



SPECIAL FEATURE

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Compass Datacenters built upon eco-friendly concrete



PHOTO COURTESY COMPASS DATACENTRES

A pre-cast concrete wall being hoisted into place at the site of a new Compass Datacenters campus.

GRANT CAMERON
CORRESPONDENT

Compass Datacenters is rolling out \$3 billion in new campuses across North America and the concrete in the buildings will use technology invented by a Canadian firm that injects re-captured industrial CO2 into the manufacturing process.

The technology, developed by Nova Scotia-based CarbonCure Technologies, reduces the volume of cement required in the mixing of concrete for buildings while permanently removing CO2 from the atmosphere.

For Compass, which provides custom, move-in-ready data centres, the technology was a good fit for a \$100-million campus recently completed in Etobicoke, as pre-fabricated concrete walls were used for its buildings. Concrete was also used extensively to create loading docks and pads for equipment in the buildings.

The company is now building campuses across North America and plans to use the technology on the builds.

Nancy Novak, chief innovation officer

at Compass, said the company chose to go with the Canadian technology because sustainability is one of the guiding principles of its operations.

“Sustainability to us is a holistic process, involving everything from minimizing power usage, using sustainable materials, minimizing water usage and more. Every company that does construction needs to look closely at the sustainability of concrete because it is such a big carbon contributor globally.”

Compass uses concrete in many areas, from foundations and sidewalks to pre-cast walls and roofing. Using the technology will reduce the CO2 footprint by an average of 1,800 tonnes per campus. That’s the amount of CO2 sequestered by 2,100 acres of forest or the equivalent of driving a car four million miles.

CarbonCure technology enables concrete producers to use waste CO2 to produce more sustainable concrete. By injecting re-captured industrial CO2 into the concrete manufacturing process, less cement is required in the mixing process.

Cement is a major component of concrete and its production accounts for seven per cent of global CO2 generated, making it one of the largest contributors to carbon from the built environment. CarbonCure CEO Rob Niven, said the company is on a mission alongside many of the world’s leading concrete producers to eliminate 500 megatonnes of CO2 emissions from concrete production annually.

“We are excited to be partnering with forward-thinking companies like Compass Datacenters to reduce the embodied carbon footprint of the built environment by making construction in the data centre industry more sustainable.”

Economic Snapshot

High inflation raises risk of higher interest rates



John Clinkard

Given that the Canadian and United States economies are joined at the hip, it is not surprising the pattern of inflation in the two countries is very similar (see chart below). Most recently, the key drivers of inflation in both countries have been energy and motor vehicles. Their prices were depressed by COVID-19 lockdowns in April and May of 2020, but they have seen sharp accelerations since then. While those two price components are largely responsible for pushing headline inflation to a ten-year high of +3.6% y/y in Canada and a 13-year high of +5.4% in the United States, core inflation has also increased significantly in both countries.

Central banks consider recent inflation uptick “temporary”

In its just-released *July Monetary Policy Report*, the Bank of Canada (BoC) noted that higher gasoline prices and ongoing supply bottlenecks were likely to cause “inflation to remain above 3% through the second half of this year (2021) and ease back towards 2% in 2022”. A similar inflation outlook was recently voiced by the U.S. Federal Reserve (the Fed). It reported that “shortages of material inputs and difficulties in hiring have held down activity in several industries” and fueled a temporary surge in inflation.

Canadian and U.S. monetary authorities consider their respective economies to have considerable excess capacity which requires them to keep interest rates as close to zero as they can. They plan to maintain this policy stance until the slack in the economy is absorbed and the +2% inflation target is sustainably achieved.

BoC & Fed see inflation back to 2% in 12 to 18 months

The BoC and the Fed contend that the recent acceleration in prices will prove to be temporary and, as the mismatch between supply and demand fades, inflation will ease over the next 12 to 18 months. However, several forward-looking indicators suggest otherwise. First, against a background of very expansionary monetary policy (i.e., interest rates are effectively zero in both countries), governments on both sides of the border are providing an extremely large amount of fiscal stimulus.

In Canada, private sector hiring has increased by 25% over the past 14 months while in the U.S., firms have increased their payrolls by 14% over the same period. Record-high job vacancy rates in Canada and the U.S. suggest both economies may be closer to full capacity than monetary authorities currently believe.

