



# BARRY B-NET SYSTEM™

*Technical Specifications and Installation Guidelines*

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This document contains 22 pages



***IMPORTANT: Make sure this user instructions manual is the latest version available.  
Consult the Barry website at [www.barry.ca](http://www.barry.ca) to view document revisions,  
important updates and other notices.***

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## Congratulations on your purchase of a Barry Quality Safety Product!

Our philosophy at **Barry** is to offer only the best quality in products designed and built to surpass your expectations. We are hopeful and confident that you will be completely satisfied with this product. The entire team wishes to thank you for choosing **Barry** and invites you to send in your comments to help us to continue improving our products and services.



We wish you many years of successful operations through the proper use and inspection of our **B-Net System**.

## Revision history

| Revision | Sections affected | Changes  | Date          |
|----------|-------------------|--|---------------|
| 1        | 4.2               | Figure 6 notes updated   | Sept. 2010    |
| 2        | Title, 2 and 4.3  | Warning added, revision history added, figure 1 updated, technical specifications updated, connection system revised | Aug. 26, 2011 |

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|  |           |
|--|-----------|
| <b>1. Introduction</b>                               | <b>4</b>  |
| <b>2. Technical specifications</b>                   | <b>5</b>  |
| <b>3. Before use</b>                                 | <b>7</b>  |
| 3.1 Training   |           |
| 3.2 Limitations                                      |           |
| 3.3 Preparation                                      |           |
| 3.4 Types of configuration                           |           |
| <b>4. Installation</b>                               | <b>9</b>  |
| 4.1 Installing the configuration                     |           |
| 4.2 Drilling   |           |
| 4.3 Connection                                       |           |
| 4.4 Replacing support poles                          |           |
| 4.5 Using the mesh hook                              |           |
| 4.6 Verification and validation                      |           |
| <b>5. After use</b>                                  | <b>18</b> |
| 5.1 Inspection                                       |           |
| 5.2 Roll-up of nets                                  |           |
| 5.3 Storage  |           |
| <b>6. Warranty</b>                                   | <b>19</b> |
| <b>Appendix</b>                                      | <b>20</b> |
| A. Testing of <b>Barry B-Net</b> System              |           |
| B. Inspection and maintenance log                    |           |
| C. Impact events involving <b>Barry B-Net</b> System |           |

<http://www.barry.ca/ski-safety/b-net-system.htm>

<http://www.barry.ca/technical-data-sheet/barry-b-net-sys-spec-installation-guidelines-en.pdf>

<http://www.barry.ca/publication/barry-b-net-system-pocket-guide.doc>

<http://www.barry.ca/publication/barry-b-net-system-pocket-guide-bilingual.doc>

## 1. Introduction

The **Barry B-Net** System is a state of the art safety net system which conforms to the classification for Alpine Ski Racing at World Cup Ski Events. **Barry** is an official supplier to Alpine Canada Alpin (ACA), United States Ski and Snowboard Association (USSA), and countless ski and snowboard organizations throughout North America, Australia and New Zealand.

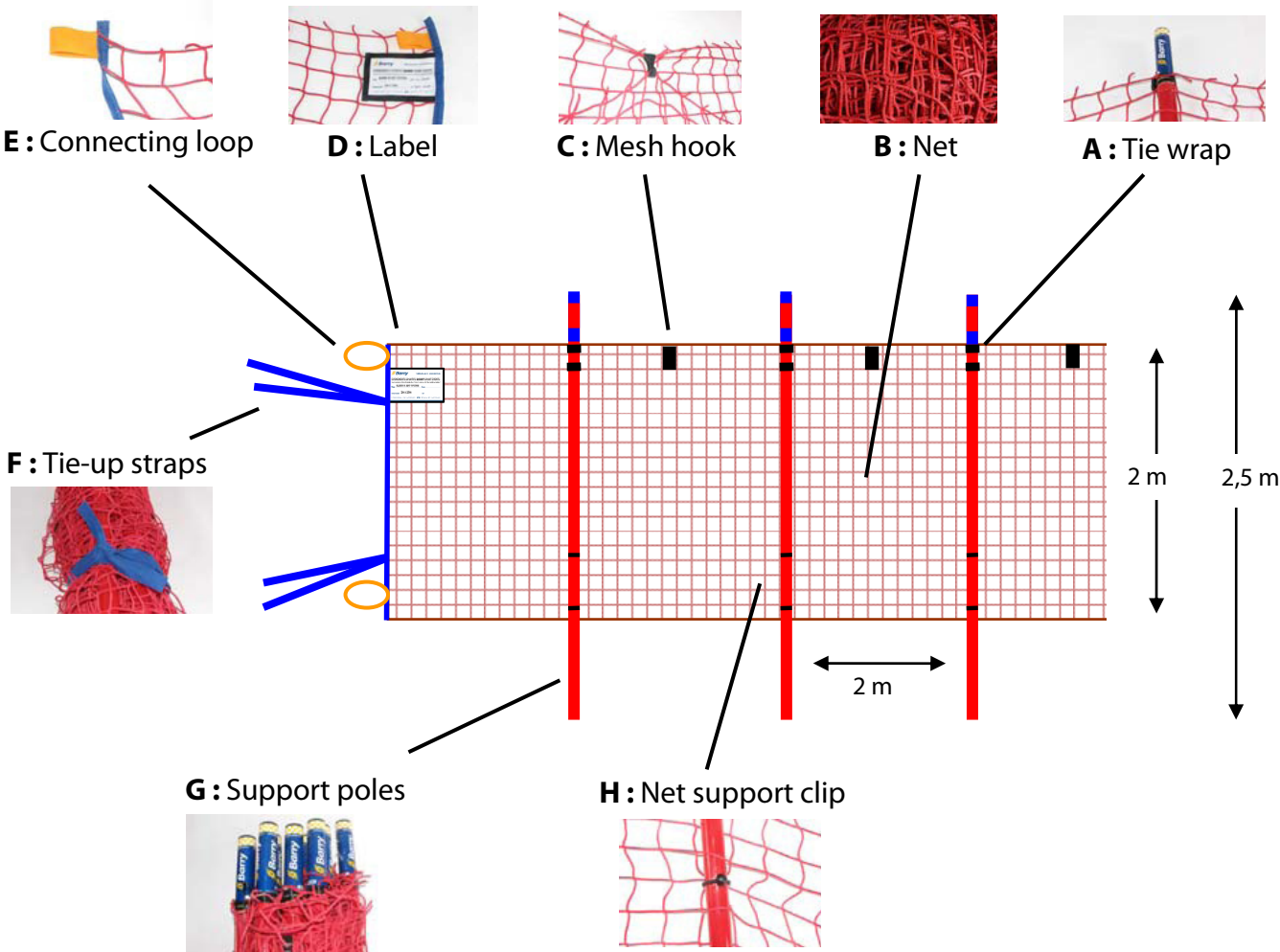
Hundreds of kilometres of this system have been installed at races since 2003 and hundreds of athletes have been safely caught and secured by the **Barry B-Net** System. We have continued to receive numerous kudos from the installation crews, Race Organizer Committees (ROC's), Technical Delegates (TD's), coaches, and every one involved in making ski and snowboard racing a safer sport.

