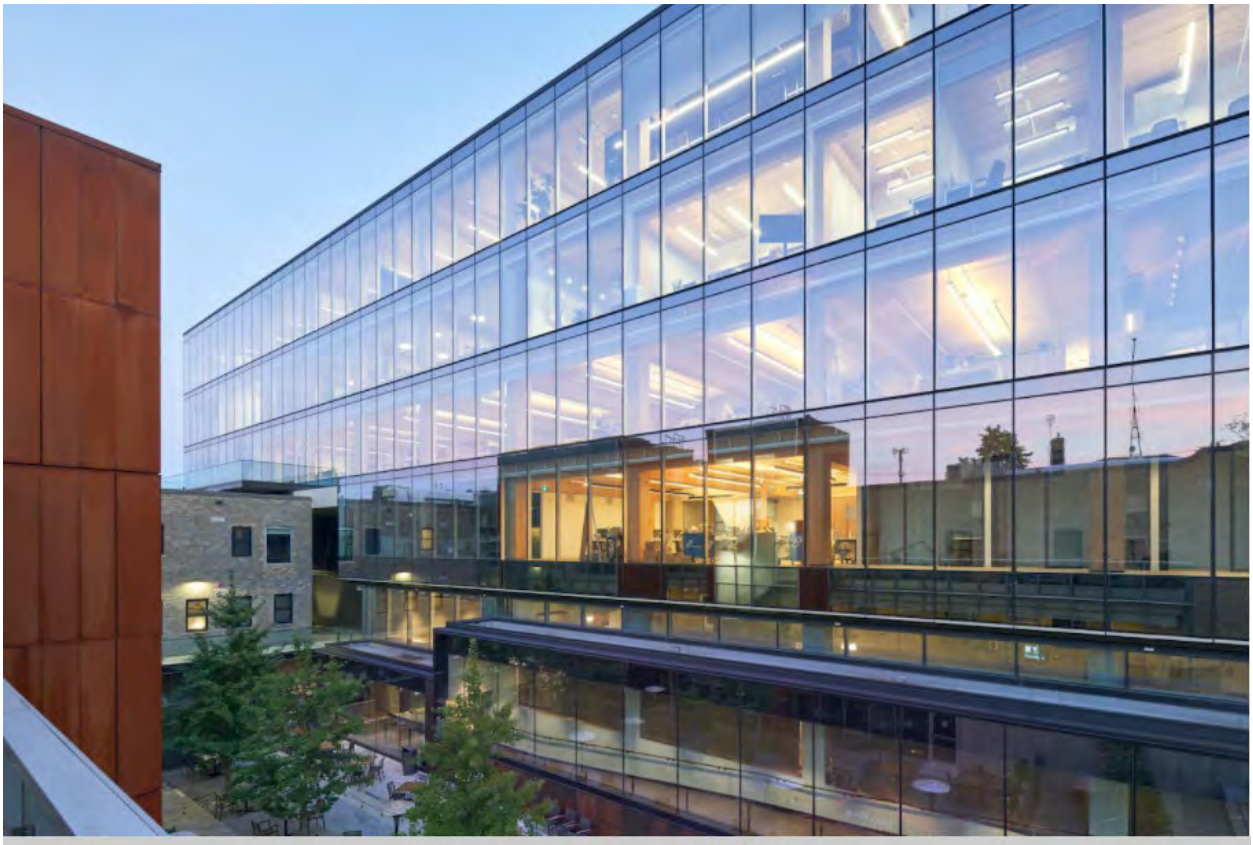
February 28, 2022 by Téana Graziani

URBAN TORONTO

# RJC Engineers' Expertise in Mass Timber Shows in Featured Buildings

Mass timber has become a smart choice of building material over the past few years, with its ability to be assembled in a shorter time, and its sustainability advantages over other building materials. RJC Engineers has played a role in a lot of great projects and firsts for Toronto, many with the use of mass timber. UrbanToronto sat down with Andrew Bayne, Principal and wood expert at RJC, to talk about the innovative timber work that has been taken on in the past, and is currently being tackled in the city with the help of RJC.

