

## Sister's of St. Joseph New Residence



The Sisters of St. Joseph recently moved into their new environmentally sustainable residence on Windermere Road, in London, Ontario. The building has a many energy efficiency and green features and received the Urban League of London's prestigious Green Brick Award for 2007.

Caneta was commissioned to assist the design team to implement a ground source heat pump system in the new residence. The initial work involved overseeing test drilling on the site to identify the subsurface conditions up to 91 metres below the surface and to estimate the thermal conductivity of the formation. With information from the drilling, sophisticated design tools were used to estimate the thermal loads on the ground and the number of vertical heat exchangers needed for the complex. Caneta prepared a borefield plan and details that were incorporated into the mechanical design for the project. A specification for materials and construction of the borefield were prepared as well.

### **Ground Source System**

- 63 vertical borehole heat exchangers arranged on grid of 9 runouts by 7 boreholes per runout.
- Spacing between boreholes: 4.57 metres
- Depth of boreholes: 91 metres

- Overburden material: grey clayey silt (0-35 meters)
- Bedrock material: limestone (35-91 metres).
- Groundwater static level: 10 meters below surface.
- Borehole grout: bentonite and silica sand mixture.
- Mean Annual Ground Temperature: 10°C
- Total installed capacity of heat pumps: 150 tons

### **Caneta Services**

Ground heat exchanger design

### **Building Summary**

Location: London, Ontario

Completion Date: 2007

Building Area: 12,685 m<sup>2</sup>

Design Cooling Load: 125 tons

