



William Conway,  
Progress Photography

July 26, 2019

SPECIAL FEATURE  
**CONCRETE  
& MASONRY**

**Daily Commercial News**  
by ConstructConnect™

[www.dailycommercialnews.com](http://www.dailycommercialnews.com)

# Concrete pour an intricate ballet of shapes and forms

IAN HARVEY  
CORRESPONDENT

It's one thing for architects and engineers to create flowing structures to enhance esthetics in public spaces, but the execution is often a massive challenge for the construction crews.

And that's the case in point at the Toronto Transit Commission's Pioneer Village station on the \$3.2 billion Toronto-York Spadina subway line extension where three critical components triggered some deep thinking.

Clearly the execution by Limen Structures hit the mark set by the IBI Group designers, winning a 2018 Ontario Concrete Award in the Architectural Merit-Cast-in-Place category for the exposed architectural concrete which included a curved ceiling slab, iconic rock-wall and massive sloped elliptical columns.

Amir Soleimani, general manager of Limen's formwork division, says when they first saw the plans and realized the scope of the formwork required there was a little bit of head scratching.

"ICI (Industrial-Commercial-Institutional) is always more challenging than residential, generally," he says. "But this was a real challenge. Still, it was an honour for us to get the contract and do the work and, of course, win this award."

The elliptical columns required a little trial and error to get the curves right and to ensure that the pieces would fit together seamlessly and still accommodate the required rebar, he says.

General contractor Walsh Canada was working with engi-

neers WSP Canada on the \$225 million station. St Marys CBM provided the mixes with Harris Rebar installing the metal work.

The elliptical columns rise from the platform level at different angles, there was no one-size-fits-all forming.

"These elliptical columns go from the raft slab to the saddle slab," says Soleimani. "There are 19 of them, six are in two sequences and two flow from top to bottom. The highest is 12 metres; the lowest is some six metres."

To pour them into forms meant sectioning the biggest columns into three pieces, Soleimani says.

"Four were in doubles, so eight columns and the rest were singles," he says. "In some we used the same middle but custom-made forms for the top and bottom because they were different heights."

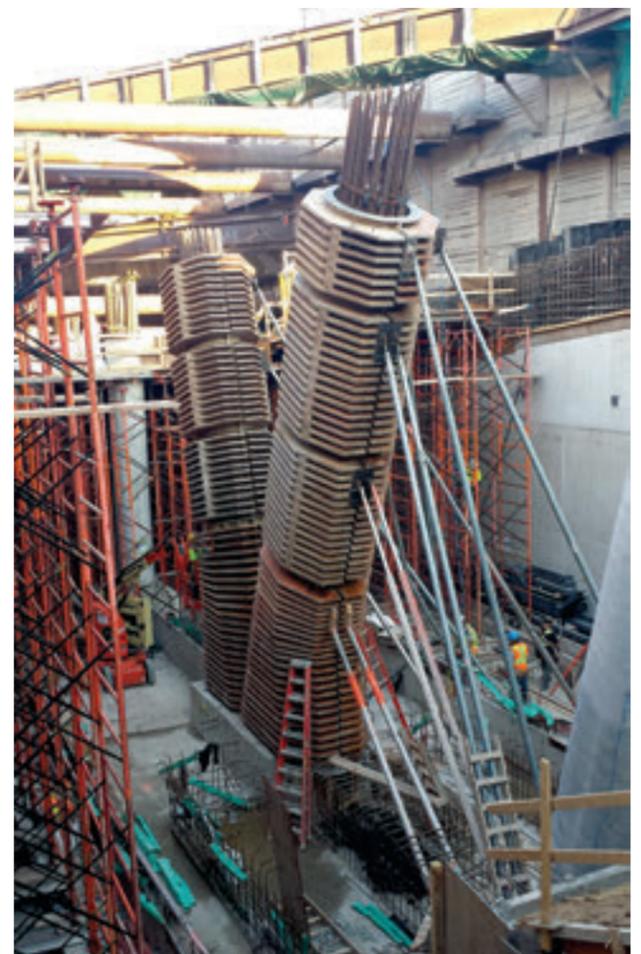
The curves meant going to fibreglass forms, he says, and that mean some intricate engineering.

