



# **An Employers Guide to Developing Efficient and Safe Ice Resurfacer Operators**

VERSION 1.0

ISSUE DATE: APRIL 2019

[orfa.com](http://orfa.com)



**Building Community Since 1947**

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## Introduction

It has been 70-years since the first ice resurfacer rolled onto an ice surface in Paramount, California (1949). Since that time, there have been thousands of ice resurfacer drivers, but only few actual ice resurfacer operators.



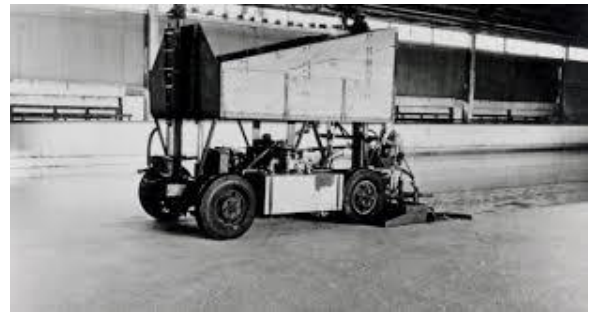
This statement will have many who currently take control of these precision pieces of equipment on a regular basis, self-evaluate their ability and determine that, based solely on years in the seat, they deem themselves "operators". However, there are many who work their entire career and never reach ice resurfacer operator status.



## The First Ice Resurfacer Operator

The first actual ice resurfacer operator was Frank J. Zamboni. Seems reasonable that the inventor of the equipment should be given such recognition however, it's not given, it's earned. Mr. Zamboni's ability as an operator is overshadowed by his inventor status. However, his first operational skills lay the foundation to evaluating those who follow.

The ability to listen to the equipment and visually evaluate the ice surface during the resurfacing process to ensure that all is working as designed are essential skills to be mastered by today's operators.



Granted, he had a bigger stake, as he wanted to ensure that he was building the best machine possible for his operation so that his costumers had the best experience possible. Appreciate that the early concept of an ice resurfacer was not based on supplying an industry. It was being built for personal use, fueled by a special pride, to do the best job possible. Professional attributes that need to be embraced by today's ice resurfacer professionals to be successful. Once created, he learned to make slight adjustments to ensure ice resurfacing perfection every time he entered onto the ice sheet. Did he learn this on his first floods? –No. He continually evaluated and improved until he knew the equipment's complete ability and limitations. Once attained, he learned the importance and benefits of pre-use and regular detailed inspection and ongoing maintenance to ensure that the equipment performed as designed - on every lap. As it should be expected, that he personally trained all operators in his facility once he learned how to operate. These same principles and skills are what continues to define ice resurfacer operator competency. Refer to: [The Zamboni Story](#)

## Why The Same Process, But Different Results?

With the information and support services to learn how to safely and efficiently operate an ice resurfacer today, there is no reason that every flood cannot be perfect. So why has this not been accomplished? The facility's actual mechanical ability is a variable that can impact ice conditions. Inadequate refrigeration or dehumidification can wreak havoc on an ice sheet regardless of operator ability. The processes used to create and paint the ice will also offer unique challenges if not conducted correctly. Type of water also plays a significant role in ice quality. However, one of the primary reasons for poor performance is passing on of incorrect ice resurfacer operational information from one

generation of drivers to the next. Concepts and processes are often adopted that conflict with manufacturer or industry operational recommendations or best practices. The next challenge often becomes a high turnover of drivers who do not receive initial quality training. Facility management that do not see value in investing in workers who may not be there in a few weeks or months is short sighted. Simply ask “what type of formal training plan is in place for new workers expected to operate this equipment”? If there is none, this is part of the problem the industry faces.

### It Must Be The Ice Resurfacer’s Fault

The investment by ice resurfacer manufacturers to improve their equipment has been significant. Today’s ice resurfacer’s are considered state-of-the-art. The options, design features and ability to cut artificial ice that varies with temperature is almost seamless – but only when the operator and equipment are in sync. A new ice resurfacer will begin operations at the highest level possible. However, this does not guarantee that the operator knows what they are doing. For those who have had the opportunity to take ownership of new equipment a few simple questions can evaluate the workplace. Under the guidance of a manufacturer representative or workplace competent person was there a comprehensive review of all owner’s manuals, video training, workplace specific sessions on how the equipment should work, risk and hazard awareness for all operators. And is there the same level of education for those who follow. If not, each operator will be learning as they go creating different levels of ability. Again, a problem that if addressed can help correct some of the problems.



