# Suggested Guidelines For Ice Arena Goal Nets and Goal Frame Anchoring Systems



**February 2013**

## Introduction

Ice arenas require a variety of auxiliary equipment that will need to be inspected, maintained and secured when not in use. Included in this equipment are goal nets and goal frame anchoring systems.

The selection, purchase, maintenance and installation are often the direct responsibility of the owner. However, at times, leagues may set out specific requirements for these items and must be reviewed and deemed acceptable by both parties. The following guideline is provided to assist facility management and staff with understanding their responsibilities for providing, using and maintaining goal nets and goal frame anchoring systems.

*Note:*
*Measurements in this document should not be considered exact*

## Basic Net Facts

The most common nets found in ice arenas are hockey nets while some facilities will also have broom ball nets. Net requirements are most often detailed in league rule books. Facility management must determine if they will supply league sanctioned nets or have the league purchase and maintain them.

There are two (2) types of hockey nets found in today's marketplace; practice nets and game nets. The primary identifier is that practice nets are usually completely painted solid a red colour while game nets will have the front posts and crossbar red and all inside posts white in colour. Quality nets use "powder coating" technology which makes it more durable and more resistant to puck damage. When this paint is damaged and repainted it often requires ongoing upkeep and should be replaced.

The official construction size of a hockey nets are:

- 1.22m (4ft) high and 1.83m (6ft) wide.
- Goal posts are most often schedule 40 tubing or .125mm wall with post being 2 3/8" (60.53 mm) outside diameter.
- The cross bar that connects the two posts together should be of the same size as the goal posts.
- Middle/centre frame tubing is most often 33.45mm (1.1/3in) with an outside diameter of 23mm (15/16in) and 25mm (1in) pipe inside wall.

- Lower/back frame tubing is most often 46.79 mm (1.84in.) outside diameter and 32mm (1 3/8in) pipe inside wall.
- A net tie down steel ribble that is 6.5mm (¼in) diameter with 8mm (5/16in) high spacing.
- The official depth of a hockey net is 1100mm (44in.) with an 850mm (34in.) net available as a lighter weight option and often used on ice sheets that are less than 56.39m (185ft)

Net accessories can be made of nylon (ballistic), vinyl or canvas. They may not come standard on all nets. They include:

- Bottom fender (White) – maximum weight of 5.4kgs (12lbs)
- Centre fender (White)
- Top fender (White)
- Water bottle restraint
- Must be installed according to manufacturer's specifications, using the lacing provided
- Should be white in colour
- NEW - clear acrylic insert on the bottom skirt allows the on ice officials to see inside the posts.

### Net Cameras

The use of net cameras during sporting events is gaining popularity. Facilities that wish to explore the use of net video equipment must understand proper mounting techniques. It is important that the person(s) installing these devices are qualified to do so. It is recommended that facility management seek direction on the legal limitations for the use of a player's image. Notification of filming and/or a release may be required.

Researching proper installation methods clamping, padding and is strongly recommended prior to installing such equipment.

### Basic Goal Frame Anchoring System Facts

There is no legal obligation to anchor ice hockey nets. This requirement is often set out in league rules. It must be accepted that not all netting and anchoring systems will work in every facility. Factors to consider include the age, size and skill level of the participants as the anchoring system must be designed to break away easily enough based on these physical characteristics while providing sufficient stability to reduce easy dislodging of the net.

If nets will be anchored it is recommended that the net and anchoring system match. When purchasing nets facility management is encouraged to seek out a recommendation from the net supplier as to which anchoring system(s) would work best with their goal net.

*Note:*
*Some pegs will require that ice build-up be removed. This is completed with a battery powered drill and drill bit. Concrete based ice surfaces offer some protection from drill bit penetration while sand based floors require a heightened level of drilling awareness as to not drill a secondary refrigerant line. Always use the correct size drill bit. Do not over drill the*

*recommended hole-depth. Never use any anti-freeze agent to stop ice build-up in a peg hole. These types of solutions will cause ice quality issues*

Anchoring system types include but are not limited to:

- Gravity/melt in pegs
- Solid pinned pegs
- Breakaway pegs (Marsh)
- Magnetic pegs
- Spring loaded pegs
- Fixed point pegs
- Rubber pegs

### Basic Net Use Facts

Facility management must review netting and anchoring requirements of each user group to ensure that the facility system meets their specific needs. Once determined this information in a written format must then be shared with frontline staff outlining

- maintenance requirements for the net and anchoring system;
- responsibility for placement and anchoring and;
- net security when not in use.

