil engineering sector is forecast to see starts shrink for the third year running. Starts are set to decline across all civil engineering segments bar water & sewage treatment and roads this year. Of most significant note is the sharp decline in the all other civil segment, which encompasses construction activity in the oil & gas sector and is still witnessing the effects of the 2014 oil price drop.

Nonetheless, we expect 2017 to be the last year of declining civil engineering starts as the Canadian economy finally appears to have adjusted to the lower oil price environment. This is seen most starkly within the all other civil category, with starts forecast to more than double in 2018 and grow at more than 50% in 2019 and 2020, though we note that headline civil engineering starts will remain below their 2014 peak level.

| Table 3: U.S. Type-of-Structure Forecasts ($ Billions USD) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Actuals** | | **Forecasts** | | | | |
| | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| Single-family | 173.165 | 186.757 | 204.790 | 222.849 | 240.323 | 259.047 | 276.696 |
| Multi-family | 65.866 | 86.923 | 96.477 | 98.481 | 102.381 | 105.535 | 109.039 |
| TOTAL RESIDENTIAL | 239.031 | 273.680 | 301.267 | 321.330 | 342.704 | 364.582 | 385.735 |
| (Yr/yr % change) | *17.5%* | *14.5%* | *10.1%* | *6.7%* | *6.7%* | *6.4%* | *5.8%* |
| Hotels/Motels | 14.907 | 20.239 | 27.828 | 27.311 | 25.571 | 23.983 | 22.226 |
| Shopping/Retail | 24.295 | 35.308 | 17.951 | 17.145 | 16.940 | 16.976 | 17.483 |
| Parking Garages | 3.252 | 4.549 | 2.785 | 3.231 | 3.412 | 3.477 | 3.525 |
| Amusement | 12.804 | 6.467 | 7.102 | 7.411 | 7.785 | 8.202 | 8.425 |
| Private Offices | 19.370 | 26.052 | 25.324 | 28.061 | 29.431 | 28.374 | 27.193 |
| Govenmental Offices | 10.516 | 13.102 | 11.753 | 12.129 | 12.435 | 12.746 | 12.942 |
| Laboratories (Schools & Industrial) | 2.332 | 3.918 | 2.499 | 2.720 | 2.843 | 2.980 | 3.072 |
| Warehouses | 15.229 | 14.785 | 17.988 | 18.836 | 19.626 | 20.367 | 20.883 |
| Sports Stadium/Convention Center | 9.265 | 8.022 | 11.995 | 11.770 | 12.103 | 12.451 | 12.761 |
| Transportation Terminals | 7.091 | 4.608 | 3.874 | 4.641 | 5.138 | 5.755 | 6.044 |
| TOTAL COMMERCIAL | 119.061 | 137.050 | 129.099 | 133.255 | 135.285 | 135.311 | 134.556 |
| (Yr/yr % change) | *21.6%* | *15.1%* | *-5.8%* | *3.2%* | *1.5%* | *0.0%* | *-0.6%* |
| TOTAL INDUSTRIAL (manufacturing) | 15.048 | 20.204 | 27.279 | 23.527 | 25.187 | 26.925 | 28.077 |
| (Yr/yr % change) | *7.2%* | *34.3%* | *35.0%* | *-13.8%* | *7.1%* | *6.9%* | *4.3%* |
| Religious | 1.697 | 1.738 | 2.042 | 2.057 | 2.105 | 2.127 | 2.136 |
| Hospitals/Clinics | 14.409 | 21.431 | 18.056 | 18.580 | 19.377 | 20.109 | 20.662 |
| Nursing Homes/Assisted Living | 5.665 | 9.731 | 9.952 | 10.534 | 10.969 | 11.482 | 11.943 |
| Libraries/Museums | 3.006 | 3.213 | 3.421 | 3.477 | 3.558 | 3.638 | 3.704 |
| Courthouse | 1.183 | 1.276 | 2.583 | 2.840 | 3.058 | 3.262 | 3.427 |
| Police/Fire | 1.983 | 2.864 | 2.975 | 3.182 | 3.335 | 3.454 | 3.579 |
| Prisons | 2.910 | 1.858 | 2.561 | 2.679 | 2.899 | 3.094 | 3.255 |
| Military | 5.813 | 4.679 | 5.023 | 5.810 | 6.346 | 6.749 | 7.090 |
| Educational Facilities | 61.053 | 70.112 | 68.433 | 71.283 | 72.666 | 73.805 | 74.735 |
| MED misc | 3.897 | 7.820 | 10.000 | 9.971 | 10.139 | 10.343 | 10.369 |
| TOTAL INSTITUTIONAL | 101.616 | 124.721 | 125.046 | 130.411 | 134.451 | 138.064 | 140.900 |
| (Yr/yr % change) | *5.3%* | *22.7%* | *0.3%* | *4.3%* | *3.1%* | *2.7%* | *2.1%* |
| Miscellaneous Non-Res Building | 4.884 | 8.654 | 7.839 | 7.638 | 7.712 | 7.793 | 7.945 |
| TOTAL NON-RES BLDG | 240.609 | 290.630 | 289.263 | 294.830 | 302.635 | 308.093 | 311.478 |
| (Yr/yr % change) | *13.2%* | *20.8%* | *-0.5%* | *1.9%* | *2.6%* | *1.8%* | *1.1%* |
| Airport | 4.508 | 6.659 | 11.818 | 10.528 | 10.923 | 11.187 | 11.441 |
| Roads | 51.611 | 51.114 | 58.224 | 61.641 | 65.096 | 68.390 | 70.871 |
| Bridges | 13.084 | 14.504 | 19.806 | 21.822 | 26.382 | 24.842 | 25.783 |
| Dams/Canal/Marine | 6.265 | 3.740 | 4.489 | 4.877 | 5.084 | 5.225 | 5.327 |
| Water & Sewage Treatment | 28.816 | 30.466 | 32.690 | 35.044 | 38.123 | 41.568 | 43.755 |
| Misc Civil (Power, etc.) | 20.253 | 13.171 | 20.222 | 23.012 | 25.362 | 27.593 | 29.265 |
| TOTAL ENGINEERING | 124.538 | 119.654 | 147.248 | 156.923 | 170.969 | 178.804 | 186.441 |
| (Yr/yr % change) | *6.9%* | *-3.9%* | *23.1%* | *6.6%* | *9.0%* | *4.6%* | *4.3%* |
| TOTAL NON-RESIDENTIAL | 365.147 | 410.283 | 436.511 | 451.754 | 473.605 | 486.898 | 497.919 |
| (Yr/yr % change) | *11.0%* | *12.4%* | *6.4%* | *3.5%* | *4.8%* | *2.8%* | *2.3%* |
| GRAND TOTAL | 604.178 | 683.963 | 737.778 | 773.084 | 816.309 | 851.480 | 883.654 |
| (Yr/yr % change) | *13.5%* | *13.2%* | *7.9%* | *4.8%* | *5.6%* | *4.3%* | *3.8%* |

EXPLANATION: Table 3 conforms to the type-of-structure ordering adopted by many firms and organizations in the industry. Specifically, it breaks non-residential building into ICI work (i.e., industrial, commercial and institutional), since each has its own set of economic and demographic drivers.

Table 4 presents an alternative, perhaps more user-friendly and intuitive, type-of-structure ordering that matches how the data appears in ConstructConnect's on-line product 'Insight'.

*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect / Table: ConstructConnect.*

## Table 4: U.S. Type-of-Structure Forecasts
### Arranged to match the alphabetical category drop-down menus in INSIGHT ($ Billions USD)

| | Actuals | | Forecasts | | | | |
|---|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| **Summary** | | | | | | | |
| CIVIL | 124.538 | 119.654 | 147.248 | 156.923 | 170.969 | 178.804 | 186.441 |
| NON-RESIDENTIAL BUILDING | 240.609 | 290.630 | 289.263 | 294.830 | 302.635 | 308.093 | 311.478 |
| RESIDENTIAL | 239.031 | 273.680 | 301.267 | 321.330 | 342.704 | 364.582 | 385.735 |
| GRAND TOTAL | 604.178 | 683.963 | 737.778 | 773.084 | 816.309 | 851.480 | 883.654 |
| | | | | | | | |
| **Verticals** | | | | | | | |
| Airport | 4.508 | 6.659 | 11.818 | 10.528 | 10.923 | 11.187 | 11.441 |
| All Other Civil | 18.774 | 11.528 | 13.707 | 17.301 | 19.018 | 20.597 | 21.833 |
| Bridges | 13.084 | 14.504 | 19.806 | 21.822 | 26.382 | 24.842 | 25.783 |
| Dams / Canals / Marine Work | 6.265 | 3.740 | 4.489 | 4.877 | 5.084 | 5.225 | 5.327 |
| Power Infrastructure | 1.478 | 1.644 | 6.515 | 5.711 | 6.344 | 6.996 | 7.432 |
| Roads | 51.611 | 51.114 | 58.224 | 61.641 | 65.096 | 68.390 | 70.871 |
| Water and Sewage Treatment | 28.816 | 30.466 | 32.690 | 35.044 | 38.123 | 41.568 | 43.755 |
| CIVIL | 124.538 | 119.654 | 147.248 | 156.923 | 170.969 | 178.804 | 186.441 |
| *(Yr/yr % change)* | *6.9%* | *-3.9%* | *23.1%* | *6.6%* | *9.0%* | *4.6%* | *4.3%* |
| Offices (private) | 19.370 | 26.052 | 25.324 | 28.061 | 29.431 | 28.374 | 27.193 |
| Parking Garages | 3.252 | 4.549 | 2.785 | 3.231 | 3.412 | 3.477 | 3.525 |
| Transportation Terminals | 7.091 | 4.608 | 3.874 | 4.641 | 5.138 | 5.755 | 6.044 |
| Commercial | 29.713 | 35.208 | 31.983 | 35.933 | 37.981 | 37.606 | 36.763 |
| *(Yr/yr % change)* | *-8.6%* | *18.5%* | *-9.2%* | *12.4%* | *5.7%* | *-1.0%* | *-2.2%* |
| Amusement | 12.804 | 6.467 | 7.102 | 7.411 | 7.785 | 8.202 | 8.425 |
| Libraries / Museums | 3.006 | 3.213 | 3.421 | 3.477 | 3.558 | 3.638 | 3.704 |
| Religious | 1.697 | 1.738 | 2.042 | 2.057 | 2.105 | 2.127 | 2.136 |
| Sports Arenas / Convention Centers | 9.265 | 8.022 | 11.995 | 11.770 | 12.103 | 12.451 | 12.761 |
| Community | 26.771 | 19.441 | 24.560 | 24.714 | 25.551 | 26.418 | 27.027 |
| *(Yr/yr % change)* | *44.7%* | *-27.4%* | *26.3%* | *0.6%* | *3.4%* | *3.4%* | *2.3%* |
| College / University | 21.137 | 24.668 | 22.499 | 23.438 | 23.912 | 24.207 | 24.463 |
| Elementary / Pre School | 18.901 | 20.326 | 19.462 | 20.706 | 21.216 | 21.541 | 21.753 |
| Jr / Sr High School | 19.579 | 23.468 | 24.856 | 25.457 | 25.796 | 26.250 | 26.657 |
| Special / Vocational | 1.436 | 1.650 | 1.615 | 1.681 | 1.741 | 1.807 | 1.861 |
| Educational | 61.053 | 70.112 | 68.433 | 71.283 | 72.666 | 73.805 | 74.735 |
| *(Yr/yr % change)* | *7.9%* | *14.8%* | *-2.4%* | *4.2%* | *1.9%* | *1.6%* | *1.3%* |
| Courthouses | 1.183 | 1.276 | 2.583 | 2.840 | 3.058 | 3.262 | 3.427 |
| Fire and Police Stations | 1.983 | 2.864 | 2.975 | 3.182 | 3.335 | 3.454 | 3.579 |
| Government Offices | 10.516 | 13.102 | 11.753 | 12.129 | 12.435 | 12.746 | 12.942 |
| Prisons | 2.910 | 1.858 | 2.561 | 2.679 | 2.899 | 3.094 | 3.255 |
| Government | 16.593 | 19.099 | 19.872 | 20.830 | 21.726 | 22.556 | 23.203 |
| *(Yr/yr % change)* | *8.3%* | *15.1%* | *4.0%* | *4.8%* | *4.3%* | *3.8%* | *2.9%* |
| Industrial Labs / Labs / School Labs | 2.332 | 3.918 | 2.499 | 2.720 | 2.843 | 2.980 | 3.072 |
| Manufacturing | 15.048 | 20.204 | 27.279 | 23.527 | 25.187 | 26.925 | 28.077 |
| Warehouses | 15.229 | 14.785 | 17.988 | 18.836 | 19.626 | 20.367 | 20.883 |
| Industrial | 32.609 | 38.907 | 47.767 | 45.083 | 47.657 | 50.273 | 52.032 |
| *(Yr/yr % change)* | *36.3%* | *19.3%* | *22.8%* | *-5.6%* | *5.7%* | *5.5%* | *3.5%* |
| Hospitals / Clinics | 14.409 | 21.431 | 18.056 | 18.580 | 19.377 | 20.109 | 20.662 |
| Medical Misc. | 3.897 | 7.820 | 10.000 | 9.971 | 10.139 | 10.343 | 10.369 |
| Nursing Homes | 5.665 | 9.731 | 9.952 | 10.534 | 10.969 | 11.482 | 11.943 |
| Medical | 23.970 | 38.981 | 38.008 | 39.084 | 40.485 | 41.935 | 42.974 |
| *(Yr/yr % change)* | *12.1%* | *62.6%* | *-2.5%* | *2.8%* | *3.6%* | *3.6%* | *2.5%* |
| Military | 5.813 | 4.679 | 5.023 | 5.810 | 6.346 | 6.749 | 7.090 |
| *(Yr/yr % change)* | *-46.1%* | *-19.5%* | *7.3%* | *15.7%* | *9.2%* | *6.4%* | *5.1%* |
| Hotels | 14.907 | 20.239 | 27.828 | 27.311 | 25.571 | 23.983 | 22.226 |
| Retail Misc. | 4.884 | 8.654 | 7.839 | 7.638 | 7.712 | 7.793 | 7.945 |
| Shopping | 24.295 | 35.308 | 17.951 | 17.145 | 16.940 | 16.976 | 17.483 |
| Retail | 44.086 | 64.202 | 53.618 | 52.094 | 50.223 | 48.752 | 47.655 |
| *(Yr/yr % change)* | *31.7%* | *45.6%* | *-16.5%* | *-2.8%* | *-3.6%* | *-2.9%* | *-2.3%* |
| NON-RESIDENTIAL BUILDING | 240.609 | 290.630 | 289.263 | 294.830 | 302.635 | 308.093 | 311.478 |
| *(Yr/yr % change)* | *13.2%* | *20.8%* | *-0.5%* | *1.9%* | *2.6%* | *1.8%* | *1.1%* |
| Multi-Family | 65.866 | 86.923 | 96.477 | 98.481 | 102.381 | 105.535 | 109.039 |
| Single-Family | 173.165 | 186.757 | 204.790 | 222.849 | 240.323 | 259.047 | 276.696 |
| RESIDENTIAL | 239.031 | 273.680 | 301.267 | 321.330 | 342.704 | 364.582 | 385.735 |
| *(Yr/yr % change)* | *17.5%* | *14.5%* | *10.1%* | *6.7%* | *6.7%* | *6.4%* | *5.8%* |
| GRAND TOTAL | 604.178 | 683.963 | 737.778 | 773.084 | 816.309 | 851.480 | 883.654 |
| *(Yr/yr % change)* | *13.5%* | *13.2%* | *7.9%* | *4.8%* | *5.6%* | *4.3%* | *3.8%* |

