

Michael Lee-Chin Crystal Facts

- In 2001, the Royal Ontario Museum launched **Renaissance ROM**, an ambitious plan to transform the Museum and the leading cultural project taking place in Canada today. Construction began in May 2003, with completion planned for 2010. The Michael Lee-Chin Crystal, a new addition to the Museum and Renaissance ROM's centrepiece, opened on June 2, 2007.
- The overall project budget for Renaissance ROM is \$270 million (Canadian). This includes the construction budget of \$240 million, plus an additional \$30 million for fit-out of restaurant and retail facilities, finance charges and fundraising expenses.
- It all started on a napkin ... Architect Daniel Libeskind's initial concept for the ROM's expansion was sketched on paper napkins while attending a family wedding at the Museum. Because the shape of the new building was inspired by specimens from the Museum's gem and mineral collection, the design was quickly dubbed "the Crystal".
- Twenty-five per cent of the Lee-Chin Crystal exterior is glass; the remaining 75% is extruded brushed aluminum cladding, in a warm silver colour. The cladding system has three layers, over three feet thick, the bottom layer being the moisture-proof seal. The aluminum top layer of the cladding was applied near the very end of construction.
- The steel structure for the Lee-Chin Crystal was completed July 12, 2005 with a Topping Off Ceremony, a historic tradition in construction projects. The final beam was signed by construction workers, ROM donors and staff, decorated with flags and topped by an evergreen tree marking an accident-free construction site. It was hoisted into position at a height of about 21 metres (70 ft.), directly over what became the main entrance to the Lee-Chin Crystal on Bloor Street West.
- The new main entrance is fully accessible to the physically disabled. The floor of the entire main floor is gently sloped to link the Bloor St. sidewalk to the existing Heritage buildings without any stairs.
- The tip of the Lee-Chin Crystal is 36.5 metres (120 ft. or 10 storeys) high and overhangs the Bloor St. W. sidewalk at a height equivalent to 9 storeys above ground. In the summer of 2007, a "Crystal Point" marker will be installed in the sidewalk directly below the tip.
- The base of the Lee-Chin Crystal is ten metres (32 ft.) below grade.
- Renaissance ROM is considered one of the most challenging construction projects underway in North America for its engineering complexity and innovative construction methods.

- Unlike most buildings, there are no right angles to the Lee-Chin Crystal, comprising five interlocking, self-supporting structures of different geometric shapes.
- Approximately 3,175 tonnes (3,500 tons) of steel and 34.5 tonnes (38 tons) of bolts were used to create the skeleton of the Lee-Chin Crystal.
- Roughly 9,000 cubic metres (317,800 cubic ft.) of concrete were poured.
- There are 162 sq. metres (1800 sq. ft.) of glass on the outside of the Lee-Chin Crystal, making up its 52 windows.
- Thirty kilometres (18.6 miles) of extruded anodized aluminum, one foot wide, (equivalent to 90,000 sq. ft.) were used in construction.
- The only vertical wall in the interior on the Lee-Chin Crystal is the south wall of the Spirit House.
- Excluding bridges into the two Heritage buildings, the Lee-Chin Crystal is not attached to the original buildings. Bridge links incorporate sliding connections to allow the Crystal to move slightly.
- Construction supervisors and project engineers used laptops and 3-D illustrations to visualize how the steel shapes fit together, many positioned using advanced Global Position Systems.
- An 80-metre (260-ft.) crane at the centre of the site lifted the beams, one by one, to their specific angle (with only a three- to four -millimetre tolerance) creating the complicated angle joints, sloped walls, and gallery ceilings, some rising almost 40 metres (130 ft.).
- Having to navigate sloped walls and difficult angles, workers had to train in rappelling (like mountain climbers) in order to complete their work.
- During peak construction periods, approximately 200 workers were onsite, with up to 30 working on the steel structure alone.
- Due to the confined size of the construction site, materials could not arrive all at once. The steel beams, each unique and ranging from one metre (three ft.) to 25 metres (82 ft.) in length, arrived in shipments of about 25 tonnes (27.5 tons) and were typically onsite for only a day prior to their installation.
- The Lee-Chin Crystal adds approximately more than 5,200 sq. metres (56,000 sq. ft.) of new permanent gallery space, more than 8,640 sq. metres (93,000 sq. ft.) of other public space, plus 2,230 sq. metres (24,000 sq. ft.) of support space, for a total of almost 17,200 square metres (175,000 sq. ft.)
- The various Lee-Chin Crystal galleries are of impressive height: the Garfield Weston Exhibition Hall, Canada's largest space for international exhibitions, is 4.8 metres (16 ft.); the James and Louise Temerty Galleries of the Age of Dinosaurs are 5.5 metres (18 ft.); the Institute for Contemporary Culture has a 10.5-metre (35-ft.) peaked roof; and the Patricia Harris Gallery of Textiles and Costume has a 11.9-metre (39-ft.) peaked roof.
- At the end of the project, the ROM will have over 36,000 sq. metres (388,000 sq. ft.) of public space, an increase of 25%.

- Construction cost of the Michael Lee-Chin Crystal itself, as well as landscaping surrounding the structure, was \$135 million. This does not include gallery installation costs.
- *Renaissance ROM* will allow for nearly double the amount of objects on display at the Museum. Some 25,000 pieces from the Museum's collections will be on view when the project is complete.
- The first stage of *Renaissance ROM*, comprising ten new galleries and public spaces in the Historic buildings, opened to the public on December 26, 2005. The Architectural Opening for the Michael Lee-Chin Crystal took place on June 2, 2007. The final phase of galleries in the Historic buildings is expected to be complete by 2010.

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The **Royal Ontario Museum** (ROM) is an agency of the Government of Ontario. Opened in 1914, Canada's largest museum of natural history and world cultures has six million objects in its collections and galleries showcasing art, archaeology and natural science. For 24-hour information in English and French, please call **416.586.8000** or visit the ROM's web site at www.rom.on.ca



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