### Does an Operator Need a Driving License?

An ice resurfacer does not fall under the Highway Traffic Act or the Farm Equipment Act – so the answer is no...but there is more to consider. Refer to: [ORFA's Maintaining A Valid Drivers Licence](#)

### As Seen On TV

One of the most difficult ice resurfacer operational issues that community rink ice resurfacer operators



need to address is what is viewed at semi/pro ice rinks. Ice resurfacer operators in these facilities are often controlled by marketing departments and/or team owners that do not necessarily embrace standard safe

operational best practices over revenue generation. For example, additional riders or non-related staff on ice activities while resurfacing is not recommended by the manufacturers or as industry best practice. Knowing what is and is not acceptable when operating an ice resurfacer is an essential part of every training program. Do not assume that because they work in a professional setting that these operators are automatically professionals nor, that they are conducting themselves professionally.



### The Equipment Maintenance Gap

Unless the ice resurfacer is maintained to its original delivery level it will slowly begin to reduce

performance. This often happens so gradually that drivers will not notice as poor operational performance becomes the norm. Arena staff will often indicate that the ice resurfacer is “not doing its job” when in fact, it is most likely that those responsible for maintaining the equipment “have not been doing their job”. To be an efficient operator, the equipment must be functioning as designed. If an operator does not know the difference, they are a driver not an operator. If those operating an ice resurfacer do not clearly understand how the equipment is designed to function, and what adjustments must be made for correct pressures or angles they are drivers not operators.



## Drivers and Operators in the Same Rink

Can an ice arena function correctly with both drivers and operators – yes! But only if there is a system in place that defines these roles and responsibilities. Operators who ensure that the equipment being left for a shift being controlled by a driver is in proper working order and correctly adjusted should find that a driver can function for a typical operational shift with little issue. But only if a driver has been provided basic training on the equipment. If there is not a team approach to ice resurfacing responsibilities expect dips, valleys, thick ice, thin ice and lost lines and logos. These will require time for staff to correct – time that might have been better invested in training the driver correctly in the first place.



## Risks and Hazard Awareness

Unlike today where ice resurfacer’s have unlimited safety warnings and comprehensive owners’ manuals, Frank J. Zamboni had to teach himself the risk and hazards associated with the equipment’s operation. All too often today’s ice resurfacer driver/operator fails to read and apply basic safety practices. Equipment manufacturers have gone to extreme lengths to protect operators by installing guards around moving parts and potential pinch points however, operators continue to place their hands near augers, in chutes and by chains. The blade which is essential to the resurfacing process is razor sharp even when considered operational dull. An operator, in partnership with the owner, must take the time to understand the associated risks, hazards and safety features specific to the equipment they operate and always follow all recommendations made by the manufacturer.

## The Cutting and Collection Systems

Often referred to as the “business end” of an ice resurfacer, the cutting and collection systems are precision parts that require extreme care, adjustment and lubrication. Understanding down pressure adjustment, proper blade installation and angles are important to proper function. Understanding how to change and set the blade to properly cut is the first step. Understanding how to calculate how much snow will be cut and collected in the hopper has scientific principles that can be applied. This ensures that an operator is cutting and collecting the equivalent of the amount of fresh water being reapplied. Don’t be fooled by an operator who is constantly adjusting blade depth by turning the blade adjustment wheel while flooding – 99.5% of the time they do not know what they are doing – it’s merely a show. The ORFA recommends in the Ice Maintenance and Equipment Operations



(IMEO) training course that the blade should be set and left for an entire flood with an exception over the creases areas where a slight lifting by 1-turn would be acceptable. Mastering these skills is what raises a driver to operator status.