Nets are bulky and heavy and as such should only be moved by persons trained in proper safe handling and placement techniques. The responsibility for these tasks must be defined between facility management and user groups. There should be no assumption that net installation and maintenance costs on game days are included in the base ice rental fee.

It is common practice to place gravity melt anchoring systems on the top of a net to allow users to install. However, who and when these anchoring systems are being used and how this is controlled should be carefully considered when creating in-house policies. These pins are designed so that it comes to a point; how much the point bites into the ice will determine the amount of force required for moving the net.

*Caution: If the net is placed prior to all floodwater freezing the net and net padding may freeze to the surface making the net more resistant during contact thus increasing the change of injury. Nets should only be pegged after all flood water has frozen or removed*

Considering the previous discussion on player size, facility management would be diligent in setting a policy that limits the use of anchoring systems for younger players that are not being governed by recognized on ice officials. In-house anchoring pins and systems that have been manufactured by a recognized supplier should **never** be used.

*Note:*
*In the game of Ringette net pegs are not used. It is recommended that pegs not be left or stored on top of the nets.*

Who is permitted to actually anchor and set nets needs to be defined by facility management. This task should be limited to persons who can prove that they can handle the nets safely. Providing a training session for rink staff, volunteers or league officials/staff should be considered to ensure everyone understands the proper procedures and process.

During official league play staff are often required to place the nets after each ice resurfacing. It is common practice to shift this responsibility to the on ice officials for resetting the net if it becomes dislodged during play.

### Nets on Outdoor Ice Surfaces

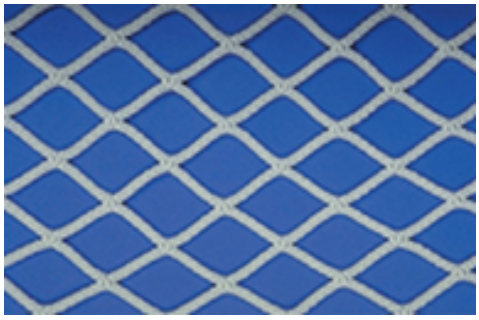
Persons responsible for the care and control of outdoor ice arenas must carefully consider the hazards associated with leaving standard sporting nets unattended and unsecured. Nets may become an attraction to children thus creating a potential tip or fall hazard should climbing occur. Additionally, because of the dark colour of the net they will attract the sun and heat often causing ice to melt and creating a skater trip hazard.

There are different netting options available in today's marketplace that offer safer alternatives while allowing sporting activities to still be played.

### Basic Hockey Netting Facts

Netting will come in a variety of options however; it is recommended that only quality netting be used.

- The preferred net colour is white
- Minimum of 315kg (700lbs) (+ or - 22.5kgs (50lbs)) breakthrough strength
- All netting should be purchased to a custom shape net and be labelled to fit hockey net frames
- Netting should be made of 100% braided nylon with 3.12mm (1/8in) nylon cord.
    - Knotless
    - Knotted
    - Resin coated
- Netting should be preshrunk
    - Polymerization treatment of netting has proven to increase the abrasion resistance and increase breaking strength
- Netting should be laced (tied)
- Net twine size minimum is 5mm
- Check with league officials for any requirements for net stretch mesh size



### Netting Replacement Facts

During the off season conduct a detailed review of all nets and make necessary repairs. Damaged netting may be able to have small holes patched. However, due to the environment they will need to be periodically replaced.

Tying a net is an art form. This task is one that should only be undertaken by individuals that understand proper re-netting techniques. Experienced facility staff will share proper installation techniques along with the fact that to properly install a replacement hockey net to a goal frame can take up to 8-hours per net. It is important to follow the manufacturer's set

installation procedures when replacing a goal net.

