



SPECIAL FEATURE

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DEMOLITION & ENVIRONMENTAL ENGINEERING

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Regent Park revitalization a ballet of construction, demolition

IAN HARVEY
CORRESPONDENT

Dump trucks rumble in and out of the demolition site while a block away, cement trucks rumble onto an adjoining site along with more trucks loaded with construction materials.

This isn't business as usual on a Toronto job site where demolition and construction are proceeding side-by-side and have been for 13 years. In the middle of this orchestrated chaos there's an entire community and assorted businesses and two schools trying to make the best of things in a 12-block construction zone sprawling across 69 acres in downtown Toronto.

The Regent Park revitalization project has been underway since 2006 and seeks to replace the 1940s public housing project with a new, broader mix of housing to serve more people, both on social assistance and those who can afford to buy.

Phase three demolition is well underway at the northwest corner of Regent Park at Parliament Street and Gerrard Street East. Phases four and five are yet to start. Phase one construction is complete and phase two is well underway.

Demolition in this case, however, isn't just a matter of rolling the heavy machinery onto the site and tearing down the low and mid-rise brown-brick buildings and then trucking the debris away.

The Daniels Corp. has partnered with Toronto Community Housing Corp. (TCHC) to redevelop Regent Park.

Kelly Skeith, the TCHC's senior development director says



IAN HARVEY

The third phase of demolition in Regent Park is well underway at the corner of Gerrard and Parliament streets in Toronto.

that given the scope of the revitalization, there's no way to avoid disruption, only to minimize the impact on residents and businesses. However, she says, with the new buildings, parks and other amenities from the initial phases in place the transformation is proving itself as a worthy goal.

"It's not even those who were here when it started, we've got people who have moved into the new buildings and see this still

all going on," she says. "Phase three is 20 acres and 10 city blocks, plus a hockey rink and its all downtown so it is disrupting."

She says maintaining communications has been critical with regular meetings, a website and posters advising people as to what is happening and what closures and specific changes are coming up.

The Regent Park Neighbourhood Association (RPNA) and a special community construction liaison committee also work closely with the TCHC, Daniels Corp. and demolition contractor GFL to flag and resolve issues as they crop up.

"It's also fluid because as the construction or demolition moves around, it involves different people and businesses next to that site," Skeith says.

It's a nightmare of logistics for builder/developer Daniels Corp. and GFL who have worked closely with the TCHC, residents, businesses, schools, the Toronto Transit Commission and police to be as clear and transparent as possible about what is happening while also being responsive to issues around noise, dust and, of course, traffic.

By the time the last building is occupied, sometime in the mid-2020s, the revitalization will see 2,000 rent-geared-to-income (RGI) units, 700 new affordable housing units and 3,000 market-price condominium units. It will be a mix of townhouses, mid-to-highrise apartment buildings and retail.

What was once a no-go zone where roads were blocked and where drug dealers and gangs ruled, reconnected streets and community centres in park settings will be pedestrian and vehicle friendly.

And what was once home to 7,500 residents in north and south Regent Park living in 2,083 units, there will be more than 12,500 residents in a mixed-income and mixed-use community.

"In some ways it is a bit of a ballet," says Megann Willson who represents "market" condo residents on the RPNA. "It might be we've been living with this for so long that as my dad used to say, we've done so much with so little for so long we can now do anything with nothing."

It's no easy job when there are so many physical constraints, social and community concerns and logistics involved.

"It really has been a challenge," says Remo Agostino, Daniels Corp's vice-president of development. "And it's something we have to pay close attention to since we started phase one back in 2006.

"That was 10 acres but consistently in one corner and contained. There's been a lot of learning since then. You have to be absolutely dynamic and responsive — and available to respond and do something when there's an issue."

While the demolition runs 10 hours a day, GFL has to be sensitive to local residents and contain the noise, not to mention the trucks. Those dump trucks must not run past either of the two schools during pick up and drop off times. Scheduling of a tower demolition on a site adjacent to a school had to be done during March break.

"The contractor went in and stripped the 13-storey building from the inside," says Agostino.

"Clearly it was next to a school yard and while the kids aren't outside as much in the playground in winter, we didn't want to be taking down the tower with all the dust and the kids so close. They (GFL) managed to do it during March break when the kids were out of school."