## The Role of ORFA Training

A basic ice resurfacer's will cost \$85,000.00 or more and can weigh as much as 10,000 pounds or more when loaded with flood water. And because of their general design, they offer many blind spots when driving in areas where the general public has access to. Operating this equipment is often seen as a privilege by employers vs. a highly skilled occupation that requires comprehensive training. Regrettably, fast food workers often receive more training than a typical ice rink worker. The industry has adopted many of the professional recreation accreditations developed by industry practitioners and are offered by the Association either through the introductory 1-day Safe Ice Resurfacer Operator (SIRO) training session or the more in-depth Ice Maintenance and Equipment Operations (IMEO) course. In the beginning, the ORFA offered a practical component in the IMEO course where students got in the seat and on the ice under the presence of a manufacturer representative. This was followed by a testing to the understanding of basic safety principles, operational best practices knowledge and risk and hazard identification. The testing confirmed they could get on and off both the machine and ice safely while properly activating and deactivating the conditioner efficiently. Twenty-years ago, the training process seemed reasonable, on the fact, that 90+% of all students had some seat time in their workplace before attending the class. This slowly shifted to most attendees not having any seat time or basic understanding of the equipment. Another issue was what equipment was being used

in the class may not be anywhere near what was in the rink when they went to work. Employers believed that by sending staff to our sessions they would return ice ready with all the required knowledge and experience to safely drive their equipment. This false sense needed to be redirected toward the role of the employer to provide workplace specific training. The relationship between the ORFA and the employer is that Association training provides a very strong working knowledge of an ice resurfacer and related equipment that will assist employers in quickly training them in the workplace.

## Confirmation of Ability

As a current operator, can you answer these five (5) universal basic equipment operational questions without Google?

1. A properly set ice resurfacer blade for a standard resurfacing, that is 77 or 84-inches long will have how much of the blade (in inches) cutting ice?
2. On what lap is the wash water recommended to be first turned on?
3. What is the recommended year-end maintenance of the wash water pump prior to storage?
4. Which direction should the horizontal auger spin when being safely checked prior to flooding?
5. What four (4) pieces on every ice resurfacer must be maintained to a mirror like finish to ensure the equipment functions as designed?

If you don't know the answers, we look forward to greeting you at future training session. A facility supervisor/manager must put in place a system to help confirm an ice resurfacer driver/operator competency and ability. The following basic steps must first be in place. These steps are considered industry best practice and should be undertaken by an experienced/competent operator:

1. An understanding of how all ice resurfacer's are designed to function.
2. Knowledge of common risks and hazards associated with ice resurfacer use and operations.
3. Understand facility air quality issues.

4. A review of all manufacturer manuals, alerts and videos.
5. Review of all applicable internal Standard Operating Procedures (SOP).
6. Comprehension of basic operational down pressure and blade angle adjustments.
7. Training in refueling or recharging processes.
8. Adequately prepared to deal with any emergency involving an ice resurfacer.
9. Be current with WHMIS, First Aid and Ministry of Labour (MOL) mandatory health and safety on-line training.
10. Completing a workplace specific operational training program.

## Ongoing Operator Evaluation

Is there an ongoing process in place to critique driver/operator ability to perform? Too many operators take offence when their work is reviewed. Facility management needs to merely watch each operator to see if the same level of operations is occurring each time.



And if poor operational habits have crept into the workplace. Is the amount of snow in the ice resurfacer hopper the same? If not, does the operator know why not. If a personal review is too sensitive, consider video-taping all operators flooding. Every ice resurfacer driver sitting in the stands will naturally evaluate another driver's ability to keep the machine straight, conduct proper overlaps, make tight turns, come on and off the ice safely – why not conduct the same video performance evaluation as an operational improvement tool?

## In-House Operator Trainer Qualifications

Currently, there is no set educational process to obtain ice resurfacer trainer status. The question as to who can train new operators is answered simply as a "competent person" as defined in the Occupational Health and Safety Act. How the Association would best define minimum competency skills that includes the following attributes. A worker who:

1. Holds an Ontario G-Class Drivers license in good standing.
2. Current WHMIS. First Aid and health and safety training.
3. Holds an up-to-date Certified Ice Technician (CIT) designation having obtained no less than 65% on all course final evaluations.
4. Has no less than 5-years of operational experience.
5. Has read and is current with the equipment owners-manual(s), alerts, safety bulletins, stickers and support videos. These should all form the foundation for the workplace specific training program.
6. Is knowledgeable of and applies all workplace Standard Operating Practices (SOP's).
7. Demonstrates leadership by always applying safe operational best practices when using an ice resurfacer.
8. Has positive communication skills.