Cdn and U.S. surveys show increase in inflation expectations

The surge in labour demand in Canada has not yet had a significant impact on wages. That said, the 07/2021 *Bank of Canada Business Outlook Survey (BOS)* reported that expectations of faster wage growth hit a record high in the second quarter. Part of the increase will be due to firms “catching up” after no change in 2020. Other factors

include a greater need to attract and retain skilled workers and recent bumps in the cost of living.

The BOS also reported that, while most firms expect inflation to remain between 1% and 3%, the percentage of respondents expecting inflation above 3% over the next two years has jumped from 1% in Q2/2020 to 35% in Q2/2021. Private sector surveys which report a similar increase in inflationary expectations include the Canadian Federation of Independent Business (CFIB)’s *Business Barometer* which reported that firms now (in June) expect their average prices over the next year to increase by +3.5% y/y compared to less than +1.8% y/y in June 2020. Also, reflecting upward pressure on prices, the IVEY Purchasing Managers Price Index posted a +46% y/y gain in June, its largest jump on record.

In the United States, the Federal Reserve Board’s Beige Book (analogous to the BoC’s BOS) reported above-average price gains for the country as a whole and strong advances in seven of the Fed’s 12 districts.

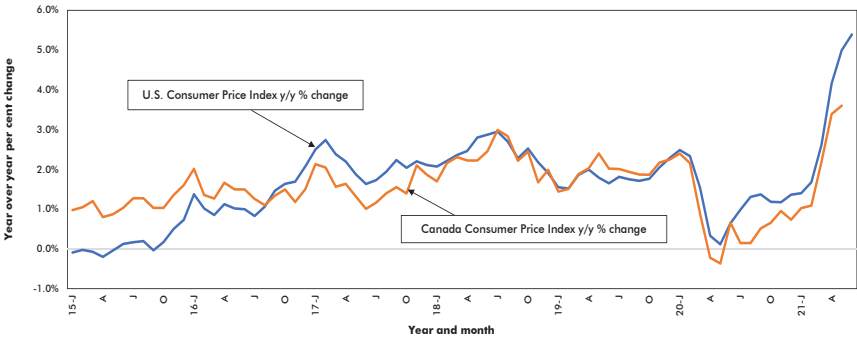
According to the University of Michigan’s *Survey of Consumers*, the year-ahead inflation rate may have retreated a bit to +4.0% y/y (from +4.6%) in early June, but it’s still higher than in the decade prior. Also, the Institute for Supply Management (ISM)’s price measure stands at a 28-year high of 92.1. Finally, the National Federation of Independent Business has reported that the net percentage of owners raising selling prices rose by 7 points in June to 47%, a 40-year peak.

