

## Future face of McMaster

Engineering building at forefront of technology, design, construction

### WADE HEMSWORTH

The Hamilton Spectator

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The toilets will flush with rain- water.

The lighting, heating and ventilation systems will know how many people are in a room and adjust themselves accordingly, making sure they use just enough energy.

Students will attend lectures in a unique hall where professors will speak from the centre of a concrete oval that rises like a leaning tube through one side of the building.

This is the \$48-million Engineering Technology Building now nearing completion beside the medical centre at the Main Street entrance to the McMaster University campus.

The five-storey building -- seven years in the making from concept to completion -- is to be ready for use in September.

A curtain of glass -- triple-glazed and arranged in an asymmetrical pattern of clear, frosted and opaque panels -- covers what may look like a typical box-shaped building. Don't be fooled. On the inside, both the form and function of the building put it firmly on the leading edge of modern technology, design and construction.

On the lower floors, students just starting their undergraduate engineering degrees will study alongside others working on bachelor of technology degrees in a new partnership with Mohawk College.

The announcement of major provincial funding for that joint venture last year caused a mid-stream change in plans for the building. Among other shuffling, the change pushed the dean's office out of the top floor, where it would have enjoyed a grand view of the escarpment.

In fact, the revision left the dean out of the building altogether. But David Wilkinson, who will stay in his current office in the original John Hodgins Engineering Building, doesn't seem to mind, as long as his students, researchers and faculty members have a place to do their best work.

"We're bursting at the seams and this will really allow us to do our job much more effectively," he said. "I'm too busy to look outside most days anyway, so it doesn't really matter."

On the upper floors, graduate students and faculty members will conduct sophisticated research in biomedical engineering, microtechnology and nanotechnology in ultra-modern laboratories. Others will research the best ways to marry engineering with entrepreneurship, design and public policy, working in a centralized hub for engineering practice.

In the middle is a question mark. Much of the third floor has yet to be designated for a specific use, as the university waits for word on funding applications before the Canada Foundation for Innovation, expected to come in the late spring.

The people who work and study in the building will meet and relax in two-storey gardens facing Main Street, and in common spaces on the first floor, where a "living wall" of artifacts will recall 50 years of the faculty's history and where a clock designed by undergraduate students of today will keep the time.

Recently, there have been 100 tradespeople on site, working late and sometimes on weekends to get the job done. That number will rise to about 150 and taper off during the final stages of the project.

The person in charge of the site is Ben Chae, himself a civil engineer who did his graduate studies at McMaster 25 years ago, just steps away in the Hodgins Engineering Building.

That 1959 building will remain the heart of the rapidly growing faculty, as the opening of the new building relieves cramped conditions resulting from the faculty's growth to 4,000 students today from 2,500 in 2001.

Now a senior project superintendent with Bird Construction Company, Chae is happy to be back on campus.

"To come back to my own school and have the chance to contribute something, to use my learning to do something there, I was quite delighted," he said. "I would never have imagined it."

Quick, intense and enthusiastic, Chae appears to be operating on multiple levels at once as he moves through the partially completed building. He calls out instructions to tradespeople and stoops to pick up a small piece of stray material, without losing the thread of his description of the project's greatest technical challenge: building the hollow column that holds the elliptical classroom, designed to lean outward from the western edge of the building at eight degrees from the vertical -- roughly twice the tilt of the Leaning Tower of Pisa.

Making the lopsided concrete tube stand safely required a complex set of concrete forms and a custom mix that would be strong enough to support weight, yet appealing enough to go without further finishing.

The building itself is a symbol of the university and its changing role in the community. Thrust forward on the building site, it is meant to show McMaster's most modern face to the city, where it is taking an increasing part in shaping the economy.



Ron Albertson, the Hamilton Spectator

For the architects at the Dundas firm of Vermeulen Hind, who specialize in cancer centres, health care and research facilities, the Engineering Technology Building is the first freestanding university building in their portfolio. They hope it will be a showpiece for the super-efficient buildings they see as the way of the near future.

"Twenty years from now, you won't be able to build a building the way people have been to date. It simply won't be sustainable," said architect Doug Oliver, a member of the project team. "We think it's important to make a case for these buildings, to invest in something that has high-performance capabilities and see the savings down the road."

The university, the builder and the architects are hoping to achieve gold level designation under the Leadership in Energy and Environmental Design program.

A significant portion of the concrete in the building, for example, was made with slag produced in Hamilton as a byproduct of steelmaking. That concrete takes a little longer to cure, but using it has saved 300 tonnes of carbon dioxide. Nearly all of the construction waste is being diverted from the waste stream. New wood used in the project has been sourced, where possible, from managed forests.

The building itself is a learning tool, where such elements as the heating and ventilation systems and rain collection pipes are visible.

"This is a building about the future," said architect Chris Harrison. "It's about the way things can be done to make a better performing product, and one that takes less of a toll on the Earth."

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