### Sample Procedures

The following information is offered as wording and phrases to be included in the development of in-house Standard Operating Practices (SOPs). They should not be considered up to date or complete. Once created, the information must be followed with workplace specific training under the guidance of a competent person.

**Sample Workers Risks**

- Slips and falls
- Use of power tools
- Back, neck strains from lifting
- Foot risk from dropping net

**Sample PPE**

- Head protection
- Foot protection
- Ice slip protection
- Eye protection
- Hand protection

### Sample Procedure for Moving Hockey Nets

- Ensure that the moving of hockey nets on, on and off of the ice is completed using an established standard operating procedure and is done in such a way as to not create a hazard or injury.

### Responsibility/Accountability:

**Supervisor/Responsibility**

- Ensure that employees are informed and trained in the proper procedure
- Maintains employee training records
- Ensure that proper work procedures and safety equipment are available

**Employee Responsibility**

- Accepts training and understands proper procedures
- Uses the recommended procedure and equipment to do the task
- Reports to the Supervisor any safety concerns relating to the task or procedure

**Procedure**

- Never drag a hockey net on concrete surfaces as it will cause damage to the bottom of the net; such damage will prevent it from sitting flat on the ice surface
- One worker should always use a net transporter when moving the net(s) or the task should be undertaken by two employees
- It is recommended that employees do not lift the hockey nets by supporting the complete weight of the hockey net on their neck and/or shoulders
- To move the net onto the ice, the hockey net should be moved by pushing or pulling along the surface of the ice
- To remove the hockey net from the ice, one end should be lifted on the edge and then pulled or pushed off the ice. For moving on to the ice, reverse the procedure

*Note:*
*Seasoned staff will often walk the nets around the ice to cool the steel prior to placing the net. This helps avoid the net from burning into the ice and freezing thus causing damage to the surface and a potential skater trip hazard. Some facilities regularly wax the bottom of the nets to help reduce freezing. Be sure to use only products that will not compromise ice conditions.*

*Tip:*
*Always remove the nets if there is an issue with the refrigeration plan. Nets will attract heat and burn into the surface causing ice/paint damage*

### Sample Procedure for Storage of Hockey Nets

- To prevent injury or damage to the nets, store all goal nets in a manner that reduces public access and availability.
- It is strongly recommended that netting, metal frames, bumpers, pads, skirts etc. be inspected daily by facility staff

    - Make repairs and corrections as required
- Do not store nets in front of any emergency exits, points of egress or stairways
- Never leave nets on the ice surface during skating public skating sessions
- Net pegs should be stored in a secure location when not in use

### Sample General Procedures for Pegging Hockey Nets

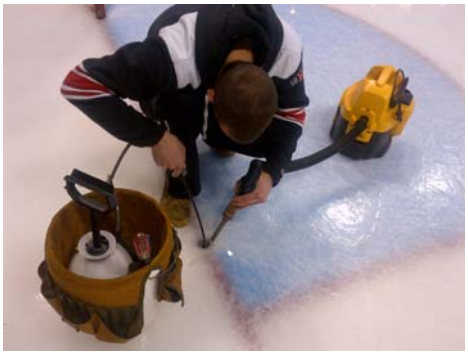
*Note: These next points may be helpful for inclusion in SOPs for the various anchoring systems.*

- Pegging of nets shall be only completed and installed by properly trained facility staff.
- It is recommended that all persons working on the ice consider the benefit of using appropriate PPE
- No participants shall be on the ice during the net pegging process. If this occurs, staff must clear the ice surface prior to continuing with the net pegging procedures
- After the net area is dried place the net in its proper location – directly on the goal line and directly centred within the goal crease.
    - Tip: Two small markings painted below the ice surface to mark the post locations will help to speed the task
- Slide the net frame back a few inches from the goal line, and place the net pegs in their proper location (i.e. the post markings, if they have painted below the surface)
- Use proper lifting/moving techniques; with your legs and shoulders-width apart, bending your knees, and keeping your back straight, lift one post and place it on the peg. Dropping the net on the peg slowly will allow the individual pins to penetrate the ice surface, and lock the peg and net in place
- Repeat the same process for the other net post
- When only one staff is performing procedures (wearing proper footwear) walk down to the other net (using the rink boards as a guide), and follow the above steps to place the pegs on the second net
- Lift nets and remove the pegs while the ice is being flooded
- When using part-time staff that are on-duty, ensure that they follow these same procedures
- Once all staff are off the ice surface, and the ice resurfacer door(s) has been closed, the participants may be permitted to come onto the ice surface