Mitigating dust is always an issue for these kinds of projects, he adds.

"You spray water in the dry season, the summer, but you can't spray in winter because it just freezes up," he says.

The end result is having to constantly juggle issues on a daily basis, he adds.

"It's a balancing act in that there's no one solution for every issue," he says.

"We've established a good rapport with the community and we're all working to stay on top of it."

Economic Snapshot

Canada's millennials – where are they now and where are they moving?



John Clinkard

Until recently, demographers, policy analysts and marketing managers have been fixated on the Baby Boom generation since it has had such a profound impact on so many aspects of life in North America and in Canada in particular since it started in 1945. Over the past few years, this attention has shifted to the children of baby boomers (born between 1981 and 1996).

This group, also referred to as "the echo boom", generation "Y" or, more frequently, the millennial generation, makes up 22% of Canada's population which is estimated to be 37.1 million as of July 1, 2018.

This focus on millennials, aged 23 to 38, has become more intense despite the fact this age cohort's growth, over the past five years (7.2%), has been significantly slower than that of the 16.2% increase in their baby boom parents' cohort, aged 55 to 74.

While the Baby Boom generation's cohort is larger and has grown faster than has the millennial generation's cohort, the impact of this younger demographic group is more significant in the short term.

For example, according to CMHC's 2018 Mortgage Consumer Survey, 49% of first-time home buyers are millennials. According to Environics Analytics, millennial households account for 19% of all households, approximately half the number of households headed by baby boomers.

However, over the next 10 years, as mortality shrinks the baby boom generation, the number of households headed by millennials will start to exceed those headed by baby boomers. Clearly, millennials will have a more significant impact on both the type of housing built as well as its location.

As noted by several commentators, including Pierre Cleroux, Chief Economist at the Business Development Bank, millennials will have a profound impact on consumer spending patterns over the medium term.

Establishing a new household and starting a family will cause spending by millennials to be significantly higher than other population cohorts. It is also worth noting that millennials are considered to be major participants in the "Gig" economy. However, as noted in Snapshot #5 titled "Real" Job Growth appears to have sidelined the Gig Economy, based on the fact that the percentage of workers in temporary jobs has remained essentially unchanged since 2010 and the period of time that employees remain in the same job has steadily risen over the past 30 years, there is little evidence to suggest that millennials are less fully employed than other demographic groups.

Two questions come to the fore regarding millennials in 2018. The first is which census metropolitan areas have the highest concentration of millennials? The second question is where are millennials moving, i.e., which CMAs have seen the fastest growth of their 23-to-38 year-old age group

over the past five years? However, the answer to this question has a major caveat. According to the 2016 census, almost 70% of millennials moved in the five years prior to the 2016 census, more than twice the percentage of non-millennials. This higher propensity to move by millennials is completely consistent with the fact that a majority are not tethered to a particular location by home ownership, family responsibility or an extended employment history.

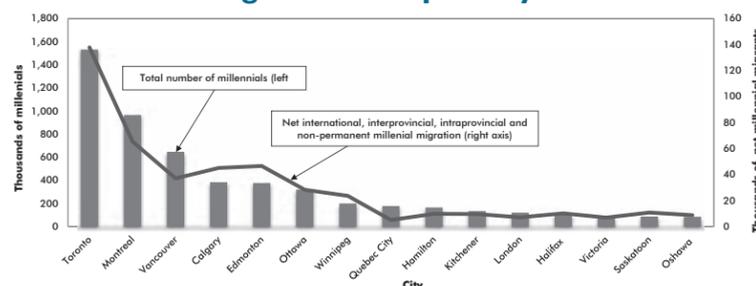
So where are millennials living? Not surprisingly, a million and a half (19%) of Canada's 8,150,000 millennials reside in Toronto. Montreal is home to just under a million (965,000) and 650,000 call Vancouver home. On average, millennials account for approximately one fifth of the population of Canada's 34 census metro areas (which have populations above 100,000). However, above average concentrations are present in the West — specifically Regina (25.2%), Edmonton (25.0%), Calgary (24.8%) and Winnipeg (24.7%) — while millennials are under-represented in St. Catharines-Niagara (17.3%), Saint John NB (17.6%), Belleville (18.1%), Trois Rivières (18.3%) and Saguenay (also 18.3%).