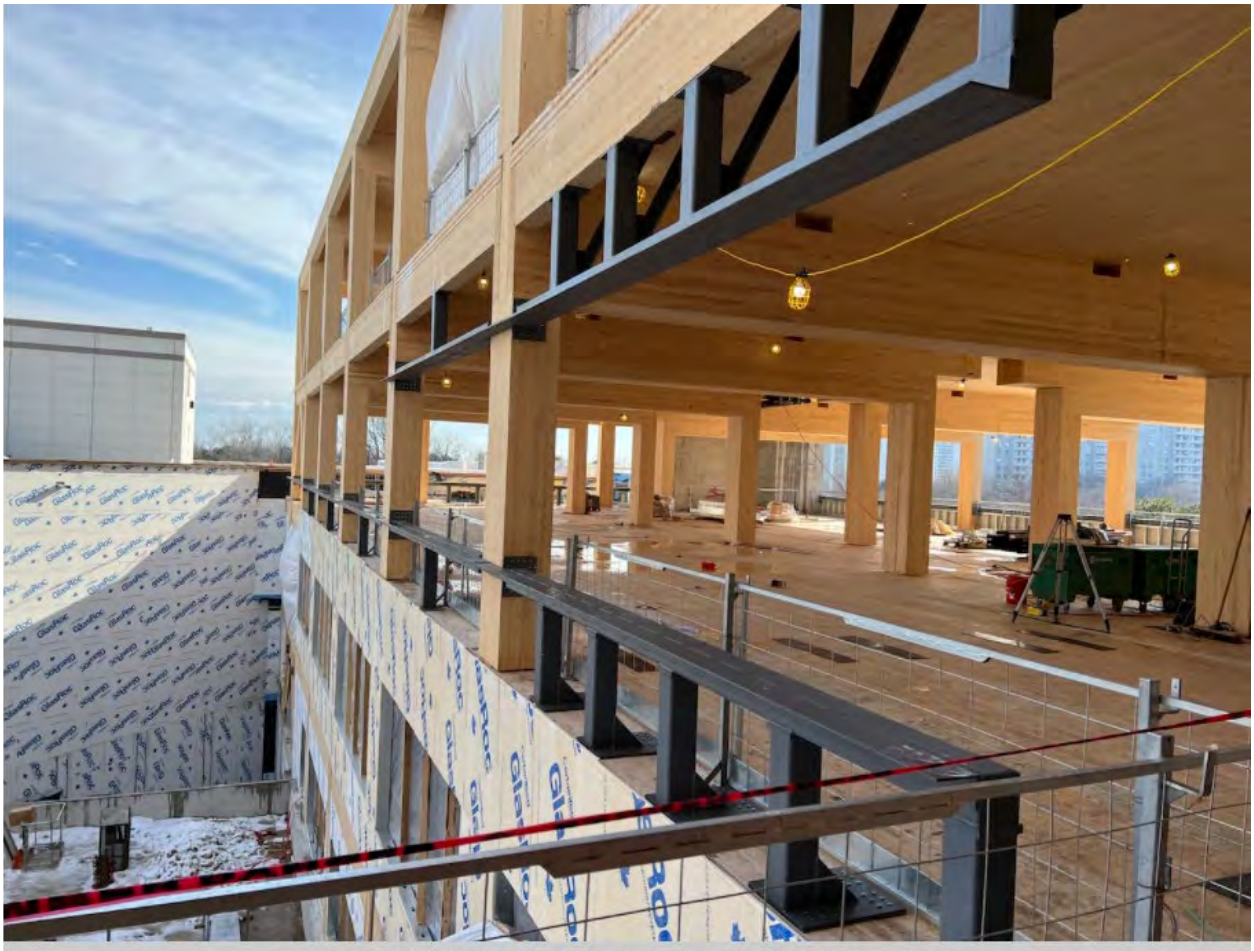
Bayne has been Engineer of Record on *all* mass timber works that RJC has done in Toronto over the last ten years. 80 Atlantic Avenue was RJC's first in Toronto, and was the first mass timber wood-framed commercial building to be constructed in Toronto in over a century. Developed by Hullmark and designed by BDP Quadrangle, the project was completed five years ago and now stands five storeys tall, offering 95,000 ft² of office space in Liberty Village, while showing off its timber features, and remaining cost effective.



80 Atlantic Avenue, image provided by RJC Engineers

"There wasn't a lot to lean on in the Toronto market at the time [in terms of building with mass timber], and there were a lot of learning curves associated with the building," said Bayne. "This included things like building codes – which are continually advancing to support industry, but often lag behind."

80 Atlantic Avenue was constructed using a Nail Laminated Timber (NLT) floor system and glulam beams — using a straightforward and repetitive structural layout, featuring few, typical connections between wood pieces, and intersecting building levels at 90 degrees.