## Tips for Training New Drivers

There is no set timetable to becoming a competent operator. Some will learn quicker than others. New drivers require adequate time to feel comfortable before driving and ice resurfacer. The following tips will assist in developing a plan that works.

1. Give new drivers with no or limited experience operating a motor vehicle extra instructional time.
2. Introduce them to the buildings exhaust system to control air quality.
3. Conduct a detailed circle check that focuses on risks hazards and important visual inspection requirements.
4. Allow new drivers time to familiarize themselves with all controls. Consider having a senior operator place the ice resurfacer out on the ice to allow the new operator to turn augers on and off while lifting and lowering the dump tank and conditioner.
5. Be sure to close all doors including the main ice resurfacer door.
6. They do not need an audience. Limit who is in the building to reduce anxiety levels.
7. Once comfortable with all controls get them to start to move the unit around the ice keeping away from the boards. Have them conduct a series of starts and stops on command. Once accomplished, encourage them to move closer to the boards with no part of the conditioning system being activated.
8. As comfort level increases begin putting the ice resurfacer into scraping action moving on to water activation and control.
9. Complete the session with moving off the ice surface safely, dumping and placing the equipment in storage mode.
10. The ORFA recommends that all new operators conduct no less than 25-hours of operational time under the guidance of a competent person. Consider the industry best practice of 20-minutes to conduct a flood. 5-minutes to prepare, 10-minutes to flood – 5-minutes to clean up and store = 75 resurfacings.



## Developing a Positive Health and Safety Culture

Trainers should never stand on an ice resurfacer unless protected from falling. All manufacturers state, “No Riders” and give no exceptions for training. It is hard to instill a positive ice resurfacer health and safety culture when the training session involves breaking a serious operational safety rule. Speak with the manufacturer for options on how to protect trainers if riding on the machine is required.



## Sample New Operator Training Plan

The Town of East Gwillimbury has created a comprehensive training plan for new operators which is included at the end of this resource. It can be used as a template to create a facility workplace specific training plan.

## Conclusion

There is no quick path in developing efficient ice resurfacer drivers/operators. There are proven processes and tools in place to assist or guide operations in obtaining their goals. How these workplace obligations are met is left with each individual workplace to consider and apply. Visit [www.orfa.com](http://www.orfa.com) to view ORFA support options. Consider contacting the equipment manufacturer to discuss what additional options may currently be available in the marketplace to assist in training staff.



## Additional Resources

Additional information can be found in the ORFA [Resource Centre](#)

1. A Guide to Artificial Ice Up-Keep and Maintenance
2. Safe Edging and Guideline Best Practices
3. The Ice Resurfacers Wash-Water System
4. Risks, Hazards and Sciences of Floodwater Systems
5. The Changing Dynamics of Artificial Ice



## Ice Resurfacer Training Program

Name of Trainee: \_\_\_\_\_

This checklist is to be used as a guide by arena staff when training an employee to operate the Ice Resurfacer (IR). It is important to ensure these training steps are followed in order to prevent employee injury and/or equipment damage. Please adhere to the following requirements when training a future ice resurfacer operator:

1. Individuals being trained on IR operation must be an employee of the Town of East Gwillimbury.
2. Only FT arena staff approved by the Parks and Facilities Manager can act as an IR trainer.
3. Individuals being trained on IR operation must have achieved a staff level of Senior Part Facility Attendant or permission by the Parks and Facilities Manager.
4. Individuals being trained on IR operation must be at least 16 years of age.
5. Individuals being trained on IR operation must have successfully completed ORFA's Safe Ice Resurfacer Operation (SIRO) course. (or have proven core competencies as determined by the Parks and Facilities Manager)
6. Individuals being trained on IR operation must have a valid Ontario class "G" drivers license.
7. Individuals being trained on IR operation must hold proof of WHMIS training.
8. Individuals being trained on IR operation must wear CSA (green patch) approved work boots.
9. Any employee wishing to be trained on the IR must receive clearance and instruction from the Parks and Facilities Manager prior to commencing their training program.