But where are millennials moving to? Well, over the past five years, the millennial population of Kelowna, British Columbia has increased by 19%, more than three times the national average. Peterborough, Ontario's millennial population has increased by 14.6%, followed by increases of 14.3% in Winnipeg, and 13.7% in Saskatoon.

Finally, it is worth noting that according to Stats Canada, "permanent and temporary immigration is the key driver of population growth in urban Canada". The chart illustrates the 15 census metro areas with the highest concentration of millennials and the extent to which net immigration of international, interprovincial, intraprovincial and temporary millennial migrants contributed to this concentration over the past five years.

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.

Census Metro Areas with the largest millennial populations and net gain due to in-migration over past 5 years



Data Source: Statistics Canada / Chart: ConstructConnect — CanaData.



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Churchill Park environmental engineering to bring stormwater relief

DAN O'REILLY
CORRESPONDENT

Surrounded by a natural woodlot, ravine lands and the Cootes Paradise marsh, Hamilton's popular Churchill Park has been the site of a massive earth movement and trucking operation which resulted in a partial closure of the park last August.

But by June the low impact and relatively inexpensive project, which will usher a number of environmental benefits, is expected to be completed and the closed area reopened.

Undertaken by Brampton-based Metric Contracting Services, the \$1.45-million project encompasses the excavation/construction of two rain gardens comprised of shallow above-grade dry ponds, each with large below-grade stormwater storage basins. The larger pond is equipped with a 4,300-square-metre (46,284 square-feet) basin and the second basin is 1,200 square metres (12,916 square feet) in size.

Designed by WSP Canada Inc., the garden system will relieve pressure on an at-capacity combined sewer system in adjacent residential areas, reduce the risk of basement flooding in the homes, and address drainage issues in the park itself.

Located in the south-end of the park, which is owned by the Royal Botanical Gardens and managed by the City of Hamilton, the rain gardens are intended to accommodate a 100-year storm, says project manager and city landscape architect Ken Wheaton.

Consisting of a range of levels with different materials such as a 19-mm clear stone, a high draining soil filter media, a non-woven geotextile layer, and a clear stone "choke layer", the 1.45-metre-deep storage basins will retain the stormwater until it has a chance to filter through and into the ground. The choke layer is particularly effective in slowing and filtering the water, says Wheaton.

Below the basins is a network of 12- to 52-metre-long (129 to 559-foot) trenches (21 in total) which will disperse the water through a coarse layer of sand which extends across the site at varying depths.

"In large storms, there will be some surface ponding, but the system is designed to reduce the time that water stays on the surface of the ponds."

Site topography, existing baseball diamonds, and existing drainage catchment areas were some of the factors which determined the specific location of the gardens and why there are two. The larger garden includes an external catchment area along Parkside Drive, while the second will drain two baseball diamonds and a small portion of the park, Wheaton.says.



CITY OF HAMILTON

Pictured here is the excavation work done for the bottom of the storage basin at Hamilton's Churchill Park. The environmental engineering on this \$1.45 million project is designed to relieve pressure on the at-capacity combined sewer system in a nearby residential area.

Planning for the project began in 2010 under a master plan and management process which is regulated by the Niagara Escarpment Plan. Dillon Consulting Ltd. was the consultant for the plan which identified a series of "short, medium, and long-term" improvements such as adding forest cover.

A separate parallel plan was also undertaken in 2012 to review stormwater management in the park, plus basement flooding in some areas of the nearby Westdale community.

Many possible solutions were looked at in the 2012 stormwater study, including capital replacement and upsizing of sewer pipes. But the rain garden project was ultimately chosen as the preferred environmental solution, especially as the park was close to the residential areas, he says.

Detailed design by WSP Canada began in 2013 and was completed last year, with a tender being awarded in May and construction starting in August.

Using several different pieces of heavy equipment, Metric excavated 28,000 cubic metres (988,810 cubic feet) of earth, placed 19,000 tonnes of aggregate for the storage basins, as well as installing the various filtering levels.

The excavated soil, which was tested and conformed to Ministry of the Environment and Climate Change (MOECC) Table 1 soil

standards criteria, was trucked to two local City of Hamilton construction projects to be used as fill, says Wheaton.