Bottom line

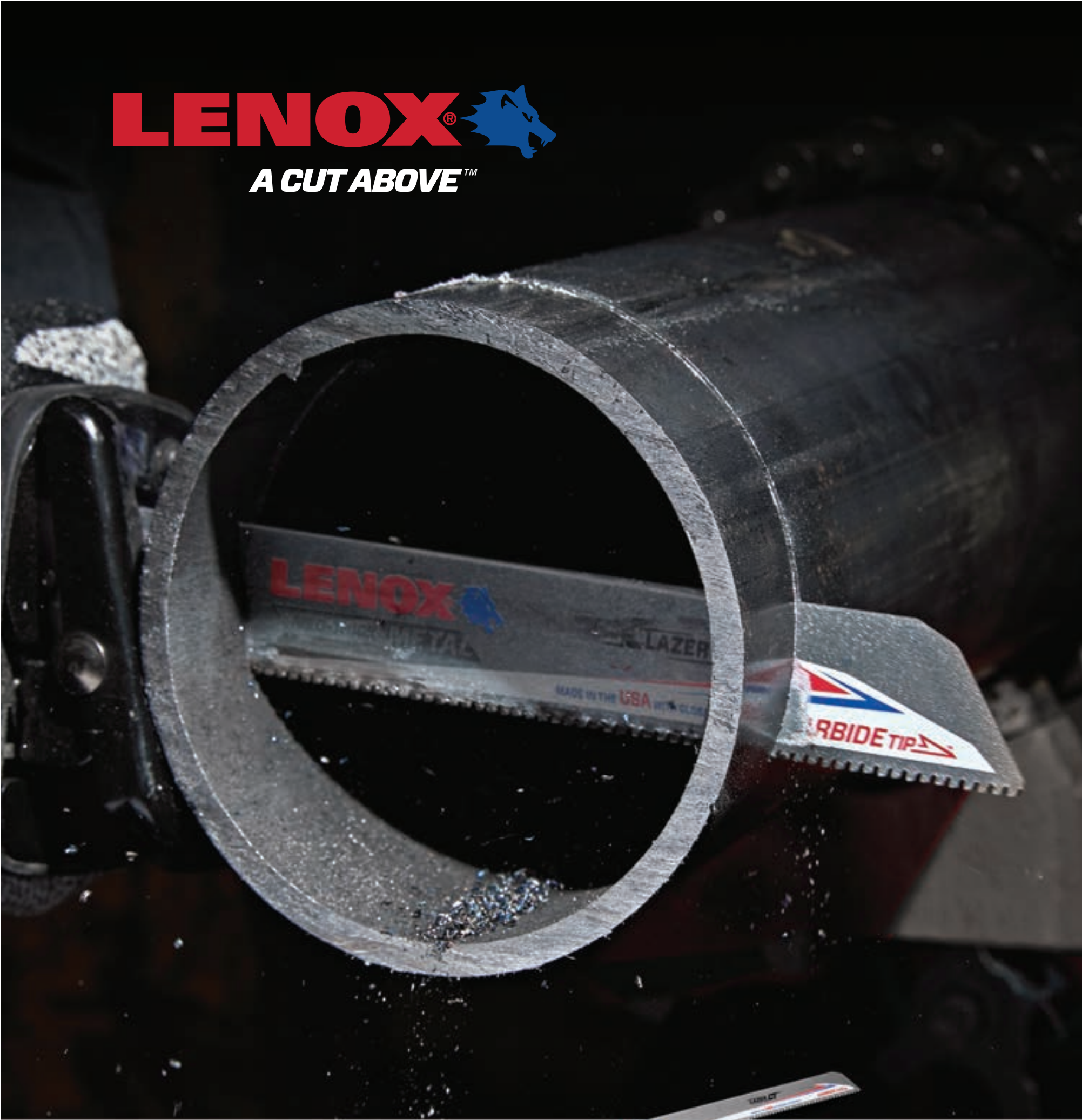
The Bank of Canada and the U.S. Federal Reserve have signaled they plan to keep interest rates on hold well into 2022. However, the above-noted escalation of consumer prices and inflationary expectations in both countries heighten the probability the BoC and Fed will start to tighten sooner rather than later.

John Clinkard has over 35 years’ experience as an economist in international, national and regional research and analysis with leading financial institutions and media outlets in Canada.

Year-over-year change in Consumer Price Index – Canada vs United States



Data Sources: Statistics Canada, U.S. Bureau of Labor Statistics/Chart: ConstructConnect — CanaData.



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Brick to make Spadina Sussex a home away from home

DAN O'REILLY
CORRESPONDENT

After a long-design process which started in 2014, the construction of a 23-storey brick and glass university student residence is now underway in downtown Toronto.

Named after its location at the northwest intersection of the two streets, the Spadina Sussex Residence will be the first student residence constructed on the University of Toronto's St. George Campus in a decade. Diamond Schmitt is the architect and the Daniels Corporation is the construction manager.

Other project partners include heritage consultant ERA Architects Inc. and structural engineering consultant Entuitive.

Set on a three-storey podium with a mix of retail stores at grade, the residence will offer a mix of dorms for undergraduates and suites for upper year and graduate students and a feature of a wide range of amenities including study rooms, yoga students, movie rooms, and large kitchen.

A heritage brick building at the south side owned by the Daniels Corporation will be incorporated into the podium as part of a partnership between the university and the developer.

The retention of that building allowed the design team to provide unique spaces within the residence, says Diamond Schmitt principal Don Schmitt, noting the level of the podium and the heritage structure will be aligned.

Also included in the project will be the construction of a three-storey townhouse containing rental replacement units and faculty house slightly to the west on Sussex Avenue. Building the townhouse is part of a university initiative to attract, "the best and brightest (faculty), but who are concerned about Toronto's high housing prices."