Centennial College Block A expansion, image provided by RJC Engineers

"On 80 Atlantic we brought on a supplier early in the design-development stage so that we could go through a bit of a design-assist to utilize materials that they could easily source," said Bayne. He asserts that even today, working with design and timber teams early on through a design-assist approach is extremely beneficial. "It's still a very new process, so the sooner we collaborate, the better and smoother the project can be. We work with local suppliers, and different suppliers have different geometries, material properties, and just manufacture different pieces of mass timber, making a number of unique designs possible," he explained.

"We also have staff that sit on code committees to help progress codes that other engineers can lean on, locally," added Bayne. "The industry wants more, so we find ourselves pushing on what the code may or may not allow, using our engineering judgement, and looking at what other projects around the globe have done, to see what can be built."

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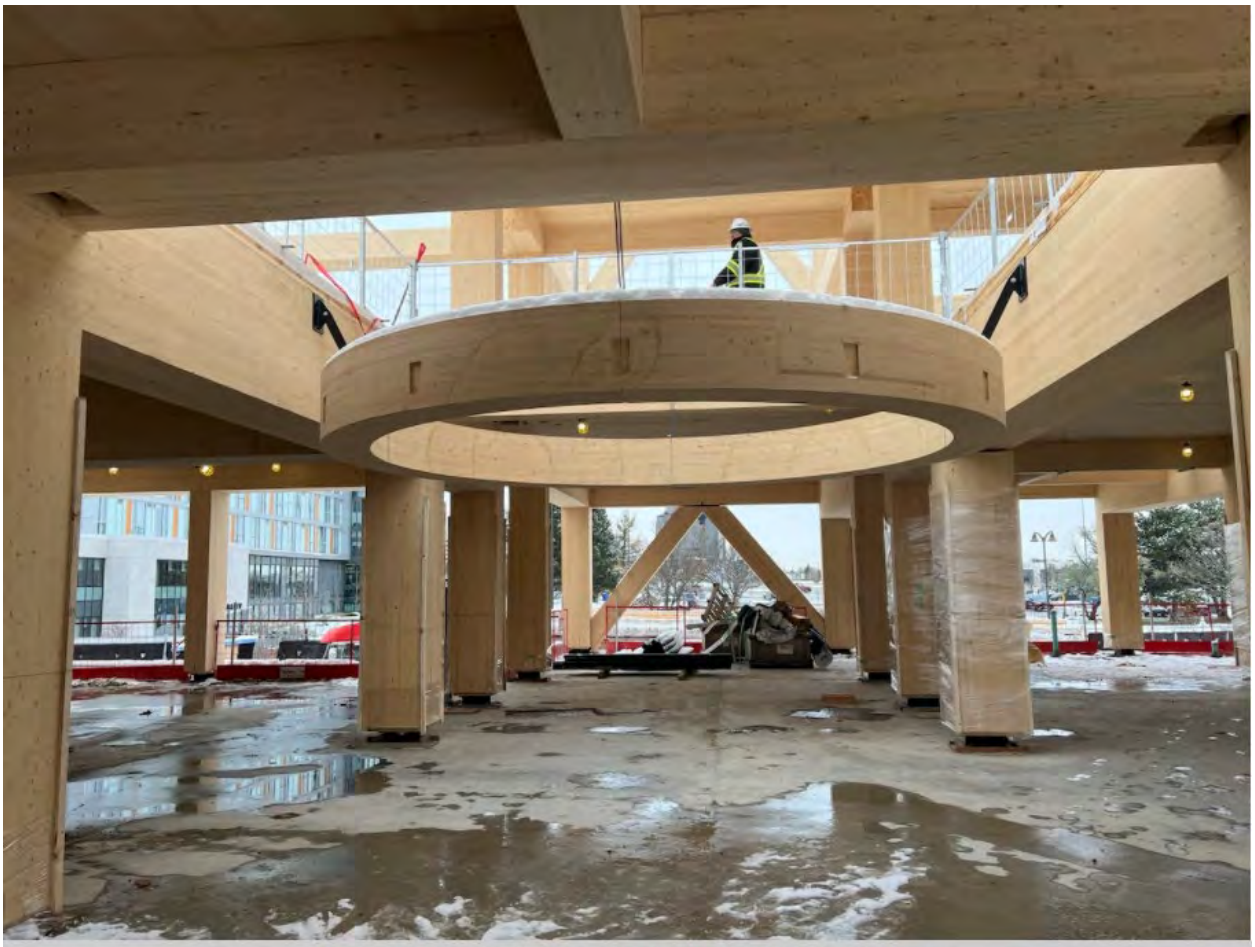

Centennial College Block A expansion, image provided by RJC Engineers

Looking to more recent projects, RJC is working on Centennial College's Progress Campus A Block, and TRCA's Head Office — both of which are currently under construction. The Centennial College project was designed by DIALOG and Smoke Architecture and is being built by EllisDon with Nordic Structures as the supplier, and will add over 150,000 ft² of new and renovated space to the Scarborough campus. It will also be the very first Mass Timber and Net Zero Carbon institutional building in all of Ontario, standing at six storeys tall. The expansion project began its construction in November, and includes a 136,000 ft² extension of the existing A-Block Building, using FSC certified black spruce from Northern Quebec, which has been cross-laminated and glue-laminated. The installation is using a total of 1,057 individual pieces of mass timber.