EXPLANATION: Table 3 conforms to the type-of-structure ordering adopted by many firms and organizations in the industry. Specifically, it breaks non-residential building into ICI work (i.e., industrial, commercial and institutional), since each has its own set of economic and demographic drivers.

Table 4 presents an alternative, perhaps more user-friendly and intuitive, type-of-structure ordering that matches how the data appears in ConstructConnect's on-line product 'Insight'.

*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect / Table: ConstructConnect.*

## Table 5: U.S. States, Total Construction Starts — ConstructConnect

| States (alphabetical by 2-letter code) | Actuals (Level in $ Millions USD) 2016 | Forecasts (Year versus previous year % change) | | | | |
|---|---|---|---|---|---|---|
| | | 2017 | 2018 | 2019 | 2020 | 2021 |
| Alaska | $2,000 | 11.2% | -25.0% | 6.2% | 4.5% | 3.3% |
| Alabama | $8,721 | 8.4% | 14.5% | 7.3% | 6.1% | 4.4% |
| Arkansas | $6,268 | -14.0% | 15.8% | 6.7% | 6.2% | 4.6% |
| Arizona | $15,018 | 2.9% | 6.9% | 6.3% | 4.9% | 4.0% |
| California* | $59,656 | 28.1% | -0.3% | 5.1% | 5.3% | 3.4% |
| Colorado | $14,718 | 2.2% | -1.9% | 4.3% | 4.8% | 4.2% |
| Connecticut | $4,776 | 49.3% | -1.8% | 4.0% | 3.2% | 2.4% |
| District Of Columbia | $3,709 | -2.0% | 10.4% | 3.3% | 6.0% | 4.0% |
| Delaware | $2,121 | 27.1% | -6.8% | 5.7% | 5.7% | 4.1% |
| Florida* | $47,068 | 16.1% | 25.2% | 5.7% | 3.1% | 3.7% |
| Georgia | $26,614 | -11.0% | 15.8% | 5.1% | 4.9% | 3.9% |
| Hawaii | $4,250 | -46.9% | 78.5% | 3.4% | 3.0% | 1.7% |
| Iowa | $7,487 | -2.4% | -11.6% | 4.9% | 4.6% | 3.4% |
| Idaho | $4,069 | 2.6% | 4.3% | 2.5% | 4.7% | 3.9% |
| Illinois | $18,765 | 28.8% | 9.2% | 4.9% | 6.4% | 5.2% |
| Indiana | $12,047 | -0.6% | 23.1% | 4.8% | 5.4% | 3.5% |
| Kansas | $5,947 | -15.6% | 14.9% | 5.4% | 4.5% | 3.3% |
| Kentucky | $9,573 | -24.9% | 18.8% | 4.6% | 4.9% | 3.4% |
| Louisiana | $10,795 | -10.9% | 4.9% | 6.7% | 4.5% | 4.0% |
| Massachusetts | $14,531 | 3.7% | 20.6% | 3.1% | 2.8% | 2.2% |
| Maryland | $14,013 | -26.8% | 15.2% | 4.7% | 3.8% | 2.8% |
| Maine | $1,930 | 13.2% | -4.0% | 4.3% | 4.2% | 2.9% |
| Michigan | $14,601 | 36.9% | -22.4% | 23.7% | -9.0% | 5.8% |
| Minnesota | $13,263 | -2.3% | 0.3% | 4.0% | 4.3% | 3.4% |
| Missouri | $11,645 | -3.3% | -3.5% | 3.6% | 4.2% | 3.1% |
| Mississippi | $4,975 | -7.2% | 25.6% | 6.7% | 6.0% | 4.4% |
| Montana | $1,957 | -12.8% | 25.5% | 4.8% | 5.0% | 3.8% |
| North Carolina | $27,485 | 0.1% | 4.5% | 5.8% | 6.1% | 5.1% |
| North Dakota | $2,917 | -27.1% | 11.5% | 9.5% | 6.4% | 4.7% |
| Nebraska | $4,273 | 8.0% | 0.3% | 5.3% | 5.2% | 3.8% |
| New Hampshire | $2,666 | -27.4% | 50.6% | 6.5% | 3.8% | 3.2% |
| New Jersey | $13,372 | 3.8% | 4.1% | 5.0% | 4.7% | 3.4% |
| New Mexico | $3,099 | -3.0% | 27.4% | 5.7% | 4.6% | 3.7% |
| Nevada | $7,378 | -4.6% | 17.3% | 7.6% | 3.8% | 2.8% |
| New York* | $41,442 | 21.0% | -13.8% | 4.5% | 3.5% | 2.5% |
| Ohio | $18,376 | 5.7% | 0.1% | 4.9% | 4.9% | 3.0% |
| Oklahoma | $8,572 | 7.4% | 3.0% | 8.1% | 5.9% | 4.5% |
| Oregon | $8,699 | 11.1% | 15.5% | 4.8% | 4.4% | 3.8% |
| Pennsylvania | $18,971 | 25.4% | -5.4% | 4.3% | 3.9% | 2.9% |
| Rhode Island | $1,127 | 52.8% | 3.7% | 5.0% | 3.5% | 2.3% |
| South Carolina | $13,925 | 2.9% | -4.6% | 5.3% | 5.8% | 4.3% |
| South Dakota | $2,126 | 10.4% | -22.6% | 5.8% | 5.6% | 4.2% |
| Tennessee | $16,480 | 6.8% | -2.4% | 4.2% | 5.4% | 4.2% |
| Texas* | $89,270 | 7.6% | 8.8% | 6.3% | 4.7% | 4.6% |
| Utah | $9,643 | -0.9% | -5.3% | 3.1% | 5.4% | 4.4% |
| Virginia | $18,785 | 4.5% | 15.1% | 4.8% | 3.5% | 2.9% |
| Vermont | $1,243 | 2.0% | -1.1% | 5.9% | 5.9% | 4.0% |
| Washington | $18,776 | 15.9% | -4.8% | 4.5% | 4.6% | 3.8% |
| Wisconsin | $11,206 | 10.9% | -22.3% | 3.4% | 4.0% | 2.9% |
| West Virginia | $1,652 | 13.4% | 53.7% | 6.7% | 5.1% | 3.5% |
| Wyoming | $1,965 | -28.4% | 14.0% | 7.7% | 5.6% | 3.6% |
| United States | $683,964 | 7.9% | 4.8% | 5.6% | 4.3% | 3.8% |

*One in three Americans lives in one of the four shaded states, New York, Florida, Texas or California.

Sum of first column may not exactly equal total due to rounding.

*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect / Table: ConstructConnect.*
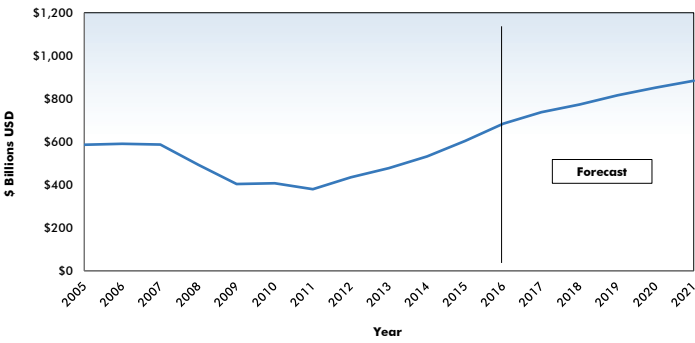
| Table 6: U.S. Four Largest States: Type-of-Structure Forecasts ($ Billions USD) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | **Actuals** | | **Forecasts** | | | |
| | | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| New York | Residential | 17.110 | 17.446 | 13.452 | 14.926 | 15.703 | 16.469 | 17.153 |
| | Non-res Building | 15.978 | 17.942 | 23.641 | 19.309 | 19.781 | 20.008 | 20.081 |
| | Engineering/Civil | 7.935 | 6.054 | 13.033 | 8.993 | 9.668 | 10.274 | 10.683 |
| | Total | 41.022 | 41.442 | 50.126 | 43.228 | 45.152 | 46.751 | 47.916 |
| *(Yr vs previous yr % Change)* | | *-8.9%* | *1.0%* | *21.0%* | *-13.8%* | *4.5%* | *3.5%* | *2.5%* |
| Florida | Residential | 20.420 | 22.177 | 27.274 | 35.573 | 38.262 | 40.008 | 42.172 |
| | Non-res Building | 12.384 | 17.726 | 18.606 | 21.926 | 22.383 | 22.168 | 22.261 |
| | Engineering/Civil | 6.545 | 7.164 | 8.766 | 10.895 | 11.648 | 12.341 | 12.826 |
| | Total | 39.350 | 47.068 | 54.646 | 68.394 | 72.293 | 74.517 | 77.259 |
| *(Yr vs previous yr % Change)* | | *41.9%* | *19.6%* | *16.1%* | *25.2%* | *5.7%* | *3.1%* | *3.7%* |
| Texas | Residential | 38.988 | 38.328 | 41.427 | 49.556 | 54.022 | 58.145 | 62.280 |
| | Non-res Building | 33.767 | 38.165 | 40.425 | 36.569 | 37.296 | 37.081 | 37.400 |
| | Engineering/Civil | 12.515 | 12.777 | 14.224 | 18.403 | 19.793 | 21.086 | 22.006 |
| | Total | 85.270 | 89.270 | 96.075 | 104.529 | 111.110 | 116.312 | 121.687 |
| *(Yr vs previous yr % Change)* | | *35.4%* | *4.7%* | *7.6%* | *8.8%* | *6.3%* | *4.7%* | *4.6%* |
| California | Residential | 19.197 | 21.916 | 28.293 | 27.985 | 28.792 | 29.821 | 30.966 |
| | Non-res Building | 22.215 | 27.414 | 31.827 | 30.618 | 32.500 | 34.272 | 34.864 |
| | Engineering/Civil | 11.075 | 10.326 | 16.273 | 17.580 | 18.777 | 20.223 | 21.324 |
| | Total | 52.487 | 59.656 | 76.393 | 76.182 | 80.069 | 84.316 | 87.153 |
| *(Yr vs previous yr % Change)* | | *-5.6%* | *13.7%* | *28.1%* | *-0.3%* | *5.1%* | *5.3%* | *3.4%* |