Limen brought in a consultant to design the forms using some high-level engineering 3D software. They sent the data to a specialty manufacturer in Texas.

Tying the rebar in was also tricky because it added pressure to the forms and had to be tied in at specific X-Y-Z co-ordinates before the fibreglass was installed.

"We did some trial and error testing off-side to see what would work best," Soleimani says. "We did some mock-ups before pouring the actual columns and went through a learning curve."

"And to ensure everything was seamless with the self-consol-



SUBMITTED PHOTO

Pictured above is the elliptical column formwork used during construction of the TTC's Pioneer Village station. There were 19 columns in total, all designed with 3D software.

idating concrete, we used guillotine valves and poured from the bottom which turned out to be the best method. The fibreglass actually released really well and we got a good finish."

The saddle was another challenge, he says. It's a mass concrete curved ceiling spanning between both station entrances under Steeles Avenue West, some eight metres below grade.

It took 14 concrete pours of 700 to 1,100 cubic metres to accomplish using traditional wood forms and some loose filler.

"It runs about 150 metres by 90 metres with 2,800 square metres of exposed surface," Soleimani says noting the height varies from 9 metres at the peak down to six metres and is about two metres thick.

"The trick there was to ensure the rebar didn't sink into the concrete and stayed in place," he says.

The third concrete challenge was the rock-wall, which runs at the station's south concourse and required some special Styrofoam forms to get some 350 points of intersection accurately laid out using GPS to line them up.

Styrofoam was the only material which would give the unique geometrical shapes required for the angle of intersection, Soleimani says.

Again the forms were designed using 3D CAD (computer-aided design) software and put in place before an architectural mix of 10 mm (pea gravel) aggregate with a 750 mm spread rating was poured, again using a guillotine valve.

"Of course with the Styrofoam, we couldn't vibrate the forms during the pour because we would damage them," he says noting the mix was also quick-set so once they started pumping they couldn't stop because the goal was a smooth, seamless finish with no visible lines.

General contractor Walsh had to manage a ballet of trucks in and out to keep the concrete flowing with two pumps simultaneously and back-ups on stand-by.

Releasing the Styrofoam once the pour was completed became the next challenge and the organic solution, using vegetable oil as a barrier, wasn't overly effective.

"We couldn't use chemicals because that would cause problems with the Styrofoam," Soleimani says.

To resolve the residue left by the vegetable oil crews sanded the surface to create a smooth, contiguous finish.

"The rock-wall is a very interesting architectural feature but it's the one we had the most difficulty with in terms of a forming system," he says noting joints were buried into intersection corners to keep everything seamless.

"We had the Styrofoam forms made with a CNC (computer numerical control) machine based on 3D plans. The wall is 50 metres long and four metres high and we needed to have no seams."

There were a few sleepless nights because of the challenges but ultimately the concrete was poured and all stakeholders were happy, and that, says Soleimani, is what matters.

## Economic Snapshot

# Apartments caused housing starts to blossom in Q2 after a chilly winter



John Clinkard

The fact that housing starts jumped by 25% from 197,000 units (SAAR) in May to a 19-month high of 245,700 in June suggests that the Canadian housing market is recovering from a weather-depressed first quarter.

Indeed, for the second quarter as a whole, starts averaged 224,400 units, a quarterly level last seen 28 years ago in the first quarter of 1990.

In Q2, starts of all four housing types moved higher led by a 34% increase in apartments followed by 11% q/q gains in both single-family and semi-detached units and a relatively small 4% gain in starts of row units. However, it should be noted that despite the second-quarter rebound, starts nationally year-to-date are down by 5%.

Housing starts (in urban centres with population of 10,000 or more) rose in all 10 provinces in the second quarter with the bulk of the 40,500 quarterly gain due to a 17,800 increase in British Columbia. Almost all (95%) of this rise was apartment starts. Over the past five years, apartments have accounted for just under 58% of total starts in B.C. However, in the second quarter, their share rose to an unprecedented 75%. Single-family dwellings accounted for 14.5% of Q2 starts, their smallest share on record.

