



# SKELETON SCHOOL PROGRAM 2014 - 2015

*Welcome to the sport of Skeleton!*



Alberta Skeleton Association is Supported By:



## Course Outline

### **Day One**

#### **Ladies Start**

1. Sign-up
2. Welcome and Introduction
3. Safety
4. Equipment
5. Body Position
6. Basic Steering and Control
7. Position on Track
8. Track Walk
9. Sliding from Ladies Luge Start (2 runs)
10. Video Review and Questions

### **Day Two**

#### **Ladies Start**

1. Introduction to Ladies start
2. Body and Head Position
3. Intermediate Steering and Control
4. Position on Track (additional corners)
5. Track Walk
6. Sliding from Ladies Luge Start (3 runs)
7. Video Review and Questions

### **Day Three**

#### **The Top**

1. Introduction to Bob start
2. Position on Track (additional corners)
3. Advanced Steering
4. Push Start Technique
5. Competition Rules
6. Track Walk
7. Start Announcer Procedure
8. Sliding from Bob Start (3 runs)
9. Video Review and Questions
10. How to Continue in Skeleton

# Day One

## ***Introduction***

Over the next few days you will learn the fundamentals of Skeleton, a unique, exhilarating, high speed sport that is growing around the world. The inclusion in the Olympic Winter Games has greatly heightened public awareness and you are about to be licensed.

The school is designed to progress the student from lower start positions with slower speeds, to the very top of the track with faster speeds while maintaining safety and confidence. Instruction includes classroom lectures prior to each session, coaching by radio following each run and video analysis each night. All equipment is provided. By the end the student will be qualified and licensed to slide from the Bobsleigh start position where all regular Alberta Skeleton Association training and races begin.

## ***Safety***

The sport of Skeleton is the safest of the sliding sports. The tracks are designed to keep the slider in the track and the track at COP is one of the best in the world. It is designed to be technical (easy to slide, but difficult to slide fast) while having high speeds. Like any sport, injuries can happen but are generally minor. Bumps and bruises are common while learning how to avoid contact with the walls. Getting flipped onto your side is about the worst that can happen. A flip is recoverable (usually instinctively) by getting the sled back under you and continuing down the track. For this reason you should never let go of the sled. In addition, the sled slides faster than you do and you don't want the sled to hit you from behind.

## ***Equipment***

### Sled

The sled is a very simple piece of equipment with no moving parts and only two possible adjustments. It is manufactured of steel welded into a frame with an attached saddle, adjustable and removable runners, and padding. Bumpers are mounted on the sides at the front and back. The sled has a degree of flexibility designed to assist in steering and control. The weight of the sled can be altered by adding or removing weight plates mounted inside to meet regulations.

### Runners

Each sled has two stainless steel runners that are adjustable for the amount of 'rock' (bow). The runner is smooth for the front half and has two grooves cut lengthwise down the rear half. The grooves are for steering and direction. Control of the sled is determined by the relative amounts of smooth runner and grooved runner in contact with the ice; this is called the contact patch. Increasing the 'rock' reduces the area of the contact patch, reducing the control but increasing the speed as less runner is creating friction with the ice. Eventual experimentation will determine the appropriate setting for each individual. For the school the sleds are all set with minimum rock in the runners.

### Helmet

A must for obvious reasons. Most helmets are lightweight downhill skiing helmets with attached chin-guards. Most athletes make their own visors out of break and shatterproof plastic. Ski style goggles can be used but are undesirable. The helmet should fit snugly so it cannot slip down over the eyes. For this reason it is highly recommended that each person acquire his or her own correctly fitted helmet.

### Suit

Once athletes have reached a certain level of competence they will desire to go even faster by reducing the wind resistance of the clothing they wear. A custom fitted speed suit is the answer and is available from local manufacturers.

### Shoes

Spikes are essential for traction during the running push start. Special Skeleton or Bobsleigh shoes must be worn for all competitions and training. These special shoes have a brush like spike pattern that increases grip on clean ice with minimal damage to the ice surface.

### Padding

During the school all athletes are required to wear elbow protection. Extra padding is used by some athletes in places where bumps and bruises occur. Shoulder pads can be used but are usually thin foam pieces under the suits.