*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.*
*Table: ConstructConnect.*

# Tweeted by ConstructConnect:

## @ConstructConnx

In five non-residential type-of-structure categories, U.S. material input costing hikes ranged from a low of +2.7% y/y for both 'new office buildings' and 'new health care buildings' to a high of +4.5% y/y for 'new industrial buildings'.
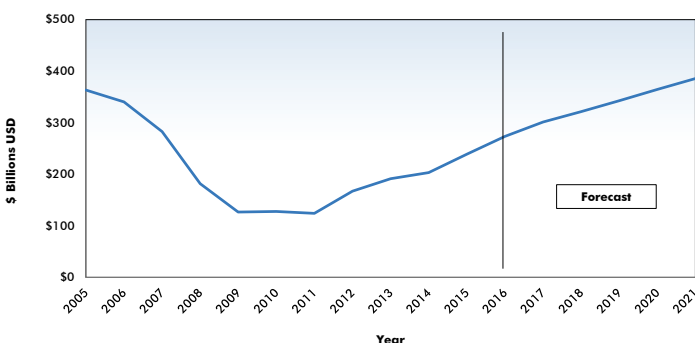
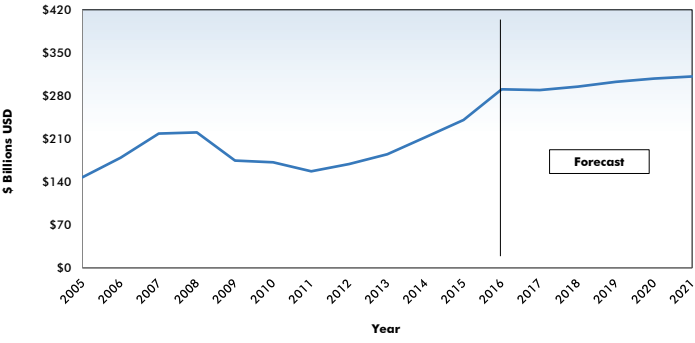## Graph 1: U.S. Grand Total Construction Starts — ConstructConnect



Forecast

Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

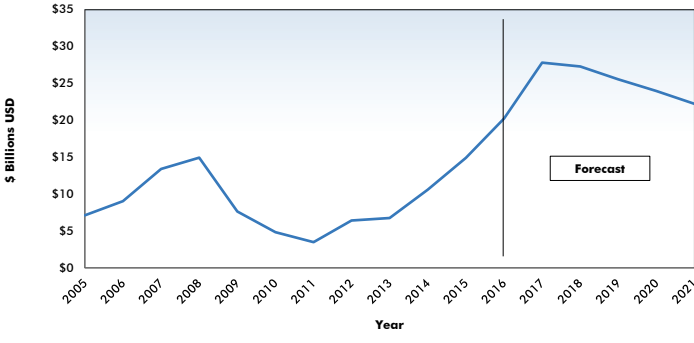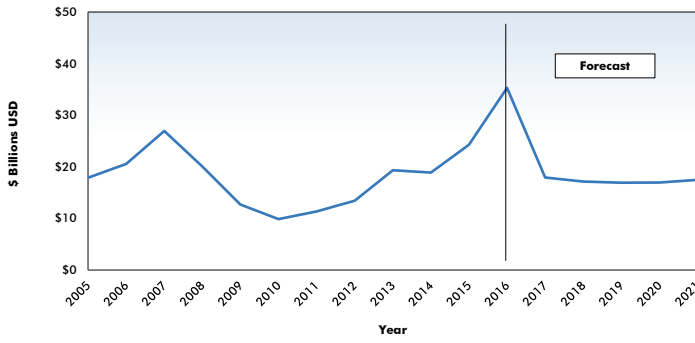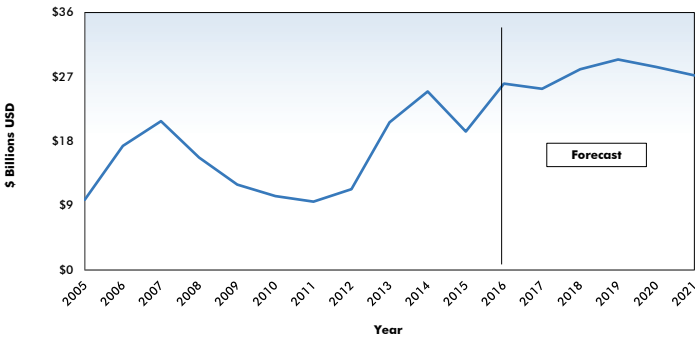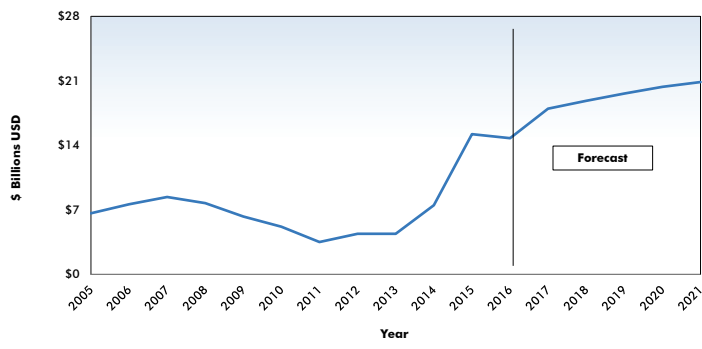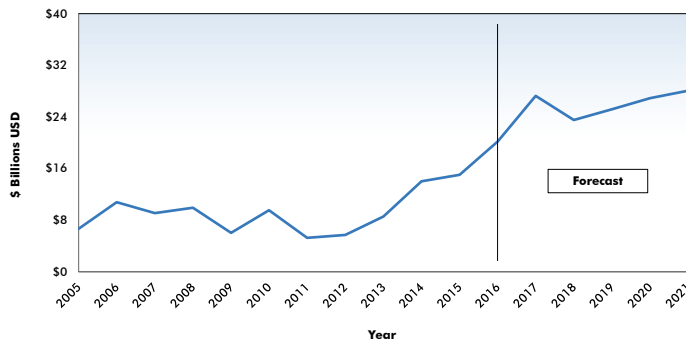## Graph 2: U.S. Total Residential Construction Starts — ConstructConnect



Forecast

Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

## Graph 3: U.S. Total Non-Residential Building Starts — ConstructConnect



Forecast

Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

## Graph 4: U.S. Hotel/Motel Construction Starts — ConstructConnect



Forecast

Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

## Graph 5: U.S. Shopping/Retail Construction Starts — ConstructConnect



Forecast

Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

## Graph 6: U.S. Private Office Building Construction Starts — ConstructConnect



Forecast

Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

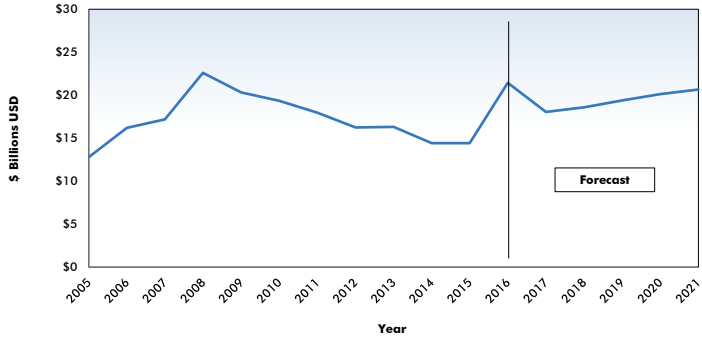## Graph 7: U.S. Warehouse Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

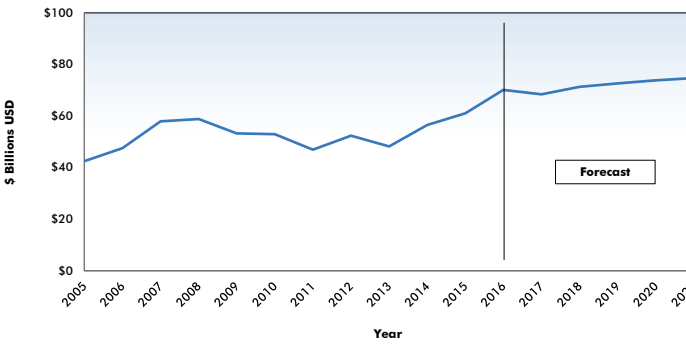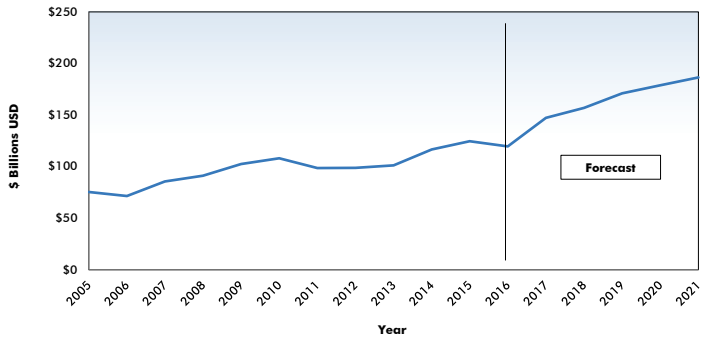## Graph 8: U.S. Manufacturing Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

## Graph 9: U.S. Hospital and Clinic Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

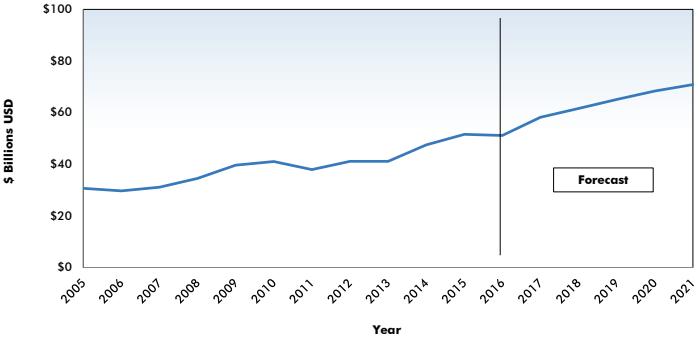## Graph 10: U.S. Total Educational Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

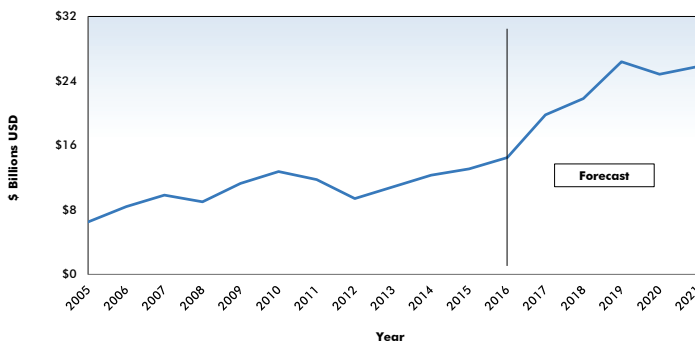## Graph 11: U.S. Total Heavy Engineering/Civil Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

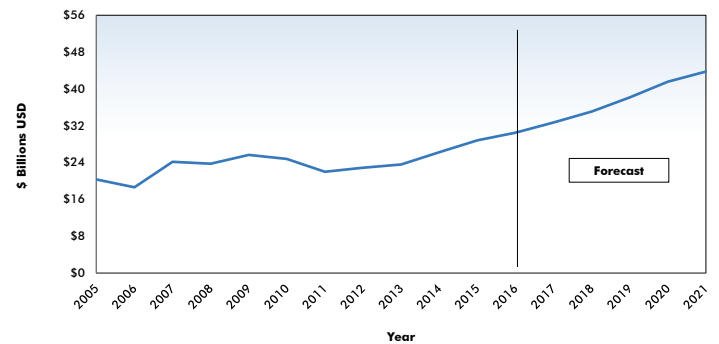## Graph 12: U.S. Roadwork Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

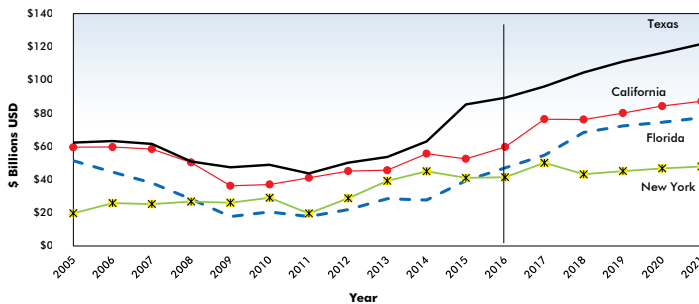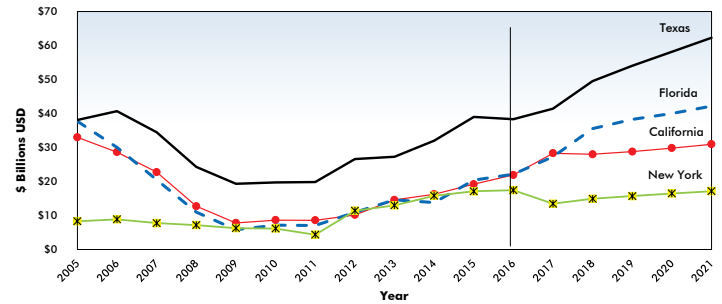## Graph 13: U.S. Bridge Construction Starts — ConstructConnect

