

Municipality of Lakeshore - Report to Council

Community & Development Services

Recreation Services



To: Mayor & Members of Council
From: Frank Jeney, Manager of Recreation and Leisure Services
Date: December 23, 2020
Subject: Rock Arena Air Conditioning Report.docx

Recommendation

This report is for information only.

Background

At the Regular Council Meeting of February 19, 2019, the following motion was passed:

115-02-2019

Council fund consulting for the Feasibility Study for installation of air conditioning in the ROCK Rink identified on page 64, line 8 of the 2019 Draft Budget from Community Benefit Reserve.

Comments

Subsequent to the Motion, Jasel Engineering Inc. was awarded the contract to undertake the Feasibility Study.

The purpose of the Study was to assess and recommend how to air condition the ROCK Arena at the Atlas Tube Centre. Typically ice is removed from the ROCK arena in May and replaced in August. The ability to rent this space out to groups between May to August is limited due to the high temperatures due to lack of air conditioning.

The recommended option is option 3 below: Direct Expansion (DX) cooling system with Indoor Fan Coil Units and Outdoor air cooled condensers. The cost is estimated at \$1,537,000.00. The Jasel report is attached as Attachment 1. Attachment 2 includes a rendering of what the indoor and outdoor condensers would look like.

The Project Description

Lakeshore requested that the Air Conditioning Report address three issues:

Issue 1: Ability of the current air handling system to provide cooling.

Issue 2: Using the current air handling system (ducts, motors, filters, power, etc.)

Price, impact, projected annual costs, structural (interior & exterior designs), and construction schedules.

Issue 3: Installing a new air conditioning (Cooling) System

The report gives a recommendation of two other air cooling systems

Price, impact, projected annual costs, structural (interior & exterior designs), and construction schedules.

The study results were:

The existing Air Handling Unit (AHU) does not have the ability to provide future cooling as there is no spare space in the AHU to add any form of cooling coil. This would address issue 1.

The existing supply ductwork would not meet the requirements to allow for air conditioning (cool air would cause condensation on the duct work because the current duct work was not set up with insulation needed for cool air). If we would consider to use the existing ductwork it would all need to be insulated, and in some cases replaced. Note: Some of this existing ductwork was installed within concrete walls, and those walls would need to be reconfigured. This would address issue 2.

The Three Options proposed in this Feasibility Study would address issue 3:

Option: 1 Rooftop or West Exterior Wall HVAC Unit installed.

Not considered financially feasible.

Estimated cost: This option was not priced out in the study.

Option: 2 Chilled Water System with one (1) Indoor Air handling Unit

Description of Work

Cooling to be provided by the use of an outdoor air cooled chiller that would be located on grade on the west side.

Air distribution will require a new indoor air handling unit complete with fans, filters and cooling coil. Note – The indoor air handling unit would need to have the air ducts installed at the North end of the ROCK Rink, due to the low ceiling on the South, and the centre ice scoreboard in the middle. Being installed at the North end would require the large cooling unit to be installed in the ROCK Conference room. (This would cause loud noise within the rock rink and surrounding offices.)

The cost of for option 2 is \$1,392,000.

Option: 3 Direct Expansion (DX) cooling system with Indoor Fan Coil Units and Outdoor air cooled condensers.

Description of Work

Addition of new indoor fan coil units suspended and and/or placed on custom support stands with their Dx coils. (Images provided at the end of this report.)

16 indoor cooling units to be located above the South windows of the ROCK Rink.

16 outdoor condenser units located on the South end of the ROCK arena.

Provide refrigerant piping to location of the new equipment from outdoor units, into ROCK Rink, up the walls, and into indoor units.

Provide power to units.

Provide building automation controls to new equipment

Note: Current ROCK Rink Air Handling unit would need to be left on “fan mode” to properly circulate these new units. (Running two systems at once)

Advantages:

Equipment does not require ductwork. Phased use of indoor cooling units to minimize electrical load.

Disadvantages:

Multiple pieces of equipment. Not integrate cooling and ventilation system. Equipment may be difficult to service. The building structure may not be able to handle the weight of the new equipment and therefore supports stands may be required. Outdoor condensers located on the south side may need covers due to the rain runoff of the ROCK Rink rooftop.

The cost of for Option 3 is \$1,537,000.

As the Feasibility Study did not include the price for a stand-alone air handling unit, Administration recommends pursuing other options to deal with Issues 1 and 2. Therefore administration will further investigate options to resolve on Issues 1 and 2. This information will be brought back to Council for consideration.

The cost of providing this retrofit will also be compared with the potential increased usage of the ROCK arena. Air conditioning will expand the usage of the rink into the summer months, if ice sports are expanded to full year.

Others Consulted

Jasel Engineering Inc.

Financial Impacts

The feasibility study was budgeted for \$80,000 in the 2019 budget to be funded from the Community Benefit Reserve.

The cost of the Jasel Feasibility Study was \$4,746. The surplus of \$75,254 will remain in the Community benefit reserve as uncommitted funds.

Should Council wish to proceed with this project it can be brought forward as part of the 2022 budget with the added solution for issues 1 and 2. If Council wishes to expedite this project, funding would come from the Facilities reserve fund which currently has an uncommitted balance of \$2.6M

Attachment 1: Jasel Engineering Inc. report

Attachment 2: Rendering of Option 3.

Report Approval Details

Document Title:	Rock Arena Air Conditioning Report.docx
Attachments:	- Jasel Engineering Inc. Air Conditioning Report fro the Rock Arena.pdf - Attachments 2 - ATC - Rock Rink Air Units (16 Units) (002).pdf
Final Approval Date:	Jan 7, 2021

This report and all of its attachments were approved and signed as outlined below:

Rosanna Pellerito

Kristen Newman

Truper McBride