

UNIQUE ASPECTS OF CMHR CONSTRUCTION

- The complex geometry of the CMHR meant that the structure could not be fully conceived through two-dimensional blueprints. By using 3-D modelling in Virtual Design and Construction (VDC), accurate information for trade scopes and competitive pricing could be extracted. For example, virtual models created for the exterior limestone resulted in specifications so accurate that there was a less than two-percent difference among the top three bids.
- In April 2014, PCL Constructors Canada Inc. (Winnipeg) received a 2014 Global Best Project Award in the Cultural Category from *Engineering-News Record*. [Read the CMHR feature story](#), with a link to an illustrated case study focusing on the VDC approach.
- Virtual 3-D models allowed for quick identification and resolution of any unforeseen issues (clash detection) before construction even began saving time and money associated with unnecessary rework.
- The museum is designed and built to meet LEED® Silver Certification for environmental sustainability.
- The building design includes many unique elements strongly related human rights themes, such as four stone “roots” that symbolize humanity’s connection to Mother Earth, a Tyndall stone “mountain” that houses the gallery spaces, a vertical “Hall of Hope” full of illuminated alabaster-clad ramps that crisscross in an irregular pattern up eight stories to a skylight, a light-filled “Garden of Contemplation” beneath a massive glass “cloud,” and an inspiring “Tower of Hope.”
- Eight hundred metres (31,496 feet) of glowing alabaster-clad ramps take visitors on a literal path of light through the darkness, represented in some areas by black concrete walls. Stone walls lining the ramp are lit from within by 900 metres (35,433 feet) of LED lighting.
- The Garden of Contemplation that is nearly 930 square metres (10,010 square feet) in area, containing hundreds of hexagonal columns of basalt assembled in patterns that replicate its natural occurrence, like that of the “Giant’s Causeway” in Northern Ireland. It will feature soothing infinity pools of water and live greenery.
- The CMHR contains over 175,000 individually cut pieces of limestone, basalt, and alabaster.
- The structural steel custom frame for the glass “cloud” surrounding the building’s southwest face features up to 13 connections to a single node. The cloud is made of 1,300 pieces of glass, no two exactly the same. Over 5,574 square metres (60,000 square feet) of vertical scaffold were built to install the cloud.
- The Tower of Hope rises to 100 metres (328 feet), or about 30 storeys: 23 metres taller than Manitoba’s Golden Boy and eight metres higher than Ottawa’s Peace Tower.
- Total building area is 24,155 square metres (260,000 square feet), equivalent to four football fields, including five main levels, three mezzanine levels, and the Tower of Hope.
- About 17,000 cubic metres (22,235 cubic yards), or 2,125 standard cement-truck loads of concrete, the same weight as 3,000 adult male elephants, was used to build the CMHR. We used more than 6,000 tonnes (6,614 tons) of steel, the weight of 27 train locomotives.
- The building is supported by 378 precast driven concrete piles and 136 caissons, resting on bedrock 25 metres below the ground.