## Graph 14: U.S. Water and Sewage Treatment Construction Starts — ConstructConnect

## Graph 15: U.S. Four Largest States (by Population): Total Construction Starts — ConstructConnect

## Graph 16: U.S. Four Largest States: Total Residential Construction Starts — ConstructConnect

## Graph 17: U.S. Four Largest States: Total Non-residential Building Starts — ConstructConnect

## Graph 18: U.S. Four Largest States: Total Engineering/ Civil Construction Starts — ConstructConnect

| Table 7: Canada Type-of-Structure Forecasts ($ Billions CAD) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Actuals | | Forecasts | | | | |
| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Single-family | 14.920 | 16.052 | 17.156 | 18.095 | 19.292 | 20.303 | 21.232 |
| Multi-family | 13.957 | 13.108 | 10.219 | 11.665 | 12.344 | 13.080 | 13.687 |
| TOTAL RESIDENTIAL | 28.876 | 29.160 | 27.375 | 29.759 | 31.636 | 33.382 | 34.919 |
| (Yr/yr % change) | 0.4% | 1.0% | -6.1% | 8.7% | 6.3% | 5.5% | 4.6% |
| Hotels/Motels | 1.077 | 0.592 | 0.540 | 0.719 | 0.805 | 0.749 | 0.671 |
| Private Offices | 2.743 | 0.658 | 0.631 | 0.931 | 1.144 | 1.341 | 1.506 |
| Govenmental Offices | 0.834 | 1.450 | 1.209 | 1.390 | 1.462 | 1.540 | 1.595 |
| Shopping/Retail | 1.246 | 1.073 | 0.765 | 0.764 | 0.767 | 0.768 | 0.770 |
| Retail Miscellaneous | 0.722 | 0.450 | 0.276 | 0.274 | 0.274 | 0.285 | 0.293 |
| Parking Garages | 0.166 | 0.108 | 0.142 | 0.145 | 0.155 | 0.164 | 0.169 |
| Amusement | 2.383 | 1.819 | 1.684 | 1.877 | 2.031 | 2.104 | 2.172 |
| Warehouses | 0.977 | 1.609 | 1.927 | 1.926 | 1.975 | 2.004 | 2.025 |
| TOTAL COMMERCIAL | 10.149 | 7.761 | 7.174 | 8.026 | 8.614 | 8.957 | 9.202 |
| (Yr/yr % change) | 11.6% | -23.5% | -7.6% | 11.9% | 7.3% | 4.0% | 2.7% |
| TOTAL INDUSTRIAL (manufacturing) | 1.014 | 0.667 | 1.015 | 1.264 | 1.506 | 1.772 | 1.973 |
| (Yr/yr % change) | -34.4% | -34.3% | 52.2% | 24.5% | 19.2% | 17.6% | 11.3% |
| Religious | 0.169 | 0.131 | 0.099 | 0.116 | 0.122 | 0.125 | 0.128 |
| Hospitals/Clinics | 2.335 | 1.058 | 1.536 | 1.886 | 2.335 | 2.710 | 3.150 |
| MED misc | 0.893 | 0.533 | 0.473 | 0.510 | 0.536 | 0.552 | 0.568 |
| Transportation Terminals* | 0.807 | 0.190 | 0.316 | 0.753 | 0.877 | 1.004 | 1.058 |
| Police/Fire | 0.613 | 0.366 | 0.721 | 0.639 | 0.676 | 0.701 | 0.718 |
| Educational Facilities | 5.169 | 3.515 | 3.941 | 4.259 | 4.505 | 4.729 | 4.913 |
| TOTAL INSTITUTIONAL | 9.986 | 5.793 | 7.086 | 8.163 | 9.050 | 9.821 | 10.536 |
| (Yr/yr % change) | 54.6% | -42.0% | 22.3% | 15.2% | 10.9% | 8.5% | 7.3% |
| TOTAL NON-RES BUILDING | 21.149 | 14.221 | 15.274 | 17.453 | 19.170 | 20.550 | 21.710 |
| (Yr/yr % change) | 23.7% | -32.8% | 7.4% | 14.3% | 9.8% | 7.2% | 5.6% |
| Bridges | 6.413 | 1.869 | 1.399 | 1.733 | 3.485 | 2.144 | 2.299 |
| Dams/Canal/Marine | 0.686 | 0.620 | 0.454 | 0.529 | 0.568 | 0.600 | 0.621 |
| Water & Sewage Treatment | 3.866 | 2.651 | 7.757 | 4.343 | 4.466 | 4.648 | 4.816 |
| Roads | 7.860 | 5.823 | 6.169 | 6.781 | 7.334 | 7.823 | 8.185 |
| Power Infrastructure | 13.294 | 9.641 | 2.167 | 4.019 | 5.071 | 5.832 | 6.520 |
| All Other Civil (Oil & Gas etc.) | 10.106 | 7.102 | 1.520 | 3.347 | 5.545 | 8.598 | 12.711 |
| TOTAL ENGINEERING | 42.226 | 27.705 | 19.466 | 20.752 | 26.468 | 29.645 | 35.153 |
| (Yr/yr % change) | -25.5% | -34.4% | -29.7% | 6.6% | 27.5% | 12.0% | 18.6% |
| TOTAL NON-RESIDENTIAL | 63.375 | 41.926 | 34.740 | 38.205 | 45.638 | 50.195 | 56.863 |
| (Yr/yr % change) | -14.1% | -33.8% | -17.1% | 10.0% | 19.5% | 10.0% | 13.3% |
| GRAND TOTAL | 92.252 | 71.086 | 62.115 | 67.964 | 77.274 | 83.577 | 91.782 |
| (Yr/yr % change) | -10.1% | -22.9% | -12.6% | 9.4% | 13.7% | 8.2% | 9.8% |

* With respect to Tables 3 and 7, 'transportation terminals' is the one type-of-structure that is categorized differently in Canada (institutional) than in the U.S. (commercial), for reasons having to do with government statistics.

EXPLANATION: Table 7 conforms to the type-of-structure ordering adopted by many firms and organizations in the industry. Specifically, it breaks non-residential building into ICI work (i.e., industrial, commercial and institutional), since each has its own set of economic and demographic drivers.

Table 8 presents an alternative, perhaps more user-friendly and intuitive, type-of-structure ordering that matches how the data appears in ConstructConnect's on-line product 'Insight'.
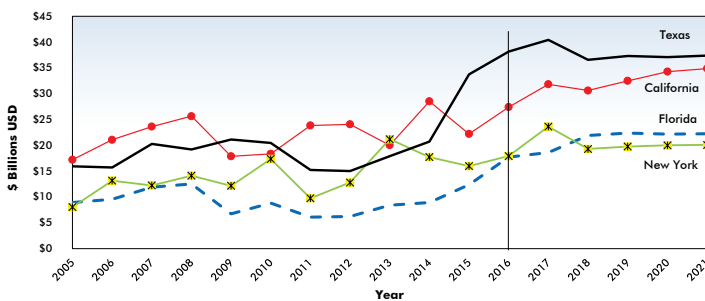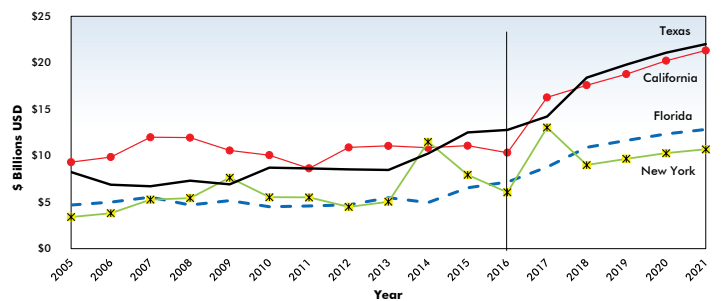
*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.*
*Table: ConstructConnect.*

| Table 8: Canada Type-of-Structure Forecasts | | | | | | |
|:---|:---:|:---:|:---:|:---:|:---:|:---:|
| Arranged to match the alphabetical category drop-down menus in INSIGHT ($ Billions CAD) | | | | | | |
| | Actuals | | Forecasts | | | | |
| | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| **Summary** | | | | | | | |
| CIVIL | 42.226 | 27.705 | 19.466 | 20.752 | 26.468 | 29.645 | 35.153 |
| NON-RESIDENTIAL BUILDING | 21.149 | 14.221 | 15.274 | 17.453 | 19.170 | 20.550 | 21.710 |
| RESIDENTIAL | 28.876 | 29.160 | 27.375 | 29.759 | 31.636 | 33.382 | 34.919 |
| GRAND TOTAL | 92.252 | 71.086 | 62.115 | 67.964 | 77.274 | 83.577 | 91.782 |
| | | | | | | | |
| **Verticals** | | | | | | | |
| All Other Civil | 10.106 | 7.102 | 1.520 | 3.347 | 5.545 | 8.598 | 12.711 |
| Bridges | 6.413 | 1.869 | 1.399 | 1.733 | 3.485 | 2.144 | 2.299 |
| Dams / Canals / Marine Work | 0.686 | 0.620 | 0.454 | 0.529 | 0.568 | 0.600 | 0.621 |
| Power Infrastructure | 13.294 | 9.641 | 2.167 | 4.019 | 5.071 | 5.832 | 6.520 |
| Roads | 7.860 | 5.823 | 6.169 | 6.781 | 7.334 | 7.823 | 8.185 |
| Water and Sewage Treatment | 3.866 | 2.651 | 7.757 | 4.343 | 4.466 | 4.648 | 4.816 |
| CIVIL | 42.226 | 27.705 | 19.466 | 20.752 | 26.468 | 29.645 | 35.153 |
| *(Yr/yr % change)* | *-25.5%* | *-34.4%* | *-29.7%* | *6.6%* | *27.5%* | *12.0%* | *18.6%* |
| Offices (private) | 2.743 | 0.658 | 0.631 | 0.931 | 1.144 | 1.341 | 1.506 |
| Parking Garages | 0.166 | 0.108 | 0.142 | 0.145 | 0.155 | 0.164 | 0.169 |
| Transportation Terminals | 0.807 | 0.190 | 0.316 | 0.753 | 0.877 | 1.004 | 1.058 |
| Commercial | 3.716 | 0.956 | 1.089 | 1.829 | 2.176 | 2.509 | 2.733 |
| *(Yr/yr % change)* | *31.8%* | *-74.3%* | *13.9%* | *68.0%* | *18.9%* | *15.3%* | *8.9%* |
| Amusement | 2.383 | 1.819 | 1.684 | 1.877 | 2.031 | 2.104 | 2.172 |
| Religious | 0.169 | 0.131 | 0.099 | 0.116 | 0.122 | 0.125 | 0.128 |
| Community | 2.552 | 1.950 | 1.783 | 1.994 | 2.153 | 2.229 | 2.300 |
| *(Yr/yr % change)* | *-9.8%* | *-23.6%* | *-8.6%* | *11.8%* | *8.0%* | *3.5%* | *3.2%* |
| Educational | 5.169 | 3.515 | 3.941 | 4.259 | 4.505 | 4.729 | 4.913 |
| *(Yr/yr % change)* | *61.2%* | *-32.0%* | *12.1%* | *8.1%* | *5.8%* | *5.0%* | *3.9%* |
| Fire and Police Stations | 0.613 | 0.366 | 0.721 | 0.639 | 0.676 | 0.701 | 0.718 |
| Government Offices | 0.834 | 1.450 | 1.209 | 1.390 | 1.462 | 1.540 | 1.595 |
| Government | 1.447 | 1.816 | 1.930 | 2.030 | 2.138 | 2.242 | 2.314 |
| *(Yr/yr % change)* | *17.6%* | *25.5%* | *6.2%* | *5.2%* | *5.3%* | *4.9%* | *3.2%* |
| Manufacturing | 1.014 | 0.667 | 1.015 | 1.264 | 1.506 | 1.772 | 1.973 |
| Warehouses | 0.977 | 1.609 | 1.927 | 1.926 | 1.975 | 2.004 | 2.025 |
| Industrial | 1.991 | 2.276 | 2.941 | 3.189 | 3.482 | 3.776 | 3.997 |
| *(Yr/yr % change)* | *-12.7%* | *14.3%* | *29.2%* | *8.4%* | *9.2%* | *8.5%* | *5.9%* |
| Hospitals / Clinics | 2.335 | 1.058 | 1.536 | 1.886 | 2.335 | 2.710 | 3.150 |
| Medical Misc. | 0.893 | 0.533 | 0.473 | 0.510 | 0.536 | 0.552 | 0.568 |
| Medical | 3.229 | 1.591 | 2.009 | 2.395 | 2.871 | 3.262 | 3.719 |
| *(Yr/yr % change)* | *59.5%* | *-50.7%* | *26.3%* | *19.2%* | *19.8%* | *13.6%* | *14.0%* |
| Hotels | 1.077 | 0.592 | 0.540 | 0.719 | 0.805 | 0.749 | 0.671 |
| Retail Misc. | 0.722 | 0.450 | 0.276 | 0.274 | 0.274 | 0.285 | 0.293 |
| Shopping | 1.246 | 1.073 | 0.765 | 0.764 | 0.767 | 0.768 | 0.770 |
| Retail | 3.045 | 2.116 | 1.581 | 1.757 | 1.846 | 1.803 | 1.735 |
| *(Yr/yr % change)* | *12.4%* | *-30.5%* | *-25.3%* | *11.1%* | *5.1%* | *-2.3%* | *-3.8%* |
| NON-RESIDENTIAL BUILDING | 21.149 | 14.221 | 15.274 | 17.453 | 19.170 | 20.550 | 21.710 |
| *(Yr/yr % change)* | *23.7%* | *-32.8%* | *7.4%* | *14.3%* | *9.8%* | *7.2%* | *5.6%* |
| Multi-Family | 13.957 | 13.108 | 10.219 | 11.665 | 12.344 | 13.080 | 13.687 |
| Single-Family | 14.920 | 16.052 | 17.156 | 18.095 | 19.292 | 20.303 | 21.232 |
| RESIDENTIAL | 28.876 | 29.160 | 27.375 | 29.759 | 31.636 | 33.382 | 34.919 |
| *(Yr/yr % change)* | *0.4%* | *1.0%* | *-6.1%* | *8.7%* | *6.3%* | *5.5%* | *4.6%* |
| TOTAL NON-RESIDENTIAL | 63.375 | 41.926 | 34.740 | 38.205 | 45.638 | 50.195 | 56.863 |
| *(Yr/yr % change)* | *-14.1%* | *-33.8%* | *-17.1%* | *10.0%* | *19.5%* | *10.0%* | *13.3%* |
| GRAND TOTAL | 92.252 | 71.086 | 62.115 | 67.964 | 77.274 | 83.577 | 91.782 |
| *(Yr/yr % change)* | *-10.1%* | *-22.9%* | *-12.6%* | *9.4%* | *13.7%* | *8.2%* | *9.8%* |

