

CHUM

NEW CHUM FOR MONTREAL





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After a decade of uncertainty Montreal is soon to benefit from a \$2.5 billion state of the art teaching and research hospital that anyone will be happy to visit – or work at

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Construction in progress and the CRCHUM in the background, almost completed

Montrealers have become accustomed to seeing the large building site in the heart of the city that will house the new hospital complex that is being built there. The new CHUM is bounded by Boulevard René-Lévesque, Rue Saint-Denis, Rue Sanguinet and Rue Saint-Antoine towering 20 storeys above ground. The City of Montreal will finally have one of the most advanced teaching hospitals and medical research facilities in the world.

The Centre hospitalier de l'Université de Montréal (CHUM) and its associated Research Centre (CRCHUM) will be truly world class institutions. They were financed under two separate PPP project agreements. Substantial completion of the CRCHUM in the end of September 2013, and substantial completion for the first phase of the hospital is April 2016. This major redevelopment project is much more than a stunning architectural group of buildings to grace this key site on the edge of the old city. The project has been clouded by uncertainty since it was first mooted more than a decade ago, in 2000.

Sylvain Villiard, Secretary General and Associate Executive Director, has been juggling the project since its inception, through a series of changes of administration and policy. The present site was finally chosen in 2005, by which time, he says, his team had become very good at site evaluation! Then there was a period of discussion about the size of the hospital: it replaces three existing facilities with a total of 1,000 beds, so the government's preference for a much more smaller facility had to be questioned. At last



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HH Angus is pleased to be participating in the CHUM project - the Centre Hospitalier de l'Université de Montréal. More than 50 members of the HH Angus staff are providing Mechanical and Electrical Consulting Engineering and Security Design to the project, which is being designed to target LEED® Silver.

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a compromise was reached, and CHUM will have 772 beds and 39 operating rooms.

The main hospital replaces three existing hospitals, the Saint-Luc Hospital that stands at the corner of Saint-Denis and René-Lévesque – that landmark will be demolished as part of the project – the Hôtel-Dieu and the Hôpital Notre-Dame. It is being constructed under a public private partnership (PPP) between the Centre hospitalier de l'Université de Montréal and four equity partners that together make up the CHUM Collectif. Innisfree is a UK investment group with 23 active hospital projects, four in Canada; OHL is based in Spain and has built hospitals totalling 60,700 beds in 14 countries; Laing O'Rourke is the UK's largest privately owned construction company and Dalkia Canada is a subsidiary of the global facilities management group.

The Research Centre to the south-east of the main hospital site and separated from it by Rue Viger, is being delivered via a separate PPP agreement with Accès Recherche Montréal (ARM), a partnership between Fiera Axiom Infrastructure and Meridiam Infrastructure, and built by a joint venture of two Quebec companies, Pomerleau and Verreault SENC. In fact it is almost finished – the fabric of the buildings is complete, and the services and equipment are going in under the overall



Amphitheatre and main entrance of the New CHUM

supervision of Sylvain Villiard who in 2011 handed over the project management of CHUM itself to Paul Landry.

The new centre brings together six former locations – imagine the advantages in communication between the researchers! No wonder they are keen to move in, something they will begin to do in October 2013, a remarkable achievement on the part of ARM and Pomerleau-Verreault says Villiard. “The

CRCHUM consists of two very high tech buildings amounting to 68,800 square metres. It is a tribute to our partners that after 42 months of construction we are on schedule, on budget and within one percent of our original specification.” The buildings that the staff will be leaving behind are up to 150 years old – their inconvenience and inefficiency couldn't be a greater contrast to the fail-safe systems they will enjoy in the new facility.

Even the power supply comes in from two separate grid sources. Hydro-Québec and an additional link will give access to power within the Research Centre. Honeywell is the facility management partner in ARM – it will

722

Number of beds in the new hospital

be a further reassurance to know that these systems will be competently maintained for at least the 30 years of the PPP agreement. The facility will be formally handed over on October 1, 2013 and by January 1, 2014 six hundred people will have moved in.

In addition, 5,500 pieces of equipment are being moved – in all \$100 million-worth of new equipment is being installed, 40 percent of it brand new.

The research facility is linked to the new Integrated Teaching and Training Centre (CIEF) by a bridge that spans one of Montreal's busiest link roads. Not that you'd know it, because it is an underpass that runs

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Overview of what the New CHUM, including CRCHUM, will look when it's finished

“THE MAIN HOSPITAL WILL TAKE A LITTLE LONGER TO COMPLETE, BUT IT IS PROGRESSING WELL AND IS IN THE HANDS OF A ROBUST PARTNERSHIP”

below the site itself. The CIEF is a key part of the hospital: some 6,000 students a year pass through it: now they will be able to work in an environment that contains a great deal of innovative learning technology and is close to a great deal more. The hospital is already working with a company involved in simulation to develop new products for surgical, ultrasound and clinical simulation, which apart from its relevance to diagnostics and treatment is increasingly important in teaching. CIEF will have 41 clinical training,

self-training and skills evaluation rooms and simulation laboratories. It will also include two rooms equipped with virtual simulators and computer operated mannequins.

