



Considerations for Designing An Ice Resurfacer Snow Melt Pit

VERSION 1.0

ISSUE DATE: SEPTEMBER 2016

orfa.com



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Introduction

Disposing of ice resurfacer shavings is an important part of the resurfacing process but often a sidebar to designing a facility by professionals unfamiliar with the workings of an ice rink. Melting snow indoors is inherently an inefficient process. Often the snow dump area is constructed undersized to effectively handle ongoing ice resurfacer snow load.



The dumping of ice resurfacer shavings outdoors would seem to be the simplest solution but there are also some risks, issues and energy efficiencies to be considered. Every time the ice resurfacer leaves the building the equipment door will be left wide open. During cold months, the room will need to be rewarmed while warmer seasons will allow moist air to enter the building and if not controlled will impact refrigeration, dehumidification and ice conditions.

Pending the location of the machine door there could be operator risk if the outside dump location is also used by public vehicular traffic. While dropping the often bacteria filled shavings outside will attract individuals that will play in it or utilize it for cooling purposes. Management must be aware of where the shavings will ultimately rest once melted. Leeching into the ground is acceptable as long as the by-product does not seep off of the owner's property. Disposing of resurfacer shavings in a safe, environmentally appropriate manner are other contemplations in the decision making process to be considered.

Note:

Refer to ORFA Potential Risks of Ice Resurfacer Shavings

http://www.orfa.com/Resources/Documents/librarydocs/guides_bp/Snow%20Dumping%20Issues%20Aug%202012%20Final.pdf

Hidden Operational Costs of Undersized or Poorly Functioning Snow Pits



Snow melt pits that are undersized or poorly functioning are costing the facility thousands of dollars in unbudgeted operational funds. Pits that are unable to handle ice resurfacer snow loads will build up causing staff to try and melt the build-up with the ice resurfacer hot water flood. Not only is there a significant energy cost to this process but there is a lost staffing time as the operator is unable to perform other facility work. A significant amount of moist air will be generated during this melting process that should be purged from the room so it cannot enter the ice rink bowl area. Un-necessary use of the exhaust fan and loss of heat during cold months adds to the hidden expenses of inadequate design.

Further, there are the related water supply and disposal costs to be applied on buildings with municipal water consumption meters.

Designing that Perfect Snow Melt Pit

The ORFA holds no engineering ability, but has the benefit of collecting information from our members on key traits that should be considered when updating or building a new snow melt pit.

1. Standard ice resurfacer design is a front dump – pending the make and model of equipment the room must have an adequate amount of height to accommodate the unit when the snow dump box is fully extended
2. Floor pits should be avoided as they are usually undersized to hold snow load; they allow for standing water that usually has drainage problems contributing to unhealthy indoor air quality; if selected they

must have grates in place at all times - grate holes should be large enough to allow snow to easily pass through while not creating a foot trip hazard

3. Ice resurfacers that use propane must have all low lying drains power-vented to ensure no accumulation of escaped gas can occur – check with local building authorities to ensure compliance
4. Drive-up to the pit should be direct with no required turning as this will cause excess ice resurfacers tire wear



5. The pit should have a depth between 4.6 - 6.1m (15-20ft) to allow for snow to build up between floods without needing to be melted by flood water; pit depth should be posted
6. The pit should be protected by a concrete baluster or steel fence to prevent the ice resurfacers from tipping into it and to assist in protecting workers from falling into the pit
7. Drainage should be at the top of the pit
8. A heating system should be installed in the base of the pit to speed snow melting; heat harvested from the refrigeration plant should be considered; geographical locations that may have limited refrigeration plant use in cold months will require back up melting system
9. Graded bottom to shunt all melted snow to drain; system should be designed to filter debris from drain
10. A means to break down large accumulations of snow; this should be separate from flood water system; recirculation from the pit itself would be best; facilities have installed marine grade air bubblers

Snow Melt Pit Cleaning and Sanitization

Snow melt tanks look very similar to septic tanks – and left unmaintained will quickly grow to smell like one. Snow pit areas, which are left unattended and continually release a foul smell, may be exposing workers, user groups and facility patrons to more than a foul odour situation; it now becomes a public health risk!

Facility staff should be reminded that “invisible body fluids” are removed during the ice scraping process which are dumped into internal snow pits may create a potential health risks such as Legionnaires disease or Pontiac fever can be created in such situations. Snow pits are not slop sinks for housekeeping staff. Workers should never urinate in the snow pit. Ice shavings containing ice paint should not be disposed of in the snow melt pit.

Note: Never pour large amounts of any sanitizing chemical (bleach) into a snow pit. The pit should be regularly pumped down by septic tank type equipment, power washed and sprayed with a sanitizer. A written SOP should be developed and the work added to the facilities housekeeping and maintenance calendar.

Turning off heating elements and/or hot water used to melt ice shavings at night and in the off-season reduces the risk of incubation of potential health hazards while saving energy. Regular cleaning and sanitizing of these areas is essential in creating a safe/healthy work environment.

Conclusion

Snow melt areas are an essential part of the resurfacing process and as such must be carefully considered when designing ice resurfacers rooms in new or retrofit construction. Once constructed, they must be regularly inspected and maintained.