EXPLANATION: Table 7 conforms to the type-of-structure ordering adopted by many firms and organizations in the industry. Specifically, it breaks non-residential building into ICI work (i.e., industrial, commercial and institutional), since each has its own set of economic and demographic drivers.

Table 8 presents an alternative, perhaps more user-friendly and intuitive, type-of-structure ordering that matches how the data appears in ConstructConnect's on-line product 'Insight'.
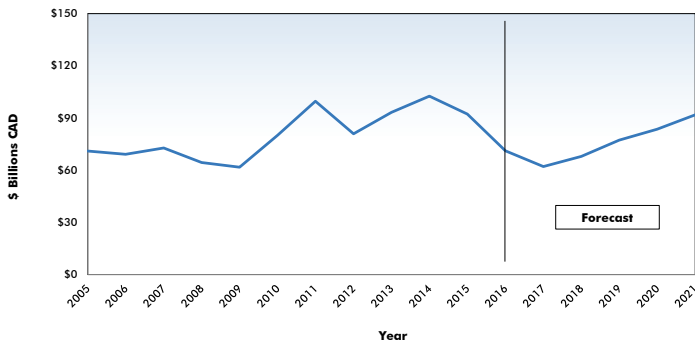
*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect / Table: ConstructConnect.*

## Table 9: Canadian Provinces, Total Construction Starts — ConstructConnect

| Regions/Provinces (East to West) | Actuals (Level in $ Millions CAD) 2016 | Forecasts (Year versus previous year % change) 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|
| Atlantic region | $3,273 | -15.3% | 8.8% | 22.0% | 18.2% | 19.6% |
| Quebec | $9,419 | 19.0% | -16.2% | 10.4% | 9.8% | 6.7% |
| Ontario | $27,651 | -22.0% | 22.8% | 14.5% | 2.7% | 6.7% |
| Manitoba | $6,932 | -69.2% | 122.7% | 8.2% | 7.4% | 8.0% |
| Saskatchewan | $1,605 | 24.0% | -5.5% | 13.0% | 14.9% | 8.3% |
| Alberta | $11,735 | 6.5% | -5.4% | 17.7% | 15.8% | 17.6% |
| British Columbia | $10,470 | -5.1% | 6.6% | 10.4% | 7.6% | 8.1% |
| Canada | $71,086 | -12.6% | 9.4% | 13.7% | 8.2% | 9.8% |

*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.*
*Table: ConstructConnect.*

## Table 10: Canada Four Largest Provinces: Type-of-Structure Forecasts
### ($ Billions CAD)

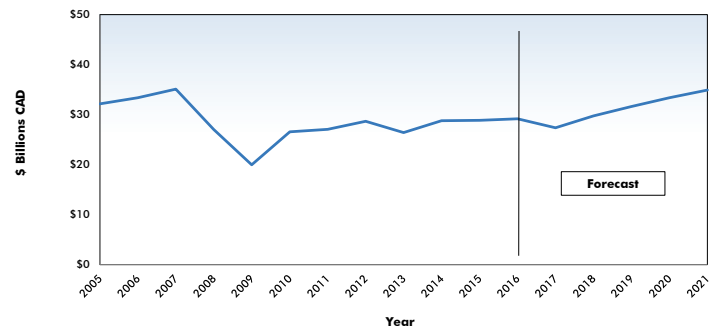| | | Actuals 2015 | 2016 | Forecasts 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|
| Quebec | Residential | 3.636 | 4.336 | 3.881 | 3.565 | 3.733 | 3.920 | 4.032 |
| | Non-res Building | 3.411 | 2.339 | 3.454 | 3.091 | 3.309 | 3.575 | 3.741 |
| | Engineering/Civil | 7.152 | 2.744 | 3.876 | 2.736 | 3.323 | 3.883 | 4.364 |
| | Total | 14.199 | 9.419 | 11.212 | 9.391 | 10.365 | 11.377 | 12.137 |
| *(Yr vs previous yr % Change)* | | *17.1%* | *-33.7%* | *19.0%* | *-16.2%* | *10.4%* | *9.8%* | *6.7%* |
| Ontario | Residential | 12.061 | 12.611 | 11.796 | 12.326 | 12.955 | 13.528 | 14.094 |
| | Non-res Building | 5.988 | 4.936 | 4.775 | 6.044 | 6.498 | 6.809 | 7.033 |
| | Engineering/Civil | 11.436 | 10.105 | 5.004 | 8.126 | 10.886 | 10.830 | 12.134 |
| | Total | 29.485 | 27.651 | 21.576 | 26.497 | 30.339 | 31.166 | 33.261 |
| *(Yr vs previous yr % Change)* | | *26.2%* | *-6.2%* | *-22.0%* | *22.8%* | *14.5%* | *2.7%* | *6.7%* |
| Alberta | Residential | 4.378 | 3.772 | 4.223 | 3.979 | 4.358 | 4.661 | 4.970 |
| | Non-res Building | 4.585 | 3.083 | 2.710 | 2.949 | 3.363 | 3.681 | 4.003 |
| | Engineering/Civil | 8.213 | 4.880 | 5.563 | 4.899 | 6.200 | 7.779 | 9.981 |
| | Total | 17.176 | 11.735 | 12.495 | 11.827 | 13.920 | 16.121 | 18.954 |
| *(Yr vs previous yr % Change)* | | *-38.9%* | *-31.7%* | *6.5%* | *-5.4%* | *17.7%* | *15.8%* | *17.6%* |
| British Columbia | Residential | 6.713 | 6.020 | 5.095 | 5.927 | 6.391 | 6.806 | 7.124 |
| | Non-res Building | 4.311 | 1.992 | 2.378 | 2.648 | 2.868 | 3.002 | 3.187 |
| | Engineering/Civil | 12.130 | 2.458 | 2.458 | 2.016 | 2.433 | 2.779 | 3.294 |
| | Total | 23.154 | 10.470 | 9.931 | 10.591 | 11.693 | 12.587 | 13.605 |
| *(Yr vs previous yr % Change)* | | *74.5%* | *-54.8%* | *-5.1%* | *6.6%* | *10.4%* | *7.6%* | *8.1%* |

*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.*
*Table: ConstructConnect.*

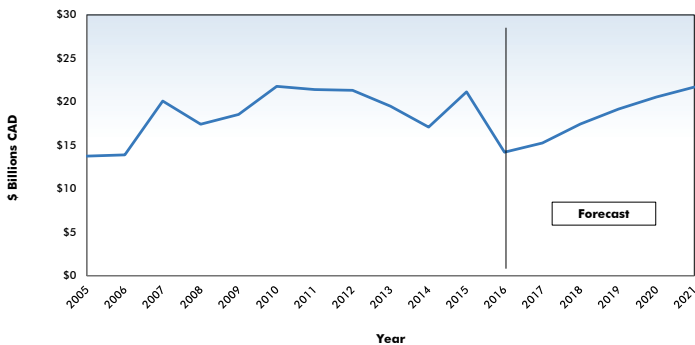## Graph 19: Canadian Grand Total Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

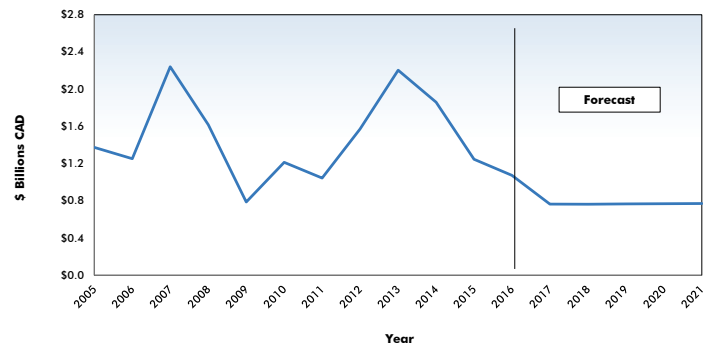## Graph 20: Canadian Residential Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

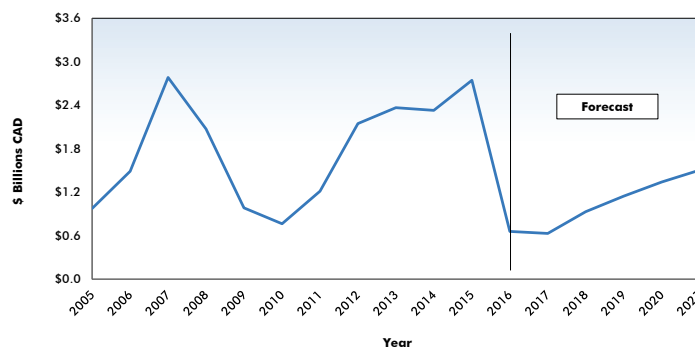## Graph 21: Canadian Non-Residential Building Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

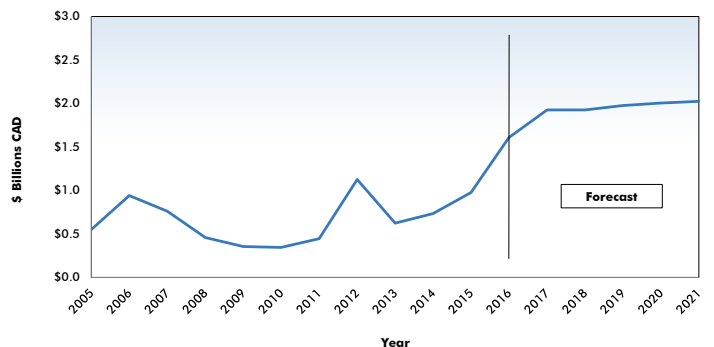## Graph 22: Canadian Shopping/Retail Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

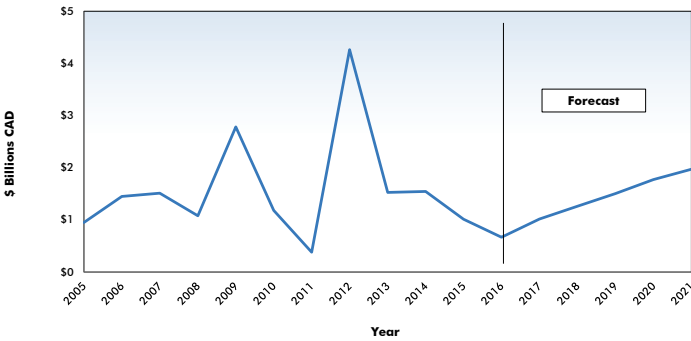## Graph 23: Canadian Private Offices Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

