



Report to: Council

Meeting Date: April 30, 2019

SUBJECT: Request for Tender 057-T-19 Markham Village C.C.
Refrigeration Room Construction

PREPARED BY: Lorne DeHaas, Supervisor, Community Facility, Ext. 3351
Darius Chung, Senior Buyer, Ext. 2025

RECOMMENDATION:

- 1) That the report entitled “057-T-19 Markham Village C.C. Refrigeration Room Construction” be received; and,
- 2) That the contract for tender 057-T-19 Markham Village C.C. Refrigeration Room Construction be awarded to the sole bidder, Black & McDonald Limited in the amount of \$829,318.18 inclusive of HST; and,
- 3) That the cost of the award in the amount of \$829,318.18 be funded from capital project 500-101-5399-19128 “Markham Village C.C. refrigeration Room Construction” which has an available budget of \$716,439.52; and,
- 4) That the shortfall in the amount of \$112,878.66 be funded from the Lifecycle Replacement and Capital Reserve Fund; and,
- 5) That the 2020 Operating Budget reflect savings as a result of the new system and legislative TSSA Standards; and further,
- 6) That Staff be authorized and directed to do all things necessary to give effect to this resolution.

PURPOSE:

Staff is seeking approval to award the contract for the supply and replacement of the refrigeration system at Markham Village C.C., which will utilize Opteon XP10 as the new refrigerant.

The City of Markham currently utilizes ammonia based refrigeration systems in its eight (8) arenas locations. Aligning with the strategic priority to maintain a safe and sustainable community, staff recommends utilization of an alternative refrigerant (Opteon XP10). This new refrigerant is more environmental friendly option that will reduce operation costs and enhance public safety. Opteon is a new product alternative for ammonia based refrigeration system that is being used in Quebec and United States, this installation will be one of the first in Ontario.

BACKGROUND:

Two key determinants have led to the replacement requirements of the refrigeration system at Markham Village C.C.:

1. The refrigeration plant within Markham Village C.C. was last updated in 1994 and a condition assessment completed in 2016 outlined that a lifecycle replacement of the refrigeration equipment was warranted. This arena is one of the City's older facilities which was built in 1954 (please check date).
2. Technical Safety Standards Association (TSSA) issued a compliance order in February, 2016 to the City of Markham citing that the current Markham Village C.C. refrigeration plant design does not comply with *B52 Mechanical Refrigeration Code (2014)* requirements.

To address the replacement requirements, the City of Markham needs to conform with Section 6.2.2. of the B52 Mechanical Refrigeration Code (Section 6.2.2.), whereby a refrigeration plant room requires *a minimum of one self-closing door that opens outwardly and is not accessible to a public corridor*. Therefore, the refrigeration room would need to be retrofitted. In addition, due to aging equipment, the removal, disposal, supply and replacement of the refrigeration equipment would be required.

In January, the City issued tender # 008-T-19 to the market for a like for like replacement of the refrigeration system at Markham Village C.C., which closed on February 13, 2019. The City received two bids at that time. The two bid prices received were \$931,104 and \$966,007 respectively, with the low bidder being \$214,665 (\$931,104 - \$716,439) over budget.

Through discussions, internally and with an engineering consultant (I.B. Storey), it was recommended to re-issue the bid utilizing the OPTEON XP10 refrigerant instead of an ammonia system. This change would result in utilizing a refrigerant that changes the operating requirements and would eliminate the need for a vestibule and secondary exit, as well as enhancing operator and public safety. By doing so, the City was able to reduce the budget shortfall by \$101,787 (\$215,665 - \$112,878).

DISCUSSION:

The first tender released did not consider the use of Opteon XP10 as a refrigerant, because Opteon is a new product on the market and is not used as of yet used in the Ontario market. Opteon XP10 is a refrigerant that has an A1 safety classification, which means that it is safe and nonflammable in air under normal conditions. While the replacement with the Opteon solution provides a safer solution than ammonia, it can only take place when the complete refrigeration system is replaced in its entirety. This is generally not the case with refrigeration systems, where replacements are component based and timing for replacement is based on each component's condition.

Opteon XP10 is used extensively in Quebec and in the United States, since the legislative ban on the R22 (Freon) refrigerant to support ice in arenas. The use of OPTEON XP10

will be the first in Ontario. The new system has been designed to reduce the installation costs, and includes the following additional benefits:

- **No ammonia charge** – enhanced operator and public safety.
- Additional financial savings include:

Annual Operating Savings

Category	Volume / Description	Savings
Reduced Water Consumption	567,811 litres / year	\$ 1,391 / year*
Reduced Energy (Hydro) consumption	50,000 kwh / year	\$10,356 / year*
Chiller manufacturer warranty	10 year warranty incl. labour, parts and refrigerant.	
Service Maintenance Agreement	Current contract - \$10,593/year New contract - \$5,707/year on parts and labour excl. chiller	\$ 4,886 / year
	Total Annual Savings	\$16,633 / year

* Savings fluctuate based on annual base rate

Recreation Services continues to safely operate and mitigate risks of ammonia based refrigerator systems through highly trained and skilled operators and compliance to strict protocols and regular inspections.. Safety controls dictated by regulators are in place such as audible and visual alarms when there is detection of ammonia presence. The department also utilizes standard operating procedures (SOP) to support staff and users when and if there is a presence of ammonia. They are also trained on emergency response and hazard identification.

Recently, TSSA proposed new regulatory standards for industry review. Current TSSA legislation that impacts arena operations are plant rating and supervision requirements based on total kilowatt capacity of a plant.

Staff anticipate that the legislative approval of TSSA proposals would lead to additional operating costs associated with the operation of ammonia plants. The impact of future TSSA proposed changes on the City of Markham's ammonia based systems at our eight locations (10 ice pads) is currently unknown.

The operating budget savings associated with the new equipment at Markham Village Community Centre estimated in the amount of \$16,633 may be offset by higher costs due to potential TSSA changes. As a result, Staff will make necessary adjustments as part of the 2020 budget once there is clarity on regulation changes.

As opportunities arise to replace complete refrigeration systems through the lifecycle replacement program, staff will ensure that the project includes evaluation of alternatives to ammonia and to any new technology opportunities that further enhance public safety and operating costs. .

BID INFORMATION:

Bids closed on	March 26, 2019
Number picking up bid document	15
Number responding to bid	1*

*This is a niche market with few local refrigeration contractors who can provide this type of work. The complexity of the work, coupled with the removal and proper disposal of ammonia has resulted in reduced bid participation. While many of the contractors that picked up the bid document were familiar with the refrigeration system, many were unfamiliar with the work required for proper ammonia removal and disposal, thus viewed the work with greater liability than they were comfortable with executing.

PRICE SUMMARY:

Suppliers	Bid Price (Inclusive of HST Impact)
Black & McDonald Limited	\$829,344.00

FINANCIAL CONSIDERATIONS

Original Budget and Account #	\$716,439.52	500-101-5399-19128
Less Cost of award	\$829,318.18	Total Cost of Award (Inclusive of HST)
Budget Remaining after this award	(\$112,878.66)	*

*The shortfall of \$112,878.66 be funded from the Lifecycle Replacement and Capital Reserve Fund.

HUMAN RESOURCES CONSIDERATIONS

Not Applicable

ALIGNMENT WITH STRATEGIC PRIORITIES:

Safe & Sustainable Community

BUSINESS UNITS CONSULTED AND AFFECTED:

Financial Services Department has been consulted during the preparation of this report.

RECOMMENDED BY:

Mary Creighton
Director, Recreation Services

Brenda Librecz
Commissioner, Community & Fire Services