Design, manufacturing and assembly of **Barry B-Net** Systems are made in Canada. The system comprises several innovations which make it safe and simple to use. Complete and thorough technical specifications, installation guidelines and fully documented testing reports for installation guideline validation are available on the **Barry** website ([www.barry.ca](http://www.barry.ca)).

No safety system is complete without detailed use and installation instructions from the manufacturer of such systems. The following pages are an industry first and sets the standard as to what ought to be expected by the client when a quality safety product is purchased.

A pocket size installation guide is also available on the **Barry** website, providing a quick reference guide for installations crews enabling success of event secured by the **Barry B-Net** system.

## 2. Technical specification (2011 model)



**Fig. 1** Section of a 20 meter Barry B-Net System (9 poles)  
(Not to scale)

### **A : Tie wrap**

**Material:** Nylon

**Quantity:** 2 per support pole

**Properties:** UV resistance, high strength

**Features:** Low profile and may be replaced at low cost

### **D : Label**

**Material:** Protection cover ensures permanent markings for the life of the nets.

**Dimensions:** 10 cm x 15 cm

**Quantity:** 2 per net

**Property:** Harsh environment

**Features:** Do not remove from nets. Permits record keeping for inspection service and maintenance

### **G : Support poles**

**Material:** Polycarbonate (PC) with PC UV additives

**Dimensions:** 2.5 m (H); 35 mm diameter

**Quantity:** 9 support poles/20 m section

**Properties:** flex and memory, UV, scratch, color fading and  $\pm 40^{\circ}\text{C}$  resistance

**Features:** Factory installed and assembled net/support poles; Support pole cap to prevent snow/ice accumulation

### **B: Net**

**Material:** Knotless nylon (polyamide (PA)); Fibers with urethane coating and possibility of re-coating annually

**Dimensions:** 2.2 m x 20 m; 57 mm Square mesh

**Weight:** about 15 kg (includes 9 support poles)

**Properties:** Rot, mildew, high abrasion, cut and UV resistance; Temperature range  $\pm 40^{\circ}\text{C}$

### **E : Connecting loop**

**Material:** Synthetic strap

**Feature:** Top and bottom straps used to connect two nets together

### **H : Net support clip**

**Material:** Nylon covered elastic shock cord

**Properties:** UV, cut, abrasion, rot, mildew,  $\pm 40^{\circ}\text{C}$  resistance

**Quantity:** 27 per system

**Features:** Low profile and un-harmful. May be easily replaced at low cost. Tangle free plastic pull tab for easy handling

### **C : Mesh hook**

**Material:** Nylon

**Quantity:** 11 per net

**Properties:** Snow/ice charge and UV resistance

**Features:** New intermediate clips to raise and support installed nets for course maintenance

### **F : Tie-up straps**

**Material:** Color coded webbing

**Dimensions:** 2,5 cm x 122 cm

**Quantity:** 8 by net (4 each end)

**Features:** Tie-up straps at each end for ease of roll-up

### 3. Before use

**These installation guidelines apply exclusively to factory assembled integrated Barry B-Net Systems. Use of individual components outside of factory assembled integrated Barry B-Net Systems, and/or any substitution or modification of any components may cause serious injury or death.**

Ski and snowboard racing are potentially dangerous sports and the **Barry B-Net** System must be installed in conformity with these installation guidelines as a second choice should A-Net Systems not be available or practical. If installation is effected (in whole or in part) outside of installation guidelines, the efficacy of the **Barry B-Net** System may be seriously compromised. Any installation effected outside of recommended parameters should be recorded, detailed and be conducted under the supervision of a *qualified authority*.

**Barry** recommends that **Barry B-Net** Systems be installed during training and with the same standard of care and concern as would be given during a race. Risk of a skier fall may be greater during training as more runs are performed and often new equipment and techniques are tested during training.

#### 3.1 Training

The installation of **Barry B-Net** Systems must only be carried out by personnel who have received and reviewed all of the information contained in the present document.

**Authorized person:** means a person approved or assigned by the Race Organizer Committee to perform a specific type of duty or duties at a specific location on the race course.

**Competent person:** means one who is capable of identifying existing and predictable hazards in the surroundings or race conditions which are unsafe, hazardous and/or dangerous to the skiers or personnel in the vicinity of the event, and who has authorization to take prompt corrective measures to eliminate them.

**Qualified authority:** means one, who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work, or the project.

Each installation must be documented and a listing of the personnel who participated in the installation, including their names, telephone numbers and level of competence must be kept and made available to the **Barry** Representative on demand. Installation situations which are not described in these pages must be avoided wherever possible and resolved and corrected only by a *qualified authority*. Detailed records of any non-manual installations (including measurements and sketches of installations) should be prepared and conserved until successful termination of the event.