When construction is completed in 2024, the university will have made significant progress in its long-standing commitment to provide housing for any first-year students who want to live on campus, he says.

In commenting on the long-design process, Schmitt says there were a considerable number of issues which had to be resolved including an extensive community consultation and obtaining all the required municipal building approvals.

As the university's first building on the west side of Spadina Avenue, the residence had to harmonize with the main campus, a number of high rise buildings along that street and the low-rise character of Harbord Village, a residential community to

the west characterized by Victorian and Edwardian-era homes, he explains.

"The main residence's height fits in with its high-rise neighbours along Spadina, while the podium and townhouse step down to reflect the scale of the adjacent residential neighbourhood."

In meeting those harmonization objectives, the selection of brick as the cladding was obvious choice. "It was decided early on in the (design) process — through close consultation with the community and that the city — that this was going to be a brick building."

Its materiality is reflective of other nearby university residences, an adjacent tower, and the Harbord Village community, says the architect.

"Brick will also be a welcoming material for the students who will be away from home for the first time."

In its evaluation of brick styles and colours, Diamond Schmitt proposed three different styles which it presented to the university's design review committee, an advisory group comprised of architects, landscape architects, and faculty members.

"As is often the case, there wasn't a unanimous agreement. So we (the design team) built three mock ups right on site. We had some help from the contractor, but mostly we built it ourselves."

After visiting the site and inspecting the mock ups the committee members ultimately chose Endicott's medium ironspot brick, says Schmitt.

Although the masonry subcontractor has not yet been selected, two different installation applications will be employed. On the podium, the masons will be hand installing four types of smooth brick and eleven textured (or artisanal) brick shapes. On the tower, the decision was the decision was made to switch to precast panels using a thin brick system. It will be the same brick, but set into the forms a storey at a time.

"Not only does this (using precast) allow for a quicker installation time, but it means that insulation and the air-vapour barrier can be installed from the inside limiting the use of swing stages."

Installation of the brick should commence by the summer of 2022, he says.

Targeted to achieve LEED Silver accreditation, the project also included an already completed geothermal bore hole under the adjacent Robert Street Field, (a community and playing field currently under redevelopment) with heat exchangers to

be included in the residence.

"Research shows that student success is often aligned with on-campus living experiences," says the university's vice president, operations and real estate partnerships, Scot Mabury, in emphasizing the residence's pivotal role.

"We're committed to ensuring our students have access to housing, and the Spadina Sussex residence will begin to address the University of Toronto's pressing need for more student housing. It's important for us (the university) to offer our students — especially first years — and their parents a safe option in Toronto, where housing is a challenge. This is one step toward that."



DIAMOND SCHMITT ARCHITECTS

The Spadina Sussex Residence for University of Toronto students is set on a three-storey podium with a mix of retail stores at grade and will offer a mix of dorms for undergraduates and suites for upper year and graduate students.



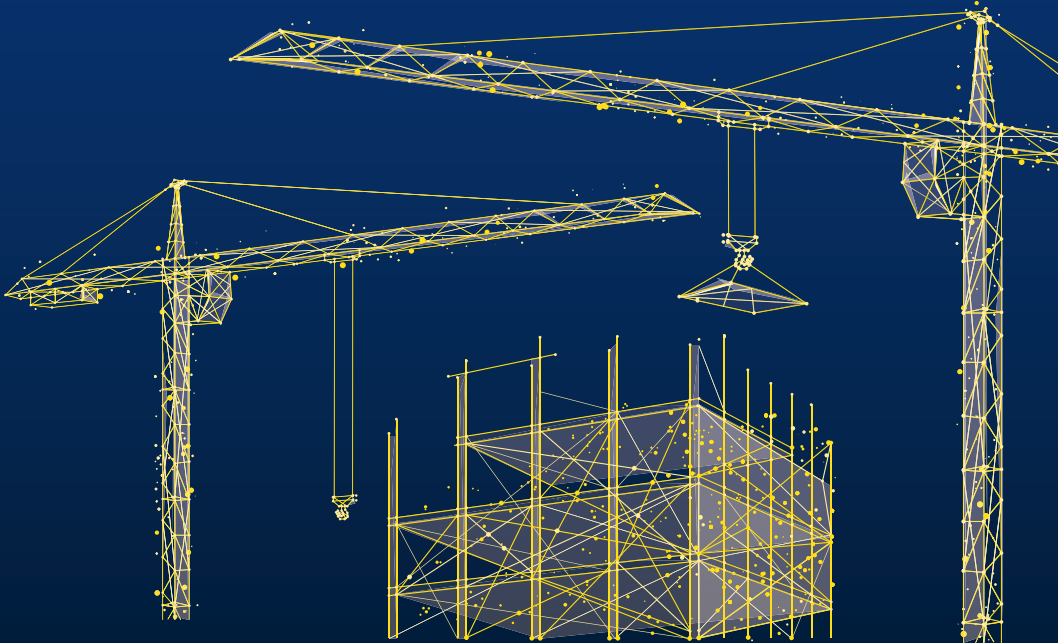
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Brick power bakes the wonderful into Wonder condo