In Quebec, starts were up by just under 6,000 units in Q2. However, consistent with the province's low rate of homeownership relative to the rest of the country, the bulk (85%) of this increase was due to the addition of 5,000 apartment starts. Since 2009, apartment starts have accounted for 84% of the province's total starts compared to the national average of 46%. The share of single-family units accounted for 12% of total starts.

Consistent with the gradual increase in total employment and an easing in the province's unemployment rate, plus an uptrend in net migration, Alberta housing starts totaled 25,129 units SAAR in Q2, up 13.5% versus Q1. Most (approx. 70%) of this gain was due to a 3,800 rise in apartment starts. Starts of semi-detached (+640), single-detached (+590) and row (+420) also moved higher in the quarter.

Elsewhere on the Prairies, starts also exhibited a significant rebound in Q2 after a weather-depressed first quarter. In Manitoba, apartment starts more than doubled from 2,400 to 5,024. This rise more than offset declines in single-family (-2.1%), semi-detached (-15%) and row (-52%) units and drove total starts up by 41% in the quarter after a 20% drop in Q1. In Saskatchewan, a very strong (116%) jump in apartment starts was responsible for driving total starts up by 22% q/q in Q2.

Following a weather-induced slump in the first quarter, starts in Ontario posted an 11.2% increase in Q2 due to a 7.2% rise in apartments and a 6.4% increase in single-family units. However, despite this rebound, plus a solid 8.2% year-to-date increase in existing home sales and very strong growth of full-time

employment, starts in all four housing types are down by 20% year to date, due mainly to weaker starts of semi-detached (-39%) and single-detached (-34%) units.

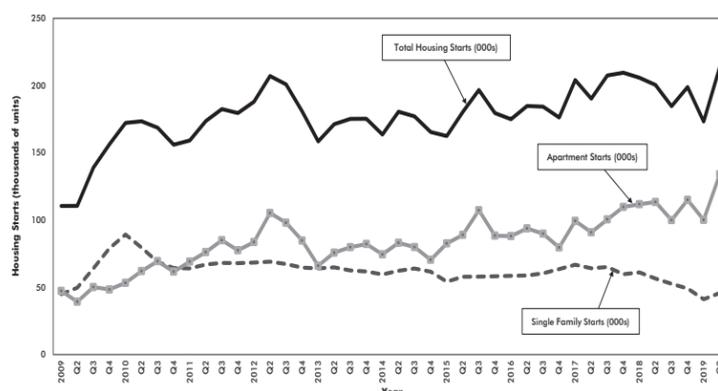
The Atlantic Provinces were hit by much colder than normal weather that severely depressed new residential construction (-17% q/q) in Q1. Consequently, it's not surprising that starts in the region rebounded (+61%) strongly in Q2. Particularly large increases occurred in New Brunswick (+223%) and Prince Edward Island (+146%). However, the second-quarter bounce back was not enough to offset a weak Q1, leaving year-to-date starts in the region off by 3%.

Given the lacklustre (0.9%) year-to-date growth of existing home sales in Canada, it is not surprising that new residential construction has essentially flatlined since the beginning of the year. Looking ahead, while the key drivers of residential construction — i.e. strong job growth, sustained net migration and low interest rates — are quite positive, the lingering impact of the more restrictive mortgage lending regulations introduced by the Office of the Superintendent of Financial Institutions at the beginning of 2018 should continue to weigh on home sales and new construction well into 2020.

Further, the relative shrinkage in the share of single-family building permits, versus apartment approvals, suggests that the share of single-family dwellings, which hit a record low of 21.4% in the second quarter, will continue to recede relative to the share of apartment starts over the near term.

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.