**Fixed Point Pegs**

- Place the net in its proper location – directly on the goal lines and directly centred within the goal crease. It is recommended to have two small markings painted below the ice surface to mark the post locations
- Lift nets and remove the pegs while the ice is being flooded
- After the goal crease area is flooded, return the net to the goal crease area, and then tap the fixed pegs onto the goal post marks
- Once adequate divots have been made, place the pegs inside the net posts and the net pegs into the divots. (An alternate and acceptable method is to use hot water in a squeezable bottle to create the divots for the pegs)

*Note:*
*In the picture below an ice technician is spraying water with a small pressure sprayer into the peg hole while using a small battery vacuum to remove the water and ice.*



**Adjustable Pegs**

- Lift the nets and remove the pegs while the ice is being flooded
- Adjust the peg height to fit the size of players that will be using the ice surface (i.e. use smaller pegs for smaller players to reduce the risk of injury)

**Spring Loaded Pegs**

- Lift the nets and remove the pegs while the ice is being flooded.
- Using the portable drill, bore holes approximately 25mm (1in) depth on the goal post markings, then put the pegs inside the net posts and place the net in the bored holes.

**Rubber Pegs**

- Lift the nets and remove the pegs while the ice is being flooded
- Using the atomizer bottle (weed sprayer), melt holes at the goal post markings, then drop the pegs into the holes and place the goal posts over the pegs

**Magnetic Pegs**

- Drill the existing holes to the appropriate depth (75mm) (3in) with the appropriate sized auger bit.
- Place the peg in the drilled hole, ensuring that you have the proper insert for the age group
- Return the goal frame onto inserts

**Megg© Net System**

- The Megg© Net system consists of a powerful magnet which is slipped into each of the front uprights and located with two small hollow head-set screws in each post
- The second main component in this system is the steel "base parts" which are installed into the playing surface
- The system comes with two special tools – a hole-saw mounted on a handle, and a wrench used to rotate the base part if they become difficult to move by hand
- Other tools and supplies needed when using this system include: wood chisel, slot screwdriver, drill bits, cordless drill, dry rags, Vaseline, cardboard disc, and plastic bucket for storage
- There are five sets of four base parts, each numerically coded based on magnet strength to accommodate player size
- It is important to include the Megg© Net system manufacturer's detailed maintenance, storage and installation instructions as part of the SOP

## Conclusion

An important part of the ice sport experience includes safe and serviceable nets. Operations that continually inspect their netting systems using proper methods when handling, storing and installing nets will achieve many years of trouble free operation.

## RESOURCES

**Ice worker head protection**
**http://orfa.com/library/guide_bp/index.htm**

**On Solid Ground On Solid Ground – The Role of Slip Resistant Footwear for On-Ice Workers**
**http://orfa.com/library/guide_bp/index.htm**

***Net Gains: Maintain Your Goal Nets through Simple Practices* - Rink Magazine Nov/Dec 2006**
**http://www.starrinks.com/**

## NET/NETTING SUPPLIERS

Arena Services Ontario
http://www.excell-sport.com/?TREE=arena&BRANCH=dasheracc
Athletica (Crystaplex Protective Netting)
http://www.crystaplex.com/websitefiles/products/arenaservices/Netting.pdf
Cascadia Sport http://cascadiasport.com/
Centaur
http://centaurproducts.com/hockey_accessories.php
Franklin Net and Twine Phone: 519- 825-7218
Pro Nets http://pronets.net/products.php
Raita Sport http://www.raitasport.ca/netting.cfm

Riley http://www.rileymfg.com/spectator%20netting.htm