### Gloves

Gloves must be worn to keep knuckles from getting accidentally scraped by the walls of the track. Please remove wristwatches and rings.

## ***Body Position***

The athlete rides the sled lying headfirst on their stomach. The front of the sled has the larger bumpers and an area cutout for the head. The hands grasp the handles at the rear of the saddle with the thumbs down and fingers to the inside next to the thigh. The head must be far enough forward so the chin clears the front of the sled.

The shoulders must stay low and in contact with the sled. Allowing the shoulders to rise while looking forward breaks the aerodynamic form, and is much like trying to throw an arrow with the feathers first. Also, the chest area catches air and slows the speed. Too much weight on the rear of the sled results in erratic steering similar to steering a car fast in reverse.

The correct position for the head is to extend the chin forwards and turn the head in the direction of the corner to see around to the exit. Going into a corner with the head held high can be dangerous as the g-force will attempt to pull the helmet onto the ice; the higher the head, the greater the potential blow will be if the helmet contacts the ice. The elbows should be kept in close to the sides.

## ***Basic Steering and Control***

Steering and control of the sled is accomplished in a number of ways, from aggressive to very subtle. Basic directional control is accomplished by touching or dragging a toe on the ice. Dragging the left toe will cause the sled to go left; dragging the right toe results in the sled going to the right.

While in a straight section of track subtle head movements can be very effective for moving from one side of the track to the other. A slight slant of the head to the right will move the sled slowly to the right, left to move left.

Although it may be hard to believe, responsiveness and control increases as speed increases.

## ***Position on Track***

This section will deal with where the athlete wants to be on the track. When starting to slide the emphasis is on how to position yourself for entering corners. The corners are built with the transition from straight to banked corner beginning with a buildup of ice on the outside wall. The prime consideration is to enter each corner on the outside, ideally about 6 inches to a foot from the wall. By the outside, we mean to enter a left corner on the right side. For a right corner the outside would be the left side of the straight section leading up to it. This allows the sled to take direction early in the corner and to utilize all of the corner's initial banking. Visualize a bowling ball running into the corner; a ball going in on the outside will start to turn earlier than a ball rolling along the inside wall that will miss the first section of banking. Entering a corner on the outside is also termed 'entering early'. Entering early means the sled will take a smoother, horizontal line while 'entering late' will cause the sled to initially rise high and then oscillate up and down around the corner.

Entering corners parallel to the wall is also very important to have a smooth line through the corner. Skidding at an angle into the corners will cause the sled to 'snap' to a horizontal position using up a lot of energy and losing time.

It is very important to study the attached track map to memorize the succession of corners so that when sliding you can begin to anticipate what is coming next, a left or right, long corner or short, etc.

## ***Track Walk***

The track walk will take place inside the track starting at the finish and moving up to the Ladies Start. It will deal primarily with entering the corners in the correct place and it is helpful to bring along a copy of the track map to follow the succession of corners and know where you are. Spikes are useful for walking on the ice but not essential.

### ***Sliding from Ladies Start***

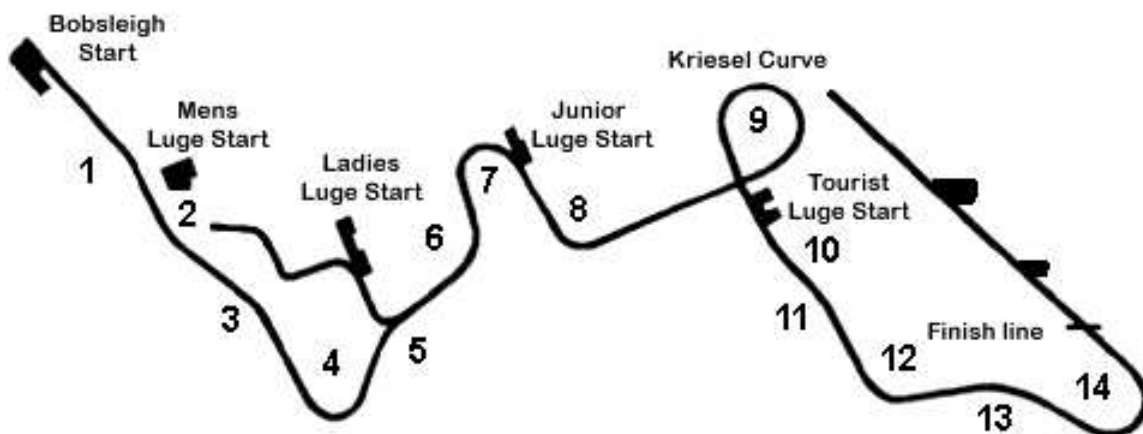
Now the real fun begins! Two runs from Ladies Luge start are meant just to familiarize the student with the position on the sled and the lower part of the track (corners 6 to 14) without gaining too much speed or g-force in the corners. Speeds will be about 70 km/h. Control will be minimal and it is important at this stage to be relaxed, keep the shoulders in contact with the sled and to just go for the ride. After each run a coach will give tips by radio.