### 3.2 Limitation

The design premise for the **Barry B-Net** System is an 80 kg mass travelling at 60 km/hr or 100km/hr, impacting the net/support pole system sideways (head/shoulder/back). **Direct impacts (whether head first or sideways) into the net system, without prior sliding of the skier on the snow surface, will either ramp up, flip or eject the skier and may result in serious injury or even death.** Typical use is on race & training courses which are wide (40 m +) and the minimum safe distance from a turning gate to the first row of netting must be **six (6) meters**. If these conditions are not met, then the installation of **Barry B-Net** Systems is invalid and will not provide skier safety, unless appropriate and adequate compensatory measures as determined by a *qualified authority*, are taken.

Furthermore, if the installation instructions are not followed as per the present document, **Barry** makes no representation and provides no warranty, legal, contractual or otherwise, express or implied, with respect to the **Barry B-Net** Systems or components. More specifically, but without limiting the generality of the foregoing, **Barry** makes no representation respecting the suitability or fitness of the products for any particular purpose or use, other than the installation scenarios described herein.

### 3.3 Preparation

Step 1: Inspect equipment before use (see Appendix B). Do not use if you have any doubts about the installation of this product or if you suspect that the materials may be damaged or unfit for use.

Step 2: Identify potential obstacles to the trail (snow gun, trees, tower, etc.). Both sides of the entire race course should be protected by **Barry B-Net** Systems for all training and race events as the skier's probable spill zones may not be accurately predicted. In addition, where appropriate, follow the security recommendations provided in the course homologation report.

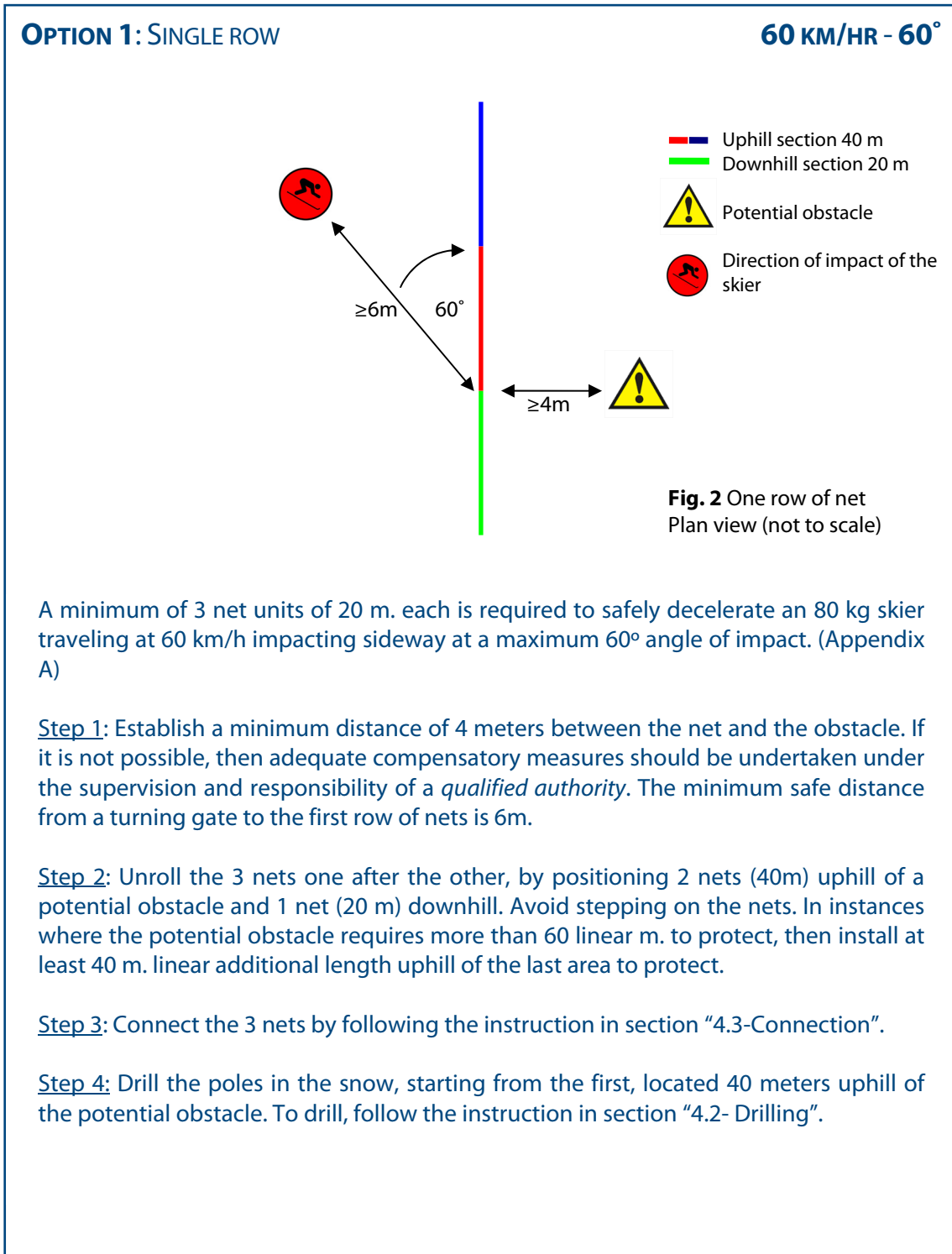
### 3.4 Types of configuration

The installation choice is made according to the speed of the skier and the angle of impact between the potential fall of the skier and the obstacle. An appropriate configuration made in accordance with guidelines of this document will meet the absorption criteria. The equipment can be provided before the event. **Barry** recommends to always have additional components on the trail of the event, in case of loss or breakage.

| Speed \ Angle | 60 km/hr  | 100 km/hr  |
|---------------|---|--|
| 60°           | <b>Option 1</b> : one row of net<br>-3 net units of 20m each                  | <b>Option 2</b> : two rows of net<br>-6 net units of 20 m each                             |
| 90°           | <b>Option 3</b> : « S » layering<br>-1 net unit of 20m<br>-2 additional poles | <b>Option 4</b> : Double « S » layering<br>-2 net units of 20m each<br>-4 additional poles |