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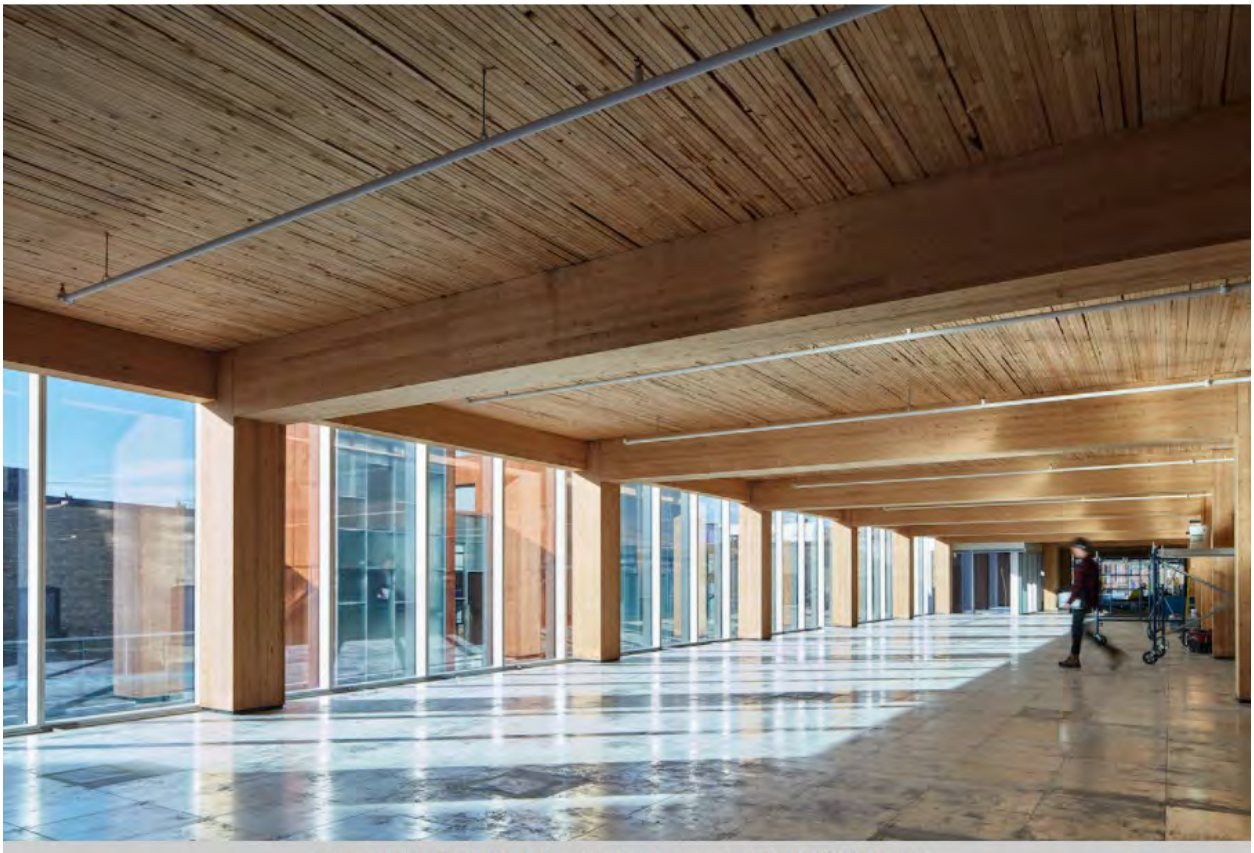

Centennial College Block A expansion, image provided by RJC Engineers

The Toronto and Region Conservation Authority (TRCA) Board's head office building is just as innovative, but for different reasons. Designed by ZAS Architects and Bucholz McEvoy Architects, Eastern Construction is the construction manager, while Element 5 is the project's supplier. The four storey building is not orthogonal, and instead, has lots of unique geometries, making it a much more complicated building than another one of similar square footage. "TRCA includes more exposed timber, longer spans, and unique geometries — every little corner is different and unique, versus 80 Atlantic or Centennial, which are both orthogonal, and whose levels repeat quite a bit," said Bayne. Not only that, but the project is aiming to be one of the most energy efficient commercial mid-rise buildings in North America, targeting Net Carbon Zero, LEED Platinum, Toronto Green Standard Level 2, and Well Silver Certification. The all mass timber building is to be comprised of cross-laminated timber floors and walls, and glulam beams, columns and braces.