A number of measures were implemented to protect Cootes Paradise — a UNESCO World Biosphere Reserve — the woodlot, and the rest of the park, he points out.

For example, silt sacks were inserted in the surrounding catch basins, a silt fence was installed around the entire perimeter of the site, and a 20-metre-long (65-foot) mud mat was installed at the access site to reduce mud-tracking from vehicles entering and exiting

the site, he says.

Construction continued until last November. The plan is for Metric to return to the site later this spring — after the muddy conditions have cleared — to complete the final phases including building adjacent gravel pathways, and sodding and seeding the ponds with native seed cover. In about a year they will have transformed into naturalized wildflower areas.

Planning for a second phase rain garden in another section of the park is already underway, says Wheaton.



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The 1.45-metre-deep storage basins at Churchill Park will retain stormwater until it has a chance to filter through and into the ground.

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TRCA equips Rotary Peace Park shoreline with new armour

DAN O'REILLY
CORRESPONDENT

By this summer, the Toronto Region and Conservation Authority (TRCA) will have completed the detailed and time-consuming erection of a new shoreline protection system at the Rotary Peace Park in southwest Toronto.

Consisting of 14,000 tonnes of armour stone revetment (each weighing between three to six tonnes) and 300- to 600-mm rip rap, the system will provide long-term erosion control from the pounding waves of adjacent Lake Ontario and protect park users from potential threats from that erosion.

Construction by TRCA's crews began in August of last year and continued throughout the winter months. SEG Sarton Environmental Group was the equipment supplier/operator contractor.

Judged solely by the 144-metre (472 feet) and \$1.4 million cost, the maintenance project might not seem overly complex.

But dismantling the failed half-century-old existing system and rebuilding the new one was a myriad of challenges, not the least of which was the sourcing and as-needed delivery of the armour stones from Ontario's Kawartha district.

Acting as its own project and construction manager, the conservation authority had to choreograph the project so it would adhere to in-water construction regulations, take measures to minimize the impact on the rest of the park, and deal with the concerns of a private property owner.

Preceding the construction was an extensive planning and public consultation process and the update of an almost five-year-old design.

The original park was greatly enlarged by a 1960s landfill operation which created a U-shape easterly addition jutting out into the lake and this is where the new system is being put in place.

Classified as a "structure," the original armour stone revetment had been monitored for erosion since 2006 and was deemed a high priority project in 2010.

Design work for its restoration was created by Shoreplan Engineering Ltd. in 2013, but the new shoreline protection had to be postponed because of funding constraints and other projects, says authority erosion risk management project manager Jet Taylor.

That changed in the spring of 2017 when record high lake levels further exacerbated the erosion problems and Rotary Peace Park was earmarked as "the number one priority" in the authority's Western Waterfront Master Plan which it had started preparing the year before, he says.

(Some of the problems included the slumping of revetment and large rock material into the lake and the erosion of pathway presenting a safety risk.)

Shoreplan Engineering, the original consultants, was asked to make small revisions to the design and "just before construction started last year we took another hard look at it."

In the lead-up to the construction, extensive preparatory work was undertaken including the erection of a 300-metre-long (984-foot) fence which cordoned off the construction zone from the rest of the park, allowing the public continued use of an outdoor swimming pool, a baseball diamond and other recreational amenities, plus access to a popular beach area on the west side of the park, says Taylor.

The authority had planned to incorporate as much as the original armour stone, gabion baskets and concrete rubble into the new wall as possible. But some of that material didn't meet modern day specifications "so we had to haul away some mate-

rial and add more."

First and most complicated step in the construction/restoration sequence was the in-water installation of "toe stones" to prevent the armour stone revetment from sinking into the water.

No machinery was allowed to operate in the water and that meant the excavator operator "had to work in the blind" a few metres away on the shoreline to excavate trenches for the stones. And on rainy or windy days the excavation had to be halted to "limit the risk of stirring up sediment or possibly washing fluids from the



Major displacement of shoreline erosion control protection at Rotary Peace Park following 2017 record high Lake Ontario water levels.

"No machinery was allowed to operate in the water and that meant the excavator operator "had to work in the blind" a few metres away on the shoreline to excavate trenches for the stones,"

Jet Taylor
Toronto Region and Conservation Authority

"The authority has identified another 20 waterfront erosion problem areas it would like to restore in the next 10 years,"

Jet Taylor
Toronto Region and Conservation Authority

machine into the water."