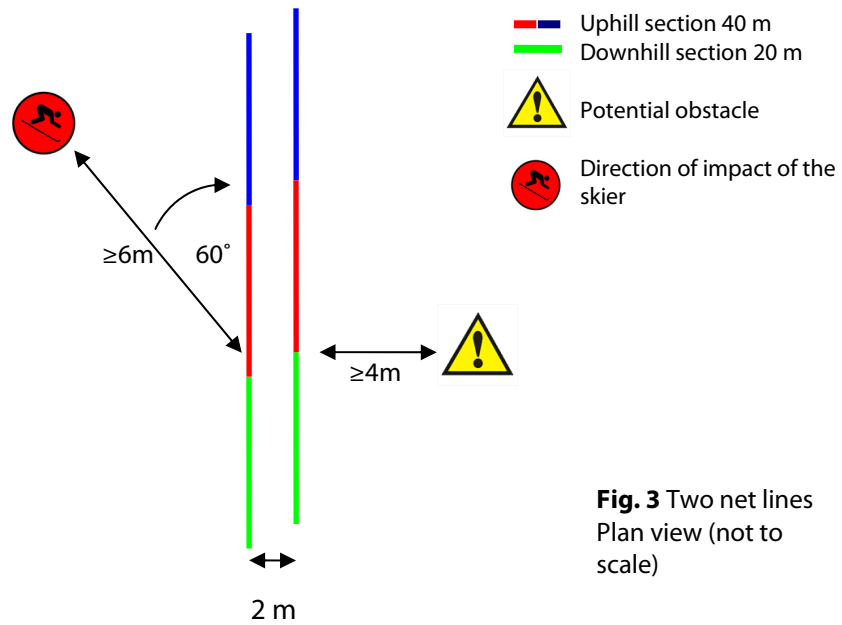
## 4. Installation

### 4.1 Installing the configuration



## OPTION 2: DOUBLE ROWS

100 KM/HR - 60°



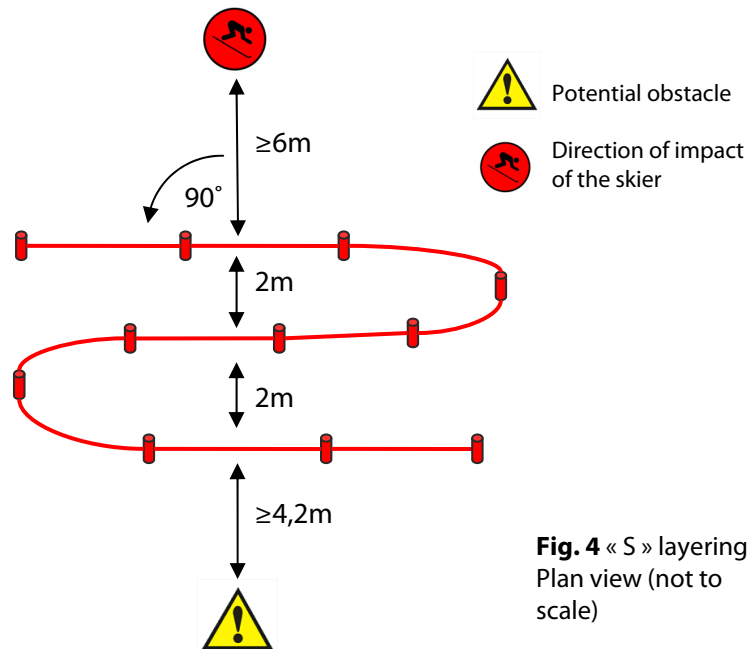
A minimum of 2 rows of 3 net units of 20 m. each is required to safely decelerate an 80 kg skier traveling at 100 km/hr impacting sideways at a maximum 60° angle of impact (Appendix A).

Install the first row of net following steps 1 through 4 at the last page.

Step 5: Install the second row of net parallel to the first net following same instructions. The distance between the two nets should be 2m and the first net must be at least 4m from the obstacle. Do not align joints of net sections in the same direction of impact of the skier.

### OPTION 3 : « S » LAYERING

60 KM/HR - 90°



This configuration has been tested to successfully decelerate an 80 kg mass travelling at 60 km/hr, with a 90° angle of impact (Appendix A).

**Step 1:** For this arrangement, you need one 20 meter net and 11 support poles (two extra poles). To install the additional support poles, refer to the « 4.4-Replacing support poles » section.

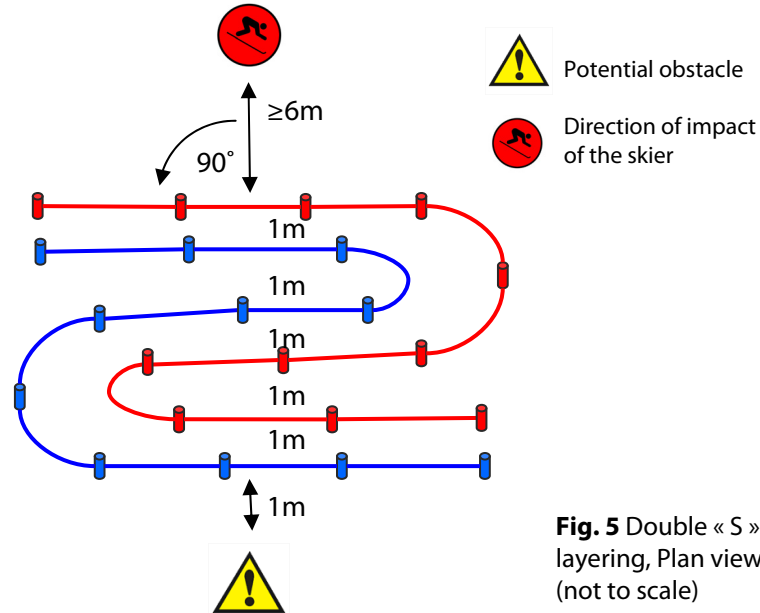
**Step 2:** Make sure there is enough distance between the turning gate and the potential obstacle. The minimum distance between the net and the obstacle is increased to 4.2 m (and not 4m). Every effort should be made to increase the distance to 5m or 6m where possible. The spacing between each row of net must be 2m. Distance between turning gate and first row of net must be at least 6m.