### Training Program Instructions

1. The program is a 7 step learning process designed to slowly walk the trainee through Ice Resurfacer operation. The training should be applied over a minimum of three shifts.
2. The steps are to be completed in order.
3. No more than 3 steps are to be completed on any given shift.
4. Training should occur at the end of an evening shift or when there is at least 3 hours before the ice is required for use.
5. Please refer to the Arena Leadhand with any IR operating questions you may have.
6. The trainer must sign-off on each step after the trainee has successfully demonstrated their competency within each step.
7. **Remember that the IR is an expensive and dangerous piece of equipment. Please respect its power and limitations.**

**Step # 1 – Operating Procedures.**

- Review Ice Resurfacer operation video.
- Review and perform IR circle checklist.
- Review log book location.
- Review Standard Operating Procedure (SOP) for IR operation.
- Review location and operation of emergency equipment (fire extinguisher, hand pump handle, horn location, ignition, gas detectors, seat switch).
- Review IR operational controls (gear shift, brakes, augers, dump box, wash water, ice making water, blade adjustment, board brush, tire wash, dashboard gauges, lights).
- Review SOP for blade replacement.
- Review fuel filling procedures and SOP for IR fuel filling.
- Review fresh air fan operation.
- Review mounting/ dismounting procedure.
- Review location of Personal Protective Equipment (PPE).

<b>Step # 1 Sign-Off By Trainer</b>	<b><u>Name</u></b>	<b><u>Signature</u></b>
Date:		

**Step # 2 – Driving the Ice Resurfacer.**

- Perform circle check.
- Mount IR and start up.
- Back onto ice surface.
- Perform 8 minutes of driving only (no PTO – emphasis on gaining a comfort level with handling of the IR).
- Perform 8 minutes of driving machine closely to the boards (no PTO – emphasis on gaining a comfort level with handling of the IR near the boards).
- Return IR to IR Room.
- Review end of the night storage procedures.
- Place IR in proper storage position.

<b>Step # 2 Sign-Off By Trainer</b>	<b><u>Name</u></b>	<b><u>Signature</u></b>
Date:		

**Step # 3 – Conditioner Operation.**

- Perform circle check.
- Review water filling procedures.
- Ensure wash and ice making water tanks are full.
- Mount IR and drive onto ice surface.
- Review conditioner operation.

- Raise and lower conditioner while machine is in park position.
- Review blade height and level check via scrape method.
- Review blade height and level check via coin method.
- Perform a blade height and level check via the scrape method.
- Perform a blade height and level check via coin method.
- Review emergency conditioner lift (hand pump)
- Review operation of augers.
- Perform conditioner and auger operation – 4 lengths of the ice surface – stopping at each end and turning off augers and raising the conditioner.
- Return to the IR room.
- Review snow dumping.
- Perform a dump of the snow in the snow-bucket.
- Place IR in proper storage position.

<b>Step # 3 Sign-Off By Trainer</b>	<b><u>Name</u></b>	<b><u>Signature</u></b>
Date:		

**Step # 4 – Flooding Procedure.**

- Perform circle check.
- Ensure IR filled with wash and ice-making water.
- Ensure IR filled with fuel.
- Mount IR and start-up.
- Back IR onto ice surface.
- Review flooding patterns. Both one and three lap configurations.
- Perform flooding pattern with use of board brush but without use of conditioner – 2 laps.
- Review and perform end of flood procedure – shutting off water supplies, raising conditioner and leaving the ice surface.
- Place IR in proper storage position in IR room

<b>Step # 4 Sign-Off By Trainer</b>	<b><u>Name</u></b>	<b><u>Signature</u></b>
Date:		

**Session # 5 – Supervised Flood**

- Perform circle check.
- Perform actual flood – no nets on the ice surface.
- Perform snow dumping at end of flood.
- Perform actual flood – nets on the ice surface.
- Perform IR storage.

<b>Step # 5 Sign-Off By Trainer</b>	<b><u>Name</u></b>	<b><u>Signature</u></b>
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