### ***Video Review and Questions***

The video shot during the session will be shown and pointers about each person's sliding will be made.



Canada Olympic Park  
premier site of the  
XV Olympic Winter Games



## Day Two

### ***Introduction***

Ladies start will encompass more detailed instruction on body and head position including an introduction to sled balance and more advanced steering techniques. The sliding session will begin farther up the Ladies' Luge Start Ramp. This a small increase in speed to around 80 km/h.

### ***Body and Head Position***

The basic body position will be refined based on the combined sled and rider's balance. A small wood bar is placed under the runners at the start of the grooves. The sled and slider should be able to tip back and forth with a minimum of effort. This mean's that an equal amount of smooth and grooved runner will be in contact with the ice. If the test shows them to be front heavy, the slider should move slightly towards the rear of the sled, without compromising the clearance of the chin over the front of the sled, until balance is attained. Being rear heavy means the slider should move slightly (an inch or so) towards the front. The slider needs to make note of this balanced position by observing where the hands grasp the handles, where the shoulders touch the sled and where the thighs contact the back of the sled. Thereafter, the athlete should seek the same position every time he/she mounts the sled.

Speed is based on a number of factors. On Day One, reducing the frontal area exposed to the air by keeping the shoulders pinned to the sled was highlighted. Another aspect of keeping an aerodynamic form is squeezing the elbows in and pointing the toes with the legs together.

Being able to see where you are going while in the corners under high g-force is beneficial for driving the correct line. It is essential to learn from the start to tilt the head to the side, almost putting the ear on the shoulder and peer 'up through the eyebrows' around the inside of the corner. This also makes it easier to keep the head off the ice as the length of the neck is shortened.

### ***Intermediate Steering and Control***

The two methods of steering covered on Day 1 are very basic but very useful and are used at all levels of competition. World-class sliders will use toe touches but only when absolutely necessary. Dragging part of the anatomy is not good for fast times.

A more subtle, but most effective, method of steering is using the runner grooves to induce turning. Pressing down on a back corner of the sled using a thigh or knee will press a greater amount of groove into the ice. The slight increase in resistance will cause the sled to turn to that side. Use the right knee to turn to the right, and the left knee to turn left.

The student can experiment with this technique once he/she feels confident with the track and speed. Advanced sliders will use knee steering only in the corners in order to have the correct exit line into the next straight.

### ***Position on Track***

The entry of each corner remains the same as outlined on Junior start; going into the corners parallel to and close to the outside wall. Many students will experience a 'pinball' effect down the long straight where contact with the wall results in 3 or 4 more bumps before Kreisel. This is a result of the lower speeds from the lower start positions not carrying the slider completely around corner 8. The sled is coming down out of the corner before the corner is finished and runs into the right wall. This will be greatly reduced with faster speed from the Bob start but does give us reason to practice a key aspect of control; 'steering in to the hit'. Analogous to steering a car into a skid, after touching a wall the corrective action is to steer back to that same side. Once straightened out it is then possible to line up the next corner. Doing nothing or steering away will take the sled across the track into the opposite wall, compounding the problem and making it more difficult to enter the next corner properly.

### ***Track Walk***

The track walk will begin at corner 8 and continue up to the Ladies' Luge Start covering the same elements as Day One. Of note is the very short straight between corners 6 and 7. The memorization of the track map will be beneficial, as it is easy to become disoriented with corners going by quicker than before.