**Step 3:** Place the net to obtain an « S », as shown on figure 4.

**Step 4:** Drill the poles in the snow following the instruction in section “4.2- Drilling”.

#### OPTION 4 : DOUBLE « S » LAYERING

100 KM/H - 90°



**Fig. 5** Double « S » layering, Plan view (not to scale)

This set-up was observed to safely decelerate a falling 80 kg skier travelling at 100 km/hr within a 1 m. distance from the obstacle with a 90° angle of impact (Appendix A).

**Step 1:** For this arrangement you need two 20 meters nets and 22 support poles (4 extra poles). To install the additional support poles, refer to the « 4.4-Replacing support poles » section.

**Step 2:** Make sure there is enough distance between the turning gate and the potential obstacle. Distance between the last row of net and the obstacle must be at least 1 m and a minimum of 6 meters for distance between the turning gate and the first row of net. The interval between each row of net must be of 1m. If it's limited, space the rows of 0.5 m. In this case, additional measures must be taken to protect the potential obstacle.

**Step 3:** Place the net to obtain a double « S », as shown on figure 5.

**Step 4:** Drill the poles in the snow following the instruction in section "4.2- Drilling".

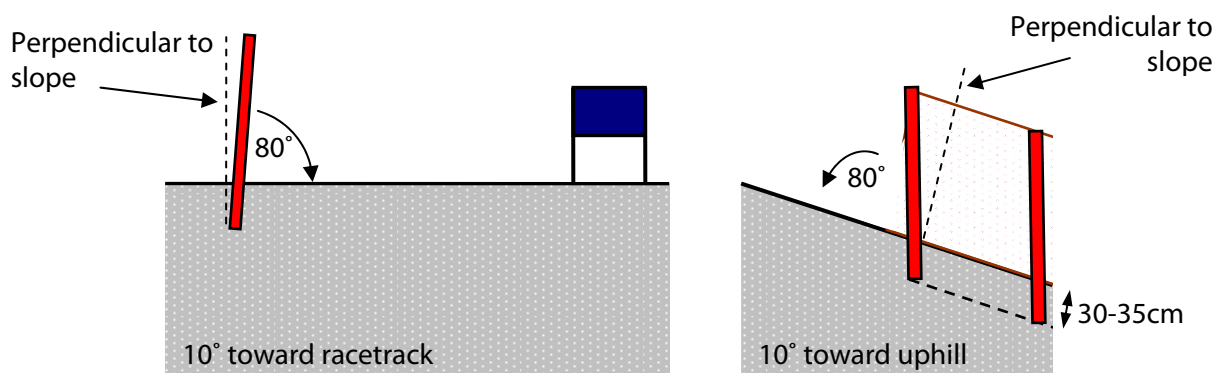
## 4.2 Drilling

Step 1: Incline the drill to get a  $10^\circ$  angle toward racetrack and  $10^\circ$  toward uphill. These inclines are calculated in relation to an imaginary line running perpendicular to the slope.

Step 2: Drill a hole (30 to 35 cm depth and 32mm diameter) in snow with a density range of 400-630 kg/m<sup>3</sup>.

Step 3: Distance between each support poles must be 1.8 to 1.95 meters to obtain a loose net. **Netting which is hung too tightly will not catch the skier who may be ramped up, flipped out or slide under and be subjected to serious injury or even death.**

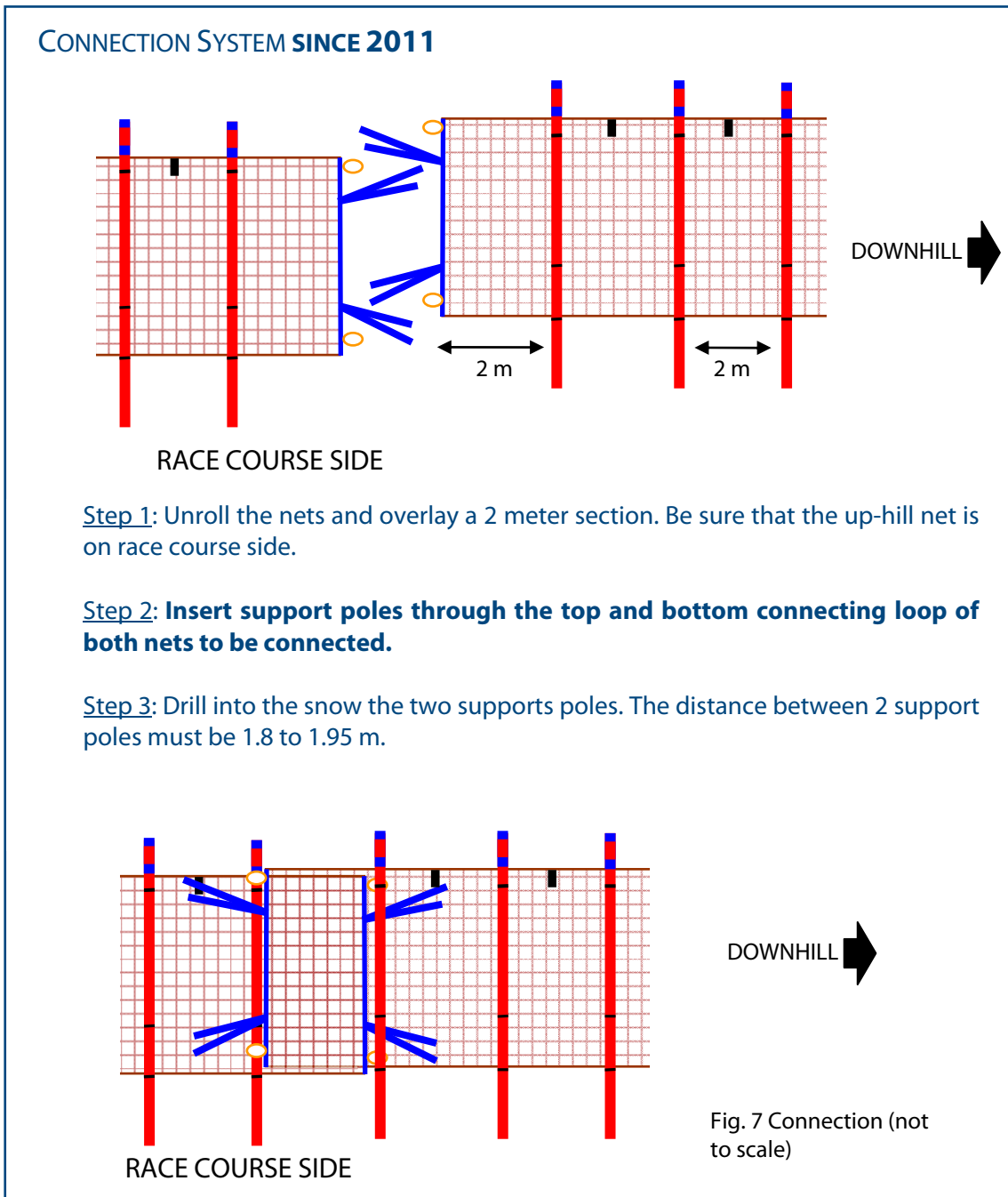
Hint: Subtract a ski boot width to the maximum stretch between two support poles (2 meters).