## Canada – Urban Housing Starts – Total, Single Detached and Apartments\*

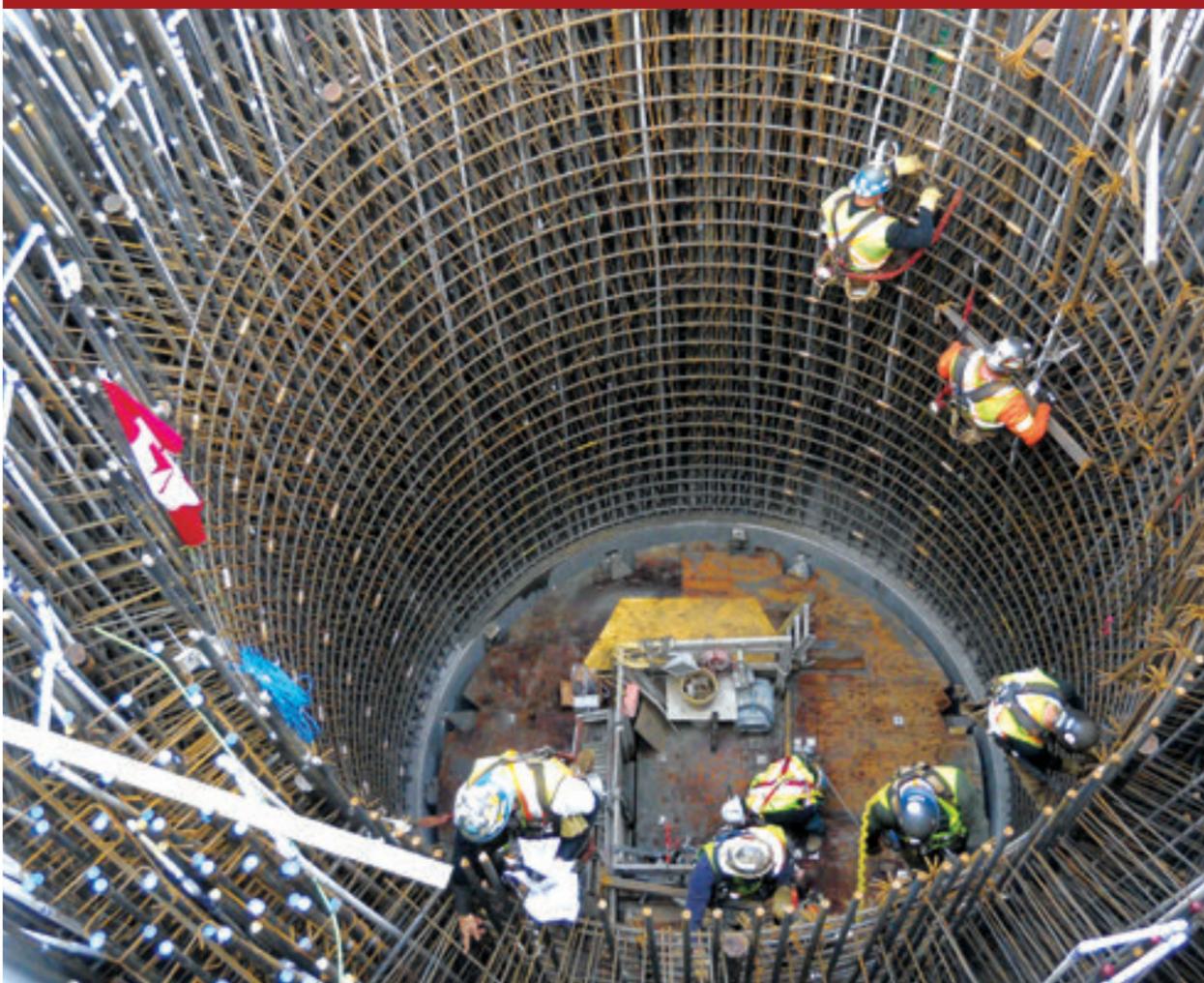


\*The 'apartment' designation covers condos as well.

Data Source: Canada Mortgage and Housing Corporation (CMHC).  
Chart: ConstructConnect — CanaData.

THE 5TH EDITION OF **THE REINFORCING STEEL INSTITUTE OF CANADA'S MANUAL OF STANDARD PRACTICE** IS NOW AVAILABLE FOR DOWNLOAD.

manual of  
standard practice



**RSIC**  
**IAAC**



REINFORCING STEEL INSTITUTE OF CANADA  
INSTITUT D'ACIER D'ARMATURE DU CANADA

Please visit [www.rebar.org/shop](http://www.rebar.org/shop) for more information on the Manual and our Institute.

# Researchers test bendable Engineered Cementitious Composite

GRANT CAMERON  
CORRESPONDENT

Concrete is often the building material of choice for construction projects because of its toughness, durability and the fact it can bear heavy loads. However, the cementitious mixture has an Achilles Heel in the form of lower tensile strength which can lead to cracking under excessive bending.