### ***Sliding From Ladies Start***

The three runs from Ladies' Luge Start will add more track awareness in the quick succession corners while gaining more speed and g-force in the corners. Speeds will be about 85 km/h. After each run a coach will give tips by radio. Keep in mind the sequence of the corners so you know where you are and how to stay in control of the sled.

### ***Video Review and Questions***

The video shot during the session will be shown and pointers about each person's sliding will be made.



## Day Three

### ***Introduction***

Bob start, the final and most exhilarating day yet! Prior to the on ice session, instruction will cover the new corners to be encountered, the technique for the running push start, and a quick review of the competition rules for skeleton. At the Bob Start the track announcer's start procedure will be covered. Today we will see the students slide from the Bob Start where all training and races begin. Five more corners will be added, and the speed and corner g-force will increase. After sliding, the videotape will be critiqued. Information on how to continue in skeleton by entering training and race events will be covered as will an introduction to local sliding clubs.

Finally, all graduates will be presented with their ASA memberships, licenses and other paraphernalia.

### ***Position on Track***

Again, the entry of each corner remains the same as outlined on Junior start; going into the corners parallel to and close to the outside wall. Of prime importance is the direction going into corner 6 as it sets up corners 7 and 8. The straight from 5 to 6 is fairly long and gives you time to get into corner 6 early.

### ***Advanced Steering Technique***

This technique is for advanced sliders but will be mentioned here for completeness. Once the slider has experimented with and experienced the knee pressure method of steering, the next step is to combine knee pressure with shoulder pressure. This is a more extreme way of steering used for cranking severe turns. It is accomplished by pressing down into the sled with the opposite shoulder from the knee being used. To go right, the left shoulder would be used in conjunction with the right knee. The right shoulder and left knee would cause the sled to go left. Again this is only used by advanced sliders and only in corners to set up the following straight.

### ***Push Start Technique***

Skeleton uses a running start in which the competitor runs with the sled and dives on to continue down the track. It is a most awkward position in which to run, as the height of the sled is less than a foot. Running with your hands at ankle level requires practice.

Spikes are used for grip on the ice. The right runner is placed in a groove cut into the ice to give direction. The athlete pushes off a block situated 15m from the first timing eye and runs forward beside the sled. Except for the first few steps, it is impossible to effectively push from behind. Once maximum running velocity is reached the athlete dives onto the sled and assumes his/her balanced sliding position. The starting groove is quite long so you will have plenty of time to get into position after jumping on the sled.

## ***Competition Rules***

A complete set of rules and regulations governing all Alberta Skeleton Association races is available. Feel free to ask any member for clarification of any rule.

### ***Track Walk***

The track walk will begin again at corner 8 and move up to the Bob Start passing through the steepest portion of the track from corners 4 to 6. Note the very important entry to corner 6. Once again, memorizing the track map will be beneficial, as it is easy to become disoriented with corners going by quicker than before. Counting the corners as you slide can help you remember where you are.

### ***Start Announcer Procedure***

The start procedure for all training and race sessions is always the same and incorporates a number of safety measures taken by the track crew. Each slider must be aware of who they follow in the start list so they can be ready to go with helmet on and equipment set. Once the previous slider goes, the announcer will state "Skeleton in track. Joe/Jane Skeleton to Bob Start position. Times for...". This is the time for the slider to leave the start house, get their sled and go to the start block. Do not place the sled into the start grove until it is time to start your run, as it is possible that the sled could start to slide away from you. Also, on warm days the runners will melt into the start groove, damaging it for the sliders to follow.

After the previous slider has completed the run and the control tower confirms he/she is down safe the announcer will say, "Track is clear for Joe/Jane Skeleton." The slider must wait for the start clock's green light, buzzer, and start count down before departing. The run must be started prior to the start clock reaching zero.

### ***Sliding from Bob Start***

This is it! Sliding from the very top! The three runs will give the student the experience of sliding the entire track. The top 5 corners are new and the student gains only slightly more speed and g-force in the corners. Speeds will be about 100 - 105 km/h. After each run a coach will give tips by radio. Again, keep in mind the order of the corners so you know where you are and what to expect.

It can be exhausting and tiring for neck muscles not used to the strain of the g-forces so students are not required to take all three runs in the one night. They can come back during a regular training session to complete the course.