DAN O'REILLY
CORRESPONDENT

The aroma of baking bread at the Weston Bakery in Toronto's east-end neighbourhood of Leslieville was an integral part of living in that part of the city for 125 years. Originally founded as Brown's Bread Limited in 1887, the Weston Bakery closed in 2014 and then was designated as a heritage structure in 2017. Now the landmark masonry industrial building is being transformed into the Wonder, a condominium that will generate new housing and commercial uses in the area upon its completion in 2022.

The developer is Graywood Developments and the Alterna Group of Companies. Diamond Schmitt Architects is the architect and structural consultant is Entuitive.

Consisting of significant masonry restoration and extensive new brick installation and major new construction, the project could be compared to a "3D jigsaw puzzle," says Diamond Schmitt Architects' senior associate architect, Walton Chan.

Not only does the heritage designation of the bakery have to be respected, the bakery has to be seamlessly integrated with the condominium's two other distinctive components which include townhouses and a condominium, says Chan.

Fronting on to Eastern Avenue the heritage section includes the original four-storey, steel framed, triple-wythe-thick bakery constructed between 1919 and 1926 — with a five storey tower — and a two-storey 1929 addition which wraps around on to Logan Avenue, a north-south side street.

Once the project is completed, the bakery will house retail space on the ground level and two-storey lofts on the upper floors.

As for the townhouses, they are comprised of two-storey units, one on Logan Avenue and the second wing on Booth Avenue, a parallel side street. Rising above the heritage section and the townhouses is the third segment, a stepped back eight-storey curtain wall and concrete condominium. Alterna is currently pouring the concrete for the sixth floor, he says.

In a multi-layer complex project such as this, there were and are several design and challenges, notably adapting the heritage building to its new uses while maintaining its historic integrity, plus integrating it with the townhouses and the condominium which have different floor-to-floor heights, he says.

While the four-storey bakery building was stripped down to the structure and the masonry walls, the floor plates were retained, the architect explains.

A major priority was the designing the condominium so that the bakery's industrial heritage features would be preserved, along with ensuring the condominium's overall appearance and siting would be compatible with the fabric of the community of predominantly single family homes. "We wanted something that would relate to its neighbours," says Chan.

There are a number of measures either underway or planned intended to meet those objectives. A prime example is the restoration of the bakery's masonry walls. Heritage Restoration Inc. is using a combination of cleaning, duck pointing, minor repairs, plus reincorporating approximately 16,000 original bricks.

Most were salvaged in the 2019 demolition of post-1950 ancillary at the north end of the bakery that were not considered heritage worthy. The bricks were placed on palettes and taken to an off-site facility to be cleaned and stored for later re-use, along with the artifacts from the bakery.



DIAMOND SCHMITT ARCHITECTS

The Weston Bakery in Toronto's east-end is a landmark masonry industrial building being transformed into a condominium called Wonder.

Another source of the reclaimed bricks was the heritage building itself. Noting that the bakery was an industrial use, not housing, some of the bricks had to be removed to allow for the enlargement of the windows to create more appropriate openings to the new loft layouts.

"The windows were originally installed to let in light, but not necessarily views," says Chan.