A team of researchers at Louisiana State University (LSU) in the U.S. has been tackling the problem for the better part of two years and is now testing a new, cost-effective, bendable concrete blend for mass market that uses readily-available ingredients and has more flexural strength.

The researchers, led by Gabriel Arce, senior research associate in the university's department of construction management, have come up with a new Engineered Cementitious Composite, or ECC material, that can withstand the kind of deformation stress that would crack regular concrete.

"Compared to typical concrete our cost-effective ECC material has about 300 times more deformation capacity, more than two times the flexural strength and a higher compressive strength," said Arce.

"The cost of our material is approximately 3.5 times that of regular concrete. However, when you factor in the possibility of building pavements at half the thickness and the enhanced construction productivity due to the ability to construct pavements without joints, the cost of pavements with our ECC material could be comparable to that of traditional concrete pavements."

Conventional concrete is made by mixing sand, cement and aggregates and activating it by adding water. It typically has steel reinforcing bars running through it for added tensile strength and to reduce cracking.

ECC, on the other hand, is a composite



LOUISIANA STATE UNIVERSITY

Workers recently poured an Engineered Cementitious Composite (ECC) for testing at the Louisiana Department of Transportation and Development pavement research facility in Baton Rouge. ECC has 300 times more deformation capacity and increased strength.

reinforced with short, random polyvinyl fibers eight to 12 millimetres long and about 40 microns in diameter, about half the thickness of a human hair. The fibers have a surface coating that allows them to slip rather than break under heavy loads, making the material more flexible.

The result is a mix that acts more like ductile metal material than brittle glass, allowing it to be used in a variety of applications.

LSU researchers began by doing preliminary tests on four different types of sand, two different types of recycled crumb rubber materials, five different types of fiber, and three different types of fly ash.

Once the raw ingredients with the best potential were determined, several ECC mix

designs were comprehensively evaluated for compressive strength, tensile toughness, deformation capacity, flexural performance, workability, cracking properties, and then refined based on testing outcomes.

More than 30 different mix designs were evaluated over a year-long period by the team of researchers.

The final LSU mix uses fine sand from the Mississippi River, rather than expensive and hard-to-obtain micro silica, and a polyvinyl alcohol (PVA) fiber that is readily available in the U.S. market. Much of the conventional cement used in the ECC has been replaced with locally available fly ash. The PVA does not possess the oil-coating that is typically used in PVA fibers for ECC application, which complicates the ability to endow the concrete with a ductile behaviour and makes the design of the material more challenging, but it substantially reduces the cost and increases practicality.

"After this process, we were able to manufacture ECC materials with locally available ingredients that produced excellent mechanical properties and were economical," said Arce.

Up to 75 per cent of cement in the bendable mix was replaced with fly ash, making it less expensive.

While the material does not exhibit better mechanical properties than typical ECC, Arce said it is more practical because it uses readily available, locally-sourced ingredients at a fraction of the price.

Admittedly, said Arce, the mix is much more expensive than regular concrete, which might not sound economically feasible at first, but only half as much material is needed to perform the same function.

Therefore, the material can reduce the cost because it has the potential to provide more durable and reliable concrete pavements that can mitigate the necessity of recurring repair, saving time and money.

Arce said the research is important because ECCs are promising for repair and construction of transportation infrastructure, along with pavements and overlays.

For instance, he said, ECC's exceptional ductility has the potential to eliminate the need for joints, reducing construction and repair costs, and prevent fracture of concrete pavements. Further, ECC pavements could potentially be constructed at half the thickness of typical concrete pavements.

The material has been used to repair two sidewalks on the LSU campus, mainly to prove that the material is easy to place and finish and can have superior durability to typical concrete at half the thickness. Arce says the sidewalks are regularly inspected and no signs of deterioration have been observed.

A large-scale test of the new material is now under way at the Department of Transportation and Development's Pavement Research Facility in Baton Rouge.

A 120-foot-long section of ECC and a 60-foot-long section of regular concrete have been laid and an Accelerated Transportation Loading System, or ATLaS 30, equipment capable of compressing many years of road wear into a few months, is being used to test the two lengths to obtain data on the overlays.