### ***Video Review***

The video shot during the session will be shown and pointers about each person's sliding will be made.

### ***How to Continue in Skeleton***

Once the course has been completed, the student is licensed to slide from the Bob Start and is encouraged to join any of the training sessions and compete in all local races. For training sessions the slider must sign the start list a minimum 45 minutes before the start of training. It is recommended to arrive at least one hour ahead of time, to get equipment organized and get up to the start house. Physical warm-up stretches and exercises are also very important. To enter races, a race entry form with the applicable race fee must be submitted to the race organizer by the required date.

Equipment is available from a number of sources. Used sleds may be acquired for very reasonable prices and new sleds may be ordered directly from the manufactures. Helmets are generally obtained from local ski shops. Suits may be bought used or custom made by local manufactures. For beginner sliders, ASA makes the school sleds and helmets available on a first come - first served basis for a nominal fee of \$200 for the season. The sleds are not allowed to leave COP and cannot be altered in anyway. Helmets must be returned after each session. Other Sleds and helmets maybe rented from Alberta Skeleton and assigned to the athlete. Specific fees and a rental contract are required for all assigned equipment.

Information on our Skeleton programs, the Provincial Team and the Provincial Development team will also be discussed.

All ASA members are encouraged to attend social functions and the Annual General Meeting held at the end of each season.

Congratulations on completing the Alberta Skeleton Association's driver school!

We hope you will continue to take part in this exciting sport.

***This Association functions solely on the efforts of its volunteers!  
Please Support Your Sport!***

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# Alberta Skeleton

## Equipment listings

### Helmets

The sport of Skeleton uses ski-racing helmets with chin guards and Uvex Skeleton specific helmets for competition. Alberta Skeleton has many sizes of helmets available for purchase.

Cost about \$160 - \$500

### Visors

ASA uses thin shatterproof lexan to make visors; the piece of plastic is cut to fit the helmet and is taped in place. Visors are available from ASA. Motorcycle visors are also used but tend to be ridged and should not be modified to fit the helmet. Any modifications to manufactured plastics compromise their structure and they become prone to breaking. More aerodynamic Luge visors are also available.

Cost about \$5 - \$50

### Bob Spikes

All races require the use of Skeleton or Bob spikes. Both Adidas and Nike make bob spikes however they are difficult to get and cost a lot. They can be ordered off the web and should fit like any other shoe. ASA has a few available for purchase.

Cost about \$425 plus shipping/duties – <http://www.rgs-marketing.de/>

### Training Suits

Start with a lycra suit, these are great for training, sizes S, M, L.

Cost about \$80 - \$150

The Dive Shop - 4652 Macleod Trail SW (403) 243-4616

### Race Suits

Custom fit lycra suits

Cost About \$160 - \$200

Lowxs Wear - Calgary

E-mail: [rindy\\_loucks@yahoo.ca](mailto:rindy_loucks@yahoo.ca), [www.rindyloucks.com](http://www.rindyloucks.com)

### ASA Equipment for Sale - Price List 2014-2015

Bob Shoes (based on Cost)	-	\$325-\$425
Helmets (Ski Uvex / chin guard) -		\$150
Chin Guard and bolts	-	\$30

### Tools

T-Handle Hex Wrench 5/16	-	\$15
T-Handle Hex Wrench 7/32	-	\$15
Hex Wrench Set	-	\$15
Ruler	-	\$2
Polishing Block	-	\$5
Polishing Dowel	-	\$2
Visor Material	-	\$10
Luge Visors	-	\$30
Tesa Tape	-	\$75
Cloth Tape	-	\$40

## Skeleton Sled

Diagrams depict a Skeleton sled with reference to rule numbers and measurements as well as a sponsorship properties placement diagram. Information taken from the FIBT (Federation Internationale de Bobsleigh et de Tobogganing) rulebook. [www.fibt.com](http://www.fibt.com)

