



WSC

**2010 OLYMPICS
WHISTLER SLIDING CENTRE
CALLAGHAN VALLEY
WHISTLER, BC**

**Vancouver 2010 Transition Team
650 - 375 Water Street
Vancouver, B.C. V6B 5C6**

FINAL DESIGN

Var03a
Aug 15, 2004



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PART 01

TABLES OF MAIN DATA

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GENERAL DESCRIPTION OF TRACK

COMPETITION LENGTH :	4-MEN-BOB / 2-MEN-BOB / SKELETON =	1450,0 m
	LUGE MEN =	1379,0 m
	LUGE LADY / LUGE DOUBLE =	1202,0 m
	LUGE JUNIOR =	959,0 m
	TOURIST =	544,0 m

TOTAL ICED LENGTH :	1640 + 22 + 73 + 42 + 29 + 30 =	1836,0 m
	length of break line luge : 1700 - 1395 =	305,0 m
	length of break line bob : 1700 - 1450 =	250,0 m
	length of iced break line luge : 1640 - 1395 =	245,0 m
	length of iced break line bob : 1640 - 1450 =	190,0 m
	length of safety zone : 1700 - 1640 =	60,0 m
	length of men start (70 m) =	73,0 m
	length of lady / double start (39 m) =	42,0 m
	length of junior start =	29,0 m
length of tourist start =	30,0 m	

CURVES :	number of curves =	16 x
	number of right curves =	7 x
	number of left curves =	9 x
	combination right - right (C7 - C8 / C15 - C16) =	2 x
	combination left - left (C2 – C3 ; C5 – C6 ; C9 – C10) =	3 x
	S - curves (C6 - C7) =	1 x
	labyrinth (C12 - C14) =	1 x
	straight parts (~61 m to C8) =	1 x

ELEVATION :

total level difference : (to lowest point)	Sx = 1285,00 m and Hx = 786,184 m		
bob start	Sx = 0,00 m	Hx = 935,866 m	dHx = 149,682 m
men start	Sx = 16,00 m	Hx = 939,259 m	dHx = 153,075 m
lady start	Sx = 193,00 m	Hx = 908,613 m	dHx = 122,429 m
double start	Sx = 193,00 m	Hx = 908,613 m	dHx = 122,429 m
junior start	Sx = 433,00 m	Hx = 886,230 m	dHx = 100,046 m
tourist start	Sx = 837,00 m	Hx = 842,750 m	dHx = 56,566 m
finish luge	Sx = 1395,00 m	Hx = 796,760 m	dHx = 10,576 m
finish bob	Sx = 1450,00 m	Hx = 802,810 m	dHx = 16,626 m
lowest point	Sx = 1285,00 m	Hx = 786,184 m	
weighing house	Sx = 1610,00 m	Hx = 829,150 m	dHx = 42,966 m
end of iced track	Sx = 1640,00 m	Hx = 830,600 m	dHx = 44,416 m
end of track	Sx = 1700,00 m	Hx = 841,150 m	dHx = 54,966 m

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GENERAL TABLE (PARAMETER OF TRACK)

BOBSLEIGH AND LUGE TRACK

TABLE

1

	[...]	4 - BOB	2 - BOB	SKELETON - MEN	MEN-LUGE	LADY-LUGE	DOUBLE - LUGE	JUNIOR
COMPETITION LENGTH	[m]	1450,0	1450,0	1450,0	1379,0	1202,0	1202,0	959,0
AVERAGE SLOPE to finish	[%]	9,18	9,18	9,18	10,33	9,31	9,31	9,33
AVERAGE SLOPE to deepest point	[%]	10,32	10,32	10,32	11,10	10,19	10,19	10,43
NUMBER OF CURVES	[-]	16	16	16	16	14	14	11
MAX. SPEED calculated	[km/h]	139,3	135,0	132,6	136,3	124,2	127,6	116,0
TIME	[sec]	50,14	51,77	52,20	45,82	48,73	47,52	50,94
MAX. N	[g]	4,91	4,66	4,48	5,02	3,92	4,11	3,47

GENERAL DESCRIPTION OF THE TRACK

The track is aligned in North-West – orientation.

The site is approximately 825 m in length with the ground sloping in a westerly direction by 125 m width measure in a north south direction.

This configuration determines the layout of the track which can be characterized as tight curves with limited straight aways.

The competition length is 1450 m for bobsled and 1395 m for luge (sleds). The whole track has a length of 1700 m.

The basic elements of the curves are a clotoide - as typical of other international tracks - at the entrance - in the intermediate member a circular arc -clotoide at the exit.

The curves had to show small clotoides at the entrance in order to be raked to the limited available space.

In total 16 curves are proposed with a 17th past the weigh building and sled take out in the deceleration zone. Curve 8 is however considered nominal as it has a radius of 1000 m and therefor represents only a "bended straight line". In total 4 start locations are planned.

The track is suitable for international competitions for the following disciplines:

Starting point : Bob Start :4 - Bob, 2 - Bob (Men's)
2 - Bob Women

Skeleton Men, Skeleton Women

Starting point : Lady Start :Lady Luge
Double Luge
Junior Luge

The Men Start and the Lady -, Double and Junior Start have been designed to accommodate competitions.

The entrance conditions are designed at 6 ° (Men Start) and 8 ° (Lady Start) for the track in accordance with the regulations of the international federations (FIL and FIBT).

The track is considered a very fast track - max. v = 139,0 k.p.h. (4-bobsled).

This is primarily determined through relatively high grade differential between the highest start area, that being the Men's Luge and the low point of the track.

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At a distance of 250 m from the start a speed of $v = 93$ k.p.h. is attained (in accordance with the rules that require 80 k.p.h.).

Beyond 350 m from the start the speed is permanently greater than 100 k.p.h.

The loading from the centrifugal force (g - forces) are relatively highly with max.N = 4.9 for the 4-bobsled and with max.N = 5,0 for luge.

These forces do not exceed in 3 seconds in any curve as required in the international rules.

In some instances a vertical radius has been formed so that the vertical centrifugal force shows is less than 1.0 to offer a greater level of difficulty.

A g force of $N = 0,41$ is attained at the end of the "bent straight line" (C8) with N ($S_x = 714,5$ m) and in the straight line in front of curve C12 with $N = 0,67$.

In the design of the track profile attention was paid to balancing cut and fill to ensure a track that respects the natural topography and is relatively flush to adjacent existing grades.

Preliminary grading indicates a maximum cut of 4,0 m (with curve C1 : 2,4 m; at C5 : 3,6 m; at C7 : 4,0 m) and a fill profile that does not exceed 4,0 m (at C2 : 3,2 m; at C6 : 3,9 m; at C7 4,0 m).

Along a 115m length of the brake path (deceleration zone) fill up at a depth of approximately 1,9 m is necessary. Before the Weigh House the track has been raised to a height of 4,0 m above existing grade in order to achieve a 20 % grade necessary for the unassisted brake effect.

Placing the track on elevated pillars with connecting gangway to the Weigh House is a consideration for this area.

Juniors Start and the Tourists Starts have been provided for for training purposes.

Furthermore the Tourist Start can also be utilized for recreational luge sled use due to the low speed attained from these start locations (max. $v = 87$ k.p.h. and max.N = 2,2).

A 4- person bobsled "taxi bobsled" for tourists (max.v = 113 k.p.h. and as a load max.N = 3,3) can also be launched from the Junior Start location.

As summary it can be said that the track is a very fast track and has a high level of difficulty.

The kind of the difficulty can be read off from the table "criterion". All curves with values > 15 should be considered difficult.