The main hospital will take a little longer to complete, but it is progressing well and is in the hands of a robust partnership says Paul Landry, who had delivered two large hospital projects in Ontario before coming to CHUM in 2010. The main hospital building, or D Block, comprises three units, he explains, with each storey running out at around 20,000 square metres. The first eight storeys contain all the diagnostic and treatment departments,

including the 39 ORs while above them rise two parallel towers that contain 28 of the 36 in-patient wards.

Connecting directly to the D Block at all levels, block B1 contains the ambulatory care centre, or outpatient facility. It houses 35 different specialist clinics. A good example is the specialist burns unit, one of only two in the province – the other is in Québec City. In terms of patient numbers, ambulatory care visits represent a major component of overall clinical services, says Landry: “Approximately 500,000 outpatients visits per year are anticipated. That’s one reason it has

been situated right behind the amphitheatre that forms the main entrance to the hospital. We wanted a direct link between the main entrance and this large volume of ambulatory visits for ease of patient access.”

The eight-storey logistics building will be the service and goods handling hub of the hospital. It houses the automated guided vehicle system that was introduced at an early stage by the CHUM Collectif, something Landry gives the partners full credit for. “Our partners were determined to exceed our expectations, and changed their design at the bidding stage to introduce

this system instead of the traditional large pneumatic tube system for removing soiled linen and refuse which takes up a large spatial and electromechanical footprint.” The use of AGVs for in-hospital logistics is not new, and the team visited other hospitals including Forth Valley in Scotland to see it in action. However the CHUM system is the

largest and most modern in North America, and the first in Canada. The robots follow wi-fi controlled paths with location precision of 1 centimetre, moving from floor to floor on dedicated elevators. “The automated transportation equipment

500,000

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Anticipated outpatient visits each year at Nouveau CHUM

“ART AND CULTURE IN THE HEALING ENVIRONMENT IS INTEGRAL TO OUR VISION OF CREATING A LEADING EDGE PATIENT FOCUSED DESIGN”

that has been conceived for this project is really key to the overall operations of the logistics centre,” he says, adding that robotics will form part of leading edge equipment in the pharmacy and even the operating rooms.

However the smartest thing about this massive building project came right at the planning stage. The original submission called for 55 percent of the facility to be delivered

in Phase 1 leaving a substantial proportion to follow in Phase 2. The Collectif sought a derogation from the government to allow a five-metre height increase to the building and a displacement of the phasing line from the hospital. This meant that in Phase 1 they would be able to deliver 85 percent of all the clinical services. By doing that they avoided in effect building two hospitals, with all the associated high tech infrastructure split between two phases. This way the bulk of the critical elements were shifted into Phase 1 with lower spec outpatient clinics, and administrative services in the second. “Our partners really stepped up to the mark with a great architectural solution, reducing the footprint, freeing up more space around the focal auditorium and main entrance and allowing more natural light to come into the hospital itself and also to reach the street.”

From the point of view of the hospital it was a tremendous advantage to get nearly all of its clinical services; its in-patient services, its diagnostic treatment services, plus all 772 beds and most of its outpatient clinics in one go. Virtually everyone will be able to relocate from the three existing hospitals by 2016, he observes with satisfaction, with the remaining 15 percent of ambulatory clinics delivered by 2020 in Phase 2.



A view inside the CRCHUM

The CRCHUM is almost complete and will open this year



No account of the new CHUM would be complete without mentioning its aesthetic aspects. Apart from the rigours of delivering a hospital to LEED Silver standards (Gold is not out of the question) in a climate that can range from minus 20 to 30 degrees Celsius, the design will enhance the city's identity. Its most striking feature is hard to put one's finger on. One contender is the remarkable curved amphitheatre, but the incorporation of two old Montreal landmarks is hard to trump. The bell-tower of the 1866 St-Sauveur church that stood on the site has been taken down stone by stone to be re-erected at the corner of the new hospital close to its entrance, rising in front of six storeys of the hospital. The associated Garth House façade is to be incorporated inside the entrance hall. "The design of the façade had to be just right and I think Cannon Design and the local architect Neuf Architects together did a marvellous job of designing this new hospital," says Landry.

We can't say much – yet – about what will undoubtedly be a keynote of the design. A competition is in hand to design an eight-storey image covering the façade of the ambulatory centre. One percent of the cost of every building project in Quebec must be reserved for artwork and the designers of CHUM enthusiastically complied, says Paul Landry: "Art and culture in the healing environment is integral to our vision of creating a leading edge patient focused design." **BE**

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