A major goal was to build the structure



Armourstone revetment sloping out of the water mid-way through construction.



Two excavators complete the vertical armourstone wall and sloped armourstone revetment at the eastern terminus of Rotary Peace Park. No machinery was allowed to operate in the water which meant, at times, excavators had to work "in the blind."

in a series of complete sections — starting with toes stones and then the armour stone revetment — before moving on to the next section.

But that wasn't always achievable. A combination of factors such as rain and heavy winds and the need to be out of the water during fish spawning months necessitated the consecutive installation of the toes stones in several areas and then completing the other phases later, says Taylor.

For the almost entire length, the armour stone was installed in a 2-to-1 slope. The one notable deviation from that geometric pattern was at the very eastern perimeter of the park where it abuts a private property. At that spot, the TRCA work crews erected a vertical wall at the request of a private property owner to deter trespassers and to stay on the park property.

Because of the need to protect fish habitat and other environmental constraints, in-water construction moves at slower pace than land construction and Rotary Peace Park was no exception. The progress of the work was also hampered by the fact that one of two excavators originally allocated for the project had to be transferred elsewhere.

"We thought we would be done by now," Taylor says.

But the earthworks will be completed in May, with landscaping and park restoration carrying on into June. That final phase will include tree planting and the building of a drainage swale to allow water to percolate away slowly, he says.

The authority has identified another 20 waterfront erosion problem areas it would like to restore in the next 10 years, says Taylor.



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Bronte preps for Seaway International Bridge final demolition phase

DON PROCTER
CORRESPONDENT

Three remaining concrete piers of the Seaway International Bridge that towered over the St. Lawrence River between Canada and the U.S. at Cornwall for almost 60 years are being prepared for demolition. The in-water piers — the tallest being 120 feet — will be taken down by Oakville-based Bronte Construction starting shortly as the final stage of the landmark crossing's demolition which commenced in 2014.

Using barges in the river, Bronte Construction will set up secured scaffolding platforms around each concrete pier —



FEDERAL BRIDGE CORPORATION

Bronte Construction will set up secured scaffolding platforms around the remaining concrete piers (at right above) of the Seaway International Bridge to help cut them down.

which has footings of about 26 by 46-feet. The contractor will then commence cutting down each reinforced concrete pier piece by piece, says Matthew Karabela, project manager, Bronte.

Tarps will surround the scaffolding “to catch all the fallout so nothing ends up in the environment,” he says.

The \$5 million contract was scheduled to start in April or May, depending on weather and ice. The contract is slated for completion by the end of 2019 “before the weather turns foul in the winter,” says Todd Kealey, director of communications marketing and government relations, The Federal Bridge Corporation Limited (FBCL), the bridge's owner.

Kealey says the current in the river is “very strong” and could impact demolition. During a previous contract, a barge “tipped sideways” because of the fast-moving river. “One edge was in the water and the other was high above it.”

“They (Bronte) are taking a lot of care to make sure everything they do is stable, safe and solid.”

Kealey says the concrete and other demolition debris is recyclable. “They will actually allow community members to take some away as souvenirs.”

He says because the bridge has been in place for so long, an eco-system has developed around each pier foundation. “We're choosing to leave the footings of those piers in the water because the local wildlife has adapted to their presence. They have created a shelter for the fish.”

Demolition commenced on other portions of the bridge — including the vehicle deck — in 2014.

Kealey says the final demolition contract presents challenges unlike the other contracts because they are the only piers of the bridge that were built in the river. Two 160-foot-tall land-based piers were removed a few years ago.

A fourth pier situated in a canal near Cornwall was remediated and now serves as a scenic lookout for the public but FBCL ruled out remediation of the last three piers because of economics.

“The goal here is to preserve as much history as we can but we don't want things (concrete) falling on our new bridge or falling onto others (boats in the river).”

While the three piers are sound today, Kealey says their deterioration is inevitable.

He says the project is unusual for FBCL, a Crown Corporation, which normally focuses on maintenance and preservation of the four crossings it operates, including the Canadian side of the Sault Ste. Marie International Bridge to Michigan, the Blue Water Bridge in Sarnia and the Thousand Islands Bridge, also on the St. Lawrence River.