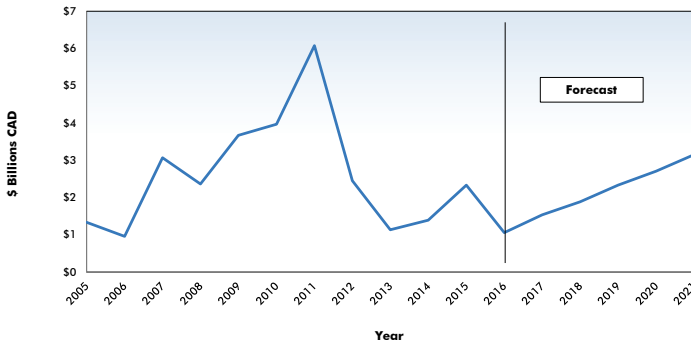## Graph 24: Canadian Warehouse Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

## Graph 25: Canadian Manufacturing Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

## Graph 26: Canadian Hospital/Clinic Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

## Graph 27: Canadian Education Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

## Graph 28: Canadian Engineering Construction Starts — ConstructConnect



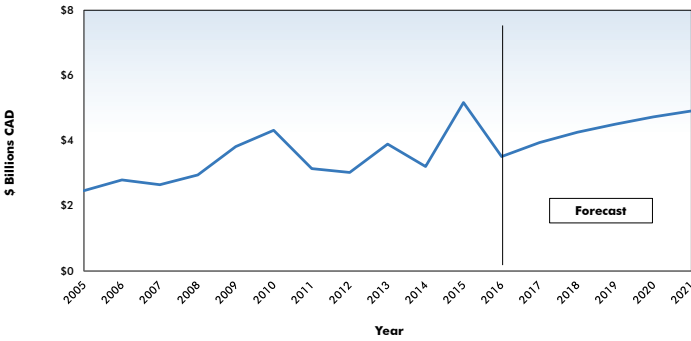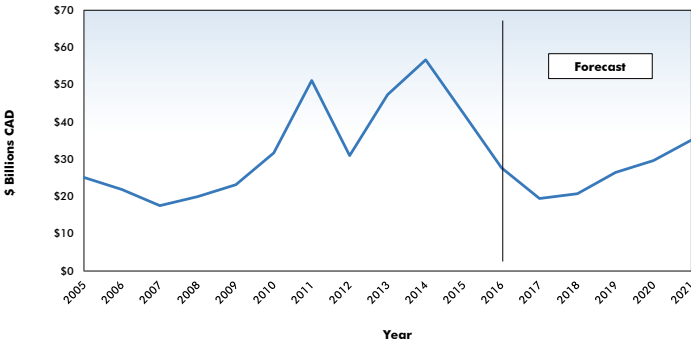Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

## Graph 29: Canadian Roadwork Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

## Graph 30: Canadian Water and Sewage Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

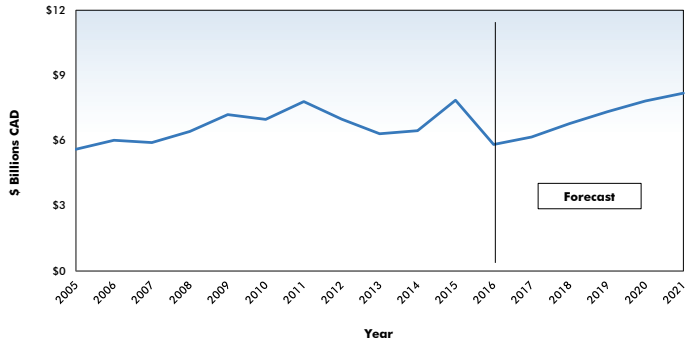## Graph 31: Canadian Power Infrastructure Construction Starts — ConstructConnect



*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.*

## Graph 32: Canadian Oil and Gas Plants, Pipelines Construction Starts — ConstructConnect



*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.*

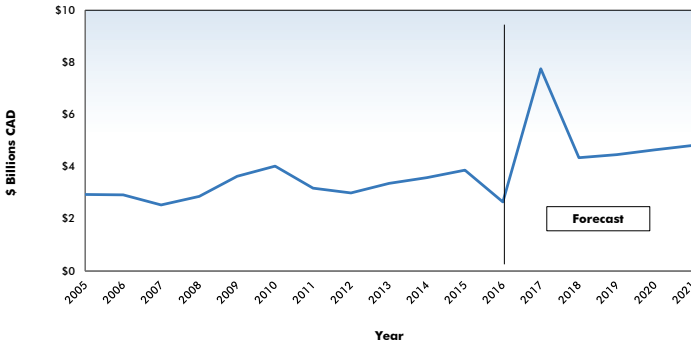## Graph 33: Canada Four Largest Provinces (by Population): Total Construction Starts — ConstructConnect



*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.*

## Graph 34: Canada Four Largest Provinces: Total Residential Construction Starts — ConstructConnect



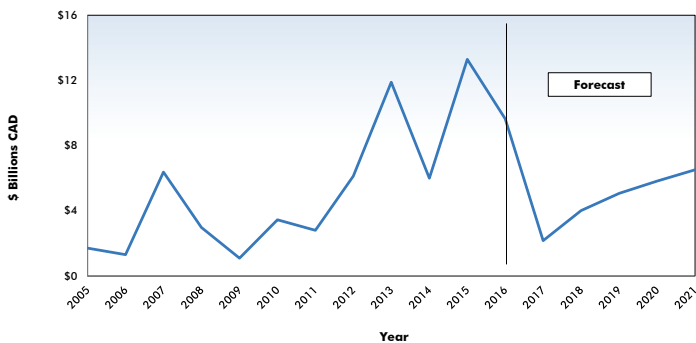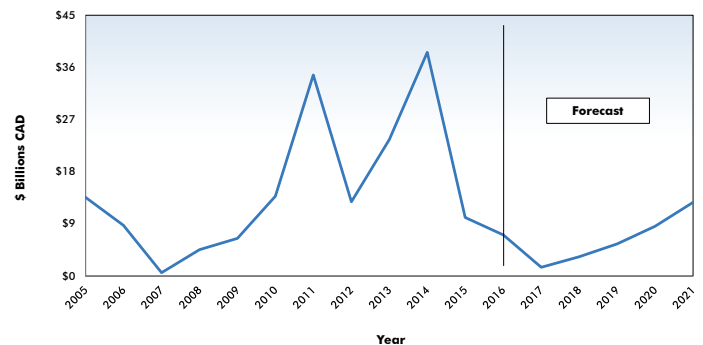*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.*

## Graph 35: Canada Four Largest Provinces: Total Non-residential Building Starts — ConstructConnect
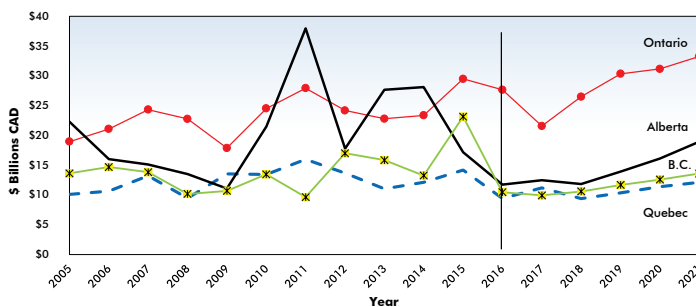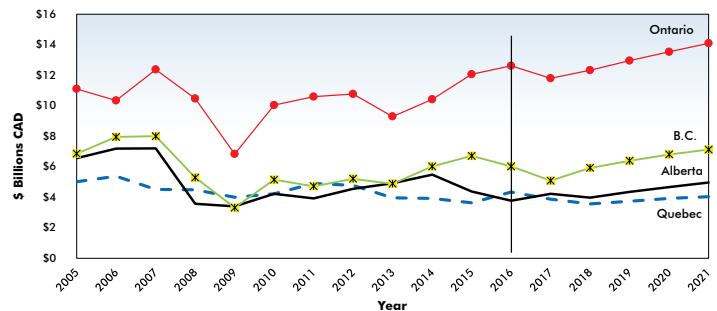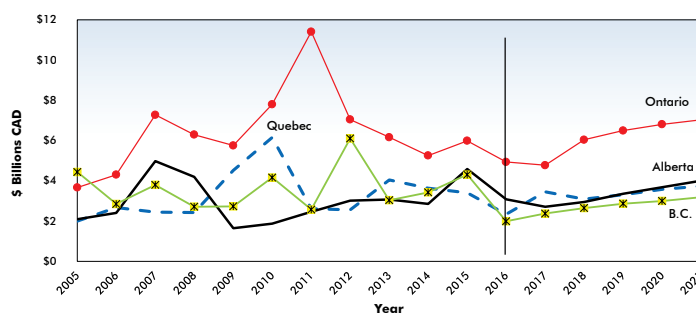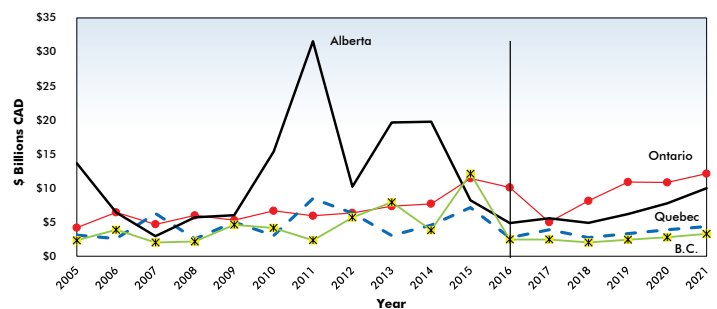


*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.*

## Graph 36: Canada Four Largest Provinces: Total Engineering/ Civil Construction Starts — ConstructConnect



*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.*

| Table 11: U.S. Type-of-Structure Forecasts (Square Feet Millions) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Actuals** | | **Forecasts** | | | | |
| | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| Single-family | 1,454.8 | 1,544.2 | 1,688.8 | 1,838.8 | 1,986.1 | 2,141.6 | 2,287.8 |
| Multi-family | 410.2 | 508.3 | 542.5 | 565.4 | 556.3 | 566.0 | 583.0 |
| TOTAL RESIDENTIAL | 1,865.0 | 2,052.5 | 2,231.3 | 2,404.3 | 2,542.4 | 2,707.6 | 2,870.7 |
| *(Yr/yr % change)* | *14.0%* | *10.1%* | *8.7%* | *7.8%* | *5.7%* | *6.5%* | *6.0%* |
| Hotels/Motels | 58.7 | 113.2 | 163.1 | 154.0 | 140.6 | 131.0 | 121.3 |
| Shopping/Retail | 150.3 | 188.9 | 73.4 | 71.1 | 74.2 | 75.4 | 78.0 |
| Parking Garages | 26.6 | 27.7 | 24.0 | 28.6 | 30.6 | 31.3 | 31.8 |
| Amusement | 36.4 | 21.2 | 24.1 | 24.3 | 24.7 | 25.8 | 26.5 |
| Private Offices | 91.0 | 112.1 | 93.6 | 112.3 | 116.1 | 111.5 | 106.8 |
| Govenmental Offices | 13.6 | 19.5 | 16.8 | 16.9 | 17.9 | 18.5 | 18.8 |
| Laboratories (Schools & Industrial) | 8.0 | 6.3 | 5.5 | 5.6 | 6.2 | 6.6 | 6.8 |
| Warehouses | 201.3 | 155.7 | 191.5 | 196.8 | 199.4 | 205.6 | 210.5 |
| Sports Stadium/Convention Center | 28.3 | 27.5 | 26.0 | 25.3 | 25.6 | 25.6 | 26.1 |
| Transportation Terminals | 11.5 | 7.6 | 6.5 | 9.0 | 10.3 | 11.6 | 12.2 |
| TOTAL COMMERCIAL | 625.6 | 679.6 | 624.6 | 643.8 | 645.6 | 643.1 | 638.8 |
| *(Yr/yr % change)* | *47.2%* | *8.6%* | *-8.1%* | *3.1%* | *0.3%* | *-0.4%* | *-0.7%* |
| TOTAL INDUSTRIAL (manufacturing) | 87.2 | 104.2 | 71.1 | 74.0 | 82.0 | 90.1 | 100.0 |
| *(Yr/yr % change)* | *-16.6%* | *19.5%* | *-31.7%* | *4.1%* | *10.8%* | *9.8%* | *11.0%* |
| Religious | 6.7 | 5.9 | 7.5 | 7.3 | 7.1 | 7.1 | 7.1 |
| Hospitals/Clinics | 23.5 | 37.8 | 26.7 | 28.5 | 31.9 | 35.3 | 38.6 |
| Nursing Homes/Assisted Living | 36.7 | 46.2 | 47.6 | 49.7 | 49.8 | 51.7 | 53.7 |
| Libraries/Museums | 3.7 | 4.2 | 3.1 | 2.9 | 3.0 | 3.1 | 3.1 |
| Courthouse | 1.7 | 1.9 | 2.2 | 2.3 | 2.5 | 2.6 | 2.8 |
| Police/Fire | 5.0 | 7.1 | 7.9 | 8.1 | 8.3 | 8.5 | 8.8 |
| Prisons | 3.6 | 2.8 | 5.1 | 5.1 | 5.2 | 5.5 | 5.7 |
| Military | 3.6 | 8.9 | 14.6 | 15.0 | 15.6 | 16.4 | 17.2 |
| Educational Facilities | 144.0 | 170.4 | 157.3 | 166.4 | 170.9 | 174.0 | 176.3 |
| MED misc | 14.0 | 19.1 | 27.0 | 26.2 | 24.6 | 24.6 | 24.6 |
| TOTAL INSTITUTIONAL | 242.7 | 304.2 | 299.1 | 311.6 | 318.8 | 328.7 | 337.8 |
| *(Yr/yr % change)* | *4.1%* | *25.4%* | *-1.7%* | *4.2%* | *2.3%* | *3.1%* | *2.8%* |
| Miscellaneous Non-Res Building | 19.2 | 32.7 | 28.3 | 26.3 | 27.3 | 27.8 | 28.4 |
| TOTAL NON-RES BLDG | 974.7 | 1,120.7 | 1,023.1 | 1,055.7 | 1,073.8 | 1,089.7 | 1,105.0 |
| *(Yr/yr % change)* | *25.3%* | *15.0%* | *-8.7%* | *3.2%* | *1.7%* | *1.5%* | *1.4%* |
| RESIDENTIAL + NON-RES BLDG | 2,839.7 | 3,173.1 | 3,254.5 | 3,460.0 | 3,616.1 | 3,797.3 | 3,975.7 |
| *(Yr/yr % change)* | *17.6%* | *11.7%* | *2.6%* | *6.3%* | *4.5%* | *5.0%* | *4.7%* |