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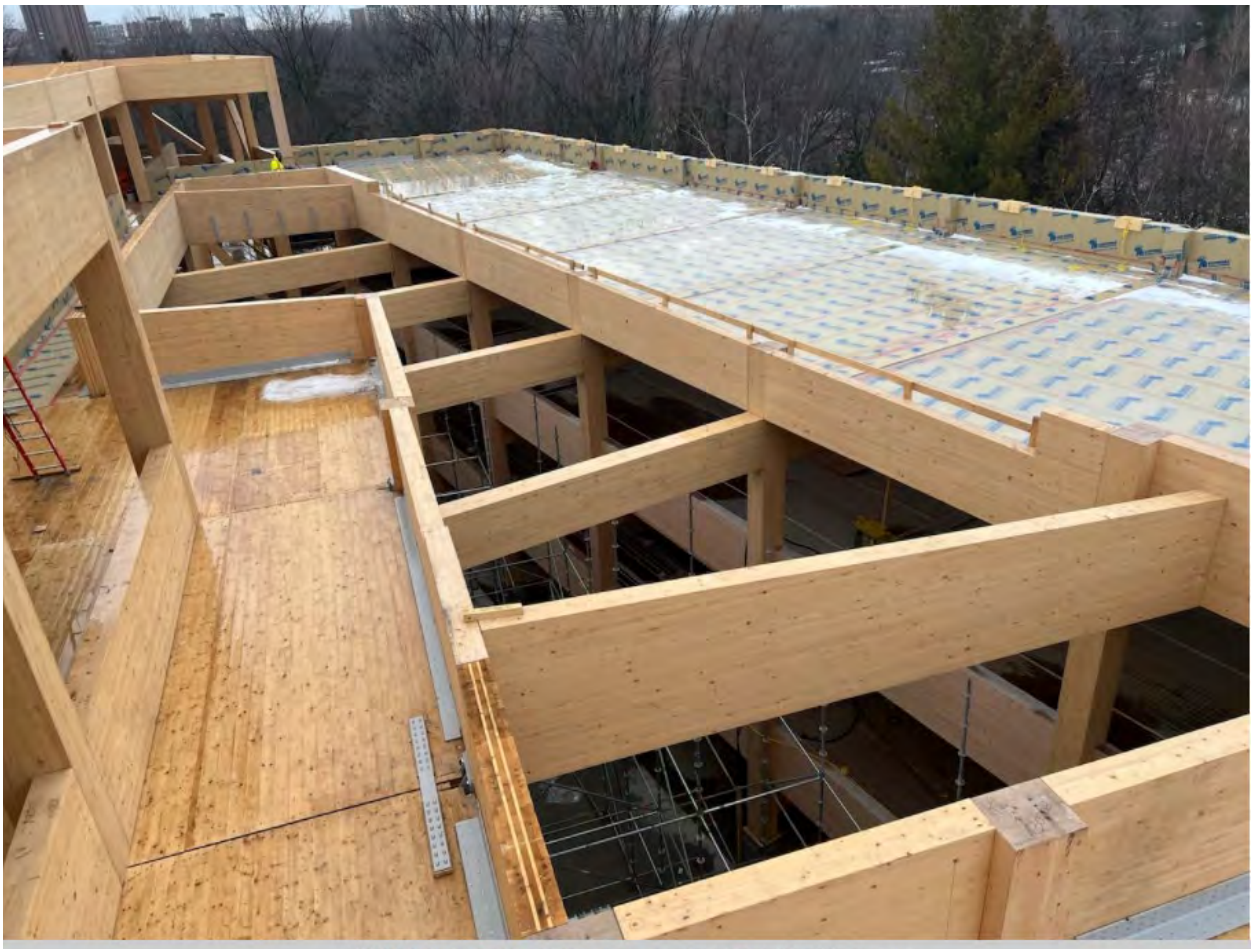

TRCA Administrative building, image provided by RJC Engineers

More information on these developments will come soon, but in the meantime, you can learn more from our Database files for the projects, linked below. If you'd like, you can join in on the conversation in the associated Project Forum threads, or leave a comment in the space provided on this page.

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