An evaluation of the results is scheduled for later this year.

Arce has high hopes of bringing the material to market — not this year, but down the road.

He and his team are still working on improving the cost-effectiveness and performance of the ECC material.

Currently, the team is experimenting with adding waste products from the local sugar industry in the ECC composition.

"To date, results are promising," he said. "If the successful development of this material continues it will hopefully be able to hit the market in the coming years."



LOUISIANA STATE UNIVERSITY

Research shows that though Engineered Cementitious Composite mix is more expensive than regular concrete it can provide more reliable and durable pavements.

## Manufacturer and Distributor of hot forged bolts, specialty threaded products and fasteners in accordance with the highest quality standards — Niagara Fasteners.

Our manufacturing range is from 1/2" to 2 1/2" diameter, and M16 to M36.

Larger diameter blanks and, all common grades are stocked and ready for threading to your specifications.

### All Major Head Configurations

Hex; Heavy Hex; Square Carriage; Guard Rail; Specials.

### Materials

SAE Grades 2,5,8; ASTM Grades A307-B; A193-B7-B8; A320-L7; A325; A354-BC or BD; A449; A490; Stainless.

### Threading

Fully threaded rods and studs from 1/4" to 6" diameter UNC - UNF - ACME - Metric - British - Rope.

### Anchor Bolts

Custom to your specifications: straight; bent; re-bar; multi-unit.

ISO 9001  
Registered

TSSA QA 423  
CSA Z299.3

### Precision Machining

We have CNC lathes with live tooling and bar feeding capabilities, and a fully equipped machine shop with presses, benders, saws, drills and mills, welders and conventional lathes. With our in house capabilities and our standard off the shelf

fasteners we are able to offer a complete line of structural bolting, on time and at a competitive price.

**Niagara Fasteners**  
INC.

6095 Progress Street, P.O. Box 148, Niagara Falls, ON Canada L2E 6S8 905.356.6887  
1.800.263.3602 fax 905.356.5747 nfsales@niagarafasteners.com www.niagarafasteners.com

# GUTS, GRIT, AND A FIRM GRIP DEMAND RESPECT



**IRWIN**®  
**TRADE STRONG**™

[IRWIN.COM](http://IRWIN.COM)



Copyright © 2018 IRWIN Tools. The blue and yellow color scheme is a trademark for IRWIN power tool accessories and non-striking hand tools.

# U of T grads looking to build on concrete sustainability

IAN HARVEY  
CORRESPONDENT

A group of University of Toronto graduates who were internationally recognized for a proposal to create more environmentally friendly concrete for developing nations is taking its research to the next level.

Their research will explore using brine water — a byproduct of desalination that is usually dumped — along with specific microbes to create self-healing concrete while not tapping into precious drinking water supplies.

David Aceituno-Caicedo, a graduate of U of T Scarborough's Master of Environmental Science program is going on to his PhD program based on the concept first formulated by his colleagues, Kimberly Asemota and Blandine Barthod, also Master of Environmental Science students at UTSC. Barthod was doing a one-year exchange program from the University of Geneva.

All three will continue to collaborate on the project as it develops, he says.

They entered their idea into the Geneva Challenge, a competition for masters' students globally. They made it to the top 15 global semi-finalists and walked away with the UN Sustainable Development Solutions Network (SDSN) Youth Special Prize which was presented at awards ceremony in Geneva last January.

While the basic idea of using microbes in concrete to create self-healing concrete isn't new and nor is using brine — the Romans used seawater to create concrete structures that have survived today — the idea of combining the two and using a waste product to divert it away from potentially harming the environment takes it to the next level.

There's a lot of work yet, says Aceituno-

Caicedo: "We're going to try to apply this in a laboratory setting to develop what kind of bacteria can appropriately be used."

They're also going to be combing through the existing research to push them ahead.

"We're going to be going through the research to get more of a concrete idea going forward, more of a foundation," says Asemota. "And that's going to include concrete mixes and other options. Specifically, we want to look at brine and bacteria too."

The next step after surveying the research is to look at what concrete-friendly microbes can survive and thrive in a brine environment and which ones are optimal for enhancing the structural properties and curing process.