EXPLANATION: Table 11 conforms to the type-of-structure ordering adopted by many firms and organizations in the industry. Specifically, it breaks non-residential building into ICI work (i.e., industrial, commercial and institutional), since each has its own set of economic and demographic drivers.

Table 12 presents an alternative, perhaps more user-friendly and intuitive, type-of-structure ordering that matches how the data appears in ConstructConnect's on-line product 'Insight'.

The square footage forecasts are largely determined by dividing the dollar value forecasts by an average dollar-per-square-foot value. The underlying dollar-per-square-foot calculation is based on the most relevant of current data. While the projected dollar values are generated through econometric modeling driven by key economic and demographic variables, both the dollar value and square footage forecasts also allow for discretionary overrides when warranted by extraordinary circumstances, such as unique mega project start-ups.

*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect / Table: ConstructConnect.*

## Table 12: U.S. Type-of-Structure Forecasts
Arranged to match the alphabetical category drop-down menus in INSIGHT (Square Feet Millions)

| | Actuals | | Forecasts | | | | |
|---|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| **Summary** | | | | | | | |
| NON-RESIDENTIAL BUILDING | 974.7 | 1,120.7 | 1,023.1 | 1,055.7 | 1,073.8 | 1,089.7 | 1,105.0 |
| RESIDENTIAL | 1,865.0 | 2,052.5 | 2,231.3 | 2,404.3 | 2,542.4 | 2,707.6 | 2,870.7 |
| RESIDENTIAL + NON-RESIDENTIAL BUILDING | 2,839.7 | 3,173.1 | 3,254.5 | 3,460.0 | 3,616.1 | 3,797.3 | 3,975.7 |
| | | | | | | | |
| **Verticals** | | | | | | | |
| Offices (private) | 91.0 | 112.1 | 93.6 | 112.3 | 116.1 | 111.5 | 106.8 |
| Parking Garages | 26.6 | 27.7 | 24.0 | 28.6 | 30.6 | 31.3 | 31.8 |
| Transportation Terminals | 11.5 | 7.6 | 6.5 | 9.0 | 10.3 | 11.6 | 12.2 |
| Commercial | 129.1 | 147.3 | 124.1 | 149.9 | 157.0 | 154.5 | 150.8 |
| *(Yr/yr % change)* | *13.0%* | *14.0%* | *-15.7%* | *20.8%* | *4.7%* | *-1.6%* | *-2.4%* |
| Amusement | 36.4 | 21.2 | 24.1 | 24.3 | 24.7 | 25.8 | 26.5 |
| Libraries / Museums | 3.7 | 4.2 | 3.1 | 2.9 | 3.0 | 3.1 | 3.1 |
| Religious | 6.7 | 5.9 | 7.5 | 7.3 | 7.1 | 7.1 | 7.1 |
| Sports Arenas / Convention Centers | 28.3 | 27.5 | 26.0 | 25.3 | 25.6 | 25.6 | 26.1 |
| Community | 75.2 | 58.7 | 60.7 | 59.8 | 60.3 | 61.6 | 62.8 |
| *(Yr/yr % change)* | *36.3%* | *-21.9%* | *3.3%* | *-1.4%* | *0.9%* | *2.0%* | *2.0%* |
| College / University | 41.1 | 54.3 | 48.7 | 50.4 | 51.7 | 52.4 | 53.0 |
| Elementary / Pre School | 51.3 | 52.5 | 45.1 | 49.4 | 52.6 | 54.0 | 54.6 |
| Jr / Sr High School | 47.5 | 57.4 | 57.5 | 60.6 | 60.5 | 61.4 | 62.3 |
| Special / Vocational | 4.1 | 6.2 | 6.0 | 6.1 | 6.1 | 6.2 | 6.4 |
| Educational | 144.0 | 170.4 | 157.3 | 166.4 | 170.9 | 174.0 | 176.3 |
| *(Yr/yr % change)* | *-2.2%* | *18.3%* | *-7.7%* | *5.8%* | *2.7%* | *1.8%* | *1.3%* |
| Courthouses | 1.7 | 1.9 | 2.2 | 2.3 | 2.5 | 2.6 | 2.8 |
| Fire and Police Stations | 5.0 | 7.1 | 7.9 | 8.1 | 8.3 | 8.5 | 8.8 |
| Government Offices | 13.6 | 19.5 | 16.8 | 16.9 | 17.9 | 18.5 | 18.8 |
| Prisons | 3.6 | 2.8 | 5.1 | 5.1 | 5.2 | 5.5 | 5.7 |
| Government | 23.9 | 31.4 | 32.0 | 32.4 | 33.8 | 35.1 | 36.1 |
| *(Yr/yr % change)* | *12.9%* | *31.4%* | *2.0%* | *1.3%* | *4.3%* | *3.7%* | *2.9%* |
| Industrial Labs / Labs / School Labs | 8.0 | 6.3 | 5.5 | 5.6 | 6.2 | 6.6 | 6.8 |
| Manufacturing | 87.2 | 104.2 | 71.1 | 74.0 | 82.0 | 90.1 | 100.0 |
| Warehouses | 201.3 | 155.7 | 191.5 | 196.8 | 199.4 | 205.6 | 210.5 |
| Industrial | 296.4 | 266.2 | 268.2 | 276.3 | 287.7 | 302.3 | 317.4 |
| *(Yr/yr % change)* | *49.9%* | *-10.2%* | *0.8%* | *3.0%* | *4.1%* | *5.1%* | *5.0%* |
| Hospitals / Clinics | 23.5 | 37.8 | 26.7 | 28.5 | 31.9 | 35.3 | 38.6 |
| Medical Misc. | 14.0 | 19.1 | 27.0 | 26.2 | 24.6 | 24.6 | 24.6 |
| Nursing Homes | 36.7 | 46.2 | 47.6 | 49.7 | 49.8 | 51.7 | 53.7 |
| Medical | 74.3 | 103.1 | 101.4 | 104.4 | 106.3 | 111.6 | 116.8 |
| *(Yr/yr % change)* | *17.3%* | *38.8%* | *-1.6%* | *2.9%* | *1.8%* | *5.0%* | *4.7%* |
| Military | 3.6 | 8.9 | 14.6 | 15.0 | 15.6 | 16.4 | 17.2 |
| *(Yr/yr % change)* | *2.5%* | *148.4%* | *64.1%* | *2.7%* | *4.1%* | *5.2%* | *4.8%* |
| Hotels | 58.7 | 113.2 | 163.1 | 154.0 | 140.6 | 131.0 | 121.3 |
| Retail Misc. | 19.2 | 32.7 | 28.3 | 26.3 | 27.3 | 27.8 | 28.4 |
| Shopping | 150.3 | 188.9 | 73.4 | 71.1 | 74.2 | 75.4 | 78.0 |
| Retail | 228.2 | 334.8 | 264.8 | 251.4 | 242.1 | 234.3 | 227.6 |
| *(Yr/yr % change)* | *29.9%* | *46.7%* | *-20.9%* | *-5.1%* | *-3.7%* | *-3.2%* | *-2.8%* |
| NON-RESIDENTIAL BUILDING | 974.7 | 1,120.7 | 1,023.1 | 1,055.7 | 1,073.8 | 1,089.7 | 1,105.0 |
| *(Yr/yr % change)* | *25.3%* | *15.0%* | *-8.7%* | *3.2%* | *1.7%* | *1.5%* | *1.4%* |
| Multi-Family | 410.2 | 508.3 | 542.5 | 565.4 | 556.3 | 566.0 | 583.0 |
| Single-Family | 1,454.8 | 1,544.2 | 1,688.8 | 1,838.8 | 1,986.1 | 2,141.6 | 2,287.8 |
| RESIDENTIAL | 1,865.0 | 2,052.5 | 2,231.3 | 2,404.3 | 2,542.4 | 2,707.6 | 2,870.7 |
| *(Yr/yr % change)* | *14.0%* | *10.1%* | *8.7%* | *7.8%* | *5.7%* | *6.5%* | *6.0%* |
| RESIDENTIAL + NON-RESIDENTIAL BUILDING | 2,839.7 | 3,173.1 | 3,254.5 | 3,460.0 | 3,616.1 | 3,797.3 | 3,975.7 |
| *(Yr/yr % change)* | *17.6%* | *11.7%* | *2.6%* | *6.3%* | *4.5%* | *5.0%* | *4.7%* |

EXPLANATION: Table 11 conforms to the type-of-structure ordering adopted by many firms and organizations in the industry. Specifically, it breaks non-residential building into ICI work (i.e., industrial, commercial and institutional), since each has its own set of economic and demographic drivers.

Table 12 presents an alternative, perhaps more user-friendly and intuitive, type-of-structure ordering that matches how the data appears in ConstructConnect's on-line product 'Insight'.

Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect / Table: ConstructConnect.

| Table 13: Canada Type-of-Structure Forecasts (Square Feet Millions) | | | | | | |
|---|---|---|---|---|---|---|
| | **Actuals** | | **Forecasts** | | | | |
| | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| Single-family | 128.3 | 138.1 | 148.6 | 156.4 | 166.1 | 174.7 | 182.7 |
| Multi-family | 83.9 | 74.0 | 52.9 | 62.2 | 69.6 | 74.8 | 78.5 |
| TOTAL RESIDENTIAL | 212.1 | 212.1 | 201.5 | 218.5 | 235.7 | 249.5 | 261.2 |
| *(Yr/yr % change)* | *-2.5%* | *0.0%* | *-5.0%* | *8.4%* | *7.9%* | *5.8%* | *4.7%* |
| Hotels/Motels | 2.9 | 2.4 | 2.2 | 2.4 | 2.7 | 2.5 | 2.3 |
| Private Offices | 10.7 | 3.1 | 3.0 | 4.2 | 5.4 | 6.4 | 7.2 |
| Govenmental Offices | 2.2 | 3.0 | 2.3 | 3.4 | 3.6 | 3.7 | 3.9 |
| Shopping/Retail | 13.2 | 10.8 | 4.9 | 5.0 | 5.0 | 5.1 | 5.1 |
| Retail Miscellaneous | 3.2 | 1.6 | 1.7 | 1.7 | 1.7 | 1.8 | 1.9 |
| Parking Garages | 0.8 | 0.2 | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 |
| Amusement | 5.9 | 5.5 | 4.0 | 4.6 | 5.3 | 5.6 | 5.8 |
| Warehouses | 7.2 | 10.1 | 10.5 | 10.8 | 11.1 | 11.4 | 12.0 |
| TOTAL COMMERCIAL | 46.0 | 36.6 | 30.0 | 33.5 | 36.1 | 37.8 | 39.4 |
| *(Yr/yr % change)* | *4.7%* | *-20.4%* | *-18.1%* | *11.8%* | *7.6%* | *4.8%* | *4.2%* |
| TOTAL INDUSTRIAL (manufacturing) | 5.4 | 2.7 | 2.7 | 3.0 | 3.7 | 4.5 | 5.0 |
| *(Yr/yr % change)* | *-2.4%* | *-49.0%* | *-2.8%* | *14.4%* | *22.6%* | *20.2%* | *11.9%* |
| Religious | 0.7 | 0.4 | 0.4 | 0.6 | 0.6 | 0.6 | 0.7 |
| Hospitals/Clinics | 3.8 | 2.2 | 5.1 | 5.2 | 5.6 | 5.9 | 6.2 |
| MED misc | 2.7 | 1.6 | 1.0 | 1.5 | 1.6 | 1.6 | 1.7 |
| Transportation Terminals* | 0.6 | 0.2 | 0.8 | 1.2 | 1.2 | 1.3 | 1.4 |
| Police/Fire | 0.9 | 0.6 | 1.8 | 1.6 | 1.6 | 1.7 | 1.7 |
| Educational Facilities | 15.7 | 10.6 | 8.1 | 9.3 | 9.9 | 10.5 | 10.9 |
| TOTAL INSTITUTIONAL | 24.6 | 15.6 | 17.2 | 19.3 | 20.6 | 21.7 | 22.6 |
| *(Yr/yr % change)* | *36.4%* | *-36.4%* | *10.1%* | *12.4%* | *6.6%* | *5.2%* | *4.0%* |
| TOTAL NON-RES BLDG | 76.0 | 55.0 | 49.8 | 55.9 | 60.4 | 64.0 | 67.0 |
| *(Yr/yr % change)* | *12.6%* | *-27.6%* | *-9.3%* | *12.1%* | *8.1%* | *5.9%* | *4.7%* |
| RESIDENTIAL + NON-RES BLDG | 288.1 | 267.1 | 251.4 | 274.4 | 296.1 | 313.5 | 328.2 |
| *(Yr/yr % change)* | *1.0%* | *-7.3%* | *-5.9%* | *9.2%* | *7.9%* | *5.9%* | *4.7%* |

\* With respect to Tables 11 and 13, 'transportation terminals' is the one type-of-structure that is categorized differently in Canada (institutional) than in the U.S. (commercial), for reasons having to do with government statistics.

