

## New Library Going for LEED Gold

### Sustainability Features

#### **Low energy consumption, low noise HVAC system**

Combined radiant heating/cooling and DOAS displacement ventilation (low level air supply) provides the highest quality comfort system and indoor air quality at the lowest noise possible.

#### **Dedicated Outdoor Air System**

DOAS demand ventilation system uses only as much fresh air as needed based on room CO<sub>2</sub> and temperature sensors. The opening windows and motorized clerestory windows provide natural ventilation and cooling during mild weather. Variable speed drives on the air units allow the fan energy use to be reduced and to move only as much fresh air as needed for the occupancy load of the building.

#### **Radiant slab heating/cooling ceiling system**

The radiant slab system satisfies the total human comfort range of "mean radiant temperature plus air temperature" in accordance with the ASHRAE-55 Standard for Human Comfort. The thermal mass of the warmed and cooled slab uses the building structure to keep very stable indoor temperatures in spite of outdoor climate variations, while using very small amounts of heating and cooling energy to keep the slab temperature "charged" at the controlled temperature.

#### **Central water to water heat pump plant**

The heat pump is connected to a geo-exchange system to use the ground under the parkade as a heat sink to cool the building in the most energy efficient manner.

#### **Heating from Lonsdale Energy Corporation**

High efficiency condensing boilers (over 92% efficiency) provide the peak heating requirements for the Library as well as the local neighbourhood. The energy efficient system provides low to medium temperature heating water to all the buildings on the block.

### **Solar water heating panels**

The solar water heating panels serve the LEC heating plant to supplement the energy use during sunny days and are estimated to provide close to 20% of the energy needs of the heating system.

### **Low flush fixtures**

The plumbing fixtures have been selected for their very low water consumption using dual flush option. They will save just over 32% of the potable water use of a "business as usual" building.

### **Domestic Hot water systems**

The domestic hot water for all fixtures is generated by small local electric hot water heaters to minimize the use of extensive copper tubing, minimize standby heat losses, and insure that hot water is available at the sinks in 10 seconds or less. This avoids wasting cool/lukewarm water waiting till the hot water starts coming out the tap.

### **Solar Shading**

The exterior sunshades and fritted glass eliminate over 75% of the solar heat gain through the windows substantially reducing the cooling load inside the building and keeping the comfort conditions a lot more stable along the exterior zones. The glass windows have been selected for a higher than normal thermal resistance (Low-e Coating and Argon filled) to reduce the heat loss from the building in winter, as well as to keep the inside surface temperature of the glass from getting too cold and creating a radiant cooling panel in the wintertime. The fritted glass at high level above the sunshade allows daylight penetration further into the interior of the building without additional solar heat gains.

### **Lighting System**

The lighting system is equipped with daylight dimming controls to reduce and turn off much of the electric lighting in the building and reduce the energy use. All light bulbs and fixtures are selected to use low wattage compact fluorescent and other high efficiency lamps.

### **Monitoring System**

The building mechanical and electrical systems are equipped with a complete suite of energy meters to monitor the system energy consumption to allow fine-tuning and further energy saving optimization over the first few years of the building operation.

### **Green Housekeeping**

Products used to clean library facility will be environmentally friendly.