In another example of how the design and construction is paying homage to the bakery's past, Chan points to the treatment of the interior masonry walls which he describes as "rough" terra cotta. They are being stripped of paint and finish to allow them to breathe and increase their capacity to release moisture to the outside. After new insulation is inserted, approximately 5,000 square feet of the interior veneer brick will be installed.

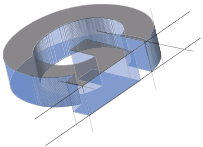
Selected to harmonize with the exterior heritage brick, the veneer will maintain much-sought-after appearance loft purchasers look for, he says.

And that is also the case with the approximately 50,000 square feet of new brick which will be installed on the two-storey townhouses. "The brick has been carefully selected to match as close as possible the colour of the original building's brick."

The two wings along Logan and Booth Avenues enclose an interior courtyard, while the condominium units above step back as the building increases in height to minimize the impact on the neighbourhood, he says.



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The 2Fifteen tower to use unique Danish bricks

DAN O'REILLY
CORRESPONDENT

The pinwheel-shaped 2Fifteen tower being built on Lonsdale Road in Toronto's Forest Hill community will be clad with a rarely used brick in Canada imported from Denmark.

The tower was designed by Diamond Schmitt, developed by DBS Developments/Preston Group, and is being erected by construction manager Reliance Construction Toronto. This 129-suite, 20-storey luxury rental building will not be a standard tower in its design, appearance, style of construction, and use of brick, say the project partners.

Manufactured by the Broager Denmark-based Petersen Tegl Company, the K91 Kolumba is a long-proportioned brick that requires the use of less brick on buildings. Still, more than 211,000 of the bricks will have



DIAMOND SCHMITT ARCHITECTS

The K91 Kolumba is a long-proportioned Danish brick that requires the use of less brick on buildings. Still, more than 211,000 of the bricks will be installed by masonry subcontractor Limen Group on this project.

been installed by masonry subcontractor Limen Group by the time construction is completed later this year.

"We believe this will be the first high rise building in Canada to use it (the brick), says Preston Group CFO Bryan Levy.

"This will be the first purpose built luxury rental building in Toronto in quite a long time," says Levy, in explaining why the company has invested the time and expense of sourcing and importing the bricks which cost approximately \$7 apiece.

A major target market for the tower are Forest Hill residents who want to downsize from their homes and move into a luxury building, without the complications and investment condo ownership entails, he explains.

As part of his research, he travelled to Denmark and met with the Petersen Tegl Company

owner and also went to New York City with senior representatives from the architectural and contracting firms to inspect buildings in that city where the brick has been used.

In highlighting the features of the bricks, he references the stripes of bricks and windows on the south facade as one aspect of their striking application. The stacked brick piers on that elevation and between the balcony windows on the other elevations are precisely measured to fit one, 528-mm-long Kolumba brick.

Accented with oversized floor to ceiling windows with defining bronze anodized aluminum frames, the light buff coloured bricks will provide a unique appearance for the building, which is set from the street to reduce its scale, says Diamond Schmitt associate architect, Persis Lam.

The architectural firm worked with the developer on the selection of the bricks as part of the three-year-long design process, she points out.

"Each brick is different. You can even see the thumbprint (of the brick maker) on them," says the architect, referring to photos that were forwarded by the manufacturer.

But it's not just the handmade nature of the bricks which sets the project and the building apart from others in the city. In what might be described as return to old-style construction practices, masonry subcontractor Limen Group is hand installing the bricks all the way from the ground to the 20th floor using scaffolding and a swing stage.

"It (the brick) is a labour intensive material to install and maintaining uniform workmanship



PRESTON GROUP/DBS DEVELOPMENTS

The 2Fifteen tower looking north over Upper Canada College and Forest Hill. The south elevation showcases the clean window treatment with bronze mullions separated by brick piers of stacked Kolumba brick. The other areas of the facade display the Kolumba in a random brick pattern.

the entire height of the building is important," says Lam, citing one of the challenges.

Another is the need for tight supply co-ordination. The bricks have to be delivered to the work area on as-needed basis as there is not enough space on site to store them all.

Touching on the aspects of the project, Lam says the developer worked with the neighbourhood residents and the city to ensure the tower would be compatible with the area. The project is targeted to LEED Silver and the Toronto Green Standard and scheduled for occupancy in early 2022.