Their theoretical model looked at Cape Town in South Africa where there is a looming drinking water shortage but still demand for concrete for infrastructure construction.

Because the city is coastal, there are

desalination plants which in turn provide brine.

The key for them is to help fight climate change and preserve environmental resources while promoting a closed circuit where waste becomes a resource.

They've started collecting samples from around the world of different components to start assembling a library of assets.

Funding for the project will come through the PhD program at the University of Toronto but sponsorship is high on the group's wish list.

The group is at the beginning of the process. It wants to get something more tangible before accelerating the work, says Barthod. "That's why David is doing the PhD to get there."

It all started when Aceituno-Caicedo and Asemota took a geo-chemistry micro biology course and were delving into microbes and how they can be used to extract minerals. That led to a module and self-healing concrete which uses microbes. From there the discussion widened.

Maria Dittrich, an associate professor in the department of physical and environmental sciences connected them with Barthod. The trio then cooked up the idea of using brine laced with microbes to make more sustainable concrete.

"I'm working with that same professor now on my PhD which is cool," says Aceituno-Caicedo.

Once they determine the right microbes, there will be logistical challenges on how to breed, package and transport them to locations for use in concrete-making. There is also the question of ascertaining how much fly ash or granulated blast furnace slag is optimum and what other waste products can be added to the mix to divert them from landfill but still produce strong concrete.



SUBMITTED PHOTO

David Aceituno-Caicedo (centre), a graduate of U of T Scarborough's Master of Environmental Science program with Kimberly Asemota (left) and Blandine Barthod, also Master of Environmental Science students at UTSC, have been recognized for their proposal to create environmentally friendly concrete for developing nations.

## A partner you can trust

Managing the success of your construction business can be challenging in today's evolving marketplace.

When you partner with Aviva for your surety needs, you can count on us to provide you with:

- Expert advice and consultation for your specific project
- Our commitment to help you meet your business goals
- A stable partnership focused on the long-term

With more than 100 years of expertise behind us, you can trust Aviva as your valued business partner.

Contact your broker to learn more.



[avivacanada.com](http://avivacanada.com)    

Insurance – Home | Auto | Leisure & Lifestyle | Business | Surety

Aviva and the Aviva logo are trademarks used under license by the licensor.



**20V<sup>MAX\*</sup>**  
LITHIUM ION

**200+**  
PRODUCTS

**OUR**  
**FASTEST GROWING**  
**SYSTEM**



**GET MORE DONE™\*\*** with **200+ PRODUCTS** in the DEWALT 20V MAX\* line. All tools come with upgraded features, superior ergonomics and use Lithium-Ion batteries. For extreme performance, step up to the XR® series and get advanced electronics, extended runtime and faster application speeds.

**DEWALT**

Learn More at [www.DeWALT.ca](http://www.DeWALT.ca)

**GUARANTEED TOUGH.®**

Copyright ©2019 DEWALT. The following are examples of trademarks for one or more DEWALT power tools and accessories: The yellow and black color scheme; the "D"-shaped air intake grill; the array of pyramids on the handgrip; the kit box configuration; and the array of lozenge-shaped humps on the surface of the tool. \*With respect to the DEWALT 20V MAX\*: Maximum initial battery voltage (measured without a workload) is 20 volts. Nominal voltage is 18 \*\*DeWALT 20V MAX\* vs. DeWALT 18V NiCad..

# Two Queen Street's work rebuilds its heritage aspects

DAN O'REILLY  
CORRESPONDENT

A single 1897 photograph from the Toronto Public Library Archives and an original hand drawing are the only reference materials in the now well-underway restoration of a prominent downtown Toronto retail building which has suffered some unsympathetic treatments during its almost 125-year existence.

Designed by Zeidler Architecture Inc. in collaboration with heritage consultant ERA Architects Inc., the project is intended to carefully rebuild the Philip Jamieson Building while conserving its cultural heritage attributes.

Overseen by construction manager PCL Constructors Canada Inc., the far-reaching project encompasses an extensive and painstaking recreation of its façade which was constructed with buff brick and terra cotta and limestone decorative elements.



