

September 3, 2019
Project: 6461

Township of Cavan Monaghan

988 County Rd. 10,
Millbrook, ON
L0A 1G0

Attention: **Yvette Hurley**
Chief Administrative Officer

Mechanical Site Condition Assessment Report

Project: **Millbrook Arena**
4 Needler's Lane
Millbrook, ON
L0A 1G0

Review Date: Tuesday August 27th, 2019 at 2:00 pm

Reviewed by: Abdulfaraj Alyas MSc, P.Eng. Mechanical Engineer

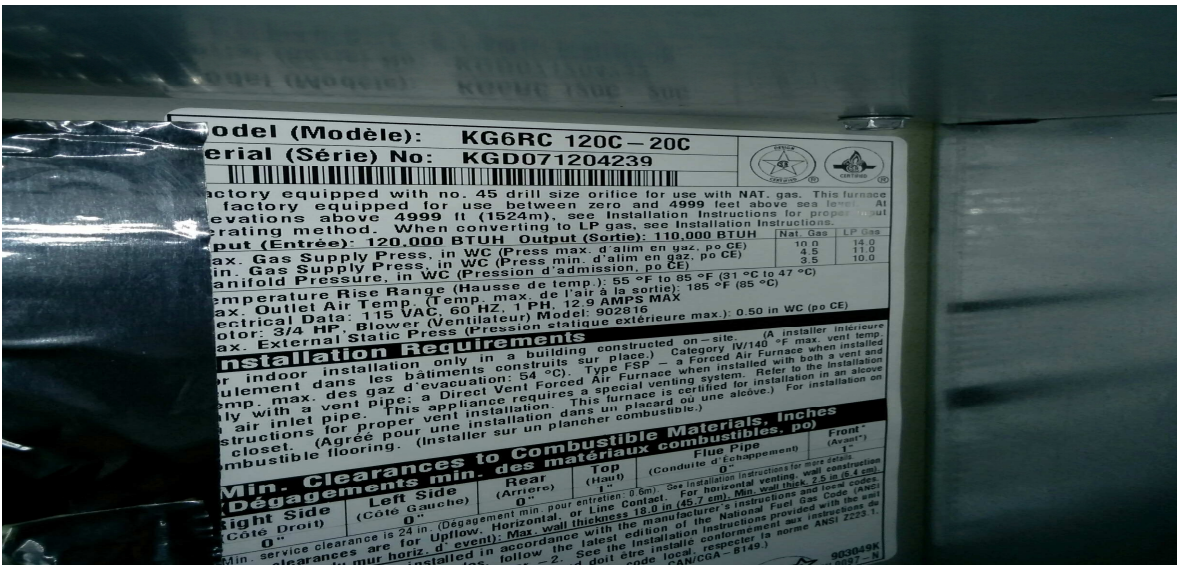
1. General Comments

- 1.1 A visual review of the Mechanical systems at the Millbrook Arena was conducted for inspection of equipment conditional and standards of good practice.
- 1.2 Photographs were taken as part of the site review.

2. Heating / Cooling / Ventilation Systems

- 2.1 The building has four Gibson furnaces for heating only, each has a capacity of 110,000 Btu/hour with efficiency of more than 90%, natural gas fueled.
- 2.2 The building has no cooling as there is no direct expansion coils above the furnaces and a roof top unit could not be verified on the roof.
- 2.3 The building has no ventilation, no heat recovery or energy recovery units, no ventilation ducts and no exhaust duct from the ducting system.
- 2.4 There are no heating, cooling or ventilation calculations to verify if the furnaces are covering the heating load or the cooling capacity required and ventilation or outside fresh air required for the whole building.
- 2.5 The mechanical room is cramped, cluttered and very small for all the equipment in it.





- 2.6 The ducting system had no access panels to verify if there are balancing dampers or any other dampers. The ducting was not accessible to verify how the fittings were done or if they were insulated.
- 2.7 The diffusers are in bad condition; there is very poor air and temperature distribution in the second floor. The diffusers were separated from each other by a long distance without return grills in the same space.





- 2.8 The supply diffusers were in a space and the return grills were in a different space.
- 2.9 Some other spaces had no supply diffusers nor return grills.
- 2.10 There is no heating, ventilation and cooling in the rink lobby as required by codes and standards. The whole corridor in the first floor had no diffusers or grills, which means no heating, cooling or ventilation.





3.0 Sanitary drainage system

3.1 The fixtures as shown in the photos are in bad conditions and old.





- 3.2 The piping system could not be verified as it is under ground.
- 3.3 The venting piping system for the sanitary piping system could not be verified.
- 3.4 The seal trap primer could not be verified also as it is underground.
- 3.5 The size of the pipes could not be verified as they are under ground.

4.0 Domestic water system

- 4.1 The fixtures are old, low efficiency and at the end of their life.
- 4.2 The pipe system could not be verified as most of it were in the ceiling space or inside walls.
- 4.3 The hot water tank is a good condition and the pipes inside the mechanical room are copper and in a good condition.
- 4.4 The incoming main domestic water pipe, valves and the meter are old, no back-flow meter was noticed.
- 4.5 No insulation on hot water pipes noticed in the whole building except some pipes in the mechanical room.
- 4.6 There was an expansion tank installed above the hot water tank.
- 4.7 No ventilation in the mechanical room and no recirculating pump.
- 4.8 No clearances around all equipment.



5.0 Other mechanical systems

- 5.1 The exhaust air systems from washrooms, change rooms were not provided with exhaust fans or ducts as required by codes.
- 5.2 There is no heat recovery system for ventilation in the mechanical room.
- 5.3 The building roof is in bad condition with many leaks so that the mechanical system cannot work efficiently.
- 5.4 The range hood for the stove is not installed as required by codes and standards.
- 5.5 The Second-Floor room was heated with a base board electrical heater without any ventilation or exhaust fan.
- 5.6 The building has no fire suppression system.
- 5.7 The building has no automated control system for the mechanical or electrical system.
- 5.8 There are many spaces in the building that have no heating, cooling or ventilation.
- 5.9 No water treatment for the water in the mechanical room.





6.0 Summary

6.1 With the exception of the furnaces, which appear to have been recently upgraded the mechanical systems (Heating, Ventilation, Fresh Air, Plumbing) installed at the Millbrook Arena are mostly original, >30 years old. The mechanical systems are

presently in substandard condition and some work should be done to improve these systems in the short term.

- 6.2 Most of the grills need to be replaced and some are missing so they need to be added
- 6.3 Ventilation and fresh air should added to both floors with HREVs which will need additional ducting and connections to the existing duct system.
- 6.4 The second floor washroom should be returned to a operational state.
- 6.5 Exhaust fans should be installed for the change rooms
- 6.6 Additional diffusors should be added in the corridor of the first floor.
- 6.7 These works with equipment estimated to cost around \$100,000.00

Prepared by:


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