Men's Weight 33 – 43kg 115 combined

Women's weight 29 – 35 Kg 92 combined

Dimensions

Sled Length 800mm – 1200mm

Sled Height 80mm - 200mm

Sled Width centre to centre of opposite runner 340mm – 380mm

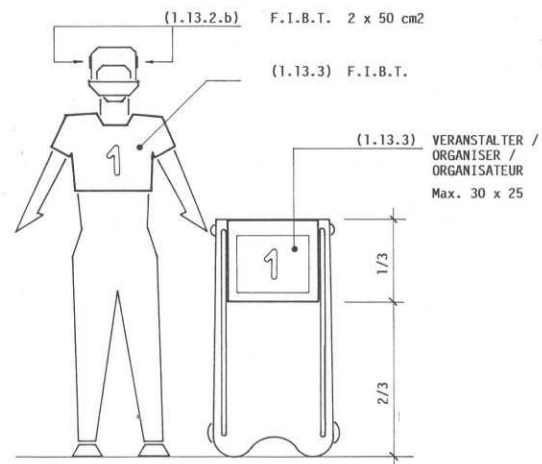
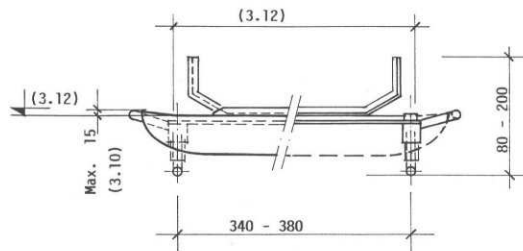
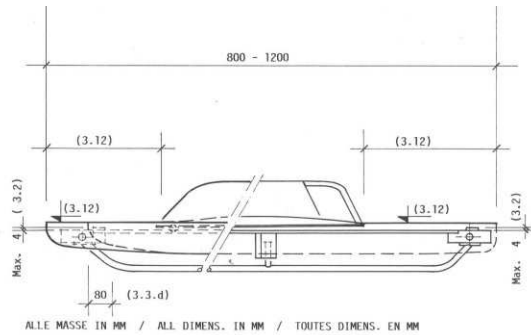
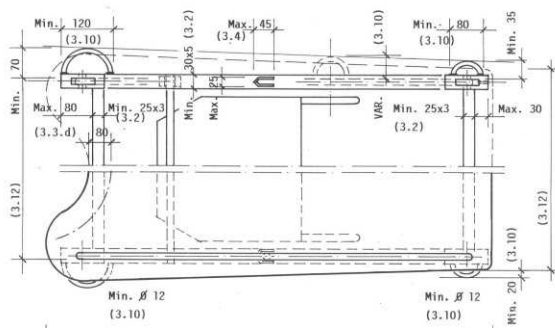
Runners Specifications are specified in the rulebook

