



The Corporation of the Town of LaSalle

Date	December 4, 2017	Report No:	PW-41-17 (2018 Budget Deliberations)
Directed To:	Mayor and Members of Council	Attachments:	
Department:	Public Works	Policy References:	
Prepared By:	Peter Marra, P.Eng. – Director of Public Works & Mark Masanovich – Manager of Facilities		
Subject:	Vollmer Ice Plant Equipment Review		

RECOMMENDATION:

That Council receive this report for information.

That Council approve \$700,000.00 in the 2018 budget for initial modification to the ice plant equipment at the Vollmer

REPORT:

The Town over the years has been experiencing difficulties with creating and maintaining ice on the two ice pads at the Vollmer during the warmer outdoor weather seasons. This has caused periodic ice rental cancellations. In 2017, administration sought the assistance of a specialized refrigeration engineering consultant to come and review our facility, with respect to the existing facilities, the current plant/equipment and current operations. This report provides a summary of their findings.

Existing Plant

The existing ice plant equipment is a package system capable of producing at a maximum 150 total tons of refrigeration (TR). The package system is a compact skid supplied, factory manufactured system with all components preinstalled prior to installation in the field. This system was installed during the construction of the Vollmer facility.

The existing dehumidification units (BRR units) located in each of the rinks also run off the overall system. These two units need approximately 28 TR each to operate. Resulting in a total load of 56 TR load on the system. Because these two BRR units are interconnected with the overall ice

plant, system this leaves only 94 TR for ice making purposes at a maximum. It should be noted that the BRR unit in the spectator rink is currently undersized given the maximum occupancy load during the warmer months of the year. This will result in warmer/humid ambient air in the spectator rink and frost on the ice.

The existing system is capable of making and maintaining ice during the months of October to March given our geographical location with relatively no issues.

The system also consists of various other equipment that runs the overall rinks, such as under floor heating, snow melt pits, glycol tanks and pumps, ammonia condenser, oil filters and coolers, cooling tower, etc. The overall system for an ice plant is a network of complicated interconnected multifaceted systems.

Analysis of Refrigeration Needed

In order to properly address the issue, the consultant carried out an analysis using applicable standards and geographical location mapping to calculate the total TR that are required to make and maintain ice given our existing facility and existing operations. The requirement for the ice pads only, per rink, is approximately 91 TR. The additional refrigeration load that the spectator rink (800 occupants) places on the system is approximately 23 TR. The existing two BRR dehumidification units need 56 TR. Resulting in a total load of 261 TR required.

It is seen that the current system is under sized for what is estimated that is required to properly operate under our current operating model. This is evident because the compressors of our existing system are continuously running around the clock. During the warmer months additional excessive strain is put on the system and has resulted in premature wear of equipment and periodic shutdown of the rinks. The heart of the existing system consists of three compressors. We have replaced two of these compressor motors and the third is needed in the extreme near future (2018) in order to keep the plant operating.

Recommended Upgrades

There were two options presented in the final report, both of which require a significant shut down approximately 3 - 5 months, both require all new equipment and both of which the preliminary budget is about \$1.7 million (taxes excluded).

New equipment is required, because the essence of the existing system being a skid package. Modification can be made to the existing system, however the cost, additional physical space required, and all the additional equipment makes the modification option more costly. Mostly due to building additions, and more to not being able to address the insufficient refrigeration loads.

Option 1

Supply and install a new 260 TR system and keep the existing BRR units. This will not address the undersized BRR unit in the spectator rink. This will require a 3 – 4 month shut down to complete the work. Preliminary construction estimate is \$1.71 million (excluding taxes).

Option 2

Supply and install a new 204 TR system and replace the rink dehumidification units with two new properly sized desiccant units. This will require a 4 – 5 month shut down to complete the work. Preliminary construction estimate is \$1.73 million (excluding taxes).

Recommended Move Forward Strategy

Carrying out the work under option 1 would be a complete all in project, while carrying out work under option 2 can be a staged approach and completed over multiple years. Administration recommends carrying-out option 2 under a staged approach.

The first stage would cost approximately \$700,000.00. This would be to change out the two rinks dehumidification units and replacement of the cooling tower on the roof. This work would be completed with either a short closure of a few weeks or perhaps none at all depending on circumstance. All of this work is part of the ultimate solution under option 2 and will be utilized once work continues on option 2.

By replacing the dehumidification units, this will free up 56 TR and administration would like to evaluate for about a year or so the effects this has on our overall system, prior to completing the remainder of option 2. Furthermore, the replacement of the cooling tower is an item that needs to be addressed regardless of this report. In this fashion, the cooling tower replacement will be compatible with an ultimate solution.

Contained in the 2018 budget is the interim proposed work for \$700,000.00 to improve the processes at the Vollmer with respect to ice plant operations.

Respectfully submitted,



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Director of Public Works



Mark Masanovich
Manager of Facilities

Reviewed by:							
✓ CAO	Treasury	Clerks	Public Works	Planning	Cult. & Rec.	Building	Fire
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