# Illinois Masonic Medical Center
*Chiller Plant*

## Facility

A 1,143,379 square foot hospital in Chicago, Illinois.

## Construction Cost

$5.5 million

## Project

Replacement of the main cooling plant and four departmental cooling units.

- Three new high efficiency, 700 ton chillers w/ VFDs and magnetic bearing compressors were installed.
- The design included the conversion of the cooling system to variable primary flow configuration from a primary/secondary arrangement.
- The total operating efficiency of the new plant is between 0.42 - 0.56 kW/ton, including pumps and cooling towers.
- The design included the installation of all new premium efficiency motors.
- The project included the design of new cooling towers with variable frequency drives (VFD's), that resulted in a temperature difference design change from 10 degrees Fahrenheit to 12 degrees Fahrenheit to reduce flow and pumping energy usage.
- Four existing air-cooled chillers were replaced w/ new high efficiency chillers. The new chillers include:
  - 250 tons (EER 9.9, IPLV EER 19.3)
  - Two 170 ton units (EER 9.4, IPLV EER 17.3)
  - 90 tons (EER 9.7, IPLV EER 15.4)
- The new air-cooled chillers are designed with higher efficiency pumping systems.
- Chillers were selected using life-cycle cost analysis to minimize total cost of ownership over the next 30 years.
- New chillers utilize refrigerant with no ozone depletion potential.
- G/BA assisted the client in obtaining ComEd rebates as a result of the new energy efficient design. The rebates included:
  - 250 ton air-cooled chiller & pump VFDs - $28,525
  - 170 ton air-cooled chillers - $31,640
  - 90 ton air-cooled chillers- $5,252
  - Three 700-ton centrifugal chillers, pump VFD's and cooling tower fan VFD's- $203,700
  - The project resulted in estimated energy savings of over $85,000 per year.