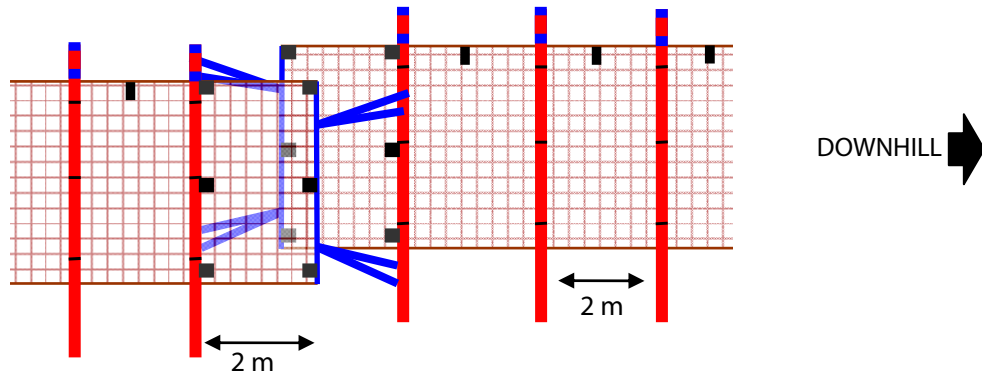
**Fig. 6** Drilling angle (not to scale)

### 4.3 Connection

Since 2011, **Barry B-Net** Systems have a new and simplified connection system with 2 connecting loops on each end of the net. The earlier models have 3 clips per side and connection was made in the top and bottom corner meshes. Refer to the instructions associated with your **Barry B-Net** system.



« QUICK-CONNECT » SYSTEM BEFORE 2011



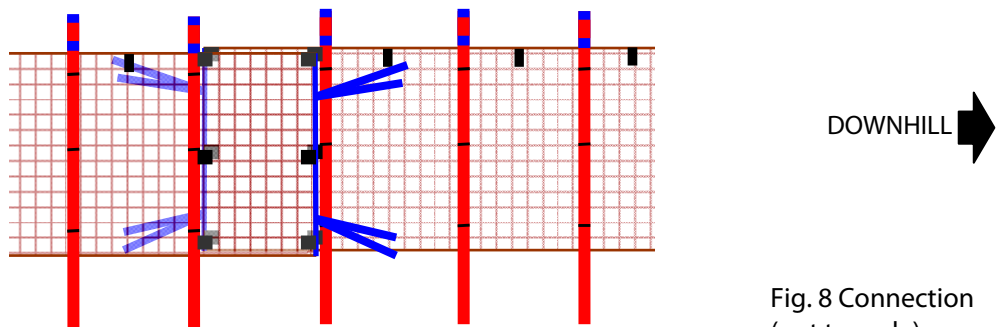
RACE COURSE SIDE

Step 1: Unroll the nets and overlay a 2 meter section. Be sure that the up-hill net is on race course side.

Step 2: Insert support poles through the top and bottom meshes of both nets to be connected and align the two “quick connect” clips.

Step 3: Attach the « quick connect » clips.

Step 4: Drill into the snow the two supports poles. The distance between 2 support poles must be 1.8 to 1.95 m.



RACE COURSE SIDE

Fig. 8 Connection  
(not to scale)