ZEIDLER ARCHITECTURE

Restoration of Two Queen Street in Toronto required detailed work on over 125 years of 'unsympathetic' treatments the building had endured, say project stakeholders.

Clifford Restoration is the heritage contractor which will be installing more than 4,000 replica bricks, stone and terra cotta pieces that will be created by three different suppliers through a combination of 3-D modelling, digital cuts, and hand finishing.

The Toronto-based contractor will also be stabilizing and preserving the building's sandstone signage band which is the only original exterior feature left intact. It will also be restoring the first three floors of the back-up wall and rebuilding its fourth and fifth floors.

Now known as Two Queen Street, the Cadillac Fairview-owned and heritage-designated five-storey building at the corner of Queen and Yonge streets adjacent to the Eaton Centre shopping mall will also receive a three-storey glass addition and a 659-square-metre (7,100-square-foot) green roof.

"It's a building that's been fighting against itself almost from the time it was built," says ERA project manager Annabel Vaughan, in tracing the rather convoluted history of the Philip Jamieson Building and the daunting task of restoring it.

Poorly fabricated terra cotta was used during the construction and then an extra floor, which had been planned for, was added. Then, in 1915, new owners built a wrap-around section on Yonge Street. That was the first in a series of changing ownerships and subsequent renovations.

"Each renovation contributed to the building's decline," says Vaughan, explaining how key features were lost, compromised, or disfigured during those phases such as the chipping away pieces of the cornices and removing arches.

In the late 1960s the entire building was encased in a white screen in what she describes as "the worst" of those renovations/alternations. The screen was removed and partially replaced with aluminum panels in the 1980s as part of a restoration effort which was only partially successful, she says.

ERA, the heritage consultant on the project, was first hired in 2012 to conduct a heritage impact assessment study and prepare a conservation plan detailing how the restoration was to be conducted.

The following year Cadillac Fairview proposed a redevelopment which would have included a tower, but the tower was rejected by the city. In 2016 the current development proposal was submitted, necessitating the writing of a revised heritage impact assessment plan.

Initially, the hope had been that a considerable amount of the original façade could be preserved. But a scaffold inspec-

tion earlier this year by ERA and Clifford revealed the various pieces had deteriorated to the point it couldn't be saved, says Vaughan. As a result, the recommendation was to restore the façade with the replica pieces, and to reinstate historic details, windows and shopfronts, she says.

ERA spent "quite a bit of time" designing the building using the 1897 photo, modern-day photography, plus extensive on-site surveys and measurements, cast iron storefront catalogues, and the 1986 restoration drawing package, says Vaughan.

One of the unique aspects of the project is that the first two floors of the addition will only be pushed back from the original building by one metre. The rationale for the slight setback is that it will actually enhance, rather than detract from the strength of the historic corner, says Vaughan.

The first task in the actual construction began with demolition of the interior finishes and selective structural demolition for investigative purposes shortly after PCL came on site in January 2018, says PCL project manager Cody Halbot.

In December of last year Walters Inc. completed the erection of the 130 tonne (145 imperial tons) interior steel structure (shore tower). Comprised of a mix of temporary and permanent steel, its initial purpose is to give support to the heritage façade. Foundations to support the new superstructure are currently been installed, says Halbot.

Erection of the structural steel for the addition will start in early 2020 and work on the addition and the rebuilding of the heritage façade will be undertaken simultaneously, says Halbot, who expects there will 50 workers on site at the peak of the project next summer.

"We took the building down one brick at a time and will be rebuilding it one brick at a time," says Cadillac Fairview's senior director of project management, David Stewart.

Although the developer's official policy is not to reveal costs on its projects, Stewart says Two Queen Street is one of the most expensive office redevelopment projects on a square footage basis in the Toronto area.

"It sound trite, but it's the right thing to do. We (Cadillac Fairview) want to make this an iconic building."

To be completed in about 17 months, Two Queen Street will be comprised of a retail ground floor which will connect with the Eaton Centre, a second floor which has the potential to be either retail or commercial, offices on the third to seventh floors and an eighth floor restaurant, he says.



65 Passmore Ave.

Scarborough, ON

416-220-7846

[daniel@metroconreadymix.com](mailto:daniel@metroconreadymix.com)

<http://www.metroconreadymix.ca>