Runners Diameter 16mm -30mm

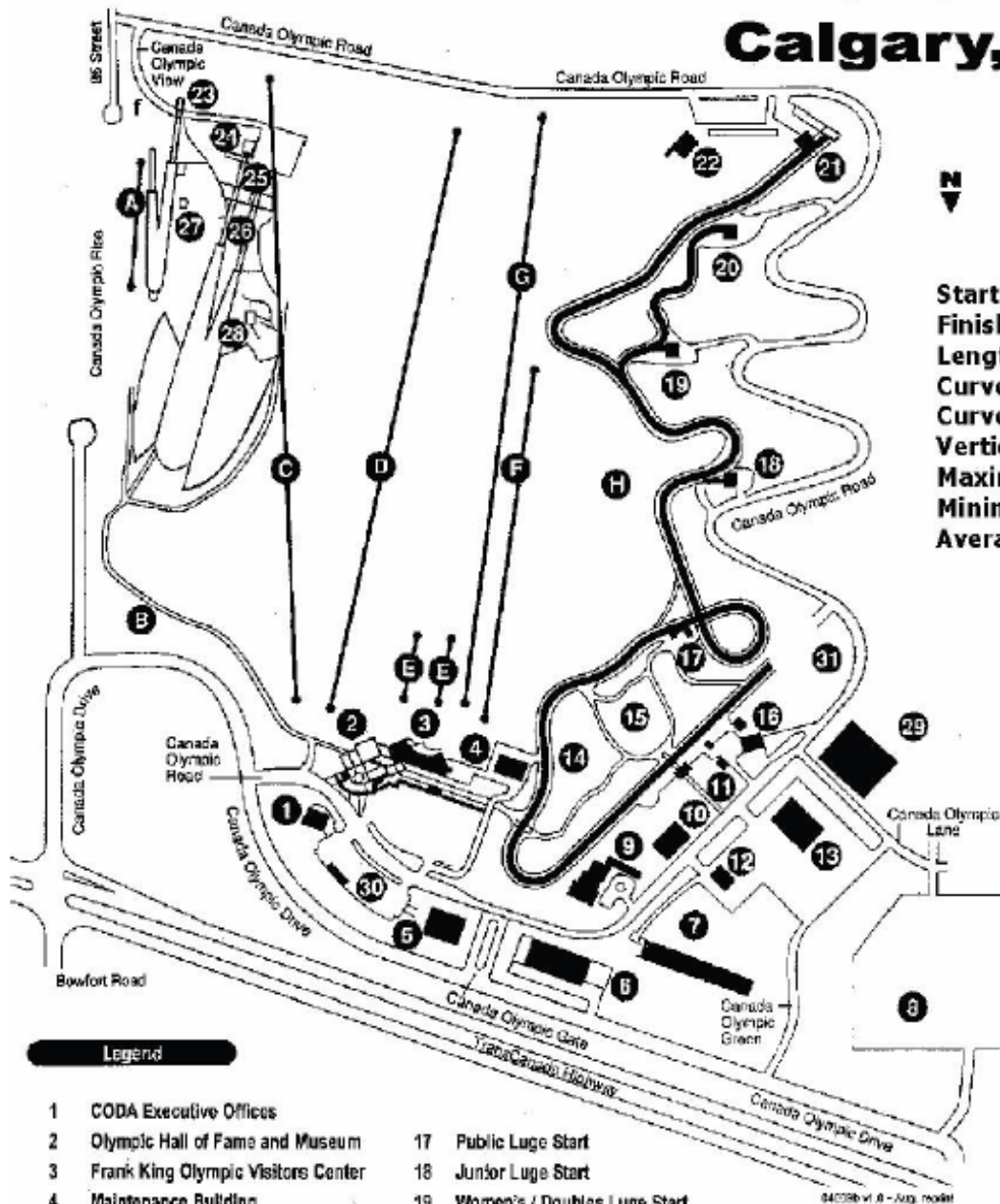
Runner Groove Depth 2mm

Runner weight Approx 3.4kg

3.2 – Frame Longitudinal min 30/5mm. Cross Rails Min 25/3mm Configured as a horizontal plane in a single, continuous line. Max. tolerance 4mm



# Olympic Track Calgary, Canada



## URSE DATA

Start Elevation	1251.2m
Finish Elevation	1130.0m
Length	1494.0m
Curves Left	8
Curves Right	6
Vertical Drop	121.2m
Maximum Gradient	15.0%
Minimum Gradient	-5.0%
Average Gradient	8.6%

## Legend

- |                                      |                                 |                              |
|--------------------------------------|---------------------------------|------------------------------|
| 1 CODA Executive Offices             | 17 Public Luge Start            | A Medal Maker Chair          |
| 2 Olympic Hall of Fame and Museum    | 18 Junior Luge Start            | B Nordic Area                |
| 3 Frank King Olympic Visitors Center | 19 Women's / Doubles Luge Start | C Olympic Chair              |
| 4 Maintenance Building               | 20 Men's Luge Start             | D C.O.P. Quad Chair          |
| 5 ATCO Centre                        | 21 Bobsleigh Start              | E Magic Carpets              |
| 6 Refrigeration Building             | 22 Naturbahn Teahouse           | F Triple Chair               |
| 7 Ice House                          | 23 HS88 Tower                   | G NEW High Speed Quad        |
| 8 Softball Diamonds                  | 24 HS123 Tower                  | H Terrain Park and Superpipe |
| 9 Bob Niven Training Centre          | 25 HS95 Tower                   |                              |
| 10 Festival Tent                     | 26 Staging Building             |                              |
| 11 Washrooms                         | 27 Judges Tower                 |                              |
| 12 Sports Centre                     | 28 Judges Tower                 |                              |
| 13 Warehouse                         | 29 Calgary Gymnastics Centre    |                              |
| 14 Beach Volleyball Courts           | 30 CCOSE Pavilion               |                              |
| 15 Husky Oil Gardens                 | 31 Paskapoo Greens Mini-Golf    |                              |
| 16 Sled Storage                      |                                 |                              |