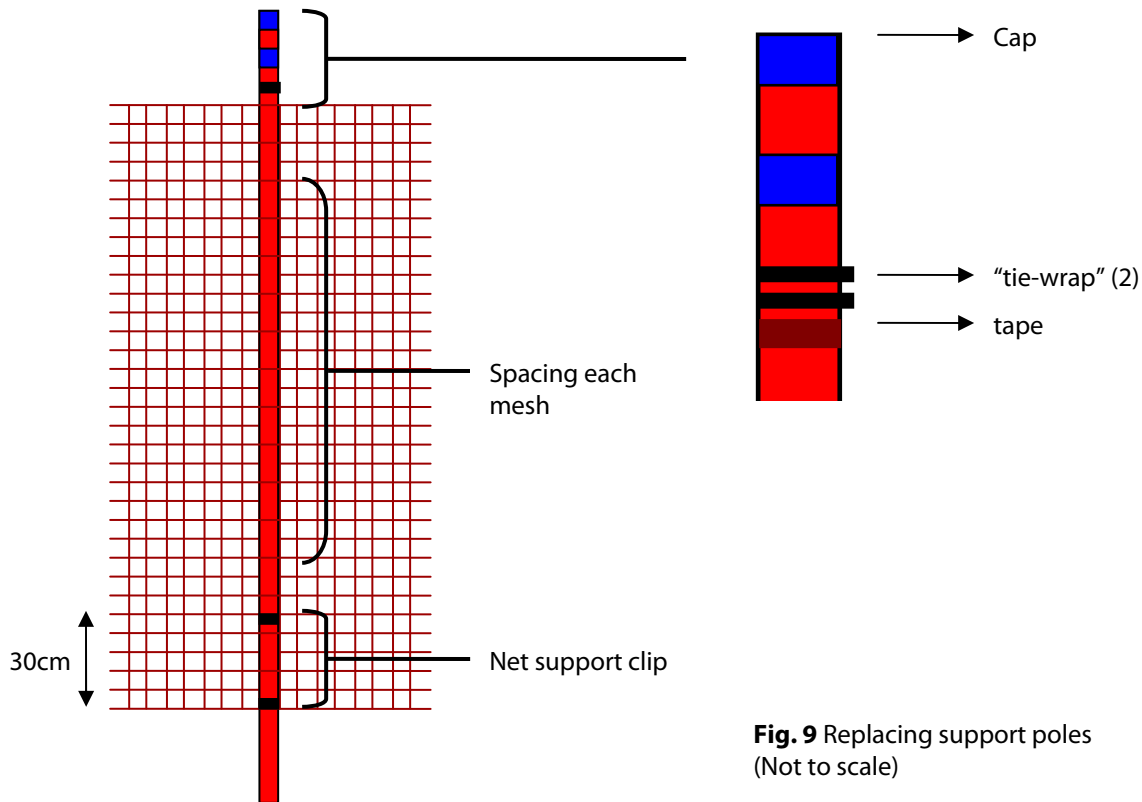
**Note:**

If you own a **Barry B-Net** System with 11 support poles (old model), the connection method is the same, except that the end poles of the “older style” nets must not be drilled into the snow. Do not remove the poles from the systems. Simply align them parallel to the overlapping net without inserting them in the snow as this would otherwise create too much resistance if 2 poles were inserted side by side.

## 4.4 Replacing support poles

Feed the pole through each mesh of net using the same line of meshes.

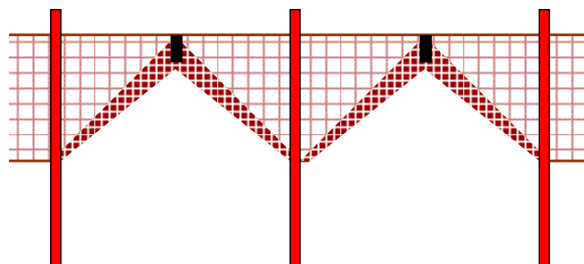
Use the **Barry** tie straps and tightening tool for repair. **Do not use substitute products, bamboo, or slalom gates as replacement parts.**



**Fig. 9** Replacing support poles  
(Not to scale)

## 4.5 Using the mesh hook

The mesh hook is inserted into a mesh of the upper section of the net, in the middle of two support poles. Insert meshes of the bottom section into the hook. It serves to raise and support installed net for course maintenance, without having to uninstall the **Barry B-Net** System.



**Fig. 10** Utilisation of the  
mesh hook  
(Not to scale)

## 4.6 Verification and validation

The validation step is very important and is to be carried out by *qualified or competent person*. Inspect carefully the following to confirm that the system is safe and ready to use.

Stopping distance: The stopping distance between the row of nets and the obstacle must be at a minimum of 4 m for one row of net configuration, 4.2m for « S » layering configuration and 1m for double « S » configuration. All efforts should be made by the installation crew to increase this distance whenever and wherever it is possible. Ideally a 5- 6 m distance is desirable. Each additional meter provides an increased safety factor.

Base of Nets: The base of the nets should be loose, skirting the snow surface and draping towards the race course side. It is important, to ensure maximum efficiency, that the base reach over the snow surface and not be buried.

Net tension: Nets should be loose between the support poles. i.e. 2 m. of net between support poles set at ~1.8 - 1.95 m. spacing. **Netting which is hung too tightly will not catch the skier who may be ramped up, flipped out or slide under (fig 4.) and be subjected to serious injury or even death.**

Assembly: The uphill net must be on the race course side and distance between 2 support poles must be 1.8 – 1.95 m.

During the period of time from initial deployment of the system, throughout the duration of the event, continuously monitor the system and ensure to account for varying conditions such as snow accumulation/ablation, snow density, impact from skiers, etc. Constant re-evaluation and the making of the necessary adjustments and/ or repairs to account for these variations, as detailed in the following pages, ensures the system's peak performance.

In the event that a skier is involved in an Impact Event (i.e. is injured, and cannot ski off) involving **Barry B-Net** Systems, the following steps should be taken (Appendix C).

## 5. After use

### 5.1 Inspection

The inspection of **Barry B-Net** Systems must be carried out before and after each use, accordance with appendix B, by personnel who have received and reviewed all of the information contained in the present document. Maintain an updated logbook of the frequency of use of this product;

### 5.2 Roll-up of nets

Step 1: Remove snow/ice from nets

Step 2: Align net to be re-wound in a straight line. Position the net so that one of the ID labels will face the exterior of the net. ie. the label should be in contact with the snow surface.

Step 3: Tie-off using webbing straps installed on the net edge.

Step 4: Place the nets in the appropriate transport/storage cradles.

### 5.3 Storage

Nets should be stored clean, dry and out of direct sunlight, and away from extreme heat and in a well ventilated warehouse. Nets should be kept off the floor and stored upright, on racks, to provide ventilation underneath. It is better to store the nets vertically to allow drainage and prevent contact of the fiber with the ground. Never store directly on a concrete, metal or dirt floor, and under no circumstances should nets and/ or acid and/ or alkalis be kept in the same building. Product life will be shortened by chemical and corrosive products or excessive temperatures;

## 6. Warranty

**Barry** offers a complete satisfaction guarantee for the **Barry B-net** system. If for any reason you are not entirely satisfied with this product, **Barry** shall reimburse the cost of product and cover the return freight cost (This offer is valid for a 60 day trial period from the date of shipping).