Feds, Canadian cement association partner to get industry to net zero

GRANT CAMERON
CORRESPONDENT

The Cement Association of Canada (CAC) and the federal government are teaming up to put the cement industry on the path to net carbon zero by 2050.

They're working on a blueprint that will provide the industry with guidance on the technologies, tools and policies that are needed to help cut down on greenhouse gas (GHG) emissions across the entire industry.

The idea is to position Canada's cement and concrete industry as a global leader in low-carbon cement and concrete production and related clean technologies.

"It's very important to the CAC because for the first time ever the federal government recognizes that cement and concrete is a strategic commodity in Canada," says association president and CEO Michael McSweeney.

"Politicians have a good understanding of fir, fish and lumber, and the mining industry, chemicals industry, and automotive industry, but at the end of the day you can't build any structure or building without concrete."

In Canada, concrete is one the most widely used construction materials with an annual production rate of 60 million tonnes while cement, one of the main concrete components, has a production rate of 14 million tonnes.

The production of Canadian cement and concrete products resulted in the emis-

sion of 11,689 kilo tonnes of GHGs in 2008. Cement production is one of the largest sources of industrial sector emissions in the world, accounting for seven per cent of all industrial CO2 emissions. In Canada, the rate is 1.5 per cent.

The Canadian industry wants to cumulatively reduce more than 15 megatonnes of GHGs by 2030, followed by further ongoing reductions.

"We are very confident that by working with government and having government invest modest taxpayer dollars into new technology and making regulatory and legislative change, by 2030 we will be able to reduce 15 megatonnes, and then after 2030 by at least four megatonnes every year," says McSweeney.

"We're setting 2025 targets and 2030 targets and we're going to set targets every five years because in our discussions with rank-and-file citizens and environmental groups, in particular, they say, 'Well, it's easy for you to promise net-zero concrete by 2050, I mean, will you be alive then?' In order to have credibility we need to have near-term targets and we need to have mid-term targets and long-term targets."

McSweeney and CAC chair Marie Glenn have signed a joint statement with federal Innovation, Science and Industry Minister François-Philippe Champagne that sets out the terms of the arrangement and the deadline for a roadmap to be completed by December

that is consistent with Canada's climate plan.

As part of the partnership, an industry-government working group has been established to support the decarbonization of the sector and has representatives from the cement and concrete industry and various government departments, environmental and Indigenous groups, innovation and technology leaders.

"We have a real robust group," says McSweeney. "It's hard to solve something when you're just working on it by yourself. But once you bring in people with diverse views and experience, that's how you spark innovation."

With concrete being used in nearly everything built in Canada, he says it was important for the industry to be part of the solution.

"Even if it's a tall wood building, the first floor and the underground infrastructure, the stairwells, the elevator cores are going to be concrete. I don't think people have even given it a second thought. They don't realize that when they flush their toilets their waste leaves the house, most likely by PVC pipes, and then it finds its way into concrete pipes and into a concrete wastewater treatment facility."

Although Canada's GHG emissions from concrete production are well below the world average, the industry is a big emitter on the world stage so the issue needs to be addressed, says McSweeney.

"We need to be able to set the example here in Canada before we can go after China and

India and the United States. We want to be able to say to other countries, 'Well, we have looked after our own house, you need to look after yours as well.'"

The industry will be taking a three-pronged approach to the problem and start by reducing the use of fossil fuels such as coal and petcoke in the production of cement. In the manufacturing of cement, 40 per cent of the emissions are from the combustion of fossil fuels used to heat the kilns to cause a chemical reaction. The industry would instead use construction waste, biosolids and recyclable plastics.

"If we reduce the amount of coal, petcoke and natural gas that is used then we can reduce that 40 per cent emissions," notes McSweeney. "We're after government to allow us to change our fuels. In most of the country we're getting there."

The industry will also be seeking to add more supplementary cementing materials like gypsum, aluminum, fly ash and slag, and ground up limestone to the mix to extend product without causing more GHGs.

Meanwhile, the industry will also develop and adopt carbon capture technology to sequester CO2. Lafarge Canada and Svante Inc. are working on a first-of-its-kind multi-phase project that involves capturing and filtering the CO2 from flue gas at the Lafarge Richmond Cement facility in British Columbia.