Originally constructed in 1958, the Seaway International Bridge actually consisted of two bridges — one from Cornwall to Cornwall Island and the second from the island to New York state. The new Seaway International Crossing opened in 2014.



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The remaining three piers of the Seaway International Bridge are the only ones which were built in the river. The above water portions of the piers will be removed but their footings in the river will remain because wildlife has adapted to their presence.

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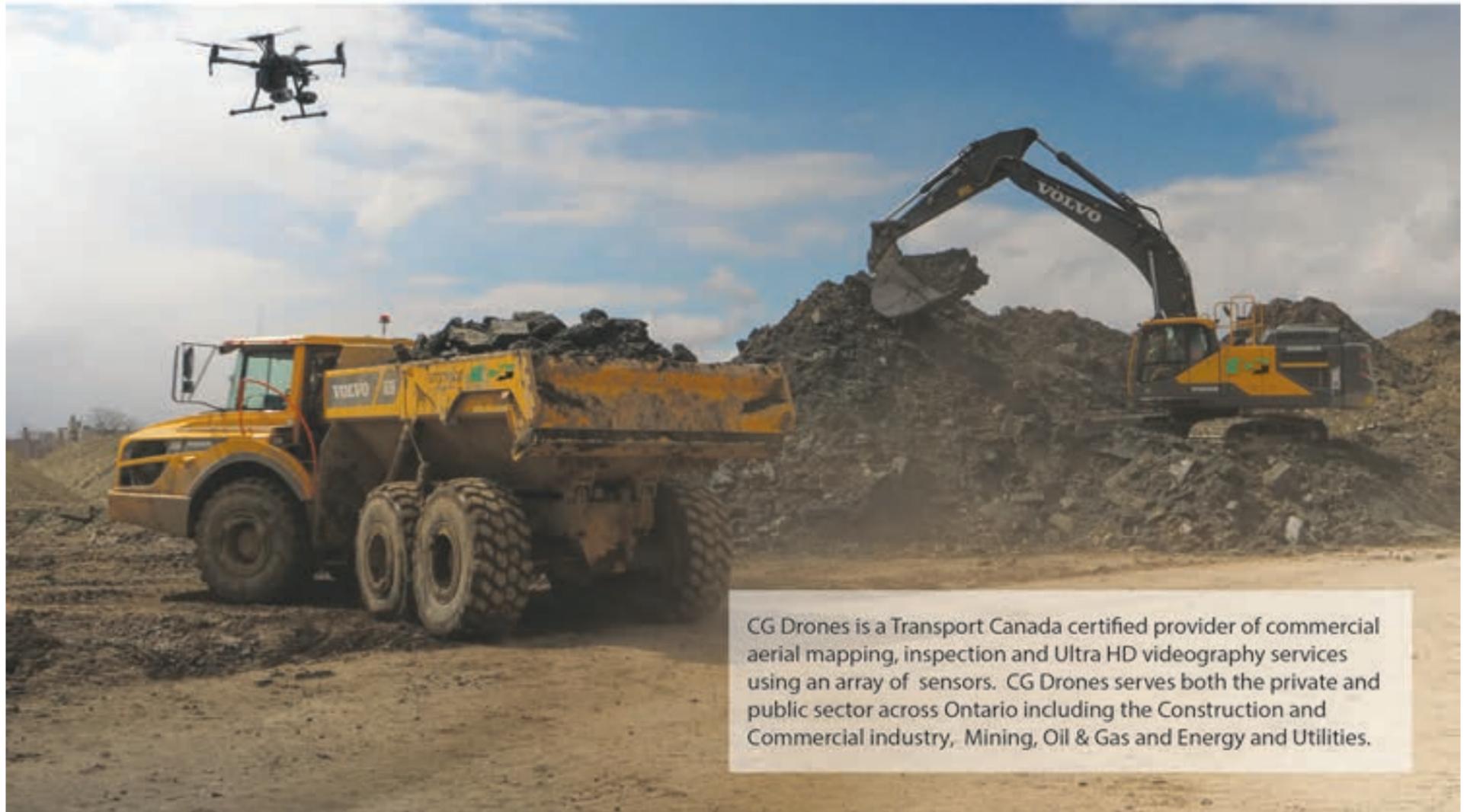


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