



## Prince Arthur Clinic, Toronto, Ontario

**LOCATION :** 64 Prince Arthur Clinic, Toronto, Ontario

**OWNER :** ATF Group of Companies

**TEAM MEMBERS :** **Mechanical Consultant**  
Advanced Buildings Solutions Inc.

**Electrical Consultant**  
Suri & Associates Ltd.

### **PROJECT DESCRIPTION:**

The Project consist of Basement, First and Second Floor. At second floor out of other rooms there are Four (4) Operating rooms, Corridor and Recovery areas where the existing HVAC system must meet the College of Physicians current (2010) Standards.

**Existing System:** The mechanical system serving four (4) Operating Rooms and Hallway includes:

- .1 One Rooftop Unit of make LENNOX, model LGC060S2BH1J, serial number 5605D04894 with DX cooling capacity of 5 tons, natural gas heating capacity of 100MBH (output), filter, controls, roof curb and fresh air Energy Recovery System of make LENNOX, model LAERS03/07-1700HP-1J-L8, serial number 2005 16 00124 with intake and exhaust air blower, filter, hood, controls with supporting legs.
- .2 The supply & return air are by sheet metal ducts concealed in ceiling space. The supply ducts are connected to air diffusers. The return system is a ducted return type system in which each return duct is connected to return air grilles.

- .3 Other areas of 2<sup>nd</sup> Floor such as Recovery Rooms, Recovery Areas, Nurses Station, Offices, Soiled-Storage/Laundry & Sterilization rooms- separate HVAC system located in Basement.
- .4 Soiled Storage / Laundry room and Sterilization room are provided with dedicated exhaust system to create -ve pressure.
- .5 The mechanical system describe in item.1 is dedicated to and only serving four (4) Operating Rooms and one (1) Hallway, which was added in 2005.
- .6 Existing mechanical system as described in item .1 achieve the following Air Changes per Hour (ACH) with pressure:
 

OR #1	10.16 ACH	Room was under Negative Pressure
OR #2	10.30 ACH	Room was under Positive Pressure
OR #3	9.67 ACH	Room was under Positive Pressure
OR #4	8.54 ACH	Room was under high Negative Pressure
- .7 Each supply diffuser in Operating Rooms equipped with HEPA Filter.
- .8 Mechanical drawings indicate a duct type spray humidification system of make NORTEC, model NHMC-20, to maintain humidity levels in Operating rooms.
- .9 The air pressure issues were observed as a result of two mechanical systems serving 2<sup>nd</sup> floor and improper air balancing. This result in contaminating other areas and unsatisfactory thermal comfort levels in the building.

### **Recommendations:**

- .1 The Existing rooftop unit shall be modified along with duct work to serve OR-4, Sterile Corridor and Recovery area to achieve positive pressurization & 20 air changes per hour in OR-4, 20 air changes in Sterile Corridor and 6 air changes per hour in Recovery area.
- .2 Provide one (1) new roof mounted gas fired and electric cooling unit, Energy Recovery system, new ductwork, new humidification system and controls to serve OR-1, OR-2 and OR-3 rooms to achieve 20 air changes per hour, positive pressurization and comfort conditions in the rooms.
- .3 Decision to convert air distribution system to Laminar Flow in Operating Rooms is on hold. Waiting for Client next instruction.