EXPLANATION: Table 13 conforms to the type-of-structure ordering adopted by many firms and organizations in the industry. Specifically, it breaks non-residential building into ICI work (i.e., industrial, commercial and institutional), since each has its own set of economic and demographic drivers.

Table 14 presents an alternative, perhaps more user-friendly and intuitive, type-of-structure ordering that matches how the data appears in ConstructConnect's on-line product 'Insight'.

*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect / Table: ConstructConnect.*

| Table 14: Canada Type-of-Structure Forecasts |||||||
|---|---|---|---|---|---|---|
| Arranged to match the alphabetical category drop-down menus in INSIGHT (Square Feet Millions) |||||||
| | Actuals || Forecasts ||||
| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| **Summary** | | | | | | | |
| NON-RESIDENTIAL BUILDING | 76.0 | 55.0 | 49.8 | 55.9 | 60.4 | 64.0 | 67.0 |
| RESIDENTIAL | 212.1 | 212.1 | 201.5 | 218.5 | 235.7 | 249.5 | 261.2 |
| RESIDENTIAL + NON-RESIDENTIAL BUILDING | 288.1 | 267.1 | 251.4 | 274.4 | 296.1 | 313.5 | 328.2 |
| | | | | | | | |
| **Verticals** | | | | | | | |
| Offices (private) | 10.7 | 3.1 | 3.0 | 4.2 | 5.4 | 6.4 | 7.2 |
| Parking Garages | 0.8 | 0.2 | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 |
| Transportation Terminals | 0.6 | 0.2 | 0.8 | 1.2 | 1.2 | 1.3 | 1.4 |
| Commercial | 12.1 | 3.5 | 5.1 | 6.7 | 7.8 | 8.9 | 9.8 |
| *(Yr/yr % change)* | *21.4%* | *-70.7%* | *44.7%* | *30.1%* | *17.4%* | *13.9%* | *10.2%* |
| Amusement | 5.9 | 5.5 | 4.0 | 4.6 | 5.3 | 5.6 | 5.8 |
| Religious | 0.7 | 0.4 | 0.4 | 0.6 | 0.6 | 0.6 | 0.7 |
| Community | 6.6 | 5.9 | 4.4 | 5.2 | 5.9 | 6.2 | 6.5 |
| *(Yr/yr % change)* | *-3.4%* | *-11.6%* | *-25.4%* | *18.7%* | *14.3%* | *5.0%* | *3.5%* |
| Educational | 15.7 | 10.6 | 8.1 | 9.3 | 9.9 | 10.5 | 10.9 |
| *(Yr/yr % change)* | *47.6%* | *-32.8%* | *-23.3%* | *14.7%* | *6.2%* | *6.0%* | *4.2%* |
| Fire and Police Stations | 0.9 | 0.6 | 1.8 | 1.6 | 1.6 | 1.7 | 1.7 |
| Government Offices | 2.2 | 3.0 | 2.3 | 3.4 | 3.6 | 3.7 | 3.9 |
| Government | 3.1 | 3.6 | 4.1 | 5.0 | 5.2 | 5.4 | 5.6 |
| *(Yr/yr % change)* | *-24.1%* | *15.3%* | *15.4%* | *19.8%* | *4.9%* | *4.3%* | *2.8%* |
| Manufacturing | 5.4 | 2.7 | 2.7 | 3.0 | 3.7 | 4.5 | 5.0 |
| Warehouses | 7.2 | 10.1 | 10.5 | 10.8 | 11.1 | 11.4 | 12.0 |
| Industrial | 12.6 | 12.8 | 13.2 | 13.8 | 14.8 | 15.9 | 17.0 |
| *(Yr/yr % change)* | *0.9%* | *1.6%* | *2.8%* | *5.0%* | *7.0%* | *7.3%* | *7.2%* |
| Hospitals / Clinics | 3.8 | 2.2 | 5.1 | 5.2 | 5.6 | 5.9 | 6.2 |
| Medical Misc. | 2.7 | 1.6 | 1.0 | 1.5 | 1.6 | 1.6 | 1.7 |
| Medical | 6.5 | 3.9 | 6.1 | 6.7 | 7.2 | 7.6 | 7.9 |
| *(Yr/yr % change)* | *31.8%* | *-41.0%* | *57.5%* | *10.9%* | *7.7%* | *4.4%* | *4.2%* |
| Hotels | 2.9 | 2.4 | 2.2 | 2.4 | 2.7 | 2.5 | 2.3 |
| Retail Misc. | 3.2 | 1.6 | 1.7 | 1.7 | 1.7 | 1.8 | 1.9 |
| Shopping | 13.2 | 10.8 | 4.9 | 5.0 | 5.0 | 5.1 | 5.1 |
| Retail | 19.2 | 14.7 | 8.8 | 9.2 | 9.5 | 9.4 | 9.3 |
| *(Yr/yr % change)* | *4.5%* | *-23.5%* | *-40.0%* | *4.0%* | *3.4%* | *-0.5%* | *-1.8%* |
| NON-RESIDENTIAL BUILDING | 76.0 | 55.0 | 49.8 | 55.9 | 60.4 | 64.0 | 67.0 |
| *(Yr/yr % change)* | *12.6%* | *-27.6%* | *-9.3%* | *12.1%* | *8.1%* | *5.9%* | *4.7%* |
| Multi-Family | 83.9 | 74.0 | 52.9 | 62.2 | 69.6 | 74.8 | 78.5 |
| Single-Family | 128.3 | 138.1 | 148.6 | 156.4 | 166.1 | 174.7 | 182.7 |
| RESIDENTIAL | 212.1 | 212.1 | 201.5 | 218.5 | 235.7 | 249.5 | 261.2 |
| *(Yr/yr % change)* | *-2.5%* | *0.0%* | *-5.0%* | *8.4%* | *7.9%* | *5.8%* | *4.7%* |
| RESIDENTIAL + NON-RESIDENTIAL BUILDING | 288.1 | 267.1 | 251.4 | 274.4 | 296.1 | 313.5 | 328.2 |
| *(Yr/yr % change)* | *1.0%* | *-7.3%* | *-5.9%* | *9.2%* | *7.9%* | *5.9%* | *4.7%* |

EXPLANATION: Table 13 conforms to the type-of-structure ordering adopted by many firms and organizations in the industry. Specifically, it breaks non-residential building into ICI work (i.e., industrial, commercial and institutional), since each has its own set of economic and demographic drivers.

Table 14 presents an alternative, perhaps more user-friendly and intuitive, type-of-structure ordering that matches how the data appears in ConstructConnect's on-line product 'Insight'.
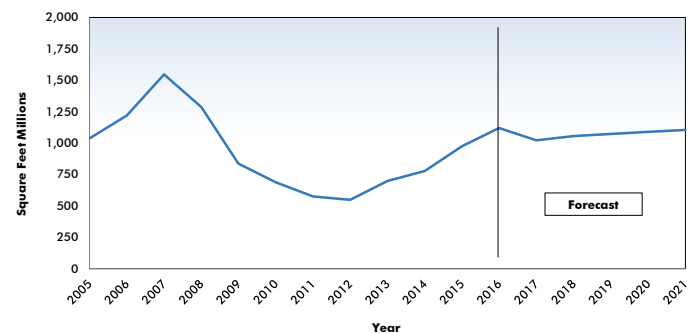
*Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect / Table: ConstructConnect.*

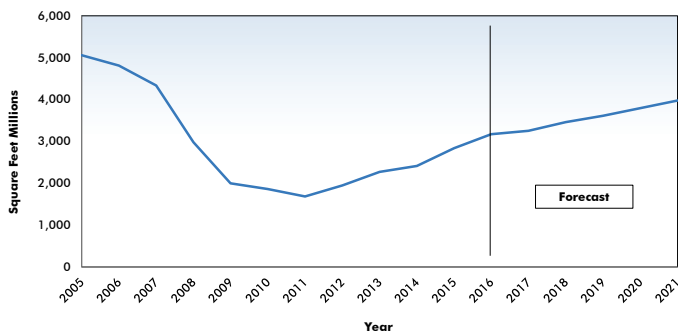### Graph 37: U.S. Residential Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

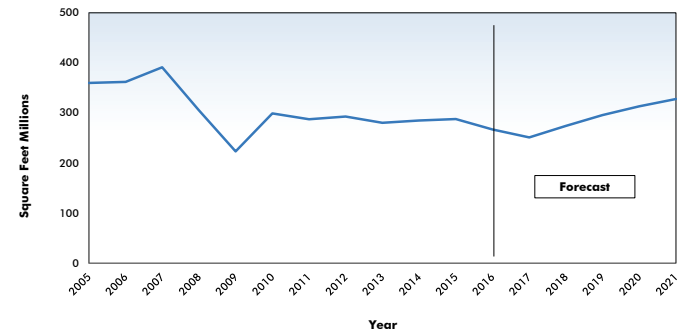### Graph 38: U.S. Non-Residential Building Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

### Graph 39: U.S. Residential + Non-Residential Building Construction Starts — ConstructConnect
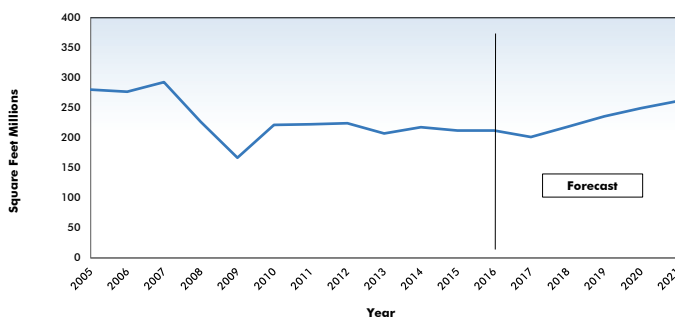


Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

### Graph 40: Canada Residential + Non-Residential Building Construction Starts — ConstructConnect
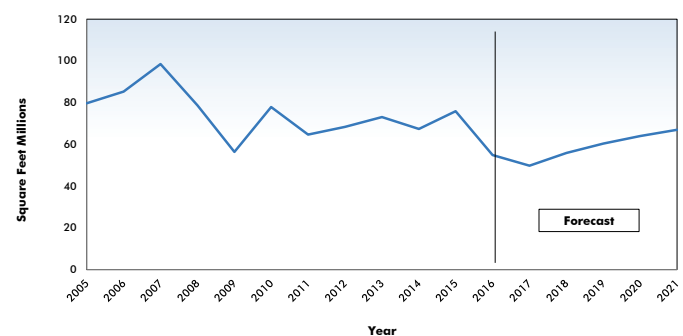


Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

### Graph 41: Canada Residential Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

### Graph 42: Canada Non-Residential Building Construction Starts — ConstructConnect



Source of actuals: ConstructConnect "Insight" / Forecasts: Oxford Economics and ConstructConnect. Chart: ConstructConnect.

Contributors:
Oxford Economics — Abby Samp, Lead Economist; Toby Whittington, Economist / ConstructConnect — Alex Carrick, Chief Economist; Erich Falkenberg, National Production Manager