Products made by **Barry** are warranted against factory defects in workmanship and materials for period of one (1) year from date of shipment. Upon notice in writing **Barry** will promptly repair or replace all defective items. **Barry** reserves the right to elect to have the defective item returned to its plant for inspection before making a repair or replacement. The cost of transport to deliver the product to and from **Barry** shall be covered by the purchaser.

Warranty does not cover product damages resulting from abuse, damage in transit, normal wear and tear or other damages beyond the control of **Barry**. The warranty applies only to original purchaser and is the only one applicable to our products and is in lieu of all other warranties **expressed or implied**. Purchaser must provide the complete inspection and maintenance logs for the equipment for the warranty to be valid.

The **Barry B-net** system is designed and built with quality components to provide many years of service. This period may range from 5 to 10 years when optimal use, inspection, maintenance and storage conditions are met. **Barry** offers an ongoing monitoring and annual refurbishing service which ensures that the systems are professionally inspected and repaired to maintain their useful life for many years. This ensures that this safety equipment receives the appropriate level of care and concern which it deserves. Please contact your **Barry** representative to discuss your specific requirements.

## Appendix

### A. Testing of Barry B-Net system

Testing of this net system was performed in April 2003 and January 2004 before representatives of Alpine Canada Alpin (ACA) and results indicate that when properly assembled in the operational range, the system is capable of safely absorbing and dissipating the energy of a falling racer.

Tests have shown that increased energy dissipation and deceleration distance is obtained when using 2 or 3 rows of **Barry B-Net** Systems. **The greater the density of layered rows of nets, the greater the energy value which can be safely dissipated.** In other words : an increase in the number of rows of netting, and not necessarily distance between the rows appears more "efficient" in bringing the racer to a slow/safe stop, and furthermore, enhances the ability of the net to trap the racer, thereby preventing ejection, sliding under, ramping up, etc. The following reports are available on request on our website ([www.barry.ca](http://www.barry.ca))

- *Effect of prolonged exposure to Ultra-Violet rays on **Barry B-Net** – Phase I*
- *Effect of prolonged exposure to Ultra-Violet rays on **Barry B-Net** – Phase II*
- *Effect of prolonged exposure to Ultra-Violet rays on **Barry B-Net** – Phase III*
- *Field testing of **Barry B-Net** Systems used in Alpine Ski Race Course Protection – 60 km/h*
- *Field testing of **Barry B-Net** Systems used in Alpine Ski Race Course Protection – 100 km/h – Phase II*
- *Water Absorption Properties of Safety **Barry B-Net***

### B. Inspection and maintenance log

Each net system has a serial number (ex. BSE28044-001). The use, inspection and maintenance log should be kept by whoever is responsible for the inventory of the net systems and has received the **Barry** training. A copy of the form is on the next page. The responsible must ensure that they have a copy for each system in their possession. In the case where an annual service contract is taken, completed copies of these are required for the annual inspection which is to be made by **Barry**. Some problems can be identified during the system inspection:

| <b>Problems</b>                | <b>Actions</b>  |
|--------------------------------|---|
| Broken strand                  | Identify location for the net using flagging tape, remove net from service and contact <b>Barry</b> for advice. |
| Broken or damaged pole or clip | Replace with new <b>Barry</b> product.  |
| Missing tie-up strap           | Make entry in log book and note. Use an adequate substitute strap.  |
| Missing label                  | Set net aside, attempt to identify, and make a temporary label. Contact <b>Barry</b> for a replacement label.   |
| Others                         | Contact <b>Barry</b> at 1-800-305-2673  |



### C. Impact events involving Barry B-Net System

In the event that a skier is involved in an Impact Event (i.e. is injured, and cannot ski off) involving **Barry B-Net** System, a detailed incident report should be prepared by the *Qualified authority*, or in his/her absence, the *Competent person*. In the event that repairs necessitate the removal or replacement of netting and/or support poles, the material removed should be kept in a secure location until recovered by a **Barry** representative. The incident should be reported to **Barry** at 1-800-305-2673 and/or by e-mail: nlachaine@barry.ca

|  |  |                        |
|--|--|------------------------|
| Type : <input type="checkbox"/> Race<br><input type="checkbox"/> Training  | <input type="checkbox"/> SL <input type="checkbox"/> SG<br><input type="checkbox"/> GS <input type="checkbox"/> DH | Location :             |
|  |  | Date :                 |
| <input type="checkbox"/> <b>1.</b> Attend to the skier immediately   |  | Name :<br>Bib number : |
| <input type="checkbox"/> <b>2.</b> Report incident to <i>qualified authority</i> (or a <i>competent person</i> ) |  | Name :<br>Date :       |
| <input type="checkbox"/> <b>3.</b> Report incident to the Ski Center   |  | Name :<br>Date :       |
| <input type="checkbox"/> <b>4.</b> Report to <b>Barry</b> 1-800-305-2673 or email: nlachaine@barry.ca            |  | Nom :<br>Date :        |
| <b>5.</b> Photograph of site of impact, transfer photos to <b>Barry</b>  |  |                        |
| <input type="checkbox"/> 20 meters above and 20 meter below  |  |                        |
| <input type="checkbox"/> Portion of net 3 poles above and below  |  |                        |
| <b>6.</b> If repairs or replacement of net or components is required :   |  | Details :              |
| <input type="checkbox"/> Removed items kept in secure locations :  |  | Location :             |
| <input type="checkbox"/> Materials handed over to <b>Barry</b> Representative :                                  |  | Name :<br>Date :       |
| <b>7.</b> Detailed incident report submitted :   |  |                        |
| <input type="checkbox"/> To <b>Barry</b>   |  | Date :                 |
| <input type="checkbox"/> To ROC  |  | Date :                 |
| <b>Filled by :</b>   |  | Date :                 |